OFFICIAL GAZETTE UNITED STATES PATENT OFFICE

VOL 42 & 43

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OFFICIAL GAZETTE

OF THE

UNITED STATES PATENT OFFICE.

VOLUME XLII.

JANUARY 3 TO MARCH 27, INCLUSIVE,

1888.

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1888.

CONTENTS.

ERRATA FOR VOLUME XLII OF THE OFFICIAL GAZETTE.

ANNOUNCEMENTS—VOLUME XLII.

DISCLAIMERS—VOLUME XLII.

TEXT OF THE OFFICIAL GAZETTE, JANUARY 3 TO MARCH 27, 1888, INCLUSIVE.

INDEX TO THE DECISIONS OF THE COMMISSIONER OF PATENTS AND OF THE UNITED STATES COURTS IN PATENT CASES.

DIGEST OF DECISIONS OF THE COMMISSIONER OF PATENTS AND OF THE UNITED STATES COURTS IN PATENT CASES.

INDEX OF PATENTS AND PATENTEES FOR THE QUARTER YEAR, JANUARY 3 TO MARCH 27, 1888.

ERRATA.

375,831, page 33, in title, for "assignor of one-half" read *assignor*.

375,985, page 72, in title, names of assignees, for "John E. Hass" read *John E. Haas.*

375,999, page 76, third claim, line 4, insert *having nuts, or being* before "provided."

376,071 and **376,072,** pages 104 and 105, in title, name of assignee, for "Parrish Bros. and the Peck Electrical Company, both of same place" read *Parrish Bros. and Peck Electrical Company, of same place.*

376,278, page 160, in title, name of assignee, for "A. G. Spaulding & Brothers" read *A. G. Spalding & Brothers.*

376,325, page 171, in title, after residence of inventor, insert *assignor to Joseph A. Jeffrey, same place.*

376,433, page 208, in title, after residence of inventor, insert *assignor to Joseph M. Taylor, same place.*

376,713 and **376,714,** page 287, in title, after residence of inventor, insert *assignor, by mesne assignments, to the Consolidated Coupling Company.*

377,266, page 458, in title, name of inventor, for "Michael Naylor" read *Michael Naylon.*

377,393, page 503, in title, name of inventor, for "Charles L. Klander" read *Charles L. Klauder.*

377,503, page 541, in title, name of inventor, for "Lawrance Stephens" read *Lawrence Stephens.*

377,786, page 641, third claim, line 4, for "nut" read *mat.*

377,913 and **377,914,** page 676, strike out all after number—title, drawings, and claims—and insert WITHDRAWN.

377,980, page 696, in title, names of assignees, for "E. S. and F. Bateman" read *himself, E. S. Bateman, and Edgar C. Wilson.*

378,436, page 840, claim 11, line 3, strike out the comma after "actuating-star" and for the following "a" read *or.*

378,454, page 845, in title, name of assignee, for "Peter B. Warren" read *Peter B. Warner.*

378,652, page 901, strike out all after number—title, drawing, and claims—and insert WITHDRAWN.

378,690, page 912, first claim, line 2, insert *contents of the* before "vessel."

378,851, page 958, in title, after residence of inventor, insert *assignor to Lucius G. Fisher, Chicago, Ill.*

379,120, page 1037, second claim, line 4, for "armed" read *curved.*

379,137, page 1041, in title, for "assignor" read *assignor of one-half.*

379,445, page 1133, strike out all after number—title, drawing, and claims—and insert CANCELED.

379,580, page 1181, claim, line 3, strike out "my."

379,597, page 1184, in title, for "Die for Straightening the Steel Handles of Knives and Forks" read *Die for Straightening Knives and Forks.*

379,919, page 1282, in title, after "assignments, to" insert *S. Lloyd Wiegand and.*

10,904, (reissue,) page 825, in title, for "by mesne assignments, to himself and William D. Park" read *to Joseph A. Jeffrey.*

18,000 and **18,001,** (designs,) page 2, residence of patentee, for "South Manchester, N. J." read *South Manchester, Conn.*

15,075, (trade-mark,) page 2, name of registrants, for "Dalman, Esteva & Co." read *Dalmau, Esteva & Co.*

Page 829, court decision, first paragraph of syllabus, for "Letters Patent No. 144,828" read *Letters Patent No.* 144,818.

Page 1061, Commissioner's Decisions, first column, line 11 from the bottom, for "(1887, C. D., 110)" read (1877, C. D., 110.)

ANNOUNCEMENTS—VOL. XLII.

	Page.
ATTORNEYS—	
Order—Disbarring Wilson Miller	209
Revoking order disbarring Jacob H. Kroh	493
John M. Roux.	617
CHANGES IN CLASSIFICATION	385, 965
FOREIGN PATENT LAWS—	
The Congo Free State	202
Guatemala	830
FOREIGN TRADE-MARK LAWS—	
Argentine Republic	383
Indexes to foreign patents	203, 831, 1065, 1171, 1293
Indexes to patents on electricity	203, 299, 385, 617, 881
NOTICE—	
Of taking testimony, Hecker & Co. v. Atlantic Milling Co	1, 99
Relative to sale of models in rejected or abandoned cases	1065, 1171, 1293
Relative to the manner of paying moneys into the Patent Office	493
Report of the Commissioner of Patents for 1887	605

DISCLAIMERS.

	Page.
John H. Harding	386
James W. Osgood	618
Frederick E. Porter	1294
Dennis F. Van Liew	1294

OFFICIAL GAZETTE

OF THE

UNITED STATES PATENT OFFICE.

JANUARY–MARCH, 1888.

THE OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 42—No. 1. TUESDAY, JANUARY 3, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
THE OFFICIAL GAZETTE	1
NOTICE OF TAKING TESTIMONY	1
ISSUE OF JANUARY 3, 1888	1
DESIGNS	2
TRADE-MARKS	2
LABELS	2
PATENTS GRANTED	3
REISSUES	93
DECISIONS OF THE COMMISSIONER—	
Ex parte Pastor Perez de la Sala	95
DECISIONS OF THE U. S. COURTS—	
Halles *et al. v.* The Albany Stove Company	95
Bliss *et al. v.* Merrill *et al*	97

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Notice of Taking Testimony.

The following notice of taking testimony is published in the OFFICIAL GAZETTE in accordance with paragraph 2, Rule 150, it having been shown to the satisfaction of the Commissioner of Patents that neither of the other modes of service prescribed in the said rule is practicable:

In the matter of the interference between the application of the firm of *George V. Hecker & Co.* for the registration of the word "Champion" as a Trade-Mark for Flour, and the registration of the same word for the same purpose by the *Atlantic Milling Co.*

To the Atlantic Milling Co., its successors, assigns, and legal representatives:

Take notice that on Thursday, the 12th day of January, 1887, at 10 o'clock in the forenoon, at the office of Richard Tone Pettit, notary public, No. 68 William street, in the city of New York, we shall proceed to take the testimony of George V. Hecker, Elijah T. Reaney, John Nagel, David O'Keefe, David Walsh, John Cronin, Daniel Foley, James M. Anderson, and Alpha Philips, all of the city of New York, as witnesses in behalf of the above-named George V. Hecker & Co., and you are at liberty to appear and cross-examine the said witnesses.

The examination will continue from day to day, if necessary, until completed.

COUDERT BROTHERS,
Attorneys for George V. Hecker & Co.,
68 William Street, New York City.

Issue of January 3, 1888.

Patents	336	No. 375,720 to No. 376,055, inclusive.
Designs	11	No. 17,995 to No. 18,005, inclusive.
Trade-Marks	9	No. 15,072 to No. 15,080, inclusive.
Labels	8	No. 5,453 to No. 5,460, inclusive.
Reissue	1	No. 10,892.
Total issue	365	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	.....	Nebraska	1	.....
Arizona Territory	1	.....	Nevada	.....	.....
Arkansas	.....	.....	New Hampshire	3	.....
California	16	2	New Jersey	11	.....
Colorado	2	.....	New Mexico Terri'y	1	.....
Connecticut	14	.....	New York	48	8
Dakota Territory	2	.....	North Carolina	.....	.....
Delaware	.....	.....	Ohio	23	.....
District of Columbia	5	.....	Oregon	2	.....
Florida	..	.....	Pennsylvania	35	.....
Georgia	.....	.....	Rhode Island	2	1
Idaho Territory	1	.....	South Carolina	1	.....
Illinois	29	1	Tennessee	3	.....
Indiana	5	.....	Texas	2	.....
Iowa	6	.....	Utah Territory	.....	.....
Kansas	3	.....	Vermont	4	.....
Kentucky	2	.....	Virginia	1	.....
Louisiana	2	.....	Washington Terri'y	.....	.....
Maine	5	1	West Virginia	1	.....
Maryland	4	.....	Wisconsin	6	.....
Massachusetts	46	2	Wyoming Terri'y	.....	.....
Michigan	11	.....	U. S. Army	.....	.....
Minnesota	7	.....	U. S. Navy	.....	.....
Mississippi	1	.....			
Missouri	12	.....	Total to citizens of the United States	322	15
Montana Territory	2	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	2	.....	Germany	3	.....
Barbadoes	.....	.....	India	.....	.....
Belgium	1	.....	Mexico	.....	.....
Bermuda	.....	.....	New Zealand	.....	.....
Brazil	.....	.....	Norway	.....	.....
Canada	4	.....	Russia	.....	.....
Chili	.....	.....	Scotland	.....	.....
Colombia, U. S. of	.....	.....	Spain	.....	1
Cuba	.....	.....	Sweden	1	.....
Denmark	.....	.....	Switzerland	.....	.....
Ecuador	.....	.....			
England	11	1	Total to citizens of foreign countries	25	2
France	3	.....			

DESIGNS.

17,995.—ENGINE-FRAME.—*Robert M. Beck*, Chambersburg, Pa. Application filed October 27, 1887. Serial No. 253,562. Term of patent 14 years.

17,996 to 17,999, inclusive.—CARPET.—*Henry Fawcett*, Kidderminster, England, assignor to *J. & J. Dobson*, Philadelphia, Pa. Applications filed September 28, 1887. Serial Nos. 250,976, 250,978, 250,985, and 250,990. Term of patents 7 years.

18,000 and 18,001.—TEXTILE FABRIC.—*Elizabeth A. Fenner*, South Orange, assignor to *Cheney Brothers*, South Manchester, N. J. Applications filed December 3, 1887. Serial Nos. 256,946 and 256,947. Term of patents 3½ years.

18,002.—MATERIAL FOR HAND-BAGS, &c.—*Henry Mehl*, Hoboken, N. J. Application filed November 25, 1887. Serial No. 256,179. Term of patent 7 years.

18,003.—ERASER-HOLDER.—*Frederick G. Osborn*, Newark, N. J., assignor to *Eberhard Faber*, New York, N. Y. Application filed November 11, 1887. Serial No. 254,931. Term of patent 7 years.

18,004.—RUG.—*Julius Pegel*, Camden, N. J., assignor to *John Bromley & Sons*, Philadelphia, Pa. Application filed December 6, 1887. Serial No. 257,166. Term of patent 3½ years.

18,005.—BOTTLE OR JAR COVER.—*Charles A. Tatum*, New York, N. Y., assignor to *Whitall, Tatum & Co.*, same place. Application filed December 1, 1887. Serial No. 256,724. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,072.—SOAPS AND PERFUMERIES.—*F. R. Arnold & Co.*, New York, N. Y. Application filed December 5, 1887. Used since May 29, 1872.

"The word 'EDELWEISS.'"

15,073.—CERTAIN PICTURE SUPPORTS OR HANGERS.—*The Brinkerhoff Company*, Auburn, N. Y. Application filed November 16, 1887. Used since September 13, 1887.

"The arbitrary symbol of a crown."

15,074.—AXES.—*E. F. Carpenter & Co.*, Jamestown, N. Y. Application filed November 7, 1887. Used since October, 1881.

"The arbitrary name 'JOHN GRIPPIN'S.'"

15,075.—CORKS.—*Dalman, Esteva & Co.*, San Feliu de Guixols, Spain, and New Orleans, La. Application filed November 28, 1887. Used since October 15, 1887.

"The letters 'D. E. & Co.' and the representation of an acorn."

15,076.—SPOOL-COTTON.—*Alex. King & Co.*, New York, N. Y. Application filed December 3, 1887. Used since November 1, 1868.

"The word 'KING.'"

15,077.—SPOOL-COTTON.—*Alex. King & Co.*, New York, N. Y. Application filed December 3, 1887. Used since October 1, 1867.

"The design of three concentric circles having within the largest circle the letters, words, and character 'ALEXR. KING & CO.'S MACHINE THREAD,' within the next circle 'WARRANTED 200 YDS.,' and in the center a monogram of the letters 'A' and 'K,' and the spaces immediately within said circles respectively alternating white, black, and white."

15,078.—STARCH FOR LAUNDRY AND CULINARY PURPOSES.—*Thomson Kingsford*, Oswego, N. Y. Application filed November 28, 1887. Used since October 1, 1887.

"The word 'PIONEER.'"

15,079.—ARTICLES OF PHARMACY, SOAP, DENTIFRICE, AND TOILET VINEGAR WHICH CONTAIN A CERTAIN ODORIFEROUS EXTRACT.—*Rocke, Tompsitt & Co.*, London, England, and Melbourne, Australia. Application filed December 30, 1886. Used since November, 1886.

"The word 'EUCALINEM.'"

15,080.—REMEDY FOR BLOOD IMPURITIES.—*King Manufacturing Co.*, Bridgton, Me. Application filed November 21, 1887. Used since November 1, 1887.

"The representation of a king and the words 'KINGS SARSAPARILLA.'"

LABELS.

5,453.—Title: "CROMPTON VELVETEEN."—*Crompton Company*, Crompton and Providence, R. I. Application filed December 9, 1887. (Trade-Mark Registered.)

5,454.—Title: "HILLER'S HYDRASTINE RESTORATIVE."—*Frederick Hiller, Jr.*, San Francisco, Cal. Application filed December 10, 1887.

5,455.—Title: "JEWELRY WASH."—*Alexander Wyatt Isaacs*, Chicago, Ill. Application filed August 18, 1887.

5,456.—Title: "MRS HUNTING'S BABY CORDIAL."—*Ernest C. Marshall*, Boston, Mass. Application filed November 12, 1887.

5,457.—Title: "NOVELTY GLOVE FITTING JERSEY."—*G. Schwab & Bros.*, of New York, N. Y. Application filed December 12, 1887.

5,458.—Title: "STEIN, BLOCH & CO., WHOLESALE TAILORS."—*Stein, Bloch & Co.*, Rochester, N. Y. Application filed December 10, 1887.

5,459.—Title: "WELCH'S ÆGOPODIUM, A POSITIVE CURE FOR RHEUMATISM AND GOUT."—*Willard Choate Welch, Jr.*, Oakland, Cal., and *John Hampden Howarth, Jr.*, New Haven, Conn. Application filed December 5, 1887.

5,460.—Title: "LOCK CLASP." (FOR CORSETS.)—*Worcester Corsel Co.*, Worcester, Mass. Application filed December 12, 1887.

PATENTS

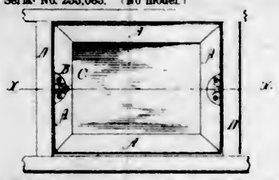
GRANTED JANUARY 3, 1888.

375,720. PRINTING-INK. LEONARD BAILEY, Hartford, Conn. Filed Jan. 15, 1887. Serial No. 224,477. (No specimens.)

Claim.—1. The within-described ink, which consists of palm-oil as a vehicle incorporated with an aniline color as a pigment, all substantially as described, and for the purpose set forth.

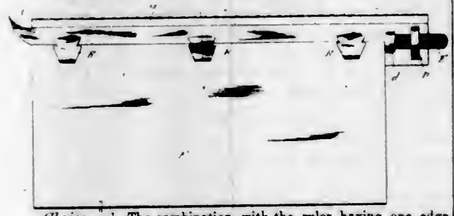
2. A ribbon for type-writers, consisting of a textile fabric thoroughly saturated with a combination made of palm-oil and aniline color, all substantially as described, and for the purpose set forth.

375,721. CAR-VENTILATOR. WILLIAM BALLMAN, Philadelphia, Pa., assignor of one-half to John T. Kiehner, same place. Filed Mar. 30, 1887. Serial No. 233,063. (No model.)



Claim.—A hollow trunnion provided with a longitudinal slot, *b'*, and a communicating transverse slot, *b''*, in combination with a pivoted frame, A, to which it is attached, a jamb, D, having a recess, *d*, in its inner side, and a longitudinally and axially movable pivot, C, arranged in said hollow trunnion and adapted to enter said recess, said pivot being provided with a lateral lug *c*, which is adapted to move in slot *b' b''*, substantially as set forth.

375,722. COMBINED RULER, BLOTTER, AND PAPER-CUTTER. EDWIN BALTELEY, Philadelphia, Pa. Filed May 10, 1887. Serial No. 237,742. (No model.)



Claim.—1. The combination, with the ruler having one edge turned up and away from the plane of the body of the ruler, of the clasps secured at one end to the ruler between its edges and having the other ends free and adapted to hold a blotter, substantially as set forth.

2. The combination, with the ruler having one edge upturned, as shown, of the pencil-eraser holder and the clasps, substantially as set forth.

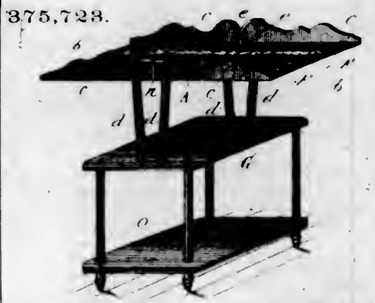
3. The herein shown and described combination paper-cutter, ruler, and blotter-holder, composed of a single piece of sheet material substantially of the form shown, having one edge turned up, an envelope-opener at one end, and the pencil-eraser holder at the opposite end consisting of the band and stop and the clasps, substantially as set forth.

4. The herein-described ruler having clasps cut therefrom, for the purpose specified, and the envelope-opener at one end made with the ruler, substantially as set forth.

375,723. BOOK-HOLDER. HIRAM BLAKE, Keene, N. H. Filed June 8, 1887. Serial No. 240,677. (No model.)

Claim.—1. A book-holder having a casing consisting of two parts

375,723.

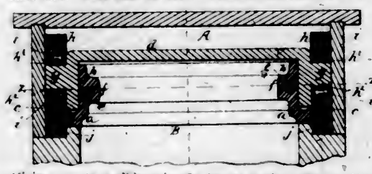


or wings, each wing having sides or slats at its front and rear ends, which are rounded at their points of contact with each other, so as to form a segmental joint on which the wings move while being opened or closed, and provided with a connecting-strap attached to each slat of said wings, and a stop-hinge connecting said wings together, and further provided with a lug-strap to hold the book within the casing, which casing is mounted or pivoted on four upright spring-standards affixed to a frame or stand, all constructed and operating substantially as and for the purposes described.

2. In a book-holder constructed substantially as herein shown, the stop-hinge *n*, having a pivotal joint at its center and pivotally attached at each end to the wings of the casing, in combination with the casing A, substantially as and for the purpose set forth.

3. The casing A, composed of two wings provided with slats or sides on each end and rounded at their meeting ends into segments of a circle, and further provided with the stop-hinge *n*, connecting-strap *l m*, lug-straps F, non-concentric bearings *e e e e*, in combination with the upright spring-standards *d d d d*, and stand O, all constructed to operate substantially as and for the purposes described.

375,724. BALANCED SLIDE-VALVE. THOMAS H. BOURKE, Cleveland, Ohio. Filed Mar. 15, 1887. Serial No. 231,001. (No model.)



Claim.—1. In a slide-valve for steam-engines, the combination of the open-frame valve, the covering-yoke having the integral trunnions *g*, arranged in line centrally lengthwise of the valve, and the supporting-wheels, all constructed and arranged as shown and described.

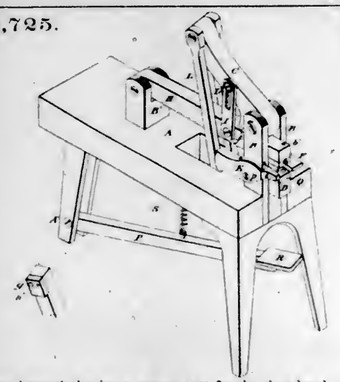
2. The combination of the steam-chest, the open-frame slide-valve, the covering yoke having integral trunnions provided with steel thimbles k^2, the supporting-wheels, the bearing-rolls *i*, and the steel ways *j*, all arranged as shown and described.

3. The combination of the slide-valve, of open rectangular form, the covering-yoke, the supporting-wheels for the latter, and the packing-strips of angular form, having interlocking ends, all constructed and arranged as shown and described.

375,725. RIVETING-MACHINE. GILBERT W. BRADLEY, Sunderland, Vt. Filed May 10, 1887. Serial No. 237,702. (No model.)

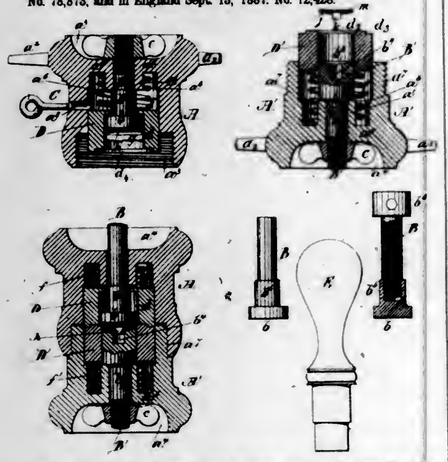
Claim.—The combination of the vertically-movable header *b*, having die-perforation and heading former or countersink, and the

375,725.



anvil-plate beneath, having a spot or seat for the rivet-head, with the lateral swinging guide cheeks or stops E and F, and means for imparting to the header a reciprocal vertical movement, as and for the purposes specified.

375,726. MACHINE FOR MAKING COVERED BUTTONS. ARNOLD BRAND, Funfhaus, near Vienna, Austria-Hungary. Filed Sept. 27, 1887. Serial No. 250,849. (No model.) Patented in Belgium Sept. 13, 1887, No. 78,873, and in England Sept. 13, 1887. No. 12,428.



Claim.—1. In the cloth-button-making tool herein described, the combination of two die-carriers adapted to be screwed together, an anvil for and arranged axially in each carrier, and a die for the reception of the button-sections, mounted and movable endwise on the respective anvils, whereby the pressure required to unite the parts of the button may be obtained by screwing the carriers together, substantially as and for the purpose specified.

2. In the cloth-button-making tool herein described, the combination of two die-carriers adapted to be screwed together, an anvil for each carrier arranged axially therein, a die for the reception of the button-sections, mounted and movable endwise on the respective anvils, and an elastic bearing for said dies, substantially as and for the purpose specified.

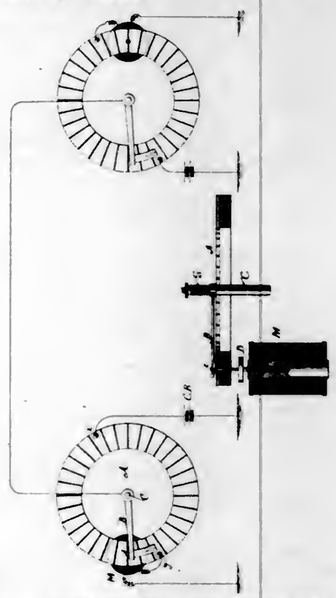
3. In the cloth-button-making tool herein described, the combination of two die-carriers adapted to be screwed together, an anvil for each carrier arranged axially therein, a die for the reception of the button-sections, mounted and movable endwise on the respective anvils, and an elastic bearing for each of the dies, said bearings differing in the degree of their elasticity, substantially as and for the purpose specified.

4. In the cloth-button-making tool herein described, the combination of two die-carriers adapted to be screwed together, an anvil for and arranged axially in each carrier, and a die for the reception of the button-sections, mounted and movable endwise on the respective anvils, said anvil being detachably connected with its carrier, whereby different anvils may be interchangeably connected with the carriers, as described, for the purpose specified.

5. In the cloth-button-making tool herein described, the combination of two die-carriers adapted to be screwed together, an anvil for and arranged axially in each carrier, and a die for the reception of the button-sections, mounted and movable endwise on the respective anvils, said anvils and dies being detachably connected with each other and with the carriers, as described, for the purpose specified.

6. In the cloth-button-making tool herein described, the combination of two die-carriers adapted to be screwed together, an anvil for each carrier arranged axially therein, a die for the reception of the button-sections, mounted and movable endwise on the respective anvils, an elastic bearing for each of the dies, and a locking device for locking one of the dies against endwise motion on its anvil, substantially as and for the purpose specified.

375,727. ELECTRICAL SYNCHRONOUS MOVEMENT. HENRY C. BRIDGER, New York, N. Y., assignor to Josiah Quincy and A. L. Parcelle, both of Boston, Mass. Filed Feb. 15, 1886. Renewed July 9, 1887. Serial No. 243,899. (No model.)



Claim.—1. In an electrical synchronous movement or system, the combination of the circular series of insulated contacts, a rotating circuit-completer which traverses the circle of contacts, mechanism for correcting or controlling said circuit-completer, operated by correcting or controlling electrical impulses, and a yielding or frictional connection between the rotating circuit-completer and its driving mechanism.

2. The combination of a main line, a driven instrument at each end of the line, a rotator or circuit-completer connected with one instrument, a rotator or circuit-completer connected with the other instrument by a frictional connection, a device or detent for checking such rotator when it travels too fast, and means for transmitting an impulse of electricity over the line to remove said checking device when the rotators come into corresponding positions.

3. The combination, substantially as set forth, of a line, synchronously-rotated instruments connected in the line, one at least of said instruments having its rotating portion connected with its driving mechanism by means of a frictional connection, and means whereby regularly-recurring synchronizing impulses may be automatically sent over the line to correct the position of said frictionally-rotated portion of said instrument.

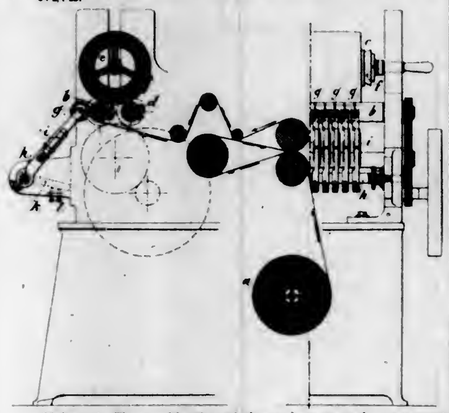
4. The combination of a main line, and at each end thereof a circular series of insulated contacts, a rotating circuit-completer which traverses the circle of contacts, and a frictional connection between the rotating circuit-completer and its driving mechanism, a correcting-battery connected with one of the contacts at one station and electro-magnetic correcting devices at the other station which act upon the rotator at that station to correct its position relatively to the rotator at the distant station.

5. The combination, substantially as set forth, of a main line, at each end thereof a circular series of insulated contacts, a rotating

circuit-completer, and a frictional connection between the rotating circuit-completer and its driving mechanism, a correcting-battery connected with a contact at each station, a correcting electro-magnet or coil at each station connected with a contact corresponding in position to the battery-connected contact at the other station, and devices controlled by said electro-magnet to correct the rotator, whereby synchronizing or correcting impulses may be sent from either station to act upon the frictionally-driven rotator at the other station.

6. The combination of the circular series of insulated contacts, the rotating spindle arranged concentrically in said circle, the trailer carried upon the spindle, the frictional connection between the trailer and spindle, the correcting-magnet M, its armature, and the detent s, which acts upon the trailer, substantially as set forth.

375,728. MACHINE FOR CUTTING INTO STRIPS AND REELING PAPER. EUGÈNE BRIMAUT, Paris, France. Filed Mar. 7, 1887. Serial No. 229,975. (No model.) Patented in France June 12, 1886, No. 174,743.

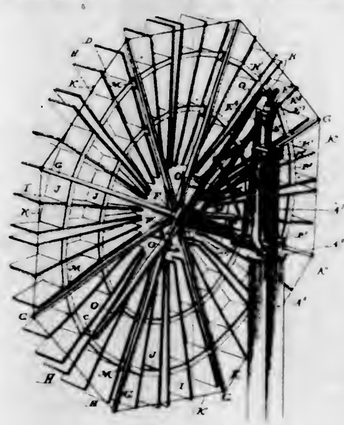


Claim.—1. The combination of the reel *a*, grooved counterpart cutting-roller *b*, rotary cutter *g*, pivoted arm *g'*, reel-cores *c*, and expansion-mandrel *c f*, all arranged for joint operation in reeling and cutting the paper and for leaving the reel-cores in the paper, as specified.

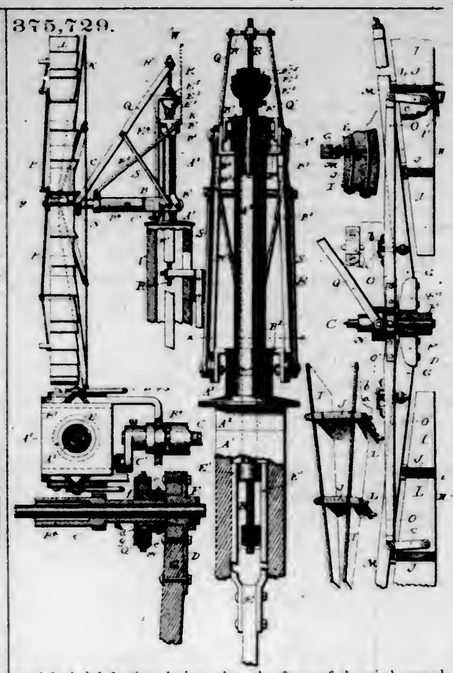
2. The combination of the reel *a*, grooved counterpart cutting-roller *b*, rotary cutter *g*, jointed forked arm *g'*, spring *i*, and receiving-reel, all arranged so that the spring *i* crowds the face of cutter *g* against the edge of a groove in the roller *b*, as set forth.

375,729. WINDMILL. CARY BROWN, Fort Atkinson, Wis. Filed Jan. 26, 1887. Serial No. 225,569. (No model.)

Claim.—1. In a vaneless windmill, the combination, with a shaft, as C, of spokes G, sections H, each comprising a series of separated blades bound together and each section pivoted to a spoke, levers O O', pivoted between their ends to the spokes G on the side opposite to sections H and each connected with one of the sections, and a series of links, P, connecting the sections in two groups, all substantially as shown, whereby the sections are adapted to tip or rock without the aid of



375,729.



special wind-deflecting devices when the force of the wind exceeds the predetermined limit.

2. A wind-wheel composed of a shaft, a hub, a series of spokes, a series of sections hinged to the outer faces of said spokes, each section consisting of a series of blades bound together with their flat faces perpendicular to the face of the section, and links connecting the sections in two groups, all substantially as shown.

3. A wind-wheel composed of a shaft, a hub, a series of spokes, a series of sections hinged to the outer faces of said spokes, each section consisting of a series of blades bound together with their flat faces perpendicular to the face of the section, links connecting the sections in two groups, and a governing device connected with the sections and serving to hold them oblique to the plane of rotation, substantially as described and shown, whereby the blades are held in position to be acted upon by the wind until a predetermined limit is reached, whereupon the sections are caused to tip or rock and present the edges of their blades to the wind.

4. In a windmill, the combination, with a suitable support, of a main shaft provided with a hub and radial spokes, a series of links connecting the outer ends of the spokes, a series of sections, H, each composed of a number of blades bound together with their flat faces perpendicular to the face of the section, the sections each being pivoted to the rear face of the spokes, and a pair of levers, O O', mounted upon the wheel and connected at opposite ends with a governor and with the sections of the wheel, all substantially as shown and described.

5. A wind-wheel comprising a hub, a series of spokes, a series of sections pivoted to said spokes and unsupported at their ends, and comprising a number of separated blades connected together, the sections being arranged in two groups, those in each group being connected with one another, and a pair of levers, O O', on the front face of the wheel connected with the two groups, substantially as shown and described.

6. In a windmill, the combination, with a shaft, C, of the wheel provided with the pivoted sections H, the levers O O', pivoted to the spokes of the wheel and connected at their outer ends to the sections H, a sliding collar, N, mounted upon the shaft and pivotally connected with the inner ends of the levers O O', and a weight connected with the collar and tending to move it away from the wheel, substantially as shown.

7. In a windmill, the combination, with a shaft, C, hub F, and spokes G, of the blade-sections H, divided into two groups and pivoted to the spokes, links P, connecting the several sections of each group, a collar, N, mounted loosely upon shaft C, and levers O O', each pivotally connected to a spoke, to the collar N, and to one of the sections.

8. In a windmill, in combination with a shaft, a wheel provided with a series of spokes, G, a series of sections, H, pivoted to the spokes G on one face, a sliding and rotatable collar, N, levers O O', pivoted to spokes G, connected with the collar N and serving to feather the sections H, a vertically-movable governor-rod, a weighted lever at the lower end thereof, and rods connecting the upper end of the governor-rod with the collar N, all substantially as shown.

9. In combination with shaft C, wheel D, sliding collar N, and levers O O', arranged and operated substantially as shown, a governor-rod, R, links Q, connecting the rod R with the collar N, and pivoted supporting-rods S, all substantially as shown.

10. In combination with the fixed post A^3, provided with collars A^4 and A^5, wheel-supporting frame B, comprising horizontal sleeve B^4, cap B', and braces B^3 and B^6, all arranged substantially as shown and described.

11. In combination with rod E, provided with concave and convex collars E^2 and E^3, the crank-shaft C and a pitman, E^4, provided with an arm, E^5, to fit between the collars E^2 and E^3, all substantially as shown.

12. In a mill of the class described, in combination with the governor-rod, the wheel D, links Q, and levers O O', collar N, comprising flanged hub *d*, having studs *e* and cap-plate *g*, all substantially as shown and described.

13. In combination with post A^3, provided with collars A^4 and A^5, wheel-carrying frame B, provided with cap B' and collars B^2, to rest upon the collars A^4 and A^5, and with fingers B^6, to engage the collar A^4, substantially as shown.

375,730. COMBINED SAW AND PLANER.

HOWARD F. BURKHARDT, Philadelphia, Pa. Filed Dec. 13, 1886. Serial No. 221,387. (No model.)

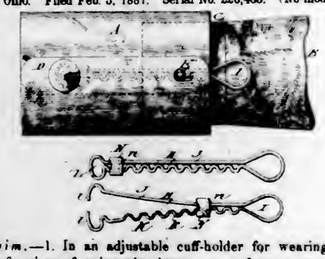


Claim.—1. A saw having gullet-lines B B' and throats, the side walls of which are coincident with the gullet-lines B B' thereof, and provided with planer-bits secured in said throats, all substantially as and for the purpose set forth.

2. A saw provided with gullet-lines B B' and planer-bits secured in the throats in said saw, each of the said bits having cutting-edges on opposite sides of the saw, and the said throats being coincident with the gullet-lines of the teeth of said saw, all substantially as described.

375,731. ADJUSTABLE CUFF-HOLDER.

JOSEPH N. CLOUSE, Toledo, Ohio. Filed Feb. 3, 1887. Serial No. 226,485. (No model.)

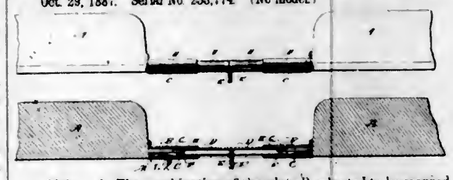


Claim.—1. In an adjustable cuff-holder for wearing-apparel, formed of a piece of spring-wire bent so as to form an opening, I, at one end, an interior section consisting of a straight wire, J, and a corrugated or scalloped wire, K, lying parallel with and contiguous to each other, so as to form a series of openings, *k k*, the two ends of the wires terminating in two hooks, *l l*, which overlap each other when closed and form an opening, L, to receive the shank of the button D, in combination with a sliding clamp, N, with its projection *n*, substantially as described and specified.

2. The combination, in an adjustable cuff-holder, of a single wire bent to form at one end an enlarged opening, I, to receive a stud-button, an intermediate section formed of a straight wire, J, and a scalloped or corrugated wire, K, forming a series of openings, *k k*, to receive the shank of a stud-button, the other end having an enlarged opening, L, formed by the ends of the wire terminating in hooks *l l*, which overlap each other and form such opening adapted to receive the shank of a cuff-button, with a sliding clasp or clamp, N, to close and retain the hooks *l l* in position around the shank of a button, as described and specified.

375,732. AWNING FOR CAR-PLATFORMS.

JOHN H. COHN, Englewood, Ill., assignor of one-half to O. C. Pugh, same place. Filed Oct. 29, 1887. Serial No. 253,774. (No model.)



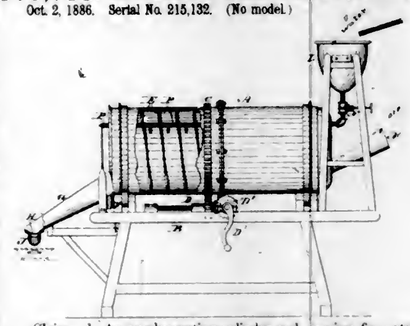
Claim.—1. The combination of the plate B, adapted to be secured to the end of the car over the platform and having the guides C C on its side edges, the plate D, sliding at its side edges in the said guides, and the springs K, attached to the end of the car and bearing against the rear edges of the plate D, substantially as and for the purpose specified.

2. The combination of the plate B, adapted to be secured to the end of a car and having the guides C C on its side edges, the plate D, sliding at its side edges in the said guides and having the depending lip E on its front edge, the spring K, comprising the arms L L, respectively, secured to the car and bearing against the rear edge of the plate D to force it forward, and the means, substantially as described, to limit the outward motion of the plate D, substantially as specified.

3. The herein-described awning for the purpose named, consisting of the guide-plate B, secured to the end of a car, the plate D, sliding in suitable guides on the said plate, the detent F, near the rear edge of the plate D, the springs K, bearing against the rear edge of the plate D to press it forward, and the rod G, mounted in a socket in the end of the car and having a hook on its front end to engage the said detent, substantially as specified.

375,733. AMALGAMATOR.

HENRY COOK, Philadelphia, Pa. Filed Oct. 2, 1886. Serial No. 215,132. (No model.)



Claim.—1. An amalgamating-cylinder and gearing for rotating the same, in combination with a mercury-cup at the discharge end of said amalgamator, an amalgamating-table wider at the upper than at the lower end and provided with slots at its lower end, and a trough beneath the slotted end, substantially as described.

2. An amalgamating apparatus consisting of the frame B, having thereon an amalgamating-cylinder with gearing, substantially as described, for rotating the said amalgamating-cylinder, having at its discharge end a flaring rim and a mercury-cup, into which said rim dips, an inclined amalgamating-table with slotted lower end, and a trough, substantially as described.

3. An amalgamating-cylinder having gearing for rotating the same, an amalgamating-table having slots at its lower end, and a perforated water-deflector attached to the upper end of said table, said parts being combined substantially as described.

4. The frame B, having a raised tank supported thereon, an amalgamating-cylinder with gearing for rotating the same, a pipe with branches leading from said tank through said amalgamating-cylinder and supported at one end on arms of the frame B, an inclined amalgamating-table, and a water-deflector secured to said table, substantially as described.

5. An amalgamator consisting of a receiving-cylinder with gearing for rotating the same, in combination with a chute at the receiving end of the cylinder, a tank with water-pipe leading into said cylinder, the said pipe provided with branches or jets, an amalgamating-table at the discharge end of said receiving-cylinder having slots therein, a perforated water-deflector, and a trough, substantially as described.

375,734. BOILER-PEDESTAL.

ALLEN P. CREQUE, New York, N. Y. Filed Jan. 3, 1885. Serial No. 151,929. (No model.)



Claim.—1. In a boiler pedestal or support, an upright consisting of a central web having flanges and provided with ribs or projections, and having grooves to outline sections, which may be removed by breaking along the said grooves, combined with a co-operating member or bracket provided with a socket having bearing-plates which engage the ribs or projections between the flanges thereof, substantially as described.

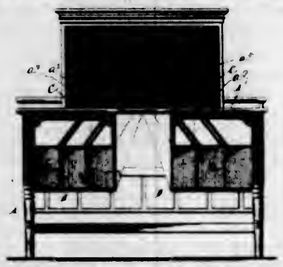
2. In a boiler pedestal or support, an upright consisting of a central web provided with flanges and having grooves to outline sections, which may be removed by breaking along the said grooves, each of the said sections having a bearing or seat, combined with a co-operating member or bracket provided with a socket having bearing-plates, which engage the seat of the upright between the flanges thereof, and a locking device, whereby the said socket and upright are securely fastened together, substantially as described.

3. In a boiler pedestal or support, an upright composed of a central web having grooves to outline sections, and having flanges, the said web being provided with a seat or bearing, and the flanges with engaging projections *g*, combined with the co-operating member or bracket, having a socket composed of bearing-plates adapted to engage the seat of the web and to be engaged at their edges by the said flanges or projections *g*, substantially as described.

4. In a boiler-pedestal, a metal H-shaped upright having a well-like center provided with wedge-shaped bearing projections or ribs *e*, combined with the bracket *m* and wedge-shaped socket attached thereto and adapted to engage the said inclined ribs or projections, substantially as described.

375,735. DISTRIBUTING-CASE.

WILLIAM C. CROCKER, Knoxville, Tenn. Filed June 10, 1887. Serial No. 240,942. (No model.)



Claim.—1. A distributing-case consisting of the drawers *a*, independently arranged, and having individual chutes with openings a^4, and the drawers B, similarly arranged, but opposite to the drawers *a*, substantially as described.

2. A distributing-case consisting of the drawers *a*, having the chutes C, the partitions of which are adapted to be adjusted and increase the size of the said chute, the drawers B, and the pigeon-holes arranged in the upper part of the case, substantially as described.

3. A distributing-case consisting of the series of drawers *a*, having the chutes C hinged at the points F, and the latches E, substantially as described.

4. A distributing-case consisting of the drawers *a*, having the individual adjustable chutes C, the drawers B, having the chutes of similar construction to the chutes C, the depressed table A, the pigeon-holes a^5, and the pigeon-holes a^6, arranged on the reverse side of the case to the pigeon-holes a^4, substantially as described.

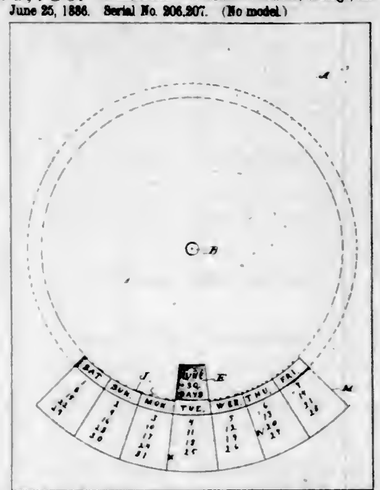
5. A distributing-case having a series of drawers and a series of independently-arranged individual chutes for said drawers, as set forth.

6. A distributing-case having a series of drawers and a series of independently-arranged individual chutes, the partitions of which are adjustable for the purpose of increasing the size of said chutes, as set forth.

7. A distributing-case consisting of the table A, the separate series of drawers *a* B, arranged on opposite sides, the independently-arranged and individual chutes C, for the drawers *a* B, which chutes open on opposite sides of the case, and the pigeon-holes a^5 a^6 in the upper part of the case above the table A, as set forth.

375,736. CALENDAR.

WILLIAM K. DAVID, Chicago, Ill. Filed June 25, 1886. Serial No. 206,207. (No model.)



Claim.—1. A chart having a graduated space containing the numerals of the days of the months and having segmental and radial incisions and recesses concentric with a central pivotal point, in combination with the two rotatable disks, the outer one having on one side figures indicating the number of years in a century, from 0 to 99, arranged spirally thereon within radial divisions, and on the other side the days of the week, and the inner disk having one side the centurial year, while the opposite side has the name of the months thereon to act in conjunction with the number of the days of the month in the quadrantal space, substantially as set forth.

2. In a calendar, the combination of two rotatable disks, the one having on its face the years of a century, from 0 to 99, also near its periphery segmental incisions and on the obverse side the name of the days of the week, the other disk having on its face around the periphery the centurial years from 0 to 2300, and on the reverse side around the periphery the months and their days, whereby the centurial years will be seen through said segmental incisions, and the names of the week-days will act in unison with the days of the month, substantially as described.

3. In a calendar, the combination of the disk F, having radial divisions provided outwardly with apertures I, and inwardly with figures indicating the years of the century, from 0 to 99, incorporated therein in spiral form, increasing from left to right, with an inner disk, K, having the radial peripheral divisions L, provided with figures indicating the centurial years, in both the old and new style, incorporated therein, the two disks being so disposed as to be operated independently of each other, substantially as herein set forth.

4. In a calendar, the combination of the disk F, having radial divisions provided outwardly with apertures I, and inwardly with figures indicating the years of the century, from 0 to 99, incorporated therein in spiral form, increasing from left to right, an inner disk, K, having the radial peripheral divisions L, provided with the figures indicating the centurial years, in both the old and new styles, incorporated therein, the two disks being so disposed as to be operated independently of each other with the card or chart A, substantially as herein set forth.

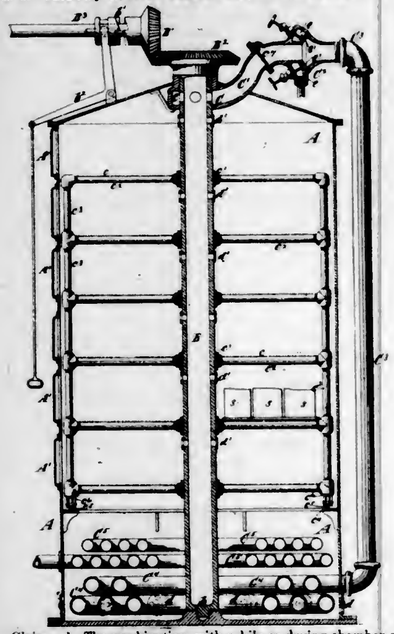
5. The combination of the disk F, having obversely the names of the days of the week peripherally disposed in series, and the inner disk, K, having the names of the different months of the year incor-

porated within radial divisions of the periphery, the two disks being disposed to rotate independently of each other, with the chart A, having the numbers of the days of the month incorporated within the quadrantal space M beneath the peripheries of the two disks, substantially as herein set forth.

6. The combination of the disk F, having thereon the numbers indicating the years of the century on one side and the names of the days of the week peripherally disposed on the opposite face, with the inner disk, K, having the centurial years, both old and new style, incorporated in divisions on the periphery of one side, while the names of the months and the year are incorporated within radial divisions on the other, substantially as herein set forth.

375,737. APPARATUS FOR DRYING STARCH OR OTHER SOLID MATTER.

EDGAR R. DURYEA and PAUL H. GRIMM, Glen Cove, N. Y. Filed July 19, 1886. Serial No. 208,373. (No model.)



Claim.—1. The combination, with a kiln or drying-chamber provided with air-inlets in the lower portion, of a radiator arranged near the air-inlets within the lower portion of the kiln or chamber, but having no communication with the interior thereof, and a steam-jet exhauster for withdrawing hot air and vapors from the kiln or chamber and supplying them, mingled with the steam required to work the exhauster, to the radiator for heating the air entering the kiln or chamber, substantially as herein described.

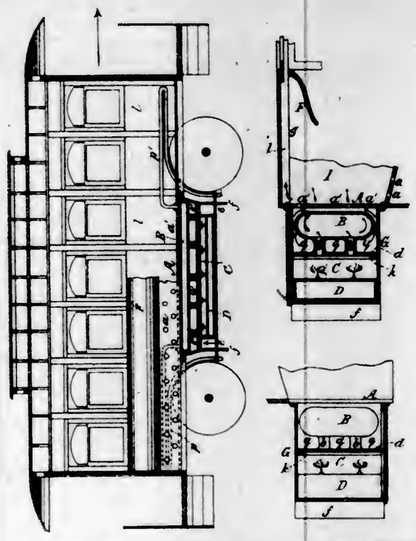
2. The combination, with a kiln or drying-chamber provided with air-inlets in its lower portion, of a rotary support for matter to be dried arranged therein, a radiator arranged in the lower part of the kiln or chamber below the rotary support and near the air-inlets, but having no communication with the interior of the kiln or chamber, and a steam-jet exhauster for withdrawing hot air and vapors from the kiln or chamber and supplying them, together with the steam employed in working the exhauster, to said radiator, whereby the air entering the lower part of the kiln or chamber will first come in contact with and be heated by the radiator, and will then rise into contact with the matter to be dried, which is on the said support, substantially as herein described.

3. The combination, with a kiln or drying-chamber provided with air-inlets in its lower portion, of a rotary support for starch or other solid matter arranged therein, and comprising a hollow shaft having inlet-openings for air and vapor at different points in its height, a radiator arranged in the lower portion of the kiln or chamber, and a steam-jet exhauster for withdrawing hot air and vapors from said shaft and supplying them, together with the steam employed in working the exhauster, to the radiator, substantially as herein described.

4. The combination, with the kiln or drying-chamber A, provided with air-inlets in its lower portion, and having the circular track c^4, of a rotary support comprising a central shaft and wheels, c^5, running on said track, a radiator, C^4, in the lower portion of the kiln or chamber A, and a steam-jet exhauster, C^3, for withdrawing hot air and vapors from the kiln or chamber and supplying them, together with the steam required to work the exhauster, to the radiator, substantially as herein described.

375,738. APPARATUS FOR HEATING RAILWAY-CARS.

WILLIAM FLANAGAN, Chicago, Ill. Filed Aug. 8, 1884. Serial No. 140,042. (No model.)



Claim.—1. In a car-warming apparatus, the combination of the seat-support having bottom and side perforations, a' a, with the casing G, forming an air-heating chamber open to the outer air, communicating with said bottom opening, the heating-drum B, located within said chamber, having suitable escape-pipes, the chamber C, containing a heat-producing device, the partition d, dividing the said chambers, and the flue-pipes b, connecting the interior of the heating-drum with the chamber containing the heat-producing device, substantially as described.

2. In a car-warming apparatus, the combination, with seat-supports having bottom and side perforations, a' a, of a casing, G, divided by a horizontal partition, d, to form a lower chamber for containing a heating device and an upper chamber for heating air, and a heating-drum arranged within the upper chamber, supported by the partition flue-pipes b, and having suitable escape-pipes arranged within the seat-supports and opening beneath the car-floor, the said air-heating chamber having suitable air-inlets, substantially as described.

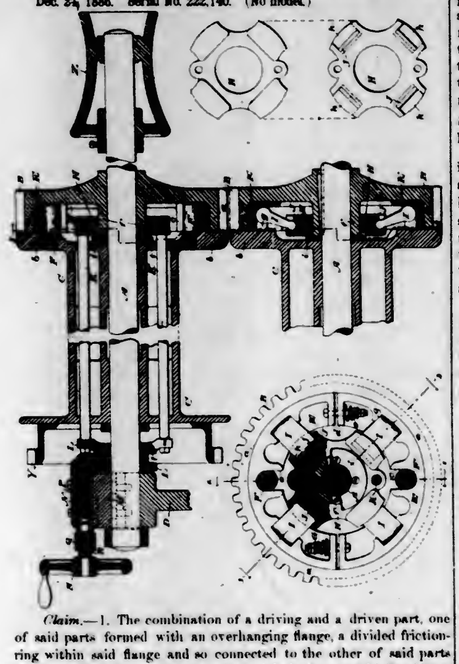
3. In a warming apparatus for street-cars, the heating-drum B, having an escape-pipe at each end, a heating device therefor, and a divided metal inclosing-case for these parts, forming a lower chamber for the heating device and forming an upper chamber surrounding the heating-drum, open at each end at e, in combination with iron seat-supports having the perforations a a', the said iron seat-supports being fitted in floor-openings of the car and forming the tops of the air-heating chambers, and the said escape-pipes coiled within the seat-supports, substantially as described.

4. The heating apparatus consisting of the flanged casing G, having interior horizontal ledges or ribs k, the heating-drum forming the chamber B, mounted upon a plate, d, seated upon said ledges, and a bottom heating-lamp, said casing G constituting a removable closure for said heating devices, in combination with metallic car-seat supports having a perforated bottom forming a cover for the top of said casing G, and the pipes p p', for the escape of the products of combustion, arranged within the said seat-supports and terminating beneath the car-floor, substantially as described.

5. The improved car-heater herein described, consisting of the oblong casing G, having a top air-heating chamber or spaces, g, opening at each end at e e' in the bottom of said casing, each opening e having a deflector, f, the heating-drum B, its flue-tubes b and plate d, and the heating-lamp D, in combination with the perforated metallic seat-supports forming the top of said casing, and the pipes p p', connecting each end of said heating-drum B within the seat-supports and terminating at the bottom of said car, all as shown and described.

375,739. FRICTION-CLUTCH.

OTTO FLOEL, Newark, N. J. Filed Dec. 24, 1886. Serial No. 222,140. (No model.)



Claim.—1. The combination of a driving and a driven part, one of said parts formed with an overhanging flange, a divided friction-ring within said flange and so connected to the other of said parts that both must rotate together, the axial shaft upon which said rotating parts are mounted, a longitudinally-moving knee-piece on said shaft, and said sections and knee-piece formed with opposite sockets, inclined toggle-arms with their opposite ends entering said opposite sockets and abutting directly against the sections and knee-piece, respectively, whereby on advancing said knee-piece the friction-ring is expanded by the direct and unyielding thrust of said toggle-arms, and retracting-springs arranged to contract said ring and thereby release the clutch.

2. The combination of a driving and a driven part, one of said parts formed with overhanging flange, a divided friction-ring within said flange and so connected to the other of said parts that both must rotate together, the axial shaft upon which said rotating parts are mounted, a longitudinally-moving knee-piece on said shaft, and said sections and knee-piece formed with opposite sockets extended laterally in planes perpendicular to the axis of rotation, inclined toggle arms or plates broadened laterally to a width corresponding to the length of said sockets and arranged with their opposite ends entering said opposite sockets and abutting directly against the sections and knee-piece, respectively, whereby on advancing said knee-piece the friction-ring is expanded by the direct and unyielding thrust of said toggle-arms, and retracting-springs arranged to draw back the sections of said ring and release the clutch.

3. The combination of a driving and a driven part, one of said parts formed with an overhanging flange, a friction-ring within said flange so connected to the other of said parts that both must rotate together, and diametrically divided into two sections, the axial shaft upon which said parts are mounted, four inclined toggle-arms arranged radially with their outer ends bearing against the sections of said ring, two against one section and two against the other, and a knee-piece movable longitudinally on said shaft and against which the inner ends of said toggle-arms bear.

4. The combination of a driving and a driven part, one of said parts formed with an overhanging flange, a friction-ring arranged within said flange and diametrically divided into two sections, each of which is formed at its middle with a socket, driving-pins entering said socket and carried by the other of said parts, whereby the sections are forced to rotate with the latter part, the axial shaft upon which said parts are mounted, four inclined toggle-arms arranged radially, with their outer ends bearing against the sections of said ring, two against each section and on opposite sides of said socket therein, and a knee-piece movable longitudinally on said shaft and against which the inner ends of said toggle-arms bear.

5. The combination of a driving and a driven part, one of said parts formed with an overhanging flange, a friction-ring arranged within said flange and so connected to the other of said parts that both must rotate together, and divided into sections, retracting-springs applied to the sections of said ring and acting to draw them together, and thereby contract the ring, toggle-arms arranged at an inclination with their outer ends bearing against the sections of said ring, a knee-piece movable longitudinally and against which the inner ends of said toggle-arms bear, and mechanism for longitudinally moving said knee-piece.

6. The combination of a driving and a driven part, one of which is formed with an overhanging flange, a divided friction-ring within said flange and so connected to the other of said parts that they must both rotate together, guiding devices upon the respective sections of said ring, adapted to guide them in their expanding and contracting movements, inclined toggle-arms with their outer ends bearing against the sections of said ring, a longitudinally-movable knee-piece, against which the inner ends of said toggle-arms bear, and retracting-springs acting to contract said ring.

7. The combination of driving and driven parts, one of which is formed with an overhanging flange, a divided friction-ring within said flange and so connected to the other of said parts that both must rotate together, a longitudinally-movable knee-piece, inclined toggle-arms with their outer ends bearing against the sections of said ring and their inner ends against said knee-piece, and removable blocks in which the ends of said toggle-arms are socketed.

8. The combination of a driving and driven part, one of which is formed with an overhanging flange, a divided friction-ring within said flange and so connected to the other of said parts that both must rotate together, a longitudinally-movable knee-piece, inclined toggle-arms with their outer ends bearing against the sections of said ring and their inner ends against the said knee-piece, and adjustable socket-blocks, each interposed between one end of one of said toggle-arms and the part against which it bears and angularly socketed in said latter part.

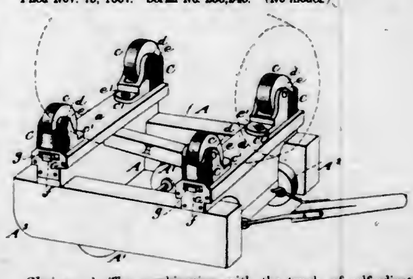
9. The combination of driving and driven parts, one of which is formed with an overhanging flange, a divided friction-ring within said flange and so connected to the other of said parts that both must rotate together, a longitudinally-movable knee-piece, inclined toggle-arms with their outer ends bearing against the sections of said ring and their inner ends against said knee-piece, retracting-springs acting to contract said ring and retract said knee-piece, and a stop for limiting the retractile movement of the knee-piece.

10. The combination of driving and driven parts, one of which is formed with an overhanging flange, a divided friction-ring within said flange, a knee-piece and inclined toggle-arms for expanding said ring, an annularly-grooved sleeve connected to said knee-piece, a longitudinally-moving slide engaging the groove in said sleeve, and an operating-screw engaging said slide and adapted, when rotated, to impart longitudinal movement thereto and thereby to engage or release the clutch.

11. A clutch-operating mechanism consisting of the combination of cap M, formed with walls m m, top plate, N, fixed thereon, yoke Q, fixed thereto, slide P, confined between said walls and beneath said top plate, and operating-screw R, engaging said yoke and swiveled to said slide.

375,740. BARREL TRUCK AND STAND.

ROBERT H. GALLUP, Oneida, N. Y., assignor to E. Hicks Mott and Walter L. Mott, same place. Filed Nov. 15, 1887. Serial No. 255,240. (No model.)



Claim.—1. The combination, with the truck, of self-adjusting brackets thereon and rollers carried by said brackets, substantially as and for the purpose described.

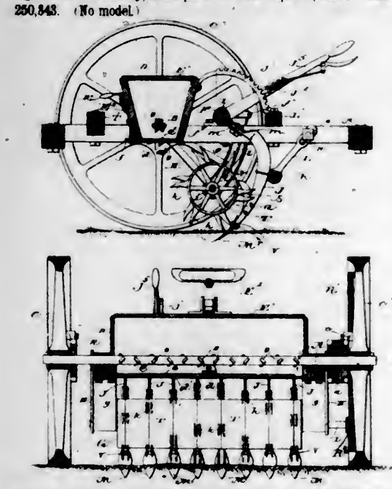
2. The combination, with the truck, of brackets pivoted at one end to said truck, rollers carried by said brackets, and means for limiting the movement of said brackets, substantially as described.

3. The combination, with the truck provided with bars a, of the brackets C, pivoted at one end to said bars, and at the other end

formed with a tongue, *f*, and slotted plates G, secured to the ends of said bars, substantially as described.

4. The brackets C, comprising in a single element ears *d*, to receive the roller-shaft, a lug, *c'*, at one end, and a tongue, *f*, at the other, substantially as and for the purpose described.

375,741. **SEEDER AND CULTIVATOR.** IRA F. GILMORE and ADDISON P. BRANAMAN, Leroy, Ill.; said Branaman assignor of one-half his right to John T. Kelly, same place. Filed Sept. 27, 1887. Serial No. 250,843. (No model.)



Claim.—1. The combination, with the carrying-frame, of the shaft F, the guides, bearings therein, and revolving rake, the sleeve embracing said shaft and having rearwardly-extending portions, standards secured to said portions, and a lever connected to said shaft and extending through an opening in said sleeve, substantially as described.

2. The combination, with the bracket consisting of three arms and perforated to form a bearing, of the caster-wheel having its spindle journaled in said bearing, substantially as described.

3. The combination, with the carrying-frame, of the shaft F, mounted thereon, depending hangers *g*, bearings movable in said hangers and connected to the shaft F, the revolving rake journaled in said bearings, sleeve embracing said shaft and having parallel rear portions, cultivator-standards bolted between said parallel rear portions, and a lever connected to said shaft, whereby the rake and the cultivators may be simultaneously adjusted, substantially as described.

4. The combination, with the carrying-frame, of the seed-hopper mounted thereon, the revolving rake-cylinder arranged below and in rear of the hopper, cultivator-standards pivotally mounted in the frame and arranged in rear of the rake, and shovels and bevel-edge knives secured to said standards, as set forth.

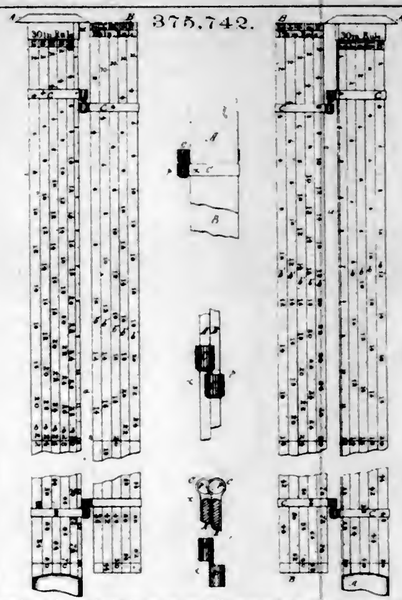
5. The combination, with the carrying-frame, of the gang of cultivator-standards pivotally mounted in the frame at their upper ends, a transverse beam secured to the rear sides of the standards, side bars having their lower ends secured to the ends of the said transverse beams and having longitudinal slots in their upper ends, and bolts passed through said slots to adjustably secure the said side bars to the side bars of the carrying-frame, substantially as set forth.

375,742. **RULE FOR MEASURING LUMBER.** PATRICK GLEASON, Wausau, Wis., assignor of one-fourth to George Manson, same place. Filed Sept. 1, 1886. Serial No. 212,417. (No model.)

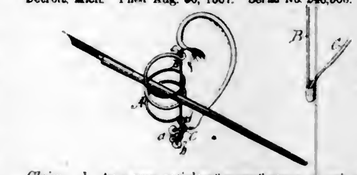
Claim.—1. The pair of hinged and flatly-folding rule-blades, the headed and handled one of which is equally divided on both sides into five or more scale-strips, the inner blade-edging ones of which are graduated to a thirty-inch scale, and the others into space-scales proportional to said standard inch-scales, and, in accordance with the indicative numbers heading said scale-strips, to be used in combination with the other or folding blade, having similar scale-strips graduated on one side to one-and-a-half-inch proportional space-scales and on the other side into proportional one-and-a-quarter-inch space-scales, also in accordance with their said respective head-numbers, substantially as and for the purposes herein specified.

2. The flatly-folding rule-blades divided into scale-strips graduated according to their respective head-numbers, indicating lengths, widths and thicknesses, in combination with the duplex and flatly-folding hinges having each the blade-clasping swing-straps and the independently-reciprocal pintles, substantially as and for the purpose herein specified.

375,742.



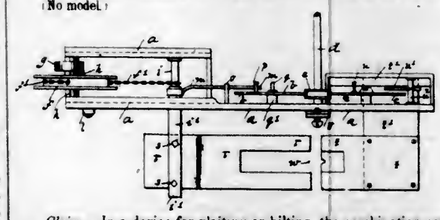
375,743. **EAR-RACK FOR PENS, PENCILS, &c.** JAMES GRAHAM, Detroit, Mich. Filed Aug. 20, 1887. Serial No. 248,306. (No model.)



Claim.—1. As a new article of manufacture, a rack or holder for pens, pencils, and the like, constructed of spring-wire and adapted to be fastened around the base of the ear, substantially as described and shown.

2. An ear-rack composed of a spiral spring, A, in combination with the fastening part B C, substantially as described, and for the purposes set forth.

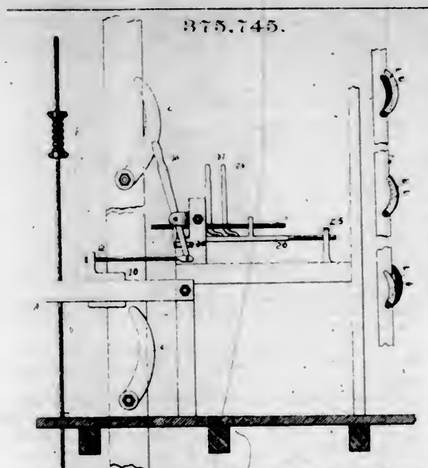
375,744. **PLAITING ATTACHMENT FOR SEWING-MACHINES.** AMOS HALLETT, Pittsburg, Pa. Filed Mar. 5, 1887. Serial No. 229,875. (No model.)



Claim.—In a device for plaiting or kilting, the combination consisting of the frame *a*, the gear-wheels *b* and *c*, operated by a pinion, *e*, and connected to the driving-belt of a sewing-machine, the drum *f* and spring *g*, sliding shaft *i i'* and pawl *m*, the pin *p*, projecting from the gear-wheel *b*, and a means for disengaging the pawl *m* from the same at the proper time, the forked plates *r* and *t*, the sliding frame *t'*, and a means for operating the same, substantially as and for the purpose specified.

375,745. **AUTOMATIC STOP FOR ELEVATORS.** WILLIAM F. HANSON and WILLIAM F. BULLOCK, Lynn, Mass., assignors to the Hanson Elevator Safety Lock Company, Portland, Me. Filed Sept. 20, 1886. Serial No. 214,064. (No model.)

375,745.



Claim.—1. In an elevator and in combination, a shipper-rope, a pair of pivoted jaws carried by the car and embracing said rope, a series of cams, as *c*, arranged along the elevator-well, a sliding bar on the car for engaging with said cams, a lever, as 26, for moving said bar and securing the same in any desired position, and means, substantially as described, between said sliding bar and the jaws whereby the movement of the bar, when actuated by the proper cam, will cause the jaws to clutch the shipper-rod, all substantially as described.

2. In combination, the shipper-rope, the clutching-jaws, the cams, a rod, as 24, said rod being adjustable and having sliding movement, and means, substantially as described, for connecting the said rod with the clutching-jaws, substantially as described.

3. In an elevator and in combination, a shipper-rope, the clutching-jaws, as A A', a series of cams, as *c*, an adjustable sliding bar, 24, a plate, as 20, carrying said adjustable bar and having sliding movement, means, substantially as described, for adjusting the bar 24, and connections between the plate 20 and the clutching-jaws, substantially as described.

4. In an elevator and in combination, the shipper-rope, clutching-jaws, substantially as described, operating devices for said clutching-jaws, substantially as described, a series of cams suitably supported, each cam projecting into different vertical planes, a second series of cams also projecting into different planes, the two series being arranged reversely to each other, substantially as described.

5. In combination, the shipper-rope, the clutching-jaws, the double series of cams suitably supported, with one cam of each series in position corresponding to one of the floors, and the independent devices, as bars 23 and 24, arranged to be acted upon by said cams, and connections, substantially as described, between said devices and the clutching-jaws, all substantially as described.

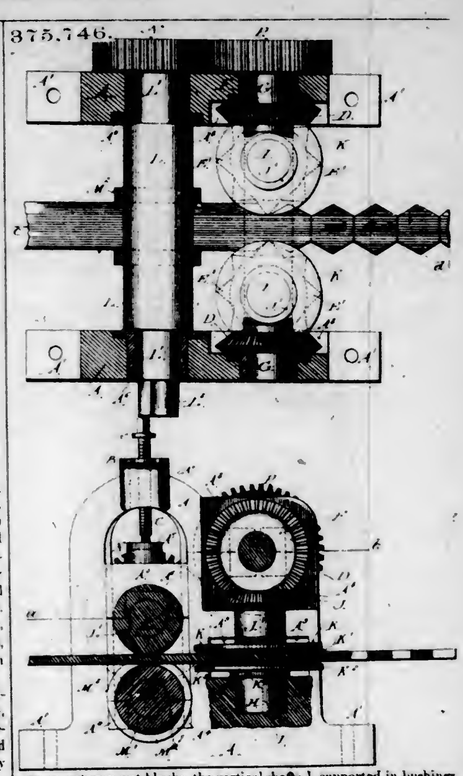
6. In combination, the shipper-rope, the clutching-jaws, the cams *c*, formed with curved edges, the sliding bar, as 24, and the intermediate mechanism between said bar and the clutching-jaws, substantially as described.

7. The combination of the jaws A A', having the inclined faces and cavities 4 4, the pins 2 2, and spring *d*, all substantially as described.

8. In a device of substantially the construction described, the combination of the bars 23 24, the plate 20, and the intermediate locking-levers, 26 27, the cams *c* on the elevator-well, arranged to operate said bars, and the lever 30, adapted to trip the locking or clutching mechanism, substantially as described.

375,746. **MACHINE FOR MAKING NUTS.** HENRY HARRIS, Reading, Pa. Filed Mar. 24, 1887. Serial No. 232,242. (No model.)

375,746.



Claim.—1. As an improvement in machinery for the manufacturing of nuts, a housing-frame consisting of a front portion provided with the usual roll-neck bearings, riders, breakers, and tightening-screw, and having an integral rear portion provided with bearings for a horizontal shaft, and a seat bored and bushed for a vertical shaft, said rear portion recessed at the top for the reception of driving bevel-gears secured upon the horizontal and vertical shafts, and recessed also upon a line with the center of the front rolls for the reception of the forming device, in combination with the said bevel-gears and their vertical and horizontal shafts, spur-gears P and N, rolls L and M, collars M^3, and disks K K^3 E, substantially as set forth.

2. As an improvement in machinery for the manufacture of hexagon or octagon nut-blanks, the vertical shafts I, supported in bushings H at their lower ends, said bushings fitted in a seat integral with the rear portion of the housings, adapted to the operating machinery for the same, said shafts having removably secured thereon a forming device consisting of disks K K^3, between which are forming-disks E, having a corrugated periphery, E', adapted by their revolution with the shaft I to compress the edges of the bar equally as it is passed between the same, in combination with bevel-wheels J, shaft G, bevels D, spurs P N, roll L, joggles L^3, roll M, and guide-collars M^3, all arranged, combined, and adapted to produce nut-blanks, as and for the purpose set forth.

3. In combination with a nut-blank machine, as shown and described, a forming device composed, essentially, of an upper disk, K, having its inner face K' slightly beveled from the points of the forming-disks to the periphery of the disk, a forming-disk, E, the thickness of which is varied to suit the thickness of nut-blanks to be produced, and provided with a series of peripheral corrugations, adapted in unison with each other to compress between them into the proper form for a hexagonal or octagon nut the bar passing through the same, a lower disk, K^3, beveled at K'', to correspond with the upper disk, and having a hub, K^3, said disk and formation washers being removably secured upon the shafts I, as and for the purpose set forth.

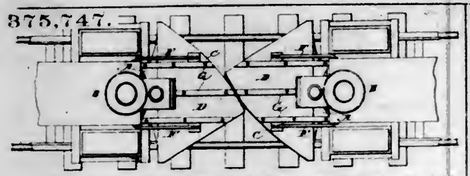
4. In combination with a nut-blank machine, as shown and described, and the lower roll, M, of the machine, the collars M^3, adjustable as to separation upon said roll, whereby the space between the same may be adapted to guide the various widths of nut-bars to the forming device, substantially as and for the purpose set forth.

5. As an improvement in machinery for manufacturing nuts, the combination, with a suitable housing having horizontal rolls supported in bearings, of vertical shafts with their lower ends in bearings, and having attached thereto in the same horizontal plane a forming device to compress a rolled flat bar by passing the same through said horizontal rolls and between said forming-disks into nut-blanks, substantially as shown and described.

375,747. **PILOT FOR LOCOMOTIVES.** WILLIAM G. HARRISON, Weston, W. Va. Filed Sept. 29, 1887. Serial No. 251,045. (No model.)

Claim.—1. A triangular pilot for locomotives having its projecting angle to one side of the center of the road-bed, as and for the purposes set forth.

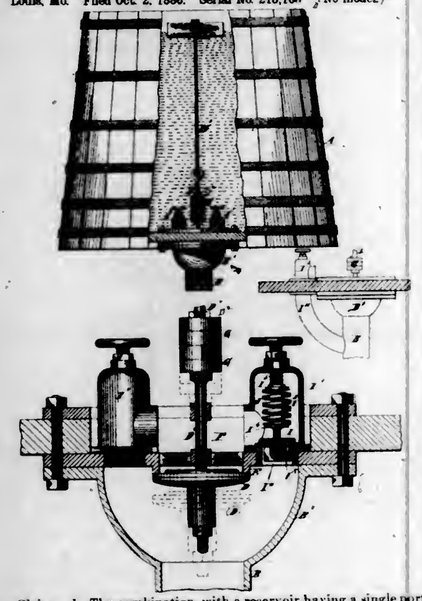
375,747.



2. A locomotive-pilot consisting of a triangular plate and a shield depending from two of the edges thereof, the third edge being adapted to be secured to the locomotive, substantially as described.

3. The combination, with a locomotive, of a triangular pilot secured to the front end of the same, and braces extending from the locomotive to the pilot, substantially as specified.

375,748. WATER-SERVICE APPARATUS. JAMES W. HILL, St. Louis, Mo. Filed Oct. 2, 1886. Serial No. 215,163. (No model.)



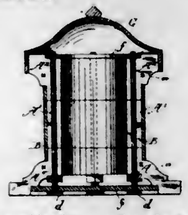
Claim.—1. The combination, with a reservoir having a single port for the ingress and egress of water and a pipe communicating with said port, of a valve for closing said port, forced against its seat by an increase in the pressure of the water in the supply-pipe, and a counter-balance for holding said valve from its seat while the pressure in said pipe is normal, substantially as set forth.

2. The combination, with a reservoir having a single port for the ingress and egress of water and a pipe communicating with said port, of a valve for closing said port, a float having connection with the valve, whereby it is drawn to its seat when the water reaches a given level in the reservoir, and a weight for holding said valve away from its seat while not acted upon by the float and while the pressure of water in the supply-pipe is normal, but which permits said valve to be forced against its seat by an increase in the pressure of the water in said supply-pipe, substantially as set forth.

3. The combination, with a reservoir having a single port for the ingress and egress of water and a single pipe communicating therewith, of a valve for closing said port, a counter-balance for holding the valve away from its seat while the pressure of the water within the supply-pipe is normal, but which counter-balance permits said valve to be forced against its seat by an increase in the pressure in said pipe, and a relief-valve forced from its seat by a sudden increase in the pressure of the water within the said supply-pipe for preventing the latter from bursting, substantially as set forth.

4. The combination, with a reservoir having a port, F, and a single pipe communicating with said port, of a valve, D, for closing said port, forced against its seat by an increase in the pressure of the water in the pipe, a stem secured to said valve, means for maintaining said stem in vertical position, and weights supported by said stem for holding the valve from its seat while the pressure within the pipe is normal, substantially as set forth.

375,749. PERMANENT MAGNET FOR ELECTRICAL APPARATUS. WILLIAM HUMANS, Cambridge, Mass., assignor to the American Magnetic Electric Company, Jersey City, N. J. Filed July 23, 1885. Serial No. 172,432. (No model.)

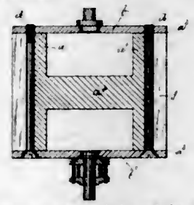


Claim.—1. In combination, a series of permanent magnets with their like poles together, arranged to form the main walls of a receptacle, as set forth.

2. A receptacle built up of permanent magnets, two or more of which are formed with moldings *a a*, of magnetic material, as set forth.

3. In combination, a series of permanent magnets arranged to form the main walls of a box or case, with non-magnetic end pieces attached to the compound magnet to form a complete box, substantially as set forth.

375,750. ARMATURE FOR MAGNETO-ELECTRIC MACHINES. WILLIAM HUMANS, Cambridge, Mass., assignor to the American Magnetic Electric Company, Jersey City, N. J. Filed July 23, 1885. Serial No. 172,433. (No model.)

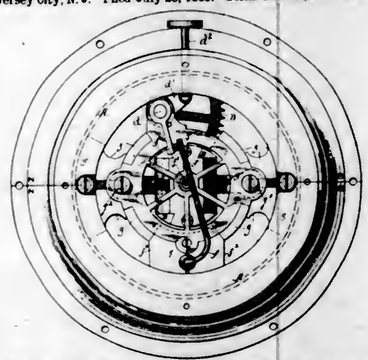


Claim.—1. An armature consisting of the pole-pieces *a a'* and a cross piece or core, a^3, having its end pieces, *b* and *b'*, inserted in recesses in the end of the armature, substantially as described.

2. An armature consisting of the pole-pieces *a a'* and a cross-piece, a^3, having its end pieces, *b b'*, clamped together and held upon the ends of the armature by the rods *d d*, substantially as shown.

3. An armature recessed on its ends at a^3, and having grooves *f* on the face of its pole-pieces *a a'*, as set forth.

375,751. MAGNETO-ELECTRIC MACHINE. WILLIAM HUMANS, Cambridge, Mass., assignor to the American Magnetic Electric Company, Jersey City, N. J. Filed July 23, 1885. Serial No. 172,440. (No model.)



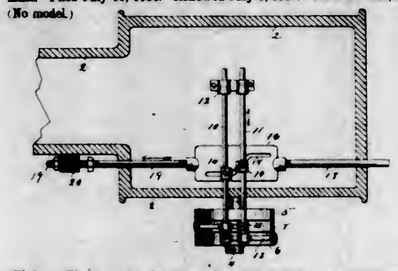
Claim.—1. In combination, the armature, its pawl *b*, ratchet *b'*, pinion b^1, sector-gear D, rock-shaft *d*, and press-knob d^3, substantially as described.

2. The arm *f*, its spring *f'*, and insulator-block f^2, in combination with the arm f^4 of rock-shaft *d* and with the armature and its shaft, substantially as described.

3. The pole-pieces *g g*, recessed as described, in combination with the clamping-disks *g' g'*, as set forth.

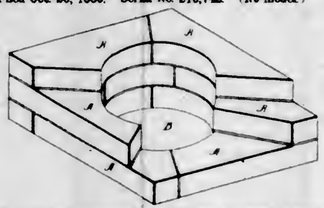
4. The armature, its pinion, the sector-gear and its rock-shaft, in combination with arm f^4 and arm *f* and its spring, substantially as described.

375,752. BELT-SHIFTING DEVICE. ELWIN R. HYDE, Springfield, Mass. Filed July 19, 1886. Renewed July 5, 1887. Serial No. 243,444. (No model.)



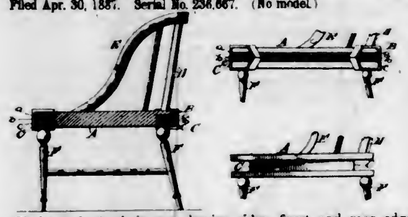
Claim.—The plate 16, having the cam-slot 17 therein, and having guide-rods attached to the ends thereof, whereby it is supported in the body 2 of the machine, combined with the planer-bed 3, having a longitudinal reciprocating movement on said body 2, and an engagement with one of said guide-rods, whereby the plate 16 is given a longitudinal reciprocating motion, and two shipper-rods having a direct engagement with the cam-slot in said plate, whereby they are given an endwise-reciprocating motion at right angles to the movement of the plate 16, substantially as set forth.

375,753. BRICK FOR CHIMNEYS. GEORGE A. KECK, Cerro Gordo, Ill. Filed Oct. 20, 1886. Serial No. 216,742. (No model.)



Claim.—As an improved article of manufacture, a building-block having a plain longitudinal side, D, extending from a short rectangular end, C, to an acute-angled end, H, the end wall, C, meeting an acute-angled wall, I, the said walls H and I being connected by an inner concave wall, F, bounded by the curve E, as set forth.

375,754. CHAIR-SEAT. TIMOTHY KELLOGG, Underwood, Minn. Filed Apr. 30, 1887. Serial No. 236,667. (No model.)



Claim.—1. A chair-seat having sides, front and rear edges channeled or grooved and fitted with strips of wood or metal, the corners strengthened by an overlapping metal square cut from a single piece, substantially as shown and specified.

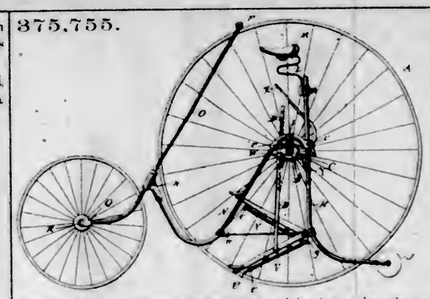
2. A chair-seat formed of a single piece of wood, its edges provided with central longitudinal grooves, a series of thin strips of wood glued together and glued into said grooves, in combination with metal corner-pieces cut from a single blank, substantially as set forth.

375,755. VELOCIPEDE. WELLINGTON P. KIDDER, Maplewood, Mass. Filed Feb. 28, 1887. Renewed Nov. 19, 1887. Serial No. 255,629. (No model.)

Claim.—1. The combination, in a tricycle-frame, of the yoke I, having bearings for the axle, the rod H, attached to one arm of the yoke and carrying the rear wheel, and the rod N, attached to another arm of the yoke and provided with a bearing for the steering-rod.

2. The combination, in a tricycle-frame, of the yoke I, having bearings *i i* for the axle on two of its arms, the rod H, attached to another arm of the yoke and carrying the rear wheel at one end and the seat at the other, and the curved rod N, having one of its ends

375,755.



connected to another arm of the yoke and having at its other end a casting for supporting the steering-gear, substantially as described.

3. The combination, in a tricycle-frame, of the yoke I, having bearings *i i* for the axle on two of its arms, the rod H, attached to another arm of the yoke and carrying the rear wheel, the curved rod N, having one end attached to another arm of the yoke and its other supporting the steering-gear, and the rod T, bracing the rods N and H, substantially as described.

4. The combination, in a tricycle, of the frame I H N, the casting G, attached to the rod H, and the treadles E, fulcrumed on said casting and connected with the axle through intermediate mechanism, substantially as described.

5. The combination, in a velocipede, of the treadles E, the pivoted arbors U, having their free ends working in suitable guides, and the springs V, substantially as described.

6. The combination, in a velocipede, of the treadles E, the pivoted arbors U, having their free ends working in suitable guides, the springs V, the racks D, and pinions C, substantially as described.

7. The combination, in a velocipede, of the treadles E, the rack D, the swinging guides W, pinions C, and intermediate mechanism connecting said pinions to the shaft, substantially as described.

8. The combination, in a velocipede, of two levers with their free ends pointing in opposite directions and connected to move simultaneously, substantially as described.

9. The combination, in a velocipede, of two levers having their free ends pointing in opposite directions, one of said levers being provided with a pin working in a slot in the other, substantially as described.

10. The combination, in a velocipede, of two levers, one of which carries a rack for operating a pinion, the two levers being connected by a pin on one working in a slot in the other, substantially as described.

11. The combination, in a velocipede, of the frame H I N, the treadles E, supported on the bar H, treadles E', supported on the bar N, the axle B, running in bearings carried by the yoke I, the pinions C, and intermediate connections for operating the pinions through the medium of the treadles, substantially as described.

12. In a velocipede, the steering-bar O, turning in a socket attached to the frame and provided at one end with a fixed axle for the steering-wheel projecting from one side thereof and a handle at the other for turning the same, substantially as described.

13. The combination, with a velocipede propelled by a rack and pinion, of a treadle provided with means, substantially as described, for changing the connection of the treadle with said rack, and a guide for the rack, substantially as described.

14. The combination, in a velocipede, of the treadles E, pivoted to the frame, the rack D, pivotally connected to said treadles, and the pinion C, loosely connected to the axle, substantially as described.

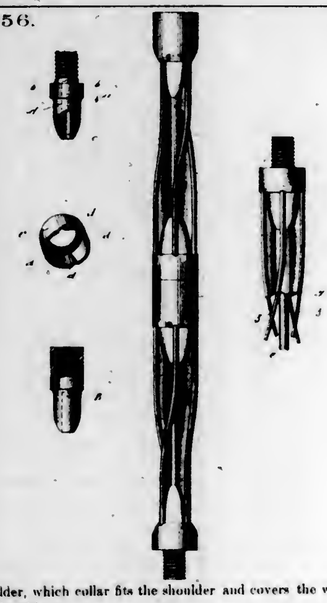
15. The combination, in a velocipede, of the treadles E, the rack D, and means, as the thumb-screw *e*, for changing the position of said racks on the treadles, substantially as and for the purpose specified.

375,756. LIGHTNING-ROD. SPENCER R. LAWSHE, Chicago, Ill. Filed Aug. 24, 1887. Serial No. 247,778. (No model.)

Claim.—1. In lightening-rods composed of sections containing a center rod or wire and two or more outside wires made of steel or iron or other suitable material, a sheathing of copper or other suitable material, arranged in such a way as to separate the outside wires from each other and from the center rod or wire.

2. In a lightning-rod made in sections, a coupling formed of two parts, one part of which has a threaded end or tenon, the other part of which has a threaded cavity to receive the other threaded end or tenon, each part having a shoulder with grooves to receive the outside wires of the section, the unthreaded ends of these parts having a hole bored about one-half the way to receive the end of the center rod or wire of the section, each part being provided with a metal collar or band having internal grooves corresponding to the grooves upon

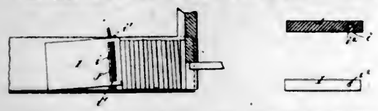
375,756.



the shoulder, which collar fits the shoulder and covers the wires and copper sheathing.

3. The combination, in a lightning-rod, of the center wire, *e*, the outside wires, *f f*, the coupling-pieces A and B, having a shoulder, *a*, with grooves *b b* and holes *c* at the taper end, provided with a collar, C, and the copper sheathing *g*, all substantially as and for the purpose set forth.

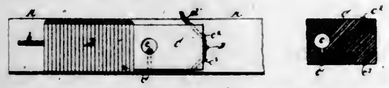
375,757. TYPE-LINE SUPPORT. A. AUGUSTUS LOW, Brooklyn, assignor to the Alden Type Machine Company, New York, N. Y. Original application filed Sept. 13, 1886. Serial No. 213,437. Divided and this application filed Feb. 3, 1887. Serial No. 226,378. (No model.)



Claim.—1. The combination, with a suitable line or column containing channel, of a line-end support or slug provided with a bearing-surface which is adjustable in inclination, substantially in the manner and for the purpose described.

2. In a line or column containing channel, substantially such as described, an end-line support or slug, I, formed with a recess, *i*, and perforations i^2, and provided with the knotted cord J, for the purpose and substantially in the manner described.

375,758. TYPE-LINE SUPPORT. A. AUGUSTUS LOW, Brooklyn, assignor to the Alden Type Machine Company, New York, N. Y. Filed Feb. 3, 1887. Serial No. 226,461. (No model.)

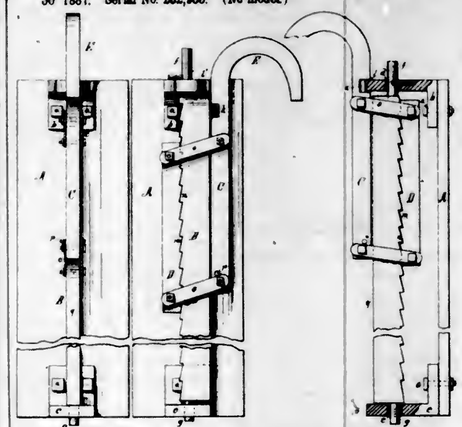


Claim.—1. A line-end support for type-containing channels, which has its rear edge perforated diagonally for the support of the free end of a section of flexible material, in combination with the latter, having its opposite end secured to the body of the support, substantially in the manner and for the purpose described.

2. An end-line support for type-containing channels, formed with the interior recess, c, and the perforation c', communicating therewith, in combination with a section of flexible material, applied substantially in the manner and for the purpose described.

3. A line-end support for type-cootaining channels, formed with the interior recess, c, perforation c', and diagonal end perforations, c^2 c^3, in combination with a section of flexible material, applied substantially in the manner and for the purpose described.

375,759. BOOM-GRIP. JAMES MASTEN, Boswell, Ohio. Filed Mar. 30 1887. Serial No. 232,955. (No model.)



Claim.—1. The combination, with a vertical rack-bar, of two parallel bars located, respectively, on opposite sides thereof, and transverse links connecting the two, said links inclosing the vertical rack-bar, one of said link-connecting bars being a boom-locking bar, the other a rack-locking bar, substantially as set forth.

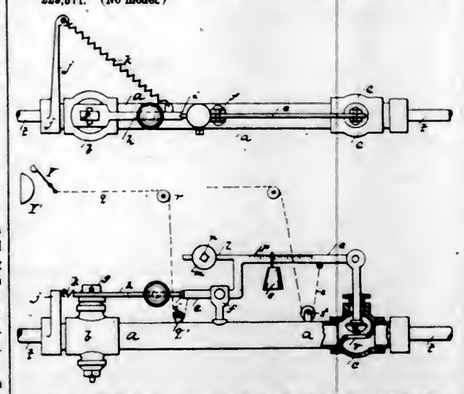
2. The combination of a vertical rack-bar, a bracket in which it has a pivotal bearing, a boom-grip bar having sliding bearing on said rack-bar and having a slot adapted to engage with said bracket and lock it against vertical movement, a rack-locking bar engaging with the rack-face of said bar, and links connecting said boom-grip and rack-locking bar, substantially as set forth.

3. The combination of a staff provided at its upper and lower extremities with brackets, a vertical rack-bar having its upper and lower extremities respectively journaled in said brackets, two parallel bars located, respectively, on opposite sides thereof, and transverse links connecting the two, substantially as set forth.

4. The combination, with a vertical rack-bar, of two parallel bars located, respectively, on opposite sides thereof, and transverse links connecting the two, said links inclosing the vertical rack-bar, one of said bars being provided with a stop, *p*, adapted to limit the vertical position of said bars relative to one another, substantially as set forth.

5. The combination, with a staff provided at its upper and lower extremities with brackets *b c*, said bracket *b* being provided with a slot, *k*, of a rack-bar, B, having pivotal bearings in said brackets at both extremities, and provided with a pin, *j*, fitting in said slot, and the bars D C, secured on either side of said rack and connected together by links *o*, substantially as set forth.

375,760. AUTOMATIC VALVE OR SHUT-OFF FOR GAS-MAINS. GEORGE W. MCKENZIE, Van Port, Pa. Filed Mar. 5, 1887. Serial No. 229,871. (No model.)

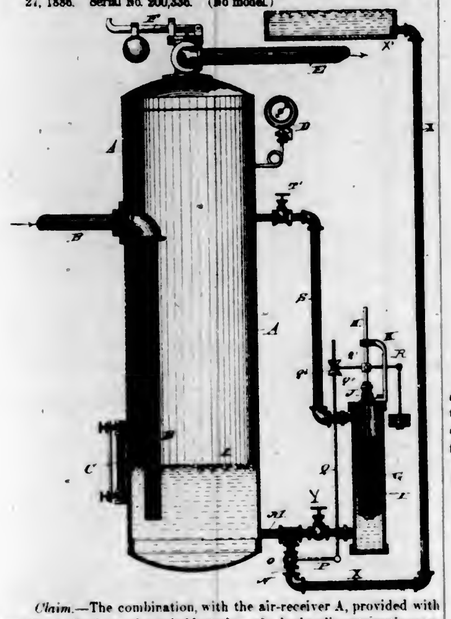


Claim.—1. In an apparatus such as described, the combination consisting of the cylinder *a*, provided with a plug-valve, *b*, at one end and a ball-valve, *u*, at the other, the levers *c* and *h*, attached to the valves *b* and *u*, the spiral spring *k*, and weights *m* and *o*, as and for the purpose specified.

2. In an automatic shut-off consisting of the cylinder *a*, valves *b u*, levers *c h*, spiral spring *k*, and a means for sounding an alarm by the action of the lever *h* and spring *k*.

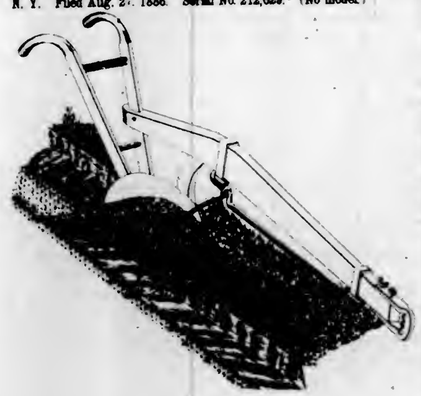
3. In an automatic cut-off, the combination, with the cylinder-section *a* of a gas-main, of the valve *u*, a lever, *c*, attached at one end to the stem of said valve and provided on opposite sides of its fulcrum with adjustable weights, the valve-plug *g*, provided with a horizontal lever adapted to engage the lower short arm of lever *c*, as described, a spring, *k*, for shutting valve-plug *g*, and a wire connecting lever *c* with an alarm, all substantially as described.

375,761. AUTOMATIC REGULATOR FOR THE RECEIVERS OF AIR-COMPRESSORS. DAVID F. MCKIM, Cable City, Mont. Filed Apr. 27, 1886. Serial No. 200,336. (No model.)

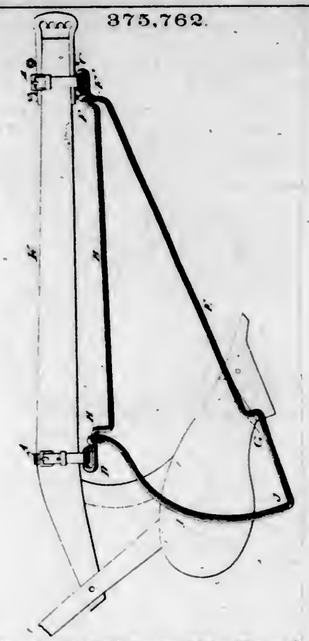


Claim.—The combination, with the air-receiver A, provided with an air-supply pipe and an air-blast pipe, of a hydraulic automatic regulator consisting of a cylinder provided with a float and communicating with the air and water spaces of the said receiver by pipes provided with cocks, a stand-pipe, X, leading from an elevated source of water and communicating with the pipe M, connecting the air-receiver and the float-cylinder, and a cock, O, located in pipe X and adjustably connected to a loaded lever, which is attached to the stem of said float, all substantially as described.

375,762. PLOW ATTACHMENT. JOSEPH T. MINARD, Highland N. Y. Filed Aug. 27, 1886. Serial No. 212,029. (No model.)

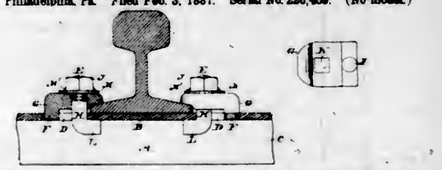


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Claim.—A plow attachment consisting of the rod B, formed with eyes at either end, and with the angular bends F H, the rod E, hinged to the rod B at said bends, having the bend G and angles F" J, and the curved rear portion, I, in combination with the flexible straps A A and the plow-beam K, substantially as shown and described.

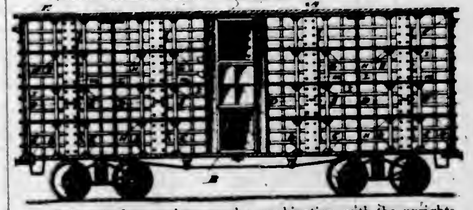
375,763. RAILROAD TIE AND FASTENING. THOMAS B. MOORE, Philadelphia, Pa. Filed Feb. 3, 1887. Serial No. 226,409. (No model.)



Claim.—1. The metallic tie A, having bed B, with slots D and flanges C, in combination with the cheek-piece G, with lugs F and angular openings K, and screw-threaded bolts E, having square shanks and feet L, and the nuts J, all substantially as described.

2. The tie A, having slots D and flanges C, in combination with cheek-pieces G, having lugs F and openings K, the screw-threaded bolts E, having squared shanks and bent lower ends forming feet L, the nuts J, and the washer M, with lips M', all substantially as and for the purpose set forth.

375,764. POULTRY-CAR. JOHN MORAN, Adair, Mo. Filed Nov. 10, 1887. Serial No. 254,797. (No model.)



Claim.—1. In a poultry-car, the combination, with the uprights having lugs on opposite sides, of the rings having offset recesses at diametrical points, and the bars having opposite ends forked to sustain the removable floors, substantially as specified.

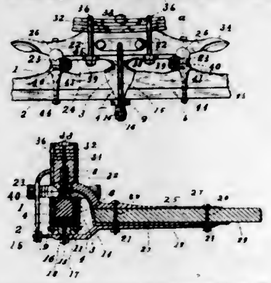
2. A poultry-car composed of open-work sides and ends, the sockets on the top and bottom to receive the opposite ends of the up-

rights, cross-bars supported by the uprights, removable folding floors supported by the cross-bars, and removable hinged partitions; substantially as specified.

3. In a car, the combination, with the uprights having lugs, as described, of the cross-bars and rings, and the removable floors, substantially as specified.

4. In a railway-car, the combination, with the rafters having depending pins, of the partitions having apertures in their upper ends to receive the same, substantially as specified.

375,765. VEHICLE GEAR-IRON. RICHARD MULHOLLAND, Dunkirk, N. Y. Filed July 25, 1887. Serial No. 245,177. (No model.)



Claim.—1. In vehicle gear-irons, a compound king-bolt and clip-iron having the clips extend down to or near the bottom of the axle, and having bolt-holes the inner sides of which pass as close to the axle as possible, or nearly through the metal, a neck part, and a bolt-hole up through the center of same, in combination with bolts passing down through the clip portions on each side of the axle into a king-bolt yoke, and a means for securing them, a king-bolt yoke-brace, a means for securing the king-bolt yoke thereto, and a bolt passing up through the center of the king-bolt clip-iron for securing it to the upper fifth-wheel and head-block, substantially as described.

2. In vehicle gear-irons, the upper gear-iron consisting of the head-block plate having the two upper fifth-wheel sections and reach-iron all formed in one piece and secured to the under side of the head-block, in combination with the lower fifth-wheel sections, their combined clip portions having supporting-lips 45 on both sides and extending down each side of the axle to or near the bottom of the same, and having bolt-holes the sides of which nearest the axle pass through or nearly through the metal, bolts passing down through said openings, clip-ties, and a means for securing the whole to the axle and reach, substantially as and for the purposes described.

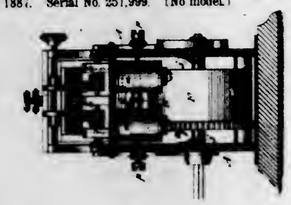
3. The compound king-bolt and clip-iron having the vertical tubular clip portions and the tubular neck portion, in combination with the bolts 6 8 13, and the king-bolt yoke, for the purpose of holding the several parts together, substantially as described.

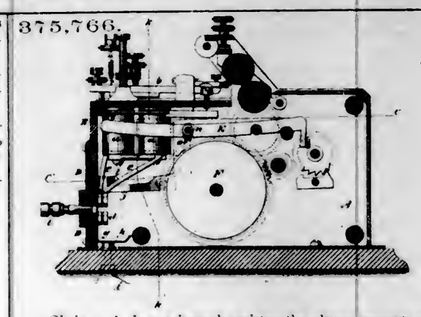
4. In vehicle gear-irons, the top fifth-wheel sections having the head-block plate, the lips 26, clip-ties, king-bolt socket or hole 31, and reach-iron extension 25, all in one piece of metal, in combination with the head-block, the lower fifth-wheel sections, the axle, the king-bolt yoke, the king-bolt yoke-brace, and bolts for securing them together, substantially as described.

5. The upper fifth-wheel and head-block plate having the reach-extension iron or irons 25, in combination with the reach, and the lower king-bolt yoke-brace and reach-extension, a wrought-iron support, 27, extending along the bottom of the reach and secured to the bottom of the head-block plate by a bolt or other suitable means for connecting the whole together, substantially as described.

6. In vehicle gear-irons, the rear reach coupling-iron having the lips 57, the rear portion provided with clip-ties and bolt-holes, and the lower projecting portion, 48, through which passes the countersunk bolt 50, in combination with the reach, reach-iron, and axle, and bolts for securing the whole together, substantially as described.

375,766. TELEGRAPH-REGISTER. JOSEPH G. NOYES, New York, N. Y., assignor to the New Haven Clock Company, same place. Filed Oct. 11, 1887. Serial No. 251,999. (No model.)





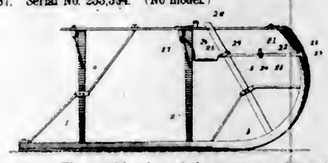
Claim.—1. In a telegraph-register, the electro-magnets *a* and binding-posts *d* in electrical connection, and L-shaped springs *g*, having upturned inner ends connected with the binding-posts *d*, all carried by and combined with the slide B, in combination with the binding-posts *h* in the base of the instrument for connection with a generator, the strips *g* being adapted to bear upon and slide over the posts *h*, substantially as herein shown and described.

2. In a telegraph-register, the combination, with the slide B, of the magnets *a a* and of the springs *g g*, arranged in pairs, each pair being electrically connected with the magnets, substantially as described.

3. In a telegraph-register, the casing A and springs *j j*, secured to the inner walls thereof, the springs *j* having studs *m*, in combination with the slide B and hooks *l l*, carried thereby, the springs *j j* acting inward and outward against the hooks *l l*, substantially as described.

4. In a telegraph-register, the combination of the casing A, trip-lever E, arbor *n*, spring *o*, and screws *p p*, carried by the casing, said screws acting as movable bearings for the arbor of the trip-lever and as means of adjusting the tension of said spring, substantially as described.

375,767. SLEIGH. CHARLES PARKIS, Buffalo, N. Y. Filed Oct. 26, 1887. Serial No. 253,394. (No model.)



Claim.—1. The combination of the runners and top frame-work with two curved or arched braces, 1 and 2, provided with inlaid curved metal braces 14, secured thereto by bolts, and an X-shaped brace, 16, secured at the top to the arched brace 1 and to the runners, substantially as described.

2. The horizontal notched bars 22, having their front ends secured to the front of the sleigh by bolts and their rear portions made in the form of a foot-scraper and secured by bolts and clips to the frame of the sleigh, in combination with the sliding portions 21, having holes 24, coinciding with the notches, substantially as and for the purposes herein shown and described.

375,768. FERTILIZER-DISTRIBUTER. HENRY O. PEABODY, Boston, Mass. Filed July 30, 1887. Serial No. 245,688. (No model.)

Claim.—1. In a fertilizer-distributer, the combination of a revolving fertilizer-holding drum, a measuring-bucket set in and projecting inward from the shell of said drum, a discharge-opening cut through said drum at some distance from said bucket, but in the same vertical plane, a chute connecting said bucket and discharge-opening, and a device secured to the exterior of said drum directly over said discharge-opening and having provision for delivering the fertilizer in a plurality of rows or lines.

2. In a fertilizer-distributer, the combination of a revolving fertilizer-holding drum and a measuring-bucket fitted to an opening in the shell of said drum, the chamber in which extends both inward and outward from said shell, and the outer portion of which chamber has inclined sides forming an extension of corresponding inclined sides of the opening through the shell of the drum, substantially as described.

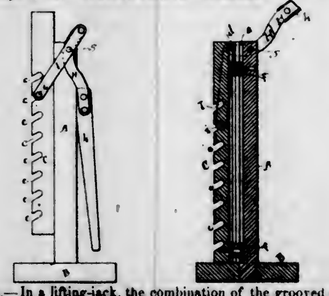
3. In combination with a revolving fertilizer-holding drum having a discharge-opening cut through its shell, a plurality of separate and distinct semicircular guide-plates placed over said opening and constructed and arranged to deliver the fertilizer which escapes through said opening in the drum in a plurality of lines, substantially as described.

375,768.



4. In combination with a revolving fertilizer-holding drum having a discharge-opening cut through its shell, the guide-plates F F, each provided with the flaring end *h*, the oblique rib *h'*, and the V-shaped ribs h^3, and the semicircular guide M, provided with the bifurcated rib *i* and the ribs *j* and *j'*, all constructed, arranged, and adapted to operate substantially as and for the purposes described.

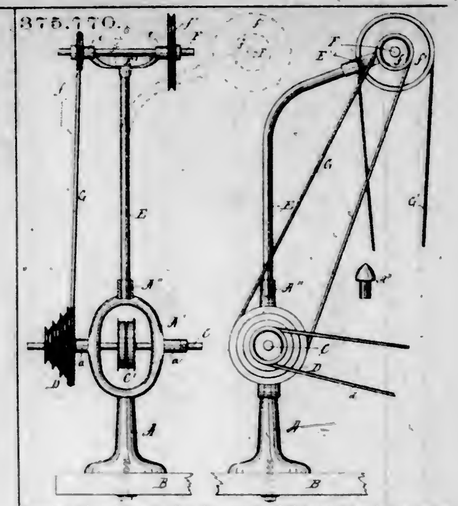
375,769. LIFTING-JACK. GEORGE S. RICKARD, Columbus, Ohio. Filed Sept. 7, 1887. Serial No. 249,023. (No model.)



Claim.—In a lifting-jack, the combination of the grooved standard A, the guide-block F', lever-arms H, having handle *h*, said arms being pivoted to the standard, arms I, having cross-pin *i*, the grooved and notched elevating-bar C, and the block F, substantially as and for the purpose specified.

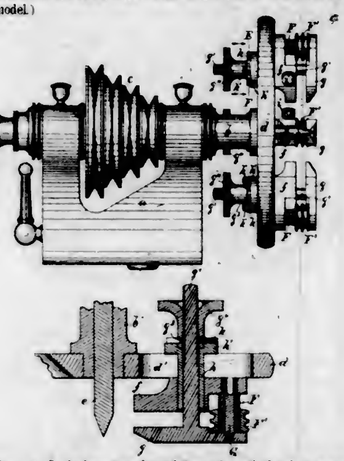
375,770. COUNTER-SHAFT BRACKET FOR WATCH-MAKERS' LATHES. EDWARD RIVETT, Boston, Mass. Filed Mar. 23, 1887. Serial No. 232,065. (No model.)

Claim.—The standard A and its ring-shaped bearing A', having shaft C journaled therein, and having pulley C within the ring-shaped



bearing A', and cone-pulley D outside of the same, both secured to said shaft C, and the socket A" in the upper end of the ring-shaped bearing A', in combination with the detachable bent rod or pipe E, having the bearing-piece and bearings E' *e e* secured to its upper end, the shaft F, journaled in said bearings and provided with the pulley *f*, belted to the cone-pulley D by means of cord or belt G, and having the pulley *f'*, for conveying a rotary motion to the lathe or other tool, substantially as and for the purpose set forth.

375,771. CLAMPING-JAW FOR WATCH-MAKERS' LATHES. EDWARD RIVETT, Boston, Mass. Filed July 11, 1887. Serial No. 243,966. (No model.)

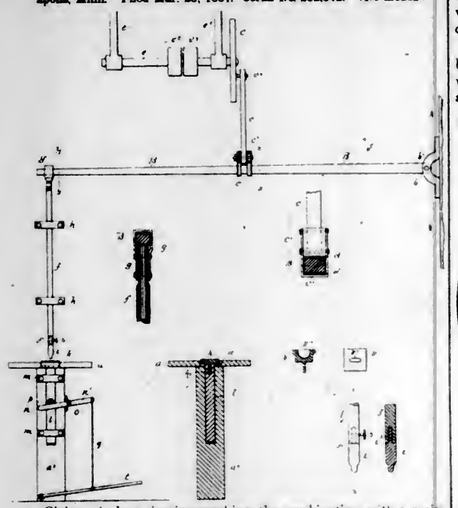


Claim.—1. In lathes, the slotted face-plate *d*, the jaw *g*, and the sleeve *h*, having flange *h'* in one end and inclined face or recess h'' h^2 in the other, in combination with the clamping-jaw *f*, journaled on said sleeve and having the set-screw *i i'*, for the purpose of securing the said clamping-jaw and sleeve to the face-plate, as set forth.

2. In lathes, the flanged sleeve *h h'*, having the inclined face or recess h'' h^2, and the jaw *f*, journaled on said sleeve and provided with the set-screw *i i'*, in combination with the jaw *g*, having the spindle *g'*, adapted to slide in the sleeve *h*, and having the nut *g''*, connected to said sleeve, for the operation of the jaw *g* to and from the jaw *f*, as set forth.

3. The flanged sleeve *h h'* and the jaw *f*, having the set-screw *i i'*, arranged as described, for clamping said parts against opposite sides of the slotted face-plate *d*, in combination with the jaw *g*, having spindle *g'*, adapted to pass through the sleeve *h*, and having regulating-nut *g''* for its manipulation, and the back-rest device F F' G at the rear of the jaws *f g*, as set forth.

375,772. RIVETING-MACHINE. HUMPHREY O. ROBERTS, Minneapolis, Minn. Filed Mar. 25, 1887. Serial No. 232,372. (No model.)



Claim.—1. In a riveting-machine, the combination, with a reciprocating riveting-tool, of an anvil, a supporting-bar therefor, guides for said bar, and a lever and foot-treadle for raising and lowering the same to adjust the anvil to the riveting-tool, substantially as set forth.

2. In a riveting-machine, a pivoted spring-bar, a pitman connected therewith, a hammer-shaft also connected therewith and carrying a riveting-tool, an anvil and its adjustable support, and a lever for adjusting said anvil-support, substantially as set forth.

3. In combination, the pivoted spring-bar B, pitman *c*, hammer-shaft *f*, riveting-tool *i*, anvil *k*, its support *l*, having pin *p*, and the lever *n* and treadle *t*, substantially as and for the purpose set forth.

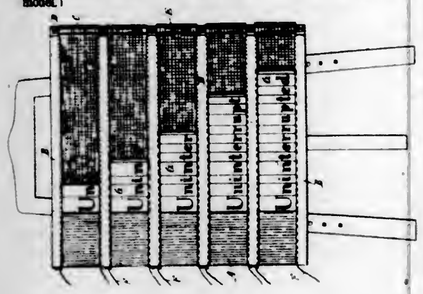
375,773. HANDLE. WILLIAM M. ROCKWELL, Woonsocket, R. I. Filed Aug. 30, 1887. Serial No. 248,272. (No model.)



Claim.—1. A handle provided on its upper side with front and rear thumb-bearing faces, each longitudinally concave, and each laterally inclined in a direction opposite to the other, substantially as described.

2. A handle provided with two longitudinally-concave and laterally-inclined thumb-bearing faces on its upper surface, a pendent horn at its rear end, and a series of corrugations or ribs on its under side, substantially as described.

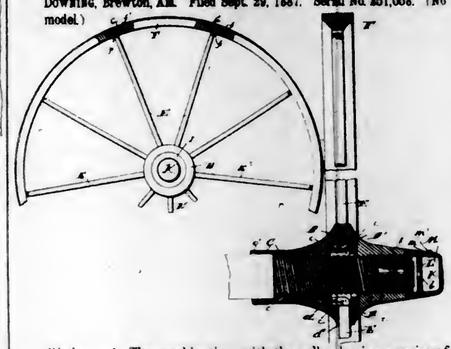
375,774. SPELLING-BOARD. JOHN SCHUMAN and ADOLPH G. BAIER, Detroit, Mich. Filed Apr. 28, 1887. Serial No. 236,437. (No model.)



Claim.—1. In a device for the purpose described, a board or base, A, grooved longitudinally and divided into horizontal spaces, and provided with a series of substantially-vertical spring-rollers, C, carrying curtains E, adapted to be moved horizontally, substantially as set forth.

2. In a device for the purpose described, the combination of the board A, groove-cleats B, spring-rollers C, curtains E, and blocks G, when constructed, arranged, and operating substantially in the manner and for the purposes specified.

375,775. VEHICLE-WHEEL. ELIAS A. SEALE and WILEY W. DOWNING, Brewton, Ala. Filed Sept. 29, 1887. Serial No. 251,068. (No model.)



Claim.—1. The combination, with the collar having a series of radial slots therein, of the spokes adapted to be inserted at the inner ends in the said slots and having shoulders *c'* thereon to engage the inner edge of the collar and the threaded outer ends, the rim having a series of openings therein adapted to receive the ends of the spokes, and the taps on the projecting threaded ends of the spokes, substantially as and for the purpose specified.

2. The combination, with the collar, of the spokes secured at the inner ends therein and having threaded outer ends, the rim having a series of openings therein to receive the ends of the spokes, and the recesses *f''* in the outer side around the said openings, and the taps adapted to be received in the said recesses and screwed on the projecting ends of the spokes, substantially as and for the purposes specified.

3. In a wheel, the combination, with the box or sleeve A, threaded on the outer side, of the collar D, secured thereon and having the inner ends of the spokes secured thereto, the thimble C, screwed on the sleeve on the inner side of the collar, the thimble I, screwed on the sleeve on the outer side of the collar, and the cap L, screwed on the end of the sleeve to cover the tap on the end of the spindle which passes through the sleeve, substantially as specified.

4. In a wheel, the combination, with the exteriorly-threaded sleeve or box A, of the collar D, surrounding said sleeve and having the annular recess D' and the radial recesses or slots *d'*, communicating therewith, the spokes E, secured at the inner ends in the said slots and having the lateral arms *e*, to engage in the annular recess, and the thimbles C and I, to be screwed on the sleeve A on opposite sides of the said collar to hold it in place, substantially as specified.

5. In a wheel, the combination, with the sleeve A, of the collar D, secured thereon and having the annular recess D' and the radial slots *d'*, communicating therewith, and the spokes E E, inserted at the inner ends in the said slots and having the lateral arms *e e*, to engage in the annular recess, and the shoulders *e' e'* on opposite sides to engage the inner edge of the said recess, substantially as and for the purpose specified.

6. In a wheel, the combination, with the sleeve or box A, of the collar D, having the radial slots *d'* in the outer side to receive the inner ends of the spokes, the washer H, to bear against the outer side of the collar and conceal the ends of the spokes, and the thimbles C and I, screwed on the sleeve A on opposite sides of the collar to bind the same and the washer H firmly in position, substantially as and for the purpose specified.

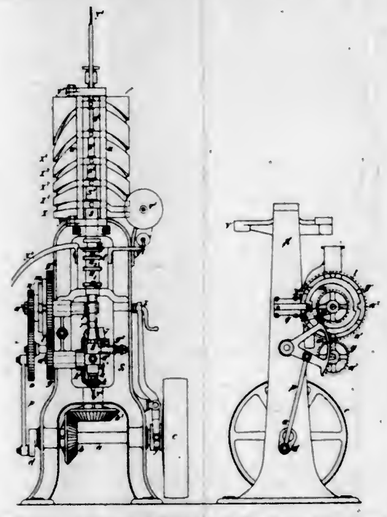
7. In a wheel, the combination, with the exteriorly-threaded sleeve A, of the collar D, surrounding the sleeve and having the interior annular recess, D', and the radial slots *d'*, communicating therewith, the spokes E, secured at the inner ends in the said slots and having enlargements to engage in the said annular recess, the washer H, to bear against the outer sides of the spokes, and the taps or thimbles C and I, to screw on the sleeve A on opposite sides of the collar to bind the same and the said washer together, substantially as and for the purpose specified.

8. In a wheel, the combination, with the exteriorly-threaded sleeve or box A, of the collar D, having the inner ends of the spokes secured therein, the inner thimble, C, and outer thimble, I, and the cap L, secured on the end of the sleeve and having the oil-reservoir M therein, communicating with the bearing of the wheel, substantially as and for the purpose specified.

9. In a wheel, the combination, with the box or hub screw-threaded at the outer end, of the cap L, screwed thereon and having the partition or web L' therein, provided with a perforation, *l*, and the opening *m* in the side, provided with a screw-cap, *m'*, all constructed and arranged as and for the purpose specified.

10. In a wheel, the combination of the exteriorly-threaded box or sleeve A, the thimble C, screwed thereon and having the flared outer end forming the shoulder *c*, and the inward-extending flange *c'* on the inner end, the collar D, bearing against the shoulder *c* and having the inner ends of the spokes secured thereto, the thimble I, screwed on the sleeve and having the flared inner end forming a shoulder, *i*, to bear against the outer side of the said collar, and the cap or oil-cup L, screwed on the end of the sleeve over the end of the spindle extending through the said sleeve, and having the opening *m* in the side thereof to receive the oil to lubricate the journal, substantially as and for the purpose specified.

375,776. CAPSULE-MACHINE. EBERHARD SEGER, Stockholm, Sweden. Filed Apr. 5, 1887. Serial No. 233,807. (No model.) Patented in Sweden Nov. 30, 1886, No. 329; in Norway Dec. 7, 1886, No. 344; in Belgium Dec. 7, 1886, No. 75,516; in France Dec. 7, 1886, No. 180,129; in England Dec. 7, 1886, No. 16,084; in Germany Dec. 8, 1886, No. 40,650; in Italy Dec. 31, 1886, No. 20,709; in Spain Jan. 17, 1887, No. 6,510, and in Austria-Hungary Mar. 26, 1887, No. 47,580 and No. 11,411.



Claim.—1. A capsule-machine having, in combination, a series of tubular dies, *s s' s²*, &c., arranged to telescope one into another and serving to successively press down the capsule-planchet, and a corresponding number of movable self-adjusting matrices, *u u' u²*, &c., the combination being and operating substantially as set forth.

2. The described means for advancing the planchet-sheet, consisting of the combination of the fork 3 4, having a horizontal and a vertical motion, plate 5, table *y⁶*, and plate 11, substantially as shown and described.

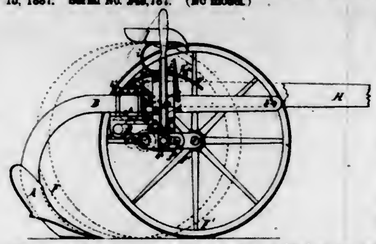
3. The described means for carrying the capsule over from the matrices to a mandrel, *i*, consisting of the combination of shaft *a²*, tube or pipe *r*, and sliding cylinder *r'*, all substantially as set forth.

4. The described means for delivering the pressed capsule, consisting of the combination of the horizonal shaft *a'*, shell or sleeve *k'*, hollow shaft *k*, rod *y⁵*, and mandrel *i*, all substantially as set forth.

5. The described means for transferring the motion of the main shaft *a* to the carrying and delivering mechanism, consisting in the combination of the crank *d*, connecting-rod *p*, oscillating sector *o*, loose gear *n'*, its supporting-shaft *a²*, arm *n*, and its pawl *x⁴*, bolt *q*, locking-wheel *l*, ratchet-wheel *m*, tube *r*, shaft *a'*, and gears *g* and *g'*, substantially as set forth.

6. The described means for cutting off the uneven edge of the capsules, consisting in the combination of a knife, 8, arranged to be alternately held off from and pressed against the lower edge of the revoluble mandrel *i*, and the upright knives 10 on shell *k'*, the combination being and operating substantially as set forth.

375,777. WHEEL-PLOW. EDWARD SNOOK, Erie, Ill. Filed Sept. 15, 1887. Serial No. 249,787. (No model.)



Claim.—1. The elevating crank-arm *f⁴*, provided at one end with a spindle, *f⁵*, carrying land-side wheel F', and having its opposite end pivoted upon the journal *e⁴* of the arched axle-tree E, in combination with the elbow spring-lever *f⁶*, which has its fulcrum upon said journal *e⁴* and its short arm pivoted to said crank-arm *f⁴* some distance forward of the said journal *e⁴*, substantially as and for the purpose described.

2. The combination of the furrow-side wheel F, with arm *f'*, slotted, as at *f³*, and its rear side provided with horizontal longitudinal depression *f²* and with upper and lower flanges *f'*, flange *e⁴*, and step or shoulder *e³* of the end portion, *e*, of the axle E, and bolt *e'*, having nut *e⁵*, substantially as and for the purpose described.

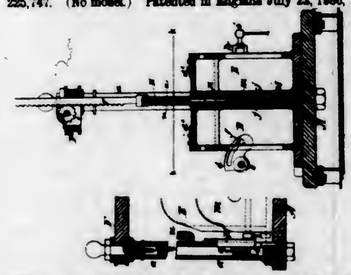
3. In a two-wheeled riding-plow having arched axle-tree E, with adjustable wheels F F' and plow-supporting crank-bar D, the combination of the plow-beam B, centrally-perforated plate *c*, having lateral lugs *c'*, plate *c⁴*, having clamp-plates *b* and bolts *b'*, left-threaded nut *c¹⁰*, and center bolt, *c⁵*, having washer *c⁶* and right-threaded nut *c⁷*, substantially as and for the purpose described.

4. In the plow-coupling C, the combination of the plow-supporting plates *c c⁴*, crank-bar D, and the coupler J, substantially as and for the purpose described.

5. In a two-wheeled riding-plow which is horizontally adjustable upon its furrow-wheel, an arched axle-tree, E, plow-supporting crank-bar D, the land-side wheel F', having axle-spindle *f⁵*, crank-arm *f⁴*, lever-handle *f⁶*, fulcrumed upon the journal *e⁴* and pivotally connected with the crank-arm, and the notched sector G, substantially as and for the purpose described.

6. In a two-wheeled riding-plow which is vertically adjustable upon its land-side wheel, and which will permit its furrow side to be adjusted forward of its land-side wheel, a plow-supporting crank-bar, D, the furrow-wheel F, having axle-spindle *f*, slotted arm *f'*, having horizontal flanges *f''*, and the arched axle-tree E, having step *e³*, flange *e⁴*, and bolt end portion, *e'*, substantially as and for the purpose described.

375,778. MACHINE FOR FORMING SEAMLESS RUBBER GOODS. FREDERICK SOUTHGATE, Paris, France. Filed Jan. 28, 1887. Serial No. 225,747. (No model.) Patented in England July 22, 1886, No. 9,508.

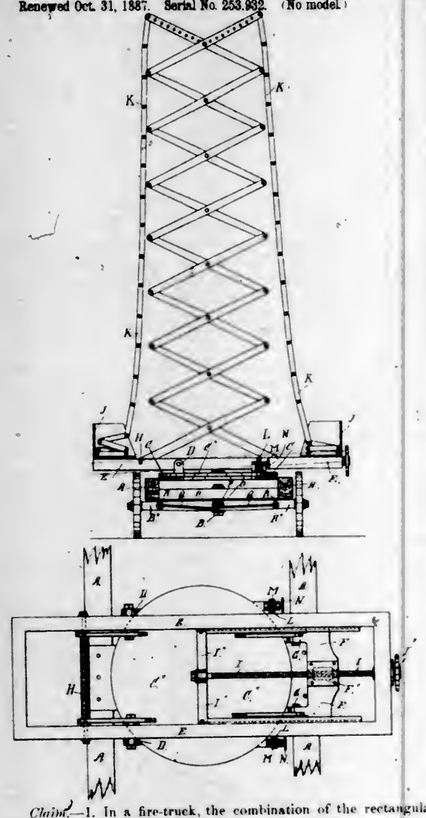


Claim.—1. In a machine for the manufacture of armhole-linings by means of a pair of heated boxes, the one fixed and the other movable, the mechanism for operating the latter consisting of the straps *h*, fixed adjustably in guides, the cam *d*, keyed on shaft *e*, carried in said straps, and screws *i*, for adjusting said movable box to suit the thickness of the fabric, as described.

2. In a machine for the manufacture of armhole-linings by means of heat and pressure, the mechanism for operating the upper knife or die, consisting of a rack, *v*, pinion *w*, hand-wheel *y*, pulleys *a⁶* and *b³*, and counterbalance-weight, as described, for the purpose specified.

3. In a machine for the manufacture of armhole-linings by heat and pressure, the combination, with the curved lower knife or die, *m*, as described, of the arms *o*, for attaching the spiral springs *q*, contained in the uprights *a*, and of the pawl *r*, in connection with said arms *o*, as described, for the purpose specified.

375,779. FIRE-TRUCK AND EXTENSION-LADDER. Rufus Smith and Henry H. Mansfield, Oakland, Cal. Filed Oct. 13, 1886. Renewed Oct. 31, 1887. Serial No. 253,932. (No model.)



Claim.—1. In a fire-truck, the combination of the rectangular frame A, mounted upon the wheels, the turn-table C, secured to the frame A, the movable platform C×, operating on the table C and having straps D, the movable rectangular frame E, pivoted to the straps D and carrying the lazy-tongs and folding ladders, and suitable mechanism for elevating the lazy-tongs, substantially as described.

2. In a fire-truck, the combination of frame A, turn-table C, secured thereto, movable platform operating on table C and having straps D, the movable rectangular frame E, pivoted to the straps D, the stationary transverse rod H in said frame, the cross-head F, traveling in frame E and having nut F×, the operating screw-shaft I for the cross-head, and the lazy-tongs having the lower member of one series of its levers pivoted to the lugs G on the traveling cross-head and the lower member of the other series of its levers pivoted to the rod H, all arranged for joint operation substantially as shown and described.

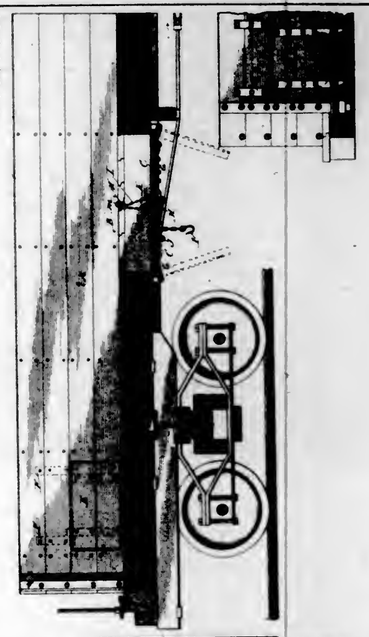
3. The combination of frame A, turn-table C, secured thereto, movable platform C× on the table C and having straps D, the movable frame E, pivoted to the straps and having its ends provided with boxes J J, the transverse rod H, secured in said frame, the traveling cross-head F, having nut F× and operated by screw-shaft I, the lazy-tongs, whose lower members are pivoted, as described, to the rod H and lugs G on the traveling cross-head, and the ladders K K, affixed to the upper members of the lazy-tongs and folding within the boxes J, all combined and operated substantially as shown, and for the purposes set forth.

375,780. GONDOLA-CAR. John L. Stagg, Chicago, Ill., assignor to the United States Rolling Stock Company. Filed Sept. 1, 1887. Serial No. 248,442. (No model.)

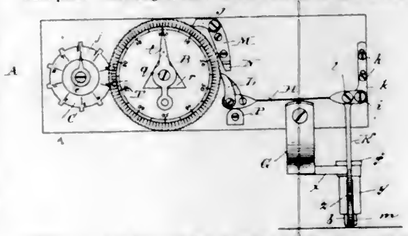
Claim.—1. The gondola-car having a double set of openings in the bottom and having sides provided with openings near each end, substantially as described.

2. In a car-door fastening, the combination, with the hasp H and hook I, of the staple J, having an elongated eye, as and for the purpose set forth.

375,780.



375,781. REGISTER FOR PAPER-BOX MACHINES, &c. Elbert L. Steele, Nashua, N. H., assignor to himself and William H. Campbell, same place. Filed Aug. 5, 1887. Serial No. 246,178. (No model.)



Claim.—1. A register of the character described, comprising a body, A, provided with the clamping-bar G, having the arm *x*, the tube *y*, attached to said arm and having the slot *z*, the sliding bar *b* in said tube, the wheel *m*, journaled at the lower end in said bar, the spring *g*, nut *f*, rod K, pivoted arm H, pawl L, stop P, dial B, and hand *t*, substantially as described.

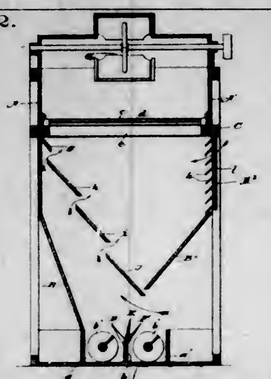
2. In a device of the character described, the combination of the body A, the plate *k*, adjustably secured to said body, the spring H, pivoted to said plate and provided with the spring-pawl L, a vertically-sliding bar, *b*, provided with a wheel at its lower end, a support for said bar, a rod, K, pivoted to said spring and engaging said bar, and a toothed dial actuated by said spring-pawl, substantially as described.

3. In a device of the character described, the body A, having the stops N P, the toothed dial B, journaled on said body and provided with the stud T, and the dial C, in combination with the adjustable plate *k*, spring H, having the pawl L, clamp G, having the arm *x* and slotted tube *y*, the bar *b*, disposed in said tube and provided with the wheel *m*, spring *g*, and nut *f*, and the rod K, secured to said bar and pivoted to the spring H, substantially as described.

375,782. MIDDLINGS-PURIFIER. Hiram W. Stone, Jr., Morris, Minn. Filed Feb. 9, 1887. Serial No. 227,053. (No model.)

Claim.—1. In combination with the casing A, the riddle consisting of a series of screens of varying-sized mesh, all of said screens being on the same plane, the downwardly-inclined separate plates *g h i j*, extending longitudinally of the casing below the riddle, said plates being arranged one above the other with a space separating their adjoining edges, whereby the meal can pass from the riddle onto the plates and then pass from one plate to the other, the meal in its passage from one plate to the other being subjected to the action of the

375,782.

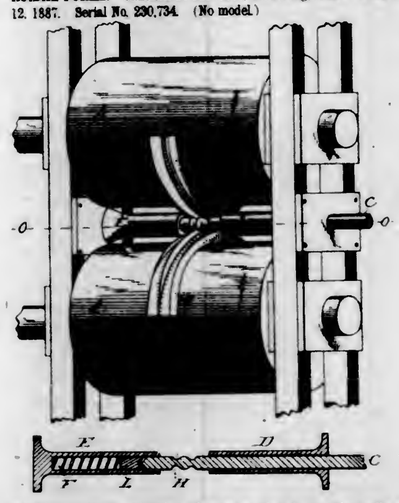


air through the spaces separating the adjoining edges of the plates, and the suction-fan G, located at the top of the casing above the riddle and providing an ascending current of air through the riddle, the conveyer-boxes below the plates and receiving the meal therefrom, and the hinged deflector-plates D E F, registering vertically with one of the divisions of the riddle above, as set forth.

2. The combination of the casing A, the suction-fan G at the top thereof, the riddle C, arranged longitudinally within the casing below the suction-fan, so that the latter will cause an ascending current of air to pass through the riddle, the opening M^1 in one side of the casing below the riddle, adjusting-slats *k*, the chute arranged below the riddle, and the series of transversely-inclined longitudinal plates located opposite the opening M^2 and one above the other in an inclined series, and having their adjoining edges separated by an intervening space, whereby the air entering therethrough is caused to circulate through the spaces between the said inclined plates, and thus the meal falling from the riddle onto the plates and passing from plate to plate is subjected to the action of a vertical ascending current of air by means of the fan G, and also a transverse current through the opening M^1, as set forth.

3. In combination with the casing of the machine having an opening in the side A′ thereof, the suction-fan, the vibrating riddle consisting of a series of screens of varying-sized mesh, the downwardly-inclined plates *g h i j*, extending longitudinally of the casing, the slats *k k*, covering the opening in the side A′, the boards B and B′, forming the chute, the downwardly-inclined deflector-plates D E F^3, the conveyer-partition *b*, to which said latter plates are hinged, and the two conveyers *b′ b′*, substantially as described.

375,783. DEVICE FOR ROLLING METALLIC BODIES TO SPHEROIDAL FORMS. Charles F. Tebbetts, Fitchburg, Mass. Filed Mar 12, 1887. Serial No. 230,734. (No model.)



Claim.—1. In combination, the supporting-frame, the rolls supported thereby, and the dies carried by said rolls, the said dies being tapered from their finishing to their forward ends, substantially as described.

2. In combination, the rolls A A and the extensible and yielding guide or holder for controlling the work, substantially as described.

3. In combination, the rolls A A and the extensible and yielding guide or holder consisting of the parts D and E and the spring and plug, substantially as described.

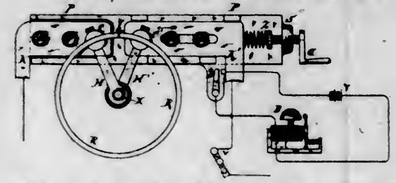
4. In combination, the rolls A, suitable supports for the work, and the dies B B, provided with roughened edges adapted to rotate the work, substantially as described.

5. In combination, the rolls having suitable dies and the guide and support for the work positioned between the rolls and upon either side of the working-dies, said guides being also in the plane of the axes of said rolls, substantially as described.

6. In combination, the rolls having suitable dies and the tubular guides, substantially as set forth.

7. In combination, the rolls having suitable dies and the guide or guides extending between the contiguous surfaces of the rollers and in line with the plane of their axes, substantially as described.

375,784. APPARATUS FOR ELECTRIC WELDING. Elihu Thomson, Lynn, Mass. Filed July 25, 1887. Serial No. 245,187. (No model.)



Claim.—1. In an electric welding apparatus, movable clamping-jaws adapted to be forced together during the welding process on a line corresponding to the curve of the pieces to be welded, and means for passing a welding-current through the pieces, substantially as described.

2. In an electric welding apparatus, the combination, with a swiveled or pivoted stationary clamping-jaw, of a swiveled or pivoted moving jaw adapted to be forced toward the stationary jaw during the operation of welding, and means for passing a welding-current through the pieces, substantially as specified.

3. In an electric welding apparatus, swiveled or pivoted clamping-jaws, one of which is movable to and from the other, and means for passing a welding-current through the pieces, substantially as specified.

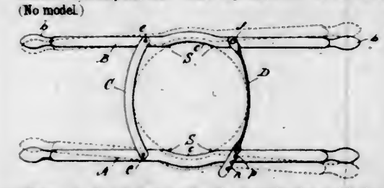
4. In an electric welding apparatus, swiveled or pivoted clamping-jaws, one of which is mounted on a slide movable to and from the other jaw, and means for passing a welding-current through the pieces.

5. In an electric welding apparatus, the combination of pivoted or swiveled clamping-jaws, one of which is adapted to be forced toward the other in the operation of welding, pivoted guiding-arms for said jaws turning on a center substantially coincident with the center of the curved pieces to be welded and giving a partially-rotating motion to said clamping-jaws, and means for passing the welding-current through the pieces, substantially as specified.

6. In an electric welding apparatus, the combination of clamping-jaws adapted to be forced together during the operation of the welding and a signaling apparatus actuated by the movement of said jaws to a predetermined point.

7. In an electric welding apparatus, the combination of a stationary clamping-jaw, a movable clamping-jaw mounted on a slide, and a signaling apparatus actuated by the movement of said slide at a predetermined point.

375,785. BARREL-CARRIER. Leonidas E. Webb and Theodore Johnson, Indianapolis, Ind. Filed Sept. 26, 1887. Serial No. 250,667. (No model.)



Claim.—1. In a barrel-carrier, the combination, with the pair of parallel bars forming handles, and the link connecting said bars, of the latch-bar consisting of a thin flexible strip of metal pivoted at one end to one of said bars, detachably secured at its free end to the other bar, and adapted to embrace the contour of a barrel with a yielding pressure, substantially as specified.

2. In a barrel-carrier, the combination of the bars A and B, the

curved link C, consisting of two metallic strips pivoted at both ends to opposite sides of said bars, the flexible latch-bar D, pivoted at one end to one of the bars and having notches n at the opposite end, and the pin *p*, all arranged to co-operate in the manner and for the purpose specified.

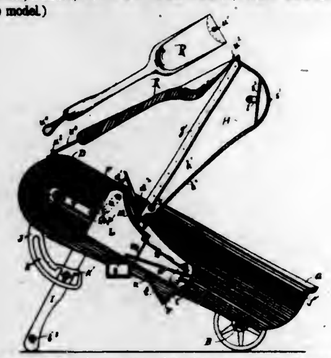
375,786. **TOOL-HANDLE.** ARTHUR C. WELLS, Manchester, County of Lancaster, England. Filed Aug. 9, 1886. Serial No. 210,418. (No model.)



Claim.—1. In a tool-handle, a metallic outer shell constructed with a socket-bore, a holding-chamber curvilinear in longitudinal section midway of said bore, and an internal circumferential stop-rib at the inner end of said bore, and having a central hole in the outer end of the shell to admit an ejecting-pin, in combination with a wooden plug fitted to said socket-bore, substantially as herein specified.

2. The within-described metallic shell having a curvilinear thrust-swell between a terminal ferrule-neck and a contracted waist, and constructed with a smooth cylindrical socket-bore within said neck and waist, a holding-chamber curvilinear in longitudinal section within said thrust-swell, and a central hole in the outer end of the shell, in combination with a wooden plug expanded within said socket-bore and holding-chamber, for the purposes set forth.

375,787. **BERRY OR SEED GATHERER AND CLEANER.** GEO. WILKIE, Dundee, New York. Filed Dec. 30, 1886. Serial No. 223,002. (No model.)



Claim.—1. In a berry or seed gatherer, a suitable frame mounted upon wheels at its forward end and provided with supporting legs or handles at its rear end, a hopper pivoted in said frame and having its free end supported in the forward part thereof, in combination with a fanning and cleaning mill located below and at the rear of the pivotal point of the hopper, substantially as described.

2. In a berry or seed gatherer, the combination of a suitable frame, a hopper pivoted in said frame and having its free end supported in the forward part thereof, a throat-board located at the pivoted end of said hopper, and a fanning and cleaning mill also located in said frame, substantially as described.

3. In a berry or seed gatherer, a suitable frame and a hopper pivoted therein provided upon its rear end with suitable projections, in combination with a spring-actuated throat-board hinged to said frame and operated by said projections, in the manner substantially as described.

4. In a berry or seed gatherer, a suitable frame and a hopper pivoted therein, said hopper being provided with a hook upon its free end, in combination with a paddle having an aperture in its end adapted to engage with said hook, whereby the hopper can be raised and emptied from the rear, substantially as described.

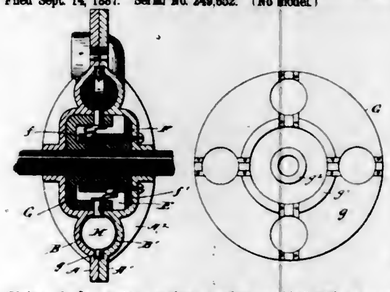
5. In a berry or seed gatherer, a pivoted hopper having a hook upon its free end, in combination with a paddle provided with a hole in its scoop portion, and a loop or hole in its handle, and a hook upon the body portion of the gatherer, with which said loop is adapted to engage, substantially as described.

6. In a berry or seed gatherer, a suitable frame mounted upon wheels in front, in combination with a pair of arms pivoted to the rear portion of said frame and connected by cross-bars, and braces having one end pivoted to said frame and provided with longitudinal slots in which one of said cross-bars is confined and adapted to operate, the upper wall of said slots being provided with locking-notches for engaging with said cross-bars when the arms are serving as legs, in the manner substantially as described.

7. In a berry or seed gatherer, a frame mounted upon wheels in front and having a projecting crown or flange on top of its front portion, in combination with a hopper mounted therein and having a crown or flange upon its top edges fitting within said flange upon the frame, substantially as described.

8. The combination, in a berry or seed gatherer, of a receiving and dumping hopper pivoted in a traveling frame, and having its free end supported in the forward part thereof, said hopper being deepest at its free end and gradually decreasing in depth toward its pivotal point, a cleaning-mill located below the pivotal point of said hopper, and a fan located at the rear thereof, substantially as described.

375,788. **ROTARY ENGINE.** DAVID WILLIAMSON, New York, N. Y. Filed Sept. 14, 1887. Serial No. 249,652. (No model.)

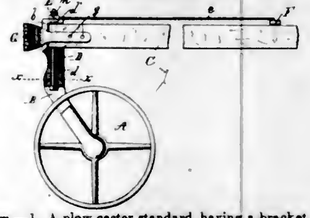


Claim.—1. In a rotary engine, a casing provided with an annular fluid-chamber, in combination with a concentric disk carrying vanes, the disk being located so as to divide the chamber into two parts, the fluid occupying the space on each side thereof, substantially as described.

2. A rotary engine consisting of a suitable casing provided with a fluid-chamber and inlet and exit ports, in combination with a disk carrying feathering vanes, and a device operating to feather said vanes.

3. In a rotary engine, a suitable casing provided with a fluid-chamber and with inlet and exit ports, an abutment located in said chamber between the inlet and exit passages in such a manner as to separate the inlet-fluid from the exhaust-fluid, the said abutment having a slit, and a vane-carrying disk running through said slit and the fluid-chamber, substantially as and for the purpose set forth.

375,789. **PLOW-WHEEL.** JOSEPH M. YOUNG, Moline, Ill. Filed Sept. 13, 1887. Serial No. 249,580. (No model.)



Claim.—1. A plow-caster standard having a bracket projecting upward from its upper end, and having the upper end of the bracket extending over and parallel with the top of the standard, the upper end of the bracket and the standard having coincident openings, substantially as described, for the purpose specified.

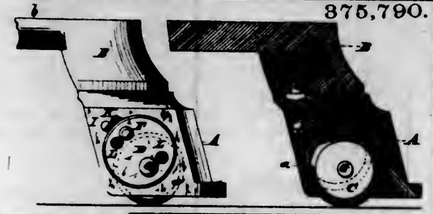
2. The combination, with the plow-beam, and the caster-standard supporting the plow-beam on its upper end, which end is provided with a bracket extending up in front of and over the said plow-beam, of the bolt passing through the caster-standard, the beam, and the bracket, substantially as described, for the purpose set forth.

3. The combination, with the plow-beam, the caster-standard, and the bracket integral with the standard of the caster and embracing the end of the plow-beam between it and the top of the said standard, of the bolt passing vertically through the beam, standard, and bracket and interlocking with the standard, and the lever fitted to the bolt, substantially as and for the purpose described.

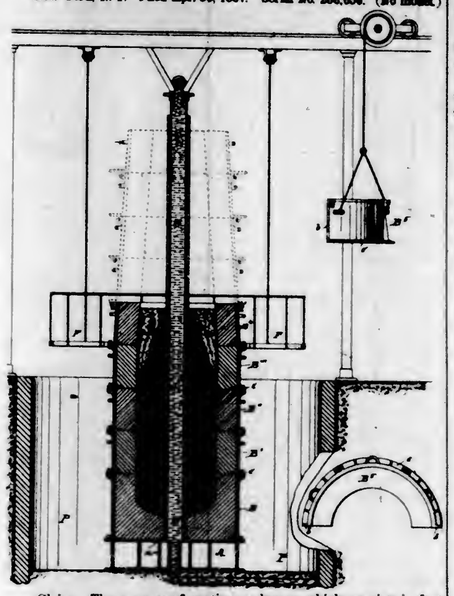
375,790. **STOVE-LEG CASTER.** ALFRED ZUBLER, Buffalo, N. Y. Filed Aug. 16, 1886. Serial No. 211,065. (No model.)

Claim.—A pair of disks and their connecting-rod H, eccentrically attached thereto, in combination with the caster C, its axle G, eccentrically attached to said disks, the relatively fixed part A, in which rod H has its bearings, the stop I in said fixed part A, and the lug K, which engages said stop A, to prevent the disks from revolving beyond a certain point, substantially as set forth.

375,790.

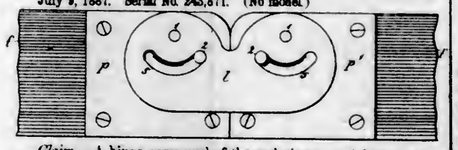


375,791. **PROCESS OF CASTING ORDNANCE.** JOHN F. ALLEN, New York, N. Y. Filed Apr. 30, 1887. Serial No. 236,659. (No model.)



Claim.—The process of casting ordnance which consists in first casting a portion of the piece; second, centrally cooling that portion; third, casting another portion onto the first portion and then centrally cooling that portion, and, fourth, if desired, in like manner casting and then successively cooling successive portions for the purpose of crystallizing the portions in oblique and conical overlapping layers, as set forth.

375,792. **HINGE.** FRANCIS P. BAILEY, Indianapolis, Ind. Filed July 9, 1887. Serial No. 243,871. (No model.)



Claim.—A hinge composed of the end pieces, *p p'*, having pivot-pins 1 and guide-pins 2, the link *l*, having slots *s* concentric with the pivots 1, by which the link is fastened to the plates of the hinge, the guide-pins 2 traversing the slots formed in the link, all combined substantially as described.

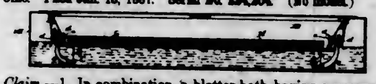
375,793. **HAMMOCK-SPREADER.** AUGUSTUS BRAIS, North Weymouth, Mass. Filed Nov. 14, 1887. Serial No. 255,085. (No model.)



Claim.—1. As a new article of manufacture, a hammock-spreader circular in transverse section and curved longitudinally, and provided on its lengthwise-convex surface with a series of hooks having the spring-points which touch or nearly touch the spreader, and are arranged substantially as shown, and for the purpose specified.

2. A hammock-spreader circular in transverse section and curved longitudinally, and provided on its lengthwise-convex surface with a series of hooks having the spring-points which touch or nearly touch the spreader, and are arranged as shown, in combination with a hammock, as set forth.

375,794. **BLOTTER-BATH.** CHARLES M. BEARDSLEY, Cleveland, Ohio. Filed Jan. 13, 1887. Serial No. 224,304. (No model.)



Claim.—1. In combination, a blotter-bath having a reservoir for holding fluid, a blotter-holder removed from the fluid-chamber, and capillary conducting material for conveying moisture from the reservoir to the holder, substantially as set forth.

2. In a blotter-bath, the combination of a fluid-reservoir and a blotter-holder with a capillary conductor, and means, substantially as described, to regulate the flow of fluid through the conductor.

3. The combination of a water-reservoir and a blotter-holder, with a capillary conductor between said parts having a sheath in which the wick is inclosed, substantially as set forth.

375,795. **DEVICE FOR OBTAINING VERTICAL LINES.** JOSEPH BEYERLE, Vallejo, assignor of one-half to W. F. Fountain, Oakland, Cal. Filed Feb. 10, 1887. Serial No. 227,213. (No model.)



Claim.—A device for finding a point which shall be in a line perpendicular to a table or surface and passing through a given point thereon, consisting of a plate attachable to said table or surface, a rotary shank or spindle pivoted with a universal joint to said plate, and an extensible leg jointed to the spindle and provided with a locking-screw by which it is fixed at any desired angle with said plate, substantially as herein described.

375,796. **MANUFACTURE OF LAMP-CHIMNEYS.** GEORGE W. BLAIR, Pittsburg, Pa. Filed June 8, 1887. Serial No. 240,867. (No model.)



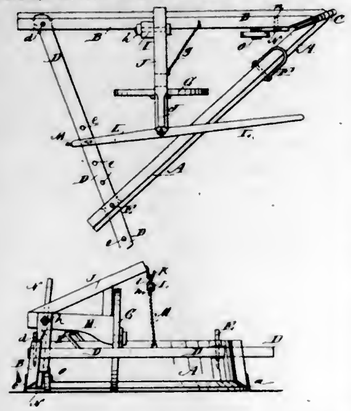
Claim.—1. An improvement in the manufacture of lamp-chimneys, which consists in turning in the chimney-top and then flaring it, substantially as and for the purposes described.

2. An improvement in the manufacture of lamp-chimneys, which consists in turning in the chimney-top and then flaring and figuring it, substantially as and for the purposes described.

3. An improvement in the manufacture of lamp-chimneys, which consists in turning in the chimney-top, then flaring it by a rotary mandrel, and subjecting the chimney to contact with a box having lateral impressions, substantially as and for the purposes described.

4. An improvement in the manufacture of lamp-chimneys, which consists in turning in the chimney-top, then flaring it by a rotary mandrel, subjecting the side of the chimney to contact with a box having lateral impressions, and subjecting the top edge of the chimney to contact with a rotary surface at the base of the box, whereby it is polished, substantially as and for the purposes described.

375,797. **ROAD-GRADER.** JOHN E. BRANCH, Sioux City, Iowa. Filed Apr. 23, 1887. Serial No. 235,864. (No model.)

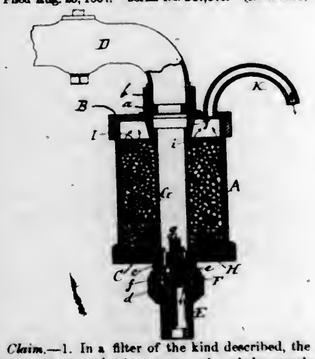


Claim.—1. A grader constructed with a mold-board and landside, A B, an axle, H, pivoted at the landside, a wheel, G, on the axle and traveling between the mold-board and landside, and a tie chain or brace, *g*, connecting the axle to the landside, substantially as shown and described.

2. In a grader, the combination, with a mold-board and landside, A B, and a cross-bar connecting them, an axle, H, pivoted to the landside, a wheel, G, on the axle, and a connection, J, to the axle, of a lever, L, fulcrumed to the axle-frame and connected to the cross-bar, substantially as described, for the purposes set forth.

3. A grader constructed substantially as herein shown and described, and comprising a mold-board, A, and landside B, hinged together at C, a cross-bar, D, allowing relative lateral adjustment of the parts A B, an axle, H, pivoted at the landside, a wheel, G, on the axle, a lever, L, fulcrumed to the axle-frame and connected to the cross-bar D, and a lever, N, fulcrumed to the forward end of the grader and provided with a roller or wheel, O, as herein set forth.

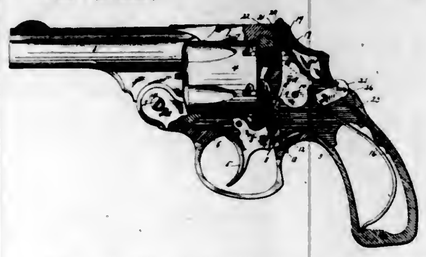
375,798. **WATER-FILTER.** FREDERICK BUCHHORN, Chicago, Ill. Filed Aug. 25, 1887. Serial No. 247,575. (No model.)



Claim.—1. In a filter of the kind described, the combination of a filtering-chamber having a screw-threaded extension on, and a discharge-pipe, K, connected to, its upper end, a central open tube, G, having the perforated diaphragm H upon its lower end over the bottom of the filter-chamber, and the perforated diaphragm and rubber ring J, surrounding the top of the tube, said ring lying between the diaphragm I and top of the chamber, as set forth.

2. The combination of casing A, having the screw-threaded necks *b* and *c* and the pipe K at the top thereof, the tube G, perforated at its bottom, the perforated diaphragms H and I, set over the tube G at bottom and top, and a notched disk, F, packing-ring *e*, and nozzle E, secured to the neck on the lower end of the casing, substantially in the manner and for the purpose set forth.

375,799. **FIRE-ARM.** MARTIN BYE, Worcester, Mass., assignor to Sullivan Forehand, same place. Filed Oct. 21, 1887. Serial No. 252,949. (No model.)



Claim.—1. In a fire-arm, a hammer-locking lever pivoted in the upper part of the handle, with its inner end adapted to engage the hammer to lock the same and its outer end extending through the handle and into the path of movement of the barrel-catch, for the purpose stated, substantially as shown and described.

2. In a fire-arm, the combination, with the barrel-catch hung in the upper part of the handle, of a hammer-locking lever pivoted within the handle, with its inner end adapted to engage the hammer to lock the same and its outer end extending into the path of movement of the barrel-catch to be engaged thereby to unlock the hammer, in the manner substantially as shown and described.

3. In a fire-arm, the combination, with the barrel-catch hung in the upper part of the handle at a point in front of the hammer and cut out upon its inner surface to allow of the hammer moving freely back and forth within said catch, and said hammer hung within the handle, of a hammer-locking lever pivoted within the handle, with its inner end adapted to engage and lock the hammer and its outer end extending into the path of movement of the barrel-catch, for the purpose stated, substantially as set forth.

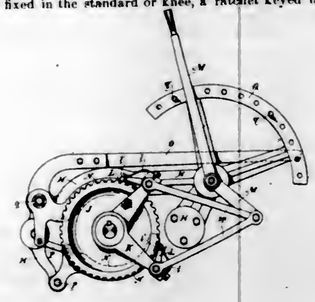
4. In a fire-arm, the combination, with a sear for cocking the hammer, provided with an adjusting-screw extending through the lower end thereof to engage the trigger, of an adjusting-screw secured in the stock or handle to bear at its inner end against the lower end of said sear, for the purpose stated, substantially as shown and described.

5. In a fire-arm, the combination, with the sear for cocking the hammer, of an adjusting-screw secured in the stock or handle and adapted to bear at its inner end against the lower end of said sear, for the purpose stated, substantially as shown and described.

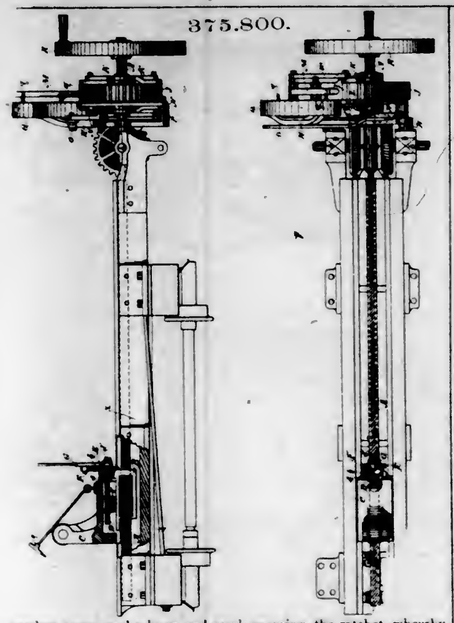
375,800. **SAW-MILL SET-WORKS.** WILLIAM A. CAMPBELL, Portland, Oreg. Filed Aug. 13, 1887. Serial No. 246,907. (No model.)

Claim.—1. In saw-mill set-works, the combination of the standard or knee sliding in the main frame, a nut carried by the standard or knee and having a sliding movement therein, a main operating-screw working in the nut, and a screw set loosely in the nut and working in a nut fixed in the standard or knee, whereby said standard or knee may have an adjustment independent of the primary adjustment received through the main screw, substantially as herein described.

2. In saw-mill set-works, the combination of a standard or knee sliding in the main frame, a nut carried by said standard or knee and having a sliding movement therein, a main operating-screw working in the nut, a supplementary screw set loosely in the nut and working in a nut fixed in the standard or knee, a ratchet keyed on the independent screw, and a lever and pawl engaging the ratchet, whereby said independent screw is operated and the standard or knee given an adjustment independent of the primary adjustment received through the main operating-screw, substantially as herein described.

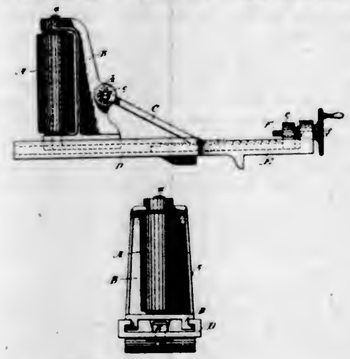


375,800.



3. In saw-mill set-works, the sliding standard or knee and the screw by which it is adjusted, in combination with the means for operating the screw, consisting of the ratchet-wheel keyed on the screw the radial arms pivoted loosely on the hub of the ratchet, and the alternately-operating pawls carried by said arms and having projections on their sides, the pivoted lever and the links connecting the lever with the pawl-carrying arms, and the means for disengaging said pawls, consisting of the pivoted levers N, operating against the projections on the side of the pawls, and the pivoted operating-lever O, connected with the disengaging-levers by the pins and links, substantially as herein described.

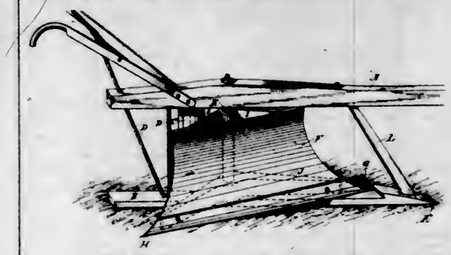
375,801. **SAW-MILL STOCK-ROLLER.** WILLIAM A. CAMPBELL, Portland, Oreg. Filed Aug. 13, 1887. Serial No. 246,908. (No model.)



Claim.—1. The main frame, the bracket adapted to slide thereon, and a pawl attached to the back of the bracket, in combination with a rack mounted to slide in the main frame and engaged by said pawl, and a roller carried by the bracket and adapted to be set up and held in its adjusted position by said pawl and rack, substantially as described.

2. A saw-mill stock-roller mounted in a sliding bracket and a pawl attached to the back of the bracket, in combination with a rack sliding in the main frame, with which said pawl engages, and an independent screw engaging a lug on the end of the rack, by which said rack may be adjusted to adjust the roller to the fractional part of an inch, substantially as described.

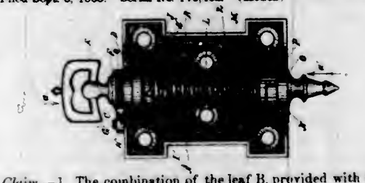
375,802. **SIDE-HILL PLOW AND ROAD-GRADER.** ELISHA CLARK, Felton, Cal. Filed May 11, 1887. Serial No. 237,906. (No model.)



Claim.—1. A reversible plow consisting of a beam, the landside or shoe standing in line below it and rigidly connected therewith, having a single point formed upon its front end, in combination with a double-ended mold-board having its rear and central portion journaled upon a fixed vertical post extending from the plow-beam to the landside or shoe, so that the mold-board may swing across the front of the landside to stand upon either side, with the points engaging a corresponding slot or groove made in the plow-point, substantially as described.

2. A reversible plow consisting of the beam, a shoe or landside standing parallel therewith and below it and rigidly united to it by means of the standard at the rear, and a colter having a curve at the lower end which enters the plow-point formed on the front of the shoe, while the other end is secured to the plow-beam, in combination with a mold-board having points at either end which may engage a groove or channel at the rear of the plow-point, and a vertical post extending from the plow-beam to the shoe to which the rear central portion of the mold-board is journaled, so that it may swing across the front beneath the plow-beam to engage either of its points with the plow-point, the mold-board standing either at the right or left of the beam, substantially as herein described.

375,803. **SPRING-HINGE.** BENONI COLVIN and JOHN WOLFLEY, Freeport, Ill.; said Wolfley assignor, by direct and mesne assignments, to the Luce Adjustable Spring Hinge Company, Port Washington, Wis. Filed Sept. 8, 1885. Serial No. 176,462. (Model.)



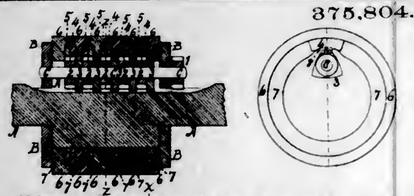
Claim.—1. The combination of the leaf B, provided with the ear N, formed with a radial slot whose inner end forms a portion of the axial pintle-bearing of the ear, the spring-cap M, having on one face the lug P, adapted to enter the outer end of said radial slot and to complete said pintle-bearing, and on its opposite face suitable projections, substantially as described, for receiving and holding in place the end of a coiled spring, the spring Z, whose end engages with said projections, and means, substantially as shown and described, for supporting the opposite end of said spring.

2. The combination of the leaf B, having the axially-bored ear D and the radially-slotted ear N, the leaf A, having the centrally-bored ear C, and the ear O, having on its inner face a gudgeon lying in the inner end of the slot in the ear N, the cap M, resting on the inner end of said gudgeon, the pintle L, passing through the ears C D and entering a socket in the cap M, the cap I, mounted on the pintle and rotating therewith, and the spring Z, supported by the caps M I, substantially as shown and described, and for the purpose set forth.

3. The combination, with the leaves A B, the cap M, connected rigidly with the leaf B, and the pintle L, passing through and connecting said leaves, of the cap I and ratchet-wheel Q, both rotating with the pintle but detachable therefrom, the spring Z, mounted between the caps I M and held in place thereby, and the pawl H, co-operating with the ratchet-wheel Q, substantially as shown and described.

375,804. **REGISTERING AND NUMBERING DEVICE.** CHARLES H. DAVIDS, Brooklyn, N. Y. Filed Oct. 30, 1886. Serial No. 217,620. (No model.)

375,804.



Claim.—1. A polygonal rotating stop, in combination with a rotating indicator-wheel having an internal circular face in its web, said face having a recess so arranged that at each rotation of said wheel the several angles of said stop consecutively engage said recess, permitting partial rotation of said stop and consequent operation of mechanism connected therewith, all combined with mechanism operating said stop, substantially as herein shown and described.

2. An indicator-wheel carrying a toothed internal gear-segment which intermittingly meshes with and operates a spur-pinion, the latter meshing with and operating an internal gear-wheel attached to and pivoted with a second indicator-wheel, both of said indicator-wheels being pivoted concentrically, all combined substantially as herein shown and described.

3. An indicator-wheel carrying a toothed internal gear-segment which intermittingly meshes with and operates a spur-pinion which is atttached to and pivoted with a polygonal rotating stop, the several sides of which consecutively engage with an internal circular face in a rotating indicator-wheel, said face having a recess so arranged that at each rotation of said wheel said recess admits an angle of said stop synchronously with the operation of said spur-pinion, all combined with each other and with mechanism operated by said spur-pinion, substantially as herein shown and described.

375,805. **MAIL-BAG.** JOHN E. DENNIS, Jr., Glenbeulah, Wis. Filed Nov. 2, 1887. Serial No. 254,124. (No model.)

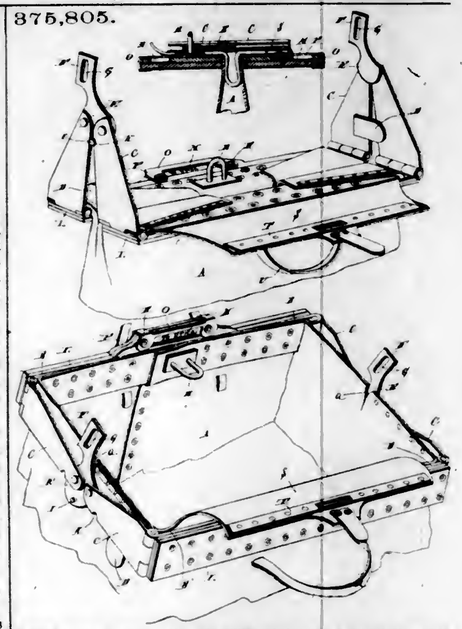
Claim.—1. A mail-bag having the two pairs of re-enforce strips on opposite sides of its mouth, one of the said strips of each pair having a slot or opening, and the tags secured between the opposing sides of the pairs of strips and exposed through the slots therein, substantially as described.

2. The combination, with a mail-bag, of the arms B, secured to opposite sides of its mouth, the arms C, hinged to the arms B, and the link-plates E, pivotally connected to the inner ends of the said arms C, for the purpose set forth, substantially as described.

3. The combination, with a mail-bag having its mouth re-enforced or strengthened on opposite sides, for the purpose set forth, and the



375,805.



hinged arms C, connected to the sides of the mouth of the bag, and the plates E, pivotally connecting their inner ends together, whereby the mouth of the bag may be distended, for the purpose set forth, substantially as described.

4. The combination, with the mail-bag having the staple on one side of its mouth and provided with the inflexible parallel re-enforce strips L on opposite sides of its mouth, for the purpose set forth, of the flap extending from one side of the mouth of the bag, adapted to fit over the same and provided with an opening to engage the staple, substantially as described.

5. The combination, with the mail-bag head, of the arms C, pivoted to opposite sides thereof, the staple secured to one side of the head, and the link-plates E, pivotally connected to the inner end of the hinged arms C, and having the slots to engage the staple when the said arms are folded on the closed head of the bag, substantially as described.

6. In a mail-bag head, the combination of the hinged arms C, having the recesses K in their opposing edges, and the slotted link-plate E, pivotally connected to the inner end of arms C, and having the studs I, adapted to engage the recesses K when the arms come together, for the purpose set forth, substantially as described.

7. The combination, with a mail-bag head, of the hinged arms C, having their inner ends pivotally connected together, one of the said arms C of each pair having a projecting lug, B, adapted to engage its companion arm when the arms C are folded together, substantially as described.

8. The mail-bag having the staple H in one side of its mouth and the flap S on the opposite, adapted to close over the mouth of the bag and engage the staple, the arms C, pivoted to opposite sides of the mouth of the bag, and the link-plates E, connecting the inner ends of said arms and having the slots to also engage the staple when the said arms C and link-plates are folded down over the flap, substantially as described.

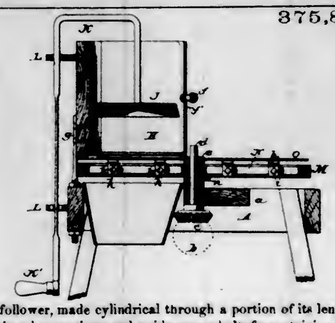
9. In a mail-bag, the combination of the hinged arms C, connected to the sides of the mouth of the bag and having their inner ends pivotally connected together, whereby the mouth of the bag may be distended, and the link-plates E, connected to the arms C, as set forth.

10. A mail-bag having the re-enforced strips L on each side of the mouth of the bag, between which strips the tags are fitted, and the clamps O, fitted over the re-enforce strips for holding the tags in place, as set forth.

375,806. **VEGETABLE-CUTTER.** WILLIAM DOERING, Kansas City, Mo. Filed June 12, 1886. Serial No. 204,999. (No model.)

Claim.—1. In a vegetable-slicer, the combination, with a supporting-frame, of rotary slicing wheel or cutter, and box or receptacle placed over said wheel, a follower adapted to enter said box, a supporting-rod

375,806.

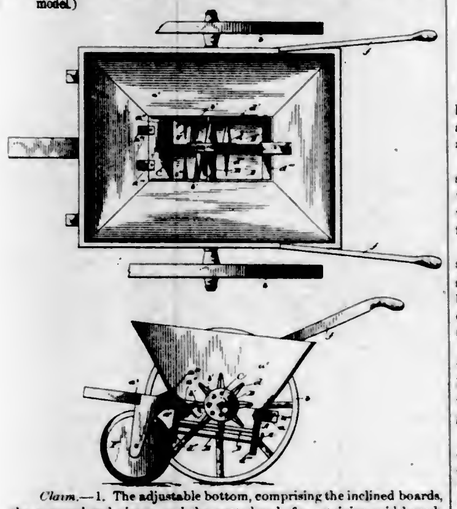


for the follower, made cylindrical through a portion of its length and angular in other portions, and guides or eyebolts for sustaining the rod, one having an elongated eye to receive the angular part of the rod.

2. In combination with frame A, wheel or cutter F, and gearing for rotating the same, cross-rod G, box H, provided with slots *f'*, clamping-bolts *f*, and upright bolts *g g*, passing through frame A and provided with nuts.

3. In combination with wheel F, having arms N, the latter provided with elongated horizontal slots *j*, knives O, provided with ears *h*, and bolts *i*, passing through the ears and slots, substantially as shown, whereby the blades may be adjusted horizontally to increase or decrease the thickness of the cut.

375,807. **MANURE-DISTRIBUTER.** MOSES P. FARIS and HUGH A. FALLS, Bethany, S. C. Filed Oct. 4, 1887. Serial No. 251,471. (No model.)



Claim.—1. The adjustable bottom, comprising the inclined boards, the grooved end pieces, and the nutted rods for retaining said boards in position, substantially as shown and described.

2. The combination, with the hopper, the carrying-wheels, and their axle, of the central box having the grooved end pieces, the inclined boards, and the threaded rods connecting said end pieces and having handled nuts screwed thereon, substantially as shown, and for the purpose stated.

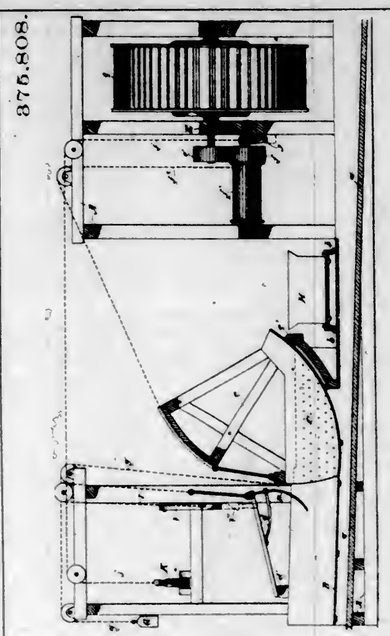
3. In a fertilizer-distributer of the class herein described, the combination, with the hopper, the carrying-wheels, and their axle, of the central distributing-wheel having series of knives or teeth, the opposite upper and lower knives or teeth, the adjustable inclined boards, the grooved end pieces, and the threaded rods connecting said end pieces, substantially as shown and described.

375,808. **ROCK-SEPARATING APPARATUS FOR MINING-SLUICES.** LAWRENCE A. FENNER, Virginia City, Mont. Filed Apr. 28, 1887. Serial No. 236,529. (No model.)

Claim.—1. An apparatus for separating the larger rocks from the finer material, comprising a horizontal grating, a perforated or grated scoop hinged or pivoted behind the grate, an underlying sluice, and means for dumping the scoop, substantially as described.

2. An apparatus for separating the larger rocks from the finer material, comprising a fixed horizontal grating, a perforated scoop

375,808.



hinged or pivoted behind said grating, means for dumping the scoop, an underlying sluice, and a vertical pivoted grating between the horizontal grating and scoop, substantially as described.

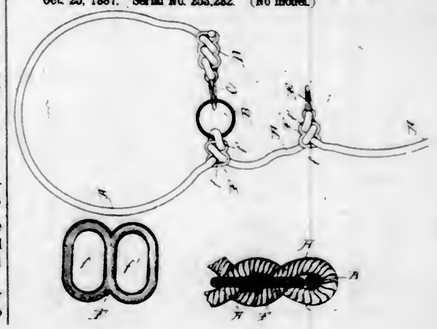
3. The perforated or grated scoop having a frame with a pivotal shaft, whereby it may be oscillated to dump its load, in combination with the means for operating it, consisting of the friction-gearing, the winding-drum, and a cable connected with said drum and with the frame of the scoop, substantially as herein described.

4. In an apparatus for separating rock from finer material, the swinging perforated or grated scoop having a frame with a pivotal shaft, in combination with friction-gearing, a winding-drum, and a cable attached to the drum and to the frame of the scoop, a brake for controlling the movement of the winding-drum, and a lever and connecting cable, substantially as herein described.

5. In an apparatus for separating rocks from finer material the vertical grating having a frame with a horizontal pivoted shaft, whereby it may be moved through an arc in a vertical plane, in combination with a lever and cable for raising the grate, and a fixed horizontal grating below the vertical grating, substantially as herein described.

6. The swinging perforated or grated scoop having a frame with a pivotal shaft, the friction-gearing, a winding-drum and connecting cable for swinging the scoop to dump its load, a weight and connecting cables for assisting in bringing it back to position, and a brake and lever and connections for controlling the movement of the winding-drum, substantially as herein described.

375,809. **HALTER, &c.** ALBERT G. GARFIELD, Chicago, Ill. Filed Oct. 25, 1887. Serial No. 253,282. (No model.)



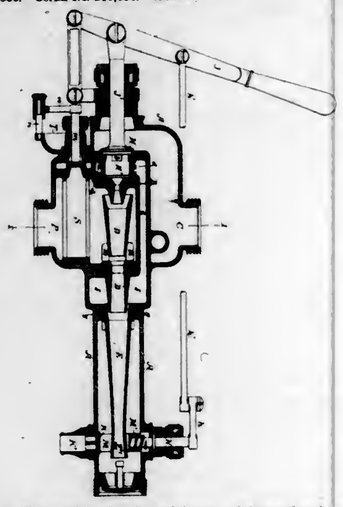
Claim.—1. The rope halter consisting in the combination of rope A, snap C, secured upon the end of said rope, and ring B, and double ring F, having two openings, *f f'*, through each of which the rope is passed twice in opposite directions, substantially as specified.

2. The horse neck-halter consisting in the combination of rope A, ring B, snap C, splice-piece D, snap E, and double rings F F, each having two oblong openings, *f f'*, through each of which the rope is twice passed in opposite directions, substantially as specified.

3. The combination of a rope with a ring or other article, and a double ring, F, having two openings, *f f'*, said rope passing through said openings, and through at least one of said openings twice in opposite directions, substantially as specified.

4. The combination of a single rope with a double ring, F, secured at an intermediate position between the ends of the rope, and having two transversely-oblong openings, *f f'*, through each of which the rope passes twice, so as to pull in opposite directions, whereby the double ring is held immovable by the strain or tension upon the rope, substantially as specified.

375,810. INJECTOR. JOHN R. GOEHRING, Philadelphia, Pa., assignor to Henry Belfield and T. Broom Belfield, both of same place. Filed Nov. 23, 1886. Serial No. 219,656. (Model.)



Claim.—1. The combination, in an injector, of forward and rear steam-nozzles, a passage leading from one to the other, a ported tubular steam-valve, and a ported barrel to which said valve is adapted, whereby as the valve is withdrawn from said barrel the steam will be admitted successively to the first and second nozzles, all substantially as specified.

2. The combination of the steam-nozzle having a ported tubular barrel with the steam-valve having a rim adapted to close against a seat at the end of said barrel and a tubular projection constructed to close the ports of the barrel and having ports adjacent to the rim, all substantially as specified.

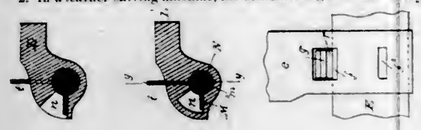
3. The overflow-valve having an operating-nut, and a yoke supporting the latter, all substantially as specified.

4. The combination, in a double-tube injector, of the steam-nozzles, combining-tubes, and delivery-tube with an overflow-valve located forward of the rear end of said delivery-tube and having a yoke embracing said tube and carrying the operating-nut of the valve, all substantially as specified.

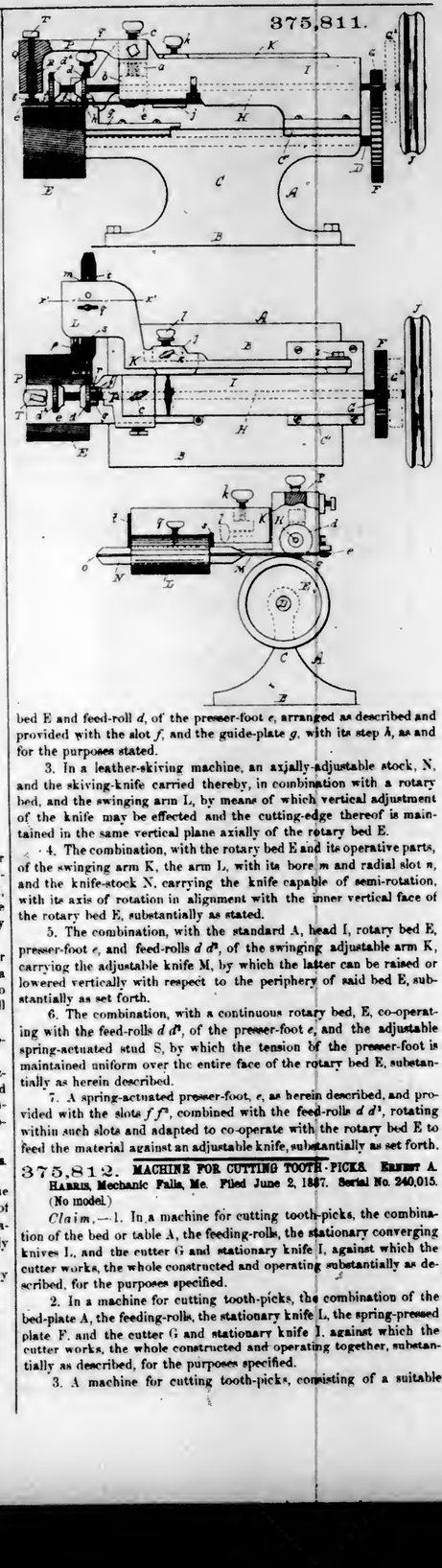
375,811. SKIVING-MACHINE. ERASTUS GOTT, Newton, Mass. Filed June 17, 1887. Serial No. 241,628. (No model.)

Claim.—1. In leather-skiving machines, the combination, with the rotary circular bed, spring presser-foot, feed-rolls, and guide-plate, of the cutter or knife disposed upon a swinging adjustable arm and capable of adjustment varying its position vertically as well as angularly with respect to said bed, substantially as stated.

2. In a leather-skiving machine, the combination, with the rotary



375,811.



bed E and feed-roll *d*, of the presser-foot *e*, arranged as described and provided with the slot *f*, and the guide-plate *g*, with its step *h*, as and for the purposes stated.

3. In a leather-skiving machine, an axially-adjustable stock, N, and the skiving-knife carried thereby, in combination with a rotary bed, and the swinging arm L, by means of which vertical adjustment of the knife may be effected and the cutting-edge thereof is maintained in the same vertical plane axially of the rotary bed E.

4. The combination, with the rotary bed E and its operative parts, of the swinging arm K, the arm L, with its bore *m* and radial slot *n*, and the knife-stock N, carrying the knife capable of semi-rotation, with its axis of rotation in alignment with the inner vertical face of the rotary bed E, substantially as stated.

5. The combination, with the standard A, head I, rotary bed E, presser-foot *e*, and feed-rolls *d d³*, of the swinging adjustable arm K, carrying the adjustable knife M, by which the latter can be raised or lowered vertically with respect to the periphery of said bed E, substantially as set forth.

6. The combination, with a continuous rotary bed, E, co-operating with the feed-rolls *d d³*, of the presser-foot *e*, and the adjustable spring-actuated stud S, by which the tension of the presser-foot is maintained uniform over the entire face of the rotary bed E, substantially as herein described.

7. A spring-actuated presser-foot, *e*, as herein described, and provided with the slots *f f³*, combined with the feed-rolls *d d³*, rotating within such slots and adapted to co-operate with the rotary bed E to feed the material against an adjustable knife, substantially as set forth.

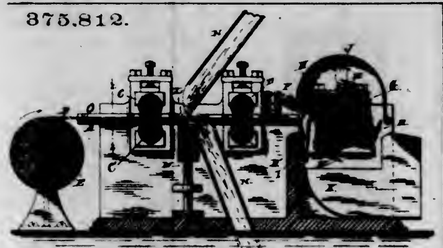
375,812. MACHINE FOR CUTTING TOOTH-PICKS. ERNEST A. HARRIS, Mechanic Falls, Me. Filed June 2, 1887. Serial No. 240,015. (No model.)

Claim.—1. In a machine for cutting tooth-picks, the combination of the bed or table A, the feeding-rolls, the stationary converging knives L, and the cutter G and stationary knife I, against which the cutter works, the whole constructed and operating substantially as described, for the purposes specified.

2. In a machine for cutting tooth-picks, the combination of the bed-plate A, the feeding-rolls, the stationary knife L, the spring-pressed plate F, and the cutter G and stationary knife I, against which the cutter works, the whole constructed and operating together, substantially as described, for the purposes specified.

3. A machine for cutting tooth-picks, consisting of a suitable

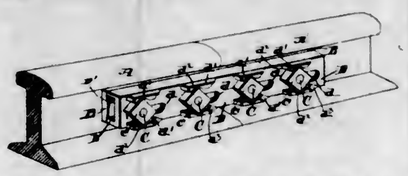
375,812.



frame, a bed-plate, A, guides thereon, feeding-rolls C C' and D D', a stationary knife, L, arranged in the line of the travel of the stock, and the rotating knives H and stationary knife I, against which knives H work, all arranged and combined substantially as set forth.

4. In a machine for cutting tooth-picks, the combination, with the bed-plate, feed-rolls, and rotating knives, of the stationary knife L, held in the line of travel of the veneer, and having an adjustable support, whereby it may be dropped below said line of travel, substantially as and for the purpose set forth.

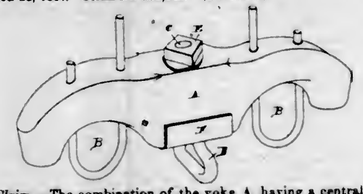
375,813. NUT-LOCK. HENRY T. HAUGH and WESTERN S. ZICKEFOOSE, Wayne, Iowa. Filed Sept. 14, 1887. Serial No. 249,681. (No model.)



Claim.—1. The combination, with the rails having the fish-plates and the extended bolts C, of the locking-plate D, having the elongated slots *d* formed therein, and the upper and lower integral recessed enlargements, *d'*, on one side of the plate arranged over the end of each of the slots *d*, and the continuous groove D' on the opposite side of the plate D, and the nuts *c* and *c'*, arranged as set forth, substantially as described.

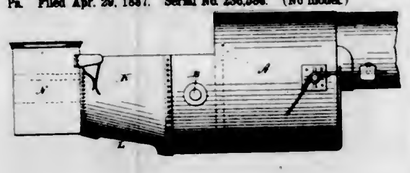
2. The locking-plate D, having the elongated slots *d*, and the integral upper and lower recessed lugs or enlargements, *d'*, having inward beveled ends *d²* formed on one side of the plate, and a continuous groove, D', on the opposite side of the plate, in combination with the bolts C and the nuts *c* and *c'*, substantially as described.

375,814. OX-YOKE. WILLIAM W. HERREN, Conroe, Tex. Filed Oct. 28, 1887. Serial No. 253,642. (No model.)

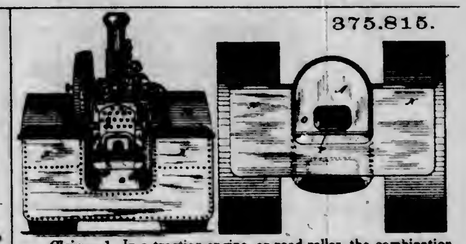


Claim.—The combination of the yoke A, having a central vertical opening, the metallic strap F, fitted around the lower edge of the yoke and having a central opening registering with the lower end of the vertical opening of the yoke, the staple D, arranged transversely to the lower edge of the yoke and having an integral shank, C, inserted upward through the aligned openings in the strap F and the yoke A, the said shank being tapered and angular in cross-section throughout its length and screw-threaded at its upper end, and a nut, E, turning on said threaded end of the shank and against the top of the yoke, substantially as specified.

375,815. TRACTION-ENGINE. MARTIN K. HERSHEY, Harrisburg, Pa. Filed Apr. 29, 1887. Serial No. 236,586. (No model.)



375,815.



Claim.—1. In a traction-engine or road-roller, the combination, with the boiler, of a tank rigidly connected thereto, having the central passage-way and the upwardly-extending side portions, substantially as described.

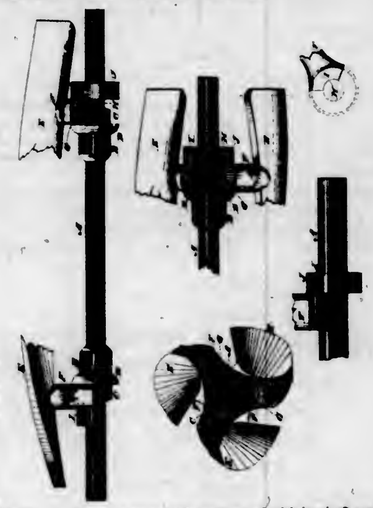
2. In a traction-engine or road-roller, a tank rigidly connected to the boiler and constructed of U form, so as to afford a convenient passage-way to the fire-box, substantially as described.

3. The fire-box having an extension-sheet passing around its bottom and extending to the rear, in combination with a tank or tanks attached to said extension-sheet, substantially in the manner described, and for the purpose specified.

4. The combination, with the fire-box, of the curved extension-sheet having the opening for the discharge of cinders and ashes drawn from the fire-box, and the U-shaped tank secured to said extension-sheet, substantially as described.

5. The combination, with the fire-box, of the curved extension-sheet, the U-shaped tank secured to it, and the platform in the housing over the extension-sheet, substantially as described.

375,816. LAWN-MOWER REEL. DANIEL B. HIXES, Springfield, Ohio, assignor to the Thomas Manufacturing Company, same place. Filed Mar. 30, 1887. Serial No. 232,969. (No model.)



Claim.—1. A lawn-mower reel constructed with its shaft separate from the knife-bars and having angular portions on the periphery of said shaft, and with its knife-bars separate from each other and having integral spokes, each spoke having an angular portion corresponding to the angular portion on the periphery of the shaft, and fastening devices which secure the spokes to the shaft.

2. In a lawn-mower reel, the combination, with three separate knife-bars, each having spokes with angular portions and hub-like projections, of the reel-shaft having like angular portions, and bands fitted upon said hub-like projections to hold the spokes to the shaft.

3. In a lawn-mower reel, the combination, with the round shaft thereof and cast-metal hubs secured thereto and having collars and angular portions, of three separate knife-bars, each having spokes with angular and curved portions in their inner ends and hub-like projections, and fitted to the hubs and the shaft, and metallic bands fitted upon the hub-like projections to clamp the spokes in place.

375,817. BED-LOUNGE. JOHN HOSY, San Francisco, Cal. Filed Sept. 21, 1887. Serial No. 250,359. (No model.)

Claim.—1. In a bed-lounge, the combination, with the back and

375,817.



seat portions thereof, of the supports C, formed in sections, one section of each support being disconnected with the back and hinged to the remaining section, and the legs E, carried by the movable sections, substantially as described.

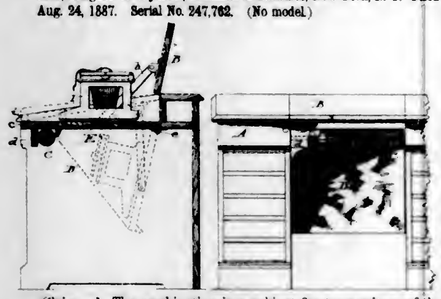
2. An improved bed-lounge, comprising a seat portion having the extensions D, a back portion hinged to said seat portion, supports C, formed in sections, one section being rigidly secured to the back portion, and the opposite section being hinged to the first section, so that its lower end will be free and will bear upon extensions to hold the back portion in an upright position, and the legs E, projecting from said hinged members and supporting the back in a horizontal position, substantially as described.

375,818. DEVICE FOR ATTACHING OVERSHOES. NATHAN B. HOLDSWORTH, Spencerville, Ohio. Filed Aug. 24, 1887. Serial No. 247,758. (No model.)



Claim.—The combination, with the overshoe, of the hook *c*, permanently secured thereto, and the web A, having a plate, *a*, at one end permanently connected with the hook *c*, and provided at its other end with a plate, *b*, adapted to engage a button on a shoe, substantially as described.

375,819. CABINET FOR TYPE-WRITERS. WILLIAM HORROCKS, Ilion, assignor to Wyckoff, Seamans & Benedict, New York, N. Y. Filed Aug. 24, 1887. Serial No. 247,762. (No model.)



Claim.—1. The combination, in a cabinet for type-writers, of the hinged lid B, the shelf E, hinged at its rear edge and pivotally connected to the lid by links *b*, and a flexible curtain, D, having one end connected to the shelf B and its opposite end secured at the front of the cabinet, whereby said curtain is made to close the space underneath the machine when the latter is thrown down out of position for use, as set forth.

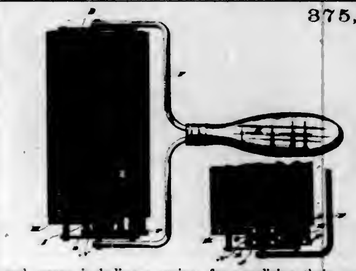
2. The combination, in a cabinet for type-writers, of the hinged shelf E, the curtain D, and spring-roller C, said parts being arranged to operate substantially as and for the purpose set forth.

3. The combination, in a type-writer cabinet, of the body A, with the lid B and shelf E hinged thereto and pivotally connected by links, the curtain D, spring-roller C, and front rails, *c d*, all arranged to operate substantially as and for the purpose set forth.

375,820. RUBBING-DOWN DEVICE FOR MOUNTING PHOTOGRAPHS. CHARLES S. HOWLAND, Campville, Conn. Filed Oct. 3, 1887. Serial No. 251,318. (No model.)

Claim.—1. A rubbing-down device for mounting photographs, having two rolls, a strip of cloth attached to and wound upon them

375,820.



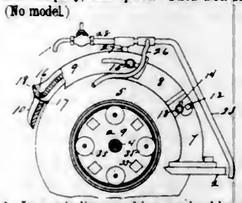
and means, including a spring, for equalizing their action, substantially as set forth.

2. A rubbing-down device for mounting photographs, having two rolls, a strip of cloth attached to and wound upon them, and gearing connecting them and including an equalizing-spring, substantially as set forth.

3. A rubbing-down device for mounting photographs, having two rolls, a strip of cloth attached to and wound upon them, a pinion attached to each roll, two independent pinions respectively meshing into the pinions secured to the rolls, and a spiral spring coupling such independent pinions and winding or unwinding to equalize the action of the rolls when they rotate at different rates, substantially as set forth.

4. A rubbing-down device for mounting photographs, having two rolls, two frame-pieces in which they are journaled, a shaft to which such frame-pieces are secured, a yoke carrying such shaft and provided with a handle, and means for equalizing the action of the rolls, substantially as set forth.

375,821. GRINDING-MACHINE. ELWIN R. HYDE and ARTHUR VALLENTINE, Springfield, Mass., assignors to the Springfield Glue and Emery Wheel Company, same place. Filed Dec. 13, 1886. Serial No. 221,366. (No model.)

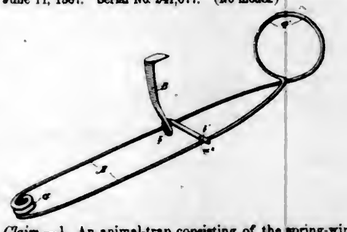


Claim.—1. In a grinding-machine, a wheel-hood nearly covering that part of the periphery of the grinding-wheel above the wheel-shaft and a portion of the opposite sides of the wheel adjoining said part of the periphery, consisting of the hood-sections 7, 8, 9, and 10, section 7 being rigidly secured to the machine, section 8 pivoted to section 7, section 9 pivoted to and having a longitudinally-sliding motion on section 8, and the section 10 pivoted to the free end of section 9, substantially as set forth.

2. The section 9 of the wheel-hood having a water-trough 16 in its lower end, combined with the hood-section 10, pivoted to and pending from the end of section 9, and having the water-passage 17 through it, substantially as set forth.

3. In a grinding-machine, a wheel-hood nearly covering that part of the periphery of the grinding-wheel above the wheel-shaft and a portion of the opposite sides of the wheel adjoining said part of the periphery, consisting of the hood-sections 7, 8, and 9, section 7 being rigidly secured to the machine, section 8 pivoted to section 7, and section 9 pivoted to and having a longitudinally-sliding motion on section 8, substantially as set forth.

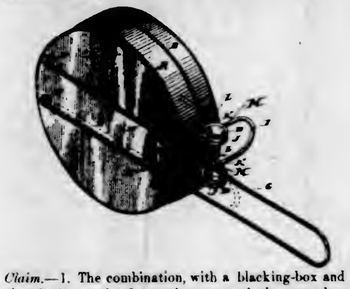
375,822. ANIMAL-TRAP. BERTIN P. JOLLY, Soledad, Cal. Filed June 11, 1887. Serial No. 241,077. (No model.)



Claim.—1. An animal-trap consisting of the spring-wire A, bent at its center to form a horizontal coil, *a*, and at its ends to form the semicircular oppositely-curved jaws *a'*, said jaws interlocking, as described, and the trigger B, consisting of a single piece of wire bent to form a loop, *b*, by which it is fitted upon one side of the wire A, and having one of its ends provided with a notch, *b'*, for engaging the other side of said wire, and its other end extending upwardly, substantially as herein described.

2. An animal-trap consisting of the single piece of spring-wire A, bent at its center to form the horizontal coil *a*, and having its ends bent and curved oppositely and at a forward inclination to form the semicircular jaws *a'*, interlocking as described, and the trigger B, made of a single piece of wire bent at right angles, one end being notched and the other broadened or flattened, substantially as herein described.

375,823. BLACKING-BOX HOLDER. GEORGE W. JOPSON and NATHAN W. CRANDALL, Meriden, Conn. Filed Jan. 17, 1887. Serial No. 224,533. (Model.)



Claim.—1. The combination, with a blacking-box and its cover, of a thumb-piece and a frame-piece respectively secured to the cover and to the box and each made of wire coiled to form vertical eyes or loops, and means for securing such eyes or loops together, substantially as set forth.

2. In a wire blacking-box holder, the combination, with a thumb-piece and a frame-piece, each provided with vertical parallel eyes or loops, of eyelets for securing such eyes or loops together to form a hinge, substantially as set forth.

3. In a blacking-box holder, the combination, with a thumb-piece made of wire and secured to the box-cover, of a frame-piece also made of wire and secured to the outer face of the bottom of the box, the said thumb-piece and frame-piece being each coiled to form vertical eyes or loops, and means for uniting such eyes or loops to form a hinge, substantially as set forth.

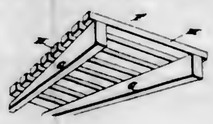
4. In a wire blacking-box holder, the combination, with one or more wire legs secured to and offsetting from the bottom of the box, of a sliding handle extending parallel with such legs or leg, and having its inner end locked under the same, substantially as set forth.

5. In a wire blacking-box holder, the combination, with two parallel legs secured to and offsetting from the outer face of the bottom of the box, to which they are attached at their opposite ends, of a sliding handle extending parallel with such legs, and having its inner end provided with extensions for engagement with them, substantially as set forth.

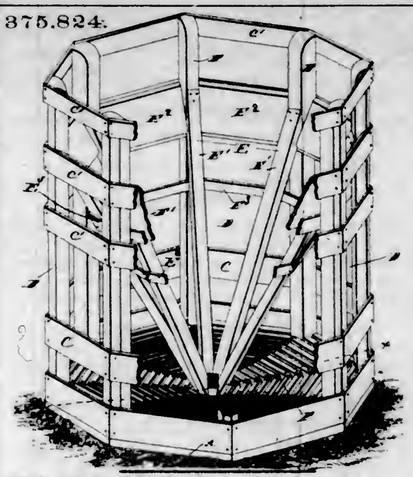
6. In a wire blacking-box holder, the combination, with a thumb-piece comprising a loop, two vertical parallel eyes or loops, and two ends, the latter being secured to the box-cover, of a frame-piece comprising a loop, two vertical parallel eyes or loops, and two legs, the latter being secured to and offsetting from the bottom of the box, and a sliding hand-piece engaged with the said legs and adapted to be retired under the box, substantially as set forth.

375,824. HAY-RACK. GEORGE W. LIGHT, Gallatin, Mo. Filed Nov. 11, 1886. Serial No. 218,638. (No model.)

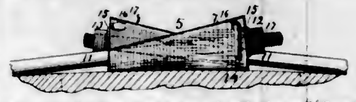
Claim.—The combination, with the rack-frame composed of the angular base-box A, the uprights B, rising from the floor of said box in the angles made by the sides thereof, the protective strips C C, and the series of binding-strips C' C', the lower series of which strips has the feeding-spaces D between it and the series of protective strips, of the rack consisting of the rack-bars E', having their upper ends secured to the inner edges of the uprights B, so that the spaces between said bars face the sides of the rack-frame and converge to an apex in the center of the floor of the box A, the feed-chutes E^2, the stay or brace strips E^3, and the sections of grating resting on the floor of the box A outside the rack and inclining downward and inward from the sides of the rack-frame to the apex of the rack, substantially as specified.



375,824.



375,825. HOOP-LUG. HERBERT M. LOURIE, Keokuk, Iowa. Filed May 20, 1887. Serial No. 238,928. (No model.)

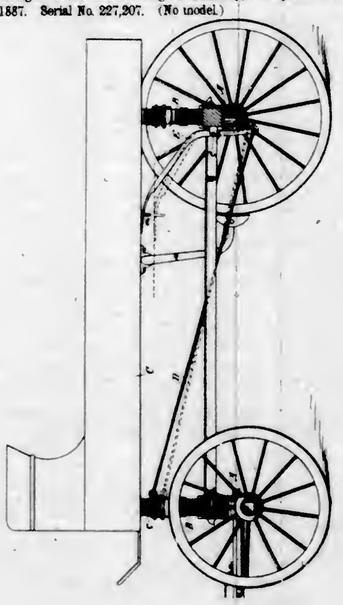


Claim.—1. The hoop-lug 5, formed with the walls 7 and 8, the partition 9, and the open grooves 6, substantially as shown and described.

2. The hoop-lug 5, formed with the walls 7 and 8, and the partition 9, separated by open grooves 6, and the pin-holes 16, substantially as shown and described.

3. The combination of the hoop-lug 5, formed with the walls 7 and 8, and the partition 9, separated by open grooves 6, and the pin-holes 16, and pins 17, placed through the said holes 16 and across the said grooves 6, substantially as shown and described, for the purpose specified.

375,826. WAGON-SPRING BRACE. FRANK H. MASON, Sausalito, Cal., assignor of one-half to George V. Kennedy, same place. Filed Feb. 10, 1887. Serial No. 227,207. (No model.)



Claim.—In a wagon, the combination, with the running-gear, the spring, and the bed having the guide *a* upon its bottom, of the brace D, attached at its front end to the forward spring-block, a lever pivoted to the rear axle, having its short arm connected with the rear end of the brace, and its long arm playing loosely in the guide on the under surface of the bed, as herein described.

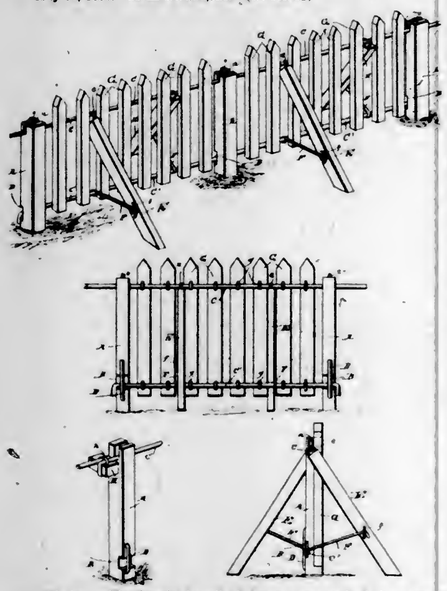
375,827. **DENTAL PENCIL.** JOHN A. MCCLELLAND, Louisville, Ky. Filed June 20, 1887. Serial No. 241,882. (No model.)



Claim.—1. In combination with a wooden support or covering, as set forth, a cleansing composition for the teeth, composed of balsam fir and an abrading material, the same being incorporated with each other and applied to the support in a heated condition, so that the parts will adhere to each other, substantially as shown and described.

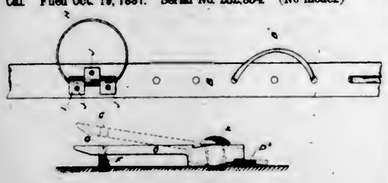
2. A hard or rigid composition for cleaning and polishing teeth, composed of soluble gum-balsam and abrading substance and borax, the several ingredients being combined substantially in the proportions and manner described.

375,828. **FENCE.** BASIL MILLER, West Lafayette, Ohio. Filed May 17, 1887. Serial No. 238,520. (No model.)

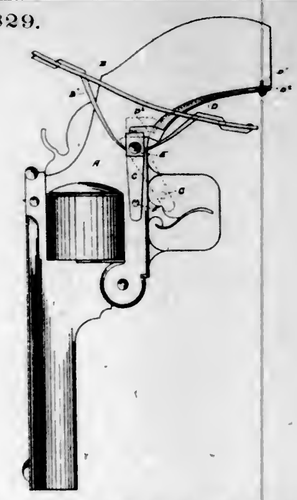


Claim.—The herein-described fence, composed of the posts A, provided in their upper ends with the slots *a*, and in their corresponding sides, near their lower ends, with the notches B, the flexible fence-wires C C', the former detachably held in the slots *a* by means of the staples c, and the latter detachably held in the notches B by means of the staples D, the pickets strung on the upper and lower wires by means of the staples *g g*, respectively, so that the fence can give to a shock without displacement, the inclined brace-bars E, having their lower ends resting upon the surface of the earth, the staples *e*, secured in the upper ends of said brace-bars and embracing the upper fence-wire, C, so as to prevent accidental detachment of the brace-bars therefrom, the staples *f*, secured to the sides of the brace-bars, and the rods F, connecting said staples *f* and the lower fence-rods, substantially as specified.

375,829. **PISTOL-HOLDER.** RUDOLPH NEWMAN, San Francisco, Cal. Filed Oct. 19, 1887. Serial No. 252,854. (No model.)



375,829.

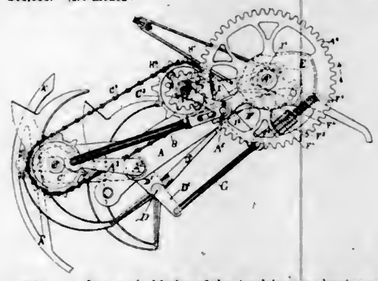


Claim.—1. In a pistol-holder, bar C, loosely attached to the pistol by means of screw E, pin F, made stationary on the pistol, and spring D, provided with sliding finger D^3 and attached to the handle of the pistol, for the purpose described and set forth.

2. In a pistol-holder, belt B, provided with loop B', in combination with bar C, said bar being provided with hole G and loosely attached to the pistol by means of screw E, pin F, made stationary on the pistol, and spring D, attached to the handle of the same by means of screw D' and wedge-shaped piece D^3, said spring being provided with the sliding finger D^3, for the purpose described and set forth.

3. In a pistol-holder, the combination, with belt B, provided with ring H, and bar C, provided with hole G, and loosely attached to the pistol by means of screw E, of pin F, made stationary on the pistol, and spring D, attached to the handle of the same, for the purpose set forth and described.

375,830. **GRAIN-BINDER.** WILLIAM F. OLIN, Chicago, Ill., assignor to William Deering, same place. Filed Oct. 19, 1886. Serial No. 216,655. (No model.)



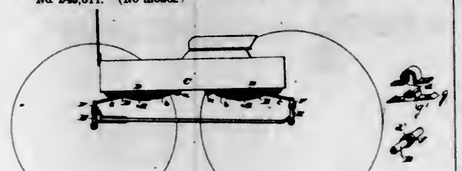
Claim.—1. In a grain-binder of the Appleby type having an overhead knotter-driving shaft, the combination of the main gear-wheel A^4, fixed on the knotter-shaft, its driving-pinion H, the continuously-rotating driving-wheel C^3, concentric with the pinion, the clutch devices to connect the driving wheel and pinion, the detent I, to hold the clutch out of action, and the cam I^3, carried by the knotter-shaft, and acting directly on the detent to hold it out of engagement with the clutch, whereby the knotter-shaft is enabled to directly control the period of action of its driving-clutch.

2. The gear A^4, mounted on the knotter-driving shaft, the driving-pinion engaging directly therein, and the continuously-rotating driving-wheel C^3, concentric therewith, in combination with the clutch-dog to connect said wheels, the clutch-tripping arm I, acting at one end directly on the dog, the compressor-operating spring acting directly on the arm to cause its engagement, and the cam on the knotter-driving shaft also acting directly on the arm to hold it out of engagement.

3. The detent I, having arm I^3, and the stem or spindle F^3, and its encircling spring, in combination with the positively-actuated compressor-actuating lever F', sustaining the spring, and the compressor-pitman connected at one end to both the lever and the detent.

4. The compressor-operating lever, the spring receiving support therefrom, and the stem or spindle passing through the spring, in combination with the detent-lever I, and compressor-actuating pitman having one end connected with both the stem and the detent by a single wrist or journal.

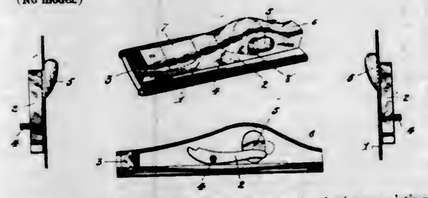
375,831. **VEHICLE-SPRING.** LEVI PENTZ, Canton, Ohio, assignor of one-half to Charles L. Paar, same place. Filed Sept. 7, 1887. Serial No. 249,011. (No model.)



Claim.—1. The box D, formed in two pieces or sections, said sections being provided with the groove *d*, and one of said sections having the flanges *g* and *g'*, the leather or like packing *f*, provided with the rib *d'*, and the spring-bar B, substantially as and for the purpose specified.

2. The combination of the springs A, attached to the frame C, the spring-bars B, provided with the arms *b* and *c*, the arms *b* being parallel with the springs A, the screw-threaded sockets G, the screw-threaded arms *c*, the boxes D, and the frame C, substantially as and for the purpose specified.

375,832. **DEVICE FOR FASTENING CORDS OR ROPES.** ALBERT L. PITNEY, Washington, D. C. Filed Nov. 25, 1887. Serial No. 256,094. (No model.)



Claim.—1. The herein-described cord-fastening device, consisting of the holder and pivoted fastening-levers provided with transverse portions extending laterally beyond the side walls of the holder, substantially as set forth.

2. The herein-described cord-fastening device, consisting of the holder and the pivoted fastening-lever provided with transverse portions extending laterally beyond the side walls of the holder, said portions having upward bends or extensions to guide the cords, substantially as set forth.

3. The herein-described cord-fastening device, consisting of the holder and the pivoted fastening-lever provided with transverse portions extending laterally beyond the side walls of the holder, said portions having upward bends or extensions prolonged beyond the end of the lever which is within the holder to increase the leverage, substantially as set forth.

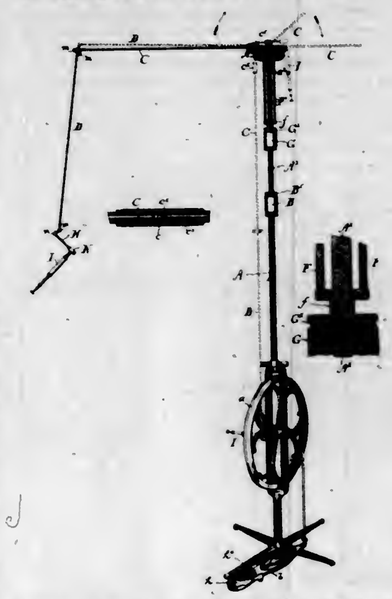
375,833. **RESONATOR FOR HARMONICONS.** RICHMOND PLANT and EDMUND PERRY, Birmingham, County of Warwick, England. Filed June 23, 1885. Serial No. 169,594. (No model.) Patented in England Mar. 22, 1884, No. 5,390; in France July 23, 1884, No. 163,445, and in Belgium July 28, 1884, No. 65,886.



Claim.—1. In a sounding-instrument, the combination, with a resonant chamber divided into a plurality of compartments by partitions and having an opening between the partitions, of a vibrating plate mounted upon said partitions and in proximity to the opening in the compartment.

2. In a sounding-instrument, the combination, with a resonant chamber divided into a plurality of compartments by integral partitions having cushions upon them and having openings between the partitions, of a vibrating plate mounted upon said cushions and secured thereto with its ends extending beyond its supports and over the outer openings, while its greatest ventral segment is opposite the openings between the partitions.

375,834. **DENTAL ENGINE.** HENRY C. REGISTER, Philadelphia, Pa. Filed May 27, 1887. Serial No. 239,516. (No model.)



Claim.—1. In a dental engine, the combination of a standard or kindred support, a rotatable pulley-head provided with two pairs of pulleys, an arm pivoted to said pulley-head upon a pivot independent of the pivots of the pulleys and in line with the standard, so as to be adapted to be thrown up into vertical alignment with said standard, and from such position to be flexed to either side of said standard and head, a hand-piece, and a single continuous endless driving-cord, substantially as set forth.

2. In a dental engine, the combination of a standard or kindred support, a pulley-head applied to said standard or support, an arm pivoted to said pulley-head and adapted to be thrown or flexed to either side of said head and standard, and two carriers, each provided with a pair of pulleys and pivoted to said pulley-head, substantially as set forth.

3. In a dental engine, the combination, with a standard or kindred support, of a pulley-head applied to said standard or support, an arm pivoted to said pulley-head and adapted to be thrown or flexed to either side of said head and standard, and a lifting device applied to said standard and operative upon the arm for raising and lowering and maintaining said arm in given positions, substantially as set forth.

4. In a dental engine, the combination, with a standard or kindred support, of a pulley-head applied to said standard or support, an arm pivoted to said pulley-head and adapted to be thrown or flexed to either side of said head and standard, two carriers, each provided with a pair of pulleys and pivoted to said pulley-head, and a lifting device applied to said standard for raising and lowering said arm, substantially as set forth.

5. In a dental engine, the combination of a standard or kindred support, a pulley-head applied to said standard or support, an arm pivoted to said pulley-head and adapted to be thrown or flexed to either side of said head or standard, a pair of lifting rods vertically movable with respect to said standard and head, and suitable means for occasioning the lift or drop of said lifting rods, substantially as and for the purpose set forth.

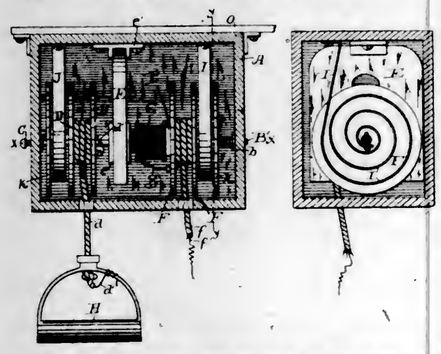
6. In a dental engine, the combination of a standard or kindred support, a pulley-head applied to said standard or support, an arm pivoted to said pulley-head and adapted to be thrown or flexed to either side of said head or standard, two carriers, each provided with a pair of pulleys and pivoted to said pulley-head, a pair of lifting rods vertically movable with respect to said standard or head, and suitable means for occasioning the lift or drop of said lifting rods, substantially as and for the purposes set forth.

7. In a dental engine, the combination, with a standard or kindred support, of a pulley-head applied to said standard or support, an arm pivoted to said pulley-head, adapted to be thrown or flexed to either side of said standard and head, and provided with a joint in propinquity to its point of application to said pulley-head, and a ferrule movable upon said arm to render said joint rigid at will, substantially as set forth.

8. A joint for a dental engine, composed of two arms or members pivoted together, and of two carriers, each provided with a pair of pulleys and pivoted upon a pivot-pin distinct from that uniting said arms or members, but adjacent thereto, substantially as set forth.

9. In combination with the hand-piece of a dental engine, a pulley-casing for inclosing the driving-pulley of said hand-piece, composed of two disks connected both with said hand-piece and with the wrist-piece of the engine and having opposite peripheral grooves, and a strip of metal introduced into said grooves to form a segmental peripheral wall or web to said disks, as and for the purposes set forth.

375,835. ELECTRIC EXERCISING-MACHINE. EDWARD W. ROBINSON, CHARLES H. O'BRIEN, and HOWARD M. BRKEN, Portland, Me. Filed Apr. 1, 1887. Serial No. 233,280. (No model.)

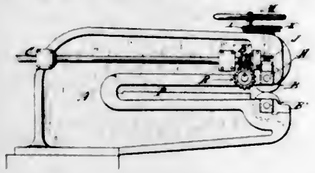


Claim.—1. In an exercising-machine, a shaft having thereon a reel, a pulling-cord on said reel, and a resisting-spring therefor, and a magneto-electric mechanism, the armature of which is secured to said shaft and rotates with it, combined with suitable connections whereby the electricity generated by the pulling of said cord is conveyed to the body of the operator, substantially as described.

2. In an exercising-machine, the combination of a shaft having thereon a reel, a pulling-cord on said reel and a resisting-spring therefor, a magneto-electric mechanism the armature of which is secured to said shaft and rotates with it, a second reel secured to an independent shaft, a pulling-cord thereon, and a resisting-spring therefor, and suitable connections for conveying the electricity to the body of the operator, substantially as shown.

3. In an exercising-machine, the combination of a shaft having thereon a reel, a pulling-cord on said reel and a resisting-spring therefor, a magneto-electric mechanism the armature of which is connected with said shaft and revolves with it, suitable connections whereby the electricity is carried to the body of the operator, an independent shaft, one end of which is in contact with the other shaft, and a reel on said independent shaft, a pulling-cord on said reel, and a resisting-spring therefor, substantially as shown.

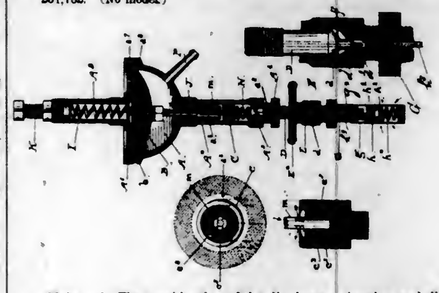
375,836. WELDING-MACHINE. THOMAS F. ROWLAND, New York, N. Y. Filed Apr. 21, 1887. Serial No. 235,693. (No model.)



Claim.—1. The combination, in a welding-mill, of the roller B', the vertical adjustable roller B, the gears F G, capable of motion past each other, the right and left hand screws J, wheels K K', driving the screws, and actuating-wheel L, substantially as described.

2. The combination, in a welding-mill, of the roller B, carried at both ends by the right and left hand screws J, the wheels K K', driving such wheels, and the actuating-wheel L, substantially as described.

375,837. PRESSURE-REGULATOR FOR CARBONIC-ACID GAS. ETHAN A. SCOTT, San Francisco, Cal.; Elizabeth Adelaide Scott executrix of said Ethan A. Scott, deceased. Filed Mar. 21, 1887. Serial No. 231,782. (No model.)

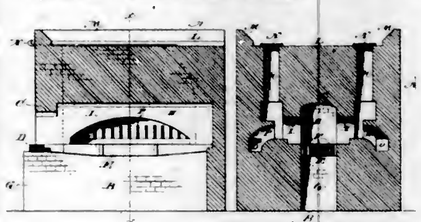


Claim.—1. The combination of the diaphragm-chamber and diaphragm, the chambered and bored neck A^*, the valve working in said chambered neck, the stem D, and connection, as A^3, whereby stem D is connected with said neck, and having the conical head d, shouldered upon the stem D, as described, and provided with the cylindrical end d^2 and pin d^3, the coupling E, holding the shouldered head, and the plug G, having the chamber f^*, conforming to the shape of the head d, and a bore fitting the end d^2, and the valve working against lower end of plug G, said valve having a stem to press against pin d^3, as and for the purpose set forth.

2. In a gas-pressure regulator, the combination of the diaphragm-chamber and diaphragm, a neck, A^*, connected to the diaphragm-chamber and provided with a valve-chamber and valve-seat projecting from the upper end of said valve-chamber, a stem, J, on the diaphragm projecting down into the neck, a valve consisting of a body, C, elastic packing c^3, and shell C^3, extending above the packing and having its edges turned over and projected down into the packing, whereby a rounded edge is extended above the packing to serve as a guide to center the valve upon its projecting seat, a stem, m, projecting upward from the valve, and a spring, N, on which the valve is mounted, as set forth.

3. The screw-plug G, having the valve-seat in the lower end, with chamber, valve, and spring, and the passage and enlarged chamber, and conical seat adapted to receive the head of a stem of corresponding shape and having a cylindrical end fitting into a cylindrical bore to keep the valveway closed for a time after the head is removed from the seat, substantially as described.

375,838. BRICK-KILN. EDMUND STAIR, Harrisonville, Mo. Filed Apr. 16, 1887. Serial No. 235,085. (No model.)

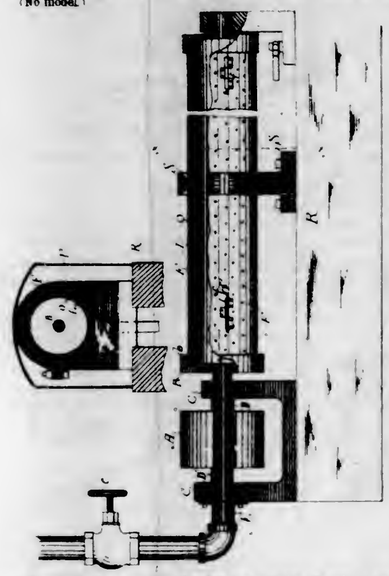


Claim.—1. The brick-kiln furnace having the longitudinal combustion-chamber H open at one end, the ash-pit G under the same, the chambers I, for the storage of fuel, arranged alongside the combustion-chamber and having their upper sides arched and opening into the combustion-chamber nearly the entire length thereof, the air-flues O, arranged on the outer sides of the combustion-chamber, and the openings P, communicating with the air-flues and with the fuel-chambers, substantially as described.

2. The brick-kiln furnace having the longitudinal combustion-chamber H, the fuel-chambers I, arranged alongside the combustion-chamber and having their upper sides arched and opening into the same throughout nearly the entire length thereof, the air-flues O, communicating with the fuel-chambers, the vertical longitudinal openings K, extending from the fuel-chambers to the roof of the furnace, and the slides N, arranged on the upper ends of the openings K, substantially as described.

3. The furnace for brick-kilns having the central combustion-chamber, the flue-chambers on opposite sides thereof and communicating therewith, the air-flues O and P, extending from the outer air to the outer sides of the fuel-chambers, for the purpose set forth, the vertical openings K, extending from the upper sides of the fuel-chambers to the roof of the furnace, the latter having the side flanges, M, and the slides N, adapted to cover the upper ends of the openings K, for the purpose set forth, substantially as described.

375,839. MACHINE FOR FORMING PULP-CYLINDERS. WILLIAM P. STEVENS, Deering, Me. Filed Feb. 2, 1887. Serial No. 226,297. (No model.)



Claim.—1. In a machine for forming articles of pulp, a pervious cylindrical former rotating horizontally, or nearly so, in suitable bearings, and a pulp-inlet opening centrally into one end of the same, whereby oscillations are prevented and the pulp evenly distributed over the entire length of the cylinder, substantially as described.

2. In a machine for forming cylindrical articles of pulp, a pervious cylindrical former having in one end a recessed head connected with a hollow spindle through which the pulp flows to the interior of the cylinder, bearings in which said spindle runs, a back head having a hollow journal, a bearing to support same, and a driving-pulley, all combined substantially as described.

3. A machine for forming cylindrical articles of pulp, a pervious cylindrical former having at one end a head or cover connected with a hollow spindle through which the pulp flows to the interior of the cylinder, bearings in which said spindle runs, a back head at the opposite end of said cylinder having a hollow journal, and means for supporting said cylinder at intermediate points between the two ends, all combined substantially as shown.

375,840. RECLINING ATTACHMENT FOR CHAIRS. JAMES I. STOCKTON, Hartsell's, Ala. Filed Aug. 2, 1887. Serial No. 245,946. (No model.)

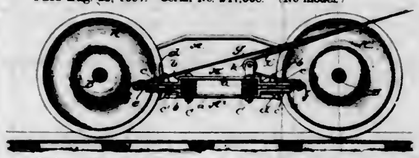


Claim.—1. A chair-recliner comprising the legs A A, hinged at their upper ends to the rear side of the chair and shorter than the distance from the hinges to the ends of the chair-legs, so as to fold against the chair, the pivot-bar C, secured between the legs A A, and the adjustable latch-bars D, pivoted on said bar C and engaging the rear round of the chair, substantially as described.

2. The chair-recliner comprising the legs A A, hinged at the upper ends to the rear side of the chair and shorter than the distance from the hinges to the ends of the chair-legs, so as to fold against the chair, brace or cross-bar B, secured thereto at the lower ends, pivot-bar C, secured at the ends in the said legs, and the adjustable latch-bars D, pivoted at the outer ends on the said pivot-bar C, and having the notches F F in the inner ends to engage over the round of the chair, substantially as and for the purpose set forth.

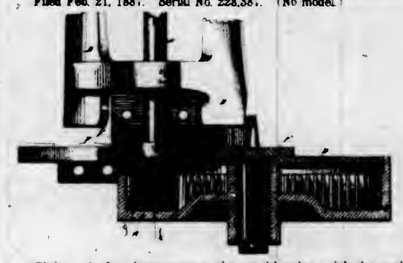
3. The herein-described chair-recliner, comprising the legs A A, hinged to the rear side of the chair, the bar C, secured at the ends in the said legs, and the latch-bars D, having a series of perforations, d d, in the outer end of each latch, through any aligned pair of which the bar C is passed, the said latches also having the notches in the inner ends, on the under side, to engage over one of the rounds of the chair, substantially as and for the purpose set forth.

375,841. CAR-BRAKE. JAMES K. P. TIMMONS, Timmons, Tenn. Filed Aug. 25, 1887. Serial No. 247,868. (No model.)



Claim.—The combination of the frame having the wheeled axles journaled therein and the parallel beams C, arranged between the axles, with the plates A' A^3, connecting the said beams and bent to form the projecting arms c c', the levers e, fulcrumed between said arms and having the brake-shoes at their outer ends, the links f, connecting the inner ends of the levers e, and the operating-cables attached to the said links, substantially as described.

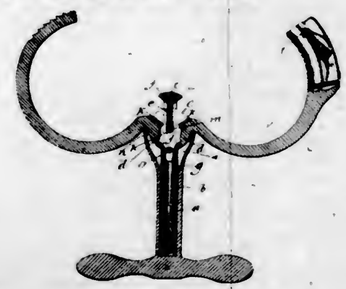
375,842. LAWN-MOWER. JOHN H. THOMAS, Springfield, Ohio. Filed Feb. 21, 1887. Serial No. 228,387. (No model.)



Claim.—1. In a lawn-mower, the combination, with the reel-shaft and the side plate constructed with a pinion-seat in the outer side thereof, of a pinion of two diameters, the smaller being the tooth portion and the larger the clutch portion, mounted on said shaft, with the larger portion fitted into said seat, and the ground-wheel meshing with the teeth of the pinion.

2. In a lawn-mower, the combination, with the side plate having a boss projecting from the inner side thereof, and a pinion-seat in said plate, and extending into said boss from the outer side of the plate, of a pinion having two diameters, the larger being the clutch end, fitted into said seat, and the reel-shaft on which the pinion is mounted.

375,843. HANDCUFF. MERTON THOMAS, Savona, N. Y. Filed June 22, 1887. Serial No. 242,131. (No model.)



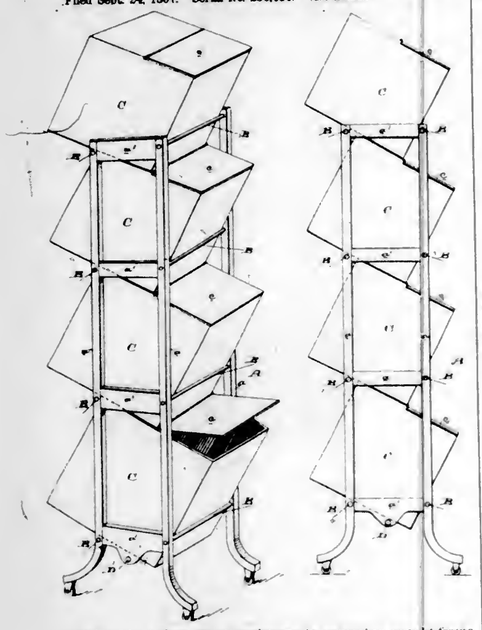
gether, and mechanism to hold the jaws apart, substantially as set forth.

2. The combination of the tubular handle, the jaws pivoted in the outer end of the same, the spring arranged in the handle and bearing on the opposing inner ends of the jaws, and the stop acting on the inner ends of the jaws to hold their outer ends apart, substantially as set forth.

3. The combination of the tubular handle, the jaws at the outer end of the same, having the disks *c* mounted on the pivot-screw *m* and provided with notches *j*, the spring *b*, arranged in the handle and having its ends bearing on the opposing inner ends of the jaws, and the spring-actuated stop carrying a transverse pin, *o*, adapted to engage the notches *j* in the disks *c*, substantially as specified.

4. A handcuff comprising the handle, the spring-actuated jaws pivoted to one end of the handle, the latch or lock at the free ends of the jaws, and the locking devices to hold the jaws open against the tension of the spring, said locking devices extending outward and having a contact-point located between the jaws, which contact-point is designed to come in contact with the wrist of a prisoner, to release the jaws and allow them to close under the reaction of the spring, as set forth.

375,844. SHOW-STAND. CORNELIUS TOOHEY, San Francisco, Cal. Filed Sept. 24, 1887. Serial No. 250,630. (No model.)



Claim.—1. A show-stand consisting of a vertical or upright frame having vertical rows of cross-bars or supports for receiving and holding a vertical series of superposed cans, boxes, or cases, each of which is supported at an angle, and a supplementary support or bar at the base of the frame bearing under the lowermost can, box, or case, whereby its angle of support and that of all the other cans, boxes, or cases are defined and insured, substantially as herein described.

2. A show-stand consisting of a vertical upright frame-work having vertical rows of cross-bars or supports and a supplementary bar or support at its base, in combination with cans, boxes, or cases placed in the frame at an angle and supported in vertical series by the bars or supports, the lowermost having its angle defined by the supplementary bar or support, whereby the angle of all the others is determined, said boxes, cans, or cases having each the rear portion of its top exposed and provided with a door or lid in said portion, by which access is had to its contents, substantially as herein described.

375,845. TANNING. LOIS M. WARE, JOHN H. PHILLIPS, and WILLIAM S. KENGLA, Tucson, Ariz. Filed Sept. 3, 1886. Serial No. 212,641. (No specimens.)

Claim.—1. The composition for tanning hides, composed of pulverized or ground sour or yellow dock-root, (*Rumex salicifolius*,) water, and carbolic acid, mixed in the proportions substantially as hereinbefore described.

2. The process of tanning hides by subjecting them to a series of baths in a compound composed of pulverized *Rumex salicifolius*, (yellow dock-root,) water, and carbolic acid, in the proportions substantially as hereinbefore described.

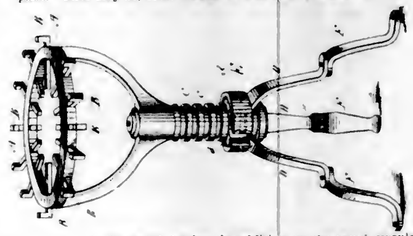
375,846. SUSPENSORY BANDAGE. WALTER F. WARE, Camden, N. J. Filed Apr. 7, 1887. Serial No. 233,987. (No model.)



Claim.—1. In a suspension device, the bag A, provided with opening B, front drop-flap, C, and waist-strap F, substantially as and for the purpose described.

2. In a suspension device, the combination of bag A, to receive the penis, provided with opening B, and front drop-flap, C, having fastenings E E, bag H, for the testicles, attached to back of bag A, and suspension-bands I I, substantially as and for the purposes described.

375,847. HOUSE-BOILER STAND. HENRY C. WEEDEN, Boston, Mass., assignor to the Weeden Sanitary Manufacturing Company, same place. Filed May 23, 1887. Serial No. 239,059. (No model.)

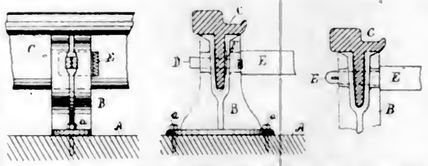


Claim.—A boiler-stand having, in addition to the usual circular upper portion, a corrugated base or lower portion, and provided with legs made separate from the stand, and having flanges to enter the said corrugations, and a retaining-ring for securing the said legs and flanged lower portion together, as described.

375,848. MANUFACTURE OF DYE-STUFFS. ARTHUR WEINBERG and HANS SIEBERT, Mainkur, near Frankfort-on-the-Main, assignors to Leopold Cassella & Co., Frankfort-on-the-Main, Prussia, Germany. Filed Nov. 15, 1886. Serial No. 218,924. (Specimens.) Patented in Germany Sept. 21, 1886, No. 2,091; in England Oct. 9, 1886, No. 12,908, and in France Oct. 11, 1886, No. 178,979.

Claim.—As a new product, the coloring-matter herein described, which is produced by the action of tetrazo-ditolyl upon the new naphthylamine sulphonic acid herein described, substantially as herein set forth.

375,849. TRACK FOR STREET-RAILWAYS. REYNOLDS T. WHITE, Boston, Mass. Filed July 14, 1887. Serial No. 244,245. (No model.)



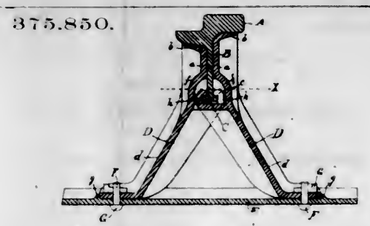
Claim.—1. In a street-railway construction, a tie-rod, E, provided at each end with shoulders to form a gage between the chairs, the ends of said rod acting as keys to draw down the rail firmly upon the chair, and keys G, for retaining said rods in position, substantially as shown and described.

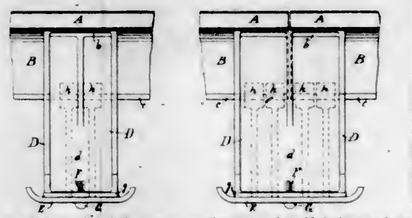
2. The combination of a tie-rod, E, having its ends turned at right angles and a suitable hole near its ends, with a chair, B, having an opening, F, to receive the ends of tie-rod E and rail C, and a split key, D, passing through chair B, web of rail C, and the rod E, and clinched, substantially as shown and described, and for the purposes set forth.

375,850. STREET-RAILWAY CONSTRUCTION. REYNOLDS T. WHITE, Boston, Mass. Filed July 14, 1887. Serial No. 244,267. (No model.)

Claim.—1. A chair for street-railways, made in two halves and properly ribbed, the lower portion of each half being spread out transversely of the rail and the upper portion of each half fitting against the web of the rail, and provided at their upper parts with flanges to form a bearing for the rail, each half of the chair being also provided with a hook to fit around the bulb or fillet at the bottom of web of rail to hold the rails in position, substantially as shown and described.

375,850.





2. A chair for street-railways, made in two parts, D D, and provided with hooks *h h*, in combination with rail A, having a web, B and bulb or fillet C, substantially as and for the purposes set forth.

3. A chair for street-railways, made in two parts, D D, and provided with hooks *h h*, in combination with rail A, having a web, B, and bulb or fillet C, and a sleeper, E, provided with lips *g g*, substantially as and for the purposes set forth.

4. A chair made in two halves, each half being spread at its lower end and properly ribbed on its outside and inside, the two inside ribs having two hooks on their upper ends to hook over the fillet or bulb on web of the rail on the opposite side from said half to hold the ends of two adjacent rails, substantially as shown and described.

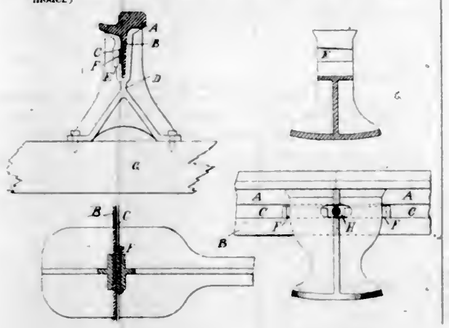
5. A chair made in two halves, each half provided with a hook to hook over a bulb or fillet on the opposite side of the rail from said half, whereby the rail is held between the two halves without bolts, screws, or other fastenings, substantially as shown and described.

375,851. CONSTRUCTION OF STREET-RAILWAYS. REYNOLDS T. WHITE, Boston, Mass. Filed Oct. 1, 1887. Serial No. 251,202. (No model.)



Claim.—The combination of a combined chair and sleeper, C having a brace-arm, F, and tie-rod J, substantially as shown and described.

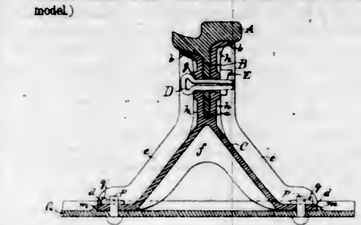
375,852. STREET-RAILWAY CONSTRUCTION. REYNOLDS T. WHITE, Boston, Mass. Filed Oct. 10, 1887. Serial No. 251,888. (No model.)



Claim.—1. A street-railway rail, A, having a tapering rib, B, on its under side at or near its center, said rib being provided with a groove, C, in combination with a chair, D, provided with an opening to receive said rib, and a tapering keyway, E, and the key F, substantially as and for the purposes set forth.

2. A metal chair spread at its bottom transversely from the rails and provided with an opening adapted to receive the rib of the rail, and tapering keyways, in combination with a rail having a tapering rib at or near its center on its under side, said rib being provided with a groove on one of its sides and capable of being keyed into the chair, substantially as and for the purposes set forth.

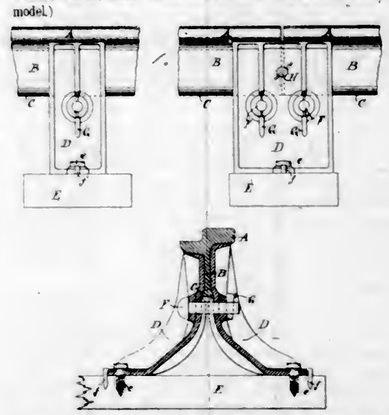
375,853. STREET-RAILWAY CONSTRUCTION. REYNOLDS T. WHITE, Boston, Mass. Filed Oct. 24, 1887. Serial No. 253,161. (No model.)



Claim.—1. A chair cast in one piece and provided at its upper end with a suitable opening to receive the rib of the rails, said rails being held near their ends by means of key-bolts passing through the chair and through the webs of the rails, and at their end passing through the chair and between the ends of the rails, substantially as and for the purposes set forth.

2. A chair cast in one piece and provided at its upper end with a suitable opening to receive the rib of the rail, and flanges for the rail to rest upon and spread transversely at its lower end, in combination with a metallic sleeper provided with lips *m* and turned-up sides, substantially as and for the purposes set forth.

375,854. STREET-RAILWAY CONSTRUCTION. REYNOLDS T. WHITE, Boston, Mass. Filed Oct. 24, 1887. Serial No. 253,162. (No model.)



Claim.—1. A metal chair made in two halves, each half being spread at its bottom, as shown, and having suitable vertical ribs, which form at their upper ends a broad bearing-surface for the rail to rest upon, in combination with a girder-rail having a web at or near its center on its under side and provided with a bulb or fillet on its lower

edge, the two halves of said chair being secured together over web and bulb or fillet of the rail by a bolt passing through the chair under but close to said bulb or fillet of rail and secured to a sleeper, substantially as shown and described.

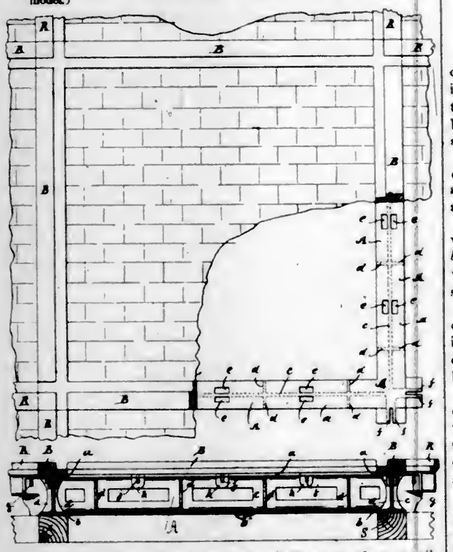
2. The combination of a metallic chair and two adjacent rails, the rails being held at their ends in said chair by key-bolts passing under and between the ends of the rails, substantially as and for the purposes set forth.

3. In street-railway construction, a metal chair made in two halves, each half being formed at its upper end to fit the lower parts of a rail provided with a web and bulb or fillet, each half of the chair being spread at its lower ends and secured to a sleeper, the two halves being also secured together over web of rail by a bolt under the bulb or fillet, thereby dispensing with holes in the rails, and having strengthening-ribs which form at their tops a broad bearing-surface for the under side of the head of the rail, substantially as shown and described.

4. In the within-described system of constructing street-railways, the combination of a girder-rail without bolt-holes, with a metal chair made in two halves, each half provided with strengthening-ribs, the upper ends of which form a broad bearing-surface for the under side of the head of the rail, and the lower ends being spread and secured to a tie or sleeper, and the two halves being secured together by a bolt passing close under the web of the rail, substantially as shown and described.

375,855. STREET-RAILWAY CONSTRUCTION.

Reynolds T. White, Boston, Mass. Filed Oct. 24, 1887. Serial No. 253,163. (No model.)



Claim.—1. Crossings, switches, and such like parts of street-railroad construction, consisting of a lower or I-beam portion, the upper flange of I-beam portion being provided with slots, through which pass lugs formed on the under side of the upper or wearing surface, the two being secured together by keys, substantially as shown and described.

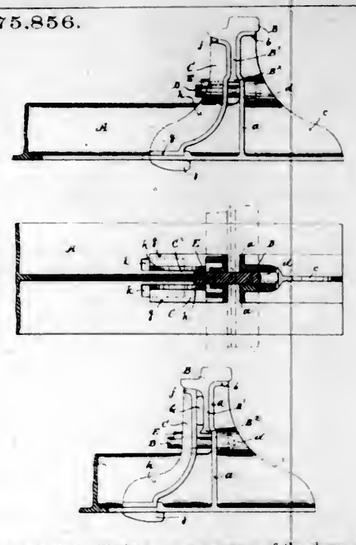
2. In street-railroad construction for crossings, switches, and such like parts, a girder, A, provided with lugs *f f*, for receiving the ends of the rails, in combination with an upper or wearing surface, B, provided on its under side with lugs *h h*, and keys *j j*, for securing the two parts together, substantially as shown and described.

3. In street-railroad construction, a girder for crossings, switches, and such like parts, said girder being cast in one piece, and consisting of an upper flange, *a*, provided with openings *e*, lower flange, *b*, webs *c c*, and lugs or ears *f f*, for receiving the ends of the adjacent rails, substantially as shown and described.

4. In street-railroad construction for crossings and such like parts, an upper or wearing surface, B, cast in one piece and provided on its under side with lugs *h*, in combination with an I-beam provided with openings in its upper flange, through which said lugs pass, substantially as shown and described.

375,856. COMBINED SLEEPER AND CHAIR FOR STREET-RAILROADS.

Reynolds T. White, Boston, Mass. Filed Nov. 7, 1887. Serial No. 254,477. (No model.)



Claim.—1. A combined sleeper and chair consisting of a sleeper cast in one piece with the two outer portions of the chairs and loose inner pieces having hooks on their lower ends engaging openings in the tie and being secured to the fixed portion by means of a bolt and key, whereby the web and bulb of the rail are held between them, substantially as shown and described.

2. The sleeper A, cast in one piece with the outer portion of the chairs, in combination with the loose inner portions, C, provided with an aperture, C^2, hooks *j*, bolts D, and key E, substantially as shown and described.

3. The sleeper A, provided with openings *k k* and cast in one piece with the outer portions of a chair consisting of the upright *a*, flange *b*, rib *c*, and bow *d*, in combination with loose inner portions, C, provided with an aperture, C^2, flanges *f g*, ribs *h h*, and hooks *j j*, substantially as shown and described.

4. A combined sleeper and chair consisting of a sleeper cast in one piece with two outer portions of chairs, in combination with inner portions, the space between the outer and inner portions of the chair being sufficient to admit the bulb of the rail, which is securely held by a key, substantially as set forth.

5. In street-railway construction, a combined iron sleeper and chair for receiving the ends of two adjacent rails, the outer portion of the chair being cast in one piece with the sleeper and provided with strengthening-ribs, in combination with a removable inside jaw secured in position by bolts and provided with hooks engaging the tie, substantially as shown and described.

6. In street-railway construction, a combined iron sleeper and chair having a rigid outside jaw and a removable bifurcated inner jaw fitting over the center vertical rib of the tie, in combination with a rail having a web and bulb, the removable jaw being securely held in contact with the web and over the bulb of the rail by a bolt passing through said jaws under the rail, substantially as shown.

7. In street-railway construction, a combined cast-iron chair and sleeper made of the form shown, the outside chair or seat for the rail being cast integral with the bottom and rib, said rib being of suitable size and running on top of bed-piece from one outside jaw to the other, in combination with an inside jaw provided with an opening, C^2, and fitting over said rib, and a rail having a web and bulb, substantially as set forth.

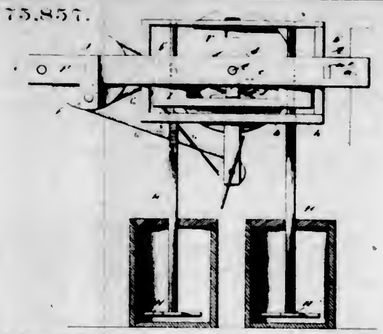
375,857. CHURN.

James H Wilmouth and Brandon McNairy, Aberdeen, Miss. Filed Feb. 10, 1887. Serial No. 227,184. (No model.)

Claim.—1. The combination, with the main frame of the device and the dasher-rod guide-frame, of the reciprocating dasher-rods, the longitudinal bar connecting said rods, the fan-shaft journaled on a bar depending from the guide-frame, the fan secured to said shaft, and mechanism, substantially as described, for simultaneously rotating the fan-shaft and moving the longitudinal bar up and down to reciprocate the dasher-rods, substantially as specified.

2. The herein-described device for simultaneously reciprocating two churn-dasher rods and rotating a fan between the same, which device consists of the main frame A, the dasher-rod guide-frame B, the crank-shaft C, the pulley *d* and fly-wheel D on said shaft, the fan-shaft E, journaled in the bar e^2, the pulley *e* and fan e' on the shaft E, the shaft F, the doubly-grooved pulley *f* and crank-handle f' on the shaft

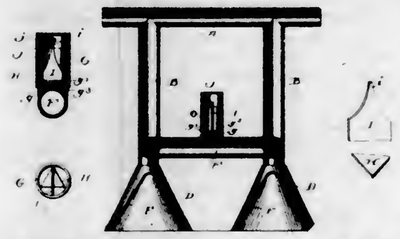
375,857.



F, the belts G G', the bar I, provided with the slot *i*, and the blocks J J, forming a bearing at their meeting edges for the transverse cylindrical part *j* of the crank, all constructed and arranged substantially as and for the purpose specified.

375,858. WASHING-MACHINE.

George E Wood, Del Norte, Colo., assignor of one-half to Frank I. Pruden, same place. Filed Mar. 10, 1887. Serial No. 230,434. (No model.)



Claim.—The combination, in a washing-machine, with the transverse end tubes, C, having their ends opening into and carrying the conical shells D, of a longitudinal tube, F, connecting the transverse end tubes and having its ends opening into the same, said longitudinal tube being provided on its upper side with a hole, *g*, near its center, a cylindrical valve-box, G, larger in interior diameter than said hole *g*, and disposed over said hole *g*, concentrically therewith, a bottom, g^2, located in said valve-box somewhat above the tube F, whereby a chamber is formed between said tube and bottom for the purpose set forth, said bottom being provided with a hole forming a valve-seat, and a downwardly-closing slide-valve in said valve-box above the bottom thereof.

375,859. DRAFT-HOOK FOR VEHICLES.

Julia B Wood, Manchester, N. H. Filed Mar. 16, 1887. Serial No. 231,211. (No model.)



Claim.—In elastic trace-connections, a whiffletree-hook and spring combined with and attached to the same vibratory shaft, each coil of the spring passing around the shaft, as shown and described.

375,860. HAIR-TONIC.

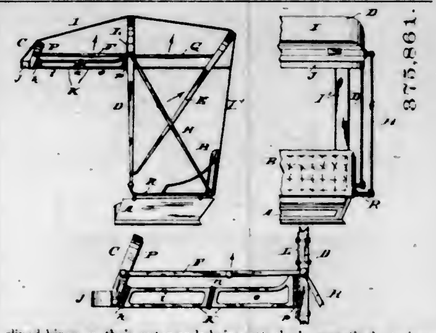
Albert I. Worthington, St. Clair, Mich. Filed Apr. 14, 1887. Serial No. 234,761. (No specimens.)

Claim.—As a hair-tonic, the composition consisting of water, wild indigo, sweet-flag, dandelion, cloves, red pepper, lavender flower, and alcohol, in the proportions substantially as specified.

375,861. BUGGY-TOP.

Charles A. Beblen, Cincinnati, Ohio. Filed Aug. 26, 1887. Serial No. 247,834. (No model.)

Claim.—1. In a buggy-top, a protecting-hood formed between the rearwardly-inclined front bow, C, and cross-support J, in combination with sustaining-braces K on each side of the top, the said braces being composed of two parts, *i* and *o*, connected together by an inclined hinge, *n*, their outer ends being attached, respectively, to bows C and D by an inclined and vertical hinge, as *k* and *p*, the hinge *k* being in substantially the same direction as hinge *n*, whereby when the top is thrown back the hood will cover and protect the interior lining, substantially as shown and described.



375,861.

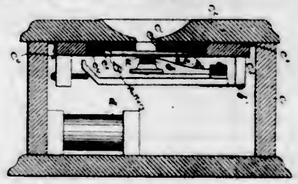
2. A buggy-top comprising the following elements: the seat A, sustaining the bows D E through the rail R, and the covering I, in combination with jointed braces F H, the side sustaining-braces K, composed of the parts *i o*, joined by an inclined hinge, *n*, their outer ends being provided with an inclined and vertical hinge, respectively, attached to rearwardly-inclined bow C and bow D, whereby the hood, formed between the said bow C and the cross-piece J, will be supported when the top is raised and cover the exposed parts of the top's interior when the same is thrown back, substantially as shown and described.

3. The rearwardly-inclined front bow, C, bow D, intermediate side braces, K, divided into parts *i o*, which are joined together by the inclined hinge *n*, and connected to said bows C D by inclined hinge *k* and vertical hinge *p*, respectively, in combination with the top-covering I, which extends below the bow C and is fastened to the cross-piece J, whereby a hood is formed, the bow E, and jointed exterior braces, F H, all arranged substantially as shown and described, and for the purposes specified.

4. In a buggy-top, the supporting-bows D E, exterior jointed braces, H and G, and interior braces F, in combination with the covering I, rearwardly-inclined bow C, cross-support J, and braces K, composed of parts *i o*, connected together by inclined hinges *n*, the outer parts being respectively attached to bows C and D by inclined hinge *k* and vertical hinge *p*, and the whole supported on a seat, as A, substantially as shown and described, and for the purposes specified.

375,862. TELEPHONE.

Maximilian Berthold, Cambridge, assignor to the American Bell Telephone Company, Boston, Mass. Filed Apr. 2, 1887. Serial No. 233,380. (No model.)



Claim.—1. The combination of the microphone or variable-resistance electrodes of a battery-telephone with a battery located between the said electrodes and the mouth-piece or sound-opening of the instrument, and having connected with it a sound-collecting plate or diaphragm that actuates the said electrodes, substantially as described.

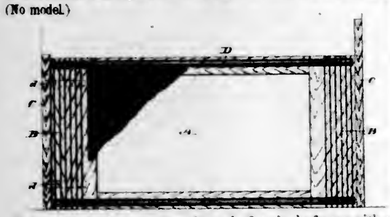
2. A galvanic battery having a passage through it for sound-waves and a vibrator or sound-collector, combined with electrodes connected with the poles of said battery and operated by said vibrator, substantially as described.

3. A battery for a telephone-transmitter, comprising a case or box constituting one element of the said battery, and a co-operating element inclosed in the said case or box, and a vibrator or diaphragm connected with the said case or box and forming therewith a sound-chamber, substantially as described.

4. A battery for a telephone-transmitter, comprising a plate having a central opening and rims or flanges surrounding said plate and opening, the said parts forming one element of the battery and containing the other element and exciting material for the battery, the said central opening and flange surrounding it constituting a passage for the sound-waves, substantially as described.

5. The combination of a galvanic battery having a vibrator or diaphragm connected with it, and an inclosing-case for said battery and the co-operating-electrodes and induction-coil, and a movable plate or frame within said case supporting the said electrodes and holding the battery in proper position with relation thereto, by means of which frame the battery may be changed without disturbing the adjustment of the electrodes, substantially as described.

375,863. **INSECT-SCREEN FOR WINDOWS OR DOORS.** JOHN W. BOUGHTON, Philadelphia, Pa. Filed Sept. 26, 1887. Serial No. 250,693. (No model.)

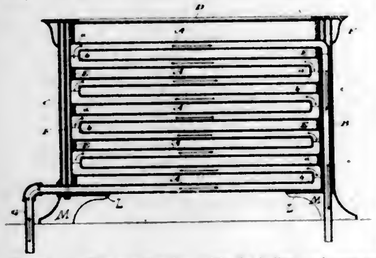


Claim.—1. An insect-screen formed of a single frame with netting thereon, having widened side stiles with vertical kerfs on the front thereof and extending to nearly the back thereof, whereby said stile may be readily narrowed for adjustment to a window, substantially as described.

2. An insect-screen having widened side stiles or rails with kerfs or grooves on the face thereof and strengthening tenons or dowels passing through the kerfed portions, substantially as described.

3. An insect-screen having widened side rails with kerfs or grooves on the face thereof and closing-strips D on the outer face of the same, substantially as described.

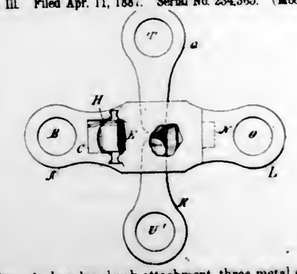
375,864. **HOT-WATER RADIATOR.** ARCHIBALD BRAKE, Toronto, Ontario, Canada, assignor of one-half to John Thomas Dodwell, same place. Filed Jan. 14, 1887. Serial No. 224,341. (No model.)



Claim.—1. The combination, with the hollow end supports, C cap D, and tubes A, provided with elbows connected together, as described, of the bolts F, passed through said cap and supports, substantially as described.

2. The combination, with the hollow end supports, C, formed with feet M and inwardly-extending lugs L, of the cap D, the tubes A, formed with elbows and connected together, as described, the cap D, the feed-pipe B, passed through one of said supports and connected with one of said tubes, and the bolts F, passed through said cap, supports, and flanges, substantially as described, and for the purposes specified.

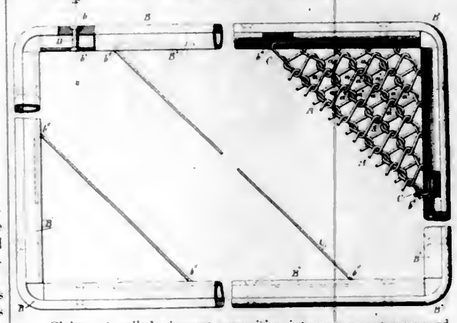
375,865. **HAY-HOOK ATTACHMENT.** THOMAS H. BROWN, Chicago, Ill. Filed Apr. 11, 1887. Serial No. 234,365. (Model.)



Claim.—1. In a hay-hook attachment, three metal sections, each having an eye at the outer end for attaching a rope, combined with a fourth section, also having an eye at its end, and provided with a spring attachment whereby, when suitably arranged in position, the said four sections can be locked together, substantially as described.

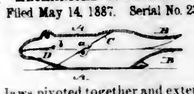
2. In a hay-hook attachment, a pair of metal sections, Q and R, each having at the inner end a lug, S, and connected inwardly and at right angles with a second pair of sections, one of which has a spring-actuated hook, D, provided with lug G, whereby said sections can be secured together or readily separated from each other, substantially as and for the purposes set forth.

375,866. **WOVEN-WIRE MAT.** FRED L. BRYANT, Chicago, Ill. Filed Apr. 15, 1887. Serial No. 234,907. (No model.)



Claim.—A coiled-wire mat comprising interwoven coils arranged transversely to each other, with their interlocked coils in forcible bearing against each other, a rectangular frame, to which the ends of both sets of coils are connected, and a diagonal brace or braces connected with said frame and retaining the coils at right angles with and in forcible bearing against each other, substantially as described.

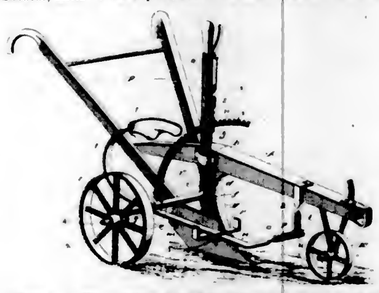
375,867. **MECHANICAL TOY FROG.** SAMUEL E. CLARK, Philadelphia, Pa. Filed May 14, 1887. Serial No. 238,177. (Model.)



Claim.—1. Jaws pivoted together and extended beyond the pivot, forming handles, in combination with a spring for closing the jaws, having an indentation, said parts being combined to form a mechanical toy, substantially as described.

2. The jaws A, with handles B, the tongue-plate D, between the jaws, and the closing-spring C, connected with the jaws and having an indentation in its face, all combined and operating substantially as described.

375,868. **SULKY ATTACHMENT FOR PLOWS.** WILLARD COBB, Decatur, Mich. Filed Sept. 6, 1887. Serial No. 248,967. (No model.)



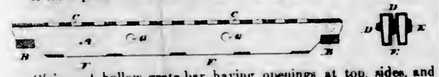
Claim.—1. The combination of the plow, the lever *a*, attached to the plow-beam and having its lower end provided with the openings *d*, the hanger *k*, attached to the plow-beam near the front end thereof and having the openings *l*, the axle *e*, having its inner end pivoted to the lever by a bolt passing through one of the openings *d* and having the wheel *i* at the outer end, the bar *m*, having its rear end secured to the axle and having the front end bent inward at right angles, provided with the openings *p* and secured to the hanger by a bolt passing through one end of the openings *p* and *l*, and the arm *w*, connecting the axle to the lever *a* and adjustably secured to the latter, substantially as described.

2. A sulky attachment for plows, comprising the lever *a* and means to secure the same to the plow-beam, the axle *e*, having its inner end pivoted to and vertically adjustable in the lower end of the lever *a*, the wheel *i* at the outer end of the said axle, the hanger *k*, adapted to be attached to the plow-beam in advance of the lever, the bar *m*, having its front end hinged to the hanger and vertically and laterally adjustable thereon, the rear end of the said bar being attached to the axle, and the arm *w*, connecting the axle to the lever *a* and adjustably secured to the latter, for the purpose set forth, substantially as described.

375,869. **BACKING ELECTROTYPE-SHELLS.** JOHN R. CUMMINGS, Chicago, Ill., assignor to The American Press Association, same place. Filed June 23, 1886. Serial No. 206,010. (No specimens.)

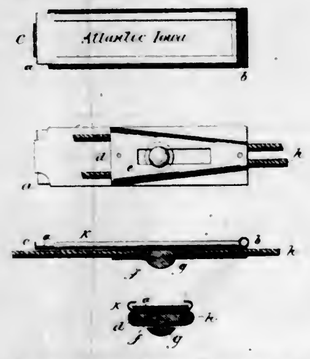
Claim.—The method of backing an electrotype-shell, consisting of applying molten metal thereto, and then at once scraping off the back of the shell with a suitable device—such as a rule with a straight edge—whereby all superfluous metal is removed and a perfectly-finished, light, pliable shell is produced without further operation, substantially as described.

375,870. **GRATE-BAR.** WILLIAM W. FORREST, Philadelphia, Pa., assignor of one-half to Stephen B. Colladay and George S. Hensel, both of same place. Filed Apr. 15, 1887. Serial No. 234,878. (No model.)



Claim.—A hollow grate-bar having openings at top, sides, and bottoms, and having the under side of its end portions cut away, forming lips, and having on one side male dowels projecting therefrom and on the other side female dowels, the walls of which project from the side of said bar, substantially as and for the purpose set forth.

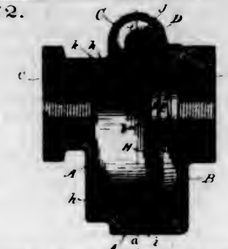
375,871. **CORD-FASTENER AND LABEL-HOLDER FOR MAIL-BAGS.** ALFRED J. GILLESPIE, Atlantic, Iowa. Filed Dec. 2, 1887. Serial No. 256,827. (No model.)



Claim.—In a mail-bag cord-fastener and label-holder, the combination of the tapering case having a longitudinal slot therein, a peripherally-grooved roller arranged and adapted to roll and slide within the case, and having a headed stem projected through the slot in the case, and a flanged label-holder, to the reverse side of which the tapering case is attached, substantially as described.

375,872. **STRAIGHT-WAY VALVE.** HARRISON P. HOOD, Indianapolis, Ind. Filed Aug. 3, 1887. Serial No. 246,010. (No model.)

Claim.—1. In a straight-way valve, the cylindrical case having the hollow screw-threaded bearing *k* formed therein, the eccentrically-perforated disk-valve H, having an annular screw-threaded flange projecting from one side thereof and intermeshing with the screw-threads in said bearing, cog-teeth arranged on the periphery of said disk, means for revolving the disk-valve from the exterior, and the removable case-end B, arranged to cover the entire face of the disk-valve, and having a single eccentrically-arranged opening, *d*, and valve-seat *e*, all combined and arranged to co-operate in the manner and for the purpose set forth.



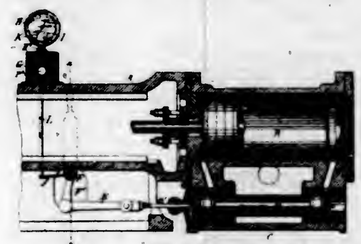
2. In a straight-way valve, the case having an interior bearing formed therein, the eccentrically-perforated disk-valve arranged to turn in said bearing and to move longitudinally therein when so turned, the removable case-end B, having the fixed annular valve-seat *e*, and the movable annular valve-seat *n*, mounted on a yielding support in said fixed seat, all combined and arranged to co-operate in the manner and for the purpose specified.

375,873. **SAFETY-PIN.** WILLIAM F. HYATT, Brooklyn, N. Y. Filed June 8, 1886. Serial No. 204,456. (No model.)



Claim.—The combination of a U-shaped shield and a pin comprising two limbs, one of which is sharpened and the other of which is secured to the shield, and has a portion forming a guide which is bent away obliquely from said last-named limb into that portion of the shield which is intended to receive the sharpened limb, said guide having a bearing in the shield in at least two places.

375,874. **STEAM-ENGINE INDICATOR.** ALBERT L. IDE, Springfield, Ill. Filed July 14, 1887. Serial No. 244,327. (No model.)



Claim.—1. The combination, with the steam-valve of an engine, of an indicator comprising a scale and an index-hand, one of which is movable relatively to the other, a part partaking of the motion of the valve constructed to engage and actuate the movable member of the indicator, means acting to carry the said movable part backwardly or into position with the index-hand at the zero-point of the scale, and retarding devices acting to check the speed of the said movable member of the indicator in its backward movement, substantially as described.

2. The combination, with the steam-valve of an engine, of an indicator comprising a scale and an index-hand, one of which is movable relatively to the other, a part partaking of the motion of the valve constructed to engage and actuate the movable member of the indicator, means acting to move the said movable part backward, and a dash-pot connected with and retarding the motion of the said movable member, substantially as described.

3. The combination, with the steam-valve of an engine, of an indicator comprising a scale and an index-hand, one of which is movable relatively to the other, a part partaking of the motion of the valve constructed to engage and actuate the movable member of the indicator, a spring acting to move the said movable member backward and retarding devices acting to check the speed of the movable member in its backward movement under the action of the spring, substantially as described.

4. The combination, with the steam-valve of an engine, of an indicator comprising a dial-plate and a rotating index-hand, a part partaking of the motion of the valve constructed to act upon the index-hand to throw the latter in one direction, means acting to turn said index-hand in a direction the reverse of that in which it is moved by the said movable part connected with the valve, and a dash-pot or equivalent retarding device giving to the said index-hand a slow backward movement, substantially as described.

5. The combination, with the steam-valve of an engine, of an indicator, comprising a dial-plate, a revolving index-hand, a shaft sustaining the said index-hand, provided with a pinion, a gear-segment engaging the pinion, a spring applied to turn the hand backwardly, a movable part partaking of the motion of the valve acting upon said gear-segment, and a dash-pot or equivalent device acting to retard the motion of the gear-segment, substantially as described.

6. The combination, with the steam-valve of an engine, of an indicator comprising a dial and revolving index-hand, a shaft supporting the index-hand, provided with a pinion, a gear-segment engaging said pinion, a spring applied to the shaft to rotate the latter in a direction to carry the hand backwardly upon the scale, a vertically-sliding rod, L, engaging one end of the gear-segment, a dash-pot applied between the said rod L and a stationary support, and a part partaking of the motion of the valve constructed to engage and actuate the said rod L, substantially as described.

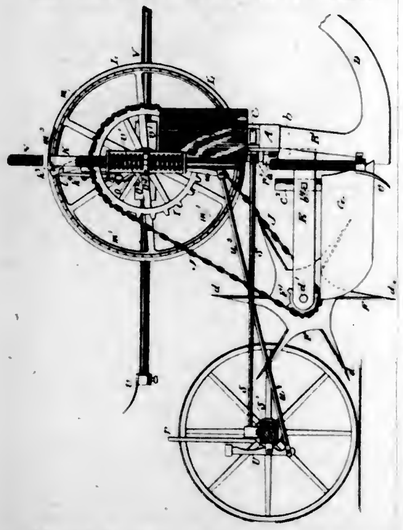
7. The combination, with the steam-valve of an engine, of an indicator comprising a scale and an index-hand, one of which is movable relatively to the other, a movable part, as rod L, connected with the movable member of the indicator, a part partaking of the motion of the valve constructed to engage and actuate the said movable part, and a dash-pot connecting said movable part with a stationary support, said dash-pot consisting of a cylinder open at one end and a piston sliding in the cylinder and provided with an inwardly-opening valve, substantially as and for the purpose set forth.

8. The combination, with the scale and index-hand of an indicator and a vertically-movable rod, L, actuating the movable member of the indicator, of a part partaking of the motion of the valve constructed to engage and move vertically the said rod L, and an eccentric, P, engaging a projection or pin upon the said rod L, substantially as described.

9. The combination, with the steam-valve of an engine, of an indicator comprising an index-hand actuated by the valve and a scale marked to show the horse-power developed by the engine under a given steam-pressure, substantially as described.

10. The combination, with the steam-valve of an engine, of an indicator comprising an index-hand actuated by the said valve and a series of scales marked to indicate the horse-power under two or more different steam-pressures, substantially as described.

375,875. **CHECK-ROW PLANTER.** JENS H. JENSEN, Minden Nebr. Filed Oct. 29, 1887. Serial No. 253,759. (No model.)



Claim.—1. In corn-planters, the combination of the wheel I, having side lug, *g*, ratchet K, having a side lug on each arm, and the laterally-toothed wheel for operating the seed-bar, said elements coacting as and for the purpose set forth.

2. In a planter, in combination with a shaft, H, a two-arm ratchet having a lateral tooth on each arm and being pivoted to a perforated block in a central opening in the ratchet, and an adjacent wheel which imparts motion to the seed-bar, said wheel being provided with teeth adapted for engagement with the ratchet, substantially as set forth and described.

3. The two-arm ratchet K, mounted on a shaft, H, and having ratchet h^2 and ratchet-dog h^4, pivoted thereto, in combination with wheel I, connected with an arm of the ratchet and provided with driving mechanism, and a wheel adjacent to the ratchet and provided with lateral teeth *m'* and with lateral projections to actuate the seed-bar, substantially as set forth.

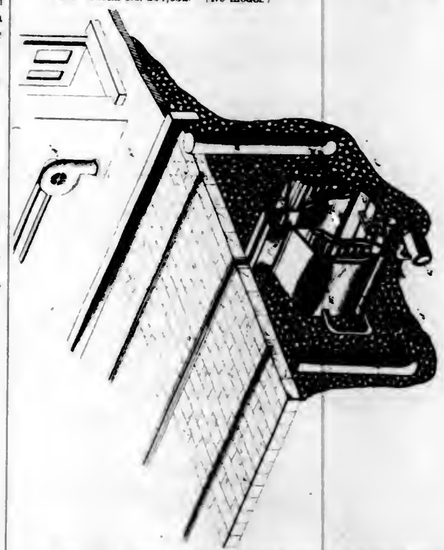
4. In combination with shaft H, a two-arm ratchet mounted thereon and provided with a lateral tooth on each arm, said ratchet having a slight swinging movement, a wheel adjacent to the ratchet and having lateral teeth for engagement therewith, said wheel being provided with projecting wings m^2 m^3, and seed-bar provided with rollers *s* and *s'* in position to engage with the last-mentioned wheel, substantially as shown and described.

5. In combination with shaft H, a tube placed on said shaft and having an annular flange, *n*, on its outer end, its inner end having a swivel-connection with the hub of wheel I, a swivel, P, connected with the outer end of the tube, a spring placed within the swivel and pressing against the outer end of the tube, and suitable means for moving swivel P on the shaft outward, substantially as set forth and described.

6. In combination with shaft H and a connection-tube thereon, a grooved swivel-head, n^2, placed on the tube and connected by a rod, O, with the ratchet-dog pivoted to the ratchet K, a swivel, N', on the tube and connected at one end with swivel-head n^2, which is pressed by a spring placed on the tube and within the swivel, and suitable means for drawing swivel N' outward on the shaft, substantially as and for the purposes set forth.

7. In combination with shaft H, a fixed bearing, Q, for said shaft, said bearing being provided with a beveled shoulder, *t*, a swinging arm, *u*, having a bearing, T, provided with a beveled shoulder, *t'*, and carrying a spring, *u'*, a rod connected with arm *u* and provided with a lever for drawing the rod, and an adjacent wheel on the shaft H, provided with lateral teeth *m'* and carrying devices for engaging with the seed-bar, substantially as set forth.

375,876. **CONDUIT FOR ELECTRIC CONDUCTORS AND POWER-CABLES.** ISAAC LA RUE JOHNSON, Washington, D. C. Filed May 9, 1887. Serial No. 237,652. (No model.)



Claim.—1. A conduit or way for power-cables for street-railways having lateral auxiliary conductor-chambers, through which currents of hot or cold air are passed, by means of suitable fan mechanism, to dry simultaneously all the chambers and to ventilate the conductor-chambers, substantially as described.

2. A combined conduit or way for power-cables for street-railways and electrical conductors having lateral auxiliary chambers for electrical service, through which hot or cold air currents are passed, by means of suitable fan mechanism, to ventilate and dry the same, and dry or thaw out the power-cable chamber, substantially as described.

3. A combined conduit or way for power-cables for street-railways having lateral auxiliary air and water tight chambers for electrical service, through which currents of hot or cold air are driven or exhausted, by means of suitable fan mechanism, for ventilating and drying the same, and thereby drying or thawing out the cable-way proper, substantially as described.

4. A conduit or way for power-cables and electrical railways having a chamber for the cable-way proper, with a slotted drain-pipe at its bottom, and having auxiliary chambers at its sides, with drain-pipes at the bottom of said chambers for carrying away all moisture that may be precipitated therein, substantially as described.

5. A conduit or way for power-cables and electrical conductors having a longitudinally-slotted drain-pipe at its bottom, and lateral or side chambers having similarly-slotted drain-pipes at the meeting portions of their converging sides, the conduit or way proper being provided with adjustable standards and their cable-bearing pulleys, substantially as described.

6. A conduit or way for power-cables and electrical conductors of semi-cylindrical form and having lateral chambers, and all provided with longitudinally-slotted drain-pipes at their converging sides, through the lower one of which pass the binding-screws of standards having pulleys attached thereto, over which pass power-cables for street-railway service, substantially as described.

7. A conduit or way for power-cables and conductors for electricity having an approximately semi-cylindrical contour and a slotted drain-pipe at the bottom thereof, and having also a lateral chamber throughout its length and lying within the walls of the same, and provided, also, with slotted drain-pipes, and a pulley-standard detachably secured therein at desired intervals for supporting power-cables, substantially as described.

8. A conduit or way for power-cables and electrical conductors having the main or power-cable chamber A of approximately semi-cylindrical form, the lower longitudinally-slotted drain-pipe, C, the air and water tight lateral chambers B for electrical conductors, and the curved bracket-supports thereto for electrical conductors, substantially as described.

375,877. **RUBBER HOSE.** THOMAS S. JUDSON, Matteawan, assignor to the New York Rubber Company, New York, N. Y. Filed Dec. 14, 1886. Serial No. 221,564. (No model.)



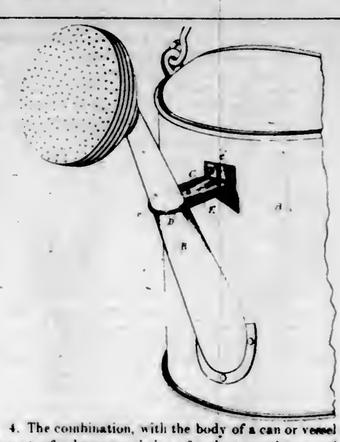
Claim.—1. An india-rubber hose containing two or more plies of duck or other fibrous material coated with rubber and having an inner layer or lining of rubber, and a coil or spiral of wire whose coils are sufficiently far apart to render the hose flexible interposed between two layers of such fabric, the whole tube being vulcanized, substantially as described.

2. An india-rubber hose consisting of an inner layer of rubber, two or more layers of duck or other fibrous material coated with rubber, a coil or spiral of wire embedded in a layer of rubber just beneath the outermost layer of duck or other fibrous material, and an outer layer or coating of rubber, substantially as described.

3. A corrugated india-rubber hose having two or more layers of duck or other fabric coated with rubber, and a spiral or coil of wire inclosed between two of said layers, the coils being under the ridges of the corrugations, substantially as described.

375,878. **SPRINKLING OR OTHER CAN.** JOHN H. KINDLEN, Chicago, Ill., assignor to the Cragin Manufacturing Company, same place. Filed Oct. 25, 1887. Serial No. 253,277. (No model.)

375,878.



Claim.—1. The combination, with the body of a can or vessel and a tubular spout, of a brace consisting of a sheet-metal part and a wire loop encircling the spout and attached at its ends to said sheet-metal part, substantially as described.

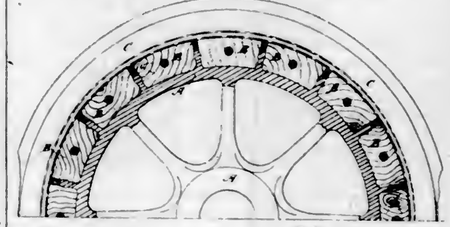
2. The combination, with the body of a can or vessel and a tubular spout, of a brace consisting of a sheet-metal part concaved upon its outer end to fit the spout, and a wire loop extending around the spout and attached at its ends to the sheet-metal part, substantially as described.

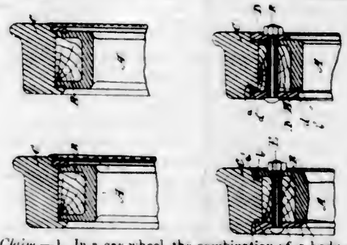
3. The combination, with the body of a can or vessel, of a brace consisting of a sheet-metal part and a wire loop extending around the spout, and extending along and secured to the side edges of the sheet-metal part, substantially as described.

4. The combination, with the body of a can or vessel and a tubular spout, of a brace consisting of a sheet-metal part and a wire loop extending around the spout, and extending along the edges of the sheet-metal part, the side margins of said metal part being bent around the said wire, substantially as described.

5. The combination, with the can body and spout, of a brace consisting of a sheet-metal part, E, provided with a concave edge, *e*, at its outer end, and a wire loop, D, bent around the spout and extending along and inclosed in the side margins of the said sheet-metal part E, substantially as described.

375,879. **RAILWAY-WHEEL.** WILLIAM H. KITSON, Kirkstall, near Leeds, County of York, England. Filed Apr. 26, 1887. Serial No. 236,245. (No model.) Patented in England Dec. 10, 1885, No. 15,169.



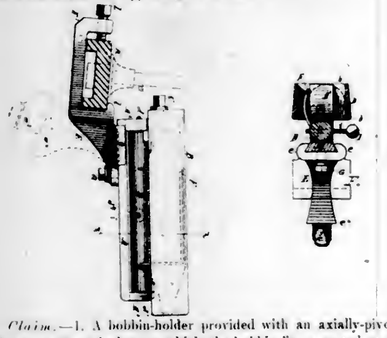


Claim.—1. In a car-wheel, the combination of a body or center portion having a continuous annular groove or channel in its periphery, a tire, cushioning-blocks adapted to be forced into said continuous groove or channel, so that when in position they will project beyond the periphery of the body portion and bear against the inner circumference of the tire, and retaining-bolts passing through said cushioning-blocks and the body portion of the wheel, whereby the tire, cushioning-blocks, and body portion are locked together, substantially as described.

2. In a car-wheel, the combination of a body portion, a tire, cushioning-blocks located in the periphery of the body portion of the wheel, so as to project beyond said periphery and bear against the inner circumference of the tire, a flanged annular fastening ring or rings adapted to engage the body portion and tire, and retaining-bolts, whereby the flanged annular fastening ring or rings and the tire are locked in position and to the body portion of the wheel, substantially as described.

375,880. **BOBBIN-HOLDER FOR SPOOLING-MACHINES.** PERLEY LAFLIN, Warren, assignor to Theodore C. Bates, North Brookfield, Mass. Filed Aug. 17, 1887. Serial No. 247,210. (No model.)

Brief.—The invention resides in the construction of the holder, the means for regulating the tension upon the bobbin, provisions for the longitudinal adjustment of the guard, the provision of a rocking bed for the bobbin, and the means for supporting the holder.



Claim.—1. A bobbin-holder provided with an axially-pivoted rolling support or bed upon which the bobbin lies, a guard or side plate having an upright surface, as *b*, against which the bobbin rests, and an upwardly-projecting swinging presser opposite thereto, between which and said surface the bobbin is confined, in the manner described, and permitted rotary movement as the thread is drawn therefrom around the lower edge of said guard, substantially as set forth.

2. A bobbin-holder provided with an axially-pivoted bobbin-supporting bed, having a swinging presser connected therewith for bearing the bobbin against the side of the holder, and a laterally-projecting stud or arm, in connection with the pivotal axis thereof, having a weight or ball-head disposed at one side of said axis, for the purpose set forth.

3. A bobbin-holder having an axially-pivoted bobbin-support, an open-topped cradle or guard with side bearing-surface, a presser-arm for retaining the bobbin against said guard-surface, swinging on an axis which is below the bobbin, and a laterally-adjustable weight in combination therewith for regulating the pressure of said arm thereof against the bobbin, substantially as described.

4. The combination, with the bobbin-holder frame and the bobbin-supporting bed, of the guard attached to said frame and laterally adjustable in relation to said bed, substantially as and for the purpose set forth.

5. The combination, with the bobbin-holder frame and the guard or cradle having sides for retaining a bobbin, of an axially-pivoted roll or bed disposed parallel with the sides of the guard at a position for supporting the bobbin between the same, substantially as described.

6. The combination of the frame A, having the upward projection A', the forked guard B, supported thereon and attached by the screw at its rear end, the supporting-bed axially pivoted in said frame, the presser-arm F, and the adjustable stud carrying the weight I, substantially as and for the purpose set forth.

7. The combination, with a supporting-bracket having means for its attachment to a spooling-machine, of a longitudinally-adjustable bobbin-holder frame carrying a bobbin-supporting cradle or guard and mounted to slide upon said bracket, and a clamping-screw for securing the parts together, substantially as and for the purpose set forth.

8. The supporting-bracket E, having dovetailed guides or retaining-ears *e*, in combination with the bobbin-holder frame A, fitted thereto and longitudinally adjustable upon said bracket, and means for confining said frame at positions of adjustment, substantially as set forth.

9. The combination, with the spindle step-rail K, in a spooling-machine, of the bobbin-holder-supporting bracket E, having the lip *l*, backwardly-extended arm E', and clamp-screw L, embracing said spindle step-rail, and the forwardly-extended seat and undercut ears *e*, supporting the bobbin-holder frame, which is longitudinally adjustable thereon, and the set-screw G, substantially as and for the purposes set forth.

10. The combination of the supporting-bracket E, the frame A, adjustable thereon, the guard B, having the bearing-surface *b*, the bobbin-support bed D, journaled at its ends on the frame A, the presser F, adapted to swing on the same axis as the bed, and the threaded stud carrying the weight I, connected therewith and laterally adjustable in relation to the axis, substantially as and for the purposes set forth.

375,881. **SCAVENGER-ROLL FOR SPINNING-MACHINES, &c.** PERLEY LAFLIN, Warren, assignor to Theodore C. Bates, North Brookfield, Mass. Filed Aug. 17, 1887. Serial No. 247,211. (No model.)

Brief.—The object of the invention is to produce a scavenger-roll which will catch and wind up the waste and broken-down ends more surely and efficiently than do the ordinary rolls in use, while its surface is less subject to deterioration by continued use.



Claim.—1. A scavenger-roll for spinning or roving machines, composed of or having its exterior surface formed of cork, substantially as and for the purpose set forth.

2. A clearer or scavenger roll for spinning or roving machines, having a rough granulated surface, substantially such as described, for the purpose set forth.

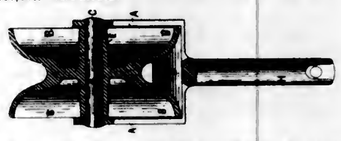
3. A clearer or scavenger roll for spinning or roving machines, having a granulated exterior surface coating of a semi-elastic substance, substantially as and for the purpose set forth.

4. A scavenger-roll for spinning or roving machines, consisting of a cylindrical body having its exterior surface coated with a comminuted substance of granulated semi-elastic nature, substantially as set forth.

5. A scavenger-roll for spinning and roving machines, having its exterior surface covered with granulated cork secured thereon by glue or cement, substantially as hereinbefore set forth.

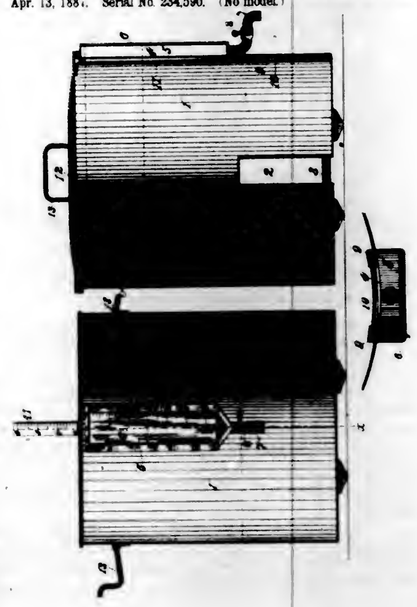
6. The combination, with the drawing-rolls in spinning or roving machinery, of a clearer or scavenger roll having a granular surface, substantially such as described, for the purpose set forth.

375,882. **COMBINED ROLLER AND BELL FOR FISHING-BOATS.** LLEWELLYN D. LOTHROP, Gloucester, Mass. Filed Oct. 26, 1887. Serial No. 253,478. (No model.)



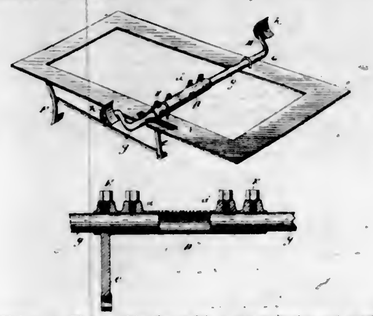
Claim.—A combined bell and pulley consisting of a double bell which forms a grooved roller between the flanges, having an axis journaled in a supporting-frame, substantially as described, as and for the purpose set forth.

375,883. **CREAMING-CAN.** SAMUEL Y. LOVE, Meadville, Pa. Filed Apr. 13, 1887. Serial No. 234,590. (No model.)



Claim.—A milk-can having a slot formed in the side thereof, in combination with a box having a transparent side, inclosing said slot and provided with an outlet, and a movable dam or plate for closing said slot, the transparent portion of the box and the slide being provided with a graduated scale, substantially as set forth.

375,884. **WAGON-BRAKE.** CHARLES A. LOWELL, Cortland, N. Y., assignor to W. H. Newton, same place. Filed Oct. 4, 1887. Serial No. 251,453. (No model.)

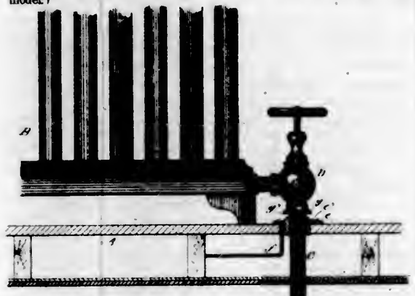


Claim.—1. The combination, with a wagon-brake rod made in two parts, of an adjusting-sleeve connecting the rods and having means for holding them therein, and a lever-arm integral with the sleeve, as set forth.

2. The combination, with a brake-rod made in two parts, of an adjusting-sleeve connecting the rods, having lugs in pairs near its ends, and a lever-arm integral therewith, as set forth.

3. The combination, with a brake-rod in two parts, united by a sleeve having lugs in pairs near each end and a lever-arm integral therewith, of set-screws passing through said lugs, holding the separate parts of the brake-rod within the sleeve, and bearings around the sleeve between the lugs, securing the brake to the body, as set forth.

375,885. **SAFETY-PLATE FOR STEAM-PIPES.** EDWARD W. MARSH, Hartford, Conn. Filed Oct. 14, 1887. Serial No. 252,295. (No model.)



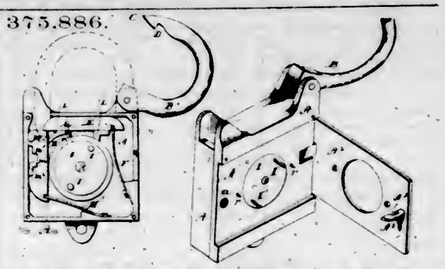
Claim.—1. In combination with a steam-pipe passing through a floor, a valve and a plate surrounding the steam-pipe at the point where it passes through the floor, the said plate having a portion fitted to an opening in the floor and a portion provided with a channel in its upper face, and with a duct leading from said channel, substantially as set forth.

2. In combination with the valve of a steam-radiator, a steam-pipe leading to said valve, a plate surrounding said pipe and provided with an annular channel in its upper face, a duct leading from said channel, and a drip-washer located above the plate, substantially as described.

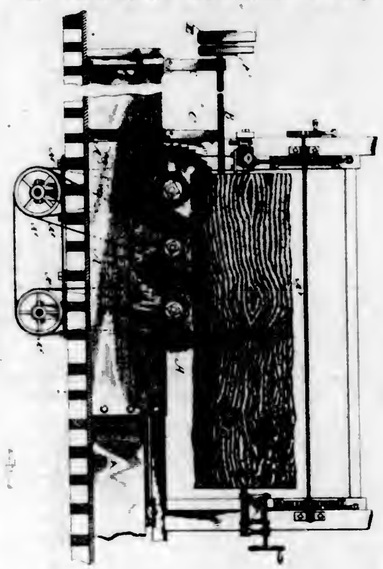
375,886. **SEAL-LOCK.** CHARLES A. MARSHALL, Lowell, assignor of one-half to William H. Bartlett, New Bedford, Mass. Filed June 9, 1887. Serial No. 240,729. (No model.)

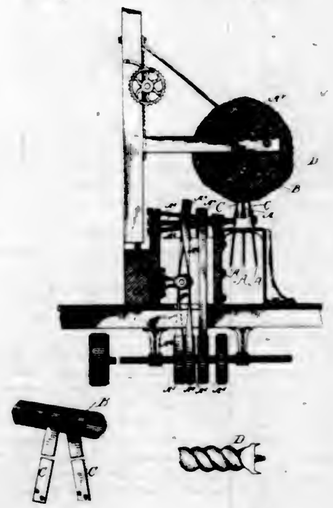
Claim.—1. The combination, with the hinged leaf, its notched pin, and a notched spring-bolt engaging said pin when pressed in either direction from a central position, of the shackle constructed to bear upon and move the said spring-bolt in one direction.

2. In a seal-lock, the combination of a casing, a shackle pivoted in the casing, a bolt in position to engage said shackle when the latter is closed, a disk pivoted centrally of the casing and having a plurality of pins extending through a side aperture in the casing, and a projection to engage the shackle-locking bolt, and a leaf hinged to the casing and having an aperture through which the pins on the disk extend when the leaf is closed, all substantially as shown and described.



375,887. **CLAPBOARD-MACHINE.** JAMES MCINTYRE, Boston, Mass. Filed Feb. 26, 1887. Serial No. 229,028. (No model.)

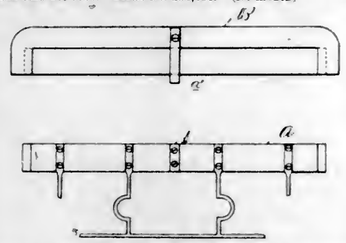




Claim.—1. In machines for sawing clapboards in which the log to be sawed is carried by a support constructed and arranged for the log to be turned thereon and provided with means for feeding lengthwise the log being sawed, the combination of a circular saw to operate on the log, arranged in a plane more or less radial therewith, means to rotate said saw, an auger to bore said log lengthwise along a line at the inner edge of the cut made by said saw in the log, and means to rotate said auger simultaneously with the rotation of said saw, substantially as described.

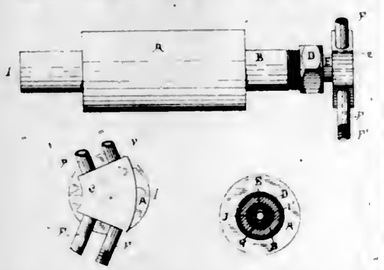
2. In machines for sawing clapboards in which the log to be sawed is carried by a support constructed and arranged for the log to be turned thereon and provided with means for feeding lengthwise the log being sawed, the combination of a circular saw to operate on the log, arranged in a plane more or less radial therewith, means to rotate said saw, an auger to bore said log lengthwise and along a line at one side of the central line of the log and at the inner edge of the cut made by the saw in the log, and means to rotate said auger simultaneously with the rotation of said saw, substantially as described.

375,888. **BUGGY-SEAT.** DANIEL B. MURRAY, Youngstown, Ohio. Filed Jan. 31, 1887. Serial No. 226,023. (No model.)



Claim.—In carriage and buggy seats having removable upholstery, a vertical spring attached at one end to the side of a removable skeleton back and therefrom extending downward, terminating at its lower end in a head formed by a notch or shoulder in its side, suitable to catch over the lower edge of the permanent rail or bar of a skeleton back, locking the removable back to the permanent rail or bar, substantially as described, and for the purpose expressed.

375,889. **GUNPOWDER-MILL ROLL.** PAUL A. OLIVER, Oliver's Mills, Pa. Filed June 14, 1887. Serial No. 241,267. (No model.)

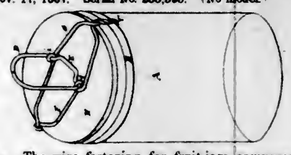


Claim.—1. The combination, with a hollow roll provided with a hollow journal, an internal pipe extending within the roll, and openings connecting the hollow journal with the interior of the roll around the pipe, of two stationary concentric pipes inserted within the said hollow journal and communicating with the said internal pipe and the openings, respectively.

2. The combination, with a hollow roll provided with a hollow journal, an internal pipe extending within the roll, and openings connecting the hollow journal with the interior of the roll around the pipe, of a stationary casing provided with inlet and outlet pipes and with two concentric pipes inserted within the hollow journal, thereby connecting the said inlet and outlet pipes with the said internal pipe and the openings, respectively.

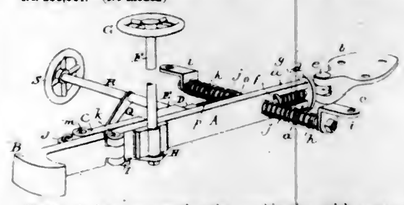
3. The combination, with a hollow roll provided with a hollow journal, an internal pipe extending within the roll, and openings connecting the hollow journal with the interior of the roll around the pipe, of two stationary concentric pipes, the outer provided with a collar on the end inserted within the said hollow journal, said inner and outer pipes communicating with the said internal pipe and the openings, respectively, a packing-gland formed in halves longitudinally and surrounding the outer pipe, and a screw-cap engaging with a screw-threaded portion on the end of the hollow journal and forcing the packing-gland within it.

375,890. **JAR-FASTENER.** CONRAD OPPERMAN, Louisville, Ky. Filed Nov. 17, 1887. Serial No. 255,396. (No model.)



Claim.—The wire fastening for fruit-jars composed of a wire doubled, or two wires looped, twisted together at the ends and provided with hooks at the ends of the twists, and another wire passing through the loops and bent so as to form a cam and lever-frame, arranged and operated substantially as set forth.

375,891. **CAR-COUPLING.** JOHN Z. PALM, Bowmansville, assignor to Thomas Schweitzer, Spring Grove, Pa. Filed Oct. 31, 1887. Serial No. 253,901. (No model.)



Claim.—1. In a car-coupler, the combination, with a car, of a bracket, *b*, secured thereto, a draw-bar, A, slotted at its inner end and provided with a plate, *d*, a rod or stem, *c*, projecting through the end plate, *d*, inward between the arms of the draw-bar, a plate, *f*, secured to the outer end of the rod *c*, a spring, *g*, encircling the rod or stem, and a pin or bolt, *e*, connecting the rod or stem with the plate or bracket *b*.

2. In combination with a car and a bracket, *b*, secured thereto, a draw-bar, A, slotted at its inner end and pivotally connected with the bracket, a rod or stem projecting through the slotted end of the draw-bar and carried at its ends in brackets *i*, and springs *j*, encircling the stem *h* and bearing at opposite ends upon the draw-bar or brackets *i*.

3. In a car-coupler, the combination, with a draw-bar, of a laterally-swinging hook pivotally attached thereto, a latch for locking the said hook against lateral movement, a shaft projecting outwardly beyond the side of the car, and mechanism, substantially as shown, connected with the shaft and serving to operate the latch and the hook.

4. In a car-coupler, the combination, with a draw-bar, of a laterally-swinging hook pivotally attached thereto, a latch for locking the said hook against lateral movement, a vertical shaft projecting upward above the floor of the car, and mechanism, substantially such as shown, connected with the shaft and serving to operate the latch and the hook.

5. In a car-coupler, the combination, with a draw-bar, of a laterally-swinging hook pivoted thereto, a locking device for retaining said hook in position, a vertical shaft journaled in the draw-bar, a second shaft also journaled in the draw-bar and projecting laterally therefrom, and mechanism for operating the hook and the latch and connected with both of the shafts, substantially as shown.

6. In combination with a draw-bar and a hook pivoted thereto, a plate, C, or equivalent device connected with the hook, a latch, D, adapted to engage the plate C, a plate, H, journaled in the draw-bar and connected with the plate C and with the latch D, and means for operating the plate H, all substantially as shown.

7. In combination with draw-bar A, pivoted hook B, plate C, and latch D, all arranged substantially as shown, a plate, H, provided with arms I and K, connected, respectively, with the plate C and latch D, and means for swinging said plate H upon its pivot.

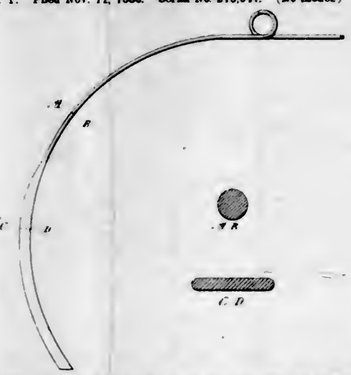
8. In combination with draw-bar A, hook B, plate C, and latch D, arranged substantially as shown, plate H, mounted upon the draw-bar and provided with a curved slot, L, adapted to receive a pin, M, upon the plate C, and a bar, N, connecting the plate H with the latch D.

9. In combination with draw-bar A, hook B, plate C, and latch D, a plate, H, mounted upon the draw-bar and provided with a slotted arm, I, a pin, M, secured to plate C and working in the slotted arm, and a bar, N, pivotally connected at one end to the plate H and connected at its opposite end by means of a sliding joint with the latch D.

10. In combination with draw-bar A, hook B, plate C, and latch D, arranged substantially as shown, a plate, H, mounted upon the draw-bar A and provided with arms I, J, and K, a pin, M, secured to plate C and working in a slot in arm I, a rod or bar, N, connecting arm K with latch D, a shaft, F, secured to and forming the pivot of plate H, a shaft, R, arranged at right angles to shaft F and provided with a radial arm, Q, and a link, P, connecting the arms J and Q, all substantially as shown.

11. In combination with draw-bar A, hook B, plate C, and latch D, a shoulder, *q*, upon that face of hook B opposite to plate C, a slotted plate, H, pivoted to the draw-bar, a pin, M, projecting from plate C into a slot in the plate H, a rod, N, pivotally connected to the plate H and slotted where it is connected to latch D, and means for swinging the plate H upon its pivot.

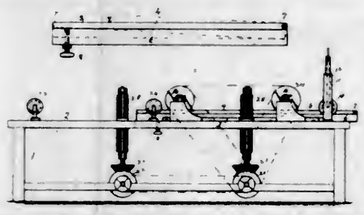
375,892. **HORSE-RAKE TOOTH.** WILLIAM H. PATTEN, Canastota, N. Y. Filed Nov. 11, 1886. Serial No. 218,647. (No model.)



Claim.—1. A round curved rake-tooth flattened on its sides from near the middle toward the point, the front and rear lines of the curve substantially parallel with each other from the beginning of the flattened portion of the tooth to the point, forming a broad section, and the point cut from rear to front in a straight line, forming an acute angle on the inner front point of the tooth, substantially as set forth.

2. A round spring rake-tooth flattened on its sides from near the middle of the tooth to the point thereof, the front and rear lines of curve substantially parallel with each other, and having the flattened end cut in straight line from front to rear, forming an acute angle on the front point of the tooth and a wide straight wearing-surface on the lower end of the tooth.

375,893. **SHAPING-MACHINE.** JOHN PEPPER, Jr., Rome, N. Y. Filed June 23, 1886. Serial No. 205,971. (No model.)



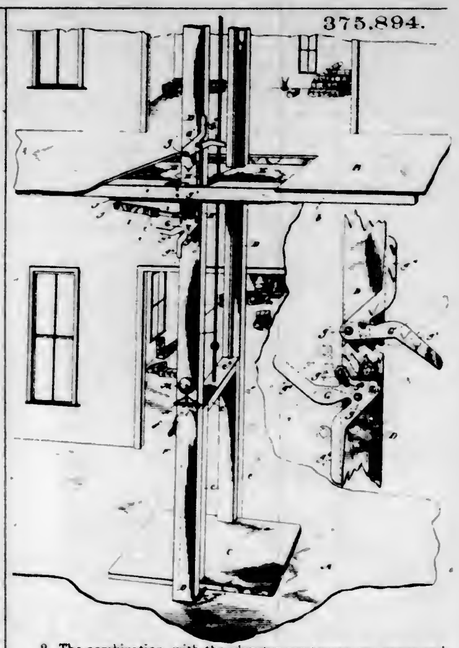
Claim.—1. The combination of one or more rotating cutter-heads, each head carrying one or more cutting-edges, the reciprocating and adjustable carriage moving between ways under the cutter-head, with means for vertically adjusting the carriage, two or more guide-rolls for engaging the upper surface of the articles to be operated upon, and two or more feed-rolls and means for operating the same.

2. The combination of one or more rotating cutter-heads, each head carrying one or more adjustable cutting-edges, the reciprocating carriage moving between ways under the cutter-head, with means for vertically adjusting the carriage, two or more guide-rolls for engaging the upper surface of the article to be operated on, and two or more feed-rolls and means for operating the same, substantially as set forth, for the purposes stated.

375,894. **DEVICE FOR AUTOMATICALLY OPERATING HATCH-WAYS FOR ELEVATORS.** JAMES W. POTTS, St. Joseph, Mo., assignor of one-half to John P. Strong, same place. Filed May 17, 1887. Serial No. 238,493. (No model.)

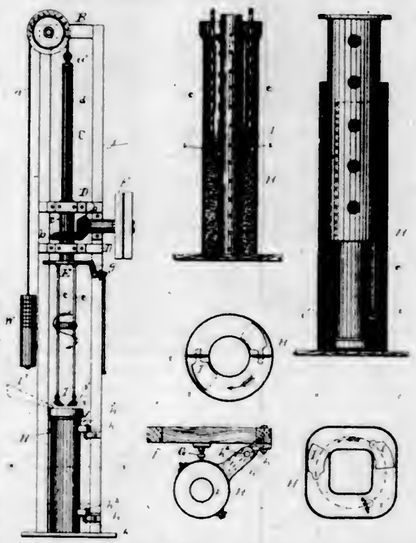
Claim.—1. The combination, for automatically operating hatchway-doors, of two levers, K and K', of different orders, connected with said doors, an elevator-car having upper and lower projections or pins, as F F', two connected levers, as G G', one above and the other below the hatchway, and connections between the said levers G G' and the door operating levers K K', substantially as set forth.

375,894.



2. The combination, with the elevator-car having the upper and lower pins, F and F', of the connected forked levers G and G', the bar J, a rod or bar to connect the bar J with the lever G, the levers K and K', of different orders, and the links L, substantially as set forth.

375,895. **SAND DISTRIBUTER AND PACKER.** SAMUEL L. ROBERTSON, Cleveland, Ohio. Filed Oct. 14, 1887. Serial No. 252,391. (No model.)



Claim.—1. In a sand distributer and packer, the combination of a vertically-moving rod and means for revolving the same, with carriers rigidly attached to the lower end of said rod, and rakes and inclined shovels attached to said carriers, substantially as and for the purpose specified.

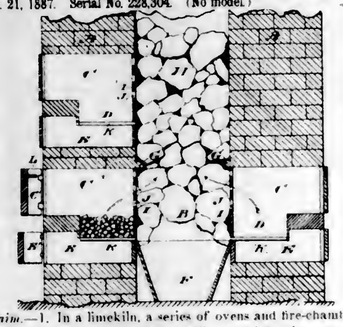
2. In a sand distributer and packer, the combination of a rotating sleeve journaled in the frame and having a spline or feather, and a

grooved rod passing loosely through said sleeve, with carriers rigidly attached to the lower end of said rod, and rakes and inclined shovels attached to said carriers, substantially as and for the purpose specified.

3. In a sand distributer and packer, the combination of a vertically-movable rod and means for revolving the same, with carriers on said rod, rakes and inclined shovels on said carriers, and a counter-balancing-weight connected, substantially as described, with the upper end of said rod, for the purpose specified.

4. In a sand distributer and packer, the combination of a core-box or flask and means for removably hinging the same to the frame, with an adjusting-screw, G, and the revolving carriers, bearing the rakes and inclined shovels herein described, for the purpose specified.

375,896. **LIMEKILN.** MARCUS SAYRE, Montrose, N. J. Filed Feb. 21, 1887. Serial No. 228,304. (No model.)

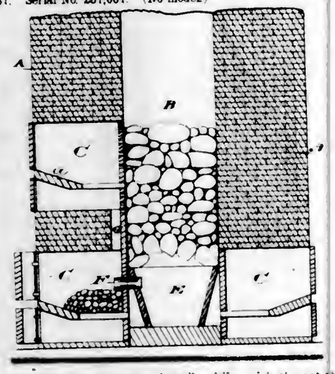


Claim.—1. In a limekiln, a series of ovens and fire-chambers arranged one above the other, substantially as and for the purposes set forth.

2. In a limekiln, a series of fire-chambers arranged one above the other and below the bottoms of the ovens, as set forth, for the purposes described.

3. In a limekiln, a series of fire-chambers arranged one above the other, and openings, as described, for admitting of the outward escape of air as the limestone settles and causes the backward pressure of said air, without disturbing the fires, as set forth.

375,897. **LIMEKILN.** MARCUS SAYRE, Newark, N. J. Filed Mar. 21, 1887. Serial No. 231,667. (No model.)



Claim.—1. The combination, in a limekiln, with the pit thereof, of fire-boxes or ovens, as C, located below the ledges formed at the top of said pit, and a flue or flues, as F, connecting said fire-boxes with said pit, as and for the purpose set forth.

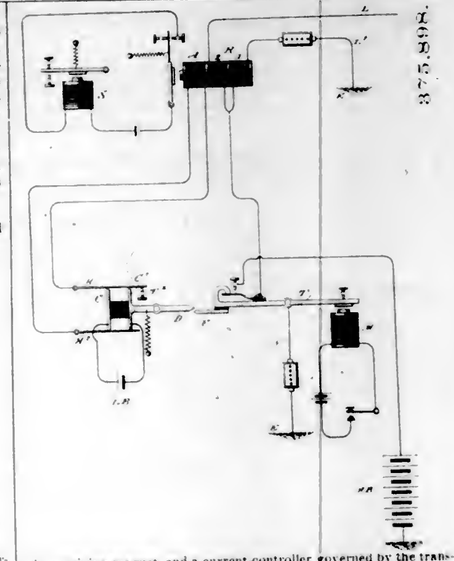
2. The combination, in a limekiln, of fire-boxes or chambers located one above another, and a flue or flues, as G, communicating with said boxes or chambers and with the receptacle for the limestone, as and for the purposes set forth.

3. In a limekiln, a fire-box or fire-boxes provided with a hearth arranged upon an incline slanting from the mouth of the oven downward to the grate, as shown and described, for the purpose set forth.

4. In a limekiln, a pit, as E, the walls of which project inwardly at the top and form ledges for the support of the limestone, substantially as set forth.

375,898. **DUPLEX TELEGRAPHY.** CHARLES SELDEN, Baltimore, Md. Filed Oct. 10, 1884. Serial No. 145,125. (No model.)

Claim.—1. The combination, with the receiving apparatus for a duplex telegraph, of an auxiliary static neutralizing-coil upon a core

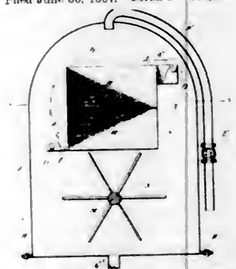


375,898.

of a receiving-magnet, and a current-controller governed by the transmitter and placed in a complete galvanic circuit that is uninterrupted save at the contacts of the controller and contains the neutralizing-coils, together with a battery, the current from said battery being made to flow momentarily in the neutralizing-coil and through the complete galvanic circuit by the operation of the circuit-controller and to be instantly interrupted by the continued movement of said controller.

2. In a duplex or multiplex telegraph, the combination, with a receiving-relay, of an auxiliary static neutralizing-coil in a local circuit, with a battery, and a pole-changer controlling the circuit of the battery and coils and momentarily actuated with the transmitter at the instant of the static charge and discharge, as and for the purpose described.

375,899. **ROTARY WATER-METER.** SAMUEL L. SHUFFLETON, Eureka, Cal. Filed June 30, 1887. Serial No. 243,010. (No model.)



Claim.—1. In a liquid-meter, the revoluble trough having the buckets projecting from opposite sides and having the flattened trunnions bearing in similar recesses, for the purpose set forth, substantially as described.

2. In a liquid-meter, the combination of the case having the bearings flattened on the lower side, the revoluble trough having the flattened trunnions arranged in the flattened bearings and provided with the buckets projecting from opposite sides, and the tappet-pins O, and the rotating shaft M, having the radial tappet-arms arranged in the path of the tappet-pins, substantially as described.

3. In a liquid-meter, the combination of the case A, having the inlet and outlet pipes, the former being provided with the check-valve F, the ears or bearings in the end walls of the case, having the recesses in their opposing sides, which recesses have the flattened lower sides, and the revoluble trough having the flattened trunnions bearing in the recesses and provided with the buckets K to receive the overflow from the trough, substantially as described.

375,900. **SWITCH-STAND.** FRED W. SHOW, Ramapo, N. Y. Filed Apr. 27, 1887. Serial No. 236,339. (No model.)

375,900.



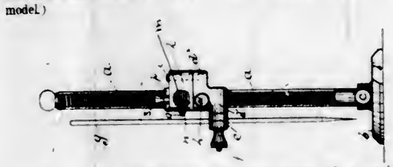
Claim.—1. The combination, with the crank-shaft of a railway-switch stand and with a spring arranged to resist the rotation of said shaft, of a bearing for the spring carried by said shaft, said bearing fitting within and adapted to pass freely through a recess in the base of the stand, whereby the shaft, spring, and bearing may be readily withdrawn from and replaced within the stand without removing or adjusting any of the parts thereof, substantially as and for the purpose described.

2. The combination, with the stand having an opening in its base, of a crank-shaft, a yielding cam-block sliding in bearings on the stand, a spring encircling the crank-shaft and bearing at one end on the block, and a bearing for the opposite end of the spring, carried by the crank-shaft and adapted to pass freely through said opening, substantially as described.

3. The combination, with the crank-shaft, clutch, cam-block, and spring, of a collar, 13, on the shaft and a stand having a recess in its base to receive said collar, substantially as described.

4. The combination, in a switch-stand, of a shaft, operating-lever, clutch, and link connecting the lever and part of the clutch, the link and lever having coinciding openings, substantially as and for the purpose set forth.

375,901. **SURFACE AND SCRATCH GAGE.** WILLIAM H. STEDMAN, Norwich, Conn. Filed Sept. 1, 1887. Serial No. 248,436. (No model.)

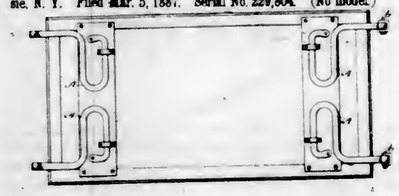


Claim.—1. In a surface-gage, the combination of an upright standard having a rack throughout its length, as set forth, a base removably secured thereto, and a carriage fitted to slide on said standard, carrying both a pointer and an adjusting-screw, which may be thrown into and out of engagement with said rack, as and for the purpose specified.

2. The combination of standard *a*, having a rack throughout its length and a scratch-pin at one end, as set forth, carriage *d*, movably fitted on said standard, having hinged thereto block *k*, carrying screw *m*, and a spring-latch for holding said screw in engagement with said rack, as described, and for the purpose specified.

3. In a surface-gage, the combination of an upright standard having a rack throughout its length, as set forth, a base removably secured thereto, and a carriage fitted to slide on said standard, carrying both a pointer and an adjusting-screw, which may be thrown into and out of engagement with said rack, said supporting-base being cut away on one side, as and for the purpose specified.

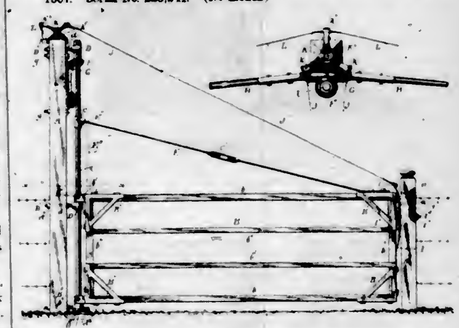
375,902. **SPRING FOR VEHICLES.** EDWARD STORM, Poughkeepsie, N. Y. Filed Mar. 5, 1887. Serial No. 229,804. (No model.)



Claim.—1. A spring composed of, first, a hanger or portion constituting a hanger; second, a portion extending therefrom at an approximate right angle; third, a portion extending farther away from the hanger or hanger portion in the direction of the length of the latter, and, fourth, a portion extending back parallel or approximately parallel with the portion that extends from the hanger or portion constituting a hanger at an approximate right angle toward the longitudinal line of the hanger or portion constituting a hanger, substantially as specified.

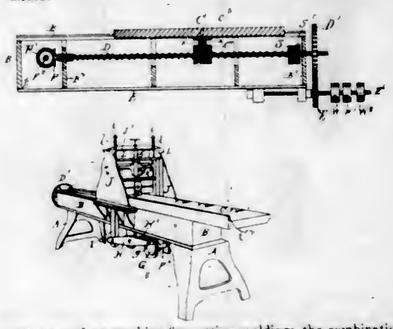
2. A spring composed of, first, a hanger or portion constituting a hanger; second, a portion extending therefrom at an approximate right angle; third, a portion extending farther away from the hanger or hanger portion in the direction of the length of the latter; fourth, a portion extending back parallel or approximately parallel with the portion that extends from the hanger or portion constituting a hanger at an approximate right angle toward the longitudinal line of the hanger or portion constituting a hanger, and, fifth, a terminal portion extending at an angle to the portion last-named toward the hanger or portion constituting a hanger, substantially as specified.

375,903. **GATE.** PETER UNFRIED, Chicago, Ill. Filed Jan. 24, 1887. Serial No. 225,241. (No model.)



Claim.—The combination, with a gate-post or other support and a gate, of a shaft, C, bearings upon the said post or support for said shaft, and an inclined tie-rod connecting the free part or end of the gate with the said shaft, the said gate and the tie-rod having sliding connection with the shaft, whereby the gate and tie-rod may be raised and lowered, substantially as described.

375,904. **MACHINE FOR CUTTING MOLDINGS.** GEORGE P. VICKERS, Cincinnati, Ohio. Filed June 3, 1886. Serial No. 203,974. (No model.)

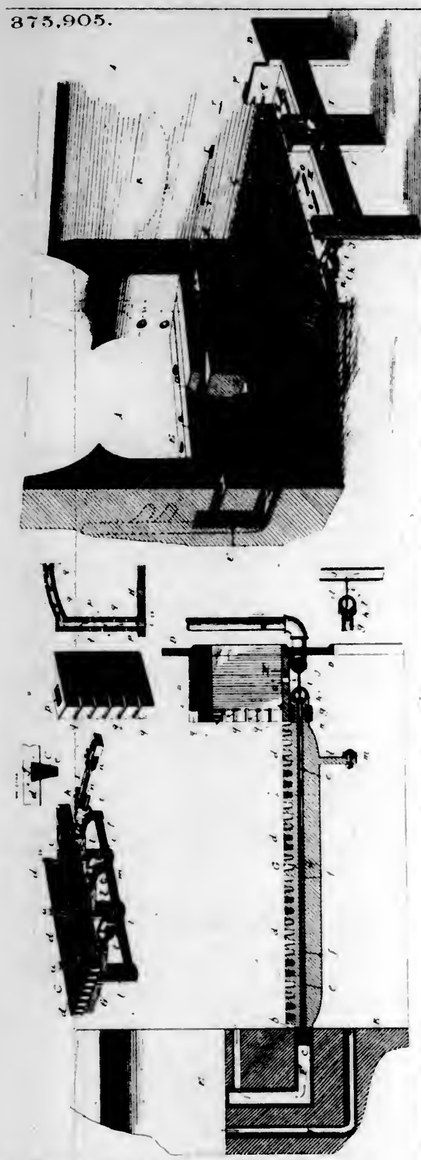


Claim.—In a machine for cutting moldings, the combination of table C, provided with lug C', worm D, beveled gear-wheels F F', shaft F², gear-wheels F³, F⁴, and F⁵, shaft F⁶, cam G, brake H, rock-shaft H', connecting-rods I, supports J, having cross-piece J', knife-frame K, having rods L, springs *l*, and knife K', as and for the purposes set forth.

375,905. **STEAM-BOILER FURNACE.** ROBERT WHELAN, Chicago, Ill., assignor of one-half to Robert A. Whelan, same place. Filed May 3, 1887. Serial No. 236,981. (No model.)

Claim.—1. The combination, with a fire pot or chamber, of a bridge-wall at the rear end thereof, upright pipes J, provided with lateral branches J', adapted to discharge heated air across the top of the bridge-wall, said pipes J opening at their lower ends into the ash-

375,905.



pit, all substantially as shown.

2. In a furnace, the combination, with a bridge-wall, of box or chamber F, located therein and provided with discharge-openings *a* in its front face, a series of rocking hollow grate-bars journaled at their rear ends in the box or chamber F, and a steam-supply pipe adapted to supply steam to said bars at their forward ends.

3. In a furnace, the combination, with front D, dead-plate H, and a bridge-wall, of a hollow box, F, mounted within the bridge-wall and provided with discharge-openings *a* in its front wall, a series of rocking hollow grate-bars, G, provided at opposite ends with cylindrical journals, and a steam-supply pipe, *j*, adapted and arranged, substantially as shown, to discharge steam into the hollow bars G, as and for the purpose set forth.

4. In a furnace, a grate composed of a series of bars, G, made zigzag on their adjacent edges and provided on their upper faces with ribs *d*, and a strip, *s*, forming the zigzag edge of each bar and connecting the ribs *d* thereof.

5. In a boiler-furnace, a grate comprising a series of bars, G, each ribbed on its upper face and made solid on its lower face, and having a longitudinal passage, *e*, and lateral openings *f*, communicating with passage *e*, substantially as shown, whereby the bars are adapted to receive and discharge steam or air, or both, into and among the fuel thereon at the base of the ribs.

6. In combination with the bridge-wall and the hollow chamber F therein, the hollow grate-bars G, provided with a bulb or enlargement, *h*, and a steam-supply pipe, *j*, provided with a nozzle, *i*, projecting into the bulb or enlargement *h*, substantially as and for the purpose set forth.

7. In combination with the bridge-wall, the hollow box F, dead-plate H, and steam-supply pipe *j*, having a nozzle, *i*, the hollow grate-bar G, provided with bulb or enlargement *h*, and openings *l*, formed in said bulb or enlargement, substantially as shown, and for the purpose set forth.

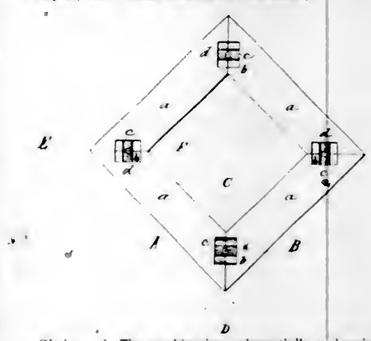
8. In combination with the bridge-wall of a furnace and a box or chamber, F, therein, a dead-plate secured rigidly in position at the front of the furnace, the hollow grate-bars G, provided with cylindrical journals *e* and *g*, the former inserted into the hollow box F, and semicircular collars *n*, encircling the journals *g*, and bolted or otherwise secured to the under side of the dead-plate.

9. In a boiler-furnace, the combination, with a bridge-wall having a hollow chamber, F, therein, of a series of hollow grate-bars journaled at one end in said hollow box or chamber, and carried at their other ends by the dead-plate and adapted to be rocked or tipped, and a stationary steam-supply pipe connected with and adapted to discharge steam into the interior of the hollow bars, substantially as shown.

10. In a furnace, the combination, with the dead-plate and the rocking grate-bars provided with a depending lug, *l*, of a bar, *m*, connecting the lugs *l* with one another, and a shaker bar or rod, I, journaled upon the under face of the dead-plate, connected at its inner end with the bar *m*, and projecting at its front end through the furnace-front, as and for the purpose set forth.

11. In a furnace, a grate comprising a series of bars, G, having on their upper faces a series of ribs, *d*, a longitudinal channel or passage, *e*, extending throughout the length of the grate-bars, and a series of lateral openings or passages, *f*, extending from the chamber or passage *e* upward to the base of the ribs *d*.

375,906. **FRAME.** CHARLES M. WHITMORE, Meriden, Conn. Filed July 28, 1887. Serial No. 245,512. (No model.)



Claim.—1. The combination, substantially as herein described, of the mitered frame-pieces having portions cut away at either end, so as to form recesses at the back of the frame, and the right and left hand wood-screws contained within said recesses, for the purpose of securing the aforesaid frame-pieces, all arranged and operating substantially as set forth.

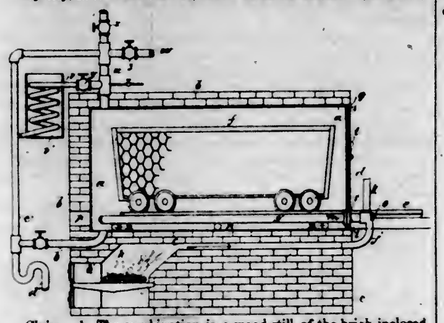
2. The combination of the mitered frame-pieces having a portion cut away at each end, so as to jointly form recesses at the back of the frame for the reception of the right and left hand wood-screws for securing the said frame-pieces, said screws being provided near their centers with means for rotating the same, substantially as shown and described, and for the purpose specified.

375,907. **WOOD-SCREW.** CHARLES M. WHITMORE, Meriden, Conn. Filed July 28, 1887. Serial No. 245,513. (No model.)



Claim.—As a new article of manufacture, the herein-described wood-screw having a right-hand thread formed upon one end and a left-hand thread formed on the opposite end, and provided near its center with means for rotating the same, substantially as described.

375,908. **APPARATUS FOR DISTILLING WOOD.** JOHN WILSON, New York, N. Y., assignor to the American Acetic Acid Company, Jersey City, N. J. Filed June 30, 1887. Serial No. 243,098. (No model.)



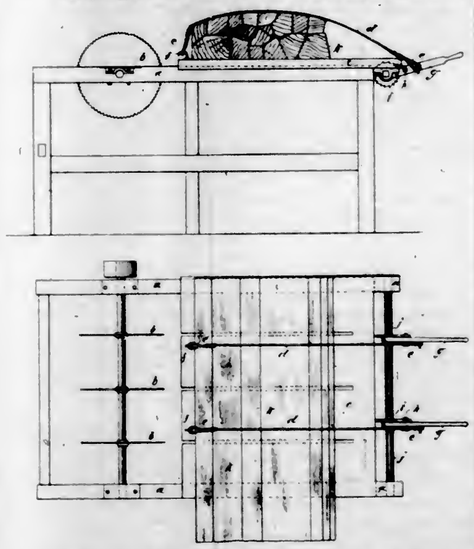
Claim.—1. The combination, in a wood-still, of the brick-inclosed metallic oven *a*, car-track *c* to and within the oven, the open or rack box wood-holding car, conductor *b'* for the discharge of the heavy products, the alcohol-column, and the gas-conducting pipe *u* to the main condenser, said pipe having branch *v*, connected with the alcohol-column, and also having the branch *w*, and regulating-cocks *x y z*, substantially as described.

2. The combination, with the metallic oven for distilling wood, of the horizontal coil-heating flue connected through the front plate of the oven with the inlet-pipe from the furnace, and with the waste-heat flue, the check-nuts clamping said coils to the front plate, and the rollers supporting the coils, substantially as described.

3. The combination, in a wood-still, of the metallic oven having perforated end plates, and the horizontal heating-coil having plugged openings to the horizontal members coincident with said perforations, substantially as described.

4. The combination, in a wood-still, of the metallic oven having a permanent front plate below the door, the horizontal coil-heating flue connected with inlet and waste-heat flues through said plate, the angle-bar door-frame above said heat-flues, and the car-rails entering through the doorway over the heat-flues, substantially as described.

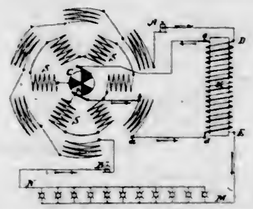
375,909. **CLAMP FOR WOOD-SAWING MACHINES.** JOHN WILSON, New York, N. Y., assignor to the American Acetic Acid Company, Jersey City, N. J. Filed June 30, 1887. Serial No. 243,099. (No model.)



Claim.—1. The combination of the clamp-wire and clamping-lever, pawl, and ratchet with the feed-table of a sawing-machine, the clamp-wire being detachably connected at one end, substantially as described.

2. The combination, with the saws and feed-table of a gang saw-ing-machine, of a wood-holding clamp between each two of the saws, consisting of the clamp-wire and clamping-lever, pawl, and ratchet, the clamp-wire being detachably connected at one end, substantially as described.

375,910. **REGULATING ALTERNATE-CURRENT ELECTRIC GENERATORS.** KARL ZIPERNOWSKY, Buda-Pesth, and MAXIMILIAN DÉRI, Vienna, Austria-Hungary. Filed Dec 16, 1886. Serial No. 221,753. (No model.) Patented in Germany Feb. 13, 1885, No. 33,951; in England Mar. 16, 1885, No. 3,379; in France Mar. 20, 1885, No. 167,760; in Belgium Mar. 20, 1885, No. 63,247, and in Italy June 30, 1886, XXXVII, 113.



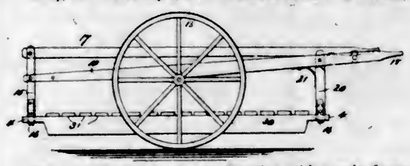
Claim.—1. The combination of an alternating-current generator with an induction-coil or transformer having one of its coils in the exciting-circuit of the generator and the other in the main circuit or a part thereof, substantially as and for the purpose set forth.

2. The combination of an alternating-current generator with an induction-coil or transformer having one of its coils in the main circuit or a part thereof and the other in the exciting-circuit, and a commutator to convert the several impulses of the exciting-current into a directed current in the field-magnet coils of the generator, substantially as set forth.

3. The combination of an alternating-current generator with an induction-coil or transformer having one of its coils in circuit with the armature-coils and the other in circuit with the field-magnet coils and also with coils on the armature, and a commutator to convert the several impulses of this exciting-current into a directed current in the field-magnet coils of the generator.

4. The combination of the armature and field-magnet coils of an alternating-current generator, and devices for producing a constant or nearly constant exciting-current therefor, with an induction-coil or alternating-current transformer having one of its coils in the working-circuit and the other in the exciting-circuit, and a commutator for directing the alternating current in the latter, all substantially as described.

375,911. **APPARATUS FOR HANDLING BRICK.** EDGAR ASKEW, Troup, Tex. Filed July 6, 1887. Serial No. 243,500. (No model.)



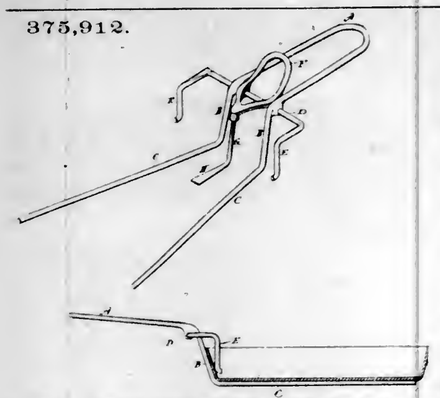
Claim.—1. In a dally, the combination, with a main frame and its supporting-wheels, of two pendent frames pivotally connected to the main frame, and having lateral projections at their lower ends, one of said pivoted frames being adapted to be moved forward below the main frame, while the other of said frames is adapted to be sprung rearward, substantially as described.

2. In a dally, the combination, with a main frame and its supporting-wheels, of a forward-swinging frame pivotally connected to the main frame and adapted to be moved forward below the main frame, a manipulating-rod extending to the rear from the said forward frame, and a second swinging frame pivotally connected to the main frame near the handles thereof and adapted to be sprung rearward, the two swinging frames being provided with projections 16, substantially as described.

3. In a dally, the combination, with a main frame and its supporting-wheels, of a frame, 15, pivoted to said main frame and provided with projections 16, a manipulating-rod, 17, connected to the frame 15, a frame, 20, also pivotally connected to the main frame and provided with projections 16, and springs 21, arranged in connection with the frame 20 and acting upon the latter, substantially as described.

375,912. **PHOTOGRAPHIC-TRAY HOLDER.** LEO F. ADT, Waterbury, Conn. Filed Sept. 5, 1887. Serial No. 248,796. (No model.)

375,912.

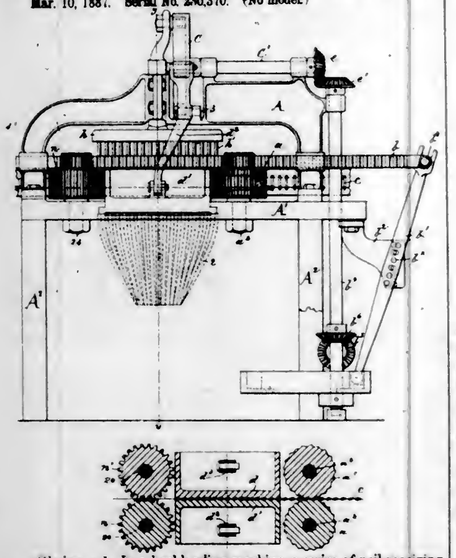


Claim.—1. The herein-described photographic-tray holder, made from wire bent into U shape, the two legs in the same plane, and the two legs bent downward to form uprights B B, and thence turned horizontally to form the supports C C, combined with a transverse bar, D, terminating in downwardly-projecting fingers E, substantially as described.

2. The herein-described photographic-tray holder, made from wire bent into U shape, the two legs in the same plane, and the two legs bent downward to form uprights B B, and thence turned horizontally to form supports C C, with a transverse bar, D, terminating in downwardly-projecting fingers E E, combined with a lifter hinged in the handle portion of the tray-holder, one arm extending from said bar to form a thumb-piece, the other extending downward and terminating in a finger adapted to rest upon the bottom of the tray, substantially as described.

3. A holder having a handle and adapted to support a photographic tray, combined with a lever hinged in said holder, one arm extending upward to form a thumb-piece and the other arm extending downward and adapted to lie upon the bottom of the tray, substantially as described.

375,913. **HEEL-LOADING MACHINE.** EDWARD B. ALLEN, Portland, Me., assignor to James W. Brooks, trustee, same place. Filed Mar. 10, 1887. Serial No. 230,370. (No model.)



Claim.—1. In a heel-loading machine, a series of nail-receiving tubes and a series of drivers, combined with an intermittingly-actuated pair of feed-rolls to feed forward under the drivers and above the tubes a nail-strip having an independent series of detached nails, and with other feeding devices, substantially as described, to take the said strip away from the drivers after the latter have ejected the nails into the said tubes, substantially as set forth.

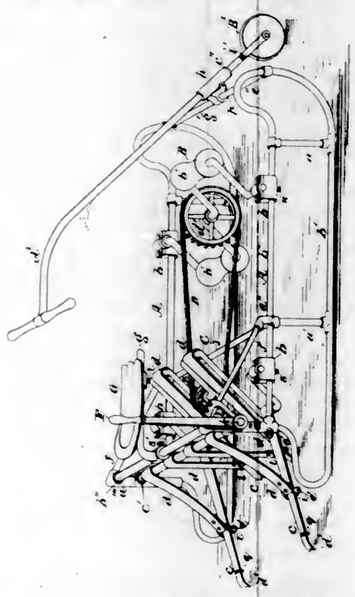
2. In a heel-loading machine, the nail-receiving tubes and a pair of corrugated nail-supports, combined with means for moving forward intermittingly a nail-strip having independent detached nails, and with plungers for ejecting the said nails into the said tubes, substantially as described.

3. In a heel-loading machine, the supporting devices for the nail-strip and an intermittent feeding device, combined with a second feeding device for feeding or carrying the flexible strip from the machine after the nails have been removed therefrom, and with plungers for removing the nails, substantially as described.

4. In a heel-loading machine, the nail-supporting mechanism and feeding-rolls for feeding the nail-strip, combined with toothed wheels and ratchet-clutch mechanism for moving the feeding-rolls intermittingly, and means, substantially as described, for reciprocating the toothed wheels, substantially as described.

5. In a heel-loading machine, a separable nail-supporting device for supporting several independent nails above a set of nail-receiving tubes, the faces of the said supporting device being corrugated to grasp and hold the nail-strip between the detached and independent nails therein while the said nails are ejected therefrom, and means for supplying the nail-supporting devices with nails, combined with plungers for removing the nails from the nail-supporting devices, and with means for moving the plungers and separating the nail-supporting devices alternately, substantially as described.

375,914. **COASTING-SLED.** WILLIAM J. BAIRD, Springfield, Ohio, assignor of one-half to Clarence H. Kay, same place. Filed Oct. 17, 1887. Serial No. 252,561. (No model.)



Claim.—1. In a coasting-sled, the tubular runner-frames A, each composed of the runner b' and the rail b^3 in a single piece, bent about the middle to form the front end, the end of said runner and rail being attached at the rear to a single upright, a''', as described, and the intermediate vertical posts, a a', connecting said rail and runner, said runner-frames being coupled together by the tie-bars c'' j'', the latter connecting the tops of the uprights a''' to form a support for an elevated seat, substantially as set forth.

2. In a coasting-sled composed of the two runner-frames coupled together, as described, and having the rear uprights extending above the rails of said runner-frames, the propelling mechanism consisting of the sprocket-and-chain gearing, the crank-shafts, and the reciprocating levers and springs, the pivotal shaft supporting the latter, and the hand-lever connected with said pivotal shaft, adapted to operate it, and provided with the means for adjustment, substantially as set forth.

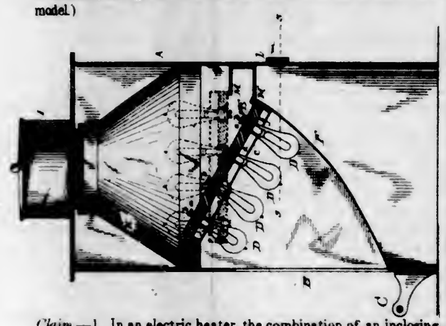
3. In a coasting-sled, the means of propulsion shown, consisting of the front and rear crank-shafts, the levers pivoted to the latter, the springs for pressing said levers into engagement, with the means described for elevating said springs, and levers to throw them out of engagement, substantially as and for the purpose set forth.

4. In combination, in a coasting-sled, the treadles, crank-shafts,

and connecting sprocket-and-chain gearing, the system of levers and springs for forcing said sled forward, and the pilot-wheel having the attachments and connections described, whereby the sled may be readily guided and turned, substantially as hereinbefore set forth.

5. In combination with the sled having the rigid block g' on its front bar, provided with the hinge-connection p, the hand-lever A', having the sleeve h, flexibly attached to said block g', the collar c, on which said sleeve rests, the fork i', and the wheel B', substantially as and for the purpose set forth.

375,915. **ELECTRICAL HEATER.** JOHN P. BARRETT and JACOB F. MERREN, Chicago, Ill. Filed Jan. 27, 1887. Serial No. 225,665. (No model.)



Claim.—1. In an electric heater, the combination of an inclosing-case, chamber, or stove provided with an opening, a support within the same carrying incandescent-electric-lamp sockets, incandescent electric lamps having glass globes held in said sockets, connections from an external electric circuit to said lamps, and reflectors for directing the heat and light from said lamps toward the opening in the case, substantially as set forth.

2. In an electric heater, the combination of an inclosing-case, chamber, or stove, a support within the same provided with sockets for incandescent electric lamps, and a reflecting-screen interposed between said support and the body of the lamps, substantially as set forth.

3. In an electric heater, the combination of an inclosing-case, chamber, or stove, incandescent electric lamps situated within the same, and means for adjusting the position of said lamps to direct their heat in different directions, substantially as set forth.

4. In an electric heater, the combination of the inclosing-case, chamber, or stove having a front opening and a top opening, the incandescent electric lamps situated within the same, and means for adjusting the position of the lamps to direct their heat toward one or the other of said openings, substantially as set forth.

5. In an electric heater, the combination of an inclosing-case, chamber, or stove, incandescent electric lamps situated within the same, means for adjusting the position of the lamps to direct their heat in different directions, and reflectors for directing and concentrating the heat from said lamps when in either position, substantially as set forth.

6. In an electric heater, the combination of the inclosing-case, chamber, or stove, the lamp-holder pivoted in bearings in said stove, and the incandescent electric lamps carried thereby, substantially as set forth.

7. In an electric heater, the combination of the inclosing-case, chamber, or stove, the pivoted lamp-holder, and sliding electrical connections therewith, substantially as set forth.

8. In an electric heater, the combination of the inclosing-case, chamber, or stove, a number of incandescent electric lamps within the same, and a supplying-circuit, said lamps being connected in multiple arc with said circuit, substantially as set forth.

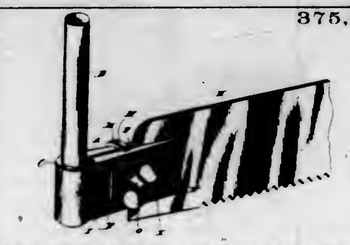
9. In an electric heater, the combination of the inclosing-case, chamber, or stove, and the lamp-holding frame consisting of a plate provided with sockets for said lamps, said sockets having contacts for closing the lamp-circuits, substantially as set forth.

10. In an electric heater, the combination of the inclosing-case, chamber, or stove, the pivoted lamp-holder, and the stop for holding the same in either position, substantially as set forth.

375,916. **HANDLE FOR CROSSCUT-SAWS.** MARTIN BENNETT, Eureka, Cal. Filed Sept. 3, 1887. Serial No. 249,139. (No model.)

Claim.—1. The combination, with the saw-blade having the perforations h h and the slot H' therein, of the clamp A, comprising the leaves B B, having the socket C in the outer end, the perforations E in the inner end to align with the perforations h h, and the slots G G, to align with the slot in the saw-blade, the plate I, having the lugs K K on the rear side to pass through the aligned slots, and the bolt

375,916.



L, having the cross-head to operate between the lugs K and the wing-nut to screw on the threaded end thereof and draw the leaves B B together to clamp the saw-blade, substantially as and for the purpose specified.

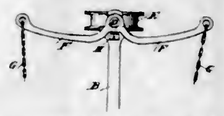
2. The combination, with a saw-blade having the slot H' therein, of the clamp A, comprising the leaves B B, hinged together and provided with the aligned slots G G to align with the slot H', the handle D, secured to the outer end of the leaves, washer-plate I, bearing against the outer side of one of the leaves and having the lugs K K on the rear side, which have an opening between them to align with a central opening in the plate I, the bolt L, passing through the washer-plate and the opening between the lugs K, and having a cross-head, M, on the end to pass between the lugs and bear against the side of the clamp A, and the wing-nut O on the threaded end of the bolt to draw the leaves B B together, substantially as and for the purpose hereinbefore specified.

3. The combination, with a saw-blade having the slot H' therein, of the clamping-plate A, comprising the leaves B B, to pass on opposite sides of the end of the said blade, and having the longitudinal slots G G therein to align with the slot H', the plate I, to bear against the outer side of one of the leaves, and having a central opening, i, the lugs K K on the rear side of the plate to pass through the aligned slots, and having an opening, K', between them, the bolt L, to pass through the openings H' and i, and having the cross-head on one end to pass between the lugs K and bear against the clamping-plate, the said cross-head being provided at the ends with the inturned flanges N, to bear against opposite edges of the clamp, the wing-nut O, to screw on the threaded end of the bolt, and the handle D, to be secured to the outer end of the clamping-plate, substantially as and for the purpose specified.

375,917. **COMPOSITION OF METALS.** HALVOR BERGLIN, Minneapolis, Minn. Filed May 28, 1887. Serial No. 239,604. (Specimens.)

Claim.—The composition hereinbefore described, consisting of the following ingredients, in substantially the proportions specified, to wit: copper, 83.23; tin, 3.48; zinc, 8.16; nickel, 4.92; antimony, .04.

375,918. **GAS KEY AND LIGHTER.** JOSEPH B. BLOOMINGDALE, New York, N. Y. Filed Apr. 9, 1887. Serial No. 234,220. (No model.)



Claim.—1. In a combination gas key and lighter, the combination of the handle A, having the pulley I, the rod B, carried by the handle A and having the eye C, the key D at the upper end of the rod B and having the slotted end E, the lever F F, connected with key D by the fixing-screw H, and the operating-chain G, all constructed and operated substantially as specified.

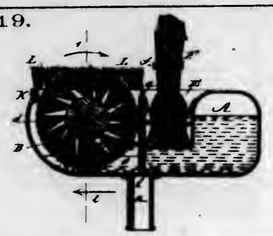
2. In a combination gas key and lighter, the combination of the handle A, having the pulley I and carrying the rod B and the wax-taper tube J, and the key D, having the slotted end E, and the lever F, affixed to the key D, and the chain G, affixed to the lever F, running over the pulley I in the end of the handle A, substantially constructed and operated as set forth.

375,919. **CEILING-BRUSH.** JAMES W. BOYLE, Negley, Pa., assignor to himself and James R. Davison, same place. Filed Feb. 15, 1887. Serial No. 227,729. (No model.)

Claim.—1. In a ceiling-brush, the combination, with a case provided with a reservoir, A, and an open-topped box, B, separated by a partition having an opening in its lower part, of the brush D, journaled in the said box, and the brush F, secured in a pocket between the reservoir and box, substantially as herein shown and described.

2. The combination, in a ceiling-brush, of a head or case provided with a reservoir, A, an open-topped box, B, a brush, D, journaled in box B, an opening, as i, connecting the parts A B, a pocket, as E,

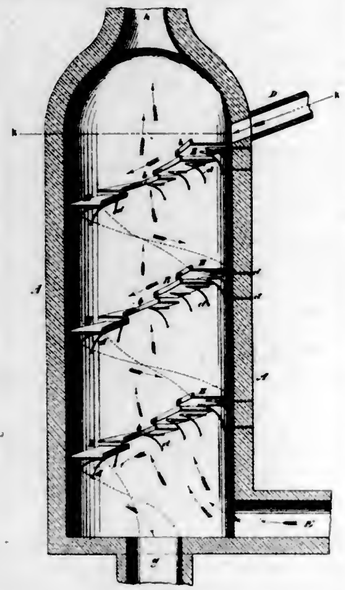
375,919.



formed behind the box B, and provided with springs *e*, and a finishing-brush or wiper held in the pocket by said springs, substantially as shown and described.

3. The combination, in a ceiling-brush, of a head or case provided with a reservoir, A, an open-topped box, B, adapted to receive a rotary distributing-brush, and a pocket, E, formed behind the box B, and adapted to receive a finishing-brush or wiper, and the front wall of said pocket E provided with openings, as *b*, for passage of drip from the pocket to the brush-box, substantially as shown and described.

375,920. KILN FOR DRYING CEMENT. HENRY A. BRADLEY, New York, N. Y., assignor of one-half to John J. Gorman, same place. Filed Apr. 6, 1887. Serial No. 233,856. (No model.)



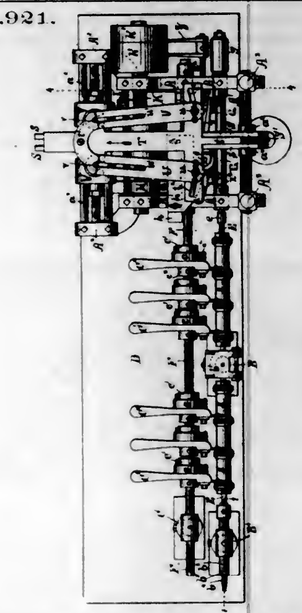
Claim.—1. The combination, with the kiln A, having inlets and outlets for the heat and the material being dried, of an interior spirally-arranged series of inclined plates, B, which are narrower than the radius of the kiln, whereby a central flue is formed, substantially as described.

2. The combination, with the kiln A, having inlets and outlets for the heat and the material being dried, of an interior spirally-arranged series of inclined plates, B, having ledges *d* at their edges, whereby a central flue is formed, substantially as described.

375,921. MACHINE FOR WINDING SPOOLS. JAMES L. BUSSEY, Providence, R. I. Filed Apr. 9, 1885. Serial No. 161,633. (No model.)

Claim.—1. In a spool-winding machine, the combination, as hereinbefore set forth, with a belt-shipping device and a traverse-rod having actuating means, and also means for engaging the belt-shipper device when the latter is thrown into action, of a sliding shaper-carriage and a step-by-step operating mechanism, substantially as described, for said carriage, said mechanism provided with adjustable means for tripping the belt-shipping device at a predetermined time and moving the said shipping device so as to be acted on by said means

375,921.



of the traverse-rod to ship the belt, substantially as herein described.

2. In combination, a traverse-changer and actuating means therefor, an endwise-moving traverse-rod, a pair of shifting-arms engaging said changer, said arms pivoted on and actuating said traverse-rod, a pair of pawls, each one coacting with one of said arms, a rotary toothed roll provided with two sets of longitudinally-disposed teeth out of alignment and engaged by said pawls, a pair of shapers, a sliding shaper-carriage carrying said shapers, means, substantially as described, whereby said shapers are held upon the carriage with capacity for independent adjustment, and a reversing device controlled by said shapers and actuating said toothed roll.

3. In combination, a traverse-changer and actuating means therefor, an endwise-moving traverse-rod, a pair of shifting-arms engaging said changer, said arms pivoted on and actuating said traverse-rod, a pair of pawls coacting each with one of said arms, a rotary toothed roll provided with two sets of teeth disposed longitudinally thereon out of alignment and engaged by said pawls, a pair of shapers, each provided with a sliding shaper-stop, a sliding shaper-carriage, a traverse-slide, means, substantially as described, whereby said shapers are held upon the carriage with capacity for independent adjustment, mounted on and actuated by said traverse-rod, and a reversing device secured upon said slide, said device controlled by said shaper-stops and engaging and actuating said toothed roll, whereby said shifting-arms may be operated to limit the traverse of the traverse-rod according to the adjustment of the shapers.

4. In combination, a traverse-changer and actuating means therefor, an endwise-moving traverse-rod provided with thread-guides, a pair of shifting-arms engaging said changer, said arms pivoted on and actuating said traverse-rod, means for engaging and disengaging said shifting-arms and changer, a traverse-slide mounted on and actuated by said traverse-rod, a reversing-lever pivoted on said slide and governing said engaging and disengaging means, a pair of shapers, each provided with a sliding shaper-stop, and a sliding shaper-carriage carrying said shapers, whereby the traverse of the traverse-rod may be controlled.

5. In combination, a traverse-changer and actuating means therefor, an endwise-moving traverse-rod, a pair of shifting-arms engaging said changer, said arms pivoted on and actuating said traverse-rod, a pair of pawls coacting one with each of said arms, a rotary toothed roll provided with two sets of longitudinally-disposed teeth out of alignment and engaging said pawls, a traverse-slide secured upon and actuated by said traverse-rod, a reversing-lever pivoted upon said slide and actuating said roll, a pair of shapers, each provided with a sliding shaper-stop for said lever, and a sliding shaper-carriage carrying said shapers, whereby the traverse of the traverse-rod may be regulated and reversed.

6. In combination, a traverse-changer and actuating means therefor, an endwise-moving traverse-rod, a pair of shifting-arms engaging

said changer, said arms secured on and actuating said traverse-rod, means for engaging and disengaging said arms and changer alternately, said means consisting in a rotary toothed roll provided with two sets of longitudinally-disposed teeth arranged out of alignment, and a pair of pawls engaging said teeth and the arms, a traverse-slide mounted on and actuated by said traverse-rod, a reversing-lever pivoted on said slide and actuating said means, a pair of shapers, each provided with a sliding shaper-stop for the reversing-lever, a sliding shaper-carriage carrying said shapers, and means intermediate between said traverse-rod and carriage for sliding the carriage, said means actuated by the movement of the traverse-rod, whereby the carriage may be moved automatically to adjust the shapers, and thereby limit the travel of the traverse-rod, substantially as described.

7. In combination, a sliding shaper-carriage provided with a rack-bar, a pinion in mesh with said rack-bar and keyed upon a rotary shaft, an adjustable tripping device secured upon said shaft, a trip-arm engaged by said device, a shipper-shaft provided with a tilting-arm engaged by said trip-arm, an endwise-moving traverse-rod and actuating means therefor, and provided with means for engaging said tilting-arm, and means for rotating said pinion-shaft, whereby the carriage may be moved and the trip-arm actuated by the tripping device.

8. In combination, a traverse-changer and actuating means therefor, an endwise-moving traverse-rod, a pair of shifting-arms engaging said changer, said arms secured on and actuating said traverse-rod, means for engaging and disengaging said arms and changer alternately, a traverse-slide mounted on and actuated by said traverse-rod, a reversing-lever pivoted or said slide and actuating said engaging and disengaging means, a sliding shaper-carriage provided with a rack-bar, a pair of shapers mounted on said carriage and each provided with a sliding shaper-stop for controlling the throw of said reversing-lever, a pinion-wheel in mesh with said rack-bar and keyed on a rotary shaft, an adjustable tripping device secured upon said shaft, a trip-arm engaged by said device, a shipper-shaft provided with a tilting-arm engaged by said trip-arm, said traverse-rod provided with means for engaging said tilting-arm and means for rotating said pinion-shaft, and means, substantially as described, whereby said rotating means is controlled by said traverse-rod, said shapers predeterminately adjusted so that the travel of the traverse-rod may move the carriage and automatically adjust the shapers, thereby regulating the throw of the reversing-lever to change and limit the traverse of the traverse-rod and to operate the shipper-shaft.

9. In combination, an endwise-moving traverse-rod, means for actuating the same, and a push device mounted on said rod, a sliding shaper-carriage provided with a rack-bar, a pinion-wheel in mesh with said rack-bar and keyed upon a rotary shaft, a ratchet-wheel mounted upon said shaft, a pawl engaging said ratchet, and a swinging arm carrying said pawl and actuated by said push device, substantially as set forth.

10. In combination, an endwise-moving traverse-rod and actuating means therefor, a push device mounted on said rod, a sliding shaper-carriage provided with a rack-bar, a pair of shapers mounted on said carriage, a pinion-wheel in mesh with said rack-bar and keyed upon a rotary shaft, a ratchet-wheel keyed upon said shaft, a movable arm mounted on said shaft and provided with an anti-friction roll and a spring-actuated pawl, said arm engaged by said push device and said pawl engaging said ratchet, said ratchet provided with an adjustable trip-stud and sockets therefor, and a trip-arm mounted upon said shaft and engaged by said stud, and a shipper-shaft provided with a tilting-arm, said traverse-rod provided with means for engaging said tilting-arm, substantially as described.

11. In combination, a pair of fixed parallel guide-rods, a pair of stop-carriers sliding on said rods and provided with guide-pins, shapers engaging said guide-pins and means for moving said shapers, a stop secured adjustably to each of said carriers by a screw-stem, said pair of stops sliding on a fixed guide-rod disposed parallel to the other said rods, a trip-collar sliding on the guide-rod carrying said stops and traveling between said stops, a rotary traverse-changer consisting of a bar having the two halves of its length reversely screw-threaded, means for actuating said changer, a traverse-rod lying parallel to said changer-bar and moving endwise and provided with thread-guides, a pair of shifting-arms pivoted upon said traverse-rod, said arms provided with concaved screw-threaded saddles, each one engaging with a half of said changer, a rotary toothed roll having yielding bearings and provided with two sets of longitudinally-disposed teeth out of alignment, a pair of pawl-plates engaging one with each of said sets of teeth and actuating said shifting-arms, a traverse-slide secured upon said traverse-rod and consisting of arched arms secured together by a plate and supported by a hanger traveling on a rod, and a reversing-lever provided with three branches and pivoted upon said slide, one branch of said lever attached to said trip-collar, the other two branches of said lever provided each with a spring-click engaging each with one of the sets of teeth on said toothed roll, substantially as set forth.

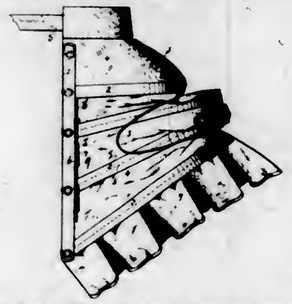
12. In combination, a sliding shaper-carriage and a rack-bar fixed thereto, a pinion-wheel keyed upon a rotary shaft and in mesh with said rack-bar, a ratchet-wheel keyed on said shaft, a movable spring-acted arm mounted on said shaft and provided with an anti-friction roll and a spring-pawl, said pawl constantly engaging said ratchet, an endwise-moving traverse-rod and actuating means therefor, a traverse-slide mounted on and actuated by said traverse-rod and consisting of arched arms secured together by a plate, said slide supported at the outer end by a hanger traveling on a fixed rod, and a push-plate mounted on said slide and actuating said movable arm, substantially as described.

13. In combination, a traverse-changer and actuating means therefor, an endwise-moving traverse-rod, shifting-arms provided with saddles intermediate between said changer and rod for alternately actuating said rod to and fro, and means, substantially as described, for engaging and disengaging said arms with the traverse-changer, a traverse-slide mounted on said traverse-rod and actuated thereby, a reversing-lever pivoted upon said slide and engaging and actuating the means for engaging and disengaging the said arms with the traverse-changers, a shaper-carriage provided with the step-by-step actuating device, substantially as described, a pair of shapers provided with guideways mounted on said carriage, a pair of sliding adjustable shaper-stops having a support and working one in a guideway of the respective shapers, and means for controlling the positions of said stops from the shapers, said stops engaged by said reversing-lever controlled thereby, whereby the traverse of the traverse-rod may advance the carriage and change the adjustment of the shaper-stops to limit the traverse of the traverse-rod.

14. In combination, a post, a socket-eye, and means whereby said socket-eye is adjustably mounted on said post, an internally-screw-threaded tube provided with an enlarged end and set through said socket-eye, a screw-bar working in said screw-thread of the tube and provided with a jam-nut abutting against the smaller end of said tube, a socket fitting in the enlarged end of said tube, and provided with means for holding the same therein against longitudinal movement and permitting revolution thereon, said socket provided with a spline, the slotted spindle set in said socket, and the said spline taking in the slot thereof, substantially as described.

15. In combination, the spool-spindle and the bearing composed of the following elements: the socket-eye b^3, the internally-screw-threaded tube b^4, the screw-bar b^5, provided with the jam-nut b^6, and the socket b^4, provided with set-screws b^7, substantially as described.

375,922. BUSTLE. HENRY O. CANFIELD, Bridgeport, Conn., assignor to the Canfield Rubber Company, same place. Filed Oct. 17, 1887. Serial No. 252,591. (No model.)



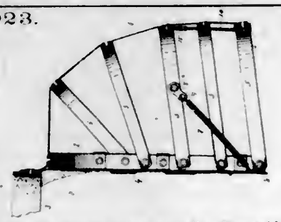
Claim.—1. A folding bustle consisting, essentially, of side pieces, ribs pivotally secured thereto, a cover secured to the ribs and to the side pieces, and a distending-spring secured to the upper and lower ribs and to the cover above the upper rib, so that the upper rib is held in place and the lower rib permitted to collapse when the wearer sits down.

2. A folding bustle consisting of side pieces, a series of ribs pivotally secured thereto, a rigid upper rib, a cover secured to the side pieces and to the ribs, and a distending-spring secured to the upper and lower ribs and extending from the upper rib to the belt, whereby the upper portion of the bustle is held rigid and the lower portion permitted to collapse when the wearer sits down.

375,923. BUSTLE. HENRY O. CANFIELD, Bridgeport, Conn., assignor to the Canfield Rubber Company, same place. Filed Oct. 17, 1887. Serial No. 252,593. (No model.)

Claim.—1. A bustle consisting of a belt, skirts secured thereto, a body-piece secured to the skirts, ribs pivotally secured to the opposite sides of the body-piece, returning-springs whose opposite ends are connected to one of the intermediate ribs and to the skirts at the bot-

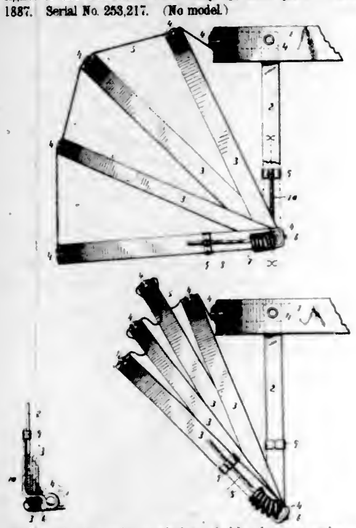
375,923.



tom of the bustle, a vertical brace extending from said intermediate rib to the bottom rib, and a flexible strip, 11, which serves as a backing for the brace and also as a hinge-connection to the ribs, permitting the bustle to be collapsed without strain upon either brace or ribs.

2. In a bustle, the combination, with the body-piece, a series of ribs pivotally secured thereto, and a strip connected to the body-piece and all of the ribs, of returning-springs 7, vertical brace 10, and a flexible connection between said brace and the intermediate rib, to which the springs are attached.

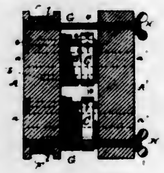
375,924. BUSTLE. HENRY O. CANFIELD, Bridgeport, Conn., assignor to the Canfield Rubber Company, same place. Filed Oct. 24, 1887. Serial No. 253,217. (No model.)



Claim.—1. A bustle consisting of side pieces, a series of curved ribs pivotally secured thereto, and springs which consist of a series of coils lying longitudinally of the lower rib and having forwardly-projecting arms secured to the lower rib and other arms secured to the side pieces, whereby the collapsing of the bustle causes torsion of each coil, which acts to return the bustle to its normal position when pressure is removed.

2. The combination, with the side pieces of a bustle and a series of curved ribs pivotally secured thereto, of springs at opposite sides of the bustle, each spring consisting of a series of coils lying longitudinally of the lower rib, a forwardly-projecting arm secured to said lower rib, and an arm secured to the side piece, so that when the bustle is collapsed more or less torsion of each coil takes place, the upper edges of the coils being pressed together and the lower edges separated, the return of the coils to their normal position, when pressure is removed, acting to throw the bustle to its distended position.

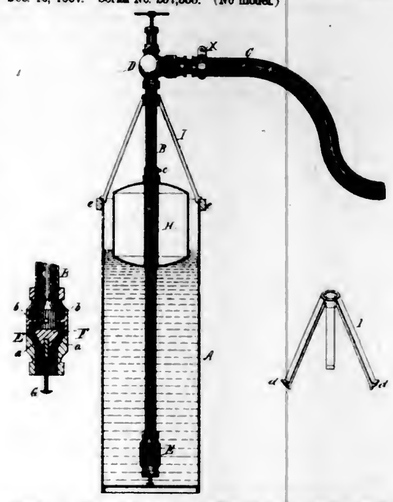
375,925. TELEPHONE SYSTEM. JOHN CRAWFORD, Reading, and JOHN B. KER, Harrisburg, Pa. Filed Mar. 24, 1887. Serial No. 232,219. (No model.)



Claim.—1. A double switch-board consisting of two boards placed back to back and both provided with plug-holes, in combination with jacks situated between said boards and permanently attached to one only of said boards, and the two boards being detachably secured together, substantially as set forth.

2. A double switch-board consisting of two boards placed back to back and having jacks mounted on one of said boards with plug-holes in both boards, said jacks being arranged in groups or sections, and the back board being removable for each of such groups or sections, substantially as set forth.

375,926. AUTOMATIC CAN-FILLER FOR ICE-MACHINES. FRANCIS VT. DE COPPET, New Orleans, La. Filed Sept. 25, 1886. Renewed Dec. 10, 1887. Serial No. 257,555. (No model.)



Claim.—1. In an automatic can-filler, the combination, with the movably-supported filling-pipe extending nearly to the bottom of the can, and having a valve in its lower end, of a float secured to the upper part of said filling-pipe and operated by the water in the can to lift said pipe, and thereby allow said valve to drop and automatically cut off the supply of water at a desired predetermined point, substantially as described.

2. In an automatic can-filler, the combination, with the movably-supported filling-pipe extending down nearly to the bottom of the can, and having a valve interposed in its lower end, of an adjustable float secured to the upper part of said filling-pipe and operated by the water in the can to lift said pipe, and thereby allow said valve to drop and automatically cut off the supply of water at any predetermined point desired, substantially as described.

3. In an automatic can-filler, the combination, with the movably-supported filling-pipe extending down nearly to the bottom of the can, and having at its lower end a valve-chamber containing a valve provided with a pendent stem, which extends below the bottom of the valve-chamber and bears against the bottom of the can to hold the valve open while the can is being filled, of an adjustable float secured to the upper part of the filling-pipe and arranged to be raised by the water in the can, and thereby lift the filling-pipe to allow said valve to drop and automatically cut off the supply of water at any predetermined point desired, substantially as described.

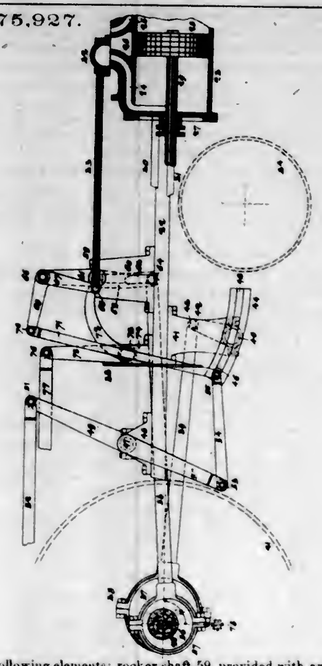
375,927. VALVE-GEAR. HENRY R. FAY, Boston, Mass. Filed Feb. 28, 1887. Serial No. 229,227. (No model.)

Claim.—1. In a valve-gear, the combination of the rocker-shaft 59, provided with arms 61 and 62, with eccentric 56, valve-stem 33, link 44, eccentric 37, bell-crank 66, and rod 71, substantially as and for the purposes set forth.

2. The combination of devices, substantially as described, for operating a single valve, said devices being composed of the following elements: eccentric 37, link 44, connected with valve by means of valve-stem 33, bell-crank 66, and rod 71, the center radial line of link being at right angles, or nearly so, to axial line of valve-stem, and bell-crank 66, oscillated by rocker-shaft 59, which oscillation is produced by connection, substantially as shown, with eccentric 56.

3. The combination of devices, substantially as and for the purposes set forth, by means of which an independent variable lead and cut-off valve motion may be obtained, said devices being composed

375,927.



of the following elements: rocker-shaft 59, provided with arms 61 and 62, arm 62 being provided with slot 63, eccentric 56, and connected with valve by means of valve-stem 33 and bell-crank 66, and rocker-shaft-arm pin 64, operated by means of adjustable lead and cut-off shaft mechanism, and as said pin in operation is drawn toward the center of rocker-shaft 59 the travel of the valve is increased, and vice versa, when pin is pushed from the center of rocker-shaft the travel of the valve is decreased, thereby permitting independent variable lead and cut-off valve motions.

4. The combination of devices, substantially as and for the purposes set forth, by means of which equally efficient, or nearly so, valve motions may be obtained in either forward or back gear, said devices being composed of the following elements: eccentric 56, rocker-shaft 59, connected with valve by means of valve-stem 33 and bell-crank 66, eccentric 37, link 44, connected with valve by means of valve-stem 33, bell-crank 66, and rod 71, said devices being placed, as shown, so that the center radial line of link 44 will be at right angles, or nearly so, with center line of adjustable lead and cut-off eccentric-rod motion.

375,928. MACHINE FOR FORMING TACKLE-BLOCK STRAPS AND HOOKS. EDWARD FLETCHER, Portland, Me., assignor to Herbert Loud, Everett, Mass. Filed Feb. 7, 1887. Serial No. 226,863. (No model.)

Claim.—1. In a machine for forming tackle-block straps and hooks, the die carrying quadrants *f f*, having an oscillating and forward-and-back motion, the filling-block Q, and reciprocatory carriage

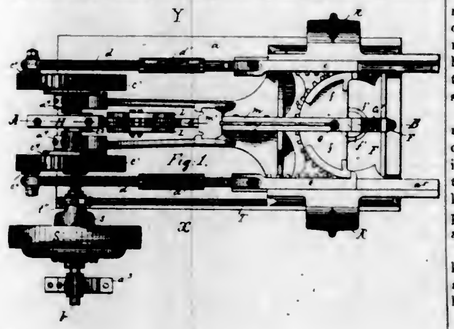
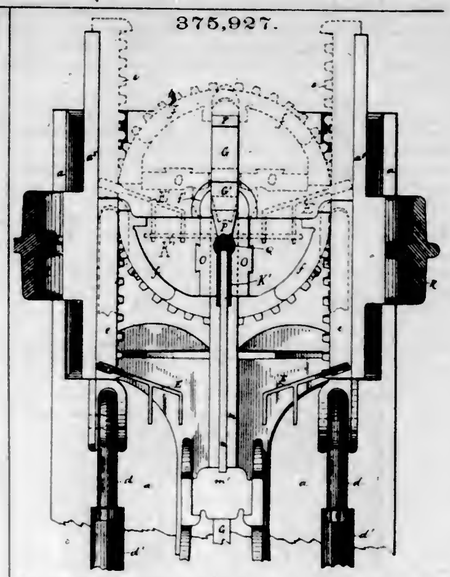


Fig. 1.

375,927.



F, and back die carrying draw-bar G, arranged and combined as and for the purpose set forth and described.

2. In a machine for forming tackle-block straps and hooks, the oscillating and reciprocatory side die carrying quadrants *f f*, reciprocatory carriage F, and back die carrying draw-bar G, the lower stationary filling-block, Q, vertically-adjustable filling-block *q*, and stationary top rib, *n*, arranged and combined to operate as and for the purpose set forth.

3. In a machine for forming tackle-block straps and hooks, the frame *a*, reciprocatory toothed racks *e e*, the toothed quadrants *f f*, with their dies O O, the reciprocatory carriage F, the reciprocatory draw-bar G and its back die, P, the filling-block Q, and stationary top rib, *n*, arranged and combined to operate as and for the purpose set forth.

4. In a machine for forming tackle-block straps and hooks, the reciprocatory carriage F and draw-bar G, secured together, combined with the quadrant-bolt f^w, and quadrants *f f*, journaled upon said bolt, as and for the purpose set forth.

5. In a machine for forming tackle-block straps and hooks, the mechanism for reciprocating the carriage F, draw-bar G, quadrant-bolt f^w, and quadrants *f f*, consisting of the rotary shaft *c* and cam c^3, secured to it, the rocking frame or lever H, having the blocks I K, and link L, connecting the draw-bar to the lever H, as and for the purpose set forth.

6. In a machine for forming tackle-block straps and hooks, the device for adjusting the position of draw-bar G, consisting of the spindle *l*, pivoted to link L, and provided with the toothed eccentric l^2, arranged in a recess in the draw-bar head *g*, and spindle g^s, with its worm *g* arranged to turn in said head *g* and adapted to engage in the toothed eccentric l^2, as and for the purpose set forth.

7. In a machine for forming tackle-block straps and hooks, the rotary shaft *c* and its cam c^3, for intermittently reciprocating the back die carrying draw-bar G, and toothed quadrants *f f*, combined with rotary gear-wheels *c' c'*, secured to shaft *c* and having cranks c^5 c^5, hinged to rods *d d*, and racks *e e*, connected to the latter and adapted to engage in the teeth on the quadrants *f f*, as and for the purpose set forth.

8. In a machine for forming tackle-block straps and hooks, the mechanism for starting and automatically stopping the machine at the completion of its operation, consisting of shipper-lever *t*, shaft T, having lever *t'* for actuating the friction clutch-blocks s^2 s^2 against the rotary pulley S, and lever t^3, and connecting mechanism to the bell-crank lever t^3, the roller t^5, journaled to the latter, and ring c^4, open at one place, c^5, and arranged on the side of one of the gear-wheels *c' c'*, as and for the purpose herein set forth and described.

9. In a machine for forming tackle-block straps and hooks, the lower stationary filling-block, Q, combined with the vertically-movable block *q*, secured to the lower end of the rod *r*, the latter being located in yoke R, secured to frame *a*, as and for the purpose set forth.

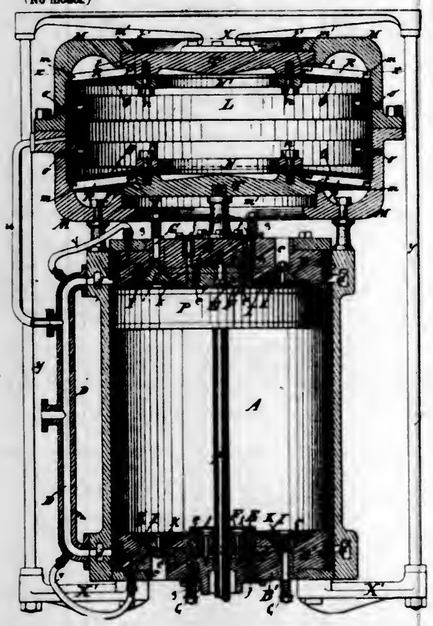
10. In a machine for forming tackle-block straps and hooks, the

stationary yoke R and rod *r*, carrying the filling-block *q*, as described, combined with standards R' R', pulleys R⁴ R⁴, chains or cords R⁵, and weights R⁶ R⁶, arranged, as described, for raising the said filling-block *q* to permit of the removal of the finished forging, substantially as described.

11. In a machine for forming tackle-block straps and hooks, the herein-described device for depressing the upper filling-block, *q*, consisting of the tripper-lever U, having recesses U' U' and stop projections U'' U'', combined with handle U³, and levers or links V V', connected, respectively, to stationary head R³ and rod *r* and having their inner ends resting in the recesses U'' on lever U, as and for the purpose set forth.

12. In a machine for forming tackle-block straps and hooks, the combination, with the trip-lever U and links V V', of the automatic mechanism for tripping said lever or said links, consisting of the rotary gear-wheel *c'*, having the projection *z'*, and the arm or lever Z, hung on fulcrum *z* and having hinged to it the rod Z', adapted to act on said lever or links, as and for the purpose set forth.

375,929. **AIR-COMPRESSOR.** WILLIAM T. FORSTER, Kansas City, Mo. Filed Oct. 21, 1885. Renewed Feb. 8, 1887. Serial No. 236,968. (No model.)



Claim.—1. In an air-compressor, an exhaust-valve connected with a flexible diaphragm communicating with the reservoir of compressed air and containing air at the same degree of pressure as is produced in the cylinder, so as to be held in place by the pressure in the diaphragm and thus balanced between the two pressures, substantially as and for the purposes set forth.

2. In an air-compressor, the combination, with the air-cylinder provided with movable heads, of a diaphragm or equalizer having flexible ends connected with the movable heads of the cylinder and adapted to contain air at the same degree of pressure as is produced in the cylinder, substantially as and for the purposes set forth.

3. In an air-compressor, the combination of the air-cylinder A, having the ports *d* at or near each end and provided with the movable heads B B', forming the outlet-valves, with the diaphragm L, communicating by a pipe with the reservoir of compressed air in order to contain air at the same degree of pressure as is produced in the air-cylinder and having flexible ends connected with the cylinder-heads B B', substantially as and for the purposes set forth.

4. In an air-compressor, the combination of the air-cylinder A, having the ports *d* at or near each end and provided with the movable heads B B', having the valves C, and cups E, with the diaphragm L, communicating with the reservoir of compressed air, so as to contain air at the same degree of pressure as is produced in the air-cylinder, and provided with the flexible rings O, disks N N', elastic plates R, and frames T T', connecting with the movable cylinder-heads B B' and having projections *t*, for acting upon the elastic plates R, arranged and operating substantially as described, and for the purposes set forth.

5. In an air-compressor, the diaphragm or equalizer L, capable of containing compressed air, consisting of the hollow body L, having the central disks, N N', the flexible rings O, attached to and connecting such disks with the sides of the diaphragm, the elastic plates R, arranged on the rings O, and the frames T T, secured to the disks N N' and provided with projections *t*, adapted to act on the plates R, substantially as and for the purposes set forth.

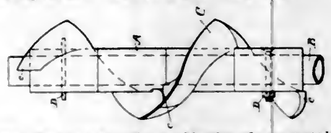
6. In an air-compressor, the combination, with the cylinder-heads B B', of the movable cups E, fitting and moving in suitable recesses in such heads, constructed with or having a cavity or air-space, F, and provided with channels or discharge-orifices *f* and valves to close the same, as and for the purpose set forth.

375,930. **PRODUCTION OF ORANGE AZO DYE-STUFFS.** PAUL FRIEDLAENDER and BERNHARD PRIEBS, Offenbach-on-the-Main, Germany, assignors to K. Oehler, same place. Filed May 20, 1887. Serial No. 238,894. (Specimens.)

Claim.—1. The process of producing the coloring-matter herein described, consisting in preparing a solution of tetrazo-ditolylchloride from sulphate of tolidine, in adding this solution to a solution of metatoluylenediamine sulpho-acid and afterward adding a solution of salicylic acid, substantially as herein described.

2. The orange azo dye-stuff herein described, consisting of a reddish-brown powder easily soluble in hot water with an orange color, insoluble in hydrocarbons, and capable of precipitation from its watery solution by addition of dilute mineral acids in brown-red flakes which dissolve in concentrated sulphuric acid with violet color.

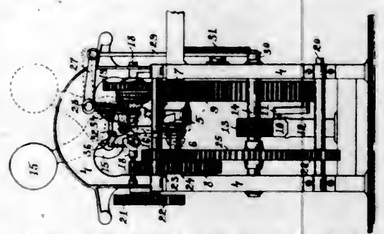
375,931. **CONVEYER.** WINFIELD O. GUSCHKE, Terre Haute, Ind. Filed Aug. 31, 1887. Serial No. 248,390. (No model.)



Claim.—In a conveyer, the combination of a central shaft, a series of flights, each consisting of a central hub and a concave blade formed integral therewith and extending one-half around the circumference of the hub, with its ends projecting beyond the faced ends of the hub and interlocking with the ends of the next adjacent blades, and a pin for securing the two end flights of the series to the shaft, substantially as and for the purpose set forth.

375,932. **SPINNING-MULE.** JOHN HACKALEY, Fall River, Mass. Filed June 8, 1887. Serial No. 240,506. (No model.)

Brief.—The object of the invention is to prevent the roller-clutch from closing until after the driving-in clutch is opened.



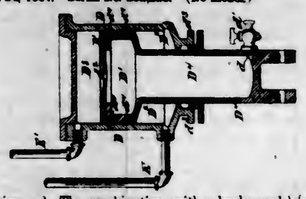
Claim.—1. The combination, as hereinbefore set forth, with the roller-clutch, the driving-in clutch, and the connected mechanism of the respective clutches, the oscillating shipper-ball, and the clutch-arm for operating the said driving-in clutch, and the roller-clutch elbow and rod for operating the said roller-clutch, of a retaining device acting to retain and retard the said clutch-elbow and engaged and released by the said shipper-ball, whereby the roller-clutch may be prevented from closing until the driving-in clutch is opened, substantially as and for the purpose herein described.

2. The combination, as hereinbefore set forth, with the roller-clutch and the clutch-elbow for operating the same, and the oscillating shipper-ball, of a retaining-latch pivoted to the said clutch-elbow, and a fixed stud engaged by the said latch, the shipper-ball engaging the said latch and acting to disengage the latch from the stud, whereby the roller-clutch elbow is released and the clutch is permitted to close, substantially as herein described.

3. The combination, as hereinbefore set forth, with the roller-clutch and the driving-in clutch, and the means, substantially as described, for operating said clutches, and the oscillating shipper-ball 15, of the retaining-latch 32, provided with the trip-finger 37, and pivoted to the said operating means of the roller-clutch, and the stud 36, engaged by said latch 32, substantially as and for the purpose herein described.

4. In a spinning-mule, the combination, as hereinbefore set forth, with the driving-in clutch and the roller-clutch, the oscillating shipper-ball for operating the driving-in clutch, and the clutch-elbow for operating the roller-clutch, of a retaining device acting to retard the action of the said clutch-elbow, such device being engaged and released to free the clutch-elbow by the shipper-ball, whereby the roller-clutch may be prevented from closing until the driving-in clutch is opened, substantially as and for the purpose herein described.

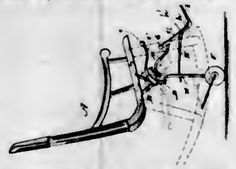
375,933. **STEAM-BRAKE.** ROBERT HARDIE, Rome, N. Y. Filed Mar. 24, 1887. Serial No. 232,232. (No model.)



Claim.—1. The combination, with a brake and brake-applying connections of a railway-vehicle, of a cylinder and a piston attached to said connections for operating them, the cylinder affording a greater steam-space on one side of the piston than on the other, and having a constantly-open exhaust from the larger space, and a valve apparatus for controlling the admission of motive fluid to the smaller space on one side of the piston, and for controlling the exhaust of such motive fluid to the larger space on the opposite side of the piston, substantially as herein described.

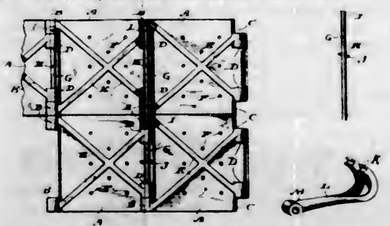
2. The combination, with a brake and brake-applying connections, of the cylinder D and the hollow trunk-piston D', affording the steam-spaces D² D³, of different size, and the piston being attached to said brake-applying connections, and the piston also having an opening, *d*³, from the space D³ to the hollow trunk and the opening *d* from the trunk, and a valve apparatus for controlling the admission of motive fluid to the space D² and its exhaust from the space D³ to the space D³, substantially as herein described.

375,934. **CONVERTIBLE CHAIR.** ORRIN C. HARRIS, Newport, N. Y. Filed Aug. 16, 1887. Serial No. 247,084. (No model.)

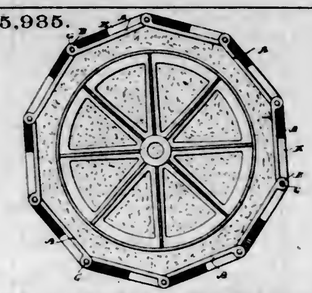


Claim.—In a convertible chair provided with rockers, the brackets B B, the shaft C, mounted in bearings in said brackets B B and provided with lever-arms D D and L, the rods E E, pivotally secured to the lever-arms D D and provided with rollers F F, and braces *e e*, having bearings *e' e'*, in combination with the rods H H, mounted in the bearings *e' e'* and provided with the foot-rest I and bolt-holes *h h*, the pendent arms G G, pivotally secured to the rods H H by bolts *h' h'* and connected by braces K K, and the bent rod M, pivotally secured at one end to the braces K K and at its other end to the lever-arm L, all constructed, arranged, and operating substantially as shown and described.

375,935. **MOLDER'S FLASK.** JOSEPH HARRISON, Milwaukee, Wis. Filed Nov. 8, 1887. Serial No. 254,599. (No model.)



375,935.



Claim.—1. A molder's flask that comprises a series of sections, each of which has one vertical edge thereof provided at its corners with perforated lugs, and the other vertical edge cut away at the corners to form recesses, and also provided with perforated lugs, and rods passed through the several lugs when those of one section are in register with those of the sections next adjacent, substantially as set forth.

2. A molder's flask that comprises a series of sections, each of which has one vertical edge thereof provided at its corners with perforated lugs, and the other vertical edge cut away at the corners to form recesses, and also provided with perforated lugs, diagonal strengthening-webs uniting the lugs on the opposite edges of the sections, and rods passed through the several lugs when those of one section are in register with those of the sections next adjacent, substantially as set forth.

3. A molder's flask comprising a series of sections, each of which has one vertical edge thereof beveled and provided at the corners with perforated lugs, and the other vertical edge rounded and cut away to form recesses that are beveled in a vertical direction, and this last-named vertical edge also provided with perforated lugs, and rods passed through the several lugs when those of one section are in register with those of the sections next adjacent, substantially as set forth.

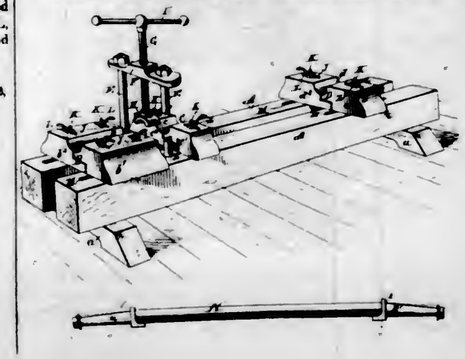
4. A molder's flask comprising a series of sections, each of which has one vertical edge thereof provided with perforated lugs and the other vertical edge cut away to form recesses, and also provided with perforated lugs, and rods provided with transverse perforations, passed through the several lugs when those of one section are in register with those of the section next adjacent, in combination with a pin or pins that detachably engage the perforations in the rods, substantially as set forth.

375,936. **PROJECTILE FOR FIRE-ARMS.** HERBERT J. HARWOOD, Littleton, Mass. Filed Oct. 27, 1887. Serial No. 253,534. (No model.)



Claim.—A projectile for fire-arms, consisting of the conoidal portion A, provided with the shank *a*, having extending from its surface one or more ribs, *b*, concentric therewith, in combination with the part B, provided with the ribs *c c*, substantially as shown and described.

375,937. **AXLE-SETTING MACHINE.** JAMES F. HENNESSY, Winona, Minn. Filed Aug. 18, 1887. Serial No. 247,270. (No model.)



Claim.—1. The combination, in an axle-setting machine, of a sill or bed, a series of blocks fitted on the sill and provided with grooves to receive the axle, and a screw or equivalent device pressing the axle near its arm to pitch the arm, substantially as herein set forth.

2. The combination, in an axle-setting machine, of a sill or bed, a series of blocks mounted on the sill and provided with grooves to receive the axle, and one or more of said blocks made laterally adjustable, and a screw or equivalent device for pressing the axle near its arm to set the axle into the adjacent block-grooves and give it pitch and gather at one operation, substantially as herein set forth.

3. The combination, in an axle-setting machine, of sills A, blocks B C D, held thereto and provided with grooves *b c d*, respectively, and a screw, G, fitted between the blocks B C and adapted to press the axle into the grooves *b c* of said blocks, substantially as described, for the purposes set forth.

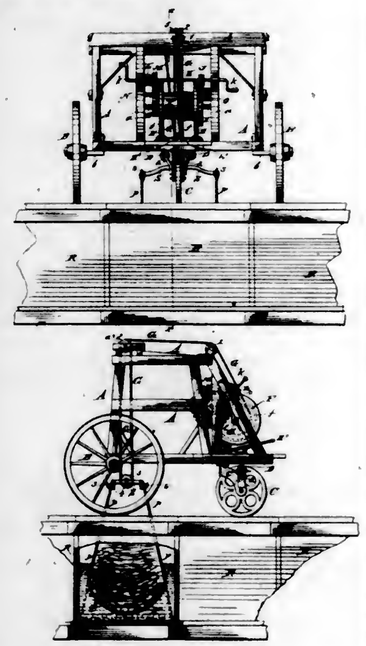
4. The combination, in an axle-setting machine, of sills A, blocks B C D, provided with grooves *b c d* and slots J, and bolts K, passed through said slots and the sills and provided with nuts L, allowing lateral adjustment of the blocks, substantially as herein set forth.

5. The combination, in an axle-setting machine, of sills A, provided with slots M, blocks B C D, provided with grooves *b c d* and slots J, bolts K, and nuts L, and the bolts K of blocks B D passing through the slots M, substantially as shown and described, whereby all the blocks B C D are allowed lateral adjustment and the blocks B D are made adjustable lengthwise of the machine, substantially as herein set forth.

6. The combination, in an axle-setting machine, of sills A, blocks B C D, having grooves *b c d*, and said block D made laterally adjustable on the sills, and the blocks B C D made in two parts, allowing adjustment of the grooves *b c d* to accommodate axles of different sizes, substantially as herein set forth.

7. The combination, in an axle-setting machine, of sills A, provided with slots M, blocks B C D, having grooves *b c d* and transverse slots J, the bolts K, and nuts L, and the bolts K of blocks B D passed through the slots M, and said blocks B C D each made in two parts, allowing adjustment of the width of their grooves *b c d*, substantially as described, for the purposes set forth.

375,938. **TANNERY-HOIST.** ALBERT F. JONES, Salem, Mass., assignor of one-half to Joseph H. Poor, same place. Filed Sept. 21, 1887. Serial No. 250,308. (No model.)



Claim.—1. The hoisting-machine herein described, constructed with a frame, A, carrying a hoisting drum and rope and mechanism for operating them and supported on main wheels B B, and a caster-wheel, C, substantially as herein set forth.

2. The hoisting-machine herein described, constructed with a frame, A, carrying a hoisting drum and rope and mechanism for operating them and supported on main wheels B B, a caster-wheel, C, and auxiliary wheels D D, journaled to the caster-wheel stirrup, substantially as herein set forth.

3. A hoisting-machine constructed with a frame mounted on wheels and carrying a hoisting drum and rope and mechanism for operating them, and a sling-frame, and sling connected to the said sling-frame, the hoisting-rope passing around pulleys hung in said sling-frame, substantially as herein set forth.

4. A hoisting-machine constructed with a frame mounted on wheels and carrying a hoisting drum and rope and mechanism for operating them, a sling-frame hung to the rope, and a sling comprising a flexible floor, and ropes connected thereto and adapted for connection to the sling-frame, substantially as herein set forth.

5. The combination, in a hoisting-machine, of a frame, A, shafts E N, and a crank-shaft, K, journaled on the frame, a drum, F, and gear-wheel I on the shaft E, a gear-wheel, M, and sliding pinion O on the shaft N, and pinions J L on the shaft K, which is movable endwise on the frame, substantially as described, for the purposes set forth.

6. The combination, in a hoisting-machine, and with a frame, A, a hoisting-drum, F, a rope, G, thereon, and friction disks or plates *f f*, fixed to the drum or its shaft, of a shaft, *h'*, journaled on the frame, arms *h*, fixed thereto and carrying brake-shoes H H, adapted to the disks *f f*, and a lever, H', fixed to the shaft *h'*, all arranged for automatic application of the brake and release of it by pressure on the lever, substantially as herein set forth.

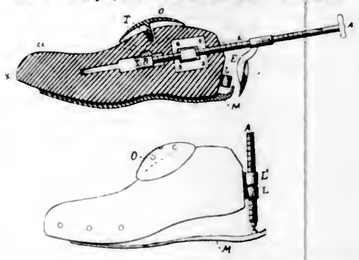
7. In a tannery-hoist, the combination, with a wheeled frame carrying a hoisting drum and rope and mechanism for operating them, of a sling-frame, S, carrying one or more sheaves beneath which the bight of the hoist-rope passes, and provided with hooks *s*, adapted to receive ropes of a hide-sling, substantially as herein set forth.

8. In a tannery-hoist, the combination, with a wheeled frame carrying a drum and rope and mechanism for operating them, and a sling-frame, S, carrying one or more sheaves beneath which the bight of the hoist-rope passes, and provided with hooks *s*, of a flexible sling comprising a floor made of plates or planks T, connected to ropes *p*, adapted for connection to the frame-hooks *s*, substantially as herein set forth.

9. In a tannery-hoist, a sling made with a flexible floor fitting in the vat and provided with hoist-ropes, said floor consisting of a series of planks or members, each independently yielding, substantially as herein set forth.

10. In a tannery-hoist, a sling made with a floor formed of plates or planks T laid parallel edgewise, and ropes connected to the planks and adapted for connection to a hoisting frame or device, said plates or planks being each independently yielding, substantially as herein set forth.

375,939. **BOOT OR SHOE STRETCHER.** WILEY JONES, Norfolk, Va. Filed May 9, 1885. Serial No. 164,917. (No model.)



Claim.—1. The combination, in a shoe-stretcher consisting of a divided wooden last, of the bottom plate, M, provided with studs N N, fitted in their corresponding cavities in the said last, substantially as and for the purposes described and set forth.

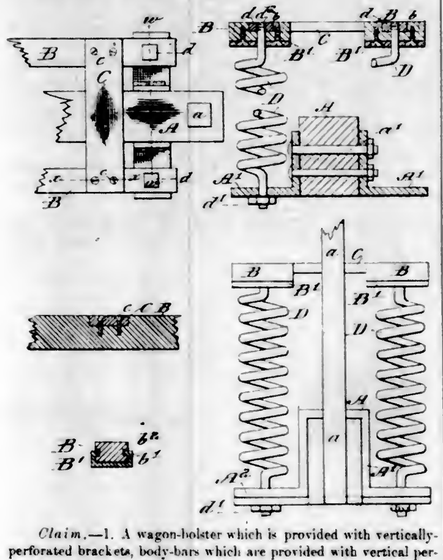
2. In a shoe-stretcher, the links C, C', and D, in combination with swivel-nut B, and pivoted on a single pin in the said nut, all substantially as and for the purposes described and set forth.

375,940. **VEHICLE-WHEEL.** WALTER KNIGHT, San Andreas, Cal. Filed Aug. 31, 1887. Serial No. 248,366. (No model.)



Claim.—The combination of the cylindrical wooden hub A, having outer opposite end metal bands, *b b*, the wooden felly C, with its metal tire D, the double series of inclined metal spokes B B, constructed with shoulders near their opposite ends and tenons *c c*, fitted to enter respectively into the hub through the bands *b* thereof and into the felly, and the washers *e*, essentially as shown and described.

375,941. **WAGON-SPRING.** EDWARD G. LEE, Brooklyn, Pa. Filed July 2, 1887. Serial No. 243,246. (No model.)



Claim.—1. A wagon-bolster which is provided with vertically-perforated brackets, body-bars which are provided with vertical perforations and rectangular top recesses, securing-nuts which are adapted to fit the top recesses, and spiral springs which by their upper ends engage the nuts in such top recesses, and which by their lower ends extend through the perforations in the brackets, and are secured by a nut which is applied directly to such lower end, substantially as shown and described.

2. A wagon-bolster which is provided with lateral brackets, an end perforated bottom plate which is received in a transverse recess in the body of the bolster and which is coincident with the horizontal portions of the bracket, connected body-bars which are provided with bottom friction-plates, top recesses, and a securing-nut which is held against rotation by the walls of such recesses, and end-threaded spiral springs, each of which at the top engages the nut in the recess and by its lower extremity extends through both the bracket and the transverse bottom plate and is secured by a nut applied thereon, all in combination, substantially as described.

3. A wagon-bolster which is provided with lateral brackets, body-bars which are provided with bottom friction-plates, which engage a recess or groove formed in each edge of such body-bars, and which are provided, also, with top recesses and with securing-nuts fitted within such recesses, and spiral springs which engage the nuts within the top recesses and which extend through the lateral brackets and are engaged by a nut beneath the same, all in combination, substantially as set forth.

4. The combination, with the bolster A, having perforated brackets A', of the connected body-bars B B, having top recesses, as described, and the springs D D, resting upon and secured to the brackets A' and secured at top to the body-bars, the securing-nut resting in the recess *b'* of such bars and being applied directly to the threaded end of the spring, substantially as and for the purposes specified.

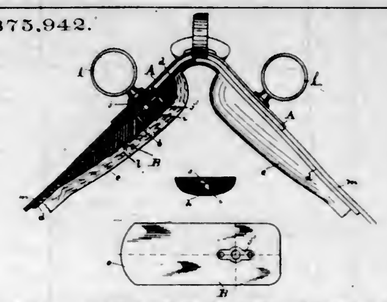
5. The combination of the bolster A, having perforated side brackets, A', the body-bars having connecting-plate C, top recesses, and bottom guard or friction-plate, B, and the supporting-springs D, secured by nuts applied to the ends thereof, as described, both to the side brackets and to the recessed body-bars, substantially as shown and set forth.

375,942. **HARNESS-SADDLE.** WILLIAM M. LEECH, Baltimore, Md. Filed Sept. 10, 1887. Serial No. 249,310. (No model.)

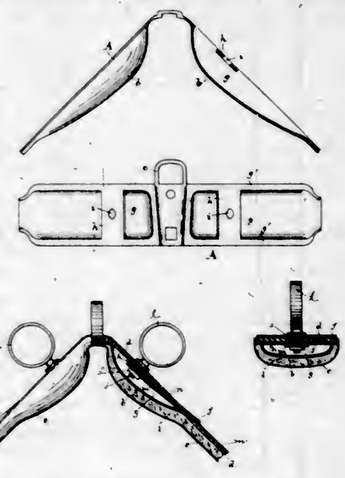
Claim.—1. The harness-saddle tree herein described, consisting of the iron jockey A and the pad-former B, provided with the terret-nut *f*, fitted in a recess flush with the face of the pad-former, as shown and described.

2. The harness-saddle tree herein described, consisting of the iron jockey A, the felt *l*, and flap *d*, the pad-former B, provided with the terret-nut *f*, fitted in a recess flush with the face of the pad-former, and the back-band *m*, interposed between the jockey and flap, as shown and described.

375,942.



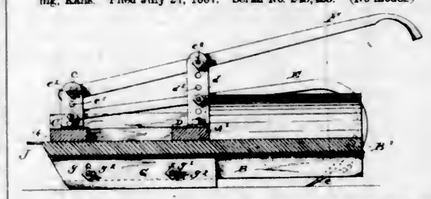
375,943. **HARNESS-SADDLE TREE.** WILLIAM M. LEECH, Baltimore, Md. Filed Sept. 10, 1887. Serial No. 249,311. (No model.)



Claim.—1. The herein-described saddle-tree, having at each side or arm and integral therewith a bold convex face, *b*, on its under surface, and the perforated cross-bar *h*, and the crupper-loop *c*, also formed integral with the tree, as shown and described, and for the purpose set forth.

2. The herein-described harness-saddle, having each of its two arms provided with integral bold convex faces *b* on their under surfaces, the perforated cross-bar *h*, and the felt *l*, connected the entire length of the tree, as shown and described.

375,944. **LISTING-CULTIVATOR.** THOMAS J. MCCORMICK, Whiting, Kans. Filed July 27, 1887. Serial No. 245,425. (No model.)



Claim.—1. The combination of the rectangular draft-frame and the L-shaped pieces H, secured adjustably at their rear ends to the rear sides of the frame, substantially as and for the purpose described.

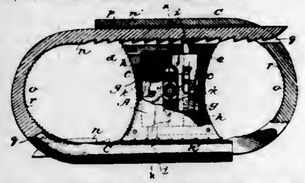
2. The standards C D, secured to the draft-frame, in combination

with the plow-beams and handles secured adjustably to said standards, substantially as and for the purpose set forth.

3. The combination, with the longitudinal protecting-frame, of the adjustable runners attached thereto, substantially as and for the purpose specified.

4. The combination of the frame composed of the transverse pieces A A′ and longitudinal pieces A², the standards C D, mounted upon said frame, the handles F and plow-beams E, connected adjustably to said standards, the bars H, connected to the under side of the frame and carrying the shovels I, the arms J, connected to the frame at *j*, the longitudinal frame-pieces B, having the cover B′ and semicircular shield L, secured upon the rear portions of said beams, and the adjustable runners G, substantially as and for the purpose specified.

375,945. SHACKLE. FRANK MCDONALD, Boise City, Idaho. Filed Sept. 10, 1887. Serial No. 249,393. (No model.)



Claim.—1. In a shackle, the combination, with a lock-case, of shackle-arms sliding upon each other and upon the lock-case, and bolts or catches for locking the same, substantially as described.

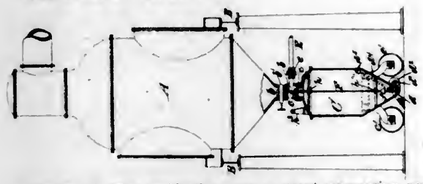
2. The combination, with a lock-case having grooved upper and lower surfaces and provided with bolts, of the shackle-arms C C, adapted to slide in the grooves on the lock-case and upon each other, and having the straight serrated portions *n n* to engage with the bolts, as set forth.

3. The shackle arms or bows C C, each of which is provided with a central curved portion and two straight arms, one of said arms being notched or serrated and the other grooved, in combination with a lock-case upon which the shackle-arms are adapted to slide, and bolts for fastening the same, substantially as herein set forth.

4. In a shackle, the combination, with a lock-case provided with spring-bolts, of the shackle-arms C C, having the curved portions *o o*, the straight arms *n n*, provided with serrations or notches for engagement with the spring-bolts, the grooved arms *n′ n′*, in which the serrated arms move, and the openings *q q* at the ends of the grooves for the passage of the serrated arms, substantially as specified.

5. In a shackle, the combination, with a lock-case provided with spring-bolts, and having a concave surface on its sides and a groove on its upper and lower surfaces, of the shackles having the serrated or notched arms, the grooved arms in which the serrated arms move, and the curved portion uniting the two arms, the said shackles being adapted to engage with and slide in the grooves on the upper and lower surface of the lock-case, substantially as described.

375,946. DISCHARGING APPARATUS FOR CLOSED EVAPORATING-PANS. ALEXANDER MILLER, New York, N. Y. Filed Mar. 4, 1887. Serial No. 229,684. (No model.)

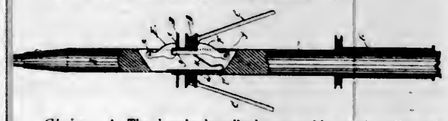


Claim.—1. The combination, with a closed evaporating-pan having a valved outlet, of a movable discharge-chamber detachably connected with the outlet below the valve, and a pipe for the inflow of liquor connected with the outlet below the valve and above the point of connection of the chamber with the outlet, substantially as herein described.

2. The combination, with the pan A, having the outlet *b*, provided with a valve, *b′*, of the discharge-chamber C, detachably connected with the outlet, and itself provided with an outlet-valve, *d*, and a pipe, E, for filling the chamber with liquor, communicating with the outlet below the valve, substantially as herein described.

3. The combination, with a closed evaporating-pan having a valved outlet and a discharge-chamber connected with said outlet and provided with a discharge-valve, of a rod and plunger working upward and downward in said chamber for loosening the precipitant and to prevent clogging of the outlet from the chamber, substantially as herein described.

375,947. UMBRELLA. JOHN D. NESBITT, New York, N. Y. Filed Mar. 10, 1887. Serial No. 230,347. (No model.)



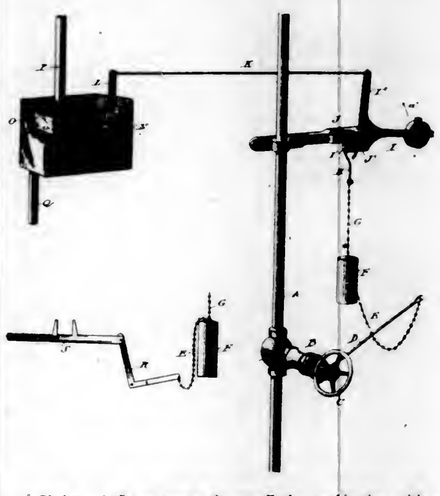
Claim.—1. The herein-described removable notch, adjustable upon the umbrella-stick as explained, and provided with a recess or slit for receiving the detent, and an adjustable covering-plate, substantially as and for the purposes set forth.

2. In combination with the notch having a recess or slot, as explained, the two-part detent pivoted in a casing and acted upon by a spring, substantially as shown and described.

3. The herein-described detent, composed of the two interlocking simultaneously-moving parts pivoted in the casing and acted upon by a spring, substantially as and for the purposes set forth.

4. The combination of the two-part detent, the open-sided casing, the pivots, and the spring secured in the casing, substantially as shown and described.

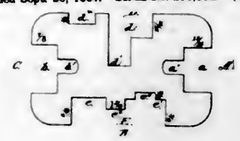
375,948. AUTOMATIC CUT-OFF FOR WATER-TANKS. JAMES POCKNELL, Jersey City, N. J. Filed May 16, 1887. Serial No. 238,396. (No model.)



Claim.—1. In an automatic cut-off, the combination, with a bucket supported on a bell-crank lever, of a weighted bell-crank lever connected with said bucket-lever, a catch formed on said weighted lever, a hook adapted to be hung on said catch, a weight supported by said hook, and a lever connected with said weight and adapted to operate either the steam-inlet valve or the shifting-lever for the driving-belt, substantially as shown and described.

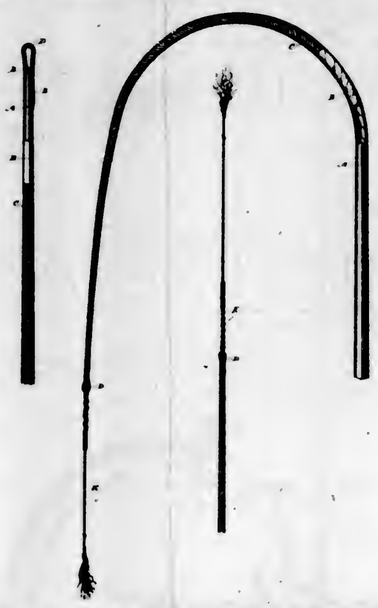
2. In an automatic cut-off, a bucket into which the tell-tale of a water-tank discharges, and a bell-crank lever supporting said bucket on one arm, in combination with a weighted bell-crank lever connected with the other arm of said bell-crank lever supporting the bucket, a bracket having a hook on which said weighted bell-crank lever is pivoted, a catch formed on said weighted bell-crank lever and extending near said hook of the bracket, a hook adapted to be hung on said catch, a weight supported by said hook, and a lever connected with said weight and adapted to operate either the steam-inlet valve or the shifting-lever for the main driving-belt of the pump, substantially as herein shown and described.

375,949. POCKET LUMBER-GAGE. JOHN P. PETERSON, Phillips, Wis. Filed Sept. 20, 1887. Serial No. 250,184. (No model.)



Claim.—A lumber-gage for dressed lumber, provided with four sides, A, B, C, and D, the side edges A and C having produced therein, respectively, compound recesses *a a′* and *b b′*, for gaging tongue-and-groove lumber of thirteen-sixteenths and seven-eighths of an inch in width, the side edges D having produced therein a compound recess, *d d′*, for ship-lapped lumber of thirteen-sixteenths of an inch in width, and a smaller recess one-half inch in width for wainscoting and ceilings, and a side edge B, having produced therein a recess an inch and three-quarters in width, for gaging sizing-stuffs, said recess having a central lip at the base, and smaller recesses *e* and *e′* in the base divided by said lip, and a still smaller recess, *e²*, in the base of the recess *e′*, the said recesses being respectively five-eighths, three-fourths, and three-eighths inch in width and adapted for gaging wainscoting and ceilings, as set forth.

375,950. WHIP. GEORGE PIERCE, Nyack, N. Y. Filed Oct. 17, 1887. Serial No. 252,540. (No model.)

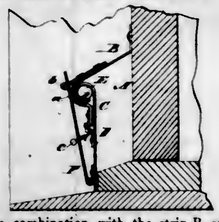


Claim.—1. A whip one of whose wrappings or coverings is composed of eel-skin, substantially as and for the purposes set forth.

2. A whip consisting of the core or central portion, A, the middle lining, B, wholly or partly composed of eel-skin, and the outer covering, C, substantially as shown and described.

3. A whip consisting of a hard core of rattan or other suitable material inclosed in a wrapping or middle lining wholly or partly composed of untanned eel-skin and with an outer fibrous covering, the eel-skin being held in place merely by its own shrinkage, substantially as shown and described.

375,951. WEATHER-STRIP. SAMUEL A. RANKIN, Mulberry, Mo. Filed Aug. 27, 1887. Serial No. 248,032. (No model.)



Claim.—1. The combination, with the strip B, of the strip D, hinged on its upper side, intermediate its longitudinal edges, to the lower edge of strip B and normally in a horizontal position, and the bar F, hinged at its lower end to the outer edge of the strip D, and having a sliding connection at its opposite end with the strip B, substantially as set forth.

2. The combination, with the offset strip B, provided with the semi-cylindrical recess *a*, of the strip D, hinged on its upper side between its longitudinal edges to the lower edge of strip B and provided on its inner edge with the counter-weight E, the slotted bar F, hinged to the outer edge of strip D, and the guide *b*, on the strip B and projecting through the slotted bar, substantially as set forth.

375,952. COVERED OR INSULATED WIRE OR CONDUCTOR. LEONARD F. RISQUA, New York, N. Y., assignor, by mesne assignments, to the Safety Insulated Wire and Cable Company. Filed Apr. 25, 1887. Serial No. 235,991. (No model.)



Claim.—1. A wire or conductor covered with a layer or tube of pyroxyline compound and a fibrous web or sheath adhered or cemented to or into the substance of the pyroxyline, substantially as herein set forth.

2. A wire or conductor covered with a tube or layer of pyroxyline compound, combined with a knit or braided fibrous sheath cemented thereto, substantially as and for the purpose set forth.

3. Wires or conductors covered with a coat of soft flexible insulating compound, a coat of pyroxyline compound, and a fibrous web in successive tubular layers, the said web being adhered to or into the substance of the pyroxyline, substantially as set forth.

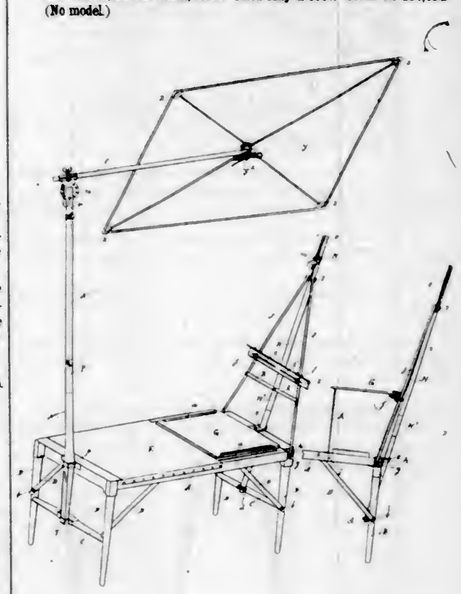
4. A wire or conductor covered with a coat of balata and pyroxyline in successive tubular layers, substantially as set forth.

5. A wire or conductor covered with a coat of balata, a coat of pyroxyline compound, and a fibrous web in successive layers, substantially as herein set forth.

6. In combination with the wire or conductor *a*, the soft insulating-layer *b*, with the pyroxyline layer *d*, intervening web *c*, and outer sheathing, *e*, substantially as shown and described.

7. The combination, with a wire or conductor, of a tubular sheath or covering of pyroxyline enveloping the wire, and a fibrous web or texture embedded or cemented in the pyroxyline by dissolving or softening the pyroxyline next to the said web, whereby the web and pyroxyline become intimately united and bound together, substantially as herein set forth.

375,953. COMBINED SEAT, EASEL, AND SUNSHADE. CARL T. H. RICHTER, East Dedham, Mass. Filed May 4, 1887. Serial No. 237,134. (No model.)



Claim.—1. A seat consisting of a rectangular frame, A, canvas E, folding legs B, and provided with a tray, F, in combination with an easel consisting of the main bar H, side bars, J, and rest L, connected to and supported by the seat, substantially as shown and described

2. A seat consisting of the rectangular frame A, canvas E, and folding legs B, in combination with the sunshade Y, rod or bar P^2, swivel-grip R S, and standard N, secured to and supported by the seat, substantially as shown and described.

3. In a combined seat and easel, the main bar H, secured to the seat by brace *c* and eye *d*, in combination with the side bars, J J, the upper end being secured to the slide I and the lower ends being provided with pins or studs *g*, fitting into eyes *h* on the frame A, and the bars K K, substantially as shown and described.

4. In a combined seat and easel, the rest or support L, provided with slots *i*, in combination with screws *j j*, provided with eyes for attachment to bars J, whereby the rest can be raised or lowered and secured in any desired position, substantially as shown and described.

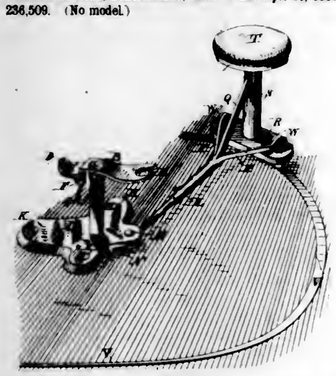
5. In a combined seat and sunshade, the adjustable joint consisting of the ferrule *r*, ring *s*, thumb-screw *t*, quadrant *u*, pin *x*, clamp *y*, and thumb-screw *z*, in combination with standard N and bar P, substantially as and for the purposes set forth.

6. In a combined seat and sunshade, the swivel-gripping device consisting of the upper grip, R, provided with screw R', the lower grip, S, plate T, and thumb-nut U, in combination with the extension-sticks Q Q' Q^3 Q^4 and bar P^3, substantially as and for the purposes set forth.

7. In a combined seat and sunshade, the sunshade Y, provided with pockets Z Z and tape Y^2, in combination with the extension-sticks Q Q' Q^3 Q^4, swivel-gripping device, and rod or bar P^3, whereby the shade is prevented from holding the wind, substantially as shown and described.

375,954. FOOT-REST AND STOOL FOR SHOE-MERCHANTS.

CHARLES L. ROBB, Bellefontaine, Ohio. Filed Apr. 28, 1887. Serial No. 236,509. (No model.)



Claim.—1. The combination, with foot-rest B and operator's stool T, mounted on rollers, of the pivoted arm L, pivoted to the foot-rest connecting the base of the foot-rest and the stool T, as and for the purpose set forth.

2. The combination, with the foot-rest B and connecting-rod L, pivoted to the foot-rest, the stool T, rollers U, and track V, as and for the purpose set forth.

3. The combination, with the foot-rest B and ledges C D to retain the heel, of the spring O and check F, as and for the purpose set forth.

4. The combination, with the foot-rest B, pivoted on its standard, of the ledges C D and boot-jack E on the front, as and for the purpose set forth.

375,955. PRESERVING GOBLET, TUMBLER, &c. ADOLPHE RODER, Philadelphia, Pa. Filed June 18, 1887. Serial No. 241,812. (No model.)

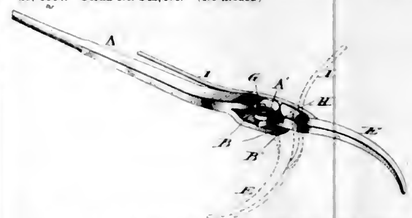


Claim.—1. A vessel of glass or equivalent material for preserving articles of food, made with an open top provided with an annular ridge or groove for securing upon it a cover, as described, and provided also with a small opening at its bottom adapted for a closing cork or plug, all substantially as set forth.

2. In combination with a glass or equivalent non-metallic goblet or jar having a closable opening in its bottom, as set forth, a top cover applied as set forth and composed of parchment-paper or its described equivalent.

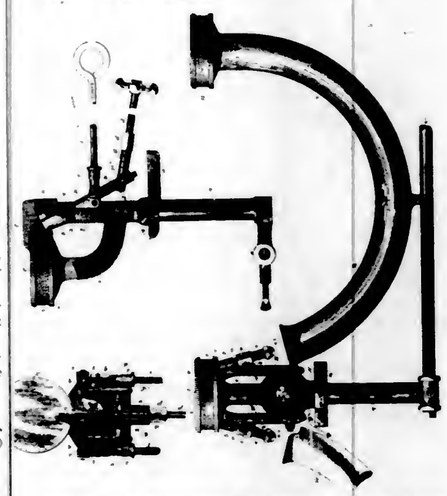
3. In combination with a glass or equivalent non-metallic preserving-vessel made with an open top and with an opening in the bottom, a top cover applied and held thereto, as described, and composed of parchment-paper having superposed thereon other protecting material, as specifically above set forth.

375,956. WIRE-STRETCHER. ARCHIBALD S. RUBYON, St. John, Mo., assignor of one-half to John H. Morgan, same place. Filed June 25, 1887. Serial No. 242,470. (No model.)



Claim.—In a wire-stretcher, the combination of the handle or lever A, the inner end of which is rounded, and a curved finger, E, pivotally secured to said end, said finger being provided with a cam projection upon its side corresponding to the inner end of the lever, and also with the small rod I, secured to the back of the curved portion, the free end of which extends up back of the lever, substantially as and for the purpose set forth.

375,957. VAPOR-BURNER. HENRY RUPPEL, Cleveland, Ohio, assignor to Schneider & Trenkamp, same place. Filed July 13, 1886. Serial No. 207,907. (No model.)



Claim.—1. The combination, with a generator, a burner in close proximity thereto, a commingling-tube connected to the burner, and arms leading from the generator and connected by a hollow cross-bar, the latter having a jet-orifice located in a line with the open end of the commingling-tube, of a valve mounted in the cross-bar for closing said jet-orifice, substantially as set forth.

2. The combination, with a generator, a stationary hollow needle-valve connected therewith, a commingling-tube, and a burner attached thereto, of a sleeve mounted on the valve and having a jet-orifice adapted to be opened and closed by the valve, the said orifice being so located as to direct the vapor into the open end of the commingling-tube.

3. The combination, with a generator, a pair of hollow stationary needle-valves leading therefrom, commingling-tubes, and burners attached to the outer ends of the commingling-tubes, of sleeves mounted on the stationary valves and provided with jet-orifices located to direct the vapor into the inner ends of the commingling-tubes, and handles for moving the hollow sleeves, substantially as set forth.

4. The combination, with a generator and hollow arms and hollow stationary needle-valves, the said arms being connected by a hollow cross-bar having a jet-orifice, of the commingling-tubes and burners, the needle-valve mounted in the cross-bar, the sleeves mounted on the stationary valves, and levers for moving the sleeves, substantially as set forth.

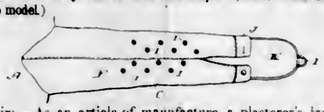
5. The combination, with a generator, a generating-tube, a burner the upper disk of which is integral with the generator, and a curved commingling-tube leading from the burner through the generating-tube, of a pair of hollow arms connected by a hollow bar, said bar being provided with a jet-orifice presenting toward the mouth of the curved tube, and a needle-valve for closing said jet-orifice.

6. In a vapor-burner, the combination, with a stationary hollow needle-valve, of a sleeve having a jet-orifice, said sleeve being mounted on the valve and adapted to slide thereon in opening or closing the jet-orifice, substantially as set forth.

7. The combination, with a stationary hollow needle-valve, of a sleeve mounted on the said valve, said sleeve having jet-orifices adapted to be closed by the valve, and means, substantially as shown, for actuating the sleeve in opening and closing the valve.

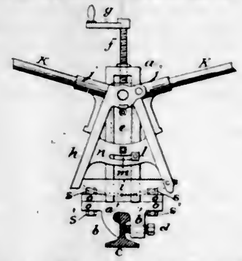
8. The combination, with a generator, a stationary hollow needle-valve attached to the generator, and a sleeve mounted on said valve, having a jet-orifice adapted to be closed by the valve, of a lever connected with the sleeve for actuating the same, said lever being fulcrumed on ears or projections extending from the generator, substantially as set forth.

375,958. PLASTERER'S JACKET. JAMES SKEFFINGTON, St. Paul, Minn. Filed July 11, 1885. Renewed Sept. 17, 1887. Serial No. 249,979. (No model.)



Claim.—As an article of manufacture, a plasterer's jacket having the right sleeve constructed with an impervious top guard or shield, G, overlapping the shoulder, said sleeve having a series of ventilating-apertures, I, on each side of the seam on the under side of said sleeve, as and for the purpose set forth.

375,959. RAIL-SAWING MACHINE. EDWARD C. SMITH, Brooklyn, N. Y. Filed May 24, 1887. Serial No. 239,179. (No model.)



Claim.—1. In a rail-sawing machine, the combination, with a base-frame adapted to receive a rail, of a frame carrying an oscillatory cutting-saw swiveled to said base-frame, as set forth.

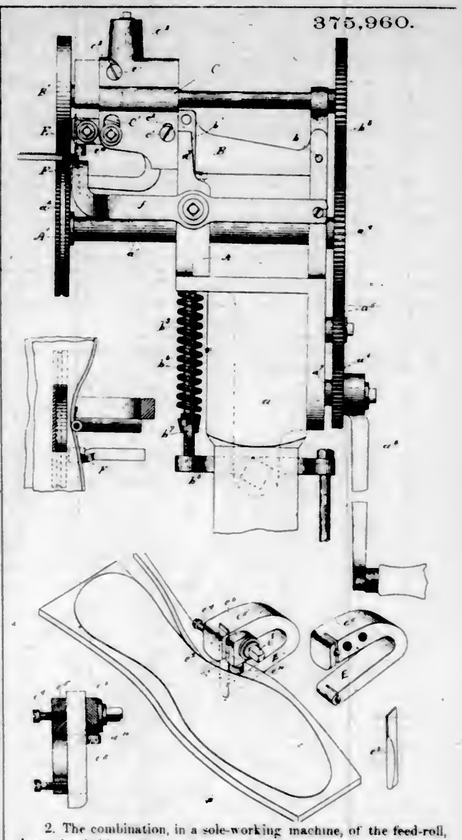
2. A rail-sawing machine consisting of a main frame carrying an oscillatory cutting-saw and its operating mechanism, and adapted to receive a railway-rail composed of two parts adjustably secured together, whereby the saw can be set obliquely to the rail to be cut, as set forth.

3. The combination of the frames *a* and *a'*, provided with the side flanges, *o*, having curved slots *p* and bolts and nuts *s s'*, as and for the purpose set forth.

375,960. ROUNDING-OUT AND CHANNEL-FLAP-TURNING MACHINE. CHARLES P. STANDON, Lynn, Mass. Filed Apr. 21, 1887. Serial No. 235,641. (No model.)

Claim.—1. A sole-working machine having a feed-roll, a spring-held pressure-roll mounted upon a movable block, a forked knife-support carried by the movable block, and the knife and the gage-roll c^{10}, held in relation to said pressure feed-rolls, as described, substantially as set forth.

375,960.



2. The combination, in a sole-working machine, of the feed-roll, the spring-held pressure-roll mounted upon a movable block, and a forked or two-armed knife-support having a recess at the end of each of its forks or arms, a vertical knife supported in said recesses, and a gage-roll, c^{10}, substantially as described.

3. The combination of the pressure-roll B', supported by a movable block, B, the forked support adjustably secured to said block, the straight knife c^9, held by said forked support, as specified, and a block, c^8, adjustably secured to said support, and carrying the gage-roll c^{10}, as and for the purposes described.

4. The combination of the forked support c^8, having the recesses c^9, and straight knife c^9, with the adjusting-screws c^4, substantially as described.

5. The combination of the forked support c^8, having the recesses c^9 in the ends of its arms, the adjusting-screws c^4, and the block c^8, fastened to said forked support to extend over one of the recesses, and having a stud, c^8, bearing a gage-roll, c^{10}, substantially as described.

6. The combination of the feed-roll A', the spring-held pressure-roll B', carried by the block B, the vertically-adjustable slide-block C, carried by said block, having the large slot or hole C', and screw c^6, for adjusting the slide vertically, and the forked knife-support c^8, carrying the knife c^9 and gage-roll c^{10}, and secured to said slide by a bolt passing through said slot, as and for the purposes specified.

7. The combination of the feed-roll A', the yielding pressure-roll B', supported by the block C, the straight knife c^9 and its forked support c^8, and gage-roll c^{10}, located in relation to the pressure and feed rolls, as specified, and the sole-support F, substantially as described.

8. The combination, in a sole-working machine, of the feed-roll A', the yielding pressure-roll B', mounted upon a movable block, B, with a channel-flap turner, G, having a guide-foot, g^9, and a folding arm, g^7, arranged in relation to the pressure and feed rolls, as specified, substantially as described.

9. The combination, in a sole-working machine, of the feed-roll A', the yielding pressure-roll B', its movable block B, a slide carried

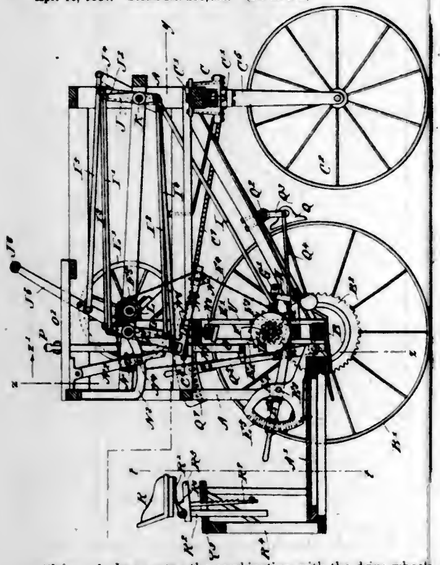
by said block having the enlarged slot or hole C', with the plate G, attached to said slide by a bolt passing through said hole, and carrying at its lower end the flap-turning device comprising a foot, g^3, and a turning-arm, g^7, as and for the purposes specified.

10. The combination, in a sole-working machine, of the feed-roll A', the yielding pressure-roll B', the flap-turning device, comprising a foot, g^3, having a folding arm, g^7, arranged in relation to the pressure and feed rolls, as specified, and a sole-support, g^8, substantially as described.

11. The combination, in a sole-working machine, of the feed-roll A', the yielding pressure-roll B', the flap-turning device, comprising the foot g^3, having a folding arm, g^7, arranged in relation to the pressure and feed rolls, as specified, a sole-support, g^8, and sole-edge gage g^{10}, substantially as described.

12. In a sole-working machine having a post, *a*, provided with a hole, *h*, at its lower end, a base, *h'*, having an extension which enters said hole, and a bench-clamp, h^3, having a hole, h^3, through which the post *a* extends, and also having a jaw, h^5, adapted to be moved against the post by a screw, h^5, substantially as described.

375,961. VELOCIPEDE. JAMES F. STEFFA, Rockvale, Ill. Filed Apr. 16, 1887. Serial No. 235,068. (No model.)



Claim.—1. In a motor, the combination, with the drive-wheels, a main driving-shaft, and means for operating the drive-wheels from said shaft, of an auxiliary driving-shaft and means for disconnecting the main driving-shaft from the driving-wheels and operating the auxiliary driving-shaft from the main shaft, substantially as and for the purpose set forth.

2. In a motor, the combination, with the supporting-frame and drive-wheels provided with gear-wheels, of a driving-shaft provided with gear-wheels meshing with the gear-wheels of the driving-wheels, and having a vertical and sidewise movement, and means for operating the said driving-shaft, substantially as herein shown and described.

3. In a motor, the combination, with a driving-shaft provided with a gear-wheel, of a reciprocating frame carrying reversible pawls engaging said gear-wheels, a hand-lever, and intermediate mechanism between the hand-lever and the reciprocating frame, substantially as herein shown and described.

4. In a motor, the combination, with the main driving-shaft F and the gear-wheel F^2, mounted on the same, of the pawls G^4, operating on the teeth of the said gear-wheel F^2, the yielding bars G^5, supporting the said pawls G^4, and the rocking frame G, adapted to move forward and backward so as to impart by its pawls G^4 motion to the said gear-wheel F^2 and the main shaft F, substantially as shown and described.

5. In a motor, the combination, with the main driving-shaft F and the gear-wheel F^2, secured on the said shaft, of the pawls G^4, engaging the two sides of said gear-wheel F^2, a yielding bar supporting the said pawls G^4, the rocking frame G, supporting the said yielding bars G^5, and the weighted lever H, on which the said frame is fulcrumed, substantially as shown and described.

6. In a motor, the main shaft F and the gear-wheel F^2, secured on the said shaft F, combined with the pawls G^4, adapted to engage the said gear-wheel F^2 on two opposite sides, the bar G^6, carrying said pawls G^4, the bolt G^4, supporting said bar G^5, the spring G^{10}, adapted to press on said bar G^5, and the swinging frame G, having two hollow arms, G^2 and G^3, each supporting one bolt G^4, substantially as shown and described.

7. In a motor, the rocking frame G, having two hollow arms, G^2 and G^3, the bolts G^4, supported in the said hollow arms, the yielding bars G^5, held on said bolts G^4, and the pawls G^4, pivoted on said bars G^5, in combination with the bars G^7, pivotally connected with the said pawls G^4, the lever G^8, pivotally connected at opposite ends from its fulcrum with the said bars G^7, the link G^9, connecting the bar G^6 with said frame G, and means, substantially as described, for changing the position of said lever G^8, as set forth.

8. In a motor, the rocking frame G, having two hollow arms, G^2 and G^3, the bolts G^4, supported in said hollow arms, the yielding bars G^5, held on said bolts G^4, and the pawls G^4, pivoted on said bars G^5, in combination with the bars G^7, pivotally connected with said pawls G^4, the lever G^8, pivotally connected at opposite ends from its fulcrum with said bars G^7, the link G^9, connecting the bar G^6 with said frame G, the notched arm H^2, pivotally connected with one end of said lever G^8, and adapted to engage by its notches a lug on said frame G, and the spring H^4, holding said arm H^2 in contact with said lug, substantially as shown and described.

9. In a motor, the combination, with the main driving-shaft F and the clutch-wheels F', secured on the said shaft, of the clutch-wheels D^6, adapted to engage said clutch-wheels F', the shafts D, carrying the said clutch-wheels D^6, the fixed collar D^5 on said shaft D, the spring B^4, coiled on said shaft D and pressing against the fixed collar D^5, the shifting-lever D^3, operating against said fixed collar D, and means, substantially as described, for holding said shifting-lever in position, as set forth.

10. In a motor, the combination, with the frame E, of the shaft D, having its bearings in the said frame E, the collar D^5, fixed on said shaft D, the collar D^5, held loosely on said shaft, a screw secured in the said collar D^5, and engaging a slot, D^7, formed in said shaft D, so as to prevent said collar from turning, a shifting-lever, D^3, pivoted on said frame E and adapted to press on said loose collar D^5, and the notched plate E^7, secured on said frame E and adapted to hold said shifting-lever D^3 in position, substantially as shown and described.

11. In a motor, the combination, with the frame E, adapted to slide vertically in suitable bearings, of the lever E^3, acting on the said frame E, the fixed bracket E^4, on which said lever E is fulcrumed, the segmental arm E^5 on the said bracket E^4, notches formed on said segmental arm E^5, and lugs secured on the said lever E^3 and adapted to engage said notches on the segmental arm, so as to hold said lever E^3 in any desired position, substantially as shown and described.

12. In a motor, the combination, with the steering-shaft O, adapted to operate the steering mechanism, of an arm, P, pivoted to the upper end of said shaft O, the plate O^2, provided with notches O^4, in which is held in a locked position the said arm P, the shoe O^3, pivotally connected with the said steering-shaft O, and the arm P^2, pivotally connected with said shoe O^3, and said arm P, substantially as shown and described.

13. In a motor, the steering-shaft O, the arm P, pivoted on the upper end of the said shaft O, the notched plate O^2, for holding said arm in position, the spring P', holding said arm P in contact with the notches O^4 on said plate O^2, in combination with the shoe O^3, pivotally connected to said shaft O, the arm P^2, connecting said shoe O^3 with said arm P, and the handle P^3, secured to said arm P, substantially as shown and described.

14. In a motor, the steering-shaft O, the sprocket-wheel C^8, secured on said shaft O, and the sprocket-chain C^7, passing over said sprocket-wheel C^8, in combination with the cross-beam C^9, adapted to turn on the king-bolt of the main frame, the pins C^4, held in bearings on the outer ends of said cross-beam C^9, the sprocket-wheels C^6, secured on said pins C^4 and operated by said sprocket-chain C^7, the U-shaped frames C^5, carrying said pins C^4, and the steering-wheels C^2, mounted in said U-shaped frames C^5, substantially as shown and described.

15. In a motor, the combination, with the driving-wheels B', of the brake-shoes Q, held near the rims of said wheels B', the crank-arms Q', supporting said shoes Q, the pin Q^6, secured on each of said crank-arms Q' and engaging a slot, Q^3, formed in each of said brake-shoes Q, the shaft Q^2, supporting said crank-arms Q', the arm Q^3, secured to said shaft Q^2, the link Q^4, pivotally connected with said arm Q^3, the lever Q^5, connected with said link Q^4, the lug Q^7, formed on said lever Q^5, and the notched segmental plate Q^7, secured to the main frame and adapted to hold said lever Q^5 in position, substantially as shown and described.

16. In a motor, the combination, with the main driving-shaft F and the sprocket-wheel F^2, secured to the said shaft F, of the sprocket-chain F^4, actuated by said sprocket-wheel F^2, sprocket-wheel F^5, operated by said sprocket-chain F^4, the shaft L, carrying said sprocket-wheel F^5, and the fly-wheels L', secured on said shaft L, substantially as shown and described.

17. In a motor, the frame E, adapted to slide vertically, the shaft F, mounted in said frame, and the sprocket-wheel F^2, secured to said shaft F, in combination with the sprocket-chain F^4, actuated by said sprocket-wheel F^2, the sprocket-wheel F^5, operated by said sprocket-chain F^4, the fly-wheel shaft L, supporting said sprocket-wheel F^5, the tightening-wheels N and N', over which passes said sprocket-chain F^4, and means, substantially as described, for changing the relative position of said chain-wheels N and N', as set forth.

18. In a motor, the sprocket-wheels F^2 and F^5 and the sprocket-chain F^4, passing over said sprocket-wheels F^2 and F^5, in combination with the chain-tightening wheel N', the notched arm N^3, supporting said wheel N', the U-shaped clamp N^2, adapted to engage the notches in said arm N^3, the spring N^4, for holding said clamp in contact with the notches of said arm N^3, and a keeper, N^5, supporting said arm N^3, and the U-shaped clamp N^2, substantially as shown and described.

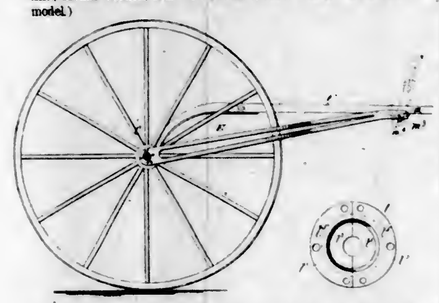
19. In a motor, the combination, with the standards R^4, having a slot, R^5, of the rod R^3, passing through said slot, the notched bar R^7, also passing through said slot, the extension R^6, secured to said rods R^3 and R^7, the springs R', pivoted on said extensions R^6 and resting on the lug R^8 of said extensions, and the seat R, supported by said springs R', substantially as shown and described.

375,962. ARTIFICIAL STRAW. MARVIN C. STONE, Washington, D. C. Filed May 11, 1887. Serial No. 237,864. (No model.) Patented in England July 8, 1887. No. 9,533.

Claim.—1. The artificial straw consisting of the narrow paper strip helically wound into a cylindrical tube secured at one end by adhesive material and treated with water-proof material, substantially as described.

2. As a new article of manufacture, a paper tube formed in imitation of a straw and treated with paraffine, whereby it is rendered water-proof and adapted for use in the human mouth without injury.

375,963. GUARD-RAIL FOR VEHICLE-WHEELS. JOHN C. TATMAN, Mount Vernon, Dak. Filed Oct. 7, 1887. Serial No. 251,703. (No model.)



Claim.—1. The combination, with the axle having a grooved nut and the thill, of a guard-rail having at one end a hollow flanged boss engaging said grooved nut and at its other end secured to the thill, substantially as and for the purpose described.

2. The combination, with the axle having a grooved nut and the thill, of a guard-rail having at one end an opening and a flanged hollow boss made in sections engaging said grooved nut, said rail at its other end secured to the thill, substantially as and for the purpose described.

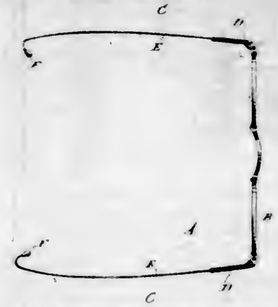
3. The combination, with the axle having a grooved nut, the hub having outwardly-projecting circular bands *f*, and the thill, of a guard-rail having at one end a hollow flanged boss engaging said grooved nut and at its other end secured to the thill, substantially as and for the purpose described.

4. The combination, with the axle and the thill having the flanged and apertured web secured thereto, of the guard-rail pivotally secured to the axle and to the said apertured web, all substantially as and for the purpose described.

5. The combination, with the axle and the thill having the flanged and apertured web secured thereto, of the guard-rail pivotally secured at one end to the axle and provided at its other end with a stop or abutment, m^4, and pivotally secured to said apertured web, substantially as and for the purpose described.

6. The combination, with the axle having a grooved nut, B, the hub having outwardly-projecting circular band *f*, and the thill having the flanged and apertured web *n*, of the guard-rail having at one end an opening, *j*, and a flanged hollow boss, *l*, made in sections, engaging said grooved nut, said rail provided at its other end with a stop or abutment, m^4, and pivotally secured to said apertured web, all substantially as and for the purpose described.

375,964. SPECTACLES. JAMES P. TRYNER, Denver, Colo. Filed Mar. 10, 1887. Serial No. 230,393. (Model.)



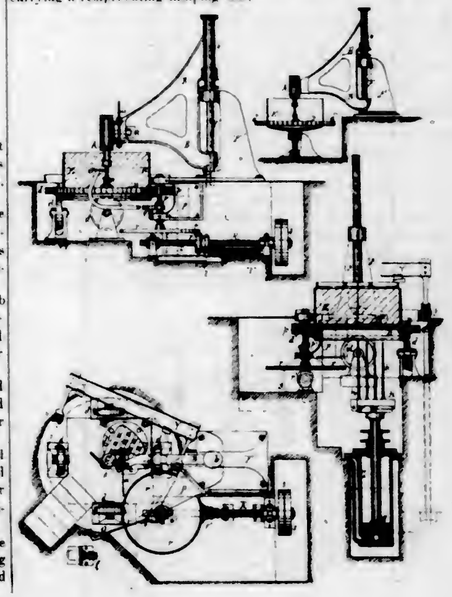
Claim.—1. The combination, with the glass-frame of the hinged temples bent short at their free ends, and provided with large balls to engage the front rims of the ears of the wearer, substantially as set forth.

2. The combination, with the glass-frame and the longitudinally-apertured arms hinged thereto, of the short temples secured immovably at their inner ends by friction within said apertures, and having the large balls at their free bent ends to engage the front rims of the wearer's ears, substantially as set forth.

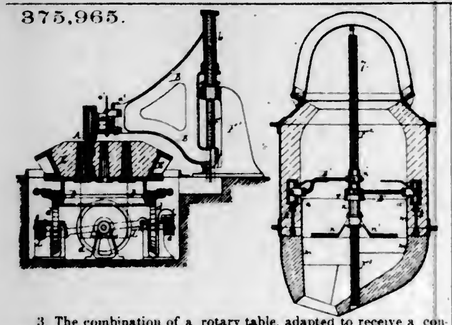
375,965. APPARATUS FOR LINING CONVERTERS AND CONVERTER-BOTTOMS. BRUNO VERSEN, Dortmund, Westphalia, Germany. Filed Apr. 14, 1886. Serial No. 198,874. (No model.) Patented in Germany Apr. 23, 1884, No. 30,634; in France Aug. 2, 1884, No. 163,610; in England Sept. 17, 1885, No. 11,030; in Austria-Hungary Oct. 19, 1885, No. 27,316; in Luxemburg July 1, 1886, No. 708, and in Belgium July 15, 1886, No. 73,687.

Claim.—1. The herein-described apparatus for forming linings for converters or converter-bottoms, said apparatus consisting of a movable arm or crane and a reciprocating tamping-tool pivoted thereto, substantially as described.

2. The herein-described apparatus for forming linings for converters and converter-bottoms, said apparatus consisting of a shaft or spindle, an arm or crane vertically adjustable and free to turn thereon, and carrying a reciprocating tamping-tool.



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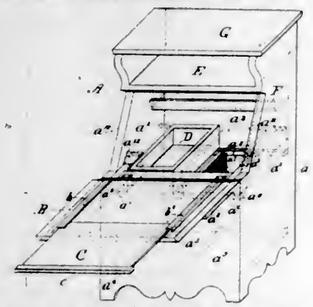
3. The combination of a rotary table, adapted to receive a converter-bottom, with a vertically-adjustable swinging crane carrying a reciprocating tamping-tool, substantially as set forth.

4. The combination of the rotary table, adapted to receive the converter-bottom, with a hollow vertical shaft and a swinging crane carrying a reciprocating tamping-tool, and having its upper socket a closed cylinder, in which the upper end of said shaft or spindle can work, substantially as set forth.

5. The combination of a crane carrying a reciprocating tamping-tool with a rotary table adapted to receive a converter-bottom, and variable-speed driving mechanism for the table, substantially as set forth.

6. The combination of a movable arm or crane, and a reciprocating tamping-tool pivoted thereto, with a rotary table adapted to receive a converter-bottom.

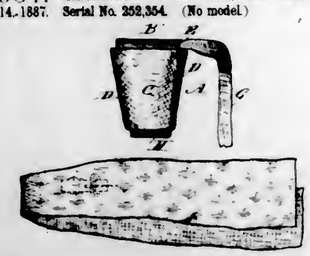
375,966. FLOUR AND MEAL BIN. CHARLES VOGT, Harlem, Mo. Filed July 5, 1887. Serial No. 243,370. (No model.)



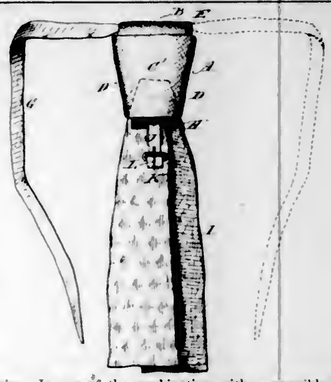
Claim.—1. A bin having its hinged cover provided with rabbeted guide-strips extending a suitable distance across said cover and a reversible sliding dough-board therein provided with a cross-bar at one end adapted to be extended beyond and recede within the limits of the cover, as shown and described.

2. A case or bin consisting of a lower portion having opposite compartments and a central transverse partition therein and an upper portion having a suitable top and ends, and a receding open front side, a sliding tray adapted to cover each compartment alternately, a cover hinged to the lower portion of said bin, provided with rabbeted guide-strips extending a suitable distance across said cover, sliding brackets on said bin beneath said cover, and a dough-board provided with a cross-bar at one end adapted to be extended beyond and recede within the limits of said cover, as described.

375,967. NECKSCARF. MAX WALD, New York, N. Y. Filed Oct. 14, 1887. Serial No. 252,354. (No model.)

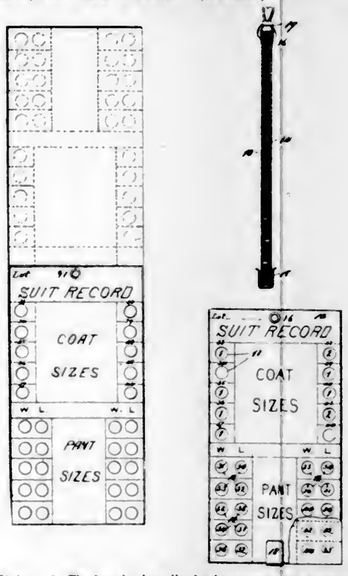


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Claim.—In a scarf, the combination, with a reversible knot, A, a neckband, G, a band-tooth, L, and a detachable fly, I, of a tab, H, and clasp J, for connecting the fly to the knot, substantially as shown and described.

375,968. TAG. EDWARD B. WEBSTER, Clay Centre, Kans. Filed June 30, 1887. Serial No. 242,990. (No model.)



Claim.—1. The herein-described suit-record, consisting of an apertured plate or cover and slips secured to the back of the plate or cover and provided with detachable panels, as set forth.

2. The herein-described suit-record, consisting of a plate or cover provided in its upper part with a series of apertures numbered to correspond with the coat sizes, and in its lower part with double rows of apertures, a back, and slips secured between the plate or cover and back and having detachable panels, substantially as specified.

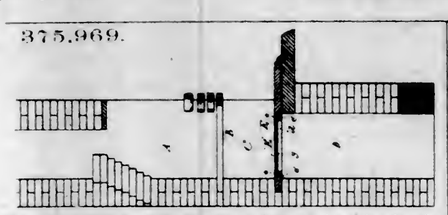
3. In a suit-record, the coinbination, with an apertured cover and a back, of slips provided with detachable panels and arranged between said apertured cover and the back, a connecting-eyelet, and a clip, all substantially as described.

375,969. COVER FOR FIRE-PLACE ASH-CHUTES. CHARLES A. WELLINGTON, Lexington, Mass. Filed Mar. 23, 1885. Serial No. 159,832. (No model.)

Claim.—1. The combination, with a fire-place having a discharge-passage, of the casing E, fitted to such passage and having the right and left bearings e^2 e^2 e^2 e^2, and the covering-plate E', having right and left pivots e^3 e^3 e^3 e^3, the pivots projecting from the ends of the plate and adapted to fit the recess, as set forth.

2. An ash-chute covering-plate which forms the bottom of an

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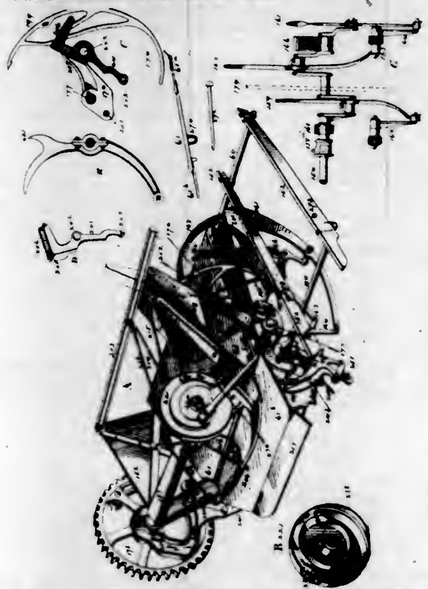


ash-pit, and which is provided with two distinct pairs of bearing-pivots, combined with a frame or casing to support the said plate, whereby the plate may be tilted upon either of the two pairs of pivots, and whereby the ashes may be discharged in either of the two directions.

3. The combination of the casing E, having bearings e^2, and the protecting or securing cross-rod or stop g, with the plate E', having the projections or pivots e^3, which enter the bearing-recesses, all substantially as and for the purposes described.

375,970. WITHDRAWN.

375,971. HARVESTER AND BINDER. WILLIAM N. WHITELEY, and WILLIAM BAYLEY, Springfield, Ohio, assignors to Whiteley, Fassler & Kelly, same place. Filed Jan. 30, 1882. Serial No. 51,562. (Model.) Patented in Canada Mar. 24, 1882, No. 14,483.



Claim.—1. The combined journal and slide box Q, cast in one piece, provided with the ring-bearing 71, to sustain one end of the tube 69 of the binder-frame and permit it to slide freely, and the bearing 70, for the shaft 66 of the pinion 68.

2. A butt-board, 62, pivoted on the elevator-frame at 63, combined with a removable part, 61, of the binder-table, for the purpose of confining the grain and giving ready access to the binding mechanism by providing for the quick removal of the part 61.

3. A hinged plate or board, 64, secured to the elevator-frame and having its free end lapping over the rear side of the binding-table in such manner as to move with said table and bridge the space made by moving the binding-table over front when working in short grain.

4. The binder-table constructed with the part 61, hinged at the top to the frame, and provided near its lower end with a loop, in combination with the pin 272, adapted to pass through holes in the frame and through the loop, whereby the portion of the table can be removed to give access to the mechanism beneath.

5. In combination with a binding-arm, a tucker, 201, provided with ears 206, as and for the purpose specified.

6. A tension device consisting of the pivoted press-bar 182, a box, 183, provided with an eye, 182', a pin, 185, and a spring, 184, in combination with a pivoted take-up lever, 191, provided with a spring, 192, and a cam, 188, on the wheel 173, as and for the purpose specified.

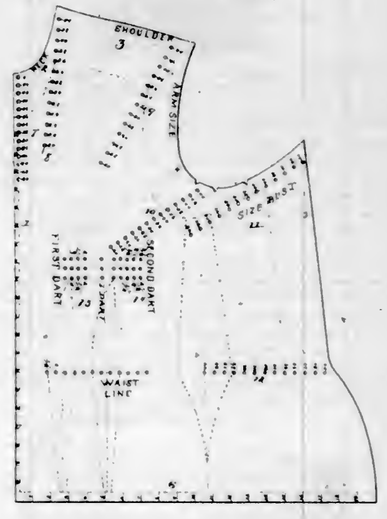
7. A principal tension device consisting of the arm 186, box 183, lever 191, and a spring, 190, combined with a preliminary tension device consisting of the parts 179, 180, and 181, as and for the purpose specified.

8. In combination, a knotter, the cam for closing its jaw, and the knotter-operating wheel 221, provided with an adjustable projection, 234, for the purpose of opening the jaw 228 of the knotter 227 always at the desired time after the parts have become worn and adjustment becomes necessary.

9. In combination with a revolving gripper, 197, a stationary strap, 268, as and for the purpose specified.

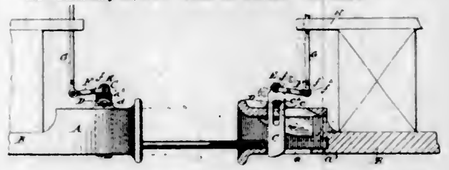
10. In combination with a revolving gripper, a strap, 268, provided with a notch, 268', for the purpose of holding the cord more firmly for the cutter 233 to act on.

375,972. DRESS-CHART. JOSEPHINE S. WILSON, San Jose, Cal. Filed Aug. 18, 1887. Serial No. 247,244. (No model.)



Claim.—In a chart for fitting and cutting garments, the front or bust form having rows of holes for the different sizes and for the gores or darts, the edges of the form being adapted to be used for laying off the outline of the different sizes, and the edge of the arm-size being provided with notches.

375,973. CAR-COUPLING. WILLIAM H. WRIGLEY, New Orleans, La. Filed July 22, 1887. Serial No. 245,027. (No model.)



Claim.—1. In a car-coupling, the combination, with the draw-head A, of the fulcrum-bolt D, link I, and a coupling-pin, C, having a slot, c', enlarged and extending backwardly to hold the pin from jolting out of place, and means for both lifting and tilting the said coupling-pin, substantially as described.

2. In a car-coupling, the combination, with the draw-head A, of the fulcrum-bolt D, link I, coupling-pin C, slotted at its upper end, link F, lever G, and plate H, substantially as described.

375,974. WHIP. DAVID B. ALLEN and EDWARD K. WARREN, Three Oaks, Mich. Filed July 12, 1887. Serial No. 244,081. (No model.)



Claim.—1. The separate siding strips or pieces of the whip, having longitudinal grooves or recesses in their inner surfaces, in combination with a series of independent stiffening cords or blades separately inserted and secured within each of said grooved or recessed portions of the siding-strips, essentially as described.

2. In a whip, the combination of the central core, A, the siding strips or pieces B, built around said core, and having longitudinal grooves or recesses in their inner surfaces, and stiffening cords or blades C, inserted within said grooved siding-strips outside of the central core, substantially as specified.

375,975. **FASTENER FOR MEETING-RAILS OF SASHES.** CHAS. J. ANDERSON, New Haven, Conn. Filed Sept. 8, 1887. Serial No. 249,071. (No model.)

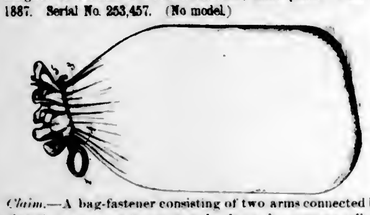


Claim.—1. A sash-lock provided with a swinging locking-lever having an elongated transverse slot in its inner end, a stationary stud passing through such slot, and a slide engaging with the inner end of the lever and provided with a bearing-face for co-operation therewith, substantially as set forth.

2. A sash-lock provided with a swinging locking-lever having at its inner end an elongated slot and a shoulder having a bearing-face, a stud passing through such slot, and a slide engaging the lever and adapted to operate the same and to shift its inner end and provided with a bearing-face co-operating with that of the lever, substantially as set forth.

3. A sash-lock provided with a swinging locking-lever having at its inner end an elongated slot, a rack and a shoulder having a bearing-face, a stud passing through such slot, a slide having a rack and a bearing-face co-operating with that of the lever, and a button connected with the slide for operating the same, substantially as set forth.

375,976. **BAG-FASTENER.** OLIVER ANDERSON, Fort Totten, Dak., assignor of one-half to Fred. C. Standish, same place. Filed Oct. 26, 1887. Serial No. 253,457. (No model.)



Claim.—A bag-fastener consisting of two arms connected by coils to spring the arms apart, one arm having a loop or eye adjacent to the coils, through which the other arm passes, and one arm having a hooked extremity to pass over and engage the extremity of the other arm, substantially as described.

375,977. **SUPPORTING-ARM FOR ELECTRIC LIGHTS.** DANIEL B. BANES and GEORGE K. HUTCHINS, Baltimore, Md. Filed Apr. 5, 1887. Serial No. 233,737. (No model.)

Claim.—1. An arm for supporting electric lights, formed of pivotally-connected and laterally-curved or bent sections, substantially as specified.

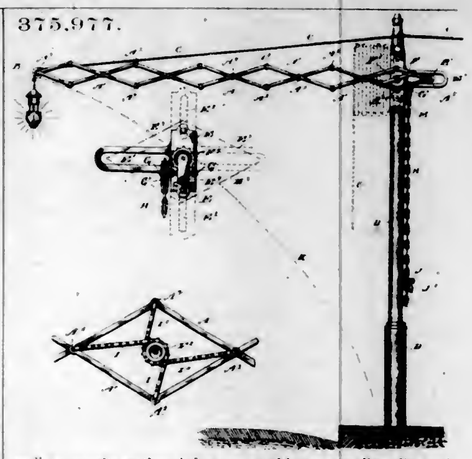
2. An arm for supporting electric lights, formed of pivotally-connected sections and provided with a device connected with opposite sections and operating to distend and retract the arm, substantially as specified.

3. An arm for supporting an electric light, consisting of a series of pivotally-connected sections, terminating with a device for the movable connection and operation of electrical conductors, or a separate lamp-supporting cord, rope, or wire, substantially as specified.

4. An arm for supporting an electric light, comprising movable sections, those at opposite ends of the arm being pivotally connected by a bolt, shaft, pin, or rod, and intermediate opposite sections being connected by an arm distending and retracting device, substantially as specified.

5. An arm for supporting an electric light, comprising movable sections, those at the ends thereof being pivotally connected, and intermediate opposite sections being connected by an arm distending and retracting device, in combination with means for oscillating said device, substantially as specified.

375,977.



6. In combination with an extensible arm for supporting electric lights and with opposite sections thereof, a device comprising a shaft and arm mounted between and pivotally connected with said opposite sections and a system of gearing for operating said shaft, substantially as specified.

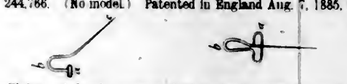
7. The combination, with an extensible arm for supporting electric lights and with a pole or mast for supporting the arm, of a plate having a slotted bracket for the reception of one end of the arm, and an opposite plate having bearings for a shaft passing through the plate and for a worm-shaft crossing the plate, substantially as specified.

8. The combination, with the support D, arm A, and the devices for operating the same, of the chain H, staple J, and lock F, substantially as specified.

9. The combination of chain H, sprocket G', worm G, pinion F', and bar F with the sections A' of the arm, substantially as specified.

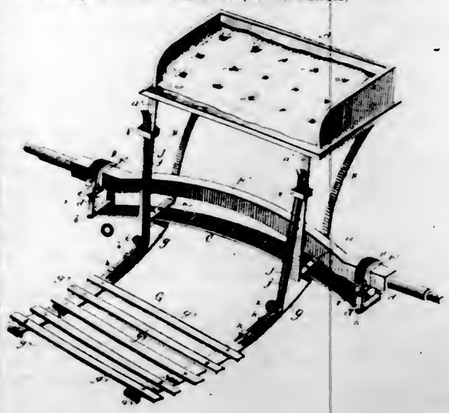
10. The combination of shaft F', bar F, and sections A' with a suitable support, substantially as specified.

375,978. **SUSPENSION-HOOK.** ROBERT W. S. BARRACLOUGH, Herne Hill, County of Surrey, England. Filed July 19, 1887. Serial No. 244,766. (No model.) Patented in England Aug. 7, 1885, No. 9,430.



Claim.—A hook composed of a single piece of wire bent upon itself at the point *b* to form a loop, one end of said loop terminating in a sharpened point, *c*, and the other end thereof bent, as shown, to form a T-shaped head, the loop *b* and point *c* lying upon opposite sides of the head *a*, substantially as shown and described.

375,979. **ROAD-CART.** CHARLES L. BARRETT, Allegan, Mich. Filed Sept. 12, 1887. Serial No. 249,456. (No model.)



Claim.—1. The combination, in a road-cart, of a seat mounted upon standards secured to a spring suspended from an axle by clips, with a foot-rest hinged to said spring and provided with one or more springs attached to the seat-standards, substantially as described.

2. The combination of a hinged foot-rest, the springs thereof and buckles adjustably attached to the seat-standards and receiving freely through them the said springs, whereby the tension thereof can be adjusted, substantially as described.

3. The combination, in a road-cart, of a hinged foot-rest, tension-springs therefor, and a device for regulating the tension of the springs, the latter being attached to seat-standards which are mounted upon springs suspended from an axle, substantially as described.

4. The combination of compound compensating springs composed of independent wires with the seat-standards and foot-rest of a vehicle, substantially as described.

5. The combination, in a two-wheeled vehicle, of the axle provided with a cylindrical portion near each of its ends, the spring C, hung beneath and in line with the axle, the clips pivotally connected to the ends of the said spring C and embracing the cylindrical portions upon the axle, whereby the said spring is loosely hung to the said axle, the standards attached to the spring C, and the seat secured upon the standards, substantially as described.

6. In a two-wheel vehicle, the combination of the upright spring-standards, a seat rigidly secured to the upper ends thereof, an arched spring, C, arranged beneath the axle and in line therewith and having the said spring-standards rigidly secured to it, spring-clips loosely applied on cylindrical portions of the axle, and links suspended from the clips and having the ends of the spring C pivotally connected to them, substantially as described.

7. The combination of the seat, the U-shaped spring-standards, the spring C, arranged beneath the axle and suspended from it by clips which will allow it to oscillate freely, a foot-rest hinged to spring C, and springs connecting the foot-rest to the said spring-standards, substantially as described.

8. The combination of a transverse spring, C, suspended by oscillating clips and laterally-vibrating links from cylindrical enlargements on the axle, and U-shaped spring-standards mounted on said spring, substantially as described.

375,980. **CABINET SHOW-CASE.** CHARLES BAUM, Washington, D. C. Filed Oct. 13, 1887. Serial No. 252,730. (No model.)

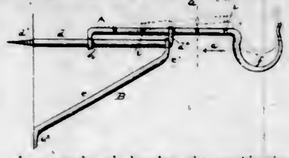


Claim.—1. A cabinet for displaying merchandise, consisting of a series of horizontally-sliding open-top compartments arranged in tiers the compartments of each upper tier being successively shorter in length than the next underlying one, in combination with upright partitions dividing the compartments of each tier, said partitions being cut away at their front edges in successive steps equal to the length of the respective compartments when extended upon cleats attached to the side surfaces of the partitions, as and for the purpose intended, substantially as described.

2. A cabinet for displaying merchandise, provided with parallel transverse divisional partitions B, cut away at the front into steps having obliquely-inclined risers *b*, rigidly attached to the floor and back wall of a casing, said partitions provided on their side surfaces with horizontal cleats *b'*, in combination with open-top compartments C, having closed backs provided with lateral flanges b^3, that limit the forward progression of said compartments between said partitions, substantially as described.

3. The combination, in a device for exhibiting merchandise, of the following elements: a show-case, A, having transparent top, sides, and front and rigid bottom and back frame, a series of transverse parallel partitions, B, firmly adjusted to the back and floor of the case, each of said partitions being cut away forwardly into a series of steps, cleats *b'*, extending horizontally along the sides of the partitions, tiers of sliding open-top compartments C, arranged to be moved forward and backward along the several tracks formed by said cleats, each tier of said compartments being successively shorter in length than the next underlying compartments, all arranged as described, whereby when said compartments are introduced their full length forwardly between the partitions B the front panels, b^3, will be in line with the respective adjacent risers *b* of the steps of the partitions, substantially as described.

375,981. **CURTAIN-POLE BRACKET.** WILLIAM O. BENNET, Worcester, Mass., assignor to the Wire Goods Company, same place. Filed Aug. 1, 1887. Serial No. 245,810. (No model.)



Claim.—In a curtain-pole bracket, the combination of the pole-supporting rod A, hinged at its inner end to the horizontal stationary supporting-rod *d* and fitted to slide longitudinally thereon, also having the usual pole-supporting hook at its outer end, and a series of transverse notches between said hook and its inner end, with said supporting-rod *d*, having the upwardly-turned fork-shaped flange d^3 at its outer end, open at the top to receive and hold the notched portions of rod A, and also to allow said rod to be lifted therefrom, whereby the bracket may be lengthened or shortened, as desired, and fastened in position without the use of set-screws or similar means, substantially as set forth.

375,982. **INSIDE BLIND.** HENAN A. BENEDICT, Syracuse, N. Y., assignor of one-fourth to George I. Beach, same place. Filed Feb. 10, 1887. Serial No. 227,145. (No model.)



Claim.—1. A window-blind section comprising a metal frame-work and a pulpy body portion secured thereto by being compressed thereon so as to embed the frame within the body portion, substantially as specified.

2. A window-section comprising a metal frame-work embedded in the pulpy body of the section and provided with corner-plates embracing the frame and body, substantially as specified.

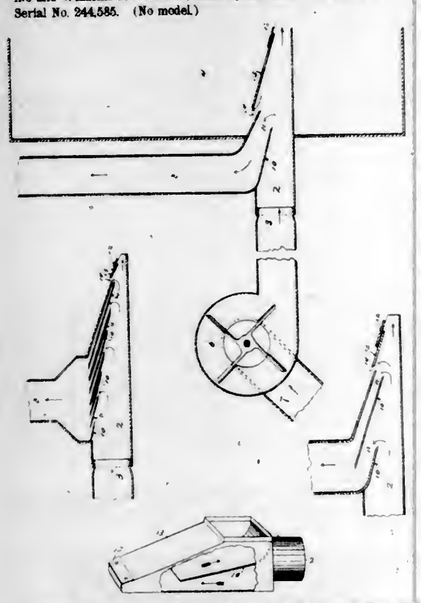
3. A window-section comprising the pulpy body portion, a metal frame-work embedded therein, corner-plates, and hinges, in combination with rods adapted to be secured to a window-casing for the pivotal support of the section, substantially as specified.

4. An inside blind-section made with an irregular outline, in combination with an adjacent foldable or hinged section arranged to close into the space not covered by the irregular section, substantially as specified.

5. In window furnishings of the class specified, blind-sections made with irregular outline, in combination with pivoted or swinging rods provided with depending fringes or curtains, and with locking devices connecting the free ends of the rods, and with sections fitting the irregular outlines of adjacent sections, substantially as specified.

375,983. DUST AND SHAVINGS COLLECTOR.

ANDREW C. BOEHNING and WILLIAM F. BOEHNING, Minneapolis, Minn. Filed July 18, 1887. Serial No. 244,585. (No model.)



Claim.—1. The dust-collector herein described, consisting of the tube 2, having a contracted discharge-opening, and having an opening in its wall for the discharge of the purified air, and an inclined deflecting-plate, 10, arranged in said tube 2 and extending toward its discharge end.

2. The dust-collector herein described, consisting of the tube 2, having a contracted end and provided with the opening 14 therein, the tube 8, connected with said tube 2, and a deflecting-plate, 10, arranged in said tube 2 and extending from the lower end of said tube 8 toward the contracted opening of the tube 2, substantially as described.

3. The combination, with the fan 6 and the conveyer 3, of the dust-receptacle 4, the tube 2, connected with said conveyer 3, extending into said dust-receptacle and provided with a discharge-opening within said receptacle and with an opening in its wall for the discharge of the purified air, and a deflecting-plate, 10, arranged in said tube 2 opposite the opening in the wall and extending toward the discharge end of the tube 2, substantially as described.

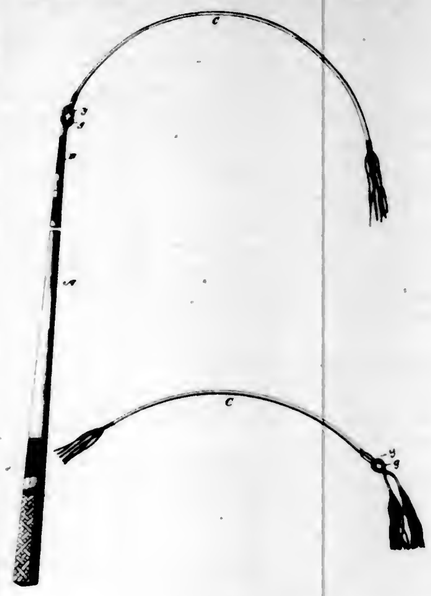
4. The combination, with the fan 6 and conveyer 3, of the dust-receptacle 4, and the tube 2, provided within said receptacle, with a contracted discharge-opening, the tube 8, connected with the upper side of said tube 2, and an inclined deflecting-plate, 10, arranged in said tube 2 below the end of said tube 8 and extending toward the discharge end of the tube 2, substantially as described.

5. The combination, in a dust-collector, with the tube 2, provided with a contracted discharge-opening, of the tube 8, connected with the said tube 2, and a series of deflecting-plates, 10, arranged in said tube 2 below said tube 8, substantially as described.

6. The dust-collector herein described, comprising a suitable tube, 2, having a discharge-opening for the escape of dust or other material, an opening in its wall for the escape of the purified air, and an inclined deflecting-plate arranged in said tube opposite said opening and extending toward its discharging end, substantially as described.

375,984. WHIP-LASH ATTACHMENT.

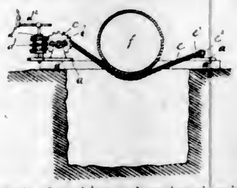
JOHN J. BOHLER, Westfield, Mass. Filed Oct. 8, 1887. Serial No. 251,845. (No model.)



Claim.—As an improved article of manufacture, the whip-snap C, provided with a loose threaded outer end and with the loops *g* and *y*, the free ends of the latter having loose threads for attachment to a whip, substantially as specified.

375,985. DEVICE FOR RAISING OR LOWERING PIPE.

LEWIS BOORE, Buffalo, N. Y., assignor to Theodore H. Meyer, Jr., John F. Diehl, Charles P. Feuchter, and John E. Hass, all of same place. Filed July 7, 1887. Serial No. 243,633. (No model.)



Claim.—A device for raising or lowering pipes in trenches, consisting, essentially, of a portable frame adapted to rest over the trench, provided with two separate and independent chains, one end of each being removably attached to one side of the frame and the other end of each being secured to and adapted to be wound upon separate drums, each being adapted to be operated independently by separate gearing and lever-handles, substantially as and for the purpose stated.

375,986. SPRING SHADE-ROLLER.

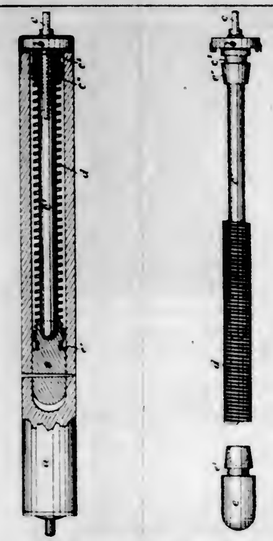
GEORGE T. BRIGGS, Cambridgeport, Mass. Filed Mar. 15, 1886. Serial No. 196,248. (No model.)

Claim.—1. In a spring shade-roller, the combination, with the spindle and the coiled spring encircling said spindle, of the tapering metal ferrule c'', secured to the spindle and having an annular groove or channel, c^3, intermediate its ends to receive one end of the coiled spring, substantially as described.

2. In a spring shade-roller, the combination of the spindle c', the spindle-step *e*, having a tapering end and an annular groove, e', the tapering metallic ferrule c'', secured to the spindle and provided with an annular groove, c^3, and the coiled spring *d*, encircling the spindle and having its ends engaged in the annular grooves of the step and ferrule, substantially as described.

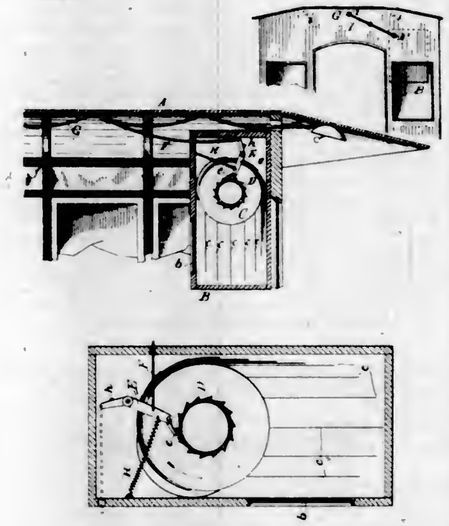
3. In a spring shade-roller, the combination, with the spindle and the coiled spring encircling said spindle, of the spindle-step *e*, having a tapering end and an annular groove, e', to receive one end of the coiled spring, substantially as described.

375,986.



375,987. ADVERTISING DEVICE FOR CARS.

JAMES CASTLE, Toronto, Ontario, Canada. Filed Oct. 15, 1887. Serial No. 252,446. (No model.)

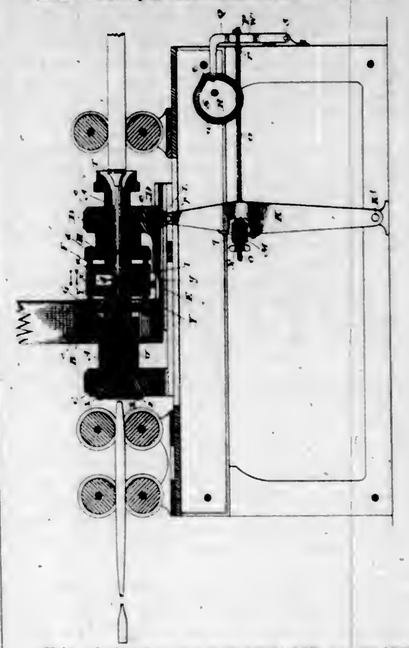


Claim.—1. In combination with a car, a case, a roller journaled in said case and carrying an advertising-sheet, a ratchet-wheel upon one end of said roller, a lever pivoted in said case, a dog upon the lower portion of said lever to engage the ratchet-wheel, a spring attached to the case and to the lever, and a cord connecting the bell-cord and the lever, whereby the roller is rotated when the bell-cord is pulled, substantially as described.

2. In combination with a car, a glass-fronted case secured in said car, a roller journaled in said case and carrying a series of advertising-sheets, a ratchet-wheel within the case and secured to one end of said roller, a lever pivoted in the case above the roller, a dog carried by the lower portion of said lever to engage said ratchet-wheel, a spring having one end secured to the case and its opposite end to the lower portion of the lever, and a cord connected with the bell-cord and passing through the case and being secured to the lever, whereby the roller is rotated when the bell-cord is pulled, substantially as described.

375,988. LATHE.

WILLIAM CHAPLIN, St. Catharines, Ontario, Canada. Filed July 23, 1887. Serial No. 245,065. (No model.)



Claim.—1. In a lathe, the main hollow shaft, a hollow drum cast solid with the main hollow shaft and having slots cut in the drum, carriers fitted into said slots, and one or more shaping-knives adjustably attached to said carriers, combined with sleeves on the main shaft engaged with the carriers and adjustable on the main shaft to move the cutting-edges of the knives nearer to or farther from the center of the main shaft, substantially as and for the purpose specified.

2. The main hollow shaft A, the drum F thereon and having slots *i*, the carriers J, having wings *h* and arms *k* and *l*, and the shaping-knives secured on said carriers, in combination with the sleeves G and H, adapted to be adjusted longitudinally on the main shaft, and having guides *m* and *n* formed therein for the reception of the carrier-arms *k* and *l*, respectively, substantially as and for the purpose specified.

3. The main hollow shaft A, the drum F thereon and formed with slots *i*, the carrier J, having wings *h* and shoulders *g*, and the shaping-knife I, adjustably secured on said carrier by the bolt *f*, in combination with the adjustable sleeves G and H, held rigidly together by the shouldered bolts *a* and to the sliding standard D by the V-shaped ring *e*, formed on the sleeve H, and having guides for the carrier-arms *k* and *l*, and said carrier-arms, substantially as described, and for the purpose specified.

4. The standard C, the sliding standard D, the hollow shaft A, supported by said standards, and the drum F, cast solid with said shaft and adapted to carry the shaping-knives, in combination with the shaping-knives, and the sleeves G and H, held together by the shouldered bolts *a* and to the sliding standard D by the V-shaped ring *e*, formed on the sleeve H, substantially as and for the purpose specified.

5. The shaping-knives, sliding standard, sleeves G and H, cam or pattern wheel R, counter-shaft S, rod O, bell-crank Q, and the drum F, adapted to carry the shaping-knives I and situated between the sleeves G and H, held to the sliding standard D by the annular projection *e*, formed at one end of the sleeve H, in combination with the lever K, pivoted at K′ and adjustably connected to the cam or pattern wheel R by the rod O, and bell-crank Q, having the roller *t*, adapted to revolve in the groove *u* by the motion of the eccentic pattern-wheel R on the counter-shaft S, substantially as and for the purpose specified.

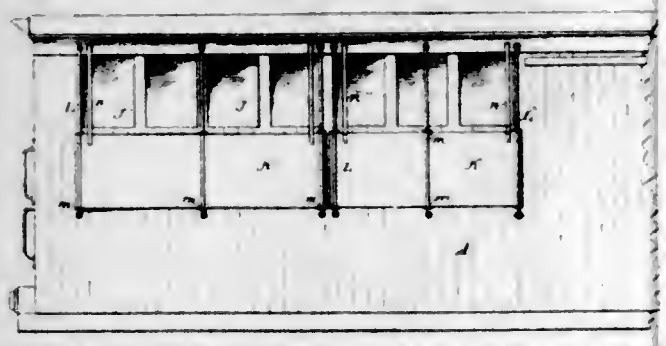
6. The sliding standard D, bell-crank Q, pattern-wheel R, having groove *u*, trunnion M, thumb-screw N, and lever K, pivoted at K′ and having its upper end connected to the sliding standard D at *p*, in combination with the rod O, actuated by the bell-crank Q, the free end of which is adapted to move in the groove *u* in the pattern-wheel R, and having its threaded end fitted into the thumb-screw N, which

thumb-screw is screwed into the trunnion M, pivoted at *q* on the lever K, substantially as and for the purpose specified.

7. The counter-shaft S, bell-crank Q, having slot W', lever K, bolt P, sliding standard D, and the rod O, at one end adjustably connected to the pivoted lever K, which actuates the sliding standard D, and pivoted at *r* to the bolt P, which is adjustably held in the slot W', formed in the bell-crank Q, having roller *t*, pivoted at its free end, in combination with the pattern-wheel R, driven by counter-shaft S, and having groove *u* formed therein, substantially as described and specified.

8. The shaft A, standard C, and the steadying-pipe U, fitted into the discharging end of the shaft A and rigidly secured to the standard C, having slot *w* formed in said pipe, in combination with the spring *v* and rings X and Y, substantially as and for the purpose specified.

375,989. **RAILWAY-CAR.** CHARLES A. DAVIS, Washington, D. C.
Filed Oct. 29, 1887. Serial No. 253,736. (No model.)



Claim.—1. In a car, in combination with a series of stalls and a passage-way extending lengthwise and at the side of the car, a hay-rack or series of racks having their front or outer section hinged at the bottom to the partition, the top of the section being free to swing out into the passage-way or to be folded into the partition at will, substantially as and for the purpose set forth.

2. In combination with a series of stalls, a passage-way and a hay-rack provided with a swinging front section and a feed-trough attached to the swinging front section of the rack, substantially as and for the purpose set forth.

3. In a car, a series of partitions, each consisting of a front and rear hinged section and an intermediate section serving to connect the front and rear section and arranged to fold over on top of one or the other of the end sections.

4. In a car, a series of partitions, each composed of a front and rear section and an intermediate section connecting the bottom of the front section with the top of the rear section, substantially as shown and described.

5. In a car, the combination of a series of stalls, a longitudinal aisle at the side of the car, a partition separating the stalls and the aisle and containing feed-racks for the respective stalls, and a stall-front hinged to said partition and bearing the rack for said stall, the bottom of its rack being cut away to permit it to swing forward.

6. In combination with aisle C, partition D, and stalls G, a stall-front hinged to the partition and provided with a hay-rack on its front side, the bottom of the rack being cut away to permit the front to swing forward, and a stationary filling-piece to cover the cut-away portion of said bottom.

7. In a car, the combination, with windows or openings in its wall, of a vertically-movable external guard or cover adapted to be raised and lowered to cover or uncover a series of said windows simultaneously and equally.

8. In combination with a car-body having windows or openings, guide-rods secured to the wall of the car, a guard or guards having perforated ears to encircle said rods, pulleys, bands, or chains attached to said guards and passing about said pulleys, and a winding shaft or arbor for taking up or paying out said bands or chains.

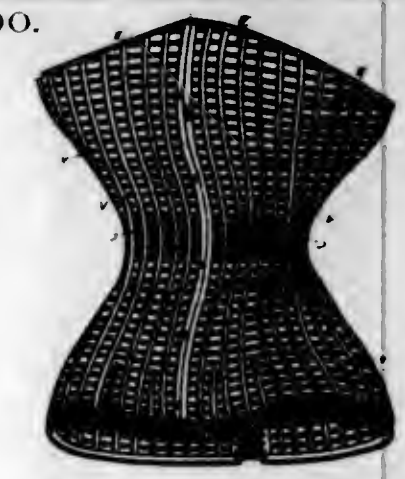
9. In combination with a car and its windows, vertically-movable guards adapted to move over the same, a rotary shaft, drums or pulleys secured upon said shaft, bands extending from the guards to the drums or pulleys, a secondary drum also secured upon said shaft, and a band wound upon the secondary drum in a direction the reverse of the winding of the bands of the other drums or pulleys.

10. In combination with a car and its windows, a guard movable vertically in relation thereto, bands for raising and lowering the same, and a series of pins or catches with which to engage one or more of the bands to hold the guard at any desired height.

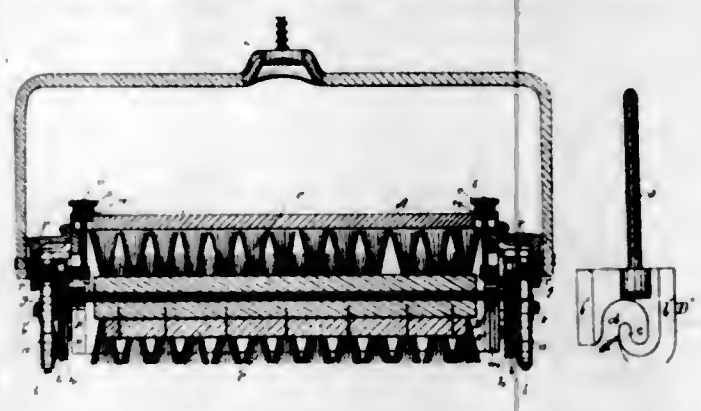
375,990. **CORSET.** MARIA PIETERS DE JONGH, Brussels, Belgium.
Filed July 11, 1887. Serial No. 243,996. (No model.)

Claim.—A skeleton corset consisting of series of vertical separated sheaths A, surrounding the body, having whalebones confined therein, a broad non-elastic waistband, C, surrounding the body, and series of horizontal separated elastic bands B, surrounding the body beneath and above the waistband, substantially as described and shown.

375,990.



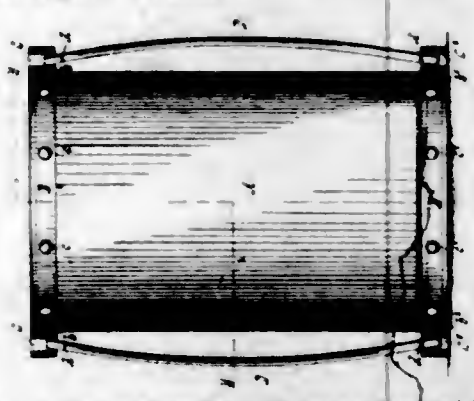
375,991. **CARPET-SWEEPER.** ROBERT H. EDDY, Chicago, Ill.
Filed Mar. 26, 1887. Serial No. 232,498. (No model.)



Claim.—1. The combination, with the case having slots on its ends, as described, and with the revoluble brush and the driving-wheels and elastic endless bands thereof at the ends of such case, of the journal bearings or boxes provided with hooks and vertical passages having at their lower ends the mouths *d'*, substantially as set forth, whereby the brush-shaft, with the brush fixed to it, can, as specified, be readily engaged with or disengaged from the said bearings or boxes as occasion may require, the endless bands operating to prevent, as explained, accidental disengagement of the journals and boxes.

2. The combination, with the case having slots in its ends, as described, and with the revoluble brush and the driving-wheels and elastic endless bands thereof at the ends of such case, of the journal bearings or boxes provided with hooks and vertical passages having at their lower ends the mouths *d'* thereto, substantially as set forth, whereby the brush-shaft, with the brush thereon, can, as specified, be readily engaged with or disengaged from the said bearings or boxes, as occasion may require, the endless bands operating to prevent, as explained, accidental disengagement of the journals and boxes.

375,992. **CAN.** JOHN FOX, Brooklyn, N. Y. Filed July 14, 1887. Serial No. 244,284. (No model.)

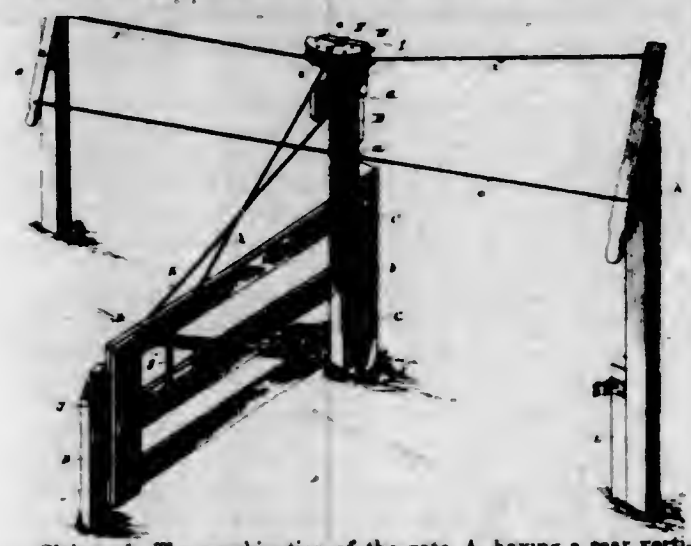


Claim.—1. The combination, with a can, of top and bottom rings, each having a series of laterally-projecting sockets, curved staves having their ends fitted in said sockets, and stops for the staves, substantially as described.

2. The combination, with a can, of sockets arranged about the top and bottom of the same, curved staves extending between the sockets and having their ends loosely fitting in the same, and stops for the staves, substantially as shown and described.

3. The combination, with a can, of outwardly-curved lengthwise-yielding staves arranged about the can and means for connecting and loosely holding the ends of the staves to the can, substantially as described.

375,998. AUTOMATIC GATE. JAMES R. GOODSUR, St. Charles, Ill. Filed Aug. 24, 1887. Serial No. 247,768. (No model.)



Claim.—1. The combination of the gate A, having a rear vertically-extending upright, *a*, rounded at top, as described, and a horizontal arm, G, secured to the top of said upright above the gate proper, with the semicircular segment E, grooved on its curved periphery and provided with the protecting metallic plates *e e*, projecting beyond its curved periphery and pivoted to swing horizontally upon the top of upright *a* above arm G, the pins F *f*, depending from said segment at points respectively near the center and one corner of the periphery thereof and embracing between them the arm G, and the levers H *h*, and wires I *i* and *c*, for operating said segment and thereby opening or closing the gate, all substantially as and for the purpose described.

2. The combination, with gate A, having a vertically-elongated rear upright, *a*, by which the gate is hinged to its supporting-post, the spring-catches J *j* on opposite sides of the gate, and the arm G and bracket D, secured to the top of upright *a*, of the semicircular segment E, grooved on its periphery and pivoted on the bracket D of upright *a* above arm G, the pin F, depending from the center of the rounded periphery of segment E, and pin *f*, depending from one corner thereof, embracing between them arm G, the operating-levers H *h*, and wires I *i*, connecting said levers to the opposite corners of the segment E and resting in the groove of said segment, the wire *c*, connecting the lower end of said levers, and the intersecting wires K *k*, connecting opposite corners of segment E with catches J *j*, all constructed and arranged substantially in the manner and for the purpose described.

375,994. HARNESS-HOOK. HENRY W. GETMAN, Ilion, N. Y. Filed May 4, 1887. Serial No. 237,056. (No model.)



Claim.—As an improved article of manufacture, the herein-described combined harness buckle and hook, comprising the frame having upper and lower end cross-bars, the cross-bar having a lug or tongue, and the hook extending from the side bars of said frame and projected over the tongued cross-bar, so as to bear against a looped portion of the harness-strap, as stated.

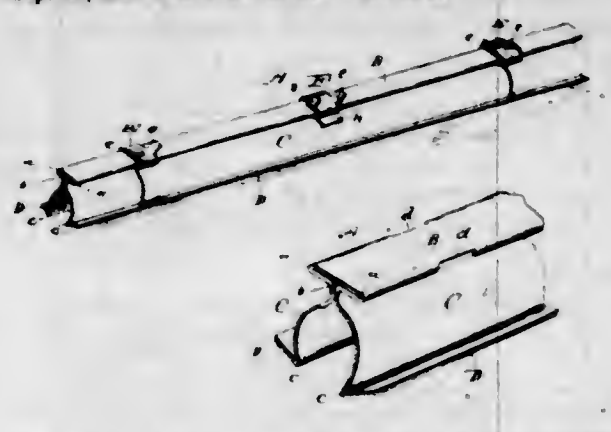
375,995. CREATING DRAFT IN CHIMNEYS. WILLIAM HAAS, New York, N. Y. Filed July 27, 1887. Serial No. 245,450. (No model.)



Claim.—1. The combination, with a chimney-tube, of a steam pipe or pipes terminating outside of the same, a chimney-cap inclosing the chimney and steam-pipes, a conical trough located above the mouths of the chimney and steam-pipes, and a discharge-nozzle for the water of condensation.

2. The combination, with a chimney-tube, of a steam pipe or pipes terminating outside of the same, a chimney-cap inclosing the chimney and steam-pipes, a conical trough located above the mouths of the chimney and steam-pipes, an inverted conical collector above the trough, and a discharge-nozzle for the water of condensation from the trough, substantially as set forth.

375,996. RAILWAY-TIE. WILLIAM P. HALL, Piqua, Ohio. Filed Sept. 27, 1887. Serial No. 250,837. (No model.)



Claim.—1. A railway cross-tie constructed of a single sheet of metal folded through its center, so as to form a broad firm T-shaped bearing-surface, and the depending elastic sides C, spread apart and flanged, substantially as described.

2. A railway cross-tie constructed of a single sheet of metal folded and bent throughout its center, so as to form the broad T-shaped bearing-surface for the rails, and the depending outwardly-curved elastic sides C, provided with flanges at their lower edges, substantially as described.

3. A railway cross-tie constructed of a single sheet of metal bent and folded upon itself throughout its length, forming the broad and strong T-shaped bearing-surface for the rails, and the depending convex elastic sides C, having their lower edges bent or turned in toward the center line of the tie and provided with flanges D, substantially as described.

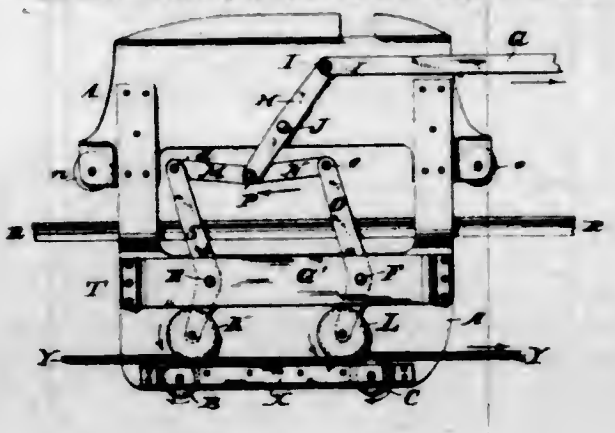
4. A railway cross-tie constructed with the T-shaped bearing-surface, and the convex elastic sides C, flanged at their lower longitudinal edges, in combination with the rail-chair constructed of a single strip of metal provided with clamping-ears and bent around and shrunk upon the tie thus constructed, so as to embrace it closely, the lower ends of the said strip being bent so as to rest upon the lower flanges of the sides C of the tie, substantially as described.

5. The combination, with the tie constructed with a T-shaped bearing-surface, and elastic depending flanged sides C, the projecting flanges of the said bearing-surface being provided with notches or indentations, of the rail-chair provided with clamping-ears and bent so as to closely embrace the tie, and forced and shrunk into the notches or indentations in the bearing-surface, substantially as described.

6. The combination, with a metallic railway-tie constructed with a broad T-shaped bearing-surface, and convex elastic sides depending from the center of the lower side of the bearing-surface, the edges of the said bearing-surface being provided with slight notches or indentations, of the switch-rail chair F, constructed of a strip of metal provided with clamping-ears, the said strip being bent so as to closely embrace the said bearing-surface and rest in the notches in the same, and provided with a continuation, *k*, which extends down upon one of the convex sides of the tie, all arranged as and for the purpose described.

7. The combination, with a metallic railway-tie constructed with a broad T-shaped bearing-surface and elastic depending sides, the edges of the bearing-surface being provided with slight notches *d*, of the switch-rail chair F, constructed of a strip of metal provided with clamping-ears *e*, the strip being bent so as to closely embrace the bearing-surface of the tie and rest in the notches *d* in the opposite edges thereof.

375,997. GRIP FOR CABLE-RAILWAY CARS. BRADNER L. HARRIS, Detroit, Mich., assignor of one-half to James D. Lehmer, Cincinnati, Ohio. Filed Aug. 8, 1887. Serial No. 246,394. (No model.)



Claim.—1. In a grip for cable-railway cars, the lever G, actuated by an operating lever or wheel connection, and attached to lever H, in combination with levers M N and S O, the two latter carrying binding-wheels K L, whereby the cable Y is held between them and the carrying-wheels B C, or released therefrom, the whole being arranged and mounted upon a suitable frame, substantially as shown and described.

2. In cable gripping and releasing mechanism, the carrying-wheels, B C, a grooved bar for supporting the cable, which bar is held between the guard-plates X, in combination with the wedging-wheels K L, carried and actuated by levers S O, which in turn are operated by connected levers M N through levers H G, said levers being properly fulcrumed and supported on a suitable frame designed to run in the slotted rail R, substantially in the manner shown and described, and for the purposes specified.

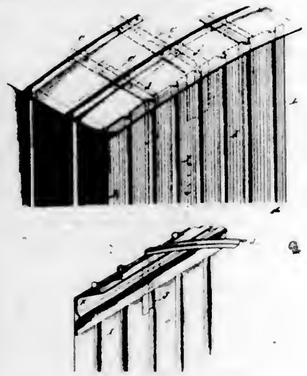
3. A grip-supporting frame, A, provided on its front and rear ends with friction-rollers *n o* and holding cable-wheels B C, in combination with levers S O and their binding-wheels, which by suitable hand mechanism are operated through the instrumentality of levers M N H G, arranged substantially as shown and described, and for the purposes specified.

4. A car provided with a frame, as A, adapted to run in a slotted rail over a cable-tunnel, which frame is provided with carrying-wheels B C and a grooved bar for the reception of the cable, in combination with a series of operating connected levers, as S, O, M, N, H, and G, the two former carrying clinching-wheels K L, all of said levers being properly pivoted and operated through the medium of a lever or by means of a hand-wheel properly attached thereto, all substantially as shown and described.

5. In a cable-grip, the cross guide or guard bars X, having between them a grooved bed-plate for supporting the cable, in combination with carrying-wheels B C and clinching-wheels K L, carried on levers S O, substantially as shown and described, and for the purposes specified.

6. The guard or guide plate G, attached to frame A, the levers S O, supported on said plate by bolts E F, and carrying clinching-wheels K L, in combination with cable-carrying wheels B C and a cable-bed held between guards X, substantially as shown and described, and for the purposes specified.

375,998. **CONSTRUCTION OF CARS, &c.** HENRY C. HODGES, Detroit, Mich. Filed June 24, 1887. Serial No. 242,366. (No model.)



Claim.—1. A car-body composed of longitudinal H-beams, cross-pieces of channel-iron having filling-pieces C at points of intersection, and provided with corrugated metal sides and roof, supported by girders J and purlins J', substantially as described.

2. A car-body consisting of sills and cross-pieces of channel metal united with intermediate filling-pieces, C, and with corrugated metal sides and roof, said parts united and stiffened by strips, girders, and purlins upon intermediate filling-pieces, C, substantially as and for the purposes described.

3. The combination, with a car-bottom, composed of longitudinal and transverse sills of channel-iron united upon intermediate filling-pieces, C, of timbers located in the upper channels of the sills, and a wood flooring secured to said timbers, substantially as described.

4. A car-body provided with a roof of corrugated sheet metal, with the corrugations extending transversely of the car, and in combination therewith purlins consisting of corrugated metal strips running longitudinally of the car beneath the roof and fastened thereto at the crossing of the corrugations upon interposed filling-pieces C, substantially as described.

5. The means for supporting a sheet-metal car-roof, consisting of cross-girders of corrugated metal bent downward at the extremities and secured to the side of the car, and in connection therewith purlins running longitudinally of the car and united with said roof-girders at the intersections upon interposed filling-pieces C, substantially as described.

6. The means for fastening the car-roof to the end of the car, the same consisting of strips of corrugated metal bent so as to present a horizontal portion beneath the roof and running longitudinally of the car, and a vertical portion extending downward the end of the car, the same adapted to fit in and mesh with the corrugations of the corresponding purlin and with the corrugation of the sheeting at the end of the car, substantially as described.

7. The combination, with the longitudinal sills of channel-iron, of a transverse sill, G, at the end of the car of a size sufficient to receive the ends of the longitudinal sills, the flange *g* being turned upward, and in connection therewith a bumper-beam and the end sheeting of the car, substantially as shown and described.

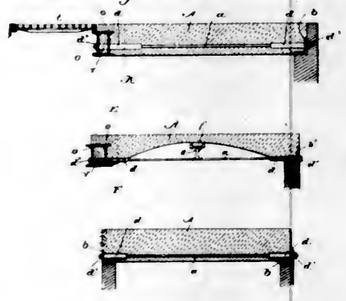
8. The means for uniting the side sheeting with the roof and girders, the same consisting of the combination, with the side sheeting and the roof and girders, of a longitudinal corrugated angle-strip, K, the downward-projecting flange of which is riveted to the top edge of the car-sheeting upon interposed filling-pieces C, the roof being fastened to its upward inwardly-turned flange at the crossing of the corrugations upon interposed filling-pieces, substantially as described.

9. The combination, with the side sheeting, the roof-sheeting, and girders J, of an angle-strip, K, having a longitudinal corrugation and an inwardly-turned flange, *k*, substantially as described.

10. The combination, with two crossing parts of channel-iron united with an interposed filling-piece, C, of supplemental clutching-pieces B', secured to one or both said crossing parts, substantially as described.

11. A roof consisting of corrugated sheet metal with the corrugations extending in the direction of the drip, and in connection therewith purlins located on the under side and crosswise of said roof-corrugations, the purlins united with the roofing at the crossing of the corrugations upon interposed filling-pieces, substantially as and for the purposes described.

375,999. **CONSTRUCTION OF ARTIFICIAL-STONE OR CONCRETE PAVEMENTS.** PETER H. JACKSON, San Francisco, Cal. Filed Oct. 27, 1886. Serial No. 217,372. (No model.)



Claim.—1. The combination of a sidewalk, floor, roof, or similar body constructed of artificial stone, concrete, or like material, with a series of arches, the footings of the arches being connected by ties provided with sleeves and skewbacks at their ends, and means, substantially as described, whereby the skewbacks are forced against the material, the span of the arch decreased, and the structure strengthened.

2. A sidewalk, floor, roof, or other similar body constructed of artificial stone, concrete, or like material, with a series of arches, the footings of the arches being connected by ties provided with sleeves and skewbacks at their ends, and intermediate of their ends with adjusting devices, substantially as described.

3. A sidewalk, floor, roof, or like body of artificial stone, concrete, or like material, with a series of arches, and having embedded in the footings of the arches ties provided with sleeves and skewbacks at their ends, the ends of the ties being screw-threaded and provided with keys, whereby the skewbacks may be thrust against the material, substantially as described.

4. A sidewalk, floor, or roof constructed with artificial stone or concrete, arches with longitudinal ties to resist the tensile strain, with the ends extending through sleeves or coverings, by which that part of the ties may slide independent of the material which it passes through, in combination with screws, nuts, keys, wedges, turn-buckles, or the like, by which tension on the tie may be increased and the material acted upon compressed, substantially as herein described.

376,000. **PROCESS OF PREPARING EXPLOSIVES.** DAVID JOHNSON, South Hampstead, County of Middlesex, England. Filed June 8, 1886. Serial No. 204,530. (No specimens.) Patented in England July 24, 1885, No. 8,951.

Claim.—1. The process, substantially as described, for the preparation of nitro-cellulose and compounds thereof for use as explosives, which consists in forming the same into grains or blocks, impregnating these with camphor by treatment with a solution of camphor in a volatile liquid not a solvent of nitro-cellulose, and expelling the solvent at a low temperature, then subjecting the camphorated nitro-cellulose to a temperature sufficiently high for the camphor to change the mechanical state of the nitro-cellulose, and finally expelling the camphor, all substantially as described.

2. The process, substantially as described, for the preparation of explosives, which consists in incorporating dinitro-cellulose with barium and potassium nitrates and carbon, treating the mixture with a solution of camphor in a volatile liquid not a solvent of dinitro-cellulose, evaporating the solvent at a low temperature, then subjecting the camphorized material to a temperature sufficiently high for the camphor to change the mechanical state of the dinitro-cellulose, and finally expelling the camphor, all substantially as described.

376,001. **INK-BOTTLE.** NELSON JOHNSON, Knoxville, Pa. Filed Mar. 30, 1887. Serial No. 232,931. (No model.)



Claim.—1. In combination with a bottle having one or more transverse grooves in its mouth, a stopper having similar grooves so arranged as to correspond in position with those in the bottle when the stopper is inserted, as and for the purposes set forth.

2. In combination with a bottle having one or more transverse grooves in its mouth, a stopper having grooves similar to and in such position as to correspond with those of the bottle-mouth when said stopper is inserted, and a corkscrew having a hinged handle perforated for the passage of a cord therethrough, substantially as and for the purposes set forth.

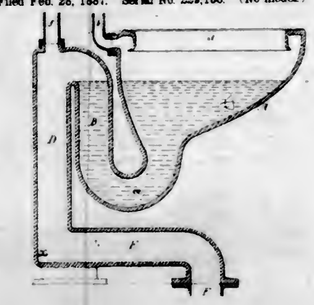
3. The combination of a bottle having grooves, substantially as described, with a similarly-grooved stopper, and a corkscrew having a hinged handle, said handle being semi-cylindrical, and having an eye or perforation for the passage of a cord therethrough, as and for the purposes set forth.

4. A bottle having formed transversely in its mouth one or more main grooves and one or more supplementary grooves in said main grooves, as herein shown, and for the purposes set forth.

5. In a bottle for ink, the combination, with the projecting lips *d*, of a groove, A, and a supplementary groove, *a*, for the purposes set forth.

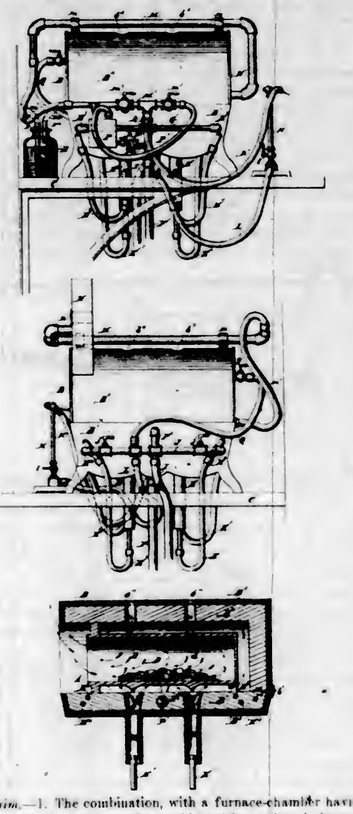
6. In a bottle for ink, the combination of the lips or projections *d* with a groove, A, as and for the purposes set forth.

376,002. **SIPHON WATER-CLOSET.** THOMAS KENNEDY, Philadelphia, Pa.; James Farley administrator of said Thomas Kennedy, deceased. Filed Feb. 28, 1887. Serial No. 229,160. (No model.)



Claim.—The combination of a water-closet bowl and its siphoning-ducts, a water-pipe discharging a jet into the long leg of the siphon, and a lateral discharge branch, the bottom of which does not extend above the bottom of said leg, whereby an impact-surface is formed adjacent to the inlet of the discharge branch, said surface being substantially at right angles to the direction of the jet descending the long leg of the siphon, as and for the purpose specified.

376,003. **HYDROCARBON-FURNACE.** CHARLES H. LAND, Detroit, Mich. Filed Apr. 22, 1886. Serial No. 199,823. (No model.)



Claim.—1. The combination, with a furnace-chamber having an air and vapor blast, of a muffle provided with openings in its top and a counter air-blast pipe communicating with the interior of the muffle, substantially as described.

2. The combination, with a furnace-chamber having escape-flues, a muffle in said chamber, and a burner for heating the same, of a counter-blast pipe located over the escape-flues of the furnace-chamber, whereby it is superheated and adapted to convey a counter-blast into the furnace-chamber to drive off injurious gases from the work and to admit determined gases to the work without chilling the muffle, substantially as described.

3. The combination, with a muffle-furnace having a movable door and a burner for heating the furnace, of a sliding and swinging counter-blast pipe adapted to communicate with the interior of the muffle, said pipe being located over the escape-flues of the furnace and connected with the movable furnace-door, substantially as and for the purposes described.

4. The combination, with a furnace-chamber, a muffle having top openings, a burner, and an air-blast exerting a pressure upon the products of combustion, of a counter-blast to communicate with the interior of the muffle and force the products of combustion out under a greater pressure than that operating the blast in the combustion-chamber, substantially as and for the purposes described.

5. The combination, with a furnace-chamber, a muffle, and a heating-burner, of a removable door, and a counter-blast pipe located over the escape-flues of the furnace-chamber, substantially as described.

6. The combination, with a muffle-furnace provided with burner and a removable door, of an air-blast pipe communicating with the burner, and a counter-blast pipe supporting said door, substantially as described.

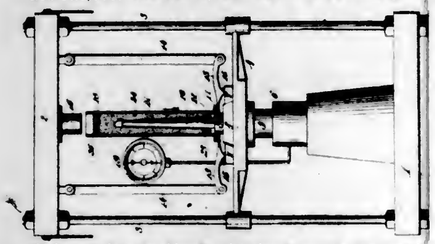
7. The combination, with a muffle-furnace provided with an air and vapor blast, of a counter-blast pipe communicating with the air and vapor blast and adapted to communicate with the interior of the furnace, substantially as described.

8. The combination, with a muffle-furnace provided with vents b^3, of a muffle perforated upon its upper surface, said furnace provided with one or more burners, the construction being such that the carbonic dioxide generated within the furnace will penetrate the muffle, substantially as described.

9. The combination of a furnace-chamber, an open muffle arranged in said furnace-chamber and having top perforations, and a heating-burner provided with an air-blast and communicating with the furnace-chamber to force the residue of combustion through the muffle and resist the encroachment of the atmosphere into said open muffle, substantially as described.

10. The combination, with a furnace-chamber provided with a removable cover and a muffle, of air and oil supply pipes and a blow-pipe located in front of the open muffle, substantially as described.

376,004. **MACHINE FOR CHARGING FIRE-WORKS.** CHARLES B. LINTON, Brooklyn, assignor to the Unexcelled Fire-Works Company, New York, N. Y. Filed Nov. 10, 1887. Serial No. 254,807. (No model.)



Claim.—1. In a machine for charging fire-works, the combination, with a press having a stationary upper platen and a lower vertically-movable platen, of a horizontal slide supported on the movable platen, and having on its upper face a circular boss or block a mandrel projecting vertically from the center of said block, and a loose vertically-movable collar surrounding the lower part of the said boss or block to support the rocket case or tube to be charged and to raise and disengage the same from said block after the operation of charging, substantially as described.

2. In a machine for charging fire-works, the combination, with a press having a stationary upper platen and a lower vertically-movable platen provided with horizontal guides, of a horizontal slide adapted to move in said guides in the upper face of the movable platen, said slide being provided on its upper face with a circular boss or block and a mandrel projecting vertically from the center of said block, a loose collar surrounding the lower part of the circular boss to support a rocket case or tube placed thereon, and pivoted laterally-swinging dogs to engage the said collar and lift it to disengage the charged rocket case or tube from the boss, substantially as described.

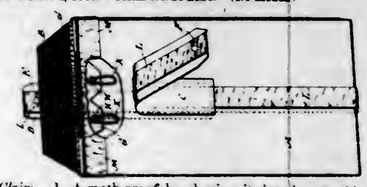
3. In a machine for charging fire-works, the combination, with a press having a stationary upper platen and a lower vertically-movable platen, of a horizontal slide supported on the movable platen and provided on its upper face with a circular boss or block having a central vertically-projecting mandrel, and a loose rammer to be placed in a rocket case or tube engaged on said boss or block in position to be driven into said tube by pressure against the upper platen, substantially as described.

4. In a machine for charging fire-works, the combination of a press having a stationary upper platen and a lower vertically-movable platen, a hydraulic ram to support and actuate the movable platen, a pressure-gage, a horizontal slide supported on the movable platen and provided on its upper face with a circular boss having a central vertically-projecting mandrel, and a loose collar surrounding the lower part of the said boss to support a rocket case or tube engaged with the boss, substantially as described.

5. In a machine for charging fire-works, the combination of the upper stationary platen, 2, the lower movable platen, 4, having guides 7, the slide 8, moving in said guides and provided with circular boss 9 and mandrel 10, the loose collar 11, surrounding the lower part of the boss and provided with recesses 12, the swinging arms 14, suspended from the upper platen, and the lifting-dogs 13, pivoted to the lower ends of the swinging arms and adapted to be engaged with the recesses in the loose collar to lift said collar and disengage a charged rocket-case from the boss, substantially as described.

6. In a machine for charging fire-works, the combination, with the upper stationary platen, 2, the lower movable platen, 4, the slide 8, provided with boss 9 and mandrel 10, loose collar 11, surrounding said boss, and a loose rammer placed in a rocket-case engaged on said boss in position to be driven into said tube by pressure against the upper platen, of a metal jacket, 27, formed in two or more parts, secured aronnd the rocket-case, substantially as described.

376,005. **MOTH-PROOF BAG.** THOMAS MANAMAN, New York, N. Y. Filed Nov. 4, 1887. Serial No. 254,320. (No model.)

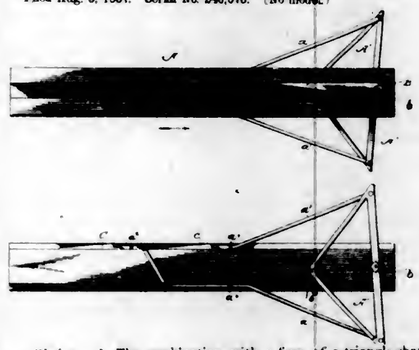


Claim.—1. A moth-proof bag having its interior provided with an attached flap, G; carrying a hook, K, substantially as described.

2. A moth-proof bag for wearing-apparel and other articles, having its open end closed by a suitable flap, a tongue attached to said flap and carrying an attaching device, and provided upon the front and rear sides with suspending-straps extending beyond the month of the bag, substantially as described.

3. A moth-proof bag having a folding closing-flap, B, and suspending-straps C D, secured, respectively, to the front and rear sides of the bag and extending beyond the bag-mouth, said bag having its inside provided with an attached flap, G, carrying an attaching device, K, substantially as described.

376,006. **RAILROAD-SWITCH.** MICHAEL MCCANN, Johnstown, Pa. Filed Aug. 3, 1887. Serial No. 246,073. (No model.)



Claim.—1. The combination, with a frog, of a triangle-shaped lever located on the under side thereof and pivoted thereto, substantially as described.

2. The combination, with a triangular lever located on the under side of a frog and pivoted thereto, of bent shifting-rods pivoted to the ends of the base of said lever and designed to operate the same by movement forward, substantially as described.

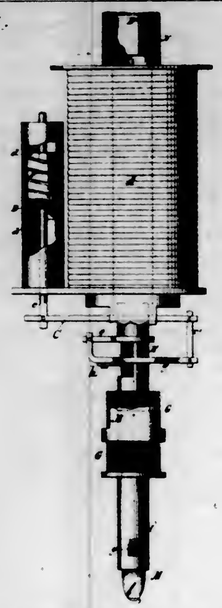
3. The combination, with a triangular-shaped lever located on the under side of a frog and pivoted thereto, and bent shifting-rods pivoted to the ends of the base of said lever and designed to operate the same by movement forward, of a shifting-bar attached to the side of the platform of a car and provided with an inward-projecting toe designed to open or close the switch by the said toe coming in contact with arms formed on the ends of the bent shifting-rods, substantially as and for the purpose set forth.

4. The combination, with the bent shifting-rods, of inclined shipping-plates attached to the side of the frog below said rods and designed to throw the toe of the shifting-bar out of contact with the arms of the shifting-rods after the latter have performed their functions, substantially as described.

376,007. **ELECTRIC-ARC LAMP.** WILLIAM H. MILLER, New York, N. Y. Filed June 16, 1884. Serial No. 135,068. (No model.)



376,007.

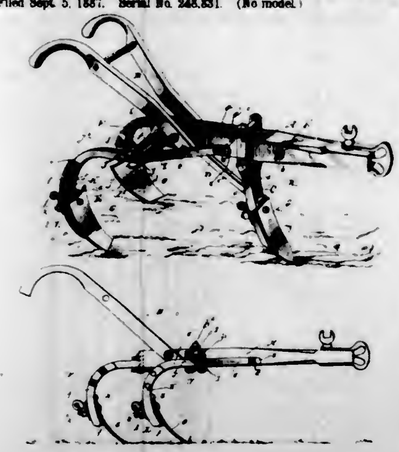


Claim.—1. The combination, in an arc lamp, of the open-bottom tube 10, the open-bottom tube R^3, provided on its upper end with a bifurcated abutment for the lower carbon, an open or spider-shaped follower, and a spring for lifting the said carbon, with the upper carbon controlled in its downward movement by a clutch connected with the stem of the dash-pot, substantially as described.

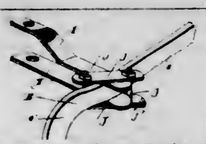
2. The combination, in an arc lamp, of a differential electro-magnet and upper carbon sustained therein, a clutching device, a dash-pot having a grooved plunger centered upon a stem connected to said clutching device, and a lower-carbon spring actuated and adjustable in a guided tube open at its lower end and provided with a sleeve, W', substantially as described.

3. In a focusing arc lamp, the combination of two electrodes, one a spring-actuated electrode inclosed by an open-bottom tube provided with a detachable feed-controlling abutment at its wasting end attached to a saddle, S', and the other a gravitating electrode provided with carbon separating and feeding mechanism, a clutching device controlled by a dash-pot having a spirally-grooved plunger, and an actuating or controlling magnet, substantially as described.

376,008. **CULTIVATOR.** GEORGE W. RANDOLPH, Memphis, Tenn. Filed Sept. 5, 1887. Serial No. 248,531. (No model.)



376,008.



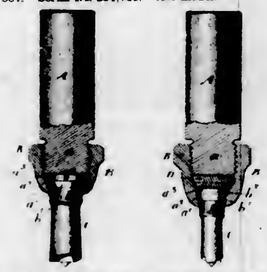
Claim.—1. In a cultivator, the combination of a beam, a plow-stock connected at its front end thereto, a brace connected at its inner end directly to the beam, and a clip, J, comprising horizontal plates arranged diagonally across the brace where the latter crosses the plow-stock, and bolts passing through the plates on opposite sides of the stock and brace, substantially as and for the purpose set forth.

2. In a cultivator, the combination of a beam, the rear plow-stocks arranged on opposite sides of the beam and detachably connected at their front ends to the beam, and braces, each formed of a single piece of metal and adjustably fixed at its outer end to one of the stocks and detachably connected at its inner end to the beam, each plow-stock and its brace being adapted to be detached from the beam and adjusted in a horizontal line toward the front end and lengthwise of the beam and to be connected thereto by suitable bolts, as and for the purpose described.

3. In a cultivator, the combination of a beam having the vertical and horizontal bolt-holes *a a'*, located as described, and the rear plows having the stocks thereof connected to the beam and braces detachably connected at their inner ends to the beam and secured at their outer ends to the plow-stocks, one of the plow-stocks and the brace thereof being adapted to be adjusted longitudinally of the beam, so that the same can be connected to the beam by bolts which are passed through the vertical and horizontal holes *a a'*, substantially as and for the purpose set forth.

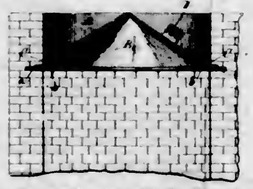
4. In a cultivator, the combination of a beam, the rear plows, each having a stock connected at its front end to the beam, and a flat-bar brace for each plow connected at its outer end to the stock by an adjustable clip and at an intermediate point of the stock and detachably connected at its inner end to the beam, either of the plow-stocks and the brace therefor being adjustable longitudinally of the beam and in advance of the other stock or brace, substantially as described

376,009. **PUNCH.** ALFRED H. RAYNAL, Hoboken, N. J. Filed Oct. 8, 1887. Serial No. 251,789. (No model.)



Claim.—As an improvement in punching machinery, a threaded plunger and a threaded coupling adapted thereto, having a suitable seat, combined with a punch having its upper end or head adapted to the seat of the coupling, and a block or blocks for insertion within the coupling between the lower end of the plunger and the head of the punch, substantially as set forth.

376,010. **COVER FOR WELLS OR CISTERNS.** JOSEPH S. REDLINE, Derry, Pa. Filed Sept. 27, 1887. Serial No. 250,861. (No model.)



Claim.—1. The combination, with the frame having an outer flange, which is to be built into the wall of a well or cistern, and an inner flange or ledge, of the cover having its central portion bulged to one side of a plane passing through its edges and adapted to contract and expand in its circumferential length, substantially as set forth.

2. The combination, with the frame having an inner flange, of the

cover centrally bulged and having its edge flared upwardly at an incline and having a radial cut to form ends, which ends normally overlap, substantially as described, for the purpose specified.

3. The combination, with the frame having an inner rest, of the cover conical-shaped and having overlapping ends and having an upwardly-flared edge, the approximate ends of the flared edge being cut away and the handle, substantially as specified.

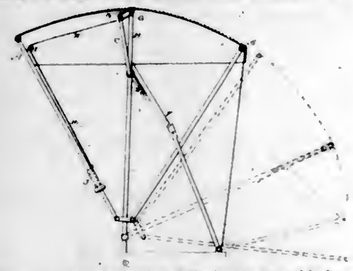
376,011. **WHIFFLETREE-HOOK.** NATHAN F. REED, Hyde Park, Vt. Filed Nov. 3, 1887. Serial No. 254,183. (No model.)



Claim.—1. The combination of the singletree with the guard-collar thereon, provided with guard-lugs D, and the hook-collar, also placed on the singletree and provided with the angular hook H, the longitudinal portion of which projects inwardly from the end of the singletree and parallel to and between the guard-lugs D, substantially as described.

2. The combination of the singletree with the guard-collar provided with the two guard-lugs on its rear side, and also with the slot in its outer edge, and the hook-collar provided with the angular hook H and the extension I, which latter projects into the slot in the outer edge of the guard-collar, substantially as described.

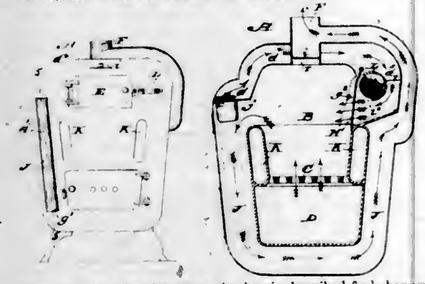
376,012. **BUGGY-TOP.** WILLIAM H. REES and JAMES H. MATTHEWS, Trading Post, Kans. Filed Oct. 3, 1887. Serial No. 251,276. (No model.)



Claim.—1. The combination of the buggy-top and its braces with the tripping-bow having arms secured to its ends, so shaped as to operate the braces, and the spring for returning the bow to position after having been moved, substantially as described.

2. The combination of a buggy-top and its braces with the tripping-bow having arms secured to its ends, so shaped as to trip the braces, the spring for returning the bow to position, and hand-holds placed upon the first or second bow and connected to the tripping-bow by means of cords, wires, or chains, substantially as set forth.

376,013. **HEATING-STOVE.** PETER A. RENO, St. Louis, Mo. Filed Jan. 25, 1887. Serial No. 225,453. (No model.)



Claim.—1. In a heating-stove, the herein-described fuel-charger over the fire-chamber, said fire-chamber having an opening at its side, through which the fuel is delivered from the charger, substantially as described.

2. The combination, in a heating-stove, of the fire-chamber, the air-supply flue, and the indirect-draft flue, and the perforated air-inlet and the draft-outlet, the said inlet and outlet respectively being at opposite sides of the fire-chamber, as described.

3. In a heating-stove, the combination of the herein-described air-supply flue or flues leading from the lower front of the stove upward across the stove and above and exterior to the fire-chamber, and then downward into the fire-chamber, with the indirect-draft flue leading from the fire-chamber at a point opposite the air-inlet, downward at the front of the stove beneath the ash-pit, and upward at the rear of the stove, substantially as described.

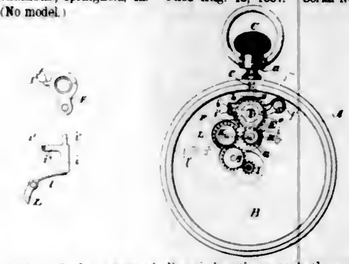
4. In a stove, the semi-cylindrical fuel-charger L, combined with the casing *l*, having opening *l'* within the stove, whereby the fuel can be discharged by turning the charger around.

376,014. **MAKING LOCK-SPINDLES.** ALFRED C. REX, Philadelphia, Pa. Filed Oct. 15, 1886. Serial No. 216,322. (No model.)



Claim.—The mode herein described of making lock-spindles with many-sided ends, said mode consisting in first cutting a circumferential groove near the end of the spindle, and then cutting the straight sides on the end of the spindle beyond the said groove by means of a die, all substantially as set forth.

376,015. **STEM WINDING AND SETTING WATCH.** THOMAS F. SHERIDAN, Springfield, Ill. Filed Aug. 13, 1887. Serial No. 246,887. (No model.)



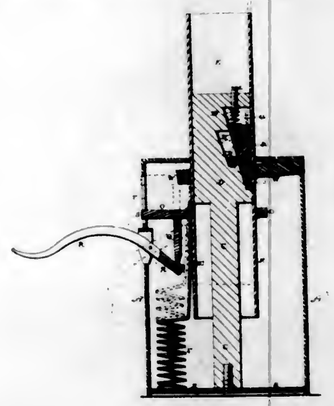
Claim.—1. In a stem winding and setting watch, the combination of the stem-driven train, the yoke F, having a projecting lug formed with a locking-angle, the slide-bar *i*, having the projection *i'* to enter a recess in the pinion D, and a lateral arm, i^2, carrying the pin i^3, the spring *l*, pivoted to the plate B and having the head portion L, the swing-bar *l'*, pivoted to the plate and adapted to engage the head of the spring, substantially as specified.

2. The combination, with a stem-driven train and its pivoted yoke F, of the slide-bar *i*, substantially as described, the stem-arbor and the spring *l*, whereby said yoke may be moved to connect or disconnect said train with reference to the winding-wheel, substantially as specified.

3. The combination, with a stem-driven train, which is provided with a pivoted yoke, F, having a projecting lug, *f*, formed with a locking-angle, f^2, of the slide-bar i, having an arm, i^2, and a projection or pin, i^3, extending through the pillar-plate to engage the yoke-lug *f*, substantially as specified.

4. In combination with a pivoted yoke, F, the slide-bar *i*, substantially as described, and a spring, *l*, and swing-bar *l'*, of a stem-arbor, the stem-driven train, the winding-wheel, and the dial-wheels, substantially as and for the purpose set forth.

376,016. **DENTAL CHAIR.** DEWELL STOCK, Big Rapids, Mich. Filed Aug. 29, 1887. Serial No. 248,181. (No model.)



Claim.—1. The combination of the frame, the rod C, placed therein and provided with a guiding-head upon its upper end for the tube, and having two inclined recesses in the side of this head, and which are placed one inside of the other and communicate together, the frictional roller placed in the inner recess, the wedge-shaped frictional device placed in the outer recess and bearing against the inner side of the tube and the outer side of the roller, and the vertically-moving tube which fits down over the head, substantially as shown.

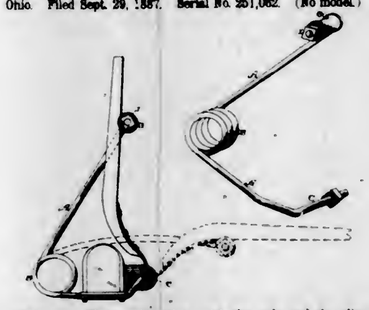
2. The combination of the frame, the rod C, provided with a head upon its upper end which has two inclined communicating recesses formed in its side, the friction-roller placed in the inner recess, the wedge-shaped frictional device placed in the outer recess and bearing against the roller and the inner side of the tube, the set-screw which passes into the upper end of the outer recess to limit the upward movement of the frictional device, and the vertically-moving tube which fits down over the head, substantially as described.

3. The combination of the frame, the vertical rod provided with a head which has the two inclined communicating recesses formed in one side, the friction-roller placed in the inner recess, the wedge-shaped frictional device placed in the outer recess and bearing against both the roller and the tube, the clutch O, which engages with the tube, the operating-lever for moving the clutch, the spring connected to the clutch, and the vertically-moving tube, substantially as set forth.

4. The combination of the frame, the vertically-moving tube, the rod C, which extends into the tube and is provided upon its upper end with the guiding-head, which has the two inclined recesses formed in its side, the friction-roller placed in the inner recess, and the wedge-shaped frictional device placed in the outer one, the clutch W, supported upon the frame and surrounding the tube, the clutch O, spring-connected thereto, and operating-lever, substantially as specified.

5. In a dental chair, the combination of the headed supporting-rod C, having a frictional device connected thereto, the vertically-moving tube with which the said frictional device engages, a clutch supported by the frame and which automatically engages with the tube to support it in a raised position, a second spring-actuated clutch by which the tube is raised and which also raises the upper clutch to allow the tube to descend, and the operating-lever, substantially as shown.

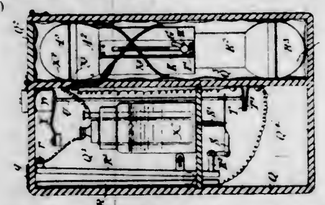
376,017. **SHAFT-SUPPORT.** COMMODORE P. TEMER, Hillsborough, Ohio. Filed Sept. 29, 1887. Serial No. 251,062. (No model.)



Claim.—1. The combination, with the axle and the clips secured thereto, of springs having one of their ends adapted to support the shafts, and the other ends so bent as to pass through the ears of the clips, and thus fasten the shafts to the clips, substantially as shown.

2. The combination of the axle and the clips secured thereto with springs which serve the double purpose of supporting the shafts and fastening the shafts to the clips, the coil of the spring being located in the rear of the axle, substantially as set forth.

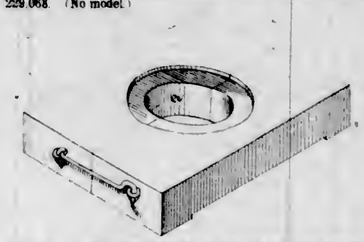
376,018. **ELECTRIC THERAPEUTIC DEVICE.** EDWIN R. WHITNEY, St. Johnsbury, Vt., assignor to the Standard Electric Company of Vermont, same place. Filed Aug. 31, 1887. Serial No. 248,407. (No model.)



Claim.—1. In an electric therapeutic device, a hand induction-coil set up in a telescopic casing formed of two insulated sections connected together and to be pressed toward each other, one of which carries primary coil and necessary connections of same, with generator, and the other the secondary coil, and each carrying a pole on outside ends, spiral spring for keeping said insulated sections normally apart, and means for electrically connecting each of said poles with the secondary coil, as and for the purposes described.

2. In an electro-therapeutic device, the combination, with an electric generator and the induction-coil herein described, of a circuit formed partially of runways and closed by the introduction of a coin therein, and also of spring-contacts, a push-button operating to close such contacts, and means by which further pressure on push-button breaks the circuit at the runways, the whole contained in a box.

376,019. **MOLD FOR FORMING PIECES OF CARBON FOR ELECTRIC PURPOSES.** CHARLES H. WILDER, Natick, Mass., assignor to the Hub Carbon Company, Kennebunk, Me. Filed Feb. 26, 1887. Serial No. 229,068. (No model.)



Claim.—1. The combination of the pedestal, the sectional core composed of wedge-shaped sections, the sheet-metal envelope surrounding said core, and the outer shell of larger diameter encircling the core and its envelope, substantially as described.

2. The combination of the pedestal having a socket, the sectional core provided with a stem for said socket, and the outer wall of larger diameter than said core and surrounding the latter, substantially as described.

3. In a mold for forming cylindrical carbon pieces, the lining of graphite paper between the carbon and the inner metallic wall of the mold.

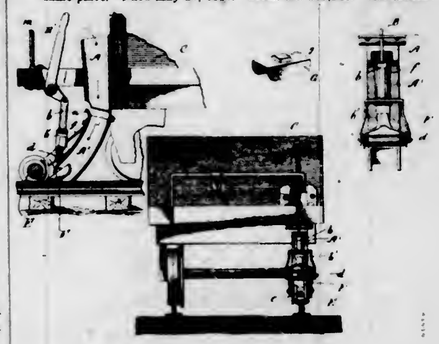
4. In a mold for forming pieces of pure coke-carbon of cylindrical form, in combination with the heads of the mold, vertical outer and inner walls of sheet metal cut open longitudinally, substantially as described.

5. The combination of the inner sheet-metal lining, the sand filling within said lining, the graphite lining outside said sheet-metal lining, the outer wall of larger diameter for inclosing the annular carbon between it and said inner lining and the heads, substantially as described.

6. The combination of the inner sheet-metal lining, the sand filling within said lining, the graphite lining outside said sheet-metal lining, the outer wall of larger diameter for inclosing the annular carbon between it and said inner lining and the heads, one of which is provided with a hollow elevation, substantially as described.

7. The above-described improved mold for forming hollow cylindrical pieces of coke-carbon, consisting of the pedestal with a socket in it, the cylindrical core of wedge-shaped sections having a stem to enter the socket in the pedestal, the sheet-metal detachable envelope around the core, and an outer shell of larger diameter surrounding the core and its envelope, substantially as described.

376,020. **TORPEDO-PLACER.** JACOB WILHELM, New Freedom, Pa., assignor, by direct and mesne assignments, of part to Alfred H. Grove, same place. Filed May 27, 1887. Serial No. 239,548. (No model.)



Claim.—1. The combination with the car, of the chute composed of hinged parts, the upper part being fixed, and means, as the bell-crank lever and intermediate connections between the lever and the lower part of the chute, for adjusting said lower part of the chute, substantially as and for the purpose described.

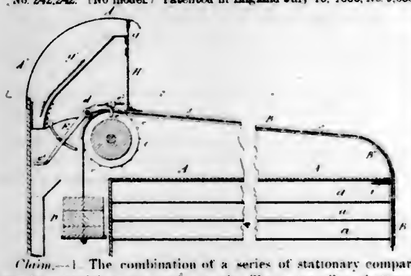
2. The combination, with the car and the hinged chute having its upper part fixed to the car and extending above and below the platform, of the bell-crank lever, means, as described, connecting the lever with the lower part of the chute, and the sliding catch for engaging the end of said lever and holding the end of the chute elevated.

3. The combination, with the car and the chute composed of two parts, one part being fixed to the car and the other part being hinged to the lower front side of the fixed part and having a curved lip on its upper rear end, of provisions, substantially as described, for raising and lowering the lower part of the chute, substantially as and for the purpose described.

4. The combination, with the chute and the frame F, pivotally connected therewith between its ends, of the grooved and flanged roller carried by the lower end of the frame, and the spring interposed between the chute and the upper end of the frame, substantially as and for the purpose specified.

5. The combination, with the car, of the herein shown and described device for placing a torpedo on the rail, composed of the chute made of two parts, A and A′, hinged together, the parts A′ having the curved lip *a*, the bell-crank lever B, the bar *b*, and the yoke *b′*, secured to the lower end of the lever B, the bolt *d*, pivotally connecting the part A′ of the chute with the yoke *b′*, the frame F, mounted between its ends upon bolt *d*, the grooved and flanged roller E, carried by the lower end of the frame, and the spring *f*, interposed between the chute and the upper end of said frame, substantially as set forth.

376,021. NEWSPAPER-SELLING APPARATUS. EDWYN ANTHONY, London, County of Middlesex, England. Filed June 23, 1887. Serial No. 242,242. (No model.) Patented in England July 10, 1886, No. 9,035.



Claim.—1. The combination of a series of stationary compartments for containing newspapers or the like, a traveling shutter or band covering said compartments, a coin-receptacle and intermediate holding devices between the receptacle and the traveling shutter adapted to be operated by the weight of the coin to allow the shutter or band to automatically uncover a compartment, substantially as described.

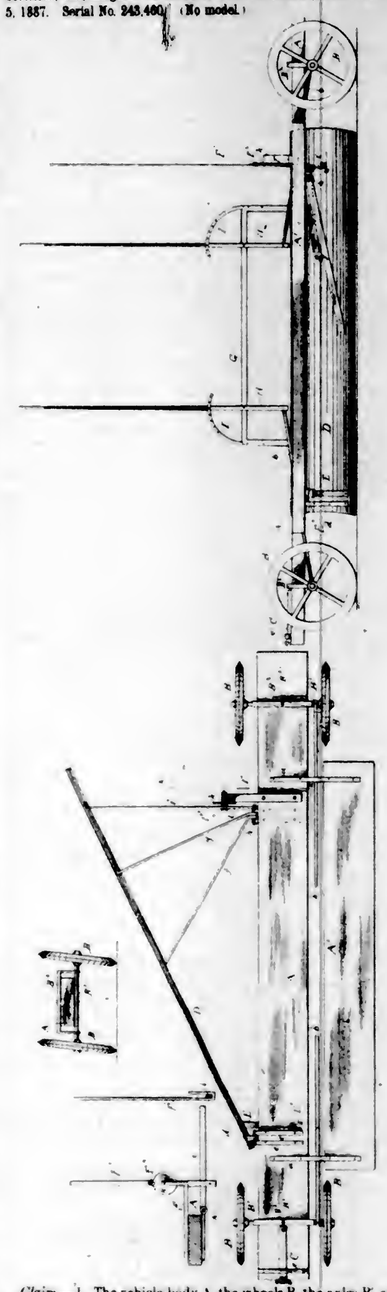
2. An apparatus for the automatic sale of newspapers and periodicals, consisting of a stationary receptacle divided into a series of compartments containing the newspapers or periodicals to be sold, a traveling shutter or band to cover the compartments, a weight to move the shutter to uncover the compartments containing the newspapers or periodicals, a locking device to hold the weight out of action until the deposit of the required coin or coins which liberate the locking device and allow the weight to move the shutter or band a sufficient distance to expose the newspaper or periodical, substantially as hereinbefore described.

3. An apparatus for the automatic sale of newspapers and periodicals, consisting of a stationary receptacle divided into a series of compartments containing the newspapers or periodicals to be sold, a traveling shutter or band to cover the compartments, a weight to move the shutter or band, a catch to hold the band, and a weight adapted to be released by the descent of the required coin or coins, substantially as hereinbefore described.

4. The combination, in an apparatus for the automatic sale of newspapers, of a series of compartments for containing the newspapers and a traveling shutter adapted to cover the same and to be automatically operated by the dropping of a coin to move intermittingly to uncover at each step a compartment to allow the newspaper therein to be withdrawn, substantially as described.

5. In combination, the stationary compartments *a*, for holding the newspapers, a traveling shutter covering the same and adapted to be automatically operated by the dropping of a coin to uncover the said compartments, and a flap arranged in the top compartment, adapted to be operated by the withdrawal of the last paper to indicate that the papers in that series have been exhausted, substantially as described.

376,022. DITCHING AND GRADING SCRAPER. LUCIUS E. ASHLEY, Stockton, Cal., assignor of one-half to Asa Clark, same place. Filed July 5, 1887. Serial No. 243,460. (No model.)



Claim.—1. The vehicle-body A, the wheels B, the axles B′, and the blade D, suitably attached to the body A, in combination with the lever F′, and the braces *f g* i, the lever F′, engaging with brace *i* and being provided with the guide F³, engaging with the circle K of the iron F, attached to body A, all substantially as and for the purpose set forth.

2. The combination, substantially as described, of the body A, the platform A′ *a*, the axles B′, the yoke B³, the king-pin B⁴, and the draft apparatus consisting of the rod C and the transverse yoke *c*.

3. The combination, substantially as described, of the vehicle A A′ *a* B B′ B³ B⁴, the blade D, set obliquely to the body A and having the bar E engaging with the lug E′, attached beneath the body A, the connecting-braces *f g i*, the latter being at right angles to the body A′, the body A, the brace *i*, blade D, forming a right-angled triangle, the lever F′, provided with the roller *l*, and the J-shaped iron F, provided with the circle K, engaging with the guide F³ of the lever F′.

4. The combination, substantially as described, of the vehicle, the blade D, the yoke G, attached to body A and provided with perforated circles I, the guiding-levers H *b*, attached to axles B′ and adapted to control the direction of the body A, and the draft attachment consisting of the rod C and transverse arch *c*.

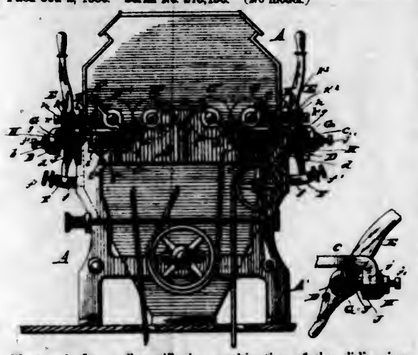
5. A scraper-frame suitably mounted upon axles and wheels, such wheels being convexly formed and inclining upon the axles, in combination with a scraping-blade set obliquely to the body A, a suitable draft attachment, and suitable levers for raising and lowering the blade and for directing the course of the scraper by changing the position of the axles and wheels irrespective of the course of the team.

6. The combination, with the body A, suitably mounted and provided with the blade D, connected thereto by the brace *i*, of the J-shaped iron F, provided with the circle K, engaging with the guide F³ upon the lever F′, substantially as set forth.

7. The combination, substantially as described, of the body A, the platform A′, the straps *a*, and the draft attachment C *c*.

8. The combination, substantially as described, of the body A, the convex wheels B, the axles B′, the yokes B³, and the king-pins B⁴.

376,023. ROLLER-MILL. HERMAN A. BARNARD, Moline, Ill., assignor to the Barnard & Leas Manufacturing Company, same place. Filed Oct. 2, 1886. Serial No. 215,130. (No model.)



Claim.—1. In a roller-mill, the combination of the sliding journal-block H, a journal-box mounted thereon, and the block J, mounted in the ends of said block and provided with an adjusting-screw, with the movable roll and shaft journaled in said box, and the shafts and eccentric-disks thereon engaging block J, and adapted to adjust block H horizontally, substantially as specified.

2. The combination of the sliding journal-block H, the cushion-block J, secured therein, the friction-rollers supporting said block, the shaft mounted in said journal-boxes, and the movable roll secured on said shaft with the main frame, the transverse oscillating shaft journaled in bearings in said frame, the operating-lever, and the eccentric-disks secured to said shafts, whereby the movable roll is horizontally adjusted, substantially as and for the purpose specified.

3. The combination, with the adjustable journal-blocks forming bearings for the adjustable rolls, of the oscillating shaft and operating-lever, the eccentric-disks having flat peripheral surfaces, and the cushion-blocks against which said disks impinge, substantially as and for the purpose specified.

4. The combination, with the journal-blocks H and the horizontally-adjustable cushion-blocks J and adjusting-screws therefor mounted in said journal-blocks, of the shafts journaled in bearings on the main frame, the eccentric-disks secured to said shafts engaging the blocks, the hand-levers whereby the shafts are operated, and the adjusting-screws bearing against said levers and adapted to limit their throw, substantially as described.

5. The combination, in a roller-mill, of horizontally-adjustable journal-blocks, and the vertically-adjustable blocks supporting the same, with the horizontal shafts and their eccentric-disks, and levers for horizontally adjusting the journal-blocks, all constructed and arranged to operate substantially as and for the purpose set forth.

6. The combination, with the movable and yielding roll, of a horizontally-adjustable journal-block, a journal-box supported thereon, a vertically-adjustable block provided with friction-rollers on its upper face, the horizontal shaft journaled in the main frame and having an eccentric-disk, means for engaging the extended end of the journal-block with said disk, the lever secured to said shaft, the set-screw for engaging the lower ends of the levers, and the spring for holding the movable to the rigid roll with yielding pressure, all substantially as and for the purpose specified.

7. In a roller-mill, the combination of the main frame provided with recesses i in its upper edges, the stationary roll, the bearings therefor, and the yielding roll, the vertically-adjustable blocks mounted in the recesses of the frame, and the journal-blocks for the yielding roll, substantially as specified.

8. In a roller-mill, the combination of the main frame provided with recesses in the upper edges, and the blocks mounted in said recesses, with the horizontally-adjustable blocks and journal-boxes, the yielding rolls journaled in said boxes, and set-screws for limiting the vertical movement of both blocks, substantially as and for the purpose set forth.

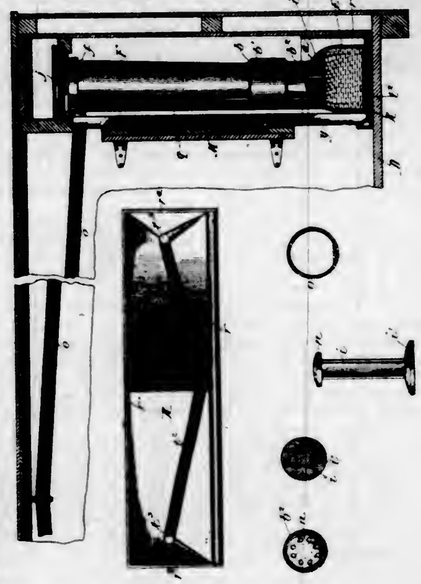
9. In a roller-mill, the combination of the main frame provided with recesses in its upper edges, the vertically-adjustable blocks I, mounted in said recesses, the journal-blocks H, the yielding rolls and the fixed rolls, with the springs K, the adjusting bolts and nuts for holding the yielding rolls to the fixed rolls with yielding pressure, and the bolts for limiting the vertical adjustment of the blocks, all substantially as and for the purpose specified.

10. The combination, in a roller-mill, of the main frame A, having recesses i′ below the journals of the yielding rolls, with vertically-adjustable blocks mounted in these recesses, the friction-rollers in their upper surfaces, the horizontally-adjustable blocks H, mounted upon the blocks I, the journal-boxes for the yielding rolls, bolts *h* for limiting the vertical adjustment of the blocks H, and spring K for regulating the grinding-pressure of the yielding rolls against the rigid rolls, all substantially as and for the purpose specified.

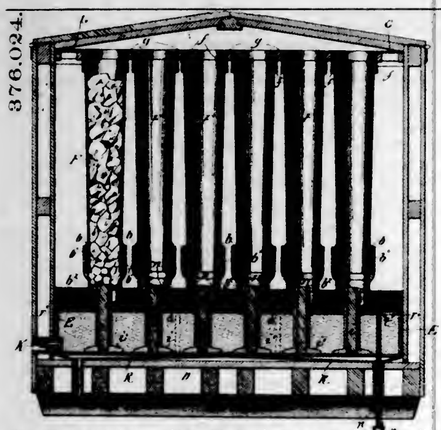
376,024. REFRIGERATOR-CAR. NICOLAS BOSMANN, Lake, Ill. Filed Mar. 11, 1887. Serial No. 230,546. (No model.)

Claim.—1. The combination, in a car, of a series of ice-pipes in its interior, at each end thereof, extending across the car, connected at their lower ends by detachable close joints with reservoirs for the water resulting from the melting of ice, and the cross-plates G, supported upon the body and frame of the car and provided with a series of double flanges, *f* and *f′*, one of which fits down over the outside of the ice-pipes and the other down within the inside of the pipes, thus forming close and detachable joints with the said pipes, substantially as described.

2. The combination, in a car, of a series of ice-pipes, F, extending across the same at each end in its interior, the cross-plates G, the ends of which are supported by the side walls of the car, and the series of bars *j*, which are furnished support by the car, and which sustain plates G against sagging at points between the side walls of the car,



376,024.



the said plates being provided with double flanges *f* and *f'*, extending down from suitable openings in the same adapted by size, form, and position to embrace the upper edge of the pipes and form closed and detachable joints with the same, substantially as described.

3. The combination of the series of ice-pipes F, provided at the lower ends with rings *b*, the upper ends of which are permanently and securely fastened thereto by close joints, and so much larger than the pipes as to leave annular spaces between the rings and pipes large enough to receive therein the cups b^2, which project upward from reservoirs E, and the said reservoirs E, with series of vertical cups b^2 projecting upward therefrom, corresponding in form and position with and below the said ice-pipes, but so much larger in diameter than said pipes as to receive the lower ends thereof within them, and also provided with tubes *b'* encircling them, but so much larger than the cups as to leave annular spaces between the cups and tubes for the ring *b*, said tubes *b'* having their lower edges fastened permanently to and making close joints with said cups, the whole adapted to form close and detachable connections between the pipes F and reservoirs E by means of mere friction of smooth surfaces and partially-elastic parts, substantially as described.

4. In combination with a series of ice-pipes, F, the supports *i*, having bases *i'*, into which they are screwed, and perforated caps *n*, standing upon said bases and extending up into the lower ends of pipes F, adapted to support in part the weight of the columns of ice in the pipes and receive the water from them, substantially as described.

5. The combination of the air-pipes *q*, having the lower ends in communication with their respective reservoirs, and their upper ends to extend about five-sixths of the way up to the roof of the car, with perforated pipe *o*, which extends from one of the pipes *q* to the other and opens into both of them, adapted to conduct the water from condensed vapor into the reservoirs, substantially as described.

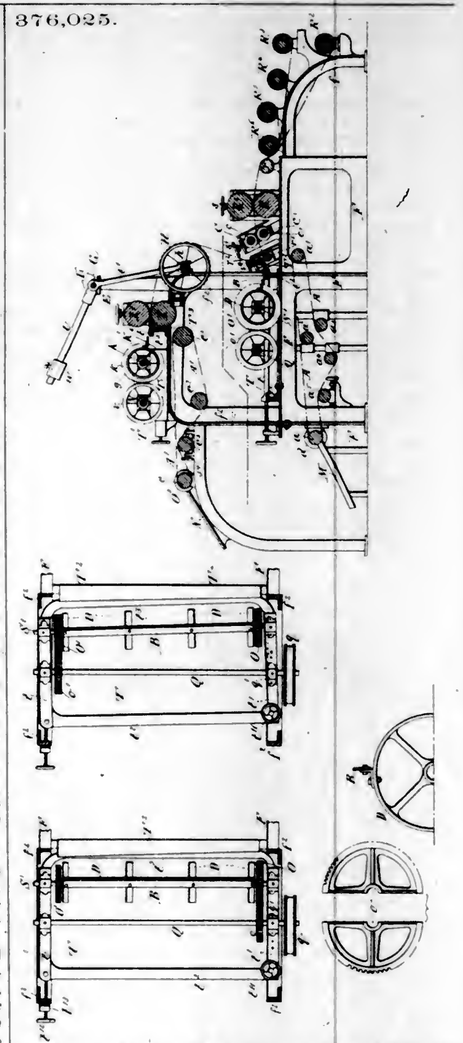
6. The described reservoirs E, having flat bottoms and arched tops, which are provided with series of cup-like projections b^2, corresponding in form and position with the described series of ice-pipes, and which are also provided with supports *i*, the bases *i'* of which are securely fastened to their bottoms, while the upper ends and caps *n* of the supports extend up through the cups b^2, the whole adapted to receive the water from the ice-pipes and to sustain the columns of ice in the same, substantially as described.

7. In combination with the described reservoirs, the waste-pan R, having side and end flanges, and having its bottom elevated about midway of its length, and the ends thereof depressed, and having the channels f^3, leading to holes f^4, near each end of the bottom, adapted to conduct off the water from the reservoirs, substantially as described.

8. In a refrigerator-car, a refrigerating apparatus consisting of refrigerating-chambers at each end, formed in part by division-doors extending across the car, a series of cooling-pipes in said chambers, reservoirs below and communicating with each series of cooling-pipes, air-tubes extending upward from each reservoir, and an upwardly-inclined perforated pipe communicating with said air-tubes for conveying cold air through the body of the car and carrying off the water of condensation, substantially as described.

376,025. PAPER-CUTTING MACHINE. GUSTAVE BROUSSIER, Paris, France. Filed Dec. 20, 1883. Serial No. 115,168. (No model.) Patented in France Dec. 20, 1881, No. 146,443; in Germany May 1, 1882, No. 21,713; in England May 1, 1882, No. 2,059; in Spain May 1, 1882, No. 3,156; in Italy May 6, 1882, XVI, 14,170; in Sweden May 6, 1882; in Austria-Hungary May 9, 1882, No. 16,223 and No. 26,671, and in Norway May 27, 1882.

376,025.



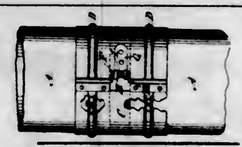
Claim.—1. A paper-cutting machine comprising a set of circular cutters for cutting the webs of paper longitudinally, a cross-cutter to which a portion of the longitudinally-cut webs of paper are fed and by which they are cut transversely, a second cross-cutter for cutting transversely the remaining webs of paper, and a delivery apron and table for each of said cross-cutters.

2. The combination, with the frame T, arranged to revolve on a pivot, *t''*, said frame carrying a cutter-bar, t^3, the cutter-shaft S', the cutter-disks D, mounted thereon, one or more cutter-blades secured to said disks and co-operating with the stationary cutter-bar t^3, and the spur-wheels O and O' on said shaft, of the shaft Q, having its bearings adjustable on the frame T, the spur-wheels *o* and *o'* for said shaft, and the driving-pulley *q*, said parts being arranged substantially as and for the purpose specified.

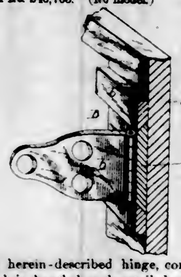
376,026. STOVE-PIPE COUPLING. ANGUS CAMPBELL, Powassan, assignor of one-half to Gilbert McEachern, Toronto, Ontario, Canada. Filed July 9, 1887. Serial No. 243,856. (No model.)

Claim.—A stove-pipe coupling consisting of a band provided with two longitudinal parallel swages and having a slot at one end crossed by a bar and at the other end a catch having notched jaws connected by a fulcrum-bar, whereby the band can be drawn around a stove-pipe joint by a lever and the ends locked together, as set forth.

376,026.

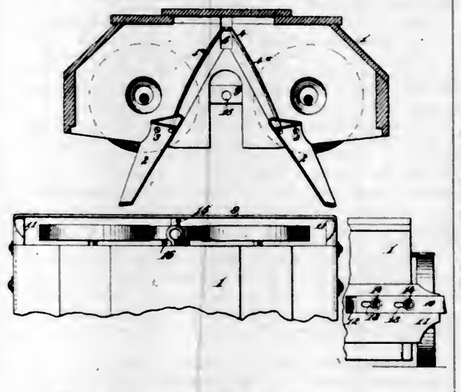


376,027. HINGE. ALBERT CLAYPOOL, Toledo, Ohio. Filed Aug 11, 1887. Serial No. 246,703. (No model.)



Claim.—The herein-described hinge, comprising the pivoted leaves, one of which is beveled or dovetailed on its side edges, and the longitudinal beveled or dovetailed guideways in which the dovetailed leaf fits and is adapted to slide laterally, for the purpose set forth, substantially as described.

376,028. CARPET-SWEEPER. WALTER J. DREW, Grand Rapids, Mich., assignor to The Bissell Carpet Sweeper Company, same place. Filed Mar. 19, 1887. Serial No. 231,534. (Model.)



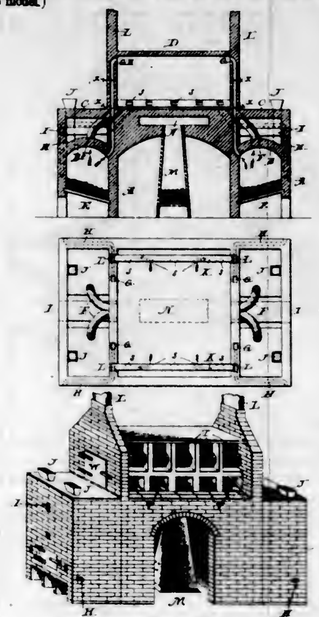
Claim.—1. In a carpet-sweeper, the combination, with a casing and the pivotally-mounted dust-pans, of a vertically-sliding single piece of spring-wire formed with divergent arms connected, respectively, at their ends under tension to said pans, and provided with a hand-hold extending through the casing, whereby said wire may be moved up or down to open and close the pans, substantially as described.

2. In a carpet-sweeper, the combination, with the casing having a slot or opening in its end and provided with pivotally-mounted pans, of a vertically-sliding piece of elastic wire bent upon itself at or about the middle and then outwardly to form a hand-hold projecting from the slot in the casing, the ends of said wire being connected with the ends of the pans under tension, substantially as described.

3. The combination, with a carpet-sweeper case and its brush-shaft, of a rigid bar having a central pintle or bearing to support the end of the brush-shaft, and provided with bent ends engaging the side walls of the sweeper-case and adjustable longitudinally with reference to the case, and adapted by such adjustment to release and permit the removal of the brush-shaft from its bearing, substantially as described.

4. The combination, with a carpet-sweeper case and its brush-shaft, of a rigid bar having a central pintle or bearing and bent ends embracing the side walls and provided with longitudinal slots, and attaching devices passing through the slots to adjust the bent ends longitudinally with reference to the case, and by such adjustment release and permit the removal of the brush-shaft from its bearings, substantially as described.

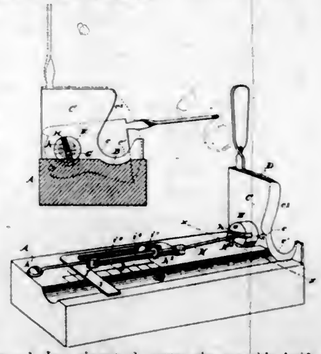
376,029. GLASS-MELTING FURNACE. HENRY DOLLIBER, Meadville, Pa., assignor, by direct and mesne assignments, of two-thirds to Joseph Masson, same place. Filed July 29, 1886. Serial No. 209,484. (No model.)



Claim.—1. In a glass-melting furnace, the combination, with the melting-chamber and producers, of the flues F, leading from the top of the arches of the combustion-chamber and entering the melting-chamber centrally near the floor, the side flues, G, leading from the combustion-chamber through the walls to the upper part of the melting-chamber, and the air-ducts H I, carried through the walls and between the ovens to heat the air, as and for the purpose set forth.

2. In a glass-melting furnace, the combination of a melting-chamber, a hollow chambered metallic floor thereunder, and a centrally-arranged coke-burner opening into the chamber of said floor, as and for the purpose set forth.

376,030. CIGAR-TUCK CUTTER. JAMES E. ELLIS, Red Oak, Iowa, assignor of one-half to L. M. Doctor, same place. Filed May 26, 1887. Serial No. 239,435. (No model.)

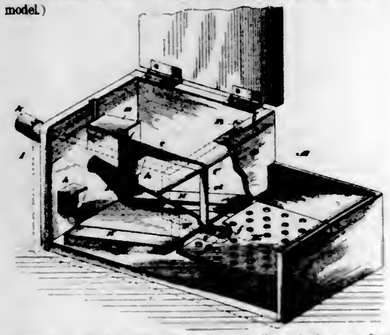


Claim.—1. In a cigar-tuck cutter, the movable knife provided with the cylindrical block E, the said block having the diametrical notch, the torsion-spring H, attached to the top of the block A and having its end bent so as to engage with the notch in the block E, and the stationary blade, all constructed and combined substantially as specified.

2. In a cigar-tuck cutter, the cylindrical block E, attached to the movable cutter and provided with the diametrical notch, the torsion-spring H, attached to the top of the block A, and having one end en-

gaging the block E and the other end attached to the opposite top end of the block A, and the gage-plate arranged on the spring, and the stationary knife, all constructed and combined substantially as specified.

376,031. STOCK-WATERER. GEORGE A. EVERSON and FRANK YOCUM, Pinchford, Iowa. Filed Aug. 4, 1887. Serial No. 246,145. (No model.)



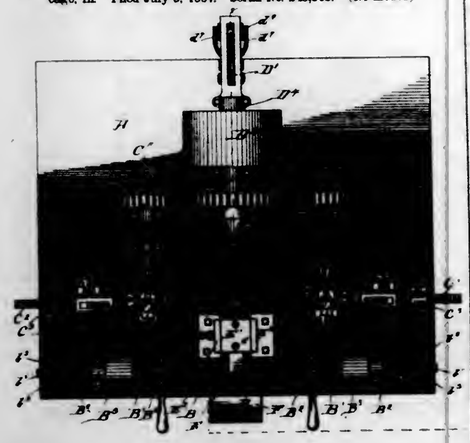
Claim.—1. The combination, substantially as before set forth, of a trough, an elbow-lever pivoted within the trough and having its horizontal arm weighted and its vertical arm provided with a platform, a supply-tank communicating with the trough, a valve to close communication between the tank and trough, and a rod connected at one end to the valve and at its other end to the vertical arm of the lever near the platform.

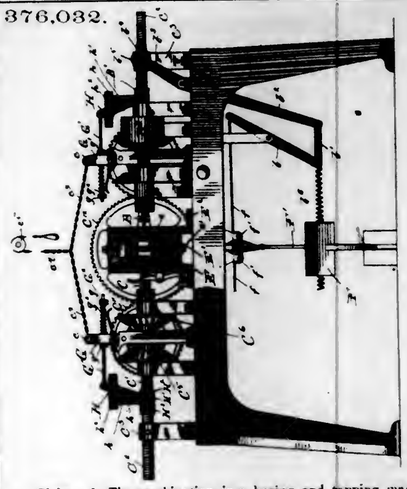
2. In a device for watering live stock, constructed substantially as shown, a weighted lever pivotally secured within the trough and provided with a platform, E, which is pivotally secured thereto, plates H H, pivoted to the aforesaid lever, fixed stops for limiting the movement of the lever in both directions, and a rod carrying a cap, said cap being adapted to slide over one end of a supply-pipe, substantially as shown, and for the purpose set forth.

3. The combination, substantially as before set forth, of a trough provided with a partition, an elbow-lever pivoted in rear of said partition, a weight carried in the horizontal arm of the lever, a platform secured to the vertical arm of the lever to protrude beneath the partition, a supply-tank communicating with the trough, a valve to close said communication, and a rod connected at one end to the valve and at the other end to the vertical arm of the lever.

4. In a device for watering live stock, the combination of a receptacle constructed substantially as shown, a lever pivotally secured within said receptacle and provided with members *c*, *d*, and *e*, a weight carried by one of said members, a platform pivotally secured to the lower member of said lever and adapted to be held in a horizontal position by a pin, *g*, plates H H, rod L, carrying a cap which is adapted to slide over the supply-pipe, and a recess for limiting the downward movement of the weighted end of the lever, and blocks for limiting the upward movement of the plates, the parts being organized substantially as shown, and for the purpose set forth.

376,032. BORING AND TAPPING MACHINE. JOHN GIELOW, Chicago, Ill. Filed July 5, 1887. Serial No. 243,365. (No model.)





Claim.—1. The combination, in a boring and tapping machine of a rotatable clamp-holder, E', furnished with clamps E E, of boring-tools B B and D, tapping-tools C C, the boring-tools B B operating upon an article held in one of said clamps, while the tapping-tools C C and boring-tool D operate upon an article held in the other clamp, substantially as specified.

2. The combination, with a rotatable clamp-holder and clamps mounted thereon, of a boring-tool and a tapping-tool adapted to operate simultaneously, said boring-tool operating upon an article held in one of said clamps, while said tapping-tool operates upon the article held in the other of said clamps, the axis of said clamp-holder being between said boring and tapping tools, substantially as specified.

3. The combination, with a rotatable clamp-holder and two clamps or chucks mounted thereon, of tools B B D, their operating-spindles B' B' D', and mechanism for simultaneously operating said spindles, said tools B B operating upon an article held in one of said clamps, while said tool D operates upon an article held in the other of said clamps, the axis of said revolving clamp-holder being between said tools D and B B, and the spindle D' being transverse to the spindles B' B', substantially as specified.

4. The combination of the standard or frame E², with a revoluble clamp-holder, E', and clamps E E mounted thereon, and provided with registering notches e^6, a registering clutch or pin, e^5, and a pair of revolving spindles or shafts carrying tools at their adjacent ends, between which said revoluble clamp-holder is mounted, substantially as specified.

5. The combination, with a revoluble clamp holder or frame and clamps mounted thereon, of a pair of revolving spindles or shafts carrying tools at their adjacent ends, between which said revoluble clamp-holder is mounted, operating-lever F, lines *f*, pulleys *f''*, levers *b*, links *b'*, levers b^3, and collars b^2 on said spindles, substantially as specified.

6. The combination, with a clamp or chuck of a pair of tapping-tools, C C, carried on shafts C' C', furnished with feed-screws, of a pair of double clutches, C^4 C^4, and clutch-levers *c c*, and a chain or equivalent device connecting said clutch-levers together for simultaneous operation, substantially as specified.

7. The combination, with a clamp or chuck of a pair of tapping-tools, their spindles, feed-screws, and driving and reversing gears, of a pair of clutches, as C^4 C^4, clutch-levers *c c*, chains or equivalent devices for simultaneously moving the clutches to engage the driving-gears, springs for moving the clutch-levers in the opposite direction, pawls and ratchets to hold the clutches in engagement with the gears, and collars or projections on said spindles, adapted to engage said pawls and release the clutch-levers when the tapping operations are finished, and thus reverse the motion of the spindles, substantially as specified.

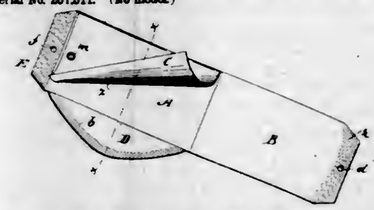
8. The combination, with a clamp or chuck of a pair of tapping-tools, their spindles, feed-screws, and driving and reversing gears, of a pair of clutches, as C^4 C^4, clutch-levers *c c*, chains or equivalent devices for simultaneously moving the clutches to engage the driving-gears, springs for moving the clutch-levers in the opposite direction, pawls and ratchets to hold the clutches in engagement with the gears, and collars or projections on said spindles, adapted to engage said pawls and release the clutch-levers when the tapping operations are finished, and thus reverse the motion of the spindles, and levers and connecting-rods operated by said spindles for moving the clutch-levers and disengaging the clutches from the reversing-gears, substantially as specified.

9. The combination, with a pair of tapping-tools, their shafts or spindles, feed threads or screws, driving and reversing gears, of clutches C^4 C^4, clutch-levers *c c*, ratchet-blocks G G, pivoted to said clutch-levers, sliding rods G' G', pawls G^3 G^3, levers H H, springs g^4 g^4, said spindles being provided with collars or projections to operate said jaws, substantially as specified.

10. The combination, with a revolving spindle, C', carrying a tool, and furnished with feed-screws C^3, and driving and reversing gears C^5 C^5, furnished with clutches C^7 C^8, of double clutch C^4, clutch-lever *c*, ratchet-block G, sliding rod G', pawl G^3, lever H, spring g^4, and collar or projection *g* on said spindle for moving said pawl, substantially as specified.

11. The combination, with a revolving spindle, C', carrying a tool and furnished with feed-screws C^3, and driving and reversing gears C^5 C^5, furnished with clutches C^7 C^8, of double clutch C^4, clutch-lever *c*, ratchet-block G, sliding rod G', pawl G^3, lever H, loose collar H' on said spindle, having arm *h* and guide *h'* for said arm, spring g^4, and collar or projection *g* on said spindle for moving said pawl, substantially as specified.

376,033. TAG. CHARLES H. GURNEY, Waltham, assignor to James B. Fuller, Boston, Mass. Filed Nov. 16, 1885. Renewed Dec. 10, 1887. Serial No. 257,511. (No model.)



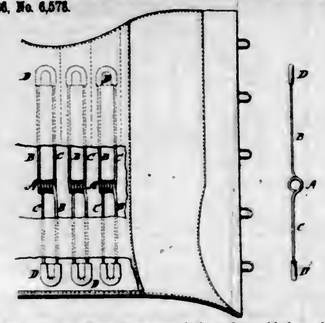
Claim.—A tag envelope consisting of the body A, provided with an eyelet-hole, a folding gummed guard-flap, E, at one end of said body, provided with an eyelet-hole registering with the hole in said body when the flap is folded, the loose flap C, attached to one side of said body and connected therewith near one end by an eyelet, the folding gummed extension-flap B, attached to the opposite end of said body and provided with an eyelet-hole near its outer end, and the sealing gummed flap D, attached to the opposite side of said body, substantially as described.

376,034. FIRE-ESCAPE. OLIVER HUGHES, Callao, Mo. Filed Oct. 11, 1886. Serial No. 215,962. (No model.)



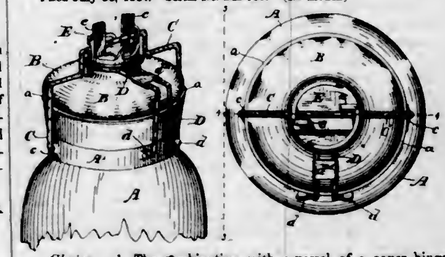
Claim.—The combination, with the bar A, adapted to be secured to the window, and the ropes or cable C, secured to said bar A at their upper ends, of the rungs B, having holes in each end thereof, through which the ropes or cables pass, the blocks D, to keep the ropes or cables out from the wall and having transverse holes to slip over the ends of the rungs B and vertical holes aligning with the holes in the ends of the rungs and through which the ropes or cables also pass, as shown, and the wire wrapping E, holding the rungs B in place upon the ropes or cables, substantially as described.

376,035. CORSET-STAY. EDWARD J. JONES, Richmond, County of Surrey, England. Filed Oct. 10, 1887. Serial No. 251,951. (No model.) Patented in England Mar. 19, 1886, No. 3,889, and May 17, 1886, No. 6,573.



Claim.—A stay for corsets, consisting of two U-shaped wires, one of said U-shaped wires having a spiral twist at its closed extremity and the other U-shaped wire loosely engaging said spiral twist at the said extremity to form a loose hinge, substantially as shown and described.

376,036. COVER-FASTENING FOR VESSELS. JULIUS KARRMANN, Indianapolis, Ind., assignor of one-half to Louis Hollweg, same place. Filed July 30, 1887. Serial No. 245,689. (No model.)



Claim.—1. The combination, with a vessel, of a cover hinged thereto, a bail attached to said vessel and adapted to swing over said cover when in place, and a cam mounted on said bail and arranged to bear against said cover, said bail being distinct from the hinge carrying the cover, substantially as ret forth.

2. The combination, with a fruit-jar or other vessel and its cover, of the bail hinged to a band surrounding the neck of the vessel and extending over the cover, a horizontally-revolnble cam on said bail, the cam-surfaces being in the form of slots, through which said bail passes, whereby said cam will remain attached to said bail, although removed from position on the cover, substantially as set forth.

3. The combination of a vessel, its cover, a bail passing over said cover, a cam between said bail and cover for holding said cover in position, and a hinge securing said cover to said vessel, said hinge being in the form of a wire passing around an upward projection on the top of said cover, said projection being provided with a groove to receive said wire, substantially as shown and described.

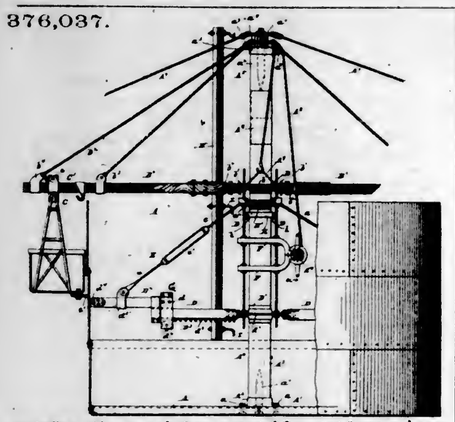
4. The combination of a vessel, its cover provided with a circumferential groove around an upwardly-projecting portion, and a hinge consisting of a wire passing around and entering said groove and held in position by a clip, *d'*, substantially as shown and described.

5. The combination of a vessel, its cover, said cover having an upward projection provided with a groove, and a hinge consisting of a wire passing around and entering said groove and extending down and entering ears *d* on the band on the vessel, the lower ends of the wire forming the hinge being turned outwardly, and being thus held into said ears by the spring force of said wire, substantially as set forth.

376,037. DERRICK. JOSEPH LAUFFMAN, Lebanon, Pa., assignor of one-half to William P. Boger, same place. Filed Aug. 6, 1887. Serial No. 246,265. (No model.)

Claim.—1. In a derrick, the combination of a mast and a frame

376,037.



encircling said mast, a platform supported from said frame, and a carriage upon a beam supported from said frame and projecting said carriage beyond the platform, substantially as described.

2. In a derrick, the combination of a mast, a platform supported from said mast by a beam having adjustable sections, and an adjustable carriage upon a beam supported from said mast and projecting said carriage beyond the platform, substantially as described.

3. The combination of a mast and a frame encircling said mast and vertically adjustable thereon, a platform supported from said frame, and a carriage upon a beam supported from said frame and projecting said carriage beyond the platform, substantially as described.

4. The combination of a mast and a frame encircling said mast and vertically adjustable thereon, a platform supported from said frame, and a carriage upon a beam supported from said frame, and a cable passing over a pulley on said mast and secured by one end to said frame and by the other to a drum secured to said frame, substantially as described.

5. In a derrick, the combination of a mast and frame on said mast, longitudinally-adjustable platform-arms secured by one end to said frame, and an adjustable brace-rod secured by one end to the frame and by the other end to the outer section of the adjustable arm, substantially as described.

6. In a derrick, the combination of a mast, a frame encircling said mast and having a collar, the buggy-arms secured by their inner ends to said collar and having on their inner ends wheels which bear on the periphery of said collar, and a carriage on their outer ends, and a cable connecting their outer ends with the top of the mast, for the purpose set forth.

376,038. **HORSE-BOOT.** MATTHEW W. LYNCH, Madison, Wis., assignor to Dexter Curtis, same place. Filed Nov. 5, 1887. Serial No. 254,390. (No model.)

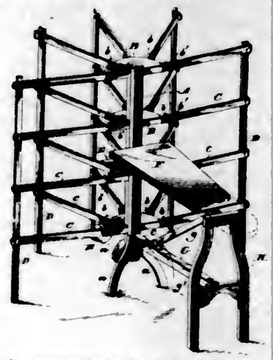


Claim.—1. In the herein-described horse-boot, the combination, with the body or protecting portion and straps for securing the same in position, of a stiffening-piece secured to one of said straps beneath a series of holes therein, and a hook on the other strap for engaging said holes, substantially as described.

2. In the herein-described horse-boot, the combination, with the body or protecting portion and straps for securing the same in position, of a grooved stiffening-piece secured to one of said straps beneath a series of holes therein, and a hook on the other strap for engaging said holes, the end of the hook lying in the said groove when so engaged, substantially as described.

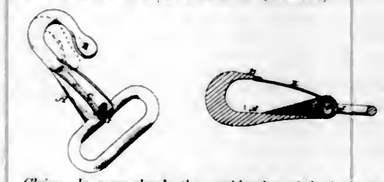
3. In the herein-described horse-boot, the combination, with the body or protecting portion and straps for securing the same in position, of a series of holes in one of said straps, having a piece of metal beneath the same, and a hook on the other strap, having its end turned slightly outward, whereby the bend of said hook is caused to abut against the wall of the hole with which it is in engagement and prevent its accidental release, substantially as described.

376,039. **COMBINED CLOTHES-RACK AND IRONING-BOARD.** AUGUSTUS C. MILLARD, Coudersport, Pa., assignor to Albert A. Allen same place. Filed Sept. 23, 1886. Serial No. 214,336. (No model.)



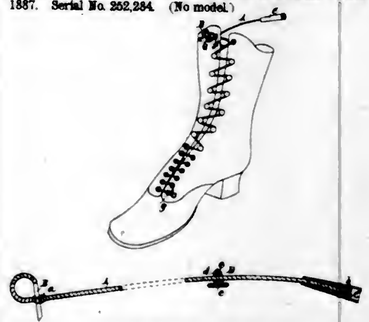
Claim.—In combination with a folding clothes-rack having a vertically-supported central bar, A, substantially as shown, a transverse bracket, E, attached to the standard and provided with hinges for attaching an ironing-board thereto, so as to fold upwardly and rest upon the upper edge of the bracket, a bar, G, pivotally attached to the central bar, a brace-rod, *g*, pivoted to the bar G near its inner end, a support, H, connected pivotally to the bar G and detachably to the rod *g*, the parts being organized so that the ironing-board may be raised when the support H is in a vertical position without raising said support and so that the board and support may be folded parallel with the standard, substantially as and for the purpose set forth.

376,040. **SNAP-HOOK.** GEORGE D. MOSHER, Birmingham, Conn. Filed Oct. 24, 1887. Serial No. 253,242. (No model.)



Claim.—In a snap-hook, the combination of the body A, having the recess C formed therein, and lateral projections extending from the side or sides of the recess, with the bent spring H, which is placed in the recess and held in position by having its bent portion confined between the projections, substantially as shown.

376,041. **SHOE-LACE FASTENER.** ADNA C. MURDOCK, Dedham, assignor of one-half to Joseph H. Beale, Boston, Mass. Filed Oct. 13, 1887. Serial No. 252,284. (No model.)

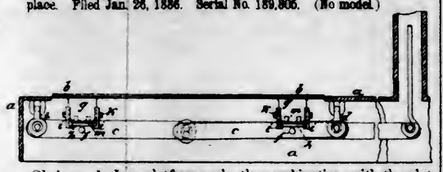


Claim.—1. The combination of a string, A, guard B, fastened to the string at one end thereof, and holdfast D, having a head, *c*, and shank *d*, provided with a hole transverse to the shank, substantially as and for the purposes set forth.

2. The combination of a string, A, a finger-piece, C, fixed to the string at one end thereof, a guard, B, adapted to operate as a cross-bar, fixed at the other end of the string, and a holdfast, D, which may

by lying partly within a loop of the string at an eyelet of a boot or shoe bind the string, substantially as specified.

376,042. **PLATFORM WEIGHING-SCALE.** HAMLIN PADDOCK, St. Johnsbury, Vt., assignor to the E. & T. Fairbanks & Company, same place. Filed Jan. 26, 1886. Serial No. 189,805. (No model.)



Claim.—1. In a platform-scale, the combination, with the platform and the underlying levers and lever-pivots, of a self-adjusting bearing between the platform and lever-pivots made of hardened steel in the form of a semi-cylindrical bar, substantially as set forth.

2. In a platform-scale, the combination, with the platform and the underlying levers and lever-pivots, of half-round or semi-cylindrical hardened bearings introduced between the platform and the lever-pivots, arranged transverse to the pivot with their flat side resting on the pivots and their convex side toward the platform and free to rock and adapt themselves to the position of the pivots, substantially as herein shown and described.

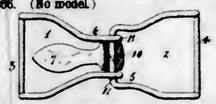
3. In a platform-scale, the combination, with the main levers and lever-pivots and the overlying platform provided with the feet *g*, of the rocking self-adjusting bearings *h h*, interposed between the feet and the knife-edge pivots, and means for holding said bearings at each end on the feet so that the bearings are free to rock, substantially as and for the purpose set forth.

4. In a platform-scale, the combination of the main levers and the overlying platform having the feet *g* with the rocking bearings *h h* and the removable socket-caps *i i*, substantially as shown and described.

5. The combination, with the main levers and the platform *b*, of the feet *g*, having sockets in the base thereof, rocking bearings *h*, placed under said feet, and springs *m*, arranged in and protruding from said sockets against said bearings, substantially as shown and described.

6. The combination, in a platform-scale, of the platform *b*, having feet *g*, with the caps *i i*, the cushion-springs *m m*, and self-adjusting bearings *h h*, arranged and operating substantially as shown and described.

376,043. **JAR-FASTENER.** JOHN W. RAMSEY, Beaver Falls, Pa., assignor of one-half to John Corbus, same place. Filed June 23, 1887. Serial No. 242,266. (No model.)



Claim.—In a jar-fastener, the combination of two oppositely-arranged double wire clamps pivoted at their inner ends, one of said clamps having its ends bent inwardly and extended across the clamp to form a pintle upon which the clamps are pivoted, and a clamping cam-lever pivoted centrally upon the pintle, substantially as and for the purposes herein described.

376,044. **GRAIN SCALE AND REGISTER.** LESTER REYNOLDS, Yreka, Cal., assignor of one-half to Francis Riley, same place. Filed July 25, 1887. Serial No. 245,207. (No model.)



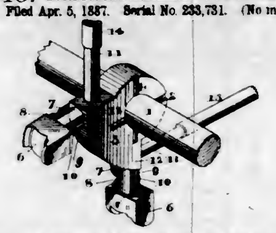
Claim.—1. The combination, with an oscillating grain-holding bin having an outstanding arm, of a scale mechanism for engaging the arm of the bin, composed of a horizontal scale-beam, F, having arms *f f*, the hook-headed bar G, pivoted to beam F, and the lever-bar H, pivoted to bar G and actuated by the arms *f* upon the lifting of beam F to cause the disengagement of bar G and the arm of the bin, as described

2. The combination, with a suitable supporting-casing, of an oscillating bin, B, having hoppers *b b'*, mounted on a transverse shaft, D, arms *d d* on opposite sides of said bin playing through openings in the sides of the casing, and scale mechanisms on each side of the bin adapted to automatically engage and release the bin as it oscillates, each composed of the scale-beams F, having arms *f f*, spring-controlled hook-bar G, and pivoted lever-bar H, all constructed and operating as described.

3. The combination of the oscillating bin B, having vertical partition b^2 and inclined bottoms b^3, mounted on a transverse shaft, and a hopper, *a*, adapted to deliver grain to the bin, with the scale mechanisms composed of beams F, rods G, and levers H and their connections, and the registering mechanisms composed of wheels I, J, and K and their connections operated by the oscillations of the bin, all constructed, arranged, and operating substantially for the purpose set forth.

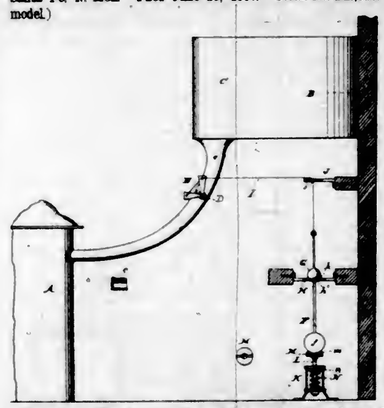
4. The combination of casing A, having hopper *a* and chute C, the oscillating bin B, having hoppers *b b'*, the pieces B', secured to the casing and closing the mouths of the hoppers *b b'*, and the arms *d d*, with the scale mechanisms inclosed in frames E E on the sides of the casing, and each composed of beams F, having arms *f f*, rod G, having head *g'* for engaging the arms *d*, and lever H, pivoted to rods G and controlled by arms *f*, the springs f^4, and pieces *f* and f^3, and the registering mechanism composed of wheels I, J, and K and their index arms and dials, and the actuating-pawl L on the bin and brake M, all constructed, arranged, and operating substantially as described.

376,045. **BURNISHING-MACHINE.** HENRY F. ROONEY, Randolph, Mass. Filed Apr. 5, 1887. Serial No. 233,731. (No model.)



Claim.—In a machine for burnishing the edges of the soles and heels of boots and shoes, the combination of a holder, 2, having a hollow segmental portion projecting from one side, the ends of which form shoulders, said portion extending slightly more than one-fourth of the surface of the central portion or sleeve of said holder, and having studs 5 projecting radially at right angles to each other, burnishing-tools secured upon said studs, and short pipes or nipples 11 through said shoulders, and flexible tubes secured to the nipples for admitting and exhausting steam from their interior, substantially as and for the purpose shown and set forth.

376,046. **AUTOMATIC FIRE-EXTINGUISHER FOR RAILROAD-COACHES.** A. CARSON RUMBLE, JOHN SYMINGTON, and NORTON STRONG, Santa Fé, N. Mex. Filed June 25, 1887. Serial No. 242,526. (No model.)



Claim.—1. The combination of the tank situated at a higher level than the stove, the pipe connecting the bottom of tank and the stove, the oscillatory valve having its diametrical rod journaled at both ends in the wall of said pipe, so as to close the pipe when the valve is in its normal position, the pendulum provided with a ball or

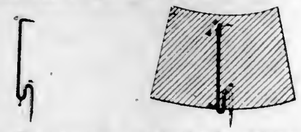
sphere at a suitable point in its length, the bracket having a circular opening that forms, with said sphere, a ball-and-socket joint, the angular lever on the extended end of the valve-rod outside the connecting-pipe, and the wire or rope connecting the end of the arm of the pendulum above the ball-and-socket joint with the angle-lever and acting on the end of the vertical arm thereof, substantially as specified.

2. The combination, with the tank above the level of the store, the connecting-pipe, the oscillatory valve having its diametrical rod journaled at both ends in the wall of the pipe, and the angle-lever on the extended end of said rod outside the pipe, of the pendulum, the ball-and-socket joint formed by the sphere G and the opening in the bracket *h*, the bracket J, secured at one end to a proper support above the pendulum, and the wire or rope secured to the top of the pendulum, passing thence through an opening in the bracket J, and having its other end so secured to the angle-lever as to act on the end of the vertical arm thereof, substantially as specified.

3. The combination, with a pendulum turning on a ball-and-socket joint, having a conical point at the lowest part of its bob, the lever, valve, and connecting-wire, of the plate having a recess to receive said point, the bar carrying said plate and pivoted in a suitable frame, and the spring forcing said bar upward and engaging the recess and conical point, substantially as specified.

4. The combination, with the pendulum having a conical point at the lower end of its bob, the ball-and-socket joint on which said pendulum turns, the oscillatory valve, and the angle-lever on the extended end of said valve-rod, of the plate having a recess to receive said point, the bar carrying said plate and supported by a suitable frame, and the spring forcing said bar upward and engaging the recess and conical point, substantially as specified.

376,047. PIN FOR NECK-WEAR. GEORGE SCHRADE, New York, N. Y., assignor to M. E. Thayer and Dela Thayer, same place. Filed June 19, 1886. Serial No. 205,644. (No model.)

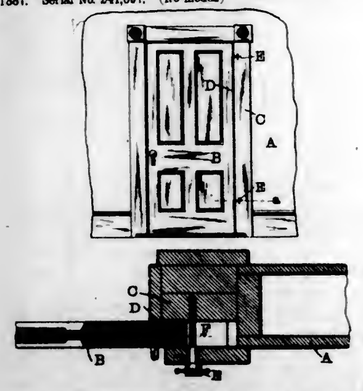


Claim.—1. The combination of a shield and a retaining-pin having a point, a loop next said point which opens toward it, a second loop beyond the first and opening away from the point, and a body extending from said second loop, said point-loops and body being in substantially the same plane, all as and for the purpose specified.

2. The combination of a shield and a retaining-pin having a point, a loop next said point and opening toward it, a second loop beyond the first and opening away from the point, and a securing device, substantially as specified.

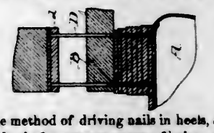
3. The combination of a shield and a retaining-pin having a point, a loop next said point and opening toward it, and a second loop beyond the first and opening away from it, all substantially in the same plane, and the attaching body portion, substantially as and for the purpose specified.

376,048. DOOR. LEWIS T. SHEPHERD, College Corner, Ohio, assignor of three-fourths to Riley E. Miller, William M. Taylor, Howard L. Young, and William H. Shepherd, all of same place. Filed June 13, 1887. Serial No. 241,097. (No model.)



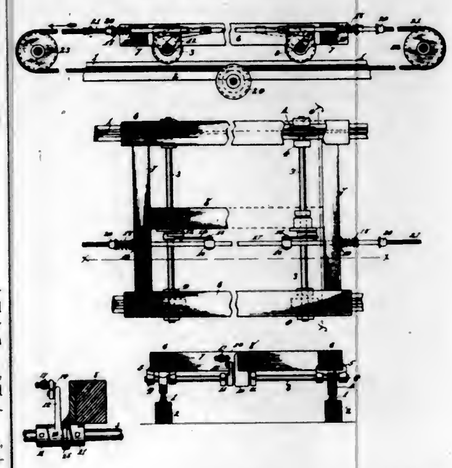
Claim.—The combination, substantially as set forth, of a wall provided with a door-opening, a door-post thereat, a finish-board set at a distance therefrom, so as to leave a groove between said post and board, a hinge-piece, D, fitting said groove and provided with transverse slots F, a door hinged to said hinge-piece, and screws E, engaging the said finish-board and door-post and passing through said transverse slots, and adapted to serve in clamping said hinge-piece between said post and board.

376,049. METHOD OF ATTACHING HEELS TO BOOTS OR SHOES. CHESTER C. SMALL, Malden, assignor to Freeborn F. Raymond, 2d, Newton, Mass. Filed Apr. 19, 1887. Serial No. 235,318. (No model.)



Claim.—The method of driving nails in heels, &c., comprising the formation in the heel of a gang or group of holes; second, in supplying said holes with nails, and, third, in driving said nails into said heel by the same implements used in forming the holes, substantially as described.

376,050. SAW-MILL CARRIAGE. SAMUEL R. SMITH, Cincinnati, Ohio, assignor to Smith, Myers & Schnier, same place. Filed Nov. 9, 1886. Serial No. 218,408. (No model.)



Claim.—1. The combination, with a saw-carriage and its axles of an endless driving-rope for moving the carriage back and forth, the screw-and-nut mechanism on the axle, the shifting-rod, and the crank-arm connected therewith and with the screw-and-nut mechanism, substantially as described.

2. The combination of a saw-mill carriage mounted upon axles by moving bearings rigidly secured to the frame-work of the carriage, of the driving-rope, the shifting-rod, the spring attached to the rope and rod, the slidable collar, the screw-and-nut mechanism on the axle, and the crank-arm connected with the shifting-rod and the screw-and-nut mechanism, substantially as described.

3. The combination, with a saw-mill carriage and its axles, of the endless carrier, the shifting-rod, the screw-and-nut mechanism on the axle, connections between the shifting-rod and the screw-and-nut mechanism, and the adjustable collars 11 on the axle for taking up lost motion, substantially as described.

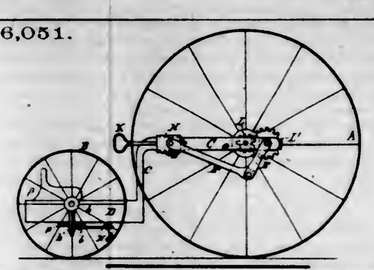
4. The combination, with a laterally-movable saw-mill carriage, the driving-rope, the shifting-rod, a laterally-moving power device on the axle, the crank-arm 12, and a connection between said crank-arm and shifting-rod, substantially as described.

376,051. VELOCIPEDE. ROBERT STEEL, Philadelphia, Pa., assignor of three-fourths to Henry T. Spring, Augustus Boas Swartz, and Charles A. Spring, all of same place. Filed Sept. 12, 1887. Serial No. 249,525. (No model.)

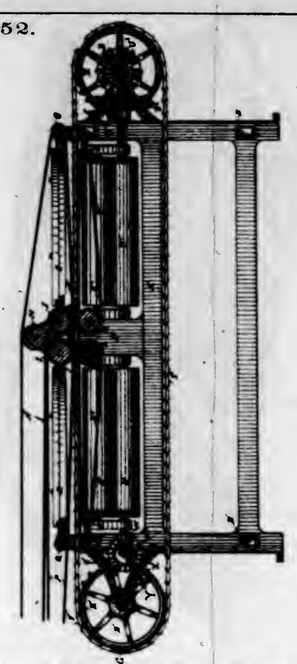
Claim.—1. The combination of the sliding cross-heads H, having grip-handles K, with the connecting-rods E, cranks E', frame C, and gear-wheels L L', in the manner and for the purpose herein shown and described.

2. The combination of the sliding cross-heads H, provided with grips K, rods E, cranks E', frame C, and wheels L L', interchangeable by means of the cranks E', to effect rotary propulsion at the desired speed or power of action, as herein shown and described.

376,051.



376,052.



376,052. COMBINED PAPER CUTTING AND FOLDING MACHINE. JOHN H. STONEMETZ, Erie, Pa., assignor to the Stonemetz Printer's Machinery Company, Millbury, Mass. Filed Jan. 2, 1886. Serial No. 187,369. (No model.)

Claim.—1. The combination, in a paper-folding machine, of a sheet-receiving roller and folding-rollers parallel thereto, with sheet folding and cutting blades passing between the folding-rolls, substantially as and for the purpose set forth.

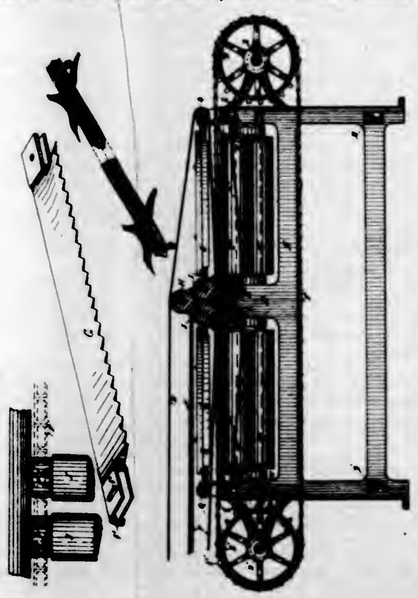
2. The combination, in a paper-folding machine, of a sheet-receiving roller and folding-rollers parallel thereto, one of said folding-rolls having yielding bearings, with a traveling sheet folding and cutting blade adapted to operate between the said folding-rollers, substantially as and for the purpose set forth.

3. The combination, in a paper-folding machine, of a sheet-receiving roller and folding-rollers parallel thereto, and sheet-conveying tapes for conveying sheets thereto, with sheet folding and cutting blades traveling between said folding-rollers in one direction and back under them in the other, substantially as and for the purpose set forth.

4. The combination, in a paper-folding machine, of a sheet-receiving roller and carrier-tapes adapted to convey sheets thereto, and folding-rollers parallel to said receiving-rollers, with a folding and cutting blade traveling between said folding-rollers and carrier-tapes, folding-blades, and folding-rolls adapted to receive a doubled and cut sheet from the first folding-rollers and fold the same, substantially as set forth.

5. The combination, in a paper-folding machine, of two complete sets of folding-roll and folding-blade mechanism, one set at each end of the machine, with rollers J L and I K, arranged across the central portion of the machine, and sprocket-chains carrying a sheet-deflector and traveling back and forth between chain-spools at the ends of the rollers J L and I K, substantially as and for the purpose set forth.

6. The combination, in a paper-folding machine, of the cross-rollers H, J, I, and K, and the chain-spools I', J', L', and K', with the sprocket-chains F F', the blades G thereon, the folding-rolls T T U', the folding-blades S and S', and the carrier-tapes N, P, and K², all substantially as and for the purpose set forth.



7. The combination, in a paper-folding machine, with the cross-rollers H I K and J L, the chain-spools I', J', K', and L', and the sprocket-chains F F', of the deflector, Fig. 10, the folding-rolls T T U and folding-blades R and R', and the folding-rolls T T U' and folding-blades S S', substantially as and for the purpose set forth.

8. The combination, in a paper-folding machine, of two complete sets of sheet-conveyer tapes, folding-blades, and folding-rolls, and a series of rollers provided with conveyer-tapes located between the two folding mechanisms, with endless sprocket-chains operating between loose chain-spools on the ends of said series of rollers and over sprocket-wheels at either end of the machine, and a folding and cutting blade, and a detachable vibratory sheet-deflector adapted to be attached to said sprocket-chains between said rollers, the machine being thereby adapted for either cutting and folding a double sheet or for folding two single sheets at the same time, substantially as set forth.

376,053. WEB-PRINTING MACHINE. JOHN H. STONEMETZ, Erie, Pa., assignor to the Stonemetz Printer's Machinery Company, Millbury, Mass. Filed July 30, 1886. Serial No. 209,575. (No model.)

Claim.—1. The combination, in a printing-machine, of two stationary type-beds located substantially in the same horizontal plane, with traveling impression-cylinders operating thereon, substantially as and for the purpose set forth.

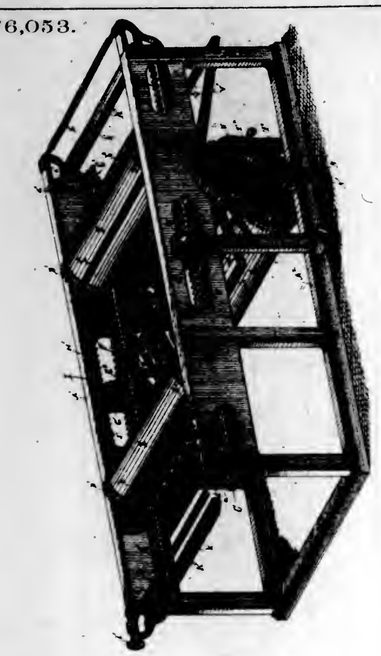
2. The combination, in a printing-machine, of stationary type-beds located on substantially the same plane, and traveling impression-cylinders and inking-rollers, with web-carrying rollers adapted to present one side of a web of paper to one type-bed and the other side of the web to the other type-bed, substantially as and for the purpose set forth.

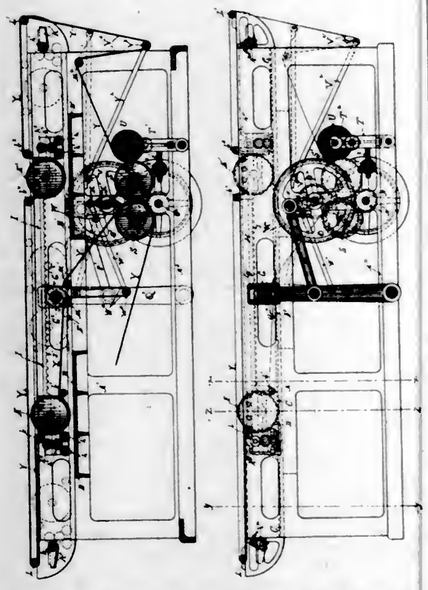
3. In a printing-machine, the combination of stationary type-beds located on substantially the same horizontal plane, with an impression-cylinder carriage adapted to travel back and forth over said type-beds and carry impression-cylinders and inking-rollers thereon adapted to operate both forward and back on type-forms placed on said stationary beds, substantially as and for the purpose set forth.

4. In a printing-machine, the combination of two stationary type-form beds secured to the frame of the machine on substantially the same horizontal plane, with a traveling carriage carrying an impression-cylinder and inking-rollers for each of said type-beds, and means, substantially as shown, for operating said cylinder-carriage so as to move each of said impression-cylinders back and forth over its own type-bed, substantially as and for the purpose set forth.

5. In a printing-machine, the combination of two stationary type-

376,053.





beds located on the same horizontal plane, and a traveling carriage carrying an impression-cylinder and inking-rollers for each of said beds, operating on said beds in their forward and backward movements, with means, substantially as described, for moving said carriage back and forth over said beds, and rollers adapted to convey a web of paper through said machine, whereby one side of the web may be printed on forms placed on one of said beds and the other side of the web on forms placed on the other of said beds, substantially as and for the purpose set forth.

6. The combination, in a printing-machine, of side frames supporting stationary type-beds located on substantially the same horizontal plane, rack-gears on said side frames at the sides of said type-beds, and ink-fountains between the ends of said side frames, with a carriage conveying impression-cylinders having spur-gears on the ends thereof, operating in said rack-gears on the frames back and forth over said type-beds, so as to print at both their forward and backward movements, and inking-rollers traveling back and forth over said type-beds and taking their ink-supply from the fountains at the ends of the press-frames, substantially as and for the purpose set forth.

7. The combination, in a printing-machine, of stationary type-beds secured to the frame of the machine, and a traveling carriage carrying impression-cylinders and inking-rollers and web-carrying rollers thereon, a vertically-moving roller for taking up the slack of the web as it is unwound from the web-roll, and a vertically-moving roller for drawing the web forward, substantially as and for the purpose set forth.

8. The combination, in a printing-machine, of stationary type-beds and a traveling carriage conveying impression-cylinders and inking-rollers back and forth over said beds, with web-carrying rollers on said traveling carriage, stationary and adjustable web-carrying rollers on the frame-work of the machine, and means, substantially as described, for intermittently drawing the web forward, substantially as and for the purpose set forth.

9. The combination, in a traveling cylinder-carriage for a printing-machine, of horizontal side frames carrying impression-cylinders and provided with friction pressure-rollers, and also with rack-gears on the under edges of said frames, with corresponding rack-gears on the frame of the machine, spur-gears operating between the rack-gears on the carriage and the rack-gears on the frame, and levers in which said spur-gears are journaled, adapted to move said spur-gears back and forth, substantially as and for the purpose set forth.

10. In a printing-machine, the combination, with stationary type-beds located on substantially the same horizontal plane on the frame of the machine, and traveling impression-cylinders and inking-rollers adapted to travel back and forth over said type-beds and take impressions both ways, of web-carrying rollers on the frame of the machine, web-carrying rollers connected with the traveling impression-cylinder carriage, and means, substantially as shown and described, for taking up the slack of the web as it runs off of the web-roll while the impression-cylinders are passing over the type-beds, and means, substantially as shown and described, for drawing the web forward when the impression-cylinders are off of the type-forms, substantially as and for the purpose set forth.

11. The combination, in a printing-machine, of a traveling impression-cylinder carriage having rack-gears on the side frames thereof, rack-gears on the frame of the machine, spur-gears operating between the rack-gears on the carriage and the rack-gears on the frame, having their bearings in vertical levers mounted on the machine-frame, and crank-wheels connected to and operating said vertical levers, substantially as and for the purpose set forth.

12. The combination, in a printing-machine, of the side frames, A A′, the stationary type-beds B B′, with the traveling cylinder-carriage I, carrying the impression-cylinders E E, which operate both forward and backward on said type-beds, substantially as and for the purpose set forth.

13. The combination, in a printing-machine, of the cylinder-carriage I, having rack-gears J J′ thereon, with the rack-gears F F′ on the frame, the spur-pinions G G′, and the crank-wheels O O′, substantially as and for the purpose set forth.

14. The combination, in the cylinder-carriage I, of the side frames, H H′, and the impression-cylinders E E′, with the web-carrying rollers b b' b^3 b^3, mounted therein, substantially as and for the purpose set forth.

15. The combination, in the cylinder-carriage I, with the side frames, H H′, and the impression-cylinders E E′, mounted in the said carriage on the same horizontal plane, of the inking-rollers h h' h^2 h^3 and web-carrying mechanism, substantially as and for the purpose set forth.

16. The combination, in the cylinder-carriage I, of the side frames, H H′, provided with rack-gears J J′, the impression-cylinders E E′, provided with spur-gears D D′, intermeshing with the rack-gear C C′, the inking-rollers h h' h^2 h^3, and the web-carrying rollers b, b^4, b^5, b', b^3, b^6, b^7, and b^3, substantially as and for the purpose set forth.

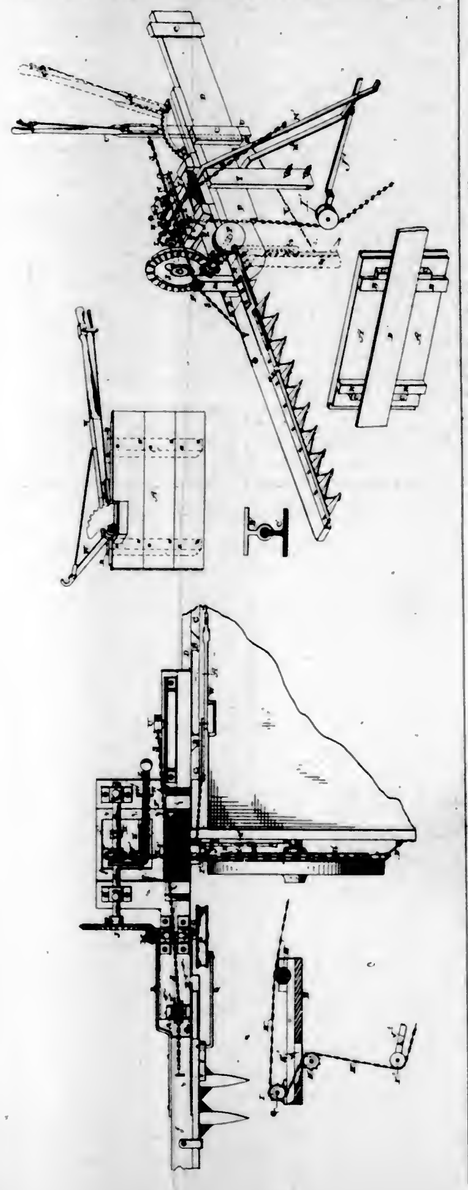
17. The combination, in a printing-machine, of the web-supporting rollers M M′ and the vertically-moving roller W^3, supported upon the arm W′ W^2, with the cutting-cylinders S S′, substantially as and for the purpose set forth.

18. The combination, in a printing-machine, of the main driving-shaft N and its spur-gears N′ N^2, the crank-wheels O O′, pitmen P P′, levers Q Q′, and shaft G^3, having thereon spur-gears G G′, intermeshing with the rack-gears J F and J′ F′, substantially as and for the purpose set forth.

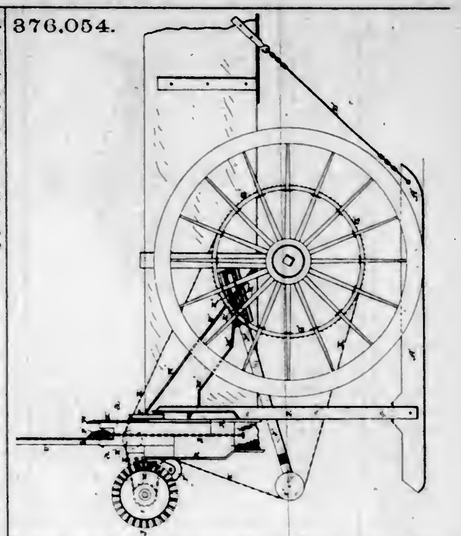
376,054. HEDGE-TRIMMER. CLINTON T. SWARTS, El Paso, Ill. Filed May 18, 1887. Serial No. 238,660. (No model.)

Claim.—1. In a hedge-trimmer, the combination, with the bed of a wagon provided with a tail-board, and vertical guides or cleats secured thereto, of the frame-work which supports the operating parts, and which is also provided with vertical cleats or guides, a lever which is journaled upon the tail-board, a chain connected thereto, a runner, and an upright, Z, connected to both the frame and the runner, whereby the operating parts can be raised and lowered, substantially as shown.

2. The combination of the frame-work upon which the operating parts are placed, the lever U, having the chain fastened to it above its pivot, and the rod V, fastened to it below its pivot, the finger-bar, and the shaft O, upon which the finger-bar is journaled, whereby the



376,054.



finger-bar can be held and operated in any desired position, substantially as set forth.

3. The combination of the wagon-wheel, the wheel G′, secured thereto, the operating-chain which passes around the pulleys of the operating mechanism, the rod J′, carrying the tension-pulley I′ and a roller, L′, the rod M′ for bearing against the roller, and the guides K′, in which the rod J′ moves, substantially as specified.

376,055. BUCKLE OR CLASP. IRA G. W. HOPKINS and HENRY H. CUMMINGS, Malden, Mass. Filed June 22, 1887. Serial No. 242,176. (No model.)



Claim.—The combination of lever B and its lugs E E with looped bracket A and its grooves F F, and designed to operate in connection with notched or corrugated tongue C, substantially as described.

REISSUES.

10,892. MACHINE FOR BORING, DRILLING, DRIVING, AND WITHDRAWING SCREWS, &c. MICAJAH C. HENLEY, Richmond, Ind. Filed Dec. 9, 1887. Serial No. 257,464. Original No. 371,196, dated Oct. 11, 1887.

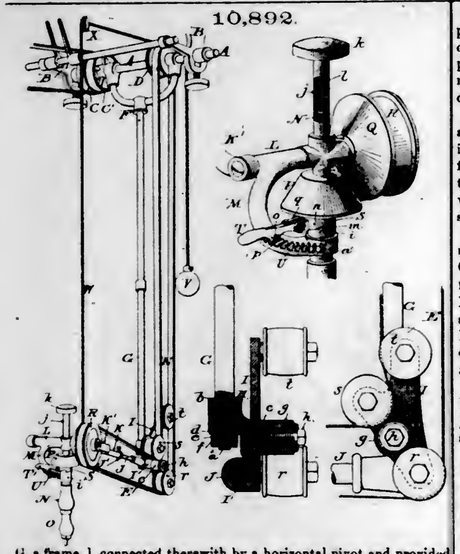
Claim.—1. The herein-described apparatus for boring, drilling, &c., consisting of shaft A, pulley D, carried by said shaft, rod G, suspended from said shaft, block H, swiveled to said rod, frame I, pivoted to block H, rod J, attached to and extending from said frame, collar J′, sleeve K, encircling said rod and formed with yoke K′, frame M, suspended in said yoke, friction-wheel Q and band-wheel R, carried by said frame, tool stock or spindle N, swiveled in frame M, spring case or shell j, spring l, placed within shell j and bearing upon the tool stock or spindle, friction-wheel P, secured upon said tool stock or spindle, pulleys r s t, carried by frame I, and belt E, passing around pulleys D, r, s, t, and R, all substantially as described and shown.

2. In a boring and drilling apparatus, the combination, with a suspending-rod, of a tool holder or stock and a supporting-frame therefor swiveled to the suspending-rod and adapted to swing or move in a horizontal plane.

3. In a device for boring, drilling, &c., the combination of a shaft, a yoke loosely hung upon said shaft, a rod extending downward from said yoke, a block swiveled to the rod, a tool-stock, and a supporting-frame for said tool-stock connected to said block by a horizontal pivot, whereby the tool-stock and its supporting-frame are enabled to move both vertically and horizontally in relation to the vertical rod.

4. The combination, substantially as set forth, of suspending-rod

10,892.



G, a frame, I, connected therewith by a horizontal pivot and provided with pulleys *r s t*, rod J, projecting from frame I, a tool-stock and supporting-frame carried by said rod, and a belt passing over pulleys *r s t* and the driving wheels or gears of the tool-stock, substantially as described and shown, whereby the rollers *r s t* are caused to maintain a uniform tension of the driving-belt under varying adjustments of the tool-stock.

5. In combination with a supporting-frame, cross-arm L, wheel or gear Q, tool stock or spindle N, wheel or gear P, carried thereby, spring *l*, bearing upon said spindle and tending to hold the wheels or gears apart, and collar S, provided with inclines *n*, to bear against the supporting-frame of the tool stock or spindle, and with a plane face to bear against a shoulder of the wheel or gear P.

6. In combination with spindle or tool-stock N, provided with pulley P, a pulley, Q, for imparting motion to the pulley P, and a collar or block having an inclined face and bearing at one side against pulley P and at the other side against a fixed support, whereby movement of the collar is caused to throw the pulleys P Q into or out of contact.

7. In combination with shaft A, suspending-rod G, rod J, pivotally connected with rod G, tool stock or spindle N and driving-gearing therefor supported by rod J, driving-belt E, passing about and from a wheel or gear on shaft A to and about a belt-wheel or gear of the driving-gear of the tool-stock, a frame, I, connected and movable with rod J, and wheels or gears *r s t*, carried by said frame I and serving to guide the belt and to maintain even tension thereon.

8. In combination with shaft A, yoke B, suspended therefrom, rod G, extending downward from said yoke, block H, swiveled to rod G, frame I, pivotally attached to block H, rod J, rigidly attached to frame I, collar J', and tubular rod K, encircling rod J, tool-stock frame M, provided with cross-arm L and carried by rod K, tool stock or spindle N, carried by frame M, friction-gears P Q, belt-pulleys R and D, carried by cross-arm L and shaft A, respectively, guide-pulleys *r s t*, carried by frame I, and belt E, passing over pulleys D, *r*, *s*, *t*, and R, all substantially as shown and described.

9. In combination with drill stock or spindle N and driving-gears P Q, a spring bearing upon said spindle and tending to separate the gears, and a cam or wedge acting in opposition to the spring and serving to press the pulleys together.

10. In combination with frame M, provided with cross-arm L and having incline *m*, drill stock or spindle N, mounted in said frame wheel or gear P, secured thereon, wheel or gear Q, carried by cross-arm L, and collar S, encircling the tool stock or spindle below wheel or gear P, and having incline *n*, to bear upon the incline *m*, substantially as and for the purpose specified.

11. In combination with frame M, formed with cross-arm L, and having toothed arm U, shell *j*, and incline *m*, spindle N, provided with wheel or gear P, wheel or gear Q, carried by cross-arm L, a spring, *l*, serving to keep the gears P Q separated, and collar S, encircling the spindle and provided with handle or lever T and with tooth *o*, to engage with the teeth of arm U.

12. In combination with a carrying-frame, M, having cross-arm L, shell *j*, toothed arm U, and incline *m*, spindle N, provided with wheel or gear P, wheel or gear Q, carried by cross-arm L, a spring, *l*, serving to keep the gears P Q separated, collar S, encircling the spindle and provided with incline *n*, lever T, pivoted to collar S and provided with tooth *o*, to engage with arm U, and spring *q*, bearing upon said lever and serving to hold it in engagement with arm U.

PHOTO-LITH NORRIS PETERS WASHINGTON, D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE PASTOR PEREZ DE LA SALA.

Decided December 27, 1887.

APPLICATION FOR PROCESS AND ITS PRODUCT.

The examiner required division, and advised applicant that the product could be produced by other processes, but refused to state to applicant what those processes were. *Held* that the examiner should furnish applicant with all the information upon which he bases his opinion that the product is not new, in order that applicant may act intelligently as to the requirement of division; that the examiner ought not when he has information which would bar the issue of patent require an applicant to go to the trouble and expense of filing an application which must necessarily fail of success.

PETITION.

TREATMENT AND APPLICATION OF WOOD TO THE COVERINGS OF SURFACES.

Application filed October 8, 1887, No. 251,849.

Mr. Anthony Pollok for the applicant.

HALL, *Commissioner:*

The applicant in this case claims as a unitary invention a process and its product, and asserts that both process and product are new, and that each is absolutely dependent upon the other. The Office advised applicant that the product was not new and could be produced by other processes, and required division of the application. The examiner did not, however, state to applicant what those processes were. This action being repeated, applicant appeals to the Commissioner and urges that he is entitled to be furnished the information or references showing that the product lacks patentable novelty, in order that he may act intelligently in the matter of filing a divisional application.

The question involved is somewhat peculiar, owing to the fact that if division be required before action on the merits a case is presented in which the Office practically determines that the product is not new and patentable before the merits have been considered, and applicant is required to file a divisional application for a patent for the product which the Office adjudges is not patentable.

My first impression was that as a matter of necessity the merits must be passed upon before a division should be required, and that the division contemplated in this case would be equivalent to a rejection. Upon reflection, however, I am of the opinion that the better practice is to require division; but at the same time the examiner should furnish applicant with all the information upon which he bases his opinion that the product is not new. (See *ex parte Rogers*, MS. vol. 23, 146.) The justice of furnishing this information is apparent. The examiner ought not when he has information which would bar the issue of patent to require an applicant to go to the trouble and expense of filing an application which must necessarily fail of success. I therefore reverse the action of the examiner in so far as he refused to furnish full information to the applicant, and direct that such information be furnished him in order that he may act intelligently as to the requirement of division.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

HAILES *et al. v.* THE ALBANY STOVE COMPANY.

Decided December 12, 1887.

1. RATHBONE AND HAILES—COAL-STOVES—ANTICIPATED.

A claim for a "circular stove" having a perforated fire-pot with a grate-bottom having provision for the admission of air below the point of suspension of said fire-pot *Held* to be met by prior patents showing all the elements of the claim save the circular cylinder, that element being old *per se* on the ground that no invention was required to combine these features.

2. DISCLAIMER—OFFICE OF.

A disclaimer is properly employed for the surrender of a separate claim, or some other distinct and separable matter, which can be excluded without mutilating or changing what is left standing. Perhaps it may be used to limit a claim to a particular class of objects, or to change the form of a claim which is too broad; but certainly it cannot be used to change the character of the invention.

3. SAME—SAME.

Sections 4917 and 4922 Revised Statutes have reference to the same sets of circumstances as grounds for disclaimer, the former authorizing the filing of a disclaimer and the other legalizing suits brought on such patents as have been amended under the first-mentioned section.

APPEAL from the Circuit Court for the Northern District of New York.

Mr. A. J. Todd for the appellants.
Mr. Esek Cowen for the appellee.

Mr. Justice BRADLEY delivered the opinion of the Court.

This is a suit on a patent in which the court below decided adversely to the complainants. The patent sued on was granted to Lewis Rathbone and William Hailes, November 21, 1865. It was for an alleged improvement in coal-stoves of the class known as "cannon" or "circular" stoves, so called in consequence of their consisting of one cylinder or cannon without

flues or separate fire-chambers. The patentees in their specification allege that such stoves have generally been constructed with a contracted outlet and with provision for admitting air above the fire. This, they say, they desire to obviate, having found that a much more perfect combustion can be maintained by enlarging the outlet for the smoke and admitting air through the sides of a suspended fire-pot at all points, and thus facilitating combustion by supplying oxygen to the burning coals beneath the surface of the fire-pot. Another object, they say, is to construct an open circular fire-pot, which can be applied to or removed from the stove at pleasure, with a grate in its bottom, said grate being so applied that it can be moved for shaking the ashes from the fire-pot when desired.

They then proceed to describe their improved fire-pot, referring to accompanying drawings. They say:

> The fire-pot is made of cast-iron of a flaring form and of such diameter as to leave a free space, *d*, all around it when arranged within the stove. It extends from the enlarged fire-chamber C down into the ash-chamber B, and it is made with vertical openings through its sides for the admission of air into the body of coal within it. The bottom of this fire-pot is an open grate, G, which may be so applied that it can be moved around a central pin, *e*, or turned upon a horizontal bar, *g*, or both of these movements may be provided for. It will then be seen that the fire-pot and its grate are united together, so that both can be removed from the stove together. By thus connecting the grate and fire-pot together and arranging them within the stove, so that they are supported or suspended by means above mentioned, they can be removed very readily from the stove when it is necessary to renew them. At the junction of the body of the stove with the ash-pit section B is a ledge, *h*, extending entirely around the top of said section, as shown in Fig. 3. This ledge is perforated at regular intervals, and it is covered by means of a marble ring-plate, *i*, which is also perforated in a manner corresponding to the perforations through the ledge. This ring-plate *i*, being provided with a knob or handle, it constitutes an annular register for regulating the admission of air into the section B of the stove below the point of suspension of the fire-pot, as indicated by the arrows in Fig. 2. The flanges *b* and *c* effectually close the upper portion of the space *d* surrounding the fire-pot, so that no air can pass at this point. The air which enters the smoke-chamber above the fire-pot must either be admitted through the register J in the feed-door or it must pass through the fire-pot.
>
> Our object is to maintain such an intense heat in the fire-pot by the free supply of oxygen to the incandescent coal therein, all around this pot, that there will be little or no smoke formed after the fire is fully started. In this way we obtain a more perfect combustion, and are enabled to burn soft coal and obtain the greatest heating effects therefrom.
>
> Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—
>
> 1. Arranging a perforated fire-pot with a grate-bottom within a circular stove having provision for the admission of air below the point of suspension of said fire-pot, substantially as described.
>
> 2. The combination of an annular horizontal register with a suspended fire-pot which has perforated sides, substantially as described.

The drawings and model exhibited at the hearing show that the fire-pot referred to in the patent was in the form of a basket with grated bottom and grated sides for the admission of air not only through the grated bottom, but through the sides. In the drawing the grated portion of the sides extends from the bottom nearly two-thirds of the way upward toward the top; but the specification speaks generally of vertical openings through the sides for the admission of air into the body of coal, without calling attention to, or specifying any limitation to, the extent of the openings, whether all the way or only part of the way up the side of the fire-pot, and, as seen, the principal claim is for arranging a perforated fire-pot with a grate-bottom within a circular stove having provision for the admission of air below the point of suspension of said fire-pot.

Now, it turns out that before the issue of the patent sued on there were already in existence two patents for a fire-pot of precisely the same description—one an English patent, granted to Robert Russell in July, 1857, and the other an American patent, granted to Zebulon Hunt on the 14th of June, 1864. The English patent shows two separate devices, one of a tapering fire-pot or basket having grated sides, but without a grate at the bottom. "Another modification consists in constructing the fire-basket with perforated sides all around it by means of tubes." The patentee adds that "solid bars may be used instead of tubes;" and, again—

> instead of making the fire-dishes to turn on a pivot, as previously described, I sometimes hang them by a projection or flange formed upon the upper flange of a fire-dish, which flange rests upon a corresponding projection on the inside of the casing.

When the latter modification is used, the inventor provides for a grated bottom to the fire-dish in the following language:

> The lower ring, *f*, may be formed in one piece with the bottom of the fire-basket, and may be made solid or with apertures. * * * Apertures may be formed in the plate *j* to correspond to similar holes in the bottom of the fire-basket, so as to regulate the admission of air to the fuel.

The Russell stove therefore contains all the elements of the first claim of the complainants' patent, the perforated fire-pot with a grate-bottom suspended by a flange from the body of the stove, projecting into an ash-pit or draft chamber, having provision for the admission of air below the point of suspension of the fire-pot.

It is true that the device of Russell is not placed in a circular or "cannon" stove consisting of a single cylinder, as defined in the patent of Rathbone and Hailes, the Russell stove being composed of two cylinders, one of which forms the coal magazine or reservoir; but we fail to see that any inventive power was required to apply the same fire-pot to a different kind of circular stove. That no invention was required seems to us too plain for argument. The patent of Zebulon Hunt shows a grated fire-pot of flaring form suspended within the draft-chamber of the stove, and provided with a grated bottom, the fire-pot suspended in precisely the same manner as in the patent in suit, and the ash-pit is provided with means for the admission of air below the point of suspension of the fire-pot. Hunt's stove was also a magazine-stove.

We have no hesitation in holding that the supposed invention of Rathbone and Hailes, as described and claimed in their patent, was anticipated by the prior patents referred to. Probably in anticipation or apprehension of this result the complainants, after the commencement of this suit, on the 30th of October, 1882, filed in the Patent Office a disclaimer which they suppose has the effect of narrowing their patent and of obviating the objection of prior discovery. The substantive part of the disclaimer is as follows, to wit:

> Your petitioners, William Hailes, &c., represent that in the matter of certain improvements in coal-stoves, for which Letters Patent of the United States No. 51,085 were granted Lewis Rathbone and William Hailes on the 21st day of November, 1865, * * * they have reason to believe that through inadvertence, accident, or mistake the specification and claims of said letters patent are too broad, including that of which said patentees were not the first inventors.
>
> Your petitioners, therefore, hereby enter their disclaimer to so much of the first claim as covers perforations or openings in the sides of a suspended fire-pot extending throughout the entire depth of sides, and limiting such perforations or openings to substantially the lower half of the fire-pot, the material or substantial part of the thing patented in and by said claim not hereby disclaimed being as follows:
>
> "A fire-pot suspended from its upper edge, with substantially the upper half of its sides made solid, and substantially the lower half of its sides containing perforations or openings."

Viewed as a disclaimer, this instrument naturally excites attention. A disclaimer is usually and properly employed for the surrender of a separate claim in a patent, or some other distinct and separable matter, which can be exscinded without mutilating or changing what is left standing. Perhaps it may be used to limit a claim to a particular class of objects, or even to change the form of a claim which is too broad in its terms; but certainly it cannot be used to change the character of the invention. And if it requires an amended specification or supplemental description to make an altered claim intelligible or relevant, while it may possibly present a case for a surrender and reissue, it is clearly not adapted to a disclaimer. A man cannot by merely filing a paper drawn up by his solicitor make to himself a new patent, or one for a different invention from that which he has described in his specification. That is what has been attempted in this case. There is no word or hint in the patent that the invention claimed was a fire-pot with sides grated only half way or part of the way from the bottom toward the top, or that such partially grated sides have any advantage over those grated all the way to the top. The first claim, as modified by the disclaimer, has nothing in the specification to stand upon, nothing to explain it, nothing to furnish a reason for it.

It is contended that the drawings annexed to the patent may be referred to for the purpose of defining the invention and showing what it really was; but the drawings cannot be used, even on an application for a reissue, much less on a disclaimer, to change the patent and make it embrace a different invention from that described in the specification. This is fully and clearly shown in the recent case of *Parker & Whipple Co.* v. *Yale Lock Co.*, (*ante*, p. 87.)

The counsel for the appellants suggests that there is a difference between sections 4917 and 4922 of the Revised Statutes, (corresponding, respectively, to sections 7 and 9 of the act of 1837,) and that the disclaimer filed in this case satisfies the conditions of the former of these sections. He says:

> Evidently there are two sections under which a disclaimer can be made in this country: First, under section 4917, where the claim is too broad—that is to say, in the language of the section, where the patentee "has claimed more than that of which he was the original and first inventor or discoverer;" second, under section 4922, where a patentee "has in his specification claimed to be the original and first inventor or discoverer of any material or substantial part of the thing patented, of which he was not the original and first inventor or discoverer," and it goes on to state that he "may maintain a suit at law or in equity for the infringement of any part thereof which was *bona fide* his own, if it is a material and substantial part of the thing patented, and definitely distinguishable from the parts claimed without right."

We think that counsel is mistaken in supposing that these sections have reference to different sets of circumstances as grounds for a disclaimer. They both relate to the same condition of things in that regard—namely, to the case in which a patentee, through inadvertence, accident, or mistake, and without any fraudulent intent, has included and claimed more in his patent than he was entitled to, and where the part which is *bona fide* his own is clearly distinguishable from the part claimed without right. In every such case he is authorized by section 4917 to file a disclaimer of the part to which he is not entitled, and that is the only section which gives him this right. The object of the other section (4922) is to legalize and uphold suits brought on such patents as are mentioned in section 4917, to the extent that the patentees are entitled to claim the inventions therein patented; but no costs are allowed to the plaintiffs in such suits unless the proper disclaimer has been entered at the Patent Office before the commencement thereof, and no patentee is entitled to the benefits of this section if he has unreasonably neglected or delayed to enter a disclaimer.

We do not see how it is possible to misunderstand the two sections when read together, as it is necessary to read them. One section authorizes a disclaimer to be filed in certain cases; the other enables patentees to maintain suits in those cases, provided a disclaimer is filed without unreasonable delay. They are parts of one law, having one general purpose, and that purpose is to obviate the inconvenience and hardship of the common law, which made a patent wholly void if any part of the invention was wrongfully claimed by the patentee, and which made such a defect in a patent an effectual bar to a suit brought upon it. There is no such difference in the phraseology of the two sections as to make them apply to different classes of cases. They refer to the same class, and being read together throw mutual light on each other; and viewed in that mutual light we think it clear that there is no authority for amending a patent by means of a disclaimer in the manner in which the appellants have attempted to amend their patent in the present case.

The decree of the circuit court is affirmed.

U. S. Circuit Court—Southern District of New York.

BLISS *et al. v.* MERRILL *et al.*

Decided December 7, 1887.

1. BLISS AND BLISS—REGISTERING LOGS FOR SHIPS.
   The second claim of Reissued Letters Patent No. 10,625, granted to John Bliss and G. H. Bliss, July 21, 1885, for improvements in registering ships' logs, declared to be valid and to have been infringed.
2. ENGLISH PATENT—DATE OF AS ANTICIPATION.
   An English patent is only effective from the date of its sealing as an anticipatory publication.
3. TESTIMONY OF WITNESSES AS OVERCOMING PRESUMPTION.
   A court would not be warranted in rejecting the positive testimony of two respectable and unimpeached witnesses as to the fact of invention at a certain date upon the presumption that the same idea, alike even in mutual details, could not have occurred to two persons in different continents without one of the persons had known of the other device.
4. NO INFRINGEMENT BY THE SALE OF AN ARTICLE NOT NECESSARILY USED WITH A PATENTED DEVICE.
   The mere fact that a person sells an article to which a patented device may be attached does not make him an infringer, provided the article is not so constructed that the patented device and no other can be used with it.

Mr. Edwin H. Brown for the complainants.

Mr. A. M. Pierce for the defendants.

COXE, *J.*:

This action is founded upon Reissued Letters Patent No. 10,625, granted to complainants July 21, 1885, for an improvement in registering logs of ships. The original patent was dated June 6, 1876. The original application was filed February 18, 1876.

Prior to the invention logs had been constructed with the registering mechanism in a circular or drum form attached to the ship by means of a yoke or with gimbals, like a compass or chronometer. They had also been made with an elongated registering mechanism

and the propeller in one apparatus, which was fastened to a line and thrown overboard. These logs were found to be expensive, inaccurate, cumbersome, and liable to get out of order and to be lost. The object of the present invention was to provide a simple and inexpensive in-board log, the elongated case containing the registering apparatus being attached to the taff-rail of the vessel and connected by a line with the distant propeller rotating in the water. The case is provided with a spindle or shaft, the end of which protrudes to receive the line of the rotator. Motion is thus communicated to a series of wheels which move the indexes on the dials, thus indicating the vessel's speed.

The claims in controversy are as follows:

2. An elongated cylindrical case containing the registering mechanism, with the shaft *c* introduced axially at one end, in combination with the anti-friction rollers *h*, eye *d'*, propeller, and connecting cord or wire, substantially as set forth.

3. The horizontal attaching-yoke *m*, in combination with the elongated case *a*, registering mechanism *b*, and shaft *c*, substantially as set forth.

In view of the disasters which usually befall reissues, it is curious to note that, although the patent in suit was granted more than nine years after the original, no accusation is made against it as a reissue. The object of the reissue was to correct a clerical error merely.

The defenses are lack of novelty and invention and non-infringement.

The invention of the second claim is not anticipated by any of the prior patents or exhibits. The English patent to Reynolds describes substantially the same combination; but though prior to the complainants' patent it is not prior to their invention. This patent was sealed July 27, 1875. It was therefore on this date that the invention was made patent to the public. (*Smith* v. *Goodyear*, 93 U. S., 486, 498.)

The complainants, if they are to be credited, conceived their invention prior to May 6 of that year. Their testimony in this regard is to some extent corroborated by other witnesses and by presumptions drawn from collateral facts and circumstances. It is true that this portion of the proof is hardly susceptible of denial. It lies almost wholly within the knowledge of the complainants. A direct attack upon a position founded upon such evidence is, except in exceptional instances, out of the question. But the difficulties which surround the defendants do not exonerate them from presenting some satisfactory proof, either direct or circumstantial, to traverse the positive assertion of the complainants. Instead of this, there is nothing but the intangible presumption arising from the somewhat peculiar coincidence that the same idea, alike even in minute details, should have occurred to two persons in different continents without one having seen the other's device. But it is entirely clear that the court would not be warranted in rejecting the positive testimony of two respectable and unimpeached witnesses upon a mere suspicion of this character. The date of the invention must be fixed as stated by the complainants.

The witness who testified to sales of the "Reynolds log" in July, 1875, omitted to give a description of the logs so sold. The court can hardly assume, in the absence of all proof, that the "Reynolds log" was the one described in the Reynolds patent, and, besides, the complainants' invention antedates these sales also.

There can be no doubt as to the infringement of the second claim. The defendants' registering apparatus contains all the elements of that claim. It has an elongated cylindrical case containing the registering mechanism, a shaft introduced axially at one end, the anti-friction rollers, and the eye adapted to receive the propeller-cord, all substantially in the same combination as in the patent.

Regarding the third claim, there arises a serious doubt whether, in view of the state of the art, there was any invention in providing the elongated case with an attaching-yoke; but it is not necessary to decide the question, for it is entirely clear that the defendants do not infringe this claim. They have no yoke at all, but simply eyes, to which a rope may be attached. It is urged by the complainants that when used to form a suspending bail the rope would be the equivalent for the rigid metallic yoke of the patent. This is perhaps true, but it is insufficient to establish infringement. The mere fact that a person sells an article to which a patented device may be attached does not make him an infringer, provided the article is not so constructed that the patented device, and no other, can be used with it. In the present case the registering mechanism of the defendants may be used without infringing the third claim. For instance, if a rope were run through the eyes at right angles to the axis of the case, the ends attached to stanchions some feet apart, and the rope twisted so that it performs the functions of a torsional spring, or if through the eyes were slipped two upright parallel rods, fitted to receive them in such manner that the spindle end projects over the taffrail, or if the case were suspended from the side of the vessel by a rope attached to one eye alone, there would be no infringement. In none of these instances would there be a "horizontal attaching yoke" or an equivalent therefor. (See cases cited in *Snyder* v. *Bunnell*, 29 Fed. Rep., 47.) If the defendants had sold a case without any apparatus for attaching it to the vessel, it would be but a step further in the argument to assert that, as the case must be supported in some manner, and as the trunnions and yoke of the complainants' device constitute a convenient mode of fastening, and might be selected, therefore contributory infringement had been established.

The complainants are entitled to a decree upon the second claim for an injunction and an accounting.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

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CONTENTS.

	Page.
THE OFFICIAL GAZETTE	99
NOTICE OF TAKING TESTIMONY	99
ISSUE OF JANUARY 10, 1888	99
DESIGNS	100
TRADE-MARKS	100
LABELS	100
PATENTS GRANTED	101
REISSUES	106
DECISIONS OF THE U. S. COURTS—	
Crawford, appellant, v. Heysinger *et al*	197
FOREIGN PATENT LAWS	202

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Notice of Taking Testimony.

The following notice of taking testimony is published in the OFFICIAL GAZETTE in accordance with paragraph 2, Rule 150, it having been shown to the satisfaction of the Commissioner of Patents that neither of the other modes of service prescribed in the said rule is practicable:

In the matter of the interference between the application of the firm of *George V. Hecker & Co.* for the registration of the word "Champion" as a Trade-Mark for Flour, and the registration of the same word for the same purpose by the *Atlantic Milling Co.*

To the Atlantic Milling Co., its successors, assigns, and legal representatives:

Take notice that on Thursday, the 12th day of January, 1887, at 10 o'clock in the forenoon, at the office of Richard Tone Pettit, notary public, No. 68 William street, in the city of New York, we shall proceed to take the testimony of George V. Hecker, Elijah T. Reaney, John Nagel, David O'Keefe, David Walsh, John Cronin, Daniel Foley, James M. Anderson, and Alpha Philips, all of the city of New York, as witnesses in behalf of the above-named George V. Hecker & Co., and you are at liberty to appear and cross-examine the said witnesses.

The examination will continue from day to day, if necessary, until completed.

COUDERT BROTHERS,
Attorneys for George V. Hecker & Co.,
68 William Street, New York City.

42 o G—2—i

Issue of January 10, 1888.

Patents	367	No. 376,056 to No. 376,422, inclusive.
Designs	12	No. 18,006 to No. 18,017, inclusive.
Trade-Marks	19	No. 15,081 to No. 15,099, inclusive.
Labels	9	No. 5,461 to No. 5,469, inclusive.
Reissue	1	No. 10,893.
Total issue	408	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	....	Nebraska	1	....
Arizona Territory	....	....	Nevada	....	....
Arkansas	3	....	New Hampshire	4	....
California	7	....	New Jersey	18	1
Colorado	....	....	New Mexico Territ'y	....	....
Connecticut	14	....	New York	73	13
Dakota Territory	....	....	North Carolina	....	....
Delaware	....	....	Ohio	31	1
District of Columbia	4	1	Oregon	....	....
Florida	....	....	Pennsylvania	35	1
Georgia	4	....	Rhode Island	1	....
Idaho Territory	....	....	South Carolina	1	....
Illinois	25	....	Tennessee	3	....
Indian Territory	....	....	Texas	5	2
Indiana	12	....	Utah Territory	....	....
Iowa	11	....	Vermont	....	....
Kansas	9	....	Virginia	3	....
Kentucky	4	....	Washington Territ'y	....	....
Louisiana	....	....	West Virginia	2	....
Maine	4	....	Wisconsin	5	....
Maryland	3	2	Wyoming Territory	....	....
Massachusetts	28	3	United States Army	....	....
Michigan	14	....	United States Navy	....	....
Minnesota	9	....			
Mississippi	1	....	Total to citizens of the United States	352	24
Missouri	9	....			
Montana Territory	1	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	....	....	Germany	8	....
Austria-Hungary	....	....	Ireland	....	....
Barbadoes	....	....	Mexico	....	....
Belgium	....	....	New South Wales	....	....
Bermuda	....	....	New Zealand	....	....
Brazil	....	....	Norway	....	....
Canada	6	....	Russia	....	....
Chili	....	....	Scotland	....	....
Columbia, U. S. of	....	....	Sweden	....	....
Cuba	....	....	Switzerland	2	....
Denmark	....	....	Victoria	1	....
England	7	4			
Finland	....	....	Total to citizens of foreign countries	27	4
France	3	....			

DESIGNS.

18,006.—HANDLE FOR DISHES.—*Eugène Brevil*, Limoges, France, assignor to *Francis H. Bacon* and *Charles T. Dotter*, Brooklyn, N. Y. Application filed November 5, 1887. Serial No. 254,444. Term of patent 7 years.

18,007.—GAS-STOVE.—*Albert J. Doty*, Philadelphia, Pa., assignor to *The Goodwin Gas Stove and Meter Company*, same place. Application filed October 14, 1887. Serial No. 252,408. Term of patent 14 years.

18,008.—LADY'S COAT.—*Henrietta F. Duke*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed December 9, 1887. Serial No. 257,466. Term of patent 3½ years.

18,009.—BURIAL-CASKET.—*John Einsfield*, Oneida, N. Y., assignor to *Chappell, Chase, Maxwell & Co.*, same place. Application filed November 14, 1887. Serial No. 255,167. Term of patent 7 years.

18,010.—CARPET.—*Henry Fawcett*, Kidderminster, England, assignor to *J. & J. Dobson*, Philadelphia, Pa. Application filed September 28, 1887. Serial No. 250,986. Term of patent 7 years.

18,011.—RUG.—*George B. Fox*, Philadelphia, Pa., assignor to *John Bromley & Sons*, same place. Application filed October 22, 1887. Serial No. 253,151. Term of patent 3½ years.

18,012.—COOKING STOVE OR RANGE.—*Joseph Leon Gobeille*, Cleveland, assignor to *The Foster Stove Company*, Ironton, Ohio. Application filed August 3, 1887. Serial No. 246,067. Term of patent 7 years.

18,013.—TYPE.—*Julius Guildenstine*, New York, N. Y., assignor to *Arthur M.* and *Alson E. Barnhart*, Chicago, Ill. Application filed February 11, 1887. Serial No. 227,350. Term of patent 7 years.

18,014.—HEATING-STOVE.—*John K. McLaughlin*, Philadelphia, assignor to *Buckwalter & Co.*, Royer's Ford, Pa. Application filed November 19, 1887. Serial No. 255,674. Term of patent 7 years.

18,015.—BADGE.—*Jesse H. McMath*, Cleveland, Ohio. Application filed November 30, 1887. Serial No. 256,564. Term of patent 3½ years.

18,016.—LADY'S COSTUME.—*Jennie Sheils*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed December 9, 1887. Serial No. 257,470. Term of patent 3½ years.

18,017.—LADY'S POLONAISE.—*Mary Turner*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed December 9, 1887. Serial No. 257,468. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,081.—FLOUR.—*Barbour & Hamilton*, Washington, D. C. Application filed April 13, 1886. Used since February 1, 1878.

"The words 'OUR SUPERLATIVE SATIN FINISH.'"

15,082.—WALL-PAPER.—*George K. Birge*, Buffalo, N. Y. Application filed December 9, 1887. Used since September, 1887.

"The representation of a seal with the cut of a buffalo within the circle."

15,083.—MIXED TEAS.—*Joseph P. Boone*, Galveston, Tex. Application filed December 14, 1887. Used since September 1, 1886.

"The grotesque representation of a letter 'T' surmounted by three parallelograms marked, respectively, 'No. 1,' 'No. 2,' 'No. 3,' and the words 'MY OWN BLENDS.'"

15,084.—SMOKING-TOBACCO.—*Marburg Brothers*, Baltimore, Md. Application filed November 15, 1887. Used since November 4, 1882.

"The words 'SEAL OF NORTH CAROLINA' and the representation of the seal of North Carolina, appearing on a parallelogram having a black background, with smaller parallelograms on each side bearing the words 'PLUG CUT' in letters of red with white edges."

15,085.—TEA.—*Frederic A. Cauchois*, New York, N. Y. Application filed December 10, 1887. Used since September, 1887.

"The words 'CAUCHOIS' BLENDED TEAS' and the picture of a sitting Chinaman taking or holding a cup of tea."

15,086.—SOAP.—*Colgate & Co.*, New York, N. Y. Application filed December 12, 1887. Used since November 30, 1887.

"The word 'OCTAGON.'"

15,087.—PLUMBERS' EARTHENWARE.—*Colwell Lead Company*, New York, N. Y. Application filed December 7, 1887. Used since November 1, 1887.

"A monogram of the letters 'L C Co.'"

15,088.—SOLID POLISHING COMPOUND FOR LAUNDRY PURPOSES.—*Robert F. S. Heath*, Camden, N. J. Application filed November 17, 1887. Used since October 1, 1887.

"The words 'SOCIETY POLISH.'"

15,089.—OIL GRAIN-LEATHER BOOTS AND SHOES.—*A. F. & J. Wm. Horner*, Baltimore, Md. Application filed November 17, 1887. Used since January 1, 1886.

"An oblong orange or yellow label the corners of which are clipped off, thus forming an irregular octagon."

15,090.—SPOOL-COTTON.—*Alex. King & Co.*, New York, N. Y. Application filed December 10, 1887. Used since December 1, 1874.

"Three concentric circles, respectively, red, black, and black upon a white ground, (the black may be bluish-black,) the words and letters 'ALEXR. KING & CO.' and 'A. KING, Jr., SOLE AGENT,' a red shield with white numerals, and a hound's head ducally gorged."

15,091.—HATS AND CAPS.—*Friedlander & Koch*, New York, N. Y. and San Francisco, Cal. Application filed December 8, 1887. Used since December 2, 1887.

"The word 'GRAMERCY.'"

15,092.—MEDICINE FOR THE CURE OF CERTAIN NAMED DISEASES.—*William W. Neal* and *Herbert W. Todd*, Akron, Ohio. Application filed November 5, 1887. Used since August 15, 1887.

"The monogram 'G G M,' in combination with the words 'DR. GRAM'S GRANDMOTHER'S MEDICINE.'"

15,093.—PREPARATION FOR THE HUMAN HAIR.—*A. Rowland & Sons*, London, England. Application filed October 8, 1887. Used since 1797.

"The words 'MACASSAR OIL.'"

15,094.—DENTIFRICES.—*A. Rowland & Sons*, London, England. Application filed October 8, 1887. Used since 1827.

"The word 'ODONTO.'"

15,095.—PREPARATION FOR THE SKIN.—*A. Rowland & Sons*, London, England. Application filed October 8, 1887. Used since 1827.

"The word 'KALYDOR.'"

15,096.—POWDER TO BE MIXED WITH LINSEED OIL, &c., FOR COATING WALLS.—*B. F. Ruth & Co.*, Reading, Pa. Application filed December 14, 1887. Used since December 1, 1887.

"The word 'CALXINE.'"

15,097.—CHICORY, PRUNES, AND RAISINS.—*F. Seggermann*, New York, N. Y. Application filed November 2, 1887. Used since May 1, 1887.

"A monogram of the letters 'H S,' a surrounding ring, and an eagle perched thereupon."

15,098.—BATS FOR TENIS, RACKET, CRICKET, AND OTHER GAMES.—*Ralph Slazenger*, London, England. Application filed October 15, 1887. Used since June 4, 1883.

"The word 'DEMON.'"

15,099.—STEAM-GAGES.—*Star Brass Manufacturing Company*, Boston, Mass. Application filed October 27, 1887. Used since October, 1887.

"The representation of a circle, an equatorial band, a star midway the length of the band, and the words 'BOSTON GAUGE.'"

LABELS.

5,461.—Title: "KASKINE," (FOR PROPRIETARY MEDICINE.)—*Kaskine Company*, New York, N. Y. Application filed December 20, 1886. (Trade-Mark Registered.)

5,462.—Title: "DR MCALLISTER'S COMPOUND SPIRITS OF JUNIPER AND EXTRACT OF BUCHU, A SURE AND POSITIVE CURE FOR ALL KIDNEY AND GENITO-URINARY DISEASES."—*John McAllister*, Albany, N. Y. Application filed December 16, 1887.

5,463.—Title: "WM. RADAM'S MICROBE KILLER."—*William Radam*, Austin, Tex. Application filed November 16, 1887. (Trade-Mark Registered.)

5,464.—Title: "RUSSIAN OIL STOVE BLACKING."—*Charles A. Shaw*, Boston, Mass. Application filed December 16, 1887.

5,465.—Title: "DIRECTIONS FOR USE." (FOR STOVE POLISH.)—*Charles A. Shaw*, Boston, Mass. Application filed December 19, 1887.

5,466.—Title: "SPENCER'S FUMIGATING DIPHTHERITIC PASTILLES. A FUMAR ANTISEPTIQUE FOR THE PROPHYLACTIC AND SPECIFIC TREATMENT OF DIPHTHERIA."—*Thomas D. Spencer*, Rochester, N. Y. Application filed December 19, 1887.

5,467.—Title: "UNDERWOOD'S COPYING INK RIBBON."—*John Underwood & Co.*, New York, N. Y. Application filed February 9, 1887.

5,468.—Title: "UNDERWOOD'S INDELIBLE COPYABLE RIBBON."—*John Underwood & Co.*, New York, N. Y. Application filed February 9, 1887.

5,469.—Title: "UNDERWOOD'S RECORD INK RIBBON."—*John Underwood & Co.*, New York, N. Y. Application filed February 9, 1887.

PATENTS

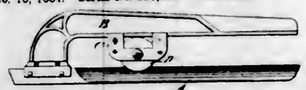
GRANTED JANUARY 10, 1888.

376,056. **POCKET-BOX FOR CIGARETTES, &c.** CHARLES S. ALDEN, Rochester, N. Y. Filed Apr. 6, 1887. Serial No. 233,933. (Model.)



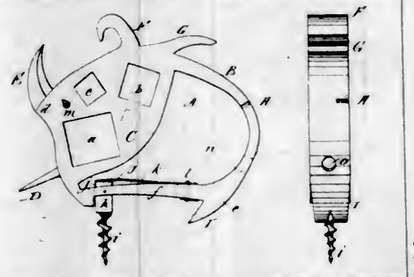
Claim.—The combination, with the box consisting of halves provided with corrugations in the bottoms and blanks at the ends of the corrugations, of hinders hinged at one end to the box and shutting over the halves of the box, in the manner and for the purpose specified.

376,057. **GROOVING-MACHINE.** AUGUSTUS V. ALLEN, Joplin, Mo. Filed Feb. 18, 1887. Serial No. 228,132. (No model.)



Claim.—The combination, with a mandrel, of a curved arm secured thereto, a carriage, and a grooved wheel journaled therein, the shaft of which is provided with a handle upon each end

376,058. **COMBINATION-TOOL.** JAMES ANGUS, St. Catharines, Ontario, Canada. Filed Apr. 21, 1887. Serial No. 235,617. (No model.)



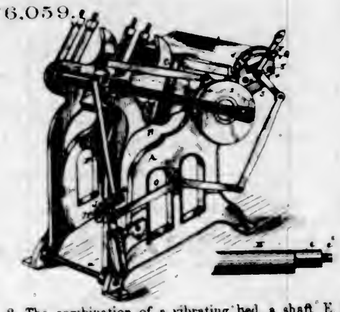
Claim.—1. In a combination-tool, the rounded body A, having a loop, B, and part C, having mortises *a b c*, the part B having an aperture, *o*, to receive an operating-bar, and the part C having an aperture in alignment with the aperture *o*, substantially as set forth.

2. In a combination-tool, the rounded body A, having the loop B, the can-opener E on the periphery of the body, and the can-penetrating point *m* on the face of the body at right angles to the can-opener, substantially as set forth.

376,059. **THROW-OFF MECHANISM FOR JOB-PRINTING PRESSES.** AMOS P. BARBER, Rahway, N. J., assignor of one-half to Willett G. Rathbun, same place. Filed Apr. 4, 1887. Serial No. 233,624. (No model.)

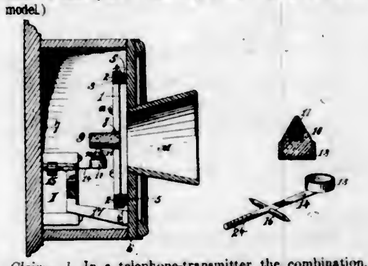
Claim.—1. The combination of the following elements: a vibrating bed upon which the form of types is secured, a shaft, E, having the eccentric-bearings *c c'* and crank-arm *c²*, the connections D, connection F, carrying a block, G, the slotted plate H, the segmental plate J, with opening K, the stud and roller N, rocking lever O, connection P, and suitable mechanism for operating the same, when the same shall be constructed and operated substantially as and for the purpose set forth.

376,059.



2. The combination of a vibrating bed, a shaft, E, having the eccentric-bearings *c c'* and crank-arm *c²*, the connections D, connection F, block G, slotted plate H, segmental plate J, with opening K, stud and roller N, rocking lever O, connection P, handle Q, provided with dog *t* and spiral spring *s*, and curved plate T, constructed and operating substantially as and for the purpose set forth.

376,060. **TELEPHONIC TRANSMITTER.** SETH E. BERDY, Farmington, Me., assignor of one-fourth to Daniel W. Austin and John J. Linecott, same place. Filed Aug. 1, 1884. Serial No. 139,410. (No model.)



Claim.—1. In a telephone-transmitter, the combination, with a diaphragm having an elongated straight-surfaced electrode secured thereto, of a swinging or pivoted lever having a balance-weight at one end and a fixed electrode at the other end, the latter electrode extending at right angles to the lever or support and impinging against the straight peripheral surface of the diaphragm-electrode, substantially as herein set forth.

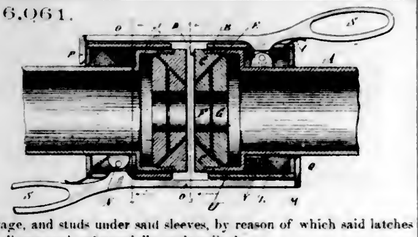
2. In a telephone-transmitter, the combination, with a diaphragm having an elongated electrode secured thereto, of a straight swinging arm or lever provided with a resilient or springy portion, an electrode rigidly secured to the latter and bearing upon the peripheral surface of the diaphragm-electrode, substantially as described.

3. In a telephonic transmitter, the combination of the straight electrode-bearing lever formed of a screw-threaded portion, a resilient portion, a cup and journals, with the electrode inserted in the cup, an adjustable weight, a support for the lever, and a diaphragm carrying an elongated electrode, substantially as described.

376,061. **PIPE-COUPLING.** GEORGE H. BENJAMIN, New York, N. Y. Filed May 13, 1887. Serial No. 238,094. (No model.)

Claim.—1. A two-part coupling, the parts of which are automatically detachable under strain and provided with axial port-openings, packing-rings in said openings, latches pivoted to the body of the coupling, and longitudinally-movable sleeves with which said latches

376,061.



engage, and studs under said sleeves, by reason of which said latches are disengaged, substantially as described.

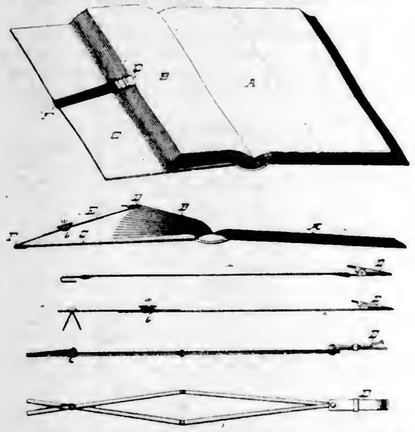
2. In a two-part coupling, the combination, with a loose sleeve on one part, of a stud under said sleeve and a hooked and tongued latch pivoted to the other part, substantially as described.

3. In a two-part coupling, the combination, with a loose sleeve on one part, one end of which projects over said sleeve and stud, of a stud under said sleeve, a latch pivoted to the other part, and a spring under the handle of said latch, substantially as described.

4. In a two-part coupling, the combination, with a loose sleeve on one part, of a spring under said sleeve, a stud under said sleeve, and a latch pivoted to the other part and engaging said sleeve, substantially as described.

5. In a half-coupling, the combination, with the body thereof, of a latch pivoted to one side of the body, a stud provided with inclined faces, and a loose sleeve provided with a slot to allow passage of said stud, substantially as described.

376,062. **STUB-HOLDER.** JASPER M. BERRY, Jr., Baltimore, Md. Filed Apr. 23, 1887. Serial No. 235,857. (No model.)



Claim.—1. The combination of a book having a stub with a clamp grasping the edge of said stub, said stub being provided with an extensible band, the end of which is adapted to be secured or attached to the cover of the book adjacent to said stub.

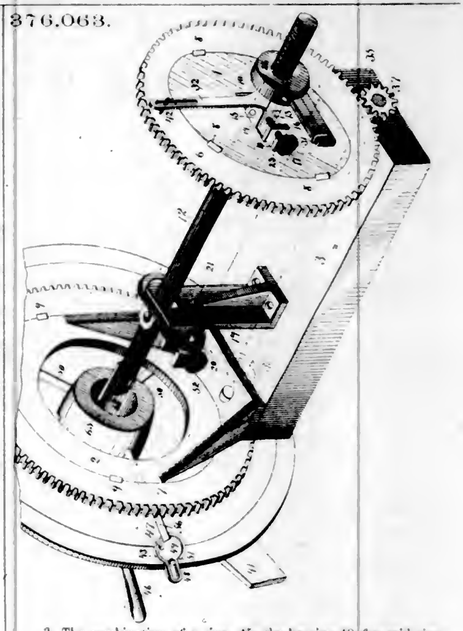
2. The combination of a book having a stub with a clamp grasping the edge of said stub, said stub being provided with an elastic band, the end of which is adapted to be secured or attached to the cover of the book adjacent to said stub.

376,063. **HUB-BORING MACHINE.** JACOB BIEBER, Jackson, Mich., assignor of two-thirds to Alfred B. Bolton and Christian William Kast, both of same place. Filed Nov. 11, 1886. Serial No. 218,568. (No model.)

Claim.—1. The combination of a revolving chuck-head to which the wheel the hub of which is to be bored is attached, a standard, 19, provided with a horizontal slot, 20, a bearing for the tool-bearing rod adjustable in the slot 20, a circular bearing, 1, provided with a horizontal slot, 10, in which is the adjustable bearing 11, a feed-actuating wheel, 6, turning upon a circular bearing, 1, and a device for feeding the tool-bearing rod up to its work, substantially as shown and described.

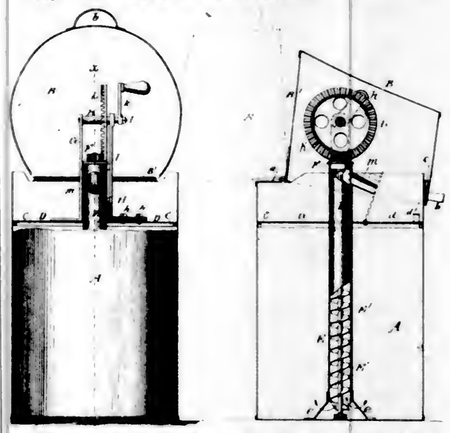
2. The combination of a revolving chuck-head provided with a toothed wheel, 7, the standard 19, provided with a horizontal slot, 20, a bearing for the tool-bearing rod adjustable in the slot 20, a circular bearing, 1, gear-wheels and shaft 36, 37, and 35, connecting wheels 7 and 6, and a means of feeding the tool-bearing rod up to its work, substantially as shown and described.

376,063.



3. The combination of a ring, 45, the bearing 40 for said ring, slotted cams 43, rods 49, extending from the ring 45 through the slots in the cams 43, and the centering-rods 50, substantially as shown and described.

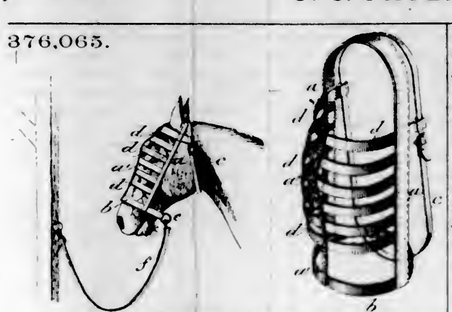
376,064. **CAN FOR MOLASSES, &c.** SAMUEL R. BILLUPS, Baltimore, Md., assignor of one-half to Charles H. White, same place. Filed May 6, 1887. Serial No. 237,332. (No model.)



Claim.—The combination, with the can-body, the platform D, supported therein near the top and having a perforated hinged portion, *d*, and the tube E, arranged centrally and vertically within said body with its upper end extended above said platform, of the screw F, arranged within said tube, pinion F in the upper end of said screw, the standards G, H, and I, secured to the top of said platform and extending alongside the portion of said tube above the platform, the shaft K, journaled in the upper ends of said standards G I, a pinion, L, on said shaft meshing with the pinion F, means for rotating the same, and a discharge-spout for said tube, all substantially as and for the purpose specified.

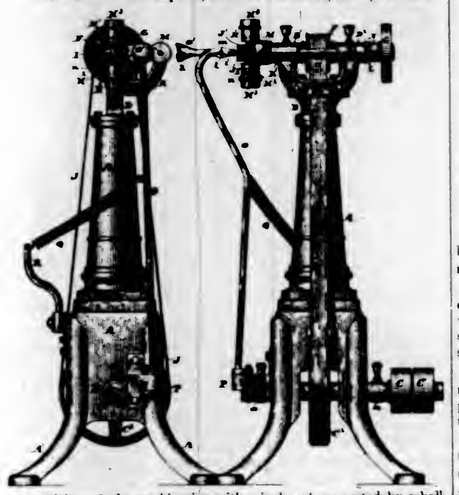
376,065. **DEVICE FOR PREVENTING ANIMALS FROM JUMPING FENCES.** JOHN H. BOOTH and SYLVANUS W. BEARD, Providence, Ky. Filed Oct. 7, 1887. Serial No. 251,721. (No model.)

376,065.



Claim.—As an improvement in devices for preventing animals from jumping fences, the headstall composed of side straps, *a a*, throat-latch *c*, and nose-piece *b*, in combination with the bars *d d* and supporting-strap *a'*, all arranged substantially as and for the purpose set forth.

376,066. **HEEL-BURNISHING MACHINE.** JAMES H. BUSELL, Boston, Mass. Filed Apr. 16, 1887. Serial No. 235,024. (No model.)



Claim.—1. In combination with a jack-rod supported by a ball-and-socket or universal joint, a lever pivoted to the upper end of said rod and provided with a pin to enter the hole in the last, and a stop to limit the vibrations of said lever.

2. In combination with a jack-rod supported in a socket-step, as set forth, a lever pivoted to the upper end of said jack-rod, provided at one end with a pin to enter the hole in the last and at the other end with a weighted handle, and a stop for limiting the vibrations of said lever.

3. The combination, in a heel-burnishing machine, of a universally-pivoted jack-rod, a pivoted last-supporting lever carried by said jack-rod, and two burnishing tools or surfaces for operating upon different portions of the heel-edge, so arranged relative to and in such proximity to said jack-rod that the heel of a shoe carried by said jack may be presented to the action of each of said tools in succession without removing it from the jack.

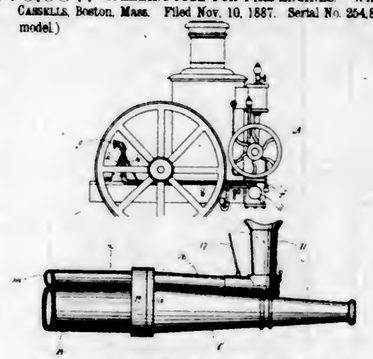
4. In a machine for burnishing boot or shoe heels, the combination of the revolving shaft E, the crank-pin *e*, the block *d*, the tool-carrier I, provided with the socket *e'*, the tool J', having the beaded surface e^3 and provided with the smooth-surfaced top-lift guard J^2, the cylinders H' and H^2, the universally-movable jack-rod O, and the vibrating shoe-supporting lever O', all arranged and adapted to operate substantially as described.

5. In a heel-burnishing machine, the combination of the revolving shaft E, the crank-pin *e*, the block *d*, the tool-carrier I, provided with the socket *e'*, the bushing D^2, and the hub H and cylinders H' and H^2, adjustably secured upon said bushing, whereby the tool-carrier may be adjusted to be reciprocated vertically, horizontally, or at any desired angle.

6. In combination with the moving burnishing-tool, a jack-rod or shoe-support having a ball-and-socket step located nearly under said tool and free to be moved in any direction about the center of said joint, a pivoted last-supporting lever carried by said jack-rod, and a spring connected at one end to said jack-rod and at its other end to a stationary or non-moving object so located that the draft of said spring shall be in a direct line through the center of the burnishing-tool, substantially as described.

7. The herein-described burnishing-tool provided with a tread-guard, in combination with a burnishing-surface for acting upon the central or concave portion of the heel-edge, curved to a segment of an ellipse, the apex or extreme outward portion of said curved surface projecting outward beyond the extreme outer edge of said tread-guard, as set forth, whereby the heel may be reciprocated at right angles to the motion of said tool without danger of injury to the top lift by contact with said tread-guard.

376,067. **SPEAKING-TUBE FOR FIRE-ENGINES.** WILFRED E. CASSELLS, Boston, Mass. Filed Nov. 10, 1887. Serial No. 254,648. (No model.)



Claim.—1. In a fire engine, a speaking-tube attached to the hose by straps, bands, or other suitable means, and through which communication may be had between the firemen, substantially as described.

2. In a fire-engine, a speaking-tube attached to the hose of said engine and provided with openings for receiving a mouth-piece, and valves for cutting off communication through said tube, the different sections of which are adapted to be coupled together, substantially as set forth.

3. In a fire-engine, the hose B, having the coupling *p*, in combination with the tube *m*, secured to said hose and having the rigid portion *q*, provided with the opening *r*, valve *w*, and cap 15, substantially as set forth.

4. In a fire-engine, the engine A, provided with the pipe *b*, having the mouth-piece *g*, in combination with the hose B and tube *m*, having the rigid portion *q*, provided with the opening *r*, valve *w*, and cap 15, substantially as set forth.

5. In a fire-engine, the tube 16, provided with the hinged cover 17, in combination with the nozzle C, hose B, pipe *m*, and coupling-rings 18 and 19, substantially as described.

6. In a device of the character described, the combination of the following instrumentalities, to wit: an engine, a speaking-tube secured to said engine, a hose, a speaking-tube secured to said hose and having its sections provided with couplings, a portable mouth-piece, openings in said tube to receive said mouth-piece and valves for closing said tube, provided with caps for closing said openings, substantially as described.

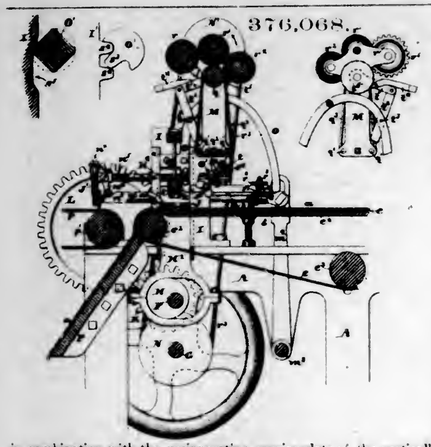
376,068. **LOZENGE-MACHINE.** OLIVER R. CHASE, Boston, Mass. Filed Nov. 24, 1886. Serial No. 219,750. (No model.)

Claim.—1. The combination of the intermittently-moving belt or apron *e*, the shaft F, the eccentrics H and H', the bars H^2 and H^3, the series of cutters *k*, carried by said bars, the oscillating shaft O', also carried by said bars and having one end thereof squared, and having formed upon the other end the tooth o^2, the type plate or form *t*, carried thereby, the stand I, provided with the teeth s^4, the stand I', provided with the curved or cut-away place s^3, the rolls *q* and q^2 q^3, the endless color-carrying belt q^3, the ratchet-wheel t^6, the pawl t^4, and the toggle-links t t^5, all arranged and operating substantially as described.

2. The combination of the intermittently-moving apron *e*, the series of vertically-moving cutters *k*, the horizontally-reciprocating lozenge-receiving plate *n'*, provided with the cams n^3, the stripper-bar J', and the elbow-levers n^4, all constructed and arranged to operate substantially as described.

3. The stripper-bar J', provided with the pendent rubber flap o^4,

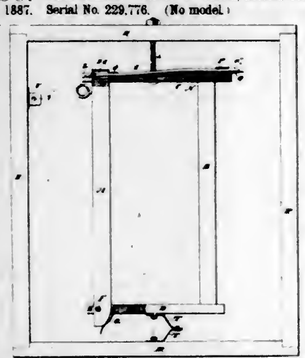
376,068.



in combination with the reciprocating carrier-plate *n'*, the vertically-reciprocating cutters *k*, and the endless belt *e*, all arranged and adapted to operate substantially as described.

4. The combination of the apron *e*, the cutters *k*, the plate *n'*, and the stripper-bar *J'*, provided with the pendent rubber flap *o*, divided into sections by vertical slits, substantially as described.

376,069. STANCHION. DAVID Y. CLARK, Bristol, Conn. Filed Mar. 5, 1887. Serial No. 229,776. (No model.)



Claim.—1. A suspended or swinging stanchion having two uprights and an upper and a lower cross-bar, one of the uprights being pivoted to the lower cross-bar, of a spring secured to the said lower cross-bar and engaging with the pivotal upright to automatically close it, and locking mechanism carried by the upper cross-bar and the upper end of the pivotal upright for holding the latter closed, substantially as set forth.

2. A suspended or swinging stanchion having two uprights and an upper and a lower cross-bar, the lower cross-bar having a slot at one end to receive the lower end of one of the uprights, which is pivoted in and extends below the said slot, a spring secured to the said lower cross-bar and extending through the slot to engage with the lower end of the pivotal upright, which it automatically closes, and locking mechanism carried by the stanchion for locking the upper end of the pivotal upright in place, substantially as set forth.

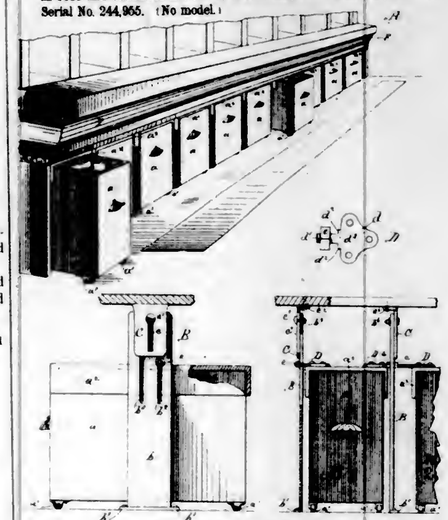
3. A suspended or swinging stanchion having a stationary and a pivotal upright and an upper and a lower cross-bar, the pivotal upright being pivoted to one end of the lower cross-bar, a spring carried by the stanchion and engaging with the lower end of the pivotal upright for automatically closing the same, a latch-bar pivoted in the upper end of the pivotal upright and working in a slot formed in the upper cross-bar, and a locking plate and spring for the said latch-bar carried by such upper cross-bar, substantially as set forth.

4. A stanchion having an upright pivoted at its lower end, a spring for closing such upright, and an upper cross-bar having a slot to receive the upper end of the upright and provided with beveled walls to guide the same into it, substantially as set forth.

5. A swinging or suspended stanchion having two uprights, two cross-bars rigidly secured to one upright, the other upright being pivoted at its lower end to the lower cross-bar, a spring carried by the stanchion for automatically closing such pivotal upright, an eye located upon the outer face of such upright, and a snap-bolt secured to frame-work in line with the pivotal upright in position to engage with the said eye and hold the upright open against the power of its spring, substantially as set forth.

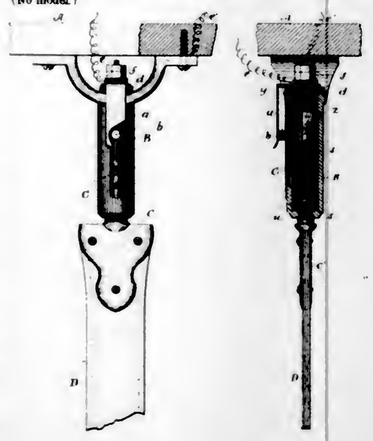
6. A stanchion and a stanchion-frame, in combination with a connection consisting of two two-armed sheet-metal angle-plates pivoted together and to the stanchion and stanchion-frame, respectively, substantially as set forth.

376,070. MERCANTILE BOOT AND SHOE BOX FIXTURE. THOS. H. COBB and COLUMBUS L. BOWEN, Wolf Creek, Ark. Filed July 21, 1887. Serial No. 244,955. (No model.)



Claim.—The combination of the shoe-boxes *a*, having the casters *a'*, the lids *a²*, adapted to fit over the top of said boxes and having their front ends open, braces *b*, adapted to be secured to the floor, and having in their upper ends slots b^2 b^3 and perforations b^4, the braces C, adapted to be secured to the lower face of a counter or wall-shelving and having the perpendicular slots *c*, nuts and bolts *c'*, passing through said slots *c* and perforations b^4, fan-headed bolts D, secured to the upper face of the lids, their threaded ends extending laterally and passing through the slots b^2 and b^3, and nut *c*, adapted to draw said braces *b* firmly against the shoulders d^2 of said bolts and hold the said lids firmly in place, substantially as shown and described, and for the purposes set forth.

376,071. ELECTRIC-CIRCUIT BREAKER. WILLIAM R. COLE, Detroit, Mich., assignor to Parrish Bros. and the Peck Electrical Company, both of same place. Filed Aug. 3, 1887. Serial No. 246,076. (No model.)



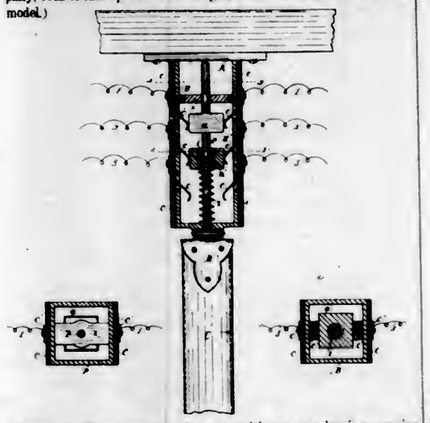
Claim.—1. A circuit-breaker comprising a metal case having the vertical slot, a spring-actuated plunger provided with a stud laterally extending through said slot, and a spring-metal finger attached to the case, but insulated therefrom and adapted to contact the stud outside of the case, substantially as set forth.

2. A circuit-breaker comprising a metal case having the vertical slot, a spring-actuated plunger provided with a stud laterally extending through said slot, a sliding cover to the slot retained in place and carried by the stud, and a metal finger attached to the case, but insulated therefrom and adapted to contact said stud, substantially as set forth.

3. A circuit-breaker comprising a case having the vertical slot, a spring-actuated plunger having a detachable head, a stud projecting through said slot and constituting a set-screw to attach the head to the plunger, and a finger attached to the case, but insulated therefrom, substantially as set forth.

4. A circuit-breaker comprising a metal case having the vertical slot, an insulating-plug in the end of said case, a spring-metal finger attached to said plug and extending downward parallel with the slot of the case, and a spring-actuated plunger provided with a stud extending laterally through the slot and adapted to contact said finger, substantially as set forth.

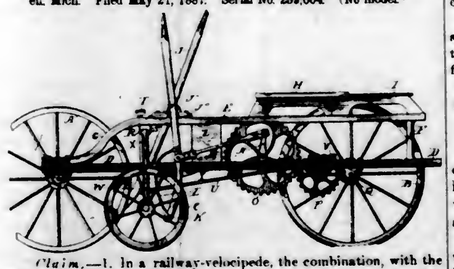
376,072. ELECTRICAL CIRCUIT-BREAKER. WILLIAM R. COLE, Detroit, Mich., assignor to Parrish Bros. and the Peck Electrical Company, both of same place. Filed Aug. 3, 1887. Serial No. 246,077. (No model.)



Claim.—1. The circuit-breaker comprising a case having a series of perforations in the sides, a series of spring-metal conductors attached to the case, but insulated from it, and having free ends extending inward through said slots, and a spring-actuated plunger provided with conducting-collars, one being insulated from the plunger and the other not, substantially as set forth.

2. The circuit-breaker comprising a case with slotted sides, said case provided with insulating-plates having like slots, spring-conductors attached to said plates and extended inward through the slots, a guide-bridge in one end of the case, and a spring-actuated plunger passed through a hole in the end of the case and through a hole in the bridge, said plunger being provided with collars, one insulated from the plunger and the other not, substantially as set forth.

376,073. RAILWAY-VELOCIPEDE. CHARLES L. COLLIER, Howell, Mich. Filed May 21, 1887. Serial No. 239,004. (No model.)

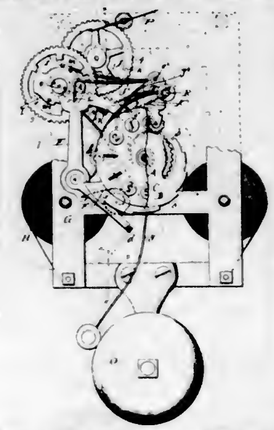


Claim.—1. In a railway-velocipede, the combination, with the frame, of two propelling-levers fulcrumed to said frame, foot-pedals P, secured to the lower ends of said levers, and braces L, extending upwardly and forwardly from the outer end of each pedal, and curved as shown, and secured at their upper ends to said levers, substantially as described.

2. In a railway-velocipede, the combination, with a frame consisting of a pair of upper and lower stringers, of two main-track wheels revolving between these stringers in boxes secured to the lower pair of stringers, an outrigger removably and adjustably secured in clamp-boxes to the upper pair of stringers and carrying a side wheel, a folding brace provided with a pivotal clip for securing it to the outrigger, an adjustable connection connecting the outrigging with the brace, a seat supported over the rear end of the frame, a pair of levers arranged for hand and foot propulsion, a pitman-connection from each lever to a double-crank shaft, and a speeding-gear from the double-crank shaft to the rear main-track wheel, substantially as described.

3. In a railway-velocipede, the lower stringers, D, combined with the uprights F, secured to the rear end thereof, and the upper stringers, E, parallel with the lower stringers and secured at their rear ends to the uprights, and at their forward ends provided with downward bends G, secured to said lower stringers, substantially as described.

376,074. CLOCK STRIKING MECHANISM. WILLIAM R. COUPTER, Three Rivers, Mich. Filed Feb. 3, 1887. Serial No. 226,380. (Model.)



Claim.—1. The combination, with the time-movement of a clock, of an hour-striking movement and a series of adjustable pins moving with the time-movement and arranged to make the clock silent or striking, at will, substantially as described.

2. The combination, with a clock provided with an hour-striking movement, of a snail to regulate the number of strokes given by the hammer, and a dial, C, provided with adjustable pins for making the clock striking or silent, at will, substantially as described.

3. The combination, with a clock provided with an hour-striking movement, of a snail moving with the "time-side" of the clock, a plate moving with said snail, and a series of pins corresponding in number with the steps of the snail, arranged to allow of the clock striking or remaining silent when either of the desired steps of the snail is in position for action, substantially as described.

4. In a striking clock, the combination of a rack, E, provided with a slot, *e*, and a supplemental arm, F, a snail, D, dial C, provided with adjusting-pins *a*, said snail and dial being actuated by the arbor of the hour-wheel, with an arm, M, actuated by a pin, B, upon the center part, A, substantially as and for the purpose described.

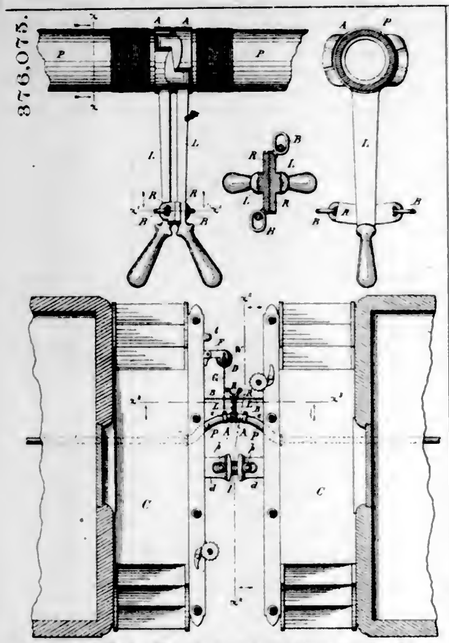
5. In a clock striking mechanism, the combination of the dial C, snail D, rack E, and arm F with the arms J J', K K', L, and M, adapted to be actuated by a pin upon the center post, A, substantially as and for the purposes specified.

376,075. PIPE-COUPLING FOR RAILWAY-TRAINS. NELSON CURTIS, Boston, Mass. Filed Aug. 9, 1887. Serial No. 246,490. (No model.)

Claim.—1. The combination, with the flexible pipes P P and half-couplings A A upon the ends of said pipes, of the levers L L, projecting one from each half-coupling, and each provided near its free end with a friction-plate or locking mechanism, R, substantially as described.

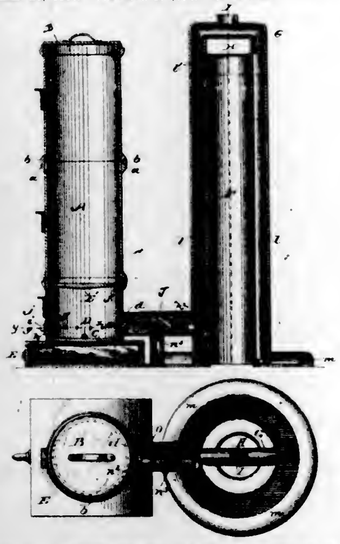
2. In a pipe-coupling between two cars, the combination, with two flexible pipes, half-couplings at their respective free ends, and levers projecting one from each half-coupling, and each carrying a locking mechanism near its free end, substantially as described, of

376,075.



two chains, B B, one for each car, and each chain extending from the end of its respective car to the locking mechanism of the lever belonging to that car, whereby the half-couplings may be unlocked and separated before the flexible pipes become taut, substantially as described.

376,076. HEATING-STOVE. OLIVER P. DALY, Smith Centre, Kans. Filed Mar. 29, 1886. Serial No. 197,051. (No model.)



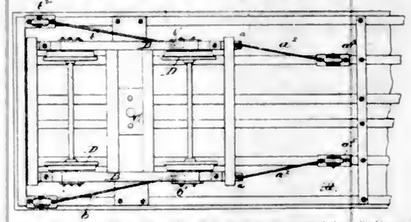
Claim.—1. The combination, with a magazine having an opening, of a heating-drum arranged independently of said magazine, a flue connecting the drum and magazine, and a grate in the latter, said grate having two or more of its bars turned upwardly to close the opening *d*, as set forth.

2. The combination, with a magazine and a heating-drum, of a flue connecting them and a passage surrounding the base of the drum, the said flue being divided into two compartments, one of which is closed at its inner end and the other open, a damper in the open-ended compartment, and pipes connecting the compartments with the passage-way around the base of the drum, substantially as set forth.

3. The combination, with a base formed with a circular passage, of a magazine supported on the base, a drum supported on the base within the circular passage, a flue connecting the magazine and drum and divided into two compartments, pipes extending from said compartments to the circular passage, one of said compartments being closed at its inner end, and a damper for the other compartment, substantially as set forth.

4. In combination, a magazine and an annular heating-drum located on essentially the same base and separated from each other by a connecting-flue, the interior space surrounded by the annular drum being open at the top and bottom to the free access of air, and an annular cap to the top of the drum, having exit-pipes connected therewith, substantially as set forth.

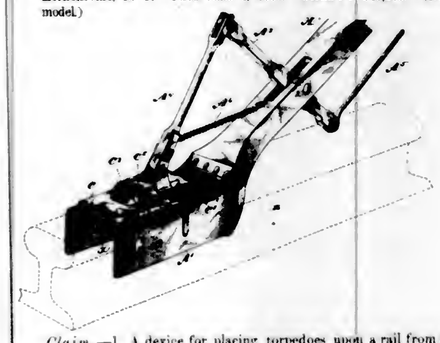
376,077. CAR-TRUCK. SAMUEL DAVIS, Montreal, Quebec, Canada. Filed Aug. 30, 1887. Serial No. 248,282. (No model.)



Claim.—1. The car-body, the stands a^3, containing bolts a^4 and attached to the car-body near its sides, the truck and its attached stands a' and bolts a, combined with the slotted metallic loops or eyes a^5 and with the two independent longitudinally-arranged flexible connections a^2, composed of wire rope operatively joined, respectively, to the truck and to the car-body, to permit the truck to swing and accommodate itself to the maximum curvature of the track, and thereafter serve as stops to prevent further turning of the said truck, substantially as described.

2. The car-truck and the car-body pivoted thereto, combined with two sets of flexible connections, a^2 *b*, composed of wire rope having attached slotted eyes and extended longitudinally from the truck in opposite directions, and connected, substantially as described, to the car-body and to the corners and sides of the truck, to operate all substantially as described.

376,078. RAILROAD TORPEDO-PLACER. STEPHEN W. DOANE, Hornellsville, N. Y. Filed June 4, 1887. Serial No. 240,298. (No model.)



Claim.—1. A device for placing torpedoes upon a rail from a moving train, comprising a handle provided at its lower end with a rail-embracing shoe adapted to receive torpedoes, a push-plate movably mounted thereon, and a lever for operating said plate, substantially as specified.

2. A device for placing torpedoes upon a rail from a moving train, comprising a handle having a torpedo-receiving shoe at its lower end adapted to embrace the sides of the rail, a push-plate provided with a spring-tongue mounted on said shoe, and a push-plate operating-lever pivoted to said handle, substantially as specified.

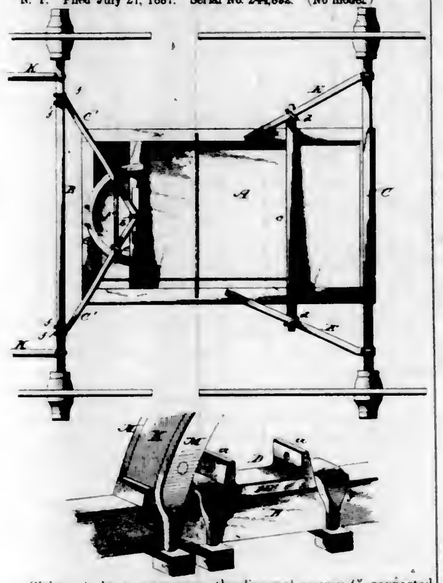
3. A device for placing torpedoes upon a rail from a moving train, comprising a handle having a torpedo-receiving shoe at its lower end provided with parallel guides, a push-plate having a spring-tongue mounted on said guides, a lever for operating the push-plate pivoted to the handle, and a retracting-spring connecting the lever and handle, substantially as specified.

4. The combination of the handle A, and the shoe A', affixed to its lower end and provided with the guides A^2, with the push-plate C, having the downwardly-projecting eyes C' at its rear end and mounted on said shoe, and with the bar A^4, lever A^3, and rod A^5, substantially as specified.

5. The combination of the shoe A' and its handle A with the push-plate C, movably mounted thereon, bent, as at C^2, and having the spring-tongue C^3, and with the torpedoes X, substantially as specified.

6. The handle A, in combination with the lever A^3, rods A^5 and A^4, the spring A^6, the plate C, and the shoe A', substantially as specified.

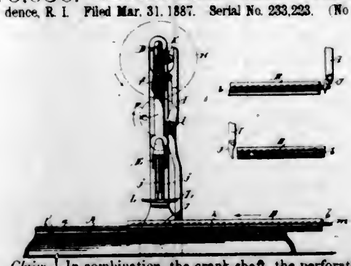
376,079. RUNNING-GEAR FOR VEHICLES. PAUL EMERY, Owego, N. Y. Filed July 21, 1887. Serial No. 244,892. (No model.)



Claim.—1. In a wagon-gear, the diagonal springs C', connected to the front axle by suitable clips and to the under side of the wagon-body at their point of intersection, which point is forward of the transverse center of said body, by a king-bolt, and also connected together near the apex of their angle by transverse brace F, in combination with the diagonal springs E, connected to the rear axle and to the wagon-body to the rear of the apex of the angle of the springs C', and also to the transverse brace *c*, by suitable clips and bolts, substantially as and for the purpose set forth.

2. The combination, with the axle B, of the metal bracket H, secured to the upper side thereof and formed with flanges *a*, serving as a seat for the eye end of a spring, seats for the clips, and at one end with a seat for the end of the thill, all substantially as shown and described.

376,080. STEAK-PERFORATOR. THOMAS W. FRANKLIN, Providence, R. I. Filed Mar. 31, 1887. Serial No. 233,223. (No model.)



Claim.—In combination, the crank-shaft, the perforating-cutters connected with the crank-shaft, the wiper-cams, the levers and ratchet-pawls, the table provided with the ratchet-teeth, and the bed provided with the stops, substantially as and for the purpose specified.

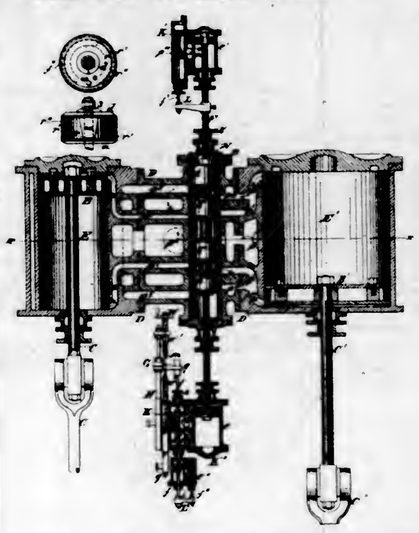
376,081. RUBBER ERASER. WILLIAM FRIEND, New York, N. Y. Filed Nov. 7, 1887. Serial No. 254,460. (No model.)



Claim.—1. A rubber eraser consisting of a rubber ring sprung in a groove on the outer edge of a circular center piece, said ring being beveled in such a manner as to give its periphery a sharp edge, substantially as shown and described.

2. In a rubber eraser, the combination of the rubber ring A, edge *a*, circular center piece B, groove *b*, flange C, and face *c*, substantially as shown and described.

376,082. VALVE-GEAR. DARIUS F. GALLAGHER, Brooklyn, N. Y. Filed Nov. 30, 1886. Serial No. 220,316. (No model.)



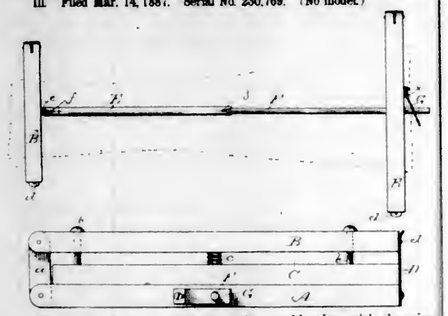
Claim.—1. The combination, with the main valve of a steam-engine and its valve-stem, of a first auxiliary engine for moving said valve successively into the positions for effecting lead and full port-opening, a second auxiliary engine for effecting the movement of said valve into the positions for cut-off and exhaust-closure, (the piston of said second auxiliary engine and its valve being rigidly connected with the piston of the first auxiliary engine for effecting simultaneous movement in the parts so connected,) and mechanism for effecting the movement of the valve of the first auxiliary engine synchronously with the movement of the main shaft of the principal engine, substantially as and for the purposes described.

2. The combination, with the main valve of a steam-engine and its valve-stem, of a first auxiliary engine for moving said valve successively into the positions for effecting lead and full port-opening, a second auxiliary engine for effecting the movement of said valve into positions for cut-off and exhaust-closure, the piston of the second auxiliary engine and its valve being rigidly connected with the piston of the first auxiliary, means for effecting the induction of steam to the first auxiliary engine synchronously with the movement of the main or crank shaft of the engine, and a third auxiliary engine, the piston and valve of which are rigidly connected with the valve of the first auxiliary engine for moving the latter into position for exhausting steam from said first auxiliary engine, substantially as and for the purpose set forth.

3. The tripping-gear consisting of the spring-clip G, attached to and moving with the sliding bar H, the rod *m*, actuated by the slide V, and the adjustable female-screw-threaded slides *x'*, fitted to right and left screw-threads on the rod *m*, all constructed and operating substantially as specified.

4. The combination of the main valve A, &c., the auxiliary engines *e f f'*, the sliding bar H, tripping-gear for engaging the valve-stem of the valve of the engine *e* with and disengaging said valve-stem from said sliding bar, and means for actuating said sliding bar synchronously with the main or crank shaft of the principal engine, all constructed and operating substantially as and for the purpose specified.

376,083. TROUSERS-STRETCHER. HENRY E GALLOWAY, Chicago, Ill. Filed Mar. 14, 1887. Serial No. 230,769. (No model.)



Claim.—1. In a pants-stretcher, the combination, with clamping devices, the one having the stud *e* and the other the plate G, of rod F and tube E, having its ends slotted, said stud *e* and rod F being constructed with laterally-projecting pins *f*, as set forth.

2. In a pants-stretcher, the combination, with clamping devices, of tube E, having its ends slotted, rod F, having on one end a laterally-projecting pin, *f*, and plate G, constructed so as to clamp said rod when the said plate is turned obliquely.

3. In a pants-stretcher, the combination, with clamping devices for the bottom and upper part of the pants, consisting of strips A and B, the latter hinged to the former and secured in a parallel position to the same, and presser-bar C, connected to bar B and adapted to press against strip A, of stud *e*, tube E, having its ends slotted, rod F, and clamp-plate G, said stud and rod being provided with lateral pins *f*, as and for the purpose set forth.

376,084. DEVICE FOR STEAMING AND COOKING PURPOSES. DANIEL C. GANTER, Indianapolis, Ind. Filed Nov. 29, 1886. Serial No. 220,210. (No model.)



Claim.—1. In a device for stewing oysters and the like, the combination, with a standard-support and a rocking block secured to the standard-support, of a double-bottomed pan secured to the rocking support and adapted to be tilted by the rocking of the block, the upper section of the double bottom of the pan being provided with corrugations extending substantially parallel with one another, and in the general direction of the tilting motion of the pan, for the purpose substantially as set forth.

2. The herein-described device for stewing oysters and the like, consisting, essentially, of the hollow standard adapted to be secured to a table or other support, the arm or block *g*, secured to the standard in rocking adjustment and provided with steam supply and discharge passages, a stew-pan secured to the arm or block and provided with a steam-chamber beneath its bottom, steam supply and discharge pipes leading within the standard to the steam-passages in the arm or block, a spring adapted to hold the arm or block on its seat, and stuffing-boxes and fastenings, substantially as set forth.

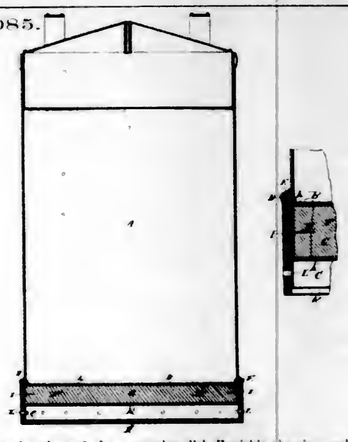
3. The herein-described device for cooking oysters and the like, comprising the double-bottomed stew-pan, the arm or block *g*, two-way faucet, stuffing-boxes *h* and *h'*, handle *r*, spiral spring *i*, standard-pipe *b*, and supply and discharge pipes *p p'*, constructed and arranged substantially as set forth.

376,085. CAN. FRANK N. GASKELL, Juda, Wis. Filed Nov. 4, 1887. Serial No. 254,306. (No model.)

Claim.—1. The combination, with the can having the bottom B, of the rim C, secured to the lower edge of the can, and the protecting-disk disposed within the rim and comprising the wooden disk G and the protecting casing or covering H, substantially as specified, for the purpose described.

2. The combination, with a can, A, of the rim C, projecting below

376,085.



the lower edge thereof, the protecting-disk F within the rim, and the hoop K, surrounding the rim C and projecting below the lower edge thereof, all constructed and arranged substantially as specified.

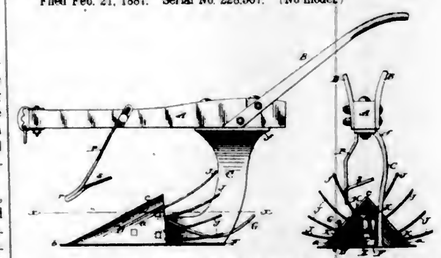
3. The combination, with a can having a rib, D, extending thereround near the lower edge, of the protecting-disk F, secured to the can, and the hoop K, encircling the lower end of the can and bearing at its upper edge against the rib D, substantially as specified.

4. The combination, with a can, A, of the protecting-disk F, secured to the can, the depending flange around the edge of the said disk, and the hoop K, surrounding the lower end of the can and the disk F and riveted or otherwise secured to the said flange, substantially as specified.

5. The combination, with a can, A, of the rim C around the bottom thereof, having its upper edge turned over to form the rib D, the ring E within the rib, the protecting-disk F, disposed within the rim C and secured thereto by means substantially as described, and the hoop K, encircling the rim C and secured to the same by rivets L, the said rib D bearing on the upper edge of the hoop, substantially as and for the purpose specified.

6. The combination, with the can A, of the protecting-disk F, secured against the bottom of the can and comprising the wooden disk G and the metallic casing or covering H, substantially as and for the purpose hereinbefore described.

376,086. POTATO-DIGGER. DANIEL Y. HALLOCK, Southold, N. Y. Filed Feb. 21, 1887. Serial No. 228,307. (No model.)



Claim.—1. The combination, in a potato-digger, with the wedge-shaped shovel D and outwardly-bent standard C, of the horizontal bent arm E, connecting the lower end of the standard C with said shovel on a level below that of the top of the shovel, substantially in the manner and for the purpose herein set forth.

2. The combination, in a potato-digger, with the shovel D, bent standard C, and horizontal bent arm E, connecting the lower end of said standard with the shovel, of the flat shoe F upon the bottom edge of the connecting-arm E, substantially in the manner and for the purpose herein set forth.

3. The combination, with the wedge-shaped angular shovel in a potato-digger, of a series of horizontally-disposed fingers or rods radiating rearwardly from a head secured centrally under the shovel, substantially in the manner and for the purpose herein set forth.
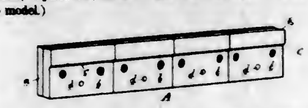
4. The combination, in a potato-digger, with the wedge-shaped angular shovel D and with a series of lateral fingers, J J, attached to the sloping sides of the shovel, to project rearwardly therefrom, of a series of intervening horizontally-disposed fingers, G G, radiating rearwardly from a head secured centrally under the shovel, substantially in the manner and for the purpose herein set forth.

5. The combination, in a potato-digger, of the wedge-shaped angular shovel D, beam A, curved standard C, curved plate E, connecting the lower end of the standard with the shovel, central horizontally-disposed fingers or rods, G G, radiating from the under side of the rear of the shovel, and lateral fingers or rods J J, projecting rearwardly from the sloping sides of the shovel, substantially in the manner and for the purpose herein set forth.

6. A spreader-plate, K, formed with transverse bars or offsets I, I', of unequal length, in combination with a doubled wire, J J, a bolt, M, and the shovel D in a potato-digger, substantially in the manner and for the purpose herein set forth.

7. The combination, in a potato-digger, with the beam A and the wedge-shaped angular shovel D, of the iron rod P, secured to the side of the beam over the shovel, to depend from the beam with a lateral and forward inclination, and which is constructed with an arm, S, made to project from its lower end both upwardly and transversely to the length of the beam, over and above the shovel, substantially in the manner and for the purpose herein set forth.

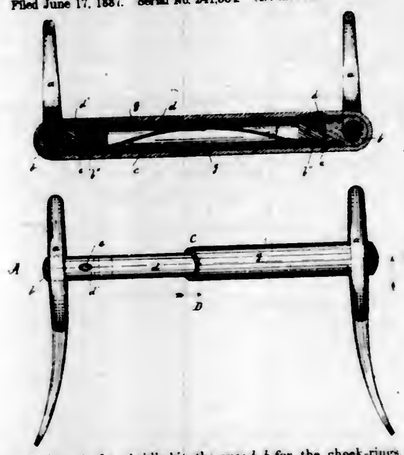
376,087. SHEAR-BLADE FOR POWER-SHEARS. JOSEPH P. HALPIN, Wyandotte, Mich. Filed Oct. 18, 1887. Serial No. 252,670. (No model.)



Claim.—1. A shear-blade for power-shears, consisting of a single wrought-iron plate, forming a backing, and of sectional steel face-plates riveted thereto, substantially as described.

2. In power-shears, the combination, with the chuck B, having shoulder *e*, of the shear-blade consisting of the wrought-iron plate or backing *a* and the sectional steel face-plates *b*, riveted thereto, and the bolts C, all substantially as described.

376,088. BRIDLE-BIT. ALBERT H. HAMSCOM, Winterport, Me. Filed June 17, 1887. Serial No. 241,584. (No model.)



Claim.—1. In a bridle-bit, the eyes *b b* for the cheek-rings, and the metal strips or plates *c d*, connected to the shanks *b' b'* of said eyes, in combination with the metal spring *f*, interposed between said plates, as and for the purpose set forth.

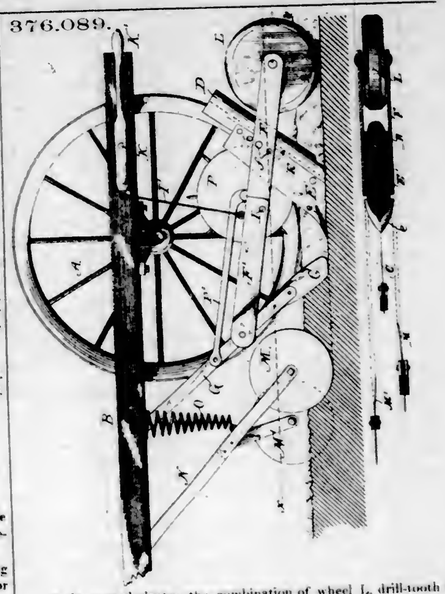
2. In a bridle-bit, the eyes *b b* and plates *c d*, one of which is firmly secured to the shanks *b' b'* of said eyes and the other free to slide thereon, combined with the interposed metal spring *f*, adapted to bear against the interior surfaces of said plates *c d*, as set forth.

3. The eyes *b b*, having shanks *b' b'*, provided with grooves or recesses *b'' b''*, for receiving the ends of the metal spring, combined with the plates *c d* and interposed metal spring *f*, substantially as and for the purpose set forth.

376,089. SEED-PLANTER. JOSEPH V. HARTER, Denver, Ill. Filed June 9, 1887. Serial No. 240,748. (No model.)

Claim.—1. In a seed-planter, a drag-bar bearing a drill-tooth and a press-roller behind the tooth, said bar having a hinged lock-joint therein and a thrust-bar for locking and unlocking the same and for holding the tooth in the earth and lifting it free thereof.

376,089.



2. In a seed-planter, the combination of wheel L, drill-tooth E on bar F', the bar F', connected with bar F by a hinged lock-joint, and a thrust-rod, l', to unlock and bend said joint.

3. In a seed-planter, the combination of the wheel L and drill-tooth E, borne on a bar jointed at l, with disk-cutters M M', adapted to cut a channel for said drill-tooth.

4. A seed-planter having press-wheel L, held by draw-bar F, bearing the planter-point E, having a drop-hole through it and provided with a joint, I, in said draw-bar in front of the point E, and with the lifter-bar l', connected with frame B.

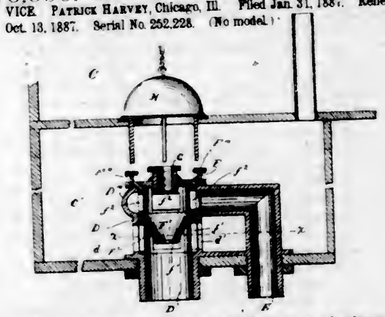
5. In a seed-planter, the drag-bar F F', having a joint, l, with a knuckle above, combined with a holder, l', and handle K.

6. The drill-tooth E, provided with a diverging point, *e*, and a steel cutter, E', in combination with the tube D, and drag-bar F F', substantially as shown and set forth.

7. The combination of hinged bar F' F, drill-tooth E, roller L, rod l', and lever K', arranged substantially as set forth.

8. The combination of hinged drag-bar F F', drill-tooth E, held thereto by two bolts, *f*, through the same, and the press-roller L, borne thereon.

376,090. SIPHON-CLOSET FLUSHING AND REGULATING DEVICE. PATRICK HARVEY, Chicago, Ill. Filed Jan. 31, 1887. Renewed Oct. 13, 1887. Serial No. 252,228. (No model.)



Claim.—1. In combination with the flushing-pipe having water-induction ports and the air-pipe communicating with the flushing-pipe above such ports, the sleeve F, concentric with the flushing-pipe and having ports corresponding in position with its said water-induction ports, said sleeve being rotatable with respect to the flushing-pipe to vary the extent of the coincidence of said ports with the water-induction ports of the flushing-pipe, substantially as and for the purpose set forth.

2. In combination with the flushing-pipe having water-induction

ports, the air-pipe communicating with the flushing-pipe above said ports, and the funnel F' within the flushing-pipe commencing between the air-pipe communication and the water-induction ports and extending down into the belt or zone of said ports, substantially as set forth.

3. In combination with the flushing-pipe having water-induction ports and the air-pipe communicating with the flushing-pipe above such ports, the sleeve F, concentric with the flushing-pipe and having ports corresponding in position with the water-induction ports of the flushing-pipe, and the flange F', commencing above said ports of the flushing-pipe and below the air-pipe communication and extending within the belt or zone of the water-induction ports of the flushing-pipe, the sleeve being rotatable with respect to the flushing-pipe to vary the extent of coincidence of its said ports with the water-induction ports of the flushing-pipe, whereby a variable quantity of flushing-water is admitted through said ports against said funnel and discharged past the edge of the funnel in a continuous sheet, substantially as and for the purpose set forth.

4. In combination with the service-box, the flushing-pipe protruding up through the bottom thereof, and the air-pipe, the flushing-pipe having communication with the service-box at two levels, both within the box, and having a communication with the air-pipe between said levels, substantially as and for the purpose set forth.

5. In combination with the service-box, the flushing-pipe protruding up through the bottom thereof, and the air-pipe, the flushing-pipe having communication with the service-box at the two levels, both within the box, and having communication with the air-pipe between said levels, the lower one of said communications with the service-box being by ports disposed about a vertical line through the mouth of the upper communication, substantially as and for the purpose set forth.

6. In combination with the service-box, the flushing-pipe protruding up through the bottom thereof, and the air-pipe, the flushing-pipe having communication with the service-box at two levels, both within the box, and having communication with the air-pipe between said levels, and the funnel F', commencing between the air-pipe communication and the lower of said service-box communications of the flushing-pipe, said lower communication being by ports disposed about the axis of said funnel, and the upper said communication having its discharge-mouth over the mouth of the funnel, substantially as and for the purpose set forth.

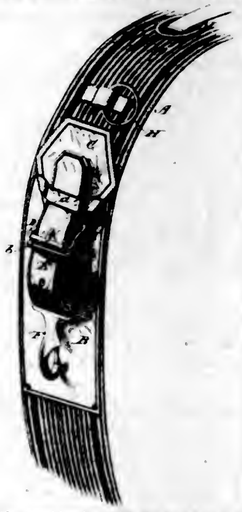
7. In combination with the service-box, the flushing-pipe protruding up through the bottom thereof, and the air-pipe, the flushing-pipe having communication with the service-box at two levels, both within the box, and having communication with the air-pipe between said levels, the upper of said communications with the service-box being by a mouth-piece adjustable vertically to vary the height at which said communication is made, substantially as set forth.

8. In combination with the service-box, the flushing-pipe protruding up through the bottom thereof, and the air-pipe, the flushing-pipe having communication with the service-box at two levels, both within the box, and having communication with the air-pipe between said levels, the lower of said communications being by ports disposed in a circle about the axis of the flushing-pipe, and the sleeve F, concentric with said pipe, and having ports corresponding to the said lower ports of the flushing-pipe and rotatable with respect to said pipe to vary the extent of coincidence of its said ports with the ports of said pipe, and the upper of said communications being by means of a mouth-piece adjustable vertically to vary the level at which said communication is made, whereby the depth of water in the service-box available for the forewash and the speed of flow through the lower ports of the flushing-pipe, which tends to exhaust the air from the air-pipe, may be correspondingly regulated, substantially as and for the purpose set forth.

9. In combination with the flushing-pipe having water-induction ports and the air-pipe communicating with the flushing-pipe above said ports, the sleeve F, within the flushing-pipe having ports corresponding in position to the water-induction ports of the flushing-pipe, communicating above with the air-pipe, and provided below such communication with a funnel-shaped flange, F', extending downward within the belt or zone of the water-induction ports of the flushing-pipe, said sleeve being rotatable within the flushing-pipe to vary the extent of coincidence of said ports with the water-induction ports of the flushing-pipe, substantially as and for the purpose set forth.

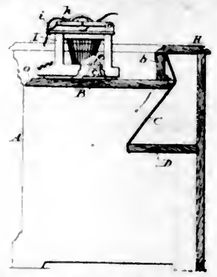
10. In combination with the service-box, the flushing-pipe protruding up through the bottom of the box, and the air-pipe communicating with the flushing-pipe above said ports, the sleeve F, within the flushing-pipe having ports corresponding to the water-induction ports of said pipe and having an interior funnel-shaped flange, F', opening upward and protruding downward within the belt or zone of said ports, said sleeve communicating above said funnel with the air-pipe, and also communicating upward with the service-box, said last-named communication being by means of a mouth-piece adjustable vertically to vary the level at which said communication is made, said sleeve being rotatable with respect to the flushing-pipe to vary the extent of coincidence of its ports with the water-induction ports of the flushing-pipe, whereby said sleeve comprises means for regulating both the degree of exhaustion of air from the air-pipe and the extent of a fore and after wash, substantially as and for the purpose set forth.

376,091. BACK-BAND. ALBERT J. HELM, Winnsborough, Tex. Filed May 20, 1887. Serial No. 238,912. (No model.)



Claim.—The combination, with the back-band, the leather guard B, secured thereto, and the leather section C, secured to said band at one end of said guard and provided with loop *a* and buckle D, of the protector G, having slotted ends *b*, and the strap E, connected with said buckle and having its ends passed through the slotted ends of said protector and under said loop, substantially as and for the purposes specified.

376,092. CABINET FOR TYPE-WRITERS. WILLIAM HORROCKS, Ilion, assignor to Wyckoff, Seamans & Benedict, New York, N. Y. Filed Aug. 22, 1887. Serial No. 247,541. (No model.)



Claim.—1. A cabinet for type-writers consisting of the case or body A, having a central section, B, of its top pivoted eccentrically to or within the body, substantially as shown, whereby said section when turned one side up will serve as a shelf to support a type-writer in proper position for use and when turned the other side up will come flush with the stationary portions of the top and serve as a desk-top.

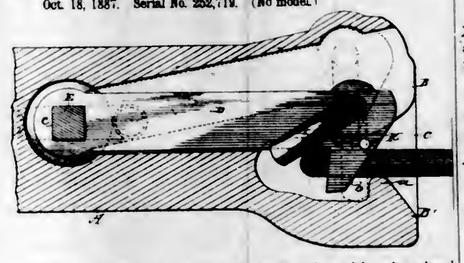
2. The combination, in a cabinet for type-writers, of the body A, the pivoted and reversible section or shelf B, and a flexible curtain, C, having one of its edges secured to a stationary portion of the body at or near its rear side and the other edge secured to that edge of the reversible section which is at the front when arranged for use as a desk, substantially as and for the purpose set forth.

3. The combination, in a type-writer cabinet, of the stationary sectional top having its inner edge beveled, and the reversible or pivoted section B, having its edge *o* provided with a corresponding bevel to serve as stops and hold the part B in position when arranged for use as a desk.

4. The combination, in a type-writer cabinet, of the body A, provided with the stationary sectional top H, and the eccentrically-pivoted section or shelf B, provided with the strip *b*, arranged to come in contact with the stationary part H when the section B is turned to the position shown in Fig. 2, substantially as and for the purpose set forth.

5. The combination, in a cabinet for type-writers, of the body A, the pivoted reversible section B, and the flexible curtain C, the said parts being arranged to operate substantially as shown, whereby the curtain is made to close the space underneath the machine when the latter is turned downward, and thus protect the same from dust.

376,093. CAR-COUPLING. EDWARD HUBER, Marion, Ohio. Filed Oct. 18, 1887. Serial No. 252,719. (No model.)



Claim.—1. In a car-coupler, the combination, with a draw-head and a coupling-hook therein, of a gravity-drop pivoted to said hook and adapted while uncoupling to hold the hook away from the link for the purpose of permitting withdrawal of the link.

2. In a car-coupler, the combination, with a draw-head and a bar located transversely therein, said bar having circular collars whereby bearings are formed for the bar, of a coupling-hook mounted on the rod and a gravity-drop pivoted in the head of the hook, substantially as set forth.

3. In a coupling, the combination, with a draw-head formed substantially as shown, an angular bar located transversely in the draw-head, and a set of circular collars adapted to turn in sockets in the draw-head and furnish bearings for the bar, of a coupling-hook mounted on the said bar, a double gravity-drop pivoted in the head of the coupling-hook, and stops for limiting the vibration of the drop, all for the purpose substantially as set forth.

376,094. VENTILATOR. SAMUEL W. HURLBURT, Creston, Iowa. Filed Oct. 4, 1887. Serial No. 251,460. (No model.)



Claim.—1. A mattress, pillow, bolster, or other analogous article provided with a ventilator consisting of a series of perforated ventilating-tubes having their outer ends accessibly arranged relatively to the surrounding air and connected at their inner ends with a common interiorly-situated and perforated reservoir of elastic material, substantially as described.

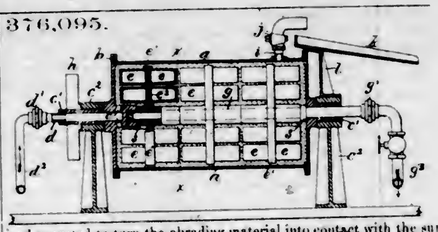
2. The combination, with a mattress, of the central expansible perforated reservoir, A, the tubes B, projecting laterally therefrom and provided with perforations *b*, the outer ends of said tubes projecting outside of the mattress, and disks *b'*, surrounding the outer ends of said tubes B to keep them outside of the mattress, substantially as described.

3. In a mattress, bolster, pillow, or other analogous article, an expansible and retractible ventilating-frame arranged interiorly and consisting of a perforated reservoir, and one or more perforated tubes having their inner ends connected to the perforated reservoir and their outer ends projecting outside the mattress, bolster, pillow, or the like, substantially as and for the purpose described.

376,095. ROTATING OR OSCILLATING FILTER. JOHN W. HYATT, Newark, N. J., assignor to The Hyatt Pure Water Company. Filed Apr. 21, 1887. Serial No. 235,632. (No model.)

Claim.—1. The combination, with a filter-casing capable of rotation, of one or more solid filter-diaphragms fixed within the casing, loose abrading material within the casing in contact with the said diaphragms, an inlet to the casing for the unfiltered water, and an outlet from the filter-diaphragms for the purified water, the whole arranged

376,095.



and operated to turn the abrading material into contact with the surfaces of the diaphragms, as and for the purpose set forth.

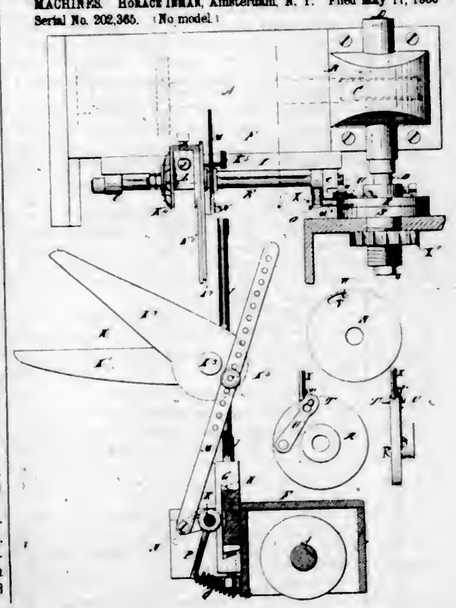
2. In a filter, the combination, with a casing mounted upon trunnions and containing one or more solid filtering media, of an inlet to the casing for the unfiltered water, an outlet from the filtering media through the trunnion for the filtered fluid, and loose abrading material in contact with the filtering media and adapted to cleanse the surfaces of the filtering media when the casing is rotated, as and for the purpose set forth.

3. In a filter, the combination, with a casing mounted upon trunnions, of an inlet to the casing conveying the unfiltered water through one of said trunnions, a series of hollow plates mounted upon a hollow shaft and having hollow filter-cups attached thereto, and an outlet from the hollow shaft through the other trunnion, and loose abrading material within the casing arranged and operated to cleanse the surfaces of the filter-cups when the casing is turned, substantially as herein set forth.

4. In a filter, the combination, with a casing capable of rotation and containing a series of filtering media, of an inlet to the casing for the unfiltered fluid, an outlet from the filtering media for the filtered fluid, loose abrading material within the casing arranged and operated to cleanse the filtering media when the casing is turned, and a waste-pipe for discharging the impurities from the casing, as and for the purpose set forth.

5. In a filter, the combination, with a casing capable of rotation and containing a series of filtering media, of an inlet to the casing for the unfiltered fluid, an outlet from the filtering media for the filtered fluid, loose abrading material within the casing operated to cleanse the filtering media when the casing is turned, means for closing the outlet for the filtered fluid, a waste pipe and cock for discharging the impurities from the casing, and a trough or pipe for receiving the impurities discharged from the waste-pipe when turned to coincide therewith, the whole arranged and operated substantially as herein set forth.

376,096. CUT-OFF ATTACHMENT FOR PAPER-BOX-COVERING MACHINES. HORACE INMAN, Amsterdam, N. Y. Filed May 17, 1886. Serial No. 202,365. (No model.)



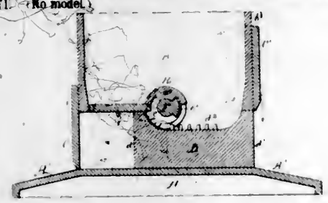
Claim.—1. In a machine for covering paper boxes, the combination of an intermittently-rotating box-form mounted on a continuously-rotating shaft, a laterally-extending arm or finger attached to the shaft, and a cut-off device, substantially as described, operated by the said arm or finger at the time the box-form is at rest, all combined and operating substantially as set forth.

2. In a machine for covering paper boxes, the combination of a rotating box-form mounted on a rotating shaft, a laterally-extending arm or finger attached to the shaft, and an automatic severing device, substantially as set forth, which is operated by the arm or finger at each complete rotation of the shaft, substantially as set forth.

3. The combination, in a box-covering machine, of a face-plate which receives its motion from the box-form shaft, and a threaded clamping-nut adapted to clamp the box-form against the face-plate by the action of screw-threads, substantially as and for the purposes set forth.

4. The combination, in a box-covering machine, of the shears K, connecting-rod M, pin N, pin P, spring Q, shaft E, block G, rod J, pin O, and a rotating box-form shaft having an extending arm adapted to engage with the pin O as the shaft revolves, substantially as and for the purposes set forth.

376,097. **PRESS FOR BUTTER AND OTHER PLASTIC MATERIAL.** GEORGE P. JOHNSON, Philadelphia, Pa. Filed July 15, 1886. Serial No. 208,071. (No model.)



Claim.—1. The combination of the receptacle, a sliding cover plate, a plunger, a presser-plate forming one side of the molding-chamber during the molding of the block, and means for reciprocating the plunger and vibrating the presser-plate, all substantially as specified.

2. The combination of the receptacle, opposite molding-chambers therein, sliding plates for closing the outer ends of said chambers, a plunger moving across the receptacle, one end of said plunger acting in connection with one molding-chamber and the other end in connection with the opposite molding-chamber, a presser-plate having two faces, one forming a side of one molding-chamber and the other forming a side of the opposite molding-chamber, and means for reciprocating the plunger and vibrating the presser-plate, all substantially as specified.

3. The combination of the receptacle, a reciprocating plunger, a vibrating presser-plate forming one side of the molding-chamber during the pressing operation, an operating-shaft, and mechanism whereby the within-described movements are imparted to said plunger and presser-plate, all substantially as specified.

4. The combination of the receptacle, a sliding cover-plate, a reciprocating plunger, a vibrating presser-plate forming one side of the molding-chamber during the pressing operation, an operating-shaft, and mechanism whereby the said shaft is caused to impart the within-described movement to the cover-plate, plunger, and presser-plate, all substantially as specified.

5. The combination of the receptacle, the plunger, the presser-plate, an operating-shaft, a segment pinion and rack whereby the movement of the shaft is imparted to the plunger, and a recessed driver for operating the presser-plate, whereby the alternate and intermittent operation of said plunger and presser-plate is effected, all substantially as specified.

6. The combination of the receptacle, opposite sliding cover-plates having projecting arms, an operating-shaft, a plunger, a rack and pinion for reciprocating the latter, and an arm carried by said shaft and acting upon the arms of the cover-plate to raise and lower the same, all substantially as specified.

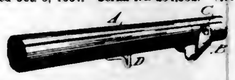
376,098. **SECTIONAL STEAM-GENERATOR.** JOHN KLING, Jr., Philadelphia, Pa. Filed Apr. 11, 1887. Serial No. 234,416. (No model.)

Claim.—1. A steam-generator section having outer lower legs, a', shorter intermediate legs, a^2, bounding part of a direct flue or fire-box space, a^3, and a return-flue, D, separate from and cut off from flue a^3 by edge flanges, d d^3, substantially as set forth.

2. The combination of a series of steam-generator sections having lower direct flue, a^3, and upper return-flue, D, cut off from flue a^3, bolt-openings, end caps, f, and bolts B, passing through the sections and said caps, substantially as set forth.

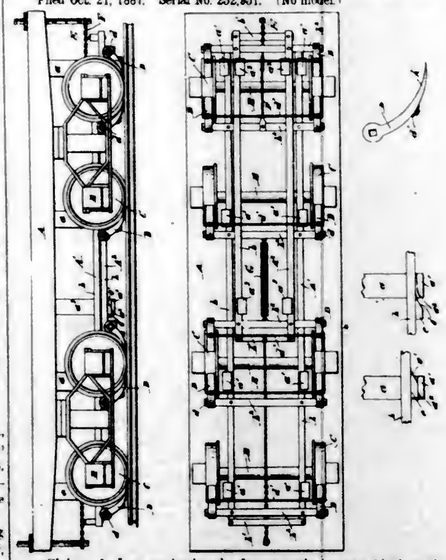
3. The section a, having opening D, flanges d d' d^2 d^3, and depending short legs or limbs a^2, provided with bolt-openings which

376,099. **NECK-YOKE GUARD.** HINRICH KNIPHALS, Davenport, Iowa. Filed Oct. 3, 1887. Serial No. 251,352. (No model.)

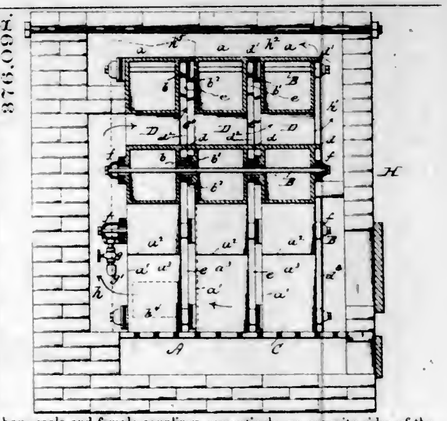


Claim.—In combination with a wagon-tongue, the guard B, attached thereto to retain the neck-yoke in place when in use, substantially as described.

376,100. **CAR-BRAKE.** LEO KUPFERSCHMID, Cincinnati, Ohio. Filed Oct. 21, 1887. Serial No. 252,951. (No model.)



Claim.—1. In a car-brake, the frame-work A, parts A' A^2, working on inclined surfaces a^2 and c' on blocks a' and c, and shoes D, said shoes being rigidly attached to the bars b^2, substantially as and for the purposes set forth.



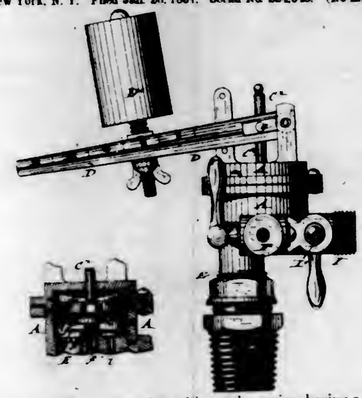
have male and female couplings, respectively, on opposite sides of the sections, substantially as set forth.

4. In combination with a casing or brick-work having top, side, front, and rear interior flues, a sectional generator having through it a flue near its top part communicating with the front and rear casing-flues, and a fire-box in the generator-sections communicating with the rear casing-flue, substantially as set forth.

5. The sectional generator A, in which the sections a have flue-openings D and fire-box spaces a^3, in combination with casing H, having front, rear, and top flues communicating with a stack or chimney, substantially as set forth.

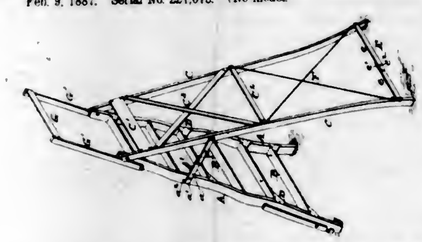
2. In a car-brake frame-work A, parts A' and A^2, posts a and a^2, blocks a' and c, having inclined faces a^2 and c', spring G, and bars b^2, having rigidly attached to them the brake-shoes D, substantially as set forth.

376,101. **PRESSURE-REGULATING VALVE.** FRANK MARKGRAF, New York, N. Y. Filed Jan. 20, 1887. Serial No. 224,845. (No model.)



Claim.—The combination, with a valve-casing having a valve-chamber, and supply and discharge channels in communication with said valve-chamber, of a flexible and weighted diaphragm supported by the valve-casing, a U-shaped spring applied to the under side of the diaphragm and provided with guide-openings at its outer end, a valve applied to the free arm of said spring, said valve resting on a valve-seat at the end of the discharge-channel, and lugs having rests for guiding and supporting the free outer end of the valve-spring, substantially as set forth.

376,102. **STEP-LADDER.** JOHN T. MILLER, Chicago, Ill. Filed Feb. 9, 1887. Serial No. 227,078. (No model.)



Claim.—1. The front section of a step-ladder, having its side bars, A, extended above the top step, in combination with the rear section or legs, C, pivoted to such extension above the top step and provided with a cross-piece, C', essentially as and for the purpose set forth.

2. A step-ladder having its side bars made of a sinuous form, in the manner and for the purpose set forth.

3. A step-ladder having its side bars made sinuous or serpentine in shape and secured to the steps with bracing-plates, in the manner and for the purpose essentially as set forth.

4. The combination of the front section, A B, of a step-ladder with the rear section or legs, C, adapted to spread laterally, and provided with flexible braces F and a spreader-toggle, E, essentially as and for the purpose set forth.

5. The combination of the front section, A B, of a step-ladder with the rear section or legs, C, having their upper portion rigidly braced together and their lower portion adapted to spread laterally, and provided with flexible braces F, and a spreader-toggle, essentially as and for the purpose set forth.

6. The spreader-toggle E of the rear section of a step-ladder, having the inner sides of its overlapping bars formed with a concave, e', in combination with the hinge-bolt e^2, essentially as and for the purpose set forth.

7. In a step-ladder, the combination, with the side bars and steps, of a tie or brace plate, D, for securing the parts together and bracing the same against lateral swaying in use, in the manner substantially as described.

8. The tie or brace plate for a step-ladder, having its exposed edge formed with a bead or flange, d, for the purpose set forth.

9. The combination, with a step-ladder, of a support, G, pivoted thereto, and adapted to fold down out of the way when not in use, essentially as set forth.

10. The combination, with a step-ladder, of the folding foot H, pivoted to the front-section side bars and adapted to engage a stirrup or lug, M, on said side bars when turned down for use, essentially as described, and for the purpose set forth.

11. The combination of the front section, A, of a step-ladder with the rear section or legs, C, the folding tie or toggle A', having an extension, a', and lug or stop a^3 on the ladder side bar, as described, and for the purpose set forth.

12. In combination with the side bars and lower step of a step-ladder, an angle-piece, D', attached to the side bars, for the purpose set forth.

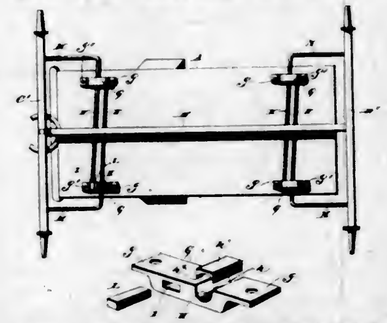
376,103. **INDICATOR-DIAL.** DANIEL L. MITCHELL, Taunton, Mass. Filed Apr. 11, 1887. Serial No. 234,330. (No model.)



Claim.—1. A sight signal or indicator having a field or dial the face of which is painted or otherwise made in two strongly-contrasting colors, with a clearly-defined dividing-line at any desired point, in combination with an index-finger or pointer arranged to move over said field or dial, and having its outer face painted or otherwise made in the same two strongly-contrasting colors.

2. A sight signal or indicator having a field or dial the face of which is painted or otherwise made in two strongly-contrasting colors, one of which represents the "safety" field and the other the "danger" field, in combination with an index or pointer arranged to be moved over said "safety" and "danger" fields, and having its outer face painted or otherwise made in the same two strongly-contrasting colors, the division between said colors extending longitudinally and centrally thereof.

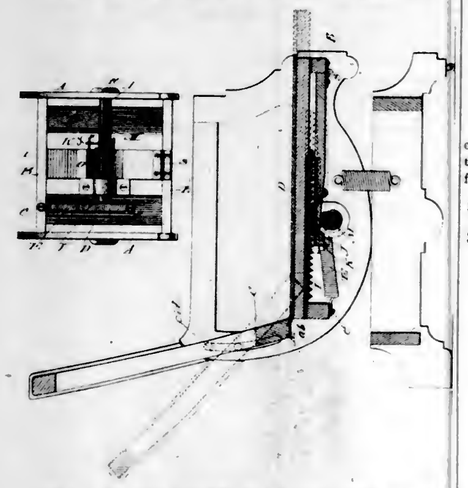
376,104. **VEHICLE-SPRING.** HARRY A. MYERS, Franklin, Pa. Filed Nov. 10, 1887. Serial No. 254,827. (No model.)



Claim.—1. The combination, with the wagon-body, of the brackets or spring-boxes attached to the under side thereof and having the bearings H and the slots I therein, the torsion-springs K, journaled in the bearings H and having their squared ends engaged in the slots I, and the wedges L, secured in the said slots to maintain the ends of the spring therein, substantially as specified.

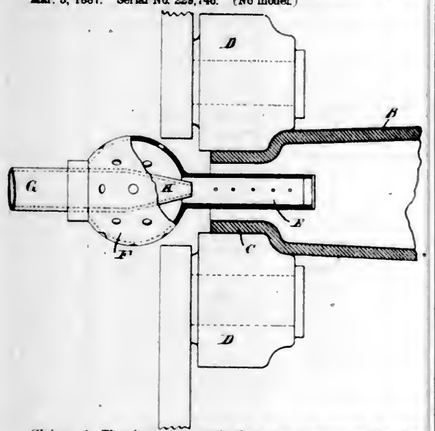
2. The herein-described brackets or boxes G, adapted to be secured to the under side of a wagon-body and having the slots I and the recesses A therein, the said recesses having converging sides, the springs K, journaled in the recesses and having squared ends fitting in the slots I, the wedge-shaped caps k', fitting in the recesses A and bearing on the said springs, and the wedges or keys L, secured in the slots I, to hold the squared ends of the spring therein, substantially as specified.

376,105. RECLINING-CHAIR. ALBERTUS E. PALMER, Hillsdale, Mich. Filed June 3, 1886. Serial No. 204,062. (No model.)



Claim.—In combination, sliding seat D, provided with the casting I on strip H, hinged strip K, provided with the counterpart casting J and rigid pin W, and eccentric rod M, provided with the rigid pin *y* and rigidly fastened to rosette R, all arranged and operated as set forth, and for the purposes specified.

376,106. METHOD OF AND MEANS FOR REDUCING THE DIAMETER OF TUBES. ANDREW PATERSON, McKeesport, Pa. Filed Mar. 5, 1887. Serial No. 229,746. (No model.)

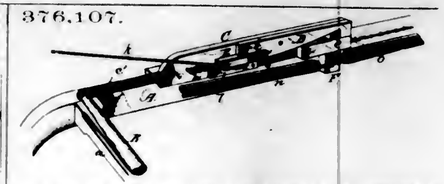


Claim.—1. That improvement in the art of condensing the diameter and increasing the thickness of tubes without forming exterior wrinkles which consists in subjecting a revolving tube to the action of exteriorly and oppositely disposed condensing-rolls, while the inner surface of the tube is left free to move radially inward and simultaneously subjecting the inner surface of the tube to the action of outward radial blasts of ignited gas, substantially as set forth.

2. In a device for simultaneously reducing the diameter and increasing the thickness of tubes without forming exterior wrinkles, the combination of a pair of condensing-rolls, D, adapted to act upon the exterior of a tube revolved between them, and a tubular gas-burner, E, disposed between and with its axis parallel to the axis of said rolls and provided with perforations adapted to supply radial jets of burning gas to the interior of such revolving tube, substantially as set forth.

376,107. HORSE-DETACHER. SIMEON A. PUGH, Dadeville, Ala. Filed Aug. 3, 1887. Serial No. 246,060. (No model.)

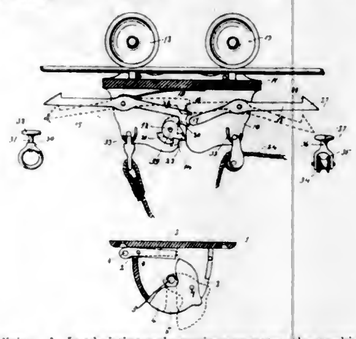
Claim.—The frame C, having pivoted latch D and spring *d*, in combination with the releasing device E, spring *h*, guide-rod *f*, and



cord *k*, and the open slotted head *e* and headed dog F, connected to the traces, and operating substantially as and for the purpose set forth.

376,108. WITHDRAWN.

376,109. HAY-CARRIER. WILLIAM S. RISLEY and E. EUGENE RISLEY, Richfield Springs, N. Y. Filed July 1, 1886. Serial No. 206,389. (No model.)

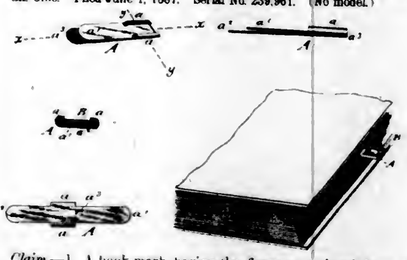


Claim.—1. In a hoisting and carrying apparatus, the combination, with a carrier depending from wheels or rollers, mounted upon a track, and having guiding-slots in the lower central portion of the walls, of latches pivoted in the carrier, projecting longitudinally from each end thereof, having hooks or shoulders upon their outer ends, their inner ends adapted to engage each other and to be simultaneously movable, and the shouldered cam-shaped catch pivoted in the carrier, adapted to engage a bail within the guiding-slot, and having a shoulder thereon adapted to be engaged by a projection on one of the pivoted latches.

2. A carrier depending from wheels, mounted upon a track, and having guiding-slots in the lower central portion thereof, latches pivoted in the carrier, having shouldered projections on the outer ends of each, the inner ends adapted to engage each other to be simultaneously moved, and the shouldered cam-shaped catch pivoted in the carrier, adapted to engage a bail within the guiding-slots, and having a shoulder thereon adapted to be engaged by a projection on one of the latches, in combination with a track-support having guiding-slots in the lower central portion of the walls, a cam-shaped catch pivoted therein, and a pivoted lever for engaging and disengaging the cam-shaped catch, for the purposes set forth.

3. A track-support having opposing walls provided with guiding-slots, the cam-shaped catch pivoted therein, and the pivoted lever for engaging and disengaging the cam-shaped catch, for the purposes stated.

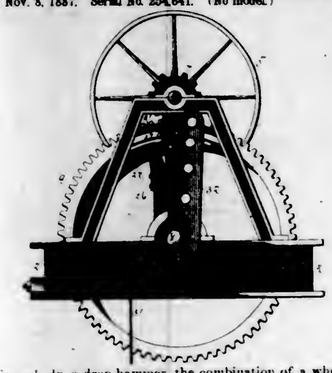
376,110. REFERENCE BOOK-MARK. HOWARD H. RUSSELL, Oberlin, Ohio. Filed June 1, 1887. Serial No. 239,961. (No model.)



Claim.—1. A book-mark having the flanges *a a* closed down at the front end to hold the spring parts $a' a^2$ together, as described.

2. A book-mark formed of a spring-plate having side flanges, *a a*, parts $a' a^2$, formed by folding on a cross-line, a^3, the tongue a^4, and the slot a^5, as shown and described.

376,111. DROP-HAMMER. JOSHUA SANDAGE, South Bend, Ind. Filed Nov. 8, 1887. Serial No. 254,641. (No model.)



Claim.—1. In a drop-hammer, the combination of a wheel having an annular friction-surface, a lock-arm carrying a friction-shoe, and a crank-arm adapted to support a hammer, said lock-arm and crank-arm supported to move in unison, substantially as set forth.

2. In a drop-hammer, the combination of a wheel having an annular friction-surface, a lock-arm carrying a friction-shoe, a spring to hold the shoe in contact with the friction-surface of the wheel, and a crank-arm to support the hammer, said lock-arm and crank-arm supported to move in unison, substantially as set forth.

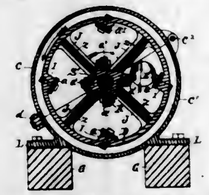
3. In a drop-hammer, the combination of a wheel having an annular friction-surface, a lock-arm carrying a friction-shoe, a tappet to release the friction-shoe from engagement with the friction-surface of the wheel, and a crank-arm to support a hammer, said lock-arm and crank-arm supported to move in unison, substantially as set forth.

4. In a drop-hammer, the combination of a wheel having an annular friction-surface, a lock-arm carrying a friction-shoe, a crank-arm to support a hammer, said lock-arm and crank-arm supported to move in unison, and devices to arrest the movement of the hammer and release the same, substantially as set forth.

5. In a drop-hammer, the combination of a wheel having an annular friction-surface, a lock-arm, a friction-shoe, a link connecting the friction-shoe and lock-arm and a crank-arm to support a hammer, said lock-arm and crank-arm supported to move in unison, substantially as set forth.

6. In a drop-hammer, the combination of a crank-arm carrying a rope-support, a windlass, a rope connecting its support and windlass, and a detent for holding the windlass when adjusted, substantially as set forth.

376,112. PULVERIZING-MACHINE. AUSTIN D. SEARLS, Sr., Seward, AUSTIN D. SEARLS, Jr., Channahon, and DEWITT C. SEARLS, Troy, Ill. Filed Apr 18, 1887. Serial No. 235,158. (No model.)



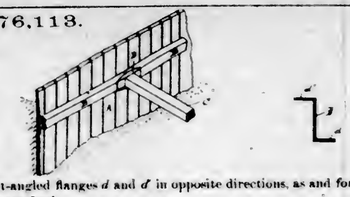
Claim.—In the pulverizing-machine shown and described, the combination of the rotatable drum D, having the inclined lugs or projections 1 on its inner peripheral surface, beaters *a*, secured to the inclined faces of said lugs, arms J, having inclined faces, beaters Z, secured to the inclined faces of said arms, rotatable beater-head R, arranged within said drum and adapted to rotate in an opposite direction therefrom, and the beaters *a*, secured to said beater-head, substantially as and for the purpose set forth.

376,113. SEWER-SHOE. CHARLES K. SHERBURNE, Minneapolis, Minn. Filed Aug. 15, 1887. Serial No. 246,949. (No model.)

Claim.—1. A metallic sewer-shoe provided with a right-angled flange the body of which is adapted to overlap the ends of two adjacent rangers and receive the pressure from the cross-brace, and the flange of which is adapted to rest on the top of said rangers, as and for the purpose set forth.

2. The metallic sewer-shoe D, provided on its edges with the

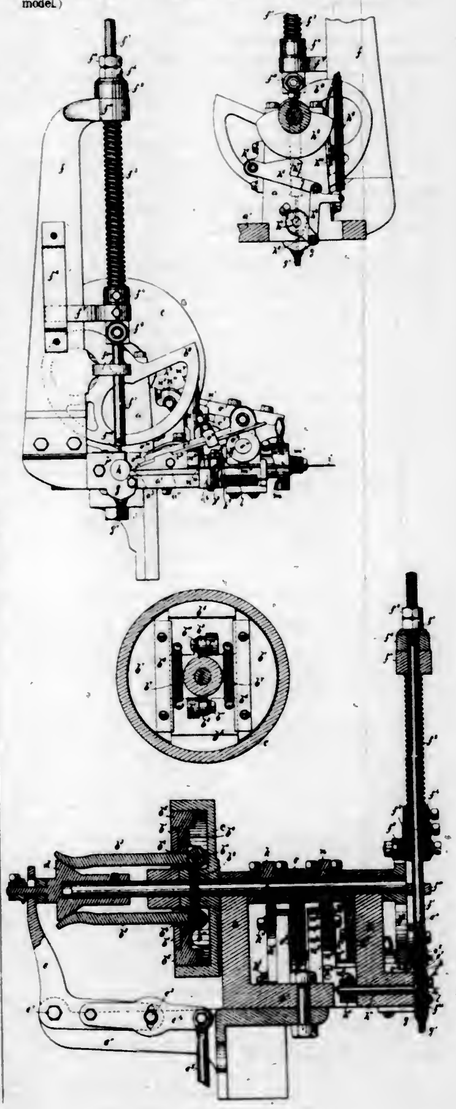
376,113.



right-angled flanges *d* and *d'* in opposite directions, as and for the purpose set forth.

3. In combination, sheeting A, rangers B, cross-brace C, and the metallic shoe D *d d'*, placed intermediate the ends of said brace and said rangers, substantially as described.

376,114. NAILING-MACHINE. JOHN P. SMITH and WARREN C. EVANS, Exeter, N. H. Filed Aug. 18, 1887. Serial No. 247,262. (No model.)



Claim.—1. In a nailing-machine, the mechanism, as described, for imparting a rotary motion to the driving-shaft *b*, consisting of the drum *c*, loosely mounted on said shaft and having radially-movable friction-clutch blocks b^2 b^2 and their connecting-springs b^3 b^3, combined with the disk b', secured to said shaft *b* and having the levers b^4 b^4 pivoted to said disk, and the longitudinally-movable cone *d*, journaled on the driving-shaft and having connecting mechanism to the treadle-rod d^3, as and for the purpose set forth.

2. In a nailing-machine, the nail-feeding device, as described, consisting of the rock-lever k^4, automatically operated from the shaft *b* and pivoted to the bed of the machine, combined with the lever k^6, pivoted in its rear end at k^5, and having jaw or lip k^9 and spring *l* in its outer end, and having the dog k^7 pivoted to it, as and for the purpose set forth.

3. In a nailing-machine, the nipper-lever k^4 and the automatic mechanism, as described, consisting of the cam *k*, secured to the driving-shaft *b*, the bell-crank lever k', and the link k^3, connecting said bell-crank lever with the rear end of the nipper-lever k^4, as and for the purpose set forth.

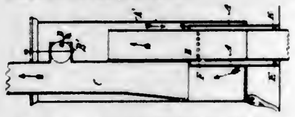
4. In a nailing-machine, the clamping-lever n^3, for the purpose of holding the wire while it is being cut, pointed, and headed, combined with the mechanism for its automatic operation, consisting of the cam *n*, secured to the driving-shaft *b*, the lever *n'*, pivoted at n'', as described, and the slotted rod n^4 n^5, provided with regulating-screw n^6 and having its lower end connected to the clamping-lever n^3, as and for the purpose set forth.

5. In a nailing-machine, the inclined reciprocating cutter-bar o^3 and connecting mechanism to the driving-shaft, as described, consisting of the cam *o* on the driving-shaft, the spring-pressed lever *o'*, mounted on the rock-shaft o'', the cranks o^4, secured to said rock-shaft, and the bar o^5, pivoted to said crank o^4 and having clamping device for securing it to the cutter-bar o^3, as and for the purpose set forth.

6. In a nailing-machine, the reciprocating and spring-actuated nipper feed-levers k^4 k^7 k^8, in combination with the adjustable and graduated cam-disk *m* and the rod or bar m^2, bearing against such cam and having its forward end adapted to serve as a stop to limit the return motion of the said nipper-levers, as set forth.

7. In a nailing-machine, the inclined reciprocating cutter o^3, adapted to yield upward against the influence of the spring o^{10}, combined with the oscillating nail-deliverer *h* and the bed or plate a^7, having the lip or rise a^8 on its upper side, adjacent to the deliverer *h*, for the purpose of centering the nail-point *i* relative to the nail-body, as and for the purpose set forth.

376,115. STOVE-DRUM. GEORGE STEPHENSON, Windsor, Ontario, Canada. Filed Mar. 28, 1887. Serial No. 232,704. (No model.) Patented in Canada Nov. 2, 1885, No. 22,715.



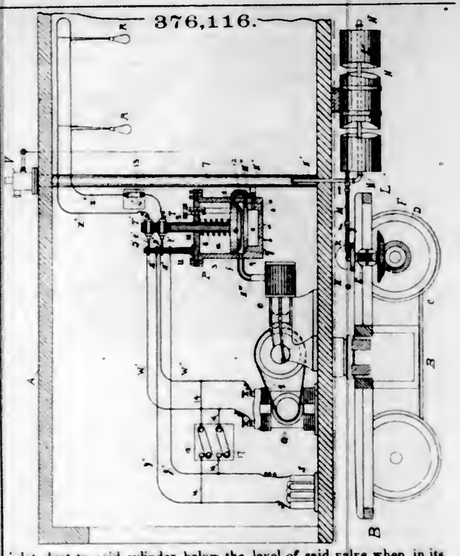
Claim.—The drum A', combined with the flue A, extending therein and perforated near its base outside said drum, the flue B, extended through the flue A and provided within said flue with perforations F, and the dampered smoke-flue C within said drum independent of said flues A B, substantially as described.

376,116. LIGHTING CARS BY ELECTRICITY. ARTHUR D. STEVENS, Minneapolis, Minn., assignor of one-half to Edgar B. Dillingham, same place. Filed June 10, 1887. Serial No. 240,943. (No model.)

Claim.—1. In a system for electrically lighting cars, in combination, an air-compressor, suitable means for driving said compressor from the car-axle, substantially as described, an air-engine, a combined air-receiver and air-storage vessel intermediate said compressor and said engine, and communicating with each, and an automatic air cut-off intermediate said storage-vessel and said engine for cutting off the supply of air to the engine when the pressure falls below a given amount, as and for the purpose set forth.

2. In the system for electrically lighting cars, as set forth, the combined air-receiver and storage-vessel L, consisting of the cylinders L' L'' and communicating-pipe *l*, in combination with an air-inlet pipe, M, and an air-outlet pipe, N, starting from a point within the receiver most remote from the air-admission point and passing through the entire length of both of said cylinders and leaving said receiver at a point near the air-admission point, substantially as described, whereby the utmost possible air may be stored within the receiver, and at the same time the air be taken from the receiver and applied to the engine at a high temperature.

3. An automatic air cut-off for air-engines, consisting of a suitable closed air-cylinder, a valve or piston in said cylinder, a tension-spring within said cylinder and bearing against the top of said valve, an air-



inlet duct to said cylinder below the level of said valve when in its lowermost position, and an air-outlet duct through the side of said cylinder at a point covered and closed by the periphery of said valve when in its lowermost position and below the level of said valve when in its uppermost position, substantially as and for the purpose set forth.

4. An automatic air-cut-off device consisting of a suitable air-cylinder, a tightly-fitting piston within said cylinder, a tension-spring bearing against the upper side of said piston, an air-inlet below said piston when in its lowest position, an air-outlet below the level of said piston when in its uppermost position and closed by said piston when in its lowest position, and an air-duct leading from the air-inlet side of said piston to a point in said cylinder just below the level of the top of said piston when in its uppermost position, whereby when the air-pressure falls below the spring-tension and the piston starts downward air from below the piston passes above the piston and the cut-off is made instantaneous.

5. An automatic air-cut-off device consisting of an air-cylinder having interior sections of different diameters, a piston having two sections of different diameters corresponding to and fitting two adjacent cylinder-sections, a tension-spring in said cylinder bearing against the top of the larger of said piston-sections, an air-inlet to said cylinder below the lowermost position of said smaller piston-section, and an air-outlet above the lowermost level of said piston and below the uppermost level of the same at a suitable point to be closed by said piston when down and be opened when the piston is up, substantially as described, whereby when the piston starts to rise the area of piston exposed to air-pressure is suddenly increased and the air-outlet is instantaneously opened.

6. An automatic device for instantaneously connecting and disconnecting an air-receiver with an air-engine, consisting of a suitable air-cylinder having three interior sections of different diameters—*i. e.*, a relatively large section, a relatively small section, and a middle conical or flaring section connecting said large and small section, a piston in said cylinder having two integrally-formed sections of proper diameters to fit said large and said middle cylindrical sections and provided with an unpacked piston-rod passing out through the head of said cylinder, a tension-spring encircling said piston-rod and bearing against said piston, an air-inlet duct to the small cylindrical section for admitting air from the receiver, an air-outlet duct intermediate the highest and lowest level of the smaller piston-section for passing air to the engine, and an air-duct from the small cylinder-section to a point in the large cylinder-section just below the highest level of the top of the large piston-section, substantially as described.

7. In combination, an air-receiver, an air-engine, a dynamo coupled to said engine, an air-conduit from said receiver to said engine, an automatic air-cut-off device on said air-conduit, a set of storage-batteries, a series of electric lamps, a pair of electric conductors through said lamps, independent pairs of electric conductors through said dynamo and said storage-batteries, respectively, and an electric switch connected to and operated by said cut-off device and adapted to automatically switch said lamps into circuit with said dynamo and out of circuit with said storage-batteries, or reversely, substantially as and for the purpose set forth.

8. In combination, an air-receiver, an air-engine, a dynamo coupled to said engine, an air-conduit from said receiver to said engine, an air-cut-off device on said conduit, consisting, essentially, of a fixed cylinder with inlet and outlet ports, and a spring-pressed piston adapted to close said outlet-port when the air-pressure falls below a given point, and provided with a piston-rod, 5, projecting outside of said cylinder, binding-posts T' T'', fixed in and insulated from said piston-rod and provided with the metallic contact-points t' t'', a fixed standard, U, of insulating material, suitably supported near the piston-rod 5, pairs of metallic contact-points, D' and D'' and S' and S'', fixed on said standards, said D' and S' being on opposite sides of t', and D'' and S'' on the opposite sides of t'', a series of incandescent lamps, R, wires Z' and Z'' from T' and T'', respectively, to said lamps, a storage-battery, wires Y' Y'' from S'' and S', respectively, to said storage-battery, and wires W' W'' from D' and D'', respectively, to said dynamo, substantially as described.

9. In combination, an air-receiver, an air-engine, an air-conduit from said receiver to said engine, and an automatic device on said air-conduit adapted to cut off the air from said engine when the air-pressure falls below a given point, substantially as set forth.

10. In combination with a car-body and its supporting-truck, an air-compressor located on said truck, an air-receiver supported on said car-body, and an air-conduit connecting said compressor and receiver composed of a series of sections connected by ball-and-socket joints, as and for the purpose set forth.

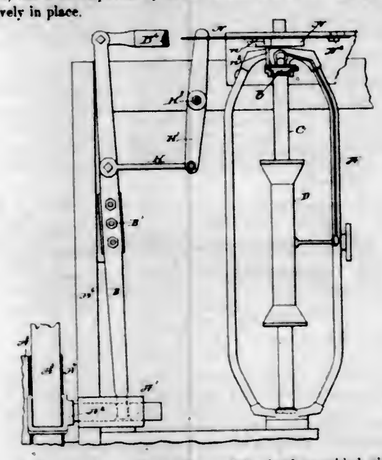
376,117. DOOR-CHECK. WILLIAM H. STEVENS, Abbott, Miss. Filed Oct. 22, 1886. Renewed Nov. 1, 1887. Serial No. 254,012. (No model.)



Claim.—The combination of a gate or door, with the guiding and locking loops, the supporting-frame for the latch, the post A, upon which the latch is secured at the opposite side or corner from the hinge, and the latch which is pivoted or jointed to its support at a point not corresponding to or registering with the hinge of the gate, and which passes through the guiding-loop and alternately engages with the loops for the purpose of locking the gate or door in position, substantially as shown.

376,118. FLIER-FRAME. HERMAN F. STRAW, Manchester, N. H. Filed Aug. 26, 1887. Serial No. 247,927. (No model.)

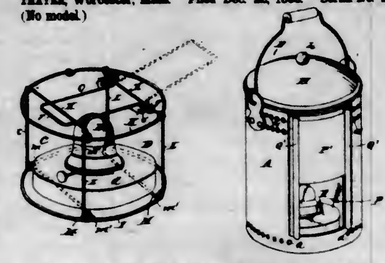
Brief.—The object of the invention is to prevent the accidental disengagement of the upper ends of the quills from their detaining-latches, and is accomplished by means to hold said latches firmly and positively in place.



Claim.—1. The quill, the flier, and the latch provided with a pin or projection, combined with a locking bar or stop to co-operate with the said pin or projection and prevent or permit, as desired, the lifting of the latch, substantially as described.

2. The quill, the flier, and the latch provided with the pin or projection, and the locking bar or stop, combined with the belt-shifting rod and intermediate connections, whereby the bar or stop prevents the lifting of the latch, except when the belt is on the loose pulley, to effect the stopping of the machine, substantially as described.

376,119. LUNCH-PAIL. CORWIN M. THAYER and LEONARD M. THAYER, Worcester, Mass. Filed Dec. 22, 1886. Serial No. 222,985. (No model.)

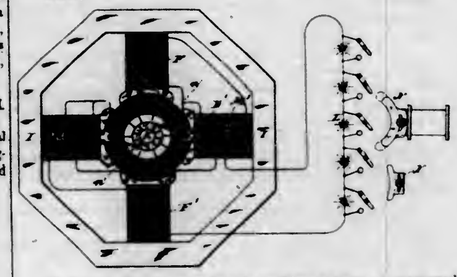


Claim.—1. The herein-described lamp-holder for lunch-pails, comprising the upper and lower horizontal rings, the vertical bars secured thereto, and the transverse horizontal bars secured to the rings within the same, as and for the purpose set forth.

2. The herein-described lamp-holder for lunch-pails, comprising the upper and lower connected rings having the transverse bars and the swinging bail connected to the upper ring and adapted to rest upon the transverse bars thereof, as and for the purpose described.

3. The combination, in a lunch-pail, of the pail A, open at the top, the dinner-vessels fitted therein to contain the lunch, open lamp-holder C, resting on the bottom of the pail and removable therefrom, lamp in the said holder, the said pail having openings in the sides on a level with the said lamp, transparent slides on the inner sides of the said pail over the openings, and metal slides on the outside of the said pail over the said openings, all constructed and arranged substantially as and for the purpose set forth.

376,120. DYNAMO-ELECTRIC MACHINE OR MOTOR. ELIHU THOMSON, Lynn, Mass. Filed Mar. 30, 1887. Serial No. 232,942. (No model.)



Claim.—1. In a dynamo-electric machine or motor, a compound pole-piece one portion of which is of constant or approximately constant effect upon the armature, while the other varies with the load, as and for the purpose described.

2. The combination, with armature-coils in the same circuit, of two field-magnet pole-pieces, one of which is of approximately constant strength, while the other is variable with the load, as and for the purpose described.

3. In a dynamo-electric machine or motor, a field-magnet pole-piece constantly magnetized to saturation, or approximately saturation, in combination with a field-pole acting on the same armature or armature-coils in the same circuit and wound with coils which are connected to the circuit of the machine and whose magnetizing effect on their field-pole is variable.

4. In a dynamo-electric machine or motor, a field-pole constantly magnetized to saturation, or approximately saturation, in combination with a field-pole of variable magnetism excited by a coil in derived circuit to the work.

5. In a dynamo-electric machine or motor, the combination, with the armature, of two pole-pieces of the same polarity, one having a constant or approximately constant effect upon the armature and the other provided with a main-circuit coil wound to normally oppose or cut down the magnetism of the same, as and for the purpose described.

6. In a dynamo-electric machine or motor, the combination, with the armature, of two field-magnet cores, one provided with an exciting derived-circuit coil whose influence is opposed by a main-circuit coil tending to cut down the magnetism and the other a pole-piece whose magnetic influence upon the armature is approximately constant.

7. In a dynamo-electric machine or motor, a field-magnet pole

having a magnetic saturation or approximate magnetic saturation, in combination with a second pole-piece variable in strength according to the work.

8. In a dynamo-electro machine or motor, a field-magnet pole having a magnetic saturation, in combination with a second pole whose normal magnetism is opposed by a main-circuit coil, as and for the purpose described.

9. In a dynamo-electric machine or motor, a field-magnet pole normally saturated by the current of the machine, in combination with a second pole whose magnetism is normally maintained by a derived-circuit coil and with a direct-circuit coil for cutting down or reversing the magnetism of said derived-circuit coil, as and for the purpose described.

10. The combination, in a dynamo-electric machine or motor, of a field-magnet core magnetized nearly or quite to saturation and a field-magnet core whose strength decreases with a decrease in the work.

11. The combination, in a dynamo-electric machine or motor, of a field-magnet core magnetized nearly or quite to saturation and a field-magnet core having a demagnetizing-coil in the main circuit, as and for the purpose described.

12. In a dynamo-electric machine or motor, the combination of a field-magnet core magnetized nearly or quite to saturation, a field-magnet core excited by a derived-circuit coil, and a main-circuit coil acting in opposition to the latter.

13. In a dynamo-electric machine or motor, a field-magnet core excited nearly or quite to saturation by current in the coil connected to the circuit of the machine, in combination with a magnet-core having a pole-piece separate from that of the first core and wound with a derived-circuit coil, as and for the purpose described.

14. In a dynamo-electric machine or motor, the combination of the three coils, one of which excites its core to saturation, while the other two are respectively in a derived circuit and a main circuit and act differentially upon a core, as and for the purpose described.

15. The combination, with a field-magnet coil which is wound to produce saturation or approximate saturation in a dynamo-electric machine or motor, of a magnetic coil wound in proper manner to set up magnetism which would develop an armature-current counter to that developed by the first-named coil.

16. In a dynamo-electric machine having a field-magnet core normally and constantly saturated, or approximately saturated, as described, a coil applied to another portion of the field-magnet or magnetic field and wound to oppose or cut down such field magnetism, as and for the purpose described.

17. In a constant current or series dynamo, the combination of field-magnet cores magnetized to a high degree of saturation and field-magnet coils differentially magnetized, as and for the purpose described.

18. In a dynamo-electric machine for supplying a constant current, the combination, with field-magnet cores magnetized nearly to saturation, of field-magnet coils differentially magnetized by a shunt-circuit to the work opposed by a coil in the main circuit.

19. In a dynamo-electric machine, field-poles or pole-pieces adjustable around the circumference of the armature independently of the field-magnet, whereby they may be set at different circumferential positions, as and for the purpose described.

20. In a dynamo-electric machine or motor, the combination, with a field-magnet having two sets of pole-pieces, one of constant and the other of variable polarity, of an armature whose line of commutation is on a line passing between the constant and variable poles, as and for the purpose described.

21. In a dynamo-electric machine, the combination, with an armature, of four field-magnet poles, each two of which on the same side of the line of commutation are respectively of constant strength and of variable strength, according to the work demanded of the machine.

22. In a dynamo-electric machine or motor, the combination, with the armature, of four field-magnet poles, each pair of which on the same side of the line of commutation consists, respectively, of a pole-piece whose magnetism is constant or approximately constant and a pole-piece which is normally of the same polarity with the first, but is provided with a counteracting coil which serves to reverse the polarity of the same, as and for the purpose described.

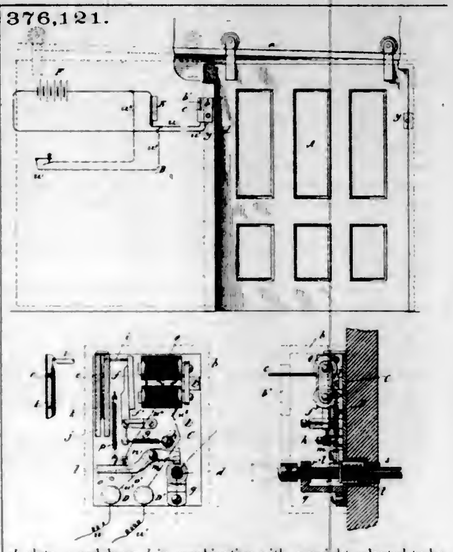
23. The combination, with a dynamo-electric machine or motor, of a set of interchangeable pole-pieces of different magnetic effect, as and for the purpose described.

376,121. ELECTRIC LOCK. CHARLES A. TUCKER, Islip, N. Y., assignor to The Tucker Electrical Manufacturing Company, of New York. Filed Feb. 4, 1887. Serial No. 226,533. (No model.)

Claim.—1. The lock described, consisting of a bolt, *d*, spring *l*, to operate the same, check-plate *r*, trigger *l*, and weight K, in combination with suitable armature and magnet adapted to operate the same, substantially as described.

2. In a lock adapted to be operated by electricity, a spring-bolt,

376,121.



d, plate *r*, and lever *l*, in combination with a weight adapted to be discharged upon the lever *l*, substantially as described.

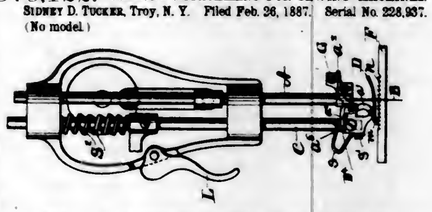
3. In a lock adapted to be operated by electricity, a device, as the lever *l*, adapted to engage with the bolt, and a part, as the post *n*, presenting a broken electrical path, in combination with a suitable device, as the strip *o'*, adapted to be operated by the lever *l* to complete the broken path, substantially as described and shown.

4. In a lock adapted to be operated by electricity, a bolt disposed to withdraw its engaging end when free to act, a suitable catch to engage with some portion of the bolt to retain its engaging end projected, and a device, as the weight *k*, adapted to be discharged upon said catch by electricity to upset the same and release the bolt, substantially as described and shown.

5. In a lock adapted to be operated by electricity and provided with a weight to be discharged upon a releasing device to release the bolt, the case *b* and support C, inclosing the working parts, in combination with the handle *c* and bolt *d*, adapted to be operated from without the inclosing-case to set the lock, substantially as described and shown.

6. A lock adapted to be operated by electricity, provided with a case, as *b*, and support C, inclosing the operating parts and preventing access thereto, in combination with a suitable device adapted to set the lock from without the case, substantially as described and shown.

376,122. FEEDING ATTACHMENT FOR SEWING-MACHINES. SIDNEY D. TUCKER, Troy, N. Y. Filed Feb. 26, 1887. Serial No. 228,937. (No model.)



Claim.—1. The combination, with a sewing-machine provided with upper and under feed mechanisms arranged to act independently of each other and at relatively alternate intervals, of a sewing-machine cloth-plate having a toothed or serrated cloth-engaging surface, substantially as described, and for the purposes set forth.

2. The combination, with an under-feed sewing-machine provided with a presser foot and bar and a reciprocatory needle-bar, of a sewing-machine cloth-plate having a toothed or serrated cloth-engaging surface, and a feed-dog pivoted upon said presser foot or bar and provided with a needle-bar-engaging lever for the purpose of actuating said feed-dog during the downward movements of the reciprocatory needle-bar, substantially as described, and for the purposes set forth.

3. In a sewing-machine provided with an under feed mechanism and a reciprocatory needle-bar carrying a stud, G, a lever-actuating spring, S, secured to the presser-foot shank, an upper auxiliary four-

motion feed mechanism consisting of a fulcrum, D^4, secured upon the presser-foot shank, a slotted three-armed lever, *a*, pivoted through its slot upon the presser-foot shank, one of the lever-arms, *a'*, supporting a toothed fabric-engaging foot or dog, *b*, another of said lever-arms, a^2, engaging with an actuating-spring, S, and another of said lever-arms, a^3, being located in the path of an actuating stop or stud, G, secured to the needle-bar, substantially as described, and for the purposes set forth.

376,123. GRAIN-BINDER. WILLIAM N. WHITELEY, Springfield, Ohio. Filed Apr. 15, 1884. Serial No. 127,993. (Model.) Patented in Canada Oct. 1, 1884, No. 20,327.



Claim.—1. In a self-binding harvester, the combination, with an adjustable binder, of butt-rake 2 and butt-board 1, located on the elevator-frame and working in line with deck or platform of the binder, but independent thereof, whereby the binder may be moved, as to the elevator-frame, without moving said butt-rake or butt-board.

2. A traveling butt-rake, 2, connected with the fixed butt-board by a link, 3, and carried on and driven by a crank, 4, located on the elevator-frame independent of the binder-platform, as set forth and described.

3. The pipe-box 7, provided with bracket-legs 8 and 9, and the bracket-leg 12, provided at its extremity with a bearing for the reel-driving shaft, whereby the butter-driving shaft and the reel-driving shaft are always kept in exact positions, as set forth.

4. A butt-rake mounted above the binder deck or platform, in combination with a relief-rake at the foot of the elevator, and shafts 5 and 13, and gearing whereby said rakes are driven by one shaft, 16, substantially as set forth.

5. The shaft 16, in bearings at the front and rear ends of the machine and receiving power at its rear end from the prime mover, combined with the shafts 5 and 13, actuated by said shaft 16, the butt-rake 2, relief-rake F, and reel G, driven by chain from shafts 13, all actuated by power transmitted by said shaft 16.

6. The palmated head-rake 18, located on top and at rear end of binder above the inflowing grain, mounted on and moved by a crank and radius-rod, substantially as shown and described.

7. In a grain-binding harvester, the combination of the grain-binding mechanism adjustable longitudinally upon the harvester, and provided with a head-rake mounted upon the binder and movable therewith, and a butt-rake mounted upon the frame of the elevator and independent of the binder, as set forth.

8. In an automatic grain-binder longitudinally adjustable on the harvester, in combination with the grain-packers of said binder working beneath the platform thereof and nearer the butts of the grain than the needle-arm, a palmated reciprocating butt-rake located over and close to the binder-platform, but entirely independent thereof, for the purpose of cleaning the elevator-belts and raking the grain over the binder-table.

9. In an automatic grain-binder, the combination, with a longitudinally-adjustable binder mounted on the harvester, the compressing devices, against which the grain is compressed, and packers working from below upward through the platform of the binder, of a head-rake mounted on said binder above the platform and inflowing grain, said packers and head-rake being movable with the binder, and a butt-rake mounted on the frame of the elevator independent of the binder, substantially as set forth.

10. In a grain-binding harvester, the combination, with an automatic binder mechanism adjustable longitudinally upon the harvester and provided with a head-rake carried on said binder, of a butt-rake carried by the harvester independent of the binder, and a shield or cover in two parts, one part attached to and moving with the binder the other part rigidly attached to the harvester and arranged substantially as set forth.

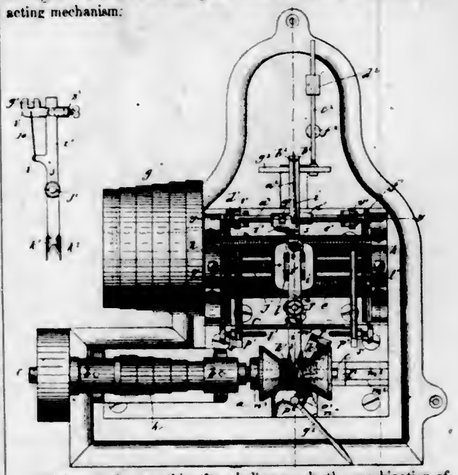
11. The head-rake and its crank-shaft 21, combined with packer crank-shaft 27, the standard 23, and the sprocket-wheels and connecting-chain, whereby the head-rake is actuated by the packer-shaft, as set forth.

12. The braces 33, fastened at one end to the rear sill, and near the other end supported by the rear elevator-post, 39, with slotted holes for the fastening-bolts, and a seat for the hub of wheel 32, thereby forming an adjustable support for the rear end of the packer-shaft.

13. The bracket 38, with seat-arm bolted on the rear elevator-post, 39, making a combined support for the twine-box 41 and packer-shaft brace 33.

376,124. MACHINE FOR WINDING SPOOLS. GEORGE H. WILKINS, Shelburne Falls, Mass., assignor, by direct and mesne assignments, of twelve twenty-fifths to Herbert H. Sanderson, New York, N. Y., and Francis H. Mayhew, Shelburne Falls, Mass. Filed Aug. 23, 1886. Serial No. 211,593. (No model.)

Brief.—The object of the invention is to provide means whereby spools of irregular and different shapes may be readily and evenly wound. The length of traverse of the thread-guide is automatically controlled by a half-nut alternately engaging oppositely-rotating screws through the action of the flanges of the spool upon intermediate co-acting mechanism.



Claim.—1. In a machine for winding spools, the combination of a thread-carrier, impelling-screws therefor, an arm moving with the carrier and provided with half-nuts adapted to alternately engage said screws, opposed springs which are alternately displaced by and caused to press against said arm during the successive movements of the carrier, an abutment against which said arm is pressed by said springs and along which the arm is moved by the carrier, a lever or levers which are actuated by the heads of the spool, and devices, substantially as described, intermediate of said lever or levers and abutment, whereby the latter is caused to release the spring-pressed arm at the completion of each course of thread on the spool and permit said arm to be moved by one of its springs into engagement with the screw, whereby the movement of the carrier is reversed, as set forth.

2. In a machine for winding spools, the combination of a thread-carrier, impelling-screws therefor, an arm moving with the carrier and having half-nuts adapted to alternately engage said screws, opposed springs which are alternately displaced by and caused to press against said arm during the successive movements of the carrier, a movable abutment against which said arm is pressed by said springs, a lever having flanges or feelers which stand in position to be actuated by the heads of the spool, and mechanism, substantially as described, whereby the abutment is retracted by the contact of each flange or feeler with a spool-head, as set forth.

3. In a machine for winding spools, the combination of the car-

rier having a sleeve, c', and a lever, g', the impelling-screws for said carrier, the arm having the half-nuts adapted to engage alternately with said screws, the springs s s', the movable abutment p, the bell-crank levers p' v', the rod a', connecting the upper ends of said levers and passing through the sleeve c', the support for the abutment, the stud w between the inner ends of said levers and the support for the abutment, and the lever i', pivoted to the carrier and having the flanges or feelers k' k^2 at its forward end and engaged, as described, at its rear end with the cam-lever g', as set forth.

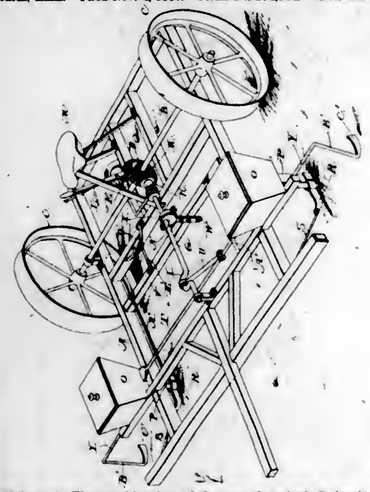
4. The combination, with the lever i', having the flanges or feelers k' k^2, of the adjustable stops l' l', whereby the lever is operated when the spool is nearly filled, as set forth.

5. The combination of the impelling-screws, the carrier, the arms l, having the half-nuts, the lever i', pivoted to the carrier and having the flanges or feelers k' k^2, the movable abutment p, the springs s s', the mechanism whereby the abutment is depressed when the lever i is arrested, the connected arms p' p', having a yielding movement, as described, and the adjustable stops l' l', connected to said arm and impinging against the rod i' when the spool is nearly filled, as set forth.

6. The combination of the carrier, its lever i', pivoted thereto, having a movable section, 2′, at its rear end, means, substantially as described, for adjusting said section, the cross-rod a', the cam-lever g', engaged with the adjustable section 2′, and a spring operating to hold said cam-lever normally out of engagement with the cross-rod a'.

7. The slide P, having the dotting-arm n^3, and the swinging arm n^5, combined with means to operate said slide, as set forth.

376,125. **CHECK-ROW CORN-PLANTER.** EMRY N. WILLIAMS, Bonita, Kans. Filed Nov. 4, 1887. Serial No. 254,304. (No model.)



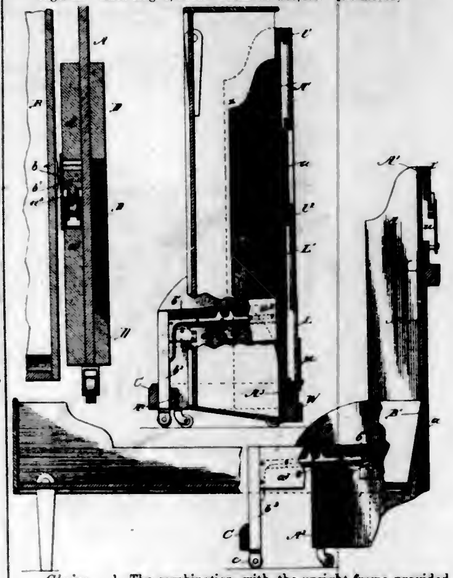
Claim.—1. The combination of the rotating shaft G, having the crank I, connected to the planting mechanism and provided with the eccentric N, and the rock-shafts Y, journaled beneath the seed-hoppers, having the markers C and the rearward extensions A′, connections between the said extensions, and the eccentric, whereby the said rock-shafts are simultaneously oscillated, substantially as described.

2. The combination, with a corn-planter having the rotating shaft G, of the rock-shafts Y, having the markers C and the arms A′, the the bar V, connecting the said arms, the eccentric secured to the shaft G, and the link W, depending from the said eccentric and adjustably secured to the said bar V, substantially as described.

3. In a corn-planter, the combination of the rotating shaft G, having the eccentric N and the crank I, the seed-slide, the pitman connecting the same to the crank I, the rock-shafts Y, having the markers C and the rearward extensions A′, the bar V, connecting said extensions and connected to the eccentric, the lever D′, and the rod E′, connecting the same to the bar V, for the purpose set forth, substantially as described.

4. The combination, in a check-row corn-planter, of the frame A, shaft B, journaled thereto and having the wheels C, the wheel E, loosely secured on the shaft, the pawl and ratchet connecting the said wheel to the said shaft when the latter rotates in one direction, the operating-shaft G, having the pinion engaging the wheel E and provided with the eccentric and the crank, the seed-slide, the pitman connecting the same to the crank, the rock-shafts Y, having the markers and provided with the arms A′, the cross-bar V, connecting the said arms, connections between the eccentric and the said cross-bar, and the lever D′, adapted to rotate the shaft G independently of the shaft B, substantially as described.

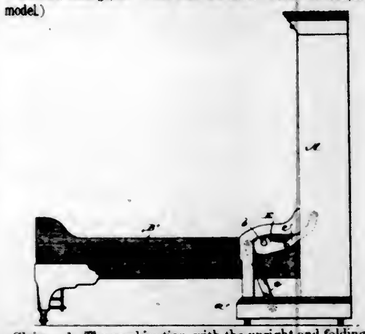
376,126. **WARDROBE-BEDSTEAD.** FITZALLAN B. WILLIAMS, Chicago, Ill. Filed Aug. 9, 1886. Serial No. 210,400. (No model.)



Claim.—1. The combination, with the upright frame provided with sliding trunnion-plates having an independent support which is adapted to come in contact with the floor in operation, of the folding frame provided with trunnions supported on such trunnion-plates and adapted to move the trunnion-plates out and in on the upright frame by the opening and closing of the folding frame, substantially as specified.

2. In a wardrobe-bedstead, the upright frame, in combination with the folding frame and sliding head-board hinged thereto and sliding on the upright frame, and the system of lazy-tongs composed of levers L, pivoted to a stationary part of the head-board and to an upright piece on the sliding head-board, and having the counterpoise-weight suspended thereon, substantially as specified.

376,127. **FOLDING OR WARDROBE BEDSTEAD.** FITZALLAN B. WILLIAMS, Chicago, Ill. Filed Mar. 26, 1887. Serial No. 232,459. (No model.)

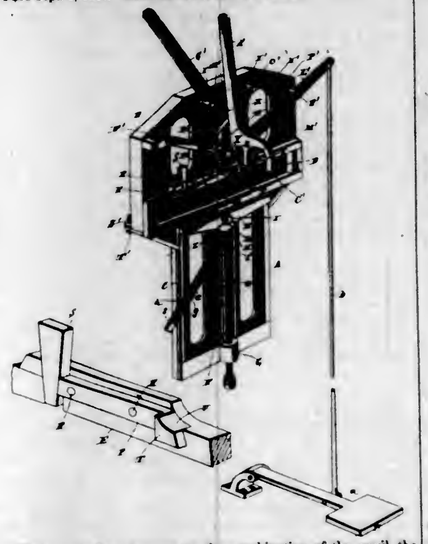


Claim.—1. The combination, with the upright and folding frames, of swinging trunnion-plates E, said plates being supported on the upright frame by being connected thereto, at opposite points on the inside, at their front ends by pivotal links, as e, supporting them from below, and at their rear ends by pivotal links, as e', supporting them from above, being thus adapted to engage the trunnions of the folding frame and afford them a free movement toward and from the back of the upright frame, substantially as specified.

2. A set of irons for a wardrobe-bedstead, said irons consisting of two trunnion-plates, E, provided with pivotal links e e' and trunnion-sockets e^4, and two plates, b', each provided with screw-holes at the ends and a trunnion, b, in the center, substantially as specified.

3. As an improvement in wardrobe-bedsteads, the combination, with the weight-holder F, which consists of a receptacle provided with eyes at or near each end, of the rods f, having hooks formed on their lower ends, and the lazy-tongs formed of levers G G and G′ G′, said rods f being pivoted to the lower ends of levers G, said levers G being pivoted to support F′ on the sliding head-board, and said levers G′ being pivoted to the upright frame at the top, substantially as specified.

376,128. **SAW-SWAGE.** HAMILTON W. WILLIAMS, Nashville, Tenn. Filed Sept. 9, 1887. Serial No. 249,262. (No model.)



Claim.—1. In a saw-swage, the combination of the anvil, the operating-lever, and the roller journaled in the said lever and adapted to turn while in contact with the edge of the saw-tooth, substantially as described.

2. The combination, in a saw-swage, of the anvil, the operating-lever having the roller D′, for the purpose set forth, and the clamp-lever adapted to engage one of the teeth of the saw and hold the same in position when the operating-lever is operated, substantially as described.

3. The combination, in a saw-swage, of the lever X, the roller D′, journaled at the free end thereof, the toggle-jointed levers connecting the lever X to a fixed point, and the lever G′, attached to the said toggle-jointed levers, substantially as described.

4. The combination, in a saw-swage, of the bed-plate, the operating-lever pivoted thereon and having the roller D′, for the purpose set forth, and the adjustable stops to limit the motion of the operating-lever, substantially as described.

5. The combination, in a saw-swage, of the bed-plate and the anvil recessed therein and bolted thereto, substantially as described.

6. The combination, in a saw-swage, of the bed-plate, the anvil recessed therein and bolted thereto, and the key or wedge bearing against the outer end of the anvil to retain the latter against displacement, substantially as described.

7. The combination, in a saw-swage, of the bed-plate, the bridge secured thereto, the operating-lever fulcrumed to the bridge and having the roller D′, the lever L′, also fulcrumed to the bridge and having the arm M′, for the purpose set forth, and the anvil, substantially as described.

8. The combination of the bed-plate having the bed-flange provided with the recess V, the lever L′, having the arm M′, adapted to operate in the said recess, for the purpose set forth, the anvil, and the swaging-lever, substantially as described.

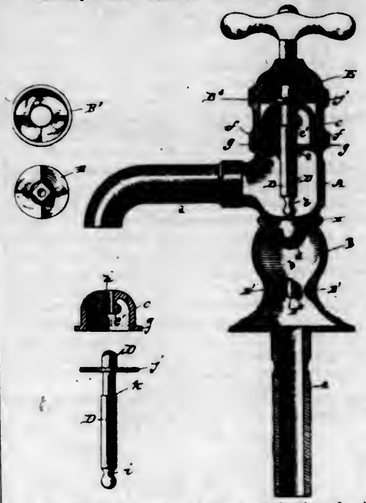
9. The combination, in a saw-swage, of the bed-plate, the lever L′, having the arm M′ to engage one of the teeth of the saw and hold the same in position while being swaged, and the spring to normally disengage the said lever from the saw when the lever is released, substantially as described.

10. The combination, in a saw-swage, of the bed-plate having slot F, the adjusting-screw O, the gage-head connected to the ends of the said screw and movable thereby, and the pivotal bolt extending through the gage-head and working in slot F, substantially as described.

11. The combination, in a saw-swage, of the adjusting-screw O, the yoke swiveled to the said screw, and the pivoted gage-head pivotally bearing on the yoke, substantially as described.

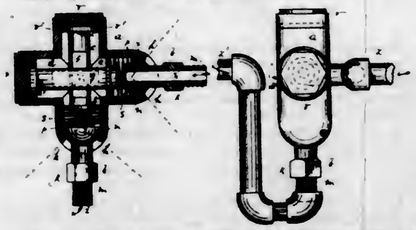
12. The combination, in a saw-swage, of the adjusting-screw, the curved yoke swiveled thereto, and the gage-head having the convex offset bearing against the concave side of the yoke, substantially as described.

376,129. **WATER-COCK.** JAMES M. ANDERSON, Kansas City, Mo. Filed May 5, 1887. Serial No. 237,232. (No model.)



Claim.—In a water-cock, the combination of a body portion having a valve-seat, a spherical valve adapted to engage said seat, a valve-stem adapted to operate the spherical valve, a bell-shaped elastic packing located in the upper part of the body portion and provided upon its lower end with an annular flange and upon its upper end with an extension through which said stem extends, an annular flange upon said valve-stem adapted to rest upon the upper part of said packing, and a cam loosely fitting in the upper part of said body portion, provided with an aperture in its lower part which forms a bearing for the upper end of the valve-stem, said cam being secured to the handle portion, whereby the cam, and hence the valve-stem, can be raised or lowered, substantially as set forth.

376,130. **PIPE-COUPLING.** JAMES ARMSTRONG, Bridgewater, N. Y. Filed Aug. 13, 1887. Serial No. 247,300. (No model.)

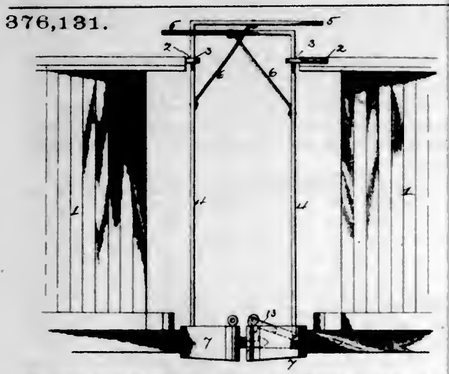


Claim.—The combination, with a shell, of the screw-caps r, the plungers with their hollow stems at right angles and open, as shown, the springs s s, and the hollow coupling-heads and stems, substantially as set forth.

376,131. **CAR-COUPLING.** FRED. C. BAILEY, Rib Lake, Wis. Filed July 16, 1887. Serial No. 244,527. (No model.)

Claim.—1. The car-coupling herein described, comprising a pair of draw-heads, each having a central or nearly central link-receiving recess and a vertical hole to receive a coupling-pin, a coupling-hook, and an open-faced longitudinally-slotted portion, a hook-engaging latch pivoted within said slot, a spring engaging the under rear face of said latch to normally project the same upward and depress the front end of said latch into engagement with the hook, a vertical rod or lever connected at its lower end to said latch, and having at its upper end a horizontal

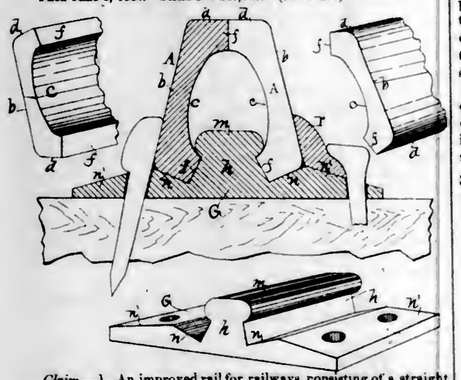
376,131.



arm, which extends rearwardly a sufficient distance to permit of its being grasped from either of the adjacent coupled cars, and a plate secured to the roof of a car and extending rearwardly thereof, and having a guide-slot in its outer end to receive and guide the latch-operating rod or lever, substantially as and for the purposes set forth.

2. In a car-coupling, the combination of a pair of draw-heads, each having near one edge of its face a coupling-hook and near its other edge a longitudinal slot, a latch rearwardly pivoted within said slot, a spring supporting the rear end of said latch, and a vertical latch-releasing rod or lever connected at its lower end with said latch, and having at its upper end a rearwardly-extending arm adapted, as explained, to be operated from either of a pair of adjacent cars, all substantially as and for the purposes set forth.

376,132. RAILWAY-TRACK. GEORGE C. BAKER, Des Moines, Iowa. Filed June 9, 1887. Serial No. 240,738. (No model.)



Claim.—1. An improved rail for railways, consisting of a straight bar having a concave in one of its side faces, and the faces on its edges inclined in opposite directions, and the faces bordering the concave also inclined in opposite directions, in the manner set forth, for the purposes stated.

2. A railway-chair having a vertical projection at its center, and a head or enlargement at the top of the projection, and an inclined plane on each side of the base of the said projection, for the purposes stated.

3. An improved railway rail and track comprising mating rails A and chairs G, jointly fastened to cross-ties, in the manner set forth.

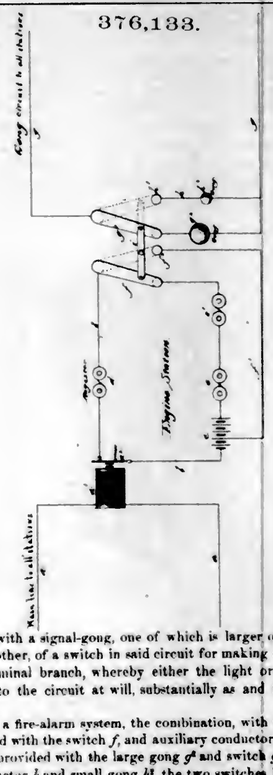
4. Railway-rails having plain side faces, *b*, concave faces *c*, inclined edges *d*, and inclined faces *f*, in combination with railway-chairs having projections *h m* and inclined planes *n* and *n'*, substantially as shown and described, for the purposes stated.

376,133. FIRE-ALARM CIRCUIT. JOHN P. BARRETT, Chicago, Ill. Filed Nov. 16, 1886. Serial No. 219,062. (No model.)

Claim.—1. In a fire-alarm system, the combination, with the main circuit and a local-station circuit operated thereby and provided with the usual register, door-opener, &c., of a switch in said local circuit, and an auxiliary conductor connected with said local circuit, passed around the door-opener and arranged to be connected with the switch-key when it is moved, substantially as and for the purpose set forth.

2. The combination, with a gong-circuit for sounding the alarms at a station, having one end at each station branched and each branch

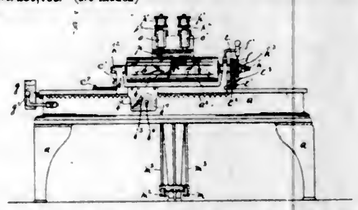
376,133.



provided with a signal-gong, one of which is larger or heavier toned than the other, of a switch in said circuit for making connection with either terminal branch, whereby either the light or heavy gong is thrown into the circuit at will, substantially as and for the purpose set forth.

3. In a fire-alarm system, the combination, with the local circuit *b*, provided with the switch *f*, and auxiliary conductor *f''*, of the gong-circuit *g*, provided with the large gong g^2 and switch *g'*, and the auxiliary conductor *h* and small gong h^2, the two switches being connected to move together, substantially as and for the purpose set forth.

376,134. ROUTING-MACHINE. GEORGE K. BIRGE and GEORGE W. SHAMP, Buffalo, and CARL F. WM. LEHMANN, New York, N. Y.; said Shamp and Lehmann assignors to said Birge. Filed May 31, 1887. Serial No. 239,788. (No model.)



Claim.—1. A routing-machine for cutting patterns upon print-rollers, consisting of a carriage adapted to receive the print-roller to be operated upon, mechanism controlled by hand to give a motion in the direction of the length of the print-roller to the carriage and a rotary motion to the roller in both directions, and a double head adapted for the reception of two separate and independent revolving drills or other tools, each independently adjustable to and from the roller, all combined and operating substantially as shown and described.

2. A routing-machine for cutting patterns upon print-rollers, consisting of a carriage adapted to receive the print-roller to be operated upon, mechanism controlled by hand to give a motion in the direction of the length of the print-roller to the carriage and a rotary motion to the roller in both directions, and a gage combined with the mechanism for giving to the carriage a motion in the direction of the print-roller for the purpose of regulating the distance between the cuts of the tools in producing regular patterns, and one or more revolving tools adjustable to and from the roller, all combined and operating substantially as shown and described.

3. A routing-machine for cutting patterns upon print-rollers, consisting of a carriage adapted to receive the print-roller to be operated

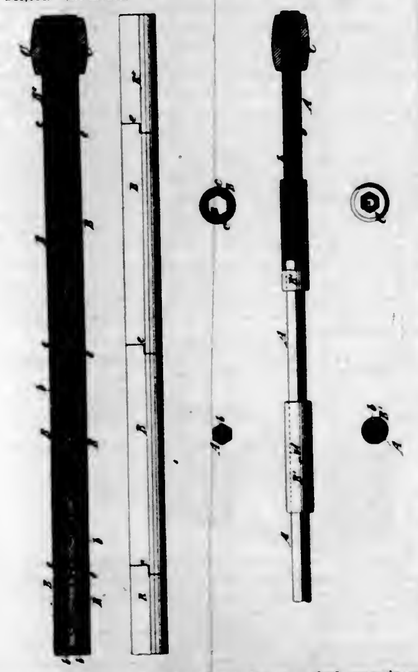
upon, mechanism controlled by hand to give a motion in the direction of the length of the print-roller to the carriage and a rotary motion to the roller in both directions, and a gage combined with the mechanism for giving to the roller a rotary motion in both directions for the purpose of regulating the distance between the cuts of the tools in producing regular patterns, and one or more revolving tools adjustable to and from the roller, all combined and operating substantially as shown and described.

4. A routing-machine for cutting patterns upon print-rollers, consisting of a carriage adapted to receive the print-roller to be operated upon, mechanism controlled by hand to give a motion in the direction of the length of the print-roller to the carriage and a rotary motion to the roller in both directions, and separate gages combined with each of the mechanisms for giving motions to the carriage and print-roller for the purpose of regulating the distance between the cuts of the tools in producing regular patterns, and one or more revolving tools adjustable to and from the roller, all combined and operating substantially as shown and described.

5. In a routing-machine, as a means of moving the carriage in the direction of the length of the print-roller, the screw-threaded rod *c*, secured in the frame-work, the depending arms c^4 c^4, adapted for removable screw-threaded engagement with the rod *c* at their lower ends, their upper ends being adjustable upon the right and left hand screw-threaded rod c^5, secured to the carriage *b*, the bevel gear-wheel c^6, keyed to the rod c^5, and the bevel gear-wheel c^8, mounted upon the shaft c^7, with lever-handle c^9, all combined and operating substantially as shown and described.

6. In a routing-machine for cutting patterns upon print-rollers, the combination, with the roller *d*, having the tapering sockets *d'* and d^2, and the mandrel *k*, with tapering portion *k'*, of the hollow bearing *k*, with tapering portion *k'*, tightening-nut k^3, and hinged top k^4, and the standard by means of which the roller is adjusted in or removed from its position in the routing-machine, substantially as shown and described.

376,135. SHAFT FOR STEAMSHIPS. WILLIAM H. BROWN, New York, N. Y., assignor to the Brown's Seamless Metal Company, Jersey City, N. J. Filed July 17, 1885. Renewed June 17, 1887. Serial No. 241,611. (No model.)



Claim.—1. As a new article of manufacture, a shaft consisting of seamless drawn tubes superposed or drawn one on another, substantially as herein described.

2. As a new article of manufacture, a shaft consisting of seamless drawn tubes superposed or drawn one on another, and having a polygonal or other transverse section, whereby the tubes are locked together and prevented from turning one relatively to another, substantially as herein described.

3. A shaft consisting of a core or center of rolled or drawn metal and tubes of corresponding form drawn or superposed on the core or center and one another, substantially as herein described.

4. The combination, with a shaft composed of sections each consisting of drawn tubes superposed one on another and having a polygonal transverse section, whereby they are locked against turning, of coupling-sleeves fitting the exterior of the shaft and serving to couple together the sections thereof, substantially as herein described.

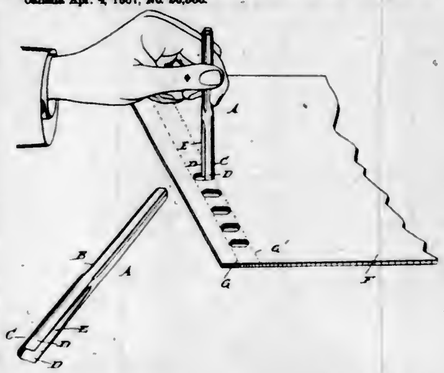
5. The combination, with shaft-sections each composed of drawn tubes superposed one on another and having a polygonal transverse section, of coupling-sleeves each composed of drawn tubes superposed one on another and fitting the exterior of the shaft-sections, substantially as herein described.

6. The combination, with shaft-sections each composed of drawn tubes superposed one on another and having a polygonal exterior, of a re-enforcement or covering continuous throughout the shaft and composed of sections each consisting of drawn tubes superposed one on another, substantially as herein described.

7. The combination, with shaft-sections having their ends interlocked and each composed of drawn tubes superposed one on another and having a polygonal transverse section, of a covering or re-enforcement consisting of tubular sections fitting the exterior of the shaft from end to end thereof, and also having their ends interlocked, substantially as herein described.

8. The combination, with shaft-sections having their ends interlocked and each composed of drawn tubes superposed one on another and having a polygonal transverse section, of a covering or re-enforcement consisting of tubular sections, also having their ends interlocked and composed of drawn tubes superposed one on another, the interior of the tubular sections fitting the exterior of the shaft-sections and the exterior of the tubular sections being cylindric to serve as journals, substantially as herein described.

376,136. PUNCH. ALBERT BURROWES, Toronto, Ontario, Canada. Filed Apr. 20, 1887. Serial No. 236,632. (No model.) Patented in Canada Apr. 4, 1887, No. 26,388.



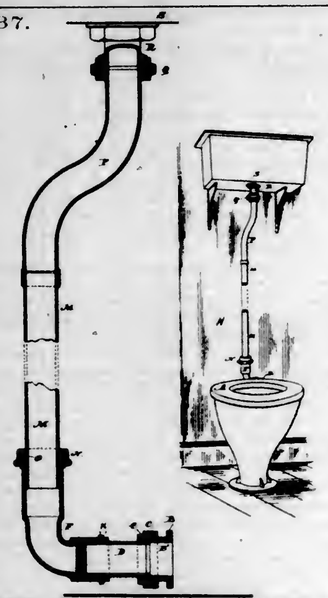
Claim.—The punch herein described for forming oblong apertures in belts, having a straight shank formed with a semicircle at one side, which semicircle continues into parallel sides, and an open U-shaped groove cut in the other side of the shank, terminating in a cutting-edge at the lower end of the punch, all substantially as shown and described.

376,137. FLUSHING-PIPE FOR WATER-CLOSETS. THEODORE BUTLER, New York, N. Y., assignor to the J. L. Mott Iron Works, same place. Filed Mar. 7, 1887. Serial No. 229,973. (No model.)

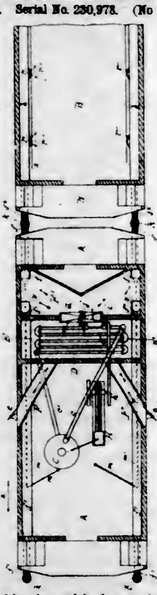
Claim.—1. The combination, with the vertical flushing-pipe M and the compound curved coupling-pipe P, connecting the pipe M to the cistern, of the elbow F, having a socket at its upper end, into which the lower end of the pipe M enters, the coupling-ring N, and washer O, screw-nipple D, ring K, and thimble B', and coupling e, substantially as set forth.

2. The combination, with the water-closet and cistern, of a flushing-pipe, M, of brass or similar material, adapted to be cut off of the required length and having a smooth exterior surface, the nipple D, connected with the water-closet, the elbow F, screwed to the nipple D and having a socket at its upper end for the reception of the lower end of the pipe M, and a screw-ring, N, and elastic packing for making a tight joint at the upper end of the elbow F, substantially as specified.

376,137.



376,138. **APPARATUS FOR HEATING CARS WITH HOT AIR.** MONTGOMERY CAMMELMAN and THOMAS F. MCGANN, Minneapolis, Minn. Filed Mar. 15, 1887. Serial No. 230,978. (No model.)

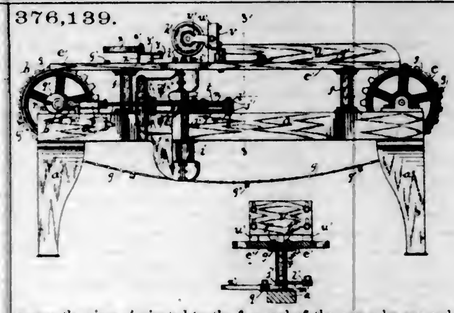


Claim.—The combination, with the car A, of the compartment E, the steam-coils D therein, the boiler C, and steam-pipe connections c c' to said coils, the air-ducts F, provided with the wings e, the secondary compartment F', having the warm-air exits f f', and the valves r r', and the levers m and rods m' for operating the same, all constructed and arranged substantially as set forth.

376,139. **STAVE-JOINTING MACHINE.** ABEL D. CATLIN, Bay City, Mich. Filed Feb. 17, 1887. Serial No. 227,896. (No model.)

Claim.—1. In a stave-jointing machine, the combination, with the rotary cutters, the table, and feeding devices, of the lever x, pivoted by one end to the surface of the table on one side, and the lever x', pivoted to the table on the opposite side and provided with the

376,139.



arm y, the piece y', pivoted to the free end of the arm y by one end and to the free end of the lever x by its opposite end, and the spring z, with its ends connected to and bearing inward upon the free ends of the levers, substantially as set forth.

2. In a stave-jointing machine, the combination, with the bed-piece a, the vertical frames h, hinged by their rear ends to the opposite sides of the bed-piece and carrying on their outer free ends the shaft h' and cutters i', and a spring, k, placed between and with its ends secured to the outer portions of the frames, of the arms l and l', having one end hinged to the rear portion of the frames and the opposite end extending beyond the shaft h', the bolts j'', passing through the central portion of the arms and tapped into the frames, and devices imparting an outward movement to the free ends of the levers, substantially as and for the purpose set forth.

3. In a stave-jointing machine, the combination of the bed-piece a, the frames h, hinged to opposite sides of the bed-piece and carrying on their free ends the shafts h' and cutters i', the spring k, with its opposite ends secured to the opposite frames, the elbow-lever o', pivoted to the bed-piece and provided with a side arm, p', and a forward-extending arm, p, a piece, m', with one end pivoted to the free end of the arm p and its opposite end pivoted to the outer portion of one of the frames h, the elbow-lever j', pivoted to the bed-piece and provided with the rearward-extending arm n and an outwardly-projecting arm, n', a piece, m, with one end connected to the free end of the arm n and its opposite end pivoted to the other frame h, the rod g, with one end connected with the arm n' and its opposite end connected with the arm p', and devices imparting an oscillating movement to the lever j', substantially as and for the purpose set forth.

4. The combination, in a stave-jointing machine, of the bed a, the frames h, hinged to opposite sides of the bed, and the spring k, secured by its ends to the frames, the lever o', pivoted to the bed-piece and having its forward-extending arm connected with one of the frames, the lever j', having an outward-extending arm, n', provided with the slot o, and a rearward-extending arm connected with the other of the frames, a rod, q, with one end pivoted to the arm n' and its opposite end pivoted to the arm p', with a cam-wheel, q', having a rotary movement, a piece, r', provided with a roller, s', bearing against the cam-wheel, and a rod, t, with one end connected with the piece r' and its opposite end connected with the arm n' by the bolt t', substantially as set forth.

376,140. **BILL-FILE.** CHARLES C. CHAMBERLAIN, Passaic, N. J. Filed Apr. 13, 1887. Serial No. 234,632. (No model.)

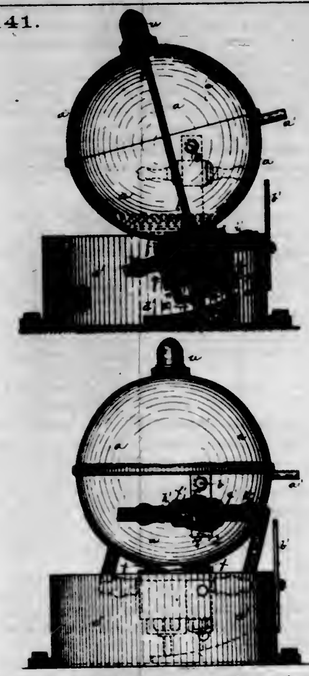


Claim.—1. In a compound case of metal and fibrous material, the metallic end pieces, B, having folds B', B², B³, and B⁴, and the separate metallic side pieces, D, having folds D', engaged together and with the fibrous material A' C, as herein specified.

2. The bill-file described, having a fibrous sheet cut and folded, as shown, to form the end A', wings A², and flaps A³, in combination with the end metal, B B' B² B³ B⁴, and with the separately-formed fibrous sheets C C and side metal, D D, edging metal E E', and fastenings G, all arranged to serve substantially as herein specified.

376,141. **AIR-COMPRESSOR.** GEORGE CHAMBERLIN, Pittsburg, Pa., assignor of one-half to James Chamberlin and James G. Corcoran, both of same place. Filed Mar. 15, 1887. Serial No. 230,948. (No model.)

376,141.



Claim.—1. In a hydraulic air-compressor, the combination, with a pivotally-mounted compression-chamber, of an air discharge and vent pipe extending up into said chamber, said pipe having at its lower end inlet and outlet orifices and a valve for opening said inlet-orifice, substantially as described.

2. In a hydraulic air-compressor, the combination, with a pivotally-mounted compression-chamber, of a valve-casing attached to the lower end of said chamber, said casing being divided into two chambers, one of which has an inlet and an outlet for the water, and a valve for closing said inlet and outlet, and the other chamber being provided with an inlet and outlet for the air, and a valve for closing said inlet, with a discharge and vent pipe connected to the second of said chambers and extending up into the compression-chamber, substantially as described.

3. In a hydraulic compressor, the combination of a compression-chamber, a cap secured to the upper part of said chamber, and an air-discharge pipe extending up within said chamber into said cap substantially as described.

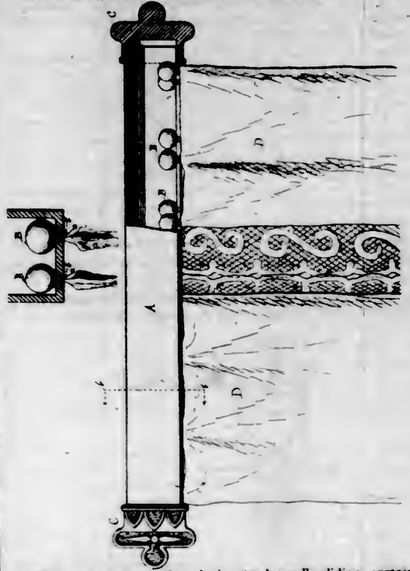
4. In a hydraulic air-compressor, the combination of a supporting-frame, a pivotally-mounted air-compressor chamber having an inlet for the water and an outlet for the air, with fixed nipples to which the water-supply tubing and the compressed-air delivery-tubing are attached, said nipples being mounted on the supporting-frame, and flexible tubing for connecting said fixed nipples with the outlet and inlet on the chamber, substantially as described.

376,142. **ANIMAL-TRAP.** ABNER M. CLEAVER, Petty, Ark. Filed Oct. 29, 1887. Serial No. 253,737. (No model.)



Claim.—In an animal-trap, the combination of the spring A, constructed as described, the plate B, carrying the notched and shouldered trigger C, the pawl D, pivoted to said plate and adjacent to the free end of the spring, through which it passes, and the jaws E, connected to bearings of said plate, as shown and described.

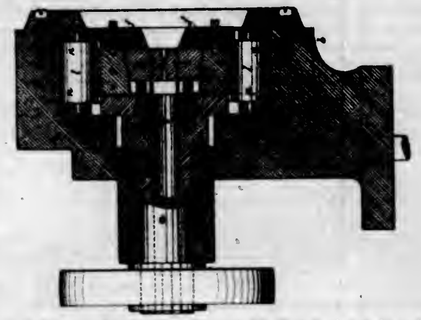
376,143. **CURTAIN-FIXTURE.** JAMES CREMER, Philadelphia, Pa. Filed Mar. 24, 1887. Serial No. 232,216. (No model.)



Claim.—1. A supporting device for laterally-sliding curtains or other analogous purposes, consisting of a hollow pole or bar provided with two or more parallel longitudinal slots or openings extending from end to end of the bar, or nearly so, and facing downward when the bar is in position, in combination with two or more series of balls or buttons adapted to slide freely within the interior of said bar, and provided with shanks or hooks projecting into or through said longitudinal slots, substantially as described.

2. A curtain-supporting device consisting of the hollow pole or bar A, provided with two or more parallel longitudinal slots, a, facing downward when the bar is in position, and sliding buttons B, with projecting hooks or shanks b, adapted to be secured to a hanging curtain, and with one or more removable knobs, C, substantially as set forth.

376,144. **MACHINE FOR SWAGING NEEDLE-BLANKS.** WILLIAM H. DAYTON, Torrington, Conn., assignor to the Excelsior Needle Company, same place. Filed Mar. 28, 1887. Serial No. 232,672. (No model.)



Claim.—1. The combination, with the shaft having at its end a head with a cross-slot, of dies with adjacent die-faces, die-followers outside the dies, said dies and followers abutting by inclined contact-surfaces, springs to move the dies in one direction, a shell, and rollers to close the dies by the rotary movement of the parts, substantially as specified.

2. The combination, with the pair of swaging-dies, of a shaft having a slotted head for receiving such dies, die-followers with inclined

surfaces in contact with the dies, a shell around the dies, and a range of rollers for acting on the dies, a holder for the blank that is to be acted on, and which holder is adapted to be pressed against the dies to move them endwise, substantially as set forth.

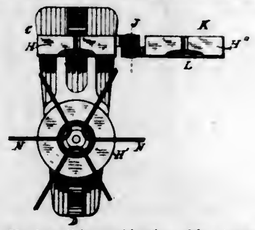
376,145. EXPLOSIVE DERIVED FROM PHENOL. STEPHEN H. EMMENS, London, County of Middlesex, England. Filed Apr. 9, 1887. Serial No. 197,654. (No specimens.)

Claim.—1. The new crystalline acid compound having the properties hereinbefore set forth, produced by the action of heated concentrated or fuming nitric acid of specific gravity 1.52 or higher upon picric acid in excess and the crystallization of the resulting liquid.

2. A new liquid explosive composition having the properties hereinbefore set forth, made by dissolving in concentrated nitric acid the new compound crystallized from the liquid product of the action of heated fuming nitric acid on picric acid in excess.

3. New solid explosive compositions or pastes possessing the qualities hereinbefore set forth, made by dissolving in concentrated nitric acid the new compound crystallized from the liquid product of the action of heated fuming nitric acid on picric acid in excess, and then thickening to a proper consistence with powdered nitrate of soda or other equivalent nitrate and powdered picric acid.

376,146. HUB-CASTING APPARATUS. FRANK H. EMRICH, Toledo, Ohio. Filed July 28, 1887. Serial No. 245,484. (No model.)



Claim.—1. The base C, in combination with a two-part mold, the parts of which mold are pivoted together and to the base C, and are adapted to be opened and closed through a substantially longitudinal division, the said mold being provided with a sprue-hole between the said parts and substantially parallel with their line of division, whereby the said mold is adapted to be raised to a vertical position for receiving through said sprue-hole molten metal, and to be lowered to a horizontal position for removal of the casting, substantially as shown and described.

2. The base C, in combination with a two-part mold, the parts of which mold are pivoted together and to the base C, and are adapted to be opened and closed through a substantially horizontal division, the said mold being provided with radial grooves between and substantially parallel with the said division for receiving wheel-spokes N, and with a sprue-hole also between and substantially parallel with the said division, whereby the said mold is adapted to be raised to a vertical position for receiving through said sprue-hole molten metal, and lowered for removal of the casting, substantially as shown and described.

3. The base C, to which are pivoted two parts of a mold whose parts are openable and closable through a substantially longitudinal division, and whose combined parts are adapted to be raised to a vertical position, one of the said parts being subdivided at a substantially right angle to the first-named division, and means for securing the parts of the mold together, substantially as shown and described.

376,147. MOLD FOR MEASURING AND PARTIALLY SHAPING CIGAR-FILLERS. FREDERICK A. FORD, New York, N. Y. Filed Apr 20, 1887. Serial No. 235,463. (No model.)



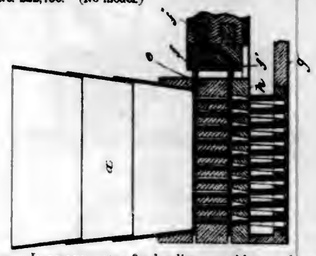
Claim.—1. A mold for measuring and partially shaping cigar-fillers, having its bottom or base portion composed of sections each vertically adjustable independently of one another, substantially as described.

2. A mold for measuring and partially shaping cigar-fillers, having its bottom or base portion composed of sections each vertically adjustable independently of one another, in combination with a supporting-frame wherein said sections are secured, substantially as described.

3. The combination of the mold A, the base B, composed of the screw-threaded posts *b*, provided with head portions *b'*, nuts *b²*, frame C, provided with recess *c* and opening *c'*, clamping-screw *c²*, and nut *c³*, substantially as described.

4. The combination of the mold A, the base B, composed of a series of posts, *b*, provided with heads graduated in width to correspond with the contour of the mold, nuts *b²*, and frame C, provided with a clamping device, substantially as described.

376,148. LOADING APPARATUS FOR CARTRIDGE-SHELLS. GEORGE G. GREENOUGH, Fort Warren, Mass. Filed Dec. 27, 1886. Serial No. 222,750. (No model.)



Claim.—In an apparatus for loading cartridges, a frame carrying a feed-magazine, a charge-measuring block forming the base of the magazine, a device for holding the shells in position to receive the charge, a pair of cut-off slides, respectively above and below the charger-block, an operating-lever having reversely-eccentric slots, and connecting-blocks between such lever and cut-off slides engaging such slots, whereby an alternate reciprocation is given the slides, substantially as set forth.

376,149. RECEIVING, TRANSMITTING, AND DISTRIBUTING INSTRUMENT FOR ELECTRO-MAGNETIC THERMOSCOPES. HENRY J. HAIGHT, New York, N. Y. Filed June 24, 1886. Serial No. 206,154. (No model.)



Claim.—1. In an electro-magnetic receiving-instrument for thermometric indications, the combination, with the index Q, of the index-shaft H, having a gear-wheel, I, mounted thereon, two gear-wheels, J K, gearing into the wheel I, oppositely-acting ratchet-wheels L M, respectively, on the shafts of the said gear-wheels J K, pawls acting upon the respective ratchet-wheels, armature-levers F G, carrying the respective pawls, and electro-magnets D E, respectively, in the increasing-temperature and decreasing-temperature transmitting-circuits and moving the respective armature-levers and the said increasing-temperature and decreasing-temperature circuits, substantially as and for the purpose herein described.

2. In combination with the armature-levers, increasing and decreasing temperature magnets operating the same, and with oppositely-acting ratchet-wheels connected by gearing with the index-shaft, pawls vibrated by the respective armature-levers and engaging with the respective ratchet-wheels, and detent-pawls engaging, respectively, with the said ratchet-wheels and vibrated by separate detent-levers, each detent-lever being connected with and moved by the armature-lever which vibrates the other ratchet-wheel, substantially as herein specified.

3. The combination of the increasing and decreasing temperature magnets, armature-levers respectively actuated thereby, the index and index-shaft, ratchet-wheels connected by gearing with the index-shaft and adapted to move the said index-shaft in opposite directions, pawls actuated, respectively, by the armature-levers and actuating in turn the respective ratchet-wheels, separate detent-levers, detents respectively actuated by the detent-levers and engaging in turn with the respective ratchet-wheels, and tappet-levers actuated by the armature-levers and in turn actuating the respective detent-levers and adapted to throw the actuating-pawls into and out of action, substantially as and for the purpose herein specified.

4. In combination with the increasing and decreasing temperature magnets of an electro-magnetic receiving-thermoscope and armature-levers actuated by the said magnets, one or more sets of increasing and decreasing temperature transmitting-circuits, and means for closing and breaking the said transmitting-circuits by the said armature-levers simultaneously with the closing and breaking of the receiving-circuits, for the purpose herein set forth.

5. In combination with the increasing and decreasing temperature magnets of an electro-magnetic receiving-thermoscope and armature-levers actuated by the said magnets, one or more sets of increasing and decreasing temperature transmitting circuits, each circuit provided with a circuit closer and breaker, and separate increasing and decreasing temperature wheels actuated, respectively, by the armature-levers and adapted to actuate simultaneously all the corresponding circuit closers and breakers of the transmitting-circuits, substantially as and for the purpose herein specified.

6. The combination of the circuit-closing and breaking wheels V W and the several sets of circuit-posts S T U, respectively, in increasing-temperature, decreasing-temperature, and return circuits of the respective systems of circuits, and severally provided with circuit closers and breakers, substantially as and for the purpose herein specified.

7. The combination of the increasing and decreasing temperature posts S T, provided, respectively, with circuit-closing pins or projections *y z*, the return-circuit post U, provided with elastic circuit closing and breaking strips *w x*, and the circuit closing and breaking wheels V W, provided, respectively, with arms or spokes *a' b'*, substantially as and for the purpose herein specified.

8. The combination, in one instrument, of one or more sets of increasing and decreasing temperature receiving-circuits for the transmission of thermometric indications, electro-magnets situated in the respective circuits, armature-levers impelled by the several magnets, and a series of sets of increasing and decreasing temperature further transmitting or distributing circuits, adapted to be simultaneously closed and broken by the actuating means of the said armature-levers, for the purpose herein specified.

9. The combination of an electro-magnetic receiving-thermoscope provided with multiple sets of further transmitting or distributing-circuits, adapted to be simultaneously closed and broken by the electro-magnets placed in the receiving-circuits, and a series of receiving-thermoscopes having, respectively, electro-magnets placed in the said distributing-circuits, substantially as and for the purpose herein set forth.

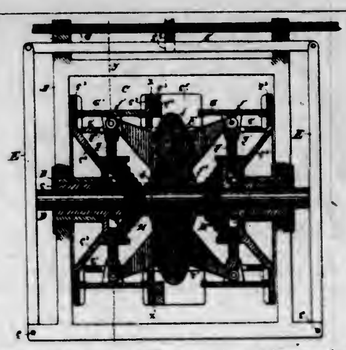
10. The combination of an electro-magnetic receiving-thermoscope provided with multiple sets of further transmitting or distributing circuits, adapted to be simultaneously closed and broken by the electro-magnets placed in the receiving-circuits, a series of receiving and multiple transmitting or distributing thermoscopes connected, respectively, with the transmitting-circuits of the first receiving-thermoscope, and a further series of receiving-thermoscopes having, respectively, electro-magnets placed in the distributing-circuits of the series of receiving and transmitting thermoscopes, substantially as and for the purpose herein set forth.

11. The combination of two or more receiving and transmitting thermoscopes, a single return-circuit wire connecting any two of the said thermoscopes, an increasing-temperature ground-circuit connection between the two thermoscopes, and a decreasing-temperature ground-circuit connection between the said thermoscopes, substantially as and for the purpose herein specified.

376,150. SPEED-CHANGER. AUGUST HARDING, Oakland, Cal. Filed Apr. 30, 1887. Serial No. 236,731. (No model.)

Claim.—1. In a speed-changer, the combination of a pulley having independent rims or peripheries which can be reciprocally expanded and contracted, whereby the relative diameters of said rims may be varied, a belt from the power mechanism passing to one of said rims, a belt passing from the other rim to the mechanism to be driven, and a swinging or pivoted frame by which said pulley is carried, whereby it may accommodate itself to positions required by the change in diameter of its rims, substantially as herein described.

2. In a speed-changer, a pulley having rims composed of separate sections, in combination with a longitudinally-sliding shaft in the axis of the pulley, and connections by which the sliding movement of the



shaft is caused to move radially the sections of the rim, whereby they are alternately contracted or expanded to decrease or increase the diameter of the pulley-rims, substantially as herein described.

3. In a speed-changer, a pulley having a suitable frame and a fixed peripheral band with circumferential flanges thereon, forming guides, and independent sections mounted in said guides and forming the pulley-rims, in combination with a longitudinally-sliding shaft in the axis of the pulley and connections by which the sliding movement of the shaft causes the sections of the rim to move radially, whereby one rim is contracted and the other expanded, substantially as herein described.

4. In a speed-changer, a pulley having independent rims composed of separate sections, in combination with a longitudinally-sliding shaft in the axis of the pulley and pivoted levers connected with the sections of each rim and engaged by the shaft, whereby by the movement of said shaft the levers are operated to alternately expand one rim and contract the other, substantially as herein described.

5. In a speed-changer, a pulley having a frame and a peripheral band with circumferential flanges forming guides, and independent rims consisting of separate sections mounted in said guides, in combination with a sliding shaft mounted in the axis of the pulley, and having teeth, pivoted double-elbow or angle levers having teeth engaging with the teeth of the shaft and their opposing arms connected with the sections of the independent rims, whereby one set of sections may be forced outwardly, while the other set may be drawn inwardly, to vary the relative diameters of the sectional rims, substantially as herein described.

6. In a speed changer, a pulley having a frame and a peripheral band formed in two parts or portions, each provided with circumferential flanges forming guides, the adjacent ones of which are bolted together to connect the two parts, and the independent pulley-rims G G', composed of independent sections mounted in the guides of the band, in combination with the longitudinally-sliding shaft having teeth, and the pivoted double-elbow or angle-levers, the inner ends of which engage the teeth and the opposing arms of which are connected with the sections of the independent rims, whereby one rim is expanded while the other is contracted, substantially as herein described.

7. In a speed-changer, a pulley having a frame, a peripheral band provided with circumferential flanges forming guides, and independent rims G G', composed of separate sections mounted in the guides, each section having a radial stem fitting in a socket of the frame of the pulley, said stem having a slotted outer end, in combination with the pivoted double-elbow or angle levers, the opposing arms of which have rollers engaging the slotted ends of the stems of the sections of the rims, the inner ends of said levers having teeth, and the longitudinally-sliding shaft mounted in the axis of the pulley and having teeth engaging the teeth of the levers, substantially as herein described.

8. In a speed-changer, a pulley having a frame, a peripheral band with circumferential flanges forming guides, and the independent rims G G', composed of separate sections mounted in the guides, in combination with the pivoted double elbow or angle levers, the opposing arms of which are connected with the independent sections of the rims G G' and their inner ends provided with teeth, the longitudinally-sliding shaft or rod in the axis of the pulley and having teeth engaging the teeth of the levers, and the springs H on the shaft, substantially as herein described.

9. In a speed-changer, the pivoted frame A, having bearings, and the pulley C, having journals mounted therein, said pulley having a frame, a peripheral band with guide-flanges, and independent sectional rims G G', mounted therein, in combination with the sliding shaft mounted in the journals of the pulley, and the pivoted double-elbow or angle levers, the arms of which engage the sections of the rims and the sliding shaft, whereby the movement of the shaft effects the expansion and contraction of the rims, substantially as herein described.

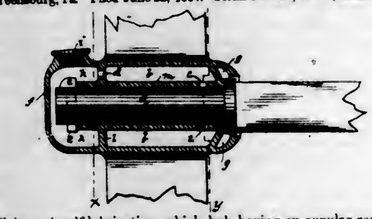
376,151. HORSE-TAIL TIE. OSCAR HASBROUCK, Jr., Modena, N. Y. Filed Oct. 10, 1887. Serial No. 251,869. (No model.)



Claim.—1. In a horse-tail tie, the enlarged button-plate having a stud upon its outer surface, and an elastic band provided with end loops adapted to be secured on the stud and encircle the horse's tail, as set forth.

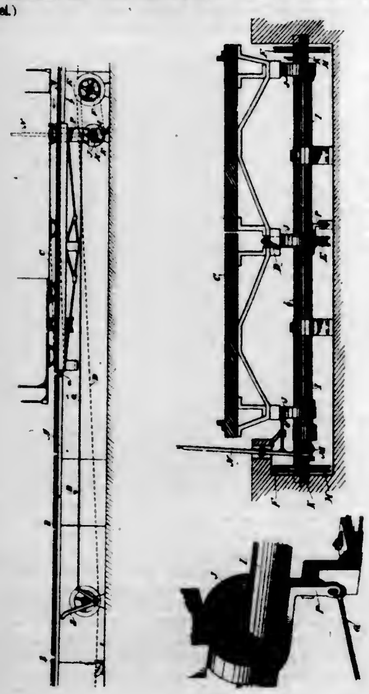
2. In a tail-tie, the elastic band, as described, in combination with a stud provided with an enlarged base concave in vertical section, whereby the frictional contact with the hair of the tail is increased, substantially as set forth.

376,152. SELF-LUBRICATING VEHICLE-HUB. JOHN V. HAWKEY, Greensburg, Pa. Filed June 22, 1887. Serial No. 242,181. (No model.)

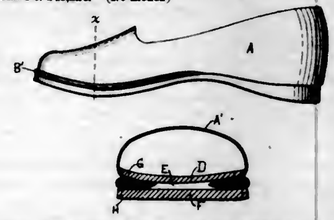


Claim.—A self-lubricating vehicle-hub having an annular recess, *b*, provided with a suitable number of openings, *c*, leading to the journal *a*, the removable cap *i*, for the purpose of placing the pin *e* in position, and an annular recess, *g*, at the back of the hub, whereby the waste lubricant may be collected, substantially as described.

376,153. CABLE-RAILWAY CROSSING. EDWARD S. HOLDEN, San Francisco, Cal. Filed June 21, 1887. Serial No. 242,068. (No model.)



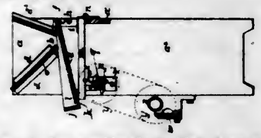
376,154. BOOT OR SHOE. WILLIAM D. KLINE, Holtown, Pa., assignor of one-half to Henry H. Kline, same place. Filed Sept. 9, 1887. Serial No. 249,223. (No model.)



Claim.—1. The combination, with the upper, insole, and outsole of a boot, shoe, or slipper, of a welt suitably secured to said upper, insole, and outsole, and projected beyond said upper and outsole, so as to form an ornamental bead, substantially as shown.

2. The boot, shoe, or slipper herein described, consisting of an upper, insole, and outsole secured to a folded welt, said welt having its bend B secured to and extended beyond the outsole, so as to form an ornamental bead, substantially as set forth.

376,155. CORE-MACHINE. ALFRED MAUSER, Sing Sing, and GEORGE G. RICHMOND, Peekskill, N. Y. Filed Apr. 30, 1887. Serial No. 236,739. (No model.)



Claim.—1. In a machine for making green-sand cores, the combination, in a supporting-frame, of a sand-hopper, *a*, a shaker, *e*, beneath the hopper, provided with an aperture, *k*, and vibrated by an arm, *m*, and cam *p*, with a core-barrel supported under the aperture in the shaker at a vertical distance below said aperture to cause the impacting of the sand on the core-barrel by gravity and the impulse given to the sand by the throwing operation of the shaker, substantially as set forth.

2. The combination, in a core-machine, of the frame a^2, hopper *a*, shaker *e*, provided with an aperture, *k*, and supported by trunnions *f*, vibrating arm *m*, and cam *p*, shaft *q*, and core-barrel support *t*, substantially as herein described.

3. The combination, in a core-machine, of the frame $a'\ a^2\ a^3$, shaker *e*, having the aperture *k* and supported by trunnions f^3, notched plates *i*, arm *m*, hinged at *n*, tooth *o*, cam *p*, shaft *q*, pulleys and belt *y y*, core-barrel *z*, scraper *w*, and bracket *t*, substantially as shown and described.

4. The combination, in a core-machine, of a shaker, *e*, provided with an aperture, *k*, and suspended by trunnions f^3, an arm, *m*, hinged at *n*, tooth *o*, and cam *p*, operated by shaft *q*, substantially as shown.

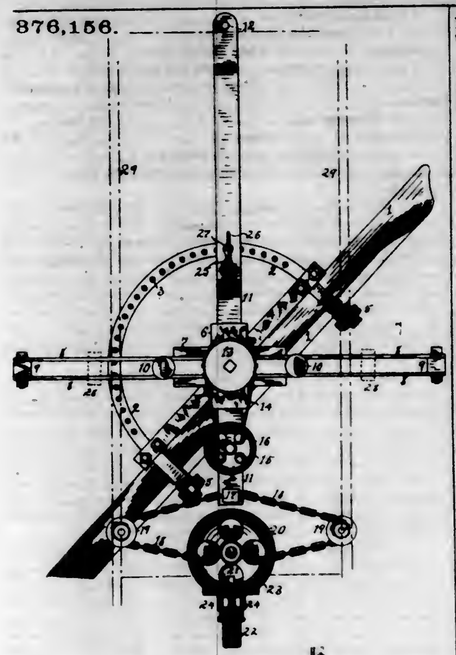
376,156. ROAD-GRADER. OTTUS R. MOATS, Decatur, Ill. Filed Oct. 5, 1887. Serial No. 251,538. (No model.)

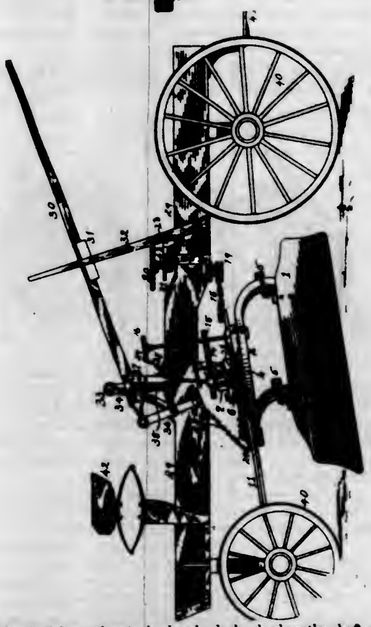
Claim.—1. In road-graders, in combination, a frame supported on wheels, a draft-bar carrying a scraper-blade and connecting pivotally at its front end to the frame, and a chain secured to the rear end of the draft-bar and passed around pulleys on opposite sides thereof, as and for the purpose set forth.

2. In road-graders, in combination, a frame supported on wheels, a draft-bar carrying a scraper-blade and connecting pivotally at its front end to the frame, a rotative shaft on the frame near the rear end of the draft-bar, and a chain secured to the draft-bar, passed around pulleys on opposite sides thereof, and connected with the shaft, as and for the purpose set forth.

3. In road-graders, in combination, a frame supported on wheels, a draft-bar carrying a scraper-blade and connecting pivotally at its front end to the frame, a rotative shaft on the frame near the rear

376,156.





end of the draft-bar, a hand-wheel and a lock-wheel on the shaft, and a chain secured to the rear end of the draft-bar, passed around pulleys on opposite sides thereof, and connected with the shaft, in the manner and for the purpose set forth.

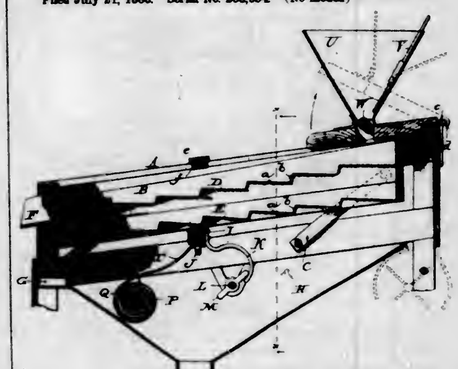
4. In road-graders, in combination, a frame supported on wheels, a draft-bar pivoted at its front end to the frame and having its rearward extension inclined upward, a scraper-blade on the draft-bar having pivotal adjustment, a shaft on the frame near the rear end of the draft-bar, a hand-wheel and a lock-wheel on the shaft, and a chain secured to the rear end of the draft-bar, passed around pulleys on opposite sides thereof, and secured to the shaft, in the manner and for the purpose set forth.

5. In road-graders, in combination, a frame supported on wheels, a draft-bar pivoted at its front end to the frame in a manner permitting universal adjustment, a transverse bar over the frame, from which the draft-bar is yieldingly supported, a scraper-blade on the draft-bar having pivotal adjustment, a shaft on the frame near the rear end of the draft-bar, a hand-wheel and a lock-wheel on the shaft, and a chain secured to the rear end of the draft-bar, passed around pulleys on opposite sides thereof, and secured to the shaft, in the manner and for the purpose set forth.

6. In road-graders, in combination, the draft-bar 11, the cross-head 6 7, the cross-frame 8, adapted to be adjusted vertically at one or both ends by the levers 30 and their intermediate connections, the cross-bar 2 under the cross-head, having holes 3, the detachable pin 27, the chain 38, connected with the pin and extended upwardly and backwardly, the scraper secured to the arc, the shaft on which the arc pivots in the cross-head, the sprocket-wheel 13 on the upper termination of said shaft, the hand-wheel 16 and sprocket-wheel 15 on a vertical shaft, and the chain 14, connecting wheels 13 and 15, as and for the purpose set forth.

7. In road-graders, in combination, the draft-bar, the cross-head, the cross-frame, the supports for the cross-frame permitting longitudinal adjustment, the scraper-blade pivotally secured to the cross-head, the shaft on the frame near the rear end of the draft-bar, carrying the hand-wheel and the lock-wheel, and the chain secured to the rear end of the draft-bar, passed around the pulleys at opposite sides thereof, and secured to the shaft, in the manner and for the purpose set forth.

376,157. GRAIN-SEPARATOR. NILS NILSON, Minneapolis, Minn. Filed July 21, 1886. Serial No. 208,654. (No model.)



Claim.—1. In a separating-machine, the combination, with a frame-work, of a shoe, B, link C, connecting the shoe to the frame-work, a cross-bar, I, secured to the shoe and provided with an eye or loop, J, an arm, K, secured to bar I, a shaft, L, and a tappet, M, mounted thereon to strike the arm K, and a coiled spring Q, secured to the frame-work and provided with an arm or extension, T, to engage the eye J.

2. In combination with frame-work A, reciprocating sieve frame or shoe B, and connecting-links C, cross-bar I, secured to frame B, arm K, secured to said cross-bar, shaft L, provided with tappet M, and journaled in the frame-work, shaft P, and coiled spring Q, mounted upon said shaft and provided with extension T, to bear against the cross-bar, substantially as shown.

3. In a separating-machine, the combination, with a frame-work, of links C, pivotally connected at their lower ends to the frame-work, a sieve-frame, B, carried at the upper ends of said links C, means for imparting motion to the sieve-frame, a cross-bar, *e*, secured to the frame-work above the sieve-frame, and rubber blocks *f*, secured to the under face of said bar *e* in position to be struck by the sieve-frame.

376,158. CARRIAGE-SPRING. JAMES R. NORTHRUP, Rocky Brook, R. I. Filed May 6, 1887. Serial No. 237,334. (No model.)

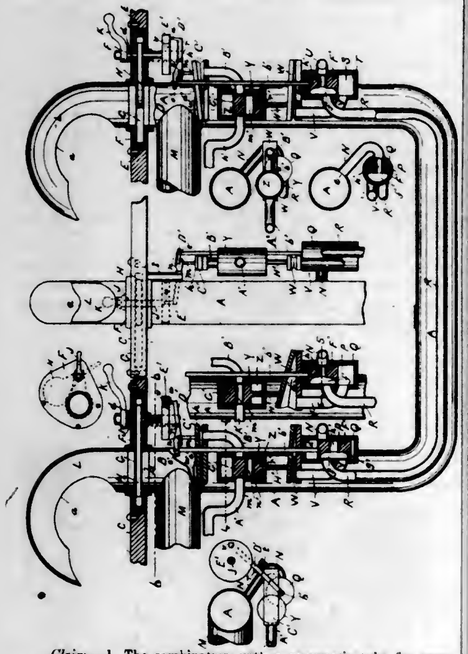


Claim.—1. The springs G G, made independent of each other, but arranged in pairs, each fixed firmly at its thickened end beneath one

edge of the body D, bent sharply near such edge and extended transversely and obliquely beneath such body with a gradual taper, and connected to the side supporting-bar, substantially as set forth.

2. The carriage-body D, and recessed bed-piece or spring-board E, fixed firmly thereto, in combination with the independent springs G G, mounted in said recesses, and with the securing-staples, substantially as set forth.

376,159. PNEUMATIC CASH-CARRIER APPARATUS. WILLARD S. PAIN, Cambridge, and WILLIAM A. WEBBER, Medford, Mass. Filed Feb. 28, 1887. Serial No. 229,192. (No model.)



Claim.—1. The combination, with a pneumatic tube for transmission therethrough of a carrier, &c., of an independent tube or passage having communication with an indicator operated by air passing through such independent tube or passage from any suitable bellows or other collapsible and expansive chamber to indicate whether the carrier, &c., has passed by or beyond a predetermined point in said pneumatic tube, for the purpose specified.

2. The combination, with a pneumatic tube for transmission therethrough of a carrier, &c., of an independent tube or passage having communication therewith at any desired point and an indicator operated by air passing through such independent tube or passage to indicate whether the carrier, &c., has passed by or beyond said point of communication of the independent tube or passage with the main pneumatic tube.

3. The combination, with a pneumatic tube for transmission therethrough of a carrier, &c., and an independent tube or passage having communication therewith at any desired point, of mechanism operated by and from air passing through said independent tube or passage and arranged to engage with the valve adapted to close and open the pneumatic tube where the carrier, &c., is inserted therein, for the purpose specified.

4. The combination, with a pneumatic tube for transmission therethrough of a carrier, &c., and an independent tube or passage having communication therewith at any desired point, of a valve, F, to said independent tube or passage, connected to a lever or arm, D', arranged to engage with the valve adapted to close and open the pneumatic tube where the carrier, &c., is inserted therein, for the purpose specified.

5. The combination, with a pneumatic tube for transmission therethrough of a carrier, &c., and an independent tube or passage having communication therewith at any desired point, of a valve, F, to said independent tube or passage, connected to a lever or arm, D', arranged to engage with the valve adapted to close and open the pneumatic tube where the carrier, &c., is inserted therein, and means for acting on said lever D', operated by air from the operating-bellows or other air-motor.

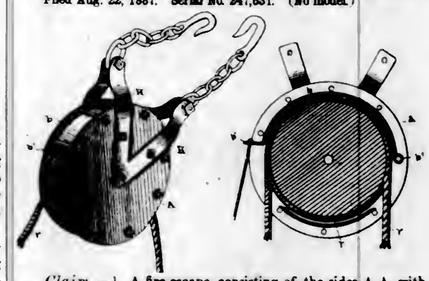
6. The combination, with a pneumatic tube for transmission therethrough of a carrier, &c., and an independent tube or passage having communication therewith at any desired point, of a valve, F, to said independent tube or passage, connected to a lever or arm, D', arranged to engage with the valve adapted to close and open the pneumatic tube where the carrier, &c., is inserted therein, and a bellows or expanding and collapsible chamber having communication with said valve F and arranged to operate a valve in a tube or pipe leading from the main operating-bellows or other air-motor to a bellows or expanding and collapsible chamber connected to the lever or arm D', for the purpose specified.

7. The combination, with a pneumatic tube for transmission therethrough of a carrier, &c., and an independent tube or passage having communication therewith at any desired point, of a valve, F, to said independent tube or passage, connected to a lever or arm, D', arranged to engage with the valve adapted to close and open the pneumatic tube where the carrier, &c., is inserted therein, said valve F having air-communication with a bellows or expanding and collapsible chamber, W, operating a valve between the operating-bellows or other air-motor and a bellows or expanding and collapsible chamber connected to the lever D', for the purpose specified.

8. The combination, with a pneumatic tube for transmission therethrough of a carrier, &c., and an independent tube or passage having communication therewith at any desired point, of a valve, F, to said independent tube or passage, connected to a lever or arm, D', arranged to engage with a disk or plate, E', of the valve adapted to close and open the pneumatic tube where the carrier, &c., is inserted therein, said valve F having air-communication with a bellows or expanding and collapsible chamber, W, operating a valve between the operating-bellows or other air-motor and a bellows or expanding and collapsible chamber connected to the lever D', for the purpose specified.

9. The combination, with a pneumatic tube for transmission therethrough of a carrier, &c., and an independent tube or passage having communication therewith at any desired point, of a valve to said independent tube or passage, connected to the valve adapted to close and open the pneumatic tube where the carrier, &c., is inserted therein and arranged to open and close air-communication between said independent tube or passage, and an indicator for indicating whether the carrier has passed hy the point of communication of the independent tube or passage with the pneumatic tube.

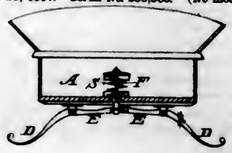
376,160. FIRE-ESCAPE. GEORGE PRITCHETT, Binghamton, N. Y. Filed Aug. 22, 1887. Serial No. 247,631. (No model.)



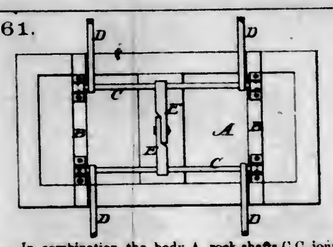
Claim.—1. A fire-escape consisting of the sides A A, with the grooved cylindrical block D, bolted fast between them, and rope *r*, running over the block, in combination with a brake, *b*, having one end pivoted between the sides and bent to substantially conform to the shape of the cylindrical block, and the other end provided with a cord or like means to draw the brake down upon the rope to retard its motion, all substantially as shown and described.

2. A friction-block having flat parallel sides, with hangers attached thereto, and a grooved cylindrical block made fast between them, over which the rope which carries the weight runs, in combination with a bar bent above the block, one end of said bar pivoted between the sides and the other end provided with a cord or other suitable means to draw the bar down on the rope to retard its movement over the block, all substantially as shown and described.

376,161. VEHICLE-SPRING. SILAS H. RAYMOND, Grand Rapids, Mich., assignor of one-half to Franklin L. Raymond, Cleveland, Ohio. Filed Oct. 25, 1887. Serial No. 253,385. (No model.)

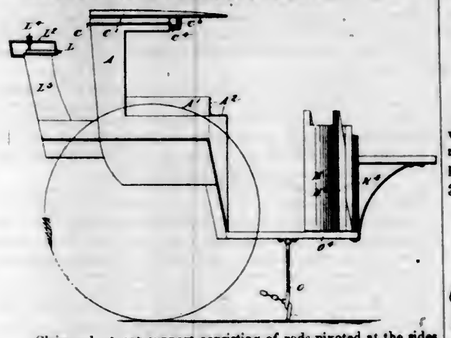


376,161.



Claim.—In combination, the body A, rock-shafts C C, journaled to said body and provided with supporting spring-arms D D and inwardly-extending and lapping arms E E, and connected to vertical rod F, attached to spring S, the ring R, and the cap P, attached to top or rod F, all arranged to operate substantially as specified.

376,162. CARRIAGE-BODY. CHARLES A. READE, Chicago, Ill. Filed May 16, 1887. Serial No. 238,373. (No model.)



Claim.—1. A cab-support consisting of rods pivoted at the sides of the cab and connected together below and beneath the forward part of the cab.

2. In a cab-body, the combination of divided sections of the top, with a guideway secured to the body, and a bar which slides in the way and is hinged at its forward end to the forward end of the cab-top.

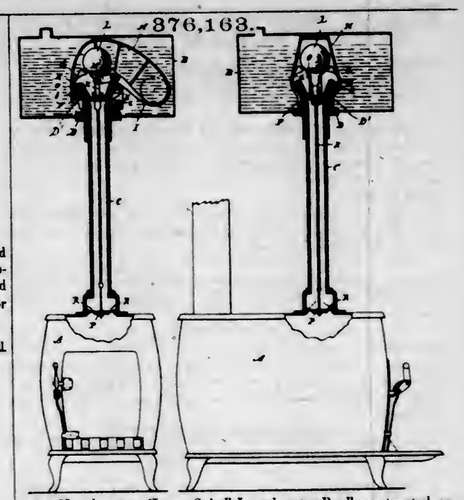
3. In a cab-body, folding doors consisting of upper and lower sections hinged at the side, and the upper section adapted to fold downward upon the lower.

4. A folding cab-body provided with a top composed of two sections, one of which remains permanently in position and the other adapted to be slightly elevated and then move parallel to the first, backward and upon the same.

5. A folding cab-body provided with a top composed of two sections, one of which remains permanently in position and the other adapted to be slightly elevated and then moved parallel to the first, backward upon the same, in combination with folding doors the upper parts of which fold down upon the lower, and sectional hinged window-frames, whereby the doors, top, and windows of the cab may be folded away so as to leave the body open.

376,163. FIRE-EXTINGUISHING ATTACHMENT FOR CAR-STOVES. DONALD ROSS and NORTON BROOKER, St. Joseph, Mo. Filed May 12, 1887. Serial No. 237,955. (No model.)

376,163.



Claim.—1. The combination, in a device for the purpose described, of a tank provided with an escape-valve, a rotating cage extended to one side, and lever, and a ball or weight normally resting upon the stem of the valve and adapted to open and close the valve, substantially as and for the purposes set forth.

2. The combination of a tank, B, provided with a turn-table, D, having a flaring valve-seat, with a carriage, F, arms G on said carriage, cage H, also carried by the carriage, extended to one side of the turn-table, valve N, lever I, and ball L, all constructed, arranged, and operating substantially in the manner and for the purposes described.

3. The combination, with the stove and the tank connected therewith, of a turn-table, D, within the tank, a flaring valve-seat on said turn-table, a carriage, F, carrying cage H, extending to one side of said turn-table, and arms G, the valve N, having stem K, the lever I, connected with said stem, cup O at the upper end of said stem, and the ball L, normally resting on said cup, substantially as described.

4. In a device for the purpose described, the combination of the stove A, tank B, pipe C, turn-table D, having flaring valve-seat, carriage F, arms G, cage H, extending to one side of said turn-table, lever I, valve N, valve-stem K, cup O, ball L, and gates R, all constructed, arranged, and operating substantially in the manner and for the purposes specified.

376,164. CAR-COUPLING. JOHN P. RUSSELL, Milwaukee, Wis. Filed Aug. 27, 1887. Serial No. 248,046. (No model.)



Claim.—1. In a car-coupler, the combination of the draw-bars A, provided with a slot or aperture, O, through its upper wall to permit the upward and downward movement of the coupling-hooks B, and coupling-hooks B, having straight horizontal lower surfaces throughout their entire length from front to rear, beveled or angular surfaces *a b* at their front ends, extending forward and downward from the upper horizontal surface of the coupling-hook to and terminating at its lower horizontal surface, and vertical angular bearing-surfaces *x y*, formed upon the sides of the coupling-hooks and extending from their upper to their lower surfaces, said coupliug-hooks being pivoted at their rear ends within an apertnre in said draw-bars, substantially as and for the purpose specified.

2. The combination of the draw-bars A, provided with an aperture, O, through its upper wall, side recess, D, for the reception of the rear ends of the coupling-hooks B, vertically-moving coupling-hooks B, secured in said recess D by pivotal bolt E, said hooks B being provided with angular front ends, *a* and *b*, extending from the upper to the lower surfaces thereof, angular vertical bearing-surfaces *x y*, extending from the upper to the lower surfaces of said coupling-hooks, and aperture C, for the reception of the coupling-pin, all substantially as and for the purpose specified.

3. In a car-coupler, the combination of the vertically-moving coupling-hooks B, secured in apertures within the draw-bars A, provided with vertical bearing or interlocking surfaces *x y*, formed upon their sides and extending from their upper to their lower surfaces, uncoupling-chains F, secured at their lower ends to said coupling-hooks and at their upper ends to the short arm of the lever G, lever G, pivoted to the end of the car and extending from the front end at right angles thereto along the side of the car, retaining-keeper K, provided with series of apertures N, and lever-retaining pin M, adapted to be secured in the apertures of said retaining-keeper above said lever G, substantially as and for the purpose specified.

4. The combination of the vertically-moving coupling-hooks B, provided with elongated aperture T, for the reception of the retaining-bolt E, interlocking bearing-surfaces *x y* upon their sides, and tapered or angular front ends, *a b*, chains F, secured at their lower ends to said coupling-hooks and at their upper ends to the short arm of the operating-levers G, operating-levers G, rod H, extending from said lever G to the top of the car, and handle I, all substantially as and for the purpose specified.

376,165. FOLDING RULE. ANDREW RYAN, New York, N. Y. Filed Mar. 22, 1887. Serial No. 231,913. (No model.)

Claim.—1. In a folding rule, the thin metallic parts M, having a series of holes, *m*, in combination with the bodies A B, narrower than M, arranged for joint operation relatively to each other and to a pivot-pin and marking device inserted in the holes, substantially as herein specified.

2. In a folding rule, the hollow pivot C *c*, in combination with the folding parts A B and thin metal portions M, having the zigzag holes *m*, all arranged as herein specified.

3. In a folding rule, the thin metallic parts M, having holes *m*, and the attached wood parts A B, &c., in combination with each other and with the slide G, carrying a hole, *g*, arranged to serve as herein specified.

4. In a folding rule, the narrow wood portions A A' B B' and wider metallic portions M, having holes *m*, combined and arranged, as shown, so as to serve the double functions of aiding to describe circles and parts of circles and of retaining in the folded condition a pencil suitably prepared for the service, all substantially as herein specified.

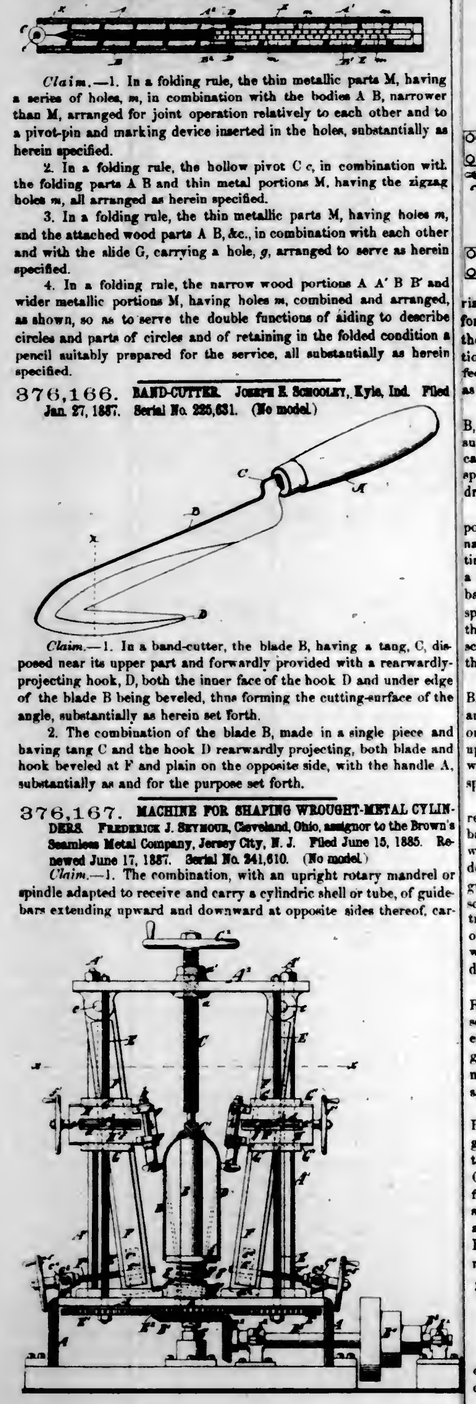
376,166. BAND-CUTTER. JOSEPH E. SCHOOLEY, Kyle, Ind. Filed Jan. 27, 1887. Serial No. 225,631. (No model.)

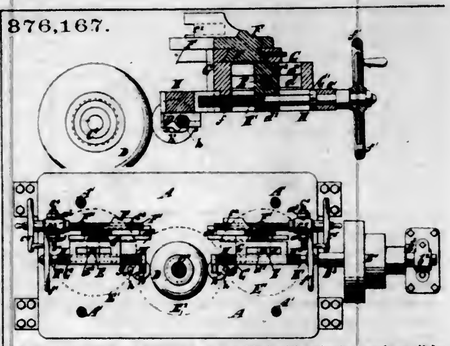
Claim.—1. In a band-cutter, the blade B, having a tang, C, disposed near its upper part and forwardly provided with a rearwardly-projecting hook, D, both the inner face of the hook D and under edge of the blade B being beveled, thus forming the cutting-surface of the angle, substantially as herein set forth.

2. The combination of the blade B, made in a single piece and having tang C and the hook D rearwardly projecting, both blade and hook beveled at F and plain on the opposite side, with the handle A, substantially as and for the purpose set forth.

376,167. MACHINE FOR SHAPING WROUGHT-METAL CYLINDERS. FREDERICK J. SEYMOUR, Cleveland, Ohio, assignor to the Brown's Seamless Metal Company, Jersey City, N. J. Filed June 15, 1885. Renewed June 17, 1887. Serial No. 241,610. (No model.)

Claim.—1. The combination, with an upright rotary mandrel or spindle adapted to receive and carry a cylindric shell or tube, of guide-bars extending upward and downward at opposite sides thereof, carriages fitting the guide-bars and provided with spinning tools or disks for operating on the shell or tube, feed-screws and nuts for traversing the carriages upward and downward along the guide-bars in a direction lengthwise of the mandrel or spindle, and gearing connecting the feed-screws, whereby they are caused to rotate in unison, substantially as herein described.





2. The combination, with the central rotary mandrel or spindle, B, and a sliding follower or ring, B^3, fitted thereto and adapted to support a cylindric shell or tube, of guiding-bars, feed-screws, and carriages arranged at opposite sides of the mandrel or spindle, and spinning tools or disks on the carriages for operating upon the cylindric shell or tube, substantially as herein described.

3. The combination, with a base-frame and top frame or head and posts connecting them, of a rotary upright mandrel or spindle journaled in the base-frame, the oppositely-arranged holding-screw C, fitting a nut in the top frame or head and provided at the lower end with a rotary foot or steadiment, C', guide-bars F, extending between the base-frame and top frame or head, on opposite sides of the mandrel or spindle, carriages fitted to reciprocate upward and downward along the guide-bars and provided with spinning tools or disks, and feed-screws and nuts for reciprocating the carriages and their tools along the guide-bars, substantially as herein described.

4. The combination, with the central rotary mandrel or spindle, B, the follower or ring B^3, fitted to slide upon the mandrel or spindle, and the spring b^3, for supporting the follower or ring, of guiding-bars or slideways and carriages fitted to slide thereon, spinning tools or disks upon said carriages, and feed-screws and nuts, whereby said carriages, with their tools, will be traversed along lengthwise of the mandrel or spindle, substantially as herein described.

5. The combination, with a central rotary mandrel or spindle for receiving and carrying a cylindric shell or tube, of pivoted guiding-bars or slideways and adjusting-screws, whereby said bars or slideways may be set and held stationary in positions parallel with or at any desired inclination to said mandrel or spindle, carriages fitted to said guiding-bars or slideways and carrying spinning tools or disks, feed-screws and nuts, whereby said carriages, with their tools, may be traversed along the guiding-bars or slideways in a direction lengthwise of the mandrel or spindle, and gearing connecting the feed-screws, whereby they are made to rotate in unison, substantially as herein described.

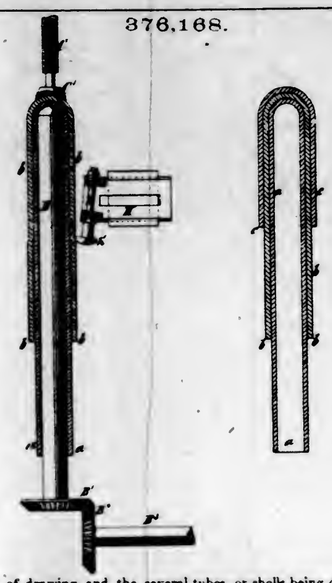
6. The combination, with the central rotary mandrel or spindle, B, of the guiding-bars F, pivoted at their upper ends, and adjusting-screws F', engaging with nuts at the lower ends of the said bars, swiveled bearings c^3 for said screws, carriages fitted to reciprocate on said guiding-bars and carrying spinning tools or disks, and feed-screws and nuts, whereby said carriages, with their tools, may be traversed along said guiding-bars, substantially as herein described.

7. The combination, with the central upright mandrel or spindle, B, and the oppositely-arranged holding-screw and steadiment C C', of guide-bars F, extending upward and downward on opposite sides of the mandrel or spindle and the vertical feed-screws E, the carriages G, each fitting a guide-bar and having a horizontal slideway, G', in its face, and also having a vertical slot, *d*, for the reception of a feed-screw, E, and a horizontal slot, *d'*, the nuts d^3, each fitting a feed-screw and received in the slot *d'* of a carriage, G, the slides H, and screws H', for adjusting them in their slideways G', and the tools or disks carried by said slides, substantially as herein described.

376,168. METHOD OF MAKING GUNS AND ORDNANCE. FREDERICK J. SEYMOUR, Cleveland, Ohio, assignor to the Brown's Seamless Metal Company, Jersey City, N. J. Filed June 15, 1885. Renewed June 17, 1887. Serial No. 241,612. (No model.)

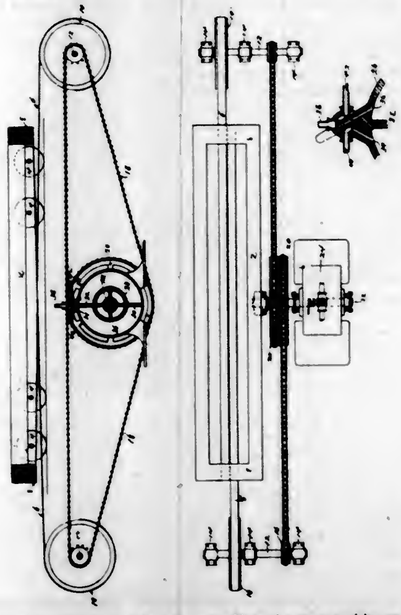
Claim.—The improvement in the method of making cannon or ordnance consisting in producing a number of cylindric drawn tubes or shells each having its interior and exterior surfaces finished in the

376,168.



operation of drawing, and the several tubes or shells being of such relative diameters that they may be slipped one upon another, and in afterward contracting the several tubes or shells by successive operations one upon another, each tube or shell forming the mandrel upon which the tube or shell next outermost is contracted, substantially as herein described.

376,169. STEAM-FEED FOR SAW-MILL CARRIAGES. JOHN R. ST. LOUIS, Minneapolis, Minn. Filed Dec. 13, 1886. Serial No. 221,391. (No model.)

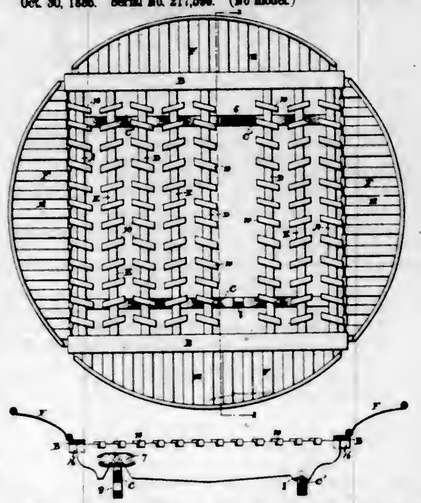


Claim.—1. A steam-feed for saw-mill carriages, comprising an oscillating steam-motor arranged below said carriage, with its shaft at right angles to the line of travel of said carriage, shafts 12 upon opposite sides of said motor, gearing connecting said shafts with said motor-shaft, whereby they are oscillated with said motor-shaft, and independent flexible bands 6, connecting the opposite ends of said carriage with said shafts 12, substantially as described.

2. The combination, with a saw-mill carriage, of the shafts 12, arranged at the opposite ends of the carriage and provided with the pulleys 10, the independent flexible bands 6, attached to the opposite ends of the carriage, extending under said carriage, and having their ends attached to the pulleys 10, and means for simultaneously driving said shafts 12 in the same direction, substantially as described.

3. The combination, with the saw-mill carriage 2, of the flexible bands 6, attached to the opposite ends of the carriage and extending in opposite directions under said carriage, the shafts 12, having pulleys 10, to which said bands 6 are attached, the oscillating motor 24, having the shaft 22, provided with the sprocket-wheels 20, and sprocket-chains 18, extending from said shaft 22 to each of said shafts 12, substantially as described.

376,170. GRATE. HIRAM P. TALLMADGE, Boston, Mass. Filed Oct. 30, 1886. Serial No. 217,599. (No model.)



Claim.—1. The combination of the two rock-bars rocking in opposite directions and having bearings for grate-bars alternately above and below their axes, the upper bearings of one bar being opposite the lower bearings of the other, and a series of grate-bars, all of the same pattern, having at one end a deep notch and at the other a shallow notch corresponding with the bearings on said rock-bars, alternate bars being turned in opposite directions, substantially as described.

2. The combination of the hangers, the rock-bars supported thereby and having arms or projections, as specified, the grate-bars having notches to receive said projections, and guards on the sides to prevent lateral movement, whereby the grate-bars are reciprocated, supported, and held in place by said rock-bars, substantially as described.

376,171. ANNUNCIATOR. JACOB P. TIERNEY, Somerville, Mass., assignor to the Electric Gas Lighting Company, Portland, Me. Filed Feb. 28, 1887. Serial No. 229,106. (No model.)



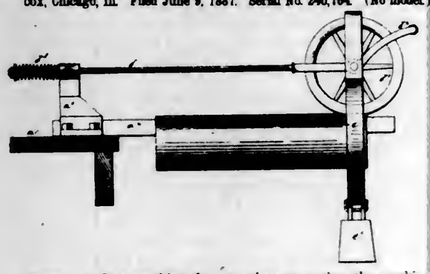
Claim.—1. The combination of the magnet and armature pivoted below it, and provided with a drop-supporting shoulder and a stop projection, with the drop at the front of the magnet and armature, provided with supporting-arms pivoted at the rear of the magnet, the said drop co-operating with the said stop projection on the armature, acting on the same when dropped, with a tendency to move the armature away from the magnet, substantially as described.

2. The combination of the base-piece *a*, provided with lugs *a'*, with the magnet at the upper part of said base, the armature having a downwardly and rearwardly extending shank pivoted in said lugs and extending beyond the pivot to constitute a stop for the retractive movement of the armature, and the drop co-operating with said armature, substantially as described.

376,172. PAVING AND ROOFING COMPOUND. AUSTIN WALRATH, Nevada City, Cal. Filed Sept. 22, 1886. Serial No. 214,280. (No specimens.)

Claim.—The process or method of treating bituminous sand-rock by means of heated air for reducing it to a plastic condition in order to prepare it for paving and roofing purposes.

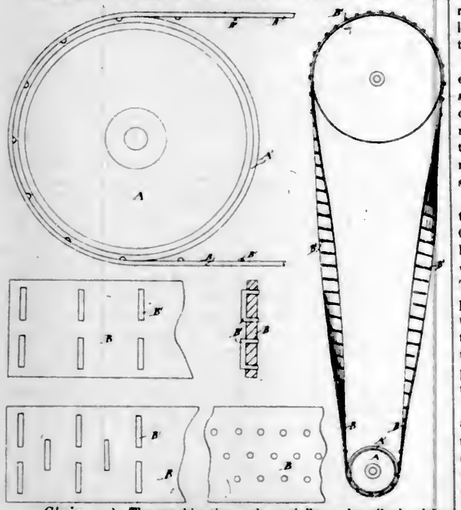
376,173. STOVE-PIPE-GROOVING MACHINE. EDWARD G. WILCOX, Chicago, Ill. Filed June 9, 1887. Serial No. 240,764. (No model.)



Claim.—1. In a machine for grooving stove-pipe, the combination, with a mandrel, of a weighted grooving-wheel running upon said mandrel and provided with a guide-arm sliding in the heel of the machine, substantially as and for the purpose set forth.

2. In a stove-pipe-grooving machine, the combination, with the heel frame or casting and its projecting mandrel, of a rod sliding through the heel-casting and provided with a spring upon its rear end and a grooved wheel on its forward end, and a yoke and weight suspended from said wheel, substantially as and for the purpose set forth.

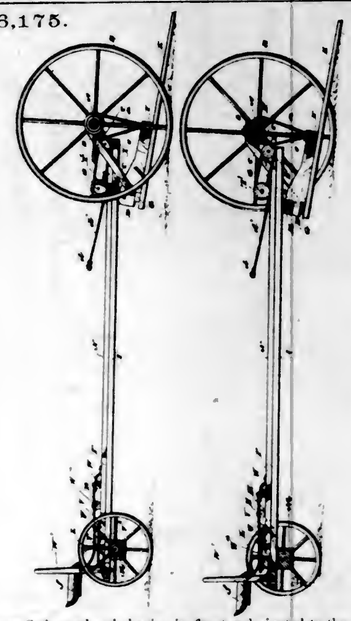
376,174. MACHINE-BELTING. JAMES H. ADAMSON, Melbourne, Victoria, assignor of one-half to James Fox Mellor and Benjamin Fox Mellor, both of Adelaide, South Australia. Filed Nov. 9, 1887. Serial No. 254,702. (No model.) Patented in Victoria July 28, 1886, No. 4,641.



Claim.—1. The combination, substantially as described, with a driving-belt of animal or vegetable material or texture having a smooth face and a face provided with metallic projections, of a pulley having a rubber-covered face, for the purpose specified.

2. The combination, substantially as described, with a driving-belt provided with a smooth face and a face provided with metallic projections, of a pulley having a hard and unyielding face, and a pulley having a more or less elastic or yielding face, the smooth face of the belt operating upon the unyielding face of the former pulley and that face of the belt provided with the metallic projections operating upon the pulley having the unyielding face by twisting the belt, for the purpose specified.

376,175. HORSE HAY-RAKE. JAMES G. ALEXANDER, Ilia, Mo. Filed Nov. 5, 1886. Serial No. 218,208. (No model.)



Claim.—1. The combination of the axle having the arms C extending to the rear, the rake-head having its rear portion pivoted to the arms C, the push-pole having its front end pivoted to the rear end of the rake-head, the cords or chains connecting the axle with the rake-head, the movable rod attached to the push-pole and having the lever to operate it, and the chain or cord connecting the said rod with the axle, for the purpose set forth, substantially as described.

2. The combination of the supporting-axle having the arms C extending to the rear, the rake-head pivoted to the rear ends of the arms C, the cords or chains connecting the axle with the forward part of the rake-head, the push-pole having its front end pivoted to the rear end of the rake-head, the movable rod on the push-pole, the lever to move the said rod, the cord or chain connecting the axle with the rod, and the neck-yoke, also attached to the said rod, for the purpose set forth, substantially as described.

3. The combination of the supporting-axle having the arms C extending to the rear, the rake-head pivoted to the rear ends of the arms C, the chains *a*, connecting the axle with the rake-head, the push-pole having its front end pivoted to the rear end of the rake-head and provided with the pulleys Y and Z at its front end, and the pulleys T and T' at a suitable distance in rear thereof, the movable rod N on the push-pole, the chain *c*, connecting the axle and the rod N and passing under the pulley Y, the chain *e*, attached to the rake-head, passed over the pulleys Z and T', and attached to the front end of the rod N, and the chain *d'*, attached to the front end of the rod N, passed under the pulley T, and having the neck-yoke attached to its free end, substantially as described.

4. In a horse hay-rake, the rake-head, in combination with the axle elevated above the rake-head, chains or cords connecting the axle to the rake-head, the pushing-pole l, pivoted to the rake-head in rear of the axle, cords or chains connecting the pushing-pole with the axle, and operating connections to work the cords mounted on the pushing-pole, as set forth.

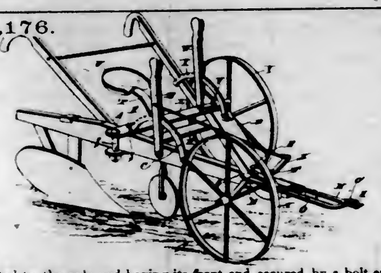
5. In a horse hay-rake, the combination of the rake-head, the pushing-pole, the sliding rod on the pushing-pole, the whiffletree connected to the sliding rod, a hand-lever, and connections to work the rod, and thereby move the whiffletree, as set forth.

6. In a horse hay-rake, the combination of the rake-head, the pushing-pole, the sliding rod thereon, the whiffletree connected to the sliding rod, lever-connections to work the rod, and thereby move the whiffletree, cord or chain connections between the rod and the rake, the neck-yoke, and the cord or chain connecting the neck-yoke to the sliding rod, as set forth.

376,176. SULKY ATTACHMENT FOR PLOWS. NELSON C. BARNES, Mullinville, Kans. Filed Oct. 21, 1887. Serial No. 253,007. (No model.)

Claim.—1. The combination, in a sulky attachment for plows, of the axle H, secured in a pivoted bearing and adapted to be turned to any desired angle with relation to the line of draft, the yoke connected to the clevis at the front end of the plow-beam and adapted for the attachment of the whiffletree, and having slot N, and the link-arm

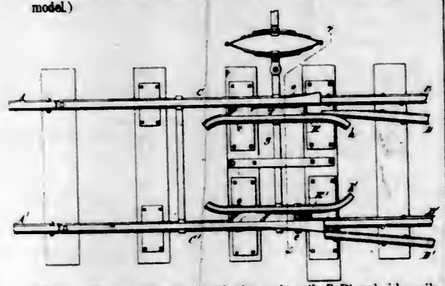
376,176.



connected to the axle and having its front end secured by a bolt-engaging slot N to the said yoke, for the purpose set forth, substantially as described.

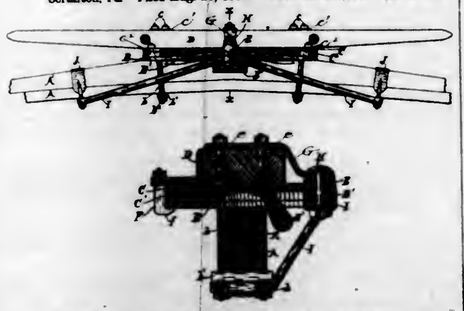
2. The combination of the oblique beam D, the pivotal bearing F on said beam, the cranked axle H, journaled in said bearing and having the wheel I, and the arm K, the guide or loop G, in which the cranked axle swings, the draft-yoke, the link-arm connecting the same to the cranked axle, for the purpose set forth, and the lever connected to the arm K of crank-axle to turn the latter in its bearings, and thereby raise or lower wheel I, substantially as described.

376,177. SAFETY-SWITCH. JOHN K. BATT, Williamsville, assignor, by direct and mesne assignments, of two-thirds to Lorenz Gebhard, Buffalo, N. Y. Filed Jan. 13, 1887. Serial No. 224,306. (No model.)



Claim.—The combination, with the main rails B B' and side rails D D', of the movable switch-rails C C', guard-rails E E', provided with inwardly-curved front portions, *h h'*, blocks *f*, arranged between the guard-rails and the switch-rails, and bolts *e*, whereby the guard-rails and blocks are rigidly secured to the switch-rails, substantially as set forth.

376,178. FIFTH-WHEEL FOR VEHICLES. WILLIAM BLUME, Scranton, Pa. Filed Aug. 26, 1887. Serial No. 247,896. (No model.)



Claim.—1. The combination of the axle, the segment B B', secured thereon, the head-block having the upper track of the fifth-wheel, and the plate E, secured underneath it, the bracket G, secured on the head-block, the stud-bolt F *f* in plate E, the brace I and clips J, for securing it to the axle, said brace arching up in the center and being provided with a perforated boss, and the king-bolt H, passing through said brace-plate E and bracket G, substantially as shown and described.

2. In a fifth-wheel, the combination, substantially as set forth, of the segment B B', the segment C, and the intermediate wooden segment, C', secured to it, the plate E, bolt F *f*, and the king-bolt, with the axle and head-block.

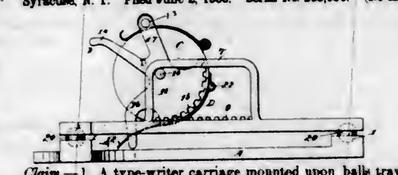
3. The combination of the fifth-wheel segments, secured, respectively, to the axle and head-block, the king-bolt located back of the axle, the plate E, secured to the head-block and having hanger E' depending from it back of the axle, and the stud-bolt F *f*, substantially as specified.

376,179. NUT-LOCK. HENRY C. BOWEN, Lamar, Mo. Filed Sept. 15, 1887. Serial No. 249,802. (No model.)



Claim.—The combination, with the bolt having the longitudinal ratchet-grooves B and the nut having the recesses D and E, of the pawl F, having the trip-arm H on its outer end and the notch I on its lower edge, and pivoted at G in the recess D, the coiled spring L on the pin M, arranged to put the point of the pawl into position to engage in one of the grooves of the bolt at a point a very little lower than the pivot thereof, and the pivoted yoke K, moving in the recess E and arranged to turn up into the notch I and hold the pawl out of engagement, substantially as specified.

376,180. TYPE-WRITING MACHINE. ALEXANDER T. BROWN, Syracuse, N. Y. Filed June 2, 1886. Serial No. 203,936. (No model.)



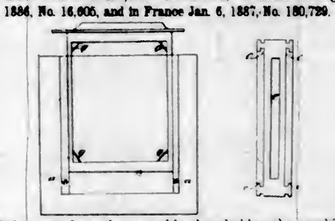
Claim.—1. A type-writer carriage mounted upon balls traveling in grooves in the top of the machine and in the carriage-frame, said grooves having stops to prevent escape of the balls, substantially as shown and described.

2. A type-writer carriage consisting of a frame carrying a rocking platen-carrier adapted to roll off from over the printing mechanism, substantially as described, for the purposes specified.

3. A type-writer carriage bearing a cradle in which the roll is mounted, said cradle rocking on ways on the carriage, the parts being combined, substantially as stated.

4. A type-writer carriage having a rack thereon, a cradle having teeth on its rockers engaging said rack, and a roll mounted in said cradle, all in combination, substantially as described.

376,181. PHOTOGRAPHIC-PLATE HOLDER. HENRY COPPIN, 58 St. Germans Road, Forest Hill, County of Kent, England. Filed Feb. 10, 1887. Serial No. 227,093. (No model.) Patented in England Dec. 17, 1886, No. 16,005, and in France Jan. 6, 1887, No. 180,729.

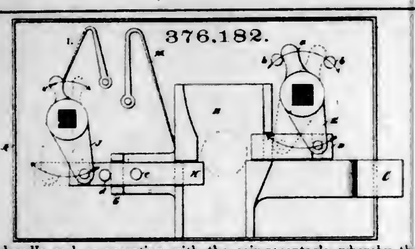


Claim.—1. In a photographic-plate holder, the combination of frame *a*, having slots *c c'*, with a carrier for sensitized plates which slides in slot *c*, and the two light-excluding panels *d*, which slide in slots *c'* on each side of said carrier, said panels being hinged, substantially as and for the purpose set forth.

2. In a photographic-plate holder, the combination of frame *a*, having slots *c c'* and grooves *b c*, with a carrier for sensitized plates which slides in slot *c* and grooves *b*, and the two light-excluding panels *d*, which slide in slots *c'* and grooves *c* on each side of said carrier, said panels being hinged, substantially as set forth.

376,182. COIN-OPERATED LOCK. MAXWELL EASTON, London, England, assignor to Percival Everitt, same place. Filed July 23, 1887. Serial No. 245,050. (No model.)

Claim.—1. In a lock, the combination, with a lock-bolt, a coin-receptacle, a supplemental bolt, as H, co-operating with the coin-receptacle to support the coin, and a third bolt connected to an operat-



ing-handle and co-operating with the coin-receptacle, whereby the lock-bolt may be withdrawn upon the insertion of the requisite coin or token within the coin-receptacle, substantially as set forth.

2. In a lock, the combination, with a lock-bolt, of a coin-receptacle connected to the lock-bolt and arranged to slide therewith, a supplemental bolt, as H, co-operating with the coin-receptacle to support the coin, and a third bolt connected to an operating-handle, substantially as set forth.

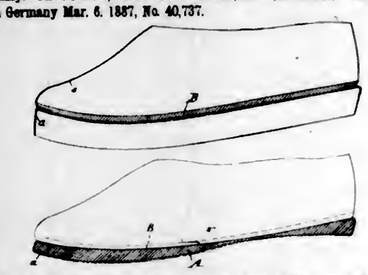
3. The coin-receptacle and the lock-bolt, in combination with a supplemental coin-supporting bolt, bolt D and its operating-crank, and stops secured to the lock-case for regulating the movement of the crank of bolt D, substantially as set forth.

4. The coin-receptacle and the lock-bolt, in combination with a supplemental bolt, as H, co-operating with the coin-receptacle to support the coin, and an operating crank and handle connected to said supplemental bolt, whereby the coin may be discharged from the coin-receptacle or the lock-bolt withdrawn for exit from the closet or the like, substantially as set forth.

5. The combination, with the coin-receptacle provided with the guide G, of the supplemental bolt having stops *c d* and an operating crank and handle, substantially as set forth.

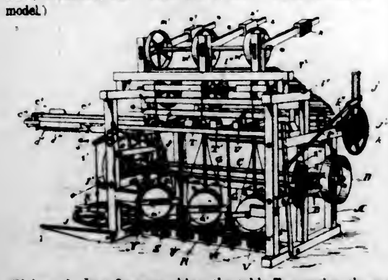
6. In combination, the lock-bolt, coin-receptacle, supplemental bolt, bolt D, operating handles of supplemental bolt and bolt D, and springs L M, substantially as set forth.

376,183. **BOOT OR SHOE.** HEINRICH EFFLANDT, Ottensen, Germany. Filed Nov. 8, 1887. Serial No. 254,629. (No model.) Patented in Germany Mar. 6, 1887, No. 40,737.



Claim.—The combination, in a boot or shoe, of the sole A, formed thin and flexible at the shank, the leather rim or welt *a*, sewed to the upper *s* and to the insole B, and within which the said wooden sole is inclosed, a thin leather sole, *b*, secured to the wooden sole, and the outer leather sole, S, secured to the inner sole of the welt or rim and to the thin leather sole *b*, all substantially as described.

376,184. **FENCE-MACHINE.** ISAAC N. ELLIOTT and PETTIS A. REID, Richmond, Ind. Filed Feb. 3, 1887. Serial No. 226,396. (No model.)



Claim.—1. In a fence-machine, the table T, carrying the ways U and having on its lower side a horizontal plunger-bar, the end of which is vertical and cushioned, combined with the cam *d*, the shaft I, and ways *d'*, substantially as and for the purpose set forth.

2. In a fencing-machine, a spool-box having within it, on opposite sides, spring-lugs *b'*, combined with a spool, substantially in the manner and for the purpose set forth.

3. In combination with the lever *r*, rod *i*, bell-crank *s*, the rod *s'*, the crank *t*, the driving-shaft C, friction-wheel E, and the large wheel F, the shaft I and bevel-gearing, as set forth, the spur-wheel J, loosely journaled on said shaft and operated as described, and having a spring-actuated lug, *l*, the arm K, having opening Q, and the spring-actuated bolt L, having lug *l*, and the piece N, substantially as and for the purpose set forth.

4. In a fence-making machine, the combination, with the table T, carrying the ways U and extended beyond the frame, and having on its under side a plunger-bar provided outwardly with a vertical cushioned part, a spiral spring, the cam *d*, the shaft I, the shaft C, and beveled gear-connections, as set forth, whereby said plunger-bar is moved in one direction by the cam and automatically retracted by the spring, substantially as and for the purpose set forth.

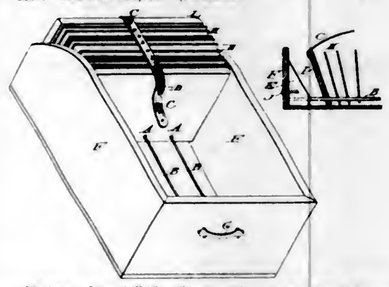
5. In a fencing-machine, a reel for receiving the finished fencing, combined with pressure-rolls having an intermittent motion, and provided with the ratchet-wheel operated by a crank, *h*, and elliptical cam-frame *h''*, and connecting mechanism, substantially as and for the purpose set forth.

6. The combination, with the shaft G, crank *h*, having roller *h'*, elliptical cam-frame *h''*, the horizontal bar *i*, the lever *i''*, connecting-rod *i'''*, the reciprocating lever and pawls, the reel *k'*, and the pawls *k''*, substantially as and for the purpose set forth.

7. In a fencing-machine, and in combination with the frame A, the feed-table provided with a horizontal plunger-bar and a cam and spring actuating mechanism, an automatic grip having hooked ends, whereby the paling is retained between the ends, substantially as and for the purpose set forth.

8. In combination with the shaft C and the crank *h*, having friction-roll *h'* and elliptical frame *h''*, the bar *i*, lever *i''*, rod *i'''*, the reciprocating lever *j*, having pawls, the shaft *k*, and the reel *k'*, substantially as and for the purpose set forth.

376,185. **BILL-FILE.** SETH ELY, Trenton, N. J. Filed Jan. 10, 1887. Serial No. 223,960. (No model.)

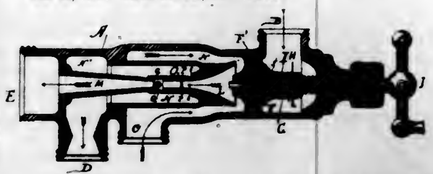


Claim.—In a bill-file, the combination of the following elements: the tray F, having both ends closed and provided with the beveled blocks E E, the rods B, held longitudinally therein and fastened by screws J J, the followers I I, and partitions H H, perforated at their lower edges and adapted to be strung upon the rods B, and the strap C, whereby the followers may be drawn together and fastened, substantially as shown and described in the above specification and drawings.

376,186. **CASE-HARDENING AND CEMENTATION COMPOUND.** O. FRANK EVANS, Portland, Me. Filed July 24, 1886. Serial No. 209,003 (No specimens.)

Claim.—The herein-described case-hardening and cementation compound, consisting of the comminuted charred shells of crustaceans, substantially as specified.

376,187. **INJECTOR.** WILLIAM T. EWING, Chicago, Ill. Filed Jan. 26, 1887. Serial No. 225,504. (Model.)



Claim.—1. In an injector, the combination of a condensing-chamber located in the feed-water passage, but closed thereto and communicating with the overflow, a suction or combining nozzle communicating with said chamber, and a discharge or condensing nozzle also communicating with said chamber, substantially as set forth.

2. In an injector, the combination of a condensing-chamber located in the feed-water passage, but closed thereto and communicating with the overflow, a suction or combining nozzle opening into said chamber and also communicating with it by apertures near the point where it enters said chamber, and a condensing or discharge nozzle opening out of said chamber, substantially as set forth.

376,188. **INJECTOR.** WILLIAM T. EWING, Chicago, Ill. Filed Aug. 6, 1887. Serial No. 246,346. (Model.)



Claim.—1. The combination, with a main valve having a central-discharge orifice communicating by a suitable aperture with the steam-space, of an auxiliary valve seated on the main valve and adapted to slide thereon to open or close the aperture therein, and a screw, as *g*, projecting through the substance of the auxiliary valve and into a groove in the stem of the main valve, whereby to operate the latter, substantially as set forth.

2. The combination of the main valve having a central-discharge orifice, *c'*, and an aperture, *c*, a stem, E^2, having a groove, c^2, and an annular groove, G, with an auxiliary valve, H, seated on the main valve and adapted to slide on its stem to open or close the aperture, and a screw, as *g*, projected through the body of the auxiliary valve into the annular groove G, whereby to operate the main valve, substantially as set forth.

3. The combination of the central-discharge steam-valve E, having a stem, E^2, provided with a longitudinal groove, c^2, and entering the hollow of an auxiliary valve, an auxiliary valve having a hollow, *h*, of greater length than the stem E^2, whereby to form a steam-chamber behind said stem, and a screw, as *g*, and groove, as G, forming a sliding connection between said valves, substantially as set forth.

376,189. **PRODUCTION OF SULPHITE SOLUTIONS.** ADOLPH FRANK, Charlottenburg, Prussia, Germany. Filed Oct. 18, 1886. Serial No. 216,560. (No specimens.) Patented in Germany Mar. 23, 1886, No. 40,306; in England Oct. 18, 1886, No. 13,286; in Canada Dec. 24, 1886, No. 25,613, and in Austria-Hungary Apr. 1, 1887, No. 40,472 and No. 5,831.

Claim.—1. The herein-described process of recovering the free as well as the combined sulphurous acid from the lyes resulting from the manufacture of cellulose by the sulphite process, which consists in converting said sulphurous acid into a monosulphite by means of calcium or a calcium salt, as set forth.
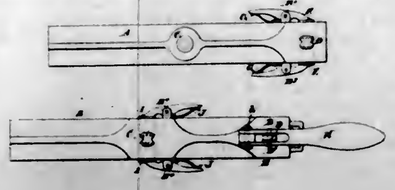
2. The herein-described process of recovering the free as well as the combined sulphurous acid from the lyes resulting from the manufacture of cellulose by the sulphite process, which consists in converting said sulphurous acid into a monosulphite by means of calcium or a calcium salt, separating the monosulphite from the lye and purifying the same by washing in a solution of sulphurous acid or of an alkali sulphite or an alkaline earth, as set forth.

376,190. **PRODUCTION OF SULPHITE SOLUTIONS.** ADOLPH FRANK, Charlottenburg, Prussia, Germany. Filed July 21, 1887. Serial No. 244,914. (No specimens.) Patented in England Oct. 18, 1886, No. 13,286; in Canada Dec. 24, 1886, No. 25,613, and in Austria-Hungary Apr. 1, 1887, No. 40,472 and No. 5,831.

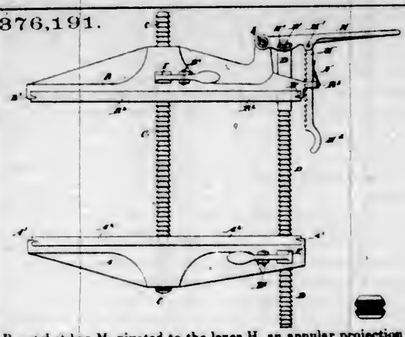
Claim.—The described process of producing acid-sulphite solutions from calcium monosulphite and obtaining calcium sulphate, which consists in treating the calcium monosulphite with sulphuric acid or with acid sulphate of soda, as set forth.

376,191. **HAND VISE OR CLAMP.** ADAM H. GEORGE, Passaic, N. J. Filed Nov. 18, 1886. Serial No. 219,228. (No model.)

Claim.—In a hand vise or clamp, the jaws A B, ratchet-bars C D, dogs E I, arranged upon the jaws to engage the bars, and springs G J, to force the dogs into engagement with the bars, in combination with the hand-lever H, fulcrumed upon the bar D and pivoted to the jaw



376,191.



B, ratchet-bar M, pivoted to the lever H, an annular projection upon the jaw B, and a spring, N, to force the bar M into engagement with the angular projection, substantially as described.

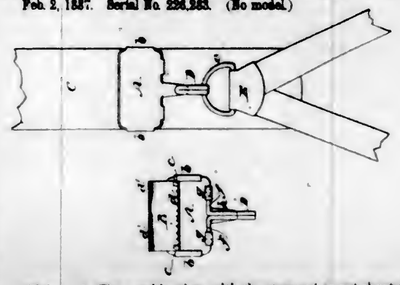
376,192. **MITERING-MACHINE.** JAMES G. GOODELL, Fairfield, Me., assignor of one-half to Charles Rowell, same place. Filed Feb. 21, 1887. Serial No. 228,321. (No model.)



Claim.—1. In a mitering-machine, a bed-piece having secured thereto two flanges, each making an angle of forty-five degrees with the sawing-line, a pair of upright guides secured to the bed of the machine to guide the body of the saw, and a pair of upright rolls adjustably pivoted to the bed of the machine to guide the ends of the saw, combined with clamps for holding the molding in place, each of said clamps having a centrally-slotted upright standard pivoted to the bed of the machine within said flanges, a beat dog passing through said slot, one end of which dog rests on the bed of the machine, the other end extending over the molding, and a screw passing through the top of said standard to operate said clamp, substantially as described.

2. In a mitering-machine, a bed-piece having secured thereto two flanges, each making an angle of forty-five degrees with the sawing-line, an auxiliary guide hinged to the outside of each of said flanges near the sawing-line, and means for securing said auxiliary guides at any required angle to the flanges, combined with vertical guides for directing the saw, and clamps for holding the molding in place, substantially as shown.

376,193. **BUCKLE.** CHARLES R. HARRIS, Williamsport, Pa. Filed Feb. 2, 1887. Serial No. 226,263. (No model.)



Claim.—1. The combination, with the stamped or cut sheet-metal buckle-body A, having its lower edge turned over to form sockets or bearings *g*, of the wire hook D, constructed with side trunnions, pivots, or shanks, *f*, secured within said sockets or bearings, essentially as described.

2. The combination, with the wire hook D, having side pivots or shanks, *f*, of a snap for closing said hook, the stamped or cut sheet-metal buckle-body A, having its lower edge turned over to form sock-

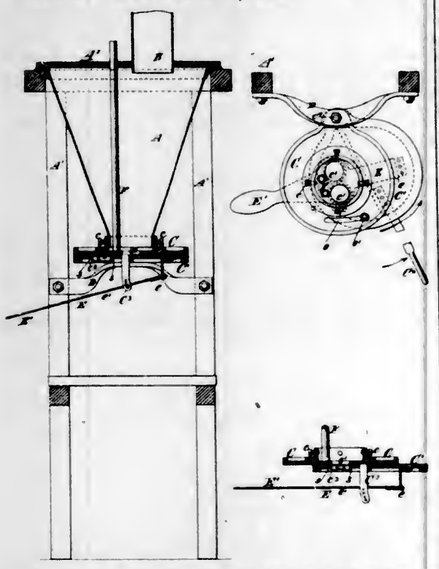
ets or bearings adapted to clamp and receive within them the pivots or shanks of the hook, and a clamping cross-bar or plate applied to the back of the buckle-body, substantially as specified.

376,194. PROCESS OF TREATING LOW STEEL. HAYWARD A. HARVEY, Orange, N. J., assignor to the Harvey Steel Company, of New Jersey. Filed Dec. 8, 1886. Serial No. 221,026. (Specimens.)

Claim.—1. The herein-described process of treating ingots or other objects composed of low steel—such as Bessemer steel—for the purpose of imparting to the metal of which such objects are composed the qualities of refined crucible steel, which consists, essentially, in embedding the object or objects to be treated in a body of granulated or powdered carbonaceous substance, such as wood-charcoal, deposited in a crucible or receptacle made of plumbago or any other suitable refractory material and provided with a cover to prevent the combustion of the charcoal, and in heating such receptacle and its contents in a furnace or heating-chamber the temperature of which is above the melting-point of cast-iron for such length of time that the objects treated when removed from the charcoal will exhibit clean unblistered surfaces of a prescribed color or colors, as herein set forth, and will possess the capacity of taking in tempering the degree or degrees of hardness ordinarily indicated by such color or colors.

2. The herein-described process of treating ingots or other objects composed of low steel—such as Bessemer steel—for the purpose of increasing the tensile strength of the metal of which such objects are composed and giving it the quality of weldability, so that it can be piled and reworked in the ordinary manner, which consists, essentially, in embedding the object or objects to be treated in a body of granulated or powdered carbonaceous substance, such as wood-charcoal, deposited in a crucible or receptacle made of plumbago or other suitable refractory material and provided with a cover to prevent the combustion of the charcoal, and in then heating such receptacle and its contents in a furnace or heating-chamber the temperature of which is above the melting-point of cast-iron for such length of time that the objects treated will on removal from the charcoal exhibit clean unblistered surfaces of a prescribed color or colors, as herein set forth.

376,195. APPARATUS FOR FILLING CANS. HENRY HERMANN, Jersey City, N. J., assignor to Benjamin T. Babbitt, same place. Filed June 3, 1887. Serial No. 240,115. (No model.)

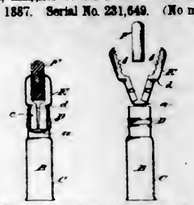


Claim.—1. The combination, with a filling-hopper having an outlet at the lower end, of a plate swinging as a slide-valve across said outlet and having a corresponding aperture, and a holder to receive upon it a can, and which is hung from said swinging plate and is vertically movable to hold the can to the swinging plate, substantially as herein described.

2. The combination, with a filling-hopper and the bottom plate, C, secured thereon and having an outlet-opening, c', of a second plate, C', also provided with an opening and sliding on the first to bring the openings into and out of coincidence, and a holder, E, supported by the sliding plate and pivoted to swing vertically in order to hold a can tightly pressed to the opening in said sliding plate, substantially as herein described.

3. The combination, with a filling-hopper having an outlet, and a vent-pipe adjacent to said outlet and rising to or near the top of the hopper, of a sliding plate, also having an outlet-opening and covering said outlet, and a holder attached to said sliding plate and movable vertically to hold a can pressed to the outlet-opening of said plate, the outlet-opening in said second plate being arranged so that by sliding said plate the outlet-opening in said second plate is open to the vent-pipe and laps upon the outlet from the hopper, substantially as herein described.

376,196. RUBBER-HOLDER FOR PENCILS. JOSEPH HOFFMAN Hoboken, N. J., assignor to Gustavus A. Goldsmith, New York, N. Y. Filed Mar. 21, 1887. Serial No. 231,649. (No model.)



Claim.—1. The combination of a tube, B, and a holder, E, consisting of clamping-jaws united by a flat-spring connection, substantially as set forth.

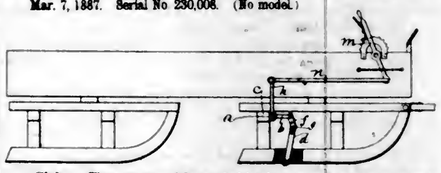
2. The combination of a tube, B, and a holder, E, the latter being formed with lower cylindrical parts, e, and upper toothed parts or jaws, b, of substantially the same length, and with a shoulder, d, beneath said upper toothed parts, said lower parts being adapted or constructed to enter and be contracted by said tube, and said upper toothed parts to project above said shoulder and entirely outside of said tube and form the clamping-jaws for a laterally-projecting rubber, which is also arranged entirely outside of said tube, substantially as described.

3. The combination of a tube, B, and a holder, E, the latter being formed with lower cylindrical parts, e, and upper toothed parts or jaws, b, of substantially the same length, with a shoulder, d, beneath said upper toothed parts, with a V-shaped space or recess between said lower parts, and with a rectangularly-shaped recess between said upper parts, said lower parts being adapted or constructed to enter and be contracted by said tube, and the upper toothed parts to project wholly above said tube and form the clamping-jaws for a laterally-projecting rubber which is arranged entirely outside of said tube, substantially as described.

4. The combination of a tube, B, and a holder, E, provided with clamping-jaws arranged entirely outside of the tube B, and with substantially cylindrical surfaces below the jaws and united by a flat-spring connecting-piece, substantially as set forth.

5. The combination of the tube B, open at both ends, and the holders E, formed of cylindrical parts e and toothed parts or clamping-jaws b of substantially the same length, and the flat spring a, connecting the ends of said cylindrical parts, substantially as and for the purpose set forth.

376,197. SLED-BRAKE. JACOB R. HOIT, Forest Home, Iowa. Mar. 7, 1887. Serial No. 230,008. (No model.)



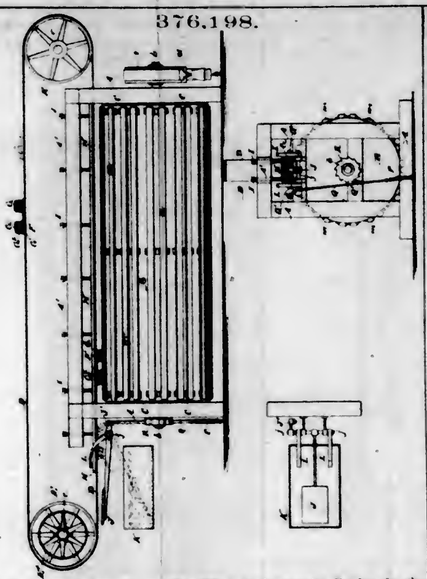
Claim.—The compound-lever sled-brake, comprising a rock-shaft, a, having lateral bends b, the knuckles f, the detachable, adjustable, and self-sharpening brake-bars d, the arm h, the lever m, and connecting-rod n, constructed and combined with the bench, the runners, and the box of a sled, substantially as shown and described, to operate in the manner set forth.

376,198. POLISHING AND VARNISHING MACHINE. JOHN W. HUMBY, Brooklyn, N. Y. Filed July 2, 1887. Serial No. 243,225. (No model.)

Claim.—1. In a varnishing-machine, the drum B, means for revolving the same, and the clamps C, carried by said drum and adapted to hold moldings, combined with a belt, D, running transversely to the motion of the drum, and pads G, carried by said belt, substantially as and for the purpose specified.

2. The reservoir, the drum B, means for rotating the same, and the clamps on said drum for holding moldings, combined with the belt

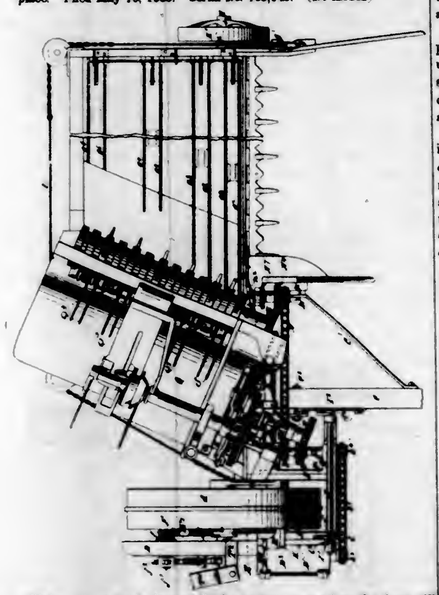
376,198.



D, the pads G thereon, and the lifter J, alternately dipping in the reservoir of varnish and being presented to the pads for automatically supplying varnish to the pads, substantially as herein described.

3. In a varnishing-machine, the drum B, means for rotating the same, and the clamps C on said drum, combined with the belt or carrier D, pad G, operated thereby, the flexible pressure-strip H, adjusting-screws I I, varnish-tank K, and the lifters J J, all arranged for joint operation, as herein specified.

376,199. GRAIN-BINDING HARVESTER. SAMUEL V. KENNEDY, Minneapolis, Minn., assignor to the Minneapolis Harvester Works, same place. Filed May 18, 1885. Serial No. 165,849. (No model.)



Claim.—1. A main frame of a harvester, secured to the front sill of a platform between the first guard and its stubble end of the front sill, the most elevated portion being U-shaped and extending around in front of and along a portion of the outer side of the drive-wheel, in combination with a horizontal beam affixed to the outer leg of the U-shaped portion and extending backward beyond the axle of the drive-wheel at a suitable distance from the drive-wheel to afford clearance for a link or crank-arm, and a link or crank-arm secured to the stubble end of the axle of the drive-wheel, pivotally connected with the main frame and provided with a radially-extending arm, to the free end of which the windlass-chain is attached, substantially as described.

2. Devices for adjusting the counter-shaft carrying the pinion by which motion is transmitted from the drive-wheel gear relative to the drive-wheel, the same consisting, essentially, of adjusting-screws inserted radially in inclined directions through the hubs of the links, fastened, respectively, to the opposite ends of the drive-wheel axle, and having their free ends pivotally connected with the main frame and having slotted holes in their hubs for the reception of a bolt inserted through the drive-wheel axle, upon which bolt the inner ends of the said adjusting-screws bear, substantially as shown and described.

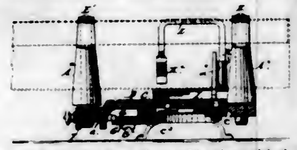
3. Mechanism for raising and lowering a harvester-platform and main frame suspended upon the drive-wheel by means of pivotal connections, with the free ends of links fastened to the opposite ends of the axle of the drive-wheel and extending forwardly and downwardly therefrom, the same consisting of the combination of a windlass-drum and shaft mounted upon a part of the main frame in the rear of the axle of the drive-wheel, and provided with the usual actuating and retaining pawls, a windlass-chain wound upon the said drum and attached to the free end of an arm projecting upwardly and rearwardly from the hub of one of the said links, an arm, c^4, projecting downward from one of the said links, and a chain connected with said arm and led over suitable guide-pulleys around the rear of the platform and along the grain side thereof, and having its opposite end connected to the upright arm of a bell-crank lever, all in combination with a bell-crank lever pivoted at its elbow to the grain side of the platform, and having the free end of its laterally-projecting arm fastened to the axle of the grain-wheel, substantially as shown and described.

4. Mechanism for the transmission from the drive-wheel of the power to actuate the various moving parts of the machine, consisting of a horizontal counter-shaft provided upon its grain end with a pinion engaging the drive-wheel gear, and provided at or near its stubble end with a bevel toothed wheel adapted to engage a bevel-pinion upon the rear end of a horizontal shaft projecting forward beyond the front of the main frame, and provided upon its forward end with a sprocket-wheel engaging a sprocket-chain extending across the front of the main frame to a sprocket-wheel upon the front end of an intermediate shaft, from which, by means of suitable gearing, power is distributed to the various working parts of the machine, substantially as shown and described.

5. The combination of a series of parallel endwise-reciprocating platform-conveyers of different lengths and a butt-driver vibrating upon an orbitally-moving vertical axis, with a diagonally-arranged spider-cylinder for moving the cut grain upward toward the binder-deck to a point within the range of movement of vibrating packer-arms for collecting and forming the gavel.

6. In a harvester and binder in which the tripping of the binder into action is effected by the completion of the gavel, the combination of the binder-arm provided with the usual guard, the tripping instrumentality which trips the binder into action, and the stop-lever mechanism for tripping the packer-arms out of action when they have arrived at a prescribed position in which they do not obstruct the path of the flow of grain as it is maintained by the rotation of the spider-cylinder, substantially as shown and described.

376,200. MITER-BOX. HERBERT D. LANFAIR, Miller's Falls, Mass. Filed May 20, 1887. Serial No. 238,553. (No model.)



Claim.—1. In a miter-box, the combination, with the supporting-frame having a horizontally-flat arc-shaped portion in front provided with vertically-cut slots G', of the notched plates G, bolted to said plates through said slots, and the swinging bar provided with a latch radially movable to engage the notched plates, as and for the purpose set forth.

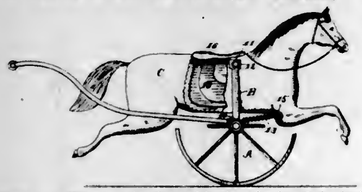
2. The combination, with the swinging bar and upright posts thereto fixed and the adjustable collars of said upright posts, of the saw-carrying sleeves adapted to fit over said posts and collar, as and for the purpose set forth.

3. The combination, with the swinging bar, the upright posts thereto fixed, and the adjustable collars for said posts, of the saw-

carrying sleeves pivoted to said swinging bar out of the line of movement of the saw, as set forth.

4. The combination, with the miter-box frame and sleeves K, fixed thereto, of the clamping device composed of the bent bar having screw-threaded ends, and the screw-threaded sleeve adjustably fitted thereon, substantially as and for the purpose set forth.

376,201. **CHILD'S CARRIAGE.** TOLBERT LAWSTON, Washington, D. C. Filed Oct. 10, 1887. Serial No. 251,927. (No model.)



Claim.—1. The combination, with the wheels, of the body-support projected from the axle and formed with a central open-end slot, the body, as C, arranged and secured within the open-end slot of the body-support, and a resistance-spring, as 13, anchored to the body-support and body, substantially as described, and for the purpose specified.

2. The combination, with the carrying-wheels, of the yoke or body-support B, formed with short axle-pieces 1, having spindles to take the wheels and formed with a vertically-projecting yoke having a central open-end slot, the body C, mounted in the open-end slot of the body-support, and a handle rigidly fixed to the axles of the carriage, substantially as described.

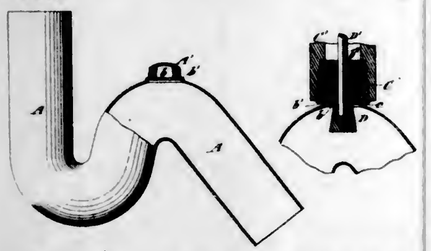
3. The combination, with the carrying-wheels, of the yoke or body-support B, formed with an axle having spindles to take the wheels and having a vertically-projecting yoke with a central open-end slot, the body C, mounted in the open-end slot of the body-support, the resistance-spring having one end fastened to the body-support and the other end to the body, and the handles rigidly fixed to the axle, substantially as described.

4. The child's carriage herein described, composed of the wheels A, the body-support B, consisting of short axle-pieces 1, having spindles to set within the hubs, and a vertically-arranged yoke projected from the axle-pieces and formed with a central open-end slot, the body C, mounted in the open-end slot of the body-support, a handle fixed to the axle-pieces, and a saddle mounted on the body, substantially as described.

5. The combination, with the carrying-wheels and an axle having vertically-projecting standards arranged with an open-end slot between them, of a body, as C, pivotally mounted within the slot of the standards forward of its balance-point, a resistance-spring having one end anchored to the axle and the other end adjustably fixed to the forward part of the body, and a handle rigidly fixed to the rear of the axle, substantially as described.

376,202. WITHDRAWN.

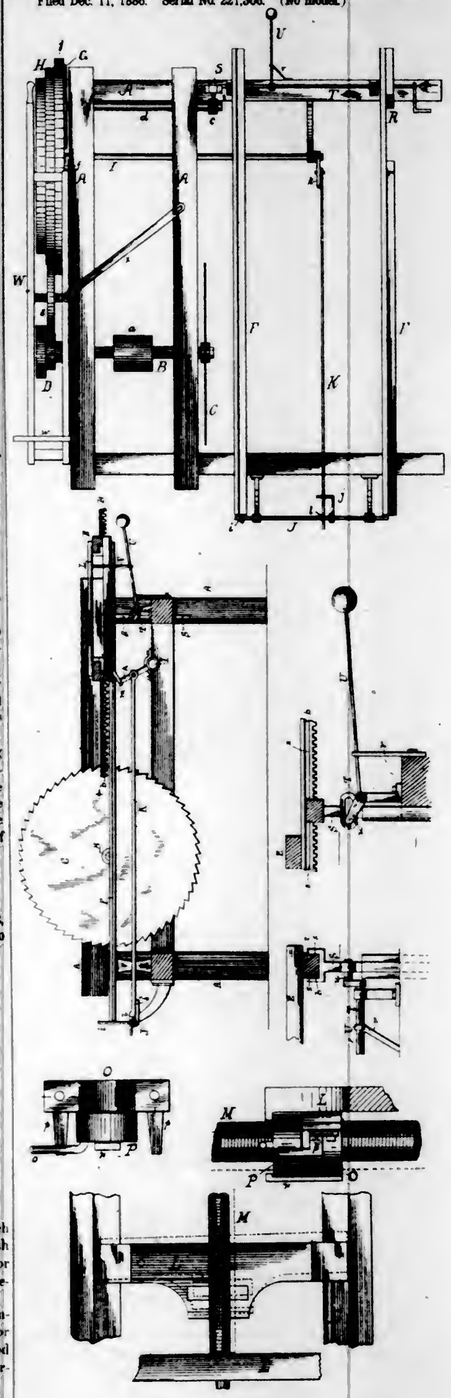
376,203. **METHOD OF MAKING LEAD TRAPS.** JAMES A. LOWE, North Branch, N. J. Filed May 12, 1887. Serial No. 237,970. (No model.)



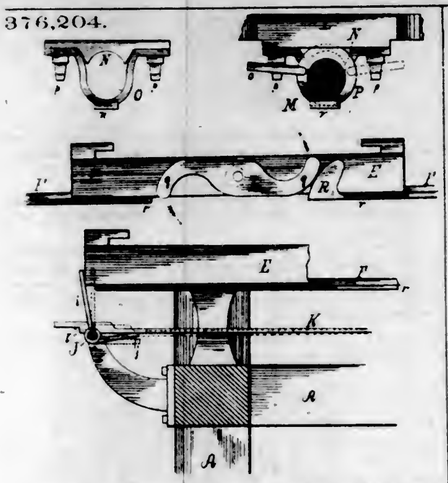
Claim.—1. The process of making a trap having the vent branch formed integral therewith, consisting in first producing the trap with a hub or thickened portion upon it, and then subjecting such hub or thickened portion to a drawing operation, substantially as herein described.

2. The process of making a trap having a vent branch formed integral therewith, consisting in first producing the trap with a hub or thickened portion upon it, and then subjecting such hub or thickened portion to a drawing operation in a die having a roughened or corrugated interior surface, substantially as herein described.

376,204. **SHINGLE-SAWING MACHINE.** SAMUEL S. MORTON, Lower Chanceford, assignor of one-half to Hugh W. McCall, York, Pa. Filed Dec. 11, 1886. Serial No. 221,306. (No model.)



376,204.



Claim.—1. In a shingle-sawing machine, the traveling carriage and a sliding head-block mounted thereon, in combination with an eccentric screw-shaft mounted on said carriage and engaging with said head-block, substantially as set forth.

2. In a shingle-sawing machine, the traveling carriage and a sliding head-block mounted thereon, in combination with a half-nut carried by said head-block and an eccentric screw-shaft mounted on said carriage and engaging said half-nut, substantially as set forth.

3. In a shingle-sawing machine, the traveling carriage, a sliding head-block mounted thereon, a half-nut carried by said head-block, and an eccentric screw-shaft mounted on said carriage and engaging said half-nut, in combination with a strap attached to said head-block and loosely embracing said shaft, and an eccentric cam embracing said shaft and held between said strap and head-block, substantially as and for the purpose set forth.

4. The traveling carriage, the track on which it runs, a sliding head-block mounted on said carriage, and an eccentric screw-shaft mounted in said carriage and engaging said head-block, in combination with a flange on one side of the track, a stop on said track placed beyond the termination of said flange, and a tappet secured to said eccentric screw-shaft, which is rotated a half-revolution by contact with said stop and the end of said flange, substantially as set forth.

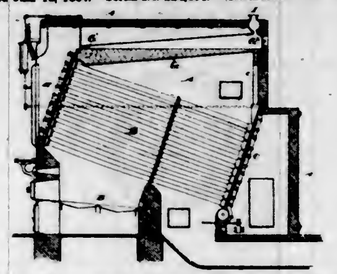
5. The traveling carriage E, having rack *b* and loop or hook *m*, cross-shaft *d*, having pinion *c*, engaging said rack, and pulley G on said cross-shaft, in combination with crank rock-shaft I, driven pulley H, mounted on the crank of said shaft and having friction-hub *h* and rim *g*, between which said pulley G is mounted, the weight of pulley H normally holding said rim *g* in contact with said pulley G, and an upwardly-extending arm, *k*, on said rock-shaft in the path of said loop or hook *m* on said carriage, which is engaged by said loop on the backward movement of the carriage, substantially as set forth.

6. The tracks F F, the carriage E, traveling thereon, having rack *b*, cross-shaft *d*, having pinion *c*, engaging said rack, pulley G on said cross-shaft, and rock-shaft J, mounted between said tracks and having tappet *i* in the path of said carriage and horizontal arm *j*, in combination with crank rock-shaft I, driven pulley H, mounted on the crank thereof and having friction-hub *h* and rim *g*, adapted to said pulley G, arm *k* on said rock-shaft, and rod K, pivoted at one end to said arm *k*, and having its other end resting on said shaft J above the arm *j*, said rod having a lip, *l*, engaging said shaft J, substantially as and for the purpose herein specified.

7. Cone-pulleys D and H, in combination with horizontal guides *w w* on a fixed frame-work, a movable frame, W, having one end held freely between said guides, a rod, *x*, pivoted at opposite ends to said movable frame and a fixed frame-work, and a friction-pulley, *e*, adapted to said cone-pulleys, mounted in said movable frame W, substantially as set forth.

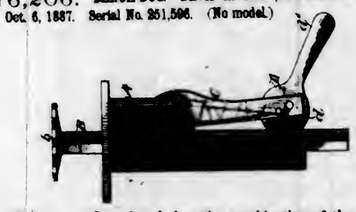
8. The traveling carriage E, having rack *b*, a rotating pinion, *c*, engaging said rack, a crank rock-shaft, T, and a sliding bar, S, connecting the crank on said shaft and said rack *b*, whereby by the rotation of said crank rock-shaft said rack may be engaged to and disengaged from said pinion, in combination with a weighted lever, U, connected to said rock-shaft and held elevated by a notch on a fixed part, and a sliding head-block, L, on said carriage E, having a tappet-arm, V, which releases said lever U, substantially as set forth.

376,205. **STEAM-BOILER.** WILLIAM H. ODELL, Yonkers, N. Y. Filed Jan. 18, 1887. Serial No. 224,668. (No model.)



Claim. In a steam-boiler, the tubes D and headers C E, connected together and to a drum, G, in combination with each other and with a steam-delivery connection, I, the drum being arranged with its rear or water-delivery end higher than its front or steam and water receiving end, and the steam-pipe I being arranged to take the steam from the drum at a point near the rear end, all substantially as herein specified.

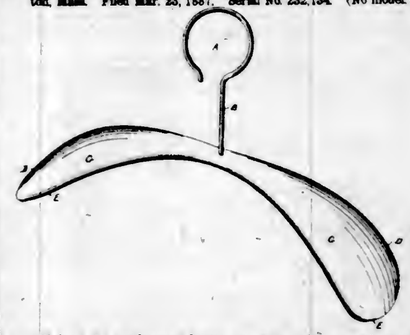
376,206. **BENCH-DOG.** DAVID A. OWEN, Hinsdale, N. H. Filed Oct. 6, 1887. Serial No. 251,506. (No model.)



Claim.—1. In a bench-dog, the combination of the casing A, adapted to receive the claw-bar B, and the lever C, pivoted to the casing, the lower end of which is provided with elongated openings leading to seats *c*, for receiving the bearing secured to the cam-lever D, as and for the purpose described.

2. In a bench-dog, the combination of the casing A, adapted to receive the claw-bar B, the lever C, pivoted to the casing, the lower end of which is forked or recessed and provided with seats *c*, and the cam *d*, having a groove cut upon its edge and provided with the handle *d'*, as and for the purpose described.

376,207. **GARMENT OR COAT HANGER.** GEORGE PAVLIK, Boston, Mass. Filed Mar. 23, 1887. Serial No. 232,134. (No model.)

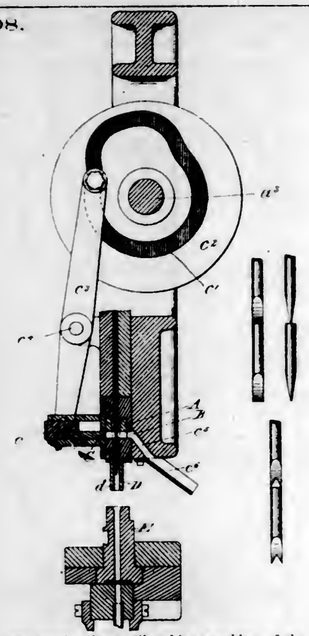


Claim.—A coat-hanger in two parts, to wit: a continuous strip of sheet metal from end to end of an arch shape, narrower at its center than its ends, and at both ends rounded across its width, and its edge bent or rolled under and thereby rounded, and an eye or hook directly attached to said metal strip at its center, as herein described, for the purposes specified.

376,208. **NAIL-MAKING MACHINE.** FREEBORN F. RAYMOND, 2d, Newton, Mass. Filed Nov. 12, 1886. Serial No. 218,680. (No model.)

Claim.—1. The combination of the frame of the machine, through which the feedway extends, the block supporting the sliding cutters *a a'*, with said sliding cutters *a a'*, and with the point-cutting and notching-cutter C, having a movement across the feedway transverse the line of movement of the cutters *a a'*, substantially as described.

376,208.



2. The combination, in a nail-making machine, of the frame of the machine having a cross-passage, B, which intersects the feedway through which the wire is fed, die or block A, having the cross-passage *b*, and the reciprocating cutter C, as and for the purposes described.

3. The combination of the frame of the machine, having the cross-passage B, which intersects the feedway through which the wire is fed, die or block A, having the cross-passage *b*, and the waste or escape passage c^4, with the punch or cutter C, substantially as described.

4. The combination of the frame of the machine, having a feedway for the wire and a cross-passage, B, the die or block A, having the cross-passage *b*, with the cutter or punch C, the cam-groove c', and the lever c^4, substantially as described.

5. The combination of the slide-block A, having the cutters *a a'*, and the cross-passage *b*, with the feedway of the machine, and the cutter or punch C, inverted-V-shaped in cross-section, substantially as described.

376,209. **HAND-TRUCK.** SETH ROGERS, Ballston Spa, N. Y., assignor to Emmitt Lee, same place. Filed Sept. 3, 1887. Serial No. 248,761. (No model.)



Claim.—1. In a hand-truck, a handle, A, formed with slots arranged at right angles to each other, in combination with a clutch-hook, B, arranged in the vertical slot and formed with a clamping holding-pin, *b*, arranged in the horizontal slot, substantially as and for the purpose specified.

2. In a hand-truck, the combination, with the handle A, having a tapering lower end, of the truck-frame *g*, mounted on wheels and having a central flaring sleeve to take the tapering end of the handle, and formed with side arms, D, extended rearwardly over the wheels, substantially as described, and for the purpose specified.

3. The combination of the slotted handle, the clutch-hook adjustably secured therein, the bolster E, secured to the handle, and the truck-frame mounted on wheels and formed with side arms, D, extended rearwardly over the wheels, and the pivoted chuck-pieces on the face of the truck-frame, all substantially as and for the purpose specified.

376,210. **GARMENT-PROTECTOR.** SIEGMUND L. SALOMON, New York, N. Y. Filed Feb. 3, 1887. Serial No. 226,400. (No model.)

Claim.—The combination, with the folded edge and lining of a garment, of a protecting-piece of ruching lying close against the interior of the garment, having its inner edge secured between the

376,210.

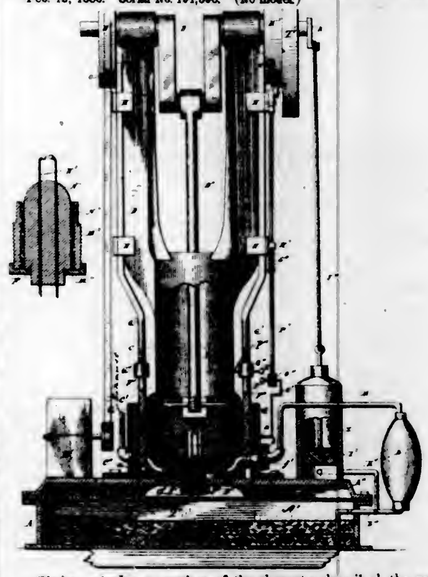


lining itself and the portion of the garment covered thereby, and having its outer end free and just within the folded edge to be protected, substantially as herein described.

376,211. **MANUFACTURE OF POLISHING-POWDER.** VALENTINE SEIB, Albany, N. Y. Filed Mar. 24, 1887. Serial No. 232,249. (No specimens.)

Claim.—The process of making a cleaning and polishing powder from coal-ashes by reheating and reburning such coal-ashes, afterward boiling the same in water, settling and resettling said water, removing said ashes from said water after such resettling, and drying the same, substantially as described.

376,212. **GAS-ENGINE.** HENRY K. SHANCK, Columbus, Ohio. Filed Feb. 13, 1886. Serial No. 191,890. (No model.)



Claim.—1. In gas-engines of the character described, the gas-producing chamber located at the base in juxtaposition to the cylinder, in combination with the air-pump, connecting-pipe, and cylinder, whereby the air is forced through the liquid and the gas is made and used on the spot, substantially as specified.

2. In a gas-engine of the character described, the gas-producing chamber located in the base of the engine, the air-blast generator, the connecting-pipes and cylinder, and the flexible gas bag or holder, all arranged to operate so as to supply the gas at a uniform pressure to the holder, substantially as specified.

3. The combination, with the gas-producing chamber, of the plate secured to the top thereof and cut away at the sides, forming an accessible recess for the electric wires or conductors, substantially as specified.

4. The combination, in a gas-engine, of the valves and ports for the admission of the explosive mixture and the evolved gases, the generator B″, the wires O′ P″, extending up through the insulating-plug F, the movable rods G P, to which the said wires are separately attached, being insulated therefrom and provided with knobs P R, and the mechanism for operating said rods so as to connect the said knobs P R at the proper intervals to produce a static spark of electricity in the cylinder and explode the gases at proper intervals, substantially as specified.

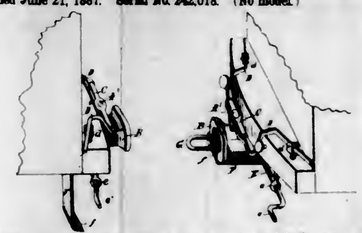
5. In gas-engines of the character described, the rod P′, secured at one end to the wire O′, said rod being operated by devices substantially as described, whereby the current of electricity is broken at intervals, as set forth.

6. The combination, with the piston having a narrow recess at its bottom, of the insulated plug secured to the cylinder-head, the

conducting-wires provided with knobs at their ends and adapted to extend into the recess when the piston is down, and the devices whereby a spark is produced to explode the gases, substantially as specified.

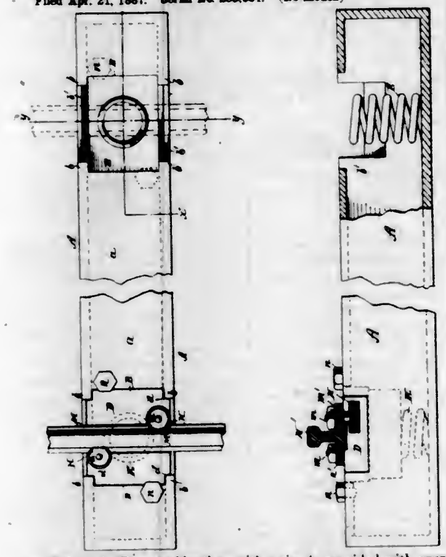
7. In gas-engines of the character described, the air-pump I, operated as described, and having a pipe leading therefrom to the gas-producing chamber, in combination with the pipes L′ L″, leading to the gas-producing chamber A′, as set forth.

376,213. **CAR-COUPLING.** CLINTON M. SNYDER, Amanda, Ohio. Filed June 21, 1887. Serial No. 242,018. (No model.)



Claim.—In a car-coupling, the combination, with the pin A, draw-head B, and link G, of the usual form, of the straight bar C, formed with slots *c* at its ends, and central hole to receive the pin A, and adapted to rest upon the top of the draw-head, and levers D, pivoted upon the top of the car-platform, then bent outward at right angles and over the end thereof and pivotally connected to the slotted ends of the bar C, as described and shown, and adapted for use in connection with a link-lifter and guide composed of a crank-bar, E *e*, and plate F, with angle end *f*, all constructed and arranged as and for the purposes specified.

376,214. **RAILWAY-TIE.** JOSEPH W. SMITH, Mount Carmel, Pa. Filed Apr. 21, 1887. Serial No. 235,631. (No model.)



Claim.—1. The combination, with a tie, A, provided with openings B in the top, and aligning side slots, B′, and springs held within said tie centrally the said openings, of bearing-blocks D, adapted to enter said openings and slots and rest upon said springs, and means for retaining a rail upon said bearing-blocks, substantially as shown and described.

2. The combination, with a tie, A, provided with openings B in the top, and aligning side slots, B′, and springs held centrally in said openings within the tie, of bearing-blocks D, provided with a transverse groove, M, centrally the face, oppositely-arranged T-shaped slots N, intersecting said groove, and casings *d*′, adapted to encompass the said springs, and means for securing the rail to said blocks, substantially as shown and described.

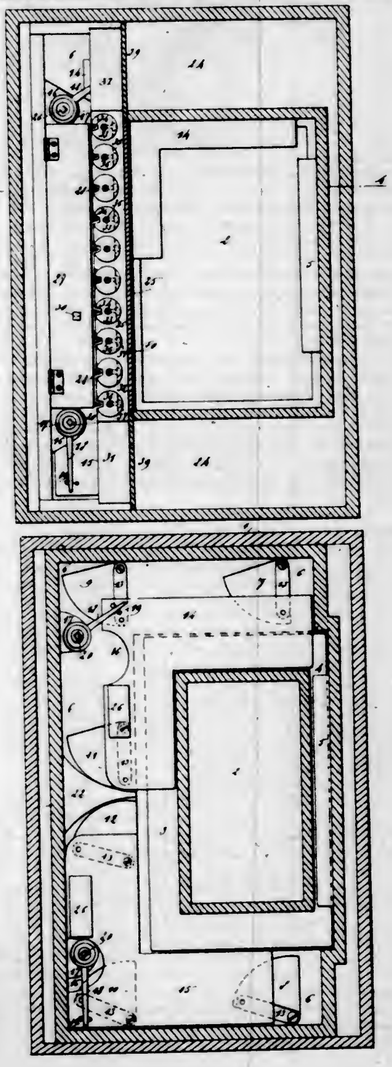
3. The combination, with a tie, A, provided with openings B in the top, aligning side slots, B′, intersecting said openings, shoulders *b*, and springs E, held centrally said openings in said tie, of bearing-blocks D, having a transverse groove, M, centrally their face, oppositely-arranged T-shaped grooves N, intersecting said grooves, casings *d*′, integral with the under side of said blocks, angular slots *d* in the edges of the blocks, and means for attaching the rail to the said blocks, substantially as shown and described.

4. The combination, with a tie, A, provided with openings B in the top, aligning side slots, B′, intersecting said openings, shoulders *b*, side bearing-surfaces, *b*′, and springs E, held centrally said openings in said tie, of bearing-blocks D, having a transverse groove, M, centrally their face, oppositely-arranged T-shaped grooves N in their outer edges, angular slots *d*, projecting under surfaces d^3, and integral casings *d*′, together with the bolts *n* and washers *n*′, all arranged to operate substantially as shown and described.

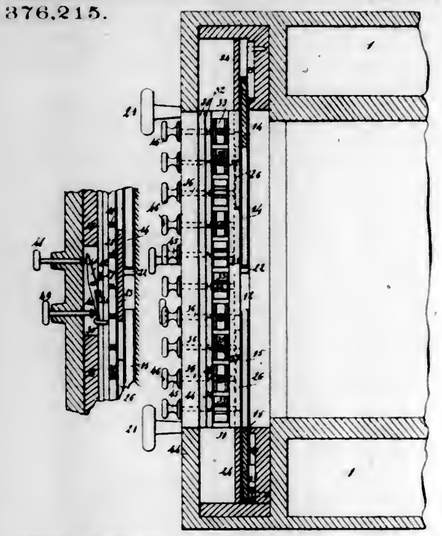
376,215. **SAFE-LOCK.** HARRY STANYBOUGHT, Brooklyn, N. Y. Filed July 6, 1887. Serial No. 243,494. (Model.)

Claim.—1. A safe having its lock and combination contained in the body at one side of the door-opening, the bolts of which lock are arranged to extend bodily from the jamb into the said opening and have engagement with the door, substantially as set forth.

2. The combination, with a safe having a door-opening, and a lock and its combination fitted in said safe at one side of the door-



376,215.



opening, of a door fitted to said opening, provided with slotted edges adapted to receive the bolts of the lock, and means for manipulating said lock, substantially as herein shown and described.

3. The combination, with a safe having a door-opening, and a lock and its combination fitted in the body of the safe at one side of said opening, said lock provided with upper and lower angular bolts, arms carrying posts adapted to reciprocate said bolts, and a hinged locking-plate adapted to secure said bolts in an open or closed position, of a door provided with a slot in the edge adapted to receive said bolts, substantially as shown and described, and for the purposes herein set forth.

4. The combination, with a safe and a lock and its combination fitted in the body of the safe, said lock provided with an upper and lower angular bolt provided with stop-plates upon their outer face and carrying posts adapted to reciprocate said bolts, a hinged locking-plate carrying blocks upon its inner face adapted to engage the stop-plates upon the bolts, and means for manipulating said lock-plate, of a door fitted in said safe, provided with a slot in the edges thereof, substantially as shown and described, and for the purposes herein set forth.

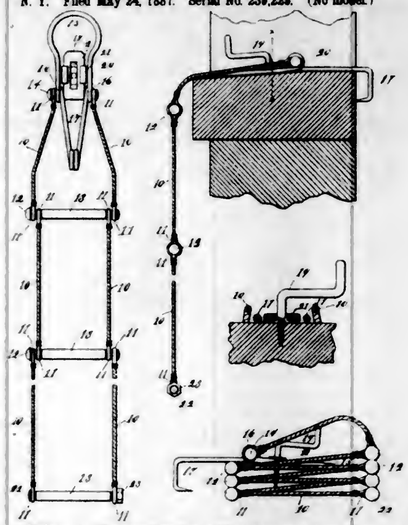
5. The combination, with a safe and a lock and its combination fitted in the body of the safe, said lock provided with an upper and lower angular bolt having stop-plates upon their outer face, arms carrying posts adapted to reciprocate said bolts, a hinged finger carrying locking-plate having blocks upon its inner face adapted to engage said stop-plates, a series of rotary disks slotted to receive the fingers of the locking-plate, and headed pins adjustably attached to said disks, having slots cut in said heads adapted to register with a given figure of the combination, of a door fitted in said safe, provided with slotted edges, substantially as herein shown and described.

6. A safe provided with a lock and its combination within the body, dials upon said body, and knobs revolving upon said dials provided with a notch in their periphery adapted to register with a given number upon said dials, and a door fitted within the safe having a slotted edge adapted to receive the bolts of the aforesaid lock, substantially as shown and described.

7. In a combination-lock, the combination, with a safe and a door fitted thereto having a slotted edge, of the reciprocating angular bolts 14 and 15, adapted to enter the slots in said door, the key-posts 17, having arms 18, adapted to engage pins 19 upon the said bolts, and means for securing the bolts in an unlocked or locked position, substantially as herein shown and described.

8. In a combination-lock, the combination, with a safe and a door fitted thereto having a slotted edge, of the reciprocating angular bolts 14 and 15, adapted to enter the slots in said door, the key-posts 17, having integral arms 18, adapted to engage pins 19 upon said bolts, the hinged finger carrying locking-plate 27, the revoluble disks 33, provided with a transverse peripheral slot, 34, and a longitudinal peripheral slot, 35, and headed pins 36, provided with a notch, 46, in the periphery of said heads, adapted to register with a predetermined figure produced upon the safe-body, all arranged to operate substantially in the manner and for the purposes herein set forth.

376,216. FOLDING FIRE-ESCAPE. IRA B. STILLMAN, Wellsville, N. Y. Filed May 24, 1887. Serial No. 239,229. (No model.)



Claim.—1. The combination, with a folding ladder, of a supporting attachment provided with a loop, hooks, a slotted plate, and a set-screw passing through said plate, substantially as described.

2. In a sectional folding ladder, the combination, with side lengths formed with loops 11, of rivets 12, sleeves 13, and a bolt, 22, arranged in connection with the lower loops of the lower lengths, substantially as described.

376,217. MASON'S FLOAT-HANDLE. EDWARD M. VAN DUSER, Newark, N. J. Filed Aug. 2, 1887. Serial No. 245,926. (No model.)



Claim.—1. The combination, with a screw having a polygonal head, a smooth reduced surface below said head, and a flattened end, of a lock-nut provided with a polygonal recess adapted to receive said head, substantially as herein set forth.

2. The combination, with a screw having a polygonal head, a smooth reduced surface below said head, and a flattened cutting end, of a winged lock-nut provided with a polygonal recess adapted to receive said head, substantially as and for the purpose herein set forth.

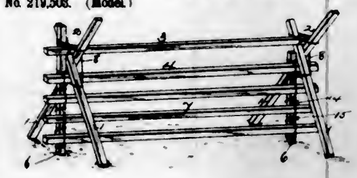
3. A screw provided with a polygonal head, a reduced smooth surface below said head, and a flattened beveled cutting end, substantially as shown and described, and for the purpose herein set forth.

4. A winged lock-nut provided with a recess in the upper face adapted to receive the head of a screw, substantially as and for the purpose herein set forth.

5. The combination, with a screw having a polygonal head and a reduced surface below said head, of a lock-nut provided with a polygonal head adapted to receive said head, and means for rotating said nut, substantially as shown and described.

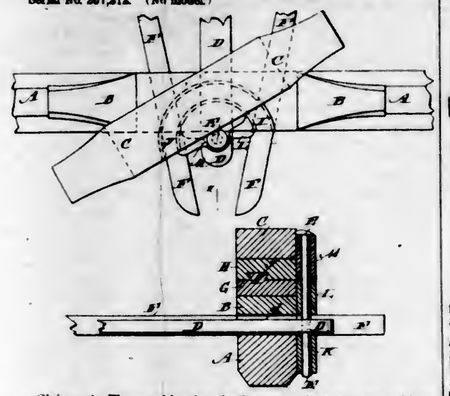
6. The combination, with a handle, of a screw having a polygonal head, a smooth reduced surface below said head, and a flattened cutting end, and a lock-nut provided with a polygonal recess in the upper face thereof, substantially as shown and described

376,218. FENCE. WILLIAM VAN HORN, Piqua, Ohio, assignor of one-half to Walter C. Lennox, same place. Filed Nov. 20, 1886. Serial No. 219,503. (Model.)



Claim.—The herein-described rail-fence, consisting of a series of rails, a rider-rail, and forked stakes, a wire formed into two horizontal loops connected by a vertical loop, the upper horizontal loop embracing the upper portion of the forked stakes above the rider-rail and the lower loop similarly embracing the forked stakes beneath the top rail of the fence, a tension-stake inserted within the central loop and turned vertically therein and against the adjacent stakes and drawing the surplus wire into the vertical loop, and a wire securing said tension-stake in its vertical position, substantially as set forth.

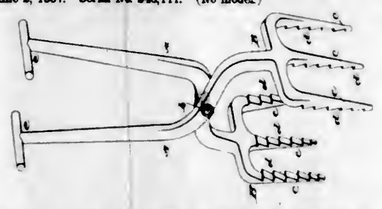
376,219. RUNNING-GEAR FOR VEHICLES. HENRY WARRINGTON and BENJAMIN BULGER, Virginia City, Mont. Filed May 5, 1887. Serial No. 237,312. (No model.)



Claim.—1. The combination, in front running-gear for vehicles, of an axle, A, a sand-board, B, fixed thereto, a head-block, C, above the sand-board, plates G H, fixed, respectively, to the parts B C and provided, respectively, with a segmental tongue, I, and corresponding groove, J, and provided also with forward lugs, L M, said parts A B formed to provide an opening, *d*, between their opposing faces, hounds F entering said opening and fixed to the parts A B, a reach, D, extending into the opening, and a king-bolt, E, passed through the lugs M L and the reach, substantially as shown and described.

2. The combination, in front running-gear for vehicles, of an axle, A, provided with a front lug, K, a sand-board, B, fixed thereto, a head-block, C, above the sand-board, plates G H, fixed, respectively, to the parts B C, and provided, respectively, with a segmental tongue, I, and corresponding groove, J, and provided also with forward lugs, L M, said parts A B formed to provide an opening, *d*, between their opposing faces, hounds F entering said opening and fixed to the parts A B, a reach, D, extending into the opening, and a king-bolt, E, passed through the lugs M L, the reach D, and the lug K, all arranged for operation, substantially as described, for the purposes set forth.

376,220. NAIL-TONGS. ANDREW WOOD, Washington, Ky. Filed June 2, 1887. Serial No. 240,111. (No model.)

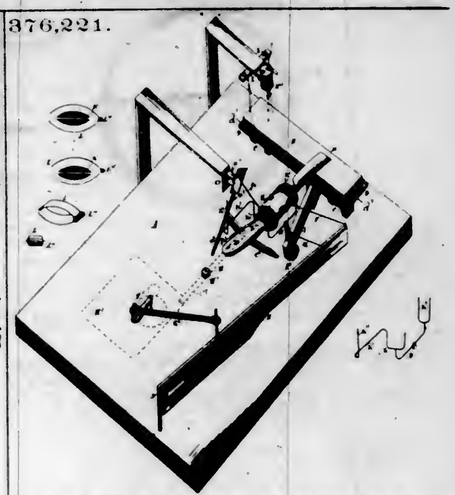


Claim.—As an improved article of manufacture, a nail-tongs comprising the crossed levers A, curved outward in opposite directions from their pivotal point *b*, and then downward, and the series of tines at the lower end of each lever having their inner faces toothed or notched, as at *d*, the upper ends of the levers being disconnected and each formed with a hand-hold, substantially as set forth.

376,221. MACHINE FOR HONING RAZORS. EDWARD WYTTENBACH, Carlisle, Ky. Filed July 26, 1886. Serial No. 209,125. (No model.)

Claim.—1. The means, substantially as described, for imparting to the razor its traversing movements, consisting, essentially, of the combination, with a prime motor, of a vibrating bar, E, a vibrating carrier connected therewith, and a razor-holding frame supported by such carrier.

376,221.



2. The means, substantially as described, for turning over the razor from side to side, consisting, essentially, of the combination, with a vibrating carrier provided with extension h^3, having an upturned end, h^4, of a razor-holding frame supported thereby and provided with rods *p p'*, and the pivoted slotted bar o^3.

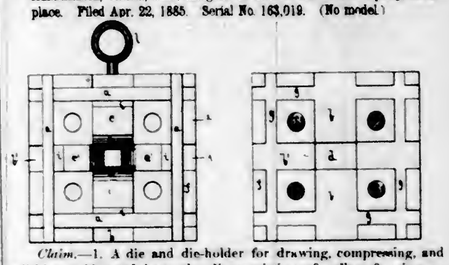
3. In combination with a base or bed piece, A, a raised hone support or frame, a hone, an oil-dropping device located above the hone and a ledge around the hone-support, all substantially as and for the purposes set forth.

4. The combination of a hone-support, the clamps attached thereto and arranged above the hone, and the hair or hairs secured within the clamps and depending across the path of the razor upon the hone.

5. In combination, a prime motor, a stationary hone, a vibrating carrier, a razor-holding frame carried thereby, and automatic mechanism, substantially as set forth, for turning over the razor during its traversing motions.

6. In a razor-sharpening machine, a vertically-adjustable track, combined with a carrier in which the razor is supported, as and for the purposes set forth.

376,222. DIE AND DIE-HOLDER FOR DRAWING. WILSLOW ALLDERDICK, Akron, Ohio, assignor to the Akron Iron Company, same place. Filed Apr. 22, 1885. Serial No. 163,019. (No model.)



Claim.—1. A die and die-holder for drawing, compressing, and polishing cold metal bars, the die consisting of rollers forming an angular opening through which the bar is to be drawn, and the die-holder formed with sockets in contact with the peripheries of the rollers directly in rear of the bearing of the latter against said bar, substantially as described.

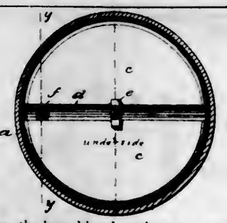
2. The rollers *c c'*, in combination with a die-holder having supports *e e'*, with their inner ends in contact with the peripheries of the rollers, substantially as described.

3. A die-holder formed of two similar sections, *f f*, having opening *d*, grooves *b b' g*, gibs *a*, and supports *e e'*, in combination with a die consisting of rollers, substantially as described.

376,223. BARREL-HEAD. JAMES ALVORD, Winsted, Conn., assignor of one-half to Rollin H. Cooke, same place. Filed July 23, 1887. Serial No. 245,487. (No model.)

Claim.—1. In combination, the barrel-body *a*, bearing the interior groove, *b*, the barrel-head sections *c c*, separated by an interval, and the interval-cap *d*, carrying the button *e*, all substantially as described, and for the purpose set forth.

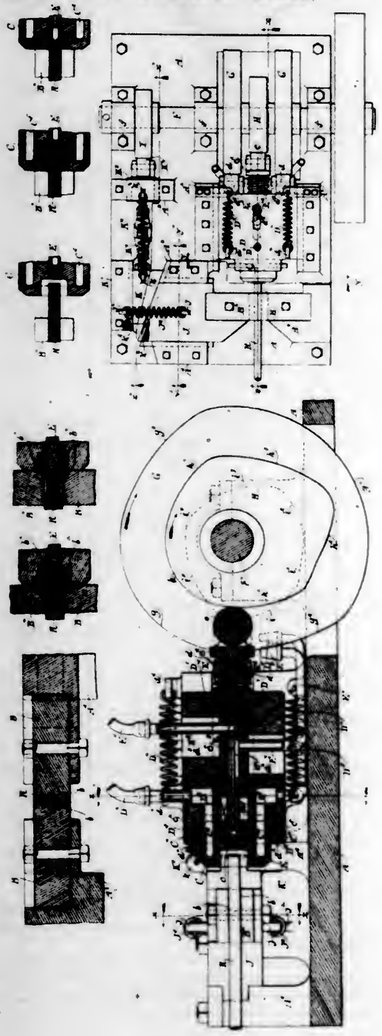
376,223.



2. In combination, the barrel-head sections *c c*, separated by an interval, the interval-cap *d*, carrying the button *e* and made of some slightly-elastic material, and the stop *f*, all substantially as described and for the purpose set forth.

3. In combination, the barrel-head sections *c c*, separated by an interval, and the interval-cap carrying the button and provided with the chamfers *i*, all substantially as described, and for the purpose set forth.

376,224. METHOD OF AND MACHINE FOR MAKING NUT-BLANKS. SEWARD S. RABBITT, Uniontown, Pa., assignor, by mesne assignments, to John B. Skinner, Chicago, Ill. Filed Feb. 28, 1887. Renewed Dec. 12, 1887. Serial No. 257,681. (No model.)



Claim.—1. The method of making nut-blanks or similar articles, which consists in compressing or upsetting the end of a rod or bar to form an enlargement or head thereon and then punching out the metal from the central part of the enlargement or head thus made.

2. A machine for making nut-blanks and similar articles, comprising clamping jaws or dies for holding a rod or bar, an apertured heading-die, and a punch working through the said heading-die, substantially as described.

3. The combination of clamping-jaws, an apertured heading-die, a sliding carriage or block carrying said die, a reciprocating punch having sliding support in said carriages and passing through the aperture of said die, and means for actuating said clamping-jaws, carriage, and punch, substantially as described.

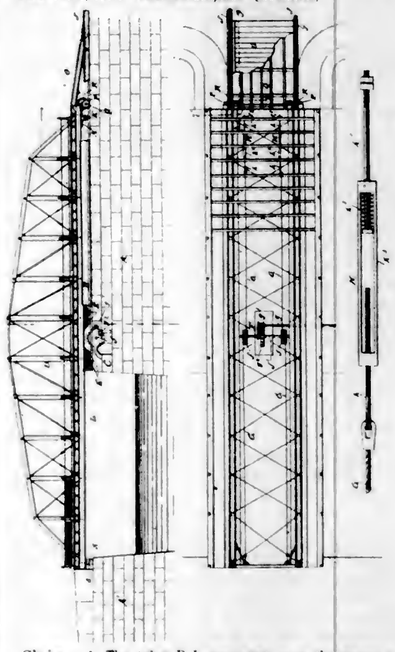
4. A machine for making nut-blanks or similar metal articles, comprising clamping-jaws, an apertured heading-die, a sliding block or carriage carrying the heading-die, a punch working through the aperture of the die, a sliding support for the punch mounted in said block or carriage, a driving-shaft provided with cams acting upon said carriage and upon the punch-support, and means actuating the clamping-jaws, substantially as described.

5. A machine for the purpose described, comprising stationary and movable clamp-jaws, an apertured heading-die, a sliding block or carriage carrying said heading-die, a punch working through the aperture of the heading-die, a support for the punch sliding in said carriage, a sliding plate supporting the movable clamp-jaw, a wedge acting upon said sliding plate, and a shaft carrying cams for actuating said wedge, heading-die, and punch, substantially as described.

6. The combination, with the die C and carriage D, of recesses D^3 and C^3 in said carriage and die, forming a water-chamber, and water supply and exit pipes connected to said chamber, substantially as described.

7. The combination, with the die C, carriage D, punch E, and bar E', supporting said punch, said punch being recessed, of water inlet and exit pipes connected with the recess of the punch, substantially as described.

376,225. DRAW-BRIDGE. OSCAR F. BALSTON, Brooklyn, N. Y. Filed Oct. 8, 1887. Serial No. 251,816. (No model.)



Claim.—1. The tubes B J, supported upon the masonry A, in combination with the bridge having trucks E K, the tubes B being provided with the tracks C, substantially as described.

2. The approach O, pivoted to the road-bed, in combination with the longitudinally-moving draw-bridge, and means, substantially as described, for lowering the approach below the bridge on opening the same, and for elevating its free end to a level with the bridge on closing the latter, substantially as described.

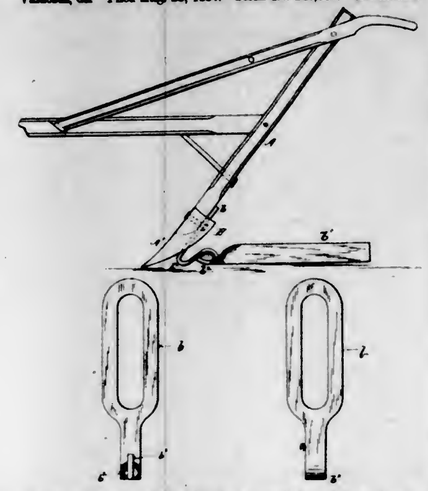
3. The tubes J, let into the street and provided with the tracks

k and spaced top flanges, *k'*, in combination with the longitudinally-movable bridge provided with the rollers K, substantially as described.

4. The chord L of the bridge, provided with the rack N, in combination with the gear-wheel P, shaft Q, eccentric R, and pivoted approach O, substantially as described.

5. The frame A^2 of the turn-buckle H, in combination with the ropes G, screw-rod *h*, rod *h'*, and spring h^2, placed upon the rod *h'*, between its head and the end of the frame A^2, substantially as described.

376,226. ADJUSTABLE PLOW-BAR. COLUMBUS R. BARFIELD, Valdosta, Ga. Filed Aug. 25, 1887. Serial No. 247,887. (No model.)



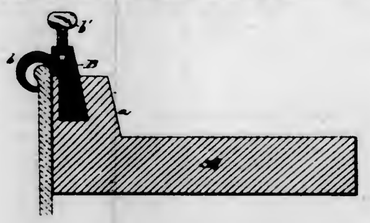
Claim.—A bar or rudder for plows, consisting of an upright portion, *b*, and a horizontal portion, *b'*, united by a bend, and a twist back of the bend, said bend being of softer temper than the remainder of the bar, substantially as set forth.

376,227. BOB-SLED. FRANCIS L. BEARD, Pleasant Ridge, Kans. Filed July 14, 1887. Serial No. 244,315. (No model.)



Claim.—The combination, with the rear sled and the connecting-bar I, adjustably attached thereto, and having a perforation in the front end, of the front sled having the platform A', provided with a perforation, the bearing-plate D, secured on said platform, and having a perforation to align with that in the platform, the swinging plate E, pivoted to the platform, and having a perforation in its free end, the front end of the connecting-bar I being adapted to be disposed between the bearing-plate D and the swinging plate E, with the perforation therein aligned with the perforations in the said plates, and the bolt M, passing through the said aligned perforations, substantially as and for the purpose hereinbefore specified.

376,228. BATTERY-ZINC. JOHN BEATTIE, Jr., Fall River, Mass., assignor to the Beattie Battery Zinc and Electrical Company, same place. Filed Aug. 13, 1887. Serial No. 246,362. (No model.)



Claim.—1. The combination, with a zinc for battery purposes, of an enlarged post cast of the same metal and integral therewith, and a supplemental post secured to the enlarged post, as set forth.

2. The combination, with a crow-foot zinc for battery purposes, of an enlarged post shaped like the frustum of a cone, cast of the same metal and integral therewith, and a supplemental post of flexible material secured to the enlarged post by a dovetail connection, as described.

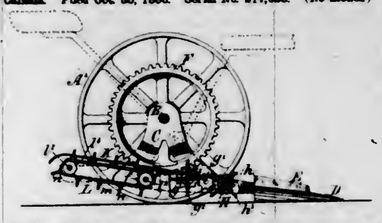
3. The combination, with a crow-foot zinc and a main post cast integral therewith, of a supplemental post constructed of different material and secured to the main post by a dovetail connection, as described.

4. The combination, with a crow-foot zinc, of a post constructed of different material, said post being secured to the zinc by a dovetail connection and having formed upon it a supporting flexible or ductile hook, substantially as described.

5. The combination, with a crow-foot zinc, of a post constructed of flexible metal, said post having formed upon it a hook and carrying a binding-screw, as set forth.

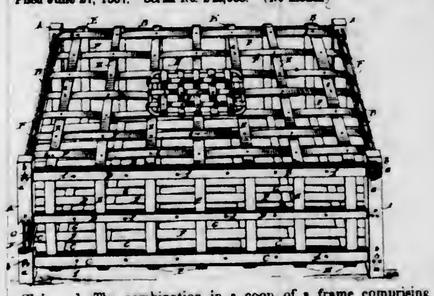
6. A crow-foot zinc having an enlarged post, in combination with a supplemental post of different material having formed upon it a flexible hook and a binding-post.

376,229. POTATO-DIGGER. HIRAM D. BERKLEY, Dundas, Ontario, Canada. Filed Oct. 20, 1886. Serial No. 217,626. (No model.)



Claim.—In a potato-digging machine, the combination, with the wheels and the frame, of the digging-blade D, picker-shafts G H, elevator-shafts *l l'*, a train of gears driven from one of the wheels, elevator L, having teeth or prongs *n*, and separating-bars K, extending from said digging-blade over said pickers and elevators in such manner that their prongs may work between said bars, substantially as and for the purpose specified.

376,230. CHICKEN-COOP. GEORGE W. BROWN, McNairy, Tenn. Filed June 27, 1887. Serial No. 242,663. (No model.)



Claim.—1. The combination, in a coop, of a frame comprising posts, bars held thereto, and splints interwoven with each other at the bottom, sides, and top of the coop and secured to the frame, substantially as shown and described.

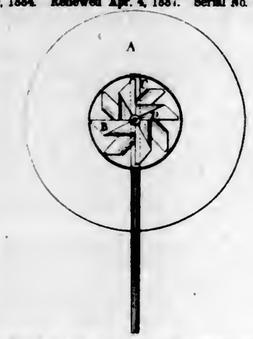
2. The combination, in a coop, of a frame comprising posts, pairs of bars connecting the posts, and splints interwoven with each other at the bottom of the coop and passed between the frame-bars at the sides of the coop, and interwoven with each other at the top of the coop, where an opening is left for access to the coop, substantially as herein set forth.

3. The combination, in a coop, of a frame comprising posts A, pairs of side bars connecting the posts, splints E F, interwoven with each other at the bottom of the coop and passed between the side bars, and interwoven and fastened at the top of the coop to provide an opening, and a door, H, fitted at said opening, substantially as shown and described.

4. The combination, in a coop, of a frame comprising posts, pairs of side bars connecting the posts, splints E F, interwoven with each other at the bottom of the coop and passed between the side bars, and interwoven also at the top of the coop to provide an opening

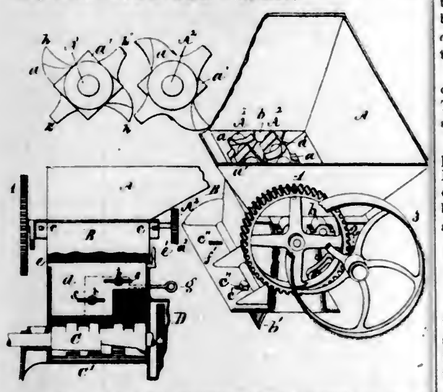
thereat, a door, H, fitted to said opening, and splints G, interwoven at the bottom of the coop between the continuous splints to form a close bottom and fastened at the ends to the frame, substantially as shown and described.

376,231. **TOILET-FAN.** GEORGE R. BURDON, Providence, R. I. Filed June 9, 1884. Renewed Apr. 4, 1887. Serial No. 233,656. (No model.)



Claim.—A toilet-fan having a portion of its center removed, with a cross-bar, C, attached to the fan across the opening therein, and a wind-wheel, B, pivotally attached to said bar in the opening and adapted to be operated by the action of the air when the fan is in motion, substantially as described and shown, and for the purpose set forth.

376,232. **FEED-MILL.** THOMAS C. CADWGAN, Springfield, Ohio, assignor to the Duplex Manufacturing Company, same place. Filed May 26, 1887. Serial No. 239,399. (No model.)



Claim.—1. In a mill, the combination of a casing, two parallel feeder-shafts arranged therein, and each provided with alternate substantially-square projections *a'* and irregular bodies *a*, having projections, as *h h'*, said bodies on the two shafts being arranged opposite to each other, and means for rotating said shafts, substantially as set forth.

2. In a grinding-mill, the combination of a casing, two parallel feeder-shafts arranged therein, and each provided with alternate substantially-square bodies *a'* and irregularly-shaped bodies *a*, having projections, as *h h'*, opposite the square bodies on the other shaft, and differential gearing for driving said shafts at different speeds, substantially as set forth.

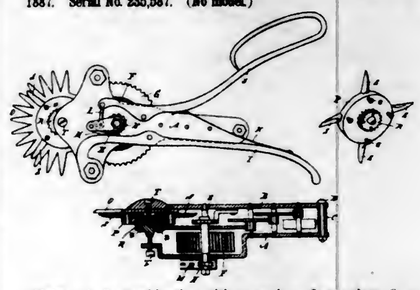
3. In a feed-mill, the combination of a casing, feeders mounted therein, a broad plate-valve pivotally suspended under the feeders in the throat of the case adapted to close the latter and having a notch or discharge-hole, in combination with a slide-valve operating thereon over said notch or discharge-hole, said slide-valve being provided with means for adjustment, substantially as and for the purpose set forth.

4. In a feed-mill, the combination, with the crusher-case C and the grinder-case D to one side thereof, of a swinging valve pivoted in the throat of the former and having a notch therein next the grinding-case, a slide-valve operating on said swinging valve over said notch, and a detachable screw-threaded rod extending through the end wall of said case and engaging a hole in said slide-valve to retain said swinging valve in a closed position and to operate said slide-valve, as set forth.

5. The combination, with the feeders, the crusher, and grinding devices, and the case provided with the hole c^4, of the double-valve consisting of the pivoted swinging plate having a notch therein to form the discharge-orifice, the slide-valve operating over the latter, having the screw-threaded lug, and the detachable screw-threaded rod adapted to be inserted through said hole c^4 into said lug to operate both said valves, as set forth.

6. In a grinding-mill, the combination of the crusher-case C, the crushers C, mounted therein, the case B, through which the material is fed to case C, having a flange, f^3, forming in part a cover to the case C, a concave plate mounted opposite the crusher and provided with a flange, f', by which it is secured to the under side of the flange f^3, and means for adjusting the said concave, substantially as set forth.

376,233. **SHEEP-SHEARS.** DONALD CAMERON, Detroit, assignor of one-half to William C. Mooney, Indian Lake, Mich. Filed Apr. 21, 1887. Serial No. 235,587. (No model.)



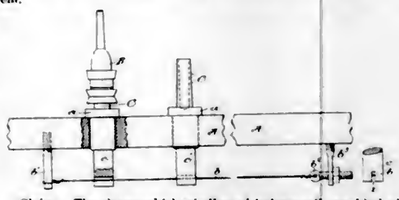
Claim.—1. In combination with a comb or finger-plate, O, a rotating cutter-head, P, carrying independent cutters S, said cutter-head being adapted to be rotated by a spring motor-wheel, R, and the screws *a* passed through said wheel and cutter-head into the cutters, substantially as described.

2. The combination, with the frame and the spring-motor, of the comb O, rotating cutter-head, cutters carried thereby, and set-screws T, tapped through said cutter-head for regulating the depression of said cutters, substantially as described.

3. The combination, with the frame, the spring-motor, and the pinion G on the shaft of said spring, of the spring-ratchet M, ratchet N on said spring-shaft, lever J, link L, connecting one end of said lever directly with the spring-ratchet, cutter P, gear-wheel R, carried thereby, comb O, cutters S, and the set-screws T, all constructed, arranged, and operating substantially as and for the purpose specified.

376,234. **SUPPORT FOR SPINNING-SPINDLES.** WILLIAM T. CARROLL, Worcester, assignor to George Draper & Sons, Hopedale, Mass. Filed Dec. 21, 1886. Serial No. 222,172. (No model.)

Brief.—One or more yielding holders are made to co-operate with the bolster-bearings at a point outside of the rail in which they are supported, to restrain the motion of said bearings when they are made to vibrate by reason of the unsteady movement of the spindles within them.



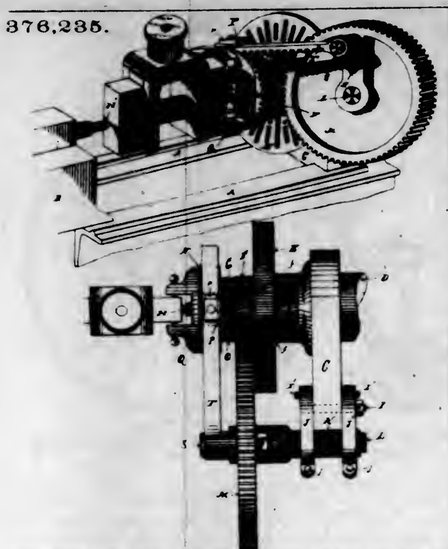
Claim.—The sleeve-whirl spindle and bolster-rail provided with a hole and a bolster having its shank extended therein loosely, combined with a flexible holder adapted to engage the bolster at a point outside of the said rail and prevent the rotation of the said bolster in the said rail, substantially as described.

376,235. **MACHINE FOR TURNING CROSS-HEAD PINS.** BENJAMIN J. COATES, Erie, Pa. Filed Oct. 27, 1887. Serial No. 253,572. (No model.)

Claim.—1. In a lathe attachment for turning cross-head pins, the combination of a stationary gear adapted to be secured to the lathe-spindle and a crank-wheel intermeshing therewith, with a loose pinion and chuck mounted on a common center with said fixed pinion, and a rack-bar pitman intermeshing with said loose pinion and actuated by said crank-wheel, substantially as and for the purpose set forth.

2. In a lathe attachment for turning cross-head pins, the combination of the fixed pinion F, having a sleeve, G, thereon, with the

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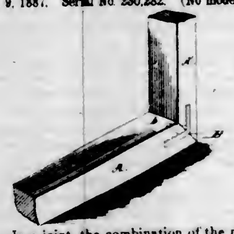


loose pinion N and chuck Q, adjustably secured together, and adapted to be rotated on said sleeve G, substantially as and for the purpose set forth.

3. In a lathe attachment for turning cross-head pins, the combination of the crank-wheel M, carrying and actuating the rack-bar pitman T, with the loose pinion N, intermeshing with said rack-bar pitman T, and the clamping mechanism P, for retaining the rack-bar pitman T in mesh with the pinion N, substantially as and for the purpose set forth.

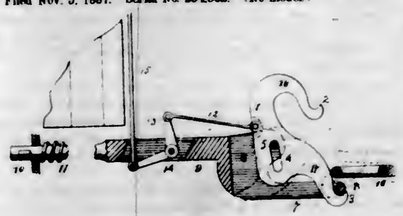
4. In a lathe attachment for turning cross-head pins, the combination, in the crank-wheel M, of the slot M' and the adjustable wrist-pin S with the rack-bar pitman T, mounted upon and actuated by said wrist-pin S and intermeshing with and operating the loose pinion N on the chuck Q, secured thereto, substantially as and for the purpose set forth.

376,236. **WOOD-JOINT.** JAMES COLLINS, Crawfordsville, Ind. Filed Mar. 9, 1887. Serial No. 230,282. (No model.)

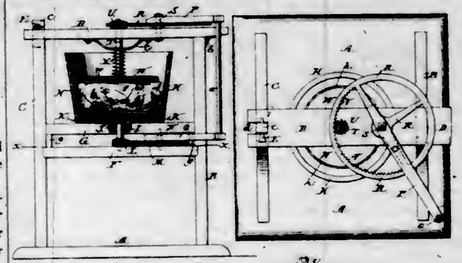


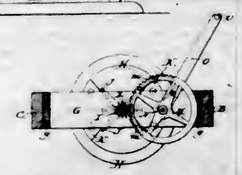
Claim.—In a joint, the combination of the members A A', provided with the communicating kerfs *a a'*, having parallel plain-faced sides, and the metallic key B, adapted to enter the said kerfs and connect the members, the said key having parallel sides, one of which is smooth, and the other one of which is provided with a series of parallel longitudinal ridges or corrugations which enter one of the sides of the kerfs as the key is driven thereinto, substantially as specified.

376,237. **CAR-COUPLING.** CHARLES G. CROSBY, Sun Prairie, Wis. Filed Nov. 5, 1887. Serial No. 254,362. (No model.)



376,238. **WASHING-MACHINE.** GEORGE F. DUNKLEE, Deep Water Mo. Filed Mar. 9, 1887. Serial No. 230,236. (No model.)





Claim.—1. In a washing-machine, the combination, with a supporting-frame, of a shaft, I, journaled therein and provided with a pinion on its lower end and a spider on its upper end for supporting a tub, a segmental rack meshing with the said pinion, a rubber-shaft journaled in the upper part of the frame and provided with a pinion on its upper end, a wheel having an internal rack meshing with the pinion on the rubber-shaft, arms or bars secured to the segmental rack and to the wheel having the internal rack, and a round or bar connecting the said arms or bars, substantially as herein shown and described.

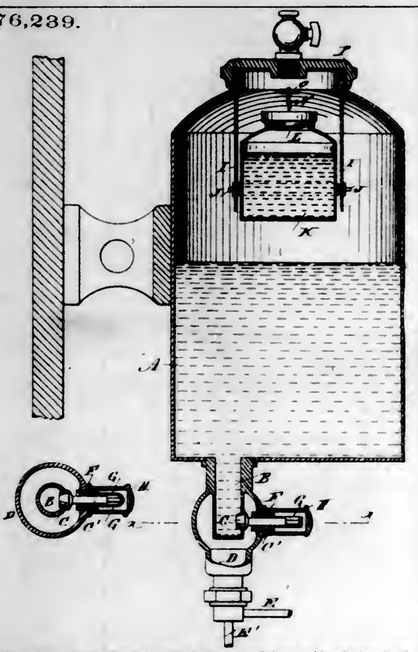
2. The combination, in a washing-machine, of a suitable frame, a shaft, I, journaled therein, a spider-frame, J, fixed to the shaft, a tub, H, having cleats or retainers K engaging the frame J, a pinion, L, on shaft I, a wheel or plate, M, having an external rack, *m*, engaging said pinion, a shaft, T, journaled on the frame, a rubber, W, on shaft T and adapted for rotation in the tub H, a pinion, U, on shaft T, a wheel, R, having an internal rack, V, engaging pinion U, and a lever-frame, O P *o*, connected to the rack-wheel M R, all arranged for operation substantially as shown and described.

376,239. **FIRE-EXTINGUISHER.** WILLIAM H. DURANT, Concord, N. H. Filed June 29, 1887. Serial No. 242,876. (No model.)

Claim.—1. In a fire-extinguisher, the combination, with a tank containing a solution of bicarbonate of soda dissolved in water, a tube extending from the lower end of said tank and provided with pipes leading to the interior of the car-heater, and a valve held in said tube and connecting the latter with the interior of the tank, of a small vessel hung on trunnions in the interior of said tank above said solution of bicarbonate of soda and water, said small vessel containing sulphuric acid, and a stopper closing the mouth of said small vessel and hung on a chain secured to the upper end of said tank, substantially as shown and described.

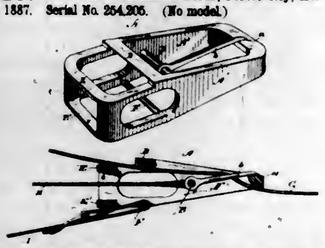
2. In a fire-extinguisher, the combination, with a tank containing a solution of bicarbonate of soda in water, of a small vessel hung on trunnions in said tank above said solution of bicarbonate of soda and water, said small vessel containing sulphuric acid, which, when said

376,239.



tank assumes an inclined position, is emptied into said solution in the tank, so as to produce carbonic-acid gas, and a stopper held on the mouth of said small vessel and hung on a chain secured to the upper end of the said tank, so that when said vessel turns on its trunnions the stopper is removed from the mouth of said vessel, substantially as shown and described.

376,240. BUCKLE. THOMAS C. FIELD, Forest City, Mo. Filed Nov. 3, 1887. Serial No. 254,205. (No model.)



Claim.—1. The herein-described buckle having the wedge-shaped side bars, A' A', cross-bar B, carrying the tongue *b*, and the cross-bar or guard D, the cross-bar F, and upper and lower rear end cross-bars or guards, E E', constructed and arranged substantially as shown and described, as and for the purpose set forth.

2. The herein-described buckle having the wedge-shaped side bars, A' A', cross-bar B, carrying the tongue *b*, and the cross-bar or guard D, the cross-bar F, and upper and lower rear end cross-bars or guards, E E', in combination with the reins or straps G, H, and I, all constructed, arranged, and operated substantially as shown and described.

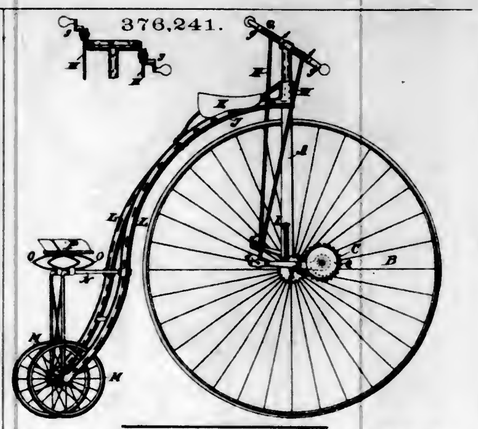
376,241. BICYCLE. PETER F. FILLIES and ALPHEUS C. MONNIN, Canton, Ohio. Filed Sept. 24, 1887. Serial No. 250,618. (No model.)

Claim.—1. The combination of the yoke A, having attached thereto the propelling-wheels C, the shaft *a*, having attached thereto the pinions *b*, the levers D, provided with the recess F, and the spring E, substantially as and for the purpose specified.

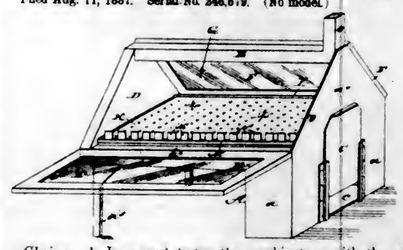
2. The combination of the yoke A, the wheel C, the pinions *b*, the levers D, the connecting bars or rods H, and the crank-shaft G, substantially as and for the purpose specified.

3. The propelling-wheel C, provided with the flange *c*, in combination with the levers D, provided with the recesses F, and the springs E, substantially as and for the purpose specified.

376,241.



376,242. SEED-TESTER. HENRY A. GOETZ, New Albany, Ind. Filed Aug. 11, 1887. Serial No. 246,679. (No model.)



Claim.—1. In a seed-tester, the combination, with the seed-chamber and its pan, of a lower body portion or base having a heating-chamber, *a*, at one end, a flue, *a'*, leading therefrom along the under side of the seed-chamber and communicating with an outlet, and the deflector H, inclined downwardly in opposite directions from the sides of the heating-chamber to the center thereof, and also inclined from the outer end of the chamber *a* upward and forward into the flue, whereby the rising heat will be divided and deflected forward and upward, substantially as set forth.

2. In a seed-tester, the combination of a body or base portion, A, having a chamber, *a*, containing a source of heat, and a flue, *a'*, leading from said chamber, and a superposed seed-sprouting chamber, G, having a hollow end wall, D, forming a flue, *D'*, communicating with the base-flue *a'*, a central upper flue, E, leading from the top of flue *D'* to the other end of the chamber G, and glazed covers or doors, as at F F, closing the space between the upper flue, E, and the base A of the tester, substantially as described, for the purposes set forth.

3. In a seed-tester, the combination of a base, A, having a chamber, *a*, and flue *a'*, a superposed seed-sprouting chamber, G, having a hollow end wall forming a flue, *D'*, communicating with the base-flue *a'*, an upper flue, E, leading from the top of flue *D'* to the other end of the chamber G, a pan, I, placed on the floor of said chamber, cotton, K, or other fibrous material placed in the pan and adapted to receive the seeds and float them on water in the pan, and hinged glazed doors, as at F, to the sprouting-chamber, all substantially as described, for the purposes set forth.

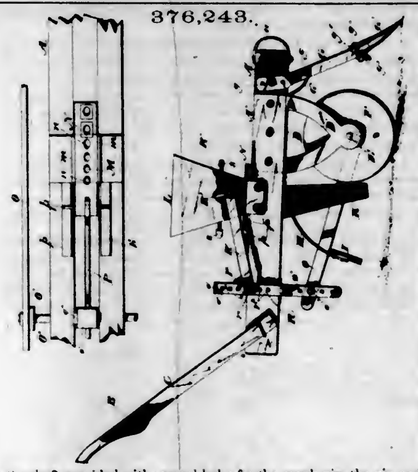
376,243. SEED-PLANTER. JOHN F. GUILMARTIN, Troy, Ala., assignor to E. T. Comer, Savannah, Ga. Filed Sept. 23, 1886. Serial No. 214,335. (No model.)

Claim.—1. In combination with the U-shaped shank, the opening-hoe having its upper portion bent to engage the shank on opposite sides, the bolt passing through the hoe and rearward between the sides of the shank, and the nut on the bolt, substantially as and for the purpose shown.

2. In a planter and distributer, as means for operating the delivery devices, the wheel, the crank on the shaft thereof, the connecting-rod, the rock-shaft, the crank thereon, with which the rod is connected, the crank-bend in the shaft, and the pitman or connecting-rod connecting such bend with the delivery mechanism, substantially as and for the purpose specified.

3. In combination with the delivery-slide, the connecting-rod or pitman, the crank, the rock-shaft carrying such crank, the crank-arm

376,243.



on the shaft provided with several holes for the crank-pin, the pin and the connecting-rod operated from the driving-wheel by suitable connecting mechanism, substantially as and for the purpose shown.

4. In combination with the rock-shaft provided with the crank-bend, the pitman or connecting-rod carried with such bend, and the delivery-slide pivotally connected with the rod, substantially as and for the purpose set forth.

5. In combination with the delivery-slide, the rock-shaft having the crank-bend provided with series of opposite holes for the reception of a pin, and the pitman or connecting-rod connected with the slide by a pin, and with the crank-bend by a pin passing through holes in the opposite sides of the bend, substantially as and for the purpose described.

6. In combination with the hopper, the rock-shaft, the crank thereon connected with the feed-slide, so as to operate the same, the stirrer-shaft, and the second crank on the rock-shaft connected with such stirrer-shaft, substantially as and for the purpose shown.

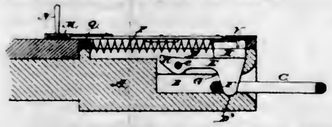
7. In combination with the hopper, the feed-slide provided with a series of openings adapted to be carried into and beyond the hopper as the slide reciprocates, and having the rear sides of their upper ends beveled, and means for brushing any projecting seed from the tops of the openings, substantially as and for the purpose specified.

8. In combination with the hopper and the slide provided with openings beveled on their rear sides at their upper ends, a brush engaging the top of the slide within the hopper, substantially as and for the purpose shown.

9. In combination with the hopper, the slide reciprocating through the hopper so as to be carried beyond opposite sides thereof, and having a series of seed-receiving openings beveled at their upper ends on the sides toward the middle of the slide, and the two brushes engaging the upper face of the slide within the hopper, substantially as and for the purpose set forth.

10. In combination with the hopper, the slide moving through the same beyond the front and rear sides thereof and provided with openings beveled at their upper ends on their rear sides with reference to their motion beyond the hopper, and the two brushes within the hopper at its front and rear sides, adapted to brush the projecting seed from the openings in the slide before such openings pass beyond the hopper, substantially as and for the purpose shown.

376,244. CAR-COUPLING. JONATHAN HENDERSHOT, Evelyn, W. Va. Filed Oct. 11, 1887. Serial No. 252,009. (No model.)



Claim.—1. In a car-coupling, the combination, with a draw-head, A, having a longitudinal groove, D, in its top, of a block, H, adapted to slide in said groove, an elbow-lever, J, pivoted at its angle to a lateral arm, K, on said draw-head and pivotally connected to said block, a bar, M, adapted to slide transversely beneath the car-platform and connected to said lever by a link, L, a handle-lever, T, connected by a link, S, to said bar, and a spring, P, interposed between said block and a cross-piece, Q, on said draw-head, substantially as shown and described, for the purpose herein set forth.

2. In a car-coupling, the combination, with a draw-head, A, having a longitudinal groove, D, in its top, of a swinging member, E, pivoted in said groove, a block, H, adapted to slide transversely beneath the car-platform and provided with a handle, N, at each end, an elbow-lever, J, pivoted at its angle to a lateral arm, K, on said draw-head, one arm of said lever being pivotally connected to said block, and a link, L, connecting the other arm of said lever to said sliding bar, substantially as shown and described, for the purpose herein set forth.

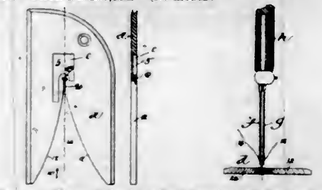
3. In a car-coupling, the combination, with a draw-head, A, having a longitudinal groove, D, in its top, of a block, H, adapted to slide in said groove, an elbow-lever, J, pivoted at its angle to a lateral arm, K, on said draw-head, a bar, M, adapted to slide transversely beneath the car-platform, a link, L, connecting said lever and bar, and a handle-lever, T, pivoted in the car-platform and connected by a link, L to said bar, substantially as shown and described, for the purpose herein set forth.

4. In a car-coupling, the combination, with a draw-head, A, having a longitudinal groove, D, in its top, of a swinging member, E, pivoted in said groove and provided at its outer end with a downwardly-projecting coupling-lug, F, a block, H, adapted to slide in said groove, means, substantially as shown and described, for moving said block, and a cross-plate, V, on top of the draw-head at its front end, substantially as shown and described, for the purpose herein set forth.

5. In a car-coupling, the combination, with a draw-head, A, having a longitudinal groove, D, in its top, and a recess, D^3, in the bottom of its link-opening B, of a swinging member, E, pivoted in said groove and provided with a downwardly-projecting coupling-lug, F, at its outer end adapted to enter said recess, a block, H, adapted to slide in said groove, and means for shifting and securing said block, substantially as shown and described, for the purpose herein set forth.

6. In a car-coupling, the combination, with a draw-head, A, having a longitudinal groove, D, in its top, and a recess, D^3, in the bottom of its link-opening B, of a swinging member, E, pivoted in said groove and provided with a downwardly-projecting coupling-lug, F, at its outer end adapted to enter said recess, and an upwardly-projecting stop-lug, R, at its inner end, a block, H, adapted to slide in said groove and to be engaged by said stop-lug, and means for shifting and securing said block, substantially as shown and described, for the purposes herein set forth.

376,245. MACHINE FOR FINISHING BUTTON-HOLES. GEORGE S. HILL, Lynn, assignor to John Reece, Boston, Mass. Filed Feb. 3, 1887. Serial No. 226,394. (No model.)



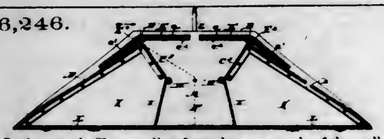
Claim.—The within-described mechanism for use on ordinary sewing-machines for gathering in and confining the needle-thread ends, the under thread, and the bar-thread of machine-made button-holes, the same comprising two needles operated simultaneously in the same direction in conjunction with the usual complemental stitch-forming mechanism and the throat or cover plate *d*, having a longitudinal slot leading to the needle-hole and provided with the sides 12, converging toward such needle-hole and meeting in the straight slot 25 immediately in front of the needle-hole, whereby the button-hole piece is fed smoothly upon the flat surface of the throat or cover plate without interruption from the edges of the longitudinal slot, substantially as described.

376,246. ANIMAL-TRAP. AMOS E. KUNDERD, Corunna, Ind. Filed Nov. 12, 1887. Serial No. 255,006. (No model.)

Claim.—1. In a trap, the combination of the body A, having the inclined and roughened walks B B, the transverse bars D D at the upper ends of the walks, the transverse bars H H below the upper ends of the walks, the angular drops or traps E E, mounted on the



376,246.

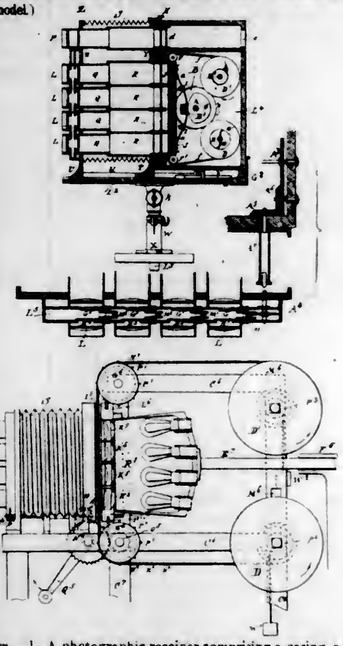


bars D, the guards C^3, extending from the upper ends of the walks to the bars H, and the swinging-doors I I, mounted on the bars H, substantially as and for the purpose specified.

2. In a trap, the combination of the body A, the pivoted traps or drops E, the depending guards or flaps C^3, and the doors I, pivoted at their upper edges below the lower ends of the said guards, and having their lower edges provided with teeth, substantially as and for the purpose specified.

3. The herein-described trap, consisting of the body A, comprising the bottom fold, C, the side folds, C C, having inclined or beveled ends, the end folds, C^3 C^3, provided with the side strips, c^3 c^3, adapted to be secured to the inner sides of the side folds, and the flaps C^4 C^4 on the ends of the end folds and adapted to be bent downward to form the guards, as described, the swinging doors I I at the lower ends of the said guards or flaps C^3, and the pivoted traps or drops E E at the upper edges of the end flaps, C^3, all constructed and arranged substantially as and for the purpose specified.

376,247. METHOD OF AND APPARATUS FOR PRODUCING ANIMATED PICTURES OF NATURAL SCENERY AND LIFE. AUGUSTIN LE PRINCE, New York, N. Y. Filed Nov. 2, 1886. Serial No. 217,809. (No model.)



Claim.—1. A photographic receiver comprising a casing, a series of lenses therein, a series of shutters therefor, and connections between the said shutters for successively and continuously operating them at regular intervals, whereby negatives of the same object from the same point of vision may be produced upon a suitable surface, substantially as set forth.

2. The photographic receiver provided with a series of lenses, a series of shutters, and means for operating them successively and continuously, in combination with film-drums and means for operating them intermittently for moving the film in the dark-box, substantially as described.

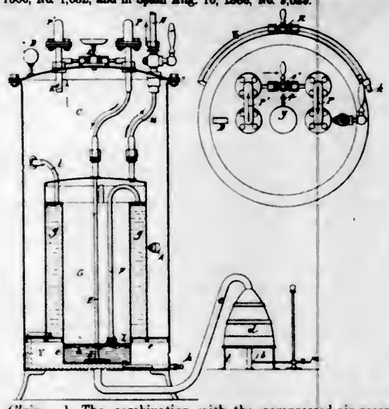
3. The receiver provided with a series of lenses and shutters and means for operating them successively and continuously, in combination with the film-rollers, the pad J, and means for reciprocating it, substantially as and for the purposes set forth.

4. The combination, with the series of lenses and the series of tubes R, for receiving the lens-tubes Q, the latter held upon an independent frame, and means for moving said frame and lens-tubes out and in for changing the focus during successive exposure, in combination with the series of successively-operated shutters for closing the lens-tubes, substantially as described.

5. An apparatus for producing animated pictures and delivering the same upon suitable surfaces, comprising a photo-camera provided with series of lenses and shutters and means for operating the shutters, and a deliverer or stereopticon provided with mechanism for delivering or throwing the pictures obtained by the camera mechanism upon a surface in approximately the same order and time in which they were received, substantially as set forth.

6. An apparatus for producing animated pictures, comprising a photo-camera having the shutter mechanism and removable and interchangeable film-box and stereopticon-reflector, whereby the camera may serve the twofold purpose described, substantially as set forth.

376,248. CARBURETOR. FRANÇOIS J. LOTHAMMER, Paris, France. Filed Mar. 13, 1886. Serial No. 195,091. (No model.) Patented in France Mar. 19, 1885, No. 167,740; in Belgium Feb. 23, 1886, No. 72,118; in England Feb. 25, 1886, No. 2,766; in Germany Mar. 4, 1886, No. 38,069; in Italy Mar. 31, 1886, XXXVIII, 485; in Portugal Mar. 31, 1886, No. 1,032, and in Spain Aug. 10, 1886, No. 9,089.



Claim.—1. The combination, with the compressed-air reservoir C and its supply-pipe, of the carbureting-chamber G, within the reservoir, a valved pipe leading from the reservoir into the chamber G, near its bottom, the hydrocarbon-receptacle *g*, surrounding the said chamber and having a pipe leading from its lower end into the bottom of the chamber, and a siphon extending from the top of the said receptacle *g* down into the carbureting-chamber G, and terminating above the lower end of the compressed-air pipe, substantially as set forth.

2. In a carburetor, the combination, with the carbureting-chamber, of the air-supply pipe leading to the bottom of the chamber and provided with straight tubes at right angles thereto, the outer ends of the tubes being flattened and inclined with respect to the axis of the pipe alternately in opposite directions, substantially as set forth.

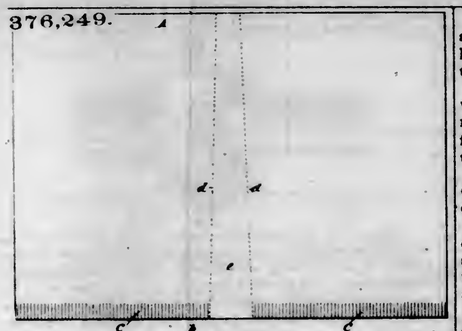
3. The combination of the air-reservoir with the inlet-pipe, the carbureting-vessel within said receiver and connected therewith by means of the pipes P' P, having, respectively, check-valves O' O, the said pipe P terminating within the carbureting-vessel and having an air-spraying attachment at its lower end, a siphon leading from the top of the oil-receptacle down to the carbureting-vessel, and the heating-chamber *e*, below and surrounding the base of the carburetor, all the parts operating substantially as set forth.

4. In a carbureting apparatus, the combination, with the air-reservoir and the carburetor supported centrally within the same, of an annular heating-chamber, *e*, formed in the lower part of the air-reservoir, surrounding the lower part of the carburetor and extending beneath the same and provided with lateral escape-apertures *f*, and the heat-supply pipe *e'*, leading into the heating-chamber, substantially as shown and described.

5. A carbureting apparatus constructed of an air-tight reservoir, C, a gas-tight carburetor, G, held within the same, a closed liquid-hydrocarbon receptacle, *g*, surrounding the carburetor, an air-conductor leading outward from the reservoir C to receive a cock, O'', and thence returning into the carburetor, a liquid-hydrocarbon-supply pipe, V, leading outward from the receptacle *g*, through the reservoir C, to receive a cock, *k*, and thence returning through the reservoir to the carburetor, and a gas-discharge pipe, M, leading outward from the carburetor, substantially as shown and described.

376,249. ENVELOPE FOR NEWSPAPERS AND OTHER MERCHANDISE. ROBERT W. MACGOWAN, Brooklyn, N. Y. Filed Aug. 24, 1887. Serial No. 247,737. (No model.)

376,249.

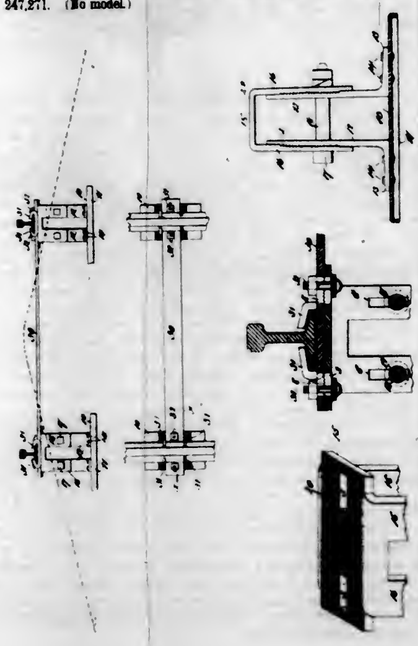


Claim.—1. In an envelope for newspapers and other merchandise put up in roll form, the sheet composing the envelope, provided with two continuous rows of perforations arranged to run in the direction in which the sheet is designed to be rolled, and situated intermediately of the sheet in a transverse direction to that in which it is designed to be rolled, substantially as specified.

2. In an envelope for newspapers and other merchandise put up in roll form, the sheet composing the envelope, provided with two continuous rows of perforations arranged to run in the direction in which the sheet is designed to be rolled, situated intermediately of the sheet in a transverse direction to that in which it is designed to be rolled, and made to converge from the closing marginal portion of the sheet toward one another, essentially as described.

3. An envelope-sheet for newspapers and other merchandise in roll form, constructed with a parting-strip formed by two continuous rows of perforations arranged to run in the direction in which the sheet is designed to be rolled, and situated intermediately of the sheet in a transverse direction to that in which it is designed to be rolled, said parting-strip being free of adhesive material on its closing end, but the remainder of the sheet on both sides of said strip having adhesive material applied to the closing marginal portion of it, whereby, while provision is made for closing and securing said envelope, increased facility is afforded for opening or removing it, substantially as specified.

376,250. COMBINED RAILWAY-RAIL CHAIR AND TIE. NICHOLAS M. MARKS, Gainesville, Tex. Filed Aug. 18, 1887. Serial No. 247,271. (No model.)



Claim.—1. The combination, with a base-plate, of a rail-support adjustably connected to the base-plate, said base-plate and rail-support having engagement with each other and clamped together, substantially as set forth.

2. The combination, with a base-plate provided with four upwardly-extending standards, the outer faces of which are ribbed, of a rail-support provided with four downwardly-extending arms, the inner faces of which are ribbed, and bolts by which the arms are clamped to the standards, substantially as described.

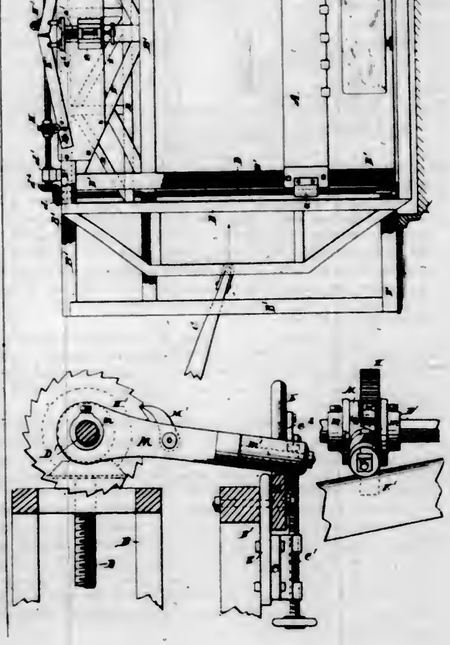
3. The combination, with two vertically-adjustable rail-supports, of a cross-bar provided with rail-clamping fingers, and a means for connecting the cross-bar to the rail-support, substantially as described.

4. The combination, with two base-plates provided with upwardly-extending standards, of rail-supports adjustably connected to said standards, a cross-tie having rail-clamping fingers, and a means, substantially as described, for connecting the cross-bar to the rail-supports, as and for the purpose stated.

5. The combination, with a base-plate, 10, of standards 12, secured thereto and formed with ribs 2, a rail-support having four downwardly-extending arms that are formed with ribs 5, the upper section of said support being serrated, bolts 17, which pass through the standards and the arms, sleeves arranged between the standards and about the bolts, a cross-bar, 30, the under face of the ends of which are serrated, and bolts 32, by which the cross-bar is connected to the rail-supports, substantially as described.

6. The combination, with vertically-adjustable rail-supports, of a cross-bar that is adjustably connected to said supports, which rail-supports have engagement with and are clamped to base-plates, substantially as described.

376,251. FEED FOR STONE-SAWS. NEIL MCINTYRE, Brooklyn, N. Y. Filed Apr. 13, 1887. Serial No. 234,868. (No model.)



Claim.—1. With a stone-saw having its ends supported by screws, the combination of the screws, a horizontal shaft, gears connecting said shaft and screws, ratchets secured upon said shaft, inclined planes attached to the saw-frame, and pawl-carrying arms loosely mounted upon said shaft and resting upon said inclined planes, substantially as shown and described, and for the purpose herein set forth.

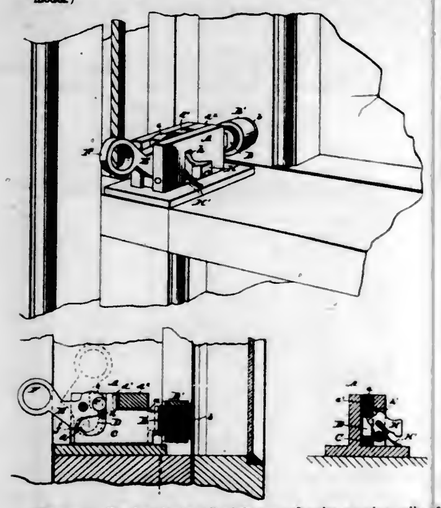
2. With a stone-saw having its ends supported by screws, the combination of the screws D, a horizontal shaft, D′, gears d d^3, connecting said shaft and screws, the ratchets H H′, keyed to said shaft, inclined planes E E′, adjustably attached to the saw-frame and projected above the same, and pawl-carrying arms M, loosely mounted upon said shaft, each provided with a loose sleeve, m', upon their free ends, said sleeves adapted to rest and travel upon said inclined planes, substantially as herein set forth.

3. In a stone-sawing machine, the combination, with the supporting-frame, of the inclined beams E′ E^2, pivoted at one end to the frame, and means for adjusting the said beams, substantially as described.

4. In a stone-sawing machine, the combination, with the supporting-frame, of the pivoted inclined beams E′ E^2, having slots e^4 in their ends for the passage of the pivot-bolts, and the screw e', provided with a bar, e^5, at its upper end, secured to the inclined beams, substantially as herein shown and described.

376,252. FASTENER FOR THE MEETING-RAILS OF SASHES.

Neil McIntyre, Brooklyn, N. Y., assignor of one-half to William Bradley & Sons, same place. Filed Apr. 13, 1887. Serial No. 234,600. (No model.)



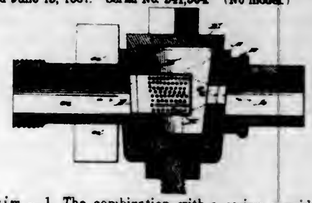
Claim.—1. The herein-described fastener for the meeting-rails of sashes, comprising a casing, A, open at both ends, the bolt C, having a projection, d', on its upper side, a recessed rear end, as shown at D, and an upward-extending projection, d, at its lower rear corner, the vertically-swinging operating-lever E, pivoted in the rear open end of the casing and having its forward end cam-shaped and provided with a recess in its edge at its point of greatest eccentricity, and a roller in said recess acting against the recessed end of the bolt and the said projections, according to the direction in which the lever is moved, substantially as set forth.

2. In a sash-fastener, a bolt having an externally-threaded head, B, at its forward end and operating mechanism, in combination with the internally-threaded sleeve screwed on said head, and the friction-block b, screwed into the forward end of said sleeve, substantially as set forth.

3. As an improved article of manufacture, a fastener for the meeting-rails of sashes, consisting in the casing A, open at the ends and having cross-piece d^2, the bolt C, formed with an externally-threaded head, B, an upward-extending projection, d', on its upper rear corner, lower rear projection, d, and recessed at D between said projections, the vertically-swinging lever E, having a cam-head, e, provided with the anti-friction roller e', to act against the recessed end and projections of the bolt, and the projection f on the lower edge of the lever, to engage the projection d, the internally-threaded sleeve B′, screwed on the head B, the block b, screwed into said sleeve, and the vertically-swinging latch B, extending through one side of the case, with its inner end, h', engaging the lower edge of the forward end of the lever E, substantially as set forth.

376,253. WATER-COCK.

Henry D. Medrick, Port Jervis, N. Y. Filed June 15, 1887. Serial No. 241,364. (No model.)

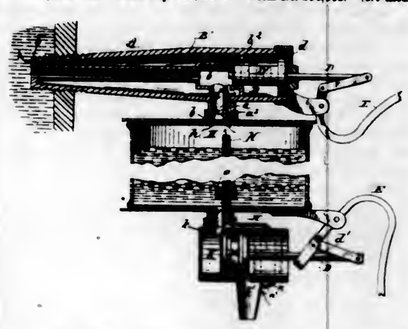


Claim.—1. The combination, with a casing provided with the inlet D, smaller outlet, D′, and auxiliary outlet D^2, of a tubular plug, E, provided with the large recess E′, small aperture e, and the filter H, having a flaring open mouth, h, engaging the walls of said recess, the body of the filter being horizontally supported in the plug, substantially as shown and described, whereby when the recess in said plug is made to register with the inlet D and auxiliary outlet D^2 the filter will be automatically cleaned, as herein set forth.

2. The combination, with a casing provided with the inlet D, smaller outlet, D′, and auxiliary outlet D^2, of a tubular plug, E, provided with a large rectangular inlet-recess, E′, a small rectangular outlet, e, at one side of said recess, brackets e', attached to the inner wall of the plug in central alignment with the recess E′, and a semicircular filter, H, having a flaring open mouth supported in said recess, the body of the filter being supported within the plug by said brackets, substantially as shown and described.

376,254. LIQUID-MEASURING FAUCET.

Herman M. Nye, Corydon, Ind. Filed Sept. 20, 1887. Serial No. 250,185. (No model.)



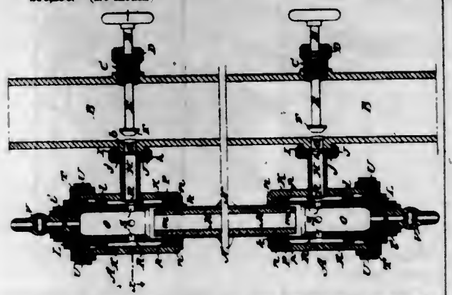
Claim.—1. The combination, with a supply-faucet provided with an inner longitudinal fluid-tube, A′, an air-chamber surrounding said tube, having a vent in its inner end, an outlet fluid-passage, a^2, an air-inlet passage, a^3, leading into the said air-chamber, and a plunger, D′, adapted to reciprocate in said fluid-tube, of a graduated reservoir attached to said supply-faucet, and a discharge-faucet, K, provided with a plunger, M, and an inlet and outlet attached to said reservoir, and means, substantially as described, for introducing air into the reservoir.

2. The combination, with a supply-faucet provided with an inner longitudinal fluid-tube, A′, an air-chamber surrounding said tube, provided with vents at each end, an outlet, a, provided with a fluid-passage, a^2, leading out from said tube A′, and an air-passage, a^3, leading into the air-chamber, a chamber, B, in front of said tube A′, and a plunger, D′, adapted to reciprocate in the tube A′ and chamber B, of a graduated reservoir attached to said outlet, and a discharge-faucet, K, secured to and connected with the reservoir, provided with a non-aligning outlet and inlet, a grooved plunger, M, air-vents n, and a tube adapted to convey the air from said vents into the reservoir, all arranged to operate as set forth.

3. The combination, with a supply-faucet provided with an inner longitudinal fluid tube or conduit, A′, having an enlargement, b, an air-chamber surrounding said tube, provided with vents at each end, an outlet, a, provided with a fluid-passage, a^2, leading out from the tube A′, and an air-passage, a^3, leading into the air-chamber, a chamber, B, in front of the tube A′, and a plunger, D′, adapted to reciprocate in the chamber B and enlargement of the tube A′, of a graduated reservoir attached to said outlet, and a discharge-faucet, K, secured to and connecting with the reservoir, provided with a non-aligning outlet and inlet, a centrally-grooved plunger, M, air-vents n, a tube, N, adapted to convey the air from said vents into the reservoir, and means, substantially as described, for operating the plungers, as and for the purposes set forth.

376,255. WATER-GAGE.

Marshall Parker, Barnesville, and Judson K. Tupper, Rothsay, Minn. Filed Apr. 26, 1887. Serial No. 236,260. (No model.)



Claim.—1. In a water-gage, the combination, with its opposite head-pieces each formed with a tube, K, having a flange, k, and provided with a sleeve within the tube, of a gage-glass, M, fitted in the opposite tubes K, and a jacket, N, surrounding the glass and provided with flanges or collars n, which are clamped to the flanges k of the tubes K by pressure of the sleeves, substantially as herein set forth.

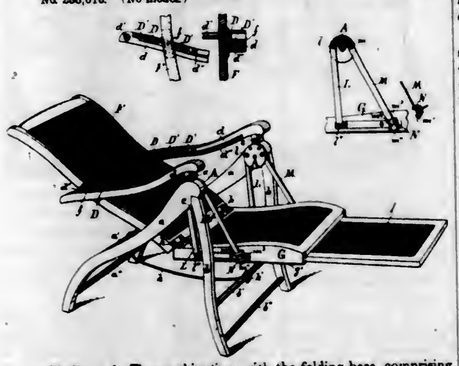
2. A water-gage having opposite heads formed with tubes K, provided with flanges k, in combination with a gage-glass, M, entering the tubes, a jacket, N, surrounding the glass and provided with flanges or collars n, abutting the tube-flanges k, packings P next the flanges n, and screw-sleeves L, fitted to the tubes K and pressing on the packings P or interposed washers, p, substantially as herein set forth.

3. In a water-gage, its head-piece in which the glass is supported, provided with a steam or water passage opening to the steam or water ways of the gage and column and opening also to a packing held to the head-piece next the gage-glass, substantially as shown and described, whereby the pressure tightens the packing at the joint of the glass with the head-piece, as herein set forth.

4. In a water-gage, its head-piece made with a tube, K, having a flange, k, a sleeve, L, formed with a chamber, O, said parts K L relatively formed to provide a passage, R, between them opening to the inlet of the head-piece, and the part L, perforated at S to connect the chamber O and passage R, a glass, M, entering the chamber O, a jacket, N, on the glass and provided with an end flange, n, a packing, P, on the jacket-flange n, and held thereto by the sleeve L, substantially as described, for the purposes set forth.

376,256. CHAIR.

Dana Parker, Revere, Mass., assignor to the Kensington Chair Company, Portland, Me. Filed Apr. 4, 1887. Serial No. 233,616. (No model.)

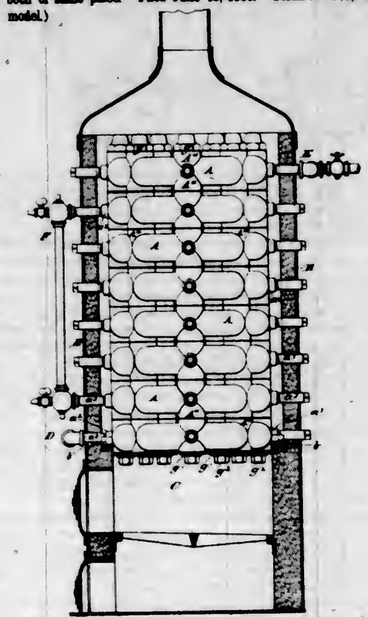


Claim.—1. The combination, with the folding base, comprising the rear and front legs, a b, of the hinges c, having their pivoted plates secured, respectively, to the inner sides of the legs, and each plate having a stop-extension, c', projecting upward above the pivot of the plates to abut each other when the legs are spread apart, substantially as described.

2. The combination, in a folding chair, of the base comprising the rear and front legs, a b, hinged together at their upper ends and provided with the fulcra l m, the seat G, the rear and front links, L and M, hung on said fulcra, the rear links being pivoted to the seat, and the front links having stops m^n, and the slotted blocks N, pivoted to the seat, and in which the front links can slide and their stops engage and disengage the blocks, substantially as described.

376,257. SECTIONAL STEAM-BOILER.

Richard Pomeay, Chicago, Ill., assignor of two-thirds to Charles H. Smith and John Hewitt, both of same place. Filed June 15, 1886. Serial No. 205,192. (No model.)



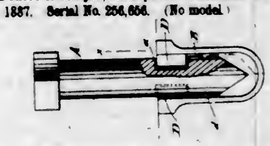
Claim.—1. The cast double annular boiler-section described, composed of the chambered rings A′ A^3, connected with each other by tubes A^3, and both provided on their tops and bottoms with short open tubes A^4, all cast in a single piece and adapted to be joined with other similar sections to form a boiler, substantially as described.

2. The combination, in a cast sectional steam-boiler, of two or more double annular sections, consisting each of the chambered rings A′ A^3, each having tubular bosses A^4 and tubular connections A^3, joining said rings, and vertical binding-bolts G, passing through the tubes A^4, said tubes A^4 being of relatively large diameter, whereby they afford free circulation from one section to another, substantially as described.

3. The cast sectional boiler composed of a plurality of annular sections, A, each provided with one or more bosses a^3 and vertical tubular bosses A^4, the said bosses a^3 and A^4 having the same position relative to each other in the several sections, whereby the sections are interchangeable, substantially as described.

376,258. BOLT.

Jonas Potter, Morrellville, Pa., assignor to himself and Jacob J. Strayer, same place. Filed Mar. 22, 1887. Renewed Dec. 1, 1887. Serial No. 256,656. (No model.)



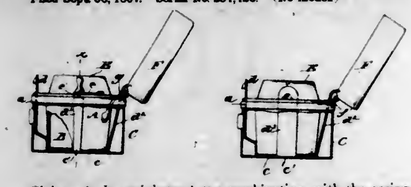
Claim.—1. The combination, with a bolt, of a spring-yoke adapted to detachably clamp the sides of said bolt, substantially as herein shown and described.

2. The combination, with a bolt having recessed sides, of a spring-yoke provided with lugs adapted to enter the recesses of the bolt, substantially as set forth.

3. The combination, with a bolt having recessed sides and grooves extending longitudinally of its lower end intersecting said recesses, of a spring-yoke provided with lugs integral with the outer ends of its members, substantially as set forth.

4. The combination, with a bolt having recessed sides and grooves extending longitudinally of its lower end intersecting said recesses and transverse grooves between said recesses and the lower ends of the said bolt, of a U spring-yoke provided with lugs integral with the outer ends of its members, adapted to enter said recesses, substantially as set forth.

376,259. **SAFETY-INKSTAND.** LOUIS B. PRAHAR, Brooklyn, N. Y. Filed Sept. 30, 1887. Serial No. 251,126. (No model.)



Claim.—1. In an inkstand, the combination, with the casing and cover, of a frame consisting of a base provided with upwardly-extending arms which form springs adapted to act in connection with the cover, substantially as set forth.

2. In an inkstand, the combination, with the casing and cover, of a frame consisting of a base provided with upwardly-extending arms which carry the hinge of the cover and form springs adapted to act in connection therewith, substantially as set forth.

3. In an inkstand, the combination, with the casings, of a frame attached thereto, provided with arms, one of which forms a retracting-spring for the cover of the outer casing, and one of which forms the spring-catch for said cover, substantially as set forth.

4. In an inkstand, the combination, with the casings, of a plate bent to form a base to receive the base of the inner casing, and also the spring-arms which extend upward through openings in the top flange of the casings, substantially as set forth.

5. An inkstand consisting of outer and inner casings provided each with a cover, and a frame provided with arms which carry the covers and form springs for the catches of said covers, an ink-bottle being held within the inner casing, substantially as set forth.

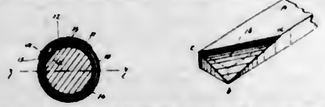
6. The combination, with the casings A C, having the top flange, *a*, provided with openings, of a frame, D, consisting of a base-plate having integral spring-arms extending through said openings, which arms are adapted to receive the hinges of the covers and to act as catches for said covers, substantially as set forth.

7. The spring-frame D, formed with a base, *c*, and with several springs projecting upward therefrom, in combination with the inner frame, A, outer frame, C, and the covers thereof, substantially as described.

8. The spring-frame D, formed with a base, *c*, the arm *d'*, to which the inner cover is hinged, and with several spring-arms, substantially as described.

9. The spring-frame D, formed with a base, *c*, and with the spring-arms *d* d^2 d^3, and with the arm *d'*, in combination with the inner and outer casings and the covers thereof, substantially as described.

376,260. **WEDGE-FERRULE FOR FISHING REELS AND RODS.** HENRY PRICHARD, New York, N. Y., assignor to Charles F. Imbrie same place. Filed Oct. 26, 1887. Serial No. 253,433. (No model.)



Claim.—1. A ferrule for securing fishing-reels to poles, provided with an enlargement on its inner face, the said enlargement extending partially around the ferrule and having a doubly-inclined face at one end, substantially as described.

2. A ferrule for securing fishing-reels to poles, provided with a recess and with an enlargement extending around the inner face of the ferrule from edge to edge of the recess, and having a double bevel-ed or inclined face at one end, substantially as herein shown and described.

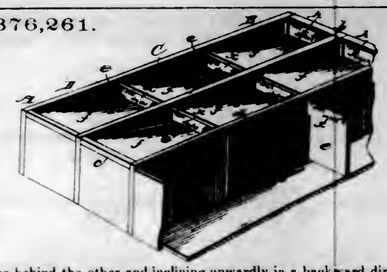
3. The combination, with a ferrule formed with a recess, 11, and provided with a cap, 13, of a strip, 14, secured to the inner face of the ferrule, one end of the strip being formed with a doubly-inclined face, 15, substantially as described.

376,261. **BOX FOR THE SALE OF GOODS.** CHARLES T. ROSENTHAL, Batesville, Ark. Filed Nov. 22, 1887. Serial No. 255,870. (No model.)

Claim.—1. A box for the display and sale of goods, consisting of any number of compartments, each of which is fitted with a cover arranged to incline upwardly in a backward direction relatively to the body of the box, and, each compartment having a raised surface applicable for marking purposes above the cover and within the box at the forward end of the compartment, substantially as specified.

2. A partition box for the display and sale of goods, composed of a series of compartments arranged in parallel rows from front to back and separated by partitions crossing said rows, and further composed of independent covers to said compartments arranged step-fashion

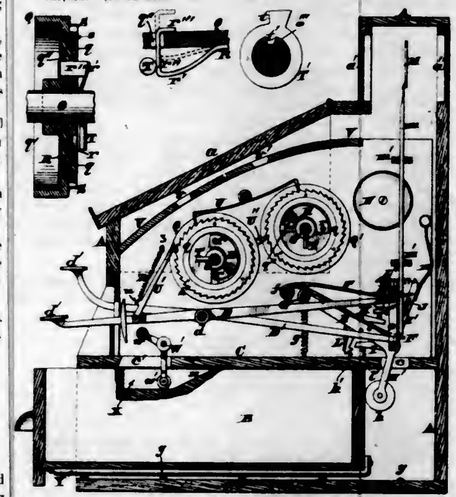
376,261.



one behind the other and inclining upwardly in a backward direction relatively to the body of the box, with their lower or front ends below the upper margins of the front walls of the compartments, essentially as shown and described, and for the purpose or purposes herein set forth.

3. In a partition box for the display and sale of goods, the combination, with the box A, having partitions *d*, extending from front to back, and slides or partitions *c*, arranged one behind the other in transverse relation with the partitions *d*, forming independent compartments S, of the inclined ways or supports *g* within the compartments, arranged to slope upwardly in a backward direction, and the independent covers *f*, substantially as shown and described.

376,262. **CASH INDICATOR AND REGISTER.** WILLIAM G SCHICKNER and ERNESTE ROTHLISBERGER, Cincinnati, Ohio; said Rothlisberger assignor to said Schickner. Filed Sept. 5, 1887. Serial No 248,781. (No model.)



Claim.—1. In combination with a cash register and indicator having a set of keys, D, operating the tablet-lifters F and registering disk Q, as herein described, the slotted grating E *e*, connecting-rod G, principal bell-cranks H H' H H', rollers *h h*, secondary bell-cranks I I' I I', rest-bar J, triggers K K, springs L L', trips *l' l'*, stems *m*, and tablets M, said triggers being pivoted to the arms H H at *k*, for the purpose described.

2. The combination, in a cash register and indicator, of the ratchet-disk Q S, journaled upon a shaft, O, provided with a fixed projection, as T, a spring, R, being attached to the side of said disk at *r*, which spring has a free end bent outwardly at *r'*, whereby this bent portion is pressed toward the disk when the latter is revolved in one direction, but is brought in contact with the projection T when the shaft is turned to reset the disks, as herein described.

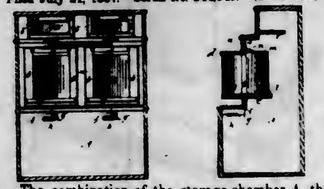
3. In combination with a cash-register having a set of keys, D, operating the tablets and registering-disks, as herein described, the bell-cranks W W', lock-bar *w*, and sliding drawer B, which drawer has a pocket, X, whose rear end terminates with an inclined shoulder, *x*, as set forth.

4. The combination, in a cash register and indicator, of bell N, hammer *n*, spring L", and secondary bell-cranks, I I', the triggers K K, and the main bell-cranks H H' H H', as herein described, and for the purpose stated.

5. The combination, in a cash register and indicator, of the ratchet-

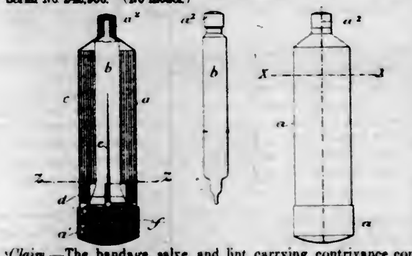
disk Q S, journaled upon a shaft, O, having a fixed projection, T, a curved spring, R, being attached to the side of said disk at *r*, which spring has an outwardly-bent free end, *r'*, lip *r"*, and lateral extension *r'''*, which extension traverses the slot *q"* of said disk, as herein described.

376,263. **REFRIGERATOR.** RICHARD SCHIERENBECK, Brooklyn, N. Y. Filed July 21, 1887. Serial No. 244,949. (No model.)



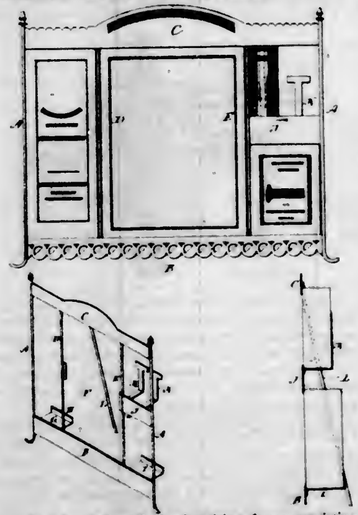
Claim.—The combination of the storage-chamber A, the cell B, pivoted in one side of the chamber and having the bottom frame, *c*, provided with semicircular groove *l*, the cover *k*, fitting into said groove and movable upward, and spring-catch *n*, as set forth.

376,264. **SURGEON'S APPLIANCE.** OTTO SCHLATTER, ADOLF SCHMID, and HUGO BURTSCHER, Berne, Switzerland. Filed June 30, 1887. Serial No. 242,966. (No model.)



Claim.—The bandage, salve, and lint carrying contrivance consisting of the combination of the outer tube, *a*, opened at its bottom and covered by the removable cap *a'*, and the inner tube, *b*, closed and held within the said outer tube, *a*, by means of the screw-cap a^2, the whole device adapted to carry the articles herein referred to, substantially as shown and described.

376,265. **ADVERTISING-FRAME.** ROBERT N. SEARLES, New Haven, Conn., assignor to the Athlophoros Company, New York, N. Y. Filed Nov. 21, 1887. Serial No. 255,715. (No model.)



Claim.—The herein-described advertising-frame, consisting of uprights and cross-bars forming open panels, the frame constructed with brackets in rear of the said openings, the rear edge of the said brackets being upwardly turned, and so as to support the articles to be exposed through the openings in the frame, and the frame provided with a brace upon its rear side for the support of the frame, substantially as described.

376,266. **ROCKING-CHAIR ATTACHMENT.** WENDELIN SEISS, Chicago, Ill., assignor to the Rocker Spring Company, same place. Filed July 26, 1887. Serial No. 245,301. (No model.)

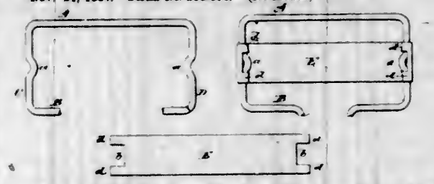


Claim.—1. A spring attachment for platform rocking-chairs, comprising a connecting-spring and an attaching-bracket for each end thereof, the spring having its terminal wire at each end bent and looped, and the bracket having a plate to be secured to the rocker or base-rail, and a portion extended crosswise substantially at right angles to the plate, adapted to receive and hold the loop of the spring also in a direction substantially at right angles to the plate, substantially as described.

2. A spring attachment for platform rocking-chairs, comprising a connecting-spring and an attaching-bracket for each end thereof, the spring having its terminal wire at each end bent and looped, and the bracket having a plate to be secured to the rocker or base-rail, and a portion extended crosswise substantially at right angles to the plate, provided with a lip forming a retaining-bearing for the looped portion of the spring to hold the same at right angles to the plate, substantially as described.

3. A spring attachment for platform rocking-chairs, comprising a connecting-spring and an attaching-bracket for each end thereof, the spring having its terminal wire at each end bent and looped, and the bracket having a plate to be secured to the rocker or base-rail, and a portion extended crosswise provided with a lip forming a retaining-bearing for the looped portion of the spring, and with grooved studs contiguous to the end coil of the spring, whereby the looped portion of the spring may be fitted into the grooves of the studs and passed over and behind the lip of the bracket in a direction substantially at right angles to its plate, substantially as described.

376,267. **BUCKLE.** KARL A. SMITH, Waterbury, Conn. Filed Nov. 21, 1887. Serial No. 255,696. (No model.)

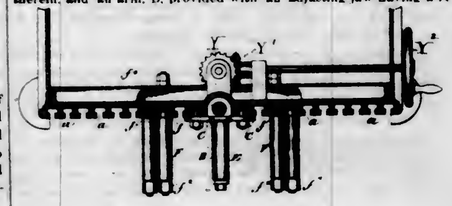


Claim.—A buckle the frame of which is composed of wire, and in which a flat sheet-metal bar extends across the frame from end to end, the ends of the frame constructed with a bend, *a*, in each less in extent than the width of the bar, the ends of the said bar constructed with a recess corresponding in width to the length of the bend, and so as to form tongues *d* on the respective ends of the bar, the said ends of the bar closed around the ends of the frame over the bends therein, the said tongues on the frame substantially above and below the bend, substantially as described.

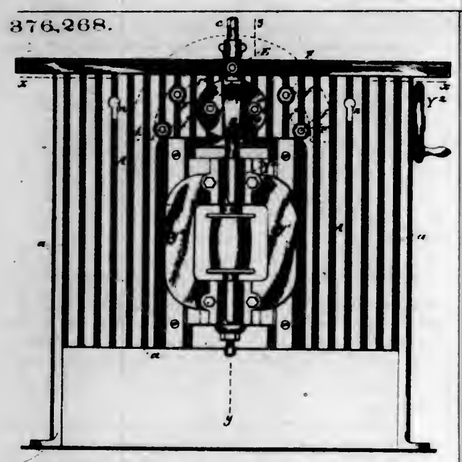
376,268. **WOOD-MOLDING MACHINE.** WALTER J. SMITH, Philadelphia, Pa. Filed May 2, 1887. Serial No. 236,753. (No model.)

Claim.—1. In a wood-molding machine, a front plate provided with a series of vertical parallel grooves having a series of rollers whose axes are horizontal, adjustably retained therein, combined with a rotary cutter, substantially as described.

2. In a wood-molding machine, a front plate provided with a series of parallel grooves in combination with rollers adjustably retained therein, and an arm, B, provided with an adjusting-jaw having a re-



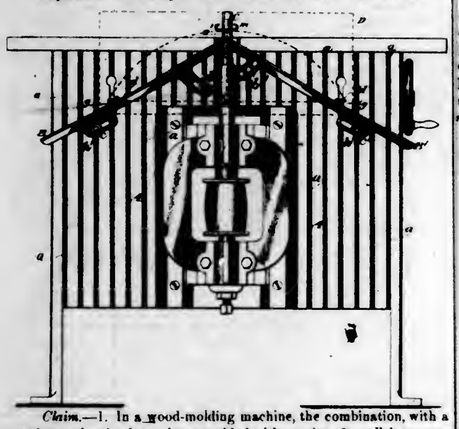
376,268.



cess, *g'*, within which a guide-strip upon the molding is adapted to pass, substantially as described.

3. In a wood-molding machine, a front plate provided with a series of open-ended vertical, parallel grooves, *a*, in combination with supporting-rollers having a bolt extending longitudinally through and forming an axis for the rollers, one end of the bolt being provided with a head and the opposite end with a thread and nut, for the purpose substantially as set forth.

376,269. **WOOD-MOLDING MACHINE.** WALTER J. SMITH, Philadelphia, Pa. Filed May 4, 1887. Serial No. 237,087. (No model.)



Claim.—1. In a wood-molding machine, the combination, with a cutting-tool and a front plate provided with a series of parallel grooves, of a pair of angle-irons or supports having plane bearing-surfaces arranged at an angle to the axis of the cutting-tool, and headed bolts adjustable in the parallel grooves, whereby said angle-irons are secured, substantially as specified.

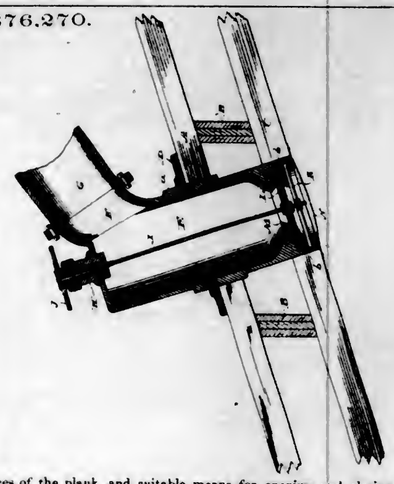
2. In a wood-molding machine, a cutting-tool and a front plate having a series of parallel grooves, combined with a pair of angle-irons or supports having plane bearing-surfaces arranged at an angle to the axis of the cutting-tool, said angle-irons being provided with elongated slots, and supports adjustably retained in said slots and in the parallel grooves, substantially as specified.

376,270. **SEA-COCK.** FRED. C. STARKE, Milwaukee, Wis. Filed July 16, 1887. Serial No. 244,474. (No model.)

Claim.—1. A sea-cock comprising a cylinder fitted to the ceiling of a vessel and having an open lower end passed through an outside plank of the vessel, suitable means for connecting the cylinder with a pump, and a valve located in said cylinder at a point between the inner and outer faces of the plank, substantially as set forth.

2. A sea-cock comprising a cylinder fitted to the ceiling of a vessel and having an open lower end passed through an outside plank of the vessel, suitable means for connecting this cylinder with a pump, a valve located in the cylinder at a point between the inner and outer

376,270.

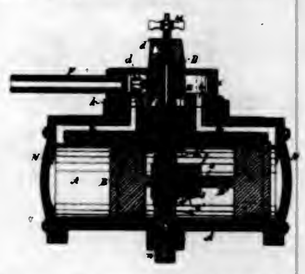


faces of the plank, and suitable means for opening and closing the valve from above said cylinder, substantially as set forth.

3. A sea-cock comprising a cylinder fitted to the ceiling of a vessel and having an open lower end passed through an outside plank of the vessel, suitable means for connecting this cylinder with a pump, a valve located in the cylinder at a point between the inner and outer faces of the plank, and provided with a screw-threaded stem, and a screw-threaded bearing for the valve-stem arranged on the closed upper end of said cylinder, substantially as set forth.

4. The ceiling A, outside plank, B, and ring D, arranged on said ceiling, in combination with the cylinder E, screw-threaded to the ring and having an open lower end passed through the outside plank, the pump-connection F G, the bearing H, arranged on the closed upper end of the cylinder, the guide-bar K, and valve-seat M, located in the lower end of said cylinder, the valve L, having its stem I screw-threaded in the said bearing, and the hand-wheel J, fast on said stem, substantially as set forth.

376,271. **STEAM-ENGINE.** GEORGE W. STEWART, New York, N. Y., assignor to Benjamin F. Mosher, same place. Filed Mar. 9, 1887. Serial No. 230,309. (No model.)

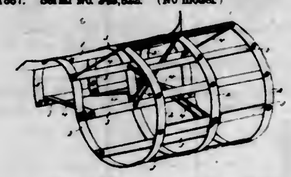


Claim.—1. The combination, with the shaft D and the circular valve E, having a steam-port, *b*, and depression *b'* for the passage of exhaust-steam, and the bridge-piece *k* upon the face of the depression, of the valve-seat through which the shaft D passes, said valve-seat having steam-ports *a a* and exhaust-ports *l l*, said ports being arcs of circles around the shaft D, and being diametrically opposite each other in pairs, substantially as specified.

2. The combination, in a steam-engine, with the pistons B B and a slotted bridge, B', connecting the same, of the crank-arms I, their threaded hubs *h*, the sliding box *e*, and crank-pin *e'*, the hollow threaded two-part shaft D, adapted to be screwed on the hubs *h*, and the pins *h'*, for additionally securing the parts together, and a valve for admitting steam, substantially as specified.

3. The combination, in a steam-engine, with the pistons and a slotted bridge-connection between the same, of a crank, hubs upon the arms of said crank, a two-part shaft passing through the cylinder, and means, substantially as specified, for connecting the crank-arms and shaft, and a circular revolving valve in the steam-chest, substantially as specified.

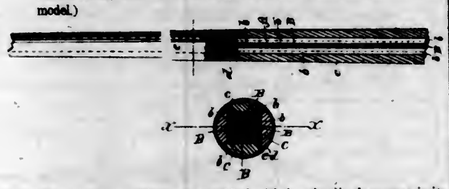
376,272. **BUSTLE.** THOMAS P. TAYLOR, Bridgeport, Conn. Filed July 9, 1887. Serial No. 243,832. (No model.)



Claim.—1. A bustle consisting of a series of spring-ribs bent to form inner and outer open-ended bows, a series of rigid cross-pieces connecting said bows, whereby lateral displacement is prevented, a belt connected to the inner bows, and adjusting-cords connecting the opposite sides of the bows.

2. A bustle consisting of a series of spring-ribs bent to form inner and outer open-ended bows, a series of rigid cross-pieces connecting said bows, whereby lateral displacement is prevented, a belt connected to the inner bows, extensions 5 at the ends of the inner bows, which rest against the person of the wearer, for the purpose set forth, and adjusting-cords, substantially as described.

376,273. **WHIP-CORE.** EDWARD K. WARREN, Three Oaks, Mich. Filed Feb. 19, 1887. Renewed Sept. 26, 1887. Serial No. 250,783. (No model.)

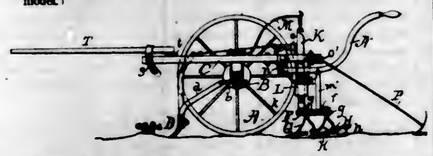


Claim.—1. A whip-core provided with longitudinal grooves in its exterior surface adapted to receive strengthening-cords, substantially as specified.

2. A whip-center formed of a core having longitudinal grooves in its exterior surface and strengthening-cords inserted within said grooves, essentially as described.

3. In a whip-core, the solid body A, having longitudinal grooves *b* in its exterior surface, and strengthening-cords B, of different material, inserted within said grooves, substantially as shown and described.

376,274. **COTTON-CHOPPER.** JOHN B. ANDOUN, Atlanta, Ga., assignor of two-thirds to George W. Reardon, Sumter, S. C., and David P. Morris, Atlanta, Ga. Filed Sept. 1, 1887. Serial No. 248,552. (No model.)



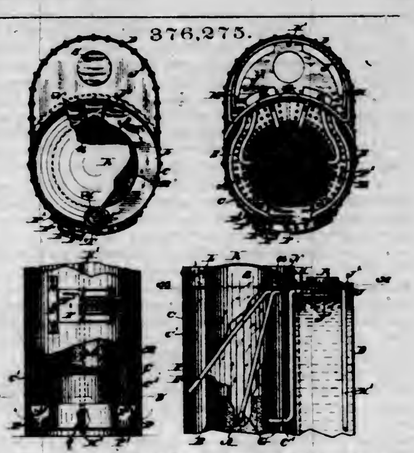
Claim.—1. In a cotton-chopper, the combination of the frame C, the axle-box, the plow-standard D, having hooks *c'*, the arm or brace *d*, connecting the plow with the axle-box, the strap *c*, the notched handle E, having offset *e'*, the rod connecting said standard and said handle, and the bracket *e*, all substantially as specified.

2. In a cotton-chopper, the combination of the frame C, the spring M, the sliding bar K, the bracket L, in which said bar slides, the beam F, attached to said bar, the handle N, the rod *m'*, which attaches said beam to said handle, the plows G, scrapers H, and harrows *h*, said plows, scrapers, and harrows being attached to said beams, all substantially as set forth, and for the purpose specified.

376,275. **SAFETY SELF-EXTINGUISHING CAR-STOVE.** R MEADE BACHE, Philadelphia, Pa. Filed May 5, 1887. Serial No. 237,268 (No model.)

Claim.—1. A car-stove having the fire-pot A, the inner casing, B, the outer casing, C, the water-reservoir D, having perforated diaphragm J', forming top chamber, J, the pipes G, leading from the top chamber, J, into the said fire-pot, and the air-pipes H in said chamber J, each of the said pipes having one of its ends opening into the chamber and the other opening into the atmosphere, both of the said openings of one of the pipes being on the opposite side of the chamber from the openings of the other pipe, said parts combined substantially as and for the purpose set forth.

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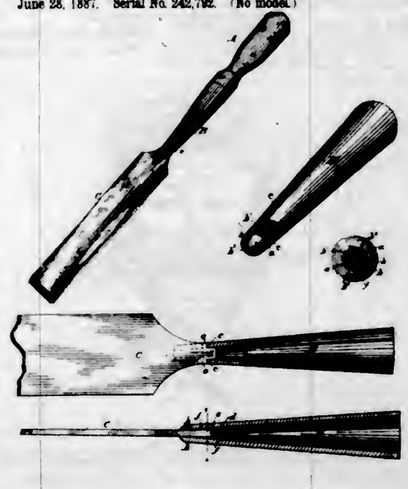
2. A car-stove having a fire-pot, inner and outer casings, a water-reservoir with perforated diaphragm, forming the top chamber, J, the pipes G, leading from said chamber into the fire-pot, the pipes E, leading from the top chamber to the inside of the feed-door F, and the pipes H within said chamber J, each of said pipes H having its ends opening on the same side of the chamber, one within and one without the walls thereof, both openings of the one pipe being on the opposite side of the chamber from the openings of the other pipe, and the pipe H', having its lower end open to the atmosphere at the base of the reservoir and its upper end opening in chamber J, said parts combined substantially as and for the purpose set forth.

3. A car-stove having a fire-pot, inner and outer casings, a water-reservoir with upper chamber therein, pipes leading from said chamber to within said fire-pot and to within the feed-doors of said casings, the pipes H in said upper chamber, and the pipe H', leading from the atmosphere at the base of the said reservoir to said upper chamber, said parts being combined substantially as and for the purpose set forth.

4. A car-stove having a fire-pot, in combination with the inner casing, B, having opening *a*, the outer casing, C, the dome K, with smoke-flue M, a diaphragm between said casings B and C, forming, with the casings B C and dome K, the chamber L, and perforated diaphragms N in said chamber L, substantially as and for the purpose set forth.

5. A car-stove having a fire-pot, an inner casing, an outer casing with openings at its base, a perforated diaphragm between said casings, and the vertical partitional diaphragm Q, extending from the base to said perforated diaphragm, said parts being combined substantially as and for the purpose set forth.

376,276. **CHISEL.** JOSEPH R. BAILEY, Brooklyn, N. Y. Filed June 28, 1887. Serial No. 242,792. (No model.)



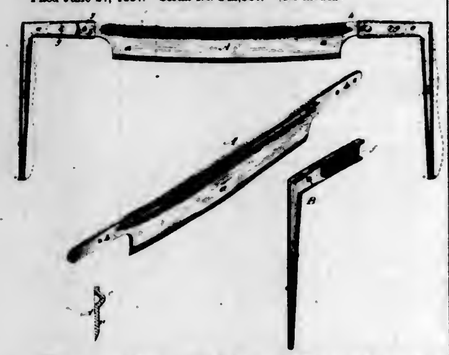
Claim.—1. A chisel comprising a tubular socket provided with slots and fixed jaws at its lower end, and a steel blade the upper end of which is fitted between said jaws, and provided with a tongue fitting into the lower end of said socket, and with shoulders on opposite sides of said tongue fitting against the upper edges of said slots, the said parts being soldered or brazed together, substantially as described.

2. A chisel comprising a tubular socket provided with slots and fixed jaws at its lower end, said jaws having concave inner faces, and a steel blade the upper end of which is fitted between said fixed jaws, and provided with a tongue fitted into the lower end of said socket above said slots, and shoulders on opposite sides of said tongue fitting against the upper edges of said slots, the said parts being soldered or brazed together, substantially as described.

3. A chisel comprising a tubular socket provided at its lower end with slots having beveled upper edges and with fixed jaws, and a steel blade the upper end of which is fitted between said fixed jaws, and provided with a tongue fitting into the lower end of said socket above said slots, and with inclined shoulders on opposite sides of said tongue fitting against the beveled upper edges of said slots, the said parts being soldered or brazed together, substantially as described.

4. A chisel comprising a tubular socket provided at its lower end with slots having beveled upper edges and with fixed jaws having concave inner faces, and a steel blade the upper end of which is fitted between said fixed jaws, and provided with a tongue fitting into the lower end of said socket above said slots, and with inclined shoulders on opposite sides of said tongue fitting against the beveled upper edges of said slots, said parts being soldered or brazed together, substantially as described.

376,277. DRAWING-KNIFE. JOSEPH R. BAILEY, Brooklyn, N. Y.
Filed June 27, 1887. Serial No. 242,587. (No model.)



Claim.—An elongated blade having shanks at each end and a longitudinal concavo-convex rib along the body, the whole being composed of sheet-steel, in combination with angular handles, the inwardly-projecting arms of which are provided with recesses into which the shanks of the blade are fitted, and fastening devices uniting said arms and shanks, substantially as described.

376,278. BASE-BALL MASK. GEORGE BARNARD, Chicago, Ill., assignor to A. G. Spaulding & Brothers, same place. Filed Aug. 29, 1887. Serial No. 248,214. (No model.)



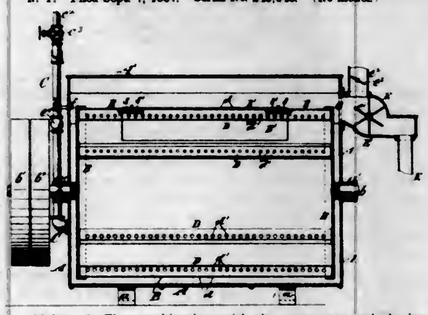
Claim.—1. A base-ball mask provided with an extension to serve as a neck-guard, substantially as described.

2. The combination, with the mask A, of the guard or protector B, for preventing injury to the neck, substantially as specified.

3. A base-ball mask, A, in combination with a neck guard or protector, B, composed of the loop *b* and wires *c c' c''*, substantially as specified.

4. A base-ball mask, A, having a wire, *a*, bent to form a loop, *b*, which loop is provided with guard-wires for forming a protector for the neck, substantially as described.

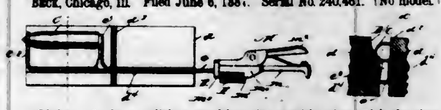
376,279. WASHING-MACHINE. SAMUEL S. BARBER, Brooklyn, N. Y. Filed Sept. 7, 1887. Serial No. 249,043. (No model.)



Claim.—1. The combination, with the outer case and the inner rotary cylinder or cage of a washing-machine, of jet-pipes for fluid arranged at or above the high-water level therein and serving to blow off the lathes and scum, substantially as herein described.

2. The combination, with the outer case of a washing-machine having a water-overflow comprising a pocket or depression, of a wheel or fan arranged in said pocket or depression and serving to break up and facilitate the escape of the lather and scum, substantially as herein described.

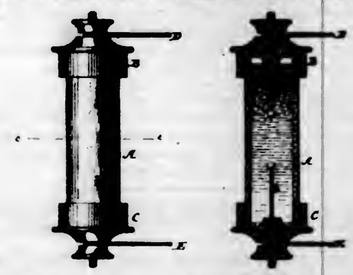
376,280. SHUTTLE-DRIVER FOR QUILTING-MACHINES. AUGUST BECK, Chicago, Ill. Filed June 6, 1887. Serial No. 240,461. (No model.)



Claim.—1. In a quilting-machine, the combination, with the shuttle-race having a way for the passage of the shuttle near its top and a way for the shuttle-driver base-plate near its bottom, said ways being connected by a passage for the supports of the shuttle, of the said shuttle, base-plate of the driver, and vertical supports for the shuttle, substantially as and for the purpose described.

2. In a quilting-machine, the combination, with a shuttle-race, D, having ways d^3 for the base-plate of the driver near the base of the race and a way for the shuttle near the top, of the shuttle-driver formed with a base-plate, *e*, having vertical supports e' and e^2 for the shuttle fitted to work on a guideway, substantially as described, the catch at one end of the shuttle-driver, and the shuttle-driver bar F, substantially as set forth.

376,281. POLE-INDICATOR FOR ELECTRIC CONDUCTORS. AUGUST BERGHAUSEN, Elberfeld, Germany, assignor to E. Imhauser, Brooklyn, N. Y. Filed Sept. 22, 1887. Serial No. 250,390. (No model.)



Claim.—The pole-indicator for electric conductors, consisting of the transparent vessel A, containing an oily liquid, substantially as herein described, said vessel A having caps B C, from which extend the points *a b* into the liquid contained in said glass vessel, as specified.

376,282. CUFF-BUTTON. FREDERICK P. BIORER, Newark, N. J. Filed May 11, 1887. Serial No. 237,797. (No model.)

Claim.—1. In a cuff-button, the combination, with the back and front thereof, of a post formed from a single or continuous piece of wire and having a cam, A', at the center thereof, and a back plate having a tongue, E, slots S S, and depression D', and a spring, said parts being combined and arranged to operate substantially as and for the purposes set forth.

2. In a cuff-button, the combination, with the post thereof, of a back plate, as C, provided with a depression to receive the end of a spring, a central depression, D', slots, as S, and a central tongue and eye, as E and E', a spring, as B, and a shoe, as G, said parts being arranged and held in their respective relations to each other by the outer ring of said shoe being bent over and compressed upon said back plate, and arranged to operate substantially as and for the purposes set forth.

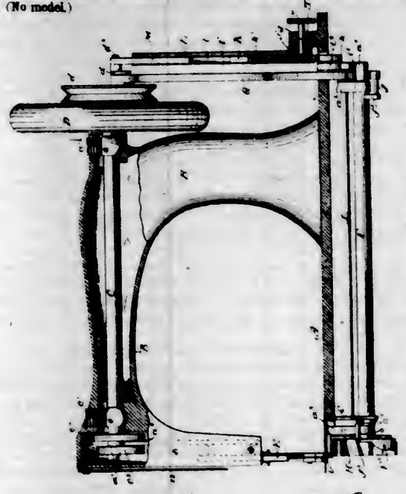
3. In a cuff-button, the combination, with the post, of a back plate, as C, a spring, as B, a shoe, as G, and an intermediate binding-ring, as F, said parts being arranged in relation to one another, substantially as and for the purposes set forth.

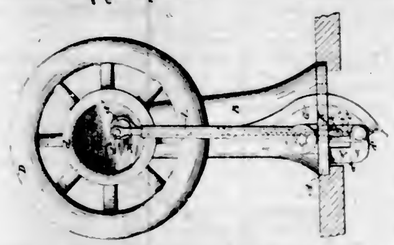


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376,283. FEEDING MECHANISM FOR SEWING-MACHINES. JAMES BOLTON, Glen Spey, N. Y. Filed July 24, 1886. Serial No. 208,940. (No model.)





Claim.—1. The feed-bar I, provided with the rigid arms i' and i^2, extending above and below the said bar, and the feed-dog connected with the arm i', combined with bearings on which the said arms can rock, a cam for imparting vertical movements to the arm i' and the feed-dog, and mechanism for imparting rocking or feeding movements to the said arms, bar, and feed-dog, substantially as set forth.

2. The combination, with the feed bar or shaft I, its arms i' and i^2, and the feed-dog i, of the shuttle-operating rock-shaft F, arranged at the center of movement of the said arms and provided with the cam f^3, and mechanism for rocking the said shaft F and the feed bar or shaft I, substantially as set forth.

3. The combination, with the feed bar or shaft I, its arms, and the feed-dog, of the adjustable bar or lever K, having a pin working in a slot in the rear arm of the bar or shaft I, the grooved lever L, the pitman sliding vertically in and thus adapted to vibrate the said lever L, a crank for operating the said pitman, and means for raising and lowering the said feed-dog, substantially as set forth.

4. The combination of the feed bar or shaft I, having two arms, to one of which the feed-dog is connected, bearings on which the said arms can rock, the adjustable bar or lever K, having a pin working in a slot in the other of said arms, said bar or lever being also provided with a rack, a pinion meshing with the said rack, the grooved lever L, the pitman M, and the crank by which the latter is operated, and means for raising and lowering the said feed-dog, substantially as set forth.

5. The combination, with the driving and the shuttle-operating shafts, the feed bar or shaft and its attached parts, and the cam f^3, of the crank-pins d' and d^1, the disk or pulley by which said crank-pins are carried, the pitman G, connected with the shuttle-operating shaft, the pitman M, the grooved lever L, the bar or lever K, provided with a rack and with a pin, *k*, the pinion J, and the shaft and head for the latter, substantially as set forth.

6. The combination, with the arched feed-dog moving in a curved path, of the presser-foot, the bearing portion of which, fitting against said dog, is arched rearward of the needle only to correspond with the curvature of the said dog, substantially as set forth.

376,284. OSCILLATING SHUTTLE-DRIVER FOR SEWING-MACHINES. JAMES BOLTON, Glen Spey, N. Y. Filed July 1, 1887. Serial No. 243,062. (No model.)



Claim.—1. In a sewing-machine, the combination, with a shuttle, of a shuttle driver or carrier having two independently-operated clamps, by which the said shuttle is held and driven, and means for alternately opening and closing the said clamps to permit the loops of needle-thread to pass, whereby the shuttle is positively held and driven without requiring a race for it to run in, as set forth.

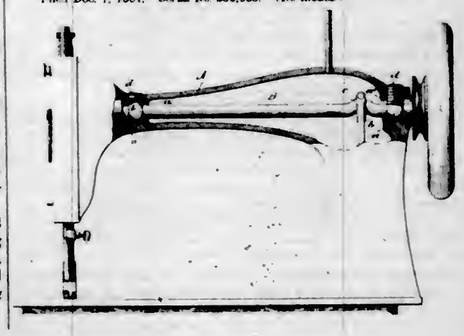
2. In a sewing-machine, the combination, with a shuttle, of a shuttle driver or carrier having two clamps, between which the said shuttle is held and by which it is driven, each of the said clamps consisting of a fixed and a movable part, the movable parts of the said clamps being adapted to operate independently of each other, and means for operating the said clamps, whereby the shuttle is positively held and driven without a race for it to run in, as set forth.

3. The combination, with a sewing-machine shuttle driver or carrier having two carrying arms or parts, one of which engages the shuttle on its outer side or periphery and the other of which engages the shuttle on its inner side, of two independently-movable clamping-levers to co-operate with the said carrying-arms to form two clamps, and a stationary cam to cause said clamping-levers to engage the shuttle.

4. The combination, with a sewing-machine shuttle driver or carrier having two arms or parts to engage a shuttle, of two independently-movable clamping-levers pivoted to the said driver or carrier, and thus moving therewith, a stationary cam to cause said levers to clamp the shuttle alternately, and a spring to release said levers from the shuttle.

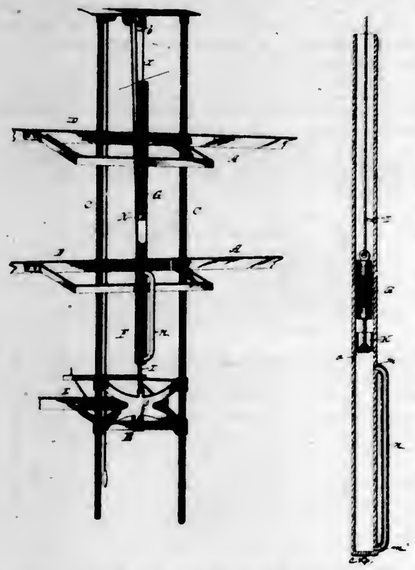
5. The combination, with the shuttle provided with the recesses or pockets *c* and c', having end and side walls, as described, of the shuttle carrier or driver, the independently-movable clamping-levers adapted to engage the shuttle at the said recesses or pockets, and the stationary cam for operating the said levers.

376,285. SEWING-MACHINE. JAMES BOLTON, New York, N. Y. Filed Dec. 1, 1887. Serial No. 256,685. (No model.)



Claim.—In a sewing-machine, the combination, with the bracket-arm having concave bearings, and a driving-shaft having near its opposite ends spherical or ball journals of greater diameter than the said shaft, of bearing-screws having concave ends fitting the journals, the openings in said arm in which said shaft is journaled being sufficiently large to permit the shaft, with its enlarged spherical journals, to be passed endwise through the same, as set forth.

376,286. **AIR-CUSHIONED COUNTER-BALANCE FOR CASH-CARRIERS.** LOUIS G. BONTEMPO, Atlantic, Iowa. Filed Apr. 16, 1887. Serial No. 235,067. (No model.)



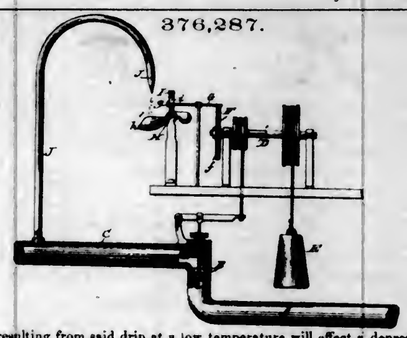
Claim.—1. In an air-cushion and counter-balance for elevators, the combination, with an air-chamber, a weighted close-fitting plunger, and flexible device connecting the weighted plunger to an elevator, of means for introducing air below the plunger to alter the speed of descent of the elevator at desired points in its downward passage, substantially as set forth.

2. In a counter-balance and air-cushion for elevators, the combination, with an air-chamber provided with a by-pass in its side and a restricted air-passage at its bottom, of an elevator flexibly connected to a weighted plunger-head, the latter being thus adapted to counterbalance and cushion the descent of the elevator at varying speeds in its downward passage, substantially as set forth.

3. In a counter-balance and air-cushion for elevators, the combination, with an elevator, of an air-chamber, a graduated or diminished air-passage in its bottom, and a tubular air by-pass rigidly connected to its side, of a weight and attached plunger-head located within the air-chamber and flexibly connected to the elevator, and thus adapted to counterbalance the elevator and regulate its descent at varying speeds in its downward passage, substantially as set forth.

4. In an air-cushion and counter-balance for elevators, the combination, with an air-chamber having a restricted air-inlet at the bottom, of an elevator, a weighted plunger-head flexibly connected to the elevator and adapted to slide in and make a close joint with the air-chamber, and a by-pass for air to permit the free descent of the elevator during part of its travel and cushion it the remainder of its fall, all arranged substantially as described.

376,287. **AUTOMATIC DEVICE FOR SHUTTING WATER-COCKS, &c.** JAMES W. BROOK, Lynchburg, Va. Filed Nov. 26, 1886. Serial No. 220,069. (No model.)



Claim.—1. In an apparatus, substantially as described, the combination of a dripper and a movable drip-receiver consisting of a counterbalanced open-ended trough or spout arranged to receive the discharge from said dripper, the counterbalancing weight or resistance being sufficient to retain the receiver in position against the weight of the water and the force of the falling water, but not to retain it in position against the weight of accumulated ice, and means for connecting said receiver with the device to be operated, all being constructed and arranged substantially as described, whereby the drip will normally not disturb the receiver, but the accumulation of ice resulting from said drip at a low temperature will effect a depression of the receiver, substantially as and for the purposes specified.

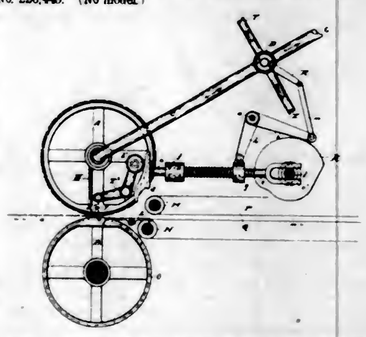
2. The combination of a shaft, D, connections between said shaft and the device to be operated, a dripper, a movable counterbalanced drip-receiver arranged to receive the discharge of said dripper, and detent mechanism between the drip-receiver and the shaft D, the counterbalancing weight or resistance to said receiver being sufficient to retain it in position against the weight of the water and the force of the falling water, but not to retain it in position against the weight of the accumulated ice, all being constructed and arranged substantially as described, whereby the drip will normally not disturb the receiver, but the accumulation of ice resulting from said drip at a low temperature will effect a depression of the receiver, substantially as and for the purposes specified.

3. The combination, with the drip-receiver and the shaft provided with a detent-plate having a notch or opening, of a key, G, connected with the drip-receiver and arranged to enter and normally occupy the notch or opening of the detent-plate, and connections for joining said shaft with the device to be operated, substantially as set forth.

4. The combination of shaft D, provided with detent-plate F, having an opening or notch, *f*, the drip-receiver pivotally supported and having a crank, I, the key G, connected with crank I and movable longitudinally into and out of the opening *f* of the plate F, and connections for joining said shaft with the device to be operated, substantially as set forth.

5. An apparatus, substantially as described, comprising a dripper, a movable counterbalanced drip-receiver arranged to receive the discharge from said dripper, and means for connecting the receiver with the device to be operated, the counterbalancing weight or resistance being sufficient to retain the receiver in position against the weight of the water and the force of the falling water, but not to retain it against the weight of accumulated ice, whereby the drip will normally not disturb the receiver, but the accumulated ice resulting from said drip at a low temperature will effect a depression of the receiver, substantially as and for the purposes specified.

376,288. **METHOD OF ACCUMULATING SHEETS FOR PRINTING-MACHINES.** LEONARD E. BROOKER, Chicago, Ill., assignor to the Goss Printing Press Company, same place. Filed Dec. 2, 1886. Serial No. 220,445. (No model.)



Claim.—The method of producing an accumulation of sheets for their simultaneous delivery, which consists in winding the web upon a revolving carrier to produce two or more layers of web on the carrier, severing the layers at a predetermined line, leading off with the web the sheets produced by the severing operation, and finally severing the web at the rear end of the accumulated sheets to produce the final sheet of the accumulation, substantially as described.

376,289. **PROCESS OF MAKING ARTIFICIAL OR ELASTIC BITUMEN FOR PAVING.** HEINRICH BUSSE, Linden, vor Hanover, Prussia, Germany. Filed July 13, 1886. Serial No. 207,984. (No specimens.)

Claim.—The process of manufacturing artificial elaterite from naphtha or liquid bitumens, consisting in subjecting the materials to a proper degree of heat, cooling and mixing them with vegetable oils, fatty or sebacic acids, treating the mixture with nitrous acid and compressed atmospheric air, and subjecting the entire mixture to a proper degree of heat, substantially as set forth.

376,290. **COMPOSITION OF MATTER FOR PAVING.** HEINRICH BUSSE, Linden, vor Hanover, Prussia, Germany. Filed June 9, 1887. Serial No. 240,679. (No specimens.) Patented in Austria-Hungary May 28, 1886; in Belgium June 1, 1886; in France June 2, 1886, and in England June 4, 1886, No. 7,492.

Claim.—The compound consisting of artificial elaterite, stone-dust, namely, powdered lime-stone and pure asphaltum substances, substantially as shown and described.

376,291. **MILK-RECEIVER.** BENJAMIN J. CADY, Washington, D. C. Filed May 11, 1887. Serial No. 237,896. (No model.)



Claim.—1. A milk-receiver having a shifting band with the indicating-figures thereon.

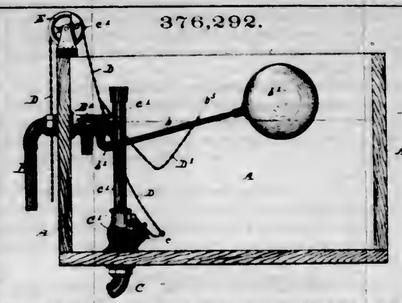
2. A milk-receiver having a shifting indicating-band held by keepers to the receiver and provided with an operating knob or handle, as set forth.

3. A milk-receiver having a shifting band held by keepers to the receiver, said band having inscribed thereon the proper signs to show measurements, a handle to operate the band, and an open cap through which the band slides, as set forth.

4. A milk-receiver having a detachable cover composed of two similar sections, each having a continuous rim and a bulged top, one section fitting within the other, with the top of the outer section pivoted to the top of the inner section, the continuous rim of the inner section being fitted tightly over the outer edge of the receiving-vessel at the top, and the continuous rim of the outer section fitting loosely over the rim of the inner section, and an opening cut out of the bulged top in both sections at one side, whereby the outer section may be turned to cause the opening therein to align with the opening in the inner section, as set forth.

5. A milk-receiver having a detachable cover composed of two similar sections, each having a continuous rim and a bulged top, one section fitting within the other, with the top of the outer section pivoted to the top of the inner section, the continuous rim of the inner section being fitted tightly over the outer edge of the receiving-vessel at the top, and the continuous rim of the outer section fitting loosely over the rim of the inner section, and an opening cut out of the bulged top in both sections at one side, whereby the outer section may be turned to cause the opening therein to align with the opening in the inner section, and a bowed or arched handle having its ends secured to the outer section on each side of the pivoted point thereof, as set forth.

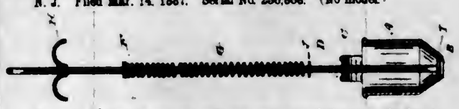
376,292. **ATTACHMENT FOR SUPPLY-TANKS.** WILLIS B. CHAMBERLIN, Worcester, Mass. Filed May 16, 1887. Serial No. 238,321. (No model.)



Claim.—1. In a supply-tank, the combination of a supply-cock, its operating-lever and a loaded float attached thereto, a discharge-valve, and a grooved counterweighted pulley located at the top of said tank for carrying a pull-cord which is connected thereto, the said pull-cord and branch cords or chains connecting said pull-cord with the operating-lever of supply-cock and the said discharge-valve, all operating substantially in the manner and for the purpose set forth.

2. In a supply-tank, the combination of a supply-cock, its operating-lever and float, a discharge-valve, and a grooved counterweighted pulley located at the top of said tank for carrying a pull-cord which is attached thereto, the said pull-cord and branch cords or chains connecting the latter with the operating-lever of said supply-cock and the said discharge-valve, the float on the operating-lever of said supply-cock being sufficiently loaded to overthrow the weighted pulley at the proper time to automatically close said discharge-valve, all substantially as and for the purpose explained.

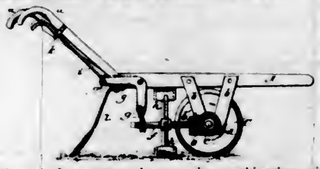
376,293. **MILK-MEASURE.** CHARLES L. CHRISTENSON, Vallsburg, N. J. Filed Mar. 14, 1887. Serial No. 230,806. (No model.)



Claim.—1. The improved milk-measure consisting of a body, A, having a valve at the bottom thereof, an axial handle, and a valve-rod extending parallel with said handle and provided with a finger-piece at its upper end, substantially as set forth.

2. The improved milk-measure consisting, essentially, of a body, A, having a valve at the bottom, a bow, C, a handle secured upon said bow and extending axially away from said body, and a valve-rod extending longitudinally along said handle and provided with a finger-piece, substantially as set forth.

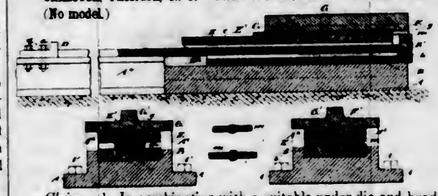
376,294. **COTTON-CHOPPER.** WILLIAM P. CLARK, Elberton, Ga. Filed Nov. 4, 1887. Serial No. 254,267. (No model.)



Claim.—1. In a cotton-chopper, the combination, with a beam, a drive-wheel, and a bevel gear-wheel on the end of its axle, of an angular bracket pivoted to the rear end of the beam, a shaft having one end journaled in the said bracket and its other end in a fixed bearing, a bevel-wheel on one end of the shaft, knives or cutters on the said shaft, and means for turning the said bracket on its pivot to move the shaft longitudinally, as and for the purpose set forth.

2. In a cotton-chopper, the combination, with the beam A and the hangers *b*, one of which is provided with the arm *b'*, of the wheel C, the bevel gear-wheel *d* on the end of its axle, the bracket *g*, pivoted to the rear end of the beam, the shaft *j*, journaled in the arm *b'*, and bracket *g*, the knives *k* on the shaft *j*, the rod *i*, pivoted to the arm g^2 of the said bracket, and catch *k*, for engaging the rod, substantially as herein shown and described.

376,295. **UPSETTING-MACHINE.** WATTS COOKE and DANIEL CARLOUGH, Paterson, N. J. Filed Oct. 21, 1887. Serial No. 252,953. (No model.)



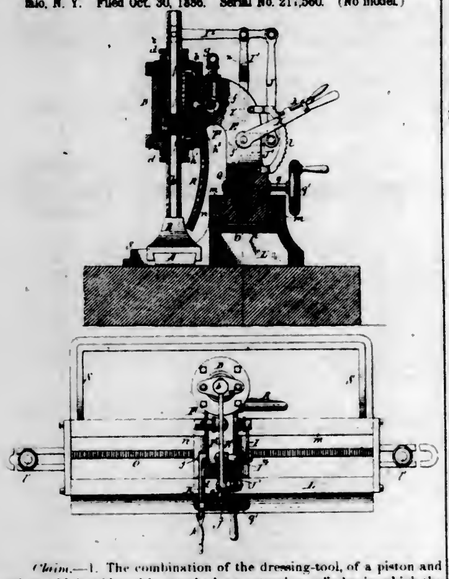
Claim.—1. In combination with a suitable under die and header, the compound upper die, E G, the part G fitted to move up and down between guides A^1 A^1, and the part E attached thereto with liberty to slide longitudinally, as herein specified.

2. In an upsetting-machine, the compound upper die, E G, and operating-plunger I, in combination with the bed A and bottom slide, B, having the ledge B', and with the ram R and stop D, all substantially as herein specified.

3. In an upsetting-machine, the longitudinally-grooved bottom slide, B *b*, and longitudinally-grooved top slide, E *e*, in combination with each other and with the operating-ram R, and lateral guides constructed and arranged, as shown, so as to leave the sides open and allow inspection of the edges of the eye during the act of upsetting, as herein specified.

4. In an upsetting-machine, the removable and exchangeable cheeks C C, in combination with upper and lower dies and with a ledge, B', and stop for holding the bar against the thrust of the header, so as to allow the same machine to be used in treating bars of different sizes, substantially as herein specified.

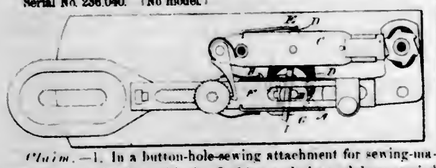
376,296. **STONE-DRESSING MACHINE.** URIAH CUMMINGS, Buffalo, N. Y. Filed Oct. 30, 1886. Serial No. 217,560. (No model.)



Claim.—1. The combination of the dressing-tool, of a piston and rod to which said tool is attached, an actuating-cylinder in which the piston reciprocates, a frame to which said cylinder is rigidly secured, a bed upon which said frame is moved to bring the dressing-tool over different parts of the surface to be dressed, and a valve and adjustable valve-gear whereby the stroke of the tool can be regulated, substantially as set forth.

2. The combination, with the bed L, provided with a rack-bar, O, of a frame, E, provided with a pinion meshing with said rack-bar, a cylinder, D, valve-chest F, valve *f*, and valve-gear mounted on the frame E, a piston, C, and rod *b*, and a dressing-tool, A, attached to the rod *b*, substantially as set forth.

376,297. **BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES.** FREDERICK EGGE, Bridgeport, Conn., assignor to the Smith & Egge Manufacturing Company, same place. Filed Apr. 25, 1887. Serial No. 236,040. (No model.)



Claim.—1. In a button-hole-sewing attachment for sewing-machines, the combination, with the feed-bar and the push-bars carried thereby, of a double spring-acting pawl pivoted to and reciprocated by the means by which motion is communicated to the attachment and having a shank projecting within the field of travel of said push-bars, and a ratchet having two reverse series of teeth and having means which by its revolution actuates the shifting mechanism, substantially as shown and set forth.

2. In a button-hole-sewing attachment for sewing-machines, the combination, with a double-acting spring-pawl pivoted to and reciprocated by the means which communicates motion to the attachment and having a shank projecting therefrom, and a ratchet-wheel having two reverse sets of teeth and having means which by its revolution actuates the shifting mechanism, of means carried or controlled by the feed-bar for throwing said pawl into engagement first with one series of said teeth and then with the other, whereby the shifting mechanism is operated to effect the barring of the button-hole, substantially as set forth and specified.

3. In a button-hole-sewing attachment for sewing-machines, the combination, with the shifting mechanism whereby the barring is effected, of a ratchet-wheel having two reverse series of teeth and means to actuate said shifting mechanism, and a pawl or pawls having means whereby at predetermined times the said pawl or pawls are thrown into operative engagement first with one of said series and then with the other, whereby the shifting in reverse directions is accomplished, substantially as set forth.

376,298. **STOCKING-SUPPORTER.** SHERWOOD B. PERRIN, Lakewood, N. J. Filed Nov. 3, 1887. Serial No. 254,146. (No model.)

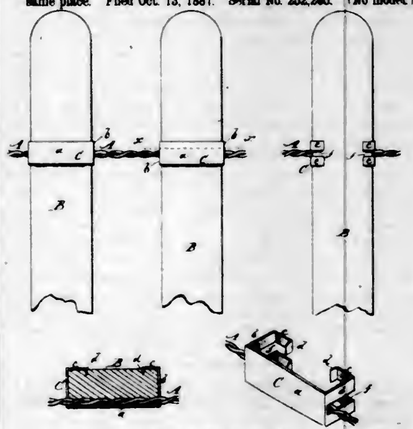


Claim.—1. The button A, having shank *b* and face-piece *a*, said face-piece projecting from both sides of the shank, but farther in one direction than in the other, and means for attaching it to a strap, in combination with the loop B, substantially as herein shown and described.

2. The button A, having shank *b* and face-piece *a*, said face-piece projecting farther from one side of the shank than from the other, and means, *c*, for attaching it to a strap, in combination with the loop B and link *d* thereon, as specified.

3. The strap D, combined with the button A, having face-piece *a*, extending farther from its shank *b* in the direction away from said strap than toward said strap, in combination with the loop B and strap E, the strap D being shorter than the strap E, as specified.

376,299. **CLAMP FOR WIRE-AND-PICKET FENCES.** ALBERT FICKETT, Rochester, N. Y., assignor of one-half to Thadeus W. Hulett, same place. Filed Oct. 13, 1887. Serial No. 252,265. (No model.)



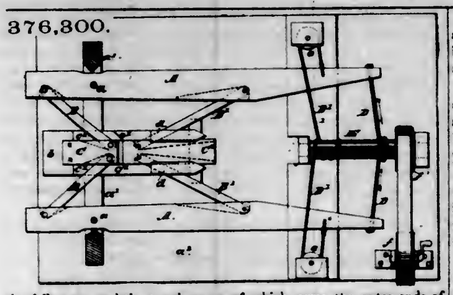
Claim.—1. The fence-clamp herein described, consisting of the body *a*, the right-angled ends *b b*, the return-bends *c c*, and the hooks or claws *d d*, the ends being formed with slots *f f*, as shown and described, and for the purpose specified.

2. A fence-clamp consisting of a body or back which fits the picket, and slotted ends that receive the wires, said ends being bent to encircle the edges of the picket and provided with hooks or claws to enter the wood on the inner side of the picket, as described.

376,300. **PRESS.** LORENZO D. GORDON, Tenaha, Tex., assignor of one-half to George M. Lasseter and Edward S. Hicks, same place. Filed Apr. 20, 1887. Serial No. 235,544. (No model.)

Claim.—1. In a press, the combination of the manipulating-levers,

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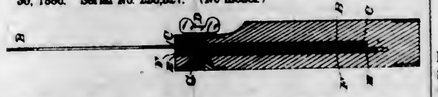


the followers, and the toggle-arms, of which arms the outer ends of two are connected to the outer ends of the levers, while their inner ends are connected to the sides of the follower near its inner end, and the outer ends of the others are connected to the levers near their mid-lengths, while their inner ends are connected to the sides of the other follower near its inner end, substantially as and for the purpose set forth.

2. The press comprising two followers and two levers, each of the latter connected by two toggle-arms to said followers, and mechanism for their simultaneous operation, substantially as and for the purpose set forth.

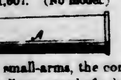
3. The press comprising the coacting followers, each directly connected to levers by two toggle-arms, said levers having connection by chains or lines to a shaft, substantially as and for the purpose specified.

376,301. **BEVEL.** LUCIUS D. GOULD, Newark, N. J. Filed Nov. 30, 1886. Serial No. 220,327. (No model.)



Claim.—The combination, in a bevel, of a stock or handle, A, having separate slots C and E therein, blades B and F, pivotally arranged in said slots, and a binding-screw, D, by means of which the said blades are pivotally held and retained in said slots or fixed at any angle in relation to said stock, as set forth.

376,302. **PROJECTILE.** MYRON E. GREGG, Washington, D. C. Filed Oct. 6, 1887. Serial No. 251,607. (No model.)

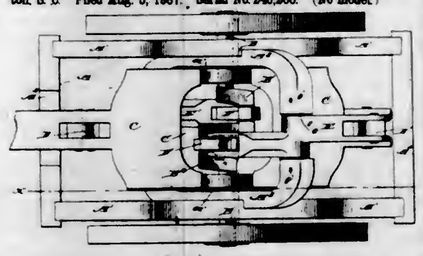


Claim.—1. In a projectile for small-arms, the combination, with the soft-metal bullet, of a cap or shell composed of a harder substance whose diameter equals the bore of the barrel, surrounding and inclosing that portion of the projectile forward of its base, which is of a slightly-increased diameter to engage the grooves of the barrel, substantially as and for the purpose described.

2. In a projectile for small-arms, the combination, with a soft-metal bullet having a base of slightly-increased diameter provided with annular flanges to engage the grooves of the barrel, of a cap or shell of harder metal covering the portion forward of the flanges on the base and provided with perforations, lugs, or flanges for uniting and firmly securing it on the bullet, substantially as and for the purpose described.

3. The combination, in a projectile for small-arms, of a soft-metal bullet, a cap or shell inclosing the outer end of same and secured to it at a point above and near its base by suitable means, as shown, and the cartridge-case A, inclosing the base of the bullet and of the cap, all constructed substantially as and for the purpose described.

376,303. **MECHANICAL MOVEMENT.** JAMES F. HANLEY, Charleston, S. C. Filed Aug. 5, 1887. Serial No. 246,200. (No model.)



Claim.—1. The combination, substantially as herein described, of a crank-shaft, a vibrating lever pivoted coincidentally with and extending across said shaft, and connected to its cranks by links and rocking arms upon each side of said shaft, for the purpose specified.

2. The combination, substantially as herein described, of two crank-shafts, and a vibratory lever connected with one of said shafts by links and rocking arms upon opposite sides of the shaft at one of its ends and by links with the crank-shaft at the other end of said lever, for the purpose specified.

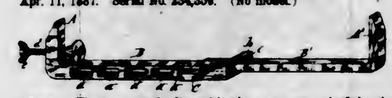
3. The combination, substantially as herein described, of the frame A, having bearings *a* and trunnion projections *a'*, a crank-shaft fitted in said bearings, and a vibratory lever, C, fulcrumed upon said trunnion projections and connected with the crank-shaft, substantially as described.

4. The combination, with the frame A, of the vibratory lever C, a crank-shaft, B, links D D', rocking arms E E', and links F F', substantially as described.

5. The combination, with the frame A, of the double-crank shaft B, links D D', rocking arms E E', links F F', and a vibratory lever, C, pivoted coincidently with the shaft B, and having a yoke, C', to encircle the moving cranks and links, substantially as described, for the purpose specified.

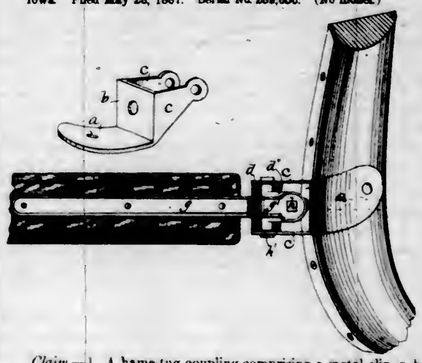
6. The combination, substantially as described, of the frame A, having cross-braces A^3, consisting of shafts *e*, fitted within castings projecting from the side pieces of the frame, a vibratory lever, and a rocking arm supported upon the shaft *e* and connected with the said lever and crank-shaft by links D F, substantially as described.

376,304. **CLAMP.** WILLIAM D. HAWLEY, Syracuse, N. Y. Filed Apr. 11, 1887. Serial No. 234,356. (No model.)



Claim.—The improved adjustable clamp composed of the shank B, provided with the perforations *a a a*, and formed integral with the gripping-hook A and perforated lateral projection *b*, respectively at opposite ends, and the shank B', formed integral with the gripping-hook A' and coupling-hook C, respectively at opposite ends, and adapted to slide with said coupling-hook through the perforated projection *b*, and pass said coupling-hook into the perforation of the shank B, substantially as described and shown.

376,305. **HAME-TUG COUPLING.** DONALD HILL, Storm Lake, Iowa. Filed May 23, 1887. Serial No. 239,656. (No model.)



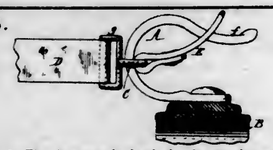
Claim.—1. A hame-tug coupling comprising a metal clip, *a*, having a flat part, *b*, and parallel extensions *c c*, a T-shaped knuckle, *d d'*, and plates *g g*, substantially as shown and described, for the purposes stated.

2. The combination of the metal clip *a b*, having parallel ears *c*, the T-shaped knuckle *d d'*, and two mating plates, *g g*, with a hame-tug and a hame, for the purposes stated.

376,306. **CHECKREIN ATTACHMENT.** GEORGE HOSLEY, Buffalo, N. Y. Filed Nov. 3, 1887. Serial No. 254,154. (No model.)



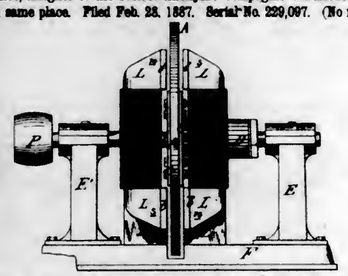
376,306.



Claim.—1. The improved check-hook attachment herein described, consisting of a strap or suitable holder having at one end a ring or loop for holding a checkrein and for connecting the rein to the check-hook, and its opposite end provided with a loop or opening adapted to pass over the free end of the hook, all substantially as set forth.

2. The combination, with a check-hook, of an attachment consisting of a strap or suitable holder having at one end a ring or loop, C, provided with a loop, *g*, arranged at right angles to said loop and adapted to receive the check-strap, and at its opposite end with a loop or opening adapted to pass over the free end of the hook, substantially as set forth.

376,307. DYNAMO-ELECTRIC MACHINE. FRANCIS JEHL, Paris, France, assignor to the Société Anonyme Compagnie Continentale Edison, same place. Filed Feb. 23, 1887. Serial No. 229,097. (No model.)



Claim.—1. A disk-armature wound with flat overlapping coils the separate convolutions of which are arranged successively in advance of one another.

2. A disk-armature wound with flat overlapping coils the separate convolutions of which are successively in advance of one another and occupy two planes parallel with the sides of the armature, one half of each convolution being in a plane on one side of the armature and the other half thereof in a plane on the other side of the armature.

3. A disk-armature wound with flat overlapping coils the separate convolutions of which are successively in advance of one another, and which are composed of metal strips arranged with their edges presented perpendicularly to the opposite faces of the armature.

4. A disk-armature wound with flat overlapping coils the separate convolutions of which are successively in advance of one another, and which are composed of metal strips arranged with their edges presented perpendicularly to the opposite faces of the armature and in two parallel planes, one half of each convolution being bent in one direction in a plane on one side of the armature and the other half being bent in the opposite direction in a plane on the other side of the armature.

5. A disk-armature wound with flat overlapping coils, each convolution of which is constructed of a longitudinally-slitted strip of metal, the arms of which are bent in opposite directions and the extremities of which are connected to the corresponding extremities of the adjacent strips.

6. A disk-armature wound with flat overlapping coils the separate convolutions of which consist each of a metal strip slitted longitudinally, with its divided portions bent in opposite directions, and with its undivided portion arranged at the inner part of the armature and its opposite extremities extending to the periphery thereof and there connected, respectively, with the next successive strips.

7. A disk-armature wound with flat overlapping coils, each convolution of which is constructed of a strip of metal, one half of which is bent around in one direction on one side of the armature and the other half of which is bent in the opposite direction on the other side of the armature, the successive convolutions being connected together serially, and the entire winding being divided into coils or groups of convolutions with a connection from each group to the corresponding commutator-section.

8. A disk-armature wound with flat overlapping coils the separate convolutions of which are spaced apart in such manner as to leave free air-spaces between them for the ventilation and cooling of the winding.

9. A disk-armature wound with flat overlapping coils the convolutions of which are arranged successively in advance of one another and constructed of metal strips arranged edgewise to the opposite faces of the armature and connected to the armature-shaft through the medium of plates applied to opposite sides thereof and between which it is clamped, whereby an annular space is formed between said plates and within the armature-strips, with annular coinciding and interlocking projections and recesses on said plates and metal strips, respectively, and circuit-connections for coupling the terminals of the respective coils passing through the space between said plates.

10. A disk-armature wound with flat overlapping coils the separate convolutions of which are arranged successively in advance of one another and constructed of metal strips arranged edgewise, combined with a peripherally-applied ligature to prevent the expansion of the winding.

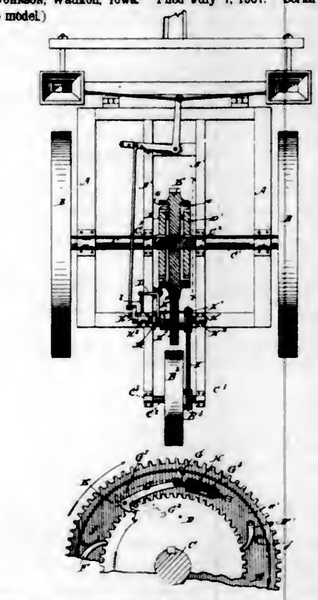
11. A disk-armature wound with flat overlapping coils, each convolution of which is constructed of a longitudinally-slitted strip of metal, the arms of which are bent around in opposite directions, with their extremities extending to the peripheries of the armature, and with metal clamps connecting together the extremities of the successive strips.

12. In a disk-dynamo, the combination, with the disk-armature, of field-magnets presenting oppositely-polarized pole-pieces on opposite sides of the armature, and iron plates arranged to cross the periphery of the armature from one pole-piece to the other and at a short distance beyond the pole-pieces, whereby the lines of force are diverted outwardly from the pole-pieces

13. In a disk-dynamo, the combination, with field-magnets presenting oppositely-polarized pole-pieces face to face, of a disk-armature the winding of which extends laterally at the periphery beyond the pole-pieces, and with iron plates arranged to cross the periphery of the armature opposite the pole-pieces, whereby the lines of force are diverted outwardly through the laterally-extended portion of the armature-winding.

14. A disk-armature wound with flat overlapping coils the convolutions of which are constructed of metal strips arranged edgewise, and wherein the portions of the convolutions on the inner side of the armature are made of thinner metal than the portions thereof toward the periphery of the armature, the same conductivity being maintained throughout the convolutions.

376,308. COMPENSATING CLUTCH FOR CORN-PLANTERS. JOHN S. JOHNSON, Waukon, Iowa. Filed July 7, 1887. Serial No. 243,691. (No model.)



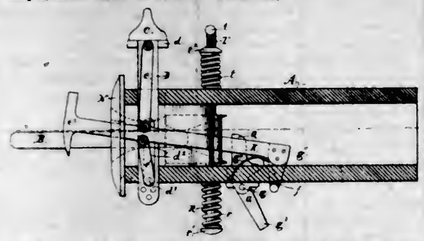
Claim.—1. The combination, in a corn-planter, of the supporting-wheels B B' and following wheel B^2, geared together with a compensating gear, and a dropping mechanism geared to and actuated by said compensating gear, substantially as described.

2. The combination, with the independently-rotating axles, of gears D D', secured thereto, an intermediate wheel, E, having a retaining pawl or pawls, F F', and a pawl, G, linked to the face of said wheel and held in engagement with the teeth of its gear-wheel, substantially as described.

3. The combination, with the axles C C', of gear-wheels D D' and intermediate wheel, E, having a pawl, G, suspended upon the face of the wheel E by links G' G^3 and actuated by a spring, G^4, located at the rear end thereof, substantially as described.

4. The combination, with the axles C C', gear-wheels D D', and an intermediate wheel, E, having recesses H H' in the face thereof, a pawl, G, links G' G^3, and a spring, G^4, located in the recess H' at the rear end of said pawl, substantially as described.

376,309. CAR-COUPLING. AARON KEEPORTS, Lancaster, Pa. Filed May 3, 1887. Serial No. 236,900. (No model.)



Claim.—1. In a car-coupler, the combination, with the draw-head and coupling-pin, of the side bars, E, passing through the bull-nose and connected with the vertical bars D by levers *e e'*, the cross-piece *d*, for engaging the head of the coupling-pin, and the lever G, chain g^2, and cross-piece F, connecting the inner ends of the side bars, substantially as and for the purpose specified.

2. In a car-coupler, the combination, with the draw-head and coupling-pin, of side bars connected with a lever, whereby they may be projected beyond the face of the bull-nose through slots in the face thereof, and arms connecting said bars, and a frame for raising the coupling-pin, substantially as and for the purpose specified.

3. The combination, in a car-coupler, with the draw-head and coupling-pin, of longitudinally-movable side bars, the bull-nose having slots therein through which said bars pass, and arms connecting said bars, and the frame for holding the coupling-pin up when the draw-head is to receive a link, all constructed and operating substantially as specified.

4. The combination, in a car-coupler, with the draw-head, of longitudinally-movable side bars passing through slots in the bull-nose, upright cross-pieces attached to the outer ends thereof, and mechanism for moving said bars forward through the slots, substantially as and for the purpose specified.

5. The combination, in a car-coupler, with the draw-head, of longitudinally-movable side bars passing through slots in the bull-nose, upright cross-pieces attached to the outer ends thereof, recesses about said slots in the outer face of the bull-nose, and mechanism for moving said bars forward through the slots, substantially as and for the purpose specified.

6. The combination, in a car-coupler, with the bull-nose having a concave inner face, of a link-bearing movable shell with a convex front adapted to fit in the concave face of said bull-nose, rods rigidly attached to the top and bottom of said shell and projecting through openings in the upper and lower plates of the casing, and springs coiled about said rods, substantially as and for the purpose specified.

7. The combination, in a car-coupler, with the bull-nose having a concave inner face, of a link-bearing movable shell with a convex front adapted to fit in the concave face of said bull-nose, and a rod rigidly attached to the top of said shell and projecting through the upper plate of the casing, whereby the said shell may be oscillated horizontally in the bull-nose, substantially as and for the purpose specified.

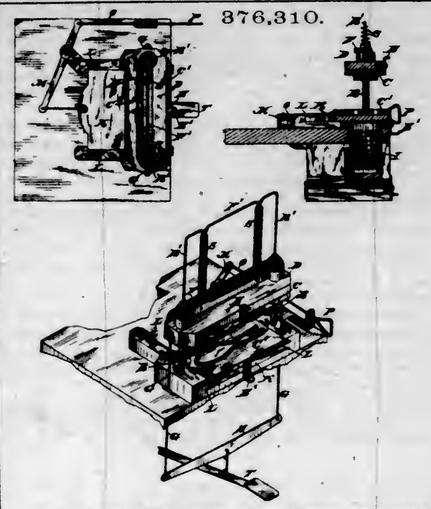
8. The combination, in a car-coupler, with the bull-nose, of a link-bearing movable shell located back of said bull-nose and suspended between the upper and lower plates of the casing by a rod attached to the top of said shell, the rod passing through the upper plate of the casing, and a spring attached to the rod and casing, whereby the elevation of the front of said shell may be varied, substantially as and for the purpose specified.

9. The combination, in a car-coupler, with the draw-head, of a link-bearing shell located back of the bull-nose and having an opening extending through it from front to rear, and stops secured to the bottom plate of the casing back of said shell, substantially as and for the purpose specified.

376,310. MACHINE FOR MAKING WELTS FOR BOOTS OR SHOES. MYRON L. KEITH, Campello, Mass. Filed July 21, 1887. Serial No. 244,856. (No model.)

Claim.—1. A machine for forming welts for boots or shoes, having two formers for shaping the welt, a plunger for forcing the upper former into the lower, and a shutter constituting a bottom for the lower former, substantially as described.

376,310.

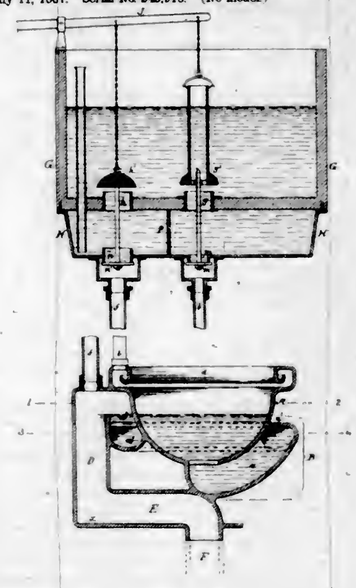


2. A machine of the character named having two formers, a plunger for forcing the upper former into the lower, a shutter beneath said lower former, and a drying-receptacle beneath said shutter, substantially as and for the purpose set forth.

3. In a machine for forming welts for boots or shoes, the frame A, with upright guide-rods B B, and mold C, in combination with carrying-head having mold C, the extension-rods B' B', with cross-bar F', the springs S S, secured to said cross-bar F', and head D, and mechanism, substantially as described, for operating said head D, substantially as and for the purpose set forth.

4. In a machine for forming welts for boots or shoes, the frame A, with uprights B B, having extensions B' B', and cross-bar F', the carrying-head D, with mold C, the lower mold, C', the shutter K, operating in grooves L and below said mold C', and mechanism, substantially as described, for operating said shutter K, substantially as and for the purpose set forth.

376,311. WATER-CLOSET. THOMAS KENNEDY, Philadelphia, Pa.; James Farley administrator of said Thomas Kennedy, deceased. Filed July 11, 1887. Serial No. 243,918. (No model.)



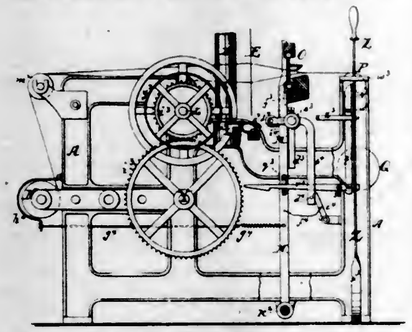
Claim.—1. The combination of the water-closet bowl and its siphoning-ducts, the reservoir having a service-box divided into two compartments, one of which is smaller than the other, and pipes whereby the contents of the smaller compartment are directed to the long leg of the siphon and the contents of the larger compartment to the bowl, all substantially as specified.

2. The combination of the bowl of a water-closet, with a discharge-pipe comprising long and short siphoning-ducts, the short duct having a coiled or bent portion extending part way around the axis of the bowl and delivering at the top into the long duct, all substantially as specified.

3. The combination of the bowl of a water-closet, with a discharge-pipe comprising long and short siphoning-ducts, the short duct having an upwardly-extending portion at one side of the bowl, and a coiled or bent portion extending part way around the bowl and delivering at the top into the long duct of the siphon, all substantially as specified.

4. The combination of the bowl of a water-closet, with a discharge-pipe comprising long and short siphoning-ducts, the short duct having at each end an upwardly-extending portion, and between the two a coiled or bent portion extending part way around the bowl and discharging at the top, all substantially as specified.

376,312. **LOOM.** FRIEDRICH KEMMERLING, Paterson, N. J., assignor to Robert S. McCreery, New York, N. Y. Filed Mar. 23, 1886. Renewed Nov. 26, 1887. Serial No. 256,257. (No model.)



Claim.—1. The combination of the levers D D, which carry the heddles of a loom, with the pivoted bars G G, having hooks *f* and *g*, transverse parallel blades I J, rods *p* and *t*, pin *r*, and cranks *q s*, connecting the parallel blades I J at one end, said blades being suitably pivoted at their opposite ends, frames *w* and *x*, rigidly attached to said blades, and means, substantially as described, for moving said blades, and thereby said frames, simultaneously in opposite directions, as specified.

2. The combination of the rod K and means, substantially as described, for moving it with the collars d^2 e^2, springs a^2 b^2, blade I, having eye *z*, bars G, having hooks *f*, and levers D, as specified.

3. The blade I, combined with the link *m*, bracket *n*, rod *p*, crank-pin *r*, having cranks *q* and *s*, rod *t*, blade J, link *o*, rollers *u*, and guide *v*, and with mechanism, substantially as described, for moving said blade I up and down, all arranged so that said blades I and J shall move simultaneously, but in opposite directions, as specified.

4. The combination of the driving-shaft L, having wrist-pin *y*, with the socket c^2, nuts f^2, adjustable rod *k*, blade I, and a yielding connection between said rod and blade, substantially as and for the purpose herein shown and described.

5. The combination of the shaft L, wrist-pin *y*, rod K, having collars d^2 e^2, connections between said wrist-pin and rod, springs a^2 b^2, eye *z*, blade I, frame *w*, blade J, frame *x*, levers D, pivoted bars G, having hooks *f g* and needles *i*, springs *k*, card H, prism *j*, and means, substantially as described, for communicating motion from the blade I to the blade J, as specified.

6. The combination of the rotary crank-shaft L with the rod i^2 and arm j^2, each having series of apertures, adjustable connecting-pin *P*, and pivoted lay M, all arranged to permit the violence of the motion of the lay to be regulated without changing the extent of its movement, substantially as herein shown and described.

7. The combination of the cloth-winding drum Q with the worm-wheel n^2, worm o^2, shaft R, flanged pulley S, loose crank-arm p^2, having pin r^2, slotted bar s^2, stem t^2, pad u^2, lug w^2, arm x^2, sleeve y^2, rod q^2, and lay M, having lug z^2, substantially as herein shown and described.

8. The combination of the lay M, reed O, rock-shaft c^3, having arms d^3 and f^3, upright torsional spring U, having hook-shaped arm e^3, lever T, lug z^3, sliding rod q^3, drum Q, and mechanism, substantially as described, for moving the winding-drum Q by means of the rod q^3, as specified.

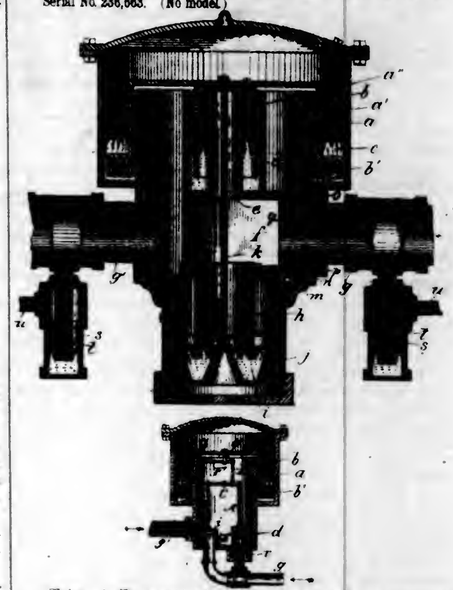
9. The lay M, having perforated lug q^3, combined with the reed, pivoted hook r^3, lever t^3, shipping-lever Z, trigger e^4, rock-shaft c^4, arm f^3, arm a^4, having the pin d^4, and cord f^4, substantially as herein shown and described.

10. The combination of the lay M, movable reed O, rock-shaft c^4, having arms f^3, d^3, and e^4, pin d^4, spring U, shipper-lever Z, lever t^3, arm r^3, hook r^3, lug q^3, and arm e^4, trigger e^4, and cord f^4, for raising said hook and actuating the shipping-lever, as described, when the reed meets with resistance and for moving said hook r^3 lengthwise when the reed does not meet with resistance, as specified.

11. The combination of the lay M, rock-shaft c^3, arm f^3, and reed O with the arm i^3 on the rock-shaft c^4, and with the fixed spring k^4, for the purpose of throwing the reed forward when the lay moves backward, as specified.

12. The shuttle-box X, having vertically-slotted rear wall, o^4, in combination with the L-shaped plate l^3, having lugs m^4, and with the bolts n^4 and nuts p^4 and q^4, substantially as and for the purpose herein shown and described.

376,313. **GAS-PRESSURE REGULATOR.** MOSES W. KIDDER, Lincoln, assignor to Person Noyes, Lowell, Mass. Filed Apr. 30, 1887. Serial No. 236,663. (No model.)



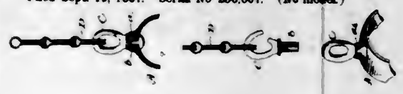
Claim.—1. The combination of the gas-holder *b*, the compensating-cup *d*, the mercury-valve, the levers, fulcrums, and connecting-rods, whereby said valve and cup are connected with each other and with the gas-holder, as set forth.

2. The combination of the gas-holder *b*, the buoyant enlargement *b'* on the lower edge of said holder, the compensating-cup, and the mercury-valve, all arranged and operating substantially as and for the purposes set forth.

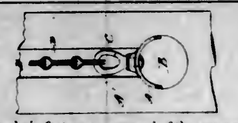
3. The combination of a gas-pressure regulator, the inlet-pipe *g*, the outlet-pipe *g'*, the branches *t t* on said pipes, the traps *s s*, receiving the ends of said branches, and pipes *u u*, for the escape of gas forced through said traps, as set forth.

4. The combination, in a gas-pressure regulator, of the exterior casing, *a*, having an unthreaded orifice, *q*, and a seat, *o*, surrounding said orifice, the inner casing having a threaded orifice, *m*, coinciding with the orifice *q*, and surrounded by a seat, *n*, the service main or pipe passed through the orifice *q* and screwed into the orifice *m*, and the lock-nut *p*, screwed upon said main or pipe and bearing on the exterior of the casing *a*, whereby a tight joint is formed between the seats *n* and *o* of the outer and inner casings, as set forth

376,314. **SASH-CORD FASTENER.** MYRON H. KIRSLEY, Niagara Falls, assignor to the Oneida Community, (Limited,) Community, N. Y. Filed Sept. 19, 1887. Serial No. 250,067. (No model.)

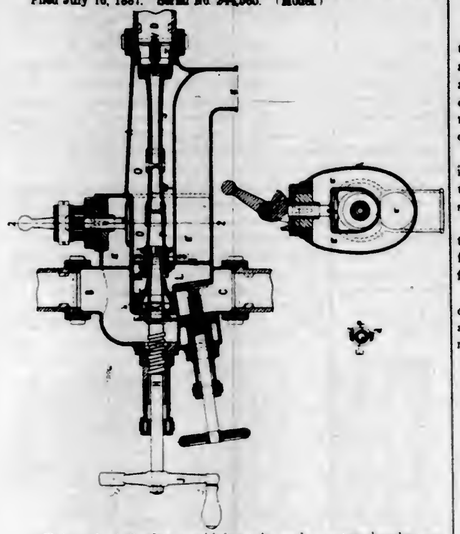


376,314.



Claim.—A sash-chain fastener composed of the segment A, adapted to rest in a recess in a sash edge, combined with the hook C, swiveled to freely turn in said segment and adapted to secure the end of the sash-chain, substantially as described.

376,315. **INJECTOR.** STRICKLAND L. KNEASS, Philadelphia, Pa., assignor to William Sellers & Company, Incorporated, same place. Filed July 16, 1887. Serial No. 244,565. (Model.)



Claim.—1. A forcing combining-tube and a water-chamber provided with a water-inlet port opening into and an overflow-port opening out of said chamber, which chamber contains the receiving and overflow openings of this combining-tube, in combination with a forcing steam-nozzle which terminates forward of the receiving end of the combining-tube, substantially as described.

2. An annular lifting steam-nozzle, an annular combining-tube, and a central forcing steam-nozzle which terminates forward of the discharging end of the annular combining-tube, in combination with a combining-tube provided with an overflow-opening located at a point in the rear of that where the diameter of this tube contracts to less than nine-tenths that of the discharging end of the forcing steam-nozzle and forward of the receiving end of this combining-tube, substantially as described.

3. An annular lifting steam-nozzle, an annular lifting combining-tube, a central forcing steam-nozzle, and a forcing combining-tube provided with an overflow-opening located at a point in the rear of that where the diameter of the tube contracts to less than nine-tenths that of the discharging end of the forcing steam-nozzle and forward of the receiving end of this combining-tube, in combination with an overflow-chamber in which all of the overflow-openings are located, substantially as described.

376,316. **BRICK-SANDING MACHINE.** JOHN I. KNAPP, JOSEPH C. MCKENNEN, and WILLIAM HUMPHREY, Adrian, Mich. Filed July 8, 1887. Serial No. 243,744. (No model.)

Claim.—1. In a device for sanding brick and tile of the character described, a table for receiving the column of clay as it emerges from the machine, a sand-hopper and tunnel arranged over said table, a feed-spout leading from the hopper, and a blast of steam or air to scatter the sand as it emerges from the spout over the clay column, as set forth.

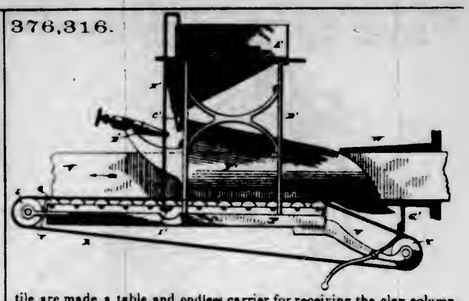
2. In a device for sanding brick and tile, a table for receiving the column of clay as it emerges from the machine, a sand-hopper and tunnel arranged over the table, said tunnel being provided with a pendent wall or diaphragm and with semicircular walls on each side of the pendent wall, whereby the blast of sand is directed onto each side and top of the clay column, as set forth.

3. In a device for sanding columns of clay from which brick and tile are made, a table and endless carrier for receiving the clay column as it emerges from the machine, said table and carrier being inclined at its rear end, in combination with a tunnel having its rear portions extended and curved downward and inward to direct the sand onto the endless carrier, as set forth, whereby the under side of the clay column is sanded.

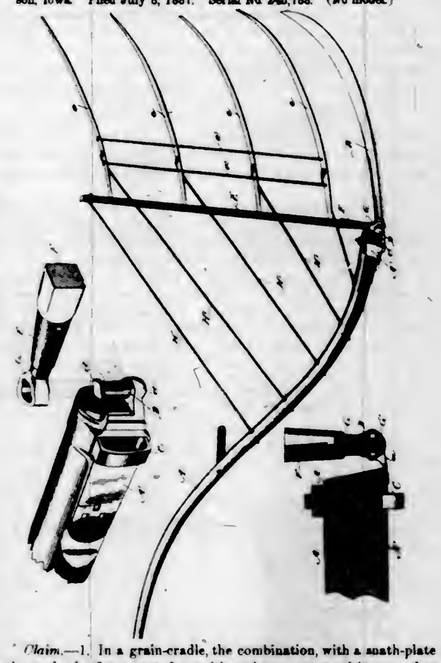
4. In a device for sanding brick and tile, the carrier having the inclined portion, and a stop against which the sand is carried to cause the same to be deposited upon the inclined portion of the carrier, substantially as and for the purpose set forth.

5. In a device for sanding brick and tile, the carrier over which the column or tile moves, the tunnel and the sand-hopper, and a blast for forcing the sand into the tunnel to sand the tile or columns, as set forth.

6. In a device for sanding brick and tile, the combination of the carrier, the tunnel constructed substantially as described, the hopper and spout, the spout-cleaner, and the blast, all constructed and arranged to operate substantially as set forth.



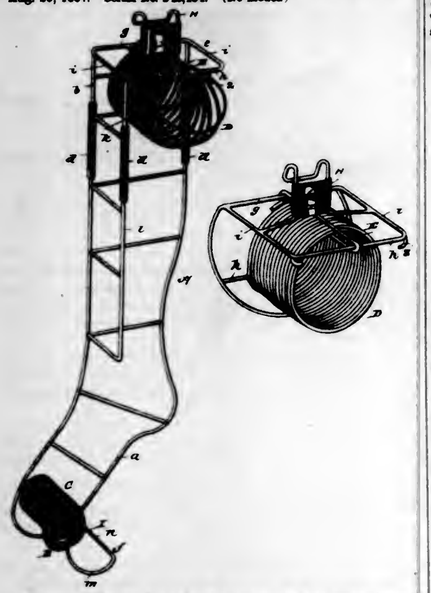
376,317. **GRAIN-CRADLE.** FREDERICK S. KRETSINGER, Fort Madison, Iowa. Filed July 8, 1887. Serial No. 243,783. (No model.)



Claim.—1. In a grain-cradle, the combination, with a snath-plate and standard, of a means for uniting the two, comprising a socket fixed to the end of the standard and a shank swiveled to said socket, said shank being hinged to the snath-plate, substantially as described.

2. In a grain-cradle, the combination, with the snath, a cradle-body, and the adjustable stay-rods connected to the standard, the fingers and the snath, of the snath-plate A', provided with the stud D, extending at substantially right angles therefrom and having projections thereon, the swivel-socket F, the shank G, and the eye G', substantially as described.

376,318. DISPLAY-RACK. JOHN M. LAUDICK, Delphos, Ohio. Filed Aug. 29, 1887. Serial No. 248,151. (No model.)



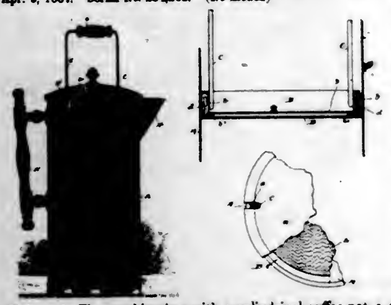
Claim.—1. A frame for holding hosiery, being of approximately the form of a leg, the said frame having a spring-coil at one end and hooks for holding the same in an expanded position to receive the upper ends of the hose, and a similar coil at its opposite end or toe portion, also having a hook or stud to hold the coils open or expanded, substantially as specified.

2. A hosiery-display frame comprising an upright and a lateral frame of wire, a suspension-hook on the lateral frame, a horizontal guide-loop, and a coil of wire secured at one end to the main frame, and the whole adapted to be guided by the said loop, substantially as specified.

3. A hosiery-frame comprising an upper and lower section adjustably connected by a socket, and each respective section carrying a horizontally-disposed spiral coil of wire to receive the tops and toes of hose between the said coil, substantially as specified.

4. A hosiery-frame comprising a vertical and horizontal section connected at right angles, a horizontal guide-loop, a coil of wire secured at one end to the main frame and passing through the guide-loop, and hooks on the horizontal section of the frame, whereby the outer coil may be engaged thereby when drawn out, substantially as specified.

376,319. COFFEE-POT. ALFRED J. LANE, Glenville, Ohio. Filed Apr. 9, 1887. Serial No. 234,263. (No model.)



Claim.—1. The combination, with a cylindrical coffee-pot, a cup-piston, and suitable attachment for operating the latter, the piston having a removable perforated metal bottom and an annular outside groove, of a cloth strainer detachably secured at the bottom of the piston, and a packing-band, preferably of cloth, made to fit into the groove of the piston, substantially as set forth.

2. The combination, with coffee-pot, cup-piston, and removable strainer, substantially as indicated, of a bail secured to the rim of the piston and made to extend through notches at the periphery of the cover, the said bail having a suitable handle attached at the top, substantially as set forth.

376,320. CORN-REMOVING KNIFE. CHARLES LAPORTE, Brooklyn, N. Y. Filed Oct. 11, 1886. Serial No. 215,964. (No model.)

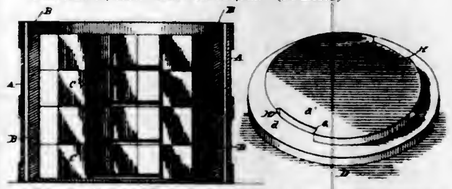


Claim.—1. In combination with a knife or lance, a separate removable protecting loop-shaped guard extending around or encircling the cutting-edge of the blade in advance of the same, and made of slender thickness, with the blade in the middle of said thickness, or nearly so, and having a bearing-face on both sides, so that either side may be pressed on the skin and moved either to the right or left, substantially as set forth.

2. In combination with a knife or lance, a looped guard, *d*, adapted to encircle the cutting-edge of the blade in advance thereof, and formed with a tubular shank, *d'*, adapted to slip over the tang of the blade, substantially as shown and described.

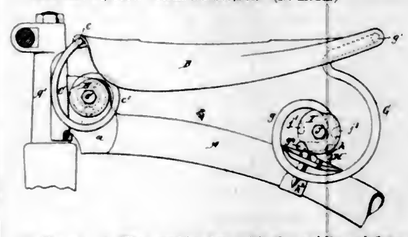
3. The combination, in a knife or lance, with the blade *b*, tang *c*, and spring *g*, of the looped guard *d*, having the tubular stem *d'* to slip over the tang and spring, substantially as set forth.

376,321. CRATE. TILGHMAN W. LANKFORD, Sharptown, Md. Filed Feb. 17, 1887. Serial No. 227,942. (No model.)



Claim.—The combination, with a crate, box, or other vessel, of oppositely-arranged cleats having grooves, the lower walls of which are horizontal and the upper walls inclined, and a cover provided on its under face with a disk, *d'*, said disk provided with recesses G G, and having its periphery beveled to form inclined edges H H, which coincide with the grooves in the cleats, substantially as described.

376,322. VELOCIPEDE-SADDLE. EMMIT G. LATTA, Friendship, N. Y., assignor to the Pope Manufacturing Company, Portland, Me. Filed Jan. 24, 1887. Serial No. 225,246. (No model.)



Claim.—1. The combination, with the saddle and frame of a velocipede, of a supporting-spring composed of two coiled branches having their convolutions made of decreasing radius from the saddle toward the frame, substantially as set forth.

2. The combination, with the flexible frameless saddle and the frame of a velocipede, of independent front and rear supporting-springs, each composed of two coiled branches arranged on opposite sides of the frame and attached with their inner ends to the frame and with their outer ends directly to the cantle and pommel of the flexible saddle, substantially as set forth.

3. The combination, with the saddle and the velocipede-frame, of an upright spring-support secured to said frame, a supporting-spring composed of two coiled branches applied to opposite sides of the spring-support, clamping-plates applied to the outer sides of the coiled branches, and a horizontal clamping-bolt, whereby the clamping-plates and coiled-spring branches are secured to the upright support, substantially as set forth.

4. The combination, with the saddle and the velocipede-frame, of an upright spring-support secured to said frame and provided with a series of recesses or spring-seats arranged at different heights, a supporting-spring adapted to be secured in either of said seats, and clamping-plates and a clamping-bolt, whereby the spring is held in engagement with either of said seats, substantially as set forth.

5. The combination, with the saddle and the frame provided with a spring-support having openings for the clamping-bolt at different heights, of a supporting-spring, clamping-plates, and a clamping-bolt which can be placed in either of said openings, thereby raising or lowering the spring, substantially as set forth.

6. The combination, with the saddle and the frame having its neck provided with a bolt-hole, e^3, and a series of openings, d' d^2 d^3, of a front spring, C, composed of two branches having their lower ends inserted in one of said spring-seats, clamping-plates E, and a clamping-bolt, e', substantially as set forth.

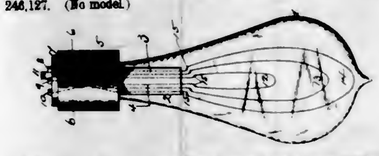
7. The combination, with the saddle and the frame, of a spring-support, H, secured to the frame and provided with a bolt-hole, h^3, and a series of recesses, j j', a rear spring, G, secured with its upper end to the saddle, and clamping-plates and a bolt, whereby the lower end of the spring is secured to the support H, substantially as set forth.

8. The combination, with the saddle and frame, of a rear spring composed of two branches having their upper ends provided with right and left screw-threads, and a similarly-threaded screw-sleeve connecting the upper ends of the spring, substantially as set forth.

9. The combination, with the saddle and frame, of a spring-support, H, reversibly secured to the frame and provided with seats for the spring in its front and rear sides, and a rear spring, G, attached to said spring-support and to the saddle, substantially as set forth.

10. The combination, with the frame, of a front spring having an upper horizontal bar, a seat having its front end lapped around said bar, and a lining-strip constructed with tapering lateral edges interposed between the seat and the bar of the spring, whereby the center of the pommel is raised, substantially as set forth.

376,323. ELECTRIC LAMP. LUTHER H. LEBER, York, Pa., assignor to Jacob G. Leber, same place. Filed Aug. 4, 1887. Serial No. 246,127. (No model.)

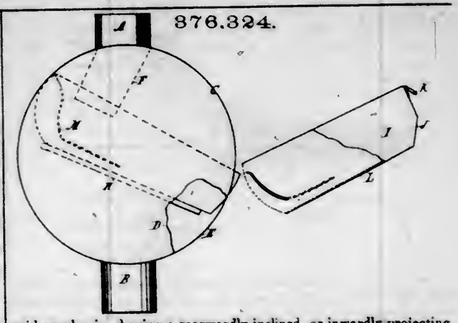


Claim.—1. An incandescent lamp comprising a vacuum chamber or globe, a plurality of incandescing wires sealed therein, a series of posts equal in number to the incandescing wires and to each of which one end of said wires is attached, a curved metal strip to which the other ends of the several wires are attached, a lamp-socket adapted to receive and hold said globe, insulated disks supported on said lamp-socket, current-conveying strips interposed between and secured to said disks, and having suitable connection with the current-transmitting wires, an insulated strip secured to and interposed between the insulated disks to constitute an insulated bearing for the switch-key, and a switch-key having a series of curved contact or current-switching fingers or strips to connect individually with the posts in contact with the incandescing wires and switch the current from one to the other thereof, substantially as and for the purpose set forth.

2. An incandescent lamp comprising a vacuum chamber or globe, a plurality of incandescing wires sealed therein, a series of posts equal in number to the incandescing wires and to each of which one end of said wires is attached, a curved metal strip to which the other ends of the several wires are attached, a ring connected to the globe, and having outwardly-projecting pins on its sides, a lamp-socket having bayonet-joints to receive said pins and lock the lamp in position, insulated disks supported on said lamp-socket, current-conveying strips interposed between and secured to said disks, and having suitable connection with the current-transmitting wires, an insulated strip secured to and interposed between the insulated disks to constitute an insulated bearing for the switch-key, and a switch-key having a series of curved removable contact or current-switching fingers or strips arranged eccentrically on said key to connect individually with posts in contact with the incandescing wires and switch the current from one to the other thereof, substantially as and for the purpose set forth.

376,324. STRAINER FOR WATER UNDER PRESSURE. THOMAS LEE, Cincinnati, Ohio. Filed Sept. 6, 1887. Serial No. 248,959. (No model.)

Claim.—1. In a water-strainer, a drum having the supply-pipe on one side and the exhaust-pipe on its opposite side on a direct line,



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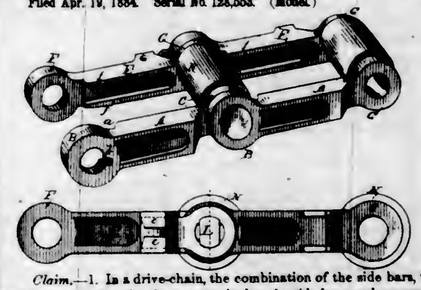
said supply-pipe having a rearwardly-inclined or inwardly-projecting extension, in combination with a forwardly-inclined drawer having wire-mesh bottoms, substantially as herein set forth.

2. A drum having oppositely-disposed supply and discharge pipes, in combination with a removable drawer having a bottom of fine wire-gauze and a raised bottom of coarse wire-cloth, substantially as herein set forth.

3. A drum having oppositely-disposed supply and discharge pipes, the inner end of the supply-pipe being disposed at an angle, in combination with two grades of wire-cloth mesh between the inner ends of said pipes disposed at approximately right angles to the discharge end of the supply-pipe, whereby the debris strained from the water is washed away, so that the straining end is always clear and unobstructed, substantially as herein set forth.

4. In strainers, the combination of a drum having oppositely-disposed supply and discharge pipes, the open side, and the inclined guideways within, with the removable drawer having two grades of wire-cloth therein, substantially as herein set forth.

376,325. DRIVE-CHAIN. BENJAMIN A. LEGG, Columbus, Ohio. Filed Apr. 19, 1884. Serial No. 128,553. (Model.)



Claim.—1. In a drive-chain, the combination of the side bars, the end bars or pintles, the sleeves attached to the side bars and surrounding the pintles, the latter being locked in their seats, so as to be incapable of rotation relative to their surrounding sleeves, and the keepers attached to and carried by the side bars and engaging with the notches or recesses in the pintles, so as to prevent accidental displacement of the end bars when the links of the chain are in ordinary working relation, substantially as set forth.

2. In a drive-chain, the side bar provided with the keeper permanently attached thereto, said keeper having the rectangular opening *i*, adapted to receive the end of the end bar, substantially as set forth.

3. In a drive-chain, the side bar provided with projecting ears *e e*, adapted to receive and retain the keeper, substantially as set forth.

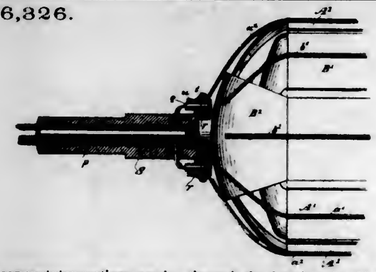
4. In a drive-chain, the combination, with the separable side bars, A B C and E F G, provided with the keeper projecting at the side of the end G, whereby there is formed a throat for the end F of an adjacent link, of the end bar provided with the locking-plate, substantially as set forth.

5. In a drive-chain, the combination, with a series of links arranged to overlap each other at their ends and keepers having elongated openings, of removable pintles having at their ends expanding heads, each pintle having a projection intermediate the expanded heads, and adapted to engage with one of the links and prevent rotation of the pintle relative to said link, substantially as set forth.

376,326. ARMATURE FOR DYNAMO-ELECTRIC MACHINES. HERMANN LEMP, Hartford, assignor to the Schuyler Electric Company, Middletown, Conn. Filed Sept. 7, 1886. Serial No. 212,905. (No model.)

Claim.—1. The combination, in a dynamo or other electrical machine, of a hollow shaft carrying the armature, leading-in wires from

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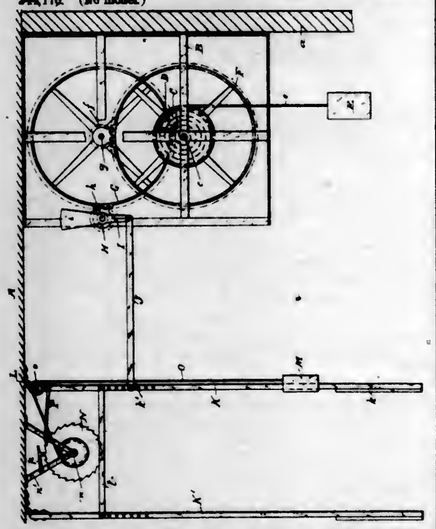
the commutator-sections passing through the interior of said hollow shaft and emerging from holes in the same near the armature-coils, an insulating-base arranged near by upon said armature, and individual binding-posts upon said insulating material for connecting each particular shaft-wire with its respective coil only, substantially as and for the purpose set forth.

2. The combination, with the leading-in wires of the armature-coils of a dynamo or other electrical machine, of a device exterior to said armature and its shaft, carrying connections for said leading-in wires and the shaft-wires from the commutator, and an insulating-plug within the shaft for holding the shaft-wires in their relative position, as set forth, whereby the shaft-wires belonging to each coil can be readily distinguished and faults in the individual coils immediately located.

3. The combination, with the leading-in wires of the armature-coils of a dynamo or other electrical machine, of an insulating-annulus surrounding and moving with the armature-shaft, and bearing connections for said leading-in wires and the shaft-wires from said commutator-sections, and an insulating-plug for holding said shaft-wires in place in the shaft, as set forth.

4. The combination of the leading-in wires of the armature-coils, as a' b' and a^2 b^2, the ring r, of insulating material, carrying metal plugs q, having binding-screws t u thereon, the former serving to hold the plugs in place, with the insulating-plug p and the shaft-wires, all substantially as and for the purpose described

376,327. POWER-FAN. JAMES A. MASON, ELIJAH F. MULKEY, and GEORGE W. HOUSTON, Savoy, Tex. Filed July 13, 1887. Serial No 244,170. (No model.)



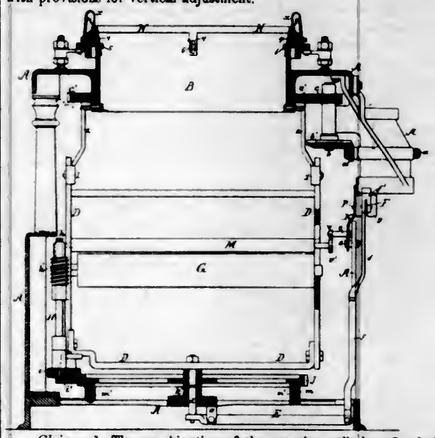
Claim.—1. In a power-fan, the combination of the slowly-revolving spring-barrel and the toothed gearing, the pitman-rod operated from the revolving gearing by a crank, the fan-lever connected to the pitman-rod, a weight sliding upon the fan-lever, and the ratchet mechanism for automatically raising the sliding weight, substantially as and for the purpose set forth.

2. In a power-fan, the combination of the slowly-revolving spring-barrel and the toothed gearing, the pitman-rod operated from the revolving gearing by a crank, the fan-lever connected to the pitman-rod, a weight sliding upon the fan-lever, the ratchet-wheel provided with a retaining-catch, a pawl pivoted to the fan-lever and engaging with the ratchet, the guide-pulley o, and the cord secured to the weight, passing over the said pulley and wound upon the ratchet-wheel spindle by the motion of the fan-lever, substantially as and for the purpose set forth.

3. In a power-fan, the combination of the slowly-revolving barrel, the intergearing toothed wheel F and pinion f, the intergearing toothed wheel G and pinion H, the crank I, the pitman-rod J, the weight i, balancing the pitman-rod, the fan-lever K, pivoted to the ceiling, adjustably connected to the said pitman-rod, and operated by the aforesaid barrel and gearing, a weight sliding upon the fan-lever, the automatic ratchet mechanism for elevating the weight as the driving power decreases, the fan-lever K', and the rod l, connecting the said fan-levers together, substantially as and for the purpose set forth.

376,328. CIRCULAR-KNITTING MACHINE. WALTER J. MCDEVITT, Philadelphia, Pa., assignor of one-half to Henry A. Truitt, same place. Filed June 20, 1885. Serial No. 169,266. (No model.)

Brief.—The weight which counterbalances the weight of the cloth upon the take-up roller is automatically adjusted on its supporting-lever as the cloth accumulates through the action of a small roller resting upon the cloth and intermediate devices. The cloth is prevented from rising upon the needles by a carved presser, which holds it between the needle-cylinder and a ring attached to the inside thereof, with provisions for vertical adjustment.



Claim.—1. The combination of the rotating cylinder of a knitting-machine, its frame D, the take-up mechanism carried thereby, a friction device for governing the rotation of said take-up mechanism, a counterbalance-lever having an adjustable weight, means whereby the counterbalance-lever is caused to act upon the frame D, so as to free the take-up mechanism from the control of the friction device, and mechanism, substantially as described, whereby the shifting of the weight on the counterbalance-lever is effected by the rotating frame D of the machine, all substantially as specified.

2. The combination of the rotating cylinder, its frame D, the take-up mechanism carried thereby, a friction device for governing the rotation of said take-up mechanism, a counterbalance-lever, F, having an adjustable weight, means whereby said lever is caused to act upon the frame D, a presser, M, bearing upon the work on the take-up roll, and mechanism, substantially as described, whereby said presser is caused to effect the shifting of the weight on the counterbalance-lever, all substantially as specified.

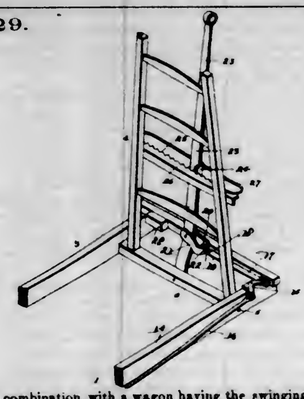
3. The combination of the rotating cylinder, its frame D, take-up mechanism carried thereby, a friction device for governing the rotation of said take-up mechanism, a counterbalance-lever having an adjustable weight, g, means whereby said lever is caused to act upon the frame D, and a lever, K, connected to the weight g and acted on by a projection on the frame D, as set forth.

4. The combination of the needles and the presser x with the needle-cylinder having a ring, N, forming an inner bearing for the work, and means for adjusting said ring vertically on the cylinder, all substantially as specified.

376,329. WAGON-LOCK. IRA MCC. MCGONIGLE, Shanesville, Ohio. Filed Oct. 11, 1887. Serial No. 252,040. (No model.)

Claim.—1. The combination, with a wagon having the swinging or movable end ladder, of the brake-bar having the end brakes and the rearwardly-extending rod, the pivoted rear lever, the connecting-rod, the bell-crank lever, the arm having the shouldered neck and head, the stirrup, and the long pivoted lever, substantially as set forth.

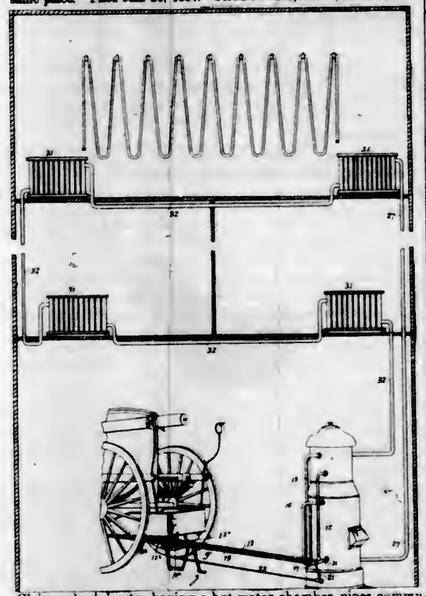
376,329.



2. The combination, with a wagon having the swinging or movable end ladder, of the brake-bar having the end brakes and the rearwardly-extending rod, the pivoted rear lever, the connecting-rod, the bell-crank lever, the arm having the shouldered neck and the head, the stirrup, the long pivoted lever formed with the side lip, the toothed rack, and the guard-bail, substantially as and for the purpose set forth.

3. The combination, with the wagon having the swinging or movable end ladder, of the brake-bar having the end brakes and the rearwardly-projecting rod, the guide-bails for the brake-bar, the pivoted rear lever, the connecting-rod, the bell-crank lever, the arm having the shouldered neck and the head, the stirrup, the stop for the hinged end ladder, the long pivoted lever formed with the side lip, the toothed rack, and the guard-bail, substantially as and for the purpose set forth.

376,330. HEATER FOR STEAM FIRE-ENGINES. EDWIN MEDDEN, Seneca Falls, N. Y., assignor to the Silsby Manufacturing Company, same place. Filed Jan. 29, 1887. Serial No. 225,872. (No model.)



Claim.—1. A heater having a hot-water chamber, pipes communicating therewith, and joints for uniting said pipes with other pipes communicating with the boiler of a steam fire-engine, in combination with radiators and a pipe communicating at its ends with said heater and at intermediate points with said radiators, the said radiator-pipe being entirely separate and distinct from the pipes for establishing communication between the water-chamber of the heater and the boiler of the fire-engine, substantially as and for the purpose set forth.

2. A heater having a hot-water chamber, pipes for establishing communication between said chamber and the boiler of a steam fire-engine for maintaining a circulation of water through said chamber and boiler, and circulating-pipes communicating at their respective ends with the top and bottom of said chamber for maintaining a circulation within the heater when communication with the fire-engine boiler is cut off, in combination with radiators and a pipe communicating at intermediate points with said radiators and at its extremities with said heater, said radiator-pipe being entirely separate and distinct from both the other sets of pipes, substantially as and for the purpose set forth.

3. A heater having a hot-water chamber, pipes 13 19, communicating therewith, slip-joints 13^a 19^a, for connecting said pipes with pipes 13^b and 19^b, respectively, communicating with the boiler of a steam fire-engine, and valves for closing all of said pipes, actuated automatically by the starting of the engine, in combination with radiators and a pipe communicating at its ends with the heater and at intermediate points with said radiators, the said radiator-pipe being entirely separate and distinct from the pipes for establishing communication between the water-chamber of the heater and the fire-engine boiler, substantially as and for the purpose set forth.

4. The combination of the heater, having a combustion-chamber, the hot-water chamber, and a number of drums located within the combustion-chamber, communicating at top with said water-chamber and communicating at their lower ends with each other, and a pipe communicating at its respective ends with said water-chamber and the lower ends of said drums, and the radiators communicating with said pipe, substantially as set forth.

5. The combination, with the combustion-chamber and the hot-water chamber, of the drums communicating with said water-chamber and extending downward within the combustion-chamber, a pipe communicating at its respective ends with said water-chamber and drums, and short pipes placing the bottoms of all of said drums in communication, substantially as set forth.

6. The combination, with the combustion-chamber, the hot-water chamber, and the pipes or drums communicating with said water-chamber and extending downward within the combustion-chamber, of the short pipes connecting said drums together at both top and bottom, substantially as set forth.

7. The combination, with the combustion-chamber, hot-water chamber, the drums, and the short pipes connecting the upper ends of said drums with said water-chamber, of the flues passing through said drums, and a pipe connecting the said water-chamber with the lower ends of said drums, substantially as set forth.

8. The combination of the water-chamber 5, a plurality of drums, 23, and heads 24, for closing each end of each of said drums, all the heads for closing the drums at either end being united by short pipes 25, cast integrally therewith and communicating with the interiors of the drums through perforations formed in the heads, the tubes 30, open at both ends and passing through said drums, the heads being provided with perforations for the reception of said tubes, the pipes 29, forming communication between the upper ends of said drums and the water-chamber, and means forming communication between said chamber and the lower ends of said drums, substantially as and for the purpose set forth.

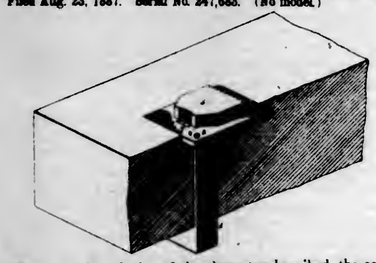
9. The combination, with the heater having the combustion-chamber, separate hot-water chambers 4 and 5, the circulating-pipes for maintaining a circulation between said water-chambers, and the water-legs or drums communicating with the upper water-chamber and extending downward within the combustion-chamber, of the radiator-pipe communicating at one end with the upper water-chamber and at the other end with the lower end of said water-leg or drum, substantially as and for the purpose set forth.

10. The combination of the heater having the hot-water chambers 4 5, the circulating-pipes, each communicating at its opposite ends with the respective chambers, pipes 13 and 19, each communicating with one of the circulating-pipes, slip-joints 13^a and 19^a for connecting the pipes 13 and 19 with pipes 13^b and 19^b, which latter in turn communicate with the boiler of a steam fire-engine, valves placed at the intersections of the pipes 13 and 19 and the circulating-pipes for the purpose set forth, radiators 31, situated in any parts of the building, and the radiator-pipe communicating at its ends with said heater and at intermediate points with said radiators, substantially as and for the purposes set forth.

11. A heater having a hot-water chamber, pipes communicating therewith and with the boiler of a steam fire-engine, radiators situated in any desired part of the building, and a pipe communicating at one end with the steam-space of said hot-water chamber—*i. e.*, above the water-line—at the other end with the bottom of the said water-chamber and at intermediate points with said radiators, said radiator-pipe being entirely separate and distinct from the pipe which forms communication between the hot-water chamber and the boiler of the fire-engine, whereby hot water is circulated through the said boiler and steam supplied to the radiators, the water of condensation being re-

turned to the hot-water chamber, substantially as and for the purposes set forth.

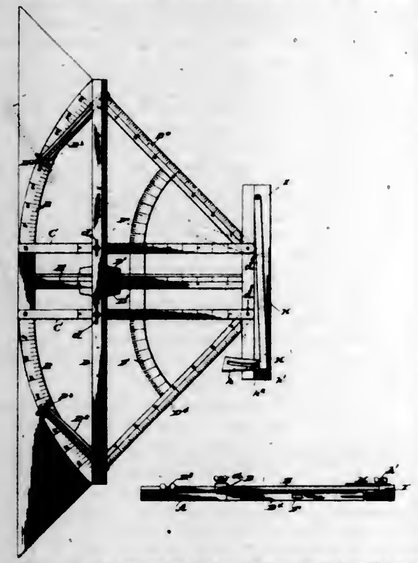
376,331. BENCH-HOOK. ANDREAS P. MILLSPAUGH, Darien, Conn. Filed Aug. 23, 1887. Serial No. 247,683. (No model.)



Claim.—1. In a device of the character described, the combination, with the hook and the racked shank thereto attached, of the hollow casing recessed as to one of its side walls, said recess being open at the top and adapted to receive the key by insertion of the latter from above, and the toothed key adapted to mesh with the racked surface of the shank and to abut against the end wall of the said recess, whereby the shank and hook are secured in position, substantially as set forth.

2. In a bench-hook, the hollow casing having the bench-plate thereto secured, said casing formed with a substantially rectangular recess in one of its sides, said recess extending to the top of the casing and provided with a lower end abutment-wall, in combination with the hook-blade, the racked shank upon which said blade is supported, and the toothed key substantially conformed to the shape of the recess and adapted both to mesh with the racked surface of the shank and to abut against the said end wall of the recess, whereby the shank is locked to the casing as against any downward movement, substantially as shown and described.

376,332. PLOTTER AND PROTRACTOR. WILLIAM J. MITCHELL, Princeton, Ky. Filed Oct. 14, 1887. Serial No. 252,339. (No model.)



Claim.—1. In a measuring device, the combination of the base-strip, the central bar, the two parallel bars on each side of the central bar, the cross-bar mounted in connection with the said parallel bars and sliding thereon, the outer pivoted bars, and the segmental arms, substantially as described.

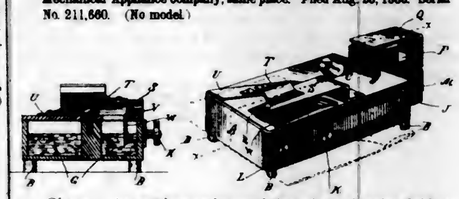
2. The combination of the base-strip, the central bar, the parallel bars on each side thereof, the sliding cross-bar having slide-blocks secured thereto and engaging with the central bar, the outer pivoted bars, the segmental arms, and the top cross-strip having a spirit-level therein, substantially as described.

3. The combination of the base-strip carrying the curved arms or segments, the central bar, the parallel bars on each side of the central bar, the cross-bar sliding on said parallel bars, the outer pivoted bars having slotted arms adapted to be clamped to the base-strip, the segmental arms, the top cross-strip carrying a spirit-level, and the arm secured to the side of the cross-strip and constructed as and for the purposes set forth, substantially as described.

4. The combination of the base-strip, the central bar, the parallel bars on each side of the central bar, the cross-bar adapted to be clamped to the parallel bars, the segmental arms, the outer pivoted arms having lower slotted arms secured thereto, which are clamped to the base-strip when the said arms are adjusted, the said parts having inch, foot, and degree scale marks thereon, the top cross-strip having a spirit-level therein and a scale, A^3, on one side thereof, and the arm H', having the depending end A provided with a scale and formed with a segmental slot through which a stud secured to the top cross-strip passes and is engaged by a clamping-nut, substantially as described.

5. The combination of the base-strip carrying segmental graduated arms, the central bar having a scale thereon, the parallel bars on each side of the central bar, having scales thereon, the sliding cross-bar having a scale thereon, and sliding blocks engaging with the central bar and adapted to be guided by the parallel bars, which pass through mortises in said cross-bar, and to be clamped thereto by suitable set-screws, the upper segmental arms secured to the central bar, the outer pivoted protracting arms having a scale thereon and formed with slots through which the upper segmental arms pass, the slotted arms on the lower end of the said protracting arms, which are adapted to be clamped to the base-strip and hold the arms in adjustment thereby, the top cross-strip carrying a spirit-level, and the arm secured to the side of the cross-strip and having the angular slotted projection at one end thereof, substantially as described.

376,333. MACHINE FOR SEALING AND STAMPING ENVELOPES. HOMER J. MOORE, Chicago, Ill., assignor to the Bryant & Stratton Mechanical Appliance Company, same place. Filed Aug. 23, 1886. Serial No. 211,660. (No model.)



Claim.—An envelope-sealer consisting of a moistening-fluid receptacle and a raised portion having an arm which carries a moistening-flap and is adapted to pass under the envelope-flap, and the spring-presser bar which passes over such envelope-flap and seals the same when moistened.

376,334. CHECK-HOOK. WILLIAM R. MOORE, Unionville, Pa. Filed Nov. 14, 1887. Serial No. 255,102. (No model.)



Claim.—1. The spring attachment D for check-hooks, consisting of a piece of wire bent to form a middle triangular loop, *c*, coils *b b*, with terminal arms, and plate *a*, substantially as and for the purpose described.

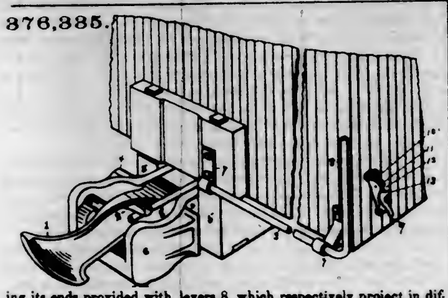
2. The combination, with the check-hook, the saddle-plate, and bolt C, of the spring D, having middle loop, *c*, spiral coils *b b*, with terminal arms, and plate *a*, secured by the said bolt C, substantially as and for the purpose described.

376,335. CAR-COUPLING. BENJAMIN R. MORGAN, Ann Arbor, Mich. Filed May 27, 1887. Serial No. 239,592. (No model.)

Claim.—1. The combination, with a draw-bar, of a pivoted coupling-hook having the lateral lug 2, the rock-shaft 3, journaled on the car and having its ends provided with levers 8, projecting in opposite directions, one engaging said lug and the other standing at the side of the car, and a device on the side of the car for engaging the latter lever to hold the coupling-hook in an elevated position, substantially as described.

2. The combination, with a draw-bar, of a pivoted coupling-hook having the lugs 2 and the rock-shaft 3 journaled on the car, and having its ends provided with levers 8, which respectively project in different directions, one engaging the lug and the other standing at the side of the car, substantially as described.

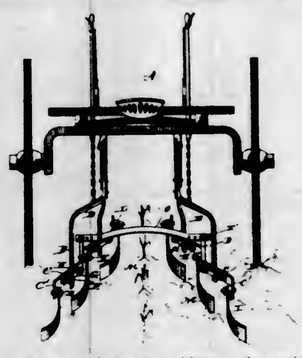
376,335.



3. In combination with the hook 1 and lug 2, the rock-shaft 3, levers 8, bracket 11, having therein notch 12, and levers 9 10, pivoted in said bracket, substantially as shown and described.

4. In combination with rock-shaft 3 and levers 8, the bracket 11, secured to the side of a car and having the notch 12 therein, and the lever 9 10, pivoted in a slot in said bracket and having thereon the projecting lug 13, substantially as shown and described.

376,336. ATTACHMENT FOR CULTIVATORS. WESLEY NAVE, South Haven, Kans. Filed Sept. 9, 1887. Serial No. 249,215. (No model.)

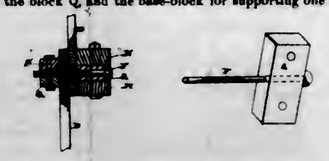


Claim.—1. In an attachment for cultivators, the combination of perforated cultivator-beams, cultivator-blades secured thereto, posts having rearwardly-projecting screw-threaded projections, an arch-bar the straight ends of which are perforated, and tightening-nuts.

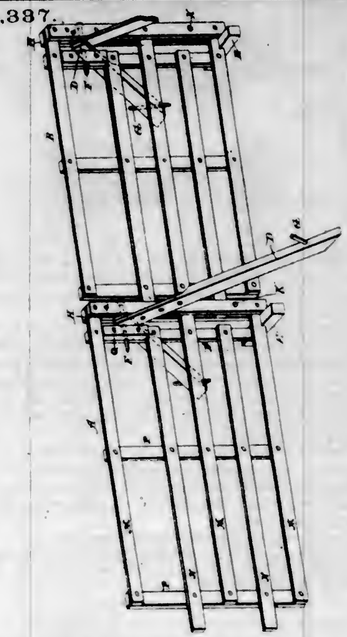
2. In an attachment for cultivators, the combination of the standards of a wheeled frame, slotted shouldered beams, screw-threaded bolts passing through said slots, perforated plates parallel with the slotted portions of said beams, tightening-nuts, posts secured to said beams and having rearwardly-projecting screw-threaded projections, an arch-bar the straight ends of which are perforated, tightening-nuts for securing said arch-bar to the posts, and curved adjustably-secured cultivator-blades.

376,337. PORTABLE FENCE. PRESLEY NEWBY, Mill Shoals, Ill. Filed June 1, 1886. Serial No. 203,861. (No model.)

Claim.—A fence-panel consisting of horizontal boards and vertical boards, the ends of the horizontal boards projecting alternately beyond the edges of the vertical boards, the vertical boards H, secured to opposite sides of one set of the projecting ends of the horizontal boards, and between which the projecting ends of the adjoining panel are placed, the pin K, passing through the boards H near their lower ends, the apertured block *a*, bolted between the vertical boards H, the apertured block Q, secured to the vertical board P', the apertured braces D, having their outer ends pinned to the ground, and the pin F, passing through the braces, the apertured block *a*, and through the aperture in the block Q, and the base-block for supporting one end of

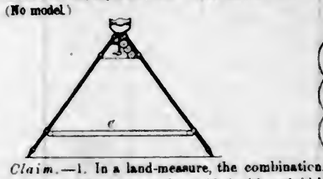


376,337.



the panel, all arranged and combined to operate in the manner substantially as shown and described.

376,338. INSTRUMENT FOR MEASURING DISTANCES. ALEXANDER OSBORN, Saybrook, Ohio. Filed June 11, 1887. Serial No. 241,090. (No model.)



Claim.—1. In a land-measure, the combination, with walking-bars and a revolving worm-rod provided with a rigid handle, of a system of registering-dials connected together and actuated by said rod, substantially as set forth.

2. In a land-measure, the combination, with walking-bars and a revolving worm-rod provided with a rigid handle, of a registering-dial actuated by said rod, substantially as set forth.

3. In a land-measure, the combination, with plate A, having perforated cross-bar D, and rod E, revolving in said bar, of walking-bars B, substantially as set forth.

4. In a land-measure, the combination, with walking-bars, plate A, provided with zero-station A, and manual worm-rod E, of graduated dial-plates actuated by said rod and registering distances from said stations, substantially as set forth.

5. In a land-measure, the combination, with walking-bars and a registering device, of worm-rod E and a friction device adapted to engage with the latter, substantially as set forth.

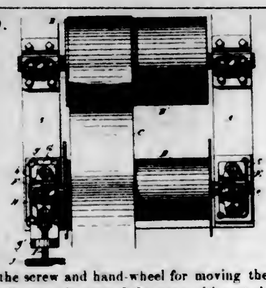
6. In a land-measure, the combination, with walking-bars and a registering device, of worm-rod E, and spring *i*, and set-screw I, substantially as set forth.

376,339. BELT SHIFTER AND TRAINER. FRANK L. PALMER, Berkeley, assignor of one-half to H. Clark & Sons, San Francisco, Cal. Filed Sept. 6, 1887. Serial No. 248,972. (No model.)

Claim.—1. A belt shifter and trainer consisting of a roller or drum bearing on the belt and mounted so as to be turned from a position at right angles to the travel of the belt to a position inclined thereto and back again, for the purpose described, in combination with a screw for effecting the movement of the roller or drum, substantially as herein described.

2. The belt shifting and training roller bearing on the belt, in combination with the pivoted box in which one end of the roller-axis is mounted, the sliding box in which the other end of said axis is

376,339.

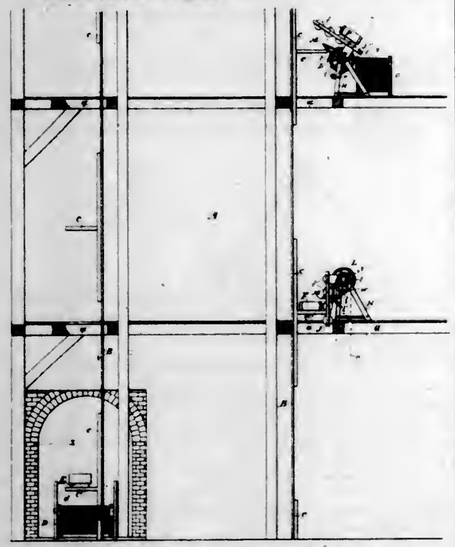


mounted, and the screw and hand-wheel for moving the sliding box, whereby the roller may be turned from a position at right angles to the direction of travel of the belt to a position inclined thereto, substantially as herein described.

3. The belt shifting and training roller bearing on the belt, in combination with the pivoted box in which one end of the roller-axis is mounted, the pivoted and sliding box in which the other end of said axis is mounted, the guide bed-plate in which the sliding box moves, having a threaded end, the screw swiveled in the box and threaded in the end of the bed-plate, and the hand-wheel on the screw, substantially as herein described.

4. The main pulleys and the belt traveling over them, in combination with the roller bearing under the belt, the pivoted box at one end of the roller and the sliding box at the other end, and the screw and hand-wheel for moving the sliding box, substantially as and for the purpose herein described.

376,340. ELEVATOR. FRANK L. PALMER, Berkeley, assignor of one-half to N. Clark & Sons, San Francisco, Cal. Filed Sept. 10, 1887. Serial No. 249,408. (No model.)



Claim.—1. In an elevating apparatus, and in combination with a traveling belt carrying shelves on which the goods are placed, an inclined series of rollers and swinging arms intervening between the rollers and the ascending belt and arranged with relation to the passing shelves thereof, so as to come up on each side and lift the goods therefrom and deposit them upon the rollers, substantially as herein described.

2. In an elevating apparatus, and in combination with a traveling belt carrying shelves upon which the goods are placed, swinging arms arranged in relation to the ascending belt and its passing shelves, so as to come up under the goods thereon and lift them therefrom, substantially as herein described.

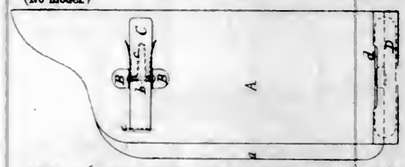
3. In an elevating apparatus, and in combination with a traveling belt carrying shelves upon which the goods are placed, swinging arms arranged in relation to the ascending belt and its passing shelves, so as to come up under the goods thereon and lift them therefrom, and antifriction rollers on said arms, upon which the goods travel in moving off the arms, substantially as herein described.

4. In an elevating apparatus, and in combination with a traveling belt carrying shelves upon which the goods are placed, swinging arms arranged in relation to the ascending belt and its passing shelves, so as to come up under the goods and lift them from the shelves, and a mechanism for turning said arms, consisting of a shaft by which they are carried, a pulley on said shaft, an endless belt secured to the pulley, and a lug secured to the belt and projecting into the path of the uprising shelf, whereby it is raised and the pulley and shaft turned to swing the arms, substantially as herein described.

5. In an elevating apparatus, and in combination with a traveling belt carrying shelves on which the goods are placed, swinging arms arranged in relation to the ascending belt and its passing shelves, so as to come up under the goods and lift them from the shelves, and a mechanism for turning said arms and returning them, consisting of a shaft by which they are carried, a pulley on said shaft, an endless belt secured to the pulley, and a lug secured to the belt and projecting into the path of the uprising shelf, and a weight secured to the arms, substantially as herein described.

6. In an elevating apparatus, and in combination with a traveling belt carrying shelves on which the goods are placed, swinging arms operated by the uprising shelves to come up under the goods and lift them therefrom, an inclined frame having a series of rollers, the upper ones of which are depressible, a series of smaller rollers mounted in the frame at right angles to the main rollers and adapted to receive the goods, and projections on the arms for depressing the main rollers to temporarily expose the smaller ones, substantially as herein described.

376,341. DEVICE FOR PLUMBING WALL-PAPER, WINDOW-SHADES, &c. JOSEPH PANYARD, Muskegon, Mich., assignor of one-half to Adolph Arntz, same place. Filed Apr. 14, 1887. Serial No. 234,810. (No model.)



Claim.—1. The herein-described device for plumbing wall-paper, window-shades, and the like, consisting of a frame for receiving the edge of the paper or like article, having a straight edge, against which the paper edge may be aligned, in combination with a clasp for fastening the frame to the paper and a leveling device on the frame at right angles to its straight edge, substantially as described.

2. The herein-described device for plumbing wall-paper and the like articles, consisting of a two-sided frame formed by doubling a piece of sheet metal, in combination with a leveling device on one of the sides at right angles to the line of junction of the sides, and a clasp for securing the frame to the paper, substantially as described.

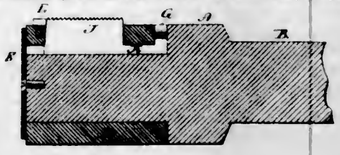
3. In a device for plumbing wall-paper and similar articles, the combination of the frame consisting of a metallic sheet bent to form the sides A and *a*, the spirit-level D, carried by side A at right angles to the line of junction of the sides, and the bent clasping-plate C, pivoted to side A, and having its bent end working through a slot in said side and arranged normally in contact with side *a*, substantially as described.

4. In a device for plumbing wall-paper, the combination of the frame having sides A and *a*, the spirit-level D, at right angles to the line of junction of the sides, and the pivoted and spring-actuated clasp C, all arranged substantially as described.

5. The combination of the frame consisting of a metallic plate bent to form the sides A and *a*, said plate being slotted at *c*, and formed also with lugs B B, the bent plate C, having lugs whereby it is pivoted to lugs B B, and held in place by a spring, *c*, and the spirit-level D, substantially as described.

376,342. SCREW-TAP. LE GRAND PARMINTER, Guilford, Conn. Filed Sept. 26, 1887. Serial No. 250,066. (No model.)

Claim.—1. The combination of the spindle C, having one or more longitudinal cam-shaped recesses, I, formed in its surface, the sleeve D, surrounding said spindle, having one or more longitudinal slots, H, therein corresponding to the said cam-shaped recesses I in the spindle, with a stop between the said spindle and sleeve, whereby a partial rotation of said spindle independent of the sleeve may be permitted.



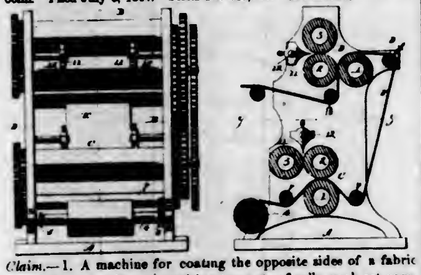
376,342.



one or more cutters set radially through the slots in the sleeve, so as to rest in the said cam-shaped recesses I on the spindle, with a block, L, on the sleeve in advance of the cutter, substantially as and for the purpose described.

2. The combination of the spindle C, constructed with longitudinal cam-shaped recess I in its surface, a sleeve, D, surrounding said spindle, said sleeve constructed with a longitudinal slot, H, corresponding to said cam-shaped recess I in the spindle, the sleeve also constructed with a circumferential recess, F, at its inner end, and the spindle portion constructed with a corresponding projection, G, less in extent than the length of the said recess F, whereby a partial rotation of the spindle independent of the sleeve is permitted, the said projection G being outside the cam-shaped recess in the spindle and its under surface of corresponding cam shape, the cutter J, arranged in said slot in the sleeve so as to rest in the cam-shaped recess I in the spindle, with an extension therefrom beneath said projection G, and a block, L, on said sleeve in advance of the cutter, substantially as described.

376,343. MACHINE FOR COATING FABRIC WITH INDIA-RUBBER UPON ONE OR BOTH SIDES. JOHN H. PEARCE, New Haven, Conn. Filed July 5, 1887. Serial No. 243,717. (No model.)



Claim.—1. A machine for coating the opposite sides of a fabric at one and the same time, comprising two sets of rolls, each set comprising a fabric-roll, a presser-roll, and a feed-roll, said sets being in juxtaposition, the fabric-rolls relatively arranged so as to support the fabric on opposite sides, and one of the presser-rolls arranged to have a greater surface speed than its fabric-roll, substantially as and for the purposes specified.

2. A machine for coating a fabric on opposite sides at one and the same operation, comprising two sets of rolls, each set comprising a fabric-roll, a presser-roll, and a feed-roll, the fabric and presser rolls of the first set having their axes in a vertical plane and those of the second set having their axes in a horizontal plane, substantially as and for the purposes specified.

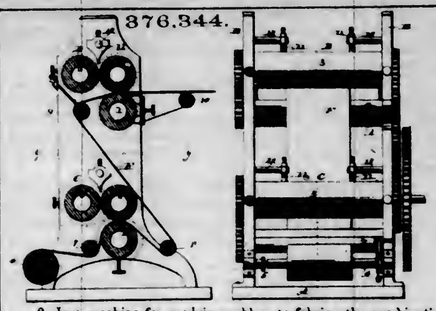
3. A machine for coating a fabric on opposite sides at one and the same operation, comprising two sets of rolls, each set comprising three rolls—namely, a fabric-roll, a presser-roll, and a feed-roll—the fabric and presser roll of the first set and the presser and feed roll of the second set being all substantially in vertical alignment, and the axes of the fabric and presser rolls of each set being in the same plane and at right angles to the same rolls of the other set, substantially as and for the purposes specified.

4. A machine for coating the opposite sides of a fabric with rubber, comprising a housing, two sets of rolls, each set composed of a fabric-roll, a presser-roll, and a feed-roll arranged in a triangular group, said sets arranged in juxtaposition, the fabric-rolls relatively arranged to support the fabric on opposite sides, one of the presser-rolls arranged to have a greater surface speed than its fabric-roll, and an adjustable tension and guide roller interposed between the two sets of rolls, substantially as and for the purposes specified.

376,344. APPARATUS FOR COATING FABRICS WITH RUBBER. JOHN H. PEARCE, New Haven, Conn. Filed July 5, 1887. Serial No. 243,719. (No model.)

Claim.—1. In a machine for applying two coats of rubber to one and the same side of a fabric, the combination of two sets of rolls, each set composed of a fabric-roll, a presser-roll, and a feed-roll, said sets relatively arranged to apply two coats to the same side of the fabric in succession and so that the fabric passes immediately from one set to the other, substantially as and for the purposes specified.

376,344.



2. In a machine for applying rubber to fabrics, the combination of a feed-roll and a presser-roll arranged in the same horizontal plane, a fabric-roll arranged below and in the same vertical plane as the presser-roll, and two guide-rollers arranged below the axis of the fabric-roll, substantially as and for the purpose specified.

3. In a machine for applying two coats of rubber to one and the same side of a fabric, the combination, with two sets of rolls, each set composed of a fabric-roll, a presser-roll, and a feed-roll, of an adjustable guide-roller interposed between the two sets, substantially as and for the purposes specified.

376,345. MANUFACTURE OF TANNIN EXTRACTS. HENRY M. RAU, Hanover, Pa. Filed Mar. 14, 1887. Serial No. 230,854. (No specimens.)

Claim.—1. In producing refined and decolorized tannic extracts, the process of placing the objectionable coloring-matters or ingredients other than the tannin in condition for removal from the liquor containing all, which consists in treating the liquor with hydrosulphurous acid, (H_2SO_2,) substantially as described.

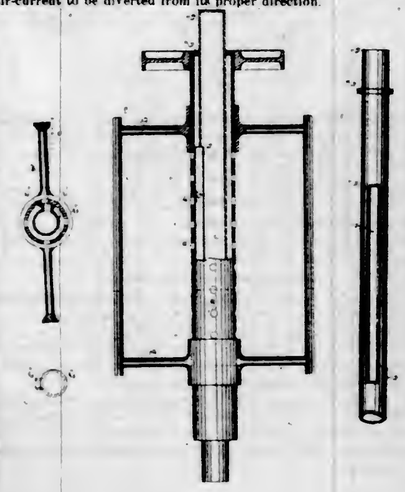
2. In the manufacture of refined and decolorized tannic extracts, the process of removing objectionable ingredients from the liquor, which consists in treating the liquor with hydrosulphurous acid (H_2SO_2) and then separating the objectionable ingredients from the tannin by filtration or other means, substantially as set forth.

3. The process of producing refined and decolorized tannic extracts, which consists in treating the liquor containing the same with hydrosulphurous acid, (H_2SO_2,) then separating coloring-matters, objectionable ingredients, and impurities from the tannin by filtration or other means, and finally concentrating the liquor containing the refined and decolorized tannin, substantially as described.

4. The refined, decolorized, and concentrated tannic extract containing hydrosulphurous acid, as described.

376,346. MACHINE FOR OPENING AND CLEANING COTTON, &c. DAVID H. RICE, Brookline, assignor to the Kitson Machine Company, Lowell, Mass. Filed Sept. 6, 1886. Serial No. 212,792. (No model.)

Brief.—The object of the invention is to improve the construction of beaters having hollow perforated shafts provided with air-passages, and especially to prevent in such constructions the liability of the air-current to be diverted from its proper direction.

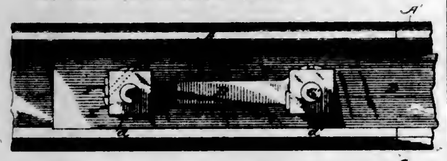


Claim.—1. The combination of the hollow perforated beater-shaft and the air tube or conduit C, located therein and provided with the slot *c*, and the elastic curbing *c'* around the margin of said slot, substantially as described.

2. The combination of the hollow perforated beater-shaft and the air tube or conduit C, located therein and provided with the slot *c*, made narrower than the internal diameter of the conduit, and the curbing *c'* around the margin of said slot, projecting outwardly toward the internal surface of the hollow beater-shaft, substantially as described.

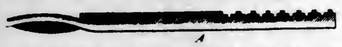
3. The combination of the hollow perforated beater-shaft and the air tube or conduit C, located therein and provided with the slot *c*, the curbing *c'* around the margin thereof, projecting outwardly toward the inner surface of the beater-shaft, and the annular collars c^3 c^3 within the beater-shaft and near its ends, substantially as described.

376,347. NUT-LOCK. JOHN A. SAUNDERS, Warrenton, Va. Filed May 5, 1887. Serial No. 237,250. (No model.)



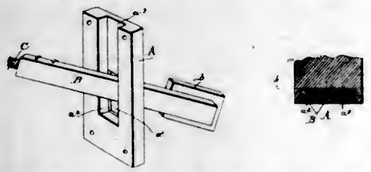
Claim.—The herein-described device for locking nuts on bolts, consisting of a flat bar having serrated, notched, or toothed washers formed on its ends, said washers having bolt-openings, in combination with nuts provided with inclined passages or grooves on their under faces at the corners thereof adapted to be screwed on the bolts until they rest on the serrated washers, and keys or wedges adapted to be inserted in the grooves of the nuts and have one end engaging a notch on the washers and the other end bent in against the nut, for the purpose set forth, substantially as described.

376,348. MATRIX FOR STEREOTYPING. FRIEDRICH SCHREINER and ARNOLD SCHOTT, Philadelphia, Pa. Filed Sept. 9, 1886. Serial No. 213,064. (No model.)



Claim.—As an improved article of manufacture and commerce, a semi-dry plastic and pliable matrix for stereotyping, consisting of a sheet of fabric, one face of which is coated with a semi-dry plastic mass composed of glue, sirup, glycerine, and a powder, which mixture also impregnates part of the thickness of the fabric, substantially as shown and described.

376,349. SASH-CORD FASTENER. OTTO C. SEITER, New Ulm, Minn. Filed Oct. 3, 1887. Serial No. 251,347. (No model.)



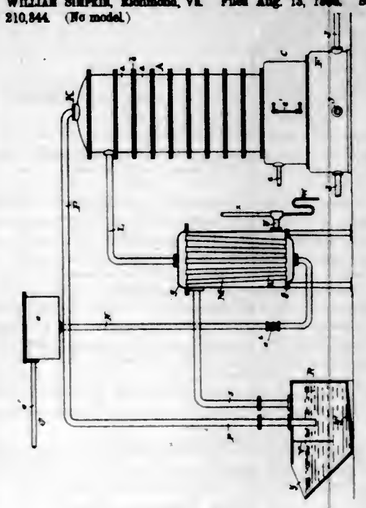
Claim.—The combination, with the sash, of the plate A, set in the edge of the same and flush with the surface thereof, the said plate having the rectangular opening *a'* in its lower portion, and the flanges a^3 extending from said opening, and thereby forming the groove a^2 in the upper portion of the plate, the strip or bar B, lying in said groove and having the enlargement *b* at its lower end fitting snugly in the opening *a'* and against the flanges a^3, and the rope having its lower end clamped to the rear side of the strip B, at the upper end of the same, substantially as specified.

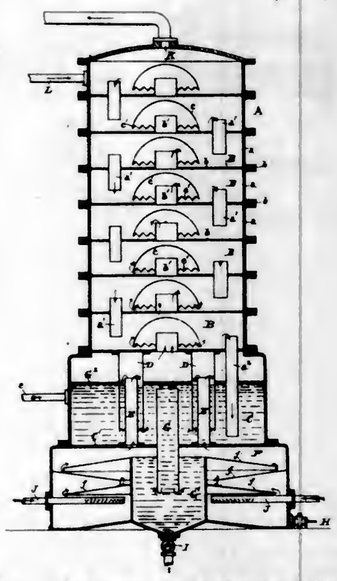
376,350. WALL-COVERING. JOHN A. SHEPHARD, Cleveland, Ohio. Filed Jan. 13, 1887. Serial No. 224,279. (No specimens.)

Claim.—1. A pliable wall-covering consisting of a flat base-sheet of woven fabric and a wrinkled surface-sheet of woven fabric, as cheese-cloth, the two cemented together and both charged or filled with sizing material, substantially as described.

2. In a wall-covering, a base-sheet combined with a wrinkled surface-sheet of woven material, as cheese-cloth, the two cemented together, and the surface-sheet filled with a tough elastic material, substantially as set forth, whereby it is rendered pliable and prevented from cracking.

376,351. APPARATUS FOR MAKING AMMONIUM SULPHATE. WILLIAM SIMPKIN, Richmond, Va. Filed Aug. 13, 1886. Serial No. 210,844. (No model.)





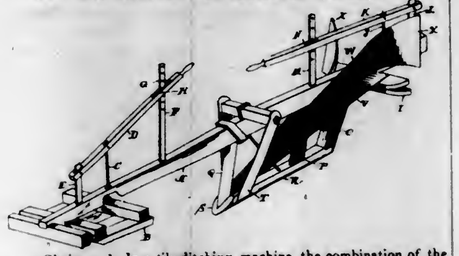
Claim.—1. In an apparatus for the production of sulphate of ammonia, the combination of the column-still, the decomposing-chamber C below said column, the suspended pipes D, having their lower ends near the bottom plate of the decomposing-chamber, the vertical pipes E, projecting up into the said suspended pipes and having their lower ends open through the said bottom plate, for the purpose set forth, the steam-chamber F, inlets and outlets J H, the settling-receptacle G', the overflow-pipe G, and the inclined sheds, all constructed and adapted to operate substantially as described.

2. In an apparatus for the production of sulphate of ammonia, the combination, with a decomposing-chamber, C, of a steam-chamber, F, below it, a settling-receptacle, G', in the center of the steam-chamber, a series of interlapping sheds or downwardly-inclining plates attached both to the walls of the steam-chamber and the central receptacle, for the purpose set forth, the surface-condenser communicating with the still, the reservoir O, and the saturator, and the pipe forming a direct communication between the said still and saturator, substantially as specified.

3. In an apparatus for the production of sulphate of ammonia, the combination of the column-still, the surface-condenser, a saturator

having an open mouth, *y*, an inclined bottom, *y'*, and a diaphragm, *v*, a pipe, L, for crude liquor connecting the condenser with the column, a pipe, P, connecting the column with the saturator, and a pipe, S, connecting the condenser and saturator, as and for the purpose set forth.

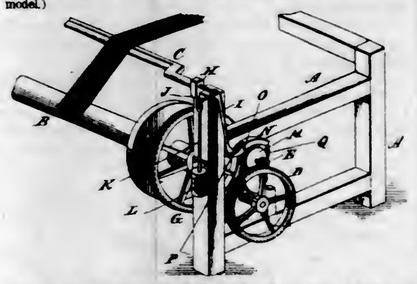
376,352. TILE-DITCHING MACHINE. WILLIAM SKINNER, Wyman, Iowa. Filed June 9, 1887. Serial No. 240,786. (No model.)



Claim.—1. In a tile-ditching machine, the combination of the beam A, the forward shoe, B, and its lever D, the rear shoe, I, and its lever K, the shoe R, the central cutter-bar, Q, the side cutter-bars, T, the inclined conveyers V, and mold-board W, substantially as described.

2. In a tile-ditching machine, the horizontal shoe R, having the cutter-bars Q and T, and the elevator V, having the shoes B and I, vertically adjustable by means of levers forwardly and rearwardly for regulating the depth of the ditch as the machine moves along, substantially as herein set forth.

376,353. LET-OFF MECHANISM FOR LOOMS. JOHN P. THOMPSON, Fall River, Mass. Filed Apr. 29, 1887. Serial No. 236,542. (No model.)



Claim.—The combination of the whip-roll, a detent fastened at the outer end of the same, a pivoted brake-shoe having a finger projecting under the lower end of the detent, a brake-disk in frictional contact with the brake, the yarn-beam, gearing for connecting the disk with the beam, a movable arm projecting under the yarn-beam and bearing against the yarn wound upon the same, and a spring connecting the said arm with the free end of the brake, substantially as and for the purpose shown and set forth.

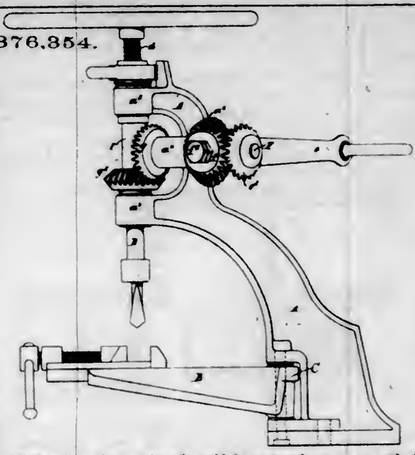
376,354. DRILLING-MACHINE. THOMAS H. WARD, Tipton, County of Stafford, England. Filed Aug. 4, 1886. Serial No. 209,936. (No model.) Patented in England Sept. 18, 1885, No. 11,061.

Claim.—1. The combination of the frame of a drilling-machine, having a bracket carrying a fixed or dead wheel, with the drill-spindle, a driving-shaft geared to the drill-spindle, and a handle and gearing connecting the shaft and the fixed or dead wheel, substantially as described.

2. The combination of the frame of a drilling-machine, having a bracket carrying a dead-wheel, with a drill-spindle, a driving-shaft mounted in said bracket and geared at one end to the drill-spindle and carrying at the other end a gear wheel or pinion fixed thereto, and a handle loose on the shaft and carrying gearing connecting the dead-wheel and the gear-wheel of the driving-shaft, substantially as set forth.

3. The combination of the frame of a drilling-machine, having a bracket carrying a dead-wheel, with a drill-spindle, a driving-shaft geared to the spindle and mounted in the said bracket so as to be adjustable longitudinally therein, gearing by which the said shaft is geared to the dead-wheel on the bracket, and a handle loose on the said shaft, but adapted to be fixed thereto when the gear is disengaged from the dead-wheel, substantially as set forth.

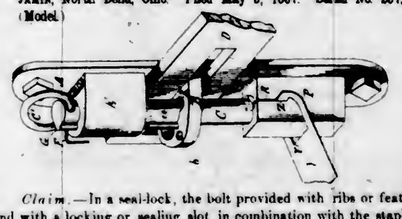
4. The combination of the frame of a drilling-machine and a threaded drill-spindle with a loose nut on the threaded spindle, having



a frictional bearing against the said frame to give an automatic feed motion in proportion to the hardness of the material operated on, substantially as set forth.

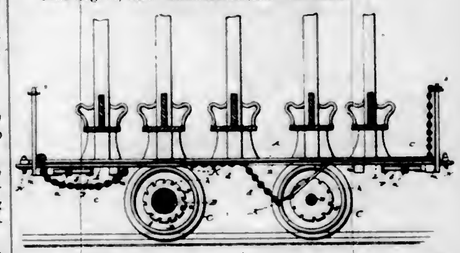
5. The combination of the frame of a drilling-machine and a threaded drill-spindle with a loose nut on the threaded spindle, having a frictional bearing against the said frame to give an automatic feed motion in proportion to the hardness of the material operated on, and a friction-sleeve to bear on the nut, all substantially as specified.

376,355. SEAL-LOCK. FRANCIS M. WARE and GEORGE W. BENJAMIN, North Bend, Ohio. Filed May 3, 1887. Serial No. 237,019. (Model.)



Claim.—In a seal-lock, the bolt provided with ribs or feathers and with a locking or sealing slot, in combination with the staple B, the housing E, and the retaining-spring F, and slot in the bolt for engaging with said spring, substantially as herein set forth.

376,356. CAR-STARTER. HENRY P. WAYMAN, Trenton, N. J. Filed Aug. 17, 1887. Serial No. 247,186. (No model.)



Claim.—1. In a car-starter, the circumferentially-notched ring-lever encircling the axial center piece, having recesses with inclined bottoms and rollers therein, in combination with a notch-engaging link connected to a slide to which the draft is attached, substantially as specified.

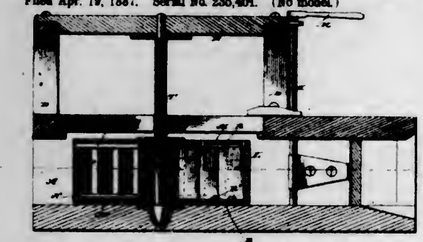
2. In a car-starter, the combination, with the axle having the circular center piece, circumferentially-notched ring-lever, and clutch device, of the end spring or springs connected to the car, the link, and its slide connected to the draft, substantially as specified.

3. In a car-starter, the combination, with the axles, their circumferentially-notched ring-levers, and clutch devices of the end springs attached to the car, the links connected at one end to the draft-slides and their opposite ends to the shipping-chain, and the reciprocating shipping rod and chains, substantially as specified.

4. In a car-starter, the transverse lapping elliptic springs attached to the end portion of the car under its bottom, in combination with the draft-slide having a catch engaging said springs at the lap, substantially as specified.

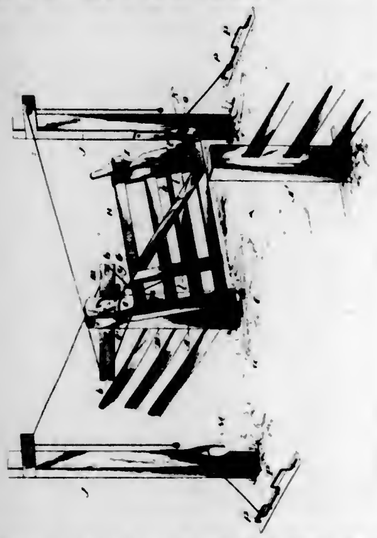
5. In a car-starter, the combination, with transverse springs attached to the car end under its bottom, of a ring-lever connected by clutch devices to the axle and a link and slide connected to the draft, substantially as specified.

376,357. **WATER-WHEEL.** JAMES N. WEEKS, Warren, N. Y. Filed Apr. 19, 1887. Serial No. 235,401. (No model.)



Claim.—The improved water-wheel herein described, comprising the case having inlet and outlet openings, the frames D, mounted on the case, the beam E, secured upon said frames, the wheel arranged in the case and having its shaft extended up to and journaled in the beam E, the doors B C, hinged to the case below the said beam, the pivot-rod I, mounted on the side of one of the frames D and extending into the case, a lever, K, on the upper end of said rod, and the gate H, mounted on the lower portion thereof and operating in the outlet-opening of the case, substantially as specified.

376,358. **SWINGING GATE.** OWEN WEST, Lynchburg, Ohio. Filed Sept. 15, 1887. Serial No. 249,823. (No model.)



Claim.—1. In a gate, the combination of a supporting-post having a guide-rod, E, for the upper end of the gate-post, formed with curved lateral extensions *e'*, with which the head of the gate-post engages, and a central outwardly-projecting portion, *e*, forming a loop for the reception of one end of a link, *g*, the supporting-brace *f*, secured to the post and guide-rod at its ends, the stirrup G, attached to the gate and to the opposite end of the link *g*, and an outwardly-projecting perforated plate C, upon which the lower end of the gate-post pivotally rests, substantially as described.

2. In combination with the gate constructed as shown and as described, the posts J J, formed with lower recesses, O, and apertures N, the spring-plates M, having lower bent ends mounted on the posts J adjacent to the recesses O and apertures N, and cords passing through apertures N, attached to said spring-plates M at one end and to crank-rods P at the opposite end, and the bails or loops *p*, substantially as specified.

3. In combination with the gate constructed and hung as shown and described, whereby the outer end of the gate is elevated when opened, a pivoted bar, I, having a spring for throwing the lower end of the same outwardly from the gate, cords *h h*, which pass over guide-pulleys *l*, *m*, and *b*, said cords depending from pulleys attached to posts on each side of the gate, and spring-plates M, for holding the gate open, the parts being organized substantially as shown, and for the purpose set forth.

376,359. **SASH-FASTENER.** GEORGE H. AYLWORTH, Brighton Ill. Filed Nov. 12, 1887. Serial No. 254,986. (No model.)



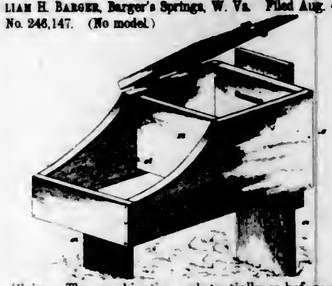
Claim.—1. A sash-lock having a curved, circularly-movable, spring-pressed bolt adapted to be thrown out of the line of movement at one end into engagement with a stop for holding it in retracted and inoperative position, substantially as shown and described.

2. In a sash-lock of the character described, the combination of a base-plate or case, a curved, circularly-movable, spring-pressed bolt, a link-connection between the base-plate and the inner end of the bolt, and a stop with which the outer end of the bolt is adapted to engage to hold the same in retracted and inoperative position, substantially as shown and described.

3. In a sash-lock, the combination of a movable locking-bolt, an extensible push-bar connected therewith, and a spring for extending said bar, substantially as shown and described.

4. In a sash-lock of the character described, the combination of a semicircular flanged base-plate or open case, A, of a curved, circularly-movable bolt, B, a link pivoted at one end to the case and at the other jointed to the inner end of the bolt, an extensible push-bar, D, between the case and bolt, a spring, d^3, to extend said push-bar, and a stop, *c'*, to limit the throw of the bolt, substantially as shown and described.

376,360. **DEVICE FOR FEEDING SALT TO LIVE STOCK.** WILLIAM H. BARGER, Barger's Springs, W. Va. Filed Aug. 4, 1887. Serial No. 246,147. (No model.)



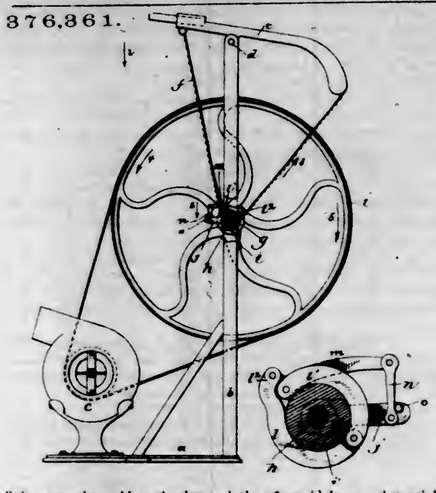
Claim.—The combination, substantially as before set forth, of a trough, a transverse partition pivoted at its upper end within the trough at a point intermediate its ends, a movable cover extending from one end of the trough just past the partition, pins projecting from the inner face of the partition, and stop-pins projecting inwardly from the sides of the trough to limit the outward swing of the partition.

376,361. **INTERMITTENT GRIP FOR FAN-BLOWERS OR OTHER MACHINES.** JACOB F. BENDER, Columbia, assignor of one-half to Potts & Weber, Lancaster, Pa. Filed Aug. 10, 1887. Serial No. 246,602. (No model.)

Claim.—1. A shaft, a wheel thereon, and its member engaged by a friction device, combined with such friction device, the lever *m*, to which said device is secured, a projection fast to the shaft, a link connecting the said lever and projection, and a stop to said link, substantially as described.

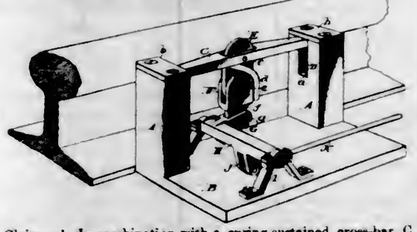
2. A shaft or rod and a wheel loosely secured thereon and provided with a member engaged by a friction device, combined with such friction device, composed of pivotally-connected fingers, a lever to which they are secured at different points, a rotatable sleeve loose on said shaft or rod, a projection from said sleeve made fast thereto, and a link connecting said projection and the aforesaid lever, substantially as described.

376,361.



3. The combination, substantially as set forth, of the stationary shaft or journal, a rotary sleeve thereon having a projection made fast to it, an arm rotatable upon the sleeve, fingers pivoted to each other and to said arm, and a lever to which said fingers are pivoted at different points, a link connecting said lever with the projection from the sleeve, and a wheel to be rotated intermittently engaged to this end by the said fingers, substantially as described.

376,362. **RAILWAY-SIGNAL.** ALBERT R. BLACKBURN, Springfield, Ohio, assignor of one-half to John E. Ehrenhart, same place. Filed Aug. 10, 1887. Serial No. 246,562. (No model.)



Claim.—1. In combination with a spring-sustained cross-bar, C, a trip, E, pivoted therein, a rock-shaft, H, connected with a signal, and a link, F, pivotally connected with the trip and with the rock-shaft, all substantially as shown, whereby when the trip is struck by a wheel moving in one direction it will merely rock without operating the signal, but when struck by a wheel moving in the reverse direction it will serve to operate the signal.

2. In a railway signal apparatus, the combination, with a spring-supported cross-bar, C, of a rock-shaft, H, a rod, K, connecting said rock-shaft with a signal, and a jointed trip, E F, the latter being pivotally connected, respectively, with the cross-bar and the rock-shaft and pivotally connected with each other.

3. In a railway signal apparatus, the combination, with a spring-sustained cross-bar, of a rock-shaft, a rod connecting said rock-shaft with a signal, and a trip pivoted in the cross-bar and connected with the rock-shaft by means of a knuckle-joint, whereby the trip is permitted to actuate the signal only by a train moving in one direction.

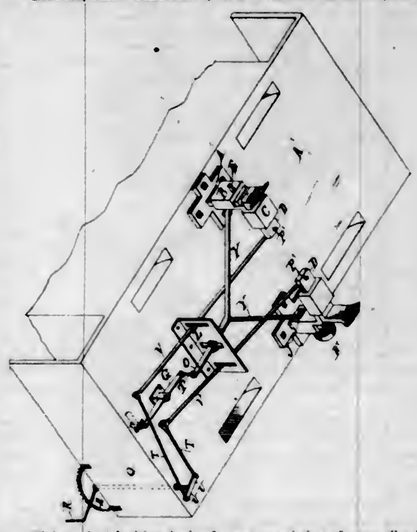
4. In combination with base-block B, upright hollow posts A, provided each with a slot, *a*, cross-bar C, projecting into or through the slots, springs D, beneath the ends of the cross-bar, a trip, as E, pivoted to the cross-bar, a rock-shaft journaled in bearings upon the base-plate, and a block, as F, connecting the pivoted trip with the rock-shaft, all substantially as shown.

5. In combination with base-block B, provided with upright posts A, springs D, mounted in said posts, a cross-bar, C, sustained by said springs, a rock-shaft, H, journaled in bearings upon the base-block and provided with radial arms G and J, a rod, K, connecting said rock-shaft with a signal, a trip, E, pivoted in the cross-bar, and a link or block, F, connected at opposite ends with the trip E and arm G, all substantially as shown.

6. In combination with base-block B, hollow posts A, cross-bar C, and springs D, arranged substantially as shown, a rock-shaft, H, journaled in bearings upon the base-block and connected with a signal, a trip, E, provided on the rear edge with a flange or rib, *d*, and a block, F, connecting the rock-shaft with the trip and arranged to bear on its rear face against the flange *d*.

7. In combination with base-block B and hollow posts A, cross-bar C, and springs D, a rock-shaft, H, provided with an arm, G, and connected with a signal, a trip, E, pivoted to the cross-bar by means of a pin or bolt, *e*, and a block, F, pivoted to the trip and arm G, respectively, by means of pins or bolts *e g*, the pivots *e*, *e*, and *g* being approximately in the same vertical plane.

376,363. **TRACK-BRAKE FOR CARS.** JOHN S. BOKENKOTTER, Norwood, Ohio. Filed June 9, 1887. Serial No. 240,754. (No model.)

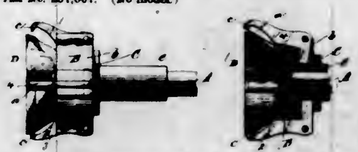


Claim.—1. A locking device for cars, consisting of retractile plates brought into and out of engagement with the sides of the track-rails, said plates being operated by a dual system of compound leverage, mounted as described, and terminating forwardly with suitable engagement-points in reach of the operator, substantially as herein set forth.

2. A brake for railway-cars, consisting of two pendent arms on the lower side of the car-body, one on each side, each carrying a sleeve provided with an inwardly-projecting right-angled or horizontal sleeve at its lower end, said horizontal sleeve having therein a horizontal sliding bar with its outer end depressed or bent downward and provided with a shoe which comes in contact with the inner side of the railway-rail, said sleeve and brake-bar being manipulated by suitable levers in reach of the brakeman, substantially as herein set forth.

3. In a brake for railway-cars, the pendent arms beneath the cars, each provided with sleeves sliding thereon, the lower ends of said sleeves having horizontal sleeves carrying the brake-bars, and a pulley or friction wheel on the outside of each vertical sleeve, which rests on the track when the sleeve is depressed, substantially as herein set forth.

376,364. **SHUTTLE-OPERATING MECHANISM FOR SEWING MACHINES.** JAMES BOLTON, New York, N. Y. Filed Dec. 6, 1887. Serial No. 257,067. (No model.)



Claim.—1. The combination, with a rotary sewing-machine shuttle having a series of holes or pockets at its periphery, of a rotary shuttle-carrier having a series of clamping-levers to engage and rotate the shuttle, said levers having pointed fingers to enter the holes or pockets in the shuttle, and a stationary grooved cam for operating said levers positively in both directions.

2. The combination, with a rotary sewing-machine shuttle-carrier provided with a series of clamping-levers, and having also a guard

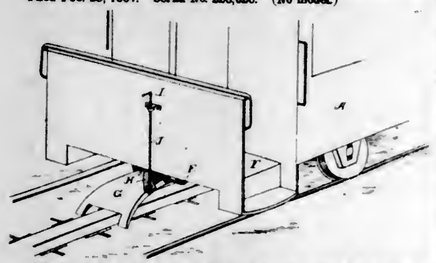
or stripper for one of the said levers, of a stationary cam for operating the said levers.

3. The combination, with the rotary shaft A, the shuttle D, having a series of recesses or pockets at its periphery, and the shuttle-carrying disk B, having the annular rearwardly-extending flange *b*, of the bell-crank shuttle-carrying levers pivoted to the said flange, and the stationary grooved cam by which the said levers are operated.

4. The combination, with the rotary shaft A and its disk B, of the pivoted shuttle-carrying levers 1, 2, 3, and 4, the guard *a* on the said disk surrounding the said lever 4, and the stationary grooved cam by which the said levers are operated.

5. The combination, with a rotary sewing-machine shuttle having a series of holes or pockets at its periphery and near its front or outer edge, of a rotary shuttle-carrier having a series of levers to engage and rotate the said shuttle, said levers having pointed fingers to enter the holes or pockets in the shuttle, and a stationary grooved cam for operating the said levers positively in both directions.

376,365. **SAFETY-BRAKE.** HERMAN BROCKMAN, Cincinnati, Ohio. Filed Feb. 23, 1887. Serial No. 228,620. (No model.)



Claim.—1. In a safety-brake, a bar pivoted centrally and having one end downturned and bifurcated, and operated by a vertical bar so as to engage with the ground and stop the car, substantially as herein set forth.

2. In a safety-brake, the bar pivoted centrally, having at one end a weight and spring for depressing the same, while the other end is bifurcated and elevated in its normal position, and operated by means of the vertical bar so as to engage with the ground, substantially as herein set forth.

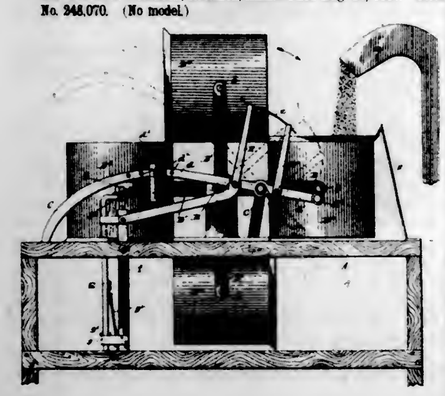
3. In a safety-brake, the bar B, pivoted centrally, having a weight, M, at one end, while the other end is bifurcated and downturned, and provided with a spring-bar, H, to which the operating-bar J is attached, with the said bar J, substantially as herein set forth.

4. The combination of the bar B, weight M, spring-bar N, bifurcated part G, and operating-bar J, substantially as herein set forth.

376,366. **PROCESS OF OBTAINING POTASSIUM CARBONATE.** FERDINAND BERNIER, Leopoldhalle, Prussia, Germany. Filed Aug. 10, 1885. Serial No. 173,984. (No specimens.)

Claim.—The process of making potassium carbonate, which consists in dissolving potassium-chloride and ammonia-magnesium carbonate in water, removing the precipitate which forms, and separating the potassium carbonate by treating said precipitate with water, in which the other carbonates are less soluble, all substantially as described.

376,367. **ROTARY GRAIN-MEASURE.** JAMES E. BURENBARRICK and GEORGE F. MITCHELL, Robinson, Kans. Filed Aug. 27, 1887. Serial No. 248,070. (No model.)



Claim.—1. The series of measures or vessels having their arms connected to a common shaft and provided with studs or projections, and the lever having a roller secured at one end, against which bears one of said studs or projections of each measure or vessel, substantially as shown and described.

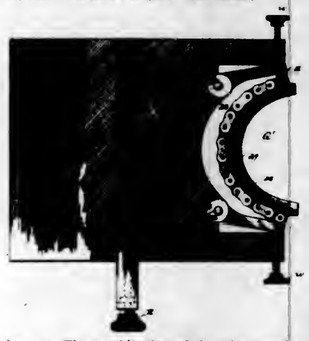
2. The series of measures or vessels connected to a common shaft and having studs or projections, the lever carrying a roller at one end, and the dog having a bent arm and operated through the agency of said lever, substantially as shown and described.

3. The combination, with the measures or vessels having the studs or projections, and the carrying-arms connected to the common shaft, of the lever, the roller secured at one end thereof, the weight, the jointed lever connected to said former lever, and the dog, substantially as shown and described.

4. The combination, with the series of measures or vessels, of the lever having one end in contact with a stud or projection of one of said measures or vessels, the jointed lever, the dog having a bent arm, and the spring connected to said dog, substantially as shown and described.

5. The combination, with the series of measures or vessels, of the lever having one end in contact with one of said measures or vessels, the jointed lever, the dog, and the cam supported by arms connected to said lever, substantially as shown and described.

376,368. **LASTING-MACHINE.** FRANK CHASE, Boston, Mass., assignor to the Chase Lasting Machine Company, same place. Filed Nov. 10, 1887. Serial No. 254,826. (No model.)



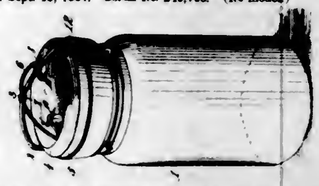
Claim.—1. The combination of the wiper-carriage, the wipers, the freely-oscillatory clasp-supports mounted on said carriage, but disconnected from and movable independently of said wipers, and the flexible or pliable clasp G', attached to said supports by its ends only, substantially as and for the purposes hereinbefore set forth.

2. The combination of the wiper-carriage, the flexible or pliable clasp G', the oscillatory clasp-supports, and the slides to which said supports are pivoted, said oscillatory clasp-supports and slides being disconnected from and movable independently of the said wipers, substantially as and for the purposes hereinbefore set forth.

3. The combination of the wiper-carriage, the flexible or pliable clasp G', the oscillatory clasp-supports, the slides to which said supports are pivoted, and the slide-operating adjusting mechanism, said oscillatory clasp-supports, slides, and slide operating and adjusting mechanism being disconnected from and movable independently of said wipers, substantially as and for the purposes hereinbefore set forth.

4. The pivoted clasp-supporting arms I and the flexible or pliable clasp G', in combination with back-stops for preventing under spreading apart of said arms, substantially as hereinbefore set forth.

376,369. **JAR-FASTENING.** WILLIAM H. CLARKE, Cleveland, Ohio. Filed Sept. 15, 1887. Serial No. 249,768. (No model.)

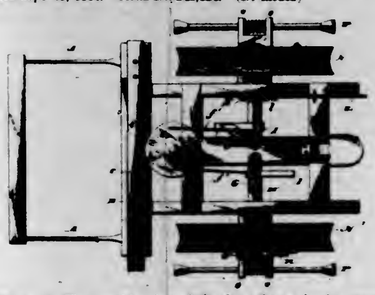


Claim.—1. The combination, with a jar having a wire bail, 2, provided with a bend, 3, of a cover having a fixed elastic metallic bridge, 6, provided with a bend, 7, to interlock with the bail, and knees 8, to distribute the pressure of the bail, substantially as described.

2. The combination, with a jar having a wire bail, 2, provided with a bend, 3, of a glass cover having holes 10, and an elastic wire

bridge, 6, having a bend, 7, knees 8, and pins 9, whereby said bridge is attached to the cover and adapted to engage the bail, substantially as described.

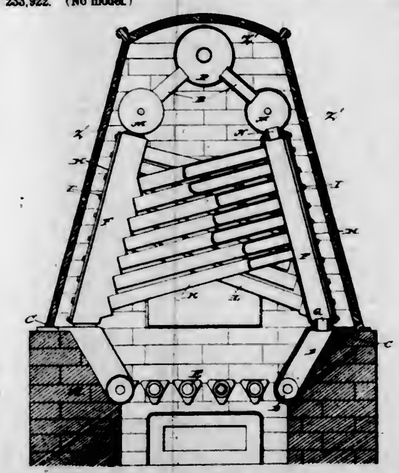
376,370. **CORN-PLANTER.** JAMES W. CRAIG, Coyville, Kans. Filed Sept. 15, 1887. Serial No. 249,831. (No model.)



Claim.—1. The combination of the front frame having runners, seed-boxes, and a reciprocating slide, the rear frame provided with a central beam coupled to the front frame, a disk recessed on its under side and secured by a journal-stud to said central beam to overhang the coupling, a rod connecting this disk with the seed-slide, an axle, arms I, rigidly secured to the axle, but adjustable longitudinally thereof, and arms G, connected at one end by pivots to the central beam and at the other end by connecting-rods to opposite sides of the disk, substantially as described.

2. The combination of the front frame having seed-boxes and a slide, the rear frame having a central beam connected to the front frame, a recessed disk, rods e, pivoted arms G, connecting-rods *f'*, the axle, and adjustable arms I, all arranged as described, a ratchet-wheel and markers fixed to the axle, a sliding lever pivoted upon the axle and provided with a fixed pawl to engage said ratchet, a fixed catch to hold the lever out of operative position, a second ratchet-wheel fixed to rotate with the axle, the supporting-wheels, and the spring-pawl secured to one of said wheels to engage said second ratchet-wheel.

376,371. **SECTIONAL STEAM-BOILER.** ALBERT M. DIMMICK and ELMER Z. SMITH, Wilkes-Barré, Pa. Filed Apr. 6, 1887. Serial No. 233,922. (No model.)



Claim.—1. In a sectional steam-boiler, the combination of the mud-drums forming the sides of the combustion-chamber, the series of headers attached to the upper sides of the mud-drums and communicating therewith, the said headers being inclined toward each other, the oppositely-inclined series of tubes K and L, connecting the headers together, the water-drums arranged above the headers and communicating therewith, and the steam-drum connected to and communicating with the water-drums, substantially as described.

2. In a sectional steam-boiler, the combination of the mud-drums B, forming the sides of the combustion-chamber, the series of headers F, attached to the drums and communicating therewith, and the oppositely-inclined series of tubes K L, connecting the headers, said tubes being arranged at different heights, as set forth.

3. In a sectional steam-boiler, the combination of the side walls of the setting, the oppositely-inclined mud-drums B, forming the sides of the combustion-chamber and having the laterally-projecting plates C at their upper sides bearing on the side walls of the setting, and the case Z', having its lower edges bearing on the plates C, substantially as described.

376,372. **MANUFACTURE OF WOOLEN BOOTS.** WALLACE H. DODGE and ROBERT D. O. SMITH, Mishawaka, Ind. Filed Oct. 17, 1887. Serial No. 252,531. (No model.)



Claim.—1. The herein-described improvement in the mode of making wool boots, which consists in forming the boot-blank of an exaggerated size by braiding two or more independent single-twisted strands of yarn together, and subsequently shrinking or fulling to the desired size and finishing on the last, as usual with wool boots.

2. The herein-described improvement in the mode of making wool boots, which consists in braiding two or more independent loosely-twisted strands of yarn to form a series of continuous boot-blanks of an exaggerated size over a succession of formers, separating such blanks, fulling or shrinking them to the required size, and finishing them on tree and last.

376,373. **WOOLEN BOOT.** WALLACE H. DODGE and ROBERT D. O. SMITH, Mishawaka, Ind. Filed Oct. 17, 1887. Serial No. 252,530. (No model.)

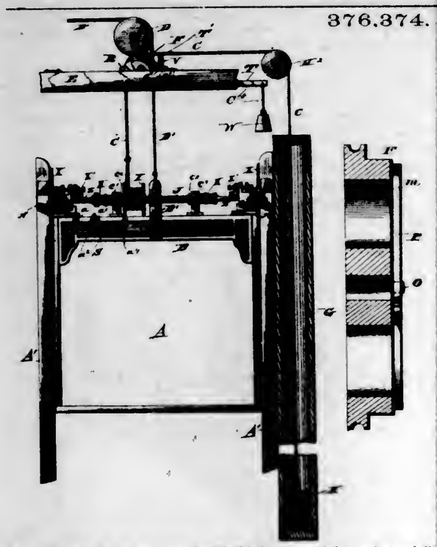


Claim.—The herein-described mode of making wool boots, which consists, first, in producing a boot of greatly exaggerated size containing a large amount of stock in a relatively loose condition by knitting two or more ordinary loosely-twisted yarns singly through weft-thread needles, substantially as described; second, in compacting the stock so prepared into a stiff felt by fulling and shrinking said boot, and, third, in finishing the same on tree and last.

376,374. **SAFETY DEVICE FOR ELEVATORS.** ALBERT C. ELLITHORPE, Chicago, Ill. Filed Apr. 26, 1887. Serial No. 236,080. (No model.)

Claim.—1. The combination, with an elevator-cage, of a governor-sheave having pivoted dogs, another pivoted dog adapted to be engaged thereby, and a brake actuated through the medium of levers,

376,374.



the said levers being connected with this last-named dog, substantially as described.

2. In combination with an elevator-cage and its hoisting-rope, a governor-sheave provided with pivoted dogs having hooked ends, the parallel links thereof, and an adjustable tension-spring, substantially as described.

3. The combination, with the governor-sheave having an annular grooved portion and a hollow cylindrical portion, of radially-extending hooked dogs, guided as described, and connected by links and controlled by an adjustable spring, substantially as described.

4. The combination, in an elevator, with the governor-sheave, of a link, R', a link, S', a gravitating lever provided with an upper extension, T', and a locking device attached thereto adapted to engage with the pivoted dogs in the said sheave, substantially as described.

5. In an elevator, the combination of an air-cushioning device, as described, and a governor-sheave provided with centrifugally-acting dogs, substantially as described.

6. In an elevator, the combination, with the cage and elevating-cable, of the governor-sheave carrying dogs, as described, an air-cushioning device, and a spring, as S, engaged by the cable leading from the air-cushioning device, substantially as described.

7. The combination, with the governor-sheave, of the pivoted hooked dogs, their parallel connecting-links and adjustable spring attachment, a gravitating dog adapted to engage the said pivoted hooked dogs, a lever to which said gravitating dog is pivoted, and a brake actuated by said lever, substantially as described.

8. The combination, with the governor-sheave having hooked dogs pivoted to it, of a brake, R, pivoted to an arm, R', a link, S', a lever, T, an arm, T', formed on this lever, a gravitating device, V, for the sheave, and a cable provided with a weight suitably connected to the lever T, substantially as described.

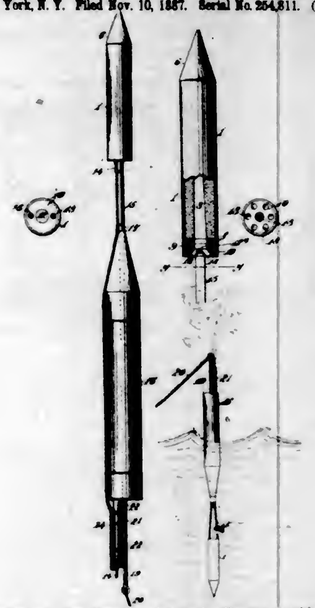
9. In an elevator, the combination, with the head-beam of the cage, of double toggle devices adapted to grip the vertical beams, a shaft having right-and-left screws bearing the winding-drum I, and the screw-threaded socketed portions K, substantially as described.

10. The combination, with the right-and-left-screw-threaded shaft J and suitable bearings upon the head-beam B of the cage therefor, of the socketed portions K, adapted to receive the threads on said shaft, the flat extensions connected to said socketed portions, the links connecting the portions to the rear extensions of gripping-levers, and the boxings for these levers, all substantially as described.

11. The combination of the friction-springs X, the adjusting-screws therefor, the upright guides for the cage, and clamping devices, substantially as described.

12. An elevator comprising the following essential elements, to wit: a cage suspended by a cable, upright guides therefor, clamping devices adapted to engage with said guides, an air-cushion adapted to restrain the rapid descent of the cage should the said cable break, an automatically-actuating governor-sheave, a hooking device, and a spring with which one end of the cable of the cushioning device is adapted to engage for safety, and which will automatically be disengaged should the suspension-cable of the cage break, all constructed and adapted to operate substantially as and for the purposes described.

376,375. LINE-THROWING PROJECTILE. JOHN N. FLETCHER, San Francisco, Cal., assignor to the Unexcelled Fireworks Company, New York, N. Y. Filed Nov. 10, 1887. Serial No. 254,811. (No model.)



Claim.—1. In a line-throwing projectile, the combination of a rocket, a float or buoy connected with the rear end of the rocket-case, and a signal-torch connected with the float or buoy, substantially as described.

2. In a line-throwing projectile, the combination of a rocket, a float or buoy connected with the rear end of the rocket-case, a signal-torch connected with the float or buoy, and a fuse connecting the torch and rocket, whereby they can be simultaneously ignited, substantially as described.

3. In a line-throwing projectile, the combination of a rocket, a float or buoy, a rod or shaft connecting the float and rocket-case, a rod or shaft projecting from the rear end of the float, and a signal-torch fastened to said rod, substantially as described.

4. In a line-throwing projectile, the combination of a rocket, a float or buoy, and a rod or shaft having one end secured to the fuse-piece of the rocket and the other end to a coupling on the float, substantially as described.

5. A line-throwing projectile consisting of a metallic rocket-case having a fuse-piece provided with a central conical deflector and a surrounding series of diverging vents opening on the rear surface of said fuse-piece, a float or buoy connected with the rear end of the rocket-case, and a signal-torch and life-line connected with the float, substantially as described.

6. The combination, with a metal rocket-case and inclosed composition, of the clay layer 4, metal disk 5, metal ring 5ª, and conical head 6 in the forward end of the rocket-case, and the clay ring 8, metal choke 9, and metal fuse-piece 10 in the rear end of said case substantially as described.

7. The combination of a metal rocket-case, a metal choke, 9, and a metal fuse-piece, 10, having a central conical deflector, 18ª, formed integral with said fuse-piece, and a surrounding series of diverging vents, 13, opening on the rear surface of the fuse-piece, substantially as described.

376,376. BARREL-HOLDER. EUGENE C. GILLEN, Madison, Nebr., assignor of one-half to William L. Ramey, same place. Filed Oct. 31, 1887. Serial No. 253,902. (No model.)

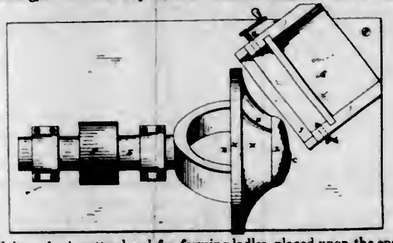


Claim.—1. The combination, in a barrel-holder, of the rock-shaft or rod, a fork on the lower end of the shaft, and lugs 7 and 8 and points on the fork, between which lugs fits the chine of the barrel, substantially as and for the purpose set forth.

2. The combination, in a barrel-holder, of the rock-shaft or rod, slide 11, having hooks 12, slide 13, to which the lid is secured, and fork 9, having lugs and points, substantially as and for the purpose set forth.

3. In a barrel-holder, the combination of the rock-shaft or rod 1, having a fork, 9, formed at its lower end, provided with points 10, lugs 7 and 8, formed on such fork, slide 11, having hooks 12, and slide 13, having arms 14, whereby said slide may be secured to the lid of the barrel, substantially as and for the purpose set forth.

376,377. MACHINE FOR MAKING LADLES. ISAAC HAMILTON, Denning, N. Y. Filed July 11, 1887. Serial No. 244,013. (No model.)



Claim.—1. A cutter-head for forming ladles, placed upon the end of a shaft and having the knife C, consisting of the convex portion *a* and the approximately-straight portion c, for shaping the bowl of a ladle, and the knife D, approximately concaved its entire length for shaping the upper side of the handle, and a reciprocating carriage placed at an angle thereto, and which carries the block from which the ladle is to be formed, substantially as set forth.

2. In a machine for forming ladles, the combination, with the head B, carrying knife C, for cutting the bowl of the ladle, and the knife D, for cutting the upper side of the handle, of the reciprocating carriage A, which is placed at an angle thereto, and in which the block from which the ladle is formed is placed, substantially as and for the purpose described.

3. A cutter-head placed upon the end of a shaft, consisting of a convex portion provided with a knife for cutting the bowl of a ladle and a concave portion provided with a knife for cutting the upper side of its handle, and a reciprocating carriage which carries the block to be acted upon by the cutters, the carriage being placed at an angle approximately parallel with the sectional shape of the cutter-head, substantially as shown and described.

376,378. OVERSHOE. WILLIAM HANLEY, Chicago, Ill. Filed Oct. 24, 1887. Serial No. 253,177. (No model.)



Claim.—The combination, with an overshoe, of two clamps, B, each comprising a strip of stiff material having a curved portion, *g*, and secured near their upper ends to the opposite inner sides of the heel portion, whereby they normally converge toward their lower free extremities, substantially as and for the purpose set forth.

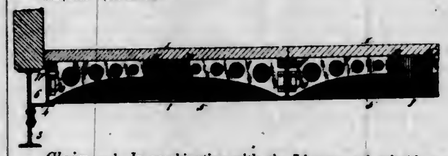
376,379. COMPASS ATTACHMENT FOR PENCILS. MORRIS HANOWER, Fort Lee, N. J., assignor to the Eagle Pencil Company, New York, N. Y. Filed Oct. 26, 1887. Serial No. 253,239. (No model.)



Claim.—1. The combined compass and pencil consisting of the split pencil-holding tube A and the tube B and the reversible needle-point fitting in the same, said tubes being formed and proportioned and hinged together, in the manner described, so that when they are fully unfolded their adjoining ends will abut, and the two will form in effect a continuous straight tubular pencil-handle.

2. The combination, with the two sections provided at their adjoining ends each with a pair of flexible ears, of the headed pivot-pin uniting said ears and the coiled spring i, surrounding said pivot-pin and compressed longitudinally between the said ears, substantially as and for the purposes hereinbefore set forth.

376,380. CONSTRUCTION AND DECORATION OF BUILDINGS. STEPHEN D. HATCH, New York, N. Y. Filed June 6, 1887. Serial No. 240,359. (No model.)



Claim.—1. In combination with the I-beams and suitable supports, interradiate arms having center brackets and a combined floor and ceiling of suitable material supported thereon, substantially as set forth.

2. In the construction and decoration of buildings, the combination of the I-beams 3, having brackets 4, I-beams 5, resting on the said brackets, tie-beams 6 and 7 crosswise of the I-beams 5, center bracket, 9, having an annular groove, 15, to receive cement, arms 8, radiating from said center bracket, 9, and resting on the beams 5, 6, and 7, and slabs 1, of marble or other suitable flooring material secured in place by the cement in the grooved bracket 9, substantially as set forth.

3. In the construction and decoration of buildings, the combination of the interradiate arms 8 of the spider-arches that connect in the center bracket, 9, said arches supported on the brackets 4 of the I-beams 3, the I-beam 5, and the tie-beams 6 and 7, and themselves supporting a combined floor and ceiling that is arranged to utilize both surfaces of the material in the embellishment and decoration of buildings, substantially as described, and for the purpose set forth.

376,381. FIRE-PROOF STRUCTURE. STEPHEN D. HATCH, New York, N. Y. Filed June 6, 1887. Serial No. 240,360. (No model.)



Claim.—1. In fire-proof structures, the combination, with I-beams having suitable support, of inverted-T beams resting on the lower flanges of said I-beams, fire-proof blocks cemented together and resting on the flanges of the T-beams, and flooring consisting of boards placed transversely of the I-beams and resting on top thereof, boards transverse of aforesaid boards, and a layer of asbestus placed between the layers of boards, substantially as and for the purpose set forth.

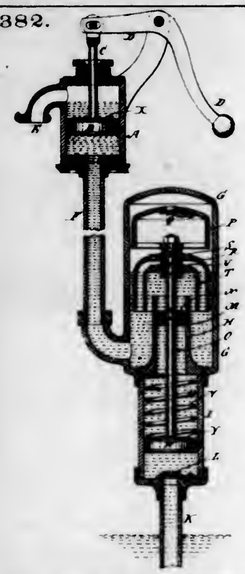
2. In fire-proof structures, a flooring consisting of a layer of boards, another layer of boards transverse thereof, and a layer of asbestus placed between the layers of boards, substantially as set forth.

3. In fire-proof structures, the combination of the I-beams, inverted-T beams resting on the lower flanges of the I-beams, hollow fire-proof blocks resting on the flanges of the T-beams and having interstices between them, pendent dovetail projections on the blocks, and bevel-notches formed by the bevel sides of the dovetails on adjoining blocks, said notches forming, in conjunction with the interstices above, keys to hold the blocks in their places when cement is placed therein, substantially as set forth.

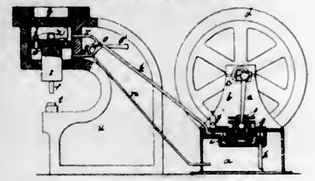
376,382. PUMP. WILLIAM J. HEARN, New York, N. Y. Filed Apr. 21, 1887. Serial No. 235,656. (No model.)

Claim.—The combination, with a suction-tube, K, a barrel, A, and piston B, and suitable valves for said parts, of an upper chamber G, communicating with the barrel A, a lower chamber, I, a tube, H, extending from the lower chamber into the upper chamber, a valved piston, M, in said tube H, and a spring-pressed rod, O, secured to said piston M, said rod being provided with a valved piston, W, and with a cup, substantially as set forth.

376,382.



376,383. TRANSMITTING POWER. ANDREW HIGGINSON, Liverpool, County of Lancaster, England. Filed Nov. 8, 1883. Serial No. 111,185. (No model.) Patented in England May 31, 1883, No. 2,701; in France Sept. 6, 1883, No. 157,409; in Germany Sept. 6, 1883, No. 26,435, and in Belgium Sept. 7, 1883, No. 62,580.

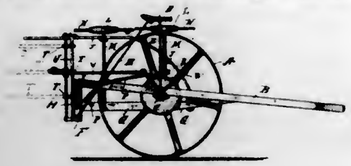


Claim.—1. In a device for transmitting power, the combination of a hydraulic circuit, a prime motor for causing the circulation of fluid in the circuit, a fly-wheel for accumulating or storing the power or energy of the prime motor, power-receiving mechanism actuated by the fluid in the circuit, a valve for directing the flow of the fluid in the circuit to apply the accumulated power to the driven mechanism, and an automatic circulating-valve, substantially as and for the purpose specified.

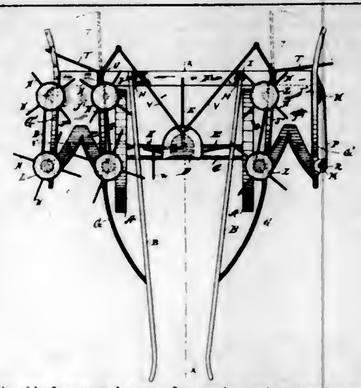
2. The combination of a hydraulic circuit, a prime motor for causing the circulation of the fluid in said circuit, a fly-wheel for accumulating or storing the power or energy of the prime motor, two or more power-driven mechanisms arranged in series in said circuit, each of which is provided with an automatic circulating-valve, and a single discharge-pipe leading from the last mechanism in the series, substantially as and for the purposes specified.

376,384. CORN-HARVESTER. ALFRED HOLLINGSWORTH, Union Valley, Kans. Filed Mar. 5, 1887. Serial No. 230,139. (No model.)

Claim.—In a corn-harvester, the combination of the thills B, rear cross-bar, F, supported by the rear ends of the thills, guide-arms G, extending from the thills outside the wheels to the cross-bar, outside arms, G', secured to the cross-bar, cradles consisting of side frames, J, bottoms J', and vertical side flanges, J", the V-shaped knives secured to the front edge of the cradles, vertical shafts M, secured to the side frames, having heads L and arms N, gates hinged at the rear corner



376,384.



of the side frames, and means for opening and closing the gates, substantially as described.

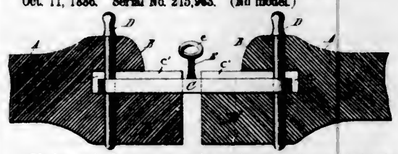
376,385. RUBBER BRUSH. JAMES P. HOYT, Newtown, Conn. Filed Sept. 16, 1886. Serial No. 213,647. (No model.)



Claim.—1. As a new manufacture, a brush formed by splitting the end of a piece of rubber, and a handle therefor formed integral with the brush.

2. The combination, with a mucilage or other bottle, of a brush and handle made from a single piece of soft rubber, the handle thereof being adapted to serve as a cork for the bottle, and the brush being formed by splitting the end of the piece of rubber, substantially as described.

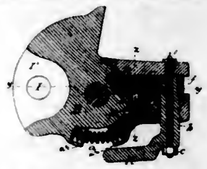
376,386. CAR-COUPLING. OLIVER HUGHES, Callao, Mo. Filed Oct. 11, 1886. Serial No. 215,963. (No model.)



Claim.—1. In a car-coupler, a draw-head provided below the link-socket with a downwardly-extending buffer, the bottom of which is nearly in a plane with the bottom of the shank of the draw-head and having its upper face in a plane with the bottom of the link-socket, the side walls of said link-socket being extended forward divergingly to form a tapering guideway for the link, substantially as described.

2. In combination with a draw-head constructed substantially as described, a coupling-link consisting of a flat metal bar provided at each end with an elongated aperture for the passage of a coupling-pin and centrally with a permanently and rigidly secured upwardly-projecting handle, E, of such length that the hand-hole *e* will be above the upper edges of the webs *c'* of the buffers, for the purpose set forth.

376,387. CAR-COUPLING. SYLVANUS D. LOCKE, Hoosick Falls, N. Y. Filed Mar. 4, 1887. Serial No. 229,702. (No model.)



Claim.—1. In combination, in a self-coupler, a draw-bar part, a coupling-hook pivoted at the end of the bar, locking mechanism for locking the hook when closed to the bar, and means for automatically holding the locking mechanism when disengaged from re-engagement before the cars separate and the hook opens, and that when the hook opens releases the locking mechanism to allow it to again act when the hook closes, substantially as described.

2. In a self-coupler, the combination of the stem A, the coupling-hook B, pivoted to the stem, and the key *e*, for locking the hook to

the stem when closed, with the pawl *l*, for automatically holding the key when disengaged from re-engagement before the cars separate and the hook commences to open, substantially as described.

3. In combination, in a self-coupler, a draw-bar part, a coupling-hook pivoted at the end of the bar, locking mechanism for locking the hook when closed to the bar, and a detent for automatically holding the locking mechanism when disengaged from re-engagement before the hook opens, with trip mechanism for suspending the detent to release the locking mechanism as the hook opens, substantially as described.

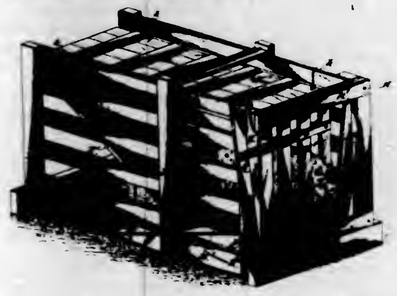
4. In a self-coupler, the combination of the stem A, the hook B, pivoted to the stem, the key *e*, for locking the hook when closed to the stem, and the pawl *l*, for holding the key when disengaged from re-engagement before the hook opens, with the trip-finger *m*, for releasing the key by suspending the action of the pawl when the hook opens, substantially as described.

5. In combination, in a self-coupler, a draw-bar part, a coupling-hook pivoted at the end of the bar, and spring mechanism for automatically closing the hook, with locking mechanism automatically locking the hook as it closes, and detent mechanism automatically holding the locking mechanism when disengaged from re-engagement until the cars separate, when the opening of the hook releases the locking mechanism and enables the latter to again act when the hook closes, substantially as described.

6. In a self-coupler, the lever K, seated as to its shaft in the draw-bar A, the key *e*, sleeved on the square end of the shaft, and the pivot-bolt *b'*, also seated in the bar, shouldered against the end or passing through the shaft to hold the key thereon, and all these parts together, substantially as described.

7. In a self-coupler having a draw-bar part and a coupling-hook pivoted thereto, mechanism for locking the hook, seated in the draw-bar, a lever for disengaging the locking mechanism, attached to said locking mechanism, but outside of the bar, and uncoupling-levers (or lever) on the car joined to said disengaging-lever, combined with mechanism for automatically holding and releasing the locking mechanism, the combination operating so that the holding and releasing mechanism shall hold the locking mechanism when disengaged by the levers and release it again when the hook opens, substantially as described

376,388. HOG-TRAP. SOLOMON LOFFER, Maitland, Mo. Filed Oct. 14, 1887. Serial No. 252,312. (No model.)



Claim.—1. The combination, with the frame, of the stationary and adjustable flooring, the incline or foot board having the suspending-hooks, and the supplemental frames or extensions, substantially as described.

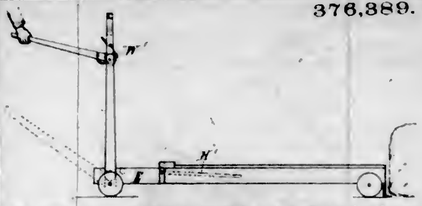
2. The combination, with the frame, of the stationary flooring having a metallic sheathing, the adjustable flooring hinged to said stationary flooring, and also having a metallic sheathing and an under elongated loop, the lifting-lever G, having the angularly-bent portion and a projecting handle, the gate H, having the movable stanchion, the lever for operating said stanchion, the wedge-strip, and the suspended top board adapted to be removed and used as an incline for loading purposes, substantially as described.

3. The combination, with the frame, of the stationary and adjustable flooring, the lifting-lever for operating the adjustable flooring, the top-suspended convertible board K, the hinged gate having an adjustable stanchion, the operating-lever, the link-plates connecting said operating-lever with the adjustable stanchion, and the wedge-strip for retaining the lever in its adjusted position, substantially as described.

376,389. TRUCK. MANFRED LORIE, Miamisburg, Ohio. Filed July 16, 1887. Serial No. 244,494. (No model.)

Claim.—1. In an elevating-truck, the forward axle having centrally a fifth-wheel, to which are attached the forward ends of two beams, and a rear axle having centrally attached thereto the rear end

376,389.

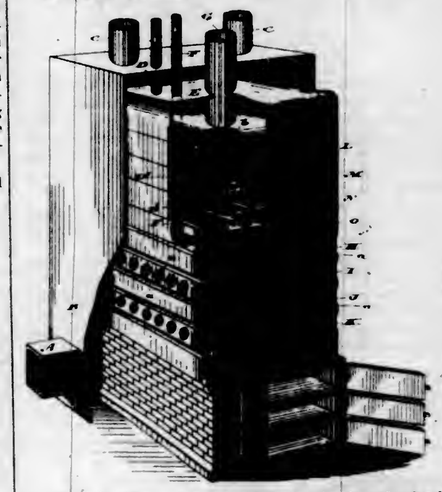


of a similar beam, the latter of which projects forward and rests between the two beams of the forward axle, said beams being centrally hinged together and carrying a bed, substantially as herein set forth.

2. In an elevating-truck, the combination of beams secured alternately at their front and rear ends to the forward and rear axles and centrally hinged together, and mounted thereon a bed hinged at its rear end to the rearwardly-projecting beams and provided at its forward end with a roller or friction-wheel, J, said beams having a series of holes, which correspond with each other, in the sides, and a pin L', substantially as herein set forth.

3. In an elevating-truck, the combination of beams secured alternately at their front and rear ends to the front and rear axles, as shown, and mounted thereon the bed H, with the handles or arms P, carrying the windlass T and rope T', substantially as herein set forth.

376,390. HOT-AIR FURNACE. WILLIAM MORRISON, Toronto, Ontario, Canada. Filed Apr. 14, 1886. Renewed May 14, 1887. Serial No. 238,287. (No model.)



Claim.—1. The combination, with the fire-chamber, of a plurality of hot-air sections, H I J K, each provided with open-ended tubes, but distinct from each other, arranged above said fire-chamber, a plurality of water-sections, each communicating with the other and superimposed upon said hot-air sections, and a shell surrounding said sections substantially as and for the purpose specified.

2. The combination of the communicating sections L M N O, each comprising a rectangular surrounding tube, a plurality of transverse tubes opening into the surrounding tube and an opening at each corner, the top section, E, forming a steam or water chamber, the outlet-pipe D, communicating with the top section, the inlet-pipe F, communicating with the lowest section, O, and a surrounding shell, substantially as described.

3. The combination, with the fire-chamber, of the sections H I J K, constructed, as described, with transverse tubes at each end, each section distinct from the other and arranged above said fire-chamber, the communicating sections L M N O, superimposed upon said sections, a section, E, above said sections L M N O and forming a water or steam chamber, and an outer shell surrounding said sections, substantially as described.

4. The combination, with the outer shell, B, and the hot-air sections H I J K, and closed communicating water-sections L M N O, superimposed thereon, of the water-section E above the water-sections and communicating therewith, the smoke-pipe G, extending through the section E, the return-pipe F, connected with the lower water-sec-

tion, and the steam-pipe D and hot-air flues C, substantially as and for the purpose specified.

376,391. CALENDAR. FRANK W. MOULTON, Washington, D. C. Filed Dec. 30, 1886. Serial No. 223,027. (No model.)



Claim.—A plate provided with a series of pairs of horizontal parallel slots, *x x'*, in combination with a flexible strip for each pair of slots containing the matter to be displayed, and each strip extending from the back through one slot of its pair and from the front through the other slot of said pair, the free ends of the strips extending side by side below the lower edge of the plate, substantially as and for the purpose set forth.

376,392. PRODUCTION OF A NEW RED AZO COLOR. ADELBERT MYLIUS, Basle, Switzerland, assignor to Jean Rod Geigy, same place. Filed Aug. 13, 1887. Serial No. 246,846. (Specimens.)

Claim.—In a process for the production of a new red azo color, first mixing nitro-aniline with water acidulated with sulphuric acid, then diazotising by adding nitrate of sodium, mixing therewith while being agitated *a* (alpha) naphthylamine disulphonate of sodium, then filtering and saturating with carbonate of sodium, and drying, substantially as described.

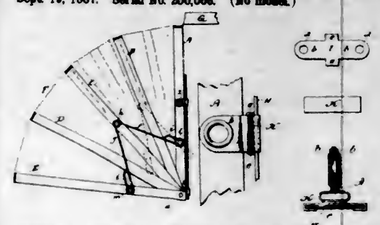
376,393. PLOW ATTACHMENT. HUGH S. NULL and JONAS BUSSARD, Huntington, Ind. Filed July 14, 1887. Serial No. 244,328. (No model.)



Claim.—1. In a fender attachment, the combination of the casting C, having the arms b' b^2, the arm b^2 being bifurcated and secured to the plowshare, while the arm b' is adapted to support and carry the fender-blade, the said blade adapted to be removably secured thereto, substantially as and for the purpose set forth.

2. In a fender attachment, the combination of the casting having one of its arms bifurcated and the other adapted to carry the fender-blade, the plowshare provided with apertures, whereby the casting carrying the fender may be detached and secured to the same through the medium of a set-screw working through apertures formed in the bifurcated ends of the casting, and the shovel or plowshare, substantially as and for the purpose set forth.

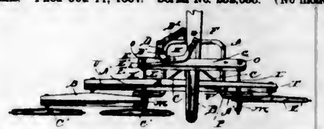
376,394. BUSTLE. WILBUR F. OSBORNE, Ansonia, Conn. Filed Sept. 19, 1887. Serial No. 250,066. (No model.)



Claim.—1. The herein-described clip, consisting of the one part, I, in the form of a cross, the two arms *b b* of the cross turned toward each other and brought into substantially parallel planes, the second part, K, arranged upon the reverse side of the part I, and the other two arms, *c c*, of the part I closed upon the said part K, and so as to secure the said part K to the part I in a plane at right angles to the plane of the said arms *b b*, substantially as described.

2. A bustle consisting of several bows pivoted by their ends to a body-bow, combined with a V-shaped spring, its two legs connected to two of the bows, which said two bows are themselves hinged together between the points of connection of the two legs of said spring, and the apex of the said spring connected to a bow intermediate or between the said two bows to which the legs are connected, the said spring being constructed at its ends with loops to form said connections, substantially as described.

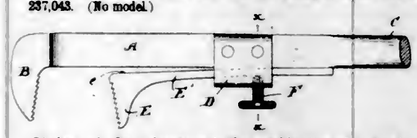
376,395. DRAFT-EQUALIZER. WILLIAM A. PERKINS, Clifton, Kans. Filed Oct. 11, 1887. Serial No. 252,033. (No model.)



Claim.—1. In a three-horse equalizer, the combination of the perforated bracket or casting adapted to be secured to the side of the tongue, the upper doubletree having the aperture one-third of its length from its shorter end, the pivot-bolt, the hangers, the long equalizer-beam having the eyebolts arranged as described, and having the double and single trees secured to its ends, substantially as and for the purpose set forth.

2. In a three-horse equalizer, the combination of the perforated bracket or casting adapted to be secured to the side of the tongue, the upper doubletree having the aperture one-third of its length from its shorter end, and having the end aperture in its longer end and the two openings in its shorter end portion, the pivot-bolt and eyebolts, the hangers, the long equalizer-beam having the bolt-aperture toward its shorter end and the two bolt-apertures toward its longer end portion, the eyebolts, and the double and single trees secured to the ends of the equalizer-beam, all substantially as and for the purpose herein set forth.

376,396. PIPE-WRENCH. DANIEL R. PORTER, Chelsea, assignor to William R. Davidson, Boston, Mass. Filed May 4, 1887. Serial No. 237,043. (No model.)



Claim.—1. In a pipe-wrench, the combination of a shank and fixed jaw with a movable jaw provided with an extension that forms a spring, and adjustable upon the shank, substantially as and for the purposes set forth.

2. In a pipe-wrench, the shank A, fixed jaw B, and saddle or slide D, in combination with the adjustable jaw E, provided with an extension, E', that forms a spring, and set-screw F, substantially as shown and described.

3. In a pipe-wrench, the shank A, fixed jaw B, saddle or slide D, and set-screw F, in combination with the adjustable jaw E, provided with a spring-extension, E', and teat *e*, substantially as and for the purposes set forth.

376,397. HANDLE FOR MUCILAGE-BRUSHES. CHARLES ROWLAND, Quincy, Ill. Filed Nov. 2, 1887. Serial No. 254,103. (No model.)

Claim.—1. The combination, with a brush-handle, of a spherical stopper adjustable longitudinally on said handle, substantially as described.

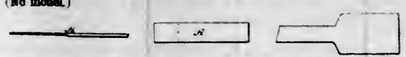
376,397.



2. The combination, with a bottle or stand for mucilage and other liquids, of a brush having a handle provided with a spherical stopper longitudinally adjustable on said handle and adapted to support the brush at any height in the bottle or horizontally across the bottle-mouth, substantially as described.

3. The combination, with a bottle or stand for mucilage or other liquids, of a brush having a handle provided with an elastic spherical stopper longitudinally adjustable on the brush-handle, substantially as described.

376,398. MANUFACTURE OF SHOVELS, SPADES, &c. JAMES C. RUSSELL, Beaver Falls, Pa. Filed July 30, 1887. Serial No. 245,707. (No model.)



Claim.—The method herein described of making shovel-blanks, consisting in, first, taking a heated plate which has been previously rolled, and which has about twice the thickness of the finished blade, but the same width as the finished strap, to form a tubular socket; second, passing one end of the said blank between rolls to lengthen out the strap, and, third, passing the opposite end of the blank at right angles between the rolls to form the blade, whereby an almost finished blank is produced, substantially as set forth.

376,399. MATTRESS-STUFFING MACHINE. EDWIN H. STEPHENSON, Waco, Tex. Filed June 13, 1887. Serial No. 241,188. (No model.)



Claim.—1. In a mattress-stuffing machine, the combination, with the box, the movable cover, the plunger, and the discharge-spout, of vertical guides, a vertically-sliding gate guided by the latter intermediate the box and spout, and between which and the follower the stuffing material is compressed, and means for moving the follower and holding the mattress-tick on the spout, substantially as described.

2. In a mattress-stuffing machine, the combination, with the box, the hinged swinging cover, the plunger, and the discharge-spout, of vertical guides, a vertically-sliding gate guided by the latter intermediate the spout and box, and between which and the plunger the stuffing material is first compressed, and a lever connected with the gate for elevating it, substantially as described.

3. In a mattress-stuffing machine, the combination of the box, the spout, the hinged swinging cover, the plunger, the rack connected with the plunger, the shaft carrying a pinion and a spur-wheel, the shaft carrying the spool and spur-wheel, a cord or chain connecting the spool with the cover, the vertically-sliding gate moving intermediate the box and spout, and between which and the plunger the stuffing material is compressed, and means for holding the mattress-tick on the spout, substantially as described.

4. In a mattress-stuffing machine, the combination, with the box, the plunger, and the spout, of the two cross-bars arranged, respectively, above and below the spout and springs connecting the said bars and drawing toward each other to clamp the tick on the spout, substantially as described.

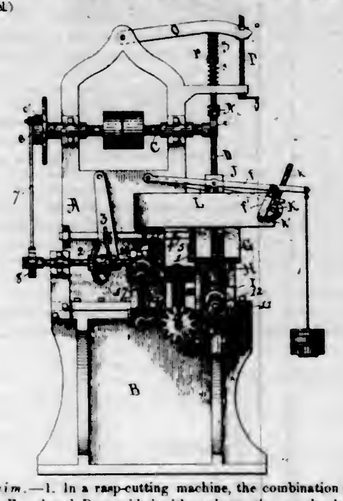
5. In a mattress-stuffing machine, the combination, with the box, the plunger, and the spout, of two swinging cross-bars arranged, respectively, above and below the spout and pivotally connected with the machine-frame and springs connecting the said bars and drawing them toward each other for clamping the tick on the spout, substantially as described.

6. In a mattress-stuffing machine, the combination of the box, the presser-head, the rack-bar, the spur-wheel, and pinion-shaft, the driving-shaft, spool, rope, and movable cover, substantially as described.

7. In a mattress-stuffing machine, the combination of the box having the movable side provided with rack-bars, and the shaft with pinions gearing into said racks, with the follower or presser-head and the spout and the cover, substantially as described.

8. In a mattress-stuffing machine, the combination of the transverse rods and eyebolts with the box, the presser-head, the movable cover, and the lever capable of having its point made to engage with either of the transverse rods, substantially as described.

376,400. RASP-CUTTING MACHINE. JAMES STOKES and GEORGE W. STOKES, Atlanta, Ga. Filed Sept. 1, 1887. Serial No. 248,551. (No model.)



Claim.—1. In a rasp-cutting machine, the combination of the hammer E and rod D, provided with reciprocating mechanism, the projection *l*, the lever L, the cam M, and the presser J, lever *f*, and connection by slotted link *f''* with crank *k'* on the rock-shaft K, for the purpose specified.

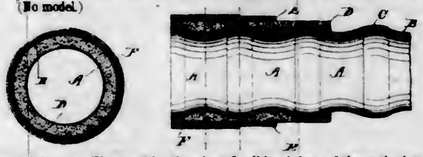
2. In a rasp-cutting machine, feeding mechanism consisting of the combination of the crank 6, pitman 7, pawl and ratchet 8 and 9, cam 2, arm 3, carrying rollers 21, and connection from the arm to the laterally-sliding table G, substantially as shown and described, and for the purpose specified.

3. In a rasp-cutting machine, feeding mechanism consisting of the revolving arm 18, star-wheel 19, screw 10, and half-nut 11 on a rock-shaft, 12, and handle 13, for the purpose of giving an intermittent movement, substantially as shown and described.

4. In a rasp-cutting machine, the combination of the feeding device consisting of the crank 6, pitman 7, pawl and ratchet 8 and 9, cam 2, arm 3, carrying rollers 21, and the interchangeable trunnion 25, connecting with the arm 3 by means of the link 26, which gives it an oscillating movement, said interchangeable trunnion being interchangeable with the trunnion 4, substantially as set forth.

5. In a rasp-cutting machine, the combination of a punching hammer-head, E, the adjusting-screw 33, the flat spring, and the punch 34, substantially as set forth.

376,401. FLEXIBLE PIPING. FRANCIS M. WILDER and GEORGE H. BENJAMIN, New York, N. Y. Filed July 19, 1887. Serial No. 244,712. (No model.)



Claim.—1. The combination, in a flexible piping, of the articulating section A, the non-combustible covering D, the impervious covering E, and the outer covering, F.

2. The combination, in a flexible piping, of the sections A, the ends of which, C B, are of different diameters, the non-combustible covering D, the impervious covering E, and the outer covering, F, all substantially as described.

376,402. RAIL-JOINT. GEORGE H. WILLIAMS, Nashville, Tenn. Filed June 15, 1887. Serial No. 241,262. (No model.)

Claim.—1. A rail-joint comprising the angle-bars having bolt-openings, the openings through one of the angle-bars being threaded, the

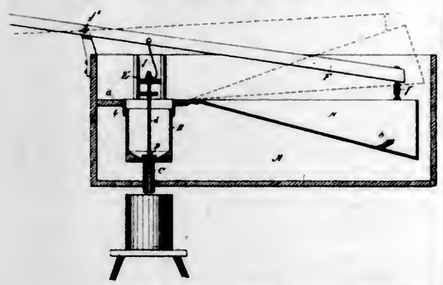
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bolts fitted to said openings and having threaded portions to engage the threaded angle-bar, which threaded portions of the bolt do not extend beyond the outer surface of the angle-bar, the bolts being provided with the reduced extension-points, which project beyond the outer surface of the threaded angle-bar and have key-slots, and the keys, substantially as described, and for the purposes specified.

2. In a rail-joint, the combination of the ties, the rails supported on and having their ends arranged between said ties, the angle-bars having bolt-openings, one set of which are threaded, and said angle-bars having main and base portions, the main portion having an increased thickness at points 5 and 6, the bolts having threaded portions which engage the threaded openings of the angle-bar, but do not extend beyond the outer surface of such bar, and which bolts have the reduced extension-points provided with key-slots and projected beyond the outer surface of the angle-bar, the keys, and the washers, all substantially as and for the purpose specified.

376,403. CAN-FILLING MACHINE. WILLIAM H. WRIGHT, San José, Cal. Filed Aug. 2, 1887. Serial No. 245,987. (No model.)



Claim.—1. The combination, with the tank, of a plural number of measuring-cups arranged therein and each provided with a valve-stem, a triangular trough pivoted in the tank with its apex adjacent to said cups, an operating-lever for said trough, and a connection between said lever and valve-stems, whereby the latter are operated during the movement of the former, substantially as described.

2. In a can-filling machine, a tank for the liquid, measuring-cups within said tank provided with the discharge-pipes through their bottoms, and valves controlling the upper ends of said pipes, said valves having sliding stems, in combination with a swinging filling-trough provided with a valve for admitting the liquid to it, a pivoted lever connected with the trough, whereby it is swung, and a connection between said lever and the valve-stems of the measuring-cups, whereby the valves are raised after the cups are filled in order to discharge their contents, substantially as herein described.

3. In a can-filling machine, the tank for the liquid, measuring-cups therein, provided with valved discharges and with vertically-adjustable sleeves for varying their capacity, in combination with a swinging filling-trough within the tank, having a valve controlling the admission of the liquid to the trough, and a pivoted lever connected with the trough and with the valves of the measuring-cups, whereby the trough is swung upwardly to fill the cups and the valves are raised to permit the discharge of the liquid from said cups, substantially as herein described.

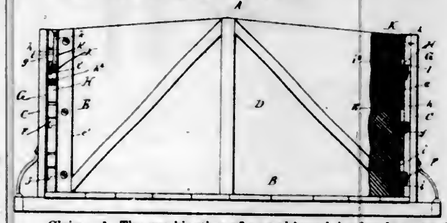
376,404. WAGON-BRAKE BLOCK. COMMODORE P. BATEMAN, Exira, Iowa. Filed Oct. 19, 1887. Serial No. 252,818. (No model.)



Claim.—1. The combination, with the block A, of the yoke B, clamping-plates D, having rough contacting faces *d' d'*, and the facing-strip C, substantially as described.

2. In a brake of the character described, the combination of the yoke B, plates D, having rough contacting faces, and means for compressing the plates, all substantially as described.

376,405. END-GATE. JOHN CLAYTON, Wadena, Minn. Filed Apr. 27, 1887. Serial No. 236,338. (No model.)

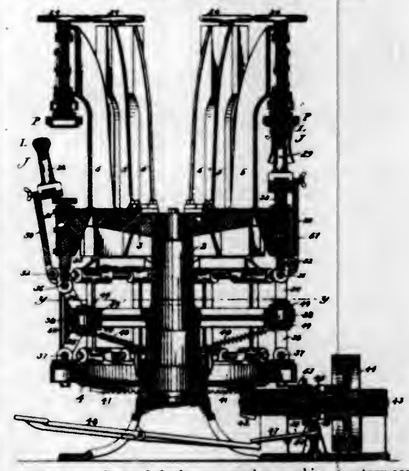


Claim.—1. The combination of an end-board, having lugs standing from its side edges and entering slots in the adjacent sides of the cart, and the clamp-levers having plates pivoted eccentrically to the cart-sides, so that when turned down the said plates will hold the lugs down in the slots, the edges of the plates resting on the upper surfaces of the slots.

2. The combination of the end-board, the clips secured thereto and provided with outstanding lugs on their flanges covering the side edges of the end-board, the plates secured to the sides of the cart, provided with the slots I and notches *i*, and the clamp-levers having their plates pivoted eccentrically, so that when their arms are turned down the plate portions will hold the lugs down in the corresponding slots, substantially as specified.

3. The combination of the end-board, the clips E, attached thereto and provided with the lugs F, having the flanges *f f*, the plates G, secured to the sides of the cart, provided with the flanges *g g*, slots I, notches *i*, and shoulders i' and i^2, and the clamp-levers K, having the plate portions *k*, pivoted eccentrically above the highest slots I, the arms k^2, and the shoulders L *l*, all constructed and arranged substantially as and for the purpose specified.

376,406. SOLE-LAYING MACHINE. FREDERICK W. COY, Boston, Mass. Filed Oct. 10, 1887. Serial No. 251,941. (No model.)



Claim.—1. In a sole laying or pressing machine, a rotary carrier, a series of sole-pressers, and a corresponding series of jacks carried by said rotary carrier, a series of toggle-joints supported by and moving with the carrier, and a fixed cam or endless track the perimeter of which acts on said toggle-joints and has its greater portion concentric with the axle of the carrier, whereby each toggle-joint is straightened to hold its jack against the accompanying presser during a greater part of a complete rotation of the carrier, the remaining portion of said perimeter presenting a recess, whereby each toggle-joint is permitted to yield and separate its jack from the presser at a given point in the rotation of the carriage, all combined substantially as set forth.

2. In a sole laying or pressing machine, a rotary carrier, a series of sole-pressers, and a corresponding series of shoe and sole supporting jacks carried by said rotary carrier, mechanism, substantially as described, for rotating said carrier, a series of toggle-joints supported by and moving with the carrier, a fixed cam or endless track having its perimeter arranged to act on said toggle-joints, said perimeter comprising a concentric portion, whereby each toggle-joint is straightened to hold its jack against the accompanying presser during the greater part of a complete revolution, and a recess whereby each toggle-joint is permitted to yield and separate its jack from the accompanying presser at a given point in said revolution, and an automatic stop mechanism, substantially as described, which operates when each toggle-joint reaches said recess, whereby the rotation of the carrier is arrested after each separation of a jack from the accompanying presser, all combined substantially as set forth.

3. In a sole laying or pressing machine, the combination of a fixed standard, a frame or carrier fitted to rotate thereon, a series of sole-pressers, and a corresponding series of jacks supported by the carrier, a series of toggle-joints supporting the jacks and provided with cam-rolls, a fixed cam or endless track having a concentric portion and a recess, as shown, and springs whereby said cam-rolls are pressed against said cam, the latter being formed to support each jack in a raised position during the greater part of a complete rotation of the carrier and to depress it at a given point, as set forth.

4. In a sole laying or pressing machine, the combination of a sole-presser, a slide, 33, movable toward and from said presser, a jack pivotally connected to said slide, whereby the jack can be swung into and out of operative position under the presser, and means for raising and depressing said slide and jack, substantially as described.

5. The combination of a sole-presser, a slide, 33, movable toward and from the sole-presser, a jack composed of the angular lever 30, pivoted to the lower portion of said slide, and the last-supporting standards detachably secured to and adjustable on said pivoted lever, and means, substantially as described, for raising and depressing said slide and jack.

6. The combination of a fixed standard, a carrier fitted to rotate thereon, a series of pressers and a corresponding series of jacks supported by the carrier, the fixed cam or endless track having the concentric portion and the recess, arranged as shown, and the toggle-joints and springs co-operating therewith, whereby the jacks are alternately raised and depressed, the bevel-gear 41 on the carrier, the shaft 43, having a pinion meshing with the gear 41, a sliding clutch and a driving-pulley having a clutch on said shaft, devices, substantially as described, whereby the sliding clutch is automatically disengaged from the driving-pulley while each jack is depressed, and devices, substantially as described, controlled by the operator, whereby said clutch and pulley may be operatively connected, as set forth.

7. In a sole-laying machine, the combination, with a jack and means for raising and depressing it, of a sole-presser, constructed substantially as described, composed of sections, one of which is capable of being depressed below the body of the presser to hold a sole on the jack while the latter is being raised, as set forth.

8. In a sole-laying machine, the combination of a rotary carrier, a series of jacks thereon, means, substantially as described, for alternately raising and depressing each jack, and a series of elastic pressers corresponding in number and position to the jacks, each presser having a section which is adapted by mechanism substantially as described to be depressed independently to hold a sole upon the depressed jack beneath it, as set forth.

9. In a sole-laying machine, the combination of a jack, means for raising and depressing it, a sole-presser located over the jack and having a section which is capable of independent movement by mechanism substantially as described, and a spring whereby said section is forcibly held down upon a sole laid upon the depressed jack, as set forth.

10. In a sole-laying machine, the combination of a jack, means, substantially as described, for raising and depressing it, a sole-presser located over the jack and having an independently-movable section, a spring whereby said section may be depressed below the body of the presser, and a holder whereby said section may be retained in its sole-pressing position, as set forth.

11. A sole-presser composed of a series of sections, each having at one side a yielding or flexible pressing-surface and at the opposite side a rigid convex bearing-surface the center of the curvature of which is at or near the said pressing-surface, and a fixed holder having concave seats for said convex surfaces, all constructed substantially as described.

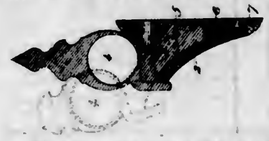
12. In a sole-presser, the combination of the sections having the convex bosses and yielding pressing-surfaces, the holder 6, having the concave seats for said bosses, and the bolts and washers connecting said sections with the holder, as set forth.

13. In a sole-presser, the combination of the sections 12 and 13, having the convex bosses 15 15 and yielding pressing-surfaces, the intermediate section, 14, having the segmental rib 17' and the yielding pressing-surface, the holder 6, having seats or sockets for the bosses 15, and the block 18, having a socket for the rib of the section 14, as set forth.

14. The combination of the holder 6, the series of sections having yielding pressing-surfaces connected, as described, to said holder, so as to be capable of tipping independently in arcs of circles the centers of which are at or near said pressing-surfaces, and a support to which said holder is connected by means substantially as described, whereby the holder is enabled to oscillate or tip, as set forth.

15. The combination of the holder 6, the independently-tipping sections having yielding pressing-surfaces connected, as described, to said holder, the vertically-movable frame jointed, as described, to said holder so that the latter is capable of tipping universally, and an adjusting-screw and a support therefor whereby said frame may be vertically adjusted and held at any position to which it may be adjusted, as set forth.

376,407. COFFIN-HANDLE. GEORGE C. FRASER, Allegheny City, Pa., assignor to Hamilton, Lemmon, Arnold & Co., same place. Filed July 11, 1887. Serial No. 243,949. (Model.)

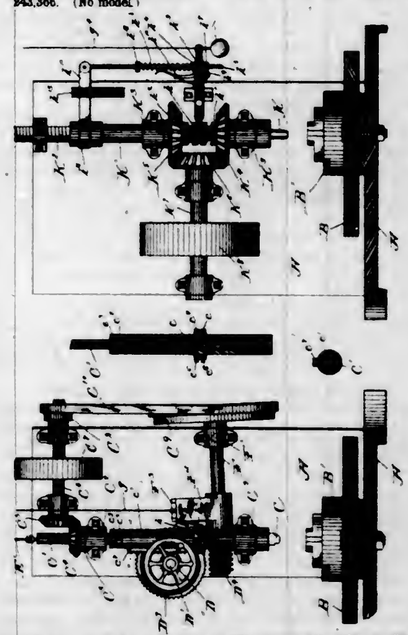


Claim.—1. The combination, with a coffin, of a socket fastened to the side thereof and having a handle-arm fitting loosely within the socket, said handle-arm being movable lengthwise and projecting normally from the socket in an upwardly-inclined direction, substantially as and for the purposes described.

2. The combination, with a handle-socket, of an arm projecting upwardly therefrom and fitting loosely, so as to be movable lengthwise, said arm being curved or set at an inclination within the socket, whereby when projected from the socket it moves outwardly, substantially as and for the purposes described.

3. The combination, with a handle-socket, of an arm projecting upwardly therefrom and fitting loosely, so as to be movable lengthwise, and a spring connecting the arm and socket, substantially as and for the purposes described.

376,408. MACHINE FOR COUNTERBORING AND TAPPING NUTS. JOHN GIELOW, Chicago, Ill. Filed July 5, 1887. Serial No. 243,366. (No model.)



Claim.—1. The combination, with a rotatable table or frame having chucks or clamps mounted thereon, of a revolving counterboring-tool, a stop to limit its forward feed, and automatic mechanism for feeding the same provided with a spring or yielding device connecting the same with the tool and adapted to keep the tool pressed against its work after its forward motion has been arrested by said stop, and thus to permit such counterboring-tool to make one or more revolutions in contact with its work after its forward feed has been arrested, a tapping-tool, and mechanism for operating said tapping-

tool simultaneously with said counterboring-tool, substantially as specified.

2. The combination, with a suitable chuck or work-holder, of a counterboring-tool furnished with a stop to limit its forward feed, and automatic means for feeding said counterboring-tool provided with a spring or yielding device through which the feed motion is communicated to said tool to permit such tool to revolve in contact with its work after its forward feed has been arrested, substantially as specified.

3. The combination, with a chuck or work-holder, of a counterboring-tool mounted on a revolving spindle furnished with an adjustable stop or collar, a feed-rack and feed-wheel, a wheel for driving such feed-wheel, and a spring connection between the two, substantially as specified.

4. The combination, with a chuck or work-holder, of a revolving tool-carrying spindle or shaft, a stop to limit its forward feed, a feed-rack, feed wheel and shaft, and driving-wheel loosely journaled on said feed-shaft, a spring connecting said driving-wheel and feed-wheel, and a worm or gear for operating said driving-wheel, substantially as specified.

5. The combination, with a chuck or work-holder, of a revolving tool-carrying spindle or shaft, a stop to limit its forward feed, a feed-rack, feed wheel and shaft, and driving-wheel loosely journaled on said feed-shaft, a spring connecting said driving-wheel and feed-wheel, and a movable worm journaled at one end in a pivotal bearing and at the other in a sliding bearing mounted on a pivotal guide, substantially as specified.

6. The combination, with a chuck or work-holder, of a revolving tool-carrying spindle or shaft, a stop to limit its forward feed, a feed-rack, feed wheel and shaft, and a driving-wheel loosely journaled on said feed-shaft, a spring connecting said driving-wheel and feed-wheel, a movable worm journaled at one end in a pivotal bearing and at the other in a sliding bearing mounted on a pivotal guide, and a pawl engaging said sliding bearing for holding said worm in contact with said driving-wheel, substantially as specified.

7. The combination, with a chuck or work-holder, of a revolving tool-carrying spindle or shaft, a stop to limit its forward feed, a feed-rack, feed wheel and shaft, and a driving-wheel loosely journaled on said feed-shaft, a spring connecting said driving-wheel and feed-wheel, a movable worm journaled at one end in a pivotal bearing and at the other in a sliding bearing mounted on a pivotal guide, and a pawl engaging said sliding bearing for holding said worm in contact with said driving-wheel, and a projection or arm on said driving-wheel for tripping said pawl, substantially as specified.

8. The combination, with rotatable table B, having chucks B' B' B', of a tapping or threading tool, K, mounted on a revolving spindle, K', mechanism, substantially as described, for driving, reversing, and stopping said spindle, a counterboring-tool, as C, carried on a revolving spindle, C', a stop to limit its forward feed, and feed mechanism furnished with a spring or yielding device, through which the feed motion is communicated to said tool, to permit said counterboring-tool to revolve in contact with its work after its forward feed is arrested by said stop, an operating-lever, as G, and suitable connecting mechanism for putting both said tools in operation simultaneously, substantially as specified.

9. The combination, with a revolving reciprocating tool-carrying spindle, of a feed rack and wheel, and a movable worm for operating said feed-wheel, having a pivotal bearing, F', at one end, and a sliding bearing, F³, at the other, mounted on a pivotal guide, F², substantially as specified.

10. The combination, with a revolving reciprocating tool-carrying spindle, of a feed-rack and wheel, and a movable worm for operating said feed-wheel, having a pivotal bearing, F', at one end and a sliding bearing, F³, at the other, mounted on a pivotal guide, F², a pawl, *h*, and pawl-tripping device d^4; substantially as specified.

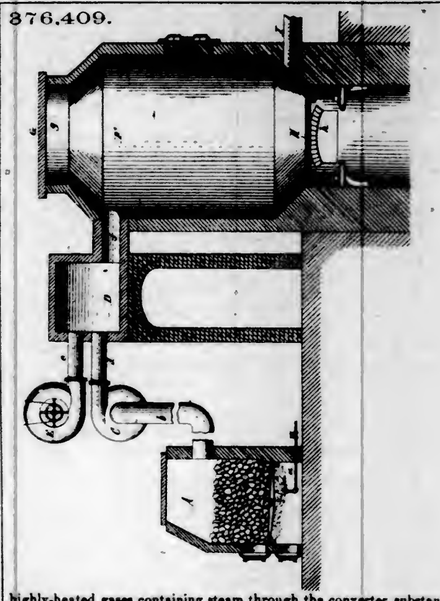
11. The combination, with a chuck or work-holder, of a revolving reciprocating tool-carrying spindle, as C, having a stop, as *c*, and a feed-rack, as c^2, a feed-wheel, D, feed-wheel shaft D', loose driving-wheel, as D^2, a spring, as D^3, and a pin or projection, as *d*, on said wheel D^2, to limit its movement in respect to said feed-wheel D, substantially as specified.

12. The combination, with a revolving reciprocating tool-carrying spindle, as C, with a feed-wheel and feed-rack, a feed-wheel shaft, as D', a gear thereon, as D^4, furnished with an annular channel, d^1, segmental ring d^3, having projection d^4, and a pawl, *h*, substantially as specified.

376,409. PROCESS OF MAKING ALKALINE SILICATES AND CARBONATES. ADOLF KAYSER, Buffalo, N. Y., assignor of two-thirds to Horace Williams and Albert B. Young, both of same place. Filed Aug. 3, 1887. Serial No. 246,005. (No specimens.)

Claim.—1. The herein-described method of treating chloride of sodium or potassium, whereby the chloride is converted into oxide and muriatic-acid gas is generated, which consists in mixing the chloride with clay and heating the mixture in a converter directly by passing

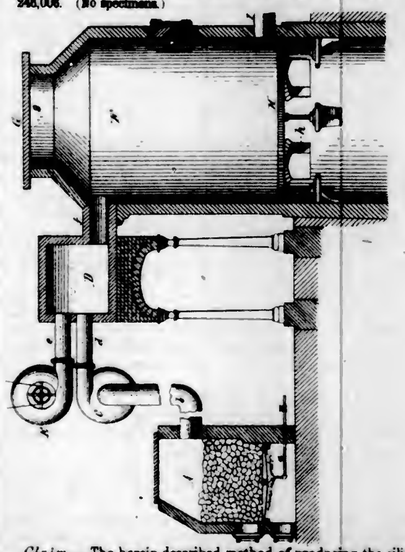
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highly-heated gases containing steam through the converter, substantially as set forth.

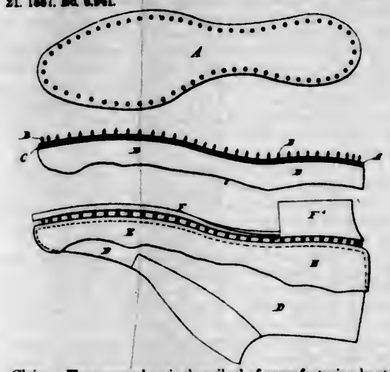
2. The herein-described method of obtaining the oxide of sodium or potassium from the chloride thereof, which consists in mixing the chloride with clay, heating the mixture in a converter directly by passing highly-heated gases containing steam through the converter, smelting the converted material together with an alkali, and then extracting the sodium or potassium combinations by lixiviation, substantially as set forth.

376,410. PROCESS OF MAKING ALKALINE SILICATES. ADOLF KAYSER, Buffalo, N. Y., assignor of two-thirds to Horace Williams and Albert B. Young, both of same place. Filed Aug. 3, 1887. Serial No. 246,006. (No specimens.)



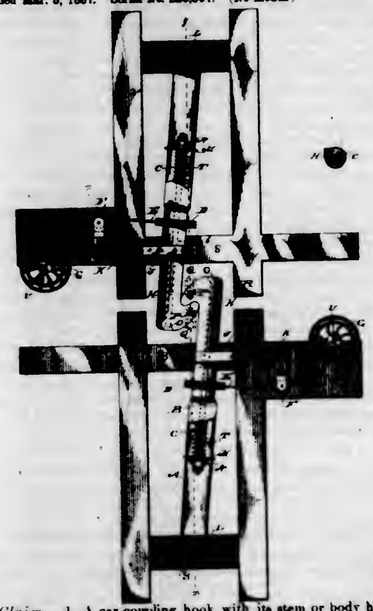
Claim.—The herein-described method of producing the silicate of sodium or potassium from the chlorides thereof, which consists in mixing the chloride with silica, molding the mixture into cakes or bricks, and heating the same in a converter by means of highly-heated gases containing steam passed through the converter, substantially as set forth.

376,411. MANUFACTURE OF BOOTS OR SHOES. MICHEL L. LEON, London, and FERDINAND COPLAN, Castle Hill, Wellingborough, assignor to the Ab-Intra Boot Making Process Company, (Limited,) London, England. Filed Mar. 31, 1887. Serial No. 233,151. (No model.) Patented in England Aug. 23, 1886, No. 10,754; in France Mar. 17, 1887, No. 183,237; in Germany Mar. 23, 1887, No. 40,915; in Belgium May 13, 1887, No. 77,087; in Italy May 14, 1887, XXI, 21,674, and in Spain July 21, 1887, No. 6,941.



Claim.—The process herein described of manufacturing boots and shoes, which consists of the following steps: first, driving metallic fasteners, with barbed hooks or points, through the inner sole near the edge thereof, secondly, fastening the lining or sock on the inner sole over the heads of the fasteners; thirdly, placing the inner sole, with the fasteners and lining, on an iron last; fourthly, drawing the edge of the upper over the points of the fasteners, and, finally, pressing or hammering the finished sole onto the points of the fasteners, substantially as set forth.

376,412. CAR-COUPLING. THOMAS W. MCKEE, Towanda, Pa. Filed Mar. 3, 1887. Serial No. 229,597. (No model.)



Claim.—1. A car-coupling hook with its stem or body hollow and its outer surface cylindrical part of its length, and provided with one angle of a square on part of its surface, substantially as set forth.

2. The combination, in a car-coupling hook, H, of a shaft or draw-bar, C, with shaft U upon end of car, and chain E, passing from shaft around pulley F, and around pulley D, returning around lower pulley, F', to shaft U, substantially as set forth.

3. The combination, in a car-coupler, of draw-bar C, carrying revolving coupling-hook H, with shaft U upon end of car, and chain E, passing from said shaft around upper pulley, F, thence around pulley D, returning around lower pulley, F', to said shaft U, and by means of wheels attached to shaft U turning said coupling-hook H upward and vertical on draw-bar, substantially as set forth.

376,413. TOOL-HANDLE. WILLIAM MILLSPAUGH, Middletown, N. Y., assignor of one-half to William S. Buring, same place. Filed June 28, 1887. Serial No. 242,751. (No model.)



Claim.—1. As a new article of manufacture, a tool consisting, essentially, of a head having a socket for a handle and a perforation, a handle, and a guard and strengthening-plate secured in the handle, the said head and handle being secured together by a rivet passing through the head, handle, and plate, substantially as set forth.

2. As a new article of manufacture, a tool consisting, essentially, of a handle having one end slotted, a guard and strengthening-plate secured in said slotted end with its edges flush with the edges of the handle, and a tool-head having a socket, within which the slotted end of the handle is secured, substantially as set forth.

3. A tool consisting, essentially, of a handle having a slotted end, a guard and strengthening-plate located within said slot and secured therein by rivets passing through the handle and plate, and a tool-head having a socket, within which the slotted end of the handle is secured, substantially as set forth.

376,414. CARRIAGE-TOP. HENRY B. PITNER, La Porte, Ind., assignor of one-half to John F. Croft, same place. Filed Aug. 10, 1887. Serial No. 246,608. (No model.)



Claim.—1. A carriage-top having the transverse portion of its front bow hinged and carrying an extension which forms a storm-shield when the top is let down, substantially as specified.

2. The combination, with a folding carriage-top having the transverse portion of its front bow hinged and carrying a front extension, substantially as specified.

3. The combination, with a folding carriage-top, of the front extension hinged to the forward bow, the said bow having recesses, as shown, and the perforated plates secured thereto, and the threaded hinge-rods and nut, substantially as specified.

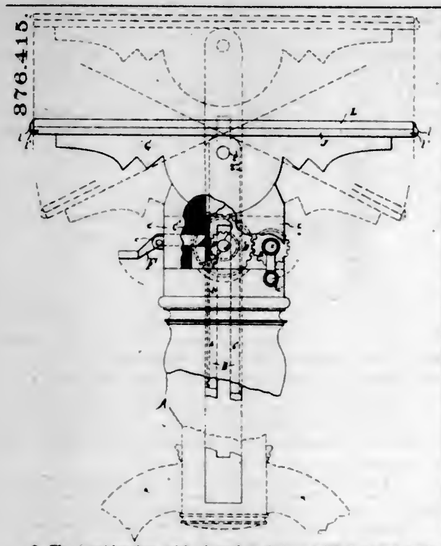
4. The combination, with a folding carriage-top, of the front extension hinged to the forward bow, the said bow having recesses, as shown, and the perforated plates secured thereto, the threaded hinge-rods and nut, and the jointed braces connecting the front extension with the middle bow of the top, so that the said extension may be locked by the braces, substantially as specified.

376,415. COMBINATION-TABLE. KARL RISER and PHILIPP BARDONNER, Cleveland, Ohio; said Riser assignor to said Bardonner. Filed May 20, 1887. Serial No. 238,860. (No model.)

Claim.—1. The combination, with a table-leaf made in two parts, each part adapted to tilt independently of the other, of a sliding top adapted to cover and engage both parts of the leaf, substantially as set forth.

2. The combination, with a slotted rack-bar having internal teeth, of pinions made to operate in the slots of the respective rack-bars made to engage the teeth of the latter, substantially as set forth.

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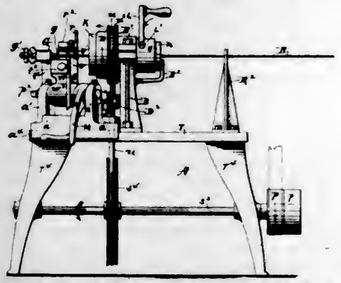


3. The combination, with slotted rack-bars with internal teeth, and pinions made to operate in the slots thereof and engage the said internal teeth, of a spindle made to extend from one standard to the other, said spindle having gearing connected to the respective ends thereof for actnating the gearing to move the rack-bars, substantially as indicated, whereby the rack-bars are moved in unison.

4. The combination, with a tilting table-top made in two sections, the top section being adjustable endwise on the lower section, said lower section being divided laterally, the two parts thereof pivoted together, of rack-bars pivotally connected with the table-top, and mechanism, substantially as described, for elevating and depressing such rack-bars, substantially as set forth.

376,416. MACHINE FOR FINISHING HEADS OF SCREW-BOLTS.

CHARLES D. ROGERS, Providence, R. I., assignor to the American Screw Company, same place. Filed Dec. 24, 1886. Serial No. 222,519. (No model.)



Claim.—1. The bolt-head-shaving machine hereinbefore described, consisting of an adjustably-mounted hollow chuck having means for clamping the bolt therein while running, an adjustable stop or gage for limiting the endwise movement of the bolt, an adjustably-mounted back-rest adapted to be automatically locked in position, a shaving-tool adjustably mounted in a pivoted arm opposite said back-rest, and means for driving said chuck, all constructed, combined, and operating substantially as hereinbefore set forth.

2. In a bolt-head-shaving machine, the combination, with the adjustably-mounted shaving-tool, back-rest, and gage, of the adjustably-mounted hollow chuck, consisting of the stationary sleeve having both a circumferential and a longitudinal slot therein, a bushing fitting the interior of said sleeve, having a cam-shaped slot therein contiguous to said circumferential slot, and also having a pin engaging said longitudinal slot to prevent the bushing from rotary movement, a hollow chuck-pulley having its hub passing through and revolving in said sleeve and bushing, a bolt centering and retaining chuck-head having a hollow spindle restrained from endwise movement secured thereto and fitting the interior of said pulley-hub, holding-jaws mounted in said chuck-head, link-blocks adapted to slide in the chuck-head secured to the rim of the chuck-pulley, links connecting said blocks and holding-jaws, and an operating-lever loosely fitting the exterior rear portion of the stationary sleeve, having a pin secured thereto extending through the hub of the lever and engaging both the sleeve and bushing, substantially as shown, and for the purpose hereinbefore set forth.

3. In a bolt-head-shaving machine, the adjustably-mounted slotted sleeve E, the bushing F, having a cam-shaped slot therein, the pulley D, having its hub *d d'* adapted to revolve in said sleeve and bushing, and an operating-lever, L, mounted on the sleeve E, having a pin, L', engaging said cam-slot, in combination with the hollow chuck-head K, having holding-jaws mounted therein, links *o o*, connecting said jaws and pulley D, a hollow spindle, J, secured to the chuck-head, extending through the hub of said pulley, and the retaining-nut *n*, adapted to revolve between the stationary thrust-arm B^3 and the rear faces of the lever and sleeve, substantially as shown and hereinbefore described.

4. The combination, with the head of a hollow chuck having means for holding a rod therein, of the automatic or self centering device radially mounted in said head, consisting of spring closing-plugs having beveled inner ends and means for restraining the plugs from rotary movement, substantially as shown and set forth.

5. In a machine for shaving bolt-heads, the combination, with a hollow shaft, J, restrained from endwise movement, the chuck-head K, secured thereto, having holding-jaws *v v'*, and the automatic centering-plugs *y*, mounted therein, of the chuck-pulley D, loosely mounted on said hollow shaft, a cam-bushing, F, restrained from rotary movement, an adjustably-mounted sleeve, E, having elongated openings *f* f^3 therein, links *o*, and blocks N, connecting said pulley and jaws, and the operating-lever L, having a pin, L', engaging the bushing F and sleeve E, substantially as and for the purpose hereinbefore described.

6. In a bolt or screw head shaving machine, the combination, with the shaving-tool and means for centering and supporting the screw, of a pivoted head, G, a gage-spindle, *g*, adjustably mounted therein, and a spring, i^3, for automatically returning the spindle-head to its normal position, substantially as shown and hereinbefore set forth.

7. In a screw-head-shaving machine, the combination, with a suitably mounted and operated hollow chuck having means for centering and holding a rod or bolt placed therein, of a pivoted arm or holder, W, carrying an adjustably-mounted tool, *t*, a cam-lever, M', adapted to move in unison with said holder, a pivoted spring-connected vertical lever, U, having a back-rest, *r*, adjustably mounted therein, a vertically-guided rod, T', having a projection, T^3, at its upper end for locking the said lever U in position, and a two-arm pivoted lever, *m*, engaging the cam-lever M' and the rod T', whereby the action of swinging the cutting-tool into engagement with the bolt causes the back-rest to be forced against said bolt and locks the back-rest in position, substantially as shown and hereinbefore set forth.

8. In a screw or bolt head shaving machine, the combination, with the tool-carrying arm W, an operating-lever, M, and a lever, M', having a cam-groove, a^3, terminating in the concentric groove a^4 formed therein, of the pivoted lever U, carrying an adjustably-mounted back-rest, *r*, a vertically-guided rod, T', having its upper end adapted to engage the said lever U, and a pivoted lever, *m*, engaging said cam-groove and vertical rod T', substantially as shown, and for the purpose hereinbefore set forth.

9. In a screw-head-shaving machine, the combination, with the tool-carrying arm, back-rest-carrying lever, and vertically-guided rod adapted to lock the said back-rest lever in working position, of a cam, M', a lever connecting the said cam and vertically-guided rod, and an operating-lever, M, all constructed, arranged, and operating whereby the movement of the operating-lever (as in cutting) first produces a simultaneous movement to the several parts, followed by the automatic locking of the back-rest in a stationary position against the revolving screw blank or rod prior to the engagement of the cutting-tool therewith.

10. The combination, with the continuously-revolving hollow chuck C, adapted to have a headed rod passed longitudinally through its center and having means for automatically centering and holding the rod in position, of the pivoted stop-gage G, the tool-carrying arm W, the cam M', the back-rest-carrying lever U U', a vertically-guided rod, T', and a pivoted lever, *m*, connecting said cam and rod T', all arranged, operating, and mounted on a suitably-supported bed, T, substantially as shown and heceinbefore described.

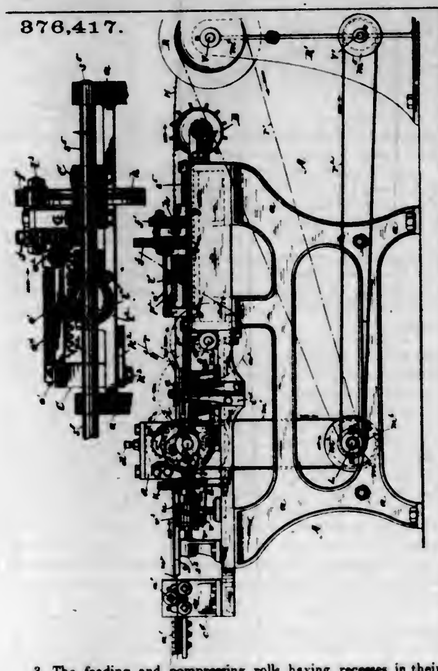
376,417. BARB-WIRE MACHINE.

CHARLES D. ROGERS, Providence, R. I., assignor to the American Screw Company, same place. Filed July 30, 1887. Serial No. 245,657. (No model.)

Claim.—1. In a barb-wire machine, the combination of mechanism for continuously feeding the wire and securing the barbs thereon and mechanisms for automatically gripping, twisting, and releasing the wire while it is passing through the machine.

2. A reciprocating carriage having mounted thereon gripping-jaws and twisting mechanism adapted to seize and twist the wire while traveling in unison with the carriage.

376,417.



3. The feeding and compressing rolls having recesses in their peripheries for the passage of the barbs and provided with dies for sharpening the barbs in their passage.

4. The feeding and compressing rolls having recesses in their peripheries adapted to receive the barbs and compress them laterally upon the wire as they pass.

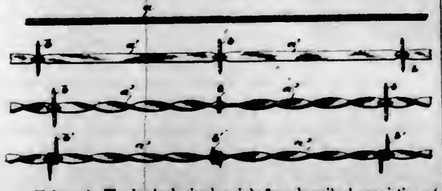
5. The combination of a barb-feeding mechanism and combined feeding and compressing rolls adapted to receive the barbs and secure them at regular intervals on the continuously-moving wire, substantially as described.

6. In a barb-wire machine, the combination of the following automatically-operating mechanisms, viz: a checking and feeding device for successively placing the barbs in position on the wire, continuously-revolving wire feeding and reducing and barb-compressing rolls between which the wire and barbs pass, whereby the barbs are secured upon the wire and the wire is reduced to a ribbon form intermediate of the fixed barbs, rolls for straightening the thus-flattened barb-wire, gripping-jaws adapted to retain the portion of wire to be acted upon by the twisting device, means for locking and unlocking the gripping-jaws, an intermittingly-operating twisting apparatus for twisting the length of wire retained between the gripping-jaws, and a revolving reel upon which the twisted barb-wire is wound, substantially as set forth.

7. In a barb-wire machine, the combination of a barb-feeding device, combined feeding and swaging rolls between which the wire and barbs pass and by which the barbs are secured to the wire and the wire reduced intermediate of the barbs to a ribbon form, and a revolving reciprocating wheel upon which the barb-wire is wound, substantially as specified.

376,418. BARB-WIRE.

CHARLES D. ROGERS, Providence, R. I., assignor to the American Screw Company, same place. Filed July 30, 1887. Serial No. 245,658. (No model.)

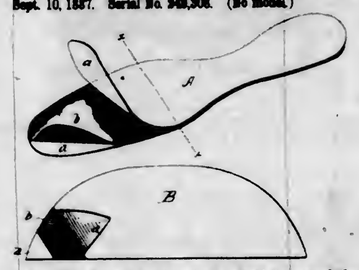


Claim.—1. The barbed wire hereinbefore described, consisting of a single wire having barbs secured thereon at intervals, and having the sections of wire intermediate of the barbs flattened out to a width considerably exceeding that of the normal size of the wire.

2. The barbed wire hereinbefore described, consisting of a single strand of wire having barbs secured thereon at intervals, and having the sections of wire intermediate of said barbs flattened out and twisted to a width considerably exceeding that of the normal size of the wire.

376,419. INNER SOLE, STIFFENER, &c.

AARON F. SMITH, Lynn, Mass., assignor to the Woodbury Heel Company, Nashua, N. H. Filed Sept. 10, 1887. Serial No. 249,308. (No model.)



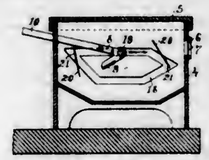
Claim.—1. The herein-described material or stock for the manufacture of inner soles, stiffeners, &c., for boots and shoes, the same consisting of a plurality of layers or sheets of wood pulp and a layer or layers of textile fabric interposed between such layers of wood pulp, all of said layers being secured together, as set forth.

2. A blank for boot and shoe stiffeners, consisting of a plurality of layers or sheets of wood pulp and a layer or layers of textile fabric interposed between the layers or sheets of wood pulp, as set forth.

3. A molded stiffener for boots and shoes, composed of a plurality of layers or sheets of wood pulp with an interposed sheet or layer of textile fabric, the several layers being secured together, as set forth.

376,420. CAKE OR BREAD BEATER.

SAMUEL F. STOWE, Providence, R. I., assignor of one-half to William G. Kelley, same place. Filed Aug. 29, 1887. Serial No. 248,124. (No model.)



Claim.—1. The combination, with the beater-chamber 4, provided with the zigzag guideways 18, of the beater 8, working in said ways and having means for operating the beater, whereby the zigzag reciprocating motion about the horizontal axis is obtained, substantially as and for the purpose herein described.

2. The combination, with the beater-chamber 4, provided with the zigzag guideways 18, and with the air-vent 6 and the gate 22, of the beater 8, provided with the means for reciprocating the beater, substantially as and for the purpose herein described.

3. The combination, with the beater-chamber 4, provided with the ways 18 and the springs 21, of the beater 8, having the guide projections 19, working in the ways 18, and provided with means for reciprocating the beater, substantially as and for the purpose herein described.

4. The combination, with the beater-chamber 4, provided with zigzag guideways 18 and the beater 8, working in said ways, of the hand-wheel 12 and the connecting-rod 11 intermediate the wheel and beater, and the link 15, for supporting said rod, substantially as and for the purpose herein described.

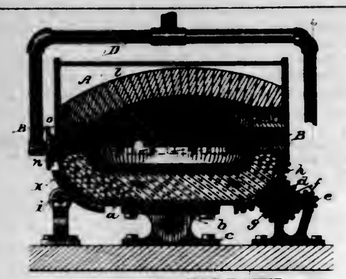
376,421. METHOD OF TREATING IRON OR STEEL.

EDWIN D. WASSELL, Pittsburg, Pa., assignor to Ann Isabella Wassell, same place. Filed Mar. 12, 1887. Serial No. 230,627. (No model.)

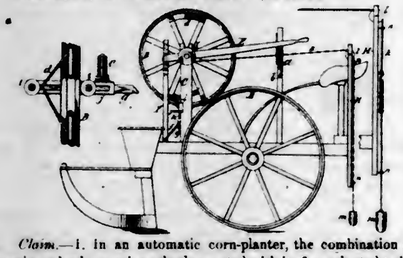
Claim.—1. The method of treating steel or iron, which consists in heating piles, fagots, blooms, or ingots in a bath of molten slag and combining a metallic oxide therewith, substantially as described.

2. The method of treating steel or iron, which consists in charging piles, fagots, blooms, ingots, or bars into a furnace, heating the same to a cherry-red heat in the presence of a metallic oxide, and finally submerging the metal in molten slag and continuing the heating thereof in the presence of a metallic oxide while in the slag until the carbon has been sufficiently reduced, substantially as described.

376,421.



376,422. CORN-PLANTER. ALEXANDER WIRSTON, Fayette, Iowa. Filed Sept. 2, 1887. Serial No. 248,563. (No model.)



Claim.—1. In an automatic corn-planter, the combination of a covering-wheel, a spacing-wheel mounted with its face adapted to bear upon that of the covering-wheel and having lateral cams, as described, a slide-rod having two upwardly-extending arms near one end and on either side of the cam-wheel, and having rollers, as specified, bearings adapted to allow reciprocal movement of the slide-rod, a slotted guide for the roller-arms set higher than the bearings for the slide-rod, and a hinged arm adapted to engage with a fork on the dropper-slide, substantially as and for the purpose set forth.

2. In an automatic corn-planter, in combination with the spacing-wheel and its shaft, a weight suspended contiguous to the path of the covering-wheel by a chain or cord, and a device, substantially as described, mounted on said shaft and adapted to intermittently raise and drop said weight by alternately drawing forward and releasing said chain or cord, substantially as described, and for the purpose set forth.

REISSUES.

10,893. HARROW. J. MORRIS CHILDS, Utica, N. Y., assignor to J. M. Childs & Co., same place. Filed Nov. 28, 1887. Serial No. 256,362. Original No. 346,266, dated July 27, 1886.

Claim.—1. The combination, in a harrow having cross-beams with cross-grooves on the under side of the beam for receiving the angle of the draft-bars, of the draft-bars constructed of metal, having an





10,893.



angle-bend in the cross-section, with means for retaining the two in fixed relation, substantially as described.

2. The combination, in a harrow, of the grooved cross-beams and the metallic draft-bars having an angle-bend in cross-section for fitting the grooves in the cross-beams, with means for retaining the two in fixed relation, substantially as described.

3. The combination, in a harrow having metallic angular draft-bars and slotted cross-beams for fitting the angle of the draft-bars at the intersection, of the curved spring-teeth, a fastening-clip, formed as described, whereby its extremes engage the inner surface of the tooth, with means for holding the clip in fixed relation to the tooth, substantially as set forth.

4. The combination, in a harrow having metallic angle draft-bars and slotted cross-bars for fitting the angle of the draft-bars at their intersection, of the curved tooth held to the upper surface of the frame, substantially as described.

5. The combination, with the cross-beams, draft-bars, and curved tooth on the upper surface of the cross-beams, of the reversible clip with perforated ears and projecting lugs extending from both surfaces of the clips for engaging the tooth and preventing the same from turning and for adjusting the length of the cut of the tooth, with means for holding the clip to the tooth, substantially as described.

6. A harrow having the following elements in combination: cross-beams, the metallic draft-bars formed with an angle-bend in cross-section, the curved tooth, the fastening-clip for engaging the tooth, the retaining-bolts for engaging the clips, and angle draft-bars for retaining in fixed relation the tooth, cross-beams, and angle-bar, substantially as shown.

7. The combination, in a harrow having metallic angle draft-bars and slotted cross-bars fitting the angle of the draft-bars at their intersection, of the hinges formed by the extension ends of the angle draft-bars perforated and bent for overlapping each other, with bolt or rivet for securing said hinges, substantially as described.

8. A harrow having the following elements in combination: cross-beams, metallic draft-bars formed with an angle-bend in cross-section, the curved teeth, fastening-clip for engaging the tooth, retaining-bolts for engaging the clips, and angle draft-bars for retaining in fixed relation the teeth, cross-bars, and draft-bars, bent, perforated, and lapping ends of the metallic draft-bars held in union by rod or bolt for forming a joint or hinge, substantially as set forth.

9. The combination, in a harrow, of the angle draft-bars, the grooved cross-beams, and the tooth at the intersection, substantially as shown.

10. The combination, with a harrow-frame, of a curved spring-tooth, a flat seat on which the tooth is mounted, and a fastening-clip spanning the tooth and held thereto by bolts and nuts.

11. The combination of a curved spring-tooth mounted on a flat seat on the frame, a fastening-clip spanning the tooth and engaging the inner curve thereof, and bolts and nuts, for the purposes stated.

12. A clip, combined with bolts, for fastening a spring-curved harrow-tooth to a seat, substantially as described, the essential characteristics of such clip being that it bears upon the tooth and engages by projections its opposing edges to prevent edgewise vibration thereof.

PHOTO LITH. NORRIS PETERS WASHINGTON D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

CRAWFORD, Appellant, *v.* HEYSINGER *et al.*

Decided December 12, 1887.

1. HEYL—PAPER-FASTENER.

The first and second claims of Reissued Letters Patent No. 9,803, granted July 12, 1881, to George W. Heyl, assignee, for improvement in paper-fasteners, regarded as valid in the consideration of their meaning and as affecting the question of infringement.

2. CONSTRUCTION OF CLAIMS LIMITED BY ACT OF INVENTOR.

Where the applicant in soliciting a reissue limits his claims in view of the objections of the Patent Office, he is bound by such limitation in subsequent suits upon that reissue.

3. SUCH LIMITATIONS CONFINE CLAIMS TO THE PRECISE COMBINATIONS DESCRIBED.

As thus limited, the first and second claims of the Heyl reissue cover only the precise combinations set forth in them, as described in the specifications and illustrated in the drawings of such reissue.

APPEAL from the Circuit Court of the United States for the Eastern District of Pennsylvania.

Mr. Hector T. Fenton for the appellant.
Mr. Joseph Pusey for the appellees.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a bill in equity filed in the Circuit Court of the United States for the Eastern District of Pennsylvania by Isaac W. Heysinger, Christian H. Hershey, and J. Loren Heysinger against James P. Crawford, founded on the alleged infringement of Reissued Letters Patent No. 9,803, granted July 12, 1881, to George W. Heyl, assignee of Henry R. Heyl, the inventor, for an improvement in devices for inserting metallic staples, the application for the reissue having been filed May 10, 1881, and the original patent, No. 195,603, having been granted to Henry R. Heyl, September 25, 1877, on an application filed September 20, 1877. Henry R. Heyl assigned the original patent to George W. Heyl, March 20, 1878, and George W. Heyl assigned the reissued patent to the plaintiffs November 23, 1881. This bill was filed June 9, 1883. The answer of the defendant sets up as defenses the invalidity of the reissue, want of novelty, and non-infringement. After issue joined, proofs were taken, and the circuit court, in November, 1883, entered an interlocutory decree, adjudging the reissued patent to be valid as respects claims 1 and 2, and that those claims had been infringed by the defendant, and awarding a perpetual injunction, and referring it to a master to take an account of profits and damages. On his report, a final decree was entered in May, 1884, in favor of the plaintiffs, for $225.75 damages and for costs.

In order to consider any question involved as to the reissue it is necessary to compare the specifications of the original and reissued patents. They are here placed in parallel columns, the parts of each which are not found in the other being in italics, the drawings in the two being substantially alike, with only immaterial differences in the lettering.

ORIGINAL.

To all whom it may concern:

Be it known that I, HENRY R. HEYL, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Paper-Fasteners, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figures 1 and 5 are side elevations of the fastener embodying my invention. Fig. 2 is a vertical section in line *x x*, Fig. 1. Fig. 3 is a side elevation, partly

REISSUE.

To all whom it may concern:

Be it known that I, HENRY R. HEYL, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Paper-Fasteners, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figures 1 and 5 are side elevations of the fastener embodying my invention. Fig. 2 is a vertical section in line *x x*, Fig. 1. Fig. 3 is a side elevation, partly

Fig. 1.

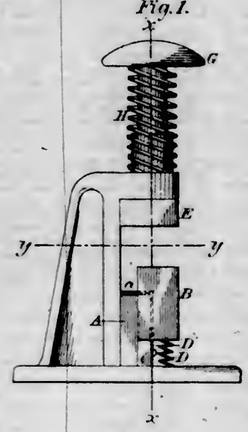


Fig. 2.

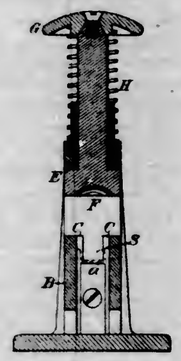


Fig. 3.

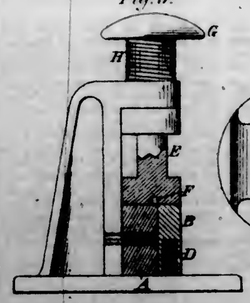


Fig. 4.

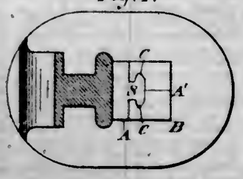


Fig. 5.

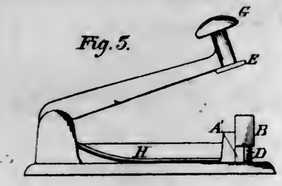


Fig. 6. Fig. 7. Fig. 8.

sectional. Fig. 4 is a horizontal section in line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of an implement of the form of a hand-stamp, by which metallic staples may be forced through sheets of paper documents, and secured by clinching the legs on the reverse side.

Referring to the drawings, A represents a stationary anvil, which is secured to or formed with an arm rising from a suitable stand of convenient form for use upon a writing-desk, and B represents a sliding guide-block fitted to the anvil A by a sliding joint, and having grooves C C, which match with the tongue of the anvil, the upper face of the block being flat. The normal position of the guide B is elevated, and in order to keep it in this position, or from dropping prematurely, I employ a spring, D, which may press up under the guide, or a spring, D′, which may press against it, and thus produce the necessary friction. E represents a reciprocating driver, whose under face is flat, and in the same is a concave recess, F, said driver having a knob, G, for receiving the blows of the hand, and provided with a spring, H, for causing the return or elevation of the driver.

The operation is as follows: A staple is placed within the grooves C C, with its crown resting on the anvil A, the points thus being *upward*. The papers to be united are now placed *upon the face of the guide B over the staple-points*, and by a sharp blow of the hand upon the knob G the driver is forced downward upon the papers. *The guide B gives way, and* the staple-legs come *up* through the papers into the recess F, where they are bent over *preparatory to the final clinching. The hand is now released from the knob of the driver, the latter then rising, and the papers are drawn somewhat forward, until the staple-crown rests upon the face of the guide B, when another blow is imparted to the driver, and the flat portion of its face descends forcibly on the staple-legs, so as to bend the latter close to the paper, thus completing the operation.*

It will be seen that the grooves C C serve to support and guide the staple-legs during their penetration through the papers, and the recess F is so shaped that, as the staple-legs enter thereinto, they will strike the concave or slanting walls of said recess, and thus be bent inward toward each other *sufficiently to insure their being bent down properly when again struck between the faces of the guide B and driver E.* A plate, *g*, may be advantageously employed to overlap the staple-crown for preventing the latter from *binding* while the legs are being forced through the papers.

sectional. Fig. 4 is a horizontal section in line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of an implement of the form of a hand-stamp, by which metallic staples may be forced through sheets of paper or documents, and secured by clinching the legs on the reverse side.

Referring to the drawings, A′ represents a stationary anvil, which is secured to or formed with an arm rising from a suitable stand of convenient form for use upon a writing-desk; and B represents a sliding guide-block fitted to the anvil A′ by a sliding joint, and having grooves C C, which match with the tongue of the anvil, the upper face of the block being flat. The normal position of the guide B is elevated, and in order to keep it in this position, or from dropping prematurely, I employ a spring, D, which may press up under the guide, or a spring, D′, which may press against it, and thus produce the necessary friction. E represents a reciprocating driver whose under face is flat, and in the same is a concave recess, F, said driver having a knob, G, for receiving the blows of the hand, and provided with a spring, H, for causing the return or elevation of the driver.

The operation is as follows: A staple is placed within the grooves C C with its crown resting on the anvil A′, the points thus being *turned toward the bending-recess F.* The papers to be united are now placed *beneath the driver*, and by a sharp blow of the hand upon the knob G the driver is forced downward upon the papers. The staple-legs come through the papers into the recess F, where they are bent over *by the slanting ends thereof.*

It will be seen that the grooves C C serve to support and guide the staple-legs during their penetration through the papers, and the recess F is so shaped that as the staple-legs enter thereinto they will strike the concave or slanting walls of said recess, and thus be bent inward toward each other, *as shown in Figs. 2 and 3.* A plate, *a*, may be advantageously employed to overlap the staple-crown, for preventing the latter from *bending* while the legs are being forced through the papers.

It will be seen that the staple-support or anvil A′, with the slotted or recessed hammer, operates to insert a staple through layers of stock to be united, and simultaneously bends over its projecting ends.

In my original specification I described the further separate operation of completely flattening down the ends of the staple thus bent over by a second blow between the upper and lower jaw of the implement, believing that the same was new; but I have since learned that the same result was obtained by devices described in previous Letters Patent of the United States. Should the legs of the staple, when bent over by the same blow which drives the same, as is hereinabove described, be found not to lie sufficiently close to the surfaces of the paper, the same may be further flattened down by a second blow between flat surfaces in front of the staple-channel and bending-recess respectively provided therefor.

Figs. 1, 2, and 3 show a hand-stamp embodying my invention, in which the driver reciprocates in a fixed head in the manner of a plunger, while Fig. 5 shows the same invention embodied in a hand-stamp, in which the driver is mounted at the end of a vibrating arm pivoted at its rear extremity to the base, which rests upon the table. It will be seen that the devices which constitute my invention are to be found in both these modifications, and that both operate in precisely the same manner to insert by a blow upon the knob G of the hand-stamp the staple through layers of stock to be united, and simultaneously bend over the projecting ends in the opposite bending-recess provided therefor.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. *The reciprocating driver E, constructed with a flat face recessed, substantially as described, whereby the projecting ends of staples may be first bent over by entering the recess and then flattened down by pressure from the flat face.*

2. *The self-adjusting guide-block B, having staple-guiding grooves C C and a flat face, upon which to complete the clinching of the staple, substantially as and for the purpose set forth.*

3. *The combination of the stationary staple support or anvil A with the sliding guide B, grooved to partially embrace and guide the staple-legs, substantially as and for the purpose set forth.*

4. *The combination of the stationary staple support or anvil A with the reciprocating slotted or recessed hammer, operating to insert a staple through layers of stock to be united and simultaneously bend over its projecting ends, substantially as and for the purpose set forth.*

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. *The combination of the stationary staple-support or anvil A′ and the sliding staple-guide B with the reciprocating slotted or recessed hammer operating to insert a staple through layers of stock to be united, and simultaneously bend over its projecting ends, substantially as and for the purpose set forth.*

2. *In a device for inserting metallic staples, the combination of the staple-guide B, anvil A′, spring D, and reciprocating driver, provided with the knob G, the whole arranged to operate substantially as and for the purpose set forth.*

3. *A staple-inserting implement having two opposite jaws arranged with relation to each other, substantially as shown, one of which is provided with a recess, the other with a vertically-channeled staple-guide, an anvil, and a spring, so that when the jaws are separated after driving a staple the guide will be open for the reception of the succeeding staple, substantially as described.*

4. *An implement for inserting metallic staples, consisting of two opposite jaws, one of which is provided with a staple-bending recess, and the other with staple-guiding grooves and an anvil fitted thereto, in combination with a knob to receive the blow of the hand and insert a staple by a sudden percussion, substantially as described.*

5. *In a staple-inserting machine constructed to operate substantially as described, the staple-guiding block B, having staple-holding grooves C C, forming side extensions of the vertical slot S, substantially as shown and described.*

6. *An implement for inserting metallic staples, consisting of two opposite jaws, one of which is provided with a staple-bending recess, and the other with staple-guiding grooves and an anvil fitted therein, the said jaws being arranged to be separated and stand apart to admit the requisite manipulation for conveniently placing a staple in the open end of the said staple-guiding grooves, substantially as set forth.*

7. *The combination of the stationary staple-support or anvil A′ with the sliding guide B, grooved to partially embrace and guide the staple-legs, substantially as and for the purpose set forth.*

8. *In an implement for inserting metallic staples, a reciprocating driver provided with a knob to receive the blow of the hand, in combination with a grooved staple-guiding block and an anvil attached to a stand of convenient form for use upon a writing-desk, the said stand having an arm arising therefrom, and over and above it a guide for the purpose of guiding the said driver to the said anvil, substantially as and for the purpose set forth.*

The differences which thus appear in the descriptive parts of the specification are these: In the original, in stating the operation of the machine, it is said that the points of the staple point "upward" when the staple is within the grooves. In the reissue it is stated that those points are "turned toward the bending recess F."

In the original it is said that the papers to be united are "placed upon the face of the guide B over the staple-points." In the reissue it is said that the papers to be united are "placed beneath the driver."

In the original it is said that—

the guide B gives way, and the staple-legs come up through the papers into the recess F, where they are bent over preparatory to the final clinching.

In the reissue it is said that—

the staple-legs come through the papers into the recess F, where they are bent over by the slanting ends thereof.

The original then contains the following statement, which is wholly omitted in the reissue:

The hand is now released from the knob of the driver, the latter then rising, and the papers are drawn somewhat forward, until the staple-crown rests upon the face of the guide B, when another blow is imparted to the driver, and the flat portion of its face descends forcibly on the staple-legs, so as to bend the latter close to the paper, thus completing the operation.

The reissue omits the statement of the original that as the staple-legs strike the slanting walls of the recess they will be bent inward toward each other sufficiently to insure their being bent down properly when again struck between the faces of the guide B and driver E, and substitutes the statement that when the staple-legs strike the slanting walls of the recess they will be bent inward toward each other, as shown in figures 2 and 3.

The following sentence, not in the original, is found in the reissue:

It will be seen that the staple-support or anvil A′, with the slotted or recessed hammer, operates to insert a staple through layers of stock to be united, and simultaneously bends over its projecting ends.

The specification of the reissue then states that the separate operation described in the original of flattening down by a second blow the ends of the staple when bent over was not new, but that the legs of the staple, if not laid sufficiently close to the surface of the paper when bent over by the driving blow, may be further flattened down by a second blow between flat surfaces.

Figure 5 of the drawings, though contained in the drawings of the original patent, was not described or referred to in the original specification; but the reissued specification speaks of figures 1, 2, and 3 as showing a hand-stamp in which the driver reciprocates in a fixed head in the manner of a plunger, while figure 5 shows a hand-stamp in which the driver is mounted at the end of a vibrating arm, pivoted at its rear extremity to the base, which rests upon the table; that the devices which constitute the invention are found in both of these modifications, and that both operate to insert, by a blow upon the knob G of the hand-stamp, a staple through layers of stock to be united, and to simultaneously bend over the projecting ends in the opposite bending-recess provided therefor.

On the question of novelty, the alleged prior invention principally relied upon is a patent of the United States No. 187,189, granted to George L. Ward and Orianna S. Smyth, assignees of James C. Smyth, February 6, 1877, for an improvement in machines for stitching books with staples.

The circuit court, in its opinion, accompanying the record, held that the patented invention was not anticipated by that of Smyth; that claims 1 and 2 of the reissue were substantially the same as claim 4 of the original patent, when the latter claim was read in the light of the specification, and that the defendants' device infringed claims 1 and 2 of the reissue.

Claim 1 of the reissue is for a combination of (1) the stationary staple-support or anvil, (2) the sliding staple-guide, and (3) the reciprocating slotted or recessed hammer or driver, the conjoined operation of the three being to insert a staple through layers of stock to be united and to simultaneously bend over its projecting ends. Claim 2 of the reissue is for a combination with the same three elements, of (4) the spring D, and (5) the knob G. Claim 4 of the original patent was for a combination of only two of these elements—namely, (1) the stationary staple-support or anvil, and (2) the reciprocating slotted or recessed hammer or driver. It left out the sliding staple-guide, and yet the claim stated that the combination of the two elements, without the staple-guide, would operate to insert the staple and simultaneously bend over its projecting ends. It would, however, wholly fail to so operate without the use of the sliding staple-guide. The use and operation of the sliding staple-guide, its arrangement so as to slide, the use of the spring D to keep it in its normal elevated position, so that it will not drop prematurely, and the use of the knob G, with which to impel the driver, are fully set forth in the original specification, and described as necessary, in combination with the stationary staple-support and the reciprocating slotted or recessed hammer, to insert a staple through layers of stock and simultaneously bend over its projecting ends; and the invention is stated in the original specification to consist in a hand-stamp by which metallic staples may be forced through sheets of "paper documents" and secured by

clinching the legs on the reverse side. We do not find it necessary, however, to decide whether the reissue is to be considered a proper one, so far as claims 1 and 2, rightly construed, are concerned, on the view that it was an inadvertence, accident, or mistake to have left out of claim 4 of the original the elements which, by the description in the original specification, were made necessary to the performance of the operation specified in that claim. We dispose of the case on the assumption that the reissued patent is valid as respects claims 1 and 2.

What is the proper construction of those claims? In claim 1 the staple-support or anvil is described as being "stationary," and the slotted or recessed hammer or driver as being "reciprocating." In claim 2 the anvil must be regarded as a "stationary" anvil, and the hammer or driver is expressly stated to be "reciprocating." In claim 4 of the original the staple-support or anvil is said to be "stationary," and the slotted or recessed hammer to be "reciprocating." So in claim 1 of the original the driver is said to be "reciprocating," and in claim 3 of the original the staple-support or anvil is said to be "stationary." In the description in the original specification the anvil is described as being "a stationary anvil," and the hammer or driver as being "a reciprocating driver." In the specification of the reissue the staple-support is described as being "a stationary anvil," and the driver or hammer as being "a reciprocating driver."

The file-wrapper and contents in the matter of the reissue are part of the evidence in the case, and throw light upon what should be the proper construction of claims 1 and 2. The application for the reissue was filed May 10, 1881. In the application as then presented eleven claims were proposed, the first and ninth of which were as follows:

1. The staple-guide B, driving-head A', operating therein, recessed bending-block E, spring D, and knob G, combined and operating substantially as and for the purpose set forth.

9. The combination of the anvil or driving-head A' with the reciprocating slotted or recessed hammer, operating to insert a staple through layers of stock to be united, and simultaneously bend over the projecting ends, substantially as and for the purpose set forth.

On the 12th of May, 1881, the applicant canceled claims 1 and 9, and converted claim 9 into a new claim, 1, and claim 1 into a new claim, 2, as follows:

1. The combination of the stationary staple-support or anvil A' with the reciprocating slotted or recessed hammer, operating to insert a staple through layers of stock to be united, and simultaneously bend over its projecting ends, substantially as and for the purpose set forth.

2. In a device for inserting metallic staples, the combination of the staple-guide B, anvil A', operating therein, spring D, recess F, and knob G, the whole arranged to operate substantially as and for the purpose described.

On the 14th of May, 1881, the examiner notified the applicant as follows:

Upon further consideration of this matter, in connection with amended specification, applicant is advised that the first clause of claim does not present an operative combination of mechanical devices for the purpose stated. It is obvious that without a staple-holding device the parts enumerated would be inoperative, in view of which a staple-holding device should be included. In reference to the second and third clauses of claim, the statement that the anvil operates in the guide-block is unwarranted, inasmuch as the anvil is stationary and the guide-block slides up and down upon the anvil. With proper correction as to this point the second and third clauses of claim may be allowed.

On the 31st of May, 1881, the applicant adopted the suggestions of the examiner and amended claim 1 by inserting after the words "stationary staple-support or anvil A'" the words "and the sliding staple-guide B," and amended claim 2 by canceling the words "operating therein," so that claims 1 and 2 then read as follows:

1. The combination of the stationary staple-support or anvil A' and the sliding staple-guide B with the reciprocating slotted or recessed hammer, operating to insert a staple through layers of stock to be united, and simultaneously bend over its projecting ends, substantially as and for the purpose set forth.

2. In a device for inserting metallic staples, the combination of the staple-guide B, anvil A', spring D, recess F, and knob G, the whole arranged to operate substantially as and for the purpose described.

On the 4th of June, 1881, the examiner notified the applicant as follows:

Upon further consideration of this matter, in connection with the last amendment, it is obvious that the "recess F" should not form an element of the mechanical combination, as such recess is a provision of the "hammer" referred to in the first clause of claim, and such recess is not an operative element independent of such hammer.

On the 14th of June, 1881, the applicant made further amendments, leaving claim 1 as last recited, and as it is found in the reissued patent, and amending claim 2, as last recited, by striking out the words "recess F," so that it read as follows:

2. In a device for inserting metallic staples, the combination of the staple-guide B, anvil A', spring D, and knob G, the whole arranged to operate substantially as and for the purpose described.

On the 15th of June, 1881, the examiner notified the applicant as follows:

Upon further consideration of this matter, with a view to final action, the second clause of claim is found defective, in the absence of any mechanical combination between the "knob G" and the other elements included in the combination. To obviate this objection a "reciprocating driver" should be added to the combination.

On the 18th of June, 1881, the applicant amended claim 2 by substituting for the words "and knob G" the words "and reciprocating driver provided with the knob G," so that the claim as thus amended read as follows, the same as claim 2 in the reissued patent:

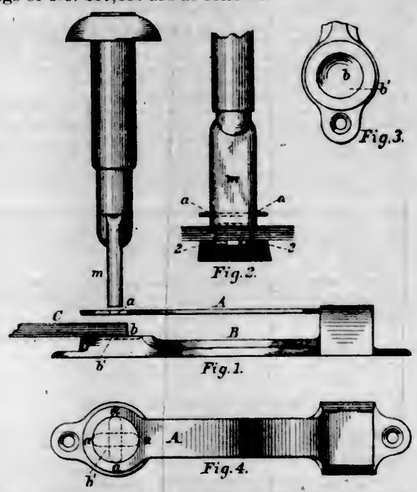
2. In a device for inserting metallic staples, the combination of the staple-guide B, anvil A', spring D, and reciprocating driver provided with the knob G, the whole arranged to operate substantially as and for the purpose set forth.

From these proceedings in the Patent Office in regard to the allowance of claims 1 and 2 of the reissued patent, it is apparent that the applicant carefully limited himself in those claims to a stationary staple-support or anvil and a reciprocating slotted or recessed hammer or driver. This result must also follow, in view of the devices existing in the various prior patents introduced in evidence, showing the state of the art. The various elements entering into the combinations of claims 1 and 2 of the reissue were old, considered singly. The recessed clinching-base was old. The driver in the staple-case was old. The combination of those two devices in a power-machine was old. The J. C. Smyth machine was a hand-lever machine, and contained in combination all the elements of the Heyl device, though differently arranged. In both the Smyth and the Heyl devices there are means for forcing out a staple from a case by a contained plunger and bending the legs against a concave recess. In view of this Smyth machine, the plaintiff's expert stated that the novelty of the Heyl devices consisted particularly—

in the automatic adjustment to various thicknesses of paper, by means of which, without any added parts, the jaws are adapted to grip and hold all thicknesses of paper while being stapled and clinched; in their capacity for being opened to allow the eye to see the staple while being inserted by hand at the open end of the staple-case, whereby a length of staple may be adapted or selected to suit the material; in the retracting-spring to keep the staple-case constantly open for a new staple; in a hand-knob for driving down the plunger, and in the general construction and adaptation of all the parts to be used as a light portable desk-tool, low in price, simple in construction and operation, and of universal use.

In prior devices the clinching part was the base, and the inserting device was above it. This arrangement did not permit of the proper support of the staple in the tube. Heyl reversed the position of the parts and placed the inserting device on the base, so that the staple could be inserted by hand into the open mouth of the tube and be supported until it should be driven by the tube and its contained driver, this reversal of the parts necessitating the use of a spring underneath to support the tube and keep it above the end of the driving-blade, or of a spring at the side to press against the guide and keep it in place by friction. Claims 1 and 2 of the reissued patent must therefore be limited to the specific combinations and arrangements of parts described and shown in the specification and drawings and enumerated in those claims. The staple-support or anvil must be stationary and the slotted or recessed hammer or driver must be reciprocating.

In the defendants' device, called the "Victor tool," the anvil or staple blade is movable, and the recessed clinching-base is fixed or stationary. It is a device constructed under and in accordance with Letters Patent No. 218,227, granted to William J. Brown, Jr., August 5, 1879, and a second patent, No. 260,365, granted to the same person July 4, 1882. The drawings of No. 260,365 are as follows:



An expert for the plaintiffs testifies that he regards the lower part of the defendants' device, which is fixed or stationary and contains the clinching-cavity, and resists the driving and clinching blow of the hand from the opposite part of the tool, as the equivalent for the "reciprocating driver provided with the knob G," mentioned in claim 2 of the reissue. As the defendants' tool is constructed with the stationary recessed clinching-base made to rest upon a table, and to receive the impact from above of the detached driving-tool, it is a misnomer to say that such stationary base is the mechanical equivalent of the reciprocating driver E of the Heyl patent. The patentee having imposed words of limitation upon himself in his claims, especially when so required by the Patent Office in taking out his reissue, is bound by such limitations in subsequent suits on the reissued patent. Such have been the uniform decisions of this Court in like cases. (*Leggett* v. *Avery*, 101 U. S., 256; *Goodyear Dental Vulcanite Company* v. *Davis*, 102 U. S., 222, 228; *Fay* v. *Cordesman*, 109 U. S., 408; *Mahn* v. *Harwood*, 112 U. S., 354, 359; *Cartridge Co.* v. *Cartridge Co.*, 112 U. S., 624, 644; *Sargent* v. *Hall Safe & Lock Co.*, 114 U. S., 63: *Shepard* v. *Carrigan*, 116 U. S., 593; *White* v. *Dunbar*, 119 U. S., 47; *Sutter* v. *Robinson*, 119 U. S., 530; *Bragg* v. *Fitch*, 121 U. S., 478: *Snow* v. *Lake Shore Railway Co.*, 121 U. S., 617.)

Assuming, therefore, that claims 1 and 2 of the reissued patent are valid, they are to be construed as covering only the precise combinations enumerated in them and described in the specification and shown in the drawings; and they do not cover the defendants' device, which has a stationary recessed clincher and a movable detached staple-inserting tool, because claims 1 and 2 of the reissued patent expressly call for a reciprocating clincher and a stationary staple-supporting anvil. Those elements in those forms in claims 1 and 2 were made necessary by the requirements of the Patent Office before it would grant the reissue, and the applicant, having voluntarily made the limitations, is bound by them.

Although in the proofs the plaintiffs undertook to show that three other claims of the reissued patent, in addition to claims 1 and 2, were infringed by the "Victor tool," the circuit court, in its interlocutory decree, states that it considered only claims 1 and 2; and, as the decree holds those claims alone to be valid and to have been infringed, and the master's report and the final decree apply only to those claims, and the counsel for the plaintiffs does not contend in his brief that any other claim is infringed, we necessarily have confined our consideration of the case to those two claims, leaving all questions as to every other claim of the reissued patent entirely open for consideration in a case which may involve them.

The decree of the circuit court is reversed, and the case is remanded to that court, with a direction to dismiss the bill of complaint.

FOREIGN PATENT LAWS.

PATENT LAW OF THE CONGO FREE STATE.

The following translation of the Congo State Patent Law, lately decreed by the King of the Belgians, and which came into operation on October 29, 1886, and of the rules made thereunder, has been made from an official copy in French by Messrs. Phillips & Leigh, international patent agents, of No. 22 Southampton Buildings, Chancery Lane, London, England, and forwarded to us for publication:

Leopold II, King of the Belgians, Sovereign of the Free State of the Congo, to all present and to come, *Greeting:*

Considering that it is of importance to encourage new and useful inventions, by granting to their authors for a limited period the exclusive enjoyment of said inventions, we have upon the proposition of our Council decreed and do decree as follows:

1. Any discovery or improvement capable of being made a subject of manufacture or trade is patentable.

2. The grant of patents shall be without previous examination, at the risk and peril of the applicants, without guarantee either as to the genuineness or novelty or merit of the invention, or of the correctness of the specification, and without prejudice to the rights of third parties.

3. Patents are of three kinds: patents of invention, patents of importation, and patents of improvement—*i. e.*, addition.

4. The date of application is the date of the patent.

5. The term of a patent of invention is twenty years; that of a patent of importation is limited by that of the foreign patent, and patents of improvement terminate with their respective parent patents.

6. Each patent issues on payment of the sum of one hundred francs. Patents of improvement (addition) are not subject to any tax. Payments to be made in advance.

7. The issue of each patent shall be notified in the *Bulletin Officiel* (*Brussels Gazette.*)

8. Patents confer on their holders the right of prosecuting before the courts all interferers with their rights; of casting infringers in damages and profits, and of (according to the case) securing a decree of confiscation of the articles manufactured in infringement of the patent.

9. Our Administrator-General of the Department of Foreign Affairs shall issue the patents in our name. He shall take all steps relative to the execution of the present decree, which shall come into force this day.

Given at Brussels the 29th October, 1886.

LEOPOLD.

By the Sovereign King.
THE ADMINISTRATOR-GENERAL OF THE DEPARTMENT OF FOREIGN AFFAIRS.

PATENT RULES.

The Administrator-General of the Department of Foreign Affairs, in consideration of the decree of October 29, 1886, orders:

1. Every applicant for a patent of invention, of importation, or of improvement (addition) must file an application therefor at the Department for Foreign Affairs, either direct or through the Administrator-General of the Congo.

The application shall be accompanied by the following documents in duplicate, one copy of which shall be sent to the Director of Justice of the Congo:

(*a.*) Specification of the invention certified as correct.

(*b.*) Drawings, models, or samples, as may be necessary for the comprehension of the specification.

2. The application shall be upon unstamped paper; it shall contain the Christian and surname, business, and domicile of the inventor.

If a patent of importation is the object of the application, the latter shall disclose the date of the original patent and the country for which it has been granted.

3. All the documents, models, or samples must be dated and signed by the applicant, or his attorney, whose power, duly legalized, shall remain annexed to the application.

4. There shall be delivered to the applicant, or to his attorney, a receipt for the documents, models, or samples filed, which shall establish the day and hour on and at which they were filed. This receipt shall only be delivered against payment of the tax, and a certificate of such payment shall be embodied therein.

5. The patent shall expressly stipulate that the grant has taken place without previous examination, at the risk and peril of the applicant, without guarantee either of the genuineness, the novelty, or the merit of the invention, or of the correctness of the specification, and without prejudice to the rights of third parties.

6. The issue of the original patent shall be without fee. Each subsequent issue shall be certified as a correct copy, and subject to a tax of five francs.

7. Every assignment or change of ownership, total or partial, must be notified to the Department of Foreign Affairs. The notification of assignment, or other act involving a change of ownership, must be accompanied by a certified abstract from the respective deed.

8. Deeds of assignment, license, or the like, shall be published in the *Bulletin Officiel*, in the same way as grants of patents in pursuance of article 7 of the decree of October 29, 1886.

EDM. VAN EETVELDE.

Brussels, October 30, 1886.

THE OFFICIAL GAZETTE
OF THE
United States Patent Office.

[*BY AUTHORITY OF CONGRESS.*]

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CONTENTS.

	Page.
THE OFFICIAL GAZETTE	203
INDEXES TO FOREIGN PATENTS	203
INDEXES TO PATENTS ON ELECTRICITY	203
ISSUE OF JANUARY 17, 1888	203
DESIGNS	204
TRADE-MARKS	204
LABELS	204
PATENTS GRANTED	205
REISSUES	292
DECISIONS OF THE COMMISSIONER—	
Ex parte Schulze-Berge	293
Ex parte Sartell	295
Ex parte Norton	296
DECISIONS OF THE U. S. COURTS—	
Kirk *v.* Du Bois	297

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Indexes to Foreign Patents.

The following indexes to foreign patents have been translated, compiled, and published under the authority of the Commissioner of Patents, and may be obtained as a Patent Office publication at the prices given below:

INDEX TO FRENCH PATENTS, 1791 to 1876, inclusive, (subject-matter, one volume, 935 pages, bound in cloth $10 00

INDEX TO ITALIAN PATENTS, 1848 to May 1, 1882, (subject-matter,) one volume, 120 pages—

Bound half-turkey	2 50
Bound in cloth	1 25
Paper covers	1 00

Indexes to Patents on Electricity.

Appendix No. 2 to the index to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1883, has been issued, and is now for sale. These indexes, arranged alphabetically, numerically, and by classes, are completed to June 30, 1883, and comprise the following volumes:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

Issue of January 17, 1888.

Patents	304	No. 376,423 to No. 376,726, inclusive.
Designs	3	No. 18,018 to No. 18,020, inclusive.
Trade-Marks	15	No. 15,100 to No. 15,114, inclusive.
Labels	5	No. 5,470 to No. 5,474, inclusive.
Reissue	1	No. 10,894.
Total issue	328	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nebraska	2	
Arizona Territory	1		Nevada		
Arkansas	3		New Hampshire	4	
California	9		New Jersey	9	
Colorado	3		New Mexico Terri'y		
Connecticut	19		New York	64	8
Dakota Territory	1		North Carolina	1	
Delaware			Ohio	16	
District of Columbia	1		Oregon		
Florida			Pennsylvania	25	2
Georgia	4		Rhode Island	5	1
Idaho Territory			South Carolina	1	
Illinois	22	1	Tennessee	3	
Indiana	10	2	Texas		1
Iowa	10	1	Utah Territory	1	
Kansas	1		Vermont	2	
Kentucky			Virginia	2	1
Louisiana	3		Washington Terri'y	1	
Maine	2		West Virginia		
Maryland	4		Wisconsin	7	
Massachusetts	17	1	Wyoming Terri'y		
Michigan	10		U. S. Army		
Minnesota	8		U. S. Navy		
Mississippi	2				
Missouri	12		Total to citizens of the United States	285	18
Montana Territory					

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	1		Germany	7	
Barbadoes			India		
Belgium			Mexico		
Bermuda			New Zealand		
Brazil			Norway		
Canada	7		Russia		
Chili			Scotland		
Colombia, U. S. of			Spain		
Cuba			Sweden		
Denmark			Victoria	1	
Ecuador					
England	6	2	Total to citizens of foreign countries	22	2
France					

DESIGNS.

18,018.—HOLDER FOR TOOTH-POWDER.—*Charles L. Bartlett*, Utica, N. Y. Application filed December 13, 1887. Serial No. 257,825. Term of patent 3½ years.

18,019.—MEMORIAL TABLET.—*Freeman A. Green*, Hamilton, Ontario, Canada. Application filed October 13, 1887. Serial No. 252,272. Term of patent 3½ years.

18,020.—DISH.—*John Slater*, Burslem, England. Application filed November 29, 1887. Serial No. 256,486. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,100.—HORSE BLANKETS, COVERS, AND NETS, SADDLE-HOUSINGS, LAP-ROBES, AND LAP-DUSTERS.—*William Ayres & Sons*, Philadelphia, Pa. Application filed April 19, 1886. Used since January, 1886.

"The representation of sprigs of holly with leaves and berries."

15,101.—HORSE-BLANKETS.—*William Ayres & Sons*, Philadelphia, Pa. Application filed November 28, 1887. Used since November 1, 1881.

"The words 'LITTLE GIANT.'"

15,102.—DRESS-CLOTHS, CASHMERES, VELVETS, SOCKS, STOCKINGS, AND GLOVES.—*Bloomingdale Brothers*, New York, N. Y. Application filed November 25, 1887. Used since September 1, 1887.

"The words 'FAST COAL BLACK' associated with the letter 'B.'"

15,103.—FERTILIZERS.—*Bowker Fertilizer Company*, Boston, Mass.. Application filed December 2, 1887. Used since January 1, 1887.

"The word 'SURE-CROP.'"

15,104.—MEDICINAL PREPARATION FOR USE IN CERTAIN NAMED DISEASES.—*J. T. Davenport*, London, England. Application filed November 23, 1887. Used since February 22, 1864.

"The word 'CHLORODYNE.'"

15,105.—ROPE FOR TRANSMISSION OF POWER OVER PULLEYS AND FOR HOISTING PURPOSES.—*Dodge Manufacturing Company*, Mishawaka, Ind. Application filed October 7, 1887. Used since the year 1885.

"A colored thread contrasting with the color of the rope and twisted with its strands and periodically visible along the rope."

15,106.—LINIMENT FOR INTERNAL AND EXTERNAL USE.—*Lew Fisher*, Crawfordsville, Ind. Application filed December 7, 1887. Used since January 1, 1887.

"The words 'CORKED LIGHTNING.'"

15,107.—MINCE-MEAT FOR PIES.—*Henderson, Adams & Co.*, Weedsport, N. Y. Application filed November 23, 1887. Used since October 1, 1887.

"The words 'PURITY CONDENSED MINCE MEAT,' with a picture of a hogshead lying on its side with the word 'SUGAR' on the end of it, and bunches of grapes, raisins, citron, apples, and boxes of spices piled at the side of it, the whole inclosed in a border having an arched top."

15,108.—SPOOL-COTTON.—*Alex. King & Co.*, New York, N. Y. Application filed December 3, 1887. Used since October 1, 1867.

"A coat of arms consisting of a shield upon which are a lion rampant and a cross in both the right and left hand upper corners and at the bottom, over the shield a hound's head ducally gorged, and under the shield a monogram composed of the letters 'A' and 'K,' entwined in a wreath, and a branch extending from each side of the wreath."

15,109.—SPOOL-COTTON.—*Alex. King & Co.*, New York, N. Y. Application filed December 3, 1887. Used since October 1, 1867.

"A coat of arms consisting of a shield upon which are a lion rampant and a cross in both the right and left hand upper corners and at the bottom, over the shield a hound's head ducally gorged, and under the shield a monogram composed of the letters 'A' and 'K,' entwined in a wreath, and a branch extending from each side of the wreath, two United States flags, and the Goddess of Liberty holding a staff surmounted by a Liberty Cap, all to the right of the shield, and the figure of Britannia holding a trident, also the two British flags, all to the left of the shield."

15,110.—DRUGS CAPABLE OF TRITURATION AND OF BEING FORMED INTO PILLS OR PELLETS.—*Albert S. Newcomb*, New York, N. Y. Application filed November 3, 1887. Used since October 1, 1887.

"The words 'NEW YORK PELLET TRITURATES,' arranged in the form of an ellipse and inclosing a collection of pills or pellets."

15,111.—CIGARS, CIGARETTES, AND CHEWING AND SMOKING TOBACCO. *The Pemberton & Hill Tobacco Manufacturing Company*, Richmond, Va. Application filed October 5, 1887. Used since May, 24, 1887.

"The representation of St. Nicholas standing or going afoot in the snow, having one hand resting on a stick and the other hand holding a Christmas-tree over one shoulder, and the word-symbol 'ST. NICHOLAS.'"

15,112.—CLOAKS.—*Siegel, Cooper & Co.*, Chicago, Ill. Application filed November 23, 1887. Used since June 1, 1887.

"The words 'SAVE YOUR DOLLARS' and the representation of a displayed eagle with the words 'TRADE MARK' across its breast."

15,113.—CERTAIN WOOLEN WEARING-APPAREL.—*Ralph Slazenger*, London, England. Application filed August 11, 1887. Used since June 1, 1885.

"The representation of an old seal bearing a nondescript figure of an animal resembling a lion."

15,114.—SEWING-MACHINES.—*The Williams Manufacturing Company*, Plattsburg, N. Y. Application filed December 6, 1887. Used since October, 1883.

"The word 'HELPMATE.'"

LABELS.

5,470.—Title: "GOFF'S BOX-PLAITED BRAID."—*D. Goff & Sons*, Pawtucket, R. I. Application filed December 23, 1887.

5,471.—Title: "ALEXR. KING & CO. MACHINE SEWING SPOOL COTTON."—*Alex. King & Co.*, New York, N. Y. Application filed December 10, 1887. (Trade-Mark Registered.)

5,472.—Title: "ALEXR. KING & CO. MACHINE SEWING SPOOL COTTON."—*Alex. King & Co.*, New York, N. Y. Application filed December 23, 1887. (Trade-Mark Registered.)

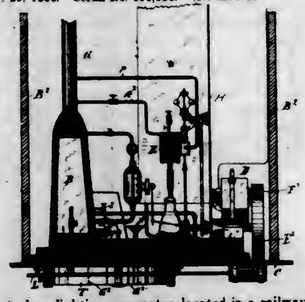
5,473.—Title: "SHIVELY'S CELEBRATED CATARRH REMEDY."—*Samuel A. Shively*, Rock Rapids, Iowa. Application filed December 27, 1887.

5,474.—Title: "MICROBE DESTROYER."—*John J. Tobin*, Austin, Tex. Application filed December 21, 1887.

PATENTS

GRANTED JANUARY 17, 1888.

376,423. CAR-LIGHTING. CRAIG R. ARNOLD, Brooklyn, N. Y. Filed Mar. 29, 1886. Serial No. 196,953. (No model.)



Claim.—1. In a lighting apparatus located in a railway-car, the combination of a dynamo-machine connected to an electric circuit on the car, a steam-engine for driving said dynamo, a boiler and furnace for supplying steam to the engine, all located in a compartment in the car, and a partition or shield which cuts off the dynamo from that chamber of the compartment in which the boiler is located and protects said dynamo from the heat of the latter, as and for the purpose described.

2. The combination, on a railway-car, of a dynamo-machine, a driving-engine, and a steam-boiler and furnace, all included in a compartment having walls that are non-conductors of heat and sound, and a partition that is also a non-conductor of heat and is placed so as to divide said compartment into two chambers, one of which contains the dynamo and the other the boiler, furnace, and engine, whereby the efficiency of the dynamo may be maintained at its maximum, without detriment from the heat of the boiler and furnace.

3. The combination, on a railway-car, of a dynamo-machine, a steam-engine, boiler, and water-tank, all contained in a compartment on the car, and a non-conducting partition or shield in said compartment for dividing the compartment into two chambers, one of which contains the dynamo and the other of which contains the water-tank, engine, boiler, and furnace.

4. The combination, on a railway-car, of a dynamo-machine connected to an electric circuit, a steam-engine for driving said dynamo, all located in a compartment of the car, a partition or shield which is a non-conductor of heat, located between said dynamo and steam-engine, a shaft extending from said steam-engine through the partition or shield into the dynamo-chamber, and friction-gear driven thereby for communicating the power of the engine to the dynamo, as and for the purpose set forth.

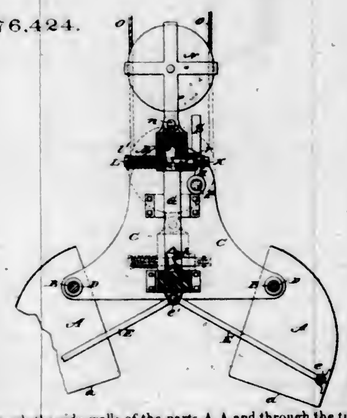
376,424. COAL-SCOOP. FREDERICK B. BARROWS, Duluth, Minn., assignor to himself and Dennison Billings Smith, Jr., same place. Filed Mar. 23, 1887. Serial No. 232,091. (No model.)

Claim.—1. A scoop made with two body parts or sections pivotally connected to a supporting-frame by means of bars or pins fitted to the walls of the scoop-sections and passed through tubes fixed to the supporting-frame and fitted between opposite side walls of the scoop-sections, substantially as herein set forth.

2. The combination, in a scoop, of two body parts or sections, A A, a frame comprising opposite plates C C, tubes D D, fixed to the plates and fitted between opposite side walls of the parts A A, and pivots B B, passed through the side walls of the parts A A and also through the tubes, substantially as shown and described.

3. The combination, in a scoop, of two parts or sections, A A, a frame comprising plates C C, tubes D D, fixed to the plates and fitted between opposite side walls of the parts A A, pivots B B, passed

376,424.



through the side walls of the parts A A and through the tubes, guides G on the plates C C, a cross-head fitted on the guides, and rods E E, pivotally connected at one end to the cross-head and at the other end to the parts A A of the scoop, substantially as shown and described.

4. A scoop made with two parts, A A, pivoted to a frame or support having guides provided with stops *g*, two cross-heads fitted to slide on said guides and adapted to latch together, rods connected pivotally to the lower cross-head and to the scoop-sections A A, and operating to load and close the scoop as the cross-head is drawn upon, and a trip device adapted to unlatch the two cross-heads by contact with the weight or stop at the place of discharge, substantially as herein set forth.

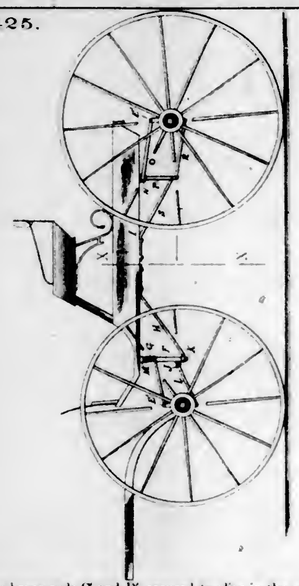
5. The combination, in a scoop, of two parts, A A, pivoted to a frame or support having guides provided with stops *g*, two cross-heads, F I, fitted to slide on said guides, rods E E, connected pivotally to the lower cross-head, F, and to the scoop-sections A A, and operating to load and close the scoop as said cross-head is drawn upon, said cross-head F having a tenon, H, notched at A, and the cross-head I having a recess receiving the tenon and provided with a spring-actuated latch-bolt, J, adapted to lock the two cross-heads together, and a trip device arranged with the latch-bolt and adapted to disengage the bolt to release the lower cross-head by contact of a weight or stop at the place of discharge, substantially as herein set forth.

6. The combination, in a scoop, of two parts or sections, A A, pivoted to a frame or support having guides provided with stops *g*, two cross-heads, F I, fitted to slide on said guides, rods E E, connected pivotally to the lower cross-head, F, and to the scoop-sections A A, and operating to load and close the scoop as said cross-head is drawn upon, the cross-head F having a tenon, H, notched at A, and the cross-head I having a recess receiving the tenon H, a spring-actuated latch-bolt, J, adapted to lock the two cross-heads together, and a trip device comprising a lever, K, pivoted to the cross-head I, and pivoted, also, to the bolt J, a bar, L, also pivoted to lever K and provided with a retracting-spring, M, a shaft, P, pivoted to the scoop-frame and provided with an arm, R *r*, adapted to withdraw the bolt J, and a spring-drawn arm, S, fixed to shaft P and adapted to strike a weight or stop at the place of discharge of the scoop to disengage the bolt from the lower cross-head, substantially as shown and described.

376,425. SPRING-VEHICLE. ANTHONY RIEK, Stockton, Cal. Filed Apr. 28, 1887. Serial No. 236,512. (No model.)

Claim.—1. The twisting front springs, C and D, secured to the front axle, A, by the clips E and E', and to the head-block G, by

376,425.



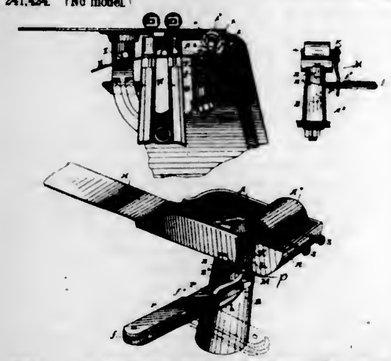
means of the brace-rods C and D, secured to clips in the ends of the ⋁-shaped braces F, the brace F being secured at its upper end to the head-block G, and at its lower end, by the king-bolt K, to the ⋁-shaped brace H, and the brace H being secured to the body I, all substantially as shown.

2. The twisting rear springs, C and D, secured to the rear axle, B, by the clips E and E', and to the rear of the vehicle-body I by the brace-rods O, such rods being suspended from the vehicle by the eyes N, the rod O, having rigidly pendent therefrom the hanger P, said hanger P being connected to the rear axle by the brace R and to the vehicle-body by the brace S, all substantially as shown and described.

3. The combination, with the braces H and F, located as shown, and with the king-bolt K, of the guide J, having the forwardly-extending brace L attached to it at its rear, and at its front end to the front axle, A, all substantially as set forth.

4. The combination, substantially as described, of the body I, the head-block G, the front braces consisting of the braces F and H, the bolster M, the king-bolt K, the guide J, the brace L, the axle A, the springs C and D, the clips E and E', and the brace-rods C D.

376,426. **INKING ATTACHMENT FOR PRINTING-PRESSES.** JAMES R. BRODIE, San Francisco, Cal. Filed June 15, 1887. Serial No. 241,424. (No model.)



Claim.—1. In combination with the distributing-disk and inking rollers of a printing-press, an inking-fountain having a fountain-roller located for operation between the disk and the form, and means, substantially as described, consisting, essentially, of a socket for the fountain, inclines E E*, and vibrating arm F, all arranged for throwing said roller into and out of action with the press-rollers.

2. In a printing-press having a distributing-disk and oscillating rollers, an inking device consisting of fountain, fountain-roller, socket, inclines, vibrating arm, and ratchet and pawl placed for operation below the disk, or between it and the chase, and adapted to supply ink to the press-rollers on their upward movement, but to be out of contact with them on their return movement, as herein set forth.

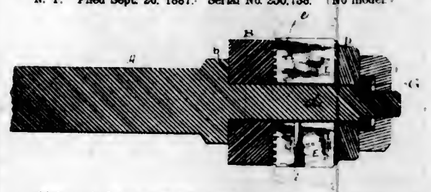
3. In a printing-press having a distributing-disk and oscillating inking-rollers, the combination, with these parts, of an inking-fountain and a fountain-roller having movement into and out of the path of the inking-rollers, as described, and mechanism consisting of inclines, vibrating arm, ratchet-wheel and pawl, and connecting-rod adapted to be actuated, as described, from some moving part of the press to operate the fountain-roller, as set forth.

4. The herein-described inking attachment for printing-presses, consisting of the trough A, roller A*, inclines E E*, vibrating arm F, and the ratchet-wheel and pawl, and connecting-rod, constructed for operation as set forth.

5. In a printing-press, the combination of the trough A, having post A^3, socket B, containing said post, roller A^*, fixed incline E, movable incline E*, spring H, arm F, jointed at *f* and having roller f^* spring *h*, and roller-carrier W, all arranged substantially as described.

6. In a printing-press, the combination of trough A, roller A^*, inclines E E*, arm F, said roller A^* having shaft *a*, provided with ratchet-wheel K, and the pawl L, pivoted at *m* to its frame, which has a bent rod, M, passing through slot l' in arm F, all arranged and operating as specified.

376,427. **EXPANSIBLE REAMER.** HUGH CASSIDY, Brooklyn, N. Y. Filed Sept. 26, 1887. Serial No. 250,738. (No model.)

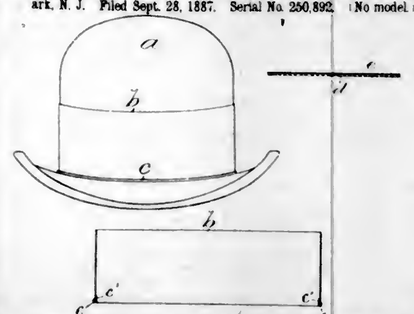


Claim.—1. In an expansible reamer, the bearer A, having a shoulder, *b*, a plate, B, fitted to turn freely thereon against said shoulder as set forth, said plate being provided with a scroll rib or thread, *c*, and cutting-bits E in engagement with said scroll-rib, and means whereby said bits are attached to said bearer to be revolved with it and free to move radially for adjustment by the rotation of said scroll-plate.

2. In an expansible reamer, a bearer, A, having an extension, *d*, and a shoulder, *b*, a plate, B, fitted to turn freely against said shoulder and provided with a scroll rib or thread, *c*, a head, D, fitted to and caused to revolve with said bearer A, provided with radial sockets, and cutting-bits E, fitted therein and adapted to engage said scroll-rib *c*, and means for locking all of said movable parts rigidly to said bearer when the proper adjustment has been attained.

3. In an expansible reamer, the bearer A, having the shoulder *b* and extension *d*, the scroll-faced plate B, adapted to turn freely against said shoulder, the non-rotating head D, provided with radial sockets, the cutting-bits E, fitted to move therein and engage the scroll-rib *c*, the recessed clamping-nut F, and the stop-nut G, substantially as set forth.

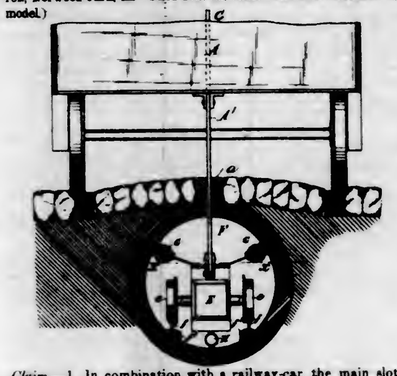
376,428. **MOURNING-BAND FOR HATS.** JAMES W. COREY, Newark, N. J. Filed Sept. 28, 1887. Serial No. 250,892. (No model.)



Claim.—1. As a new article of manufacture, a removable mourning-band for hats, consisting in a strip of bombazine or other soft fabric formed into an endless band ready for application to the hat, and provided at its lower edge with a reed or stiffener inserted in a fold of the fabric and projected beyond the surface of the fabric when the latter is applied to the hat, and thus performing the threefold function of ornamenting the band, of affording a grip in the application of the band, and of holding its lower edge in contact with the brim of the hat when applied, substantially as herein set forth.

2. As a new article of manufacture, a mourning-band for hats, consisting in a strip of bombazine or other soft fabric formed into a portable endless band ready for application to the hat, and having a reed or stiffener inserted in a fold at the edge of the fabric and a coating of india-rubber upon its inner side, and adapted, by its elasticity, to fit, without alteration, upon hats of different sizes and to retain its hold thereon without fastening, substantially as herein set forth.

376,429. **TUBE-MOTOR STREET-RAILWAY.** WILLIAM G. CREIGHTON, Norwood Park, Ill. Filed Dec. 21, 1885. Serial No. 186,369. (No model.)



Claim.—1. In combination with a railway-car, the main slotted tube, an electric motor carried upon a wheeled frame and adapted to travel upon a track in the main tube, tubular conductors supported within the main tube, brushes connected with the motor and arranged to travel within said conductors, and a bar connecting the motor-carriage with the car, substantially as described.

2. In combination with a car provided with a depending bar, the lower end of which is connected to a wheeled frame carrying an electric motor, a main slotted tube located between the rails upon which the car travels, a lever for controlling the direction of the motor, slotted tubular conductors and a track within the main tube, and conductors connecting the motor with the tubular conductors, substantially as described.

3. In combination with a railway-car, the main tube, slotted tubular conductors supported therein, brushes arranged within the tubular conductors, bars connecting the brushes with the motor, a motor-carriage mounted upon a track within the main tube, a bar connecting the car with the motor-carriage, and a lever carried by the motor and extending through the slot in the main tube to the car for controlling the motor, substantially as described.

4. The combination, with a track and a car adapted thereto, of a slotted tube arranged between the rails of the track and provided interiorly with a track, insulated tubular conductors supported within said tube, a carriage adapted to traverse the interior track and carrying an electric motor, conductors connected at one end to the motor and at the other end to contacts arranged to traverse the interior of the tubular conductors, and a bar connecting the motor-carriage with the car, substantially as described.

5. The combination, with a track and a car adapted thereto, of a slotted main tube arranged between the rails of the track and provided interiorly with a track and with slotted tubular conductors insulated from the main tube, an electric motor mounted upon a carriage adapted to traverse the track within the tube, traveling contacts arranged within the tubular conductors and connected with the motor, and a commutator or switch operated from the car to change the current passing through the motor.

376,430. **PROTRACTOR.** SAMUEL DARLING, Providence, R. I. Filed Apr. 22, 1887. Serial No. 235,743. (No model.)

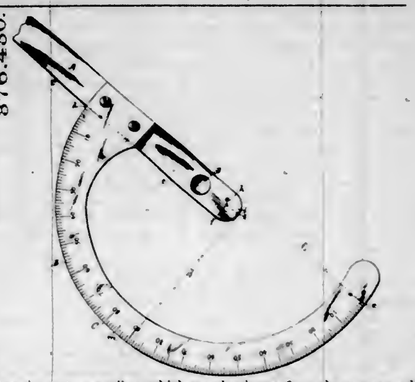
Claim.—1. A protractor having a blade provided with a circular end, and a circumscribing arc or circle arranged concentric with the circular end of the blade and having a graduation into degrees at the periphery of the arc or circle, which points of graduation lie in the imaginary tangent-lines which may be drawn from the corresponding degrees at the periphery of the circular end of the blade, substantially as described.

2. A protractor having a blade provided with a circular end, and a circumscribing arc or circle arranged concentric with the circular end of the blade and having a graduation into degrees at the periphery of the arc or circle, which points of graduation lie in the imaginary tangent-lines which may be drawn from the corresponding degrees at the periphery of the circular end of the blade, and having the opposite edges of the blade parallel to each other, and tangents to the periphery of the circular end of the said blade, substantially as described.

3. A protractor having a blade provided with a circular end, and a circumscribing arc or circle arranged concentric with the circular end of the blade and having a graduation into degrees with its zero-point in line with one of the edges of the blade, the said edge also forming a tangent to the circular end of the said blade, substantially as described.

4. A protractor having a blade provided with a circular end, and a circumscribing arc or circle arranged concentric with the circular end of the blade and having a graduation into degrees with its zero-point in line with one of the edges of the blade and its point of one hundred and eighty degrees therefrom in line with the opposite edge of the blade, substantially as described.

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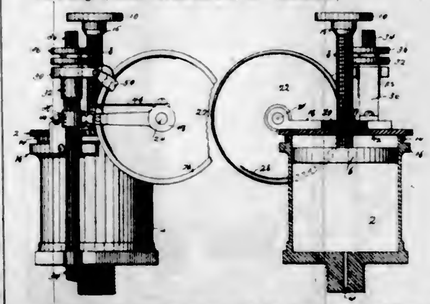


376,431. **SASH-FASTENER.** WILLIAM T. DAVIS, Battle Creek, Mich. Filed Jan. 7, 1887. Serial No. 223,688. (No model.)



Claim.—A sash and casing having a hole through the sash and leading into the casing, in combination with a plate attached to the sash and flanged to catch over a portion of the inner edge thereof, and having the fulcrum-stud and a handle provided with the lateral flange, a lever fulcrumed on said stud and provided with the lateral flange, a bolt detachably engaging the lever and adapted to slide loosely in said hole, the spring coiled around the fulcrum-stud and having its ends in contact with the flanges of the handle and lever, and a plate covering said spring, substantially as set forth.

376,432. **LUBRICATOR.** WILLIS M. DERBY, Minneapolis, Minn. Filed Aug. 1, 1887. Serial No. 245,771. (No model.)



Claim.—1. The combination, with the lubricating-cup 2, of the cap 12, fitting upon said cup and provided with a worm-gear upon its edge and a threaded central opening, the piston 6, fitting in said cup, the threaded rod 8, secured to said piston and passing through the threaded opening in the cap, the plate 18, and the wheel 22, having the volute rib 28 engaging said worm-gear, substantially as described.

2. The combination, with the lubricating-cup 2, of the cap 12, having the threaded central opening, the plate 18, the piston 6, the threaded stem 8, secured to said piston and passing through said cap and having the groove 52, the bolt 53, engaging said groove, the spring 56, and the latch on said bolt for holding said bolt out of engagement with said groove, substantially as described.

3. The combination, with the lubricating-cup 2, of the cap 12, having the threaded center and the beveled recess 17, the piston 6, and the threaded piston-rod 8, secured to said piston and having the beveled hub 15, substantially as described.

4. The combination, with the lubricating-cup 2, of the cap 12, having the worm-gear on its edge, the plate 18, the piston and piston-rod, the wheel 22, engaging said cap and provided with the flange 26, the friction-clamp engaging said flange, lever 45, and the operating-rod, substantially as described.

5. The combination, with the cup 2, of the cap fitting said cup and adapted to revolve thereon and provided with a threaded central opening, and the worm-gear on its edge, the wheel 22, having the volute rib 28 engaging said worm-gear, a plate, 18, secured to the cup and holding said cap in place, the piston 6, the threaded piston-rod 8, passing through the opening in said cap, substantially as described.

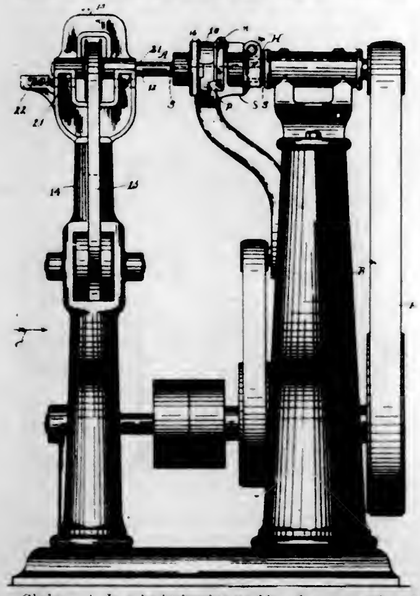
6. The combination, in a lubricating-cup, with the movable piston and a threaded rod on said piston, of the revolving cap having a threaded opening through which said rod passes, and a locking device consisting of beveled hub 15 and recess 17 on said rod and cover, whereby when the piston reaches the end of its stroke the rod and the cover are locked together, substantially as described.

7. The combination, in a lubricator, with the cup, of the piston fitting therein and having a threaded rod, a cap having a threaded opening engaging said rod, a worm-gear on the edge of the cap, a wheel engaging said worm-gear, the adjustable operating-rod 34, lever 45, and clamp 42 therewith, and an adjustable operating-rod, substantially as described.

8. The combination, in a lubricator, with the cup, piston-rod, and piston, of the cap, the plate 18, arranged over said cap and secured to said cup, and the operating-wheel 22, secured upon said plate, whereby the plate, cap, piston, and operating-wheel 22 may be removed from the cup without changing the adjustment of the operating device, substantially as described.

9. The combination, in a lubricator, with the piston-rod 8, the piston, and cap having the worm-gear on its face, of the wheel 22, having the volute rib engaging said gear, and having the flange 26, the plate 18, the arm 45, having the friction-clamp 42 pivoted thereto, the operating-rod, and the friction-catch 50, all substantially as described.

376,433. **HEEL-TRIMMING MACHINE.** FRANK N. ETHRIDGE, Lynn, Mass. Filed July 20, 1887. Serial No. 244,800. (No model.)



Claim.—1. In a heel-trimming machine, the combination of a shaft and means for revolving the same, a trimmer-tool mounted on said shaft, and a heel-rest for supporting the heel, a rand-cutter mounted on an independent shaft in substantially the same axial plane with the cutter-shaft, and independent means for revolving said shaft and rand-cutter in the direction and uniformly with the trimmer-tool, substantially as described.

2. In the heel-trimming machine herein described, the combination of a shaft and means for revolving the shaft, a trimmer-tool mounted on said shaft, and a heel-rest for supporting the heel, a rand-cutter mounted on an independent shaft in the same axial line as the trimmer-shaft and overlapping a portion of the trimmer-tool, and independent means for revolving the rand-cutter uniformly with the trimmer-tool, substantially as described.

3. In a heel-trimming machine, the combination of a shaft and means for revolving the shaft, a trimmer-tool mounted on said shaft, and a heel-rest for supporting the heel, combined with a rand-cutter, said rand-cutter being mounted on an independent shaft in the same axial line as the trimmer-shaft and adapted to permit movement in line with the axis of rotation of the trimmer-tool, and independent means for revolving the rand-cutter uniformly with the trimmer-tool, all substantially as described.

4. In a heel-trimming machine, the combination of a shaft and means for revolving the shaft, a trimmer-tool mounted on said shaft, a heel-rest, P, for supporting the heel, a top-lift guide, s, yoke S, and collar F, said heel-rest and top-lift guide being formed or combined in one piece and adapted to permit adjustment, as described, in a line at right angles to the axis of rotation of the trimmer-tool, substantially as described.

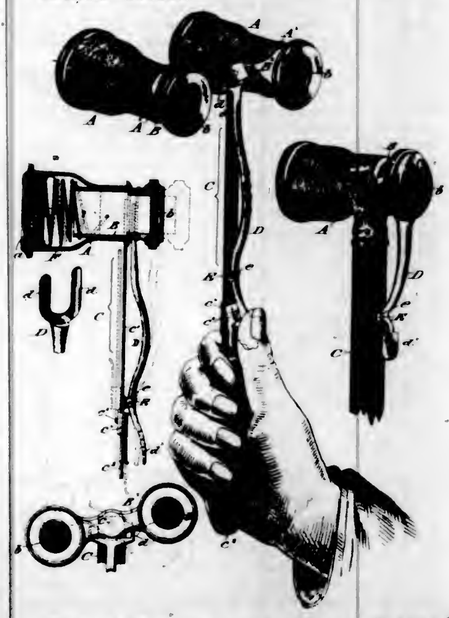
5. The combination, in a heel-trimming machine, of the heel-rest P, top-lift guide s, the yoke S, the flange-supporting collar F, mounted on the sleeve H of the trimmer-shaft, screw-stud y, and flanged nut w, and trimmer-tool, substantially as described.

6. In a heel-trimming machine, the shaft 12, the head 13, and the rand-cutter 17, in combination with the trimmer-tool carried on an independent shaft, substantially as described.

7. In a heel-trimming machine, the shaft 12, the divided head 13, the spring-cutter 22, the rand-cutter 17, and means for revolving the cutter 17, in combination with the heel-trimming tool mounted upon an independent shaft, substantially as described.

8. The combination of the shaft A, the cutters *a*, the collars *e f*, and clamping-nut *k*, substantially as described.

376,434. **ADJUSTING ATTACHMENT FOR OPERA AND OTHER GLASSES.** IVAN FOX, Philadelphia, Pa. Filed Apr. 25, 1887. Serial No. 236,102. (No model.)



Claim.—1. The combination, with a single or double barreled opera-glass, of a handle for carrying said glass and a lever pivotally attached to said handle for effecting the focal adjustment of the lenses of said glass, substantially as set forth.

2. In a single or double barreled opera-glass, the combination of a handle for carrying the instrument as an entirety, with a lever fulcrumed upon said handle and acting upon their respective carrying-tubes to effect focal adjustment between the field and the eye lenses, substantially as set forth.

3. In an opera-glass, the following elements in combination: a body-tube carrying a field-lens, a draw-tube carrying an eye-lens and telescopically fitted to the body-tube, a handle for supporting said tubes, a spring for maintaining the tubes closed together, and a lever for separating said tubes to effect a given focal adjustment between the lenses of the said tubes, substantially as set forth.

4. In an opera-glass, the combination of a handle depending from the main yoke, the lever fulcrumed upon said handle and bearing against the yoke of the draw-tubes, and a spring for maintaining the tubes together, substantially as set forth.

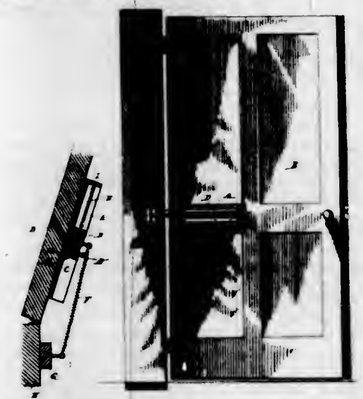
5. In an opera-glass, a handle connected with the body-tubes, in combination with a lever fulcrumed upon said handle and acting to move the draw-tubes, substantially as set forth.

6. In an opera-glass, the combination of a handle depending from the main yoke and pivotally attached thereto, so as to be laterally adjustable, and a lever fulcrumed upon said handle and bearing against the yoke of the draw-tubes, substantially as set forth.

7. In an opera-glass, the combination of a handle depending from the main yoke and a lever fulcrumed to said handle and terminating in forks to engage the draw-tubes, substantially as set forth.

8. In an opera-glass, the combination of a handle depending from the main yoke, composed of two members hinged together, and provided with a sliding collar adapted to cover the hinge and rigidify the handle when the same is unfolded, and a lever pivoted upon said handle about its upper member, substantially as set forth.

376,435. **DOOR-SPRING.** JAMES P. HARRISON, Danville, Va. Filed Apr. 20, 1887. Serial No. 235,493. (No model.)



Claim.—1. In a door-spring, a block to slide or be moved in ways on the door or casing, in combination with springs to act upon the block upon both sides and in both directions, substantially as set forth.

2. In a door-spring, the combination of the dovetailed grooved block A, sliding block D, fitting within the groove, spring F, secured to the sliding block and to the door-frame, and the spring E, also secured to the sliding block and to the grooved block A, all substantially as and for the purpose set forth.

376,436. **SCREEN.** JAMES P. HARRISON, Danville, Va. Filed May 7, 1887. Serial No. 237,497. (No model.)

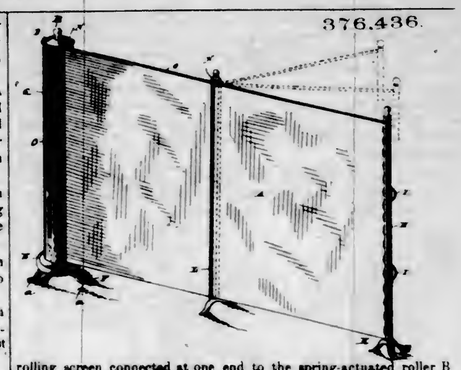
Claim.—1. A folding or rolling screen of the character described, consisting of a cylinder having a spring-actuated roller, to which one end of the screen is attached and into which said screen is wound, and a standard or support to which the other end of the screen is secured, whereby the screen is extended and held at any desired distance from the retaining-cylinder, as set forth.

2. A folding or rolling screen of the character described, consisting of a cylinder in which the screen is wound, a standard or support to which the other end of the screen is secured, and an intermediate standard or standards for supporting the screen, whereby the screen may be set at any angle, as set forth.

3. In a screen of the character described, the screen A, provided with the cord O, in combination with the supports L, E, and H and clips N, as and for the purpose set forth.

4. The combination of the cylinder C, in which the screen is wound, the spring-actuated roller B, pivoted in said standard, and the

376,436.



rolling screen connected at one end to the spring-actuated roller B and at the other to the standard H, substantially as set forth.

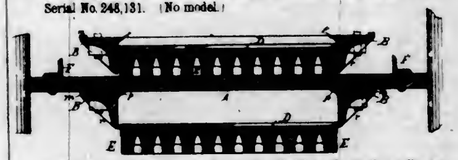
376,437. **RUBBER-DAM CLAMP.** JAMES H. HATCH, San Francisco, Cal. Filed Aug. 17, 1887. Serial No. 247,218. (No model.)



Claim.—1. A clamp for fastening a rubber dam upon a tooth, consisting of the curved arms A A, rigidly united at their base and having sharp points, the curved arm B, united to the arms A A at their base by a hinge-joint, and having a sharp forked point, and the set-screw C, and the spring D, all constructed and operated substantially as described.

2. As a new article of manufacture, a clamp for fastening a rubber dam upon a tooth, consisting of rigid front arms and rear arm connected together by a hinge-joint, all of suitable shape and adapted to be fastened upon the tooth by means of a set-screw or other adjustable device acting on the base of the inner arm.

376,438. **OIL-PRESS BOX.** GEORGE W. HATFIELD, Texarkana, Ark., assignor to Walter T. Forbes, Atlanta, Ga. Filed Aug. 29, 1887. Serial No. 248,131. (No model.)



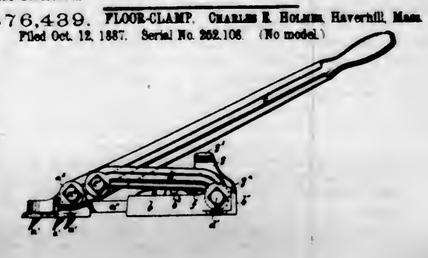
Claim.—1. In combination with the division-plate of an oil-press box, the lateral wall having a lip on its upper face fitting into a corresponding recess in the division-plate to which it is attached, for the purpose described.

2. In combination with the division-plate of an oil-press box, the side wall united thereto by a tongue-and-groove connection and having an inwardly-projecting lip, for the purpose described.

3. In combination with the division-plate of an oil-press box, the lateral wall secured to the under surface thereof and having an inwardly-projecting lip, whereby the upward pressure of the meal tends to tighten the joint between the division-plate and side wall, as and for the purpose described.

4. The combination, in an oil-press box, of the division-plate, the side wall united thereto by a tongue-and-groove connection and having inwardly-projecting lip bearing against the division-plate, the grated platen, and the corrugated pans with slots therein, for the purpose described.

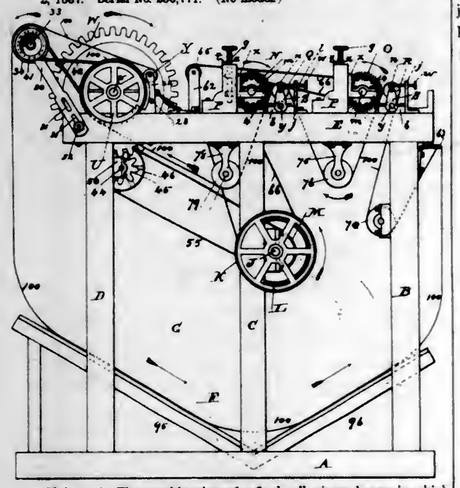
376,439. **FLOOR-CLAMP.** CHARLES R. HOLMES, Haverhill, Mass. Filed Oct. 12, 1887. Serial No. 252,106. (No model.)



Claim.—The improved floor-clamp, as described, composed of the stationary part *a*, having prongs or teeth *a' a' a'* and serrated bar *a''*, and the adjustable box or block *b*, having grooves for the reception of the said bar *a''*, and the lever *c*, pivoted to ears on the stationary part *a*, in combination with the links *d d*, pivoted to the lever *c*, and the adjustable block or box *b*, the spring-pressed pawl *e*, and treadle-lever *g*, pivoted to the adjustable box or block *b*, and having treadle *g⁴*, pawl-operating projection *g''*, and stop projection *g³*, as and for the purpose set forth.

376,440. MACHINE FOR BURRING AND SPECKING CLOTH.

James W. Holt and Arthur McQuillan, Skowhegan, Me. Filed May 2, 1887. Serial No. 236,771. (No model.)



Claim.—1. The combination of a feed-roll, pivoted arms in which said feed-roll is journaled, stationary brackets adjacent to said arms, and set-screws mounted in said brackets and loosely connected with said arms for oscillating the same to adjust the roll, substantially as described.

2. The combination of the pivoted arms 22, the presser-roll Y, journaled in said arms, the jointed screws 25 and 26, and the nuts 28 on said screws for adjusting said roll, substantially as described.

3. The combination of a cylindrical brush, as O, means for adjusting said brush vertically, a feed-roll, as R, adjacent to said brush, and means for adjusting said feed-roll laterally, whereby said brush and feed-roll may be brought into proper relative positions with respect to each other, substantially as described.

4. The combination of a cylindrical brush, as N, means for vertically adjusting said brush, a cylindrical brush, as O, means for vertically adjusting said brush, feed-rolls, as Q R, adjacent to said brushes, means for adjusting said feed-rolls laterally, the driving-shaft, as J, pulleys L, 65, 59, and 60, and an endless belt, 66, passing over said pulleys, substantially as described.

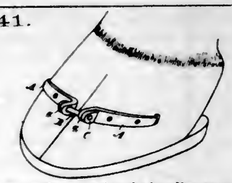
5. The delivery-roll 34, provided with the pulley 41, in combination with the draft-roll T, provided with gear W, and the pulley U, the presser-roll Y, pinion 45, connected with the pulley 46, the belt 42, and means for adjusting said presser-roll with respect to the draft-roll, substantially as described.

6. The improved burring and specking machine herein described, the same consisting, essentially, of the frame G, rotary cylindrical brushes N and O, bearings for the shafts of said brushes, means for adjusting said bearings, pulleys 59 and 60 on said shafts, feed-rolls Q and R, disposed adjacent to said brushes, respectively, bearings for the shafts of said feed-rolls, means for adjusting said bearings, a draft-roll, T, provided with the pulley U and gear W, presser-roll Y, bearings for said presser-roll, means for adjusting said bearings, a delivery-roll, 34, the shaft of which is provided with the pulley 41, a shaft, 44, the pinion 45 on said shaft 44, and the pulley 46, attached to said pinion, the guide-rolls 70, 76, and 79, guide-bar 67, guide-pulley 65, shaft J, pulleys L, M, and K, and belts 42, 55, and 66, said parts being constructed and arranged to operate substantially as set forth.

376,441. CLAMP FOR CRACKED HOOFS.

Thomas Hughes, Detroit, Mich., assignor of two-thirds to William L. Beardsley and G. S. Hazard, same place. Filed May 27, 1886. Serial No. 203,410. (No model.)

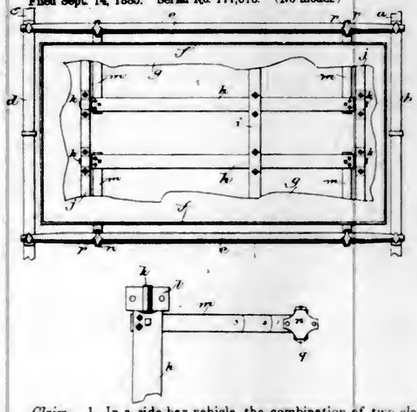
Claim.—The clamp described, consisting of the two parts A, each of which is provided with ears *a*, at right angles to the main body, and



each part permanently secured to the hoof by means of screws, as shown, the adjusting-screw B, passed through holes in said ears, and the adjusting-nut C on the end of said screw, substantially as and for the purposes specified.

376,442. VEHICLE-SPRING.

Joseph R. Locke, Amesbury, Mass. Filed Sept. 14, 1885. Serial No. 177,018. (No model.)



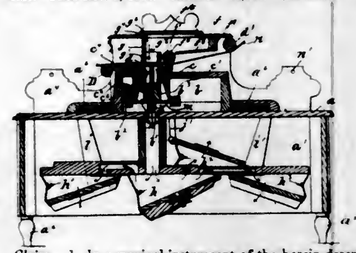
Claim.—1. In a side-bar vehicle, the combination of two elastic metallic bars of flattened cross-section arranged lengthwise of the body, and at both their respective ends pivotally connected therewith, and at a point between their ends rigidly secured to the body, and an arm at each end of said bars rigidly secured thereto and pivotally connected with the side bars, substantially as specified.

2. In a side-bar vehicle, the combination of the flat bars *h*, pivotally supported at their ends and rigidly secured to the body at a point between their ends, and arms *m*, rigidly secured to said bars *h* near their respective ends, and pivotally connected with side bars, *e*, substantially as specified.

3. In a side-bar vehicle, the longitudinal torsion-bars *h*, pivoted at their respective ends, and having at each end an arm rigidly connected to them and pivotally connected with the side bars, said torsion-bars being rigidly secured to the body at a point in rear of their lineal center, substantially as for the purpose specified.

376,443. MUSICAL INSTRUMENT.

Alpheus Lowmiller, Jewett, Ohio. Filed Nov. 9, 1882. Serial No. 76,376. (No model.)



Claim.—1. In a musical instrument of the herein-described type, the combination, with the reed-board and a music-sheet having a tune written therein and fixed relative to the reed-board as regards any side-to-side or lateral movement, of a transposing mechanism consisting of a valve or valves constructed to operate in the manner described, whereby all passages of the reed-board except those belonging to the scale of a certain key are closed for playing said tune in any desired key, substantially as set forth.

2. A compound reed-board constructed with reed-chambers on opposite sides of its air-spaces and having the intermediate partition cut away on the wind-entrance edge, whereby wind is admitted to the opposite air-chambers through a common opening, combined with a valve or series of valves arranged to operate substantially as described, whereby all the passages of the reed-board except those belonging to the scale of a certain key may be closed, substantially as set forth.

3. A reed-board composed of two sections arranged alongside of each other, each section provided with a set of reeds, the reeds of one set alternating in the order of the chromatic scale with the reeds of the other set, one of said sections being adjustable alongside of the other, substantially as and for the purpose specified.

4. In a mechanical musical instrument, the combination, with the compound reed-board having one section fixed and the other adjustable, of an elastic support arranged to press against the outer side of the adjustable section and hold the same snugly against the fixed section, substantially as set forth.

5. In a musical instrument, the combination, with a reed-board, of independent interchangeable transposing key-slips placed over the wind exit or entrance to the reeds and provided with openings registering with the reed-chambers for closing all passage-ways therethrough except those belonging to a certain key, substantially as specified.

6. In a musical instrument, the combination, with the reed-board, of an independent interchangeable transposing key-slip over the wind entrance or exit to the reeds to close the passage-ways therethrough except those arranged in the order of the intervals of a scale, substantially as shown and described.

7. The combination, with the casing provided with an opening to receive the key-slip, of a cap provided on its inner edge with a suitable packing and provided with means whereby it may be secured to the casing over and covering the key-slip, as set forth.

8. In a musical instrument, the combination of the reed-board, an independent interchangeable transposing key-slip, and a yielding support to hold the latter close against the reed-board, substantially as described, and for the purposes specified.

9. The combination, substantially as described, of the operating-shaft provided with crank c^4, having wrist-pin c^5, the bellows K' A^3 A^2, and the connecting-arms j' j'' j^3, all pivoted at one end on the wrist-pin c^5, and having their opposite ends connected relatively with and operating the bellows A^3 A^2 K', substantially as set forth.

10. The combination of the reed-board having reeds arranged on opposite sides thereof and having wide upper openings common to its opposite reed-chambers, the interchangeable slip *d*, provided with narrow openings registering with the wide common openings of the reed-chambers to regulate the time of the music, substantially as described, the music-sheet, and a presser whereby said sheet is held firmly against the slip *d*, substantially as set forth.

11. In a mechanical musical instrument, the combination, substantially as set forth, of the casing provided with key-slip openings, the reed-board arranged within the casing with its lower edge flush with the upper wall of the key-slip opening, and the bar K, arranged within the casing with its end adjacent to the key-slip opening flush with the under side thereof, and the spring K', bearing under the bar K, all arranged to operate in connection with the key-slip, substantially as and for the purposes set forth.

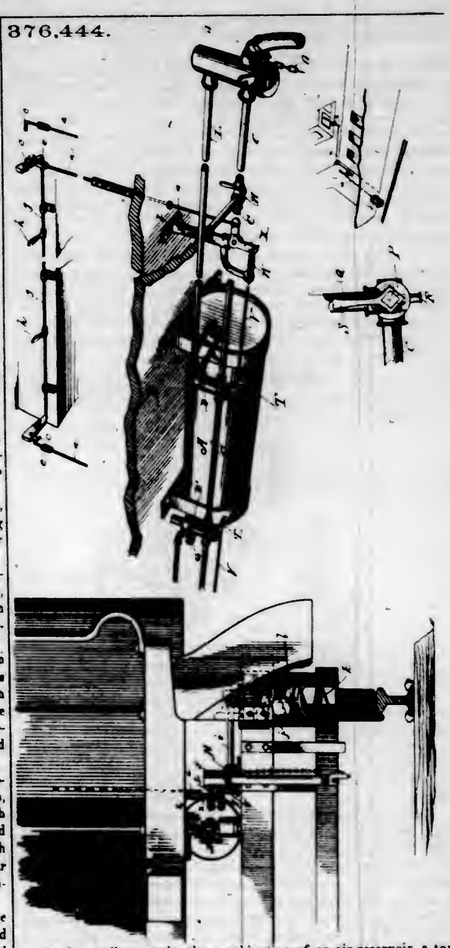
12. In a mechanical musical instrument, the combination of the casing, the reed-board arranged therein and constructed with a fixed section, c', and an adjustable or movable section, c^2, and a slot and handle-rod, c^4, connected with the section c^2 and extended through the casing, substantially as and for the purposes specified.

13. In a mechanical musical instrument, the combination of the reed-board having a double row of reeds alternately arranged in the order of the chromatic scale, wind access to said pairs of reeds being had through a common opening, and having individual wind-exits, and a valve or series of valves arranged, substantially as described, to close all the wind-exits of the reeds except those belonging to the scale of a common key, as and for the purpose specified.

14. In a mechanical musical instrument, the combination of the casing and the reed-board, the latter made in two sections arranged alongside of each other, the reeds comprised in the sections alternating in the order of the chromatic scale, one section being movable relative to the other, and both sections having the receiving ends of their opposite reed-chambers communicating one with the other, substantially as specified.

376,444. RAILROAD DANGER-SIGNAL.

Louis T. Mann, Chicago, Ill. Filed Feb. 5, 1887. Serial No. 226,657. (No model.)



Claim.—1. In a railway-train, the combination of an air-reservoir, a signal adapted to be set upon the track for giving warning to a following train, and means whereby the air-pressure in the air-reservoir may be caused to operate to set the signals.

2. In a signaling device for railway-trains, the combination of an air-reservoir, a system of pipes extending from end to end of the train, devices for setting torpedoes upon the rails, and suitable connections of said systems of pipes to the cab or either coach of a train whereby the air-pressure may be thrown into the pipes to set the torpedoes.

3. In a railway-train, the combination of an air-reservoir, a torpedo adapted to be set upon the track for giving warning to a following train, and means whereby the air-pressure may be caused to set the torpedo on the track.

4. A torpedo-carrier, *l*, provided with a bifurcated end for holding the torpedo and adapted to embrace the rail, in combination with mechanism operated by compressed air for projecting said carrier toward the rail for the purpose of setting the torpedo.

5. A torpedo-carrier, *l*, provided with a bifurcated end for holding the torpedo and adapted to embrace the rail, in combination with mechanism operated by compressed air for projecting said carrier toward the rail for the purpose of setting the torpedo, and means for withdrawing said torpedo-carrier from the rail after the torpedo has been set.

6. A torpedo-carrier, *l*, set in a cylinder, *j*, and provided with a retracting-spring, in combination with mechanism operated by compressed air for moving said carrier against its spring.

7. The combination of a torpedo-carrier, *l*, provided with a piston-head, with cylinder *j*, and means for causing air-pressure to force said torpedo-carrier toward the rail of the track.

8. A torpedo-carrier, *l*, provided with a bifurcated end for holding the torpedo and adapted to embrace the rail, in combination with mechanism operated by compressed air for projecting said carrier toward the rail for the purpose of setting the torpedo, and means for withdrawing said torpedo-carrier from the rail after the torpedo has been set, and devices for automatically operating said torpedo-carrier in case of separation of cars.

9. A system of pipes extending from front to rear of train, in combination with a piston and mechanism for setting a torpedo placed

at some point on the train, and means whereby air-pressure may be caused to operate upon said means to set the torpedo.

376,445. **ADHESIVE PASTE.** MARK W. MARSDEN, Connellsville, assignor to James W. Campbell and Alexander Matchett, Pittsburg, Pa. Filed Jan. 20, 1887. Serial No. 224,889. (No specimens.)

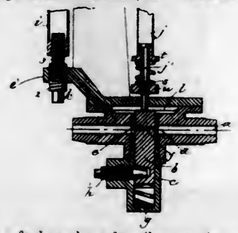
Claim.—1. The hereinbefore-described method of making paste, which consists in treating a farinaceous substance with a strong alkali, whereby said substance is digested, and neutralizing said alkali with an ammonium salt, substantially as and for the purposes described.

2. A dry paste compound consisting of a mixture of flour, starch, or other farinaceous substance and a strongly-alkaline dry substance—such, for example, as caustic soda—whereby the flour, &c., is digested, substantially as and for the purposes described.

3. A dry paste compound consisting of a mixture of flour, starch, or other farinaceous substance, an alkali, and a dry substance which, when in solution, has an affinity for the alkali and is of a property to neutralize it, substantially as and for the purposes described.

4. A dry paste compound consisting of a mixture of flour, starch, or other farinaceous substance, an alkali, and ammonium sulphate, substantially as and for the purposes described.

376,446. **FEED-REGULATOR FOR OIL-STOVES.** FRANK S. MASON, Cambridge, Mass. Filed Jan. 3, 1887. Serial No. 223,720. (No model.)



Claim.—1. In a feed-regulator for oil-stoves, the combination of a valve which controls the passage of oil to the burner, an expansion pair arranged to move said valve, a fixed support or abutment secured to one end of one member of said pair, a fixed stop arranged to arrest the movement of the other member of the pair at a given point and thereby limit the expansive movement of said pair, and a spring, or its specified equivalent, arranged to give the expansion pair a yielding movement, whereby any expansive movement of said members, after the pair has reached the limit of elongation permitted by the stop, is absorbed, as set forth.

2. In a feed-regulator for oil-stoves, the combination of a valve which controls the passage of oil to the burner, an expansion pair arranged to move said valve, a spring, as *g*, supporting the valve against the pressure exerted on it by the expansion pair, a fixed support or abutment secured to one end of one member of said pair, a fixed stop arranged to stop the movement of the other member of the pair at a given point and thereby limit the expansive movements of said pair, and a spring, *s*, or its specified equivalent, arranged to give the expansion pair a yielding movement, as and for the purpose set forth.

3. In a feed-regulator for oil-stoves, the combination of a valve which controls the passage of oil to the burner, an expansion pair, one of whose members is provided with a sliding terminal or section, as *j'*, a spring, *s*, whereby said terminal is normally projected from the other section of said member, a fixed support or abutment secured to one end of one member of said pair, and a fixed stop arranged to arrest the movement of the other member of the pair at a given point, all arranged and operating substantially as set forth.

4. The combination of the valve and its casing, the valve-supporting spring, the expansion pair, one of whose members is supported at one end by a fixed abutment, while the other member has a sliding terminal bearing with a yielding pressure on the valve, and means, substantially as described, for regulating the degree of pressure of the sliding terminal on the valve, whereby the ratio of movement of the valve to the expansive movement of the members of the pair may be regulated, as set forth.

5. The combination of the valve and its casing, the expansion pair, one of whose members is supported at one end by an adjustable abutment comprising arm *c'* and differential screw, one part of which engages with a screw-thread in the arm *c'*, while the other part engages with the adjacent member, the other member having a sliding terminal bearing with a yielding pressure on the valve, substantially as set forth.

376,447. **BUTTON-LATHE.** FRANK A. MERWIN, New Milford, Conn., assignor to Alfred H. Noble and George R. Noble, both of same place. Filed Mar. 28, 1887. Serial No. 232,729. (No model.)

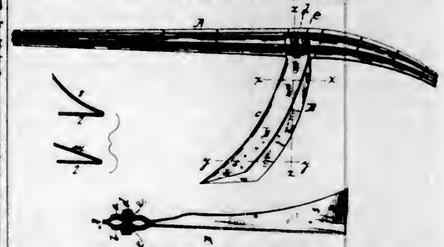
Claim.—In a button-lathe, the combination, with a base-plate, standards mounted thereon, a pair of rotary and longitudinally-sliding

376,447.



mandrels, a rotary cam-shaft journaled in said standards, and a slide-bar connected to each mandrel, of a fixed and a movable clamping-die, a vibrating lever to which the movable die is adjustably secured, and the slide-bar-operating levers pivotally connected to the sliding bars, all of these levers having connection with the cam-shaft, whereby they are given periodical vibratory motion, substantially as set forth.

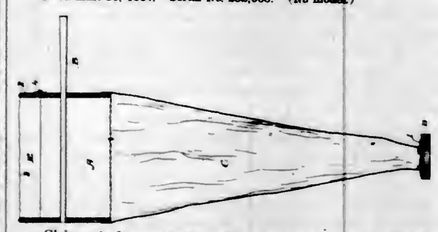
376,448. **PLOW-STANDARD.** AARON J. NELLIS, Pittsburg, Pa. Filed June 15, 1886. Serial No. 205,566. (No model.)



Claim.—1. The combination, with an elastic plate-metal plow-beam, of a longitudinally-folded elastic metal standard having its upper end bifurcated, substantially as and for the purposes specified.

2. The combination, with a longitudinally-corrugated metal plow-beam, of a plate-metal standard of V-cross-section, and having a bifurcated transversely-corrugated end to clasp the longitudinally-corrugated beam, substantially as and for the purposes specified.

376,449. **SIFTER.** ADDISON F. PURDY, New Haven, Conn. Filed Mar. 28, 1887. Serial No. 232,683. (No model.)



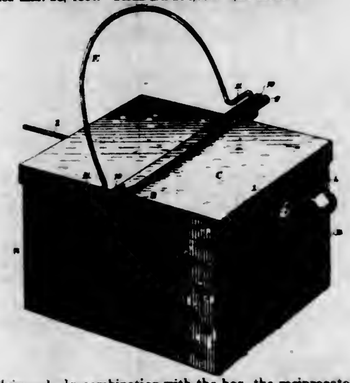
Claim.—1. In combination with a sieve, a cloth tube weighted at the bottom and secured at the top around the rim or frame of the sieve, substantially as described.

2. The combination of the sieve, the cloth tube secured to the rim or frame of the sieve, and the ring-weight secured to the bottom of the tube, substantially as described.

3. The combination of a sieve provided with a removable cover, a cloth tube under the sieve, and a weight at the lower end of said tube, substantially as described.

4. The combination, with a sieve, of a cloth tube secured at the top around the rim or frame of the sieve, and contracted at the bottom so as to form a flexible funnel-shaped conveyer under the sieve, substantially as described.

376,450. **BOX-SIEVE.** ADDISON F. PURDY, New Haven, Conn. Filed Mar. 28, 1887. Serial No. 232,684. (No model.)

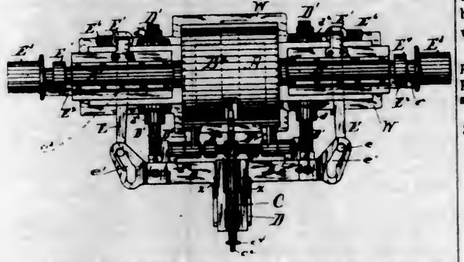


Claim.—1. In combination with the box, the reciprocatory sieve provided with a wire extending across and projecting beyond said sieve in the direction of its reciprocation, said wire being bent down in the middle, so as to conform to the upright ends of said sieve, and being fastened to said ends, and the projecting portions of said wire forming supports for upholding the sieve, and one of them forming also a handle for reciprocating the same, substantially as described.

2. The combination, with the box and the bail therefor, of the cover provided with notched projections, the said bail having horizontal portions for overlying and holding down the cover, substantially as described.

3. The sieve provided with a wire bent down in the middle and fastened to the ends of the sieve, the ends of the said wire projecting beyond the sieve on opposite sides, in combination with the box having openings or notches for the passage of the ends of said wire, and the rollers on the outside of said box on which the said ends run, substantially as described.

376,451. **EMERY GRINDING-MACHINE.** CHARLES R. ROGERS, Chicago, Ill. Filed Sept. 26, 1886. Serial No. 214,733. (No model.)



Claim.—1. In combination with the reciprocating grinders and holder of a nut-grinding machine, a shaft having a crank fast thereon and connected to the nut-holder and segments loose upon the shaft and connected to the grinders, the projections d^4 and d^5 upon the shaft and segments, respectively, and the hand-lever for actuating the shaft, substantially as specified.

2. The combination, with the grinders, of the levers connected thereto and to diagonal slots in the carriage, the carriage, and devices for moving the carriage backward and forward, substantially as specified.

3. The cup-shaped emery-wheel, the washer, the screw, and the collar b^3, in combination with the shaft to which the wheel is attached and the box, said collar encircling the box, and space being left between the abutting faces of the collar and box to allow the endwise movement of the wheel, substantially as specified.

4. The nut-holding slide having the movable spring-jaw provided with the head e^4, in combination with the trip d, controlled from the carriage, the carriage, and devices for reciprocating said slide, substantially as specified.

5. The combination of two emery-grinders placed end to end with their axes coincident, both rotating and both reciprocating, and adapted to operate simultaneously upon opposite sides of the nut or bolt-head, and a nut or bolt holder for carrying the nut or bolt into the space between the grinders, substantially as specified.

6. The combination of two rotating and reciprocating grinders adapted to operate upon opposite sides of the nut or bolt-head, and a laterally-yielding nut or bolt holder, substantially as specified.

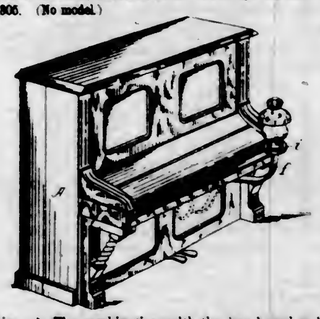
7. The combination, with the nut or bolt holder, of two endwise-reciprocating grinders rotating in the same direction and the levers and interposed springs for moving and cushioning the action of the grinders, substantially as specified.

8. The combination, with the two rotating and reciprocating grinders and the nut-holder, of means consisting of a trip acting upon the movable jaw of the nut-clamp for automatically releasing the nut from the holder after the grinding operation, substantially as specified.

9. The combination, with the rotary reciprocating grinders and the reciprocating nut-holder, of the hand-lever and the intervening mechanism connecting the said lever with the grinders and holder, substantially as specified.

10. The combination, with the levers for reciprocating the grinders, of springs acting upon said levers to cushion the power exerted thereby, substantially as specified.

376,452. **LAMP-SUPPORTING DEVICE FOR UPRIGHT PIANOS.** GEORGE S. ROBERTS, Meredith, N. H. Filed Apr. 14, 1887. Serial No. 234,805. (No model.)



Claim.—1. The combination, with the key board or bed *a* of an upright piano, of a lamp-supporting arm or bracket having a universal-joint connection with said key board or bed, whereby the lamp-supporting bracket may be folded under the key board or bed or moved out therefrom under, and an arm or bracket also secured to the key board or bed to support said lamp-supporting arm when moved outward, substantially as and for the purposes hereinbefore set forth.

2. The combination, with the key board or bed *a*, of the pivot-plate *b*, plate *d*, pivotally connected with plate *a*, arm *f*, hinged to plate *d*, and supporting arm *j*, all constructed, arranged, and operating substantially as and for the purposes hereinbefore set forth.

376,453. **REGISTER KEY-RING.** WALTER SCOTT, Waterbury, Conn. Filed Nov. 14, 1887. Serial No. 255,147. (No model.)



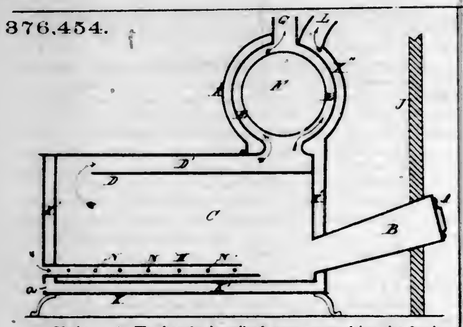
Claim.—1. A key-ring consisting of a case forming a label-holder, a cover therefor, a flexible chain connected to one end of the case, and connections at the opposite ends of the chain and case, whereby the chain may be connected or disconnected in changing keys.

2. A key-ring consisting of a case depressed on its inner side to form a label-holder, a cover therefor, a socket having a T-shaped slot at one end of the case and a chain attached to the other end, and having at its free end a catch adapted to engage said slot.

3. The case, a pivoted cover therefor, and an independent label within said case, in combination with a flexible chain attached to one end of the case, and having at its free end a catch adapted to engage the other end of the case.

376,454. **STOVE.** WILLIAM STEPHENSON, Morris, Manitoba, Canada. Filed Jan. 3, 1886. Serial No. 183,009. (No model.) Patented in Canada Apr. 22, 1886, No. 23,872.

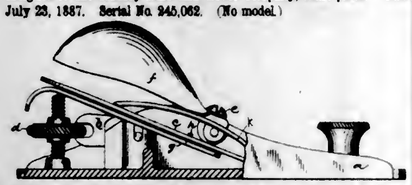
376,454.



Claim.—1. The herein-described stove, comprising the fire-box C, having a horizontal diaphragm, D, and flue D′, the jacket K, nearly surrounding said fire-box and forming flues K′, the feed-pipe B, and the draft-pipe H, located in the lower part of the fire-box and having openings N, substantially as shown and described.

2. The herein-described stove, comprising the fire-box C, having a horizontal diaphragm, D, and flue D′, the oven F, the flues E E, surrounding the oven and communicating with the flue D′, the draft-pipe H, located in the lower part of the fire-box, the feed-pipe B, the jacket K K², forming flues K′ K″, the hot-air exits L L, and the smoke-exit G, substantially as shown and described.

376,455. **BENCH-PLANE.** JUSTUS A. TRAUT, New Britain, Conn., assignor to the Stanley Rule and Level Company, same place. Filed July 23, 1887. Serial No. 245,062. (No model.)



Claim.—1. In combination with the stock and cutting-bit of a bench-plane, a lever for laterally adjusting said bit, fulcrumed on the screw which secures the cap-section, in substantially the manner and for the purpose herein specified.

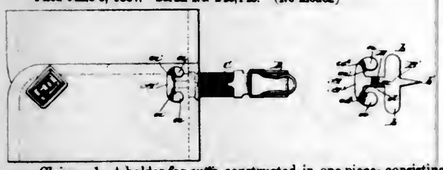
2. In combination with the stock and bit of a plane, a lever for laterally adjusting said bit, said lever being tapped to fit and fulcrumed on the cap-screw, substantially as and for the objects specified.

376,456. **COPYING-PENCIL.** CHARLES WALPUSKI, Brooklyn, N. Y. Filed June 30, 1887. Serial No. 243,016. (No specimens.)

Claim.—1. A copying-pencil composed of a mixture of nigrosine, lamp-black, tannate of iron, a suitable oleate, and a binding medium, substantially as set forth.

2. A copying-pencil composed of nigrosine, a mixture of lamp-black, tannate of iron, palmitate of alumina, oleate of soda, and a binding medium, substantially as set forth.

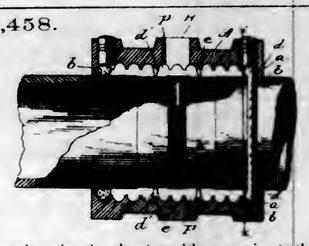
376,457. **CUFF-HOLDER.** WILLIAM J. WALTERS, Prospect, N. Y. Filed June 3, 1887. Serial No. 240,143. (No model.)



Claim.—1. A holder for cuffs, constructed in one piece, consisting of the head A′, provided with inwardly and upwardly projecting tabs *a*, the shank B, slightly concavo-convex near the center, and the tie B′, connected with said head by the shank, substantially as herein set forth.

2. A holder for cuffs, constructed of one piece, consisting of the head A′, provided with inwardly and upwardly projecting tabs *a* and recesses *a′*, the shank B, having a concavity, *d*, and convexity *d′* near the center, and a tie, B, whereby the holder is attached to the strip C, consisting of the wings *b*, and pointed tongue *b′*, all arranged substantially as herein shown and described.

376,458. **PIPE-COUPLING.** ALFRED WILBUR, Allegheny City, Pa. Filed Aug. 30, 1887. Serial No. 247,494. (No model.)

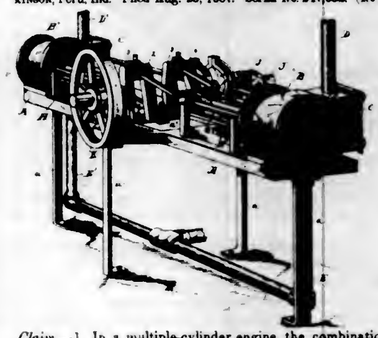


Claim.—1. A pipe-coupling consisting of an inclosing-sleeve for the pipe ends, an interior chamber with an opening to the outside for a suitable filling, interior grooves at the end of the sleeve having openings to the outside, and a rope packing or gasket fitting in said grooves, with the ends extending to the outside, said gasket being compressed around the pipe by pressure applied to the free ends thereof, substantially as described.

2. A pipe-coupling consisting of a coupling-sleeve having an interior groove for a rope packing, and the groove between that and the end for lead, a hole to the outside leading to both grooves, and a rope and lead packing and a filling, substantially as described.

3. In combination, the sleeve having grooves for the rope and lead, the lead groove having an outer rib, with the outside thereof beveled to an edge, and the rope and lead packing, all substantially as described.

376,459. **MULTIPLE-CYLINDER STEAM-ENGINE.** DAN WILKINSON, Peru, Ind. Filed Aug. 23, 1887. Serial No. 247,652. (No model.)



Claim.—1. In a multiple-cylinder engine, the combination, with a continuous bed-plate, of two cylinders of equal size set opposite each other on said plate, two pistons, two guides, two cross-heads to which the pistons are centrally attached, a crank-shaft having three points of attachment for the connecting-rods and located in bearings on the said bed-plate midway between the cylinders, and two connecting-rods, one of which is forked and the other straight, attached at their rear ends to the cross-heads in alignment with the pistons and at their forward ends to the crank-shaft, all constructed in the manner described.

2. In an engine of the class described mounted on a continuous bed-plate, the crank-shaft mounted midway between the cylinders and having four arms, in combination with the fly-wheel, the eccentrics, and the forked and straight connecting-rods attached to the cross-heads and to the crank-shaft, in the manner shown and described.

376,460. **BRICK-MACHINE.** BENJAMIN J. WILSON and ALBERT A. WOOD, Atlanta, Ga.; said Wood assignor to said Wilson. Filed Mar. 25, 1887. Serial No. 232,453. (No model.)

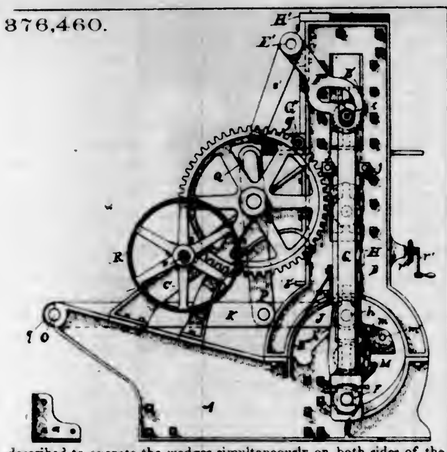
Claim.—1. In a brick-machine, as a means of transmitting an increasing power to the upper and lower beams, the toggle J K, having a stationary abutment on the pin O, the rock-shaft D, having oppositely-projecting cranks on its ends, and the connecting-rods H and G, combined and operating substantially as described.

2. As a means of operating the reciprocating charger, the rock-shaft E′, having arms *e′* connected to the charger, and arms F′, provided with cams at their free ends, in combination with a reciprocating beam of a brick-machine, substantially as shown and described, and for the purpose specified.

3. In a brick-machine, to force the bricks from the molds, the combination of the molds, the beam C′, carrying dies *p*, the swinging arm L, the roller N, and the cam M, having adjustable part *m*, substantially as shown and described.

4. In a brick-machine, as a means of regulating the holding capacity of the molds, the combination of the molds and the die-carrying beams C′ with the wedges D′, the screw-shafts *r*, carrying cranks *r′*, and sprocket-wheels for the chain *r″*, constructed substantially as

376,460.

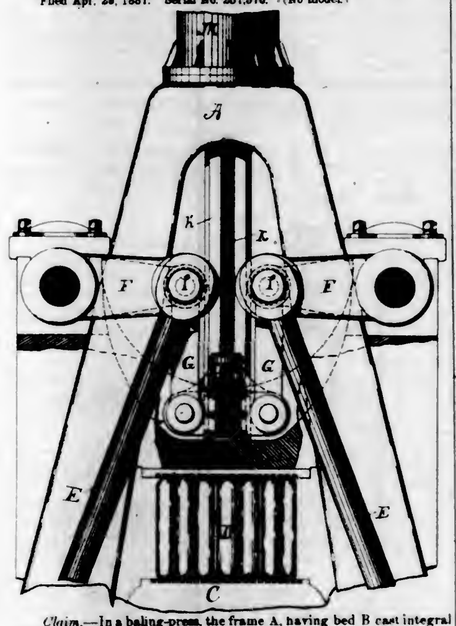


described to operate the wedges simultaneously on both sides of the machine.

5. In a brick-machine, forming mechanism consisting of molds and dies, the dies for forming one side of the brick having a sloping projection adapted to equalize the density of the brick pressed from clay of unequal density, substantially as shown and described.

6. In a brick-machine, a mold-box consisting of the parts J′ and K′, having coincidental grooves, the metal plugs *k*, and the bolts *i*, combined substantially as shown and described.

376,461. **BALING-PRESS.** BENJAMIN J. WILSON, Atlanta, Ga. Filed Apr. 29, 1887. Serial No. 237,376. (No model.)

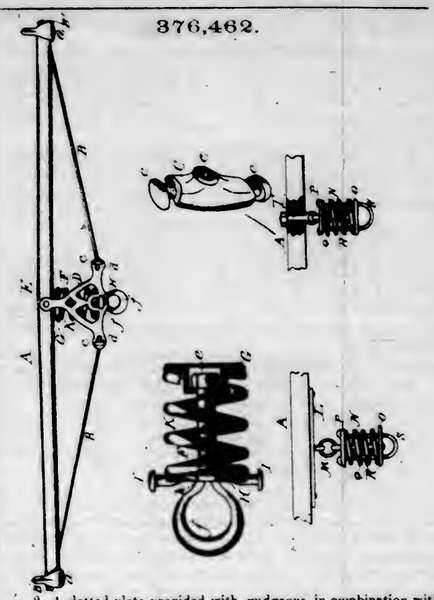


Claim.—In a baling-press, the frame A, having bed B cast integral therewith, in combination with the power-cylinder M, mounted upon the top of said frame, the cross-head H, piston-rod K, links G, fulcrums F, connecting-rods E, and the movable platen C, substantially as set forth.

376,462. **WHIFFLETREE.** FREEMAN R. WILSON, Sr., Columbus, Ohio. Filed Sept. 8, 1887. Serial No. 248,108. (No model.)

Claim.—1. A whiffletree or its equivalent, a slotted plate pivoted to a fixed attachment thereof, a draw-bar passing through said plate, another plate attached to said draw-bar and movable therewith both laterally and longitudinally, and a spring arranged between said plates to take the strain of said draw-bar, substantially as set forth.

376,462.



2. A slotted plate provided with gudgeons, in combination with frames in which said gudgeons turn, a whiffletree or its equivalent, to which said frames are attached, another plate which is movable laterally and rearward, a draw-bar attached to the latter plate and passing through the former, and a spring between said disks, for the purposes set forth.

3. In combination with a whiffletree or its equivalent and its terminal clips, the frames for the draw-bar, the blocks connecting them, and the truss-rods detachably secured to said blocks and to the ends of said whiffletree, substantially as set forth.

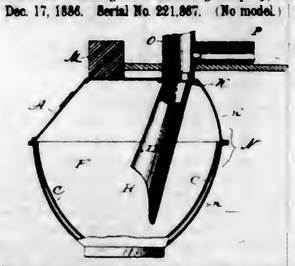
4. The combination of the frames having oblong slots *d*, with the blocks C, having buttons *c* with oblong heads, the whiffletree to which said frames are fastened, and a spring and draw-bar in the space between said frames, substantially as set forth.

5. The frames having oblong slots J, in combination with the disk G, having trunnions which are free to turn therein, the draw-bar working through a central opening in said disk, the disk or seat H on the end of said draw-bar, the spring K, and the whiffletree, substantially as set forth.

6. In combination with a draw-bar and its spring, the slotted frames to which they are attached, and a piece having buttons I, with oblong heads to serve both as trunnions, allowing lateral vibration, and as means of attaching and detaching said spring and draw-bar to and from said slotted frames, substantially as set forth.

7. A spring-whiffletree provided with open frames D for the spring and draw-bar, allowing lateral motion of the draw-bar, and with trusses for said frames, substantially as set forth.

376,463. **CAR-HEATING FURNACE.** HIRAM G. WILSON and JAY NOBLE, St. Louis, Mo., assignors, by direct and mesne assignments, to the Wilson Car Warming and Ventilating Company, East St. Louis, Ill. Filed Dec. 17, 1886. Serial No. 221,867. (No model.)



Claim.—1. A stove for heating cars and other compartments, having a grate in its bottom and the walls of the lower part inclining to the grate, and a door, A, for introducing the fuel, in combination with a flue, as O, to carry the products of combustion and distribute

the heat, and a pipe-extension, as D, having its lower end open and directly over the grate, substantially as described.

2. In combination with the floor of a car or other compartments, a stove attached thereto underneath, having a door for the admission of fuel, and a grate in its bottom with an opening to the outer air, and with inclined sides about the grate, and a flue-extension from the smoke-flue extending downward to a point over the grate, substantially as described.

3. In combination with the floor of a car or other compartments, a stove attached thereto underneath, having a door for the admission of fuel, and a grate in its bottom with an opening outward, and with inclined sides about the grate, and a flue-extension from the smoke-flue to a point over the grate, said extension having its lower end formed with an oblique end, substantially as described.

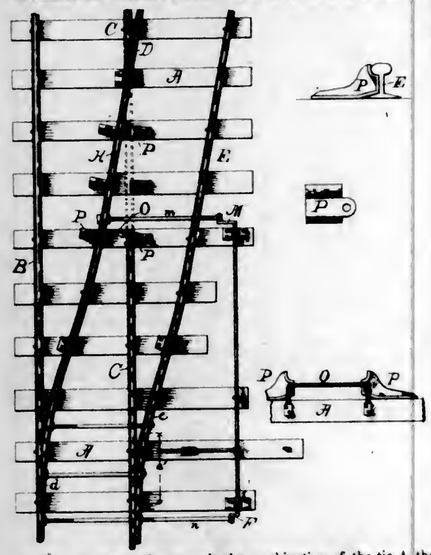
4. In combination with the floor of a car or other compartments, a stove attached thereto underneath, having a door for the admission of fuel, and a grate in its bottom with an opening outward, and with inclined sides about the grate, and a flue-extension from the smoke-flue to a point over the grate, and a safety-grate in the flue, substantially as described.

376,464. STOCKING-SUPPORTER. ALFRED M. ZIEGLER, Boston, Mass. Filed Oct. 12, 1887. Serial No. 252,109. (No model.)



Claim.—The herein-described garment-supporting attachment or clasp, consisting of a piece of metal bent or shaped to form the arms free at one end and leave a fabric or garment receiving slot, the said arms at or near their free end being provided with inclined or wedge surfaces, combined with a slide or loop free to slide on the free end of the said arms and bridging the fabric or garment receiving slot, whereby pressure or strain applied to the said slide causes the arms to be positively moved one toward the other to close the said slot, as and for the purposes set forth.

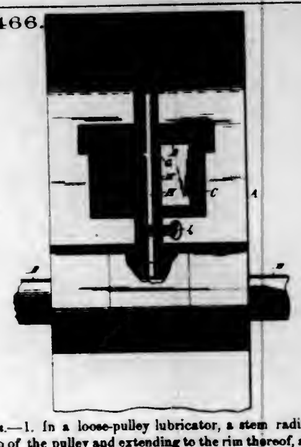
376,465. RAILWAY-SWITCH. ANDREW J. ATKINSON, Astor, assignor of two-thirds to Horatio W. Fairbanks and John T. Stocks, both of Atlanta, Ga. Filed Oct. 3, 1887. Serial No. 251,364. (No model.)



Claim.—1. In a railway-track, the combination of the tie A, the rail H, the brackets P, and the curved rod O, passing through the web of said rail, fastened to the said tie, and extending between and supported against the said brackets, substantially as set forth.

2. In a railway-switch, the combination of the rails B, C, D, and E, the movable rails *d*, *e*, and H, the rock-shaft K and cranks F and M, the rod O, and the bracket P, as and for the purpose set forth.

376,466. LOOSE-PULLEY LUBRICATOR. ROBERT A. AUSTIN, Sandusky, Ohio, assignor to the William P. Miller Company, Brooklyn N. Y. Filed May 12, 1887. Serial No. 237,976. (No model.)

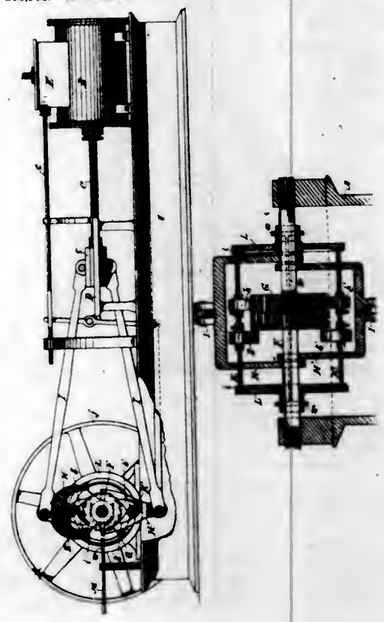


Claim.—1. In a loose-pulley lubricator, a stem radially secured to the hub of the pulley and extending to the rim thereof, a cup axially sleeved upon said stem, a plunger secured to said stem and operating within the cup, and a duct in said stem to carry the lubricant from the cup to the shaft of the pulley, all arranged to operate substantially as described.

2. As a new article of manufacture, a loose-pulley lubricator consisting of a tube closed at one end and screw-threaded at the other end, and extending from the hub to the rim of the pulley, a cup axially sleeved upon said tube, a plunger secured upon a screw-thread formed upon said tube and operating as a piston within the cup, one or more openings for the discharge of the lubricant from the cup into the tube, and a valve in the tube to control the discharge therefrom, all arranged to operate substantially as described.

3. In a loose-pulley lubricator, a stem radially secured between and extending from the hub and rim of the pulley, a cup axially sleeved upon the stem, a plunger-piston secured to said stem within the cup, a passage for the lubricant from the cup through the stem to the shaft of the pulley, and a valve in the stem, all arranged and combined to operate substantially as specified.

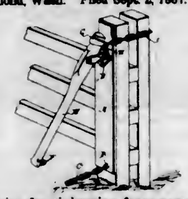
376,467. PAWL-AND-RATCHET MECHANISM. RICHARD J. BALLEW, Magalia, Cal., assignor of one-third to Samuel Stevens and John W. Hall, both of same place. Filed Apr. 28, 1887. Serial No. 236,531. (No model.)



Claim.—1. In combination with a reciprocating piston-rod and a driving-shaft, a double-faced ratchet upon said shaft, the teeth on said faces being reversed, oppositely-extending cranks pivoted upon the shaft and carrying pawls for engaging oppositely each face of the ratchet, mechanism for moving said pawls so as to throw one set into engagement with one face of the ratchet and the other set out of engagement with the other face of the ratchet, to reverse the motion of the driving-shaft, and connecting-rods between the cranks and the head of the piston-rod, substantially as herein described.

2. In combination with a reciprocating piston-rod and a driving-shaft, the double-faced ratchet on said shaft having teeth oppositely arranged, oppositely-extending cranks pivoted on said shaft, sliding pins mounted in said cranks, each pin carrying two pawls for engaging oppositely the faces of the ratchet, grooved disks feathered on the shafts and receiving the ends of the pawl-pins, a pivoted lever and yoke for moving sidewise the feathered disks and throwing the pawl-pins over, whereby one set of pawls are thrown into engagement with one of the faces of the ratchet while the other set are thrown out of engagement with the other face of the ratchet, and connecting-rods between the cranks and the piston-rod head, all arranged and adapted to operate substantially as herein described.

376,468. DEVICE FOR TIGHTENING FENCE-POSTS. LEVI BROOKS, Black Diamond, Wash. Filed Sept. 2, 1887. Serial No. 248,613. (No model.)



Claim.—In a device for tightening fence-posts, the combination of the base, the casting D, secured to the base near its upper end, the chain C, secured thereto near its lower end, the lever fulcrumed in the casting D and having a hook, F, at one end adapted to be engaged by the chain C, and the band G, secured to the opposite end of the lever, having a hook, H, formed at one of its ends and carrying a chain, I, adapted to engage the said hook H, substantially as specified.

376,469. SAFETY-SNAP FOR CARRIAGE-THILLS. HARRISON H. BROWN, Ladoga, Wis. Filed Oct. 7, 1887. Serial No. 251,739. (No model.)



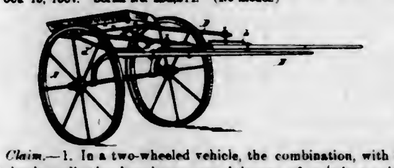
Claim.—1. The combination, with the hook having apertured end extensions, the end of the hook curving outwardly from the point *a*, of the latch or snap pivoted at its outer end and having its inner end touching the hook at *a* and beveled downward or away from said hook, substantially as described, for the purpose specified.

2. The combination, with the hook, of the snap having sides embracing the sides of the hook.

3. The combination, with the hook and the stud projecting from the hook, of the spring mounted on the stud, and the snap having sides embracing the spring and the sides of the hook, substantially as set forth.

4. The herein described and shown holdback, composed of the hook having its end curved outwardly and having apertured end extensions, the snap having sides embracing the sides of the hook, and having its end correspondingly beveled away from the hook and pivotally connected with the hook, the stud, and the spiral spring mounted on the stud and held in place thereby, substantially as specified.

376,470. ROAD-CART. LEWIS BUBB, Farmington, Iowa. Filed Oct. 13, 1887. Serial No. 252,211. (No model.)



Claim.—1. In a two-wheeled vehicle, the combination, with the thills having adjusting loop-irons secured thereto, of eyebolts provided with springs sliding on the loop-irons and fastened to seat-bars above, as set forth.

2. The combination, with thills having loop-irons, of eyebolts adjustable thereon, having diaphragms on their shanks, and springs above and below the diaphragms, said bolts being secured to seat-bars, as set forth.

3. The combination, with loop-irons, of eyebolts adjustable thereon, having diaphragms on their shanks, and springs above and below the diaphragms inclosed within vertical cylinders secured to seat-bars, as set forth.

4. A spring device for seat-bars of vehicles, consisting of a cylinder having central openings in its heads, provided with an eyebolt extending through the cylinder, and having a diaphragm secured thereto, with springs above and below the same within the cylinder, and a perforated angle-iron extending across and rigidly secured to one side of the cylinder, as set forth.

5. The combination, with the thills having springs secured to their rear portion and extending behind the axle, of a seat over the rear portion of the springs, provided with seat-bars extending in front of the springs and attached to adjusting loop-irons on the thills, adapting the seat to be moved back and forth over the rear portion of the springs, as set forth.

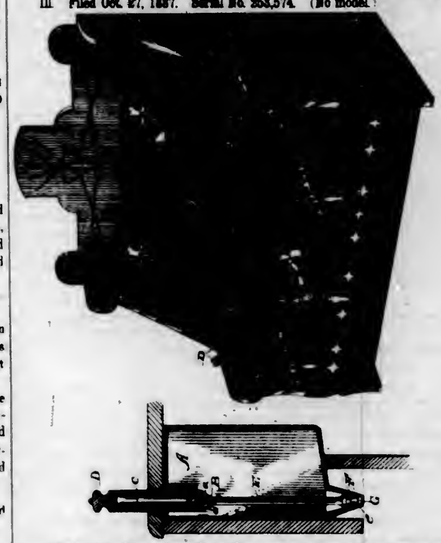
6. The combination, with a seat in the rear of the axle, having seat-bars movable back and forth on the thills, of an adjusting-bar secured to the under side of the seat and held to the rear portion of the springs by an eyebolt over the bar, as set forth.

7. The combination, with a vehicle-seat, of an adjusting-bar on the under side thereof, having notches on its upper side, and vertical sockets at its ends for securing it to the seat, said notches being provided with indicating-marks on the bar, as set forth.

8. The combination, with an adjusting-bar for a vehicle-seat, having notches on its upper side and sockets on its ends, of an eyebolt or hook over the bar fitting into the notches, the shank of the bolt passing through the springs or spring-bar connecting them, and having a coil-spring thereon and secured under the spring, as set forth.

9. The combination, with a seat having an adjusting-bar provided with notches, and an eyebolt on said bar, of a round bar spring secured to the thills, said bars being placed by the side of each other and secured together by clamps, the shank of said bolt being fastened in the rear clamp of said spring, as set forth.

376,471. SODA-WATER FOUNTAIN. ARTHUR CHRISTIN, Chicago, Ill. Filed Oct. 27, 1887. Serial No. 253,574. (No model.)

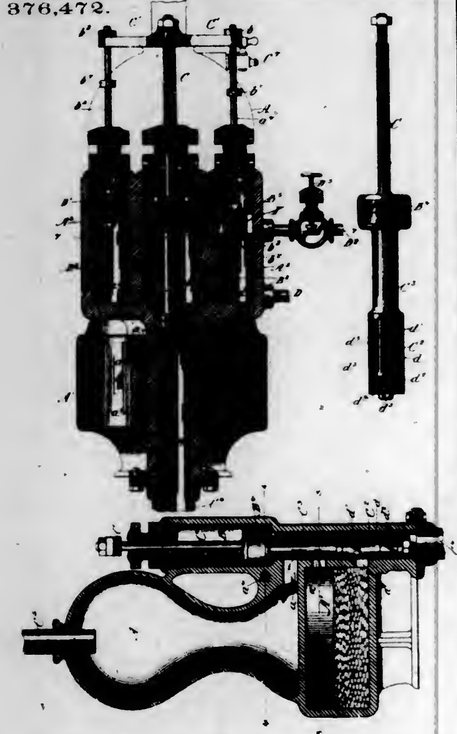


Claim.—1. In combination with a can, a plunger having a tube or pipe forming a receptacle communicating below the top of the can with its interior, and a removable cover above the top of the can, substantially as described.

2. In a soda-fountain, the combination, with a can having a nozzle for the escape of liquid, of a plunger having a tube or pipe forming a receptacle communicating below the top of the can with its interior, a removable cover above the top of the can, and a solid stem whose end closes the nozzle of the can and stops the flow of the liquid, substantially as described.

376,472. AUTOMATIC FEED-WATER APPARATUS FOR BOILERS. MILO COVEL, Chicago, Ill. Filed Oct. 14, 1884. Serial No. 145,475. (No model.)

376,472.



Claim.—1. In a boiler-feeding apparatus operated wholly within itself, the combination, with a feed-chamber the highest part whereof is on a level with the high-water line in the boiler, of a water-reservoir located above said feed-chamber and separated therefrom by a horizontal diaphragm, a number of ports or openings forming communicating passages between said feed-chamber and reservoir, a steam-piston and a piston or water valve rigidly connected together in a vertical plane and moving in a continuous cylinder common to both, and the feed-water pipe connected to the lower end of said cylinder and leading to the boiler, all combined and arranged to operate substantially as and for the purpose set forth.

2. In a boiler-feeding apparatus, a supply-reservoir, a feed-chamber, and a breast properly chambered to provide the steam and water cylinders and the steam-chests, all being constructed and arranged in connection with said reservoir and feed-chamber, substantially as and for the purpose set forth.

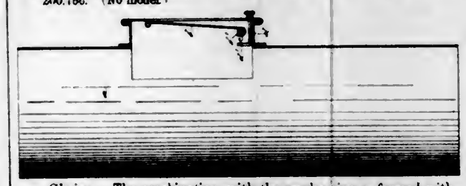
3. In a boiler-feeding apparatus, the combination, with a supply-reservoir and feed-chamber, of a steam and water cylinder, the latter being a continuation of the former, but of a less diameter, a steam-piston moving in said steam-cylinder, and a piston-valve moving in said water-cylinder, said piston-valve being arranged below said steam-piston and rigidly connected to the same by means of a cylindrical body, whereby said steam-piston and piston-valve are adapted to have a simultaneous movement, substantially as set forth.

4. In a boiler-feeding apparatus, the combination, with a water-cylinder, of a supply-reservoir provided with ports leading into said cylinder, a feed-chamber provided with a second series or set of ports through which the water passes into said feed-chamber from said cylinder, a third series of ports opening from the lower part of said feed-chamber into said cylinder and passage leading to the boiler, and a piston-valve adapted to open and close said ports or passages in the order described, whereby water may flow from the reservoir into the feed-chamber when said piston-valve is on the downstroke, and from the feed-chamber to the boiler when the same is on the upstroke, substantially as set forth.

5. In a boiler-feeding apparatus, the combination, with a steam and water cylinder communicating with each other, but of a different diameter, of a steam-piston, a piston-valve connected to and having a simultaneous movement with said steam-piston, a steam-chest having steam and exhaust ports, a valve moving in said chest, means for adjusting said valve to open and close said ports at the proper time, and a steam-passage leading from said steam-chest into the upper end of said steam-cylinder, whereby steam-pressure is supplied to force the piston or pistons in one direction, the water-pressure from the boiler supplying the pressure for the return-stroke, substantially as and for the purpose set forth.

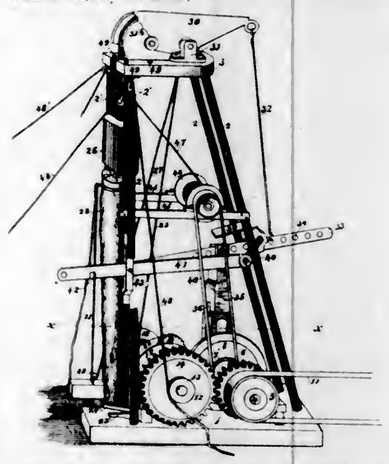
6. In a boiler-feeding apparatus, the combination, with a feed-chamber, of a steam-chamber, a steam-passage through which steam is conducted into said chamber from the source of supply, a second steam-passage leading from said steam-chamber into said feed-chamber, a piston-valve moving in said steam-chamber for the purpose of opening and closing said steam-passage communicating with said feed-chamber, and means for setting or adjusting said piston-valve to open and close said passage at the proper time with reference to the movement of the steam-piston, substantially as and for the purpose set forth.

376,473. **DRAFT-REGULATOR FOR SMOKE-PASSAGES.** JOHN M. GIBBS, Park Hill, Ontario, Canada. Filed May 1, 1886. Serial No. 200,786. (No model.)



Claim.—The combination, with the smoke-pipe *a*, formed with an opening in one side, of the valve *b*, hung over said opening, and formed with the trough *c*, to receive a weight, and the rod *d*, having a hooked end, *d'*, substantially as and for the purpose set forth.

376,474. **COMBINED PILE-DRIVING AND WELL-DRILLING MACHINE.** FRANK M. GRAY, Milwaukee, Wis. Filed Mar. 10, 1887. Serial No. 230,367. (No model.)



Claim.—1. In a well-drilling or pile-driving machine, a tower or derrick and thereon a walking-beam, 30, adjustable to front or rear in bearings movable thereon, substantially as described.

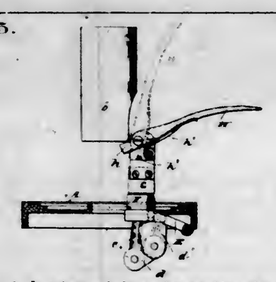
2. In well-drilling mechanism, a rotating shaft, 12, and rigid pinion 15 thereon, in combination with brake-wheel 17, the thereon carried pinions 19 20 and 19' 20', and the windlass-drum 18, provided with spur-teeth meshing with pinions 20 20', substantially as described.

3. In well-drilling mechanism, a pitman, 35, and the two therewith impinging cam-arms, 9 9, supported and rotating with shaft 4, in combination with shaft 4, sub-pitman 52, and crank-arm 10, also rotating with shaft 4, constructed as described, substantially as and for the purpose set forth.

4. In well-drilling mechanism, a pitman, 35, provided with bifurcated arms straddling a shaft, 4, and with a bearing-pin, 37, and anti-friction wheel 38, in combination with shaft 4, cam-arms 9 9, and anti-friction sleeves 53 53, substantially as described.

376,475. **CUTTING MECHANISM FOR BUTTON-HOLE SEWING-MACHINES.** JAMES G. GREBBE, Elizabeth, N. J., assignor to The Singer Manufacturing Company of New Jersey. Filed Sept. 10, 1887. Serial No. 249,342. (No model.)

376,475.

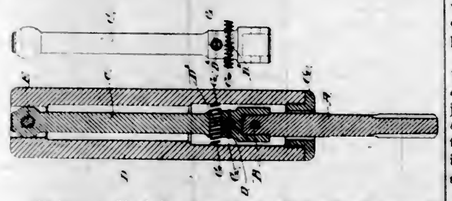


Claim.—1. In a button-hole sewing-machine, the combination, with the bracket-arm thereof, a cutter or blade, a cutting-block, and a cutting-lever, of a hand-lever pivoted to the said cutting-lever and arranged to impinge against the head at the forward end of the said bracket-arm.

2. In a button-hole sewing-machine, the combination, with the bracket-arm thereof, a cutter or blade, a cutting-block, and a cutting-lever, of a hand-lever pivoted to the forward end of the said cutting-lever and arranged to impinge against the head at the forward end of the said bracket-arm, a spring for lifting the said hand-lever and holding it elevated, and a stop for limiting the upward movement of the said lever by the said spring.

3. The combination, with the work-plate A, bracket-arm B and its head *b*, of the cutting-lever C, the rock-shaft D, connected with the said lever and provided with the cam *d'*, the lever E, a cutter or blade, a cutting-block, and a hand-lever, H, pivoted to the lever C and arranged to impinge beneath the said head *b* when a button-hole is to be cut.

376,476. **DRILL OR REAMER HOLDER.** WILLIAM L. GROUT and EDWARD L. BOWERS, Orange, Mass. Filed Aug. 4, 1887. Serial No. 246,118. (No model.)



Claim.—1. The hollow sleeve or spindle D and tool, combined with the shank C, inserted within the said sleeve or spindle to carry the tool, the said shank being entirely within and loosely connected, substantially as described, with the said sleeve or spindle, for the purposes set forth.

2. The tool-carrying shank and the sleeve or spindle to which the said shank is loosely connected, combined with the springs or cushions, to operate substantially as described.

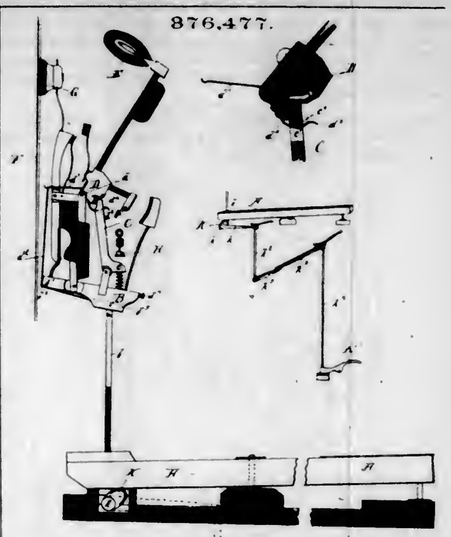
376,477. **PIANO-ACTION.** STILLWELL HARCOURT, Chicago, Ill., assignor to himself and John E. Hall, same place. Filed Sept. 26, 1887. Serial No. 250,652. (No model.)

Claim.—1. The combination, in a piano-forte action, of the hammer, hammer-butt, jack, and jack-operating lever with a spring secured to the hammer-butt and projecting to the opposite side of its pivot from the jack, and connected by a cord or link with the inner end of the jack-lever, said hammer-butt being also provided at its lower end with a curved guard or guide projecting through a slot in the upper end of the jack for returning the jack to position under the hammer-butt, substantially as specified.

2. The combination, in a piano-forte action, of the hammer, hammer-butt, jack, and jack-operating lever with a spring secured to the hammer-butt and projecting to the opposite side of its pivot from the jack, and connected by a cord or link with the inner end of the jack-lever, said hammer-butt being also provided at its lower end with a curved guard or guide projecting through a slot in the upper end of the jack for returning the jack to position under the hammer-butt, the outer end of said curved guard being recurved, substantially as specified.

3. The combination, in a piano-forte action, of the hammer, hammer-butt, jack, and jack-operating lever with a spring secured to the hammer-butt and projecting to the opposite side of its pivot from the jack and connected by a cord or link with the inner end of the jack-lever, said hammer-butt being also provided at its lower end with a curved guard or guide projecting through a slot in the upper end of

376,477.



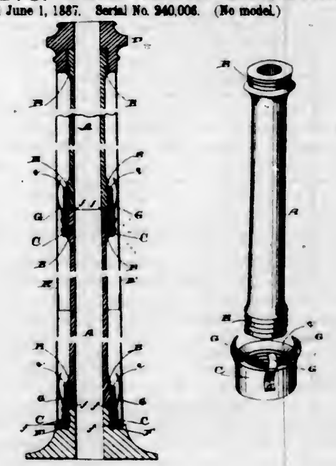
the jack for returning the jack to position under the hammer-butt, the outer end of said curved guard being recurved, and the upper wall or edge of said slot being downwardly inclined toward the hammer-butt, substantially as specified.

4. The combination, with hammer E, of hammer-butt D, provided with a curved cam or guide, d^4, for the jack, provided with a recurved end, *d*, jack C, furnished with slot *c'*, through which said curved guard projects, and lever B, for raising the jack, substantially as specified.

5. The combination, with hammer E, of hammer-butt D, provided with spring *d'*, jack C, jack-lever B, and link or cord d^3, said spring *d'* projecting to the opposite side of the hammer-butt pivot from the jack and being connected by said link or cord with the inner end, *b'*, of the jack-lever, and an adjusting-screw, d^5, at the front end of the jack-lever, said cord extending along the jack from its rear end to its front end and wound around said adjusting-screw, substantially as specified.

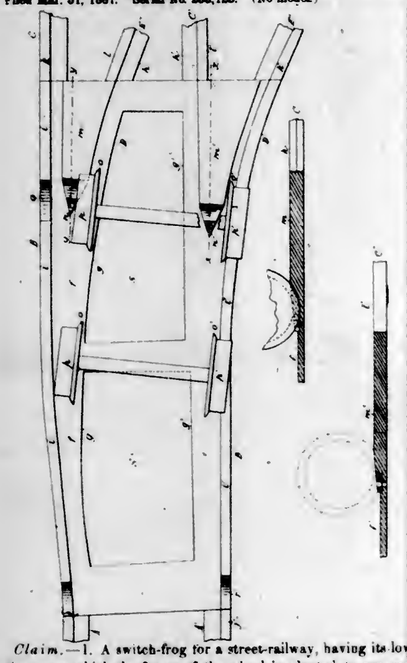
6. The combination, with hammer E, of hammer-butt D, provided with spring *d'*, jack C, jack-lever B, and link or cord d^3, said spring *d'* projecting to the opposite side of the hammer-butt pivot from the jack and being connected by said link or cord with the inner end, *b'*, of the jack-lever, and an upwardly-curved or hook-shaped cam or guide, d^4, projecting through the slot *c'* in the jack C, substantially as specified.

376,478. **CHIMNEY.** BENJAMIN F. HERTZELL, San Francisco, Cal. Filed June 1, 1887. Serial No. 240,006. (No model.)



Claim.—The earthenware chimney-sections with the screw-couplings by which the adjacent ends are united and the exterior pipe-sections of larger diameter, within which the chimney is inclosed, in combination with the elastic springs attached to the sides of the couplings and acting to hold the chimney central within the exterior pipe, substantially as described.

376,479. **STREET-RAILWAY SWITCH-FROG.** JOHN HOPE, Jr., Providence, R. I., assignor of one-half to William V. Daboll, same place. Filed Mar. 31, 1887. Serial No. 233,125. (No model.)



Claim.—1. A switch-frog for a street-railway, having its lower portion, upon which the flange of the wheel is adapted to run, made with its upper surface on the same level throughout its entire length and gradually widened until it reaches the projecting guide or frog proper, said guide being gradually inclined from its apex to the higher portion of the same, substantially as shown, and for the purposes described.

2. The two switch-frogs of a street-railway, each having its lower portion, upon which the flange of the wheel is adapted to run, made with its upper surface on the same level throughout its entire length and gradually widened until it reaches the projecting guide or frog proper, said guide being gradually inclined from its apex to the higher portion of the same, the incline of one frog merging into the higher portion of the branch rail, and the incline of the other frog merging into the higher portion of a continuation of the main rail, all substantially as shown, and for the purposes described.

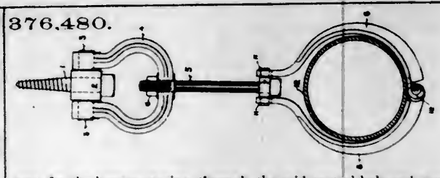
3. The double switch-frog or stationary switch, all cast in one piece, each frog having its lower portion, upon which the flange of the wheel is adapted to run, made with its upper surface on the same level throughout its entire length and gradually widened until it reaches the projecting guide or frog proper, said guide being gradually inclined from the apex to the higher portion of the same, the incline of one frog merging into the higher portion of the branch rail, and the incline of the other frog merging into the higher portion of a continuation of the main rail, all substantially as shown, and for the purposes described

4. A switch-frog for a street-railway, having the higher portion or flange of the same lower than the flange of the main rail, and having its lower portion gradually widened until it reaches the projecting guide or frog proper, said guide being gradually inclined from its apex to the higher portion of the same, and the flange of the frog also being gradually inclined opposite to the incline of the projecting guide to correspond with said incline, all substantially as shown, and for the purposes described.

376,480. **PIPE-HANGER.** PERCY H. KENWAY, Lowell, Mass. Filed Jan. 8, 1887. Serial No. 223,745. (No model.)

Claim.—1. The pipe-hanger consisting of the yoke-piece having the central hole and the pipe-strap-retaining lips at its ends, the support for the hanger passing through the said central hole and movable therein, and the straps locked together at their lower ends and hung upon the ends of the said yoke-piece, substantially as described, and for the purposes specified.

376,480.



2. The pipe-hanger consisting of the yoke-piece having the central hole and the pipe-strap-retaining lips at its ends, the support for the hanger, that is adjustable in length, passing through the said central hole and movable therein, and the straps locked together at their lower ends and hung upon the ends of the said yoke-piece, substantially as described, and for the purposes set forth.

3. The pipe-hanger consisting of the yoke-piece having the central hole and the pipe-strap-retaining lips at its ends, the support for the hanger passing through the said central hole and movable therein, and the straps locked together at their lower ends with the open hook and the pin 9, substantially as described, and for the purposes specified.

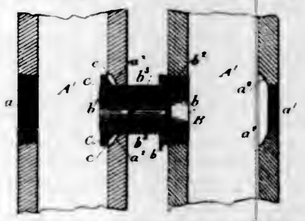
4. The yoke-piece having the central hole, the pipe-strap-retaining lips, and the cylindrical portions between the said central hole and the said lips, combined with the pipe-straps locked together at their lower ends and with their upper ends supported by the said cylindrical portions, and a support for the hanger passing through the central hole in the yoke-piece, substantially as described, and for the purposes specified.

5. The yoke-piece having the central hole, the pipe-strap-retaining lips at its ends, and the cylindrical portions between the said hole and the said lips, combined with a support adjustable in length, passing through the central hole in the yoke-piece, and the straps locked together at their lower ends and with their upper ends supported by the cylindrical portions of the said yoke-piece, substantially as described, and for the purposes specified.

6. The yoke-piece having a cylindrical portion near each end and the straps supported thereon, and means of preventing the said straps from slipping off the ends of the said yoke-piece, combined with the cross-bar 2, with its cylindrical ends, and a means of supporting the same from an object above it, the stirrup engaging with the ends of the said cross-bar, and a means of connecting the said yoke-piece to the said cross-bar, substantially as set forth.

7. The yoke-piece and the pipe-straps supported near the ends thereof, and means of preventing the said straps from slipping off the ends of the said yoke-piece, combined with the cross-bar with the stirrup swinging thereon, and means of supporting the said cross-bar from an object above it, and means adjustable in length of connecting the said stirrup and yoke-piece, substantially as described, and for the purposes specified.

376,481. **RADIATOR-CONNECTION.** GEORGE A. KILEY, Rochester, N. Y. Filed Mar. 30, 1887. Serial No. 232,965. (No model.)



Claim.—In radiators or other devices made in sections for the circulation of fluids, the two integral screws *b b'* of differing diameters and the convex nut C, in combination with radiator-sections having the opposite screw-threaded aperture *a a'* to receive said screws, as and for the purpose described.

376,482. **CAR-COUPLING.** ABNER J. MCGEHEE, Jackson, Tenn. Filed July 29, 1887. Serial No. 245,616. (No model.)

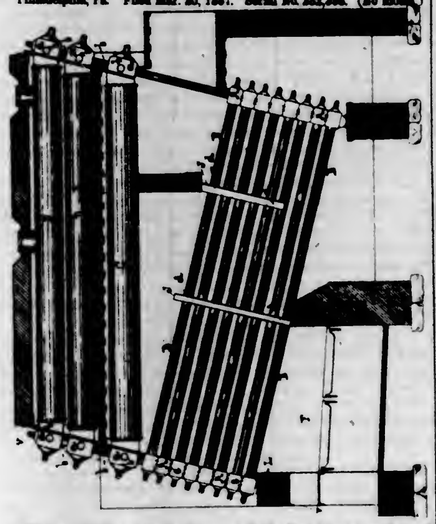
Claim.—1. The combination, with the draw-head having the tongues C C', of the draw-bar pivoted in the tongue C and having its rear edge beveled and provided with the notch K, and the latch L, hung in the rear portion of the draw-head, in position to engage said notch, and having its shaft extended through the side of the same and provided with means for rotating it, substantially as set forth.

2. The combination, with the draw-head having the tongues C C', the tongue C being provided with the vertical shoulder D on its inner side, of the draw-bar pivoted in the tongue C, and having a vertical shoulder, I, engaging against the shoulder D, the rear edge of the draw-bar being beveled and provided with the notch K, and the latch L, hung in the draw-head in position to engage the notch K, and having its shaft extended through the side of the draw-head and provided with means for rotating the same, substantially as specified.

376,482.



376,483. **SECTIONAL WATER-TUBE BOILER.** EDWARD J. MOORE, Philadelphia, Pa. Filed Mar. 26, 1887. Serial No. 232,268. (No model.)



Claim.—1. In a sectional water-tube boiler, the drums thereof connected by means of nipples and pipes to the headers, in alignment with the nipples which unite the said headers together in a vertical direction, substantially as and for the purpose specified.

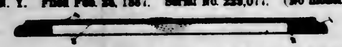
2. In a sectional water-tube boiler, a flame-plate formed of rectangular sections secured together at their upper and lower edges by means of bolts situate wholly within the said sections, and thereby not exposed to the direct action of fire from the furnace, substantially as and for the purpose specified.

3. In a sectional water-tube boiler, the flame-plate thereof supported at its ends by the side walls of the boiler-setting, whereby the weight of the tubes is to some extent carried by said side walls, substantially as and for the purpose specified.

4. In a sectional water-tube boiler, the flame-plate bolted to bars built in the side walls of the boiler-setting, substantially as and for the purpose specified.

5. In a sectional water-tube boiler, the front headers thereof provided with trunnions and rollers, combined with boxes built in the side walls of the setting, in which the said rollers are free to rotate, substantially as and for the purpose specified.

376,484. **PLAYING-CARD BOARD.** FRED M. PERSEY, Waterville, N. Y. Filed Feb. 28, 1887. Serial No. 229,077. (No model.)

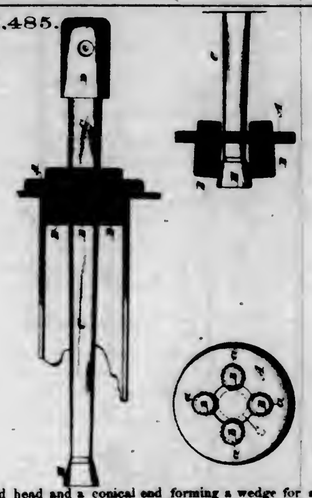


Claim.—A playing-card board consisting of a frame having the surface covered with slightly-flexible material in such manner as to form a taut flexible surface, the top side or edge of the frame being substantially flush with the flexible surface, substantially as set forth.

376,485. **TUBE-EXPANDER.** JAMES H. RICHARDS and EDWARD HUBER, Marion, Ohio. Filed Aug. 16, 1887. Serial No. 247,095. (No model.)

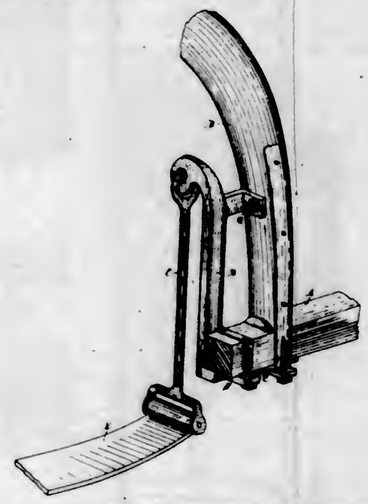
Claim.—1. In a pipe-expander, the combination, with a flat disk centrally perforated and provided with radial grooves to form seats for cylindrical rollers, of a set of rollers having shouldered journals that fit the grooves, and a tapered cylindrical mandrel having a perforated head and a conical end forming a wedge for separating the free ends of the rollers, substantially as set forth.

376,485.



2. In a pipe-expander, the combination, with a flat disk perforated centrally and having four radial slots cut into the central hole, and four cylindrical rollers having journals which fit the grooves of the disk and collars that bear loosely on the sides of the disk, of a tapered cylindrical mandrel having a cylindrical hub on one end, which is perforated to receive a lever, and a conical end forming a wedge for separating the free ends of the rollers, substantially as set forth.

376,486. **TWO-WHEELED VEHICLE.** BENJAMIN F. RIX, Kalamazoo, Mich., assignor to R. Arthur Stone, same place. Filed July 19, 1887. Serial No. 244,729. (No model.)

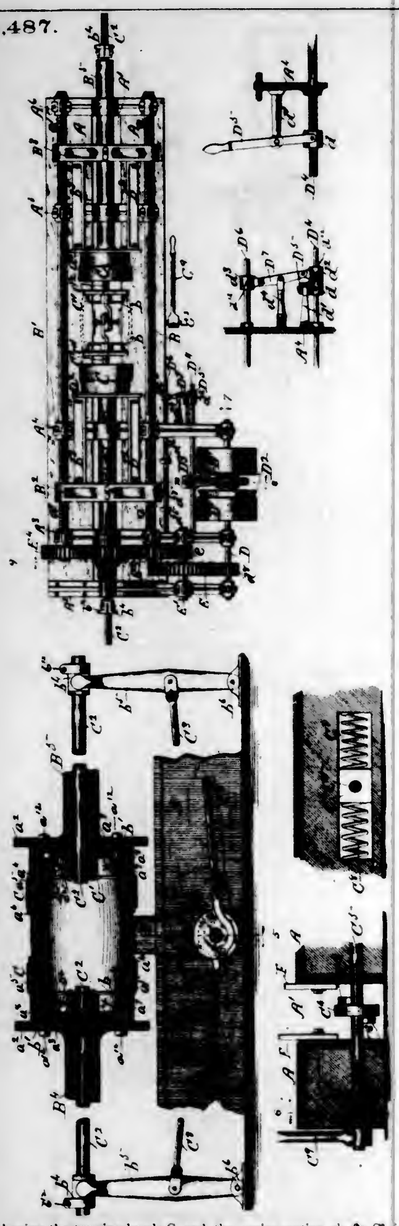


Claim.—In a vehicle of the style referred to, the spring-support comprising as an integral whole the upright body part, the right-angled clip-plate, the upper turned eyed end, and the lug below said end extending laterally, and thence at right angles, substantially as set forth.

376,487. **MACHINE FOR TRUSSING BARRELS.** JOHN A. SEAMAN, Chicago, Ill. Filed Sept. 21, 1886. Serial No. 214,167. (No model.)

Claim.—1. In a barrel-trussing machine, the combination of two endless rotating screw-shafts on opposite sides of the machine and having right and left hand screw-threads on opposite ends, respectively, the cross-heads B^3 and B^3 at opposite ends of the machine, and having correspondingly screw-threaded engagement with said screw-shafts, the hollow shafts B^4 B^4, on which the cross-heads are mounted,

376,487.



and having the trussing-heads C, and the reciprocating shafts C^2, inclosed by the hollow shafts, and having the centering-heads C', substantially as described.

2. In a barrel-trussing machine, the combination, with a hollow shaft having an endwise movement only and provided with the face-plate a^3 and the annular shoulder x, of a cylindrical trussing-head adapted to be removably secured to said face-plate and having the annulus a^4, which engages with the shoulder x, the reciprocating shafts C^2, and the centering-heads having an annular projecting rim, substantially as set forth.

3. In a barrel-trussing machine, the combination of a hollow compressing-head of variable diameter and having an annular shoulder, a^4, at or near the central interior, and annulus a^3 at the rear or bottom end, and a centering-head within the compressing-head, having the annular projecting rim a^5, substantially as described.

4. In a barrel-trussing machine, the combination of two endless screws, the compressing-heads, the cross-heads connected with said compressing-heads, the hollow shafts having an idler gear-wheel connecting the gear-wheels of the endless screws, the centering-heads having the reciprocating shafts within said hollow shafts, and the pulleys connected with said gearing and having a friction-clutch for reversing the motion of the gearing, substantially as described.

5. In a barrel-trussing machine, the combination, with the compressing-heads, of the centering-heads C', having the annular projecting rim a^6 and a number of apertures, b', and the angle spring-arms b, the inner ends of which are rigidly secured to the hub of said head C', while the outer ends are loosely inserted in said apertures, substantially as described.

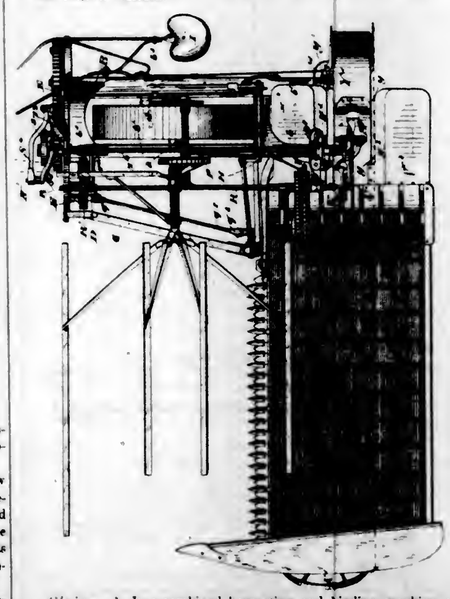
6. In a barrel-trussing machine, the combination, with a trussing-head adapted to set up or drive the bilge and quarter hoops, of a centering-head provided with the springs forming a yielding support for the end of the barrel, and the annular rim a^6, which bears against the end or head hoop and drives the same by reason of said trussing-head forcing said centering-head inward, substantially as set forth.

7. In a barrel-trussing machine adapted to truss both ends of a package simultaneously, the combination, with the compressing-heads C C, of the centering-heads C' C', having the springs which form a yielding support for the barrel and co-operating with said compressing-heads, but having an independent action relative thereto, substantially as and for the purpose set forth.

8. In a barrel-trussing machine, the combination, with the solid companion shafts C^2 C^2, having an endwise movement, of the centering-heads mounted on the inner ends of said shafts and having springs which form a yielding support for the barrel, the reciprocating levers b^5, the upper ends of which are adjustably secured to the outer ends of said shafts, and the lower ends provided with a pivotal bearing, the connecting-rods C^3 C^3, the disk-wheel C^4, the rock-shaft C^5, and the hand-lever C^6, whereby the centering-heads are operated by hand independently of the trussing-heads, substantially as set forth.

9. In a barrel-trussing machine, the combination, with the cross-head B^2, of the friction-cones, the driving-pulleys, the automatic shifting-arm d^7, the rod D^8, the collars d^5 d^6, the companion rod D^9, the fulcrumed link D^7, connecting said rods, and the bracket-arm D^8, whereby the friction cone-pulleys are automatically and alternately thrown into and out of engagement relative to the driving-pulleys, substantially as and for the purpose set forth.

376,488. LOW-LEVEL GRAIN-BINDER. JOHN F. STEWARD, Chicago, and GEORGE H. STEWARD, Piano, Ill. Filed July 5, 1883. Serial No. 100,000. (Model.)



Claim.—1. In a combined harvesting and binding machine, a metallic main frame having its forward end adapted to encircle the main wheel and its rear end provided with the two rigid rearwardly-extending arms, one above and the other below the grain-passage, said arms provided with bearings to sustain the binder-shafts lying in a fore-and-aft direction.

2. In a harvesting and binding machine, the combination of the main wheel, the harvester and binder frame formed complete in one rigid structure, its forward end adapted to encircle the main wheel and to sustain the harvester and binder gearing, and its rear end provided with the two rearwardly-extending arms, one above and the other below the grain-passage, said arms having bearings to sustain the binder-shafts lying in a fore-and-aft direction.

3. In a combined harvesting and binding machine, the combination of a main wheel, a rigid frame encircling said wheel and provided at its rear end with two rigid rearwardly-extending arms, one above and the other below the grain-passage, a binding mechanism mounted on the rear end of said frame, with upper and lower shafts carried by said arms, and harvester and binder driving-gear located on the forward end of the frame and driven from the main wheel, substantially as described, whereby the binder is supported rigidly in rear of the wheel, counterbalanced by the gearing in advance of said wheel, and the weight of both gearing and binder applied to the wheel to insure proper traction.

4. In a self-binding harvester, the main driving-wheel frame supported on the axle, the binder mechanism supported on said frame, the platform pivotally supported on said frame, and the draft-bars connecting the said platform to the said frame, all combined with the stretcher-bar g^2, substantially as described.

5. In combination with the main wheel and axle, the rigid main frame encircling the wheel, with the harvester and binder gear mounted on its forward end, and the binder mechanism carried on its rear end, the harvester-platform sustained at one side by the grain-wheel, the pivoted draft-bars G and G', connecting the platform and frame, and means, substantially as described, adjustably supporting the stubble end of the platform from the main frame in rear of the main wheel.

6. The main driving-wheel frame, the binding mechanism mounted thereon, and the delivery-platform pivoted thereto substantially in line with the binding mechanism and suitably connected by draft-bars to said frame, combined with the adjustable braces h^2 and h^3, for sustaining the said frame in its upright position in relation to the said platform, substantially as described.

7. In a self-binding harvester, the platform connected to the main driving-wheel frame by pivoted draft-bars and the said frame supported in its upright position by means of adjustable braces h^2 and h^3, combined with means for tilting the platform and retaining it in any position or adjustment, substantially as described.

8. In a self-binding harvester, the biuding-tables y^6 y^7 Y, fixed in relation to the binding mechanism, combined with the platform pivoted, substantially as described, in relation to said binding mechanism and provided with the fore-and-aft tables x^4 and x^5, overlapping the edges of the first-named sections of the table, whereby the binder-table forms a complete support for the grain whatever the position of the tilt in relation to said binder mechanism, as set forth.

9. In a self-binding harvester, the combination of the main driving-wheel frame having the parallel longitudinal bars which form supports for the needle and knotter-driving shafts and having the axle-bearing b^2, and the standard C, having the axle-bearing, whereby the side of the frame supporting one shaft is supported so high that the swath of the grain may be carried beneath it and the other shaft be beneath the swath, substantially as described.

10. In a self-binding harvester, the frame-plate E, having the tongue pivoted thereon and provided with the trunnions c^{10} and c^{11}, and the draft-bars G and G', connected thereto, the said plate E secured to the main frame, and the said draft-bars at their rear ends to the platform, all combined substantially as described.

11. The plate E, having the binder-shaft bearings e and e', the driving-shaft bearings c^9, the crank-shaft bearings c^8, and the canvas-driving-shaft bearing c^7, substantially as described.

12. The needle, in combination with the packers, reversible at will as regards their position beside the said needle, substantially as described.

13. The tripping compressor-shaft having the arm t, combined with the flanged plate having the inclined portion t^6, for the purpose specified.

14. The rocking and longitudinally-movable tripping compressor-shaft provided with the arm t, combined with the adjustable flanged plate having the inclined portion t^6, substantially as described.

15. The combination of the rocking and longitudinally-movable tripping compressor-shaft provided with the arm t, and the adjustable plate t^6, having the flange t^6, with the inclined portion, whereby the said shaft is caused to move longitudinally and be retained in the position to which it is thus moved until the arm T returns to its position of rest, substantially as described.

16. The combination of the bearing-bracket T^4, the longitudinally-moving shaft therein, and the adjustable flanged plate having the inclined portion journaled thereon, in combination with means for adjusting the plate in relation to the said bearing and shaft, substantially as described.

17. In a grain-binder, the longitudinally-movable rock-shaft T and the flanged plate having the incline t^6, and devices, substantially as described, offering a variable resistance to the longitudinal movement of said shaft.

18. The combination of the longitudinally-movable tripping rock-shaft with the spring T^7, adjustable in its resistance to the endwise movement of said shaft, substantially as described.

19. In combination with the longitudinally-movable rock-shaft T and the tripping-lever, the intermediate mechanism, substantially as described, for imparting motion from one to the other.

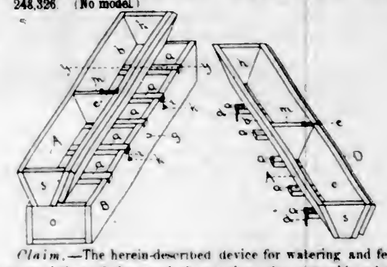
20. The combination of the longitudinally-movable tripping-shaft and the lever pivoted on the frame, and one end connected with the shaft and the latter connected with the clutching device, substantially as described.

21. The tripping-lever T^5, having the foot with the projecting toe reaching to and engaged by the cam-ring S^4, all combined with the clutching device, substantially as described.

22. In a machine for harvesting and binding grain, the combination of the main wheel and its axle, the main frame mounted on said axle and extending in front and rear of the wheel, the harvester and binder gearing mounted on the forward end of the frame, the binding mechanism mounted on the rear end of the frame, the tongue or draft-pole jointed to the front end of the frame and connected thereto by tilting mechanism, the driver's seat sustained by the tongue, the main platform mounted at its outer end on the grain-wheel and connected at its inner end to the main frame by the draft-bars G and G', and suspending devices connecting the inner end of the platform with the rear end of the main frame, substantially as described, whereby the weight of the entire structure is applied chiefly to the main wheel, the machine adapted to poise or balance upon said wheel, and the driver enabled to readily effect the adjustment of the platform.

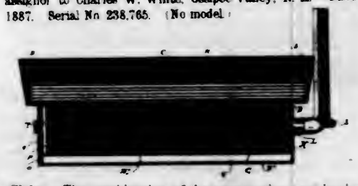
23. In a grain-binding machine, the combination of a needle or binder-arm for laying the cord about the bundle and a packing mechanism for compressing the grain, said elements adapted for adjustment in relation to each other and in the direction of the length of the grain, so that the packer may be caused to act upon the grain either in front or in rear of the point at which the cord is laid, as occasion may require.

376,489. DEVICE FOR FEEDING AND WATERING HOGS. THOMAS B. SWAN, Atlantic, Iowa. Filed Aug. 30, 1887. Serial No. 248,326. (No model.)



Claim.—The herein-described device for watering and feeding hogs, consisting of the vessel, the receiver, the covers hinged to the receiver, and the cross-bars hinged at one end and hasped at the other end to the vessel and each firmly secured to the lower portion of the receiver, the parts being constructed, combined, and arranged substantially as shown and described.

376,490. EVAPORATING-PAN. HARRISON F. THURSTON, Bartlett, assignor to Charles W. White, Ossipee Valley, N. H. Filed May 19, 1887. Serial No. 238,765. (No model.)



Claim.—The combination of the evaporating-pan, having the depending fire-box on its lower side, formed of an inner and outer shell, providing a space between them which communicates with the pan, the rear end of said fire-box being closed and provided with an opening, I_4, and the front end thereof being open, the smoke-stack arranged

in rear of the fire-box and fitted on opening L, the door-frame O, arranged on the front end of the fire-box removable therefrom, and having the flanges R, and the clip yoke or rod S, embracing the rear side of the smoke-stack, and having its arms extending forward through the flanges R and provided with clamping-nuts T, thereby securing both the smoke-stack and the door-frame in position, substantially as described.

376,491. TIRE-TIGHTENER. STEPHEN D. TOMLINSON, Gladesville, Ga. Filed Sept. 2, 1887. Serial No. 248,609. (No model.)



Claim.—The combination of the spokes, each having the end tenon, C, the threaded portion E, and the notches H in the shoulder formed by the tenon, and the externally-threaded sleeves F, each having a diameter equal to that of the end of the corresponding spoke, and provided with the studs D and with threads similar to those of the spokes, with the felloes having the mortises extending through them, the tire with the tenons abutting against its inner surface, the metal washers M, and the metal sleeves I, internally threaded and engaging the threads of the sleeves F and of tapped parts E of the spokes, substantially as specified.

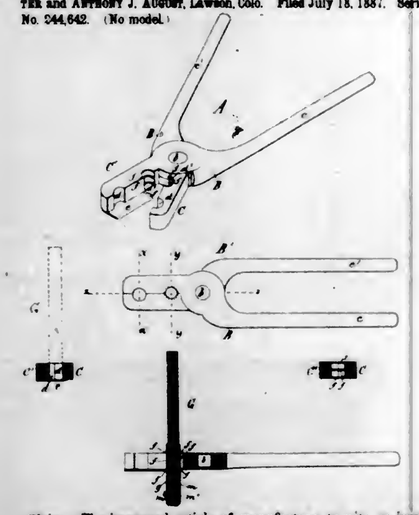
376,492. BOB-SLED. MORRIS S. TYLER, Lansing, Mich. Filed June 27, 1887. Serial No. 242,636. (No model.)



Claim.—1. The standard B, comprising in a single element the upright, the head, the trunnions *a a*, projecting laterally from said head, a flanged base to engage the runner, and a bearing-plate, *b*, on top of the standard, substantially as and for the purposes specified.

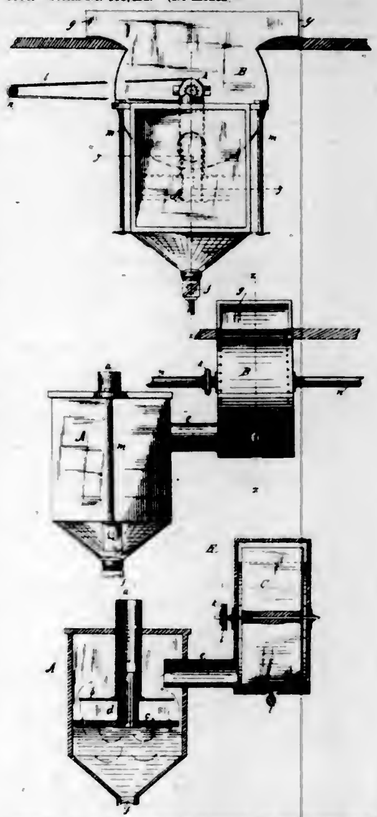
2. In a bob-sled, the combination, with the cross-beam C, of standard B, rigidly secured to the runner and rave and having laterally-projecting trunnions *a*, and the caps F, adapted to form pivotal bearings for the trunnions of the standards, and provided with bearing-faces *c* and upwardly-projecting ears *d*, all arranged substantially as described.

376,493. FUSE-CUTTER AND CAP-CRIMPER. ALBERT VANHATTER and ANTHONY J. AUGUST, Lawson, Colo. Filed July 18, 1887. Serial No. 244,642. (No model.)



Claim.—The improved article of manufacture, to wit: an implement for cutting and capping fuse, which comprises in its construction two jaws, C C, pivoted together by pivot *b* and provided with semi-cylindrical recesses or slots *d* and *d'* forward of the pivot *b*, a cutter, *e*, beneath jaw C, forward of slots *d' d'*, and below slots *d d*, crimping-ridges *f f* transverse of slots *d' d'*, and handles *c c'*, rounded and forming rigid extensions of the jaws in rear of pivot *b*, substantially as and for the purpose described.

376,494. VENTILATING APPARATUS FOR RAILWAY-CARS, FACTORIES, &c. JAMES D. VOAK, Watkins, N. Y. Filed Mar. 16, 1886. Serial No. 195,452. (No model.)



Claim.—1. In a ventilating apparatus, the combination of an exhaust-fan inclosed in a drum connected by the pipe *c* with a purifying-tank provided with the perforated float *e*, short pipe *d*, working within and extending the inlet-pipe *a*, and rising and falling with the body of water in the tank, substantially as specified and shown, and for the purposes stated.

2. In a ventilating apparatus, the combination of a double-acting fan inclosed in a drum having apertures for the discharge of air at opposite ends and provided with the shifting valve *h*, with a purifying-tank having the solid or perforated deflector *b*, affixed upon the inlet-pipe *a* above the body of water and below the connecting-pipe *c*, substantially as shown and described, and for the purposes set forth.

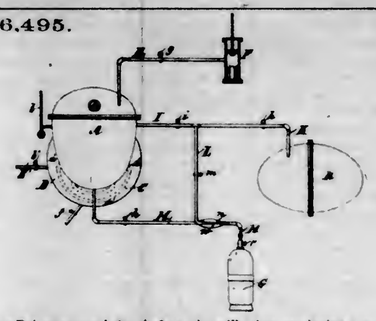
3. In a ventilating apparatus, the drum B, provided with the outlets *g g* and valve *h*, and inclosing the double-acting fan C, in combination with the tank A, having inlet and outlet pipes *a* and *c*, the deflector *b*, and float *e*, substantially as described and shown, and for the purposes stated.

376,495. PROCESS OF CONDENSING AND PRESERVING MILK. OTTO VON RODEN, New York, N. Y., assignor to the Von Roden Manufacturing Company, of New York. Filed Dec. 12, 1885. Serial No. 185,526. (No specimens.) Patented in England Jan. 15, 1883, No. 227.

Claim.—1. The process substantially herein described of preserving milk, which consists in heating the same in a closed chamber to a temperature sufficient to expel the air from the milk, then producing a vacuum in said chamber by expelling the air eliminated from the milk, then introducing carbonic-acid gas into the said vacuum, and then raising the temperature of the milk to a degree sufficient to destroy the germs of fermentation therein before charging it.

2. The process substantially herein described of preserving milk, which consists in heating the same in a closed chamber to a tempera-

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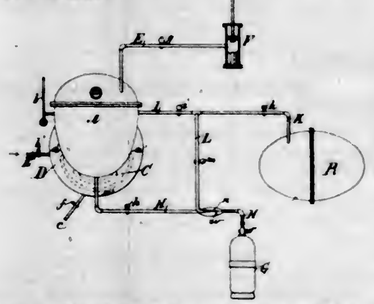


ture sufficient to expel the air from the milk, then producing a vacuum in said chamber by expelling therefrom the air eliminated from the milk, then introducing carbonic-acid gas into said vacuum, then raising the temperature of the milk to a degree sufficient to destroy the germs of fermentation therein, and finally lowering the temperature of the milk to prepare it for being charged.

3. The process substantially herein described of preparing and charging milk with carbonic-acid gas, which consists in subjecting the milk to the successive and continuous treatment as follows, to wit: the first treatment being under a heat limited to a degree sufficient to expel the air from the milk, the second treatment being in the presence of carbonic-acid gas under a degree of heat sufficient to destroy the germs of fermentation in the milk, the third treatment being under the action of a positive cooling agent; and, finally, charging the milk with carbonic-acid gas in its flow from the treating-chamber into the receiver after being cooled to effect the more intimate incorporation of the gas with the milk.

4. The process substantially herein described of preserving milk, which consists in subjecting the milk to heat in a closed chamber and expelling the air so liberated from the chamber, introducing carbonic-acid gas under pressure into said vacuum, increasing the heat of the chamber in the presence of the gas, then cutting off the heat, then reducing the temperature of the milk, and finally displacing the milk from the treating-chamber and ejecting it and mixing it after its expulsion from said chamber by means of the pressure in the generator.

376,496. APPARATUS FOR CONDENSING AND CARBONATING MILK. OTTO VON RODEN, New York, N. Y., assignor to the Von Roden Manufacturing Company, of New York. Filed Dec. 12, 1885. Serial No. 185,527. (No model.)



Claim.—1. The combination of a vacuum-pan, A, a receiver, G, a generator or source of supply for carbonic-acid gas under pressure, a pipe, H, having a bulb or chamber, *n*, and connecting the receiver with the pan, and an ejector-nozzle, *w*, arranged within the bulb or chamber *n* and connected by a pipe with the generator or source of carbonic-acid supply, all substantially as and for the purpose herein set forth.

2. In apparatus for preserving and charging milk with carbonic-acid gas, the vessel A, provided with a bottom shell or jacket having inlet and outlet pipes for heating the milk-containing chamber, a coil of pipe within said shell entering and leaving it for cooling said chamber, a pipe connecting the top of said chamber, a pipe connecting the bottom of said chamber, and an intermediate pipe connecting with said bottom pipe, in combination with the air-pump, the receiver, and the generator, each separately connected with said pipes, and the ejector *w*, constituting a part of and arranged at the junction of the pipes which connect the vacuum-vessel with the generator and with the receiver, substantially as described.

3. The herein-described combination of parts, constituting an improved apparatus for preserving and charging milk with carbonic-acid gas, said parts consisting of the vacuum-vessel A, having the jacket D, the coil of pipe C, placed within said jacket for heating said vessel, the generator R, the pipes I K, connecting the chambers of said vacuum-vessel and generator, the air-pump F, connecting the upper part of the chamber of said vessel, the receiver G, its pipe H, having the bulb *n*, and the pipe L, connecting the pipes I and H, and terminating in the latter in an ejector, *w*, the said pipes having the cocks shown and described.

4. In apparatus for preserving and charging milk with carbonic-acid gas, the combination, with the milk-containing vessel provided with coils and jacket for both heating and cooling the same, of a thermometer, the air-pump and its pipe E, the generator and its pipes I K, the receiver and its pipe H, and the pipe L, branching from the pipe I and terminating in the pipe H in an ejector at a point between the treating-vessel and the receiver, the several parts having the precise relation shown and described.

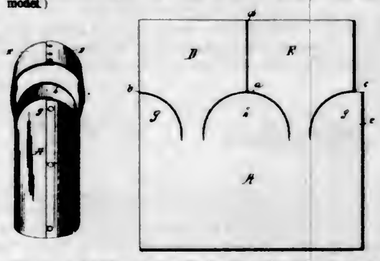
5. The combination of a vacuum-pan, a generator, R, for supplying carbonic-acid gas under pressure, a receiver, G, pipe H, having bulb or chamber *n*, and an ejector-nozzle, *w*, connected with the generator, all substantially as and for the purpose herein set forth.

376,497. BUTTON-FASTENER. ADA L. WEBB, Hillsborough, Ark. Filed Oct. 24, 1887. Serial No. 253,236. (No model.)



Claim.—A button-fastener consisting of the staple A, having the loop *a*, the bends *a'*, and the lateral extensions *a*³, provided with the points *a*³, and the plate B, having the apertures *b b'* fitted on the staple, the bends *a'* being held in the apertures *b* and the apertures *b'* receiving the points *a*³, substantially as specified.

376,498. FLUE-TOP OR SPARK-CATCHER. EDWIN O. WOODRUFF, Knoxville, Iowa. Filed Oct. 21, 1887. Serial No. 252,998. (No model.)



Claim.—1. The herein-described pattern for a flue-top composed of the sheet having a middle cut, a cut on each side of the middle cut, and a cut extending about at right angles to the line of the three cuts and from the middle cut through the top of the sheet, the side cuts extending through the edges of the sheet, substantially as described, for the purpose specified.

2. The herein-described flue-top, composed of the sheet having a curved cut midway between its edges and a short curved cut on each side of the middle cut extending through the edge of the sheet, and the cut extending from the middle cut through the top of the sheet, forming the two wings, the sheet below the middle and side cuts being bent into tubular form and having its edges secured together, and the wings being curved toward each other and secured together at their tops.

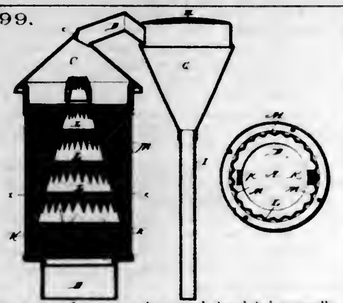
3. A flue-top made of a single piece of sheet material, composed of a tubular portion and a hood or bonnet, the tubular portion having a single side seam, and the bonnet having a single seam, which seam is located on top, substantially as described, for the purpose specified.

376,499. SPARK-ARRESTER. FRANK P. ENGLER, Abders, Pa. Filed Oct. 11, 1887. Serial No. 252,046. (No model.)

Claim.—1. In a spark-arrester, the body A, adapted to be secured on the upper end of the stack, and having the sides thereof composed of screen, the flue D, leading from the center of the top of the said body, and the series of bands L, arranged in the body, having the inwardly-inclined fingers thereon, constructed and arranged substantially as and for the purpose specified.

2. In a spark-arrester, the combination of the body A, having the collar B at the lower end to engage over the upper end of the stack, and the conical top C, provided at the center with an opening, flue D, attached to the said opening, and the series of bands L, arranged one above the other in the said body and having the inwardly-

376,499.



inclined fingers on the upper edges, each band being smaller than the band below it in the series, substantially as and for the purpose specified.

3. In a spark-arrester, the combination of the body A, having the conical top C, flue D, communicating with the center of the top supports, K K, arranged in the body and converging toward the upper ends, and the bands L, secured to the said supports, and having the inwardly-inclined fingers on the upper edges thereof, for the purpose herein specified.

4. In a spark-arrester, the body A, having a conical top and screen sides, the funnel-shaped spark-chamber G, adjacent to the body, and having a screen top, the flue D, leading from the top of the body to the spark-chamber, and the flue I, extending from the reduced bottom of the spark-chamber, substantially as and for the purpose specified.

5. In a spark-arrester, the body having the screen sides and a top provided with an opening, and the series of annular inturned fingers M, arranged in the body, substantially as and for the purpose specified.

376,500. CUFF-BUTTON. GEORGE B. ADAMS, Newark, N. J., assignor, by direct and mesne assignments, to the Adams Manufacturing Company, same place. Filed Dec. 29, 1886. Serial No. 222,872. (No model.)



Claim.—1. A combined cuff-button and a cuff-holder, consisting of a face or head portion, a shoe or back-plate, and a shank connecting said head and base portion, said head being pivotally attached to said shank, and said head and shoe portions inclining or converging normally one toward the other, and adapted, when the button is inserted in the cuff, to grasp or clamp the material of said cuff and sleeve between the converging ends thereof, and a spring constructed and arranged to cause said shoe and head to grip or seize said material, for the purposes set forth.

2. A combined cuff-button and cuff-holder, consisting of an eccentrically-pivoted head portion or face, a shank to which said head is pivoted eccentrically extending from the eccentric pivotal point thereof toward or to the center of said head, and then projecting centrally, or approximately so, from said head, and a shoe or back-plate attached to said shank, said head and shoe portions inclining or converging, normally, one toward the other, and adapted, when the button is inserted in the cuff, to grip or to clamp the material of said cuff and the sleeve between the converging ends thereof, and a spring constructed and arranged to cause the said shoe and head to grip said material, for the purposes set forth.

3. A combined cuff-button and cuff-holder, consisting of a face or head portion provided with one or more holding-teeth projecting therefrom toward the sleeve and constructed and arranged to turn away from the under surface of said head, for the purposes set forth, a shank to which said head is pivotally attached, and a shoe or back-plate, said head and shoe portions inclining or converging, normally, one toward the other, constructed and arranged, when the button is inserted into the cuff, to grip or clamp the said cuff and sleeve between the converging ends thereof, and a spring constructed and arranged to cause said head and shoe to seize and hold the said sleeve, for the purposes set forth.

4. A combined cuff-button and cuff-holder, consisting of a head or button provided with a tooth or teeth on the under side thereof, a shank to which said button is hinged or pivoted, a shoe or back-plate secured to the opposite end of said shank constructed and arranged so as to incline toward or approach the said head, and a spring constructed and arranged to cause the holding contact of said head with the sleeve when adjusted in the cuff, for the purposes set forth.

5. In a cuff-button, the combination of a recessed chambered head or button provided with a tooth or teeth on the under side thereof, a shank to which said button is hinged or pivoted, a shoe or back-plate secured to the opposite end of said shank, constructed and arranged so as to incline toward or approach said head, and a spring arranged in said recessed or chambered head and engaging with the end of the shank pivoted thereto, for the purposes set forth.

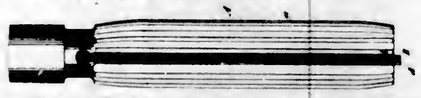
6. In a cuff-button, the combination of an eccentrically-pivoted recessed or chambered head or button provided with a tooth or teeth on the under side thereof, a shank to which said head is pivoted eccentrically extending from the eccentric pivotal point thereof toward or to the center of said head and then projecting centrally, or approximately so, from said head, a shoe or back-plate secured to the opposite end of said shank, constructed and arranged so as to incline toward or approach said head, and a spring arranged in said recessed or chambered head and engaging with the end of the shank pivoted thereto, for the purposes set forth.

7. In a cuff-button, the combination of a recessed or chambered head or button, a shank to which said button is hinged or pivoted, a shoe or back-plate secured to the opposite end of said shank, constructed and arranged so as to incline toward or approach said head, and a spring arranged in said chambered head and having oppositely-arranged free ends, one of which engages with the end of the shank to which said head is pivoted, and the other free end being provided with a tooth or teeth thereon projecting downward from the under side of said head, for the purposes set forth.

8. In a cuff-button, the combination of a chambered head or button consisting of a casing having an under plate, a^2, provided with an opening, a^4, extending to or approximately to the center of said casing, a shank pivoted or hinged eccentrically to said casing in said opening, and extending in said opening to or approximately to the center and then bent away from said casing, a shoe or back-plate secured to the end of said shank projecting away from said casing, constructed and arranged so as to incline toward or approach said head, and a spring arranged in said casing and engaging with the ends of said shank pivoted to said casing, for the purposes set forth.

9. In a cuff-button, the combination of an eccentrically pivoted or hinged head or button, a shank to which said head is pivoted and hinged, and extending from the eccentrically-pivoted point to or toward the center of the said head, and then bent away from said head and provided with a projection, c^4, at the angle formed by said bent shank, for the purposes set forth, a shoe or back-plate constructed and arranged so as to incline toward or approach the said head, and a spring constructed and arranged to cause the holding contact of said head with the sleeve and cuff when inserted in said cuff, for the purposes set forth.

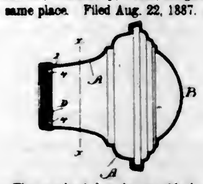
376,501. REAMER. THOMAS R. ALMOND, New York, N. Y. Filed Dec. 10, 1887. Serial No. 257,528. (No model.)



Claim.—1. The fluted reamer A, having stationary blades *a*, and adjustable blade B, said adjustable blade having curved outer edge, substantially as specified.

2. The combination of the reamer A with its adjusting-blade B and with the rib *d* thereon, said rib being on that side of said blade toward which the same is turned during the operation of the reamer, as specified.

376,502. MANUFACTURE OF SHEET-METAL KNOBS. CLAYTON C. ANDREWS, Waterbury, Conn., assignor to the American Ring Company, same place. Filed Aug. 22, 1887. Serial No. 247,523. (No model.)

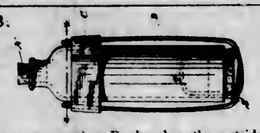


Claim.—The method herein specified of manufacturing sheet-metal knobs, consisting in inserting into the sheet-metal shell A the nut D, fitting such shell, and then spreading the edges of the nut and thereby forcing the same against the sheet metal and spreading it by forcing into the metal of the nut a tool that spreads the metal outwardly, substantially as set forth.

376,503. OIL-DISTRIBUTING BOMB OR CASE. BENJAMIN ARNOLD, East Greenwich, R. I. Filed June 16, 1887. Serial No. 241,495. (No model.)

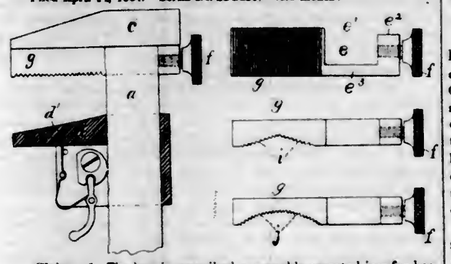
Claim.—1. In combination with a case for holding oil to be distributed on the water, a spring, B, placed on the outside of the case, and a strip, C, of material pervious to water, for the purpose of confining the spring, all constructed and arranged so that when the strip is moistened it will break, release the spring, and allow the oil to flow out upon the water, substantially as and for the purpose set forth.

376,503.



2. The case A, having an opening in it, in combination with a stopper, S, for closing said opening, spring B, for holding the stopper S, and the strip C, of material pervious to water, to confine the spring while under strain, substantially as and for the purpose specified.

376,504. WRENCH. HENRY W. ATWATER, East Orange, N. J. Filed April 14, 1887. Serial No. 234,833. (No model.)

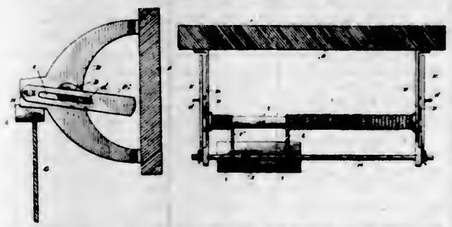


Claim.—1. The herein-described removable serrated jaw for bar-wrenches, having in its rear end a socket open at one side, whereby it may be attached to the wrench-shank.

2. The combination, with the removable jaw having in its rear end a socket open on one side, of the means, substantially as described, for holding the jaw in position.

3. The removable serrated jaw for bar-wrenches, constructed as herein shown and described, with the tongue e^2 projected from its rear end at one side, and the lug e^3 at a right angle with the tongue, forming the socket *e*, open at one side, *e'*, and the lug being provided with the set-screw *f*, projected through the lug e^3 into the rear side of the socket, as and for the purpose set forth.

376,505. FIRE-ESCAPE. WILLIAM C. BARKER, Watkins, N. Y. Filed Aug. 2, 1887. Serial No. 245,956. (No model.)



Claim.—1. In a fire-escape, the combination of a rotary shaft having cranks on its ends provided with wrist-pins with pivoted oscillating bars provided with slots for engaging the wrist-pins of the cranks, all substantially as and for the purpose described.

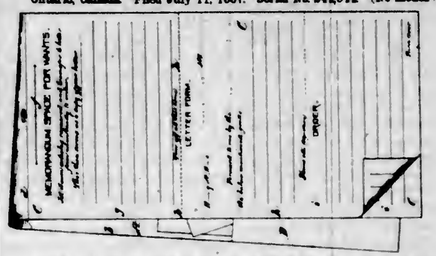
2. The combination, with suitable supports, of the horizontal shaft and its ropes, the crank-arm and wrist-pin on the end of said shaft, and a pivoted oscillating bar having a longitudinal slot engaged by the wrist-pin of said crank, substantially as and for the purpose specified.

3. The combination of the rotary shaft and its oppositely-winding ropes and the supporting devices for said shaft with a rope-guide, I, adapted to regulate the winding of the ropes upon said shaft, substantially as and for the purpose described.

4. In a fire-escape, the combination of the supporting-brackets and the horizontal shaft journaled therein and having cranks on its extended ends provided with wrist-pins with the pivoted governor-bars E E, provided with slots *e*, engaging the wrist-pins of said cranks and adapted to be oscillated thereby upon the rotation of the shaft, substantially as and for the purpose described.

5. The herein-described fire-escape, consisting of the supporting-brackets B B, horizontal shaft C, its cranks D and their wrist-pins *d*, the pivoted oscillating slotted bars E E, engaging said cranks, the oppositely-winding ropes F G on shaft C, the rod H, outside of and parallel with shaft C, and the block I, provided with rope-guide openings i i and playing on said rod, all substantially in the manner and for the purpose described.

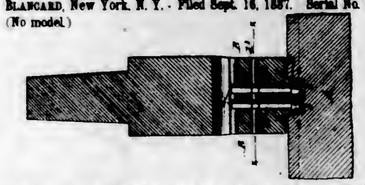
376,506. COMBINATION ORDER-BOOK. HENRY A. BATE, Ottawa, Ontario, Canada. Filed July 11, 1887. Serial No. 244,044. (No model.)



Claim.—1. In an order-book, the combination, with the cover A, having a pocket, D, on the outside of its front portion for containing envelopes, catalogues, or other matter, of a series of leaves or sheets, C, each sheet having lines printed or otherwise placed thereon to form spaces for memorandums of wants, a letter-form, and an order blank or section, said memorandum section or portion being located at the top of the sheet and serving the double purpose of a memorandum-blank and a stub-section for recording the order, and having a line of perforations whereby the letter-form and order blank or section may be readily detached from said memorandum-section when filled out, substantially as described.

2. The combination of the cover A, having at its top a ring or suspension device, and provided on the outside of its front portion with a pocket having a calendar on its exterior surface, and a series of leaves or sheets, C, each having lines printed or otherwise placed thereon to form spaces for memorandums of wants, a letter-form, and an order blank or section, said memorandum-section being located at the top of the sheet and serving as a memorandum-blank and stub-section for recording the order, and having a line of perforations between itself and the letter-form and order-blank section, whereby the latter may be readily detached from the memorandum-section when filled out, substantially as described.

376,507. DIE FOR MAKING CLUSTER SETTINGS. CHRISTIAN BLANGARD, New York, N. Y. Filed Sept. 16, 1887. Serial No. 249,873. (No model.)



Claim.—1. A die for making cluster settings, composed of a base-block having a conically-shaped depression in the shape of the setting and seats within said depression, and a plunger having a conically-tapering shoulder at the lower end, and shaping-dies having conically-tapering heads, substantially as set forth.

2. In a die for making cluster settings, the combination, with a plunger having a conically-tapering shoulder made in the shape of the setting, of shaping-dies having conically-tapering heads and notched shanks inserted in holes of the plunger and secured in position by transverse pins or keys, substantially as set forth.

376,508. DIE FOR MAKING DIAMOND-SETTINGS. CHRISTIAN BLANGARD, New York, N. Y. Filed Sept. 16, 1887. Serial No. 249,874. (No model.)



Claim.—1. A die for making scalloped diamond-settings, composed of a base-block having a fixed center cone, female die-sections having grooved and flaring lower faces and ribbed upper faces, means for locking said female die-sections to the cone and base-block, and a male die or plunger having a channeled lower part with a scalloped lower end fitting into the correspondingly-shaped upper faces of the female die-sections, substantially as set forth.

2. The combination, with a base-block having a fixed center cone, a top plate having an inner beveled edge attached to the block, female die-sections having an exteriorly-rimmed base, a conically-flaring and grooved lower face portion, a ribbed upper face portion, and a smooth cylindrical portion above the ribbed portion, a locking-ring embracing said female die-sections, and a plunger provided with a smooth cylindrical portion and a channeled portion below the same, said channeled portion having a scalloped end, and a depression fitting over the head of the cone of the base-block, substantially as set forth.

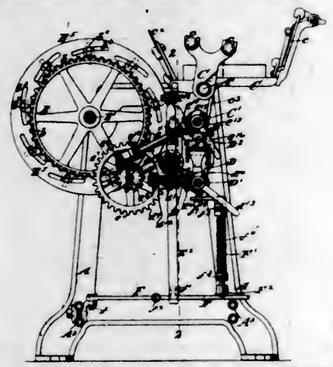
3. The combination of a base-block having a fixed center cone, a top plate having a beveled inner edge attached to said block, detachable female die-sections having an exteriorly-rimmed base and conically-flaring faces, and a ring for locking said die-sections to the cone and block, substantially as set forth.

4. The male die or plunger D, having a ribbed and channeled portion, c', and a scalloped lower end, substantially as set forth.

5. The male die or plunger D, having a smooth cylindrical portion, c, a ribbed and channeled portion, c', having a scalloped end, and a central depression, c^4, substantially as set forth.

376,509. REELING-MACHINE. EDWARD E. BRADLEY, Stoneington, Conn., assignor to John E. Atwood and Eugene Atwood, both of same place. Filed Oct. 16, 1886. Serial No. 216,386. (No model.)

Brief.—The invention relates to the means for supporting and operating the reed-carriage; to the indicator; to the means through which the indicator acts to stop the machine; to the means for operating the reed-carriage and indicator-screw, whereby they may be readily released and turned by hand, and to the construction of the reel.



Claim.—1. The combination, with a reel and end frames or standards, of a round girth connecting the end frames or standards and a feed-screw extending parallel with and below the girth, a reed-carriage free to slide and turn on the girth, and having a downwardly-extending arm and a section of a nut on said arm, which by turning of the carriage on the girth is engaged with and disengaged from the screw, and mechanism, substantially as described, for operating the reel and screw, substantially as herein set forth.

2. The combination, with the reel, a screw, D', and means, substantially as described, for operating them, of a flanged stretcher or bar, A^3, having upon it a scale or index extending parallel with the screw, the indicator D, fitted to slide on the screw with its weight supported thereon, and having a projecting finger which bears on the scale or index, and a lip, d^6, which engages a flange on the stretcher or bar and holds the indicator with its projecting finger in registering relation to the scale or index, and a nut, D^2, pivoted to the indicator and engaging the screw, substantially as herein described.

3. The combination, with a reel, the screw D', and mechanism, substantially as described, for operating them, of the scale or index A^3, extending parallel with the screw, the indicator D, fitted to slide on the screw, and the pivoted nut-section D^2 and pivoted lock d^5, substantially as herein set forth.

4. The combination, with a reel, a traverse-screw, and a driving device for operating them, which is movable to stop the machine, of a spring or equivalent weight for throwing off or disconnecting the driving device when released, and a trip whereby said device is held in operative position, an indicator-screw and the indicator fitted thereto and provided with a movable nut-section, an index or scale extending approximately parallel with said indicator-screw and on which said indicator registers, and mechanism, substantially as described, for operating the indicator-screw and whereby the indicator acts at the desired time to throw off the trip, substantially as herein described.

5. The combination, with a reel and a traverse-screw, and a driving device, substantially as described, for operating them, and which is movable to stop the machine, of a spring or equivalent weight for throwing off or disconnecting the device, the indicator-screw D' and indicator D, and a shaft provided with arms F^3 f'', the former, F^3, serving as a trip to hold the driving device operative, and the latter, f'', projecting in the path of the indicator, and gearing for operating the indicator-screw, substantially as herein set forth.

6. The combination, with the reel, a traverse-screw, and the driving device, substantially as described, for operating them, and which is movable to stop the machine, of a lever, E^3, controlling the driving device, a lever, F, a spring or equivalent weight for operating said levers to throw off or disconnect the driving device, a movable trip for holding the said levers set with the driving device operative, an indicator-screw and an indicator moved thereby, and mechanism, substantially as described, through which the indicator is caused by the screw to throw off the trip and stop the machine at a predetermined time, substantially as herein set forth.

7. The combination, with a main frame and a reel and traverse-screw, and a fixed tubular sleeve or hub projecting from the main frame, of a pulley turning loosely on the sleeve or hub, a shaft extending through the sleeve or hub and provided with a clutch-arm engaging the pulley, gearing, substantially as described, for operating the reel and traverse-screw from said shaft, and a lever for sliding said shaft within the sleeve or hub to free it from and engage it with the pulley, substantially as herein set forth.

8. The combination, with the reel and its wheel b and the traverse-screw C, of the shaft E', provided with a pinion, e^6, the gear-wheel e^7, pinion e^8, and worm e^9, having concentric axes and rotating as one, the wheel e^7 being in engagement with the driving-pinion e^8, and the pinion e^8 in engagement with the reel-gear b, and the counter-shaft e^{11}, having a worm-wheel, e^{10}, gearing with the worm e^9 and geared with the traverse-screw, substantially as herein described.

9. The combination, with the indicator-screw D', of the counter-shaft d^8, geared therewith and provided with a worm-wheel, d^7, and the driving-shaft E', provided with a worm, e^5, engaging said worm-wheel, substantially as herein described.

10. The combination, with the traverse-screw C and its bevel-wheel c^{13}, of the counter-shaft c^{11}, provided with a wheel, c^{14}, and means, substantially as described, for driving it, bearings wherein said shaft may slide, a spring for holding said shaft in operative position with the wheels c^{14} c^{13} in engagement, and a cam-lever, c^{15}, for forcing the shaft endwise to break engagement of said wheels and stop the screw, substantially as herein set forth.

11. The combination, with an indicator-screw, D', provided with a gear-wheel, d^{11}, of the counter-shaft d^8, provided with a gear-wheel, d^{10}, and means, substantially as described, for driving it, bearings wherein said shaft may slide, and a spring for holding the shaft in position with the said wheels in engagement, and a cam-lever, d^{12}, for forcing said shaft endwise to break engagement between said wheels and stop the machine, substantially as herein set forth.

12. The combination, with the heads and bars of a reel, and a gear-wheel or circular series of gear-teeth at one end thereof, of a driving-pinion engaging with said wheel or gear-teeth, elevating-blades pivoted at their one end in the bars, and an annular flange or ring fitting and provided with means for securing it on the periphery of one of the heads and adjustable circumferentially relatively to the head and the gear-wheel or circle of gear-teeth, the said flange or ring having oblique slots which receive the ends of the elevating-blades, substantially as herein described.

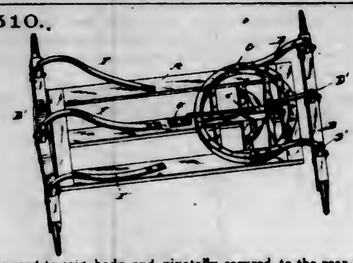
13. The combination, with the upright frames or standards of a creel and the cross-rails of wood connecting them, of the upright metal strips G^3, secured to said rails and provided with pins or spindles h', substantially as herein described.

376,510. VEHICLE RUNNING-GEAR. CHRISTOPHER C. CANER, Pataskala, Ohio. Filed Mar. 30, 1887. Serial No. 233,082. (No model.)

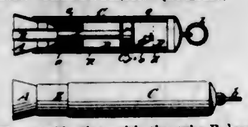
Claim.—1. In a vehicle, the combination, with the body and fifth-wheel secured to the bottom thereof, of a front axle located forward of the body and wheel, springs having one end secured to the fifth-wheel and the other end pivotally secured to the said axle at points outside the plane of the sides of the body, and a link loosely jointed to the fifth-wheel and the axle at points intermediate of said springs, substantially as specified.

2. The combination, with the body of a vehicle and axles located beyond the front and rear ends thereof, of a fifth-wheel secured to the bottom of said body, springs secured to said wheel and pivotally secured to the front axle at points outside the plane of the sides of the body, a link loosely jointed to said wheel and front axle, and springs secured to said body and pivotally secured to the rear axle, the outer springs being secured to the axle at points outside the plane of the sides of the body, substantially as specified.

376,510.



376,511. CIGAR-PUNCHER. JAMES D. CARTER, East Dulwich County of Surrey, England, assignor to George W. Mabie, Brooklyn, N. Y. Filed Aug. 8, 1887. Serial No. 246,269. (No model.)

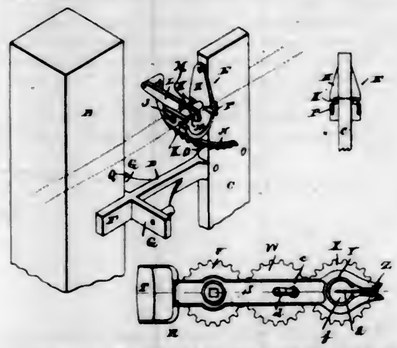


Claim.—1. The combination, with the tube E, having a flaring mouth to receive a cigar-tip, of an inner tube having at the end a tubular cutter, and also having a spiral slot or groove, a pin in the tube E entering the spiral slot or groove and serving to turn the inner tube and its cutter when the tube E is slid inward over it, whereby the inner tube and its tubular cutter will be rotated and held rigid lengthwise when the tube E and its mouth-piece are slid inward over the inner tube and cutter, substantially as herein described.

2. The combination, with a tube having a flaring mouth-piece and a pin or ejector fixed in the tube, of a second tube having extending from it a tubular cutter surrounding the pin or ejector sliding within the first-named tube and connected therewith by a pin and spiral groove or slot, substantially as herein described.

3. The combination, with the inner and outer tubes, C D, the inner tube having a spiral slot or groove and the tubular cutter B projecting from its end, of an intermediate tube, E, terminating in a flaring mouth, an ejector, f, connected with the intermediate tube by a pin, f^9, which is received in the spiral slot or groove, and a spring, e, substantially as herein described.

376,512. FENCE-BUILDING APPARATUS. FRANK P. CHAMBERLIN, Middletown, Ohio. Filed June 9, 1887. Serial No. 240,683. (No model.)



Claim.—1. The combination, with a supporting post or bar, of tension devices K, each having plates H and J, provided with outwardly-open side notches for the reception of wires, lever L, pivoted thereto and provided with notches M to engage the wire, a ratcheted segment, N, and pin O, arranged for adjusting the angular position of the lever, substantially as and for the purpose set forth.

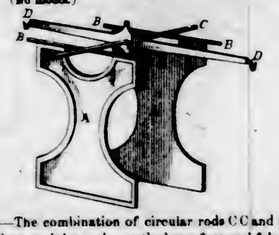
2. The combination, with a supporting post or bar, of tension devices K, each provided with plates having outwardly-open notches K, lever L, pivoted thereto, a ratcheted segment and pin for regulating the angular position of the lever, and a wire-keeper, P, pivoted near one of said plates and arranged to turn down, so as to prevent the disengagement of wires from said slots, and to turn up, so as to permit such disengagement, substantially as and for the purpose set forth.

3. The combination, substantially as set forth, of tension-bar C, tension devices E, attached thereto, and brackets D, secured to the tension-bar and provided with a gage-toe and with ears G, having bolt-holes provided for the attachment of the tension-bar to a post.

4. Plates S, secured together so as to leave a space between them and provided with a handle and slotted prolongations Z, whose slots are of a width to permit the passage of two wires twisted together, and bearings for gears, a gear, X, having a slot of a width adapted to twist two wires together, as described, and journaled in the forward end of said plates, and having a central web, b, thinner than the total thickness of said plates where it supports said gear, and a gear provided with a crank and supported by said plates and arranged to transmit rotary motion to said slotted gear, combined and arranged for operation substantially as set forth.

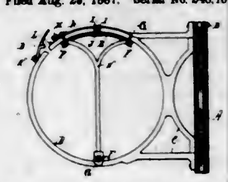
5. The combination of plates S, provided with a handle and with slotted prolongations Z, gears mounted therein, the forward gear being provided with slot a, and one of said gears being provided with countersink c, stop-pin c, adapted to engage said countersink, spring d, arranged to press the stop-pin into said countersink and to automatically yield to the forcible rotation of the gear having the countersink, and crank V, for giving rotary motion to the gears, substantially as and for the purpose set forth.

376,513. LEVER FOOT AND FULCRUM OF SCALE-BEAMS. JOSEPH J. CLARKE, Brooklyn, N. Y. Filed Apr. 11, 1883. Serial No. 91,538. (No model.)



Claim.—The combination of circular rods C C and B B B B, crossing each other at right angles as the lever foot and fulcrum of a scale-beam, substantially as herein described, and for the purpose set forth.

376,514. HAND FENCE-MACHINE. MATTHEW F. CONNETT, Jr., Peoria, Ill. Filed Aug. 29, 1887. Serial No. 248,137. (No model.)



Claim.—1. In fence-machines, a wire-carrier mounted within and upon a guide-ring and adapted to travel along said ring when the latter, without rotation on its center, is moved bodily in the proper direction, whereby the wires borne by the carrier are intertwisted to any desired extent.

2. A fence-machine comprising one or more annular guide-frames, and a wire-carrier mounted and revoluble in each of said frames, respectively, whereby the curvilinear bodily motion of the frames may cause each carrier to travel around the corresponding frame, twisting the wires.

3. In a fence-machine, an annular guide-frame and a wire-carrier mounted upon and rotating in said frame to twist the wires, said frame being discontinuous to permit the wires to pass laterally into the space inclosed by the frame.

4. In fence-machines, a wire-carrier, a broken annular guide-frame encircling and forming a track for said carrier, and means whereby a segment of said frame or track may at will be removed or be fixed in position to form a part of said frame, substantially as set forth.

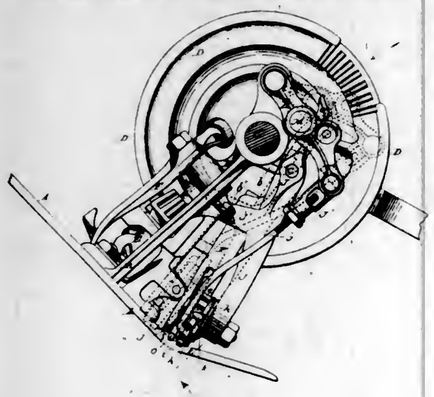
5. In fence-machines, a guide-frame of annular form and a wire-carrier mounted therein and revoluble in the plane thereof, said carrier being provided with anti-friction rollers bearing against the surface of the frame and maintaining the position of the carrier, substantially as set forth.

6. The broken ring D and the carrier mounted therein at a fixed distance from said ring's inner surface, said carrier being adapted to move along the inner surface of the ring, and thus twist the wires when the ring is given proper bodily curvilinear motion in its own plane.

7. In a fence-machine, a guide-ring from which a small segment is

removed, and a wire-carrier mounted in said ring and using it as a track in rotation therein, said carrier forming three sides and the ring itself the fourth side of a space for confining the wires, whereby when the carrier is opposite the space of the removed segment the wires may pass into or out of the carrier, substantially as set forth.

376,515. CORD-TYING MECHANISM FOR GRAIN-BINDERS. RUFUS H. COREY, Auburn, N. Y., assignor of one-half to David M. Osborne, same place. Filed June 16, 1886. Serial No. 205,364. (No model.)



Claim 1. The vibratory frame J, having the cord-clamp thereon, in combination with the lever L, pivoted to a fixed support and provided with a stud or roller acting on the end of the frame to cause its depression, and mechanism, substantially as described, for vibrating said lever.

2. The pivoted frame J, having the arm c', extended at one end beyond the pivot and having the cord-clamp mounted on the opposite end, in combination with the lever L, having the roller or projection to act on the arm c', and the cam I, arranged to actuate the lever, substantially as shown.

3. In combination with the vibrating frame J, pivoted at a point distant from its end, the cord-clamping disk mounted in one end of said frame, the lever L, pivoted to a fixed support and provided with a roller or projection arranged to act directly on that end of the frame which is distant from the clamp, and devices, substantially as shown, connecting said lever with the cord-clamp, and mechanism, substantially as shown, for vibrating said lever, whereby the lever is enabled to answer the double purpose of vibrating the frame and operating the clamp.

4. The combination of the knotter frame or standard, the frame J, pivoted thereto and extended rearwardly beyond its pivot, the cord-clamping disk mounted on said frame, the cam I, the lever L, actuated by said cam and provided with a stud or roller acting on the frame J, and a ratchet mechanism connecting said lever with the clamping-disk, substantially as described.

5. The pivoted clamp-supporting frame J, having the rear arm, c, with a beveled end, in combination with a lever, L, provided with roller N, and means, substantially as described, for vibrating said lever and carrying its roller against the end of said arm and beneath the same, as described, whereby said roller is caused to first effect the movement of the vibrato.y frame and thereafter lock the same in position.

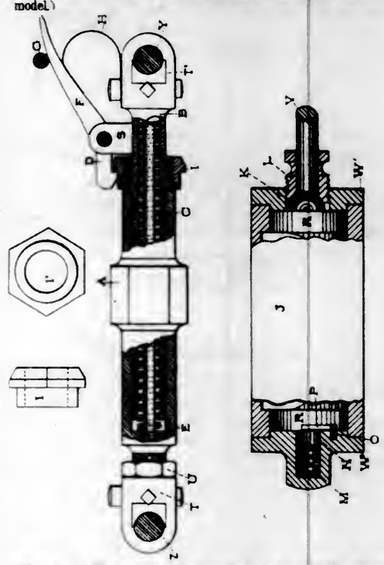
6. In combination with the sustaining-frame, the clamping-disk provided with a ratchet-hub on its side, the independently-turning plate k, the pawl i, pivoted at its middle to said plate, and the reciprocating rod j, attached to the tail end of said pawl to throw its nose into engagement with the ratchet-hub, as described.

7. In combination with a slotted arm or shoe arranged to yield radially in relation thereto, the peripherally-notched disk having its edge seated in the slot and adapted to project through and beyond the arm, as described, whereby the arm is adapted to adjust itself to the varying size of the cord and to confine the latter in the notches and also against the side faces of the disk.

8. In combination with a supporting-frame, the peripherally-notched disk journaled thereon and the elastic arm having one end fixed rigidly to the frame and the opposite end provided with an open slot through it from front to back, said slotted end arranged to straddle the edge of the disk and yield radially in relation thereto, as described.

9. In combination with the notched disk, the cord-retaining clamp or shoe consisting of a flat spring having one end bent upward, as described, and having a longitudinal slot extended to and through the angle, as shown.

376,516. TELESCOPIC CUT-OFF-VALVE GEAR. CHARLES W. CROWE, Newark, N. J. Filed May 14, 1887. Serial No. 238,284. (No model.)



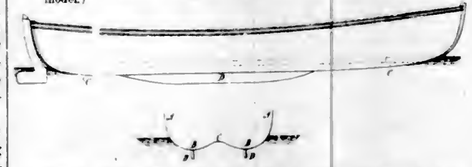
Claim.—1. The combination, in a telescopic cut-off motion for releasing and closing oscillating plug-valves of steam-engines, of the sleeve A, provided with a spring-guide, E, stub T, and hexagonal nut I, with latch-dies forming the sides, substantially as described.

2. The combination, in a telescopic cut-off motion for releasing and closing oscillating plug-valves of steam-engines, of the plunger B, provided with a spiral spring, C, lug S, latch-bar F, stub T, and latch-spring H, substantially as described.

3. The combination, in a telescopic cut-off motion for releasing and closing oscillating plug-valves of steam-engines, of plunger B, ball-and-socket joint K and L, spiral spring M, slot P, and stop-pin O, substantially as described.

4. The combination, in a telescopic cut-off motion for releasing and closing oscillating plug-valves of steam-engines, of the sleeve A, plunger B, spring C, latch-spring H, spring-guide E, hexagonal nut I, ball-and-socket joint K and L, stop-pin O and slot P, and spring M, substantially as and for the purposes described.

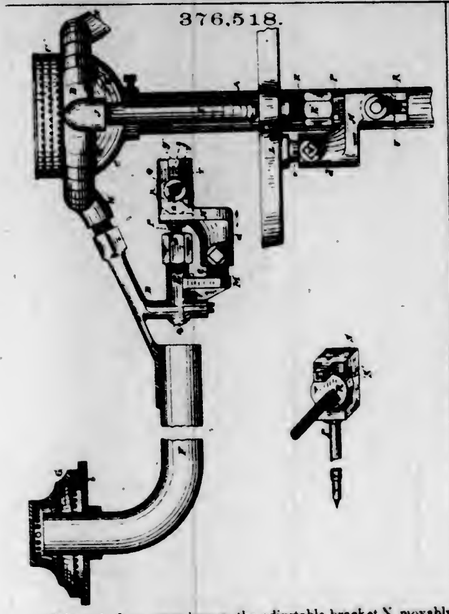
376,517. CONSTRUCTION OF SHIPS, &c. WILLIAM H. DANIELS, Southsea, England. Filed Nov. 12, 1886. Serial No. 218,693. (No model.)



Claim.—A hull for vessels, having its bottom centrally provided with an external V-shaped channel-trough which extends longitudinally through the bottom, and is formed by said bottom curving from each side upward and inward toward the middle thereof, the channel, or portion of the body between the upwardly and inwardly curved portions, constituting the backbone of the vessel, the two bilges gradually rising and merging themselves therein at the stem and stern post, in combination with keels or center-boards extending downward from the lowest part of the two bilges and longitudinally tapering toward each end of the vessel from the lowest or central part of said bilges, substantially as described.

376,518. VALVE MECHANISM FOR VAPOR-STOVE BURNERS. DAVID R. DANGLER and HENRY RUPPEL, Cleveland, Ohio. Filed July 2, 1887. Serial No. 243,298. (No model.)

376,518.

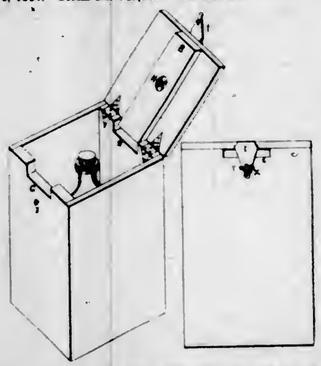


Claim.—1. In a vapor-burner, the adjustable bracket N, movably connected in relation to the arm c, and having a slot, U, closed at one end, a yoke, S, with a stud engaging said slot, a cam arranged in connection with said yoke in central line, or nearly so, with the needle-valve, and a cam-rod having its support in the bracket for operating said cam for the movement of the needle-valve, substantially as described, and for the purpose set forth.

2. The combination, with a vapor-burner, of a cam, R, movably arranged in connection with the yoke S, for operating the needle-valve by means of a rod having its bearing in a bracket on one side of said cam, and a slot at one end for the reception of a stud projecting from the yoke and of an arm, c, for carrying said bracket and to admit of its longitudinal and axial movement thereon, substantially as and for the purpose specified.

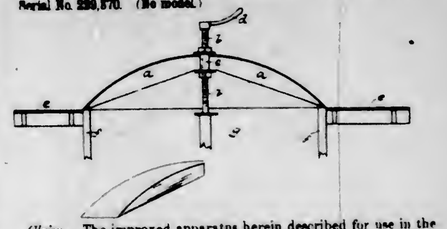
3. The combination, with the bracket N, having an axial and longitudinal movement upon the arm c and attached thereto in a line parallel with the needle-valve, of a cam arranged within the yoke, connected with the stem of the needle-valve and operating conjointly in connection with a vapor-burner, substantially as and for the purpose set forth.

376,519. PACKING-CASE. JOSEPH DAVY, Oakland, Cal. Filed July 26, 1887. Serial No. 245,386. (No model.)



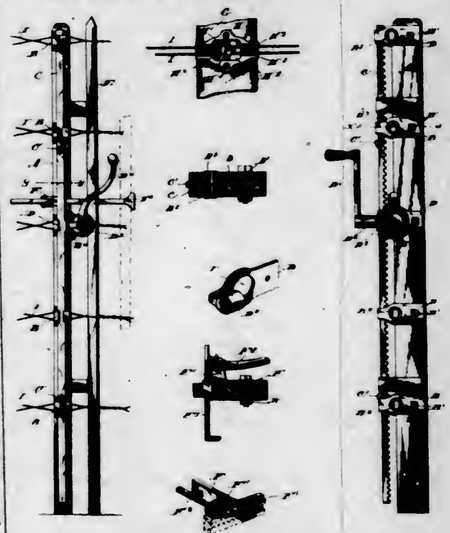
Claim.—A packing-case for demijohns and similar vessels, comprising a body having in the upper edge of two opposite walls the grooves G g, and a cover having a transverse strip, B, adapted to fit closely into the grooves G g, and provided with a hole, H, to receive the mouth of the inclosed vessel, as and for the purpose specified.

376,520. DEVICE FOR CONSTRUCTING ARCHES OR CENTERS FOR FURNACES. ALEXR FARLEY, Pittsburg, Pa. Filed Mar. 5, 1887. Serial No. 229,570. (No model.)



Claim.—The improved apparatus herein described for use in the construction of arches and domes, the same consisting of the segmental sections, the central vertical screw, the threaded sleeve thereon having flanges, as shown, to engage the upper and lower sides of the segments at their inner ends, and the hand-lever on the upper end of the shaft, whereby the said segments may be positively engaged and moved up and down to accurately attain the desired spring, substantially as specified.

376,521. FENCE-MACHINE. SAMUEL H. GARRETT, Mansfield, Ohio. Filed Nov. 4, 1887. Serial No. 254,291. (No model.)



Claim.—1. In a fence-machine, the combination, with the upright A, having the plates B bolted thereto, said plates being bent at their ends and having the gear-twisters B^3 journaled therein, of the rack-bar C, embraced by said bent ends, and having stops C' arranged thereon and adapted to limit the movement of the bar by coming into contact with the said bent ends, substantially as specified.

2. In a fence-machine, the combination, with the upright A, having the plates B and gear-twisters B^3, and the rack-bar C, embraced by said plates and meshing with the twisters, of the plates D and D', the former having the bearing D^2 formed at a right angle thereto and carrying the gear D^3 and handle D^4, the twister B^3, mounted in said plates, and the gear B^4, mounted on the twister and meshing with the gear D^3, substantially as specified.

3. In a fence-machine, the combination, with the upright A, of the casting F', carrying the sector F^3, and having the ways F^4, and the clamping-bar F^5, mounted in said ways and adapted to mesh with said sector, substantially as specified.

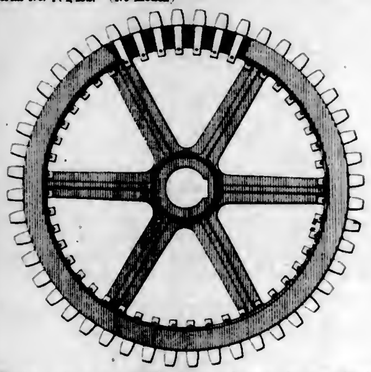
4. In a fence-machine, the combination, with the upright A, of the casting F', having guides F^4, the clamping-bar F^5, mounted therein, and the lugs or ears F^7, carrying the sector F^3, having the toothed and plain faces, substantially as specified.

5. The combination, with the fence-machine and its twisters, of the tension H, consisting of the plate H', having the central opening, H^3, and parallel grooves H^4, for carrying the wires, and the button H^5, adapted to bind upon said wires, substantially as specified.

6. In combination with a fence-machine and the post G, a tension

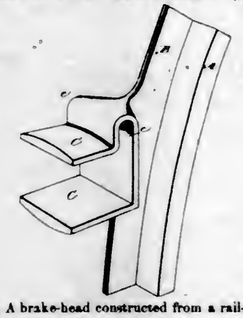
device comprising the securing-plate H', having the central opening, H^2, and grooved, as at H^3, and the button H^4 and its screw H^5, substantially as specified.

376,522. WOODEN GEAR-TEETH. WILLIAM D. GRAY, RICHARD BERKHOLZ, and EDWIN REYBOLDS, Milwaukee, Wis. Filed Aug. 14, 1885. Serial No. 174,432. (No model.)



Claim.—As a new article of manufacture, the gear having a metal body and wooden teeth charged or filled with paraffine.

376,523. BRAKE HEAD AND SHOE. THOMAS A. GRIFFIN, Chicago, Ill. Filed Oct. 12, 1887. Serial No. 252,106. (No model.)



Claim.—1. A brake-head constructed from a rail-section by partially separating the flange from the web and shaping said flange to fit the brake-beam and shaping the head to receive the shoe.

2. A brake head and shoe constructed from a rail-section by partially separating the flange from the web, shaping said flange to fit the brake-beam, and shaping the rail-head to conform to the periphery of the car-wheel.

376,524. WATCH-CASE SPRING. CARL G. HARSTRÖM, Peekskill, N. Y. Filed Feb. 23, 1887. Serial No. 228,605. (No model.)



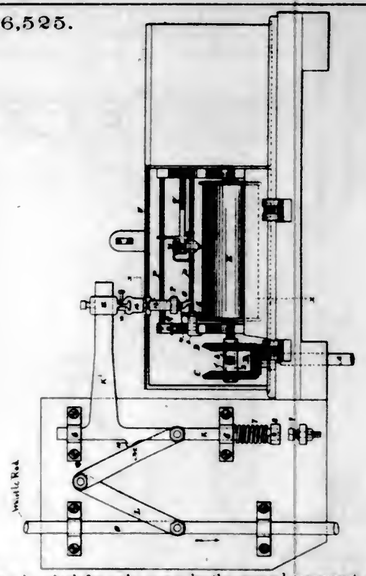
Claim.—1. In a watch-case spring, the combination of a spring, D, and a spring-holder, B, provided with projections *c c* and *b b*, bent over upon the spring, holding said spring firmly in its place yet admitting of its lateral adjustment, substantially as herein shown and described.

2. The combination, in a watch-case spring, of a wire spring, D, semicircular in cross-section, and a holder, B, having projections *c c* and *b b* bent over upon the spring to secure it in place, substantially as herein shown and described.

376,525. WHISTLE-RECORDER FOR LOCOMOTIVE-ENGINES. CHARLES L. HOUGHTON, New Haven, Conn., and WASHINGTON I. FOX, Fitchburg, Mass., assignors to themselves and George W. Weymouth, Fitchburg, Mass. Filed Jan. 20, 1887. Serial No. 224,849. (No model.)

Claim.—1. The combination, with the whistle-rod in a locomotive-engine, of a marker and a revolving cylinder for receiving and moving the strip of paper, a slide-rod, a spring for operating the marker and impressing it upon the paper when the whistle is sounded, and a connection between the whistle-rod and marker, whereby the

376,525.



marker is raised from the paper by the upward movement of the whistle-rod, substantially as specified.

2. The combination, with the cylinder for giving motion to the paper and a marker to be impressed upon such paper, of a slide-rod and arm carrying the marker, a spring to give the impression, the whistle-rod, links for connecting the whistle-rod and slide-rod, and a stop against which one of the links comes in contact for lifting the marker, substantially as set forth.

3. The combination, with the whistle-rod in a locomotive-engine, of a slide-rod and an arm extending therefrom, link-bars connecting the whistle-rod and slide-rod, respectively, a spring for actuating the slide-rod when released, a marker, the revolving cylinder for receiving and moving the strip of paper, and mechanism, substantially as specified, connecting the marker adjustably with the arm of the slide-rod, substantially as set forth.

4. The combination, with the whistle-rod in a locomotive-engine, of a slide-rod and an arm extending therefrom, link-bars pivoted together and to the whistle-rod and slide-rod, respectively, a stop upon the slide-rod against which one link-bar engages to raise the slide-rod, a spring for actuating the slide-rod downwardly when released, and an adjustable stop for limiting the movement, a marker, the revolving cylinder for receiving and moving the strip of paper, and mechanism, substantially as specified, connecting the marker adjustably with the arm of the slide-rod, substantially as set forth.

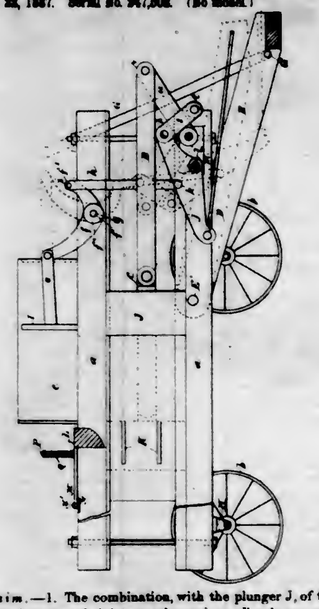
5. The combination, with the whistle-rod in a locomotive-engine, a slide-rod and extending arm, and mechanism, substantially as specified, for connecting the parts and also for operating the slide-rod, of a marker and a revolving cylinder for receiving and moving a strip of paper, a socket, 13, receiving the stock of the marker, a spring, 14, bearing against the marker-stock, a guide-eye, P, through which the socket plays, a block supporting the socket, a bridle, R, upon the arm of the slide-rod, and a T-piece, 17, formed therewith and supporting the block 16, and bolts for clamping the parts, substantially as specified.

376,526. STIRRUP-PAD. DANIEL H. JENNINGS and WILLIAM H. ALLEN, Denver, Colo. Filed July 19, 1887. Serial No. 244,687. (No model.)



Claim.—The herein-described improved stirrup-pad, composed of the foot-receiving portion *a*, having flanges *b* at its edges, metallic strips *c*, secured in said flanges, and means, substantially as described, whereby the strips with the flanges may be secured to the stirrup, as set forth.

376,527. BALING-PRESS. GUSTAV JOHNSON, Denver, Colo. Filed Aug. 22, 1887. Serial No. 247,502. (No model.)



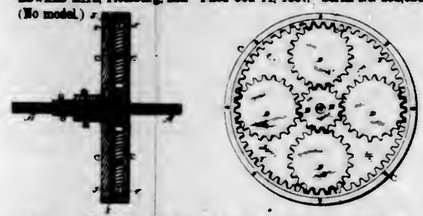
Claim.—1. The combination, with the plunger J, of the arms E and *u*, forming a toggle-joint, cam-lever *j*, coupling-bars *s*, and the actuating-rod D, substantially as described.

2. The combination, with the frame *a* of a baling-press, of the connecting-frame E F and adjusting-bars G, as set forth.

3. The combination of the main baling-head or plunger J, arms B and *u*, condensing-plunger I, arms *c*, bent lever *f*, operating-bars *h*, cam-lever *j*, coupling-bars *s*, and actuating-rod D, substantially as described.

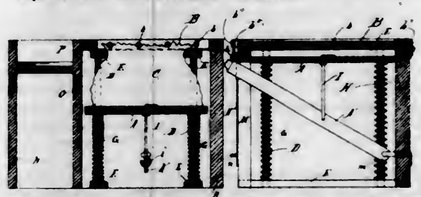
4. The combination of the plunger J, arms B and *u*, cam-lever *j*, coupling-bars *s*, actuating-rod D, and folder consisting of the cross-piece L, hinged arm M, bolt P, and spring Q, substantially as described.

376,528. DIFFERENTIAL GEAR FOR TRACTION-ENGINES. EDWARD KITT, Pittsburg, Ind. Filed Oct. 11, 1887. Serial No. 252,022. (No model.)



Claim.—The combination of the solid shaft provided with a pinion, B, the circumferential pinions D, and the internal gears, C I, which mesh with the pinions D, and which have the hollow shafts G O extending from them, substantially as shown and described.

376,529. HAY-MANGER. DAVID KLINE, Highville, Pa. Filed Sept. 14, 1887. Serial No. 249,707. (No model.)



Claim.—The combination of the bottom A, guide-rods D, springs G, lever K, hanging post I, and pawl N, with a frame, H, inclosing a hay-space above said bottom, substantially as set forth.

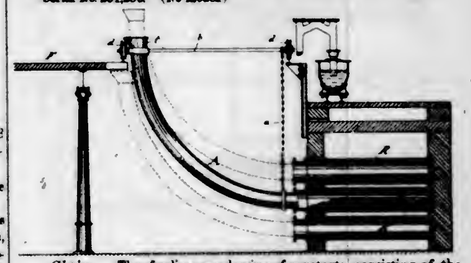
376,530. HOOP FOR COOPERS' WARE. JOSEPH LEACH, Indianapolis, assignor of one-half to Calvin G. Udell, North Indianapolis, Ind. Filed Sept. 12, 1887. Serial No. 249,412. (No model.)



Claim.—1. A metal hoop for barrels or casks, formed of a single piece of metal, the end of the inner lap upset to form a spur for engaging with the sides of the tub and preventing the hoop from falling off, substantially as described.

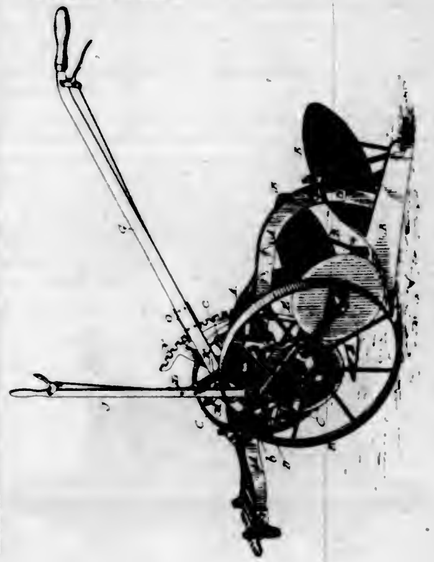
2. The hoop *h*, formed of a single piece of metal, the end of the inner lap upset to form a spur, *s*, and an additional spur bolted to the inside of the hoop at a point opposite such lapped end, substantially as shown and described.

376,531. DEVICE FOR CHARGING RETORTS. AUGUST LENTZ, Stettin, Prussia, Germany, assignor to the Stettiner Chamotte Fabrik Actien-Gesellschaft, formerly Didier, same place. Filed Mar. 17, 1887. Serial No. 231,258. (No model.)



Claim.—The feeding mechanism for retorts, consisting of the curved feeding-tube provided with a feed-hopper, the wheeled shaft for carrying said tube, and a chain, as described, for raising and lowering said tube, substantially as specified.

376,532. SULKY-PLOW. AUGUST LINDGREN, Moline, Ill., assignor to the Moline Plow Company, same place. Filed Aug. 31, 1887. Serial No. 248,330. (No model.)



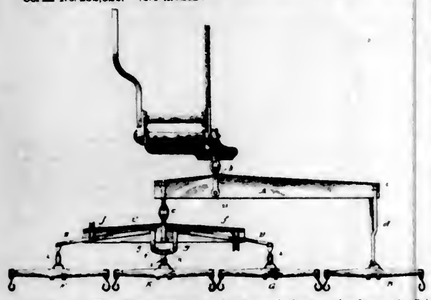
Claim.—1. The plow-carrying frame, in combination with the land-wheel and the furrow-wheel adjustably connected thereto, the hand-lever, and connections whereby said lever is enabled to move the wheels simultaneously in opposite directions, one forward and the other rearward.

2. The plow-carrying frame, in combination with the front furrow-wheel and its crank-axle, the rear land-wheel and its crank-axle, and a connection between said axles compelling them to swing in opposite directions, whereby the wheels in the act of raising the frame are moved one forward and the other rearward and brought approximately opposite each other.

3. The main frame having one or more plows attached, in combination with the furrow-wheel and its crank-axle D, provided with arm I, the hand-lever G, connected to said arm, the land-wheel E, its crank-axle F, the lever J, the spring between the lever J and axle F, devices for locking the levers to each other, and devices for locking the lever G to the frame, said members arranged, as described and shown, so that the adjustment of the lever G will move the wheels simultaneously in opposite directions, one forward and the other rearward.

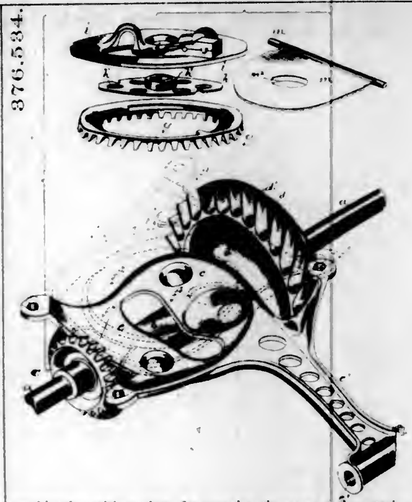
4. In a wheel-plow, the combination of a plow-carrying frame, a furrow-wheel in advance of the plow, a crank-axle extending from the frame forward to the furrow-wheel, a land-wheel in rear of the furrow-wheel, a crank-axle extending from the frame rearward to said land-wheel, and connections, substantially as described, between the two axles, whereby they are caused to swing simultaneously in opposite directions, one forward and the other rearward.

376,533. DRAFT-EQUALIZER. AUGUST LINDGREN, Moline, Ill., assignor to the Moline Plow Company, same place. Filed Oct. 14, 1887. Serial No. 252,320. (No model.)



Claim.—The four-horse equalizer consisting of the lever A, fulcrumed nearer one end than the other, the singletree B, attached to the longer end of lever A, the doubletree C, attached to the shorter end of said lever, the levers D and D', mounted at opposite ends of the doubletree, the singletrees F and G, attached to the outer ends of the levers D and D', respectively, and the intermediate singletree, E, connected to the inner and longer ends of the levers D and D'.

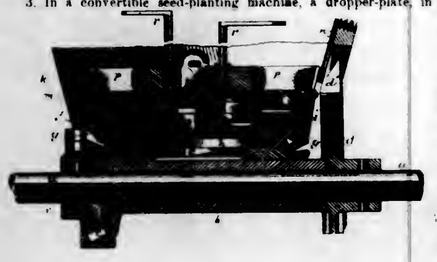
376,534. COMBINED CORN AND COTTON PLANTER. EDWARD P. LYNCH, Davenport, Iowa. Filed Oct. 14, 1887. Serial No. 252,366. (No model.)



Claim.—1. In a combined corn and cotton-seed planter, the horizontal corn-dropping plate and its driving mechanism, in combination with its hopper having a side opening, means for closing said opening, the removable cotton-planting wheel, and a connection between said wheel and the dropper-plate whereby the corn-dropping mechanism is rendered available for actuating the cotton-planting devices.

2. The rotary perforated corn-dropping plate and its sustaining and driving devices, of ordinary or suitable character, in combination with the hinged plate *m*, the hopper with a side delivery-opening, the removable cotton-planting wheel *p* and its central driving-stud, and the vertical wheel.

3. In a convertible seed-planting machine, a dropper-plate, in combination with a plate for covering the same and rendering it inactive as a dropper, a removable secondary dropper plate or wheel overlying the first, and a stud for communicating motion from one dropper-plate to the other.



4. In a convertible seeding-machine, the horizontal driving-shaft provided with the pinion *c* and wheel *d*, in combination with the gearing *g*, engaging said pinion and carrying the perforated dropper-plate *h*, the plate *m*, the radially-feeding plate or wheel *p*, the driving-stud, and the hopper adapted to deliver its contents to the plate *h* or wheel *d*, as demanded.

5. In a seed-distributing mechanism, the channeled plate *f*, with openings f^3 and f^4, in combination with the toothed ring *g*, the driving-pinion *c*, and the detachable perforated dropper-plate *h*, seated in and carried by the ring *g*, as described.

6. In a cotton-planter, the combination of a hopper, a horizontal wheel provided with arms to feed the seed horizontally and radially, and a vertical wheel, *d*, with cells or pockets arranged to receive the seed from the first-named wheel, as shown.

7. In combination with a hopper and a perforated horizontally-rotating dropper-plate at its bottom, a movable plate, *m*, by which the dropper-plate may be covered, and a side gate, *n*, affording an outlet from the hopper, whereby the parts may be adapted to discharge downward through the bottom plate or laterally from the hopper.

8. In combination with the dropper-plate *h*, the hopper with a side opening, the hinged plate *m*, and the sliding gate *n*, adapted, as described, to serve the double purpose of closing the side opening of the hopper and of retaining the plate *m* in an upright position.

9. In a seeding mechanism, the combination of a hopper with a lateral opening, a horizontally-revolving feed wheel or plate, *p*, located in the base of said hopper, and a vertically-revolving wheel, *d*, provided with cells or pockets, as described.

10. In a seed-dropping mechanism, the combination of a hopper, a horizontal wheel with arms or fingers to deliver the seed through the side of said hopper, and an external vertically-revolving wheel provided with peripheral cells or pockets to receive the seed as it issues from the side of the hopper.

11. In a seeding mechanism, the combination of a hopper with a seed-delivery opening, a horizontally-revolving wheel, *p*, with backwardly-curved arms located in the base of the hopper, and one or more agitator-arms, *r*, rising from said wheel, as described.

376,535. WHEEL-PLOW. EDWARD P. LYNCH, Davenport, Iowa. Filed Oct. 14, 1887. Serial No. 252,367. (No model.)

Claim.—1. In a plow having a beam or frame and a mold-board connected thereto, a swiveled steering-wheel, a rearwardly-extended plow-controlling handle connected to said steering-wheel and serving, by a side motion, to turn the same to the right or left, as required, and locking devices to hold said lever and wheel in their normal operative positions.

2. In a wheeled plow, a beam provided with a mold-board or plow proper, in combination with front carrying-wheels, a swiveled steering-wheel located in rear of the mold-board, and a laterally-movable hand-lever by which the attendant, walking in rear of the plow, is enabled to control the steering-wheel, and locking devices for holding said lever against lateral motion, whereby it is rendered available for the double purpose of adjusting the steering-wheel and of controlling the action of the machine.

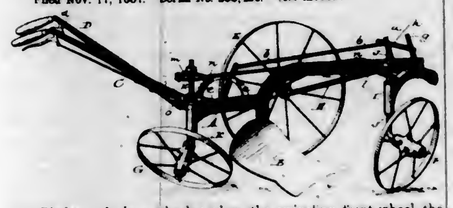
376,535.



3. In combination with a mold-board plow having front carrying-wheels, a swiveled steering-wheel located at the rear, and two guiding-handles, one of which is fixed against lateral motion and the other of which is connected to the steering-wheel to control its position.

4. In a mold-board plow, the guiding-handle fixed against lateral movement, the swiveled steering-wheel, the second handle connected with and serving as a means of adjusting said steering-wheel, and devices, substantially as described, for locking said movable handle and wheel in their normal position.

376,536. WHEEL-PLOW. EDWARD P. LYNCH, Davenport, Iowa. Filed Nov. 17, 1887. Serial No. 255,426. (No model.)



Claim.—1. In a wheeled plow, the swiveling front wheel, the swiveling rear wheel, and the intermediate connections, in combination with the plow-guiding handle connected to the rear wheel to turn the same by a lateral movement and a locking device to hold the handle against lateral motion, whereby the handle is enabled to serve its ordinary purpose, and also to change the position of the two wheels for turning the implement.

2. In a wheeled walking-plow, a beam or frame and a mold-board attached thereto, in combination with two vertically-adjustable ground-wheels a vertically-swinging plow-controlling handle connected to said wheels and provided with a locking device, a horizontally-swinging ground-wheel, and a plow-controlling handle connected with said wheel and provided with a locking device, whereby the attendant is enabled to use the two handles for guiding and controlling the implement as usual, and also enabled to raise and lower the one wheel by one handle and to swivel the other wheel by the second handle.

3. In a three-wheeled plow, the frame having the plow or mold-board attached, in combination with the vertically-swinging and the laterally-swinging handles, each with a locking device, the two vertically-adjustable wheels connected with one handle, and the two horizontally-swinging wheels connected with the other handle.

4. In a wheeled plow, and in combination with the plow-sustaining frame, the land-wheel and its crank-axle, the leading-wheel, its vertical spindle, and the crank-arm carrying said spindle, in combination with the pivoted plow-handle and the rod connecting the same with the wheel-carrying cranks.

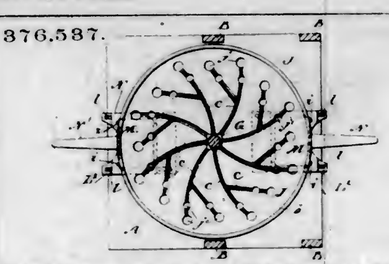
5. In a wheeled plow, a frame, a crank-arm pivoted thereto to swing vertically, a vertical spindle free to turn in said arm, a ground-wheel carried by said spindle, a pivoted handle connected to and serving to adjust the crank-arm, and a second pivoted handle connected with and serving to turn the spindle.

376,537. SLATE GRINDING OR DRESSING MACHINE. SAMUEL S. MARSHALL, Slatington, Pa. Filed Jan. 4, 1887. Serial No. 223,386. (No model.)

Claim.—1. The grinding-wheel J, formed with a peripheral flange, *b*, and formed with the passages *j'*, and the vertically-movable rods L' beneath the wheel J, provided with the supports or tables L^3 at their upper ends, in combination with the plates N, held upon the tables L^3 in guides radial to the wheel J, substantially as described.

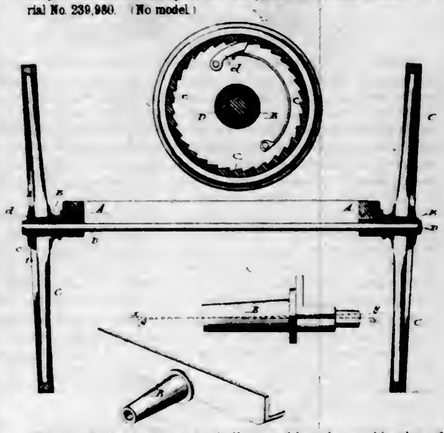
2. The combination, with the grinding-wheel J, the rods L' and

376,537.



L^3, for lifting the same, and the tables L^3, held upon the said rods and formed with slots *l*, of the plates N, formed with handles N', and with the ribs *l'*, to enter the slots *l*, substantially as described.

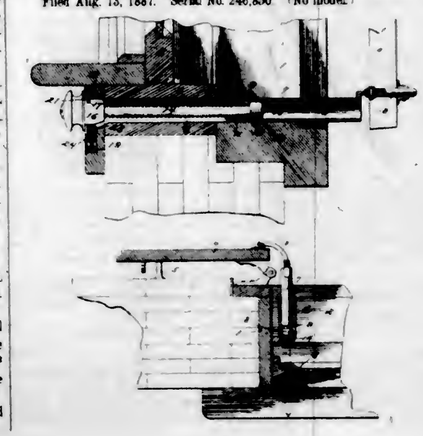
376,538. GRAIN-DRILL. ANDREW J. MARTIN, Macedon, N. Y., assignor to Helen M. Kirkpatrick, same place. Filed June 1, 1887. Serial No. 239,980. (No model.)



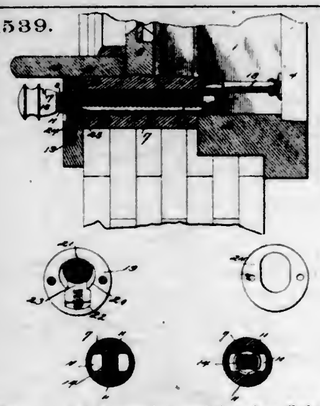
Claim.—1. In a seeding or similar machine, the combination of a main frame, concave or dished supporting-wheels, tubular journals fixed to the frame and carrying said wheels, the axes of said journals being inclined from the horizontal, a shaft extending across the frame and projected at its ends through the journals, and clutch devices connecting said shaft at the outer ends with the wheels.

2. In a seeder or similar machine, the combination of the main frame, the tubular axles flanged at their inner ends and bolted to said frame, and the transverse shaft projected at its ends through said journals and connected by clutch devices to either or both of said wheels, the axes of the shaft and of the journals lying in divergent lines, substantially as described.

376,539. SHUTTER-WORKER. JAMES K. MCGUIRK, Newark, N. J. Filed Aug. 13, 1887. Serial No. 246,850. (No model.)



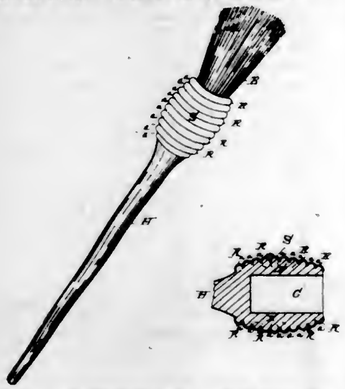
376,539.



Claim.—1. A shutter-worker consisting of a cylinder having one beveled and slotted end and an aperture in said end provided with broken threads, a rod threaded upon two opposing sides only and provided with a transverse slotted handle, a segmental rod pivoted to said cylinder and adapted to be also pivoted to a shutter, an apertured locking-cap provided with a lip adapted to enter slots in said cylinder and handle, and a spring-actuated block held in said cap, adapted to prevent the cylinder and handle from becoming disengaged from said lip, substantially as and for the purpose herein set forth.

2. The combination, with a tubular cylindrical body having one beveled end slotted upon the upper face, and provided with interior broken threads and a shoulder at the inner end of said threads in said beveled end, and a segmental rod pivoted to said cylinder at the opposite end and adapted for attachment to a shutter, of a rod threaded upon two opposing sides only, provided with a transversely-slotted handle at one end and a button at the other, said rod adapted to slide in said cylinder and engage said broken threads, and an apertured locking-cap provided with a segmental lip adapted to alternately engage the slots in said cylinder and handle, and a spring-actuated block adapted to engage the under portion of said handle and cylinder, all operating substantially as herein set forth.

376,540. **PAINT-BRUSH.** JAMES MCQUIDE, Lansingburg, N. Y. Filed June 27, 1887. Serial No. 242,623. (No model.)

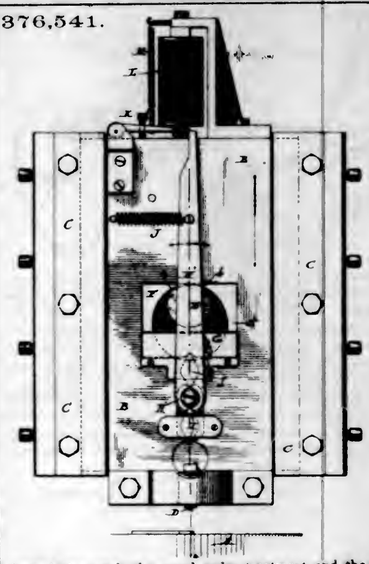


Claim.—The combination, with a brush-handle made with the usual cored-out end to receive the bristles, of the swell S, made thereon to encircle said cored-out part, said swell being made with the well-defined encircling-ribs R, and a coating of paint or cement applied to said ribs, substantially as and for the purposes herein set forth.

376,541. **MECHANISM FOR ELECTRICALLY CONTROLLING STAMPING-MACHINES, &c.** OTTMAR MERGENTHALER, Baltimore, Md. Filed May 23, 1887. Serial No. 239,723. (No model.)

Claim.—1. In a metal punching or cutting mechanism, the combination of a punch or die, an adjacent finger located in fixed relation thereto, its end in rear of the punch-face a distance equal to the depth of impression required, and an electro-magnetic stopping mechanism having a controlling-circuit connected at one extremity to the punch and at the other to the finger, whereby the circuit is completed

376,541.



through the punch, the metal under treatment, and the finger when the punch is entered to the predetermined depth.

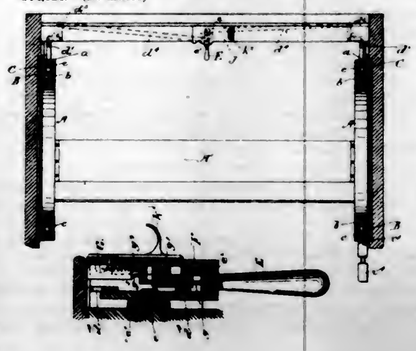
2. A head or slide carrying a punch or equivalent tool, mechanism to move said head, intermediate devices through which the operating mechanism acts to move the head, said device adjustable to permit the head to stop during the continued movement of the operating mechanism, a spring tending to adjust said intermediate devices to the inoperative position, a detent to hold the intermediate devices in operative position, an electro-magnet to release the detent, and a finger to control the magnet-circuit located in close proximity to the punch and in position to touch the blank when the die has entered the same to the proper depth.

3. The movable head, its operating-wrist, and the adjustable connection between the wrist and head, in combination with the lever to operate said connection, the spring to move the lever, the detent for the lever, and the magnet to actuate the detent, whereby the attraction of the magnet is caused to instantly relieve the head from the action of the wrist.

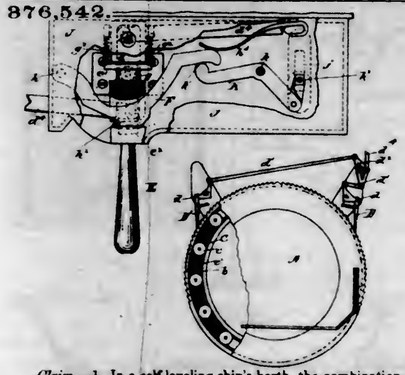
4. The slotted slide B and the actuating-wrist having one side, *a b*, made of diminishing lift, as described and shown, in combination with the electric mechanism, substantially as described, to effect the automatic stoppage of the slide during the action of said portion of the wrist.

5. In combination with a punching, boring, cutting, or equivalent machine, electro-magnetic devices to cause its stoppage, said mechanism embracing and being controlled by a contact device located near the tool and in position to act upon the blank or object under treatment.

376,542. **SELF-LEVELING SHIP'S BERTH.** WILLIAM T. MILLIGAN, Boston, Mass., assignor, by mesne assignments, to the Ocean Steamship Berth Company, Portland, Me. Filed Apr. 11, 1887. Serial No. 234,326. (No model.)



376,542.



Claim.—1. In a self-leveling ship's berth, the combination of the berth having at each end a circular bearing-surface, two circular tracks, each located upon a suitable support in close proximity to one of said bearing-surfaces, and two carriages of substantially the kind described, provided with supporting-wheels all of the same diameter, each carriage resting upon its track and upholding one of said bearing-surfaces, as and for the purposes set forth.

2. In a self-leveling ship's berth, the combination of the berth having at each end a circular bearing-surface, two circular tracks, each located upon a bulk-head or other support in close proximity to said bearing-surface and two carriages of substantially the kind described, provided with supporting-wheels all of the same diameter, each resting upon its track and upholding with its wheels one of said bearing-surfaces, and means, substantially as above described, whereby when said berth is in use neither end of it can be lifted off its supporting-wheels, all substantially as and for the purposes set forth.

3. In a self-leveling ship's berth, in combination with a track, the self-righting carriage above described, consisting of a number of wheels axled to a common curved connection, the ends of said common connection each being provided with a wire projecting therefrom, a weight joining said wires midway between the ends of said carriage, whereby said carriage is normally kept centered on the top of said track, all as set forth.

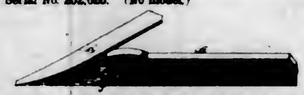
4. A self-leveling ship's berth adapted to rotate about its longitudinal axis, having at each end a circular bearing-surface, two circular tracks, each located upon a bulk-head in close proximity to said bearing-surface, and two carriages of substantially the kind described, each located upon its track and supporting one of said bearing-surfaces, the outer upper periphery of said bearing-surfaces being provided with teeth, in combination with pawls located above said bearing-surfaces and adapted to interlock therewith, and means, substantially as described, whereby said pawls shall be operated, all as set forth.

5. In combination with the berth-locking mechanism of a self-leveling ship's berth, the handle E, having a cavity, as described, a spring-restrained tongue, *g*, and a lock, G, located above said tongue, as and for the purposes set forth.

6. In a self-leveling berth, in combination with the berth-locking mechanism and its operating-handle E, the handle-latching mechanism above described, consisting of the latch-lever F and mechanism, substantially as described, whereby it may be moved, all as set forth.

7. In a self-leveling ship's berth, in combination with the handle E and the berth-locking mechanism, the latch-lever F, spring A^2, releasing-lever K, and means, substantially as described, whereby said releasing-lever may be operated, as set forth.

376,543. **PLOW.** EDWARD MURAIRE, Huron, Dak. Filed Oct. 11, 1887. Serial No. 252,085. (No model.)



Claim.—The combination of the part A, having the groove B made in its front end, and having the extension G extending beyond the groove, so as to overlap the part D, with the part D, having the shank C to extend back into the groove and a shoulder, J, to bear against the front end of the part A, the lay which is secured to the part D, and the bolt which secures the two parts of the landside together, substantially as shown and described.

376,544. **BOLT.** JOHN R. PARKER, Hamilton, Ontario, Canada. Filed Aug. 6, 1887. Serial No. 246,261. (No model.)

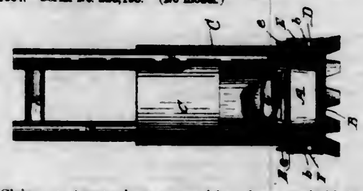
376,544.



Claim.—1. The bolt B for door-locks, formed with two or more beveled faces and stop-surfaces, substantially as described.

2. The retaining or striker plate E, formed with the aperture E', having stop edges *i i*, in combination with the bolt formed with the beveled edges *b b'*, substantially as described.

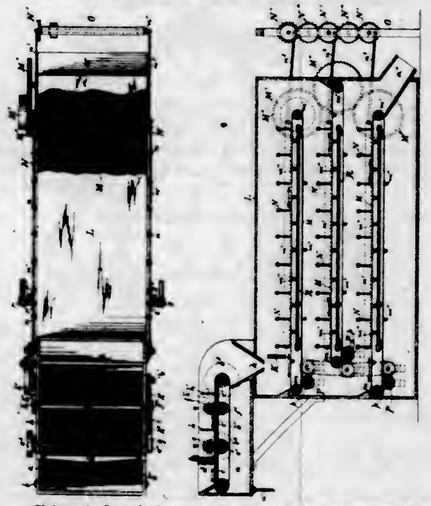
376,545. **WATER-HEATER.** ABEL A. PIERCE, St. Johnsbury, assignor of one-half to J. C. Eaton & Co., Lyndonville, Vt. Filed Feb. 19, 1887. Serial No. 228,195. (No model.)



Claim.—1. A water-heater comprising a lamp, a suitable base upon which it is mounted, a case or air-chamber inclosing said lamp, suitable fastening devices whereby said air-chamber is secured perfectly water-tight to said base, tubes connected to the top of said case and extending a suitable distance above the same for the admission of cold and the discharge of hot air or smoke, and means whereby the water may circulate through said air-chamber without contact with the air contained therein, for the purpose set forth.

2. In a heater, the combination, with a lamp having one or more burners, of a base upon which said lamp is firmly mounted, a suitable case for inclosing the lamp, means for securing it water-tight to the said base, and tubes connecting with said case and extending a suitable distance above the same, all substantially for the purpose set forth.

376,546. **DRYING APPARATUS.** EDWIN J. POND, Franklin, Mass. Filed Nov. 7, 1887. Serial No. 254,491. (No model.)



Claim.—1. In a drying apparatus, the extractor consisting of the shell or case *a*, the rotary rollers *b b'*, and the perforated endless apron *b''*, the stationary gratings *c c' c''*, the spreader *d*, squeezing-rollers *e e* and *f f''*, and the rotary stirrers *h h'*, combined and arranged to operate in a manner and for the purpose substantially as described.

2. In a drying apparatus, the case or chamber L, containing a series of perforated endless aprons, M M M, and rollers *m m'*, each of said aprons having an independent heat-radiator, R, a set of reciprocating stirrers, N N, and cleaning-brush P, as and for the purpose set forth.

3. The drying apparatus, as described, consisting of the extractor composed of an endless perforated movable apron, *b''*, perforated gratings *c c' c''*, the spreader *d*, one or more pairs of squeezing-rollers, and rotary stirrers, combined with the chamber L, containing one or more

perforated endless aprons, M, stirrers N N, independent heat-radiators R, and cleaning-brushes P, as and for the purpose set forth.

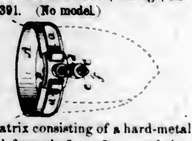
376,547. **ADJUSTABLE CUFF-RETAINER.** ROBERT L. PRATT, Tigerville, La. Filed June 25, 1887. Serial No. 242,486. (No model.)



Claim.—1. In a cuff-retainer, the combination of a shank, A, a cuff-fastener, D, a sleeve-fastener, E, and a wristband-fastener, G, the said fasteners D and G being adjustable with respect to the said fastener E, substantially as described.

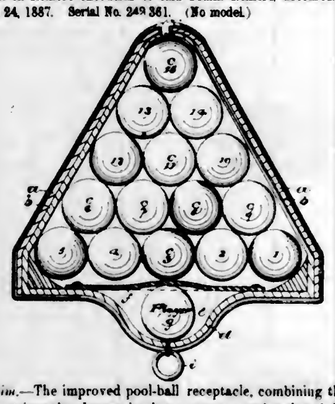
2. In a cuff-retainer, the combination of a shank, A, having a slot, B, with enlarged opening C, a cuff-fastener, D, and a sleeve-fastener, E, having ears F, adapted to pass through the opening C, but not through the slot B, substantially as described.

376,548. **DENTAL MATRIX.** JOHN H. REED, Lancaster, Wis., assignor of one-half to C. Stoddard Smith, Chicago, Ill. Filed Mar. 25, 1887. Serial No. 232,391. (No model.)



Claim.—A dental matrix consisting of a hard-metal yoke provided with a screw, and a band formed of a softer metal than that of which the yoke is formed, to be attached to the yoke by tongues on the end thereof, passing through apertures formed in the yoke.

376,549. **POOL-BALL BOX.** FRANK REINERT, Newark, N. J.; Maria A. Reinert executrix of said Frank Reinert, deceased. Filed June 24, 1887. Serial No. 242,361. (No model.)



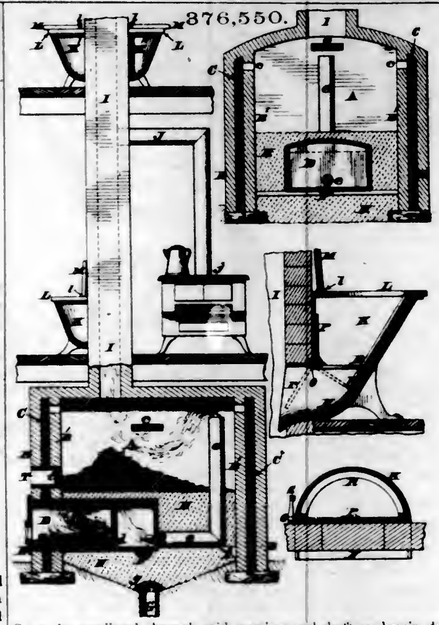
Claim.—The improved pool-ball receptacle, combining therein a case, *a*, a triangular drawer having a recess, *c*, and spring *f*, for holding the player's ball in position, substantially as set forth.

376,550. **DRY CLOSET.** LUCIAN B. ROSS, Cincinnati, Ohio. Filed May 19, 1887. Serial No. 238,712. (No model.)

Claim.—1. The combination, in a cremating-closet, of a sealed deposit-chamber and a single shaft proceeding from its upper part, which shaft performs the threefold duty of ventilator, soil-pipe, and chimney, substantially as herein described.

2. The combination, in a cremating-closet, of a sealed deposit-chamber, a non-combustible absorbent bed, a furnace, a smoke-pipe, and a single shaft proceeding from the upper part of said chamber, within which latter the furnace is situated and is surrounded or partially surrounded by said bed, the smoke-pipe being arranged to discharge into said chamber, and the single shaft serving as the ventilator, soil-pipe, and chimney of the closet, substantially as herein described.

3. The combination, in a cremating-closet, of the deposit-chamber A, surrounded by outer walls, B, inner walls, B', and air-space C, openings *c c* being provided in said inner walls, and a single shaft, I, being applied to the upper part of said chamber in order that the air-space



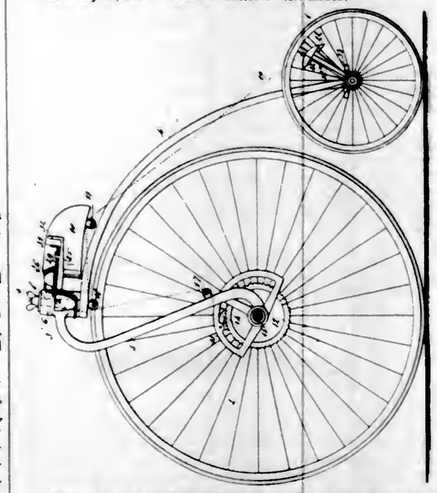
376,550.

C may be ventilated through said openings and shaft, as herein described.

4. The combination, in a cremating-closet, of a sealed deposit-chamber having means for drying or burning the excreta collected therein, and a single shaft proceeding from said chamber, which shaft has a series of privy-boxes attached thereto at different levels and has the smoke-pipe of a cooking, heating, or steam apparatus leading into it, for the purpose described.

5. A cremating-closet provided with a privy-box having a valve, P, rigidly connected to the bow-scraper R, which latter rakes the excreta from off the concave discharge-chute N of said box, as herein described.

376,551. **TRICYCLE.** GEORGE W. RODECAP, Middletown, Ind. Filed May 20, 1887. Serial No. 238,837. (No model.)



Claim.—1. A tricycle provided with one large rear driving-wheel, two small forward supporting-wheels, and a frame consisting of twin S-shaped rods forming bearings for the large wheel, and twin arched rods forming bearings for the small wheels, substantially as shown and described.

2. A tricycle provided with one large rear driving-wheel, two small forward supporting-wheels, and a frame consisting of twin S-shaped rods constituting journals for the large wheel, and twin arched rods constituting bearings for the small wheels, the said rods pivotally connected above the driving-wheel, substantially as shown and described.

3. In a tricycle, the combination, with the drive-wheel, ratchet-wheels keyed upon the same axle with said drive-wheel, spring-actuated segmental frames adapted to reciprocate upon said axle, and a gripping device carried by said segmental frames, of treadle-carrying arms pivoted upon the axle of the supporting-wheels, segmental blocks attached to said treadle-arms, and a cord or rope connecting the said segmental frames and blocks, substantially as herein shown and described.

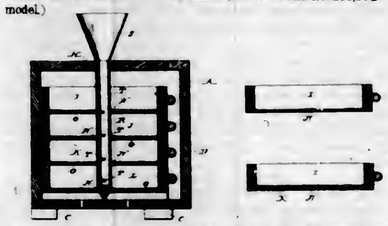
4. In a tricycle, the combination, with the drive-wheel, ratchet-wheels keyed upon the same axle with said drive-wheel, spring-actuated segmental frames adapted to reciprocate upon said axle, and a gripping device carried by said segmental frames, of treadle-carrying arms pivoted upon the axle of the supporting-wheels, provided with heel-rests, and segmental blocks attached thereto, a rope or cord connecting the said segmental blocks and frames, and means, substantially as shown, for turning the drive-wheel, substantially as herein shown and described.

376,552. **SCREW-CONVEYER.** LUDWIG RÖSSLER, Aibling, Bavaria, Germany. Filed Mar. 11, 1887. Serial No. 230,498. (Model.)



Claim.—In a screw-conveyer, the combination, with a shaft, of a series of sector-shaped wings having their narrower ends bent over to form segmental flanges of the diameter of the shaft, and of bolts passed through said flanges into the shaft, the plane of each wing being at an angle to the vertical longitudinal plane of its flange, substantially as shown and described.

376,553. **CASE FOR TRANSPORTING FISH-EGGS.** GEORGE T. SANDFORD, Kinston, N. C. Filed Mar. 9, 1887. Serial No. 230,264. (No model.)



Claim.—1. A fish-egg-transport frame, tray, or drawer provided with a bed, mat, or bottom of canton-flannel having its nap surface uppermost, substantially as specified.

2. In a transport for fish-eggs, the combination, with the main case, of a removable frame, tray, or drawer provided with a bed, mat, or bottom of canton-flannel having its nap surface uppermost, substantially as specified.

3. In a transport for fish-eggs, the combination, with the main case having the perforated bottom and the central aperture in the top, of the trays or drawers arranged therein and provided with canton-flannel bottoms having central apertures, and the funnel or sprinkler having the perforated stem passing through the apertures of the trays or drawers to the bottom of the case, substantially as specified.

4. In a transport for fish-eggs, the combination, with a frame, tray, or drawer having a screen-bottom provided with a central aperture, of a canton-flannel mat or lining having a central aperture aligned with the aperture of the tray or drawer bottom, and the sprinkler having the perforated stem adapted to pass through the aligned apertures of the case and the tray or drawer bottoms, substantially as specified.

5. In a transport for fish-eggs, the combination, with a drawer having a screen-bottom provided with a central aperture, of a canton-flannel mat provided with a central aperture and resting on said screen-bottom, substantially as specified.

376,554. **PREPARING LITHOGRAPHIC SURFACES.** ERNST O. SCHMIDT, Gohlis, near Leipsic, Germany. Filed May 9, 1887. Serial No. 237,583. (No specimens.)

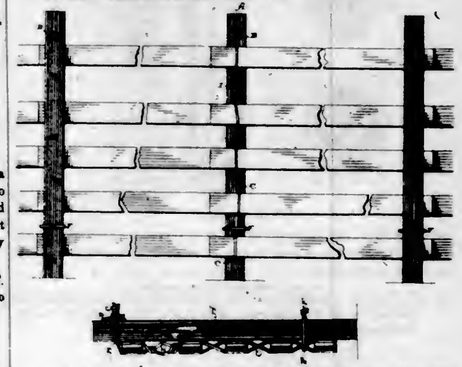
Claim.—The process of treating lithographic stones and zinc plates, which consists of washing them with benzine, subjecting them to the action of a chloride, and then to the action of carbonate of magnesia, substantially as specified.

376,555. **BANANA-CARRIER.** GILBERT D. SIDWAY, Jackson, Miss. Filed July 18, 1887. Serial No. 244,668. (No model.)



Claim.—A banana-case made with the top board, A, with the V-shaped slot or opening B, the bottom board, C, side boards, E, and the key D, to be used for carrying bananas and similar fruit, substantially as above set forth.

376,556. **FENCE.** FRED BLACK, Sugar Branch, Ind. Filed Sept. 29, 1887. Serial No. 251,061. (No model.)



Claim.—In a fence, the combination of the posts A, provided with holes B in their upper ends, the rails or boards out of which the panels are formed, the wires C, having their upper ends passed through the holes in the posts, looped around the rails, and then twisted together, as at I, for the purpose of tightening them upon the rails, the loops F, which are fastened around the wires and the post, and the pins D, substantially as shown and described.

376,557. **BIT-HOLDER FOR BIT-STOCKS.** HENRY SMILEY, Boston, Mass. Filed Mar. 19, 1887. Serial No. 231,617. (No model.)

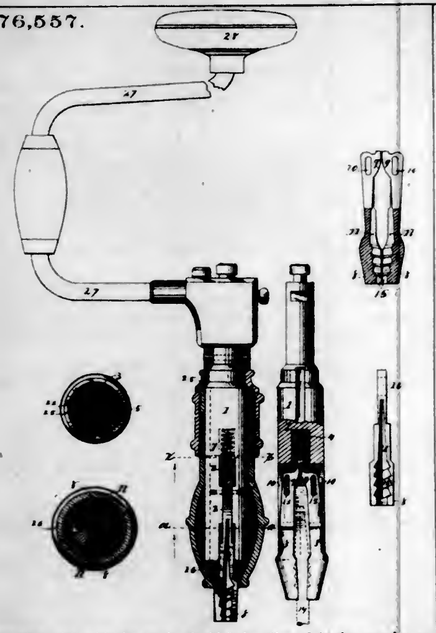
Claim.—1. The jaws 8 8, provided with curved parts 9, in which are slots 10, and having inside angular recesses 11, extending from said parts 9 to the end of said jaws, which angular recesses are serrated with the ridges 15 near the outer end of said jaws, in combination with the tool-holding shaft 1, provided with slotted openings 2 2, in which said jaws 8 8 are pivoted by pivots 13 13, all arranged substantially as described, and for the purpose set forth.

2. In a bit-stock, the tool-holding shaft 1, provided with angular recesses 12 12 and interior chamber, 4, and having slotted openings 2, extending through said shaft, in combination with the jaws 8 8, adjusted in said openings 2 and pivoted therein by pivots 13, which pass through the slotted openings 10 of said jaws, the said jaws being provided with angular recesses 11, serrated with the ridges 15, as described, having curved parts 9, the toes of which are adjusted in the chamber 4 of said shaft 1, all arranged as described, and for the purpose set forth.

3. In combination, the tool-holding shaft 1, having slotted openings 2 and 3 and chamber 4, the serrated jaws, provided with slotted openings, adjusted in the slotted openings of said shaft by pivots 13, passing through said shaft and said openings, the plunger 5, having the spring 7 upon its shank, resting against the head, and arranged in the chamber 4 of said shaft, as described, and provided with a recess, 6, in which are adjusted the toes of said serrated jaws, all substantially as described, and for the purpose set forth.

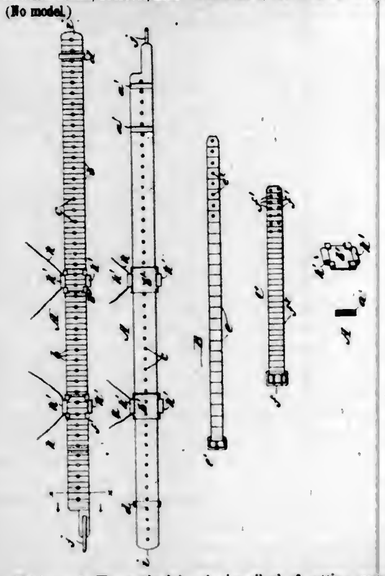
4. The tool-holding shaft 1, provided with slotted openings and chamber and angular recesses, and having serrated angularly-recessed jaws pivoted in said openings by pivots 13, and the plunger 5, with the spring 7 upon it, adjusted in the chamber 4 of the said shaft, with its head recessed to be adjusted on the toes of said serrated jaws, in com-

376,557.



bination with a bit the stock of which is adjusted in the angular recess of said shaft and jaws and against the ridges of said jaws, all arranged as described, and for the purpose set forth.

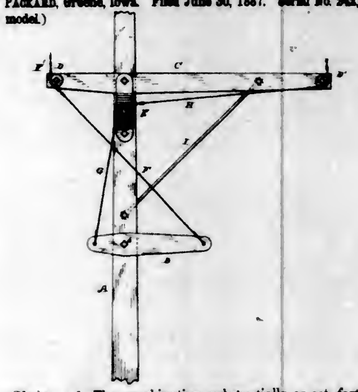
376,558. METHOD OF AND DEVICE FOR FITTING GARMENTS. EDWARD STAHL, Prescott, Ariz. Filed June 4, 1887. Serial No. 240,268. (No model.)



Claim.—1. The method herein described of cutting garments, which consists in applying pattern material to a bust-band and forming a downfold in the material, and applying the band and material to the bust of the person just beneath the arms, and then cutting the downfold to fit over the shoulder, and then cutting the material below the band to fit the waist, substantially as described.

2. The bust-band A, graduated upon one surface and provided with a series of holes, *c*, in combination with two sliding clips, *V*, having opposite eyes *k k* at the edges, and provided with the fastening-cords *k*, substantially as described.

376,559. DRAFT-EQUALIZER. EDWIN F. STEVENS and JOSEPH PACKARD, Greene, Iowa. Filed June 30, 1887. Serial No. 242,955. (No model.)



Claim.—1. The combination, substantially as set forth, of the tongue or pole, the equalizing-lever having long and short arms, the cross-bar or spreader, the pulley on the pole in rear of the spreader, and the crossed draft-connections from the longer end of the equalizing-lever over the shorter end of the spreader and from the shorter end of the equalizing-lever over the pulley on the pole and over the outer end of the spreader.

2. The combination, substantially as set forth, of the tongue or pole, the equalizing-lever having long and short arms, the cross-bar or spreader in front of the equalizing-lever, the pulleys on the outer ends of the spreader, the pulley on the pole in rear of the spreader, and the crossed draft-connections from the shorter end of the equalizing-lever over the pulley on the pole and over the pulley on the outer end of the spreader, and from the longer end of the equalizing-lever directly over the pulley on the shorter end of the spreader.

3. The combination, substantially as set forth, of the tongue or pole, the equalizing-lever, one-third of its length on one side of the pole and the remaining two-thirds on the opposite side, the spreader in front of the equalizing-lever, one-third of its length on that side of the pole opposite the long end of the equalizing-lever and two-thirds of its length on that side of the pole opposite the short end of the equalizing-lever, the diagonal brace-rod connecting the spreader to the pole, and the crossed draft-connections between the ends of the equalizing-lever and the spreader.

376,560. MACHINE FOR FORMING FABRICS FROM WIRE. DANIEL C. STOVER and OSWALD R. WIEGER, Freeport, Ill. Filed July 16, 1887. Serial No. 244,538. (No model.)

Claim.—1. In an automatic machine for forming coiled-wire fabrics, mechanism for coiling the wire, means for supporting the fabric with its marginal coil in position to receive an additional interlocking coil, and mechanism for moving said marginal coil both laterally and longitudinally, combined with means whereby the operator may at will add to or subtract from such lateral movement while the machine is in operation, substantially as set forth.

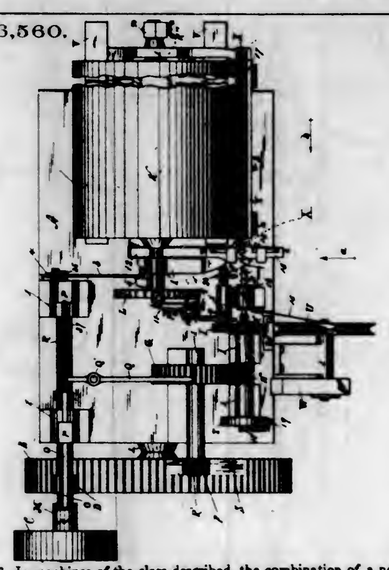
2. In machines for making coiled-wire fabrics, the combination, with mechanism for coiling the wire, of automatic mechanism for stopping and starting the coiling mechanism at intervals without disconnecting the power from the machine, and mechanism for automatically disconnecting the power from the machine at the completion of a predetermined length of the fabric.

3. In machines for forming coiled-wire fabrics, the combination, with a non-cylindrical coiling-mandrel and a fixed spirally-grooved sleeve inclosing a portion of said mandrel, of a rotary hammer adapted to strike, in each of its revolutions, the wire coiled upon said mandrel, and means whereby the impact of the blow upon the wire may be varied at will while the parts mentioned are all in operation.

4. In machines of the class described, the combination of a coil-forming mandrel, coil-severing jaws, a support, X, for the coil when formed, and a compressor fixed to one of said jaws and adapted to press the coil against said support at the instant of severing.

5. In a machine of the class described, the combination of a non-cylindrical rotating coil-mandrel and a hammer actuated automatically by said machine and striking, at suitable intervals, the wire coiled upon said mandrel, whereby the wire is forced more closely against certain parts of the mandrel and "set" sufficiently to prevent appreciable uncoiling of the wire when released from tension.

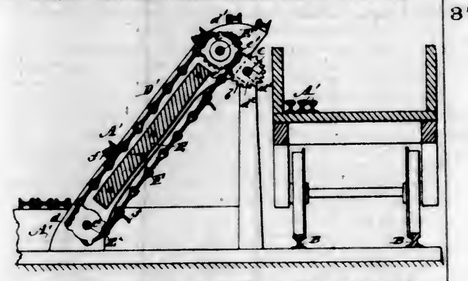
376,560.



6. In machines of the class described, the combination of a non-cylindrical rotating mandrel or coiling-spindle, a shaft parallel to said mandrel mounted in a suitable support and bearing a hammer adapted to strike the wire coiled upon said mandrel, an eccentric-sleeve within said support and forming the bearing of said shaft, and means whereby said sleeve may be rotated about said shaft and in said support, for the purpose set forth.

7. The combination, with the power-driven mutilated gear E and the mutilated wheel 25, both mounted upon a shaft, R', of the shaft R', connected by gearing with said mutilated gear and carrying the coiling-spindle N, the mutilated wheel T, mounted upon the shaft R', and the centrally-pivoted pawl 19, engaging both said mutilated wheels, whereby the rotation of the spindle may be stopped at exact intervals without disconnecting the power from the machine.

376,561. RAIL-LOADING MACHINE. CYRUS P. TITTLE, Johnstown, Pa. Filed July 12, 1887. Serial No. 244,077. (No model.)

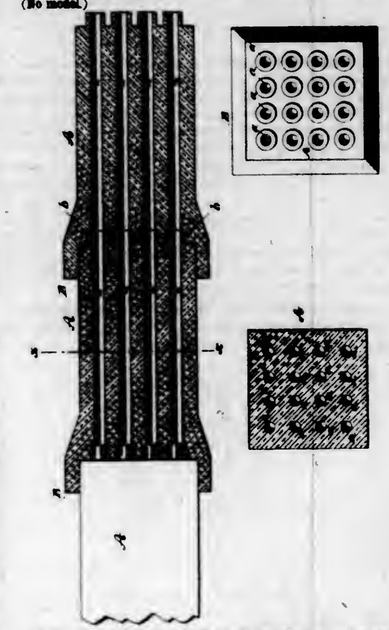


Claim.—1. A rail hoisting or loading machine consisting of parallel side plates provided upon their inner faces near the upper ends with slotted lugs, a transverse shaft or mandrel journaled at top and bottom of said plates, a sprocket-wheel secured to each of said shafts or mandrels, an endless chain provided with carrying-hooks and encompassing said sprocket-wheels, the outer ones of said side plates being offset at their upper ends providing for the reception upon the upper shaft or mandrel of gear-wheels engaging with a driving shaft, pinion, or wheel, substantially as set forth.

2. In a rail hoisting or loading machine, the parallel side plates carrying sprocket and gear wheels, and provided upon their inner faces near the upper ends with slotted lugs, which sprocket-wheels carry an endless belt provided with hooks, in combination with an independent elevated driving-shaft having a series of pinions arranged to engage with the gear-wheels carried by said side plates, and means for driving said shaft, substantially as set forth.

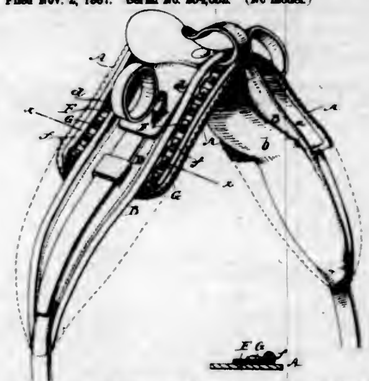
3. In a rail loading or hoisting machine, the parallel side plates carrying sprocket and gear wheels, and provided upon their inner faces near the upper ends with slotted lugs, which sprocket-wheels carry an endless chain provided with a series of hooks, in combination with an independent elevated driving-shaft carrying a series of pinions arranged in pairs, each pair being disposed opposite a rail-supporting rack and adapted to engage with the gear-wheels carried by the said side plates, substantially as described.

376,562. ELECTRIC CONDUIT. ROBERT VAN BUREN and JAMES J. POWERS, Brooklyn, N. Y. Filed Oct. 21, 1887. Serial No. 252,964. (No model.)



Claim.—As an improved article of manufacture, a longitudinally-perforated conduit-section formed of insulating material tubulated at one end and provided with a socket, B, and a series of recesses, *b*, at the other end, as set forth.

376,563. HARNESS-PAD. SOMERS VAN GILDER, Knoxville, Tenn. Filed Nov. 2, 1887. Serial No. 254,052. (No model.)



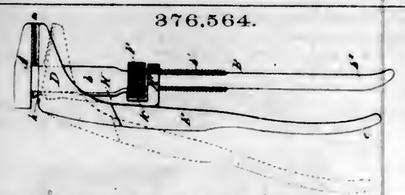
Claim.—1. A harness-pad formed with the side flanges, A, in combination with strips F, stitched to the outer surface of the said flanges, and the ornament G, secured to the strips F between their outer edges and the edges of the skirt D, substantially as shown and described.

2. The pad formed with the reed *d* at its edges, in combination with the flanges A and ornamented strip F, having the reed *f*, substantially as described

376,564. WRENCH. VANRIVER J. VAN HORN, Goff's, Kans. Filed Aug. 15, 1887. Serial No. 246,976. (No model.)

Claim.—1. A wrench comprising a fixed jaw, a stock, a bar ad-

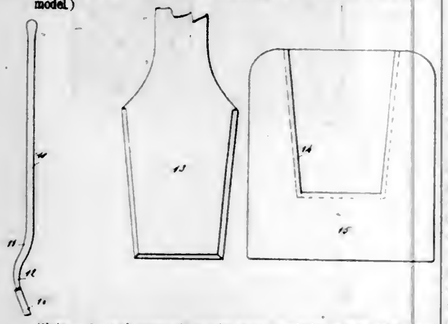
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justable on the front or the rear face of the stock and having a recess in its outer face near its upper end, and the movable jaw provided with a lever and recessed for the reception of the stock, opposite shoulders being formed at the upper end of the said recess to engage the recess in the sliding bar, according to which side of the stock the bar is placed, substantially as set forth.

2. In a wrench, the combination, with the fixed jaw A, having an integral threaded stock, B, the nut F, traveling upon said threaded stock, and the carrying-rod H, provided with an integral ring, H', adapted to follow said nut, and a recess, *k*, adapted to receive the periphery of the nut, of the movable jaw D, provided with an attached lever-arm, E, an irregular aperture, *d*, and shoulders d' d^2 at each side of said aperture, substantially as shown and described, whereby the leverage may be increased or decreased, as desired.

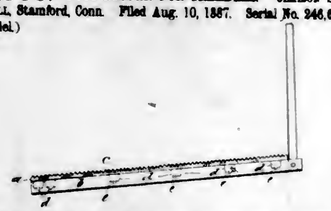
376,565. **TAMPING-TOOL.** WARREN R. WALDRON and GEORGE C. BOLLER, Folsom City, Cal. Filed June 8, 1887. Serial No. 240,631. (No model.)



Claim.—1. An improved tamping-tool consisting of a head formed with a tapering dovetailed groove and a handle provided with a tapering projection on its lower end, fitting in the groove of the said head, substantially as described.

2. The combination, with a handle formed with bends 11 and 12 and a projection, 13, having inclined edges, of a head formed with a dovetail recess, within which the projection of the handle is adapted to fit, substantially as described.

376,566. **FOOT-HOLDER FOR TREADLES.** CLARION S. WARDWELL, Stamford, Conn. Filed Aug. 10, 1887. Serial No. 246,632. (No model.)

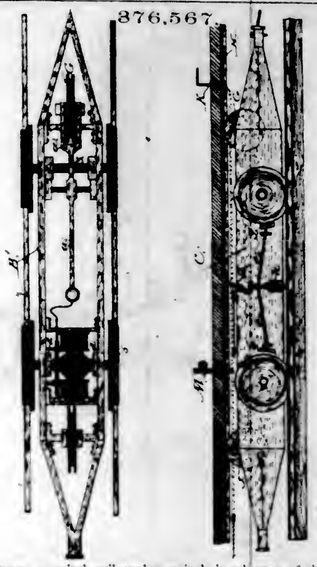


Claim.—An adjustable foot-holder for treadles, consisting of the elastic body *a*, provided with studs *d*, formed integral with the body and having corrugations *c*, as and for the purpose set forth.

376,567. **ELECTRIC-RAILWAY SYSTEM.** DAVID G. WEEKS, Baltimore, Md. Filed Mar. 21, 1887. Serial No. 231,729. (No model.)

Claim.—1. In an electric-railway system, the combination, with a series of adjustable stops, of a brake mechanism applied to the cars of a train and comprising a pivoted latching-lever engaging said stops, and spring-actuated rods carrying brake-shoes and checking the train when the trip-lever is released.

2. In an electric-railway system, a car having an electric motor, the main and upper guide-rails forming with said car an electric circuit, in combination with a brake mechanism comprising brake-shoes, rods, and a trip-lever applied to said car, adjustable stops M, engaging said lever, a switch-rail, and a switch in advance of the adjustable stop for transferring the current from the main to the switch rails.



3. In an electric-railway system, the main rails and an upper guide-rail, in combination with a traveling car having an electric motor, and a brake mechanism comprising brake-shoes, rods, and pivoted trip-lever, a switch-rail, means for shifting the electric current from the main to the switch rail, and adjustable stops in the path of the trip-lever for setting the brakes, whereby the car is stopped.

4. In an electric-railway system, the main and the upper guide-rail, a car having a motor, a brake mechanism on said car connected with a trip-lever, and a switch-rail, in combination with means for transferring the current from the main and upper rails and car to the switch-rails, and adjustable stops actuating the trip-lever to stop the car before the current is again returned thereto.

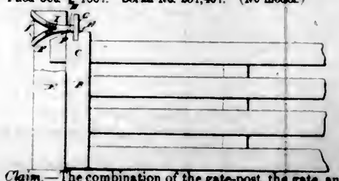
5. An electric car pointed at both ends and having its extremities below its longitudinal center, whereby a greater resisting upper surface is provided to hold the wheels to the track.

6. An electric-railway system comprising the main and the upper guide-rails, traveling cars provided with guide-wheels engaging the latter rails, an electric connection between one of said wheels and rail and the motor on the car, brake mechanism on said cars actuated by fixed stops on the line, and an elevated frame-work on which the rails are laid and in which the cars travel, as herein described.

7. In an electric-railway system, the main and an upper guide-rail, in combination with a car having a motor in electric connection with said rails, a brake mechanism on said car comprising a trip-lever operated by fixed stops on the line, the spring *h*, and the brake-rod *e*, connected with the spring and trip-lever.

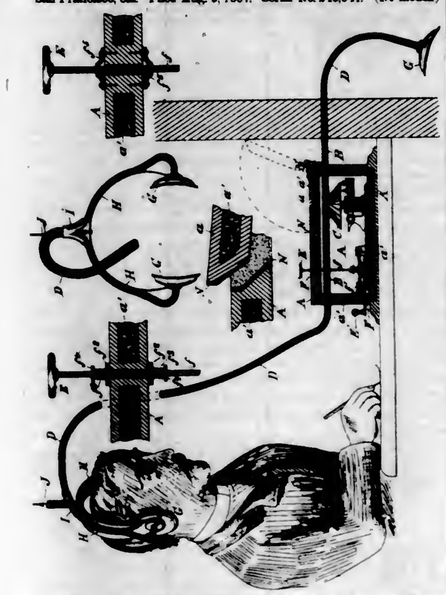
8. An improved electric railway for transporting articles, comprising the stationary dynamos, the traveling locomotive and attached cars, the stations, an upper conducting-rail, and lower bearing-rails, in combination with brake mechanism on said locomotive and cars, pivoted latches connected therewith, fixed stops or abutments at points on the road for automatically applying said brakes, a switch-rail, and means for transferring the current from the main to the switch rail, substantially as set forth.

376,568. **GATE-LATCH.** WILLIAM R. WHITE, Washington, Iowa. Filed Oct. 4, 1887. Serial No. 251,467. (No model.)



Claim.—The combination of the gate-post, the gate, and the latch, comprising a transverse blade and a bifurcated arm extending therefrom, the said arm being pivoted to the post and adapted to be actuated by the gate to cause the blade to engage the same, substantially as specified.

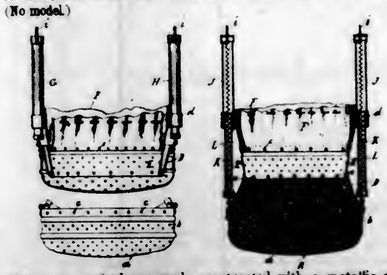
376,569. **TELEGRAPHIC APPARATUS.** SAMUEL R. WHITEHEAD, San Francisco, Cal. Filed Aug. 9, 1887. Serial No. 246,541. (No model.)



Claim.—1. In a muffled telegraphic message receiving and transmitting instrument, a box all the sides of which are made with an inner and outer casing, and the space between the casings filled with suitable non-conducting material, and having a cover or lid similarly constructed, and the edges of the box and of the lid or cover, where they come together to form a joint, being furnished with felt or other suitable material, the box also having holes through which the key and switch rods pass, suitably packed to prevent the egress of sound substantially as described.

2. In a muffled telegraphic message receiving and transmitting instrument, the combination of the sound-non-conducting box A, substantially as described, a telegraphic receiving and transmitting instrument therein contained, the tubes B B', sound-collector C, stems E and E', for operating the transmitting-instruments from the outside of the box, flexible pipe D, with its branches H H, ear-pieces G, having their edges padded and conforming to the contour of the human head around the ear, the head-clamp H, and elastic sustaining-cord J, all arranged and operating substantially as described.

376,570. **FEED-BAG.** EDWARD WILLIGEROD and LOUIS NEBELSIEKER, New York, N. Y. Filed Sept. 1, 1887. Serial No. 248,450. (No model.)



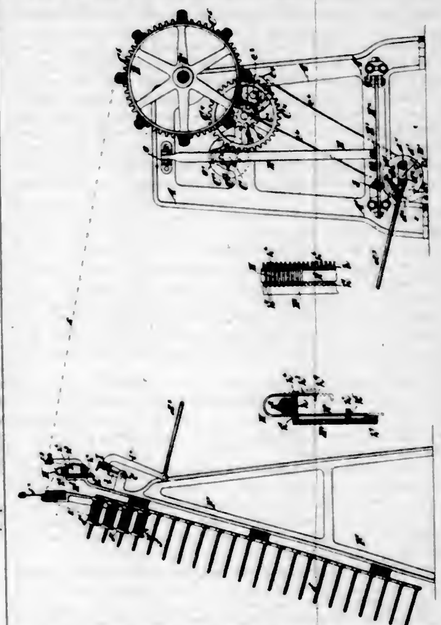
Claim.—1. A feed-receptacle constructed with a metallic dish-shaped base, B, curved on its lower part, having suitably attached to its upper edge a band of flexible material, D, to which is connected a perforated band or hoop, E, having fastened to its upper portion a piece of flexible material, F, which forms the top of the bag, substantially as shown and described.

2. In a feed-receptacle, the dish-shaped base B, attached by a band of canvas or other flexible material, D, to a perforated intermediate hoop or band of metal, E, or other suitable material, having a piece of canvas, F, fastened to its upper part to form the cover, in combination with the side pieces consisting of the telescopic inner and outer tubes, J K, and the spiral springs L L, arranged therein, said tubes J being riveted at their bottoms to the piece of canvas F, and the inner tubes, K, secured to the top of the base B, for automatically adjusting the feed-bag to the mouth of the animal, substantially as and for the purpose herein described.

3. In a feed-receptacle, the dish-shaped base B, connected to an intermediate band or hoop, E, by means of a piece of flexible material, D, in combination with side pieces constructed, as described and shown, to gradually cause the base B to automatically rise and telescope with the band E and canvas band D as the feed-bag is emptied of its contents, thereby always keeping the food within a convenient eating distance of the animal's mouth until the food is entirely consumed, substantially as herein shown and described.

376,571. **STOP MECHANISM FOR REELING-MACHINES.** JOHN E ATWOOD, Stonington, Conn. Filed Oct. 27, 1886. Serial No. 217,311. (No model.)

Brief.—The invention relates to and consists in improved stop mechanism for that class of reeling-machines in which the driving mechanism is held operative by a trigger and is moved into inoperative position by a spring through its shipper when released from the trigger, and in such machine the faller-wires descend in the path of a bar having a definite range of movement, and by blocking the movement of such bar cause the shipper to be released from the trigger and be moved by the spring to stop the machine.



Claim.—1. The combination, with the flanged beam H', constituting the faller-holder, and having the guiding-holes h^4 and the guides h^5, of the fallers H, having the legs h^3 h^4, respectively, fitted to slide in the said guiding-holes and guides, substantially as herein described.

2. The combination, with the flanged beam H', constituting the faller-holder, and having the guiding-holes h^4 and the guiding-notches h^5, of the fallers H, having the long legs h^3, entering the guiding-holes h^4, and the shorter legs h^4, entering the guiding-notches h^5 and shouldered at the ends to prevent undue upward movement of the fallers, substantially as herein described.

3. The combination, with a reel and driving mechanism therefor, having a controlling shipper or lever, a hook or latch, whereby the shipper or lever is maintained in operative position, and a spring for moving the shipper or lever into inoperative position when released from the hook, of stop mechanism for threads to be wound on the reel, having a member which has a definite range of movement, a stop-motion shaft, and mechanism, substantially as described, for driv-

ing it with a positive rotary motion, a yielding crank-arm carried by said shaft and rotating in the path of the latch or hook, and a connection between said crank and the said movable member of the stop mechanism, whereby when undue resistance is opposed to said movable member of the stop mechanism the crank-arm will yield to allow it to come into contact with and throw off the said hook or latch, substantially as herein set forth.

4. The combination, with a reel and driving mechanism therefor, having a controlling shipper or lever, a hook or latch whereby the shipper or lever is maintained in an operative position, and a spring or equivalent weight for moving the shipper or lever into inoperative position when released from the latch or hook, of stop mechanism for the threads to be wound having a member which has a definite range of movement, a stop-motion shaft, and mechanism, substantially as described, for driving it, a crank-arm, d^3, provided with a cam, d^5, a carrier, d', therefor upon said shaft, a connection between said crank-arm and said movable member of the stop mechanism, and a spring connecting the said crank-arm to its carrier, and which will permit the said crank-arm to yield, and thus change the path described by its cam when a usual resistance is opposed to the said movable member of the stop mechanism, substantially as herein set forth.

5. The combination, with a faller-holder having an abutment and fallers movable in said holder, of the rocking bar I and its supports, the stop-motion shaft and mechanism, substantially as described, for driving it, the spring-supported crank-arm d^3 and its lifting-cam d^5, a rod connecting said crank-arm and rocking bar, a reel and driving mechanism therefor, substantially as described, a shipper for controlling the driving mechanism, a latch or hook, J, whereby the shipper is held in operative position, and a spring for moving the shipper when released from the latch or hook, substantially as herein set forth.

6. The combination, with a reel and driving mechanism therefor, substantially as described, of stop mechanism for the threads to be wound having a member which has a definite range of movement, a stop-motion shaft composed of two sections, and a clutch connecting said sections and having its engaging members constructed to afford lost motion between them in a circular direction, gearing whereby the first section of the stop-motion shaft is rotated synchronously with the reel, and connections, substantially as described, whereby the second section of the stop-motion shaft operates the movable member of the stop mechanism, substantially as and for the purpose herein set forth.

7. The combination, with a reel and driving mechanism therefor, substantially as described, of the stop-motion shaft composed of the sections D D′ and a clutch connecting them and constructed with play or lost motion in a circular direction between its engaging parts, gearing for operating the section D synchronously with the reel, the crank-arm d^3, provided with a cam, d^5, the carrier d' on the shaft-section D′, and with which the crank-arm is connected by a pivot and a spring, a lever, E^3, and connections, substantially as described, whereby it controls the driving mechanism, and a latch or hook, J, which engages said lever to hold the driving mechanism operative, substantially as herein set forth.

8. The combination, with the two shaft-sections D D′ and an arm on the section D′, of a disk, K, free to slide on the section D, and provided with means for locking it to turn with the section D, and having a projection for engaging the said arm on the section D′, substantially as herein described.

9. The combination, with the two shaft-sections D D′ and an arm on the section D′, of a disk, K, free to slide on the section D, and also receiving in its bore the section D′, the said disk being provided with means for locking it to turn with the section D and with a projection engaging the said arm on the section D′, substantially as herein described.

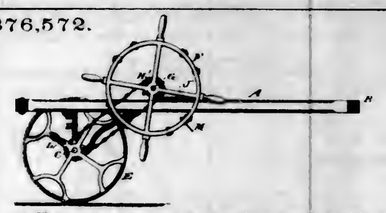
10. The combination, with the two shaft-sections, D D′, of the arms m l, secured, respectively, to said sections, and the disk K, free to slide relatively to said sections, and having an arm, m', engaging the arm m, and a projection, k', for engaging the arm l, substantially as herein described.

11. The combination, in a reeling-machine, with a reel, of stop mechanism having fallers and a member having a definite range of movement, and in the path of which the fallers are obtruded on the breaking of threads, and mechanism, substantially as described, for operating the reel and the movable member of the stop mechanism, and which provides for lost motion between the two, substantially as herein set forth.

376,572. HOSE-REEL. JOHN H. BACON, Homer, N. Y. Filed Jan. 23, 1887. Serial No. 225,810. (No model.)

Claim.—1. The combination, in a hose-carriage, of the loosely-mounted wheels, the spring-actuated pawl secured to one of said wheels, and the ratchet-wheel secured on the axle, with a sprocket-wheel mounted on the axle, a sprocket-wheel mounted on the reel-shaft, and an endless chain connecting together said sprocket-wheels, the whole so combined and arranged that when the carriage is pushed forward the reel is caused to revolve and wind up the hose, and when pulled backward the reel remains at rest, substantially as specified.

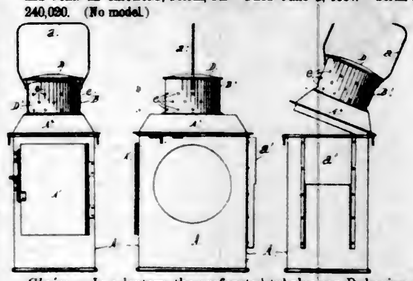
376,572.



2. The combination, in a hose-carriage provided with ground-wheels loosely mounted upon the axle, with a locking device adapted to lock said wheels, so that when the carriage is pushed forward the reel is caused to revolve, of a sprocket-wheel rigidly secured on the axle, a sprocket-wheel loosely mounted on the reel-shaft and adapted to clutch with one of the hubs of the reel, an endless chain connecting said wheels, and a lever pivoted on one of the side bars and engaging the loosely-mounted sprocket-wheel, whereby the reel can be thrown into and out of operation at will, substantially as specified.

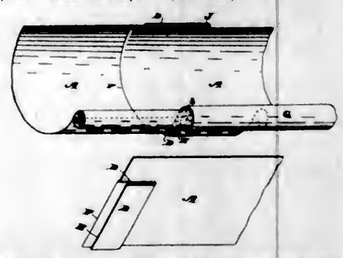
3. In a hose-carriage provided with loosely-mounted ground-wheels, a locking device adapted to lock said wheels to the axle, so that when the carriage is pushed forward the reel is caused to revolve and wind up the hose, and when forced in the opposite direction the reel remains at rest, in combination with a sprocket-wheel rigidly secured on the axle, a sprocket-wheel loosely mounted on the reel-shaft and adapted to clutch with one of the hubs of the reel, and an endless chain connecting the said sprocket-wheels, whereby the reel is caused to revolve in unison with the ground-wheels, substantially as shown and described.

376,573. SIGNAL-LANTERN. WILLIAM K. BEARD, Lancaster, and JOHN M. RAYMOND, Florin, Pa. Filed June 2, 1887. Serial No. 240,020. (No model.)



Claim.—In a lantern, the perforated tubular cap D, having upright slots d and transverse slots d', connecting with the upper ends thereof, in combination with handle a, having ends bent into said slots and movable therein, and a fixed perforated collar, within which said cap fits, said cap being free to turn on said collar.

376,574. EAVES-TROUGH. WILSON C. BERGER, Canton, Ohio, assignor to the Berger Manufacturing Company, same place. Filed Oct. 14, 1887. Serial No. 252,304. (No model.)

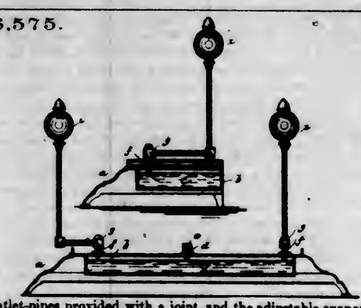


Claim.—As a new article of manufacture, an eaves-trough having on one of its ends a slip-joint formed, essentially, by cutting away a portion of the sheet from X to X, the narrowed end folded to form a groove, as D, and the end of said groove covered by the roll G, formed of the projecting edge H, substantially as shown and described, and for the purpose set forth.

376,575. COMBINED FIRE-PLACE FENDER AND AIR-MOISTENER. THOMAS BRADFORD, Allegheny, Pa. Filed Dec. 7, 1886. Serial No. 220,946. (No model.)

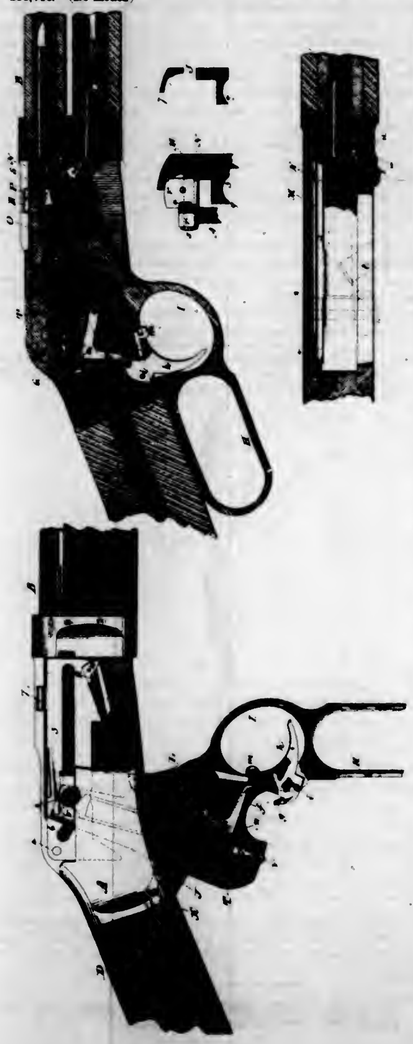
Claim.—The combination, with the fender a, of the water-tank below the upper surface thereof, a feed-aperture provided with a cap,

376,575.



the outlet-pipes provided with a joint, and the adjustable evaporators, substantially as described.

376,576. MAGAZINE FIRE-ARM. JOHN M. BROWNING and MATTHEW S. BROWNING, Ogden, Utah, assignors to the Winchester Repeating Arms Company, New Haven, Conn. Filed Nov. 21, 1887. Serial No. 255,710. (No model.)



Claim.—1. The combination of a receiver having a vertical recess therein, a barrel at the forward end of the receiver opening into said recess, a breech-piece in length corresponding to said recess in the receiver and adapted to rest in its closed position against the rear end of the said recess in the receiver to resist recoil, the said breech-piece provided with an extension therefrom beneath the receiver by which the said breech-piece may be moved, the receiver constructed with a longitudinal groove in one side of said recess, and the breech-piece provided with a stud near its forward end adapted to work in said longitudinal groove, with a link hung by one end to the receiver in rear of the breech-piece and hung by the other end to the breech-piece near its rear end, substantially as described.

2. In a fire-arm having the barrel opening into the receiver at the rear, a breech-piece arranged in said receiver, the said receiver constructed upon its inner side with a longitudinal groove, and the breech-piece provided with a stud projecting therefrom adapted to work in said groove, the breech-piece also adapted to take a bearing at the rear end of the recess in the receiver, a link, one end pivoted to the receiver in rear of the breech-piece, the other end of the link constructed with a transverse trunnion arranged in a corresponding recess in the breech-piece, a hammer arranged longitudinally in the breech-piece above the said trunnion and provided with a mainspring, a sear in the receiver hung eccentrically to the axis of said trunnion, the hammer constructed with a shoulder corresponding to the nose of the said sear, the nose of the said sear being adapted to engage the shoulder on the hammer in the closing movement of the breech-piece, with a trigger arranged to engage said sear when the breech-piece is in the closed position, substantially as described.

3. The combination of a receiver, a barrel opening at the rear into said receiver, a breech-piece arranged in said receiver and adapted to swing in a vertical plane in opening and closing, the receiver constructed with a longitudinal groove in one side, the breech-piece provided with a stud corresponding to and adapted to work in said longitudinal groove, the said breech-piece adapted at its rear end to take a bearing on the receiver, a link hung by one end to the receiver in rear of the breech-piece, the other end of the link hung to the breech-piece and so that the breech-piece may turn thereon in its opening and closing movement, a double-bevel spring-latch in said breech-piece, and corresponding notch in the receiver, through which said latch is adapted to engage when the breech-piece is in the closed position, substantially as described.

4. The combination of a receiver, a barrel opening at the rear into said receiver, a breech-piece arranged in said receiver and adapted to swing in a vertical plane in opening and closing, the receiver constructed with a longitudinal groove in one side, the breech-piece provided with a stud corresponding to and adapted to work in said longitudinal groove, the said breech-piece adapted at its rear end to take a bearing in the receiver, a link hung by one end to the receiver in rear of the breech-piece, the other end of the link hung to the breech-piece and so that the breech-piece may turn thereon in its opening and closing movement, a tubular hammer arranged in a corresponding longitudinal recess in said breech-piece, a double-bevel latch arranged in the breech-piece in rear of said hammer, the recess in the receiver being constructed with a notch corresponding to the nose of the said latch, and a spring within said tubular hammer, the rear end of said spring resting against said latch and the other end against the hammer, substantially as described, and whereby said spring serves the double purpose of mainspring for the hammer and a spring for said latch.

5. The combination of a receiver, a barrel opening at the rear into said receiver, a breech-piece arranged in said receiver and adapted to swing in a vertical plane in opening and closing, the receiver constructed with a longitudinal groove in one side, the breech-piece provided with a stud corresponding to and adapted to work in said longitudinal groove, said breech-piece adapted at its rear end to take a bearing in the receiver, a link hung by one end to the receiver in rear of the breech-piece, the other end constructed with a transverse trunnion working in a corresponding recess in the breech-piece and upon which the said breech-piece swings in its opening and closing movement, a tubular hammer arranged in a corresponding longitudinal recess in said breech-piece, a mainspring arranged within said tubular hammer, supported at its rear end, and at its forward end adapted to bear against the hammer, a sear hung eccentrically upon the trunnion of the said link, the hammer constructed with a shoulder with which the nose of the said sear is adapted to engage, the sear constructed with a finger extending downward therefrom, and a trigger hung in the breech-piece and constructed with a shoulder adapted to engage the said finger of the sear, substantially as described.

6. The combination of a receiver, a barrel opening at the rear into said receiver, a breech-piece arranged in said receiver and adapted to swing in a vertical plane in opening and closing, the receiver constructed with a longitudinal groove in one side, the breech-piece provided with a stud corresponding to and adapted to work in said longi-

tudinal groove, said breech-piece adapted at its rear end to take a bearing in the receiver, a link hung by one end to the receiver in rear of the breech-piece, the other end constructed with a transverse trunnion working in a corresponding recess in the breech-piece and upon which the said breech-piece swings in its opening and closing movement, a tubular hammer arranged in a corresponding longitudinal recess in said breech-piece, a mainspring arranged within said tubular hammer, supported at its rear end, and at its forward end adapted to bear against the hammer, a sear hung eccentrically to the trunnion of the said link, the hammer constructed with a shoulder with which the nose of the said sear is adapted to engage, a trigger arranged in the breech-piece and adapted to engage said sear when the breech-piece is in the closed position, with a sliding dog arranged in the trigger forward of its pivot, and a corresponding bearing for the dog in the breech-piece forward of the trigger, substantially as and for the purpose described.

7. The combination of a receiver having a vertical recess therein, a barrel at the forward end of the receiver opening into said recess, a breech-piece in length corresponding to said recess in the receiver and adapted to rest in its closed position against the rear end of the said recess in the receiver to resist recoil, the said breech-piece provided with an extension therefrom beneath the receiver by which the said breech-piece may be moved, the receiver constructed with a longitudinal groove in one side of said recess, and the breech-piece provided with a stud near its forward end, adapted to work in said longitudinal groove, with a link hung by one end to the receiver in rear of the breech-piece and hung by the other end to the breech-piece near its rear end, the receiver constructed with an opening through its side opposite the said groove, and the said opening forming a longitudinal bearing-surface parallel with the said groove, a block pivoted to said breech-piece near its forward end and adapted to work upon said parallel surface as its guide, with a spring-extractor hook arranged in said block, and an ejector-shoulder opposed to said extractor as the said extractor approaches its extreme rear position, substantially as described.

8. The combination of the receiver having a vertical recess therein adapted to receive the breech-piece, a barrel opening into the receiver at the rear, a magazine beneath the barrel also opening into the receiver at the rear, a breech-piece in length corresponding to said recess in the receiver and adapted to rest in its closed position against the rear end of the said recess in the receiver to resist recoil, the said breech-piece provided with an extension therefrom beneath the receiver by which the said breech-piece may be moved, the receiver constructed with a longitudinal groove in the said recess, and the breech-piece provided with a stud in its forward end adapted to work in said longitudinal groove, with a link hung by one end to the receiver in rear of the breech-piece and hung by the other end to the breech-piece near its rear end, a carrier hung in the receiver and so as to swing in a plane parallel with the plane of movement of the breech-piece, said carrier constructed with a longitudinal slot corresponding to the groove in the receiver and through which the said stud on the breech-piece extends, the said slot in the carrier constructed with an oblique termination at its rear end, substantially as described.

9. The combination of the receiver having a vertical recess therein adapted to receive the breech-piece, a barrel opening into the receiver at the rear, a magazine beneath the barrel also opening into the receiver at the rear, a breech-piece in length corresponding to said recess in the receiver and adapted to rest in its closed position against the rear end of the said recess in the receiver to resist recoil, the said breech-piece provided with an extension therefrom beneath the receiver by which the said breech-piece may be moved, the receiver constructed with a longitudinal groove in the said recess, and the breech-piece provided with a stud in its forward end adapted to work in said longitudinal groove, with a link hung by one end to the receiver in rear of the breech-piece and hung by the other end to the breech-piece near its rear end, a carrier hung in the receiver and so as to swing in a plane parallel with the plane of movement of the breech-piece, said carrier constructed with a longitudinal slot corresponding to the groove in the receiver and through which the said stud on the breech-piece extends, the said slot in the carrier constructed with an oblique termination at its rear end, the under side of said carrier provided with a downward projection at its forward end, the under surface of which corresponds to the opening into the rear end of the magazine when the carrier is in its up position, and the under surface of the breech-piece constructed to correspond with the said projection and as a continuation thereof, substantially as described, and whereby the under face of the said extension of the carrier and of the breech-piece forms a guide for the introduction of cartridges to the magazine, substantially as described.

10. The combination of a receiver having a vertical recess therein adapted to receive the breech-piece, a barrel opening into the receiver at the rear, a magazine beneath the barrel also opening into the receiver at the rear, a breech-piece in length corresponding to said recess in the receiver and adapted to rest in the closed position against the rear end of the said recess in the receiver to resist recoil, the said breech-piece provided with an extension therefrom beneath the receiver by which the said breech-piece may be moved, the receiver constructed with a longitudinal groove in said recess, and the breech-piece provided with a stud near its forward end adapted to work in said longitudinal groove, with a link hung by one end to the receiver in rear of the breech-piece and hung by the other end to the breech-piece near its rear end, a carrier hung in the receiver and so as to swing in a plane parallel with the plane of movement of the breech-piece, said carrier constructed with a longitudinal slot corresponding to the groove in the receiver and through which the said stud on the breech-piece extends, the said slot in the carrier constructed with an oblique termination at its rear end, the under side of said carrier provided with a downward projection, the under surface of which corresponds to the opening into the rear end of the magazine when the carrier is in its up position, and a spring-latch hung in said projection adapted to engage the heads of the cartridges as they pass into the magazine, substantially as described.

11. The combination of a receiver having a vertical recess therein adapted to receive the breech-piece, a barrel opening into the receiver at the rear, a magazine beneath the barrel, also opening into the receiver at the rear, a breech-piece in length corresponding to said recess in the receiver and adapted to rest in its closed position against the rear end of the said recess in the receiver to resist recoil, the said breech-piece provided with an extension therefrom beneath the receiver by which the said breech-piece may be moved, the receiver constructed with a longitudinal groove in said recess, and the breech-piece provided with a stud near its forward end adapted to work in said longitudinal groove, with a link hung by one end to the receiver in rear of the breech-piece and hung by the other end to the breech-piece near its rear end, a carrier hung in the receiver and so as to swing in a plane parallel with the plane of movement of the breech-piece, said carrier constructed with a longitudinal slot corresponding to the groove in the receiver and through which the said stud on the breech-piece extends, the said slot in the carrier constructed with an oblique termination at its rear end, the under side of said carrier provided with a downward projection, the under surface of which corresponds to the opening into the rear end of the magazine when the carrier is in its up position, and a spring-latch hung in said projection adapted to engage the heads of the cartridges as they pass into the magazine, substantially as described.

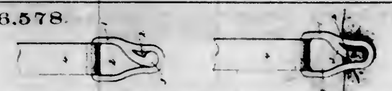
376,577. CAN-OPENER. HERMAN BRUCKERMAN, Table Rock, assignor of one-half to Frederick Bruckerman, Poker Flat, Cal. Filed Oct. 25, 1886. Serial No. 217,173. (No model.)



Claim.—A can-opener consisting of the shank I, provided with the bend D, having the notch A in one edge, and the blade C, bent substantially parallel with said shank, substantially as shown and described.

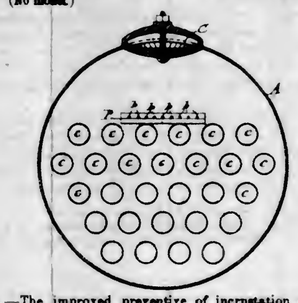
376,578. CLASP. HARRY W. BUSHLAND, Waterbury, Conn. Filed July 26, 1887. Serial No. 245,171. (No model.)

376,578.



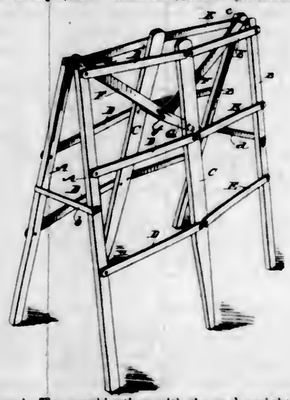
Claim.—The clasp herein described, consisting of a body having an opening and a tongue projecting inward from one side and extending down into the lower end of the opening, so that the upper portion of the opening is left clear for the insertion of a fold of a garment, which in the engaged position lies over the tongue and between the end of the tongue and the inner edge of the lower portion of the opening.

376,579. PREVENTIVE OF INCRUSTATION OF STEAM-BOILERS. CHARLES J. T. BURDET, Syracuse, N. Y. Filed Sept. 9, 1887. Serial No. 249,209. (No model.)



Claim.—The improved preventive of incrustation of steam-boilers, consisting of the iron or copper pan P, having its entire top open and perforations in its sides, and the zinc slab *a*, seated in said pan and occupying the portion below the perforations, substantially as described and shown.

376,580. CLOTHES-FRAME. SAMUEL F. BURGESS, West Morris, Conn. Filed July 8, 1887. Serial No. 243,767. (No model.)



Claim.—1. The combination, with the end uprights, A B, and central upright, C, connected together by cross-pieces D E, of the braces F, connected to the upper end of the end upright and to the central brace, G, substantially as and for the purposes set forth.

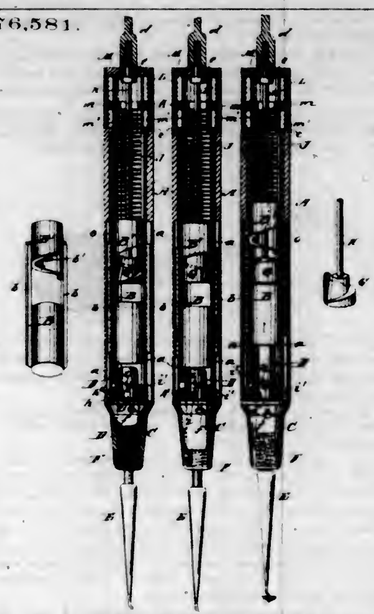
2. In a clothes-frame, the center braces connected at their outer ends to the joined ends of the end uprights and connected at their inner ends by the wire *f*, on which the brace G is pivoted, substantially as described.

376,581. DENTAL PLUGGER. BENJAMIN S. BYRNE, Memphis, Tenn. Filed July 16, 1887. Serial No. 244,508. (Model.)

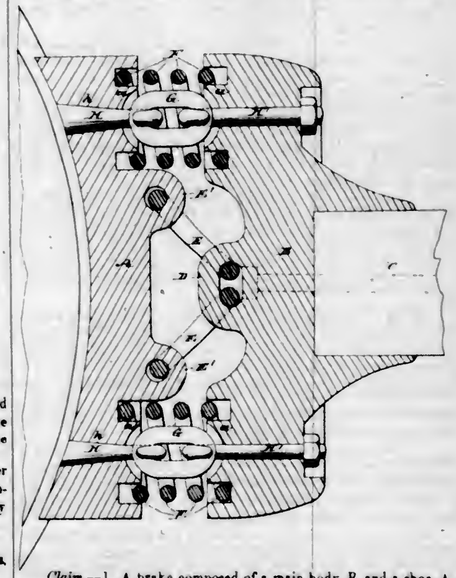
Claim.—1. The shank D and pin *h* thereof and the tip C and slot *i*, for receiving the said pin *h*, in combination with the main casing, hammer B, cam F, intermediate cam, G, spindle H, spring J, and spring *i*, placed in the main casing, with its free end in line with the slot *i*, substantially as and for the purposes described.

2. The main casing A, hammer B, cam F, intermediate cam, G, spindle H, spring J, shank D, and tip C, having slot *i*, in combination with the spring *i*, terminating over the slot *i*, and the pin *f*, attached to the spring, substantially as and for the purposes set forth.

376,581.



376,582. CAR-BRAKE. DAVID D. CHIDESTER, Hackettstown, N. J., assignor of part to George R. Knowles, New York, N. Y., and Elisha M. Osmun, Hackettstown, N. J. Filed Sept. 15, 1887. Serial No. 249,748. (No model.)



Claim.—1. A brake composed of a main body, B, and a shoe, A, connected to the main body by flexible or vertical yielding connections, in combination with springs interposed between the main body and the shoe, substantially as and for the purposes set forth.

2. The shoe A, secured to the body B by links E, in combination with the springs F, substantially as described.

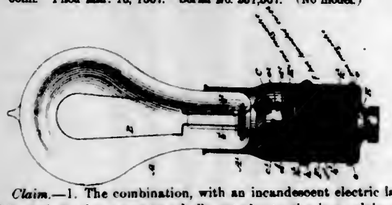
3. The shoe A, connected to the body B by the central links, E, substantially as described.

4. The shoe A, connected to the body B by bolts H H' and links G, substantially as described.

5. The shoe A, connected to the body B by the diagonal links E, substantially as described.

6. The shoe A, connected to the body B by the flexible connections H H' G and central links, E, in combination with the springs F, placed between the shoe and main body B, substantially as described.

376,583. COMBINED INCANDESCENT-ELECTRIC-LAMP SOCKET AND ELECTRICAL CONVERTER. EDWARD A. COLBY, New Haven, Conn. Filed Mar. 18, 1887. Serial No. 231,367. (No model.)



Claim.—1. The combination, with an incandescent electric lamp and its socket, of a converter wholly exterior to the lamp-globe and within the socket, and connections between one coil of the converter and the filament of the lamp.

2. The combination, with an incandescent electric lamp and a socket therefor, of an adjustable electric converter wholly exterior to the lamp-globe and within the socket.

3. The combination, with an incandescent-electric-lamp socket and electric contacts for the lamp, of an adjustable converter within the socket and wholly exterior to the lamp-globe, and consisting of an annular core, coils of wire wound thereon, a movable core placed within said annular core, and coils of wire wound upon the inner core.

4. An electric converter consisting of an annular core having inwardly-projecting lugs or pole-pieces, and a movable inner core in metallic contact therewith and extending from one of said pole-pieces to the other, and coils of wire upon said cores.

5. In an electric converter, an annular core having inwardly-projecting lugs or pole-pieces, an inner core extending from one of said pole-pieces to the other and in metallic contact therewith, and means for adjusting the position of the latter core.

6. An electric converter consisting of two cores, one adjustable with reference to the other and in metallic contact with each other, and coils of insulated wire wound upon the respective cores.

7. The combination, with an electric-lamp socket, of a cylindrical laminated core of soft iron within the socket and wholly exterior to the lamp-globe, coils of insulated wire wound thereon, and a second set of coils inductively affected by the magnetization of said core.

8. The combination, with an incandescent-electric-lamp socket, of a converter within said socket and wholly exterior to the lamp-globe, and consisting of an annular core having polar projections within said socket, coils of insulated wire wound upon said core, and a second set of coils adjustable with reference to said coil.

9. The combination, with an incandescent-electric-lamp socket, of a converter within said socket and wholly exterior to the lamp-globe, and consisting of an annular core having bare pole-pieces, supports or plates of non-magnetic material at the respective ends of said core, insulated wire wound upon said core, an adjustable core supported between said end plates, and coils of wire wound upon the last-named core.

10. The combination, with an incandescent-electric-lamp socket, of a converter within said socket and wholly exterior to the lamp-globe, and consisting of an annular core having bare pole-pieces, supports or plates of non-magnetic material at the respective ends of said core, insulated wire wound upon said core, an adjustable core supported between said end plates, coils of wire wound upon the last-named core, and means for placing the last-named coils in circuit with an incandescent-electric-lamp filament.

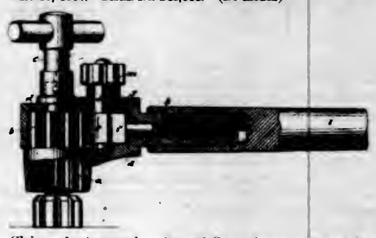
11. The combination, with a consequent-pole ring-magnet, of a straight magnet placed between the poles thereof, means for connecting the coils of one magnet in one circuit and for connecting the coils of the other magnet in another circuit, and an incandescent-electric-lamp socket containing both of said magnets.

12. An electric converter consisting of two semicircular magnets having enlarged ends, said magnets being fastened together with their ends confronting, and an independent magnet placed within the circle thus formed, substantially as described.

13. The combination, with an incandescent-electric-lamp socket, of an electric converter consisting of two cores in metallic contact with each other and adjustable with reference to each other, whereby the extent of such contact may be varied, and coils of insulated wire inductively acting upon and acted upon by such cores.

14. An electric converter consisting of two cores in metallic contact with each other, one of said cores being adjustable with reference to the other, whereby the extent of contact-surface may be varied, and coils of insulated wire upon the respective cores.

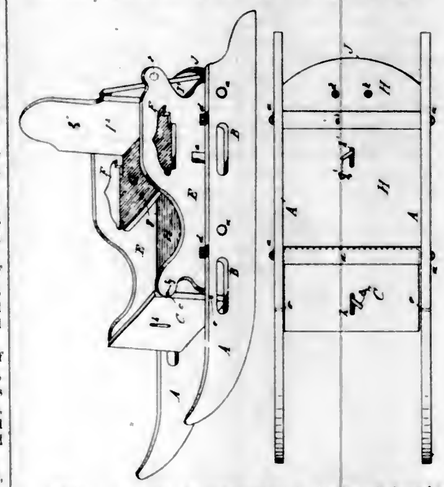
376,584. WRENCH. HENRY D. COES, Stockbridge, Mass. Filed June 10, 1887. Serial No. 240,553. (No model.)



Claim.—1. A wrench, substantially as shown and described, consisting of the socket part *a*, the grooved piece *b*, the recessed arm *d*, the circular duplex pawl-piece *e*, the partly-circular pawl-teeth *h h*, the surfaces *i i*, the shaft *f*, on which the pawl-piece *e* is mounted, a thumb-nut at its outer end, the spring *k*, fastened in the arm *d*, and the lever *l*.

2. A wrench, substantially as shown and described, consisting of the socket part *a*, the grooved piece *b*, the recessed arm *d*, the handle *c*, the circular duplex pawl-piece *e*, the partly-circular pawl-teeth *h h*, the surfaces *i i*, the shaft *f*, on which the pawl-piece *e* is mounted, a thumb-nut at its outer end, the spring *k*, fastened in the arm *d*, and the lever *l*.

376,585. SLED. JESSE A. CRANDALL, Brooklyn, N. Y. Filed Sept. 26, 1885. Renewed June 23, 1887. Serial No. 242,284. (No model.)

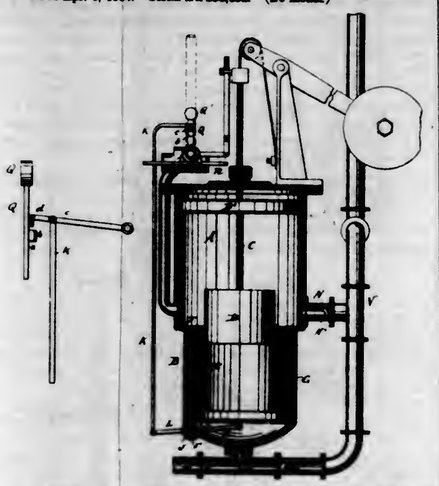


Claim.—1. In a sled, the combination of a foot-board pivoted to the runners of the sled, hinged sides provided at their forward extremities with dowels and at their rear extremities with pins, a seat, back, and support for said back, said seat, back, and support being hinged upon each other, and said foot-board, sides, seat, back, and support being capable of evolution from said sled-frame and of adjustment into the form of a sled-body, substantially as shown and described.

2. In a sled, hinged folding sides provided at their forward extremities with dowels and at their rear extremities with pins, in combination with a foot-board pivoted to the runners of the sled and a hinged folding seat and back for the same, and a support to said back, as shown and described, and for the purposes specified.

3. An auxiliary top to a sled, consisting of a floor, H, provided with a cleat, N, sockets *k k*, and slot *k'*, a foot-board, C, provided with pivots *o o*, sockets *c c* and *b b*, and slot *h*, folding sides E E, provided with sockets *e e*, openings F F, dowels *f f*, pins *j j*, hinges *d d*, and sockets *c c*, seat G, provided with hook *g* and hinges K K, back I^2, provided with hook *g'*, and support I', provided with hinges O O, said back I^2 and support I' being connected together by hinges *i i*, the whole adapted to be folded in upon the frame of the sled and form a flat surface thereon, and also adapted to be unfolded from said sled-frame and erected into the form of an upper body for the sled, having a foot-board, sides, seat, back, and support for said back, all substantially as shown and described, and for the purposes specified.

376,586. STEAM-TRAP. HENRY GRABNER, New York, N. Y. Filed Apr. 6, 1887. Serial No. 233,833. (No model.)



Claim.—1. In a steam-trap, the combination, with a steam and water cylinder, of an open-top float in the water-cylinder and a piston or plunger for forcing the water out of said float, substantially as herein shown and described.

2. In a steam-trap, the combination, with a steam and a water cylinder, of an open-top float in the water-cylinder, a lever connected with said float, and a piston or plunger for forcing the water out of said float in the water-cylinder, substantially as herein shown and described.

3. In a steam-trap, the combination, with a united steam and water cylinder, of a neck projecting into the water-cylinder, a piston in the steam-cylinder, a piston-rod on said piston, a water-forcing piston working in the neck and fixed to the lower end of said piston-rod, and an open-top float in the space between the water-cylinder and the neck projecting into the same, substantially as shown and described.

4. In a steam-trap, the combination, with a united steam and water cylinder, of a neck projecting into the top of the water-cylinder from the bottom of the steam-cylinder, an open-top float between the sides of the water-cylinder and the said neck, a pivoted lever operated by the float, and a rod operated by the said lever, which rod acts on the valves that govern the operation of the pump, substantially as shown and described.

5. In a steam-trap, the combination, with a weighted rocking lever for operating the steam-valve, of a lugged wing on said lever, a pivoted lever, *c*, having a latch, *d*, and a rod for operating the lever *c*, which rod is operated from the float in the trap, substantially as shown and described.

6. A steam-trap constructed with a steam-cylinder and a water-cylinder, and an open-top float in the water-cylinder, into which open-top float the water-forcing piston can pass to force the water out of said float, substantially as herein shown and described.

376,587. GRIP FOR TRAM-CARS. DANIEL T. DENTON, Tower Mines, Minn. Filed Oct. 15, 1887. Serial No. 252,449. (No model.)

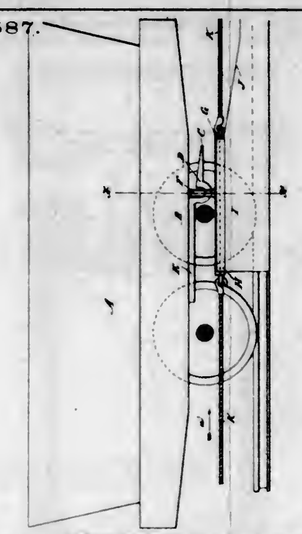
Claim.—1. In a grip for tram-cars, the combination, with a hook secured on the bottom of the car, of a staple adapted to engage the said hook, and a slide carrying the said staple and being secured to the cable, substantially as shown and described.

2. In a grip for tram-cars, the combination, with a hook secured to the bottom of the car, of a staple adapted to engage the said hook, a slide carrying the said staple and being secured to the cable, and an incline for raising the said slide, substantially as shown and described.

3. In a grip for tram-cars, a hook secured to the bottom of the car, an incline, and guides held on the upper end of the said incline, in combination with a slide secured to the cable and adapted to travel on the said incline and engage the said guides, and a staple held on the said slide and adapted to engage the said hook, substantially as shown and described.



376,587.



376,588. WALKING TOY. GEORGE T. FALLIS, St. Joseph, Mo. Filed Apr. 16, 1887. Serial No. 235,059. (Model.)



Claim.—1. A walking toy or figure provided with opposite side legs pivoted to independently swing as pendulum-rods, and having attached feet adapted to operate as pendulum balls or weights, and constructed on their bottom surfaces to form rockers, substantially as and for the purposes herein set forth.

2. In a walking toy, the pivoted opposite side legs of corresponding length and adapted to independently swing at their lower ends in parallel planes from or about an upper transverse axis common to both, in combination with attached feet transversely curved on their lower surfaces and unitedly forming a lateral rocker to the toy, essentially as shown and described.

3. In a walking toy, the independently-swinging pendulum-like legs A A on opposite sides of the figure or toy, in combination with the pendulum-weight-like feet B B, of convex construction on their lower surfaces from back to front, whereby the toy, when walking, is made to rock forward, essentially as specified.

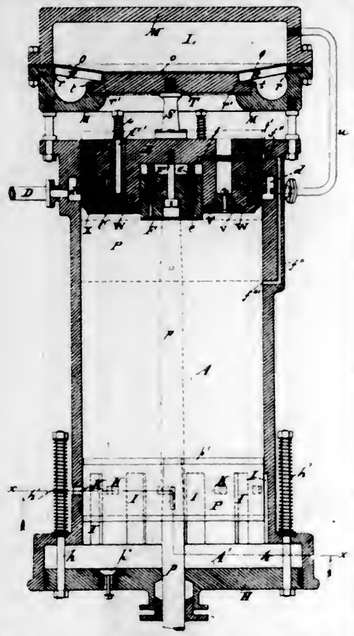
4. In a walking toy, the independently-swinging pendulum-rod-like legs A A on opposite sides of the toy, in combination with the pendulum-weight-like feet B B, of transverse and longitudinal convex curvature on their lower surfaces, substantially as described, and for the purposes herein set forth.

5. In combination with the pivoted legs A A, the attached feet B, of convex curvature in direction of their width on their lower surfaces and with their outer side margins at a higher elevation and nearer to the axis of motion of the legs than their inner side margins, essentially as shown and described.

6. A walking toy having one or more pairs of upper pivoted opposite side legs with attached rocker-like feet adapted to provide for both the forward and lateral rocking of the toy on their ground or lower surfaces, and the legs being adapted to independently swing forward in parallel planes at or near the feet, substantially as described, and for the purposes herein set forth.

7. In a walking toy having independently-swinging opposite side legs and rocker-like feet, the toy or frame thereof, constructed of two independent pieces of wire bent, respectively, to form the feet B B, legs A A, coils *g g'*, adapted to provide for the independent swinging of the legs, arms *f f*, and head and trunk in the form of loops *h d*, essentially as shown and described.

376,589. AIR-COMPRESSOR. WILLIAM T. FORSTER, Kansas City, Mo. Filed Aug. 5, 1886. Serial No. 210,127. (No model.)



Claim.—1. In an air-compressor, the combination, with the air-cylinder having a single movable head adapted to act as the exhaust-valve of the compressor, of an equalizer provided with a flexible side connected with the movable head of the cylinder and adapted to contain air at the same degree of pressure as is produced in the cylinder, substantially as and for the purposes set forth.

2. In an air-compressor, the combination of the cylinder A, having the port *d*, and provided with the single movable head B, having the valve C and cup E, with the equalizer L, communicating with the reservoir of compressed air, so as to contain air at the same degree of pressure as is produced in the air-cylinder, and provided with the flexible sheet O, plates R, and central disk, T, connected with the movable head B, and having the projecting rim *t* for acting upon the plates R, arranged and operating substantially as described, and for the purposes set forth.

3. In an air-compressor, the equalizer L, capable of containing compressed air, having one side formed by the flexible sheet O, and the disk T, attached to the center of such flexible sheet and provided with the projecting rim *t* for acting on the plates, and the elastic plates R, resting on the frame M and on the central disk, T, substantially as and for the purposes set forth.

4. In an air-compressor, the combination, with the cylinder, of a chamber situated at the end of the compressor beyond the piston when at its lowest position, and having an inlet-valve for the passage of air into the chamber, and channels connecting the chamber with the cylinder, so constructed and arranged that the air is compressed in the chamber by the return-stroke of the piston, and is then introduced into the cylinder through the channels in front of or on the other side of the piston, substantially as and for the purpose set forth.

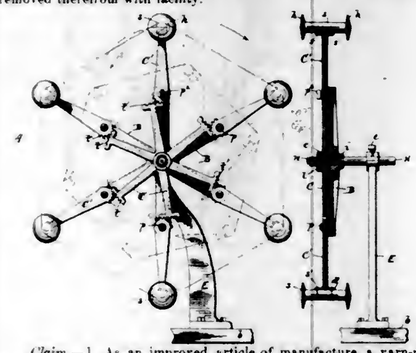
5. In an air-compressor, the combination, with the air-cylinder, of the auxiliary chamber A', having the sliding head or plate H, held in place by the spring *h'* on the rod *h*, and provided with the inlet-valve *h''*, and having in the walls of the cylinder the holes K for the escape of air and the channel I for the passage of the compressed air from the chamber A' to the cylinder, substantially as described, and for the purposes set forth.

6. In an air-compressor, the combination, with the cylinder-head B, of the movable cup E, fitting and moving in a recess in such head, and constructed with the cavity or air-space F on its outer face, and provided with the channels *e* and springs *e'*, and having the space or recess F between the cup and head communicating with the channel *f* in the head and the channel *f''* in the wall of the cylinder, so that the air confined in the cavity F can pass into the cylinder back of the piston-head, substantially as and for the purposes set forth.

7. An air-compressor having the port *d* in the walls of the cylinder, and the sliding head B, adapted to form the exhaust-valve, provided with the cup E and inlet-valve C, and the equalizer L, communicating with the reservoir of compressed air, for the purpose set forth, and provided with the flexible sheet O, elastic plates R, and central disk, T, connected with the sliding head B, and having the projecting rim *t* for acting on the elastic plates R, and the auxiliary chamber A', having the sliding plate H, held in place by the springs *h'* or the rods *h*, and provided with the valve *h''* and with the hole K and channels I, for the purpose described, all arranged and operating substantially as described, and for the purposes set forth.

376,590. YARN-REEL. CHARLES S. FOSTER, Pawtucket, R. I. Filed May 11, 1887. Serial No. 237,830. (No model.)

Brief.—The object of the invention is to produce a yarn-reel of improved construction, whereby the yarn may be placed thereon or removed therefrom with facility.

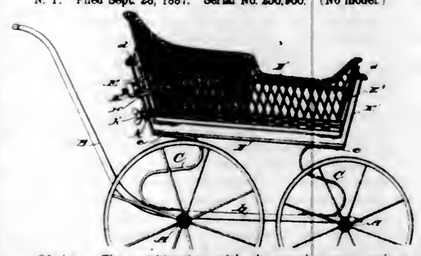


Claim.—1. As an improved article of manufacture, a yarn-reel consisting of a series of yarn-carrying toothed arms, a center portion having said arms pivotally mounted and secured thereto, and a loosely-mounted toothed wheel meshing with the arms and having stops, as *f*, for limiting the rearward movement of said toothed arms, all combined, arranged, and operating substantially as described, and for the purpose specified.

2. A yarn-reel having a center portion adapted to revolve on its axis, a series of toothed arms adapted to carry yarn arranged around said center portion and pivoted thereto, a loosely-mounted toothed wheel engaging the several toothed arms, and a stop for limiting the angular movement of said arms and wheel, substantially as hereinbefore described.

3. The combination of the center portion or spider, B, a loosely-mounted toothed wheel, as C, having a series of stop-teeth, *f*, a series of toothed yarn-carrying arms, as C', pivotally mounted to the said spider B and meshing with the wheel C, and means for simultaneously securing the said arms in position after adjustment, the whole constructed, arranged, and operating substantially as shown and described, and for the purpose specified.

376,591. CHILD'S CARRIAGE. EUGENE A. GERRACHTY, New York, N. Y. Filed Sept. 28, 1887. Serial No. 250,900. (No model.)

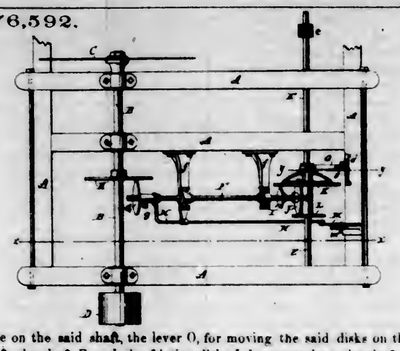


Claim.—The combination, with the running-gear, springs, and spring-bars of a child's carriage and the body of the carriage, of the brackets E and E', the plates E^2 and E^3, attached to the ends of the body and provided with pivots, the bar *b*, attached to the bracket E, and a locking device carried by the bar *b*, all arranged for operation substantially in the manner and for the purpose set forth.

376,592. SAW-MILL-FEED DEVICE. W. HAMPTON GIBBES, Jr., Columbia, S. C. Filed June 29, 1887. Serial No. 242,374. (No model.)

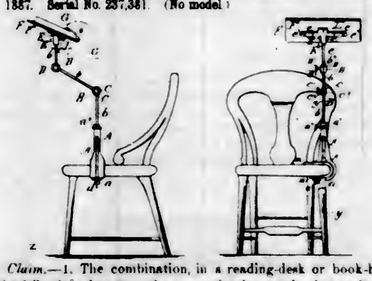
Claim.—1. In a saw-mill-feed device, the combination of the carriage-feed shaft E, the friction-disks K L, of unequal size and fitted to slide on the said shaft, the lever O, for moving the said disks on the shaft, the shaft F, and the friction-disks I J, mounted on the shaft F and of unequal size, the two sets of disks being so arranged with respect to each other that the smaller disk of one set engages the larger of the other, substantially as herein shown and described.

376,592.



2. In a saw-mill-feed device, the combination of the carriage-feed shaft E, the friction-disks K L, fitted to slide on the said shaft, the disks being of unequal size and the disk K having an open-disked central part, the lever O, for sliding the disks, the shaft F, and the friction-disks I J, mounted on shaft F and of unequal size, the two sets of disks being so arranged with respect to each other that the smaller disk of one set engages the larger disk of the other, substantially as herein shown and described.

376,593. READING-DESK OR BOOK-HOLDER. HENRY B. GREIWAWALT, Millersville, and JACOB B. URBAN, Conestoga, Pa. Filed May 6, 1887. Serial No. 237,381. (No model.)

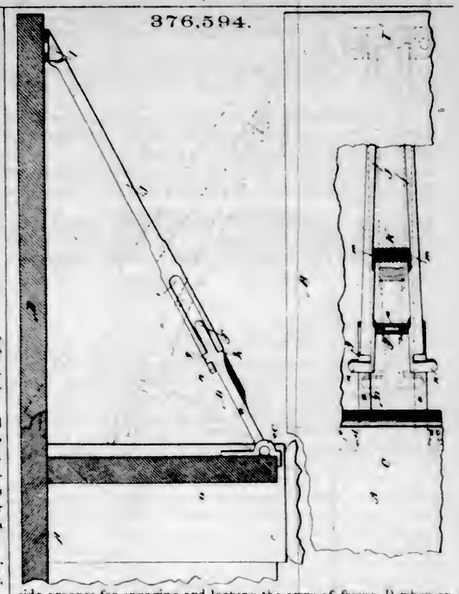


Claim.—1. The combination, in a reading-desk or book-holder, of the following elements: the supporting-base A, having on its lower end two inwardly-projecting lugs, *a a*, adapted to engage with and be held in position on a chair, as set forth, its upper part being provided with a socket to receive the lower end of the supporting-rod B, said rod being composed of the several parts *b'*, b^2, and b^3, which are connected by the knuckle-joints C and D, the upwardly-projecting end of said column being adapted to fit in the vertical socket *c'*, to the top of which is attached the tablet F, having on its lower edge the cleat F^2, said cleat being recessed to receive the leaf-holder G, when constructed and operated as set forth and described.

2. In a reading-desk or book-holder, the combination, with the supporting-base A, rod B, and tablet F, of the knuckle-joint C, composed of the following elements: the disks C^2 and C^3, integral with the parts *b* and *b'*, with their inner faces provided with ratchet-teeth *c'*, adapted to mesh with each other, also with annular recesses *c*, spring H, adapted to fit said recesses, and the thumb-screws C', adapted to compress said spring and hold the disks C^2 and C^3 together, the ratchet-teeth *c'* being meshed, substantially as set forth and described.

3. In a reading-desk or book-holder, the combination, with the supporting-base A, rod B, and tablet F, of the leaf-holder G, rectangular in form and composed of the following elements: the side *g*, and the upwardly-projecting sides *g'* and *g'*, and the inwardly-projecting ends g^2 g^2, terminating at g^3, the base *g* being surrounded by a coil-spring, I, adapted to keep the holder in position on the book, as set forth, and the hook L, adapted to keep the holder firm on the same, as set forth and described.

376,594. TABLE-LEAF SUPPORT. FREDERICK A. HARTER, Chicago, Ill. Filed July 12, 1887. Serial No. 244,106. (No model.)



Claim.—1. The U-shaped frame D, pivotally secured to the table-frame, and the bars J, pivotally secured to the extension-leaf, said frame D having cylindrical bar *f* and the bars J being pivotally connected thereto, being pushed apart by spring K, and provided with side grooves for engaging and locking the arms of frame D when on a relative straight-line position therewith, substantially as set forth.

2. The U-shaped frame D, pivotally secured to the table-frame, and the bars J, pivotally secured to the extension-leaf, and pivotally connected to bar *f* of frame D, said bars J being provided with side grooves for engaging and locking the arms of frame D when on a relative straight-line position therewith, and with suitable stops or shouldering lugs that will allow the parts to fold in one direction only, substantially as set forth, to operate as specified.

3. The U-shaped frame D, pivotally secured to the table-frame, and having cylindrical bar *f*, lug *g*, and shoulder *h*, and the bars J, pivotally secured to the extension-leaf and provided with slots *i*, and with side grooves for pivotally connecting with frame D and for engaging and locking the arms of such frame when on a relative straight-line position, and with lugs *n*, to allow the parts to fold in one direction only, and the spring K, for pushing the bars J apart, all substantially as set forth, to operate as specified.

376,595. PORTABLE CLEAT. CHARLES P. HAWLEY, New York, N. Y. Filed Apr. 26, 1887. Serial No. 236,176. (No model.)



Claim.—A cleat constructed of one piece of wire, consisting, essentially, of a body portion, a transverse guide attached to the under side of the body extending outwardly from both sides, an eye in one end of the body, a vertical twisted shank integral with said body, and outwardly-extending diverging arms integral with said shank, substantially as shown and described.

376,596. COMBINED SCISSORS AND FILE. CHARLES P. HAWLEY, New York, N. Y. Filed May 5, 1887. Serial No. 237,222. (No model.)



Claim.—1. The combination, with a pair of scissors, of a file attached to the thumb-ring thereof, substantially as shown and described.

2. The combination, with a pair of scissors, of a file hinged thereto adapted to fold out therefrom and parallel therewith, substantially as shown and described.

3. The combination, with a pair of scissors, of a spring-actuated file hinged to the thumb-ring thereof, substantially as shown and described.

4. The combination, with a pair of scissors, of a file hinged thereto provided with an integral spring, whereby said file is retained in given positions, substantially as shown and described.

5. A nail-file, B, split at one end to form the hinge portion *c* and spring *c'*, substantially as shown and described, and for the purpose herein set forth.

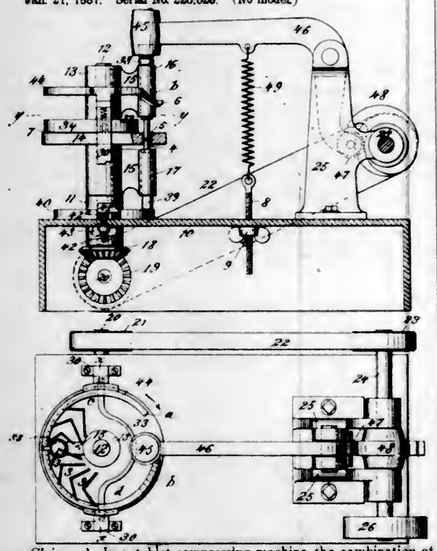
376,597. MANUFACTURE OF BUTT-HINGES. HENRY HOFFMAN, Jr., South Norwalk, Conn., assignor to the Norwalk Lock Company, same place. Filed Sept. 26, 1887. Serial No. 250,655. (No model.)



Claim.—1. That improvement in the manufacture of wrought-metal butt-hinges which consists in forming the blanks with projections therefrom on the ear sides in the plane of the blanks, splitting the said projections from their rear edge inward and in a plane substantially parallel with the plane of the blank, and then turning such split portions outwardly and returning them into tubular shape, and so as to form tubular ears on the edge of the blank, substantially as and for the purpose described.

2. The improvement in the manufacture of sheet-metal butt-hinges which consists in first forming blanks corresponding to the respective leaves of the hinge, each blank formed with projections upon one edge corresponding in length to the ears required for the said leaves, then splitting the said projections from their rear edge inward and in a plane substantially parallel with the plane of the blank, and then turning such split portions outwardly and closing them around a metal tube in length corresponding substantially to the length of said projections, and substantially as described.

376,598. COMPRESSOR. HARRY H. JONES, Lancaster, N. H. Filed Jan. 21, 1887. Serial No. 225,023. (No model.)



Claim.—1. In a tablet-compressing machine, the combination of an apertured disk, a feed-box held in yielding contact with the disk, plungers secured to the disk and registering with the aperture or apertures therein, and means for revolving the disk and plungers and for forcing the plungers together, substantially as herein shown and described.

2. In a tablet-compressing machine, the combination, with an apertured revoluble disk, of a feed-box arranged above the disk, angular plates carried by the feed-box and extending inward over the face of the disk, plungers mounted to register with the disk-aperture, and a means, substantially as described, for forcing the plungers together, as and for the purpose stated.

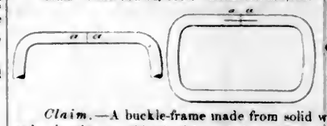
3. In a tablet-compressing machine, a feed-box formed of two sections, 33 and 34, bolted together, the section 34 being provided with the angular plates 3, substantially as herein shown and described.

4. In a tablet-forming machine, the combination, with a vertical shaft and a means for revolving the same, of a sleeve keyed to the shaft, an apertured disk carried by the sleeve, vertically-slotted tubes, also carried by the sleeve, a feed-box arranged above the disk, plungers mounted within the tubes carried by the sleeve and arranged to register with the disk-aperture, adjustable cams arranged in connection with the lower plunger, a pin carried by the upper plunger and projecting outward through the slot of the tube within which the plunger is mounted, a broken ring formed with a cam-face and arranged in the path of the pin of the upper plunger, and a means, substantially as described, for forcing the plungers together, as and for the purpose stated.

5. In a tablet-compressing machine, the combination, with a vertical shaft and its support, of a sleeve, 13, carried by said shaft, a disk, 14, carried by the sleeve, a bushing, 5, fitted within the disk, tubes 16 and 17, carried by the sleeve 13, plungers 38 and 39, arranged within the tubes, standards 30, formed with projections 32, a feed-box made up of outer sections, 33 and 34, the section 33 being formed with vertical slots to receive the projections 32, springs 31, a broken ring, 44, formed with a cam-face, *b*, a ring, 40, provided with adjustable cam-sections 41 and 41ª, a hammer, 45, a hammer-supporting lever, 46, a cam, 48, a spring arranged in connection with the hammer, and a driving mechanism, substantially as described.

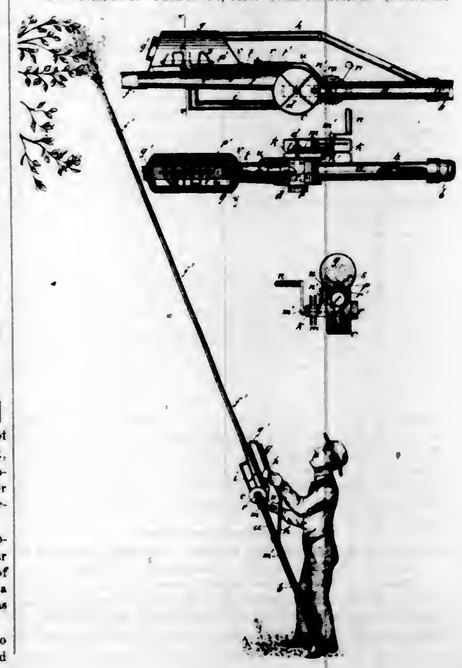
6. In a tablet-compressing machine, the combination, with a revolving apertured disk and plungers, of the feed-box arranged above the disk and provided with recesses, upwardly-projecting standards provided with shoulders and with inwardly-extending projections fitting in the recesses of the feed-box, and springs interposed between the shoulders and feed-box, substantially as herein shown and described.

376,599. BUCKLE-FRAME. GEORGE R. KELSEY, West Haven, Conn. Filed Oct. 31, 1887. Serial No. 253,809. (No model.)



Claim.—A buckle-frame made from solid wire having the two ends abutting, combined with an independent piece of wire inclosed in the body of said abutting ends and extending across the joint between them, substantially as described.

376,600. INSECT-POWDER DISTRIBUTER. CLINTON H. LEGGETT, New York, N. Y. Filed Nov. 1, 1887. Serial No. 253,943. (No model.)



Claim.—1. In a powder-distributer, the combination, with an air-forcing device and an air-ejecting tube leading therefrom, of a powder-reservoir communicating with the air-tube, and a sieve-plate in the connection, with an agitator working over the sieve in the reservoir and operating simultaneously with the air-forcing device, substantially as set forth.

2. A powder-distributer consisting in the combination, with a staff or pole, of an air-forcing device mounted thereon, an air-tube extending therefrom, and a powder-reservoir communicating with the air-tube, substantially as set forth.

3. The improved powder-distributer consisting of the combination of the supporting-staff, the air-forcing device, the extensible sectional air-tube extending therefrom, with the powder-reservoir discharging into the air-tube, the agitator working in the reservoir, and the manipulating device operatively connected to the agitator and air-forcing device to simultaneously actuate the same, substantially as set forth.

4. The combination of the staff *a* and posts *b*, secured thereto, fan *c d*, mounted on post, air-tube *f*, leading from fan, reservoir *g*, communicating with air-tube, agitator *s*, reciprocating therein, wheel-train *m*, operating fan *c d*, and crank *m'*, operatively connected to wheel-train and agitator, substantially as set forth.

5. In a powder-distributer, the combination, with the fan *c d* and air-tube *f*, of the reservoir *g*, discharging into air-tube, agitator *s*, working in reservoir, operating-rod *r*, pitman *u*, wheel-train *m*, and cranks *n n'*, substantially as shown and described.

6. In a powder-distributer, the combination, with the powder-reservoir, of an agitator, such as *s*, working therein and extending around the walls or sides of the reservoir to or about the middle thereof, substantially as and for the purpose set forth.

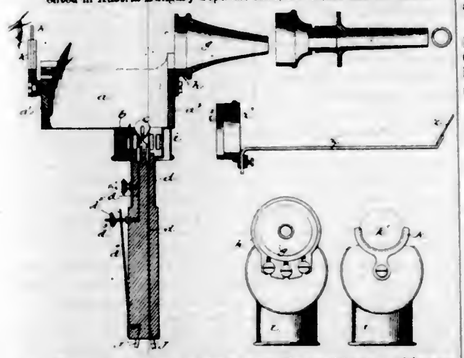
7. In a powder-distributer, the combination, with a powder-reservoir, of the agitator *s*, working therein, operating-rod *r*, connected to agitator, packing-washer *v* on said rod, and bearing *t*, guiding the operating-rod, substantially as set forth.

8. The combination, with the supporting-staff *a*, of the fan *c d*, mounted thereon, the air-tube *f*, leading from fan, reservoir *g*, opening into air-tube, and brace *h* between staff and reservoir, substantially as shown and described.

9. The combination, with the staff, of the fan *c d*, mounted thereon, air-tube *f*, leading from fan, reservoir *g*, opening into air-tube, and braces *h i* between staff and reservoir and fan and air-tube, respectively, substantially as shown and described.

10. The combination, with the supporting staff or post, of the fan *c d*, mounted thereon, air-tube *f*, leading from fan, extensible sections *f'*, joined to air-tube, reservoir *g*, opening into air-tube, agitator *s* in reservoir, wheel-train *m*, pitman *u* between wheel-train and agitator, and cranks *n n'*, for operating wheel-train and pitman, substantially as shown and described.

376,601. LARYNGOSCOPE. JOSEF LEITER, Vienna, Austria-Hungary. Filed May 14, 1887. Serial No. 238,260. (No model.) Patented in Austria-Hungary Sept. 25, 1887, No. 11,020 and No. 40,070.



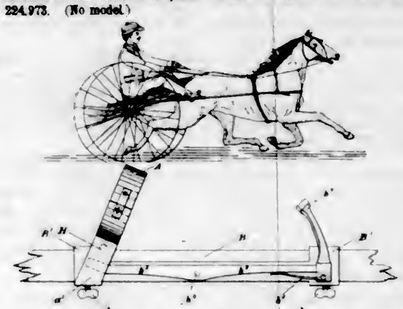
Claim.—1. In a surgical instrument, the combination, with a cylindrical casing open at the top, of an electric lamp held on the inside of the said casing, and a concave reflector for throwing the rays of light from the electric lamp into the cavity to be examined and in line with the eye of the operator, substantially as shown and described.

2. In a surgical instrument, the combination, with a cylindrical casing open at the top, of an electric lamp held inside of the said casing, a reflector held on the inside of the casing, and a ring held on the casing and adapted to receive instruments passed into cavities of the human body, the said reflector being so arranged as to throw the rays of light from the lamp into the said ring, substantially as shown and described.

3. In a surgical instrument, the combination, with a cylindrical casing closed at the ends and open at the top, of an electric lamp held in the inside of the said casing, a reflector held on the inside of one end of the casing, a vertically-adjustable ring held on the other end of the casing and into which are thrown the rays from the reflector, and a movable lens-holder held on the rear of the reflector and in line with the said ring, substantially as shown and described.

4. In a surgical instrument, the combination, with a cylindrical casing, of a perforated tube projecting downward from the said casing, a shell surrounding the said perforated tube, and an electric lamp held on the inside of the said perforated tube, substantially as shown and described.

376,602. MECHANISM FOR TIMING HORSES. HARRY A. LEONARD and GOVER KETTLEWELL, Baltimore, Md., assignors of one-third to Richard S. Culbreth, same place. Filed Jan. 20, 1887. Serial No. 224,973. (No model.)



Claim.—1. A timer for a vehicle, having an actuating-stem, as H, in combination with an attaching device having a standard, as *a'*, perforated to receive the stem of the timer and provided with means for securing it to a suitable part of the vehicle, and a separate and detached lever suitably pivoted and arranged in position to co-operate with the stem of the timer and the foot of the occupant, substantially as described.

2. An attaching device for a timer, consisting of the piece B and the lever b^3, pivoted thereto, in combination with a standard, as *a'*, for supporting a timer, and perforated to receive the stem of the timer in position to be actuated by the lever, substantially as described.

3. An attaching device for a timer, having the lever b^3 suitably pivoted thereto, the standard, as *a'*, slotted, as shown, to receive the end of said lever and limit its movement, in combination with the timer provided with an actuating-stem, H, arranged to enter the slot in position to be actuated by the end of the lever, substantially as shown.

4. An attaching device for a timer, having the lever b^3 suitably pivoted thereto, in combination with a timer having an actuating-stem, as H, arranged in position to co-operate with the end of said lever, and means independent of each other for limiting the movements of the stem and lever, substantially as described.

376,603. ARTIFICIAL TOOTH-CROWN. JAMES B. LOW, Chicago, Ill. Filed Feb. 12, 1885. Renewed Apr. 15, 1887. Serial No. 234,952. (No model.)



Claim.—1. An artificial tooth-crown consisting of a metal part or base adapted for attachment to the natural root and a porcelain body or veneer, said portion and body or veneer and the metal part being provided with closely-interfitting recesses and projections and secured together by cement, substantially as and for the purpose set forth.

2. In combination with a natural root, an artificial tooth-crown provided with a plug made larger at its outer than at its inner end and inserted in and accurately fitted to a correspondingly-shaped recess in the root, said plug being made without screw-threads or similar holding devices and secured in the said recess by cement, substantially as described.

3. An artificial tooth-crown provided with a plug, E, made larger at its outer than at its inner end, and stepped or shouldered, as shown, and adapted to fit a correspondingly-shaped recess in the root, substantially as and for the purpose set forth.

4. An artificial tooth-crown provided with a plug which is made larger at its outer than at its inner end, is accurately fitted to a correspondingly-shaped recess in the natural root, and is provided with a saucer-shaped cap or flange having its concavity on its under side fitted on the convex top of the root, said plug being without screw-threads or similar means of attachment and being secured in said recess by cement, substantially as described.

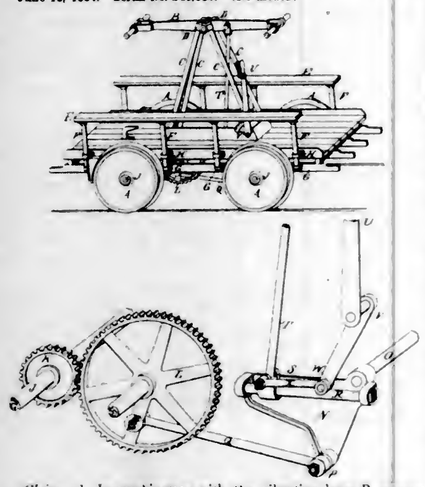
5. In combination with an artificial tooth-crown, a metal plug for attaching the crown to a natural root, said plug being larger at its upper than at its lower end and stepped and shouldered, as shown, and a cap fitted over the plug and root, said plug and cap being secured together and to the artificial crown by solder, substantially as described.

6. In combination with an artificial crown, a metal plug made larger at its outer than at its inner end and a metal cap provided with a conical flange and fitted over the top of the plug and root, said plug and cap being secured together and to the tooth-crown by solder, substantially as described.

7. In combination with an artificial tooth-crown, a plug for attaching said crown to a natural root, said plug being larger at its outer than at its inner end and fitted to a socket in the root, and an apertured cap covering the top of the root and the plug, said cap and plug being secured together and to the tooth-crown by solder, substantially as described.

8. The combination, with an artificial tooth-crown comprising a porcelain body or veneer and a metal base or socket, said porcelain body and metal base being provided with interlocking recesses and projections and secured together by cement, of a plug made larger at its outer than at its inner end and fitted to a socket in the natural root, and a cap fitted over the root and plug, said plug and cap being secured together and to the metal base or socket of the crown by solder, substantially as described.

376,604. HAND-CAR. ALBERT K. MANSFIELD, Chicago, Ill. Filed June 18, 1887. Serial No. 241,687. (No model.)



Claim.—1. In combination with the vibrating lever B, supporting-wheels A, and connecting parts between said wheels and lever, whereby vibrations of the latter produce rotation of the former, the vibrating pivot S, the non-vibrating pivot W, the connection X from one of these pivots to the other, and suitable means for changing the position of the pivot W at the will of the operator, substantially as and for the purpose described.

2. In a hand-car, the combination of operating-lever B, crank-wheel L, intermediate lever, N, hand-lever U V W, sliding pivot S, and connecting mechanism, substantially as and for the purpose described.

3. In a hand-car, the detachable seat E, in combination with suitable sockets or supports, G H, in which the seat rests, but is not permanently fixed, substantially as and for the purpose set forth.

4. In a hand-car, a support for the operating-lever formed of the combination of four inclined hollow posts, C, suitably fastened to the frame-work below and bound together by the pivot-castings D above, substantially as set forth.

376,605. PROCESS OF ORNAMENTING METAL. GEORGE MATTHEWS, New York, N. Y., assignor to The Firm of John Matthews same place. Filed Feb. 5, 1887. Serial No. 226,662. (No model.)

Claim 1. The process herein described of ornamenting metallic

376,605.



articles, which consists in depositing upon parts of a metal design a film of metal differing in color and then subjecting the whole to the sand-blast, as set forth.

2. The process of ornamenting metallic articles which consists in depositing a series of films of metal upon metallic surfaces in varying thicknesses and then subjecting the article to the action of the sand-blast, substantially as described.

3. The herein-described process of ornamenting metallic articles, which consists in depositing a series of films of metal upon metallic plate and in covering a portion of the surface of said plate with varnish between every two applications of metallic film, then coloring the same, and subjecting it to the action of a sand-blast, substantially as described.

376,606. THILL-COUPLING. LEWIS MILLER and MAURICE L. WRIGHT, Mexico, N. Y. Filed June 13, 1887. Serial No. 241,189. (No model.)



Claim.—In combination with the shackle-eyes *a* and coupling-pin *b*, the thill-iron *c*, formed with the eye-section *d*, the eye-section *d'*, hinged to the end of the section *d* and formed with the forward-projecting lip *l*, adapted to lie on the under side of the thill-iron, the lever *e*, pivoted to the top of the thill-iron, and the bail *f*, connected to the lever and embracing the lip *l*, substantially as described and shown.

376,607. QUILLER. JAMES NIGHTINGALE, New York, N. Y. Filed Jan. 8, 1887. Serial No. 223,723. (No model.)

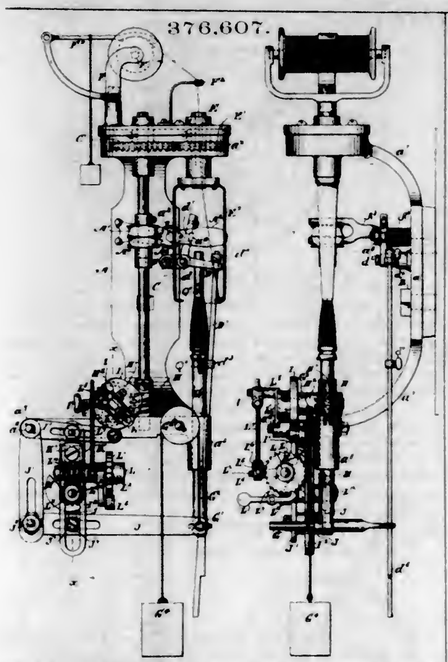
Brief.—The invention relates particularly to individual quillers, and consists in the mechanism for imparting to the quill-spindle its reciprocations.

Claim.—1. The combination, with a main shaft, of a flier operated by said main shaft, a reciprocating quill-spindle, means, substantially such as described, for raising the quill-spindle when its reciprocations are to cease, a shaft provided with a cam and extending at right angles to said main shaft and deriving motion from said main shaft, a horizontally-extending lever actuated by said cam, a horizontally-extending shaft carried by said lever, mechanism, substantially such as described, between this shaft and the shaft provided with the cam for transmitting motion from the last said shaft to the shaft carried by the lever, a cam also carried by the lever and deriving motion from the shaft which is carried by the lever, and means, substantially such as described, for transmitting motion from said second cam to the reciprocating quill-spindle, between said cam and the quill-spindle, substantially as specified.

2. The combination, with a main shaft, of a flier operated by said main shaft, a reciprocating quill-spindle, means, substantially such as described, for raising the quill-spindle when its reciprocations are to cease, a shaft driven by said main shaft and provided with a cam, a lever actuated by said cam, a shaft carried by said lever, pawl-and-ratchet mechanism deriving motion from said main shaft and transmitting motion to the shaft carried by the lever, a second cam deriving motion from the shaft which is carried by said lever, and means, substantially such as described, between this second cam and the quill-spindle for transmitting motion from said second cam to the quill-spindle, substantially as set forth.

3. The combination, with a main shaft, of a flier operated by said main shaft, a reciprocating quill-spindle, means, substantially such as described, for raising the quill-spindle when the reciprocations are to cease, a shaft deriving motion from said main shaft and provided with a cam, a lever actuated by the cam, a crank upon the shaft which is provided with a cam, a shaft carried by the lever, mechanism, substantially such as described, between this shaft and the crank aforesaid, whereby motion is transmitted from said crank to the said shaft

376,607.



which is carried by the lever, a second cam deriving motion from the shaft which is carried by the lever, and means, substantially such as described, between the second cam and the quill-spindle for transmitting motion from said second cam to the quill-spindle, substantially as specified.

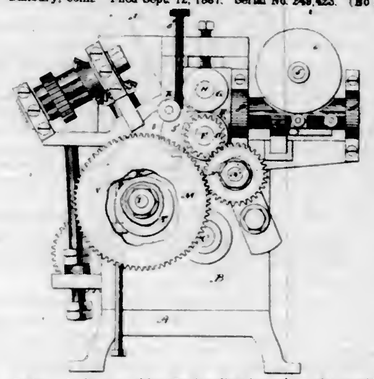
4. The combination, with a main shaft, of a flier operated by said main shaft, a reciprocating quill-spindle, means, substantially such as described, for raising the quill-spindle when its reciprocations are to cease, a shaft deriving motion from said main shaft and provided with a cam, a lever actuated by the cam, a crank-wrist, means, substantially such as described, for adjustably connecting the crank-wrist with the shaft which is provided with a cam, a shaft carried by the lever, mechanism, substantially such as described, between the shaft and the crank aforesaid, whereby motion is transmitted from the crank to said shaft which is carried by the lever, and means, substantially such as described, for transmitting motion from said second cam to the quill-spindle, between the second cam and the quill-spindle, substantially as set forth.

5. The combination, with a main shaft, C, of a flier driven by said main shaft, a shaft, H^3, also driven by said main shaft, a cam on the shaft H^3, a lever actuated by said cam, a shaft, L, carried by said lever, a pawl-and-ratchet mechanism between the shaft H^3 and the shaft L, a shaft, L^{13}, deriving motion from the shaft L and provided with a cam, M, a reciprocating quill-spindle, means, substantially such as described, for raising the quill-spindle, and means, substantially such as described, for transmitting motion from the cam M to the quill-spindle, between the cam M and the quill-spindle, substantially as set forth.

6. The combination of a main shaft, C, a flier driven by said main shaft, a shaft, H^3, driven by said main shaft, a cam affixed to said shaft H^3, a lever, I', actuated by said cam, a hanger, means, substantially such as described, whereby said hanger is adjustably connected to said lever I', a shaft carried by said hanger, mechanism, substantially such as described, between the shaft H^3 and the shaft carried by the hanger, a cam carried by the hanger for imparting motion to the last-named shaft and deriving motion from the shaft which is also carried by the hanger, a reciprocating quill-spindle, means, substantially such as described, for raising the quill-spindle when its reciprocations are to cease, a lever connected with the reciprocating quill-spindle provided with a bearing upon which the cam which is carried by the hanger operates, and means, substantially such as described, for adjusting said bearing into different positions, substantially as set forth.

7. The combination, with a main shaft, C, of a flier driven by said main shaft, a shaft, H^3, driven by said main shaft, a cam on said shaft H^3, a lever, I', actuated by the cam I, a shaft, L, carried by the lever I', a crank-wrist, means, substantially such as described, for adjustably connecting the crank-wrist with the shaft H^3, a ratchet-wheel on the shaft L, a lever carrying a pawl, a rod connected to the lever which carries the pawl, means, substantially such as described, for adjustably connecting said rod with the crank, a cam, M, carried by said lever and driven by the shaft which is carried by said lever, a reciprocating quill-spindle, means, substantially such as described, for raising said quill-spindle when its reciprocations are to cease, and means, substantially such as described, for transmitting motion from the cam M to the quill-spindle, between the cam and the quill-spindle, substantially as set forth.

376,608. MACHINE FOR BENDING HAT-WIRES. JOSEPH NUTT, Danbury, Conn. Filed Sept. 12, 1887. Serial No. 249,423. (No model.)



Claim.—1. In a machine for bending hat-wires, the combination of the bending-rolls and an oscillating guide through which the wire is led to the bending-rolls, the axis of said guide being substantially in line between the principal rolls, the said guide constructed with a circuitous passage through which the wire runs to the bending-rolls, substantially as described, whereby the wire passing through the guide is forced to partake of the oscillating movement of the guide.

2. In a machine for bending hat-wires, the combination of the bending-rolls, the oscillating guide *e*, through which the wire is led to the bending-rolls, and a wheel, 6, hung upon said oscillating guide so as to oscillate therewith, the axis of the said wheel being at substantially right angles to the axis of the said guide, so that the wire in running through the said guide passes around the said wheel, substantially as and for the purpose described.

3. In a machine for bending hat-wires, the combination of the rolls E G and the adjustable roll R with a wire-guide, *e*, arranged in bearings upon an axis substantially in line between the two rolls E G, and with a circuitous passage through said guide, through which the wire may run to the said rolls E G, a reciprocating toothed slide, *u*, and corresponding segment on the said guide *e*, substantially as described, whereby an oscillating movement is imparted to said guide and to the wire running through it.

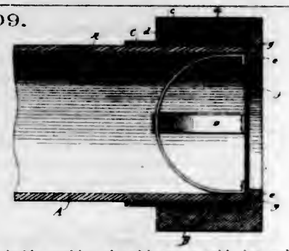
4. The combination of the bending-rolls G E, the lever S, hung loose upon the axis of the roll E, the said lever provided with a second part, S', hung upon the same axis, the roll R, hung upon the said part S' of said lever and in the plane of the rolls G E, an eccentric, T, adapted to operate upon said lever S and impart vibration thereto, and an adjusting-screw between the said parts S and S' of said lever, substantially as described, whereby the said part S' and the roll it carries are made adjustable independent of the lever S.

5. In a machine for bending hat-wires, the combination of a pair of rolls through which the wire passes to be bent, the shaft I, through which one of said rolls receives its revolution, an oscillating guide through which the wire is delivered to said rolls, a pinion, *g*, loose on said shaft I, but from which movement is communicated to said oscillating guide, the said shaft and the said pinions provided, the one with a conical annular surface and the other with the reverse-shaped surface, the one adapted to engage the other, and a nut upon said shaft adapted to force the said pinion into engagement with the said annular surface on the shaft or release it therefrom, substantially as and for the purpose described.

376,609. TOOL FOR FORMING COLD-PACKED PIPE-JOINTS. ANDREW N. RANKIN, Jamaica, N. Y. Filed Mar. 9, 1887. Serial No. 230,246. (No model.)

Claim.—1. A mold for casting a soft-metal band upon the spigot end of a pipe-section, comprising the sectional portions B, the hinged

376,609.



ring C, and suitable packing placed between said ring and mold and said ring and pipe-section, substantially as set forth.

2. The mold B and ring C, the said mold having an inwardly-projecting front, which, when the mold is placed in position upon the pipe end, extends below the line of the bore of the pipe, combined with the disk *f*, secured within the bore of the pipe between the front of the mold and the end of the pipe, all the parts being adjusted so that the soft-metal band *a* may be formed to overlap the front end of the pipe-section, and also be separated a short distance at the rear from the pipe-surface, enabling the calking to act thereon against the inside of the socket or bell without disturbing the adhesion by shrinking of the balance of the soft-metal band to the spigot, substantially as set forth.

3. The mold B, provided with packing at its rear, combined with the hinged ring C, likewise provided with packing, the said hinged ring arranged to extend sufficiently within said mold, whereby the soft-metal band *a* at its rear end will not come in contact with the pipe-surface, substantially as and for the purpose set forth.

4. The mold B, having an inwardly-projecting front portion, combined with the hinged ring C and spring-plug D, the latter comprising a disk, *f*, of less diameter than the external diameter of the pipe end, and springs D, whereby a line of soft-metal packing is provided from the point of calking to the base of the socket or bell, substantially as set forth.

5. The sectional serrated upsetting device herein described, comprising a rear portion, *l*, and a front portion, *m*, the former provided with lugs *o* and its companion section with lugs *q*, the said lugs *q* being slotted and having an inclined under surface, as shown, and adapted to receive screw-bolts, substantially as set forth.

6. The sectional upsetting device comprising the rear portion, *l*, and side extension *m*, the latter provided upon its edge *n* with serrations, substantially as set forth.

7. The serrated sectional upsetting device provided with lugs *o*, whose rear ends are curved and terminate in a vertical plane, and with slotted lugs *q*, whose terminations are rounding and whose lower surfaces are inclined from the front to the rear, combined with screw-bolts having a smaller cross-section than the slots of the lugs *q*, substantially as set forth.

8. A tool or device for forming a space between the base of the socket or bell of one section of pipe and the soft-metal clothed spigot end of its companion section, comprising a segmental expanding and collapsible ring, a series of bars, *t*, and spring-plates connecting the rear ends of said bars, substantially as set forth.

9. The segmental expanding and collapsible ring, the sections whereof are provided with lugs, and a series of bars secured to said segmental sections at their front ends, and having their rear ends attached to spring-plates, substantially as set forth.

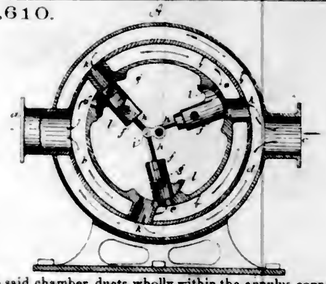
10. The tool or device whereby a space may be formed between the base of the socket or bell of one section of pipe and the soft-metal clothed end of the spigot of its companion section, comprising a collapsible and expanding segmental ring, bars connected to said segments or integral therewith, spring-plates at the rear end of said bars, and the ring or sleeve *x*, substantially as set forth.

376,610. WATER-MOTOR. ELBRIDGE F. RANES, Lewiston, Me. Filed Apr. 1, 1886. Serial No. 197,474. (No model.)

Claim.—1. In a water-motor, the combination of an annular case, a crank-shaft passing centrally through it, a series of oscillating cylinders arranged radially about said shaft and within the central space formed by said case, and having pistons and piston-rods connecting with said shaft, supply-ports on the inner surface of said case for supplying water to said cylinders and connecting by closed passages in said case with the main water-inlet, and exhaust-ports on the inner surface of said case for taking water from said cylinders and connected by closed passages passing through the annulus of said case with the main water-outlet, substantially as described.

2. In a water-motor, the combination of a closed annular casing, an induction-opening and an eduction-opening to said casing, a chamber within said casing, a series of contiguous entrance and exhaust

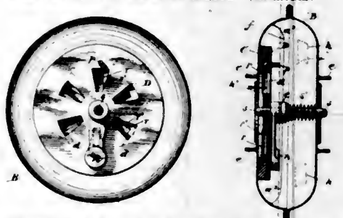
376,610.



ports to said chamber, ducts wholly within the annulus connecting the ports with the induction and eduction openings, respectively, at points without the central chamber, a series of rocking cylinders pivoted in the chamber in water-tight engagement with the ports, a side extension to each cylinder to shut the entrance-port when the discharge-port is open, pistons to the cylinders, and connections between the pistons and a central crank-shaft, as and for the purpose set forth.

3. In a water-motor, the combination of three concentric chambers, the outer chamber containing the eduction-opening, the middle chamber containing the induction-opening, the inner chamber containing a series of pivoted rocking cylinders, pistons moving in said cylinders, a central crank-shaft connected to the pistons, and entrance and exhaust ports for the cylinders, said ports connected with the middle and outer chambers, respectively.

376,611. MUSICAL TOY. CHARLES D. ROGERS, Providence, R. I. Filed Nov. 5, 1887. Serial No. 254,384. (No model.)



Claim.—1. A toy of the buzz type having an apertured shell, a series of fixed reeds, a loosely-mounted apertured disk, a loosely-mounted unbalanced arm adapted to engage said disk, and a fixed partition, as *f*, the whole constructed and arranged whereby during the rotation of the buzz the relation of the disk-openings to the reeds is automatically changed, substantially as hereinbefore described.

2. A toy of the class hereinbefore described having an apertured shell, a perforated plate secured to the shell, a series of reeds mounted on said plate, a loosely-mounted disk provided with openings arranged to coincide with the reeds, a weighted arm adapted to change the position of said disk, a center spindle on which the arm, disk, &c., are mounted, and means for rotating the shell, substantially as set forth.

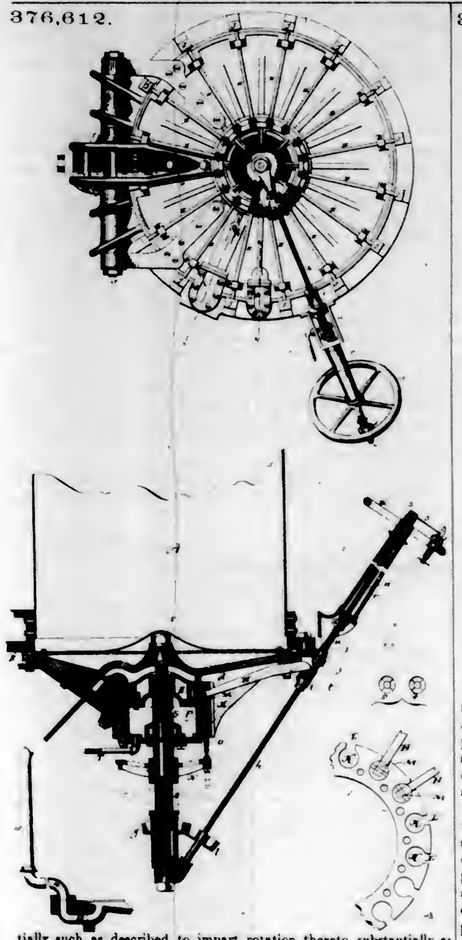
3. The combination, with an apertured shell having a series of reeds mounted and arranged therein, of a loosely-mounted apertured disk having a pin, as *p*, a loosely mounted arm adapted to engage said pin, and a center spindle having a collar and spring and carrying said disk and arm, substantially as hereinbefore described, and for the purpose specified.

376,612. DIGESTER. FREDERICK C. ROWLAND, New Haven, Conn. Filed Jan. 24, 1887. Serial No. 225,269. (No model.)

Claim.—1. A digester-chamber and a door hinged to the bottom thereof, combined with the rod W, carrying a pinion, *g*, for operating the clamping devices, a shaft, *h*, supported at its lower end upon said rod and its upper end in a bearing on the door, a pinion, *l*, on said shaft *h*, adapted to work into the nut-pinion *g*, a shaft, *n*, arranged in a support independent of the door, but in line with the shaft *h*, the adjacent ends of the two shafts provided with separable parts of the coupling, the upper end of said shaft *n* screw-threaded, a nut, 2, thereon, by the rotation of which the said shaft *n* may be moved in an axial direction, substantially as described.

2. A digester-chamber and the door hinged to the bottom thereof, combined with the rod W, carrying a pinion, *g*, for operating the clamping devices, a shaft, *h*, supported at its lower end upon said rod and its upper end in a bearing on the door, a pinion, *l*, on said shaft *h*, adapted to work into the nut-pinion *g*, a shaft, *n*, arranged in a support independent of the door, but in line with the shaft *h*, the adjacent ends of the two shafts provided with separable parts of the coupling, the said shaft *n* provided at its upper end with means, substan-

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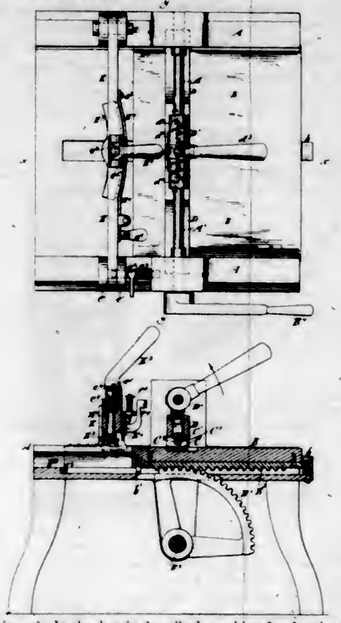


tially such as described, to impart rotation thereto, substantially as and for the purpose described.

3. A chamber and a door hinged thereto and adapted to form the bottom of the chamber, the said door constructed with a series of vertical cylinders, K, in a concentric circle upon its under side, each of said cylinders constructed with a vertical slot, L, opening outward, combined with a follower, M, in each of said cylinders, a disk, N, below said cylinders and vertically guided, a connection from each of said followers with said disk, a series of radial levers, H, the several levers of the series corresponding, respectively, to the several cylinders on the door and projecting radially therefrom, the inner end of said levers hung to the follower in their respective cylinders, a series of sockets, J, surrounding the door and corresponding to the respective levers H, the said sockets adapted to receive the outer end of said levers, and mechanism, substantially such as described, to impart up-and-down movement to said disk and followers, substantially as described, and whereby under such up-and-down movement of the disk and followers the said levers will be accordingly forced into or drawn from said sockets.

4. A chamber and a door hinged to the lower end of said chamber and adapted to form the bottom of the chamber, the door swinging downward in opening, combined with mechanism for detachably securing said door in its closed position, the said door constructed with a passage opening at one end through the door into the chamber, the other end of the passage turned upward through the door outside the chamber, with a fixed escape-passage outside the chamber and corresponding to the opening in the door outside the chamber, and a packing around said opening between the door and the said fixed passage, substantially as described.

376,613. MACHINE FOR ORNAMENTING LEATHER AND OTHER MATERIALS. EDWIN R. STIMPSON, Brooklyn, N. Y. Filed June 8, 1887. Serial No. 240,574. (No model.)



Claim.—1. In the herein-described machine for forming ribs or ridges upon leather or other material, the combination, with a die and a series of substantially parallel punches or pressers arranged and supported in close proximity, of a series of cams arranged to operate successively upon the punches or pressers and to maintain each punch or presser in action on the material while producing the action of another or others, substantially as herein described.

2. In the herein-described machine for forming ribs or ridges upon leather or other material, the combination, with a die and a series of punches or pressers, as $C\ C^2$, of the spring-supported plungers $c\ c'\ c^2$, rabbeted or cut away at the side for the attachment of said punches or pressers, and a cam-shaft, D', having cams or steps which are arranged to operate on the plungers in succession and to hold each plunger depressed during the operation of the next succeeding plunger, substantially as herein described.

3. In the herein-described machine for embossing leather to form ribs or projections thereon, the combination, with the movable bed supporting a die, of a punch or series of punches arranged for rectilineal movement toward and from the bed and a lever for operating the punch or punches, and a plain presser and its operating-lever arranged one in advance of the other above the bed, whereby the bed may be moved to first bring the die and leather below the punch or punches and to then bring the die and leather below the presser for applying a covering to the back thereof, substantially as herein set forth.

4. In the machine herein described for impressing leather to form ribs or projections thereon, the combination, with the movable bed for supporting a die and a punch or series of punches arranged for rectilineal movement toward and from the bed and a lever for operating the punch or punches, of a cross-bar hinged at one end at one side of the machine and adjustably locked at its other end and at the other side of the machine, a presser guided in the cross-bar, and an operating-lever for the presser on the cross-bar, whereby the bed may be moved to first bring the die and material below the punch or punches and then below the presser, substantially as herein described.

5. In the herein-described machine, the combination, with a sliding bed, B, for supporting a die, as C, a series of punches, as $C\ C^2$, and the plungers and series of cams for acting successively on the plungers, of a cross-bar, E, the presser E^2 and its operating handle or device, and the knife secured upon the cross-bar for operation relatively thereto, substantially as herein set forth.

376,614. VEHICLE-SPRING. JOHN W. SULLIVAN, East Brighton, N. Y. Filed Sept. 29, 1887. Serial No. 250,997. (No model.)

376,614.



Claim.—In combination with the body and side bars, the bars C C, pivoted to the under side of the body lengthwise thereof, the coil-springs *a a*, each terminating with the eye *c* at one end, by which it is rigidly secured to one of the bars, and terminating at the opposite end with the arm *b* and eye *c* on the end of said arm, the bolt *d*, adjustably connected to the body and having its lower ends connected to the arms *b b*, and levers D D, rigidly secured to the bars C C and hung on the side bars, substantially as described and shown.

376,615. SUPPORT FOR TELEPHONE-RECEIVERS. WILLIAM R. THURBER and JOHN MCCONNELL, Cleveland, Ohio. Filed Aug. 31, 1887. Serial No. 248,335. (No model.)

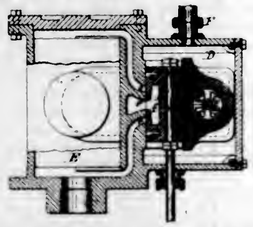


Claim.—1. In a support for a telephone-receiver, a bracket provided with a fixed and an adjustable jaw, adapting it to be clamped to different-sized standards, and a horizontal segmental plate provided with perforations at intervals near its edge, in combination with an arm swiveled on said bracket and having a projection on its under side to engage said perforations, a jointed and adjustable standard pivoted on the extremity of said arm, and a holder for a telephone-receiver on the said standard, substantially as set forth.

2. In telephone-supports, an adjustable jointed standard, in combination with a holder for a telephone-receiver, swiveled on the extremity of said standard and provided with fingers extending from opposite sides and a locking-clasp for holding the telephone-receiver, the fingers being provided with rubber tips to more firmly hold and protect the receiver, substantially as set forth.

3. In telephone-supports, the combination of the following elements: a telephone-case, a bracket clamped to the said case and having a segmental horizontal portion, an arm swiveled and adjustable on said horizontal portion of the arm, a jointed adjustable standard on the end of the arm, and a holder for the telephone-receiver swiveled on the standard, substantially as set forth.

376,616. CUT-OFF FOR ENGINES. JOHN J. TONKIN, Oswego, N. Y. Filed May 10, 1887. Serial No. 237,711. (No model.)



Claim.—1. In combination with the cylinder and steam-chest, the reciprocating main valve having steam-ports extending through it, a valve-case provided with steam-ports coinciding with the ports of the main valve, steam induction-ports in said valve-case between the aforesaid steam-ports, and a reciprocating governor-valve in the said valve-case, substantially as set forth and shown.

2. In combination with the steam-cylinder and steam-chest, the main valve A, formed with the steam-chest B, and with the receiving-ports *a a a*, and discharge-ports *a' a'*, the valve-case C, secured to the interior of the steam-chest and provided with the ports *b b b*, coinciding with the ports *a a a*, and provided also with the steam induction-ports *b' b'*, and the reciprocating governor-valve I, provided with bridges *c c*, having perforations *c'' c''*, substantially as described and shown.

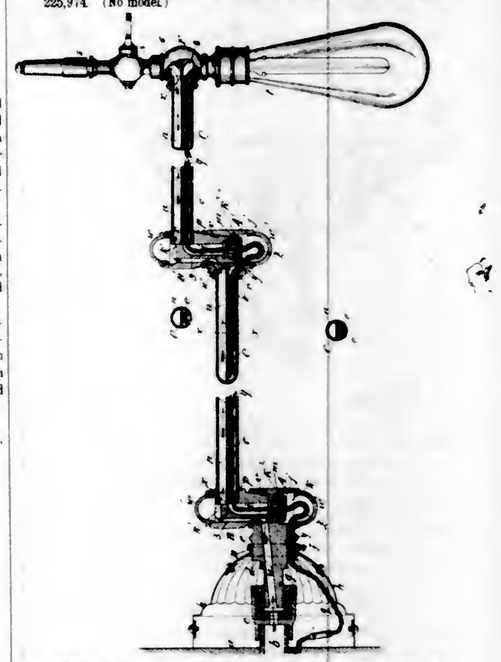
3. In combination with the steam-chest and the main valve A, provided with ports *a a a*, the valve-case C, provided with the ports *b b b* and *b' b'*, the governor-valve I, provided with the governing-bridge *c*, and safety stop-bridge *c'*, respectively at opposite sides of the port *b*, substantially as described and shown.

4. In combination with the steam-chest and main valve A, the valve-case C, provided with the ports *b b b* and *b' b'*, and the governor-valve I, provided with the governing-bridges *c c c*, at one side of the respective ports *b b b*, and having the stop-bridges *c' c' c'* adjustably in their position at the opposite side of said ports, substantially as and for the purpose set forth.

5. In combination with the steam-chest, the reciprocating main valve A, provided with the ports *a a a*, the valve-case C, secured to the steam-chest, and having a cavity, O, extending through it at right angles to the movement of the main valve, steam-ports *b b b*, extending from the cavity O to the ports *a a a*, valve-seats *d d* at opposite sides of each port *b*, and steam-receiving ports *b' b'* between the sets of valve-seats *d d*, the governor-valve I, extending longitudinally through the cavity O, and provided with the bridges *c c'*, the governor P, mounted on the steam-chest, and the stem *s*, connecting the governor with the valve I, substantially as described and shown.

6. In combination with the steam-chest, main valve, and governor-valve inside of said steam-chest, the governor P, mounted on the steam-chest, the governor-stem *s*, connecting the governor with the aforesaid governor-valve, and a catch adapted to temporarily retain the governor-stem in its depressed position, substantially as and for the purpose set forth.

376,617. COMBINED GAS AND ELECTRIC-LIGHT FIXTURE. SAMUEL B. H. VANCE, New York, N. Y. Filed Jan. 31, 1887. Serial No. 225,974. (No model.)



Claim.—1. In a combined electric and gas fixture, swing-joints having a tubular plug held within the sockets and adapted to receive the wires through the center thereof, with an external gas-groove on said plug and a lateral duct in the socket leading thereto, and an internal duct in the plug leading from said groove to the head of the plug, and ducts to convey wires and gas from the head of said plug, substantially as set forth.

2. In a combined fixture, the swing-joints having the sockets A or A' with recess *k* and shoulder *m*, with the plugs B or B', having central bore, *i*, and hollow screw *j*, holding the same in the shouldered recess of the socket, substantially as shown and described.

3. The combination, with the socket A or A', having a lateral gas-passage, of the plugs B or B', having gas-passage on its ground or seating face continued to the head of the plug, and a central wire-passage, *i*, with two distinct tubes or ducts connected to the top of said plug coincident with the respective gas and wire passages, substantially as shown and described.

4. In a swing-joint for combined fixtures, the combination, with socket A or A', of the tubular plugs B or B', having a central bore, *i*, turned laterally in the head of the plug, with a circumferential gas groove, *v*, vertical gas-passage 3, recess *k'*, removable cap *w*, and socket *p*, into which said gas and wire passages open independently, substantially as shown and described.

5. In a swing-joint for combined fixtures, a socket having a wire-way extending laterally into the open base thereof, and a gas-way opening laterally into the ground seat thereof, with a tubular plug having a gas-passage on its ground exterior extended vertically through the body of the plug to the head thereof, and a central wire-passage opening from the base of the plug extending into the head thereof, from which head both gas and wire passages issue independently, substantially as set forth.

6. In a swing-joint for combined fixtures, the sockets A A', having lateral gas and wire passages *u y* and recesses *k'*, and caps *w'* over said recesses, in combination with the tubular plugs B B', washers k^2, and hollow screws *j j*, holding said plugs in said shouldered recesses, substantially as shown and described.

7. In a combined fixture, swing-joints having plugs with a recessed head, removable caps *w* on said recessed head, a gas-passage leading from said recess through the plug *via* the ground seat of plug and socket, a wireway extending up through the center of the plug, a neck or socket, *p*, on the head of said plug, into which both wire and gas ways open separately, and a double-ducted tube connected to said neck and soldered or sealed gas-tight therein at the septum between said wire and gas ways, substantially as shown and described.

8. In a combined swing-joint fixture, sockets having a lateral gas-way *via* the ground seat and a lateral wireway into the open base of the socket, with a plug having an internal gas-passage *via* the ground-seat, and a central wireway with wires passed in a U-loop from the lateral passage of the socket up into the bore of the plug, with both gas and wire ways continued laterally from head of plug, and gas and wire ducts extending parallel in arms of fixture from said head.

9. In combination with the sockets A A' and plugs B B', having internal gas-passages *via* the ground seat, and a central passage for the wires, the compound tube extending from the head of said plugs and consisting of the outer tube, C, with two internal half-tubes, *n o*, connecting independently to the gas and wire ways in the said head, substantially as shown and described.

10. In a combined gas and electric fixture, a compound conducting and sustaining tube for gas and wires, consisting of an outer inclosing-tube with two or more distinct half or segmental tubes fitted snugly within the same, abutting together and forming independent ducts for gas and wires.

11. In a combined gas and electric fixture, a compound conducting and supporting tube consisting of an outer round or cylindrical tube, C, in combination with two half-round or semi-cylindrical tubes, *n o*, abutting diametrically together within said outer tube and forming distinct ducts for gas and wires, substantially as shown and described.

12. In a lighting fixture, the combination, with a neck, *d*, on the root end of the fixture and a wall plate or canopy, of an adjustable ring or collar mounted on said neck and abutting against said canopy, substantially as and for the purpose set forth.

376,618. KING-BOLT FOR VEHICLES. DANIEL D. WHITNEY, Cornwall, N. Y., assignor of one-half to Spencer Weart, Jersey City, N. J. Filed Dec. 17, 1886. Serial No. 221,843. (No model.)



Claim.—1. A conical king-bolt for vehicles and a conical sleeve or other means co-operating therewith, within which the king-bolt rotates, fastened to the head-block, for sustaining the weight of a vehicle by the conical portion alone.

2. The combination of a conical-clip king-bolt, as B D, a head-block, as C, within which the king-bolt rotates, and a sleeve, as *a*, conforming to said king-bolt and fast to said head-block, operating essentially as set forth, supporting the weight of a vehicle by the conical portion alone.

3. The combination of a conical-clip king-bolt, as B D, a head-block, as C, a plate, as *b*, fast thereto, and a sleeve, as *a*, within which the king-bolt rotates, upon which the latter rests, secured to the same and to the head-block, all operating essentially as set forth, sustaining the weight by the conical portions alone.

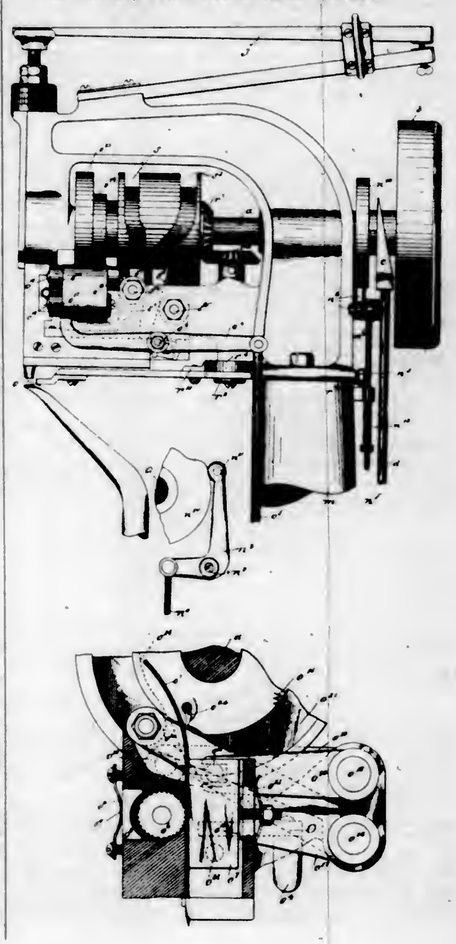
4. The combination of a conical-clip king-bolt, as B D, a head-block, as C, a plate, as *b*, fast thereto, having ears, as *f f*, and a clip, as E, for holding the same in place through the instrumentality of said ears, and a sleeve, as *a*, within which the king-bolt rotates, upon which the latter rests secured to the same and to the head-block, sustaining the weight by the conical portions alone.

5. The combination of a conical-clip king-bolt, as B D, a head-block, as C, a plate, as *b*, fast thereto, having ears, as *f f*, and a clip, as E, for holding the same in place through the instrumentality of said ears, a sleeve, as *a*, within which the king-bolt rotates, upon which the latter rests secured to the same and to the head-block, and a washer, as *d*, having recesses carrying a solid lubricant interposed between the nut *e* and its bearing, sustaining the weight by the conical portions alone.

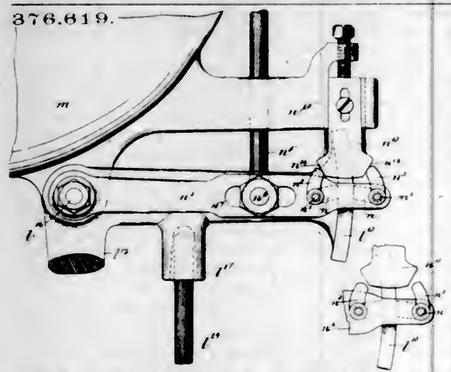
6. The combination, in a king-bolt having a conical portion, as D, for sustaining the pressure, of a sleeve, as *a*, within which the king-bolt rotates, conforming thereto and co-operating therewith, having grooves or channels, as *c*, filled with a graphite composition for the purpose specified, and means for securing said sleeve to the head-block in any suitable manner and the king-bolt to the axle.

7. The combination, in a king-bolt having a conical portion, as D, for sustaining the pressure, of a sleeve, as *a*, within which the king-bolt rotates, conforming thereto and co-operating therewith, having grooves or channels, as *c*, filled with a graphite composition for the purpose specified, a washer, as *d*, having a graphite composition packed in recesses therein interposed between the nut *e* and its bearing, and means for securing said sleeve to the head-block in any suitable manner and the king-bolt to the axle.

376,619. NAILING-MACHINE. ELIHU WILDER, Newton, Mass., assignor to the Plume & Atwood Manufacturing Company, Waterbury, Conn. Filed Aug. 1, 1887. Serial No. 245,802. (No model.)



376,619.



Claim.—1. In a nailing-machine, the combination of driving mechanism, the wire-feeding mechanism, the cutters s^6 s^7, formed to make an oblique side, 2, on the wire, and the cutters s^9 s^{10}, formed to sever the wire at one end of said oblique side and shear off one side of the nail from its reduced end nearly to its head, the latter retaining the full diameter of the wire, as set forth.

2. In a nailing-machine, the combination of driving mechanism, wire-feeding mechanism, a fixed wire-guide, s^4, the fixed cutters s^5 and s^{10}, the reciprocating cutters s^7 and s^9, mechanism for reciprocating said cutters independently, whereby, first, the cutter s^7 is caused to co-operate with the cutter s^5 in pointing the wire, and, secondly, the cutter s^9 is caused to co-operate with the cutter s^{10} in severing the wire and shearing off a part of one side of the severed nail, a driver, and a fixed throat under the same, to which each nail is presented by the forward movement of the cutter s^9, as set forth.

3. In a nailing or tacking machine, the combination, with nail forming and driving mechanism substantially such as herein described, of a laterally-movable feed-block, a roll between which and the block the nail-wire passes, mechanism, substantially as described, for reciprocating said block, means, substantially as described, for pressing the block toward the roll during its downward movement, and means, substantially as described, for separating the block and roll during the upward movement of the block, as set forth.

4. In a nailing or tacking machine, the combination, with nail forming and driving mechanism substantially such as herein described, of a laterally-movable feed-block, a roll between which and the block the nail-wire passes, mechanism, substantially as described, for reciprocating said block, means, substantially as described, for pressing the block toward the roll during its downward movement, and means, substantially as described, for giving the block an additional pressure at the end of its downward movement, and thereby rigidly holding the wire while the nail-forming cutters are acting, as set forth.

5. The combination of the vertically-movable horn, mechanism, substantially as described, for controlling the height of the same according to the thickness of the material to be nailed, nail-forming mechanism, a driver, a reciprocating wire-feed, and a stop which is moved vertically with the horn and determines the initial or starting point of the feed and the length thereof, as set forth.

6. In a nailing-machine, the combination of the vertically-movable horn, the screw-threaded standard supporting the same, a nut, l^{13}, engaged with said threaded standard, and means, substantially as described, for rotating said nut, and thereby raising or lowering the horn, as set forth.

7. In a nailing-machine, the combination of the vertically-movable horn, the screw-threaded standard supporting the same, the stud l^{13}, having a thread of opposite pitch, the journaled nut tapped to engage both the standard and stud, and means, substantially as described, for rotating said nut, as set forth.

8. In a nailing-machine, the combination of the vertically-movable horn, the screw-threaded standard, the nut engaged with said standard, a spring, as l^{8}, whereby the nut is normally turned to elevate the horn, and automatic means, substantially as described, for rotating said nut in the opposite direction, and thereby depressing the horn, as set forth.

9. In a nailing-machine, the combination of the vertically-movable horn, the screw-threaded standard, the nut engaged with said standard, a spring, as l^{8}, whereby the nut is normally turned to elevate the horn, automatic means, substantially as described, whereby the nut is rotated in the direction required to depress the horn, and devices, substantially as described, controlled by the operator, whereby the nut may be independently rotated in the direction last mentioned to additionally or independently depress the horn, as set forth.

10. In a nailing-machine, the combination of the vertically-movable horn, the screw-threaded standard, the nut engaged with said standard, a spring whereby the nut is normally turned to elevate the horn, automatic means, substantially as described, for rotating the nut in the opposite direction, and automatic means, substantially as described, for releasing the nut and permitting the spring to rotate it, as set forth.

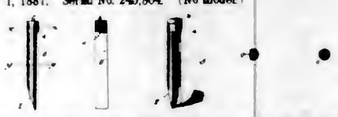
11. The combination of the horn and the threaded standard, the spring-impelled nut engaged with said standard, the lever l^{11}, connected with said nut by means substantially as described, and provided with the flange l^{12}, the lever n^3, having the dogs adapted to grip said flange, means, substantially as described, for automatically moving said levers while they are locked together to depress the horn, and means, substantially as described, for automatically disengaging the lever n^3 from the lever l^{11}, as set forth.

12. The combination of the lever l^{11}, having the flange l^{12}, the lever n^3, having the dogs n n and arms n^2 n^3, and the adjustable piece n^{13}, formed to displace the arms n^2 and dogs n, as set forth.

13. The combination of the screw-threaded horn-supporting standard, the spring-impelled nut engaged, as described, with said standard and adapted to normally raise the same, and means, substantially as described, for regulating the tension of the nut-impelling spring, as set forth.

14. The combination of the horn, the threaded standard supporting the horn, the nut for raising and lowering said standard, and the treadle l^{15} and intermediate devices, substantially as described, whereby the operator is enabled to rotate the nut independently by foot-power, as set forth.

376,620. NAIL. ELIHU WILDER, Newton, Mass., assignor to the Plume & Atwood Manufacturing Company, Waterbury, Conn. Filed Aug. 1, 1887. Serial No. 245,904. (No model.)



Claim.—1. A nail made from cylindrical wire, having one side cut away at one end to form a diagonal surface, 2, and the opposite side cut away to form a flat surface, 5, of considerably greater length than the surface 2, the said surface 5 forming a chisel-point by its intersection with the surface 2, and by its elongation preventing the driven nail from turning, as set forth.

2. A wire nail cut away at one side to form an oblique surface, 2, and cut away at its opposite side to form a flat surface, 5, extending from the end intersected by the surface 2 nearly to the opposite end, and there terminating in a shoulder, 4, the last-mentioned end having the full diameter of the wire, as set forth

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376,621. QUILTING-MACHINE. KARL ZALLUD, New York, N. Y., assignor to Louis Schultz and John B. Hagenbuchle, same place. Filed Mar. 20, 1886. Serial No. 195,934. (No model.)

Claim.—1. In a quilting-machine, the combination, with feed-rollers for the goods, of traveling carriages, needle-bars bearing needles mounted on said carriages, guides for the carriages, and mechanism, substantially such as described, for moving the needles wholly beyond the edge of the goods at each traverse of the carriages, substantially as specified.

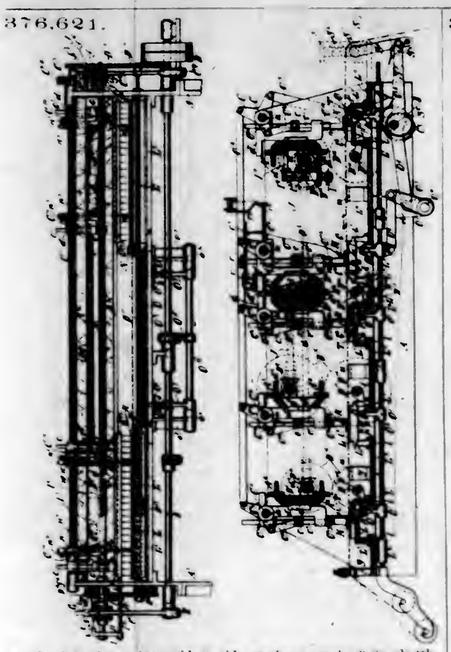
2. In a quilting-machine, the combination, with feed-rollers for the goods, of traveling carriages, needle-bars bearing needles mounted on said carriages, guides for said carriages, mechanism, substantially such as described, for imparting a side-to-side motion to said carriages, slider-bars carrying shuttles acting in conjunction with said needles, said slider-bars being independent of said carriage, shuttle-races, and mechanism, substantially such as described, for imparting a side-to-side motion to said slide-bars, said carriages and shuttle-races moving in unison, substantially as specified.

3. In a quilting-machine, the combination, with feed-rollers for the goods, of traveling carriages, needle-bars bearing needles mounted on said carriages, guides for said carriages, screws for imparting a side-to-side motion to said carriages, shuttle-carriers carrying shuttles acting in conjunction with said needles, shuttle-races, and screws for imparting a side-to-side motion to said shuttle-races, the screws for actuating the carriages and the screws for actuating the shuttle-races being geared together, substantially as specified.

4. In a quilting-machine, the combination, with shuttles, of shuttle-carriers, shuttle-races, mechanism, substantially such as described, for imparting a side-to-side motion to the shuttle-races, and a reciprocating shuttle-driver with which the shuttle-carriers are alternately engaged and disengaged when moving in either of two directions, substantially as specified.

5. In a quilting-machine, the combination, with shuttles, of shuttle-carriers, a number of shuttle-races, mechanism, substantially such as

376,621.



described, for imparting a side-to-side motion to each of the shuttle-races, and a shuttle-driver arranged at each of the shuttle-races, with which the shuttle-carriers are alternately engaged and disengaged when moving in either of two directions, all said shuttle-drivers operating in unison, substantially as specified.

6. In a quilting-machine, the combination, with needle-bars bearing needles and having a movement from side to side of the machine and carrying the needles wholly beyond the edges of the goods, of shuttles operating in conjunction with said needles, and a shuttle-driver for reciprocating the shuttles, and mechanism, substantially as described, for operating the shuttles, whereby the shuttles will be reciprocated only when beneath the goods, substantially as specified.

7. The combination, with a traveling carriage and sewing mechanism, of feed-rollers, a ratchet-wheel on the journal of one of said feed-rollers, another ratchet-wheel arranged at the side of the ratchet-wheel first named, and having segmental portions provided with teeth, an arm, a pawl on said arm for imparting motion to said ratchet-wheels, and a rod for imparting motion to said arm, the teeth upon the segmental ratchet-wheel extending beyond the teeth upon the ratchet-wheel first named, and the spaces between the toothed segmental portions of said wheel being inward of the teeth upon the ratchet-wheel first named, substantially as specified.

8. The combination, with feed-rollers, a traveling carriage and sewing mechanism, of the ratchet-wheel S, the segmental ratchet-wheel S^2, provided with the flange S^3, the ratchet-wheel S^6, the pawl S^7, the brake S^{10}, the arm S^4, the pawl S^5, and the rod S^8, substantially as specified.

9. The combination, with laterally-moving shuttle-races, of shuttle-carriers moving with said shuttle-races and provided with legs, as p, a reciprocating shuttle-driver provided with resilient beveled ends and bumpers for the shuttles, substantially as specified.

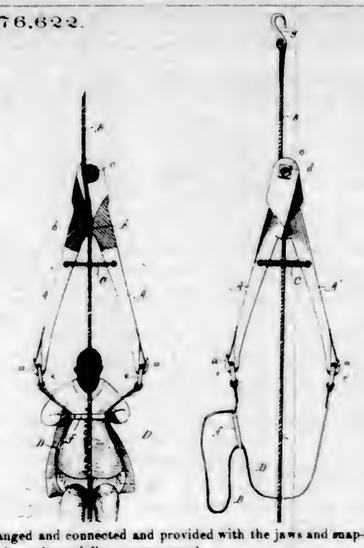
10. The combination of sewing mechanism, the rod F, the lever G, pawls c c', ratchet-wheels H H', a screw-shaft, as D^6, dogs I I', rods I^3 I^5, tappets I^4 I^6, catches I^9 I^{10}, retaining devices I^{12} I^{13}, and a traveling carriage, as D^4, provided with projections I^7 I^8, substantially as specified.

376,622. FIRE-ESCAPE. JOSEPH ABBOTT, Rumney, N. H. Filed June 15, 1887. Serial No. 241,367. (No model.)

Claim.—The combination of the sliding ring applied to the looped strap, as described, with such strap and with the furcated arms ar-

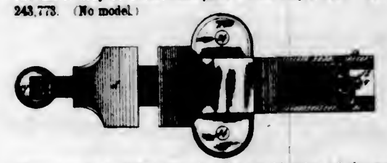


376,622.



ranged and connected and provided with the jaws and snap-hooks, all being substantially as represented.

376,623. VISE. ROBERT R. M. RAIN, St. Louis, Mo., assignor of one-half to Gray Staunton, same place. Filed July 8, 1887. Serial No. 243,773. (No model.)



Claim.—1. In a sliding-jaw vise, the combination of the stationary jaw 1, provided with an elongated slot, in which the stem 3 of the sliding jaw 2 engages, the shaft 9, that passes through said stem, and at one end engages the wedge-clamps 12, to clamp said end, and has at the other end a head-disk, 17, that is pivotally connected to the eccentric cam-lever 18, arranged as a sudden-action sliding clamp to enforce the grip of the jaws, substantially as described, and for the purpose set forth.

2. In a sliding-jaw vise, the combination of the stationary and sliding jaw, the former provided with an elongated slot and the latter having a horizontal stem that engages in said slot, the bevel edges of said stem that engage the bevel edges of the wedge-clamps and force them to engagement in their corrugated seats, said wedges and the spiral spring 10 being secured by the shaft 9, that passes through said stem and is operated by the eccentric cam-lever to effect a sudden sliding clamp-grip of the jaws, said wedge-clamps carrying spiral springs 27, substantially as described, and for the purpose set forth.

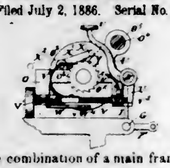
3. In a sliding-jaw vise, the combination of the stationary and sliding jaws, the shaft 9, operated by the eccentric cam-lever and passing through the pedestal 7, stem 3, and corrugated wedge-clamps that are provided with oval perforations, and said shaft carrying the spiral spring 10, all arranged to force the wedge-clamps into their corrugated seats, clamp the grip by the eccentric cam-lever, and when released by the eccentric cam project the stem by the spiral screw and release the wedge-clamp, and then allow them to be unseated from their locking-seat by the spiral springs 27, substantially as described, and for the purpose set forth.

4. In a sliding-jaw vise, the combination of the stationary and sliding jaws, the projected bevel end of the stem of the latter enforcing the engagement of the corrugated wedge-clamps in their corrugated seats, the shaft 9, spiral unclamping-spring 10, the spiral unlocking-springs 27, and the disk-head 17, that is pivotally engaged by the eccentric cam 20 of the lever 18, said lever having a ball-weight, 19, to enforce the clamp, substantially as described, and for the purpose set forth.

5. In a sliding-jaw vise, the combination of the stationary and sliding jaws, the projected bevel end of the stem of the latter enforcing the clamp of the smooth friction-wedges 12, the spiral unclamping-spring 10 on the shaft 9, that carries the wedge-clamps, said shaft pass-

ing through said stem, and the disk-head 17, pivotally engaged by the eccentric cam of the ball-lever and operated to effect a sudden clamp-grip of the jaws, substantially as described, and for the purpose set forth.

376,624. TYPE-WRITING MACHINE. GEORGE W. BALDRIGE, St. Louis, Mo. Filed July 2, 1886. Serial No. 206,959. (No model.)

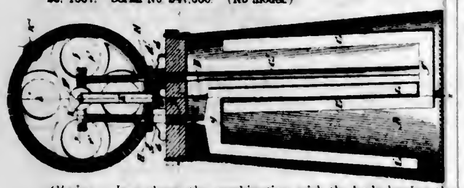


Claim.—1. The combination of a main frame having a transverse shaft, G, an oscillating rack, I, mounted on the shaft, means, substantially as described, for swinging the rack, a carriage having end plates, O^2, formed with lugs O^3 and socket-bearings N', rod O^4, for supporting the carriage at the rear, shaft N, secured in the socket-bearings, pendant fixed pawl J, formed with hub M, by which it is supported on the shaft N, stop T, secured to the fixed pawl, spring P, secured to the fixed pawl, pendent pivoted pawl secured to the fixed pawl between the spring and stop, and means, substantially as described, for advancing the carriage.

2. The combination of the carriage O, rod O^4, for supporting the carriage, the rock-shaft N, supported on the carriage, the hub M, rigidly secured to the shaft, having fixed dog J, a stop and pivoted spring-dog, L, a swinging rack, I, a lever, U, keyed to the rock-shaft, having a projection, V^2, a spring bearing on the lever, the sliding rod V, acting on the projection, and a bell-crank lever, W, for operating the sliding rod in opposition to the spring U^2.

3. The combination of the carriage O, having paper-roller O^3 and ratchet-wheel O^5, rod O^4, for supporting the carriage, the rock-shaft N, supported on the carriage, the hub M, rigidly secured to the shaft, having fixed dog J, a stop and pivoted spring-dog, L, a lever, U, keyed to the rock-shaft, having a projection, V^2, a spring bearing on the lever, the sliding rod V, acting on the projection, having a spring-pawl, V^4, engaging the ratchet-wheel, and means, substantially as described, for operating the sliding rod.

376,625. CHURN. NELSON BARNESLEY, Enrom, Mo. Filed Aug. 23, 1887. Serial No. 247,680. (No model.)



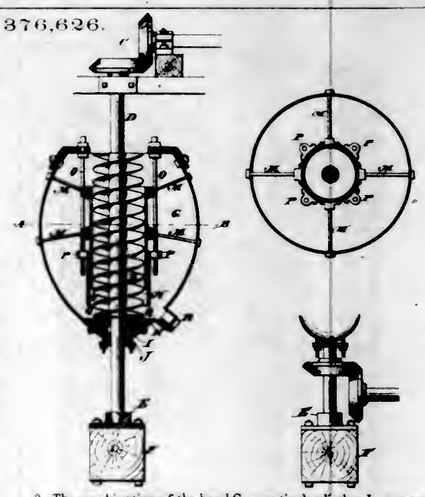
Claim.—In a churn, the combination, with the body having the diametrically-opposite breaker-strips B B on its inner side, of the lid having vertical openings, the plate D, secured upon the lid and having the lateral arms *d d*, provided with bearings *d' d'*, aligning with the vertical openings in the lid, the standard E, rising from the plate D and formed integrally therewith, the bearing-plate F at the upper end of the standard E, the ears *f f*, projecting laterally from the bearing F and having bearings *f' f'* in alignment with the bearings *d' d'* in the arms *d d*, the parallel dasher-shafts G G, mounted in the bearings *d'* and *f'* and passing through the vertical openings in the lid, the dashers secured to the lower ends of the said shafts and forming intercepting circles when the shafts are rotated, the pinions H H, mounted on the dasher-shafts and resting on the side arms, *d*, of the plate D, the spindle *i*, secured on the forwardly-projecting arm *d* of said plate, the pinion I, journaled on the said spindle and meshing with the pinions H H, the shaft K', journaled in the bearing-plate F, and the master gear-wheel K, mounted on the end of the shaft K' and meshing with the pinion I, substantially as described and shown.

376,626. RICE-HULLING MACHINE. JOHN D. BELTON, New Orleans, La., assignor of one-half to George Alfred Lanaux, same place. Filed Apr. 23, 1887. Serial No. 235,929. (No model.)

Claim.—1. The combination of the bowl G, a cylinder, L, secured vertically in said bowl and open at both ends, a rotating vertical screw, K, arranged vertically in said cylinder and extending therethrough, and means for rotating the screw, substantially as described.

2. The combination of the bowl G, a stationary cylinder therein, open at each end and terminating at a distance from the upper and lower ends of the bowl, the lateral bolts M, extending from the cylinder to the shell of the bowl, and a screw, K, arranged within the cylinder and extending beyond each end thereof, substantially as described.

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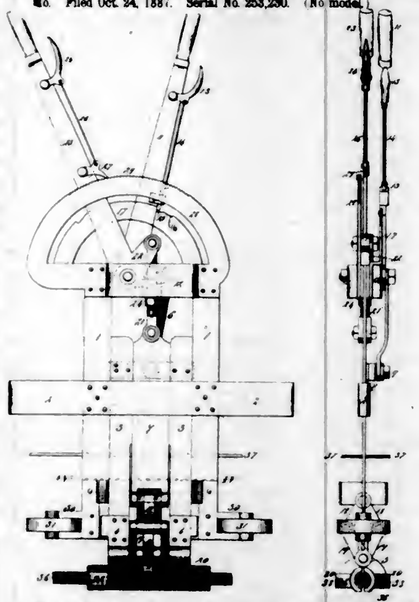


3. The combination of the bowl G, a vertical cylinder, L, arranged therein, a cylinder, N, adjustable vertically at the lower end of the said vertical cylinder, and a rotating screw, K, extending through both cylinders, substantially as described.

4. The combination of the bowl G, the vertical cylinder L therein, the lateral brace-bolts M for said cylinder, a vertically-adjustable cylinder, N, at the lower end of the said vertical cylinder, and having lateral lugs P, and screws O, engaging the lugs for adjusting the lower cylinder, substantially as described.

5. The combination, in a rice-huller, of a bowl, G, having a bottom outlet, R, a central stationary cylinder, L, arranged vertically in said bowl and having a telescopic end, N, above the bottom outlet, and a rotating screw extending vertically through the vertical stationary cylinder and through its telescopic end, substantially as described.

376,627. CABLE-GRIP. FREDERICK H. D. BERGMANN, St. Louis, Mo. Filed Oct. 24, 1887. Serial No. 253,230. (No model.)



Claim.—1. A cable-gripping apparatus constructed with a pair of hinged grip-jaws opening and closing horizontally, a frame in which said grip-jaws are fulcrumed, having a vertically-sliding movement for raising and lowering the grip, a bar or plate having a vertically-sliding movement and connected to the grip-jaws for opening and closing them, an operating-lever connected to the grip bar or plate for opening and closing the jaws, and a lifting-lever connected to the vertically-sliding plate for moving it up and down and having free movement within certain limits, permitting the moving of the grip-frame up and down by the grip-operating lever after it has closed or opened the jaws, substantially as explained.

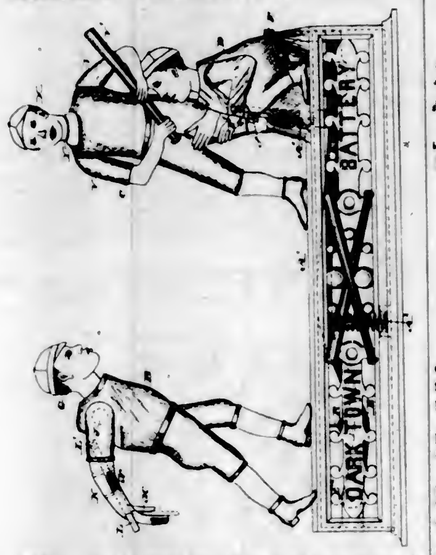
2. A lifting-plate vertically movable on the frame, a pair of jaws hinged on the lifting-plate, a sliding plate connected to the jaws or grip, a lever for operating the grip-plate, and a lever connected to the lifting-plate and having a stop whereby the grip-lever may close the jaws and lift the cable before tightly gripping the cable, as set forth.

3. The combination of the frame or plate 3, jaws 20, mounted thereon, plate 9, connected to the jaws, a lever, 23, connected to plate 9, a lever, 11, connected to frame 3, a segment, 17, having a slot, 16, and a pin, 15, engaging in said slot, as and for the purpose set forth.

4. The combination of the frame or plate 3, having grip-jaws mounted thereon, operating-bar 9, connected to the jaws, a lever, 23, connected to said operating-bar, a lever, 11, connected to the frame 3, a segment, 17, having a slot, 16, a pin, 15, on lever 11, engaging said slot, and a supplementary decline, 16^a, as and for the purpose set forth.

5. The combination of the main frame 1, the vertically-movable elevating-frame 3, the grip-jaws 20, fulcrumed in the frame 3 and projecting downward beyond the lowest part of the frame, the vertically-sliding operating-bar 9, and the grip-lever 23, operating by its movement in one direction to open and subsequently lower the jaws and by its opposite movement to close the jaws and then elevate the grip bodily, all substantially as herein described, and for the purposes set forth.

376,628. TOY MONEY-BOX. JAMES H. BOWEN, Philadelphia, Pa. Filed July 21, 1887. Serial No. 244,870. (Model.)



Claim.—1. In a toy money-box, the box A, with pivoted lever E, in combination with the figure B, having an oscillating arm with hand, and a sliding rod secured to said arm and having a finger, substantially as and for the purpose set forth.

2. In a toy money-box, the figure B, having an oscillating arm with hand and a sliding rod with finger, and a lateral projection or extension, L', said parts combined and operating substantially as and for the purpose set forth.

3. The box A, with pivoted lever E, in combination with figure B, having a pivoted head with the shoulder P, the spring-dog Q and rod R, and the spring-rod U, said parts being combined substantially as and for the purpose set forth.

4. The pivoted lever E, in combination with the figure B, having an inner projection, S^3, a pivoted head with the shoulder P, the spring-dog Q, with rod R, connecting said dog to lever E, and the spring-rod U, said parts being combined substantially as and for the purpose set forth.

5. In a toy money-box, the box A, with lever E, in combination with the figure C, having arms holding a bat, a rock-shaft to which said arms are connected, lugs on said shaft, and an oscillating and rotary head, having cams *a* and *b*, engaging with said lugs, substantially as and for the purpose set forth.

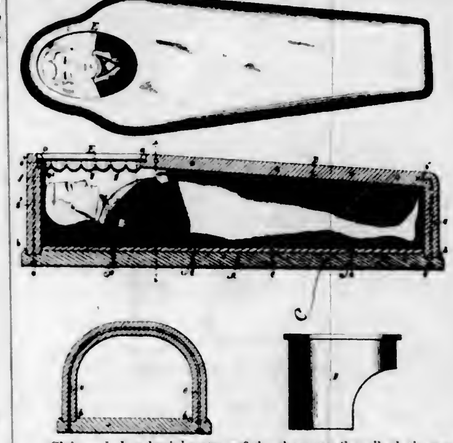
6. The box A, with lever E and arm E', in combination with the figure D, having opening in front, a head with pivoted neck C, the latter having a cam side, *c*, and a door, D', the said arm E' bearing against the cam *c*, substantially as and for the purpose set forth.

7. A figure having a head with a neck journaled in the body thereof, said neck having cam-faces, substantially as described, in combination with a shaft having lugs which are adapted to engage with said cam-faces, as stated.

8. A toy money-box having the box A, with operating-lever E, pivoted therein, the figure B, representing a pitcher, and having an oscillating arm with hand and a movable thumb, the figure D, with an opening in front and a swinging door closing said opening, and mechanism, substantially as described, for connecting said oscillating arm and said swinging door with said operating-lever E, said parts being combined substantially as and for the purpose set forth.

9. In a toy money-box, the figure D, having an oscillating head with neck C, and door D', with opening therein, the pivoted hand F', having wrist G', and the lever E, with arm E', said parts being combined substantially as and for the purpose set forth.

376,629. BURIAL PROCESS. JOHN T. BRAUER, Muskegon, Mich., assignor of one-half to William W. Barous, same place. Filed Feb. 24, 1887. Serial No. 228,678. (No model.)



Claim.—1. In a burial system of the character described, the process of preparing a corpse upon a board and packing the same with fiber saturated with an oily substance, substantially as and for the purposes specified.

2. In a burial system of the character described, the process of preparing a corpse on a board and packing the same in a natural position with fiber saturated with glycerine, substantially as described.

3. In a burial system of the character described, the process of preparing and packing the corpse, as described, and then surrounding the same with a cementing compound of sugar and other cement, substantially as described.

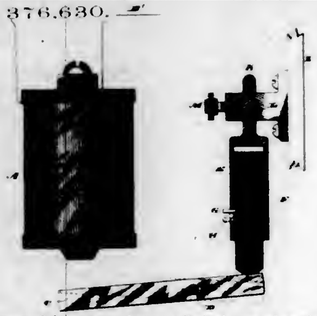
4. In a burial system of the character described, the process of laying out the corpse and bolstering it up and packing it with saturated fiber and providing the head with a removable shield, and then sealing the corpse within a packing of cement, except around the head, which is provided with the removable shield during the process of casting, substantially as described.

376,630. ELECTRO-MAGNETIC DEVICE. CHARLES F. BRUSH, Cleveland, Ohio. Filed Dec. 19, 1885. Serial No. 186,188. (No model.)

Claim.—1. The combination, with a helix included in an electric circuit and an armature, of a supplemental actuating device constructed and arranged to operate slowly through a predetermined distance and assist the helix in moving the armature gradually to a predetermined distance from the helix and then to release the armature to the sole action of the helix, substantially as set forth.

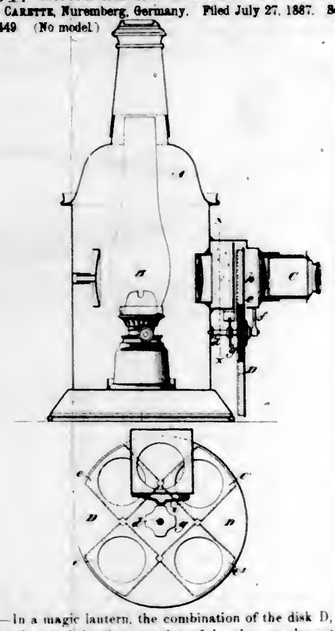
2. In an electro-magnetic device consisting primarily of an electro-magnet and an armature controlled thereby, a dash-pot, the moving portion of which, without being connected, except by simple contact, with the armature or moving parts attached thereto, assists the armature, during a portion of its movement, to respond to the at-

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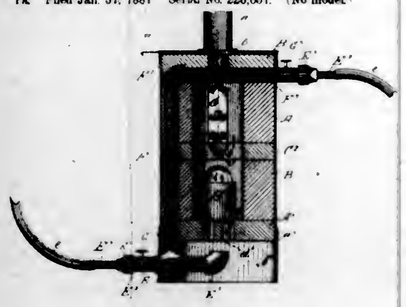
tractive influence of the magnet, but at a limited rate of motion, the position of said movable portion of the dash-pot being controlled by said armature when not under the influence of the magnet, substantially as set forth.

376,631. PICTURE-HOLDING DISK FOR MAGIC LANTERNS. GEORGES CARETTE, Nuremberg, Germany. Filed July 27, 1887. Serial No. 245,449. (No model.)

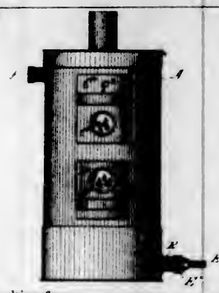


Claim.—In a magic lantern, the combination of the disk D, provided with pockets *e e'*, for the reception of the pictures, the notched wheel *g*, mounted on the axis of the disk D, and the spring *i*, engaging with the notches of the notched wheel, substantially as described.

376,632. CRUCIBLE-FURNACE. CRAFT C. CARROLL, Meadville, Pa. Filed Jan. 31, 1887. Serial No. 226,057. (No model.)

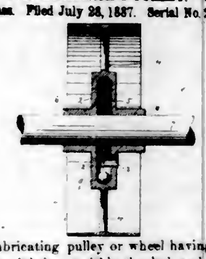


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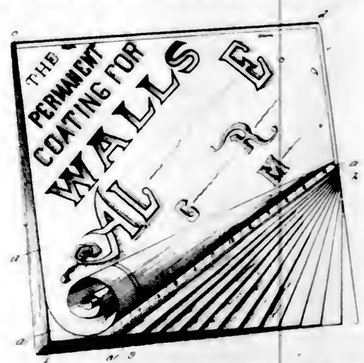
Claim.—A smelting-furnace comprising a metallic outer casing having a fire-brick or clay lining, upper and lower heating-chambers having floors formed of bridges, horizontally-arranged fuel-feeding pipes entering near the base and the top thereof, and provided with one or more perforated couplings for the admission of air, a vertically-arranged pipe within the fire-brick or lining for heating the air, or the air and gas, a damper for controlling the consumption of fuel by closing or opening the flue, and a gas-burner, substantially as described.

376,633. SELF-LUBRICATING PULLEY. WILLIAM T. CARROLL, Worcester, Mass. Filed July 28, 1887. Serial No. 245,485. (No model.)



Claim.—A lubricating pulley or wheel having an annular chamber for holding the lubricant within the hub and in direct communication with the bearing thereof, the open end of said chamber surrounding the bearing being of the same diameter as the chamber itself and provided with one or more balls to come in direct contact with the bearing of the pulley to apply the lubricant thereto, substantially as shown and described.

376,634. SAMPLE-CARD. MELVIN B. CHURCH, Grand Rapids, Mich. Filed Oct. 29, 1887. Serial No. 253,778. (No model.)

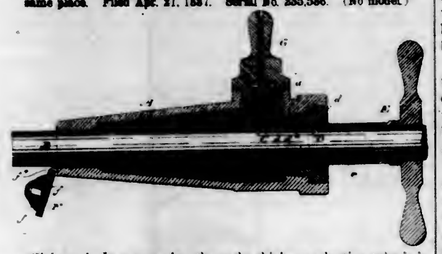


Claim.—1. A sample-card for exhibiting wall-tints, consisting of a series of leaves bound together on one margin, with the free edge of the leaves cut successively of different lengths, the edges being exposed in order, the sheets being provided with an ornamental advertising-cover, substantially as described.

2. A sample-card composed of a series of sheets covered with the samples of the wall-coating bound upon one margin, with the free edges upon one cover cut at an angle and underlapping, substantially as described, whereby each margin is shown in perspective, as set forth.

3. In combination, a sample-card composed of a series of sheets cut diagonally and underlapping, with their edges converging, and a cover for said sheets, also having a diagonally-cut edge and provided with a perspective design the lines of which converge with the cut edges of the sheets, substantially as described.

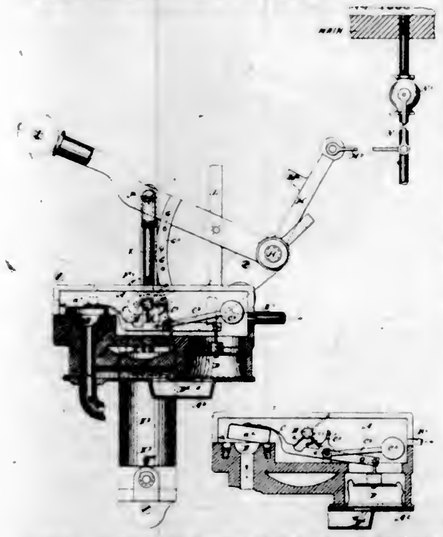
376,635. VENT-PLUG FOR KEGS AND CASKS. WILLIAM F. CLARK, Chicago, Ill., assignor to Fred F. Temple and Willie A. Johnson, same place. Filed Apr. 21, 1887. Serial No. 235,586. (No model.)



Claim.—1. In a vent-plug through which an eduction-tube is introduced for the purpose set forth, the packing-tube held for a portion of its length upon a hollow packing-support, in combination with a hollow key having a tubular stem adapted to enter the hollow packing-support and having its bore adapted to receive the eduction-tube, the bore of the hollow packing-support being somewhat longer than the eduction-tube, so as to permit the tubular stem of the key to enter the space between the hollow packing-support and the eduction-tube and to pass between the portion of the packing-tube that is contracted upon the eduction-tube, in order to separate the packing-tube from the eduction-tube, substantially in the manner and for the purpose set forth.

2. The hollow vent-plug provided at its driving end with a hinged stopper, F, having an elastic body portion of normally greater diameter than the bore of the plug, and attached to the plug by a hinge-joint having between its component connected parts a limited extent of play in a direction parallel with the longitudinal axis of the plug, whereby in driving the elastic body portion into the plug the hinged stopper can move bodily in a direction coincident with the axis of the plug, substantially as and for the purpose set forth.

376,636. GAS AND OTHER FLUID PRESSURE CONTROLLING APPARATUS. HENRY W. COLE and ALBERT F. COLE, Stourport, County of Worcester, England. Filed Mar. 29, 1887. Serial No. 232,851. (No model.) Patented in England Nov. 25, 1886, No. 15,404.



Claim.—1. The herein-described method of detecting leakage of gas or other fluid under pressure in the pipes conducting same, which consists in admitting such fluid to a suitable reservoir, opening communication between said reservoir and egress-pipes leading therefrom, cutting off the flow of said fluid to said egress-pipes, and, after an interval of time, utilizing the relation of pressure for automatically determining the presence or absence of leakage, for the purpose set forth.

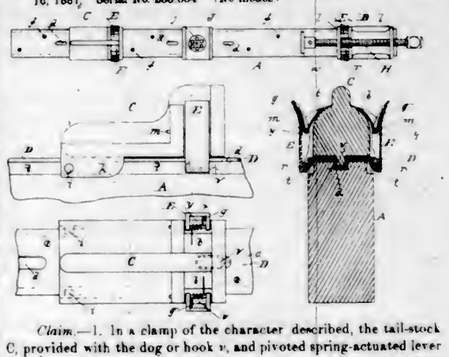
2. The combination, with the gas-chamber having openings for the ingress and egress of the fluid, of a compensating-lever carrying a valve on one end and a weighted balancing device, such as described, upon the other extremity, a mercury cup or seal for said valve, and means for intermediately and gradually operating the said lever according to the amount of gas or fluid admitted to said chamber from the main or other source, as described.

3. The combination, with the fluid-chamber having openings for the ingress and egress of the fluid, of the lever carrying a valve and diaphragm operated by the varying pressure in the chamber and service-pipes, and a spindle carrying a suitable arm or arms for imparting the requisite intermittent motion to the said lever, substantially as specified.

4. The combination, with the fluid-chamber provided with ingress and egress openings, of the valve-lever located entirely within said chamber and having a valve and flexible diaphragm, and a balance-arm and movable weight for regulating the operation of the valve to compensate for the variable pressure of the fluid in the chamber and service-pipes, substantially as specified.

5. The combination, with a valve-lever having the cam projection at its fulcrum-point, of the spindle provided with radial arms which engage and operate upon said projection, and means for intermittently rotating said spindle, as specified.

376,637. CLAMP. PHILIP F. CORBETT, Boston, Mass. Filed Apr. 16, 1887. Serial No. 235,004. (No model.)



Claim.—1. In a clamp of the character described, the tail-stock C, provided with the dog or hook *v*, and pivoted spring-actuated lever E, having the catch *r*, in combination with the body A, provided with the socket *d* and groove *t*, substantially as described.

2. In a clamp of the character described, the tail-stock C, provided with the hook *v*, studs *i*, and pivoted spring-actuated lever E, having the catch *r*, in combination with the body A, provided with the socket *d* and groove *t*, substantially as set forth.

3. In a clamp of the character described, the tail-stock C, provided with the hook *v*, and pivoted levers E, having catches *r*, in combination with the body A, provided with the socket *v* and grooves *t t*, said levers being respectively arranged on opposite sides of said stock, and provided with springs adapted to force their catches into said grooves, substantially as shown and described.

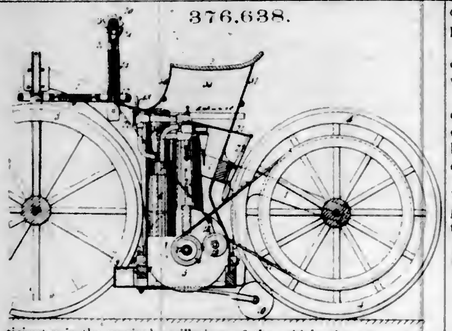
4. In a clamp of the character described, the head-stock B, provided with the hook *v*, studs *i*, and spring-actuated levers E, having the catches *r*, in combination with the screw H and body A, provided with the socket *d* and grooves *t t*, substantially as set forth.

376,638. ENGINE-DRIVEN VEHICLE. GOTTLIEB DAIMLER, Cannstadt, Würtemberg, Germany. Filed Oct. 12, 1885. Serial No. 179,692. (No model.) Patented in England Sept. 11, 1886, No. 10,786; in Belgium Oct. 15, 1885, No. 70,293; in Italy Dec. 17, 1885, No. 18,966; in France Dec. 21, 1885, No. 171,261; in Austria-Hungary Feb. 18, 1886, No. 32,523 and No. 2,908, and in Spain Mar. 26, 1886, No. 8,264.

Claim.—1. The combination, with a vehicle comprising a frame, 1, a ground steering device, 3, and a ground driving-wheel, 4, of the gas or petroleum motor-engine 5 and its reservoir 6, suspended centrally from the frame between the driving-wheel and steering device, with its center of gravity in the plane of the track traversed, and traveling side supports, 10, extending from the motor-engine frame to travel on the ground and laterally brace and support said engine-frame, substantially as described.

2. The combination, with the framing 1, driving-wheel 4, and steering-wheel 3, of the gas or petroleum motor-engine 5, and reservoir 6, suspended centrally from the framing, so that its center of gravity is in the plane of the track, and so that it only partially par-

376,638.



ticipates in the vertical oscillations of the vehicle, the motor-engine being suspended in an elastic manner, and the vehicle being supported laterally by spring-rollers, substantially as herein described.

3. The frictional connection of the driving-pulley 25 with the engine-shaft, adjustable by spring 28, and screw adjustment, whereby when the resistance of the vehicle exceeds the maximum power of the engine the driving-pulley can slip on the engine-shaft.

4. The combination of the elbow-lever 18, with tightening-pulley 19, driving-strap 17, cord 21, steering-spindle 20, and brake-lever 22, whereby when the brake is applied the driving-band is slackened.

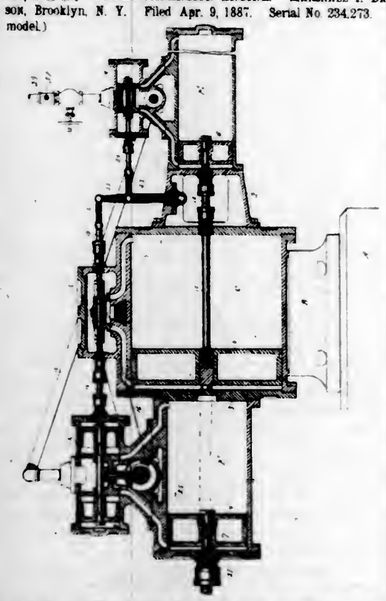
5. The combination, with the engine-shaft, of the fan 31 and removable crank-handle 38, with ratchet-clutch 39, whereby the engine is put in action in the first instance.

6. The inclosed chamber 35 beneath the seat, into which the hot air from the engine passes, and which is also warmed by the receptacle for the products of combustion for the purpose of warming the seat.

7. In combination with the chamber 35, heated by the hot air, the openings provided with flaps 36 and 37, whereby the hot air is allowed to escape when no heating is required.

8. The combination of the frame 1, the ground-wheel 4, the ground steering-runner 3, a gas or petroleum motor-engine, 5, elastically suspended from the frame between the ground-wheel and steering-runner, and yielding side runners, 10, extending from the engine-frame and laterally bracing and supporting the engine-frame, substantially as described.

376,639. TRIPLE-EXPANSION ENGINE. MARSHALL T. DAVIDSON, Brooklyn, N. Y. Filed Apr. 9, 1887. Serial No. 234,273. (No model.)



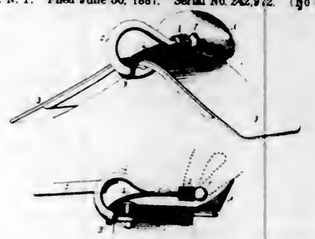
Claim.—1. The combination, in a triple-expansion engine, of a large cylinder, C, supported upon the bed, and two smaller cylinders, one at each end of cylinder C and axially in line therewith and supported wholly thereby, substantially as described.

2. The combination of the cylinder C, cylinder F, supported by one head of said cylinder, and a third cylinder connected by a bracket with the other head of the cylinder C, substantially as described.

3. A triple-expansion direct-acting engine provided with three cylinders axially in line, the pistons of the center and forward engines connected by independent rods with the cross-head, and the rear and high-pressure cylinder connected with the piston of the center cylinder, substantially as described.

4. The combination of the three axially-arranged cylinders with valves, one connected to be operated from a moving part of the engine, and connections between the other valves constructed to vary the throws of the valves, substantially as described.

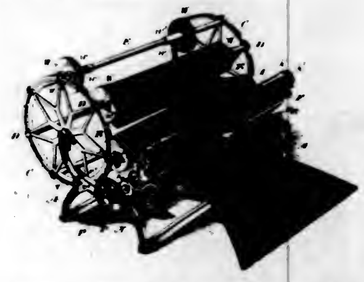
376,640. CHECKREIN-HOLDER. FRANKLIN T. DAVIS, Mount Vernon, N. Y. Filed June 30, 1887. Serial No. 242,972. (No model.)



Claim.—1. The curved checkrein-hook C, having means at one end to connect with a harness-saddle, in combination with a spring, G, connected at one end with the hook and having at the other end the cap E, for engaging the end of the hook above the saddle to prevent accidental disengagement of the checkrein, substantially as described.

2. A checkrein-guard consisting of a cap, E, having a yielding connection, G, and a loop, H, secured to said connection, said loop being adapted to engage the check-hook, substantially as set forth.

376,641. MACHINE FOR MEASURING AND CUTTING FABRICS. HENRY H. DILLE and ELWOOD W. MCGUIRE, Richmond, Ind., assignors to the Dille & McGuire Manufacturing Company, same place. Filed Apr. 3, 1886. Serial No. 197,745. (No model.)



Claim.—1. A machine for measuring and cutting fabrics, having means for holding the fabric to be measured and cut, a rotary feeding and measuring roller, means for rotating the roller, and a cutting device mounted on and movable along a fixed guide on the delivery side of the feed-roller, substantially as and for the purpose specified.

2. A machine for measuring and cutting fabrics, having a suitable holder for the fabric, the feeding and measuring roller, the fixed guide-bar on the opposite side of the feed-roller frame, the fabric-holder, and the cutting device attached to a sleeve sliding on the bar, substantially as and for the purpose shown.

3. In combination with a suitable frame-work and a holder to receive a roll of goods to be cut and measured, the measuring-roller F, the roller above the same, means for rotating roller F to draw the goods from the roll, the fixed guide-bar on the delivery side of the roller F, and the cutting device made movable along the bar, substantially as and for the purpose described.

4. In combination with feed and measuring roller F and means for rotating it, the roller above the same journaled in movable bearings, springs for pressing such bearings toward those of roller F, gearing connecting the two rollers, the guide-bar on the delivery side of the roller, and the movable cutter guided by and moving along such bar, substantially as and for the purpose described.

5. In combination with the gear-wheel L of the registering mechanism, the eccentric connected with the wheel by means adapted to cause it to rotate with the wheel, but to allow it to be rotated independently of the wheel, the pawl provided with a portion engaging and actuated by such eccentric, and a toothed wheel engaged by the pawl, substantially as and for the purpose set forth.

6. In a registering mechanism, in combination with the gear-wheel L, the dial, the pointer, and the eccentric rigidly connected together and frictionally connected with the wheel, and the pawl actuated by the eccentric and adapted to actuate the next wheel in the train of registering mechanism, substantially as and for the purpose described.

7. In combination with the dial, the sleeve on the stud provided with a flange or collar and carrying an eccentric, the hand or pointer fixed on the sleeve, the wheel on the sleeve, and the spring pressing the wheel against the flange or collar, substantially as and for the purpose specified.

8. In combination with the gear-wheel L and the fixed dial, the pointer and eccentric rigidly connected together and yieldingly connected with the wheel, the pawl actuated by the eccentric, and the toothed register-wheel engaged by the pawl, substantially as and for the purpose specified.

9. In combination with a graduated rotary registering-wheel, the stud upon which such wheel is journaled, provided with a collar, the index-hand pivoted on the stud outside of the collar, and the friction-spring on the stud pressing against the hand, substantially as and for the purpose described.

10. In combination with the gear-wheel rotating with roller F, the gear-wheel meshing therewith, the dial, the hand normally carried with wheel L and adapted to be set independently thereof, the graduated wheel, and means for actuating such wheel from wheel L, rigidly connected with the index-hand, so as to be set with such hand, substantially as and for the purpose specified.

11. In combination with a rotary head provided with a series of sockets, the rotary head connected therewith, provided with a corresponding series of opposite sockets having openings through their outer sides made smaller than the sockets themselves, and the rods having their ends of less diameter than the sockets, substantially as and for the purpose specified.

12. In combination with the two rotary heads C C, provided with corresponding sockets having openings in their bottoms or outer sides smaller than the sockets, the rods of such diameter at their ends as to be capable of passing through such openings, substantially as and for the purpose shown.

13. In combination with a bolt or roll carrying rod, the two plates thereon having yielding material on their inner faces, and means for fixing such plates at any desired adjustment on the rod, substantially as and for the purpose specified.

14. In combination with a roll or bolt carrying rod, a plate or disk thereon, provided with a surface of felt on its face adapted to engage one end of the roll, substantially as and for the purpose shown.

15. As a means for keeping a roll of fabric from unrolling, a plate or disk having a hub adapted to enter the roll and provided with a layer of felt or other yielding material on its face to engage the roll end, substantially as and for the purpose set forth.

16. In combination with means for holding the fabric or material, the geared rollers for feeding out the material and means for rotating them, the toothed wheel on the shaft of one of the rollers, and a pawl adapted to be brought into engagement with the teeth on such wheel, so as to allow it to be turned backward, but prevent its forward rotation, substantially as and for the purpose set forth.

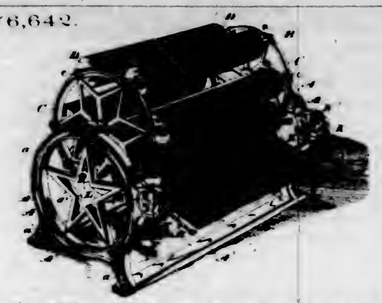
17. In a measuring mechanism for fabrics, in combination with the feed-roller F and the toothed wheel for operating the measuring mechanism as the roller turns, rigidly connected with the roller, the pawl N, for engaging the wheel, so as to prevent its forward rotation, adapted to be thrown into or out of engagement with the wheel at will, and means for rotating the roller in either direction, as desired, substantially as and for the purpose described.

376,642. APPARATUS FOR MEASURING AND CUTTING FABRICS. HENRY H. DILLE and ELWOOD W. MCGUIRE, Richmond, Ind., assignors to the Dille & McGuire Manufacturing Company, same place. Filed May 1, 1886. Serial No. 200,867. (No model.)

Claim.—1. A machine for holding and measuring fabrics having the guide over which the goods are drawn, a tape-measure arranged close to the guide, so that the tape, as drawn out therefrom, passes close to and at right angles to the guide, and the cutter moving along the guide, substantially as and for the purpose specified.

2. The machine having means for holding a roll of goods so as to allow of its being unwound, a guide-bar over which the goods pass as unwound, a tape-measure arranged so that its tape can be drawn over

376,642.



the guide-bar close to the goods and at right angles to the guide-bar, and a cutter moving along said bar, substantially as and for the purpose shown.

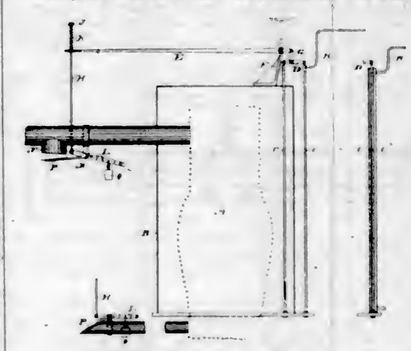
3. A machine for holding, measuring, and cutting fabrics, having a guide for the cutter, a cutter moving along the guide, a tape-measure at one end of such guide, and a revolving carrier adapted to receive and hold several rolls of goods, so that such rolls can be brought successively near and parallel to the guide, substantially as and for the purpose set forth.

4. In combination with bar E, the tape-measure socket just above the same, the tape-measure in the socket, and the set-screw engaging the case of the measure, substantially as and for the purpose set forth.

5. A machine for holding, measuring, and cutting goods, having the revolving heads and rods carried thereby for receiving and holding the goods, the cutter-guide arranged parallel to the roll-receiving rods, the cutter movable along such guide, and the tape-measure situated close to the guide, substantially as and for the purpose shown.

376,643. WITHDRAWN.

376,644. HEAT-REGULATOR FOR FURNACES. LORENZO D. FARRA, Philadelphia, Pa., assignor of one-half to Horace F. McCann, same place. Filed Feb. 3, 1887. Serial No. 226,440. (No model.)

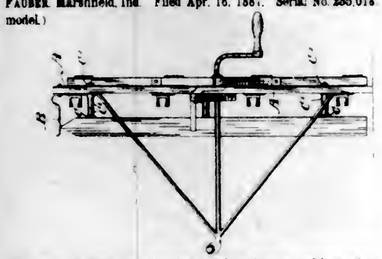


Claim.—1. A heat-regulator for a stove or furnace, consisting of two tubes secured to the base of the casing of a stove, one only of said tubes being within the casing, the lever D, connecting the upper ends of said tubes, a lever pivoted to a frame above said casing and having its shorter arm connected by a link to said lever D, the rod H, having a screw-threaded end, the nut J, and the spring K, the pivoted lever L, the rock-shaft M, with damper P, the weight Q, and a pipe having opening N, all of said parts being combined substantially as described.

2. An automatic regulator for a stove or furnace, consisting of a damper, a series of connecting-levers attached to said damper, a tube having an air-inlet pipe and forming a fulcrum for one of said connecting-levers, and a tube actuating said fulcrumed lever, substantially as described.

3. An automatic regulator for a stove or furnace, consisting of the tubes C and C', the said tubes being secured to the base of the casing B, and the tube C being provided with the air-supply pipe R, the lever D, pivoted to said tubes C and C', the link G, the lever E, having its fulcrum above said casing, the rod H, passing through one end of said lever D, and having the adjustable spring K thereon, the weighted lever L, the rock-shaft M, with damper P, and the pipe with opening N, all substantially as described.

376,645. ATTACHMENT FOR FENCE-MACHINES. W. H. HARRY FAUBER, Marshfield, Ind. Filed Apr. 16, 1887. Serial No. 235,018. (No model.)



Claim.—1. The combination, with a fence-machine, of a claw-support secured to a suitable part thereof and arranged to engage with the slat or picket, whereby said slat or picket is held in the desired position during the twisting, substantially as set forth.

2. The combination, in a wire-fence machine, with the other mechanism, of a gage for determining the position of the slat or picket, and a claw-support for supporting it in said position during the operation of securing it into the fence.

3. A support for slats or pickets in forming wire-and-picket fence, consisting of a projecting bolt or arm having a head provided with teeth, said support being mounted on a suitable part of the fence-machine and arranged for the said teeth to enter the wood of the slat or picket being operated upon.

4. In a fence-machine, the combination, with the part carrying the twisting mechanism, of a claw-support projecting therefrom in advance of said twisting mechanism, whereby said picket is held during the twisting.

5. The combination, in a fence-machine, of a part carrying the twisting mechanism, said twisting mechanism, a gage, B, mounted at the top of said part carrying the twisting mechanism, and a claw-support, buffer, and spacer also secured to said part, substantially as set forth.

6. In a fence-machine, the combination of the main post or twister-board, gage B, mounted at the top of said twister-board, and a series of adjustable buffers and spacers mounted below said gage, one of said buffers and spacers being provided with teeth, whereby it is enabled to support the pickets in position while being operated upon, substantially as set forth.

376,646. FENCE. JOEL A. FLANAGAN, Air Mount, Miss. Filed July 23, 1886. Serial No. 208,883. (No model.)



Claim.—1. In a portable swinging fence, the combination, with the posts having the panels swung thereto, of the braces connected to said panels at their lower ends and pivotally connected at their upper ends, as shown and described.

2. In a portable swinging fence, the combination, with the posts having bearings, the panels, also having bearings, and a hook or link connected to said bearings, of the brace D, connected to the panels at its lower end, and having its upper ends pivotally and detachably connected together, as shown and described.

376,647. DEVICE FOR DRESSING AND JOINTING THE TEETH OF SAWS. WILLIAM M. GREEN, Muskegon, assignor of one-half to David Goldrath, Muskegon County, Mich. Filed Apr. 13, 1887. Serial No. 234,707. (No model.)

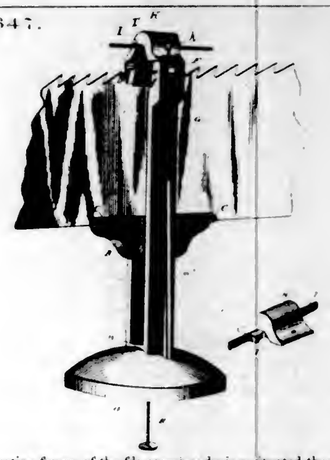
Claim.—1. The combination, with the supporting-frame, of a saw-clamp having a groove or slot for the reception of the saw, and set-screws in the said frame and clamp for guiding the saw and to keep it from lateral movement, substantially as herein shown and described.

2. The combination, with the supporting-frame, of a saw-clamp situated therein and having a groove for the reception of the saw, the devices for guiding said saw, consisting of set-screws arranged on each side thereof to bear against the upper and lower portions of the saw and the set-screw for elevating and lowering the clamp, in the manner and for the purpose substantially as herein shown and described.

3. In a device of the character herein described, the combination with the main frame, of a file-holder pivoted to an outwardly-projecting arm, and the set-screw passing through the main frame and bearing against the lower edge of the said file-holder, by means of which it can be leveled or inclined, substantially as described.

4. In a device of the class herein described, the combination, with

376,647.



the supporting-frame, of the file-carrying devices situated therein and on each side thereof, and adapted to carry the files for dressing or sharpening the teeth of saws, each one of which file-holders is secured to an arm on the frame and may be adjusted to and from each other, and means for giving to said file-holders a proper inclination or level, substantially as described.

5. In a device of the character herein described, a saw-jointer consisting of a file-holder adapted to be attached to or removed from the frame when desired and provided on its under side with a groove to receive and accommodate the file, and the key for holding said file in place, substantially as described.

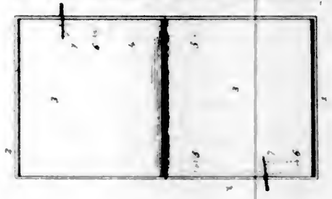
6. The combination, with the supporting-frame, of the saw-clamp situated therein and provided with a groove for the reception of the saw-blade, means for guiding and holding the saw in an upright position, consisting of the set-screws C C C C, and the devices for dressing or sharpening said saw, consisting of the files D, having a beveled face and secured within file-holders E, which are pivoted to the projecting arms F and inclined or leveled by means of the set-screws G G, substantially as described.

7. The combination, with the supporting-frame, of a saw-jointing device consisting of a holder, H, attached to the top of the standards *a a* and provided with a transverse groove for the reception of the jointer-file, which is held therein by means of a key, the clamp B, situated within the supporting-frame and provided with a groove for the reception of the saw-blade, means for holding said saw in an upright position, consisting of the set-screws C C C C, and means for elevating the clamp to bring the saw-teeth in jointing position with respect to the file, consisting of a set-screw, F, passing down through the bottom of the supporting-frame, substantially as described.

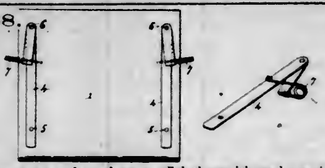
8. In a device for jointing and dressing saw-teeth, the supporting-frame consisting of the standards *a a*, the cross-piece a^2, and the perforated base a^3, in combination with the saw-clamp situated therein, having a groove for the reception of the saw and mounted on a set-screw which passes through the said base-piece, and means for guiding the saw when situated in the frame, and the file-holders situated near the top of the supporting-frame, in alignment with each other and pivoted to projecting arms, and the screws passing through the supporting-frame and bearing against the lower outer sides of the pivoted said file-holders, means for jointing the saw-teeth, consisting of the attachable and detachable holder secured to the top of the standards *a a*, and having a transverse groove on its under side for the reception of a jointer-file securely held therein by a key or wedge, substantially as shown and described.

376,648. MUSIC-FOLIO. WILLIAM J. GROHERT and CHARLES G. COHN, Elkhart, Ind. Filed June 9, 1887. Serial No. 240,755. (Model.)

Claim.—1. In combination with a music-folio, an arm pivoted



376,648.



thereto so as to move in a plane parallel therewith, and a spring-arm carried by said pivoted arm and adapted to embrace the edge of the folio, substantially as described.

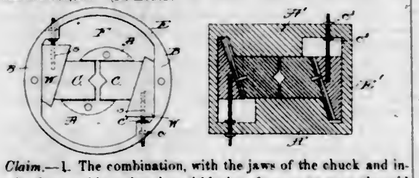
2. The combination of a music-folio whose leaves are hinged together, a jointed arm having one member pivoted to one of said leaves and adapted to move in a plane parallel therewith, and a spring-arm fixed to the other member of said pivoted arm and adapted to embrace the edge of the folio when the latter is in either extended or folded condition, substantially as described.

376,649. VAULT-LIGHT. JOHN C. HALDEMAN, Philadelphia, Pa. Filed Apr. 14, 1887. Serial No. 234,856. (No model.)



Claim.—The vault-light A, having ribs E and a conoidal reflecting-surface, C, on its under face, in combination with the vault-door B, the said light A projecting below said door B, so that nearly the entire conoidal reflecting-surface is below the same and the peripheral face *a* is uncovered, substantially as and for the purpose set forth.

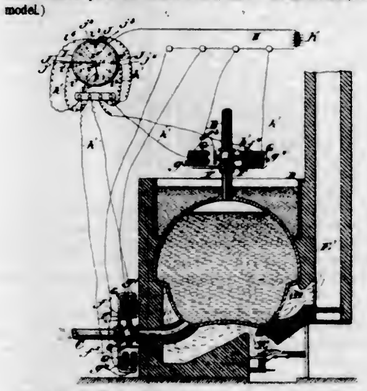
376,650. CHUCK. O. CLIFFORD HALL, Wilkes-Barré, Pa., assignor to the Sheldon Axle Company, same place. Filed Sept. 13, 1887. Serial No. 249,569. (No model.)



Claim.—1. The combination, with the jaws of the chuck and independently-movable wedge-shaped blocks, of screws to move the said blocks to adjust the said jaws, substantially as described.

2. The chuck-jaws C, provided each with a projection at its outer end and wedge-shaped blocks grooved to receive the said projections, combined with actuating-screws to move the said blocks independently of each other, substantially as described.

376,651. AUTOMATIC ELECTRIC VALVE. CHARLES J. HEXAMER, Philadelphia, Pa. Filed Oct. 4, 1887. Serial No. 251,392. (No model.)

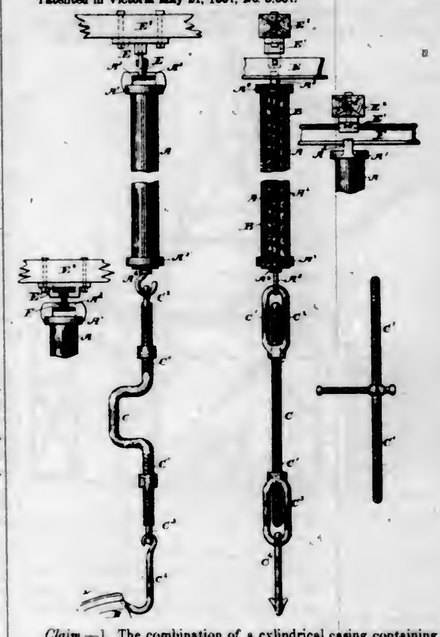


Claim.—1. The combination, with a vessel—such as a boiler—and the supply and discharge pipes thereof, of electrically-controlled valves on said pipes, an electric circuit, and a clock or clocks adapted to periodically close and break said circuit in order to open and close said valves successively, substantially as and for the purpose set forth.

2. The combination, with a vessel—such as a boiler—and the supply and discharge pipes thereof, of the valves on said pipes, the armatures secured to the valve-stems, the magnets adjacent to said armatures, the electric circuit with which said magnets are connected, and the clock or clocks adapted to periodically close and break said circuit, substantially as and for the purpose set forth.

3. The combination, with a vessel—such as a boiler—the supply and discharge pipes thereof, the valves on said pipes, the valve-stems, the armatures on the ends of said valve-stems, respectively, the magnets adjacent to said armatures, and the electric circuit connected with said magnets, of the clock or regulator for successively breaking and completing the circuit with said magnets at predetermined intervals, the dial-plate of said clock, a hole or series of holes in said dial-plate in the path of the hand or hands of said clock, the pins connected with the circuit-wires leading from each of said magnets and adapted to be inserted in said hole or holes, the other end of the circuit being connected with said hands, whereby either of the latter, as desired, will in its rotation come into contact with and ride over said pin or pins, and thus complete and break the circuit with said magnets in succession, all combined, constructed, and adapted to operate substantially as and for the purpose specified.

376,652. APPARATUS FOR TILTING CASKS. JAMES HILL, Melbourne, Victoria. Filed July 27, 1887. Serial No. 245,465. (No model.) Patented in Victoria May 21, 1887, No. 5,067.



Claim.—1. The combination of a cylindrical casing containing a spring, with a rod having a disk at its top to press on such spring, a hook for engaging the barrel-chine, and an adjustable connection between said hook and rod, substantially as described.

2. The combination of the cylindrical casing having engaging-lugs on its upper end, a rail engaging said lugs and upon which said cylinder is movably supported, a spring in said casing, and a rod having a disk bearing on said spring, and a hook for engaging the barrel-chine, substantially as described.

3. The combination of the screwed coupling-bar, means for rotating said bar, hooks connected to the lower end of said bar, and cylindrical casing above said bar, containing a spring, and rod connected to said bar, substantially as specified.

376,653. DENTAL MANDREL. CHARLES W. F. HOLBROOK, Newark, N. J. Filed Oct. 4, 1887. Serial No. 251,485. (No model.)

Claim.—1. In a dental disk-carrier, the combination of a spindle provided with a cross-head, a sleeve having teeth on its end, and an outwardly-pressing spring, whereby the said teeth engaging a disk placed on the carrier will hold it securely against the cross-head, substantially as and for the purpose described.

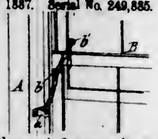
2. In a dental disk-carrier, the combination of the shouldered

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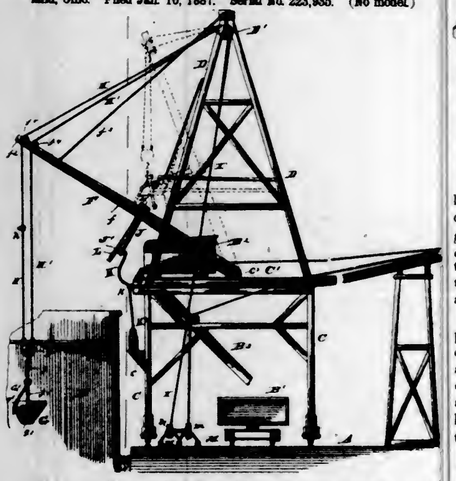
spindle provided with a cross-head and carrying the coiled spring between the shoulder and cross-head, and the sleeve carrying the integral teeth between which the cross-head fits, locking the disk in position.

376,654. SASH-FASTENER. KATE D. HUGHES, Washington, D. C. Filed Sept. 15, 1887. Serial No. 249,885. (No model.)



Claim.—In a window-sash fastener, the combination of a staple attached to the frame below the meeting-rails of the sashes, a chain secured to the staple, and a scroll-shaped hook attached to the sash, said chain having open links and being capable of attachment to the hook by means of its various links, substantially as described.

376,655. HOISTING APPARATUS. GEORGE H. HULETT, Cleveland, Ohio. Filed Jan. 10, 1887. Serial No. 223,935. (No model.)



Claim.—1. The combination, with an elevated platform having curved slots oppositely arranged in the arcs of a single circle within the body of said platform, of a two-legged boom having shoes working directly between the walls of and arranged to be adjusted within said arc-shaped slots, whereby the free end of the boom may be thrown over different hatchways of a vessel without moving either the vessel or derrick, as set forth.

2. The combination, with the boom F and means for changing its position in the arc of a circle, of two pulleys arranged in the free end of the boom, a single pull-rope and two branch ropes, as H H', the said branch ropes being arranged to move simultaneously, and having their outer ends connected to a block which supports the bucket, as set forth.

3. The combination, with the boom having pulleys f^4 f^5, of the bucket-supporting block g', the simultaneously-moving ropes H H', both attached at one end to said block, and pull-rope I, attached to both of said ropes, the drum or pulley D', and the stop, as h, arranged upon one of said ropes and adapted to engage the boom at predetermined periods, as herein specified.

4. The combination, with the boom having pulleys f^4 f^5, the bucket and its supporting-block, the two simultaneously-moving ropes, the pull-rope, and proper connections, of the weight K' and cord K, arranged to limit the upward movement of the boom, as specified.

5. The combination, with the boom F, the suspended bucket, and means for elevating them, of the frame J J, secured to said boom, and the cross-bar J', rigidly secured to said frame and arranged to engage the bail of the bucket and to "square" it up for dumping, as herein specified.

6. The combination, with the boom, the bucket, and means for elevating them, of the cross-bar J', rigidly secured to the boom and arranged to present the bucket fairly for dumping, and the dumping-bar L, supported rigidly upon the beam at right angles to the bar J', and arranged to engage the locking-arm of the bucket to dump the same, as set forth.

7. The bucket G, having short flat bottom and extended dumping-mouth, and having its bail-pivot hung below and in rear of its center of gravity, and having an extended mouth and bail, g^4, combined with the boom, the cross-bar J', the locking-arm G', the keeper g, and dumping-arm L, as set forth.

8. The derrick herein described, comprising the boom having its feet adjustably secured in slots C^3 of the platform C, the pull-rope I and its two branches, H H', the longer one being led over the pulley f^3, nearest the end of the boom, and both secured rigidly to the block g', the bucket G, having locking-arm G', the frame J J', the dumping-arm L, the rope K, and the weight K', and the stop h, all arranged for joint operation, for the purpose set forth.

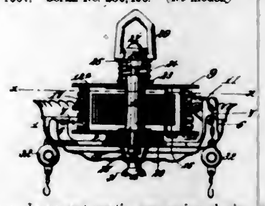
376,656. DISPLAYING-RACK. ARVINE P. HUNTER, Lowell, assignor of two-thirds to Harry W. Beecher and James L. Kymer, Grand Rapids, Mich. Filed Mar. 28, 1887. Serial No. 232,682. (No model.)



Claim.—1. In a display-rack, the combination, with a rectangular frame pivotally secured at one end to a support and a series of cross-bars on which the goods to be displayed are hung, of stationary guide-bars rigidly secured to a support at a point below the pivoted end of the frame and the supporting-rods pivotally secured at one end to the frame, the other or lower ends of said bars being loosely attached to the guide-bars and adapted to slide thereon, substantially as set forth.

2. In a display-rack, the combination, with a rectangular frame pivotally secured at one end to a support and provided with a series of cross-bars on which the goods to be displayed are hung, of stationary guide-bars secured to said support at a point below the pivoted end of the frame, the supporting-rods pivoted at one end to the frame and loosely attached at their opposite ends to the guide-bars, and a latch adapted to engage the free end of the frame when the latter is turned to an upright position, substantially as set forth.

376,657. SUSPENSION DEVICE. NICHOLAS JENKINS, Waterbury, Conn., assignor to Holmes, Booth & Haydens, New York, N. Y. Filed Apr. 28, 1887. Serial No. 236,496. (No model.)



Claim.—1. In an automatic suspension device, the combination of a casing and an inclosed suspension mechanism comprising a hollow arbor, a slotted sleeve, a bolt passed through said arbor and sleeve, and a loop hinged or pivoted in the slots of the sleeve beneath the head of the bolt and adapted to engage a hook, substantially as described.

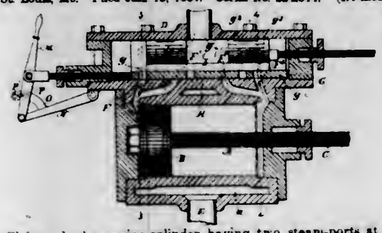
2. In an automatic suspension device, the combination of a rotary drum, a hollow arbor, a bolt passed through said arbor, a spiral spring surrounding the upper part of the bolt and engaged with the upper end of the said arbor, a bilaterally-slotted sleeve, and a hinged loop engaged in the slots of said sleeve beneath the head of the bolt, substantially as described.

3. In an automatic suspension device, the combination of a casing, a rotary drum, a spider having a hollow arbor for said drum, a bolt passed through said arbor and casing, a nut on the bolt beneath the spider, a bearing-block surrounding said bolt and nut between the casing and spider, and a nut on the end of the bolt beneath the casing, substantially as described.

4. In an automatic suspension device, the combination of the rotary drum 9, having a detachable top plate, the hollow arbor 10, having a slot, 18, the springs 17 and 24, engaged in said slot, the bolt 27, the sleeved washer 23, flat washer 25, sleeve 26, and hinged loop 29, substantially as described.

5. In an automatic suspension device, the combination of the casing 1, spring-drum 9, hollow arbor 10, a spider, 2, a bolt, 27, passing through the hollow arbor and casing and having a screw-threaded lower end, a hinged loop, 29, connected with the upper end of said bolt, the washers 20 and 23, bearing upon the upper and lower sides of the drum, a sprius, 24, bearing against the upper washer, a washer, 25, between the hinged loop and the upper end of the spring 24, a bearing-block, 30, located in the casing and supporting the spider, and a nut, 31, bearing against the under side of the casing below said block and adjustable on the lower end of the bolt, substantially as described.

376,658. REVERSING DEVICE FOR ENGINES. DANIEL P. KANE St. Louis, Mo. Filed Jan. 13, 1887. Serial No. 224,311. (No model.)



Claim.—1. An engine-cylinder having two steam-ports at each end, a slide-valve having two exhaust chambers or cavities, as i^4, a reversing-plate between the slide-valve and cylinder, having but four steam-ports so arranged that but two of the cylinder-ports (one at each end) can have communication with the steam-chest at the same time, and two exhaust-ports situated above the reversing-plate, with which the exhaust-chambers i^4 communicate, substantially as set forth.

2. The combination, with the cylinder A, the seat H, having four ports, two communicating with each end of the cylinder, and the steam-chest inclosing said seat, of the sliding reversing-plate having but four ports situated at such distances apart that but two of them can be brought into coincidence with but two of the ports in the seat H at the same time, (one communicating with each end of the cylinder,) a slide-valve placed above said plate, adapted to alternately open and close the ports in communication with the respective ends of the cylinder and having exhaust-chambers which communicate with the port which is for the time being closed by the valve, and exhaust-ports above the reversing-plate, with which said chambers communicate, substantially as set forth.

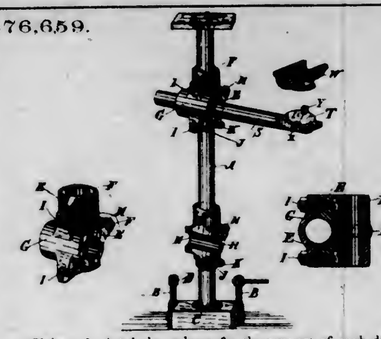
3. The combination, with the cylinder, of the seat H, having two pairs of ports communicating with each end of the cylinder, a reversing-plate having but two pairs of ports for registering with the ports of the cylinder, said ports being so arranged that but one pair of ports in the reversing-plate can register with its corresponding pair of cylinder-ports at the same time, a slide-valve adapted to alternately cover and uncover each cylinder-port and having exhaust-chambers with which the port which is for the time being covered communicates, and exhaust-ports above the reversing-plate, with which the said chambers communicate, substantially as set forth.

4. The combination of the cylinder, the seat H, having a pair of ports communicating with each end of the cylinder, a reversing-plate having two pairs of ports adapted to register alternately with the ports of the seat H, the seat d', having ports communicating with the exhaust, and the valve having the two faces fitting against said seats, and the exhaust-chambers adapted to communicate with all the ports which are open for operation, substantially as set forth.

5. The combination, with the cylinder and the seat H, having a pair of ports, F F', communicating with one end thereof, and a pair of ports, F^2 F^3, communicating with the other end, of a reversing-plate having but four ports, g g' g^2 g^3, so arranged that when the said plate is at one position one pair of ports, g g^3, will be in communication with one pair of the cylinder-ports, F F^2, when in another position its other pair of ports, g' g^2, will be in communication with the other pair of cylinder-ports, F' F^3, and when in a third position none of said ports will communicate, as set forth.

376,659. DRIFT COLUMN OR SUPPORT FOR ROCK-DRILLS. PATRICK KELLY, Poughkeepsie, assignor to Addison C. Rand, New York, N. Y. Filed Dec. 14, 1886. Serial No. 221,575. (No model.)

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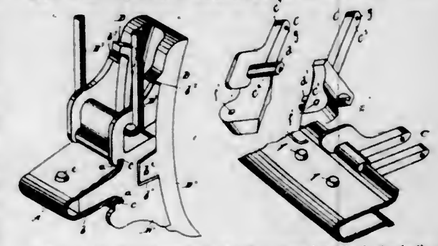


Claim.—1. A tubular column for the support of rock-drills, provided with an extension screw or screws in the end thereof, and a three-part split hub on said column bored vertically and horizontally and provided with threaded bolts and nuts, the heads of said bolts countersunk in the respective tubular bearings.

2. The combination, with the column A and horizontal arm S, of a drill-clamp on the arm and a coupling adjustable vertically on the column and comprising a horizontal sleeve wherein said arm is held and in which the arm may be adjusted lengthwise, substantially as described.

3. The combination, with the column A and the arm S, of the coupling having the divided sleeve, with their axes at substantially right angles to each other, and composed of the center piece, E, having formed in its opposite sides semicircular portions of the sleeves and having recesses for the bolt-heads, and cap-pieces F and G and bolts I, securing the said cap-pieces and having their heads received in said recesses, substantially as described.

376,660. CAR-BRAKE. RICHMOND H. LITTLEFIELD, Somerville, Mass. Filed Aug. 9, 1887. Serial No. 246,527. (No model.)



Claim.—1. In a device of the character described, the hollow brake-beam of a form substantially U-shaped.

2. In a device of the character described, a hollow U-shaped brake-beam formed with flanges, for the purpose substantially as herein shown and set forth.

3. In a device of the character described, the combination, with the hollow brake-beam, of the shoe, the head of which is formed with a lug fitting within said brake-beam and secured together by a single rivet, substantially as shown and described.

4. In a device of the character described, the combination of the hollow brake-beam having flanges, and the shoe formed with a lug fitting within the said brake-beam and with grooves for the reception of the said flanges, and a rivet for further securing the said beam and shoe together, substantially as shown and described.

5. In a device of the character herein described, the brake-beam having flanges, in combination with a shoe formed of separate pieces, one of which pieces is formed with a lug at or near its central portion and with smaller lugs at each extremity, and the other of which pieces is formed with a groove for the reception of the said central lug, a groove for the reception of the flanges of the beam, and a slot for the reception of a suitable suspending device, and a locking-key for securing the said parts together.

6. In a car-brake, the combination, with a hollow brake-beam, of a fulcrum-piece formed of parts independently secured within the brake-beam.

7. In a device of the character described, the hollow brake-beam, in combination with a fulcrum-piece formed of separable pieces, substantially as described.

8. In a device of the character described, the hollow brake-beam having flanges, in combination with a fulcrum-piece formed of separable pieces, substantially as described.

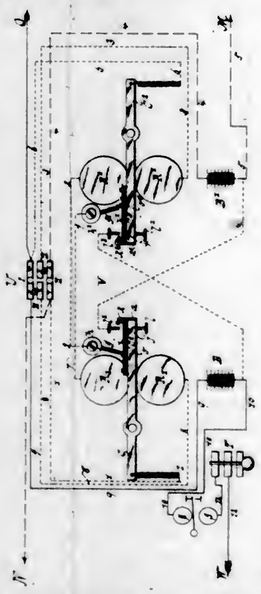
9. In a device of the character described, the combination, with the hollow brake-beam having flanges, of a fulcrum-piece formed of separable pieces and having lugs provided with grooves adapted to embrace the said flanges, substantially as described.

10. In a device of the character described, the hollow brake-beam having flanges, in combination with a fulcrum-piece formed of separable pieces and having lugs formed with grooves adapted to embrace the said flanges, and the head of the said fulcrum-pieces adapted to be situated within the hollow beam and secured thereto by rivets, substantially as described.

11. In a car-brake, the combination, with a hollow brake-beam formed with flanges, of a fulcrum-piece formed of portions C' and C², independently secured within the said beam and having lugs formed with grooves adapted to embrace the said flanges, and also having outwardly-extending arms adapted to receive a lever between them.

12. In a device of the character described, the combination, with the hollow brake-beam, of the shoes at its extremities, which shoes are formed of separable pieces, one of which pieces, as B', is formed with a lug fitting within the brake-beam and with grooves for the reception of the flanges of the said brake-beam, and the other of which pieces, as B², is formed with a lug fitting within a recess formed in the said piece B', and a key or wedge adapted to be driven down through the said pieces B' and B² and serving to secure them together, and the fulcrum-piece formed of separable pieces, each of which has a lug or projection grooved to embrace the flanges of the said brake-beam and provided with arms for the reception of an operating-lever, and the said operating-lever, all arranged and combined to operate in the manner and for the purposes substantially as shown and described.

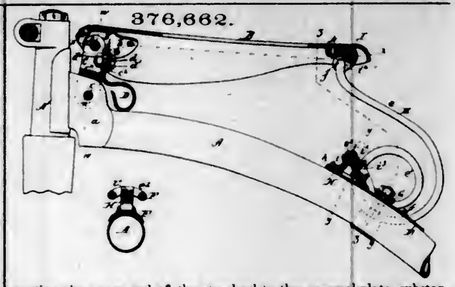
376,661. TELEGRAPH-REPEATER. JOSEPH KÖLSER, Duisburg, Prussia, Germany. Filed Apr. 8, 1886. Serial No. 198,270. (No model.) Patented in Germany May 31, 1884, No. 30,517; in France June 10, 1884, No. 162,342; in Belgium June 11, 1884, No. 65,449; in England June 14, 1884, No. 8,990; in Italy June 30, 1884, XXXIII, 467; in Sweden Oct. 17, 1884; in Austria-Hungary Nov. 13, 1884, 34/2,236 and XVIII/2,218; in Spain Nov. 15, 1884, No. 441; in Norway Dec. 4, 1885, and in Denmark Jan. 12, 1886, No. 993.



Claim.—In a telegraph apparatus, the combination, with the two main-line circuits O W and M N and the batteries B B' included therein, of the relays R R', constructed as described, and the commutator U, having six plates, four holes, and two plugs, and circuit-wires connected with the relays and main-line circuits, whereby the latter can be united or separated, substantially as described.

376,662. VELOCIPEDE-SADDLE. EMMIT G. LATTA, Friendship, N. Y., assignor to the Pope Manufacturing Company, Portland, Me. Filed Jan. 24, 1887. Serial No. 225,247. (No model.)

Claim.—1. The combination, with the frame of a velocipede, of an upright standard pivoted at its lower end to the frame, a saddle, a rigid pommel-plate secured to the saddle, and a horizontal pivot connecting the upper end of the standard to the pommel-plate, substantially as set forth.



2. The combination, with the frame of a velocipede, of an upright standard pivoted at its lower end to the frame, a saddle, a rigid pommel-plate secured to the saddle, a horizontal pivot connecting the upper end of the standard to the pommel-plate, and a curved metallic spring secured with its upper end to the standard and resting with its curved lower end upon the frame, substantially as set forth.

3. The combination, with the frame and saddle of a velocipede, of an upright supporting-bar pivoted to the frame and saddle and a supporting-spring secured to the supporting-bar and made vertically adjustable thereon, substantially as set forth.

4. The combination, with the frame and saddle of a velocipede, of an upright supporting-bar pivoted to the frame and saddle and composed of side pieces, c', and a connecting cross-piece, c², a supporting-spring, D, provided in its upper end with a vertical slot, d', and a bolt, d, whereby the spring is adjustably secured to said cross-piece, substantially as set forth.

5. The combination, with the frame and saddle of a velocipede, of a supporting-standard pivoted to the frame and saddle and a supporting-spring secured to said standard and resting on the frame, and having its lower end curved upwardly and adapted to strike the upper portion of the spring when the latter is subjected to an excessive shock, substantially as set forth.

6. The combination, with the frame and saddle of a velocipede, of a metallic pommel-plate secured to the under side of the saddle and a supporting-bar pivoted with its upper end to said pommel-plate and with its lower end to the frame, substantially as set forth.

7. The combination, with the backbone of a velocipede and the saddle, of a supporting-spring composed of two coiled branches and a base-plate resting on the backbone and provided with curved seats in which the coils of the spring are supported, substantially as set forth.

8. The combination, with the backbone of a velocipede and the saddle, of a supporting-spring composed of two coiled branches, a base-plate resting on the backbone and provided with curved seats for the inner coils of the spring, and a clamping-plate whereby the base-plate and the spring are secured to the backbone, substantially as set forth.

9. The combination, with the backbone of a velocipede and the saddle, of a supporting-spring, a base-plate resting on the backbone, and a detachable supporting-block resting on the base-plate, substantially as set forth.

10. The combination, with the backbone of a velocipede and the saddle, of a supporting-spring, a base-plate resting on the backbone and provided with a longitudinal groove, and a detachable supporting-block arranged in the groove of the base-plate, substantially as set forth.

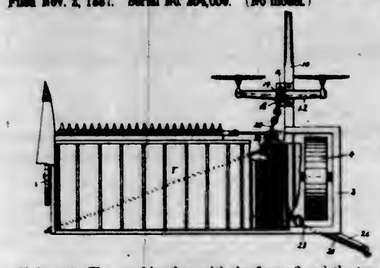
11. The combination, with the backbone of a velocipede and the saddle, of a supporting-spring, a base-plate resting on the backbone, and a detachable supporting-block resting on the base-plate and provided with a series of seats for the spring at different elevations, substantially as set forth.

12. The combination, with the backbone of a velocipede and the saddle, of a supporting-spring composed of two coiled branches, a base-plate provided on its upper side with curved seats in which the coils of the spring are supported, a clamping-plate provided on its under side with concave seats resting on the coils of the spring, and a clip whereby the clamping-plate is secured to the backbone, substantially as set forth.

13. The combination, with the backbone of a velocipede and the saddle, of a supporting-spring composed of two coiled branches and a saddle-frame, composed of a curved round metallic rod secured to the saddle and connected detachably with the spring, substantially as set forth.

14. The combination, with the backbone of a velocipede and the saddle, of a supporting-spring composed of two coiled branches and a saddle-frame composed of a round metallic rod provided with sockets in which the upper ends of the branches of the spring are inserted substantially as set forth.

376,663. DRAFT-EQUALIZER FOR HARVESTERS. C. A. HERMAN LAUDON, Sherman, assignor to Louis Laudon, Sr., Dover, Minn. Filed Nov. 2, 1887. Serial No. 254,059. (No model.)



Claim.—1. The combination, with the frame 2 and the tongue 10 of the evener 12, held in sliding bearings, and the equalizing-cable secured to the rear corners of the frame 2 and connected with said evener, substantially as described.

2. In a harvester, the combination, with the frame 2 and the tongue 10, of the evener 12, held in sliding bearings upon said tongue, the equalizing-cable 20, secured to the frame at the rear corners, and the rod or cable 24, connecting said evener with said equalizing-cable, all substantially as described.

3. In a harvester, the combination, with the frame 2, of the beam 26, attached to and extending outward from said frame, the cable 20, the sheave 28, over which said cable passes, and the draft device attached to said cable 20, substantially as and for the purpose set forth.

4. The draft-equalizer consisting of the cable 20, secured to the frame 2, the ring 22, the rod 24, the clevis 16, and the evener 12, all substantially as described.

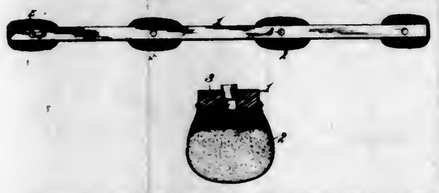
376,664. TERRY FABRIC. FRANK LEAKE, Philadelphia, Pa. Filed May 5, 1887. Serial No. 237,251. (No model.)



Claim.—1. A terry fabric consisting of the warp and weft threads forming the ground of the fabric and the loose warp or terry thread bound between its loops by three or more of the weft-threads, the said warp and weft threads being bound together beneath the terry loops, substantially as described.

2. A fabric consisting of filling and warp threads and a second warp-thread formed in a series of loops and bound between the loops by the weft-thread, passing first above, then below, and then above the loose warp, the tight warp of the cloth proper being floated over the second and third picks of the weft, substantially as described.

376,665. INSECT-POISON DISTRIBUTER. BOWLING S. LEATHERS, New Orleans, La. Filed Oct. 1, 1887. Serial No. 251,215. (No model.)

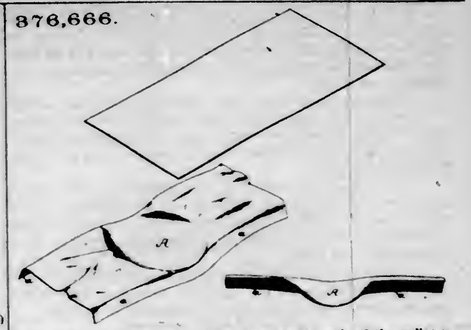


Claim.—In a device for distributing insect-poison, the pole or bar having openings formed therein at intervals, in combination with bags formed of textile fabric or wire-net attached thereto, and with which said openings communicate, substantially as described.

376,666. MANUFACTURE OF SHEET-METAL SPLINTS. J. ELLWOOD LEE, Conshohocken, Pa. Filed Sept. 27, 1887. Serial No. 250,632. (No model.)

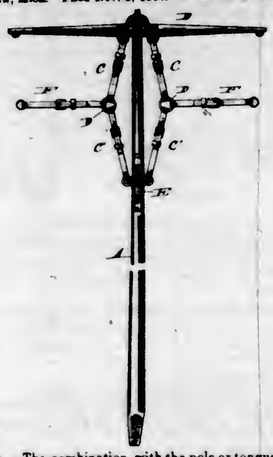
Claim.—1. The mode herein described of producing splints, said mode consisting in forming in the blank the desired depression, and at the same time forming flanges at the edges of the blank to avoid the formation of creases, then cutting off the flanges and finishing the blank, all substantially as set forth.

2. The mode herein described of forming chin-splints, said mode consisting, first, in forming the central depression in the blank for the point of the chin and forming flanges for the edge of the depression,



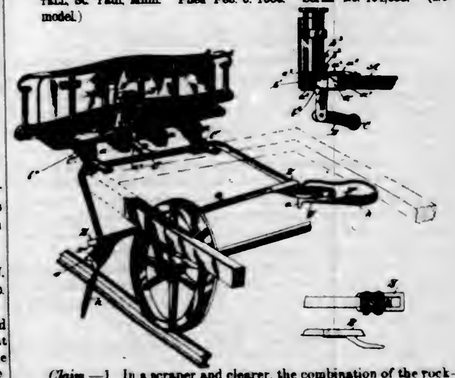
then removing said flanges and bending up the ends of the splint to the desired curve, all substantially as described.

376,667. VEHICLE-TONGUE SUPPORT. GEORGE F. LITCHARD, Paw Paw, Mich. Filed Nov. 3, 1887. Serial No. 254,181. (No model.)



Claim.—The combination, with the pole or tongue and neck-yoke, of the straps C C, attached to the neck-yoke, the ring-connections D D, attached to the straps C C, the straps C' C', attached to the said rings and to the vehicle-pole, and the straps F F, also attached to the said ring-connections and provided with means of attachment to the hames, substantially as described.

376,668. TRACK-SCRAPER FOR RAILROADS. HARVEY M. LITTELL, St. Paul, Minn. Filed Feb. 6, 1886. Serial No. 191,085. (No model.)



Claim.—1. In a scraper and clearer, the combination of the rock-shaft, the eyebolts or journals, the levers, and the scrapers, with the cross-bar, which is provided with loops at its ends loosely encircling the scraper-levers, and which extends from one to the other and is free to vibrate therewith, substantially as described.

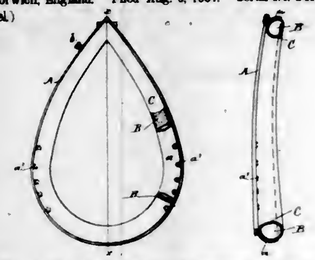
2. In a scraper and clearer, the rock-shaft and scrapers journaled to the car, in combination with the lever-arm which operates the rock-shaft and the latch which operates said lever-arm, said latch and lever-arm being adjustable at their pivotal point of connection, substantially as set forth.

3. In a scraper and clearer, the rock-shaft and scrapers pivoted to the car, in combination with the lever-arm provided with a locking device whereby the scrapers may be instantly dropped and rigidly held down into contact with the rail at will by the driver's foot, substantially as set forth.

4. In a clearer and scraper, the rock-shaft having the crooked scraper-levers formed integral therewith, and the crank-lever B, also formed integral with the rock-shaft and extending forward therefrom, in combination with the scrapers and means for operating the same, substantially as set forth.

5. The combination of the rock-shaft, the scraper lever-arms, and the scrapers, with the cross-bar having the extensions which extend back with and strengthen the scrapers, substantially as set forth.

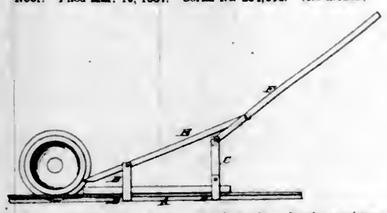
376,669. HORSE-COLLAR. HERBERT W. LOADS, Norwich, County of Norwich, England. Filed Aug. 3, 1887. Serial No. 246,356. (No model.)



Claim.—1. In a horse-collar, the combination, with the metallic front plate having a concave recessed back, of a separate air-inflated pad, a soft cover for the pad, and the fastenings whereby the said covered pad is removably secured within the said concave recess, substantially as set forth.

2. In a horse-collar, the combination, with a metallic front plate having a concave recessed back and provided with eyes *a'*, of a separate air-inflated pad, and a soft cover for the said pad stitched to the said eyes, whereby the said pad is removably attached to the said front plate, substantially as set forth.

376,670. CAR-PUSHING MACHINE. RICHARD LUKINS, Randolph, Nebr. Filed Mar. 19, 1887. Serial No. 231,618. (No model.)



Claim.—1. A car-pusher comprising a base having guides whereby to direct its movement on a rail, a pivoted pinch-bar, a lever, a swinging fulcrum, to which said lever is pivoted, and connections, substantially as described, the pinch-bar being pivoted to the lever at a point in rear of the pivot or fulcrum of such lever, substantially as described, and for the purpose specified.

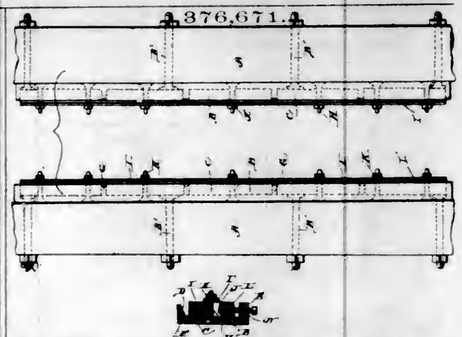
2. The combination of the base having depending guides whereby to direct its movements along a rail, a pivoted pinch-bar having an extension in advance of its pivot, a support on which such bar is pivoted, a swinging fulcrum, and a lever pivoted to said fulcrum, and having the pinch-bar pivoted to it in rear of the point where it is pivoted to the swinging fulcrum, substantially as set forth.

3. The herein-described car-pusher, consisting of the base, the uprights *d d'*, having extensions D D, forming guides, the pinch-bar E, having extension *e*, the hand-lever F, and the link C, substantially as described, and for the purposes specified.

376,671. SLIDEWAY. HENRY R. MATHIAS, Athens, Ohio. Filed Sept. 9, 1887. Serial No. 249,247. (No model.)

Claim.—1. In a slideway, the combination of a flanged casting having one of the flanges thereof beveled upon its inner face, with wooden blocks secured in said casting, thereby forming substantially a V-shaped way.

2. In a slideway, the combination of a flanged casting having one



of the flanges thereof beveled upon its inner face, with wooden blocks having the grain thereof extending transversely across them secured in said flanged casting, thereby forming substantially a V-shaped way.

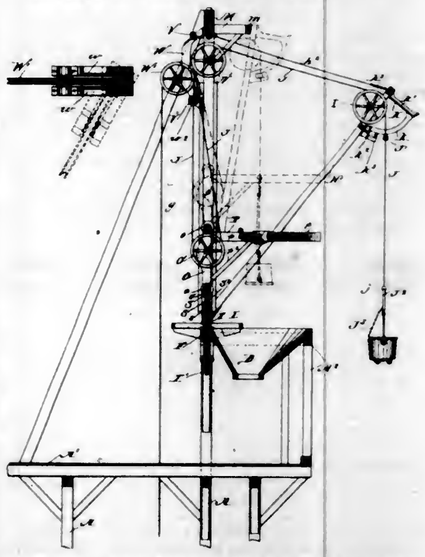
3. In a slideway, the combination of a casting having one of its sides beveled and ears projecting from its bottom, with wooden blocks adjustably secured to said casting and having the grain thereof extending transversely across them.

4. In a slideway, the combination of a casting having one of its sides beveled and ears projecting from its bottom, with wooden blocks clamped and adjustably secured to said casting and having the grain thereof extending transversely across them.

5. In a slideway, the combination of a casting having ears projecting from its bottom, with wooden blocks having the grain thereof extending transversely across them, and an adjustable metallic strip and set-screws.

6. In a slideway, the combination of a casting, substantially as described, and ears and bolts projecting from the bottom thereof, with adjustable blocks having the grain thereof extending transversely across them, and having elongated apertures, a clamping-strip, and nuts.

376,672. HOISTING APPARATUS. FRANK P. MILLS, Chicago, Ill. Filed June 18, 1887. Serial No. 241,711. (No model.)



Claim.—1. In a hoisting apparatus, the combination, with a suitable sustaining-frame and with a mast pivoted at the top and bottom, of a base-bar to which said mast is connected, and a jib comprising side bars pivotally connected at their inner ends to the ends of said base-bar, said base-bar serving to sustain both the mast and the jib, and being adjustably connected with the frame-work, whereby the position of the mast and jib with respect to said frame-work may be simultaneously adjusted, substantially as described.

2. In a hoisting apparatus, the combination, with a suitable sus-

taining-frame, of a mast pivotally mounted therein, a jib comprising side bars, a base-bar to which said side bars of the jib are pivoted, and segment-plates and adjusting-bolts for determining the position of the mast and jib, substantially as described.

3. In a hoisting apparatus, the combination, with the jib pivoted to swing in vertical direction and a hoisting-rope passing over said jib, of a clutch adapted to lock the hoisting-rope against direct outward movement when the jib is raised, substantially as described.

4. In a hoisting apparatus, the combination, with a jib pivoted to swing in vertical direction and a hoisting-rope passing over said jib, of a clutch for retaining the hoisting-rope as the jib is raised, and expanded guide-arms for directing said rope into the clutch, substantially as described.

5. In a hoisting apparatus, the combination, with a mast and a jib pivoted at its inner end, of a vertically-movable dumping-arm and a hoisting-rope connected with the jib and with the dumping-arm, substantially as described.

6. In a hoisting apparatus, the combination, with a mast and with a jib pivoted to swing in vertical direction, of a vertically-movable dumping-arm, a hoisting-rope, and a movable sleeve on said dumping-arm, with which the dumping-arm will engage, substantially as described.

7. In a hoisting apparatus, the combination, with the mast, of a jib pivoted at its inner end and provided at its outer end with a detent device, a vertically-movable dumping-arm, and a hoisting-rope, provided with a stop to engage with the detent on the outer end of the jib, and with a movable trip-sleeve to engage with the dumping-arm, substantially as described.

8. In a hoisting apparatus, the combination, with the mast provided with pulleys at its upper end and with a jib, of a vertically-movable frame or carriage provided with a pulley, a dumping-arm carried by said frame or carriage, and a hoisting-rope provided with a trip-sleeve adapted to be moved by the dumping-arm, substantially as described.

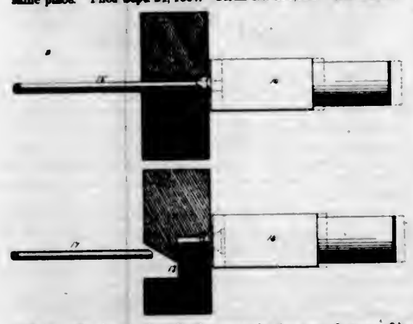
9. In a hoisting apparatus, the combination, with the mast provided with pulleys at its upper end, of a vertically-swinging jib provided at its outer end with a pulley and with a detent device, a vertically-movable frame or carriage sustained by said mast and provided with a pulley, a dumping-arm connected with said frame or carriage, and a hoisting-rope passing over said several pulleys and provided with a stop to engage with the detent and the jib, and with a movable trip-sleeve to engage with the dumping-arm, substantially as described.

10. In a hoisting apparatus, the combination, with the mast and the jib, of a vertically-movable dumping-arm having jaws to admit the hoisting-rope, and a suitable clutch device for retaining the rope within said jaws, substantially as described.

11. In a hoisting apparatus, the combination, with the crane and the jib, of a vertically-movable dumping-arm and a hoisting-rope provided with the vertically-movable trip-sleeve, and a chain leading from said trip-sleeve for connection with the base of the tub, substantially as described.

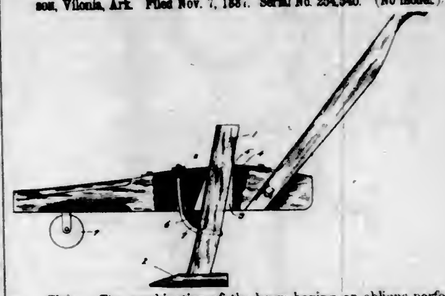
12. In a hoisting apparatus, the combination, with the mast and the jib and the hoisting-rope, of a vertically-movable dumping-arm, a movable carriage for sustaining said dumping-arm, and a weight connected with said carriage for restoring the same to the lowest position, substantially as described.

376,673. PROCESS OF MANUFACTURING BOLTS. FREDERICK MUTHER, Rockford, Ill., assignor of one-half to the Rockford Bolt Works, same place. Filed Sept. 21, 1887. Serial No. 250,321. (No model.)



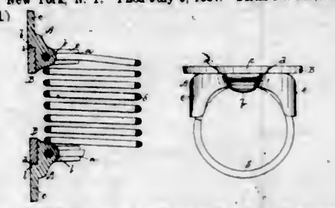
Claim.—The herein-described process in the manufacture of bolt-blanks, consisting of heating the end of the bar from which to make the bolt-blank, subjecting its heated portion to endwise pressure in suitable dies, thereby accumulating material in a form to retain heat for a second endwise compression, and cutting the heated compressed end portion of the bar to the required length and subjecting it to a second compression in suitable dies in one operation to complete the blank, substantially as and for the purpose set forth.

376,674. MOLE-PLOW. THOMAS NOWELL and GEORGE H. WILSON, Vilonia, Ark. Filed Nov. 7, 1887. Serial No. 254,540. (No model.)



Claim.—The combination of the beam having an oblique perforation and a vertical and downwardly-flaring slot, a plate secured to the top of said beam and having a perforation and a slot corresponding, respectively, with the said oblique perforation and slot in the beam, a colter passing through the slot in said beam and plate and carrying a mole at its lower end, a metallic strap looped around said colter, passing through the oblique perforation in said beam, and having its end screw-threaded, a three-cornered block interposed between said colter-strap and beam, and a nut on said strap for binding the colter in position, essentially as set forth.

376,675. CHAIR-ROCKER-SPRING ATTACHMENT. EDMUND E. PECK, New York, N. Y. Filed July 9, 1887. Serial No. 243,907. (No model.)



Claim.—1. The improved rocker-spiral-spring attachment, substantially as described, consisting of the holder A, having the curved groove *a*, and the arch or loop *b* at or near the middle thereof, for receiving the terminal coil of the spiral spring, and also having the shoulder and dovetailed projection *c*, as shown, and the bearing-plate B, provided with the dovetailed socket *d*, and below such the bearing for the holder to rest on, all being essentially as represented.

2. The spring-holder as provided with the curved groove *a* and with the arch or loop *b*, arranged with and extending across such groove at or near its middle, such groove and loop being for receiving and holding the terminal coil of the spring, as set forth.

376,676. LUBRICATOR. CHARLES H. PARSHALL, Detroit, Mich., assignor of one-half to Edward Grace, same place. Filed Oct. 23, 1886. Renewed Dec. 15, 1887. Serial No. 258,016. (No model.)

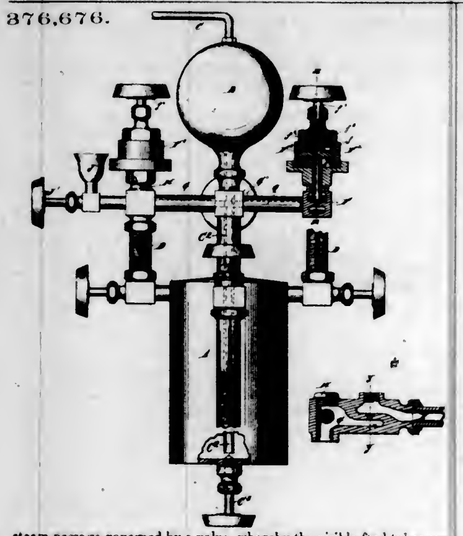
Claim.—1. The combination, with a lubricator, of a valve, F, located in the oil-exit passage between the visible-feed tube and the parts to be lubricated, said valve constructed to present a large surface to the back-pressure through the oil-exit conduit and to present a small surface only to the direct pressure from the lubricator, and an adjustable spring for pressing the valve upon its seat, substantially as and for the purposes described.

2. The combination, with a lubricator, of a valve, F, located in the oil-conduit between the visible-feed tube and the point to be lubricated, said valve open at its top to the external air, provided with a disk or piston, F^3, and an adjustable spring for forcing the valve toward its seat, the construction being such that the large surface beneath the disk is presented to the back-pressure through the oil-exit pipe, while a small surface only at the end of the valve is presented to the direct pressure from the lubricator, substantially as and for the purpose described.

3. The valve F, provided with a disk or piston, F^3, the latter constructed at its upper edge to form a steam-tight joint, whereby pressure is exerted back through the oil-exit passage, in combination with a spring located above said valve, substantially as and for the purposes described.

4. The combination, in a lubricator, of the valve F in its oil-exit passage, constructed as described, and a steam-passage, G, leading from the condense-water passage to the top of the sight-feed glass, said

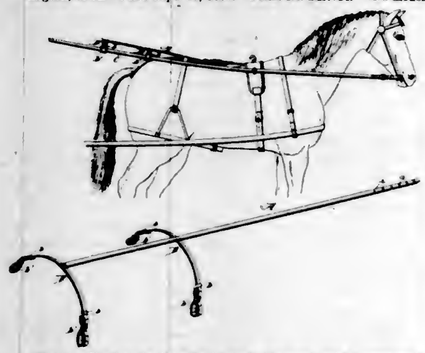
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steam-passage governed by a valve, whereby the visible-feed tubes can be cleansed, substantially as and for the purposes described.

5. As an article of manufacture, an attachment to an ordinary sight-feed lubricator, said attachment consisting of the valve F, provided with stem F', disk or piston F^2, and adjustable spring f^3, substantially as described.

376,677. **REIN-GUARD FOR HARNESS.** JAMES PETERSON, Burlington, Iowa. Filed Sept. 15, 1887. Serial No. 249,786. (No model.)



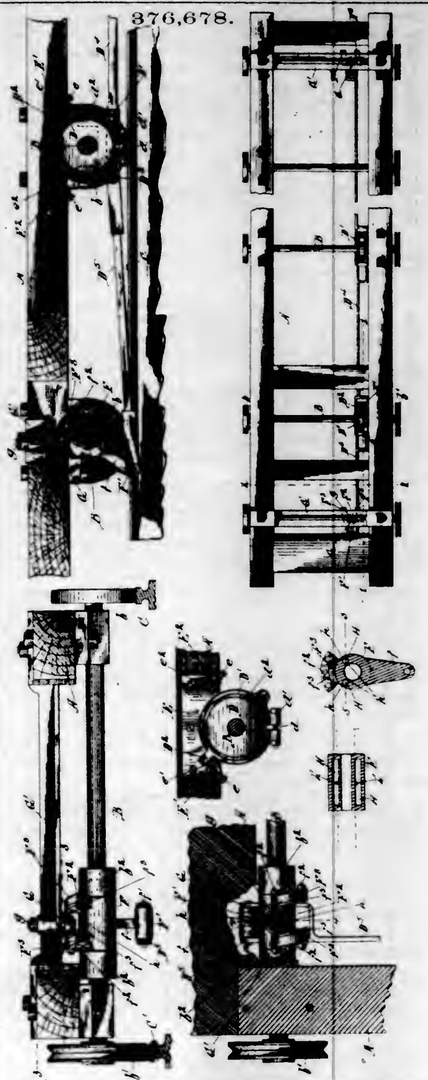
Claim.—The herein-described rein holder and guide, composed of the longitudinal strap A, provided at its front end with an adjustable attachment to the back-strap of the harness, the transverse straps B B', secured at proper points to the strap A, near its rear end, and provided with the integral adjustable rein-loops b' b', and the buckles b b, completing said loops, substantially as specified.

376,678. **SAW-MILL CARRIAGE.** DE WITT C. PRESCOTT, Marinette, Wis. Filed June 9, 1887. Serial No. 240,834. (No model.)

Claim.—1. In a saw-mill carriage, the combination, with the truck-axles, of the carriage-frame capable of lateral movement on the axles, one or more cam-shifting devices mounted on the said axles, capable of a limited oscillation thereon, and each consisting of a sleeve provided with a cam-groove, a suitable fixed projection from the carriage-frame to enter said groove, and mechanism for partially rotating or oscillating the said cam-shifting devices in each direction to shift the carriage, substantially as and for the purposes specified.

2. In a saw-mill carriage, the combination, with the truck-axles, of the carriage-frame capable of lateral movement on the axles, cam-shifting devices supported on the axles and each provided with a cam-groove, corresponding projections on the carriage to enter the said grooves, and actuating mechanism connecting the cam-shifting devices and one or more of the axles, substantially as and for the purposes specified.

376,678.



3. In a saw-mill carriage, the combination, with the truck-axles, of the carriage-frame capable of lateral movement on the axles, the cam-shifting devices mounted on one or more of the axles and each provided with a cam-groove, a corresponding projection on the carriage-frame, and friction-wheels mounted on one or more of the axles and each provided with a friction-band connected to the cam-shifting devices to operate the same, substantially as and for the purposes specified.

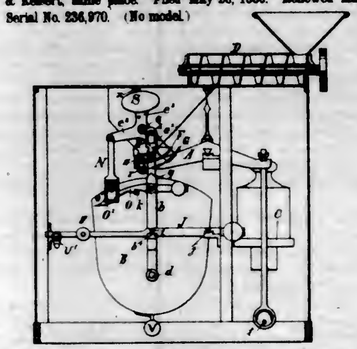
4. In a saw-mill carriage, the combination, with the truck-axles B, of the carriage-frame A, capable of lateral movement on said axles, the sleeves F, mounted on the axles B between fixed collars b^2 and provided with inclined projections F^3, forming the cam-groove F^3, the projection G of the carriage-frame, the friction-wheels D, having friction-bands D', and the connecting-rod D^4 and pitmen D^5, substantially as and for the purposes specified

5. In a saw-mill carriage, the combination, with the truck-axle B, having fixed collars b^2, of the sleeve F, mounted on said axle between the said collars, and provided with the inclined projections F^3, forming the cam-groove F^3, and the carriage-frame A, capable of lateral movement on the said axle and provided with the roller G, arranged between the projections F^3, substantially as and for the purposes specified.

6. In a saw-mill carriage, the combination, with the axle B, of the carriage-frame A, capable of lateral movement thereon, the roller G, mounted on a projection from said frame, the sleeve F, mounted on the axle and provided with cam projections F^3, arranged to embrace said rolles, and separate bearing-pieces f^4 for the roller, detachably secured to the projections F^3, substantially as and for the purposes specified.

7. In a saw-mill carriage, the combination, with the axle B, of the sleeve F, mounted thereon and provided with cam projections to operate the carriage-frame, said sleeve being provided with oil-chambers H on each side thereof, having filling-apertures h and lubricating-passages h', and the carriage-frame provided with a projection engaging with the cams of said sleeve, substantially as and for the purposes specified.

376,679. **AUTOMATIC GRAIN-SCALE.** MICHAEL R. REISERT, Hennef, Germany, assignor to Henneder Maschinenfabrik C. Reuther & Reisert, same place. Filed May 26, 1886. Renewed May 3, 1887. Serial No. 236,970. (No model.)



Claim.—1. In an automatic weighing-scale, the combination of a receptacle, the rod b, with projection b', upon which presses the knife-edge z of the lever J, provided with an adjustable weight, the supply-flap G, with counter-weight S, mounted on pivot e, the knife-edge z, and a link connecting rod b and the said knife-edge, arranged and operating substantially as and for the purpose hereinbefore specified.

2. In an automatic weighing-scale, the combination of a receptacle, the lever J, provided with an adjustable weight, the supply-flap G, with the counter-weight S, mounted on pivot e, the knife-edge z, and a link-connecting lever J and the said knife-edge, arranged and operating substantially as and for the purpose set forth.

3. In an automatic weighing-scale, the combination of the three-armed lever e' e^2 e^3, mounted on pivot e, the flap G, secured to arm e', the weight S on arm e^3, the knife-edge z, a tilting receptacle provided with the catch k, a pivoted hook engaging with the catch, the link N, pivoted to arm e^2, the lever J, provided with an adjustable weight, and the link H, connecting the lever J either directly or by means of the rod b with the knife-edge z, so that the said lever may be unbalanced by the weight S until the descent of the receptacle causes the said weight to suddenly cut off the supply of material, raise the hook O clear of the catch k, and allows the receptacle to fall over and empty itself.

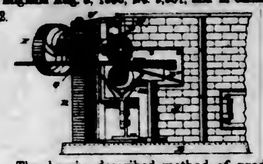
4. In an automatic weighing-scale, the combination of a tilting receptacle provided with the projection q, the roller r, and the pin s, attached to the flap F, the said projection operating to bear on the said roller, the said pin pressing upon the arm e' of the flap G and opening both supply-flaps when the emptied receptacle is tilted up.

376,680. **SPIRALLY-WELDED TUBE.** JOHN R. ROOT, Port Chester, N. Y.; Hannah M. Root administratrix, and William S. Church administrator, of said John R. Root, deceased. Filed Sept. 19, 1881. Serial No. 42,276. (No model.) Patented in England Aug. 3, 1886, No. 9,951, and in Canada Aug. 9, 1887, No. 27,382.



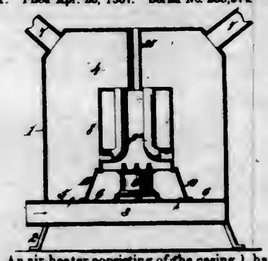
Claim.—As a new article of manufacture, the described spirally-seamed metal pipe or tubing, consisting of a spirally-wound strip or blank having its opposite edges united by a welded lap-seam, in the formation of which seam the overlapping edges only of the blank have been heated to welding temperature, the body or main portion of the pipe being composed of metal unsubjected to and unaffected by said welding heat, and in the same condition in the pipe as it was in the strip, substantially as and for the purposes hereinbefore set forth.

376,681. **METHOD OF MAKING SPIRALLY-WELDED TUBING.** JOHN R. ROOT, Port Chester, N. Y.; Hannah M. Root administratrix, and William S. Church administrator, of said John R. Root, deceased. Original application filed Sept. 9, 1881, Serial No. 42,275. Divided and this application filed June 26, 1886. Serial No. 206,046. (No model.) Patented in England Aug. 3, 1886, No. 9,951, and in Canada Aug. 9, 1887, No. 27,382.



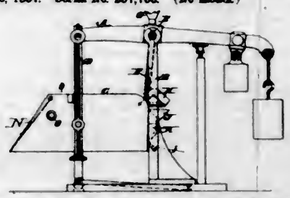
Claim.—The herein-described method of producing spirally-welded pipe or tubing, which consists in spirally winding the coo blank with its opposite edges overlapping, heating the overlapping edges at or near their point of junction only, the main portion of body of the blank remaining unaffected by the action of the heating jet, and uniting such heated edges by the application of welding-pressure, substantially as and for the purposes hereinbefore set forth.

376,682. **AIR-HEATING FURNACE.** ALFRED E. SMITH, Brooklyn, N. Y. Filed Apr. 23, 1887. Serial No. 235,874. (No model.)



Claim.—An air-heater consisting of the casing 1, having an outlet, 7, a horizontal perforated bottom wall, 5, a horizontal air-inlet flue, 3, beneath said bottom wall to supply air therethrough to the casing, a drum, 8, within the casing, a series of air-heating tubes in the drum opening at their upper ends through the top portion of the drum, and having their lower ends bent laterally and opening through the side of the drum, a heat-generator above the perforated bottom wall and below the drum and the laterally-bent ends of the tubes, and a pipe, 25, leading from the drum through the casing to carry the products of combustion to a chimney, substantially as described.

376,683. **WEIGHING APPARATUS FOR GRANULAR AND POWDERED SUBSTANCES.** HENRY E. SNYDER, Philadelphia, Pa. Filed May 10, 1887. Serial No. 237,788. (No model.)



Claim.—1. A scale-beam having an opening therein, in combination with a tube leading from said opening, a hopper above said opening, a chute below said tube, and a tray, substantially as and for the purpose set forth.

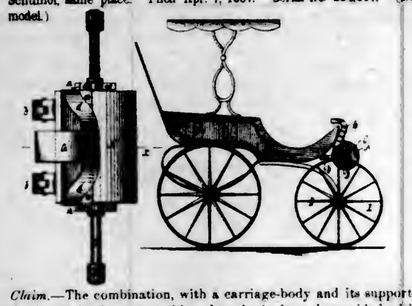
2. A weighing apparatus having an inclined chute, a deflector, and a tube connected with the beam, located above said chute, and a tray whereby the material to be weighed may be directed both into the tray and outside of the same, substantially as described.

3. A scale-tray provided with a pocket outside of the same, in combination with a deflector supported above said pocket, and means for directing material to be weighed into said pocket.

4. A scale-tray having a pocket outside of the same, the same consisting of a gate which is pivoted at top to the tray and provided with a closing-spring, substantially as described.

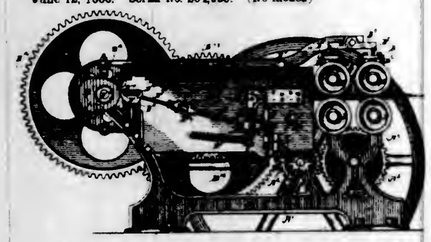
5. In a weighing apparatus, a scale-beam having an opening therein, in combination with a tube communicating with the said opening substantially as and for the purpose set forth.

376,684. FAN ATTACHMENT FOR CHILDREN'S CARRIAGES. ADOLF SONNENSCHEIN, New York, N. Y., assignor to himself and MAX Schulhof, same place. Filed Apr. 7, 1887. Serial No. 234,007. (No model.)



Claim.—The combination, with a carriage-body and its supporting-wheels, of the fan-case A, hinged to the body and provided with a stationary boxing, *a*, at each end, a tube, G, rising vertically from the fan-case and having its upper end bent laterally over the carriage-body to direct the air-currents upon the occupant, the fan-shaft C, extending through the case and boxings and projecting beyond each end of the case and swinging with the latter, and a friction-disk, D, in each end of the fan-shaft respectively engaging the supporting-wheels of the carriage-body, substantially as described.

376,685. WIRE-COILING MACHINE. DAVID F. STAMBAUGH, St. Louis, Mo. assignor of one-half to James T. Birch, same place. Filed June 12, 1886. Serial No. 204,993. (No model.)



Claim.—1. In a wire-coiling machine, in combination with the lower feed-rollers, the upper feed-rollers, made vertically movable, a pivoted lever operated by a recessed cam, and connection between the upper rollers and the lever, substantially as shown and described, for the purpose set forth.

2. In a wire-coiling machine, in combination with the lower feed-rollers, the upper feed-rollers, and the boxes in which they are journaled, made vertically movable, a pivoted lever operated by a recessed cam, a cross-head carried by said lever, and pins connecting the cross-heads with the boxes, substantially as shown and described, for the purpose set forth.

3. In a wire-coiling machine, in combination with the feed-rollers, the guide-rollers journaled in a frame or housing, and a former pivoted concentrically with one of the guide-rollers, and means for operating the former, substantially as and for the purpose set forth.

4. In a wire-coiling machine, the combination, with the feed-rollers, of an independent set of idle guide-rollers located in a suitable housing, a pivoted former located at the forward end of the guide-rollers, and mechanism for operating the former, substantially as shown and described.

5. In a wire-coiling machine, the combination, with the guide-rollers and the former, of a pitman adjustable in length and adjustably secured to said former at one end, and a cam engaging the other end of said pitman, substantially as shown and described.

6. In a wire-coiling machine, in combination with the guide-rollers, the former made substantially as described and provided with a slotted extension, the pitman secured to the extension and made adjustable therein, and a cam for operating the pitman and former, substantially as shown and described, for the purpose set forth.

7. In a wire-coiling machine, in combination with the guide-rollers, the pivoted former provided with a slotted extension, the pitman connected to the extension, a set-screw for making the pitman adjustable in the extension, a spring, and a cam for operating the former and pitman, substantially as shown and described, for the purpose set forth.

8. In a wire-coiling machine, in combination with the guide-rollers and former, the pivoted oscillating block E, substantially as shown and described, for the purpose set forth.

9. In a wire-coiling machine, in combination with the guide-rollers and former, the pivoted oscillating block E, provided with a plate, E', substantially as shown and described, for the purpose set forth.

10. In combination with the guide-rollers and former, the pivoted block E, and mechanism for operating it, consisting of a lever to which the block is connected by a rod, and a cam for operating the lever, substantially as shown and described, for the purpose set forth.

11. In a wire-coiling machine, in combination with the guide-rollers and former, the pivoted block E, the lever and rod for operating the block, and the set-screw for adjusting the rod in the block, substantially as shown and described, for the purpose set forth.

12. In a wire-coiling machine, in combination with the guide-rollers, the former, and the stationary knife, of the movable knife, a pivoted lever connected therewith, a spring for holding said knife in retracted position, and a cam for operating it, substantially as and for the purpose described.

13. In a wire-coiling machine, in combination with the frame A, the guide-rollers C, and the former, the inclined block J', fixed to the frame, the jaw J of the cutter, fixed at the lower inclined edge of said block, and the movable jaw I, substantially as and for the purpose set forth.

14. In a wire-coiling machine, in combination with the guide-rollers and former, the knives for cutting the wire, and support M, for holding the spring as the wire is cut, substantially as set forth.

15. The combination, with a wire-coiling machine, of a table having fingers, one of which receives each spring automatically as it is formed, and means for partially rotating said table after the formation of each spring, so as to carry away the spring last formed and present another finger for the reception of the next spring to be formed, and means for compressing the springs on said fingers, substantially as set forth.

16. In a wire-coiling machine, in combination with mechanism for forming the springs, mechanism for compressing the springs, consisting of fingers, a revolving table by which they are supported, and a movable arm for compressing the springs on the fingers, substantially as and for the purpose set forth.

17. In a wire-coiling machine, in combination with mechanism for forming the springs, mechanism for compressing the springs, consisting of fingers pivoted to a movable table, a cam for raising the fingers from a horizontal to a vertical position, and an arm for compressing the springs on the fingers, substantially as and for the purpose set forth.

18. In a wire-coiling machine, the combination, with mechanism for forming the springs, of mechanism for compressing them, consisting, essentially, of a table provided with fingers, means for causing the intermittent movement of the table to which the fingers are secured, and mechanism for compressing the wire on the fingers, substantially as and for the purpose set forth.

19. In a wire-coiling machine, in combination with mechanism for forming the springs, mechanism for compressing the springs, consisting of fingers, the movable table to which the fingers are pivoted, levers, cog-wheels, and pivoted dogs for operating the table, an arm for pressing the springs on the fingers, and mechanism for operating the arm, consisting of a rack, segment, cog-wheels, and shaft, substantially as set forth.

20. The combination, with an intermittingly-moving table carrying fingers, substantially as described, of an arm or follower and mechanism for reciprocating it during the intervals in which the table remains at rest, substantially as set forth.

21. The combination, with the rotary disk P, having the fingers O pivoted thereto, of a cam for moving said fingers from a horizontal to a vertical position, a follower for compressing the spring on said fingers, and a second cam for throwing said fingers again into horizontal position, substantially as set forth.

22. The combination, with the fingers O, of the arm or follower W, a weight for holding it normally in elevated position, a rack-bar, W', projecting from said arm or follower, and a segmental pinion for reciprocating said rack-bar, substantially as set forth.

23. In a wire-coiling machine, the combination, with the lower feed-rollers, of the vertically-movable upper feed-rollers, a pivoted lever, connection between the upper rollers and the lever, and a cam for operating said lever, substantially as and for the purposes set forth.

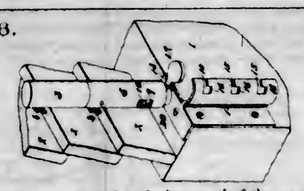
24. The combination, with the movable feed-rollers, of a lever having connection therewith, and means for operating said lever to cause the intermittent feed of wire, substantially as set forth.

25. Mechanism for compressing springs, consisting of a rotating device provided with fingers for successively presenting the springs to the compressing-head, in combination with a compressing-head and means for moving it against the spring.

376,686. BLIND-STOP. WILLIAM A. STICKNEY, St. Louis, Mo. Filed July 5, 1887. Serial No. 243,418. (No model.)

Claim.—1. In combination with the slats and round connected

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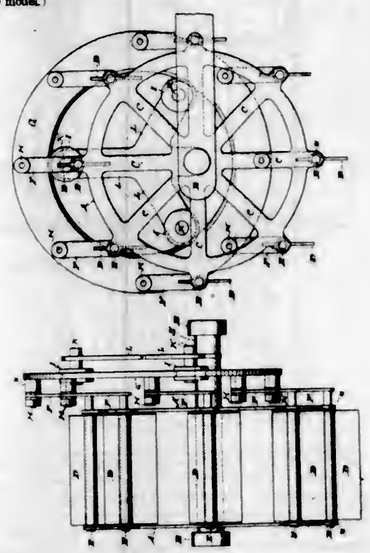
thereto, a headed bolt secured to the lower end of the round, and a bracket secured to the frame of the shutter and provided with notches to receive said head, substantially as and for the purpose set forth.

2. In combination with the slats and round secured thereto, a sleeve secured on the lower end of the round, a headed bolt fitting in the sleeve, and having a slot-and-pin connection therewith, spring located over the bolt within the sleeve, and a bracket secured to the frame of the shutter and having notches to receive the head, substantially as and for the purpose set forth.

3. In combination with the slats and round secured thereto, a spring-bolt secured to the lower end of the round and provided with a head, and a bracket having notches to receive the head, substantially as and for the purpose set forth.

4. In combination with the slats and round secured thereto, a spring-bolt secured to the lower end of the round, and a bracket secured to the frame, having an extension, 20, with a depression, 21, in which the lower end of the spring-bolt fits, substantially as and for the purpose set forth.

376,687. FEATHERING PADDLE-WHEEL. CLARENCE P. THURSTON, Winona, Minn. Filed Sept. 10, 1887. Serial No. 249,366. (No model.)

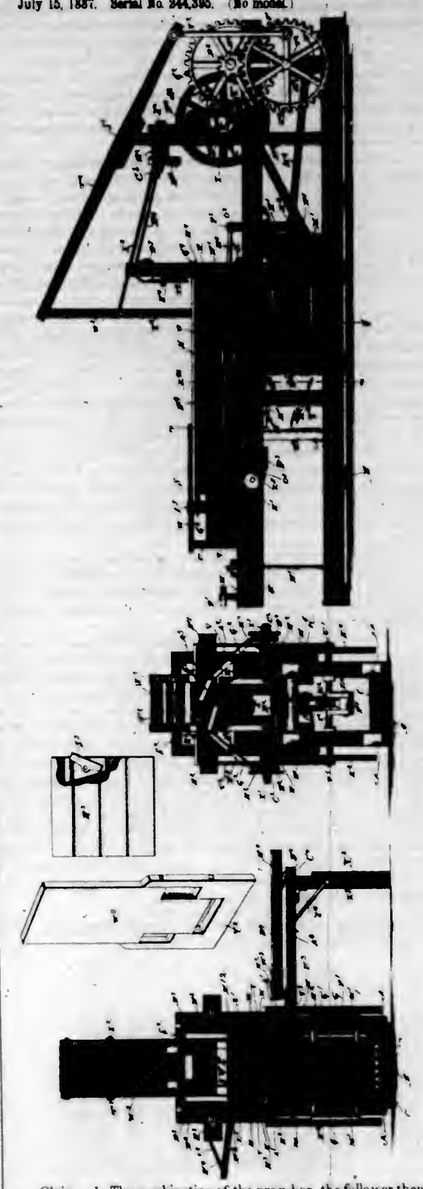


Claim.—1. The combination, with the shaft S and the bearings B, of the rims A A', having the outstanding bearings M, and having the radiating spokes and the hub, the shafts E, the paddles rigidly secured to the shafts, and the arms F, attached to the outer ends of the shafts E, substantially as specified.

2. The combination, with the shaft S, the rims A A', having the spokes and the hub, the paddles, the shafts E, and the rigid arms, of the guide-rim G, having its center above the shaft S, the frame portion L, the grooved rollers journaled on the bearings K at the outer ends of the frames, the pins H, extending from the guide-rim, and the thimbles and securing-nuts, substantially as specified.

3. In a feathering paddle-wheel, the combination of the shaft S, the bearings B, the rims A A', having the bearing-lugs, the radiating spokes and the hub, the paddles D, rigidly secured to the shafts E between the rims A A', the shafts E, extending through the bearings on the rims A', the arms F, extending from the shafts E, and pivoted on the pins H, the frames L, the rollers thereon, the guide-rim rotating on said rollers eccentric to the paddle-wheel, the bearings K, the thimbles, and the securing-nuts, substantially as described.

376,688. BALING-PRESS. SARAH W. TRABUE, Girard, Ill. Filed July 15, 1887. Serial No. 244,395. (No model.)



Claim.—1. The combination of the press-box, the follower therein, the feeder-hopper on the upper side of the press-box having the horizontal grooves M in the sides, and the slots N, communicating with the said grooves, the condenser movable longitudinally in the feed-hopper and having the front T in said hopper, the guide-arms V, working in the grooves M, and the pins or bolts X, connecting the said guide-arms and the front T and extending through the slots N, substantially as described.

2. The combination, in a baling-press, of the press-box, the follower, the vertically-movable holder Y, the spring to normally elevate the same, and the hay-compressor movable in unison with the follower and adapted to automatically depress the holder when the hay-compressor advances, substantially as described.

3. The combination, in a baling-press, of the press-box, the holder Y, having the spring-arms A′, to normally elevate the same, and the hay-compressor movable in unison with the follower and provided with the arms V to bear upon the springs A'_1 substantially as described.

4. The combination, in a baling-press, of the feed-hopper on the press-box, having the horizontal grooves M in its sides, the hay-condenser movable in the feed-hopper and having the guide-arms V, working in grooves M, and movable plates F^{12}, secured to the sides of the feed-hopper and covering the grooves M and the arms V, substantially as described.

5. The combination of the press-box, the feed-hopper thereon having the grooves M in its sides, the holder Y, having the spring-arms to normally elevate the same, said spring-arms being located in the lower sides of the grooves M, the compressor movable longitudinally in the feed-hopper and having the guide-arms V, working in the grooves M and adapted to depress the spring-arms, and the removable plates F^{12}, secured to the sides of the feed-hopper and covering the grooves M and the mechanism therein, substantially as described.

6. The combination of the press-box having the compression-chamber, the feed-hopper arranged over the press-box and extending over the compression-chamber, the vertically-movable holder Y, arranged at the rear upper side of the compression-chamber and having the spring-arms A′, to normally raise the same, the follower arranged in the press-box, a hay-condenser arranged in the feed-hopper and adapted to slide therein, the said hay-condenser having the arms bearing on the spring-arms A′ to operate the holder, and the yoke connecting the condenser to the follower, substantially as described.

7. The combination, in a bale-press, of the press-box having the feed-hopper on its upper side and the platform or foot-board U^3, adapted to be attached to the press-box and having the screen E^4 connected thereto and movable longitudinally thereon, the said screen being adapted to bear against the feed-hopper, substantially as described.

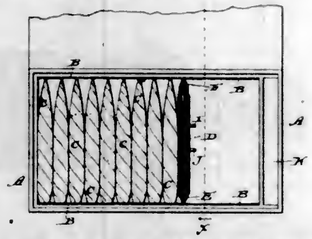
8. The combination, in a baling-press, of the press-box having the keepers T^3 on its sides and the foot-board or platform U^3, having the hooks at one edge to engage the keepers and provided with the hinged plate W^3 and the supporting-legs, for the purpose set forth, substantially as described.

9. The combination of the foot-board, the platform U^3, adapted to be attached to the press-box of the baling-press and having the guide-rods C^4 at its outer side, and the screen hinged to the said guide-rod and movable longitudinally therein, substantially as described.

10. The combination, in a baling-press, of the press-box having the feed-hopper on its upper side, the follower movable in the press-box, the hay-condenser movable in the feed-hopper and connected to the follower and actuated thereby, the walking-beam, the feeder pivoted thereto and extending downward into the hopper and adapted to descend in the press-box, the crank-shaft, the pitman connecting the same to the follower, the rods connecting the crank-shaft to the outer end of the walking-beam, the driving-shaft geared to the crank-shaft and having the feathered pinions, and the levers to throw the said pinions out of engagement with the gears, substantially as described.

11. The feeder W^3, having the adjustable extension Y^3, for the purpose set forth, substantially as described.

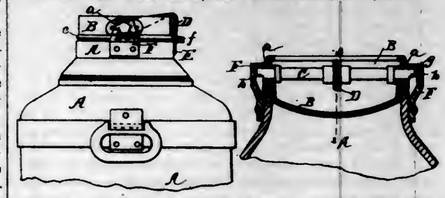
376,689. CIGAR-BOX. EUGENE VALLERY, Chicago, Ill. Filed Sept. 29, 1887. Serial No. 251,010. (No model.)



Claim.—1. The combination of a cigar-box and a contractile and extensile cigar-holder movable within the box and against the cigars remaining therein after the removal of some, whereby they may be held in place and prevented from jostling and rolling, substantially as described.

2. The combination of a cigar-box provided with sides cushioned on their inner surface to afford a slightly-yielding contact with the ends of the cigars and protect them from injury, and a contractile and extensile cigar-holder, with its pointed ends forced into the cushion, movable within the box and against the cigars remaining therein after the removal of some, whereby they may be held in place and prevented from jostling and rolling, substantially as described.

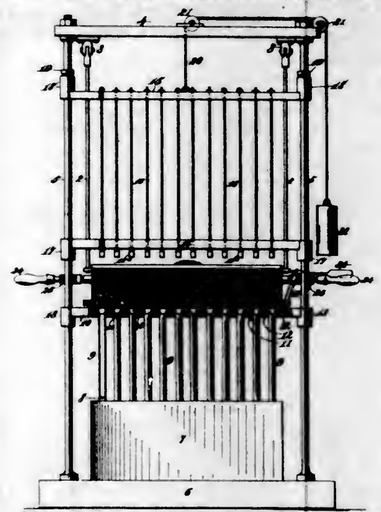
376,690. MEANS FOR CLOSING MILK-CANS. OTTO VON ROSEN, New York, N. Y., assignor to the Von Rosen Manufacturing Company, of New York. Filed June 5, 1886. Serial No. 204,379. (Model.)



Claim.—1. The combination of the vessel A, having flanged lugs F *g*, the cover B, having the cross-shaft C journaled therein, formed with end cams, the hasp D, secured upon said shaft and terminating in a lip, *f*, at its free end, and the fastening-bracket E for said hasp secured to the cam, substantially as shown and described.

2. The combination of the vessel A, having the flanged lugs F *g*, and the stop *g′*, the cover B, having the cross-shaft journaled therein, formed with end cams, the hasp D, secured upon said shaft and terminating in the lip *f*, and the fastening-bracket E for said hasp, substantially as shown and described.

376,691. APPARATUS FOR CHARGING FIRE-WORKS. CLAUDIUS WADSWORTH, Brooklyn, assignor to the Unexcelled Fireworks Company, New York, N. Y. Filed Nov. 10, 1887. Serial No. 254,817. (No model.)



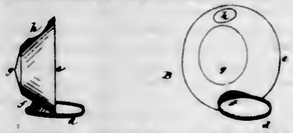
Claim.—1. In an apparatus for charging fire-works, a suspended and swinging powder-feeding box composed of metal and having a close-fitting metallic cover, a double bottom composed of upper and lower plates having longitudinal series of perforations, the perforations in one plate being so located as to not register directly with the perforations in the other plate, and a longitudinally-movable slide located between said plates and provided with a series of perforations to register alternately with the perforations in the upper and lower plates of the box-bottom, substantially as described.

2. In an apparatus for charging fire-works, the combination, with a bar or oblong plate having in its under side a longitudinal series of recesses to fit over and receive the upper ends of a number of fire-work tubes to be charged, and provided on its upper side with a longitudinal series of funnel-shaped openings communicating with said recesses, of an oblong tightly-covered metallic powder-feeding box suspended adjacent to said bar or plate and capable of being swung to and from a position above and in contact with the same, said powder-feeding box being provided with a double bottom composed of plates, in each of which is a longitudinal series of perforations so located that the perforations of one plate do not register with the perforations of the other plate, and a longitudinally-movable slide located between said plates and provided with a longitudinal series of perforations to alternately register with the perforations in the upper and lower plates and thereby receive powder from the box and discharge it through the funnel-shaped openings into a series of tubes, substantially as described.

3. In an apparatus for charging fire-works, a swinging and tightly-covered metallic powder-feeding box, having handles 24, and a double bottom composed of plates 26 and 28, provided, respectively, with a longitudinal series of perforations, 27 and 29, located in different vertical lines, said box being provided with a longitudinally-movable slide, 30, located between said plates and having a longitudinal series of perforations, 31, to register alternately with the perforations 27 and 29, levers 33 and 34, mounted on one of the box-handles and adapted to actuate the slide so as to cause its perforations to register with the perforations in the lower plate, 28, and a spring, 32, to retract the slide and cause its perforations to register with the perforations in the upper plate, 26, substantially as described.

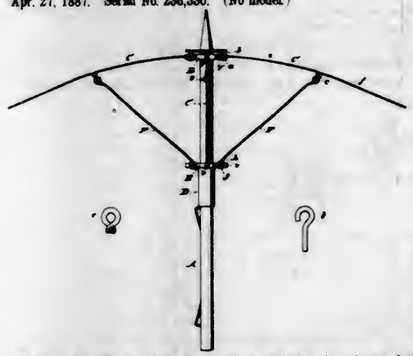
4. In an apparatus for charging fire-works, the combination with the standards 5 and a bar or plate, 10, having recesses 11 in its under side to receive the upper ends of the tubes or cases to be charged, and provided with funnel-shaped openings 12, leading into said recesses, of a covered metallic powder-feeding box suspended by hinged rods 2, so as to be capable of swinging to and from said bar, said box being provided at each end with handles 24, having guides 25, the perforated plates 26 and 28 forming a double bottom for said box, the perforated slide 30, located between said perforated plates, the levers 33 and 34, for actuating the slide, and the spring 32, for retracting the slide, substantially as described.

376,692. ADJUSTABLE REFLECTOR AND HOOD-SHADE FOR LAMPS. RICHARD M. WARNER, Hamilton, Ontario, Canada, assignor to the Wanser Lamp Company, (Limited,) Philadelphia, Pa. Filed Feb. 21, 1887. Serial No. 228,603. (No model.)



Claim.—The herein-described reflector and hood-shade for lamps, consisting of the ring *d*, the shade *e*, the neck *f*, connecting said ring and shade, and the reflector *g*, all combined substantially as and for the purpose set forth.

376,693. UMBRELLA. JOHN C. WARREN, Menallen, Pa. Filed Apr. 27, 1887. Serial No. 236,330. (No model.)



Claim.—An umbrella-frame consisting of the bearing-ring and the runner-ring having the central bearings integral therewith, and forming the parallel guide-walls extending from the four sides of said bearings, and the steel-wire arms C, having hooks at their upper ends to engage the bearings in the upper ring, and having the integral transversely-bent eyes at points intermediate of their length for engaging the upper hooks of the braces F, the lower ends of said braces being hooked to engage the central integral bearings in the runner, substantially as specified.

376,694. WIRE-TIGHTENER. JOHN W. WEAR, Walker, Mo. Filed Jan. 22, 1887. Serial No. 225,171. (No model.)



Claim.—1. A wire-tightener consisting of the tongs having their jaws provided with guides for the wire, a drum supported on said tongs, and a connection for joining said drum with the wire to be tightened, substantially as set forth.

2. The improved wire-stretching device hereinbefore described, consisting of the tongs having their jaws provided with guides for the wire and provided adjacent to said guides with interlocking portions, whereby to sustain the lateral strain, a drum or wheel journaled to the tongs, and a wire connected with said drum or wheel, substantially as set forth.

3. In a wire-tightener, substantially as described, a pair of tongs having their jaws provided with guides B, one of said jaws being formed laterally to its guide B with a notch, *C*, and the other with a projection, *c*, fitted to enter said notch, substantially as and for the purposes specified.

4. In a wire-tightener, the combination, with the tongs, of a looper thereon to engage the wire at a point intermediate of the edges of the jaws of the tongs and form a loop or bend for the said jaws to grasp and twist, substantially as set forth.

376,695. WIRE-TIGHTENER. JOHN W. WEAR, Eldorado Springs, Mo. Filed Aug. 24, 1887. Serial No. 247,737. (No model.)



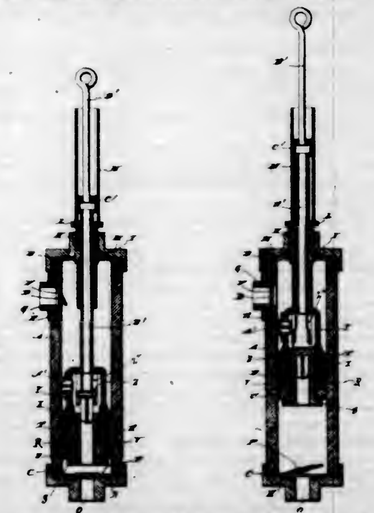
Claim.—1. A wire-tightener comprising a pair of tongs having their jaws movable alongside of and past each other when the tongs are closed and constructed to guide the wire when the tongs are open, whereby the wire may be drawn between said jaws to form a loop or bend when the tongs are open and such tongs may be closed and rotated to twist and secure such loop or bend, substantially as set forth.

2. A wire-tightener comprising a pair of tongs having their jaws provided with guides for the wire, a lever pivotally supported on said tongs, and a connection for joining said lever with the wire to be stretched, substantially as set forth.

3. The improved wire-tightener herein described, consisting of the tongs having their jaws movable alongside of and past each other and provided with guides for the wire to be stretched, the lever supported in bearings on said tongs, and the connection for joining said lever with the wire to be stretched, all substantially as and for the purposes specified.

4. In a wire-stretcher, the tongs, the pivot-pin thereof having bearings for the lever, the lever, and connections between said lever and the wire to be stretched, substantially as set forth.

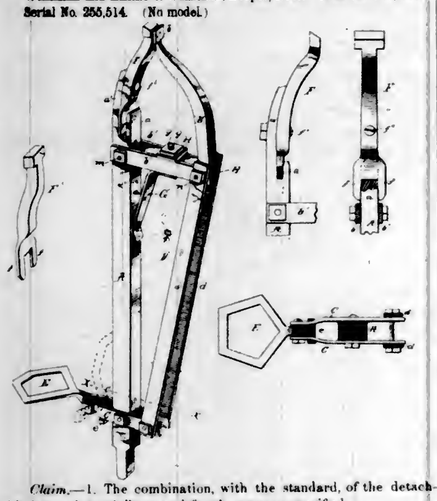
376,696. DOUBLE-ACTING PUMP. DANIEL WEBSTER, Brooklyn, Wis. Filed Mar. 23, 1887. Serial No. 232,156. (No model.)



Claim.—The herein-described piston for hollow-piston-rod pumps, comprising the cylinder R, having the flange or disk S at its lower end

and screw-threaded at its upper end, the packing-ring U, resting on said flange, the cylindrical sleeve V, encircling the cylinder and resting on the packing-ring U, the packing-ring X, placed around the upper end of the cylinder and resting on the upper end of the sleeve V, the cage Y, screwed onto the upper end of the cylinder and having the puppet-valve A′ in its side near its upper end and the arms Z^3 depending from its top, the puppet-valve Z, seated on the upper end of the cylinder and limited in its play by the arms Z^3, and the hollow piston-rod secured centrally in the top of the cage and leading therefrom, substantially as specified.

376,697. **DEVICE FOR SHARPENING TOE-CALKS.** JOHN C. WILLIAMS and HARRY C. WILLIAMS, Hooper, Nebr. Filed Nov. 18, 1887. Serial No. 255,514. (No model.)



Claim.—1. The combination, with the standard, of the detachable jaw, substantially as and for the purpose specified.

2. The combination, with the standard, of the two interchangeable jaws, the one jaw having a beveled face and the other jaw a straight face, substantially as and for the purpose described.

3. The combination, with the standard having a kerf in its end, of the jaw having its lower end fitted in the said kerf, said lower end being notched to form legs which embrace the sides of the standard, substantially as described.

4. The combination, with the standard having an extension projecting up from its upper end, of the jaw resting against and re-enforced by the said extension, substantially as described, for the purpose specified.

5. The combination, with the standard having a kerf and an extension, of the jaw fitted in the kerf and having legs which embrace the standard, and means for securing the jaw to the extension, substantially as set forth.

6. The combination, with the standard and the elbow jaw-lever, of the adjustable stop.

7. The combination, with the standard and the elbow jaw-lever having its lower end separated, of the stop and the bolt passing through the separated ends of the elbow jaw-lever, substantially as and for the purpose described.

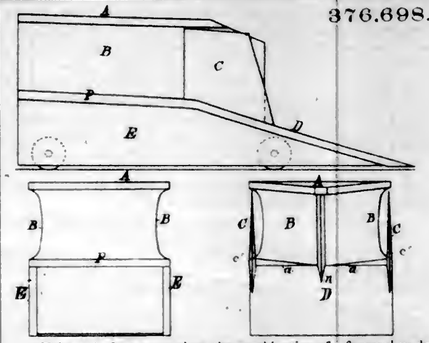
8. The combination, with the standard and the elbow jaw-lever pivoted at its inner end to the standard, of the foot-lever and the connection interposed between the foot-lever and the elbow of the said elbow jaw-lever, substantially as and for the purpose described.

9 The combination, with the standard, the elbow jaw-lever, the foot-lever, and the connection uniting the foot-lever with the said elbow jaw-lever, of the foot-rest having its outer end expanded and its inner end provided with means, as the lateral projections, for limiting its movement in one direction relative to the foot-lever, substantially as described, for the purpose specified.

10. The herein-specified horseshoe-calker, composed of the standard, the elbow jaw-lever having its lower end separated or divided and embracing the standard, the adjustable stop, the foot-lever embracing the standard, the connection uniting the foot-lever with the elbow of said elbow jaw-lever, and the foot-rest having one end expanded and its other end provided with lateral projections, substantially as and for the purpose set forth.

376,698. **RAILROAD SNOW-PLOW AND CAR COMBINED.** JOSEPH WOOLLEY, Rutland, Vt. Filed Oct. 30, 1886. Serial No. 217,628. (No model.)

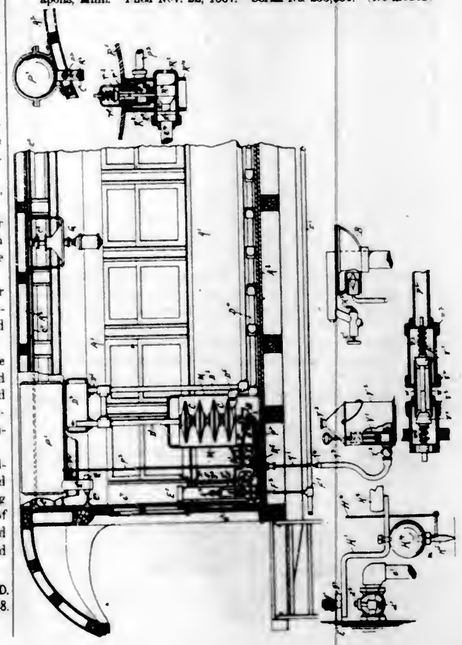
376,698.



Claim.—1. In a snow-plow, the combination of a forward wedge-shaped incline, inclined surfaces continuing rearwardly from said forward incline at a less degree of inclination than the same, mold-boards extending from the center of the upper portion of the forward incline to the rear corners of the rear inclined surfaces with a gradual increasing lateral curvature, the outline of said mold-boards throughout their length being vertically concave in cross-section, a beveled point for said mold-boards, and cutters upon the opposite edges of said inclines, substantially as described.

2. In a snow-plow, the combination, with the forward wedge-shaped inclination, the inclined surfaces continuing upwardly and rearwardly from the forward incline at a less degree of inclination than the same, and the downwardly-extending sides, of the mold-boards provided with a beveled point or cutting-edge and extending from the center of the upper portion of the forward incline to the rear corners of the plow with a gradual increasing lateral curvature, the outline of said mold-boards from their point to their rear ends being vertically concave in cross-section, cutters upon the opposite edges of the first incline and extending rearwardly to and upon the rear inclines, the side faces of said cutters tapering upwardly from their lower portions and their front edges sloping upwardly and rearwardly and being beveled to form a sharp cutting-edge, and a top covering the upper portions of said mold-boards and projecting beyond the edges of the same, substantially as described.

376,699. **APPARATUS FOR PREVENTING FIRES AND EXTINGUISHING LIGHTS IN RAILWAY-CARS.** HENRY M. YOUNG, Minneapolis, Minn. Filed Nov. 22, 1887. Serial No. 255,639. (No model.)



Claim.—1. In a railway car or coach, a compressed-air reservoir, an outlet-valve therefor having a projecting stem, a burner, and tubing connecting said valve and burner, in combination with an actuating-rod for opening said valve and a pivotally-supported ball for holding said rod normally out of contact with said valve-stem, substantially as and for the purpose described.

2. In a railway car or coach, a compressed-air reservoir and outlet-valve to said reservoir, illuminating-burners for said car, and tubing connecting said valve and illuminating-burners, in combination with a pivotally-supported ball, a bar intermediate of said ball and valve, and a spring-actuated rod for opening said valve, substantially as and for the purpose set forth.

3. In a railway car or coach, the combination of air-brake apparatus, a compressed-air reservoir adapted to be supplied with air from said brake apparatus and having an outlet-valve, a spring-actuated rod supported in juxtaposition to said valve, a pivotally-supported ball, and a bar resting upon said ball and extending over said valve, whereby, by the displacement of said ball, said rod will be released and permitted to open said valve, substantially as and for the purpose set forth.

4. In a railway car or coach, a compressed-air reservoir, an outlet-valve therefor having a projecting stem, burners, air-brake apparatus, and tubing connecting said valve, burners, and air-brake apparatus, in combination with a pivotally-supported ball and a spring-controlled rod supported upon said ball and normally held out of contact with the stem of said valve, substantially as and for the purpose set forth.

5. In a railway car or coach, the combination of air-brake apparatus, a compressed-air reservoir, an outlet-valve to said reservoir, tubing connecting said reservoir with said brake apparatus, the burners, tubing connecting the same with the compressed-air reservoir, a pivotally-supported ball, a bar supported upon said ball and extending over the compressed-air valve, and a spring-actuated rod resting upon the end of said bar and over said valve, substantially as and for the purpose described.

6. In a railway car or coach, the combination of a compressed-air reservoir, an outlet-valve to said reservoir, the burners, the tubing connecting said burners with the compressed-air reservoir, the pivotally-supported and adjustable ball, the bar resting upon said ball and extending over said outlet-valve, and the spring-actuated rod arranged over the end of said bar and the valve, substantially as and for the purpose described.

7. In a railway car or coach, the combination of a heating apparatus, a hydrocarbon-vapor burner for heating said apparatus, a pivotally-supported ball, and an extinguishing-lever supported upon said ball for cutting off the supply of vapor to and extinguishing the flame of said burner, substantially as described.

8. In a railway car or coach, the combination of a heating apparatus, a hydrocarbon-vapor burner for heating said apparatus, a pivotally-supported ball, and an extinguishing-lever supported upon said ball, and a spring overlying its end adjacent to said ball, substantially as and for the purpose described.

9. In a railway car or coach, the combination of a heating apparatus, a hydrocarbon-vapor burner for heating said apparatus, a pivotally-supported ball, a bar supported upon said ball, and means for preventing its upward rise at one end, and a lever resting upon the other end of said bar for cutting off the supply of vapor to and extinguishing the flame of said burner, substantially as described.

10. In a railway car or coach, the combination of a heating apparatus, a hydrocarbon-vapor burner for heating said apparatus, a compressed-air reservoir, an outlet-valve to said reservoir, burner suitably arranged in said car, tubing connecting said burner and the outlet-valve of said compressed-air reservoir, a pivotally-supported ball, a spring-actuated rod arranged over said outlet-valve, and an extinguishing-lever supported upon said ball, whereby the simultaneous extinguishment of the lights of the burners in the car and the flame of the burner of the heating apparatus is effected, substantially as described.

11. In a railway car or coach, the combination of a heating apparatus, a hydrocarbon-vapor burner for heating said apparatus, a compressed-air reservoir, an outlet-valve to said reservoir, burners suitably arranged in said car, tubing connecting said burners and the outlet-valve of said compressed-air reservoir, a pivotally-supported ball, a bar supported upon said ball and having one end extending over said outlet-valve, a spring-actuated rod arranged over one end of said bar and the valve, and a lever resting upon the other end of said bar, whereby, when the ball is displaced, the simultaneous extinguishment of the lights of the burners in the car and the flame of the burner of the heating apparatus is effected, substantially as described.

12. In a railway car or coach, the combination of a heating apparatus, a hydrocarbon-vapor burner for heating said apparatus, a compressed-air reservoir, an outlet-valve to said reservoir, burners suitably arranged in said car, tubing connecting said burners and the outlet-valve of said compressed-air reservoir, a pivotally-supported ball, a bar supported upon said ball and having one end extending over said outlet-valve, a spring-actuated rod arranged over one end of said bar and valve, a lever resting upon the other end of said bar, and a cord for displacing said ball, whereby the simultaneous extinguishment of the lights of the burners in the car and the flame of the vapor-burner may be effected, substantially as described.

13. In a railway car or coach, the combination of a heating apparatus, a vapor-burner, B, for heating said apparatus, a tank or reservoir, F', for containing a supply of hydrocarbon fuel, a supply-tube, F^2, a valve, r^4, in said tank, a piston, R^2, for holding said valve open when said heating apparatus is in operation, a compressed-air reservoir, E, an outlet-valve, d^2, to said compressed-air reservoir, and tubing for conveying the compressed air that operates the piston which holds said valve open, substantially as described.

14. In a railway car or coach, the combination of the heating apparatus, the hydrocarbon-vapor burner B, for heating said apparatus, the supply tank or reservoir F', provided with an interior valve, r^4, the supply-pipe F^2, connected with said valve, the short rod f', the cylinder R', the piston R^2, having the tapered end f, the compressed-air reservoir E, having an outlet-valve, d^2, and tubing for conveying the compressed air which operates the piston and closes the valve in said supply-tank, substantially as and for the purpose described.

15. In a heating apparatus for cars or coaches, a liquid-fuel-supply pipe provided with interior normally-open valves having abutting stems, weakened points, and springs for automatically closing said valves in the event of the breakage of said pipe at said weakened points, substantially as and for the purpose described.

16. In a railway car or coach, the combination of a heating apparatus, a tank or reservoir, F', containing the supply of liquid hydrocarbon fuel, a supply-tube, F^2, a burner, B, for heating said apparatus, and one or more valves, V', arranged at suitable points in said supply-tube and having abutting stems for holding them open when said tube is in operation, said tube being weakened at or near said valves, whereby, in the event of accident, said tube will break at said weakened points, release said valves, cause them to be automatically closed, and prevent the escape of the contents of the tube, substantially as described.

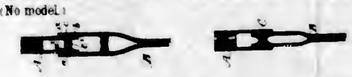
376,700. **CAR-COUPLING.** DAVID BAKER, Freeport, Pa. Filed Apr. 18, 1887. Serial No. 235,280. (No model.)

Claim.—1. The combination, with a draw-head having the pin-holes $b\,b'$, of the superposed tube B′, carrying the inside pulley C, the pin D, carrying a chain, the lever E, and the shaft F, having the arm f, as and for the purpose described.

2. The link-raiser G, having the incline g^3, in combination with guide-bar K, having grooves $k'\,k'$, whereby the former may rise as it is carried back to lift the link, in the manner set forth.

3. The movable rods H, combined with a thereto-pivoted link-raiser, G, both moving in guides and operating together, as and for the purpose specified.

376,701. **TYPE-WRITING MACHINE.** WALTER J. BARROW, New York, N. Y., assignor to Amos Densmore, Meadville, Pa., and C. Godfrey Patterson, New York, N. Y. Filed Dec. 6, 1886. Serial No. 220,832. (No model.)



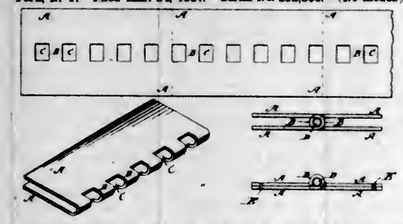
Claim.—1. The combination of a type-bar hanger, consisting of a bent strip of sheet metal having perforations in its ends and the edges of said perforations forced laterally, with a type-bar having the portions adjacent its pivot consisting of sheet metal having perforations and the edges of said perforations forced laterally, whereby relatively larger conical bearings are produced, substantially as and for the purpose described.

2. The combination of a type-bar hanger, consisting of a bent strip of sheet metal having perforations in its ends and the edges of said perforations forced laterally, with a type-bar having the portions adjacent its pivot consisting of sheet metal having perforations and conical journal-bearings around said perforations, and a pin or screw passing through the perforations of the type-bar and its hanger, substantially as and for the purpose described.

3. The combination of a type-bar, a connecting-rod, and a nut with spring-fingers uniting said rod and nut, one of the fingers having permanently secured thereto a pin, the free end of which enters a finger perforated substantially as and for the purpose described.

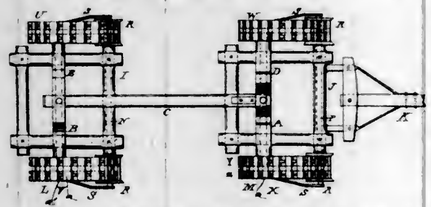
4. The combination of a type-bar hanger, consisting of a bent strip of sheet metal having perforations in its ends and the edges of said perforations forced laterally, whereby conical cavities are formed therein, with a type-bar and a pin passing through said type-bar and hanger, and having its ends conical or expanded to fit within the conical cavities of the hanger, substantially as and for the purpose described.

376,702. **MANUFACTURE OF HINGES.** GEORGE BAYER, New York, N. Y. Filed Mar. 24, 1887. Serial No. 232,288. (No model.)



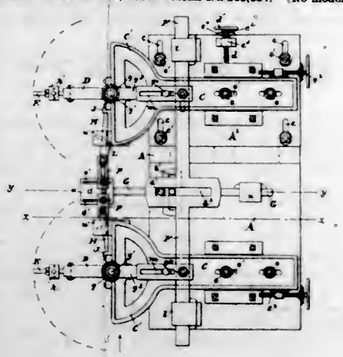
Claim.—The herein-described method of making a hinge, which consists in providing a blank with leaves A, having a central longitudinal series of alternating tongues, B, and apertures C, bending a section of said blank longitudinally in a line passing through said tongues and apertures, then engaging the tongues of one section in the apertures of a corresponding section, placing a pin or pivot into engagement with the knuckles formed by the bent or folded tongues, and securing the leaves of each section together, substantially as shown and described.

376,703. **TRACTION-TRUCK.** WILLIAM H. BEDELL, Sayville, N. Y. Filed Mar. 9, 1887. Serial No. 230,258. (No model.)

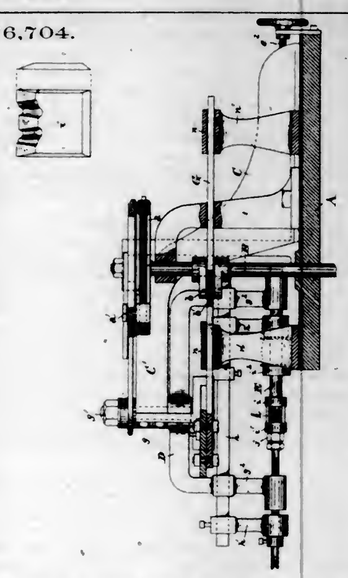


Claim.—In a traction-truck, the combination, with the vehicle-gear, axles, and wheels, constructed substantially as described, of the transverse shafts N and P, secured, respectively, to the rear and front hounds, the spools loose on the ends of said shafts and provided with encircling flanges at each end, the detachable spring-guides S, and the traction-belts, each composed of the two endless link belts Y Z and the slats *a*, connecting the outer sides of opposite members of the two belts, and with their inner surfaces between the belts Y and Z forming a tread for the truck-wheels, substantially as specified.

376,704. **MOLDING-MACHINE.** BENJAMINE L. BRADLEY, Baltimore, Md. Filed June 14, 1886. Serial No. 205,057. (No model.)



376,704.



Claim.—1. In a wood-molding machine for producing strips having serpentine grooves, the combination of two cutter-frames pivoted to turn in a horizontal plane, a lever, g^3, attached to the pivot-bolt of each cutter-frame, the vertical shaft B for driving the shafts E and G', a bar, F, supported in bearings adapted to have endwise movement and connected with each of the said levers g^3, and endwise-reciprocating bar G, receiving its movements directly from shaft B and transmitting movements to the frames D, and means to impart endwise-reciprocating movement to the said bars, as set forth.

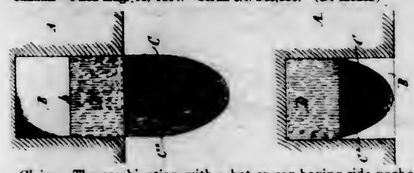
2. In a wood-molding machine for producing strips having serpentine grooves, the combination of a table, A, two bases, A' A^2, on the table, one fixed and the other adjustable toward or from the fixed one, a cutter-frame mounted on each base and each frame pivoted to turn in a horizontal plane, a lever, g^3, attached to the pivot-bolt of each cutter-frame, a bar, F, supported in bearings adapted to have endwise movement and connected with each of the said levers g^3, adjustable jointed connections between the said cutter-frames, a rectilinear reciprocating bar receiving its movements from a shaft, B, and means to impart an endwise-reciprocating movement to the said bars, as set forth.

3. In a wood-molding machine for producing strips having serpentine grooves, the combination of a table, A, two cutter-supporting arms, C, each provided with means to adjust it independently of the other toward or away from the table-front, a cutter-frame pivoted to each arm, a lever, g^3, attached to the pivot-bolt of each cutter-frame, a bar, F, supported in bearings adapted to have endwise movement and connected with each of the said levers g^3, a slotted rectilinear reciprocating bar, G, receiving its movements directly from a crank on the main driving-shaft, the plate *o*, the short arm *p*, the hanger L, and the lever H, connecting the bar G to the frames D, and means to impart endwise-reciprocating movement to the said bars, as set forth.

4. In a wood-molding machine for producing strips having serpentine grooves, the combination of a cutter-supporting arm, C, an oscillating cutter-frame pivoted to said arm, a bar, *h*, in bearings in the cutter-frame and adapted to slide endwise therein, a rotary cutter-shaft, E, carried by said sliding bar, means, substantially as shown to partly revolve the cutter-frame, and means, substantially as shown, to impart endwise movement to the cutter-shaft, as set forth.

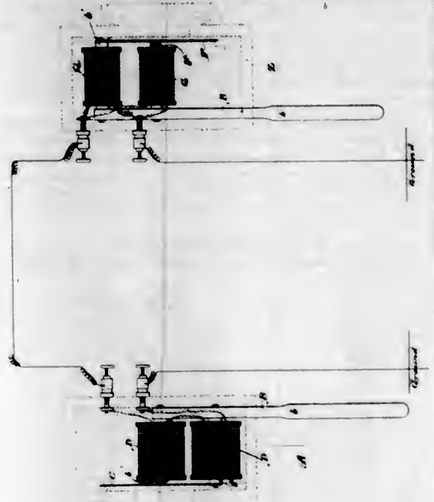
5. In a wood-molding machine for producing strips having serpentine grooves, the combination of two cutter-frames pivoted to turn in a horizontal plane, a lever, g^3, attached to the pivot-bolt of each cutter-frame, a bar, F, supported in bearings adapted to have endwise movement and connected with each of the said levers g^3, means to impart an endwise-reciprocating movement to the said bar, an endwise-sliding bar, *h*, in each cutter-frame, a rotary cutter-shaft, E, carried by said sliding bar, a bar, G, extending crosswise of the bar first mentioned and adapted to have endwise movement, levers H I, connecting the last bar, G, with each cutter-shaft, and a shaft, B, provided with two cranks to impart movement to both of the bars F G, as set forth.

376,705. **HAT OR CAP.** ABRAHAM BRAHAM, Montreal, Quebec, Canada. Filed Aug. 10, 1887. Serial No. 246,639. (No model.)



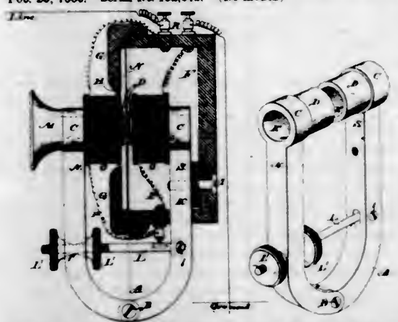
Claim.—The combination, with a hat or cap having side pockets or recesses, of a flexible strip, as D, within such recess, and an ear-tab having a metallic stiffening-frame secured to said strip and capable of sliding in said recess, substantially as set forth.

376,706. **MAGNETO-TELEPHONE.** FRED. H. BROWN, New York, N. Y., assignor to the Magneto Telegraph Company, of New York. Filed Mar. 31, 1886. Serial No. 197,343. (No model.)



Claim.—The transmitting-telephone having the magnet provided with the arms of unequal magnetic strength, the diaphragm secured magnetically to the weaker pole and free to vibrate over the stronger, and the helices on the parallel arms, in combination with the receiving-telephone having the magnet provided with the arms of unequal strength, the helices on the said arms, and the diaphragm secured magnetically to the stronger arm and free to vibrate over the weaker arm, substantially as described.

376,707. **MAGNETO-TELEPHONE.** FRED. H. BROWN, New York, N. Y., assignor to the Magneto Telegraph Company, of New York. Filed Feb. 20, 1886. Serial No. 192,672. (No model.)

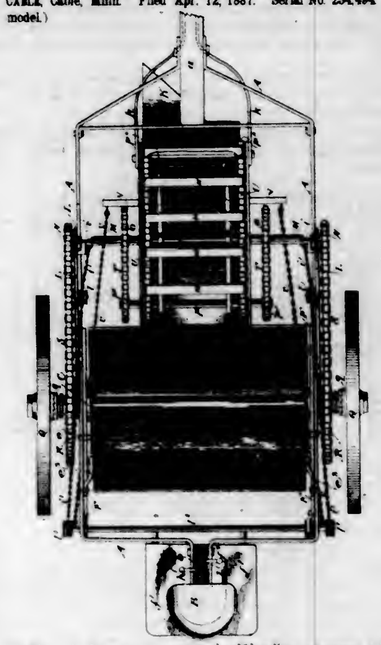


Claim.—1. The combination of the magnet A, hinged at the point B, hollow cylinders D, formed with the upper portion of the said magnet, the adjusting-rod L, hinged to one part of said magnet, screwed L', engaging with the other end of said rod where it passes through the opposing portion of the magnet, and the diaphragm N, substantially as described.

2. The permanent magnet having the opposing arms of the same polarity and the extended arm of opposite polarity, the helices arranged as set forth, the diaphragm N, and the adjusting-rod L, substantially as described.

3. In a magnetic telephone, the combination of the magnet constructed with a hinged joint and having its arms provided with aligned opposing hollow cylinders formed therewith, the helices wound thereon, the mouth-piece communicating with one of said hollow poles, the diaphragm arranged between the said poles, and the adjusting-rod L, substantially as described.

376,708. **EXCAVATOR AND SELF-LOADING CONVEYER.** JOHN CABLE, Cable, Minn. Filed Apr. 12, 1887. Serial No. 234,494. (No model.)



Claim.—1. In an excavator and self-loading conveyer, a hopper in two sections, a plate having a plow attached thereto, and scrapers adapted to carry dirt up said plate, combined with sprocket-wheels mounted on the hubs of the draft-wheels, and adapted to engage therewith by means of a clutch mechanism, and a system of sprocket-wheels and chains for imparting motion to said scrapers, substantially as described.

2. A plate having a plow attached thereto, scrapers adapted to carry dirt up said plate, and a system of sprocket-wheels and chains for imparting motion to said scrapers from the draft-wheels, combined with a hopper in two sections, substantially as described.

3. In an excavator and conveyer, a hopper formed of two sections, one section being supported by the axle of the machine and adapted to revolve thereon, and the other section being suspended by the frame of the machine and adapted to perform the function of a door, substantially as described.

4. In an excavator and conveyer, a hopper formed of two sections, one section being supported by the axle of the machine and adapted to revolve thereon, and having a lever pivoted on one side and adapted to come in contact with a pin for the purpose of tilting it, and the other section being suspended by the frame of the machine, and adapted to enter slightly within the former section, combined with an angle-iron mounted on a shaft and adapted to hold the latter in contact with the former section, substantially as described.

5. In an excavator and conveyer, a platform rigidly secured to a shaft mounted in bearings secured to the frame of the machine, said shaft having arms at its ends carrying brake-shoes, combined with a lever supporting the platform and adapted to release it in order to apply the brakes, substantially as described.

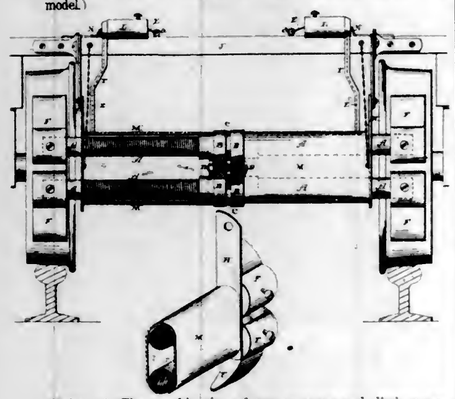
6. In an excavator and conveyer, an elevating mechanism and a plate having an angle-bar hinged to the back thereof, said bar being

journaled in arms pivoted on the axle, and also resting on the frame of the machine, whereby the said arms are supported, combined with chains attached to said bar and passing over sheaves on the upper ends of said arms and connected to reels on a shaft mounted in the rear end of the frame of the machine, and on which they are adapted to be wound, whereby the said plate and elevating mechanism can be lifted, substantially as described.

7. In an excavator and conveyer, an elevating mechanism and a plate having an angle-bar hinged to the back thereof, said bar being journaled in arms pivoted on the axle, and also resting on the frame of the machine, whereby said arms are supported, and chains leading from said angle-bar over sheaves on the upper end of said arms to reels on a shaft mounted in the rear end of the frame, combined with a bar secured to the back of the said plate near its lower end, and chains leading from said bar under sheaves on the end of a bar secured to the frame of the machine to the shaft aforesaid, whereby on revolving the shaft the plate and the elevating mechanism are lifted and at the same time drawn in toward the machine, substantially as described.

8. In an excavator and self-loading conveyer, the combination of a leveler, H, bars C, rods *h*, bent lever *h'*, and arm *b* of the frame A, substantially as set forth.

376,709. **ELECTRO-MAGNETIC BRAKE.** NICHOLAS J. CLUTE, Schenectady, N. Y. Filed Oct. 26, 1887. Serial No. 253,461. (No model.)



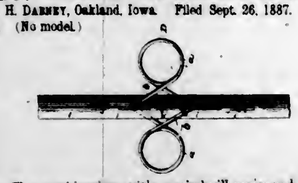
Claim.—1. The combination of two separate and distinct magnets, which are electrically connected by a clamping-bolt at their inner ends, but magnetically insulated, an independent brake-shoe for each pole of the magnets, circuit-wires connected to the magnet-cores, and suitable supports for the magnets, the magnets being made to extend horizontally across from one wheel to the other, substantially as shown.

2. In an electro-magnetic brake, the combination of two U-shaped magnets, which are magnetically insulated, but electrically connected together, with a separate and distinct brake-shoe applied to the different poles of the magnets, and the non-magnetic hangers H, by means of which the shoes are magnetically insulated from each other, substantially as described.

3. The combination of the U-shaped magnets magnetically insulated from but electrically connected together, the separate brake-shoes, the non-magnetic hangers, the pipes T, the sockets L, secured to the brake-beams, and the conducting-wires, substantially as set forth.

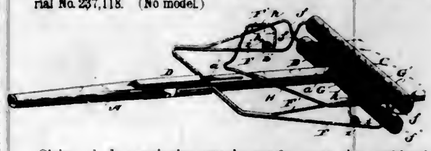
4. The combination of the conducting-wires with the weighted levers pivoted upon the ends of the cars, and having their lower connecting ends provided with plates, substantially as specified.

376,710. **ATTACHMENT FOR WINDMILL PUMP-RODS.** WILLIAM H. H. DARNEY, Oakland, Iowa. Filed Sept. 26, 1887. Serial No. 250,696. (No model.)



Claim.—The combination, with a windmill pump-rod, of springs having coils, as described, and having their opposite ends connected to the opposite sections of the rod, substantially as specified.

376,711. **WRINGING ATTACHMENT FOR MOPS.** CHARLES L. FORTIN, Whitehall, N. Y., assignor of two-thirds to Frederick H. Gaylord and Walter D. Travis, both of same place. Filed May 4, 1887. Serial No. 237,118. (No model.)

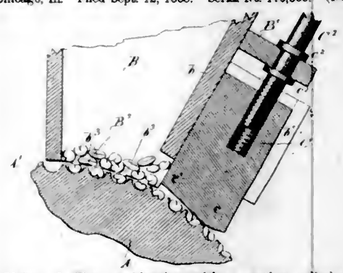


Claim.—1. In a wringing attachment for mops, the combination of a sliding sleeve, two pairs of spring-arms carried by the sleeve, a pair of rollers journaled in the free ends of the arms, and a bail pivoted to one pair of spring-arms, and having cranks arranged between the two pairs of arms, substantially as described, for the purpose set forth.

2. In a wringing attachment for mops, the combination of a sliding sleeve, the spring-arms affixed at one end to the sleeve, and having the free ends thereof bent inwardly toward and crossing one another, a pair of rollers journaled in the crossed ends of the spring arms, and a swinging bail having the crank-arms, said crank-arms being arranged between the spring-arms at points above the crossed ends thereof, and pivoted to one pair of the spring-arms, substantially as described.

3. The combination of an angular mop-handle, a non-rotatable sleeve fitted on the handle and limited to sliding movement thereon, a catch or detent to retain the sleeve in an elevated position on the handle, spring-arms fixed to and carried with the sleeve in its movements on the handle, rollers journaled in the arms, and a bail having crank-arms pivoted to one pair of spring-arms, substantially as and for the purpose described.

376,712. **MACHINE FOR SPLITTING GRAIN.** LOUIS GATHMANN, Chicago, Ill. Filed Sept. 12, 1885. Serial No. 176,869. (No model.)



Claim.—1. The combination, with a rotating cylinder provided with longitudinal grooves somewhat wider than the grain-kernels to be operated upon, of a feed box or hopper constructed and arranged to allow the grain to pass directly to the cylinder and to retain the grain, except the kernels, in said grooves, and a smooth-surfaced presser arranged to press and thereby split the grain-kernels in the cylinder-grooves as they are carried beneath the presser in the rotation of the cylinder, substantially as described.

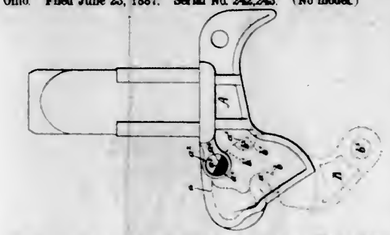
2. The combination of a rotating grooved cylinder, a feed-box or hopper arranged to allow the grain to rest directly on the cylinder, a device for distributing the grain-kernels in the cylinder-grooves, a plate (as D) for retaining the kernels in said grooves on their way to the presser, and a smooth-surfaced presser operating to split the kernels more or less remote from the distributing device, substantially as described.

3. The combination of a longitudinally-grooved rotating cylinder, a feed-hopper having its walls constructed to present an open bottom adjacent to the cylinder, and also to present a lateral opening toward the departing surface of the cylinder, a smooth-faced presser arranged to press and split the grain in said grooves after they have left the hopper, and suitable devices for adjusting the lateral opening, substantially as described.

4. The combination, in a machine for splitting grain, of a rotating cylinder provided with longitudinal grooves, a feed box or hopper constructed and arranged to allow the grain to rest directly on the cylinder, and a smooth-surfaced presser adapted to hold back the grain not in the cylinder-grooves and to press and thereby split the berries on the line of the crease in said grooves, substantially as described.

5. The combination, in a machine for splitting grain, of a longitudinally-grooved rotating cylinder, a hopper having a slotted bottom curved concentric with said cylinder, and a smooth-surfaced presser adapted to press the grain in the cylinder-grooves, and thereby split the grain on the line of the crease, substantially as set forth.

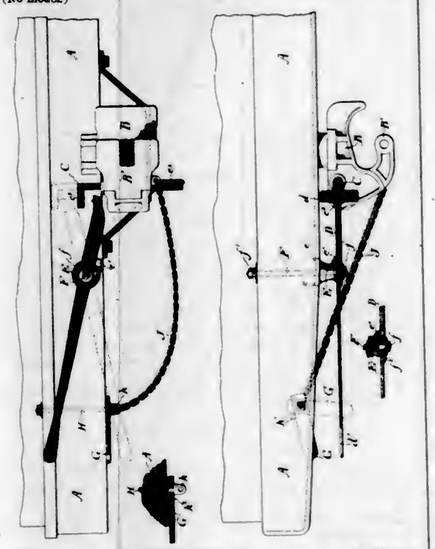
376,713. **CAR-COUPLING.** SAMUEL H. HARRINGTON, Columbus, Ohio. Filed June 23, 1887. Serial No. 242,243. (No model.)



Claim.—1. In a car-coupler substantially as specified, a latch-pin hole, substantially concentric with the curved inner surface of the recess in the coupler-head, said latch-pin hole being contracted at the bottom of the coupler-head to a substantially semi-cylindrical form and lying entirely outside of the path in which the jaw moves, as and for the purpose shown and described.

2. As a latch-pin for a car-coupler constructed substantially as specified, the pin C in its upper portion, *c*, substantially cylindrical, terminating in a substantially semi-cylindrical end, c^2, and having a shoulder, *c'*, as and for the purpose specified.

376,714. **CAR-COUPLING.** SAMUEL H. HARRINGTON and JAMES HANNAN, Columbus, Ohio. Filed June 21, 1887. Serial No. 241,966. (No model.)



Claim.—1. In combination with a car-coupler, substantially as described, the latch-pin C, having a flanged head, c^2, and the pivoted lever D, secured to the end of the car and having one end, *d*, bent at right angles to the shaft of the lever, so as to extend beneath the flange c^2, but not otherwise engage or surround the pin C, and its other end, *d'*, extending out toward the side of the car.

2. In combination with a car-coupler, substantially as described, the latch-pin C, of irregular outline to prevent its turning in its seat, and having a flanged head, c^2, and a pivoted lever, D, secured upon the end sill, and having a flanged end arranged to extend under and engage the flange c^2, substantially as and for the purpose described.

3. In combination with a car-coupler, substantially as described, the latch-pin C, having a flanged head, c^2, the pivot-casting E, having a stop, *c'*, formed on it, and the lever D, pivoted on said casting and arranged to engage the flange c^2 of bolt C, substantially as shown and described.

4. In combination with a car-coupler, substantially as described, the latch-pin C, having a flanged head, c^2, the pivot-casting E, having a stop, *c'*, formed on it, and having projections *e e* formed on its base, the bolt F, and the lever D, pivoted on said casting and arranged to engage the flange c^2 of bolt C, substantially as shown and described.

5. In combination with a coupler, substantially as specified, the latch-pin C, having flanged head c^2, the pivoted lever D, secured on the end of the car and having its end *d* passing under the flange c^2, and the pivoted latch G, arranged to engage the end *d'* of lever D and hold it down when turned out.

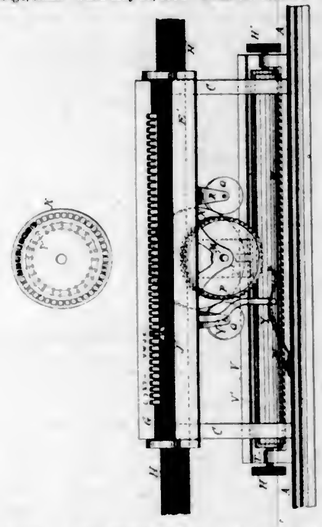
6. In combination with a coupler, substantially as specified, the latch-pin C, having flanged head c^2, the pivoted lever D, secured on the end of the car and having its end *d* passing under the flange c^2, the pivoted latch G, arranged to engage the end *d'* of lever D and hold it down when turned out, and the stop *h'*, arranged to confine the motion of the latch, as and for the purpose specified.

7. In combination with a coupler, substantially as specified, the latch-pin C, having flanged head c^2, the pivoted lever D, secured on the casting E, having stop *c'*, said lever having its end *d* passing under the flange c^2, and the pivoted latch G, arranged to engage the end *d'* of lever D and hold it down when turned out.

8. In combination with a coupler, substantially as specified, the latch-pin C, having flanged head c^2, the pivoted lever D, secured on the casting E, having stop *c'*, said lever having its end *d* passing under the flange c^2, the pivoted latch G, arranged to engage the end *d'* of lever D and hold it down when turned out, and the stop *h'*, arranged to confine the motion of the latch, as and for the purpose specified.

9. In combination with a coupler, substantially as specified, the latch-pin C, having flanged head c^2, the pivoted lever D, secured on the casting E, having stop *c'*, said lever having its end *d* passing under the flange c^2, and the latch G, pivoted on the eyebolt H and arranged to engage the end *d'* of lever D and hold it down when turned out.

376,715. **TYPE-WRITING MACHINE.** EDWARD C. LOCKE, New York, N. Y., assignor, by mesne assignments, to George T. Briggs, Cambridge, Mass. Filed May 23, 1884. Serial No. 132,614. (No model.)



Claim.—1. The herein-described type-writing machine, consisting of the base A, having rigidly secured on the right and left sides thereof the frames B B, having rearwardly-extending arms C C, the notched index-plate G, extending across the front of the machine and rigidly secured to the frames B B, the type-wheel frame pivoted on the arms C C and carrying the freely-revolving shaft L, arranged therein at an angle to the base A, the type-wheel K and its operating-gear P, fast on the respective ends of said shaft, the rack I, meshing with said gear and having the operating-finger J, and adapted to slide or move right and left across the front of the machine in a straight and horizontal way or bearing on the type-wheel frame, the paper-carriage S, adapted to travel under the frame-arms C C right and left across the base A, means for automatically feeding said carriage along, and means for inking said type-wheel, all combined and arranged to operate substantially as shown and described, and for the purpose set forth.

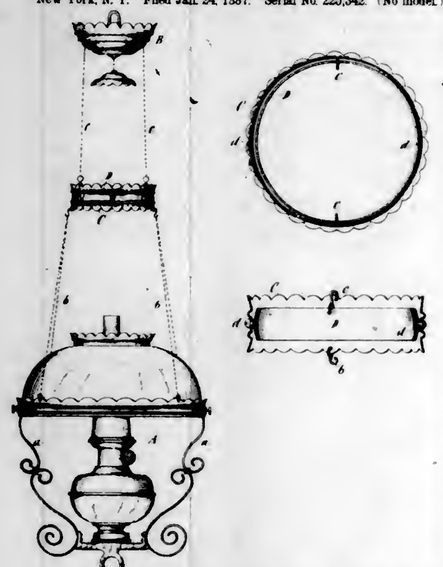
2. In a type-writer, the combination of a rotatable type-wheel, a carriage movable back and forth in ways in the base of the machine, an inclined bearing for the type carried by said carriage beneath the type-wheel, a roller for the paper to pass around supported by said carriage, a rack connected with said carriage, and a spring-pawl engaging with the teeth of said rack and operating the same, substantially as described.

3. In a type-writer, the combination of a rotatable type-wheel, a

carriage movable back and forth and carrying a roll for the paper to be printed by the type on said wheel, a rack connected with said carriage, a spring having a pawl engaging with the teeth of said rack, a vertically-movable frame carrying the type-wheel, and an arm connecting the same with said rack-pawl, whereby, when said frame is depressed, the spring-pawl is made to pass from one tooth of the rack to another to move said carriage, substantially as described.

4. In a type-writer, the combination of the paper-carriage and the movable frame carrying the type-wheel with a spring for both moving the carriage and elevating the frame, substantially as described.

376,716. **LAMP.** CHARLES H. LYMAN, Ansonia, Conn., assignor to the Ansonia Brass and Copper Company and Wolcott A. Hull, both of New York, N. Y. Filed Jan. 24, 1887. Serial No. 225,342. (No model.)



Claim.—1. The combination of a lamp, chains or like devices attached to the lamp, a suspending device, chains depending from said suspending device, and a compensating device comprising two rings arranged one within the other at a distance above the lamp, said rings being pivotally connected together diametrically and connected, intermediate of their pivotal connections, one with the chains or like devices of the lamp and the other with the chains of the suspending device, the lamp, the said compensating device, and the suspension device being concentric with one another, substantially as specified.

2. The combination of a lamp, chains or like devices attached to the lamp, a suspending device, chains depending from said suspending device, and a compensating device comprising two rings arranged one within the other at a distance above the lamp and pivotally connected together diametrically, the outer ring being considerably wider than the inner ring, said rings being connected, intermediate of their pivotal connections, one with the chains or like devices of the lamp and the other with the chains of the suspending device, the lamp, the said compensating device, and the suspension device being concentric with one another, substantially as specified.

376,717. **SLIDING GATE.** ADAM W. MEEK, Hudson, Ind., assignor of one-half to David E. Meek, same place. Filed Oct. 6, 1887. Serial No. 251,634. (No model.)

Claim.—1. The combination, with the posts and the gate carrying the inclined arms, of the cross-head, the pivoted guide-standard carrying a roller and connected to the rear post, and the elongated slotted levers working on a pin secured to one of the inclined arms and secured to the outer end of the cross-head by being fulcrum-pivoted, substantially as described.

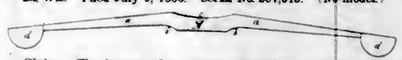
2. The combination, with the front and rear posts, of the extending strip vertically mounted with the front post and separated therefrom, the hooked arm at the top of said strip, the roller between the said front post and vertical strip, the cross-head on the rear post having a top beveled surface, the extended uprights of the gate carrying downwardly-inclined arms, the forward arm, E, having an outer reduced end, the inclined rail within the gate, the pivoted guide-standard having a roller therein, and the extended levers slotted at their inner ends and in movable engagement with a stud or pin on the inclined arm E' of the gate and pivotally fulcrumed on the ends of the cross-head, substantially as described.

376,717.



3. The combination of the posts A, the strip A', having a hooked arm, a', the roller a^3, the guide-standard B, pivoted between a base-block, B', and a top connecting-cap, B^3, the roller b in said standard, the cross-head F, having end fulcrum-blocks, f, the gate having the extended uprights C, C', and C^3, the forward inclined arm, E, the rear inclined arm, E', the inclined rail D', the elongated slotted levers G, pivoted to the fulcrum-blocks f, and the headed pin G', secured to the arm E' and passing through slots in the said levers and having washers thereon separating the said levers, substantially as described.

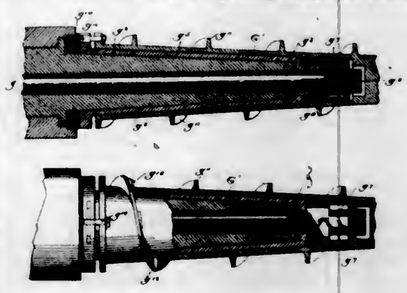
376,718. **SPRING FOR WAGON-SEATS.** JOHN F. MOORE, Centralia, Wis. Filed July 9, 1886. Serial No. 207,615. (No model.)



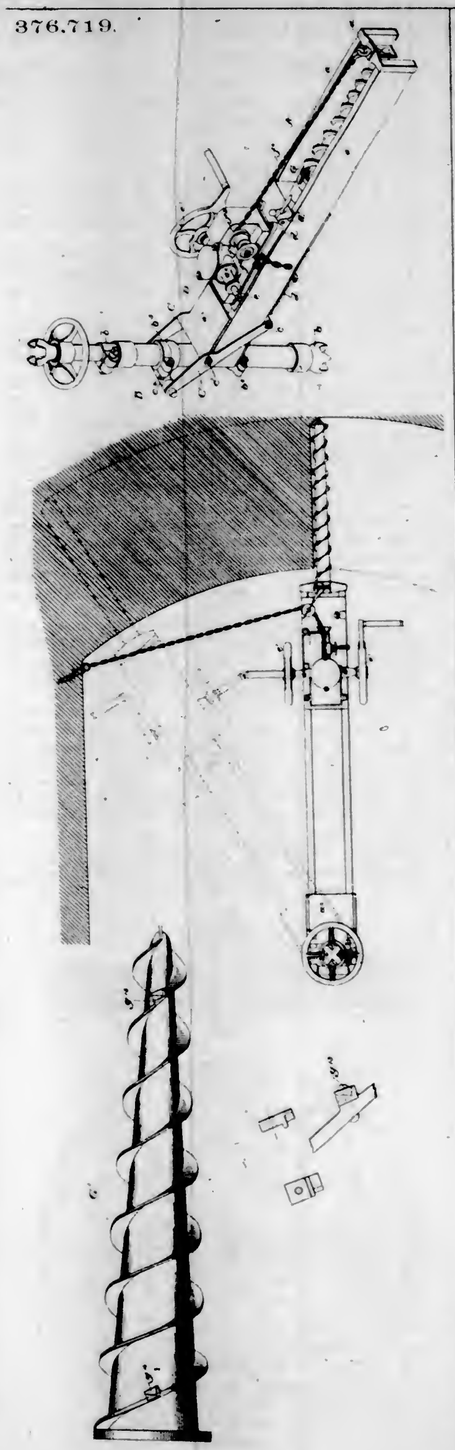
Claim.—The bearer of a wagon-seat spring, consisting of a semi-elliptical spring-body having the counter-arched spring-seat, elastic arms, and the duplicate pairs of counter-facing, overlapping, and compensatively-sliding arm-lugs, substantially as and for the purposes herein specified.

376,719. **MINING-MACHINE.** EUGENE MORREAU, Philadelphia, Pa., assignor to Richard B. Westbrook, same place. Filed Jan. 3, 1887. Serial No. 223,215. (No model.)

Claim.—1. In a machine for mining coal, the combination, with a standard, of a horizontal guide-arm pivotally connected thereto and capable of lateral and vertical swing during the operation of cutting,



376,719.



and serving to support the operative parts and guide them in making the cut, substantially as described.

2. In a mining-machine, in combination with the driving mechanism, mechanism connected therewith and driven thereby to direct the auger in boring and guide its vertical and lateral movements, substantially as described.

3. In a mining-machine, the combination, with the revolving spindle driven by suitable means, said spindle mounted in a bearing at the rear, of the fixed spindle serving as an additional bearing to the revoluble spindle and elongated to serve as a bearing for a revoluble sleeve, and the revoluble sleeve fixed to the revoluble spindle, substantially as described.

4. In a mining-machine, the combination, with the revoluble spindle driven by suitable means, said spindle being mounted in a bearing at the rear, of the fixed spindle serving as an additional bearing to the revoluble spindle and elongated to serve as a bearing for a revoluble sleeve, the revoluble sleeve fixed to the revoluble spindle, and the auger proper upon the revoluble sleeve and secured to the same, substantially as described.

5. The combination of the revoluble spindle, having the bearing at its rear, with the fixed spindle serving as a bearing at its front, and provided with a conical elongation which forms a bearing for the revoluble sleeve that carries the auger proper, substantially as described.

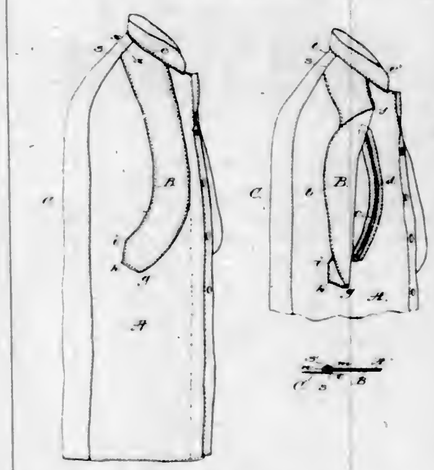
6. The combination of the spindle with the automatic guiding mechanism driven by said spindle, and consisting of a train of wheels, a shaft, the train extending from the spindle and imparting motion to the shaft, and a warp chain or cable, one end of which is secured to the shaft and the other end at a point in the direction in which the auger is desired to move, substantially as described.

7. The auger proper, G', consisting of a sleeve having helices, said helices provided with bosses g^{13}, to which the knives are secured, whereby proper inclination of the knives is obtained, substantially as and for the purpose specified.

8. In combination with the revoluble spindle, the sleeve g^2, fixed to the spindle by means of a key, g^6, and nut g^7 at its forward or outer end.

9. The combination, with the fixed spindle and the sleeve turning upon the same and provided with an oil-groove, of the revoluble spindle fastened at its forward or outer end to the sleeve by a key and nut, this being covered by a cap, g^9, substantially as and for the purpose described.

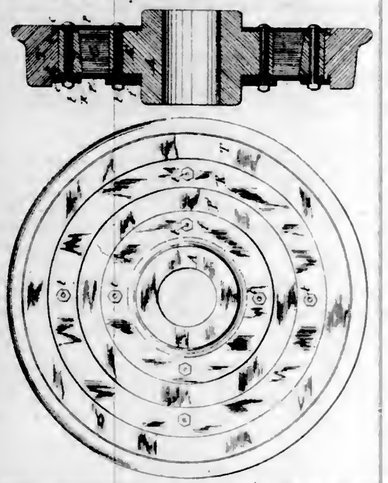
376,720. **WATER-PROOF GARMENT.** CAROLINE W. MORRISON, Boston, Mass., assignor of one-half to Amanda M. Lougee, same place. Filed Oct. 10, 1887. Serial No. 251,930. (No model.)



Claim.—1. As an improved article of manufacture, a gossamer water-proof garment having a front piece, A, provided with an armhole, combined with a lapel secured at its upper portion above the armhole in or to a seam of the garment, and at its lower portion to the front piece below the armhole, substantially as described.

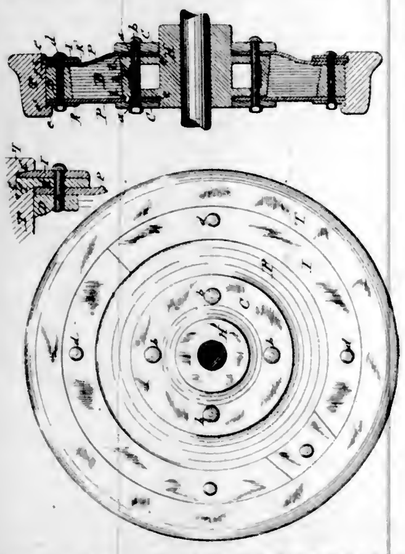
2. As an improved article of manufacture, a gossamer water-proof garment having a front piece, A, provided with an armhole, combined with a lapel secured at its upper portion in or to the shoulder and collar seams of the garment, and at its lower portion to the front piece below the armhole, substantially as described.

376,721. CAR-WHEEL. EDGAR PECKHAM, Syracuse, N. Y., assignor to the Peckham Car Wheel Company, of New York. Filed Nov. 7, 1887. Serial No. 254,485. (No model.)



Claim.—In combination with the wheel-body and the tire formed with the circumferential rabbets *a a* and inward groove *b b* in said rabbets, the side plate P, projecting over the periphery of the wheel-body and formed with a flange, *c*, entering one of the grooves *b*, the side plate P', abutting against the inner periphery of the tire, the ring R, applied to the exterior of the plate P' and projecting over the outer periphery thereof, and formed with the flange *d*, entering into the adjacent groove *a* of the tire, and bolts or rivets *t t*, tying the ring R and the plate P on opposite sides of the wheel-body, as set forth.

376,722. CAR-WHEEL. EDGAR PECKHAM, Syracuse, N. Y., assignor to the Peckham Car Wheel Company, of New York. Filed Oct. 20, 1887. Serial No. 252,896. (No model.)



Claim.—1. The combination of the hub H, formed with the central enlargement, H', the web-plates P P', embracing between them said enlargement of the hub and having their central eyes of greater diameters than the end portions of the hub, and provided with the elongated holes *a a*, the core B, seated upon the enlargement H' of the hub, the collars C C, seated on the end portions of the hub, and bolts or rivets *b b*, passing through the holes *a a* and through the collars and fastening the latter on the web-plates, substantially as described and shown.

2. The combination of the hub H, formed with the central enlargement, H', and with a beveled peripheral face on said enlargement, the web-plates P P, embracing between them the enlargement of the hub, the core B, provided with a correspondingly-beveled eye seated on the peripheral face of the hub, and the collars C C, seated on the end portion of the hub and secured to the sides of the web-plates, substantially as described and shown.

3. In combination with the outer ring, D, web-plates P P, and core B, the retaining-rings R R', having their inner circumference smaller than that of the ring D, substantially as described and shown, for the purpose specified.

4. The combination of the ring D, formed with a beveled inner peripheral face, and the core B, provided with a correspondingly-beveled outer peripheral face seated on the inner face of the ring, substantially as described and shown.

5. The combination of the hub provided with a beveled peripheral face, the outer ring, D, having its inner peripheral face beveled parallel to the bevel of the hub, and a wheel-body seated between said hub and ring and provided with corresponding beveled bearings, substantially as described and shown.

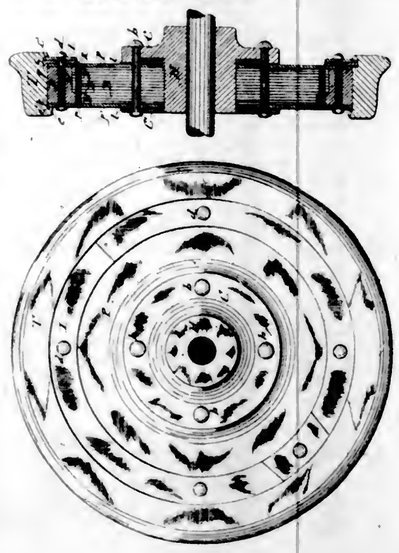
6. In combination with the wheel-body, the tire locked on the body at one side and provided at the opposite side with the circumferential groove *c*, formed with the beveled outer wall, *c'*, and the sectional locking-ring I, having its outer edge beveled correspondingly, substantially as described and shown.

7. In combination with the wheel-body, the tire formed at one side with the undercut inward projection, *c*, and provided at the opposite side with the groove *c*, having an undercut inner wall and beveled outer wall, *c'*, the retaining-rings R R', interlocking, respectively, with the undercut projection *c* and undercut wall of the groove *c*, and the sectional locking-ring I, having its outer edge beveled and inserted into beveled portion of the groove *c*, substantially as described and shown.

8. In combination with the wheel-body, the tire formed at one side of its inner peripheral face with the undercut inward projection, *c*, and the wrought-metal retaining-ring R, secured to the side of the body and formed with an outward-projecting flange, *c'*, interlocking with the projection *l*, substantially as described and shown.

9. In combination with the wheel-body, the tire formed at one side of its inner peripheral face with the undercut projection *c* and at the opposite side with the groove *c*, the wrought-metal retaining-ring R on one side of the body and formed with an outward-projecting flange, *c'*, interlocking with the projection *c*, sectional retaining-rings on the opposite side of the wheel-body entering in the groove *c*, and bolts or rivets securing said retaining-rings to the body, substantially as described and shown.

376,723. CAR-WHEEL. EDGAR PECKHAM, Syracuse, N. Y., assignor to the Peckham Car Wheel Company, of New York. Filed Oct. 20, 1887. Serial No. 252,897. (No model.)



Claim.—1. In combination with the core B and outer ring, D, the web-plate P', secured to said ring and formed with the outward-projecting tongue *t*, and the tire T, formed with the inward projection *c*, having the groove *c'* in its inner side and interlocking with the tongue *t*, substantially as described and shown.

2. In combination with the core B and outer ring, D, the web-plates P P', having their peripheries flush with that of the ring, the tongue *t*, projecting outward from the plate P', the tire T, provided with the projection *c*, and groove *c'* in said projection, interlocking with the tongue *t*, and the groove *c* in the inner peripheral face of the tire, having an undercut inner wall and beveled outer wall, the sectional retaining-ring R, provided with the inward projection *f*, the locking-ring I, beveled at its outer edge, and both entering the groove *c*, and bolts or rivets *d*, passing through said rings and plates P P' substantially as described and shown.

3. In combination with the hub and tire, the ring D, having its inner peripheral face formed with circumferential steps of different diameters, the non-metallic core B, formed with corresponding steps seated on those of the aforesaid ring, and plates P P', embracing between them the said core and ring, substantially as set forth.

4. In combination with the hub and tire, the ring D, having its inner peripheral face formed with circumferential steps of different diameters, the non-metallic core B, formed with corresponding steps seated on those of the aforesaid ring, the plates P P', embracing between them the said ring and core, retaining-rings R S, interlocked with the tire, and bolts or rivets *r*, passing transversely through the retaining-rings, plates, and through the stepped portion of the ring D and core B, and uniting said parts, substantially as described and shown.

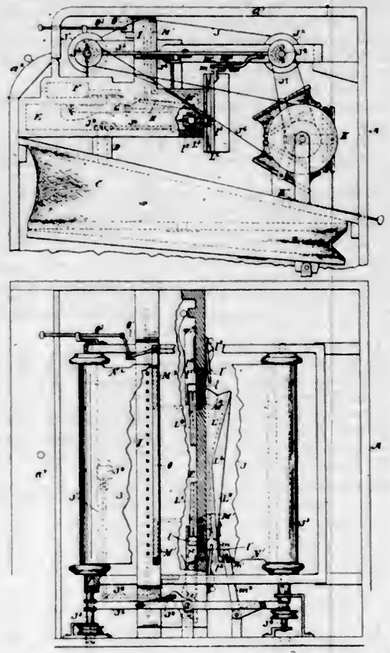
376,724. CAR-WHEEL. EDGAR PECKHAM, Syracuse, N. Y., assignor to the Peckham Car Wheel Company, of New York. Filed Oct. 20, 1887. Serial No. 252,898. (No model.)



Claim.—1. In a car-wheel-tire lock, the combination of the tire provided at the edge of its inner peripheral face with the rabbet *a* and the grooves *b* and *c* in the two walls of said rabbet, a plate projecting from the periphery of the wheel-body and into the rabbet *a*, and provided with the flange *d*, entering the groove *b*, and a retaining-plate clamped on the exterior of the aforesaid body-plate and entering with its outer edge into the groove *c*, substantially as described and shown.

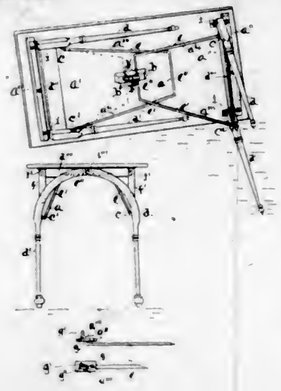
2. The combination, with the wheel-body, of plates secured to opposite sides of the body, one of said plates being flush with the periphery of the body, and the other plate projecting from said body, and both of said plates being provided at their outer peripheries with lateral flanges projecting in one and the same direction, the tire formed at one side of its inner peripheral face with an undercut inward projection interlocking with the flange of the aforesaid flush plate, and the opposite side of the aforesaid face of the tire being provided with the rabbet *a* and grooves *b* and *c* in the walls of the rabbet, said rabbet, with its groove *b*, receiving the aforesaid projecting plate with its flange, the locking-plate I entering with its outer edge into the groove *c*, and bolts or rivets *r*, clamping the respective plates onto the wheel-body, substantially as described and shown.

376,725. MECHANICAL MUSICAL INSTRUMENT. WILLIAM B. TREMAINE, New York, N. Y. Filed Mar. 16, 1887. Serial No. 231,132. (No model.)



Claim.—The combination, with a mechanical musical instrument having a controlling perforated music-sheet, of a motor for driving said music-sheet, pneumatic mechanism for effecting the reversal of the action of the motor upon the music-sheet, ducts comprised in said mechanism and controlled by the music-sheet, and a valve combined with said ducts so as to render them operative or inoperative at will, substantially as specified.

376,726. FOLDING TABLE. FRANK ASA WHITE, Candor, N. Y.; Louisa F. White administratrix, and Morgan A. White administrator, of said Frank Asa White, deceased. Filed Nov. 3, 1886. Serial No. 217,879. (No model.)



Claim.—A bracing-frame, *a*, for the legs *d d*, provided with an elongated cross-bar end, by which a clear space is given for the knees of one sitting at the end of the table, in combination with the hinge-plates *g*, studs *g'*, and hooks *g''* of the hinge ends of the frame *a*, which stiffen the brace, as set forth.

REISSUES.

10,894. **LOCOMOTIVE-BRAKE.** ERNEMER BEALS, Norwich, N. Y., assignor to Jane M. Guernsey, same place. Filed Nov. 1, 1883. Serial No. 110,592. Original No. 271,189, dated Jan. 23, 1883.

Claim.—1. The combination, with the rock-arms, of fulcrum-plates attached to the locomotive-frame and affording centers or fulcrums for the said rock-arms at points in the plane of the wheel-treads below the horizontal plane of the axles and nearer their respective vertical planes than are the shoe-centers *f*.

2. A brake system having shoes bearing on opposite sides of each wheel, operated by pull-lines behind the wheels and below the axles, and arranged in a series indefinitely extensible, so as to operate on any number of wheels, and interfulcrumed, so that each shoe constitutes a fulcrum for all the rest of the series, substantially as herein set forth.

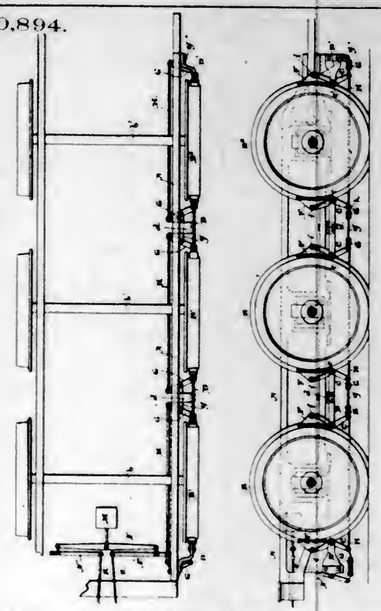
3. In a locomotive-brake, a connected series of brake-shoes distributed and bearing with self-equalizing pressure one upon each side of each driving-wheel and actuated by lines of connection passing behind the wheels and below their axles.

4. A locomotive-brake having a series of brake-shoes on each side of the locomotive bearing with self-equalizing pressure on both sides of each of the respective driving-wheels and operated by separate longitudinal pull-lines passing between the wheels and below their axles.

5. A locomotive-brake having separate interior pull-lines on its respective sides, and floating levers operating to transfer equalized and interfulcrumed pressure to an indefinite number of brake-shoes situate in the line of the wheel-treads.

6. A locomotive-brake having interior pull-lines situate below the axles, floating levers to transfer the power to the plane of the wheel-treads, and rock-arms to elevate the plane of shoe-pressure above that of the pull-line.

10,894.



7. The combination of the motor M, levers N N' N², connecting-links *k*, ties H, floating levers G, rock-arms C, and brake-shoes F, the whole operating, substantially as herein described, to apply uniform or equalized pressure to an indefinite number of driving-wheels.

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DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE SCHULZE-BERGE.

Decided January 5, 1888.

1. Objections by the examiner that the alleged invention shown in an application for a mechanical patent should be made the subject of a design application *Held* to be a *rejection* of the application, the appeal from which must go to the Examiners-in-Chief.
2. The word "useful," employed by Congress in legislation upon the subject of mechanical and design applications, defined and distinguished, and *Held* when applied to designs to relate to matters of decoration and æsthetic art which reach the senses through the eye, and so used in an entirely different sense from that in which it is applied to the subject of mechanical invention, where the *usefulness* contemplated by the statute relates to the employment of dynamic force, its modification or operation.
3. An inventor of a mechanical invention is entitled to give to it such enhancement by way of ornamentation and decoration as it is capable of receiving, and this without in any way modifying or detracting from his right to a patent.
4. Such inventor may also receive a design patent for the configuration, ornamentation, or decoration which the mechanical invention is capable of receiving.

PETITION.

PLATE-GLASS.

Application of Hermann Schulze-Berge filed May 7, 1887, No. 237,436.

Messrs. Bakewell & Kerr for the applicant.

HALL, *Commissioner:*

This is an application for patent for an improvement in corrugated or *ondoyant* glass, the function of which is to permit the passage of light and yet obscure vision.

On the 11th of July, 1887, applicant was informed as follows by Office letter:

This application cannot be considered in the class of mechanical inventions. The application should be for a design patent.

On the 7th of October, 1887, applicant answered as follows:

We request a reconsideration of the last action in this case, for the reason that applicant does not claim a design for plate-glass, but has made an improvement in corrugated or *ondoyant* glass, the function of which is to permit the passage of light and yet obscure vision. This applicant's invention does more perfectly than the former devices, in that while it more perfectly obstructs vision it obstructs the passage of light to a much less extent.

On the 13th of October, 1887, the Office replied in the following language:

The argument filed in this case October 8 has been considered, and applicant is advised that the Office still entertains the views expressed in the official action of July 11, 1887. The fact that applicant's design serves a useful purpose does not change its classification as a subject of invention. This case comes under the clause of section 4929 Revised Statutes, which says that "any new, useful, and original shape or configuration of any article of manufacture" is the subject of a design patent. The official action of July 11, 1887, is reiterated.

Thereupon the applicant appeals to the Commissioner, and prays that the action of the examiner may be reversed, and that he may be directed to entertain the application and act upon the merits thereof, for the reasons, first, that the invention involves the functions of or result produced by the article claimed as a new article of manufacture; second, that the action of the examiner is contrary to the views held by the Office, &c.

In view of the decisions in *ex parte Proudfit*, (10 O. G., 585;) *ex parte Pressprich*, (11 O. G., 195,) and *ex parte Bailey*, (C. D., 1886, 39,) I am of opinion that the action of the examiner in this case must be held to be a rejection of the application, and that the appeal must go to the Examiners-in-Chief. It is true the examiner has simply advised applicant that the invention described and shown in his application must be covered by a design patent, and not by a mechanical patent; but the applicant asks for the latter kind of patent, and the Office has no right or power to insist upon his filing an application for a design patent or any other patent than that which he wishes. This application is pending in the Office and must be disposed of. I know of no way of disposing of it except by allowing or rejecting it; and when the examiner has twice advised applicant, after a discussion of the merits of the question, that he must pursue another course and file an application for a design patent, he, in fact, refuses to allow the present application, for the reason that it is not for an invention upon which a patent, as now asked, can be based. But in view of the fact that the case must go back to the examiner for further consideration, and will be within his jurisdiction until applicant sees proper to take an appeal to the Examiners-in-Chief, I feel justified in offering some suggestions to the examiner.

I have examined very carefully the answer of the examiner to this petition and the authorities cited by him, and I am disposed to think that the invention shown and described in this case, if new, contains patentable merit as claimed by the applicant. Up to 1842 there was no provision of law authorizing the issue of design patents. The field of art in which invention could proceed and for which patents might issue was limited to the four classes specified—viz., "any new and useful art, machine, manufacture, or composition of matter;" but in that year Congress saw proper to recognize and establish another and different field of art. It is difficult to define this new field other than by the language Congress has employed:—

Any new and original design for a manufacture, whether of metal or of other material or materials, or any new and original design for the printing of woolen, silk, cotton, or other fabrics,

or any new and original design for a bust, statue, or bas-relief, or composition in alto or basso relievo, or any new and original impression or ornament to be placed on any article of manufacture, the same being formed of marble or other material, or any new and useful pattern, or print, or picture, to be either worked into or worked on, or printed or painted or cast, or otherwise fixed, on any article of manufacture, or any new and original shape or configuration of any article of manufacture, not known or used by others before his or their invention or production thereof, &c.

It will be noticed in this extract from the statute that the only instance in which the word "useful" is employed is with reference to "pattern, or print, or picture, to be either worked into or worked on," &c., any article of manufacture, &c. The statute has since been modified until we find in section 4929 of the Revised Statutes that the only employment of the word "useful" is in this clause: "Or any new, useful, and original shape or configuration of any article of manufacture."

Under the former statute there seems to have been some contrariety of opinion as to the dividing-line between inventions which might be the subject of "design patents," and attention has been called to the decisions in *ex parte Crane*, (C. D., 1869, 7;) *ex parte Bartholomew*, (C. D., 1869, 103;) *ex parte Fenno*, (C. D., 1871, 52,) and *Wooster* v. *Crane*, (2 Fisher, 583.) In some instances the Commissioner has been of opinion that the word "useful" justified the issue of a mechanical patent for any form, shape, or configuration, provided the thing whose shape or form was involved possessed usefulness or utility in a mechanical sense. In my judgment, the decisions which have pursued this line of reasoning have given too great importance to the word "useful," employed in this connection. I cannot avoid the conclusion, from an examination of later authorities, that the subject of design patents was intended by Congress to relate to matters of decoration, of æsthetic art, which reach the senses through the eye.

There can be no doubt that an invention to be the subject of a mechanical patent must possess utility or usefulness; but it is a usefulness which relates to mechanics, the modification or control of physical forces. On the other hand, the subject of a design patent may also be useful in an entirely different sense or direction, and I think the word "useful" in the statute, section 4929 Revised Statutes, is employed in a different sense. The subject of invention so far as form or shape or configuration is concerned must be useful in the sense that it tends to promote pleasure, refinement, comfort, depending upon the sense of the beautiful; it must be useful in the sense that it must not be mischievous, obscene, or tending to produce evil or wicked reflections. Invention in this field of art relates to the intangible, and its power consists in its ability to awaken pleasant and agreeable sensations, conceptions, and thoughts, and the *usefulness* involved is that which brings about these results.

The decisions above alluded to have dwelt upon the technical meaning of the word "useful," overlooking the fact that Congress by its legislation upon the subject of mechanical and design patents had clearly marked out two separate and distinct fields of invention, which were purposely made separate and distinct from each other, and that, while the word "useful" is employed in the statute relating to each, it was not intended to apply to the same kind of usefulness in each.

As already suggested, the usefulness contemplated by the statute for mechanical patents was such as related to the employment of dynamic force, its modification or operation. The usefulness indicated in the statute with reference to designs was in the other direction and intended to be limited to that kind of usefulness.

Says Leggett, Commissioner, in *ex parte Parkinson*, (C. D., 1871, 251):

> The law has provided for granting patents to the inventors or discoverers of new and useful arts, machines, manufactures, and compositions of matter, and also of any improvements thereof.
>
> This class of inventions has to do with functional qualities of matter and things. The term "useful," in connection with machine patents, relates to the office the thing patented fills in producing a desired effect; or, if the thing patented is the result or effect, that is, the article produced, then "useful" relates to its adaptation to serve some practical purpose in supplying some physical or tangible want.
>
> But the law authorizing design patents was intended to provide for an entirely different class of inventions, inventions in the field of æsthetics, taste, beauty, ornament.
>
> The question an examiner asks himself while investigating a device for a design patent is not "What will it do?" but "How does it look?" "What new effect does it produce upon the eye?" The term "useful" in relation to designs means adaptation to producing pleasant emotions.
>
> * * * * * * *
>
> The legislature never intended by this section [4929] to let down the standard for patents. It was never contemplated to grant a design patent for every possible change of form that might be given to a machine or article of manufacture. By "article of manufacture," as used in this section, the legislature evidently meant only ornamental articles, articles used simply for decoration.

In the case of *Thomas S. Cox* v. *Jacob W. Griggs et al.* (2 Fisher, 174) Judge Drummond held:

> You must be satisfied that the invention is a useful one, and of this slight evidence only is necessary. "Useful," in the patent law, is in contradistinction to "mischievous." The invention should be of *some* benefit.

(See, also, *Wooster* v. *Crane*, Id., 583; *Gorham Manufacturing Co.* v. *White*, 14 Wall., 511.)

In *ex parte Norton* (C. D., 1882, 14) Commissioner Marble held:

> "Useful," in the patent law, is in contradistinction to "mischievous." The invention should be of some benefit. (*Cox* v. *Griggs*, 2 Fisher, 174.) A design, if not "mischievous," is useful if it attracts persons to it or to articles made like it. It may not be of great artistic excellence; but if it be attractive it is useful. * * * It is not necessary that it should be ornamental, although it may be, to entitle the applicant to a patent therefor. The utility in an article of this kind consists in having a shape or configuration of such a character that persons needing it will purchase it because of its shape or configuration in preference to other articles for the same purpose but different in shape and configuration.

In *Theberath* v. *Rubber Co.*, (C. D., 1883, 205,) Circuit Court of New Jersey, Judge Nixon uses the following language in speaking of design patents:

> They differ from patents for inventions or discoveries in this respect, that they have reference to appearance rather than to utility. Their object is to encourage the arts of decoration more than the invention of useful products. A picture or design that merely pleases the eye is a proper subject for such a patent without regard to the question of utility, which is always an essential ingredient in an invention or discovery patent.

Applying these decisions to the present case, the applicant claims that he has invented a plate-glass which is useful, because while it admits a great quantity of light it practically excludes vision. It is true that this function of the glass depends upon the peculiar manner in which applicant gives form and shape to one of its surfaces, which he claims may be made irregularly and without any design whatever, or it may be made in forms which would be pleasing to the eye, such as designs of figures, but when so made such configuration is a mere incident to the purpose for which the plate-glass is constructed. It must be conceded that such a plate-glass would have no attraction and no practical utility as a mere design or picture, and no person would purchase it for that alone. The great and predominant utility of the plate-glass is that it

may be used in the construction of houses in windows and doors, so as to admit light into the rooms and apartments of the building without enabling vision from either side.

In the examiner's discussion of the distinction between mechanical and design patents, he says:

> The one is that which the letter of the statute seems to suggest, viz., on the line of configuration pure and simple—that is to say, where the invention is for an article of manufacture and consists in shape or configuration it should be protected by a design patent, *and no other*. This is the line clearly suggested by Commissioner Fisher, and possesses the merit of clearness and simplicity, besides that of strictly following the letter of the statute.
>
> Another line is that of function. That is, where the subject-matter of the invention is an article of manufacture and the invention consists of shape or configuration, the classification may depend upon the use for which the article is designed. If its function is mechanical—that is, if its function is to transmit or modify mechanical force—then it should be a mechanical patent. The articles suggested by Commissioner Fisher in the Bartholomew case as properly belonging to the classification of designs would come under this category—"plowshares, fan-blowers, propeller-blades, and others of like character." On the other hand, if the function of the article is to gratify the eye or to serve some useful purpose and promote convenience in a way not connected with the transmission, generation, or modification of mechanical power, then it should be protected by a design patent.

I am not able to agree that a propeller-blade, the form of which is devised by an inventor for use in propelling a vessel and to transunit vast power by reason of that form, should be covered by a design patent; its function is mechanical, and its object is to transmit or modify mechanical force, and that being true, it should be covered by a mechanical patent; and so of the other illustrations cited by the examiner.

In the case now before me the whole object or purpose of the invention is to modify and transmit mechanical force—that is, the force called "light." The rays of light are dispersed or scattered in such a way that, while the light is admitted, by reason of this dispersion vision is prevented. Light is a force, and it flows in at the window much as a current of water flows over a dam; it produces results, and its modification in hundreds of particulars is desirable. The invention now under consideration is made with a view to accomplishing such modification, and it modifies or transmits that force as much as a wheel or other device operating in a current of water would modify or change such current, and is therefore as much the subject for a mechanical patent as the other. Having made this invention, the inventor is next entitled to give to it such enhancement by way of ornamentation and decoration as it is capable of receiving, and this without in any way modifying or detracting from his right to patent. As already suggested, if the invention admit of it, the inventor may arrange the irregular surfaces of the glass in figures and designs pleasing to the eye. This every inventor may do with all the varieties of invention conceivable, and I know of no reason why an inventor of a mechanical invention may not in many instances also have a patent for a design for such configuration, ornamentation, or decoration made upon the same. Of course the two are different inventions—one relating to the transmission or modification of mechanical force and the other to the ornamentation that is pleasing to the eye.

A mechanical patent has been held to be no bar to the grant of a patent to the same patentee for a design shown therein. (*Ex parte Palmer*, C. D., 1882, 5; *Collender* v. *Griffith et al.*, 18 O. G., 241; *ex parte Bartholomew*, C. D., 1871, 298.)

It is sometimes exceedingly difficult to separate the form or configuration of a body from its function. This seems to have been the difficulty in cases hereinbefore cited, where reference has been had to propeller-blades, plowshares, and other like instrumentalities. Take, for instance, a lens for converging or diverging light, which depends entirely upon its configuration, no one would pretend, if it were new, that it would not be the proper subject of a mechanical patent, and for the sole reason that it modifies the force called "light" in its transmission through it. So, too, of a goose-necked valve or trap used in plumbing; the function depends upon its form, and yet no one would contend, I apprehend, that, if new, it should not be the subject of a mechanical patent. So, I think, we may go through the entire list of subjects where the invention and form depend upon each other, and the true distinction will always remain that when the function of the invention for the accomplishment of some physical result depends upon its form it cannot be deprived of its mechanical patentability by reason of form or configuration.

I have made these suggestions because I deem the subject of considerable importance, and in order that the examiner may, if he sees proper, give them consideration before the case proceeds further. It is to be understood that they are not at all conclusive upon him, and he is at liberty to permit the case to remain just as it is—rejected—so that the applicant, if he chooses, may take an appeal upon the merits to the Examiners-in-Chief; but, it being evident that the examiner has not understood that he has *rejected* the case upon its merits, I deem it proper to go into the question to some extent in order that the examiner may feel at liberty to reconsider his decision and be justified in taking such further action as to him seems right and proper.

The present appeal is dismissed, and the case is remanded to the Primary Examiner for such action as the applicant or the examiner may see proper to direct.

EX PARTE SARTELL.

Decided January 9, 1888.

1. While a patent would not be declared void, but would be supported in the courts, even though it might cover two independent inventions, the Commissioner in the proper administration of the Office is vested with the discretionary power to require division in certain cases.
2. Among the rules and principles announced in *ex parte Herr* for determining when division should be required was one applicable to combinations, and the proposition is there stated that in the case of a combination applicant may claim such combination and also any element therein which in itself is new and possesses individual utility separate from the combination, provided that element has not already obtained a distinct location in the arts as an independent subject of invention and possesses utility in various other relations than that in which it is used in the particular combination claimed.
3. The classification referred to in *ex parte Herr* was not a mere classification to be found in the different examining divisions of the Office, and it was not intended that division of an application should be required because one examining division had one subject and another division another subject, both of which might be sometimes found in a combination; but the principle therein announced was based upon the determination of the fact as to whether the particular device sought to be made a part of a combination had become a separate and distinct subject of invention and classification, made so by the inventors and manufacturers themselves.

4. In the case under consideration the inventors and manufacturing interests of the public have made the coupler a distinct subject of invention and manufacture, and applicant, therefore, ought not to be allowed to claim this particular invention in the present application, because as an individual coupler it is a distinct and separate invention from the combination, which it is claimed has for its object the heating of cars.

PETITION.

CAR-HEATERS.

Application of Egbert Perry Sartell filed July 8, 1887, No. 243,781.

Messrs. C. A. Snow & Co. for the applicant.

HALL, *Commissioner:*

This appeal is taken from a requirement of the examiner for division of the application. The requirement was that claims 1, 2, and 3, which relate to a pipe-coupling for steam-heating devices for railway-trains, should be embraced in one application, and claims 4 and 5, which are thought to relate merely to a steam-heating device irrespective of the coupling, should be the subject of another and distinct application. The coupler in this case differs from the ordinary coupler which is used to unite flexible tubes or piping, in that the ends of the tubes or piping to be connected are made flexible by joints or pivot-joints, the sections of the tube or piping being themselves stiff and unyielding. There is also a further difference, that the sleeve which is used to unite the two ends of the tube or piping is operated by gear which is a part of the device claimed.

It is to be understood at the outset that there is no objection to the applicant obtaining a patent for his coupling and this device for its operation if it be new, as claimed. The only question is whether he should apply for this particular device in another application, or may be allowed to claim it and also the combination for his car-heating apparatus, which includes this coupler as one of the elements, in the present application.

Applicant has presented an able and elaborate brief, in which, as I understand, he attacks the principle of the decision in *ex parte Herr* (41 O. G., 463) upon the ground that it requires division of applications whenever the elements or devices are located in different classes and examined in different divisions of the Office. I think that this is a misconception of the decision in *ex parte Herr*. In that case I held that, while a patent would not be declared void, but would be supported in the courts, even though it might cover two independent inventions, the Commissioner in the proper administration of the Office was vested with the discretionary power to require division in certain cases, and among the rules announced for determining when division should be required was one applicable to combinations, and the proposition is there stated that in a combination the applicant may claim such combination and also any element which in itself is new and possesses its own individual utility separate from the combination, provided that element has not already obtained a distinct location in the arts as an independent subject of invention and classification, and possesses utility in various other relations than that in which it is used in the particular combination claimed.

In the case before me applicant may be entitled to a patent for his combination which includes this particular coupler with its adjustable devices. If this coupler is in itself new and has no other relation or use in the present state of the art, applicant could claim that also in the application under consideration; but if, as a matter of fact, couplers of tubes and piping, flexible or inflexible, have been made by the inventors themselves and by the manufacturing interests of the country a distinct subject of invention and manufacture, and so stand in a distinct class, applicant ought not to be allowed to claim this particular invention in this application, because as an individual coupler it is a distinct and separate invention from the combination, which it is claimed has for its object the heating of cars.

The classification alluded to in the case of *ex parte Herr* was not a mere classification to be found in the different examining divisions of the Office, and it was not intended that division of an application should be required because one such examining division had one subject and another division another subject, both of which might be sometimes found in a combination, but it was because the particular invention which is sought to be made a part of a combination has become a separate and distinct subject of invention and classification, made so by the inventors and manufacturers themselves.

In this case the particular device for coupling may be wholly new and unlike any other coupler, or it may be used, as other couplers are, in a great variety of apparatus where tubes and pipes are necessary for conducting steam, air, gas, or water. Indeed, it could be used in connecting pipes employed for the transmission of messages or material by pneumatic power, so that a coupler or device of this kind has therefore obtained a definite status in the arts. This being so, I think that the public interest and the interest of the Office require that a separate application should be made for the device, and that it should receive an examination in the division or before that examiner in the Office who has charge of the class of invention thus made separate and distinct.

The requirement of the examiner is sustained.

EX PARTE NORTON.

Decided January 10, 1888.

1. The assignee requested postponement of official action until the application should be called up by him: *Held* that the application must be considered as abandoned under the statute, the period of such suspension extending beyond two years.
2. It is against public policy to permit an application for patent to lie dormant and suspended upon request of applicant or his assignee for a long term of years, and the practice of suspending action on applications for indefinite periods upon the request of the parties in interest is not sanctioned. There is no authority of law for such procedure, and a case cannot be suspended as a matter of right on the part of the applicant.
3. A request by the parties in interest that further action should not be taken waived action by the Office, and put the case in the same condition as though the Office had acted and was awaiting further action on the part of the applicant or his assignee.

REFERENCE by Primary Examiner.

SACCHARINE COMPOUND.

Application of Thomas Norton filed April 6, 1883, No. 90,875.

Messrs. Wilhelm & Bonner for the applicant.

HALL, *Commissioner:*

This case comes before the Commissioner upon the request of the Primary Examiner for instructions.

It appears from the examiner's statement that before the application was taken up for examination—to wit, on the 13th day of May, 1883—a letter addressed to the examiner then in charge of the class was received from the assignee of the entire interest in the invention, in which request was made for the postponement of official action until the case should be called up by him, and that from said date until the present time the parties in interest have failed to solicit action or in any manner to prosecute the application.

It also appears that notice of the grant of the request for postponement was not mailed to either the assignee or the attorney of record, but that the word "postponed" was written in pencil across the back of the file-wrapper and the file placed in the case, where it has since remained.

The examiner requests instruction as regards the status of the application—*i. e.*, whether it is to be regarded as abandoned or simply held in abeyance to receive action at the pleasure of the applicant.

Section 4894 Revised Statutes provides that—

All applications for patents shall be completed and prepared for examination within two years after the filing of the application, and in default thereof or upon failure of the applicant to prosecute the same within two years after any action therein, of which notice shall have been given to the applicant, they shall be regarded as abandoned unless it be shown to the satisfaction of the Commissioner of Patents that such delay was unavoidable.

It is true that said section, which is in effect a statute of limitations, provides that an application will become abandoned by the failure to "prosecute the same within two years after any action therein, *of which notice shall have been given to the applicant;*" but it does not follow that because an application is suspended upon the written request of the applicant he can choose his own time in which to demand examination. If such were the case, the Office would be placed in the position of practically nullifying the plain meaning of the statute. The refusal of the Office to act was in the present case presumptive notice to the assignee that his request had been granted.

It is against public policy to permit an application to lie dormant in this Office for a long term of years upon request of the applicant, and it is clearly within the meaning of the statute that such an application will become abandoned by the failure of the applicant to prosecute within two years from the date of suspension thereof. Suspension of the present case was due to the act of the assignee, who is alone responsible therefor. It is not intended to sanction the practice of suspending action on cases for indefinite periods upon the request of the parties in interest. There is no authority of law for such procedure, and the grant or denial of the request is optional with the Office. A case cannot be suspended as a matter of right on the part of the applicant, and suspension should not be granted unless good and sufficient cause therefor be shown.

A request of an applicant or his assignee that further action should not be taken until he should advise the Office waived action by the Office, and put the case in the same condition as though the Office had acted and was awaiting further action on the part of applicant or his assignee. In every case in which such a request is made a letter should be written by the examiner notifying applicant thereof, and such action should be indorsed on the file-wrapper, and a date set on which the suspension will terminate.

The examiner is instructed to regard the application under consideration as abandoned.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Western District of Pennsylvania.

KIRK *v.* DU BOIS.

Decided December 27, 1887.

1. KIRK—MOVABLE DAMS.
   The tenth claim of Letters Patent No. 268,411, dated December 5, 1882, granted to Arthur Kirk, for an improvement in movable dams, declared valid and to have been infringed.
2. CLAIM—CONSTRUCTION OF.
   Where it does not appear in evidence that the object desired and claimed has been accomplished by any analogous method before the patentee conceived and described the means of effectuating it, he is fairly entitled to all the benefits his patent was intended to confer upon him.
3. INTERFERENCE—EFFECT OF DECISION IN.
   While a decision of the Patent Office awarding priority of invention in an interference proceeding not appealed from is not conclusive in a suit between the same parties on the same subject-matter, yet it is strongly persuasive that it was right.
4. INFRINGEMENT AS AFFECTED BY CHANGE OF LOCATION OF OPERATIVE PARTS.
   A difference in location is immaterial where the function performed, the result attained, and the mode of operation are the same so far as the essential purpose of the invention is concerned.

Messrs. W. Bakewell & Sons for the complainant.

Mr. T. H. B. Patterson and *Mr. W. P. Jenks* for the defendant.

Before MCKENNAN, *C. J.*, and ACHESON, *J.*

MCKENNAN, *C. J.:*

The complainant is the patentee, to whom was issued Letters Patent No. 268,411, dated December 5, 1882, for a new and useful improvement in movable dams. The patent covers ten claims, only one of which (the sixth) is alleged to have been infringed, and is therefore the subject of this controversy. That claim is in the following words:

6. A bear-trap dam having a relieving or open sluice extending from under the gates, so as to relieve them from unnecessary pressure, substantially as and for the purpose described.

In the specification this relieving device is thus described:

In the end wall of the dam I make an open sluice, water-way, or tail-race, 38, Fig. 2, at such height as will permit all water which is not required to sustain the gates to escape from under them. When the gates are down, as in the position shown in Fig. 1, the water is admitted by the wickets under them. This raises and floats them up until they reach the position shown in Fig. 2. By that time the water having reached the sluice 38, which passes through the wall around the end of the gate, will flow freely through, sustaining the gates at that level.

A modified construction of the sluice 38 is shown by Fig. 4, where the outlet 39 in the wall is below the level of the water, the latter passing through the outlet 39 into a forebay or well, 40, and thence over the bridge 41.

* * * * * * *

It is apparent that the form, place, and details of construction of the sluice for relieving the gates from excessive pressure below can be varied by the skilled constructor; but in all cases an

open channel will be necessary when the water has reached a certain height or pressure under the gates.

It thus appears that the whole object of the invention was to regulate the hydrostatic pressure under the gates or leaves of a bear-trap dam, so as to raise and retain them at the desired height or level; and if it does not appear that this desirable object was accomplished by any analogous method before the patentee conceived and described the means of effectuating it, he is fairly entitled to all the benefits his patent was intended to confer upon him.

Three grounds of defense are set up and insisted upon by the respondent:

1. That the alleged invention is not useful, aside from the desirability of the result contemplated by the patentee, and hence the ostensible value of any means conducing to its production, it is sufficient to say that no proof was presented by the respondent on this subject, and that therefore the presumption of utility arising from the patent itself is enough, without more, to meet all the requirements of the complainant's contention, and that he is entitled to the uncontroverted benefit of it.

2. That the patented device was in use by the late John Du Bois before the date of the alleged invention by the patentee.

It is alleged that this device was embodied in a dam described as the "Chamber of Commerce Dam," and was in use there on the 23d of December, 1879. On that day several members of the Chamber of Commerce of Pittsburg, and other persons, among whom was the complainant, visited this dam for the purpose of inspecting and examining it, and all of them who were witnesses testified that no such device as that described in the patent was then connected with it. On the other hand, quite a number of witnesses who had been in the employment of John Du Bois testified that a relieving device substantially similar to the complainant's was then and there in use. In view of all the surrounding circumstances, we are of the opinion that the testimony in support of the complainant's hypothesis preponderates; and this conclusion is confirmed by what transpired in the course of proceedings in the Patent Office.

In the spring of 1881 John Du Bois and Arthur Kirk each filed applications in the Patent Office for an improvement in bear-trap dams as described in the claim in controversy here. They were adjudged to interfere with each other, and an interference was accordingly declared between Kirk and Du Bois. After the taking of testimony and the hearing of the parties, the Examiner of Interferences decided "the question of priority of invention in favor of Kirk." From this decision Du Bois, in writing, waived his right of appeal. Now, although this decision was not conclusive against Du Bois, yet the decision itself, coupled with his acquiescence in it, is strongly pursuasive that it was right; but an averment of decisive significance is made in the preliminary statement by Du Bois filed in pursuance of the requirement of the Office. In that he says:

That as yet (October 10, 1881) he has made no model and has built no dam similar to that shown in his pending case.

How, then, is it credible that the contested invention could have been embodied in the Chamber of Commerce dam as early as December 23, 1879? In view of all this, we must conclude that the testimony in behalf of the defendant is of the most doubtful character, and that the weight of all of it is with the complainant, and that this part of the defense must fail.

3. Has the defendant infringed the complainant's patent? The proofs, in our judgment, demonstrate that he has; but we do not propose to discuss this question at any length or in any detail. It is sought to differentiate the complainant's and the defendant's methods by the argument that the complainant's provides for the overflow of the surplus water on the side of the dam opposite to that where it enters it, while in the defendant's the overflow is on the same side at which the water enters; but the difference in location is immaterial, as the function performed, the result attained, and the mode of operation are the same so far as the essential purpose of the invention is concerned.

Upon the whole case a decree must be entered in favor of the complainant for an injunction and account, with costs.

DESIGNS.

18,021.—BOTTLE.—*Richard M. Atwater*, Millville, N. J., assignor to *James Whitall, John Mickle, C. Albert Tatum, John M. Whitall, J. Whitall Nicholson*, and *Francis M. Underhill*, all of Philadelphia, Pa. Application filed November 14, 1887. Serial No. 255,165. Term of patent 14 years.

18,022.—BARBER'S DRESSING-CASE.—*Timothy J. Collins*, Toledo, Ohio, assignor of two-thirds to *John E. B. Ransom*, and *Thaddeus F. Randolph*, same place. Application filed December 22, 1887. Serial No. 258,768. Term of patent 3½ years.

18,023.—LADY'S COSTUME.—*Henrietta F. Duke*, New York, N. Y., assignor to *The Butterick Publishing Company, (Limited,)* same place. Application filed December 9, 1887. Serial No. 257,465. Term of patent 3½ years.

18,024.—FONT OF PRINTING-TYPE.—*Charles E. Heyer*, Chicago, Ill. Application filed December 24, 1887. Serial No. 258,929. Term of patent 14 years.

18,025.—CARD.—*William A. Kelsey*, Meriden, Conn. Application filed November 18, 1887. Serial No. 255,559. Term of patent 7 years.

18,026 to 18,028, inclusive.—OIL-CLOTH.—*Charles T. Meyer* and *Victor E. Meyer*, Bergen, N. J., assignors to *Edward C. Sampson*, New York, N. Y. Applications filed December 23, 1887. Serial Nos. 258,906 to 258,908, inclusive. Terms of patents 3½ years.

18,029.—OIL-CLOTH.—*Charles T. Meyer* and *Victor E. Meyer*, Bergen, N. J., assignors to *Edward C. Sampson*, New York, N. Y. Application filed December 24, 1887. Serial No. 258,909. Term of patent 3½ years.

18,030.—BURIAL-CASKET TOP.—*William J. Noble*, New York, N. Y. Application filed November 16, 1887. Serial No. 255,370. Term of patent 7 years.

18,031.—CORSET.—*Edward S. Rosenbluth*, Hartford, Conn. Application filed September 5, 1887. Serial No. 248,905. Term of patent 7 years.

18,032.—LEAD-PENCIL.—*Louis Zeckendorf*, New York, N. Y. Application filed December 13, 1887. Serial No. 257,824. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,115.—CORN-CURE.—*Don H. Aldrich*, Concord, N. H. Application filed December 17, 1887. Used since January 1, 1884.

"The representation of an ear of corn rising from the center of a box upon which are assembled several bottles of corn cure or killer."

15,116.—SOAP.—*The Ammonia Soap and Chemical Company*, Chicago, Ill. Application filed November 28, 1887. Used since September 1, 1886.

"The word 'AMMOLIO.'"

15,117.—HORSE-BLANKETS.—*William Ayres & Sons*, Philadelphia, Pa. Application filed November 28, 1887. Used since November 1, 1883.

"The word 'Boss.'"

15,118.—ROPE FOR TRANSMITTING POWER OVER PULLEYS AND FOR HOISTING PURPOSES.—*Dodge Manufacturing Company*, Mishawaka, Ind. Application filed October 1, 1887. Used since 1885.

"The word 'FIRMUS.'"

15,119.—COMPOUND FOR FIREPROOFING.—*Griffith's Pyrodene Fireproofing Company, (Limited,)* London, England. Application filed December 12, 1887. Used since May 1, 1886.

"The word 'PYRODENE.'"

15,120.—TEA.—*Chas. K. Hammitt & Co.*, New York, N. Y. Application filed November 30, 1887. Used since October 1, 1887.

"The words 'CELESTIAL TEA.'"

15,121.—CHEWING-GUM.—*Charles T. Heisel*, Cleveland, Ohio. Application filed October 7, 1887. Used since October 5, 1887.

"The word 'PHOTO,' accompanied by a photographic illustration of some actress."

15,122.—ENVELOPE-PAPER AND ENVELOPES.—*The Holyoke Envelope Company*, Holyoke, Mass. Application filed November 23, 1887. Used since October 20, 1887.

"The representation in outline of an envelope-blank."

15,123.—ENVELOPE-PAPER AND ENVELOPES.—*The Holyoke Envelope Company*, Holyoke, Mass. Application filed November 23, 1887. Used since October 20, 1887.

"The representation of an envelope-blank in outline and the word 'TREASURY.'"

15,124.—ENVELOPE-PAPER AND ENVELOPES.—*The Holyoke Envelope Company*, Holyoke, Mass. Application filed November 23, 1887. Used since October 20, 1887.

"The representation in outline of an envelope-blank and the word 'GOVERNMENT.'"

15,125.—MEDICINE FOR THE CURE OF COUGHS AND COLDS.—*George Kneuper*, New York, N. Y. Application filed November 8, 1887. Used since September 25, 1887.

"The words 'PARKER'S COMPOUND.'"

15,126.—OLIVE-OIL.—*P. Mottet & Cie.*, Grasse, Alpes Maritimes, France. Application filed October 27, 1887. Used since 1805.

"The trade-name 'J. MOTTET & CIE.' and the representation of a metallic seal."

15,127.—WHETSTONES.—*A. F. Pike Manufacturing Company*, Pike Station, N. H. Application filed October 24, 1887. Used since 1868.

"The words 'WHITE MOUNTAIN.'"

15,128.—OIL-STOVES.—*C. Riessner & Company*, New York, N. Y. Application filed December 16, 1887. Used since November 3, 1887.

"The word 'VOLUNTEER.'"

15,129.—MEN'S DRAWERS.—*Julius Stiefel* and *Benjamin M. Cohen*, Baltimore, Md., and New York, N. Y. Application filed December 17, 1887. Used since October 14, 1887.

"The word 'CABLE-STAY.'"

15,130.—WHISKY.—*E. Taniere & Co.*, San Francisco, Cal. Application filed December 15, 1887. Used since November 1, 1887.

"The words 'GOLDEN WEST.'"

15,131.—LADIES' HATS AND BONNETS AND MILLINERY MATERIALS.—*Louise G. Thompson*, New York, N. Y. Application filed December 3, 1887. Used since January 1, 1887.

"The word 'LOUISE.'"

LABELS.

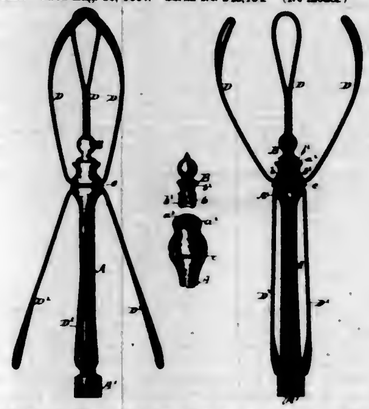
5,475.—Title: "DAY'S SPECIFIC."—*Walter L. Day*, New York, N. Y. Application filed December 29, 1887.

5,476.—Title: "UNION PRINT WORKS." (FOR TEXTILES.)—*William H. Locke, Jr.*, Brooklyn, N. Y. Application filed December 28, 1887.

PATENTS

GRANTED JANUARY 24, 1888.

376,727. **VAGINAL SYRINGE.** SYLVESTER W. BEALL, Columbus, Ohio. Filed Aug. 29, 1887. Serial No. 248,184. (No model.)



Claim.—1. The combination of an injector-nozzle, having its front end internally screw-threaded and the opening flaring, with a plug having its inner end screw-threaded, and longitudinal grooves in said screw-threaded portion, substantially as and for the purpose described.

2. The combination of a nozzle having upon its sides cavities *c*, and a circumferential groove with a series of fingers looped at both ends and bent in the middle between said ends, and a wire bearing upon the bent middle portion of said fingers and resting in said groove, substantially as and for the purpose described.

376,728. **PROJECTILE.** WILLIAM H. BROWN, Jersey City, N. J., assignor to the Brown's Seamless Metal Company, same place. Filed June 30, 1885. Renewed June 23, 1887. Serial No. 242,275. (No model.)

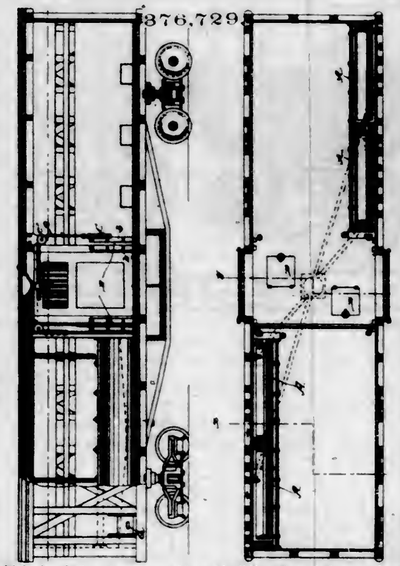


Claim.—The combination, in a projectile, of a conical hard-metal body, A, and a conical covering-shell, B, of seamless drawn metal enveloping the body from its point rearward, the body portion of the shell B being extended in a direct line rearward beyond the adjacent portion of the body A and left open at the rear end to form a gas-ring and expansion-chamber, substantially as herein described.

376,729. **STOCK-CAR.** GEORGE D. BURTON, New Ipswich, N. H. Filed Sept. 23, 1886. Serial No. 214,337. (No model.)

Claim.—1. In a stock-car, the combination of the manger provided with the diagonal rod K, which extends from the front portion of the manger between the feed-trough and a gutter for the feed-trough, and holds the manger in position, substantially as and for the purposes specified.

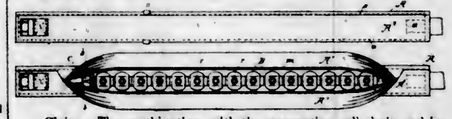
2. In a stock-car, the main body provided with vertical grooves each side of its central portion and having a water-tank at its top, which water-tank is provided with a perforated projection, in combination with sliding partitions provided with counterbalancing-weights having cords which extend up to the top of a car and across the space and are adapted to slide up and down on the side opposite that side



376,729.

which the sliding door occupies, said sliding door being perforated, and a pin for securing the door in place when in an elevated folded position, substantially as and for the purposes specified.

376,730. **THERAPEUTIC ELECTRIC BELT.** SAMUEL R. BOSWELL, Denver, Colo. Filed May 31, 1887. Serial No. 239,534. (No model.)

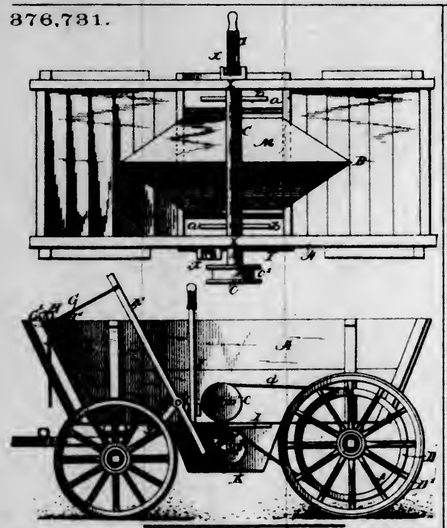


Claim.—The combination, with the generating cell chain and its inclosing-case, of the herein-described electrode, composed of the annular concavo-convex disk *f*, having a central opening, a piece of absorbent material in the said opening at the concave side of the disk *f*, the metallic disk *h*, supporting said absorbent material in the opening, and the fastening-strap *j*, extending over the disk *h* and secured to the disk *f*, and a conductor connecting the electrode and the chain cell, as set forth.

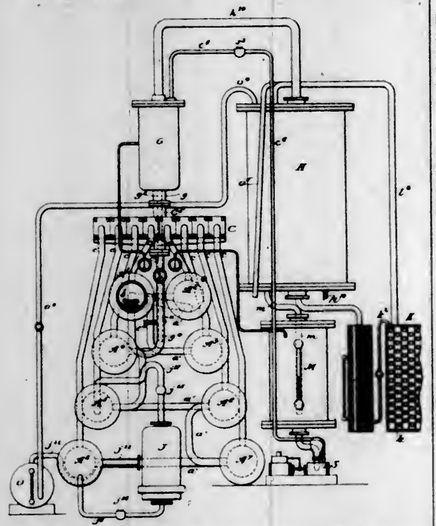
376,731. **FERTILIZER-DISTRIBUTER.** SAMUEL H. COTTRELL, Ramsey, Ala. Filed Sept. 16, 1887. Serial No. 249,841. (No model.)

Claim.—In a fertilizer-distributer, an inclined hopper with slotted bottom, an inclined deflector within said hopper, a cross-shaft with projections working above said deflector, a slotted slide-board having alternate sieve-openings, a pivoted lever adapted to transversely move said board, and a rigid pulley on said cross-shaft, in combination with one of the rear wheels having a grooved band-wheel secured thereto, a chain connecting said band-wheel with said pulley, and a lever carrying an idler-pulley working against the lower face of said chain, substantially as shown and described.

376,731.



376,732. APPARATUS FOR ICE MAKING AND REFRIGERATING. JAMES R. CRAFT, New York, N. Y. Filed Mar. 2, 1886. Serial No. 193,763. (No model.)



Claim.—1. In an ice or refrigerating machine, a rectifying-vessel having an hour-glass coil of piping for the cold aqua-ammonia and a central diaphragm in such coil, a gas-inlet and water-outlet vent at the center of the bottom and a gas-outlet vent at the center of the top, whereby the gas to be rectified is cooled and freed from water-vapor and the aqua-ammonia is heated, substantially as and for the purposes set forth.

2. In combination with the distilling devices of an ice or refrigerating machine, a gas receiving or conducting device having a downwardly-conducting portion, with a water outlet or vent at the bottom of such downwardly-conducting portion, and a rectifying device having within it a coil or passage-way for the cold aqua-ammonia, and a water outlet or vent at its lowest point, the gas receiving or conducting device being arranged between the distilling and the rectifying devices and connected therewith, as shown, whereby the distilled gas is freed from water and from water-vapor, substantially as and for the purposes set forth.

3. In combination with the distilling-retort of an ice or refrigerating machine and its gas-discharge pipe or pipes, a gas-receiver, and a return water-pipe connecting the lower part of the gas-receiver with the lower part of the distilling-retort, whereby any water in the gas-receiver is returned to the distilling-retort, while the water-trap formed in said return water-pipe prevents the backflow of gas from the gas-receiver into the distilling-retort, substantially as and for the purposes set forth.

4. In combination with the distilling-retort of an ice or refrigerating machine and its gas-discharge pipe or pipes, a gas-receiver, a return water-pipe connecting the lower part of the gas-receiver with the lower part of the distilling-retort and forming a water-trap thereby, and an aqua-ammonia-supply pipe discharging in such trap, substantially as and for the purposes set forth.

5. In combination with the distilling-retort of an ice or refrigerating machine and its gas-discharge pipe or pipes, a gas-receiver, a return water-pipe connecting the lower part of the gas-receiver with the lower part of the distilling-retort and forming a water-trap thereby, a rectifier having a water outlet or vent at its lowest point and having within it a coil or separate passage-way for the cold aqua-ammonia, and, continuing such coil or passage-way, a supply-pipe discharging in the water-trap of the return water-pipe between the gas-receiver and the distilling-retort, substantially as and for the purposes set forth.

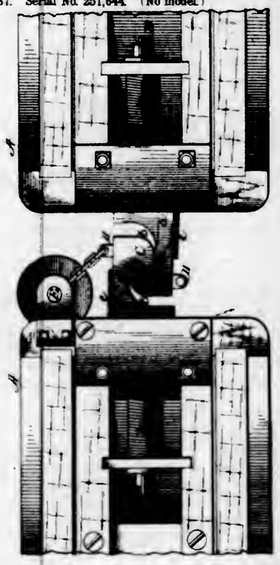
376,733. WHIFFLETREE-HOOK. AMASA CURTIS, Freeport, Ill. Filed Oct. 7, 1887. Serial No. 251,678. (No model.)



Claim.—1. The combination, with a whiffletree, of a U-shaped hook having one of its ends pivoted to the whiffletree at a distance from the side and end margins thereof approximately equal to the width of the hook, when the rear face of the whiffletree is provided with a transverse groove or depression inside the path described by the outer end of said pivoted hook, substantially as and for the purpose set forth.

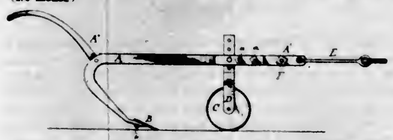
2. The combination, with the whiffletree A, provided with a transverse notch, H, in its rear face, of a hook, E, formed substantially as shown, and having one of its ends pivoted to said whiffletree, substantially as set forth, whereby a trace-loop engaged by said whiffletree may be carried backward with said pivoted hook until it falls into said notch, and may then be released by reversing the motion of the hook and withdrawing it from the loop, but not otherwise.

376,734. CAR-COUPLING. VAN R. DAVIS, Temple, Ga. Filed Oct. 6, 1887. Serial No. 251,644. (No model.)



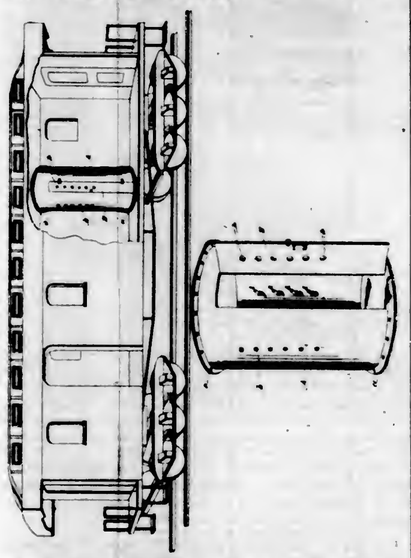
Claim.—In a car-coupler, the draw-bar B, horizontally pivoted to the shank C, backed by the flat spring *c*, secured horizontally to said draw-bar, and the inward rear-extension grip-piece, *e*, in combination with the eye D, connected by chain to square shaft E, having ratchet adapted to engage with pawl *h* on platform of car, all arranged and operated substantially as shown and specified.

376,735. SECTIONAL WEED-CUTTER. DENIS M. DENERY and HERAN W. CHILDS, Acampo, Cal. Filed Sept. 26, 1887. Serial No. 250,772. (No model.)



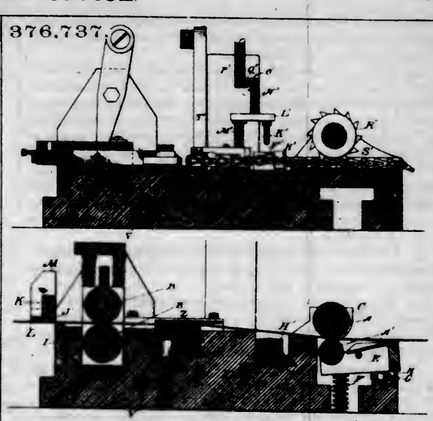
Claim.—The improved cultivator described, consisting of the curved beams, the handles secured thereto, the cutter B, composed of the two straight sections having their inner ends abutting and secured together, so as to form a continuous cutter in the same transverse plane, and also secured to the lower ends of the said curved beams, the draft-beams connected with the forward ends of the curved beams, the cross-rod connecting these draft-beams, and the clevis-rods and draft-ring attached thereto, substantially as specified.

376,736. BULLET-PROOF CASE FOR RAILWAY-CARS. BENJAMIN F. DETTRA and JULIUS C. SHIELDS, Rushville, Ill. Filed Sept. 20 1887. Serial No. 250,297. (No model.)



Claim.—The herein-described metallic case having the upper and lower securing-flanges, *a*, the entrance-door, the said door and a portion of the sides thereof being provided with a series of loop-holes for insertion of a pistol or revolver barrel from the inside, for the purposes set forth, substantially as described.

376,737. MANUFACTURE OF SHEET-METAL CHAINS. FREDERICK BOGE, Bridgeport, Conn., assignor to the Smith & Egge Manufacturing Company, same place. Filed June 7, 1887. Serial No. 240,499. (No model.)



Claim.—1. In a chain-manufacturing machine, the combination, with the strip-feeding rolls at the rear of the blanking mechanism, of similar rolls located beyond said mechanism, whereby all the stock is fed through the machine, substantially as set forth.

2. As an improvement in the art of making chain from sheet metal by machinery, the combination, with the feeding devices, of mechanism adapted to automatically shear the strip of stock to a predetermined length, substantially as set forth.

3. The combination, with the feeding-rolls in the rear of the blanking mechanism, of similar rolls journaled beyond the said mechanism and adapted to grasp the strip of stock after it has left the back rolls, whereby a continuity of feed throughout the entire length of the strip is obtained, substantially as set forth.

4. As an improvement in the art of manufacturing chain by machinery from sheet metal, the combination, with the primary feeding devices, of shearing mechanism supported out of operation by the stock itself and adapted to operate when the latter has been carried from beneath it, substantially as set forth and specified.

5. The combination, with the rear feeding-rolls, of a shear-block secured to the bed-plate, a pivoted bar adapted to shear across the edge of said block, a dog pivoted to the outside of said bar and adapted to be held in an elevated position by the stock itself during the feeding of the latter, and a striker depending from the plunger and operating to abut against the head of the dog when the latter has swung to a vertical position, whereby the bar is driven against the stock to shear the same, substantially as shown and set forth.

6. In combination with the shear-bar and the feeding device, the dog pivotally attached to said bar and adapted to automatically regulate the operation of the latter through the medium of the strip of stock itself, substantially as set forth.

7. As an improvement in the art of manufacturing chain from sheet metal by machinery, the combination, with the means for connecting and disconnecting the driving-shaft with the motive power, of mechanism whose effective operation is dependent on the feeding of the strip of stock for automatically stopping the machine, substantially as set forth.

8. As an improvement in the art of manufacturing chain from sheet metal by machinery, the mechanism for automatically stopping the machine preparatory to the blanking of the last link from the stock, the same consisting of means, as a stop, withheld from operation by the edge of the strip of stock, in combination with the mechanism for disconnecting the driving-shaft from the motive power, substantially as set forth.

9. The combination, with the shear-block secured to the bed-plate at a predetermined distance from the blanking mechanism, of the bar pivoted to the bed and adapted to shear across the cutting-edge of said block, a dog pivoted to said bar and adapted to effect the operation of the latter when the rear edge of the stock has been carried beyond said dog, and the striker depending from the plunger and adapted to depress the bar through the medium of the interposed dog, substantially as and for the purpose set forth.

10. In combination with the means for connecting and disconnecting the driving-shaft from the motive power, the spring-actuated mechanism controlled by the strip of stock fed through the machine and adapted when unrestrained by said strip to drive against said means and thereby automatically stop the machine, substantially as set forth.

11. The combination, with the rod extending loosely through the bed and having attached to its rear end a toe and at its front end a block arranged to slide in ways in the bed, of a coil-spring around said rod between said toe and bed, a stop against which said block impinges, pivoted to the bed in the same horizontal plane with the strip of stock from which the links are blanked, and the mechanism which disconnects the motive power from the driving-shaft, substantially as described.

12. The combination, with the driving-shaft, the motive power, and a throw-off lever adapted to disconnect said shaft and power, of a spring-actuated tripper one end of which is in close proximity to said throw-off, the other end being withheld against the resiliency of

the spring by contact with the strip of stock, said tripper adapted when released by the stock to operate the throw-off lever and thereby stop the machine, substantially as set forth.

13. As an improvement in the art of manufacturing sheet-metal chain by machinery, the combination, with the feeding devices and mechanism for shearing the rear edge of the stock at a predetermined distance from the blanking mechanism, of means controlled by said stock for stopping the machine immediately prior to the blanking of the last link at the end of the strip, substantially as set forth.

14. In combination with the compressor-bars adapted to be reciprocated in ways within the bed-plate, the compressor-levers pivoted to said bars and bill-hooked at their inner extremities, and means for forcing said levers against the loop end of the link, substantially as shown and described.

15. The bill-hooked compressor-levers carried by the compressor-bars, in combination with the tappets and the strikers depending from the plunger, substantially as set forth.

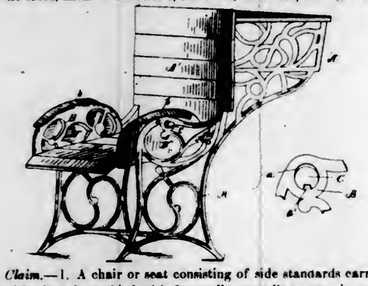
16. The bill-hooked compressor-levers pivoted to the compressor-bars and adapted when in operative position to meet on opposite sides of the loop end of the link, in combination with the anvil-pin projected within the loop, substantially as and for the purpose described.

17. The combination, with the compressor-bars, of the anvil-pin projected within the loop end of the chain, as and for the purpose set forth.

18. As an improved means for pulling or feeding chain made by machinery, a sprocket-wheel mounted on a shaft journaled in bearings projecting from the bed-plate, the teeth of said wheel adapted to enter between the sides of the link within the loop end thereof and against the end of the preceding link, whereby all the strain is exerted in a line coincident with the horizontal axis of the chain, substantially as set forth.

19. In the art of manufacturing sheet-metal chain by machinery, the method herein described of blanking consecutive links from independent and separate strips of stock, the same consisting in shearing the rear end of the preceding strip at a predetermined distance from the blanking mechanism, feeding the strip so sheared, and butting the forward edge of the succeeding strip against the rear edge of the aforesaid strip immediately prior to the blanking of the last link from the latter, whereby at the next operation of the blanking mechanism the last link will be cut from the first strip and the eyes of the next link will be punched out from the succeeding strip at the proper distance from the forward edge thereof, substantially as and for the purpose specified.

376,738. **OPERA OR SCHOOL SEAT.** HOWELL E. GARDINER, Battle Creek, Mich. Filed June 1, 1887. Serial No. 239,967. (No model.



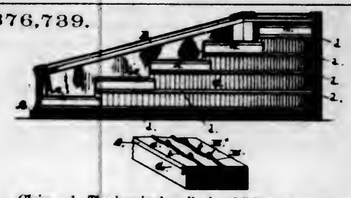
Claim.—1. A chair or seat consisting of side standards carrying a fixed back and provided with forwardly-extending arms, in combination with a seat having rigid upwardly-projecting brackets or hangers pivoted to said arms above the plane of the seat and behind the middle line thereof, substantially as described.

2. A chair or seat consisting of the combination of a suitable frame or support, a folding seat suspended by rigid hangers in bearings above said seat and behind the middle line thereof, and means for holding said seat in and for releasing it from a horizontal position, substantially as described.

3. A chair or seat consisting of a frame or support having bearings provided with ribs or shoulders and a rearwardly-folding seat suspended from said bearings by rigid hangers having gudgeons provided with notches, substantially as described.

4. The combination of a frame or support, rearwardly-folding seat suspended by rigid hangers in bearings above said seat, the bearings being provided with ribs and the pivots with notches for holding and releasing the seat and limiting and supporting stops, substantially as described.

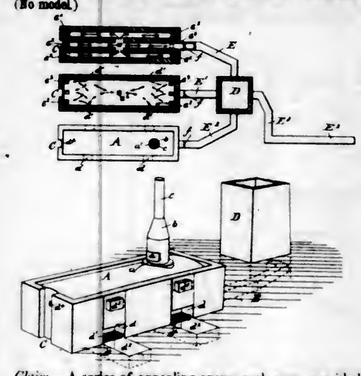
376,739. **SAMPLE-TRAY.** DAVID GOLDSTEIN, San Francisco, Cal., assignor to Henry Goldstein, same place. Filed Mar. 30, 1887. Serial No. 232,910. (No model.)



Claim.—1. The herein-described exhibiting device, consisting of a case, a series of supports therein arranged in steps, the projecting portion of each being about the dimensions of a tray, and trays or holders inserted through the rear of the case and held on the forward end of said supports, so that the whole top of the tray shall be displayed, and elastic sample-holding clamps on the tops of said trays, and compartments in the body thereof, as set forth.

2. The herein-described exhibiting device, consisting of a case having a series of supports therein arranged in steps, the projecting portion of each being about the dimensions of a tray, and trays or holders inserted through the rear of the case and held in the projecting portions of the supports, said trays having elastic tapes E, secured on their tops, and rings E^x, secured in and extending above the tapes, as set forth.

376,740. **OVEN FOR ANNEALING METALS.** MARTIN D. GREENWOOD, Hoosick Falls, N. Y. Filed Aug. 31, 1886. Serial No. 212,321. (No model.)



Claim.—A series of annealing-ovens, each oven provided with a separate pipe communicating directly with a stack common to all the ovens, a damper in each pipe adapted to open and close the communication between each oven and the common stack, a separate chimney in each oven, also provided with a damper, and an opening in the lower portion of the oven, through which the cold air from the outside of the oven is adapted to be drawn through the oven and through the separate chimney in the top of each oven, whereby the cooler air, passing from the oven in which the annealing process is completed, does not diminish the draft of the main stack common to the ovens, substantially as and for the purpose specified.

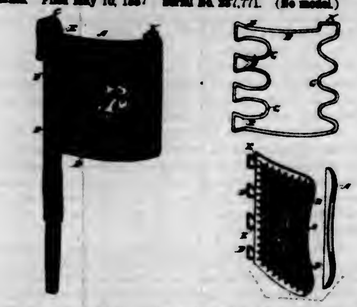
376,741. **EXERCISING APPARATUS.** ALFRED H. HOWARD, Boston, Mass. Filed Jan. 13, 1886. Serial No. 188,433. (No model.)



Claim.—1. The combination of the bracket C, provided with the stationary arm *e*, the angular lever F, and the screw *f* thereof screwed through and inclined to the upper arm of said lever and the part of the bracket against which the said screw bears, with the swivel D, pivoted to such arm *e* and lever F, the guide-rods B B, extending down from the brackets, the weight-carrier A, arranged to slide on such rods, and the rope I, fastened to and depending from the bracket and extending about the grooved wheels of such swivel and weight-carrier, and provided with a handle, as set forth.

2. The combination of the rope I, fastened at one end, as described, and extending downward in the form of a loop, and thence over a sheave or wheel to a handle, as set forth, with the weight-carrier A, provided with a grooved wheel, *m*, hung in said loop, and with the guiding projections *c c d d*, and with vertical rods or guides B B to enter such projections, all being substantially as shown and hereinbefore explained.

376,742. **MOLDED BRIDLE-WINKER.** LEWIS S. HOYT, Boston, Mass. Filed May 10, 1887. Serial No. 237,771. (No model.)



Claim.—1. A bridle-winker whose elementary parts consist of granulated cork and rubber or other rubber compounds set to shape in a mold, having embedded therein a strengthening wire frame, B, provided with projecting reflexed shoulders D, and a loop, K, said compound vulcanized with sulphur or its equivalent, to join said frame and body to produce a solid product, substantially as herein described.

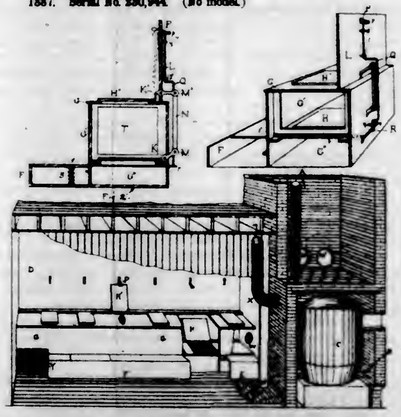
2. In a composite bridle-winker, a strengthening metal, B, provided with contiguous re-entering loops G, an adjusting frontal-strap loop, K, and the reflexed projecting shoulders D, thereby forming the adjusting devices by which said winker is secured at varying angles, combined with the vulcanized body A, substantially as and for the purpose set forth.

376,743. **STEREOTYPING CASTING-BOX.** IRA D. HURLBUT, Prairie du Chien, Wis. Filed Jan. 3, 1887. Serial No. 223,226. (No model.)



Claim.—In stereotyping-machines, the combination of the casting-box with two adjustable and reversible lugs, substantially as herein described, and for the uses and purposes herein set forth.

376,744. **WATER-CLOSET.** EDWIN T. JOHNSON, Minneapolis, Minn., assignor of one-half to Saxton & Phillips, same place. Filed Mar. 15, 1887. Serial No. 230,944. (No model.)



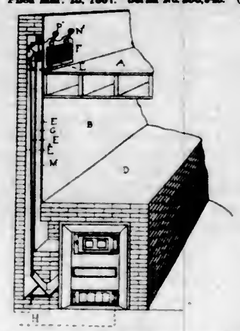
Claim.—1. A seat-box for water-closets, composed of an upper and a lower section, with a closed space between the tops of the two sections when set in use, and provided with lids over coincident openings in the same vertical plane for exposing a continuous channel from the seat-hole to the cesspool when in use, in combination with a ventilating-shaft and a conduit leading from one end of the closed space between the two sections to said ventilating-shaft, substantially as described, whereby the closet-room is sealed from the cesspool by the current of air drawn downward into and through said space between the said sections and the foul air and gases are carried outward into the ventilating-shaft, as set forth.

2. In combination, ventilating-shaft A, closed air-heating chamber B, fire-pot C, provided with smoke-pipe *c*, warm-air-supplying flue X, two-story closet seat-box G, with closed air-space between the tops of its two sections, G′ G″, and provided with the lids H H′ over coincident openings to the vault E, foul-air conduit W, sewer-gas conduit W′, and register or grate Y, substantially as and for the purpose set forth.

3. In combination, shaft A, heating-chamber B, fire-pot C, provided with pipe *c*, warm-air flue X, two-story-closet seat G, with space T between the tops of its two sections, G′ G″, lids H and H′ over openings to the vault, rock-shafts K K′, lever-arms M M′, the link N, seat-back L, dog P, lever Q, foot-box F, provided with pivoted foot-board *f*, spring S, lever-bar R *r r′*, foul-air conduit W, sewer-gas conduit W′, and the register or grate Y, all substantially as described, for the purpose set forth.

4. In a water-closet, in combination, the two-story seat-box G, consisting of upper section, G′, and lower section, G″, provided with closed air-chamber between the tops of the two sections and coincident openings to the cesspool, the rock-shafts K K′, the lids H H′, rigidly connected at their rear edges to said rock-shafts, the crank-levers M M′, rigidly connected to said rock-shafts, the link N, pivotally connecting said crank-levers, the seat-back L, the dog P, fulcrumed to said back, the vertically-sliding lever Q, suitably attached to the seat body and back, the foot-box F, provided with the pivoted foot-board *f*, the resistance-spring S, and the lever-bar R *r r′*, attached to said pivoted foot-board, all substantially as described, for the purpose set forth.

376,745. **HEATING AND VENTILATING APPARATUS.** EDWIN T. JOHNSON, Minneapolis, Minn., assignor of one-half to Saxton & Phillips, same place. Filed Mar. 15, 1887. Serial No. 230,945. (No model.)



Claim.—1. In combination, for heating and ventilating buildings, a furnace, independent warm-air flues connected one to the top and the other to the bottom of the heating-chamber of the furnace and leading to the room to be heated, and means for forcing the air from the furnace solely through one or the other at will, substantially as and for purpose set forth.

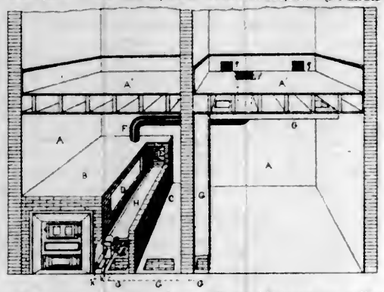
2. In combination, for tempering the air of living-rooms, a heating-furnace, a register-space provided with a register opening into the living-room, an air-conduit from said register-space to the top of said furnace, an independent air-conduit from said register-space to the bottom of said furnace and to the fresh-air-intake pipe, and provided with a damper for connecting it to the bottom of the furnace or to the intake-pipe at will, and dampers suitably placed in said conduits for disconnecting either of them from said register-space, substantially as described, whereby hot air, warm air, or cold air may be supplied to said living-room, as desired.

3. In combination, for heating and tempering the air of living-rooms, a heating-furnace, a fresh-air-intake pipe to said furnace, two parallel and adjacent air-conduits from said living-room, one communicating with said furnace and constituting a hot-air conduit and the other communicating with said intake-pipe and constituting a cold-air conduit, said hot and cold air conduits having for the whole or a part of their length a common partition composed of iron or similar heat-radiating material, substantially as described, whereby a forced draft is produced in the cold-air conduit by the heat radiated into the same from the adjacent hot-air conduit.

4. In combination, for heating and tempering the air of living-rooms, a fresh-air-intake pipe, a heating-furnace, air-conduits from said living-room to said furnace and intake-pipe, respectively, having a common division-plate composed of iron or similar heat-radiating material, and a damper placed in the hot-air conduit above said metallic division or radiating plate, whereby the hot-air conduit may be used to produce a draft in the cold-air conduit without conducting its hot air to the living-room, as set forth.

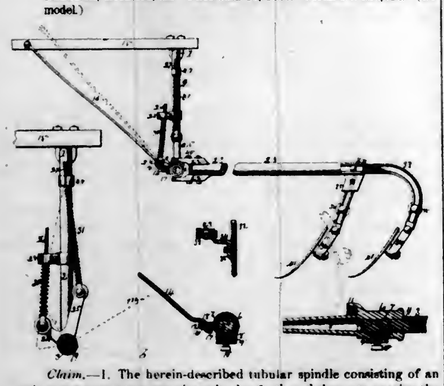
5. In combination, heating-furnace D, fresh-air-intake pipe H, register-space K, provided with a register opening into the living-room, the air-flue E", communicating with said register-space at one end and with said intake-pipe and the lower part of said furnace at the other end, the damper L, provided with operating-lever mechanism M l L' L", for connecting the lower part of said air-flue with the intake-pipe and shutting it off from the furnace, or reversely, as described, and the damper N, provided with the operating-lever mechanism N' n S N", as described, for connecting or disconnecting said air-flue with said register-space, substantially as and for the purpose set forth.

376,746. HEATING AND VENTILATING APPARATUS. EDWIN T. JOHNSON, Minneapolis, Minn., assignor of one-half to Sexton & Phillips, same place. Filed Mar. 15, 1887. Serial No. 230,946. (No model.)



Claim.—In combination, furnace B, provided with the radiating-plate D, hot-air flue F, annex chamber C, foul-air outlet E to the ventilating-shaft, conduit G from the living-rooms to said annex chamber, the damper H, journaled in the end walls of said chamber and serving to divide the same into an upper and lower section at will, and the damper K, journaled in the walls of said furnace and serving to connect or shut off said annex chamber from the bottom of said furnace, whereby the air from the living-rooms may be continuously revolved through the heating-chamber of said furnace, or be made to force its way into the ventilating-shaft at will, substantially as described.

376,747. CULTIVATOR. JAMES MACPHAIL and FRANKLIN M. NEEDHAM, Rockford, Ill. Filed Jan. 19, 1887. Serial No. 224,814. (No model.)



Claim.—1. The herein-described tubular spindle consisting of an axle-arm support to a carrying-wheel, a feathered sleeve to receive the axle, a recess in the sleeve to receive the screw-nut, a sand-band, and a perforated ear projecting from its forward side, substantially as and for the purpose set forth.

2. The combination, with an axle, of a tubular spindle to receive a carrying-wheel, said spindle having a feather-connection of its sleeve portion with the axle to prevent rotary displacement and a recess to receive a screw-nut, a screw-nut within the recess in the sleeve, and a screw-bolt in connection with the screw-nut to fix the spindle in place against longitudinal displacement, substantially as and for the purpose set forth.

3. The combination, with a spindle detachably secured to an axle and provided with a laterally-extending perforated ear fixed rigidly thereto, and the tongue, of a brace extending from the tongue to the spindle and having a self-locking connection with the ear on the spindle, whereby the spindle is held firmly in position and readily detached at pleasure, substantially as set forth.

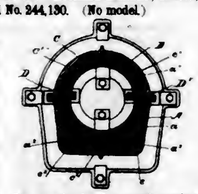
4. The combination of an axle, a draft-sleeve with bell-crank arms radiating from its inner end, a supporting-spring, and a counterbalance-spring in connection with their respective radial bell-crank arms of the draft-sleeve and with adjustable attachments to the axle, substantially as and for the purpose set forth.

5. The combination of a joint-sleeve with bell-crank arms radiating from its inner end, an axle-support to the joint-sleeve, a shovel-supporting drag-bar hinged-jointed to the sleeve, a supporting-spring and a counterbalance-spring and their rod-supports connecting their respective arms of the joint-sleeve with the axle, said springs made adjustable in their connection with the axle, substantially as and for the purpose set forth.

6. The combination of a drag-bar, an outer shovel-standard, a bracket-support to the inner shovel-standard, a bolt to fix the shovel-standard and bracket in place on opposite sides of the drag-bar, and an inner shovel-standard fixed to its bracket-support, substantially as and for the purpose set forth.

7. The combination, with the shovel-standard, of a shovel-carrying sleeve pivotally secured to the lower end of the standard and having a branch extending upwardly along the side of the standard and terminating in a toothed end, a toothed wheel provided with a guard-flange, and a pivotal bolt to clamp the toothed wheel to the side of the shovel-standard in a position to engage the toothed end of the carrying-sleeve, substantially as and for the purpose set forth.

376,748. PROCESS OF MANUFACTURING CONDUITS AND MACHINE THEREFOR. MICHAEL MEEHAN, Boston, Mass. Filed July 13, 1887. Serial No. 244,130. (No model.)



Claim.—1. The method of manufacturing the base and cover sections of a conduit from moldable material, consisting in constructing a mold of the shape of the complete base and cover of the conduit, then dividing the mold into two parts or sections by partitions, and then simultaneously forming in said mold-cavity by pressure the cover and base of the conduit as one operation, as and for the purposes described.

2. The method of simultaneously forming the lap-joints to the edges of a cover-section and to the edges of a base-section of a molded conduit by forming a mold-box having a cavity of the shape of the complete base and cover of the conduit, and dividing the cavity or space into two parts by division-plates, which are shaped to form a section of a lap-joint upon each longitudinal edge of the cover-section and of the base-section of the conduit, as and for the purposes described.

3. The mold for forming the base and cover sections of a conduit, comprising a mold-box, an interior core box or former, and partitions extending from the core-box to the outer or main box, as and for the purposes described.

4. The combination of the mold-box C, the core-box C, and the partition-plates D D', extended across the mold-cavity to separate the same into two parts, and attached or supported either by the mold-box or by the core-box, or by both, as and for the purposes described.

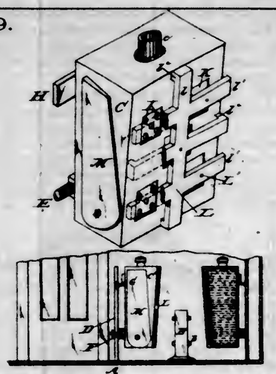
5. A mold-box for forming a base and cover of a conduit having partition-plates D D', extended across the cavity thereof to divide the same into two parts or sections, and also to shape the edges of the said parts or sections, as and for the purposes specified.

6. The mold-box having the outer case or box, C, the inner case or box, C, the partition-plates D D', and the mandrels or formers c^2, as and for the purposes described.

376,749. APPARATUS FOR EXTINGUISHING FIRES IN RAILWAY-CARS. BENEDICT MILLRADDER, Scranton, Pa. Filed Mar. 25, 1887. Serial No. 232,368. (No model.)

Claim.—1. The combination, with a car-heating stove, of one or more reservoirs of water detachably secured to the car and provided with non-combustible frangible portions, whereby when the car is overturned the reservoir will be thrown against the stove and the

376,749.



frangible portion thereof broken to release the water, substantially as and for the purpose set forth.

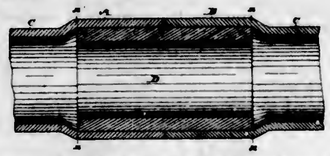
2. The combination, with a car-heating stove, of a reservoir of water having its lower end pivoted to the car and its upper end held by detachable fastenings, the reservoir being provided with a non-combustible frangible portion or portions, substantially as and for the purpose set forth.

3. The combination, with a car-heating stove, of a reservoir, C, having holes I, frangible material K, and a gridiron, L, provided with spurs L', substantially as and for the purpose set forth.

4. The combination, with stove B, of reservoir C, provided with gudgeons E, wings M, holes I, frangible material K, gridiron L, and spurs L', substantially as and for the purpose set forth.

5. The combination, with car A, provided with stove B, stanchions D, eyebolts F, and detachable fastenings G, of reservoirs C, having gudgeons E, wings M, holes I, frangible material K, and gridirons L, consisting of the bars *l l*, provided with lugs l^2 and spurs L', substantially as and for the purpose set forth.

376,750. METHOD OF UNITING PIPE-SECTIONS. ALBERT L. MURPHY, Philadelphia, Pa. Filed June 23, 1887. Serial No. 242,263. (No model.)



Claim.—1. The within-described method of uniting two pieces of iron piping or tubing, consisting in inserting an iron plug into the ends of the pipes to be united, then heating the whole to point of welding, and finally swaging the parts, substantially as described.

2. The within-described process of welding wrought-iron tubing or piping, consisting of mechanically uniting the ends of the tubing or piping about an iron plug, then heating the joint to the point of welding, and finally swaging the joint to the desired dimensions, substantially as described.

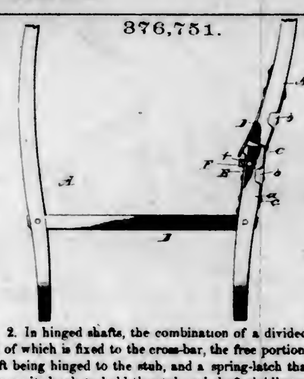
3. The within-described improvement in the art of uniting metal tubing or piping, consisting in first enlarging the diameter of the ends of the tubes or pipes to be united, then joining said enlarged ends over a metal plug, and then heating such joint to the point of welding, and finally swaging the joint to the desired dimensions, substantially as described.

4. The within-described improvement in the art of uniting hollow iron tubing or piping, consisting, first, in forcing the ends of the parts to be united over an iron plug having an exterior diameter substantially equal to that of the inner diameter of said ends, then heating the joint to the point of welding, and finally swaging the same to the desired dimensions, thus welding the parts together, substantially as described.

376,751. VEHICLE-SHAFTS. WILLIAM J. MCDERMOTT, Grubbville, Mo. Filed May 26, 1887. Serial No. 239,451. (No model.)

Claim.—1. In hinged shafts for vehicles, the combination, with a short stub end of a shaft and a cross-bar to connect the stub end to a fixed shaft, of a hinged shaft and a means of securing this shaft to line with the fixed shaft and thus become a rigid continuation of the stub, substantially as set forth.

376,751.



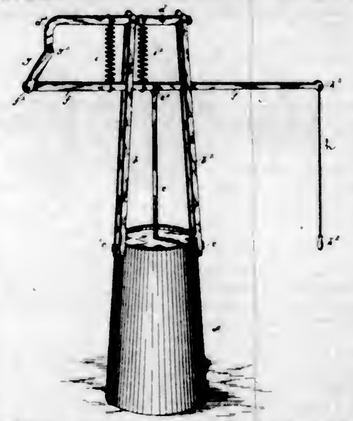
2. In hinged shafts, the combination of a divided shaft the stub end of which is fixed to the cross-bar, the free portion of this divided shaft being hinged to the stub, and a spring-latch that automatically engages its hook to hold the stub and shaft rigidly together when the free end of the divided shaft is made to swing in line with its stub, substantially as set forth.

3. In hinged shafts, the combination, with a cross-bar and a short stub of a shaft, of a free shaft, a hinge to connect this free shaft to its stub, a spring latch-hook, a plate-spring, and a cam-bolt to disengage the plate-spring from the latch-hook, substantially as set forth.

4. In hinged shafts, the combination, with a short stub of a shaft and a cross-bar connecting said stub to an integral shaft, of a free shaft, a hinge to connect this free shaft to its stub, a plate-spring having a hole in its free end, a spring latch-hook to enter the hole in the plate-spring, and a cam-bolt the cam-lug of which passes through the latch-hook to bear on the plate-spring and lift it when the bolt is turned, substantially as set forth.

5. In hinged shafts, the combination, with a cross-bar and a short stub of a shaft that is slotted, of a free shaft having a tongue to mate the slotted end of the stub, two links pivoted on the sides of the shaft and stub, a swinging pivoted latch, a spring-hook, and a cam-bolt to release this spring-hook, substantially as set forth.

376,752. OPERATING MECHANISM FOR CHURNS. WILLIAM G. PATTERSON, Claysville, Pa. Filed Mar. 16, 1887. Serial No. 231,136. (No model.)



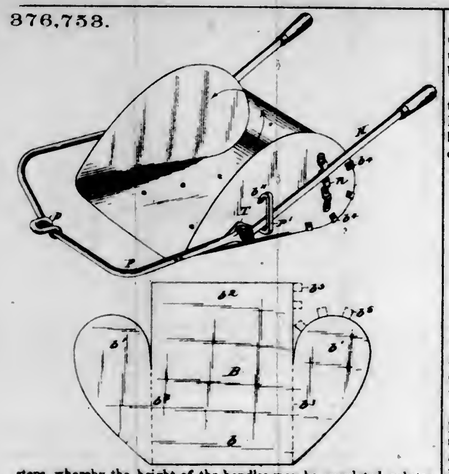
Claim.—The combination, with the uprights *b b'* and the cross-bar *d*, having the curved end d^2, of the operating-lever *f*, connected to the curved portion d^2 by the link *g*, and the springs *i i'*, arranged as described, for sustaining and retracting the operating-lever, substantially as set forth.

376,753. EARTH-SCRAPER. CHARLES G. PETERSON and CARL V. RUDSELAD, Chicago, Ill. Filed June 20, 1887. Serial No. 241,915. (No model.)

Claim.—1. In an earth-scraper, the combination, with the body of the scraper, of the pivoted handles H, adjustable to the height of the operator, substantially as specified.

2. In an earth-scraper, the handles H, pivoted to the body of the scraper, in combination with a suitable rack, R, having two or more

376,753.



steps, whereby the height of the handles may be regulated, substantially as shown.

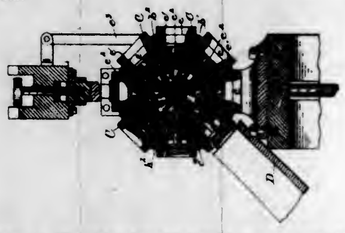
3. In an earth-scraper, the bail P, having the loop ends P', provided with the cam ends *b''*, in combination with the handles H, substantially as shown, and for the purpose specified.

4. In an earth-scraper, the pivoted handles H and the rack R, in combination with the bail P, having the retaining-loop P', provided with the throwing-out cam *b''*, substantially as shown.

5. In an earth-scraper having the sides *b' b'* of such shape and proportions as described, in combination with the adjustable handles H H, the rack R and the bail P, provided with automatic releasing mechanism for the handles, substantially as shown and specified.

6. In combination with the bail of an earth-scraper, the U-shaped attachment-iron having its prongs turned about said bail and welded thereto, substantially as specified.

376,754. HEEL-COMPRESSING MACHINE. FREEBORN F. RAYMOND, 2d, Newton, Mass. Filed Nov. 2, 1887. Serial No. 254,040. (No model.)



Claim.—1. The combination of the head A, a reciprocating former, A', carried thereby, the rotary block B', adapted to be rotated upon the horizontal shaft *b'*, the bracket or support *b*, and the die-blocks C, carried thereby, substantially as described.

2. The combination of the reciprocating head A and former A', carried thereby, the rotary block B', the horizontal shaft *b'*, upon which it is mounted, the die-blocks C, carried by said block or holder, the diaphragm c^3, having the spindle c^3, and the wedge or incline c^4, arranged upon said shaft to operate as specified, all as described.

3. The combination of the head A, former A', carried thereby, the block B', mounted upon a horizontal shaft, *b'*, the die-blocks C, carried thereby, and devices for rotating the block during the upward movement of the cross-head, substantially as described.

4. The combination of the head A, the former A', carried thereby, the rotary block B', mounted upon a horizontal shaft, *b'*, the die-blocks C, carried by said block or holder, the heel-discharger c^3, adapted to be operated upon the rotation of the die-blocks to bring their openings below the diaphragm, with a device for rotating the block or holder B' during the upward movement of the cross-head, substantially as described.

5. The combination of the head A, the former A', the head or holder B, the die-blocks C, carried thereby, the ratchet-wheel E, pawl *e*, lever *e'*, and links e^2, connecting the lever and cross-head A, substantially as described.

6. The combination of the cross-head A, two or more arms, *a*, carrying a former, A', with the rotary block or holder B', mounted upon a horizontal shaft, *b'*, and die-blocks C, carried by said holder or block, substantially as described.

7. The combination of the head A, two or more arms, *a*, carried thereby, a heel-former, A', for each arm, the rotary block or holder B', and two or more die-blocks, C, arranged in the same horizontal line upon said block or holder, and adapted to be brought simultaneously into operative position, as and for the purposes specified.

376,755. SPRING FOR VEHICLES. CYRUS W. SALADEE, Cleveland, Ohio. Filed May 11, 1887. Serial No. 237,867. (No model.)



Claim.—1. A flexion-spring for vehicles, consisting of a curved main plate provided at its ends with means for suspending it from the running-gear and one or more plates superposed upon said main plate and conforming substantially to the curve thereof at one side of its center, but extending on the opposite side of said center in a plane tangent to said curve, substantially as and for the purpose set forth.

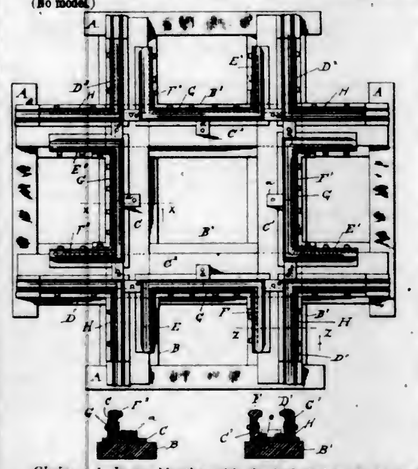
2. A flexion-spring for vehicles, consisting of an arched main plate provided at its ends with eyes for its suspension and one or more plates superposed upon said arched plate and conforming thereto at one side of its highest point, but having on the opposite side of said point a horizontal extension provided with means for attachment to the body or spring-bar of the vehicle.

3. A flexion-spring for vehicles, consisting of the arched main plate A, having eyes *a* at its ends, and the superposed plates A', having horizontal extensions A'', substantially as and for the purpose set forth.

4. A duplex flexion-spring for vehicles, consisting of two similar main plates parallel to each other and provided at their ends with eyes for their suspension and plates superposed on said main plates and having approximately horizontal extensions lying on opposite sides of the central line of the spring and adapted to be attached to the body or spring-bar of the vehicle, substantially as and for the purpose set forth.

5. The combination, with the side bars of a running-gear, of a duplex flexion-spring consisting of two parallel arched main plates, A, having their ends pivotally connected with the side bars, and the plates A', superposed on the main plate A, and having the opposite extensions A'', adapted to form a support for a vehicle-body, substantially as and for the purpose set forth.

376,756. RAILROAD-CROSSING. WILLIAM H. SHANNON and ROBERT T. SHANNON, Stockton, Cal. Filed Sept. 30, 1887. Serial No. 251,143. (No model.)



Claim.—1. In combination with the bed-timbers B, the bed-plates C, provided with flanges, the shoes F^2 E^2, and the angular plates G, bolted together, substantially as described and shown.

2. In combination with the bed-plates attached to the bed-timbers and provided with flanges, the shoes E F and the clamps *e*, such clamps being secured to the bed-plates and overlapping the lower edges of the shoes, substantially as described.

3. The combination, with the bed-plates secured to the bed-timbers, of the shoes E F and angular plates G, substantially as shown.

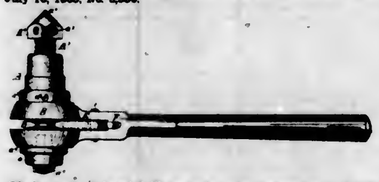
4. The combination, with the bed-plates C and shoes D and E, and equivalent points thereto, of the bracing-plates *c*, secured to the plates C and provided with lugs fitting into the interstices between the shoes D and E and impinging upon the lower edges of said shoes at the points of their angles, substantially as shown.

5. The combination, substantially as shown, of the bed-timbers B, the plates C, the shoes D, and the angular plate H.

6. The combination, substantially as described, of the timbers B and B^2 at right angles, the flanged plates C and C^2 at like right angles, the plate C^2 being provided with groove or channel at its intersection with plate C, the shoes D and E, secured to the flanges of the plates C and C^2, the angular plate H, attached to the shoe D, and the lug-plate *c*, attached to the plate C

7. Two trackways running toward each other at a right angle and composed of the bed-timbers B B' B^2 B^3, the relative bed-plates C C' C^2 C^3, provided with flanges and secured to said bed-timbers, the series of angular shoes D D' D^2 D^3, E E' E^2 E^3, and F F' F^2 F^3, such shoes being secured to the flanges of the bed-plate by removable bolts, the plates G H *a*, and lug *c*, all substantially as shown.

376,757. DRILL-BRACE. JAMES L. SHORROCK, Accrington, County of Lancaster, England, assignor to Thomas C. Massey, Chicago, Ill. Filed July 11, 1887. Serial No. 243,985. (No model.) Patented in England July 10, 1886, No. 8,359.

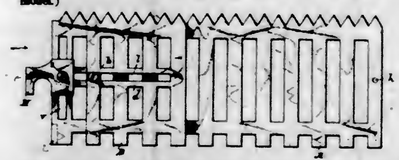


Claim.—1. A hand-drill or tool-carrier comprising a tool-holding spindle, a hand-lever mounted to turn about the said spindle, and a pivoted arm or pawl connected and moving with the hand-lever, said spindle and the arm or pawl being provided with engaging-surfaces made tapering or wedge-shaped, substantially as and for the purpose set forth.

2. A hand-drill or tool-carrier comprising a tool-holding spindle, a head or collar mounted upon the spindle, a hand-lever rigidly attached to the head or collar, and an arm or pawl pivoted upon said head or collar, said spindle being provided with a groove having inwardly tapering or converging side walls for engagement with the free end of the said arm or pawl, substantially as described.

3. A hand-drill or tool-carrier comprising a tool-holding spindle, a hand-lever mounted to turn about said spindle, and a pivoted arm or pawl connected with the hand-lever, said spindle being constructed with eccentric annular grooves tapered or wedge-shaped for engagement with correspondingly tapered or wedge-shaped portions of the said pivoted arm or pawl, substantially as described.

376,758. ADJUSTABLE GRATE FOR STOVES. WILLIAM H. H. BRAULDEN, Peru, Ind. Filed May 17, 1887. Serial No. 238,496. (No model.)



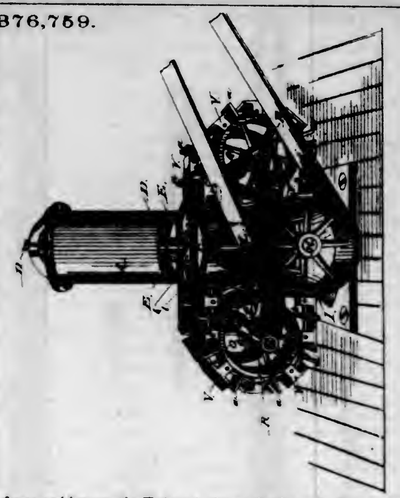
Claim.—1. The combination, with a grate constructed as described, of two extension-plates, one adjustably attached to each end of the grate, and two fastening-hooks, one adjustably attached to each extension-plate, the said plates being each formed with a longitudinal slot and a vertical slot, substantially as described, and for the purposes stated.

2. The extension-plates B C, each having a central longitudinally-slotted web, as *d*, a vertical slot, as *v*, and a supporting-leg, as L, and the hooks H, when combined with each other and with the grate A in the manner above set forth.

376,759. BRICK-MACHINE. WILLIAM H. STEWART, Kansas City, Mo., assignor of three-fourths to Robertson H. Godfrey, same place. Filed Mar. 28, 1887. Serial No. 232,718. (No model.)

Claim.—1. A main frame, a hopper secured thereto, and endless brick-molding chains, in combination with a bed-plate, C, between the

376,759.



frame and hopper, the T-shaped plates *g* in the main frame, secured to the bed-plate and forming the sides of the molds, the bars *h*, for supporting the chains, and mortise-wheels O, engaged by lugs on the chains, whereby said chains are driven, substantially as herein described.

2. In a brick-machine, the endless chains comprising the links V, having the upwardly-projecting bars *a*, forming the ends of the molds, and the plates *c*, loosely mounted in said links and forming the bottom of said molds, in combination with a stationary bed-plate, *c*, having the plates *g*, which constitute the side walls of the mold, substantially as herein described.

3. In a brick-machine, the endless traveling chains comprising the links V, having the bars *a* and lugs *b*, the plates *c*, loosely mounted in said links, and forming with the bars *a* the ends and bottoms of the molds, and a stationary bed-plate between the hopper and main frame, forming the sides of said molds, in combination with mortise-wheels O, engaging the lugs *b* and driving the chains, and mechanism between said wheels and driving-pulley for rotating the former, substantially as herein described.

4. In a brick-machine, a hopper, a main frame, a bed-plate between said hopper and frame, a vertical shaft, D, having a tempering auger or flukes, and a bevel-gear, F, on said shaft connecting with the main driving mechanism, in combination with a horizontal shaft, M, having the pinion N, gearing between said shaft and vertical shaft, mortise-wheels O, driven by said pinion, endless chains composed of separable sections driven by the mortise-wheels and forming the bottoms and ends of the molds, and suitable plates, *g*, within the bed-plate and forming the sides of said molds, substantially as herein described.

376,760. FOUNTAIN-PEN. WILLIAM W. STEWART, Brooklyn, N. Y. Filed Jan. 8, 1887. Serial No. 223,766. (No model.)

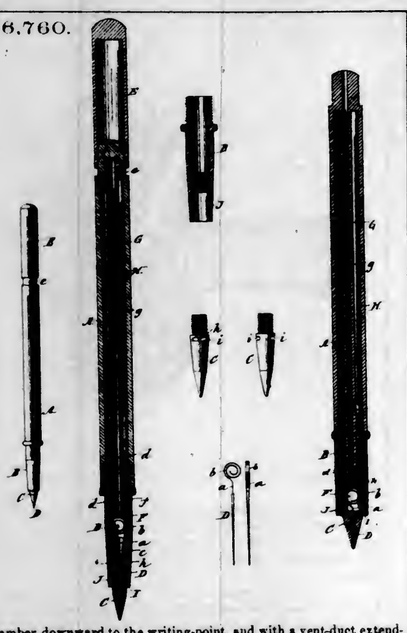
Claim.—1. A fountain-pen constructed with a condensing-chamber between the reservoir and the writing-point, with a vent for ink and air communicating therewith and opening near the lower end of the pen, and with a vent-duct extending from said chamber upwardly and opening to the outer air.

2. A fountain-pen constructed with a condensing-chamber between the reservoir and the writing-point, with an ink-duct extending thence downwardly to the writing-point, with a vent for ink and air communicating with said chamber and opening near the lower end of the pen, and with a vent-duct extending from said chamber upwardly and opening to the outer air.

3. A fountain-pen constructed with a condensing-chamber between the reservoir and the writing-point, with an ink-duct extending thence down to the writing-point, with an irritant in said ink-duct, with a vent for ink and air opening into said ink-duct, and with a vent-duct extending from the condensing-chamber upwardly and opening to the outer air.

4. A fountain-pen constructed with a condensing-chamber between the reservoir and the writing-point, with a jacket around said point forming a partially-closed air-chamber, with a vent for ink and air opening into said air-chamber and communicating with said condensing-chamber, with an ink-duct extending from said condensing-

376,760.



chamber downward to the writing-point, and with a vent-duct extending from said condensing-chamber upwardly and opening to the outer air.

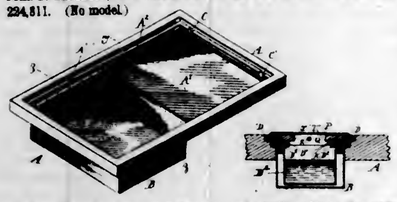
5. A fountain-pen constructed with a condensing-chamber between the reservoir and the writing-point, with an ink-duct extending thence down to the writing-point, with ink and air vents communicating with said chamber, with a flexible irritant extending through said duct, and with a capillary spiral in said condensing-chamber.

6. A stylus fountain-pen constructed with a condensing-chamber between the reservoir and the writing-point, with an ink-duct extending from said chamber down to the writing-point, and with a stylus extending through said duct and formed at its upper portion with a flat flexible spiral arranged in the condensing-chamber.

7. The combination, in a fountain-pen, of a holder, a nozzle screwed to the lower end of said holder, a vent-tube extending through said holder, with its lower end entering the upper part of said nozzle and entirely filling the same with the exception of a capillary space or conduit, and a point-section fastened in the lower end of said nozzle, whereby a condensing-chamber is formed in said nozzle between the ends of said vent-tube and point-section.

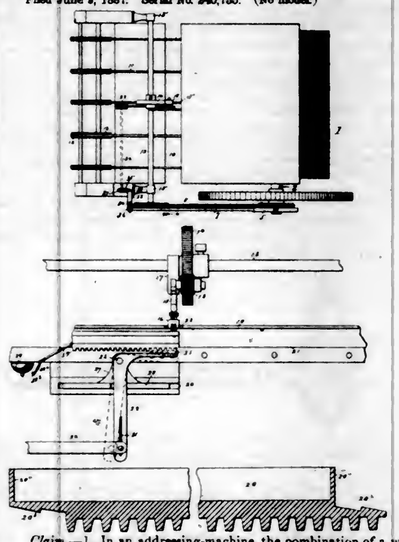
8. The combination, in a fountain-pen, of a tubular holder, a nozzle screwed to the lower end thereof and formed at its lower end with a projecting jacket, a point-section fastened to said nozzle within said projecting jacket, and a tube extending through said holder with its lower end entering said nozzle.

376,761. SPITTOON AND METHOD OF SECURING THE SAME. JOHN F. THOMPSON, New Castle, Ind. Filed Jan. 19, 1887. Serial No. 224,811. (No model.)



Claim.—In a fixed spittoon for cars and similar places, the combination of the perforated upper floor, A, with ledges A' A², depressions or notches C C', box B, secured to edges of floor A for receiving the spittoon B', the metal plate D, with ledges and flanges D' D², bearings E E', forming, with sides and end of plate D, the openings F F', and having a depression, G, corresponding to a similar depression, G' in plate H, for button G², the metal plate H, with its flanges K K' groove N, formed by flanges K² K², cross-ledges L L in groove N, opening O, continuous plate X X, projections M M', the thin metal-plate shutter P, with cross-piece Q, with slots T T', and spring-steel rod R, having upper surface with depressions and elevations giving uneven pressure, depressions S S' in upper surface of plate P, forming ridge W, all substantially as and for the purposes described and set forth.

376,762. ADDRESSING-MACHINE. STACY C. THOMPSON, Manistee, Mich., assignor of one-fourth to John A. Thompson, same place. Filed June 9, 1887. Serial No. 240,735. (No model.)



Claim.—1. In an addressing-machine, the combination of a movable galley having cogs or teeth on its under surface, the slideways, the cross-head, the rack-lever having cogs or teeth on the upper surface of its horizontal arm, and means, substantially as described, for intermittingly moving said lever from the printing-press, substantially as described.

2. In an addressing-machine, the combination of the movable galley 20, having cogs or teeth, the slideways 21, the slotted cross-head 28, the slideways 30, the rack-lever 22, having cogs or teeth, the rod 32, the slotted bell-crank lever 33, and means, substantially as described, for operating the same, substantially as described.

3. In an addressing-machine, the combination of the movable galley 20, having cogs or teeth, the slideways 21, the slotted cross-head 28, the slideways 30, the rack-lever 22, having cogs or teeth, the rod 32, the slotted bell-crank lever 33, eccentric-rod 7, and eccentric 5, substantially as described.

4. The combination, in a printing-machine having a main shaft provided with an eccentric formed with a lug, and with a sleeve, also formed with a lug, of an addressing-machine provided with a movable galley, and operating mechanism, substantially as described, intermediate of said eccentric and said movable galley, substantially as described.

5. The combination of two or more movable galleys provided with scarfed ends for removably holding or locking them together, with means, substantially as described, for supporting and operating said galleys, substantially as described.

6. In an addressing-machine, the combination of two or more galleys having teeth or cogs upon their under sides, and having end pieces formed of thin metallic strips registering, when brought together, with one cog upon the under side and occupying the space of the said cog, substantially as and for the purpose described.

7. The combination, with the main shaft of the printing-press, the sprocket-wheels, the sprocket-chain, the shaft carrying the cam, and the impression-hammer, of the galley and mechanism, substantially as described, for intermittingly moving the same, substantially as described.

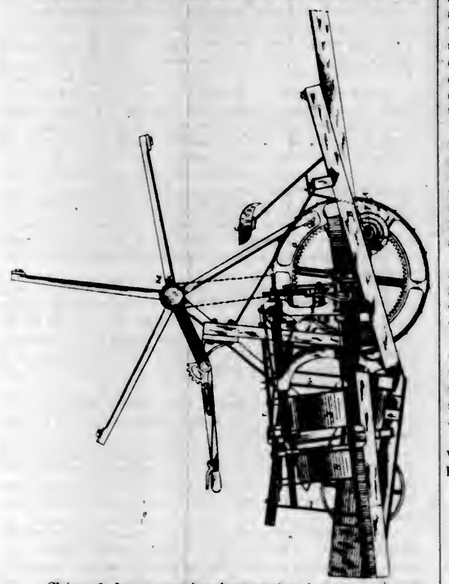
8. The combination, with the intermittingly-moving galley and the guide-plate and cover for the same, provided with the opening, of the intermittingly-operated impression-hammer, substantially as described.

9. The combination of the printing-press and addressing-machine with two intermediate sets of tapes, one set being arranged above the other, substantially as and for the purposes described.

10. The combination of the printing-press, two sets of tapes, one set being arranged above the other, and shafts and pulleys for operating the same, with an addressing-machine having a cover and guide-plate, a movable galley, and means, substantially as described, for moving the same, substantially as described.

11. The combination, with a movable galley, of a pivoted lever normally resting against the bottom of said galley, a pivoted arm attached to the lower end of said lever and having a hammer at its upper end, and a bell which is sounded by said hammer, substantially as and for the purpose described.

376,763. HARVESTER AND BINDER. WILLIAM H. WHITELEY, Springfield, Ohio. Filed Apr. 15, 1884. Serial No. 128,464. (No model.)



Claim.—1. In a rear-cut low-down-platform harvester and binder, the combination of the cutting mechanism, the grain receiving and conveying platform in rear of the main wheel, the binder-table arranged near the ground and inclined rearwardly and downwardly, the binder-arm pivoted substantially in the plane of the binder-table, and the binder-operating mechanism also inclined relatively to the grain-platform and arranged higher than the binder-table, substantially as and for the purposes set forth.

2. The combination, in a rear-cut low-down-platform grain-binding harvester, carrying the binding mechanism in rear of the main driving-wheel, of the needle and knotter operating shafts and binder-table inclined downward and rearward in relation to the platform-conveyer for the purpose of giving free discharge to the grain and elevating the front of the shafts and their operative mechanism to permit them to pass clear above the ground or obstructions thereon.

3. In a rear-cut low-down-platform grain-binding harvester, the combination of the shaft actuating the knotting mechanism, arranged at an angle inclining downward to the rear in relation to the grain receiving and conveying platform to permit the knotting mechanism to operate low to the ground, and the operating mechanism of the said shaft being arranged at a higher position from the ground.

4. A rear-cut low-down automatic grain-binding harvester, provided with a grain receiving and carrying platform and a grain-binding receptacle combined with the shafting to operate the entire binding mechanism arranged at an angle thereto, inclining upward and forward for the purpose of rendering it possible to place the needle near to the ground, and the gearing to actuate the shaft of the same at a higher level for the purpose of binding the grain near to the ground.

376,764. MANIFOLD SHEET. JACOB I. WORTMAN, Philadelphia, Pa. Filed Oct. 31, 1887. Serial No. 253,892. (Specimens.)

Claim.—1. A sheet for manifold copying carrying a coloring substance and a permeant vehicle therefor, as set forth.

2. A sheet for manifold copying having a facing containing the constituents of a soluble coloring substance and a permeant vehicle therefor, as set forth.

3. A sheet for manifold copying carrying the elements of a soluble color and an insoluble color and a permeant vehicle therefor, as set forth.

4. A sheet for manifold copying having a transferable printing-surface and a backing-sheet, as set forth.

376,765. TYPE CASTING AND FINISHING MACHINE. HENRY BARTH and ERNST LIETZ, Cincinnati, Ohio; said Lietz assignor to the Cincinnati Type Foundry, same place. Filed June 12, 1886. Serial No. 205,010. (No model.)

Brief.—The type is cast in a horizontal position. The mold-covering slide, moving backward, shaves the upper side of the type and then uncovers the mold. The type is pushed up out of the mold, and the covering-slide, moving forward, pushes the type past a cutter, which takes off the jet, and then over a cutter, which shaves the lower side of the type. The type, still being in a horizontal position, is pushed down into a vertical channel, in the walls of which are fixed three cutters. One of these grooves the feet of the type. The other two simultaneously shave its two opposite unfinished sides. The type is then moved out of the channel onto a horizontal rule.

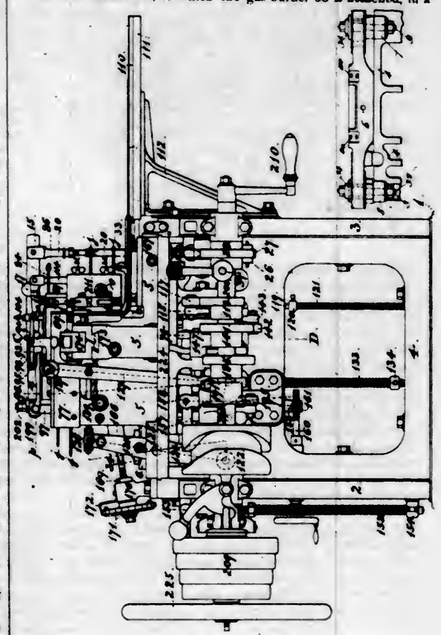
Claim.—1. The combination, with a horizontally-adjustable base-plate, 6, supporting the furnace 10 and the melting-pot 11 in a type-casting machine, of the pin 9, the pin 32, the adjusting-screw 30, journaled in the said base-plate and having parts, substantially as described, preventing endwise motion, and the sliding block 29, having a vertical hole to fit the upper thicker part of the pin 9, and having a tapped horizontal hole to engage the adjusting-screw 30, substantially as described and illustrated, and for the purpose specified.

2. In a type-casting machine, the combination of a furnace, 10, a combined melting-pot and pump, 11 12, having a discharging-nipple, 31, and a base-plate, 6, for said parts, with the wedge 41, inserted between the said base-plate and the furnace for adjusting the position of the nipple-hole vertically, substantially as described and specified.

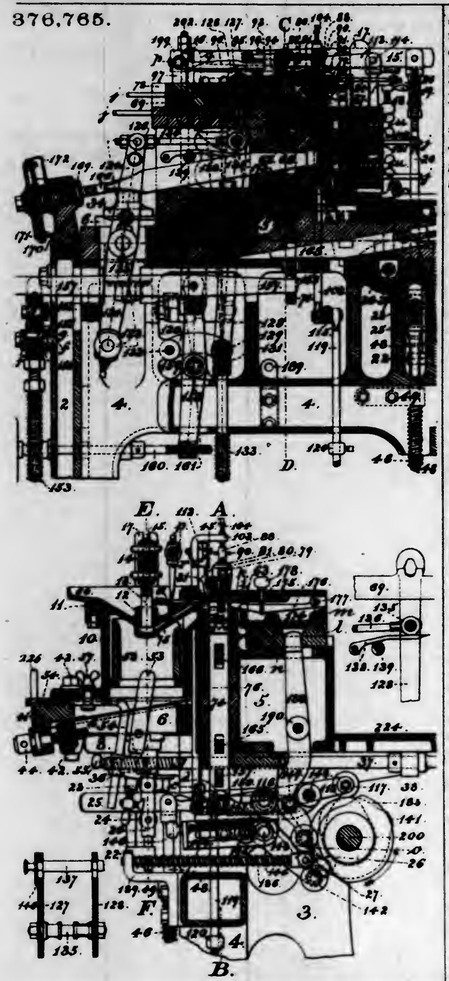
3. In a type-casting machine, the combination of a furnace, 10, a melting-pot, 11, having a discharging-nipple, 31, a supporting base-plate, 6, for said parts, and a wedge, 41, inserted between said base-plate and furnace, with the adjusting-screw 44 for moving the wedge minute amounts, so as to adjust the position of the discharge-opening of the nipple vertically very accurately, substantially as set forth.

4. The metal-kettle 11, in a type-casting machine, constructed with circularly-arranged flues or openings 59, through which the flame passes vertically, substantially as shown and described.

5. The bracket 54, to which the gas-burner 53 is attached, in a



376,765.



type-casting machine, having a tail projecting to the outside of the furnace 10, in combination with suitable guide-bearings belonging to the supporting parts of the furnace, and a bracket-handle, 226, outside of the furnace, substantially as set forth.

6. In a type-casting machine, a melting-kettle, 11, a metal-pump, 12, a discharging-nipple, 31, an apron, 45, located in front of the nipple, and a choker, 61, having a cylindrical termination adapted to work in a corresponding opening in the said nipple and in the said apron, in combination with a type-mold and a type-discharging body-piece, 68, of the mold, said body-piece sliding in a groove between the stationary mold parts 64, 65, 66, and 67, and perpendicularly to the longitudinal axis of said choker termination, and having its end surface which comes in contact with the type equal to the corresponding surface of the type bodywise and its jet, substantially as described, and for the purpose set forth.

7. In the mechanism for operating the choker 61 of a type-casting machine, in which the furnace, the metal-pot, and the pump are supported by a movable base-plate, the combination, with the lever 194, carried by the stationary framing of the machine, operated by a suitable cam, 191, and having a toe-like bearing-surface at the free extremity of one of its arms, and the arm 196, pivoted to a bracket, 198, projecting from the movable base-plate 6, and having a corresponding bearing-surface at its free extremity for the bearing-surface of the lever 194 to act upon, and for adapting it to automatically engage with and disengage from the lever 194 when the base-plate 6 is moved toward and from the stationary parts of the machine, of the choker 61, the two lever-arms *r* and 199, rigidly connected with the pivot *p*, the link 202, connecting the arm 199 with the arm 196, and the spring 192, for maintaining the arm 196 in engagement with the lever 194, substantially as set forth.

8. In a type-casting machine, the rod 20 of the pump mechanism, having a slot and guiding-rollers 23 and 24, in combination with the backwardly-extending curved arm 25 of the lever 25 26, and the guide 22, attached to the base-plate 6, the rod 20 being guided by the guide 22 and operated by means of the curved arm 25 and the rollers 23 and 24, and the lever-arm 25 being adapted to engage and disengage from the said rollers, substantially as set forth.

9. In a type-mold, interchangeable parts, each consisting of the combination of an integral base-plate, 63, made of a solid block, and the permanently-attached cheeks 64 and 65, between which the type is cast, the cheeks being fitted and adjusted but once for the corresponding size of the types, and the base-plate having a rectangular hole for the body-piece 68 of the mold to pass through, and holes for screws for fastening it to the frame of the machine, and the entire plain bottom surface of the base-plate 63, serving as a bearing, and being fitted to a corresponding plain bearing-surface of the framing of the machine, whereby the combined interchangeable parts may be immediately brought into working position, substantially as set forth.

10. In a type-casting machine, the body-piece 68 of the mold, having a simple prismatic outline, and having the support 73 under the wedge-shaped part 72, which fits between the jet-pieces 66 and 67, the said support 73 being made thinner than the part 72, so that the latter may be readily fitted to accurately work between the jet-pieces 66 and 67, substantially as shown and described, and for the purpose specified.

11. In a type-casting machine, the slide 74, to which the body-piece 68 of the mold is attached, having a simple prismatic outline, being provided with openings for the wedges 165 and 166 to pass through, and being guided by a groove planed in the stationary framing of the machine and by a cover which closes this groove, in combination with the body-piece 68 and the wedges 165 and 166, substantially as set forth.

12. In a type-casting machine, the prismatic sliding bar 74, to which the body-piece 68 of the mold is attached, and which has a slot for the wedge 166, in combination with the framing having a groove in which the bar 74 slides, and the wedge 166, passing transversely through the slot of the sliding bar 74, the wedge 166, having suitable bearings in the framing and serving as a stop for the downward motion of the sliding bar 74 and limiting the depth of the mold, substantially as described.

13. In a type-casting machine, the sliding bar 74, to which the body-piece 68 of the mold is attached, in combination with the framing having a groove in which the bar 74 slides, and the wedge 165, the sliding bar 74, having a slot for the wedge 165 to pass through transversely, and the wedge 165, having suitable bearings in the framing and serving as a stop for the upward motion of the sliding bar and the body-piece of the mold, substantially as described.

14. In a type-casting machine, the sliding bar 74, to which the body-piece 68 of the mold is attached, in combination with the framing, a wedge, a screw, and a nut, the framing having a groove in which the bar 74 slides and suitable bearings for the wedge, the wedge passing transversely through a slot in the sliding bar 74 and being adapted for limiting the movement of the bar 74, and the said screw and nut being arranged and adapted for adjusting the position of the wedge in order to adjust thereby the limit of the movement of the bar 74, substantially as set forth.

15. In a type-casting machine, the combination, with the sliding bar 74, to which the body-piece 68 of the mold is attached, of the arms 147 and 150, the screw *c*, adapted to adjust the relative positions of these arms, and the bolt *d*, for uniting the same, the lever 143, the adjustable roller 145, the sliding block 151, to which the roller 145 is pivoted, the adjusting-screw 146, and the cam 141, the lever 143 being pivoted to the frame, one of its arms being provided with a friction-roller, 142, for the cam 141 to operate on, and its other arm having suitable bearings for the block 151 to slide in, the screw 146 being arranged and adapted to adjust the block 151 and the roller 145 lengthwise of said arm, thus providing a variable leverage of the same, the arms 147 and 150 being placed adjacent to each other and approximately parallel to the arm of the lever 143, which carries the roller 145, and adapted to form united one double arm of adjustable width vibrating on the pivot 148, the roller 145, engaging the lower edge of the arm 147, and the upper edge of arm 150, engaging the lower end of the sliding bar 74 and transmitting the motion to the same, substantially as set forth.

16. The device for disengaging the lever 157 from the slide 74, to which the body-piece 68 of the mold is attached, comprising the combination of the slide 74 with the lever 157, the lever 158, the swiveling nut 161, and the screw 160, the lever 157 having its fulcrum upon the lever 158 and acting directly upon the slide 74, substantially as shown and described.

17. The device for releasing the lever 157 from the pressure of the spring 153, comprising the combination of the lever 163, the spring 153, the guide-rod of the spring 153, and the guide 156, the head 155 of the said guide-rod having the hole *g*, and the guide 156 having the hole *f*, substantially as set forth.

18. The combination, in a type-casting machine, of the mold-covering slide 69, with the two side arms, 127 and 128, the links 130, the cross-head 131, the spring 133, the guide-rod of this spring, and the nut 134, substantially as and for the purpose set forth.

19. In a type-casting machine, the combination of the mold-covering slide 69, the side levers, 127 and 128, and the pins 137 and 135, with the lifter 136 and the cam 139, for elevating the side levers when the slide 69 is to be removed, substantially as shown and described.

20. The matrix-holding vise constructed with the block 174, the stationary jaw 175, the screw 178, the movable jaw 176, the stool *h*, the back-rest *i*, and the plate *k*, the block 174 being fastened to a slide, *l*, substantially as shown and described.

21. In the mechanism for moving the matrix-holding vise to and from the mold, the carriage *l*, to which the matrix-vise is attached, having side flanges for the vise-block 174 to fit between, and a bearing-surface for the vise-block 174 to rest upon with its bottom face, and having tooth-like bearing-surfaces for the end of the upper arm of the lever 186 to work between, and being suitably guided in the framing of the machine, in combination with the operating-lever 186, having bearing-surfaces corresponding with the said tooth-like bearing-surfaces of the carriage *l*, and suitable mechanism, as described, to operate the lever 186, substantially as described and specified.

22. The combination, with the slide *l*, having apertured side flanges, of the matrix-holding vise having a transverse aperture and being pivoted to the slide, and the pin *n*, substantially as and for the purpose specified.

23. In a type casting and finishing machine, the mechanism for pushing the types through the grooving and dressing apparatus, consisting of the pusher *a*, the hollow piston 86, a lifting-spring in this piston, the pushing-screw 104, the bent rod 103, the link 113, pivoted to a stationary support and jointed to the bent rod 103, the lever 115, pivoted to the framing and connected with the bent rod 103 and operated by a suitable cam, the rod 119, jointed to the lever 115 at one end and guided at its other end in the frame, and the spring 121, guided by the rod 119, substantially as set forth.

24. The type grooving and dressing apparatus constructed with the stationary plate 101, the spring-pressed plate 102, suitable springs arranged to press the plate 102 toward the plate 101, the stationary dressing-knives 107 and 108, and the gage-pieces 217 and 218, the said dressing-knives having oblique cutting-edges and being placed diametrically opposite each other, having their inner and opposite plain faces parallel to the plate 101, and having their cutting-edges symmetrically inclined in opposite directions, the space between the stationary plate 101 and the spring-pressed plate 102 and in rear of the dressing-knives being regulated by the thickness of the undressed types, and the distance between the inner and opposite plain faces of the dressing-knives being made equal to the thickness which the finished types are required to have, and this distance being constantly preserved by the gage-pieces 217 and 218, interposed between the dressing-knives, substantially as set forth.

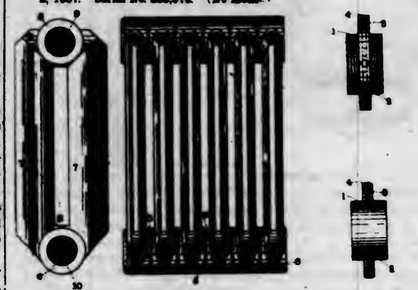
25. In a type-grooving apparatus, the stationary plate 101, the opposing plate 102, and the smaller plates, 221 and 222, in combination with a stationary knife, 106, for planing grooves in the feet of types, the plate 102 being provided with studs *u u* for supporting it parallel to the plate 101, and the plate 102 being provided with springs for pressing it toward the plate 101, the two plates 101 and 102 forming a self-adjusting guiding-channel into which the types are pushed and guided to the grooving-knife, the small plates 221 and 222 being attached by means of screws to the outer sides of the plates 101 and 102 at the ends where the types enter the guiding-channel and at the side where the faces of the types will be, and the small plates 221 and 222 projecting a little over the space between the plates 101 and 102, the plate 101 having at the end where the types enter the channel guiding projections corresponding in number and form to the nicks in the types, and one part of the face of plate 101 ahead of the small plate 221 being left smooth and without projections, so that types may be taken out endwise for inspection after they are grooved and before they are delivered to the dressing-knives, substantially as set forth.

26. In a type-grooving apparatus, the plate 101 and the opposing plate 102, having springs, as described, in combination with the block 211, the roller *w*, and the pin on which the same rotates, the swinging arm *x*, to which the pin of the roller *w* is attached, the eyebolt *y*, and the spring on this eyebolt, substantially as shown and described, and for the purpose specified.

27. The plates 102, 214, and 215 and the grooving-knife 106, in combination with the block 211, to which these pieces are applied, substantially as described, and for the purpose that these parts of the apparatus may together be detached from the machine, and that the knife may be set conveniently to cut grooves of the required depth.

28. The type-dressing knives 107 and 108 and the gage-pieces 217 and 218, in combination with the plate 101, the dressing-knives having the form of plates with oblique cutting-edges and being fastened to the plate 101 near one end of the same and arranged symmetrically and diametrically opposite each other, with their oblique cutting-edges inclining in opposite directions and their inner opposing faces being parallel to the face of the plate 101, and the gage-pieces 217 and 218 being as thick as the finished types and being clamped between the dressing-knives, substantially as herein shown and described, and for the purpose that these parts may be fitted together and adjusted or conveniently inspected and then attached to the machine.

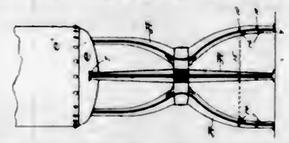
376,766. RADIATOR. JOSEPH ROSS, Buffalo, N. Y. Filed Mar. 2, 1887. Serial No. 229,378. (No model.)



Claim.—1. A right-and-left-hand-screw-threaded nipple having a narrow circular flange extending outward from between the right and left hand screw-threaded portions, in combination with the circular bosses 6 of the radiator-section, having their peripheries of the same diameter, or substantially so, as the periphery of the flange, and the faces of which come flush together, and thereby form a continuous pipe at the upper and lower portions of the radiator, substantially as described.

2. A right-and-left-hand-screw-threaded nipple having a circular flange, 3, extending outward from between the right and left handed screw-threaded portions 1 and 2, and provided with a rim, 4, extending from each side of the periphery of the flange 3, for the purposes described.

376,767. PEDESTAL FOR RANGE-BOILERS. ALLEN P. CROOUR, New York, N. Y. Filed Apr. 26, 1887. Serial No. 236,156. (No model.)



Claim.—1. The combination of a suitable number of legs, A, approaching each other near their longitudinal centers and provided at such points with spider-receiving devices and of different divergence on opposite sides of such center, with such spider, and screws or bolts for uniting the legs and spider when assembled, substantially as described.

2. The independent legs A and their spider-receiving portions, such as sockets or projections, combined with the spider and an appropriate number of assembling-bolts to unite the spider and legs, substantially as described.

3. A pedestal for range-boilers, composed of an appropriate number of legs, each having a number of lugs, 10, to form ends for the legs, whereby the height of the stand may be decreased as many times as there are such lugs, and a footed terminal for the legs still be retained.

4. The reversible pedestal for range-boilers, composed of the several legs A, expanded more at one end than at the other, and provided with spider-receiving members, such as sockets or projections, and a spider engaging each of such members and rigidly secured thereto by a suitable number of assembling-bolts, substantially as described.

5. The legs having socketed portions, combined with a spider having wedge-shaped arms to enter the said sockets, substantially as described.

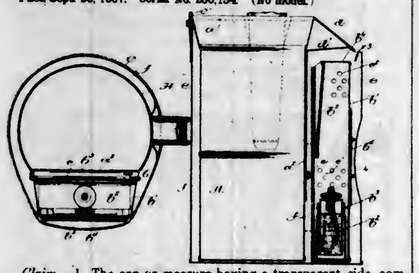
6. The legs having wedge-shaped socket portions and the spider

having wedge-shaped arms, combined with a screw or bolt to form a locking device and wedge the spider into the socket portion of the leg, substantially as described.

7. In a boiler-stand, the combination, with a spider having three or more radial arms, of independent legs secured to said arms, substantially as and for the purpose specified.

8. In a boiler-stand, the combination, with a spider having radial arms, of independent legs adjustable on the said arms, substantially as described.

376,768. **CAN OR MEASURE.** JOHN CUTHBERTSON, Lowell, Mass. Filed Sept. 20, 1887. Serial No. 250,154. (No model.)

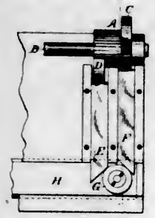


Claim.—1. The can or measure having a transparent side, combined with the lamp-compartment having a closed top, and provided with a transparent back and front, and with air inlets and outlets, and with the hinged door having a transparent pane, substantially as described.

2. The can or measure open at top, and the lamp-compartment and lamp, combined with the inclosing-jacket provided with an opening, 4, for the outward passage of rays of light, substantially as described.

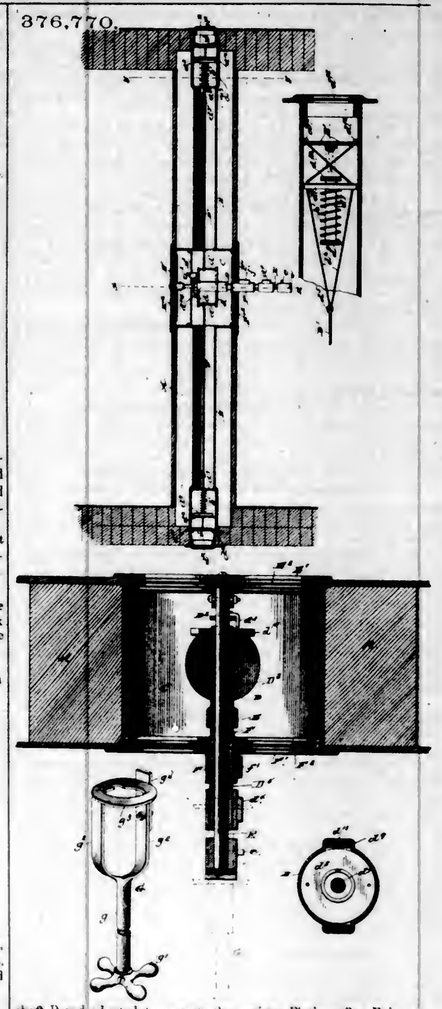
3. The can or measure open at top and having a transparent side and a lip, *d*, and the lamp-compartment having a transparent back and front, and the lamp, combined with the inclosing-jacket, to operate substantially as described.

376,769. **MECHANICAL MOVEMENT.** GEORGE DUNHAM, Unionville, Conn. Filed June 13, 1887. Serial No. 241,153. (No model.)



Claim.—The combination of a sliding bar having a projection, the slides E F, having beveled ends bearing against said projection, the cams C D, and their driving-shaft, substantially as described, and for the purpose specified.

376,770. **ROOM-VENTILATOR.** FRITZ FOELLMER, West Point, Nebr., assignor of one-third to Joseph Ruesing, same place. Filed May 4, 1887. Serial No. 237,105. (No model.)



Claim.—1. In a ventilator, the combination, with the central chamber having upper and lower registers, of two pipes leading therefrom and having end doors operated by the shaft passing through the central chamber, and which operates the registers thereof, and the springs for keeping the doors in a closed position, substantially as described.

2. The combination, in a ventilator, of the chamber C, having the registers at its upper and lower ends, the pipes B, extending from the said chamber to the outer air, the doors B' at the outer ends of said pipes, the revoluble shaft D, arranged in the chamber C, and connections between the said shaft and the doors whereby the latter may be opened or closed, substantially as described.

3. In a ventilator, the combination, with the chamber C, having upper and lower registers, E' and F', of the pipes B, connected thereto, having gauze coverings on their outer ends, the hollow shaft D, passing into said chamber and having the disk d^{14}, the cross-bar D^2, arranged in chamber C, and having the depending stud or stop d^2, adapted to engage the disk, the arms *d*, secured to shaft D, the tie-rods *d'*, the rods D', connected to the doors B', the shaft E, passing through the shaft D and adapted to operate the register E', the collar F, in connection with the register F', and means, substantially as set forth, for operating the several parts, substantially as described.

4. The combination of the chamber C, having the registers E' and F', and pipes B, communicating with the said chamber and having the doors B', the shaft E, attached to the register E', the hollow shaft D, fitted on shaft E, and having the connections attached to doors B', and the collar or sleeve F, attached to the register F', and shaft D, substantially as described.

5. The combination of the chamber C, having the registers E' and F', the stud or projection d^2, supported rigidly in the said chamber, the pipes B, communicating with the said register and having the doors B', the shaft E, attached to register E', the hollow shaft D, fitted on shaft E, adapted to turn and move lengthwise thereon, and having the disk or detent adapted to engage the projection or stud d^2, for the purpose set forth, connections between said shaft D and doors B' and the collar or sleeve F, attached to the register F' and fitting on the hollow shaft, substantially as described.

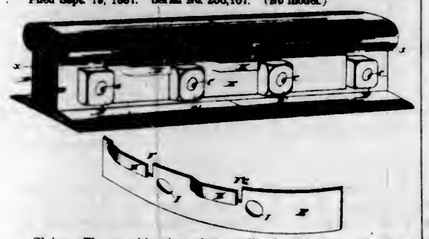
6. In combination with the rods D', having the eyes d^3 at their upper ends, of the smaller rods d^4, connected to the said eyes d^3 at one end and diverging and passing through a plate, d^5, and crossing each other on the opposite side of said plate and secured to the doors B', and the spring B', substantially as described.

7. The combination of the pivoted doors B', the movable plates d^8, arranged near the rear sides of the doors, the springs *b'*, bearing against said plates, the rods d^9, attached to the plates and having their outer ends attached to the doors, and the shaft D, connected to the rods d^8, substantially as described.

8. The combination of the pipes B, having the side depressions, d^{13}, the U-shaped arm d^9, bearing in the side depressions and having the cross-plate d^{10}, the pivoted doors B', arranged in the pipes, the rods d^7, attached to the arms d^9 and cross-plates d^{10}, the plates d^8, adapted to slide on the rods d^7, the springs bearing against said plates, the rods d^6, connecting the said plates to the pivoted doors, and the operating-shaft and connections between the same, and the said rods *d*, substantially as described.

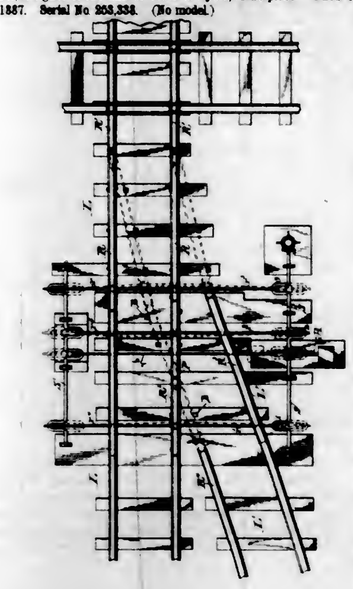
9. The combination of the chamber C, having the registers, the tubes communicating with the chamber and extending in opposite directions therefrom, the end doors, B' B', in said tubes, the shaft E, connected to the registers, the hollow shaft D, through which shaft E extends, connections between shaft D and the end doors, and the handle G, adapted to operate either of the shafts, substantially as described.

376,771. **NUT-LOCK.** GEORGE P. FULLER, Minneapolis, Minn. Filed Sept. 19, 1887. Serial No. 250,107. (No model.)



Claim.—The combination of the rails, the fish-plates, the outer bolts passed through the rails and fish-plates and having the nuts D, the curved spring-plate E, having the lips H, raised horizontally in one edge and projecting in the same direction, and provided with openings I, for the shanks of the intermediate bolts, and the nuts D', screwed onto the intermediate bolts, bearing against the outer side of the spring-plate, and thereby forcing the latter flat against the opposing fish-plate and causing its ends to bear against the opposing sides of the nuts D, the said nuts D' being engaged when screwed home by the lips H, substantially as described.

376,772. **RAILWAY-SWITCH.** HAMILTON C. GRATTY, Kingsdale, Pa., assignor of one-half to John G. Byers, same place. Filed Oct. 25, 1887. Serial No. 253,338. (No model.)



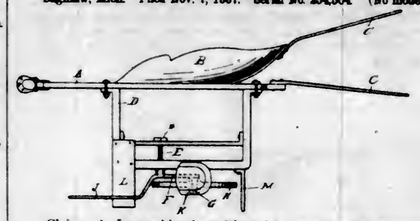
376,772. **RAILWAY-SWITCH.** HAMILTON C. GRATTY, Kingsdale, Pa., assignor of one-half to John G. Byers, same place. Filed Oct. 25, 1887. Serial No. 253,338. (No model.)



Claim.—1. The combination, substantially as described, with the rails R R, fulcrumed at one end, and the pivoted rail R^2, and a crank-shaft on one side of the track, having its cranks connected, respectively, with the free end of the rails R R and with the rail R^2 on opposite sides of its pivot, of a similar crank-shaft on the opposite side of the track similarly connected to said rails R and R^2, for the purpose specified.

2. As a means for pivoting the rail R^2, the combination therewith of the chair C, provided with a pivot-pin, P, and a bearing-plate, P', said chair and plate having their bearing-faces formed slightly convex, substantially as and for the purpose specified.

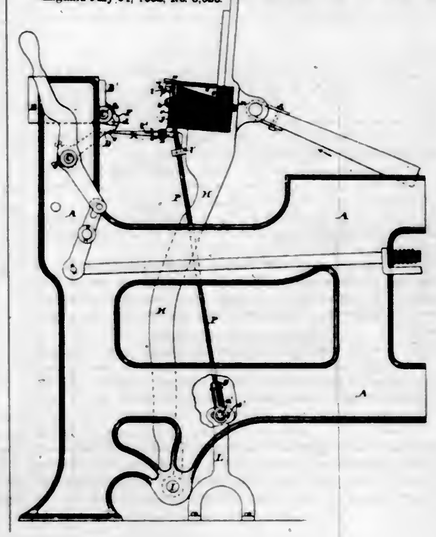
376,773. **ATTACHMENT FOR PLOWS.** EZRA G. GODDARD, East Saginaw, Mich. Filed Nov. 7, 1887. Serial No. 254,504. (No model.)



Claim.—1. In combination with a plow, an adjustable outrigger or frame, D, a rock-shaft, E, journaled transversely across the land side of said frame in advance of the heel of the plowshare, a rock-arm secured to said rock-shaft and carrying a stub-axle, G, a supporting-wheel, H, and an actuating-lever, J, the parts being constructed, arranged, and operating substantially in the manner and for the purposes set forth.

2. In combination with a plow, a removable outrigger or frame, D, the rock-shaft E, journaled in bearings *a* in said frame in advance of the heel of the plowshare, rock-arm F on said shaft, stub-axle G, supporting-wheel H, lever J, formed integral with said rock-arm and bent outward, as shown, foot-board L, and stop M, at opposite ends of said frame, the parts being arranged and operating substantially in the manner and for the purposes specified.

376,774. **WEFT STOP-MOTION FOR LOOMS.** LUCIUS J. KNOWLES, Worcester, Mass.; Francis B. Knowles and Henry A. Marsh surviving executors of said Lucius J. Knowles, deceased. Filed Apr. 20, 1882. Renewed June 27, 1885. Serial No. 170,015. (No model.) Patented in England July 31, 1882, No. 3,628.



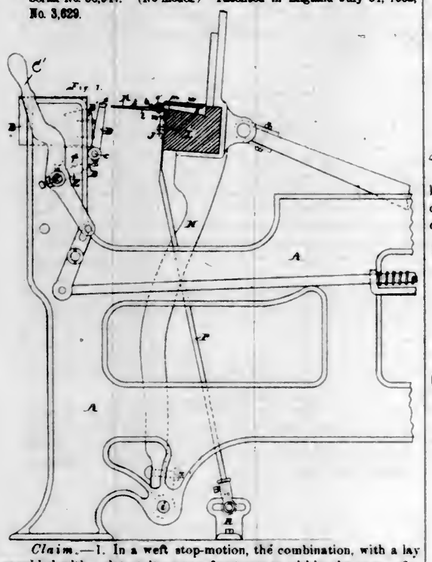
Claim.—1. The combination of the feeler-shaft, a crank thereon, a vibrating dagger, and a connecting-rod between said crank and dagger with means for adjusting the length of the connecting-rod and mechanism for directly limiting the motion of the feeler-shaft, substantially as described.

2. The combination, with the lay and attachments thereto consisting, essentially, of a feeler-shaft and feelers within the web, a feeler-operating lever, and a crank-connection between said feeler-shaft and said feeler-operating lever, of the governing-rod P and bearing-pivot therefor outside and independent of the lay, whereby said rod is adapted to vibrate with the lay, but upon a different center, substantially as described.

3. The combination, with a lay and feeler-wires pivoted to the front thereof, a feeler-operating lever, and a connection between said lever and said wires, of the vibrating rod P and bearing-pivot therefor outside and independent of the lay, the said pivot being provided with means of adjustment to and from the center of vibration of the lay, and the said vibrating rod being provided with a telescopic adjustment, substantially as described.

376,775. WEFT STOP-MOTION FOR LOOMS.

Lucius J. Knowles, Worcester, Mass.; Francis B. Knowles and Henry A. Marsh surviving executors of said Lucius J. Knowles, deceased. Filed Apr. 20, 1882. Serial No. 58,947. (No model.) Patented in England July 31, 1882, No. 3,629.



Claim.—1. In a weft stop-motion, the combination, with a lay provided with a slot at its upper front corner within the warp, of a dagger and feeler-wires provided with a single pivot, from which they project in opposite directions, the said pivot being in front of said slot, and means for vibrating the combined feeler and dagger to feel for the weft, substantially as described.

2. The combination, with the lay L, provided with the slot *s* at its upper front corner, of the feeler-wires *w*, dagger K, and pivot *c'*, and the pivoted governing-rod P, substantially as described.

3. The combination, with the lay L, provided with slot *s*, of the feeler-wires *w*, dagger K, and pivot *c'*, and the screw *b*, substantially as described.

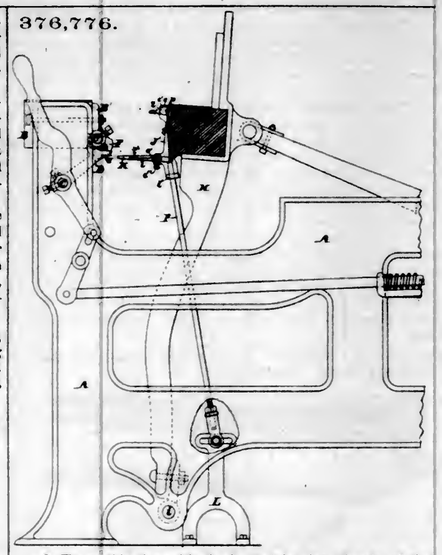
4. The combination, with the lay, dagger, and weft-feeling devices, and the breast-beam, shipper-lever shaft, and shipper-lever handle, of the arm E and the weighted elbow-lever D, provided with pin *d* and projection *e*, substantially as described, for the purpose specified.

376,776. WEFT STOP-MOTION FOR LOOMS.

Lucius J. Knowles, Worcester, Mass.; Francis B. Knowles and Henry A. Marsh surviving executors of said Lucius J. Knowles, deceased. Filed Apr. 20, 1882. Serial No. 58,948. (No model.) Patented in England July 31, 1882, No. 3,629.

Claim.—1. The combination, with the lay and bearings upon the face thereof, of the long feeler-shaft a^3, provided with feeler-wires *w* at one end within the warp, the pivoted governing-rod at the other end of said shaft without the warp, and actuating-connections intermediate the governing-rod and the warp, substantially as described.

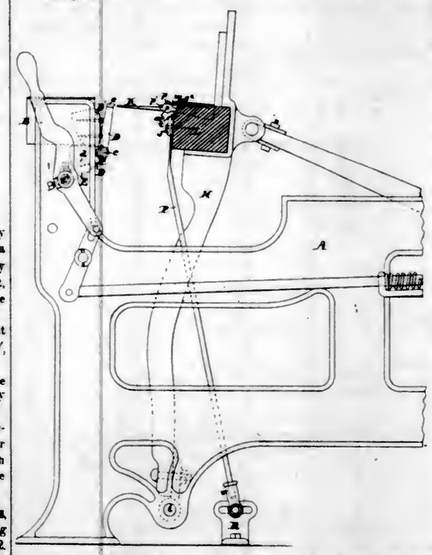
376,776.



2. The combination, with the lay and bearings therein, of the long feeler-shaft a^3, the feeler-wires *w*, connecting-rod *r*, wrist-pin, crank-disk *t*, dagger K, and pivoted governing-rod, substantially as described.

376,777. WEFT STOP-MOTION FOR LOOMS.

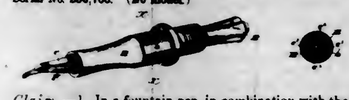
Lucius J. Knowles, Worcester, Mass.; Francis B. Knowles and Henry A. Marsh surviving executors of said Lucius J. Knowles, deceased. Filed Apr. 20, 1882. Serial No. 58,949. (No model.) Patented in England July 31, 1882, No. 3,629.



Claim.—The combination, with the slotted lay and bearings upon the front face thereof, of the long feeler-shaft a^3, one end of which lies within the warp and is provided with feeler-wires *w* opposite the slot in said lay, while the other end extends without the warp, the dagger K, rigidly attached to said feeler-shaft without the warp, and the pivoted governing-rod P, also without the warp, substantially as described.

376,778. FOUNTAIN-PEN.

Daniel W. Lapham, Brooklyn, N. Y., assignor to Josephine M. Lapham, same place. Filed Apr. 30, 1887. Serial No. 236,700. (No model.)



Claim.—1. In a fountain-pen, in combination with the reservoir and the nozzle or mouth-piece, the pen-point in such nozzle, and the feed-piece projecting up into the reservoir, having the tongue extending down over the pen-point and having the slot extending from its inner end outward to a point in the tongue over the pen-point shank, substantially as and for the purpose specified.

2. In a fountain-pen, in combination with the reservoir and the nozzle or mouth-piece, the pen-point and the feed-piece having the tongue projecting out along the top of the pen-point, and provided with an ink-passage extending along the tongue to a point on the pen-point short of the slit therein, substantially as and for the purpose shown.

3. In combination with the ink-reservoir, the nozzle, and the pen-point, the feed-piece having the part projecting into the reservoir provided with an outwardly-tapering slit for the passage of the ink, substantially as and for the purpose set forth.

4. In combination with the ink-reservoir and the pen-point-holding piece, the feed-piece having its portion extending into the reservoir-split and having a passage from this split to the pen-point, substantially as and for the purpose shown and described.

5. In combination with the ink-reservoir and the nozzle on the same, the feed-piece in the nozzle split longitudinally on two planes substantially at right angles to each other, substantially as and for the purpose specified.

6. In combination with the ink-reservoir and the nozzle thereon, the pen-point, the feed-piece having the tongue extending down along the pen-point and having its body slit or split longitudinally on two planes, and one of the slits extended down along the tongue, substantially as and for the purpose shown.

7. In combination with the nozzle, the feed-piece fitting therein, having at its outer end the pen-point-receiving slot, and the tongue to engage the top of the pen-point and having its inner portion split, so that the split communicates with the pen-point-receiving slot, substantially as and for the purpose set forth.

8. In combination with the nozzle or mouth-piece, the feed-piece provided with a tapering slit or slot extending from its inner end, and having on its outer end the pen-point-receiving slot intersecting the forward or outward end of the slit in the piece, and the tongue to engage the top of the pen-point shank, substantially as and for the purpose shown and described.

9. In combination with the nozzle, the longitudinally-split feed-piece fitting therein, having the tongue to engage the top of the pen-point and the slot to receive the pen in communication at its upper side with a split in the feed-piece, substantially as and for the purpose specified.

10. The feed-piece for use in fountain-pens, consisting of the longitudinally-split body provided with the pen-point-receiving slot in communication with the split in the body of the piece, and the tongue for engaging the top of the pen-point, substantially as and for the purpose shown.

11. The feed-piece for use in fountain-pens, having the tongue for engaging the top of the pen-point, the point-receiving slot, and the longitudinal tapering slot or slit communicating with the pen-receiving slot, substantially as and for the purpose set forth.

12. The feed-piece for use in fountain-pens, having the pen-point-receiving slot and the tongue to extend along the pen-point, and having its main and inner portion split in two different planes, and one of the splits in communication with pen-point-receiving slot, substantially as and for the purpose shown and described.

376,779. FIFTH-WHEEL.

Robert D. Morgan and Joseph B. Morgan, Macon City, Mo. Filed Sept. 22, 1887. Serial No. 250,425. (No model.)

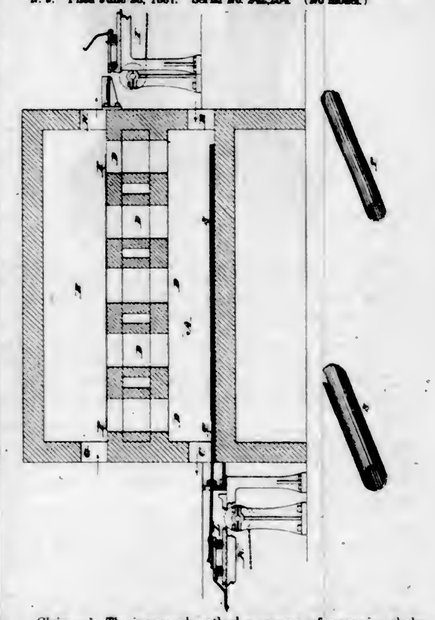


Claim.—1. The combination of the reach A, the braces *f f'*, secured, respectively, to the upper and lower sides of the reach and uniting at their forward ends in a common bolt, F, the said brace *f'* having a depending portion, f^2, the strap f^4, secured to the under side of the reach, the friction-roller mounted between the parts f' f^2, the disk C, and the semicircle D, as set forth.

2. The combination of the axle-beam C, the semicircle D, bolted thereto, the beam D', secured to the beam C, the disk D^2, formed integrally with the beam D', the disk C', pivoted on the disk D^2, the plate E, the reach carrying a friction-roller which supports the semicircle, and the braces *f f'*, extending from the reach and uniting in a common bolt, F, which pivotally secures the plate E to the disk C, substantially as specified.

376,780. METHOD OF PREPARING TURE-SKELPS FOR HANDLING.

Albert L. Murphy, Philadelphia, Pa., assignor of one-half to Jawood Lukens, Conshohocken, Pa., and John Wishron, New Brunswick, N. J. Filed June 23, 1887. Serial No. 242,264. (No model.)



Claim.—1. The improved method or process of preparing skelps for handling in a welding-furnace, consisting in inserting into one end of a heated skelp a heated iron tag, whereby they are united, and then withdrawing the skelp by means of said tag, substantially as described.

2. The improved method of preparing skelps for handling in a welding-furnace, consisting in heating the skelp to a welding heat and inserting thereto one end of a handling-tag heated to a similar temperature, thereby connecting them, so that the skelp may be handled by said tag, substantially as described.

376,781. MAIL-CRANE.

William W. McCleary, Braddock, Pa., assignor of one-half to George H. Riley, same place. Filed Sept. 8, 1887. Serial No. 249,093. (No model.)



Claim.—1. A mail-bag crane having at the base a support by which it is upheld in an upright position, said support being detachable, substantially as and for the purposes described.

2. A mail-bag crane hinged at the base, substantially as and for the purposes described.

3. A mail-bag crane having a detachable catch which supports it in an upright position, and a trigger-arm connected with the catch and operated by the train, substantially as and for the purposes described.

4. A mail-bag crane having a movable catch which supports it in an upright position, and a pivoted mail-bag-supporting arm connected with the catch, substantially as and for the purposes described.

376,782. SAD-IRON HEATER. THOMAS W. MCFARLAND, Chicago, Ill. Filed Sept. 12, 1884. Serial No. 142,873. (No model.)



Claim.—1. The combination, in a sad-iron heater, of the central drum and a surrounding jacket with a vertically-yielding coupling connecting said drum and jacket, to compensate for the unequal degrees of longitudinal expansion between the drum and the jacket, substantially as described.

2. The drum, in combination with a surrounding sectional jacket and a vertically-yielding coupling connecting each section with the drum, to compensate for the unequal degree of longitudinal expansion between the drum and the sections of the jacket, substantially as described.

3. The drum, in combination with a surrounding jacket connected at its base with the drum by a connection adapted to yield laterally with respect to the length of the drum, to compensate for the difference between the radial expansion of the drum and of the jacket, substantially as described.

4. The drum, in combination with a surrounding sectional jacket, the several sections of which are connected with the drum by a connection adapted to yield laterally with respect to the length of the drum, to compensate for the difference between the radial expansion of the drum and of the jacket, substantially as described.

5. The drum, in combination with a surrounding jacket, a series of partitions dividing the space between the drum and the jacket into compartments, and a sliding coupling and bolt connection between the drum and jacket, substantially as described.

6. The drum, in combination with a sectional jacket and a series of partitions dividing the annular space between the drum and the jacket into compartments, the jacket-sections being secured to the partitions, and the latter being connected with the drum by a sliding connection, substantially as described.

7. The drum, in combination with a surrounding jacket composed of sections and a series of partitions dividing the space between the drum and the jacket into compartments, the jacket-sections being secured to the partitions, and the latter being connected with the drum, substantially as described.

8. The drum provided at its top with a series of notches, in combination with a series of partitions, G, surrounding the drum and connected with the latter by couplings G^2, and a sectional jacket, the sections of which are secured to the said partitions, substantially as described.

9. The drum and its surrounding jacket, in combination with a rest for the sad-irons secured to the jacket and connected with the drum by a laterally-sliding connection, substantially as described.

10. The drum and the surrounding jacket composed of sections separated from each other to form openings through which to project the irons, in combination with the bottom H and a slot-and-bolt connection between said sections and the drum, substantially as described.

11. The drum and the surrounding jacket, in combination with the bottom H for the heating-compartments, secured to the jacket and connected with the drum by slot-and-bolt connections, substantially as described.

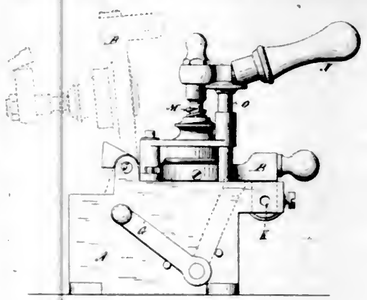
12. The drum and its surrounding heating-compartments, in combination with the two-part ring seated upon the drum and provided with hinged lids, substantially as described.

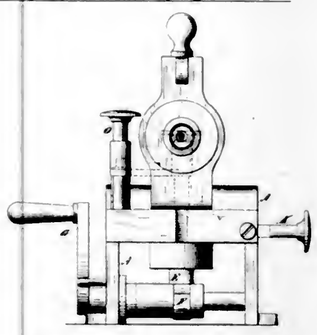
13. The two-part ring seated on the drum and provided with hinged lids for closing the heating-compartments around the drum, the lower part of the ring being provided with lugs constituting bearings for the pintles of the lids, substantially as described.

14. The two-part ring seated on the drum and provided with hinged lids for closing the heating-compartments, said parts of the ring being bolted together by bolts serving to bolt the ring to the lugs at the top of the drum substantially as described.

15. In a sad-iron heater, a central drum, in combination with a surrounding jacket composed of several independent sections separated from each other, whereby a passage is formed between the sections through which the sad-iron handle may project, substantially as shown and described.

376,783. MACHINE FOR MANUFACTURING BUTTONS. CARL A. PFENNING, Barmen, Prussia, Germany. Filed Mar. 10, 1887. Serial No. 230,476. (No model.) Patented in Norway Mar. 24, 1886, Nos. 173; in England Apr. 20, 1886, No. 5,446; in Belgium May 15, 1886, No. 73,004; in Italy May 15, 1886, No. 20,181; in Sweden July 24, 1886; in France Aug. 20, 1886, No. 175,617; in Germany Oct. 12, 1886, Nos. 37,811 and 38,621; in Austria-Hungary Oct. 15, 1886, No. 18,180; in Denmark Oct. 27, 1886, No. 864; in Canada Dec. 6, 1886, No. 25,497; in Spain Oct., 1886, No. 9,620, and in Portugal Dec. 23, 1886, No. 1,085.





Claim.—1. The combination of the base A, cover B, independent ejector E, and mechanism for raising said independent ejector through the button-forming tube, substantially as described.

2. The combination, in a button-forming machine, of a supporting-base having a cylindrical opening for supporting the button-forming cylinder, a button-forming cylinder, D, made to the size of the button desired, an ejector, E, to fit the same, a cap or cover containing button-forming mechanism and having a cavity to receive cap L, in different sizes, provided with mechanism for turning the edges of the cloth, of identical exterior but varying interior diameters, and mechanism for supporting the cover upon the base, substantially as described.

3. The combination of the frame A, carrying button-forming cylinder C and ejector E, the pivoted cover carrying the button-forming cap and the eyeleting-spindle M, and a stop supported upon the base of the machine, against which the handle of the eyeleting-plunger strikes in its operation, thereby limiting the motion of the eyeleting-plunger, substantially as described.

4. The combination, in a button-forming machine, of the base A, the button-forming cylinder D, the ejector E, and the plunger O, pivoted upon the base A, whereby it may be swung into position to operate in depressing the cloth, substantially as described.

376,784. INSECT-DESTROYER. JOHN T. RIVES, Wharton, Tex. Filed Oct. 10, 1887. Serial No. 251,990. (No model.)



Claim.—1. A poison-sprinkling machine consisting of wheels mounted on stub-axles, with an arched frame connecting the same, and vertical adjustable rotary sifters in the rear thereof operated by the wheels, said frame having thills secured thereto, and an arched yoke connecting the outer ends of said thills, whereby a way is formed through the center of the machine to pass over plants higher than the axle, as set forth.

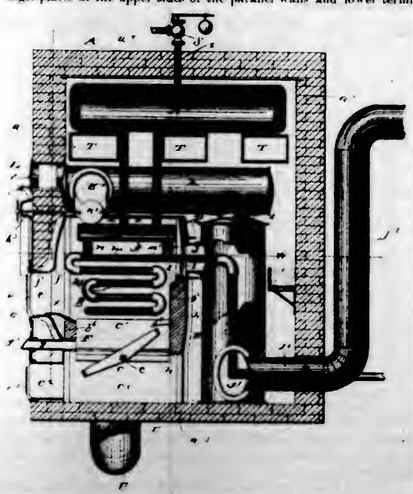
2. In a poison-sprinkling machine, the combination, with the wheels mounted on stub-axles, with vertically-adjustable rotary sifters in the rear operated by the wheels, of an arched frame connected to said axles, said frame having thills secured thereto, and an arched yoke having its ends bent outward to form neck-yokes and secured to the outer ends of said thills, and draft-arms secured to the sides of said thills, as set forth.

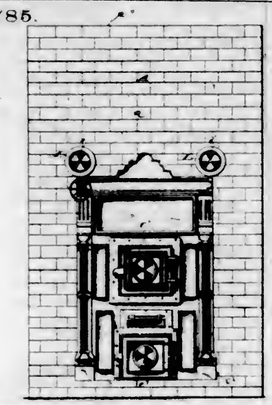
3. In a poison-sprinkler, the combination, with the wheels on stub-axles, with rearwardly-extended arms pivotally secured to the axles, and a horizontal shaft journaled in said arms, having sifters thereon, of a cylindrical shaft journaled in the upright frame of the axle, having a crank on one end thereof, and a ratchet-wheel secured to said shaft, and a spring-actuated lever on the frame below the shaft, having a tooth thereon engaging said ratchet, and cords attached to said shaft and to the outer ends of the rearwardly-extending arms, adapting the sifter-shaft to be adjusted to the height of the upright frame of the axle, as set forth.

4. A poison-sprinkling machine composed of stub-axles having wheels and pulleys thereon, uprights on the inner ends of the axles extended to form an arched frame above the axles, having an adjusting-rod near its top, thills or poles extended forward from the lower ends of the uprights and united at their front ends by a yoke equal in height to the arched frame, the yoke having its ends extended outward from the thills, pivoted arms extending back from the axles and united by a brace, said arms carrying a shaft with sifters and pulleys thereon, adapted to be raised by the adjusting-rod to the height of the arched frame and yoke, as and for the purpose set forth.

376,785. FURNACE. GEORGE R. SCATES, Knoxville, Tenn. Filed Aug. 6, 1886. Serial No. 210,223. (No model.)

Claim.—1. In a furnace, a fire-box comprising the curved hood, the parallel upper side walls, the converging lower side walls, the fixed angle-plates at the upper sides of the parallel walls and lower terminals of the converging side walls, between which the fire-brick is arranged and held, the curved rear wall having the flange *h* at its lower edge, and the protector plate or shield arranged in front of the upper portion of the rear wall having the depending flange *i* to hold the rear fire-brick in place, as and for the purpose described.





2. In a furnace, a fire-box having the rear wall thereof provided with an inwardly-extending flange, *h*, at or near its lower edge and the outlet-openings near its upper end, the shield arranged in front of the rear wall and the outlet-openings therein, and having the angular depending flange *i* at its lower edge and the fire-brick between the flanges *h i*, the side and upper edges of the shield being out of contact with the rear wall to permit the products of combustion from the fire-box to pass around the shield to the outlet-openings, as and for the purpose described.

3. In a furnace, the combination of the fire-box having the shield arranged in front of the outlet-openings, the vertical radiators arranged in rear of the fire-box communicating with each other at their lower ends by a connecting-pipe, J', the independent pipe-connections *j*, intermediate the upper portions of the vertical radiators and the fire-box, and a single escape-pipe communicating with the pipe *j'*, connecting the radiators, as and for the purpose described.

4. In a furnace, the combination, with the fire-box, of the vertical and horizontal radiators arranged above and in rear of the fire-box, and each having an independent pipe-connection with the same and communicating with each other, and a common smoke-flue communicating with the vertical radiators only, as and for the purpose described.

5. In a furnace, the combination, with a fire-box, of the vertical radiators J, arranged in rear thereof and communicating with the same, the horizontal radiators K, arranged above the fire-box and communicating at their rear ends with the vertical radiators, a transverse pipe connecting the horizontal radiators near their front ends and having a vertical pipe entering the fire-box, and a smoke-flue connected with the lower ends of the vertical radiators, substantially as described.

6. In a furnace, the combination of a fire-box, the independent circulating-coils therein connected by a transverse pipe, an auxiliary steam-reservoir connected with the circulating-coils, an elevated main reservoir connected with the auxiliary reservoir, and an injector connected with the circulating-coils for forcing water therein under pressure, substantially as described, for the purpose set forth.

7. In a furnace, the combination, with a fire-box, of the circulating-coils arranged therein, the vertical connected radiators in communication with the fire-box and having a pipe or pipes from the circulating-coils extending through them, a transverse pipe connecting the independent coils within the fire-box, the auxiliary steam-reservoir in communication with the transverse pipe, the main reservoir connected with the auxiliary reservoir, an injector, a pipe, O, intermediate of the injector and the circulating-coils, and provided with the regulating and check valves, and the steam and water supply pipes to the injector having the regulator-valves, substantially as described, for the purpose set forth.

8. In a furnace, the combination, with a fire-box, of the vertical radiators, the horizontal radiators arranged above the fire-box and in communication with the fire-box and the vertical radiators, the steam-reservoir arranged above the horizontal radiators, and the ovens intermediate of the steam-reservoir and the horizontal radiators, substantially as described, for the purpose set forth.

9. In a furnace, the combination of a fire-box, the horizontal ra-

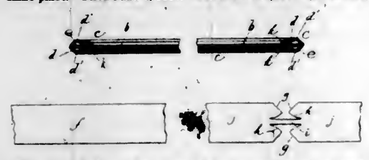
diators arranged above the fire-box on the outside of the shell thereof, a pipe connecting the front ends of the horizontal radiators and having a central pipe-connection with the fire-box to conduct a portion of the heat and products of combustion from the fire-box to the horizontal radiators, a valve or damper located in the said central pipe for cutting off communication between the horizontal radiators and fire-box, the vertical radiators arranged in rear of the fire-box and communicating therewith, the pipe J', connecting the vertical radiators, and a smoke-flue communicating with the said pipe, as and for the purpose described.

10. In a furnace, the combination of a fire-box, the horizontal radiators arranged above the fire-box, and each having an air-flue extending through the wall of the furnace above the fire-box and opening into the front end of the radiators, said flues having the registers for regulating the air-supply to the radiators, a horizontal pipe connecting the front ends of the radiators in rear of points where the air-flues enter, the same, a central valve-pipe intermediate the horizontal connecting-pipe and the fire-box, the vertical radiators in communication at all times with the fire-box and the horizontal radiators by independent pipe-connections, the pipe J', connecting the vertical radiators, and a smoke-pipe communicating with the said pipe, as and for the purpose described.

11. In a furnace, the combination of a fire-box, the horizontal radiators arranged above and exterior to the fire-box, a horizontal pipe connecting the front ends of the radiators and having a central valved pipe-connection with the fire-box, the vertical radiators arranged in rear of the fire-box and having the separate air-inlet nozzles *j'* at their lower ends, a horizontal pipe, J', connecting the lower ends of the vertical radiators and arranged substantially in the same horizontal plane with the air-inlet nozzles thereto, a smoke-flue connecting with the horizontal connectiug-pipe of the vertical radiators, and the independent pipe-connections intermediate the fire-box and the vertical and horizontal radiators, to thereby establish communication between said parts at all times, as and for the purpose described.

12. In a furnace, the combination of a fire-box, the independent water-circulating coils therein connected by an intermediate pipe, *m'*, the vertical radiators arranged in rear of the fire-box and communicating therewith, the horizontal pipe connecting the lower ends of the vertical radiators, a smoke-flue connecting with said horizontal pipe, and the circulating-pipe *m*, communicating with the water-circulating coils in the fire-box and extending through the vertical radiators and the intermediate and horizontal connecting-pipes thereof, to establish thereby a constant circulation of water through the fire-box and radiators, as and for the purpose described.

376,786. FRAME FOR SCHOOL-SLATES. DAVID SCRYMGEOUR, Monson, Me., assignor to the Paragon Noiseless School Slate Company, same place. Filed June 4, 1887. Serial No. 240,252. (No model.)

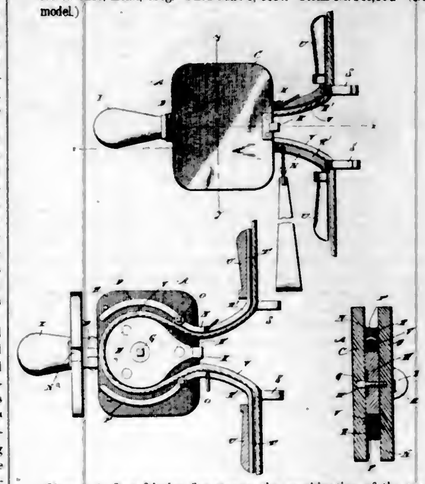


Claim.—1. A frame for school-slates, consisting of an inner supporting-case made from a strip of sheet metal or equivalent material of proper width and length, cut to form the corners, with mitered sides, rounded edges, and the narrow connecting-strip over each corner, then bent and fastened over the edges of the slate, and an outer coating of rubber or similar elastic material enveloping said case and extending under the edges thereof, substantially as shown and specified.

2. A school-slate, in combination with a frame comprising an inner supporting-case made from a strip of sheet metal or equivalent material of proper width and length, cut to form the corners, with mitered sides, rounded edges, and the narrow connecting-strip over each corner, then bent and fastened over the edges of said slate, and an outer coating of rubber or similar elastic material enveloping said case and extending under the edges thereof, substantially as shown and specified.

3. The method of making and attaching a frame to a school-slate, consisting in cutting and bending a strip of sheet metal or equivalent material of proper width and length into the proper form to produce an inner supporting-case having rounded corners, mitered at the sides, and a narrow connecting-strip over each corner, then fitting said case over the edges of the slate with the ends thereof brazed or soldered together, then enveloping its outer surface with unvulcanized rubber, extending the same under the edges thereof, and finally subjecting said coated case or frame to pressure and heat between suitable molds and in contact with sulphur, thereby causing the rubber to be molded, vulcanized, and to adhere tightly to the metal casing, as well as to the edges of the slate, substantially as and for the purposes set forth.

376,787. FRICTION FIRE-ESCAPE. LEMUEL D. SMITH and WILSON A. OLDS, Helix, Oreg. Filed June 9, 1887. Serial No. 240,804. (No model.)

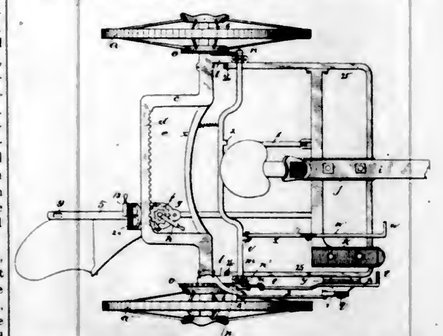


Claim.—1. In a friction fire-escape, the combination of the case A, comprising the parts B and C, hinged together, and having the detent to lock the said parts when closed, the cam G, the levers N, pivoted to the case on opposite sides of the cam and having the curved friction-arms P and the outward-extending arms R', and the rope arranged between the opposing sides of the cam and friction-arms, substantially as described.

2. In a friction fire-escape, the combination of the case A, having the cam G, the lever N, pivoted to the case and arranged on one side of the cam, the said lever having the friction-arm P, the handle U, and the keeper or yoke S, the rope passing between the opposing sides of the cam and the friction-arm and through the yoke or keeper, and the stirrup or loop secured to the lever-arm and depending therefrom, substantially as described.

3. The combination of the case A, having the cam G and the lever l, projecting from one side of the case, the levers N, fulcrumed to the case on opposite edges of the cam, the said levers having the friction-arms P, and provided at their outer ends with the oppositely-extending handles U, and the yokes or keepers S, the rope passed around the cam between the same and the friction-arms and engaged by the yokes or keepers S, and the stirrup or loop adapted to be connected to either of the levers N, for the purpose set forth, substantially as described.

376,788. SULKY-PLOW. WILLIAM STRAIT, Elmira, N. Y. Filed Dec. 18, 1886. Serial No. 221,978. (No model.)



Claim.—1. In a wheeled plow, a crank-axle carrying a plow, forwardly-projecting arms rigid thereto, and supporting-wheels, in combination with a frame jointed to the axle-arms in front of the axle and a driver's seat located upon the jointed frame, substantially as shown and described.

2. In a wheel-plow, the combination of a crank-axle having a plow

journaled thereto and arms projecting forwardly therefrom, with a forward frame and a rock-shaft pivoted to the projecting arms, a dog carried by the shaft, and a wheel and ratchet.

3. A reversible plow-point provided with an interiorly-projecting lug at or near the apex of the point and oppositely-arranged recesses at the sides, substantially as described.

4. A plow-point having a depression or seat upon its share and provided with a rib or thickened projection extending along its land-side edge or side, said rib having a recess adapted to lock with a corresponding lug upon the plow saddle or seat, substantially as set forth.

5. In combination with a sector-plate and a lever for raising and lowering a sulky-plow, an adjustable segmental piece having a lug or notch.

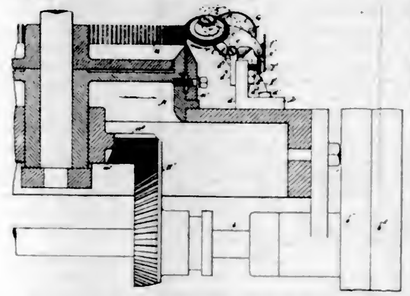
6. In a wheeled plow, the combination of a crank-axle, a reversible-mold-board plow having a suspension-bearing on the frame, and means for moving the plow laterally on the frame.

7. A wheeled plow provided with a laterally-adjustable pole or shafts and a reversible plow or plows, in combination with a shifting mechanism for setting said plow or plows to one side or the other of the frame, whereby the off horse of the two or three horse team may walk in the furrow when the machine is set for plowing right-hand furrows, and the nigh horse may walk in the furrow when the machine is set for left-hand furrows.

8. In a wheeled plow, the combination of a crank-axle having a plow journaled thereto and arms projecting forwardly therefrom, with a forward frame and a rock-shaft pivoted to the projecting arms and extending across the frame, a dog carried at each end of the shaft, and a ratchet on each wheel.

9. In a reversible-mold-board plow, a plow-standard, a mold-board, a link connecting the two, a lever pivoted to the mold-board, and passing up through or by the standard, a catch upon the lever, and a spring for engaging the lever and standard, all combined as set forth.

376,789. CIRCULAR-KNITTING MACHINE. CHARLES T. SULLIVAN, Lowell, Mass. Filed May 18, 1887. Serial No. 238,575. (No model.)



Claim.—1. The combination of the clearing-wheel and a suitable stand or bracket adapted to be secured upon the frame of a circular spring-needle knitting-machine, with means, substantially as described, for supporting said clearing-wheel upon said stand or bracket in a position to be engaged and rotated by the needles of said knitting-machine and of allowing said clearing-wheel to be thrown out of engagement with said needles automatically by the pressure of bent needles or bunches of lint too large to be removed from the needles by said clearing-wheel, as and for the purpose specified.

2. The combination of the clearing-wheel bracket, a bracket-lever pivoted to the upper end of said bracket and provided on its under side with two flat surfaces, either of which may be brought into contact with a flat surface with which said bracket is provided, an inclined stud secured upon one end of said bracket-lever, a clearing-wheel supported on said stud, and a spring secured to said bracket and pressing against the other end of said bracket-lever to hold either of said flat surfaces of said lever in contact with said flat surface of said bracket and thereby to hold said clearing-wheel in a position to be engaged or out of engagement with the needles of a knitting-machine, as and for the purpose specified.

3. The combination of the clearing-wheel bracket, a lever pivoted upon said bracket, an inclined stud secured upon one end of said lever, a clearing-wheel supported upon said stud, a gong supported upon said bracket, a hammer pivoted upon said bracket in proximity to said gong and having a stem bent under said lever and adapted, when said lever is turned upon its pivot to lift said clearing-wheel, to be brought into contact with said gong, and a spring secured to said bracket and pressing against the lower end of said lever, substantially as described, to throw said clearing-wheel suddenly upward when the same is slightly raised, as and for the purpose specified.

4. The combination of the clearing-wheel bracket, a lever pivoted upon said bracket, an inclined stud secured upon one end of said lever, a clearing-wheel supported upon said stud, a gong supported upon said bracket, a hammer pivoted upon said bracket and having a stem bent under said lever and adapted, when said lever is turned upon its pivot to lift said clearing-wheel, to strike said gong, a spring secured to said bracket and connected to said stem to restore said hammer to position when said bracket-lever is restored to position, and another spring secured to said bracket and pressing against the lower end of said lever to throw said clearing-wheel suddenly upward when the same is slightly raised, as and for the purpose specified.

376,790. PLOW. COLUMBUS P. SUTTON, Sharon, Tenn., assignor of one-half to Andrew G. Exum and Francis M. Parish, both of same place. Filed Mar. 17, 1887. Serial No. 231,305. (No model.)



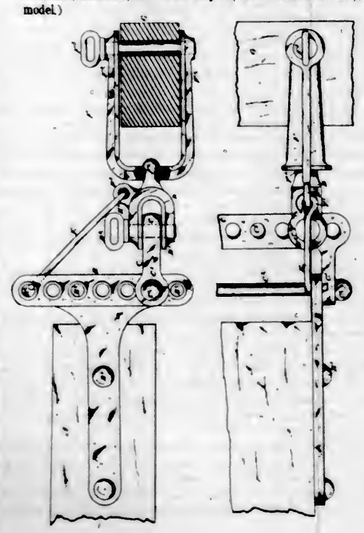
Claim.—In a plow or cultivator, the beam having a vertical slot at an intermediate point, and the plate C, passing through the slot and having each end projecting from the same, the handles converging together at their lower ends, where they are secured on opposite sides to the upper end of the plate C, the double-armed plow-standard, made from a single piece of metal, the arms of the standard projecting, respectively, forward and backward, the rear arm of the standard being adjustably connected to the beam and the front arm connected to the plate C, and the handle-braces pivotally connected at their lower ends to the beam and at their upper ends to the handles, as set forth.

376,791. WIRE NAIL. WILLIAM A. SWEET, Syracuse, N. Y. Filed Sept. 27, 1886. Serial No. 214,673. (No model.)



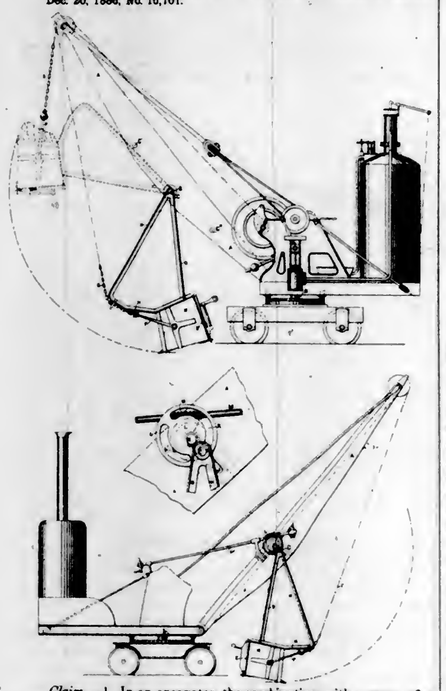
Claim.—A nail constructed with a three-cornered body and a three-cornered head, substantially as shown and described.

376,792. CLEVIS FOR PLOWS. LEWIS A. WEYBURN and GEORGE S. BRIGGS, Rockford, Ill. Filed May 18, 1887. Serial No. 238,626. (No model.)



Claim.—The combination, with the series of clevises herein shown and described, of a pair of draft-plates connected therewith by means of a pin, C^3, and a double hook, E, for maintaining said series of clevises in a substantially horizontal position, and thereby preventing a doubletree, G, and singletrees connected therewith from coming in contact with the heels of draft-animals, substantially as described, and for the purpose specified.

376,793. EXCAVATING AND MACHINERY THEREFOR. THOMAS WHITAKER, Horsforth, near Leeds, County of York, England. Filed May 11, 1887. Serial No. 237,871. (No model.) Patented in England Dec. 20, 1886, No. 16,701.



Claim.—1. In an excavator, the combination, with a crane, of an excavating device, R, arm D, and quadrant H, whereby a nearly vertical pull is converted into a pull almost parallel with the circular face of the cut.

2. In a portable excavator, the combination, with a crane, of a jib, A, capable of rotating about its vertical axis, a quadrant, H, pivotally secured to the jib, a bucket, a chain secured to the bucket and passing over the outer face of the quadrant, and means, substantially such as shown, for raising and lowering the quadrant and the bucket.

3. In an excavating apparatus, the combination, with a portable crane, of a jib, A, mounted thereon, a radius-bar, D, and a quadrant, H, swinging upon a common center, a hoisting-chain, and a bucket, all combined and arranged to operate substantially in the manner shown.

4. In an excavator, the combination, with a portable crane having a jib, A, of a radius-bar, D, and quadrant H, and a bucket fixed relatively to the bar D, substantially as shown.

5. In an excavator, the combination, with the jib A, of a radius-bar, D, pivoted thereto, a hoisting-chain and bucket, and a device, substantially such as shown, varying or changing the position of the pivot of the radius-bar, whereby the throw of the latter may be varied.

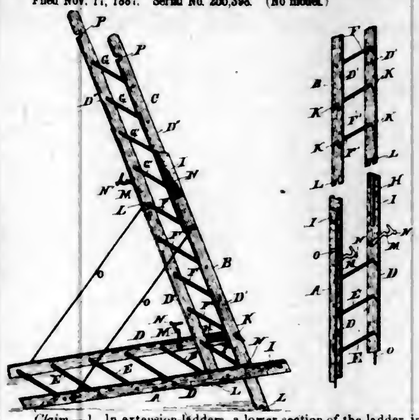
6. In an excavator, the combination of the jib A, pin C, and slot J with a hand-regulating device, whereby the position of the pin C in slot J, and consequently its distance from the face of the work, can at any time be adjusted.

7. In an excavating apparatus, the combination, with a portable crane, of a jib having a series of centers, C C C', and a quadrant, H, adapted to be applied to any one of said centers at will.

8. In an excavator, the combination, with a jib, A, provided with a slot, J, of a slotted eccentric journaled upon the jib, a pin or stud passing freely through the slots in the eccentric and jib, a radius-bar, D, mounted upon the pin or stud, and means for rotating or turning the eccentric.

9. In an excavator, the combination, with a jib, A, provided with a slot, J, of a slotted eccentric, L, provided with a worm-wheel and mounted upon the jib, a pin, as C, engaging the slots in the eccentric and jib, a shaft, M', and a worm, M, secured to the shaft and meshing with the worm-wheel.

376,794. EXTENSION-LADDER. HOSEA BARNS, Kenosha, Wis. Filed Nov. 17, 1887. Serial No. 255,398. (No model.)



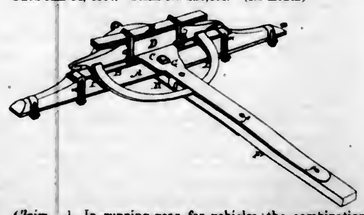
Claim.—1. In extension-ladders, a lower section of the ladder, in which the upper ends of the side bars are each provided with a recess, H, and with a metal plate, I, in combination with another section of the ladder, having its side bars at such a distance apart as to be adapted to just slide within the side bars of the next lower section of the ladder, and having the outer ends, K K, of its two lowest rounds extend beyond the side bars, forming stays adapted to enter the recesses H H, and being provided with recesses L L in the ends of its side bars, substantially as described.

2. In extension-ladders, a section of the ladder B and therein the rounds F F, the ends of which extend beyond the side bars, forming the stays K K, and the recesses L L in the lower ends of the side bars, in combination with the section A, the recesses H H in the upper ends of its side bars, with plates I I, secured to the ends of the side bars opposite to the recesses H H, and the hooks M M, pivoted to the side bars of the section A and adapted to engage the lowest round of the section C, substantially as described.

3. In extension-ladders, a section of the ladder B, constructed and adapted to slide inside of a section of the ladder A, the stays K K on the section B, adapted to enter the recesses H H in section A, and the side bars of section B, adapted to rest on the upper round of the section A, in combination with the hooks M M, pivoted to section A, which hooks are provided with knobs N and are adapted to engage the outer ends of the lower round, F', between the side bars of the section B and section A, substantially as described.

4. In extension-ladders, a foot-section, A, provided with recesses H H, plates I I, hooks M M, and braces O O, in combination with an upwardly-extending section, B, having stays K K entering recesses H H in section A, and being secured to foot-section A by the braces O O and hooks M M, substantially as described.

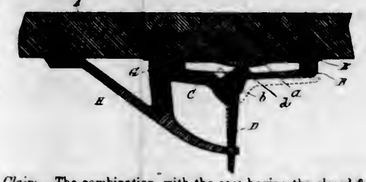
376,795. RUNNING-GEAR. STEPHEN BURDSALL and CHARLES THOMPSON, Fremont, Ohio, assignors to the Herbrand Co., same place. Filed Jan. 31, 1887. Serial No. 226,101. (No model.)



Claim.—1. In running-gear for vehicles, the combination, with the axle, reach, bolster, or head-block and king-bolt, located in rear of the axle, of the fifth-wheel plates B C, plate B having rearwardly-projecting arm through which the king-bolt passes, also having the segmental rub-irons extending in front and rear, the plate C having the continuous circle rub-iron and perforated lugs for the clips *d d*, and the cross-bar extending rearward of the circle rub-iron, and having holes for securing it to the reach, and also the hole *g* for the king-bolt, all constructed and operating substantially as described.

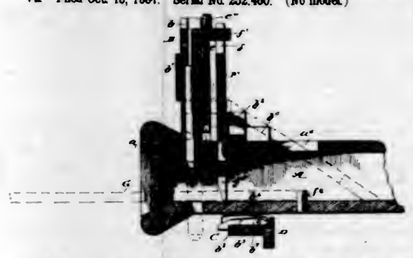
2. In running-gear for vehicles, the combination, with the axle, reach, bolster, or head-block and king-bolt, located in rear of the axle, of the fifth-wheel plates B C, plate B having rearwardly-projecting arm through which the king-bolt passes, also having the segmental rub-irons extending in front and rear, the plate C having the partial circle rub-iron and the perforated lugs for the clips *d d*, and the cross-bar provided with the hole *g* for the king-bolt, and having two branches extending rearwardly and pierced with holes for securing them to the reaches, a bottom plate, H, having perforated lugs *h h* at each end, and a central rearwardly-projecting arm through which the king-bolt passes, all constructed to operate substantially as described.

376,796. HOLDBACK. DANIEL A. CAMP, Barre, Vt. Filed Apr. 7, 1887. Serial No. 234,074. (No model.)



Claim.—The combination, with the case having the closed front, and also having the standard G, provided with the brace H, of the pivoted arms C D, having the cam projection *d*, the spring *a*, and the cap E, said cap having an opening through which the standard G passes, as set forth.

376,797. CAR-COUPLING. WILLIAM C. CHAMBERLAIN, Cedar Bluff, Va. Filed Oct. 15, 1887. Serial No. 252,460. (No model.)



Claim.—1. As an improvement in car-couplings of the class herein described, the frame rigidly secured by means of a clamp to the upper side of the draw-head and the sliding coupling-pin secured therein, substantially as shown and described.

2. The frame rigidly secured to the draw-head, the sliding coupling-pin working in said frame, and the supporting-arm for retaining said pin in an elevated position.

3. The combination, with the draw-head having a transverse slot or opening therein, of the vertical frame having grooves or guideways, the sliding coupling-pin, and the clamp securing said frame, substantially as shown and described.

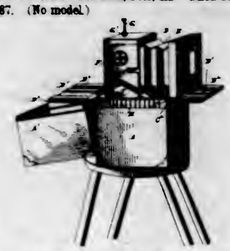
4. The combination, with the draw-head, the vertical frame having right-angular arms, and the coupling-pin, of the clamp having its upper hooked ends securing said arms, and the spring-key having a step-like end, and a spring-pressed tongue provided with a shouldered end, substantially as shown and described.

5. The combination, with the draw-head having a slotted upper wall, of the vertical frame, the sliding coupling-pin, and the supporting-arm pivotally secured to the pin-carrying frame, substantially as shown and described.

6. The combination, with the draw-head, of the vertical frame having grooves or guideways, the coupling-pin, the frame having downwardly-projecting parallel arms, the supporting-arm having a U-shaped frame-like end pivoted to said pin-carrying frame, and the clamp securing said vertical frame, all constructed and arranged substantially as shown and described.

7. The combination, with the draw-head having slotted sides, of the beveled block provided with projecting arms and the securing-blocks, arranged as shown and described.

376,798. COMBINED PHOTOGRAPHIC CAMERA AND PLATE-HOLDER. JOSEPH A. DAVISON, Polo, Ill. Filed July 2, 1887. Serial No. 243,267. (No model.)



Claim.—1. The combination of the box A, provided with compartments C and ways C^2, and the camera D, provided with folding sides D' and the flanges D^3, and also aperture D^4, and means, substantially as shown, for drawing the plates B from the box A into the camera D when the latter is closed, substantially as shown, and for the purpose described.

2. The combination of the box A, provided with ways C^2 and compartments C, and engaging-marks H, camera D, provided with the folding sides D', flanges D^3, slot D^4, and pointers J, and means, substantially as shown, for drawing the plates B up into said camera through said opening D^4 and returning the same, for the purpose specified.

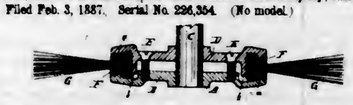
3. The combination of the box A, provided with ways C^2 and compartments C, adapted to hold the plates B, the camera D and folding sides D', provided with flanges D^3, adapted to be seated in and traverse said ways C^2, said camera being further provided with a longitudinal slot, D^4, adapted to admit the passage of the plates B, respectively, and means, substantially as shown, for drawing plates B from the compartments C in the said camera and returning the same, substantially as shown, and for the purpose described.

376,799. AUTOMATIC AIR-VALVE. AXEL H. ERICSSON, Philadelphia, Pa., assignor to Stanley G. Flagg & Co., same place. Filed July 28, 1887. Serial No. 245,577. (No model.)



Claim.—In an automatic air-valve, in combination, an air vent or escape pipe provided as to its outer surface with a seat, and adapted at one end to be attached to a radiator, a cap contracted at its lower end, and which in its lowest position rests on the top of said pipe, and a device on which said cap, in positions intermediate between its lowest position and the position it occupies when the valve is closed, rests, and by which it is vertically adjustable, said cap, when lifted, having a part of its surface in close hermetical contact with the seat on the outer surface of said pipe, as specified.

376,800. SCRATCH-BRUSH. HENRY R. FRIEBIS, Detroit, Mich., assignor of one-half to the Detroit Patent Brush Company, same place. Filed Feb. 3, 1887. Serial No. 226,354. (No model.)



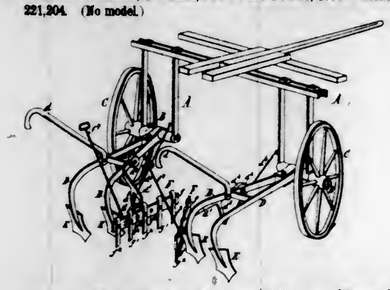
Claim.—1. The combination, with the jaw B, provided with inwardly-extending projections, and the removable jaw D, provided with like projections, of the rubber ring carrying the wires G and held between the outer ends of said jaws, substantially as described.

2. The combination, with the jaws B D, formed with projections *a* and having their inner faces converging from an interior point, of the rubber ring E, carrying the wires G and secured between the converging faces of said jaws, substantially as described.

3. The combination, with the shaft C and the jaw B, fixed thereon and formed with projections *a*, of the movable jaw D, formed with projections *a* and annular ledge *b*, the inner faces of said jaws converging from the shaft outwardly, and the rubber ring F, carrying the wires G and held between the converging faces of said jaws, substantially as and for the purpose specified.

376,801. HARROW-TOOTH AND HARROW ATTACHMENT.

WILLIAM H. HOBSON, La Monte, Mo. Filed Dec. 10, 1886. Serial No. 221,204. (No model.)



Claim.—1. The combination, with a straddle-row cultivator having cultivator-shovels on each side of the row of plants being cultivated, of two symmetrical oblique harrows, F F, having arms d', pivoted, respectively, to the cultivator-bars and located between the respective inner cultivator-bars and the row of plants, and each adapted for harrowing a sloped surface of the ridge of earth about the row of plants, substantially as and for the purpose described.

2. The oblique harrow-bar f, having its straight and twisted sharpened teeth all on a line, each alternate tooth twisted or each alternate tooth straight, and each tooth formed with an integral offset, f^4, which is oblique with respect to the upper edge of said bar f, and confined by a bolt, f^3, in combination with the pivoted arm d' and cultivator-bar D, the arm d' being pivoted to the bar D, substantially as and for the purpose described.

3. The oblique harrow-bar f, having its straight and twisted teeth f f^2 arranged on a line, and a straight tooth succeeded by a twisted tooth, or a twisted tooth succeeded by a straight tooth, whereby both the straight and twisted teeth have their cutting-edges set diagonally to the line of draft, one set in the direction of the line of the harrow-bar and the other set across said line of the bar, substantially as and for the purpose described.

4. The combination of a cultivator-bar, arm d', harrow F, and an adjusting disk-coupling, G, having beveled serrated surfaces, substantially as and for the purpose described.

5. The combination of the oscillating arm d' of harrow F, the cultivator-frame A, and the spring d^4, substantially as and for the purpose described.

6. The combination, with a cultivator-bar, D, of a harrow, F, on an oscillating arm, d', said harrow being arranged between the bar D and row of plants, and serving the twofold purpose of harrowing the same and fending the plants, substantially as described.

7. The combination, with the harrow-bar f and its pivoted arm d', and with the cultivator-bar D and fastening-bolt, of the coupling G, consisting of the bevel-faced disks g, having serrated surfaces, as g^3, and equidistant lugs g', with intersecting spaces between them, whereby the harrow-bar, with its teeth, can be set more or less inclined to the horizon, and also more or less oblique to the row of plants and the line of draft, substantially as and for the purpose described.

8. The combination of the coupling G, having bevel-faced disks which are provided with suitable means by which they are adjusted relatively to each other, as described, with the harrow-tooth bar f, whereby the harrow-bar, with its teeth, can be set more or less oblique to the line of draft or row of plants, substantially as and for the purpose described.

9. In combination with a harrow-bar, the harrow-tooth formed above its pivot-connection with an offset, f^4, integral with the body of the tooth and set at an angle oblique to the edge of the harrow-bar to which it is attached, and to the length of said bar, so that when the tooth stands inclined it is sustained by one side of said offset bearing against the bar, and when it is set vertical it is also sustained by the opposite side of said offset bearing against said bar, substantially as described.

376,802. METHOD OF MAKING PHOTOGRAPHIC PICTURES.

ALFRED A. HART, New York, N. Y., assignor to himself, Arthur C. Rowe, Orange, N. J., and George C. Leavenworth, Louisville, Ky. Filed July 27, 1887. Serial No. 245,461. (Specimens.)

Claim.—1. The process of photographic copying, consisting of, first, throwing an image of the thing to be copied upon a screen in a dark-chamber, the surface of which screen is composed of actinic and non-actinic parts, and, second, taking a photograph of such image as appearing on the screen.

2. The process of making photographic lined pictures, consisting of, first, throwing an image of the picture upon a screen in a dark-chamber, the surface of which screen is subdivided more or less minutely into actinic and non-actinic lines or dots, and, second, taking a photographic picture of such image.

3. The process of making photographic lined pictures, consisting of, first, throwing an image of the picture upon a screen in a dark-chamber, the surface of which screen is subdivided more or less minutely into actinic and non-actinic lines or dots; second, varying by manipulation the relative proportions of the actinic and non-actinic subdivisions of the screen at different points on the image, so as to modify the lights and shadows therein as desired, and, third, taking a photographic picture of such image as so treated.

4. The process of making photographic lined pictures, consisting of, first, throwing a negative image of the picture upon a screen in a dark-chamber, the surface of which screen is subdivided more or less minutely into actinic and non-actinic lines or dots; second, varying by manipulation the relative proportions of the actinic and non-actinic subdivisions of the screen at different points on the image, so as to modify the lights and shadows therein as desired, and, third, taking a photographic picture of such negative image as so treated.

5. The process of making photographic lined pictures, consisting of, first, throwing an image of the picture upon a screen in a dark-chamber, such screen having a rough surface, the elevations of which are made actinic and the depressions non-actinic, (or vice versa;) second, varying the relative proportions of the actinic and non-actinic subdivisions of the screen at different points on the image, by rubbing over it chalk or other friable material, so as to modify the lights, shadows, or design of the screen, and, third, taking a photographic picture of such image as so treated.

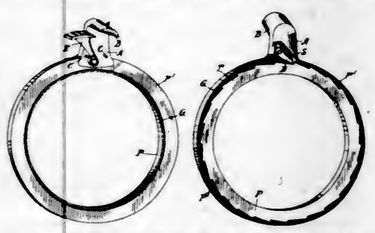
6. The process of making photographic lined pictures, consisting of, first, throwing a negative image of the picture upon a screen in a dark-chamber, the surface of which screen is subdivided more or less minutely into actinic and non-actinic lines or dots; second, varying by manipulation the relative proportions of the actinic and non-actinic subdivisions of the screen at different points on the image, so as to modify the lights and shadows therein as desired; third, taking a photographic picture of such image as so treated; fourth, throwing upon the screen an image of the resulting lined positive pincture, and, fifth, taking a photographic picture of such image.

7. The process of preparing photographic pictures for printing in several colors, consisting of, first, throwing an image of the entire picture upon a non-actinic screen in a dark-chamber; second, making actinic that portion of the screen which corresponds to the portion of the picture to be printed in a given color, and, third, taking a photographic picture of the partial image thereby made to appear upon the screen.

8. The process of preparing photographic pictures for printing in several colors, consisting of, first, throwing an image of the entire picture upon a non-actinic screen in a dark-chamber, the surface of which screen is composed of more or less minute elevations and depressions; second, making actinic either the elevations or depressions upon that portion of the screen which corresponds to the portion of the picture to be printed in a given color, and, third, taking a photographic picture of the lined partial image thereby made to appear upon the screen.

376,803. AUTOMATIC HORSE-TIE.

ROBERT HYNES, London, Ontario, Canada. Filed May 4, 1887. Serial No. 237,144. (No model.)



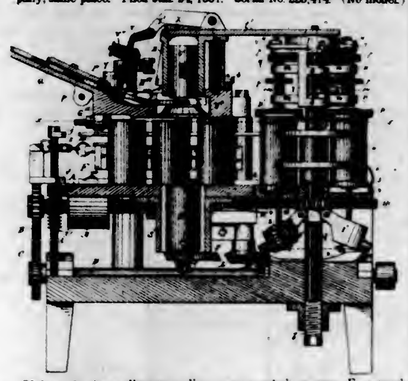
Claim.—1. The plate P', formed with a boss or stud, B, and an eccentric-grip, E, pivoted on said plate, in combination with a plate, P, formed with a ratchet, T, a dog, D, and spring S, substantially as shown and described, and for the purpose specified.

2. The plate P', formed with a boss or stud, B, and an eccentric-grip, E, pivoted on said plate, and pins C C, in combination with the plate P, formed with a ratchet, T, a dog, D, and spring S, substantially as shown and described, and for the purpose specified.

3. The plate P', formed with a boss or stud, B, and an eccentric-grip, E, pivoted on said plate, and pins C C, in combination with the plate P, formed with a ratchet, T, packing G, dog D, and spring S, substantially as shown and described, and for the purpose specified.

376,804. CAN CRIMPER AND CAPPER.

MATHIAS JENSEN, Astoria, Oreg., assignor of one-half to the Jensen Can Filling Machine Company, same place. Filed Jan. 24, 1887. Serial No. 225,414. (No model.)



Claim.—1. An endless traveling carrying-belt, a stop, E, extending across it to change the direction of the cans, and arms swinging over the belt, whereby the delivery of the cans from the belt to the feeder is rendered exact, substantially as herein described.

2. The endless carrying-belt upon which the cans are placed, the transverse stop extending over the belt at a point where the cans are received by the feeder, the feeder, and the arms swinging across the belt, so as to stop the cans and determine their time of delivery to the feeder, in combination with connecting links or devices extending from these arms to the feeder, so that they may be moved backward by the movement of the feeder to allow the cans to advance upon the belt, substantially as herein described.

3. In combination with a transverse belt, the feeder having the projecting arms between which the cans are received from the belt and the actuating devices by which the motions of the feeder are produced, substantially as herein described.

4. In combination with a transverse belt, the capping-table, and crimper, the feeder having the projecting arms to receive the cans and transfer them from the belt to the capping-table and from the capping-table to the crimper, successively, together with the mechanism by which its movements are produced, substantially as herein described.

5. The inclined chute into which the caps are placed and a stop extending across said chute, so as to prevent the caps from moving downward, in combination with a trigger extending across the path of the cans as they are moved toward the capping-table, said trigger being connected with the stop, so that as it is moved backward by the passage of the can it withdraws the stop to allow a cap to move down the chute, substantially as herein described.

6. The inclined cap-carrying chute with the stop and releasing-trigger actuated by the movement of a can toward the capping-table, in combination with the spring-holder R, substantially as herein described.

7. The inclined cap-carrying chute with its stop actuated by the passage of a can toward the capping-table, the cap-holding spring extending below the stop, and the oscillating forked arm by which the caps are removed from the spring and delivered into position to be placed upon the can, substantially as herein described.

8. The inclined cap-carrying chute with its stop, spring, and the feeding-arms, in combination with the transversely-moving slides having the countersink to receive the caps and hold them while the can is being advanced toward the cap, substantially as herein described.

9. The vertically-moving plunger upon which the cans are delivered by the feeder, in combination with the conical guide situated above the cans, and the transversely-moving slides upon which the caps are received and held, with a mechanism by which the slides are withdrawn as the can enters the cap, substantially as herein described.

10. The vertically-moving plunger by which the can is raised to receive the cap, and the guide into which the upper end of the can enters the transversely-moving cap-holding slides, in combination with the second plunger moving vertically above the cap and following it down by gravitation or otherwise, so as to steady the can in its descent after the cap has been applied, substantially as herein described.

11. The vertically-moving plunger upon which the can is received, a carrier for placing the can upon the plunger, and a mechanism by which this plunger is reciprocated vertically in combination with a second plunger, which rests upon the top of the cap and steadies it while descending, and a mechanism for raising the second plunger before the arrival of the next cap, substantially as herein described.

12. The receiving-table and means for removing the cans therefrom, in combination with the vertically-revolving shaft with its driving-gear, the chambered rotating heads for receiving the caps and upper ends of the capped cans, gearing by which motion is imparted to said heads, and the vertically-moving disk by which the can is raised and the cap held within the rotating head, substantially as described.

13. The rotating heads, the shaft l, and means for rotating said heads, a table supported on said shaft, and vertically-moving disks carried by said table, in combination with the cams 2 and the lever-arms I', carried by said shaft, traveling over the cams and raising the disks to force the caps into the rotating heads, substantially as and for the purpose described.

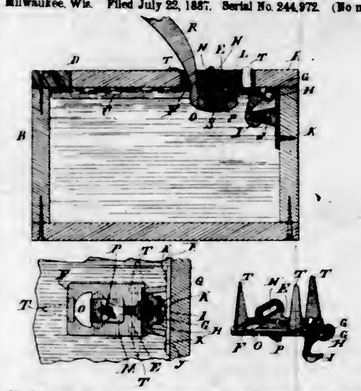
14. The rotating heads, the vertical shaft l, means for rotating said shaft and heads, the receiving-table on said shaft, and vertically-moving disks mounted in the table, in combination with the hangers s, carried by the vertical shaft, crimping-wheels mounted in said hangers, and the cams for operating the crimping-wheels, substantially as herein described.

15. The vertical shaft l, the receiving-table thereon, and guiding-plates onto which the cans are received, in combination with rotating heads carried by said shaft, vertically-moving disks mounted in said table and receiving the bottoms of the cans, in combination with the hangers s, carried by said shaft, crimping-wheels mounted in the hangers having arms traveling in contact with a cam, an adjusting mechanism for the same, and means for actuating the vertical shaft, rotating heads, and vertically-moving disks, substantially as described.

16. The intermittingly-operating can-feeder, the traveling belt from which the cans are removed by the carrier, a mechanism for feeding the caps and placing them upon the cans, and a crimping mechanism, in combination with a driving-shaft, gearing, and intermediate mechanisms by which the whole are driven in unison with relation to each other, substantially as herein described.

376,805. BOX-FASTENER.

GEORGE LINDER and CONRAD FARNER, Milwaukee, Wis. Filed July 22, 1887. Serial No. 244,972. (No model.)



Claim.—1. In a cover-retainer and seal for boxes and doors, the combination, with the cover or door, of a lever-retaining bracket, F, angular lever E, centrally pivoted to said bracket F upon the inner side of the cover or door and provided upon its inner end with the retaining-hook I and upon its outer end with a seal-retaining aperture, N, seal M, formed of U-shaped flexible metal, and adapted, when sealing the lock, to engage upon the downward-projecting lug P, downward-projecting lug P, formed integral with said bracket F, and cover-retaining bracket J, affixed to the inner walls of the inclosure and adapted to engage with the retaining-hook I of the lever E, substantially as and for the purpose specified.

2. In a cover-retainer for boxes and doors, the combination of the cover A, provided with aperture L, bracket F, provided with retaining-prongs T, cast integral therewith and turned downward upon and engaging the upper outer surface of said cover upon the sides of said aperture L, a single angular two-armed lever, E, pivoted to said bracket F beneath the lower surface of the cover A, outturned retaining-hook I, and keeper J, rigidly affixed to the inner wall of the inclosing case or box and adapted to engage said outturned retaining-hook I, substantially as and for the purpose specified.

3. In a cover-fastener and seal, the combination of the bracket F, provided with downward-projecting seal-retaining lug P, lever E, centrally pivoted to said bracket and adapted to engage at its lower end when locked in a retaining-keeper and provided at its upper outer end with a seal-retaining aperture, N, seal M, suspended from said

seal-retaining aperture and extending beneath the lower surface of said bracket F, and adapted to engage upon said seal-retaining lug P, and lever R, adapted when sealing said lock to extend downward or inward beneath the inner surface of said bracket F and against said metallic seal, whereby when said lever is inclined at its outer end away from said locking mechanism its inner end is brought in contact with and forces said seal against and around said seal-retaining lug l', all substantially as and for the purpose specified.

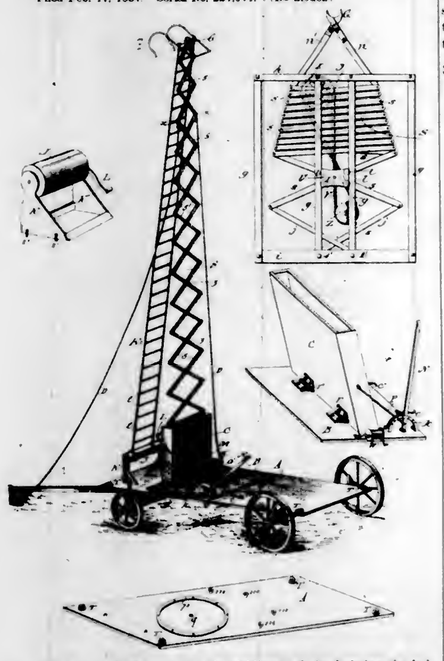
376,806. HOOK FOR SINGLETREES. JAMES MACPHAIL and FRANKLIN M. NEEDHAM, Rockford, Ill. Filed June 3, 1887. Serial No. 240,135. (No model.)



Claim.—1. In a singletree-hook, the combination, with the herein-described ferrule, of the wedge connected therewith and extending inward edgewise in the direction of the longitudinal center of said ferrule when said ferrule and wedge are formed and used in a single piece, as herein shown, substantially as set forth.

2. The combination, with the herein-described ferrule having lugs projecting from the outer end thereof in a direction substantially parallel to the axis of said ferrule, of a wedge included lengthwise between the free ends of said lugs and extending inward edgewise in the direction of the longitudinal center of said ferrule, and the spurs projecting from the outer end of said ferrule and converging toward the axis thereof, substantially as described, and for the purpose set forth.

376,807. FIRE-ESCAPE. ANDREW R. MOORE, Charlotte, Mich. Filed Feb. 17, 1887. Serial No. 227,971. (No model.)



Claim.—1. In fire-escapes, the folding rack for hoisting the ladder, operated by a rope and pulley and roller, in combination with the oscillating case mounted upon a rotating table bolted to the platform, substantially as set forth and described.

2. In fire-escapes, the folding rack made of slats bolted in the center and ends and attached below to an oscillating case and terminating on the top in a clasp for carrying one end of a ladder and hinged at the bottom to a rotating table bolted pivotally at its center to a mounted platform, substantially as set forth and described.

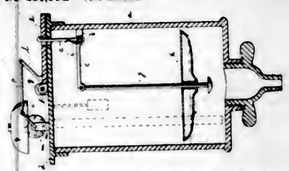
3. In fire-escapes, the folding rack bolted at its lower end to an oscillating case, which in turn is bolted to a turning table having a spool on each edge and a lever for oscillating the case containing the rack, in combination with a platform to which the turning table is bolted, substantially as set forth and described.

4. In fire-escapes, the folding rack having two guy-ropes attached near its top, bolted to a case attached to a rotating table pivotally connected to a platform, in combination with a ladder, substantially as set forth and described.

376,808. HAIR-TONIC. A. FELIX PRATT, Montpelier, Vt. Filed Oct. 21, 1887. Serial No. 253,027. (No specimens.)

Claim.—The herein-described composition of matter to be used as a hair-restorative, consisting of water, eggs, glycerine, sulphur, and alcohol, in the proportions specified.

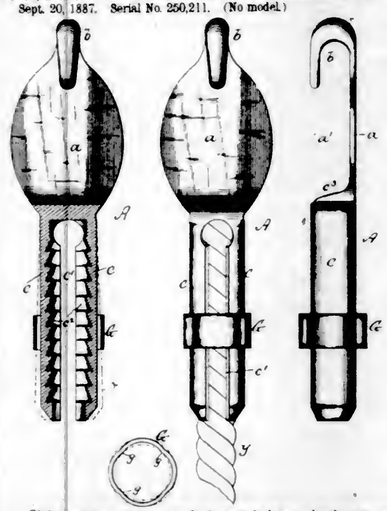
376,809. LUBRICATOR. WILHELM ANDERSCH, Brooklyn, N. Y., assignor of one-half to Wilhelm Reisert, same place. Filed Oct. 3, 1887. Serial No. 251,304. (No model.)



Claim.—1. The combination of cup *a* with float *k*, rod *j*, lever *c*, and with pivoted plate *c'* engaged by said lever, and with spring *A*, substantially as specified.

2. The combination of an oil-cup with a pivoted spring-plate, lever, and float, and with a wheel having pins and connected to the spring-plate, and with a gong and clapper, the clapper being connected to a sleeve having a flexible extension that is engaged by the pins of the wheel, substantially as specified.

376,810. TUG-HOOK. JOHN A. BRILL, Philadelphia, Pa. Filed Sept. 20, 1887. Serial No. 250,211. (No model.)

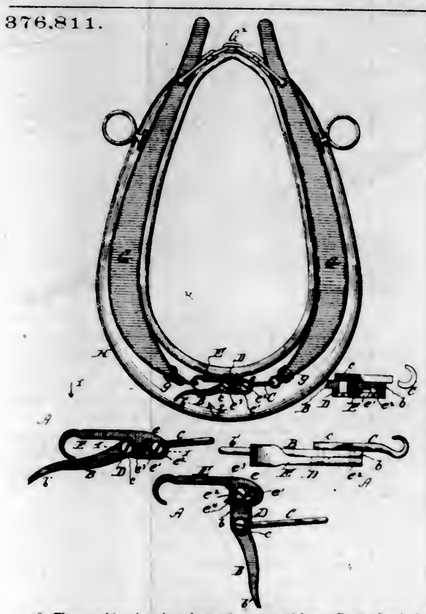


Claim.—A tug, A, composed of central plate, *a*, having at one end an integral hook, *b*, and integral flexible semi-tubular clamping-jaws *c c*, serrated as at *c²*, and an exterior sliding sleeve, G, substantially as set forth.

376,811. HAME-FASTENER. JOHN A. BRILL, Philadelphia, Pa. Filed Nov. 18, 1887. Serial No. 255,479. (No model.)

Claim.—1. A hame-fastener composed of a lever, B, having separately pivoted thereto at one end and upon opposite sides of the same oppositely-directed hooks C and E, the latter having a curved recess, *c²*, and an elongated slot, *c'*, substantially as set forth.

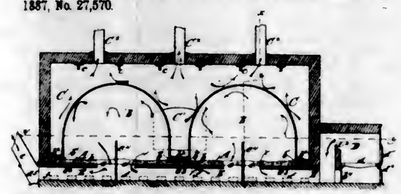
376,811.



2. The combination, in a hame-fastener, of lever B, the hook C, pivoted upon one side of lever B, anti-friction roller journaled on the pivot-stud for hook C on the opposite side of lever B, and a hook, E, having recess *c²* and an elongated slot, *c'*, for a separate pivot, *c³*, securing said hook E to lever B to admit of them longitudinally moving in opposite directions, substantially as set forth.

3. The combination, in the hame-fastener herein described, of a lever, oppositely-directed hooks having separate pivotal connections with one end of said lever on opposite sides thereof, one of said hooks and the lever and the other hook being adapted to move longitudinally in opposite directions, and a stud on said lever engaging with a recess on one of said hooks, substantially as set forth.

376,812. HOT-AIR FURNACE. ROBERT A. CHERRYBROUGH, New York, N. Y. Filed Feb. 1, 1887. Serial No. 226,120. (No model.) Patented in England July 2, 1887, No. 9,410; in France July 4, 1887, No. 184,395; in Belgium July 4, 1887, No. 78,060, and in Canada Sept. 3, 1887, No. 27,570.



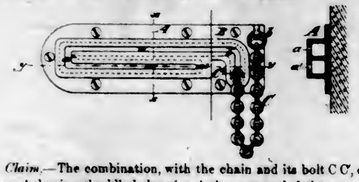
Claim.—1. The combination, with a base or foundation and a metal chamber supported thereon, of a casing surrounding such chamber and having an inlet for cold air and an outlet for heated air, a furnace for supplying heat external to the casing, and a flue for products of combustion extending from the furnace through the base and beneath the chamber and communicating with the interior of the chamber, substantially as herein described.

2. The combination, with the base A and the chamber B, supported thereon, of the air-casing having a cold-air inlet and a heated-air outlet, an external furnace, D, and a flue, E, leading from the furnace through the base and intercepted at the opening under the chamber B by a deflector, substantially as herein described.

3. The combination, with the base or foundation and a series of two or more dome-shaped metal chambers supported thereon, of a casing inclosing said base and chambers and having an inlet for cold air thereto and an outlet for heated air therefrom, a furnace external to said casing, and a combustion-flue extending from the furnace through the base and communicating with the chambers in succession, substantially as herein described.

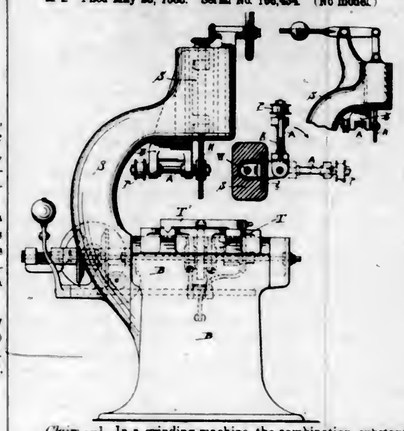
4. The combination, with the base or foundation A and the chamber B, of a casing, C, surrounding said chamber and leaving a space, *c'*, between it and the base or foundation, and provided with air-inlets into said space below the top of the base or foundation, and with a hot-air-escape pipe, a furnace, and a flue, E, extending from the furnace through the base or foundation directly beneath the chamber, and having inlet and outlet openings *c' c²*, whereby it communicates with said chamber, substantially as herein described.

376,813. DOOR-CHECK. CLEMENT CLEVELAND, New York, N. Y. Filed Nov. 14, 1887. Serial No. 255,060. (No model.)



Claim.—The combination, with the chain and its bolt C C', of the keeper A, having the blind slot *a'* and the open-ended slot *a*, communicating with each other at their inner ends, and the hanger or chain-plate B, to which the chain may be secured, and which has the hanging slot or pocket *b'*, the mouth of which is opposite the open-ended slot in the keeper, and in which the bolt is held by gravity, substantially as herein described.

376,814. GRINDING-MACHINE. JOHN A. COLEMAN, Providence, R. I. Filed May 23, 1885. Serial No. 166,434. (No model.)



Claim.—1. In a grinding-machine, the combination, substantially as described, of a sliding table for supporting material to be ground and an overhanging grinding-wheel which is supported in a frame and is thereby pivoted at right angles to its axis, whereby said wheel may be adjusted for service either with its axis parallel with or at right angles to the path of the table.

2. In a grinding-machine, the combination, substantially as described, of a sliding table for supporting material to be ground, an overhanging grinding-wheel supported in a frame and thereby pivoted at right angles to the axis of the wheel, and means, substantially as described, for varying the space between the grinding-face of the wheel and the table.

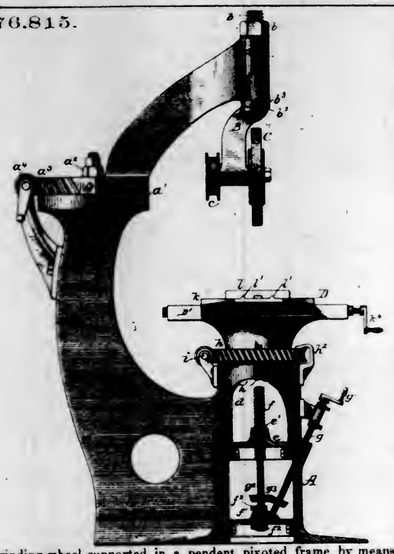
3. In a grinding-machine, the combination, substantially as described, of a grinding-wheel supported in a frame and thereby pivoted at right angles to its axis, and a work-supporting sliding table below the wheel and mounted upon a second sliding table, affording a line of movement which is at right angles to the path of the work-supporting table.

4. In a grinding-machine, the combination, substantially as described, of a sliding table for supporting material to be ground and an overhanging grinding-wheel having an unobstructed grinding-periphery and supported in a frame and thereby pivoted at right angles to its axis and adjustable toward and from the surface of said table and at right angles thereto.

376,815. GRINDING-MACHINE. JOHN A. COLEMAN, Providence, R. I. Filed Apr. 16, 1887. Serial No. 235,079. (No model.)

Claim.—1. In a grinding-machine, the combination, substantially as hereinbefore described, of a sliding work-table, an overhanging

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grinding-wheel supported in a pendent pivoted frame, by means of which the wheel has an unobstructed periphery and is pivoted at right angles to its axis, and means for lifting and lowering said table and maintaining it in position.

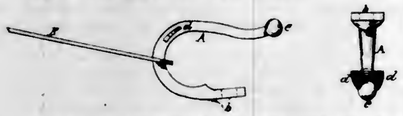
2. In a grinding-machine, the combination, substantially as hereinbefore described, of a sliding work-supporting table which is non-rotative in itself, a rotative bed on which said table is mounted, a pendent grinding-wheel above said work-supporting table, and means for varying the space between the grinding-face of said wheel and the table.

3. In a grinding-machine, the combination, substantially as hereinbefore described, of a rotative bed, a work-supporting table non-rotative in itself, but fitted to a transverse slide on said bed, a pendent grinding-wheel mounted in bearings above said table and supported by a suitable bracket, and means for raising and lowering said bed and maintaining it in position.

4. In a grinding-machine, the combination, substantially as hereinbefore described, of a rotative bed, a work-table non-rotative in itself, but fitted to a transverse slide on a second sliding table interposed between said rotative bed and the work-supporting table, a pendent grinding-wheel mounted in bearings above the work-supporting table, and means for raising and lowering said bed and tables and maintaining them in position.

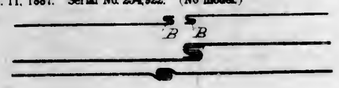
5. In a grinding-machine, the combination, substantially as hereinbefore described, of the grinding-wheel, the sliding table beneath said wheel, means for varying the space between the grinding-face of said wheel and the table, and a longitudinally-tilting work-supporting frame mounted upon said sliding table and supported at one end by an adjusting-cam rotatively controlled by a worm and gear.

376,816. CHECKREIN-HOLDER. JOHN M. CRAWFORD, Philadelphia, Pa. Filed June 16, 1887. Serial No. 241,565. (No model.)



Claim.—The herein-described checkrein-holder, provided with the projections *d*, extending laterally from the body portion of the holder, and adapted to prevent the accidental detachment of the checkrein, substantiallly as shown and described.

376,817. SEAM FOR SHEET METAL. EDWARD J. DOLAN, Philadelphia, Pa., assignor to William Hacker, trustee, same place. Filed Nov. 11, 1887. Serial No. 254,922. (No model.)



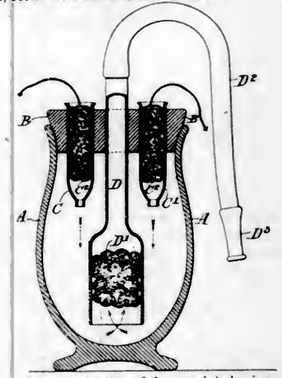
Claim.—The herein-described seam for sheet-metal cans, consisting of the two adjacent S-shaped folds B B, interlocked, as described, and provided with a covering or coating of solder upon one of the faces of the seam, substantially as described

376,818. ELECTRICAL CONDUCTOR. THOMAS EGLESTON, New York, N. Y., assignor to the Plume & Atwood Manufacturing Company, Waterbury, Conn. Filed Jan. 5, 1883. Serial No. 81,071. (No model.)



Claim.—A wire or conductor having applied directly to its surface an insulating covering of fibrous material impregnated with a liquid fireproofing material composed of metallic oxide or oxides and a binding material, the impregnated fibrous material forming of itself the insulating covering for the wire, and also having applied to it an external water-proof covering of lead or fusible metal as a protection to the insulating material, substantially as herein described.

376,819. APPARATUS FOR INHALING MEDICINAL VAPORS, &c. FREDERICK H. GLEW, 30 Conduit Street, Bond Street, County of Middlesex, England, assignor to Thomas Greenish, same place. Filed Sept. 27, 1887. Serial No. 250,845. (No model.)



Claim.—The combination of the vessel A, having a removable stopper, B, the tubes C C, for containing separate remedial agents fitted to openings in said stopper, and the suction-fube D, also fitted to said stopper, and having its inner end enlarged to form a receptacle for a sponge, substantially as herein described.

376,820. STEAM-BOILER-TUBE CLEANER. PAUL H. GRIMM, Glen Cove, N. Y., assignor of one-half to John Duryea, same place. Filed Apr. 11, 1887. Serial No. 234,327. (No model.)



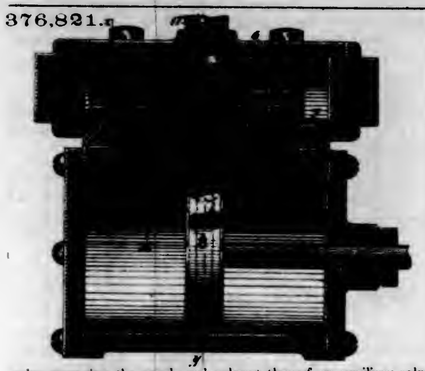
Claim.—1. A tube-cleaner herein described, consisting of a single casting comprising a suction-tube, A, a combining-chamber, B, and a forcing-tube, C, and having a surrounding steam-belt, D, the outer wall of which is solid and imperforate, and which communicates with the combining-chamber by a circular series of valveless and permanently-open jet-apertures, *d'*, of substantially cylindric bore, and having a handle, E, extending rearwardly beyond the suction-tube, substantially as herein described.

2. The tube-cleaner herein described, comprising the suction-tube A, with its side inlets, *e*, for air, the combining-chamber B, and the forcing-tube C, and having a steam-belt, D, communicating with its interior by the circular series of steam-jet openings *d'*, and a handle, E, inserted in the end of the suction-tube and projecting rearward therefrom, substantially as herein described.

376,821. FLUID-PRESSURE MOTOR. WILLIAM R. HARRIS, Greenville, assignor to William L. Deming, Salem, Ohio. Filed Sept. 24, 1887. Serial No. 250,553. (No model.)

Claim.—1. The combination of a cylinder, a main or distribution

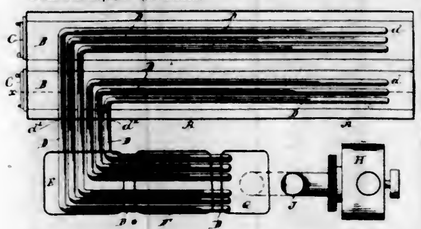
376,821.



valve governing the supply and exhaust thereof, an auxiliary valve governing the supply and exhaust of motive fluid to and from the main valve, and a series of ports located, substantially as described, so as to alternately admit and exhaust motive fluid from the cylinder to and from opposite ends of the auxiliary valve, and thereby establish communication between opposite ends of the main valve and the supply and exhaust pipes alternately, substantially as set forth.

2. The combination of a cylinder provided with induction and exhaust passages, supplemental valve-supply ports leading from the cylinder to its valve-face, and valve exhaust-ports leading from the induction-ports to the valve-face, a main distribution-valve having pistons at its ends governing the supply and exhaust of the cylinder, said valve having a seat for an auxiliary valve, a central exhaust-passage, ports so located as to communicate alternately with the valve-supply and valve-exhaust ports of the cylinder and ports leading from the auxiliary valve-seat to opposite ends of the main valve, and an auxiliary valve fitting on the main valve and provided with a central exhaust-chamber governing communication between the exhaust-passage of the main valve and the ports leading to the ends thereof, substantially as set forth.

376,822. SMOKE-CONSUMING FURNACE. REGINALD W. HEWITT, Birmingham, County of Warwick, England. Filed Feb. 28, 1887. Serial No. 229,244. (No model.)



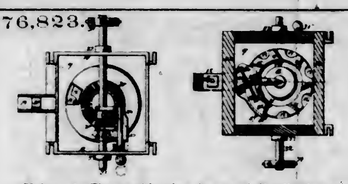
Claim.—1. In combination with the boiler and its heating-flues, a series of independent tubes connected to said heating-flues at their rear ends and a suction or exhaust apparatus in communication with said tubes, whereby air is drawn into and through said heating-flues, substantially as and for the purpose set forth.

2. In combination with the boiler and its heating-flues, a series of independent tubes connected to the rear ends of said heating-flues and extending through the water-space of the boiler and protruding therefrom, and an exhaust or suction apparatus in communication with said tubes, substantially as and for the purpose set forth.

3. In combination with a boiler and its heating-flues, the independent tubes D, connected to the rear ends of said heating-flues and extending through the water-space of the boiler, a water-tank exterior of the boiler, through which said tubes pass, and a suction apparatus, substantially as set forth.

4. The boiler and its heating-flues, in combination with a series of independent tubes connected to the rear ends of said heating-flues and extending through the water-space of the boiler, an air-tight water-vessel, G, into which the exhausted air is discharged, and a suction apparatus in communication with said vessel G, substantially as set forth.

376,823. GRAIN-DRILL. JAMES H. JONES, Rockford, Ill., assignor to Emerson, Talcott & Company, same place. Filed July 7, 1887. Serial No. 243,646. (No model.)



Claim.—1. The combination, in a seed-distributing wheel, of peripheral seed-openings and an annular groove within the seed-openings on its upper face, substantially as and for the purpose set forth.

2. The combination, in a seed-distributing wheel, of peripheral seed-openings, an annular groove within the seed-openings on its upper face, and grooves in its upper face extending from the annular groove to the periphery of the wheel, substantially as and for the purpose set forth.

3. The combination of a recessed bottom to the seed-box and a seed-distributing wheel to rotate centrally within the recess of the seed-box bottom, said seed-distributing wheel having peripheral openings, which, in connection with the annular wall of the recess, form seed-cells, substantially as and for the purpose set forth.

4. The combination of a recessed bottom to the seed-box, having a seed-outlet opening extending beyond the inner face of the annular wall of the recess, and a seed-distributing wheel located centrally within the opening in the bottom and having peripheral openings, which, in connection with the annular wall of the recess, form seed-cells, said peripheral openings, in connection with seed-outlet opening, forming an enlargement of the seed-cells, substantially as and for the purpose set forth.

5. The combination of a seed-distributing wheel with axial opening and an overspanning axial support to the seed-distributing wheel, said overspanning support provided with a depending stud-journal to enter the axial opening in the seed-distributing wheel, substantially as and for the purpose set forth.

6. The combination of a seed-distributing wheel, a lever cut-off, and a bar-spring to the lever cut-off, substantially as and for the purpose set forth.

7. The combination of a recessed bottom to the seed-box, a seed-distributing wheel with peripheral opening to rotate in the recess of the seed-box bottom, an overspanning axial support to the seed-distributing wheel, and a spring-actuated cut-off to the seed-cells, substantially as and for the purpose set forth.

8. The combination of a shaft-support to the gear-pinion capable of an endwise movement, a gear-pinion fixed on the endwise-moving shaft, a shifting-bar with yoke-arms embracing the shaft on each end of the pinion, and detents projecting from the shaft portion of the shifting-bar to hold the pinion in or out of gear mesh with the gear-wheel of the seed-distributing wheel, substantially as and for the purpose set forth.

376,824. HEEL FOR BOOTS OR SHOES. ELEANER KEMPSHALL, New Britain, Conn. Filed July 8, 1886. Serial No. 207,388. (No model.)



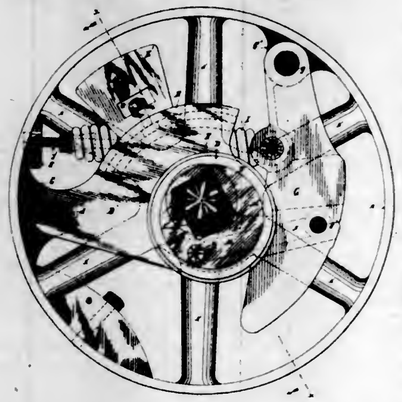
Claim.—An improved article of manufacture consisting of a boot-heel lift having a conical stud shorter than the thickness of the lift inserted from the upper side, leaving a portion of the lift between the lower end thereof and the face of the lift, as and for the purpose set forth.

376,825. PAINTER'S COMBINATION POT-HOOK. LEE KENT, Hot Springs, Ark. Filed Sept. 5, 1887. Serial No. 248,898. (No model.)



Claim.—The herein-described painter's combination pot-hook, consisting of the hooks D E, stage-fastener C, bit B, and knife A, all constructed substantially as set forth.

376,826. CUT-OFF REGULATOR. CHARLES W. LAWRIE, Erie, Pa. Filed May 23, 1887. Serial No. 239,150. (No model.)



Claim.—1. The combination, in an automatic cut-off regulator, of an eccentric-ring having an arm thereon adapted to be pivoted to a pulley, and a bushing adapted to rotate in said eccentric-ring, supported upon a block rotating on the shaft and operating in a slot in said bushing, with a weight pivoted to such pulley, and also coupled to said rotating bushing, and a spring connecting said weight to the pulley, substantially as and for the purpose set forth.

2. The combination, in an automatic cut-off regulator, of an eccentric-ring, having an arm on one side thereof adapted to be pivoted to a pulley, with an adjustable weight on said arm adapted to be adjusted and secured thereto, substantially as and for the purpose set forth.

3. The combination, in the eccentric of an automatic cut-off regulator, of an eccentric-ring having an arm on one side thereof adapted to be pivoted to a pulley, and a radial slot in said ring, with a bushing adapted to rotate therein, having an oblong longitudinal slot therein adapted to allow said bushing to move back and forth across a shaft, and a link passing through the slot in the eccentric-ring, connected with and adapted to rotate said bushing in said eccentric-ring, substantially as and for the purpose set forth.

4. The combination, in an automatic cut-off regulator, of a weight adapted to be pivoted to a pulley, and a spring operating against the force of said weight, with a link connecting said weight to a slotted bushing adapted to rotate in the eccentric-ring and supported by a block mounted on the shaft, substantially as and for the purpose set forth.

5. The combination, in an automatic cut-off regulator, of a weight adapted to be pivoted to a pulley, and a spring operating against the centrifugal force of said weight, with a bushing adapted to rotate in the eccentric-ring, connected with and operated by said weight and supported on a block rotating on the shaft, substantially as and for the purpose set forth.

6. The combination, in a bushing adapted to rotate in the eccentric-ring of an automatic cut-off regulator, of an oblong longitudinal slot with a supporting-block adapted to rotate on a shaft and operate in said slot, substantially as and for the purpose set forth.

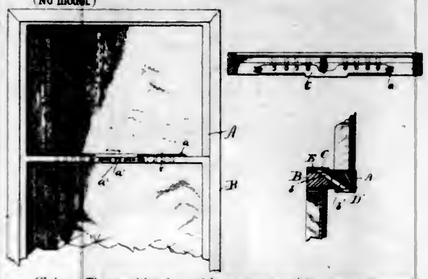
7. The combination, in the eccentric mechanism of an automatic cut-off regulator, of a slotted bushing, supported upon a rectangular block adapted to rotate on the shaft, with link-and-weight mechanism adapted to automatically rotate said bushing in the eccentric-ring, substantially as and for the purpose set forth.

8. The combination, in an automatic cut-off-regulator eccentric, of the ring D, having thereon the arm D', the slotted arc E, and the adjustable weight E', with the rotating bushing M, the supporting-block L, and the link N, substantially as and for the purpose set forth.

9. The combination, in an automatic cut-off regulator, of the swinging weight G and the spring I, with the link M, connecting said weight with the rotating bushing M, substantially as and for the purpose set forth.

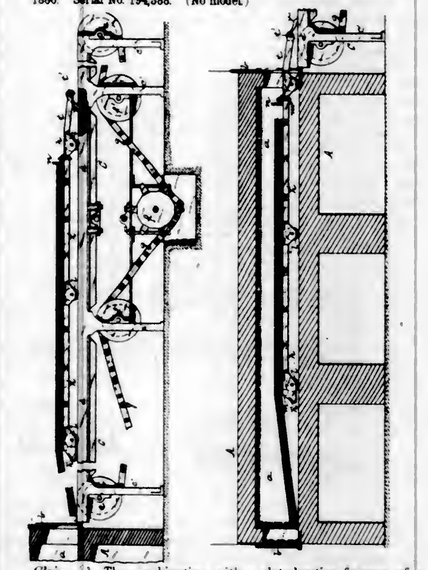
10. The combination, in an automatic cut-off regulator, of the eccentric-arm D', having the eccentric-ring D and the slotted arc E thereon, and the adjustable weight E', secured upon said arc E, with the swinging weight G, the spring I, the link N, the rotating bushing M, the supporting-block L, and the counterbalance-weight O, substantially as and for the purpose set forth.

376,827. VENTILATOR. MICHAEL A. W. LOUIS and CHARLES T. MURRAY, Washington, D. C. Filed Dec. 12, 1885. Serial No. 185,507. (No model.)



Claim.—The combination, with an upper and lower window-sash, of their meeting-rails provided with oblique perforations registering with each other when the sashes are both closed, and a plate provided with openings registering with said perforations in the meeting-rails and adapted to slide longitudinally upon one of said rails to open or close the said perforations.

376,828. APPARATUS FOR CHARGING PLATES AND BARS INTO FURNACES. PETER PATTERSON, McKeesport, Pa., assignor of one-half to the National Tube Works Company, same place. Filed Mar. 8, 1886. Serial No. 194,388. (No model.)



Claim.—1. The combination, with a plate-heating furnace, of a charging-carriage supporting one end of the plates to be charged and adapted to push the plates into the furnace-chamber, substantially as and for the purposes set forth.

2. The combination, with a plate-heating furnace, of a track at one end thereof and a charging-carriage for supporting and carrying the materials to be charged, the said carriage adapted to travel on said track and onto the furnace-hearth and leave the charge therein, substantially as and for the purposes set forth.

3. In combination with the plate-heating furnace, the charging-carriage supporting one end of the plates to be charged and mechanism for pushing said carriage into the furnace and withdrawing it therefrom, substantially as and for the purposes set forth.

4. The plate-charging carriage provided with the pushing-plate at or near the rear end of the carriage, substantially as and for the purposes set forth.

5. The plate-charging carriage provided with the pushing-plate adjustable longitudinally thereon, substantially as and for the purposes set forth.

6. The plate-charging carriage provided with the pushing-plate and with the anti-friction roller at the forward end thereof, substantially as and for the purposes set forth.

7. The plate-charging carriage having the inclined shoe at its forward end, substantially as and for the purposes set forth.

8. The combination, with the plate-heating furnace, of the bed-frame carrying an endless power-chain, the traveling charging-carriage, and means for connecting it to the chain, substantially as set forth.

9. The combination of the bed-frame, the charging-carriage having the extension *t* and the double hook *r*, and an endless chain passing under said carriage and with which the hook engages, substantially as and for the purposes set forth.

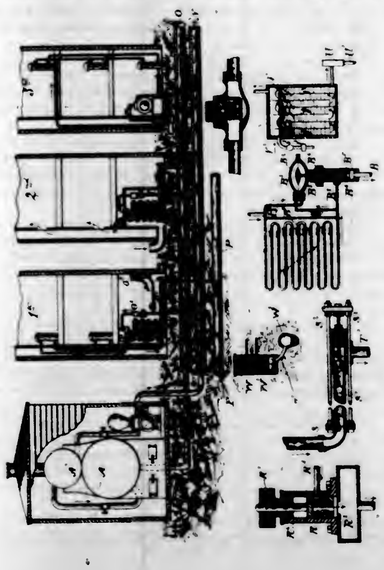
376,829. ELEVATED RAILWAY. WILLIAM P. WOOD, Clayton, Ga. Filed May 27, 1887. Serial No. 239,529. (No model.)



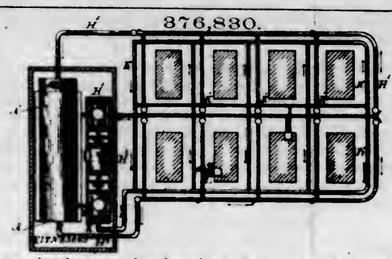
Claim.—The carriage consisting of the upper portion, C, mounted upon the carrying-wheels E and provided with the pendent frames D' H, in combination with the compartment D, with its step I sustained by the frame, the operating-wheel G, mounted in the lower end of the frame H, and having the cranks A', and the belts F J, as set forth.

376,830. METHOD OF SUPPLYING HEAT AND POWER. WILLIAM R. PRALL, Washington, D. C., assignor to the Prall Union Heating Company, New York, N. Y. Filed Dec. 30, 1887. Serial No. 258,464. (No model.) Patented in England July 23, 1879, No. 2,987.

Claim.—1. The herein-described method of furnishing steam for heat and power purposes to large districts of buildings in cities and towns, which consists in superheating water at a central station, conveying the water to the buildings to be heated, converting the superheated water into steam, which is employed for heating purposes, and



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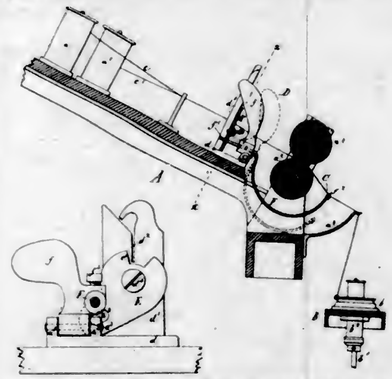
returning the water of condensation to the heater at the station, substantially as shown and described.

2. The herein-described method of furnishing heat and power for large districts of buildings in cities and towns, which consists in heating water at a central station, conveying it throughout the district to be heated and returning it to the heater, extracting a portion of the hot water at the points where heat or power is required, and returning the same or a portion thereof directly to the heater after it has been used for heat or power purposes, substantially as shown and described.

3. The herein-described method of furnishing steam for heating or power purposes to large districts of buildings in cities and towns, which consists in superheating water at a central station, conveying the water to the buildings where heat or power is required, converting the superheated water into steam, and returning the water of condensation to the heater, where it is reheated and again circulated, substantially as shown and described.

376,831. SPINNING-MACHINE, &c. WILLIAM C. SANFORD, Amsterdam, N. Y. Filed May 14, 1887. Serial No. 238,247. (Model.)

Brief.—The invention consists in an improved construction of devices for clamping and severing the thread between the supply-spools and the drawing-rolls when it breaks between the rolls and the twisting device



Claim.—1. The combination of the nipping-plate E, plate d', and weighted lever F, the said plate E being formed with a slotted extension, as e^4 e^5, and with a jaw, e', and pivoted to the plate d', while the plate d' is provided with a slot, as d^4, and the lever F connected by one of its ends to the plate E, while its other end is pendent upon the threads of yarn being twisted, substantially as described.

2. The vibrating nipping-plate E and the gravitating lever F, in combination with a nipping and guide plate, d', the said vibrating plate being pivoted to the plate d' and moving on its pivot in a transverse direction to the threads being fed to the twisting mechanism, and thereby causing the broken ends of the threads to be moved laterally between itself and the plate d' and nipped firmly, substantially as and for the purpose described.

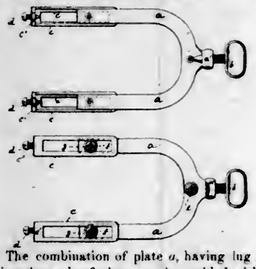
3. The combination of the vibrating nipping-plate E, formed with a jaw, e', and an extension, e^3, having a slot, e^5, the nipping and guiding plate d', and the gravitating lever F, the latter hung on a pivot and swinging transversely to the direction in which the plate E moves, substantially as and for the purpose described.

4. The weight *f*, pivoted to the plate *d*, the gravitating lever F, looped or bent at its forward end and having its rear end passed through the weight above the pivot thereof, the vibrating nipping-plate E, pivoted at d^2 and provided with a slotted extension, and con-

nected to the rear end of the lever F by said slotted extension, and the guiding nipping-plate d', substantially as and for the purpose described.

5. The vibrating nipping-plate E, formed with a jaw, e', and an extension, e^4, having a slot, e^5, the nipping-plate d', provided with a pivot, d^3, on which the plate E is hung and vibrated, and with a slot, d^2, the lever F, and the pivoted weight f, said lever having its rear end passed through the pivoted weight f and into the slot e^5 of the plate E in a direction at a right angle to the pivot of the weight f and the movement of the plate E, and having its front end adapted to rest upon the threads being fed to the twisting-machine, the whole combined and operating substantially as described.

376,832. ICE-CREEPER. CARL SCHUMMEL, Hoboken, N. J. Filed Nov. 29, 1887. Serial No. 256,415. (No model.)

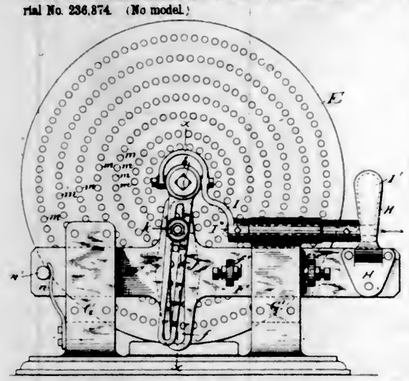


Claim.—1. The combination of plate a, having lug a', with the slides c, embracing the ends of plate a and provided with lugs c' and with the fastening devices b d, substantially as specified.

2. The combination of plate a with the slides c, having slotted base, and with the spurs e f, the spurs f extending through said slotted base, and with collars g on spurs f, substantially as specified.

3. The combination of plate a with the slides c, having slotted base, and with spur e and the squared spurs f, screwed into plate a and carrying collars g, and with the fastening devices d b, substantially as specified.

376,833. DIVIDING MECHANISM FOR GEAR-CUTTING MACHINES. CHARLES SPAULDING, Malden, Mass. Filed May 2, 1887. Serial No. 236,874. (No model.)



Claim.—1. The combination of a rotary shaft adapted to hold a blank, an index-wheel attached to said shaft and having concentric rows of holes each row having a different number of holes from the others, while the holes in all the rows are at uniform distances apart, an operating-slide which is adapted to be reciprocated across the face of the index-wheel a distance equal to the distance from hole to hole in any row of holes in the index-wheel, and provided with a slot extending radially of the index-wheel, across all the rows of holes therein, and a latch or pin passing through said slot and adapted to be engaged with any hole in the index-wheel coincident with the slot, said slide and pin operating conjointly to give the index-wheel and the blank-holding shaft step-by-step rotations, the extent of which is governed by the distance of the pin or latch from the axis of the index-wheel, as set forth.

2. The combination of a rotary blank-holding shaft, an index-wheel attached thereto and having concentric rows of holes, all the holes being spaced alike, while each row has a different number of holes, an operating-slide adapted to have a reciprocating motion, which is limited, as described, across the face of the index-wheel and provided with a slot extending across all the rows of holes in the index-wheel, a latch or pin passing through said slot and adapted to be moved therein from one row of holes in the index-wheel to another, and devices whereby said pin may be alternately moved from and toward the index-wheel to disengage it from and engage it with holes in said wheel, as set forth.

3. The combination of the blank-holding shaft, the index-wheel thereon having the concentric rows of holes, the operating-slide F, having a slot, f, and provided with devices to limit its reciprocating movements, the latch or pin K, adapted to slide in said slot toward and from the index-wheel and from row to row of holes therein, the slotted arm J, adapted both to oscillate and slide on a stud in line with the axial center of the index-wheel, and engaged, as described, with the latch or pin K, and the rock-shaft I", having the arm I engaged with said arm J, whereby said arm and the latch or pin may be moved toward and from the index-wheel, as set forth.

4. The combination of the blank-holding shaft, the index-wheel thereon having the concentric rows of holes, the operating-slide F, having the slot f and provided with devices to limit its reciprocating movements, the latch or pin K, adapted to move, as described, in said slot, the slotted arm J, adapted both to oscillate and slide on a stud in line with the axial center of the index-wheel, the spring j, whereby the arm J is normally pressed toward the index-wheel to engage the pin K with a hole therein, and the rock-shaft I", having the arm I engaged, as described, with the arm J, whereby the latter may be moved against the pressure of the spring j to remove the pin K from the index-wheel, as set forth.

5. The combination of the blank-holding shaft, the index-wheel having holes arranged as described, the latch or pin K, the operating-slide F, having the slot f, receiving said pin, the stops f' f^2 on said slide, and a fixed stop, as G', co-operating with said stops f' f^2, as set forth.

6. The combination of the blank-holding shaft, the index-wheel having holes, arranged as described, the latch or pin K, the operating-slide F, having the slot f, receiving said pin, the adjustable stops f' f^2 on said slide, the spring n, arranged to move said slide in one direction, and a handle, H, whereby the slide may be moved in the opposite direction, as set forth

7. The combination of the blank-holding shaft, the index-wheel having holes, arranged as described, the latch or pin K, the operating-slide F, having the slot f, receiving said pin and the handle H, the stops f' f^2 on said slide, the fixed stop G', the slotted arm J, adapted both to oscillate and slide, the spring j, arranged to hold the arm J in its normal position, and the rock-shaft I", having the arm I engaged with the arm J, and the handle I', arranged in close proximity to the handle H, whereby both handles may be grasped simultaneously, as set forth.

376,834. SPOOLING-MACHINE. JOSEPH M. STONE, North Andover, Mass., assignor to the Davis & Furber Machine Company, same place. Filed Jan. 3, 1887. Serial No. 223,193. (No model.)

Brief.—The object of the invention is to provide a spooling-machine with readily-operated and improved means for raising both ends of the spool positively and uniformly from the drum when the spool has been filled with yarn, or when it is desirable to raise the spool during the operation of filling.

Claim.—1. In a multiple-thread spooling-machine, the winding-drum, and separate movable sliding spool-lifters c', located at opposite sides of the machine, and guides therefor, combined with means to connect and actuate the said spool-lifters longitudinally and in unison, substantially as described.

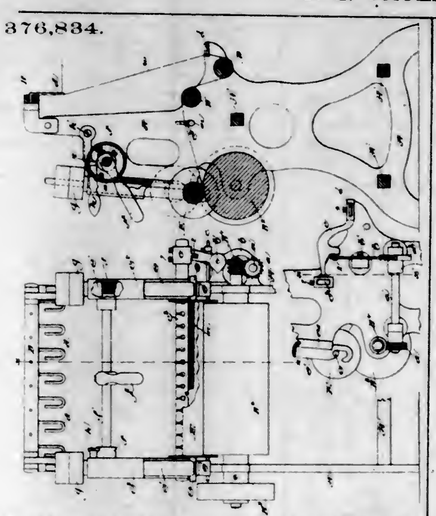
2. In a multiple-thread spooling-machine, the winding-drum and separate movable sliding spool-lifters to support and lift the journals of the spool, combined with lifting mechanism including a shaft and gearing to co-operate with the spool-lifters, substantially as described, whereby the said spool-lifters may be moved to lift the spool from the drum, substantially as described.

3. In a multiple-thread spooling-machine, the winding-drum, the separate sliding spool-lifters at opposite sides of the machine, and means to connect and actuate them to insure their longitudinal movement in unison, combined with weights applied to the upper end of each of the sliding spool-lifters to force the spool against the drum, substantially as described.

4. The winding-drum, means to rotate it, and the separate toothed sliding lifter-bars to support the journals of the spool, combined with the rotating shaft f' and its toothed gears f, to engage with and move the said lifter-bars, the projection 10 upon the gear f, and the locking device h, to engage the said projection 10, to operate substantially as described.

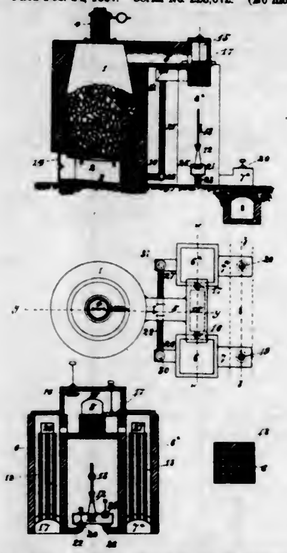
5. The drum, means to rotate it, the worm, the guide-rolls B B', the shaft a', having an attached worm-gear and cam, and the two guide-

376,834.



bars c' c^3, combined with means, substantially as described, actuated by the said cam and connected to the said guide-bars to reciprocate them simultaneously in the same direction, as set forth.

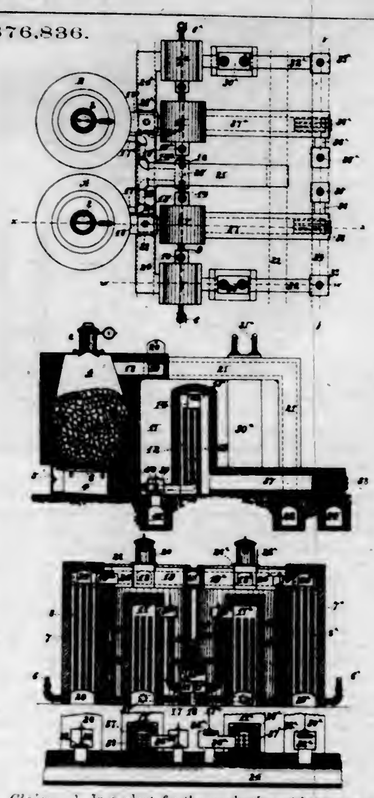
376,835. APPARATUS FOR THE MANUFACTURE OF GAS. SAMUEL T. WELLMAN and GEORGE W. GOETZ, Cleveland, Ohio, assignors to the Fuel Gas and Electric Engineering Company, (Limited,) Pittsburg, Pa. Filed Feb. 24, 1887. Serial No. 228,672. (No model.)



Claim.—In a plant for the production of gas, the combination of a stack or producer, flues governed by valves and leading from the stack to a distributing-conduit, each of said flues being provided with a series of heating-passages, pipes governed by regulating-valves and leading from said heating-passages to the ash-pit of the stack, a box or chest having valved connections with the flues, and an injector for forcing mingled steam and air into said box or chest, substantially as set forth.

376,836. APPARATUS FOR THE MANUFACTURE OF GAS. SAMUEL T. WELLMAN and GEORGE W. GOETZ, Cleveland, Ohio, assignors to the Fuel Gas and Electric Engineering Company, (Limited,) Pittsburg, Pa. Filed Feb. 24, 1887. Serial No. 228,674. (No model.)

376,836.



Claim.—1. In a plant for the production of heat, power, and light, the combination of two stacks of producers, heaters having a valved connection with the exit-flues of the stacks and with a producer-gas-delivery conduit, superheaters having valved connections with the heaters and with the ash-pits of the stacks, and a steam-pipe leading into the heaters, substantially as set forth.

2. In a plant for the production of heat, power, and light, the combination of two stacks or producers having valved connections with independent producer and water gas delivery conduits, heaters arranged in the line of said connections with the producer-gas conduit, a blast-pipe having valved connections with the ash-pits of the stacks, superheaters having valved connections with the heaters and with the ash-pits of the stacks, and a steam-pipe for conducting steam into the heaters, substantially as set forth.

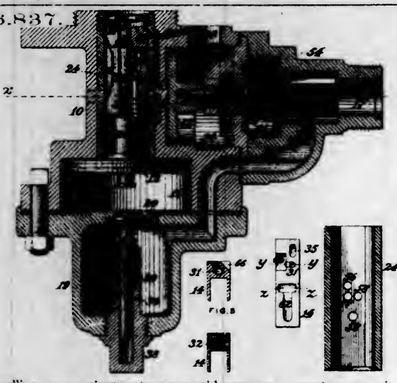
376,837. FLUID-PRESSURE AUTOMATIC BRAKE MECHANISM. GEORGE WESTINGHOUSE, Jr., Pittsburg, Pa. Filed Oct. 1, 1887. Serial No. 251,196. (No model.)

Claim.—1. In a brake mechanism, the combination of a chamber or casing having direct connections to a brake-cylinder and to a brake-pipe, respectively, a valve controlling communication between said connections, and a piston or diaphragm which is independent of and unconnected with a triple-valve piston and is actuated by pressure from an auxiliary reservoir in direction to impart opening movement to said valve, substantially as set forth.

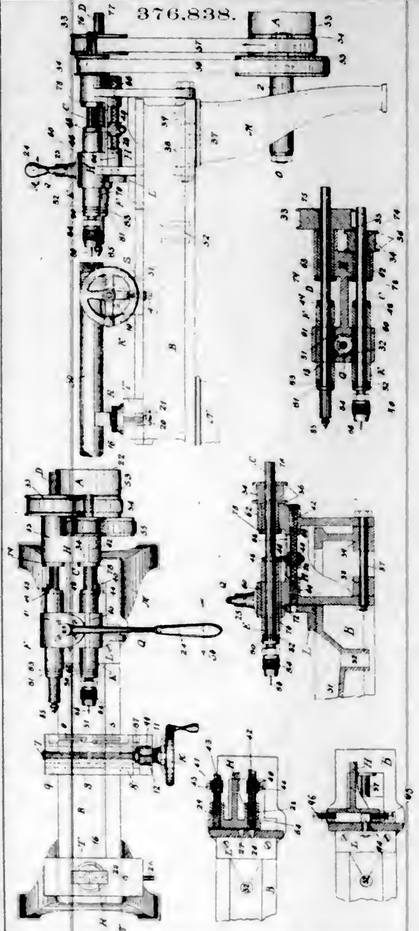
2. In a brake mechanism, the combination of a chamber or casing having direct connections to a brake-cylinder and to a brake-pipe, respectively, a valve controlling communication between said connections, a piston or diaphragm which is independent of and unconnected with a triple-valve piston and is actuated by pressure from an auxiliary reservoir in direction to impart opening movement to said valve, and a check or non-return valve controlling communication between said valve and the brake-pipe passage of the chamber, substantially as set forth.

3. In a brake mechanism, the combination, with a triple valve, of a supplemental chamber or casing having passages leading to a brake-cylinder and to a brake-pipe, respectively, a supplemental valve

376,837.



376,838.



controlling communication between said passages, a supplemental piston operating independently of the triple-valve piston and adapted to impart opening movement to said supplemental valve, and a passage establishing communication between said supplemental piston and an auxiliary reservoir, substantially as set forth.

4. In a brake mechanism, the combination, with a triple valve, of a supplemental chamber or casing having passages leading to a brake-cylinder and to a brake-pipe, respectively, a supplemental valve controlling communication between said passages, a piston adapted to impart movement to said valve, and a passage establishing communication between said piston and an auxiliary reservoir through the main slide-valve of the triple-valve mechanism, substantially as set forth.

5. In a brake mechanism, the combination of a triple valve having its main slide-valve and valve-bushing provided with ports and passages for the admission and exhaust of air from an auxiliary reservoir to and from a brake-cylinder and to and from a supplemental valve-chamber, a supplemental valve-chamber connected to the slide-valve chamber of the triple valve and having passages leading to the brake-cylinder and to the brake-pipe, respectively, a supplemental valve governing a port or opening in a partition of said chamber between said passages, a piston fitting said chamber above a port leading to the main slide-valve chamber in position to impart movement to the supplemental valve, a check-valve governing the brake-pipe passage of the supplemental valve-chamber, and a spring or springs acting to seat the supplemental and check valves, substantially as set forth.

6. In a brake mechanism, the combination of a triple-valve casing, a supplemental valve-chamber composed of an inner section which is formed integral with the triple-valve casing and a separable outer section, each having a lateral air pipe or passage, and a supplemental valve-seat formed in a division plate or partition interposed between and secured to the two sections of the supplemental valve-chamber, substantially as set forth.

376,838. DRILLING-MACHINE. AMOS WHITNEY, Hartford, Conn., assignor to The Pratt & Whitney Company, same place. Filed July 25, 1887. Serial No. 245,246. (No model.)

Claim.—1. The combination, in a drilling-machine, of a laterally-swinging head carrying two revolving and sliding spindles, a lever pivotally mounted on said head, whereby the head may be swung laterally on its pivot, and connecting-gearing, substantially as described whereby the spindles are both operated from said lever, all substantially as set forth.

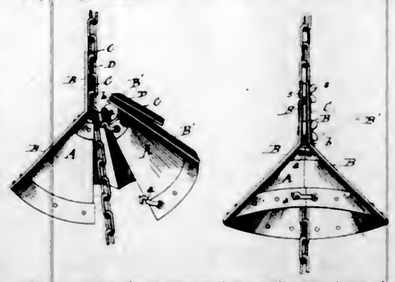
2. The combination, in a drilling-machine, of a vise holding the piece to be drilled in a fixed position, a laterally-movable head carrying two revolving and sliding spindles, a lever connected to actuate said spindles, and serving at the same time to shift said head, and a lock or detent temporarily holding the head at one or the other end of its stroke, all substantially as set forth.

3. The combination, in a drilling-machine head, of spindles C D, sleeves E F, gear G, and a handle connected to operate said gear, substantially as set forth.

4. The combination, with the head H and lock-plate L, of the sliding sleeve E, carrying the spindle, bolt 28, sliding in said head and fitting into said plate, a spring acting on the bolt, and arm 46, adjustably fixed on said bolt and operated in one direction from said sleeve, all substantially as set forth.

5. The combination, in a drilling-machine of the class specified, and with a spindle-head swinging on a pivot, of two pulley-provided spindles carried by said head above said pivot, driving-pulleys below said pivot, and belts connecting each of said driving-pulleys with the corresponding spindle-pulleys, the whole being organized and arranged to tighten the belt on shifting either spindle driven thereby from its idle to its working position, as shown and described.

376,839. PROTECTOR FOR VESSELS AGAINST RATS. THOMAS WILSON, North Tarrytown, N. Y. Filed Mar. 14, 1887. Serial No. 230,825. (No model.)



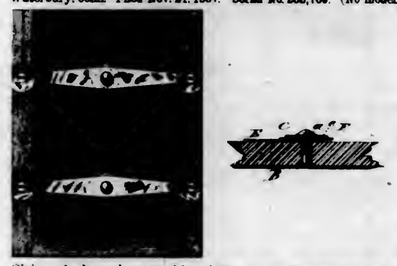
Claim.—1. A device for preventing rats from coming on board vessels, consisting of the cone A, formed in two parts hinged together, and operating substantially as and for the purposes set forth.

2. A device for preventing rats from coming on board vessels, consisting of the cone A, formed in two parts hinged together, and provided with the straps B B', having the elongated openings C and the holes D, substantially as described, and for the purposes set forth.

3. In a device for preventing rats from coming on board vessels, the metal straps B B', attached to the cone so as to project from the apex of the same, and provided with the elongated openings C and the holes D, substantially as described, and for the purposes set forth.

4. A device for preventing rats from coming on board vessels, consisting of the cone A, formed in two parts hinged together, and provided with the collar E, substantially as described, and for the purposes set forth.

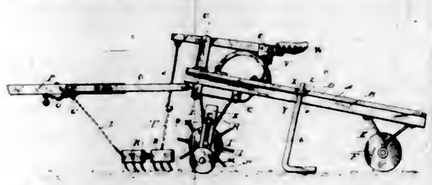
376,840. PHOTOGRAPHIC-PRINTING FRAME. LEO F. ADT, Waterbury, Conn. Filed Nov. 21, 1887. Serial No. 255,709. (No model.)



Claim.—1. In a photographic-printing frame, the combination of the back, the spring-bar C, pivoted upon the back and adapted to engage the sides of the frame, with a pointer, also pivoted upon the back and between the bar and the back, substantially as described, and whereby the pointer is secured by the elastic force of the bar when it engages with the lugs on the frame.

2. The combination, in a photographic-printing frame, of a back, a spring-bar hung upon a pivot on the back and adapted to engage the sides of the frame, a pointer hung upon the same pivot as the bar and between the bar and back, with a washer between the bar and pointer, through which washer the pressure of the spring-bar is communicated to the pointer when the bar engages with the lugs on the frame, and the back provided with a series of figures concentric with the axis of the pointer, substantially as described.

376,841. COMBINED HARROW, CLOD-CRUSHER, AND LAND ROLLER. GEORGE W. ALBAUGH, State Line, Pa. Filed Aug. 18, 1887. Serial No. 247,252. (No model.)



Claim.—1. In a combined harrow, clod-crusher, and land-roller, the combination of the main frame having brackets in its rear end, land-rollers journaled therein, a pivoted cross-frame at its forward end, brackets secured thereto, and clod-crushers journaled in said brackets, with slotted bars formed at their lower ends with stub-axles, wheels, or rollers journaled upon said axles, and means, substantially as described, for adjusting said bars.

2. In a combined harrow, clod-crusher, and land-roller, the combination of the main frame having brackets secured in its rear end, land-rollers journaled in said brackets, brackets secured at its forward end, screw-threaded bolts projecting outwardly therefrom, and clod-crushers journaled in said brackets, with slotted bars formed at their lower ends with stub-axles, wheels, or rollers journaled thereto, and thumb-nuts.

3. In a combined harrow, clod-crusher, and land-roller, the combination of the main frame, land-rollers journaled in its rear end, a cross-frame pivoted to its forward end, clod-crushers journaled in brackets secured to the said cross-frame, and markers, substantially as described, secured to the side of the main frame, with a harrow consisting of two or more beams having teeth in their under sides hinged together, the tongue secured to said cross-frame, a doubletree secured to said tongue, chains connecting said harrow with said doubletree, and means, substantially as described, for raising and lowering the said harrow.

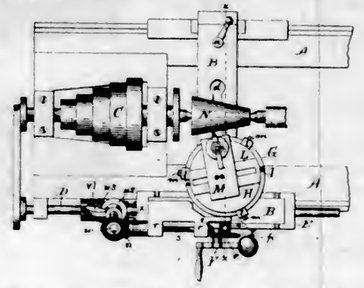
376,842. END-GATE. FRANK H. ALLEN, Port Allen, La. Filed Oct. 6, 1887. Serial No. 251,602. (No model.)



Claim.—1. The combination, with the spring-pressed lever having the angular engaging-arm, of the plate hinged thereto, and the plate having embracing ends and connected to the hinged plate, substantially as specified.

2. The combination, with a wagon-body and the end-gate having its top rail slotted at opposite ends, of the fastening device consisting of the lever and its engaging-arm, the bar hinged to the angle thereof, the plate having the embracing ends connected to the hinged plate by a rod, and the spring secured to the end of the lever and adapted to bear against the hinge-plate, substantially as specified.

376,843. TAPER ATTACHMENT FOR LATHES. EDWARD A. ALPRESS, New Britain, Conn. Filed Mar. 31, 1887. Serial No. 233,102. (No model.)



Claim.—1. The combination of the carriage and head of an engine-lathe with the herein-described taper attachment, consisting of the upper and lower beds concentrically mounted one upon the other, and adjustably secured to the lathe-carriage, the driving-shaft *e*, pinion *g*, double-faced gear *j*, the feed-screw I, having a pinion connected with said double-faced gear, the supplementary tool-carriage M, and mechanism for driving the shaft *e*, substantially as described, and for the purpose specified.

2. The combination of the lathe-head C, carriage B, the upper and lower beds concentrically mounted one upon the other and adjustably secured upon the lathe-carriage, the driving-shaft *e*, pinion *g*, double-faced gear *j*, feed-screw I, having the pinion connected with said double-faced gear, the supplementary tool-carriage, the gear *p*, for driving the shaft *e*, the shafts *s w* D, with their connecting-gearing and angle-arms, substantially as described, and for the purpose specified.

3. The combination of a lathe-head and carriage with the supplementary tool-carriage M, adjustably mounted upon the main carriage, and provided with a feed-screw, driving-shaft, and mechanism connecting said shaft and feed-screw, the gear-wheel *p*, secured to said driving-shaft, the shaft *s* and its gears, mounted on the lathe-carriage B, the feed-shaft D of the lathe, and the swinging shaft *w*, with its connecting angle-arms and gears, substantially as described, and for the purpose specified.

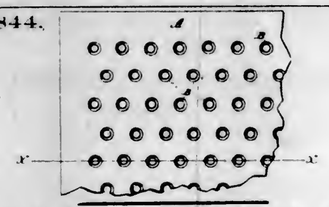
4. The combination of a lathe-head and carriage with the lower bed, G, adjustably secured to said lathe-carriage, the driving-shaft *e*, secured against longitudinal movement upon the lathe-carriage, and provided with driving mechanism, the pinion *g*, secured on shaft *e*, so as to rotate therewith, the double-faced gear *j*, the upper bed, H, concentrically mounted upon the bed G, and provided with mechanism for fastening it in any desired position thereon, the feed-screw I, mounted within said upper bed and provided with driving-pinion *k*, and the supplemental carriage M, connected to said feed-screw, substantially as described, and for the purpose specified.

376,844. PERFORATED GLASS. LÉON APPERT and ADRIEN APPERT, Paris, France. Filed Oct. 26, 1886. Serial No. 217,205. (No model.) Patented in France Apr. 9, 1885, No. 168,270.

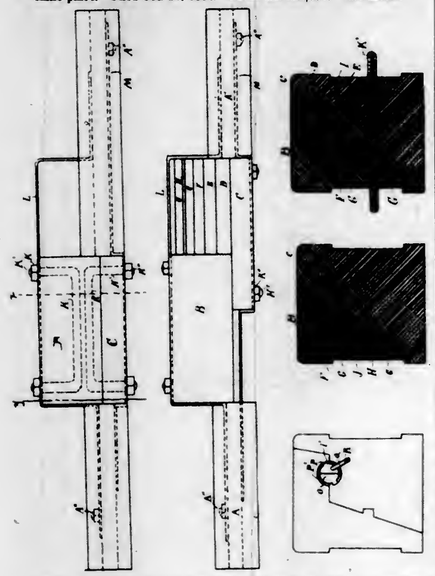
Claim.—Glass or vitreous plate formed with a number of conical or other flaring perforations, substantially as and for the purposes set forth.



376,844.



376,845. EXPANSION-JOINT AND RAIL-COUPLING. DAVID M. ARMITAGE, Deerfield, Mich., assignor of one-tenth to Daniel F. Griswold, same place. Filed Oct. 27, 1887. Serial No. 253,557. (No model.)



Claim.—1. An expansion-joint for sections of metal, comprising movable sections having interlocking devices engaged one with the other and connected to move in coaction with the expansion or contraction of the metal, as and for the purpose set forth.

2. An expansion-joint for sections of metal, comprising two portions held from lateral movement by tongues and grooves and connected to the metal sections to move telescopically upon each other, as and for the purpose set forth.

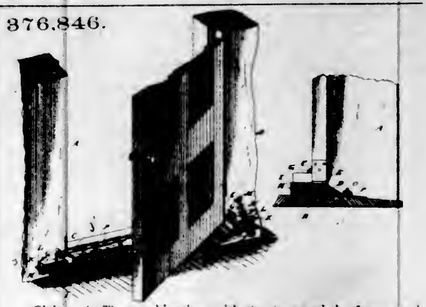
3. In combination with oppositely-disposed rail-sections, an expansion-joint consisting of two movable sections, each section having fastening devices to which are connected spring-plates connected to bear frictionally upon the rail-sections and move in harmony with the expansion or contraction of the rails, as and for the purpose set forth.

4. In combination with an interlocking expansion-joint, a rail-coupling consisting of two spring-plates, each secured to but one rail and having a free end bearing frictionally upon the rail to which the opposite spring-plate is connected, as and for the purpose set forth.

376,846. WEATHER-STRIP. THOMAS P. ASBURY, Tingley, Iowa. Filed July 23, 1887. Serial No. 245,515. (No model.)



376,846.



Claim.—1. The combination, with the door and the frame-work thereof, formed on its opposite lower inner edges with recesses, of a weather-strip having holding-plates which are flexibly connected to the strip and fitted in said recesses, and a spring to elevate the strip.

2. The combination, with a door and the frame-work thereof, formed on its lower ends with recesses, of a weather-strip having a sheet of flexible water-proof material attached thereto, and holding-plates at either end of the sheet which fit in said recesses, and a spring to elevate the strip.

3. The combination, with the door and the frame-work thereof, having a sill slanting in both directions and studs on the outside, of flexible water-proof material extending between the door and the sill and held on the outside in a flat position by a longitudinal bar fitting under the studs and fastened on the inside to the weather-strip, and having holding-plates which fit into the side frames of the door.

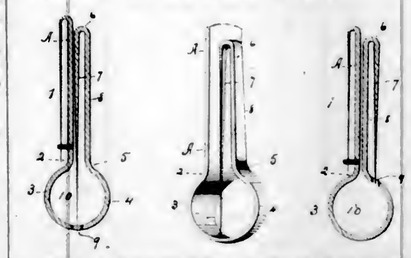
4. The combination, with the door and the frame-work thereof formed on its lower inner ends with recesses and provided with turning-keys, of a weather-strip having holding-plates which are flexibly connected to the strip and fit in the said recesses and are securely held by the keys, and a spring attached to the frame-work and the strip and adapted to elevate the latter when the door is shut.

5. The combination, with a door and the frame-work thereof, formed on its lower ends with recesses and provided with a turning-key, of a weather-strip having a flexible water-proof sheet attached thereto and holding-plates at either end of the sheet which fit in the said recesses and are securely held by the keys, and a spring attached to the frame-work and the strip and adapted to elevate the latter when the door is shut.

6. The combination, with a door and the frame-work thereof, having staples on either side of the door, of a strip having a sheet of flexible material attached thereto and pivot-pins fitting within the staples, and a spring attached to the frame-work and the strip, so as to elevate the latter when the door is shut.

7. The combination, with the door and the frame-work thereof, having staples on either side of the door and having the lower inner ends of the jambs formed with recesses, of a weather-strip having pivot-pins fitting within the staples and a sheet of flexible water-proof material attached thereto, provided with holding-plates which fit within the recesses of the jambs, and a spring attached to the frame-work and the strip to elevate the latter when the door is shut.

376,847. EYEGLASS-HOLDER. CALVIN S. BALL, Syracuse, N. Y. Filed Mar. 11, 1887. Serial No. 230,547. (No model.)

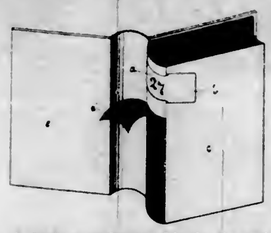


Claim.—1. An eyeglass-holder consisting of a back piece bent to form an eye at its lower end and provided with a pin and catch, and a hook rising vertically from the eye and bent downward at the top to form a spring-extension to the hook, substantially as described.

2. The eyeglass-holder herein described, consisting of a back provided with pin and catch, a hook and an eye integral with each other, and a downward extension of the hook substantially parallel with the back and hook, substantially as described.

3. In an eyeglass-holder, the combination of the eye connecting the back and hook and provided with a slot, 9, with the downward spring-extension of the hook, substantially as described.

376,848. PROCESS OF MANUFACTURING BOOKS. JAMES M. BEERS, Brooklyn, N. Y. Filed July 27, 1887. Serial No. 245,406. (No model.)



Claim.—1. In the manufacture of books, the method of affixing a suitable identifying-mark, which consists in printing, stamping, cutting, or otherwise suitably affixing said identifying-mark upon or to the inner part of the case, lining, or back of the book, and covering and protecting the same by securely and permanently applying thereto the outer part of the book, whereby the said identifying-mark is concealed from view and can be removed or changed only by destroying the book, substantially as described.

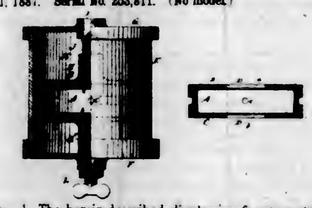
2. The improved method of manufacturing books, which consists in printing, stamping, cutting, or otherwise suitably affixing upon or to the edges or folds of the signatures of the book a suitable identifying-mark, and securely and permanently applying thereto the lining of the back of the book and covering and protecting the mark by said back-lining, whereby the said identifying-mark can be removed or changed only by destroying the book, and whereby the book can be identified, substantially as shown and described.

376,849. MANUFACTURE OF EXPLOSIVES. CHRISTIAN R. BICHEL, Berlin, Germany. Filed Nov. 26, 1886. Serial No. 219,862. (No specimens.) Patented in England Dec. 17, 1885, No. 15,528.

Claim.—1. The method of making explosives which consists in distilling sulphur and a hydrocarbon in the presence of one another and adding to the resultant body an oxygen-bearing substance, substantially as described.

2. The method of making explosives which consists in distilling sulphur and a hydrocarbon in the presence of one another and adding to the resultant body nitrate of potash or equivalent oxygen-bearing substance, substantially as described.

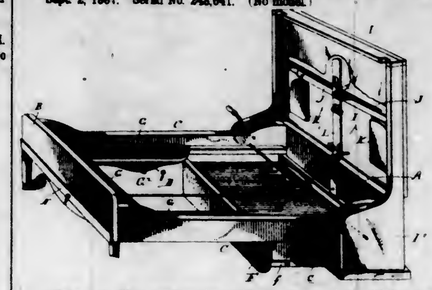
376,850. STEAM-TRAP. JOSEPH BISHOP, Meriden, Conn. Filed Oct. 31, 1887. Serial No. 253,511. (No model.)



Claim.—1. The herein-described diaphragm for steam-traps and like purposes, consisting of a rigid wall, with one or both sides composed of elastic or flexible material, combined with a cap corresponding to the respective elastic or flexible sides, secured to the rigid wall of the diaphragm, the said caps having an opening through them to the said elastic side or sides of the diaphragm, and the caps constructed to form a recess between their inner surface and the adjacent surface of the said sides of the diaphragm, substantially as described, and whereby said caps form stops to limit the expansion of the said diaphragm.

2. A steam-trap consisting of a chamber, E, closed at its upper and lower ends, a diaphragm within said chamber, composed of a rigid wall with elastic or flexible top and bottom, with caps made fast to said diaphragm, and so as to cover the said flexible or elastic sides, but leave a limited space between the inner surface of the caps and the adjacent surface of the sides of the diaphragm, the said caps having a central opening therein to said sides of the diaphragm, a support, G', in the bottom of the diaphragm and upon which the lower side of the diaphragm rests, a valve supported on the upper side of said diaphragm through the cap, the upper end of the trap provided with a valve-opening, which said valve on the diaphragm is adapted to open or close, substantially as described.

376,851. FOLDING BED. RODOLPH C. BOWERS, Carlyle, Ill. Filed Sept. 2, 1887. Serial No. 248,641. (No model.)

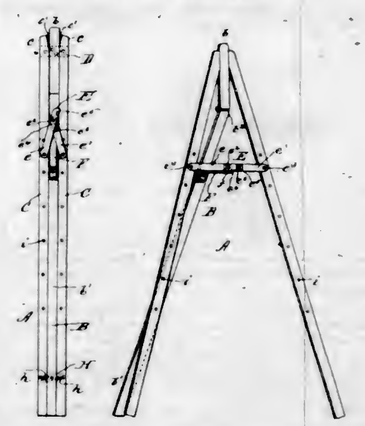


Claim.—1. The combination, with the case and the folding bed, of the levers pivoted at their outer ends to the said case and weighted at their inner ends, and the single bar connected at its lower end with the said bed and supporting the weighted levers midway of their ends in an approximately horizontal position when the bed is extended, substantially as and for the purpose described.

2. The combination, with the case and the folding bed, of the levers J, arranged in substantially a horizontal position, pivoted to the case at their ends and weighted at their inner ends, and the bar L, composed of a series of sections hinged together, and connected with the bed at its lower end and supporting the said levers between their ends at its upper end, substantially as described, for the purpose specified.

3. The combination, with the case, the folding bed, and the rod M, connecting the case and bed and forming the pivot about which the bed turns, of the folding foot leg-section, the arm *m*, projecting from the rod M, means for rotating the said rod M, and the cord O, connecting the foot leg-section with the said arm, substantially as described, for the purpose set forth.

376,852. EASEL. WILLIAM A. BULKLEY, Philadelphia, Pa. Filed June 21, 1887. Serial No. 241,982. (No model.)

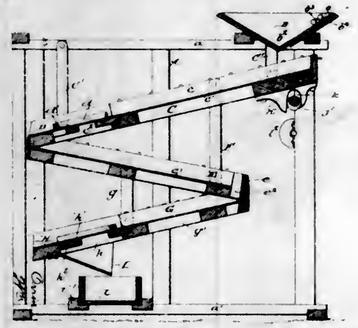


Claim.—1. An easel-frame having its central and outside legs connected by a T-shaped bar, G, composed of jointed sections pivoted or hinged to said legs and to each other, and provided with a lock or fastening device, substantially as set forth.

2. The combination of leg B, having upper and lower hinged sections, *b* and *b'*, the legs C C, pivoted to section *b*, or a clip secured thereto, the sectional bar E, composed of pivoted sections *e* and *e'*, provided with a lock or fastening device, and bar F, having hinged section *f*, substantially as and for the purpose set forth.

3. An easel-frame having its central and outside legs connected by a jointed T-shaped bar, G, composed of sections pivoted together and hinged or pivoted to the center and outside legs, and provided with an automatically-acting lock or fastening device for holding the legs of the easel in an open or extended position, in combination with a separate catch, H, for locking the legs in their folded position, substantially as set forth.

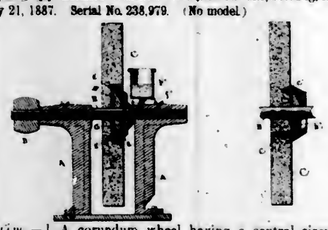
376,853. ORE-CONCENTRATOR. ORIN CAMPBELL and WILLIAM PEET, Lawrence, Kans. Filed Mar. 25, 1887. Serial No. 232,422. (No model.)



Claim.—1. The combination of the hopper and the actuating mechanism with the communicating chutes provided with plate-metal bottoms having the V-shaped closed riffles and the openings within the points or angles of said riffles, each chute having riffles made on a wider angle than the one above, so as to decrease the number of riffles and floor-openings from above downward, substantially as described.

2. The combination of the main frame having the hopper, the shaft L, gear-wheel *l* on said shaft, and the shaft J, carrying the pinion *j* and the cam-disk *j'*, with the chute C, provided with the metal floor *c'*, the plate D, having the riffles *d* and the openings *d'*, the blocks K, having a notch, *k*, to engage the cam-disk, the straps C', supporting said chute, the chute E, secured to and inclining in a different direction from the chute C, the chute G, parallel to the chute C, and provided with the plate H, having the riffles *h'* and openings h^2, and the spout or chute I, secured to chute G below chute H, substantially as described.

376,854. EMERY-WHEEL. WILLIAM CAVERT, Sterling, Ill. Filed May 21, 1887. Serial No. 238,979. (No model.)



Claim.—1. A corundum-wheel having a central circular depression in one side, combined with a hollow conical and perforated washer placed within said depression, substantially as and for the purposes set forth.

2. The combination, with a corundum-wheel, of a water-distributing washer having a circular conical recess provided with water-vents communicating with the wheel.

376,855. ARTIFICIAL LEATHER. IRA CHOATE, Somerville, and CASTELLY O. NORCROSS, Lynn, Mass. Filed Sept. 30, 1886. Serial No. 215,023. (No specimens.)

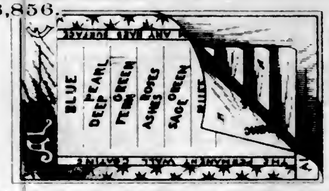
Claim.—1. As an improved article of manufacture, an artificial leather compound composed of glue, ground leather, and an astringent, as tannin alum, &c., the same being intimately associated to present a homogeneous and durable product capable of receiving and retaining a high polish, substantially as set forth.

2. The artificial leather herein described, the same consisting of glue, ground leather, an astringent, and bichromate of potash, the latter acting on the glue to make the compound water-proof, substantially as set forth.

3. The artificial leather herein described, the same consisting of glue, ground leather, an astringent water-proofing, and sawdust or other material to give body, the whole being intimately associated to present a homogeneous and durable product capable of receiving and retaining a high polish, substantially as set forth.

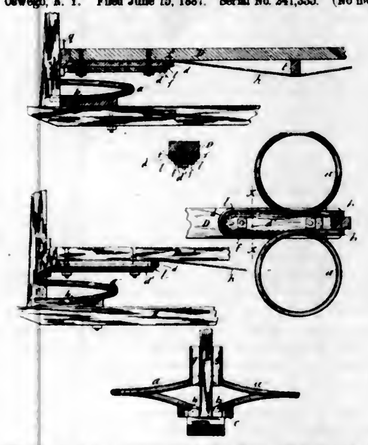
376,856. ADVERTISING-CIRCULAR. MELVIN R. CHURCH, Grand Rapids, Mich. Filed Oct. 29, 1887. Serial No. 253,780. (No model.)

Claim.—An advertising-circular consisting of a page or section



containing tinted strips, and a page or section adapted to fold over the first, having a perforation above every tinted strip, whereby the color of one only of the tints beneath is exposed through one perforation, substantially as described.

376,857. BOLSTER-SPRING FOR VEHICLES. EDWARD CLIFF, Oswego, N. Y. Filed June 15, 1887. Serial No. 241,335. (No model.)



Claim.—1. In combination with the bolster B, stake C, and the bar D, arranged over the bolster parallel therewith and guided on the stake, as shown, the coils *a a*, arranged axially vertically at opposite sides of the bolster and united at the top by the attaching-loop *l*, extending lengthwise the bar D and secured thereto, and the shanks *b b*, extending from the base of the coils and resting upon the bolster and terminating at opposite sides of the stake, substantially as described and shown.

2. In combination with the bolster B, stake C, and bar D over said bolster and parallel therewith, the axially-vertical coils *a a* at opposite sides of the bolster, united at the top by the elongated loop *l*, formed with an opening throughout its length, the shanks *b b*, extending from the base of the coils and resting on the bolster and terminating at opposite sides of the stake, plates entering the opening of the loop, and bolts securing said plates to the bar D, substantially as set forth.

3. In combination with the bolster B and bar D over the bolster and parallel therewith, the axially-vertical coils *a a*, united at the top by a loop formed integral therewith and formed at their base with bearings on the bolster directly under the coils, substantially as set forth.

4. The combination, with the bolster B, stake C, and body-supporting bar D, of the coils *a a*, arranged axially vertically at opposite sides of the bolster and united by the loop *l*, formed in one piece with said coils and extending lengthwise the bar D, and the shanks *b b*, supported upon the bolster and separated and embracing the base of the stake between them, substantially as described and shown.

5. In combination with the bolster B, stake C, bar D, and the coils *a a*, terminating with the attaching-shanks *b b*, the shoe *c*, secured to the bolster and formed with the notch *n* and with the grooves *e e*, for supporting the attaching-shanks *b b* of the coils, substantially as described and shown.

6. In combination with the bolster B, bar D, and the coils *a a*, formed in one piece with the elongated attaching-loop *l*, the plates *d* and *d'*, secured to the bar D and provided in their adjacent sides with the grooves *f f*, inclosing the loop *l*, substantially as described and shown.

7. In combination with the bolster B, stake C, bar D, and the coils *a a*, united by the elongated loop *l*, the plate *d*, secured to the under side of said bar and formed with the vertical guide *g* and with

the groove *f*, and the plate *d'*, secured to the under side of the plate *d* and provided with a corresponding groove, *f*, substantially as described and shown.

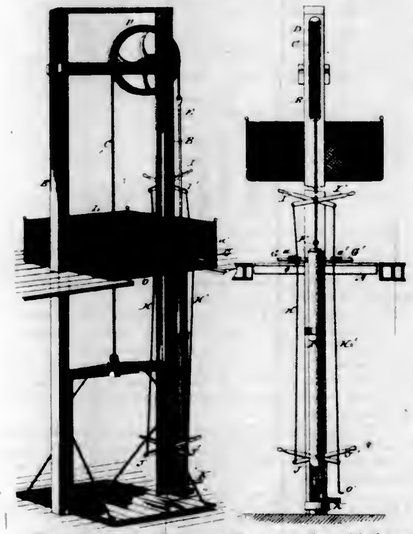
8. The combination, with the bar D and its supporting-springs *a a*, of plates *d d*, secured to the under side of opposite ends of said bar, the strap *h*, clamped at its ends between the bar D and plates *d d*, and the strut *t*, interposed between the said bar and strap, substantially as described and shown.

376,858. THREAD-HOLDER FOR SPOOLS. ERNEST G. CONE, East Hampton, Conn. Filed Apr. 4, 1887. Serial No. 233,687. (No model.)



Claim.—In combination with a spool having a slit in one of its faces, forming a cutter-socket, a cutter made of a single L-shaped piece of sheet metal, having one of its prongs seated and held in the said slit and the other prong forming a flat jaw that lies upon the periphery of the spool-head, all substantially as described.

376,859. HYDRAULIC ELEVATOR. JOHN CONE, Marquette, Mich. Filed Dec. 9, 1886. Serial No. 185,151. (No model.)

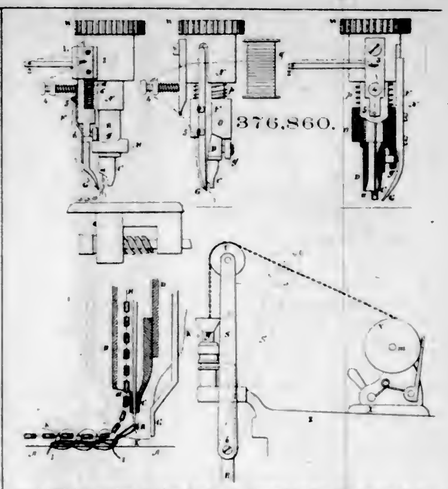


Claim.—In a hydraulic elevator, the combination, with the main frame, the cage traveling between vertical guides forming part of the main frame, the rope connecting the cage with the piston-rod, and the pulley over which said rope runs or renders, of the vertical cylinder outside of the guides, the piston, the piston-rod, the air-vent K at the lower end of the cylinder, the outlet and inlet pipes G G', respectively, the valves *a* and *a'* in said pipes, the pivoted levers I I' and J J', and the connecting-rods H H', respectively provided with the arms or tappets O O', all constructed and arranged substantially as and for the purpose described.

376,860. MACHINE FOR FIXING CORDS TO TEXTILE FABRICS. EMIL CORNELY, Washington, D. C. Filed Nov. 11, 1886. Serial No. 218,556. (No model.)

Claim.—1. In a sewing or embroidering machine, the combination, with the stitch-forming mechanism, of the revolving thread-carrier and means for imparting thereto a rising-and-falling motion in each revolution, substantially as described.

2. The combination, with the stitch-forming mechanism and the mechanism for laying a cord or like article on the fabric, of a thread-carrier for binding said cord to said seam by means of a second thread, and means, as specified, for lifting said carrier when passing over the



376,860.

cord and depressing it when laying its thread under the point of the needle, substantially as described.

3. The combination, with sewing mechanism and cord-delivering mechanism, of the thread-carrier, means for rotating the same, a cam, and an anti-friction roller for raising and lowering said carrier at proper points in its revolution, substantially as described.

4. The combination, with the removable hollow needle-bar, of a guide-roller above the same and a pivoted support for said roller, whereby it may be moved to one side, substantially as described.

376,861. TRUSS. LEWIS R. CRAIG, Salem, Mo., assignor of one-half to Henry C. Long, same place. Filed Aug. 19, 1887. Serial No. 247,372. (No model.)



Claim.—1. The combination, in a truss, of the single spring-band 1, nearly surrounding the body and carrying at its ends the lumbar pads 4, the centrally and downwardly curved straps 11, carrying the inguinal pads 13, and the upwardly-extending arm 7, carrying the umbilical pad 9, substantially as set forth.

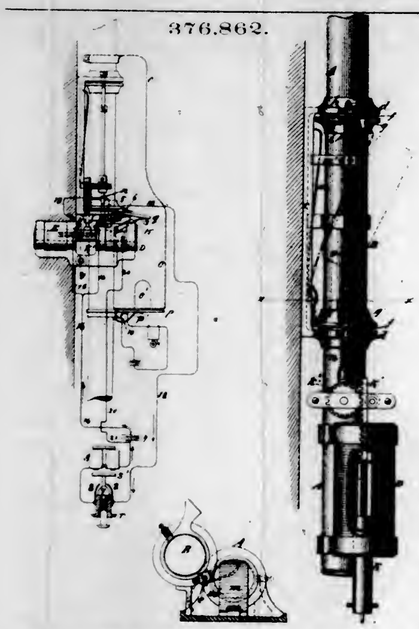
2. The combination, in a truss, of a spring-band adapted to nearly surround the body of the wearer, lumbar pads 4 at its ends, integrally-formed compound-curved straps 11, extending downwardly from the front of the spring-band toward each other, longitudinally-adjustable inguinal pads 13 at their lower ends, and umbilical pad 9, situated at the front central portion of the spring-band, substantially as set forth.

3. The combination, in a truss, of the spring-band 1, curved so as to conform to the contour of the body which it nearly surrounds, the front of said band being curved downward and outward to compress and carry the abdominal regions where it is located, the lumbar pads at the back terminals of said band, the pendent spring-straps 11, provided with elongated slots, in which set-screws adjustably secure the inguinal pads, the aforesaid straps integral with said spring-band, and descending from it just forward from the hips, curved and passing downward and their ends approaching toward each other, so as to correspondingly embrace the lower abdominal regions, with a compound curve that conforms to the contour of the body, and the arm 7, provided with a slot, in which the set-screw 10 works to adjust and fasten the umbilical pad, substantially as set forth.

376,862. MEANS FOR AUTOMATICALLY OPERATING THE GATES OF PNEUMATIC TUBES AND SIMILAR WAYS. ROBERT M. CURTIS, Brooklyn, N. Y. Filed June 11, 1886. Serial No. 204,891. (No model.)

Claim.—1. In combination with a pneumatic tube or equivalent way or conduit with a discharge-outlet therein, through which the carrier is ejected, and a movable gate arranged to open and close said

376,862.



outlet with reference to the air-current, an electro-magnet having its armature connected to the gate and arranged to move it with a positive impulse in one direction, with a spring or its equivalent arranged to move it in the reverse direction, with an electric circuit to energize said magnet, and a circuit-closer to throw the same into and out of action to positively open and close the gate, as desired, substantially as set forth.

2. In combination with a pneumatic tube or its equivalent and a gate thereon, an electro-magnet arranged to operate the gate, with a movable or yielding arrester placed in the path of the ejected carrier, and electric contacts operated by said arrester and included in an electric circuit with said magnet, whereby the circuit is broken and the gate closed when the carrier is ejected against said arrester, substantially as shown and described.

3. The combination, with a transmitting-tube and its gate, of a receiving support or platform on which the ejected carrier is deposited, electric contacts operated by said support, and an electric bell or sounder in circuit with said contacts, substantially as herein set forth.

4. In combination with a transmitting-tube and its gate or gates, and a magnet arranged to operate the gate, an electric circuit to energize said magnet, provided with a magnet, *s*, and a push-button or closer, *r*, having an armature, *s'*, arranged and operating substantially as shown and described.

5. In combination with a transmitting tube or conduit and a series of gates opening thereon, a corresponding series of electro-magnets controlling the opening of the gates, with one terminal of all of said magnets connected to one side of an electric generator and the opposite terminals connected to individual switch-points, with a switch connected at one end to the generator and movable at the other end over the switch-points, and a circuit-closer or push-button arranged in the main line common to all the magnets and switch-points, substantially as shown and described.

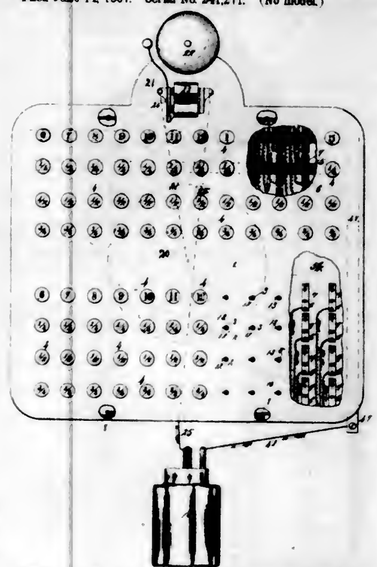
6. In combination with a transmitting tube or conduit and a movable gate opening thereon, an electro-magnet controlling the opening of the gate, a catch or detent arranged to engage the gate when opened and hold it open, and an arrester placed in the path of the ejected carrier and operatively connected with the detent, whereby the detent is released and the gate closed by the ejection of the carrier against the arrester, substantially as set forth.

7. In combination with a pneumatic tube and its swinging gates B, the yielding packing-collars *g g*, substantially as and for the purpose set forth.

8. In combination with a pneumatic tube and its swinging gate B, the freely-pivoted deflecting-blade *m*, and a projection, *m'*, on the gate to engage and operate the same, substantially as set forth.

9. The combination, with a pneumatic tube or equivalent conduit, such as A, having at one or more points a movable coinciding or aligning tubular section, such as B, forming when swung out of line an ejecting outlet or gate on the tube, of an electro-magnet arranged in operative relation therewith, an armature connected to said movable section B to move the same in one direction, and a spring or retracting device to move the same in the opposite direction, substantially as shown and described.

376,863. ELECTRIC CALL. WILLARD H. CUTTING, St. Louis, Mo. Filed June 14, 1887. Serial No. 241,271. (No model.)

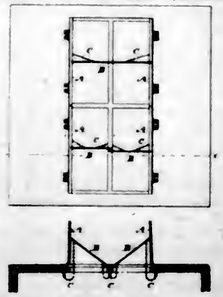


Claim.—1. The combination of the hand provided with a contact-brush, alarm having electrical connections with the hand and with a suitable supply, a number of series of pins against which the contact-brush bears, and push-buttons interposed in a connection between the pins and the supply, as set forth.

2. The combination of the hand, alarm, electrical connection between said hand and alarm and between the alarm and battery, a ring or cylinder in which are arranged longitudinal series of pins, push-buttons interposed in the connection between the pins and the battery, and a contact-brush on the hand adapted to bear on each of the pins in the series by means of a series of projections on the brush, substantially as described.

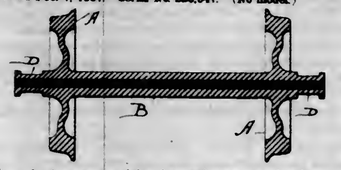
3. In a call system, substantially as herein shown and described, the combination of the buttons and removable tablets having bent fingers on their stems for fitting over the buttons, substantially as and for the purpose set forth.

376,864. HATCHWAY. FRANCIS I. DARRACH, Philadelphia, Pa. Filed Jan. 20, 1887. Serial No. 224,852. (No model.)



Claim.—A support for a door, &c., consisting of a fusible prop having connections of non-fusible material attached to its ends and to the adjacent portions of the frame, substantially as described.

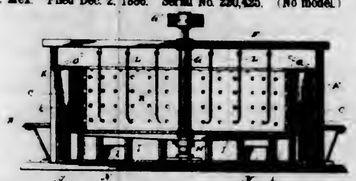
376,865. CAR-WHEEL. FRANCIS P. DAVIDSON, South Chicago, Ill. Filed Feb. 7, 1887. Serial No. 226,847. (No model.)



Claim.—1. As a new article of manufacture, a pair of car-wheels provided with journals and a connecting-shaft cast integral therewith, substantially as described.

2. As a new article of manufacture, a pair of car-wheels provided with a connecting-shaft cast integral therewith, substantially as described.

376,866. WOOL-WASHING MACHINE. SAMUEL DAVIS, Las Vegas, N. Mex. Filed Dec. 2, 1886. Serial No. 220,425. (No model.)

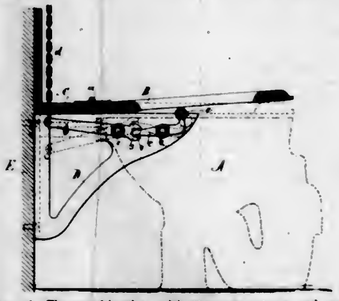


Claim.—1. In a wool-washing machine, the combination, with a pair of tanks, one mounted on a revoluble shaft within the other, of a suitable frame and set of movable depending hooks loosely suspended therefrom and adapted to stir the contents of the revoluble tank, substantially as set forth.

2. In a wool-washing machine, the combination, with a tank and a platform surrounding this tank, of a smaller tank adapted to revolve within the larger tank and a set of doors hinged to the larger tank, adapted to cover the space between the two tanks, substantially as set forth.

3. The combination, with a pair of tanks, one mounted on a revoluble shaft within the other, the smaller tank having angular-shaped projections on its outer sides, and also having perforations in its side and bottom, of a set of depending hooks adapted to stir the contents of the smaller tank as the latter rotates, substantially as set forth.

376,867. SEAT-CONNECTION FOR WATER-CLOSET CISTERNS. JOHN DEHAERT, New York, N. Y., assignor to The J. L. Mott Iron Works, same place. Filed Mar. 21, 1887. Serial No. 231,681. (No model.)

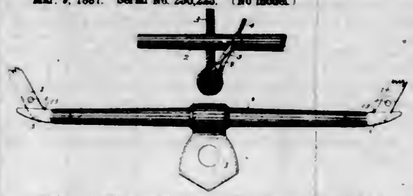


Claim.—1. The combination, with the water-closet and seat, of brackets connected to the wall and supporting the seat, hinges upon which the seat can swing, a lever pivoted to one of the brackets and acted upon by the seat to move the closet-valve by the depression of the seat, substantially as set forth.

2. The combination, in a water-closet, with the wall-plate C and seat B, hinged together, of the brackets D, the compound lever *b c*, pivoted to the face of the bracket, the chain *d*, connected to one end of said lever, and the roller *c* upon the other end, substantially as and for the purposes set forth.

3. The combination, in a water-closet, with a hinged seat, of brackets to support the seat, a compound lever pivoted to the bracket and having a jaw on one end of one part, a cylinder on the end of the other part entering said jaw, a chain connected to one end of the compound lever, and the seat acting upon the other end of said lever, substantially as and for the purposes set forth.

376,868. NECK-YOKE. JOHN EDGAR, Rochester, Minn. Filed Mar. 9, 1887. Serial No. 230,223. (No model.)

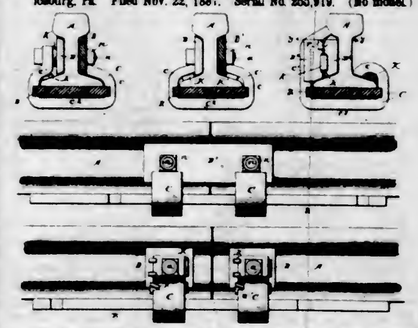


Claim.—1. The combination, with the carriage-pole 2, having a projecting lug, 5, thereon, of the neck-yoke having the strap 3, provided with an opening adapted to fit upon the end of the pole 2, and the auxiliary strap 4, adapted to be carried past the projection and to be engaged with said projection by a partial rotation of the neck-yoke.

2. The combination, with the neck-yoke having the strap 3, of the auxiliary locking-strap 4, for the purpose set forth.

3. The neck-yoke having the projecting end, in combination with the plate 13, secured to said yoke and provided with a projecting spindle substantially at right angles to the projecting end of the neck-yoke, substantially as described.

376,869. RAIL-JOINT SUPPORT. ALEXANDER H. REA, Meehanicsburg, Pa. Filed Nov. 22, 1887. Serial No. 255,919. (No model.)



Claim.—1. In a rail-joint, the combination, with two abutting rails, of a fish plate or bar, D', lapping the joint on one side of the rails, separate bars or plates D, one on each side of the joint opposite the bar D', an embracing binding-clamp for each bar D, securing it to the opposite bar, D', substantially as described.

2. In a rail-joint, the combination, with two abutting rails, of a fish-bar, D', lapping the joint on one side of the rails, separate bars D, one on each side of the joint opposite the bar D', a sole-plate below the ends of the rails, and a clamp, C, passing below the sole-plate and uniting it to the rails and assisting in securing the bars D' D, substantially as described.

3. In a rail-joint, the combination, with two abutting rails, of a sole-plate, a fish-bar, D', lapping the joint on one side of the rails, separate bars or plates D on the opposite side of the rails, and a rigid binding-clamp passing under the sole-plate, which it secures to the rails, and having upward-extending flanges, one engaging the rail-flange and terminating opposite the angular connection of said flange with the rail-web and the other flange extending upward by the side of one of said bars, substantially as described.

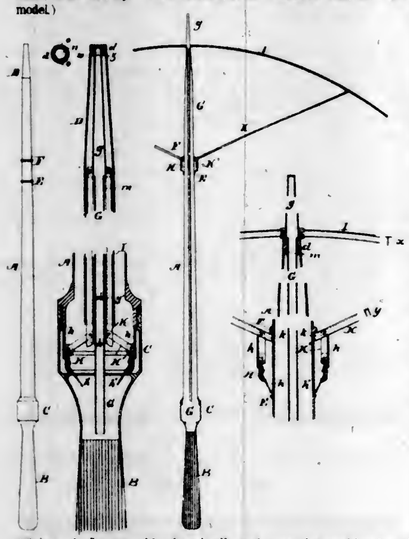
4. In a rail-joint, the combination, with two abutting rails, of a sole-plate, a fish-bar, D', lapping the joint on one side of the rails, separate bars D on the opposite side of the rails, a rigid binding-clamp, C, passing under the sole-plate and having upward-projecting flanges, one engaging the rail-flange and terminating opposite the angular connection thereof with the rail-web and the other flange extending upward by the side of one of the said bars, and bolts *a*, passing through said flange, bars, and the rail, substantially as described.

5. In a rail-joint, the combination, with two abutting rails, of plates or bars by the side of the rails supporting and uniting them, a binding-clamp, C, extending below the rail and having upward-extending flanges overlapping the rail-flanges, and vertically-wedging keys K', adapted to bind the parts vertically together, substantially as described.

6. In a rail-joint, the combination, with two abutting rails, of plates or bars by the side of the rails supporting and uniting them, a binding-clamp, C, vertically-wedging keys K', and laterally-wedging keys K, substantially as described.

7. In a rail-joint, the combination, with two abutting rails, of plates or bars D D' by the side of the rails, the sole-plate B, the binding-clamp C, passing below the sole-plate, and having upward-extending flanges overlapping the rail-flanges and one of them lying by the side of plate D', a key, K', inserted between the rail-flange and one of the flanges of the clamp, and another key, K, inserted between plate D' and the clamp-flange adjacent thereto, substantially as described.

376,870. **COMBINED UMBRELLA AND CANE.** WILLIAM H. G. ELLIS, Louisville, Ky. Filed June 28, 1887. Serial No. 242,716. (No model.)



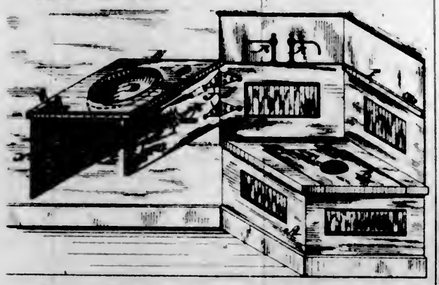
Claim.—1. In a combined umbrella and cane, the combination of the tube A, the handle B, the sleeve C, the beads E and F, the rod G, the thimble H, the T-shaped ribs I, the jointed and grooved braces K K', and the top catch consisting of the lugs *m*, the slots *n*, and the pins *o*, substantially as and for the purpose set forth.

2. In a combined umbrella and cane, the combination of the beads E and F, the thimble H, the T-shaped ribs I, the jointed and grooved braces K K', and the top catch consisting of the lugs *m*, the slots *n*, and the pins *o*, substantially as and for the purpose set forth.

3. In a combined umbrella and cane, the combination of the tube A, the handle B, the sleeve C, the beads E and F, and the thimble H, substantially as and for the purpose set forth.

4. In a combined umbrella and cane, the combination of the tube A, the handle B, the sleeve C, the T-shaped ribs I, and the jointed and grooved braces K K', substantially as and for the purpose set forth.

376,871. **COMBINED WASH-STAND AND WATER-CLOSET.** AUSTIN D. ELWELL, Philadelphia, Pa. Filed July 2, 1887. Serial No. 243,209. (No model.)



Claim.—1. In a combined wash-stand and water-closet, a swinging frame with a basin thereon, the latter having a discharge-pipe with an automatic valve therein, and a water-closet with lid having an opening therein, said valve being open and said opening in lid registering with said discharge-pipe when said swinging frame is closed over said water-closet, substantially as and for the purpose set forth.

2. A wash-stand and water-closet having a swinging frame with basin and discharge-pipe, a valve in said discharge-pipe with projecting stem M, and a water-closet with opening in lid thereof, the said valve being closed by contact of said stem with facing K of stand when discharge-pipe registers with said opening in lid, substantially as described.

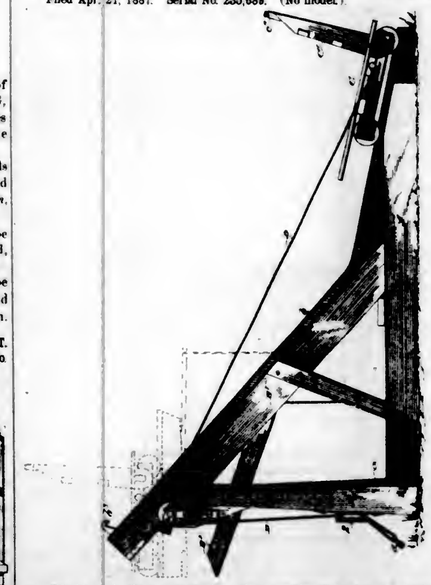
376,872. **HOPPLE.** JOSIAH FREEMAN, Goodlettsville, Tenn., assignor to Lucian E. Drake, same place. Filed Oct. 25, 1887. Serial No. 253,346. (No model.)



Claim.—1. A device for breaking horses, comprising the body-strap A, having one end secured to a ring, B, and its other end passed through said ring, and then doubled on itself and fastened by a buckle, C, the loop D, carried by the ring B, and the loop F, loosely mounted on the body-strap between the ring B and the buckle C, substantially as set forth.

2. A device for breaking horses, comprising the body-strap A, provided at one end with a ring, B, and at an intermediate point with a buckle, C, the free end of the strap passed through the ring B, and then doubled on itself and secured by the buckle C, the loop D, carried by the ring B, the ring H, loosely mounted on the doubled portion of the strap A, between the ring B and the buckle C, and the loop F, carried by the ring H, substantially as specified.

376,873. **STRAW-STACKER.** AUGUST FURST, Corning, Kans. Filed Apr. 21, 1887. Serial No. 235,689. (No model.)

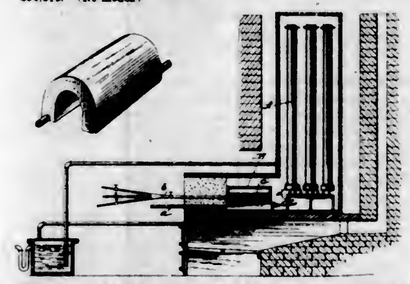


Claim.—1. In a hay-stacker, the combination of a supporting frame-work, the two inclines B and B', the incline B' of which is arranged at a greater angle of inclination than the incline B, the tilting table arranged at the upper part of said incline and trunnioned or pivoted in the uprights A', track-irons *b*, mounted in the several parts, a truck or carriage, C, having a tilting gate, C', traveling and adapted to ascend said inclines, the sheaves or pulleys arranged and mounted upon the uprights A', as set forth, the draft-ropes connected to the carriage and passing through the said sheaves or pulleys, and the projecting beams B³, substantially as described.

2. In a hay-stacker, the combination of the supporting-frame, the inclines mounted in connection therewith, having track-irons secured thereto, the tilting table at the upper forward end thereof, having suitable stops or pins and recessed plates, the truck or carriage traveling on said track-irons and provided with a drop-gate, studs or pins and recessed plates secured to the under sides of the frame-work of the said truck or carriage and adapted to engage with the plates and pins in the tilting table, the projecting beams B³, and the draft-rope D, connected to the said truck or carriage and passing through the sheaves or pulleys 1 1 and 2 2, arranged in the forward part of the frame-work, substantially as described.

3. In a hay-stacker, the combination, with the supporting frame-work, of the inclines mounted thereupon, having a tilting table in the upper portion thereof, a truck or carriage moving on the track-irons mounted in connection with said inclines and connected to draft-ropes, operated as described, and a movable gate mounted in the rear portion of said truck or carriage and adapted to be tilted downward in loading the said carriage with hay or straw, and to be raised in a vertical position when the said truck or carriage has been loaded, substantially as described.

376,874. **APPARATUS FOR OXIDIZING THE SURFACE OF METALS.** GEORGE W. GRIMES, New York, N. Y., assignor to the Hydrogen Company of the United States. Filed Dec. 2, 1887. Serial No. 256,819. (No model.)



Claim.—1. In the treatment of metallic articles, a retort or muffle for holding the article, combined with an open-arched superheater arranged within the muffle, having deflecting-plates arranged within the same to form a circuitous passage, pipe-connections from said superheater to a boiler or other source of steam, and connections between the superheater and muffle, substantially as described.

2. In the treatment of metallic articles, a retort or muffle for holding the article, having a vertical and horizontal portion, a superheater arranged within the horizontal portion, thereby leaving the vertical portion free for the article to be treated, pipe-connections between said superheater and a steam source, and connections with the interior of the muffle from the superheater, substantially as described.

3. In the treatment of metallic articles, a retort or muffle for the articles to be treated, a superheater within the same, pipe-connections with a suitable steam source, connections with the retort, inlet-pipes for the gases and hydrocarbon, and a spraying device connecting the various pipes within the muffle, said spraying device being deflected upwardly to direct the agents directly against the articles treated, with suitable cocks for regulating the flow through one or more of said pipes and cutting it off altogether, substantially as described.

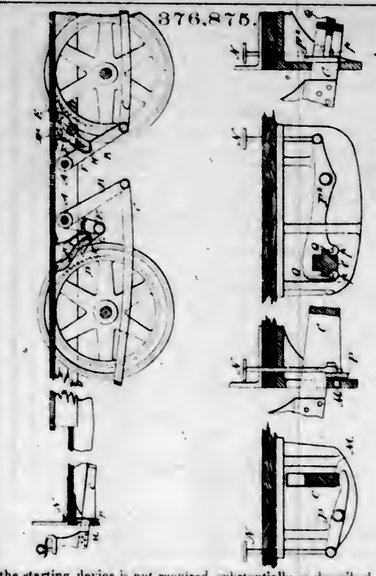
376,875. **CAR-STARTER.** JOHN GILMORE and WILLIAM R. CLARK, London, England. Filed Apr. 6, 1887. Serial No. 233,930. (No model.)

Claim.—1. In a starting device for tramway and other vehicles, the combination, with a longitudinally-yielding draw-bar, of a rock-shaft having a lever-arm to which the draw-bar is pivoted and a lever-arm to which a pawl is directly pivoted, and a carrying-wheel provided with ratchet-teeth near its circumference, substantially as described, for the purpose set forth.

2. In a starting device for tramway or other vehicles, a guide-bracket provided with a pivoted cam-guide, in combination with a pawl having a stud-pin, and with a coacting ratchet-wheel, substantially as described, for the purpose set forth.

3. In a starting device for tramway and other vehicles, a draw-bar provided with a stop or stops which normally prevent its outward longitudinal movement, in combination with a part coacting with said stop or stops, and an unlocking device comprising a treadle convenient to the driver, the arrangement being such that the draw-bar may be unlocked at will in its innermost position, or may be left locked when the starting device is not required, substantially as described, for the purpose set forth.

376,875.



376,876. **HORSE.** WILLIAM C. GOODRICH, Newburg, N. Y. Filed Oct. 6, 1887. Serial No. 251,611. (No model.)



Claim.—1. The combination of a plate having guide-flanges, the supporting-legs pivoted to said plate, and the head having the depending standards fitted between the guide-flanges, substantially as described.

2. The combination of a plate having guide-flanges, the supporting-legs pivoted to said plate, the head having the depending standards fitted between the guide-flanges and vertically adjustable on the plate, and the detaining devices to secure the said standards at any desired adjustment, substantially as described.

3. The plates A, having the vertical parallel guide-flanges B on one side, the laterally-projecting wings D, and the curved flanges E and diverging stop-flanges G on the side opposite the flanges B, for the purpose set forth, substantially as described.

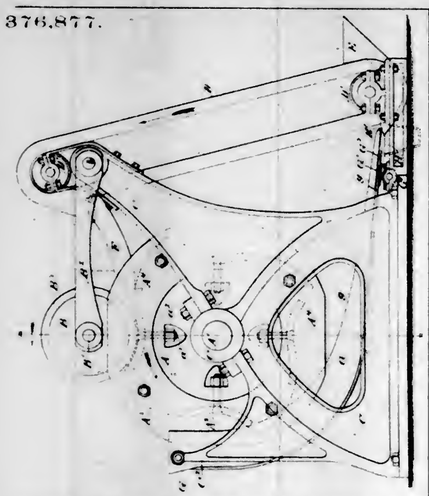
4. The plates A, having the vertical parallel guide-flanges B on one side, the laterally-projecting wings D, and the curved flanges E and diverging stop-flanges G on the side opposite the flanges B, in combination with the supporting-legs having their upper ends pivoted to the plates and bearing against the under sides of flanges E, the vertically-adjustable head having the depending standards fitted between the guide-flanges and provided with the ratchet-teeth, and the dogs or pawls pivoted to one of the wings of each plate and engaging the said ratchet-teeth, substantially as described.

376,877. **MACHINE FOR CRUSHING OR DISINTEGRATING ORES, &c.** ALVAN P. GRANGER, Denver, Colo. Filed Dec 7, 1885. Serial No. 185,015. (No model.)

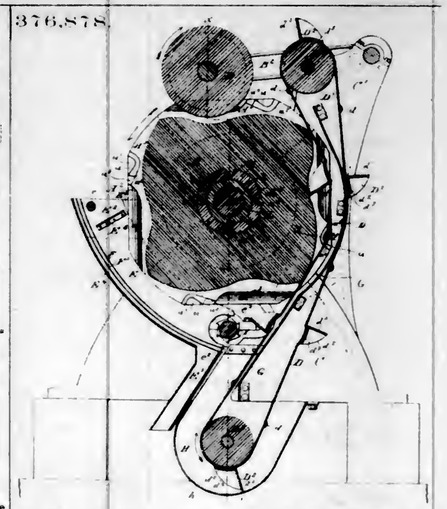
Claim.—1. In a crushing-machine, the combination, with a rotating wheel mounted on a horizontal axis and having depressions in its periphery, of a crushing-roller of suitable form to enter the depressions, arranged to ride said wheel, substantially as described.

2. The combination, in a crushing-machine, of a rotating wheel mounted on a horizontal axis, and having on its periphery concaved or curved depressions alternating with elevations whose surfaces are

376,877.



376,878.



continuous with those of the depressions, and a vertically-movable crushing-roller fitted to enter the depressions and arranged to ride the periphery of the wheel, substantially as described.

3. A rotating wheel having a succession of curved depressions and elevations in its periphery, the descent of the depressed surfaces being relatively more abrupt at their advanced than at their rear ends, in combination with a vertically-movable crushing-roller fitted to enter the depressions and arranged to ride the wheel, substantially as described.

4. The combination of a rotating wheel having a series of peripheral depressions to contain material to be crushed, a movable stamp adapted to enter said depressions, and cam-acting surfaces carried by the wheel, operating to lift the stamp preliminary to its descent into the depressions, substantially as described.

5. The combination of a rotary wheel having a series of peripheral depressions to contain material to be crushed, a movable stamp-roller adapted to enter said depressions, and cam-acting surfaces carried by the wheel, operating to lift the roller preliminary to its descent into the depressions, substantially as described.

6. In combination with a vertically-movable crushing-roller, a wheel having a succession of depressions and elevations upon its periphery, and flanges at the margins of the periphery, forming a peripheral trough in which the crushing-roller rides, substantially as described.

7. In combination with a rotating mortar-wheel having a series of depressions in its periphery and a crushing-roller, a feed-spout which rises and falls with the surface of the periphery of the wheel, substantially as described.

8. The combination, with the mortar-wheel and crushing-roller, of an elevator and a vertically-vibrating spout leading from the elevator to the wheel, substantially as described.

9. The combination, with the mortar-wheel, a crushing-roller, and a hopper, of elevator mechanism which raises the material from the hopper to the upper surface of the mortar-wheel and a screen arranged to receive the crushed product and to deliver the tailings back to the hopper, substantially as described.

10. The combination, with the rotating mortar-wheel and a stamp operating on the upper surface of the wheel, of a curved screen-chute extended beneath the wheel and pivoted at its upper end, and a shaker for the chute, substantially as described.

376,878. **ORE-CRUSHER.** ALVAN P. GRARDER, Denver, Colo. Filed June 21, 1886. Renewed Nov. 5, 1887. Serial No. 254,442. (No model.)

Claim.—1. The combination, with a rotating wheel provided with a series of peripheral depressions and a crushing device acting upon material in the depressions, of an elevating device comprising a belt provided with buckets, and supporting-pulleys for the belt, constructed to sustain the latter with its upwardly-moving part in contact with the said wheel, substantially as described.

2. The combination, with a revolving wheel provided with a series of peripheral depressions and a crushing-stamp, of an elevating device comprising an endless belt provided with buckets arranged at the same distance apart as the said depressions, and supporting-pulleys for the belt, constructed to sustain the latter with its upwardly-moving part in contact with the periphery of the wheel, said belt and the periphery of the wheel being driven at the same speed, whereby the buckets will severally enter the depressions in their upward movement past the wheel, substantially as described.

3. The combination, with a revolving wheel provided with a series of peripheral depressions and a crushing-stamp, of an elevating device comprising an endless belt, supporting-pulleys for the belt located in position to sustain the belt with its upwardly-moving part in contact with the peripheral surface of the wheel, and buckets upon the belt provided with flat bottoms arranged approximately at right angles to the surface of the belt, said buckets being constructed to rest in contact with the peripheral surface of the wheel, whereby the material is retained in the buckets while the latter are moving upwardly past the wheel, substantially as described.

4. The combination, with a revolving wheel provided with a series of peripheral depressions and a crushing-stamp, of an elevating device comprising a belt provided with buckets, said belt being engaged with and actuated by the said wheel, substantially as described.

5. The combination, with a revolving wheel provided with a series of depressions about its periphery and with peripheral flanges and a crushing-stamp, of an elevator-belt provided with buckets, and pulleys sustaining said belt with its upwardly-moving part in contact with the wheel, said belt being provided with cross-bars extending at their ends beyond the margins of the belt, and the wheel-flanges being provided with notches or recesses for engagement with said cross-bars, substantially as described.

6. The combination of a revolving wheel provided with peripheral depressions and with flanges having marginal notches or recesses, a crushing-stamp, and an elevator comprising an endless belt provided with cross pieces or bars adapted to engage the notches or recesses of the flanges, said notches or recesses being provided with inclined outer walls engaging the end surfaces of said cross pieces or bars, substantially as described.

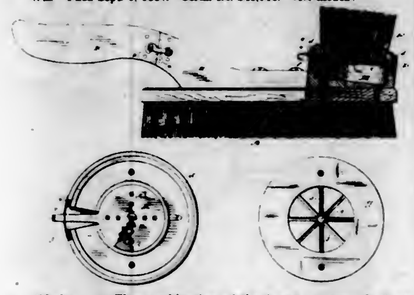
7. The combination, with a revolving wheel provided with a series of peripheral depressions and a crushing-stamp, of an elevating device comprising a belt provided with a series of buckets, supporting-pulleys for the belt, sustaining the latter with its upwardly-moving part in contact with the wheel, and a screen chute constructed to receive material from the said wheel and deliver the uncrushed particles thereof to the buckets upon the upwardly-moving part of the elevator-belt, substantially as described.

8. The combination, with a revolving wheel provided with a series of peripheral depressions and a crushing-stamp, of a screen chute receiving the material from the wheel, said chute being provided with an outwardly and downwardly inclined deflector directing said material against the upper part of the screen therein, substantially as described.

9. The combination, with a revolving wheel provided with a series of peripheral depressions, a crushing-stamp, and a frame supporting the wheel, of a cushion interposed between the wheel and the frame, substantially as and for the purpose set forth.

10. The combination, with a revolving wheel provided with a series of peripheral depressions, a crushing-stamp, and a frame sustaining the wheel, of a shaft, A', for supporting the wheel, a sleeve, L, attached to the shaft and provided with radial flanges *l*, the said wheel being provided with a central opening larger than the sleeve and with inwardly-extending flanges a^3, and a cushion inserted in and filling the space between the said sleeve and wheel, substantially as described.

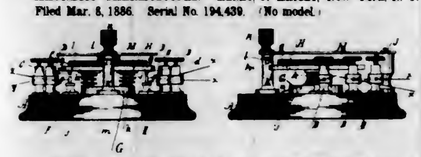
376,879. **BLACKING-BRUSH.** AXEL R. GUSTAFSON, Marinette, Wis. Filed Sept. 6, 1887. Serial No. 248,918. (No model.)



Claim.—1. The combination of the brush A, reservoir C, perforated top or cover D, having the slot *f*, perforated plate E, provided with an arm, *e*, and spreading-brush F, having the central opening, *i*, and radiating gutters *j*, as set forth.

2. The combination of the brush A, reservoir C, perforated top or cover D, having the slot *f*, perforated plate E, provided with an arm, *e*, a shield, *e'*, carried by the arm, and the spreading-brush F, having an opening in its back, as set forth.

376,880. **CIRCUIT-CLOSER AND REGULATOR FOR ELECTRO-MAGNETIC THERMOSCOPES.** HENRY J. HAIGHT, New York, N. Y. Filed Mar. 8, 1886. Serial No. 194,439. (No model.)

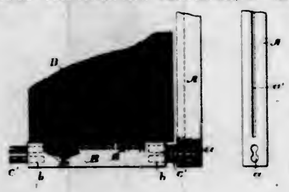


Claim.—1. The combination of the increasing-temperature, decreasing-temperature, and return-circuit wires of an electro-magnetic thermoscope, anvils connecting, respectively, with the said increasing and decreasing temperature wires, two separate keys or hammers, both in metallic connection with and both acting to close and break the respective increasing and decreasing temperature circuits, and a switch for breaking and closing the return-circuit, substantially as and for the purpose herein set forth.

2. In combination with the increasing-temperature and decreasing-temperature keys or knobs, a shield-plate adapted to cover and shield the keys or knobs and at the same time to close the entire return-circuit and to open the said return-circuit when the said keys or knobs are uncovered by said plate.

3. The combination of the increasing-temperature, decreasing-temperature, and return-circuits, anvils connected, respectively, with the increasing-temperature and decreasing-temperature circuits, a metallic disk or plate connected with the return-circuit, spring-keys connected with the return-circuit disk or plate and adapted to respectively strike upon said anvils to close the circuits connected therewith, and a shield-plate adapted to separately close the return-circuit and to shield the said keys or knobs, substantially as and for the purpose herein specified.

376,881. **SCREEN FOR WINDOWS, DOORS, &c.** JACOB HAHN, De Kalb, Ill. Filed Oct. 29, 1887. Serial No. 253,772. (No model.)

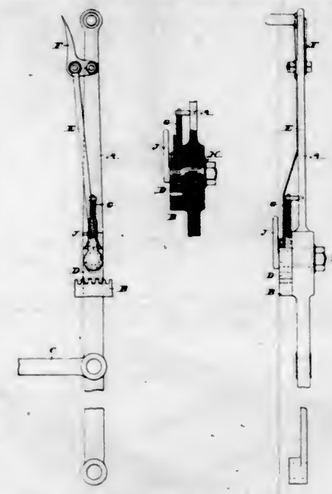


Claim.—1. In a screen for windows and doors, the combination of the rails and sills, each grooved on its inner face, with the wire-mesh placed in said grooves, and staples driven into said grooves in the manner described, whereby they hold the mesh therein, and also secure the entire structure together without the aid of the fastenings.

2. A screen the rails and sills of which are grooved and have holes bored into their ends, combined with the loose tenons adapted to fit into said holes and give the frame firmness, and with the wire-mesh fitting into said grooves, and with staples securing the mesh in the frame and all the parts together, substantially as described.

3. In a screen, the rails A, each having in its ends the auger-holes *a* and in its inner face the groove *a'*, and sills B, each having like holes *b* and grooves *b'*, combined with the wire-mesh D and loose tenons C, and with the staples E, driven down into said grooves and retaining said mesh therein, substantially as and for the purposes set forth.

376,882. **REVERSING-LEVER FOR ENGINES.** WILLIS E. HALL, Altoona, Pa. Filed Jan. 7, 1887. Serial No. 223,661. (No model.)



Claim.—1. An adjustable device for controlling expansion in locomotive and other steam-engines, consisting of the quadrant B with notches, the reversing-lever A with slot therein, the reach-rod C, the latch D, the bolt H, rotatably fitted in said latch and having an eccentric portion working in the slot of the lever A and provided with the handle J, the link E, connecting said latch to its handle F, the latter pivoted to the lever A, and the spring G, bearing against the lever A and the latch D, all of said parts being arranged and combined substantially as described.

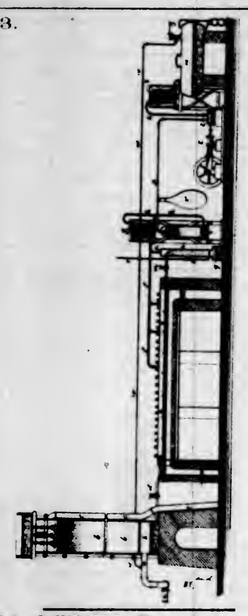
2. In a device of the character described, the combination of a lever provided with a reach-rod and having a bolt with an eccentric portion connected thereto, the said bolt having a latch pivoted thereto, and a notched quadrant, the throw of the eccentric of the bolt being equal to the length of a notch of the quadrant plus the distance between two notches thereof, all substantially as described.

3. In a device of the character described, a slotted reversing-lever having a latch connected thereto, in combination with a notched quadrant, a bolt having an eccentric working in the slot of the reversing-lever, and a spring bearing against the said lever and latch, said parts being substantially as and for the purpose set forth.

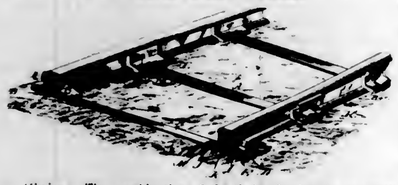
376,883. **PROCESS OF OBTAINING SULPHUROUS ACID.** EMIL HÄNISCH and MAX SCHROEDER, Hamborn, Prussia, Germany. Filed June 4, 1885. Serial No. 167,663. (No specimens.)

Claim.—The process herein described of producing liquid sulphurous acid from furnace or other gases containing sulphurous acid, which consists of the following successive steps: first, passing the furnace or other gases through a spray of water for separating the sulphurous-acid gases by absorption; secondly, heating the resulting solution of sulphurous acid and water, so as to evaporate the sulphurous-acid gas therefrom; thirdly, cooling the separated gases, and, fourthly, converting the same into liquid form by compression and condensation, substantially as set forth.

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376,884. RAILWAY-TIE. WILLIAM B. HENNING, Waterloo, Ind. Filed Nov. 6, 1885. Serial No. 182,067. (No model.)



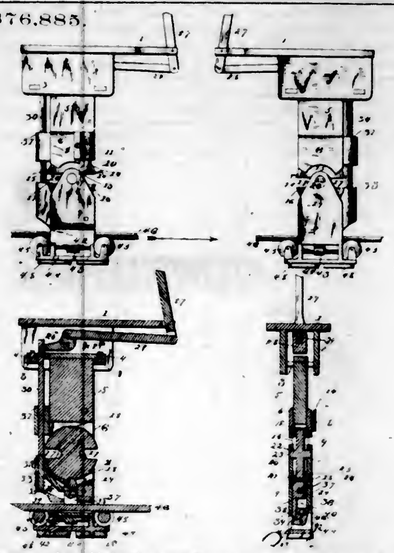
Claim.—The combination of the tie-bar having the upwardly-bent and outwardly and inwardly bulged ends, the outer clamping-blocks having the curved lips at the upper edges and having the recessed foot portions, the inner clamping-block having the notches in the foot portions, the rails, the bolts passing through the clamping-blocks and through the ends of the tie-bar and through the webs of the rails, and the bolts passing into the tie-bar and fitted into the notches of the foot portions of the inner clamping-blocks, as shown and set forth.

376,885. CABLE-GRIP. ELWOOD P. HEPPARD, Jr., Woodbury, N. J. Filed Aug. 1, 1887. Serial No. 245,820. (No model.)

Claim.—1. In a grip for cable-cars, the combination of the upper flat bar secured to the car and having a downwardly-extending lip at one side of its lower end formed with a concave segmental lower edge and with a segmental groove concentric with the edge, a plate having a similar edge and groove and secured to the other side of the bar, a lower block or casting having the clamping mechanism and formed with an upwardly-extending lip formed with a bearing at the upper end and with a segmental groove in its inner face, a plate secured to the other side of the casting and formed with a similar bearing and groove, a circular disk having flanges projecting laterally from the periphery and fitting and turning in the grooves, and having trunnions journaled in the bearings, and provided with diametrically-opposite radiating slots extending from the periphery, and with notches at right angles to the slots, and a catch for engaging the notches in the disk and for holding the slots horizontally, as and for the purpose shown and set forth.

2. In a grip for cable-cars, the combination of the clamping portion having suitable guide-rollers and fender-rollers at the lower end, and having a block formed with a groove in one side of the lower end, a block hinged at its lower edge at the lower edge of the recess, fitting into the recess, and having a groove registering with the other

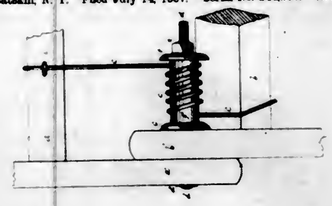
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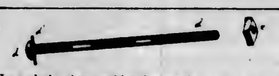
groove, and provided with a laterally-projecting arm at the lower edge, a rod sliding in a vertical bearing and having a spring forcing it upward, and having a downwardly-inclined arm, a vertically-sliding bar having its lower end bearing against the arm of the clamping-block and having the arm of the sliding rod engaging its upper end, a vertically-sliding rod having its lower end engaging the spring-actuated rod, an L-shaped lever pivoted under the car and having the upper end of the vertically-sliding rod movably connected to its long arm, and a lever pivoted in the platform of the car and having a connecting-rod pivoted to its lower end and to the upper end of the short arm of the L-shaped lever, as and for the purpose shown and set forth.

3. In a grip for cable-cars, the combination of the upper flat bar having the lip formed with the segmental groove and the vertical bearing, the plate secured to the face of the bar formed with the groove and having a spring-pawl sliding in a vertical casing, the lower casting formed with the lip having the bearing and groove, and having the vertical spring-casing at its rear end and the recess in its lower end formed with the groove, the plate secured to the casting having the bearing, the groove and the notch for the pawl, the circular disk journaled in the bearings and having the diametrically-opposite slots radiating from the periphery, and having the notches at right angles to the slots, the clamping-block hinged at the lower end of the casting in the recess and having the groove and the arm, the vertically-sliding bar formed with the head engaging the notches of the disk and having its lower end bearing against the arm of the clamping-block, the vertically-sliding rod having the spring in the spring-casing forcing it upward and having the downwardly-inclined arm engaging a groove in the head of the vertically-sliding bar, the vertically-sliding rod in the bearing of the upper flat bar bearing with its lower end against the spring-actuated rod below it, an L-shaped lever pivoted at its bend under the car and having its long arm movably connected to the vertically-sliding rod, a hand-lever pivoted in the platform of the car, and a connecting-rod pivoted to the lower end of the hand-lever and to the upper end of the short arm of the L-shaped lever, as and for the purpose shown and set forth.

376,886. RETURN-SPRING FOR CHAIRS. JOSEPH B. HOLDEN, Catskill, N. Y. Filed July 14, 1887. Serial No. 244,256. (No model.)



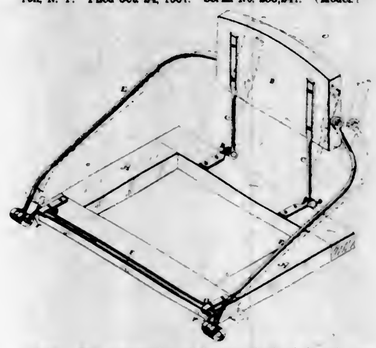
376,886.



Claim.—1. In a chair, the combination of the parts *a a'* and *b b'*, the bolt *d*, the washer *g*, groove *g'*, barrel *f'*, head *f*, and nut *e*, substantially as and for the purpose set forth.

2. In a chair, the spring *c*, in combination with the parts *a a' b b'*, the bolt *d*, washer *d'*, washer *g*, groove *g'*, barrel *f'*, having head *f*, and nut *e*, substantially as and for the purpose set forth.

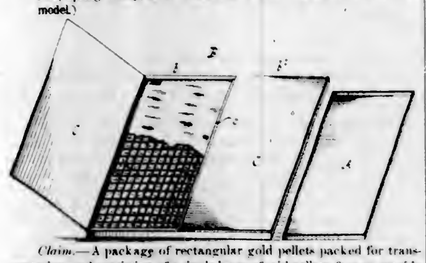
376,887. SEAT FOR VEHICLES. SAMUEL B. IRWIN, West Hebron, N. Y. Filed Oct. 24, 1887. Serial No. 253,241. (Model.)



Claim.—The combination of the seat, the back loosely connected thereto, the arms connected to the back, and the cranks for adjusting the back, substantially as shown and described.

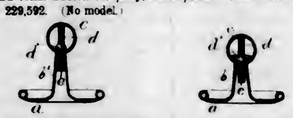
376,888. WITHDRAWN.

376,889. DENTAL GOLD-PELLET PACKAGE. EDWARD G. KEARSING, Spring Valley, N. Y. Filed Jan. 7, 1886. Serial No. 187,928. (No model.)



Claim.—A package of rectangular gold pellets packed for transportation, and consisting of a single layer of said pellets, face or cut side uppermost, inclosed by the walls of the packing-box, in such manner as described, to substantially prevent impact or free movement of the pellets, substantially as set forth.

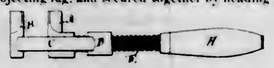
376,890. BUTTON. DANIEL A. LADD, Newark, N. J., assignor to the Newark Collar Button Company, same place. Filed Mar. 3, 1887. Serial No. 229,592. (No model.)



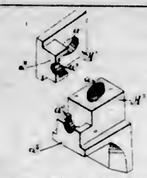
Claim.—The stud consisting of the back *a*, hollow shank *b*, head *c*, and pin provided with an enlargement, the whole arranged and combined as and for the purpose set forth.

376,891. WRENCH. BRADFORD F. LANCASTER, Augusta, Me. Filed Sept. 22, 1885. Serial No. 177,865. (No model.)

Claim.—In a wrench, a sliding jaw made in two parts, the one having an elliptically-shaped rivet and the other an elliptically-shaped hole and a projecting lug, and secured together by heading said rivet,

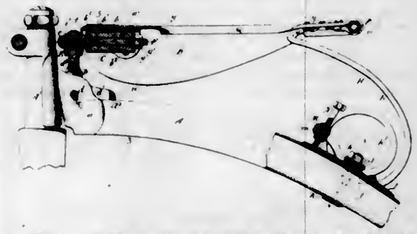


376,891.



the lug of the one part coming against the face of the other part, whereby the two parts are locked and interlocked together, substantially in the manner and for the purpose set forth.

376,892. VELOCIPEDE-SADDLE. EMMIT G. LATTA, Friendship, N. Y., assignor to the Pope Manufacturing Company, Portland, Me. Filed Jan. 24, 1887. Serial No. 225,248. (No model.)



Claim.—1. The combination, with the frame and saddle, of a screw-threaded supporting-standard pivoted to the frame, and a screw-nut connected with the saddle and engaging with said standard, substantially as set forth.

2. The combination, with the frame and saddle, of a screw-threaded supporting-standard pivoted to the frame, a screw-nut applied to said standard, and a bolt pivoted to said nut and connected with the saddle, substantially as set forth.

3. The combination, with the frame and saddle, of a screw-threaded supporting-standard pivoted to the frame, a screw-nut applied to said standard, a bolt pivoted to the nut and connected with the saddle, and a spring applied to said bolt, substantially as set forth.

4. The combination, with the frame and saddle, of a socketed pommel-plate secured to the saddle, a spring seated in said plate, a bolt passing through said spring, a screw-nut pivoted to said bolt, and a screw-threaded supporting-standard pivoted to the frame and engaging with said screw-nut, substantially as set forth.

5. The combination, with the frame and saddle, of a screw-threaded supporting-standard attached to the frame, a screw-nut applied to said standard, and a bolt connecting said screw-nut with the saddle and attached to the screw-nut near one end thereof, substantially as set forth.

6. The combination, with the frame and saddle, of a screw-threaded standard attached to the frame, a screw-nut applied to said standard and provided near one end with a perforated ear, and a bolt connected with the saddle and pivoted to the ear of the screw-nut, substantially as set forth.

7. The combination, with the frame and saddle, of a screw-nut connected with the saddle, and a screw-threaded supporting-standard, D, pivoted to the frame and provided with a cross-piece, d^6, resting on the frame, substantially as set forth.

8. The combination, with the frame and saddle, of a supporting-standard pivoted to the frame, a bolt pivotally connected at its front end with said standard and extending rearwardly therefrom underneath the saddle, and a spring applied to said bolt and connected with the saddle, substantially as set forth.

9. The combination, with the frame and saddle, of a pommel-plate provided in its under side with a longitudinal socket, a spring arranged lengthwise in said socket, and a pommel-support connected with the frame and with said spring, substantially as set forth.

10. The combination, with the saddle, of a supporting-spring composed of two similar branches having their upper and lower ends screw-threaded, and screw-sleeves connecting the adjacent ends of the branches, substantially as set forth.

11. The combination, with the saddle and frame, of a supporting-spring composed of two similar branches secured with their upper ends to the saddle, and having their lower ends screw-threaded and attached to the frame, and a screw-sleeve connecting the lower ends of said branches, substantially as set forth.

12. The combination, with the saddle and frame, of a supporting-spring composed of two similar coiled branches having their upper

ends attached to the saddle, a supporting-plate secured to the frame and receiving the coils, and a coupling connecting the lower ends of the branches of the spring, substantially as set forth.

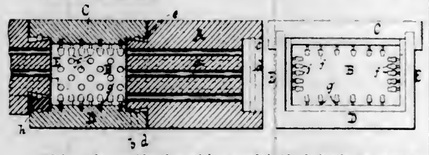
13. The combination, with the saddle and frame, of a supporting-spring composed of two similar coiled branches secured with their upper ends to the saddle, and having their lower ends connected by a coupling and supported on the frame, and an adjusting-screw, whereby the spring can be raised and lowered, substantially as set forth.

14. The combination, with the saddle and frame, of a supporting-spring composed of two similar branches secured with their upper ends to the saddle, and having their lower ends connected by a coupling and supported on the frame, and an adjusting-screw passing through said coupling, substantially as set forth.

15. The combination, with the saddle and frame, of a supporting-spring composed of two similar branches secured with their upper ends to the saddle, and having their lower ends screw-threaded, a threaded coupling-sleeve connecting said ends, a plate attached to the frame and supporting the spring, and an adjusting-screw working in said coupling-sleeve and resting on the supporting-plate, substantially as set forth.

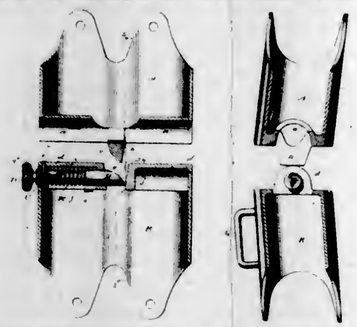
16. The combination, in a saddle, of an expansible seat and an expansible frame composed of the two side pieces secured to the seat and connected at their inner ends by a screw-coupling, substantially as set forth.

376,893. **UNDERGROUND CONDUIT FOR ELECTRIC WIRES.** ERNEST C. LINDEMANN, Baltimore, Md. Filed Nov. 2, 1887. Serial No. 254,045. (No model.)



Claim.—In combination with a conduit-block having a recess at one end, with an internal groove, as shown, a similar block with a dovetailed projection of a reduced size, and a grooved liner-block adapted to reduce the size of the recess, substantially as and for the purpose specified.

376,894. **HORSE-COLLAR FASTENING.** ROBERT T. LOMBARD, Racine, Wis. Filed Aug. 13, 1887. Serial No. 246,826. (No model.)



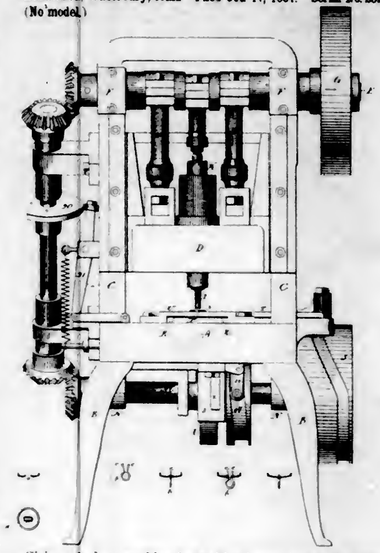
Claim.—1. In a horse-collar fastener, the combination of two opposing sections, one of which has a longitudinal concave depression in its face and a central transverse eye-piece outwardly projecting therefrom, the other section provided upon its face with convex elevations that fit said concave depression, and an open space between these depressions for the passage of the eye-piece, and a suitable bolt arranged in the latter section to engage said eye-piece, substantially as set forth.

2. In a horse-collar fastener, the combination of two opposing sections, one of which has a longitudinal concave depression in its face and a central transverse eye-piece outwardly projecting therefrom and beveled upon one of its sides, the other section provided upon its face with convex elevations that fit said concave depression, and an open space between these elevations for the passage of the eye-piece, and a suitable bolt beveled upon its inner end in opposition to the bevel on said eye-piece and arranged to engage the latter, substantially as set forth.

3. In a horse-collar fastener, the combination of the section A, having the concave depression *a* and eye-piece *b*, the section B, provided with the convex elevations *d* and open space *e*, the grooved bolt D, spring E, and stop-pin F, substantially as set forth.

4. In a horse-collar fastener, the combination of the section A, having the concave depression *a* and eye-piece *b*, the section B, provided with the convex elevations *d* and open space *e*, the bushing C, grooved bolt D, spring E, and stop-pin F, substantially as set forth.

376,895. **MACHINE FOR MAKING BUTTON-BACKS.** FRANK J. LUDINGTON, Waterbury, Conn. Filed Oct. 17, 1887. Serial No. 252,526. (No model.)



Claim.—1. In a machine for making button-backs, the combination of a cutting and drawing punch and a corresponding die adapted to cut the disk and form the cup for the back, a reciprocating slide arranged beneath said die and so as to reciprocate in a plane at substantially right angles to the axis of the die, the said slide having an opening through it corresponding to the external shape of the cup to be formed, a reciprocating punch below said slide and in line with the cup-forming punch, the said second punch adapted to pierce the cup, an eye-forming mechanism, substantially such as described, arranged in the line of reciprocation of the said slide, but below it, the reciprocating movement of the said slide being adapted to bring the formed pierced cup to a position over the eye, and a setting-punch arranged to pass down through the opening in the slide, substantially as described, and so as to transfer the cup from the slide onto the eye and set the legs of the eye thereon.

2. The combination of the cutting and drawing punches I J, the corresponding stationary die V, the reciprocating slide P, arranged beneath said stationary die, the said slide P constructed with an opening through it corresponding to the opening through the die and adapted to receive the cup formed by said punches and die, a vertically-reciprocating punch, *n*, below said slide and in line with the cupping-punch, the stationary spindle *w*, the horizontally and vertically reciprocating bending-dies 13 and 14, having cavities 15 in their face corresponding to the exterior surface of the eye to be formed, the said spindle and dies being in line with the reciprocating movement of the said slide P, but below it, and a vertically-reciprocating setting-punch, 23, over said spindle, substantially as and for the purpose described.

3. The combination of the cutting and drawing punches I J, the corresponding stationary die V, the reciprocating slide P, arranged beneath said stationary die, the said slide P constructed with an opening through it corresponding to the opening through the die and adapted to receive the cup formed by said punches and die, a vertically-reciprocating punch, *n*, below said slide and in line with the cupping-punch, the stationary spindle *w*, the horizontally and vertically reciprocating bending-dies 13 and 14, having cavities 15 in their faces corresponding to the exterior surface of the eye to be formed, the said spindle and dies being in line with the reciprocating movement of the said slide P, but below it, a reciprocating separator, 18, and a vertically-reciprocating setting-punch, 23, over said spindle, substantially as described.

4. The combination of a cup-forming and transfer mechanism, substantially such as described, with a stationary spindle, *w*, the horizontally and vertically reciprocating dies 13 and 14, the said dies 13 and 14 having cavities 15 formed in their respective faces, and a setting-punch, 23, with a reciprocating stripper, 26, substantially as described.

5. The combination of a reciprocating slide, P, having an opening through it adapted to receive a cup for a button-back, the mechanism, substantially such as described, for cutting and forming the cup and introducing the same into said openings in the said slide, the spindle *w*, the horizontally and vertically reciprocating bending-dies 13 and 14, the said spindle and dies arranged in line with the reciprocation of the said slide P, but below it, the reciprocation of the said slide P being adapted to bring the opening therein carrying the cup directly over said spindle, a feed for the wire, a wire-guide, 16, through which the said wire is led between the spindle and said bending-dies, one of said bending-dies 14 provided with a cutter, 17, working against the face of the guide 16, and the setting-punch 23, substantially as and for the purpose described.

6. An eye-forming device for button-backs consisting of the reciprocating slide 2, a slide, *i*, reciprocating in a plane parallel with said slide 2, but at right angles thereto, slides 5 and 6, arranged in guides in said slide 2 at right angles to the path of movement of said slide 2, the said slide *i* constructed with a cam-groove, 4, into which a stud from the slide 2 extends, whereby reciprocating movement is imparted to said slide 2, lever 7 8, hung upon said slide 2, one end of each, respectively, connected to said slides 5 6, a cam-shaped groove, 12, in said slide *i*, and links 9 10, one end of each connected, respectively, with the said levers 7 8, the other ends of said links connected by a stud, 11, working in said cam-groove 12 in the slide *i*, substantially as described.

376,896. **STOCK-LOADING DEVICE.** ANDREW J. MARTIN, Muncy, Pa., and HENRY J. BREESE, Macedon, N. Y. Filed June 3, 1887. Serial No. 240,156. (No model.)

Claim.—1. In a device for loading live stock, the combination of the stationary inclined gangway, the section forming a continuation thereof, and having one end movable vertically and the other end arranged to move horizontally, the rack-bars and pinions, and the dogs or locking devices for operating the vertically-movable end of the said section, substantially as described.

2. The stationary gangway B, in combination with a vertically-movable section, C, provided with side rails, the pivoted sections E, and the adjusting and supporting devices for the section C, as described and shown.

376,897. **STORE-SERVICE APPARATUS.** CHARLES W. MCCORMICK, Emporia, Kans. Filed Aug. 10, 1887. Serial No. 246,566. (No model.)

Claim.—1. In a store-service apparatus, the combination, with the track and its supports, of a guide arranged parallel to the track and provided with an angular guide-orifice and a push-bar mounted within said guide and having a twist in its body to engage the angles of the guide-orifice, substantially as before set forth.

2. In a store-service apparatus, the combination, with the track and its supports, of the casing secured to one of said supports and having an angular guide-orifice, a swiveled push-bar having spiraled ribs or angles to engage the guide-orifice of the casing and provided at its forward protruding end with an arrow-head, and a carriage provided with hooked jaws engaging the barbs of said arrow-head when the push-bar is in its retracted position, substantially as described.

3. The combination, with the line-wire and its supports, of the casing secured adjacent one end of the line-wire, a push-bar swiveled at its inner end to a slide mounted in grooves within the casing, a slide mounted to move beside the push-bar and provided with a pulley, a fixed stud, a grooved pulley mounted in lugs in the casing, and the cords connected to said slides, substantially as described.

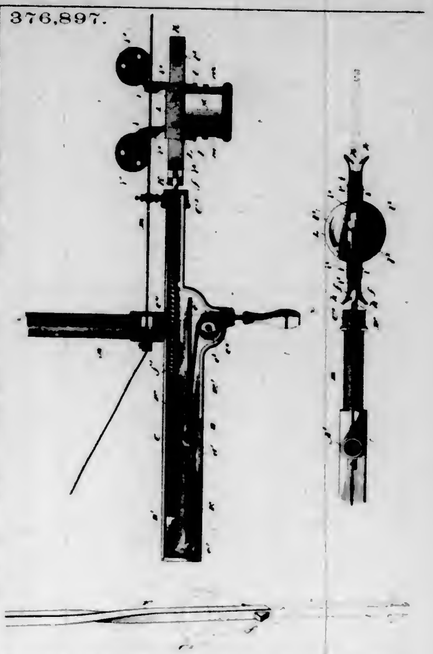
4. A store-service apparatus consisting of a casing provided with parallel grooves or ways, a fixed stud, a grooved pulley mounted in lugs, a slide, D, arranged to move in one set of ways and provided with a pulley, a slide, D′, arranged to move in the other set of ways, a cap, a push-bar swiveled at its rear end to the slide D′ and provided at its forward protruding end with an arrow-head, a spring pressing rearward upon the push-bar, a cord passing from the fixed stud over the pulley in slide D and connected to slide D′, and a cord connected to slide D and passing over pulley *e*′ to the exterior of the case, substantially as described.

5. A store-service apparatus consisting of a case provided at its forward end with a cap having an angular aperture, a push-bar proper having a cross-sectional contour to fit the aperture of said cap and twisted a quarter-turn on its own axis, a spring pressing rearwardly upon said bar, and means to propel the bar forward in opposition to the spring, substantially as described.

6. The combination, with the supports and track suspended therefrom, of a case having an angular guide-orifice, a slide within the case, a push-bar connected at its rear end to a slide by a swivel and having spiral ribs or angles and provided at its forward end with an arrow-head, a carriage mounted upon the track and provided at its ends with hooked spring-jaws to engage the barbs of the arrow-head, a spring pressing rearwardly upon the push-bar, and means to propel the push-bar forward in opposition to the spring.

7. A cash-box for store-service apparatus, consisting, substantially as before set forth, of a cover, the lower edge of the flange of which

376,897.



is inturned to form a shoulder, and having downwardly-pressing springs cut from the metal of said cover at the top, and a receptacle provided with spring-catches to engage said inturned shoulder, substantially as described.

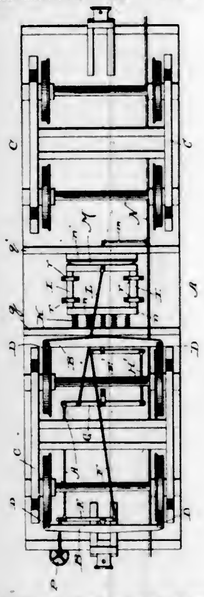
8. In a store-service apparatus, the combination, with the track and its supports, of a guide arranged relatively to the track, having an angular orifice formed in one end thereof, and a push-bar mounted in said guide, having a twist in the body thereof to produce a quarter-revolution of the said bar when passing through the angular orifice in the guide, and projections on the end of the bar, for the purposes set forth.

9. In a store-service apparatus, the combination of a guide mounted relatively to a track or way and provided with a square orifice, and a push-bar having a single twist in the body thereof, the angles of which are out of alignment with the horizontal plane of the said bar and operate conjunctively with the guide-orifice, substantially as described.

10. In a store-service apparatus, the combination, with a guide mounted relatively to a track or way and having a square orifice, of a direct-acting push-bar or starter constructed of about the same dimensions as the orifice in the guide and formed with a single twist in the body thereof, mounted in and having a quarter-revolution when propelled from said guide, substantially as described.

11. In a store-service apparatus, the combination, with a track or way and its supports, of a guide supported relatively thereto and formed with a square orifice, a spring-actuated push-bar or starter having a single twist in its body, mounted in said guide and adapted to be propelled therefrom, and pull-cords of shorter length than the said push-bar, which are adapted when operated to propel the said bar forward its entire length, whereby the power applied is concentrated upon the push-bar by a limited amount of extraneous exertion, substantially as described.

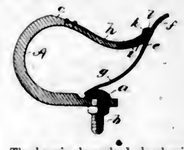
376,898. **CAR-BRAKE.** MORTIMER R. MILLS and FRANK W. MILLS, Chicago, Ill. Filed June 10, 1887. Serial No. 240,868. (No model.)



Claim.—1. The combination of the brake mechanism of a car, a shifting frame, I, provided with a convex bearing, n', on one end, a spring at one side of the frame, operating to hold it normally in a position to set the brakes through the medium connecting it therewith, and a chamber, M, at the opposite side of the frame, to communicate with an air-pressure supply, and comprising a dish, M', covered by a flexible diaphragm, M^3, bearing against the projection n' on the frame, substantially as and for the purpose set forth.

2. The combination, with a car, of brake-beams B, carrying brake-shoes, levers E and E', having their short arms connected, a lever, G, connected on opposite sides of its fulcrum with the long arms of the levers E and E', a shifting frame, I, connected with the lever G, springs K, confined against one side of the frame and operating to maintain the brakes normally set, a conduit, N, and a collapsible chamber, M, communicating with the conduit N and confined against the opposite side of the frame I, substantially as and for the purpose set forth.

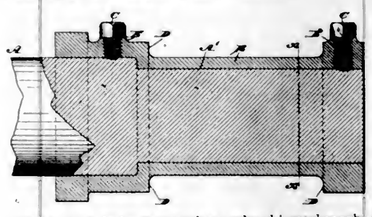
376,899. **CHECKREIN-HOOK.** WILLIAM E. MOORE, Chillicothe, Ohio. Filed Aug. 4, 1887. Serial No. 246,142. (No model.)



Claim.—1. The herein-described checkrein-hook having a rearwardly-extending flattened arm slotted in its end, in combination with a lever pivoted in the slot of said arm and projecting above and below the same, and a spring secured to the flat side of the arm of the hook and bearing upon the long arm of the lever, which projects below the upper arm of the hook, substantially as described.

2. The hook A, having slot d, lever e, provided with projection i, and pivoted in the free end of the hook, in combination with spring h, attached to the hook at one end, and its free end bearing upon the projection i of the lever, substantially as described.

376,900. **REPAIRING VEHICLE-AXLES.** JAMES F. MORELL, Camden, N. J., assignor of one-half to Joseph E. Roberts, same place. Filed July 21, 1887. Serial No. 244,862. (No model.)



Claim.—1. A device for restoring a reduced journal or axle, consisting of a sleeve which is adapted to be fitted on the reduced portion of the journal or axle, and having a securing screw or bolt, the exterior of the sleeve being of a contour corresponding to that of a journal or axle, substantially as described.

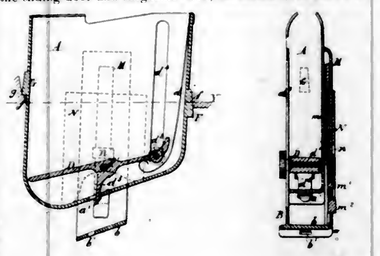
2. A sleeve of the contour of a journal or axle, substantially as and for the purpose set forth.

3. A sleeve of the contour of a journal or axle and provided with a screw or bolt, substantially as and for the purpose set forth.

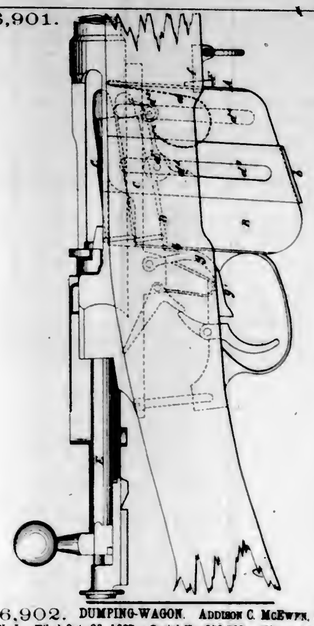
4. The sleeve B, substantially as described, provided with a screw or bolt, and a boss about the opening for said screw, as set forth.

376,901. **MAGAZINE FIRE-ARM.** RICHARD MORRIS, Blackheath, County of Kent, England. Filed Sept. 6, 1887. Serial No. 248,950. (No model.) Patented in England Apr. 20, 1887, No. 5,786; in Belgium Aug. 29, 1887, No. 78,693, and in Italy Nov. 29, 1887, XLIV, 253.

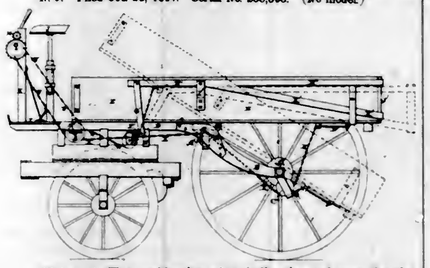
Claim.—For a breech-loading fire-arm, a detachable magazine, A, having at its front a vertically-sliding door, B, with a back guide, M, held up by a spring-catch, $m\,m'\,m^3$, and having within it a sliding platform, D, urged upward by a spring, d, the said platform having a latch-arm, d^3, and pins $d'\,d^2$, guided, respectively, in slots $d^3\,d^4$ of the sliding door and magazine-back, substantially as described.



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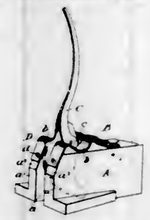
376,902. **DUMPING-WAGON.** ADDISON C. MCEWEN, Jersey City, N. J. Filed Oct. 26, 1887. Serial No. 253,593. (No model.)



Claim.—1. The combination of a windlass located upon the platform for the driver's seat, the operating-chain extending therefrom, a shaft provided with a sprocket-wheel, and a worm or drum, the two operating-chains which are wrapped in opposite directions around the worm or drum, the guiding-pulleys, and the pivoted wagon-body, substantially as shown.

2. The combination of the rear axle, the knees secured thereto, the cheek-plates secured to the knees and the timbers upon which the body is supported, the casting secured to the under side of the body, and the body, substantially as described

376,903. **POST-EXTRACTOR.** WILLIAM R. OYLER, Topeka, Kans. Filed Aug. 25, 1886. Renewed June 11, 1887. Serial No. 241,026. (No model.)



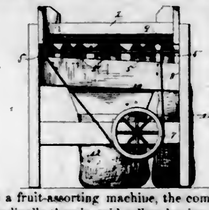
Claim.—1. A post-lifter or similar device consisting of a base or fulcrum block vertically slotted in front and having crotches or lever-seats on each side of said slot, combined with a lever having at its lower end a blade fitting into said slot and having staggered teeth, substantially as described.

2. The fulcrum-block slotted in front and having the crotches at the top and on each side of the said slot, combined with the lever having rounded ends to rest on the said crotches and the blade provided with staggered teeth on its curved front edge, substantially as described.

3. The combination of the block A, slotted vertically in front at a and having crotches B, one on each side of said slot, and combined with a lever, C, and blade D, having teeth d on its eccentric edge, substantially as described.

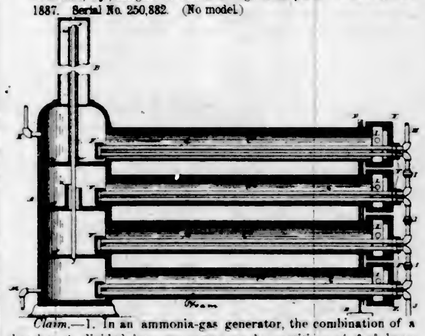
4. A base-block having a slotted end, combined with a detachable lever, having the toothed blade, fulcrumed on said block, substantially as described.

376,904. **MACHINE FOR ASSORTING FRUIT.** WILLIAM R. PHILLIPS, Milford, Del. Filed Sept. 10, 1886. Serial No. 213,230. (No model.)



Claim.—In a fruit-assorting machine, the combination of rollers journaled longitudinally therein, said rollers having sections of successively-decreasing diameters toward one end and arranged in pairs, the upper ends of the rollers of each pair being in frictional contact, a drive-pulley and an idle-pulley journaled to one end of said frame, and a band passed over said pulleys and alternately over and under the end of one of the rollers in each pair and one of the outer rollers, and adapted to bear against the inner face of the opposite outer roller, substantially as described, and for the purpose set forth.

376,905. **AMMONIA-GAS GENERATOR.** MATHIAS POSCHINGER, Louisville, Ky., assignor to Sulzer & Vogt, same place. Filed Sept. 26, 1887. Serial No. 250,882. (No model.)



Claim.—1. In an ammonia-gas generator, the combination of a chamber, A, divided into compartments by partitions $a'\,a^3\,a^4$, large tubes $C'\,C^3\,C^3\,C^4$, coils of steam-pipe G, upper and lower pipes L, and tubes w, x, and y, substantially as and for the purpose set forth.

2. In an ammonia-gas generator, the combination of a chamber, A, divided into compartments by partitions $a'\,a^3\,a^4$, large tubes $C'\,C^3\,C^3\,C^4$, coils of steam-pipe G, and connecting-pipes l, to give a large heating-surface, substantially as and for the purpose set forth.

3. In an ammonia-gas generator, the combination of a chamber, A, divided into compartments by partitions $a'\,a^3\,a^4$, large tubes $C'\,C^3\,C^3\,C^4$, upper and lower tubes L, and tube x, to allow the ammonia to pass through the generator, substantially as and for the purpose set forth.

4. In an ammonia-gas generator, the combination of a chamber, A, divided into compartments by partitions $a'\,a^3\,a^4$, large tubes $C'\,C^3\,C^3\,C^4$, and tubes w, x, and y, to allow the gas to pass to the receiver dry, substantially as and for the purpose set forth.

5. In an ammonia-gas generator, the combination of tubes $C'\,C^3\,C^3\,C^4$ with pipes l, which permit the ammonia to flow from one tube to another, substantially as and for the purpose set forth.

6. In an ammonia-gas generator, the combination of tubes $C'\,C^3\,C^3\,C^4$ with a pipe, x, allowing the ammonia to flow down and gas to rise simultaneously, as and for the purpose set forth.

376,906. **BORING-TOOL.** MAX QUASS, Philadelphia, Pa. Filed Apr. 27, 1887. Serial No. 236,364. (No model.)

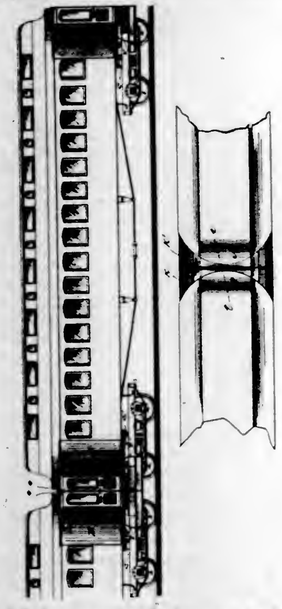


Claim.—1. A boring-tool consisting of semi-tubular sections with sloping forward ends and overlapping cutting side edges and a clamping-sleeve, substantially as described.

2. A boring-tool consisting of sections having rounded forward ends and overlapping edges, substantially as and for the purpose set forth.

3. The combination of a boring-tool composed of tubular sections with overlapping edges, with the sleeve D, the head E, the screws F, and flexible shafting C, substantially as described.

376,907. **CAR-CONNECTION.** ALBERT RAYMOND, Chicago, Ill., assignor of one-half to George Raymond, same place. Filed Oct. 27, 1887. Serial No. 253,503. (No model.)



Claim.—1. In the construction of railway-cars, a truck that is adapted to pivotally support the adjacent ends of two cars, said trucks having attached thereto steps, and having at the sides thereof extending from the end of one car to the end of the adjacent car casings or doors, to form a vestibule inclosure between car ends.

2. In the construction of railway-cars, a truck that is adapted to pivotally support the adjacent ends of two cars, and the combination therewith of doors at each side to form a vestibule inclosure between car ends, said doors being secured to and supported upon the truck.

3. In the construction of railway-cars, trucks in two parts that are brought closely together, in combination with abutting plates I and I', horizontal platform-extensions *g* and *g'*, connected with said abutting plates, coupling-bars J, center castings, C C, supported upon the trucks, castings E E, attached to the car-bodies, and the king-bolt G, substantially as set forth.

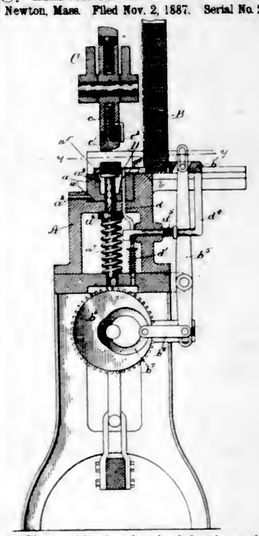
4. In railway-cars, double or two-part trucks, one part being closely connected with the other and adapted for pivotal support of adjacent ends of cars, in combination with abutting plates I and I', platform-extensions *g* and *g'*, vertical bars *s*, secured to said extensions, and door or doors *u*, hinged to said bars *s*, substantially as set forth.

5. In railway-cars, a solid truck adapted to pivotally support the ends of adjacent cars, in combination with a vestibule between the ends of cars and supported upon the truck, consisting of a platform, doors at each side of said platform, and a covering for said vestibule.

6. In railway-cars, the combination, with a solid or closely-joined two-part truck adapted to pivotally support the ends of adjacent cars, of steps leading to the platform that are supported upon said trucks.

7. In railway-cars, the combination, with a double or two-part truck adapted to pivotally support the contiguous ends of adjacent cars, one part abutting closely against the other centrally and having abutting faces receding from a central point, of a coupling-bar so confined as to be prevented from lateral movement centrally in its bearing, to which coupling-bar the truck-sections are respectively pivotally connected, substantially as shown and described.

376,908. **HEEL-COMPRESSING MACHINE.** FREEBORN F. RAYMOND, 2d, Newton, Mass. Filed Nov. 2, 1887. Serial No. 254,038. (No model.)



Claim.—1. The combination, in a heel forming and compressing machine, of the bed A, the stationary die-block *a*, the vertically-movable diaphragm a^3, a reciprocating head, C, the heel-seat-forming block *c'*, carried thereby, with a heel-blank carrier, substantially as specified, for transferring a heel-blank from one position to a position over the opening to the die and diaphragm, substantially as described.

2. The combination, in a heel-blank forming and compressing machine, of the bed A, the die *a*, the vertically-movable diaphragm a^3, the reciprocating head C, the heel-seat former *c'*, carried thereby, the blank-carrier, and a blank stripper or holder for holding the blank upon the diaphragm during the reverse movement of the carrier, substantially as described.

3. The combination, in a heel-blank forming and shaping machine, of the bed A, die *a*, vertically-movable diaphragm a^3, vertically-movable head C, the seat-forming block *c'*, carried thereby, a heel-blank-carrying device, the heel-blank holder D, adapted to be moved downward by the block c^3, carried by the heel-seat former, and to be moved upward by a spring, *d'*, and a latch for locking the holder or stripper depressed, and a projection carried by the heel-blank-feeding plate for moving said latch to release the holder after the movement of a heel-blank into position upon the diaphragm, substantially as described.

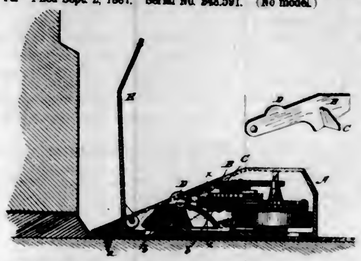
4. The combination, in a heel-blank forming and shaping machine, of the bed A, the die-block *a*, the vertically-movable diaphragm a^3, the reciprocating head C, the heel-seat former *c'*, with the stack B, for holding heel-blanks, having the mouth *b*, slide-plate *b'*, having the long arms b^3, and laterally-movable heel-blank-grasping devices b^3, carried by said arms b^3, substantially as described.

5. The combination of the stack B, for holding heel-blanks, with the slide-plate *b'*, having the long opening formed by the arms b^3, which are disconnected at their front ends, and the heel-blank-grasping jaws b^3, attached to or carried by said arms and laterally movable in relation to each other, as and for the purposes described.

6. The combination, in a heel-blank forming and shaping machine, of the head A, die *a*, the diaphragm a^3, its operating-spring a^7, the head C, the heel-seat former *c'*, carried thereby, the slide-plate *b'*, carrying the heel-grasping devices, the stripper or holder D, its operating-spring *d'*, a locking device for locking the stripper when moved down, the crank-shaft, and a cam, b^4, thereon, connected with the slide-plate *b'*, all as described.

7. The combination of the die A, the vertically-movable diaphragm a^3, and the reciprocating plate or heel-blank holder for knocking or removing the formed heel-blank from the upper surface of the diaphragm, as and for the purposes specified.

376,909. **BURGLAR-ALARM.** WILLIAM H. REIFF, Philadelphia, Pa. Filed Sept. 2, 1887. Serial No. 248,591. (No model.)



Claim.—1. A burglar-alarm comprising a box or case, an alarm device, a detent or tumbler for restraining the sounding of such alarm device, and a balanced pivoted drop-trip, the detent being arranged in the path of the drop-trip, and such trip being constructed to operate by its gravity and the power acquired in falling to release such detent, whereby all springs and other independent operating means for the trip may be dispensed with, substantially as and for the purposes specified.

2. The combination of the casing, the power gong or bell therein, the lid forming the trip and fitted to said case and pivoted or hinged at its lower end thereto, whereby it will be balanced when raised and will only fall when thrown off its balance, and the detent arranged in the path of the lid, whereby it will be disengaged by the same in its descent, substantially as and for the purposes specified.

3. A burglar-alarm consisting of the box or casing, the power gong or bell having an escape-wheel and pallet, the detent movable into and out of engagement with said pallet and resting normally in such engagement, and the balanced pivoted drop-trip arranged to engage such detent whereby to release the pallet, substantially as and for the purposes specified.

4. The combination, in a burglar-alarm, of the case A, the alarm bell or gong and its operating mechanism having an escape-wheel and pallet, the detent or tumbler B, pivoted at one end and provided near its opposite end with a stop-lug, C, movable into and out of position in rear of the pallet, the spring for operating said detent or tumbler, and the trip E, pivoted at one end and adapted to be raised and set slightly back of a vertical line, whereby it will be overbalanced and will fall and release the detent when tripped by opening the door, substantially as set forth.

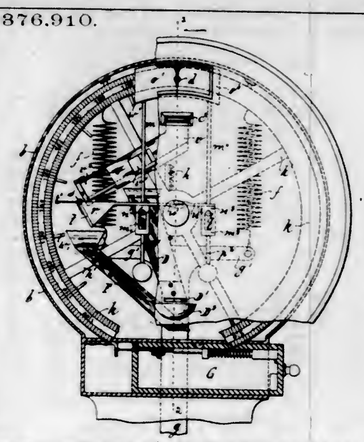
5. The combination, in a burglar-clarm, of a case, an arm and operating mechanism therefor, a detent or tumbler for restraining the sounding of such alarm, such detent being pivoted at one end, and a gravity drop-trip pivoted substantially as described, whereby it may be elevated and balanced in elevated position and arranged to engage and depress the detent or tumbler when lowered, substantially as set forth.

376,910. **COIN-RELEASED WEIGHING-MACHINE.** GEORGE REIMANN, Berlin, Germany, assignor to the Naehmaschinen-Fabrik, vormals Frister & Rossmann, Actien-Gesellschaft, same place. Filed Jan. 26, 1887. Serial No. 225,583. (No model.) Patented in Germany July 28, 1886, No. 40,394; in Austria-Hungary Aug. 7, 1886, No 37,318 and No. 44,428; in Belgium Aug. 10, 1886, No. 74,173; in France Aug. 11, 1886, No. 177,905, and in England Aug. 13, 1886, No. 10,363.

Claim.—1. A case provided with a sight-opening and with a coin-receiving slit, combined with an interior counterbalanced slide which in its normal state covers said sight-opening and is interposed between said sight-opening and a rotating dial within said case, the said rotating dial provided with projecting pins, as *w'*, and a coin-receptacle, as *r*, carried by an arm connected with said slide and furnished with a hinged side, as *t*, having an arm, as *t'*, which holds said side normally closed, said arm *t'* being arranged to stand, when the receptacle *r* is depressed and contains a coin, in the path of the pins on the dial, whereby the backward rotation of the dial serves to discharge said coin, substantially as set forth.

2. In an automatic weighing-machine, the combination, with the casing *b*, having a fixed pointer, *d*, an opening at said pointer whereat the dial is visible, and a coin-slit, c^3, of the dial *k*, rotatively mounted within said casing and provided with pins *w'*, flaps or slides o' o^3, covering said opening in the casing normally, the rods *m* m^2, carrying said slides, their frames m' m^3, bearings n' n^3, weighted rods p' p^3, receptacle *r*, provided with a hinged side, *t*, having a weighted arm, *t'*, said frames m' m^3 being provided, respectively, with overlapping arms u' u^3, and the chute *v*, all arranged substantially as set forth.

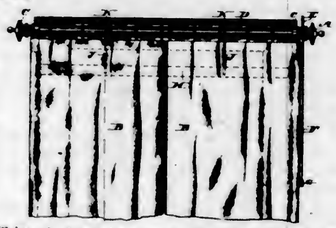
376,910.



3. In an automatic weighing-machine, the combination, with the revolving dial provided with pins *w'* and the inclosing-casing *b*, having an opening through which a part of the dial is visible, a fixed pointer, *d*, at said opening, and a coin-slit, c^3, of the slide o', mounted on a rocking bearing, n', and provided with a suspended weight to maintain it in its normal position, the receptacle *r*, fixed to an arm projecting laterally from the rod carrying said slide o', said receptacle having a hinged side, *t*, provided with a weighted arm, *t'*, to keep it normally closed, and the chute *v*, leading from the coin-slit c^3 to receptacle *r*, said weighted arm *t'* being arranged in the path of the pins *w'* on the dial.

4. In an automatic weighing-machine, the combination, with the inclosing-casing having a fixed pointer, *d*, a dial-disclosing opening at said pointer, and a coin-slit, c^3, of a revolving dial within said casing and visible through said opening, the lever *t t'*, a coin-hopper, and two movable slides, o' o^3, made to recede from each other when a coin inserted in the machine causes the lever *t t'* to move, substantially as described in the foregoing specification and shown in the accompanying drawings.

376,911. **CURTAIN-SUPPORT.** JOHN F. ROBINSON and CHARLES W. GOUKER, New Castle, Del. Filed Sept. 5, 1887. Serial No. 248,851. (No model.)



Claim.—1. A curtain-support consisting of a rotatable pole having fixed bearings and a set-out parallel bar connected with said pole, substantially as described.

2. A rotary curtain-pole, in combination with a parallel bar connected therewith, and means, substantially as described, connected with said pole for rotating the same, substantially as and for the purpose set forth.

3. A curtain-pole suitably journaled and provided with a parallel bar attached thereto, and a crank attached to said pole, said parts being combined substantially as and for the purpose set forth.

4. In a curtain-support, substantially as described, a rotating pole, in combination with a setting-out bar, and arms connecting said bar and pole, as stated.

5. In a curtain-support, a rotary pole, in combination with a setting-out bar, and arms connecting said bar and pole, the arms having the abutting shoulders L, substantially as and for the purpose set forth.

376,912. **GLOVE-FASTENER.** MAX ROSS, New York, N. Y. Filed Feb. 1, 1887. Serial No. 226,124. (No model.)

Claim.—1. The combination, with the glove, of the fastening-strip A, having the eyes *a*, the fastening-strip B, having the hooks *b*, and the elastic strip C, substantially as described.

2. The combination, with the glove, of the fastening-strip A, having the eyes *a*, the fastening-strip B, having the hooks *b*, the elastic strip C, and the reinforcing-strip D, substantially as described.

3. The combination, with the glove, of the fastening-strip A, having the eyes *a*, the fastening-strip B, having the hooks *b*, the elastic strip C, and the reinforcing-strip D, the latter being secured to the glove only at its edges *c c*, of the packing H, and the sleeves E E, embracing

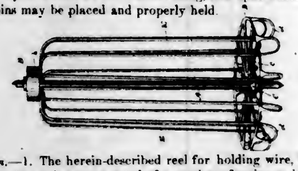
376,912. GLOVE-FASTENER. MAX RUBIN, New York, N. Y. Filed June 10, 1887. Serial No. 240,861. (No model.)



Claim.—In the described fastening device for gloves and other articles, the combination of the connecting-tongue composed of a sheet-metal tubular shank having an enlarged end made integral therewith and forming shoulders or offsets, with a spring catch or clasp composed of a sheet-metal base-plate having curved spring-jaws made integral therewith, the convex faces of the jaws facing each other, said spring-catch and tongue being fastened to the material to be connected, so that the tubular shank of the connecting-tongue can be forced in between the spring-jaws and be retained by the enlarged end, substantially as set forth.

376,913. WIRE-REEL. CHARLES B. RUMSEY, Homer, N. Y., assignor to the Wire Fabric Company, same place. Filed Aug. 5, 1887. Serial No. 246,184. (No model.)

Brief.—The object of the invention is to provide an improved reel for holding wire to be used in making wire fabric, from which the wire may be drawn off without breaking, and upon which a number of skeins may be placed and properly held.



Claim.—1. The herein-described reel for holding wire, having a tapering body portion constructed of a number of spring-rods secured rigidly at opposite ends to a spindle or support and free to spring between the ends, substantially as described.

2. In a reel, the combination, with the spindle or support, of the series of rods forming the body portions of the reel secured rigidly to the spindle at the smaller end, and at or near the larger provided with loops intermediate their connection with the spindle to render them slightly elastic, said body portion tapering slightly toward one end, so as to permit of the application of the material to the reel, substantially as described.

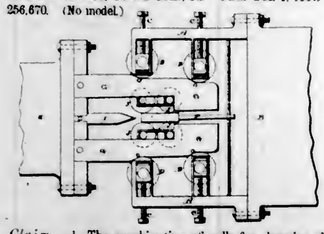
3. In a reel, the combination, with the spindle and the ring secured thereto by radial rods, of the spring-rods forming a slightly-tapering body portion secured to the spindle at the upper ends and intersecting the radial supports for the ring inside the latter, whereby the ring and supports will form a broad base for the reel, substantially as described.

4. In a reel, the combination, with the spindle and the ring secured thereto upon radial arms, of the spring-arms forming the body portion secured at one end to the spindle, having the loops therein and passing below the ring and between it and the spindle, substantially as described.

5. In a reel, the combination, with the spindle and the ring secured thereto by means of radial arms, of the spring-rods forming the tapering body portion secured to the spindle at one end, passing below the arms supporting the ring, and secured to the said ring, forming the loops therein, substantially as described.

6. In a reel, the combination of the spindle, the ring secured thereto by the radial arms, and the wires forming the tapered body portion secured at one end to the spindle and at the other to the ring, substantially as described.

376,914. MACHINE FOR DIVIDING OR SPLITTING METAL. JAMES C. RUSSELL, Beaver Falls, Pa. Filed Dec. 1, 1887. Serial No. 256,670. (No model.)



Claim.—1. The combination of rolls for drawing the piece of metal to a uniform thickness, movable supports in which the rolls are journaled, rolls or bearings between which the supports are forced, and the cutter or cutters for dividing or splitting the piece of metal, substantially as shown.

2. The combination of the frame, the adjustable rolls D, connected to the frame, the head or drop, the cutter or cutters secured to the head, the pivoted supports carrying one or more pairs of rolls, and the support upon which the piece of metal to be operated upon is placed, substantially as described.

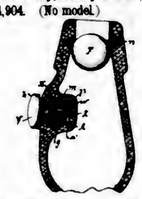
3. In a machine for splitting metal, the combination of an end-wise-moving cutter or cutters, a stationary bearing upon which the heated piece of metal to be split is placed, and rolls for drawing or reducing the thickness of the piece of metal to a uniform thickness just prior to the splitting, both the cutter and movable bearings for the rolls being connected to the same head or drop, substantially as set forth.

376,915. METHOD OF FORMING INDENTS, &c., IN INTERNALLY-STOPPERED BOTTLES. DAN RYLANDS, Stairfoot, near Barnsley, County of York, England. Filed Mar. 24, 1887. Serial No. 232,298. (No model.) Patented in England Feb. 19, 1887, No. 2,580.



Claim.—The method of forming indents and grooves or undercuts in internally-stoppered bottles, which consists in placing a ring of asbestus or like material on the threaded portion of a spindle projecting into the mold which receives the molten glass, then blowing up the glass bottle in the closed mold, then withdrawing the spindle from the mold and ring, leaving the ring in the indented and undercut portion of the bottle, then forming a mouth on the bottle after it is removed from the mold, and finally removing the ring from the bottle, substantially as described.

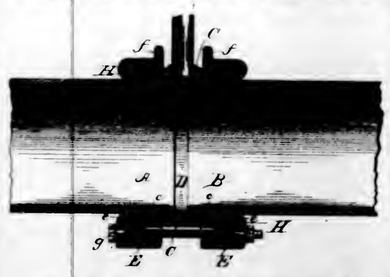
376,916. INTERNALLY-STOPPERED BOTTLE. DAN RYLANDS, Stairfoot, near Barnsley, County of York, England. Filed July 21, 1887. Serial No. 244,904. (No model.)



Claim.—1. In connection with an internally-stoppered bottle, the indent A, provided with a hole, K, communicating with the interior of the bottle, in combination with valve V, adapted to work in the indent and to close or open the hole K, so as to allow the gas or air in the bottle to escape through the valve at pleasure, the valve being secured to the indent by washer X, resting in a groove, *g*, in the indent and a recess, *t'*, in the valve-stem, substantially as shown and described.

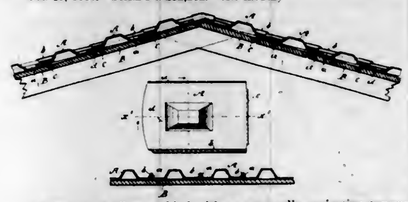
2. In connection with an internally-stoppered bottle having an indent, A, provided with a groove, *g*, and hole K, a valve, V, made with portions *t t' t²*, with slots M, and a head, *h*, for screwing and unscrewing, and having a washer, X, and washer W, substantially as shown and described.

376,917. JOINT FOR GAS-CONDUITS. JACOB SCHINNELLER, Pittsburg, Pa. Filed July 23, 1887. Serial No. 245,120. (No model.)



Claim.—In a pipe-coupling, the combination, with adjacent sections A B and sleeve C, embracing said sections and bearing thereon only at its edges *c c*, of the packing H, and the sleeves E E, embracing the packing and internally and externally beveled, so as to present edges *c c* to the pipe-sections, substantially as described.

376,918. ROOFING. HENRY SCHULHOFF, New York, N. Y. Filed Oct. 13, 1887. Serial No. 252,262. (No model.)

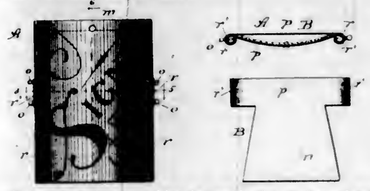


Claim.—1. A tile provided with an upwardly-projecting tongue on one side, a groove corresponding to said tongue on the opposite side, and a downwardly-projecting tongue on one end, substantially as shown and described.

2. A tile provided with an upwardly-projecting tongue on one side, a groove corresponding to said tongue on the opposite side, a downwardly-projecting tongue on one end, and a portion on the opposite end extending beyond the end of the tongue and groove, substantially as shown and described.

3. The combination, with the roof-boards B, having intervening crevices, of the tiles A, having downwardly-projecting end tongues, *c*, to enter said crevices, overlapping end portions, *d*, and upwardly-projecting tongues *a* and grooves *b*, adapted to interlock, substantially as described.

376,919. SIGN. CHARLES W. SHONK, Chicago, Ill. Filed Oct. 28, 1887. Serial No. 253,627. (Model.)



Claim.—1. A sign comprising, in combination, a sheet of metal provided with beaded edges and having the character-matter permanently and directly upon its surface and bent to a concavo-convex form, and a brace permanently secured to the metal sheet to extend transversely of the bend therein across its rear side and operating to maintain the concavo-convex form, substantially as described.

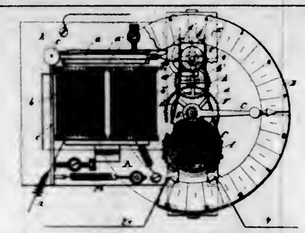
2. A sign formed of sheet metal having beaded edges and bent to a concavo-convex form and provided with a rear brace, B, comprising a cross-piece, *p*, permanently secured to the sign and operating to maintain the concavo-convex form thereof, and a leg, *n*, the leg and cross-piece affording also a flat back, substantially as and for the purpose set forth.

3. A sign formed of sheet metal bent to a concavo-convex form, having its lateral edges rolled into the form of hollow cylinders, affording ornamental strengthening-beads *r*, and provided with a rear brace, B, comprising a cross-piece, *p*, shorter than the width of the sign, having its lateral edges rolled into the form of hollow cylinders *r'*, to fit the rolled lateral edges of the sign, and permanently secured to the said sign, and a flaring leg, *n*, the said leg and cross-piece affording also a flat back, substantially as and for the purpose set forth.

4. A sign formed of sheet metal bent to a concavo-convex form, having its lateral edges rolled toward the face of the sign into the form of hollow cylinders, affording ornamental strengthening-beads *r*, and provided with a rear brace, B, comprising a cross-piece, *p*, shorter than the width of the sign, having its lateral edges rolled into the form of hollow cylinders *r'*, to fit over the rolled lateral edges of the sign, and permanently secured at the parts *r'* to the lateral beads *r*, and a flaring leg, *n*, the said leg and cross-piece affording also a flat back, substantially as and for the purpose set forth.

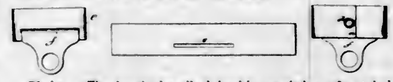
376,920. WATCHMAN'S ELECTRIC CONTROLLING APPARATUS. OTTOKAR SKRIVAN and FRANCIS DVORAK, Vinohrady, Prague, Bohemia, Austria-Hungary. Filed Feb. 5, 1887. Serial No. 226,695. (No model.)

Claim.—1. In an electric clock, the combination of the frame A A', the spring *f'*, the train of wheels *f g g h h' c'*, their shafts journaled in said frame, the escapement-wheel *c*, the escapement-lever *a' a c*, pivoted to said frame at *c'*, the spring *c²*, the magnet *b b'*, the disk-wheel *j*, the pin *j'*, the springs *d d*, attached to the said frame, and electric connections, substantially as specified, for transmitting an electric current to and through said mechanism, substantially as and for the purpose set forth.



2. The combination, with an electric clock, a bell mechanism, and an electric battery and circuit, all substantially as hereinbefore specified, of a transmitter consisting of the disk *g*, having edges formed into a ratchet in which works pawl *v*, held by spring *u* and carrying the index-hand K, the lugs *c³*, the insulating-ring *r*, and the spring *m*, by the use of which, to break and close said circuit, signals may be transmitted, registered, and announced, substantially as and for the purpose set forth.

376,921. BUCKLE. EARL A. SMITH, Waterbury, Conn. Filed Dec. 1, 1887. Serial No. 256,631. (No model.)

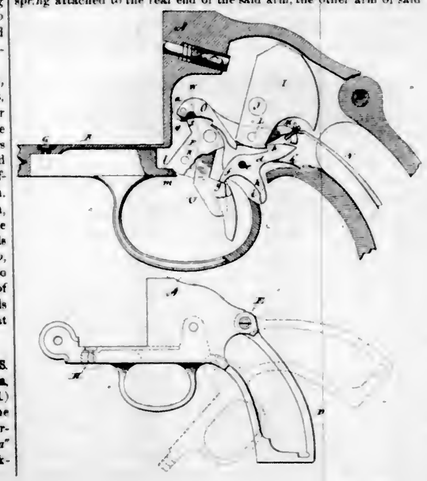


Claim.—The herein-described buckle, consisting of a tubular frame made from a single piece of metal bent into tubular shape, the ends of the metal overlapping on the back, and the said overlapping portions riveted together, the front of the frame constructed with a horizontal slot combined with a cam-lever arranged in the said slot, and so as to operate against the united back as a resistance, substantially as described.

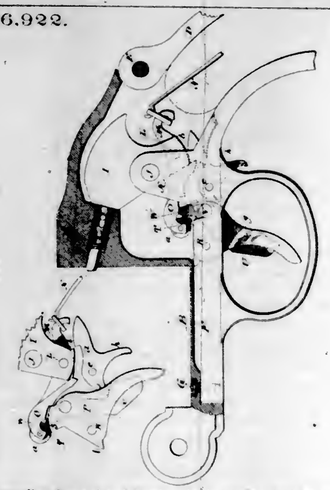
376,922. REVOLVER. JOHN T. SMITH, Rockfall, Conn. Filed June 6, 1887. Serial No. 240,400. (No model.)

Claim.—1. In a revolver, the frame made in two parts, the division being between the handle portion and recoil portion of the frame, the handle portion of the frame hinged to the recoil portion at one point and at a distant point adapted for attachment to the corresponding point of the other portion of the frame, the said handle portion carrying the lock mechanism, substantially as described.

2. The combination, in a revolver, of the hammer I, principal trigger hung in the frame below and forward of the hammer, a sear hung in the frame between the principal trigger and hammer, a lever hung in the hammer below its pivot, one arm extending rearward, the main-spring attached to the rear end of the said arm, the other arm of said



376,922.



lever extending forward and forming the dog forward of the hammer and over the principal trigger, the said forward arm or dog adapted to be engaged by the principal trigger, and an auxiliary trigger hung in said principal trigger, the said sear constructed with a finger projecting forward into the path of said auxiliary trigger, the said auxiliary trigger extending above its pivot and adapted to engage the hammer-dog as the hammer approaches the full-cocked position, substantially as described.

3. The combination, in a revolver, of a concealed hammer, I, a trigger, a dog hung to the hammer, one arm extending rearward, the mainspring attached to said rearward end of the dog, the forward arm of the dog extending forward over the trigger and adapted to be engaged therewith, whereby under the pull of the trigger the hammer may be brought to full-cock, and a sear between the trigger and hammer, the said sear constructed with a finger, *h*, projecting downwardly through the frame, and whereby said sear may be turned independent of the trigger, substantially as described.

4. In a revolver, the combination of a hammer hung concealed within the frame, a trigger with mechanism between it and the hammer whereby upon the pull of the trigger the hammer may be thrown to the full-cocked position, and a sear between the trigger and hammer and adapted to engage the hammer at the full-cocked position, the sear constructed with a finger projecting therefrom through an opening in the frame, and whereby the said sear may be turned independent of the trigger, substantially as described.

376,923. MECHANICAL TELEPHONE. JOHN P. SUNDERLAND, Brooklyn, N. Y. Filed July 21, 1887. Serial No. 244,853. (No model.)



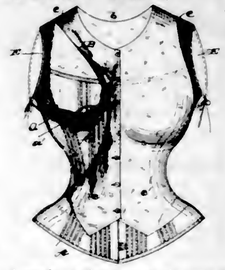
Claim.—1. In a mechanical telephone, the casing, the diaphragm, a hollow cone filled with non-resonant material in front of the diaphragm, and a rod extending through the cone and diaphragm for connection with the line-wire, all in combination, substantially as described.

2. In a mechanical telephone, the casing, the diaphragm in said casing, a plate resting against the front of the diaphragm, a hollow cone filled with non-conducting material having its base resting against said plate, and a bolt passing through the cone, plate, and diaphragm for the attachment of the line-wire, all in combination, substantially as described.

3. The combination, with the casing of a mechanical telephone, of a diaphragm stretched across the same, a metallic plate resting against the front of the diaphragm, a hollow metallic cone filled with plaster and having its base resting against said plate, and a bolt passing through the cone, plate, and diaphragm and connected to the line-wire, substantially as described.

4. The combination, with the casing of a mechanical telephone, of a diaphragm stretched across and secured to said casing, supporting-bars secured to the casing and resting against the back of the diaphragm, a hollow cone filled with non-resonant material at the front of the diaphragm, and a connection to the line-wire extending from this cone through the diaphragm, all combined as stated.

376,924. CORSET. EMMA THOMPSON, Brooklyn, N. Y. Filed July 21, 1887. Serial No. 244,891. (No model.)



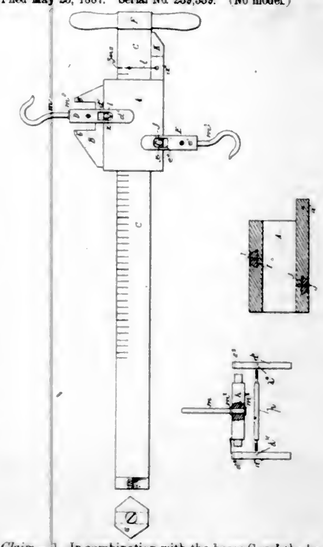
Claim.—1. A nursing waist or corset the main body of which is provided with cut-away portions for the breasts of the wearer, said cut-away portions being fitted with knitted material, substantially as described.

2. A nursing waist or corset the main body of which is provided with cut-away portions for the breasts of the wearer, fitted with knitted material, and vest-pieces attached to the corset and covering said breast portions and the entire front of the corset, substantially as described.

3. The combination, with a waist or corset, of vest-pieces connected to the waist or corset near the top and also near the bottom of the same and covering the entire front of the corset, substantially as described.

4. The combination, with a corset or waist having knitted breast portions, of vest-pieces each permanently secured to the said corset or waist at one point and detachably secured to the same at another point, substantially as described.

376,925. WEIGHING-SCALE. WADDY C. THOMSON, Camden, S. C. Filed May 25, 1887. Serial No. 239,339. (No model.)



Claim.—1. In combination with the beam C and the box in which the same slides and the hanger D, a buffer, B, surmounting said box and provided with the upward projections b' b^2, serving with the hanger as stops to limit the swing of the beam, substantially as and for the purposes set forth.

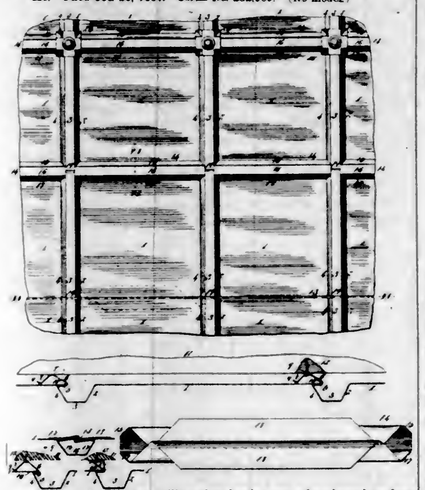
2. In combination, the box, the buffer B, having the stops b', b^2, and a', and the sliding beam having the fixed weights F and G at its respective ends, all substantially as and for the purposes set forth.

3. In combination with the hangers D and E, the box A, provided with dovetailed grooves, the cross-pieces J J, made dovetailed, as described, and fitting in said grooves, and provided at their ends with edges serving as bearings for said hangers, all substantially as shown and described.

4. In combination with the box having the stops b' b^2 at its top and the projection a' at its bottom and a pointer on projection a', a beam having the fixed stop K, serving to limit the sliding movement of the beam and to insure the bringing of the pointer to the zero-point.

5. In combination, the box with its stops b' b^2 and projection a', the hangers D and E, the sliding non-fulcrumed scale-beam weighted, as set forth, and provided with the stop K, and the pointer *l*, all substantially as set forth.

376,926. METALLIC CEILING. CHARLES THURNER, St. Louis, Mo. Filed Oct. 20, 1887. Serial No. 252,909. (No model.)



Claim.—1. A metal ceiling-plate having one edge shaped to form a rib and adapted for nailing to a joist, and having a ledge thereon over the rib for the support of the opposite edge, 10, of the next plate, and a spring-flange projecting beyond the ledge and adapted to press the edge 10 upon the ledge, substantially as and for the purpose set forth.

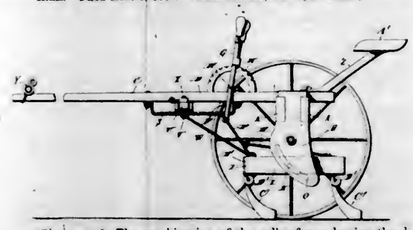
2. The combination of the plates 1 and 14, a rosette, 20, and clips 21, adapted to engage the plates and the rosette, substantially as set forth.

3. The combination of the plates 1 and 14, a rosette, 20, a clip, 21, and a knob, 25, all constructed and arranged substantially as set forth.

4. In a metallic ceiling, a plate having the bends 2, 3, 4, 6, 7, 8, and 9 on one edge, and a second plate having an edge, 10, substantially as set forth.

5. In a metallic ceiling, in combination with plates and rosettes, the fastenings 21, bent substantially as shown and described.

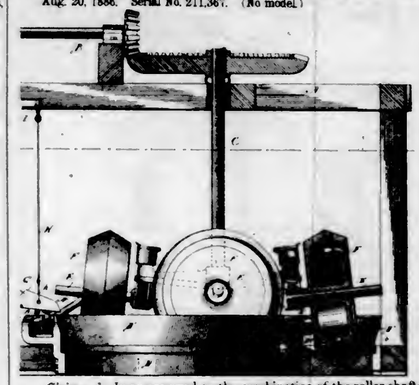
376,927. PULVERIZER AND HARROW. ALBERT H. TRIPP, Rago, Kans. Filed Nov. 1, 1887. Serial No. 253,999. (No model.)



Claim.—1. The combination of the sulky-frame having the depending head-blocks provided with the inclined grooves O, the harrow-frame having the studs or projections at its ends engaging the said inclined grooves, the rock-shaft journaled on the frame and having the lever-arms, the longitudinally-movable whiffletree, the links connecting the said lever-arms to the harrow-frame, and the links connecting the harrow-frame to the whiffletree, whereby the shaft is applied directly to the harrow-frame, and whereby the latter may be raised or lowered under the sulky-frame, substantially as described.

2. The combination of the sulky-frame having the depending head-blocks provided with the inclined grooves O, the harrow-frame having the studs or projections at its ends engaging the said grooves, the rock-shaft journaled on the sulky-frame, having the lever to turn it to any desired position, and provided with the lever-arms E, the links P, connecting the front side of the harrow-frame to the said lever-arms F, and the links R, connecting the rear side of the harrow-frame to the links P, substantially as described.

376,928. ORE-CRUSHER. RICHARD UREN, Houghton, Mich. Filed Aug. 20, 1886. Serial No. 211,367. (No model.)

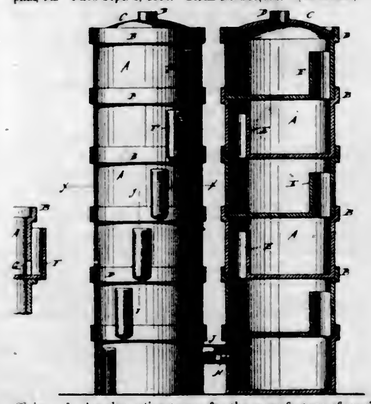


Claim.—1. In an ore-crusher, the combination of the roller-shafts, a lever operated by said shafts, an ore-supply bin having a movable hopper engaged by said lever, and suitable means for regulating the supply of material to the crusher, substantially as described.

2. In an ore-crusher, the combination, with the roller-shafts, of the ore-supply bin having a movable hopper, a rod supporting said hopper, a lever attached to the crusher, having one end engaging with said hopper and its opposite end engaged by said shafts, whereby the hopper is actuated so as to discharge the ore into the crusher, and suitable means for regulating the discharge of the material from the hopper into the crusher, substantially as described.

3. In an ore-crusher, the combination of the bed D, the track *d*, crushing-rolls F, shafts E, extending beyond said rolls, the ore-supply bin G, the vibrating hopper G', the levers N and N', arranged to come in contact with the ends of said shafts, and means for imparting motion to the rolls, substantially as described.

376,929. ABSORPTION-TOWER. HENRY PH. WEIDIG, Philadelphia, Pa. Filed Sept. 8, 1887. Serial No. 249,092. (No model.)

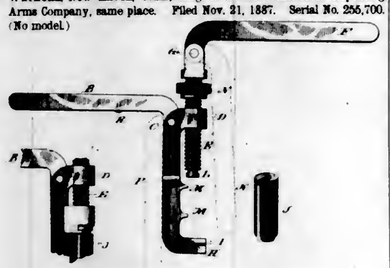


Claim.—1. An absorption-tower for the manufacture of muriatic or nitric acid, composed of a series of cylindrical sections open at the

top and closed at the bottom, each section having a vertical channel extending from the bottom to a short distance from the top, and each section being also provided with an external laterally-projecting cup open at the top and in communication with the bottom part of the section, substantially as herein shown and described.

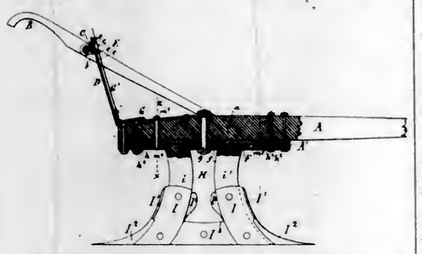
2. A section of an absorption-tower for the manufacture of muriatic or nitric acid, consisting of a cylinder closed at its bottom and flanged externally at its open top and provided with a vertical channel extending from the bottom to within a short distance from the top, and also provided with an external cup open at the top and having its bottom in communication with the bottom part of the section, substantially as herein shown and described.

376,930. **CARTRIDGE-RELOADING IMPLEMENT.** WILLIAM W. WETMORE, New Haven, Conn., assignor to the Winchester Repeating Arms Company, same place. Filed Nov. 21, 1887. Serial No. 256,700. (No model.)



Claim.—The combination of the stock A, constructed with a transversely-projecting seat, I, having an undercut recess, I, therein corresponding to the flange of the shell, the said stock also constructed with a transversely-projecting head, D, at the opposite end, the lever B, hinged to the said stock, the screw E through the said head D, a lever, F, hinged to the said screw, the said two levers arranged to swing in a plane substantially parallel with the axis of the screw, and the block J, having a recess within it corresponding substantially to the shape of the completed cartridge, the said block and screw, the one constructed with a T-shaped projection and the other with a corresponding undercut recess, substantially as described, and whereby said block and screw may be engaged, and so that said block will move axially with the screw.

376,931. **SIDE-HILL REVERSIBLE PLOW.** THOMAS H. WHITAKER, Youngsville, N. C. Filed June 16, 1887. Serial No. 241,506. (No model.)



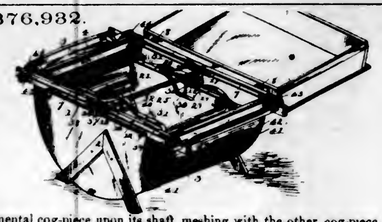
Claim.—1. In a double-mold-board reversible plow, the combination of the double standard-plate H, revolving latching-plate F, provided with the pin-holes m^2 and inclined transverse passage-ways $m\,m'$, the plow-beam provided with lips $h\,h'$, and the vertical moving pin or bolt m^3 on a longitudinal spring-plate, G, connected to the operating-rod G', substantially as and for the purpose described.

2. The combination, in a reversible plow, of the beam A, standard H, the rotating standard-plate F, locking-plate A', a spring latching device, a landside, and wings J', the standard of said plow being adapted to receive the blocks or seats I and mold-boards I' for a reversible plow, or the saddle I^2, shovel J, wings J', and interchangeable landsides, substantially as shown and described.

376,932. **WASHING-MACHINE.** ISAAC WHITNEY, Lynnville, Iowa. Filed Aug. 9, 1887. Serial No. 246,502. (No model.)

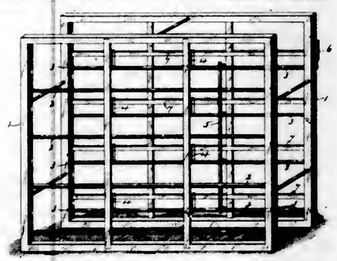
Claim.—1. In a washing-machine, the combination of a suds-box having a rounded bottom, a lower rocking rubber trunnioned within the box and having a segmental cog-piece upon the middle of one edge, and a rubber rocking within the lower rubber and having a segmental cog-piece upon its shaft meshing with the other cog-piece, as and for the purpose shown and set forth.

376,932.



2. In a washing-machine, the combination of a rocking outer rubber having a segmental cog-piece upon the middle of the edge of one side piece, an inner rubber having the middles of its side pieces cut out to form notches or recesses, and having straps secured to the upper edges of the side pieces and vertical guide-rods extending from the bottoms of the notches or recesses to the middles of the straps, a shaft journaled in the sides of the suds-box of the machine, and having a segmental cog-piece meshing with the cog-piece of the outer rubber, and having the guide-rods sliding in perforations in it, and coiled springs interposed between the bottoms of the recesses and the perforated portions of the shaft, as and for the purpose shown and set forth.

376,933. **HAT-RACK FOR HAT-MANUFACTURERS.** HENRY I. WINTERFIELD, Danbury, Conn., assignor of one-half to Robert Kerr, same place. Filed May 16, 1887. Serial No. 238,431. (No model.)



Claim.—1. A hat-rack consisting of frame-work, supporting bars in one side thereof and turning-bars in the other side, which are provided with loops or pins adapted to engage the interior of the hats.

2. A hat-rack consisting of frame-work, side bars 2, turning-bars 3, having loops or pins 4, and a strip connecting said turning-bars, whereby a movement of either bar carries the others with it.

3. A hat-rack consisting of frame-work, side bars 2, turning-bars 3, having loops 4, strip 5, connecting the turning-bars, and side bars 7, in the frame-work just above the turning-bars, against which the hats are clamped by the pins when in use.

4. In a hat-rack, bars 2 and turning-bars 3, having loops or pins 4, in combination with a strip, 5, connecting the turning-bars, side strips 7, against which the hats are clamped by the loops or pins, and a crank or handle adapted to engage one of the turning-bars, whereby all the hats are clamped at once.

5. In a hat-rack, the combination, with bars 2 and side strips 7, of turning-bars 3, having loops 4, whereby the hats are clamped against the side strips.

376,934. **WAGON.** EDWARD M. ALLEN, Stafford, Md., assignor to Sallie E. Allen, same place. Filed Apr. 6, 1887. Serial No. 233,900. (No model.)

Claim.—1. The improvement in wagons herein described, comprising an axle, a support pivoted between its ends and adapted to support the load, a brake, and connections, substantially as set forth.

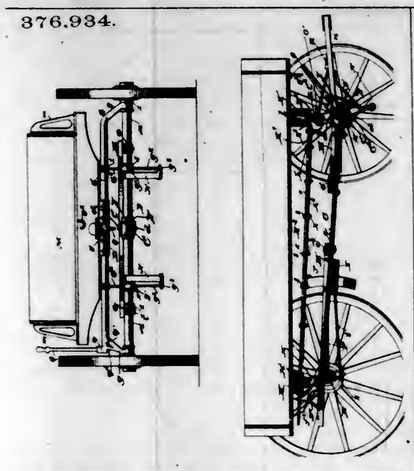
2. The combination of the front and rear axles, a perch connecting said axles, body-supports pivoted on the axles, the draft devices, the brake, and connections, substantially as set forth.

3. The combination of the axles, the oscillating body-supports, the bolsters mounted and capable of oscillating on said supports, the brake, and connections, substantially as set forth.

4. The combination of the rear axle, the body-support pivoted thereon and having extensions below the axle, the brake, and connections between the brake and the lower extensions, substantially as set forth.

5. The combination of the front axle having a non-circular portion, the clamp D, formed of sections D', having pins d, and fitted to and bolted on the non-circular portion of the axle, the perch-pole, and

376,934.



the plates connected therewith and having openings to receive the pins d, substantially as and for the purposes specified.

6. The combination of axle A, the body-support pivoted on said axle, and the stirrups G, pivoted on the axle A, having extensions below said axle, and extensions projected up and united with the top cross-bar of the body-support, substantially as set forth.

7. The combination of the axle A, the body-support pivoted thereto and having a top cross-bar, the box journaled thereon and having a pin, l, and the bolster pivoted to said pin, substantially as set forth.

8. The combination of the front and rear axles, the oscillating supports pivoted thereon, the brake-connections therewith, and a stop, as F, whereby to limit the movement backward of said supports, substantially as set forth.

9. The combination of the front and rear axles, a perch connecting the same, a support, G, having arms g, pivoted on the front axle and provided with a top cross-bar, the stirrups G^2, secured at their upper ends to cross-bar G', oscillating on the front axle and having lower extensions, g^2, the rear support, H, having extensions h', the brake-bar, a connection between the same and extensions h', bolsters K K', and perch K^2, substantially as set forth.

10. The combination, with the axles and the oscillating supports, of the upper and lower perches and devices whereby the upper and lower perches may be correspondingly lengthened and shortened, substantially as set forth.

11. The combination of the box L, having a recess fitted to receive a plate or head, O', the tongue having an abutment, s, and the rod O, having a plate, O', substantially as set forth.

12. The combination, with the oscillating body-support and the framing, of the stop having a spring-bar, F^4, and means for adjusting the position of said bar, substantially as set forth.

13. The combination, with the oscillating body-support, of the bar F^4, the rack F^3, the cam f^3, arranged to engage bar F^4, and a handle connected with said cam f^3, arranged to engage rack F^3, substantially as set forth.

14. The combination of the oscillating body-support, the brake-connection between said brake and support, and a handle connected with said support, whereby the brake may be applied at will, substantially as set forth.

15. In a wagon, substantially as described, an oscillating body-support having an extension, q', provided with a socket, q, fitted to receive lock-handle Q, and provided with a brace, q^2, for said extension q', substantially as set forth.

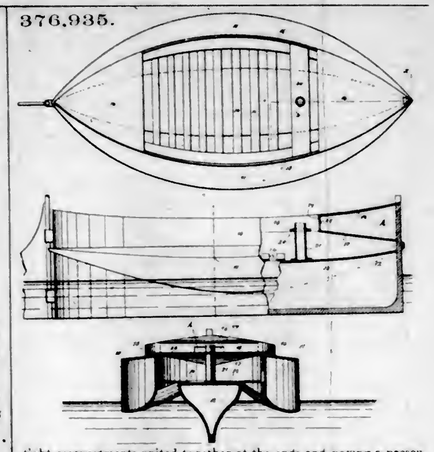
16. The combination of the axle A, the support G, pivoted thereon and having extensions g^2 below said axle, and the tongue connected with said extensions, substantially as set forth.

17. In a wagon, the combination, with a shaft or bar on which an arm oscillates, of a band fitted on said shaft and having a part or parts indented therein, whereby it is held to such shaft, and an arm fitted on said band, substantially as and for the purposes specified.

376,935. **LIFE-BOAT.** JOHN A. ANIELLO, Biloxi, Miss., assignor of one-half to Constantine Oliver, same place. Filed Oct. 14, 1887. Serial No. 252,248. (No model.)

Claim.—1. A life-boat formed of three longitudinal air and water

376,935.



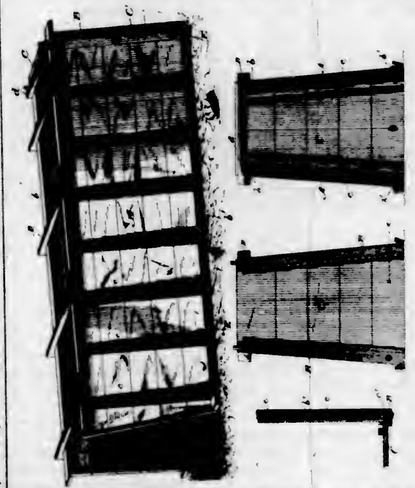
tight compartments united together at the ends and having a passenger-compartment forward and aft, substantially as described.

2. A life-boat formed of three longitudinal air and water tight compartments united together at the ends and provided with a passenger-compartment forward and aft, the said compartments having grated floorings, substantially as herein shown and described.

3. In a life-boat, the combination, with the central section, 12, of the side sections, 10 and 11, above the central section and connected to the ends of the said central section, the cross-bars 14, passing above the disk of the central section and connected to the sections 10 and 11, and the bulwarks 15, extending upward from the said sections 10 and 11, substantially as herein shown and described.

4. In a life-boat, the combination, with a central section, 12, of side sections, 10 and 11, connected to either end thereof, cross-bars 14, passing above the deck of the section 12 and connected to the sections 10 and 11, bulwarks 15, extending upward from the decks of the sections 10 and 11, decks 16, arranged between the bulwarks, grated floorings 17, arranged beneath the decks, and partitions 18, having openings 19, which partitions connect the floors and the decks, substantially as described.

376,936. **MOLD FOR EARTH FENCES.** LAFAYETTE BARTON, Sherwood, Mich. Filed June 3, 1886. Serial No. 204,079. (No model.)



Claim.—A mold for earth fences, comprising the sides A, inclined inward toward each other and wider apart at their base than at their upper edges, and constructed of longitudinally-arranged side boards

a, secured to vertical bars c, which are attached at their upper and lower ends to outwardly-projecting battens $b\,b'$, the stakes E, driven

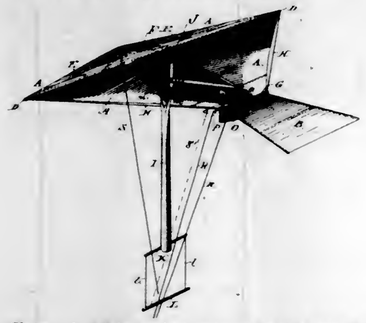
2. In a wheel, the combination of the hub having threaded radial sockets $a\,a$ therein arranged in groups of three, the rim having

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a, secured to vertical bars *c*, which are attached at their upper and lower ends to outwardly-projecting battens *b b'*, the stakes E, driven against the outer edges of the lower battens, *b'*, to prevent the sides from spreading at this point, the removable top tie-bars D, having end projections overlapping the top battens, *b*, to prevent the sides from spreading at their upper portions, the inwardly-extending end strips, B, bolted to an end strip, *C*, secured to the sides A, the end board, *C*, having tapering sides bearing against the inwardly-extending edges of the boards or strips B, and the transverse batten *d*, substantially as described.

376,937. **FLYING-MACHINE.** WILLIAM BERSON, Dillon, Mont. Filed Sept. 2, 1887. Serial No. 248,588. (No model.)



Claim.—1. A flying-machine constructed with an aerial plane comprising a mainsail and a back or tail sail connected pivotally thereto, a pendulum-bar pivotally connected to the mainsail, and a lever connecting the pendulum and tail-sail, substantially as shown and described, whereby a deviation of the mainsail will be responded to by the tail, as and for the purposes herein set forth.

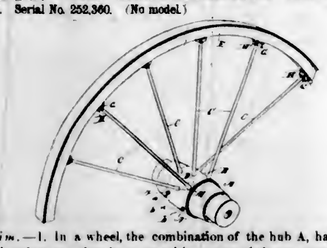
2. A flying-machine constructed with an aerial plane comprising a mainsail and a tail-sail pivoted thereto, a pendulum-bar carrying a support for an aeronaut and connected pivotally to the mainsail, a lever connecting the pendulum and tail-sail, and cords leading from the front and rear parts of the mainsail to the aeronaut, substantially as described, for the purposes set forth.

3. A flying-machine constructed with an aerial plane comprising a mainsail, a tail-sail pivoted thereto, a pendulum-bar carrying a support for the aeronaut and connected pivotally to the mainsail, a lever connecting the pendulum and the tail-sail, a rudder pivoted to the mainsail, and ropes connected to the rudder and leading to the aeronaut, substantially as described, for the purposes set forth.

4. The combination, in a flying-machine, of a mainsail, a tail-sail pivoted thereto, a pendulum-bar connected pivotally to the mainsail, and a lever connecting the pendulum and tail-sail, and said mainsail being formed with a front wind-pocket, *a*, substantially as described, for the purposes set forth.

5. The combination, in a flying-machine, of a mainsail, A, a plate, C, connected thereto, a tail-sail, B, pivoted by a bar, G, to the plate C, a pendulum, I, pivoted to the plate C, an arm, N, fixed to the bar G, and a rod, M, pivotally connecting the parts I N, substantially as described, for the purposes set forth.

376,938. **WHEEL.** JEROME BOLICK, Conover, N. C. Filed Oct. 14, 1887. Serial No. 252,360. (No model.)

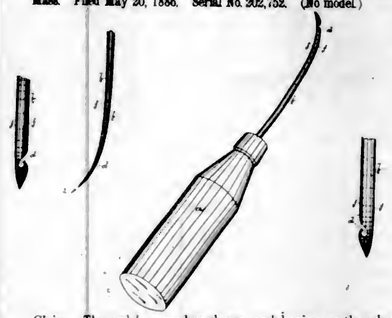


Claim.—1. In a wheel, the combination of the hub A, having the radial sockets *a-a* therein arranged in groups of threes extending obliquely across the hub, the spokes having the threaded outer ends and adapted to fit at the inner ends in the sockets *a*, the rim E, having radial openings F therein to receive the outer ends of the spokes, and the nuts G on the threaded outer ends of the spokes, bearing against the inner side of the rim, substantially as and for the purpose specified.

2. In a wheel, the combination of the hub having threaded radial sockets *a a* therein, arranged in groups of threes, the rim having openings F therein, and the spokes threaded at both ends and inserted, respectively, in the sockets *a* and the openings F, substantially as specified.

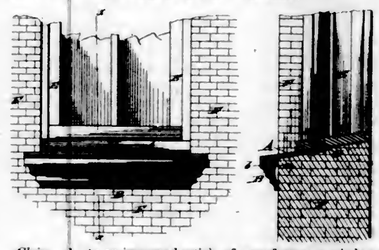
3. In a wheel, the combination of the hub A, having the sockets *a* therein arranged in groups of threes on oblique lines, the band or sleeve B, secured around the hub and having a series of openings, *b*, also arranged in groups of threes and registering with the sockets *a*, the said registering sockets and openings being tapped, the spokes having threaded inner ends to screw into the sockets, and shoulders D to bear on the band B around the openings therein, and the rim E, having radial sockets F F to receive the outer ends of the spokes, all constructed and arranged substantially as and for the purpose specified.

376,939. **LASTING-AWL.** CHARLES K. BRADFORD, Lynnfield, assignor to George H. P. Flagg and George A. Fullerton, both of Boston, Mass. Filed May 20, 1886. Serial No. 202,752. (No model.)



Claim.—The awl *b*, curved as shown, and having on the edge of its curved part the hook *d*, with an inwardly-inclined point, substantially as and for the purpose set forth.

376,940. **WINDOW-SILL.** HYNEK BREUER, New Prague, Minn. Filed Oct. 24, 1887. Serial No. 253,198. (No model.)



Claim.—1. As an improved article of manufacture, a window-sill made with a main plate, A, and a front pendent wall plate or molding, B, and said plate A provided with a lip or flange, C, at its inner edge and adapted to a groove in a window-frame, substantially as herein set forth.

2. As an improved article of manufacture, a window-sill made with a main plate, A, and a front pendent wall plate or molding, B, and web braces *a* at the angle of said plates A B, and said plate A provided with a lip or flange, C, at its inner edge, substantially as described, for the purposes set forth.

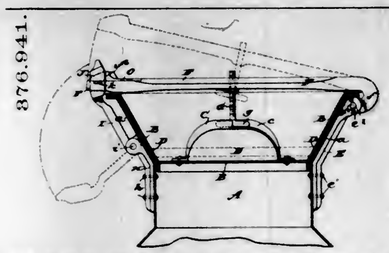
3. A window-sill made with a main plate, A, and a front pendent wall plate or molding, B, and said plate A provided with upwardly-projecting flanges G, to which the window-pillars may be bolted, substantially as herein set forth.

376,941. **CAN-COVER AND CLAMP.** EDMUND R. BRISTOL and EDWARD C. GRAN, Jordan, Minn. Filed Mar. 16, 1887. Serial No. 231,158. (No model.)

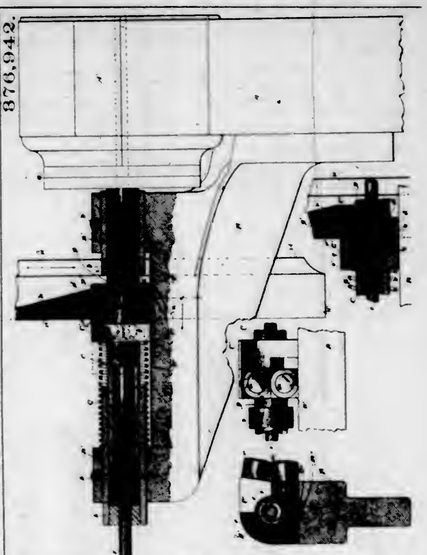
Claim.—1. The combination, with a can and its cover having a recess, of a top cross-bar held over the cover, and an adjustable screw or pin, which is fitted to said cross-bar and enters said recess in the cover when the cross-bar is locked, whereby the cover may be closed tightly by the screw or pin, and the latter will be prevented from turning loose.

2. The combination, with a can and its cover having a recess, of a top cross-bar pivoted to one side of the neck or top of the can or package, a device fixed to the can or package to latch or retain the free end of the cross-bar, and an adjustable screw or pin, which is

376,941.



376,942.



fitted in the top cross-bar and enters the recess in the cover when the cross-bar is locked.

3. The combination, in a can-cover and clamp, of a cover, B, fitted to the neck of the can and provided with a recess, *c*, a clamp-lever, F, held at one end to the can, a latch-bar, I, pivoted at one end to the other side of the can, and having at its free end a slot adapted to receive the free end of the clamp-bar, a screw, G, fitted in the lever and having a head, *g*, adapted to enter the cover-slot *c*, and a latch device locking the parts F I together, substantially as shown and described.

4. The combination, in a cover and clamp, of a cover, B, a clamp-lever, F, a pivoted latch-bar, I, having a slot, J, receiving the free end of the lever F and provided with notches *j*, and a latch device consisting of spring-pressed hook-plates K K, adapted to enter the notches *j*, and the lever having a hole, *n*, to admit a key between the hook-plates, substantially as shown and described.

5. The combination, in a can-cover and clamp, of a cover, B, having a handle, C, provided with a recess, *c*, a packing, D, interposed between the cover and can-body, a clamp-lever, F, a screw, G, fitted in said lever and having a head, *g*, adapted to enter the handle-recess *c*, a pivoted latch-bar, I, having a slot, J, notched at *j* and adapted to receive the free end of the clamp-lever, and a latch device consisting of spring-pressed hook-plates K K, and the lever provided with a hole, *n*, to admit a key between the hook-plates, substantially as shown and described.

6. The combination, in a can-cover and clamp, of a cover B, fitted to the neck of the can, a bar or plate, E, and a plate, H, fixed to the can, a lever, F, pivoted to the plate E, a screw, G, fitted in the lever F and adapted to bear on the cover, a latch-bar, I, pivoted to the plate H, and having a slot, J, into which the free end of the lever F is adapted to enter, and a latch device fitted in the clamp-lever F and adapted to lock it to the latch-bar, substantially as shown and described.

7. The combination, with a can, of a plate or bar, E, fixed to one side of the can and with its head portion below the top of the neck of the can, and said head portion being made forked and provided with slots e^2 in the lower parts of the side lugs of the fork, in combination with a clamp-lever, F, adapted to bear onto the cover and provided with a tenon entering the fork of the bar E, and pins f', entering the slots e^2 of the bar E, and a device retaining the free or outer end of the lever F, substantially as shown and described.

376,942. **METAL-SCREW MACHINE.** JAMES R. CLYNE, Cleveland, Ohio, assignor to the White Sewing Machine Company, same place. Filed Sept. 12, 1887. Serial No. 249,438. (No model.)

Claim.—1. In feed mechanism for machines for making metal screws, the combination, with reciprocating sleeves having opposing ends counterbored, said sleeves being set in line with the hollow mandrel of the machine and yieldingly held together or in close proximity to each other, of clamping-jaws set in the counterbore of the sleeves, said clamping-jaws having conical ends and corresponding conical seats in the sleeves for closing the jaws by moving the sleeves toward each other, substantially as set forth.

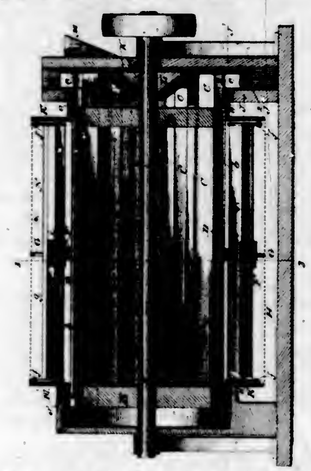
2. The combination, with reciprocating sleeves and clamping-jaws held between the sleeves, substantially as indicated, of a spring made to engage the rear sleeve for moving the feed mechanism forward and cam-disk for moving the feed mechanism rearward against the action of the spring, substantially as set forth.

3. The combination, with a reciprocating sleeve, clamping-jaws held between the sleeves, and spring acting against the rear sleeve to move the feed mechanism forward, of cam-disk for moving the feed mechanism rearward, said cam-disk having inclines arranged, substantially as indicated, to close the clamps with the forward movement and open the clamps with the rearward movement of the feed mechanism, substantially as set forth.

4. The combination, with reciprocating sleeves, of clamping-jaws and a spring for normally holding the sleeves in contact with the clamping-jaws.

5. The combination, with reciprocating sleeves having opposing ends counterbored and provided with conical seats, of clamping-jaws and a spring for normally holding the sleeves in contact with the clamping-jaws, substantially as set forth.

376,943. **FLOUR-BOLT.** JOHN M. COOK, Baltimore, Md. Filed Apr. 2, 1887. Serial No. 233,454. (No model.)



Claim.—1. In a flour-bolt, the combination of a central body formed of a jacket, D, and heads B B, an outer covering of cloth, with means for distending it, and longitudinal bars arranged between the socket and cloth and hung upon axes parallel with the main axis, the said bars having their opposite sides constructed alike to operate both as carriers and knockers when revolving in either direction, substantially as shown and described.

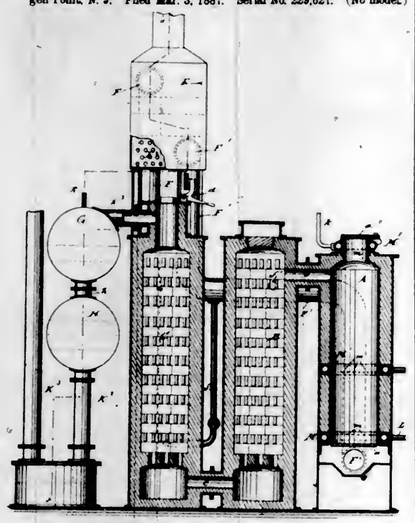
2. The combination, with the central shaft, of the heads B B, notched and provided with longitudinal bars C, the fluted jacket D, bent around these bars, the bolting-cloth, a frame distending the cloth around the fluted jacket, and longitudinally-pivoted knockers and carriers, substantially as shown and described.

3. The flour-bolt consisting of the bolting-cloth and frame distending the same, a fluted central body with head B and extended

bars C, provided with stirrers *c*, the collar *e*, head K, and cone L, combined with the box-casing J J' J², substantially as and for the purpose described.

4. In a flour-bolt, the combination of a central fluted body, the sides of the flutes being of equal inclination, an outer covering of cloth, a cloth-distending frame, and longitudinally-pivoted bars hung between the fluted body and the cloth and adapted to swing and act as knockers and carriers when the cylinder is revolved in either direction, substantially as shown, and for the purpose described.

376,944. **MANUFACTURE OF GAS.** WILLIAM W. DASHIELL, Bergen Point, N. J. Filed Mar. 3, 1887. Serial No. 229,621. (No model.)



Claim.—1. The combination, with the generator of a gas plant or apparatus, a heater having divided chambers connected by tubes supported over the exit-flue of said generator, an air-supply pipe leading to said heater, and an outlet-pipe connecting the heater with the generator beneath the fire, of a tubular steam-superheater connected with the gas-outlet of the generator and an oil-superheater connected with the steam-heater and with the gas-tank seal, substantially as shown and described, whereby the waste products of combustion are made to heat the air fed to the fire and the steam and oil used in connection with the plant are heated by the gas in its passage from the generator to the tank, as set forth.

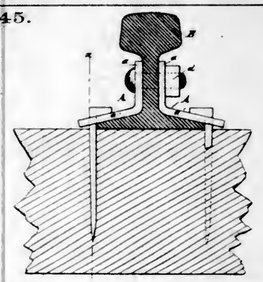
2. The combination, with the generator A of a gas plant or apparatus, provided near the top with a series of apertures, *m*, of a tubular heater, H, adapted to contain oil around the tubes connected with the gas-outlet of the generator, and with the tank-seal, a tubular ring, M' surrounding the generator, provided with a series of apertures registering with the apertures in the generator, and a pipe-connection between the heater and ring, substantially as shown and described, whereby the oil is heated by the passage of the gas through the tubes of the heater and distributed over the fuel in the generator, as set forth.

376,945. **CENTRAL RAIL-FASTENING.** THOMAS A. DAVIES, New York, N. Y. Filed Oct. 4, 1887. Serial No. 251,424. (No model.)

Claim.—1. The combination, with rails united by fish-plates, of opposing angle-plates located substantially centrally of the rails in engagement with the web and base, a fastening device passing through said web and plates, and spikes passing through the plates only and into the foundation of the rails, substantially as shown and described, whereby the rails are prevented from creeping and the fish-plates preserved from rapid wear, as set forth.

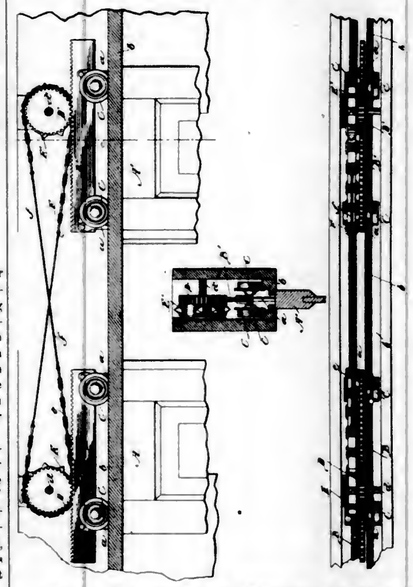
2. The combination, with rails united by fish-plates, of opposing angle-plates located substantially centrally of the rails and adapted to the contour of the web and upper face of the base, bolts passing through the vertical member of the plates and through the web, and spikes projected through the horizontal member of the plates only and into the foundation of the rails, substantially as and for the purpose herein set forth.

376,945.



3. The combination, with rails united by fish-plates, of opposing angle-plates located between the ends of the rails away from the fish-plates conforming to the contour of the web and upper face of the base, the horizontal member being adapted to extend beyond the base, bolts passing through the vertical member of the plates and through the web, and spikes projected through the overhanging portion of the horizontal member of the plates and into the rail-bed, substantially as and for the purpose herein set forth.

376,946. **DEVICE FOR SIMULTANEOUSLY MOVING DOUBLE DOORS.** BERNHARD I. H. DE VRY and JOHN SCHREIBER, Chicago, Ill. Filed Jan. 11, 1887. Serial No. 224,073. (No model.)



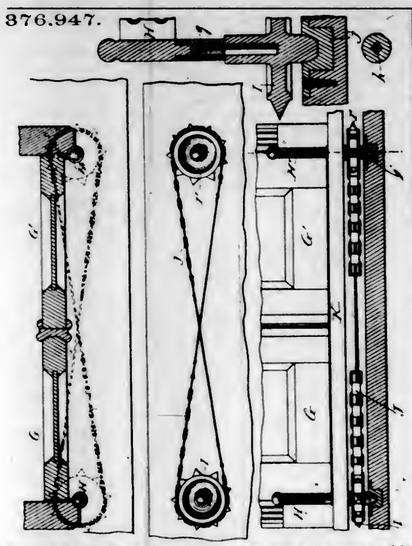
Claim.—1. In a device for moving sliding doors, the combination, with the rack-bars secured to a moving part of the doors, of gear-wheels meshing into said rack-bars, and sprocket-wheels mounted on the same shaft with the gear-wheels and connected to turn or rotate together, and a cross-belt or chain engaging the sprocket-wheels, substantially as and for the purpose set forth.

2. In a device for moving sliding doors, the combination, with the traveler-frames and rack-bars secured thereto, of the gear-wheels and sprocket-wheels mounted and connected together on the same shaft, and a cross-belt composed of the rods *f* and the links *e*, the latter engaging the said sprocket-wheels, as set forth.

376,947. **DEVICE FOR SIMULTANEOUS MOVEMENT OF DOUBLE DOORS.** BERNHARD I. H. DE VRY and JOHN SCHREIBER, Chicago, Ill. Filed Mar. 28, 1887. Serial No. 232,743. (No model.)

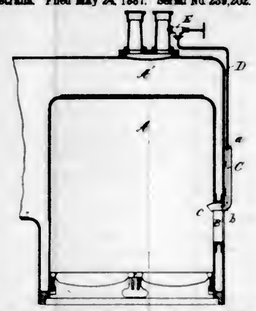
Claim.—Two swinging door-wings having squared extensions to their hinge-pivot pins, in combination with sprocket-wheels pivotally secured under the threshold, having long hubs with squared sockets

376,947.



for receiving the hinge-pivot-pin extensions, and being connected by a cross-belt, substantially as set forth, for the purpose specified.

376,948. **SMOKE-CONSUMING APPARATUS FOR STEAM-BOILERS.** ALFRED DOE, 21 Cooper Street, Redfern, Sydney, New South Wales, Australia. Filed May 24, 1887. Serial No. 239,202. (No model.)



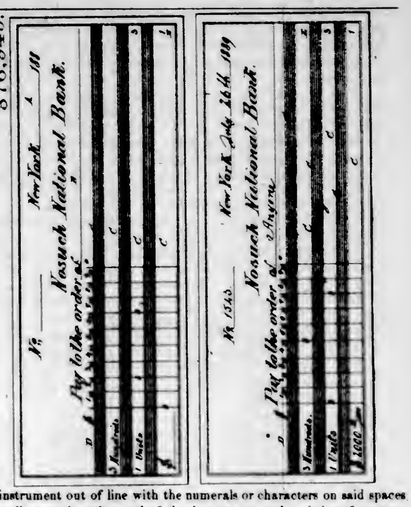
Claim.—1. As a new article of manufacture, an attachment for steam-boiler and other furnaces, consisting of an L-shaped air-induction pipe secured to the end of the furnace, and its curved portion projecting within the fire-box through an opening in the furnace, having a bell-shaped mouth fitted with a lid or valve, and a bell-shaped exit deflected downwardly above the fuel in the fire-box, said pipe being adapted to receive a steam-supply pipe, substantially as described and shown, for the purposes set forth.

2. In an apparatus for consuming smoke in steam-boiler and other furnaces, the combination, with the L-shaped air-pipe C, having the bell-shaped mouth *a* fitted with the lid *f*, and the bell-shaped exit *c*, having a downward deflection, of a steam-pipe, D, connected to the steam-chest or other source of steam-supply, and adapted to discharge steam within the bent portion of said air-pipe, substantially as shown and described.

376,949. **DRAFT, CHECK, OR OTHER MONEY ORDER OR INSTRUMENT.** WILLIAM T. DORRENUS, Flatbush, N. Y. Filed June 27, 1887. Serial No. 242,662. (No model.)

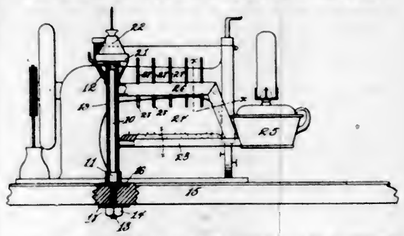
Claim.—A blank draft, check, money order, or instrument made, substantially as herein shown and described, with a series of longitudinal spaces or lines, C, and cross-spaces D, a series of consecutive numbers or characters and denominational names applied to said spaces or lines C at or near one end of the check or instrument, an additional index, E, composed of a series of corresponding numbers or characters applied to the spaces or lines C at or near the opposite end of the

376,949.



instrument out of line with the numerals or characters on said spaces or lines at the other end of the instrument, and a series of consecutive numbers applied to the cross-spaces D, or certain of them, as and for the purposes set forth.

376,950. **LAMP-SUPPORTING ATTACHMENT.** NELSON GUYER, Lima, Ohio. Filed July 13, 1887. Serial No. 244,192. (No model.)

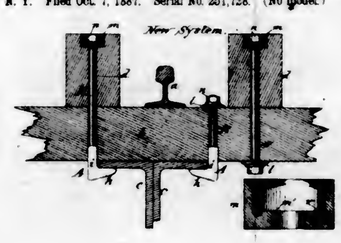


Claim.—1. In a lamp-supporting attachment, the combination, with a post or standard adapted for connection to a table, of a tube fitted upon said post or standard and having an arm supporting a lamp-bracket and a second arm bracing the first-named arm and carrying pins and hooks, substantially as set forth.

2. The combination, with a post or standard formed with enlargements 11 and 12, of a tube mounted upon the post or standard, an arm, 23, extending outward from the tube, a lamp-socket carried by the arm, and a brace, 26, carrying pins 27 and hooks 28, all substantially as described.

3. The combination, with a tube and a means for connecting the same to a table, of an arm carried by the tube, a cushion carried by the arm, a lamp-socket connected to the arm, and a brace provided with upwardly-extending pins and downwardly-extending hooks, substantially as described.

376,951. **RAILWAY STRUCTURE.** FRANK K. HAIN, New York, N. Y. Filed Oct. 7, 1887. Serial No. 251,728. (No model.)



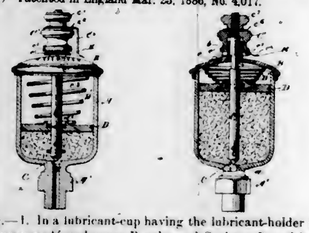
Claim.—1. In a railway or similar structure, the combination, with the girder *c* and ties *b*, of the hook-headed bolts A, having hooked ends engaging the girder and their stems passing up through the ties, with nuts screwed thereon at the top of the ties, substantially as shown and described.

2. In a railway or similar structure, the combination, with the girders *c*, ties *b*, and guard-rails *d*, of the bolts A, passing through ties and guard-rail, with hooked head *h* engaging the flange beneath the tie, and a nut screwed on its threaded end at the top of the guard-rail, substantially as and for the purpose set forth.

3. In a railway or similar structure, the combination, with the girder *c*, ties *b*, and rail *d*, of the bolt A, passing through rail and tie, with hooked head *h* at the base engaging girder, cup-washer *m* on top of bolt at top of rail, and nut *n*, screwing on bolt within the washer, substantially as shown and described.

4. In a railway structure, the combination, with guard-timbers *d*, of the cup-washers *m*, recessed into the top of the timbers flush, or nearly so, with the face thereof, and fastening-bolts passing through the washers into the timbers, substantially as and for the purpose set forth.

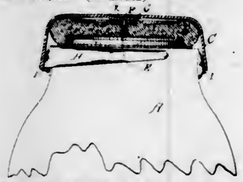
376,952. **LUBRICANT-CUP.** JOHN S. HALL, New York, N. Y. Filed Mar. 23, 1886. Renewed June 9, 1887. Serial No. 240,734. (No model.) Patented in England Mar. 23, 1886, No. 4,017.



Claim.—1. In a lubricant-cup having the lubricant-holder and its discharge-passage A′, and cover B, valve-rod C, piston D, and its operating-spring D′, the combination of the pin c^2 in the valve-rod, said piston D provided with the annular groove d' and slot d^3 in its central opening, as and for the purpose specified.

2. In a lubricant-cup having the lubricant-holder A and its discharge-passage A′, cover B, and its central exteriorly-threaded tube, *b*, and valve-rod C, and its hollow interiorly-threaded cap C′, the combination therewith of the leaf-spring E, carrying projection e^3, adapted to engage the ratchet c^3 on said cap, as and for the purpose set forth.

376,953. **PRESERVE-JAR FASTENING.** GEORGE H. HARVEY, Pittsburg, Pa.; assignor to Albert C. Ellis, same place. Filed June 3, 1887. Serial No. 240,122. (No model.)



Claim.—A jar having spiral lugs, a lid having a stud in which is a vent, said stud surrounded by a groove in which is a flexible gasket, and a clamp having a portion of its lower face enlarged, all combined, arranged, and operating with relation to each other substantially as herein described, and for the purpose set forth.

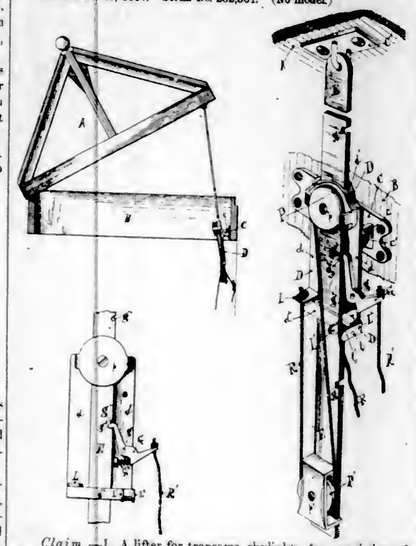
376,954. **PAPETERIE.** JACOB HERTZ, London, England. Filed Aug. 9, 1887. Serial No. 246,524. (No model.)



Claim.—1. As a new article of manufacture, papeterie consisting of a combined letter-sheet or piece of writing-paper and an envelope provided with a hole or perforation, said letter sheet or paper bearing a postage-stamp, the stamp being so arranged on the paper and the perforations so located in the envelope that when the paper is properly inserted into the envelope its stamp will appear through the perforations of the envelope, substantially as specified.

2. As a new article of manufacture, papeterie consisting of a sheet or piece of writing-paper bearing a postage-stamp, an envelope with a perforation, and a connecting-piece between the writing-paper proper and the envelope, the stamp being so arranged on the writing-paper and the perforation so located in the envelope that when the paper is properly inserted into the envelope its stamp will appear through the perforation of the envelope, substantially as specified.

376,955. **TRANSOM-LIFTER.** SYLVESTER L. HILL, Boston, Mass. Filed Mar. 26, 1887. Serial No. 232,581. (No model.)



Claim.—1. A lifter for transoms, skylights, &c., consisting of a flat and-notched lifting-bar, E, pivotally connected to the sash, a swinging guide, D, having sleeves d' d^3, and a pawl, G, having spring g^3, to engage the notches of said bar E, in combination with the sheave-wheels P P′ and an operating-cord, R, substantially as described, for the purposes specified.

2. A lifter for transoms, skylights, &c., consisting of a flat and notched lifting-bar, E, pivotally connected to the sash, a swinging guide, D, having pawl G and its spring g^3, sleeves d' d^3, and lugs L′ L², carrying roller *l*, in combination with the sheave-wheels P P′ and an operating-cord, R, substantially as described, for the purposes specified.

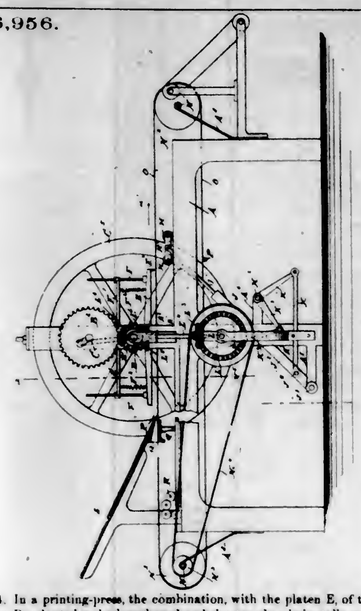
376,956. **PLATEN PRINTING-MACHINE.** CHARLES F. HOWE, Greenleaf, Kans. Filed May 2, 1887. Serial No. 236,861. (No model.)

Claim.—1. In a printing-press, the combination, with a platen, of endless belts carrying the paper and held below said platen, pulleys over which said endless belts pass, and elastic brackets supporting said pulleys and disposed to project obliquely outward from the main frame, whereby said brackets yield bodily inwardly when the platen presses the upper parts of the endless belts downward, substantially as shown and described.

2. In a printing-press, a platen having an up-and-down motion, a type-table carrying the type and held below said platen, and inking-rollers adapted to travel over the type on the type-table between said platen and the type-table, in combination with endless belts carrying the paper and held at their upper parts between said platen and said type-table, pulleys over which said belts pass, and elastic brackets supporting said pulleys, so that when the platen presses the upper parts of said endless belts downward the elastic brackets yield, and means, substantially as described, for imparting an up-and-down motion to said platen, a rotary motion to said pulleys, and a forward and backward motion to said inking-rollers, substantially as shown and described.

3. In a printing-press, the combination, with the platen having an up-and-down movement and provided with a pendent lug, of the belts provided with grippers held in their closed position by springs, and trippers, which lug is adapted to have contact with said grippers, while the grippers are adapted to be opened by the trippers, substantially as set forth.

376,956.



4. In a printing-press, the combination, with the platen E, of the pitmen D, adapted to be lengthened and rhortened and pivotally connected with said platen, and the springs E^3, held between the lower ends of said pitmen and said platen, substantially as shown and described.

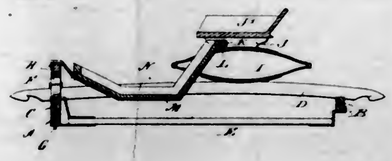
5. In a printing-press, the combination, with the platen E, provided with the slotted standards E′, of the pitmen D, adapted to be lengthened and shortened and pivotally connected with said slotted standards, and the springs E^3, resting on the platen between said standards and pressing against the lower ends of said pitmen, substantially as shown and described.

6. In a printing-press, the combination, with the platen E, receiving an up-and-down motion and provided with a lug, E^4, of the belts O, held with their upper parts below said platen E, and the grippers P, adapted to carry the paper under the platen and strike against said lug E^4, so as to interrupt the forward motion of said belts O, substantially as shown and described.

7. In a printing-press, the combination, with the main shaft B, of the transverse shaft C, connected with said main shaft B and adapted to operate the platen, the crank-shaft L, operated from said main shaft B and adapted to impart a rotary motion to the endless belts O, and the oscillating shaft K^2, operated from said crank-shaft L and adapted to impart a forward and backward motion to the inking-rollers H through the arm K′, secured to the transverse shaft K^2, and the link K, pivotally connected to the said arm and to the ink-roller-carrying arm J, substantially as shown and described.

8. In a printing-press, the combination, with the main shaft B, of the transverse shaft C, connected with said main shaft B and adapted to operate the platen, the crank-shaft L, operated from said main shaft B and adapted to impart a rotary motion to the endless belts O, and the oscillating shaft K^2, operated from said crank-shaft L and adapted to impart a forward and backward movement to the inking-rollers H by means of the extensible arm J, having connection with the ink-roller and with the crank-shaft L, substantially as set forth.

376,957. **SPRING-VEHICLE.** JONATHAN G. HUFF and LEMUEL H. HUFF, East Bend, N. C. Filed May 13, 1887. Serial No. 238,147. (No model.)

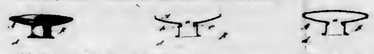


Claim.—1. In a vehicle, the combination, with the axles A and B, front cross-bar G, and side bars, D, of the spring on top of the front cross-bar, the opposite springs, I, on top of the side bars, D, the upper bar, H, on the front spring, F, the seat-bars J on the springs I, and the box N, suspended from and between the front spring-bar, H, and the side seat-bars, J, substantially as shown and described.

2. The combination, in a vehicle, with the axles, side bars, and the front and the opposite side springs, of seat-bars on the side springs, a transverse rod connecting said seat-bars, straps having their rear eyes secured on said transverse rod and their forward ends supported on the front spring, and the box resting on said straps, substantially as shown and described.

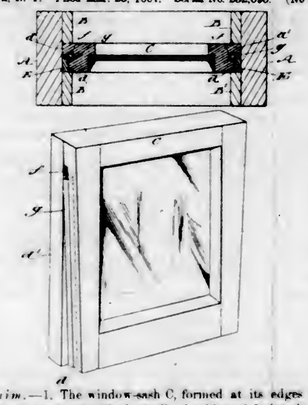
3. The combination, in a vehicle, with the axles, side bars, transverse front spring, and parallel side springs, of a bar secured at its middle part to the top of each side spring, a rod connecting the forward end parts of the side upper spring-bars, suspension-straps having eyes on the rear ends held loosely on the ends of the connecting-rod and their forward ends secured to the front upper spring-bar, and a box suspended on the straps, substantially as shown and described.

376,958. **BUTTON.** THEOPHILUS R. HYDE, Jr., Waterbury, Conn., assignor to The Scovill Manufacturing Company, same place. Filed Nov. 21, 1887. Serial No. 255,705. (No model.)



Claim.—The herein-described improvement in buttons, which consists of a metal back, A, constructed with a central opening through it, and with an outwardly-turned flange, *b*, around said opening, combined with the tubular shank B, having an annular inwardly-turned flange, *c*, around its inner end, the internal diameter of the said flange *c* corresponding substantially to the external diameter of the flange *b*, the said flange *b* of the back extending into said shank and closed upon said flange *c*, substantially as described.

376,959. **WINDOW FRAME AND SASH.** JOHN E. JONES, New York, N. Y. Filed Mar. 23, 1887. Serial No. 232,096. (No model.)



Claim.—1. The window-sash C, formed at its edges with the straight surfaces *d* and with the inclined rabbets *d*, facing the window-frame, in combination with tapering strips E, secured to the window-frame, substantially as described.

2. The sash C, formed at its outer edges with the straight surfaces *d* and with the inclined rabbets *d*, and provided at the angle with the packing *g*, in combination with the tapering cleats E, secured to the window-frame, substantially as described.

376,960. **PUMP.** STEPHEN LA POINT, Derrick City, Pa. Filed Apr. 12, 1887. Serial No. 234,539. (No model.)



Claim.—1. In a pump, the combination of the body portion thereof, spurs or arms pivoted to said body portion, and a conical sleeve fitting loosely on the body portion and provided with openings through which the spurs or arms project, substantially as herein shown and described.

2. In a pump, the combination, with a body portion and arms or spurs pivoted thereto, of an apertured and conical sleeve fitting loosely

on the body portion, a casing secured to the sleeve, and a pipe projecting through the casing, substantially as herein shown and described.

3. In a pump, the combination, with a body portion and a stuffing-box in its upper end having recesses in its upper face, of a plunger, a pipe, and a coupling for connecting the plunger and pipe, having lugs on its lower face adapted to engage the recesses of the stuffing-box, substantially as herein shown and described.

4. In a pump, the combination, with a hollow pump-rod and a casing surrounding the same, of a valve-casing secured to the pump-rod and having a passage communicating with the bore of said rod, a valve normally closing said passage, but clearing the passage in the upward movement of the rod, substantially as set forth.

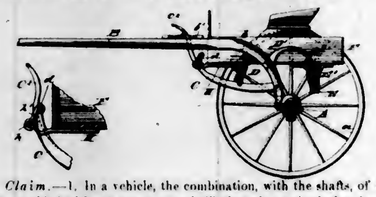
5. In a pump, the combination, with a stationary casing and a pipe adapted to be connected to the plunger, of a valve-casing secured to the pipe within the stationary casing and communicating with the said pipe, and a spring-actuated valve in the casing provided with a stem projecting through the said casing, substantially as herein shown and described.

376,961. LUBRICANT. EDWARD C. LEAHY, Halifax, Nova Scotia, Canada, assignor to himself, Joseph Howe Austen, John White, and Frank Roberts, all of same place. Filed Aug. 31, 1887. Serial No. 248,378. (No specimens.)

Claim.—1. A lubricating compound comprising cocoanut-oil, lard, tallow, plumbago, tin crystals, carbonate of soda, and chloride of sodium, substantially as set forth.

2. A lubricating compound consisting of cocoanut-oil, lard, tallow, plumbago, yarn waste, tin crystals, carbonate of soda, and chloride of sodium, in substantially the proportions specified.

376,962. TWO-WHEELED VEHICLE. HENRY K. OLMSTED, Victoria, Ill. Filed Oct. 19, 1887. Serial No. 252,820. (No model.)



Claim.—1. In a vehicle, the combination, with the shafts, of a body provided with a transverse semi-elliptic spring and spiral springs connecting the ends of said transverse spring with the shafts, substantially as shown and described.

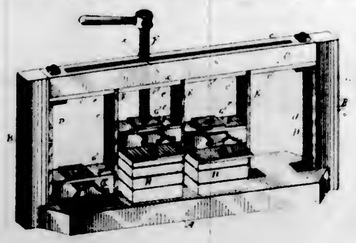
2. In a vehicle, the combination, with the shafts and a spring-actuated frame pivoted in said shafts, of a body suspended from said frame at the forward end and resting upon springs at its rear end, substantially as and for the purpose herein set forth.

3. In a vehicle, the combination, with the shafts and a spring-actuated frame pivoted in said shafts, of a body suspended from said frame at its forward end, a semi-elliptic spring secured transversely to the under rear portion of the body, and spiral springs connecting the ends of said transverse spring with the shafts, as and for the purpose herein set forth.

4. In a vehicle, the combination, with the shafts, a spring-actuated frame pivoted in said shafts, and rearwardly-curved brackets rigidly secured to the shafts, of a body suspended from said frame at its forward end, a semi-elliptic spring secured transversely to the under rear portion of the body, and spiral springs connecting the ends of said transverse spring with the brackets, substantially as herein shown and described.

376,963. CIGAR-PRESS. WILLIAM PORTNER, Red Lion, Pa. Filed Aug. 1, 1887. Serial No. 245,840. (No model.)

Claim.—1. In a cigar-press, the combination, with the main frame, the top rail of which is provided with a T-shaped groove, of the castings D and E, rigidly secured to said frame and having the ratchet-





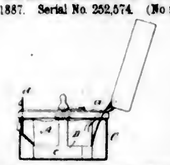
teeth *d* and *e*, and the follower G, having spring-latches to engage with the said ratchet-teeth, substantially as specified.

2. In a cigar-press, the combination, with the main frame, the top rail of which is provided with a T-shaped groove, of the screw F and nut *f*, adapted to slide in said T-shaped groove, substantially as specified.

3. In a cigar-press, the combination, with the main frame, the top rail of which is provided with a T-shaped groove, of the castings D and E, rigidly secured to said frame and having the ratchet-teeth *d* and *e*, the screw F and nut *f*, adapted to slide in the said T-shaped groove, and the follower G, having spring-latches adapted to engage with the teeth on the castings, substantially as specified.

4. In a cigar-press, the combination, with the main frame, the top rail of which is provided with a T-shaped groove, of the castings E, provided with ratchet-teeth and having slots at their upper ends, and the screw F and nut *f*, substantially as and for the purpose specified.

376,964. SAFETY-INKSTAND. LOUIS R. PRAHAR, Brooklyn, N. Y. Filed Oct. 17, 1887. Serial No. 252,574. (No model.)

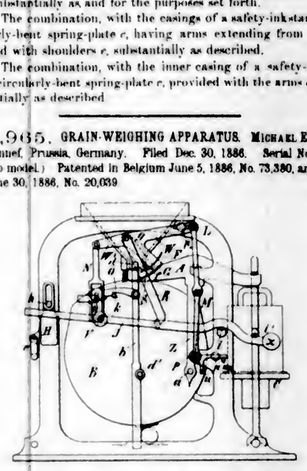


Claim.—1. In a safety-inkstand, the combination, with the outer and inner casings and their covers, of a circularly-bent spring-plate between said casings, provided with arms extending from its upper edge, substantially as and for the purposes set forth.

2. The combination, with the casings of a safety-inkstand, of the circularly-bent spring-plate *c*, having arms extending from its edge, provided with shoulders *e*, substantially as described.

3. The combination, with the inner casing of a safety-inkstand, of the circularly-bent spring-plate *c*, provided with the arms *d d' d'' d'''*, substantially as described.

376,965. GRAIN-WEIGHING APPARATUS. MICHAEL E. REISERT, Hennef, Prussia, Germany. Filed Dec. 30, 1886. Serial No. 222,999. (No model.) Patented in Belgium June 5, 1886, No. 73,380, and in Italy June 30, 1886, No. 20,039.



Claim.—1. In an automatic weighing apparatus, the combination, with the receptacle B and the upper supply-flap, F, of the scale-beam A, with the lever J, and the counter-weight H, for the purpose of causing the descent of said receptacle required for closing the said supply-flap, substantially as set forth.

2. In automatic weighing apparatus, the combination of the scale-beam A, with the lever J, the toggle-joint or articulated lever L M P, the arm W, and the flap G, for the purpose of closing the flap G so prematurely as to balance the material which drops upon the material already filled into the receptacle after the scale-beam equipoises.

3. In automatic weighing apparatus, the combination of the arresting devices, substantially as described, scale-beam A, with the toggle-joint L M P and the arms W and W', and link N, for the purpose of disengaging the arresting device of the weighing-receptacle and of permitting the latter to be emptied thereby.

376,966. LUBRICATING DEVICE. AARON J. ROBINSON, Fremont, N. H. Filed Apr. 30, 1887. Serial No. 236,717. (No model.)



Claim.—1. A bearing for a loose pulley formed of two bushings, one of which has channels *c*, leading to a space between the inner ends of the bushings, substantially as specified.

2. The combination of the bushings B and E, oil-reservoir C, shaft A, and pulley D, one of the bushings being provided with channels *c*, substantially as and for the purposes set forth.

3. The combination of shaft A, bushing B, provided with channels *c*, oil-reservoir C, bushing E, and absorbent material *g* between the inner ends of said bushings, substantially as set forth.

4. The combination of shaft A, oil-reservoir C, bushing B, provided with channels *c*, bushing E, pulley D, loose on the shaft, pulley F, fixed on the shaft, and packing *i*, substantially as described.

376,967. CAR-COUPLER. LOUIS A. RUDISILL, Charlotte, N. C. Filed Sept. 14, 1887. Serial No. 249,729. (No model.)



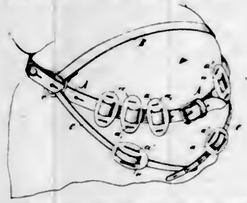
Claim.—1. A car-coupling having an armed link-securing wheel and provided with a bolt movable transversely across the path of the wheel, substantially as and for the purposes specified.

2. The combination of the draw-head, the armed wheel, the bolt, and the spring, substantially as set forth.

3. The draw-head and the armed link-securing wheel combined with the bolt made U-shaped, providing the arms *c c'*, one of which is movable into position to engage the wheel and the other being adapted to receive the spring, and the spring, substantially as set forth.

4. The improved car-coupling herein described, consisting of the draw-head having a slot, *a*, and wall B, provided with openings *b*, the armed wheel, the U-shaped bolt C, having arms *c c'*, passed through openings *b*, the spring on arm *c'*, and the lever connected with the bolt, substantially as set forth.

376,968. APPLIANCE FOR SELF-MASSAGE. LUDWIG SCHAFFER, Vienna, Austria-Hungary. Filed Apr. 6, 1887. Serial No. 233,943. (No model.) Patented in Germany Jan. 14, 1887, No. 40,670; in France Mar. 7, 1887, No. 182,034; in Belgium Mar. 16, 1887, No. 76,730, and in Austria-Hungary Mar. 26, 1887, No. 5,959 and No. 10,217.



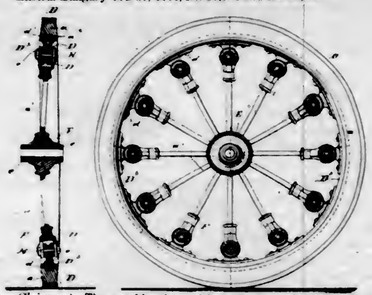
Claim.—1. The herein-described appliance for self-massage, comprising an abdominal band and a series of metallic ponderous bodies secured thereto and adapted to exert by gravity pressure upon individual abdominal muscles, substantially as and for the purpose specified.

2. The herein-described appliance for self-massage, comprising an abdominal band and a series of weights secured thereto and adjustable thereon, substantially as and for the purpose specified.

3. The herein-described appliance for self-massage, comprising an abdominal band and a series of weights secured thereto, and an auxiliary band, C, arranged to encompass the lower portion of the abdomen, and weights secured to said band, substantially as and for the purpose specified.

4. The herein-described appliance for self-massage, comprising an abdominal band having a series of weights secured thereto and adjustable thereon, and an auxiliary band or strap passing around the lower portion of the abdomen and having weights adjustable thereon, as and for the purpose specified.

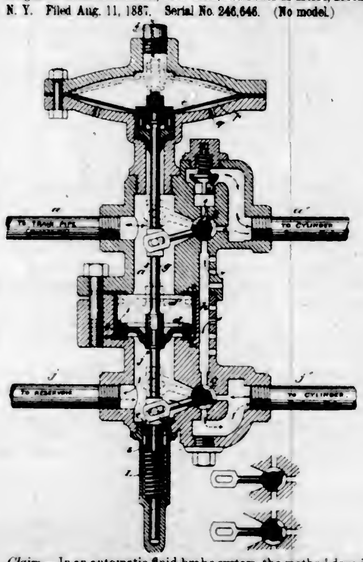
376,969. VEHICLE-WHEEL. G. L. HERRMANN SCHNEIDEWIND, Altona, Prussia, Germany, assignor of one-half to Ferdinand Otto Hugo Wechsung, New York, N. Y. Filed May 3, 1887. Serial No. 236,949. (No model.) Patented in Germany May 16, 1885, No. 33,446, and in Austria-Hungary Oct. 23, 1886, No. 29,391 and No. 54,812.



Claim.—1. The combination, with a wheel provided with a series of inwardly-extending rings, D', secured to the inner side of the tire, and centrally-apertured annular elastic blocks H, held in said rings, of the U-shaped frame F, pivoted within said blocks and rings and having an annular base, *f*, the hub E, and spokes *a'*, provided with exteriorly-threaded end, said spokes adapted to screw into said hub and frame, substantially as shown and described, and for the purpose herein set forth.

2. The combination, with a wheel provided with a series of inwardly-extending rings, D', secured upon the inner side of the tire, having a segmental base, *d*, and a central peripheral groove in said rings and base, and the elastic blocks H, centrally apertured and provided with flanges *h*, said blocks adapted for insertion in the rings D', of the U-frame F, adapted to embrace said blocks and rings, having an annular base, *f*, and recessed sides *f'*, the bolt H', adapted to pivotally secure the frame F to the rings D' and fit in said recesses, the hub E', and the spokes *a'*, having exteriorly-threaded ends screwed into said base *f* and hub E', all arranged to operate substantially in the manner and for the purpose herein set forth.

376,970. AUTOMATIC AIR-BRAKE. RENALDO SOLARO, Brooklyn, assignor to Howard & Morse, New York, and David R. Morse, Brooklyn, N. Y. Filed Aug. 11, 1887. Serial No. 246,646. (No model.)



Claim.—In an automatic fluid-brake system, the method described of first reducing the controllable pressure to a desired degree, which

allows the opposite stored air to act until reduced by expansion below the controllable pressure; second, closing communication of the stored and controllable pressure with the brake-cylinder, which re-

376,973.

teeth of the wheel V^4 will &c., the whole constructed and arranged substantially as described.

6. In a mechanism for making electrical connections, the combination, with a rotating shaft, of a wheel or pulley having in longitudinal section an unbroken series of reversed curves substantially semicircular in form, of a wheel or pulley having a counterpart

allows the opposite stored air to act until reduced by expansion below the controllable pressure; second, closing communication of the stored and controllable pressure with the brake-cylinder, which retains the respective pressures therein, the valve-piston being arrested and held by the action of an auxiliary resisting-pressure and the stored air on one side and the controllable pressure on the other; and, third, exhausting either fluid-pressure from the brake-cylinder, so that the opposite fluid-pressure has full effect.

376,971. BUTTON-ATTACHING MACHINE. HARRISON TONE, Denison, Tex. Filed June 24, 1887. Serial No. 242,417. (No model.)



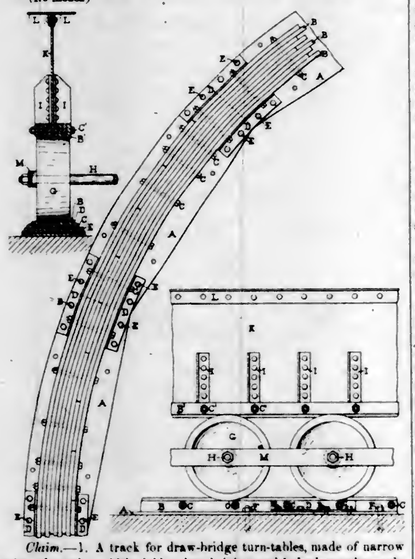
Claim.—1. In a machine for attaching buttons, the combination, with the plunger, of the die below the same, having oblique parallel curved recesses in its upper face, substantially as set forth.

2. In a button-setting machine, the die having a concave upper face formed with the central oblique parallel curved recesses therein, substantially as set forth.

3. In a button-setting machine, the die having a central projection to enter the concavity of a button and parallel oblique curved recesses in said projection, substantially as set forth.

4. In a button-setting machine, the die having a peripheral flange and a central projection on its upper face having parallel curved recesses, substantially as set forth.

376,972. CONSTRUCTION OF DRAW-BRIDGES. MAXIMILIAN J L. TOWLER, Detroit, Mich. Filed Oct. 25, 1887. Serial No. 253,344. (No model.)



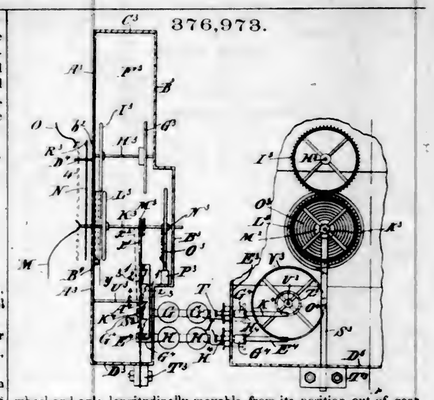
Claim.—1. A track for draw-bridge turn-tables, made of narrow strips of varying widths laid to break joints and bolted together, substantially as shown and described.

2. A track for a draw-bridge turn-table, consisting of strips B, bolted together by bolts C and secured to the bed-plate by angle-irons D, substantially as shown and described.

3. In combination with the web of a draw-bridge turn-table, a track consisting of a series of narrow strips of iron of varying widths secured to the web by bolts, which pass through said strips and through said web, substantially as shown and described.

4. In combination with the web-plate K, the strips B', bolts C', and angle-brackets I, substantially as shown and described.

376,973.



376,978. MECHANISM FOR ELECTRICAL CONNECTIONS. PETER W. WOOD and JOHN R. WOOD, Montreal, Quebec, Canada. Filed June 21, 1887. Serial No. 242,003. (No model.)

Claim.—1. In a mechanism for making electrical connections, as described, the combination, with a revolving gear-wheel, of a gear-wheel and axle longitudinally movable from its position out of gear with the said revolving gear-wheel into gear therewith, and to again move beyond the position of gearing with the said revolving wheel, the said axle of the said wheel and axle being further provided with a hand arranged as described, and, in combination with the two wires, of an electric circuit, one of which wires is arranged to connect with the axle of the said wheel and axle, and the other is arranged to connect with the point of the hand when the said hand has been rotated to the required position, as described, and then moved to the position 4, thereby forming an electrical connection of the said two circuit wires, the whole substantially as described.

2. In a mechanism for making electric connections, as described, the combination of a revolving gear-wheel, I^3, with a gear-wheel and axle longitudinally movable from a position out of gear with the said revolving gear-wheel into gear therewith and to again move beyond the position of gearing with the wheel I^3, the axle of the said wheel and axle being further provided with a hand, a stop adjacent to the periphery of the gear-wheel, so arranged that when the said gear-wheel has passed beyond or out of gear with the said gear-wheel I^3 it will be held by the said stop stationary, the above further in combination with two electric circuit-wires and the said hand forming an electrical connection between the said two circuit-wires, the whole substantially as described.

3. The combination, in a mechanism for making electric connections, of a revolving gear-wheel with a gear-wheel and axle longitudinally movable from a position out of gear with the said revolving gear-wheel into gear, and beyond gearing therewith, the axle of the said wheel and axle being provided with a hand arranged to form a connection between two electric circuit-wires when operated by the said wheel and axle, as described, with the two said circuit-wires, and with a stop, B^4, as described, by which the said hand is caused to retain the connection between the said circuit-wires and hand, the said axle of the said wheel and axle being also provided with a fly-back device by which, when the said wheel and axle have been returned to their first position out of gear with the wheel I^3, the fly-back device causes the said hand to return to zero, the whole constructed and arranged substantially as described and shown.

4. In a mechanism for making electric connections, as described, the combination of the gear-wheel I^3, axle K^3, longitudinally movable, having gear-wheel L^3, hand N, flanged collar or collet M^3, and hair-spring O^3, secured upon the said axle K^3, stop B^4, and circuit-wires M and O, spring-bar S^3, having pawl A, wheel V^3, having teeth, as described, of various heights, as described, whereby through the said pawl and spring-bar the axle K^3 is moved to bring the wheel L^3 from its position out of gear with the wheel I^3 into gear therewith and to a position beyond gearing therewith and in contact with the stop B^4, and bring the point R^3 in contact with the circuit-wire O and the axle K^3 in contact with the circuit-wire M, thereby forming an electrical connection between the said two circuit-wires, the hair-spring forming a fly-back device for returning the hand N to zero when the wheel L^3 has been returned to its first position out of gear with the wheel I^3, the whole substantially as described.

5. In a mechanism for making electrical connections, as described, the combination of the spring-bars E^4 and K^4, having pawls F^4 and L^4, wheels V^3 and Z^3, provided with teeth of equal length, measured circumferentially of the wheel, the bottoms of teeth 1, 2, and 3 being at different heights to each other, as described, arranged to be operated upon by the said pawls F^4 and L^4, whereby one push of the spring-bar K^4 will cause an equal revolution of the wheels V^3 and Z^3 that a series of pushes or operations of the pawl F^4 on a series, 1 2 3, of the teeth of the wheel V^3 will do, the whole constructed and arranged substantially as described.

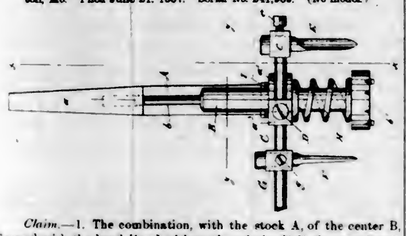
6. In a mechanism for making electrical connections, the combination of the wheel V^3, having teeth, as described, of different heights, and axle K^3, with a spring-bar, S^3, provided with a pawl, A^4, arranged to act upon the teeth of the wheel V^3, whereby, according as the said pawl is engaged with teeth of various heights, the said axle K^3 is raised and lowered or moved to the different positions, as shown and described, the whole substantially as set forth.

7. The combination, in a mechanism for making electrical connections, of a revolving wheel, I^3, wheel L^3, and axle K^3, stop B^4, arranged to engage with the teeth of the wheel L^3 and hold it stationary, as described, hand N, arranged to form connection between the electrical circuit-wire M and an insulated station or location represented by the electrical wire O, situated at a distance from the casing, of which A^3 is the front, the whole substantially as described.

8. The combination, in a mechanism for making electrical connections, of an axle, K, having a hand, N, secured thereon, and a hair-spring, O^3, having one end attached to said axle, also a gear-wheel, L^3, secured thereon, by which the hand N is rotated in the one direction from zero, and thereby further winding up the said hair-spring, with revolving gear-wheel I^3, with which the gear-wheel L^3 is arranged to be engaged and disengaged, as described, and when so disengaged the said hair-spring O^3 is arranged to cause the hand N to return to zero by revolving the axle K^3 in the reverse direction, the whole substantially as described.

9. In a mechanism for making electrical connections, the combination of the longitudinally-movable axle K^3, having gear-wheel L^3, and hand N, secured thereon, with the continuously-revolving axle H^3, having gear-wheel I^3 secured thereon, the said gear-wheel L^3 being arranged to gear with the said gear-wheel I^3 and pass beyond therewith, whereby the hand N is rotated and stopped at pleasure, the whole substantially as described.

376,974. WASHER-CUTTER. CHARLES WUNDERLICH, Washington, Mo. Filed June 21, 1887. Serial No. 241,989. (No model.)



Claim.—1. The combination, with the stock A, of the center B, formed with the head b' and with teeth and pins b^3 b^2, the cross-bar C, laterally adjustable in the stock A and carrying knives E F, and the spring H, surrounding the center B between the head b' thereof and the lower end of the stock A, substantially as shown and described.

2. The stock A, made in crank form and formed with the foot a' and toe a^2, the cross-bar C, adjustable in said toe and formed with a head, c, the knife E, vertically adjustable in the head c, the block G, adjustable along the cross-bar C, and the knife F, vertically adjustable in the block G, in combination with the center B and spiral spring H, substantially as shown and described.

3. The stock A, made in crank form and formed with a tang or shank, a, and the center B, placed in the crank portion of the stock, the upper end of the center B fitting loosely in a recess, a^3, of the stock, and its lower end passing through the stock at the lower end and formed with a head, b', upon the face of which head teeth b^3 and pins b^2 are formed, in combination with the cross-bar C and knives E F, carried thereon, and a spiral spring, H, surrounding the lower end of the center B, substantially as shown and described.

376,975. DRIVING-BELT AND WHEEL. PATRICK ADIE, London, County of Middlesex, England; William G. Henderson, Washington, D. C., administrator of said Patrick Adie, deceased. Filed Jan. 23, 1886. Serial No. 189,475. (No model.) Patented in England June 1, 1885, No. 6,442; in France Aug. 17, 1885, No. 170,671, and in Belgium Aug. 19, 1885, No. 69,927.



Claim.—1. The combination, with a metallic driving-belt formed with an uninterrupted succession of transverse corrugations to present in longitudinal section an unbroken series of reversed curves substantially semicircular in form, of a wheel or pulley having a counterpart transversely grooved or corrugated periphery adapted to engage said belt, substantially in the manner and for the purpose herein set forth.

2. A driving-belt constructed of a thin metallic strip having an uninterrupted succession of uniform transverse semicircular bends or corrugations, presenting in longitudinal section an unbroken series of reversed curves, in combination with a plain straight metallic strip superimposed and secured longitudinally thereon, to serve as a continuous chord for the several arcs of said curves, substantially in the manner and for the purpose herein set forth.

3. The combination of the pulley, a corrugated band of metal applied to the pulley, and the corrugated belt fitting to the said pulley, substantially as described.

376,976. ELECTRICAL SWITCH. SIGMUND BERGMANN, New York, N. Y., and JOHN TROY DEMPSTER, Summit, N. J., assignors to Bergmann & Company, New York, N. Y. Filed May 27, 1887. Serial No. 239,521. (No model.)



Claim.—1. In an electrical switch, the combination of a moving contact-piece, arms throwing such contact-piece in opposite directions, a cam spreading such arms apart and constructed with a drop to release such arms alternately, and a spring forcing said arms together, substantially as set forth.

2. In an electrical switch, the combination, with a moving contact-piece and an operating-handle, of a cam turned by such handle and constructed with a rise, a concentric portion and a direct drop, two arms forced upon opposite sides of the cam by a spring, and connections from such arms to the moving contact-piece, substantially as set forth.

3. In an electrical switch, the combination, with a moving contact-piece and an operating-handle, of two pivoted arms connected with and moving the contact-piece in opposite directions, a cam turned by the handle and located between such pivoted arms and constructed with a drop to release such arms alternately, a spring connecting the arms and drawing them together upon the cam, and connections from such arms to the moving contact-piece, substantially as set forth.

4. In an electrical switch, the combination, with a base, of a moving contact-piece and an operating-handle located above the base, a cam beneath the base turned by such handle, two pivoted arms beneath the base embracing the cam and forced thereon by spring-pressure, a slot in the base, and fingers from the pivoted arms extending into said slot and embracing the contact-piece or a pin therefrom, substantially as set forth.

5. In an electrical switch, the combination, with the base, of a stationary bushing therein, the operating-spindle turning through such bushing, the moving contact-piece turning upon the bushing independent of the spindle, a cam turned by the spindle, pivoted arms embracing the cam and forced thereon by spring-pressure, and connections from the arms to the moving contact-piece, substantially as set forth.

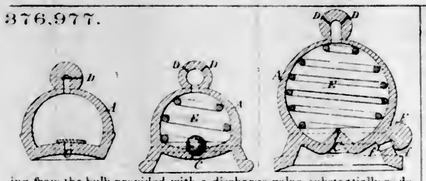
6. In an electrical switch, the combination, with the base, of the moving contact-piece, the operating-spindle, the cam constructed with a rise, a concentric portion, and a direct drop, the pivoted arms embracing the cam, a spring drawing the arms together upon the cam, a pin on the contact-piece projecting into a slot in the base, and fingers on the pivoted arms embracing such pin, the parts being constructed and arranged to operate substantially as set forth.

7. In an electrical switch, the combination, with the swinging metallic cross-bar having perforated ends, of two sets of stationary contact-springs, one set being in the path of movement of each end of the bar, insulating-buttons on the ends of the bar, contact-plates on such buttons, and a rivet connecting the opposite contact-plates at each end of the bar through the insulating-buttons and the perforation in the cross-bar, substantially as set forth.

376,977. BOTTLE-STOPPER. WALTER C. CHURCH, Brixton, County of Surrey, England, assignor of one-half to Henry Smith, same place. Filed Oct. 25, 1887. Serial No. 253,352. (No model.) Patented in England Jan. 12, 1887, No. 522.

Claim.—1. A stopper for a bottle, jar, or other vessel, consisting of an elastic hollow bulb having an inlet-opening in the portion to be applied to the vessel provided with a suction-valve, and an outer open-

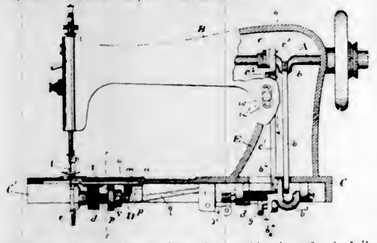
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ing from the bulb provided with a discharge-valve, substantially as described.

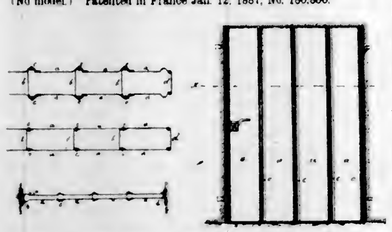
2. In combination with a hollow elastic stopper provided with suction and discharge valves, an opening at the base of the stopper having a movable closure for relieving pressure, substantially as described.

376,978. SEWING-MACHINE. WILLIAM O. GRAIN, Baltimore, Md., assignor of two-thirds to Wise Brothers, same place. Filed Mar. 14, 1887. Serial No. 230,771. (No model.)



Claim.—In a sewing-machine, the combination of a bed-plate arm, C, a main shaft, A, in the head B of the machine, provided with a crank, *b*, and a cam, *c*, an oscillating shaft, D, moving a shuttle, *f*, crosswise of the arm and having a feed-bar cam, *e*, a feed device which moves the goods lengthwise of the said arm, a rock-shaft, b^2, connected with the said oscillating shuttle-shaft, a second rock-shaft, *h*, to impart a forward-and-back motion to the feed device, a rod, *b'*, connecting the crank on the main shaft with the rock-shaft b^2, and a lever, *d'*, connecting the cam on the main shaft with the second rock-shaft, *h*, for the purpose set forth.

376,979. U-SHAPED METAL PLATE FOR METAL STRUCTURES. ERNST DE LA SAUCK, Berlin, Germany, assignor to E. de la Sauce & Kloss, same place. Filed Oct. 14, 1887. Serial No. 252,397. (No model.) Patented in France Jan. 12, 1887, No. 180,850.



Claim.—1. As an article of manufacture, metal plates bent into a U-shaped form, with recesses formed into the metal at or near the upper and lower end of the sides *a*, substantially as and for the purpose set forth.

2. As an article of manufacture, metal plates bent into a U-shaped form, with a recess, *c*, formed into the metal at the lower edge of the sides *a*, substantially as described, and shown in Fig. 4.

3. The combination of two or more metal plates bent into a U-shaped form, having recesses *c* formed into the metal, such recesses serving to give a hold of one bent plate upon another, substantially as and for the purpose described.

4. The combination of a series of U-section plates, *a*, having bottoms B at right angles to the sides, and recesses or projections C, with a terminal cover-plate, *d*, whereby a stout non-conducting cellular structure is obtained, with strengthening-plates *b b b x x d* at intervals and at each end.

5. The combination of a series of narrow U-plates, A, with rounded corners, curved bulges *c*, and terminal plate *d*, forming a door, whereby a strong fire-proof door is obtained, having rounded end to allow for radial action, and a series of strong vertical ribs and hollow frame, with a rounded universal joint between each panel capable of allowing of greater expansion on one side than the other through unequal heating in case of a fire.

376,980. VOTING-MACHINE. WILLIAM W. FORD, Longview, Tex. Filed Nov. 15, 1887. Serial No. 255,209. (No model.)

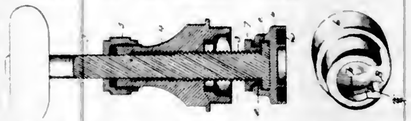


Claim.—1. In a voting-machine, the combination, with the transverse bridge, through the opening of which are fulcrumed by means of a pin two parallel keys, said keys having pivotally connected to their fulcrumed ends two parallel pawls, the free ends of which mesh with teeth in two ratchet-wheels carrying hands indicating on a dial and having eccentrics upon their faces, two parallel narrow plates moved by such eccentrics to indicate the complete revolution of the hands, and a shield upon the top of the casing inclosing the pawl-and-ratchet mechanism, substantially as described, and for the purposes set forth.

2. The combination, with the main box A and bridge C, of two parallel keys, E E, pin D, parallel pawls G G, parallel ratchet-wheels H H, having eccentrics or pins thereon and having their shaft journaled in bearings formed integral with a struck-up portion of the horizontal metallic plate Q, two narrow parallel plates, N N, two parallel vertical slides, M M, for displaying scores or figures, and a screen or shield, M', upon the top of the vertical casing B, substantially as described.

3. The combination of the horizontal box A and vertical box or casing B, each provided with a communicating opening between the two, by means of which the mechanism in box B is enabled to be operated by that in box A, the mechanism consisting, essentially, of the keys E E, bridge C, pin D, pawls G G, flat springs J J, clamp I, springs L L, guide-pins *n' n'*, ratchet-wheels H H, metallic plates Q N N, slides M M, shield M', dials S S, constructed as described, and index-hands, and pivotally-swinging covers or shields arranged to swing over the circular openings in the sides of the vertical casing B, all arranged and operated as set forth.

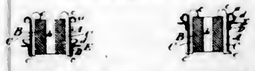
376,981. SPINDLE-CONNECTION FOR VALVES. HENRY R. FRISBIE, Detroit, Mich., assignor to William Barnett, Mansfield, Ohio. Filed Apr. 4, 1887. Serial No. 233,563. (No model.)



Claim.—The improved spindle and valve-connection herein described, consisting of the spindle 3, externally screw-threaded, having the annular collar c on its lower end, combined with the nut 7, having a screw engagement with the spindle above said collar, and the valve 6, having an annular chamber, *v*, in one side to receive the lower end of said spindle and collar, said chamber having an overhanging border, *b*, surrounding an opening of suitable diameter to receive the neck *c* of said nut, and a passage through its side of a width less than the diameter of said neck, substantially as set forth.

376,982. BOBBIN-HOLDER FOR SPINNING-SPINDLES, &c. WILLIAM F. FULLER, Port Elmsley, Ontario, Canada, assignor of one-half to Benson Smith Snyder, same place. Filed June 1, 1887. Serial No. 239,338. (No model.)

Brief.—The object of the invention is to prevent the waste of yarn usually made when a bobbin is doffed, and to provide a device by which the bobbin may be adjusted at any height upon the spindle.



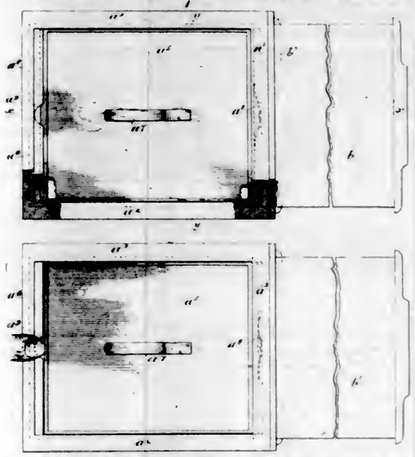
Claim.—1. A shell or thimble, A, provided with an elastic core having an eye for the reception of a spindle, said shell provided with an enlarged upper edge or bead, strips C, having the lugs *c*, adapted to engage a bobbin and holding the elastic core in the shell, a sliding collar, D, upon said shell A, having its upper edge enlarged and adapted to pass freely over the enlarged upper edge or bead of the shell and clamp a thread, substantially as set forth.

2. The combination of the shell A, having the bead *a*, elastic core B, strips C, having the lugs *c*, and sliding collar D, having the enlarged edge *d*, substantially as set forth.

3. The combination of the shell A, having the bead *a*, elastic core B, having the eye *b*, strips C, having the lugs *c* and hooked ends *c'*, sliding collar D, having the enlarged edge *d*, and fast collar or flange E, substantially as set forth.

4. The combination of the shell A, elastic core B, having an eye, *b*, and strips C, having lugs *c* and hooked ends *c'*, substantially as set forth.

376,983. PHOTOGRAPHIC-PLATE HOLDER. WILLARD H. FULLER, Passaic, N. J., assignor to The Scovill Manufacturing Company, New York, N. Y. Filed July 9, 1887. Serial No. 243,815. (No model.)



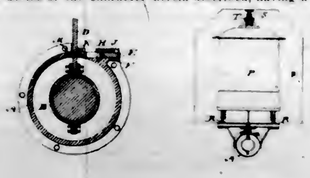
Claim.—1. In a photograpic-plate holder, the combination of a frame composed of side and end pieces rigidly secured together, the end pieces being provided with flanges adapted to secure a photographic plate, one of said end pieces having a notch in its flange, the other of said end pieces having a spring arranged in a recess beneath or behind the flange, and both said end pieces being closed beneath said flanges and at the rear of the recesses formed thereby, substantially as specified.

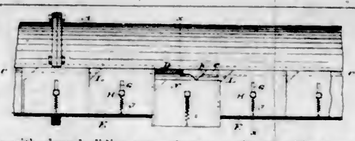
2. The combination, with a photographic-plate holder, of a kit consisting of a thin frame having a central opening, corner pieces extending across the central opening upon one side of the kit, and buttons at the other side of the kit adapted to be adjusted over the opening, said kit being of such thickness only that when a photographic plate is arranged in said opening and between said corner pieces and buttons the surface of the plate will be approximately flush with the surfaces of the kit upon both sides, substantially as specified.

376,984. PNEUMATIC PROPELLER FOR CARS. CHRISTIAN H. GOEBEL, Philadelphia, Pa., assignor, by mesne assignments, to the American Pneumatic Railway Company, of Tennessee. Filed Mar. 12, 1887. Serial No. 230,625. (No model.)

Claim.—1. A device of the character described, having a slotted tube which is provided with sliding gates having inclined shoulders, a plunger in said tube, and an arm connected with said plunger, having a wedge-shaped lug adapted to be brought in contact with said inclined shoulders, the parts being combined substantially as and for the purpose set forth.

2. A device of the character herein described, having a slotted





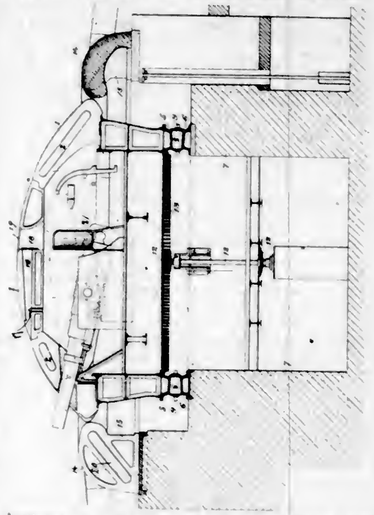
tube with slotted sliding gates thereon, a plunger with an arm provided with a lug, and the bolts H, secured to the top of said tube, substantially as and for the purpose set forth.

3. A slotted tube and a plunger therein, in combination with sliding gates and opening and closing devices therefor, said gates having tongues and grooves, substantially as and for the purpose set forth.

4. A slotted tube and a plunger therein, in combination with sliding gates and operating devices therefor, said tube and gates having grooves and tongues, substantially as and for the purpose set forth.

5. In a device of the character herein described, a slotted tube, in combination with slotted gates thereon, having inclined shoulder L, a plunger with an arm provided with the wedge-shaped lug K, the bolts H, secured to said tube and located in the slots of said gates, and springs adapted to close said gates, substantially as described.

376,985. ARMOR-TURRET. HERMANN GRUSON, Buckau, Prussia, Germany. Filed Feb. 1, 1886. Serial No. 190,501. (No model.)



Claim.—1. An armor-turret having a substantially horizontal sky-plate, an observation-aperture formed in said plate in a horizontal direction, and a man-hole, into which said aperture opens, substantially as set forth.

2. An armor-turret having a substantially horizontal sky-plate, an observation-aperture, 16, formed in said plate and terminating in an enlarged aperture or man-hole, 18, formed vertically through said plate, substantially as set forth.

3. An armor-turret having a substantially horizontal sky-plate, an observation-aperture, 16, formed in said plate, extending between its top and bottom sides, a fixed sight, 17, located in said aperture, and an enlarged aperture or man-hole, 18, into which said observation-aperture opens, substantially as set forth.

376,986. ELEVATED RAILWAY STRUCTURE. BENJAMIN F. HAMILTON, Lawrence, Mass. Filed July 5, 1887. Serial No. 243,712. (No model.)

Claim.—1. In an elevated railway structure, the main vertical supports and truss-frames supported by them, said main vertical supports consisting of two uprights, A A', having a narrow space between them gradually increasing in width toward the lower ends, and key-blocks fitted into and between the uprights, combined with the foundation-beam and brace-rods, substantially as and for the purpose specified.

2. In an elevated railway structure, the main vertical supports, each consisting of two uprights placed side by side, but separated somewhat at their lower ends, combined with the foundation-beam

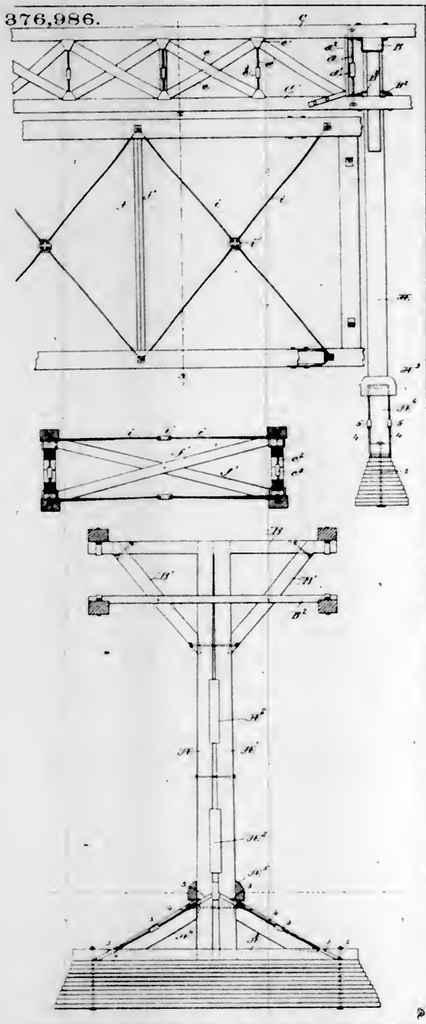
376,986.

376,987. BOOT OR SHOE HEEL. HUBERT C. HART, Unionville, Conn., assignor, by mesne assignments, to Arthur H. Hart, New York.

2. The improvement in the manufacture of steel guns, which consists in twisting the steel casting or ingot to be used in making the

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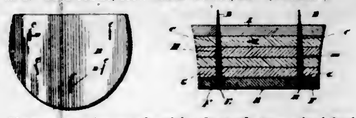
A³, brace-bars A⁴ and binding-rods, and means for securing the foundation-beam rigidly in position, substantially as described.

3. In an elevated railway structure, the main vertical supports, each consisting of two uprights placed side by side, but separated somewhat at their lower ends, and key-blocks A², and bolts passing through the uprights, combined with the foundation-beam A³, brace-bars A⁴ and binding-rods, and means for securing the foundation-beam rigidly in position, substantially as described.

4. In an elevated railway structure, the main vertical supports and their foundation beams and braces, combined with the supporting-beams B B² and braces therefor, and the truss-frames supported upon the beams B B², the cross-bar and binding-rods forming component parts of the truss-frames, and the cross-bars and binding-rods for joining the said truss-frames, substantially as described.

5. In an elevated railway structure, the main vertical supports and their foundation beams and braces, combined with the supporting-beams B B² and braces therefor, and the truss-frames supported upon the beams B B², the cross-bars and binding-rods forming component parts of the truss-frames, cross-bar *f f'*, the binding-rods *i*, and the ring *i'*, for joining the two truss-frames, substantially as described.

376,987. BOOT OR SHOE HEEL. HUBERT C. HART, Unionville, Conn., assignor, by mesne assignments, to Arthur H. Hart, New York, N. Y. Filed Oct. 20, 1887. Serial No. 252,923. (No model.)



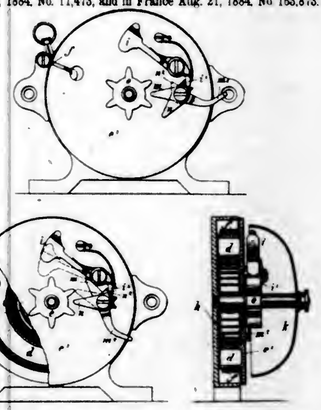
Claim.—As an improved article of manufacture, a heel for boots and shoes, consisting in the combination, with a heel-body and a top lift therefor, of fastening devices each consisting of a binding end, a shorter corrugated or roughened wearing end, and a flange located between such ends which are in the same line, the said wearing ends passing through or nearly through the top lift, and the said binding ends extending through the heel-body and projecting through the heel-seat, and adapted to have their projecting ends turned down to co-operate with the flanges for positively clamping the lifts of the body together and the entire heel to the sole, substantially as set forth.

376,988. BOOT OR SHOE HEEL FASTENING. HUBERT C. HART, Unionville, Conn., assignor, by mesne assignments, to Arthur H. Hart, New York, N. Y. Filed Oct. 24, 1887. Serial No. 253,257. (No model.)



Claim.—A boot or shoe heel fastener having a long binding end, a shorter corrugated or roughened wearing end, and a flange located between such ends, the said binding end being adapted in length to pass through the heel-body and to project from the heel-seat, and to have its projecting end turned down to co-operate with the flange in securing a positive retaining action for the fastener, substantially as set forth.

376,989. ALARM APPARATUS. WILHELM F. LÖFFELHARDT, Hamburg, Germany. Filed July 22, 1887. Serial No. 245,002. (No model.) Patented in Germany Aug. 20, 1884, No. 31,285; in England Aug. 20, 1884, No. 11,473, and in France Aug. 21, 1884, No. 163,873.



Claim.—1. In an alarm apparatus, the combination, with the disk *c*, having the barrel cast therewith, of the spring on said barrel and strap connected therewith, a bell, and pivoted gravity-hammer actuated from the movement of the disk, substantially as set forth.

2. In an alarm apparatus, the combination, with the movable disk, spring-barrel, and strap for actuating the same, of a bell and pivoted gravity-hammer and an adjuster located on the outer face of the disk, as described, the said adjuster for varying the striking operation for either or both movements of the disk, substantially as set forth.

376,990. MANUFACTURE OF GUNS. HIRAM S. MAXIM, London, England. Filed Oct. 4, 1887. Serial No. 251,389. (No model.) Patented in England Mar. 22, 1887, No. 4,320.

Claim.—1. The improvement in the manufacture of steel guns, which consists in twisting the steel casting or ingot to be used in making the gun, as and for the purpose set forth.

2. The improvement in the manufacture of steel guns, which consists in twisting the steel casting or ingot to be used in making the gun and then cooling it internally, as set forth.

3. The improvement in the process of making steel guns, which consists in twisting the steel casting or ingot to be used in making the gun and then heating and cooling it internally.

4. The improvement in the process of making steel guns, which consists in twisting the steel casting or ingot to be used in making the gun, boring the casting or ingot when cast solid, and then cooling it internally while its exterior is exposed to heat.

5. The improvement in the process of making steel guns, which consists in twisting the steel casting or ingot to be used in making the gun, boring the same when cast solid, then tempering or toughening it in the ordinary manner, and then reheating it and cooling it internally while its exterior is exposed to heat, as set forth.

6. The improvement in the process of making steel guns, which consists in twisting the steel casting or ingot to be used in making the gun, then forging the said casting or ingot to the desired shape or configuration, and then roughly boring the same, then heating it and cooling it internally while its exterior is exposed to heat, as set forth.

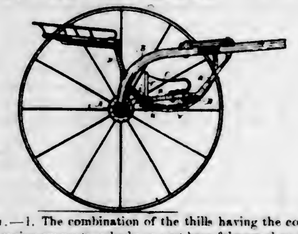
7. The improvement in the process of making steel guns, which consists in twisting the steel casting or ingot to be used in making the gun, then forging the said casting or ingot to the desired shape or configuration and roughly boring the same, then tempering or toughening it in the ordinary manner, and then reheating it and cooling it internally while its exterior is exposed to heat.

376,991. WRENCH. HENRY P. ROBERTS, Jamestown, N. Y. Filed May 27, 1887. Serial No. 239,567. (No model.)



Claim.—As an article of manufacture, a combined nut and pipe wrench consisting of a shank having a fixed jaw at one end, projecting from each side, a movable jaw having a centrally-disposed slot for said shank, said movable jaw being open front and rear and provided with two downwardly-extending side wings, *f*, terminating at the bottom in heads *g*, a sleeve, *d*, having sockets formed in its sides near the center to receive the heads, the upper portion of said sockets diverging upwardly to form at the front and rear of said wings walls or stops for limiting the movement of the movable jaw, and a spring for returning the jaw to its normal position, as herein described.

376,992. TWO-WHEELED VEHICLE. HENRY H. SMITH, Kalamazoo, assignor of one-half to Mary Mohr Kruse, Portage, Mich. Filed Oct. 13, 1887. Serial No. 252,246. (No model.)



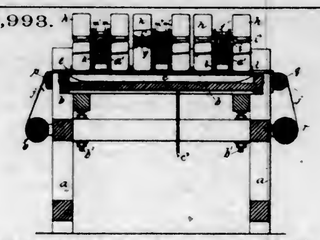
Claim.—1. The combination of the thills having the combined braces and spring-supports, a body or seat-bars fulcrumed at the forward end, and springs mounted upon and attached to said braces and suspending or supporting said body, substantially as set forth.

2. The combination of the vehicle-body fulcrumed at the forward end, the thills having the spring-support, the springs having the extended end, the short end being mounted upon and attached to said support, and hangers suspending the body from the extended ends of the springs, substantially as set forth.

3. In combination, a fulcrumed vehicle-body, the thills having the combined braces and spring-supports, springs, hangers suspending the body from said springs, and bolts or keys adapted to lock the hangers to the braces, whereby the effect of the springs is dispensed with, substantially as set forth.

376,993. MACHINE FOR FINISHING AND POLISHING TEXTILE FABRICS. CLAUDE TACHON, Charlieu, Loire, France, assignor, by direct and mesne assignments, to Herman Spahn, New York, N. Y., and Edouard G. Landru, Union, N. J. Filed May 7, 1887. Serial No. 237,404. (No model.) Patented in France Jan. 15, 1880, No. 134,542.

376,993.



Brief.—The fabric is acted upon by inclined flexible rotating blades, which rub both ways from the center. Gripping devices arranged between the blades bear upon the cloth and oppose the dragging action of the blades. To prevent creasing there is at one end of the machine a guide-bar and at the other end a guide-roller, each being higher in the middle than at the ends, and having the ends of unequal height. The fabric is supported upon an elastic bed composed of an air-cushion in an open-topped box and having over it a sheet of cloth and strips of leather under the rubbing-blades.

Claim.—1. In a machine for finishing and polishing textile fabrics, in combination, an elastic or yielding bed on which the goods under treatment are held, feeding mechanism for drawing the goods over the bed, and rotary rubbing devices arranged to act transversely on the goods, substantially as and for the purpose set forth.

2. In a machine for finishing and polishing textile fabrics, the combination, with an elastic or yielding bed, of several series of polishing devices provided with flexible blades arranged to act on all parts of the goods held on the bed and rotated in opposite directions, and connecting devices for imparting a continuous rotary motion to the polishing devices, substantially as and for the purpose set forth.

3. In a machine for finishing and polishing textile fabrics, in combination, an elastic or yielding bed, rotating rubbing devices provided with flexible blades and arranged to act on all parts of the goods held on the bed, grippers located between the rubbing devices, and mechanism, substantially as described, for actuating the grippers and causing them to hold the goods on the bed when the rubbing devices are acting thereon.

4. In a machine for finishing and polishing textile fabrics, in combination, an elastic or yielding bed, rotating rubbing devices provided with flexible blades and operated to act simultaneously on the goods held on the bed, grippers located between the rubbing devices, mechanism, substantially as described, for actuating the grippers and causing them to hold the goods on the bed when the rubbing devices are acting thereon, and an intermittently-actuated feeding device for drawing the goods forward when the flexible blades of the rubbing devices and the grippers leave the goods.

5. In a machine for finishing and polishing textile fabrics, the combination, with an elastic bed, of rotary rubbing devices having flexible blades arranged obliquely to their axes and actuated to rotate in opposite directions on the goods held on the bed, the inclination of the flexible blades being in opposite directions on the oppositely-moving rubbing devices, whereby creasing of the goods is avoided, and connecting devices for imparting continuous rotary motion to the rubbing devices.

6. In combination, an open-top box, an elastic air-chamber, a cloth covering placed over the same, strips of leather placed and stretched over the cloth covering, and means for supplying the air-chamber with air under pressure, substantially as set forth.

7. In a machine for finishing and polishing textile fabrics, the combination, with an elastic bed, a feeding-roller for drawing the goods over the bed, and flexible rubbing devices, of two curved guides, one at the entrance side and one at the exit side of the bed over which the goods pass, said guides being higher at their central parts than at their ends, and each higher at one of its ends than at the other end, the high end of the one being opposite the low end of the other, substantially as and for the purpose set forth.

8. In combination, the shafts *f f*, gear-wheels *f' f'*, secured to their ends, miter-wheels *i' i'*, secured to the shafts *f f*, the studs *g g*, arranged on either side of and at right angles to the shafts *f f*, and the rubbing devices *k k k' k'*, fitted to rotate on the studs *g g* and provided with miter-wheels *i i*, meshing into the miter-wheels *i' i'*, substantially as set forth.

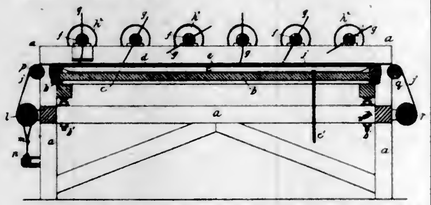
9. The combination, with an elastic bed, rotating rubbing devices *k k k' k'*, and connecting devices for imparting a continuous rotary motion to the rubbing devices, of the pivoted grippers *l* and *l'*, the bars *m* and *m'*, provided with projecting pins for actuating the grippers *l* and *l'*, short levers m^3, for connecting the ends of each pair of bars *m m'* together, the bar m^3, to which the other ends of the bars *m* are connected, and the cams *n n'*, acting on the bar m^3, so as to im-

part a reciprocating movement to the bars *m* and *m'*, substantially as set forth.

376,994. MACHINE FOR FINISHING AND POLISHING TEXTILE FABRICS.

CLAUDE TACHON, Charlieu, Loire, France, assignor, by direct and mesne assignments, to Herman Spahn, New York, N. Y., and Edouard G. Landru, Union, N. J. Filed May 7, 1887. Serial No. 237,405. (No model.) Patented in France Oct. 29, 1886, No. 179,384.

Brief.—A series of transverse shafts carry flexible blades arranged to act upon the fabric in the direction in which it is passing through the machine. The blades of each series are set a little to one side of those of the preceding series. Each series is arranged to impinge upon the fabric after the preceding series has done so, and there is a slight interval during which no series is striking the fabric. The fabric passes over an elastic bed provided with strips of leather and over a stretching-bar at each end of the machine. One of the cloth-rollers is provided with a brake.



Claim.—1. In a machine for finishing and polishing textile fabrics, in combination, an elastic bed, feeding mechanism for drawing the goods over the bed, several series of flexible blades rotated in one direction, arranged to act longitudinally on the goods and set in different angular positions, and devices for imparting a continuous rotary motion to the flexible blades, substantially as set forth.

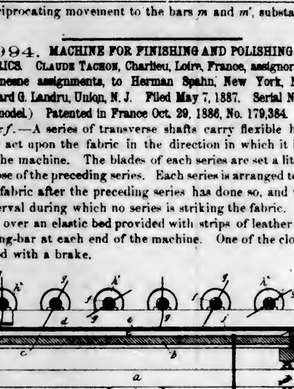
2. In a machine for finishing and polishing textile fabrics, in combination, an elastic bed, feeding mechanism for drawing the goods over the bed, several series of flexible blades rotated in one direction and arranged to act longitudinally on the goods in the direction in which the goods travel over the bed, devices for imparting a continuous rotary motion to the flexible blades, and a brake or retarding device acting on the roller holding the goods, substantially as and for the purpose set forth.

3. In a machine for finishing and polishing textile fabrics, in combination, feeding mechanism for drawing the goods through the machine, transversely-arranged shafts, devices for continuously rotating the shafts, flexible blades secured to the transverse shafts so as to occupy different lateral positions in relation to the goods, and an elastic bed provided with strips of leather obliquely arranged thereon, between which and the flexible blades the goods are drawn, substantially as and for the purpose set forth.

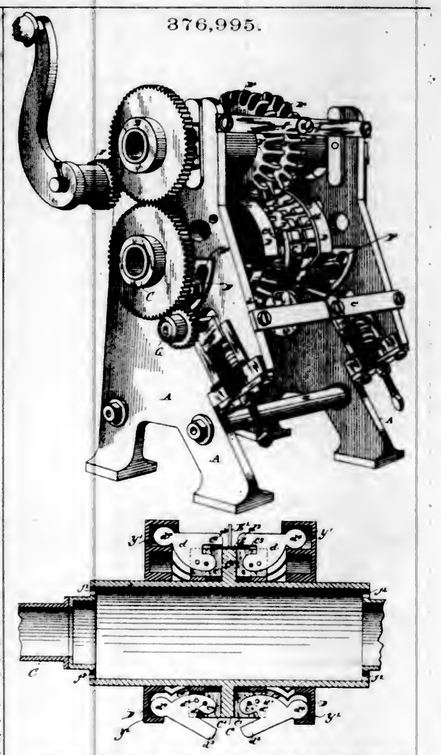
4. In combination, the side shaft, *i*, provided with bevel-pinions *h h*, the shafts *f f*, provided with bevel-wheels *h' h'* on one of their ends and similar bevel-wheels, h^2 h^2, on their other ends, the flexible rubbing-blades *g g*, secured to the shafts *f f*, and the elastic bed *c d e*, substantially as set forth.

376,995. MACHINE FOR ORNAMENTING STRIPS OF FABRIC.

GEORGE TAYLOR and JAMES H. TAYLOR, Nottingham, County of Nottingham, England, assignors to Alexander E. Kursheedt, New York, N. Y. Filed Dec. 30, 1886. Serial No. 222,992. (No model.)



376,995.



Claim.—1. In a machine for ornamenting a strip of fabric, the combination, with one or more sets of pivoted folding-fingers pivoted to and carried by a rotating cylinder, of one or more sets of intermittent pressing devices so arranged in relation to the fingers that they press upon alternate portions of the margin or margins of the goods between the said folding-fingers, substantially as described.

2. In a machine for ornamenting a strip of fabric, the combination of a rotating cylinder having a cylindrical operative surface, pivoted folding-fingers carried by said cylinder, a cam adapted to control the position of the said folding-fingers, and a folding-plate separate from but conforming to the shape of said operative surface, substantially as described.

3. In a machine for ornamenting a strip of fabric, the combination of a set or sets of folding-fingers pivoted to the rotating cylinder, a cam adapted to control the position of the folding-fingers, and a folding-plate separate from but conforming to the shape of the said cylinder, over the edge or edges of which the margin or margins of the strip is folded by the folding-fingers, substantially as described.

4. In a machine for ornamenting a strip of fabric, the combination of a set or sets of folding-fingers pivoted to a rotating cylinder, a folding-plate separate from but conforming to the curved surface of the cylinder, the said cylinder and plate being so arranged in respect to each other that the unfolded portion of the goods lies between the plate and the cylinder, while the portion to be folded lies upon one or both sides of the folding-plate, and a cam or cams adapted to control the position of the fingers, and so placed that they fold the free margin or margins of the goods upon the surface of the folding-plate, substantially as described.

5. The combination, in a machine for ornamenting a strip of fabric, of a rotating cylinder, a set or sets of folding-fingers moving with the cylinder, a cam or cams to operate the folding-fingers and to cause them to fold the margin or margins of a strip of fabric, a folding-plate suitably arranged, and over the edge or edges of which the fabric is folded, and rotating radial pressers acting upon the strip between the folding-fingers, substantially as described.

6. In a machine for ornamenting a strip of fabric, the combination of a set of pivoted folding-fingers and a rotating cylinder carrying the said fingers, pivots upon which the said fingers can turn, rings C^6 C^6, for holding the pivots of the fingers, and a central enlarged portion, C^7, formed upon the cylinder, to which the fingers are pivoted, substantially as described.

7. For use in combination with a machine for ornamenting a strip of fabric, folding-fingers having three extensions, one to operate upon the fabric, the other to move within a cam-groove, and a third adapted to receive the pivots of the fingers, the said first and third extensions being formed at adjacent portions of the fingers, substantially as described.

8. In a machine for ornamenting a strip of fabric, the combination of slotted grooved rings forming part of an operative surface, folding-fingers, said fingers having three extensions, one to operate upon the fabric, another to move within a cam-groove, and a third adapted to receive the pivots of the fingers, pivots for the folding-fingers carried by the slotted grooved rings, said pivots being below the operative surface formed by the rings, and means for vibrating the said fingers, substantially as described.

9. In a machine for ornamenting a strip of fabric, the combination of a rotating cylinder, radial slots formed in the said cylinder, an unbroken cylindrical operative surface formed by the parts composing said rotating cylinder, fingers pivoted within the slots in the said cylinder, and a folding-plate separate from but conforming to the operative surface of the cylinder, and a cam or cams for controlling the position of the fingers in relation to the operative surface and the folding-plate, substantially as described.

10. In a machine for ornamenting a strip of fabric, the combination of a cylinder having an operative surface, a folding-plate adapted to such surface but of less width than the surface, fingers arranged at their operative ends to close upon or toward the exposed operative surface and folding-plate, means for operating the said fingers, and a presser or pressers which act upon the goods between the fingers and press them upon or toward the exposed operative surface on each side of the folding-plate, substantially as described.

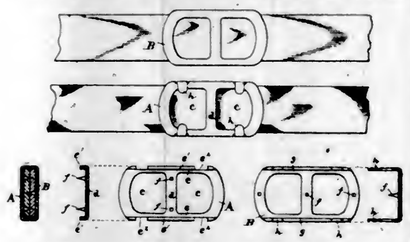
11. The combination, with the fingers *d d*, having three extensions, one of which forms the operative ends d^8 d^8, another containing the holes d' d^3, for the purpose of altering the relation of the fingers, and another to move within a cam-groove, of means for vibrating the said fingers, substantially as described.

12. In a machine for ornamenting a strip of fabric, a rotating cylinder having an operative surface and a stationary folding-plate adapted thereto, combined with folding instrumentalities which rotate with the cylinder and fold the margin or margins of the goods as the goods pass with the cylinder under the folding-plate, substantially as described.

13. In a machine for ornamenting a strip of fabric, a folding-plate made rigid at the end and which is fastened or attached to the frame of the machine, and flexible at the other end, where it is bent to conform to the operative surface, with which it co-operates, and an operative surface, and one or more sets of folding-fingers, adapted to fold the material over and upon said folding-plate, substantially as described.

376,996. STRAP-CLASP.

MARK VANDERCOOK and ROBERT T. BUSH, Gallatin, Tenn. Filed Nov. 29, 1887. Serial No. 256,377. (No model.)

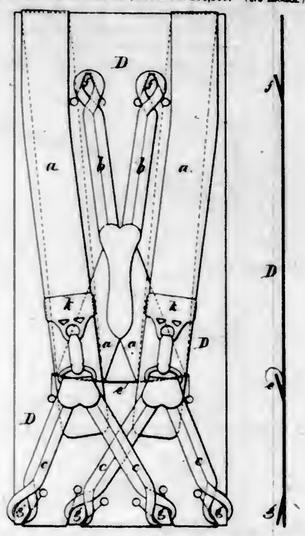


Claim.—1. A metal clasp for harness-straps, comprising two plates, A B, one of said plates, A, having two side bars, *c*, each provided with two notches, c^3, and also having on its inner face prongs *f* to penetrate the leather, and the other plate, B, having at each side edge two tangs, *h*, to bend over the side bars of the opposite plate and occupy the said notches thereon, and also having prongs *f*, as shown and described.

2. A metal clasp for harness-straps, comprising two plates, A B, one of said plates, A, having two side bars, *c*, each provided with two notches, c^3, and also having on its inner face prongs *f* to penetrate the leather, and the other plate, B, having at each side edge two tangs, *h*, to bend over the side bars of the opposite plate and occupy the said notches thereon, and also having prongs *f*, and provided with a loop, *i*, integral with the plate, as set forth.

376,997. DISPLAY-CARD FOR SUSPENDERS.

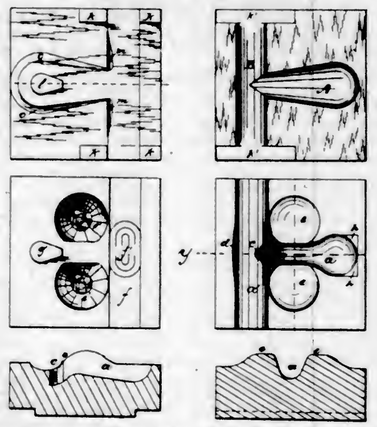
CALVIN VOORHIS, New York, N. Y., assignor to himself and Abraham Shenfield, same place. Filed Dec. 1, 1887. Serial No. 256,599. (No model.)



Claim.—The display-card for suspenders, having the incision *c* toward one end of the card, through which the suspenders are passed, and the hooks *f f* and *g g* at or near the ends and standing in opposite directions and receiving the suspender-ends, substantially as set forth.

376,998. DIE FOR WELDING DRAFT-EYES TO HAMES.

WILLIAM H. WALKER, Milford, Conn. Filed July 1, 1887. Serial No. 243,060. (No model.)

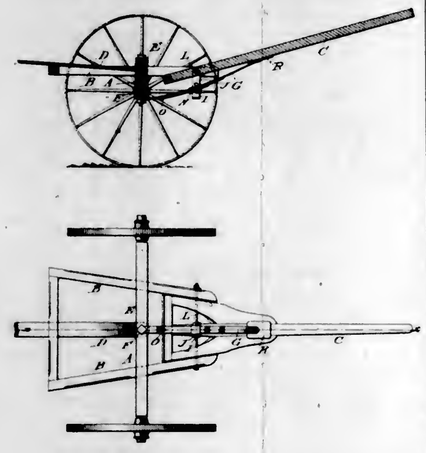


Claim.—1. Dies for partially forming and clinching a draft-eye to a hame-body, consisting of a die having recesses or cavities *a* and *a'*, corresponding substantially with the dimensions of a draft-eye and hame-body, a projection, *e*, at each side of the cavity *a*, near its junction with the cavity *a'*, and recesses or cavities, as *b c*, at the junction of the cavities *a' a'*, to receive the projections *e* on the opposite die, recesses *f f*, and a punch projection, *g*, all being disposed and arranged to operate substantially as and for the purposes set forth.

2. Dies for welding a draft-eye to a hame-body, one of which is provided with a projection or punch, *l*, to punch the hole for the trace-clip, a recess or cavity, *o*, partially surrounding said punch, guide projections *k* at the opposite sides of said dies and recesses, and the other with recesses A B, corresponding in size and shape with those of the draft-eye and hame-body, and with recesses K′ at the opposite ends of the recess B, all being disposed upon the face of said dies substantially as shown and described, for the purposes set forth.

376,999. TONGUE-SUPPORT. DANIEL WARD, Chadron, Nebr.

Filed Apr. 16, 1887. Serial No. 235,126. (No model.)



Claim.—The king-bolt F, which passes through sand-board E, coupling D, axle A, and support or spring G, together with queen-bolt L, small bolt I, clamp or band N, stirrup or loop J, bolt O, plate R, and spring or support G, substantially as and for the purpose set forth.

377,000. METHOD OF REDUCING AND FINISHING WIRE. JAMES WITHINGTON, Chambersburg, assignor to the Trenton Iron Company, Trenton, N. J. Filed Mar. 17, 1883. Serial No. 88,607. (No model.)

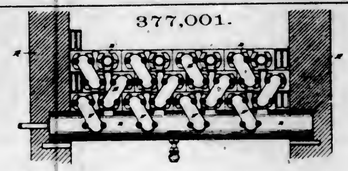
Claim.—1. The method of finishing wire hereinbefore described which consists, first, in subjecting cleansed wire rods or annealed wire contained or inclosed in a wrought-iron or steel vessel to the action of heat in order to anneal it bright; second, in coating the bright annealed wire, after it has been cooled in and then removed from the annealing-vessel, and without any intermediate operation of pickling or cleaning, with a farinaceous, glutinous, or mucilaginous solution; third, in drawing the coated bright annealed wire through a die, and, fourth, in repeating the above-named steps of coating and drawing until the ultimate desired diameter of wire is reached, all substantially as hereinbefore set forth.

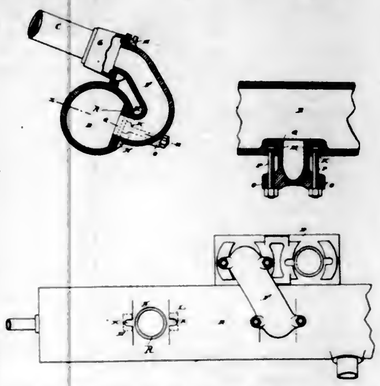
2. The method of finishing wire hereinbefore described, which consists, first, in pickling and cleansing wire rods or annealed wire; second, in coating the cleansed product with a farinaceous, glutinous, or mucilaginous solution and in drawing the coated product through a die; third, in subjecting the cleansed and drawn product contained or inclosed in a wrought-iron or steel vessel to the action of heat in order to anneal it bright; fourth, in coating the bright annealed wire, after it has been cooled in the closed annealing-vessel and removed therefrom, and without any intermediate operation of pickling or cleaning, with a farinaceous, glutinous, or mucilaginous solution and in drawing the coated bright annealed wire through a die, and, fifth, in repeating the above-named steps of coating and drawing (and, if required, of annealing) until the ultimate desired diameter of wire is reached, all substantially as hereinbefore described.

377,001. BOILER. AMASA WORTHINGTON, Brooklyn, N. Y., assignor to the Abendroth & Root Manufacturing Company, of New York.

Filed Oct. 12, 1886. Serial No. 216,061. (No model.)

Claim.—1. The bend F, having a long and a short arm and a bore of uniform diameter throughout, affording a connection between the mud-drum and water-tubes of a water-tube boiler, substantially as and for the purpose set forth.



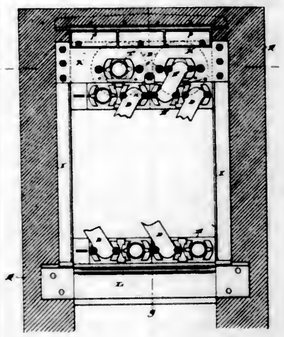


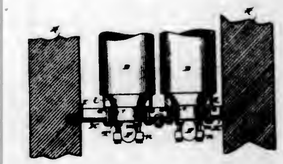
2. In combination, the mud-drum B, having apertures Q and recesses K below its center, water-tube header G, bend F, having a long and a short arm and a bore of uniform diameter throughout, chamfered at its opposite ends and provided with perforated ears O, and T-bolts P and nuts, substantially as and for the purpose set forth.

377,002. BOILER. AMASA WORTHINGTON, Brooklyn, N. Y., assignor to the Abendroth & Root Manufacturing Company, of New York.

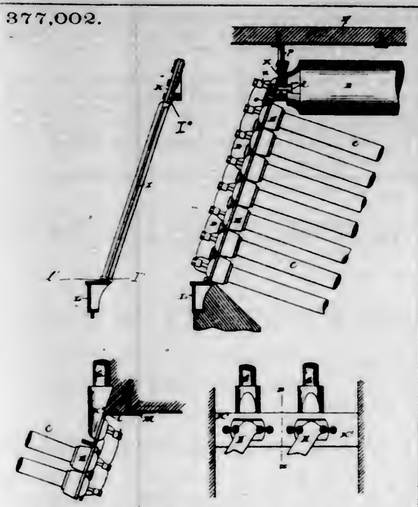
Filed Oct. 12, 1886. Serial No. 216,064. (No model.)

Claim.—1. A supporting-frame for the forward end of a water-tube boiler, consisting, in combination, of the upper cross-piece, K, side supports, I I, supporting the cross-piece K, and having formed upon their lower ends grooves I′, and lower cross-piece, L, provided upon its inner end with a rib, *l*, to engage with the groove formed in the lower end of the supports I I, substantially as and for the purpose set forth.





377,002.



2. A supporting-frame for the forward end of a water-tube boiler, consisting, in combination, of the upper cross-piece, K, side supports, I I, having flanges formed upon their upper ends to engage with and support the cross-piece K, and provided with groove at their lower ends to engage with the rib formed upon the inner side of the lower cross-piece, L, and said cross-piece L having a rib formed on its inner side, substantially as and for the purpose herein shown and described.

377,003. TOOL-HANDLE. CHRISTIE L. YOUNG, Springfield, Mass., assignor to Charles S. Sexton, same place. Filed Feb. 21, 1887. Serial No. 228,291. (No model.)

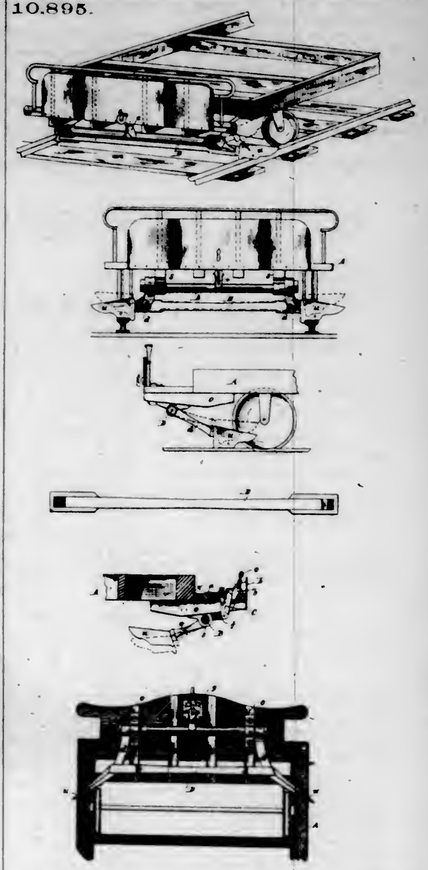


Claim.—The herein-described tool-handle, consisting of the handle having the internally-tapered tool-shank socket *b*, rigidly secured in one end thereof, and the ejector-pin *c*, extending from beyond the rear end of said handle and secured within the latter, said pin having a free endwise movement in the handle, and having one end entering the inner end of said socket, combined with a tool having a tapering shank fitting said socket and capable of engagement with the inner end of said pin, substantially as set forth.

REISSUES.

10,895. TRACK-SCRAPER FOR RAILROADS. HARVEY M. LITTELL, St. Paul, Minn., assignor of one-half interest to Hardin H. Littell, Louisville, Ky. Filed Nov. 30, 1886. Serial No. 220,310. Original No. 320,363, dated June 16, 1885.

10,895.



Claim.—1. In a track scraper and clearer of the character described, the rock-shaft and scraper-levers combined, and the lever and latch, said latch having a flattened head, in combination with the slotted platform, and a pawl for engaging the recesses in the latch, substantially as described, whereby the scrapers may be adjusted and held at any desired position with relation to the rail, as set forth.

2. In a scraper and clearer, the rock-shaft and lever for operating the same and the scraper-levers for carrying the scrapers, in combination with the scrapers, said scrapers having the agitators and the upward and outward inclined curved and tapered portions, substantially as described.

3. In a scraper and clearer, a rock-shaft provided with the rearwardly-extending scraper-levers and scrapers with the forward-extending lever-arm which is slotted to receive the latch, which latter is pivoted to the lever-arm in between the projections in the slotted end of the lever-arm, in combination with the said latch, substantially as described.

4. In a track-cleaner, the foot-lever and ratchet, the plate or guide, and the wedge, in combination with the arms, substantially as described.

5. In a track-cleaner, the foot-lever, the ratchet, the wedge and chain, the plate or guide, the stay-brace, and the oscillating frame B *d*′, in combination with the scrapers, substantially as described, and for the purpose set forth.

6. In a track-cleaner, the combination of the foot-lever C, placed on the interior of the dash-board L, pivotally secured to the arm *e* and working in the guide *g*, the ratchet *a*, adapted to engage with the groove *r*, the wedge *b* and the chain *c*, and the stay-brace D, hold-

ing in place the arms *d d* and scrapers *u u*, substantially as described, and for the purpose specified.

7. In a track scraper or clearer, the combination of the rock-shaft, the levers, and the scrapers, with the latch, the slotted platform, and the metallic slotted plating for said slot in the platform, substantially as described.

8. In a track scraper and clearer, the car having a rock-shaft pivotally secured thereto, in combination with scrapers and scraper-levers secured to the rock-shaft, and a bar, *e*, rigidly secured to the rock-shaft, and a vertically-reciprocating foot-lever secured to said bar, all constructed and combined to operate substantially as described, whereby the scrapers may be operated by the downward pressure of the foot, as set forth.

9. In a track scraper and clearer, the combination of the perforated car platform with the scrapers and their supporting shaft and arms, and a bar which serves as a lever to tilt the scrapers and rock-shaft, said bar having a foot-lever which is vertically movable through the perforation in the car-platform, substantially as described.

PHOTO-LITH. NORRIS PETERS WASHINGTON, D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Southern District of New York.

RAILWAY REGISTER MANUFACTURING COMPANY *v.* THIRD AVENUE RAILWAY COMPANY *et al.*

Decided October 19, 1887.

1. HARRIS—FARE-REGISTERS.

The first, second, fourth, and fifth claims of Letters Patent No. 206,565, granted to Charles B. Harris, July 30, 1878, for an improvement in fare-registers, adjudged to be valid as limited by the specification and the state of the prior art.

2. LIMITATIONS OF CLAIMS.

Where certain of the claims of a patent give to an element in a combination a particular mechanical construction, the same element without such description of mechanical construction occurring in combination in other claims must be limited to the particular mechanical construction where no other mechanical construction is described in the patent.

3. CONSTRUCTION OF CLAIMS.

Claims must be construed according to their terms, and where the import is plain resort cannot be had to the specification for the purpose of enlarging their scope.

4. COMBINATION AFFECTED BY DIFFERENT ARRANGEMENT OF ELEMENTS.

Where one patentee has invented a combination for a particular purpose, the field is open to another to invent a combination of the same parts differently arranged and affecting the same result by a different mode of operation.

Messrs. Frost & Coe for the defendants.

Messrs. Dickerson & Dickerson for the complainants.

WALLACE, *J.*:

The issue in this case involves the alleged infringement by the defendants of the first, second, fourth, and fifth claims of Letters Patent No. 206,565, bearing date July 30, 1878, granted to Charles B. Harris, for improvement in fare-registers, and owned by the complainant. The charge of infringement of the fifteenth claim of the patent has been abandoned by complainant upon the hearing.

The defendants insist that the fare-register used by them is not an infringement of these claims, when limited, as they contend should be done in view of the prior state of the art, to the specific mechanical devices which constitute the novelty of the combination, and they also insist that the claims are void for want of novelty unless thus limited. No other issue is presented by the proofs, and the defendants rely wholly upon documentary evidence as explained by their expert to sustain their position.

The improvements set forth in the patent belong to a class of devices which are designed to guard against the fraudulent manipulation of fare-registers used on the cars of street-railways, and, analagously, by requiring the collector of fares to make a registry for each collection, which cannot be omitted without exposure to detection, and which when made cannot practically be obliterated. As stated in the patent, the object of the invention is—

* * * to furnish a fare-register provided with means whereby the amount of fares or collections made during the travel of the car or vehicle in each direction will be permanently recorded and ascertained. * * *

The patent describes the invention as follows:

* * * My invention consists of a fare-register having an indicator or sign by which the direction of travel may be known, so organized that the indicator cannot be changed to indicate a different direction of travel without first making a permanent record of the fares collected.

This part of my invention further consists of the combination, with the fare-registering mechanism of a fare-register, of an indicator or sign showing the direction of travel of the vehicle inclosed in the same casing or receptacle with the registering mechanism, the indicator being so organized that it cannot be changed to indicate a different direction of travel without first bringing the register to zero, or in a position indicating no registry.

This part of my invention further consists in the combination of primary registering mechanism, secondary, permanent, or transfer registering mechanism, and an indicator or sign showing the direction of travel, the indicator being so organized that it cannot be changed to indicate a different direction of travel unless the primary register is at zero, or at a point indicating no registry, the setting of the primary register back to that point after a registry has been made transferring its record to the secondary or permanent register.

This part of my invention further consists of a fare-register provided with a window or opening to permit of inspecting the registering mechanism or record, and with a window or opening to permit of inspecting an indicator, or sign which indicates the direction of travel of the car or vehicle.

This part of my invention further consists in the combination, in a single case, of registering mechanism, alarm mechanism, an actuator, handle, or push-bar for working the register and sounding an alarm, and an indicator, which indicates the direction of travel, whereby the sounding of the alarm announces the registry of the fare, and the indicator shows in which direction of travel of the car or vehicle the registry was made.

* * * * * * *

My invention also consists in the organization, construction, and arrangement of the various details of the mechanism, as will be hereinafter specifically set forth.

After describing the casing or receptacle in which the registering mechanism and indicator are mounted, the specification states as follows:

The registering mechanism consists of two sets—a primary mechanism for temporarily registering the fares collected on each separate trip or direction of travel of the car or vehicle, and a secondary mechanism, to which a transfer of the record of the primary register is made at the terminus of each direction of travel, to obtain a permanent record of the fares collected, the transfer being accomplished during the act of resetting or moving the primary mechanism back to the zero or starting-point, in readiness to commence the registry of fares to be collected on the return or back trip of the car or vehicle.

The specification then proceeds to a detailed description of a primary register, consisting of two disks or dials provided with figures so constructed and arranged as to record and display the number of fares

corresponding with the number of actuations of the registering mechanism through an aperture or window in the face of the receptacle, actuating mechanism, alarm apparatus, the secondary or permanent registering mechanism, suitable means for transferring the record made by the primary registering mechanism to the permanent registering mechanism, and an indicator or sign which is displayed through apertures in the face of the receptacle to visually denote to the passengers the direction of travel of the car or vehicle.

The specification continues as follows:

To prevent the indicator being changed or shifted to indicate a different direction of travel without first making a permanent record of the fares collected, and without moving the primary registry back to zero or the starting-point, (beyond which point the registering-disks cannot be carried, as the disk B' will be locked by a pawl, b^1, mounted on a stud or arbor, b^2, on the casing,) I provide the indicator-plate with notches *s*, with which engage the toothed or projecting end of one arm, T, of a three-pronged latch, the latch being pivoted, in this instance, upon the arbor of the ratchet-wheel that actuates the bell-hammer, and is acted upon by a spring, *t*, which tends to keep the arm T normally in engagement with one of the notches *s*. The other arms, T^1 T^2, of this three-pronged latch are adapted, when the register is at zero, to vibrate the arm T^1 into a notch, t^1, in the unit-disk B of the primary register and the arm T^2 into a similar notch, t^2, in the disk B' of said register. This will permit the indicator to be turned so as to bring the sign desired, indicating the direction of travel, opposite the window in the casing, the locking-arm T riding out of the notch *s* of the plate, and the other arms vibrating into the notches in the registering-disks. When, however, an operation of the register takes place the notches in the primary disks are taken out of line with the prongs T^1 T^2 of the three-pronged latch, which will effectually prevent the indicator-plate from being turned, as an attempt to turn the plate, except when the register is at zero, only brings the arms T^1 T^2 in contact with the curved edges of the disks, which is not sufficient to carry the arm T out of the locking-notch.

The patentee closes the description of his invention in the specification as follows:

I do not intend to limit myself to the precise construction and organization of the various parts of my improved register, they being susceptible of considerable variation without departing from the spirit of my invention.

I do not, however, broadly claim a fare-register having a primary or temporary and a permanent or secondary registering mechanism, as that is not my invention.

The first five claims of the patent are as follows:

1. The combination, substantially as hereinbefore set forth, of a fare-register with a direction-indicator, locked from indicating a different direction of travel without making a permanent record of the fares collected.

2. The combination, substantially as hereinbefore set forth, with the registering mechanism of a fare-register, of an indicator or sign inclosed in the same casing with the registering mechanism, and incapable of being changed to indicate a different direction of travel without resetting or bringing the register to the zero or starting-point.

3. The combination, substantially as hereinbefore set forth, of primary or temporary registering mechanism, secondary or permanent registering mechanism, and an indicator or sign showing the direction of travel, and so organized that a different direction of travel cannot be indicated without bringing the primary register to zero or starting-point and transferring its record to the permanent register.

4. The combination, substantially as hereinbefore set forth, of registering mechanism, an indicator or sign which indicates the direction of travel, and a surrounding casing provided with windows or openings therein, for the purpose of inspecting the register and the direction-indicator or sign.

5. The combination, substantially as hereinbefore set forth, in a single case, of registering mechanism, alarm mechanism, an actuator, handle, or push-bar for working the register and sounding an alarm, and an indicator which indicates the direction of travel, whereby the sounding of the alarm announces the registry of the fare, and the indicator shows in which direction of travel of the car or vehicle the registry was made.

Respecting the prior state of the art, it appears from the testimony of the expert for the defendants in explanation of the prior patents put in evidence to which he refers, that the use of a duplex register—that is, trip-registering mechanism and permanent registering mechanism in fare-registers—was not new, and that such registering mechanism, with alarm mechanism actuated substantially after the mode of the complainant's patent and contained in a casing exposing the registering operation through windows or apertures, had previously been employed together in fare-registers. It was doubtless because the prior state of the art is as was thus indicated that the complainant's expert asserts infringement of the claims by the defendants, upon the theory that Harris was the first to employ in combination with these several devices a direction-indicator such as is described in the specification, and therefore that the claims should be broadly construed to cover every combination of such a direction-indicator with the several devices which is an equivalent in producing the new result. He states that the invention of Harris relates to a fare-register of the kind which contains a permanent register of the number of fares collected during a series of trips of the vehicle in which the register is employed, and a trip-register which exhibits at all times during a single trip figures indicating the number of fares collected upon that trip. He says:

Harris's invention consists in combining with these two registers the additional element of a direction-indicator, incapable of being changed to indicate a different direction of travel without resetting or bringing the temporary register to zero or the starting-point, and hence showing in which direction of travel of the vehicle the indicated registry of fares collected was made. By means of this contrivance the number of fares collected during a trip and the direction of travel of the vehicle during which such fares were collected are exposed to view, so that they may be seen at a glance, not only by the inspector, whose business it is to make a note of the indications of the apparatus at the end of each trip, but also at all times during the trip by passengers, and also by inspectors, who are unknown to the conductor and may be employed to observe the register during the course of the trip.

The subordinate features of the invention consist in inclosing the apparatus in a suitable casing provided with windows or openings to permit the inspection of the register and direction-indicator, and providing an alarm mechanism which will attract the attention of passengers to the proper manipulation of the trip-register by the collector.

The defendants rely upon the Morgan-Brown British patent of August 15, 1877, which sets forth three Italian fare-registers and modifications thereof, the invention of Joseph Marzari, of Italy, as an anticipation of the first and second claims of the complainant's patent. That patent describes and the drawings illustrate a direction-indicator employed in a fare-register, which fare-register also employs a trip-register and secondary registering mechanism.

The direction-indicator of this patent is so organized that it cannot be changed without first bringing the trip-register to zero or the starting-point, and this feature is distinctly pointed out. The apparatus differs materially in the arrangement and character of the devices which are combined in a fare-register from that of the Harris patent.

One object for which the apparatus is designed is to indicate to the passengers or to an inspector what number of passengers are in the vehicle at any given time; but it contains registering mechanism, with which the direction-indicator co-operates, designed to enable an inspector to ascertain the number of fares collected on a single trip and also the aggregate number of fares collected upon any number of trips, and is practically operative to effect this object.

Whether this patent is of any value as an anticipation of the Harris patent or not it is important as bearing upon the scope of his invention and the construction to be given to the claims.

It is apparent, in view of the Morgan-Brown patent,

that Harris was not the first to employ a direction-indicator in a fare-register or to combine a trip-register with a direction-indicator which could not be changed to indicate a different direction of travel without first bringing the trip-register to the starting-point. Consequently, what Harris really did was to employ such a direction-indicator with primary and secondary registering mechanism which was adapted to co-operate with such registering mechanism so as to effect a transfer from the former to the latter of the record of fares collected. The apparatus of the Morgan-Brown patent did not do this. Harris by doing it made an advance of utility.

The direction-indicator is an element of each of the claims in controversy. It is plain from the language of the description that it is one so organized in relation to the registering mechanism that it cannot be changed to indicate a different direction of travel without first bringing the trip-register to the starting-point. To this end it is provided with a locking device, and a description is given of a suitable locking device by which the indicator-plate engages with a three-pronged latch. The trip-register cannot be brought to the starting-point without actuating the permanent register and transferring to that register a record of the fares received upon the trip. Consequently, the direction-indicator cannot be changed without a permanent record being made of the fares collected on the trip. Although a direction-indicator without this peculiar organization is useful, because when it has not been changed by the conductor at the end of any one trip the fact is apparent to the passengers in the car or to a detective, its usefulness as a new safeguard for exposing any attempt at fraudulent manipulation of the fare-register to detection would be materially less if it were not so organized in relation to the primary and secondary registering mechanism that whenever it is changed, whether at the end of the trip or at any other time, the record made upon the trip-register is not lost, but is transferred to the permanent register. The specification describes an indicator of this character. The essential novelty of the several inventions specified in the claims consists in combining such a direction-indicator with the other parts.

Although the fourth and fifth claims, unlike the first and second, do not in terms make such a direction-indicator a constituent, they are to be read as though such a direction-indicator were specifically mentioned. No other indicator is described, and they refer by implication to such an indicator as is described in the specification. The expert for the complainant assumes that the direction-indicator of those claims is the same direction-indicator as that in the first claim.

Registering mechanism substantially such as is described in the specification is also to be regarded as an element of each claim. As has been said, a claim for the combination of the direction-indicator of the patent with any fare-register, or with the registering mechanism of any fare-register, literally construed, could not be maintained, because the novelty of such claims would be negatived by the Morgan-Brown patent. It is not claimed in behalf of the complainants that registering mechanism which does not include secondary as well as primary registering mechanism is the registering mechanism of the claims; but it is insisted that the term does not necessarily refer to registering mechanism by which the record on the permanent register is made from the trip-register in any specified manner. It must be held that this contention is not tenable, and that the registering mechanism of the claim is such as will accomplish the transfer of the record from the trip-register to the permanent register during the act of resetting the trip-register. This characteristic of the registering mechanism is distinctly set forth in the specification, and cannot be eliminated from the claims.

The registering mechanism is described as consisting of two parts, primary or trip, and secondary or transfer mechanism, which makes a transfer at the terminus of each direction of travel—

during the act of resetting or moving the primary mechanism back to the zero or starting-point, in readiness to commence the registry of fares to be collected on the return trip of the car or vehicle.

The detailed description coincides with devices thus organized, and there is nothing in the specification to denote or imply that registering mechanism having this mode of operation is a preferable or subsidiary as distinguished from an essential feature. Unless the registering mechanism is of this character it cannot co-operate with the direction-indicator in performing the functions assigned to the latter, because the direction-indicator is required to be so organized that it cannot be changed without bringing the primary register to zero and transferring its record to the secondary register.

The first and second claims are intended to discriminate between a combination in which the direction-indicator cannot be changed without causing a transfer to be made from the trip-register to the permanent register, and one in which it can be changed by being brought to zero without causing such a transfer. In either combination a locking device by which the indicator cannot be changed unless the trip-register be brought to zero is indispensable. The second claim contains the further constituent of a casing to inclose the other parts. The fourth claim contains the additional constituent of a casing provided with openings. The fifth claim embodies all the constituents of the fourth, together with alarm mechanism and actuating mechanism for working the register and alarm mechanism. It is to be observed that infringement of the third claim is not alleged, and that it differs from the first claim, as that claim must be construed, only in a more particular specification of the parts required to make a permanent record of the fares collected—that is, in specifying the mode of operation of the co-operative devices. It would seem that this claim more particularly and distinctly points out the real invention of Harris than do the first or second claim.

There is some doubt whether the first and second claims are not void for want of novelty in view of the Morgan-Brown patent. There is room for fair argument that they are expressed in terms to comprehend—the first any fare-register having the direction-indicator of the Harris patent, and the second any registering mechanism of a fare-register combined with such a direction-indicator.

The general statement in the patent of the essential features of the several inventions which are the subject of the patent, and the very guarded terms of the disclaimer at the end of the description, countenances the argument that these claims were intended to be as broad as their literal terms.

The claim of the inventor in letters patent must be construed according to its terms, and when its import is plain resort cannot be had to the context for the purpose of enlarging it. A more liberal rule is indulged frequently when it is necessary to restrict or narrow the ordinary import of the language in order

to secure the real invention of the patentee and preserve the claim from destruction. But the language of the Supreme Court in *White* v. *Dunbar* (119 U. S., 47, 52) is applicable to both classes of cases. The Court say:

> The claim is a statutory requirement, prescribed for the very purpose of making the patentee define precisely what his patent is, and it is unjust to the public, as well as an evasion of the law, to construe it in a manner different than from the plain import of its terms.

The specification here is well calculated to admonish the public that Harris was the first to employ an indicating-register in combination or conjunction with a fare-register or fare-registering mechanism of any kind, and the language of the claim is equally well calculated to advertise the pretensions of the patentee to the monopoly of such an improvement. Nevertheless this meaning is not to be ascribed to the claims unnecessarily. It is not necessary for present purposes to decide that they must receive such a construction, and the conclusion is reached that they should receive the narrower interpretation which has been indicated.

The fare-register of the defendants is one in which the permanent register is not actuated by the resetting of the trip-register during the act of moving the latter back to the zero or starting point. In their register the permanent register is not actuated by the act of resetting the trip-register, but is actuated only when the trip-register is making its original record. At each actuation of the trip-register in their apparatus the permanent register is actuated, and not otherwise. For this reason their apparatus does not contain the registering mechanism which is an element of each claim; nor does the fare-register of the defendants contain any locking device which detains the direction-indicator so that it cannot be moved until the trip-register is reset at zero. It is this device in the Harris invention which not only prevents the indicator from being changed until the trip-register is reset, but also prevents it from being changed until the record of the trip-register has been transferred to the secondary register. In the defendants' register the indicator not only can be, but must be, changed before the trip-register is reset. This feature of the apparatus precludes the possibility of an accidental omission on the part of the collector to change the direction-indicator when resetting the trip-register. Thus it will be seen that the principle of the Harris invention and of the defendants' apparatus differs in this: that while the former depends upon the locking of the direction-indicator when the trip-register is recording fares, and the unlocking to reset the trip-register and transfer its record of fares to the permanent register, the apparatus of the defendants makes both a trip-registry and a permanent registry of fares whenever a single fare is registered, independently of the co-operation of the indicator, and the indicator must be changed before the trip-register is reset.

If Harris had been the first to employ a direction-indicator with registering mechanism, and had not circumscribed the boundaries of his invention by his description in the patent, the question of infringement would be presented in a very different aspect. Obviously it was not invention merely to employ an indicator in a fare-register having primary and permanent registering mechanism when one had previously been employed in a fare-register having only primary or trip-registering mechanism. Invention could consist in a combination of an indicator with both or either registering mechanism, in which the devices would co-operate to contribute some new function or mode of operation to the other, but not in bringing them into such juxtaposition to allow each to work out its own effect and produce an aggregate of results. Although the Morgan-Brown patent had shown a combination between the indicator and trip-register, it was open to Harris to invent a new one, or one between the indicator and trip-register and a permanent register. But after he had done this it was open to others to make a combination between the same parts which would accomplish a similar result by a different organization, introducing a different mode of operation. This has been done in the apparatus of the defendants.

It follows that the defendants do not infringe, and the bill must be dismissed.

U. S. Circuit Court—Southern District of New York.

MATTHEWS *et al. v.* THE IRON CLAD MANUFACTURING COMPANY.

Decided January 9, 1888.

1. SCHULTZ—SODA-FOUNTAIN.
   Letters Patent No. 149,254, granted March 31, 1874, for an improvement in soda-fountains, declared invalid for lack of patentable invention.
2. PATENTABLE INVENTION—WHAT IS NOT.
   It being old to put a flanged bottom into an iron shell, or into an iron shell washed with tin, or into an iron shell with a lining of sheet-tin adhering thereto, and old also to provide a soda-fountain with a separable sheet-tin lining, it did not require the exercise of the inventive faculty to place a flanged bottom covered with a separable sheet-tin lining into a shell lined in a similar manner.

Mr. Arthur v. Briesen for the complainants.
Mr. Frederic H. Betts, Mr. Ernest C. Webb, and *Mr. Frank MacArthur* for the defendant.

COXE, *J.*:

The complainants are owners of Letters Patent No. 149,254, granted to Carl H. Schultz, March 31, 1874, for an improvement in soda-fountains.

The invention consists in providing a sheet-copper or boiler-iron soda-fountain with a bottom composed of cast-iron or other suitable material the inner surface of which is lined with tin, which overlaps the edge of the cover and serves to unite it to the tin lining of the shell. In this manner a strong and durable fountain is produced and the inner surface of the shell is protected against the attacks of the chemicals which may be mixed with the effervescent liquids. The bottom is provided with a downwardly-projecting flange and forms a firm base for the fountain. When desired, it can be readily removed.

The claim is as follows:

> In a vessel for holding effervescent liquids, constructed as herein shown, the bottom C, having a depending flange, *b*, in combination with the vessel A, its lining *a*, cap B, and lining *c*, the depending flange of which is interposed between the flange *b* and lining *a*, in the manner and for the purpose specified.

The defenses are non-infringement and lack of patentable novelty.

The specification is ambiguous. Two constructions are suggested and maintained by plausible arguments. The complainants insist that the patentee describes a soldered joint between the lining of the bottom and the lining of the cylinder. The defendant asserts that this construction eliminates the only novel feature of the structure—namely, access to the interior of the vessel—and that the claim should be construed to cover a pressure-joint only. If the latter construction is adopted, it is quite evident that the defendant does not infringe, as the linings in its structure are soldered together. But it is thought that the positive statement of the specification that the rim of the cap is to be soldered to the lining is wholly inconsistent with the defendant's theory, and makes a soldered joint a necessary element of the claim. The question of invention, therefore, is the only one to be determined.

Had the patentee been successful in arranging an operative pressure-joint at the point in question the advantages obtained would, quite likely, be sufficient to uphold a patent; but when he unites the lining of the bottom and the lining of the shell so that they form an interior integral vessel in no way superior to the arrangement shown in many prior devices, he has no longer a place even on the debatable ground which divides invention from mechanical skill. The application was twice rejected as showing no new feature, and the claim was twice amended to meet the objections of the examiners.

On the 11th of March, 1874, the patentee, through his attorneys, wrote to the Commissioner as follows:

> We ask simply a claim for the vessel as an entirety—that is, its construction and union of parts, each of which separately are well known; but so far as we are aware they have never been combined in a vessel such as presented in this application.

It will be observed that the area of invention was at best an exceedingly limited one. Not only is it admitted by the patentee that the separate elements of the claim were old, but, in addition to this, the proof shows that many of them had previously been assembled in nearly analogous combinations. The most liberal statement that can be made regarding the Schultz fountain is that he does not make the connection between the bottom with its lining and the shell with its lining in precisely the same manner adopted by others. Wherein his method is an improvement upon those that preceded it, and wherein it involved invention, conceding it to be an improvement, it is, indeed, difficult to perceive. The antecedent art left nothing but the narrow space between the metallic shell and the depending flange of the bottom in which to maneuver.

If it required brain work to carry down the tin lining into this space—a flanged bottom of tin being inserted into the tin cylinder precisely as the flanged bottom of iron is inserted into the iron cylinder—it is possible that patentability might be presumed; but how can such a proposition be maintained? Are not such changes the ordinary expedients of the workshop? It is so difficult to discover what advantage is obtained by the Schultz arrangement over the many prior fountains—the Wiesebrock fountain of 1873, for example—that it is doubtful if a very skillful mechanic would have adopted it. There is nothing shown which is beyond the grasp of the ordinary workman. As the patentee himself says, "the details were so simple that as soon as it was found that the bottom could be put in there were no more details." When it is remembered that it had been demonstrated time and again that a similar bottom could be put into a similar cylinder in analogous structures not only, but also in soda-fountains, the full force of this statement will be appreciated.

The record fails to show that the complainants have ever made or sold any fountains embodying the patented features. The defendant, after a trial of two years, abandoned this construction as impracticable.

The position of the complainants involves the concession that it was not invention in 1874 to put a flanged bottom into an iron shell, or into an iron shell washed with tin, or into an iron shell with a lining of sheet-tin adhering thereto; neither was it invention to provide a soda-fountain with a separable sheet-tin lining; but the contention is that, for some occult and unfathomable reason, the inventive faculty was called into being because the flanged bottom happened to be covered with a separable sheet-tin lining, and in that condition was placed in a shell lined in a similar manner. This position cannot be maintained.

It is thought that it is impossible, in view of the repeated admonitions of the Supreme Court upon this subject, to sustain the patent.

The bill is dismissed.

TRADE-MARK LAW.

ARGENTINE REPUBLIC.

Law concerning manufacturing and commercial trade-marks and the regulations of the Office. The Senate and Chamber of Deputies of the Argentine Nation, &c., enact with the authority of law:

TITLE I.—CONCERNING MANUFACTURING AND COMMERCIAL TRADE-MARKS.

Chapter I.—Of the Right of Ownership of Manufacturing and Commercial Trade-Marks.

Article 1. The names of articles or of persons, under any special form, devices, monograms, engravings or prints, seals, vignettes and reliefs, letters and numbers with special designs, cases or wrappings of articles, and any other mark whereby the productions of a factory or articles of a trade are distinguished are manufacturing and commercial trade-marks.

Art. 2. The trade-mark may be affixed to the cases or wrappings or to the articles themselves which are designed to be marked.

Art. 3. The following shall not be considered manufacturing and commercial trade-marks:

1st. The letters, words, names, or distinctive marks which the state does or is to use.

2d. The form which is given to productions by the manufacturer.

3d. The color of productions.

4th. Terms or expressions that have come into general use.

5th. Words usually employed to indicate the nature of productions, or the class to which they belong.

6th. Drawings or expressions opposed to public morals.

Art. 4. The absolute ownership of a trade-mark, as well as the right through it of opposing the use of any other that may give rise to direct or indirect confusion among productions, shall belong to any manufacturer or merchant who shall have complied with the requirements of this law.

Art. 5. The exclusive ownership of the trade-mark is only acquired with relation to industries of the same kind.

Art. 6. The use of the trade-mark is optional. It may, nevertheless, be obligatory when the necessities of public convenience require it.

Art. 7. The ownership of a trade-mark passes to the heirs, and may be transferred by contract or by devise of the last will.

Art. 8. The transfer or sale of the establishment embraces the trade-mark, stipulations to the contrary excepted, and the grantee has the right to use the trade-mark which designates it (even though it was issued in the name of the original holder only) in the same manner that the grantor did, without other restrictions than such as are expressly provided for in the contract of sale or transfer.

Art. 9. The transfer of a trade-mark shall be made to appear in the office in which it is registered in order to acquire the right to use it.

Art. 10. That only shall be considered a trade-mark in use for the effects of the ownership granted by this law for which the office has given the proper certificate.

Art. 11. The protection of the rights of the manufacturer or merchant respecting the exclusive use of the trade-mark shall continue for ten years only, which time may be extended indefinitely for other like terms, the necessary formalities in all cases being complied with, and the tax which is hereinafter fixed being in every case paid.

Chapter II.—Formalities to be Complied With in Order to Acquire the Ownership of Trade-Marks.

Art. 12. Any one who may desire to secure the ownership of a manufacturing and commercial trade-mark must apply for it at the Office of Patents for Inventions.

Art. 13. The application for obtaining a trade-mark must be accompanied:

1st. By two copies of the trade-mark or of the distinctive device which is desired to be used.

2d. By a description, in duplicate, of the trade-mark or device, if it consists of figures or emblems, it being necessary to indicate the class of articles to which they are to be affixed, and whether they are to be applied to productions of a manufactory or to articles of commerce.

3d. By a receipt, in which it shall appear that the amount of the fee fixed by Article 19 has been deposited in the General Treasury.

4th. By a power of attorney in due form, in case the interested party does not appear in person.

Art. 14. Applications filed shall be entered by means of a short record, which shall state in brief their contents and the date and hour of their receipt, in a book whose leaves shall be numbered by the Minister of the Interior, and shall bear his flourish.

This record shall be signed by the head of the office, the secretary, and the applicant, and the latter shall be furnished with an authenticated copy of the same, if he shall ask it, without other cost than that of the official paper on which it is written.

Art. 15. The right of preference as to the ownership of a trade-mark shall be granted according to the day and hour when the application is filed at the office.

Art. 16. The certificate of the trade-mark which the Patent Office shall give shall consist of an authentication of the decree which grants it, accompanied by a duplicate of the description and drawings. It shall be issued in the name of the nation, clothed with the authorization of the Government, and shall bear the signatures of the head of the office and the secretary, and also the seal of the office.

Art. 17. Any decision of the Patent Office refusing the ownership of a trade-mark may be appealed within the next ten days to the Minister of the Interior, who, after hearing the attorney of the Treasury, shall confirm or reverse the refusal.

Art. 18. The Patent Office shall keep a book in which shall be entered in their order the grants of trade-marks, it being the duty of its head to transmit to the executive every three months a statement of the certificates granted and of those refused, with their respective dates. This statement shall be published.

Art. 19. For the registration and certification of a trade-mark, whatever may be its origin, a fee of forty dollars in coin shall be paid.

For the registration and certification of a transfer a fee of twenty dollars in coin shall be paid.

For the authentication of certificates that shall hereafter be applied for four dollars in coin shall be paid, in addition to the value of the stamp of the official paper on which they are issued.

Art. 20. The trade-marks on which certificates are issued, as well as the applications and descriptions filed, shall remain among the archives of the Patent Office.

In case of litigation, a drawing of the trade-mark shall be exhibited to the proper judge, in testimony of the correctness of the description thereof, or of any other paper relating to the question.

Art. 21. The trade-marks, as well as their descriptions, shall be open in the office to any one who may desire to examine them.

TITLE II.—OF MANUFACTURING AND COMMERCIAL NAMES.

Art. 22. The name of a merchant and that of a firm, the sign or designation of a house which trades in specified articles, constitute an industrial property for the purposes of this law.

Art. 23. If a merchant shall wish to carry on a business already conducted by another person, under the same name or commercial designation, he shall be required to adopt such a modification as shall make that name or designation plainly different from that used by the pre-existing house.

Art. 24. If the person injured by the use of a manufacturing or commercial name shall not make complaint within the period of one year from the day in which the other began its use, he shall lose his right to complain.

Art. 25. Joint stock companies have a right to the name they bear the same as any individual, and are subject to the same limitations.

Art. 26. The right to the exclusive use of the name as industrial property shall terminate with the commercial house which bears it or with the operation of the branch of industry.

Art. 27. The registry of the name is not necessary in order to exercise the rights granted by this law, except in cases where it forms a part of the trade-mark.

TITLE III.—PENAL PROVISIONS.

Art. 28. Punishment shall be imposed by a fine of from twenty to five hundred dollars in coin, or by imprisonment for from fifteen days to one year:

1st. On those who counterfeit or change in any manner a manufacturing or commercial trade-mark.

2d. On those who affix a trade-mark owned by another to their productions or articles of commerce.

3d. On those who knowingly sell, place on sale, or aid in selling or circulating articles with a counterfeit trade-mark or with one fraudulently affixed.

4th. On those who knowingly sell, place on sale, or aid in selling counterfeit trade-marks, and on those who sell genuine trade-marks without the knowledge of their owner.

5th. On all those who, with fraudulent intent, place or cause to be placed upon merchandise a declaration or other designation which is false with respect either to the nature, quality, quantity, number, weight, or measure, or to the place or country in which it was made or issued.

6th. On those who knowingly sell, place on sale, or aid in selling merchandise with any of the false declarations mentioned in the foregoing paragraph. For a second offense these penalties shall be doubled.

Art. 29. To constitute an offense it is not necessary that the falsification should embrace all the articles that ought to be marked, the application to a single article being sufficient.

Art. 30. A mere attempt does not involve a penalty or entail civil responsibility, but occasions the destruction of the instruments which were to be used exclusively in the falsification.

Art. 31. Those who shall sell or place on sale merchandise with a misappropriated or counterfeit trade-mark are required to give to the merchant or manufacturer who owns it full information in writing respecting the name and address of the person who sold or procured the sale of the merchandise, as also respecting the time when the sale commenced, and in case of refusal they shall be required judicially, under penalty of being considered accomplices of the offender.

Art. 32. Merchandise with a counterfeit trade-mark found in the possession of the counterfeiter or his agents shall be confiscated and sold, and its proceeds, after paying the costs and indemnifications specified in this law, shall be appropriated to the benefit of the public schools of the province in which the confiscation is made.

Art. 33. Counterfeit marks found in the possession of a counterfeiter or his agents shall be destroyed, as well as the instruments that have been used specially for the counterfeiting.

Art. 34. Criminal action shall not be officially initiated, and shall pertain to the parties interested only; but once initiated it may be prosecuted by the law department.

The complainant shall have the right to withdraw his suit up to the moment when sentence is to be passed.

Art. 35. Those injured by the violation of the provisions of this law shall have the right to bring suit for damages and injuries against the originators of and the co-operators in the fraud.

Judgments of condemnation shall be published at the expense of the offender.

Art. 36. Neither a civil nor a criminal suit shall be instituted when three years have passed since the commission or the repetition of the offense, or after one year from the day when the owner of the trade-mark first had knowledge of the fact.

The causes which bar limitation are those fixed by the common law.

Art. 37. The provisions contained in the articles of the present title shall be applicable to those who, without having any right to do so, make use of the names of a merchant or of a firm, or of the sign or designation of a commercial or manufacturing house, as prescribed in Title II of the present law.

TITLE IV.—TEMPORARY PROVISIONS.

Art. 38. Manufacturers who, upon the promulgation of this law, are in possession of a trade-mark within the territory of the Republic, shall not be able to obtain the right to its exclusive use, except by complying with the conditions required by the present law.

For this purpose a period of one year is granted, reckoned from the day of its promulgation.

Art. 39. If, before the promulgation of this law, several manufacturers have made use of the same trade-mark, the right to its exclusive use shall belong to the one who shall prove that he has made use of such trade-mark before the others.

If none of the interested parties can prove priority in the use of the trade-mark, its ownership shall be conceded to the one who has the greatest facilities for production.

Art. 40. If a trade-mark shall not have been registered within the time specified in Article 38, no one shall take advantage of its use before the approval of the present law for the purpose of claiming the right of priority.

Art. 41. Before issuing a trade-mark certificate, during the first year that this law is in force, the application of the interested party or parties shall be published for a period of thirty days, at their expense, in a daily newspaper of the capital of the Republic and in one issued at place of their residence.

Art. 42. In order that foreign trade-marks may enjoy the guarantees provided by this law they shall be registered in accordance with its provisions.

The owners of these trade-marks or their duly authorized agents are the only persons who can apply for registration.

Art. 43. Let this be communicated to the Executive.

Done in the Hall of Sessions of the Argentine Congress, at Buenos Ayres, this 14th day of August, 1876.

(Signed) MARIANO ACOSTA,
CARLOS M. SARAVIA,
Secretary of the Senate.
FELIX FRIAS,
J. ALEJO LEDESMA,
Secretary of the Chamber of Deputies.

DEPARTMENT OF THE INTERIOR,
BUENOS AYRES, *August* 19, 1876.

Let it be complied with, communicated, published, and sent to the National Register.

Avellaneda.

SIMON DE IRIONDO.

BUENOS AYRES, *March* 14, 1887.

I certify that the annexed pamphlet, consisting of seven good folios, is an exact and true copy, in all its parts, of the law concerning manufacturing and commercial trade-marks now in force in this Republic. The office of which trade-marks, together with that of patents for inventions, (which conjointly form a single office,) is attached to this Department of National Public Works.

A. E. RUSIÑOL,
Secretary.

[Seal of Department of Public Works, Argentine Republic.]

I certify that the foregoing signature, which says "A. E. Rusiñol," is the authentic signature of the Secretary of the Department of Public Works.

BUENOS AYRES, *March* 17, 1887.

F. P. HANSEN,
Chief Clerk.

[Seal of Ministry of Interior, Argentine Republic.]

I certify that the foregoing signature, which says "F. P. Hansen," is authentic

BUENOS AYRES, *March* 17, 1887.

RICARDO J. PARDO,
Chief Clerk.

[Seal of Ministry of Foreign Relations, Argentine Republic.]

I, Henry L. Thomas, of the city of Washington, District of Columbia, do hereby certify that I am familiar with the Spanish language, holding the position of translator of the Department of State, and that the foregoing is a true and correct translation of the documents attached hereto, to wit: The Law on Trade-Marks of the Argentine Republic and the accompanying authentications of the same.

HENRY L. THOMAS.

Sworn to before me this 6th day of July, 1887.

CHAS. L. HUGHES,
Notary Public.
[SEAL.]

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[*BY AUTHORITY OF CONGRESS.*]

VOL. 42—No. 5. TUESDAY, JANUARY 31, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
THE OFFICIAL GAZETTE	385
INDEXES TO PATENTS ON ELECTRICITY	385
ORDER NO. 439	385
ISSUE OF JANUARY 31, 1888	385
DESIGNS	386
TRADE-MARKS	386
LABELS	386
DISCLAIMERS	386
PATENTS GRANTED	387
REISSUES	486
DECISIONS OF THE U. S. COURTS—	
Lawther *v.* Hamilton *et al*	487
Dryfoos *v.* Wiese	490
Dreyfus *et al. v.* Searle	491

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Indexes to Patents on Electricity.

Appendix No. 2 to the Index to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1883, has been issued, and is now for sale. These indexes, arranged alphabetically, numerically, and by classes, are completed to June 30, 1883, and comprise the following volumes:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 50 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

Order No. 439.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., November 5, 1887.

The following new sub-classes are hereby established under Class 126, Stoves and Furnaces, Division XIX:

Grates—
Adjustable.
Compound-movement.
Cut-offs.
Raking attachments.
Reciprocating.
Rocking-bar.
Vertical-movement.

(Signed) BENTON J. HALL,
Commissioner.

Issue of January 31, 1888.

Patents	362	No. 377,004 to No. 377,365, inclusive.
Designs	2	No. 18,033 to No. 18,034, inclusive.
Trade-Marks	27	No. 15,132 to No. 15,158, inclusive.
Labels	3	No. 5,477 to No. 5,479, inclusive.
Reissues	2	No. 10,896 to No. 10,897, inclusive.
Total issue	396	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	1	Nebraska	4	.....
Arizona Territory	.....	.....	Nevada	.....	.....
Arkansas	1	.....	New Hampshire	2	.....
California	3	.....	New Jersey	14	1
Colorado	4	.....	New Mexico Terri'y	.....	.....
Connecticut	15	1	New York	56	4
Dakota Territory	3	.....	North Carolina	.....	.....
Delaware	.....	.....	Ohio	27	.....
District of Columbia	2	.....	Oregon	2	.....
Florida	.....	.....	Pennsylvania	34	4
Georgia	2	1	Rhode Island	3	.....
Idaho Territory	.....	.....	South Carolina	2	.....
Illinois	32	2	Tennessee	2	.....
Indiana	10	.....	Texas	3	.....
Iowa	13	.....	Utah Territory	2	.....
Kansas	4	.....	Vermont	4	.....
Kentucky	2	.....	Virginia	1	.....
Louisiana	3	.....	Washington Terri'y	.....	.....
Maine	8	1	West Virginia	.....	.....
Maryland	6	1	Wisconsin	10	1
Massachusetts	34	1	Wyoming Terri'y	.....	.....
Michigan	12	3	U. S. Army	1	.....
Minnesota	6	.....	U. S. Navy	.....	.....
Mississippi	.....	.....			
Missouri	6	2	Total to citizens of the United States	335	23
Montana Territory	.....	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	1	.....	Germany	6	1
Barbadoes	.....	.....	Ireland	1	.....
Belgium	.....	.....	Mexico	.....	.....
Bermuda	.....	.....	Netherlands	1	.....
Brazil	.....	.....	New South Wales	1	.....
Canada	5	.....	Norway	.....	.....
Chili	.....	.....	Russia	.....	.....
Colombia, U. S. of	.....	.....	Scotland	.....	.....
Cuba	1	.....	Spain	.....	.....
Denmark	.....	.....	Sweden	.....	.....
Ecuador	.....	.....			
England	12	5	Total to citizens of foreign countries	29	7
France	1	1			

DESIGNS.

18,033.—TRIMMING.—*Isaac Goodman*, Philadelphia, Pa., assignor to himself, *Abraham Kaufman*, *Bernhard Strouse*, *William Kaufman*, and *Sylvester C. Klopfer*, all of same place. Application filed December 17, 1887. Serial No. 258,325. Term of patent 3½ years.

18,034.—MEDALLION, &c.—*William D. Smith*, Denver, Colo. Application filed September 19, 1887. Serial No. 250,152. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,132.—NATURAL MINERAL WATER.—*The Apollinaris Company, (Limited,)* London, England. Application filed November 18, 1887. Used since June 1, 1885.

"The words 'THE QUEEN OF TABLE WATERS,' surrounded by an ornamental border."

15,133.—CIGARS.—*Ed Aschermann & Co.*, Milwaukee, Wis. Application filed December 27, 1887. Used since September, 1887.

"The word 'SKAT.'"

15,134.—HORSE-BLANKETS.—*William Ayres & Sons*, Philadelphia, Pa. Application filed November 23, 1887. Used since November 1, 1886.

"The contrasted representations of a torn and a perfect horse-blanket as they would appear when applied to a horse."

15,135.—BLACKING OR POLISH FOR STOVES.—*The Black Flag Stove Polish Company*, Detroit, Mich. Application filed January 3, 1888. Used since March 1, 1887.

"The representation of a black flag, across the face of which are the words 'BLACK FLAG STOVE POLISH,' the flag being mounted upon a staff, which is supported by a woman, and the lower end of the flag-staff resting on a stove."

15,136.—MEDICINE TO BE APPLIED TO THE NOSTRILS AND THROAT. *Frank M. Blodgett*, New York, N. Y. Application filed November 28, 1887. Used since July 1, 1887.

"The word 'RUSSIAN' and the picture of a man in Russian uniform."

15,137.—HATS, CAPS, AND HELMETS.—*Lincoln Bennett & Co.*, London, England. Application filed January 6, 1888. Used since 1847.

"The representation of the Prince of Wales' feathers."

15,138.—PROPRIETARY MEDICINES IN THE FORM OF LIQUIDS, PILLS, AND POWDERS.—*James R. Isbell* and *Henry P. Sauls*, Lot, Ala. Application filed December 27, 1887. Used since April, 1887.

"The representation of the four hammers having the ends of their handles in juxtaposition in such a manner as to describe straight lines bisecting each other at right angles."

15,139.—HOOF-STIMULANT.—*Owen J. Murphy*, Baltimore, Md. Application filed June 21, 1887. Used since April 1, 1887.

"The word 'MAZEPPA' and the representation of a horse's head and hoofs."

15,140.—SOAP FOR LAUNDRY AND TOILET PURPOSES.—*L. & J. Oakley*, Newburg, N. Y. Application filed December 22, 1887. Used since September 9, 1887.

"The word 'VASKA.'"

15,141.—CONCENTRATED STOCK-FOOD.—*James H. Pollard*, Springfield, Ill. Application filed January 3, 1888. Used since December, 1882.

"The numerals 'IIIX.'"

15,142.—PLUG-TOBACCO.—*Sam. Reid Tobacco Company*, St. Joseph, Mo. Application filed December 27, 1887. Used since November, 1887.

"The representation of a buzz-saw, in tin or other suitable metal or material, and the word-symbol 'Buzz.'"

15,143.—CERTAIN NAMED MEDICAL REMEDIES.—*Friedrich Adolf Richter*, Nuremberg and Rudolstadt, Germany, Vienna, Austria-Hungary, Rotterdam, Holland, Olten, Switzerland, London, England, and New York, N. Y. Application filed October 29, 1887. Used since 1886.

"The representation of a comet."

15,144.—MACARONI.—*C. Rivoire* and *T. Carret*, Lyons, France. Application filed December 20, 1887. Used since November 18, 1887.

"The representation of a trophy of the United States and French national flags, the poles being crossed and the flags draped over the crossing-point, and the word 'EXCELSIOR.'"

15,145.—POCKET-CUTLERY, SCISSORS, RAZORS, AND TABLE-CUTLERY. *Schmachtenberg Bros.*, New York, N. Y. Application filed December 20, 1887. Used since December 1, 1887.

"The representation of an anchor and two swords."

15,146.—STEAM WATER-EJECTORS.—*William J. Sherriff*, Pittsburg, Pa. Application filed December 12, 1887. Used since December, 1870.

"The word 'COLL.'"

15,147.—MEDICINE FOR DISEASES OF THE LIVER AND KIDNEYS.—*Sparks Medicine Company*, Camden, N. J. Application filed December 17, 1887. Used since November, 1885.

"The word-symbol 'PERFECT HEALTH.'"

15,148.—COMPOUND WASHING AND CLEANING FLUID.—*Margaret D. Thompson*, Philadelphia, Pa. Application filed December 28, 1887. Used since December 3, 1887.

"The letters 'M. D. T.'"

15,149.—LIVER-PILLS AND BABY-SIRUP.—*Richard E. Townsend*, New York, N. Y. Application filed November 23, 1887. Used since December 1, 1885.

"The words 'GOOD LUCK' and the representation of a horse-shoe."

15,150.—CIGARS AND CIGARETTES.—*Waldauer & Baer*, Kansas City, Mo. Application filed December 14, 1887. Used since September 1, 1887.

"The words 'PRIESTS OF PALLAS' and the monogram letters 'P P.'"

15,151.—MEDICINE FOR CERTAIN NAMED DISEASES.—*Alexander Wilson & Co.*, Philadelphia, Pa. Application filed December 24, 1887. Used since November 15, 1887.

"The fanciful title 'SCIENCE OF HEALTH.'"

15,152.—MEDICINE FOR CERTAIN NAMED DISEASES.—*B. M. Woolley & Co.*, Atlanta, Ga. Application filed December 19, 1887. Used since July 1, 1886.

"The word 'INVIGORINE.'"

15,153.—HATS, CAPS, AND HELMETS.—*Lincoln Bennett & Co.*, London, England. Application filed January 6, 1888. Used since January 1, 1865.

"The name 'LINCOLN BENNETT & CO.'"

15,154.—HATS, CAPS, AND HELMETS.—*Lincoln Bennett & Co.*, London, England. Application filed January 6, 1888. Used since 1847.

"The representation of a shield."

15,155.—RUBBER BELTING.—*H. D. Edwards & Co.*, Detroit, Mich. Application filed December 10, 1887. Used since December 5, 1887.

"The words 'SUPER EXTRA,' arranged between two parallel lines extending diagonally across a field."

15,156.—RUBBER BELTING.—*H. D. Edwards & Co.*, Detroit, Mich. Application filed December 10, 1887. Used since December 5, 1887.

"The word 'PROOF' inclosed in a circle."

15,157.—BOOTS AND SHOES.—*T. A. Whicher & Co.*, Boston, Mass. Application filed December 17, 1887. Used since November 1, 1887.

"The word 'IMPENETRABLE' and the representation of a river-driver engaged in breaking a jam of logs."

15,158.—CORN BROOMS.—*Robert R. Carroll* and *Benjamin F. Carroll*, Chicago, Ill. Application filed December 13, 1887. Used since May 30, 1887.

"The letter 'S,' with the figure '6' in its upper curve and the word 'BROOM' in its lower curve."

LABELS.

5,477.—Title: "NO NAILS IN THIS SHOE TO HURT THE FEET, SOLES ATTACHED BY PROCESS OF BOOT AND SHOE SOLE LAYING CO. BOSTON."—*Boot and Shoe Sole Laying Company*, Portland, Me. Application filed January 5, 1888.

5,478.—Title: "KICKAPOO COUGH CURE."—*Healy & Bigelow*, New Haven, Conn. Application filed December 1, 1887. (Trade-Mark Registered.)

5,479.—Title: "ARNOLD'S OFFICE & STEEL PEN WRITING INK."—*Charles Edwin Ogden*, London, county of Middlesex, England. Application filed January 6, 1888.

DISCLAIMER.

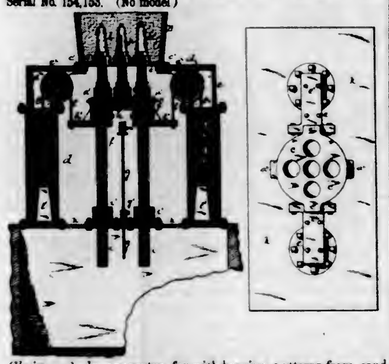
278,238.—*John H. Harding*, Milwaukee, Wis. IMPROVEMENT IN EMBOSSING UPON PLASTERED WALLS AND OTHER SURFACES. Patent dated May 22, 1883. Disclaimer filed January 19, 1888, by the patentee.

Enters his disclaimer to the first claim of said patent, which is in the following words: "The process herein described of ornamenting newly-plastered walls, ceilings, and other soft surfaces, the same consisting in applying thereto a stencil-pattern with the desired design formed therein, and filling said designs with plaster by pressing the stencil-plate into the newly-applied plaster, so as to fill the openings in the stencil-plate, as set forth."

PATENTS

GRANTED JANUARY 31, 1888.

377,004. **APPARATUS FOR WITHDRAWING PATTERNS FROM SAND MOLDS.** S. JARVIS ADAMS, Pittsburg, Pa. Filed Jan. 27, 1885. Serial No. 154,153. (No model.)



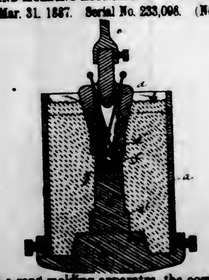
Claim.—1. In apparatus for withdrawing patterns from sand molds, the combination of a supporting-table, a yielding bed, and a vertically-adjustable support therefor, substantially as and for the purposes set forth.

2. In apparatus for withdrawing patterns from sand molds, the combination of a supporting-table, a yielding bed having suitable guide apparatus, counterbalancing apparatus, and a vertically-adjustable support for said yielding bed, substantially as and for the purposes set forth.

3. In apparatus for withdrawing patterns from sand molds, the combination of a supporting-table, a yielding bed having suitable guide apparatus, counterbalancing apparatus, and a support for said yielding bed, having a cushioning-spring at the upper end thereof, substantially as and for the purposes set forth.

4. In an apparatus for withdrawing patterns from sand molds, the combination, with the mold, of a pattern extending from the base of the flask toward the top and adapted and arranged to be dropped out of the mold, and a rod extending through the mold to the pattern, whereby an initial movement is imparted to the pattern, substantially as and for the purpose set forth.

377,005. **SAND-MOLDING APPARATUS.** S. JARVIS ADAMS, Pittsburg, Pa. Filed Mar. 31, 1887. Serial No. 233,098. (No model.)

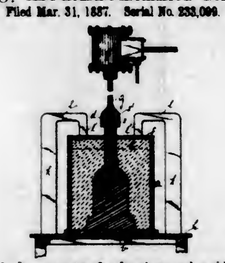


Claim.—1. In a sand-molding apparatus, the combination of a one-part flask with a separable two-part pattern therein and releasable means for holding said parts together, whereby the parts of the pattern are held together during molding and released after molding, substantially as and for the purpose set forth.

2. In sand-molding apparatus, the combination of the flask *a*, the pattern-block carrying the pattern *c*, the pattern *d*, and engaging devices between the pattern *c* and the pattern *d*, substantially as and for the purposes set forth.

3. In sand-molding apparatus, the combination of the flask *a*, the pattern-block carrying the pattern *c*, the pattern *d*, fitting around the end of the pattern *c*, and suitable engaging devices between said patterns, substantially as and for the purpose set forth.

377,006. **SAND-MOLDING APPARATUS.** S. JARVIS ADAMS, Pittsburg, Pa. Filed Mar. 31, 1887. Serial No. 233,099. (No model.)



Claim.—1. In apparatus for forming sand molds by compression, the combination of the flask, a pattern-plate closing one end of said flask and carrying a pattern therein, a packing-plate inclosing the other end, a rod or like device extending within the flask and attached to one of said plates, and power-connections engaging said rod to compress the sand within the flask, substantially as and for the purpose set forth.

2. In apparatus for forming sand molds by compression, the combination of a flask, a pattern and its pattern-block, a packing-plate, a rod or like device extending within the flask and attached to said pattern or pattern-block, and power-connections engaging said rod and adapted through said rod to impart the compressing force to the sand within the flask, substantially as and for the purpose set forth.

3. In apparatus for forming sand molds by compression, the combination of a flask, the pattern and its pattern-block, a reservoir, a packing-plate, a rod or like device extending within the flask and attached to said pattern or pattern-block, and power-connections engaging said rod and adapted through said rod to impart the compressing force to the sand within the flask, substantially as and for the purpose set forth.

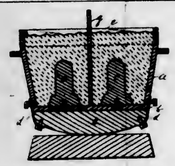
4. In apparatus for forming sand molds by compression, the combination of the pattern plate or block carrying the pattern and having the rod or like device extending through the opposite end of the flask and secured to said pattern and pattern-block, the flask resting on the pattern-plate and the packing-plate fitting within the flask or its reservoir, standards engaging with the packing-plate, and power-connections engaging with the rod where it extends beyond the flask, substantially as and for the purpose set forth.

377,007. **SAND-MOLDING APPARATUS.** S. JARVIS ADAMS, Pittsburg, Pa. Filed Mar. 31, 1887. Serial No. 233,100. (No model.)

Claim.—1. In a sand-molding apparatus, the combination, with a flask, of a pattern-plate formed in one piece with the flask and carrying patterns within the flask, substantially as and for the purpose set forth.

2. In sand-molding apparatus, the combination, with a flask, of a pattern plate or block formed with or permanently secured to the

377,007.



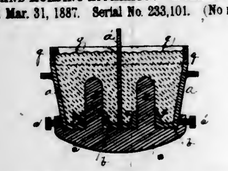
flask and carrying patterns within the flask, and a stripping-plate fitting within the flask, substantially as and for the purposes set forth.

3. In sand-molding apparatus, the combination, with a flask, of a pattern plate or block formed with or permanently secured to the flask and carrying patterns within the flask, and a stripping-plate fitting within the flask and having the pattern for cope-prints formed thereon, substantially as and for the purposes set forth.

4. In sand-molding apparatus, the combination, with the flask, of a pattern block or plate permanently secured thereto and carrying patterns within the flask, a stripping-plate fitting around the patterns, and bars extending through the pattern-plate and engaging with the stripping-plate, substantially as and for the purposes set forth.

5. In sand-molding apparatus, the combination, with a flask having a pattern-plate formed with or permanently secured to the flask and carrying patterns therein, of a base-block secured to the flask and adapted to receive the blows in jarring, substantially as and for the purposes set forth.

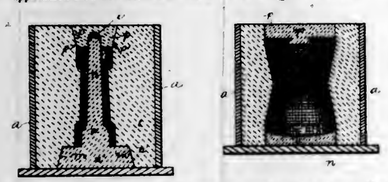
377,008. **SAND-MOLDING APPARATUS.** S. JARVIS ADAMS, Pittsburg, Pa. Filed Mar. 31, 1887. Serial No. 233,101. (No model.)



Claim.—1. In sand-molding apparatus, the combination of the flask, the stripping-plate formed with or permanently secured to the flask, and the pattern extending through the stripping-plate into the flask, substantially as and for the purposes set forth.

2. In sand-molding apparatus, the combination of the flask, the stripping-plate formed with or permanently secured to the flask and adapted to form the seat or cope-print for the core-head of the core, and the pattern extending through the stripping-plate in the flask, substantially as and for the purposes set forth.

377,009. **SAND MOLD.** S. JARVIS ADAMS, Pittsburg, Pa. Original application filed Mar. 31, 1887, Serial No. 233,098. Divided and this application filed Oct. 29, 1887. Serial No. 253,750. (No model.)



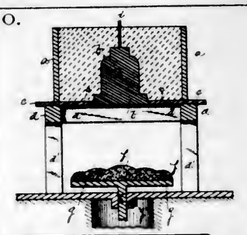
Claim.—1. In a sand mold, the combination, with a one-part flask having a mold-cavity formed therein of greater diameter at each end than in the central part thereof, of separate cores located in the opposite ends of the mold-cavity and closing its ends, substantially as and for the purpose set forth.

2. In a sand mold, the combination, with a mold having its cavity extending through the flask, of a core located in one end and extending within said mold-cavity, and a core located in the opposite end of said mold-cavity and provided with a seat for the reception of the end of the other core, substantially as and for the purpose set forth.

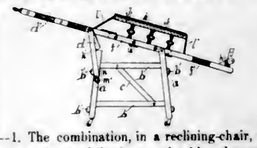
377,010. **METHOD OF WITHDRAWING PATTERNS FROM SAND MOLDS.** S. JARVIS ADAMS, Pittsburg, Pa. Original application filed Jan. 27, 1885, Serial No. 154,153. Divided and this application filed Nov. 1, 1887. Serial No. 253,973. (No model.)

Claim.—The method herein described of withdrawing patterns from sand molds, consisting in dropping the pattern from the mold and guiding such withdrawal only by the walls of the mold-form.

377,010.



377,011. **ADJUSTABLE RECLINING-CHAIR.** LEWIS BERGER, Bay City, Mich. Filed July 23, 1886. Serial No. 208,823. (No model.)



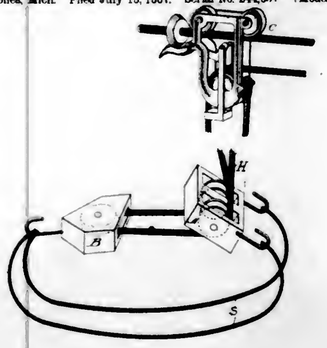
Claim.—1. The combination, in a reclining-chair, of the back portion, the seat portion, and the foot portion hinged together at their meeting ends and provided with cross-bars and having a flexible cover, the front legs pivoted to the seat-rails, and the rear legs provided with a hinged section pivoted to the side rails of the back portion, and the arms rigidly secured above the seat-rails and provided with longitudinal grooves with cords placed within the grooves and with one end secured to the side rails of the back portion and their opposite ends secured to the side rails of the foot portion, substantially as and for the purpose set forth.

2. The combination, in a reclining-chair, with the back side rails d', the seat-rails f, and side rails f'', hinged together at their meeting ends and provided with cross-bars e and g and having a flexible cover, the legs a, pivoted to the seat-rails, and the legs a', provided with the hinged portion d, pivoted to the back side rails, and the arm j, rigidly secured above the seat-rails and provided with the groove j', of the pulleys l, journaled in the ends of the arms j, and the cords l' within the groove and passing over the pulleys and secured to the side rails d and f'', substantially as and for the purpose herein set forth.

3. In a reclining-chair, the combination of the back portion, the seat portion, and foot portion hinged together and operating as described, the front legs, a, pivoted to the seat-rails, and the rear legs, a', having a hinged portion, d, pivoted to the side rails d', with a supporting-brace, k', pivoted by the bolt m to the upper end of the piece d, and provided on its lower end with the opening m', and the bolt n, passing through the opening m' and into the leg a', substantially as and for the purpose set forth.

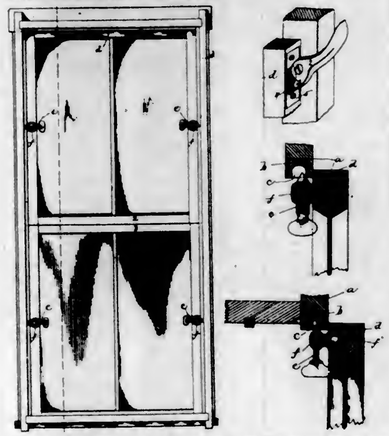
4. In a reclining-chair, the combination, with the back side rails d', the seat-rails f, and side rails f'', hinged together and provided with cross-bars, the arms j, rigidly secured above the seat-rails and provided with a longitudinal groove, j', and the cords l' within the groove and secured to the rails d' and f'', of the braces q, pivoted at one end by the bolt m to the back rail d' and provided on their opposite ends with the slots s, having the ratchet t, the bolt r, passing through the slot s and into the seat-rail f, and a button, u, beneath the seat-rail f, and operating substantially as described, and for the purpose set forth.

377,012. **HAY OR GRAIN UNLOADER.** ALLEN P. BOYER, Jones, Mich. Filed July 18, 1887. Serial No. 244,657. (Model.)



Claim.—The combination of the carrier, the single and double blocks provided with pulleys, and hooks to receive the sling, and a hoisting-rope secured to the carrier, passing over sheave at one side of double block, over sheave in single block, over the other sheave in double block, and forward over the sheave in carrier, substantially as described.

377,013. **OUTSIDE WINDOW AND MEANS FOR SECURING THE SAME.** BENJAMIN P. BROOKS, Manchester, N. H. Filed Dec. 31, 1886. Serial No. 223,090. (No model.)



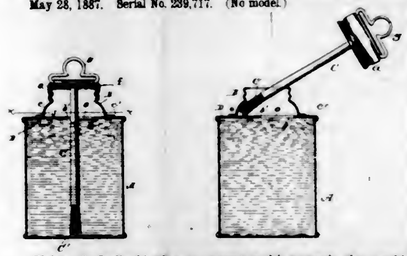
Claim.—1. An outside sash having inwardly-projecting nuts on its inner side and screws working in said nuts, combined with a casing provided with bushings adapted to receive the ends of said screws, as set forth.

2. An outside sash having inwardly-projecting nuts on its inner side and screws working in said nuts, combined with a casing having conical cavities receiving the ends of said screws, as set forth.

3. As an article of manufacture, a nut, f, provided with a screw, f', whereby the nut may be attached to a post, sash, casing, or the like, and having a screw, e, arranged in the nut transversely to screw f' and passing entirely through and having a screw-threaded connection with the nut, and a bushing, b, adapted to receive the end of screw e, extending through and beyond the nut, substantially as and for the purposes set forth.

4. An outside sash adapted to cover the entire window or area within the casing, said sash being made in two sections, 2 3, divided horizontally and hinged together at their line of division, each section being provided on its inner side with devices, substantially as hereinbefore set forth, for securing it to the casing, whereby the outside sash may be made as a single article, readily attachable and detachable from the inside, and either section held stationary and the other swung outwardly for the purposes of ventilation, as set forth.

377,014. **LIQUID-GLUE PACKING-CAN.** REUBEN BROOKS, Gloucester, Mass., assignor to the Russia Cement Company, same place. Filed May 28, 1887. Serial No. 239,717. (No model.)

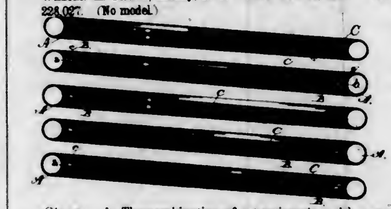


Claim.—1. In liquid glue or cement packing-vessels, the combination, with a receptacle having an opening in its top, of a screw-threaded cap-piece secured over the opening, said cap-piece being larger than the opening and extending beyond the edges of the opening, substantially as set forth.

2. In liquid glue or cement packing-vessels, the combination, with a receptacle, of a screw-threaded cap-piece secured on the top of the receptacle, the latter having an opening formed in its top of less diameter than the diameter of the cap-piece and located eccentrically of the center of the cap-piece, substantially as set forth.

3. The combination, with a receptacle and a screw-threaded cap-piece secured thereon, said receptacle having an opening in its top located eccentrically to the center of the cap-piece, of a threaded cap-nut, a brush secured to one side of the cap, and a bail or handle to the other side, substantially as set forth.

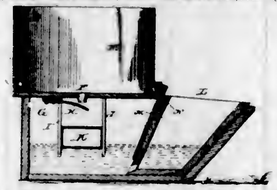
377,015. **DEVICE FOR HEATING COILS AND PIPES BY GAS.** WALTER M. BROWN, Albany, N. Y. Filed Feb. 18, 1887. Serial No. 228,027. (No model.)



Claim.—1. The combination of a heating-pipe with a gas-pipe and an air or steam pipe running parallel with said heating-pipe, said gas-pipe and air-pipe being provided with correspondingly-located apertures throughout their length, arranged so that the jets of air and gas from said pipes will converge on said heating-pipe throughout its length, substantially as set forth.

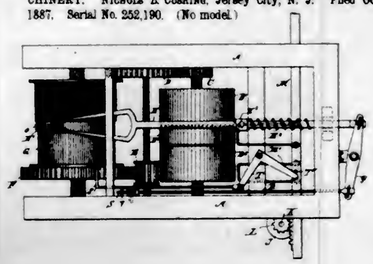
2. A coil of heating-pipe, in combination with a corresponding coil of gas-pipe, provided at intervals with burners discharging against said heating-pipe, and an air or steam pipe coiled parallel with said gas-pipe and heating-pipe and perforated at points corresponding to said burners, in order that a jet of air or steam may converge with the flame from each burner on said heating-pipe, substantially as set forth.

377,016. **DEVICE FOR WATERING HOGS AND OTHER ANIMALS.** DANIEL F. COLLINGWOOD and JAMES A. COLLINGWOOD, Pretty Prairie, Kans. Filed June 9, 1887. Serial No. 240,791. (No model.)



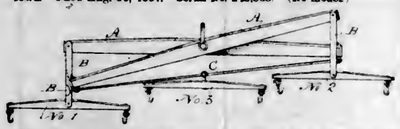
Claim.—The combination, with the trough having its front end inclined upward and outward, the cross-bar C a suitable distance in rear of the front edge of said trough, the removable tank E, resting on the rear portion of said trough and provided with a tubular discharge-opening, F, in its bottom, and the flexible valve H, secured to the bottom of the tank and adapted to close said opening, of the four guide-bars I, depending from the bottom of the tank, the float K, held between said guide-bars, but free to rise and fall with the water in the trough, the removable trough L, made fitting in the inclined front end of the trough A and provided with an opening in its rear side adjoining its bottom, and the wedge-shaped piece M, by means of which the trough L is held in place in front of the bar C, substantially as specified.

377,017. **UNWINDING SAFETY DEVICE FOR HOISTING MACHINERY.** NICHOLS B. CUSHING, Jersey City, N. J. Filed Oct. 12, 1887. Serial No. 252,190. (No model.)



Claim.—In a winding and hoisting machine, a pawl-rod, S', in combination with the bell-crank T, pin T', belt-shifting bar M, latch S, rod R, cross-beam Q, sheave-rod N, sheave N', and spring N², for the purpose specified.

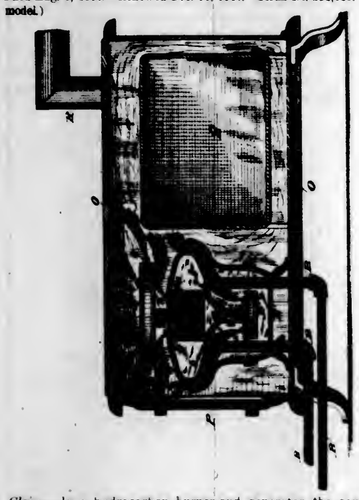
377,018. **DRAFT-EQUALIZER.** FREDERICK E. DAVIS, Glenbrook, Iowa. Filed Aug. 30, 1887. Serial No. 248,308. (No model.)



Claim.—1. A three-horse equalizer composed of two straight overlapping bars pivoted together at their centers by means of a clevis, a jointed rod flexibly connected with one end of each of said straight bars, a singletree connected with one end of each of said bars by means of short bars or rigid links, and a singletree connected with the center of the jointed rod, to operate in the manner set forth.

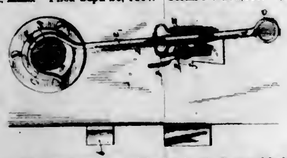
2. The two straight bars A, connected at their centers by means of a clevis, singletrees Nos. 1 and 2, connected with the ends of the bars A by means of links B, a jointed rod, C, connected with the ends of the bars A, and a singletree, No. 3, connected with the center of the jointed rod, arranged and combined substantially as shown and described, for the purposes stated.

377,019. **HYDROCARBON GENERATOR AND BURNER.** JOHN R. DEEDS, Terre Haute, Ind., assignor to Frederick Lee, same place. Filed Aug. 9, 1886. Renewed Dec. 16, 1887. Serial No. 258,083. (No model.)



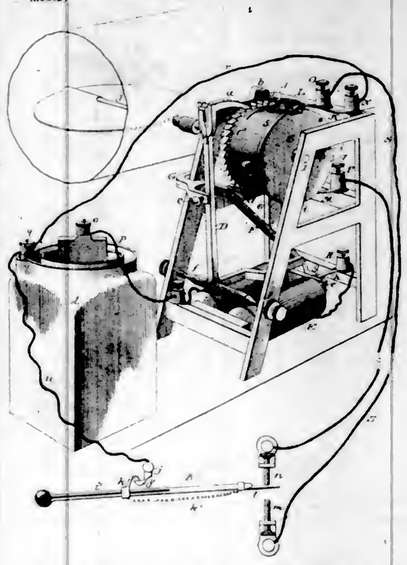
Claim.—In a hydrocarbon burner and generator, the combination, with the retort A, constructed of a central mixing-chamber having jets or openings in its top and two outer vaporizing-chambers having each a supply-pipe and communicating with said mixing-chamber, of a distributing-chamber having jets or openings and a pipe connecting it with the mixing-chamber, provided with a regulating-valve, said distributing-chamber being of such dimensions and form as to act as a deflector for the flames issuing from the jets of said mixing-chamber, substantially as described.

377,020. **KEY-FASTENER.** FRANK R. DE LISLE, North Attleborough, Mass. Filed Sept. 20, 1887. Serial No. 250,265. (No model.)



Claim.—The combination, with the hook C, provided with the notched shank, of the sliding spring-catch E, provided with slots adapted to receive the shank and to engage the notches of the same, and the hook D, secured upon said catch and adapted to engage the key, substantially as and for the purpose specified.

377,021. **ELECTRIC TEMPERATURE-REGULATOR.** LUCIEN F. EASTON, La Crosse, Wis. Filed Oct. 17, 1887. Serial No. 252,805. (No model.)



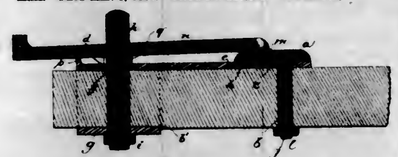
Claim.—1. The herein-described apparatus for controlling valves, dampers, and like devices, consisting of a battery or other source of electric energy, a thermostatic circuit-closer, an electro-magnet included in the battery-circuit, a lever provided with a pawl or dog and with a soft-iron armature, the latter within the attractive field of said magnet, a second armature arranged to bear upon the first when said first armature is moved away from the electro-magnet, a spring serving to move the second armature away from the electro-magnet, a wheel or cylinder actuated by the lever and its dog and provided with contact points or surfaces, a valve, damper, or like device connected with the cylinder and movable thereby, and spring-fingers arranged in the paths of the contact points and surfaces of the cylinder and adapted to change the path of the current as the cylinder is rotated.

2. The actuating mechanism for a temperature-regulator, consisting of a circuit-changing wheel provided with teeth, a lever provided with an armature and with a pawl to engage with the teeth of said wheel, an electro-magnet placed within the attracting distance of said armature, a second armature carried by a spring-arm and placed in position to be touched by the first armature as the latter moves away from the magnet, and a stop to limit the movement of the second armature toward the magnet, the electro-magnet and the second armature being included in one and the same electric circuit, and the parts being constructed and arranged to operate substantially as set forth.

3. The herein-described apparatus for regulating temperature, consisting of a battery or source of electricity, as A, a thermostat, as B, a toothed circuit-changing wheel or cylinder, as C, provided with a lug or contact-point, 1, and segments 5 and 6, electro-magnet E, lever D, provided with pawl *a* and armature *e*, armature *g*, spring-arm *h*, supporting said armature *g*, electric conductor *p*, connecting one pole of battery A, magnet E, and spring-arm *h*, conductor *r*, connecting the other pole of the battery and spring-finger K, conductor *f*, connecting contact *m* of the thermostat and spring-finger L, conductor *t*, connecting contact *n* of the thermostat and spring-finger M, and conductor *u*, connecting the thermostat with the second pole of the battery or other source of electric energy.

4. In combination with wheel or cylinder C, having teeth on its periphery, vibratory lever D, provided with a pawl to engage with said teeth, armature *e*, carried by said lever, electro-magnet E, having its pole or poles placed opposite and within attractive distance of armature *e*, a second armature, *g*, located in the path of movement of armature *e*, a spring-arm, *h*, carrying the armature *g*, and a battery or other source of electric energy including in its circuit the electro-magnet and the armature *g*.

377,022. **SCYTHE-FASTENER.** LEWIS R. EDWARDS, Charlemont, Mass. Filed Mar. 5, 1887. Serial No. 229,822. (No model.)

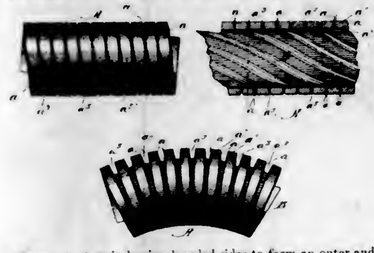


Claim.—1. The combination, with the bolt *j*, having its head offset or elongated to one side only, and provided with the socket *m* and teeth *k*, of the fixed under plate perforated at its upper end to receive said bolt, and provided with teeth to engage those upon the head, and with a perforation at its lower end for a loop-bolt, and said loop-bolt securing the tang near its junction with the blade directly to the end of the snath, the said offset bolt-head being arranged to depend toward the lower end of the snath, as set forth.

2. The combination, with the ring and plate, of the bolt *k*, having the acute-V-shaped loop, the bolt *j*, having its head offset or elongated to one side only and provided with the socket *m* and teeth *k*, and the plate perforated at its upper end to receive said bolt and provided with teeth to engage those upon the head, the said head being arranged to depend from the shank of the bolt toward the lower end of the snath, as set forth.

3. The combination, with the plate provided with the transverse rib *p* and the short ribs *q*, arranged as described, of the bolt *j*, having the head offset or elongated to one side only, and provided with the socket *m* and teeth *k* and arranged to depend from the shank of the bolt toward the lower end of the snath, as and for the purpose set forth.

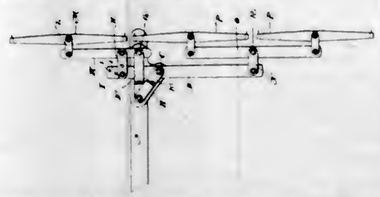
377,023. **RAILWAY TRACTION-CABLE.** PETTER J. FRANNER, Chicago, Ill., assignor of one-fourth to Charles H. Gersch, same place. Filed Sept. 6, 1887. Serial No. 248,920. (No model.)



Claim.—1. A strip having beveled sides to form an outer and inner face, said strip being coiled to form a continuous spiral covering for the traction-cable, substantially as specified.

2. The combination, with a traction-cable, of a strip having beveled sides *a*, continuously wound in spiral coils around the cable to form a flexible covering therefor, substantially as shown and described.

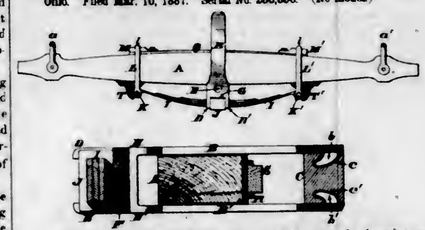
377,024. **DRAFT-EQUALIZER.** WILLIAM H. FRITTS, Plano, Ill. Filed Mar. 3, 1887. Serial No. 229,602. (No model.)



Claim.—1. In a draft-equalizer, the combination of the tongue, the long lever D, pivoted at a suitable distance from one end and provided with the series of openings 1, 2, and 3 at its shorter end, the short lever E, pivoted to the tongue and projecting beyond the same side thereof with the shorter end of the lever D, the link H, pivoted to the short lever E, near the inner end thereof, and the bolt I, to connect the rear end of the said link to either of the series of openings in the short arm of the lever D, the said openings being arranged in a curved line drawn from the center of the bolt that connects link H to short lever E, for the purpose set forth, substantially as described.

2. In a draft-equalizer, the combination of the tongue, the forward-extending strap F thereon, the long lever D, pivoted to the tongue at a suitable distance from one end and having the link N pivoted to its outer end, the short lever E, the link H, connecting the same, near its inner end, to the short arm of the lever D, whereby the said lever E may be swung in rear of the lever D, for the purpose set forth, the singletree M, attached to the outer end of the lever E, the removable bolt G, to extend through aligned openings in the strap F, lever E, and tongue, to pivot the inner end of the said lever to the tongue in advance of the lever D, the whiffletree O, and the removable bolt R, to attach the same either to the link N at the long end of the lever D or to the tongue, all combined and arranged to operate substantially in the manner and for the purpose described.

377,025. **SPRING-WHIFFLETREE.** JAMES H. FOOTE, Cincinnati, Ohio. Filed Mar. 10, 1887. Serial No. 230,330. (No model.)



Claim.—1. The combination, with a whiffletree, of a housing or keeper having at rear an open-ended socket, within which is fitted a leaf-spring, the extremities of the latter being coupled to said whiffletree, substantially as herein described.

2. A whiffletree-spring having its opposite extremities coupled to swinging shackles, which latter engage with concave bearings attached to the front edge of the whiffletree, for the purpose described.

3. A whiffletree-spring housing consisting of the plates B B', having at their rear ends lugs D D' E E', and at their front ends spurs *b b'*, that engage with the pockets *c c'* of a separable block, C, for the purpose described.

4. A whiffletree having a spring in the rear and a buffer secured to its front edge, for the purpose described.

5. The metallic strap O, fastened to the front edge of a whiffletree, said strap being provided with a socket, R, for the buffer S, and a serrated portion, *o*, for the concave bearing M', as herein described.

6. The combination of whiffletree A, housing B B' G H H', spring I i i', band J, bolts K K', shackles L, L', concave bearings M M', and stops T T', for the purpose herein described.

7. The combination, with a whiffletree, of a housing or keeper having at rear an open-ended socket, within which is fitted the band of a leaf-spring, the extremities of the latter being coupled to said whiffletree, for the purpose described.

377,026. **SPRING-WHIFFLETREE.** JAMES H. FOOTE, Cincinnati, Ohio. Filed Sept. 23, 1887. Serial No. 250,534. (No model.)



Claim.—1. A whiffletree attachment consisting of a perforated strap or band, and a detachable keeper coupled to said strap by the wagon-hammer, said keeper being provided at rear with an open-ended socket within which a leaf-spring is inserted, substantially as described.

2. A whiffletree surrounded by a strap that is coupled to a detachable keeper by the wagon-hammer, in combination with a plate-spring inserted within an open-ended socket at the rear of said keeper, the extremities of said spring being jointed to said whiffletree, substantially as described.

3. The whiffletree A, shackles B *b* B' *b'*, plate-spring E, band F, and detachable keeper H, having a perforation, *h*, and open-ended socket G, in combination with the pierced strap J *j j'* and wagon-hammer I, for the purpose described.

4. The combination, with a whiffletree, of the detachable keeper H, having at rear an open-ended socket, G, within which is inserted the band F of a plate-spring, E, said socket being provided with con-

verging grooves *g g'*, to admit the outwardly-flaring edges *f f'* of said band, as herein described.

377,027. ELASTIC CORD. JOSEPH W. GREEN, Jr., and CHARLES H. CASWELL, Easthampton, Mass. Filed Aug. 13, 1887. Serial No. 246,398. (No specimens.)

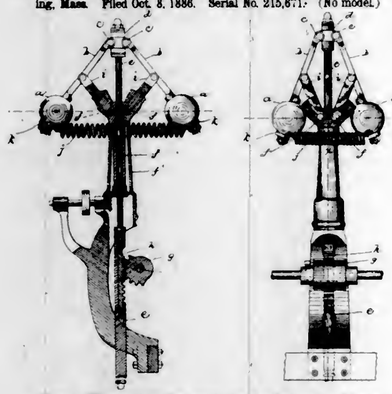
Brief.—The object of the invention is to produce a durable elastic cord having an attractive figured appearance.



Claim.—1. An elastic cord having a smooth unbroken braided covering consisting of series of threads, with two or more threads in a series running in one direction, said series of threads being crossed or interbraided by single threads running in an opposite direction, substantially as set forth.

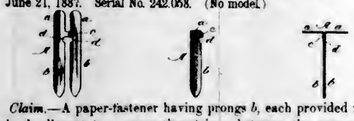
2. An elastic cord consisting of a core composed partly of fibrous or non-elastic threads and partly of rubber threads, and a smooth unbroken braided covering consisting of series of threads with two or more threads in a series running in one direction and single interbraiding threads running in the opposite direction, substantially as set forth.

377,028. STEAM-ENGINE GOVERNOR. JAMES A. HORTON, Reading, Mass. Filed Oct. 3, 1886. Serial No. 215,671. (No model.)



Claim.—The combination, with the fixed sleeve or bearing, of a hollow driving-spindle mounted to rotate therein and immovable against vertical movement, a vertically-moving valve-operating rod playing in said sleeve and having a removable rack-section, governor-arms having balls and connected to said rod, links pivoted to said sleeve and governor-arms, and coiled springs arranged at each side and connecting the governor-arms to control their normal position, substantially as set forth.

377,029. PAPER-FASTENER. JOHN C. JENSEN, Chicago, Ill. Filed June 21, 1887. Serial No. 242,058. (No model.)



Claim.—A paper-fastener having prongs *b*, each provided with a notch, *d*, adjacent to a connecting-strip, *c*, between the prongs, substantially as and for the purpose specified.

377,030. INSERTER OR NEEDLE FOR PAPER-FASTENERS. JOHN C. JENSEN, Chicago, Ill. Filed Sept. 6, 1887. Serial No. 248,924. (No model.)



Claim.—1. The needle or inserting-tool A, having point *a* and depressed ends *b*, substantially as specified.

2. The needle or inserting-tool A, adapted to receive and hold a paper-fastener, and having a point, *a*, said point being provided with sharpened edges for cutting purposes, substantially as and for the purpose specified.

3. The needle or inserting-tool A, having a point, *a*, formed with cutting-edges, and a rib, *c*, for receiving and inserting paper-fasteners, substantially as specified.

377,031. COMBINED PAPER CLIP AND PUNCH. JOHN C. JENSEN, Chicago, Ill. Filed Sept. 6, 1887. Serial No. 248,925. (No model.)



Claim.—1. The base A and bar D, having handle D' and arms *d*, in combination with the clamp B, posts C, and coiled springs C', for holding sheets of paper, substantially as specified.

2. The clamping-bar B, having holding-lips *b' b''* and end blocks, *b²*, posts C, passing through the ends of the clamp B, and springs C', in combination with the lifting-bar D, having handle D' and curved slotted arms *d*, substantially as and for the purpose specified.

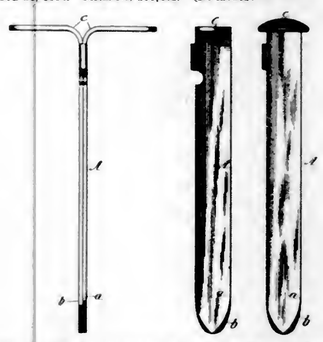
3. The slotted clamp-bar B, in combination with the sliding socket F, carrying a punch, G, and mounted on the bar B, substantially as and for the purposes specified.

4. The base A, having the slot *a*, and movable clamp-bar B, having the slot *b*, in combination with a sliding socket, F, mounted on the bar B and carrying a punch, G, substantially as and for the purposes specified.

5. The base A, having slot *a*, bar D, having handle D' and slotted lifting-arms *d*, and clamp B, having the longitudinal slot *b*, in combination with the socket F, supported on the edges of the slot *b* and carrying a punch, G, substantially as and for the purposes specified.

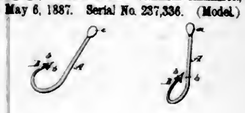
6. The combination, with a paper-clip, substantially as described, of a sliding socket containing a punch mounted and carried thereon, substantially as and for the purpose specified.

377,032. PAPER-FASTENER. JOHN C. JENSEN, Chicago, Ill. Filed Oct. 26, 1887. Serial No. 253,472. (No model.)



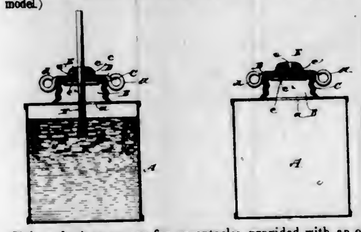
Claim.—The herein-described paper-fastener, consisting of two parallel prongs of substantially equal length, one of which is formed with a pointed end and the other with a rounded or blunt end to facilitate the spreading apart of the prongs after they have been inserted through papers to be fastened, said rounded or blunt end of one prong guarding the pointed end of the other until they are spread apart, substantially as described.

377,033. FISH-HOOK. CHARLES KERRISON, Jr., Charleston, S. C. Filed May 6, 1887. Serial No. 237,336. (Model.)



Claim.—A fish-hook having the double-barbed end, the pointed ends of said barbs being bent inwardly toward the shank of the hook, substantially as set forth.

377,034. PACKAGE FOR LIQUID GLUE, MUCILAGE, &c. JOHN W. KIRKPATRICK, Newburyport, assignor to the Russia Cement Company, Gloucester, Mass. Filed July 16, 1887. Serial No. 244,537. (No model.)



Claim.—1. A screw-cap for receptacles, provided with an opening in its top and a removable elastic plug adapted to enter the opening, said plug having a disk formed thereon, substantially as set forth.

2. A screw-cap for receptacles, having an opening in its top and a removable perforated elastic plug adapted to enter said opening, substantially as set forth.

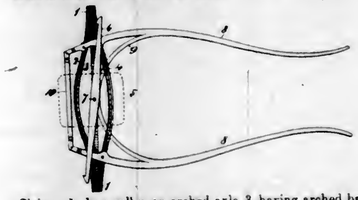
3. A screw-cap for receptacles, having an opening in its top and a removable elastic perforated plug, said plug having a restricted neck and an elastic disk formed integral therewith, substantially as set forth.

4. A screw-cap for receptacles, having a bail and handles rigidly secured thereto, an opening in its top, and a removable elastic plug adapted to enter the opening in the cap, substantially as set forth.

5. In packages for liquid glue and mucilage, the combination, with a receptacle having a screw-threaded collar and flanges on the receptacle and collar for removing superfluous liquid from the brush, of a screw-cap having an opening therein and an elastic plug adapted to enter the opening, for the purpose substantially as set forth.

6. In a screw-cap for receptacles, a bail extending part way around said cap and rigidly secured thereto, and having handles or eyes on its ends.

377,035. TROTTING-SULKY. WILLIAM E. LAMSON, Sarnia, Ontario, Canada. Filed June 15, 1887. Serial No. 241,345. (No model.) Patented in Canada Feb. 7, 1887, No. 25,934.



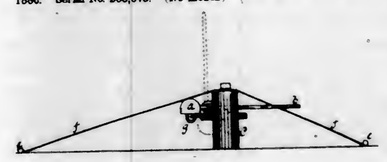
Claim.—1. In a sulky, an arched axle, 3, having arched bars 2 4 at opposite sides, connected by the driver's seat 5 above the axle, as set forth.

2. In a sulky, an arched axle, 3, having arched bars 2 4 at opposite sides connected by the driver's seat 5, thills 8, secured to said bars, and the singletree 6, attached to the axle below the driver's seat, as set forth.

377,036. COMPOSITION FOR THE MANUFACTURE OF ARTIFICIAL STONE OR CEMENT. ISAAC LICHTENTAG, New Orleans, La. Filed Sept. 11, 1886. Serial No. 213,338. (Specimens.)

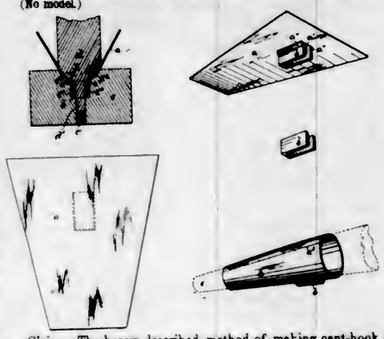
Claim.—The herein-described composition of matter, for the purpose specified, consisting of saccharine, air-slaked lime, (common or hydraulic,) sand, and water, in the proportions specified.

377,037. FLOOD-FENCE. HARVEY A. MACK, Mount Zion, Ill., assignor of one-half to John H. Poulter, same place. Filed July 15, 1886. Serial No. 208,073. (No model.)



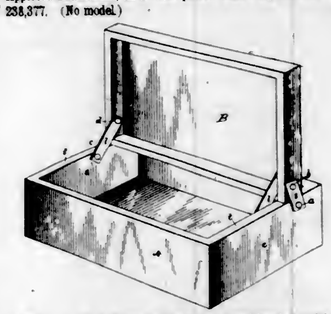
Claim.—In a flood-fence, the combination of the fence-posts, sills carrying upwardly-projecting pickets and loosely hinged to the upstream sides of said posts at such a point that they will come in contact with the under side of the upper guide-braces of the posts to retain said pickets in horizontal adjustment while the water is passing over them, and a board loosely hinged to the downstream sides of the sills and extending below the same, whereby the pickets and board when under action of the water will fold into a horizontal position, substantially as described.

377,038. METHOD OF MAKING FERRULES FOR CANT-HOOKS. EDWARD MANSFIELD, Orono, Me. Filed Oct. 10, 1887. Serial No. 251,905. (No model.)



Claim.—The herein-described method of making cant-hook ferrules, consisting in first punching or cutting out a plate, *a*, of steel or wrought metal, making a perforation, *a'*, in such plate and forming lips *a''* at the edges of said perforation, then inserting therein a steel or forged metal staple, *b*, and welding said parts together, as described, and finally bending the plate *a* on a suitable mandrel and welding its abutting or overlapping edges together, substantially in a manner and for the purpose set forth.

377,039. TRUNK OR CHEST. MOSES J. S. MARSHALL, Boston, Mass., assignor of three-fourths to Lowell B. Hiscock, William F. Miller, and Appleton B. Eastman, all of same place. Filed May 16, 1887. Serial No. 238,377. (No model.)



Claim.—1. In a trunk or chest, the combination, with the body, of the lid connected to the body by means of hinges, each consisting of two straps, each of which straps is pivoted at one end to the side or end of the lid and at the other to the side or end of the trunk-body, whereby when the lid is raised to vertical position it will be raised and carried bodily forward, substantially as described.

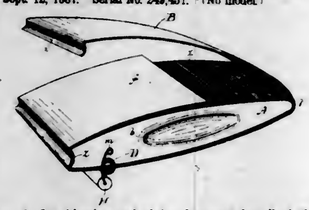
2. In a trunk or chest, the combination, with the body and the side or end of the lid, of two hinge-straps, each pivoted at one end to the lid and at the other to the side or end of the body, in such position as to incline in opposite directions from the lid when the latter is raised, as set forth.

3. In a trunk or chest, the combination, with the body and lid, of a hook-plate, *f*, secured to the body, and a catch-plate, *h*, secured to the lid at a point opposite the catch-plate, the construction and arrangement being such as that the hook-plate will be engaged by the catch-plate when the lid is closed, both the hook-plate and the catch-plate extending the entire length of the trunk, as set forth.

4. In a trunk or chest, the combination, with the body and lid, of the hinges comprising the straps *l a*, each pivoted at one end to the

body of the trunk and at the other to the lid, and the hook-plate *f*, secured to the body, and the catch-plate *h*, secured to an opposing point of the lid, as set forth.

377,040. BLOTTING-PAD. CLIFTON M. MOORE, Revere, Mass. Filed Sept. 12, 1887. Serial No. 249,431. (No model.)



Claim.—1. In a blotting-pad of the character described, the combination of the following instrumentalities, to wit: a flattened or elongated oval body provided at one end with a lateral groove, springs secured to said body near said groove, and a roll journaled on said springs and adapted to press on the paper in said groove and secure it on said block, substantially as set forth.

2. In a blotting-pad, the oval body A, provided at one end with the transverse groove *z*, a coiled spring, D, secured to each side of said body near said groove, the roll H, journaled on said springs, and the paper strip B, wrapped longitudinally around said body and secured in said groove by said spring-actuated roll, constructed, combined, and arranged to operate substantially as described.

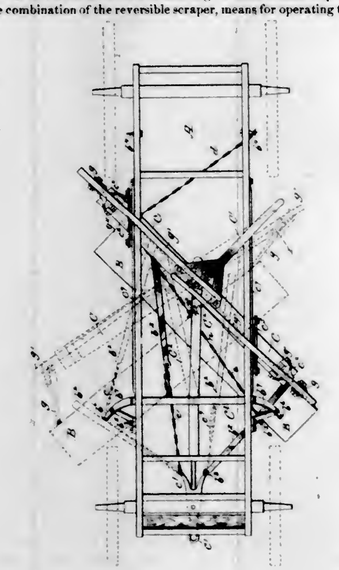
377,041. REVERSIBLE ROAD AND DITCHING MACHINE. HENRY C. MOORE, Tama City, Iowa. Filed July 6, 1886. Serial No. 207,251. (No model.)

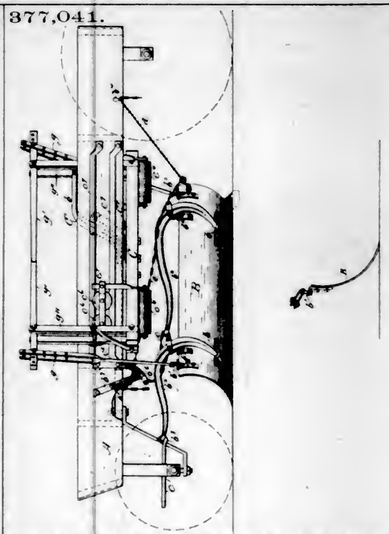
Claim.—1. The combination, in a road or ditching machine mounted upon wheels, of a reversible scraper or plow, a traverse-bar, movable frames provided with grooved disks journaled therein, and the tracks or bars, substantially as described.

2. In a road or ditching machine, the combination, with a reversible scraper, of the tracks or bars, the movable or traversing frames, the traverse-bar, the operating or hand lever, the pivoted bar C^2, and the cross-bar C^3, substantially as described.

3. The combination, in a front-draft road or ditching machine mounted upon wheels, of a reversible scraper, the vertical rods or bars, the traverse-bar longitudinally movable across the frame and provided with the standards at each end, and the operating-levers, substantially as described.

4. In a front-draft road or ditching machine mounted upon wheels, the combination of the reversible scraper, means for operating the same,





377,041.

the swiveled draft-beams, the adjustable chains *c*, *d*, and *e*, and devices for attaching them to the frame, substantially as described.

5. In a front-draft road or ditching machine mounted upon wheels, the combination, with the scraper and the draft-beams provided with swiveled connections, of the traverse-bar, the traversing frames, and means for operating said bar and frames, substantially as described.

6. In a front-draft road or ditching machine, the combination of the reversible scraper, the traverse-bar, the traversing frames, the draft-beams, the adjustable draft-chain, the guy-chains, and the projecting guy-braces provided with loops, substantially as described.

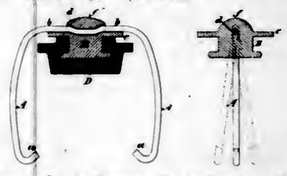
7. The combination of the movable traverse-bar and the traversing frames provided with rollers and the grooved disks with the tracks or bars, substantially as described.

8. In a front-draft road or ditching machine mounted upon wheels, the combination of the reversible scraper, the traverse-bar, the traversing frame provided with rollers and grooved disks, means for operating said parts, and the tracks or bars, substantially as described.

9. In a front-draft road or ditching machine, the combination of the frame A, the reversible scraper B, the traverse-bar C, the bar C^2, pivoted to said frame and provided with the pin x^3, and the operating-lever C', substantially as described.

10. In a road or ditching machine, the combination of the frame mounted upon wheels and provided with a direct-draft attachment for the team, a reversible scraper suspended from said frame, and the adjusting-chains, by which said scraper may be placed and held to work outside of the track of the wheels, and in other positions, substantially as described.

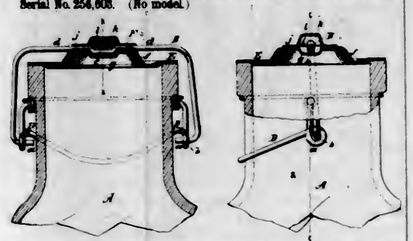
377,042. BOTTLE-STOPPER. FREDERICK P. MORSOUR, Bennington, Vt., assignor to Henry W. Putnam, same place. Filed Oct. 26, 1887. Serial No. 253,402. (No model.)



Claim.—1. In a bottle-stopper, the combination, with the bail A, having eccentric portions, of the stopper-body mounted loosely on the bail and provided with the opening *g* through an integral part of the body, this opening having eccentric enlargements to allow some play to the stopper-body on the bail, as specified.

2. The bail A, having the bend *d* and the eccentric portions *b*, combined with the stopper B, mounted loosely upon the bail and provided with the opening *g* through an integral part of the body, this opening having eccentric enlargements, substantially as described.

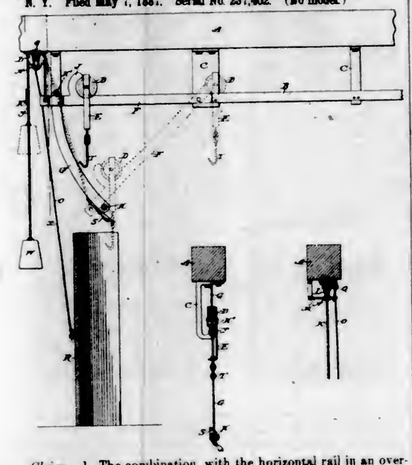
377,043. BOTTLE-STOPPER. FREDERICK P. MORSOUR, Bennington, Vt., assignor to Henry W. Putnam, same place. Filed Dec. 1, 1887. Serial No. 256,603. (No model.)



Claim.—1. In a bottle-stopper, the combination of the bail B, having bend or enlargement *e*, stopper E, having recess *g* for the reception of the bend or enlargement *e*, and a cap, F, for holding the stopper on the bail and permitting its rotation thereon, substantially as described.

2. In a bottle-stopper, the combination of the bail B, having bend or enlargement *e*, stopper E, having recess *g*, and cap F, having cavity *h*, over the recess *g*, said cap being secured on the stopper, substantially as described.

377,044. OVERHEAD TRACK. HENRY G. MURRELL, New York, N. Y. Filed May 7, 1887. Serial No. 237,402. (No model.)



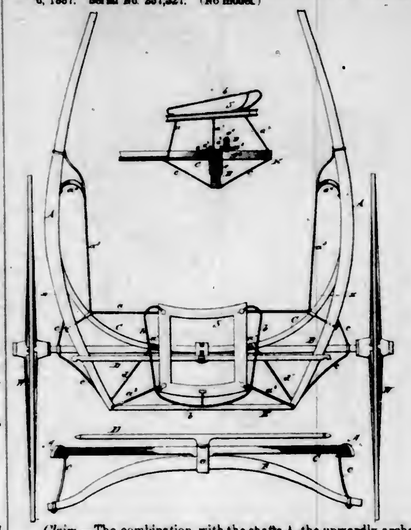
Claim.—1. The combination, with the horizontal rail in an overhead railway and with a terminal drop-rail hinged to swing in a vertical plane as an extension of the horizontal rail, of a fixed vertical bar guiding and steadying the movements of the drop-rail, substantially in the manner and for the purpose herein set forth.

2. The combination, with the horizontal rail in an overhead railway, of a drop-rail hinged to swing in a vertical plane as an extension of the horizontal rail, a fixed vertical bar guiding the play of the drop-rail, and a weight attached by a cord to the free end of the drop-rail and operating to counterbalance and elevate the end of the rail automatically to its horizontal position, substantially in the manner and for the purpose herein set forth.

3. The combination, with the horizontal rail in an overhead railway, of a drop-rail hinged to swing in a vertical plane as an extension of the horizontal rail, a cord attached to its free end, a pulley over which the cord is carried, a weight attached to the cord to counterbalance the free end of the rail and automatically elevate it to its horizontal position, and a brake controlling the cord and weight, substantially in the manner and for the purpose herein set forth.

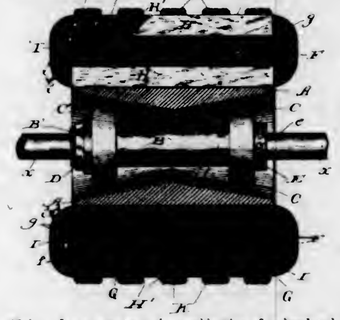
4. The combination, in an overhead single-rail railway, with its horizontal rail, a conveying-wheel running thereon, a terminal drop-rail hinged at one end to form an extension of the horizontal rail, a weight counterbalancing the free end of said terminal drop-rail, and a vertical bar guiding its play, of a catch at the lower end of the guide-bar to engage the drop-rail and hold it, substantially in the manner and for the purpose herein set forth.

377,045. SULKY. MOSES MCCORMICK, Calverton, Md. Filed May 6, 1887. Serial No. 237,327. (No model.)



Claim.—The combination, with the shafts A, the upwardly-arched axle B, and the circle-bar C, having its forward ends attached to the shafts and its rear middle portion resting above the axle, of the U-shaped clip *e*, embracing both the axle and circle-bar and having its upper ends screw-threaded, the rearwardly-extending plate *e'*, forming a yoke-piece for the clip and also a bearing-plate for the whiffletree, and the whiffletree D, mounted upon the rear end of the yoke-plate and connected to it by a pivot-bolt, substantially as shown and described.

377,046. ARMATURE FOR DYNAMO-ELECTRIC MACHINES. EDWARD J. O'BRIEN, Elgin, Ill., assignor, by direct and mesne assignments, to the National Electric Company, same place. Filed Mar. 3, 1887. Serial No. 229,595. (No model.)

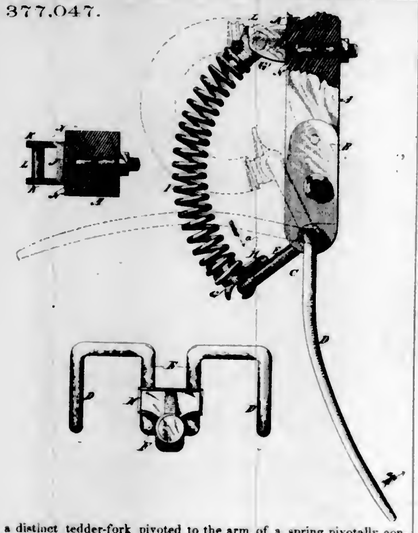


Claim.—In an armature, the combination of an insulated cylinder formed of wire wound upon a sheet-metal cylinder having upturned flanges, bobbins suitably wound on said insulated cylinder, and slats placed between said bobbins upon both the inner and outer surface of said insulated cylinder, with a wooden cylinder having a cone-shaped inner surface, and a hollow shaft having disks thereon fitting said cone-shaped inner surface of the wooden cylinder, one of said disks being secured to said hollow shaft and the other movable thereon and held adjustably in position by a nut placed on said hollow shaft, substantially as described.

377,047. TEDDER-FORK. CHARLES H. PAXSON, Springfield, Ohio, assignor to the Thomas Manufacturing Company, same place. Filed Nov. 23, 1885. Serial No. 183,677. (No model.)

Claim.—1. In a tedder, the combination, with a tedder-arm and

377,047.



a distinct tedder-fork pivoted to the arm, of a spring pivotally connected to said fork at one end and pivoted at the other end to the said arm, of greater length than the greatest distance between its connection with the arm and its connection with the fork, and arranged in such a manner that the leverage of the spring gradually diminishes as the fork turns in its mountings and moves its point away from the ground.

2. In a tedder, the combination, with the tedder-arm and a fork pivotally connected thereto, of a spiral spring pivotally connected to the fork at one end and pivoted at its other end to the said arm, of greater length than the greatest distance between its connection with the fork and the arm, and arranged in such a manner that the leverage of the spring gradually diminishes as the fork turns in its mountings and moves its point away from the ground.

3. In a tedder, the combination, with the tedder-arm, of a fork pivoted thereto and having a bend projecting substantially at a right angle from the upper end thereof, and a spring pivotally connected with the said tedder-arm and pivotally connected with the bend of the fork and of greater length than the greatest distance between said bend and the point of connection of the spring with the arm.

4. In a tedder, the combination, with the fork having a bend projecting substantially at a right angle from the upper end thereof, of a spring pivotally connected with the said bend and having a pivotal connection with the fork-arm, and a stop or projection extending from the spring adapted to bear upon said bend as the spring straightens, the spring being of greater length than the greatest distance between the said bend and the pivotal connection of the spring with the arm.

5. In a tedder, the combination, with the fork-arm, of a fork pivoted thereto and having a U-shaped bend projecting substantially at right angles therefrom, and a spiral spring having connecting-hooks which respectively pivotally engage with the said bend and with the fork-arm.

6. In a tedder, the combination, with the pivoted fork having a U-shaped bend projecting at an angle therefrom, of a coupling-iron secured to the tedder-fork arm above the fork, and a spiral spring having hooks which engage, respectively, the said bend in the fork and the coupling-iron, one of said hooks having a stop or projection adapted to bear upon said bend as the spring straightens.

7. In a tedder, the combination, with a pivoted fork having a U-shaped bend extending at a right angle therefrom, of a coupling-iron secured to the tedder-fork arm above the fork, and a spiral spring having hooks which engage, respectively, with said bend and the coupling-iron, the spring being of greater length than the greatest distance between the bend and the coupling-iron, and one of said hooks having a stop or projection adapted to bear upon said bend as the spring straightens.

377,048. SPOUT FOR SHEET-METAL VESSELS. DANIEL PRENDERGAST, New York, assignor to Henry Wellington, Brooklyn, N. Y. Filed June 9, 1887. Serial No. 240,700. (No model.)

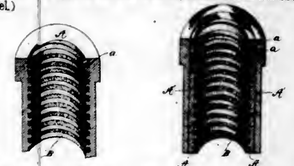


Claim.—1. In a spout for sheet-metal vessels, the combination, with the two side pieces, of the central piece united therewith and provided with the stiffening or strengthening rib extending from top to bottom along its front, substantially as shown and described.

2. The herein-described spout for sheet-metal vessels, composed of three pieces united by seams or joints projecting and extending from top to bottom for the purpose of stiffening the sides of the spout, substantially as explained.

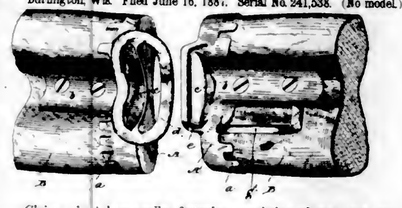
3. In combination with the body of the vessel, the spout made of three pieces united as explained, and having the two side seams or ribs and the central front rib, substantially as shown and described.

377,049. JOURNAL-BEARING. MANLON RANDOLPH, New York, N. Y. Original application filed Nov. 17, 1886, Serial No. 219,141. Divided and this application filed Dec. 15, 1886. Serial No. 221,625. (No model.)



Claim.—An anti-friction journal or machine-bearing formed of vulcanized fiber, and lubricating material composed of plumbago and an adhesive cement, placed in grooves or pockets formed in the said vulcanized fiber, substantially as described.

377,050. HORSE-COLLAR FASTENING. ALBERT F. RANSOM, Burlington, Wis. Filed June 16, 1887. Serial No. 241,538. (No model.)



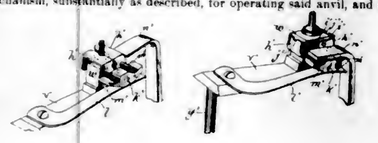
Claim.—1. A horse-collar fastening consisting of two caps provided with dentated edges *a* and with lugs or arms *b*, one of the said caps having a loop, *d*, and the other a loop or staple, *e*, substantially as set forth.

2. A horse-collar fastening consisting of two caps provided with interlocking loops *d* and *e*, the said caps being beveled or cut away, as at *h*, on their adjacent inner edges to prevent galling, substantially as set forth.

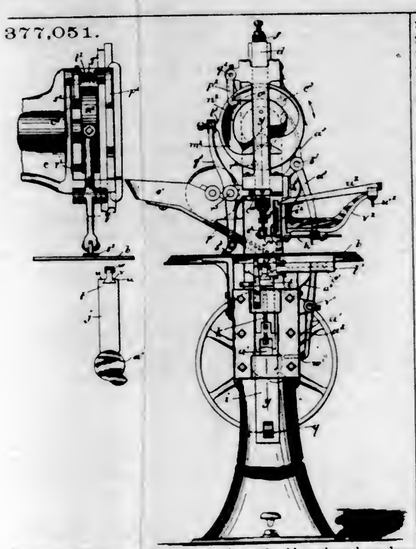
3. A horse-collar fastening consisting of the caps A A', provided with suitable interlocking loops, *d* and *e*, the said caps being also provided with the openings *c*, substantially as set forth.

377,051. RIVETING-MACHINE. JOHN L. SAXE, Waterbury, Conn., and NORMAN M. SEELYE, Cambridge, and FREDERICK W. COY, Boston, Mass.; said Seelye and Coy assignors to said Saxe. Filed Jan. 3, 1887. Serial No. 223,309. (No model.)

Claim.—1. In a riveting-machine, the combination of a rivet-raceway receiving inverted rivets under the work, a laterally and vertically movable anvil located below the plane of the work, adapted to receive the rivets from the raceway and to insert them in the work, mechanism, substantially as described, for operating said anvil, and a



377,051.



heading device arranged above the plane of said work and mechanism for operating it, substantially as described.

2. In a riveting-machine, substantially as herein described, the combination of a raceway and feeding mechanism co-operating therewith adapted to feed inverted rivets under the work, a rivet-inserting anvil located and operating below the plane occupied by the work to be riveted and which receives the rivets from said raceway, mechanism to operate said anvil, burr feeding and holding mechanism whereby burrs are held to receive the rivets, and a heading device and mechanism to operate it, said feeding and holding mechanism and heading device being located and operating above the plane occupied by said work, as set forth.

3. In a riveting-machine, substantially as herein described, the combination of a raceway and feeding mechanism co-operating therewith adapted to feed inverted rivets under the work, a punch or awl adapted to enter the work from below, a rivet-inserting device or anvil which is interchangeable in position with the awl, independent mechanism, substantially as described, for successively operating the awl and anvil, and an upsetting device or hammer located above the plane of the work and mechanism to operate it, whereby the upper ends of the inverted rivets are upset, as set forth.

4. In a riveting-machine, the combination of a vertically-movable anvil, a rivet-conducting raceway, means, substantially as described, for feeding the rivets positively and intermittingly through the raceway to the anvil, a burr-holding reservoir above the rivet-raceway, means for feeding the burrs from said reservoir to the upper surface of the work, means, substantially as described, to raise the anvil and insert the rivet thereon through the work and into the burr held thereon, and an upsetting-hammer and means to operate it, whereby the ends of the rivet-shanks are upset at the upper surface of the work, as set forth.

5. In a riveting-machine, the combination of a work table or plate, an anvil vertically movable in an opening in said plate, a rivet-conducting raceway extending substantially horizontally under said table, means, substantially as described, for feeding the rivets intermittingly forward through said raceway to the anvil, a burr-holding reservoir above the work-plate, means for feeding burrs singly from said reservoir to the upper surface of the work, means, substantially as described, for raising the anvil and causing it to insert a rivet upwardly through the work and into the burr held on its upper surface, and an upsetting-hammer and means to operate it, whereby the ends of the rivet-shanks are upset at the upper surface of the work, as set forth.

6. In a riveting-machine, substantially as herein described, the combination of an awl or punch and means to reciprocate it vertically, a vertically and horizontally movable anvil, said awl and anvil being located below the plane of the work, means for reciprocating said anvil horizontally and vertically, a rivet-conducting raceway, means, substantially as described, for feeding the rivets intermittingly forward to the anvil when the latter is depressed and moved back from its rivet-setting position, an elevated burr-holding receptacle, and means for feeding the burrs from said reservoir to the upper surface of the work at the point where the rivets are inserted by the anvil, and an upsetting-hammer above the plane of the work and means to operate it, whereby the ends of the rivets are upset at the upper surface of the work, as set forth.

7. In a riveting-machine, substantially as herein described, the combination of the burr feeding and holding devices, the upsetting-hammer above the plane of the work and its operating mechanism, the rivet-raceway formed to guide the inverted rivets, the feeding devices whereby the rivets are intermittingly fed through said raceway, the anvil below the plane of the work having the rivet-holding jaws, and mechanism, substantially as described, for moving said anvil to alternately hold it in position to receive a rivet from the raceway and insert said rivet in the work, as set forth.

8. The combination of the burr feeding and holding devices, the upsetting-hammer above the plane of the work and its operating mechanism, the rivet-raceway formed to guide the inverted rivets, the feeding devices whereby the rivets are intermittingly fed through said raceway, the anvil below the plane of the work having the rivet-holding jaws, the awl or punch and mechanism to reciprocate it vertically, and mechanism, substantially as described, for moving said anvil horizontally to first hold it in position to receive a rivet from the raceway, and then over the awl or punch, and mechanism for vertically reciprocating the anvil when it is in the last-named position, and thereby cause it to insert the rivet into the work, as set forth.

9. In a riveting-machine, the combination of a rivet-receptacle, a raceway leading therefrom to rivet-inserting devices and having a portion inclined and a portion horizontal, and means, substantially as described, for positively moving through the horizontal or nearly horizontal part of the raceway the rivets that gravitate through the inclined part, as set forth.

10. In a riveting-machine, the combination of a rivet-receptacle, a raceway leading therefrom to a rivet-inserting anvil and having a portion inclined and a portion horizontal, means, substantially as described, for positively and intermittingly feeding the rivets through the horizontal portion of the raceway, and a transferring slide and mechanism to reciprocate it crosswise of the raceway, whereby the rivets are transferred from the raceway to the anvil, as set forth.

11. The combination of the rivet-raceway formed to hold the rivets inverted, and the rivet-inclining spring i^2, whereby the heads of the rivets in the raceway are caused to overlap.

12. In a riveting-machine, the combination, with the upsetting device and the anvil arranged, respectively, above and below the plane of the work, and operating devices therefor, of the rivet-receptacle, the raceway leading therefrom formed to receive the rivets in inverted position, and the agitator composed of the continuously-rotated shaft and the pins set therein, arranged close to the entrance of the raceway to engage the shanks of the rivets and turn them upon their heads, so as to cause the rivets to enter the raceway properly positioned, as set forth.

13. The combination of the anvil, the rivet-raceway, mechanism, substantially as described, for positively and intermittingly feeding rivets through the raceway to the anvil, retaining devices, substantially as described, for holding said rivets on the anvil, means for moving the anvil, as described, and a fixed stop which acts on the rivet-retaining devices during the upward movement of the anvil and releases the rivet, as set forth.

14. The combination of the anvil, the mechanism for supplying rivets thereto, the jaws *h' h'*, pivoted to the anvil and normally held together by yielding pressure, means for raising and depressing the anvil, and an arm or stop which opens the jaws when the anvil is raised.

15. The combination of the anvil having the pivoted jaws *h' h'*, the spring-pressed block *k'*, bearing against pins *m' m'* on said jaws and normally closing the latter over the anvil, and the arm *n'*, which arrests the block *k'* and opens the jaws, as set forth.

16. In a riveting-machine such as described, the combination of a work plate or table, the reciprocating anvil, means for supplying inverted rivets thereto, reciprocating punch or awl, a vertically-reciprocating burr-holder, a burr-reservoir, and means, substantially as described, for moving the burrs from the reservoir to the burr-holder, as set forth.

17. The combination of the slide c^3, means for reciprocating it vertically, the yielding burr-holding sleeve c^5, carried by the slide c^3 and provided with spring-fingers f^2 f^2, and means, substantially as described, for inserting burrs between said fingers when the sleeve c^5 is raised, said sleeve bearing with a yielding pressure on the work and holding the burr against the same when the slide c^3 is depressed, as set forth.

18. The combination, with the anvil, its operating mechanism, and the rivet-supplying mechanism, of the hammer-carrying slide *d*, a spring to depress it, the slide c^3, having the offset tubular throat which receives the hammer, and the yielding burr-holding sleeve on

said throat, means for vertically reciprocating the slide, and thereby causing it to first press the burr-holding sleeve against the work and then raise said sleeve with the hammer, means, substantially as described, for inserting burrs in the burr-holding throat when the latter is raised, a latch which automatically engages the hammer-slide when the latter is raised, and means, substantially as described, for releasing the hammer-slide when the burr-holding sleeve is depressed upon the work and the anvil raised, as set forth.

19. The combination of the burr-reservoir, the reciprocating slide which moves the burrs from the reservoir, the vertically-reciprocating burr-holding sleeve, and the spring-presser c^4 between said reservoir and sleeve, whereby the burrs are held down upon the slide during their passage from the reservoir to the sleeve, as set forth.

20. In a riveting-machine such as described, the combination of the rivet-supplying mechanism, the burr-supplying mechanism, the upsetting device, a work plate or table, and a work-feeding device, whereby the work is moved when desirable.

21. In a riveting-machine such as described, the combination of a rivet receptacle and raceway extending therefrom, and devices for feeding rivets in said raceway, a vertically and laterally movable anvil and mechanism for moving it, a device, substantially as described, for holding the rivets on the anvil, and a heading device opposite the anvil, whereby the anvil is adapted to receive a rivet from the raceway, move it to a position in line with the hole in the work, and by a vertical movement thrust it through the same in position to be operated upon by the heading device, substantially as described.

22. In a riveting-machine, substantially as herein described, the combination, with the rivet-receiving receptacle and feeding mechanism adapted to feed rivets to the anvil, an anvil to which the rivets are fed, devices for holding them in position thereon, and mechanism, substantially as described, for moving said anvil so as to bring the rivet in line with the hole in the work and moving it to thrust the rivet through the same, of a burr-holding receptacle, feeding devices for placing burrs in position on one side of the work opposite the rivet, and a heading device arranged to upset the end of the rivet, the head resting all the time in contact with the anvil, substantially as described.

23. In a riveting-machine, the combination, with the rivet-receiving receptacle and feeding mechanism adapted to feed rivets to the anvil, an anvil to which the rivets are fed, devices for holding them in position upon the anvil, and mechanism, substantially as described, for moving the said anvil so as to bring the rivet in line with the hole in the work and moving it to thrust the rivet through the same, of a punch for cutting the hole in the work, operating on the side from which the rivet is inserted, and a heading device located on the side of the work opposite the anvil for co-operating with the anvil to head the rivet, substantially as described.

24. In a riveting-machine, substantially as herein described, the combination, with the work-table having an aperture therein, a punch and a rivet holding anvil located on one side the table, mechanism, substantially as described, for alternately placing the punch and anvil in line with said aperture, and rivet-feeding devices for placing rivets upon the anvil when removed from the aperture, of a heading device located on the side of the table opposite the punch and anvil, and mechanism, substantially as described, for operating it, as set forth.

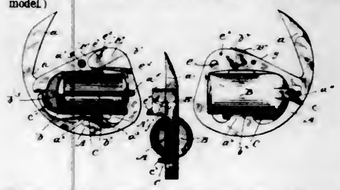
25. In a riveting-machine, substantially as herein described, the combination of a work-support, a punch or awl arranged to enter the work from one side, burr-feeding devices, substantially as described, whereby burrs are placed in position on the opposite side of the work from the awl, so that each burr will be centered by the movement of the awl, a rivet-inserting anvil interchangeable in position with the awl, independent mechanisms, substantially as described, whereby the awl and anvil are successively operated, feeding device whereby rivets are supplied to the anvil, and an upsetting-hammer located opposite the anvil, and mechanism to operate said hammer, whereby the rivets are upset on the anvil.

26. In a riveting-machine, the combination of a work-support, a punch or awl arranged to enter the work on said support from below, burr-feeding devices, substantially as described, whereby burrs are placed upon the upper surface of the work over the awl, so that each burr will be centered by the upward movement of the awl, a rivet-inserting device or anvil which is interchangeable in position with the awl, independent mechanism, substantially as described, whereby the awl and anvil are successively operated, feeding devices whereby inverted rivets are supplied to the anvil, and an upsetting-hammer located above the plane of the work, and mechanism to operate said hammer, whereby the upper ends of the inverted rivets are upset.

27. In a riveting-machine, substantially as herein described, the combination of a raceway and feeding mechanism co-operating therewith adapted to feed inverted rivets under the work, a punch or awl adapted to enter the work from below, burr-feeding devices, substantially as described, whereby burrs are placed upon the upper surface of the work over the awl, so that each burr will be centered by the upward movement of the awl, a rivet-inserting device or anvil which is interchangeable in position with the awl, independent mechanisms, substantially as described, for successively operating the awl and anvil, and an upsetting device or hammer located above the plane of the work, and mechanism to operate it, whereby the upper ends of the inverted rivets are upset, as set forth.

28. The combination, with a work-support, of a device for holding the burrs in contact with the work, a punch for penetrating the work and centering the burr, and connections between the burr-holder and punch, whereby the punch will pass through the work while the burr is in contact therewith, and means for introducing the rivets through the punched holes and burrs, and a heading device for heading them, substantially as described.

377,052. SEWING-MACHINE SHUTTLE. DRIKUS SCHLER and MICHAEL KUEHN, St. Louis, Mo., assignors to The Singer Manufacturing Company of New Jersey. Filed Feb. 9, 1887. Serial No. 227,022. (No model.)



Claim.—1. The combination, with the shuttle-shell A, having the pivot-studs a', of the bobbin-case B, having oppositely-placed slots for the reception of said studs, and a spring-latch for retaining the said bobbin-case in the said shell.

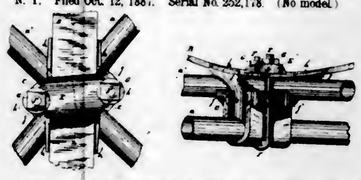
2. The combination, with the shuttle-shell A, having the pivot-studs a' and the projection a^3, recessed to form a shoulder, a^4, of the bobbin-case B, having slots on its opposite sides, and also provided with the pin b' and the shoulder b^4, and the spring-latch C, arranged to engage the said pin.

3. The combination, with the shuttle-shell provided with the tension-block E, having the lip e^3, of the main tension-spring bearing against the inner face of the said lip, the regulating tension-spring, and the adjusting-screw impinging against the latter.

4. The combination, with the shuttle-shell and the tension-block E, secured thereto and having the lip e^3, provided with the open thread-eye e^5, of the tension-spring F, bearing against the inner face of the said lip and provided with the inclined flange or guard f and the open thread-eye f'.

5. The combination, with the shuttle-shell provided with the tension-block E, having the flange e^4, of the tension-spring provided with the inclined flange or guard f, and the bobbin-case having the inclined lip or projection e.

377,053. SPRING-TOOTH HARROW. LESTER D. SWART, Auburn, N. Y. Filed Oct. 12, 1887. Serial No. 252,178. (No model.)



Claim.—1. The combination, in a spring-tooth harrow, of a frame-grip adapted to admit the lower frame-bar, a spring-seat adapted to enter the said grip and having upwardly-branching spring-supports, a detachable cross-tie, the spring-tooth, and hollow or tubular frame-bars, the said spring and bars passing at their intersections between the said grip and the said tie, substantially as and for the purposes specified.

2. The combination, in a spring-tooth harrow, of the U-shaped frame-grip C, the spring seat or grip D, entering the grip C and having upwardly-branching arms or spring-supports f f, arranged diagonally with relation to the grip C, the spring-tooth B, seated on the said arms, the cross-tie E, a frame-bar passing through the grip C, a frame-bar extending across the said grips, one or more grip-bolts, and nuts on the said bolts, substantially as and for the purposes specified.

3. The combination, in a spring-tooth harrow, of the U-shaped frame-grip C, having thereon the shoulders j j, the spring seat or grip D, having upwardly-branching or spring supports f f, arranged diagonally to its lower part or base, the said arms having thereon the ears or lugs h h, the spring-tooth B, the cross-tie E, having thereon the depending flanges or lugs i i, the fastening-bolts passing through the

said tie and shoulders, the nuts on the said bolts, and the frame-bars, all arranged together substantially as and for the purposes specified.

4. As an improved article of manufacture, a grip or clamp for spring-tooth harrows, the said grip or clamp consisting of a U-shaped frame-grip, a spring-seat having a base or lower portion adapted to enter the frame-grip, and also having upwardly-extending arms or spring-supports arranged diagonally to the said base, a cross tie, one or more bolts, and fastening-nuts, all adapted, substantially as described, for arrangement together about the frame-bars at their intersection with each other and to receive and clamp the upper end of the spring-tooth.

377,054. FORCE-PUMP. BENJAMIN C. VANDUSEN, Winton Place, Ohio. Filed June 30, 1884. Serial No. 136,479. (No model.)



Claim.—1. In a lift-out and drop valve, the combination of annular portion m, and annular spring p, and devices for holding said spring in position, substantially as set forth.

2. In a drop-valve, the combination of annular portion m, and flanges or projections n n', and annular spring p, and the valve proper, substantially as set forth.

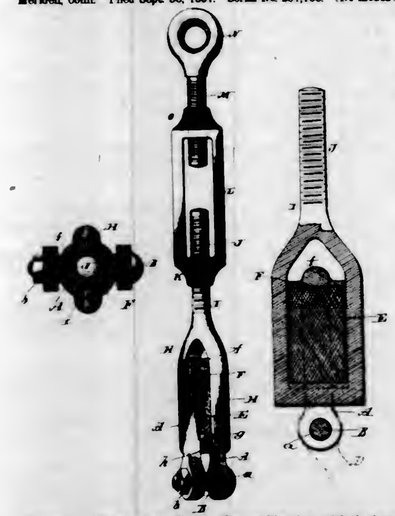
3. A drop-valve having annular portion m, and flanges or projections n n', and annular spring p, located between the said projections, substantially as set forth.

4. In a drop-valve, the combination of annular portion m, and flanges or projections n n', and annular spring p, and valve proper, and legs q, connected to the annular portion, substantially as set forth.

5. In a drop-valve, the combination of annular portion m, and flanges or projections n n', and annular spring p, and valve proper, and leg q, connected to the annular portion, and arch w, substantially as set forth.

6. The combination of tube or cylinder D, bushing having raised valve-seat I, forming an annular sand-chamber, and drop-valve having annular portion m, and flanges or projections n n', and annular spring p, and valve proper, and legs q, connected to the annular portion, all substantially as and for the purposes specified.

377,055. DEVICE FOR SETTING UP RIGGING. FRANK WHEELER, Meriden, Conn. Filed Sept. 30, 1887. Serial No. 251,108. (No model.)

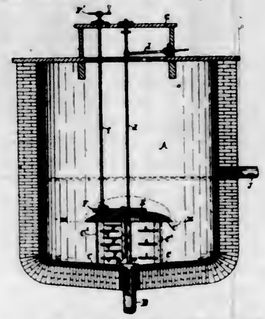


Claim.—1. In a rigging-adjuster, the combination, with the interlocking links, substantially as described, one of which is provided with a screw-threaded shank, and a yielding cushion separating the cross-bars of said links, of a turn-buckle mounted at one end on said screw-threaded shank and a screw-threaded rod engaging the opposite end of said turn-buckle, substantially as set forth.

2. In a rigging-adjuster, the combination, with the interlocking links, each carrying a circular plate, one of said links having a screw-threaded shank, and a yielding cushion interposed between the plates of the links, of a turn-buckle attached at one end to said screw-threaded shank and a screw-threaded rod engaging the opposite end of the turn-buckle, substantially as set forth.

3. The combination, with the interlocking links, one of which is loop-shaped and provided with a screw-threaded shank and the other open at one end and provided with a removable bolt, and a yielding cushion separating the cross-bars of said links, of a turn-buckle mounted at one end upon said screw-threaded shank and a screw-threaded rod engaging the other end of the turn-buckle, substantially as set forth.

377,056. CATCH-BASIN. JOHN WIEDEMANN, Cincinnati, Ohio, assignor to August X. Schwebel, same place. Filed Nov. 9, 1887. Serial No. 254,368. (No model.)



Claim.—1. In a catch-basin, the combination of the centrally-located cage, composed of top, bottom, and connecting pillars, having inwardly-projecting cutters all cast in one piece, and the top of said cage perforated to furnish a bushed wheel, the wheel carrying cutters to coact with said stationary cutters, said wheel fitted in the top opening of said cage, substantially as shown and described.

2. The combination, as specified, of the basin A, the centrally-located cage, having bottom C, top C', the vertical pillars C², having cutters c, the hubbed cog-wheel E, fitted to revolve in the top, and carrying shafts H, having radially-projecting cutters h, the pinion F, shaft f, and hand-wheel F', for revolving said cog and cutters, substantially as shown and described.

3. The combination, substantially as specified, of the basin, the centrally-located cage with cutter-blades projecting inwardly, a valved opening at the bottom, and a perforated top, to receive a wheel carrying revolving cutters to coact with the said stationary cutters, the said wheel being centrally perforated for the valve-rod d, the valve D, rod d, and the valve-actuating treadle I, with the pinion F, its shaft, and hand-wheel for revolving the inner cutters, for the purpose set forth.

377,057. STOVE FOR RAILWAY-CARS. CHARLES RASSINI, Newark, N. J. Filed Apr. 2, 1887. Serial No. 233,345. (No model.)

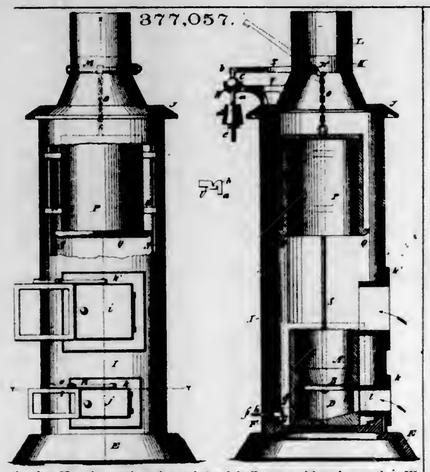
Claim.—1. In a stove, the combination of an open vessel for containing the fire, a hood detachably suspended and adapted to fit over said vessel, a suspension-hook for said hood, a pivoted lever connected to said hook, and a detachable weight suspended from said lever and counterbalancing said hood, substantially as described.

2. In a stove, the combination of an open vessel for containing the fire, a hood detachably suspended and adapted to fit over said vessel, a suspension-hook for said hood, a pivoted lever connected to said hook, and a pendulum-rod and weight thereon, the said rod being pivoted or similarly supported, and having a shoulder or projection engaging the said lever above its point of support, and carrying a weight sufficient to counterbalance said hood below said point of support, substantially as described.

3. The combination of the fire-pot A, shell or casing I, hood P, rock-shaft M, and hook N thereon, the said hood being suspended from said hook N, lever T, having projection U and secured upon said shaft M, and weight d, suspended from said projection U, substantially as described.

4. The combination of the fire-pot A, shell or casing I, hood P, rock-shaft M, and hook N thereon, the said hood being suspended from said hook N, lever T, having projection U and secured upon said shaft M, rod a, having shouldered end b, adapted to engage with pro-

377,057.



jection U and carrying the weight *d*, ball *c* on said rod *a*, socket W, for receiving said ball, and support V for said socket, substantially as described.

5. The combination of the fire-pot A, shell or casing I, hood P, rock-shaft M, hook N thereon, the said hood being suspended from said hook N, lever T, having projection U and secured upon said shaft M, threaded rod *a*, shouldered end *b*, ball *c*, nut *e*, weight *d*, and on said rod socket W for said ball, and support V, substantially as described.

6. The combination of the fire-pot A, base E, of greater surface area than the bottom of said fire-pot therefor, flange F around said base, and hood P, disposed above said fire-pot and having its lower edge constructed to enter the interval between said fire-pot and said flange, substantially as described.

7. The combination of the fire-pot A, base E, of greater surface area than the bottom of said fire-pot therefor, flange F on said base hood P, supported above said fire-pot and having its lower edge constructed to enter the interval between said fire-pot and said flange, flange Q on the lower edge of said hood, and catches *f*, arranged in flange F, substantially as described.

8. The combination of the fire-pot A, base E, of greater surface area than the bottom of said fire-pot therefor, flange F on said base, hood P, supported above said fire-pot and having its lower edge constructed to enter the interval between said fire-pot and said flange, flange Q on the lower edge of said hood, and spring-catches *f*, provided with dogs *g*, having rounded upper edges, arranged in said flange F, substantially as described.

9. The combination of the stove-shell I, door *j* therein, chute *l*, having inner concave edges and hinged to said shell, and link-bars *n o* between said door and said chute, substantially as described.

377,058. **FIRE-ESCAPE.** JOHN BATTEN, Pittsburg, Pa. Filed May 24, 1887. Serial No. 239,215. (No model.)

Claim.—1. The combination, with a balcony, of a flooring constructed of bars separated by thimbles c' c^2, said bars and thimbles united by rods C, substantially as described.

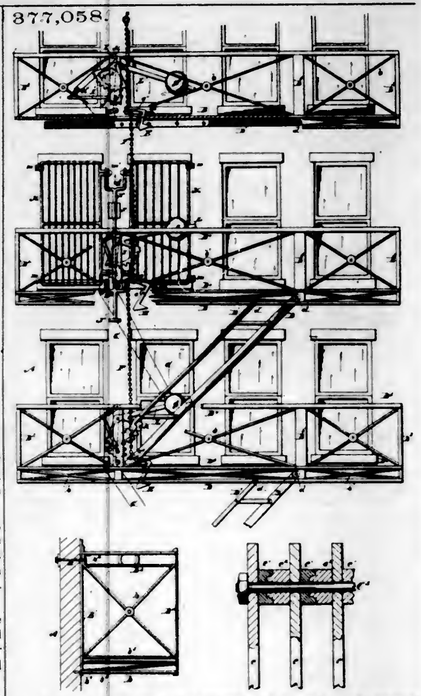
2. The combination, with a balcony, of a ladder pivotally engaged underneath the floor of the balcony, a tilting hook to support the ladder when folded, said hook constructed to automatically engage the ladder when folded, substantially as described.

3. The combination, with a series of balconies, of a series of ladders pivotally connected with said balconies, respectively, said balconies provided with tilting hooks to support the ladders when folded, and a chain or cable connecting said hooks, substantially as and for the purpose described.

4. The combination, with a balcony, of a ladder pivotally engaged therewith at one end, a cable engaged with said ladder and passed over intermediate pulleys, one of said pulleys engaged with a tightening device comprising the bar I, lever I', gear J, and the segmental gear K, having a weighted arm, L, substantially as described.

5. The combination of a pivoted ladder, a lever, I', connected with a rotatable gear, J, having rotatable gear K meshing therewith, said gear K provided with a weighted arm, and a cable engaged with the ladder and passed over intermediate pulleys, one of said pulleys engaged with said arm I', substantially as and in the manner described.

377,058.



6. The combination, with a balcony, of a ladder pivotally engaged therewith, of a counterpoise device consisting of rotatable gears J and K, meshing with each other, the gear J connected with a lever, I', and the gear K with a weighted arm, L, and pulley engaged with the arm I', and the pulley engaged with the balcony, a cable passed over said pulleys and engaged with the ladder, the construction being such that when the ladder descends the weighted arm will be lifted, and vice versa, substantially as described.

7. The combination, with the hinged guards M, having the extensions *m'*, and the pivoted folding ladder D, of the vertically-movable locking-bar N, having fingers n^2, and provided at its lower end with the angular arm N', arranged above the ladder, substantially as described.

8. The combination, with a balcony provided with a folding ladder, of movable window-guards, a movable slide to engage and release said guards, said slide operated automatically by the operation of the ladder, substantially as described.

9. The combination, with movable window-guards, of a device for locking and unlocking said guards, a pivoted ladder arranged to lock the said guards when folded up, substantially as described.

10. The combination, with movable window-guards, of a locking device and a ladder engaged to operate said locking device, substantially as described.

11. The combination, with a folding ladder, of a tilting supporting-hook and electric mechanism whereby an alarm may be sounded on the disengagement of the hook with the ladder, substantially as described.

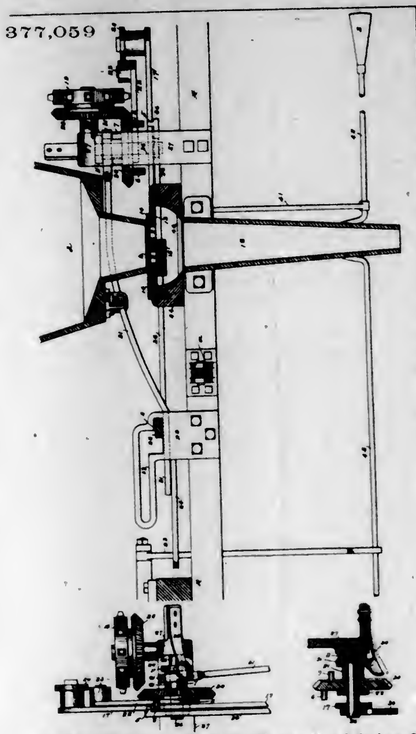
377,059. **CORN-PLANTER.** ALFRED G. BEALE, Dublin, County of Dublin, Ireland, assignor of one-half to William Mackenzie, same place. Filed Jan. 12, 1887. Serial No. 224,098. (No model.)

Claim.—1. The combination, with the dropping mechanism, of the lever 16, bar 17, movable gear 30, having the arm 22, and the lever 31, substantially as described.

2. The combination, with the lever 16, carrying the plates 14 15 and connected to the vibrating rod 39, of the bar 17, the gear 30, having the arm 22, and the gear 29, driven from one of the wheels of the machine, substantially as described.

3. The combination, with the gear 30, having the arm 22 for operating the dropping mechanism, and the studs 6, of the lever 31 and the bar 36, having the flange 5, substantially as described.

377,059



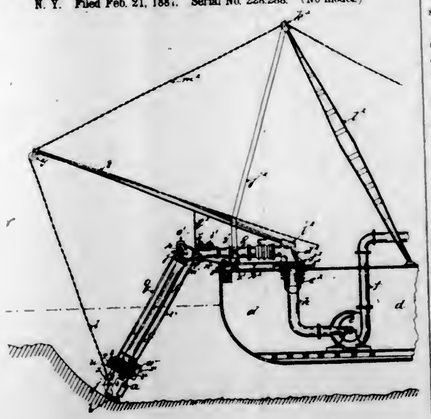
4. The combination, with the movable gear 30 and the lever 31, of the catch 38 and studs 7, substantially as described.

5. The combination, with the levers 32 34, of the lever 31, bar 36, and gear 30, substantially as described.

6. The combination, with the levers 32 34, of the lever 31, bar 36, gear 30, catch 38, and gear 29, substantially as described.

7. In a corn-planter, the combination, with an automatically-operated dropping mechanism, of means for setting the mechanism so that the dropping will take place when the machine has been moved a given distance from any point, substantially as described.

377,060. **DREDGING-MACHINE.** MORRIS F. BRAINARD, Brooklyn, N. Y. Filed Feb. 21, 1887. Serial No. 228,288. (No model.)



Claim.—1. The combination, with a suction-pipe jointed and suspended for swinging vertically fore and aftward of the boat, and having a hood-extension in prolongation of the lower end, of a rotary excavator located under the hood parallel with but lower than the axis of the tube, and adapted to dig and throw the earthy matters laterally to itself into the hood, substantially as described.

2. The combination, with a suction-pipe jointed and suspended for swinging vertically fore and aftward of the boat, and having a hood-extension in prolongation of the lower end, of a pair of rotary cutters located under the hood and parallel with but lower than the axis of the tube, and adapted to dig and throw upward laterally to them a stream between them into the hood, substantially as described.

3. The combination of the suction-pipe having a hood-extension of the lower end, rotary excavators located under the hood and adapted to dig and throw up the earthy matters into the hood, the T on the upper end of the suction-pipe, and the convergent branches *a' b'* of pipe *g*, and trunnion-bearings thereof connected with the T, substantially as described.

4. The combination of the suction-pipe *c*, having the hood-extension of the lower end and a rotary excavator located under the hood, the T-head of the upper end of said pipe, and the branched pipe *g*, having the hollow trunnion-bearings connected with the T, substantially as described.

5. The combination, in a dredging-machine, of rotary excavators with a suction-pipe having a joint, *c*, adapted to swing the excavators vertically fore and aftward of the boat for following up the work, and also having a joint, *g*, adapted to swing said excavators laterally to the work, said excavators being located under a hood-extension of the lower end of the suction-pipe to throw up the earthy matters into the hood above them, substantially as described.

6. The combination of the suction-pipe *c*, having the hood-extension of the lower end and a rotary excavator located under the hood, the T-head of the upper end of said pipe, the branched pipe *g*, having hollow trunnion-bearings connected with the T, the carriage-supporting pipe *g*, and the vertical stationary pipe *h*, jointed to the elbow of pipe *g*, substantially as described.

7. The combination of the suction-pipe *c*, having the hood-extension of the lower end and a rotary excavator located under the hood, the T-head of the upper end of said pipe, the branched pipe *g*, having hollow trunnion-bearings connected with the T, and the flexible sections c^2 of said pipe *g*, substantially as described.

8. The combination of the branched pipe *g*, jointed with the vertical pipe *h*, and having the flexible section and hollow trunnion-bearings, with the pipe *c*, having the T-head at the upper end pivoted on said trunnion-bearings, and also having the hood-extension of the lower end and a rotary excavator located under the hood, substantially as described.

9. The combination of the branched pipe *g*, jointed to the vertical pipe *h*, pivoted on the traversing carriage, and having the flexible section c^2 and the hollow trunnion-bearings, with the pipe *c*, having the T-head at the upper end and the hood-extension and excavator at the lower end, substantially as described.

10. The combination of the branched pipe *g*, pivoted to the vertical stationary pipe *h* on the boat, pipe *c*, pivoted to the branches of pipe *h*, excavators mounted on the lower end of pipe *c*, boom *z*, stepped on the pipe *g*, traversing carriage z' for the suction-pipes, stanchions f^2, supported on the carriage, shears f^3, stayed by the stanchions, and the boom-supporting chain rigged on the shears, substantially as described.

11. The combination of the excavators mounted in supports *l* and *o n*, pendent from the hood and pipe *c*, transmitting-wheel *l*, pivoted on the pipe, driving-pinions *s*, and the driving-shaft *q*, mounted on the upper side of said pipe *c*, substantially as described

12. The combination, with the driving-shaft *q*, mounted on the upper side of pipe *c* and connected with the excavators, of motor-engine mounted on the branched pipe *g*, and the gear-train connecting the motor-engine and said shaft through the wheel j^7, pivoted in the axis of the joint-connection of said pipes *c* and *h*, substantially as described.

13. The combination of the stop-chain q^2 with the pipe *g*, having the flexible section c^2, and being mounted on trunnion-bearings and jointed to the pipe *c*, having the excavators, substantially as described.

14. The combination, with the traversing carriage and the suction-pipe mounted thereon, of the driving-wheel v', having the plain rim v^2, and the toothed rack s', having the plane rail o^3, said wheel being geared with said carriage and with the motor-train mounted on the suction-pipe, and the rack being attached to the deck of the boat, substantially as described.

15. The combination, with the traversing carriage and the flexibly-jointed suction-pipe pivoted on it, of the driving-wheel of the carriage, having one end of its shaft mounted on the vibrating suction-pipe and the other end connected with the carriage by a box adapted to shift as the pipe vibrates, substantially as described.

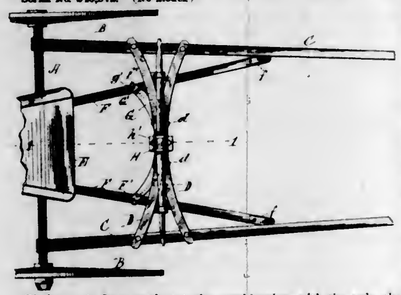
16. The guard-rail b^3, in combination with the traversing car-

riage having the suction-pipe pivoted on it, and provided with the guard-bracket connecting it with said guard-rail, substantially as described.

17. The excavator driving-gearing inclosed in a protecting-case, in combination with apparatus maintaining hydrostatic pressure in the case to exclude sand and other gritty matters, substantially as described.

18. The combination of trunnion-band n^2 and trunnions y with pipes g and c, said pipe g having a flexible section, c^3, allowing it to vibrate, substantially as described.

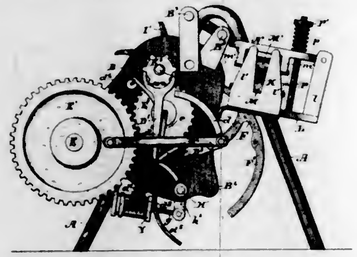
377,061. **ROAD-CART.** REUBEN D. BUCKINGHAM, Chicago, Ill., assignor of one-half to Edward F. Cragin, same place. Filed Aug. 3, 1887. Serial No. 246,072. (No model.)



Claim.—1. In a road-cart, the combination, with the axle, the shafts secured thereto, and a cross-bar or cross-bars connecting the same, of the suspension-spring attached to the cross-bar or cross-bars at its center and curving rearward in each direction from said center, the seat, and the seat-supports connected to the shafts at their front ends by means of a flexible connection and suspended from the free ends of the spring at a point in the rear of the cross-bar or cross-bars, substantially as and for the purposes specified.

2. In a road-cart, the combination, with the axle, of the shafts attached thereto, a cross-bar or cross-bars connecting the shafts, a spring attached at its center to said cross-bar or cross-bars and curving rearward in each direction from its point of attachment, and also curving first downward and then upward on each side of its said point of attachment, the seat, and the seat-supports connected to the shafts at their front ends by a flexible connection and suspended from the free ends of the spring at a point in the rear of the cross-bar or cross-bars, substantially as and for the purposes specified.

377,062. **GRAIN-BINDER.** JOHN E. BUXTON, Owatonna, Minn. Filed Apr. 25, 1885. Serial No. 163,378. (Model.)



Claim.—1. In a grain-binder, the main driving-shaft carrying loosely the rotating packers and a loose pinion in gear with the binder-train, both packers and pinion provided with clutches coupled by a rod, f, the clutch-lever D^5, pivoted to the frame and having a cam-extension, d^3, the thrusting-cam d, the crank-arm H and shaft H', the needle-shaft crank, the rod d', and spring d^2, connecting the thrust-cam and arm H, all combined and operating as described.

2. In a grain-binder, the main driving-shaft having thereon the packers, the crank-arm on the needle-arm shaft, carrying a curved bar or thrusting-cam, the clutch-lever D^5, having offset d^6, the adjustable coupling-rod f, and short clutch-lever g', and the clutches G and G', substantially as described.

3. The combination of the main driving-shaft, the packers, the clutches G and G', the clutch-lever D^5, having offset d^6, the short lever g', and the rod f, connecting offset d^6 and lever g', the thrust lever or cam d, the crank on the needle-arm shaft, and the train of gear-wheels, substantially as shown and described.

4. The combination of the intermittent rotary packers, the oscillating needle, the crank-arm on the needle-shaft, the thrust-cam connected therewith, the curved arm secured to the crank-arm on the needle-arm shaft, the spring on said arm, the clutch-lever D^5, its extension d^3, the gate or shield H^2, their shaft, and the crank-arm H on said shaft, all as shown and described.

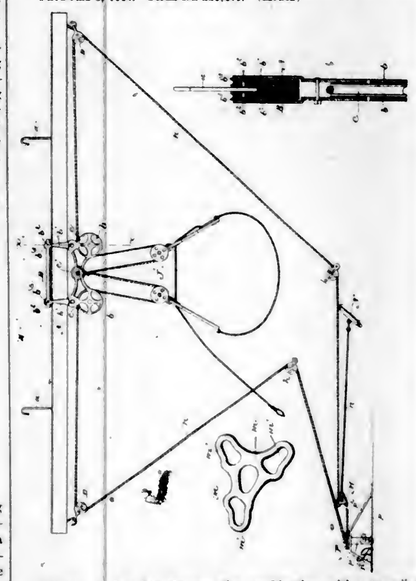
5. In a grain-binder, a tension-supporting bracket having an upper and an under roller, each journaled in half-bearings, the bearings for the lower roller fixed and those for the upper attached to a spring-actuated arm pivoted at one end to said bracket, said arm being parallel to the upper roller, substantially as and for the purposes set forth, whereby said rollers in their normal condition are parallel to each other, and when moved apart the upper is inclined with respect to the lower.

6. The shaft H', carrying the shields H^2 and having near its end the arm h^2 and at its end the crank-arm H, the curved arm d' on the needle-shaft, the springs d^2, the spring connecting-rod y, the tripping-fingers, the lever D^5, having arm d^5, and its clutch-connections with shaft G^2, all combined in the manner described.

7. In a grain-binder, the combination of the following parts, viz: the main driving-shaft, the packers thereon, and the loose pinion engaging with the binder-operating train, the clutches connecting said packers and pinion to their driving-shaft, the clutch-lever D^5, its extension d^3, the needle-arm, and the thrusting-cam d, the shields H^2, their shaft H', having arms h^2 and H, the arm d', provided with the spring d^2, the spring connecting-rod Y, and the three-armed lever operated by the knotter driving-wheel.

8. In combination with a grain-binder, the bracket L, having the bifurcated side plates, l' l', the fixed half-bearings m, the spring-actuated bar N, pivoted at one end to the bracket and having on its under side the half-bearings m', and the rollers M M', the upper one journaled in said bearings m' and lengthwise of the bar N, substantially as and for the purposes set forth.

377,063. **HAY-ELEVATOR.** PETER F. CHAMBARD, Fayette, Ohio. Filed Jan. 5, 1887. Serial No. 223,479. (Model.)

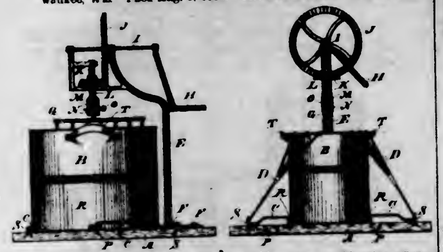


Claim.—1. In a hay-elevator, the combination, with a traveling carriage, the hay grasping or lifting device, and the guide-pulleys, of an elevating-rope connected to the carriage and passing through the guide-pulleys, a coupling-plate connected with the rope, and an anchoring device having a guide-pulley over which the cord passes and with which the coupling-plate comes in contact when the hay-grasping device and the load thereon attain their desired elevation, substantially as described, for the purpose set forth.

2. In a hay-elevator, the combination, with the traveling carriage, of an anchoring device having the guide-pulley, a rope, and a coupling-plate to which the rope is connected, and provided with the concave side adapted to impinge against the convex side of the pulley, substantially as described.

3. The combination of the track, the carriage traveling thereon and having the bolt c' and the pulleys c, the hay-grasping device having the pulleys J' and the endless elevating-rope attached to the bolt c', and passing over the pulleys c and J', and guiding-pulleys for the endless elevating-rope, substantially as described.

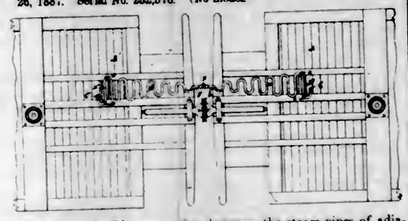
377,064. **DOUGH-MIXING MACHINE.** SARAH M. CLARK, Milwaukee, Wis. Filed Aug. 5, 1887. Serial No. 246,235. (No model.)



Claim.—1. In a dough-mixing machine, the combination of the base A, provided with series of apertures P P, receptacle B, provided with keepers R R, retaining-hooks C, secured at one end to said base A by staples S, and their opposite ends being adapted to be inserted through the keepers R and into one of the several apertures P, and brace-hooks D, secured at their lower ends to said base A by said staples S, and adapted to engage at their upper ends upon the upper edge of said receptacle B, whereby said receptacle is held firmly in place upon said base A, substantially as and for the purpose specified.

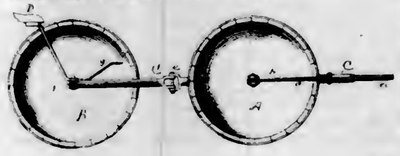
2. In a dough-mixing machine, the combination of the receptacle-supporting base A, provided with series of apertures P P, receptacle B, provided with keepers R R, retaining-hooks C C, secured at one end to said platform or base A, and adapted to be inserted through said keepers R and into one of the several apertures P, gear-supporting bracket E, rigidly affixed at its lower end to said base A, and adapted to support the mixing-fork and fork-rotating mechanism centrally above said receptacle B, mixing-fork G, and the fork-rotating mechanism, all substantially as and for the purpose specified.

377,065. **STEAM-PIPE CONNECTION BETWEEN RAILWAY-CARS.** JULIUS R. DRODZEWSKI, Erie, Pa., assignor of two-thirds to Joseph McCarter and John M. Ormsbee, both of same place. Filed Mar. 26, 1887. Serial No. 232,578. (No model.)

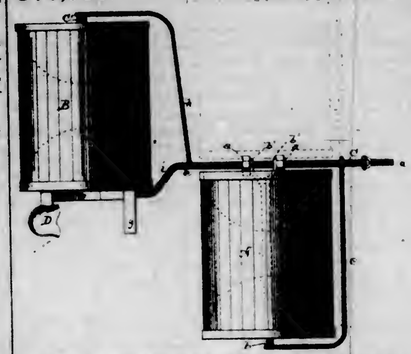


Claim.—A flexible connection between the steam-pipes of adjacent railway-cars, consisting of the coupling D, and the two flat inclined coils B and B', secured to the steam-pipes and to the said coupling, and having their bends gradually increasing in amplitude as they recede from the coupling to distribute the strain upon them in rounded curves, in combination with the hooks rigidly securing the higher ends of the coils underneath the cars, and the flexible chains supporting the lower ends of the coils near the coupling, so that the water may drain off when the pipes are disconnected, substantially as and for the purpose set forth.

377,066. **LAND-ROLLER.** GEORGE C. FOOSE, Dalton, N. Y. Filed June 11, 1887. Serial No. 240,970. (No model.)



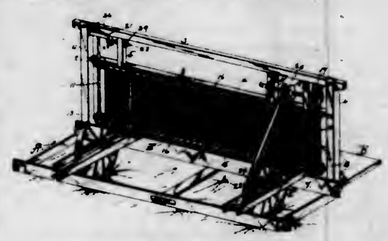
377,066.



Claim.—1. The herein-described land-roller, comprising the rollers A and B, the roller A on a journal, C, whose inner end sets loosely on the beam C, and held in place by nuts or stops d d, arranged as described, and so as to swing over in front of the second roller, B, when desired, substantially as specified.

2. In a land-roller, the beam C, jointed at e, and bent at f, as described, forming the journal C, for the second roller, B, and in combination with rollers A B, all substantially as and for the purpose specified.

377,067. **HARVESTER.** JOHN R. GENNELL, Red Bluff, Cal. Filed Aug. 24, 1886. Serial No. 211,736. (No model.)



Claim.—The combination, with the wheel-axle, carrying a driving-pulley, the evener-frame having journaled therein a horizontal shaft carrying a pulley connected by a belt to the driving-pulley, and a gear-wheel, a vertical shaft, as 10, having a gear to mesh with the gear on the horizontal shaft, and sprocket-wheels, as 12 13, and a vertical shaft, as 11, carrying similar sprocket-wheels, of the evener E, composed of endless chains arranged on said sprocket-wheels, and the slats 16, secured to said chains, and the stationary vertical screen C, arranged along the rear edge of the grain-floor and within the evener, substantially as described.

377,068. **TAIL-PIECE FOR STRINGED INSTRUMENTS.** WILLIAM GERKE, Providence, R. I. Filed Oct. 4, 1887. Serial No. 251,468. (No model.)



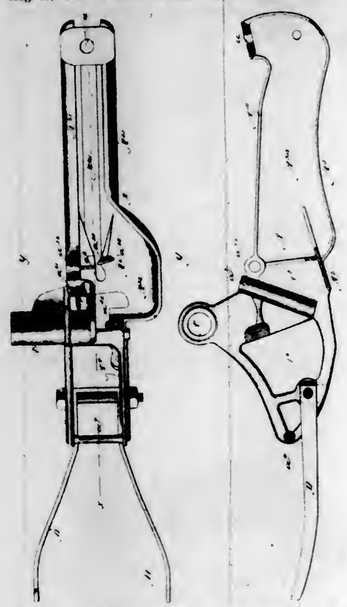
Claim.—1. The tail-piece for stringed instruments, having the round transverse bar G, provided on the outer side with an overhanging slotted lip or flange, H, the strings being adapted to be passed through and around the said bar, with the knots on the ends of the strings engaging under the said lip or flange, substantially as described.

2. In a tail-piece for stringed instruments, the triangular plate C, having the transverse bar G, provided with the slotted overhanging lip or flange H, the post D on the under side of the plate C at the apex of the angle, and the rod A, adapted to be passed through a

suitable portion of the instrument and pivoted to the post D, as set forth.

3. In a tail-piece for stringed instruments, the triangular plate C, having the transverse bar G rounded in section and provided with the overhanging lip or flange H, having a series of transverse slots, I, therein to receive the strings, the inner ends of the said slots being rounded to correspond with the section of the bar G, substantially as and for the purpose specified.

377,069. **GRAIN-BINDER.** PAUL HARSON, St. Paul, Minn. Filed Aug. 18, 1886. Serial No. 174,275. (No model.)



Claim.—1. In a cord-knotter, the frame which supports the knot-tying mechanism, formed integrally with the shell or pocket A^{32} to shield said mechanism.

2. In a cord-knotter, the shell or pocket A^{32}, formed integrally with the breast-plate.

3. In a cord-knotter, the knotter-frame, breast-plate, and pocket A^{32}, all formed integrally.

4. In combination with the knotter-frame and breast-plate, a bundle-stripper pivoted to the frame and depending from its pivot in advance of the bundle in the direction of discharge, and adapted to be folded upward by the discharging movement of the bundle, the frame being provided with a stop to limit such upward folding when the said stripper extends substantially in the direction and as a continuation of the breast-plate, substantially as and for the purpose set forth.

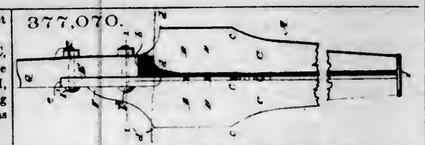
5. In a cord-knotter, the frame and breast-plate formed integrally and having the cavity A^{32} for the needle's path, and having the cord-deflecting spur a^6 extended within said cavity in a plane transverse to the path of the needle, to form a strengthening-rib for the shell inclosing said cavity, substantially as set forth.

377,070. **POST-ANCHOR.** FRANK HAY, Brooklyn, Mich. Filed May 19, 1887. Serial No. 238,763. (No model.)

Claim.—The herein-described post-anchor, consisting of the disk-shaped base-piece I and the four equidistant similar wings C, having the lower edges flush with the edge of said base-piece, and inclining upward and outward at equal angles, said anchor being provided with

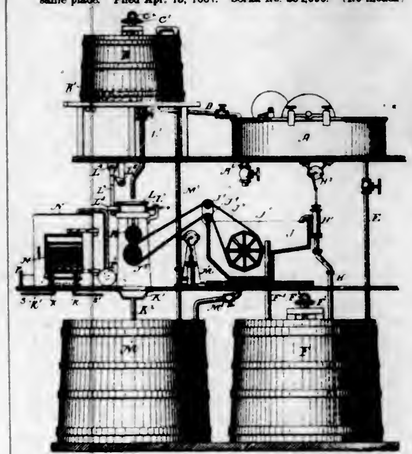


377,070.



the straight edge *d*, the plate E, having the straight edge *e*, and the flange F, re-enforcing said plate, substantially as specified.

377,071. **MACHINE FOR MAKING PAPER LEATHER-BOARD.** CORNELIUS E. HAYNES, Boston, Mass., assignor to Amos L. Wood, trustee, same place. Filed Apr. 13, 1887. Serial No. 234,696. (No model.)



Claim.—1. In a machine for making paper leather board, &c., the compounding-tank B, having within it a steam-heating coil, B', and stirrers C, in combination with the eduction-pipe D, and beating-engine A, substantially as described, and for the purpose set forth.

2. In a machine for making paper leather-board, &c., the compounding-tank B, having within it a steam-heating coil, B', and stirrers C, in combination with the eduction-pipe D', vibrating strainer L, and collecting-roll K, all operating together substantially as described, and for the purpose set forth.

377,072. **COMPOUND FOR MAKING PAPER LEATHER-BOARD, &c.** CORNELIUS E. HAYNES, Boston, Mass., assignor to Amos L. Wood, trustee, same place. Filed Apr. 13, 1887. Serial No. 234,697. (No specimens.)

Claim.—The herein-described composition of matter to be used for making paper leather-board, &c., consisting of water, silicate of soda, rosin, alum, crude potassa, fish-glue, pulp, and coloring-matter, in the proportions and manner specified.

377,073. **PROTECTING DEVICE FOR ELECTRICAL APPARATUS.** ANGUS S. HIBBARD, New York, N. Y., assignor to the American Bell Telephone Company, Boston, Mass. Filed May 18, 1887. Serial No. 238,577. (No model.)



Claim.—1. In a fusible protector for electrical circuits and apparatus, the combination of a strip of non-inflammable insulating material, and a strip of foil or other narrow and thin coating of metal placed thereon and rolled up helically therewith, the two ends of the said metal strip being provided with attachments, whereby it may be included in an electrical circuit.

2. A protector for electrical circuits and apparatus consisting of a thin narrow strip of metal in helical form, the successive convolutions thereof being separated by insulating material, and means, as

indicated, for including the two ends of the strip in an electrical circuit, substantially as described.

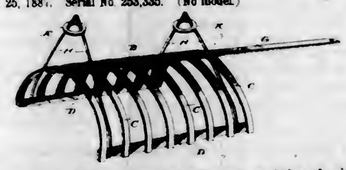
3. The combination, in an electrical circuit and apparatus protector, of a metallic post connected with or constituting a binding-screw or circuit-terminal, a compound roll consisting of a strip of metal foil and a strip of non-inflammable insulating material placed side by side and wound helically together upon said post, the metal strip being the longest, so that one end of it may be in contact with said post and so that the other may be extended quite round the complete roll thus formed, and a clamping ring or plate to hold or press against the external conducting-surface, provided with a jam-screw to maintain such pressure, and the said clamp being connected with the complementary circuit-terminal, substantially as specified.

4. The combination, in an electrical circuit and apparatus protector, of a hollow roll formed, as described, of a thin and narrow metal strip stretched upon a non-conducting and non-inflammable strip, the ends of said metal strip extending over the ends of the said non-conducting strip, so as to form homogeneous internal and external surfaces for said hollow roll, a metal screw-post serving as a circuit-terminal and passing through the center of the hollow roll in contact with the inner conducting-surface thereof, and a clamping-ring surrounding the said hollow roll when mounted on the metal post and making contact with the external conducting-surface thereof, the said ring being provided with a jam-screw, and a screw circuit-terminal, whereby the condenser-like roll may be held in place upon the metal post, and whereby electrical continuity may be maintained between the said post and the clamping-ring through the metal strip, substantially as specified herein.

5. The combination, in an electrical-circuit protector of the character hereinbefore described, of a non-conducting base-board, a metal post mounted thereon and forming a screw-terminal, a strip of metal mounted upon a shorter strip of asbestus, or like material, and rolled around said post, so that one end of said metal strip is in contact with said posts and so that the other end forms an external conducting-coating for the complete roll, a metal clamping-ring surrounding the compound rolled strip, a binding-screw terminal attached thereto, and a jam-screw therefor to hold the rolled strip in contact with the central post and to maintain the external layer of said strip in contact with the said ring and binding-screw, substantially as described.

6. The combination, with a telegraphic or telephonic line circuit and apparatus included therein, of an appliance for protecting said apparatus from the destructive effects of abnormally-strong electrical discharges or currents, said protecting appliance consisting of a strip of thin metal foil placed upon a shorter strip of non-conducting and non-inflammable material and rolled up therewith upon a metal post, forming a circuit-terminal, so that the inner end of said foil extending over the non-conducting strip may make contact with said metal post, the outer end of said foil being caused to completely surround the roll, and a metal clamping-ring and jam-screw therefor carrying a second circuit-terminal in contact through said ring with the external layer of said foil, the said appliance being connected in the circuit external to the apparatus to be protected, and in such a manner that the central post terminal and the inner end of the helically-wound foil are connected to the line-wire and the clamping-ring terminal and outer end of the foil are connected to the instrument-wire, substantially as described.

377,074. **FENDER.** HENRY HOWE, Moss Springs, Kans. Filed Oct. 25, 1887. Serial No. 253,335. (No model.)



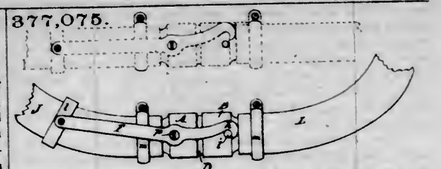
Claim.—1. A plant-protector for cultivators consisting of a draw-bar, bowed yielding ribs secured thereto about midway of their length, a shoe secured to each end of the said ribs, and hinged arms also secured to the shoes and adapted to regulate the bulge or bow of the ribs, substantially as specified.

2. The combination, with the bowed ribs having the draw-bar secured to them, of the hinged arms threaded and the ring engaging the threads of the arms, whereby the bulge or bow of the ribs may be regulated, substantially as specified.

377,075. **HOSE-COUPLING.** FRANK A. JACOB, Indianapolis, Ind., assignor of one-half to William Strong, same place. Filed Sept. 19, 1887. Serial No. 250,061. (No model.)

Claim.—1. In a hose-coupling, the combination, with two sections of hose and two coupling-sections secured, respectively, to the opposed

377,075.



ends of said hose-sections, of a lever connected at one end with one section of the hose at a distance from the coupling, pivoted between its ends to the coupling-section, which is secured to said hose, and terminating in a hook which is adapted to engage a projection on the other opposed coupling-section, and a pin or like projection on said opposed coupling-section, whereby the two coupling-sections are automatically locked when coupled together by the bending and unlocked by the straightening of the hose, substantially as specified.

2. In a hose-coupling, the coupling A, having the thimble C secured therein, coupling B, having the tubular projection *e*, levers F F, pivoted to coupling A and having hooks A, pins *i i*, projecting from coupling B, hose J, and ring *l*, all combined and arranged to co-operate, substantially as specified.

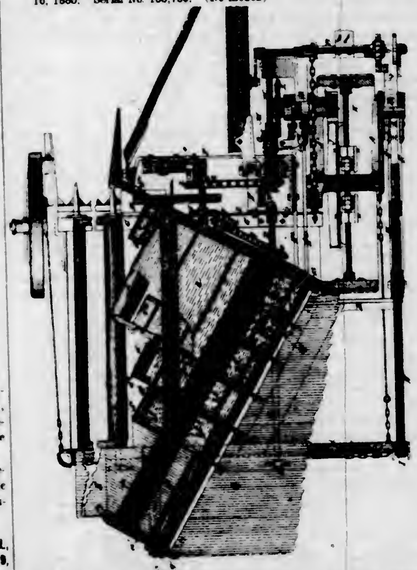
377,076. **SHEET-METAL CHAIN.** GEORGE M. JEWETT, Bridgeport, Conn. Filed May 10, 1887. Serial No. 237,779. (No model.)



Claim.—1. Sheet-metal chain formed from blanks having eyes at opposite ends, which are bent into line with each other in the completed chain, the loop of each link being strengthened by corrugating or bending the metal.

2. Sheet-metal chain, each link of which is formed from a blank having eyes at opposite ends which are provided with lugs or teats 7, which are bent into line with each other in the completed link, the loop of the link being provided with a corrugation or rib, 4, which is engaged by the lugs or teats upon the next link, thereby increasing the bearing-surface.

377,077. **HARVESTER.** SAMUEL V. KENNEDY, Minneapolis, Minn., assignor to the Minneapolis Harvester Works, same place. Filed Dec. 16, 1886. Serial No. 185,789. (No model.)



Claim.—1. In a harvester, the combination of the side-delivery platform-carrier, the binder located behind the drive-wheel farther to

the rear of the machine than the carrier, and a system of vertically-inclined diagonally-arranged belts for delivering the grain received

377,079.

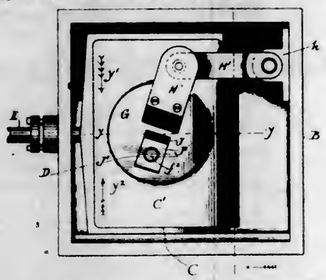
377,081. **COMPOUND FOR COATING IRON, WOOD, CANVAS, &c.** JOHN F. MARTIN, Chicago, Ill., assignor of one-half to Horatio Kenker and

377,082.

the rear of the machine than the carrier, and a system of vertically-inclined diagonally-arranged belts for delivering the grain received from the carrier to the binder, consisting of an upper inclined and oblique shaft having rollers decreasing in diameter toward the rear, idler-rollers journaled in suitable bearings, and a series of belts traveling over the rollers on the shaft at the top and the idlers at the bottom of the incline, each belt having a width exceeding that of its idler, substantially as described.

2. In a harvester, the combination of the side-delivery platform-carrier, the binder located behind the drive-wheel farther to the rear of the machine than the carrier, and a system of vertically-inclined diagonally-arranged belts for delivering the grain received from the carrier to the binder, consisting of an upper inclined and oblique shaft having rollers decreasing in diameter toward the rear, a beam running parallel with said shaft, a series of inclined arms carried by said beam, decreasing in length and increasing in vertical inclination toward the rear, idler-rollers journaled in the lower ends of said arms, and a series of belts traveling over the rollers on the shaft at the top and the idlers at the bottom of the incline, each belt having a width exceeding that of its idler, substantially as described.

377,078. **SLIDE-VALVE.** DENIS O'B. LADD, Chicago, Ill. Filed Aug. 12, 1887. Serial No. 246,757. (No model.)



Claim.—1. The combination, with the steamways of a steam-cylinder, of a main slide-valve having a central exhaust-port and double ports near the respective ends, one of said ports at each end being intended to admit steam in addition to that admitted at the ends of said valve, a supplemental valve having a central chamber and antechambers between that and its respective ends, and means for reciprocating said supplemental valve at a higher rate of speed than said main valve, substantially as shown and described.

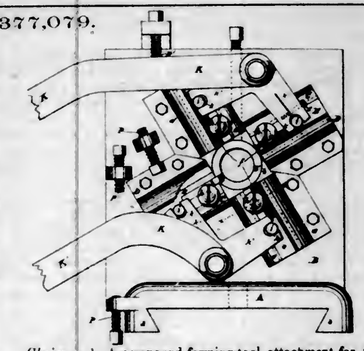
2. A main slide-valve provided with double ports at or near its respective ends, in combination with a supplemental valve for opening and closing said ports, means, as an eccentric having a link-connection with the steam-chest, for imparting a higher relative speed to said supplemental valve, an exhaust-cavity beneath the latter, and separate chambers upon the respective sides of said exhaust-cavity, said chambers being adjusted to communicate in turn with said double ports and the exhaust-port of the main valve, substantially as shown and described.

3. The combination, with the steamways of a cylinder, of a main slide-valve arranged to admit steam to said ways at its respective ends, ports e^1 e^2 e^3 e^4, a main exhaust-port, a supplemental valve arranged to open and close said double ports at the respective ends of the valve, an exhaust-cavity, chambers F^5 F^6, and means for imparting a quicker throw to said supplemental valve than to the main valve, substantially as shown and described.

4. The combination, with a cylinder having suitable steamways, of a main slide-valve having admission-ports near its respective ends in addition to a main and auxiliary exhaust-ports, a supplemental valve provided with an exhaust-chamber and having separate chambers upon the respective sides of said exhaust-chamber, said supplemental chambers being adapted to be brought coincident with said admission and exhaust ports, and means for reciprocating said supplemental valve with each stroke of the main valve, but with a quicker movement, substantially as shown and described.

5. The combination of the slide-valve C, having an exhaust-port and double ports near its ends, with a supplemental valve, chambered as described, and means, as the eccentric G, connected by an arm-and-link connection with the steam-chest, and pin f^3, for actuating said supplemental valve, substantially as shown and described.

377,079. **ATTACHMENT FOR TURNING-LATHES.** ERNST LINDNER, New York, N. Y., assignor of one-half to the E. P. Gleason Manufacturing Company, same place. Filed May 9, 1887. Serial No. 237,661. (No model.)



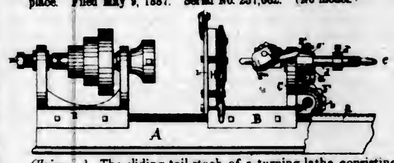
Claim.—1. A compound forming-tool attachment for turning-lathes, consisting of a vertical plate; as B, adapted by flanges, such as C and c, for holding and guiding two or more sliding tool-holders, as E and e, in combination with said tool-holders E and e, and a three-armed lever, as K, fulcrumed to said vertical plate and adapted to operate said sliding tool-holders, in the manner and for the purpose substantially as described.

2. In a compound forming-tool attachment for turning-lathes, a three-armed lever, such as K, which is adapted to operate two sliding tool-holders, such as E and e, in combination with said tool-holders, arranged in the manner and for the purpose substantially as specified.

3. In a compound forming-tool attachment for turning-lathes, the arrangement, as shown and described, of the guiding-flanges C and c and the sliding tool-holders E and e, with their grooves *f*, whereby the tool will at all points of its motion be held with its cutting-edge on a radial line from the center of the socket-hole *b*, in the manner and for the purpose substantially as described.

4. In a compound forming-tool attachment for turning-lathes, the combination of the following elements: a vertical plate, as B, guide-flanges, as C and c, sliding tool-holders, as E and e, three-armed lever, as K, with a base-plate, as A, and suitable means for securing the same to a lathe-bed.

377,080. **TURNING-LATHE.** ERNST LINDNER, New York, N. Y., assignor of one-half to the E. P. Gleason Manufacturing Company, same place. Filed May 9, 1887. Serial No. 237,662. (No model.)



Claim.—1. The sliding tail-stock of a turning-lathe, consisting of a base-plate, as B, upright flange, as H, provided with the socket-hole O for holding interchangeable bushings, and the upright flange C, having the hub C, in combination with the tool-stock *d*, having suitable means for operating the same, arranged in the manner and for the purpose substantially as set forth.

2. The sliding tail-stock of a lathe, consisting of a base-plate, as B, upright flange, as C, terminating in the hub C, and the upright flange, as H, provided with a socket, O, for interchangeable bushings, in combination with the bed of a lathe, as A, and suitable means of adjusting said sliding tail-stock thereon.

3. The combination of the sliding tail-stock of a turning-lathe with the progressive feeding, gaging, and locking mechanism hereinbefore described, to wit: a shaft, as D, bearings, as D' D', pinion, as *b*, index-wheel, as F, bolt, as *g*, and bearing, as G, arranged in the manner substantially as shown, and for the purpose set forth.

4. The upright flange H, in combination with the bed A and rack *a* of a turning-lathe, with its pivoted lever tool-holders I I I and socket-hole O, adapted for receiving and holding interchangeable bushings, said flange being rigidly connected, so as to form part of the sliding tail-stock of the lathe.

5. In turning-lathes, a live head-stock having a hollow spindle, and a bed or shears having a cog-rack adapting it to receive and operate in conjunction with progressive feeding, gaging, and locking mechanism, in combination with a sliding tail-stock having such mechanism attached, the same being arranged substantially in the manner and for the purpose specified.

377,081. **COMPOUND FOR COATING IRON, WOOD, CANVAS, &c.** JOHN F. MARTIN, Chicago, Ill., assignor of one-half to Horatio Kenier and Theodore P. Bailey, both of same place. Filed Feb. 2, 1886. Renewed May 27, 1887. Serial No. 239,562. (Specimens.)

Claim.—1. A coating compound consisting of a base or body composed of common glue, sulphur, paris-white, and zinc-white, compounded substantially as and for the purpose set forth.

2. A coating compound consisting of a base or body composed of common glue, sulphureted water or sulphur in solution, paris-white, and zinc-white, compounded substantially as and for the purpose set forth.

3. A coating compound consisting of a base or body composed of common glue, sulphur, paris-white and zinc-white, and shellac, compounded substantially as and for the purpose set forth.

4. A coating compound consisting of a base or body composed of common glue, sulphur, paris-white, zinc-white, shellac, and alcohol, compounded substantially as and for the purpose set forth.

5. A coating compound consisting of a base or body composed of common glue, sulphureted water or sulphur in solution, paris-white and zinc-white, and shellac and alcohol, compounded substantially as and for the purpose set forth.

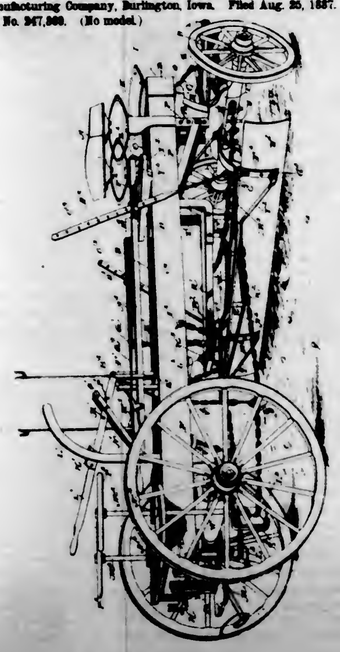
6. A coating compound consisting of a base or body composed of common glue, sulphur, paris-white, and zinc-white, in combination with coloring-matter, whereby the color of the body mixture may be varied or changed, all compounded as described, and for the purpose set forth.

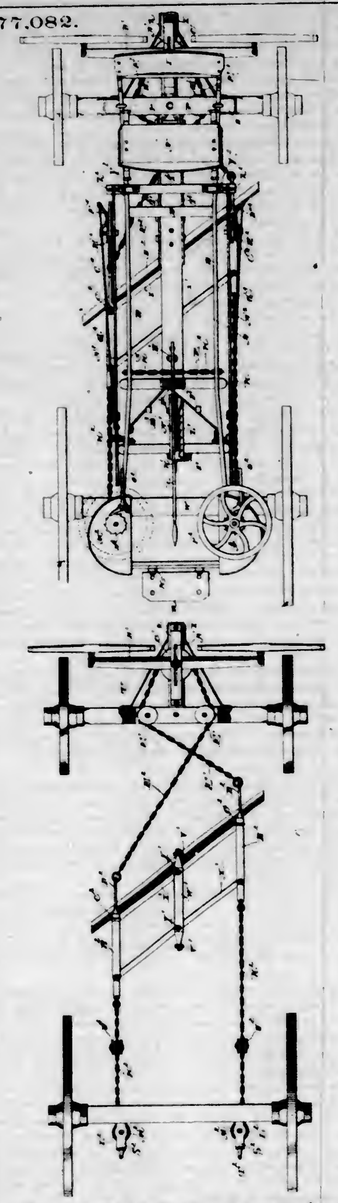
7. A coating compound consisting of a base or body composed of common glue, sulphureted water or sulphur in solution, paris-white, and zinc-white, in combination with coloring-matter, whereby the color of the body mixture may be varied or changed, all compounded as described, and for the purpose set forth.

8. A coating compound consisting of a base or body composed of common glue, sulphur, paris-white, zinc-white, and shellac, in combination with coloring-matter, whereby the color of the body mixture may be varied or changed, all compounded as described, and for the purpose set forth.

9. A coating compound consisting of a base or body composed of common glue, sulphur, paris-white, zinc-white, shellac, and alcohol, in combination with coloring-matter, whereby the color of the body mixture may be varied or changed, all compounded as described, and for the purpose set forth.

377,082. **ROAD SCRAPER AND GRADER.** WELLINGTON J. MARTIN, Mount Pleasant, assignor to the Iowa Road Grader and Ditcher Manufacturing Company, Burlington, Iowa. Filed Aug. 25, 1887. Serial No. 247,869. (No model.)





Claim.—1. The combination, in a scraper and grader, of the beam R' and the swinging frame suspended from the said beam, pivoted longitudinally under the same and thereby adapted to tilt or incline, and carrying the scraping-blade, substantially as described.

2. The combination, in a scraper and grader, of the beam R', the rod W', journaled longitudinally under the said beam, and the frame having the parallel bars X' pivoted under the bar W', the said frame carrying the scraping-blade, and means to turn the frame and blade to any desired angle, substantially as described.

3. The combination, in a scraper and grader, of the vertically-movable beam R', the frame pivoted longitudinally thereunder, suspended therefrom, and having the parallel bars X', adapted to be swung in any desired direction, means to swing the said frame in a horizontal plane and thereby arrange it in any desired oblique position, the levers attached to the ends of the frame and adapted to incline the same to any desired angle, and the scraping-blade attached to the frame, substantially as described.

4. The combination, in a scraper and grader, of the beam R', the rod W', journaled longitudinally under the same, the parallel bars X', pivoted centrally to the said bar W', the bars B^3, pivotally connected to the ends of the bars X', the brackets F^3, depending from one of the bars X', and the scraping-blade attached to the said brackets, substantially as described.

5. In a scraper and grader, the combination of the bars X', arranged parallel with each other and connected together, the trusses A^3 on the under side of the said parallel bars, brackets F^3, depending from one of the said bars, and the scraping-blade attached to said brackets, substantially as described.

6. The combination of the beam R', the rod W', journaled under the same, parallel bars X', pivoted centrally to the rod W', the bars B^3, pivotally connected to the ends of the bars X' and connecting the same together, the brackets F^3, depending from the front bars X', and the braces I^3, extending from the lower ends of the said brackets to the outer ends of the rear bar X', substantially as described.

7. The combination of the bed or frame A, mounted on wheels, the vertically-movable beam R', arranged under the same, and the frame suspended from the said beam, pivoted longitudinally thereunder, and having the scraping-blade and lever to raise and lower the beam, substantially as described.

8. The combination of the bed or frame A, mounted on wheels, the beam R', arranged under the same and vertically movable, the swinging frame suspended from the said beam and adapted to be turned to any desired position in a horizontal or vertical direction, the levers attached to the said beam to raise and lower the same, the levers A^3, connected to the ends of the swinging frame to incline the latter in a vertical direction and thereby raise either end of the scraping-blade attached to the frame, the shaft M^3, having the drums, and the chains connected to the said drums and to the swinging frame, whereby the latter may be turned in a horizontal direction, substantially as described.

9. The combination of the frame or body mounted on wheels, the frame having the scraping-blade arranged under the frame or body A, the longitudinally-movable pulley C, connected to the whiffletree, to which the draft-animals are attached, and the chain passed over the said pulley and connected to the frame carrying the scraper, whereby the draft will be applied directly to the scraper, substantially as described.

10. The combination of the main frame or bed mounted on wheels, the beam R', having its front end connected thereto and vertically adjustable thereon, the lever connected to the rear end of the said beam to raise and lower the same, and the swinging frame suspended from the beam R' and adapted to turn in either a horizontal or a vertical direction, and the scraping-blade attached to the said suspended frame, substantially as described.

11. The combination of the main frame or bed mounted on wheels, the vertically-movable beam R' under the same, the said beam carrying the scraping-blade, the lever G', fulcrumed on the main frame and connected to the beam R', also fulcrumed on the main frame, and the link N', connecting the lever I' to the lever G', substantially as described.

12. The combination of the main frame mounted on wheels, the beam R', arranged under the main frame, the swinging frame suspended from the said beam and to which the scraping-blade is connected, the levers A^3, and the links or rods C^3, connecting the swinging frame to the said levers and detachably attached to the latter, substantially as described.

13. The combination of the main frame or body mounted on wheels, the beam R', arranged under the same, the swinging frame suspended from the said beam and carrying the scraping-blade, the levers A^3, fulcrumed on the main frame and having the keepers E^3 and the detents F^3, and the link or rod C^3, attached to the ends of the swinging frame, passed through the keepers E^3, and engaged by the detents F^3, whereby the said links or rods are adjustably attached to the levers A^3, substantially as described.

14. The combination of the main frame or body, the vertically-movable beam R', arranged under the same, the swinging frame suspended from the said beam and carrying the scraping-blade, the shaft M^3, journaled in the main frame and having the drums and chains K^3, connecting the end of the swinging frame to the said drums, and the vertically-adjustable chains V^3, depending from the main frame and having the sheaves U^3, over which the chains K^3 pass, substantially as described.

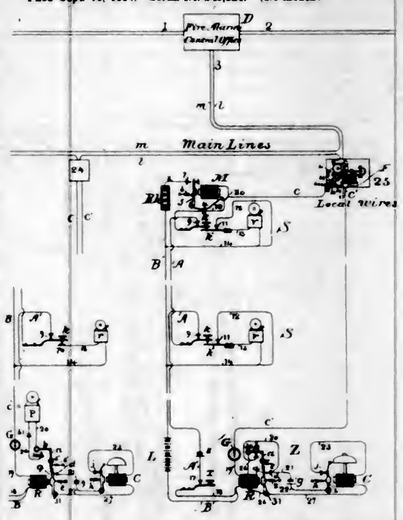
15. The combination of the bed or frame A, mounted on wheels, the beam R', arranged under the same, the swinging frame suspended from and pivoted longitudinally under the said beam, the scraping-blade secured to the said frame, and the levers connected to opposite sides of the frame to tilt or incline the same in either direction, substantially as described.

16. The main frame or body A, comprising the side boards, B, having their ends diverged, and the cross-beams connecting the said boards together, substantially as described.

17. The combination of the frame or body A, the rear axle arranged under the same, the head-block O under the front end of the frame, the front axle pivoted under the head-block, the plates P on the rear side of the head-block and having the vertical series of openings R, and the beam R', having the curved arms T extending from its front end, the front ends of the said arms being pivoted on a bolt extending through two of the aligned openings R, substantially as described.

18. The combination of the main frame or body having the rear axle, the head-block under the front end of the frame or body, the sand-board under the head-block, the front axle under the sand-board, the king-bolt passing through the centers of the head-block, sand-board, and front axle, the sheaves E', journaled on either side of the said king-bolt and arranged in an opening in the front axle, the tongue, the bolt B', movably journaled therein, the sheave C and whiffletree pivoted on the said tongue, the beam having its front end connected to the head-block, the said beam carrying the swinging suspended frame to which the scraping-blade is attached, the chain E^3, passed over the front side of the pulley C, over opposite sides of the sheaves E', and having its rear ends crossed and connected to the swinging suspended frame, whereby the draft will be applied directly to the scraper, substantially as described.

377,083. ELECTRICAL AUXILIARY SIGNALING SYSTEM. Geo. F. Milliken, Boston, Mass., and Henry R. Lytle, Providence, R. I., assignors to the Gamewell Auxiliary Fire Alarm Company, Boston, Mass. Filed Sept. 10, 1887. Serial No. 249,326. (No model.)



Claim.—1. In a system for the transmission of arbitrary electric signals, the combination, substantially as hereinbefore described, of a main alarm-circuit connecting signal-transmitting boxes with a central signal-receiving station, local or auxiliary alarm-sending circuits extending through a series of private sub-stations, and connecting the said sub-stations with the alarm-boxes of the main circuit, an electro-magnetic releasing device controlling the signal-sending mechanism of the said alarm-boxes, the actuating-magnet therefor being included in the auxiliary circuit, two batteries of different strengths, the weaker being constantly included in the local alarm-circuit when the said circuit is at rest for testing purposes, and the stronger being included in a normally-open derived circuit having a normally-open branch extending into each sub-station, and a compound signaling-key at each sub-station connected with the wire leading to the alarm-box-actuating magnet and normally maintaining the continuity of the weaker battery-circuit through its back contact, but having its front stop united to the branches of the larger battery derived circuit, whereby

the said key, when operated, is adapted first to break the circuit of the testing-battery and thereafter to connect the remaining fragment of the local alarm-circuit, including the magnet of the signal-transmitting box, with the stronger battery for the purpose of sending an alarm-signal.

2. The combination, with an alarm-transmitting or arbitrary signal-box, of a normally-closed local alarm-circuit extending from sub-stations to said signal-box, two batteries of unequal strength, the weaker of which is included in said circuit and the stronger being included in a normally-open branch thereof, extending also into the sub-stations, a releasing or tripping device for the said signal-box controlled by an electro-magnet in the local alarm-circuit, the said magnet being responsive to the current of the stronger battery only, a relay-magnet, also included therein and adapted to be partly energized and actuated by the current of the smaller battery, but fully energized by that of the larger battery, and a compound circuit-changing key at each sub-station connected permanently with the main wire of the local alarm-circuit and maintaining the connection thereof with the weaker battery when at rest through its resting-contact, but having its front contact connected with the stronger battery and adapted thereby, when operated, to disconnect the weaker battery from the circuit and to substitute the stronger, whereby the releasing-device magnet may be actuated to send a signal, the relay-magnet being simultaneously caused to exert a fuller attraction upon its armature, thereby changing its position, substantially as described herein.

3. The combination, with an alarm-transmitting or arbitrary signal-box, of a normally-closed local alarm-circuit extending from sub-stations to said signal-box, two batteries of unequal strength, the weaker of which is normally closed upon said circuit, completing the same, and the stronger being included in a normally-open derived circuit thereof, said derived circuit being permanently in contact with the local alarm-circuit at one end and extending by normally-open branches into the sub-stations, a releasing or tripping device for the said signal-box controlled by an electro-magnet in the local alarm-circuit, the said magnet being responsive to the full force of the stronger battery only, a relay-magnet, also included therein and adapted to partially respond to the current of the weaker battery, but to be fully responsive to the current of the stronger battery, a compound signal-sending key at each sub-station, comprising the main key *k* and the supplementary key *k'*, the latter being adapted to be actuated by the former, and each having an independent resting contact-stop, that of the former having a circuit-connection with the weaker battery and that of the latter with the normally-open circuit of the stronger battery, the keys *k* of the several sub-stations being in series on the weaker battery-wire, and an electric bell connected in the circuit-connection of the supplementary key between the said key and its back contact-stop, and thereby normally shunted, whereby when the said keys at any sub-station are actuated the weaker battery is disconnected, the stronger battery connected, and the subscriber's bell introduced into the circuit of the latter to receive an automatic answering-signal, as described.

4. The combination, substantially as hereinbefore described, with a clock-train or signal-box mechanism and an electro-magnetic releasing device therefor, of two batteries of different strengths, the stronger only being of sufficient strength to actuate the electro-magnetic releasing device, a metallic circuit normally completed through the weaker of the said batteries and including permanently the magnet of the releasing device, a circuit-connection including the stronger battery connected permanently on one side of said battery with the said metallic circuit, but normally open on the other side thereof, and having normally-disconnected branches extending into one or more sub-stations, a compound circuit-changing key, *k*, at each sub-station, having its back contact connected with the leading wire from the weaker battery, and being itself connected with the continuation of said wire to the releasing-device magnet, (the said keys at the several sub-stations being in series with one another,) a supplementary key, *k'*, at each sub-station connected permanently with the normally-open branch extending thereinto from the stronger battery and serving as the front contact of the main key, a responsive signal electric bell included in said branch circuit between the key *k'* and the main wire, and a shunt-circuit around the said bell from the back contact of said key *k'* to the said open branch circuit, the operation of key *k* being thereby adapted to send an alarm by opening one circuit and closing another, and immediately thereafter, through the agency of the supplementary key *k'*, to cause the response-signal bell to be actuated.

5. The combination, with a clock-train or signal-box mechanism and an electro-magnetic releasing or tripping device therefor, of the batteries L and *s*, having opposing poles presented toward the electro-magnet of the releasing device, together with the wire c, constituting the permanent portion of a local metallic alarm-circuit including said magnet, circuit-connections extending from both poles of battery *s* and constituting normally the remaining portion of said circuit, and the normally-open circuit, including the battery L, connected upon one side of said battery with the connections leading from the opposite pole of the other and constituting a portion of the said metallic circuit during the sending of alarms, whereby in case of a cross between the main wires of the two batteries they are short-circuited and false alarms from the undesired energization of the alarm-magnet are prevented.

6. The combination, substantially as hereinbefore specified, with the batteries L and *s*, of different strengths, a normally-open circuit including the former and extending for any required distance, and a resistance, RA, included therein at a point close to the end thereof, of means for testing from a given station the integrity of said normally-open circuit, said means comprising a normally-closed metallic circuit including the weaker battery, a testing-relay, R, a galvanometer, and a circuit-breaking key, all at a testing-station, and a circuit-changing magnet, M, and armature and lever located near the end of the open circuit of the larger battery, the said circuit being terminated by a connection with the back-stop of said lever, and the said lever being electrically connected with the line-wire leading direct to the galvanometer and relay, so that by pressing the test-key the original circuit may be broken and the open circuit thereupon closed through the armature-lever and stop of the magnet M may be tested by the current of its own battery, weakened by the introduction of the resistance.

7. In a system for electrically actuating an alarm or signal sending mechanism, an electric circuit normally closed upon a weak battery, a relay included therein and partially energized by the current of said battery, the armature of said relay being by such partial energization held in an intermediate position between its limiting stops, and two independent normally-open local circuits, each including an electric bell, one of said circuits being adapted to be closed by the backward movement and the other by the forward movement of said armature, whereby the same relay may be used alike for an alarm-test and for a signal-sending indicator, as specified herein.

8. In a system for electrically actuating an alarm or signal sending mechanism, an electric circuit normally closed upon a battery, but having a normally-open derived circuit including a stronger battery, a relay included in the said circuit and partially energized by the current of said battery, but adapted to be included in circuit with the larger battery, and thereupon to be fully energized, the armature of said relay being by such partial energization held in an intermediate position between its limiting-stops, two independent normally-open local circuits, each including an electric bell, one of said circuits being controlled by the backward and the other by the forward movement of said armature, whereby one bell is caused to sound when the normal circuit is disarranged for testing purposes and the other when the larger battery is introduced to send a signal, and one or more keys connected with the wires of both batteries and normally maintaining the continuity of the circuit of the first to the relay, but adapted, when depressed, to connect the second with the said relay.

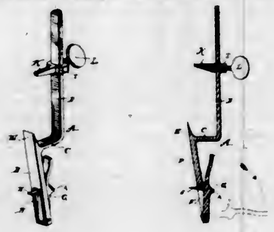
9. The combination, in a system for electrically actuating from any of a series of sub-stations a signal-sending mechanism or alarm-box, of a metallic circuit leading from the said sub-stations to a starting electro-magnet for releasing the said mechanism, a signaling-key at each sub-station adapted to connect a battery with said circuit for the purpose of energizing the said starting-magnet, a response-signal bell, also located at each sub-station in the said metallic circuit, and an automatic circuit-changer located at the signal or alarm box and controlled by the mechanism thereof, whereby the response-bell may be affected, for the purpose of indicating that the alarm-box is properly performing its functions.

377,084. FERTILIZING COMPOSITION. George H. Murray, Chicago, Ill. Filed Mar. 12, 1887. Serial No. 230,697. (No specimens.)

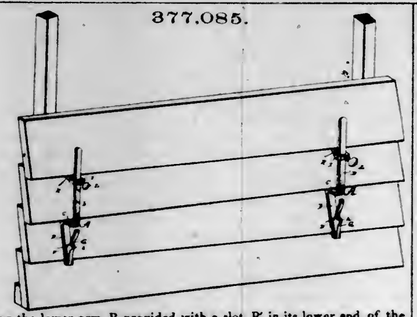
Claim.—A fertilizer composed of approximately one-half pulverized tan-bark, one-quarter drained distillery-slop or animal excrement, and one-quarter common salt, slaked lime, and potash.

377,085. SIDING-GAGE. Horace Russell, Fayette, Ohio, assignor of one-half to G. W. Griffin and D. A. Baker, both of same place. Filed May 27, 1887. Serial No. 239,551. (No model.)

Claim.—In a siding-gage, the combination, with the body D, hav

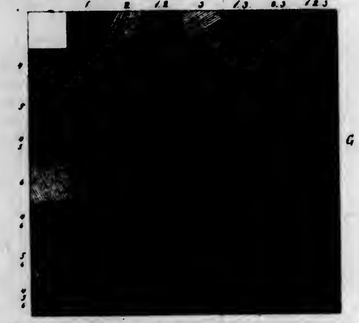


377,085.



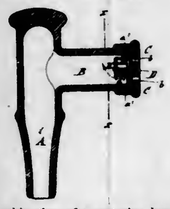
ing the lower arm, B, provided with a slot, B', in its lower end, of the swinging arm G, pivoted in the lower end of the said slot and curved at the upper end to form a handle, the said arm being provided on one side at the center with a brad, H, adapted to swing through the slot B', and on the other side with the boss *h*, arranged directly in line with the brad H, and adapted to be struck with a hammer to drive the brad into the siding, substantially as described.

377,086. **COLOR CHART OR SCALE.** FREDERICK C. SCHRODER, Boston, Mass. Filed July 13, 1887. Serial No. 244,153. (Model.)



Claim.—The herein-described color-chart, comprising a series of color-keys, as A B C D E F, equal in number to the colors to be combined, said keys being divided vertically and horizontally into fields, as described, a scale, as G, divided vertically and horizontally into colored squares or spaces equal to the number of key-colors, all the combinations of said key-colors, and a blank, and index characters for identifying the key-colors and their combinations, substantially as specified.

377,087. **VENT-PLUG.** MAX SCHUETZ, New York, N. Y. Filed June 8, 1887. Serial No. 240,579. (No model.)



Claim.—1. The combination of a vent-plug having a lateral vent-tube with an interior valve-seat and an exterior screw-thread, a valve-plug having a vent-opening, a raised valve-seat, and sockets above said seat integral with the valve-plug, a flap-valve having a shank bent at right angles therewith, and pivots made integral with the shank, and a screw-cap screwed on the vent-tube, substantially as set forth.

2. The combination of a vent-plug having a lateral vent-tube, a valve-plug fitted into said vent-tube and provided with a central vent-opening, a raised seat and sockets above said seat, a flap-valve having a shank bent at right angles thererewith, and pivots made integral with said shank, and a screw-cap screwed on the vent-tube and provided with openings outside of and not in line with the vent-opening of the plug, substantially as set forth.

3. In a vent-plug, the combination of an adjustable valve-plug having a central vent-opening, a raised tubular seat portion, and sockets above said seat portion, said sockets being made integral with the plug, with a flap-valve having a shank bent at right angles therewith, and pivots made integral with said shank, substantially as set forth.

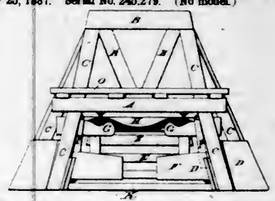
377,088. **COLLAR-PAD.** RUDOLPH SCHWAHN, Eau Claire, Wis. Filed July 19, 1886. Serial No. 208,447. (No model.)



Claim.—1. As a new article of manufacture, a cast-glass horse-collar pad, as set forth.

2. As a new article of manufacture, a cast-glass horse-collar pad made thickest at its middle portion, as set forth.

377,089. **WATER-GATE.** ELI E. SMITH, Steubenville, Ohio. Filed July 25, 1887. Serial No. 245,279. (No model.)

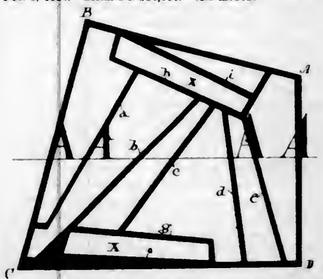


Claim.—1. In a water-gate, the combination of the vertically-swinging gate E, with the rudders F and cam-levers G, adapted to swing horizontally and raise the gate when acted upon by the water, as set forth.

2. In a water-gate, the combination of the gate E, the top piece provided with an inclined surface, the lever or cam G, working on said incline, the post P, and the blade F, provided with the brace *f*.

3. In a water-gate, the frame consisting of the cross-piece A, provided with the foot-board O, the supports C C, secured at their bottoms by the cross-piece K, the braces B' B', and the top cross-piece, in combination with the gate E, having a cross-piece, H, with an inclined surface to receive the cam or lever G, and the opening device consisting of the lever or cam G, working on the inclined surface of cross-piece H, the post P, and the blade F, provided with the brace *f*.

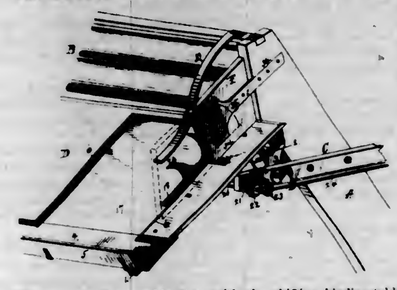
377,090. **LETTERING-BLOCK.** JOB SPRINGER, Augusta, Me. Filed Feb. 5, 1887. Serial No. 226,636. (No model.)



Claim.—1. A lettering-block having straight sides and having its interior divided into straight bars which incline toward each other and are arranged in pairs, as *c* and *d*, *b* and *e*, the two bars which constitute a pair making equal and opposite angles with one of the sides A B of the block, substantially as shown.

2. A lettering-block having the form of a quadrilateral two opposite angles of which are right angles, the remaining two being one greater and one less than a right angle, and having its interior divided into bars or straight edges in pairs, as *c* and *d*, *b* and *e*, the two bars of each pair forming equal and opposite angles with one of the sides, as A B, of the block.

377,091. **HARVESTER.** WILLIAM R. STEINER, Frederick, Md. Filed June 23, 1887. Serial No. 242,251. (No model.)

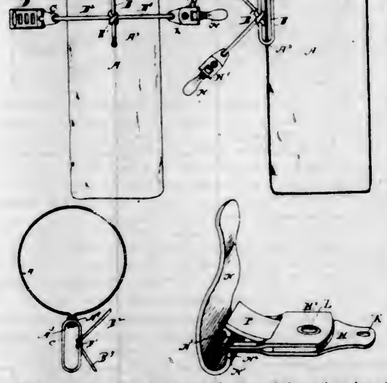


Claim.—1. The combination, with the shifting binding-table formed with a rectangular opening at its front end, of a fixed butt-rake mounted on a crank-shaft beneath said table and having its bearings in a stationary frame provided with a slotted cover arranged under and to bridge the opening in the binding-table, and means, substantially as described, for rotating the crank-shaft, substantially as specified.

2. The combination, with the shifting binding-table formed with a rectangular opening at its front end, of a stationary frame having a cover thereon bridging the opening in the table and a butt-rake slot in the cover and mounted on supports under the shifting binding-table, a crank-shaft mounted on bearings on the stationary frame, a fixed butt-rake mounted in the stationary frame with its teeth working through the slot in the cover, one end connected with the pin of the crank-shaft and the other end supported to slide in the frame of the binding-floor, and means, substantially as described, for rotating the crank-shaft, substantially as specified.

3. The combination, with the shifting binding-table formed with a rectangular opening at its front end, and the sliding rod of the binding-table, of a stationary frame with a slotted cover arranged under the binding-table, and having its upper end supported on the shifting rod and the other arranged in a groove in the frame of the binding-table, a crank-shaft supported in bearings on the stationary frame, a fixed butt-rake arranged with its teeth working through the slot of the covering of the stationary frame, and mounted at one end on the pin of the crank-shaft and at the other end supported on a bar arranged in a slot in the frame of the binding-table, and means, substantially as described, for rotating the crank-shaft, substantially as described.

377,092. **BALE-TIE.** GEORGE A. WELD, Winchester, Mass. Filed Apr. 9, 1887. Serial No. 234,362. (No model.)

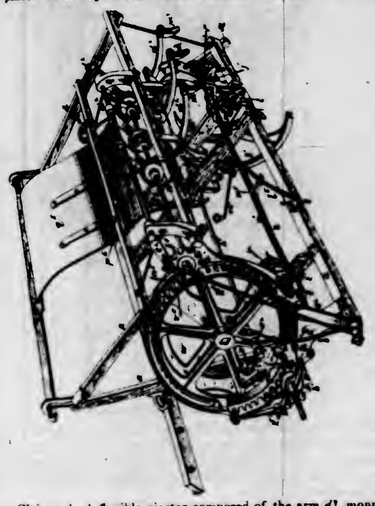


Claim.—1. In a bale-tie, the combination of the sack or bag A, having two holes A' A', with the cord B, formed into a link by the knot B', and having tying ends B^2 B^3, substantially as described, and for the purpose set forth.

2. In a bale-tie, the combination of the barred link D, having a projection or stop, S, on the first bar C', with the loop C, having an opening, S', adapted to receive the stop S, all substantially as described, and for the purpose set forth.

3. In a bale-tie, the combination of the clasp H, having a spring, P, riveted between the folds of the clasp, with the hook N, having trunnions N', and a bent and flattened end, N^2, all operating together substantially as described, and for the purpose set forth.

377,093. **GRAIN-BINDER.** WILLIAM H. WHITELEY and ROBERT BROWN, Springfield, Ohio, assignors to Whiteley, Fassler & Kelly, same place. Filed May 4, 1882. Serial No. 60,418. (Model.)



Claim.—1. A flexible ejector composed of the arm d^1, mounted upon and actuated by the rock-shaft f^3, and the sections l^2 m^2, jointed at k^1 k^2, whereby said ejector is enabled to pass uninterruptedly over the grain about to be bound.

2. A flexible ejector composed of sections d^1, l^2, and m^2, jointed at k^1 and k^2, combined with an expanding-spring in joint k^2, whereby the part m^2 is moved to a position almost at right angles to the part l^2.

3. A looping-hook, j^2, a rotating tube, c^4, on which said hook is carried and adapted to reciprocate, and the pinion f^3, attached to said tube, combined with a gear-wheel, n^3, having gear segments and delay-surfaces in engagement with said pinion during one continuous revolution of said wheel, said pinion and the looping-hook making one revolution and a part of another, and then rest for a period, and then complete the second revolution and rest, as set forth.

4. A clutch device consisting of a pivoted tooth, *v*, carried by a wheel, *w*, having a gap in its teeth, a movable pin, *x*, on the frame, a pinion, *b'*, a slotted lever, *u*, engaging the pin *x* at one end and provided with a spring, a^3, in combination with the cam-plate *r* of a shaft that is rocked by the accumulation of grain acting against a trip-arm on the said shaft, for the purpose specified.

5. A rock-shaft, *u'*, carrying a loosely-sleeved trip-arm, *d*, that has a spring, *p*, interposed between it and an extension, *g*, fast on the shaft, in combination with an arm, *h*, also fast on the shaft, bell-crank *k*, pivoted on the frame-rod *l*, slotted rack c^3, curved rack b^3, and a spring-latch, *m*, resting against a stationary projection, *n*, and liberated by a spring-lever, w^4, substantially as and for the purpose specified.

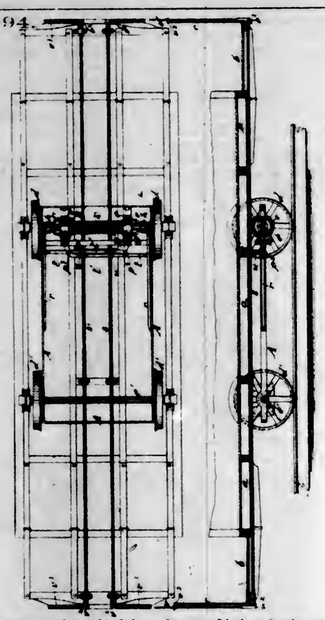
6. A rock-shaft, *u'*, carrying a trip-arm, *d*, mechanism for operating the same, and levers m^3, provided with pivoted grain-retaining fingers l^3, the lower ends of which work through holes formed in lugs secured to the frame n^3, substantially as and for the purpose specified.

7. In a grain-binding machine, the combination, with the packers *c' c'*, of a trip-arm, substantially such as specified, and the ejectors composed of the sections d^1 l^2 m^2, arranged upon a rock-shaft located above the binding-receptacle, and the mechanism for operating the same, substantially as and for the purpose specified.

377,094. **CAR BRAKE AND STARTER.** JOHN H. WILLIAMS, Newark, N. J. Filed Feb. 12, 1887. Serial No. 227,361. (No model.)

Claim.—1. In a car-starter, the combination, with the driving-axle and spring-coil thereon, of two friction-pulleys loose on the axle and

377,094.



connected to opposite ends of the spring, two friction-clutches to clutch either pulley to the axle, and two friction-brakes to hold either pulley stationary, of two operating hand-levers each connected in reverse order with the respective clutches and brakes, substantially as shown and described.

2. In a car-starter, the combination, with the driving-axle and spring-coil thereon, of two loose pulleys to which each end of the spring is connected and clutches to engage each pulley with the axle, and brakes or stops to hold either pulley stationary, with a ratchet-connection between one end of the spring and its pulley arranged to engage in the directions in which the wound spring reacts to drive the axle and slip in the reverse direction, substantially as and for the purpose set forth.

3. In a car-starter, the combination of the driving-axle and two pulleys arranged in fixed position on the axle, but free to turn thereon, a clutch to engage the pulley at one end of spring to axle, and a brake or stop to hold the opposite end stationary at the same time, with a hand-lever connected to the said brake and clutch, whereby one movement of the lever engages one pulley with the axle and holds the opposite pulley from rotating at the same time, substantially as set forth.

4. In a car-starter, the combination of the driving-axle and two pulleys normally loose thereon, a torsional spring or coil connected at opposite ends to said loose pulleys, two clutches normally loose adapted to engage either pulley to the axle, and two brakes or stops normally loose adapted to hold either pulley stationary, with two distinct hand-levers or operating devices, each connected with the clutch of one and the brake of the opposite pulley, whereby the movement of one lever will engage one pulley with the axle and hold the opposite pulley stationary, leaving the opposite clutch and brake free, while the movement of the second lever will set the other clutch and brake and hold both pulleys and the spring from motion in either direction, substantially as shown and described.

5. In a car-starter, the combination, with the driving-axle and a torsional coil or spring adapted to be clutched at one end to the axle and held from rotating at the opposite end, of a friction-brake adapted to hold the fixed end of the spring in a yielding manner and a clutch arranged to engage the winding end to the axle with operative connections between the clutch and brake, and a hand-lever or manipulating device with a relative idle play between the clutch and brake, whereby after the clutch is set the tightening action of the brake may continue more or less to govern the winding of the spring and the resistance to the motion of the car in a graduated manner, substantially as and for the purpose set forth.

6. The combination, with the axle *c*, coil *k*, and pulleys B B', of the loose sleeve *n*, extending between the hubs of pulleys, with the clutch-hubs *m m*, fixed on the axle outside of said pulleys, and connecting-clutch mechanism to engage either pulley with the axle, and brakes or stops to hold either pulley stationary.

7. The combination, with the axle *c*, coil *k*, pulleys B B', loose on the axle, and loose sleeve *n*, extending snugly between the hubs of pulleys within the coil and preventing endwise motion of said pulleys, substantially as shown and described.

8. In a car, the combination, with the starting mechanism, of two operating hand-levers situated vertically at the front of the platform or dash-board and arranged to move from the center outward in opposite directions, substantially as shown and described.

9. In a car, the combination, with starter mechanism, of a rock-shaft extending longitudinally of the car-floor connected with the shifting or operating mechanism of the starter and terminating at each end in front of the platform or dash-board, with a socket-head, *v'*, on each end and a removable hand-lever, *v*, to fit the same, substantially as and for the purpose set forth.

10. In a car-starter, the combination, with the driving-axle, a torsional coil or spring thereon adapted to be clutched at one end to the axle and held stationary by a stop or brake at the opposite end, of an operating rock-shaft, *s*, a manipulating device connected with said rock-shaft, a crank-arm, *u*, extending from said rock-shaft, a link, *l*, extending from said crank-arm and operating the clutch of the spring, and a link extending oppositely from the crank-arm and operating the brake or stop of the spring, substantially as shown and described.

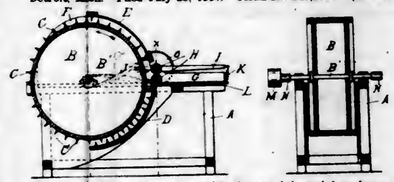
11. In a car-starter, the combination, with a driving-axle and a torsional coil or spring therefrom adapted to be clutched at one end to the axle and held by a brake or stop at the other, of the rock-shaft *s*, a manipulating device, *v*, extending thereon, crank *u*, links *l*, clutch-lever *r*, and brake-lever p^3, to which said links connect, arranged and operating substantially as shown and described.

12. The combination, with the pulleys B or B', of the brake-bands *o o*, nuts p^3, attached to said bands, right and left threaded rock-shaft *p*, engaging said nuts, and rocking mechanism connected to said shaft, substantially as set forth.

13. The combination, with the axle *c*, its spring-coil *k*, and its pulley or pulleys B B', of the brake or holder bands *o o*, with screw-threaded rock-shaft *p*, connecting said bands, and an operating device for rocking said shaft to tighten or loosen the bands, substantially as shown and described.

14. In a car-starter, the combination, with the driving-axle, of the loose pulleys B B' and the spring *k*, connected at one end to one pulley with the intermediate disk, *l*, to which opposite end of spring is connected, and a ratchet engagement between said disk and the opposite pulley, with clutches to engage the respective pulleys to the axle, and brakes to hold the same stationary, substantially as shown and described.

377,095. MACHINE FOR PICKING HUSKS, &c. FRANK COBBEN, Detroit, Mich. Filed July 25, 1887. Serial No. 245,263. (No model.)



Claim.—1. The combination, with the revolving picker-drum and its stationary concave, of a removable hood carrying a second concave, a pair of feed-rolls, and a feed-table, substantially as described.

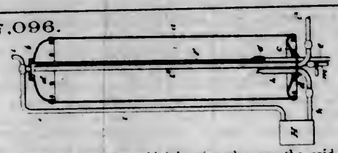
2. The combination, with the revolving picker-drum and its stationary concave, of the removable hood provided with the feed-table L and carrying a second concave with a lesser number of picker-teeth than the stationary concave, and a pair of feed-rolls journaled in said hood and operating in connection with said picker-drum.

3. In a picker, the combination of the frame A, revolving picker-drum B, shaft B, drive-pulley M, pulleys N, hood having concave E, feed-rolls H, and pulleys O, and belt-connections between said pulleys O and pulleys N, all arranged to operate substantially as described.

377,096. APPARATUS FOR HEATING WATER. ALLEN P. CRIDGE, New York, N. Y. Filed Jan. 2, 1885. Serial No. 151,763. (No model.)

Claim.—1. The water-reservoir and cold-water inlet-pipe having its eduction-orifice near the lower portion of the reservoir, and a check-valve to prevent the water in the reservoir from flowing from the lower portion of the reservoir back into the inlet-pipe, combined with a relief-valve and a relief-pipe co-operating with the said valve, the said relief-pipe being extended into the upper portion of the reservoir and serving to conduct water or steam from the upper portion of

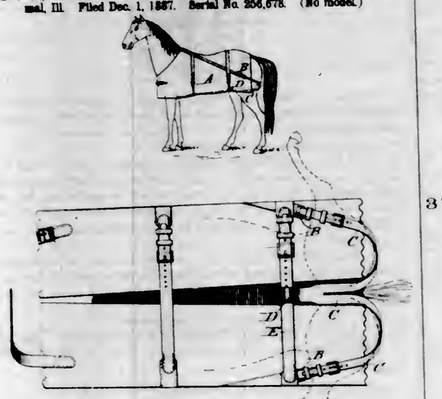
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the said reservoir into the said inlet-pipe whenever the said relief-valve is permitted to fall by the absence of pressure in the said inlet-pipe, substantially as described.

2. The inlet-pipe having a main or check valve, combined with a relief-pipe and a relief-valve controlling the relief-pipe, the said relief-valve being governed in its action by the said main or check valve, substantially as described.

377,097. HORSE-BLANKET FASTENER. ELLIS E. DILLON, Normal, Ill. Filed Dec. 1, 1887. Serial No. 256,678. (No model.)



Claim.—The combination, with a horse-blanket, of the strap B, adapted to receive the ends of the strap C, which is provided with a loop on its free end, and the strap E, all arranged to operate substantially as shown and described.

377,098. WOOD-BLOCK FLOORING. WILLIAM DUFFY, Bermondsey, County of Surrey, England. Filed Dec. 21, 1885. Serial No. 186,319. (No model.) Patented in England Aug. 27, 1885, No. 10,158; in France Oct. 20, 1885, No. 171,767, and in Belgium Dec. 2, 1885.



Claim.—1. In a wood-block flooring, the combination of a substructure of concrete, A B, bonding-blocks D, embedded therein, flooring-block C, having dowel-holes E, grooves *a*, and dowels F, fastening G, and a coating of preservative adhesive composition, substantially as set forth.

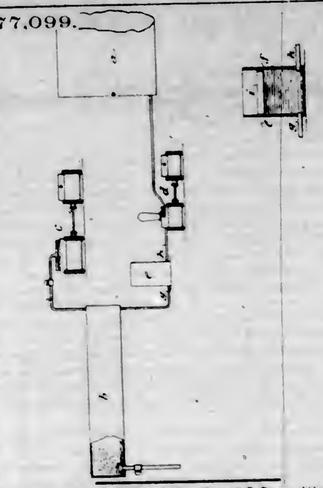
2. In a wood-block flooring wherein the blocks are mutually sustaining, the combination of a concrete substructure, intermittent non-continuous bonding-blocks embedded in said substructure, and doweled floor-blocks, some of which are secured to the bonding-blocks by suitable means, substantially as set forth.

3. In a wood-block flooring, the combination of doweled floor-blocks C, having grooves *a*, intermittent non-continuous bonding-blocks D, and a layer of preservative adhesive composition, as set forth.

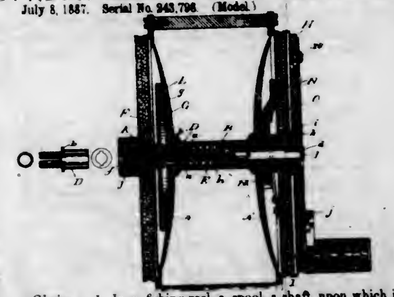
377,099. STEAM-BOILER. FRANK G. FOWLER, Bridgeport, Conn. Filed June 26, 1887. Serial No. 242,460. (No model.)

Claim.—In combination, a steam-boiler, a feed-tank, a pump, C, for extracting the gases from water, a feed-pump, *d*, and a storage-tank interposed between the feed-tank and feed-pump, said storage-tank being provided with a floating cover, substantially as and for the purpose set forth.

377,099.



377,100. FISHING-REEL. GEORGE S. GATES, Athol, Mass. Filed July 8, 1887. Serial No. 243,796. (Model.)



Claim.—1. In a fishing-reel, a spool, a shaft upon which it is loosely mounted, and means for rotating the shaft, combined with a friction device adjustably connecting the shaft and spool, whereby the spool may be revolved in one direction and be permitted to revolve in the opposite direction when the strain on the line overcomes the friction of the said device, substantially as described.

2. In a fishing-reel, a spool, a shaft upon which it is loosely mounted, and means, substantially as described, for rotating the shaft, combined with a positive locking device within the shaft for locking the spool to the said shaft, and means operable adjacent to the means employed for rotating the shaft for moving said locking device, substantially as described.

3. In a fishing-reel, a spool, a shaft upon which it is loosely mounted, and means for rotating the shaft, combined with a friction device adjustably connecting the shaft and spool, said friction device comprising a tension spring or plate and a friction-ring inclosing it, substantially as described.

4. In a fishing-reel, a spool, a shaft upon which it is loosely mounted, and means, substantially as described, for rotating the shaft, combined with a positive locking device for locking the spool to the shaft, and a sliding strip mounted upon the handle, it having a projection adjacent to the knob of the handle, substantially as described.

5. In a fishing-reel, a spool, a shaft upon which it is loosely mounted, and means, substantially as described, for rotating the shaft, combined with a positive locking device for locking the spool to the shaft, and a sliding strip mounted upon the handle, it having a projection adjacent to the knob of the handle, and the rivet-head *i*, to enter recesses in the handle, substantially as described.

6. In a fishing-reel, a spool, a shaft upon which it is loosely mounted, a spring-controlled friction device adjustably connecting the shaft and spool, and adjusting devices therefor, combined with a positive locking device extending within the shaft, and means readily accessible to the operator for moving said locking device, substantially as described.

377,101. WAGON-BRAKE. JONATHAN GIFT, Star, Wis. Filed June 2, 1887. Serial No. 240,073. (No model.)

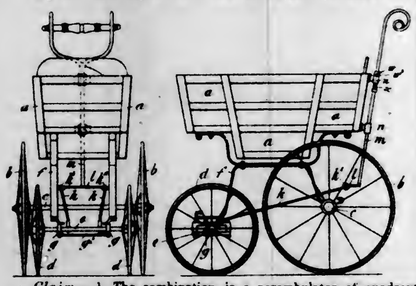


Claim.—1. The combination of the brake-levers having their inner ends connected together, the arm I', connected to the inner ends of the brake-levers, the lever M', fulcrumed to the reach and connected to the arm and having the notch N', the endwise-moving rod arranged under the tongue, and means, substantially as set forth, connecting the said endwise-moving rod to the lever M', the pawl O', pivoted to the reach and adapted to engage notch N' of lever M', and the operating-cord W', attached to the pawl, substantially as described.

2. The combination, in a wagon, of the tongue having the longitudinally-movable rod M, to which the whiffletree is connected, the front axle having the frame U, the longitudinally-movable rod X in a groove or recess in said frame, the link G, connecting said rod to rod M, the brake-levers B', having their inner ends connected together the lever M', fulcrumed to the reach, connections between the upper end of lever M' and the inner ends of the brake-levers, and the rod R', connecting the rod X to the lower end of lever M', substantially as described.

3. In an automatic wagon-brake, the combination of the tongue, the longitudinally-movable rod secured on the tongue and to which the horses are adapted to be attached, the said rod being provided with the stud N, and the yoke-lever U', fulcrumed on the tongue and adapted to engage the stud, substantially as described.

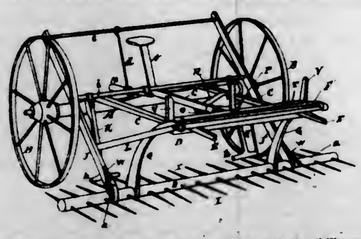
377,102. STEERING DEVICE FOR PERAMBULATORS. CHARLES R. GORHAM and CHARLES J. FLETCHER, Birmingham, County of Warwick, England. Filed May 31, 1887. Serial No. 239,867. (No model.)



Claim.—1. The combination, in a perambulator, of quadrant guides held in a suitable frame, the front axle resting on said quadrant and guided thereby, and operating-handles, and connections between the handles and the axle for steering the vehicle, substantially as described.

2. The combination, in a perambulator, of front guiding-wheels mounted on a pivoted axle, connections to a steering-handle, and a spring-clutch for returning the handle-bar and axle to their normal positions parallel with the fixed axle, so as to automatically steer the perambulator in a straight line.

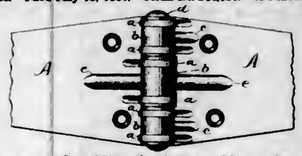
377,103. HORSE HAY-RAKE. THOMAS W. GREEN, Lansing, Mich. Filed Feb. 3, 1887. Serial No. 226,366. (No model.)



Claim.—1. The combination of the rake-head H, the thills, cross-bar F, connecting said thills, the curved draft-bars G, pivotally connecting said bar and rake-head, the tilting frame J, stops K, hanging from said tilting frame, and the bars L, pivotally connecting said stops and bars G with the supplemental bar T, guide-standards V, and handle M, substantially as and for the purpose described.

2. In a horse hay-rake, the combination of the axle A, wheels B, bars C, cross-bar D, thills E, cross-bar F, connecting the thills in advance of the bar D, the curved draft-rods G, pivotally connecting the bar F and rake-head H, teeth I, tilting frame J, stops K, bars L, handle M, sliding saddle O, lever P, hook R, ratchet-bar S, supplemental bar T, standard-guides U, dogs W, and pins *a*, the parts being constructed, arranged, and operating substantially in the manner and for the purposes specified.

377,104. SHEET-METAL HINGE. WILLIAM H. HART and THOMAS CORSCADEN, New Britain, Conn., assignors to the Stanley Works, same place. Filed July 13, 1887. Serial No. 244,128. (No model.)

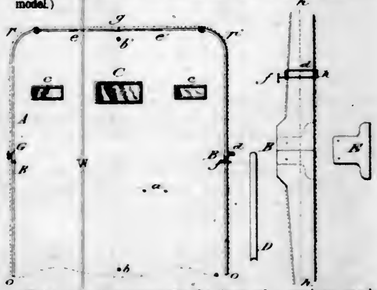


Claim.—1. In a hinge, the sheet-metal leaf or leaves having a swaged or struck-up strengthening-bead at the joint end, said bead extending transversely to the axis of the pintle, substantially as described, and for the purpose specified.

2. In a sheet-metal hinge, the leaf or leaves having a bead extending around the pintle-sleeve and over a portion of the leaf, and another bead on the body of the leaf extending toward the pintle-sleeve to a point where a transverse section through the leaf will extend through both beads, substantially as described, and for the purpose specified.

3. In a sheet-metal hinge, the angular leaf having strengthening-beads at the joint end, and a bead extending from said end around the first angle of the leaf, substantially as described, and for the purpose specified.

377,105. WEATHER-PROTECTOR FOR CARRIAGES. JOHN L. HEDE, Union, Ohio. Filed June 22, 1886. Serial No. 205,943. (No model.)



Claim.—1. A protector for the front of a carriage, consisting of the sectionally-hinged frame A, having a flexible covering, W, and fastening devices *g*, G, and *f*, whereby the said protector can be detachably secured to the upper part and to the sides of the front of a carriage-top, and also be readily removed and folded, as set forth.

2. The combination, with a carriage-top provided with the attaching device *g* and with the straps *m*, of a folding frame, A, having the flexible covering W and fastening devices G and *f*, whereby the same may be detached, folded, and suspended in the top of the carriage, as set forth.

3. The herein-described protector for the front of a covered carriage, consisting of the sectionally-folded frame A, provided with fastening devices *g*, G, and *f*, and with the flexible covering W, the latter having the lights c C c and the holes *a*, as set forth.

4. The herein-described protector, consisting of a jointed rod frame covered with flexible material, said frame having the double knuckle-joints B, and also provided with devices for attaching the same to the front of a carriage-top, as set forth.

377,106. SLICING AND CORING KNIFE FOR APPLE-PARERS. CHARLES E. HUDSON, Leominster, Mass. Filed June 16, 1887. Serial No. 241,461. (No model.)

Claim.—1. A slicing and coring knife combining in its construction a straight slicing-knife having an extended curved end bent in scroll form to partially encircle the core, and a solid metallic tubular core-guard having that portion of its inner edge that extends from the

377,106.



cutting-edge of the slicing-knife to the point of the outwardly-bent scroll-extension sharpened to act as a core-cutter, substantially as described.

2. A combined slicing-knife and circular core-cutter, as described, the coring-tube having a recess formed in its edge at the point where it joins the slicing-knife, substantially as described, and for the purpose set forth.

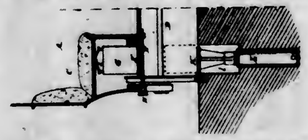
3. A slicing and coring knife combining in its construction a straight slicing-knife and a circular core-guard and core-cutter sharpened on its inner edge, the knife provided with an opening or recess in its cutting-edge at a point where it joins the core-cutter, substantially as shown and described.

4. A combined slicing-knife and core-cutter, as described, the slicing-knife having a recess at the lower end of its sharpened edge, in combination with a coring-tube having a recess registering with the recess in the slicing-knife, substantially as shown and described.

5. A slicing-knife combining in its construction a straight slicing-knife having an extended curved end bent in scroll form to encircle the core, and having cut-away portions or recesses upon its inner edge, and a coring tube or guard having lugs or points on the edge of the tube and being located and so formed as to fit in the cut-away portions or recesses of the scroll of the slicing-knife, substantially as shown and described.

6. A slicing-knife combining in its construction a straight slicing-knife having an extended curved end bent in scroll form to encircle the core, and having cut-away portions or recesses upon its inner edge, and a coring tube or guard having lugs or points formed upon its inner edge, the lugs or points on the inner edge of the tube being located and so formed as to fit in the cut-away portions or recesses of the scroll of the slicing-knife, the points or lugs on the tube being made to protrude slightly beyond the thickness of the metal forming the slicing-knife blade, and having such raised portion turned outward or headed to fasten the tube to the slicing-knife blade, substantially as shown and described.

377,107. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa. Filed June 30, 1887. Serial No. 242,980. (No model.)



Claim.—1. The combination of a car having compartments under the seats, a removable bottom for said compartments, and secondary batteries supported upon said removable bottom.

2. The combination of a car having compartments under the seats, a removable bottom for said compartments, secondary batteries supported upon said removable bottom, and detachable locks to detachably secure said removable bottoms in place.

3. The combination of a car having compartments under the seats, a removable bottom for said compartments, and secondary batteries supported upon said removable bottom, and stationary contacts for automatically connecting the cells of the battery in circuit upon placing said battery in working position in the car.

4. The combination of a car having compartments under the seats with two or more removable bottoms under each seat-compartment and a secondary battery upon each bottom.

5. The combination of a car having compartments under the seats with two or more removable bottoms under each seat-compartment, a secondary battery upon each bottom, and connecting-circuit for electrically connecting the several batteries under the same seat-compartment.

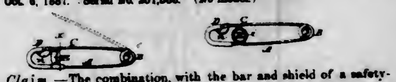
6. The combination of the railway, lifts located below the railway, an electrically-propelled car having compartments under its seats and above the lifts, and storage-batteries adapted to be supported upon the lift and raised into the compartments under the seats.

7. The combination of the railway, a hydraulic lift located below the railway and close to each rail, valves to control the movements of said lifts, an electrically-propelled car having compartments under its seats and above the lifts, and storage-batteries adapted to be supported upon the lift and raised into the compartments under the seats.

8. The combination of the railway, a lift located below the railway and having guides acting on the axles to automatically adjust the car into position to receive the batteries, an electrically-propelled car having compartments under its seats and above the lifts, and storage-batteries adapted to be supported upon the lift and raised into the compartments under the seats.

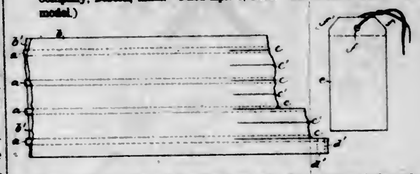
9. The combination of the railway, a car adapted to receive storage-batteries from below, a lift or elevating device having a platform or frame for receiving and lifting the storage-batteries into position, and guides to hold the car in position above the lifts.

377,108. SAFETY-PIN. JOEL JENKINS, Montclair, N. J. Filed Oct. 6, 1887. Serial No. 251,586. (No model.)



Claim.—The combination, with the bar and shield of a safety-pin, of a guard projecting from and united to the bar in front of the open end of the shield to protect the latter from strain, substantially in the manner and for the purpose herein set forth.

377,109. TAG AND MANUFACTURE OF THE SAME. WELLINGTON P. KIDDER, Malden, assignor to the Boston Tag and Printing Company, Boston, Mass. Filed Apr. 8, 1886. Serial No. 196,198. (No model.)



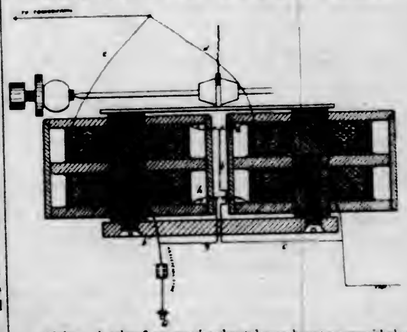
Claim.—1. The herein-described material for tags, consisting of a web of paper or other material suitable for the body of the tag and a series of continuous longitudinal parallel strips of re-enforcing material attached thereto at a distance apart equal to double the length of the tags to be cut from said material, substantially as described.

2. That improvement in the art or method of making tags which consists in fastening upon a web of paper a series of re-enforcing strips, cutting the said web longitudinally through the re-enforcing strips and midway between the said strips, cutting the strips thus made transversely into pieces of a length equal to the width of the tag, and forming an eye in the re-enforced end of the said pieces, substantially as described.

3. The herein-described strip of tag material, composed of a strip of paper or material suitable for the body of a tag and a continuous strip of re-enforcing material attached to and extending the entire length of one edge thereof, substantially as described.

4. The herein-described strip for tag material, composed of two strips of paper cemented together, combined with a continuous strip of re-enforcing material inserted and cemented between the said strips, extending the entire length of one edge thereof, substantially as described.

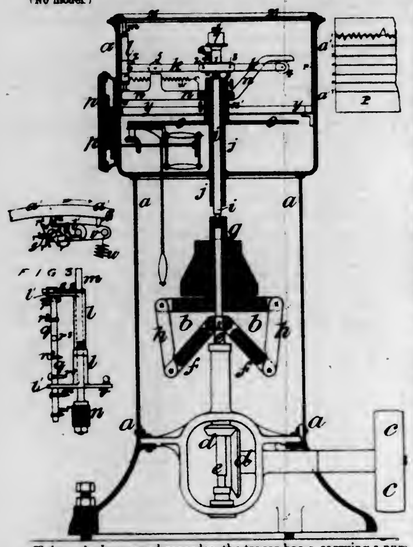
377,110. TELEGRAPH-INSTRUMENT. WILLIAM S. LOGUE, Baltimore, Md. Filed Mar. 10, 1887. Serial No. 230,349. (No model.)



Claim.—A relay for a quadruplex-telegraph system provided with exciting-coils, a condenser surrounding said coils, and circuit-connec-

tions between the condenser terminals and the line to neutralize the effect of the static discharge of the line on said relay.

377,111. APPARATUS FOR RECORDING THE VARIATIONS OF SPEED IN MOTIVE-POWER ENGINES. NORMAN MACBETH, Bolton, County of Lancaster, England. Filed July 15, 1886. Serial No. 208,153. (No model.)

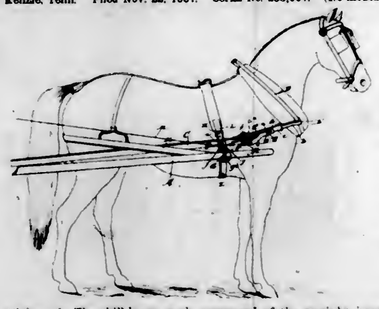


Claim.—1. In a speed-recorder, the tracer-bar *q*, carrying a number of tracers, *r' r²*, a traversing arm carrying the bar, and a case carrying a slip of paper to receive the record, in combination with means, substantially as described, for turning the said tracer-bar at intervals, whereby the tracers are presented in successive order for marking the slip.

2. The combination of the cylindrical case containing the record-paper of a speed-recorder with a traversing arm carrying a tracer-bar, *q*, with a number of tracers, a ratchet-wheel on the tracer-bar, and a fixed stop on the case to turn the tracer-bar as the traversing arm moves in the case, substantially as set forth.

3. The combination of the traversing arm and tracer-bar of a speed-recorder and the casing carrying the paper with the analyzing apparatus consisting of a frame adapted to the arm of the recorder-casing, a moving disk, E, a tracer, L, and a link, M, carrying the tracer and adapted to rest on and be operated by the tracer-bar of the recorder, all substantially as set forth.

377,112. HARNESS ATTACHMENT. JOSEPH R. MCDONALD, McKenzie, Tenn. Filed Nov. 22, 1887. Serial No. 255,907. (No model.)



Claim.—1. The thill-loops, each composed of the straight inner bar, *g*, provided with the perforated lug l, the curved bar g^2, hinged to the lower end of the bar *g*, and the curved bar *g'*, hinged to the free end of the bar g^2, provided with the slot i, the curves of the bars *g' g²* being formed to embrace the corresponding thill, the keys J, passing through the perforations on the lugs l, and the unlocking-cords M, substantially as specified.

2. The combination, with the hames, of the compound jointed detaching-loops connected thereto, the traces, each provided with a ring engaging the corresponding detaching-loop, the locking-keys, and the cords attached to said keys for the purpose of drawing the same and unlocking said loops, substantially as specified.

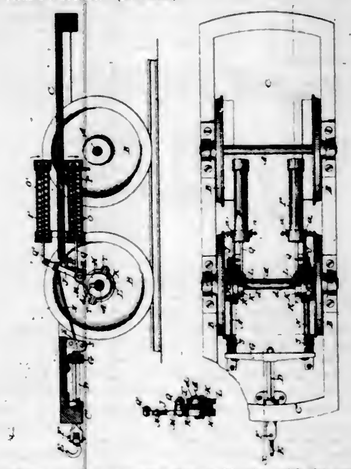
3. The combination, with the hames and the loops *b*, attached thereto, of the compound jointed detaching-loops, each composed of a straight bar, *c*, forming a joint with the corresponding loop *b* at its forward end and provided with the perforated lug D, and the curved bar *c'*, jointed to the rear end of the bar *c*, provided with the slot *d*, the traces having rings on their front ends to engage the corresponding detaching-loops, the split key engaging in the perforations of the lugs D, and the cords M, for the purpose of drawing the said keys and unlocking the disengaging-loops, substantially as specified.

4. The combination, with the thills, hames, and traces provided with rings on their front ends, of the compound jointed thill-loops attached to the hames and connecting with the rings on the traces, the keys locking the said thill-loops and detaching-loops, and the cords attached to said keys, whereby the thill-loops and detaching-loops may be simultaneously unlocked, substantially as specified.

5. A harness attachment for the purpose of simultaneously detaching the horse from the thills and traces, composed of the detaching-loops C, each consisting of the bars *c*, provided with the perforated lug D, the bar *c'*, provided with the slot *d*, and the locking-key E, the thill-loops G, each composed of the bar *g*, provided with the perforated lug I, the bar *g'*, provided with the slot i, the bar g^2, and the locking-key J, and the cords M, secured to the keys E and J for the purpose of simultaneously drawing said keys and unlocking the respective loops, substantially as specified.

6. The compound jointed loops to be attached to the hames and backband, respectively, the one attached to the hames connecting with the traces and the one attached to the backband connected to the thills, said compound jointed loops consisting of a rigid part and a pivoted or jointed part, the latter having a detachable connection with the rigid part, and the releasing-cord running from the driver to this said detachable connection, as set forth.

377,113. CAR-STARTER. JOHN O'NEILL, New York, N. Y., assignor of one-third to Charles Hvass, same place. Filed May 14, 1887. Serial No. 238,165. (No model.)

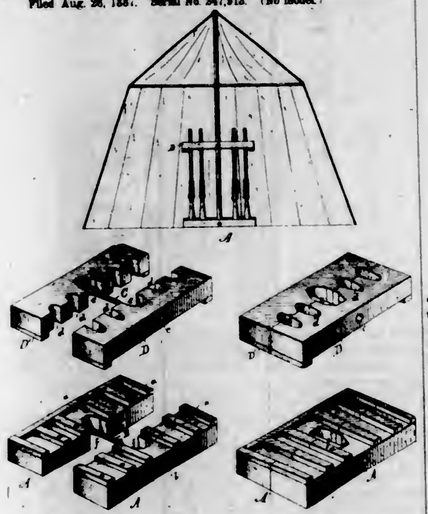


Claim.—1. In a car-starter, the combination, with the car-frame and car-axle, a circular disk secured upon the axle, and an arm pivoted loosely upon said axle at the side of the disk, of a lever pivoted to the arm to overhang the adjacent disk and provided with a toe or cam at its lower end to engage the periphery of the disk when the lever is thrown forward, a spring attached to the radial arm to pull it and the attached lever backward, and a draw-bar fitted to the car-frame and coupled to the lever to pull it and the car forward, substantially in the manner and for the purpose herein set forth.

2. The combination, in a car-starter, of a circular disk secured to the car-axle, a radial arm pivoted loosely upon the axle at the side of the disk, a lever pivoted to said arm and terminating in an eccentric toe or cam adapted to engage the disk, a draw-bar coupled to the free end of the lever, a cylinder pivoted at its forward end to oscillate in the same vertical plane as the lever, a spiral spring fitted within said cylinder, and a coupling-bar engaging at one end the rear end of said spring and pivoted at its opposite end to the radial arm carrying the lever, all substantially in the manner and for the purpose herein set forth.

3. The combination, in a car-starter, with an arm pivoted loosely upon the axle, a lever pivoted to said arm, a circular disk secured to the axle and engaged peripherally by said lever when it is moved forward, a draw-bar, and a cord or cable coupling the draw-bar to the lever to move it forward, of a spring coupled to the radial arm on the axle, and a second spring coupled to the outer end of the lever pivoted to said arm said springs being made to operate conjointly in the retraction of the lever, substantially in the manner and for the purpose herein set forth.

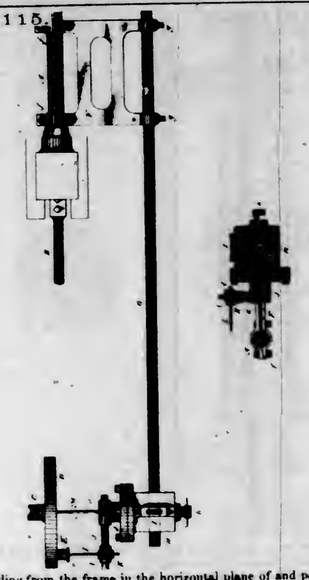
377,114. GUN-RACK FOR TENTS. SAMUEL S. FAGUE, U. S. Army. Filed Aug. 26, 1887. Serial No. 247,913. (No model.)



Claim.—1. A gun-rack consisting of a stock and muzzle holding block, each made in two parts and provided with an opening for a tent-pole and the passage of a securing-bolt, the parts of each block being removably secured to each other and to the tent-pole.

2. In a gun-rack for tents, the combination, with a tent-pole, of a stock-holding block having a central opening for the passage of the tent-pole, a muzzle-holding block having a central opening for the pole and openings for the muzzles of the guns, each block made in two pieces and detachably secured to each other and to the pole by a pin or bolt passing through each separate piece and the tent-pole, substantially as and for the purpose set forth.

377,115. INSTRUMENT FOR TESTING THE FAIRNESS OF STEAM-ENGINE CRANK-SHAFTS. JOHN PATTERSON, San Francisco, Cal. Filed Aug. 31, 1887. Serial No. 248,475. (No model.)



Claim.—1. An instrument for testing the fairness of crank-shafts of steam-engines, consisting of a frame-work to be secured to the piston-rod, a pointer carried by the frame-work for centering on the crank-shaft, and a second pointer movable about the first as a center for centering on the crank-pin, substantially as described.

2. An instrument for testing the fairness of crank-shafts of steam-engines, consisting of a frame-work to be secured to the piston-rod, a level on said frame-work for leveling it, a pointer carried by the frame-work for centering on the crank-shaft, and a second pointer movable about the first as a center for centering on the crank-pin, substantially as described.

3. An instrument for testing the fairness of crank-shafts of steam-engines, consisting of a frame to be secured to the piston-rod, a rod secured to the frame-work and extending parallel with the piston-rod, a pointer carried by the rod for centering on the crank-shaft, and a second pointer movable about the first as a center for centering on the crank-pin, substantially as described.

4. An instrument for testing the fairness of crank-shafts of steam-engines, consisting of a frame to be secured to the piston-rod, a rod extending from the frame in the horizontal plane of and parallel with the piston-rod, a level on the frame-rod, a pointer carried by said rod for centering on the crank-shaft, and a second pointer movable about the first as a center for centering on the crank-pin, substantially as described.

5. An instrument for testing the fairness of crank-shafts of steam-engines, consisting of a frame to be secured to the piston-rod, a rod extending from the frame in the horizontal plane of and parallel with the piston-rod, a sliding head adjustable on said frame-rod, a pointer carried by said head for centering on the crank-shaft, and a second pointer movable about the first as a center for centering on the crank-pin, substantially as described.

6. An instrument for testing the fairness of crank-shafts of steam-engines, consisting of a frame to be secured to the piston-rod, a rod extending from the frame in the horizontal plane of and parallel with the piston-rod, a sliding head adjustable on the frame-rod, a hub rotating in said head, a pointer carried by the hub for centering on the crank-shaft, a radial arm carried by said hub, a sliding head adjustable on the arm, and a pointer carried by said last-named head for centering on the crank-pin, substantially as described.

7. An instrument for testing the fairness of crank-shafts of steam-engines, consisting of a frame to be secured to the piston-rod, a rod fitted to the frame and adjustable lengthwise therein, said rod extending in the horizontal plane of and parallel to the piston-rod, a sliding head adjustable on said frame-rod, a hub fitted to said rod rotating on the sliding head, a pointer carried by the hub for centering on the crank-shaft, a radial arm carried by said hub, a sliding head adjustable on said arm, and a pointer carried by said last-named head for centering on the crank-pin, substantially as described.

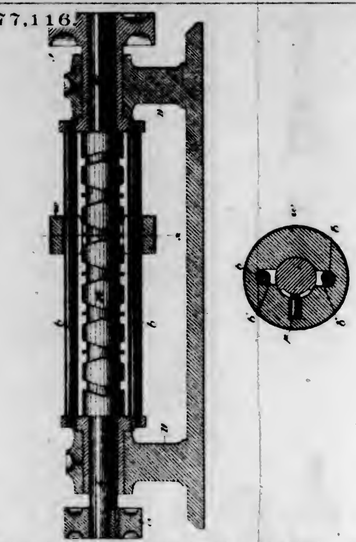
8. An instrument for testing the fairness of crank-shafts of steam-engines, consisting of a frame to be secured to the piston-rod, a longitudinally-adjustable rod carried by the frame and extending in the horizontal plane of and parallel with the piston-rod, a sliding head adjustable on the frame-rod, a level carried by said head, a rotating hub on the end of the head, an adjustable pointer in said hub for centering on the crank-shaft, a radial arm carried by the hub and adjustable lengthwise therein, a sliding head adjustable on the arm, and an adjustable pointer carried by the last-named head for centering on the crank-pin, substantially as described.

377,116. CARD-GRINDING MECHANISM. WILLIAM H. RANKIN, Lawrence, Mass. Filed Apr. 19, 1887. Serial No. 235,322. (No model.)

Claim.—1. The screw-shaft, combined with the surrounding wheel guided directly upon it, and having a pin to enter the spaces between the threads of the screw-shaft, and means to operate the wheel, substantially as described.

2. The screw-shaft and the surrounding wheel mounted and guided directly upon it, and having a pin to enter the spaces of the screw-thread, and having a rod-receiving opening, *b'*, combined with a rotat-

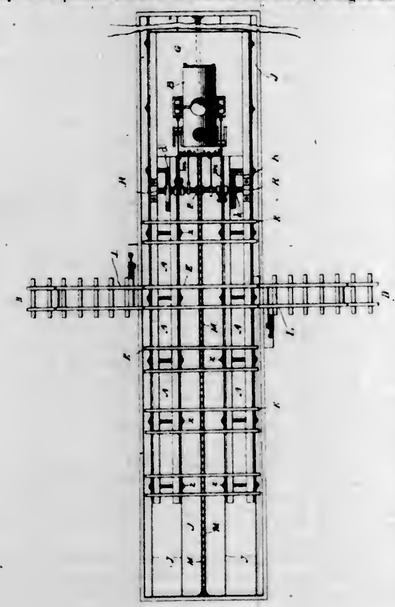
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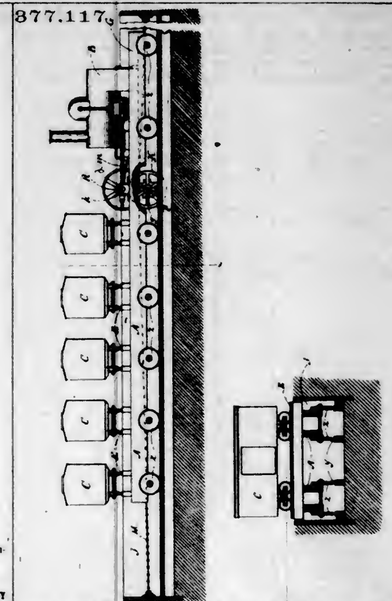


ing frame having a rod extended through the wheel in the said opening, to operate substantially as described.

377,117. APPARATUS FOR TRANSFERRING CARS. ROWLEY ROBINSON, Wymore, Nebr. Filed Aug. 24, 1887. Serial No. 247,701. (No model.)

Claim.—1. In a device of the character described, the combination of the following instrumentalities, to wit: a pit formed at right angles to the main track, longitudinally-arranged tracks within said pit, a carriage mounted on trucks adapted to run on said tracks, sets of transversely-arranged rails mounted on said carriage and adapted to register with the main-track rails, a jack-chain disposed longitudinally in said pit and secured at or near the ends thereof, an engine dis-





posed on said carriage, a crank-shaft journaled on said carriage and provided with a pinion and fly-wheel, a counter-shaft journaled on said carriage and provided with a sprocket-wheel engaging said chain and a gear engaging said pinion, and a pitman rod or rods connecting the engine with said crank-shaft, substantially as described.

2. In a device of the character described, the carriage A, provided with the rails E, trucks z, the engine B, mounted on said carriage, the crank-shaft R, provided with a fly-wheel and pinion, k, the counter-shaft g, provided with the sprocket-wheel P and gear K, the track y and chain M, disposed in the pit J, the pitman-rods m, connecting the engine with said crank-shaft, and the main track D, all constructed, combined, and arranged to operate substantially as described.

3. In a device of the character described, the combination, with a carriage provided with a series of tracks, either of which is adapted to register with a main track, of the track on which said carriage moves, a fixed jack-chain disposed in the path of said carriage, a shaft mounted on said carriage, a sprocket-wheel on said shaft and engaging said jack-chain, and mechanism for operating said shaft, substantially as described.

4. In a device of the character described, the main track D, provided with a switch, I_1, at either side of the carriage A, to enable said main track to be so adjusted as to register with the tracks E on said carriage when the carriage is not stopped in position to cause the tracks to register, substantially as described.

377,118. INSULATING ELECTRIC CONDUCTORS. RUPERT SCHEUERAUER, Dresden, Saxony, Germany, assignor to Weber & Scheuerauer, same place. Filed Apr. 25, 1887. Serial No. 236,120. (No model.)

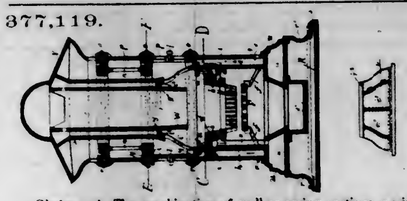


Claim.—1. The process of insulating electric conductors, consisting in the following steps: first immersing a strip of paper in a bath of ammoniacal oxide of copper, then rolling the conducting-wire with said strip to cause the paper to adhere to said wire, then drying the strip by heat and pressure, substantially as and for the purpose set forth.

2. A strip of paper containing oxide of copper and having conducting-wires embedded therein, the whole forming an integral article, substantially as shown.

377,119. PARLOR-STOVE. MAX SCHNEIDER, Doos, near Nuremberg, Bavaria, Germany. Filed June 14, 1884. Serial No. 134,903. (No model.) Patented in Belgium Sept. 15, 1883, No. 62,585; in England Jan. 23, 1884, No. 1,974, and in Germany Feb. 6, 1884, No. 28,231.

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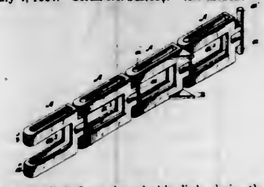


Claim.—1. The combination of wall or casing sections *p* with rings M, bars *n*, bolted to said rings, and clamps *o*, which hold the aforesaid parts in place, substantially as set forth.

2. The outer casing having openings, in combination with slides *k*, which are movable from said openings to allow the heat of the fire to stream into the room, and the crown *i*, provided with panes of mica, which transparently cover the fire when the latter is exposed, substantially as set forth.

3. In a parlor-stove, the combination of the crown *i*, provided with mica plates, and a movable section to allow communication with the interior thereof, with the tubes X W and the inner casing, *h*, which supports said crown and tubes, substantially as set forth.

377,120. DRIVE-CHAIN. FREDRICK F. SCHOFIELD, Oscoda, Mich. Filed July 7, 1887. Serial No. 243,659. (No model.)



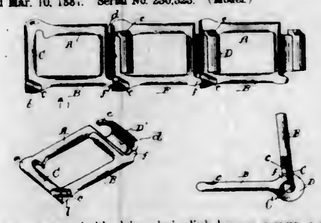
Claim.—1. A link for a detachable link chain, the same consisting of shank *a*, with trunnions *a'* and loops a^2, with an intermediate slot, a^3, substantially as described.

2. A link for a detachable link chain, consisting of shank *a*, with trunnions *a'*, loops a^2, with intermediate slot, a^3, and in connection therewith lugs or shoulders a^4, substantially as described.

3. A link for a detachable link chain, the same consisting of a shank, *a*, with trunnions *a'*, loops a^2, with intermediate slot, a^3, and projections B, substantially as and for the purposes described.

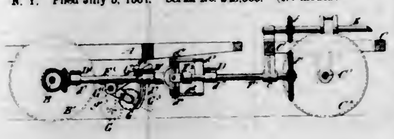
4. A detachable link chain, the same consisting of a series of links engaged with each other, each said link consisting of a shank, *a*, with trunnions *a'*, and loops a^2, with an intermediate slot, a^3, and with or without the lugs or shoulders a^4, substantially as and for the purposes described.

377,121. DRIVE-CHAIN. DAVID J. SHELDRICK, Columbus, Ohio. Filed Mar. 10, 1887. Serial No. 230,323. (Model.)



Claim.—A detachable drive-chain link having a spur, *e*, projecting from the lip of the hook, the spur *f*, projecting in the opposite direction from the end of the side bar at the opposite side of the link, and the diagonal grooves or recesses *e' f'* upon opposite sides of the link and in the opposite corners of the link, substantially as set forth.

377,122. MOTOR-TRUCK FOR CARS. HALCYON SKINNER, Yonkers, N. Y. Filed July 5, 1887. Serial No. 243,306. (No model.)



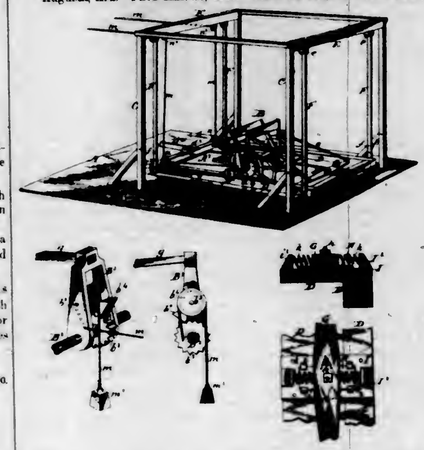
Claim.—1. The combination, with a car-truck and an independent motor-truck, of a reach comprising two sections, one of which rigidly projects from the motor-truck and the other of which is for connection with the car-axle, and which sections are connected together by a vertical pivot to provide for their swinging one relatively to the other, a motor-shaft on the motor-truck, and gearing connecting said shaft with the car-axle, substantially as herein described.

2. The combination, with the car-truck and the independent motor-truck C, of the reach composed of the sections D D', having the rings or yokes d^3 d^4, one of which has arms secured by vertical pivots to the other, the section D rigidly projecting from the motor-truck and the section D' having boxes fitting the car-axle, a motor-shaft on the motor-truck, and gearing connecting said shaft with the car-axle, substantially as herein described.

3. The combination, with a car-truck and an independent motor-truck, of a reach connecting them and composed of sections, one section projecting from the motor-truck and the other being connected with the car-axle, and the two said sections being connected by a vertical pivot, and a transmitting-shaft extending from the motor-truck and geared with the car-axle and composed of sections corresponding to the sections of the reach and connected together by a universal joint, substantially as herein described.

4. The combination, with a motor-truck independent of a car and having a reach for connection with a car-axle, of trailing wheels and swinging bearings therefor on the reach, whereby said wheels may be raised out of the way or lowered to support the reach when it is disconnected from a car-axle, substantially as herein described.

377,123. BOAT-PROPELLING MECHANISM. ANDOY B. SMITH, Augusta, Ark. Filed Mar. 23, 1887. Serial No. 232,677. (No model.)



Claim.—1. A boat-propelling apparatus consisting of a reciprocating frame, a propeller-wheel having its shaft mounted loosely in bearings secured to said frame, and means, as set forth, for locking and releasing said shaft, substantially as described.

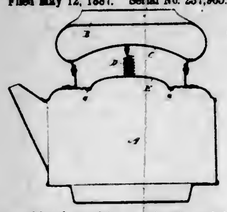
2. The combination of a reciprocating frame, a propeller-wheel having its shaft mounted loosely in bearings secured to said frame, a ratchet-wheel secured upon said shaft, and a pawl engaging with said ratchet-wheel, with means, as described, for operating said pawl, substantially as and for the purpose described.

3. The combination of a reciprocating frame, a propeller-wheel having its shaft mounted loosely in bearings secured to said frame, a ratchet-wheel secured upon said shaft, arm B^2, pivoted upon said shaft, a reversible pawl pivoted upon each arm, an evener connected with the reciprocating frame, and rods connecting said evener with the arms B^2, substantially as described.

4. The combination of a reciprocating frame, a propeller-wheel having its shaft mounted loosely in bearings secured to said frame, and means for locking and releasing said shaft, an evener located on one end of said frame and connected with said means, and springs to support said evener, substantially as described.

5. The combination of a reciprocating frame, a propeller-wheel having its shaft loosely mounted in bearings secured to said frame, a ratchet-wheel secured upon said shaft, a reversible pawl engaging with said ratchet-wheel, and a rope to reverse and control said pawl, substantially as and for the purpose described.

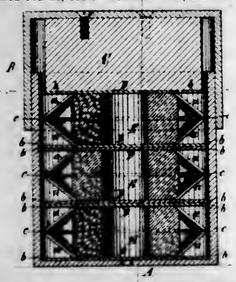
377,124. TEA-KETTLE. LEWIS P. SNYDER and GEORGE WAIGLE, Linden, Mich. Filed May 12, 1887. Serial No. 237,965. (No model.)



Claim.—1. In combination, with a tea-kettle and its handle, an internal cover and a spring connecting said handle and cover, substantially as and for the purposes specified.

2. In a tea-kettle, the combination, with the kettle A and handle provided with brace-bar C, of the flanged cover E and the coil-spring D, connecting said cover and brace-bar, substantially as described.

377,125. SPRING. JOSEPH TRENT, Jersey City, N. J. Filed Oct. 3, 1885. Renewed Oct. 28, 1887. Serial No. 253,624. (No model.)



Claim.—1. In a spring, the combination of pairs of spring-plates of metal having solid approximately parallel main or body portions and inwardly-extending cuts upon the edges, certain portions of the metal between the cuts being bent at an angle to the main portions, rubber cushions having approximately parallel ends arranged between said spring-plates, and a case or shell, substantially as specified.

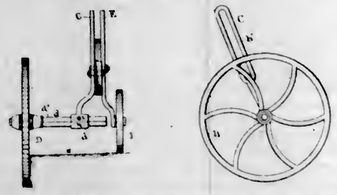
2. In a spriog, the combination of pairs of spring-plates of metal having solid central portions and inwardly-extending cuts upon the edges, certain portions of the metal between the cuts being bent at an angle from the main or body portion, hollow rubber springs arranged between said spring-plates, and a case or shell, substantially as specified.

3. In a spring, the combination of pairs of spring-plates of metal having inwardly-extending cuts upon the edges, certain portions of the metal between the cuts being bent at an angle from the main or body portion, a friction or bearing ring between said bent portions, and a case or shell, substantially as specified.

4. In a spring, the combination of pairs of spring-plates of metal having inwardly-extending cuts upon the edges, certain portions of the metal between the cuts being bent at an angle from the main or body portion, guides upon said spring-plates, and a case or shell, substantially as specified.

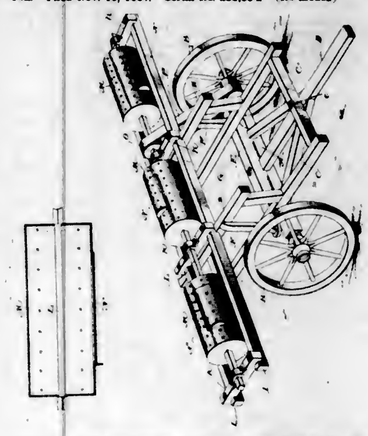
5. In a spring, the combination of the case or shell A B, the plunger C, rigidly secured to the portion B of the shell, the spring disks or plates D *a b*, and the hollow rubber springs or cushions E, substantially as specified.

377,126. ATTACHMENT FOR PLOWS. WILLIAM TYERS, Sharon, Pa. Filed June 12, 1886. Serial No. 205,029. (No model.)



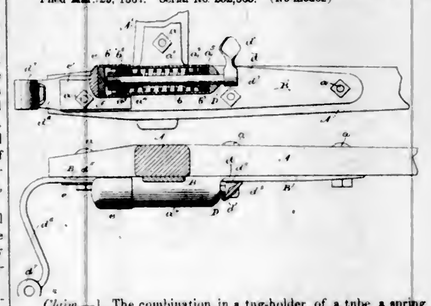
Claim.—In a plow, the combination, with the plow-beam A, of the slotted arms or standards C and E, each secured directly and adjustably to the said beam, said arms being bent or curved transversely outward at their lower ends, the arm C having a box to receive the adjustable axle of the furrow-wheel, and the arm E having a journal for the surface-wheel, substantially as described.

377,127. INSECT-DESTROYER. THOMAS H. WEBB, Bay View, Tex. Filed Nov. 16, 1887. Serial No. 255,334. (No model.)



Claim.—The combination, with the truck formed by the axle, bounds, and tongue and provided with the standards F, of the frame C, fitting between said standards, the bolt c, the frame composed of the bars I and K, removably attached to the frame G, the shaft L, journaled in bearings secured to the bars K, the pulleys on said shaft and on the axle, the band connecting said pulleys, and the cylindrical sifters secured on the shaft L at proper points and provided with the described perforations and doors N, substantially as specified.

377,128. SHAFT-IRON. ALBERT B. WEBSTER, Manchester, N. H. Filed Mar. 29, 1887. Serial No. 232,865. (No model.)



Claim.—1. The combination, in a tug-holder, of a tube, a spring within the said tube, a draw-bar having its shank extended into the tube and encircled by the said spring, a nut upon the end of the said shank, and a stop, substantially as described, to limit the forward movement of the said spring to prevent it being set under excessive tension, substantially as described.

2. The combination, in a tug-holder, of a tube provided with a cap, a packing in said cap, a spring, *b*, located in said tube, the washers b^2 b^3 at opposite ends of the said tube, the draw-bar D, having the extension *d'*, and nut *b'*, substantially as described.

3. The combination, in a tug-holder, of a tube provided with a cap, a packing in said cap, a spring, *b*, located in said tube, the draw-bar, D, having the extension *d'*, and nut *b'*, substantially as described.

4. The shaft-iron B, the tube a^2, integral therewith, the spiral spring *b*, and the draw-bar D, combined with the sweep d^6, spliced to the shaft-iron B, and with the cap *c*, provided with the extension *c'*, to cover the said spliced shaft-iron and sweep-piece, substantially as described.

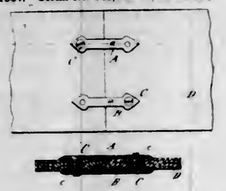
5. The combination, in a tug-holder, of the tube a^2, the spiral spring *b*, the draw-bar D, having the extension *d'*, provided with the packing d^4, the nut *b'*, and packing *f*, substantially as described.

6. The combination, in a tag-holder, of the tube a^2, the spiral spring *b*, the draw-bar D, having the extension *d'*, provided with the packing d^4, and having the thickened portion d^3, the nut *b'*, and packing *f*, substantially as described.

7. The combination, in a tag-holder, of a tube, a spiral spring, *b*, located therein, the washers b^2 b^3 at opposite ends of the said tube, the draw-bar D, having the extension *d'*, and nut *b'*, substantially as described.

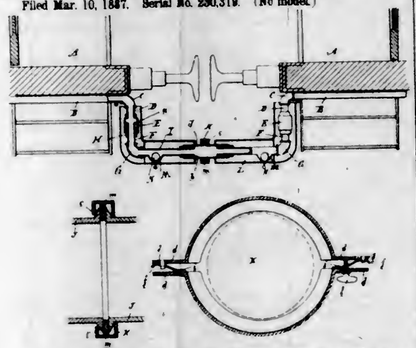
8. The combination, in a tug-holder, of the tube a^2, the spiral spring *b*, the draw-bar D, having the extension *d'*, provided with the packing d^4, and the nut *b'*, substantially as described.

377,129. BELT-FASTENER. EMIL WEITMAN, Detroit, Mich. Filed June 20, 1887. Serial No. 241,946. (No model.)



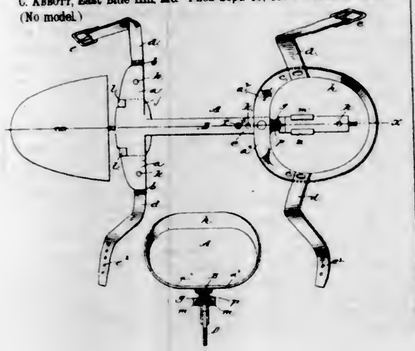
Claim.—As an improved article of manufacture, the belt-fastener described, comprising two like plates, each formed with a boss at one end only, and at the opposite end with an eye, and adapted to be used together with the bosses extending in opposite directions, and with screws passed through the eyes into the bosses, as set forth.

377,130. PIPE-COUPLING. LYMAN T. WHITE, Eaton Rapids, Mich. Filed Mar. 10, 1887. Serial No. 230,319. (No model.)

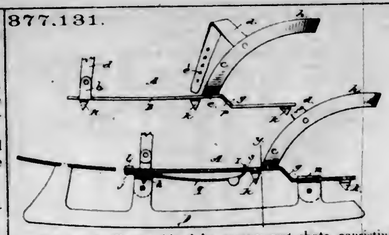


Claim.—In a device for the purposes specified, the ring K, formed of two parts, each part provided with lugs *d*, springs *f* between said lugs and slotted at one end, a T-stud, *k*, loosely engaging the slot of said spring, and the set-screw *l*, passed through said lugs, as set forth.

377,131. CONVERTIBLE ICE-CREEPER AND SKATE. RICHARD C. ABBOTT, East Blue Hill, Me. Filed Sept. 13, 1887. Serial No. 249,572. (No model.)



377,131.



Claim.—1. The combined ice-creeper and skate, consisting of a sole and heel bearing plate and a skate-runner, which are convertible to form either a skate or ice-creeper, substantially as set forth.

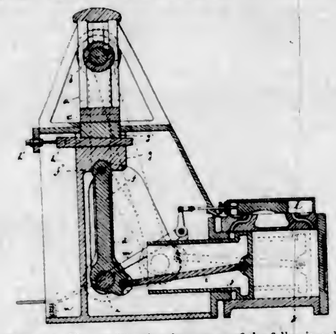
2. The herein-described interchangeable ice-creeper and skate, comprising the sole-bearing plate having spurs on its under side, and provided with means for securing it to the foot, and a skate-blade provided with means for its attachment to said sole-bearing plate, substantially as described.

3. An interchangeable ice-creeper and skate, comprising the sole and heel bearing plate B, provided with an aperture, *s*, and spurs on its under side, and with means for its attachment to the foot, and a skate-blade provided with upwardly and inwardly extending ear-pieces, and a spring-bar having a stud, *r*, suitably located and adapted to engage with and be disengaged from said apertured sole and heel bearing plate, substantially as and for the purpose described.

4. An interchangeable ice-creeper and skate, comprising the sole-bearing plate having spurs on its under side and the downwardly-offset heel-bearing portion *g*, narrowed, as at *p*, and provided with means for its attachment to the shoe, and a skate-blade provided with upwardly and inwardly extending ear-pieces suitably located and adapted to engage said sole and heel bearing plate, substantially as and for the purpose described.

5. An interchangeable ice-creeper and skate, comprising the sole-bearing plate B, having spurs on its under side and provided with the apertnre *s*, and having the downwardly-offset heel-bearing portion *g*, narrowed, as at *p*, the side projections, *b*, and heel-embracing rest *h*, and provided with means for attachment to the foot, and a skate-blade provided with upwardly and inwardly projecting ear-pieces *l m*, and a spring-bar, with stud *r*, suitably located and adapted to engage with and disengage from said apertured sole and heel bearing plate B, substantially as and for the purposes described

377,132. PRESS. JOHN F. ALLEN, New York, N. Y. Filed Aug. 25, 1887. Serial No. 247,805. (No model.)



Claim.—1. The combination, in a press, of the following elements: uprights with slotted bearings, an upper vertically-movable shaft carrying upper platen, a pair of connecting-rods, a lower pin, a pivoted strut connected to said pin between the rods, and a lower platen, substantially as specified.

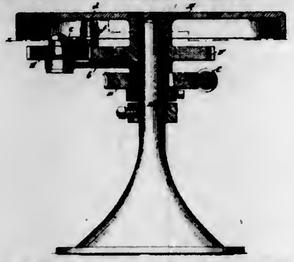
2. The combination of uprights *a*, movable platen *c*, and shaft *b* with rods *d*, pin *e*, and with pivoted strut *f*, having upper rounded edge, and with lower platen, *g*, having a grooved face to accommodate such rounded edge, substantially as specified.

3. The combination of slotted uprights *a* with the vertically-movable shaft *b*, carrying platen *c*, and with the rods *d*, connecting shaft *b* with pin *e* and with strut *f*, platen *g*, and strut *i*, that connects the strut *f* with trunk-piston *j*, and with lever *m*, for operating the piston, substantially as specified.

4. The combination of uprights *a* with shaft *b*, movable platen *c*,

rods *d*, pin *e*, strut *f*, and with the platens *g g'* and interposed wedge *h*, having set-screw *h'*, substantially as specified.

377,133. MEANS FOR CONVERTING MOTION. HORACE L. ARNOLD, Brooklyn, assignor of one-half to Robert W. Smith, New York, N. Y. Filed May 11, 1887. Serial No. 237,854. (No model.)



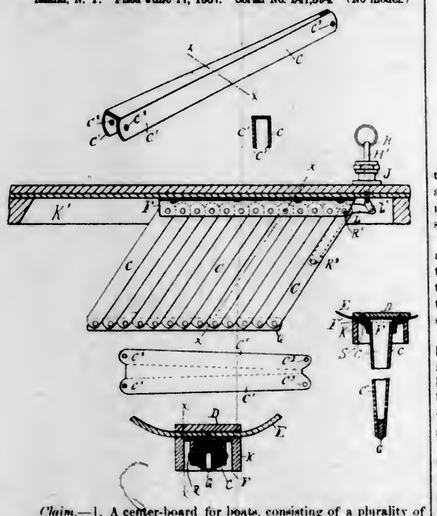
Claim.—1. The combination, with the stationary gear F, of the planetary gear E, carrying the crank-pin or stud *d*, and connections between the latter and the part to which motion is to be imparted, substantially as described.

2. The combination, with the stationary gear F, of the arm or carrier *b*, the planetary gear E, mounted thereon and having the crank-pin or stud *d*, and connections between the latter and the part to which motion is to be imparted, substantially as described.

3. The combination, with the stationary gear F, of the worm C and worm-gear B, the arm *b*, carrying the planetary gear E, the arm *c*, carried by the gear E and having the stud *d*, and connections between the latter and the part to which motion is to be imparted, substantially as described.

4. The combination, with the stationary gear F, of the worm and worm-gear C B, the planetary gear E, driven by the worm-gear and having the stud or crank-pin *d*, and connections between the latter and the part to which motion is to be imparted, substantially as described.

377,134. FOLDING CENTER-BOARD. ASHBELL BARNUM, Green Island, N. Y. Filed June 17, 1887. Serial No. 241,594. (No model.)



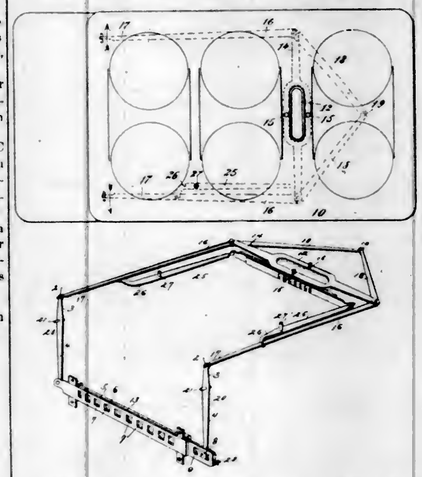
Claim.—1. A center-board for boats, consisting of a plurality of metallic sections shaped like an open trough, having the opening gradually contracted in width from one end to the other of each section, the several sections being riveted through their side walls at the ends having the contracted openings to a single plate or bar interposed between said walls, and riveted through one side wall at the other or open end of each section to a plate or bar located on the outer side of the wall, and through the opposite side wall to another plate or bar on the outer side of said walls, the relative position of the sections being such that the back or bottom of each section, except the last, is partially inclosed within the walls of its succeeding and contiguous section, one of said sections being provided with an operating-lever for the purpose of folding and unfolding said sections, substantially as described, and for the purposes set forth.

2. The combination, with a boat having a longitudinally-slotted keel, of a folding center-board composed of trough-like overlapping sections pivoted at one end to a common slat or bar interposed between the walls of said sections and at the other end to an inclosing bar or bars secured to the boat within said slot, and an operating-lever secured at one end to one of said sections and connected at the other end with an operating-handle by a link and stem passing up into the boat through a stuffing-box, substantially as described, and for the purposes set forth.

377,135. SOAP COMPOUND. FREDERICK C. BAUER, Philadelphia, Pa. Filed Mar. 5, 1887. Serial No. 229,844. (Specimens.)

Claim.—A granular soap compound consisting of a porous vehicle—such as sawdust—charged with soap, substantially as set forth.

377,136. AUTOMATIC DAMPER. WILLIAM A. J. BEAUCHAMP, Orange, Tex. Filed Nov. 8, 1886. Serial No. 218,324. (No model.)



Claim.—1. The combination, with a stove and a sliding damper therein, of an expansion-bar, a lever pivoted to the front of the stove and having its lower end connected to the damper, and a lever connected to the lever on the front of the stove and to the expansion-bar, substantially as herein shown and described.

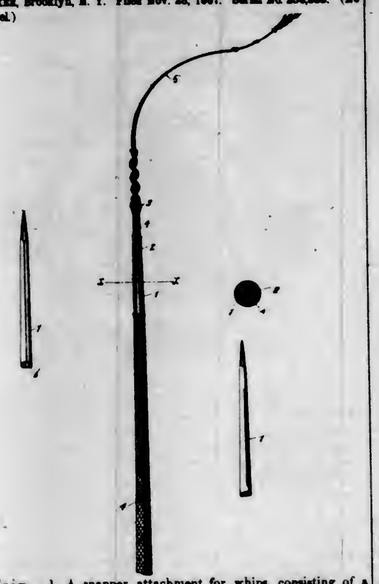
2. The combination, with a stove and sliding damper-plates, of an expansion-bar, levers pivoted to the front of the stove and having their lower ends connected to the damper-plates, and levers pivoted to the expansion-bar, and having their rear ends pivoted together and their forward ends connected to the levers pivoted to the front of the stove, substantially as herein shown and described.

3. The combination, with a stove and sliding damper-plates, of levers pivoted to the front of the stove and having their lower ends adjustably connected to the damper-plates, an expansion-bar, and bent levers pivoted to the ends of the expansion-bar, and having their rear bent ends pivoted together and their forward ends loosely connected to the levers pivoted to the front of the stove, substantially as herein shown and described.

4. The combination, with a stove and sliding damper-plates at the front of the stove, pivoted levers 20, having their lower ends connected to the damper-plates, an expansion-bar, 14, and levers 16, pivoted to the expansion-bar, and having their rear ends pivoted together and their forward ends connected to the levers 20, of an auxiliary damper at the rear of the stove, and levers 25, pivoted to the top of the stove and to the levers 16, and having their rear ends connected to said auxiliary damper, substantially as herein shown and described.

5. The combination, with a damper made up of sections 5 and 6, that are formed with apertures 7, of levers 20 and 16, one of the levers 20 being connected to a block, 8, that rides within an aperture, 9, formed in one of the damper-sections, the block 8 being arranged in connection with an adjusting-screw, 22, substantially as and for the purpose stated.

377,137. SNAPPER ATTACHMENT FOR WHIPS. WILLIAM BECKER, Brooklyn, N. Y. Filed Nov. 26, 1887. Serial No. 256,333. (No model.)

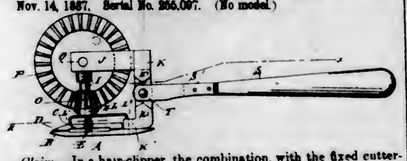


Claim.—1. A snapper attachment for whips, consisting of a stiffening-piece formed of a tapering tubular section of a quill, embracing a whip-tip, and a plaited covering extending over the whip-tip and strengthening-piece and forming a loop, substantially as shown and described.

2. In a snapper attachment for whips, a stiffening-piece consisting of a tapering tubular section of a quill, substantially as described.

3. A snapper attachment for whips, consisting of the combination, with whip-tip 2, of stiffening-piece 1, formed of a section of a quill cut off square at one end and to a point at the other end, and embracing the whip-tip, and a plaited covering, 4, extending over the stiffening-piece and formed with a loop, 3, at the end of the whip-tip, the pointed end of the stiffening-piece extending over the whip-tip and close up to the loop 3, substantially as described.

377,138. HAIR-CLIPPER. JOHN BERTSCH, Boston, Mass. Filed Nov. 14, 1887. Serial No. 255,007. (No model.)

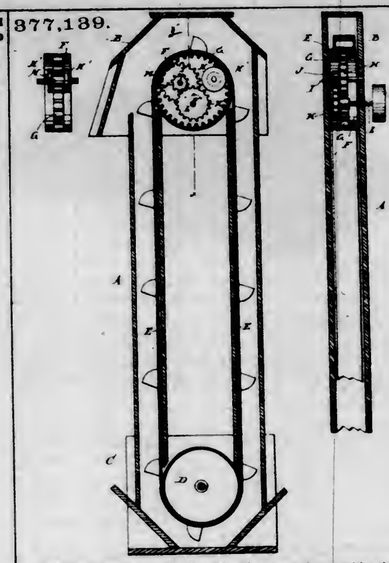


Claim.—In a hair-clipper, the combination, with the fixed cutter-plate A and the vertical back plate, K, extending up from the rear side thereof and provided with the forwardly-extending arm J, projecting over the center of the cutters, of the laterally-reciprocating cutter-plate C, having longitudinal slots F F at its ends, and the central transverse slot, G, the pins or bolts E, projecting up from the plate A through the slots F, the vertical shaft I, journaled in the arm J and plate A, the cam H on said shaft within slot G, and engaging the wall thereof with the forward end only, the beveled gear O, also on said shaft, and the drive-wheel P, journaled on the arm J and engaging the gear O, substantially as set forth.

377,139. DRIVING MECHANISM FOR ELEVATORS. JOSEPH P. BOWER, Des Moines, Iowa. Filed June 8, 1887. Serial No. 240,654. (No model.)

Claim.—1. The combination, with an internally-toothed pulley and a driving-shaft passing through said pulley and carrying a gear-wheel, of another shaft passing through said pulley and carrying two gear-wheels, one of which meshes with the gear on the driving-shaft and the other with the internal gear of the pulley, and a supporting-wheel carried by a third shaft passing through the pulley, substantially as set forth.

377,139.

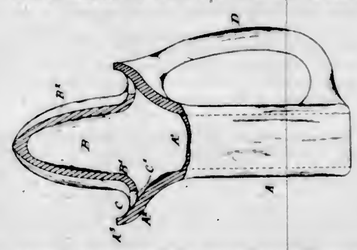


2. In a driving-mechanism for elevators, the combination, with an elevator-belt pulley provided with the interior gear-teeth, of a gear-wheel meshing into the interior gear-teeth of the belt-pulley, means, substantially as described, for rotating said gear-wheel from the main driving-shaft, and a double-flanged pulley supporting with its flanges said belt-pulley, substantially as shown and described.

3. In a driving mechanism for elevators, a belt-pulley provided with internal gear-teeth, a double-flanged pulley supporting one side of said belt-pulley on the interior of its rim, in combination with a gear-wheel meshing into said internal gear-teeth, a shaft supporting said gear-wheel, and a train of gear-wheels for rotating said shaft from the main driving-shaft, substantially as shown and described.

4. In a driving mechanism for elevators, the combination, with the elevator-head B and the main driving-shaft L, mounted in said head B, of the gear-wheel K, secured on said main driving-shaft L, the pinion J, meshing into said gear-wheel K, the shaft I, mounted in the sides of the head B and carrying said pinion J, the gear-wheel H, secured on the said shaft I, the belt-pulley F, provided with the internal gear-teeth, G, meshing into said wheel H, and the double-flanged pulley N, secured to a shaft mounted in the sides of the head B, said double-flanged pulley N supporting in connection with the gear-wheel H said belt-pulley F, substantially as shown and described.

377,140. LEMON-JUICE EXTRACTOR. RALPH R. BURROW, Rockford, Ill. Filed Sept. 22, 1887. Serial No. 250,578. (No model.)



Claim.—The herein-described lemon-juice extractor, consisting of a vessel, A, having a longitudinal passage, A', therethrough, and flaring to a bell shape at the upper end thereof, a conoidal shell, B, having a rim, B', flared sufficiently to adapt the same to engage with the inside of the bell-shaped portion A^3 of the vessel A, furnished with ribs B^3, extending from the base to the apex of said shell and provided with an annular groove, C, pierced by means of the perforations C', and the handle D, substantially as set forth.

377,146. DEVICE FOR BURNING HYDROCARBON OIL. GEORGE

377,141. METHOD OF FORMING TRADE-MARKS AND ATTACHING THEM TO FABRICS. GEORGE J. BROWNE, New York, N. Y., assignor to Dana, Tucker & Co., Boston, Mass. Filed Jan. 27, 1887. Serial No. 225,647. (No model.)

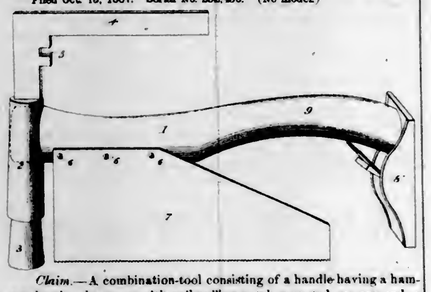


Claim.—1. The herein-described method of forming trade-marks and attaching them to fabrics, the said method consisting in weaving or impressing the trade-mark in or on a strip of suitable material, then, during the weaving of the fabric securing the trade-mark strip to the said fabric by placing the said strip between the warp-threads, and then continuing the weaving, whereby the trade-mark strip is held to or incorporated in the fabric by the said warp-threads, substantially as set forth.

2. The herein-described method of forming trade-marks and attaching them to fabrics, the same consisting in weaving the trade-mark into or impressing it onto a strip of suitable material, then during the weaving of the fabric securing the trade-mark strip to the fabric being woven by placing a portion of the said strip between the warp-threads of the fabric, with the end or ends containing the trade-mark outside of the said threads, and then continuing the weaving, whereby the trade-mark strip is held to or incorporated in the fabric by the said warp-threads, substantially as set forth.

3. The herein-described method of forming trade-marks and securing them to fabrics, the same consisting in first weaving a trade-mark into or impressing it onto a tape or strip of material in recurring order; second, in dividing the strip into lengths embracing one or more of the trade-marks; third, placing the trade-mark strip between the warp-threads of the fabric during the operation of weaving the same, and continuing the weaving with the trade-mark strip between the said threads, and thereby securing the strip in the fabric, substantially as set forth.

377,142. COMBINATION-TOOL. JOSEPH BROUSE, New Berlin, Pa. Filed Oct. 15, 1887. Serial No. 252,456. (No model.)

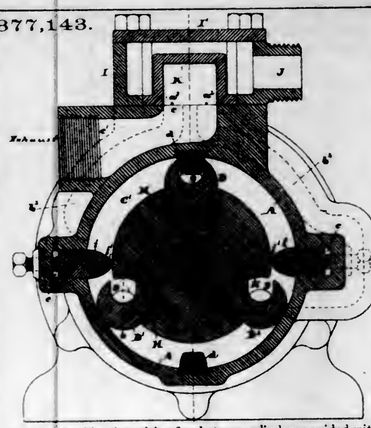


Claim.—A combination-tool consisting of a handle having a hammer-head and square, with nail-pulling notch mounted upon one end, a saw mounted lengthwise on the handle adjacent to the hammer-head, and a plane attached at the other end of the handle at substantially a right angle thereto, as shown and described.

377,143. ROTARY STEAM-ENGINE. ALAMSON R. BULLOCK, Canton Mass. Filed May 23, 1887. Serial No. 239,071. (No model.)

Claim.—1. In combination with a steam-cylinder provided with both steam and exhaust ports upon opposite sides thereof, a revolving piston-body of less diameter than the bore of said cylinder, two cylinder-abutments bridging the annular space between said piston-body and cylinder upon the opposite sides of the axis of said piston, two inwardly-projecting rib-like teeth set in said cylinder upon the opposite sides of the axis of revolution of the piston and equidistant from said non-revolving abutments, but not bridging the annular space between the piston-body and cylinder, and a plurality of revoluble piston-abutments mounted in bearings in the piston-heads and revolving therewith at the same time that they revolve about their own axes, and each provided with a longitudinal groove to engage in succession with each of said non-revolving abutments, and inwardly-projecting rib-like teeth, substantially as described.

377,143.

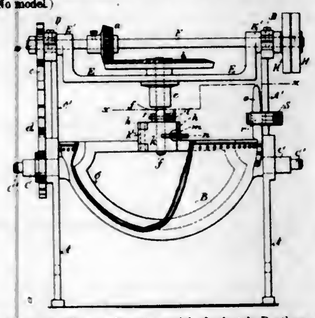


2. In combination with a fixed steam-cylinder provided with both steam and exhaust ports upon each of two opposite sides thereof, the revoluble piston-body C, provided with the heads C', the cylinder-abutments *f f*, the teeth *d d*, the revoluble piston-abutments D, D', and D², each provided with the groove *g* and mounted in bearings in the heads C', the pinions E, the internal gear F, and the shaft B, all constructed, arranged, and adapted to operate substantially as described.

3. The combination of the cylinder A, the revolving piston-body C, provided with the heads C', the cylinder-abutments *f f*, the fixed teeth *d d*, the revoluble piston-abutments D, D', and D², each provided with the longitudinal groove *g*, the semicircularly-grooved bar B, the wedge *h*, and the screw *i*.

4. The combination of the cylinder A, the fixed abutment *f*, the rotary cylinder-body C, and the revoluble piston-abutment D, provided with the longitudinal groove *g*, constructed and arranged to engage with said abutment *f* as it is revolved with said piston-body.

377,144. CONFECTIONER'S KETTLE. WILLIAM CAIRNS and CHAS L. CAIRNS, Jersey City, N. J. Filed May 13, 1887. Serial No. 238,060. (No model.)



Claim.—1. The combination, with the kettle B, stirrer *g*, and supporting-frames, of the yoke E, segmental gears *c d*, an operating-shaft, F, bevel-wheels *a b*, shaft *f*, plates *k k*, between which the shaft *f* is held, lugs and a pin for connecting the shaft *f* to the stirrer, and a screw-stem, *m*, and clamping-nut *n*, substantially as specified.

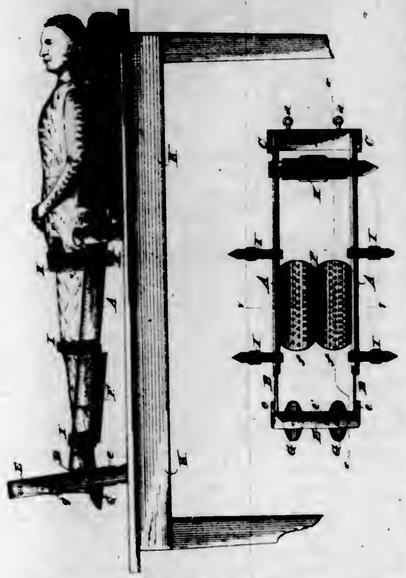
2. The combination, with the kettle B, stirrer *g*, and supporting-frames, of segmental gears *c d*, connecting the yoke and kettle-trunnions, respectively, an operating-shaft, F, a shaft, *f*, wheels for transmitting power from the shaft F to shaft *f*, and means, substantially as specified, for connecting the shaft *f* and stirrer *g* and for securely clamping them together, substantially as set forth.

3. The combination, with the kettle B, its trunnions and supporting-frames, and the stirrer *g*, of a yoke, E, having upturned ends and hubs by which said yoke is suspended in the frames, and a shaft, F, passing through said hubs, a shaft for rotating the stirrer and supporting the same from the yoke, and segmental meshing gears *c d*, connected, respectively, to one hub of the yoke and one trunnion of the kettle, whereby the tilting of the kettle swings the yoke and stirrer-shaft out of a perpendicular line, substantially as specified.

4. The combination, with the kettle B, its trunnions and supporting-frames, and the stirrer *g*, of a yoke, E, having upturned ends and hubs by which said yoke is suspended in the frames, and a shaft, F, passing through said hubs, a shaft depending from the yoke for rotating the stirrer, a joint for supporting the stirrer from the shaft, plates and a clamping-nut for rigidly holding the shaft and stirrer together, and segmental meshing-gears *c d*, connected, respectively, to one hub of the yoke and one trunnion of the kettle, whereby the tilting of the kettle swings the yoke and stirrer-shaft out of a perpendicular line, while the stirrer hangs vertically as the contents of the kettle are discharged, substantially as specified.

5. The combination, with the stirrer *g*, shaft *f*, and means, substantially as specified, for operating the same, of lugs and a pin for connecting the stirrer to the shaft, plates between which the shaft *f* is clamped, and a clamping-nut for holding said plates together, substantially as set forth.

377,145. SURGICAL SPLINT. ANNIE CALLER, Albany, N. Y. Filed Aug. 16, 1887. Serial No. 247,134. (No model.)



Claim.—1. A surgical splint made with side rails and a plate connected thereto and bent to form concave rests for both legs of the patient, substantially as herein set forth.

2. A surgical splint made with extensible or telescoping side rails and a plate connected to the rails and bent to form concave rests for both legs of the patient, substantially as herein set forth.

3. A surgical splint made with extensible or telescoping side rails supported so as to incline downward from the feet toward the head of the patient, and supports for the calves of the patient's legs, attached to the side rails, substantially as herein set forth.

4. A surgical splint made with side rails, a plate connected thereto and bent to form rests for both legs of the patient, a strap or band for securing the patient at the hips, or thereabout, to the side rails, and straps for securing the patient's legs one to each side rail of the splint, substantially as herein set forth.

5. A surgical splint made with side rails, a plate connected thereto and shaped to form rests for both legs of the patient, and separate rests for the feet of the patient, connected to the foot-frame of the splint, substantially as herein set forth.

6. The combination, in a surgical splint, of opposite extensible side rails, A B A B, posts C C, a cross-bar, D, connecting said posts or side rails, a foot-frame, E, to which the side rails are attached, a plate, F, connected to the side rails and bent to form two concaved leg-rests, *f f*, foot-rests G G, suspended from the frame E, and straps H I, adapted to secure the patient's limbs, substantially as described, for the purposes set forth.

377,146. DEVICE FOR BURNING HYDROCARBON OIL. GEORGE K. CUMMINGS, New York, N. Y. Filed July 30, 1887. Serial No. 245,752. (No model.)



Claim.—1. In a device for burning hydrocarbon oils, the oil-vaporizing chamber divided into compartments by means of a division plate or plates, in combination with the superheating steam-chamber and mixing-chamber, means for supplying the oil-vapor to the mixing-chamber, and an air-heating chamber, as described, the mixing-chamber and air-heating chamber terminating in nozzles, substantially as specified.

2. In a device for burning hydrocarbon oil, the oil-vaporizing and steam-heating chambers divided into compartments by means of division-plates, in combination with the mixing-chamber and means for supplying oil-vapor and superheated steam thereto from the oil-vaporizing and steam-heating chambers, and an air-heating chamber, the mixing-chamber and air-heating chamber terminating in nozzles, substantially as specified.

3. In a device for burning hydrocarbon oil, the oil-vaporizing chamber and the steam-heating chamber, as described, in combination with a mixing-chamber terminating in a nozzle, and an air-heating chamber opening into an annular passage around the forward end of the mixing-chamber and terminating in an annular wedge-shaped nozzle, substantially as described.

4. In a device for burning hydrocarbon oil, the oil-chamber B B', superheating steam-chamber F F', and air-heating chambers K L, each and every chamber having external superficial area of heating-surface, in combination with means for supplying the gases to the point of combustion, substantially as described.

5. In a device for burning hydrocarbon oil, the oil-vaporizing chamber divided into compartments, the vapor-reservoir C, and delivery-pipe D, in combination with the superheating steam-chamber divided into compartments, steam-reservoir G, surrounding the delivery-pipe D and communicating with the steam superheating-chambers, a mixing-chamber, E, air-heating chambers K L, and nozzles, substantially as described.

6. In a device for burning hydrocarbon oil, the combination, with the oil-vaporizing chamber and the vapor-delivery pipe D, of the superheating steam-chamber having a frusto-conical terminal formation and an annular circular opening and the mixing-chamber having a nozzle, substantially as described.

7. In a device for burning hydrocarbon oil, the combination, with the oil-vaporizing chamber and the vapor-delivery pipe D, of the superheating steam-chamber surrounding the delivery-pipe and having a frusto-conical terminal formation, an annular circular opening, and a mixing-chamber having a nozzle with an air-heating chamber opening into an annular air-passage and terminating in an annular contracted wedge-shaped nozzle.

8. In a device for burning hydrocarbon oil, the steam-delivery pipe having an automatic regulating-valve, *r'*, as described, in combination with the oil-delivery pipe having a valve with connecting mechanism, as described, whereby the pressure of the steam from the inlet acting directly upon the valve *r'* regulates the flow of oil and steam to the generator.

377,147. HEAD-REST FOR BARBERS' CHAIRS. CHARLES W. DELANEY, Hammond, Ind. Filed Aug. 19, 1887. Serial No. 247,368. (No model.)

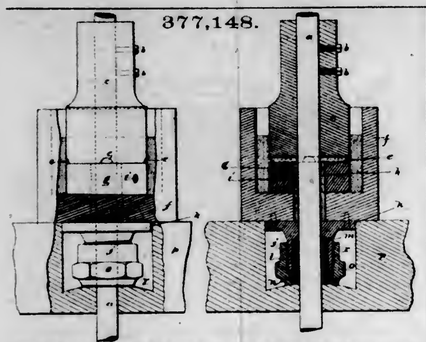


Claim.—The plate B, adapted to be secured to the back of a chair and provided with the pivot C, in combination with the slotted bar D, spring-pawl G, and hinged pillow F at the upper end of the bar D, the said bar being formed with the teeth *a* to receive the spring-pawl, substantially as described.

377,148. VERTICAL-SHAFT BEARING. WILLIAM H. EVANS, Baltimore, Md. Filed June 11, 1887. Serial No. 241,051. (No model.)

Claim.—1. A bearing for suspending vertical shafts, comprising a collar or sleeve made fast to the shaft, the oil cup or box having a bearing to receive said collar or sleeve, and a stuffing-box surrounding

377,148.



the shaft and closing the lower end of the oil cup or box, substantially as described.

2. A vertical shaft, a collar or sleeve secured thereto and provided with a dressed face having ducts therein, combined with an oil cup or box having a bearing provided with a shaft-opening of greater diameter than the shaft and pierced transversely with oil-ducts, substantially as described.

3. A vertical shaft, a collar or sleeve secured thereto and provided with a dressed face having ducts therein, combined with an oil cup or box having a bearing provided with a shaft-opening of greater diameter than the shaft, and pierced transversely with oil-ducts, and a stuffing-box fitted oil-tight to the shaft beneath the shaft-opening in the oil box or cup, substantially as described.

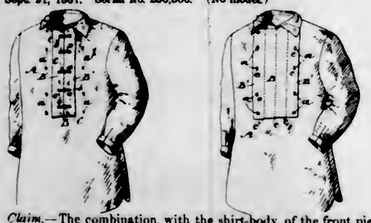
4. The oil box or cup, a bearing therein having a shaft-opening of greater diameter than the shaft, and pierced transversely to form ducts communicating with said opening and the surrounding box, combined with a shaft extending vertically through the said box and its bearing, and the collar or sleeve secured to said shaft and seated upon the said bearing, substantially as described.

5. A bearing for suspending vertical shafts, comprising a collar or sleeve made fast to the shaft, an oil cup or box, and a loose bearing arranged in said box to receive the said collar or sleeve, and constructed with a convex or curved supporting-surface, substantially as described.

6. A bearing for suspending vertical shafts, comprising a collar or sleeve made fast to the shaft, an oil cup or box, and a loose bearing arranged in said box to receive the said collar or sleeve, and constructed with a convex or curved supporting-surface combined with a stuffing-box, substantially as described.

7. A bearing for suspending vertical shafts, comprising a collar or sleeve made fast to the shaft, an oil cup or box, and a loose bearing arranged in said box to receive the said collar or sleeve, and constructed with a convex or curved supporting-surface combined with detaining devices *a*, engaging the oil cup or box, for preventing the bearing from rotating with the shaft, substantially as described.

377,149. **SHIRT.** JACOB FALKENBERG, New York, N. Y. Filed Sept. 21, 1887. Serial No. 250,306. (No model.)

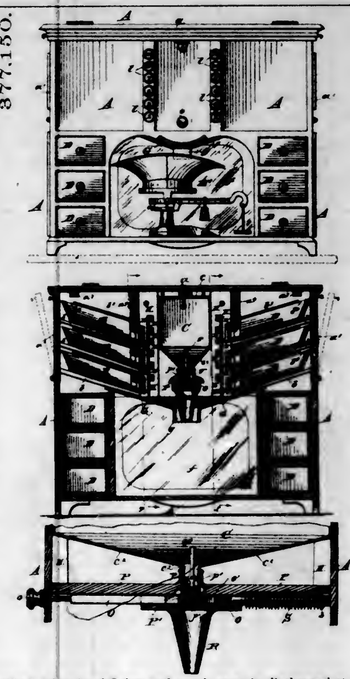


Claim.—The combination, with the shirt-body, of the front piece, B, made of a single piece or blank, stitched to the shirt-front by seams *c c'*, between the center of the said front piece and its side edges and equidistant from the edges, to form the two flies B' B', adapted to fold in the manner and for the purposes described.

377,150. **AMMUNITION-CASE.** EDWARD C. FREMAUX, Mermentau, La. Filed Sept. 21, 1887. Serial No. 250,302. (No model.)

Claim.—1. An ammunition-case constructed with a box, one or more shot-trays fitted therein, a hopper below the trays and provided with an outlet for discharge of shot dropped from the trays, and a powder-holder supported in the box and having an outlet discharging at or through the shot-hopper outlet, substantially as shown and described, whereby the shot and powder may be discharged at the same point to the scoop of a subjacent weighing-scales, as herein set forth.

377,150.



2. An ammunition-case constructed with a box, one or more shot-trays fitted at each end of the box, a hopper below the trays and provided with an outlet for shot, a powder-holder supported in the box between the trays and arranged to discharge at or through the shot-hopper outlet, and said box being fitted with gun-material drawers arranged below the trays, and providing a space to receive a weighing-scales, substantially as herein set forth.

3. An ammunition-case constructed with a box, one or more shot-trays fitted in the box, a powder-holder arranged next the trays, a hopper below the trays and provided with an outlet for shot, and said powder-holder discharging at the shot-outlet, and valves fitted at discharge-openings of the shot-trays and powder-holder and connected to pull-rods extending outside the box, substantially as herein set forth.

4. In an ammunition-case, the combination, with a box, A, of one or more shot-trays fitted therein and having a discharge-opening, b^3, a pivoted automatically-closing valve, I, fitted over said opening, and a rod, L, extended to the outside of the box and provided with a pin which opens the valve when the rod is operated, substantially as herein set forth.

5. In an ammunition-case, the combination, with a box, A, having one or more shot-trays provided with an oulet, b^3, of a pivoted valve, I, fitted over said opening, a rod, L, provided with a pin, *k*, adapted to open the valve when the rod is operated, and a spring, N, retracting the rod, substantially as described, for the purposes set forth.

6. In an ammunition-case, the shot-tray made with an opening, b^4, at the rear, a discharge-opening, b^3, at the front, which inclines toward said opening, and a spring-pressed valve, I, normally closing said opening, substantially as herein set forth.

7. In an ammunition-case, the shot-tray made with a front outlet, b^3, to which the front wall of the tray inclines, and a valve, I, pivoted to the tray and adapted to close the outlet b^3, substantially as herein set forth.

8. In an ammunition-case, the shot-tray made with two compartments, each having an outlet, b^3, to which the front wall of the tray inclines, and spring-pressed valves I I, pivoted to the tray and adapted to close the outlets of the compartment, substantially as herein set forth.

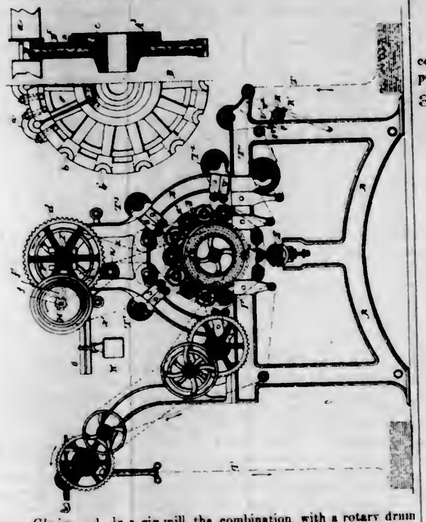
9. The shot-tray valve consisting of an apertured plate, M, fixed to the tray, and having a bridge-piece, *m*, a valve, I, pivoted at *i* to the plate M and entered at i^2 beneath the bridge *m*, and a spring, J, held to the plate M, substantially as herein set forth.

10. In an ammunition-case, the combiaation, with the box A, of a cross-bar, P, fixed thereto and provided with an opening, p', registering with the outlet of a superposed powder-holder, a valve, O, fitted to the cross-bar P, and a spout, R, fixed to the cross-bar, substantially as described, for the purposes set forth.

11. In an ammunition-case, the powder-holder fitted at its outlet with an oscillatory agitator, T, in combination with a staple or pin on the powder-valve actuating the agitator when the valve is operated, substantially as shown and described.

377,151. **MACHINE FOR NAPPING CLOTH.** HENRY H. GRIMMELIN, Fils, Seclan, France. Filed July 26, 1886. Serial No. 208,150. (No model.) Patented in France Oct. 2, 1885, No. 171,459; in England Dec. 9, 1885, No. 15,125; in Belgium Jan. 14, 1886, No. 71,616, and in Germany Jan. 21, 1886, No. 36,971.

Brief.—A pair of rotating drum-heads carries a series of teaseling-rollers journaled in their circumferences and provided with pulleys at the ends. A driving-belt passes about said pulleys, whereby they may be driven in the same direction as the rotation of the drum-heads, or in an opposite direction; or, by means of an interior brake and by holding the driving-belt stationary, the teaseling-rollers may be held without independent rotation. The speed of said rollers is varied by means of step-pulleys, and their journals are lubricated from reservoirs at the hubs of the drum-heads.



Claim.—1. In a gig-mill, the combination, with a rotary drum consisting of heads, a shaft, and a series of card or teaseling rollers journaled upon said heads and provided with pulleys at their projecting ends, of a driving-belt applied to each set of said pulleys, and devices, substantially as described, for driving said belts with varying speeds and in different directions, as described, whereby the cards are rotated simultaneously each about its own axis and about the axis of the drum, substantially as described.

2. In a gig-mill, the combination, with a drum composed of heads, a shaft, and the working card or teaseling rollers D D, of a shaft, I, cones H H', belt X^1, pinion *f*, gear *d*, pulleys F F', belts X X', and pulleys *a a*, substantially as described.

3. In a gig-mill, the combination, with a drum composed of teaseling-cards or working-rollers D D, heads, and a shaft, of pulleys *a a* at the projecting ends of said rollers and of greater diameter than the rollers, a driving-belt in operative relation to each set of pulleys, and devices, substantially as described, for driving said belts with varying speeds and in different directions, substantially as described.

4. In a gig-mill, the combination of a rotary drum composed of a shaft, heads, and a series of teaseling-cards or working-rollers jonrnaled upon the heads, with pulleys attached to the projecting ends of the rollers, with a friction-ring, mounted concentrically with each set of pulleys and in contact with the interior sides of the same, and an actuating-belt for each set of pulleys bearing upon the exterior surface of the same, and driving means for said belts, substantially as described.

5. In a gig-mill, the combination of a rotary drum carrying a series of independently-rotating teaseling-rollers, with a driving-shaft provided with a convex parabolic step-pulley, a driven shaft provided with a concave parabolic step-pulley, a belt connecting the two pulleys, and means, substantially as described, for transmitting motion to the teaseling-rollers, substantially as and for the purpose described.

6. In a gig-mill, the combination of a rotary drum composed of a shaft, heads, and a series of teaseling-rollers journaled upon the outer circumferences of the heads, said heads each being formed with a central annular oil-reservoir around the hub thereof, and radial channels leading from the reservoir to the journals of each teaseling-roller, substantially as described.

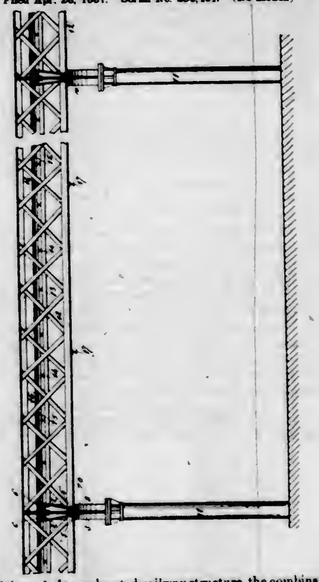
7. In a gig-mill, the combination of a rotary drum composed of a shaft, heads, and a series of teaseling-rollers supported in journal-boxes upon the circumference of the heads, said heads each being provided with a central annular oil-reservoir around the hub thereof, radial channels from the reservoir to the journal-boxes extending to within close proximity of the hub, but communicating with the reservoir, with a removable plug in the outer wall of the reservoir, and a wick in each channel, substantially as described.

377,152. **SWEAT-PAD HOOK.** CHARLES J. GUSTAVESON, Salt Lake City, Utah. Filed June 29, 1887. Serial No. 242,911. (No model.)



Claim.—The hook for a sweat-pad, having projections *a* and *b*, combined with the stud-plate E and the washer-plate F, as and for the purpose described.

377,153. **ELEVATED RAILWAY.** JAMES M. HANHAM, Chicago, Ill. Filed Apr. 28, 1887. Serial No. 236,461. (No model.)



Claim.—1. In an elevated-railway structure, the combination, with transverse arched trusses, of longitudinal girders formed with steps 5 and 6, said steps resting upon the upper and lower angle-irons of the trusses, strips 13, carried by the girders, ties carried by the strips, and stringers and rails carried by the ties, substantially as described.

2. In an elevated-railway structure, the combination, with transverse arched trusses, of longitudinal girders formed with steps 5 and 6, said steps resting upon the upper and lower angle-irons of the trusses, strips 13, carried by the girders, ties carried by the strips, stringers and rails carried by the ties, and transverse tie-bars arranged in connection with the girders, substantially as described.

377,154. **ROUNDING-JACK FOR HAT-BRIMS.** MICHAEL HILD, Philadelphia, Pa. Filed May 12, 1887. Serial No. 237,980. (No model.)

Claim.—1. In a rounding-jack, the combination, with the main frame and the sliding knife-stock, of the sectional rod for operating the knife-stock, substantially as described.

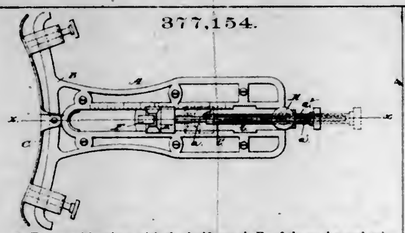
377,154.

the coupling, and also communicating with the port G, substantially

377,159.

377,161. **PULLEY-COVER.** JOHN G. JEBB, London, County of Middlesex, England. Filed June 28, 1887. Serial No. 242,764. (No model.)

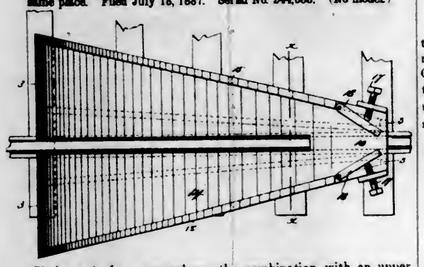
377,154.



2. The combination, with the knife-stock E, of the rod *a* and tube *a'*, substantially as described.

3. The combination, with the knife-stock E, of the rod *a*, tubular rod *a'*, formed with the slot a^3, and notches *i'*, substantially as and for the purposes set forth.

377,155. CAR-REPLACER AND PORTABLE SWITCH. THOMAS HOLLIDAY, Sanborn, Dak., assignor to himself and Thomas M. Murphy, same place. Filed July 18, 1887. Serial No. 244,633. (No model.)

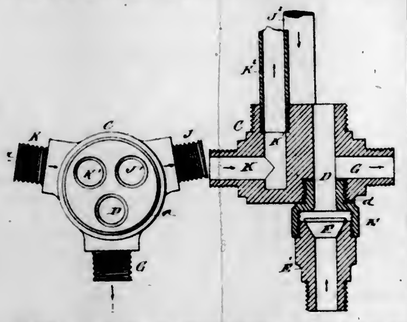


Claim.—1. In a car-replacer, the combination, with an upper plate, of inclined plates leading downward therefrom, flanges or ridges mounted at the sides of the inclined plates, and deflecting-plates mounted above the upper plate, and each adapted to be moved toward or from the longitudinal center of the upper plate and held at its point of adjustment, substantially as described.

2. In a car-replacer, the combination, with an upper plate, of two downwardly-inclined plates arranged in connection therewith, ridges or flanges connected to the inclined plates, deflecting-plates arranged above the upper plate, and adjustable screws arranged in connection with the deflecting-plate, substantially as described.

3. In a car-replacer and portable switch, the combination, with supporting-plates 11 and 12, of a plate, 10, mounted thereon, downwardly-inclined plates 14, between which there is a space, 2, that are also mounted upon the plates 11 and 12, spurs 3, flanges 15, extending upward from the plates 14, deflecting-plates 16, mounted above the plate 10, and adjustable screws 17, arranged in connection with the plates 16, substantially as described.

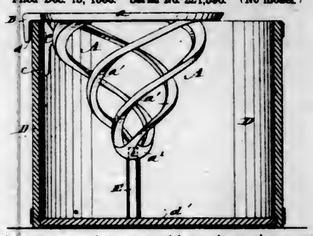
377,156. PIPE-COUPLING FOR BOILERS. JAMES HOLLINGER, New York, N. Y. Filed Feb. 2, 1887. Serial No. 226,272. (No model.)



Claim.—1. As a new and improved article of manufacture, the coupling C, formed with the part provided with screw-threads *a* and with the horizontal ports G J K and the vertical ports J' K', communicating with the ports J K, respectively, and the port D, passing through the coupling, and also communicating with the port G, substantially as described.

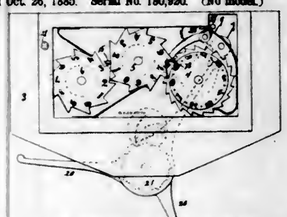
2. The coupling C, having the range-pipes and the inlet and outlet pipes connected to it in suitable ports in the coupling, in combination with the boiler A, and the pipes K^2 and J^2, connected to the coupling inside of the boiler, substantially as described.

377,157. MOP-WRINGER. HENRY I. HOTCHKISS, South Ryegate, Vt. Filed Dec. 15, 1886. Serial No. 221,590. (No model.)



Claim.—A mop-wringer comprising a rim or ring, *a*, and the integral spirally-ranging converging ribs *a'*, a fastening formed on said rim or ring and consisting of a pair of outer lugs, B B, and inner lug, C, spaced as described, to bear against the outer and inner sides of the pail or tub, and a detachable leg, E, engaging the apex of the spiral ribs *a'* and adapted to rest upon the bottom of the pail or tub, substantially as shown and described.

377,158. GRAIN-TALLY. ROBERT R. HOWELL, Minneapolis, Minn. Filed Oct. 26, 1885. Serial No. 180,920. (No model.)



Claim.—1. The combination, in a grain-register, with the grain-box 2 and the tallying-box 3, secured to its side, of the registering mechanism arranged within the box 3 and having an operating-lug projecting through a slot in said box, a plate pivoted to said box and carrying the radiating arms 20, extending within the grain-box, said operating-lug being arranged in the field of said arms, and means for preventing a back movement of said arms, all substantially as described.

2. The combination, with the box 3, of the series of registering-wheels 4 5 6, the bell-crank lever 7, the pawl 8, pivoted upon one arm of said lever, the projection 10, extending through a slot in said box, and the pivoted plate carrying the radiating arms 20, all substantially as described, and for the purpose set forth.

3. The combination, with the grain-box 2 and the tallying-box 3, secured to its side, of the registering mechanism arranged within said box 3, the revolving arms 20, in a a plane beneath said tallying-box and extending within the grain-box, and the operating-lug connected with said mechanism and projecting through the bottom of said box in the field of the arms 20, whereby said mechanism is operated at each movement of said arms, all substantially as described, and for the purpose set forth.

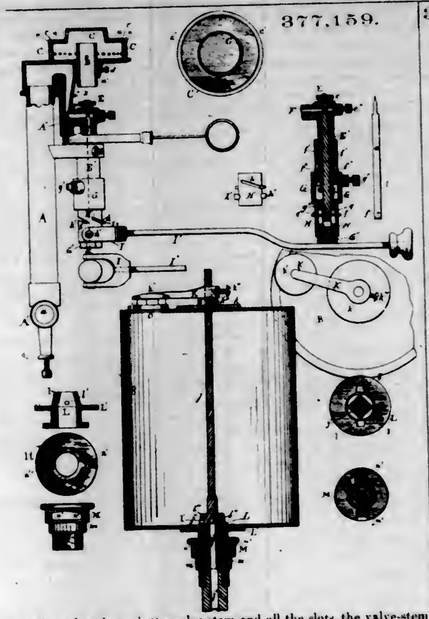
4. In a tallying mechanism, the combination of the wheels 4 5 6, arranged as described, with the bell-crank lever 7, hook-dog 8, spring 9, projection 10, and revolving arms 20, all substantially as described, and for the purpose set forth.

5. The combination, in a grain-register, with the grain-box 2 and the tallying-box 3, secured to its side, of the registering mechanism arranged within the box 3, the plate 21, pivoted to the box, the three arms 20, projecting at equidistant points from the circumference of said plate and extending within the grain-box, means for preventing a back movement of said arms, and connecting means between said arms and said registering mechanism, whereby said mechanism is operated at each movement of said arms, all substantially as described.

377,159. VAPOR-STOVE. MARTIN L. HULL, Cleveland, Ohio. Filed July 17, 1886. Serial No. 208,276. (No model.)

Claim.—1. The combination of the needle-valve E and its casing E', enlarged at its lower end, the sleeve G, having two vertical slots, *g g*, through its smaller end, the sleeve H, having spiral slots A A, the

377,159.

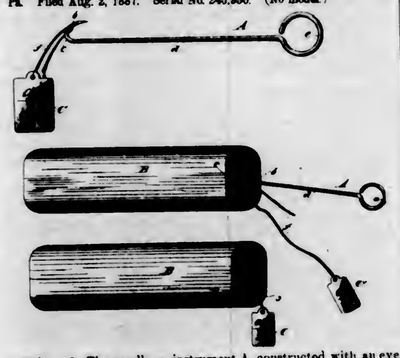


pin *f*, passing through the valve-stem and all the slots, the valve-stem *e*, and the lever I', attached to the sleeve H, by which the sleeve is rotated on the bearing *f''* of the sleeve G.

2. In a reservoir for vapor-stoves, the combination of the rod *j*, threaded at the top, having an enlarged lower end, the coupling L, which is attached to the bottom of the reservoir B, the screw-nut *k'*, and washer *k*, whereby the cock-valve formed by the enlarged lower end of the rod *j* and coupling L can be tightened.

3. The combination of the rod *j*, having an enlarged end, the coupling L, attached to the bottom of the reservoir, the feed-pipe *j''*, the orifice *j'* in the rod *j*, communicating with the feed-pipe *j''*, the coupling M, connecting the rod *j* and feed-pipe *j''*, the index-arm K and disk *k''*, attached to the rod *j*, the screw-cap *o'*, and opening *o* in the top of the reservoir B.

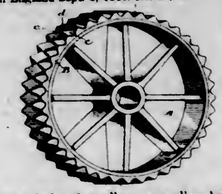
377,160. TAG HOOK OR NEEDLE. OLIVER H. HUNTER, Warren, Pa. Filed Aug. 2, 1887. Serial No. 245,930. (No model.)



Claim.—1. The needle or instrument A, constructed with an eye, *b*, near its point, and bent back of the eye, as at *c*, substantially as and for the purpose herein set forth.

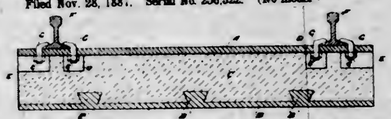
2. In a needle or instrument for attaching string tickets or tags to the inner fold of rolled goods, the needle A, of hook shape at its forward end, with its eye *b* near its point, and having a loop or finger piece, *c*, at the rear end of its stem, essentially as shown and described.

377,161. PULLEY-COVER. JOHN G. JESS, London, County of Middlesex, England. Filed June 28, 1887. Serial No. 242,764. (No model.) Patented in England Sept. 3, 1885, No. 10,435.



Claim.—As a facing for pulleys, an endless band of india-rubber transversely corrugated on its outer face with grooves deepening from the center of the band toward either edge thereof, substantially in the manner and for the purpose herein set forth.

377,162. RAILWAY-TIE. GEORGE KELTON, near Kiowa, Colo. Filed Nov. 28, 1887. Serial No. 256,322. (No model.)

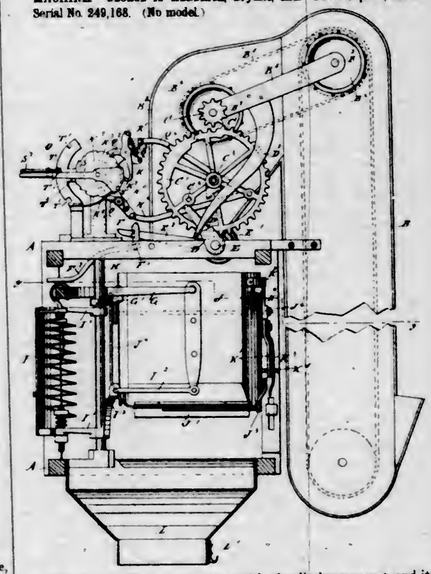


Claim.—1. In a railway-tie, metallic casing A, filled with pulp C and provided with bottom B, said bottom being provided with lugs B', for the purpose set forth and described.

2. In a railway-tie, metallic casing A, provided with holes A' and D and filled with pulp C, in combination with metallic bottom B, provided with lugs B', for the purpose set forth and described.

3. In a railway-tie, the combination, with metallic casing A, provided with holes A', of metallic bottom B, provided with lugs B', and spikes G, provided with nuts G' for attaching said spikes to the tie, said tie being filled with pulp C and provided with openings D and E, for the purpose set forth and described.

377,163. GRAIN WEIGHING, REGISTERING, AND BAGGING MACHINE. GEORGE R. KENDRICK, Bryant, Ind. Filed Sept. 8, 1887. Serial No. 249,168. (No model.)



Claim.—1. The combination, with the discharge-spout and its closing mechanism, of a separate and independent receptacle under said spout, a closing or shut-off mechanism for said receptacle, and a vertical horizontally-rocking shaft, to which said receptacle is connected, substantially as set forth.

2. The combination, with the grain-receptacle, a vertical horizon-

tally-rocking shaft, and a scale-beam on said shaft, to which said receptacle is connected, of a spout above and independent of the receptacle and its shaft, and provided at its lower end with a closing or shut-off mechanism released upon the downward movement of the receptacle, and two discharge-spouts side by side below and independent of the receptacle, substantially as set forth.

3. The combination, with the grain-receptacle, a vertical shaft, to which it is connected, of a horizontal shaft geared thereto, and an intermittently-operated gear and a pawl-and-ratchet mechanism connecting the same with the horizontal shaft to rotate it, substantially as set forth.

4. In a grain-measuring machine, the combination, with the discharge-spout of an elevator, of a grain-measuring receptacle held below said spout, a scale-beam in which said receptacle is hung, a vertical shaft carrying said scale-beam, and means, substantially as described, for imparting a swinging motion to said shaft from said elevator, as set forth.

5. In a grain-measuring machine, the combination, with the discharge-spout of an elevator, of a grain-measuring receptacle held below said spout, two hoppers placed alongside of each other below said grain-measuring receptacle, a scale-beam supporting said grain-measuring receptacle, a vertical shaft carrying said scale-beam, and a mechanism, substantially as described, for imparting a swinging motion to said vertical shaft from said elevator, so that said receptacle swings over either of the two hoppers and discharges into the same, substantially as shown and described.

6. In a grain-measuring machine, the combination, with a grain-measuring-receptacle adapted to swing sidewise, of doors pivoted on the lower end of said grain-measuring receptacle, levers and links for controlling the opening and closing of said doors, and fixed lugs against which said levers operate for opening and closing said doors, substantially as shown and described.

7. In a grain-measuring machine, the combination, with a grain-measuring receptacle adapted to swing sidewise, of doors pivoted on the lower end of said grain-measuring receptacle, levers and links for controlling the opening and closing of said doors, fixed lugs against which levers operate for opening and closing said doors, and a spring-arm engaging one of said levers for holding the doors in a locked position, substantially as shown and described.

8. In a grain-measuring machine, the combination, with a vertical shaft, a scale-beam held on said shaft, and a grain-measuring receptacle supported on said scale-beam, of a horizontal shaft connected by gear-wheels with said vertical shaft, a notched disk held on said horizontal shaft, pawls engaging said notched disk, cams for throwing either of the pawls out of contact with said disk, levers fulcrumed loosely on said horizontal shaft and carrying said pawls, and a wheel having a rotary motion and connected by pitmen with said levers, so as to impart at each revolution of said gear-wheel a forward-and-backward motion to said horizontal shaft, substantially as shown and described.

9. In a grain-measuring machine, the combination, with a vertical shaft carrying the grain-measuring receptacle, of a horizontal shaft connected with said vertical shaft, a notched disk held on said horizontal shaft, pawls engaging said notched disk, a second set of pawls operating on said first set of pawls, and a cam operating alternately on said second set of pawls, so that when one pawl is in contact with said notched disk the other is disengaged from the same, substantially as shown and described.

10. In a grain-measuring machine, the combination, with a vertical shaft carrying the grain-measuring receptacle, of a horizontal shaft connected with said vertical shaft, a notched disk held on said horizontal shaft, pawls engaging said notched disk, a second set of pawls operating on said first set of pawls, a cam operating alternately on said second set of pawls, so that when one pawl is in contact with said notched disk the other is disengaged, levers fulcrumed loosely on said horizontal shaft and carrying the first-named set of pawls, and a gear-wheel connected by pitmen with said levers and having a rotary motion, substantially as shown and described.

11. In a grain-measuring machine, the combination, with a horizontal shaft connected with a vertical shaft carrying the grain-measuring receptacle, of a notched disk secured to said horizontal shaft, pawls engaging said notched disk, levers fulcrumed loosely on said horizontal shaft and carrying said pawls, a gear-wheel connected by pitmen with said levers and having a rotary motion, a second set of pawls operating on the first set of pawls, a cam operating on the second set of pawls, so that one throws one of the first set of pawls out of contact with the notched disk, while the other pawl of the first set remains engaged with said disk, a notched disk carrying said cam and held to rotate loosely on said horizontal shaft, and a pawl adapted to engage the notched cam-disk and fulcrumed on one of said levers, substantially as shown and described.

12. In a grain-weighing machine, the combination, with a horizontal shaft connected with a vertical shaft carrying the grain-measuring receptacle, of a notched disk secured to said horizontal shaft, pawls engaging said notched disk, levers fulcrumed loosely on said horizontal shaft and carrying said pawls, a gear-wheel connected by pitmen with said levers and having a rotary motion, a second set of pawls operating on the first set of pawls, a cam operating on the second set of pawls, so that one throws one of the first set of pawls out of contact with the notched disk, while the other pawl of the first set remains engaged with said disk, a notched disk carrying said cam and held to rotate loosely on said horizontal shaft, a pawl adapted to engage the notched cam-disk and fulcrumed on one of said levers, and an adjustable lever fulcrumed loosely on said horizontal shaft and adapted to engage the pawl operating on the cam-disk during part of its stroke, substantially as shown and described.

13. In a grain-measuring machine, the combination, with a swinging frame and a pinion mounted in said swinging frame and having a rotary motion derived from the elevator, of a gear-wheel adapted to mesh into said pinion, a stop secured to said gear-wheel, an arm having a shoulder and operated on by said stop, a shaft carrying said arm and provided with a spring, and an arm secured to said swinging frame and resting with its free end against the shoulder of said arm, substantially as shown and described.

14. In a grain-measuring machine, the combination, with the discharge-spout of an elevator, of doors hinged to the lower end of said spout and connected with each other, a shaft on which one of said doors is mounted, a spring coiled on said shaft, a swinging arm having a shoulder and secured on said shaft, a gear-wheel having a stop operating on said shoulder, a pinion adapted to mesh in said gear-wheel and having a rotary motion derived from the elevator, and a swinging arm carrying said pinion and provided with an arm resting at its free end on the shoulder of the arm secured to the shaft, substantially as shown and described.

15. In a grain-measuring machine, the combination, with the discharge-spout of an elevator, of doors hinged at the lower end of said spout and connected with each other, a shaft on which one of said doors is mounted, a spring coiled on said shaft, a swinging arm having a shoulder and secured on said shaft, a gear-wheel having a stop operating on said shoulder, a pinion adapted to mesh in said gear-wheel and having a rotary motion derived from the elevator, and a swinging arm carrying said pinion and provided with an arm resting at its free end on the shoulder of the arm secured to the shaft, and means, substantially as described, for locking said shaft in position, as set forth.

16. In a grain-measuring machine, the combination, with a scale-beam carrying the grain-measuring receptacle, of a catch operated on by said scale-beam, a lever held in a locked position by said catch, a shaft on which said lever is secured, a spring operating on said shaft, an arm having a shoulder and secured on said shaft, a gear-wheel having a stop operating on said arm, a pinion having a constant rotary motion adapted to mesh in said gear-wheel, a swinging frame carrying said pinion, and an arm secured to said swinging frame and resting with its free end on the shoulder of the arm secured to the shaft, substantially as shown and described.

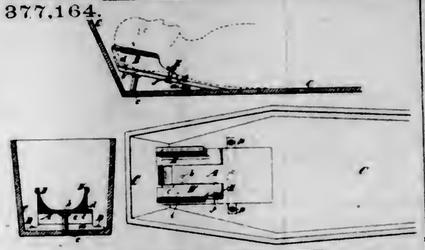
17. In a grain-measuring machine, the combination, with the discharge-spout of an elevator, of a sprocket-wheel secured to the upper elevator-shaft, a second sprocket-wheel connected by a sprocket-chain with the first sprocket-wheel, a shaft on which the second sprocket-wheel is mounted, a frame fulcrumed on the upper elevator-shaft and carrying said sprocket-wheel shaft, a pinion secured to said sprocket-wheel shaft, a gear-wheel having a stop and into which said pinion is adapted to mesh, an arm having a shoulder and operated on by said stop, a shaft carrying said arm and provided with a spring and a locking mechanism, doors connected with each other and hold on the lower end of the spout of the elevator, one of the doors being secured to said shaft, and an arm secured to the swinging frame and operated on by the shoulder of the arm secured to the shaft, substantially as shown and described.

18. In a grain-measuring machine, the combination, with a grain-measuring receptacle having a swinging motion, of doors pivoted on the bottom of said grain-measuring receptacle and connected with each other by links, a crank-arm connected by a link with one of said doors, a shaft mounted transversely in said grain-measuring receptacle and carrying said crank-arm, a lever secured on said shaft, an arm pivoted on said lever, a spring-arm adapted to engage said lever, and fixed lugs held on each side of the grain-receptacle, so that when the latter swings it engages said lever and its pivoted arm, whereby the doors of the grain-measuring receptacle are automatically opened and closed, substantially as shown and described.

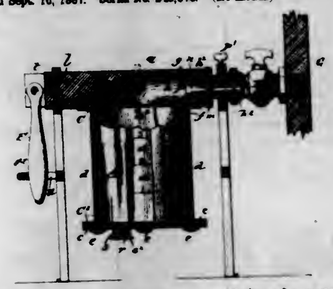
377,164. HEAD-REST FOR COFFINS. JOHN L. KRAUSER, Leeper, Pa. Filed Mar. 4, 1887. Serial No. 229,734. (No model.)

Claim.—The combination, in a head-rest for a coffin or casket, of a base-board and side supports, one of which is positively adjustable on the said board, substantially as herein described.

377,164.



377,165. MEASURING-FAUCET. OLE MARTINSON, Meridian, Wis. Filed Sept. 16, 1887. Serial No. 249,573. (No model.)



Claim.—1. A measuring apparatus consisting of a measuring-receptacle having upper and lower closed ends, the former being provided with an outlet-passage and a transversely-extending outwardly-projecting enlargement hung for a rotatable bearing on suitable supports, and provided with a passage therein leading from its one end to the receptacle-chamber, and at such end adapted for a connection with a supply-conduit, substantially as and for the purpose described.

2. A measuring apparatus consisting of a measuring-receptacle having upper and lower closed ends, the latter provided with an opening and closing vent-plug and the former having an outlet-passage and a transversely-extending and outwardly-projecting enlargement hung for a rotatable bearing on suitable supports, and provided with a passage therein leading from its one end to the receptacle-chamber, and at such end adapted for a connection with a supply-conduit, substantially as and for the purpose described.

3. A measuring apparatus consisting of a measuring-receptacle formed by a body and ends or heads which lie upon and against and project over the ends of said body, and secured thereto by headed rods and nuts, having at its top a stop-cock and at its bottom a vent-plug, and provided with means for conveying the commodity to be measured thereto and for inverting said receptacle, substantially as and for the purpose described.

4. A measuring apparatus consisting of a measuring-receptacle formed by a body and ends or heads which lie upon and against and project over the ends of said body, with the flexible packing-rings interposed and secured thereto by headed rods and screw-nuts, having at its top a stop-cock and at its bottom a vent-plug, and provided with means for conveying the commodity to be measured thereto and for inverting said receptacle, substantially as and for the purpose described.

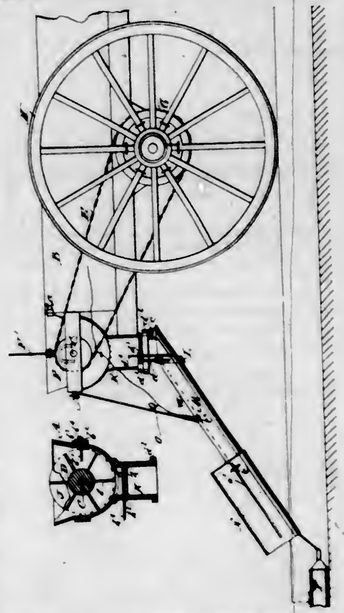
5. The combination, with the measuring-receptacle having upper and lower closed ends, the former provided with a cock and having the transverse enlarged portion *g*, with a passage leading from one end thereof to the interior of the receptacle, and its other end provided with a trunnion having a bearing in a suitable support, of a pipe or passage suitably supported leading from the supply to be measured, adapted to be opened and closed and to enter and form a close bearing for the open end of the enlarged portion, all substantially as and for the purpose described.

6. The combination, with the measuring-receptacle having upper and lower closed ends, the former provided with a cock and having the transverse enlarged portion, with a passage leading from one end thereof to the interior of the receptacle, its other end having a trunnion, *k*, having a bearing in a suitable support, of a pipe with a flanged end suitably supported leading from the supply to be measured, and adapted to be opened and closed, and entering the open end of said enlarged portion, and the screw packing-collar, all substantially as and for the purpose described.

7. The combination, with the measuring-receptacle having upper and lower closed ends, the former provided with a cock and having the transverse enlarged portion *g*, with a passage leading from one end thereof to the interior of said receptacle, and its other end provided with a trunnion, *k*, having a bearing in a suitable support, and provided with ear-pieces *l*, to which is pivotally hung a lever-arm, P, of a pipe or passage suitably supported leading from the supply to be measured, adapted to be opened and closed and to form a close bearing for the open end of said enlarged portion *g*, and the studs *u v*, located for the engagement of said handle-lever, all substantially as and for the purpose described.

8. The combination, with the measuring-receptacle having upper and lower closed ends, the former provided with a cock and having the transverse enlarged portion *g*, with a passage leading from one end thereof to the interior of said receptacle, and its other end provided with a trunnion, *k*, having a bearing in a suitable support, and provided with ear-pieces *l*, to which is pivotally hung a lever-arm, P, of a pipe or passage suitably supported leading from the supply to be measured, adapted to be opened and closed and to form a close bearing for the open end of said enlarged portion *g*, and the studs *u v*, the latter having a lug, v^3, and adapted for rotation, substantially as and for the purpose specified.

377,166. MACHINE FOR DISTRIBUTING FERTILIZERS. JAMES R. MCCORD, Jackson, Ga. Filed Aug. 8, 1887. Serial No. 246,429. (No model.)



Claim.—1. The combination, with the hopper A and outlets K thereof, of the spouts M and the weights P, attached to the lower ends of the spouts to run in the furrows, substantially as and for the purpose set forth.

2. The combination, with the hopper A and the outlets K thereof, of the spouts M, connected to the outlets by a rotating connection, and the weights P, to run in the furrows, substantially as described.

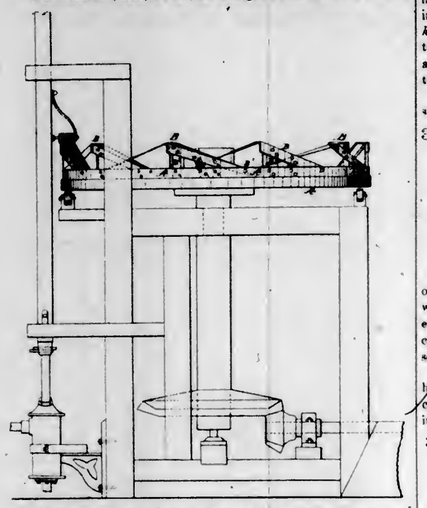
3. The hopper A, provided with the outlets K, in combination with the spouts M, suspended below the outlets by a rotating connection, and the pipes N, attached to the lower ends of the spouts M, substantially as described.

4. The hopper A and the outlets K thereof, and the spouts M, connected to the outlets by a rotating connection, in combination with the pipes N, attached to the lower ends of the spouts M by slots *e'* and bolts *e*, whereby the pipes N are adapted to automatically slide endwise upon the spouts M, substantially as described.

5. The hopper A, formed with the outlets K, in combination with the spouts M, pipes N, and weights P, substantially as described.

6. The spouts M, suspended from the outlets of the hopper, in combination with the adjustable brace-rods O and the tubes N, adjustably attached to the spouts M, substantially as described.

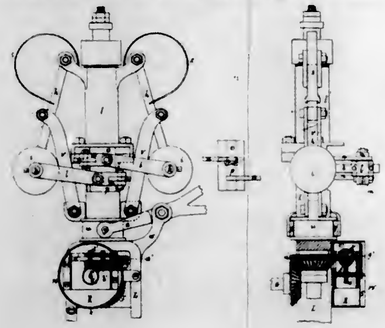
377,167. ORE-PULVERIZER. WILLIAM MCLEAN, Goulburn, New South Wales. Filed Dec. 16, 1885. Serial No. 185,838. (No model.) Patented in Victoria Oct. 15, 1885, No. 4,282; in Queensland Oct. 20, 1885; in New South Wales Oct. 22, 1885, No. 1,703; in New Zealand Oct. 26, 1885, No. 1,604; in Tasmania Dec. 5, 1885, No. 381; in South Australia Dec. 7, 1885, No. 634, and in England Dec. 17, 1885, No. 15,504.

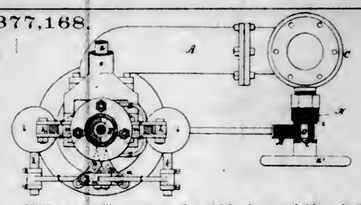


Claim.—1. The combination of main wheel A, adjustable cams or inclined planes B, mortar D, inclined-plane supports B^3, sliding wedges B^5, binding-plate B^6, and set-screws B^7, substantially as and for the purposes set forth.

2. The combination of main wheel A, adjustable cams or inclined planes B, mortar D, inclined-plane supports B^3, adjustable stays B^3, sliding wedges B^5, binding-plate B^6, and set-screws B^7, substantially as and for the purposes set forth.

377,168. STEAM-ENGINE GOVERNOR. FRANCIS MCMAHON, Somerville, Mass. Filed July 25, 1887. Serial No. 245,208. (No model.)





Claim.—1. The combination, with the revoluble spindle I, its arms *h*, and balls *i*, and with the stem *d*, of the valve D, of the spring F, for elevating the valve-stem, and the mechanism connected with the said balls and stem for depressing the valve, such mechanism consisting of the studs *k*, arms *l*, links *m*, curved arms *n*, and the spiral cams *o p*, all being arranged and to operate substantially as set forth.

2. The combination, with the ball-governor and the throttle-valve stem, of the mechanism for effecting the closing of the throttle-valve in case of breakage of the driving-belt of the governor, such consisting of the open or slotted arms *v*, applied, as described, to the arms *h* of the balls *i*, the grooved sleeve *u*, forked toothed sector M, and the pinion N, the latter being applied to the throttle-valve spindle O and movable lengthwise thereon, and having means of clutching it to the hand-wheel *x'* of such spindle, as specified.

3. The combination of the speed-indicator, as described, with the steam-engine governor, substantially as set forth.

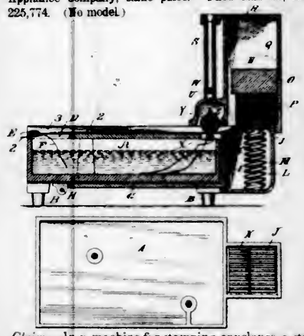
377,169. WIRE-STRETCHER. JOHN R. MEREDETH, Aurora, Ill. Filed Oct. 13, 1887. Serial No. 252,233. (No model.)



Claim.—1. A wire-stretcher consisting of a bar, A, having at one of its extremities the curved wire-holding claws *b*, and having an upwardly-projecting ear, *c*, on one of such claws, combined with the eccentric or cam B, pivoted on such ear and serving to clamp the wire close to and in line with the crotch of the claw, all as shown and described.

2. The described wire-stretching implement, consisting of the bar having the claws, the ear *c*, located as shown, and the eccentric or cam on said ear, and having also the chisel or wire-cutting edge at its other end, all substantially as set forth.

377,170. ENVELOPE SEALER AND STAMPER. HOMER J. MOORE, Chicago, Ill., assignor to the Bryant & Stratton Mechanical Appliance Company, same place. Filed Jan. 28, 1887. Serial No. 225,774. (No model.)



Claim.—In a machine for stamping envelopes, a stamp-containing chute, in combination with an elastic presser on which there is a corrugated surface inclined at one side, and which forms the bottom of the chute.

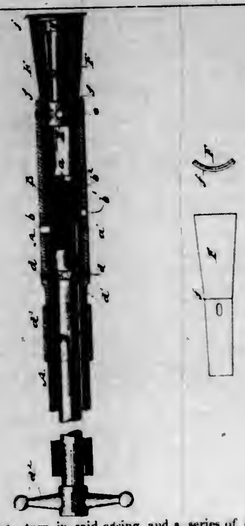
377,171. BOILER-TUBE CLEANER. HENRY RANDALL, Brooklyn, N. Y. Filed May 5, 1887. Serial No. 237,218. (No model.)

Claim.—1. The combination, with a tube and flanged plates fulcrumed upon a block at one end of said tube, of an expanding-block held to slide in said tube, provided with a tapering recess and a threaded aperture, and a rod swiveled in said tube, and having its inner end threaded to carry said expanding-block, substantially as shown and described.

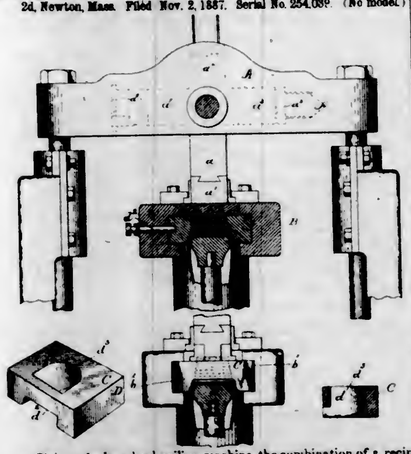
2. In a boiler-tube cleaner, the combination, with a tubular casing, a rod held to turn in said casing, and a series of centrally-depressed segmental plates provided with a flanged outer end, and a block secured in the end of said tube, upon which the said plates are fulcrumed, of an expanding-block traveling upon the outer end of the rod and adapted to bear upon the inner end of said plates, and a disk supported within said combined plates at their outer ends, supported from the fulcrum-block, substantially as shown and described.

3. In a boiler-tube cleaner, the combination, with a tubular casing, a rod held to turn in said casing, provided with a threaded outer end, and an expanding-block traveling upon the threaded portion of the rod, provided with a longitudinal recess having rearwardly and inwardly tapering walls, of a circular block secured at the forward end of the casing, and a series of angular centrally-depressed plates, wider at the outer than at the inner end, fulcrumed upon the said end block and projecting from the casing, provided at their outer ends with a flange extending at right angles to the body, and having their inner ends in engagement with the said expanding-block, substantially as set forth.

377,171.



377,172. HEEL-NAILING MACHINE. FREEBORN F. RAYMOND, 2d, Newton, Mass. Filed Nov. 2, 1887. Serial No. 254,039. (No model.)



Claim.—1. In a heel-nailing machine, the combination of a reciprocating head, a rotary head supported thereby, having an arm carrying a pressure-block, an arm carrying a gang of awls, an arm carrying a gang of drivers, and an arm supporting the top-lift spanker, which are adapted to be brought successively into operative position, a last or work-support, a vertically-movable table, a solid die-block having a die-cavity, supported by said table, the sliding templet-plate D, and nail-carrier D', substantially as described.

2. The combination, in a heel-attaching machine, of the table B, having a forward extension, *b*, and cap-plates *d*, with the horizontally-movable templet D, substantially as described.

3. The combination of the table B, the solid die-block C, supported thereby, and the horizontally-movable templet D, also supported by said table, substantially as described.

4. The combination, in a heel-nailing machine, of the table B, having a die-block-receiving recess, *b'*, open at its front end, with the removable die-block having the die-cavity *d'*, substantially as described.

5. The combination of a vertically-movable pressure-head, the last or work-support, the vertically-movable table B, and the solid die C, supported thereby, having the die-cavity *d'*, substantially as described.

6. The combination of the last or work-support, the vertically-movable table B, and the solid die C, having the die-cavity *d'* and opening d^6, with the top-lift-attaching device a^5, substantially as described.

7. In a heel-attaching machine, the solid die-block C, having the die-cavity *d'*, and the recess d^3, and flaring mouth, as and for the purposes described.

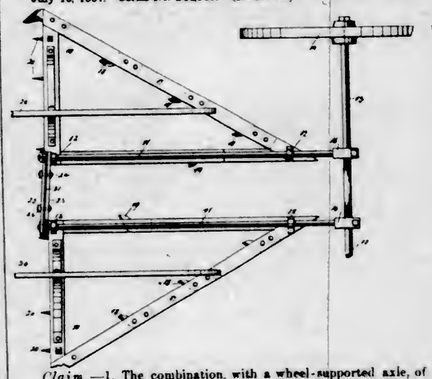
8. In a heel-attaching machine, the combination of the last or work-support, the vertically-movable table B, the solid die C, supported by said table and having the die-cavity *d'*, the templet D, and a reciprocating gang or group of awls, A', substantially as described.

9. The combination of the last or work-support, the vertically-moving table B, the solid die-block C, supported by said table B and having the die-cavity *d'*, the templet D, and the reciprocating gang of drivers a^4, as and for the purposes described.

377,173. ARTIFICIAL STONE. EDUARD R. SCHROETER, Jersey City, N. J. Filed Mar. 24, 1887. Serial No. 232,245. (No specimens.)

Claim.—A composition to imitate stone, and consisting of carbonate of lime, cellulose, glue, soapstone, and coloring-matter, substantially as specified.

377,174. CULTIVATOR. JACOB SEUCK, Blue Springs, Nebr. Filed July 16, 1887. Serial No. 244,509. (No model.)



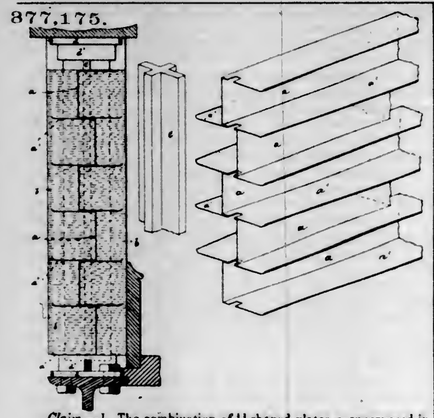
Claim.—1. The combination, with a wheel-supported axle, of rearwardly-extending bars connected to said axle, and frames pivoted at their inner adjacent sides upon said bars, shovels and teeth being carried by said frames, substantially as described.

2. The combination, with frames carrying rearwardly-extending shovels and teeth, of bars to which the frames are connected by clips, an adjustable arch by which the bars are connected, and means, substantially as described, for connecting the bars to a wheel-supported axle, substantially as described.

3. The combination, with triangular frames 10, carrying shovels 18, and teeth 20, which extend downward and to the rear from the under side of the frames, bars 11, to which the frames are connected by clips 12, the bars being arranged for connection with an axle, and an arch, 21, consisting of two sections, each of which sections is connected to one of the bars 11, said sections consisting of vertical portions 22 and horizontal portions 23, that are apertured, clamping-bolts being passed through the apertures of the two horizontal sections, substantially as described.

377,175. FIRE-PROOF PARTITION. PETER SMITH, New York N. Y. Filed Nov. 17, 1887. Serial No. 255,397. (No model.)

377,175.



Claim.—1. The combination of U-shaped plates *a*, superposed in such a manner that their horizontal flanges project in opposite directions, and that such flanges overlap at the center only, but are of single thickness at the ends, with an upright entering slots in the overlapped sections, substantially as specified.

2. The combination of U-shaped plates *a*, overlapping one another, with a cruciform upright, *c*, entering slots in such plates, substantially as specified.

3. The combination of U-shaped plates *a*, overlapping one another, with post *c*, and with the plate *d*, having slotted flange *d'*, and with wedge *e*, substantially as specified.

4. The combination of overlapping U-shaped plates *a*, having slotted horizontal flanges, with the posts *f*, entering such slotted flanges, and with the staples *g*, substantially as specified.

377,176. TICKET-HOLDER. MOSES H. STRAUS, Columbus, Ohio. Filed July 27, 1887. Serial No. 245,431. (No model.)

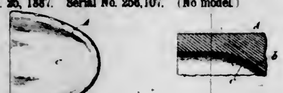


Claim.—1. As an improved article of manufacture, a ticket-holder consisting of a single wire bent upon itself to form the parallel side arms, *a* and b^3, the aligning end loops, *a'* and *b'*, the M-shaped top B, and the aligning side loops, a^3 and *b*, connected with said top and located above the said arms, as set forth.

2. As an improved article of manufacture, a ticket-holder consisting of a single wire bent upon itself to form the parallel side arms, *a* and b^3, the aligning end loops, *a'* and *b'*, the M-shaped top B, the aligning side loops, a^3 and *b*, connected with said top B and located above the side arms, and a plate, D, adapted to pass between the arms and the top into the said side loops, substantially as and for the purpose herein set forth.

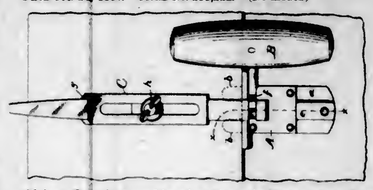
3. The combination, with a ticket-holder consisting of a single wire bent upon itself to form the parallel side arms, *a* and b^3, the aligning end loops, *a'* and *b'*, the M-shaped top B, and the aligning side loops, a^3 and *b*, forming a part of said top and located above the said arms, of a plate, D, secured above the arms *a* and *b* and below the top B in the side loops, a^3 and *b*, and means for retaining tickets above and below the plate, substantially as shown and described, and operating as herein set forth.

377,177. RUBBER DENTAL PLATE. EZRA W. TALBOTT, Napoleon, Ohio, assignor of one-half to Andrew T. Sherman, same place. Filed Nov. 26, 1887. Serial No. 256,107. (No model.)



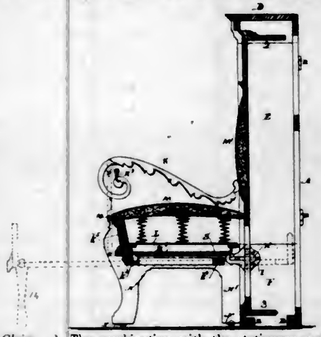
Claim.—In the manufacture of rubber dental plates, the combination of the paper base-plate and metallic finishing-plate for use in connection with each other, with the model made from an impression of the mouth, and with the rubber of the dental plate, substantially as and for the purposes specified.

377,178. CLAPBOARD-BRACKET. JUSTUS A. TRAUT, New Britain, Conn., assignor to the Stanley Rule and Level Company, same place. Filed Oct. 24, 1887. Serial No. 253,222. (No model.)



Claim.—In a clapboard-bracket, the main frame or base A, having on its flat side the thin plate *a*, with the upwardly-projecting blades adapted to extend up under the clapboard, the spring *c*, secured by its lower end to said plate *a* and having at its upper end the blade-like spur *d*, adapted to enter the wood at a point near the upper edge of the main frame or base A, and the cam for forcing said spur into the wood, substantially as described, and for the purpose specified.

377,179. FOLDING BEDSTEAD. JAMES G. TWISS, New York, N. Y. Filed Mar. 28, 1887. Serial No. 232,641. (No model.)



Claim.—1. The combination, with the stationary case having a back, A, and ends C and F, of the slotted plates I, attached to the ends C and F and projecting therefrom, the swinging bed-bottom having pivots on its edges entering the slots in the plates and at a distance from the lower edge of the bed-bottom corresponding to the depth of the case, so that one side of the bed-bottom will be within the case when swung down, a swinging end piece, E, and a settee hinged at one back corner to the case and capable of being swung around horizontally, substantially as specified.

2. The combination, with the case and folding bed-bottom and the settee having the bottom M and stationary end arms, K, of the side guard, K', corresponding in length to the distance between the arms K and the slide or support below the seat for receiving said guard, and the slide-plate S, to which the guard is hinged, so that the seat can be inclosed by the side guard in addition to the arms and bed-bottom to form a crib, substantially as set forth.

3. The combination, with a case and a bed-bottom pivoted to swing up into the case, of a settee, two hinges to connect the settee at one corner of the case, undercut slides upon the end of the case, blocks upon the hinges within the said slides, and a web connecting the hinges and the blocks, substantially as set forth.

4. The combination, with the pivoted bed-bottom, of a case having a stationary back and the two stationary end portions, C and F, and the swinging flap E, and a settee and hinges to connect the settee to the case, substantially as set forth.

5. The combination, with the case and the bed-bottom hinged to the case and swinging up into the same, of a settee having end arms and hinged at one back corner to the case, so as to be swung around horizontally and form part of the bed, and a seat to the settee hinged at the front edge, so as to be swung up between the arms to form the head-board, substantially as specified.

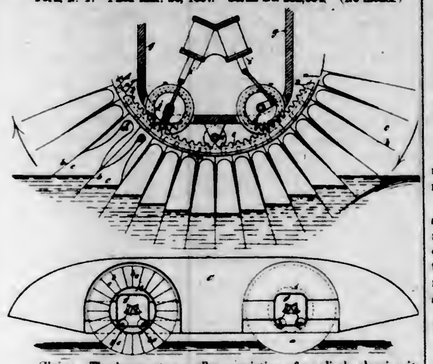
377,180. BRUSH. WILHELM UHDE, Wooster, Ohio. Filed Apr. 8, 1887. Serial No. 234,210. (No model.)

Claim.—1. The brush-knot A, made of the stem of a quill, having its exposed or brush end *b* split into splints of suitable fineness, and having its upper end, *a*, unsplit, substantially as set forth.

2. In a brush, the combination, with the block B, perforated, as shown, of a series of knots, A, formed of the stem end of quills, having their exposed or brush ends split into splints of suitable fineness and their upper ends unsplit, and thereby secured in the perforations of the block to form a brush-surface, substantially as set forth

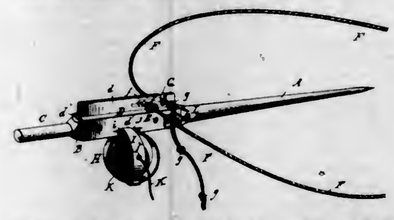


377,181. BUOYANT PROPELLER. OSBORN VANDENBURGH, New York, N. Y. Filed Mar. 26, 1887. Serial No. 232,664. (No model.)



Claim.—The buoyant propeller consisting of a cylinder having its periphery composed of or surrounded by self-collapsible open-mouthed air-chambers which receive within them the air through which the propeller itself and the superincumbent weight of the vessel are supported directly upon the water, substantially as herein described.

377,182. CORN-SHOCK TYER. URIAH R. WATKINS, Barclay, Kans. Filed May 5, 1887. Serial No. 237,211. (No model.)



Claim.—1. The combination, in a shock-tyer, of a pin, A, having a shank and handle, a plate, D, having a flange, *d*, provided with a slot, G, and fixed to the shank, and a cord, F, secured at one end to the plate D and provided at its free end with a series of knots, *g*, substantially as described, for the purposes set forth.

2. The combination, in a shock-tyer, of a pin, A, having a shank and handle, a plate, D, having a flange, *d*, provided with a slot, G, and fixed to the shank, and provided, also, with a slot, J, forming an eye on the plate, a cord, F, secured at one end to the plate D and provided at its free end with a series of knots, *g*, and a twine-box held to the pin-shank and having a hinged lid, I, provided with a hook, *i*, adapted to the slot J in plate D, substantially as described, for the purposes set forth.

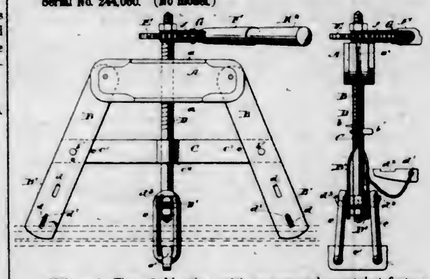
377,183. HOISTING AND LOADING MACHINE. DAVID S. WEITZ, Minneapolis, Minn. Filed Sept. 19, 1887. Serial No. 250,072. (No model.)

Claim.—1. The combination, with a suitable carriage or frame and a receptacle mounted thereon, of the receiver 9, bars 7, pivoted to the frame and to said receiver at a point near its upper end, and the bars 13, pivoted to the receiver at a point near its lower end, and also pivoted to said frame, the hoisting bucket and rope, substantially as described.

2. The combination, in a machine of the class described, with a suitable carriage, of a standard secured upon the carriage, a receiver, 9, a movable support secured upon said carriage and supporting said receiver, a hoisting-bucket, and a rope or chain passing through said receiver and over said support, substantially as described.

3. The combination, with a suitable carriage having a standard secured therein, and with a sheave or pulley on said standard, of a movable support adapted to overhang the side of the carriage, a receiver, 9, carried by said support, a receptacle on said carriage between said standard and said support, a hoisting-bucket, and hoisting-rope passing over said support and over the sheave on said standard, substantially as described.

377,184. RAILWAY-RAIL BENDER AND STRAIGHTENER. EMORY M. WOODIN and FRANK J. GIBBS, Tyrone, Pa. Filed July 12, 1887. Serial No. 244,060. (No model.)



Claim.—1. The combination, with a screw-rod, a ratchet fast on the same, and a handle operating the ratchet, of a double pawl provided with rearwardly-extending fingers at each side of its pivotal point, a guiding-pin pivoted in the handle, and a spiral spring on said pin and adapted to engage either of the fingers of the pawl, substantially as set forth.

2. The combination, with a ratchet and a handle adapted to operate the same, of a double pawl provided with a rearwardly-extending finger at each side of its pivotal point, a guiding-pin pivoted in the handle, and a spiral spring on said pin and adapted to engage either of the fingers of the pawl, substantially as shown and described, and for the purposes herein set forth.

3. The combination, with a screw-rod, a ratchet fast on the same, and a handle having pivoted therein a double spring-acting pawl adapted to operate the ratchet, a swivel upon the lower end of the screw-rod, links supported from said swivel, and a block suspended from said links, of a head-block, arms pivoted at the ends of said head-block having slotted bifurcated ends, a horizontally-adjustable brace-rod attached to said arms and constructed to receive the screw-rod, and keys adapted to enter said slots in the bifurcated ends of the said arms, substantially as herein shown and described.

4. The combination, with a screw-rod, a ratchet fast on the same, a handle adapted to operate said ratchet, having pivoted therein a double pawl provided with rearwardly-extending fingers, and a pivotal guiding-pin surrounded by a spring adapted to engage one of said fingers, a swivel upon the lower end of the screw-rod, links supported from said swivel, and a block suspended from said links, of a head-block having slotted bifurcated ends, a horizontal brace-rod attached to said arms and constructed to receive the screw-rod, and keys adapted to enter the slots in the bifurcated ends of said arms, substantially as shown and described.

5. The combination, with a screw-rod provided with a swivel at

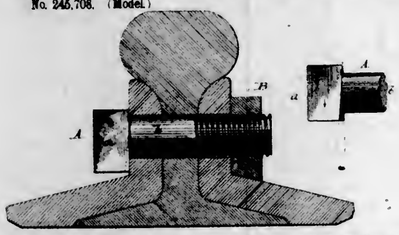
stem secured centrally within the lowest trough, the central gas-pipe passing through the troughs and secured into the said stem, distance-

having the rearward-extending arms, the rod D, attached to axle B, arranged on the rear side thereof, and connected to the arms of

5. The combination, with a screw-rod provided with a swivel at one end having opposing curved arms, links suspended from said swivel, and a block suspended from said links, a ratchet fast upon said screw-rod above the swivel, and a handle adapted to operate the same, of a head-block, arms pivoted at the ends of said head-block having slotted bifurcated ends, a horizontal adjustable brace-rod attached to said arms and adapted to receive the screw-rod, and keys adapted to enter the slots in the bifurcated ends of the said arms, all arranged to operate substantially as shown and described.

6. The combination, with a head-block, a screw-rod engaging the head-block provided with a swivel, links supported from said swivel, and a block suspended from said links, and means for operating the said rod, of arms pivoted in the ends of the head-block and having bifurcated ends provided with transverse slots, keys adapted to said slots, and an adjustable brace connecting said arms, substantially as shown and described.

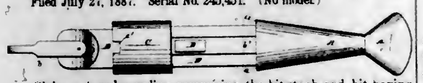
377,185. **NUT-LOCK.** LEE ANDERSON, Paris, Tex., assignor of one-third to Phillip M. Spears, same place. Filed July 30, 1887. Serial No. 245,708. (Model.)



Claim.—1. In combination with a bolt, A, having a cylindrical stem, *b*, and a head, *a*, beveled on its inner face, a nut, B, tapped to receive the threaded end of the bolt and prevented from turning, substantially as shown and described.

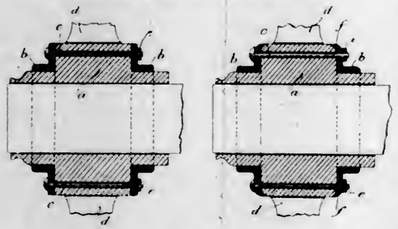
2. In combination with a bolt, A, having a cylindrical stem, *b*, and an eccentric head, *a*, beveled on the eccentric portion of its inner face, a nut, B, tapped to receive the bolt and prevented from turning, all substantially as shown.

377,186. **ROD-COUPLING.** JAMES BOTTOMER, Sandy Run, Pa. Filed July 27, 1887. Serial No. 245,451. (No model.)



Claim.—A rod-coupling comprising the bit-stock and bit having the angular outer surfaces, *b'*, and the bit being further provided with the shoulder *a*, the sleeve C, having the inner angular surface and the slots *c'*, and the spring-catches D, adapted to pass through said slots *c'* to hold the sleeve down over the joint of the bit and stock, substantially as described.

377,187. **WHEEL-HUB.** WILLIAM J. BREWER, London, County of Middlesex, England. Filed May 18, 1887. Serial No. 238,689. (No model.) Patented in England Oct. 31, 1885, No. 13,174.

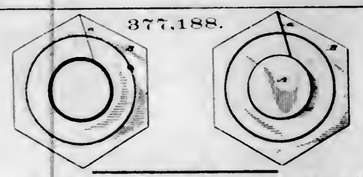


Claim.—In an improved hub, as herein described, the combination consisting of the compressed-fiber nave made in sections and held in place by the metallic disks secured together by means of bolts, substantially as shown and described.

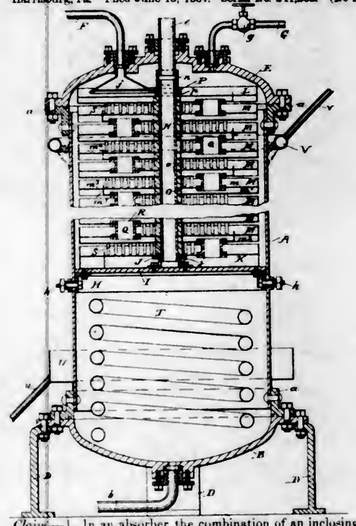
377,188. **NUT-LOCK.** JUSTIN H. BURDICK, Utica, assignor to the Elastic Nut Company, Milwaukee, Wis. Filed June 10, 1887. Serial No. 240,857. (No model.)

Claim.—The combination of a screw-threaded bolt with a slitted elastic nut, the bore of the bolt and nut being normally the same, but the pitch of the threads being different.

377,188.



377,189. **ABSORBER FOR ICE-MACHINES.** THOMAS H. BUTLER, Harrisburg, Pa. Filed June 13, 1887. Serial No. 241,302. (No model.)



Claim.—1. In an absorber, the combination of an inclosing-shell, a series of troughs having false bottoms and gas-chambers beneath them, supported within the said shell out of contact with it and with each other, so that the gas escaping from each trough may have free passage between the troughs and the shell, pipes connecting the said gas-chambers, gas-pipes depending from the bottom of each gas-chamber into the trough beneath it, a pipe discharging weak liquor into the top trough, and a pipe conveying cold gas direct into the gas-chamber of the bottom trough, substantially as and for the purpose set forth.

2. In an absorber, the combination of an inclosing-shell, a series of troughs having false bottoms and gas-chambers beneath them, supported within the said shell out of contact with it and with each other, so that the gas escaping from each trough may have free passage between the troughs and the shell, pipes connecting the said gas-chambers, gas-pipes depending from the bottom of each gas-chamber into the trough beneath it, a pipe discharging weak liquor into the top trough, a pipe conveying cold gas direct into the gas-chamber of the bottom trough, and a coil within the said shell below the bottom trough for circulating cold water through the strong aqua-ammonia, substantially as and for the purpose set forth.

3. In an absorber, the combination of an inclosing-shell, a series of troughs having false bottoms and gas-chambers beneath them, pipes connecting the said gas-chambers, gas-pipes depending from the bottom of each gas-chamber into the trough beneath it, a pipe discharging weak liquor into the top trough, distance-pieces separating all the bottoms of the troughs, and a pipe passing centrally downward through the said troughs and distance-pieces and conveying cold gas direct into the bottom trough, substantially as and for the purpose set forth.

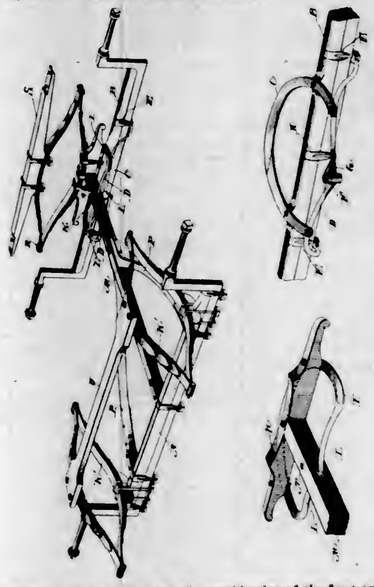
4. In an absorber, the combination of a series of troughs, each provided with a false bottom and a gas-chamber below the false bottom, a low partition across the false bottom above the end of the gas-chamber, a perforated portion in the false bottom for spraying the liquor which flows over the said partition, a series of short pipes depending from the gas-chamber into the trough beneath it, and a gas-pipe connecting each gas-chamber with the gas-chamber next beneath it, substantially as and for the purpose set forth.

5. In an absorber, the combination of an inclosing-shell, the arms secured to the shell, a series of troughs having false bottoms and gas-chambers beneath them, supported by the said arms, the perforated stem secured centrally within the lowest trough, the central gas-pipe passing through the troughs and secured into the said stem, distance-pieces separating the troughs and surrounding the central pipe, a nut for tightening up the troughs and distance-pieces screwed upon one end of the central pipe, pipes connecting the gas-chambers of the troughs, gas-pipes depending from the bottom of each gas-chamber into the trough beneath it, and a pipe discharging weak liquor into the top trough of the series, substantially as and for the purpose set forth.

6. The combination, with an absorber of the character described, provided with a series of troughs for bringing the gas and liquor into intimate contact, and having a gas-escape space around the said troughs between them and the inner surface of the absorber-shell, of a pipe for spraying cold water upon the outer surface of the shell of the absorber, thereby increasing its absorbing capacity, as set forth.

7. The combination, with an absorber of the character described, provided with a series of troughs for bringing the gas and liquor into intimate contact, and having a gas-escape space around the said troughs between them and the inner surface of the absorber-shell, of an annular perforated spray-pipe surrounding the upper part of the shell of the absorber and a shallow trough encircling the lower part of the said shell, whereby the cold water may be constantly applied to the outer surface of the shell, substantially as and for the purpose set forth.

377,190. **VEHICLE-GEAR.** HIRAM CLARK, Augusta, Me. Filed July 28, 1887. Serial No. 245,542. (No model.)



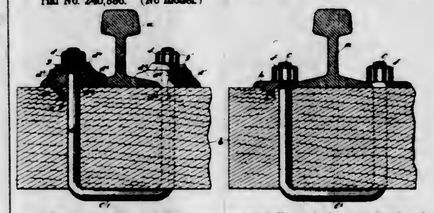
Claim.—1. In a vehicle-gear, the combination of the front axle, the circle C, secured thereto and having the rearward-extending arms, the brace-rod D, secured to the front axle, arranged on the rear side thereof, connected to the rear arms of circle C, and having the central opening, and the reach M, having the circle I attached to its front end and bearing on circle C, and provided, further, with the opening N at a distance from its front end, registering with the central opening in the brace-rod, and adapted for the reception of the king-bolt, substantially as described.

2. The combination of the front axle, the circle C, secured thereto and having the rearward-extending arms, the brace-rod D, secured to the front axle, arranged on the rear side thereof, and connected to the rear arms of circle C, the arm G, extending rearward from the center of the front axle and having its rear end resting on the center of the rod D, the reach M, having the circle I at its front end bearing on circle C, and the king-bolt passing through an opening in the reach at a distance from the front end thereof and through registering openings in the rear end of arm G and center of rod D, substantially as described.

3. The combination of the crank-axles A B, the reach M, having its rear end attached to axle A, the circle C, attached to axle B and having the rearward-extending arms, the rod D, attached to axle B, arranged on the rear side thereof, and connected to the arms of circle C, the arm G, extending rearward from the center of axle B and having its rear end resting on the center of rod D, the circle I, having the arms L attached to the reach, the bolster-block R, secured to the front end of the reach and also to the circle I, (the latter bearing on circle C,) and the king-bolt extending through an opening at a distance from the front end of the reach and through registering openings in the rear end of arm G and center of rod D, substantially as described.

4. In a vehicle-gear, the combination of the crank-axles having the depending central portions, the reach attached to the rear axle and having the opening N at a distance from its front end, the upper portion, I, of the circle or fifth-wheel attached to the front end of the reach, the lower portion, C, of the circle or fifth-wheel attached to the front axle, the brace-rod D, attached to the front axle, arranged at a suitable distance in rear thereof, and connected to the lower portion, C, of the circle or fifth-wheel, and the king-bolt passing through the opening N and through a central eye or opening, F, in the brace-rod to pivotally connect the reach to the front axle, substantially as described.

377,191. **DEVICE FOR FASTENING RAILWAY-RAILS TO THEIR TIES.** HENRY D. COBB, Stockbridge, Mass. Filed June 10, 1887. Serial No. 240,886. (No model.)



Claim.—1. The combination, substantially as before set forth, of the railroad-rail, the wooden cross-tie, the yoke-bolt passed through said cross-tie, and metallic bearings between the nuts of said bolt and said cross-tie.

2. The combination, substantially as before set forth, of the railroad-rail, the wooden cross-tie, the yoke-bolt passed through the said cross-tie, and the clamps bearing upon the opposite sides of said rail.

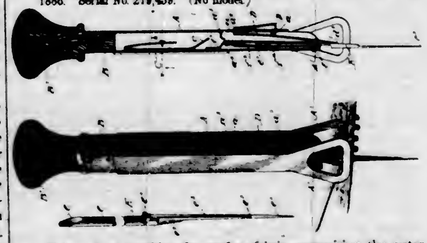
3. The clamp constructed, substantially as before set forth, with a lug projecting from its upper face integral therewith to hold a detachable locking device from turning.

4. The clamp constructed, substantially as before set forth, with a lug integral therewith projecting from its upper side to hold a detachable locking device from turning and a stud projecting at its under side.

5. The clamp constructed, substantially as before set forth, with an offset at one side and with a wedge-formed stud at its under face, having that face of the stud which is nearest the offset of steeper inclination than the other face of said stud, whereby the said clamp is pressed laterally in the direction of said offset when the stud is forced into yielding material.

6. The clamp constructed, substantially as before set forth, with a wedge-formed stud at its under face, having that face of the stud which is nearest the bearing side of the clamp of steeper inclination than the other face of said stud, whereby the said clamp is pressed laterally in the direction of said bearing side when the stud is forced into yielding material.

377,192. **FABRIC-TURFING IMPLEMENT.** ELMA E. CONNETT, Peoria, Ill., assignor to Julius F. Myers, same place. Filed Nov. 20, 1886. Serial No. 219,439. (No model.)



Claim.—1. A machine for turfing fabric, comprising the outer shell or sheath having the inward projection, and the reciprocating

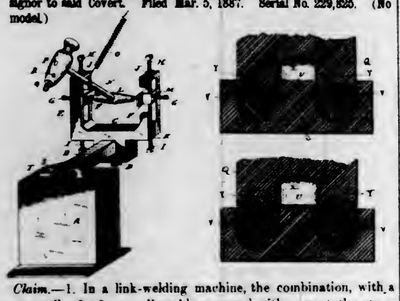
needle-bar having the inclined plate and the adjustable stop, substantially as described.

2. A machine for turfing fabric, comprising an outer sheath or shell provided with the inward projection, the reciprocating needle-bar having the lugs, and the spring having openings entered by the lugs, and the inclined plate attached to the needle-bar, substantially as described.

3. The combination, in a turfing machine, of the needle having the upper beveled end, the groove, and the hollow portion, and the retaining device consisting of the plate F, the spring-fingers attached to the plate, the upturned end provided with holes, and the cross-piece provided with the notches on its lower face.

4. The combination, with the shell A and needle-bar B, of the needle-holder having its lower end pivotally connected with the needle-bar, the needle set in said holder, the adjustable spring C, having the end *c*, which limits the oscillation of the free end of the needle-holder, and the adjustable spring D, having the serrated end *d''*, impinging upon the needle and adapted to catch and arrest the yarn as the eye of the needle passes it, substantially as and for the purpose set forth.

377,193. MACHINE FOR WELDING CHAIN-LINKS. JAMES C. COVERT and JETHRO BILLINGHAM, West Troy, N. Y.; said Billingham assignor to said Covert. Filed Mar. 5, 1887. Serial No. 229,825. (No model.)



Claim.—1. In a link-welding machine, the combination, with a base or anvil, of a frame adjustably mounted with respect thereto, a cross-head mounted in said frame and provided with screws for vertically and laterally adjusting it, and an arm and die head or hammer carried by said cross-head.

2. In a link-welding machine, the combination, with an anvil or base having a die thereon, of a frame adjustably mounted with respect thereto, a cross-head mounted in said frame, and screws for laterally and vertically adjusting it, an arm carried thereby and provided with a die-head and a die secured to the same, and a spring to lift the die-head.

3. In a link-welding machine, the combination, with an anvil or base having an arm extending therefrom, of a frame adjustably fitted to said arm, blocks slidingly fitted to said frame, screws for adjusting the blocks up and down, and bearing-screws fitted to said blocks, a cross-head supported and adjusted laterally thereby, an arm extending from said cross-head, and having a hammer or die head.

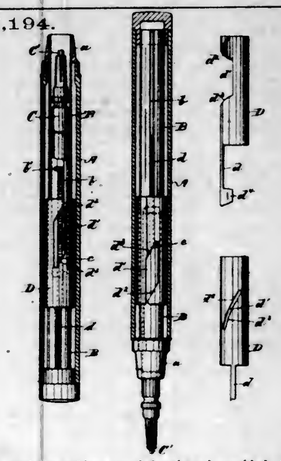
4. In a link-welding machine, the combination, with a frame and blocks slidingly mounted therein, of screws fitted to said frame above and below said blocks, to adjust them up and down and maintain them in a set position, and screws passing through said blocks, a cross-head carrying a hammer or die head and mounted upon the latter screws.

5. In a link-welding machine, the combination of a female and a male die, the female die consisting of a metallic block having a recess in the upper face thereof whose length is approximately semicircular, whose lower portion in cross-section is semicircular, whose sides from the termination of the said latter portion extend upwardly and outwardly, and a stud or projection extending from the said recess to said face, and the male die consisting of a metallic bar rounded in an annular direction on the rear side of the lower end and recessed in a vertical direction in the front side of said end, leaving a semi-annular portion adapted to enter the female die and stand between the rear side of and partly round the stud and the wall of the recess round it, and a concavity in the lower face of the said resulting portion whose cross-section is less than a semicircle, the width of said concavity being less than the width of the recess in the female die at the point where the link arrests the male die, whereby a space or pocket is left all around the link, into which surplus metal may escape and lie above the plane of the axial line of the link in position to be worked back into the link by reversing the link in the die, as set forth.

377,194. PENCIL-HOLDER. CORTI DE MEYER, Budweis, Bohemia, Austria-Hungary. Filed Sept. 24, 1887. Serial No. 250,598. (No model.)

Claim.—1. In a pencil-carrier, the combination, with the tubular

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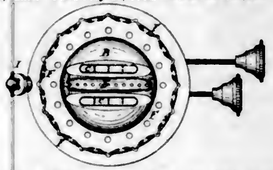


handle, a tubular guide secured therein and provided with an L-shaped slot, and a pencil-carrier fitted loosely in the guide and having a radial pin projecting through the slot thereof, of a propelling device operating on the carrier-pin by gravity to move said carrier along and impart to it a partial rotation in the guide, substantially as and for the purpose specified.

2. In a pencil-holder, the combination, with the tubular handle, a tubular guide secured therein and provided with an L-shaped slot, and a pencil-carrier fitted and moving freely in the guide and having a radial pin projecting through the slot thereof, of a tubular propelling device movable on the guide and operating by gravity on the pin to propel the carrier along and impart to it a partial rotation in said guide, and a locking device to lock the tubular propelling device against rotation on the guide, substantially as and for the purpose specified.

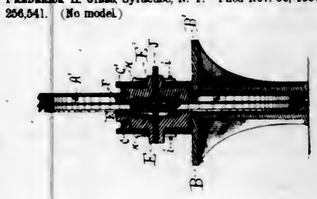
3. In a pencil-holder, the combination, with the tubular handle, a tubular guide secured therein and provided with an L-shaped slot, and a pencil-carrier fitted and moving freely in the guide and having a radial pin projecting through the slot thereof, of a tubular propelling device movable on the guide and operating by gravity on the pin to propel the carrier along and impart to it a partial rotation in said guide, a locking device to lock the propeller against rotation on the guide, and means to limit the movements of said propeller, substantially as and for the purpose specified.

377,195. KEROSENE-LAMP BURNER. THOMAS FITZGERALD, Revere, Mass. Filed July 16, 1884. Serial No. 137,834. (No model.)



Claim.—In a kerosene-lamp burner, the single cone B, provided with the openings D D and the grooved and perforated division or partition E, the latter being on a level, or nearly so, with the tops of the openings D D, in combination with the wick-tubes C C, as and for the purposes set forth.

377,196. APPARATUS FOR THE MANUFACTURE OF WHEELS. FREDERICK H. GIBBS, Syracuse, N. Y. Filed Nov. 30, 1887. Serial No. 256,541. (No model.)



Claim.—1. In an apparatus for making wheels, the combination, with a frame for holding the wheel-rim, of a revoluble hub-mold, whereby the insertion of the spokes is facilitated, substantially as and for the purpose set forth.

2. In an apparatus for making wheels, the combination, with a sectional frame for holding the wheel-rim, of a two-part mold provided with ways or grooves adapted to receive and hold the spokes, frames for supporting said mold, and clamps for holding the mold-sections and frames together, substantially as and for the purpose set forth.

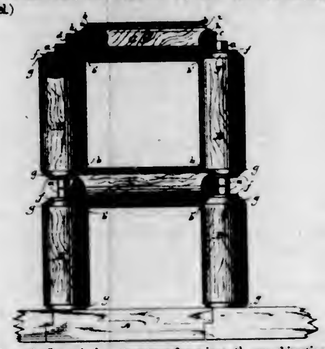
3. In an apparatus for making wheels, the combination, with a frame for holding the wheel-rim, of a frame for supporting the hub-mold at the center of the wheel and a two-part mold journaled therein, whereby the rim and hub-mold are revolved together for the convenient insertion of the spokes, substantially as and for the purpose set forth

4. In an apparatus for making wheels, the combination, with a frame made in two parts for clamping the wheel-rim, of a two-part hub-mold, a supporting-table, two laterally-sliding frames thereon, in which the hub-mold sections are journaled, and suitable clamps for securing the hub-mold sections firmly together after the spokes are inserted, substantially as and for the purpose set forth.

5. In an apparatus for making wheels, the combination, with a frame for holding the wheel-rim, made in parts and provided with clamps for holding them firmly upon the rim, of a supporting-table for the hub-mold, a two-part hub-mold provided with a central opening for the mandrel and radial sockets for the spokes, a pair of frames sliding upon the table, in which the hub-mold sections are journaled, clamps for securing these sections firmly together, and keys engaging the journal of the hub-mold and L-frames, substantially as and for the purpose set forth.

6. In a molding apparatus, a two-part mold supported and journaled in suitable supports, in combination with clamps for holding the mold-sections firmly together and locking devices for preventing revolution of the mold while pouring the molten metal, when constructed and operating substantially as shown and set forth.

377,197. TIMBER STRUCTURE FOR MINES. GEORGE J. GOODNUE, Stevens Point, Wis. Filed Nov. 14, 1887. Serial No. 255,096. (No model.)



Claim.—1. In a timber structure for mines, the combination, with suitable legs beveled at their ends, of caps having their respective ends cut away to form beveled tongues, and upper and lower shoulders beveled to correspond with the bevels on the legs, substantially as and for the purpose set forth.

2. In a timber structure for mines, the combination, with suitable legs provided with gudgeons and reduced at their ends to form bevels, of caps cut away at their respective ends to form beveled tongues recessed to fit the gudgeons, and upper and lower shoulders beveled to correspond with the bevels on the legs, substantially as and for the purpose set forth.

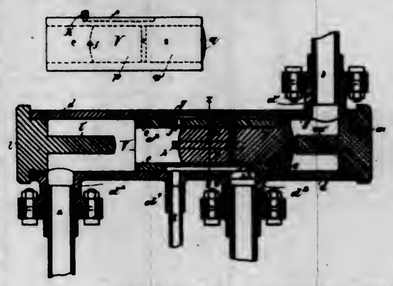
3. In a timber structure for mines, the combination, with legs having beveled extremities and cut away to form circular gudgeons, of caps cut away at their respective ends to form beveled tongues recessed to fit the gudgeons, and upper and lower shoulders beveled to correspond with the bevels on the legs, substantially as and for the purpose set forth.

4. In a timber structure for mines, the combination, with legs having beveled extremities cut away to form shoulders, of caps having their respective ends cut away to form beveled tongues, and upper and lower shoulders beveled to correspond with the bevels on the legs, substantially as and for the purpose set forth.

5. In a timber structure for mines, the combination with the legs B, having their extremities reduced to form the shoulders *f* and bevels *g*, of the caps C, having their ends cut away to form the beveled tongues *c*, beveled shoulders *b b'*, and plain shoulders *h*, substantially as and for the purpose set forth.

6. In a timber structure for mines, the combination, with the legs B, having their extremities reduced to form the gudgeons *a*, shoulders *f*, and bevels *g*, of the caps C, having their ends cut away to form the recessed and beveled tongues *c*, beveled shoulders *b b'*, and plain shoulders *h*, substantially as and for the purpose set forth.

377,198. RAILWAY-BRAKE. FREDERIK A. ROLLEMAN, Oisterwyk, Netherlands. Filed Feb. 3, 1887. Serial No. 226,423. (No model.)



Claim.—1. The herein-described valve for air-brakes, comprising a valve-casing provided with branches for connection with the compressed air main, the auxiliary cylinder, and the brake-cylinder, respectively, also with a longitudinal groove or passage in its inner periphery in communication with the auxiliary cylinder or branch and with an exhaust-port diametrically opposite said longitudinal passage, in combination with a cylindrical valve fitting snugly but moving freely in the corresponding bore of the casing, said valve being provided with an admission-port adapted to communicate with the passage of the casing, and with an exhaust-port communicating at all times with the exhaust-port of the casing and adapted to establish communication between said port and the brake-cylinder branch, substantially as and for the purposes specified.

2. The herein-described valve for air-brakes, comprising a valve-casing provided with branches for connection with the compressed-air main, the auxiliary cylinder, and the brake-cylinder, respectively, also with a longitudinal passage in its inner periphery in communication with the auxiliary-cylinder branch and with an exhaust-port diametrically opposite said passage, in combination with a cylindrical valve fitting snugly in the corresponding bore of the casing and having a motion at right angles to the direction of motion of the car, said valve being provided with a port adapted to communicate with the longitudinal passage in the casing, and with an exhaust-passage communicating at all times with the exhaust-port of said casing and adapted to establish communication between said exhaust-port and the brake-cylinder branch, substantially as and for the purpose specified.

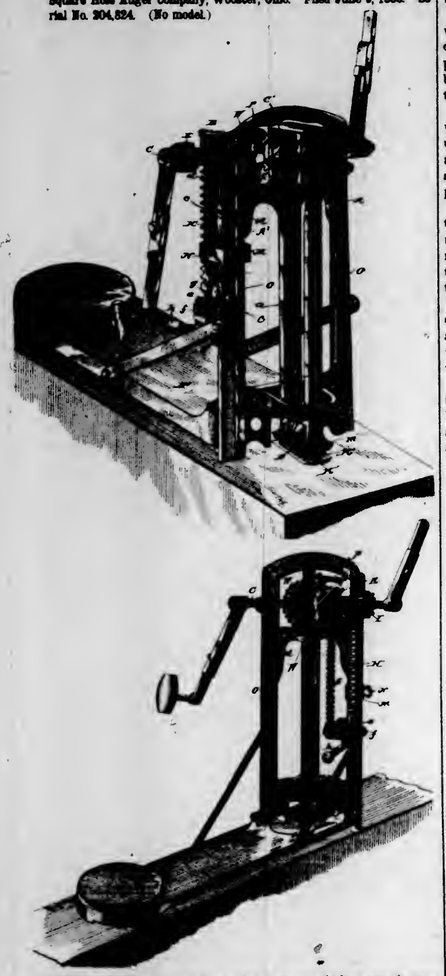
3. The combination, with the main *a'*, the reservoir *b'*, and the brake-cylinder *c'*, of the valve-casing *d*, provided with branches d' d^2 d^3, respectively connected with the main, the reservoir, and cylinder, an exhaust pipe or branch, d^4, and a groove or passage, *g*, and the cylindrical valve V, provided with a port or passage, *f*, adapted to communicate with the groove *g*, and a groove, *i*, communicating at all times with the exhaust-port and adapted to establish communication between said port and the branch d^3, substantially as and for the purpose specified.

4. The combination, with the valve-casing *d*, constructed as described, of the valve V, composed of a hollow cylinder divided interiorly into two chambers by a partition, and having a port, *f*, leading from one of said chambers, and a longitudinal groove or recess, *i*, in its periphery, substantially as and for the purpose specified.

5. The combination, with the valve-casing *d*, constructed as described, and having inwardly-projecting abutments formed on the heads thereof, of a valve composed of a hollow cylinder divided interiorly into two chambers by a partition, and buffers arranged within said chambers, substantially as and for the purposes specified.

6. The combination, with the valve-casing *d*, constructed as described, and having abutments of unequal length projecting inwardly from the heads thereof, of a valve composed of a hollow cylinder divided interiorly into two chambers of unequal length, a buffer-block completely filling the smaller chamber and adapted to contact with the shorter abutment, and a buffer-block partially filling the longer chamber and adapted to contact with the longer abutment, substantially as and for the purpose specified.

377,199. **SQUARE-HOLE AUGER.** RICHARD HUSSER, Wooster, and ABRAHAM R. LAKE and JOHN C. LAKE, Big Prairie, assignors to the Square Hole Auger Company, Wooster, Ohio. Filed June 9, 1886. Serial No. 204,824. (No model.)



Claim.—1. In a mortising-machine or square-hole auger, the combination, with a cutter-head, of a single two-part rod secured at its lower end to the cutter-head and at its upper end to the operating mechanism, the parts of said rod being connected by a slide-coupling, substantially as described.

2. In a mortising-machine or square-hole auger, the combination, with a cutter-head, of a two-part rod pivoted thereto and to the operating mechanism, the two sections of said rod being pivotally secured to a coupling, which latter is adapted to slide in guideways of the stock, substantially as described.

3. In a mortising-machine or square-hole auger, the combination, with a supporting-frame and a nut arranged thereon, of a sliding stock carrying the cutter-head, and a feed-screw passing through said nut, and a pawl-and-ratchet device operated by the driving-gear of the machine to impart an intermittent movement to the screw to feed the stock downward, substantially as described.

4. In a mortising-machine or square-hole auger, the combination, with a supporting-frame and a nut arranged thereon and a sliding stock carrying a cutter-head, of a feed mechanism consisting of a vertical screw supported to move downwardly with the stock, and mechanism for automatically turning the screw from the gearing which oscillates the cutter-head, and a nut upon the supporting-frame coacting with the screw, substantially as described.

5. In a mortising-machine or square-hole auger, the combination, with a supporting-frame and a nut arranged thereon, of a sliding stock carrying the cutter-head, a feed-screw passing through said nut and provided with a ratchet-wheel, and a spring-actuated pawl adapted to be intermittently thrown into engagement with said wheel, substantially as described.

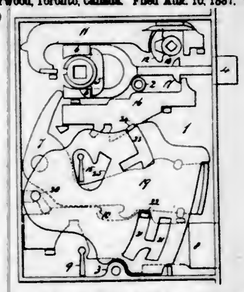
6. In a mortising-machine or square-hole auger, the combination, with a supporting-frame and with the sliding stock, of a nut arranged upon said frame, a feed-screw passing through said nut and provided at its upper end with a ratchet-wheel, a spring-pawl pivoted upon the stock, and a wheel provided with projections adapted to strike said pawl to cause the latter to rotate the screw, substantially as described.

7. In a mortising-machine or square-hole auger, the combination, with a supporting-frame and a sliding stock, of a feed-screw, a movable rack arranged upon the frame, a bearing arranged below said rack-bar to receive the feed-screw and provided with a screw-nut section, and a device secured to said rack-bar for throwing said nut-section into and out of gear with the feed-screw, substantially as described.

8. The combination, with the main frame and the operating-shaft, of a sliding spring-actuated rack-bar, a pinion mounted upon said shaft, a feed-screw, a nut device to receive said screw, and a device connected with said rack-bar for throwing said nut into and out of engagement with the screw, substantially as described.

9. The combination, with the main frame and feed-screw, of a movable spring-actuated rack-bar, a bearing secured below said rack-bar to receive the feed-screw and provided with an adjustable threaded section, and a bent bar for throwing said threaded section into and out of gear with the feed-screw, substantially as set forth.

377,200. **COMBINED LATCH AND LOCK.** MOSES JOHNSON, Hamilton, Ontario, Canada, assignor to John H. Tilden, same place, and George B. Underwood, Toronto, Canada. Filed Aug. 10, 1887. Serial No. 246,731. (Model.)



Claim.—1. In a lock and latch, the combination, with the latch-bolt 4, of slide 11, shaft 13, having cam 12, tappet 5, slide 16, gravitating lever 7, and tumblers 19, whereby the tappet can be locked from the inside of the door and the latch-bolt retracted from without by a key, as set forth.

2. In a latch and lock, the combination of the latch-bolt 4, tappet 5, gravitating lever 7, having a projection on the lower edge thereof, lock-bolt 8, having a projection, 10, and tumblers 19, whereby the advancement of the lock-bolt by a key locks latch-bolt 4 by engagement with the lever, as set forth.

3. The combination, with the case 1, of shaft 13, having cam 12, slide 11, tappet 5, gravitating lever 7, slide 16, tumblers 19, and lock-bolt 8, whereby the tappet can be locked from the inside of the door, the latch-bolt retracted from the inside and outside by a key, and from the inside by a thumb-knob, as set forth.

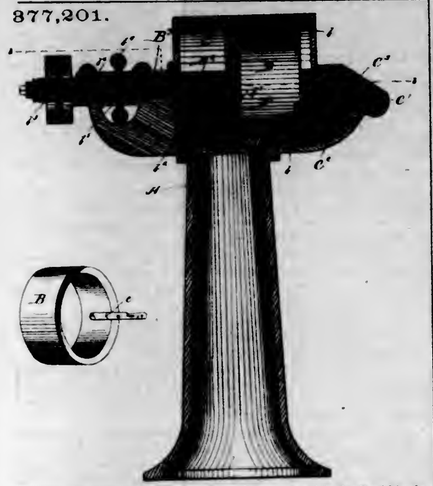
4. The combination, with the gravitating lever 7, slide 16, having post 24 thereon, and bolt-lock 8, of tumblers 19, having slots 21 23 and opening 25, whereby the tumblers depress the lever, offer resistance to the key, and prevent the retraction of slide and latch-bolt without the use of a key, as set forth.

377,201. **CUTLERY-GRINDING MACHINE.** ALLEN JOHNSTON, Ottumwa, Iowa. Filed July 23, 1887. Serial No. 245,473. (No model.)

Claim.—1. The combination of a hollow cylinder or cup-shaped ring-grinder having an internal cone-shaped end surface with a work-holder and a guide for said work-holder inclined to the axis of said work-holder, whereby the side or surface of the article to be ground may be fed across and parallel to the conical end surface of said grinder, substantially as specified.

2. The combination, with a revolving hollow or cup-shaped grinder, of a trough or receptacle in which the outer periphery of said grinder

377,201.



revolves, a second trough or compartment into which the liquid is elevated or thrown by the centrifugal action of the grinder, and having a spout or connection leading to the interior of the hollow grinder, and by which it is thus automatically delivered upon the inner surface of the hollow or cup-shaped grinder, so that the centrifugal action thereof will flow or spread the liquid entirely and constantly over and to the grinding-surface at the very point and time the work or grinding is being done, substantially as specified.

3. The combination, with a hollow or cup-shaped grinder, of a water spout or conductor directed into the hollow grinder for delivering a supply of water upon its interior periphery, so that the centrifugal action will flow or distribute the water constantly to the grinding-surface, substantially as specified.

4. The combination of a hollow or cup-shaped grinder with a water trough or receptacle, an inclosing-case, an elevated water trough or receptacle, and a spout or conductor to deliver the water from said elevated trough to the interior of the wheel, so that the centrifugal action may serve to automatically supply the water to the grinding-surface, substantially as specified.

5. The combination, with a hollow emery cylinder or ring, a hollow cylindrical holder for said ring, and reciprocating knife-holder slide mounted upon an adjustably-inclined guideway, said guideway being inclined toward the axis of said grinder and adapted to reciprocate said work-holder and the article held thereon to be ground in and out of said hollow grinder and over and parallel to its inside conical end surface, substantially as specified.

6. The combination, with a hollow emery-cylinder, of a holder for said emery-cylinder and an inclosing-case provided with a lower and an upper water trough or receptacle, substantially as specified.

7. The combination, with a hollow revolving grinder, of a reciprocating work-holder and threaded sleeve B^2, and hand-nut b^4, for adjusting the pressure of the grinder against the article being ground in the work-holder, substantially as specified.

8. The combination of hollow grinder B, with its revolving holder B', secured to hollow shaft B^2, follower b', abutting against the end of said grinder, and adjustable follower-rod b^3, mounted in said hollow shaft, substantially as specified.

9. The combination of hollow grinder B, with its revolving holder B', secured to hollow shaft B^2, follower b', abutting against the end of said grinder, and adjustable follower-rod b^3, mounted in said hollow shaft, and an adjusting-screw, b^5, substantially as specified.

10. The combination of hollow grinder B, its revolving holder B', to which it is secured, having interiorly-threaded hub b'', hollow shaft B^2, secured to said hub, journal-sleeve B^3, follower b', abutting against the end of said grinder, follower-rod b^3, adjusting-screw b^5, and wheel or nut b^4, for adjusting said sleeve B^3, substantially as set forth.

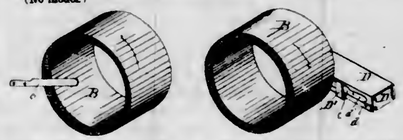
11. The combination, with hollow revolving grinder B, of reciprocating inverted-box-form work-holder D, mounted upon a guide, D', in and covered by said sliding box-form work-holder, a rack secured to said work-holder upon the under side thereof, and a shaft journaled in said guide and having a gear meshing with said rack and inclosed between said slide and guide D', oscillating segment d^9, gear d^{11}, and cam E, substantially as specified.

12. The combination, with hollow revolving grinder B, of reciprocating inverted-box-form work-holder D, mounted upon a guide, D', in and covered by said sliding box-form work-holder, a rack secured to said work-holder upon the under side thereof, and a shaft journaled in said guide and having a gear meshing with said rack and inclosed between said slide and guide D', oscillating segment d^9, gear d^{11}, cam E, worm-gear f', and worm f, mounted upon a pivoted or movable shaft, substantially as specified.

13. The combination with the hollow grinder B, reciprocating work-holder D, guide D', rack d^8, pinion d^7, shaft d^6, gear d^{11}, segment d^9, cam E, worm f, worm-gear f', mounted upon a pivoted or movable shaft, spring-pawl f^3, catch f^2, and a lug or pin, f^4, on said worm-gear, substantially as specified.

14. The combination, with a hollow or cup-shaped emery-grinder having an inside conical end grinding-surface, of a reciprocating knife-holder, an adjustable inclined guide upon which said knife-holder reciprocates, said guide being inclined inwardly toward the axis of said grinder and parallel to the inside conical end grinding-surface of the grinder, and means for reciprocating the knife-holder, substantially as specified.

377,202. **ART OF GRINDING CUTLERY.** ALLEN JOHNSTON, Ottumwa, Iowa. Original application filed July 23, 1887, Serial No. 245,473. Divided and this application filed Dec. 30, 1887. Serial No. 259,387. (No model.)



Claim.—1. The process or improvement in the art of grinding cutlery or other articles with a convex surface, consisting in feeding the article across the internal edge of a cylindrical revolving grinder, substantially as specified.

2. The process or improvement in the art of grinding cutlery or other articles with a convex surface, consisting in feeding the article across the internal edge of a cylindrical revolving grinder and adjusting the degree of convexity of the ground surface by adjusting the inclination of the line of feed of the article relative to the axis of the grinder, substantially as specified.

377,203. **FOOT-GEAR.** MATHIAS LARSEN, Milwaukee, Wis. Filed Jan. 29, 1886. Serial No. 190,153. (No model.)



Claim.—1. In an article of foot-gear, a pelt base having the wool or hair side thereof turned in and adapted to cover the foot and a portion of the ankle or leg, a re-enforce or outer covering of non-pelt material such as described secured or united throughout its length, or from top to bottom, by the seam that binds their edges together to said base, and a flexible sole, substantially as and for the purpose set forth.

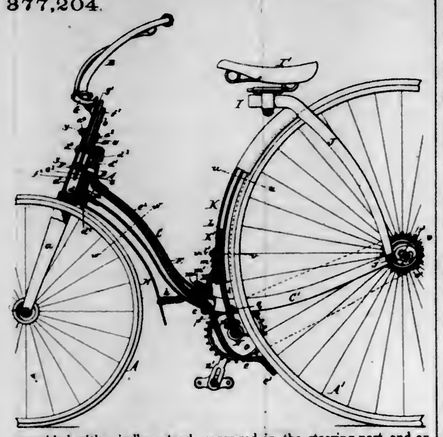
2. In an article of foot-gear, a pelt base having the wool or hair side thereof turned in and adapted to cover the foot and a portion of the ankle or leg, a re-enforce or outer covering of non-pelt material such as described secured throughout its length or from top to bottom to said base, in combination with a short boot, the former provided with button-holes and the latter with buttons, substantially as and for the purpose set forth.

377,204. **VELOCIPEDE.** BENJY G. LATTA, Friendship, N. Y., assignor, by mesne assignments, to the Pope Manufacturing Company, Portland, Me. Filed June 10, 1886. Serial No. 204,797. (No model.)

Claim.—1. The combination, with a hollow steering-post, of a handle-bar provided with a hollow shank arranged in the steering-post, a brake hand-lever pivoted to the handle-bar, and a brake-rod arranged in the hollow shank and steering-post, substantially as set forth.

2. The combination, with a hollow steering-post, of a handle-bar

377,204.



provided with a hollow shank arranged in the steering-post and an adjusting-rod arranged in the hollow shank of the handle-bar, whereby the latter can be raised and lowered, substantially as set forth.

3. The combination, with the steering-wheel and its frame and the driving-wheel, of a reach connecting the driving-wheel with the steering-frame by steering-centers in rear of the steering-post, a brake-lever attached to the reach, a brake-actuating mechanism attached to the steering-frame, and a pivot connecting the actuating mechanism and the brake-lever in line with the steering-centers, substantially as set forth.

4. In a velocipede, the combination, with the hollow reach, of a brake-lever pivoted to the reach and having its upper actuating-arm extending lengthwise through the hollow reach and its lower arm provided with a brake-spoon and projecting from the reach, substantially as set forth.

5. The combination, with the front steering-wheel and its frame and the driving-wheel, of a hollow connecting-reach and a brake adapted to check the rear wheel and having the front arm of its lever arranged in the hollow reach, substantially as set forth.

6. The combination, with the front steering-wheel and its frame and the rear driving wheel or wheels, of a hollow connecting-reach, C, provided at its front end with a hollow head, D, a brake-lever, E, pivoted to the reach and having its front arm arranged within the same, and a retracting-spring, g^3, applied to the brake-lever within the head D, substantially as set forth.

7. The combination, with the front steering-wheel and its frame and the rear driving wheel or wheels, of a hollow connecting-reach, C, provided at its front end with a hollow head, D, a brake-lever, E, pivoted to the reach and having its front arm arranged within the same, and an actuating-finger, F, pivoted to the brake-lever within the head D, substantially as set forth.

8. The combination, with the front steering-wheel and its fork, provided with a hollow steering-post, a', and the rear driving wheel or wheels, of a hollow connecting-reach, C, provided at its front end with a hollow head, D, a brake-lever, E, pivoted to the reach and having its front arm arranged within the same, an actuating-finger, F, a rod, f', attached to said finger, and a hand-lever, G, connected with the rod f', substantially as set forth.

9. The combination, with the front steering-wheel and its frame and the rear driving wheel or wheels, of a connecting-reach and an elastic mud-guard attached to the steering-frame and the reach, whereby the wheels are held in line, substantially as set forth.

10. The combination, with the front steering-wheel and its frame and the rear driving wheel or wheels, of a connecting-reach, a mud-guard, and a spring whereby one end of the mud-guard is attached to the reach, substantially as set forth.

11. The combination, with the front steering-wheel and its frame and the rear driving wheel or wheels, of a connecting-reach, an elastic mud-guard rigidly secured with its front end to the steering-frame, and a yielding connection whereby the rear end of the mud-guard is attached to the reach, substantially as set forth.

12. The combination, with the main frame connecting the steering-wheel and driving wheel or wheels, of an auxiliary frame made vertically adjustable on the main frame, a saddle supported on the auxiliary frame, and a driving-gear made adjustable on the auxiliary frame toward and from the saddle, substantially as set forth.

13. The combination, with the wheel A, driving-wheel A', reach C, and rear fork, C', of the bifurcated brace J, pivoted to the rear fork, the brace K, secured with its upper end to the brace J and provided with a ratchet-bar, m, a pawl, M, attached to the reach and engaging with said ratchet-bar, a bar, L, adjustably attached to the brace K, and a driving-gear supported by the bar L, substantially as set forth.

14. The combination, with the driving-wheel A' and rear fork, C', provided with a cross-piece, q, in front of the driving-wheel, of the bar, L, supporting the driving-gear and resting against the cross-bar q, substantially as set forth.

15. The combination, with the tubular brace K, of the bar L provided with a series of holes, l, fastening-bolts l', whereby the bar L is adjustably attached to the brace K, and a driving-gear supported by the bar L, substantially as set forth.

16. The combination, with the steering and driving wheels and the connecting-frame, of a tubular brace, K, supporting the saddle, and a bar, L, supporting the driving-gear and held adjustably in the brace K, substantially as set forth.

17. The combination, with the wheel A' and a saddle, I', of a hollow supporting-brace, K, of crescent-shaped cross-section, acting as a mud-guard to the wheel, substantially as set forth.

18. The combination, with the crank-shaft n and sprocket-wheels o o^3, provided with cones p^1, of the tubular bearing N, composed of two tubular parts p p', secured together by an external and an internal screw-thread, substantially as set forth.

19. The combination, with a driving-wheel adapted to be reversed in the frame and provided with two sprocket-wheels of different diameters, of a crank-shaft provided with a sprocket-wheel and a single drive-chain adapted to connect the crank-shaft with either of the sprocket-wheels of the drive-wheel, substantially as set forth.

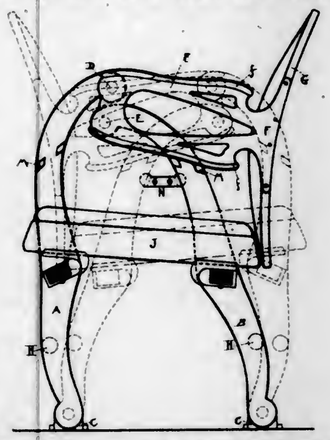
20. The combination, with a driving-wheel adapted to be reversed in its frame and provided with a sprocket-wheel, of a crank-shaft, two sprocket-wheels of different diameters rigidly secured thereto, and a single drive-chain whereby the driving-wheel can be connected with either sprocket-wheel on the crank-shaft, substantially as set forth.

21. The combination, with the driving-wheel provided with a sprocket-wheel, of a crank-shaft provided with two sprocket-wheels of different diameters and made reversible, whereby either of said two sprocket-wheels can be connected with that of the driving-wheel by a single chain, substantially as set forth.

22. The combination, with a driving-wheel, A', provided with two sprocket-wheels, o' o^3, of different diameters, of a crank-shaft, two sprocket-wheels, o o^3, of different diameters, rigidly secured to the crank-shaft, and a single drive-chain, o^4, substantially as set forth.

23. In a velocipede, the combination, with a wheel, of a fork or frame having two recesses or seats, r r', in either of which the axle of the wheel can be secured, substantially as set forth.

377,205. REVERSIBLE CAR-SEAT. WILLIAM B. LOCK, Brookline, Mass. Filed Mar. 25, 1887. Serial No. 232,441. (No model.)



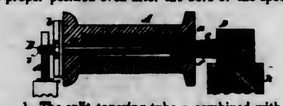
Claim.—1. In a reversible seat, the supports A B, separately pivoted at adjacent points to the swinging arm F, and at fixed points below the seat, in combination with the back G, fixed to said arm, and the seat-frame J, supported upon the parts A and B, and tilted by reversing the arm and back, substantially as set forth.

2. The described reversible seat, provided with two pairs of supports, A B, each pivoted at its foot, and having a projection or cross-bar on which the seat-frame rests, in combination with the double arm F f, pivoted to said supports separately at D E, and with the back G, fixed to and moving with said arm, substantially as set forth.

3. The described reversible seat, having two pairs of supports pivoted at their lower ends to a foot or base, and at their upper ends to a swinging arm at adjacent points D E, in combination with the seat-frame J, provided with hooked clamps K, arranged to engage with the cross-bars I or their sockets L, and to be disengaged therefrom, substantially as set forth.

377,206. SPOOL-HOLDING SPINDLE FOR WINDING SILK, &c. JOHN MARTHLOFF, Reston, Pa. Filed July 16, 1887. Serial No. 244,477. (No model.)

Brief.—The object of the invention is to provide a spindle upon which the spool may be readily adjusted and which will hold the spool firmly in its proper position even after the bore of the spool is worn.



Claim.—1. The split tapering tube e, combined with the cylindrical rod B, said tube e being arranged to slide on the rod B and to hold a spool, the said rod being adapted to support said tube e near one end and the spool near the other end, as set forth.

2. The pulley D and split tapering tube e, in combination with the rod B and collar b, all arranged to operate and hold a spool substantially as herein shown and described.

377,207. POSITIVE SHUTTLE-MOTION FOR LOOMS. JOHN MAW, Dundas, Ontario, Canada. Filed May 19, 1887. Serial No. 238,730. (No model.)

Brief.—To the shuttle is pivoted a locking-lever which has heads to engage with notches in the carrier-arms. The lever is disengaged from one carrier by being struck by the other carrier, and the locking movement is completed by a reversing-spring which acts on either side of a projection on the lever. Means for attaching the bobbin-tension spring to the bobbin-post form a part of the invention.



Claim.—1. The combination, with the shuttle-frame, of a duplex locking-lever pivoted to said frame and adapted to come in contact with the carrier-arms, thereby effecting the first part of the movement of the locking-lever, and a reversing-spring attached to the shuttle-frame and completing the movement of the locking-lever, substantially as set forth.

2. The combination, with the carrying-arms C C, provided with locking-recesses f f' and heads F F', of a shuttle provided with a duplex locking-lever, D, having heads e^2 e^3, a tail-piece, g, and a projection, I, and a reversing-spring, H, bearing against the projection I, substantially as set forth.

3. The combination, with the shuttle-frame provided with a hollow post, J, of a bobbin mounted on said post, and a tension-spring, L, provided with a pin, l, which enters the bore of the hollow post, and means whereby the pin l is locked within the same, substantially as set forth.

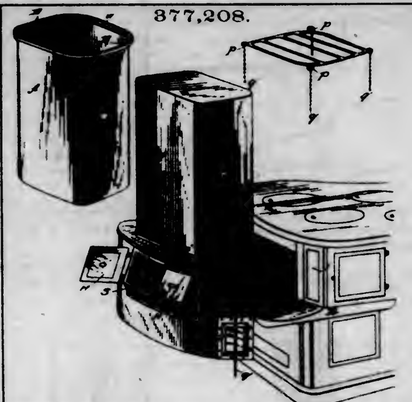
4. The combination, with the shuttle-frame provided with a hollow post, J, having a locking-groove, n n' n^3, of a bobbin mounted on said post, a tension-spring, L, and a pin, l, secured to said spring and provided with a projection, m, whereby the pin is locked in the groove of the post, substantially as set forth.

377,208. HAY AND STRAW BURNER. OLIVER R. MERRICK, Potter County, Dak. Filed Mar. 18, 1887. Serial No. 231,462. (No model.)

Claim.—1. In combination, the vertically-arranged magazine to receive and hold the straw, the fire-box beneath said magazine, the follower for forcing the material downward placed in said magazine, and the chains or wires attached to said follower and extending downwardly, and thence through the walls of the fire-box to the outside, substantially as described.

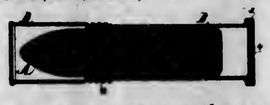
2. In a straw-burner, the combination of a magazine having a follower therein, a fire-box forming a support for the magazine having a horizontal extension adapted in turn to be supported by the hearth of the stove, and having also an oblong or elongated rear open end to fit the front of the stove, with spring-plates for attachment thereto, and the downwardly-extending portion depending below the hearth and

377,208.



comprising the ash-pit, the grate located beneath the magazine and in the plane of the horizontal portion of the fire-box, the doors in the sides of the downward extension, and the means for operating the follower, all substantially as described.

377,209. ERASER-HOLDER. FREDERICK G. OSBORN, Newark, N. J., assignor to Eberhard Faber, New York, N. Y. Filed Oct. 12, 1887. Serial No. 252,105. (No model.)



Claim.—1. A tubular sheet-metal case having an inwardly-bent screw-thread, in combination with the cylindrical eraser screwed into the same, the cylindrical portions of the case being larger than the rubber, so as not to press against the same except at the screw-thread, substantially as set forth.

2. The combination, with a cylindrical erasing-rubber, of a tubular sheet-metal case, with an inwardly-pressed screw-thread to hold the rubber, the cylindrical portion of the case being sufficiently large not to press upon the rubber except at the screw-thread, and a polygonal bead at the end of the cylindrical portion of the case, substantially as set forth.

3. The combination, with the cylindrical erasing-rubber, of a tubular sheet-metal case of larger diameter than the rubber, and having an inwardly-pressed screw-thread for holding the rubber, and a removable sheet-metal cap with an inwardly-pressed screw-thread to screw upon the outside of the sheet-metal case, substantially as set forth.

4. The combination, with the cylindrical erasing-rubber, of a tubular sheet-metal case of larger diameter than the rubber, and having an inwardly-pressed screw-thread for holding the rubber, and a removable sheet-metal cap or cover adapted to fit over the outside of the sheet-metal case, substantially as set forth.

377,210. ELECTROLYTE COMPOUND. GEORGE B. PERKOCK, Brooklyn, N. Y. Filed Jan. 12, 1887. Serial No. 224,121. (No specimens.)

Claim.—1. In an electrical battery, mineral wool, in combination with acids or fluids of any kind capable of decomposing it.

2. The combination, in an electrical battery, of mineral wool with sulphuric acid, chromic acid, and water.

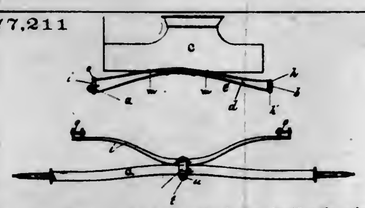
3. In an electrical battery, the combination of mineral wool and water, the latter securing the decomposition of the former, for use in the zinc-holding porous cup, as set forth.

4. In an electrical battery for any electrical service, a depolarizing jellied compound, by the use of which evaporation and crystallization are prevented, formed by the addition of mineral wool to acids in an aqueous solution, in which the porous cup, with its contents, and the electrodes, can be firmly placed and held in any desired position, substantially as set forth.

377,211. VEHICLE-GEAR. MICHAEL B. RING, Norwich, and JOSEPH I. LAVOIE, Taftville, Conn. Filed Apr. 11, 1887. Serial No. 234,238. (No model.)

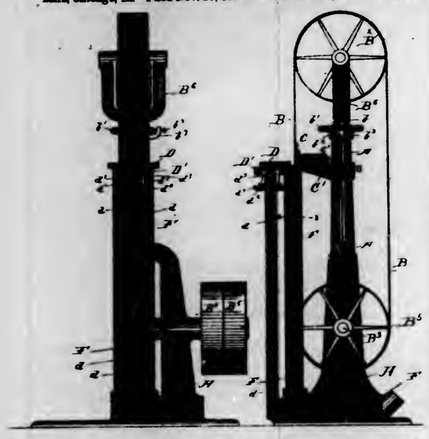
Claim.—In combination with the front and rear axles, transverse spring i, seated on the front axle, side springs extending from the ends of said transverse spring to the rear axle, the central spring, e, secured

377,211



to the rear axle at one end and bent back upon itself at the other end to embrace spring *i* and the front axle, and the king-bolt *t*, all being substantially as and for the objects specified.

377,212. EMERY-BELT GRINDING-MACHINE. CHARLES E. ROBERTS, Chicago, Ill. Filed Nov. 23, 1886. Serial No. 219,586. (No model.)



Claim.—1. The combination in an emery-belt grinding-machine, of the emery-belt and its supporting-pulleys, with a rotatable plate or disk for supporting the belt at the place where the article is pressed against it, the flat face of said disk fitting against the inner surface of the belt and the axis of revolution of the disk being at right angles to the plane of the belt, substantially as specified.

2. The combination, with an emery-belt, of a rotatable back plate or support having a shaft journaled at right angles to the plane of the belt and midway between the edges of the belt, so that the belt will lie equally on each side of the axis of the disk, substantially as specified.

3. The combination, with an emery-belt, of a rotatable flat disk for supporting its back, the axis of the disk being at right angles to the plane of the belt, and means for adjusting the same to and from the belt, substantially as specified

4. The combination, with an emery-belt, of a laterally-swinging table for supporting the work and moving it laterally across the face of the belt, and a pair of swinging supports for holding said table level as it swings to and fro across the face of the belt, substantially as specified.

5. The combination, with an emery-belt, of a table and a pair of laterally-swinging supports hinged or pivotally connected to said table at different points, whereby the table is held level or at right angles to the belt as it swings to and fro across the face of the belt, substantially as specified.

6. The combination, with an emery-belt, of a table and a pair of laterally-swinging supports hinged or pivotally connected to said table, said supports consisting of flat springs, substantially as specified.

7. The combination, with an emery-belt, B, of table D, and flat springs *d d*, pivotally connected at one end to the opposite ends or sides of said table and at their lower ends rigidly connected to the frame of the machine, substantially as specified.

8. The combination, with an emery-belt, B, of table D, base-piece IV, springs *d d*, and hinge-arms *d' d³*, secured rigidly to said springs *d d* and pivotally to said base-piece IV, substantially as specified.

9. The combination, with an emery-belt, B, of table D, base-piece IV, springs *d d*, and hinge-arms *d' d³*, secured rigidly to said springs *d d* and pivotally to said base-piece IV, said table D being secured to said base-piece IV, substantially as specified.

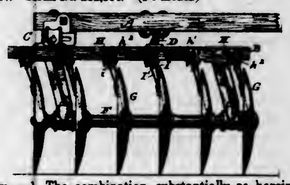
10. The combination, with an emery-belt, B, of table D, and laterally-swinging supports *d d*, pivotally connected to said table near its opposite ends, said table having also pivots d^3, for the purpose of adjusting the table at right angles to the belt, substantially as specified.

11. The combination, with an emery-belt, B, of table D, supports *d d*, hinge-arms *d' d³*, bolts d^3 d^3, and set-screws d^4, for tarning or adjusting said table on the pivots d^3 d^3, substantially as specified.

12. The combination, with emery-belt B, of pulleys B' B^3, hollow standard A, yoke or frame B^4, having screw-stem *b*, provided with longitudinal groove b^3, key b^4, and threaded adjusting-wheel *b'*, substantially as specified.

13. The combination, with an emery-belt and its pulleys, of the rotary disk C and laterally-swinging table D, and means for holding said table at right angles to said disk as it swings to and fro, substantially as specified.

377,213. HARROW. SEBASTIAN RITTY, Dayton, Ohio. Filed Oct. 17, 1887. Serial No. 252,538. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, with the harrow-head and harrow-disk, of a plate-spring connected to the harrow-head and a scraper-blade pivoted to the lower end of the plate-spring.

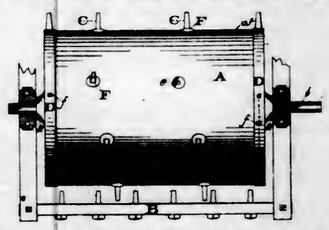
2. The combination, substantially as hereinbefore set forth, of the angle-bracket affixed to the harrow-head, the harrow-disk, the scraper-blade, the inner plate-spring affixed to said angle-bracket and resting upon the body of the blade, and the outer curved plate-spring secured to a flange from said angle-bracket and its lower end pivoted to the blade.

3. The combination, substantially as hereinbefore set forth, of the harrow-head, the angle-bracket affixed thereto, the harrow-disk, the scraper-blade with its lugs, the straight plate-spring secured to a flange from the angle-bracket and resting at its lower end between said lugs, and the curved plate-spring secured to said flange and having its lower end pivoted between said lugs, and the adjusting-bolt connecting said plate-springs with the angle-bracket.

4. The combination, substantially as hereinbefore set forth, with the two plate-springs depending from the rear of the harrow-head and with the harrow-disk, of the scraper-blade, its lugs or flanges embracing the lower ends of said springs, the pivot-bolt connecting said blade with the lower end of the outer plate-spring, and the opening through the body of the blade beneath said springs.

5. The scraper herein described, consisting of the angle-bracket with its spur, the plate-springs, the inner one of which is straight or nearly straight and the outer one curved, as set forth, the adjusting-bolt and its thumb-nut, and the scraper-blade pivoted to the lower end of the outer spring and confining said springs between its lugs, all as set forth.

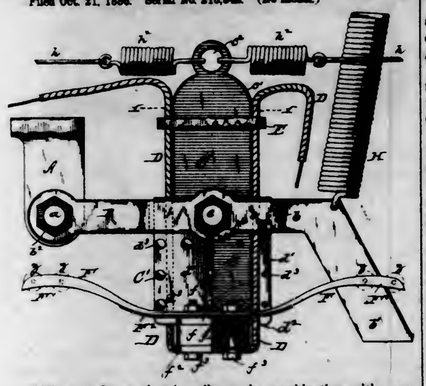
377,214. THRASHING-MACHINE. JASPER A. ROGER, East Berkshire, Vt. Filed Sept. 22, 1886. Serial No. 214,289. (No model.)



Claim.—1. In a thrashing-machine cylinder, the combination of wooden staves *a*, formed with countersunk depressions *e*, the teeth C, provided with shoulders, double convex washers F, fitting into the depressions *e*, and nuts *m*, substantially as shown and described.

2. In a cylinder for thrashing-machines, the combination of the heads and wooden staves, said staves being formed with countersunk depressions *e* and bored to receive the shanks of the teeth, a metallic covering, *a'*, enveloping the cylinder, teeth C, formed with screw-threaded shanks and having shoulders i, and the double convex tooth-supporting washers F, arranged to fit into the depressions *e* and to depress the metallic covering thereinto, substantially as described.

377,215. TRAVELING CURRENT-COLLECTOR FOR ELECTRIC-RAILWAY MOTOR-CARS. WILLIAM M. SCHLEMMER, Philadelphia, Pa. Filed Oct. 21, 1886. Serial No. 216,942. (No model.)



Claim.—1. In an electric railway, the combination, with a car, of a bar or support and a current-collector frame mounted upon said support and having a longitudinal and a lateral rocking motion, a lateral sliding motion, and a vertical movement independently of said support, substantially as and for the purpose set forth.

2. An electric-railway car having a traveling current-collector composed of a supporting-frame having a lateral and a vertical movement, and a collector or brush frame mounted on said supporting-frame, and having vertical and lateral and longitudinal oscillating movements independent of the movement of the supporting-frame, substantially as set forth.

3. In an electric railway, a car having a traveling current-collector composed of a supporting-frame pivoted at one end and having a spring-support at its other end, and a brush-frame mounted upon and having a lateral movement independent of the supporting-frame, substantially as set forth.

4. In an electric railway, a car having a traveling current-collector composed of a pivoted bar or frame, B, a brush-frame pivoted to bar B, a spring-support for said bar, and devices on the car for manually actuating said brush-frame to vary the contact of its brushes or shoes, substantially as set forth.

5. A traveling current-collector composed of a pivoted frame having a yielding support and a brush-frame loosely mounted upon said pivoted frame and having upward spring-pressure contact-brushes, substantially as set forth.

6. An electric-motor car having a traveling current-collector composed of a frame pivoted at one end to the car and having an opposite free end, an elastic or spring support for said free end, and a brush-frame loosely mounted on said pivoted frame and having oscillating, lateral sliding, and vertical movements independently of said pivoted frame, substantially as set forth.

7. A traveling current-collector composed of a bar loosely pivoted at one end and having an opposite free bent end provided with a spring-support, H, a brush-frame pivoted to said bar, and upward spring-pressure contacts or brushes on the brush-frame, substantially as set forth.

8. A traveling current-collector composed of pivoted bar B, having bent end *b'* and spring H, and a brush-frame, C, pivoted to bar B, substantially as set forth.

9. A traveling current-collector composed of a bar, B, having an up-and-down and a lateral movement, and a brush-frame pivoted to bar B and having a lateral movement independent of bar B, substantially as set forth.

10. In an electric-railway car having a traveling current-collector composed of a pivoted bar having bent end *b'* and spring H, a brush-frame, C, mounted on bar B, and actuating mechanism for frame C, substantially as set forth.

11. In an electric railway, a car having a current-collector freely supported upon the car, springs A^3 and connections A, attached to the current-collector, and operating devices for connections A, substantially as and for the purpose set forth..

12. In an electric railway, a car having a freely-supported current-collector provided with parallel upward spring-pressure brushes and actuating devices for tilting the current-collector, substantially as and for the purpose set forth.

13. A traveling current-collector composed of a bar or frame, B, having elastic or spring support H, a brush-frame, C, mounted on frame B, and having springs A^2 and connections A to provide an angular pressure for the brushes in the direction of their travel, as and for the purpose set forth.

14. An electric-motor car having a current-collector composed of a pivoted bar, B, having spring-support H, a brush-frame, C, pivoted or mounted on bar B, and having springs A^2, connection A, and lever *A'*, as and for the purpose set forth.

15. A traveling contact composed of a pivoted or oscillating brush-frame having a pair of parallel brushes, and actuating mechanism provided with flexible or spring-pressure connections for moving opposite ends of the brushes into and out of contact, substantially as set forth.

16. The combination of pivoted bar B, having slot *b* and bent end *b'*, the frame C, pivoted to frame B within slot *b*, and having at its lower end contact-brushes F F, substantially as set forth.

17. A traveling current-collector frame, C, having side and end plates, *d d'*, incasing-conductors D D, and bottom side lugs, *f f*, and parallel insulated spring-brushes F F, secured to said lugs and in circuit with said conductors, substantially as set forth.

18. A traveling current-collector frame, C, having side and end plates, *d d'*, incasing-conductors D, lugs *f*, contact-brushes F, and fastening-bolts f^3, and insulation between said lugs, brushes, and bolts, substantially as set forth.

19. The combination, with an electrically-propelled car, a traveling current-collector composed of a pivoted bar, B, having a spring-support, H, and a brush-frame, C, mounted upon bar B and having bow-shaped upward spring-pressure brushes F, provided with re-enforcing leaves or bars F^3, substantially as set forth.

20. A traveling current-collector having bow-shaped upward spring-pressure brushes F upon opposite sides of the collector, and each brush having a re-enforcing spring-plate, F^3, having frictional contact and a simultaneous action with the brush, substantially as set forth.

21. A traveling current-collector having parallel brushes F, in combination with plates f^4, bolts f^3, conductors D, and insulation f^2, substantially as set forth.

22. In an electric railway, a slotted conduit having electric conductors, in combination with a motor-car having a freely-supported traveling current-collector composed of a pivoted bar having a finger depending into the conduit-slot, and a spring, H, and a brush-frame mounted upon and having movements independently of said pivoted bar and depending into the conduit-slot to the rear of said finger, substantially as set forth.

23. An electric-motor car having two traveling current-collectors, in combination with lever *A'* and connections A, having springs A^2, substantially as set forth.

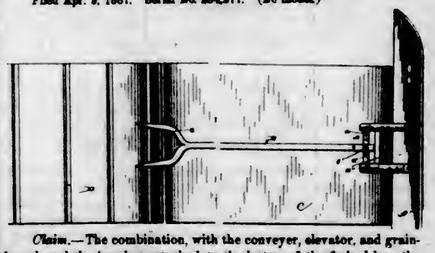
24. A traveling current-collector having parallel brushes F, pivoted to a bar, B, having spring H, in combination with springs A^2 and connections A, secured to said collector, substantially as and for the purpose set forth.

25. The combination of pivoted bar B, having spring H, and brush-frame C, pivoted to bar B, and having springs A^2, actuating-connections A A, and a pair of parallel brushes on frame C, substantially as set forth.

26. A traveling current-collector composed of a pivoted bar, a brush-frame loosely mounted upon said bar, in combination with springs A^2 and connections A, secured to the brush-frame, and an actuating-lever for said connections A, substantially as set forth.

27. A traveling current-collector for electric-railway cars, composed of a central plate, C, provided with separate side plates, *d*, and integral side lugs, *f*, said side plates being secured to plate C and inclosing conductors D, and insulated brushes F, secured to lugs *f* and in circuit with said conductors, substantially as set forth.

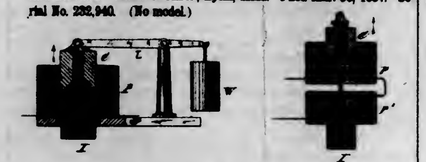
377,216. GRAIN-ADJUSTER. WILLIAM L. SHAKE, Parton, Ind. Filed Apr. 9, 1887. Serial No. 234,377. (No model.)



Claim.—The combination, with the conveyer, elevator, and grain-board, and the bracket attached to the latter, of the forked bar, the apertured pivoted bar on the bracket, and the nutted bolt, said forked bar being apertured to permit of its adjustment, the forked bar extend-

ing over the conveyer, and its forked end extending over the aperture between the conveyer and elevator, substantially as and for the purpose set forth.

377,217. ALTERNATING-CURRENT MOTIVE AND REGULATING DEVICE. ELIHU THOMSON, Lynn, Mass. Filed Mar. 30, 1887. Serial No. 232,940. (No model.)



Claim.—1. A motive or regulating device for alternating-current circuits, consisting of a closed conducting-circuit in which currents of high self-induction are inductively generated, combined with a mass of magnetic material, preferably subdivided, serving as the core of an alternating-current coil with relation to the magnetic field of which the core varies magnetically simultaneously with a change in the inductive relation of the conducting circuit and its inducing agent.

2. The combination, substantially as described, of a closed conducting-band or conductor, an alternating-current coil which sets up currents of high self-induction in said conductor, and an iron core or mass, preferably subdivided, whose magnetic relation with reference to the magnetic field of the same or a different alternating-current coil varies simultaneously with a change in the relation of the closed conductor and its inducing agent, as and for the purpose described.

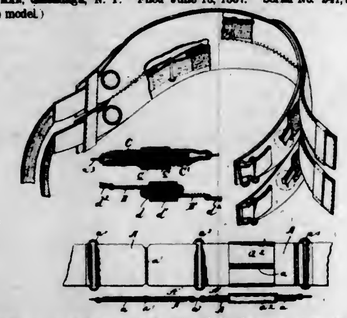
3. A motive or regulating device for alternating-current circuits consisting, essentially, of one or more alternating-current coils, a closed-circuit conductor adapted to carry induced currents of high self-induction, and an iron core connected to said conductor and movable with the same into different positions in the magnetic field, as and for the purpose described.

4. The combination, substantially as described, of an alternating-current coil or coils, a closed conducting-circuit in which currents are set up by induction, a core for an alternating-current coil, and means whereby the inductive relation of both core and conductor to the coil or coils may be simultaneously varied.

5. The combination, with one or more alternating-current coils, of a movable conductor in which currents of high self-induction are set up, and a connected core adapted to have a movement of translation in the field of the conductor, whereby a movement of the conductor may be accompanied by a change in the reactive capacity of the coil due to the presence of the core.

6. The combination, on an alternating-current circuit, of a coil or coils, a core for one or both of said coils, and a closed-circuit conductor, said elements being connected in the manner described, so that a movement producing a change in the inductive relation of one of the parts with reference to the coil will impart movement to another part in the proper manner to produce a compensation by changing the inductive relation of said latter part to the coil in the circuit.

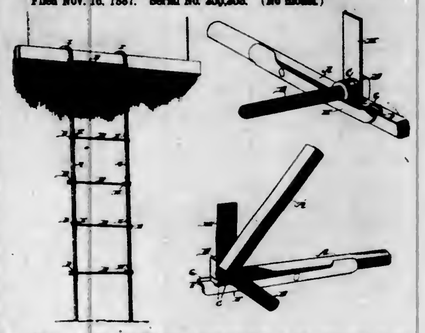
377,218. ELECTRIC BELT. GEORGE W. TOTHAM and PERRY C. TOTHAM, Cassadaga, N. Y. Filed June 18, 1887. Serial No. 241,790. (No model.)



Claim.—1. A battery-chain for electric body wear, composed of links or cells coupled together in series, the links of opposite polarity or the plates of the cells being held together by a non-conducting binder of electricity, and a supplemental metallic binder embracing and forming a shield for the said binder, the metallic parts being suitably insulated, substantially as and for the purpose described.

2. In electric body wear, the combination, with two plates of opposite polarity having notches in their edges, of the non-conducting binder of electricity fitted in the notches, the supplemental metallic binder fitting over the non-conducting binder, and the insulation interposed between the plates and the supplemental binder, substantially as and for the purpose described.

377,219. LADDER. HORACE T. WEBSTER, Mount's Mill, N. Y. Filed Nov. 16, 1887. Serial No. 255,353. (No model.)

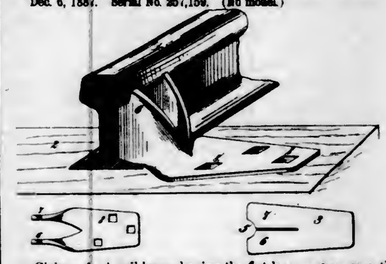


Claim.—1. In a ladder, the combination of the side bars of the adjacent sections hinged together and the springs secured to the side bar of one section and engaging the side bar of the adjacent section to hold the sections extended, substantially as set forth.

2. In a ladder, the combination of the side bars of the adjacent sections hinged together and a spring having one end secured to one side bar and its other free end provided with a lateral offset to engage over the other side bar, substantially as described.

3. The combination of the side bars of the adjacent sections hinged together, the springs secured to the side bars of one section and engaging the side bars of the adjacent section, and the braces secured to the side bars and projecting rearwardly therefrom, substantially as set forth.

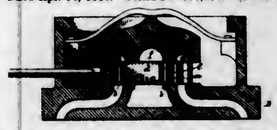
377,220. RAIL-BRACE. FREDRIC C. WEIR, Cincinnati, Ohio. Filed Dec. 6, 1887. Serial No. 257,159. (No model.)



Claim.—1. A rail-brace having the flat base resting on a tie, bifurcated, with curved and vertical arms 6 7 resting on a tie, with their ends abutting against the rails, substantially as specified.

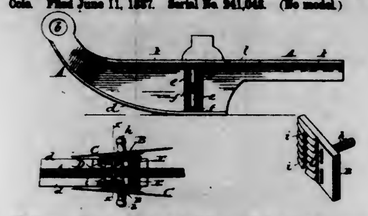
2. A rail-brace formed of a single piece of metal, which is slitted and notched and the forked arms spread by bending the arms so as to bring the ends to vertical lines, substantially as specified.

377,221. BALANCED SLIDE-VALVE. EDWIN J. ARMSTRONG, Painted Post, N. Y., assignor to the Weston Engine Company, same place. Filed Apr. 30, 1887. Serial No. 236,686. (No model.)



Claim.—A balanced slide-valve of the hereinbefore-described class, consisting of a steam-chest provided with flat-surfaced projections, a valve, a pressure-plate having screw-threaded perforated lugs projecting laterally therefrom, screw-threaded rods or bolts passing vertically through said lugs, and a spring secured within the steam-chest and adapted to exert its strength to hold the pressure-plate down against any normal steam-pressure and permit it to recede from abnormal pressure, as set forth.

377,222. SEEDING-MACHINE. WILLIAM D. ARNETT, Denver, Colo. Filed June 11, 1887. Serial No. 241,043. (No model.)



Claim.—1. The herein-described drag-bar for a seeding-machine, cast complete in one piece, with its forward end adapted to receive the supporting-shaft *c* and its lower edge formed with the sole or runner *d*.

2. A drag-bar having the rigid sole or runner thereon, in combination with a furrow-opening disk, a plate supporting said disk, and devices, substantially as described, connecting said plate to the drag-bar and permitting its vertical adjustment thereon.

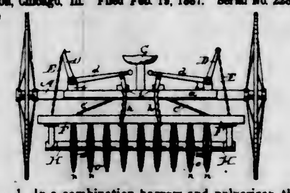
3. The drag-bar provided with teeth or serrations, the toothed plate having the furrow-opening disk mounted thereon, the adjustable block seated between said plate and drag-bar, and a transverse bolt or bolts connecting the plate and drag-bar, substantially as described.

4. In combination with a drag-bar provided with teeth or serrations *f*, a disk-supporting plate having the curved toothed surface to engage the bar, and fastening-bolts, applied substantially as described, to connect the plate and drag-bar.

5. In combination with the furrow-opening disks attached thereto, the drag-bar provided with the top flange, *k*, containing recesses *l*, substantially as and for the purpose described.

6. In combination with the drag-bar having the slots *e* and the teeth *f* on both faces, the two disk-supporting plates provided with teeth and applied to opposite sides of the bar, and bolts extending transversely through the bar and both plates, substantially as described.

377,223. COMBINED HARROW AND PULVERIZER. GARRET P. ATCHISON, Chicago, Ill. Filed Feb. 19, 1887. Serial No. 228,423. (No model.)



Claim.—1. In a combination harrow and pulverizer, the tongue axle A, rectangular frame consisting of side bars, *b b*, and rear cross-bar, *a*, shafts *c*, journaled in bearings on said side bars, arm D op the ends of said shafts over the axle, and bails E, leaves *d* on the rear end of the shafts C, projecting toward the rear end of the tongue, parts *A A*, pivotally secured to and depending from said levers, and staples or loops *i i*, secured to the cross-bar *a*, through which said panels pass and engage therewith, in combination with harrow-frame E, as set forth.

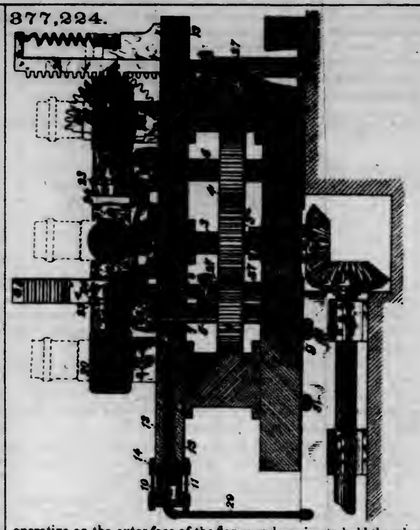
2. In a combination harrow and pulverizer, axle A, rectangular frame consisting of side bars, *b b*, and rear cross-bar, *a*, shafts C, journaled in the side timbers thereof, arms D, projecting, as described, from the forward ends of said shafts, and bails E, leaves *d* on the rear ends thereof, projecting in toward the longitudinal center of the machine, pawls *A A*, depending downward from near the ends of said levers, and loops *i i*, through which said pawls pass and with which they engage, in combination with the rectangular harrow-frame E, the transverse stationary shafts, independently-revolving spur-wheels *m*, and the sleeves *k*, placed between each spur-wheel

377,224. MACHINE FOR TRUING CAR-WHEELS. RALPH RAGALEY, Pittsburg, Pa. Filed Nov. 7, 1887. Serial No. 254,538. (No model.)

Claim.—1. In a machine for truing and finishing wheels, the combination of a series of positively-driven rolls operative on the tread and inner face of the flange of a wheel, and a series of rolls operative on the rim and outer face of the flange and movable toward and from the other series of rolls, thereby permitting of the direct insertion of the wheel between the positively-driven rolls, substantially as set forth.

2. In a machine for truing and finishing wheels, the combination of a series of positively-driven rolls operative on the tread and inner face of the flange of a wheel, and a series of frictionally-driven rolls

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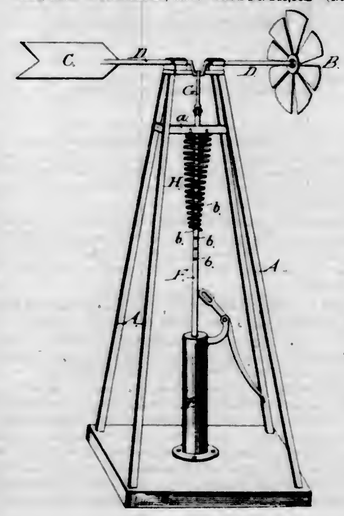
operative on the outer face of the flange and serving to hold the wheel in engagement with the positively-driven rolls, substantially as set forth.

3. In a machine for truing and finishing wheels, the combination of a series of positively-driven rolls, one or more of said rolls being movable toward and from the other rolls, and a series of frictionally-driven rolls having their axes at an angle to the axes of the other rolls and movable toward and from the same, substantially as set forth.

4. In a machine for truing and finishing wheels, the combination of two or more vertically-arranged rolls, two or more similarly-arranged rolls movable horizontally, and a fluid-pressure cylinder and piston for operating said movable rolls, substantially as set forth.

5. In a machine for truing and finishing wheels, the combination of two or more vertically-arranged rolls, two or more similarly-arranged rolls movable horizontally, a series of rolls having their axes at an angle to the axes of the vertical rolls, a fluid-pressure cylinder and piston, and mechanism connecting the said rolls with said piston, substantially as set forth.

377,225. PUMP-ROD ATTACHMENT. SAMUEL BARR, McClelland, Iowa. Filed June 20, 1887. Serial No. 241,862. (No model.)



Claim.—The combination, with the frame A, having the cross-bar *a*, the windmill crank-shaft and the pitman G connected therewith, of the piston-rod F, connected with said pitman and provided with a series of holes, *b*, and a coiled spring surrounding said rod, having one end fixed to the cross-bar and the opposite end adjustably secured in said holes, as herein described.

377,226. PLOW. SAMUEL BARR, McCausland, Iowa. Filed July 19, 1887. Serial No. 244,696. (No model.)

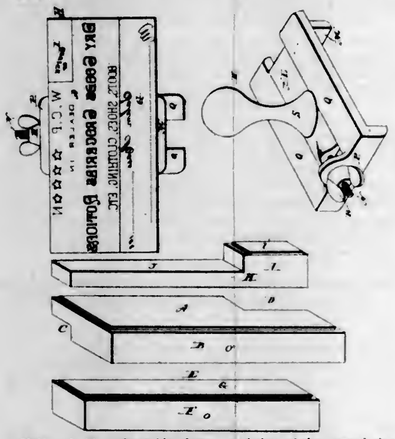


Claim.—1. The combination, with a plow and plow-beam, of a rearwardly-bent vibrating colter having a series of backwardly-ranged serrations formed on its lower curved surface and a shank capable of rotating or being locked, whereby said colter is fitted to said beam, substantially as described.

2. The combination, with a plow-beam and colter, of the slotted plate B and the slotted plate C, provided with the sleeve-bearing D and depressions *c' c'*, and the adjusting-block E, provided with the projections *c' c'* and set-screw *c*, all constructed and arranged substantially as and for the purpose herein set forth.

3. In combination with the plow-beam and colter, the beam-plates B and C, provided with slotted bolt-holes, the short bolts *b*, and the long bolts *c*, substantially as and for the purpose set forth.

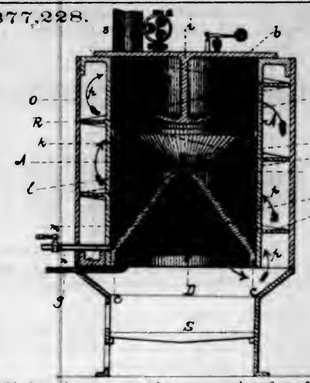
377,227. COMBINATION PRINTING-STAMP. THOMAS BARTHOLOMEW, Newark, Ohio. Filed June 7, 1887. Serial No. 240,568. (No model.)



Claim.—1. The adjustable clamp consisting of the central piece having the broad clamping-jaw at its outer end and the screw at its inner end, the perforated clamping-jaw having the parallel side pieces, the thumb-nut, and the handle secured upon the central piece of the clamp, substantially as set forth.

2. The combination, with the main section having the longitudinal recess formed in its upper rear edge, and having its right-hand upper corner cut away, as described, of the logotype having the extension or stem adapted to fit in the said longitudinal recess, substantially as set forth.

377,228. STEAM-GENERATOR. FREDRICK M. BARTLETT, Woodstock, Me. Filed Apr. 6, 1887. Serial No. 233,893. (No model.)

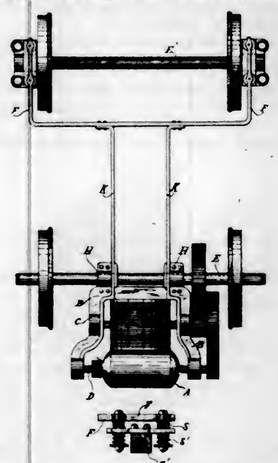


Claim.—1. The steam-generating reservoir having an inverted-cone-shaped bottom provided with a series of wrinkles or corrugations, and having its apex pierced for the passage through of a pipe for conveying highly-heated water, substantially as shown and set forth.

2. The steam-generating reservoir having an inverted-cone-shaped bottom provided with a series of wrinkles or corrugations, and having its apex pierced for the passage through of a pipe for conveying highly-heated water, in combination with a cone-coil of pipe beneath and corresponding with said reservoir's bottom, a conducting-pipe at the apex of the cone-coil, a spraying-disk within said reservoir, an internally-located funnel-shaped diaphragm for discharging the sprayed highly-heated water upon the corrugated surface of the said cone-shaped bottom, substantially as set out.

3. The combination, in an apparatus for speedily generating steam from water, of the cone-coil of pipe, the cone-shaped bottom, wrinkled and corrugated, as set forth, the spraying-disk, and spray-collecting diaphragm, substantially as and for the purpose herein set out.

377,229. ELECTRIC LOCOMOTIVE. EDWARD M. BENTLEY, New York, N. Y. Filed July 30, 1887. Serial No. 245,759. (No model.)



Claim.—1. The combination, in an electric locomotive, of a motor geared to an axle of the vehicle and fulcrumed thereon so that its center of gravity falls on one side of the axle, with means for counterbalancing it on the opposite side of the axle.

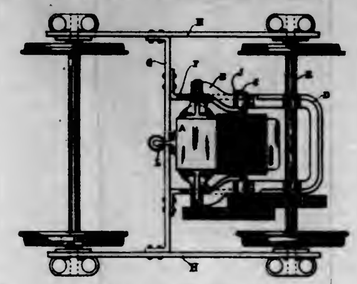
2. The combination, in an electric locomotive, of a motor geared to an axle of the vehicle and fulcrumed thereon so that its center of gravity falls on one side of the axle, with means for spring counterbalancing it on the opposite side of the axle.

3. The combination, in an electric locomotive, with a motor resting directly on the axle without the intervention of springs and fulcrumed thereon, substantially as described, of a gear-connection between the motor and axle, and means for counterbalancing the motor on the opposite side of the axle.

4. The combination, in an electric locomotive, of a motor rigidly framed with the axle and geared thereto, journal-boxes in the framing resting upon the axle so that the center of gravity of the motor falls at one side of the axle, and means for counterbalancing the motor, so that the adhesive power of the locomotive may be increased.

5. The combination, in an electric locomotive, of a motor geared to an axle and fulcrumed thereon so that its center of gravity falls on one side of the axle, a transverse bar between opposite journal-boxes, and a counterbalancing-connection from the motor to said bar.

377,230. ELECTRIC MOTOR. EDWARD M. BENTLEY, New York, N. Y. Filed Aug. 4, 1887. Serial No. 246,160. (No model.)

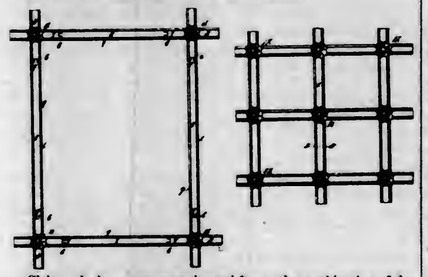


Claim.—1. The combination, with an electric motor and mechanism driven thereby, of an intermediate counter-shaft about which the motor is spring-centered, substantially as described.

2. The combination, in an electric locomotive, of the counter-shaft connected to the axle and itself driven by gearing from the motor-shaft, the motor, an axial support therefor coincident with the axis of the counter-shaft, and a spring in the line of rotation of the motor about said support.

3. The combination, in an electric locomotive, of a frame journaled on the axle and a motor and counter-shaft supported thereby, the motor gearing with the counter-shaft and being spring-centered thereon.

377,231. ORNAMENTAL METAL FRAME. ROBERT G. BORNHAM, St. Louis, Mo., assignor of one-third to Henry Kaltenbach, same place. Filed July 7, 1887. Serial No. 243,658. (No model.)

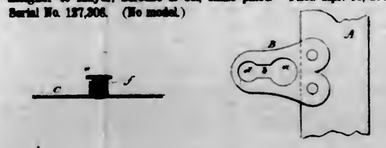


Claim.—1. In an ornamental metal frame, the combination of the cross corner sections, 5, cast integral in one piece, the intermediate tie-sections, 8, with tongues 7, that match into slots 6 in the inner arms of said cross corner sections, the matching tongues 4 and corresponding grooves, 2, of the rear and front sections, and the decorative set-screws with rosette thumb-screws 13, that secure the front and rear sections together, substantially as described, and for the purpose set forth.

2. In an ornamental metal frame, the combination of the front and rear sections of the frame with matching tongues and grooves that are arranged to limit the approach of the front and rear sections of said frame to provide a seat for the edges of the inclosed glass, and the decorative nut that secures the sections of the frame together and clamps the glass within the frame, substantially as described, and for the purpose set forth.

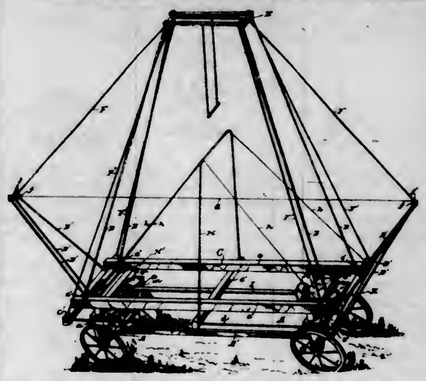
3. In an ornamental metal frame, the combination of the front and rear sections of the frame, and the match-tongue connections that are arranged to provide a clamping-seat for the glass, and the decorative set-screw connection of the frame-sections to their connecting-points, substantially as described, and for the purpose set forth.

377,232. CORSET-CLASP. MOSES P. BEAT, New Haven, Conn., assignor to Mayer, Strouse & Co., same place. Filed Apr. 10, 1884. Serial No. 127,208. (No model.)



Claim.—The stud *c*, attached to one bank, a sleeve, *f*, thereon made from several convolutions of wire, but of less diameter than the head, and free for longitudinal movement thereon, combined with an eye attached to the other bank, the said eye constructed with an opening for the passage of the head of the stud, and a slot extending forward therefrom in width slightly larger than the diameter of the body of the stud, the said slot enlarged at its forward end to a diameter substantially that of the sleeve on the stud, and substantially as and for the purpose described.

377,233. EQUESTRIAN GYMNASIUM. EDWARD G. BOTHIN, Comanche, Iowa. Filed May 23, 1887. Serial No. 238,117. (No model.)



Claim.—1. A vehicle carrying a frame-work, side spaces in said frame-work, in each of which one of the draft-horses is harnessed, and a gymnasium mounted upon said frame-work, all combined substantially as and for the purposes set forth.

2. A vehicle carrying a frame-work with side-spaces in which to harness the draft-horses, a gymnasium mounted upon said frame-work, and mechanism for steering the vehicle, all combined substantially as and for the purposes set forth.

3. A vehicle carrying an open frame-work of beams detachably connected together, and gymnastic appliances attached to and supported by stay-rods and uprights detachably secured to said frame-work, substantially as and for the purposes set forth.

4. A gymnasium composed of a pair of two-wheel trucks, a frame mounted upon said trucks, a group of stay-rods at each end of said frame, and a tight rope stretched between said groups of stay-rods, substantially as described.

5. A mounted gymnasium composed of a pair of two-wheel trucks, a frame mounted upon said trucks, four uprights secured to said frame and connected by a frame at their upper ends, and a trapeze or the like suspended from said upper frame, substantially as described.

6. A mounted gymnasium composed of a pair of two-wheel trucks, a frame mounted upon said trucks, and a horizontal bar mounted upon standards secured to the center of said frame, substantially as described.

7. A mounted gymnasium composed of a pair of two-wheel trucks, a frame mounted upon said trucks, a horizontal bar mounted upon standards hinged to said frame, stay ropes or cables for the standards, and a windlass for tightening said stay ropes or cables and for raising and lowering the standards with its bar, substantially as described.

8. In a mounted gymnasium, the combination of a pair of two-wheel trucks and a frame mounted upon said trucks and provided with four uprights and two groups of stay-rods connected by stay ropes or cables, substantially as described.

9. In a mounted gymnasium, the combination, with the trucks upon which the same is mounted, of a crown cog-wheel secured on the platform of each truck, and a shaft provided with pinions meshing with said cog-wheels and with means for turning said shaft, substantially as described.

377,234. CYLINDER. THOMAS R. CARDEN and GUSTAVE LEHMANN, Logan, Utah. Filed July 14, 1887. Serial No. 244,333. (No model.)

Claim.—1. A cylinder for the purpose set forth provided on its interior with a series of plates, each of which is adapted to be removed and replaced behind any one of said series, for the purpose set forth.

2. A cylinder having its interior walls made up of a series of removable plates of substantially the same size, whereby the interior plate or plates can be removed and reinserted behind one of the series, said plates being held in position by the cylinder-heads, which are pro-

377,234.



vided with recesses for the reception of the ends of said plates, substantially as shown, and for the purpose set forth.

377,235. BUTTON OR STUD. STEPHEN L. CHILD, Providence, R. I. Filed Oct. 18, 1887. Serial No. 252,717. (No model.)



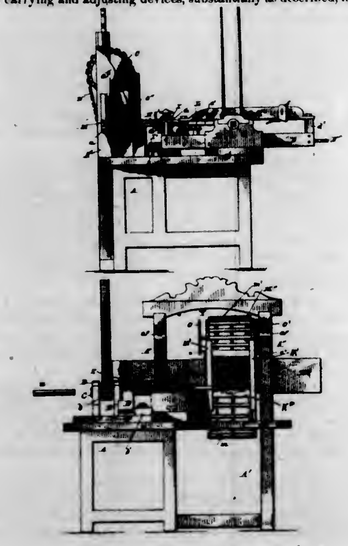
Claim.—1. In a button or stud, the combination, with a head and shoe, of a post rigidly secured at one end to one of said parts and provided at its other end with laterally-projecting lugs, and a spring-plate located within the other part and provided with arms adapted to form bearings for the lugs on the post, and a tongue adapted to bear against the end of the post, substantially as set forth.

2. In a button or stud, the combination, with a head and shoe, of a post bent at one end and rigidly secured at its opposite end to one of said parts and provided at its bent end with laterally-projecting lugs, and a spring-plate located within the other part and provided with arms forming bearings for the lugs on the post and with a tongue adapted to bear against the bent end of the post, substantially as set forth.

3. In a button or stud, the combination, with a head and shoe, one of said parts being slotted on its inner face from its center to its periphery and provided with inwardly-projecting stops or bearings, and a spring-plate located in said part and provided with arms forming bearings for the lugs on the post and with a tongue adapted to rest on the bent end of the post, of a post bent at one end and secured at its other end to the other part of the button or stud, and provided at its bent end with laterally-projecting lugs, substantially as set forth.

377,236. WASH-BOARD-MAKING MACHINE. JAMES R. CLUXTON, Xenia, Ohio. Filed Aug. 30, 1887. Serial No. 248,278. (No model.)

Claim.—1. In a machine for forming wash-boards of the character described, a rotating mandrel for holding the wood blank, and the reciprocating frame carrying the series of cutters adapted to shape the pins to be inserted into the back of the board, and the wash-board-back carrying and adjusting devices, substantially as described, in combination with a reversible rotative hammer, substantially as described, adapted to remove the completed pin from its forming mechanism and to carry the same to and set it in place upon the back of the board, all constructed and arranged substantially as and for the purpose described.



2. The combination, with the wash-board-back-supporting mechanism and the pin-cutting mechanism, substantially as described, of the hammer K, its shaft J', guide-track *j*, and actuating mechanisms, whereby the hammer is adapted to remove the completed pins from the cutting mechanism and set them in place upon the back of the board, all substantially as and for the purpose described.

3. The combination of the revolving shaft C, having an angular axial opening for the reception of the wood blank, with the frame D, adapted to be reciprocated at right angles to said shaft, the cutter-bar E, mounted on said frame for operating upon the blank, and the stop-bar on said frame for limiting the longitudinal movement of the blank through the shaft, all substantially as and for the purpose specified.

4. In a machine of the character described, the pin setting and driving devices, composed of a revoluble post, I, the horizontal shaft J', revolubly mounted thereon, provided with a hammer, K, on its outer end, the segment *k* and its engaging devices for tripping the shaft J' and hammer K, and means for revolubly operating said post I, all substantially as described.

5. The combination, with the supporting-bar, of the frame Y, composed of the uprights M' M', the drums M'' *m* and elevator-belt thereon, the toothed wheels on the shaft of drum M'' and retaining devices therefor on the sides of frame Y, and the supporting-frame N', mounted on belt N, all constructed and arranged substantially as and for the purpose described.

6. The combination, with the hollow shaft for carrying the revolving blank, of the reciprocating frame D, its inclined cutter-bar E, having the inner wide cutters and outer narrow cutters, the cutter-blade F, secured to the bar E and adapted to round off the front of the blank, and the saw *f*, for severing the blank, all constructed and arranged substantially as and for the purpose described.

7. The combination of the shaft C, having longitudinal angular opening *c* and mounted in suitable bearings, with the reciprocating frame D, the inclined cutter-bar E, adjustably mounted thereon and constructed substantially as described, the cutter-blade F on bar E, and saw *f*, and the stop-bar *c'*, all constructed and arranged substantially as and for the purpose described.

8. The combination of the revolving post I, disk I' and spring I'', for operating the same, and the stop-arm *i*, for regulating the throw of said disk, the horizontal shaft J', loosely mounted on post I, the toothed segment *k*, and hammer K, mounted on said shaft J', with the supporting-track for said shaft J', and the tooth *l* and lugs *l' l''*, for engaging segment *k*, all constructed substantially as and for the purpose described.

9. A machine for the purpose described combining a pin-cutting device composed of a revolving blank-holding mandrel and reciprocating frame D, provided with suitable cutting devices for forming the pins, substantially as described, the revoluble post I, carrying the horizontal shaft J', provided with a hammer, K, at its outer end, adapted to remove the pins from said cutting device after separation from the blank and insert them into a suitable blank or wash-board back, and the mechanism, substantially as described, for supporting said blank and reciprocating it laterally and adjusting it vertically, all constructed and arranged substantially in the manner and for the purpose described.

10. The combination, with the reciprocating cutter-bearing frame D, having an adjustable arm, H, substantially as described, on its inner end, of the longitudinal reciprocating bar M, standing at right angles to frame D, and provided with a rack, P', adapted to be engaged by arm H of frame D and cause the reciprocation of bar M thereby, all constructed and arranged substantially as and for the purpose described.

11. The combination of the blank receiving and holding shaft C and the reciprocating cutter-bearing frame D, having on its inner end the adjustable curved spring-arm H, and the reciprocating bar M, provided with rack P' and carrying the frame Y, and constructed substantially as described, with the revolubly hammer K, mounted on a shaft, J', journaled loosely in a post, I, provided with an actuating-disk, I', engaging a rack on frame D, and operated thereby so as to cause the reciprocation of shaft J' and hammer K, and the devices, substantially as described, for partially revolving shaft J' at the center of its movement, all constructed and arranged substantially as and for the purpose described.

12. The laterally-reciprocating frame Y, for the purpose described, composed of the uprights M' M', the drums M'' and *m* in its upper and lower ends, respectively, the conveyer-belt N on said drums, the holder N' one one portion of belt N and the backing *n''* therefor, and the devices for regulating the movement of said belt, comprising toothed wheels O O' on the opposite ends of the shaft of drum M'', and the retaining devices *o o'*, adapted to engage the respective wheels O O' as the drum is shifted laterally, all substantially as and for the purpose described.

13. The combination, with the revolving wood blank and its actuating devices, of the reciprocating frame D, having uprights *d'* D', the inclined cutter-bar E, adjustably mounted on said uprights and constructed substantially as described, and the stop-bar *c'*, secured between a central upright of frame D and upright *d'*, all constructed and arranged substantially as and for the purpose described.

14. The combination, with the mandrel C and the cutter-bearing reciprocating frame D, having a rack, of the post I, the disk I' thereon, provided with rack *i'* for engaging the rack of frame D, the stop *i''* on said disk, and the convolute spring I'' for retracting the same, the revolubly shaft J', mounted horizontally on post I and bearing at its outer end a hammer, K, provided with a pin in its concaved driving-face, the segment *k* on said shaft, and its engaging tooth and lugs on a bracket, L, and the supporting-track *j* for the hammer and shaft J', and the wash-board-blank carrying and adjusting device, all substantially as and for the purpose described.

377,237. PLUG-SWITCH FOR TELEPHONE AND TELEGRAPH CIRCUITS. GEORGE H. COLE, Atlanta, Ga. Filed June 30, 1887. Serial No. 243,070. (No model.)



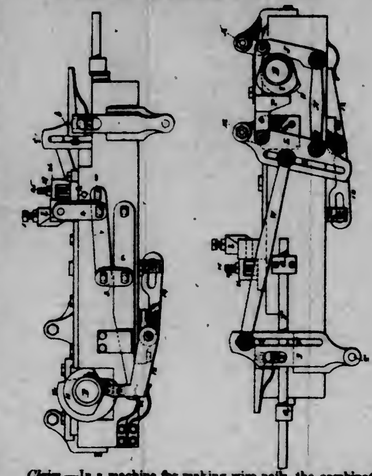
Claim.—1. The combination, in a switch-plug, of the metal tube adapted to enter a switch-board, the tubular insulating-lining arranged within one end of the metal tube, the headed pin passing through the insulating-lining beyond the same into the metal tube, the insulating-washer on said pin, the metallic washers arranged on the pin, between the head thereof and the insulating-washer, and the insertible hollow plug adapted to enter the metallic tube, substantially as described.

2. The combination, in a switch-plug, of the metal tube adapted to enter a switch-board, a tubular insulating-lining arranged within one end of said tube, a headed pin engaging and extending through the lining and extending beyond the latter into the tube, the insertible hollow plug adapted to enter the tube over the pin, a circuit-wire connected with the tube beyond its lining, and a circuit-wire connected with the external end of the pin, substantially as described.

3. The combination, in a switch-plug, of the metal tube adapted to enter a switch-board, a tubular insulating-lining arranged within one end of the tube, the headed pin extending through the tube into the latter beyond the lining, the insertible hollow plug adapted to enter the tube, the insulating-washer on the pin, the metal washers on the pin, between its head and the insulating-washer, a circuit-wire connected with the tube beyond the lining thereof, and a circuit-wire held between the metal washers on the pin, substantially as described.

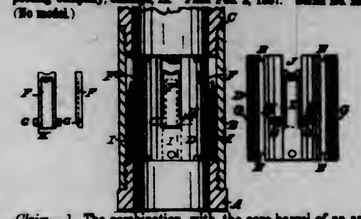
4. The combination of the metal tube flanged at one end and screw-threaded at the other and having an insulating-lining extending part of its length, the metal screw or pin, the metallic nut, the insulating-washer, and the metallic washers, with a base or switch board, circuit-wires, and an insertible hollow plug adapted to connect the metal pin with the tube, substantially as described.

377,238. WIRE-NAIL MACHINE. JAMES L. ORBIT, Trenton, Mass., assignor to the Birmingham Iron Foundry, Birmingham, Conn. Filed Mar. 26, 1887. Serial No. 232,241. (No model.)



Claim.—In a machine for making wire nails, the combination of a feed-bar, E, carrying the grasping device to engage the wire, two levers, J L, hung, respectively, upon opposite sides of the driving-shaft, parallel connections O and N between said levers J and L, the connection O provided with an arm, P, cams I H on the driving-shaft between said lever J and the arm P, a lever, S, in connection with said feed-bar, and an adjustable connection, W, between said levers S and L, substantially as described.

377,239. CORE-LIFTER FOR ANNULAR ROCK-DRILLS. HENRY CHAMPETTE, Champlain, Quebec, Canada, assignor to the Diamond Prospecting Company, Chicago, Ill. Filed Feb. 2, 1887. Serial No. 226,266. (No model.)



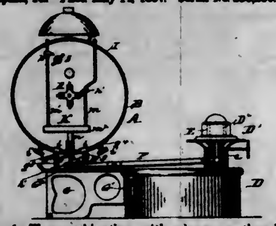
Claim.—1. The combination, with the core-barrel of an annular rock-drill, of a core-lifter consisting of an inside jacket or casing, D, provided with one or more vertical slots, J, and as many tilting catches F, hinged in said slots near their lower ends, substantially as described.

2. The combination, with the core-barrel of an annular rock-drill, of a core-lifter consisting of an inside jacket or casing, D, provided with one or more vertical slots, J, as many tilting catches F, hinged in said slots near their lower ends, and a spring, I, secured to said jacket or casing behind each catch, substantially as described.

3. The combination, with the core-barrel of an annular rock-drill, of a core-lifter consisting of an inside jacket or casing, D, provided with one or more vertical slots, J, and two horizontal recesses, H H, near the base of each slot, and with a tilting catch, F, for each slot having two side lugs, G G, adapted to fit in the recesses H H, and an end lug, K, substantially as and for the purposes set forth.

4. The combination, with the core-barrel of an annular rock-drill, of a core-lifter consisting of an inside jacket or casing, D, provided with one or more vertical slots, J, and two horizontal recesses, H H, near the base of each slot, one or more tilting catches, F, having two side lugs, G G, and an end lug, K, and one or more springs, I, secured to said jacket or casing behind the catches, substantially as and for the purposes set forth.

377,240. COMBINED CLOCK AND LAMP. John M. Crawford, Philadelphia, Pa. Filed May 14, 1887. Serial No. 238,268. (No model.)



Claim.—1. The combination, with a lamp or other light fixture, of a clock having its dial in a vertical plane and its case swiveled upon a vertical axis, whereby said clock may be arranged at different angles in relation to the light, substantially as described.

2. In a night-clock or combined clock and lamp or light fixture, a clock having its dial in a vertical plane and having an adjustable pointer or supplementary hand arranged independently of the clock mechanism and attached to an adjustable ring or collar encircling the clock-case, substantially as described.

3. In a combined clock and lamp, the combination, with the lamp-bowl or oil-tank, of a laterally horizontally projecting handle upon which the clock is supported, said handle being arranged in a vertical radial plane and provided with a table or platform, G^2, on its upper edge to receive the clock-stem, substantially as described.

4. In a combined clock and lamp, the combination, with the clock and lamp-burner, the latter being provided with a sliding or vertically-adjustable flame-regulating tube having pendants *e e*, of a horizontal lever connected directly to said pendants and connected operatively with the clock mechanism, substantially as described.

5. In a combined clock and lamp, the combination, with the flame-regulating tube exterior to the wick-tube and the clock, of the horizontal lever F, operating by its own weight, and a frame attached to the back of the clock and controlled by the clock mechanism, whereby at intervals the flame-regulating tube is moved vertically to raise or lower the flame, substantially as described.

6. In a combined clock and lamp, the combination, with the vertically movable flame-regulating tube *e*, of the horizontal lever F, having its long arm connected directly to the tube-arms *e e* and its short arm in contact with mechanism for operating said lever at intervals, whereby said lever will move in substantially a vertical line at its point of connection with the arms *e*, substantially as described.

7. In a combined clock and lamp, the combination, with the light-controlling device applied to the burner or wick-tube and the lever F connected therewith, of the cam or wedge-like slide A^3, constructed and adapted to limit or regulate the throw of said lever and the size or duration of the flame, substantially as described.

8. In a combined lamp and clock, the combination, and having the flame-controlling tube and the lever F, of a vertically-sliding frame attached to the back of the clock and having its lower part in contact with the lever and adapted to engage with the clock mechanism at intervals and to be raised thereby, so as to release the lever and allow the tube to be lowered, substantially as described.

377,241. TOBACCO-PIPE. Henry Cellarier, Sheffield, County of York, England. Filed Apr. 11, 1887. Serial No. 234,475. (No model.) Patented in England Aug. 19, 1886, No. 10,694.

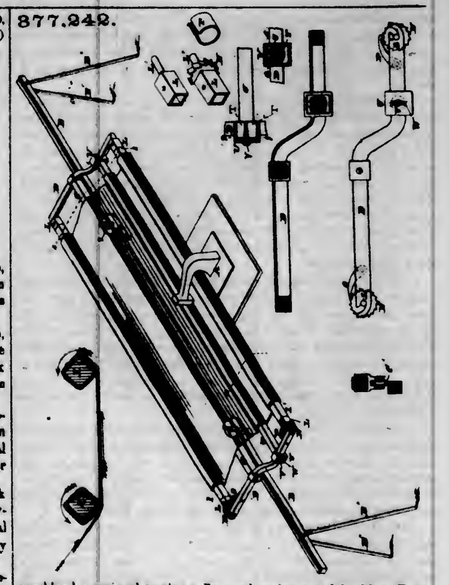


Claim.—A cap, B, having a hollow annular enlargement, *b*, in combination with a disk, C, fitting into said enlargement, and having a central hole, *c*, a pipe having an extension, E, on the end of its stem and a bore, *e*, running from end to end of said stem and extension, and a pin, A, attached to said cap and passing through the hole *c* of said disk into said bore, substantially as set forth.

377,242. QUILTING ATTACHMENT FOR SEWING-MACHINES. Henry T. Davis, New York, N. Y. Filed Apr. 12, 1886. Serial No. 198,694. (No model.)

Claim.—1. In a quilting attachment for sewing-machines, the combination of a suitable support, a longitudinal track-bar, end pieces, a lining-roller, a winding-roller, a combined cover and tension roller, and means for imparting tension to the latter roller, substantially as described and shown.

2. A quilting attachment for sewing-machines, consisting of a longitudinal track-bar, end pieces, lining-roller, winding-roller, and



combined cover and tension roller, and spring-metal bushings T, surrounding the journals of the cover-roller, substantially as described and shown.

3. A quilting attachment for sewing-machines, consisting of a longitudinal track-bar, end pieces, lining-roller, winding-roller, combined cover and tension roller, the elongated sockets V, having slots W, and the set-screws for adjusting the cover-roller, substantially as described and shown.

4. A quilting attachment for sewing-machines, consisting of a longitudinal track-bar, end pieces, a lining-roller, and a winding-roller, said rollers having on each end a clip, L, formed with a gudgeon, L^1, and one of the clips on each roller having a ratchet-wheel, N, in combination with suitable pawls on the end pieces, substantially as described.

377,243. STRAW-STACKER. Jacob C. Bomgiser, Chewsville, Md. Filed July 23, 1887. Serial No. 245,115. (No model.)

Claim.—1. The combination, with the elevator composed of two sections, the bar H, the bail J, and the clamp I, of the brackets a', the rods *a*, the pairs of rollers a^3, and the cords *c* and a^4, substantially as and for the purpose described.

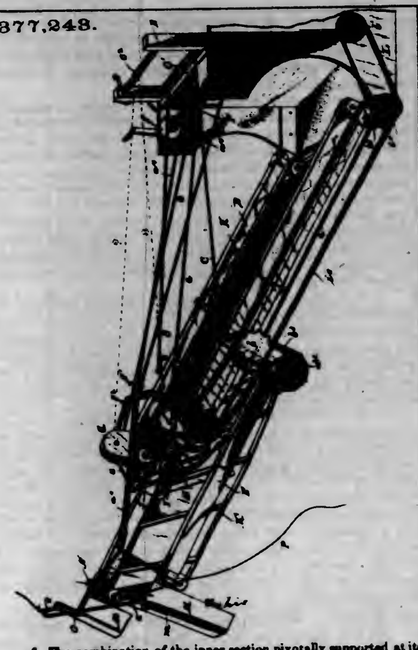
2. The combination, with the section B and the section E, of the bar H, bail J, and the double clamp I, substantially as described, for the purpose specified.

3. The combination, with the inner section of the elevator having the journals of the rollers supporting the apron extended and provided with sprocket-wheels, and the sprocket-chain passing about said sprocket-wheels, of the outer section, means for adjusting it for lengthening and shortening the elevator, the journal of the roller supporting the inner end of the apron of said outer section being extended and provided with a sprocket-wheel, and means for imparting motion to said sprocket-wheel from the sprocket-chain at any and all adjusted positions of the outer section, composed of the double sprocket-wheel, having one of the sprocket-wheels engaged by the aforesaid chain, and the sprocket-chain b^3 passing around and connecting the other sprocket-wheel with the sprocket-wheel on the journal of the roller which supports the inner end of the apron of the outer section.

4. The combination, with the inner section, the sprocket-chain b^3, and the side guide-rods, of the outer section having brackets, the pairs of rollers, the sprocket-wheel d^3, the double sprocket-wheel *b*, and the sprocket-chain b^3, substantially as described, and for the purpose specified.

5. The combination, with the inner section having the journals of the roller supporting the outer end of the apron extended at each end, the pulleys mounted on said journals, the rod, the clamp, and the bail, of the outer section having the journals of the roller supporting the inner end of the apron extended on each side, the endless band, the brackets, and the pairs of rollers carried by the brackets, substantially as set forth.

377,243.



6. The combination of the inner section pivotally supported at its lower end, the cords C, and the windlass for holding its outer end at an adjusted position, the side guide-rods, the outer section adapted to slide on said guide-rods, cords *c*, attached to the outer section and passing over the end of the inner section, and windlass F, supported independently of the sections for adjusting and holding the outer section in an adjusted position, and cords c^4, attached to the end of the outer section and having their inner ends connected with the windlass F, substantially as set forth.

7. The combination, with the elevator-section B and the elevator-section E, of the side rods, *a*, having reduced ends, the bail J, having sockets in its ends to receive the ends of the rods *a*, and the brackets a', having rollers a^3, for supporting the inner end of section E, substantially as described.

8. The combination, with the elevator, of the chute composed of wings pivoted at one end, and the rod connecting the wings for operating both simultaneously, substantially as set forth.

9. The combination, with the elevator, of the chute composed of wings pivoted at one end and having flanged portions, which flanges project beyond the pivotal supports of the wings, and the rod connecting said extended flanges, substantially as specified.

10. The combination, with the elevator, of the chute composed of wings pivotally supported at their upper ends, and the rod having cranks at each end uniting the wings for operating them simultaneously, substantially as set forth.

377,244. SOLE FOR BOOTS OR SHOES. George W. Ellis, Lynn, assignor to Parley Green, Stoneham, Mass. Filed Oct. 26, 1887. Serial No. 253,460. (No model.)

Claim.—1. As an improved article of manufacture, a sectional sole for boots or shoes, comprising two sections, one of which has a recess near its front inner end, the other section being formed with a



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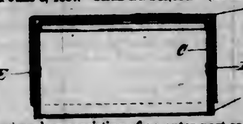


projecting portion near its end corresponding in shape to and adapted to fill said recess, and staples for securing the sections together, substantially as set forth.

2. A composite sole composed of two or more pieces secured together at their adjoining edges and having all the pieces extending to the outer edge of the sole, whereby a central filling is obviated and all the pieces will be retained in position by sewing or nailing in the construction of the shoe, said pieces forming two united sections, one of which has a recess near its front inner end, while the other section is formed with a projecting portion near its end corresponding in shape to and adapted to fill said recess, substantially as set forth.

3. The herein-described sectional sole for boots or shoes, comprising two sections, one of which has a recess near its front inner end, the other section being formed with a projecting portion near its end corresponding in shape to and adapted to fill said recess, substantially as set forth.

377,245. BOX FOR CIGARS. Frederick A. Pike, New York, N. Y. Filed June 8, 1887. Serial No. 240,614. (No model.)



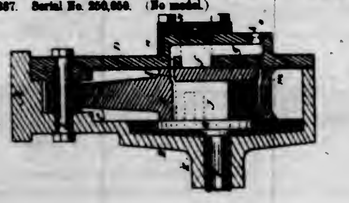
Claim.—A cigar-box consisting of an outer part or casing and an inner metallic part, said metallic part being secured to said casing by fastenings arranged to be capable of release only after cigars have been removed from the box, whereby said metallic part may be detached and put to other use, substantially as set forth.

377,246. REFRIGERATOR. Sylvester Pfeiffer, Beatrice, Nebr. Filed Mar. 26, 1887. Serial No. 232,563. (No model.)



Claim.—The combination, with a refrigerator proper, having its top provided centrally with a countersunk opening, of a drip-cup provided with countersunk flange engaging therewith, and a waste-pipe passed centrally downward through said refrigerator, an ice-receptacle formed with a flange engaging the countersunk flange of the drip-cup, a cover for said ice-receptacle, and a packing-ring interposed between said cover and the top D and against the side of the flange of the drip-cup, substantially as and for the purpose described.

377,247. STEAM-ENGINE. Herbert H. Gale, Bristol, Conn., assignor of one-half to Fred A. Dennett, Sheboygan, Wis. Filed Sept. 26, 1887. Serial No. 250,669. (No model.)

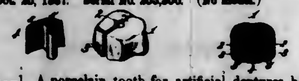


Claim.—1. In a steam-engine, the combination of a casing, a cylinder hung upon an axis within said casing and so as to vibrate therein, one side of the cylinder closed, said closed side working in close contact with one side of the casing, a disk fixed to a shaft in the opposite side of the casing, the axis of said shaft being parallel with the axis of vibration of the said cylinder, and the other side of said cylinder working in close contact with said disk and the disk side of the cylinder open against the disk, a piston arranged in the said cylinder, a crank-pin on said disk in connection with said piston, a steam-chest, and an exhaust-passage in the casing on the closed side of the cylinder, the closed side of the cylinder constructed with ports for the admission and outlet of steam, and that side of the case constructed with valve-openings from the steam-chest and into the exhaust-passage, substantially as described.

2. In a steam-engine, the combination of a cylinder carrying a piston adapted to reciprocate therein and communicate power therefrom, the said cylinder hung upon an axis at right angles to the path of the piston, a stationary valve-surface against which one side of said cylinder works in close contact, the said valve-surface provided with a steam-chest and an exhaust-passage, the said cylinder constructed with two ports on the valve side with passages therefrom, the one opening to one end of the cylinder and the other to the opposite end of the cylinder, the valve-surface constructed with two openings to the steam-chest and with an intermediate opening to the exhaust, the said openings in the valve-surface being in the path of the ports of the cylinder, the width of the exhaust corresponding substantially to the extent of one-half of the movement of the cylinder in a full vibration, the steam-openings less in width than the said one-half movement of the cylinder in a full vibration, substantially as described, and whereby as the cylinder passes to either extreme the port in the cylinder receiving steam will pass beyond the opening from the steam-chest during one half the stroke, but return during the other half of the stroke, while the exhaust-port will pass from one side of the exhaust-opening to the opposite side during the first half of the same stroke and return during the last half of the stroke, substantially as described.

3. In a vibrating-cylinder engine in which the cylinder vibrates in close contact with a stationary surface, the said cylinder provided with ports for the admission and escape of steam, the cylinder constructed with apertures *l m* onto said surface, but independent of said steam-ports, the said apertures being respectively at the extreme ends of the cylinder, and the said surface constructed with corresponding apertures, *n o*, with which the said apertures *l m* of the cylinder are adapted to register at about the extreme strokes of the piston, substantially as and for the purpose described, the said apertures being adapted for the escape of the water of condensation independent of the steam-ports.

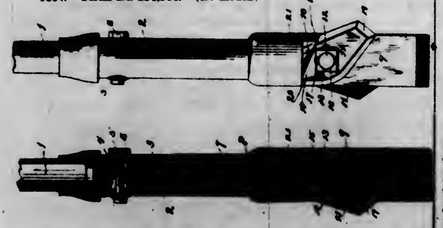
377,248. ARTIFICIAL TOOTH. DAVID GRIMES, Baltimore, Md. Filed Oct. 25, 1887. Serial No. 253,350. (No model.)



Claim.—1. A porcelain tooth for artificial dentures having one or more vertical cylindrical cavities or openings extending entirely through the body of the tooth, and a channel leading from each of said cavities to the rear or labial surface of said tooth, substantially as described.

2. The combination, with a porcelain tooth having one or more vertical cylindrical cavities extending entirely through the body of the tooth, of a metal backing lining and coextensive with said cavity and passing the channel in rear thereof, the ends of said metal backing being folded down laterally in opposite directions upon the body of the tooth, forming an opening inclosed by the lining, and passing through the body of the tooth to receive the material of the plate, substantially as described.

377,249. DRILL. JOHN A. GRABNEAN, Floyd, Ill. Filed Mar. 19, 1887. Serial No. 231,501. (No model.)



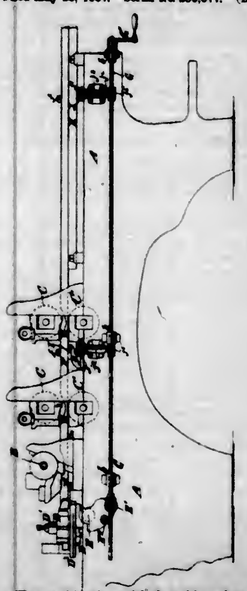
Claim.—1. In a rock-drill, the combination of a bit having a cutting-edge at its lower end formed with divergingly-inclined shoulders at the opposite sides, and the said shoulders formed at their lower portions with slightly cut-off ends, with expansion-bits or reamers pivoted near their upper ends upon the sides of the bit and having inclined edges bearing against the inclined shoulders, as and for the purpose shown and set forth.

2. In a rock-drill, the combination of a bit having a cutting-edge at its lower end formed with divergingly-inclined shoulders at the opposite sides, and the said shoulders formed at their lower portions with slightly cut-off ends, and formed with a square perforation through the upper portion below the shoulders, a bolt having its square central portion fitting in the perforation and formed with rounded portions outside of the square portion and provided with nuts and split keys upon the outer screw-threaded ends, and reamers or expansion-bits pivoted near the upper ends upon the round portions of the bolt, and having inclined edges at one side of the upper portion bearing against the shoulders and having oblique lower cutting-edges, as and for the purpose shown and set forth.

3. In a rock-drill, the combination of a bit having reamers or expansion-bits pivoted upon its sides and secured to the end of a rod having a longitudinal slot, with a casing or tube having a shoe at its lower end bearing against the upper ends of the reamers, and having a diametrical bolt passing through and sliding in the slot of the rod and formed with a tubular drill-rod at its upper end, as and for the purpose shown and set forth.

4. In a rock-drill, the combination of a rod having a female-threaded socket at its lower end and having a longitudinal slot near the upper end, a bit secured in the socket and having inclined shoulders upon opposite sides formed with slightly cut-off lower ends, reamers or bits pivoted near their upper ends upon the sides of the bit, and formed with inclined edges upon the upper portions bearing against the inclined shoulders and having the upper portions slightly cut off, and a cylindrical casing having a shoe upon its lower end bearing against the cut-off portions of the inclined edges of the reamers, and having a transverse bolt fitting and sliding in the slot of the rod and secured to the lower end of a tubular drill-rod, as and for the purpose shown and set forth.

377,250. WOOD-PLANING MACHINE. WILLIAM H. GRAY, Brooklyn, N. Y., assignor to the Glen Cove Machine Company, (Limited,) same place. Filed May 23, 1887. Serial No. 239,077. (No model.)



Claim.—The combination, with the table and cross-bar H I, slotted transversely of the machine, and the side guide, F, overlying the same, of the longitudinal side shaft, G, upright shafts j^*, connected by worm-gearing with said shaft G, and surmounted by chain-driving wheels j', the idler-wheels j at the opposite side of the machine, endless chains J, passing around said wheels in a horizontal plane and each having in its length a block, *k*, guided on the table or cross-bar, and bolts *f*, connecting said blocks with the side guide through the slots in the table and cross-bar, substantially as herein described.

377,251. ADVERTISING-STAND. MOSES D. GREENBARD and FRANKLIN HAINES, St. Louis, Mo. Filed Sept. 14, 1887. Serial No. 249,738. (No model.)



Claim.—1. As an improved article of manufacture, an advertising-plate for exhibiting-stands consisting of the plate B, formed with the shank *b*, projecting from its lower portion, and with the socket b^3 in its upper part, the said socket being adapted to receive and support the standard of the stand, as set forth.

2. The combination, with an exhibiting-stand, of an advertising-plate secured to the base and supporting the standard or rod of the said stand, substantially as described.

3. In a combined exhibiting and advertising stand, the combination, with the base and the supporting-standard, of an advertising-plate provided with a shank for securing it to the base and with a socket for receiving the supporting-standard, substantially as herein shown and described.

4. The herein-described combined exhibiting and advertising stand, consisting of the base A, the plate B, provided with the stem *b* and the socket b^3, the standard C, the horizontal rods D, and the holders E, carried by said arms, as specified.

377,252. BARBED WIRE. J. WOOL GRISWOLD, Troy, N. Y. Filed Aug. 16, 1887. Serial No. 246,572. (No model.)

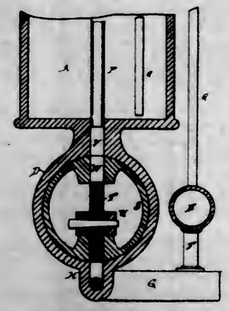


Claim.—1. A flat metallic barb-piece having a longitudinal rib projecting from both sides of said barb, and recesses in said rib adapted to receive two cable-strands, and formed by removing or depressing portions of said ribs, substantially as described.

2. A flat metallic barb-piece having a central longitudinal rib, and slits in its opposite edges disposed at right angles to said rib, substantially as described.

3. In combination with a cable, and held between the strands thereof, a pointed barb-piece, A, having a rib, B, transverse slits C D and bent parts 1 2, substantially as described.

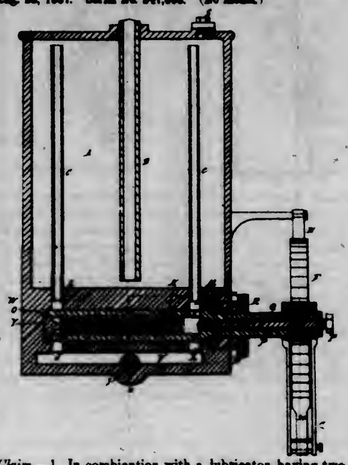
377,253. LUBRICATOR. HENRY H. HEWLETT, Oscoda, Mich. Filed Aug. 23, 1887. Serial No. 247,063. (No model.)



Claim.—1. In a lubricator, the combination, with the oil-pipe, of a cylinder connected with said oil-pipe, a rotary valve having an oil-passage therethrough within said cylinder, a weighted piston in said valve, and mechanism for rotating said valve, substantially as shown and described.

2. In a lubricator, the combination, with the oil-exit pipe P, of the cylinder D and shaft J, valve B, having an oil-passage, W, therethrough, a weighted piston in said valve, and the ratchet-wheel Y, substantially as shown and described.

377,254. LUBRICATOR. HENRY H. HEWLETT, Oscoda, Mich. Filed Aug. 23, 1887. Serial No. 247,062. (No model.)

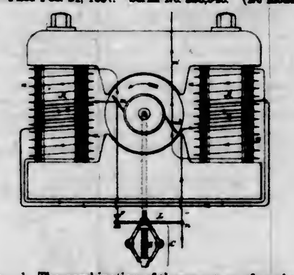


Claim.—1. In combination with a lubricator having two oil-delivery pipes, a rotary cylinder having therein two ports at opposite sides adapted to register with the oil-delivery pipes and having a movable piston therein, mechanism for rotating said cylinder, and an enlargement having delivery-passages registering with the ports of said cylinder, substantially as shown and described.

2. In a lubricator, the combination, with the oil-delivery pipes C C and an enlargement having passages L M, of the hollow cylinder O and hollow shaft Q, the cylinder having therein ports X X', and the hollow shaft provided with a screw-plug, P, substantially as shown and described.

3. In a lubricator, the combination, with the body A, of the water-pipe between the oil-pipes C C, the rotary cylinder O, having therein the ports X X' and piston N, and the enlargement W, having therein delivery-passage V and the passages J K, substantially as shown and described.

377,255. REGULATION OF ELECTRIC MOTORS. DANIEL HEDMAN, Philadelphia, Pa., assignor to the Higham Electric Motor Company, same place. Filed Feb. 21, 1887. Serial No. 228,340. (No model.)



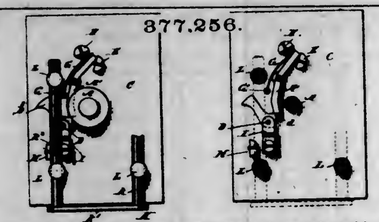
Claim.—1. The combination of the armature of an electric motor with a field-magnet having shunt-coils and series coils opposed to each other, a short circuit around the series coils, and a speed-governor operating a contact for said short circuit to vary the magnetic effect of the field-magnet coils.

2. The combination of the armature of an electric motor with a field-magnet having shunt-coils and series coils opposed to each other, a short circuit around the series coils, a movable contact to open and close said short circuit, and a speed-governor driven by the armature to operate the said contact.

377,256. ELECTRIC ANNUNCIATOR. JOHN W. HOFFMAN, Pullman, Ill. Filed Mar. 24, 1887. Serial No. 232,232. (No model.)

Claim.—1. In an electric annunciator, the combination, substantially as herein described, of the electro-magnet, the oscillatory armature A', consisting of a proximately-straight bar pivoted between its ends, the spring applied to act against the upper end of the armature above the pivot thereof, and the arm D^2 of the index device, arranged to engage and bear upwardly against the lower extremity of the said

377,256.



armature and below the pivot thereof when said arm is in position to place the index in its set or normal condition, substantially as described.

2. In an electric annunciator, the combination, substantially as herein described, of the electro-magnet, the oscillatory armature A', pivoted between its ends, the vibratory arm D^2 of the index device, arranged to engage against the lower extremity of the armature when said arm is in position to place the index in its normal or set condition, the spring applied against the upper end of the armature, and the cam E, against which the upper end of the armature is normally maintained by the spring, substantially as set forth.

3. The combination, substantially as described, of the electro-magnet, the oscillatory spring-controlled armature A', pivoted between its ends, the cam-stops E and F, between which the upper end of the oscillatory armature is extended, and the arm D^2 of the index device, arranged to engage against the lower extremity of the armature when said arm is in position to place the index in its normal or set condition, substantially as described.

4. In an electric annunciator, the combination, with the vibratory arm D^2 of the index device, of the cam-stop H, for limiting the extent of drop on the part of said arm, substantially as described.

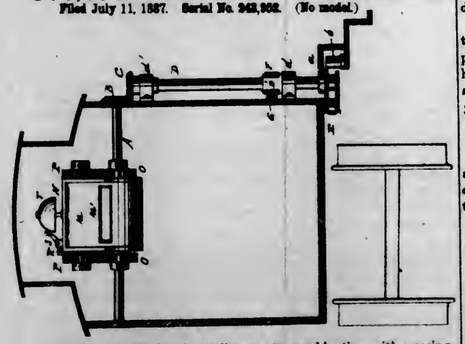
377,257. SCREW-KEY FASTENING FOR TOOL-HANDLES. GUSTAVUS HOFFMANN, Lebanon, Ill. Filed Apr. 7, 1887. Serial No. 234,034. (No model.)



Claim.—1. In combination with a tool-head having a transverse socket, 9, and countersinks 8 10, a locking-stem adapted to engage in said socket, having a head at one end and a screw-threaded socket at the other, and a screw-key having a head and adapted to occupy said socket, substantially as and for the purpose set forth.

2. In combination with a tool-head having a transverse socket, 9, and countersinks 8 10, a locking-stem, 4, having rectangular beveled head 3 and screw-threaded socket 5, and a screw-key, 6, having head 7, and adapted to occupy said socket 5, substantially as and for the purpose set forth.

377,258. STATION-INDICATOR. JOSÉ ISLEBAS, Havana, Cuba. Filed July 11, 1887. Serial No. 243,952. (No model.)



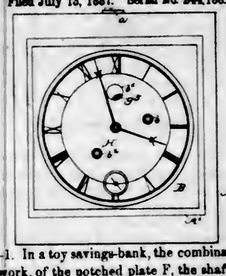
Claim.—1. In a station-indicator, the combination, with a casing, of a shaft, a drum on said shaft, cog-wheels on said shaft, a drum provided with pivots journaled in the casing above the drum on the shaft, cog-wheels mounted loosely on the pivots of the drum and containing spiral springs having one end secured to the pivots of the drum and the other end secured to the wheel, a belt secured on said drums and bearing the station-names, and mechanism for rotating the shaft and the drums, substantially as herein shown and described.

2. The combination, with a car, of a transverse shaft in the same, a station-indicator mounted on and worked by the shaft within the car, a bevel cog-wheel on one end of the shaft, a vertical shaft on the side of the car, said shaft being provided with a squared part, a bevel cog-wheel fixed on the upper end of the vertical shaft and engaged with the bevel cog-wheel on the end of the transverse shaft, a flat spring interposed between the squared part of the shaft and side of the car, a star-wheel on the lower end of the vertical shaft, and a projection or obstruction on the station-platform for engagement with the said star-wheel, substantially as herein shown and described.

3. The combination, with a car, of drums, a belt or band secured to said drums, a transverse shaft for operating said drums, a vertical shaft on the side of the car geared with said transverse shaft, the squared part D' on said vertical shaft, rollers F on the corners of the squared part, and the spring G, secured on the side of the car, substantially as herein shown and described.

4. The combination, with the casing N, of the shaft A, the drum H on the same, the drum K, the shaft K', the cog-wheels O on the shaft A, the cog-wheels P, mounted loosely on the shaft K' and engaged with the cog-wheels O, the spiral springs Q in the recesses of the wheels P, and having one end secured to the wheel and the other to the shaft K', the belt or band J, the rollers L, the ratchet-wheel R, connected with one of the wheels P, the hammer-lever S, and the gong or bell T, substantially as set forth, for operating the parts, substantially as herein shown and described.

377,259. TOY SAVINGS-BANK. GEORGE S. IRESELL, Philadelphia, Pa. Filed July 13, 1887. Serial No. 244,188. (Model.)



Claim.—1. In a toy savings-bank, the combination, with the bank and a clock-work, of the notched plate F, the shaft H, the arm I, carried upon said shaft and having lug K, adapted to enter the notch in said plate, the arm L, also carried by said shaft, and the bolt M, connected to said arm L, substantially as described.

2. In a toy savings-bank, the combination, with the bank structure and the clock-work carried thereby, of the cam plate or arm c', shaft c^2, to which said arm is secured, arm D upon said shaft, and dog d, toothed wheel d', carrying eccentric d^4, slotted arm E, embracing said eccentric, dog e, carried by arm E, toothed wheel J, and notched disk F, moving therewith, shaft H, and arms I and L, the former having a lug, K, adapted to enter the notch in the said disk, and the latter being connected to sliding bolt M, all constructed and operating substantially as described.

3. In a toy bank, the combination, with the bank structure, of a time-lock and a visual signal operated thereby and indicating by its position the condition of said lock, the dial of said time-lock having a hole, b', in its face, through which said signal is exposed, substantially as described.

377,260. RUNNING-GEAR FOR VEHICLES. JOSIEL JACKSON, Fort Atkinson, Wis. Filed Sept. 9, 1887. Serial No. 249,261. (No model.)

Claim.—1. The combination, with the running-gear of a vehicle, a side spring consisting of a semi-elliptical extended lower plate secured at its ends to the running-gear, to which is clipped, adjacent to the center thereof, independent spring-plates, which are centrally bent



377,260.



so that the ends will diverge and be parallel with the lower portion of the side spring, the top spring-plate C being bent upon itself, with the top arm thereof longer than the lower arm and normally in a position away from the said lower arm, the extended arm B, against the under side of which the extended arms of the upper bent spring C engage, the said springs all being united by clips which are passed over the springs to one side of the bend of the upper bent spring C and the attaching angular bends a^3 of the cross-bars a, which are secured to the body of the vehicle, substantially as described.

2. In combination with a side spring constructed, substantially as shown, so as to provide a central space between the spring-sections, an elastic block, W, secured within said space, substantially as and for the purpose set forth.

3. In combination, with a semi-elliptical spring, spring-plates C C, having the members thereof bent so as to provide diverging plates or leaves, and an upper plate to which the body of the vehicle is attached, the parts being clipped to each other and organized so as to provide a central space within which is secured an elastic block, substantially as shown, and for the purpose set forth.

4. In combination with the side springs having a front end formed into eyes, shackles for connecting the same to the front cross-bar, consisting of clips A A, plates H', with end perforations, i, and centrally-enlarged and screw-threaded portions i' and bar I, having the ends screw-threaded so as to form a connecting means for the end spring, and portions H', substantially as shown, and for the purpose set forth.

5. In combination with a spring, the rear end of which is provided with a vertical perforation, a shackle having a plate adapted to lie adjacent to the front side of the hind axle, to which it is secured by clips, said plate having a forwardly-projecting portion, L, which is curved on its upper and lower edges, vertical side plates, M, and a central slot, l, through which the connecting-bolt passes, and washers with a spring-cushion interposed between the same and a fastening-nut, substantially as shown, and for the purpose set forth.

6. The combination, with a running-gear for vehicles, constructed substantially as shown, of a side spring having the end portion of the leaves constituting said spring convex in cross-section, and a spring which is concave in cross-section clipped to the same and attached at its ends to the supporting-strips of the vehicle-body, substantially as shown, and for the purpose set forth.

377,261. WATER-SUPPLY APPARATUS FOR WATER-CLOSETS, &c. DAVID S. KEITH, Toronto, Ontario, Canada. Filed June 26, 1886. Serial No. 206,967. (No model.) Patented in England Sept. 7, 1886, No. 10,571.



Claim.—1. The combination of a valve-casing, the elastic diaphragms B B', secured by their edges to said casing to form a chamber, and the diaphragm B having an opening to admit and expel water from said chamber, a water-supply pipe having a seat for the diaphragm B and its discharge-opening opposite to opening in said diaphragm B', the discharge-pipe, and the compressor acting upon the diaphragm B', substantially as described.

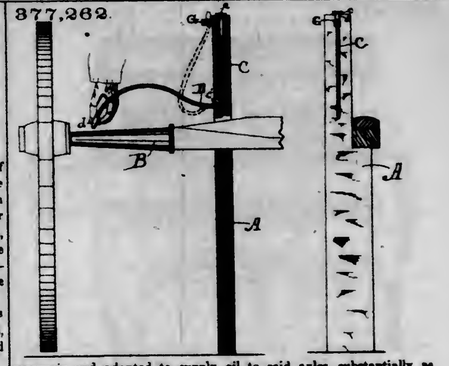
2. The combination of a valve-casing, the elastic diaphragms B and B', a water-supply pipe having a seat for the diaphragm B, which is provided with a valved opening, the discharge-pipe, and the compressor acting upon the diaphragm B', substantially as described.

377,262. OILING ATTACHMENT FOR CARRIAGE-JACKS. BRADFORD F. LADDAKER, Hartlingsweek, Md. Filed Apr. 26, 1887. Serial No. 236,208. (No model.)

Claim.—1. A jack for vehicle-axles, having in its standard an oil-reservoir, a flexible tube leading from said reservoir, and a clamp attached to said standard for holding the end of the tube when not in use, substantially as described.

2. A jack for vehicle-axles, having in its standard an oil-reservoir and a flexible tube, of rubber or other like material, leading from said reservoir and adapted to supply oil to said axles, substantially as shown.

377,262.



377,263. TWINE. JAMES LYALL, New York, N. Y. Filed Sept. 9, 1887. Serial No. 249,255. (Specimens.)

Brief.—The object of the invention is to produce a binder-twine which will not be materially weakened by heat and moisture, and which, though made from jute, will be substantially as strong as ordinary twine made from more expensive material.

Claim.—A twine of jute sized to strengthen the twine, and prepared with a mildew-proof composition to prevent the twine becoming injured by heat and moisture while around the grain, substantially as set forth.

377,264. MACHINE FOR PUNCHING AND SHEARING METAL. GILBERT MCDONALD, Denver, Colo. Filed Oct. 11, 1887. Serial No. 252,041. (No model.)



Claim.—The combination, with a main frame having registering apertures in its sides, of a cogged operating-lever, a racked wedge, friction-rollers arranged substantially as herein described, a connecting-rod, an eccentric, a link, a plunger provided at its lower end with a punch, a lever carrying shears, and a pitman connected to the said operating-lever and the lever carrying the shears.

377,265. SECTIONAL STEAM-BOILER. ANDREW MEHRON, Brooklyn, N. Y. Filed June 16, 1887. Serial No. 241,504. (No model.)

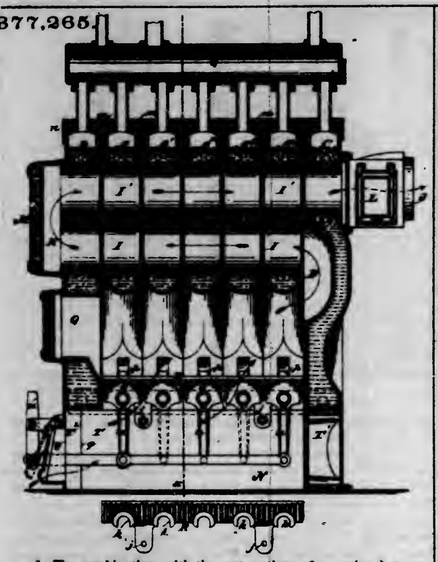
Claim.—1. In a steam-boiler composed of cast sections containing independent water or steam spaces, the combination of an intermediate series of like sections, as shown, comprising the furnace-walls and the double series of direct sectional flues, with a front or door section containing the final sections of said flues and having a flue-chamber for connecting the same together, and a rear section comprising a draft-passage, a flue-delivery, and a fire-back in one piece.

2. In a steam-boiler composed of a series of cast sections, the combination of a double series of direct sectional flues, substantially as shown, a passage connecting the lower series at the rear with the furnace, a chamber connecting the lower with the upper series at the front thereof, and a draft-eduction chamber or pipe located at the rear of the upper series, whereby a triple exposure of heated furnace-gases to the water-spaces of said boiler is obtained.

3. The combination, with the double series of direct flues, of a front cleaning-door located opposite both series, a rear receptacle or chamber opposite the upper series, and a draft-passage for discharging deposits from the rear of the lower series into the furnace, for the purposes set forth.

4. In a steam-boiler composed of separable sections, the combination therewith of a double-ribbed joint, the same consisting of a faced rib and of a lesser packing-rib parallel to said faced rib, the said joints, when placed in juxtaposition, forming an inclosed packing-space accessible from one side thereof, as specified.

377,265.

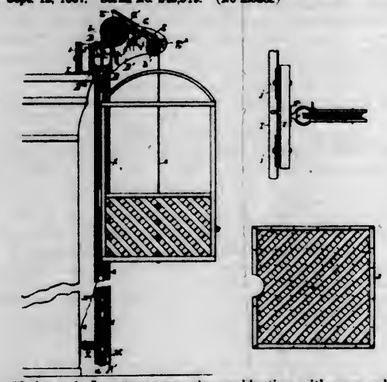


5. The combination, with the cast sections of a sectional steam-boiler, of sockets or recesses cast in the water-legs of said sections for the reception of the trunnions of the rocking grates, arranged substantially as described, the said sockets being vertically elongated to permit the introduction or removal of said grates.

6. The combination, with the grate-trunnion sockets, of protecting-blocks for capping said trunnions, and castings, substantially as shown, for retaining said blocks and trunnions in place, said castings having inverted bearing-sockets and provided with draft-corrugations, as and for the purposes set forth.

7. The means herein described for securing the jacketing material upon the united boiler-sections, consisting, namely, of marginal ribs cast upon said sections, front and rear plates secured, as shown, to the end sections, and sheathing supported upon said ribs and terminating at said plates, and means for binding the whole in place, (as rods extending through lugs projecting from said ribs,) as shown.

377,266. FIRE-ESCAPE. MICHAEL NAYLOR, Cleveland, Ohio. Filed Sept. 12, 1887. Serial No. 249,519. (No model.)



Claim.—1. In a fire-escape, the combination, with cage, cable, and counter-balance, substantially as indicated, of upright tube for the counter-balance to operate in, said tube having closed ends with valves top and bottom, the top valve opening inward and the bottom valve opening outward, and an aperture through the top cap of the tube for the passage of the cable, the parts being arranged substantially as described, and for the purposes set forth.

2. In a fire-escape, the combination, with upright tube having lateral arm attached to the top and sheaves mounted on the arm for supporting the cable, of cage, cable, and piston, the latter operating inside of the tube and serving as a counter-balance to elevate the empty cage, a valve at the top of the tube opening inward, and a valve opening outward located at the bottom of the tube, substantially as set forth.

3. In fire-escapes, the combination, with tube having valves at its ends for the admission and escape of air, piston, cable, and cage, substantially as indicated, of spiral spring located inside the tube for cushioning the piston at the terminals of its stroke, substantially as set forth.

4. The combination, with upright tube, valves, counter-balance, cable, and cage, substantially as indicated, of brake-blocks made to embrace the cable, a spring for holding the blocks apart, and a cord for closing the brake-block, the parts being arranged substantially as described, and for the purposes set forth.

5. In a fire-escape, the combination, with a wheeled carrier, a tube having valves in its ends and secured to carrier, a piston located in the tube, and a cable attached to the piston and leading out of the tube, of a cage or car attached to the outer end of the cable, substantially as set forth.

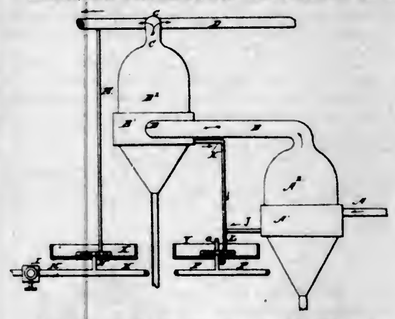
377,267. DIE FOR FINISHING BOX-LOOPS. FRANK. H. PERKINS, Covington, and LOUIS L. MILLER, Newport, Ky. Filed Nov. 22, 1887. Serial No. 255,914. (No model.)



Claim.—1. In a press for finishing box-loops, the vertically-movable side dies, 2, each supported by a flexible spring, substantially as described.

2. In a die for forming box-loops, a side die composed substantially of the stationary frame 1, and the vertically-moving die 2, suspended upon a flexible spring and adapted to move in ways formed in the frame, substantially as described.

377,268. SALT-MAKING APPARATUS. RICHARD G. PETERS, Manistee, Mich. Filed Mar. 26, 1887. Serial No. 232,609. (No model.)



Claim.—1. In a salt-making apparatus, the combination, with the grainer X, of the vacuum-pans A^2 B^2, provided with the jackets A′ B′, the pipe B, connecting the upper part of the pan A^2 with the jacket B′ of pan B^2, the pipe C, leading from pan B^2, and the pipe E, connected with the pipe C, and having its lower end coiled in the grainer X, substantially as herein shown and described.

2. In a salt-making apparatus, the combination, with the grainer X, of the vacuum-pans A^2 B^2, provided with the jackets A′ B′, the pipe B, connecting the upper part of pan A^2 with the jacket B′ of pan B^2, the pipe C, leading from pan B^2, the distributing-pipe, the pipe E, connected to the distributing-pipe, and having its lower end coiled in the grainer X, the pump I, and the pipes H and *i*, connecting the coiled pipe to the pump, substantially as described.

3. In a salt-making apparatus, the combination, with the vacuum-pans A^2 B^2, provided with the jackets A′ B′, and the pipe B, connecting the upper part of pan A^2 with the jacket B′ of pan B^2, of the grainer Y, the pipes J K, projecting from the jackets of the pans, the pipe L, having its lower end coiled in the grainer and connected to the pipes J K, and the tail-pipe O, substantially as herein shown and described.

377,269. DRAWER FOR FURNITURE, &c. JACOB PETERSON, Niagara, Dak. Filed May 23, 1887. Serial No. 239,071. (No model.)

Claim.—1. The herein-described improved means for preventing a drawer from binding in the recess in which it is located, consisting

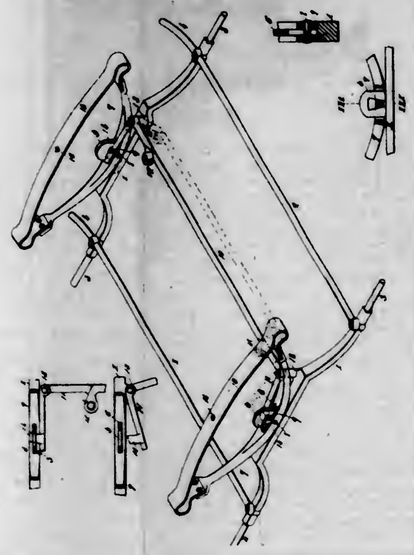
377,269.



of a split tube secured in the bottom of the recess in the furniture-frame and a projecting rod, the body of which is adapted to accurately fit said tube, having bent and reduced ends, said ends being secured at the front and rear of the bottom of the drawer, whereby the drawer is guided and steadied by the tube and rod alone, substantially as described.

2. In combination with a case or frame for bureaus and the like having drawer-recesses, frames hinged at their rears to the bottom of said recesses, and having split tubes secured rigidly thereto, and drawers provided with rods at their under sides adapted to fit and slide longitudinally in said tubes, substantially as set forth.

377,270. COMBINED CARRIAGE, CRADLE, AND CHAIR. HENRY G. PORTMANN, St. Louis, Mo., assignor of one-third to William W. Portmann, same place. Filed Aug. 1, 1887. Serial No. 245,866. (No model.)



Claim.—1. The combination, in a combined child's carriage, chair, and cradle, of the body-springs, rigid rockers to which they are connected at their respective ends, axles on which the rockers bear, and a suitable device for connecting the parts, substantially as and for the purpose set forth.

2. In a child's carriage, &c., the combination of axles, standards on the axles, rockers with mortises in which the standards fit, and a suitable device for preventing the rockers from moving on the axles when the device is used as a carriage, substantially as set forth.

3. In a child's carriage, &c., the combination of the axles having slotted standards, rockers having mortises in which the standards fit, pins 8, connecting the rockers to the standards, and means for connecting the rockers to the axles when the device is used as a carriage, substantially as and for the purpose set forth.

4. In a carriage, &c., the combination of the axles having slotted standards, rockers having mortises in which the standards fit, and a device for holding the rockers from movement on the axles when the device is used as a carriage, said device consisting of bell-crank levers and a connecting-rod, the levers having projections fitting in the slots of the standards above the rockers, substantially as set forth.

5. In a child's carriage, &c., the combination of the axles 1, side bars, 2, rockers 7, having mortises 6, springs 15, slotted standards 5, bell-cranks 11, projections 14, and connecting-bars 10, substantially as and for the purpose set forth.

377,271. CAR-AXLE LUBRICATOR. ROWIN PITKIN, Chicago, Ill. Filed Aug. 1, 1887. Serial No. 245,841. (No model.)



Claim.—1. In a car-axle lubricator, a lubricating-roller provided with lubricant-carrying material and having a central aperture into which the oil is fed to the lubricant-carrying material.

2. In a car-axle lubricator, a lubricating-roller pivoted on depending hangers pivotally supported above, so as to permit of a free oscillatory motion.

3. In a car-axle lubricator, a lubricating-roller provided with a central aperture, perforated core, lubricant-carrying material thereon, and an oil-conveyer which carries the lubricating material into the central aperture of the roller.

4. In a car-axle lubricator, a lubricating-roller pivoted on depending hangers which are supported above each by a spring-arm, so that each end of the roller has an independent vertical motion.

5. In a car-axle lubricator, a lubricating-roller supported by depending hangers, one at each end, each of which hangers is suspended from a spring-arm, so that each end of the roller has an independent vertical motion and the entire roller a free oscillatory motion.

6. In a car-axle lubricator, a lubricating-roller provided with a hollow axle which is a part of and revolves with the same.

7. In a car-axle lubricator, the combination of a spiral oil-conveying coil with a lubricating-roller, the coil attached to the roller and made to revolve on its own axis thereby.

8. In a car-axle lubricator, the combination of a spiral oil-conveying coil, a fixed rod or core therein, with a lubricating-roller, the coil being attached to the roller and revolving therewith about the fixed core.

9. In a car-axle lubricator, a lubricating-roller having a central aperture, in combination with an oil-conveying spiral coil which passes into said roller and is also immersed in the oil.

10. In a car-axle lubricator, the combination of a lubricating-roller having a central aperture, a rod which passes through said aperture and into the lubricating material, and a spiral spring which is wound about said rod.

11. In a car-axle lubricator, a lubricating-roller having a central aperture, a rod which passes into said aperture and also into the lubricating material, and a spiral wire which encompasses said rod and is secured to said roller.

12. In a car-axle lubricator, a hollow lubricating-roller which is supplied with a spiral coil passing into the same, said coil being so securely attached thereto that it revolves with the roller, while the dependent ends of said coil reach to the lubricant below.

13. In a car-axle lubricator, the combination of a lubricating-roller having an internal aperture with a spiral wire oil-conveyer, and wheels whereby the said oil-conveyer is supported at its lower end.

14. In a car-axle lubricator, the combination of a lubricating-roller supported by spring-arms, the opposite ends of which have a movable point of resistance, with a locking-lever which presses thereagainst, so that by turning the same a maximum or minimum condition of elevation of the lubricating-roller may be secured.

15. In a car-axle lubricator, the combination of a lubricating-roller with a spiral spring, the two arms at one end of which support the roller, the middle of which is bent and extended from its pivotal rod, with a fastening-frame which operates against the middle portion of said spring, and by moving which the spring may be rotated on its supporting-rod and the roller elevated or depressed, as desired.

16. In a car-axle lubricator, a base in combination with an extension-frame pivoted thereto and adapted to be folded upon the base or extended from the same, so as to increase or diminish the length of the base at will.

17. In a car-axle lubricator, the combination of a roller, a base, a shaft on said base, a spiral spring twisted about said shaft, its two extended ends supporting the roller, its middle bent away from said shaft, an extension-frame pivoted on said base and adapted to engage the middle portion of said spring, so that when the frame is lengthened by turning the extension-frame out the roller is elevated.

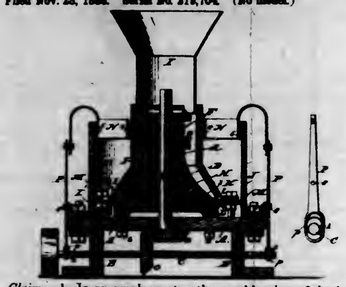
18. In a car-axle lubricator, the combination of a base with a lubricating-roller supported thereon and an extension-frame pivoted

thereto, the roller-support and extension-frame being so connected as that both are folded to the base or extended therefrom simultaneously by operating the extension-frame.

19. A car-axle lubricator provided with a lever extension-frame so arranged that by turning the same the lubricator-frame is lengthened simultaneously with the elevation of the lubricating mechanism.

20. A car-axle lubricator provided with a lever extension-frame, in combination with a spring the free ends of which support the lubricating-roller, and the opposite end of which is provided with a bend, so that the frame is held in position thereby when extended.

377,272. AMALGAMATOR. NATHAN L. RABER, Corvallis, Oreg. Filed Nov. 23, 1886. Serial No. 219,704. (No model.)



Claim.—1. In an amalgamator, the combination of the base, the drum mounted thereon, the feed-wheel, the cover fitted over said wheel, the annular ring-valve having a flange bearing against the cover, the concentrator located at the upper end of the mercury-space, and means for operating said concentrator and feed-wheel, substantially as set forth.

2. The combination, in an amalgamator, of the feed-wheel, means for operating the said wheel, the cover, the drum forming the mercury-space, and an annular ring check-valve, substantially as set forth.

3. The combination of the drum, a feeder, an agitator or concentrator consisting of a series of fixed inclined amalgamating-plates connected together, and means for oscillating said concentrator, substantially as set forth.

4. The combination of the base, the drum, the screw feed-wheel, the cover fitted over said feed-wheel, the bolts I', extended through said cover, and nuts *i i*, whereby such cover may be adjusted, substantially as set forth.

5. The combination of the drum, the revolving feeder, the cover fitted over said feeder and forming an annular mercury-space within the drum, the annular agitator or concentrator arranged at the upper end of said mercury-space and provided with amalgamating-plates, and operating means, substantially as set forth.

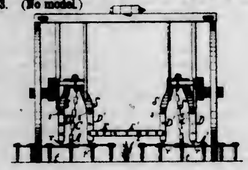
6. The combination of the feed-wheel, means for operating said wheel, the cover, the drum forming the mercury-space, the annular ring-valve, and the annular agitator or concentrator located at the upper end of the mercury-space and provided with fixed inclined amalgamating-plates, substantially as set forth.

7. The combination, with the screw feed-wheel, means for operating the same, and the pedestal, of the cover extended down below the lower edge of the screw feed-wheel, the drum, and an annular ring-valve secured to the pedestal and having an annular flange bearing against the cover, substantially as set forth.

8. The combination of the screw feed-wheel, means for operating the same, the drum, the cover, the pedestal, and the annular ring-valve surrounding the pedestal and having an annular flange bearing against the cover, substantially as set forth.

9. The improved amalgamator herein described, comprising the base, the drum, the pedestal, the screw feed-wheel, the cover, the annular ring-valve supported on the pedestal and having the flange bearing against the cover, the perforated dividing-plate, the concentrator, and means for oscillating the latter, substantially as set forth.

377,273. CULTIVATOR. EMANUEL REICHART and JACOB P. REICHART, Neola, Iowa. Filed Dec. 18, 1886. Renewed Aug. 8, 1887. Serial No. 246,433. (No model.)

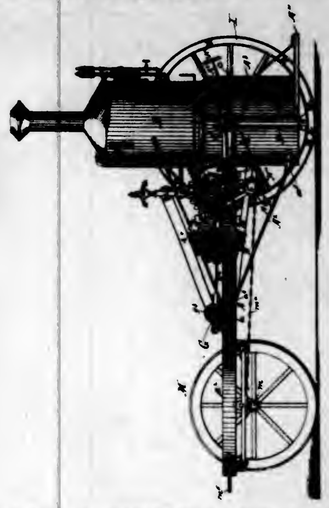


Claim.—1. In a cultivator, in combination with the frame A, carrying teeth or cultivator-blades *t*, substantially such as herein described, and an ordinary double-shovel plow having standards to which the usual cultivator blades or points are attached, the cross-bars B B', having adjustment-holes *b b'*, ring-bolts *r r'*, and perforated bars D D', secured to said frame, whereby said frame is secured to the plow, for the purposes specified.

2. In a cultivator, in combination with a suitable wheeled supporting-frame and two ordinary double-shovel plows, the two frames A A', each supplied with cross-bars B B', ring-bolts *r r'*, and bars D D', secured thereto, whereby said frames are secured to the plow-standards, draft-chains *h h*, and adjustable bars E E', substantially as and for the purposes described.

3. In a cultivator, the frames A A', formed of the angularly-placed pieces 1, 2, 3, 4, 5, 6, and 7, the one 7 being bent, as at *l*, secured to each other by the cultivator-teeth *t*, and provided with means, substantially such as described, for securing said frames to an ordinary double-shovel cultivator or plow, for the purposes specified.

377,274. TRACTION-ENGINE. DE LA FAYETTE REMINGTON, Woodburn, Oreg. Filed Aug. 3, 1887. Serial No. 246,056. (No model.)



Claim.—1. In a traction-engine, the combination of the main frame having the semicircular rear portion, the boiler secured thereto, and the curved or U-shaped axle passed around the rear side of the boiler and flexibly connected at its spindles to the frame, with the hangers engaging beneath the bottom of the boiler with their lower hooked ends, and slidingly connected to the axle at their upper ends, and the springs cushioning the vertical play of these hangers, as shown and described.

2. In a traction-engine, the combination of the main frame having the semicircular rear portion, the boiler secured thereto, the curved or U-shaped axle passed around the rear side of the boiler, the braces pivoted at their forward ends to the frame and secured at their rear ends to the spindles of the axle, the hangers engaging the bottom of the boiler with their lower hooked ends, and having their upper ends sliding vertically in the rear ends of the braces and connected above the same by caps, and the springs interposed between the caps of the braces and cushioning the hangers, as shown and described.

3. In a traction-engine, the combination of the main frame, the U-shaped axle surrounding the rear side of the boiler and having its bent spindle ends movably secured to the frame, the traction-wheels mounted upon the spindles of said axle and provided with cogged inner peripheries, and the driving-shaft journaled upon the frame and provided with the compensating gearing, and also with the bull-pinions at its ends engaging the cogs of said wheels, as shown and described.

4. In a traction-engine, the combination of the internally-cogged traction-wheels, the driving-shaft having bull-pinions engaging the cogs of said traction-wheels, the intermediate shaft having gear-wheels engaging gear-wheels upon the driving-shaft and having crank-disks upon its ends, the engine or crank shaft having eccentrics upon its ends, and the connecting-rods or pitmen pivoted upon said eccentrics and crank-disks, as shown and described.

5. In a traction-engine, the combination of the main frame, the traction-wheels having internally-cogged peripheries, the yielding rear axle, the driving-shaft having bull-pinions engaging the said internally-cogged wheels, the intermediate shaft geared to said driving-shaft, the engine-shaft arranged forwardly of said intermediate shaft and driving-shaft, the connecting-rods for revolving said intermediate shaft, the engine-cylinders, and the piston-rods connecting with and revolving the engine-shaft, said engine-cylinders being supported from the main frame and arranged below said intermediate and driving shafts, as shown and described.

6. In a traction-engine, the combination of the main frame A, the curved axle C, the internally-cogged traction-wheels, the shaft H, provided with the compensating gearing, sliding sleeves and bull-pinions, the shaft K, mounted in front of shaft H, and provided with the gear-wheels l^3 l^4, and crank-disks *k' k'*, the engine-shaft G, provided with the cranks and eccentrics, and the connecting-rods or pitmen, substantially as described.

7. In a traction-engine, the combination of the main frame A, the inclined bed-frame E, removably secured thereto, the cylinders mounted on said inclined bed-frame, and the shafts G, H, and K, arranged above said bed-frame, substantially as and for the purpose described.

377,275. STOPPER FOR VESSELS. JOHN RUDDEN, St. Louis, Mo. Filed July 5, 1887. Serial No. 243,497. (No model.)



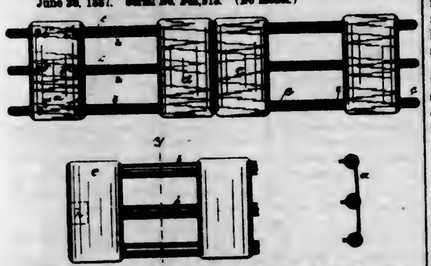
Claim.—1. The combination of a vessel, a cap or stopper for closing the mouth thereof, and a support for the stopper formed of wire and secured to the cap or stopper and extending through the neck of and into the vessel, the portion of the wire support within the vessel being bent laterally, so as to engage within the said vessel for preventing its withdrawal therefrom, and also being constructed for lateral extension to permit the cap or stopper to be moved to one side of the neck of the vessel, while the portion of the support within the neck lies against the side thereof, thereby permitting the insertion of the nozzle of a funnel, substantially as set forth.

2. The cap or stopper for the mouth of a vessel, having a wire or stem attached to it, said wire or stem being provided with an eye, and bent so as to adapt said eye to receive the nozzle of a funnel when the cap or stopper is removed from the vessel, substantially as set forth.

3. The combination, with a vessel having a neck surrounding the filling-orifice, of a cap or stopper, a rod consisting of a single continuous piece of wire attached to the cap or stopper and extending through the neck into the vessel, the portion of the wire rod within the vessel being bent into an eye of greater diameter than the neck of the vessel for preventing the withdrawal of the rod, the portion of the wire rod adjoining the eye being bent, so that the eye may receive the nozzle of a funnel, and the portion of the rod outside of the neck being bent so that the cap or stopper may be moved to one side of the neck, substantially as set forth.

4. The combination of the can 1, neck 2, cap 3, and wire 4, the wire having a loop or eye, 6, on its inner end, and being bent at 9 and 11, as shown, substantially as and for the purpose set forth.

377,276. LADY'S BELT. FREDERICK SCHOLL, Newark, N. J. Filed June 28, 1887. Serial No. 242,913. (No model.)

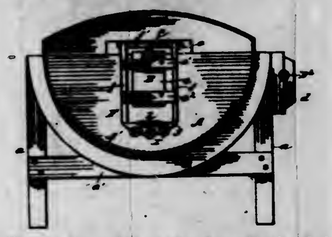


Claim.—1. A lady's belt consisting of a series of plates, *a*, having wire ribs *c* on one side thereof, and spiral wire links secured to the wires *c*, and a fastening device, as set forth.

2. A lady's belt consisting of a series of plates having wire ribs *c* on one side thereof, having a covering over the said wire ribs, and a series of interposed links of spiral wire laid lengthwise and connected to the links, in the manner and for the purpose set forth.

3. A lady's belt consisting of the plates, as described, having covers on their reverse faces, and the connecting-links of spiral wire covered, substantially as and for the purpose set forth.

377,277. WASHING-MACHINE. JOHN SCOLL, Omaha, Nebr. Filed Aug. 24, 1887. Serial No. 247,772. (No model.)



Claim.—1. In a washing-machine, the combination of a horizontal shaft journaled in fixed bearings, depending carriers fixed to the shaft to swing in unison therewith and arranged within the sides of the rub-box, and a vertically-movable rubber connected by devices, substantially as specified, to the carriers to cause said rubber to swing back and forth when the shaft is oscillated, and to permit said rubber to play vertically on the carriers independently of the oscillations of the latter or the shaft, as and for the purposes specified.

2. In a washing-machine, the combination of a horizontal shaft journaled in suitable fixed bearings, a pair of depending carriers fixed to the shaft within the sides of the rub-box, and each having lateral fixed guides, and a vertically-movable rubber having the vertical arms *f* arranged on opposite sides of the carriers, and between the lateral guides thereof, to thereby adapt the rubber to oscillate with the carriers and shaft, and at the same time permit it to play vertically on the carriers independently of the oscillations of the carriers and shaft, as set forth.

3. In a washing-machine, the combination of a shaft, a pair of carriers having the fixed guide-plates, the ends of which are extended beyond the sides of the carriers, a vertically-movable rubber connected to the carriers to swing with the latter and capable of a sliding movement on the same, and friction-rollers journaled in the extended ends of the guide-plates, and arranged between the carriers and the rubber, substantially as and for the purpose set forth.

377,278. GRAIN-MEASURING APPARATUS. ANDREW J. SIMPSON, Morrow, Ohio. Filed Apr. 20, 1887. Serial No. 236,020. (No model.)

Claim.—1. In a grain-meter, the combination, with a measuring-wheel having separate grain-buckets, of a yoke in which said wheel is journaled, a spring supporting the yoke, and a lever raising or lowering said spring to increase or decrease its tension on the yoke, the wheel-heads being provided with teeth, and the casing having stops engaging therewith, substantially as described.

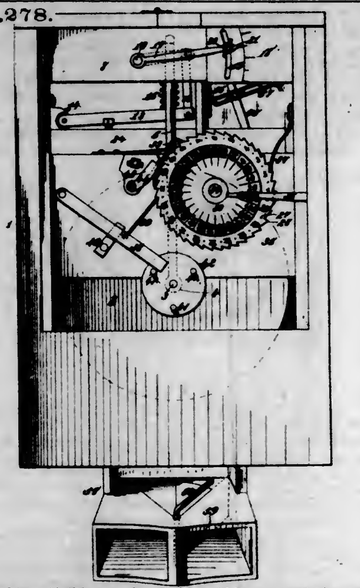
2. In a grain-meter, the combination, with a measuring-wheel having intermittent rotary movement, of a registering mechanism consisting of an outer annulus, an inner disk on which said annulus turns, a vibrating lever having a pawl engaging with a ratchet on the outer annulus, a spring-pawl carried by a flange on said annulus and having its nose projecting through an opening in said flange, and a cam-block rigid on the casing with which said spring-pawl engages at each revolution of the annulus, the inner disk being provided with a ratchet, substantially as described.

3. In a grain-meter, the combination, with a grain-measuring wheel, of a yoke in which said wheel is journaled, a spring supporting said yoke, a rock-shaft having a crank-arm which is linked to a pivoted arm on which one end of the yoke-supporting spring rests, a lever rigid on the end of said rock-shaft, and means for fastening said lever at any point of adjustment, substantially as described.

4. In a grain-meter, the combination, with a measuring-wheel having separate grain-buckets, of a feeding-hopper having an upper rearwardly-inclined plate, an adjustable forwardly-inclined grain-plate below the same, a rock-shaft having an arm engaging the adjustable plate, a lever on the end of the rock-shaft, a set-screw passing through the end of said lever, a slotted arm in which said set-screw moves, and a turn-nut by which the lever may be locked at any point, substantially as described.

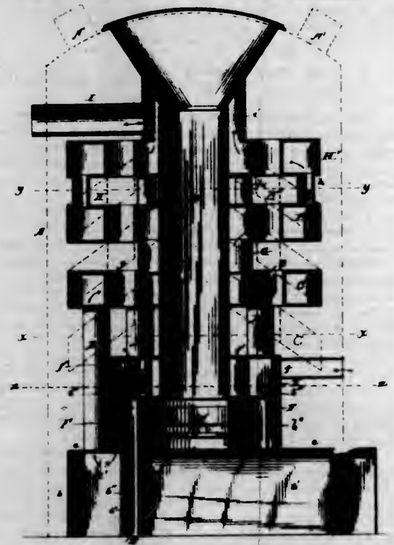
5. In a grain-meter, the combination, with a rotating measuring-wheel having a disk on its axis provided with studs, of a pivoted lever

377,278.



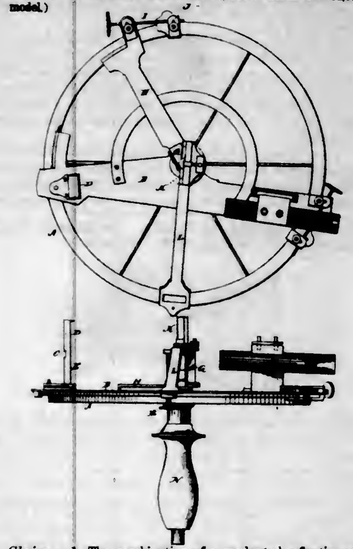
vibrated by said disk, a pawl carried by said lever, a toothed annulus with which said pawl engages, an inner toothed disk on which the annulus turns, a flat index having bearing on the face of the disk, a spring-pawl carried by the annulus and adapted to engage with the teeth of the disk, and a cam-block on the casing impinging at each revolution against the spring-pawl and throwing it into mesh with the disk, substantially as described.

377,279. HEATING-FURNACE. WARREN SUTLIFF, Minneapolis, Minn. Filed Jan. 22, 1885. Serial No. 153,632. (No model.)



Claim.—In a hot-air furnace, the combination of the shell, a fire-chamber, a cold-air chamber surrounding it, and a combustion-chamber above the fire-chamber, a diving-flue communicating with the combustion-chamber and surrounding the cold-air chamber, the magazine, radiating-drums surrounding the magazine and connected with the diving-flue, and smoke-exit pipes *f'*, passing through the combustion-chamber and leading from the cold-air chamber into the hot-air chamber, and a cold-air tube leading from the exterior of the shell through the hot-air chamber into the combustion-chamber, substantially as described.

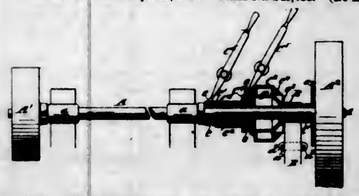
377,280. DOUBLE REFLECTING-CIRCLE. CHARLES H. TOWNSEND, New Haven, Conn. Filed June 30, 1887. Serial No. 241,957. (No model.)



Claim.—1. The combination of a graduated reflecting-circle, a horizon-sight perpendicular to the plane of the circle, and two or more reflectors hung upon axes in line with and corresponding to the axis of the circle, each of said reflectors being independently adjustable around its own axis, with reflectors corresponding to the said concentrically-hung reflectors and in line with the horizon-sight.

2. The combination of the graduated circle, a turn-table arranged on said circle and adapted to rotate about the axis of the said circle, a horizon-sight fixed on said turn-table, two or more reflectors arranged one above the other, both upon an axis concentric with said circle, each adjustable on its axis independent of the other, and reflectors corresponding to the said two or more concentric reflectors and fixed in line with said horizon-sight, substantially as described.

377,281. PULLEY FOR VARIABLE SPEED. JAMES F. WELCH, Brooklyn, assignor to the Glen Cove Machine Company, (Limited,) Green Point, N. Y. Filed Sept. 15, 1887. Serial No. 249,733. (No model.)

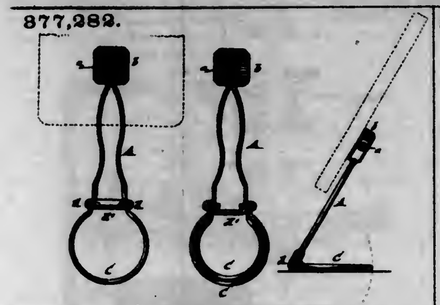


Claim.—The combination, with a shaft, of a series of pulleys of different diameters sliding one over another to form a nest of pulleys, all being connected together and with the shaft, so as to turn with the shaft, the said pulleys having inclined edges, and also having concentric sleeves by which they may be shifted, and stops for engaging the belt and holding it in one plane during the lateral shifting of the pulleys, substantially as and for the purpose herein described.

377,282. HAND-MIRROR. LEONHARD WIENBERG, New York, N. Y. Filed Aug. 20, 1887. Serial No. 247,408. (No model.)

Claim.—The combination, with a mirror, of a forked handle, a friction-clamp connecting said handle with the back of the mirror, and an extension piece or pieces pivoted by friction-screws to the lower end of the handle, substantially as set forth.

377,282.



377,283. MANUFACTURE OF WALL-COVERING. ISAAC B. ABRAHAM, New York, N. Y. Filed Apr. 30, 1887. Serial No. 236,464. (No model.)



Claim.—1. The process herein described of making wall-coverings, which consists in sizing paper or other backing, spreading over said sizing a layer of animalized vegetable flock, and pressing the so-covered paper between heated embossing-rolls, substantially as set forth.

2. The process herein described of making wall-coverings, consisting in applying to a layer of paper or other suitable backing a sizing containing casein, spreading over the same a layer of animalized vegetable flock also containing casein, and pressing the so-coated fabric between heated embossing-rolls, whereby the casein of the flock and of the sizing unite at the compressed portions, so as to form a glossy ground of a different shade of color than the uncompressed parts in relief, substantially as set forth.

3. A wall-covering composed of a base or backing of paper or other suitable fabric, and a face-covering of animalized vegetable flock secured thereto by a suitable sizing, substantially as set forth.

4. A wall-covering composed of a base or backing of paper or other suitable fabric, and a face-covering of animalized vegetable flock secured thereto by a suitable sizing, said face being compressed in part and partly in relief, substantially as set forth.

5. As a new article for use in the manufacture of wall-papers, animalized vegetable flock or fibers prepared from wood or other vegetable fibers and coated with animal fibers deposited thereon, substantially as set forth.

6. In the manufacture of wall-coverings, the process herein described of preparing vegetable flock, which consists in dissolving animal fibers in a suitable alkali and depositing from said solution the animal fiber on wood pulp or other vegetable fibers by means of diluted acid, substantially as set forth.

7. In the manufacture of wall-papers, the process herein described of preparing flock, which consists in dissolving animal fibers in a camphorated alkali solution containing casein and depositing said animal fibers on wood pulp or other vegetable fibers by means of a diluted acid, substantially as set forth.

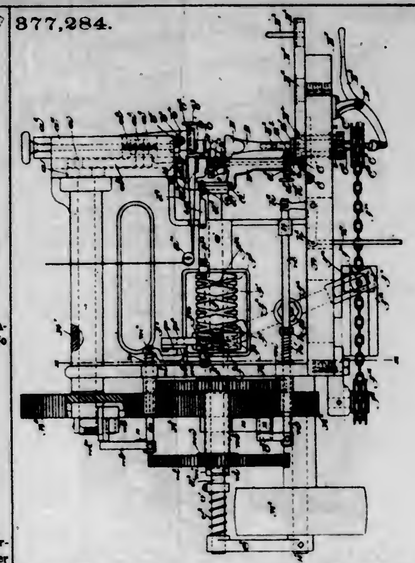
377,284. HEEL-TRIMMING MACHINE. EDWARD B. ALLEN, Portland, Me., assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Sept. 27, 1887. Serial No. 250,600. (No model.)

Claim.—1. In a heel-trimming machine, a rotating shaft and two or more pivoted cutting-blades carried thereby, combined with a rod and links to connect the rod with each of the said blades and with a cam to actuate the rod to move all the said blades about their pivots during the rotation of the said shaft and while the said blades are acting upon and shaping the heel, all the said blades acting to cut entirely around the heel from breast to breast, substantially as described.

2. The movable bed B^3, a turn-table mounted thereon, a last carried by the turn-table, and a rotating cam-plate, combined with the locking device or mechanism to clutch the cam-plate and turn-table together, substantially as described.

3. The rotating shaft C^3, its attached cutter, the yoke-like bearing in which the said shaft rotates, and cam-roll d^3, combined with

377,284.



the partially-rotating last and pattern-plate d^7, substantially as described.

4. The rotating shaft C^3, its attached cutter, the yoke-like bearing in which the said shaft rotates, and cam-roll d^3, combined with the partially-rotating last and pattern-plate d^7, and with the cam-plate having a cam-ledge, C, and a rod, c', actuated thereby to change the position of the blades d, substantially as set forth.

5. In a heel-trimming machine, a rotating table, a series of turn-tables carried by it to receive two or more lasts, and a rotating cutter to trim the heel, combined with means to rotate the said lasts one at a time in the said rotating table and while the heel of the shoe is being acted upon by the rotating cutter, substantially as described.

6. In a heel-trimming machine, a rotating cutter, a turn-table, a last mounted thereon, a rotating plate, C, having a shank, C^2, provided with a sprocket-wheel, combined with a chain and with a vibrating lever, f^5, substantially as described.

7. In a heel-trimming machine, the combination, with a partially-rotating last and a fixed rotating heel-trimmer, of heel-breasting mechanism, substantially as described, to breast the heel after the same has been trimmed, as set forth.

8. The shoe-holding last, the shaft A^7, slide a^3, and intermediate connections, combined with the heel-breasting blade b, to operate substantially as described.

9. The rotating shaft A^7, the link a^6, the slide a^3, and the screw a^4, combined with the stud a^5, made adjustable with relation to or upon the said screw, and the breasting-knife, substantially as and for the purpose set forth.

10. The reciprocating slide a^3, combined with the blocks b^4 and b^5, the heel-breasting blade b', and with means to adjust them to place the blade in proper position, substantially as described.

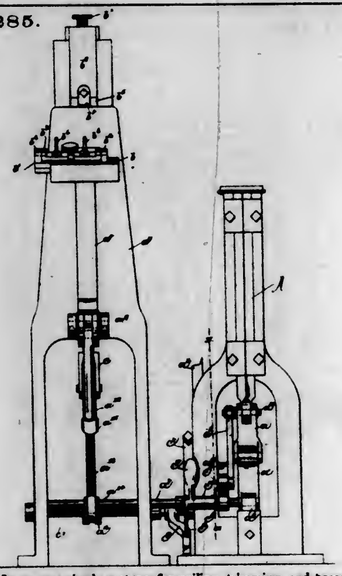
11. The rotating clutch-gear A^6, the shaft A^7, the arm m^{12}, its dog, stop-shoe, and rod 60 and arm m^7, combined with the collar f^2 and with the spring p^3 and pivoted block p, to operate substantially as described.

12. The heel-trimming mechanism and the heel-breasting mechanism, combined with an intermediate clutch automatically controlled as to its movements by the heel-trimming mechanism, whereby the main shaft of the heel-breasting mechanism is started at the completion of the heel-trimming operation, substantially as described.

377,285. HEEL NAILING AND BREASTING MACHINE. EDWARD B. ALLEN, Portland, Me., assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Oct. 31, 1887. Serial No. 253,850. (No model.)

Claim.—1. In an organized machine for nailing, trimming, and breasting heels, the die-bed spindle of a heel nailing and trimming machine, a rock-shaft, connection between the said die-bed spindle and rock-shaft to actuate the said rock-shaft, a jack or holder for a shoe to be breasted, a heel-breasting knife and a carrier therefor, and means, substantially as described, to connect the said jack or holder with the said rock-shaft, to operate substantially as described.

877,285.



1. In an organized machine for nailing, trimming, and breasting heels, the breasting-knife, its carrier, the rock-shaft c^3 and connections between it and the said carrier, and a jack or holder for the shoe to be breasted, a movable part of a heel-trimming mechanism, as the lever a^3 of the rock-shaft c^3, the latter being extended horizontally and deriving its movement from the said movable member of the heel-trimming mechanism, for the purposes set forth.

3. The die-bed spindle of a heel-nailing machine, its toggle, the link a^2, having a roller-stud, the cam a^5, entered by the said roller-stud, the rock-shaft to which the said cam is attached, the arm a^6, carrying the jack or holder of the boot or shoe to be breasted, a breasting-knife and carrier therefor, and connections between the said arm and rock-shaft, combined with means, substantially as described, for temporarily locking the said stud in the slot of the said cam as the die-bed spindle is being lowered, to thus automatically move the jack or holder out from under the breasting-knife, for the purposes set forth.

4. The combination, with the die-bed spindle of a heel attaching and trimming machine, of a rock-shaft, a^7, of a breasting-machine, a jack connected to and operated by the said rock-shaft, a trimming mechanism of the heel-attaching machine, a rock-shaft, c^3, of the breasting-machine, a cam, a^5, an arm having a stud, a^4, in engagement with the said cam, a locking device to engage said pin, and a lever, c^{10}, actuated by the movement of the trimming mechanism to operate the locking device, as and for the purpose specified.

877,286. NUT-TAPPING MACHINE. EDWIN H. BENJAMIN, Marion, Conn., assignor of one-half to Henry H. Newell, same place. Filed Sept. 23, 1887. Serial No. 250,474. (No model.)

Claim.—1. In a machine for tapping or reaming nut-blanks and in a machine for nutting screws, the combination, with an intermittently-rotating reciprocating shaft, of a nut-holder carried by such shaft, substantially as set forth.

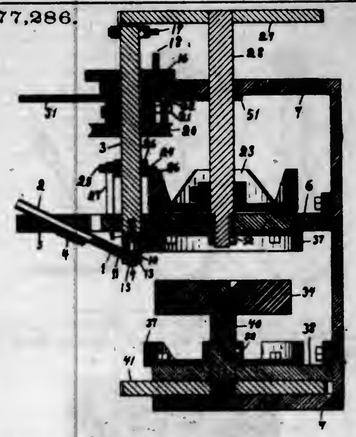
2. In a machine for tapping or reaming nut-blanks and in a machine for nutting screws, the combination, with an intermittently-rotating reciprocating shaft, of a nut-holder carried by such shaft and means for feeding a nut to the holder, substantially as set forth.

3. In a machine for tapping or reaming nut-blanks, the combination, with a rotating nut-holder, of jaws for holding the tool while said holder rotates a nut thereon and jaws for holding the tool while a finished nut is being discharged over the shank end thereof, substantially as set forth.

4. In a machine for tapping or reaming nut-blanks, the combination, with a rotating reciprocating nut-holder, of jaws for holding the tool while a nut is being revolved thereon by said holder and jaws for holding the tool while a finished nut is being discharged over its shank end, substantially as set forth.

5. In a machine for tapping or reaming nut-blanks, the combination, with an intermittently-rotating reciprocating nut-holder, of a

877,286.



holder for holding the tool while said nut-holder rotates a nut thereon, a holder for holding the tool while a finished nut is being discharged over its shank end, and a chute for feeding the nut-holder aforesaid, substantially as set forth.

6. In a machine for tapping or reaming nut-blanks and in a machine for nutting screws, the combination, with an intermittently-rotating reciprocating nut-holder, of a reciprocating chute for feeding the nuts to such holder and means for stopping the rotation of the holder with its nut-entrance in line with the chute aforesaid, substantially as set forth.

7. In a machine for tapping or reaming nut-blanks and in a machine for nutting screws, the combination, with a revolving nut-holder carried by a block, 8, such block having a gage, an inclined plane, and a normally-closed nut-outlet, of a nut-guide chute for feeding said holder, substantially as described.

8. In a machine for nutting bolts, the combination, with an intermittently-rotating reciprocating nut-holder, of an intermittingly-revolving dial and devices carried by the dial for holding the bolts, substantially as set forth.

9. In a machine for tapping or reaming nut-blanks, the combination, with an intermittently-rotating reciprocating nut-holder, of an intermittingly-revolving dial, devices carried by the dial for holding the tools, and means for operating the tool-holding devices for discharging the finished nuts over the shank of the tools, substantially as set forth.

10. In a machine for tapping or reaming nut-blanks, the combination, with a revolving reciprocating nut-holder, of an intermittingly-revolving dial, jaws carried by such dial for holding the tools, and means for operating the jaws for discharging the cut nuts over the shank end of the tools, substantially as set forth.

11. In a machine for tapping or reaming nut-blanks and in a machine for nutting bolts, the combination, with a rotating reciprocating nut-holder, of an intermittingly-revolving dial, means carried by such dial for holding tools or bolts, and mechanism governed by the nut-holder aforesaid for effecting its retraction and the moving of the dial, substantially as set forth.

12. In a machine for tapping or reaming nut-blanks, the combination, with a rotating reciprocating nut-holder, of means for holding a tool while a nut is rotated thereon by said holder, and mechanism controlled by the holder for retracting it after it has rotated a nut on the tool, substantially as set forth.

13. In a machine for tapping or reaming nut-blanks and in a machine for nutting bolts, the combination, with a rotating reciprocating nut-holder, of means for feeding a nut to such holder, an intermittingly-revolving dial provided with lever-actuated tool or bolt holding jaws, and cam-tracks adjacent to the dial for controlling the levers, substantially as set forth.

14. In a machine for tapping or reaming nut-blanks, the combination, with a rotating reciprocating nut-holder, of a pair of jaws for holding the tool while said holder rotates a nut thereon, a pair of jaws for holding the tool while the nut is being discharged over its shank end, levers for operating both pairs of jaws, and rotary cams 37 37 for controlling the levers, substantially as set forth.

15. In a machine for tapping or reaming nut-blanks and in a machine for nutting screws, the combination, with a nut-holder, of the jaws 32, levers 35, and cams 37 37, substantially as set forth.

16. In a machine for tapping or reaming nut-blanks and in a machine for nutting screws, the combination, with a nut-holder, of the guide-chute 2, shaft 3, and cam-wheel 23, substantially as described.

17. In a machine for tapping or reaming nut-blanks and in a machine for nutting screws, the combination, with the shaft 3, of a nut-holder carried thereby, cam-wheel 23, shaft 31, pulley 43, and sleeve 45, substantially as set forth.

18. In a machine for tapping or reaming nut-blanks and in a machine for nutting bolts, the combination, with the dial 34, of the jaws 32, shaft 31, pulley 43, and sleeve 45, substantially as set forth.

19. In a machine for tapping or reaming nut-blanks and in a machine for nutting bolts, the combination, with the dial 34, of the jaws 32, levers 35, and tracks 37 37, substantially as set forth.

20. In a machine for tapping or reaming nut-blanks and in a machine for nutting bolts, the combination, with the jaws 32, of the levers 35, tracks 37 37, shaft 31, pulley 43, and sleeve 45, substantially as set forth.

21. In a machine for tapping or reaming nut-blanks and in a machine for nutting bolts, the combination, with the jaws 32, of the levers 35, tracks 37 37, dial 34, shaft 40, cog-wheel 41 and toothed segment 42, and shaft 31, substantially as set forth.

22. In a machine for tapping or reaming nut-blanks and in a machine for nutting screws, the combination, with the shaft 3, provided with a nut-holder, of the cam-wheel 23, shaft 28, cog-wheel 29, toothed segment 30, and shaft 31, substantially as set forth.

23. In a machine for tapping or reaming nut-blanks and in a machine for nutting screws, the combination, with the shaft 3, provided with a nut-holder, of the pulley 16, pulley 20, and pins 18, 19, 21, and 22, substantially as described.

24. In a machine for tapping or reaming nut-blanks, the combination, with a rotating reciprocating nut-holder, of an intermittingly-revolving dial provided with one or more sets of tool-holding jaws and means for operating such jaws for discharging the finished nuts over the shank end of the tool, substantially as set forth.

25. In a machine for tapping or reaming nut-blanks and in a machine for nutting screws, the combination, with an intermittently-rotating reciprocating shaft, of a nut-holder carried thereby, a driving-pulley loosely mounted on said shaft, and means for coupling and uncoupling the pulley and shaft, substantially as set forth.

26. In a machine for tapping or reaming nut-blanks and in a machine for nutting screws, the combination, with an intermittently-revolving nut-holder, of means for conducting the nuts to such holder and mechanism for stopping it to receive a nut, substantially as set forth.

27. In a machine for tapping or reaming nut-blanks and in a machine for nutting screws, the combination, with a revolving reciprocating nut-holder, of means for stopping it to be fed, substantially as set forth.

28. In a machine for tapping or reaming nut-blanks and in a machine for nutting bolts, the combination, with a revolving nut-holder, of means for retracting such holder after it has done its work, devices for holding either tools or bolts, and mechanism controlled by said nut-holder for operating the tool or bolt-holding devices, substantially as set forth.

29. In a machine for tapping or reaming nut-blanks and in a machine for nutting screws, the combination, with a rotating reciprocating nut-holder, of mechanism for retracting such holder, such mechanism being normally idle and actuated to operate by means controlled by the nut-holder, substantially as set forth.

30. In a machine for nutting bolts, the combination, with a revolving reciprocating nut-holder, of means for feeding a nut to such holder and a device for holding the bolts, substantially as set forth.

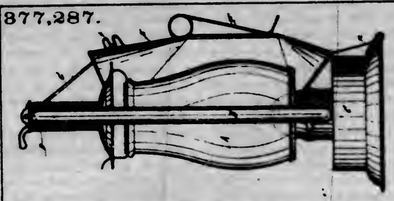
31. In a machine for tapping or reaming nut-blanks and in a machine for nutting screws, the combination, with a rotating nut-holder, of a gage for limiting the passage of the nuts when entered therein and means for stopping the rotation of the holder for feeding a nut thereto, substantially as set forth.

32. In a machine for tapping or reaming nut-blanks, the combination, with a revolving reciprocating nut-holder, of a normally-idle cam, operating when actuated to retract the said holder, two pairs of jaws for holding the tool, each independent of the other, and mechanism for periodically actuating said jaws and the idle cam aforesaid, substantially as set forth.

877,287. REFLECTOR ATTACHMENT FOR TUBULAR LANTERNS. LEWIS F. BUTTS, New York, N. Y., assignor, by mesne assignments, of one-half to The R. E. Dietz Company, same place. Filed June 4, 1887. Serial No. 240,305. (No model.)

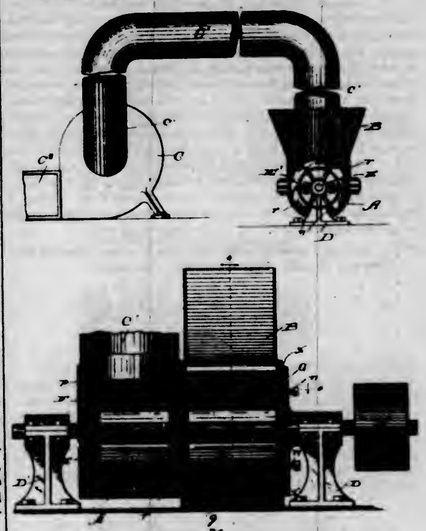
Claim.—1. In combination with a tubular lantern having a handle or bail, an attachment consisting of a reflector adapted to engage with the tubes of the lantern when slipped vertically thereon, and a projection from the rear of said reflector wherewith said handle or bail is adapted to engage, substantially as and for the purposes set forth.

877,287.



2. In combination, a tubular lantern, a hinged bail thereon, a reflector, and a clip applied upon the reflector and arranged to receive and hold the lantern-bail, substantially as and for the purposes set forth.

877,288. PULVERIZER. ARMI. H. BLISS, Chicago, Ill. Filed Apr. 12, 1887. Serial No. 234,422. (No model.)



Claim.—1. In a pulverizing-machine, the combination of a stationary shell, a rotary hollow cylinder within the shell having longitudinal circumferential openings, a feed-opening in the shell leading directly to the exterior surface of the inclosed hollow cylinder, and means for producing air-currents through the machine, substantially as described.

2. In a pulverizing-machine, the combination of a stationary shell, A, a rotary shaft, E, disks F and G, supported on the shaft to rotate with it, bars H, secured at opposite ends to and supported by the said disks, and forming with the latter a hollow cylinder having longitudinal circumferential openings, a feed-opening in the shell leading directly to the exterior surface of the said cylinder, and means for producing air-currents through the machine, substantially as described.

3. In a pulverizing-machine, the combination of a stationary shell, A, a rotary hollow cylinder, K, within the shell and having longitudinal circumferential openings, an annular disk, I, affording a strengthening-band and partition on the said cylinder, a feed-opening in the shell leading directly to the exterior surface of the said cylinder, and means for producing air-currents through the machine, substantially as described.

4. In a pulverizing-machine, the combination of a shell, A, provided with a feed-opening, a rotary shaft, E, disks F and G, supported on the shaft to rotate with it, bars H, inserted at opposite ends into recesses in the opposing faces of the said disks, an annular disk, I, between the disks F and G, having peripheral recesses at which the bars H are let into it, and means for producing air-currents through the machine, substantially as and for the purpose set forth.

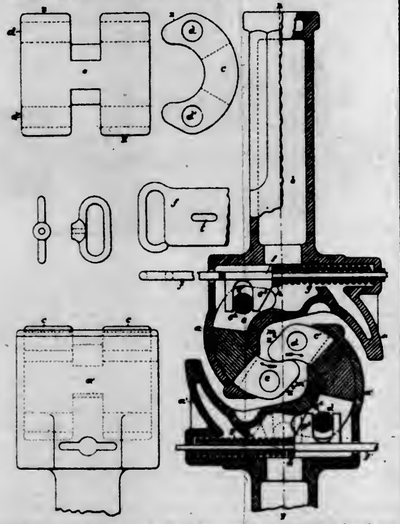
5. In a pulverizing-machine, the combination of a shell, A, provided with a feed-opening, a rotary shaft, E, disks F and G, supported

on the shaft to rotate with it, bars H, inserted at opposite ends into recesses in the opposing faces of the said disks and grooved or recessed at one end, and secured in position by bolts inserted into the recesses through the disk G, an annular disk, I, between the disks F and G, having peripheral recesses at which the bars H are let into it, and means for producing air-currents through the machine, substantially as and for the purpose set forth.

6. The combination of a shell, A, having a feed-opening provided with a hopper, B, at one side of the center and a discharge-opening at the opposite side of the same, a rotary shaft, E, disks F and G, supported on the shaft to rotate with it, bars H, inserted at opposite ends into recesses in the opposing faces of the said disks, an annular disk, I, between the said feed and discharge openings in the shell A, and having peripheral recesses at which the bars H are let into it, an air-current-producing device, C, a conduit, C', affording communication between the device C and the discharge-opening in the shell A, and a chamber, L, in the conduit C, provided with an internal partition, *m*, valves *k* and *l*, and a chute, *h*, leading into the hopper B, substantially as and for the purpose set forth.

7. A pulverising-machine comprising, in combination, the following elements, viz: a shell, A, having a feed-opening provided with a hopper, B, at one side of the center and a discharge-opening at the opposite side of the same, a rotary shaft, E, disks F and G, supported on the shaft to rotate with it, bars H, inserted at opposite ends into recesses in the opposing faces of the said disks and grooved or recessed at one end, and secured in position by bolts inserted into the recesses through the disk G, an annular disk, I, between the said feed and discharge openings in the shell A, and having peripheral recesses at which the bars H are let into it, an air-current-producing device, C, a conduit, C', affording communication between the device C and the discharge-opening in the shell A, and a chamber, L, in the conduit C provided with an internal partition, *m*, valves *k* and *l*, and a chute, *h*, leading into the hopper B, the whole being constructed and arranged to operate substantially as and for the purpose set forth.

377,289. CAR-COUPLING. WILLIAM F. BRAUN, Columbus, Ohio. Filed Aug. 13, 1887. Serial No. 247,398. (No model.)



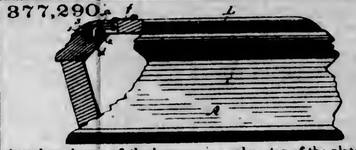
Claim.—1. In a car-coupling, the combination, with a head provided with a circular knuckle-recess, of a curved knuckle fitting and adapted to slide within the recess, substantially as set forth.

2. In a car-coupling, a curved knuckle with its ends exactly alike and cut away on their outer faces on a straight line intersecting the curve of the knuckle, substantially as set forth, whereby the knuckle may be reversed.

3. The combination, with the head, of the curved knuckle, the hand-rod, and a spring or weight for throwing the hand-rod and knuckle, substantially as set forth.

377,290. FASTENER FOR COFFINS. JAMES R. CORBETT, Rochester, N. Y., assignor to the State Manufacturing Company, same place. Filed May 21, 1887. Serial No. 238,945. (Model.)

Claim.—1. The combination, in a spring-catch, with a top plate

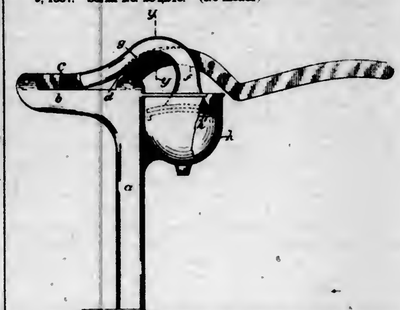


slotted, as shown, of the lugs *c c*, secured on top of the plate and connected by an integral bend, *c'*, which extends through the slot in the plate to form a guard for the latch, substantially as shown and described.

2. The lugs and guide-pieces *c c'*, provided with the projections *e e*, struck up in one piece and secured to the plate 1, substantially as and for the purpose set forth.

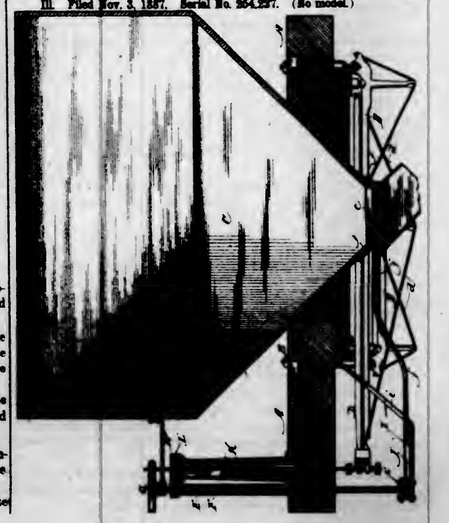
3. The plate 1, formed with a slot, as shown, and the blank C, bent to form in one piece the lugs *c c* and the guard *c'*, in combination with the lever *a*, pivoted in the lugs *c* and provided with the spring *s* under one end, and the latch *d*, formed integral with the lever and depending within the guard *c'*, substantially as and for the purpose set forth.

377,291. LEMON-SQUEEZER. WARREN K. CROWFORD, New York, N. Y., assignor of one-half to William Bardsley, same place. Filed Apr. 9, 1887. Serial No. 234,319. (No model.)



Claim.—In a lemon-squeezer, the combination of the standard *a*, provided with the extension *b*, and the cup *h*, provided with the perforated bed *h'*, the presser-lever *c*, having the presser *c'* at its free end and provided with the elongated slot *d*, fulcrumed to said extension, and the hand-lever *e*, fulcrumed to the standard and passing through the slot in the presser-lever, substantially as described.

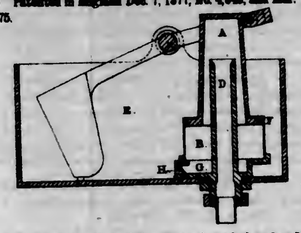
377,292. SCALE FOR WEIGHING GRAIN. JOHN DAHLE, Chicago, Ill. Filed Nov. 3, 1887. Serial No. 254,237. (No model.)



Claim.—1. The combination of the vertical shaft E, provided on its lower end with pinion *e*, with the support I, rigidly attached to the square frame B below, and the support H, in like manner attached to the hopper C above, and with the rack *J*, gearing with said pinion and with the slide *c*, the said slide and rack being rigidly connected together, the whole adapted to operate the slide, substantially as described.

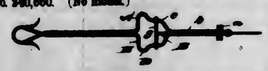
2. In combination with the square frame B and rigidly attached thereto, the support I, provided with the longitudinal slot *i*, to serve as a guide for the rack *j*, and at its outer end with the described box adapted to sustain the lower end of the vertical rod E, the pinion *e*, and rack *J*, and guide the motion of the rack, substantially as described.

377,293. APPARATUS FOR REGULATING THE SUPPLY OF LIQUIDS FOR WATER-CLOSETS. WILLIAM DAVIES, Liverpool, County of Lancaster, England, assignor of one-half to Joseph Edward Hannah, Winnipeg, Canada. Filed Feb. 19, 1887. Serial No. 228,171. (No model.) Patented in England Dec. 7, 1877, No. 4,943, and Mar. 13, 1886, No. 3,575.



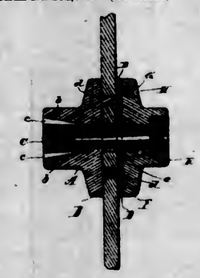
Claim.—The combination of the reservoir and chamber B, having valve H between, the stand-pipe D, extending up through said chamber, and the hollow piston A, fitted within chamber B and surrounding the stand-pipe and adapted, as described, to act both as a plunger and the short leg of the siphon.

377,294. FISHING-HOOK. CHRISTOPH F. DIBBS, New Orleans, La., assignor of one-half to Pascal Lastelle, same place. Filed June 8, 1887. Serial No. 240,660. (No model.)



Claim.—As an improved article of manufacture, a fishing-hook comprising a wire having a lateral vertical coiled eye about midway of its length and rounded shoulder portions forming stops, as described, said wire turned back upon itself and terminating in hooks, as shown, and a slide-loop adapted to compress the hooks and having a straight branch passing through the lateral eye and formed with an eye at its outer end for the attachment of the line, substantially as specified.

377,295. VEHICLE-HUB. GEORGE S. ELLIOTT, Mobile, Ala. Filed Sept. 29, 1887. Serial No. 251,088. (No model.)



Claim.—1. In a hub, the combination, with an axle-box and a flanged collar, of a washer resting against the spokes, a flanged nut mounted on the screw-threaded end of the axle-box, and a screw mounted in the flange of the nut and bearing against the washer for locking the flanged nut against independent movement, substantially as set forth.

2. In a hub, the combination, with an axle-box having ribs thereon, of a flanged collar having grooves with which the ribs on the box register, a washer, a flanged nut mounted on the screw-threaded end of the box and provided at a point near the edge of the flange with a screw-threaded hole, and a screw-plug mounted in said hole and adapted to bear against the washer and lock the washer and nut against movement independently of the box, substantially as set forth.

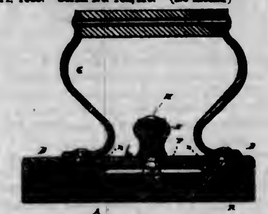
377,296. PLOW. WILHELM A. FAHRBACH, Charles City, Iowa. Filed Nov. 12, 1887. Serial No. 255,831. (No model.)



Claim.—1. The combination, in a plow, with a curved standard having an eye through its front end and a beam having a vertical transverse slot through its rear end, of a front swivel-clasp, F, and a rear clasp, E, pivoted to the said standard and connected to the beam by nuts and washers, all substantially as described.

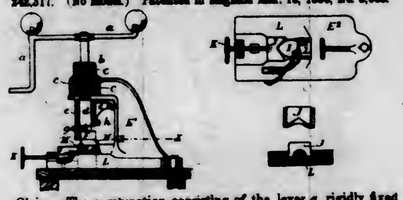
2. The combination of the curved standard, the curved plow-beam, the front swivel-clasp pivoted to the said standard and beam to allow vertical and lateral adjustments thereof, and the clasp E, connected to the beam by a transverse pivot-bolt and having a screw-stem provided with nuts and washers and adjustably secured to the rear transversely-slotted end of the plow-beam, substantially as and for the purpose described.

377,297. IRON-HOLDER. JAMES FISHER, Pittsburg, Pa. Filed Nov. 11, 1886. Serial No. 218,419. (No model.)



Claim.—The combination, with the iron-body having its sides rabbeted and its upper face provided with recesses P *b* R, of the shell or cap D, adapted to fit over the body, the lever L, its fulcrum-pin and knob, and the handle attached to the cap or shell, all arranged to operate substantially as specified.

377,298. LEATHER-CUTTING MACHINE. WILLIAM FREEMAN, Leicester, County of Leicester, England. Filed June 28, 1887. Serial No. 242,317. (No model.) Patented in England Mar. 16, 1886, No. 3,668.



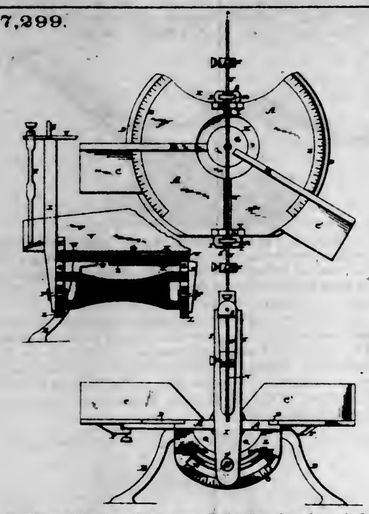
Claim.—The combination consisting of the lever *a*, rigidly fixed to the vertically-operating screw *b*, engaging with corresponding threads of the screw-box *c*, the adjustable buffer *d*, held by screw *h*, within the sleeve *e*, secured to the frame E', the die F, secured to the lower end of the buffer *d* by the screw *g*, the knife I, vise J, screw K, base-plate L, and guides M, the whole forming a complete device, substantially as shown and described.

377,299. MITER-BOX. BENJAMIN F. GARDINER, Cobleskill, N. Y. Filed Sept. 9, 1887. Serial No. 249,241. (No model.)

Claim.—1. In a miter-box, the combination, with the table A, of the rectangular guides C C, the vertical portions of which extend inward to the center of the table, one of the guides being provided with a plate pivoted to the center of the table and the other with a ring which moves around the plate, and a saw which is supported above the table in suitable guides, substantially as shown.

2. The combination of the table, the rectangular frames or guides C C, which are pivoted at or near the center of the table, the slotted standards I, which are pivoted to opposite sides of the table, and having their lower ends extending below the table and connected together by means of the cross-piece J, the slotted plates L, clamping-bolts P, and the saw, which is passed through the standards, substantially as described.

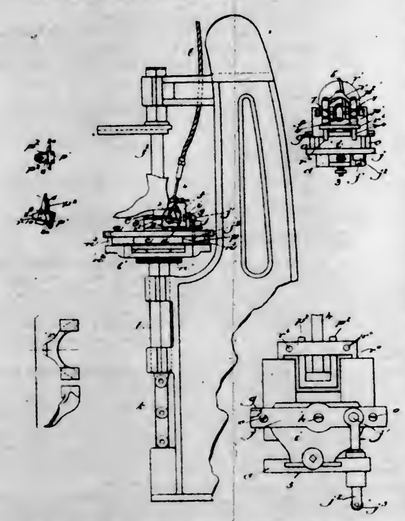
877,299.



3. The combination of the clamps T, the slotted perforated plates S, the rod U, which connects the upper ends of the clamps T, and which passes through the holes made in the plates S, the standards I, pivoted to opposite ends of the table and provided with slots R, in which the plates S slide vertically, the saw, the table A, and the guides C C, substantially as set forth.

4. The combination of the table A, having the recesses Y, the vertical standards I, having the lugs Z, cross-pieces L, provided with openings M N Q, the bifurcated cross-piece, which connects the lower ends of the standards through the cross-pieces L, and the clamping-screws P, substantially as specified.

877,300. HEELING-MACHINE. CHARLES W. GLIDDEN, Lynn, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Oct. 21, 1887. Serial No. 252,991. (No model.)



Claim.—1. The tipping plate, the laterally-movable carriage thereon, and the segmental cutter-carrying frame having bearings 8 and 10, combined with a rotating cutter secured to a short rigid spindle, 4, mounted in said bearings to operate substantially as described.

2. The tipping plate, the laterally-movable carriage thereon, and the segmental cutter-carrying frame, combined with a rotating cutter, and with a cam and connecting means to control the movement of the tipping plate, to operate substantially as described.

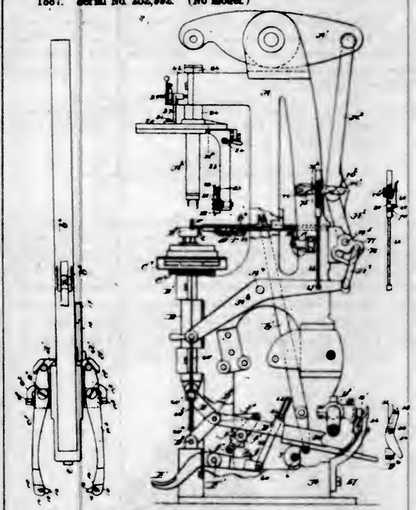
3. The tipping plate, the laterally-movable carriage thereon, and the segmental cutter-carrying frame, combined with a rotating cutter, and with a rotating flexible shaft to rotate the cutter, substantially as described.

4. In a heeling-machine, a carriage and a rand-guide, combined with a rotary cutter, and a segmental frame to carry the said cutter, the said frame and rand-guide having a slot-and-pin connection whereby the rand-guide has only a longitudinal movement with relation to the carriage, while the segmental frame moves to trim the heel to a greater or less curve under the heel-seat, substantially as described.

5. In a heeling-machine, a nail-box, B, a spindle to hold the heel of the shoe against the nail-box, a rotary cutter, a rotary flexible shaft to drive it, and a rand-guide, combined with the segmental frame to carry the cutter, and a carriage in which the segmental frame moves, as described, as the cutter moves about the heel from breast to breast, the combination being and operating substantially as described.

6. The die-bed spindle, the nail-box, the trimming-lever thereon, turn-table plate *d*, bearing-block *i*, tipping plate, cam *p*, means, substantially as described, between the said cam and tipping plate to move the latter, and the carriage and rand-guide mounted therein, combined with the segmental frame and the rotating cutter mounted thereon, the parts being constructed to operate substantially as described.

877,301. HEELING-MACHINE. CHARLES W. GLIDDEN, Lynn, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Oct. 21, 1887. Serial No. 252,992. (No model.)



Claim.—1. In a heeling-machine, jaws to grasp and release a top lift, combined with loosely-connected dogs carried thereby and adapted to be moved independently of and vertically in the ends of the jaws, as and for the purposes set forth.

2. The shoe 20, for supporting the last-holding spindle, and the projection 22 thereof, combined with the bifurcated bracket 23, clamped to the said projection, substantially as described.

3. In a heeling-machine, the bracket 23 and its attached block 26 and cross-slide 28, combined with the vertically-movable slide 29, having ratchet-teeth, and with a pawl to engage the said teeth and hold the slide 29 in position, substantially as described.

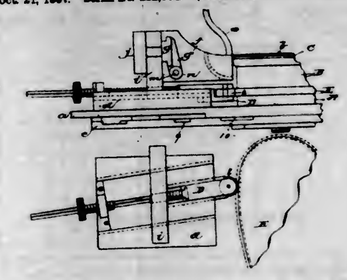
4. In a heeling-machine, the cross-slide 28 and the vertically-movable slide 29, having ratchet-teeth and pawl to engage the said ratchet-teeth, combined with thumb-pieces by which to operate the said pawl and disengage it from the ratchet-teeth, the said thumb-pieces being in position to be engaged by either hand of the operator, substantially as described.

5. In a heeling-machine, the shoe 20, to receive and support the foot of the last-holding spindle, and its attached stands and bearing-stands, combined with screws rotatable in unison to control the position of the said shoe with relation to the spindle 84, supporting it, substantially as described.

6. In a heeling-machine, the die-bed spindle, its toggle-connection D, the lever D^4, and the rotating crank-shaft, combined with a cam or projection, as 52, and with a locking lever or device to prevent the raising of the lever D^4 except at the proper time, substantially as described.

7. In a heeling-machine, the die-bed spindle, its connected toggle D, and lever D^4, and treadle F, combined with a movable stopping-lever actuated by the toggle-joint connection D, and adapted to prevent the depression of the outer end of the said treadle except at the proper time, substantially as described.

877,302. HEEL-TRIMMING MACHINE. CHARLES W. GLIDDEN, Lynn, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Oct. 21, 1887. Serial No. 252,994. (No model.)



Claim.—1. In a heel-trimming machine, a turn-table plate, a trimming-knife, a knife-holder, and a plate on which the said knife-holder is made adjustable, combined with a bearing-plate or cross-slide, *i*, arranged and adapted to slide diagonally in or with relation to the turn-table, as and for the purpose described.

2. In a heel-trimming machine, a turn-table plate, a trimming-knife, a knife-holder, and a plate on which the said knife-holder is made adjustable, combined with a bearing-plate or cross-slide, *i*, arranged and adapted to slide diagonally in or with relation to the turn-table, and with a pattern-plate and nail-box, substantially as described.

3. The nail-box, its attached tubular bolt and inclosed spiral spring held therein at or near one end, the upper end of the spring extending laterally from the bolt, combined with the top-lift plate, substantially as and for the purpose described.

4. The nail-box, its shank having a stud or projection, 23, combined with the plate *b*, having an annular groove, as described, to be entered by the said stud or projection, substantially as described.

5. The nail-box, its shank having a stud or projection, 23, combined with the plate *b*, having an annular groove, as described, to be entered by the said stud or projection, and with a bolt to hold the plate *b* at one side of the said shank, substantially as described.

6. In a heel-trimming machine, a plate or device, as *d*, having a movement about the heel in a heel-shaped path, combined with a heel-trimming knife or blade, and support therefor, whereby the said knife or blade, besides its movement toward and from the heel, has also a movement backward and forward with relation to the direction of movement of the blade about the heel, to, as described, provide for the normal presentation of the cutting-edge of the knife or blade to heels of different sizes, substantially as described.

877,303. MACHINE FOR MAKING POP-CORN BALLS. WILLIAM T. GOODWIN, Jr., Philadelphia, Pa. Filed Apr. 26, 1887. Serial No. 236,157. (No model.)

Claim.—1. In a device of the character named, a pan with a discharge-throat, in combination with a charger fed from said throat, sliding sectional molds at one end of said charger, and a plunger having a sectional mold and adapted to enter said charger, substantially as described.

2. A pan having a discharge-throat, a charger fed from said throat, sliding sectional molds, and a plunger and perforated steam-pipes at the ends of said charger, said parts combined and operated substantially as described.

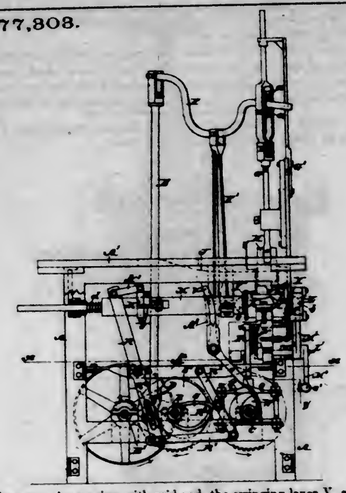
3. The slides L, each carrying a section of a mold, in combination with the levers M', rocking shafts, the jointed arms N, the rod P, and mechanism, substantially as described, connected to said rod P for operating the same, substantially as described.

4. A charger, the slides L, each having a sectional mold, a plunger provided with a mold, a spring throw-off within said plunger, the pivoted lever U, and mechanism, substantially as described, connected to a rotary shaft and adapted to operate the said lever U, said parts being combined substantially as and for the purpose set forth.

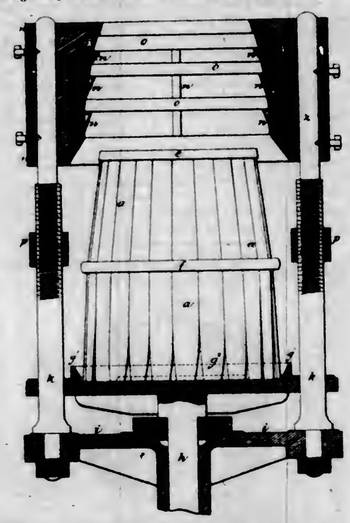
5. The plunger M, provided with mold *c*, the rod T in said plunger, the spring X, encircling said rod, the lever U, connected with said plunger and engaging with said rod, the swinging lever V, and mechanism, substantially as described, connected to the driving-shaft, for operating said swinging lever V, said parts being combined substantially as and for the purpose set forth.

6. The frame A, the shaft B, the crank-arm D, connected to said shaft B, the rod E, the pivoted beam F, the rising and falling bar G, with rollers *a*, the upright G', the plunger H, attached to lower end of said bar G, and the tray J, with discharge-throat H, said parts being combined substantially as and for the purpose set forth.

877,308.



877,304. MACHINE FOR MAKING CASKS. CHARLES HEWITT and WILLIAM W. HEWITT, Swanscombe, County of Kent, England. Filed June 23, 1886. Serial No. 205,960. (No model.) Patented in England Jan. 11, 1886, No. 446; in France June 8, 1886, No. 176,630; in Belgium June 9, 1886, No. 73,418; in Germany June 16, 1886, No. 39,240; in Portugal July 9, 1886, No. 1,063, and in Spain Aug. 27, 1886, No. 9,247.

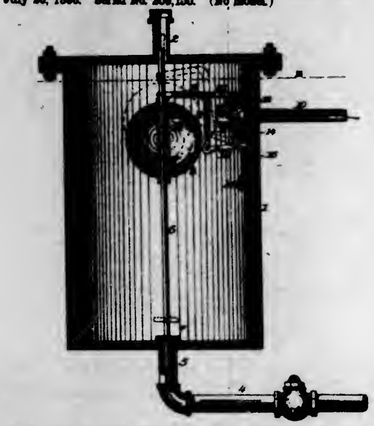


Claim.—1. The method hereinbefore described of trussing and applying permanent hoops to a cask, consisting in forcing the staves when suitably arranged and already grooved to receive the head, but not bent to final form into a bell or cone, with the hoops supported as described, and, as the staves are drawn together again by the bell or

cone, inserting the head into its place, thereby simultaneously trussing and hooping, substantially as set forth.

2. The trussing cone or bell having grooves to receive the permanent hoops of the cask, and shoulders in the grooves which support the hoops on the upper side, and yielding supports beneath the grooves which sustain the hoops on the under side, substantially as described.

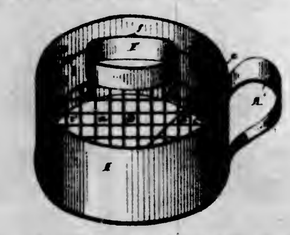
377,305. STEAM-TRAP. FRANK J. HLADKY, Topeka, Kans. Filed July 26, 1886. Serial No. 209,155. (No model.)



Claim.—1. In a return steam-trap, the combination of a casing having a water-inlet and a water-discharge in the bottom, a vertically-sliding rod having a floating ball sliding upon it, a steam-inlet having an upwardly-opening valve provided with a downwardly-extending stem, a pivoted rod bearing against the stem and having a rectangularly-curved arm pivoted to its free end and to the rod above the ball, a steam-exhaust having an upwardly-opening valve with an upwardly-projecting stem, and a lever fulcrumed over the valve and having its longer arm pivoted to the sliding rod, and having a weight upon its shorter arm and having the valve-stem pivoted to the short arm, as shown and set forth.

2. In a return steam-trap, the combination of a casing having a closed central tube in its top, and having a water-inlet pipe, 3, and a water-discharge pipe, 4, entering at the center of the bottom, with a vertical portion, 5, a vertically-sliding rod having its ends in the top tube and vertical portion of the discharge-pipe, and provided with a valve or disk, 7, near its lower end, a hollow floating ball sliding with a diametrical tube upon the rod, a steam-inlet pipe, 10, having a valve-casing, 11, and upwardly-opening valve 12, provided with downwardly-extending stem 13, a rod, 15, pivoted upon lug 14 and having notch 16, rectangularly-bent arm 17, pivoted to the rod 15 and to the vertically-sliding rod, exhaust-pipe 18, having valve-casing 19, and upwardly-opening valve 20, having upwardly-extending stem 21, and lever 22, fulcrumed upon lug 23 and pivoted to the rod 6 and to the valve-stem, and having a weight depending from the end of its short outer arm, as shown and set forth.

377,306. PAINT-CUP. NETTIE ILLOWAY, Cincinnati, Ohio. Filed Apr. 12, 1887. Serial No. 234,535. (No model.)



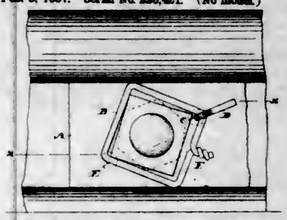
Claim.—1. In a cup for cleaning paint-brushes, the combination, with the body of the cup, of the skeleton wire scrub-floor supported above the bottom of the cup, and the drying-bar above the skeleton floor, substantially as set forth.

2. In a cup for cleaning paint-brushes, the combination, with the body of the cup, of the skeleton wire scrubbing-floor, and the suspending hangers provided with hooks at their upper ends, whereby the scrubbing-floor is adapted to be tilted edgewise to facilitate removal from the cup, substantially as set forth.

3. In a cup for cleaning paint-brushes, the combination, with the body of the cup, of the ring B, of less diameter than the cup, the skeleton wire scrubbing-floor, and the hangers attached to the floor and provided at their upper ends with hooks engaging with the ring, substantially as set forth.

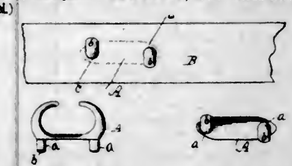
4. In a cup for cleaning paint-brushes, the combination, with the body of the cup, of the soap-holder attached to the inner side thereof, the drying-bar, and the skeleton wire scrubbing-floor supported below the soap-cup, and the drying-bar, substantially as set forth, and adapted to be tilted edgewise for removal.

377,307. NUT-LOCK. ROBERT M. JOHNSON, Mount Holly, N. J. Filed Feb. 3, 1887. Serial No. 226,421. (No model.)



Claim.—The fish-plate A, having secured thereto the flexible pin D, the angular link B, formed of wire with twisted ends and of such size relative to the nut as to permit the passage of the pin between the nut and link, all of said parts being combined and arranged substantially as and for the purpose set forth.

377,308. OVERCHECK CROWN-LOOP. HENRY JOHNSON and EDWARD JACOBUS, Newark, N. J., assignors to the Sargeant Manufacturing Company, same place. Filed Nov. 30, 1887. Serial No. 256,587. (No model.)



Claim.—The overcheck crown-loop herein described, having two attaching-studs projecting from its under side respectively near its two ends, each stud having a fastening-extension bent abruptly substantially at right angles to the stud and transversely to the body of the loop, and the two extensions pointing in approximately-opposite directions.

377,309. CARPET-STRETCHER. JOHN A. KIENARDT, Dayton, Ohio, assignor of one-half to Philip T. South, same place. Filed Aug. 3, 1887. Serial No. 246,017. (No model.)



Claim.—A carpet-stretcher consisting of the toothed cross-head B, having arms C and guides D, the rack-bar A, interposed between the said arms and guides, the toothed wheel F, pivoted to the outer ends of the arms C, the lever E, having bifurcated arms journaled on the outer faces of the arms C, and having a pawl, G, automatically engaging the wheel F, and said arms C having the pivoted pawl H, also engaging said wheel F, the said pawl G also provided with an arm, *h*, operating under the arms C, as shown and described, and for the purpose set forth.

377,310. HINGE. FRANK H. KENNEY, Washington, D. C. Filed Oct. 3, 1887. Serial No. 251,327. (Model.)

Claim.—1. A hinge comprising a leaf having a pintle, a locking-stud upon said pintle, and a guiding-stud separate from said pintle, and a leaf having a slot to receive said pintle and separate recesses to receive said locking-stud and said guiding-stud, respectively, substantially as described.

377,310.



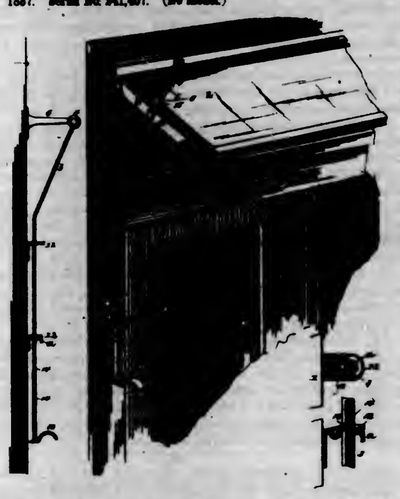
2. A hinge comprising a leaf having a pintle, separate locking-studs projecting from said pintle, and a guiding-stud separate from said pintle, and a leaf having a projecting portion, a slot formed therethrough to receive said pintle, and separate recesses upon its opposite sides to simultaneously receive said locking-studs and guiding-stud, substantially as described.

3. In a hinge, a leaf having a pintle, separate locking-studs projecting from said pintle, a guiding-stud separate from said pintle and inclines at opposite sides of said pintle, and a leaf having a projecting portion, a slot therethrough to receive the pintle, separate recesses upon its opposite sides to simultaneously receive said locking-studs and said guiding-stud, and inclines to engage the inclines of the opposite leaf, substantially as described.

377,311. MANUFACTURE OF SALICYLIC ACID ESTER. CARL HEILES, Radebeul, Saxony, Germany, assignor to Dr. F. Von Heyden, Radebeiger, same place. Filed Sept. 15, 1887. Serial No. 249,790. (No specimens.)

Claim.—The within-described process of producing salol, which consists in mixing together equal molecules of salicylic acid with equal molecules of a phenol, raising the temperature to about 170° centigrade, and then passing a current of phosgene gas through the mixture, substantially as set forth.

377,312. TRANSOM-LIFTER. ALBERT LADENBURG, Council Bluffs, Iowa, assignor of one-half to A. B. Walker, same place. Filed June 15, 1887. Serial No. 241,407. (No model.)



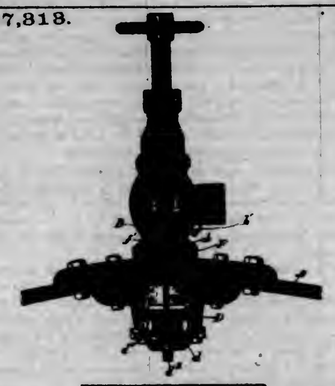
Claim.—The combination, with a transom-window, of a lifting-rod having notches and bent outward, as specified, and a series of fixed brackets, with one of which the spring of said rod causes it to engage, as shown and described.

377,313. AUXILIARY BOILER ATTACHMENT. JOHN H. LADNAM, Newburyport, Mass. Filed Apr. 11, 1887. Serial No. 234,242. (No model.)

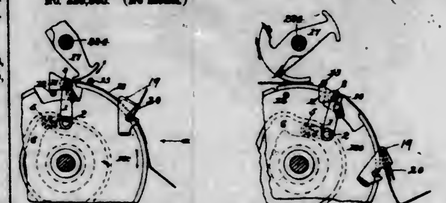
Claim.—The combination, with receptacle A, having an outlet, exterior outlet-controlling device, B, and interior outlet-controlling device, D, of a spindle, F, fast to cylinder *b*, arranged and operating substantially as and for the purpose set forth.



377,318.

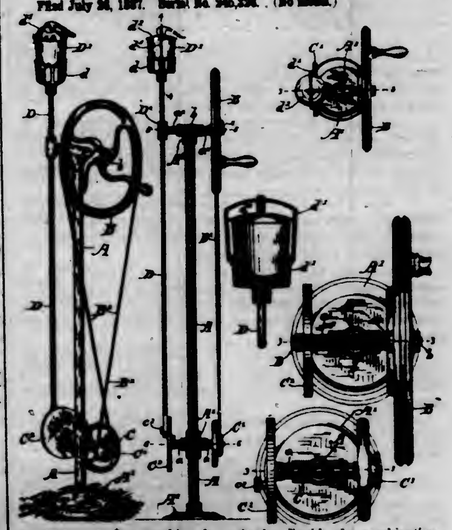


377,314. PAPER-BAG MACHINE. WILLIAM A. LOOMIS and WILLIAM H. HOMAN, Hartford, Conn., assignors to Felix W. Leinbach and Clarence A. Wells, both of Bethlehem, Pa. Filed Mar. 7, 1887. Serial No. 230,205. (No model.)



Claim.—The combination of the arm 1, provided with the clip 8, the presser 17, having a working-surface corresponding to the opposite surface under the bag-blank, and the pair of clips 19, pivoted, constructed, and operating substantially as pointed out, the whole being so arranged that the body of the bag-blank is retracted and the flap 20 is folded over, substantially as described and shown.

377,315. MACHINE FOR AGITATING LIQUIDS. JOHN F. MAINS, Indianapolis, Ind., assignor of one-half to Willard H. Short, same place. Filed July 26, 1887. Serial No. 245,236. (No model.)



Claim.—1. In a machine for agitating liquids, the combination of the frame, the crank-shaft, a pivoted bearing on said frame, and a rod carrying the receptacle for the liquid, connected at one end to

said crank-shaft and passing through said pivoted bearing near the other end, whereby an oscillating as well as reciprocating motion is given the vessel containing the liquid, substantially as set forth.

2. A frame-work for a machine for agitating liquids, consisting of a standard, A, composed of gas-pipe divided into two pieces and connected by a four-way coupling and mounted in a foot or base, and provided with a three-way coupling at its upper end, whereby bearings are provided for a crank-shaft and for a rod or shaft for the mechanism at the upper end, substantially as set forth.

3. The combination, in a machine for agitating liquids, of the standard or frame A, the hand crank-wheel B, the crank-shaft C, a pulley thereon, a belt connecting said pulley and said crank-wheel, a crank-wheel, C^2, on the other end of said shaft C, a rod, D, connected to a wrist-pin thereon, and an oscillating bearing, D', through which said rod passes.

4. The combination, in a machine for agitating liquids, of a frame consisting of a standard provided with an upper and a lower set of bearings, a shaft mounted in the upper set, having a hand crank-wheel loosely mounted on one end and a bearing-block rigidly secured to the other, a rod for carrying a receptacle mounted in said bearing-block, and the means for operating said rod mounted in said lower set of bearings and geared to be driven from said hand crank-wheel, substantially as shown and described.

377,316. IRON OR STEEL INGOT.

CHARLES A. MARSHALL, Johnstown, Pa. Filed Mar. 5, 1886. Serial No. 194,132. (No model.)

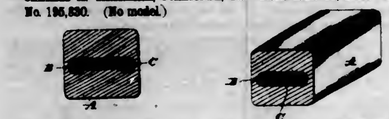


Claim.—1. An ingot having a cavity filled with yielding refractory material, the ingot metal being thinner at two diametrically-opposite points of the cavity than at intermediate points, substantially as set forth.

2. An ingot having a cavity lined with superior metal, the ingot metal being thinner at two diametrically-opposite points of the cavity than at intermediate points, substantially as set forth.

377,317. TUBE-BLANK AND METHOD OF MAKING THE SAME.

CHARLES A. MARSHALL, Johnstown, Pa. Filed Mar. 19, 1886. Serial No. 195,830. (No model.)



Claim.—1. In the process of making a tube-blank, the following steps, viz: first, casting an ingot around a core, the wall of which consists wholly or partially of superior metal, and, secondly, reducing the ingot to a flattened blank by external pressure.

2. In the process of making a tube-blank, the following steps, viz: the construction of a core of yielding refractory material incased wholly or partially within a layer of superior metal, casting an ingot around the said core, and reducing the ingot so constituted to a flattened blank by external pressure.

3. In the process of making a tube-blank, the following steps, viz: casting an ingot around a core of refractory material partially or wholly incased in superior metal and reducing the ingot so constituted to a flattened form by "flat and edge rolling."

4. In the process of making a tube-blank, the following steps, viz: casting an ingot about a core, two diametrically-opposite points of which extend nearer the outer faces of the ingot than the intermediate points, and reducing the ingot so cast and with its core therein to a flattened blank by external pressure.

5. In the process of making a tube-blank, the following steps, viz: casting an ingot having an interior lining of superior metal, reducing the ingot to a flattened form by flat and edge rolling, and trimming the edges.

6. A blank for making a seamless tube, consisting, essentially, of a flattened metallic band having a partial or complete lining of superior metal, substantially as set forth.

7. A blank for making a seamless tube, consisting, essentially, of a flattened metallic band having a partial or complete lining of superior metal and provided with walls thickened at intervals, substantially as set forth.

8. A blank for making seamless tubes, consisting, essentially, of a flattened metallic band having a partial or complete lining of superior metal and trimmed edges, substantially as set forth.

377,318. SEAMLESS TUBE AND PROCESS OF MAKING THE SAME.

CHARLES A. MARSHALL, Johnstown, Pa. Filed Mar. 30, 1886. Serial No. 197,194. (No model.)



Claim.—1. In the process of making seamless tubes, the following steps, viz: casting an ingot around a core of refractory material, reducing the ingot with its core therein to a flattened blank, and opening the blank into a tube.

2. In the process of making seamless tubes, the following steps, viz: casting an ingot around a core of refractory material partially or entirely incased by superior metal, reducing the ingot to a flattened blank, and opening the blank into a tube.

3. In the process of making seamless tubes, the following steps, viz: casting an ingot around a transversely-oblong core of refractory material partially or entirely incased in superior metal, reducing the ingot to a flattened blank, and opening the blank into a tube.

4. In the process of making seamless tubes, the following steps, viz: casting an ingot having a longitudinal tubular cavity, reducing the cast ingot to a flattened blank having the metal unequally disposed in cross-section, and opening the blank by external edge pressure.

5. In the process of making seamless tubes, the following steps, viz: casting an ingot around a core of refractory material, reducing the cast ingot to a flattened blank by flat and edge rolling, opening one end of the blank, and completing the opening of the blank by edge pressure between rolls.

6. In the process of making seamless tubes, the following steps, viz: reducing a hollow ingot containing refractory material to a flattened blank by edge and flat rolling, opening the blank by first opening one end, subsequently passing the blank edgewise through pressure-rolls, and finishing the tube by drawing the opened blank over a bulb or mandrel.

7. In the process of making seamless tubes, the following steps, viz: reducing a hollow ingot containing refractory material to a flattened blank by edge and flat rolling, finishing the edges of the blank to the proper thickness, opening the blank by first starting open one end and subsequently passing the blank between edge-pressure rolls, and finishing by drawing the opened blank over a bulb or mandrel.

8. In the process of making seamless tubes, the following steps, viz: casting an ingot of substantially rectangular form in cross-section and having a transversely-oblong powdered or friable core of refractory material, reducing the ingot to a flattened blank by flat and edge rolling, and opening the blank into a tube by means of a bulb or mandrel working internally therein.

9. In the process of making seamless tubes, the following steps, viz: the opening of a flattened blank by first starting one end open and subsequently passing it between a pair of edge-pressure rolls, and then completing the tube by passing it over a bulb or mandrel.

10. In the process of making seamless tubes, the following steps, viz: forming a core of refractory material partially or completely incased in superior metal, casting an ingot around the core, reducing the ingot thus constituted to a flattened blank, welding the ingot metal to the superior metal either in casting or reducing, or partly in both, opening the blank by edge pressure, and completing the tube by drawing the opened blank over a flat-pointed mandrel.

377,319. ELECTRIC MOTOR.

CHARLES T. MASON, Sr., Sumter, S. C., assignor to the Maryland Electric Motor Manufacturing Company of Baltimore City. Filed Dec. 24, 1886. Serial No. 222,436. (No model.)



Claim.—1. The combination of an insulating-block and the divided axle provided with means for supporting said block, consisting of lugs so arranged that when said lugs are secured to the said block the lugs on one side of said block will be opposite spaces on the other side of the block, whereby conducting connection through the fastenings for said lugs is prevented, substantially as described.

2. The combination, with the insulating or non-conducting block C, of the divided axle B, the boxes D, provided with the lugs *e*, so arranged that when said boxes are secured to the said block C the lugs *e* of the boxes D on one side of the said block C will be opposite the space between the lugs *e* of the box D on the other side of the said block C, substantially in the manner and for the purpose set forth.

377,320. BRAID.

JOHN MCCARRY, Providence, R. I., assignor to the New England Belt Company, same place. Filed June 6, 1887. Serial No. 240,691. (Specimens.)

Brief.—The invention consists in a double flat diamond braid, to be used for trimmings, suspender-loops, &c., showing one material on its face and edges and another material on its back.

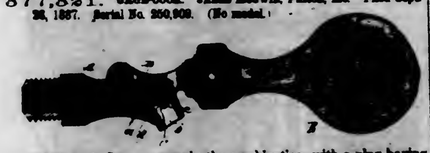


Claim.—1. A double flat diamond braid having one face and the two edges of one material and the back of another material, substantially as and for the purpose set forth.

2. A double flat diamond braid constructed of two sets of strands, one set of which constitutes one side or face and the two edges of the braid and the other set constitutes the other side or back of the braid, substantially as herein specified.

377,321. GAGE-COCK.

JAMES MCGWIN, Fulton, Mo. Filed Sept. 26, 1887. Serial No. 250,909. (No model.)



Claim.—1. In a gage-cock, the combination, with a plug having an orifice therein, of a removable packing-slide having a yielding packing material therein adapted to be seated over the orifice, substantially as set forth.

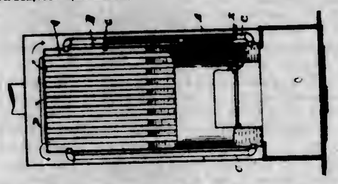
2. In a gage-cock, the combination, with a plug having an orifice therein, of a movable rigid slide carrying a yielding packing adapted to be seated over the orifice, and caps adapted to be removably secured to the plug, substantially as and for the purpose set forth.

3. In a gage-cock, the combination, with a plug having an orifice therein, of a removable packing-slide having a yielding packing therein adapted to be seated over the orifice, and a screw compressional plug dovetailed at one end to the slide, substantially as set forth.

4. A removable packing-slide constructed of rigid material and having a recess therein and a yielding packing located in said recess, substantially as set forth.

377,322. BOILER FOR STEAM-HEATING.

HENRY MCLAUGHLIN and CHARLES A. MCLAUGHLIN, Lebanon, Pa. Filed Sept. 4, 1886. Serial No. 212,755. (No model.)

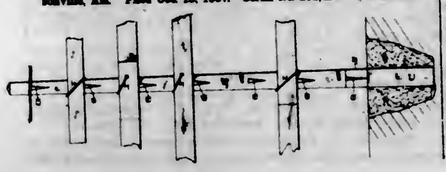


Claim.—1. A steam-heating apparatus having an outer casing, an inner boiler, a circular pipe within the outer casing leading from top of boiler to steam-supply pipe, the pipes C, leading from upper to lower part of boiler outside of the same, but within the casing, the coil H, communicating with the boiler and the return-pipe, and a fire-pot, all substantially as and for the purpose set forth.

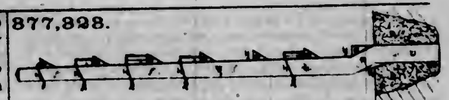
2. In a steam-heating apparatus, a boiler with outer casing, in combination with a return-pipe, and a coil of pipe communicating with said return-pipe and boiler and located between said boiler and casing, all substantially as described.

377,323. METALLIC FENCE-POST.

LAWRENCE D. MILLER, Jacksonville, Ala. Filed Oct. 15, 1887. Serial No. 252,456. (No model.)



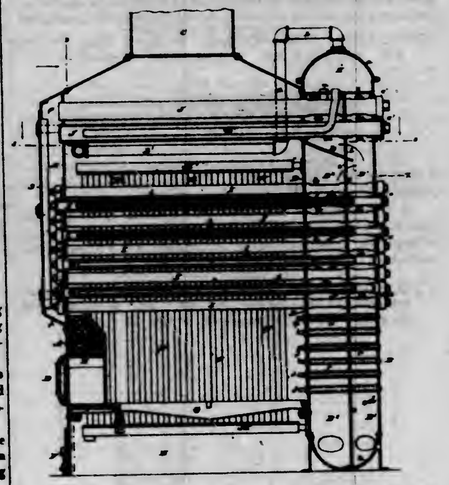
377,328.



Claim.—A fence-post provided with rests or supports G for the ends of the rails or boards, and the sharp-pointed projections H, placed at suitable distances above the rests, and which catch in the sides of the rails or boards, substantially as set forth.

377,324. STEAM-GENERATOR.

THOMAS F. MORRIS, Jersey City, N. J. Filed July 14, 1887. Serial No. 244,267. (No model.)



Claim.—1. In a steam-generator, the generator-chamber constructed with plane front and back plates and with a tight partition, *c*, extending up to the water-line with communication above between the two parts of said chamber, and the compound generating-tubes mounted in the plates and partition of said chamber and extending across the combustion-chamber over the fire-bed, substantially as set forth.

2. In a steam-generator, the combination, with the front plate and side plates of the combustion-chamber, of the generator-chamber B, forming one wall of said chamber, and the compound generating-tubes mounted at their one ends in the generator-chamber and at their other ends in the opposite plate of the combustion-chamber, said generating-tubes having suitable apertures within the generator-chamber for the ingress and egress of water, substantially as set forth.

3. In a steam-generator, the combination of a generator-chamber, B, of substantially the form shown, and provided with a partition, *c*, of the generating-tubes mounted therein and comprising each an exterior tube, I, with openings *h* and *h'*, arranged on opposite sides of said partition in the chamber B, and the inner tube, *i*, mounted in tube I, substantially as set forth, whereby a proper circulation is effected in said tubes.

4. In a steam-generator, the combination, with the generator-chamber, forming one wall of the combustion-chamber and fire-box, and the plates A A' A', forming the other sides of the same, of the header M, arranged below the grate and connected at its one end with the generator-chamber, the header M', arranged above the water-level in the combustion-chamber and also connected with the generator-chamber, and the tubes N N, connecting said headers, said tubes and headers being arranged near the wall of the combustion-chamber, substantially as set forth.

5. In a steam-generator, the combination, with the generator-chamber B, having a partition, *c*, which divides said chamber below the water-line into chambers B' and B^2, and having also a deflecting-plate, *k*, over chamber B^2, of the compound generating-tubes mounted in said generating-chamber, substantially as set forth.

6. In a steam-generator, the combination, with the generator-chamber B and the generating-tubes mounted therein, of the compound superheating or drying tubes mounted in said generator-chamber above said generating-tubes, said superheating-tubes comprising each an exterior tube, J, open to the chamber B and extending across the combustion-chamber, and an inner tube, *n*, opening into the steam-dome, substantially as set forth.

7. The generator-chamber B, provided with a partition, *c*, and with tubular stays r^2, extending across said generator and opening into the fire-box at their inner ends, said stays being each provided at its outer end with a grooved plug or stopper, r^3, substantially as set forth.

8. The combination, with the generator-chamber, of the partitions *v' v'*, across the same below the steam-dome K, forming chambers, the drying-tubes J, arranged in tiers and secured in the walls of said generator-chamber, said tubes J provided with apertures *m m*, the chambered stoppers *w*, and the tubes *n* and *n'*, arranged substantially as set forth.

9. The header F for the generating-tubes, constructed in the form of a shallow box, provided with holes to receive two or more of said tubes, with partitions *s s*, separating each of said tubes from the others, and with a cap and screw fastening therefor, substantially as set forth.

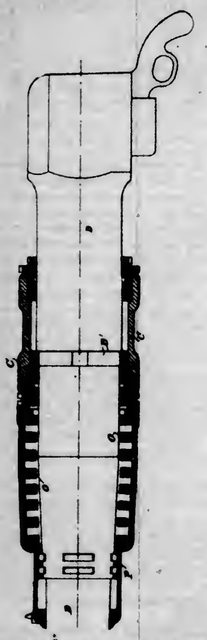
877,325. **COFFIN-FASTENER.** WILLIAM J. NOBLE, New York N. Y. Filed Aug. 6, 1887. Serial No. 246,360. (No model.)



Claim.—1. The combination of a casket-body, B, having a socket, F, provided with a bridge, *f*, a lid, A, having a catch, D, and spring-pressed locking-hook H, substantially as set forth.

2. The combination of a casket-body, B, having a socket, F, provided with a bridge, *f*, a lid, A, having a catch, D, and a spring-pressed locking-hook, H, having tapering hook-shaped ends *h* h^2 and lateral finger-piece h^3, substantially as set forth.

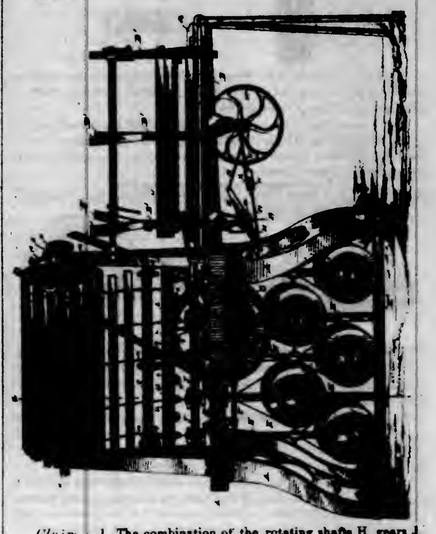
877,326. **RECOIL-MOUNTING FOR ORDNANCE.** ANDREW NOBLE, Newcastle-upon-Tyne, England. Filed Dec. 1, 1887. Serial No. 256,652. (No model.) Patented in England Oct. 23, 1885, No. 12,730.



Claim.—1. The combination, in a carriage or mounting for a quick-firing gun, of a slide-frame having trunnions and carried by these trunnions in bearings on a pivoted support, and a gun with cylindrical surfaces formed upon it carrying a piston-ring within a cylindrical cavity in the slide-frame, such cylindrical cavity being closed by glands at its ends filled with liquid, and serving as a hydraulic buffer to control the movement of the gun, substantially as described.

2. The combination, in a carriage or mounting for a quick-firing gun, of a slide-frame having trunnions and carried by these trunnions in bearings on a pivoted support, and a gun with cylindrical surfaces formed upon it, carrying a piston-ring within a cylindrical cavity in the slide-frame, such cylindrical cavity being closed by glands at its ends filled with liquid, and serving as a hydraulic buffer to control the movement of the gun, and a coiled spring surrounding the gun in front of the slide-frame and abutting upon a collar provided upon the gun, such spring being compressed when the gun recoils, and by its reaction bringing the gun back to the firing position, substantially as described.

877,327. **SLAT-AND-WIRE-FENCE MACHINE.** GEORGE W. PACKER, Rock Falls, Ill. Filed Nov. 29, 1887. Serial No. 256,472. (No model.)



Claim.—1. The combination of the rotating shafts H, gears J, pushers M, collars N, pins O, boxes N', bars N^3, belt T^5, arm T^3, shaft T', arm T, pitman S^2, shaft S', pinion S, gear P, and shaft D', substantially as shown, and for the purpose described.

2. The combination of the mutilated gear E, mutilated pinion F, bevel-gear G, horizontal bevel-gears I, and horizontal gear J, provided with guides L and wire-holes J', substantially as shown, and for the purpose described.

3. The combination of the mutilated gear P, pinion S, shaft S', crank S^2, pitman S^3, rock-shaft T', provided with arms T and T^3, belt T^5, and reciprocating bar N^3, pins O', pushers M, and shaft H, substantially as shown, and for the purpose described.

4. The combination of the winding-shaft 11, provided with ratchet 12, horizontal arms 14, provided with pawl 15, pitman 16, lever 17, rock-shaft 69, provided with arm 70, pitman 71, arm 18, shaft T', and pawl 19, substantially as shown, and for the purpose described.

5. The combination of the rock-shafts 22, provided with stirrers 23 and arm 29, pinion 24, provided with wrist-pin 25, pitman 26, lever 27, vertical pitman 28, and arms 30, and connecting-pitman 31, substantially as shown, and for the purpose specified.

6. The combination of the rock feed-shaft 32, provided with arm 48, dogs 33, mutilated gear 34, mutilated pinion 35, shaft 72, provided with wrist-pin 36, pitman 37, rock-shaft 39, provided with arm 38, arm 46, post 47, segmental gear 40 rack 41, vertical rod 42, provided with arm 49, and coiled spring 50, substantially as shown, and for the purpose described.

7. The combination of the pulley 55, belt 53, pulleys 52, bars 73 dog 56, chains 75 and 59, pitman 38, and means for operating the same, substantially as shown, and for the purpose described.

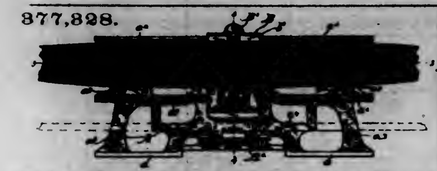
8. The combination of the mutilated gear 34, pinion 35, shaft 74, provided with wrist 36, pitman 37, rock-shaft 39, provided with arms 38 and 58, rods 59, chains 75, pulley 55, bars 73, each provided with flange 51 and belt-pulleys 52, belt 53, and dog 56, substantially as shown, and for the purpose described.

9. The combination of the shafts 62, arms 63, sheaves 64, arms 65, pitman 66, arm 67, and rock-shaft 69, substantially as shown, and for the purpose described.

877,328. **SAW-JOINTER.** ROBERT R. POINDEXTER, Indianapolis, Ind. Filed Oct. 25, 1887. Serial No. 253,288. (No model.)

Claim.—1. The combination, with the block A, formed with appropriate rests for the file, of the clamp B, constructed to secure said file in position when laid into said block either in a flat position or on its edge, substantially as set forth.

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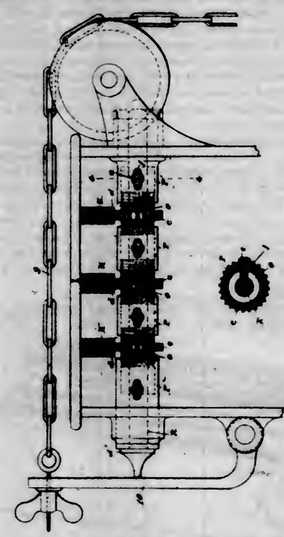


2. The combination, with the block A, formed with the bearing-points a^2, a^4, and a^5, of the clamp B, mounted to slide in the way formed in said block, and a screw for operating the same, said clamp being formed with a flange, *b'*, at its top adapted to engage with the edge of the file when placed in said block in a flat position, and with a clamping-piece at its bottom adapted to engage with the side of said file when placed in said block edgewise.

3. The combination, with the block A, constructed substantially as shown and described, of the block B, mounted in a way formed therein and formed with an upper and lower clamping-jaw engaging with the file when in different positions, and the clamping-screw E, extending down through a notch or perforation formed in said block and engaging with a screw-threaded lug, a^6, formed on said block, substantially as set forth.

877,329. **EVENING MECHANISM FOR COTTON-OPENERS.** JAS. C. POTTER, Lowell, Mass. Filed Aug. 22, 1887. Serial No. 247,543. (No model.)

Brief.—The evener levers are formed as elbow-levers, the upper arms of which communicate motion to sliding bars having racks on their under sides, which engage and rotate pinions having right-and-left-handed screws formed upon their axles. Said screws engage non-rotatable couplings, the effect being to elongate or shorten the shaft made up of said couplings and pinions, the motion being communicated to the belt-shifting mechanism through a lever bearing upon the movable end of the shaft and a connecting-chain.



Claim.—1. In an evener mechanism, the combination, with an evener plate and lever and a sliding rack-bar and means whereby said rack-bar is held up against said lever with yielding pressure, as described, of a rotatable section geared with said rack-bar, a non-rotatable section with which said rotatable section is connected by a screw-joint, so that the rotary movement of the rotatable section shall cause a longitudinal movement of the one section relatively to the other, and belt-shifting mechanism operated from or by said longitudinally-moving section, substantially as and for the purposes hereinbefore set forth.

2. The combination, with the evener-roll, of pivoted evener-levers, pivoted adjustably-weighted levers, one for each evener-lever, and intermediate slide-bars, one for each evener-lever, bearing at one end against their appropriate weighted levers and at the other end against their appropriate evener-levers, substantially as hereinbefore set forth.

3. The combination, with the sliding rack-bars and belt-shifting mechanism, of the longitudinally-extensible sectional shaft composed of alternate rotatable and non-rotatable sections, the former geared with said rack-bars, respectively, substantially as and for the purposes hereinbefore set forth.

4. The right and left externally-screw-threaded longitudinally movable and rotatable sections, each provided with a pinion, and the correspondingly internally-screw-threaded non-rotatable couplings alternating therewith, one, P', of which non-rotatable sections or couplings is secured against longitudinal movement, and the sliding rack-bars engaging said pinions, in combination with the pusher-rod contained within and moved lengthwise by said devices, and belt-shifting mechanism operated by said rod, substantially as and for the purposes hereinbefore set forth.

5. The combination, with the evener-roll, the evener-levers provided with evener-plates placed above the evener-roll, the sliding rack-bars, and the weighted levers, of the longitudinally-extensible shaft having its rotatable sections geared with said rack-bars, respectively, and belt-shifting mechanism operated by or from said shaft at the times and in the manner substantially as hereinbefore set forth.

877,330. **SAFETY CAR-DOOR.** HORACE L. RUSH, Hammond, Ind., assignor of one-half to William H. Verril, same place. Filed Oct. 18, 1886. Serial No. 216,502. (No model.)



Claim.—1. The combination, with the car provided with the normally-open doorway or opening C at its end, of the compartment or passage formed within the same and adjacent to said doorway by means of side, end, and top walls, a door at the inner end of said passage opening into the car, and a sliding door at the outer end of said passage for closing the doorway C, a spring applied to throw said door into its closed position, and means, substantially as described, holding said door in its opened position, controlled from the interior of the car.

2. The combination of the end wall of the car provided with a doorway, C, and a compartment or passage, D, adjacent to said doorway, said compartment or passage being provided with a door at its inner end, of a sliding door, G, at its outer end, a spring applied to throw said door into its closed position, a latch or bolt engaging said sliding door for holding the latter open against the action of the spring, and connections extending from said latch to the interior of the car, substantially as described.

3. The combination, with a car provided with a doorway or opening, C, in its end wall, of a compartment or passage, D, formed within the car by said door, and end walls adjacent to said doorway or opening, said passage having a door at its inner end, a sliding door, G, for closing the said doorway or opening and provided with locking-apertures *g' g'*, and a spring latch or bolt, J, constructed to enter one or other of the apertures in the said sliding door when the latter is opened and when it is closed, substantially as described.

4. The combination, with a car provided with a doorway or opening in its end wall, of a compartment or passage formed within the

car adjacent to said doorway or opening and having a doorway at its inner end, said doorway forming its inner end wall and leading into the car, a sliding door for closing the doorway or opening, and a spring-belt extending from the inner side of the end wall or passage and arranged for controlling the sliding door both when opened and when closed, substantially as described.

377,331. **DUMP-WAGON.** GEORGE W. RICHARDSON, Chicago, Ill., assignor of one-half to Jason H. Shepard, same place. Filed Oct. 20, 1887. Serial No. 252,874. (No model.)

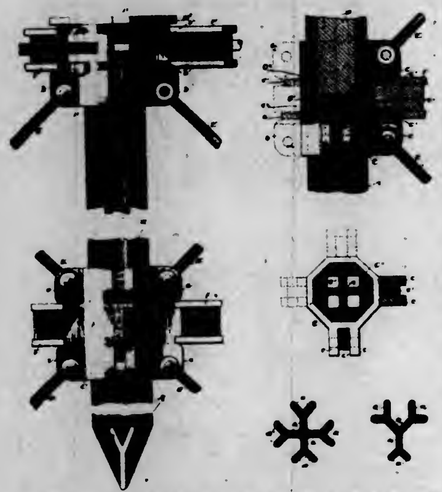


Claim.—1. In dumping-wagons, the box A B C, combined with the longitudinal central shaft, D, with the hinged bottoms G *m*, the shaft provided with the prongs V W, in combination with the levers *c c*, for elevating the bottoms, as specified.

2. The shaft D, provided with the prongs V W and levers *c c*, in combination with box A B C, the bottoms G *m*, the shafts *i c*, provided with the pins *a*, and the links *f*, as specified.

3. The box A B C, bottoms G *m*, rod D, elevated bolster L, the plates M J, and braces S Q, substantially as and for the purpose specified.

377,332. **METAL PILING AND SUBSTRUCTURE.** STILLMAN W. ROBINSON, Columbus, Ohio. Filed July 27, 1886. Serial No. 209,257. (No model.)



Claim.—1. A cast-metal pile consisting of a body made up of a series of webs terminating in laterally-projecting wings or flanges, the said webs and flanges being integral.

2. The combination, with a metal pile or column, of a metal cap provided with an internal flange or flanges to bear or rest upon the upper end of the divergent wings of the pile or column, substantially as set forth.
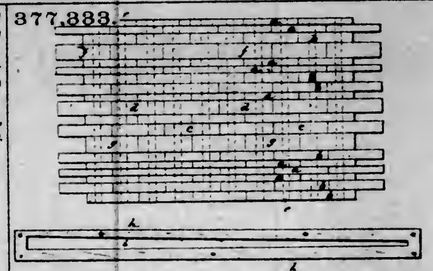
3. The combination, with a group of metal piles and caps arranged on the same, substantially as described, of a spider-strut adapted to engage the seats on the respective caps, substantially as set forth.

4. The combination, with a group of metal piles, columns set, respectively, upon the piles, and couplings connecting the respective piles and columns, of a spider-strut adapted to engage the seats on the respective couplings, substantially as set forth.

5. The combination, with metal piles and columns, the same having webs and divergent wings or flanges, and coupled substantially as described, of metal sheets, the same being secured to opposing wings on adjacent piles and columns and notched over the couplings, substantially as set forth.

377,333. **MANUFACTURE OF LEATHER-LINK BELTING.** CHAS. A. SCHIERER, Brooklyn, N. Y. Filed Dec. 1, 1887. Serial No. 256,697. (No model.)

Claim.—1. The method herein described of making leather-link belts, which consists, first, in cutting the links from leather stock; secondly, passing said links through an assorting device, whereby the links are grouped into series of different thicknesses, (the thickness of the links of each series being uniform;) thirdly, assembling the links into a belt upon longitudinal lines of links, each of uniform thickness, and, finally, uniting the links by pins, substantially as set forth.



2. That improvement in the manufacture of leather-link belting which consists in separating the prepared links into independent groups by passing them through an assorting device, whereby the links of the same thickness in the completed belt will lie in the same longitudinal line or lines of the belt, substantially as set forth.

377,334. **KNIFE.** MAXIMILIAN SCHWEERS, Nanbuc, Conn. Filed Sept. 23, 1887. Serial No. 250,518. (No model.)



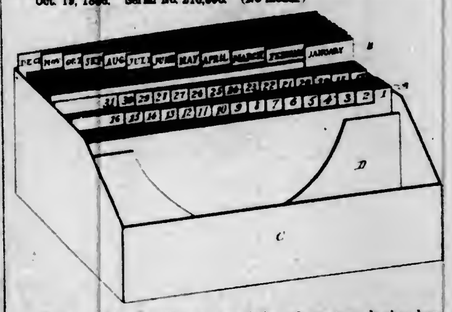
Claim.—1. The combination of a blade or fork provided with a tang having a projection or projections formed integral therewith and extending in the same plane with that portion of the tang from which it projects, a handle formed of two pieces having a recess adapted to receive the tang and its projection, and a rivet or rivets for securing the pieces of the handle around the tang, substantially as described.

2. The combination of a blade or fork, provided with a tang having a projection integral therewith and forming a rivet for securing the handle thereto, and a handle formed of two pieces adapted to receive the tang and be secured thereto by said projection, substantially as described.

3. The combination of a blade or fork, provided with a twisted tang having a projection integral therewith and projecting at right angles to the greater width of the blade, and a handle formed of two pieces adapted to receive the tang and be secured thereto by said projection, substantially as described.

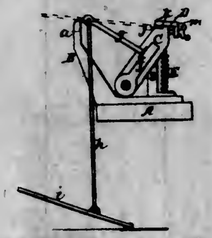
4. The combination of a blade or fork provided with a twisted tang having a projection integral therewith, a handle formed of two pieces adapted to receive the tang and be secured thereto by said projection, and a metal filling surrounding the tang in the handle, substantially as described

377,335. **OFFICE-TICKLER.** FRANK R. SMITH, Toledo, Iowa. Filed Oct. 19, 1886. Serial No. 216,690. (No model.)



Claim.—A file for office use, consisting of a rectangular box having a fixed vertical partition near the front wall, the space between the said vertical partition and the rear wall of the box being less in width than the intermovable month-partitions and in combination therewith, the intermovable month and adjustable day partitions unattached to each other and provided with extensions of their upper edges cut away, as shown, and carrying the proper designations of months and days, whereby a single series of day-partitions can by interposition be used with any month-partition of the series, all as shown and described.

377,336. **MACHINE FOR BENDING SHEET METAL.** EMIL R. STAHL, Corning, N. Y., assignor to Victor Hatscher and Bertha Stahl, both of same place. Filed Apr. 13, 1887. Serial No. 234,655. (No model.)

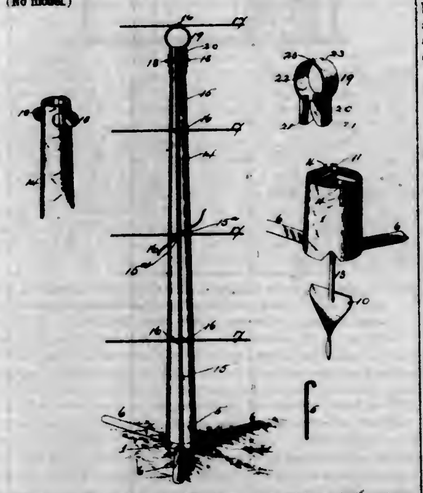


Claim.—1. In a machine for bending or flanging sheet metal, the combination, with the stationary jaw having straight surface *a* and the movable jaw recessed, as at *j*, of the angle-gage D, fitting over the upper edge of this latter jaw, the guide-pins *n*, and adjusting-screws by which said gage is regulated, substantially as described.

2. In a machine for bending or flanging sheet metal, the combination of the stationary jaw B, having the vertical face *a*, the movable jaw C, having means for tilting it toward the stationary jaw and for automatically withdrawing it from the same, and provided with the recess *j*, parallel with face *a* when brought against it and with the shoulder *k*, and gage D, having its inner side parallel to the face of the recess *j*, and provided with set-screws for adjusting the degree of its overlapping the recess, as and for the purpose shown and set forth.

3. In a machine for bending or flanging sheet metal, the combination of the stationary jaw having tubular longitudinal bearings at its base, the movable jaw having tubular longitudinal bearings at its lower edge fitting between the bearings of the stationary jaw, the hinge-rod inserted through the bearings and rigidly secured to the bearings of the movable jaw and provided with a crank at one end, the connecting-rod secured to the crank, the pitman pivoted to the connecting-rod at its upper end, the treadle having the lower end of the pitman pivoted to it, the springs secured to the movable jaw and to the bed of the stationary jaw, serving to withdraw the movable jaw from the stationary jaw, and the stops upon the bed-plate of the stationary jaw, having inclined upper faces for supporting the movable jaw when drawn back by the springs, as and for the purpose shown and set forth.

377,337. **POST.** ALBION W. TOURGÉE, Mayville, N. Y., assignor to E. K. Tourgée, same place. Filed May 5, 1887. Serial No. 237,285. (No model.)



Claim.—1. The herein-described post, comprising a hollow base, an anchoring-stake having an arrow-pointed and screw-shaped lower end, and a head composed of diverging arms having notched under edges to adapt them to snugly rest upon the top edge of the base, a tubular beaded post adapted at its lower end to fit over said base and having holes on either side of the bead, wire-binders within said holes, and at its upper portion outwardly-extending wings, and a covering-cap having depending slotted wings to receive the wings on the post, substantially as and for the purpose set forth.

2. The combination of a tubular post having slots or holes in its lower portion, a tubular base adapted at its upper end to rest within the post and having on its inner face a series of brace-sockets and in its sides vertical and angular keyways, keys for connecting said post and base, said keys being formed of pliable metal to permit of their passing through the holes in the post and along the keyways in the base, as explained, and base-braces connecting at the inner end with the brace-sockets in the base and extending outwardly and divergently from said base, substantially as set forth.

3. The combination of a tubular post having at its upper end outwardly-extending wings or lugs, a cap having depending slotted wings to embrace the post and receive the wings thereon, and a curved upper portion having side openings and notched edges, substantially as and for the purpose set forth.

4. The sheet-metal post herein described, having the vertical lapped bead or seam described, a series of holes in the body of the post adjacent to but outside the respective edges of the lapped bead, the respective holes of each pair being formed in different planes, as shown, and a series of binders or tie-wires each passed through a pair of said holes and extending in an angular direction across the inner face of and embracing the bead and the body of the post adjacent thereto and coiled around the fence-wire, substantially as and for the purpose set forth.

5. The post herein described, comprising a hollow base, braces connected thereto and extending outwardly therefrom, a stake having a head adapted to rest upon the top of the base, a tubular sheet-metal post adapted to fit over the base and having a cement filling composed of sand and hydraulic lime, as described, and having at its upper portion outwardly-extending wings, and a sheet-metal cap having depending slotted wings to receive the wings on the post, substantially as set forth.

6. The combination, with a hollow post-receiving base, of an anchoring-stake comprising an arrow-pointed and screw-shaped lower end, a head composed of diverging arms, and a rod or spindle connecting said point and head, substantially as set forth.

7. The combination of a hollow post-receiving base having lugs on its inner face and base-braces each having at its inner end an upwardly-extending portion to engage said lugs and a rear outwardly-extending arm, substantially as and for the purpose set forth.

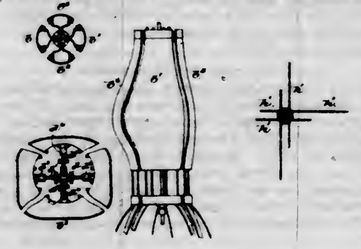
8. The combination of a post-receiving base having brace-sockets therein on its inner face, and base-bracing arms adapted at their inner ends to removably fit within said sockets and having horizontally-extending rear portions, substantially as set forth.

9. The combination, with a post for fences and other purposes having suitable slots or holes in its lower portion, of a removable base having vertical and angular keyways and internal brace-sockets, keys adapted to pass through said holes and keyways in the post and base and connect said post and base, and a series of base-braces adapted to engage the sockets in the interior of the base, substantially as set forth.

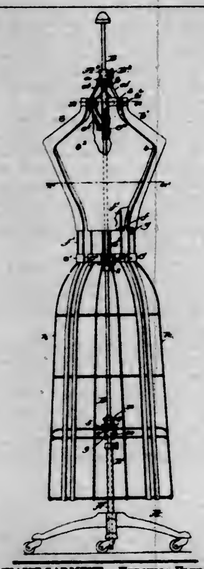
377,338. **DRESS-FORM.** CHARLES A. UPHAM and WILLIAM L. HENDRICK, Boston, Mass.; said Hendrick assignor to said Upham. Filed Sept. 5, 1887. Serial No. 248,816. (No model.)

Claim.—1. In a dress-form, a segmental waist-section and a longitudinally-adjustable bust portion above it, combined with an intermediate circumferential series of rods or bars, *f*, constituting an independent waist portion, whereby the adjustment of the bust longitudinally with relation to the said waist-section enables the waist to be correspondingly lengthened or shortened by exposing the bars *f* for a greater or less distance, substantially as described.

2. The body of the dress-form, divided substantially as described, having its sides separated from its front and back in the line of the quarter back-seam and the dart-seam, substantially as described.



377,338.



377,339. WAIST-GARMENT. VERONICA ULEX, Washington, D. C. Filed Sept. 16, 1887. Serial No. 249,832. (No model.)



Claim.—1. The combination of a waist-garment having a number of button-holes about the waist-line, with an elastic belt extending about the waist-line on the inner side of the garment, and having a number of buttons secured thereto which register with the button-holes on the waist-line, and a clasp for closing the belt, substantially as described.

2. The combination of a waist-garment having a number of button-holes about the waist-line, with an elastic belt extending around the waist-line on the inner side of the garment, and buttons corresponding to the button-holes on the waist-line secured to and near the upper edge of the belt, substantially as described.

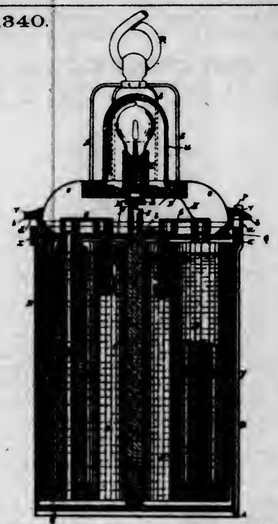
3. The combination of a waist-garment having a number of button-holes around the waist-line, with a belt extending around the waist-line on the inner side of the garment, and buttons corresponding to the button-holes on the waist-line secured to elastic sections of the belt, substantially as described.

377,340. GALVANIC BATTERY. DAVID UNDERHILL, Westminster, and BENJAMIN HICKMANN, South Norwood Park, County of Surrey, assignors to the New Portable Electric Lamp and Power Syndicate Company, (Limited,) London, England. Filed Sept. 21, 1887. Serial No. 250,536. (No model.) Patented in England May 28, 1887, No. 7,508.

Claim.—1. An electric battery having a negative element composed of or carrying peroxide of silver, in combination with a positive element and electrolyte, substantially as described.

2. The combination, with the battery-vessel and electrolyte, of

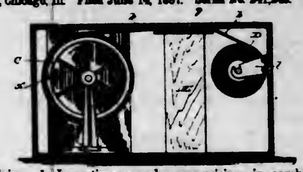
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positive elements in said vessel, negative elements all attached to and carried by a disk or plate covering the vessel, and contacts for the positive elements, also carried by said disk or plate, the positive elements not being carried thereby, so that by removing the cover the negative elements may be readily removed for regeneration, leaving the positive elements in the battery-vessel, substantially as described.

3. In a battery, the combination of the containing-vessel divided into compartments, the positive elements of S shape, and the negative elements one in each loop of the positive elements, substantially as described.

377,341. EMPLOYE'S TIME-RECORDER. CHARLES R. VAN VOORHIS, Chicago, Ill. Filed June 14, 1887. Serial No. 241,249. (No model.)



Claim.—1. In a time-recorder comprising, in combination, an inclosing-case, A, provided with an opening, *q*, a time-movement, a roller, C, rotated by the time-movement, a roller, D, a ribbon, *k*, wound upon the roller D, and adapted to be unwound therefrom upon the roller C by the rotation of the latter, and marked with a time-scale having increasing intervals to compensate for the increasing diameter of the roller C, in which intervals names are to be recorded on the ribbon, and a support, E, beneath the opening *q*, for the ribbon to slide upon, substantially as and for the purpose set forth.

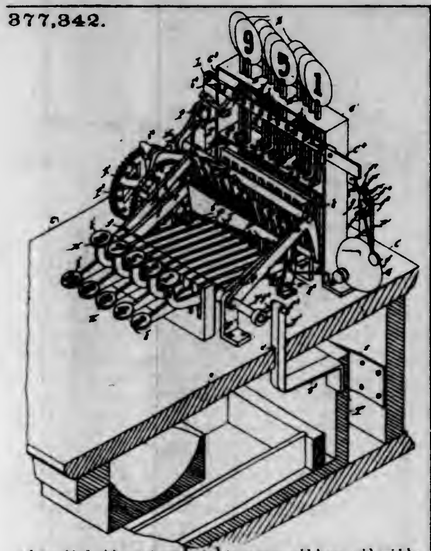
2. In combination with the case A, provided with an opening and closing side, the base-plate *m*, having a dovetailed groove, *m'*, and the standard *n*, for supporting the roll C, provided with a dovetailed base, *n'*, substantially as and for the purpose set forth.

377,342. CASH REGISTER AND INDICATOR. JEROME J. WEBSTER, Somerville, Mass., assignor to the Boston Cash Indicator and Recorder Company. Filed Feb. 3, 1887. Serial No. 226,411. (No model.)

Claim.—1. The combination of a series of keys and a grid composed of rack-bars adapted to be pressed automatically against said keys and provided with notches adapted to engage said keys, said grid being adapted to be moved laterally when said keys are depressed to allow said keys to pass said notches, each of said rack-bars being provided with an incline above said notches and overhanging said notches, whereby the raising of the rear ends of said keys to the tops of said inclines will move all of said notches out from under said keys and allow the same to return to their normal position, as and for the purpose specified.

2. The combination of a series of keys and a grid composed of rack-bars adapted to be pressed against said keys by their own gravity

377,342.



and provided with notches adapted to engage said keys, said grid being adapted to be moved laterally when any of said keys are depressed to allow said keys to pass said notches, each of said rack-bars being provided with an incline above said notches and overhanging said notches, whereby the raising of the rear ends of said keys to the tops of said inclines will move all of said notches out from under said keys and allow the same to return to their normal position, as and for the purpose specified.

3. The combination of a series of keys, a grid composed of rack-bars adapted to be automatically pressed against said keys and provided with notches adapted to engage said keys, said grid being adapted to be moved laterally when any of said keys are depressed to allow the rear ends of said keys to pass said notches, each of said rack-bars being provided with an incline above its notches, whereby the raising of the rear ends of said keys to the tops of said inclines will move all of said notches out from under said keys and allow said keys to return to their normal position, said grid being provided with a projection, and a hook adapted to swing over said projection and to prevent said notches from engaging with said keys, as and for the purpose specified.

4. The combination of a series of keys, a grid composed of rack-bars provided with notches and adapted to be automatically pressed against said keys and to engage said keys, each of said bars being provided above its notches with an incline, the upper end of which overhangs said notches, whereby raising the rear end of any of said keys to the top of an incline will move said grid to one side of said keys, said grid being provided with a projection, and a hook turning on a stationary pivot and adapted to engage with said projection to prevent said grid from returning to its normal position, a bar arranged above said keys and adapted to be raised by raising the rear ends of any of said keys, a lever provided with an arm which reaches under said hook, said lever being adapted to be operated to depress said arm to allow said hook to engage said projection when said bar is raised, and a spring to rock said lever upon its fulcrum when said keys are restored to their normal position and to raise said hook out of engagement with said projection to allow said grid to return to its normal position, as and for the purpose specified.

5. The combination of a series of keys having a uniform range of motion and a graduated lever arranged to be struck and to be moved by any of said keys when the same are depressed, the under side of said lever being provided with as many steps or graduations as there are keys, whereby the distance through which said lever is moved is determined by the key which is struck or depressed, a registering-ratchet, and a pawl pivoted on said graduated lever, as and for the purpose specified.

6. The combination of a series of keys having a uniform range of motion, a registering-lever arranged to be struck and moved by any of said keys when the latter are depressed, said registering-lever being provided on its under surface above said keys with steps or graduations, a registering-ratchet, and a pawl pivoted to said registering-lever and engaging said ratchet, said keys being differently numbered and the number on each key representing the number of teeth by which said ratchet is rotated by a single depression of said key, as and for the purpose specified.

7. The combination of the registering-ratchet, the registering-gear, a pawl having a slot and being pivoted through said slot to allow said pawl a longitudinal motion, said pawl having a tooth which engages with the teeth of said registering-gear, and having also a downward projection beveled off on its under surface, said ratchet being provided with a projection arranged to strike the beveled surface of said pawl and to raise the tooth of said pawl out of engagement with said gear and to allow it to drop into the next space between teeth of said gear, and a spring arranged to draw the upper end of said pawl downward into engagement with said gear and, by restoring said pawl to position, to rotate said gear one tooth during every complete revolution of said ratchet, as and for the purpose specified.

8. The combination of a series of keys, a pin projecting from each of said keys, a series of hooks pivoted below said keys, the registering-lever arranged above said keys and provided with steps or graduations equal in number to said keys, the shanks of said hooks having each an inclined slot which receives the pins upon said keys, and said hooks being of different lengths and adapted to be thrown into engagement with said registering-lever to prevent said lever from being carried beyond its proper limit by its own momentum when raised by any of said keys, as and for the purpose specified.

9. The combination of a series of keys, a pin projecting from each of said keys, a registering-lever arranged above said keys and provided with steps or graduations equal in number to said keys, a series of hooks equal in number to said keys, pivoted below said keys, and each having an inclined slot to receive the pin upon one of said keys, said hooks being adapted to be moved by the depression of said keys and the movement of said pins in said slots to engage with said graduated registering-lever, and each of said hooks being of a suitable length to prevent said registering-lever from being carried by its own momentum higher than the key appropriated to said hook should raise said lever, and a registering-ratchet, and a pawl pivoted on said registering-lever and engaging said ratchet, as and for the purpose specified.

10. The combination of the frame, the locking-rod provided with a projection and adapted to slide in said frame, a spring adapted to draw said locking-rod endwise in one direction, an unlocking-lever adapted, when turned upon its fulcrum, to press against said projection and to move said locking-rod against the resistance of said spring and to pass by said projection and to release said locking-rod, said locking-rod being provided with a series of pins, and a series of rods guided vertically in said frame and each provided with a pin adapted, when raised above a pin on said locking-rod, to be supported thereby, as and for the purpose specified.

11. The combination of the frame, the locking-rod provided with an incline and adapted to slide endwise on said frame, a spring adapted to draw said locking-rod in one direction, an unlocking-lever adapted, when turned upon its fulcrum, to press against said incline and to move said locking-rod against the resistance of said spring and to pass by said incline to release said locking-rod, signals provided with stems or signal-rods guided vertically in said frame and having projections, said locking-rod being provided with projections equal in number to the number of said signal-rods, a series of keys equal in number to said signal-rods, one of said signal-rods normally resting on each of said keys, and a bar resting upon said keys and adapted to engage and to turn said unlocking-lever when any of said keys is depressed, as and for the purpose specified.

377,343. COMPOUND FOR SAFE-LININGS, &c. ISAAC P. WISDELL, Philadelphia, Pa., assignor of one-half to Stephen P. M. Tasker, same place. Filed July 2, 1887. Serial No. 243,237. (No specimens.)

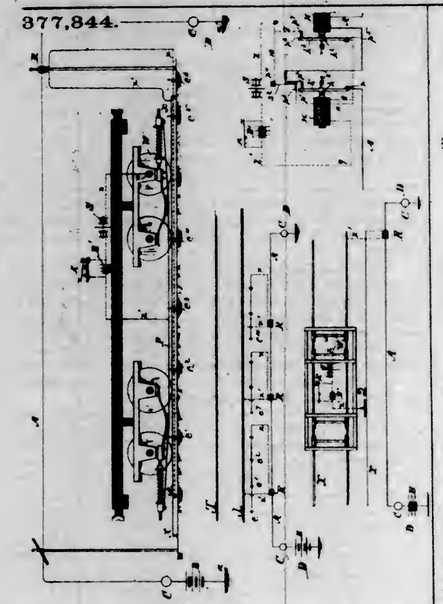
Claim.—The compound herein described, composed of asbestus, fossil meal or infusorial earth, and silicate of soda.

377,344. RAILWAY-TELEGRAPH. CHARLES W. WILLIAMS, Cave City, Ky. Filed June 2, 1886. Renewed Oct. 24, 1887. Serial No. 253,223. (No model.)

Claim.—1. In a railway-telegraph system, the combination of a main-line-circuit conductor, a partial circuit carried on a railway-car, signaling-instruments in said partial circuit, an electrical conductor off the car adapted, substantially as described, in connection with the partial car-circuit, to transmit electrical impulses, and a repeater, substantially as described, connected to both the main-line-circuit conductor and the electrical conductor, which completes the car-circuit, as and for the purpose specified.

2. In a railway-telegraph system, the combination of a main-line-circuit conductor, a partial circuit carried on a car, signaling-instruments in said partial circuit, contact devices upon said car, substantially as described, a series of electrical conductors off the car adapted to complete the car-circuit, portions of which series of conductors run

377,844.



parallel with and in close proximity to the line of the railway and separated from each other by intervals so short that the contact devices on the car will make contact with a second of said series of circuits before it breaks contact with the first of said series, and a series of repeaters, substantially as described, which are connected, respectively, to the main-line conducter and one of the circuits of said series, substantially as and for the purpose specified.

377,845. SHADE FOR CANDLES OR TAPERS. CHARLES C. WORTHINGTON, Irvington, N. Y. Filed May 4, 1887. Serial No. 237,097. (No model.)



Claim.—1. A shade-support for candles or tapers, having the depending arms *a* connected to the weighted ring E, which surrounds the candle, and having the arms c connected to the ring *d*, which rests within the cup-shaped depression at the end of the candle and surrounds and is guided by the wick, substantially as described.

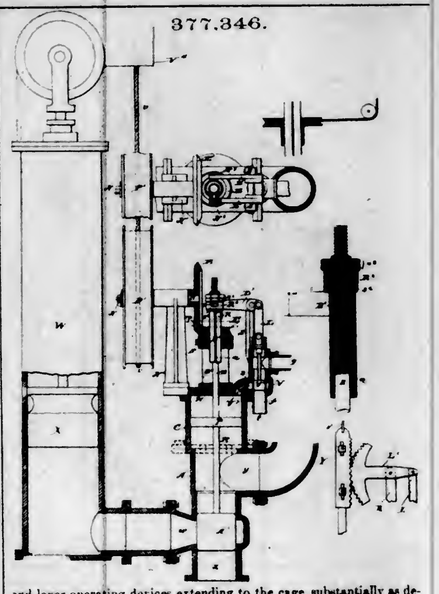
2. A shade-support having an arm or arms, *c*, connected to the ring *d*, which rests within the cup-shaped depression at the end of the candle and surrounds and is guided by the wick of the candle, substantially as described.

377,846. OPERATING MECHANISM FOR HYDRAULIC ELEVATORS. NORMAN C. RAMSEY, Chicago, Ill., assignor to the Hydraulic Elevator Company. Filed Mar. 5, 1886. Serial No. 157,771. (No model.)

Claim.—1. The combination, with the main valve, cylinder, and working-piston of a hydraulic elevator, of an auxiliary engine connected to the main valve and provided with a piston, piston-rod, and auxiliary valve, a slide connected with the auxiliary valve and supported adjustably in respect to the main valve and carried therewith, and slide-operating devices extending to the cage to shift the slide independently of the main valve, substantially as described.

2. The combination, with a hydraulic elevating-engine, main valve, and cage thereof, of an auxiliary engine connected to the main valve and provided with a piston, a piston-rod, and an auxiliary valve, a lever connecting the auxiliary valve and the piston-rod of the auxiliary engine, and connections between the lever and the main valve, supported adjustably in respect to said valve and normally traveling therewith.

377,346.



and lever-operating devices extending to the cage, substantially as described.

3. The combination, with the main engine-valve and elevator-cage, of an auxiliary-valve-operating engine provided with a piston-rod and auxiliary valve, a slide carried by said piston-rod and adjustable thereon and connected with said valve, and connections for moving said slide from the cage independently of said rod, substantially as described.

4. The combination, with the main-valve and auxiliary-valve operating engine, of a slide supported adjustably by the main valve, and slide-operating devices extending to the cage, and a lever connecting the slide and the auxiliary valve and pivoted near one end to proportion the movements of one valve to those of the other, substantially as described.

5. The combination, with the main valve and cage of a hydraulic elevator, of an auxiliary engine connected to operate the main valve and provided with a piston, a piston-rod, and an auxiliary valve controlling the flow of motor-fluid to and from the said auxiliary engine, a sleeve carried adjustably upon the said piston-rod, and connections, substantially as described, between the auxiliary valve and the sleeve and between the latter and the cage, substantially as set forth.

6. The combination, with the valve of an elevator, of an auxiliary engine having a valve and a threaded piston-rod, a threaded sleeve upon said rod, and connections between the sleeve and cage for rotating the sleeve from the cage, and a lever connected to the auxiliary-engine valve and to said sleeve, substantially as set forth.

7. The combination, with the main valve and valve-operating engine of a hydraulic elevator and with the threaded piston-rod and valve of said engine, of a threaded sleeve upon the said piston-rod connected with the engine-valve, a pinion through which the sleeve slides and with which it turns, and a shaft carrying a beveled wheel gearing with said pinion, and a pulley round which passes the shifting rope, substantially as set forth.

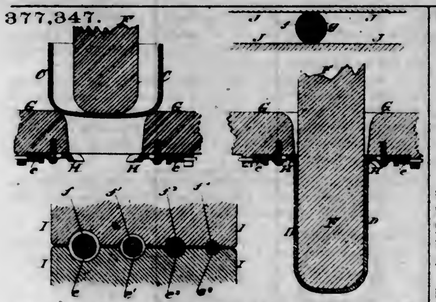
8. The combination, with the main valve of a hydraulic engine, and with an auxiliary engine for operating the same, and with the piston-rod and valve of the said engine, of a movable slide carried by said piston-rod and independently movable thereon, and an unequal-armed lever connected with the auxiliary valve and with said slide and with the elevator-cage, substantially as set forth.

377,347. ART OF MAKING SEAMLESS TUBES. WILLIAM H. BROWN, Jersey City, N. J., assignor to the Brown's Seamless Metal Company, of New Jersey. Filed May 27, 1887. Serial No. 239,517. (No model.)

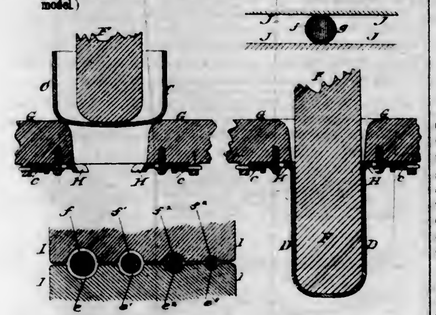
Claim.—1. The improvement in the art of manufacturing metal cylinders and tubes, consisting in submitting the cylinder or tube while hot to successive and alternate longitudinal rollings and cross-rollings on mandrels, whereby it is subjected to successive reductions of caliber and thickness with a corresponding increase of length, and the metal is compacted, condensed, and toughened, substantially as herein described.

2. The improvement in the art of manufacturing metal cylinders and tubes from disks or blanks, consisting in first submitting the metal in a hot state to a series of turning-in or folding operations, whereby its form is changed from the flat to the cylindrical and from that of shorter cylinder of larger caliber to that of a longer cylinder of smaller caliber without material reduction of thickness, and afterward submitting the so-produced cylinder in a hot state to a series of alternate longitudinal rollings and circumferential rollings, whereby it is subjected to successive reductions of caliber and thickness with a corresponding increase of length, and its metal is condensed and toughened, as herein set forth.

377,347.



377,348. ART OF MAKING SEAMLESS TUBES. WILLIAM H. BROWN, Jersey City, N. J., assignor to the Brown's Seamless Metal Company, of New Jersey. Filed May 28, 1887. Serial No. 239,652. (No model.)



Claim.—The improvement in the art of manufacturing seamless cylinders and tubes from disks or blanks of metal, consisting in first subjecting the metal in a hot state to the folding or turning-in operations necessary to change its form from substantially flat to cylindrical, afterward subjecting it in a hot state to alternate longitudinal rollings and circumferential rollings, and, finally, subjecting it in a cold state to drawing operations, substantially as and for the purpose herein set forth.

377,349. PRODUCTION OF NEW RED COLORING-MATTER. MAURICE CREMOLE, Ludwighafen-on-the-Rhine, Bavaria, Germany, assignor to the Badische Anilin and Soda Fabrik. Filed Nov. 17, 1887. Serial No. 255,401. (Specimens.)

Claim.—As a new product, the red coloring-matter or dye-stuff (tetramethyl-rhodamine) hereinbefore described and having the characteristics above set forth.

377,350. PRODUCTION OF NEW RED COLORING-MATTER. MAURICE CREMOLE, Ludwighafen-on-the-Rhine, Bavaria, Germany, assignor to the Badische Anilin and Soda Fabrik. Filed Nov. 17, 1887. Serial No. 255,402. (Specimens.)

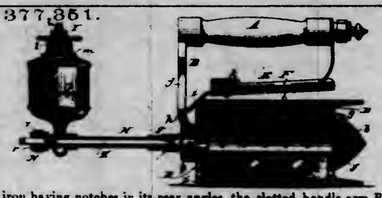
Claim.—As a new product, the red coloring-matter or dye-stuff (tetraethyl-rhodamine) hereinbefore described and having the characteristics above set forth.

377,351. SAD-IRON. AUGUST F. CRABB, Evansville, Ind., assignor of one-half to Joseph C. Price, same place. Filed Oct. 5, 1886. Serial No. 215,408. (No model.)

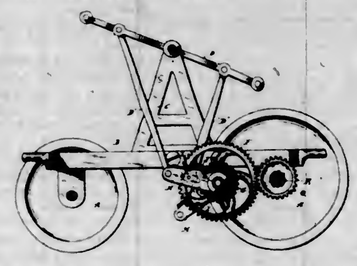
Claim.—1. The combination, with the rotatable body of the sad-iron having notches in its rear angles, the slotted handle-arm B, and handle proper, of the curved spring attached to the free end of the latter and extending rearward over the said body into the slot of said handle, and having a knob or finger-piece on its upper side, as shown and described.

2. In a reversible sad-iron, the combination, with the rotatable body, the handle and its arm, and the spring attached to its front end and extending rearward, as specified, of the shield attached to said spring and thus adapted to be raised with it for clearing the corners or side angles of the body, as shown and described.

377,351.



377,352. HAND-CAR. DEODATUS CRAPIL, San Francisco, Cal., assignor of one-half to Calvin Nutting, Jr., same place. Filed Feb. 11, 1887. Serial No. 227,280. (No model.)



Claim.—1. The combination, with the driving-shaft of a moving structure and a pinion on said shaft, another shaft mounted near the driving-shaft, a gear-wheel and two pinions—one at either side thereof—mounted upon said latter shaft, and arms also mounted upon said shaft and having pawls which engage with said pinion on the upward stroke of the arms, of an oscillating lever having an opening near the middle to receive the fulcrum-shaft, and having openings between the center opening and its ends to receive the pitmen-fulcrums, the said latter openings being out of line with each other, and pitmen connected with the lever at said openings.

2. In a hand-car, the combination, with one of the axles and a pinion thereon, and a shaft carried by the frame and mounted near the axle, a gear-wheel, a pinion at each side thereof, and an arm at the side of either pinion mounted on said shaft, said pinions and gear-wheel rotating together, pawls carried by said arms, and springs to hold them in engagement with said pinions and standards carried by the frame, of an oscillating lever having an opening near the middle to receive the fulcrum-shaft, and having openings between the center opening and its ends to receive the pitmen-fulcrums, the said latter openings being out of line with each other, and pitmen connected with the lever at said openings.

3. The combination of a lever having an opening near the middle to receive the fulcrum-shaft, and having openings between the center opening and its ends to receive the pitmen-fulcrums, the said latter openings being out of line with each other, and a pitman connected with the lever at said openings.

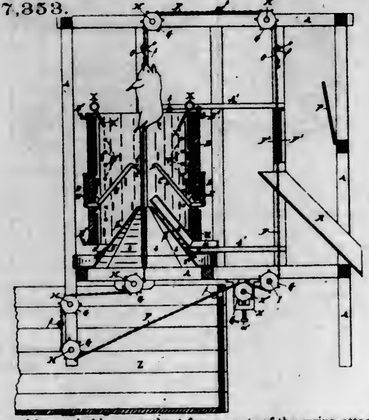
377,353. HOG-SCRAPING MACHINE. JAMES CUNNING and GEORGE A. LOWRY, Indianapolis, Ind.; said Lowry assignor to Frank P. Woollen, same place. Filed Apr. 1, 1880. Serial No. 6,423. (No model.)

Claim.—1. In a hog-scraping machine, a cylinder or equivalent frame-work, through the sides of which run converging arms bearing scraping-knives upon their inner ends, and upon the outer ends of which are spring or weight attachments which force said scrapers inwardly toward the center, all substantially as and for the purpose set forth.

2. A hog-scraping machine in which the cylinder or frame-work bearing the scrapers is divided longitudinally, and of which one part or section is adapted to be moved bodily away from the remaining portion on ways or tracks, substantially as and for the purposes set forth.

3. The combination, with the scrapers C and brackets E, both

377,353.



supported by a suitably-constructed frame-work, of the spring attachment D, substantially as and for the purposes set forth.

4. The combination, with the vibrating scrapers of a hog-scraping machine, of an adjustable spring attachment consisting of a spring, a rod passing through the spring, and adjusting-nuts upon the ends of the rods, said spring attachment being secured to the cylinder or frame-work by a bracket or similar connection, substantially as and for the purposes set forth.

5. The combination, with the scrapers of a hog-scraping machine, of an endless traveling ladder, the chains of which pass outside the scraping-knives, and the cross-bars of which pass through or between the scrapers, substantially as and for the purposes set forth.

6. In a hog-scraping machine, in combination with the cylinder thereof, an endless traveling ladder supported by sprocket-wheels mounted on stud-shafts, whereby a clear passage is provided for the carcass as it passes through the machine, all substantially as set forth.

7. The combination, with a hog-scraping machine, of a series of water-pipes arranged to shower water upon the scrapers and upon the carcass while it is passing through the machine, substantially as and for the purposes herein set forth.

8. In a hog-scraping machine, the combination, with the traveling carrier, of a trip-rod automatically operated by said carrier to release the carcass therefrom at the proper point, all substantially as set forth.

9. The combination of the traveling carrier F *f*, trip-rod P, shaft P', arm P², connecting-rod Q, and lever Q', arranged as shown and forming an automatic tripping device, substantially as and for the purposes set forth.

10. In a hog-scraping machine, a bristle-catching device composed of a hinged conduit and an appropriate receptacle, substantially as herein set forth.

11. The combination, with the cylinder B and the scrapers C, of the bristle-catcher U, composed of the hinged conduit *u* and the receptacle *u*, all substantially as shown and specified.

12. In combination with the traveling carrier and the showering device, the adjustable shaft N', substantially as and for the purposes set forth.

13. The combination, in a hog-scraping machine, of a cylinder or frame-work provided with scrapers, a showering device, and a tank having a perforated top, substantially as shown and described.

14. The combination, with the scraping-cylinder of a hog-scraping machine, of a series of main water-pipes, Y Y, each having numerous smaller pipes leading therefrom toward the center of said cylinder, substantially as and for the purposes set forth.

15. The combination of the frame-work or cylinder, the scrapers, the main water-pipes having smaller pipes leading therefrom toward the center of the cylinder, and plungers for preventing or removing obstructions in said smaller pipes, substantially as and for the purposes set forth.

16. The combination of the frame-work or cylinder provided with scrapers, the guides F', and the traveling carrier, substantially as and for the purposes set forth.

17. In a hog-scraping machine, scrapers C, provided with the scraping-knives *c c'*, set at angles with each other, substantially as and for the purposes set forth.

18. In a hog-scraping machine, scrapers C, having the scraping-knives *c* loosely pivoted thereto, as shown, all substantially as and for the purposes set forth.

19. The combination, with the cylinder of a hog-scraping machine, of a hair-catcher, S, composed of sections *s s*, hinged to a base by hinges *s' s'*, and each inclining toward a common center, substantially as and for the purposes set forth.

20. The combination, with a hollow cylinder and a means for drawing a carcass centrally through it, of a series of scraping-levers, having one of their arms projecting into the cylinder and the other connected to springs exterior of the cylinder, and a stop for regulating the position of the scraping-levers, substantially as and for the purposes set forth.

377,354. **PAPER-FOLDING MACHINE.** WELLINGTON DOWNING, Erie, Pa., assignor to the Brown Folding Machine Co., same place. Filed June 2, 1887. Serial No. 240,046. (No model.)



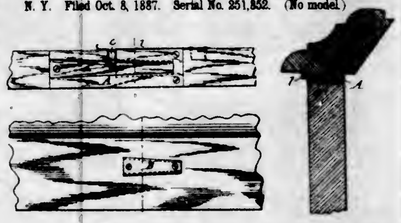
Claim.—1. In a paper-folding machine, the combination, with the first set of folding-rollers, of a feeding-table that is adjustable from and toward said rollers over the top of the folding-machine, substantially as and for the purposes set forth.

2. In a paper-folding machine, the combination, with the first set of folding-rollers, of a feeding-table which is mounted on ways, in a manner substantially as shown, whereby it can be adjusted more or less near said rollers.

3. In a paper-folding machine, the combination, with the first set of folding-rollers, of a feeding-table which is mounted on ways and is provided with gearing, substantially as set forth, whereby the said table can be moved on said ways and adjusted more or less near the said folding-rollers.

4. In a paper-folding machine, the combination, substantially as set forth, of the frame A, brackets A', extending from said frame A, shaft F, journaled in said brackets, pinions F² F³ on said shaft, the feeding-table E, mounted and movable on said brackets longitudinally, and the racks G G on said table gearing with said pinion.

377,355. **COFFIN-FASTENER.** CHARLES H. DUELL and EMIL LAASS, Syracuse, assignors to Chappell, Chase, Maxwell & Co., Oneida, N. Y. Filed Oct. 8, 1887. Serial No. 251,852. (No model.)



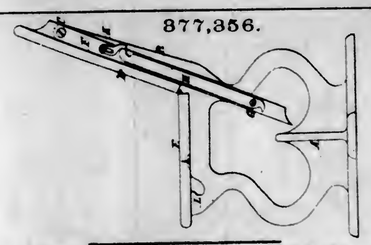
Claim.—1. The combination, with the casket and lid, of the wedge-shaped tongue-plate B, having undercut longitudinal edges and secured to the lid, and the plate A, countersunk in the top edge of the casket, and of greater length than the tongue-plate and provided with the wedge-shaped undercut groove *a*, the wide end of said groove being adapted to receive the tongue-plate flatwise through the face of the plate A, as set forth.

2. The combination, with the casket and its lid, of the plate A, provided with the undercut wedge-shaped groove *a*, extending part way of the depth of the plate and having its wide end extending through the end of the plate, the tongue B, elongated horizontally and wedge-shaped to correspond to the small end of the aforesaid groove, and having undercut side edges interlocking with the edges of the groove, and a movable stop arranged at the heel of the tongue-plate to prevent the withdrawal of the tongue-plate from the groove, as set forth.

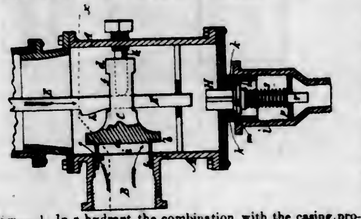
377,356. **SEAT CONVERTIBLE INTO A TABLE.** LEWIS EVANS, Belmaine, Hemel-Hempstead, County of Herts, England. Filed Oct. 6, 1887. Serial No. 251,632. (No model.)

Claim.—A seat or chair convertible into a table, consisting of the base A, with its limb B, the bar F, jointed to B, the strut H, jointed to F, the board D, fixed to F, and the board E, hinged to D, with the catches K and L, substantially as described.

377,356.



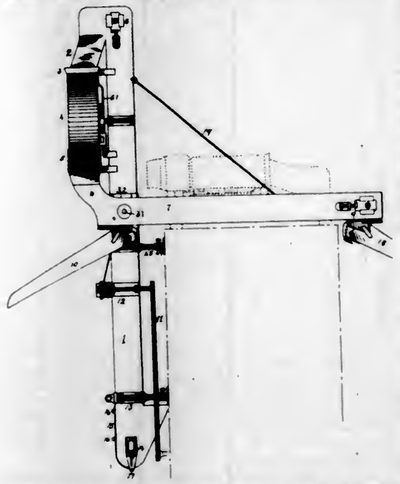
377,357. **HYDRANT.** REUBEN HAND, Rochester, N. Y., assignor of two-thirds to Peter R. Rivard and George A. Sabey, both of same place. Filed Sept. 12, 1887. Serial No. 249,512. (No model.)



Claim.—1. In a hydrant, the combination, with the casing provided with an induction-opening, of the piston C, provided with head *a* and slot *f*, the rod E, provided with wedge-shaped lug *h*, passing through the slot of the piston-stem, and the supporting and adjusting screw G, on which the piston slides, as herein shown and described.

2. In a hydrant, the combination, with the casing provided with an induction-opening, of the piston C, provided with head *a* and slot *f*, the rod E, provided with wedge-shaped lug *h*, passing through the slot of the piston-stem, the adjusting-screw G, on which the piston slides, the valve H, located in the bottom of the hydrant below the rod, and the spring *s*, closing the valve in its seat, as shown and described, and for the purpose specified.

377,358. **ELEVATOR AND WEIGHING ATTACHMENT FOR THRASHERS.** CHARLES J. HARTLEY, Decatur, Ill., assignor to John K. Warren and Bradford K. Durfee, both of same place. Filed May 17, 1887. Serial No. 238,491. (No model.)



Claim.—1. In grain-meters, in combination, a circular meter comprising a series of sector-formed compartments adapted to rotate intermittently in one direction, and a peripheral partial casing for said meter adapted to oscillate on the shaft thereof, as and for the purpose set forth.

2. In grain-meters, in combination, the circular meter divided into sector-formed compartments, the frame on the face of the meter having sides corresponding in number to the compartments of the meter, the scale-beam under the frame, and the peripheral partial casing resting on the scale-beam and pivoted on the shaft of the meter, as and for the purpose set forth.

3. In grain-meters, in combination, the circular meter divided into quadrantal compartments, the rectangular frame on a face of the meter, the scale-beam under the frame, the peripheral partial casing pivotally connected with the meter-shaft by the radial arms, the arm on the lower bar resting on the scale-beam at a point coincident with a corner of the rectangular frame, and the inclined spur on the scale-beam, as and for the purpose set forth.

4. The hinge for an elevator, composed of plate 32, having the overlapping square portion 33 and the boss 35, and the plate 34, having the boss-formed pintle 36 and the inner projections, 43 44, in combination, as set forth.

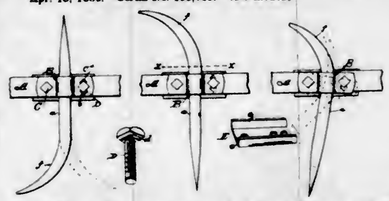
5. The attaching device for elevators, comprising the clamp-plates 13, held on the elevator by bolts 48 and provided with annular brackets 46, sockets 49, adapted to be secured to the thrasher, rods 45 in the sockets and brackets, and set-screws 47 and 50, as and for the purpose set forth.

6. The chute secured to the band by the pivoting-links, the downwardly-extended ratchet-bar on the band, and the pawl-plate on the chute in contact with the ratchet-bar, all in combination, for the purpose set forth.

7. The revolving band, the chute secured to the same by the pivoting-links, the downwardly-extended ratchet-bar on the band, and the pawl-plate on the chute in contact with the ratchet-bar, all in combination, as and for the purpose set forth.

8. The sliding bearing comprising the slotted frame 14, the plate 52, carrying the bearing and having the perforation in its upper end, and the adjusting-bolt 55 in the upper portion of the frame, as and for the purpose set forth.

377,359. **HARROW-TOOTH.** HENRY L. HARWOOD and LEWIS B. WHITE, Norfolk, Va., assignors to S. R. White & Bro., same place. Filed Apr. 13, 1886. Serial No. 198,703. (No model.)



Claim.—1. The combination, with the bar, of the rigid tooth or shank having a straight and bent end and vertically adjustable to bring the bent or straight portion of the tooth opposite the bar, and the clip for securing it in an adjusted position, whereby the tooth may be used as a stand, scratching, or smoothing tooth, substantially as set forth.

2. The combination, with a bar, of a rigid double-pointed harrow or cultivator tooth having a straight and bent end reversibly and vertically adjustably secured thereto to bring the straight or bent portion of the tooth opposite the bar, and a clip pivotally connected at one end with the bar and vertically adjustable at the other end for independently adjusting the inclination of the tooth relative to the bar, substantially as and for the purpose set forth.

3. The combination of the frame of the machine, the reversible tooth enlarged at one end and pointed at the other, and a clip recessed to receive the tooth in either of its positions, said holder engaging with the stem of the tooth between its opposite ends and serving to confine said tooth to a bar of the frame, all substantially as specified.

4. The combination of the fixed bar of the frame, the reversible tooth enlarged at one end and pointed at the other end, the clip pivoted to said fixed bar and constructed to clamp the tooth between its opposite ends and to receive the tooth in either of its positions, and means for securing the holder to the bar after adjustment, all substantially as specified.

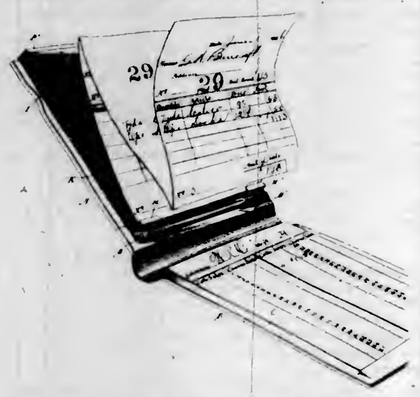
5. The combination of the bar of the frame, a rigid tooth having a harrow-point at one end and a cultivator at the opposite end, and a clip whereby said tooth is secured to the frame, said clip being constructed to permit the end-for-end reversal of the tooth, and also a reversal front for back when the harrow-point is down, all substantially as specified.

6. The combination of the bar of the frame, a rigid tooth having a harrow-point at one end and a cultivator at the opposite end, and a pivoted clip whereby said tooth may be secured to the frame at dif-

ferent inclinations, and the tooth may be reversed end for end and front for back, substantially as specified.

7. The combination of the bar of the frame, the slotted clip pivoted thereto and having a recess on the inner side, the confining-bolt passing through the slot in the clip, and a rigid tooth having different working ends and confined between the bar of the frame and the recessed portion of the clip, all substantially as specified.

377,360. MANIFOLD ORDER-BOOK. JAMES S. MCDONALD, Chicago, Ill. Filed July 6, 1886. Serial No. 207,221. (Model.)



Claim.—1. In a manifold order book or tablet, a series of original orders, a carbon sheet arranged substantially as described, and a base-support for said orders, in combination with a pair of spring-actuated arms parallel with each other and extending obliquely across the opposing edges of the orders, and a clamping-plate uniting said arms and having no connection with the base, except through said arms, for removably securing the orders and carbon sheet upon the base, substantially as described.

2. In a manifold order book or tablet, a series of original and duplicate orders, a carbon sheet arranged substantially as described, a base-support therefor, and a pair of spring-actuated arms extending obliquely along the opposing edges of said orders, and a clamping-plate uniting the free ends of said arms, in combination with a binding-plate, between which and the clamping-plate the carbon sheet is removably bound, substantially as described.

3. In a manifold order-book, a series of original and duplicate orders and a carbon sheet arranged substantially as described, in combination with a base-support for said orders, a spring-actuated clamping-plate upon one end of said orders, a binding-plate for the carbon sheet, and one or more angular lugs embracing one end and projecting over said orders, substantially as described.

4. In a manifold order-book, a series of original and duplicate orders and a carbon sheet arranged substantially as described, a base-support, and a spring-actuated clamping-plate for said orders, in combination with a separable binding-plate mounted upon the clamping-plate and provided upon one edge with a perforator, substantially as and for the purpose described.

377,361. PAPER-TESTING MACHINE. EDWARD MILL, Cleveland, Ohio, assignor of one-third to William H. Patterson, same place. Filed Mar. 5, 1887. Serial No. 229,802. (No model.)

Claim.—1. The combination, in a paper-testing machine, of a paper-holding clamp, a piston in position to operate against the clamped paper, and mechanism by which a compressed gas may be made to actuate the piston, substantially as described.

2. The combination of the frame, a screw-plunger supported thereby and having a clamping-ring, a bed-plate beneath said ring, and a rod operating through said plunger.

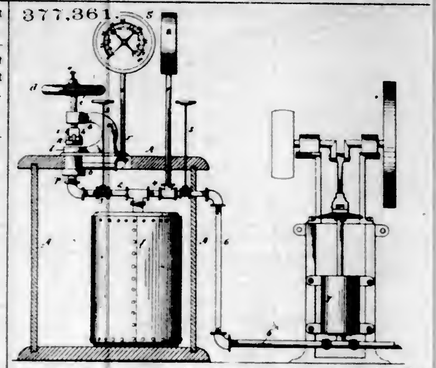
3. The combination of the screw-plunger, the removable ring thereon, mechanism for retaining said ring to the plunger, and a clamping-plate beneath the ring, substantially as described.

4. The combination of the screw-plunger and its clamping-ring, the spring-rod within the plunger, the clamping-plate beneath the plunger, and a piston-rod operating through the plate.

5. The combination, with the paper-clamp and the piston operated by air-pressure, of the cylinder in which said piston works, and a pressure-gage connected to said cylinder.

6. The combination of the screw-plunger, the removable ring

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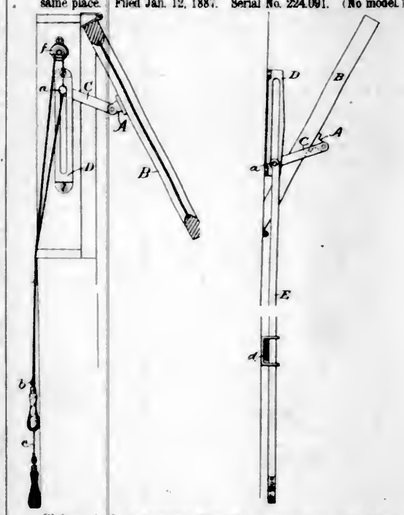


thereon, a clamping-plate, and a rod operating through said plate, the piston-cylinder, and a registering-gage connected with said cylinder.

7. The combination, in a paper-testing machine, of a paper-clamp, an air-actuated piston in position to work against the clamped paper, an air-storage flask connected so as to operate the piston, substantially as described, and mechanism for compressing the air, all substantially as described.

8. In a paper-testing machine, the combination of a cylinder and piston, a pressure-gage connected to said cylinder, and a valve on the piston in position to close the aperture to the pressure-gage when the piston completes its stroke, as set forth.

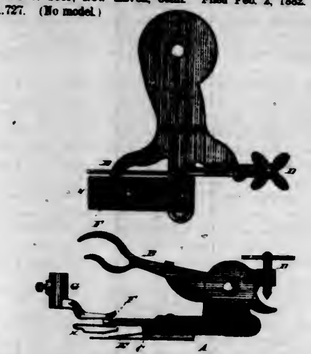
377,362. TRANSOM-LIFTER. HENRY E. RUSSELL, Jr., New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, same place. Filed Jan. 12, 1887. Serial No. 224,091. (No model.)



Claim.—1. In a transom-lifter, the combination of the bracket A, the bracket D, slotted through and through in a direction which is parallel to the face of the transom-frame, the link C, pivoted to the bracket A, the guide-pin *a*, secured to the opposite end of said link and resting within the slot of the bracket D, with its axis parallel to the face of the transom-frame, and means for operating said guide-pin lengthwise within the slot of the bracket, substantially as described, and for the purpose specified.

2. In a transom-lifter, the combination of the bracket A, the link C, with one end pivoted to said bracket, the guide-pin *a*, secured to the opposite end of said link, and the slotted bracket D, having its slot of a length proportionate to that of said link C, as described, whereby the guide-pin and link in opening the transom may pass the center on which said link is pivoted to the bracket A, substantially as specified.

377,363. RUFFLING ATTACHMENT FOR SEWING-MACHINES. EDWIN J. TOOF, New Haven, Conn. Filed Feb. 2, 1882. Serial No. 51,727. (No model.)

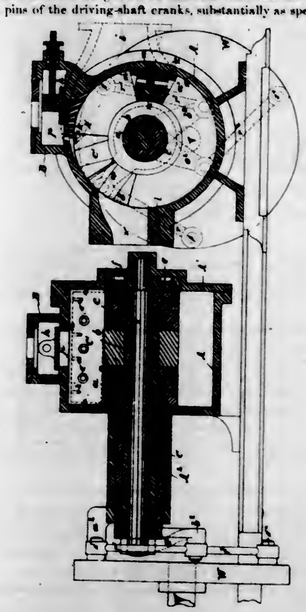


Claim.—1. The combination, with a supporting-frame, actuating-lever, and gathering-blade, of a flexible presser and a fixed projection or bridge for supporting the presser proper of the sewing-machine, substantially as and for the purpose set forth.

2. The combination, in a ruffling attachment for sewing-machines, consisting of a supplemental frame, operating-lever, gathering-blade, and an adjusting device, of a fixed projection secured to said frame, serving as a rest for the usual presser of a sewing-machine, and an elastic supplemental presser, substantially as set forth, and for the purpose described.

377,364. ROTARY ENGINE. PHILIP J. WEBER, Neu-Oetting, assignor of one-half to Ludwig Zechmeister, Munich, Bavaria, Germany. Filed Aug. 17, 1886. Serial No. 211,094. (No model.) Patented in Germany Mar. 23, 1886, No. 37,494; in Italy Dec. 14, 1886, No. 20,627; in Belgium Dec. 15, 1886, No. 74,756, and in France Feb. 7, 1887, No. 178,895.

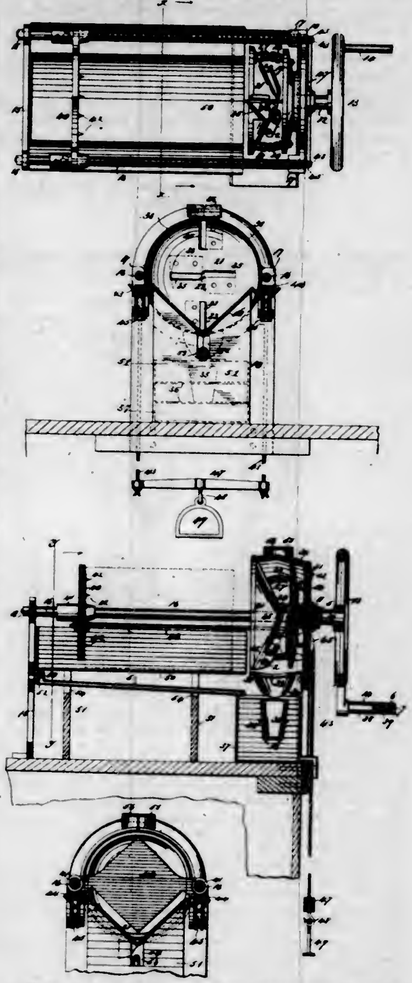
Claim.—1. The combination, in a rotary engine, of three or more revolving pistons, which are with their shafts set centrally one within the other in the cylinder, with the driving-shaft outside of the cylinder and lying eccentrically thereto and receiving rotary motion from the pistons, all being so constructed that the crank-pins describe a circle much less or much greater in diameter than the circle described by the pins of the driving-shaft cranks, substantially as specified.



2. In combination with the pistons rotating in a cylinder, A, the side plates, *m m'*, with packing *k* in the plate *m*, connected through passages *k'* with the interior of the cylinder, substantially as specified.

3. The combination of cylinder A and pistons *a' b' c'*, provided with packing *n k*, and side plates, *m m'*, with the head A' and disk *e*, containing packing *f*, substantially as described.

377,365. ICE-SHAVER. JOHN C. WHARTON, Nashville, Tenn. Filed Nov. 5, 1886. Serial No. 218,098. (No model.)



Claim.—1. In an ice-shaving machine, the combination, with the revoluble shaft having a disk thereon, of a slotted cutting-disk having knives projecting through said slots and connections between the two disks, a space being formed between the adjacent faces of the disks, into which the shaved ice passes from the knives, substantially as set forth.

2. In an ice-shaving machine, the combination, with the revoluble shaft having a fixed disk on its inner end, of the conical cutting-disk having the central slot, 22, perpendicular slots 23 23, leading inward from the edge of the disk for a distance equal to the distance of the ends of the central slot from the edge of the cutting-disk, cutters 25, projecting through said slots, and the bolts or rods 20 between the inner adjacent faces of the disks and holding them apart, whereby the

ice-receiving space behind the entire rear face of the disk is formed, substantially as set forth.

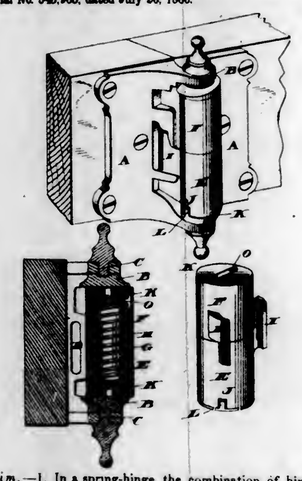
3. In an ice-shaving machine, the combination of the revoluble main shaft, a disk rigidly connected to the shaft, bolts or rods 20, carried by the said disk, a conical cutting-disk carried by the bolts or rods and provided with knives or blades, and sleeves or rings loosely mounted on said rods or bolts, substantially as set forth.

4. In an ice-shaving machine, the combination of a slotted disk provided with knives or cutters, a revoluble supporting-disk to which the slotted disk is attached to revolve therewith, and a clearer arranged in connection with the inner face of the supporting-disk, substantially as set forth.

5. In an ice-shaving machine, the combination, with the horizontal revoluble shaft having the disk 19 on its inner end and a longitudinal aperture, 5, and the swinging clearer 28, formed of an angle-bar, one arm of which projects into the aperture 5 and the other arm extending along the inner face of the supporting-disk, of the cutting-disk having knives, and the bolts or rods securing the two said disks together, space for the shaved ice being formed between the two disks as set forth.

REISSUES.

10,896. SPRING-HINGE. HENRY P. KOCHENDERFER and GEORGE M. WALDORF, Freeport, Ill. Filed May 24, 1887. Serial No. 239,274. Original No. 345,905, dated July 20, 1886.



Claim.—1. In a spring-hinge, the combination of hinge-leaves having lugs upon their inner edges, and two sleeves turning with their inner ends upon each other, and having hooks projecting from their sides, overlapping said sleeves in opposite directions and adapted to engage said lugs, with a spring inclosed within the sleeves and secured to the outer ends thereof.

2. In a spring-hinge, the combination of hinge-leaves having lugs upon their inner edges, with two sleeves turning with their ends upon each other, and having hooks projecting from their sides, a spring inclosed within the sleeves, and caps secured to the ends of the spring and to the ends of the sleeves.

3. In a spring-hinge, the combination of hinge-leaves having lugs upon their inner edges, and two sleeves turning with their inner ends upon each other, and having hooks projecting from their sides and engaging with said lugs, with a spring inclosed within the sleeves and secured to the outer ends of the sleeves, as and for the purpose shown and set forth.

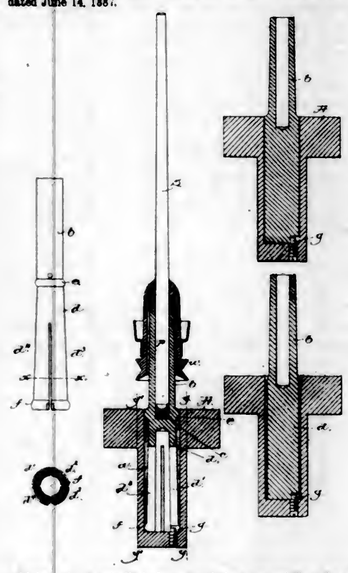
4. In a spring-hinge, the combination of hinge-leaves having lugs upon their inner edges, a sleeve having a reduced inner end, and having an outwardly-projecting hook at the shoulder, formed by the reduction, a sleeve turning with its inner end upon the reduced portion of the other sleeve, and having a hook projecting outwardly from its inner end, said hooks engaging with said lugs, and a spring inclosed within the sleeves and secured to their outer ends with its ends, as and for the purpose shown and set forth.

5. In a spring-hinge, the combination of hinge-leaves having lugs upon their inner edges, two sleeves turning with their inner ends upon each other, and having hooks projecting from their sides and engaging with said lugs, removable and adjustable caps secured to the outer ends of said sleeves, and a spring inclosed by said sleeves and having its ends secured to said caps, substantially as and for the purpose set forth.

6. The combination of hinge-leaves having lugs upon their inner edges, two sleeves turning with their inner ends upon each other, and having hooks projecting from their sides and engaging with said lugs, and having notches in their outer ends, caps formed with recesses and perforations fitting into the outer ends of the sleeves, and having lips to engage with said notches, and a spring inclosed within the sleeves and having its ends inserted into the perforations in said caps.

7. In a spring-hinge, the combination of two hinge-leaves having oblique ears at the ends of their inner edges pivoted together, and formed with wide perforated lugs or bails upon the middles of the inner edges, sleeves turning upon each other with their inner ends, and having wide hooks at their inner ends engaging said perforated lugs or bails, and a spring inclosed by the sleeves and having the ends thereof attached to said sleeves, as and for the purpose shown and set forth.

10,897. SPINDLE-SUPPORT FOR SPINNING-MACHINES. AUBIN WOOD, Worcester, assignor to the Sawyer Spindle Company, Boston, Mass. Filed July 20, 1887. Serial No. 244,834. Original No. 364,880, dated June 14, 1887.



Claim.—1. A spindle-bolster consisting, essentially, of a socketed pintle-receiving portion having a shank forming a prolongation of the said socketed portion, combined with a bolster-rail having a socket closed at its bottom for the reception of the said shank, substantially as described.

2. A spindle-bolster consisting, essentially, of a socketed pintle-receiving portion having a shank forming a prolongation of the said socketed portion, combined with a bolster-rail having a socket for the reception loosely of the said shank, substantially as described.

3. A spindle-bolster consisting, essentially, of a socketed pintle-receiving portion having a shank forming a prolongation of the said socketed portion, combined with a bolster-rail having a socket closed at its bottom for the reception of the said shank, and with means, substantially as described, to restrain the rotation of the bolster in the said socket.

4. A spindle-bolster consisting, essentially, of a socketed pintle-receiving portion having a shank forming a prolongation of the said socketed portion, and the elastic packing interposed directly between the shank of the bolster and the interior of the socket in the rail, combined with a bolster-rail having a socket closed at its bottom for the reception of the said shank, substantially as described.

N. PETERS, Photo-Lithographer, Washington, D. C.

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

LAWTHER *v.* HAMILTON *et al.*

Decided January 9, 1888.

1. LAWTHER—TREATING OLEAGINOUS SEEDS.

Letters Patent No. 168,164, granted to Alfred B. Lawther, September 28, 1875, for improvements in processes for treating oleaginous seeds, declared valid and to have been infringed.

2. NEW PROCESS MAY RESULT FROM THE OMISSION OF A STEP IN AN OLD PROCESS.

The omission of one step of an old process with an improved result constitutes a new process.

3. PATENTABILITY OF NEW PROCESS NOT AFFECTED BY GREATER CARE OR SKILL IN USING IT.

Where the new process requires greater care, or even greater skill, on the part of the workmen than formerly, it does not change its character as a process or materially affect its utility.

4. PROCESS—WHEN SUFFICIENTLY DESCRIBED IN A PATENT.

A patent sufficiently describes a process when by the aid of the knowledge derived from the state of the art the same may be carried out from the description in the patent by those skilled in the particular manufacture.

5. PROCESS CLAIMS—HOW LIMITED.

A claim for a process consisting of several steps may be limited by the state of the art and the description in the patent to the instrumentalities or their equivalents as thus described, which are essential in the carrying out of the process claimed.

APPEAL from the Circuit Court of the United States for the Eastern District of Wisconsin.

Mr. John W. Munday and *Mr. Edmund Adcock* for the appellant.

Mr. C. E. Shepard for the appellee.

Mr. Justice BRADLEY delivered the opinion of the Court.

The appellant, Alfred B. Lawther, filed his bill in the court below against the appellees, alleging that they were infringing a patent granted to him on the 28th of September, 1875, for certain improvements in processes of treating oleaginous seeds, and praying for an account of profits and damages and an injunction. The circuit court, being of opinion that the patent could not be sustained as a patent for a process, (which it was claimed to be,) dismissed the bill. We are called upon to revise this decision.

In the specification of the patent the patentee states that the object of his invention is—

to improve the process of working flaxseed, linseed, and other oil seeds in such a manner that a greater yield of oil is obtained at a considerable saving of time and power in the running of the crushing, mixing, and pressing machines, while also a cake of superior texture is produced.

The specification proceeds as follows:

Hitherto it has been the practice to crush the oil seeds between revolving rollers, and completing the imperfect crushing by passing them under heavy stones known as "edge runners" or "mullers," under addition of a quantity of water, the crushed and moistened seed being then taken from the muller-stones and stirred in a heated steam-jacketed reservoir preparatory to being placed into the presses for extracting the oil.

This process has been found imperfect in regard to many points, but mainly on account of the over-grinding of portions of the seed and the husks or bran when the seeds were exposed for too long a time to the action of the muller-stones, so as to form a pasty mass, and produce an absorption of oil by the fine particles of bran, while on the other hand the under-grinding, by too short an action of the stones, rendered the presses incapable of extracting the full amount of oil from the seed.

* * * * * * *

My process is intended to remedy the defects of the one at present in use; and consists mainly in conveying the oil seeds through a vertical supply-tube and feeding-roller at such degree of pressure to powerful revolving rollers that each seed is individually acted upon, and the oil-cells fully crushed and disintegrated. They are then passed directly, without the use of muller-stones, to the mixing-machine, to be stirred, moistened, and heated by the admission of small jets of water or steam to the mass, and then transferred to the presses.

The oil seeds are by my new process first conveyed to a hopper and fluted feed-roller at the top of an upright feed-tube of the crushing-machine, by which the seeds are fed, under suitable pressure, to revolving rollers of sufficient power, which run at a surface speed of about one hundred and fifty to two hundred feet per minute.

The pressure on the seeds in the feed-tube is necessary, as the oil seeds would otherwise not feed readily into rollers revolving under great pressure. The oil seeds are thereby compelled to pass evenly and steadily through the rollers, which have, therefore, a chance to act on all of them, and break the oil-cells uniformly without reducing any portion to a pasty condition. The bran is also left comparatively coarse, so that it shows the nature of the seed after pressing.

The muller-stones, and their over or under grinding of any portion of the seeds, are entirely done away with by this mode, which makes not only the machinery less expensive, but produces also a saving of power required in running the same. The crushed seeds are next placed in a steam-jacketed reservoir of the mixing-machine, where they are stirred, moistened, and heated by perforated revolving stirrer-arms, which throw jets of water or steam into the mass, so as to thoroughly permeate and mix the same. The crushed and moistened mass is then transferred to the presses for the extraction of the oil, which operation requires less power, on account of the uniformity of the mass, produces a greater yield of oil, and furnishes an improved quality of oil-cake or residue of open-grained flaky nature, capable of being split in regular pieces, at right angles to the direction of pressure.

Having thus described his invention, the patentee states his claim to be—

The process of crushing oleaginous seeds and extracting the oil therefrom, consisting of the following successive steps, viz: the crushing of the seeds under pressure, the moistening of the seeds by direct subjection to steam, and, finally, the expression of the oil from the seed by suitable pressure, as and for the purpose set forth.

The purpose and effect of the invention claimed by the patentee as a new process, and the argument against the validity of the patent as a patent for a process, cannot be better or more clearly stated than is done in the opinion of the court below, pronounced

by Judge Dyer, (21 Fed. Rep., 811.) We quote therefrom as follows:

> The proofs show, and in fact it is undisputed, that formerly in the process of extracting oil from flaxseed the seed was subjected to the crushing and disintegrating action of the muller-stones, which consisted of two large and very heavy stone wheels mounted on a short horizontal axis attached to a vertical shaft. By the rotation of this shaft the stones were caused to move on their edges shortly around in a circular path upon a stone bed-plate, with a peculiar rolling and grinding action, upon a layer of flaxseed placed on the bed-plate. This was the usual mechanical appliance in connection with the operating movement of the muller-stones. By this means such portions of the seed as came in contact with the muller-stones were reduced to a complete state of pulverization. To facilitate the disintegrating action of the muller-stones the seed was generally first more or less crushed by passing it through one or more pairs of rollers, thus better preparing it for the rubbing and grinding action of the muller-stones. The further treatment of the seed required the application of heat and moisture, and this was accomplished in various ways. Sometimes the heat and moisture were applied by a steaming device before the seed was crushed by the muller-stones; sometimes the seed was moistened when it was under the action of the muller-stones by sprinkling water upon the layer of seed beneath the stones, the heat being applied afterward by a separate operation. At other times both heat and moisture were applied after the seed had been run through the mullers and was in the form of meal in the heater. As the last step in the process, the seed thus crushed and disintegrated and in moist and warm condition was usually placed in hair-cloth mats or bags and subjected to hydraulic pressure, by which means the oil was extracted. This was the state of the art and this the usual process when the complainant obtained his patent.

The court then states the process set out in the appellant's patent, and after some observations thereon proceeds to say:

> The crushing of oleaginous seed, so that ultimately it may be in condition for the application of hydraulic pressure, was always a step, and necessarily the first step, in the process of extracting the oil therefrom. As we have seen, that step was formerly accomplished by means of rollers and muller-stones. The complainant ascertained by practice that in crushing the seed the tearing, pulverizing action of the muller-stones was injurious, and so he dispensed with that mechanical operation in the crushing step of the process and employed the rollers alone. He thereby simply omitted one of the instrumentalities previously used in the first stage of treatment of the seed. This was undoubtedly a useful improvement; but it was not the invention or discovery of a new process. Each step in the process existed and was known before—namely, crushing the seed, heating and moistening it, and, finally, the application of hydraulic pressure. What the complainant accomplished was a change in mechanical appliances and operation, by which an existing process and each step thereof were made more effective in its results. For this he may have been entitled to a mechanical patent. * * * He discovered that more advantageous results were attainable by dispensing with the use of muller-stones, and that these results were also promoted by the improved construction of the rollers and other mechanical appliances for heating and moistening the seed is quite apparent. The discovery or invention was not of a new series of acts or steps constituting a process, but only of certain mechanical changes in carrying into effect the well-known old steps of the process.

The view thus taken by the court below seems to us open to some criticism. If, as that court says, and we think rightly says, the omission of the muller-stones is a real improvement in the process of obtaining the oil from the flaxseed, if it produces more oil and better oil-cakes, and it is new and was not used before, why is it not a patentable discovery? And why is not such new method of obtaining the oil and making the oil-cakes a process? There is no new machinery. The rollers are an old instrument, the mixing machinery is old, the hydraulic press is old. The only thing that is new is the mode of using and applying these old instrumentalities. And what is that but a new process? This process consists of a series of acts done to the flaxseed. It is a mode of treatment. The first part of the process is to crush the seeds between rollers. Perhaps, as this is the only breaking and crushing of the seed which is done, the rollers are required to be stronger than before; but if so, it is no less a process.

The evidence shows that although the crushing of the seed by two horizontal rollers and then passing it thus crushed under the muller-stones was the old method commonly used, yet that for several years before Lawther took out his patent a more thorough crushing had been effected by the employment of four or five strong and heavy rollers arranged on top of one another in a stack, still using the muller-stones to grind and moisten the crushed seed after it was passed through the rollers. The invention of Lawther consisted in discarding the muller-stones and passing the crushed seed directly into a mixing-machine to be stirred, moistened, and heated by jets of steam or water, and then transferring the mass to the presses for the expression of the oil by hydraulic or other power.

The machinery and apparatus used by Lawther had all been used before. His only discovery was an improvement in the process. He found that by altogether omitting one of the steps of the former process—the grinding and mixing under the muller-stones—and mixing in the mixing-machine by means of steam a great improvement was effected in the result. Why should it be doubted that such a discovery is patentable? It is highly useful, and it is shown by the evidence to have been the result of careful and long-continued experiments and the application of much ingenuity. By the omission of the mullers greater care may be necessary on the part of the workman in carrying on the operations, especially in watching the moistening and mixing process so as to produce the proper moisture and consistency of the mass before subjecting it to hydraulic pressure. But though it be true that the new process does require greater care, and even greater skill, on the part of the workman than was formerly required, this does not change its character as being that of a process, nor does it materially affect its utility. The only question which, in our view, raises a doubt on the validity of the patent is whether it sufficiently describes the process to be followed in order to secure the beneficial results which it promises. The patentee, when on the witness's stand, stated that the invention was perfected on the 2d day of June, 1874; that it was the result of a long series of experiments which were not entirely successful until that date. His account of it is thus elicited on his cross-examination:

57. When did this invention, as you claim it, as you describe it in this patent, first take tangible and practical shape in your mind as a whole process? A. Complete and perfect in 1874.
58. What time? A. Between the 31st of May and the 2d of June.
59. What was the particular improvement that produced the change in results at that time? A. It was the perfecting of all of the improvements, the harmonious working of all of the changes that we had made in the matter; most of the changes had taught us something, and when we learned it all we knew it.
60. What particular thing brought about that change at that time? A. I don't know that I could locate any particular thing of any importance or magnitude.
61. What did you do different on the 1st or 2d of June or thereafter from what you had done on the 30th of May or theretofore? A. I have answered that before as near as I can. I only know it was the culmination of all previous efforts, our knowledge, and our apparatus.
62. Was the change caused by anything more than your men's increased practical skill and experience in working seed in that new way? A. Added to the apparatus, yes, sir; that was just it exactly. We couldn't have done it without the proper appliances, and with the proper appliances we couldn't have done it without the knowledge; the two things come together. The whole thing was a series of infinitely small steps.
63. Wasn't the apparatus the same on the 30th of May and after the 2d of June? A. I have no record of any experiment or change having been made during that time, nor do I recollect of any changes. It is possible that it was precisely similar.
64. Isn't that your best recollection, that it is similar? A. I have no recollection about it one way or the other. One of our greatest difficulties was the uniform moistening of the seed. We changed the moistening apparatus in a great many different ways. Some of them involved the delay of a day, some of them an hour, some of them a few minutes. Some such changes as that might have been made in the time spoken of.
65. No change was made in the rolls in that time, was there? A. Not that I know of.
66. Nor in the heater apparatus or in the presses at that time?
A. No; we didn't change the body of that heater; probably not the presses.
67. On the 30th day of May, and some time previously, didn't you crush the seed under rolls at the first step? A. Yes.
68. And then moisten it? A. Yes.
69. And then heat it? A. Yes.
70. And then extract the oil by pressure in the presses? A. Yes; some of it; all that we did extract.
71. Are not those the same steps in the process of making oil that you used on the 2d of June and ever since? A. That is the process to-day.

From this statement it is apparent that the beneficial result is due, not only to a proper degree of crushing of the seed in the rolls, but to a proper and uniform moistening of the crushed material in the heating-machine before it is subjected to pressure. The question is whether the patent sufficiently describes the operation to be performed in order to accomplish these results.

After a careful consideration of the specification of the patent, and in view of the principle of law that it is to be construed in the light of that knowledge which existed in the art at the time of its date, we are satisfied that it does sufficiently describe the process to be followed. Every step of this process was already understood, although not connected in the manner pointed out in the patent.

The following things were known and used before the granting of the patent, to wit: *First*, the crushing of the seed between powerful revolving rollers, fed thereto by a supply-tube and feeding-roller, so as to pass in a sheet of uniform thickness between the rollers. *Secondly*, the moistening, mixing, and heating of the crushed mass by means of steam and water in a mixing-machine. *Thirdly*, the pressure of the material thus prepared in molds by means of hydraulic power. These several steps being well known in the art when the patent was applied for required no particular explanation. The patentee had only to say to the oil-manufacturers of the country what he did say, namely: Crush your seed evenly and sufficiently between powerful rollers as heretofore, and then, instead of passing it under the muller-stones, as you have heretofore done, transfer it immediately to the well-known steam mixing-machine, and moisten and mix it equably and sufficiently for pressing. Every oil-manufacturer in the country would understand him. They would also understand that it might require additional care and skill to make the new process work successfully. It is evident that they did understand him, and that the manufacture of linseed-oil and oil-cakes has ever since been greatly improved and facilitated by the invention.

But while we are satisfied that the invention is that of a process, it is nevertheless limited by the clear terms of the specification, at least so far as the crushing of the seed is concerned, to the use of the kind of instrumentality described—namely, in the first part of the process to the use of powerful revolving rollers for crushing the seed between them under pressure. The claim cannot have the broad generality which its terms, taken literally, might at first sight seem to imply; but limited as suggested it seems to us sustainable in law. It is true that the description also calls for the use of a vertical supply-tube and feeding-roller. The latter is probably essential as a means of distributing the flow of the seed in a sheet of even thickness to the rolls; but the vertical supply-tube is evidently an incidental arrangement suited to one position of the rollers—namely, where a pair of rollers are set side by side. Where they form a pile on top of one another a vertical tube would be inapplicable. In such case the equivalent would be a slanting tube or inclined plane. The vertical tube is clearly not an essential part of the instrumentality used, and constitutes no limitation of the process.

The appellees also contend that they do not (in the words of the claim) "moisten the seeds by direct subjection to steam." It is proven, however, that they do moisten the seeds by a shower of spray in the mixing-machine, produced by directing a jet of steam against a small stream of water. This is within the claim of the patent. The specification describes the process of moistening the seeds as follows:

> They are then passed [after being crushed] directly, without the aid of muller-stones, to the mixing-machine to be stirred, moistened, and heated by the admission of small jets of *water* or *steam* to the mass.

Again:

> The crushed seeds are next placed in a steam-jacketed reservoir of the mixing-machine, where they are stirred, moistened, and heated by perforated revolving stirrer-arms, which throw jets of *water or steam* into the mass, &c.

Then the claim is for three successive steps, viz: the crushing of the seeds under pressure, the moistening of the seeds by direct subjection to steam, and the expression of the oil by suitable pressure. These words are to be read in the light of the explanations in the descriptive part, and thus read it is apparent that the meaning of the claim is that the crushed seeds are to be moistened and heated by the use of steam, or steam and water, immediately after coming from the rollers, without any aid from muller-stones. This is precisely what the appellees do.

One of the defenses set up is an implied license. It seems that Lawther has another patent for some improvement in the stack of rollers now commonly used for crushing the seed, and supplies them to order through a foundryman by the name of McDonald. The appellees purchased a set of these rollers from McDonald with the knowledge and consent of Lawther. These rollers were returned on account of some imperfection in the material; but the frame was retained, and the appellees procured similar rollers made elsewhere. They contend that by this transaction Lawther gave his consent to their use of his process. We do not think that there is sufficient evidence of any such consent. The use of the rollers did not necessarily involve the use of the process, and there is no proof that anything was said about the process.

Other points were raised which we do not deem it necessary to discuss.

We cannot but think that Lawther discovered a new process of manufacturing oil from seeds, and that he was entitled to a patent therefor; and we are of opinion that the patent in suit, construed as we have suggested, is a good and valid patent. We are also of opinion that the appellees infringed the patent, and that they have not shown any legal defense to the suit. It follows that the appellant is entitled to a decree for an injunction and an account of profits and damages, as prayed in the bill. The decree of the circuit court is therefore reversed, and the cause remanded, with instructions to enter a decree for the appellant, and take such further proceedings as may be in conformity with this opinion.

Supreme Court of the United States.

DRYFOOS *v.* WIESE.

Decided January 9, 1888.

1. BECK—QUILTING-MACHINES.

The second claim of Reissued Letters Patent No. 9,097, granted to Louis Dryfoos, assignee of August Beck, February 24, 1880, for an improvement in quilting-machines, adjudged to be valid.

2. INFRINGEMENT—WHAT IS NOT.

Where the supposed infringing machine was for the same purpose as complainant's patented machine and produced the same result in operation but by different means from those claimed in the patent in suit there was no infringement.

3. EQUIVALENT—WHAT IS NOT.

Where complainant's patent claimed "conical feed-rolls" and the defendant's machine had short cylindrical feed-rolls feeding in a circular direction these latter rolls were not the equivalent of complainant's conical feed-rolls.

APPEAL from the Circuit Court of the United States for the Southern District of New York.

Mr. Edmund Wetmore for the appellant.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity, brought in the Circuit Court of the United States for the Southern District of New York by Louis Dryfoos against William Wiese, for the infringement of Reissued Letters Patent No. 9,097, granted to said Dryfoos, assignee of August Beck, February 24, 1880, for an improvement in quilting-machines, on an application for a reissue filed January 24, 1880, the original patent, No. 190,184, having been granted to Louis Dryfoos and Joseph Dryfoos, as assignees of Beck, May 1, 1877, on an application filed February 27, 1877. Joseph Dryfoos assigned all his interest to Louis Dryfoos, and the patent was reissued to Louis Dryfoos, January 29, 1878, as No. 8,063, on an application filed January 2, 1878.

There are six claims in the second reissue; but the bill alleges infringement only of claim 1 and prays for an injunction only as to claim 1. The plaintiff's proofs, however, were directed to showing an infringement of claims 1 and 2.

The circuit court (22 *Blatchford*, 19) considered the case in respect to both claim 1 and claim 2. It held the second reissue to be invalid in respect to claim 1, and to be valid as to claim 2; but it held that the defendant had not infringed claim 2, and dismissed the bill. From that decree the plaintiff has appealed.

In the opinion of the circuit court, delivered by Judge Wheeler, the questions involved are so well stated that we adopt his language, as follows:

> The invention was and is stated in the original and reissues to be of improvements on the quilting-machine shown in Letters Patent No. 159,884, dated February 16, 1875, granted to the same inventor, [that is, to Louis Dryfoos, as assignee of Beck, as inventor.] That machine was for quilting by gangs of needles in zigzag parallel lines, and was fed by cylindrical rolls having an intermittent rotary motion which would move the cloth while the needles were out of it, and could be arranged to feed in straight lines direct or oblique. The original of the patent in suit showed different mechanism for actuating the feed-rolls, so that the length of stitch could be varied at pleasure, and conical rolls having an intermittent motion to feed the conical bodies of skirts and skirt-borders in a circular direction when the needles were out of the cloth, as well as cylindrical rolls for straight goods and other improvements upon other parts of the machine, and had claims for the feed mechanism and improvements upon the other parts of the machine, but none for the conical feed-rolls. The first reissue further described the conical feed-rolls as made of such taper as to conform to the shape of the skirt or border to be quilted, and claimed the combination of the series of needles, with the conical feed-rolls acting intermittently, in place of one of the other claims. The reissue in suit still further describes the conical feed-rolls as the embodiment of a feed device which extends substantially throughout the width of the conical strip of goods, and as it departs from the shorter curved edge and approaches the longer curved edge is adapted to have a proportionately increased range of feed movement, so that it will feed the conical strip of goods in the requisite curved path evenly and without any injurious strain or drag, and further claims the combination, with the gang of sewing mechanisms and the cloth-plate which supports the goods under them, of a feed device operating intermittingly in the intervals between the formation of the stitches, which extends and operates substantially across the conical strip of goods, and which, as it departs from the shorter curved edge and approaches the longer curved edge of the goods, is adapted to have a proportionately increased range of feed movement. The defendant is engaged in using a quilting-machine for quilting conical goods, having a gang of needles and short cylindrical feed-rollers at each edge of the goods, which they feed in a circular direction by moving at different rates of speed constantly, the needles having a forward movement corresponding to that of the cloth while in it, and also one with a four-motion feed, which is capable of feeding in a circular direction by lengthening the feed at the longest edge of the goods, but is not shown to have been so used or intended to be so used. The validity of the reissue and infringement of it, if valid, are denied.

The circuit court then proceeds:

> Beck still appears to have meritoriously invented effective means for giving circular direction to the feed of quilting-machines having gangs of needles for quilting several parallel seams. He set forth these means in the specifications and drawings of his original patent, and seems to have been well entitled to then have a patent for the mand for the combination of the mechanism with the gang of needles. But he does not appear to have been entitled to a patent for merely giving such direction to such feed-motion apart from the mechanism, nor to the process of operation of his mechanism for giving such direction. Neither could he claim the combination of mechanism not then known, or its processes, with the needles. He invented his own mechanism, and the combination of that with the co-operating parts of the machine, and nothing more, and seems to have been entitled to a patent for those and no more. The first reissue was within a few months of the original, and before others appear to have done anything in that region of invention, and seems to have been well enough. The second reissue was more than two years after the original, but, whether too long after or not, was, in effect, for the combination of the gang of needles and cloth-plate with any feeding mechanism which would reach across the cloth and feed the long side faster than the other. This was clearly beyond the invention shown in the original, and, except as to the mechanism shown in the original, beyond the invention in every way. This claim of the reissue is therefore wholly invalid.

Claims 1 and 2 in the second reissue are as follows:

> 1. In a machine for quilting conical strips of goods, the combination, with the series or gang of sewing mechanisms and the cloth-plate which supports the goods under the action of the same, of a feed device operating intermittingly in the intervals between the formation of the stitches, which extends and operates substantially across or from edge to edge of the conical strip of goods, and which, as it departs from the shorter curved edge and approaches the longer curved edge of said goods, is adapted to have a proportionately increased range of feed-movement, substantially as and for the purposes set forth.
>
> 2. The combination, with a series of vertically-reciprocating needles mounted in a laterally-reciprocating sewing-frame, of conical feed-rolls, and mechanism for causing them to act intermittingly during the intervals between the formation of stitches, substantially as herein shown and described.

Claim 1 is not brought before us by the counsel for the appellant, for in his brief he states that it is only necessary to consider claim 2, for the reason that if claim 1, first introduced into the second reissue, is broader than claim 2, (which is substantially in the same language as claim 1 of the first reissue,) it is an unlawful expansion, introduced nearly three years after the original patent was granted, and that if the defendant has not infringed claim 2 of the second reissue he has infringed no lawful claim of it. We therefore make no ruling as to claim 1.

As to claim 2, the circuit court held that, as it was valid as claim 1 of the first reissue in the form in which it there appeared, and was brought forward into the second reissue as claim 2 thereof in substantially the same language, it was not made invalid by the fact that claim 1 of the second reissue was invalid, and that the plaintiff appeared, therefore, to be entitled to a monopoly of the conical feed-rollers in claim 2.

On the question of the infringement of claim 2 the circuit court held that neither one of the defendant's machines, above described, infringed that claim, because neither one of those machines had conical rollers nor any of the other mechanism of the plaintiff; that what the defendant did was not to divide the plaintiff's conical feed-rollers into sections or parts in such manner as to make the parts the equivalent of the whole, but that the plaintiff's machine gave the circular direction to the goods by mechanism which accomplished the result in one way, while in the defendant's machines the result was accomplished by different mechanism in a different way. We are of opinion that this view of the case was correct

The specification of the second reissue states that Beck's feed device "extends substantially throughout the width of the conical strip of goods;" that as such feed device "departs from the shorter curved edge and approaches the longer curved edge of the goods" it "is adapted to have a proportionately increased range of feed movement;" that such feed device "consists, as shown in the drawings, of feed-rolls H, which are made of conical shape and of such taper or relative diameters at their respective ends as to conform to the shape of the skirt or border to be quilted." In one of the defendant's machines there are short cylindrical feed-rollers at each edge of the goods, which they feed in a circular direction by moving at different rates of speed constantly, the needles having a forward movement corresponding to that of the cloth while the needles are in it. The other one of the defendant's machines has the well-known sewing-machine four-motion feed, which is capable of feeding in a circular direction by lengthening the feed at the longest edge of the goods. Neither of these machines has any such conical rollers as are found in the plaintiff's patent, and are particularly specified as an element in claim 2 of the second reissue.

It is contended for the plaintiff that as Beck was the first to devise a combination the gist of which is a feed feeding faster at one end than at the other, with a laterally-moving gang or series of needles and an intermittent feed when the needles are out of the stitches, he is entitled to cover all variations in the form of the feed so long as by any means it operates to feed faster at one end than at the other, and that if that result is accomplished the mechanism must be an equivalent for that of the plaintiff.

The plaintiff's patent must be limited to the mechanism described and claimed by him, and cannot be extended so as to cover all mechanism for giving a circular direction to the feed motion, nor to the process of operation of the mechanism described in his patent, and the defendant's mechanism, in each form of his machine, cannot be regarded as merely an equivalent for the plaintiff's mechanism. The case is substantially like that of *Yale Lock Co.* v. *Sargent*, (117 U. S., 373.) There the claim of the patent, which was for an improvement in permutation-locks, claimed the arrangement of two or more rollers, of varying eccentricity, resting upon the periphery of a cam, for the purpose of preventing the picking of the lock. In the defendant's lock the rollers were identical with each other in eccentricity and shape; but it was claimed by the plaintiff that when in revolution they varied in eccentricity in reference to the cam which operated them, so that in action their eccentricity varied and the same result was produced. But this Court held that the description in the patent and the claim required that the variation of eccentricity should be between the rollers themselves, and not a variation in action in reference to the cam; that although the same result might be produced it was not produced by the same means, and that there was no infringement.

Decree affirmed.

Supreme Court of the United States.

DREYFUS *et al. v.* SEARLE.

Decided January 9, 1888.

1. SEARLE—RIPENING WINES.

Letters Patent No. 48,728, granted to John Searle, July 11, 1865, for a process for imparting age to wines, declared invalid for lack of patentable invention.

2. PATENTABLE INVENTION—WHAT IS NOT.

The application of artificial heat to ripen wine being old and the application of artificial heat to the outside of casks to ripen wine contained therein being old, it did not require invention to apply artificial heat to the inside of the casks to ripen the wine in the same.

3. SAME.

There was no invention in applying steam-pipes to the interior of a cask for the purpose of heating the wine contained therein, steam-pipes having been previously applied to the interior of a closed tub for the purpose of heating water in the same.

APPEAL from the Circuit Court of the United States for the District of California.

Mr. J. Hubley Ashton for the appellant.

Mr. A. C. Bradley and *Mr. W. J. Newton* for the appellee.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity, brought in the Circuit Court of the United States for the District of California by Sophia Searle, as executrix of the last will and testament of John Searle, deceased, against Benjamin Dreyfus, Emanuel Goldstein, Jacob Frowenfeld, and John J. Weglein, copartners under the firm-name of B. Dreyfus & Co., for the infringement of Letters Patent of the United States No. 48,728, granted to John Searle, July 11, 1865, for seventeen years from June 15, 1865, for an improved process of imparting age to wines. The bill was filed December 21, 1881.

The specification and claim of the patent are in these words:

> Be it known that I, JOHN SEARLE, of the city and county of San Francisco, State of California, have invented a new and Improved Process for Imparting Age to Wines and Liquors; and I do hereby declare that the within is a full and exact description of the same.
>
> The nature of my invention consists in providing a process for shortening the time that is now required for ripening wines and liquors to about one-half the period, without deteriorating their flavor, by the use of steam.
>
> Madeira, sherry, port, Teneriffe, and other wines have been prepared for many years, for imparting age, through the medium of "estufas," or large ovens having flues by which they are heated. These estufas are filled with wines and spirits in casks or pipes, and are kept at a proper heat until the contents of the casks show the desired age through the staves. By this process the heat must necessarily be very great, (say 140°,) which impairs the flavor of the wine by imparting to it the taste of the cask, and oftentimes the casks have to be taken out and recoopered before the process can be completed.
>
> By the use of my process the following advantages are derived:
>
> 1st. There is a great saving of time and fuel, the building and air not being heated within, as by the old process.
>
> 2d. It can be effected in casks of the largest size, thereby insuring uniformity of quality in the wine.
>
> 3d. The process can be carried on in any storehouse or cellar.

4th. There is no injury to the casks, whereas by the old system they become damaged and require constant repairs.

5th. The breakage and loss on the liquors is very much reduced, which is sometimes excessive in the estufas by the falling to pieces of the heated and dried-up casks.

6th. No bad taste is imparted to the liquors during my process, which is too often the case in the estufas, where the wine receives the heat through the sides of the cask.

To enable others skilled in the art to make use of my improvement, I will proceed to describe my process and its operation.

I use casks or tanks (as the case may be) for holding the wine. If casks, they may be placed on end. Through each of these casks or tanks, near the base, I pass an iron or metallic pipe (copper is preferable) of about one inch and open at its end. These pipes connect with a main steam-pipe, and can be closed and the steam shut off, should the heat become too great for the wine, by means of a stop-cock attached to each of the pipes.

The degree of heat which I use in the operation varies from 100° to 140°.

The time required to perfect the operation of ripening wine by this process is about six weeks, yet, of course, it will be left to the knowledge and discretion of the keeper of the cellar to determine when the ripening process is completed.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The introducing the heat, by steam or otherwise, to the wine itself by means of metallic pipes or chambers passing through the casks or vessel, substantially as set forth.

The answer of the defendants denied that the invention was new or useful, and alleged that it was in public use in San Francisco for more than two years prior to the date of the application by Searle for the patent by two persons, named Wieland and Voorman.

Issue being joined, proofs were taken on both sides, and on the 22d of May, 1883, the circuit court entered an interlocutory decree, adjudging the patent to be valid, that the defendants had infringed upon it by treating and aging wine by the process described and claimed in it, and ordering a reference to a master to take and report an account of profits from the infringement. He reported the amount of profits to have been $3,249.60. Both parties excepted to the report; but all the exceptions were overruled, and a final decree was entered in August, 1884, awarding a recovery to the plaintiff of $3,249.60, with interest from the date of the entry of the interlocutory decree, May 22, 1883, and costs. From this decree the defendants have appealed to this Court.

It is stated in the specification of the patent that age had been imparted to wines for many years by placing them in casks, in estufas or large ovens, and keeping up a proper heat therein, on the outside of the casks, until the contents of the casks showed the desired age. The application of artificial heat to impart age to wine was therefore old. The heat was applied to the wine from the outside. The new process claimed in the patent is to introduce the heat by causing steam or other heating medium to pass through metallic pipes or chambers placed on the inside of the cask and within the body of the wine in the cask. This is called in the patent a new process; but so far as the action or effect of heat on the wine is concerned in respect to ripening it or imparting to it what is called "age," or any other quality imparted to it by heat, the effect or result is the same as that produced by imparting the heat to the wine from the heated air in the old-fashioned estufa or oven. It is shown by the evidence that the application of the heat to the wine from the inside of the cask has no different effect upon it from that of the heat as applied by the old process, and that no chemical or other change is produced in the wine different from that produced by the old process.

There was no novelty in the process as a patentable process. Whatever novelty there could have been must have consisted wholly in the apparatus used for introducing the heat to the inside of the body of the wine; but it appears by the evidence that the apparatus as a means of imparting heat from it to the body of the liquid, inside of which it was placed, was not new. Wieland testifies that for twenty-five years prior to November, 1882, he had, in conducting his business as a brewer in San Francisco, heated water by means of a copper coil filled with exhaust-steam, placed in the water, the water being in a closed tub containing fifty or sixty barrels, the copper pipe entering the tub on the side, near the bottom, and forming a coil inside, and then passing out through the top. It also appears that a like apparatus was used in the United States prior to the issuing of the plaintiff's patent for the purpose of heating high-wines by means of steam in a copper coil, so as to evolve the alcoholic vapors. There was no patentable invention in applying to the heating of wine or any other liquor from the inside of the cask of the apparatus which had been previously used to heat another liquid in the same manner.

The case falls directly within the decisions of this Court in *Pomace Holder Co.* v. *Ferguson* (119 U. S., 335, 338) and the cases there collected, and in *Thatcher Heating Co.* v. *Burtis*, (121 U. S., 286.)

There having been, therefore, nothing new as a process in the operation or effect of the heat on the wine, and nothing patentable in the application of the old apparatus to the heating of the wine, the decree of the circuit court must be reversed and the case be remanded to the Circuit Court for the Northern District of California, with a direction to dismiss the bill.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 42—NO. 6. TUESDAY, FEBRUARY 7, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
THE OFFICIAL GAZETTE	493
ATTORNEYS	493
NOTICE	493
ISSUE OF FEBRUARY 7, 1888	493
DESIGNS	494
TRADE-MARKS	494
LABELS	494
PATENTS GRANTED	495
REISSUES	603
REPORT OF THE COMMISSIONER OF PATENTS FOR 1887	605

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Attorneys.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., January 27, 1888.

SIR: I am directed by the Secretary of the Interior to inform you that the order dated August 7, 1876, disbarring Jacob H. Kroh, of Kokomo, Indiana, from practice as attorney before the Department and its Bureaus has this day been rescinded.

Very respectfully,

GEO. A. HOWARD,
Chief Clerk.

The Commissioner of Patents.

Notice.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., January 26, 1888.

Hereafter all drafts, bills of exchange, and money-orders sent to this Office must be made payable to the Commissioner of Patents as payee, and all checks must be certified and made payable to the Commissioner of Patents.

(Signed) BENTON J. HALL,
Commissioner.

42 o g—6—i

Issue of February 7, 1888.

Patents	366—No.	377,966 to No. 377,731, inclusive.
Designs	13—No.	18,035 to No. 18,047, inclusive.
Trade-Marks	14—No.	15,159 to No. 15,172, inclusive.
Labels	6—No.	5,480 to No. 5,485, inclusive.
Reissues	3—No.	10,898 to No. 10,900, inclusive.
Total issue	402	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	.....	Nebraska	.....	.....
Arizona Territory	.....	.....	Nevada	.....	.....
Arkansas	1	.....	New Hampshire	13	.....
California	5	.....	New Jersey	16	1
Colorado	.....	1	New Mexico Territ'y	1	.....
Connecticut	16	1	New York	67	4
Dakota Territory	1	.....	North Carolina	3	1
Delaware	1	.....	Ohio	24	1
District of Columbia	1	.....	Oregon	.....	.....
Florida	1	.....	Pennsylvania	38	2
Georgia	.....	.....	Rhode Island	3	.....
Idaho Territory	1	.....	South Carolina	.....	.....
Illinois	27	3	Tennessee	1	.....
Indian Territory	.....	.....	Texas	4	.....
Indiana	14	2	Utah Territory	1	.....
Iowa	6	.....	Vermont	3	.....
Kansas	8	.....	Virginia	6	1
Kentucky	5	.....	Washington Territ'y	.....	.....
Louisiana	2	.....	West Virginia	2	.....
Maine	1	.....	Wisconsin	6	.....
Maryland	4	.....	Wyoming Territory	.....	.....
Massachusetts	34	2	United States Army	.....	.....
Michigan	12	.....	United States Navy	.....	.....
Minnesota	4	.....			
Mississippi	2	.....	Total to citizens of the United States	350	19
Missouri	14	.....			
Montana Territory	.....	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	.....	.....	Germany	5	1
Australia	.....	.....	Italy	1	.....
Austria-Hungary	4	.....	Mexico	.....	.....
Belgium	1	.....	New South Wales	.....	.....
Bermuda	.....	.....	New Zealand	.....	.....
Brazil	.....	.....	Norway	1	.....
Canada	2	.....	Russia	.....	.....
Chili	.....	.....	Scotland	1	.....
Colombia, U. S. of	.....	.....	Sweden	.....	.....
Cuba	.....	.....	Switzerland	.....	.....
Denmark	1	.....	Victoria	.....	.....
England	8	.....			
Finland	.....	.....	Total to citizens of foreign countries	29	1
France	3	.....			

DESIGNS.

18,035.—TYPE.—*Arthur M. Barnhart*, Chicago, Ill., assignor to *Barnhart Bros. & Spindler*, same place. Application filed January 11, 1888. Serial No. 260,449. Term of patent 14 years.

18,036.—PACKAGE-HOLDER.—*George H. Benedict*, New York, N. Y. Application filed December 23, 1887. Serial No. 258,852. Term of patent 7 years.

18,037.—TYPE.—*Charles E. Heyer*, Chicago, Ill., assignor to *Arthur M.* and *Alson E. Barnhart*, same place. Application filed August 7, 1885. Serial No. 173,870. Term of patent 14 years.

18,038 and 18,039.—CARPET.—*Eugene H. Hill*, Philadelphia, Pa., assignor to *Schofield, Mason & Co.*, same place. Applications filed January 5, 1888. Serial Nos. 259,926 and 259,927. Term of patents 3½ years.

18,040.—CARPET.—*Arthur Lees*, Kidderminster, county of Worcester, England, assignor to *Schofield, Mason & Co.*, Philadelphia, Pa. Application filed January 5, 1888. Serial No. 259,925. Term of patent 3½ years.

18,041 to 18,046, inclusive.—CARPET.—*Thomas E. Meagher*, Philadelphia, Pa., assignor to *Schofield, Mason & Co.*, same place. Applications filed January 5, 1888. Serial Nos. 259,928 to 259,933, inclusive. Term of patents 3½ years.

18,047.—HAME-CLIP.—*Oliver Hazen Muntz*, Greenville, Pa. Application filed December 17, 1887. Serial No. 258,879. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,159.—UNDER-CLOTHING AND OUTSIDE SUITS FOR MEN AND BOYS.—*B. W. Adler & Co.*, Philadelphia, Pa. Application filed December 31, 1887. Used since December 1, 1887.

"The words 'FIRE INSURANCE COMPANY' in connection with a pictorial illustration of a house on fire."

15,160.—MANUFACTURED PLUG CHEWING-TOBACCO.—*Bitting & Hay*, Winston, N. C. Application filed December 9, 1887. Used since January 1, 1886.

"The pictorial illustration of three elderly women sitting at a tea-table in interested conversation."

15,161.—DETERGENT OR CLEANSING POWDERS.—*N. K. Fairbank & Company*, Chicago, Ill.: St. Louis, Mo.; New York, N. Y., and Omaha, Nebr. Application filed July 7, 1887. Used since June, 1887.

"The words 'GOLD DUST' appearing across the picture of a pile of coin."

15,162.—SOAP-POWDER.—*John R. Gentleman*, Brooklyn, N. Y. Application filed September 13, 1887. Used since September 20, 1886.

"The word 'IVY.'"

15,163.—PLAIN CHOCOLATE FOR USE IN COOKING AND AS A CONFECTION.—*Hawley & Hoops*, New York, N. Y. Application filed December 2, 1887. Used since September 1, 1887.

"A monogram composed of the words and numeral 'A No. 1.'"

15,164.—MALT EXTRACT.—*Johann Hoff*, Berlin, Germany. Application filed January 13, 1888. Used since 1847.

"The words 'JOHANN HOFF'S' in any language."

15,165.—NEWSPAPERS.—*Housewife Publishing Co.*, Greenfield, Mass. Application filed January 12, 1888. Used since April 1, 1886.

"The compound word 'HOUSE-WIFE.'"

15,166.—SOFT-RUBBER GOODS.—*The India Rubber Comb Company*, College Point and New York, N. Y. Application filed December 9, 1887. Used since June 30, 1886.

"The word 'CROWN.'"

15,167.—WASH FOR CLEANING AND POLISHING JEWELRY.—*Alexander Wyatt Isaacs*, Chicago, Ill. Application filed August 25, 1887. Used since July 1, 1887.

"The word 'CHAMPION.'"

15,168.—REMEDY FOR CATARRH AND KINDRED DISEASES.—*F. T. Montague & Co.*, Crawfordsville and Indianapolis, Ind., and Chicago, Ill. Application filed December 10, 1887. Used since November, 1885.

"The words 'NA NON.'"

15,169.—PACKINGS FOR MACHINERY.—*Alexander Montgomery*, Boston, Mass. Application filed December 22, 1887. Used since December 1, 1887.

"The words 'THE FAVORITE' and a representation of an elastic core-packing inclosed by a lozenge or diamond shaped figure."

15,170.—RIBBONS AND PIECE SILKS.—*Murphy, Grant & Co.*, San Francisco, Cal., and New York, N. Y. Application filed December 29, 1887. Used since December, 1881.

"The letters 'AA.'"

15,171.—METALLIC PIPE AND COUPLINGS FOR THE SAME.—*The Spiral Weld Tube Company*, East Orange, N. J. Application filed January 3, 1888. Used since December 22, 1887.

"The two words 'SPIRAL WELD.'"

15,172.—COMPOSITION FOR PRINTERS' INKING-ROLLERS.—*Andrew Van Bibber*, Cincinnati, Ohio. Application filed December 27, 1887. Used since May, 1878.

"The words 'ROUGH AND READY.'"

LABELS.

5,480.—Title: "FIRE EXTINGUISHER."—*George Corbion, Jr.*, Philadelphia, Pa. Application filed January 9, 1888.

5,481.—Title: "GOLD DUST." (FOR WASHING POWDER.)—*N. K. Fairbank & Company*, Chicago, Ill.; St. Louis, Mo.; New York, N. Y., and Omaha, Nebr. Application filed July 7, 1887. (Trade-Mark Registered.)

5,482.—Title: "PREMIUM STOCK LAGER."—*Haberle Brewing Company*, Syracuse, N. Y. Application filed January 12, 1888.

5,483.—Title: "D. H. JONES' ANTI-BILIOUS CATHARTIC PILLS."—*D. H. Jones*, Stamford, Conn. Application filed January 11, 1888.

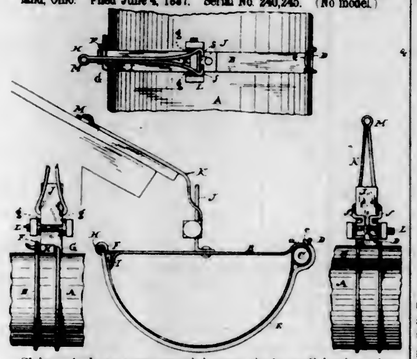
5,484.—Title: "MEXICAN CEREUS POLLEN."—*Frank S. Newby* and *George E. Rockwell*, Indianapolis, Ind. Application filed December 27, 1887.

5,485.—Title: "TYREE'S SOUTHERN CARMINATIVE."—*William Richards Tyree*, Staunton, Va. Application filed January 12, 1888.

PATENTS

GRANTED FEBRUARY 7, 1888.

377,366. EAVES-TROUGH HANGER. JONATHAN P. ABBOTT, Cleveland, Ohio. Filed June 4, 1887. Serial No. 240,245. (No model.)

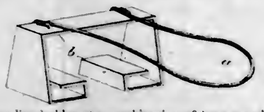


Claim.—1. In an eaves-trough hanger, the brace E, having a loop at one end engaging the hook at the terminal of the cross-bar B, extending around under the trough connected to the hook H of said cross-bar by means of a hook and eye formed on the ends of the brace, in combination with the cross-bar provided with a hook, H, at one end, and a hook, D, at the other adapted to engage the trough and brace, with a standard, J, fastened thereto for an attachment to connect the hanger to the roof, substantially as described, and for the purpose set forth.

2. An eaves-trough hanger consisting of the cross-bar B, having a hook, D, at one end, and a hook, H, at the other, in combination with the brace E, and attached to the roof by means of the supporter K, adjustably connected to the standard J by the entwining wires of the supporter and screw bolt and nut, arranged in the manner substantially as described, and for the purpose set forth.

3. In combination with an eaves-trough hanger, the supporter K, made of a simple piece of wire and at its lower part formed to entwine about the standard for the purpose of attaching the hanger to the roof and adjusting the pitch of the trough conjointly with a screw-bolt, substantially as set forth.

377,367. LINE-HOLDER. JEREMIAH V. BEAVERS, Mount Summit, Ind. Filed Nov. 14, 1887. Serial No. 255,163. (No model.)

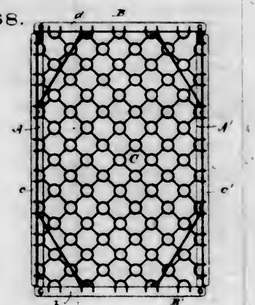


Claim.—In a line-holder, the combination of loop *a* and the plate *b*, provided with the catches, substantially as and for the purposes described.

377,368. BED-BOTTOM. CHARLES BIGBON, Cincinnati, Ohio. Filed Nov. 15, 1887. Serial No. 255,186. (No model.)

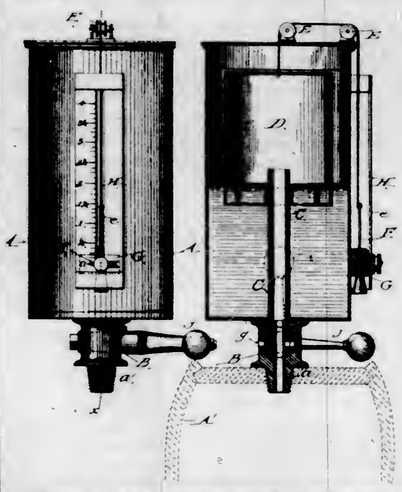
Claim.—1. In combination with the supporting-frame having fixed head and foot rails, the movable side rails, and the elastic web secured thereto, pivotal braces securing the side rails to bars connecting the upper and lower sills of the base-frame, and adjustable vertically at their connection with the connecting-bars to regulate the horizontal tension of the web under load, substantially as set forth.

377,368.



2. The combination of the supporting-frame, fixed end rails, *a b*, movable side rails, *c c'*, the elastic web C, bars *f f*, connecting the upper and lower end sills of the bed-frame, and the braces D D, adjustable thereon, which connect the same with and support the movable side rails, substantially as set forth.

377,369. MEASURING-VESSEL. JOSEPH O. BOGGS, Harrisburg, Pa., assignor of one-fourth to William A. Middleton and Wilson T. Corman, both of same place. Filed May 7, 1887. Serial No. 237,414. (No model.)



Claim.—1. A vessel or measure containing air under pressure and an indicating device connected therewith, in combination with a liquid-containing vessel communicating with the interior of said measure, substantially as described.

2. The combination, with a liquid-containing vessel, of an air-vessel communicating therewith and an indicating apparatus on said air-

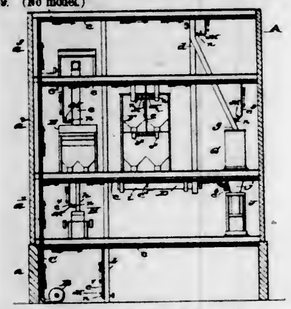
vessel, whereby a given amount of liquid displaced causes a like amount of displaced air to be indicated, substantially as described.

3. The method of indicating the amount of liquid drawn from a vessel, consisting in connecting said vessel with an air chamber or vessel, which supplies the liquid-containing vessel with air in quantities corresponding with the liquid removed, and in attaching to said air-vessel a device for indicating the amount of displaced air, substantially as herein described.

4. The combination, with a liquid-containing vessel, of an air-measure comprising an exterior vessel having an air tube or pipe, an internal vertically-moving dome or chamber containing air and communicating with said tube or pipe, and an exterior indicating device operated by the dome or chamber to register both the amount of air removed from said dome or chamber and the amount of liquid drawn from the vessel, substantially as described.

5. An air-measure having an indicating apparatus, in combination with a liquid-containing barrel or vessel communicating with and drawing air therefrom in amounts corresponding to the amounts of liquid withdrawn, substantially as herein described.

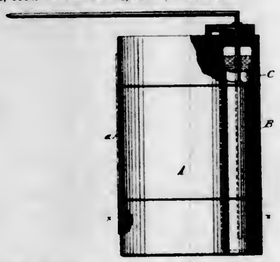
377,370. ALARM FOR FLOURING-MILLS. ALFRED J. BUIE, St. Louis, Mo. Filed June 15, 1885. Renewed June 6, 1887. Serial No. 240,449. (No model.)



Claim.—1. The combination of a conduit for flour, grain, or other material, an air-forcing device, the blower B, communicating with the conduit, and an alarm communicating with the conduit, which alarm is arranged to be operated by the air-current upon the choking of the conduit, substantially as set forth.

2. The combination of a conduit for flour, grain, or other material, an air-forcing device, the blower B, communicating with the conduit, an alarm communicating with the conduit, which alarm is arranged to be operated by the air-current upon the choking of the conduit, a plug for closing the conduit, and a fusible support for the plug, substantially as set forth.

377,371. ATOMIZER. HOWARD CAMPBELL, Brooklyn, N. Y. Filed Mar. 18, 1887. Serial No. 231,362. (No model.)

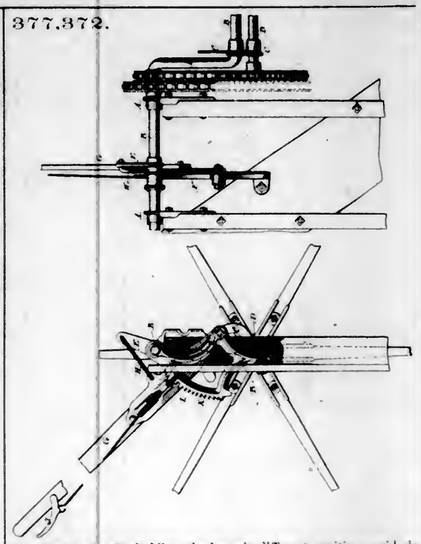


Claim.—An atomizer composed of elastic air-bulb, with pocket or receptacle entirely inclosing vial and molded in one piece with the bulb, substantially as described.

377,372. HARVESTER-REEL. MORTIMER A. CLAPP, Auburn, N. Y., assignor to D. M. Osborne & Company, same place. Filed Dec. 4, 1886. Serial No. 220,671. (No model.)

Claim.—1. In a harvester, the horizontal rock-shaft mounted in fixed bearings and having the overhung cranked end, in combination with the reel-shaft carried by said cranked end, an arm, E, secured rigidly to the rock-shaft and extending therefrom in an opposite direction from the crank, a hand-lever, G, pivoted to the frame below the rock-shaft, a link, H, extending from the hand-lever to the arm E, and

377,372.



a locking device for holding the lever in different positions, said elements combined and arranged, as described, to admit of the reel being adjusted vertically to different operative positions forward of the rock-shaft, or of its being thrown downward and rearward in relation to the rock-shaft, as described.

2. In a harvester, the horizontal rock-shaft B, having the cranked end, the stationary bearings for said shaft, the horizontal reel-shaft carried by the crank-arm of the rock-shaft, the arm E, fixed to the rock-shaft and extended in opposition to the crank, the stationary toothed plate F, the hand-lever G, pivoted to said plate below the rock-shaft, a link, H, connecting said lever with the arm E, as described and shown, and the locking-dog I, to hold the lever in different positions, said parts constructed and arranged as described, whereby the reel may be adjusted and fixed at different heights in advance of the rock-shaft for action or folded downward in rear of the rock-shaft for transportation.

377,373. ELASTIC BAND FOR POCKET-BOOKS, &c. JOHN S. EBERT, Brooklyn, N. Y. Filed June 14, 1887. Serial No. 241,315. (No model.)



Claim.—1. A fastening or band for articles to be carried in the pocket, formed with exterior flexible protuberances, substantially in the manner and for the purpose described.

2. As a new article of manufacture, an elastic fastening-band formed with exterior protuberances, substantially in the manner and for the purpose described.

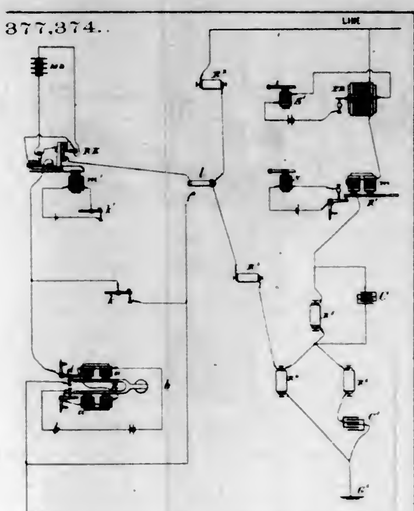
377,374. TELEGRAPHY. THOMAS A. EDISON, Menlo Park, N. J., assignor to The Western Union Telegraph Company, of New York. Filed May 14, 1877.

Claim.—1. In a telegraphic system, the combination, with a line-wire and battery, of a circuit preserving and reversing key, a vibrating circuit-breaker and a short-circuiting key at the transmitting-station, a polarized relay, and a reed or vibrating receiver and sounder at the other station, substantially as set forth.

2. In a telegraphic system, the combination, with the main line, of a battery, a circuit preserving and reversing key, a vibrator, a magnet and local circuit for operating the same, yielding contacts *c d*, and a short-circuiting key and connections at the transmitting-station, and a polarized relay and sounder and a vibrating receiver and sounder at the receiving-station, substantially as set forth.

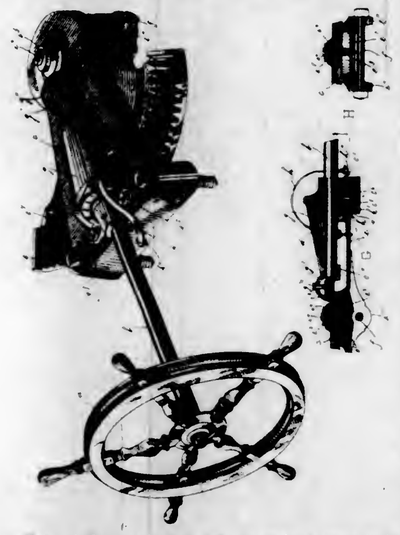
3. The combination, in a telegraphic system, of a reed or vibrating

377,374.



receiver, one transmitter composed of a vibrating circuit-breaker and short-circuiting key, the other transmitter consisting of a circuit preserving and reversing key, and a polarized receiving-magnet to respond to the same, substantially as set forth.

377,375. SHIP-STEERING APPARATUS. JACOB EDSON, Boston, Mass. Filed Dec. 23, 1887. Serial No. 258,782. (No model.)



Claim.—1. In a steering apparatus, the segmental gear *e*, having socket *e'*, adapted to receive the rudder-post, said socket having a web, *e*, adapted to enter the rudder-post, and ears *e'' e''*, with fastening-bolt *f*, as and for the purpose set forth.

2. In a steering apparatus, the segmental gear *e*, having upwardly-projecting trunnion *e*, combined with the stationary bearing-plate *c*, having a perforation adapted to receive said trunnion, and the fastening-screw *e*, substantially as and for the purpose set forth.

3. In a steering apparatus, the segmental gear *e*, its trunnion *e*, and fastening-screw *e*, in combination with the stationary frame or bearing plate *c*, in combination with the front perforations, *c c*,

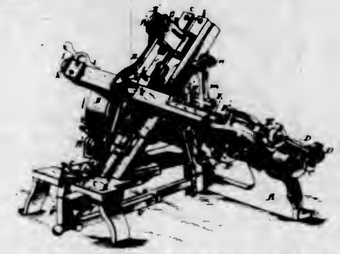
adapted to receive fastening screws or bolts for securing the plate *c* in place, substantially as set forth.

4. In a steering apparatus, the bearing plate or frame *c*, having centering-bub *c* in its rear end, in combination with the cover *g*, having cup *g'*, and the single rear screw, *g''*, and front screws, *g'' g''*, arranged at the sides of the bearing *c'*, substantially as and for the purpose set forth.

5. In a steering apparatus, the shaft *b* and pinion *d* secured to it, and the segmental gear *e*, having perforations *e''*, combined with the bearing-plate *c* and locking-pin *k*, adapted to pass through a perforation in said bearing-plate and any one of the perforations in the segmental gear, as and for the purpose set forth.

6. In a steering apparatus, the shaft *b* and its pinion *d* and the segmental gear *e*, meshing in said pinion, as described, in combination with the bearing-plate *c*, having foot or rest *c* and rib *c*, the forked metal plate *k' k''*, and intermediate elastic packing, *i*, all constructed, combined, and arranged substantially as and for the purpose set forth.

377,376. MACHINE FOR COUPLING CHAIN-LINKS. NELSON B. FARNETT, Moline, Ill. Filed Nov. 19, 1886. Serial No. 219,375. (No model.)



Claim.—1. In a machine for coupling chain-links, a feed-chute adapted to receive uncoupled chain-links, having a portion of its side walls adjustable, whereby the width of the chute may be varied to receive links of different sizes, substantially as set forth.

2. In a machine for coupling chain-links, the combination of a feed-chute adapted to receive uncoupled chain-links, a link-coupler for pushing the end bar of an uncoupled link into the hook of one of a series of assembled links, and a stop or abutment to support the hook of one of the assembled links against the thrust of the link-coupler, substantially as set forth.

3. In a machine for coupling chain-links, the combination of a feed-chute adapted to receive uncoupled chain-links, a chain-channel adapted to receive assembled links, and a link-coupler for pushing the end bar of an uncoupled link into the hook of one of the assembled links, substantially as set forth.

4. In a machine for coupling chain-links, the combination of a feed-chute adapted to receive uncoupled chain-links, a chain-channel adapted to receive assembled links, a link-coupler for pushing the end bar of an uncoupled link into the hook of one of the assembled links, and a pushing device for advancing the assembled links in the chain-channel, substantially as set forth.

5. In combination with a guideway for containing two or more assembled links, an inclined feed-chute, and a link-coupler for pushing or feeding from the latter the links placed therein, a positively-moved pusher device arranged and operating to periodically move the assembled links to the proper extent to bring the last one of the series into proper relationship with the link to be next engaged with it, substantially as set forth.

6. In a machine for coupling chain-links, the combination of a feed-chute adapted to receive uncoupled chain-links, a chain-channel adapted to contain assembled links, the feed-chute and the chain-channel being arranged at an angle to each other, a link-coupler for pushing the end bar of an uncoupled link into the hook of one of the assembled links, and a pusher device for advancing the assembled links in the chain-channel, substantially as set forth.

7. In a machine for coupling chain-links, the combination of an inclined feed-chute adapted to receive uncoupled chain-links, a horizontal chain-channel adapted to receive assembled links, a link-coupler for pushing the end of an uncoupled link into the hook of one of the assembled links, and a pusher device for advancing the assembled links in the chain-channel, substantially as set forth.

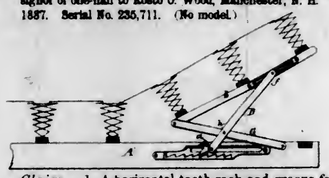
8. In a machine for coupling chain-links, the combination of a feed-chute adapted to receive uncoupled chain-links, a chain-channel adapted to receive assembled links, a link-coupler for pushing the end bar of an uncoupled link into the hook of one of the assembled links, a pivoted thrust-bar adapted to advance the assembled links in the guideway, and a spring adapted to move the swinging end of the

thrust-bar into position for engagement with one of the assembled links, substantially as set forth.

9. In a machine for coupling chain-links, the combination of a chain-channel adapted to contain the assembled links, a pusher device adapted to engage with one of the assembled links, and an adjustable bar for actuating the pusher device to properly advance chain-links of different sizes, substantially as set forth.

10. In a machine for coupling chain-links, the combination of a feed-chute adapted to receive uncoupled chain-links, a chain-channel adapted to receive assembled links, a link-coupler for pushing the end bar of an uncoupled link into the hook of one of the assembled links, the plate arranged in the plane of the chain-channel, and means for advancing the assembled links in the guideway and turning the last coupled link under the plate and into line with the previous link, substantially as set forth.

377,377. **SPRING-BED.** CARLOSTIN C. FERRY, Hillsborough, assignor of one-half to Rosto O. Wood, Manchester, N. H. Filed Apr. 21, 1887. Serial No. 235,711. (No model.)



Claim.—1. A horizontal tooth-rack and groove fastened to the external surface of the longitudinal bars A' and B of the frame-support, in combination with pivots or bolts *a* and *f*, pawls K, levers D, links G, the whole operating substantially in the manner and for the purposes herein described.

2. The combination of a combined horizontal tooth-rack and groove provided with slot on its posterior surface for bolt-head, with longitudinal bars of a frame-support of a spring-bed, and supplemental section thereof with groove attachment, pawl K, levers D, and links G, as and for the purposes herein described and set forth.

377,378. **STOVE-OVEN.** GILES F. FILLEY, St. Louis, Mo. Filed Apr. 2, 1885. Serial No. 161,013. (No model.)



Claim.—A cook-stove oven-door consisting of the frame A, having the wire-gauze or perforated metal C in its lower part, and open in its upper part at D, substantially as described.

377,379. **MACHINE FOR MAKING METALLIC CLASPS.** FERDINAND R. GIRARD and ALEXANDRE RIGAULT, Paris, France. Filed Sept. 4, 1886. Serial No. 176,212. (No model.) Patented in France Aug. 7, 1886, No. 170,594; in Belgium Aug. 14, 1886, No. 69,913; in England Aug. 24, 1886, No. 10,008, and in Germany Aug. 31, 1886, No. 35,406.

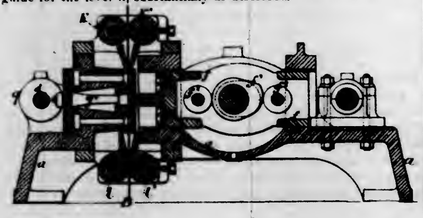
Claim.—1. In a machine for forming clips, the combination, with the frame *a*, of the two carriages *f g*, carrying dies *o p*, the molds *o' p'*, and means for reciprocating the carriages *f g*, substantially as described.

2. The combination of the frame *a*, carriages *f g*, and means for reciprocating them, dies *o p*, carried by the carriages *f g*, molds *o' p'*, and shuttle *q'*, for passing a blank from the mold *o'* to the stamping-mold *p'*, substantially as described.

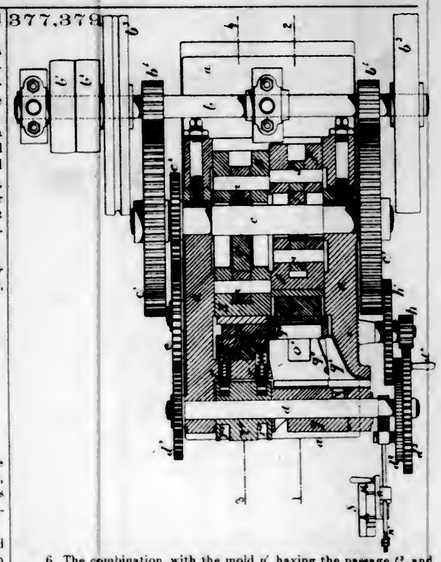
3. The combination of the reciprocating carriages *f g*, stamping-die *p*, carried thereby, mold *p'*, expellers *r r*, within the mold, and means for reciprocating the expellers longitudinally, substantially as described.

4. The combination of the shaft *d*, cam m^2, ratchet d^3, gear-wheel d^4, rigid with d^3, spring-pressed lever *m'*, click *m*, and rollers *k k' l'*, driven from the wheel d^3, substantially as described.

5. The ratchet-wheel d^3, having tooth d^5, larger than the others, lever *m'*, having click *m*, lever *n*, connected with the lever *m'*, and a guide for the lever *n*, substantially as described.

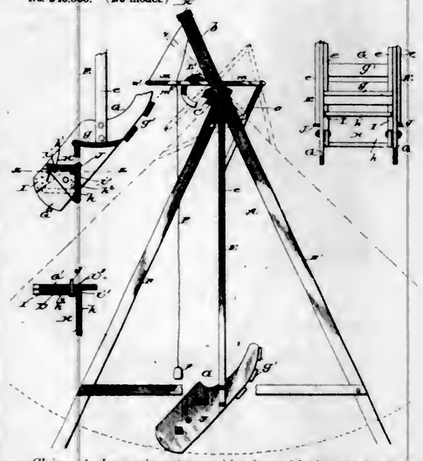


377,379



6. The combination, with the mold *p'*, having the passage l^3, and with the stamper *p*, of the drill *l l'* and means for rotating same and for reciprocating it longitudinally, substantially as described.

377,380. **SWING.** HERMAN A. GOEBEL, Houston, Tex., assignor of one-half to Louis Hirsch, same place. Filed Aug. 6, 1887. Serial No. 246,306. (No model.)



Claim.—1. In a swing, the combination, with the seat G, of the foot-rest H, comprising the pivoted end pieces, h^3, and the foot-boards *h h'*, secured to the said end pieces at right angles to each other, either one of which is adapted to serve as a foot-rest at different times, the board *h'* being closer to the seat in its operative position than the board *h*, substantially as and for the purpose specified.

2. In a swing, the combination, with a seat having the side boards, G' G', of the foot-rest H, comprising the end pieces, h^3, pivoted to the said side boards, the foot-boards *h* and *h'*, secured to the end pieces at right angles to each other, the said foot-rest being adapted to be rotated around its pivot to bring either of the foot-boards to a horizontal position below the front edge of the seat, the board *h'* being higher in the said position than the board *h*, and the block or stop I, secured to the side board, G', and adapted to engage the front edges of the boards *h h'*, respectively, in their operative positions, substantially as and for the purpose specified.

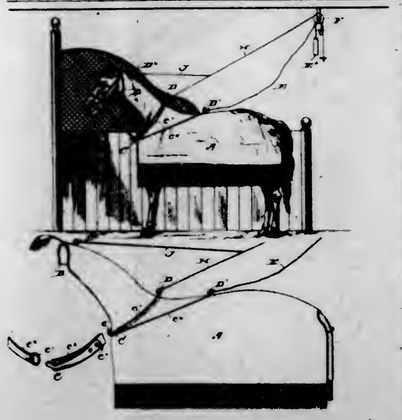
3. In a swing, the combination, with the seat having the side boards, G' G', on opposite sides thereof, provided with the perforations i^3, of the adjustable foot-rest H, pivoted between the said side boards, and comprising the end pieces, h^3 h^3, provided with the perforations *i i'*, either of which is adapted to be aligned with the perforation i^3, and the foot-boards *h h'*, secured to the end pieces at right angles to each other, either one of which is adapted to be arranged horizontally under the front edge of the seat by rotating the foot-rest on its pivot, the pin J, to pass through the perforation i^3 and the perforation *i* or *i'*, one of which is aligned therewith in each position of the foot-rest, and the block or stop I, to engage the front edges of the boards *h h'*, respectively, when they are in their operative or horizontal positions, substantially as specified.

4. In a swing, the combination, with the support A, having the cross-bar C, on which the swing is suspended, and the cross-bar K above and in front of the bar C, of the bracket L, lever M, pivoted to the said bracket, the bar O, connecting the rear end of the lever with the supporting-bars of the swing-seat a short distance below the pivot thereof, and the operating-cord P, attached to the front end of the lever, passing over a sheave or pulley on the bar K, and extending down within reach of the occupant of the swing, substantially as and for the purpose specified.

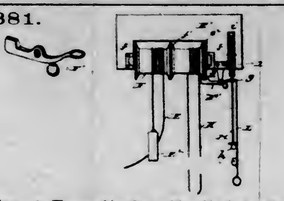
5. In a swing, the combination, with the supporting-frame A, having the cross-bar C, on which the swing is suspended, and the cross-bar K above and in front of the bar C, and having a pulley, *k*, depending from the center thereof, of the bracket L, secured to the upper side of the bar C and provided with the forwardly-extending curved arm L', the lever M, comprising the parallel strips *m m*, pivoted to the said bracket, with the said strips operating on opposite sides of the curved arm, the connecting-rod O, attached at the upper end to the rear end of the lever M and at the lower end to a transverse rod secured at the ends to the supporting-bars of the swing-seat, and the operating-cord P, attached to the front end of the lever M, passing over the pulley *k*, between the strips *m m* of the lever M, and thence down within reach of the occupant of the swing, substantially as and for the purpose specified.

6. In a swing, the combination of the front standards, B B, and the rear standards, B' B', bolted, respectively, together at the upper ends, the cross-bar C between the upper ends of the standards, the upwardly and forwardly extending arms *b b*, having the cross-bar K between the upper ends thereof, the swing suspended from the bar C and comprising the supporting-bars E E and the swing-seat G between the lower ends, the transverse rod N, secured at the ends to the said bars E a short distance from the upper ends, the bracket L, secured to the upper side of the bar C and having the forwardly-extending curved arm L', the lever M, pivoted to the said bracket and comprising the parallel strips *m m*, to operate on opposite sides thereof, the transverse pin or bolt m^3 between the strips *m m* in front of the curved arm L', the operating-cord P, attached to the front end of the lever M, passing over a pulley, *k*, secured to the cross-bar K, passing between the strips *m m* in front of the pin or bolt m^3, and extending to the seat of the swing, and the connecting-rod O, attached at the upper end to the rear end of the lever M and at the lower end to the transverse rod N between the swing-supports, substantially as and for the purpose specified.

377,381. **AUTOMATIC HORSE-COVER.** GEORGE C. HALE, Kansas City, Mo. Filed July 30, 1887. Serial No. 245,720. (No model.)



377,381.



Claim.—1. The combination, with a blanket and a pulley, of a weighted elevating-cord attached at one end to the blanket and passing over the pulley near the other end, and a trip-and-cord mechanism, substantially as described, to release the weight and retract the blanket, as set forth.

2. The combination, with a blanket and a pulley, of a weighted elevating-cord attached at one end to the blanket and passing over the pulley near its other end, means to hold the blanket detachably on the horse, and a trip-and-cord mechanism, substantially as described, to release the weight and retract the blanket, as set forth.

3. The combination, with a blanket and a pulley, of a weighted elevating-cord attached at one end to the blanket and passing over the pulley, a trip-and-cord mechanism, substantially as described, to release the weight, and spring fastening devices connected to the blanket to detachably hold the same on the horse, and adapted to be automatically released by a pull of the elevating-cord, as set forth.

4. The combination, with a blanket and a pulley, of a weighted elevating-cord connected at one end to the blanket and passing over the pulley, a trip mechanism for normally suspending the weight, and a trip-cord connected at one end with the blanket and at its other end with the trip mechanism in such manner that said trip-cord can move a limited distance without throwing the tripping mechanism and releasing the weight, as and for the purpose described.

5. The combination, with a blanket and a pulley, of an elevating-cord attached at one end to the blanket and passing over the pulley, a trip-and-cord mechanism, and means, substantially as described, for exerting tension on the elevating-cord when the trip is thrown, as and for the purpose described.

6. The combination of a blanket, a weighted elevating-cord connected thereto, a pulley over which the cord passes, a trip-pawl having a guide, and a trip-cord connected with the blanket and passing through the guide of the trip-pawl, and having a button which is adapted to strike and release the trip-pawl, substantially as described, for the purpose set forth.

7. The herein-described combination of an animal blanket or cover, means secured to the blanket or cover for holding the same on an animal, said means adapted to be automatically released to permit the blanket or cover to be removed when the animal leaves a stall, a cord or rope secured at one end to the blanket or cover and passing over a guide or supporting bracket at its other end, and a button or other obstruction made with or attached to the cord, as and for the purpose described.

8. The combination of a blanket, a guide drum or pulley, a cord connected to the blanket and having a detent, 3, a trip-pawl engaging the detent to prevent the cord from exerting tension on the blanket, and a trip-cord for throwing the pawl, substantially as described.

9. The combination of a blanket, a hanger having a depending tubular guide, a guide drum or pulley journaled in the hanger, a weighted elevating-cord passing through the guide and having a detent, 3, a trip-pawl adapted to engage the detent, and a trip-rope, substantially as described.

10. The combination of a blanket, a fixed hanger, a guide-pulley journaled therein, a vertical tubular guide fixed to the hanger in line with the pulley and having the projections on its inner side, a weighted elevating-cord passing over the pulley and through the guide, a conical detent secured to the cord, and a pivoted spring-controlled trip-pawl having a trip-cord connected thereto, substantially as described.

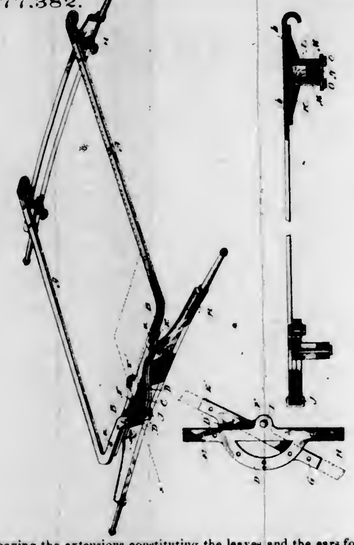
377,382. **SIDE-BAR VEHICLE.** OTTO HEIDELMAN, Belleville, Ill., assignor of one-third to J. R. Thomas, same place. Filed Feb. 24, 1887. Serial No. 228,760. (No model.)

Claim.—1. The side bars connected together at their forward ends by a bar made integral therewith and forming a bolster-plate, and having a bead therein, substantially as shown, forming part of the fifth-wheel, substantially as described.

2. The combination of the side bars connected together at their forward ends by a cross-bar, a plate secured to said cross-bar and having an extension on one side to form one leaf of the fifth-wheel, and an ear on the opposite side for the passage of a king-bolt, and a second plate having an extension and ear corresponding to those of the first plate to form a second leaf of the fifth-wheel, substantially as described.

3. The combination of the fifth-wheel formed of the two plates

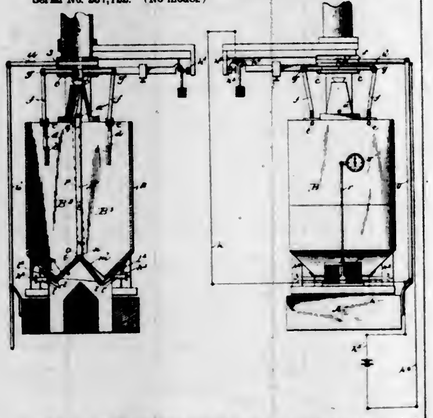
377,382.



having the extensions constituting the leaves and the ears for the passage of the king-bolt, the side bars connected together at their forward ends by a cross-bar which is bent or curved to form a bearing or brace for the fifth-wheel, and a clip embracing the lower leaf of the fifth-wheel and the cross-bar of the side bars, substantially as described.

4. The combination of the side bars, the rear axle, the blocks depending from the side bars and formed with sockets to embrace the axle, bolts passed through said block on opposite sides of the axle, with their heads lying below the side bar, substantially as shown, and clips and nuts for clamping said parts together, substantially as described.

377,383. ELECTRO-MAGNETIC GRAIN-WEIGHING SCALE. WILLIAM A. HOLLEY and ULRIK MALIN, Holland, Mich. Filed May 4, 1887. Serial No. 237,122. (No model.)



Claim.—1. The combination of a scale, a double hopper carried thereby, having a deflector and discharge-valves, the detents, means connecting the same, and an electric circuit constructed and arranged to be controlled by the scale-beam, whereby the discharge-valves are permitted to open by the weight of the grain, substantially as described.

2. The combination of a scale, a hopper carried thereby and provided with a connected deflector and discharge-valves, cut-off valves and floats for closing said cut-off valves, and an electric circuit constructed and arranged to be controlled by the scale-beam, whereby the discharge-valves are permitted to open, substantially as described.

3. The combination, with a scale, of a hopper carried thereby, divided into two compartments and having cut-off valves, a float in each compartment for closing said cut-off valves, a double discharge-valve and a deflector at the supply end of the hopper for diverting the material to the respective compartments alternately, and means for connecting and operating said deflector and discharge-valves simultaneously, substantially as described.

4. The combination of a scale, a hopper carried thereby and divided into two compartments, a double discharge-valve for said compartments, the detents, a supply-deflector connected to the discharge-valve, and an electric circuit controlled by the scale-beam and operating to release the detents and permit the weight of the grain to operate said discharge-valve and deflector, substantially as described and shown.

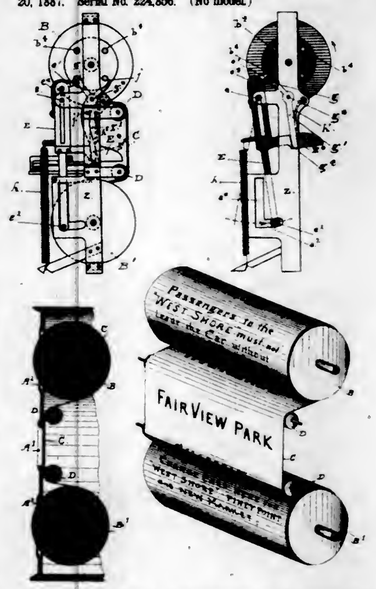
5. The combination of a scale, a double hopper carried thereby, cut-off valves, a float in each compartment of the hopper, a double discharge-valve adapted to open and close the hopper-compartments, the detents, a deflector connected with said discharge-valve, and an electric circuit controlled by the scale-beam and operating to release the detents and permit the weight of the grain to operate said discharge-valve and deflector, substantially as described.

6. The combination of a scale, a hopper carried thereby, having a discharge-valve, a detent for retaining and releasing the discharge-valve, a battery, an electro-magnet, connections forming an electric circuit controlled by the scale-beam, and an armature for retaining and releasing the discharge-valve, substantially as described.

7. The combination, with the scale and the double hopper carried thereby and provided with the connected deflector and discharge-valves, of the forked armature-lever electrically connected to the scale, the detents, and the connecting-rod and register operated by said lever, substantially as described.

8. A scale and a double hopper having discharge-valves and detents therefor, in combination with an electric circuit controlled by the scale-beam and operating to release the detents and permit the weight of the grain to open one of said discharge-valves and close the other, substantially as described.

377,384. STATION-INDICATOR. EDWIN S. IRVIN, Berkeley, assignor to the Pacific Indicator Company, San Francisco, Cal. Filed Jan. 20, 1887. Serial No. 224,856. (No model.)



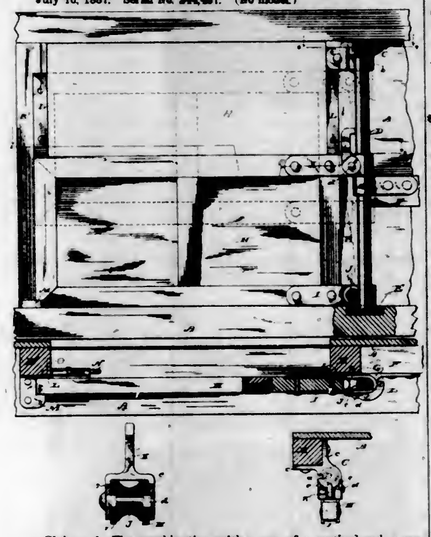
Claim.—1. In a station or street indicator, the combination, with a spring-impelled drum or roller, B', and roller B, for displaying signs or moving an apron, of the pins b^4 on roller B, the sliding arm E, with hinged pawl e', for turning the roller B by engaging with its pins, and the lever-catch $g\,g'$ and spring k', for holding the roller, as set forth.

2. In a station or street indicator, the combination of a suitable case having openings A' and A^2 A^3 above and below the same, and in the same face of the case the drums or rollers B B', one located back of each opening A^2, apron C, wound in reverse direction over said rollers, and rollers D D, for holding the apron close up to the opening A', and mechanism, substantially as described, for rotating said rollers B B' to wind the apron alternately upon one and off the other roller, for operation as set forth.

3. In a station or street indicator, the combination of a suitable case having openings A' A^2 A^3, the former between the latter, the apron C, drums or rollers B B', set to show through openings A^3, and having the apron wound in opposite directions thereon, one of said rollers being a spring-barrel and the other having pins or projections with which mechanism for turning the roller step by step is caused to engage, substantially as described, and the rollers D D on opposite sides of the opening A', and contiguous to the front of the case, to turn the opposite or reverse side of the apron to the opening, as set forth.

4. In a station or street indicator, the combination, with the drums or rollers B B', apron C, and spring for turning the drums in one direction to wind the apron upon one and draw it off of the other, of the sliding bar or arm E, movable on the pin e, and having the piece E^6, provided with a shoulder, g^2, the lever-catch $g\,g'$, lying against said shoulder g^2, a spring, k, applied to arm E for producing its vertical restoration, and a spring, k', applied to lever-catch $g\,g'$, to produce lateral restoration of part $E\,g\,g'$ to normal position, the pulleys f' f^3, and the operating-cord f, capable of being shifted, as described, to operate the slide-bar vertically or laterally, as described.

377,385. GRAIN-CAR DOOR. JENS JENSEN, Racine, Wis. Filed July 16, 1887. Serial No. 244,497. (No model.)



Claim.—1. The combination, with a car, of a vertical rod, a vertically-grooved socket-head for the upper end of the rod, a sliding and swinging door operative on said rod, and a hook secured to the door and arranged to pass through the groove in the head and come over upon the latter, substantially as set forth.

2. The combination, with a car, of a vertical rod, a door, irons bent to encircle the rod and secured to the door, and friction-rollers journaled in the irons, to come against said rod, substantially as set forth.

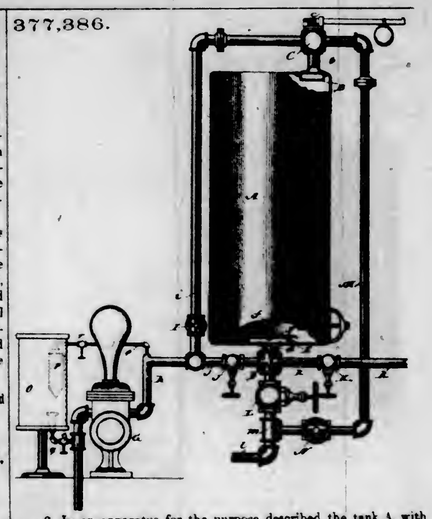
3. The combination, with a car, of a vertically-grooved head having flanges at right angles to each other, to form a corner-iron, a vertical rod having its upper end secured in the head, a sliding door arranged on the rod, and a hook secured to the door and arranged to pass through the groove in the head and come over upon the latter, substantially as set forth.

4. The combination, with a car, of a vertical rod, a door, irons bent to encircle the rod and secured to the door, a hook having vertical flanges secured to the uppermost iron, and a head having a vertical groove for the passage of the hook, substantially as set forth.

377,386. FEED-WATER PURIFIER. OMAR H. JEWELL, Chicago, Ill. Filed May 10, 1887. Serial No. 237,703. (No model.)

Claim.—1. In an apparatus for the purpose described, the tank A, provided with strainers B and E, the strainer B communicating with the pump through pipes h and i, and the strainer E with the boilers through pipe k, substantially as set forth.

377,386.



2. In an apparatus for the purpose described, the tank A, with strainers B and E, the strainer B communicating with the pump through pipes h i, and with the sewer through pipes M l, and strainer E communicating with the pump through pipes h j, and with the boilers through pipe k, such pipes being provided with suitable valves for regulating and reversing the circulation of the water through such tank, substantially as set forth.

3. In an apparatus for the purpose described, the tank A, with strainers B and E, strainer B communicating with the pump through pipes h i, provided with valve I, and with the sewer through pipes M l, provided with valves L N, and strainer E communicating with the pump through pipes h j, provided with valve J, and with the boilers through pipe k, provided with valve K, all substantially as set forth, for the purpose specified.

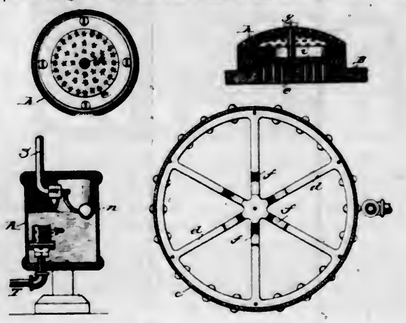
4. In an apparatus for the purpose described, the combination, with the filtering-tank, of perforated plate E in the bottom thereof, and perforated disk F on top of plate E, vertically movable and guided on bolt f, substantially as described, to operate as specified.

5. The combination, with the filtering-tank and the force-pump feeding the same, of chamber O, with perforated funnel P, a pipe, p, leading from the discharge-pipe of the pump into funnel P, and a pipe, q, leading from the bottom of chamber O into the suction-pipe of the pump, all substantially as and for the purpose set forth.

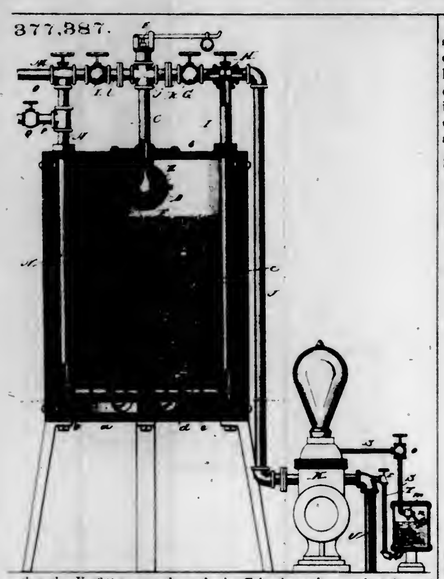
377,387. WATER FILTER AND PURIFIER. OMAR H. JEWELL, Chicago, Ill. Filed June 11, 1887. Serial No. 240,972. (No model.)

Claim.—1. In an apparatus for the purpose described, the filtering-tank A, having false bottom with perforated plates e, with caps h, secured by bolts g, and with perforated plates i, guided on bolts g, all substantially as set forth.

2. The combination, with a filtering-tank and a pump, K, of tank R, communicating with the discharge-chamber of the pump through pipe S, having valve m, with float n, and communicating with the suc-

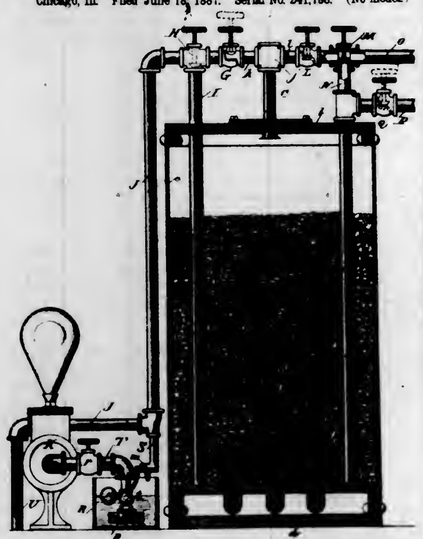


377,387.



tion-pipe V of the pump through pipe T, having valve *r* and perforated cup *p*, all substantially as and for the purpose set forth, to operate as specified.

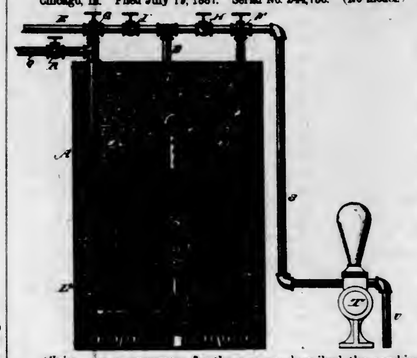
377,388. WATER FILTER AND PURIFIER. OMAR H. JEWELL, Chicago, Ill. Filed June 16, 1887. Serial No. 241,788. (No model.)



Claim.—1. In an apparatus for the purpose described, the combination of a tank, A, having a false bottom, B, as described, said false bottom being provided with tubes *f*, screwed through it and perforated above and below the false bottom, with the pipes L and N, extending down through the tank and communicating with the space beneath the false bottom, a supply-pipe, J, having the short pipe C, opening into the top of the tank, and the pipes I and N connected with it, and provided with valves H and M at top of pipes I and N, and valves G and I, between the tops of said pipes and the short pipe C, substantially as and for the purpose set forth.

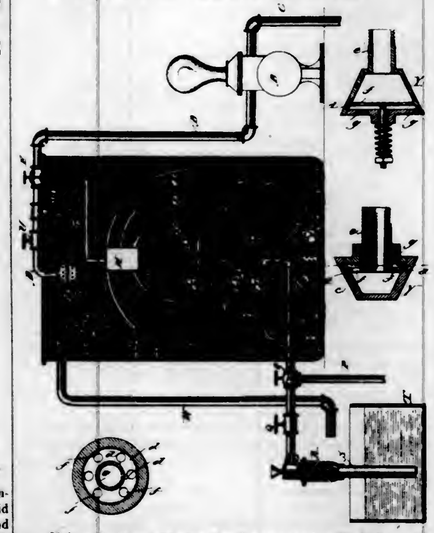
2. The combination, with the filtering-tank and pump K, having suction-pipe V and discharge-pipe J, leading into the filtering-tank, of tank R, supplied with water from pipe J through faucet *m*, regulated by float *n*, and of pipe T, communicating with the pump-cylinder through the cover of the same, and being provided with regulating-valve *r*, check-valve *t*, and rose-head *p*, suspended into the bottom of tank R, all substantially as and for the purpose described, to operate as specified.

377,389. WATER PURIFIER AND FILTER. OMAR H. JEWELL, Chicago, Ill. Filed July 19, 1887. Serial No. 244,786. (No model.)



Claim.—In an apparatus for the purpose described, the combination, with the tank, the supply and discharge pipe, of a system of pipes, K, connected with the force-pump and extending through the filtering material into the bottom of the tank, and cups L, into which the ends of the pipe extend, secured to the bottom of the tank, and provided with lugs for supporting such pipe ends above the bottom of the cups, providing an annular opening for the water to squirt out, substantially as and for the purpose set forth.

377,390. FEED-WATER PURIFIER. OMAR H. JEWELL, Chicago, Ill. Filed Aug. 16, 1887. Serial No. 247,116. (No model.)



Claim.—1. In an apparatus for the purpose described, the spraying-valves Y, each consisting of a conical shell, *c*, a pipe-coupling neck, *e*, perforated plate *d*, fixed in the conical shell, and a valve, *g*, guided in the mouth of the conical shell, as set forth.

2. In an apparatus for the purpose described, the automatic spray-valves Y, each consisting of a conical shell, *c*, with screw-neck *e*, and valve *g*, guided on neck *e*, all substantially as set forth.

377,391. BOOT OR SHOE UPPER AND METHOD OF PREPARING IT FOR LASTING. CHARLES A. KNOX, Danvers, Mass. Filed June 3, 1887. Serial No. 240,148. (No model.)



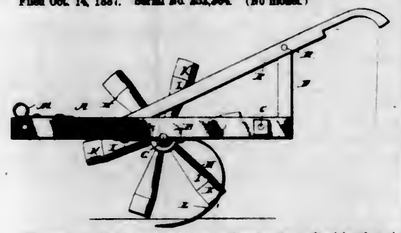
Claim.—1. As an article of manufacture, an unlasted upper or vamp having the edges of its toe portion turned inwardly and crimped or plaited to form an inwardly-projecting flange, and provided with binding-stitches to hold said flange, as set forth.

2. As an article of manufacture, an unlasted upper having the edge of its heel portion turned inwardly and crimped or plaited to form an inwardly-projecting flange, and provided with binding-stitches to hold said flange, as set forth.

3. As an article of manufacture, an unlasted upper having its toe and heel portions turned inwardly and crimped or plaited to form inwardly-projecting flanges, and provided with binding-stitches extending around the edge of the upper, the stitches at the toe and heel holding said flanges, while the intermediate stitches serve to hold lasting-cords, as set forth.

4. The method of partially forming a boot or shoe upper, consisting in turning it inwardly and folding or plaiting it at its edge to form an inwardly-projecting flange, and at the same time stitching said folded or plaited portion to hold the folds or plaits, as set forth.

377,392. COTTON-CHOPPER. JEFFERSON B. KIRK, Baldwyn, Miss. Filed Oct. 14, 1887. Serial No. 252,364. (No model.)



Claim.—1. In a cotton-chopper, the rotating wheel having the radial arms or tamps, for the purpose set forth, substantially as described.

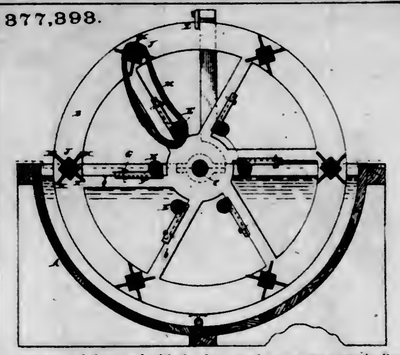
2. In a cotton-chopper, the combination of the frame having the covering-shovels and the wheel journaled in the said frame, arranged between the covering-shovels, and provided with the radial arms or tamps, substantially as described.

377,393. DYEING OR SCOURING MACHINE. CHARLES L. KLAPPER, Philadelphia, Pa. Filed June 4, 1887. Serial No. 240,218. (No model.)

Claim.—1. In a dyeing or scouring machine, the combination of a dye or liquor tank, a central shaft, a frame secured thereto and revolving partly in and partly out of the dye or other liquor in said tank, removable cross-bars or supports arranged upon said frame and at a distance apart sufficient to sustain the skeins of yarn, and adjustable to or from each other for different lengths of skeins, and means to lock said cross-bars in position upon the frame, whereby said skeins of yarn are carried around with the frame and passed through the liquor and then exposed to the atmosphere.

2. In a dyeing or scouring machine, the combination of a dye or liquor tank, a central shaft, a frame secured thereto and revolving partly in and partly out of the dye or other liquor in said tank, cross-bars or supports arranged upon said frame and at a distance apart sufficient to sustain the skeins of yarn, and means arranged above the tank and substantially above the axis of the revolving frame to intermittently rotate one or more of said cross-bars, whereby said skeins of

377,398.



yarn are carried around with the frame and passed through the liquor and then exposed to the atmosphere.

3. The combination of a dye or liquor tank, a frame partly supported therein, inner and outer sets of cross-bars carried by the frame, upon which the skeins of yarns to be treated are hung, one of said sets of bars being adapted to rotate to gradually turn the yarn, and suitable means to move the frame through the tank and rotate the cross-bars.

4. The combination of a dye or liquor tank, a frame partly supported therein, inner and outer sets of cross-bars carried by the frame, upon which the skeins of yarns to be treated are hung, one of said sets of bars being adapted to rotate to gradually turn the yarn, pins or extensions on said rotatable cross-bars, and a stationary stop in the path of said pins whereby as the frame carries the cross-bars past the stop the pins thereon strike the stop and impart to the bar a portion of a revolution.

5. The combination of a dye or liquor tank, a frame partly supported therein, inner and outer sets of cross-bars carried by the frame, upon which the skeins of yarn to be treated are hung, one of said sets of bars being adapted to rotate to gradually turn the yarn, pins or extensions on said rotatable cross-bars, and a stationary stop arranged above the tank in the path of said pins, whereby as the frame carries the cross-bars past the stop the pins thereon strike the stop and impart to the bar a portion of a revolution.

6. The combination of a die or liquor tank, a frame supported partly therein, inner and outer sets of cross-bars carried by the frame, upon which the skeins of yarns to be treated are hung, one of said sets of bars being adapted to rotate to gradually turn the yarn, pins or extensions on said rotatable cross-bars, and a stationary stop in the path of said pins, whereby as the frame carries the cross-bars past the stop the pins thereon strike the stop and impart to the bar a portion of a revolution when the cross-bar and its yarns are raised clear of the dye-liquor.

7. The combination of a dye or liquor tank, a frame adapted to pass into and out of the liquor contained therein, and two sets of transverse yarn-supporting bars arranged upon said frame and movable therewith through the liquor, means to rotate one of said sets of bars, and devices to relatively adjust the two sets of bars to or from each other.

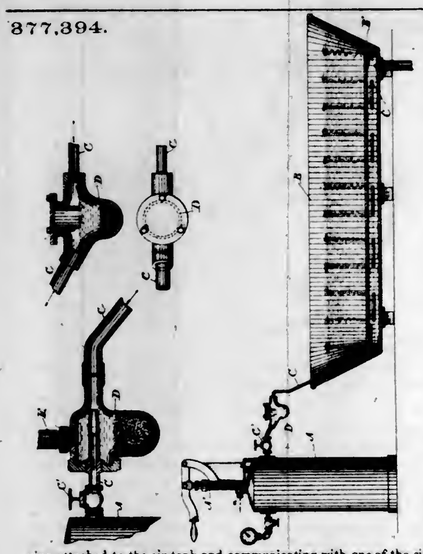
8. The combination of a dye or liquor tank, a frame adapted to pass into and out of the liquor contained therein, and two sets of transverse yarn-supporting bars arranged upon said frame and movable therewith through the liquor, one of said sets of cross-bars being made polygonal in cross-section and the other set made round in cross-section, and means to rotate the polygonal set of cross-bars.

377,394. APPARATUS FOR BATHING PURPOSES. FRANK C. F. KNAAK, New York, N. Y. Filed Aug. 30, 1887. Serial No. 248,279. (No model.)

Claim.—1. The combination, with a bathing-tank provided with a perforated coil in the bottom thereof and a removable bottom over said coil, of an air-tank, a vessel having an enlarged lower portion and openings in its opposite sides, a pipe attached to the air-tank and communicating with one of the side openings in said vessel, extending part way across and forming an injector-nozzle therein, and a pipe attached to the opposite side opening and communicating with the coil in the bathing-tank.

2. The combination, with a bathing-tank provided with a perforated coil in the bottom thereof, of an air-tank, a vessel having an enlarged lower portion and openings in its opposite sides and top, a water-pipe communicating with the openings in the top of said vessel, a

377,394.



pipe attached to the air-tank and communicating with one of the side openings in said vessel and forming an injector-nozzle therein, and a pipe attached to the opposite side opening and communicating with the coil in the bathing-tank, substantially as shown and described.

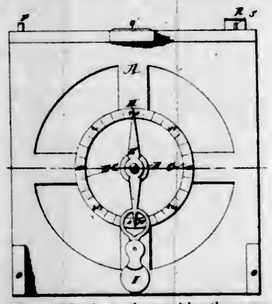
377,395. DIE FOR WELDING LINKS. WILLIAM C. KROEGHER, Allegheny, Pa. Filed Oct. 21, 1887. Serial No. 253,037. (No model.)



Claim.—1. The anvil A, having a cavity, B, and the inclined detachable die C, in combination with the hammer F, having cavity *g*, substantially as herein described, and for the purpose set forth.

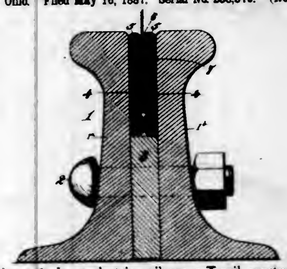
2. The anvil A, having cavities B and E, in combination with the detachable die C and hammer F, having cavities *g h*, arranged and operating as herein described, and for the purpose set forth.

377,396. PLUMB-LEVEL. WILLIAM C. LOOKER and JOHN NEWLOVE, Union Mills, Ind. Filed May 20, 1887. Serial No. 238,897. (No model.)



Claim.—The combination-tool comprising the square frame A, having the extensible arm L, the central circular disk having the graduated circular scale, the weighted pointer pivoted to the center of the said disk and adapted to sweep over the scale, the compass in the upper side of the square-frame, the sight P, at one of the upper corners thereof, and the tubular sight R, at the opposite upper corner thereof, said tubular sight being provided with the stud S, substantially as described.

377,397. ELECTRIC RAILWAY. WASHINGTON I. LUDLOW, Cleveland, Ohio. Filed May 16, 1887. Serial No. 238,379. (No model.)



Claim.—1. In an electric railway, a T-rail constructed in two substantially equal vertical sections, in combination with an electrical conduit laid in a space between said rail-sections, substantially as described.

2. In an electric railway, a T-rail composed of two substantially similar vertical sections and tie-bolts uniting said sections and passing through interposed washers, whereby the sections are separated to form a space for the electrical conductors, substantially as described.

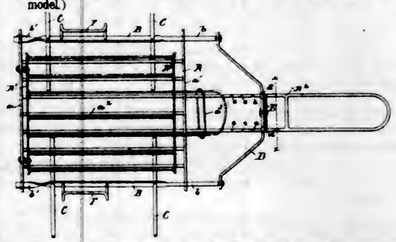
3. In an electrical railway, a T-rail composed of two substantially similar sections, tie-bolts uniting the same and passing through interposed washers, insulating rubber strips each having a similar cavity in its inner face, and an electric conductor consisting of two flat strips of copper lying in the cavities of the insulating-strips, substantially as described.

4. In an electrical railway, a conduit for the electric conductor by which the energy is conveyed to the motor, said conduit consisting of a pair of insulating-strips and flat conducting-strips laid between, the whole being contained in a channel formed in the tread of the rail, substantially as described.

5. In an electric railway, a rail having a channel formed in its tread, in combination with an electric conductor insulated in said channel, substantially as described.

6. In an electric railway, two flat conducting-strips laid face to face and having their edges inwardly beveled, two insulating rubber strips laid face to face and within which the conducting-strips are inclosed, and a rail formed in longitudinal sections between which said insulating-strips are contained, substantially as described.

377,398. TOASTING OR BROILING IMPLEMENT. DON P. MCHARG, Rome, N. Y. Filed Mar. 31, 1887. Serial No. 233,112. (No model.)



Claim.—1. In a toasting or broiling implement, the combination, with the broiling-frame, of rotatable rods extending longitudinally of the frame at opposite edges thereof and having bearings in the end pieces thereof, and legs fixed in and projecting an equal distance from opposite sides of said rotatable rods, together with locking devices, substantially as described, adapted to lock said rotatable rods in position when rotated relatively to the broiler-frame, as set forth, whereby the legs carried by the rotatable rods and constituting the sole support to the boiler-frame may be adjusted and held at such an angle to the frame as to sustain either side of the same at an equal distance from the fire-bed, as specified.

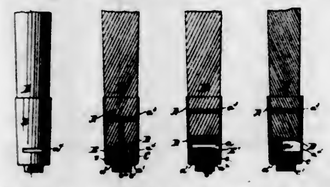
2. In a toasting or broiling implement, the combination, with a broiling-frame composed of two sections hinged together at corresponding edges and adapted to be detachably locked together at their opposite or free edges, of rotatable rods extending longitudinally of one of the frame-sections and working in bearings in the end pieces thereof, and legs fixed in and projecting an equal distance from opposite sides of said rods, together with locking devices, substantially as described, carried by said rods and adapted to lock said rods to said frame-section in position relatively thereto, as and for the purpose set forth.

3. In a toasting or broiling implement, the combination, with the frame A, of the rotatable side bars, B B, having flat twisted ends *b'*, playing in said frame, the legs C C, carried by and extended from one or both sides of said bars, the yoke D, uniting said bars, and means, substantially as described, for adjustably locking said yoke to said frame, as and for the purpose described.

4. In a toasting or broiling implement, the combination, with the frame A, of the bars B B, having the flat and twisted ends *b'*, working in corresponding bearings in the frame, the legs C C, carried by and extending from one or both sides of said bars, the yoke D, uniting said bars, together with the latch E on said yoke, adapted to engage the series of notches *e*, with which said frame A is provided, as and for the purpose set forth.

5. In a toasting or broiling implement, the combination, with the frame A, of rotatable rods extending longitudinally of the frame at opposite edges thereof and working in bearings in the end pieces thereof, legs fixed in and extending an equal distance from opposite sides of said rods, angle-arms F, fixed in said rods and adapted to reach therefrom over the broiling-frame, together with locking devices carried by the rods and adapted to lock the rods and their legs and angle-arms to the frame and in position relatively thereto, as and for the purpose specified.

377,399. TOY-CARTRIDGE EXPLODER. JOHN R. MCHARG, Rome, N. Y. Filed Apr. 22, 1887. Serial No. 235,724. (No model.)



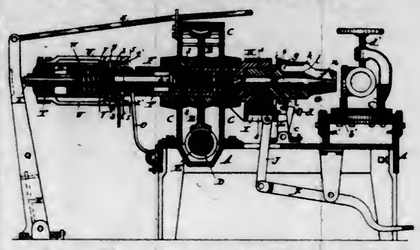
Claim.—1. In a toy-cartridge exploder, as an attachment to canes, arrows, or similar articles, the combination, with the stick B, provided at its end with an anvil, D, of the ferrule A, detachably attached to said anvil end of said stick and extending beyond said end to constitute a chamber, *a*, and having the opening a^2 through its bottom, together with the block C, fitted loosely and free to move by gravity in said ferrule-chamber, and having the projection *c'* on its lower face adapted to extend through said bottom opening in the ferrule, the shoulder *c*, engaging the rim of said opening, and the orifice c^3, extending longitudinally through said block and its projection, whereby a percussion-cap or toy cartridge may be seated in said orifice in said block and exploded by being driven, thus seated, against the anvil on the stick, as described.

2. In a toy-cartridge exploder, as an attachment to canes, arrows, and similar articles, the combination, with the stick B, having a tapered end, an anvil, D, on said tapered end, and a pin, a^3, extending laterally through said tapered end, of the correspondingly-tapered ferrule A, adapted when seated on the stick to extend beyond the same and form a chamber, *a*, together with the block C, fitted loosely and free to move by gravity in said chamber, and provided with the projection *c'*, adapted to extend through an opening in the ferrule end, and a shoulder, *c*, adapted to engage the rim of said opening, as described.

3. In a toy-cartridge exploder, as an attachment to canes, arrows, and similar articles, the combination, with the stick B, carrying on its end an anvil, D, of the ferrule A, fitted upon said anvil end of said stick and adapted to extend therefrom to constitute the chamber *a*, together with the block C, fitted loosely and adapted to move by gravity in said ferrule-chamber, and having the projection *c'* on its lower face adapted to extend through an opening in the ferrule end, and a shoulder, *c*, adapted to engage the rim of said opening, the said ferrule having formed in its side the slot a^4, leading into the ferrule-chamber at a point between the anvil and the block when said block rests on the bottom of said ferrule, as and for the purpose set forth.

4. In a toy-cartridge exploder, the combination, with the stick B, tapered at one end, as described, and having a ferrule fixed on said tapered end by a pin, a^3, passing laterally through the stick and the ferrule, of the supplemental ferrule A, detachably fitted upon the fixed ferrule and adapted to extend beyond the extremity of the same to constitute a chamber, *a*, together with the block C, having play by gravity in said chamber, and provided with a projection, *c'*, extending through and having play in an opening in the bottom of said detachable ferrule, as and for the purpose set forth.

377,400. TAPPING-MACHINE. ALLEN T. MILLER, Greenville, Ohio, assignor to George P. Kuhns, William H. Kuhns, and Henry B. Kuhns. Filed May 20, 1887. Serial No. 238,878. (No model.)



Claim.—1. The combination, substantially as described, of the driving-wheel B, the sliding spindle having the threaded collar, the movable nut to engage the collar, and the latch to hold the nut, whereby the spindle is advanced and automatically released at the proper time.

2. In combination with the spindle having the threaded collar, the nut to engage the collar, the treadle or lever, and an intermediate connection for placing the nut in engagement, the spring-actuated latch to hold the nut, and the spring to retract the spindle, whereby the action of the treadle will cause the rotating spindle to advance to the required point and then retreat.

3. The tubular spindle and the tap or cutter with movable jaws, in combination with the central sliding rod to move the jaws, the spring to retract the rod, the catches to hold the rod forward, and devices, substantially as shown, to disengage the catches when the spindle has advanced the predetermined distance.

4. The sliding spindle and the tap with movable cutters, in combination with the central sliding rod, its retracting-spring, a catch, U, to connect the rod and spindle and hold the former forward, a lever, *l*, pivoted to the spindle to trip the catch, and a stationary stop to encounter and actuate said lever, substantially as described.

5. In combination with the spindle, the tap with movable cutters, the sliding rod, the spring to retract the same, the two catches to hold the rod forward, the two connected levers *l l'*, and a stop or trip, *w*, to actuate said levers, whereby the contraction of the tap is automatically effected when it has advanced to the predetermined point.

6. The tap having movable cutters, the central sliding rod, and the spring to retract the rod, in combination with the independently-movable striker and its actuating-spring, whereby the rod may be driven backward if held by the friction of the cutters.

7. The spindle, the tap or cutter with movable jaws, the sliding rod to expand the tap, and the spring *p*, to retract the rod, in combination with the independently-movable striker, its actuating-spring, and a catch, U, to hold the rod and the striker in their forward positions, whereby the pressure of the spring *p* and the impact of the striker may both be applied to move the rod rearward.

8. In combination with the spindle, the contractile tap, the sliding rod, and the retracting-spring, the independently-movable striker, its actuating-spring, and the catch U, attached to the rod and adapted to engage both the striker and the spindle, its construction being such, as shown, that it may disengage from the spindle before disengaging from the striker, whereby the rod may be released and subjected to the influence of its retracting-spring before the striker is permitted to act.

9. In combination with the spindle, the contractile tap, the central rod, and the spring *p*, the striker and its actuating-spring, the catch U, having its shoulders constructed, as shown, to disengage from the spindle while retaining their engagement with the striker, the lever *l*, mounted on the spindle to disengage the catch, and a stop or trip, *w*, to actuate the lever, whereby the rod is automatically released and subjected to the influence of its retracting-spring and subsequently subjected to the action of the striker when and only when it fails to move under the influence of said retracting-spring.

10. In a tap or cutter, the jaws pivoted at their ends, in combination with the body grooved longitudinally to receive said jaws, said body being left intact beneath the pivoted ends of the jaws, as shown at *l*, whereby the springing and twisting of the parts is prevented.

11. In a tap or cutter, the tubular body provided with longitudinal grooves which open through to the center at their forward ends only, in combination with the angular or bent cutters extended at their forward ends into the central opening and pivoted at their rear ends in the outer part of the body, where the grooves do not extend through to the exterior, whereby the cutters are rigidly sustained.

12. In combination with the tap-body having the longitudinal grooves and the unbroken forward end, the pivoted jaws or cutters seated in said grooves and encircled at their forward ends by the body, and the sliding rod whereby the jaws may be forced outward and seated at their inner ends against the interior of the body.

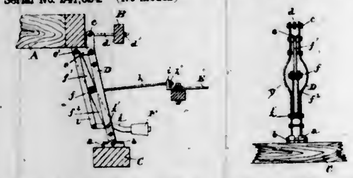
13. The tap-body provided with the longitudinal grooves and the external grooved studs, in combination with the pivoted jaws or cutters, and the springs seated in said studs and acting upon the jaws, substantially as described.

377,401. **COMBINED SKIRT AND BUSTLE.** EMORY K. MILLER, Louisville, Ky. Filed June 20, 1887. Serial No. 241,897. (No model.)



Claim.—The combination, with a skirt having a rearwardly-bulging portion, of a bustle formed independently of the skirt, and consisting, essentially, of a casing of flexible material having pockets and springs secured in said pockets, the said casing having end flaps by which the bustle is removably secured to the bulging portion of the skirt, substantially as set forth.

377,402. **LANDING-CATCH FOR MINING-CAGES.** JONAS L. MITCHELL, Logan, Ohio. Filed June 10, 1886. Renewed June 11, 1887. Serial No. 241,024. (No model.)

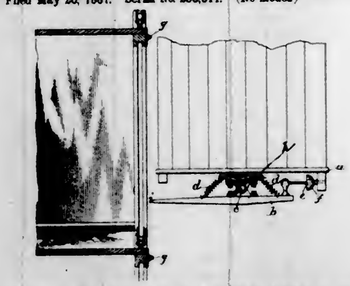


Claim.—1. A landing-catch for cages of mine-shafts, having, in combination, upright bars D, pivoted at their lower ends, a stop-rod, *d*, at the upper end, cage-supporting arms *e*, pivoted to the upright bars, a toggle-joint having one of its links united to the cage-supporting arms, an operating-rod connected with the toggle, and a weighted lever suitably connected with the cage-supporting arms, as set forth.

2. A landing-catch for cages of mine-shafts, having, in combination, upright bars D, cage-supporting arms *e*, pivoted to the upright bars, a toggle-joint having one of its links united to the cage-supporting arms, a pull-bar, E, a weighted lever suitably connected with the cage-supporting arms, and an operating-rod attached by one end to the toggle and having the other end passed loosely through a connection on the pull-bar, as set forth.

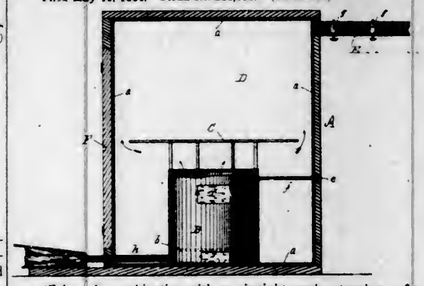
3. A landing-catch for cages of mine-shafts, having, in combination, upright bars D, cage-supporting arms *e*, pivoted to the upright bars, a toggle-joint having one of its links united to the cage-supporting arms, an operating-rod connected with the toggle, and a weighted lever suitably connected with the cage-supporting arms, as set forth.

377,403. **ELEVATOR-ALARM.** ARTHUR OAKLEY, Brockton, Mass. Filed May 20, 1887. Serial No. 238,811. (No model.)



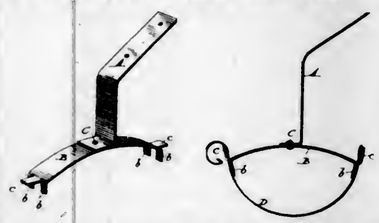
Claim.—The combination, in a passenger, freight, or other elevator, of a movable bar, plates secured one to the bar and the other to the sill of the elevator, and arranged to positively limit the movement of the lever about its axis, said axis journaled in the plates, a hammer on one end of the lever, a gong both of whose interior walls are in the path of the hammer, projections arranged in the path of the end of the lever opposite the gong, and springs on opposite sides of the journal or axis, secured to the elevator and to the lever outside of the plates, all substantially as set forth.

377,404. **PRESERVING MEAT.** JOHN D. REED, Boston, Mass. Filed May 10, 1886. Serial No. 201,656. (No model.)



Claim.—In combination with an air-tight smoke-chamber, a furnace located thereon and having a number of perforations in its top for the escape of smoke, and the plate C, supported upon and raised above said furnace, substantially as set forth.

377,405. **EAVES-TROUGH HANGER.** HENRY RUSSELL, Peoria, Ill. Filed May 16, 1887. Serial No. 238,344. (No model.)



Claim.—1. In an eaves-trough hanger, the arm A, in combination with the cross-bar B, secured rigidly thereto, said cross-bar having its ends provided with fingers *b* and *c*.

2. The eaves-trough provided with perforations in its two edges, in combination with the supporting-bar B, having tongues or lips *c*, extended through said openings and bent against the outer surface of the trough, and the internal lips, *b*, extending laterally from the bar and seated against the inner face of the trough.

377,406. **REFINING VEGETABLE OILS.** GEORGE W. SCOLLAY, New York, N. Y. Filed Sept. 18, 1886. Serial No. 213,926. (No specimens.)

Claim.—The process, substantially herein described, of refining vegetable oils and manufacturing paint in a single operation, which process consists of treating the oil with any of the ochers that are suitable to be used in the manufacture of paint, by which the impurities of the oil are combined with the ocher, and of then separating the refined oil from the ocher carrying the impurities, thus obtaining a double product consisting of refined oil and a paint having a mineral base or pigment combined with the vegetable and oily residuum.

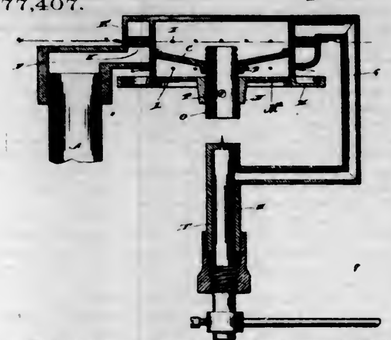
377,407. **VAPOR-BURNER FOR GAS-STOVES.** CHARLES H. SHULTZ, St. Joseph, Mo. Filed May 16, 1887. Serial No. 238,347. (No model.)

Claim.—1. The burner-head having the vaporizing-chamber E surrounding the same, the series of tubes K extending outward from the burner-head through the chamber E, the said burner-head having openings L in the sides, which are arranged below the bottom of the chamber E, for the purpose set forth, substantially as described.

2. In a vapor-burner, the combination of the burner-head having the annular oil-chamber E surrounding the same, the tubes K extending outward from the burner-head through the chamber E, and the said burner-head having openings L in its side wall below the bottom of the chamber E, with the commingling tube or chamber O, secured to and depending from the burner-head, and the oil-cup secured to the tube or chamber O, substantially as described.

3. In a vapor-burner, the burner-head having the oil-chamber E around the same, and the series of tubes K extending from the interior of the burner through the oil-chamber, as set forth.

377,407.



4. The burner-head having an open bottom, combined with the tube or commingling-chamber O, connected to the burner-head, and the plate M^3, connected to the tube and closing the bottom of the burner-head, the said plate M^3 being formed to provide an oil-cup, M, as set forth.

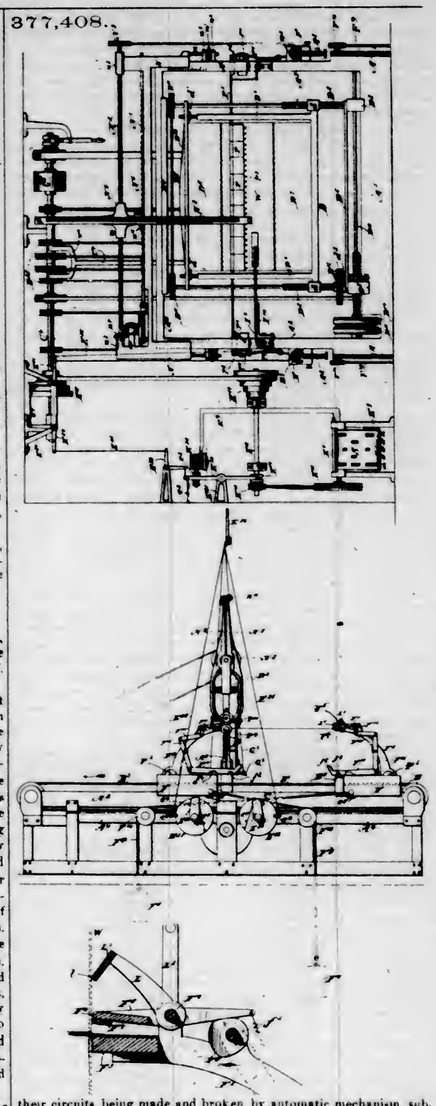
5. The burner-head having the arms C on the interior, terminating in an annular collar, D, said burner-head having an open bottom, combined with the tube or commingling-chamber O, to screw into the collar D, and the plate M^3, carried by the tube O and closing the open bottom of the burner-head, the said plate M^3 having an oil-cup, M, formed on its outer edge, as set forth.

6. In a vapor-burner, the burner-head having an open bottom, combined with the plate M^3, separate from the burner-head and entirely closing the bottom of the same, the outer edge of the plate M^3 being formed with an oil-cup, M, as set forth.

377,408. **EMBROIDERING-MACHINE.** ROSWELL T. SMITH, Nashua, N. H., assignor to himself, Nate W. Goddard, same place, and George H. Dunham, New York, N. Y. Filed June 10, 1885. Serial No. 168,237. (No model.)

Brief.—Threaded vertical shafts and a threaded horizontal shaft having gearing rigidly mounted therein for actuating them engage in threaded recesses in the fabric-frame supports. The movements of the said fabric-carrying frame are timed, determined in degree, and wholly controlled by a perforated sheet (a kind of stencil-plate or ribbon) having a step-by-step or intermittent feed, whereby it operates to make and break an electric circuit. The reversal of the needle-carriages is automatic, being effected by electro-magnetic devices governed by the tension or strain of the threads, the thread-tension mechanism being variable to produce designs differing in texture on fabrics, or as may be required in producing designs from threads of different sizes and strength. Portions of the fabric may be removed by a punching or cutting apparatus automatically and positively actuated and intermittingly fed or caused to travel over the fabric. The distance apart of said cuttings may be varied to correspond with the proposed design. The threads are prevented from being withdrawn from the eyes of the needles by a locking device acting while the threads are under tension. The gripping-bars accommodate themselves to needles of any desired size. A button-hole stitch may be secured at any stage, or throughout, as desired. Duplicate designs of different sizes may be produced by varying the speed of the mechanism adjusting the fabric relatively to the feed of the main controlling element. Tension-plates are placed near each surface of the web, whereby the swaying of the web produced by the strain on the threads effects, through certain levers and electro-magnetic devices, the reversal of each needle-carriage.

377,408.



Claim.—1. In an embroidering-machine, the combination, with a movable fabric-frame, of threaded vertical shafts and a threaded horizontal shaft engaging with the supports upon which said frame is mounted, belt-gearing connecting the vertical shafts to give them simultaneous rotation, pulleys mounted upon the horizontal shaft and upon one of the vertical shafts, driving-pulleys geared therewith, clutches by which said pulleys are brought into operation, electro-magnets by which the clutch-shifting levers are actuated, and a perforated sheet formed of any suitable non-conducting material, whereby the circuits in which said magnets lie are made and broken, substantially as specified.

2. In an embroidering-machine, the combination, with a fabric-supporting frame and shafts by which the fabric-frame receives adjustment, of pulleys mounted loosely upon continuously-revolving shafts, clutches splined on said shafts, clutch-shifting levers, each carrying an armature, and electro-magnets which actuate said levers, their circuits being made and broken by automatic mechanism, substantially as specified.

3. In an embroidering-machine, the combination, with a movable fabric-frame and the mechanism by which the successive stitch adjustments are effected, of gearing actuating said mechanism, clutches by which said gearing is brought into action, and electro-magnetic devices by which each clutch is shifted by the make and break of an electro-magnetic circuit, substantially in the manner specified.

4. In an embroidering-machine, the combination, with a vertically and laterally adjustable fabric-frame, of threaded shafts for giving the successive stitch adjustments, a stencil-sheet having as many distinct series of longitudinal openings as there are different adjustments of the fabric-frame, each opening having a length which defines the degree of the stitch adjustment, and electro-magnets lying in circuits which are made and broken by the progressive movement of said stencil, substantially as specified.

5. In an embroidering-machine, the combination, with a fabric-frame and the mechanism whereby the needle-carriages are moved toward and from the web or fabric, of reversing mechanism actuated by a reversing-lever, and tension-plates swinging said lever and lying adjacent to each surface of the web, whereby the swaying of the web produced by the tension of the threads effects the reversal of each needle-carriage, substantially as specified.

6. In an embroidering-machine, the combination, with a fabric-frame and mechanism for moving the needle-carriages, of reversing devices operated by a contact-lever having tension-plates lying against or adjacent to the opposite faces of the web, a shifting-lever throwing the clutch whereby the reversal is effected, and an electro-magnet actuating the shifting-lever, said magnet lying in a circuit which is made by the vibration of the contact-lever, said vibration being produced by the swaying of the web caused by the tension of the embroidering-threads, substantially as specified.

7. In an embroidering-machine, the combination, with a fabric-supporting frame, threaded shafts upon which said frame is supported, and pulleys by which said shafts are connected, of an electro-magnet vitalized by the making of a circuit within which said magnet lies, an arm vibrated by the attraction of said magnet, and a clutch splined upon a continuously-revolving shaft and thrown by the vibration of the arm into engagement with a pulley loosely mounted upon said shaft, said pulley being belted to a pulley on one of the shafts supporting the fabric-frame, substantially as specified.

8. In an embroidering-machine, the combination, with a fabric-supporting frame, threaded shafts upon which said frame is supported, and pulleys by which said shafts are connected, of an electro-magnet vitalized by the making of a circuit within which said magnet lies, an arm vibrated in one direction by the attraction of said magnet and in the opposite direction by a spring or its equivalent, a clutch splined upon a continuously-revolving shaft and connected with one end of said lever, a pulley loosely mounted upon said shaft, and a non-conducting sheet having progressive movement and provided with a series of longitudinal openings, whereby the magnet is automatically vitalized and devitalized, substantially as specified.

9. In an embroidering-machine, the combination, with needle-carriages which alternately approach and recede from the web or fabric, of a shaft from which such movement is derived, pulleys loosely mounted upon said shaft and belted to a power-shaft to have rotation in opposite directions, clutches splined upon the shaft carrying said pulleys, levers by which the clutches are thrown into engagement with the pulleys alternately, electro-magnets which when vitalized actuate said levers, and a perforated stencil-sheet having progressive movement, whereby the circuits in which said magnets lie are made and broken automatically, substantially as specified.

10. In an embroidering-machine, the combination, with the needle-carriages by which the embroidering-needles are carried, of a needle-bar having formed therein needle-holding channels or slots arranged at regular intervals, each channel increasing in width from its lowest point upward, and a needle-clamping bar pressing the needles into said channels, substantially as specified.

11. In an embroidering-machine, the combination, with the needle-carriages by which the embroidering-needles are carried, of a needle-bar having formed therein channels or slots at equal intervals, in which the needles rest, and a clamping-bar having an elastic strip which rests upon and holds the needles in said channels, substantially as specified.

12. In an embroidering-machine, the combination, with a needle-carriage by which the embroidering-needles are driven and the threads drawn taut, of a thread-fastening bar lying in front of the needle-clamping bar, and arms carrying said fastening-bar, whereby the latter is caused to rise and fall as the carriage approaches and recedes from the web or fabric, substantially as specified.

13. In an embroidering-machine, the combination, with the needle-carriage having a suitable needle-bar, of a clamping-bar by which the needles are held, a thread-fastening bar lying in front of the clamp and having an elastic surface which lies upon the central portion of the needles, spring-actuated arms carrying said fastening-bar, and stop-arms by which the latter is raised as the needles closely approach the fabric, substantially as specified.

14. In an embroidering-machine, the combination, with the needle-carriage having suitable clamping mechanism, of a thread-fastening bar having an elastic or yielding surface adapted to lie upon the central portions of the needles to prevent the withdrawal of the threads, substantially as specified.

15. In an embroidering-machine, the combination, with a needle-carriage having a needle-clamping bar carried by arms pivoted upon the carriage, of cams mounted upon a rock-shaft by which the clamp is thrown into locking engagement, levers pivotally mounted upon the needle-carriage and actuating said cams, notched slide-bars connected with said levers, a driving-block having a tooth or feather which engages with the notch in the slide-bars, and a traveling belt by which the driving-block is carried from end to end of the machine, substantially as specified.

16. In an embroidering-machine, the combination, with two needle-carriages, one upon each side of the web or fabric, of cords and pulleys whereby each carriage is normally drawn toward said web, a belt or chain upon each side of the machine, having a driving-block rigidly mounted thereon, slide-bars resting upon the foot-pieces of each needle-carriage and having a notched forwardly-projecting portion which normally engages with a tooth or feather upon the driving-block; levers pivotally mounted upon each carriage and actuating the needle-clamps, cams upon the foot-pieces of each carriage whereby the notch of the slide-bar is thrown off the tooth of the driving-block, and stop-arms which limit the forward movement of each needle-carriage, whereby the unlocking of the needles in one carriage and the locking of the same in the other is rendered automatic and substantially simultaneous, substantially as specified.

17. In an embroidering-machine, the combination, with two needle-carriages, one upon each side of the web or fabric, of belts or chains by which a retrograde movement is given to the said carriages, a shaft driving said belts, reversing mechanism connected with said shaft, and a reversing-lever having plates which lie upon each side of the web and are thrown in opposite directions alternately by the swaying of the web produced by the tension of the embroidering-threads, substantially as specified.

18. In an embroidering-machine, the combination, with a fabric-frame and a driving-shaft having pulleys or sprockets, of belts or chains driven thereby, pulleys loosely mounted upon said shaft and revolving in opposite directions, clutches splined upon the shaft and adapted to engage alternately with said pulleys, shifting-levers connected with said clutches, and a reversing-lever having tension-plates lying upon opposite faces of the web or fabric, said lever being vibrated by the swaying of the web produced by the tension of the threads, substantially as specified.

19. In an embroidering-machine, the combination, with a fabric-frame and the mechanism by which the needle-carriages are moved, of a reversing apparatus consisting of a pendulum-lever connected at its upper end to a vibrating plate, a spring connected with said plate and attached to a pin below the point of support of the latter, and tension-plates connected with the reversing-lever and adjustable toward and from the web, substantially as specified.

20. In an embroidering-machine, the combination, with a fabric-frame and the mechanism whereby the needle-carriages are receded from the web, of a reversing-lever operated by tension-plates lying upon or adjacent to the opposite faces of the web and thrown in opposite directions by the swaying of the web as the threads are drawn taut, substantially as specified.

21. In an embroidering-machine, the combination, with a fabric-frame and a reversing-lever pivotally mounted upon one of the side standards supporting the fabric-frame, of a vibrating plate balanced upon the pivotal support of said lever, a spring under tension having its terminals one below said support and in a vertical line drawn through it and the other in the central upper portion of said plate, an arm having one extremity lying in a fork on said plate, and tension-plates connected with the opposite extremity and adapted to be moved in opposite directions alternately by the swaying of the web, substantially as specified.

22. In an embroidering-machine, the combination, with a fabric-frame and a vibrating reversing-lever, of tension-plates connected therewith and lying upon each side of the vertically-suspended web, and means, substantially as described, whereby said plates may be adjusted toward and from the web, whereby the thread-tension required to effect the reversal may be varied, substantially as specified.

23. In an embroidering-machine, the combination, with a fabric-frame and a reversing-lever which is vibrated by the swaying of the web as the threads are drawn taut, of two separate battery-circuits, each passing through a binding-post arranged beside the lower end of a pendulum-lever, which is swung by the action of the reversing-lever, a binding-post upon the lower non-conducting end of said pendulum-lever, which is thrown by the swing of the latter from one of said binding-posts to the other, thereby breaking the one circuit and making the other, electro-magnets lying in each of said circuits, armatured levers actuated by said magnets, and devices connected with said levers for locking the oppositely-revolving pulleys alternately to the shaft moving the needle-carriages, substantially as specified.

24. In an embroidering-machine, the combination, with a fabric-frame mounted upon a movable support, of threaded shafts engaging with said support, a pulley belted to one of said shafts, two oppositely-revolving pulleys, one upon each side of said pulley and upon the same shaft, splines for locking the central pulley with one of the adjacent pulleys and with the shaft simultaneously, thereby giving rotation in either direction to the central pulley and to the pulley on one of the threaded shafts, giving adjustment to the fabric-frame, a series of electro-magnets, each in a separate circuit, a stencil-sheet having openings which represent the degree and kind of adjustment by their length and relative arrangement, a conducting-bar above and

spring-fingers beneath said stencil, whereby as the latter is fed forward the several circuits in which said fingers lie are made and broken, and conducting-wires connecting said fingers with the coils of the several magnets, substantially as specified.

25. In an embroidering-machine, the combination, with a conducting-bar and with fingers which normally make contact therewith, of a stencil or perforated sheet which is fed between the bar and the fingers, a series of electro-magnets, each in circuits with one of said fingers, oppositely-revolving pulleys loose upon the shaft actuating the needle-carriages, clutches by which either of said pulleys may be locked with the shaft and caused to actuate the same, needle-carriages belted to the shaft carrying said pulleys, and clutch-shifting levers having armatures which are attracted by said magnets, substantially as specified.

26. In an embroidering-machine, the combination, with a fabric-frame and the mechanism by which the several adjustments of the fabric-frame are effected, of a stencil-sheet having openings which control the degree of adjustment, and gearing for driving said stencil at different rates of speed relatively to the constant speed of the adjusting mechanism, substantially as specified.

27. In an embroidering-machine, the combination, with the vertical frame and the fabric-frame supported thereby, of a yoke-frame having vertical adjustment thereon, a horizontal shaft journaled in said yoke and lying above the fabric, cutting-arms coupled together and lying one upon each side of the fabric, a rack actuated by said shaft to feed the cutters step by step from one end of the fabric to the other, and means for operating said cutters between each feed-movement, substantially as specified.

28. In an embroidering-machine, the combination, with suitable supports and the fabric-frame mounted thereon, of a vertically-adjustable frame carrying a horizontal shaft mounted therein, cutters mounted upon said shaft and arranged to operate upon the fabric, and means for feeding said cutters forward upon the shaft and for operating them between each feed-movement.

29. In an embroidering-machine, the combination, with a fabric-frame and a shaft arranged horizontally near one surface of the fabric, of one or more leaf-plates hanging from said shaft and provided with a hook or hooks at the lower end, multiple cams supporting the ends of said shaft, a striker rigid upon said shaft and engaging with an edge cam upon one of the multiple cams, the stitch-forming mechanism, and means for giving said cam-wheels a partial revolution at stated intervals, substantially as specified.

30. In an embroidering-machine, the combination, with a fabric-supporting frame moved by vertical and horizontal threaded shafts engaging with its supports, of pulleys mounted upon said shafts and belted by a straight and a cross belt, respectively, to pulleys loose upon a continuously-revolving driving-shaft, clutches by which either pulley may be temporarily locked with the shaft, armature-levers shifting said clutches, electro-magnets attracting the armatures, electric circuits in which said magnets lie, a stencil which governs the stitch adjustments, stencil-feeding mechanism brought into action by a sliding clutch upon the driving-shaft to which said clutch is splined, a shifting-lever actuated by the attraction of an electro-magnet, and devices for making and breaking the circuit in which said magnet lies, said devices being operated by a separate series of perforations in the stencil, substantially as specified.

31. In an embroidering-machine, the combination, with the reciprocating needle-carriages, of disks journaled upon each side of the central standard, a pawl pivoted on the axis of each disk and supported behind by a pin and in front by a spring, a projection on the foot-piece of each needle-carriage which trips the pawl on the forward movement of the carriage and engages with it as the carriage recedes, and a cord or wire attached to the periphery of each disk and connected with the shifting-lever, throwing the clutch which initiates the movement of the stencil, substantially as specified.

32. In an embroidering-machine, the combination, with the mechanism reversing the movement of the needle-carriages, of a slide-bar seated in the standard and having pins which straddle the insulated end of the pendulum-lever, rods pivoted to each end of said bar and normally supported by cords or wires above the path of the driving-block which moves the needle-carriages, said cords being connected by bell-cranks with the shifting-lever throwing the clutch which initiates the movement of the stencil, substantially as specified, whereby the needles are prevented from contact with the web during the time the latter is in motion.

33. In an embroidering-machine, the combination, with a fabric-frame and the threaded shafts by which the vertical movements of the fabric-frame are effected, of a pulley loose upon a shaft journaled in a bracket attached to the power-shaft by a hanger, pulleys loosely mounted one on each side of said pulley, sliding splines set in recesses in the shaft and having radial teeth which project within the chambered hub of the central pulley, clutches operating said splines to lock the central with either of the outer pulleys, and levers shifting said clutches, said levers being actuated by the making of an electro circuit by means of a series of perforations in a controlling-stencil, substantially as specified.

34. In an embroidering-machine, the combination, with the clutch-shifting levers which lock the driving-pulleys with their shafts, of electro-magnets operating said levers, separate electric circuits within which said magnets lie, a stencil having several series of perforations and circuit-closing devices lying in the path of said perforations, reciprocating carriages carrying the needles which draw the threads, and devices operated by the thread tension to make and break the circuit of the magnets reversing the motion of said carriages, said stencil having intermittent progressive movement, whereby each of the circuits is made in turn automatically, substantially as specified.

35. In an embroidering-machine, the combination, with a fabric-frame and with a pulley driving the threaded shaft which gives horizontal adjustment to the fabric-frame, of a pulley rigidly mounted upon a driving-shaft, two loose pulleys mounted upon the same shaft and driven in opposite directions, clutches splined to the shaft and adapted to engage with the loose pulleys, and means for operating said clutches to give the driving-shaft movement in opposite directions, substantially as specified.

36. In an embroidering-machine, the combination, with the needle-actuating mechanism, of a stencil by which the movements of the fabric-frame are controlled and timed, and stencil-feeding mechanism set in motion by the needle-actuating mechanism and arrested by the action of the stencil itself, substantially as specified.

37. In an embroidering-machine, the combination, with a fabric-frame having supports which engage with threaded shafts, of mechanism by which said shafts are rotated in either direction, electro-magnetic devices whereby operative connection is effected between the rotating mechanism and the power-shaft, and a stencil having openings of varied length and arrangement by which the rotation of said threaded shafts is timed and controlled, substantially as specified.

38. In an embroidering-machine, the combination, with a movable fabric-frame, of means for adjusting said frame, electro-magnetic devices whereby operative connection is effected between the adjusting mechanism and the power driving the same, a stencil having openings of varied length and relative arrangement whereby the stitch adjustment is timed and determined, and means for giving to said stencil a progressive movement at proper intervals, substantially as specified.

39. In an embroidering-machine, the combination, with the needle-carriages which are drawn toward the web by weights and from it by belts, of reversing mechanism consisting of oppositely-revolving pulleys loose upon the belt-actuating shaft, clutches splined upon said shaft, levers adapted to engage one or the other of said clutches with one or the other of said pulleys, and electro-magnets which attract one or the other of said levers, the circuits of said magnets being closed and opened by mechanism operated by the draft upon the embroidering-threads, substantially as specified.

40. In an embroidering-machine, a stencil-sheet having four separate longitudinal series of openings representing the time, direction, and relative length of the vertical or horizontal movement, or of both combined, required to effect the successive stitch adjustments, and a fifth series of openings whereby devices are brought into action to continue the advance of the stencil until the adjustments represented by each transverse series of openings are completed, and then to arrest its movement, substantially as specified.

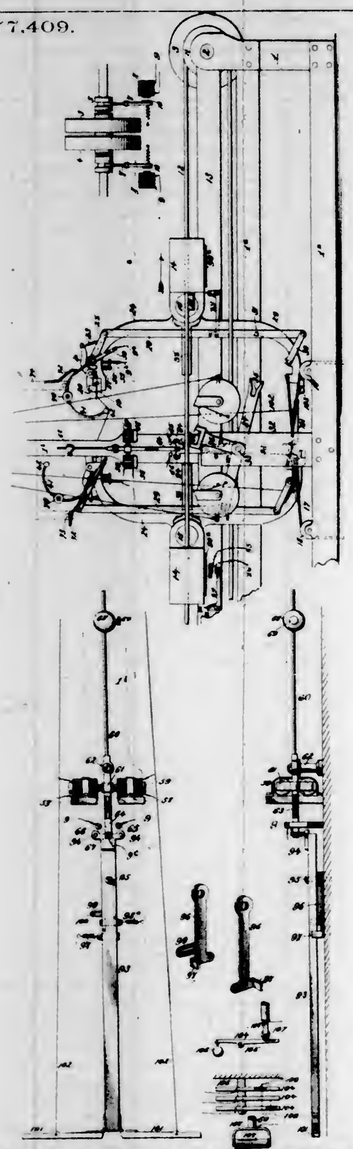
41. In an embroidering-machine, the combination, with mechanism for giving adjustment to the fabric-frame, of a series of circuit breakers and contacts, a stencil-sheet feeding between the same and having four series of openings representing the several adjustments of the fabric-frame and the relative time thereof, and provided also with a fifth series of openings representing the length of each advance movement of the stencil, mechanism for effecting said adjustments, and mechanism for advancing the stencil, the action of the former being initiated by the making of one of the circuits and that of the latter being continued after its initiation by making the circuit in the fifth series and arrested by breaking it, substantially as specified.

42. In an embroidering-machine, the combination, with a stencil-sheet having four longitudinal series of openings of varied length and arrangement, of electric circuits closed and broken by the advance of said sheet, and stitch-adjusting mechanism brought into and out of action by closing and opening said circuits, the openings in the stencil representing the two vertical and two horizontal adjustments of the tambour-frame required for the formation of stitches, substantially as specified.

377,409. EMBROIDERING-MACHINE. ROSWELL T. SMITH, Nashua, N. H., assignor to himself, Nate W. Goddard, same place, and George H. Dunham, New York, N. Y. Filed July 9, 1886. Serial No. 207,609. (No model.)

Claim.—1. In an embroidering-machine, the combination, with the needle-carriages and their needle-clamping jaws, of cam-levers locking and releasing said jaws, a centrally-fulcrumed lever engaging with the cam-lever connections, and a driving-block on the railway-

377,409.



belt by which the said lever is actuated and the needles locked in the one carriage at or before they are released by the other, substantially as specified.

2. In an embroidering-machine, the combination, with the needle-carriages and their needle-clamping jaws, of levers centrally fulcrumed and arranged, cams locking and releasing the needle-jaws, levers operating the cams, and blocks on the railway-belts by which the said levers are actuated simultaneously in opposite directions by the central levers, substantially as specified.

3. In an embroidering-machine, the combination, with the needle-carriages and the mechanism by which they are alternately moved toward and from the web, of tension-bars resting upon the working-threads, electrical contacts engaged and disengaged by the movement of said bar, electro-magnets lying in the circuits of which said contacts form part, and devices for bringing the reversing mechanism into action, the point of electrical contact being adjustable relatively to the point of elevation of the tension-bars, substantially as specified.

4. In an embroidering-machine, the combination, with the needle-carriages and the mechanism by which they are moved alternately toward and from the web, of tension-bars resting on the working-threads, electrical contacts engaged and disengaged by the movement of said bar, electro-magnets lying in the circuits of which the contacts form part, devices actuated by said magnets for bringing the reversing mechanism into action, means for adjusting the point of electrical contact relatively to the position of the tension-bars and the tension on the threads, and weights on the supports of said bars adjustable toward and from the same to vary the working tension of the threads, substantially as specified.

5. In an embroidering-machine, the combination, with the needle-carriages and the mechanism by which they are moved alternately toward and from the web, of tension-bars resting on the working-threads, electrical contacts engaged and disengaged by the movement of said bars, oppositely-arranged electro-magnets lying in the circuits of which such contacts are part, an armatured lever fulcrumed on the standard and swinging to one or other of said magnets, a weight on said lever above its fulcrum, contacts on each side of the insulated end of the lever, a connection therefrom to one pole of the battery, electro-magnets lying in the circuits of which said contacts form part, and devices actuated by said magnets for bringing the reversing mechanism into action, substantially as specified.

6. In an embroidering-machine, the combination, with the needle-carriages and mechanism for moving them toward and from the web, of an electric switch on each carriage, reversing devices actuated by the attraction of magnets lying in the same circuit with each switch and a separate switch interposed in each reversing-circuit, having its magnet energized by closing the switch on the carriage, and adapted to close and maintain said reversing-circuit until the next succeeding reversal, substantially as specified.

7. In an embroidering-machine, the combination, with two separate sets of electro-magnets, of electrical contacts lying in the circuit of one set of said magnets, tension-bars engaging and disengaging said contacts by their rise and fall, a switch having an armature between the magnets of the first set and connected with one pole of the battery of the second set of magnets, contacts connected to the other pole, with which contacts the switch is alternately engaged by the attraction of its armature, and reversing mechanism which is brought into action by making the circuits of said magnets, substantially as specified.

8. In an embroidering-machine, the combination, with the needle-carriages and the mechanism by which the stitch adjustment is effected, of a stencil having openings of varied arrangement and length to control the time and degree of adjustment, stencil-feeding mechanism, devices by which the same is brought into action, an electro-magnet actuating said devices, and contacts lying in the circuit of said magnet and closed by the carriage-block as it recedes, substantially as specified.

9. In an embroidering-machine, the combination, with a contact on the rail, of a movable contact on a lever pivoted to the rail, an electro-magnet in the same circuit, stencil-feeding mechanism, devices actuated by the magnet to bring the feeding mechanism into action, and the needle-carriage riding on the rail to which the contact-lever is pivoted, substantially as specified.

10. In an embroidering-machine, the combination, with the needle-carriage and mechanism by which it is moved to and fro, of a tension-bar resting on the working-threads, a rigid electrical contact on the carriage-arm, a pivoted spring-actuated contact carried by the parts supporting the tension-bar, and a throw-off engaging with the rigid contact and permitting electric connection upon the rise of the tension-bar, substantially as specified.

11. In an embroidering-machine, the combination, with the needle-carriages and mechanism by which they are moved to and fro alternately, of tension-bars resting on the working-threads, an arm or arms connected with said bar and swinging on a pivoted support as the bar rises and falls, an electrical contact pivoted to said arm, a contact-post mounted on the carriage-frame, an adjustable contact-point on said post, and a spring pressing the pivoted contact toward the adjustable one, substantially as specified.

12. In an embroidering-machine, the combination, with the stencil-feeding mechanism and the clutch-lever bringing said mechanism into action, of an electro-magnet actuating the clutch-lever, and electrical contacts engaged by the retrograde movements of the needle-carriages, substantially as specified.

13. In an embroidering-machine, the combination, with the tension-bar resting on the working-threads, of an electrical circuit made by the rise of said bar, an electro-magnet lying in said circuit, reversing mechanism brought into action by the attraction of such magnet, and a switch actuated by a toe on the needle-carriage to close the circuit of the magnet and reverse the carriage to prevent its approach while the web is in adjustment, substantially as specified.

14. In an embroidering-machine, the combination, with a tension-bar resting on the threads, of an electrical circuit made by the rise of said bar, a magnet lying in said circuit, reversing mechanism brought into action by said magnet, and an automatic switch by which the circuit is maintained until the action of the railway is again reversed, substantially as specified.

15. In an embroidering-machine, the combination, with the stencil-feeding mechanism, of devices by which the action of said mechanism is initiated, an electro-magnet actuating said devices, a switch on the rail of the machine by which the circuit is made and broken, and a dog pivoted on said switch and rigid therewith in one direction and yielding in the other, and a prolonged boss on the needle-carriage engaging with and operating the dog and switch after the carriage has traveled a distance from the web, substantially as specified.

16. In an embroidering-machine, the combination, with a tension-bar resting on the working-threads, of an electrical circuit closed by the rise of said bar, a magnet lying in said circuit, a pulley mounted between friction-disks on a revolving shaft, a belt normally loose on said pulley, and a lever actuated by the magnet to bind the belt on the pulley and actuate the same, substantially as specified.

17. In an embroidering-machine, the combination, with the needle-carriages and the needle-clamping jaws, of levers carrying the movable jaw, connecting-bars on each carriage having studs, a centrally-fulcrumed lever midway of the machine having forked ends engaging said studs, a forked bar operating the lever, and a block on the belt actuating the bar, substantially as specified, whereby the jaw on the one carriage is opened as that on the other is closed.

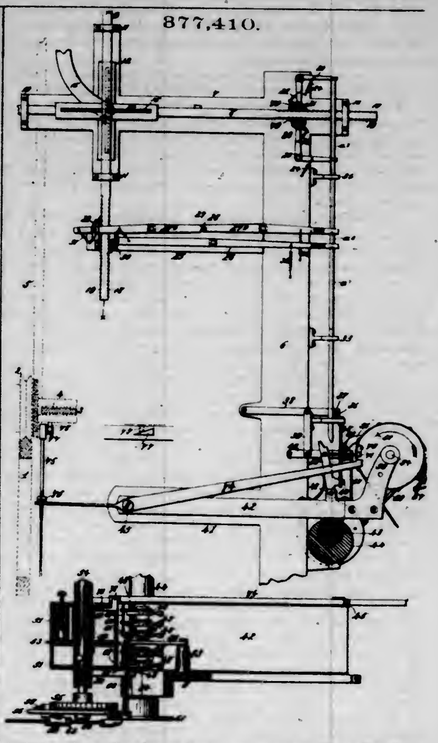
18. In an embroidering-machine, the combination, with the needle-carriages and their needle-jaws, of locking and releasing levers on each carriage, connecting-bars operating said levers in reverse directions, studs on the connecting-bars, a centrally-mounted forked lever engaging said studs as the carriages arrive at the web, a bar actuating the lever, and blocks on the belt of the railway, which swing the bar, whereby the needle-jaws are locked and unlocked on the two carriages, respectively, substantially as specified.

19. In an embroidering-machine, the combination, with the needle-carriages and their needle-clamping jaws, of levers carrying the movable jaws, cams actuating said levers to lock and unlock the clamps, levers operating the cams, connecting-bars pivotally attached to said levers, centrally-mounted levers near each end of the web engaging with the connecting-bars as the carriages are arrested, and a block on the belt actuating the lever, substantially as specified, whereby the needles are locked in the receiving-carriage an instant before they are released from the other carriage.

20. In an embroidering-machine, the combination, with the stencil-feeding mechanism, of an electro-magnet by the attraction of which the stencil-pulley is locked to its shaft, a switch closed by the advance of the stencil and making the circuit of said magnet, and a second switch in the same circuit closed by the retrograde movement of the needle-carriage and broken after the switch is closed by the stencil, substantially as specified.

21. In an embroidering-machine, the combination, with the railway-reversing mechanism and the electro-magnetic devices whereby the said mechanism is brought into action, of a switch making and breaking the circuits of said devices, said switch consisting of separate contacts separately mounted on an insulating-support, and a second contact moving on the separate contacts, the latter being thrown against the roll and presenting alternating insulated surfaces to the roll, substantially as specified.

377,410.



devices, reciprocating feeders having engagement with said devices, selectors adapted to operate said feeders, and a stencil-sheet having four separate longitudinal series of openings for timing and controlling the stitch adjustment, substantially as specified.

4. In an embroidering-machine, the combination, with devices for adjusting the tambour-frame, of independent adjusting devices communicating vertical and horizontal movement to the tambour-frame, a stencil-sheet having four longitudinal series of openings for timing and controlling the two vertical and two horizontal movements of the adjusting devices, and means for giving a progressive movement to the stencil, substantially as specified.

5. In an embroidering-machine, the combination, with an intermittently-advancing stencil-sheet, of reciprocating selectors and vertically and horizontally moving adjusting devices connected to the apparatus which supports the tambour-frame, said selectors imparting their reciprocatory movement at stated intervals to the adjusting devices, the stencil-sheet being provided with four longitudinal series of openings for timing and controlling the stitch adjustment, said openings representing the two vertical and the two horizontal adjustments therein, substantially as specified.

6. In an embroidering-machine, the combination, with the tambour-frame and a pantograph apparatus connected therewith, of adjusting devices connected to the motor-arm of the pantograph and having independent vertical and horizontal adjustment, selecting and actuating devices having continuous reciprocatory movement, a stencil-sheet having four series of openings representing the two vertical and two horizontal adjustments, means for giving a progressive advancement to the stencil-sheet, and independent mechanism for initiating the stitch adjustment at proper times with relation to the action of the needle-carriages, substantially as specified.

7. In an embroidering-machine, the combination, with the tambour-frame and a pantograph apparatus giving adjustment thereto, of independent arms having cruciform arrangement, slide-bars carrying said arms, reciprocatory devices giving adjustment in two vertical and two horizontal directions to said slide-bars, selectors having continuous reciprocation and means to cause said selectors to engage at stated intervals with the adjusting devices, a stencil-sheet having four series of openings of varied length and arrangement representing the two

377,410. AUTOMATIC-STITCH-ADJUSTING MECHANISM FOR EMBROIDERING-MACHINES. ROSWELL T. SMITH, Nashua, N. H. Filed Mar. 25, 1887. Serial No. 232,375. (No model.)

Claim.—1. In an embroidering-machine of the type described, an automatic mechanism for imparting the stitch adjustment to the tambour-frame, a stencil-sheet having four longitudinal series of openings cut therein, and means for enabling said series of arms to time and control the two vertical and two horizontal adjustments, respectively, and means for giving a stated progressive movement to said stencil-sheet, the four series of openings representing the two vertical and two horizontal adjustments of the tambour-frame, substantially as specified.

2. In an embroidering-machine, the combination, with the tambour-frame, of a pantograph, independent slide-bars connected with the motor-arm of the pantograph and having vertical and horizontal adjustment, respectively, a stencil-sheet having four longitudinal series of openings, which time and control said adjustments, and automatic devices intermediate of said stencil and the slide-bars and effecting the adjustments of the latter, substantially as specified.

3. In an embroidering-machine having a tambour-frame and a pantograph apparatus connected therewith, the combination, with the motor-arm of the pantograph, of vertically and horizontally moving

vertical and two horizontal adjustments of the tambour-frame, and means for advancing said stencil intermittently, the cross-arms having independent connection with the end of the motor-arm of the pantograph, substantially as specified.

8. In an embroidering-machine, the combination, with the stitch-adjusting mechanism, of a stencil-sheet having four series of openings of varied length and arrangement representing the two vertical and two horizontal adjustments of the tambour-frame, a rotating feed-disk advancing said stencil, a vibrating pawl-carrier moving a ratchet on the shaft of said disk, a pitman throwing the pawl-carrier in one direction, and a latch operated by the stitch-adjusting mechanism and retracting the pawl to give an advance movement to the stencil, substantially as specified.

9. In an embroidering-machine, the combination, with the tambour-frame and a pantograph apparatus connected therewith, of slotted arms having cruciform arrangement, reciprocating pawl-carriers acting upon opposite racks on each arm, motor-bars actuating the pawl-carriers, continuously-vibrating selectors, means for causing said selectors to engage at stated intervals with one or more of said motor-bars, and an intermittently-advancing stencil-sheet having four series of openings, which time and control the action of said selectors, the motor-arm of the pantograph having an independent connection with each of the slotted cross-arms, substantially as specified.

10. In an embroidering-machine, the combination, with the tambour-frame and adjustable supports connected therewith, of independent arms having connection with the adjustable supports of the tambour-frame, and reciprocatory pawl-carriers acting upon double racks carried by said arms and giving them a vertical and a horizontal movement alternately or simultaneously, motor-bars actuating said pawl-carriers, selectors having continuous vibration and means for causing said selectors to engage at stated intervals with said motor-bars, a stencil having progressive movement and provided with four series of openings which represent the two adjustments of the tambour-frame, and means for advancing said stencil synchronously with the presentation of any one or more of the stencil-openings to the selectors, substantially as specified.

11. In an embroidering-machine, the combination, with the tambour-frame and with supports therefor having two vertical and two horizontal adjustments, of a stencil-sheet having four series of openings representing by their relative longitudinal and transverse arrangement the relative time and direction, respectively, of the several stitch adjustments, and mechanism directed and controlled by said stencil for effecting said adjustments, the degree of movement being represented by the length of the stencil-openings, substantially as specified.

12. In an embroidering-machine, the combination, with the tambour-frame and with supports therefor which are capable of the movement required for the stitch adjustment, of a stencil having four series of openings representing by their relative longitudinal and transverse arrangement the relative time and direction, respectively, of the successive stitch movements, automatic mechanism controlled by said stencil for effecting said movements, means for advancing the stencil, and a timing apparatus whereby the stitch movement is made to alternate with the action of the stitch-forming mechanism, substantially as specified.

13. In an embroidering-machine, the combination, with the tambour-frame, the adjustable supports therefor, and means for effecting the stitch movements to said supports, of a stencil having four series of openings which control the successive stitch movements of said frame, the relative longitudinal and transverse arrangement of said openings determining the time and direction of said movements, opposite vertical and horizontal movements being represented by openings in different transverse series, while the combined vertical and horizontal movements may be controlled by openings in the same transverse series, substantially as specified.

14. In an embroidering-machine, the combination, with the tambour-frame and supports therefor capable of the adjustment required to admit of the stitch movements, of a stencil governing the mechanism by which said movements are effected, a feed mechanism for said stencil, and a timing device actuated by the stitch-forming mechanism, whereby the effective or operative selections of the stencil alternate with the action of said mechanism, substantially as specified.

15. In an embroidering-machine, the combination, with the supports sustaining the tambour-frame, of automatic mechanism effecting the stitch movements, said mechanism consisting of a stencil having openings representing the relative time, direction, and length of the several movements successively, four continuously-moving selectors by which the two vertical and two horizontal movements of the tambour-frame are effected, means for advancing the stencil, a fifth selector by which said advance movement is initiated, and a timing-lever actuated by the needle-carrying apparatus, by which said selector is permitted to act, substantially as specified.

16. In an embroidering-machine, the combination, with a stencil which controls the automatic stitch movement, of a feed for said stencil, a vibrating pawl-carrier having a swiveling eye or sleeve, a pitman running loosely in said eye and having a nut or boss which vibrates the pawl-carrier in one direction only, and a vibrating arm which retracts the pawl after each stroke, said arm having connection with the stitch-adjusting mechanism, whereby the advance of the stencil is rendered synchronous with the continued presentment of one or more of its openings and alternates with the action of the needles, substantially as specified.

17. In an embroidering-machine, the combination, with a vibrating platform, of selecting devices pivotally mounted thereon, springs impelling said devices to rock in one direction, a rigid yoke rocking them as the platform drops to or near its limit of movement in the opposite direction, a stencil having four series of openings which govern the adjustments of the tambour-frame, a drum over which said stencil is fed, a feeding-pawl retracted after each stroke by the effective action of one or more of said selecting devices, an independent device, by which the initial retraction is given, and a timing device by which the independent selector giving it is brought into action for a single stroke to initiate the advance of the stencil, substantially as specified.

18. In an embroidering-machine, the combination, with a tambour-frame and its supports, of two independent arms or bars acting the one in a horizontal and the other in a vertical direction, vibratory levers carrying pawls which are normally impelled to engage with racks on said arms or bars, selecting devices having continuous reciprocation, a stencil having four series of openings representing the two vertical and two horizontal movements of said arms or bars, and means for feeding said stencil and for causing said selectors to vibrate toward and from the same between their successive reciprocations, substantially as specified.

19. In an embroidering-machine, the combination, with the tambour-frame and the stitch-forming mechanism, of an automatic stitch adjustment consisting of arms or bars acting in lines at right angles to each other, said arms having each a double rack with the teeth pitched in opposite directions, vibrating pawl-carriers having spring-impelled pawls engaging with said racks, continuously-reciprocating selectors acting upon the pawl-carriers, a stencil bringing said selectors into and out of action, said stencil having openings representing by four different series the two vertical and two horizontal adjustments of the tambour-frame, and means for repeating individual adjustments as often as the openings require, the opposite movements in the same plane being effected by different transverse series of openings, substantially as specified.

20. In an embroidering-machine, the combination, with arms or bars having oppositely-toothed racks, of pawl-carriers having spring-impelled pawls engaging said racks, relief-plates underlying said pawls and intermediate between the same and the racks, and an arm rigid on one of said pawl-carriers and provided with a cam-incline engaging with a pin on the nose of the pawl carried by the opposite lever when both pawl-carriers vibrate simultaneously, substantially as specified.

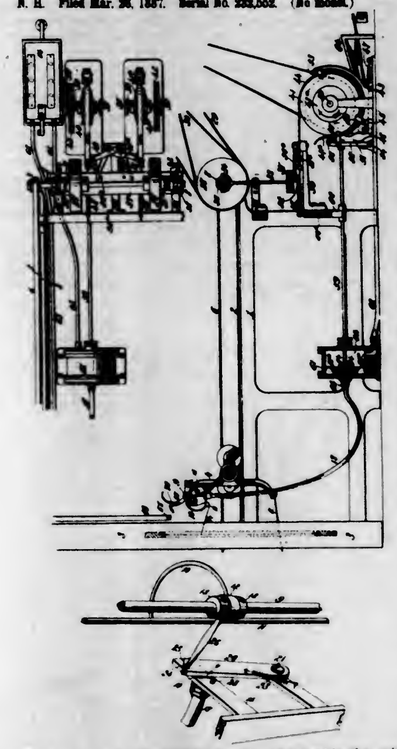
21. In an embroidering-machine, the combination, with the devices whereby the successive stitch movements are imparted to the tambour-frame, of a directing or controlling mechanism consisting of a stencil having four series of openings representing the time, direction, and length of the several stitch movements, five independent selectors having continuous reciprocation and an intermediate vibration on a pivotal axis toward and from the stencil, a corresponding series of bars arranged to have engagement at the intervals designated by the stencil with the selectors, an arm raised by the lift of any one of said bars, a feed-pawl retracted by the rise of said arm, a pitman throwing the feed-pawl forward only, and a timing-lever by which a single effective action of the fifth selector is permitted to initiate the advance movement of the stencil, substantially as specified.

22. In an embroidering-machine, the combination, with the tambour-frame and the stitch-adjusting supports, of a directing or controlling mechanism consisting of a vibrating support, a series of selectors pivotally mounted thereon, an intermittently-advancing stencil having four series of openings which control the direction, extent, and time of the successive stitch movements, a pawl-and-ratchet feed for the stencil, the effective throw of the pawl being by the stroke of a pitman, and a vibratory latch-bar raised by the effective lift of any one of the selectors and by its rise retracting the pawl-carrier for initiating the feed movement of the stencil and continuing it to the extent required by the length of opening, substantially as specified.

23. In an embroidering-machine, the combination, with the movable or actuating member of a pantograph, of independently-connected arms or levers acting the one in a vertical and the other in a horizontal direction, reciprocatory feeders engaging with and moving said arms a step at each reciprocation, a series of continuously-reciprocating and intermediately-vibrating selecting devices carrying fingers which are supported and projected forward at each vibration, a stencil having openings which represent the time and direction of the movements of the said arms or bars, a pawl-and-ratchet feed for the stencil, and devices for actuating said feed, said devices being in part operated by the effective lift of any one or more of the selectors and in part by the throw of the pitman, substantially as specified.

24. In an automatic stitch-adjusting mechanism for an embroidering-machine, a drum-support for a controlling-stencil, a feed-disk having teeth engaging said stencil, said disk turning between the separate drum-sections, a ratchet on the shaft of the disk, a pawl-carrier vibrating on the end of said shaft, a spring-impelled pawl engaging the ratchet, a pitman reciprocating in a support swiveled on the pawl-carrier and vibrating the latter one way, a latch vibrating it in the opposite direction, and a series of bars which have independent connection with the said latch, which rises by the lift of any one or more of said bars, four of said bars having action upon the stitch-adjusting devices, and the fifth having as its sole function to initiate the advance of the stencil, substantially as specified.

877,411. EMBROIDERING-MACHINE. Roswell T. Smith, Nashua, N. H. Filed Mar. 26, 1887. Serial No. 232,552. (No model.)



Claim.—1. In an embroidering-machine, the combination, with the needle-carriages and the mechanism whereby they are moved toward and from the web, of pneumatic devices controlled by the tension of the working-threads by which the needle-carriages are reversed automatically, substantially as specified.

2. In an embroidering-machine, the combination, with the needle-carriages and mechanism by which they are moved to and from the web, of reversing mechanism operated by pneumatic mechanism controlled by the thread-tension, said mechanism consisting, essentially, of an air-cylinder, a perforated piston-head moving therein, an air-entrance on one side of said piston-head and an air-exit on the other, an air-pump connecting with the cylinder, and a valve controlled by the thread-tension, whereby the equilibrium of atmospheric pressure on both sides of the piston-head is disturbed, substantially as specified.

3. In an embroidering-machine, the combination, with the needle-carriages and the mechanism by which they are caused to recede from the web, of devices by which said mechanism is reversed, a pneumatic exhaust, and a valve mechanism on the needle-carriage operated by devices connected with the embroidering-threads, whereby the reversing devices are actuated, substantially as specified.

4. In an embroidering-machine, the combination, with the needle-carriages and the mechanism by which they are alternately moved from the web, of levers which actuate the reversing devices, a pneumatic engine consisting of a cylinder and a perforated piston moving therein, a flexible tube-connection between the engine and the needle-carriage, and a valve actuated by the tension of the embroidering-threads to open said valve and admit air to the air-engine on one side of the piston-head, substantially as specified.

5. In an embroidering-machine, the combination, with needle-carriages which recede from the web alternately, and with traveling belts effecting such movements, of oppositely-revolving pulleys, by which revolution in opposite directions is given the shaft driving said belts, clutching mechanism whereby one of said pulleys is locked to as the other is unlocked from the shaft, cylinders having perforated piston-heads and piston-rods connected with the clutching mechanism, an exhaust for each cylinder on one side of the piston-head, an air-conduit entering the cylinder on the other side, and a valve on the needle-carriage operated by the working-threads, whereby the equilibrium of atmospheric pressure is disturbed and the reversing mechanism actuated, substantially as specified.

6. In an embroidering-machine, the combination, with railway-belts and pulleys operating the same in opposite directions alternately, of devices whereby one of said pulleys is caused to act as the other ceases, an air-cylinder having connection by its piston with said devices, means for exhausting the cylinder upon one side of the perforated piston-head, an air-conduit entering the cylinder on the other side, and means for opening and closing said conduit controlled by the embroidering-threads, substantially as specified.

7. In an embroidering-machine, the combination, with the needle-carriages and mechanism for moving said carriages from the web, of oppositely-revolving pulleys, by which the retrograde movement is arrested, clutches having simultaneous action, whereby one pulley is locked to as the other is unlocked from their shaft, air-cylinders having a continuous exhaust upon one side of their perforated pistons and an interrupted air-supply on the other side, and means for controlling the latter arranged upon the carriages and actuated by the working-threads, substantially as specified.

8. In an embroidering-machine, the combination, with a railway-shaft and belts driven thereby, of oppositely-revolving pulleys, clutching mechanism on the shaft of said pulleys, a clutch-throwing lever operating the same, air-cylinders having perforated piston-heads, means for exhausting from one side and giving an interrupted air-supply on the other side of said piston-heads, valves on the needle-carriages which control said supply, tension devices operating the valves, and intermittently-acting pulleys interposed between the air-cylinders and the clutch-levers, substantially as specified.

9. In an embroidering-machine, the combination, with reversing mechanism by which the needle-carriages are caused to recede from the web, of air-cylinders having perforated pistoo-heads, an air-exhaust upon one side of said piston-heads, air-conduits entering the cylinders on the other side, valves mounted on the carriages opening and closing the said conduits, tension-bars resting on the working-threads, and devices actuated by the rise of said bars to open the valves, substantially as specified.

10. In an embroidering-machine, the combination, with alternately-operating air-engines which actuate the railway-reversing devices, of air-conduits connected to the needle-carriages, spring-actuated valves closing the said conduits, and arms swung by the rise and fall of tension-bars resting on the threads to open the valves, substantially as specified.

11. In an embroidering-machine, the combination, with mechanism reversing the railway, of air-cylinders having alternate action, perforated piston-heads moving in each cylinder, an exhaust-passage on one side and a flexible air-pipe mounted on each carriage and entering on the other side in each cylinder, a valve on each carriage closing one of said pipes, tension-bars rising and falling with the threads, and flexible arms vibrated by said bars to open the valve, substantially as specified.

12. In an embroidering-machine, the combination, with the needle-carriages and the tension devices carried thereby, of the pivoted spring-actuated valve-plates, each having a notched and beveled end, an elastic arm carried by the tension device, and means for raising the latter as the carriages approach the web, substantially as specified.

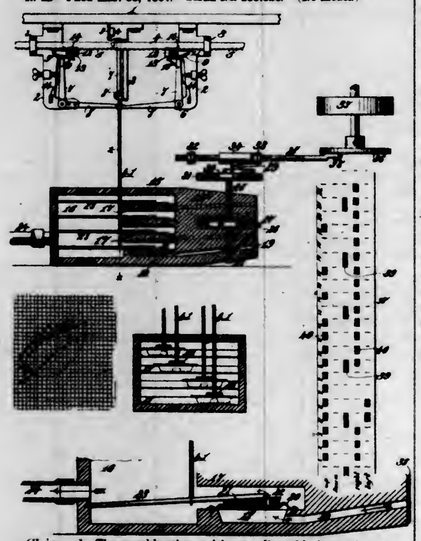
13. In an embroidering-machine, the combination, with oppositely-revolving pulleys giving reverse revolution to the railway-shaft, of clutches keyed to said shaft and having simultaneous opposite action, one locking and the other unlocking one of said pulleys, a reversing-lever actuating said pulleys, intermittently-acting pulleys reciprocating said lever, a pneumatic engine effecting an operative engagement between each pulley and its belt, and means for controlling the action of said engines operated by the tension devices on the needle-carriages, substantially as specified.

14. In an embroidering-machine, the combination, with the pneumatic cylinder, of the exhaust-pipe 63 and inlet 18 at opposite ends,

the perforated piston-head, the piston-rod, the reversing devices operated thereby, the valve on the needle-carriage, and the tension-bar, substantially as specified.

15. In an embroidering-machine, the combination, with the air-cylinder 61, having an air-exhaust, 63, at one end and an air-inlet, 18, at the other, of the perforated piston-head 61^c, piston 69, roll-carrier 55, belt 44, pulley 41, and spring-actuated valve 20, substantially as specified.

377,412. EMBROIDERING-MACHINE. ROSWELL T. SMITH, Nashua, N. H. Filed Mar. 30, 1887. Serial No. 233,023. (No model.)



Claim.—1. The combination, with an adjustable bar, of reciprocatory devices having alternate intermittent engagement therewith and imparting step-by-step motion thereto and pneumatic pistons actuating said devices, said pistons being operated by a disturbance of the equilibrium of air-pressure on their opposite sides, effected by a traveling stencil having air-openings which communicate as the stencil advances with the chambers in which said pistons lie, substantially as specified.

2. The combination, with two or more bars having longitudinal adjustment, of reciprocating devices giving intermittent longitudinal adjustment, a pneumatic chest having pumping mechanism communicating with it, pistons interposed in air-passages leading from the exterior to said chest, and a stencil traveling over the mouths of said air-passages, said pistons being connected to the reciprocating devices, substantially as specified.

3. The combination, with a pneumatic chest having an exhaust-chamber and provided with successive shelves lying in said chamber, of pistons lying in air-chambers in said shelves, passages connecting said chambers with the outer air, a stencil traveling over said passages and having varied openings, and rods lifted by the pistons, substantially as specified.

4. The combination, with a pneumatic chest having an exhaust-chamber and provided with shelves which are arranged within said chamber, each shelf having an air-chamber communicating with the exterior, of a series of pistons, one in each air-chamber, levers fulcrumed on a suitable support and attached to said pistons, devices rising and falling with said levers, and a stencil traveling over the passages connecting the piston-chamber with the exterior air, said stencil having openings in four separate series, substantially as specified.

5. The combination, with the bars arranged as set forth, of the reciprocating bell-cranks adjusting said bars, a series of rods engaging said bell-cranks, a pneumatic chest having a series of shelves arranged in its interior, a series of air-chambers partly overlying each other in said shelves, piston-disks lying in said chambers, a stencil moving over air-passages communicating with said air-chambers, and means for exhausting the chest, the rods engaging the bell-cranks being actuated by the rise of said piston-disks, substantially as specified.

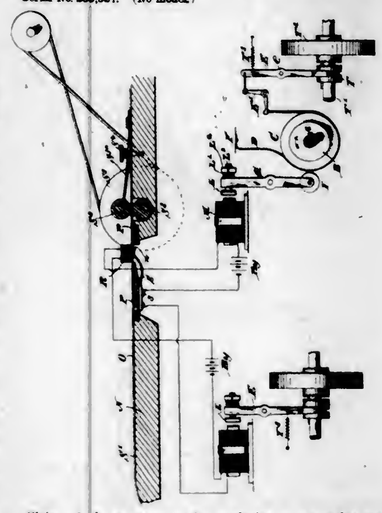
6. The combination, with a pneumatic chest having an exhaust-chamber and provided with separate air-chambers communicating with the exhaust and with the exterior air, of diaphragms covering said air-chambers, pistons mounted on said diaphragms and having openings in the diaphragms, and a stencil having four series of openings which register with the passages connecting the piston-chambers with the exterior, said chambers being arranged in an ascending order, substantially as specified.

7. The combination, with the pneumatic chest having an exhaust-chamber and provided with separate air-chambers, of piston-disks lying in said chamber, levers fulcrumed to suitable supports and attached to said piston-disks, a stencil lying upon the solid head of the chest and having varied openings, a feed-sprocket journaled in the solid head, and means for operating said sprocket to advance the stencil, openings being formed between the piston-chambers and the stencil and in said pistons, substantially as specified.

8. The combination, with the adjustment mechanism composed of the toothed bars, the bell-cranks, and the pawls carried thereby, of a pneumatic chest, air-chambers therein communicating with an exhaust-chamber and with the exterior, piston-disks lying in said air-chambers, levers operated thereby, a stencil having varied openings arranged in four series, and means for exhausting the chest and feeding the stencil, a small opening being formed in each piston to establish an equilibrium of pressure on both sides thereof, substantially as specified.

9. A pneumatic chest having a main air-chamber and provided with a series of separate air-chambers which communicate with the main chamber and with the exterior, in combination with a series of pistons and piston-disks lying in said separate air-chambers, and rods which are actuated by the lift of said pistons, the separate air-chambers being arranged to partly overhang each other, or in an ascending series, whereby the rods operated by the piston may be brought into close proximity, and the piston-disks being controlled in their action by a stencil moving over the air-openings which connect the separate air-chambers with the exterior, substantially as specified.

377,413. ELECTRICAL APPARATUS FOR EFFECTING MECHANICAL MOVEMENTS. ROSWELL T. SMITH, Nashua, N. H. Filed Sept. 17, 1885. Renewed Apr. 25, 1887. Again renewed Nov. 18, 1887. Serial No. 255,521. (No model.)



Claim.—1. In an apparatus for producing or converting motion, the combination, with a continuously-revolving pulley carried by adjustable friction devices, of a belt loosely carried around said pulley and attached to the mechanical element to which movement is to be imparted, a device for clamping said belt upon the surface of the pulley, and an electro-magnet by which said clamp is thrown against the pulley, substantially as specified.

2. In an apparatus for producing or converting motion, the combination, with a continuously-revolving pulley loose upon a shaft, of friction clamps or disks splined to or rigid upon said shaft and clasping the pulley between them, a belt normally loose upon said pulley, a clamping device binding the belt thereon, an electro-magnet by which said device is actuated, and means, substantially as described, for automatically making and breaking the circuit in which said magnet lies, substantially as specified.

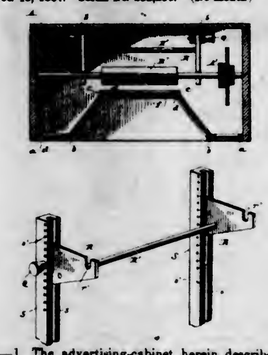
3. In an apparatus for producing or converting motion, the combination, with a pulley and a belt normally loose thereon, of a lever carrying an idle-roll, an armature mounted upon one end of said lever, an electro-magnet adapted to attract said armature when vitalized, and a non-conducting sheet having perforations of suitable length and arrangement, said sheet being fed between devices by which the circuit is made and broken by the perforate and imperforate portions, respectively, substantially as specified.

4. In an apparatus for producing or converting motion, the combination, with a pulley loose upon its shaft, of friction clamps or disks splined upon or rigid with said shaft and clasping the pulley between them, and nuts turning upon said shaft upon one or both sides of the pulley and bearing against the friction-disks, a belt normally loose upon said pulley, a lever carrying a device for clamping the belt upon the surface of the pulley, an armature on said lever, said electro-magnetic devices for attracting said armature, substantially as specified.

5. In an apparatus for producing or converting motion, the combination, with a continuously-rotating pulley carried by friction-disks clasping its vertical faces and having continuous rotation, of a belt normally loose upon said pulley, a lever carrying an idle-roll adapted to bind the belt upon the surface of the pulley, an electro-magnet attracting an armature upon said lever, a support above which is arranged an insulated conductor connected with the magnet and with one pole of the battery, an elastic conductor which normally makes contact with the same and is connected with the other pole of the battery, and a non-conducting sheet fed between said conductors and having perforations of suitable length and arrangement, substantially as specified.

6. In an apparatus for producing or converting motion, the combination, with a lever pivoted or fulcrumed between its ends and having an armature mounted upon one end, of an electro-magnet placed opposite said armature, an electric circuit within which said magnet lies, and a non-conducting sheet having perforations of suitable length and arrangement, said sheet being fed between circuit making and breaking devices whereby the magnet is vitalized and the lever actuated at stated intervals, substantially as specified.

377,414. ADVERTISING-CABINET. ISAAC R STONE, Seffner, Fla. Filed Oct. 13, 1887. Serial No. 252,259. (No model.)

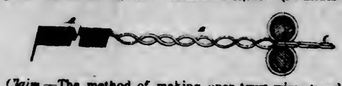


Claim.—1. The advertising-cabinet herein described, the same comprising an ordinary top, bottom, back, and sides, and a front composed of vertical longitudinal strips slotted in their adjacent faces, and removable advertising-panels passed into the upper ends of and built up within said slots from the bottom, all of said panels in each longitudinal row being in one vertical plane.

2. The advertising-cabinet herein described, the same comprising an ordinary top, bottom, back, and sides, and a front composed of vertical longitudinal strips slotted in their adjacent faces, removable advertising-panels passed into the upper ends of and built up within said slots from the bottom, all of said panels in each longitudinal row being in one vertical plane, and transverse strips having reduced ends fitting said slots, said strips being interposed transversely between the adjacent upper and lower ends of each vertical pair of panels and forming a horizontal raised bead between them, as and for the purpose set forth.

3. The advertising-cabinet herein described, the same comprising a plain top, bottom, back, and sides, and a front composed of vertical longitudinal corner-strips *a*, interior vertical longitudinal strips, *b*, in a transverse line therewith, inner vertical longitudinal strips, *c*, back of the plane of said strips *a* and *b*, all of said strips being longitudinally slotted on their adjacent faces, the panels *e*, fitted between said strips *a* and *b* and *b* and *c*, the panels *f*, fitted between said strips *c*, and the glass *h*, also fitted and inserted between said strips *c*, said panels and glass being removably inserted in said slots from the top and built up from the bottom, as and for the purpose described.

377,415. PROCESS OF MAKING OPEN-TWIST WIRE STRANDS. JOHN VERDEHLEN, New York, N. Y., assignor to Bertha Frank, same place. Filed June 16, 1887. Serial No. 241,576. (No model.)



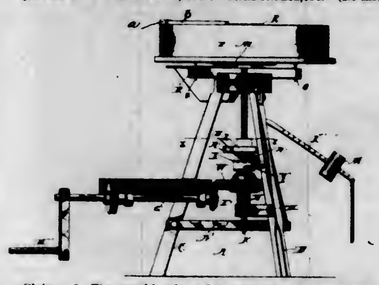
Claim.—The method of making open-twist wire strands, which consists in coiling two wires side by side in one continuous coil, stretching the coil to the desired degree of openness, and flattening the stretched coil, substantially as set forth.

377,416. BOOT OR SHOE. BENJAMIN F. WHITNEY, Portland, Me. Filed Feb. 26, 1887. Serial No. 228,961. (No model.)



Claim.—The shoe having the usual heel and outer sole, vamp and quarter, and the inner sole, B, turned up all round its edges and supporting the upper, thus dispensing with the usual heel-stiffening.

377,417. AUTOMATIC GRAIN-WEIGHER. EDGAR C. WILEY, Independence, Va. Filed Oct. 21, 1887. Serial No. 252,996. (No model.)



Claim.—1. The combination of the tripod or frame having the cap D, the arms L', depending from said cap, and scale-beam fulcrumed to the said arms, the link P' at the inner end of the scale-beam, the lever N', fulcrumed to one of the tripod-legs, the rod O', connecting the free end of said lever to the link P', the vertically-movable platform on the upper side of the cap and having the discharge-opening, the vertically-movable shaft K, journaled in the cap and platform and supported by the lever N', the revoluble head secured to the upper end of said shaft and resting on the platform, said head having the compartments, and the gearing to rotate the shaft when the same is lowered, substantially as described.

2. The combination of the vertically-movable shaft having the clutch, the rotating wheel W, journaled loosely on the said shaft and having the sleeve adapted to be engaged by the clutch when the shaft is lowered, for the purpose set forth, the platform movable vertically with the shaft and provided with the opening N, means to prevent the said platform from rotating, the measuring-head secured to the upper end of the shaft, revoluble therewith, arranged on the platform, and having the compartments U, and the scale-beam having the adjustable weight, and connections between the said scale-beam and the shaft, substantially as described.

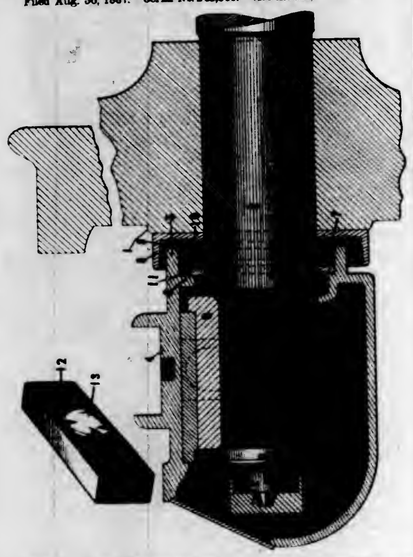
3. The combination, in an automatic grain-weighing machine, of the vertically-movable platform having the opening N, the vertically-movable shaft extending through the said platform and having the measuring-head secured thereto, the said head being provided with the compartments U, the rotating wheel W, journaled loosely on the shaft, the stop-disk Z, rigidly secured to the shaft and adapted to engage the wheel W when the shaft is lowered, the scale-beam, connections between the same and the shaft to normally elevate the latter, and a detent-roller adapted to engage the disk when the shaft is raised, for the purpose set forth, substantially as described.

4. The combination of the vertically-movable shaft, the vertically-movable platform supported thereby and having the opening N, the measuring-head on the upper side of the platform, having the compartments U and revoluble with the shaft, the rotating wheel W, jour-

naled loosely on the shaft, the clutch adapted to connect the shaft to the said wheel when the shaft is lowered, the lever N', supporting the shaft, and the scale-beam connected to the said lever and adapted to normally elevate the same and the platform and measuring-head, substantially as described.

5. The combination of the supporting-frame, the vertically-movable counterbalanced shaft journaled therein, the platform having the discharge-opening supported on the said shaft and having the guide-arms whereby it is prevented from rotating, and the measuring-head attached to the shaft, revoluble therewith, and having the compartments U, substantially as described.

377,418. **CAR-AXLE BOX.** FITCH D. ADAMS, Boston, Mass. Filed Aug. 30, 1887. Serial No. 248,309. (No model.)

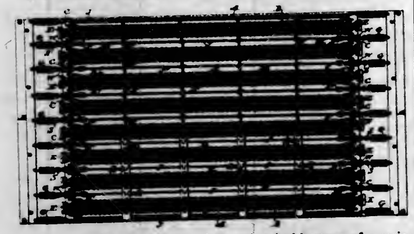


Claim.—1. In combination with the hub of the wheel, the axle-box having the neck 5, the ring of felt, the wood-fiber ring 9, and the cast-iron ring 7 loose on the wheel.

2. In combination with the axle-box having the neck 5, the stop-block 12, and the cast-iron ring 7, as described.

3. In combination with the car-wheel hub and the movable plate 7, the axle-box with the neck 5, the intermediate rings, and the stop-block 12, as described.

377,419. **SPRING BED-BOTTOM.** FRANK O. RADGER, Brooklyn, N. Y. Filed Jan. 31, 1887. Serial No. 225,985. (No model.)



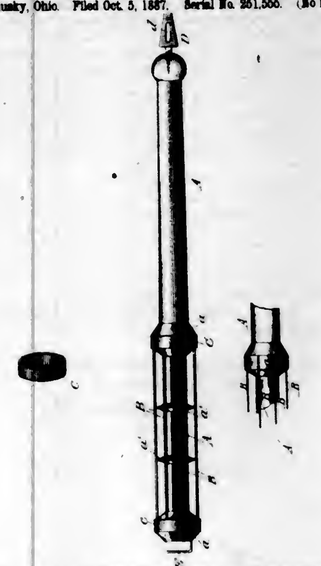
Claim.—1. The combination, in a spring bed-bottom, of a series of hinged woven-wire strips, clasps securing and uniting the ends of the woven wires in the strips, longitudinal straining-wires interposed between the strips, and hinged connections for the clasps to which the straining-wires are secured, substantially in the manner and for the purpose herein set forth.

2. The combination, with the wires in a woven strip for a bed-bottom, of a terminal plate pierced with two or more parallel rows of holes, which in the one row are opposite the spaces in the other, the ends of each pair of the intertwisted wires of the strip being parted and led separately from opposite sides of the plate through two adjacent holes in the first row, then brought together from opposite sides through a single hole in the next row to be again parted, as required, substantially in the manner and for the purpose herein set forth.

3. The combination, with parallel longitudinal strips of woven wire, an interposed longitudinal straight wire, and hinged clasps at the ends of the strips, of one or more intermediate hinges formed upon said straight wire as a pintle and made to couple the two adjacent strips, substantially in the manner and for the purpose herein set forth.

4. The combination, in a hinge for woven-wire bed-bottoms, with a single straight wire serving as a pintle, of two spirally-coiled wires run closely together loosely upon the straight wire and each made to project therefrom in radial arms or loops to serve as the leaves of the hinge, substantially in the manner and for the purpose herein set forth.

377,420. **DEVICE FOR GROOMING ANIMALS.** SILAS E. BAUDER, Sandusky, Ohio. Filed Oct. 5, 1887. Serial No. 251,555. (No model.)

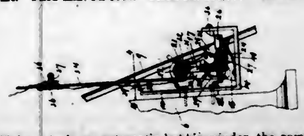


Claim.—1. As a new article of manufacture, the grooming-stick described, consisting of a handle having wide-faced end bands and narrow-faced intermediate bands turned on the upper or head end thereof, and a series of wires secured to said wide-faced end bands and resting upon said narrow-faced intermediate bands, running lengthwise with said handle parallel with each other a distance apart entirely around the circumference of said bands, substantially as and for the purpose herein set forth.

2. As a new article of manufacture, the grooming-stick described, consisting of a handle having a number of bands or astragals turned on one end thereof and an iron spud screwed into the opposite end, a series of longitudinal wires secured to said bands or astragals at intervals around the circumference thereof, and ferrules encircling both the end bands or astragals and the ends of said longitudinal wires, substantially as herein described.

3. As a new article of manufacture, the grooming-stick described, consisting of the handle A, having bands or astragals *a a'*, longitudinal wires B, ferrules C, spud D, having slot *d*, and staple E, constructed, arranged, and operating as and for the purposes set forth.

877,421. **AUTOMATIC BOBBIN-WINDER.** CARL BELL, Cincinnati, Ohio. Filed Mar. 14, 1887. Serial No. 230,906. (Model.)



Claim.—1. In an automatic bobbin-winder, the combination of a stationary shear-blade, a stationary member, a swinging member pivoted thereto and having the bobbin-bearings, a friction-pulley and a shear-blade, a stationary catch, a spring-catch co-operating therewith to hold the swinging member in such a position as to bring the friction-pulley into contact with the moving parts of the sewing-machine, a trigger for operating the spring-catch, secured to the swinging member in such proximity to the bobbin as to be moved or lifted by the accumulating thread thereon, and a spring acting on the said swinging member, all as and for the purpose described.

2. The combination of stationary member 14 15 16, shear-blade 38, pivot 18, catch 30, oscillating member 17, bobbin-bearings 19 20, friction-pulley 21, spring 27, bolt 26, connecting-piece 29, short bolt 28, trigger 25, arm 31, leaf 32, upright 34, shear-blade 39, and spring 40, as and for the purpose explained.

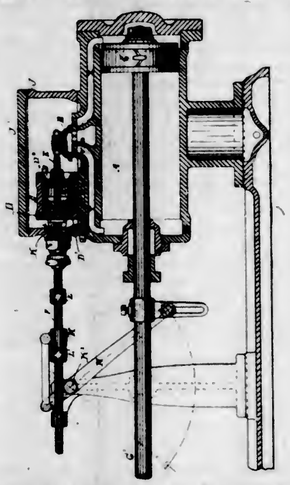
3. The combination of stationary member 14 15 16, shear-blade 38, pivot 18, catch 30, oscillating member 17, bobbin-bearings 19 20, friction-pulley 21, spring 27, bolt 26, connecting-piece 29, short bolt 28, trigger 25, arm 31, leaf 32, upright 34, having holes 35, friction-disks 36, shear-blade 39, and spring 40, all as and for the purpose explained

377,422. **WIRE-UNWINDING APPARATUS.** HERMAN A. BUDDMAN, Chicago, Ill., assignor to the Union Wire Mattress Company, of Illinois. Filed July 8, 1887. Serial No. 243,749. (No model.)



Claim.—In a wire-coiling machine, a stationary form or spool for holding the wire, in combination with a tube or guide through which the unwinding wire is conducted, that is so connected at its upper end as to permit of a gyratory movement of the lower end, and the said lower end adapted to move in an orbit about the head of the spool, substantially as shown and described.

377,423. **STEAM-ACTUATED VALVE.** HENRY W. BULKLEY, East Orange, N. J. Filed Nov. 13, 1885. Serial No. 183,688. (No model.)

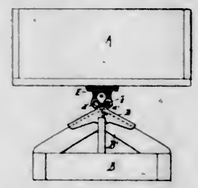


Claim.—1. In a direct-acting engine, the combination, with the main slide-valve, of the auxiliary piston C, connected therewith by rod E, the auxiliary cylinder D, connected at one end with the tappet-rod F, and provided at the other end with the head D^3, perforated for the rod E, and suitable steam and exhaust ports to admit the steam alternately to the opposite sides of the piston C, the cylinder operating, when moved by the tappet-rod, to press the piston and move the slide-valve a part of the required stroke, and the piston C, when supplied with steam, moving in the same direction to complete the stroke of the slide-valve, as and for the purpose set forth.

2. In a direct-acting engine, the combination, with the steam-chest having valve-seats I and I', provided with steam and exhaust ports, of the main slide-valve fitted to the seat I, the auxiliary piston C, connected therewith by rod E, the auxiliary cylinder D, connected at one end by a transversely-sliding joint with the tappet-rod F, and provided at the other end with the head D^3, perforated for the rod E, the cylinder being fitted to the seat I' and provided with steam and exhaust ports, the cylinder operating, when moved by the tappet-rod to press the piston and move the slide-valve a part of the required stroke, and the piston C, when supplied with steam, moving in the same direction to complete the stroke of the slide-valve, as and for the purpose set forth.

3. In a direct-acting engine, the combination of the main cylinder and piston, the main valve, and the connected auxiliary cylinder and piston, the respective cylinders being provided with steam and exhaust ports, located and relatively arranged substantially as described.

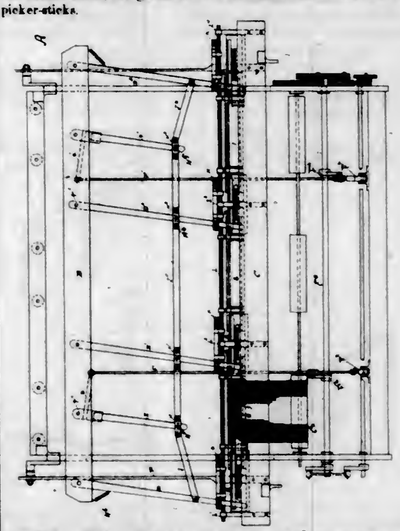
377,424. **DUMPING-CAR.** FRED COTE, Minneapolis, Minn. Filed June 18, 1887. Serial No. 241,734. (No model.)



Claim.—In a dump-car, the combination of the dump-box A, provided with the sockets E, having grooves *d'*, with openings d^3, truck-frames B, having brackets D, with circular heads *a*, adapted to fit said sockets, and with pins *b*, adapted to enter said grooves, whereby said box and truck-frame are separable only when said dump-box is in a horizontal position, substantially as and for the purpose set forth.

377,425. **LOOM.** HENRY EASTWOOD, Paterson, N. J. Filed Mar. 12, 1887. Serial No. 230,602. (No model.)

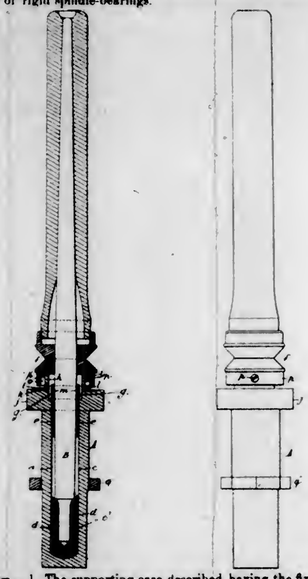
Brief.—The depending lay is provided with two or more reeds and the proper shuttle-boxes at the ends of the lay and intermediate the reeds. From a beam on the lay-swords hang picker-sticks, one for each box, connected near their lower ends by straps, and also to the ends of oppositely-placed levers pivoted to the said beam, which are operated alternately from tappets on the cam-shaft through the intervention of connecting-rods and tappet-levers, thus throwing all the sticks first to one side, then to the other, and hence driving the shuttles through the several sheds. Springs are employed to retract the outside sticks, and guides to limit and direct the movement of the picker-sticks.



Claim.—The combination, with the levers E E' and picking-sticks D D' D^2 D^4, straps J J' J^2, plates H H' H^2 H^3, and bolts H^4 H^5, of beam B, adapted to carry said connected levers and picking-sticks, springs H^6, rods or links F F', adapted to operate levers E E', all as described, lay C, lay-swords P, shaft *a*, crank-arms *a''*, pitmen *a'*, for vibrating the lay, cam-shaft F^2 and tappets thereon, and levers F^3 F^4.

377,426. SPINNING-SPINDLE AND SUPPORT THEREFOR. JAS A. FARMER, South New Market, N. H. Filed Apr. 1, 1887. Serial No 233,283. (No model.)

Brief.—The object of the invention is to secure an improved construction of rigid spindle-bearings.

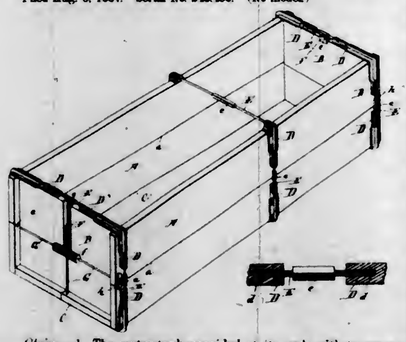


Claim.—1. The supporting-case described, having the fixed tubular top bearing, *e*, as described, the rimmed portion *h i*, the annular chamber *g* between the parts *e* and *h*, the groove *k*, ducts *l* and *m*, oil-chamber *n*, and the step-bearing *d*, all substantially as set forth.

2. In combination with the supporting-case A, having the top and bottom bearings, *e d*, chamber *g*, rim *h i*, groove *k*, ducts *l m*, and oil-chamber *n*, as set forth, the spindle provided with the whirl and screw *p*, as and for the purposes set forth.

3. The case A, having its lower and closed end made integral with the body of the case and its top and bottom bearings, *e d*, inserted therein from the top, and provided with chambers *g n*, rim *h i*, ducts *l m*, and groove *k*, all as and for the purposes set forth.

377,427. WATER-TANK. HOMER A. GLEASON, Hampshire, Ill. Filed Aug. 8, 1887. Serial No. 246,406. (No model.)

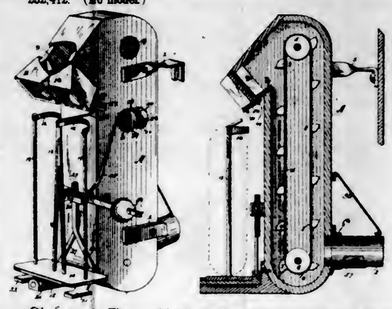


Claim.—1. The water-tank provided at its ends with transverse straining-bands extending entirely around the tank, and consisting of rigid angle-irons at each corner, and tie-bolts at the top, bottom, and sides, connecting said irons and adapted to draw them together, substantially as specified.

2. The water-tank provided with end and intermediate transverse straining-bands, each extending entirely around the tank, and consisting of rigid angle-irons at each corner, and tie-bolts at the top, bottom, and sides, connecting said irons and adapted to draw them together, substantially as set forth.

3. The water-tank provided with transverse straining-bands extending entirely around the tank, and also having at their ends hooks F and bolts G, passing through sides and bottom, substantially as specified.

377,428. GRAIN WEIGHING, BAGGING, AND REGISTERING DEVICE. WILLIAM H. GROVE, Circleville, Ohio, assignor of one-half to Clifford R. Dresback, same place. Filed Mar. 25, 1887. Serial No. 232,412. (No model.)



Claim.—1. The combination of a casing, an elevator therein, a tilting platform adapted to receive bags to be filled by the elevator, a scale-beam, two rods connecting the opposite ends of the platform and the scale-beam, and a weight adjustably secured thereon, which after adjustment remains stationary relative thereto, and which after the platform has been tilted by the weight of the filled bag and the same has been removed returns the platform to a horizontal position, substantially as described.

2. The combination of a casing, two discharge-spouts connected therewith, a valve which intermittently closes passage through one of said spouts, a tilting platform adapted to receive the bags, a weighted scale-beam which returns the platform to a horizontal position after each bag has been weighed and removed from the platform, and two rods each connected to said platform on one side of its fulcral line and both connected to the scale-beam on the same line, whereby equal amounts are weighed on both ends of the platform, substantially as described.

3. The combination of a casing, two discharge-spouts connected therewith, a valve which intermittently closes passage through one of said spouts, a tilting platform adapted to receive the bags, a weighted scale-beam, and two rods each connected to said platform on one side of its fulcral line and both pivotally connected to the scale-beam, the ends of the rods being slotted where connected with the beam to permit either rod by the tilting of the platform to move the beam independently of the other rod, substantially as described.

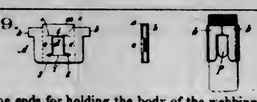
4. A casing having inlet and outlet spouts, a support, 20, rigidly connected to said casing, and a tilting frame mounted upon said support and provided with laterally-projecting arms, in combination with a scale-beam having a bifurcated rear end and adjustable weight, and slotted connecting-rods extending between said beam and laterally-projecting arms, substantially as described.

5. The combination of a casing, two discharge-spouts connected therewith, a support, 20, rigidly secured relatively to the casing, having bearings 18 and 19 and stop-arms 21 22, a tilting frame having gudgeons mounted in the bearings in said support and laterally-projecting arms 24 25, a weighted scale-beam, and rods connected, respectively, with said arms and with the scale-beam by a single pivot, 30, which unites them both thereto, substantially as described.

6. The combination of a casing having two discharge-spouts, a valve-controlling exit through said spouts, a centrally-pivoted tilting platform, a weighted device connected with the platform, operating after each time either end of the platform is depressed and the weight which depressed it is removed to return it to a substantially horizontal position, and connections between the platform and valve, including a slotted bar, and an arm working in the slot in said bar in substantially the direction of the length thereof, whereby when the platform is returned to a horizontal position the valve shall not be moved, substantially as described.

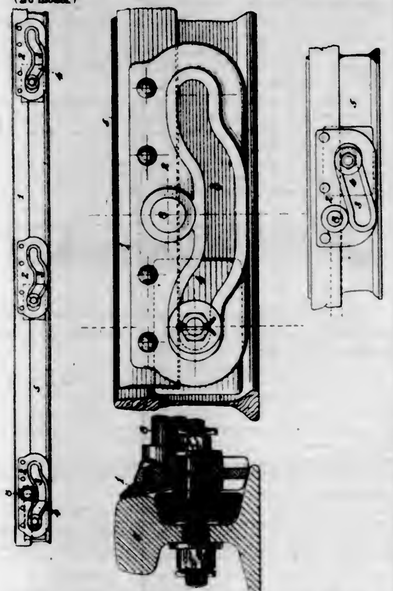
377,429. CLASP. JAMES JENKINSON, Brooklyn, N. Y. Filed Oct 27, 1887. Serial No. 253,526. (No model.)

Claim.—1. The clasp herein described for securing the webbing and steels together for use as stays in ladies' garments, formed of a single piece of sheet metal, and with a central opening having flips on the sides thereof for holding the edges of the webbing, and transverse portions at the ends for holding the body of the webbing to the stays, as herein shown and described.



2. The clasp herein described for securing the webbing and steels together for use in ladies' garments, formed of a single piece of sheet metal provided with a central opening and side lips, in combination with a steel having forked openings, substantially as shown and described.

377,430. DETECTOR-RAIL. CHARLES R. JOHNSON, Allegheny, and HENRY JOHNSON, Pittsburg, Pa. Filed Dec. 2, 1886. Serial No. 220,437. (No model.)



Claim.—The combination of the main rail, a series of studs projecting from the web portion thereof, a series of plates each provided with an angular slot, and a rail or strip secured to said plates, substantially as set forth.

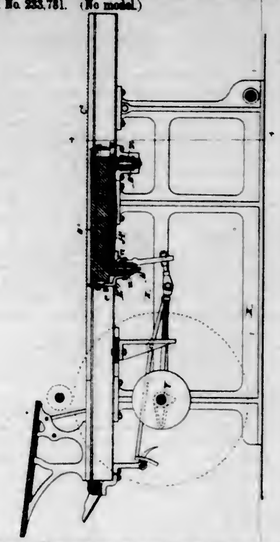
377,431. NON-SLIPPING SHOE. FRANCIS A. KISS and GEORGE F. BRAND, York, Pa. Filed Oct. 3, 1887. Serial No. 251,274. (No model.)



Claim.—1. In a non-slipping shoe, the combination, with a perforated sole, of a cord passed through said perforations to form a roughened surface, substantially as and for the purpose described.

2. In a non-slipping shoe, the combination, with an outer sole provided with a series of openings or eyelets adapted to receive the cord, of a solid removable inner sole, substantially as described, and for the purpose set forth.

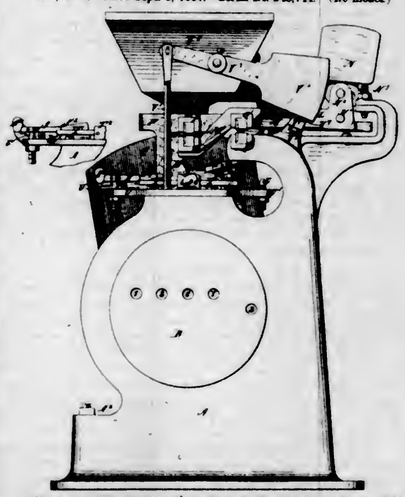
377,432. CYLINDER PRINTING-MACHINE. JOHN T. KING, Madison, Wis., assignor to Walker & Co., same place. Filed Apr. 5, 1887. Serial No. 233,781. (No model.)



Claim.—1. The combination, with the oscillating bars Z and bolts B', of the sliding bars A', the type-bed, and tracks C, substantially as set forth.

2. The combination, with the oscillating bars Z and bolts B', of the sliding bars A', the type-bed, tracks C, the arm E', and screw *e*, substantially as set forth.

377,433. AUTOMATIC GRAIN-SCALE. CHARLES A. LIEB, New York, N. Y. Filed Sept. 3, 1887. Serial No. 248,744. (No model.)



Claim.—1. The combination of an oscillating receiver provided with a centrally-located partition, pivoted pawls attached to the receiver, their ends respectively opposite the pivots being capable of independent motion, counterpart pivoted pawls attached to the suspension-rods of the bucket, and stops to determine the movement of the pawls, substantially as set forth.

2. The combination of an oscillating double-chambered receiver, pivoted pawls attached thereto, counterpart pivoted pawls attached to the suspension-rods, the meeting ends of the pawls being formed on arcs of circles the centers of which, respectively, are the pivots on which they turn, and stops to determine the movement of the pawls, substantially as set forth.

3. The combination of an oscillating double-chambered receiver hung on a weighted scale-beam and having a downward movement when loaded, pawls attached to the receiver, set-screws or equivalent devices on the frame of the machine, which engage with the pawls on the receiver and tilt them when the receiver sinks, counterpart pivoted pawls attached to the suspension-rods of the bucket, and stops to determine the movement of the pawls, substantially as set forth.

4. The combination, in a weighing-machine, of an oscillating receiver, pivoted pawls attached to the receiver, their ends respectively opposite the pivots being capable of independent motion, counterpart pivoted pawls attached to the suspension-rods of the receiver, and a gate at the bottom of the receiver operated by the oscillation thereof, substantially as set forth.

5. The combination, in a weighing-machine, of an oscillating receiver, pivoted pawls attached thereto, counterpart pivoted pawls attached to the suspension-rods, the meeting ends of the pawls being formed on arcs of circles the centers of which, respectively, are the pivots on which they turn, and stops to determine the movement of the pawls, substantially as set forth.

6. The combination of oppositely-arranged trunnions or brackets, flexible strips of metal extending from one to the other, and leaves fastened to the trunnions by the side of the said flexible connecting-strip, substantially as set forth.

7. The combination, in a grain-scale, of swinging lower gates hinged to an oscillating receiver, a suspension-frame hung to a weighted scale-beam, and rollers which impinge on the gates and control the position thereof when the receiver is oscillated, said rollers being pivoted in a movable support attached to the receiver-holding frame and provided with an adjusting set-screw adapted to move the roller-support toward the gate, whereby the rollers may be adjusted to and from the gates, substantially as described.

8. The combination of an oscillating receiver suspended from a rising and falling suspension-frame which is hung to a scale-beam, and a flexible strip of metal attached to the frame of the machine at both ends and to the suspension-frame at its central part, and pivoted pawls which control the position of the receiver and which are tripped by its descent, substantially as set forth.

9. The combination of a rising and falling receiver hung to a scale-beam, and one or more flexible stay-strips attached to the frame of the machine at both ends and directly or indirectly to the receiver between the ends, substantially as set forth.

10. The combination of an oscillating receiver, pivoted pawls attached to the receiver, pivoted counterpart pawls attached to the suspension-rod of the machine, substantially as described, and stops for the pawls which are pivoted to the receiver, adjusted to hold their free ends sufficiently above the ends of the pawls attached to the suspension-rod to insure their being the uppermost ones when the pawls are tripped by the descent of the receiver, and a tripping device placed on the frame which engages with the pawls on the receiver when it descends, substantially as set forth.

11. The combination of a pivoted pan or its equivalent, upon which the grain is discharged from the receiver, a rod which connects the pan with the shaft of the inlet-valve, a weight which normally acts to open the valve and to elevate the pan, and a set-screw whereby the extent to which the inlet-valve may be opened will be determined, substantially as set forth.

12. The combination of an oscillating receiver supported from a suspension-frame which is hung to a scale-beam by flexible metallic strips, as described, locking devices to hold the receiver in its dual positions, which are tripped by the descent of the receiver, and a weight for the scale-beam located above the beam, substantially as set forth.

13. The combination of a rising and falling receiver supported from a suspension-frame which is hung to a scale-beam by metallic strips, a gate at the lower part of the receiver closed by adjustable rollers, a flexible metallic tie rod or strip attached to the lower part of the receiver and to the frame of the machine, and a weight for the scale-beam located above the beam, substantially as set forth.

14. An automatic grain-scale embodying, essentially, the following features, constructed and arranged substantially as hereinabove described, to wit: an oscillating double-chambered receiver attached directly or indirectly to a weighted scale-beam, gates at the lower end of the compartments controlled by adjustable rollers and operated by the rising and falling of the receiver, a flexible stay strip or strips adjusted to center the receiver when at its uppermost position, locking-pawls which control the position of the receiver during the inflowing of the material to be weighed by abutting against each other end to end, tripping devices for disengaging the locking-pawls during the descent of the receiver, and an adjustable inlet-valve closed by the discharge of the material from the receiver, as set forth.

15. The combination of an oscillating receiver supported from a suspension-frame which is hung to a scale-beam by a flexible metallic strip or strips, a gate at the lower part of the receiver, pivoted pawls attached to the receiver, counterpart pivoted pawls attached to the suspension-frame, and a weight for the scale-beam constructed and arranged so that its line of gravity approaches the fulcrum as the weight moves, substantially as set forth.

16. The combination of an oscillating receiver hung from a scale-beam, pivoted pawls attached to the receiver, counterpart pivoted pawls which engage end to end with the pawls attached to the receiver, and a weight for the scale-beam constructed and arranged so that its line of gravity approaches the fulcrum as the weight moves, substantially as set forth.

17. The combination of an oscillating receiver hung to a weighted scale-beam, flexible strips attached at one end to the beam and at the other to a suitable support, pivoted pawls attached to the receiver, and counterpart pivoted pawls attached to the suspension-rods of the receiver, substantially as set forth.

18. The combination, in a weighing-machine, of a vertically-moving receptacle for the material to be weighed and a flexible tie rod or strip attached directly or indirectly to the said receptacle and to the frame of the machine, substantially as set forth.

377,434. PLUMB-LEVEL. CALVIN MARSHALL, St. Joseph, Mo. Filed July 5, 1887. Serial No. 243,405. (No model.)

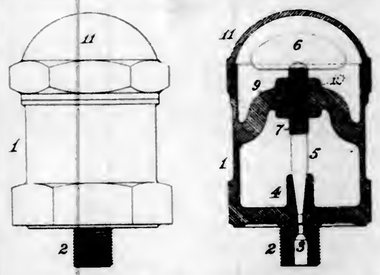


Claim.—1. A spirit-level casing having channels arranged lengthwise and crosswise, as described, and a transparent division arranged at the intersection thereof and provided with a guide for one of the bob-cords, substantially as specified.

2. As an improved article of manufacture, a leveling and plumbing device comprising a case having a transverse and longitudinal groove, bobs suspended from cords in the respective grooves, and transparent face-plates for the chambers containing the bobs, substantially as specified.

3. A plumb-bob and leveling device having the case grooved and recessed, as described, the glass piece E, secured in the said recess, and the glass plates C and C' and J and J', whereby bobs placed in the case may be viewed from either side, substantially as specified.

377,435. OIL-CUP. JAMES MCNAUGHTON and ADAM BARDSLEY, Brainerd, Minn. Filed Sept. 1, 1887. Serial No. 248,542. (No model.)



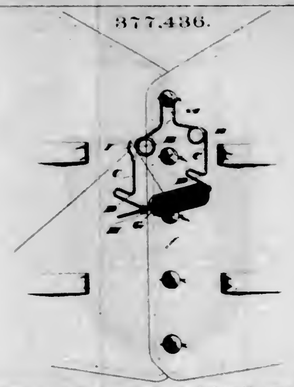
Claim.—1. In an oil-cup, the combination of a body and an expansible split or divided elastic bridge connected to the body, and having an internal screw-thread cut within it, substantially as set forth.

2. In an oil-cup, the combination of a body, a transversely-divided elastic bridge connected to the body, and having an internal screw-thread forming two half-nuts on opposite sides of the slot or division of the bridge, and a spindle or feeder externally threaded to engage the half-nuts of the bridge, substantially as set forth.

377,436. SPOOL-HOLDER. FRANK A. PURCELL and JOHN K. CASE, Vincennes, Ind. Filed Nov. 10, 1887. Serial No. 254,795. (No model.)

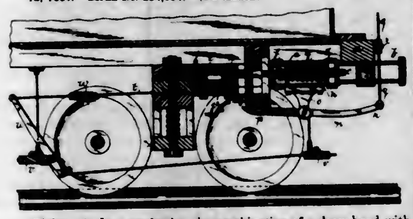
Claim.—As an improved article of manufacture, the combined spool-holder and thread-cutter herein described, consisting, essentially, of a single piece of wire bent about midway of its length to form the loop A, and thence outwardly in opposite directions and formed in coils B B, downwardly-straight arms C C, having rearward loops, D D,

377,436.



at their lower straight portion, and one of the said arms terminating in an eye, H, and the other one in a spindle, G, to receive the spool and enter the said eye, and the cutter Y, secured to the upper end of one of the arms C, substantially as shown.

377,437. CAR-BRAKE. ADRAN REESE, Pittsburg, Pa., assignor to the Reese Safety Brake Company, (Limited,) same place. Filed May 12, 1887. Serial No. 237,937. (No model.)



Claim.—1. In a car-brake, the combination of a draw-head with a draw-bar or extension attached thereto, two springs coiled around said draw-bar, one of which is longer than the other and bears against the draw-head, and a brake-lever in the rear of the draw-bar and operated by the backward thrust of the same, substantially as described.

2. The combination of a draw-head having a draw-bar or extension attached thereto, a spring bearing at each end against a follower-plate, and another spring one end of which bears against the rear follower-plate and the other end projects beyond the other spring and bears against the draw-head, and a brake and connection between said draw-bar and brake, substantially as described.

3. The combination of a draw-head or buffer having a draw-bar or extension attached thereto, a brake-operating lever, and a filling-block having a recess therein and sliding between the end of said draw-bar and the brake-operating lever, substantially as described.

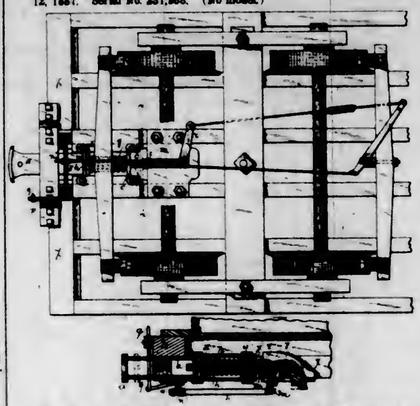
4. In a car-brake, the combination of a draw-head or buffer having an extension attached thereto, a brake-operating lever, and connections between said lever and the brakes, with a vertically-sliding filling-block between said draw-bar and brake-operating lever, and a vertically-movable support for said filling-block, on which the same rests, substantially as and for the purpose set forth.

5. In a car-brake, the combination of a spring-backed draw-head or buffer, *b*, having the draw-bar or extension *c*, a longitudinally-moving bar *k* in the rear of said extension, a filling-block, *l*, between the end of said draw-bar and the bar *k*, and a brake-operating lever, *j*, operated by the backward thrust of the bar *k*, substantially as and for the purposes set forth.

6. In a car-brake, the combination of a draw-head having a draw-bar or extension attached thereto, a spring bearing at each end against a follower-plate, and another spring one end of which bears against the rear follower-plate and at the other end projects beyond the other spring and bears against the draw head, a brake-operating lever, and a movable filling-block between the draw-bar and the brake-lever, substantially as and for the purposes set forth.

7. In a car-brake, the combination of a draw-head having a draw-bar or extension attached thereto, a filling-block sliding in guides across the path of the end of said draw-bar, and a lever on which said block rests for supporting the block in position, substantially as described.

377,438. CAR-BRAKE. ADRAN REESE, Pittsburg, Pa., assignor to the Reese Safety Brake Company, (Limited,) same place. Filed May 12, 1887. Serial No. 237,938. (No model.)



Claim.—1. In a car-brake, the combination of a spring-backed draw-head having a draw-bar or extension-rod attached thereto, a brake-operating lever in the rear of said draw-bar, and a sliding rocking filling-block between said brake-operating lever and the draw-bar and independent thereof, substantially as described.

2. In a car-brake, the combination of a draw-head having an extension-rod or draw-bar attached thereto, a brake-operating lever in the rear of said draw-bar, a sliding rocking filling-block between said draw-bar and operating-lever and independent thereof, and means for rocking said block, substantially as described.

3. In a car-brake, the combination of the draw-head having a draw-bar attached thereto, a sliding rocking block, *i*, having the downward-extending arm *m*, a brake-operating lever, *r*, and means connected to said arm *m* for rocking said block, substantially as and for the purposes set forth.

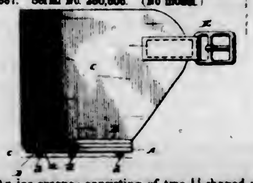
377,439. LAST-BLOCK FASTENER. HENRY S. REYNOLDS, Brooklyn, N. Y. Filed Feb. 4, 1887. Serial No. 226,554. (No model.)



Claim.—1. The combination of the last A, having inclined offset recess *e*, provided at opposite sides of its inner extremity with screws the heads of which are flush with the upper surface of said last and extend partly into the recess, a solid flat spring secured to the last extending to the edges of the screw-heads and adapted to be depressed in the recess, and the last-block provided on its under surface with a screw whose head is adapted to interlock with those of the last and the free end of the spring, substantially as described.

2. In a last, the combination, with the last having recess *e*, sunken, as at *d*, of the screws secured in the last on opposite sides of the recess, a metal plate extending lengthwise of the recess, and a rubber cushion beneath said plate, and the last-block having opening *h* and provided with the screw E, all designed to operate as set forth.

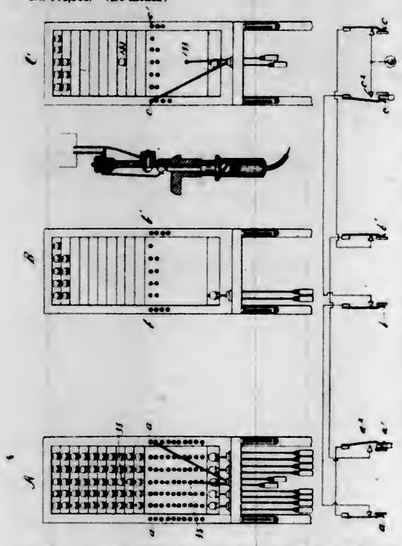
377,440. ICE-CREEPER. WILLIAM SAGE, Boston, Mass. Filed Sept. 24, 1887. Serial No. 250,606. (No model.)



Claim.—An ice-creeper consisting of two U-shaped metal plates, A B, the upper one being provided with countersunk apertures and

the lower one with screw-threaded apertures, heel-cap C, having its edge clamped between said plates, and screw-bolts D, passing through said apertures and uniting said plates, and having their ends pointed and projecting beyond the face of the lower plate, substantially as described.

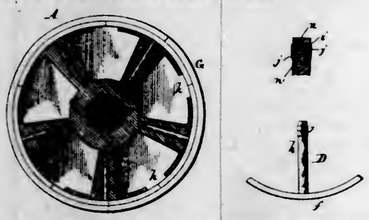
377,441. **TRANSFER SWITCH AND CIRCUIT FOR TELEPHONE-EXCHANGES.** CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed July 11, 1885. Serial No. 171,368. (No model.)



Claim.—1. The combination, with two or more switch-boards to which different lines are connected, of transfer-lines provided with two spring-jack terminals on each of the boards, and a ground-connection for each of said spring-jack terminals, whereby a line connected at one board with a transfer-wire will always be closed.

2. The combination, in a telephone-exchange, of two or more switch-boards to which different groups of telephone-lines are connected, with transfer or trunk lines connecting said boards together, the terminals of said trunk or transfer lines on the different boards being spring-jack switches, two of such terminals being provided for each transfer-wire on each intermediate board, and a ground-circuit connection for each transfer-wire, whereby a line connected at one board will be closed at the other board either to line or to the ground-connection of the transfer-wire to which the line is connected.

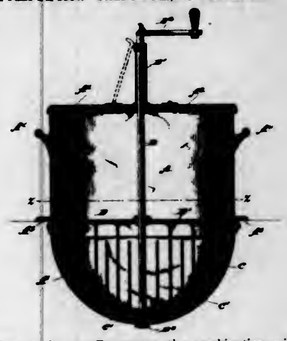
377,442. **PISTON-PACKING.** HENRY L. ST. JAMES, Marshall, Tex. Filed Oct. 28, 1887. Serial No. 253,602. (No model.)



Claim.—1. The within-described piston-head cast entire and having radial arms bored out, in combination with the piston-segments, the steam-ports in the piston-plates, and stems of said segments, packing expansible rings on said stems, and the expansible packing-rings inclosing the said piston-segments, substantially as described.

2. A piston-head cast entire and cored out from its slots to its hub, in combination with the radial arms, the steam-ports *g*, and the T-shaped pistons having rods perforated at *n n'*, and provided with suitable packing-rings, substantially as described.

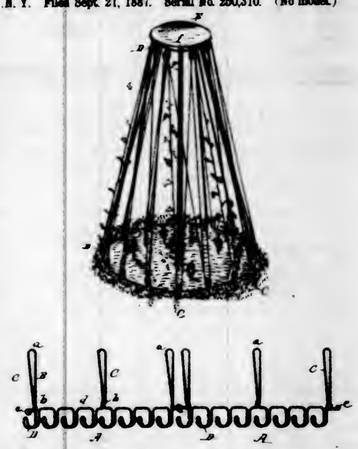
377,443. **COFFEE-ROASTER.** OTTO WALDEN, Wheeling, W. Va. Filed June 24, 1887. Serial No. 242,374. (No model.)



Claim.—1. In a coffee-roaster, the combination, with the cylinder thereof, having a vertical operating-shaft passing therethrough, and formed with a hemispherical bottom, of a basin conforming to the bottom of the cylinder, mounted within the same, and fixed to the shaft and provided with upwardly-projecting pins, and of a cross-piece mounted in the cylinder above the basin and provided with depending pins alternately with those of the basin, substantially as specified.

2. The combination, with the cylinder A, having the lids A^2, lugs A^3, handle B^2, and hemispherical bottom A', of the operating-shaft B, mounted in said cylinder and in standards B' upon the same, the basin C, secured to the shaft and having the upwardly-projecting pins C', and the cross-piece D, mounted above the basin and perforated for the reception of the shaft, and provided with depending pins D', alternating with those of the basin, substantially as specified.

377,444. **TRELLIS-SUPPORT.** EBNA D. WATROUS, Prestown, N. Y. Filed Sept. 21, 1887. Serial No. 250,310. (No model.)

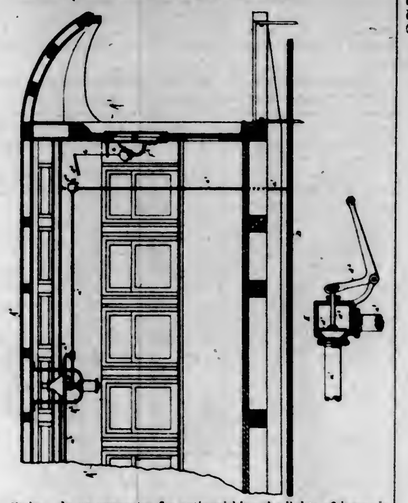


Claim.—1. A trellis-support consisting of a flexible section provided with a series of lacing-hooks upon one side, with spacing-bars between the hooks and integral therewith, and loop-arms or supports upon the other side, as and for the purpose set forth.

2. A trellis-support consisting of a section formed from a single piece of flexible material provided with a series of double lacing-hooks upon one side with spacing-bars between the hooks and long loop-arms on the other side, the loop-arms at the ends of the section having connecting-hooks at right angles thereto, as and for the purpose set forth.

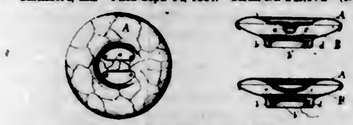
3. A trellis-support consisting of a single piece of wire bent to form loop-arms on one side and double lacing-hooks on the other side, and spacing-bars between the hooks, the ends of the wire being twisted around the loop-arms and extended at right angles thereto to form connecting-hooks on a line with the spacing-bars at the end of the section, as and for the purpose set forth.

377,445. **APPARATUS FOR EXTINGUISHING THE LIGHTS OF CAR-LAMPS.** HENRY M. YOUNG, Minneapolis, Minn., assignor, by mesne assignments, to the Young Safety Heating and Lighting Company. Filed Apr. 29, 1887. Serial No. 236,053. (No model.)



Claim.—In an apparatus for extinguishing the lights of lamps in railway-cars, the combination of the compressed-air pipe D, having the smaller supply-pipe, *a'*, passing to the lamp, and the connecting-pipe a^3, the casing E upon the supply-pipe, the valve *d'*, and valve-stem d^2, the bell-crank d^3, pivoted to the valve-casing and having one arm pivotally connected to the valve-stem, the cord or chain *e*, attached to the other arm of the bell-crank, the bracket F^3, and the weighted ball F', secured to the cord or chain and resting loosely upon the bracket, substantially as described.

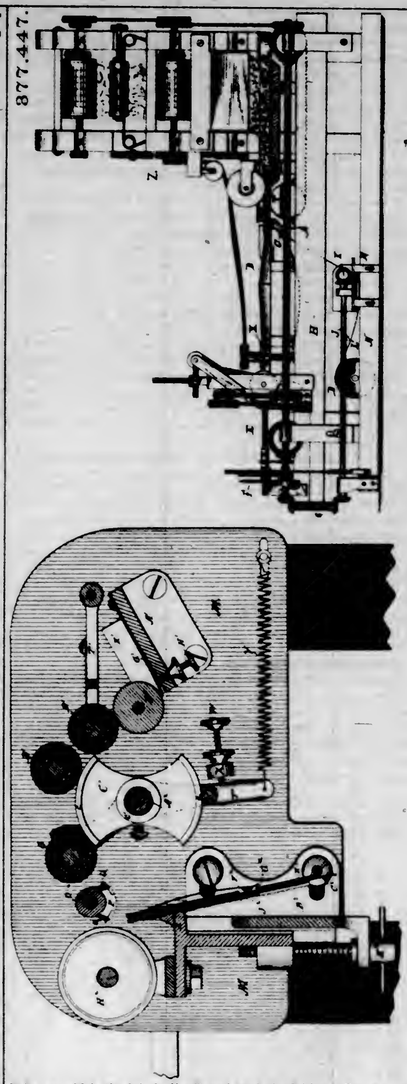
377,446. **BUTTON.** GURDY S. BLUM, Jr., and JOSEPH A. PHILLIPS, Baltimore, Md. Filed Sept. 14, 1887. Serial No. 249,674. (No model.)



Claim.—1. As an improved article of manufacture, a button of the class described, having the central portion of its back plate or disk perforated and turned upward and outward within the interior of the button, so as to form a smooth eyelet-shaped passage for the retaining-thread, substantially as set forth.

2. A button comprising, substantially, a front disk or shell, having a bar or other thread-support formed integral therewith, and a rear disk or shell provided with a hub and central opening, the metal forming the lower edge of said hub being countersunk and turned upward and outward within the interior of the button, substantially as and for the purpose set forth.

377,447. **PRINTING ATTACHMENT FOR CIGARETTE-MACHINES.** JAMES A. BONSACK, Bonsack's, assignor to the Bonsack Machine Company, Lynchburg, Va. Filed Mar. 21, 1884. Serial No. 125,068. (No model.) Patented in England Oct. 25, 1884, No. 14,149.



Claim.—1. A printing attachment for cigarette-machines, consisting of an impression-roller, a type-cylinder, an inking-roller adapted to come in contact therewith, an ink-fountain, and a segmental cylinder on which the ink received from the fountain is distributed, said cylinder also adapted to come in contact with the inking-roller of the type-cylinder, substantially as described.

2. The combination, with the type-cylinder and the inking-roller in contact therewith, of the segmental cylinder, the ink-fountain, and the roller mounted therein, the distributing-roller, and the swinging roller mounted between the distributing and fountain rollers and adapted to be moved out of contact with the latter and into contact with the former by the segmental cylinder, substantially as described.

3. The combination, with the type-cylinder, the segmental cylinder on which the ink is distributed, and the inking-roller mounted in a frame pivoted upon the shaft of the segmental cylinder, of the spring for keeping said frame pressed toward the type-cylinder and the inking-roller in contact therewith, substantially as described.

4. The combination, with the type-cylinder, of the inking-roller, the frame supporting the same in its upper end, the segmental cylinder, the sleeve and the shaft-supporting said cylinder and frame, the cylinder being secured to the sleeve and the frame loosely mounted on the sleeve at one side and on the shaft at the other, and the spring connected to the lower end of the frame, substantially as described.

5. The combination of the type-cylinder having the segmental portions at the sides of the type-form, the inking-roller having disks at its sides adapted to be engaged intermittently by said projections, and the segmental cylinder geared with the type-cylinder and adapted to come in contact with the inking-roller alternately with the type-cylinder, substantially as described.

6. The combination, with the type-cylinder having the segmental projections at the sides of the type-form, and the inking-rollers having the removable disks adapted to engage the segmental projections, of the segmental cylinder geared to the type-cylinder, substantially as described, and for the purpose specified.

7. The combination, with the segmental cylinder and the fountain-roller, of the transfer-roller, its supporting-frame hung on a shaft and provided with a spring for holding it normally in engagement with the said fountain-roller, the said parts being so arranged that the contact of the segmental cylinder with the transfer-roller will lift said roller out of contact with the fountain-roller in the act of rotating the transfer-roller, substantially as described.

8. The combination, with the type-cylinder, of the grooved guide-plate having a roller at its lower end, a tension device, substantially as described, and the roller for sustaining the strip of paper in proximity to the type-cylinder, substantially as described.

9. The combination, with the type-cylinder, of the grooved guide-plate having the roller at its lower end, and a tension device, substantially as described, fitted in a recess in said plate, the roller for supporting the strip of paper, said last-mentioned roller and the guide-plate being mounted on the same support, and means for adjusting said support toward and from the type-cylinder, substantially as described.

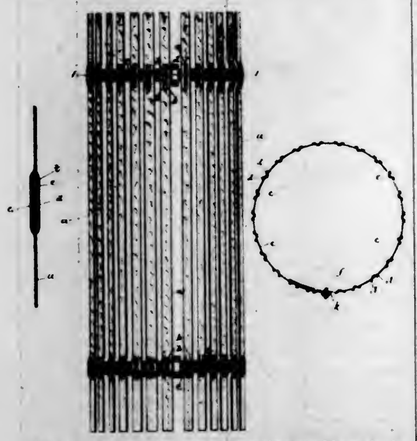
10. In a cigarette-machine of the kind described, the combination of a folder for folding the continuous web of paper and the contained tobacco into a cigarette, a device, substantially as described, for pasting the edges of the cigarette thus formed, and suitable printing devices for printing suitable letters or characters upon the web of paper while in motion, as set forth.

11. In a cigarette-machine of the kind described, the combination, with the folder for folding a continuous wrapper of paper around a tobacco-filler, and a device, substantially as described, for pasting the edges of the cigarette thus formed, of a type-cylinder arranged in proximity to the web of paper and adapted to imprint suitable letters or characters upon the web while in motion, substantially as described.

12. In a cigarette-machine of the kind described, in which a continuous web of paper is folded around a tobacco-filler, a suitable printing device for imprinting letters or characters upon said paper, the folder for folding the paper around the tobacco-filler, devices, substantially as described, for pasting the edges of the folded wrapper, and a knife or cutter arranged relative to the printing device, so as to sever the cigarette into suitable lengths, each having the letters or characters imprinted thereon, substantially as described.

13. In a cigarette-machine, the combination, with the conveying-belt, of devices for forming the tobacco into a continuous roll, means for appropriately printing or stamping the sheet at regular intervals, devices for folding the paper around the tobacco, a pasting apparatus, a device for completing and finishing the cigarette by folding down the pasted edge, and devices for severing the continuous cigarette, substantially as described.

377,448. TREE-PROTECTOR. JAMES O. BROWN, Boston, Mass., assignor of one-half to James S. Newell, same place. Filed Dec. 13, 1886. Serial No. 221,443. (No model.)



Claim.—1. In a tree-protector, the combination of hoops having overlapping ends, clamps which hold said overlapping ends by friction and permit them to be moved continuously upon each other by the pressure caused by the expansion of the tree, and slats secured to said hoops, as set forth.

2. In a tree-protector, the combination of the metallic slats *a*, having loops formed therein, the hoops *c*, passing through the loops of the slats, and a frictional buckle or clasp, substantially as described, whereby the ends of the hoops are frictionally held together with sufficient force to maintain the protector in position on the tree, but permit it to be continuously expanded or enlarged by the growth of the tree.

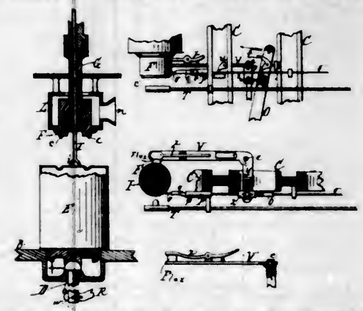
3. In a tree-protector, the combination of the hoop *c*, having one end provided with a bend, *k*, a friction clamp or buckle which bears against said bend and holds the overlapping ends of the hoop in frictional contact with each other, whereby the tree is enabled by its growth to continuously enlarge the hoop, and a series of slats engaged with the hoop, as set forth.

4. In a tree-protector, the combination, with the hoop *c*, having the extremity of one end provided with the bend *k*, of the buckle consisting of the loop *f*, link *j*, and nuts *i*, as set forth.

5. The combination of the slats *a*, having loops formed therein, hoop *c*, having one end thereof provided with the bend *k*, and a buckle consisting of the loop *f*, link *j*, and nuts *i*, as set forth.

6. The combination of the tree-encircling hoops cut to form tongues *l* on their edges and the slats slotted to receive said hoops, the tongues *l* being bent into the slots of the slats to prevent lateral displacement of the latter, as set forth.

377,449. MACHINE FOR CAPPING CANS. CHARLES A. BURT, Rochester, N. Y. Filed Mar. 26, 1887. Serial No. 232,496. (No model.)



Claim.—1. In a machine for capping cans, the combination, with the soldering-iron, of a nozzle or guide having a bend and capable of being turned to different positions, whereby the solder-wire is brought against different portions of the side of the soldering-iron, as specified.

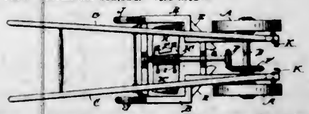
2. The support D, formed in two parts, *a b*, connected by a ball-and-socket joint, in combination with the inclosing-curbing of the table B, substantially as and for the purpose herein specified.

3. The combination of the soldering-iron, means for guiding the solder-wire thereto, lever O, for feeding the solder-wire forward, treadle Q, connecting-rod P, lever R, for raising the cans up to the soldering-iron, and connecting-rod S, connecting the said lever R to the said treadle Q, whereby when the cans are raised to be soldered the solder-wire is fed to the soldering-iron and always at the same moment.

4. In a machine for capping cans, the combination, with the soldering-iron, of a rock-lever provided with means, substantially as described, to feed the solder-wire forward, and a pivoted clamp holding a suitable flux, the parts connected, substantially as set forth, so that the forward movement of the rock-lever will operate the clamp, as specified.

5. The combination, with the soldering-iron, of the rock-arm provided with means, substantially as described, to feed the solder-wire forward, the pivoted clamp holding a suitable flux, and an adjustable slide on the clamp against which the rock-arm strikes to operate the clamp, as specified.

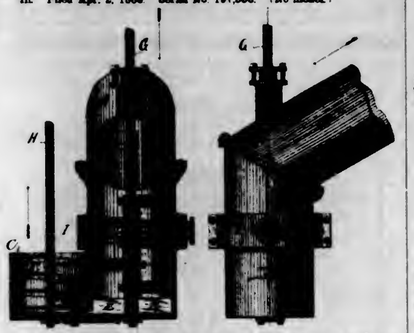
377,450. COTTON-CHOPPER. LUTHER R. CORDER, Jacksonville, assignor of one-half to Ladson L. Boone, Little Rock, Ark. Filed Oct. 17, 1887. Serial No. 252,521. (No model.)



Claim.—1. The combination, with the frame B, having the wide rear end, as described, the plow-knives E, attached thereto, and the adjustable spring-runners J, of the axle D, cog-wheels F F', longitudinal shaft G, head-block H', secured on said shaft having the ribs I', and the adjustable choppers H, substantially as shown and described.

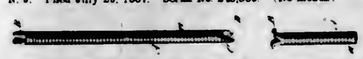
2. The combination of the frame B, having the wide rear end, as described, and bearing the plow-knives E, the geared longitudinal shaft G, bearing head-block H', with ribs I', and adjustable choppers H, secured in said head-block, and adjustable spring-runners J, secured to the rear end of said frame, substantially as shown and described.

377,451. MASHING-MACHINE. MATHIAS GOTTFRIED, Chicago, Ill. Filed Apr. 2, 1886. Serial No. 197,538. (No model.)



Claim.—In a mashing-machine, the combination of a main vertical cylinder, a malt-conveying pipe leading thereto, a vertical revoluble shaft within the vertical cylinder, horizontal beaters and stirrers arranged thereon, a water-conveying pipe leading to the vertical cylinder, an auxiliary cylinder closed at the bottom and connected at the side near the bottom with the main cylinder, into which the malt is delivered from the main cylinder, and a screw or conveyer located in the auxiliary cylinder, by which the malt is raised or elevated therein, operating substantially as described, and for the purpose set forth.

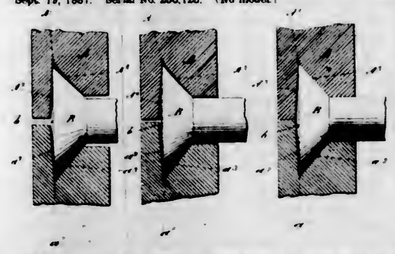
377,452. WIRE SCREW-NAIL. HAYWARD A. HARVEY, Orange, N. J. Filed July 29, 1887. Serial No. 245,589. (No model.)



Claim.—1. A wire screw-nail having one end suitably pointed, and having its opposite end notched or bifurcated, but of the same diameter as its body, and having its body or any desired portion thereof provided with a screw-thread, substantially as shown and described.

2. A wire screw-nail having a chisel-point and a notched or bifurcated end, and a body the whole or any desired portion of which is provided with a screw-thread, substantially as shown and described.

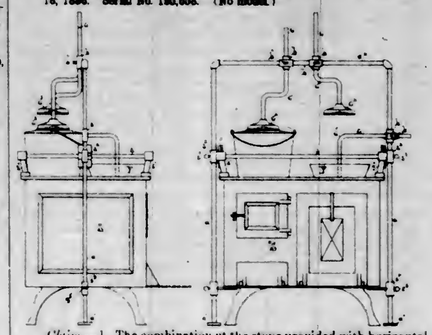
377,453. ROLLED-HEADED WOOD-SCREW AND PROCESS OF MAKING THE SAME. HAYWARD A. HARVEY, Orange, N. J. Filed Sept. 19, 1887. Serial No. 250,125. (No model.)



Claim.—1. As a new article of manufacture, a wood-screw provided with a rolled head the top of which is slightly conical or conoidal, substantially as described.

2. For employment in rolling the heads of flat-headed blanks for screws, finishing and shaping dies, each of which is provided with a ratchet-shaped groove, one wall of which groove is less nearly perpendicular to the axial line of the blank than is the top of the headed blank upon which it is intended to bear, and the other wall of which is more nearly perpendicular to the axial line of the blank than the under side of the head of the blank upon which it is intended to bear, whereby the initial bearing-points of the dies upon the head upon which they act are respectively upon the outer portions of the top of the head and upon portions of the under side of the head near the body, substantially as set forth.

377,454. STOVE. HORACE M. HATCH, Boston, Mass. Filed Mar. 18, 1886. Serial No. 195,658. (No model.)



Claim.—1. The combination of the stove provided with horizontal rods *s*, the rods *a a²*, the couplings *a²*, provided with set-screws *a³*, and a brace or rod mounted on rods *a a²*, and projected downward over the stove, substantially as described.

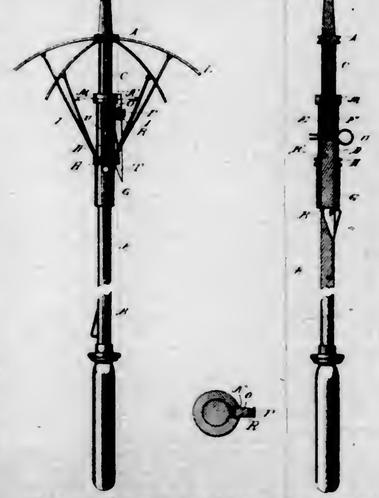
2. The combination of the rod *a*, the coupling *b*, provided with set-screws *b' b²*, and the bent rod or arm *c*, capable of sliding and turning therein and therewith, substantially as described.

3. The combination of the stove S, the horizontal rod *s*, provided with the sliding couplings *s²* and set-screws *s³*, the vertical rod *a*, the coupling *b*, provided with set-screws *b' b²*, and the bent rod or arm *c*, capable of turning and sliding therein, substantially as described.

4. The combination of the horizontal rod *a²*, the coupling *b*, provided with set-screws *b' b²*, the sliding and turning bent arm or rod *c*, provided with the hollowed-out enlargement *c²* at its lower end, and the stove S, substantially as described.

5. The combination of the stove S, the vertical rods *a a*, and horizontal rod *a²*, made adjustable transversely of the stove, the couplings *b*, provided with set-screws *b' b²*, and the swinging and sliding arms or rods *c*, substantially as described.

377,455. UMBRELLA. FREDRICK HAITH, Towanda, Ill. Filed Apr. 18, 1887. Serial No. 235,237. (No model.)

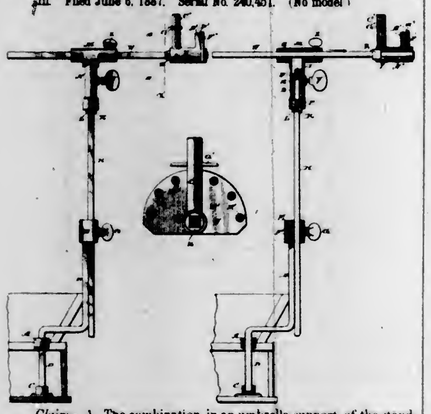


Claim.—1. The combination of the umbrella-stick made in two detachable sections, B and C, the sleeve D, secured to the upper section

and forming the socket for the lower section, the thimble free to slide on the lower section and forming a socket to receive the lower end of the sleeve, the ribs pivoted to the upper section of the stick, the braces pivoted to the thimble and connected to the ribs, and the spring-actuated keeper O, to secure the thimble to the sleeve when the umbrella is hoisted, and thereby permit the umbrella to be detached from the lower section of the stick, substantially as described.

2. The combination of the umbrella-stick made in two detachable sections, B and C, one of the said sections having the mortise and the other provided with the tenon adapted to enter the mortise, and thus prevent the upper section from turning on the lower one, the sleeve D, depending from the upper section and forming a socket to receive the upper end of the lower section, the ribs pivoted to the upper section of the stick, the thimble G, adapted to slide on the lower section of the stick and having the socket to receive the lower end of the sleeve when the umbrella is hoisted, the stays pivoted to the thimble and connected to the ribs, and the keeper O, attached to the sleeve and adapted to engage the flange formed on the thimble to lock the thimble to the sleeve, and the pin adapted to pass through transverse openings made in the sleeve and in the lower section of the stick to attach the sleeve to the said lower section, substantially as described.

377,456. **UMBRELLA-SUPPORT.** FREDERICK HAITZ, Towanda, Ill. Filed June 6, 1887. Serial No. 240,451. (No model.)



Claim.—1. The combination, in an umbrella-support, of the standard D, having the socket E and the set-screw G, the vertically-adjustable rod H, secured in the said socket and having the collar K, provided with teeth L, the head M, having the depending sleeve N, fitting on the upper end of rod H and provided at its lower end with the teeth or recesses to engage the teeth L, the springs bearing downward normally on the collar K, the horizontal bar W, secured in the upper side of the head A, and the sleeve on the bar W, adapted to turn thereon and provided with the stud C to enter a socket in the umbrella handle or thimble, and the arm or detent D', to engage a series of openings in a plate, F', on the end of the bar W, and thereby secure the sleeve thereon at any desired inclination, substantially as described.

2. The combination, in an umbrella-support, of the vertical rod H, the head M at the upper end of the said rod, the horizontal bar W, secured in the said head and adjustable therein, the head being provided with the clamping-screw to secure the bar, and the sleeve secured to the bar W and adapted to turn thereon to any desired angle, the said sleeve having the stud C to enter the recess or socket in the umbrella handle or thimble, substantially as described.

3. In an umbrella-support, the combination of the standard H, having the collar K, provided with vertical teeth L, the head M, having the sleeve N to receive the upper end of rod H, the said sleeve being provided with the annular inwardly-projecting offset R, the spring S on the upper end of rod H and bearing between the offset R and the collar K, for the purpose set forth, and the pin or screw extending transversely through the upper end of rod H above the offset R, substantially as described.

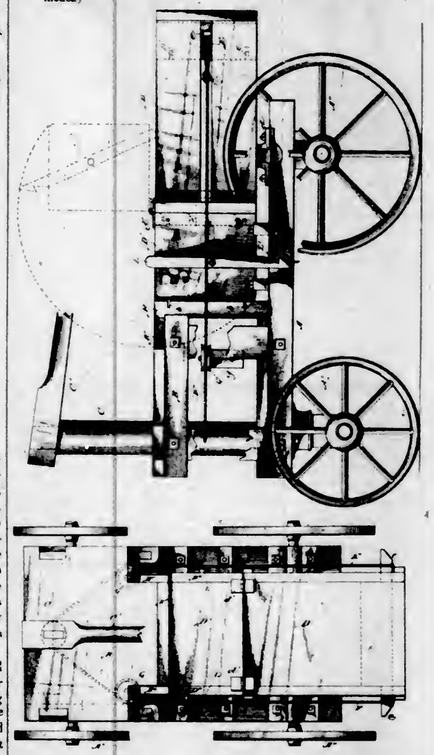
377,457. **DEVICE FOR RAISING OR LOWERING WINDOWS.** WILLIAM H. HORNE, Decatur, Ill., assignor to Remsen Schenck, New York, N. Y. Filed Aug. 13, 1885. Serial No. 174,343. (No model.)

Claim.—In a device for raising and lowering window-sashes, the combination of the sash and a rod pivotally connected with the top rail thereof and flush with or below its face, whereby the rod may be



swung sidewise to allow the hand to grasp it, and the sash may be raised or lowered its entire length without interfering with the other one, substantially as described.

377,458. **HAY-PRESS.** DAVID J. HYNEMAN and IRVEN W. HYNEMAN, Corinth, Miss. Filed Oct. 25, 1887. Serial No. 253,343. (No model.)



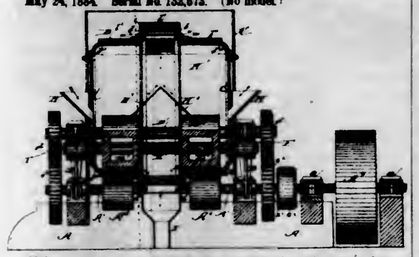
Claim.—1. In a press of the class described, the combination, with a suitable bed and its supporting-wheels, of a stationary frame or platform mounted on the front end of said bed, a windlass or capstan journaled therein and provided with means for its rotation, a press-chamber supported by a transverse pivot journaled in suitable bearings at the rear end of the wagon-bed, and a swinging hood hinged to the front end of the press-chamber and forming a continuation thereof, and lying between it and the rear face of said stationary platform, substantially as and for the purpose set forth.

2. The combination, with the bed A and its supporting-wheels A' A'', of the stationary platform B, mounted on the front end of said bed, the windlass C, journaled in said stationary platform, the press-chamber D, mounted on a horizontal shaft journaled in bearings on the rear end of the bed, and the hood D', hinged to the front end of the press-chamber and provided with means for locking it to the bed

or an attachment thereof, substantially as shown and described, the rear edge of the stationary platform being formed with slots B'', permitting the upward swing of the hood, substantially as and for the purpose set forth.

3. The combination, with the wagon-bed A and its supporting-wheels A' A'', of the platform B, having at its rear end the platen B', formed with grooves *b*, the press-chamber D, pivotally mounted on the rear end of the bed, the follow-board E, lying within the press-chamber and having grooves *c* in its front face, the hood D', hinged to the press-chamber and lying between it and the platen B', and means, substantially as shown and described, for drawing the follow-board forward in the press-chamber, substantially as and for the purpose set forth.

377,459. **ORE-CRUSHER.** CHARLES KARSTNER, Chicago, Ill. Filed May 24, 1884. Serial No. 132,673. (No model.)



Claim.—1. In an ore-crusher, the combination of a main frame, four rollers journaled therein and connected by driving-belts, a rolling cylinder supported upon and driven by said rollers, an annular screening-chamber forming the central portion of said cylinder, crushing-rolls located in each end thereof and geared together, and means for feeding the crushed ore from the ends of the cylinder to its central screen, substantially as and for the purpose set forth.

2. In an ore-pulverizer, the combination of the main frame, a rolling crushing-cylinder, crushing-rolls therein, shafts, journal-boxes, arms hinged upon the main frame, and weighted arms connected with said journals, whereby the rolls are pressed upon the inner surface of the cylinder, substantially as and for the purpose set forth.

3. In an ore-crusher, the main frame and a rolling cylinder within which the ore is crushed, in combination with a pair of crushing-rolls, journal-boxes, arms hinged on the main frame, a second pair of rolls, journal-boxes therefor, jointed arms connecting the two pairs of journal-boxes, and weighted arms secured to the journal-boxes of each roll to press them down upon the inner surface of the cylinder, substantially as and for the purpose set forth.

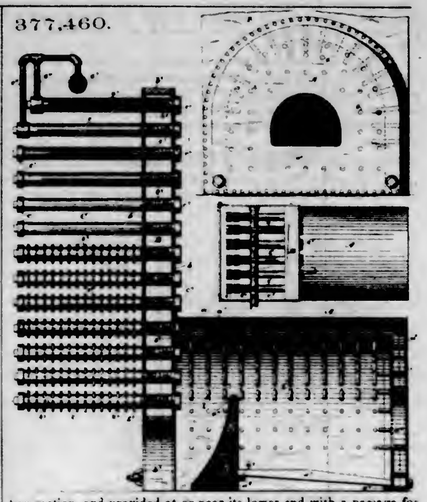
4. In an ore-crusher, the combination of a main frame, a casing, a rolling crushing-cylinder formed with annular grooves, and a spout having its upper edges running in said grooves, whereby the dust is prevented from escaping from the machine, substantially as and for the purpose set forth.

5. In an ore-crusher, a rolling cylinder provided with a central enlargement covered by wire-netting, and a pair of crushing-rolls located within the cylinder, in combination with a right and left hand conveyer located in rear of the crushing-rolls and adapted to carry the crushed material from the ends of the cylinder to the central screen, substantially as shown and described.

6. In an ore-crusher, the combination of the rolling cylinder B, the crushing-rolls D², the arms D, hinged upon the main frame, the weighted arms F, secured to the journals of said crushing-rolls, and the set-screws *d*, all constructed and arranged to operate substantially as and for the purpose set forth.

7. In an ore-crusher, the combination of a rolling cylinder having a central enlargement covered with wire-netting, ledges or buckets within said enlargement, crushing-rolls working against the inner surface of the cylinder, a right and left hand conveyer for carrying the crushed ore to the screening-chamber, and an incline to receive the crushed ore carried up by the buckets and return it to the crushing-rolls, substantially as and for the purpose set forth.

377,460. **STEAM-BOILER.** MIRABEAU H. LYNN, Rising Sun, Ind., assignor to the Lynn Engine Company, Dayton, Ohio. Filed Dec. 28, 1886. Serial No. 222,808. (No model.)



Claim.—1. The herein-described improved boiler, consisting of the horizontal fire-box section, the vertical rear section, and the series of tubes attached to and projecting from the said vertical section into the uptake, substantially as and for the purpose set forth.

2. In combination with the horizontal fire-box section, the hollow vertical section B, secured to and forming the rear wall of said fire-box section, and provided at or near its lower end with a passage for the products of combustion, substantially as described.

3. In combination with the fire-box section A, its grate and bridge-wall, the vertical section B, secured to the rear end of the fire-box section and provided with an opening below the upper edge of the bridge-wall for the passage of the products of combustion, substantially as described.

4. In combination with a horizontal fire-box boiler section A and vertical boiler-section B, the latter forming the rear wall of the horizontal section and provided with a passage communicating with the uptake, the series of tubes secured to and projecting rearwardly from the vertical boiler-section and into the uptake, substantially as described.

5. In a boiler such as described, and in combination with the vertical section B, constituting one wall of the uptake, the series of tubes passing through the water-walls of said boiler-section and projecting into the uptake, substantially as described.

6. In a boiler such as described, and in combination with the vertical boiler-section B, constituting one wall of the uptake, the series of tubes passing through and connecting the opposite water-walls of said boiler B and provided with removable caps at one or both ends, substantially as described.

7. In a boiler such as described, and in combination with the vertical section B, forming one wall of the uptake, the series of tubes passing through the water-walls of said boiler-section and projecting into the uptake, and the steam-pipe also located in the uptake and connected to the upper series of tubes, substantially as described.

8. In a boiler such as described, and in combination with the vertical boiler-section B and tube-section C, the horizontal fire-box section A, provided with the grate and hollow bridge-wall, the latter provided with openings for the introduction of air from beneath the grate and its escape into the combustion-chamber, substantially as described.

9. In a boiler such as described, and in combination with the water-walls thereof, a series of hollow stay-bolts whose open inner ends are prolonged beyond the surface of the inner water-wall and projected into the combustion-chamber, substantially as described.

10. In a boiler such as described, and in combination with the water-walls thereof, the tubular stay-bolts with their inner ends open and projecting into the fire-chamber, said stay-bolts being screwed into the walls of the boiler and their outer ends closed by caps, substantially as described.

11. In a boiler such as described, and in combination with the horizontal fire-box section A, and vertical section B, connected as set forth, the tubes projecting rearwardly from the vertical section into the uptake, each of said tubes being provided with a series of conducting-pins projecting through its walls, substantially as described.

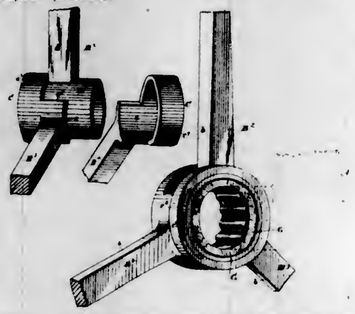
12. In a boiler such as described, and in combination with the vertical section B thereof, the series of tubes with removable caps secured to the walls of said section B, each tube provided with conducting-pins projecting radially on opposite sides, leaving the lower surface of the inner wall of the tube unobstructed, substantially as and for the purpose set forth.

13. In a boiler such as described, and in combination with the

section B thereof, a series of tubes, C, provided with conducting-pins on the sides, said tubes being screwed through the water-walls of the boiler-section, substantially as described.

14. In a boiler such as described, and in combination with the vertical section B and inclosing-walls forming the uptake, of the series of tubes C, secured to the said section B and communicating with the interior thereof, said tubes arranged to project within the uptake, being provided with removable caps at opposite ends, substantially as described.

377,461. PITMAN-CONNECTION. MIRABEAU N. LYNN and ELMORE P. LYNN, Rising Sun, Ind., assignors to the Lynn Engine Company, Dayton, Ohio. Filed Aug. 6, 1886. Renewed June 22, 1887. Serial No. 242,150. (No model.)



Claim.—1. The combination, with pitman B^3, provided with a tubular head, B', of the pitmen B^3 B^4, each having a transverse bearing fitting the exterior of the head B', and a ring or collar embracing one end of said tubular head, substantially as described.

2. In a crank-pin connection, such as described, the combination of the pitmen B^3 B^4, each provided with a transverse head having a segmental flange at one end and a collar at the opposite end, the said segmental flange on one head being received in a bearing formed in the collar of the other head, and uniting to form a bearing for the reception of a crank-pin or sleeve, substantially as described.

3. In combination with the pitman B^3, provided with the transverse cylindrical head B', the pitmen B^3 B^4, applied to the exterior of said head, each of said pitmen B^3 B^4 being provided with a collar at one end and an interlocking projection or flange at the other end fitted to a bearing in the opposite collar, substantially as described.

4. In combination with the pitman B^3, having the transverse tubular head B', the pitmen B^3 B^4, each provided with a rod, *b*, a central bearing, *c*, and a ring or collar, c^2, the central bearings of the two pitmen B^3 B^4 engaging the periphery of the head B', and the collars engaging opposite ends of said tubular head B', substantially as described.

5. In combination with the pitman B^3, composed of the rod *b* and transverse tubular head B', the pitmen B^3 B^4, each composed of a rod *b* and transverse head, the latter constructed with the central bearing, *c*, ring c^2, and projection or flange c^3, substantially as described.

6. The combination, in a crank-pin connection such as described, and with the tubular head, of the pitman B^3, the removable sleeve or lining *h*, and roller-bearing G, substantially as described.

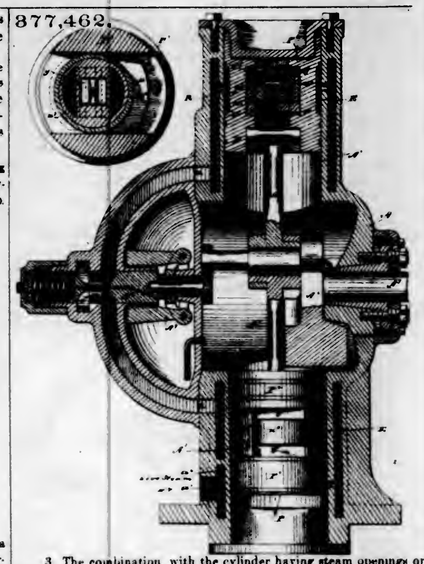
7. In a pitman attachment such as described, and in combination with the pitmen B^3 B^4, having central bearings, *c*, and rings or collars c^2, and the inner pitman, B^3, having the tubular head, to which said bearings and collars are applied, the removable anti-friction roller-bearing, G, interposed between the said head B' of the inner pitman and the crank-pin, substantially as described.

377,462. STEAM-ENGINE. MIRABEAU N. LYNN and ELMORE P. LYNN, Rising Sun, Ind., assignors to the Lynn Engine Company, Dayton, Ohio. Filed July 20, 1886. Renewed June 22, 1887. Serial No. 242,151. (No model.)

Claim.—1. The combination, with a cylinder having ports or openings in its inner surface for the admission of steam, of a piston carrying a valve controlling the inlet and exhaust ports, said piston being provided with two piston-heads and a steam-space between them, into which steam is delivered from the openings in the cylinder, substantially as described.

2. The combination, with the cylinder and its openings or ports, of a piston carrying the valve mechanism governing the inlet and exhaust openings and provided with a steam-space intermediate the ends of the piston and communicating with the valve-chamber, said steam-space co-operating with openings in the cylinder during a portion only of the stroke of the piston to thereby limit the supply of steam as delivered to the cylinder, substantially as described.

377,462.



3. The combination, with the cylinder having steam openings or ports in its interior, of a piston having a valve-chamber and valve through which the steam is admitted and exhausted in the cylinder, said piston being also provided with a steam-space intermediate its ends or heads, whereby steam is admitted to the valve-chamber at the beginning of the stroke and is cut off by the movement of the piston which closes the ports in the cylinder during the latter portion of the stroke, substantially as described.

4. In a direct-acting steam-engine such as described, wherein steam is admitted direct to the interior of the cylinder through ports in the side thereof, and in combination with said cylinder, a piston carrying valve mechanism controlling the admission and escape of steam above the piston and operating in conjunction with the ports in the cylinder as a cut-off, substantially as described.

5. In an engine such as described, and in combination with the cylinder and its ports or openings, the piston provided with two piston-heads connected together to form a steam-space and valve-chamber, and a valve located in said chamber and driven by the pitman to alternately open and close the inlet and exhaust ports as the crank passes the center, substantially as described.

6. In an engine such as described, and in combination with the cylinder having ports or openings, the piston fitting the cylinder above and below said openings or ports and provided with an intermediate steam-passage for re-establishing communication between the said ports or openings and an inlet-port in the piston, substantially as described.

7. In a direct-acting steam-engine, and in combination with the piston thereof provided with the valve-chamber, as described, the slide-valve constructed in two sections fitted together and engaging the opposite faces of the valve-chamber, the inlet and exhaust ports formed in one end of the piston and the exhaust-port in the other, said valve-sections being also provided with a passage through their connecting portions for the escape of the exhaust through the piston, substantially as described.

8. The combination, in a direct-acting engine such as described, and with the piston and cylinder thereof, of a slide-valve located in the piston and provided with a longitudinal socket for the reception of a guide-block, the pitman pivotally secured to the lower side of the piston, and the rod attached to and forming an extension of the piston projecting within the piston and valve with its end pivoted to the before-mentioned guide-block in the valve, substantially as described.

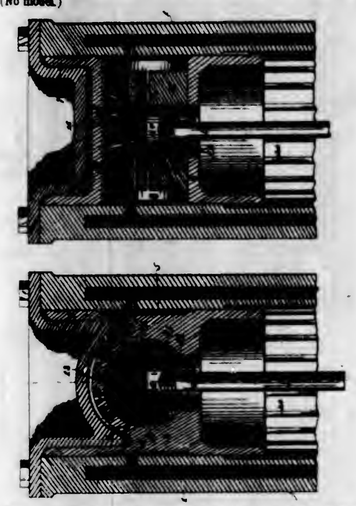
9. In a direct-acting engine such as described, and in combination with the cylinder having openings or ports in its inner walls, and a piston provided with two heads and an intermediate steam-space and operating as a cut-off, a valve carried by said piston and moving in unison with the pitman to control the admission of steam from the steam-passage into the cylinder above the piston and the escape of steam through the piston, substantially as described.

10. In a direct-acting steam-engine such as described, wherein steam is admitted through openings in the cylinder and into a steam-space in the side of the piston during a portion of the stroke and cut off during the remainder of the stroke by the end of the piston overlapping the openings in the cylinder, and in combination with said piston and cylinder, a valve-chamber formed in the piston, and a slide-valve located in said chamber, moving in unison with the pitman and exhausting through the rear end of the piston, substantially as described.

11. In a direct-acting steam-engine such as described, and in combination with the piston provided with double heads and an intermediate space, a cylinder provided with a series of openings or ports arranged at equal distances apart, through which the fluid is admitted to the interior of the cylinder, whereby, when the head of the piston is brought opposite said openings to serve as a cut-off, the pressure will be equalized upon the periphery of the piston, as set forth.

12. In a direct-acting engine such as described, and in combination with the jacketed cylinder having openings or ports in its inner walls, the piston provided with two heads and an intermediate space through which the fluid is conducted from the openings in the cylinder to the valve in the piston, the reciprocating valve containing the exhaust-passage communicating with the opening in the lower end of the piston, and the pitman pivotally attached to the piston in said last-mentioned opening and carrying an arm or extension engaging the valve to reciprocate the latter, substantially as described.

377,463. STEAM-ENGINE. MIRABEAU N. LYNN and ELMORE P. LYNN, Rising Sun, Ind., assignors to the Lynn Engine Company, Dayton, Ohio. Filed July 20, 1886. Renewed June 22, 1887. Serial No. 242,152. (No model.)



Claim.—1. In a steam-engine such as described, wherein steam is admitted and exhausted in the cylinder above the piston and through ports in the latter, and in combination with said cylinder and piston, a valve controlling the inlet and exhaust ports in the piston, a cut-off independent of said valve, and a supplemental or auxiliary exhaust, also independent of the valve, substantially as described.

2. In a steam-engine such as described, wherein the piston is provided with a steam-chamber intermediate its ends co-operating with steam openings in the side of the cylinder, while the head of the piston serves as a cut-off, and in combination with said piston and cylinder, a reciprocating valve located in the piston and adjusted to have lap and lead with respect to the inlet and exhaust ports, and a supplemental or auxiliary exhaust-passage opened at or near the end of the stroke of the piston to relieve the pressure in the cylinder before the direct exhaust opens, substantially as described.

3. In combination with the cylinder and its steam-openings, the double piston having steam-chamber communicating with said openings in the cylinder, a cut-off for regulating the admission of steam to the said steam-chamber during the stroke of the piston, a valve carried by the piston and reciprocating in unison with its pitman to open and close the inlet and exhaust ports, and a supplemental or auxiliary exhaust independent of said valve and its exhaust-ports co-operating with the piston to relieve the pressure in the cylinder near the end of the stroke, substantially as described.

4. In an engine such as described, wherein steam is admitted through the side of the cylinder into a chamber in the piston and is conducted through inlet-openings into the cylinder above the piston, and in combination with said cylinder and piston, a cut-off, a reciprocating valve carried by the piston and connected to the pitman to vibrate in unison therewith, said valve being adjusted to open the inlet before the completion of the return or back stroke of the piston, a direct exhaust controlled by said valve, and a supplemental or auxiliary exhaust operating to relieve the pressure in the cylinder and steam-chamber before the completion of the stroke of the piston, substantially as and for the purpose set forth.

5. The combination, with the double piston having the steam-chamber and a reciprocating valve controlling the inlet and exhaust ports, said valve being adjusted to have lap and lead, of a cylinder provided with steam-ports and exhaust-passages at or near one end, one end of the said piston co-operating with the steam-ports in the cylinder to cut off the supply of steam during the latter portion of the stroke, and the other end co-operating with the exhaust-passages to relieve the pressure in the cylinder at the end of the stroke, substantially as and for the purpose set forth.

6. In an engine such as described, and in combination with the piston and cylinder thereof, the cylindrical valve controlling the inlet and exhaust ports and located in the piston, said valve being constructed in two sections fitted to move the one upon the other, and the pitman secured directly to the upper section of said valve, substantially as described.

7. In combination with the cylinder and double piston having steam-chamber and cylindrical valve-chamber, the balanced cylindrical valve constructed in two sections moving one within the other, the upper section, containing inlet and exhaust ports, being attached directly to the head of the pitman, substantially as described.

8. In combination with the cylinder having steam-ports in the side and supplemental exhaust-ports at or near the end, the double piston provided with the steam-chamber and valve-chamber, and the cylindrical valve made in two sections fitted to move one within the other, and the pitman secured directly to one of the sections of the valve substantially as described.

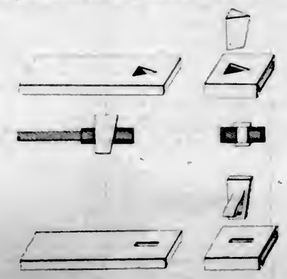
9. In a steam-engine such as described, wherein steam is admitted and exhausted in the cylinder through a valve in the piston, and in which a cut-off is employed for limiting the admission of the steam to the valve-chamber, and in combination with said cylinder, piston, and valve, the latter driven from the pitman and adjusted to have lap and lead, the supplemental or auxiliary exhaust opened by the movement of the piston before the crank reaches the center, substantially as and for the purpose set forth.

10. In an engine such as described, and in combination with the piston thereof containing a valve-chamber, the cylindrical valve constructed in two sections, the outer section of said valve containing the inlet and exhaust ports and means whereby it can be firmly secured to the head of the pitman, and the inner section moving upon the other section and closing the opening for the pitman in the lower head of the pistoh, substantially as described

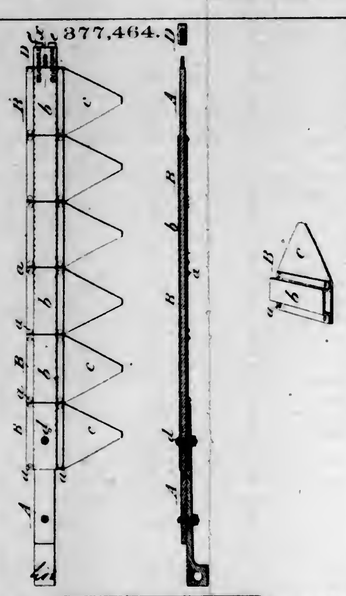
377,464. CUTTER AND CUTTER-BAR FOR MOWERS AND REAPERS. CHARLES E. MORTON and SIDNEY F. BROWN, Madisonville, Ky. Filed Oct. 4, 1887. Serial No. 251,470. (No model.)

Claim.—1. As an improvement in cutters for reapers and mowers, the straight unbent plate *c*, in combination with the cap *b*, bent to inclose three sides of the cutter-bar, and riveted to said straight plate to form a loop for the reception of the cutter-bar, substantially as set forth.

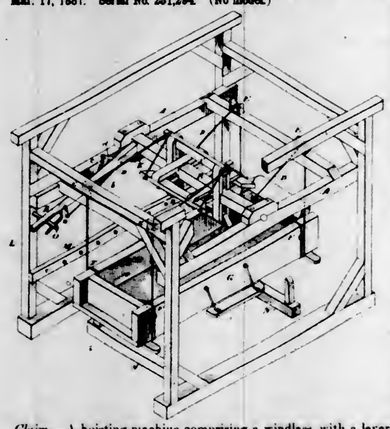
2. As an improvement in cutters and cutter-bars, the cutter formed of a straight plate with a cap forming a loop riveted thereto, in combination with the bar and the nut screwed upon the end of the same, with right and left screws passing through said nut into the end of the bar to prevent its accidental removal, as set forth.



377,464.



377,465. HOISTING APPARATUS. MARTIN S. RAGSDALE, Freelandville, Ind., assignor of one-half to F. T. Phillips, Olney, Ill. Filed Mar. 17, 1887. Serial No. 231,294. (No model.)



Claim.—A hoisting-machine comprising a windlass, with a lever-bar by which to rotate it, ropes wound around the windlass and descending to the load, pulleys supported on the frame-work, over which the ropes pass, hooks attached to the ends of the ropes, an attachment pivoted on the lever-bar, consisting of a curved handle, rod, spring, and pawl, a ratchet-plate fastened to the frame-work, the pawl, and a pin adapted to fit into holes arranged along the frame-work, all combined, arranged, and operated substantially as set forth.

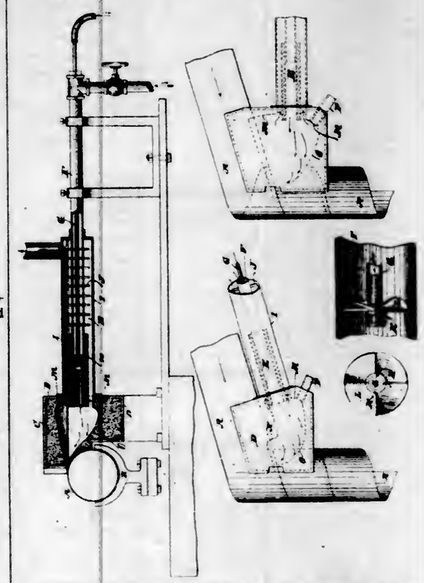
377,466. WAX-THREAD SEWING-MACHINE. ARTHUR S. RICHARDSON, Reading, Mass. Filed Mar. 22, 1887. Serial No. 231,901. (No model.)



Claim.—1. In a wax-thread sewing-machine, the slender standard d^3, open at its upper end, the needle and cast-off bars fitting closely within the said standard, the cast-off entering a groove in the needle-bar, the back of the said cast-off being in contact with the inner wall of the standard to retain the former in the groove of the said bar and both the needle and cast-off being adapted to be retracted entirely within the standard, combined with a presser-foot, an awl, an awl-carrying bar, and means to move the awl-carrying bar to effect the movement of the shoe over the top of the standard, substantially as described.

2. The slender work-supporting standard d^3, slotted at one side, as at *f*, a longitudinally-grooved needle-carrying bar, and a cast-off entering the said groove, the assembled needle and cast-off bars fitting the interior of the standard snugly, combined with a needle-holding screw, *f'*, arranged to move in the slot of the standard, substantially as described.

377,467. BLOW-PIPE APPARATUS. HANNAH M. ROOT and WILLIAM S. CHURCH, Port Chester, N. Y., administratrix and administrator of John B. Root, deceased. Filed Aug. 8, 1887. Serial No. 246,375. (No model.)



Claim.—1. In combination, in a blow-pipe, an air-pipe, and a gas-pipe arranged within the air-pipe and provided with lateral openings K and wings L, arranged substantially as described.

2. The combination, with the blow-pipe, of the furnace provided with a heating-chamber of substantially conical shape, with an opening at one side for the entrance of the edge of the blank to be heated and having at the opposite side the curved deflecting-surface O, against which the jet impinges and by which said jet is deflected laterally upon the blank, as and for the purposes hereinbefore set forth.

3. In combination with the blow-pipe, the furnace C, provided with a heating-chamber formed at the rear with the heat-concentrating surface M, and on the side opposite to that through which the edge of the blank projects into the chamber with the lateral curved deflecting-surface O, placed in the path of the jet, so that the latter shall be deflected by it laterally upon the blank, as and for the purposes hereinbefore set forth.

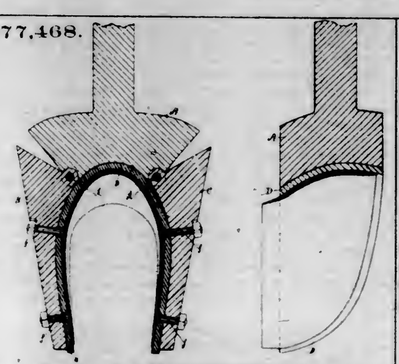
4. In combination with the blow-pipe E, provided with the openings K and wings L, the furnace structure C, arranged substantially as described.

5. In combination with the blow-pipe E, having pins J, the outer regenerating pipe, I, and the furnace structure C, arranged substantially as described.

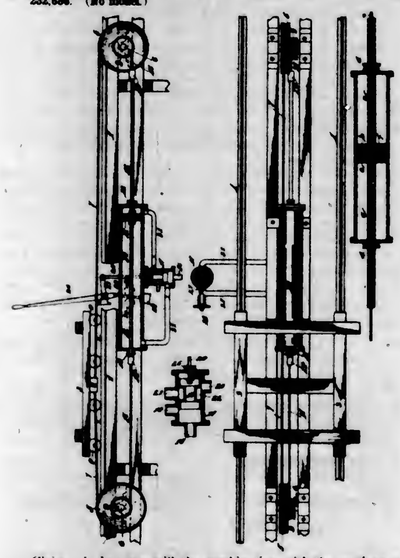
377,468. COUNTER-STIFFENER MACHINE. LEWIS B. RUSSELL, Lynn, Mass., assignor to the Russell Counter Company, Saco, Me. Filed Aug. 15, 1887. Serial No. 246,927. (No model.)

Claim.—A divided or sectional mold for counter-machines having a smooth and continuous interior layer or lining of rawhide or leatheroid attached to the mold and closely fitting against and covering the entire interior thereof, substantially as set forth.

377,468.



377,469. FEED MECHANISM FOR SAW-MILL CARRIAGES. ANTHONY SCHNIER and SAMUEL R. SMITH, Cincinnati, Ohio, assignors to Smith, Myers & Schnier, same place. Filed Mar. 28, 1887. Serial No. 232,686. (No model.)



Claim.—1. In a saw-mill, the combination, with the carriage and the track supporting the same, of a centrally-located cylinder having its piston-rod projecting from both ends, multiplying-drums located at the ends of the track, and each connected by cords with the piston-rod and with the carriage, and a central lever controlling the mechanism, substantially as described.

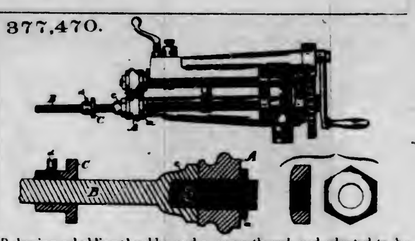
2. The combination, with the carriage and a track on which it moves, of a centrally-located cylinder having a piston-rod which projects both ways from the piston and passes through both ends of the cylinder, multiplying-drums at the ends of the track, each connected with the piston and with the carriage, and a central lever having a weight by which the valve is normally balanced between the ports, substantially as described.

3. The combination, with the carriage, the track, and a centrally-located cylinder, of tubular piston-rods projecting from both sides of the piston and passing through both ends of the cylinder, and cords passing from the drums at the ends of the track through the tubular piston-rods and connected to the piston, substantially as described.

377,470. TENSIONER'S HEADING-MACHINE. ABEL SHEPARD, Plantsville, assignor to the Peck, Stow & Wilcox Company, Southington, Conn. Filed Dec. 12, 1887. Serial No. 257,695. (No model.)

Claim.—In a heading-machine, the combination of the lower shaft, having a threaded end, and roller, with the rest C and rest-rod

377,470.



B, having a holding-shoulder and a screw-thread, and adapted to be attached and detached from said shaft and roller, substantially as described, and for the purpose specified.

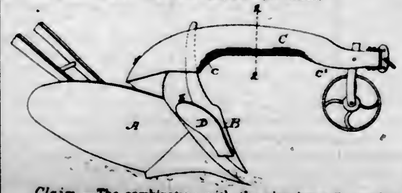
377,471. COOKING-STOVE. GEORGE W. WALKER, Malden, Mass. Filed Jan. 11, 1887. Serial No. 224,064. (No model.)



Claim.—1. The stove-body, the draft-pipe, the bottom plate, D, the concavo-convex back plate, and the end pieces, combined with the concavo-convex cover-plate consisting of the plate E and end pieces, *a*, pivoted at *a'*, all as shown and described.

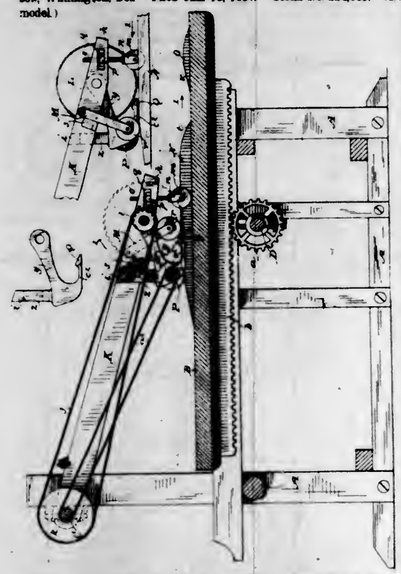
2. The stove-body, the draft-pipe, the bottom plate, D, the concavo-convex back plate, and the end pieces, combined with the concavo-convex cover-plate consisting of the plate E and end pieces, *a*, pivoted at *a'*, and with the shelf G, all as shown and described.

377,472. PLOW-BEAM. EDGAR A. WILCOX, Monterey, Mich. Filed Oct. 11, 1887. Serial No. 252,050. (No model.)



Claim.—The combination, with the plow-beam C, rounded or curved lengthwise of the beam between the points e c^4, of the plow-share A, and the downwardly and forwardly curved colter B, provided with the auxiliary mold-board D, situated immediately in front of the plow, and the said curve of said plow-beam being in front of the points of the colter and plow, as shown and described.

377,473. LEATHER-DRESSING MACHINE. GEORGE V. ANDERSON, Wilmington, Del. Filed Jan. 18, 1887. Serial No. 224,686. (No model.)



Claim.—1. In a leather-dressing machine, a traveling bed upon which the material to be dressed is placed, in combination with a vertically-movable frame located above said bed, supporting-rollers vertically adjustably mounted on said frame, which rest upon said bed, a rotating dressing-roller mounted in said frame, which constantly rotates in the same direction, and means for rotating said roller, substantially as set forth, whereby said movable frame may be adjusted to accommodate the dressing-roller to different thicknesses of leather.

2. In a leather-dressing machine, a reciprocating bed upon which the material to be dressed is placed and a dressing-roller which constantly rotates in the same direction, in combination with a vertically-movable frame in which said roller is mounted, which frame is automatically lowered when the bed feeds forward the leather to the dressing-roller and is automatically raised during the reverse movement of the bed, and mechanism for automatically raising and lowering said frame.

3. In a leather-dressing machine, a reciprocating bed upon which the material to be dressed is placed and a driving-shaft located above said bed and constantly rotating in one direction, in combination with a movable frame pivotally hung at its upper end upon said shaft and supporting-rollers carried by said frame at its lower end, which rest upon said bed, a rotating dressing-roller mounted in said frame, and mechanism intermediate between said shaft and dressing-roller for imparting rotary motion to the dressing-roller.

4. In a leather-dressing machine, a reciprocating feeding-bed upon which the material to be dressed is placed, in combination with a rotating dressing-roller and a rotating spreading or smoothing roller in advance of said dressing-roller, and mechanism for rotating said rollers, whereby each roller rotates constantly in the same direction irrespective of the movement of the bed.

5. In a leather-dressing machine, a reciprocating feeding-bed and a movable frame, in combination with a rotating dressing-roller mounted in said frame and a rotating spreading or smoothing roller, also mounted in said frame in advance of the dressing-roller, and mechanism for rotating said rollers, whereby each roller rotates constantly in the same direction irrespective of the movement of the bed.

6. In a leather-dressing machine, a traveling bed and a rotating dressing-roller mounted above the same, in combination with a presser-bar located above the bed and alongside the dressing-roller, beneath which presser-bar the leather is fed before it reaches the dressing-roller, substantially as set forth, whereby the leather is prevented from curling up on the dressing-roller or from being lifted from the bed.

7. A dressing-roller and a spreading or smoothing roller located in advance of said dressing-roller, in combination with a presser-bar located between said rollers.

8. A reciprocating feeding-bed and a vertically-movable frame which is lowered when the bed feeds forward the leather and is raised during the backward movement thereof, in combination with a dressing-roller, smoothing-roller, and presser-bar, all mounted on said movable frame, substantially as set forth.

9. A buffing-roller having raised bands on its surface covered with emery, said bands consisting of broad spiral bands arranged in parallel pairs, each pair meeting in the center and extending toward the margin of the roller in opposite directions, and of short narrow bands connected with each pair of broad bands, the narrow bands extending in a direction diverging from the center of the roller partly across the spaces between adjacent broad bands, substantially as set forth.

10. In a leather-dressing machine, the reciprocating bed, the movable dressing-roller-carrying frame, and the small rollers resting on the bed and supporting the frame during the advance of the bed, in combination with tracks carried by the bed, swinging frames carried by said movable frame, rollers mounted in said swinging frames, which co-operate with said tracks, and stops upon the movable frame, which limit the motion of the swinging frames, substantially as set forth.

11. In a leather-dressing machine, the reciprocating bed B, tracks N N thereon, having opposite inclines *t u*, in combination with frame K, supporting rollers *m m*, swinging frames M M on said frame K, rollers *r r* on said swinging frames, and stops *s s* on said frame K, substantially as set forth.

12. In a leather-dressing machine, the reciprocating bed having short tracks O O at its rear end, in combination with frame K, having rollers *m m*, which ride on said tracks O O.

13. In a leather-dressing machine, the bed B and tracks N N and O O thereon, in combination with frame K, having rollers *m m* and *r r*.

14. In a leather-dressing machine, the reciprocating bed having racks on its under side, the main drive-shaft above the bed, and a cross-shaft beneath the bed having pinions which engage said racks, in combination with fast and loose pulleys on said cross-shaft, oppositely-traveling belts connecting said pulleys to said main drive-shaft, and mechanism automatically actuated by said bed for shifting said belts on said fast and loose pulleys.

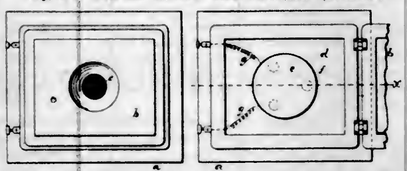
15. In a leather-dressing machine, the reciprocating bed having racks on the under side, the main drive-shaft, a cross-shaft beneath the bed having pinions which engage said racks, fast and loose pulleys on said cross-shaft, and oppositely-traveling belts connecting said pulleys to said main drive-shaft, in combination with a sliding bar on a fixed part of the machine, said bar having arms *c c*, having eyes *d d*, through which said traveling belts pass, stops carried by said reciprocating bed, and a bell-crank lever, one end of which is alternately moved in opposite directions by successive contact with said stops, the other end being connected to said sliding bar, substantially as set forth.

377,474. WINDOW-GLASS SETTING. JOHN V. AUTH, Pittsburg, Pa., assignor of one-half to Conrad Auth, same place. Filed Aug. 22, 1887. Serial No. 247,610. (No model.)



Claim.—The combination of the window-sash, grooved as described, a window-glass, the rubber tubing C, slitted longitudinally and applied to the edges of the glass, and the strips *b*, confining the rubber and glass in the groove of the sash, substantially as specified.

377,475. TELEPHONE-TRANSMITTER. JOHN F. BAHR, Jersey City, N. J. Filed Mar. 28, 1887. Serial No. 232,638. (No model.)

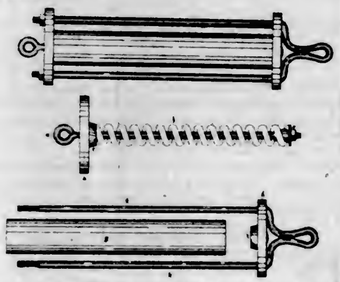


Claim.—1. The improved telephone-transmitter herein described, combining therein a box or case having a perforated cover or lid, a partition separating the interior of said box into two chambers, plates *f e*, one of which is secured to said partition and the other of which lies, under the influence of gravity, upon the first one, and is provided with projections *i*, and suitable conducting-wires, all said parts being arranged and adapted to operate substantially as set forth.

2. The improved telephone-transmitter, combining a box or case with a perforated cover, a sounding-board secured therein, a carbon plate secured upon said sounding-board, a carbon plate provided with projections and lying by gravity upon the first said plate, and conducting-wires *g g*, said parts being arranged and combined substantially as and for the purposes set forth.

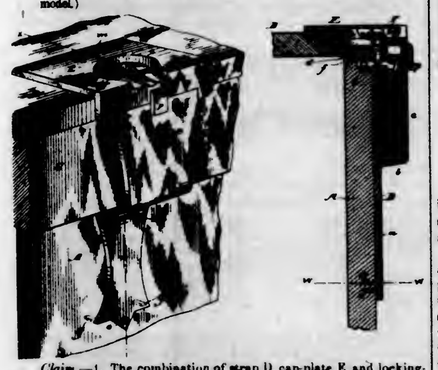
3. The improved transmitter, substantially as described, combining therein a box or case, a hinged and perforated cover, a partition secured in said box at its edges and forming upper and lower chambers, a carbon plate, *f*, secured upon said partition and having depressions *k k k*, an upper carbon plate, *e*, having contact-points *i i*, corresponding with said depressions, said plate *e* lying on said plate *f* by gravity, and conducting-wires *g g*, and an induction-coil arranged in said lower chamber, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

377,476. COMPENSATOR. WILLIAM K. BEARD and HENRY A. AUKAMP, Jr., Lancaster, Pa. Filed Sept. 10, 1887. Serial No. 249,395. (No model.)



Claim.—A plate having a loop formed on one side of it for the attachment of a signal-wire, in combination with rods extending from the outer side of said plate, another plate fastened on the other ends of said rods to complete the frame, a barrel arranged longitudinally between these plates, an endwise-movable rod arranged within said barrel, passing through the second head and provided with a wire-attaching loop outside of the same, and a retracting-spring for said rod, also within said barrel, substantially as set forth.

377,477. PACKING-CASE FASTENING. NELSON BECKWITH, Jr., Cambridge, Mass., assignor, by mesne assignments, to Capitola Pillsbury Beckwith, same place. Filed Mar. 25, 1887. Serial No. 232,367. (No model.)

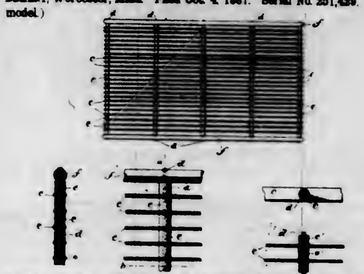


Claim.—1. The combination of strap D, cap-plate E, and locking-stud F, said strap adapted to be secured to the vertical wall of the case and to overlap the upper edge thereof and provided with an opening, *h*, to receive the lower head of the locking-stud, the cap-plate being secured to the cover and having an opening, *j*, to receive said locking-stud, the latter being formed with two heads, each at right angles to the plane of its body *q*, substantially as specified.

2. The combination, with strap D and locking-stud F, formed as specified, of cap-plate E, formed with a recess, *i*, to receive one of the heads of said locking-stud, and openings *j*, through which the locking-stud may be inserted, and a floor or bottom on which the head *s* of the locking-stud may bear, substantially as specified.

3. The combination, with strap D and locking-stud F, of the cap-plate E, formed with opening *j* and recess *i* to receive said locking-stud, and with depressions *k* and *l*, formed in the floor of said recess, to receive head *s* of said locking-stud, substantially as specified.

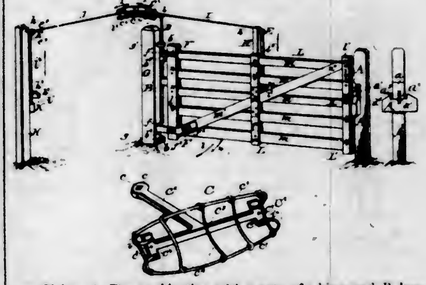
377,478. METALLIC MAT OR FLOOR-COVERING. WILLIAM O. BEMENT, Worcester, Mass. Filed Oct. 4, 1887. Serial No. 251,429. (No model.)



Claim.—1. A metallic mat or floor-covering consisting of the combination of the parallel flat strips *c*, both edges of which are rounded, a series of flexible transverse rods or wires, *d*, passing through the said strips, two outer longitudinal side strengthening-bars, *f*, larger than the transverse rods or wires *d*, and a series of sleeves on the said rods or wires *d*, between the said strips *c*, to hold the latter separated, substantially as set forth.

2. A metallic mat or floor-covering consisting of the combination of the parallel flat strips *c*, both edges of which are rounded, a series of flexible transverse rods or wires, *d*, passing through the said strips, two outer longitudinal side strengthening-bars, *f*, larger than the transverse rods or wires *d*, and a series of sleeves on the said rods or wires *d*, between the said strips *c*, to hold the latter separated, the diameter of the said sleeves being less than the width of the said strips, so that the scraping-surfaces afforded by the edges of the latter will not be interrupted, substantially as set forth.

377,479. FARM-GATE. ISAAC BURKHOLDER, Farmersville, Pa. Filed Apr. 16, 1887. Serial No. 235,132. (No model.)



Claim.—1. The combination, with a gate, of a hinge-rod, B, having two opposing cranks, b^3 and b^3, the two collars b^4 and b^5, the rigid swing-lever B', and the square end b^6, and working in the eyebolts *b* and *b'*, substantially as set forth.

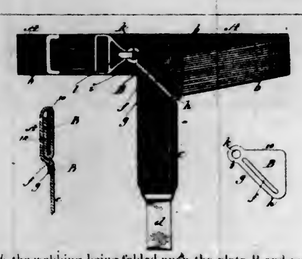
2. The combination, with a gate and hinge-rod, as described, of a T-lever and cord-rack C, having the horizontal bar c^2, the head c', pierced by the square hole *c*, the cross-bar c^2, having at its extremities the vertical cross-lugs c^4 and c^5, having the holes *i* and i^2, the two lune-shaped wires c^6 and c^7, fastened to ends of the cross-lugs c^4 and c^5 on their outer face by rivets c^8 and c^9, and the five or more curved joining-wires c^{10}, attached to the lune-shaped wires, substantially as set forth, and for the purpose described.

377,480. STOCKING-SUPPORTER. FRED P. BUTMAN, Holbrook, assignor to himself and Edward H. Fennessy, Newton, Mass. Filed Dec. 2, 1887. Serial No. 256,594. (No model.)

Claim.—1. In a stocking-supporter, the combination, with a band or piece of webbing which encircles the leg of the wearer, of a fold-plate, B, provided with a single inclined slot, *f*, the webbing being folded upon said plate and passed twice through the slot *f*, substantially in the manner and for the purpose set forth.

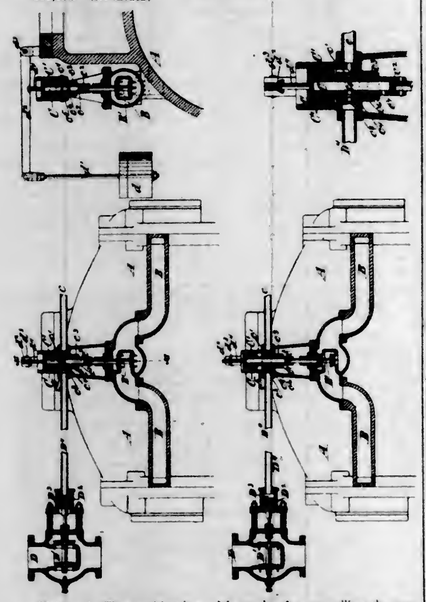
2. A stocking-supporter composed of a single piece of webbing having a hook at one end, combined with a fold-plate, B, having a single inclined slot, *f*, and an eye at one end or corner for the reception of the hook attached to the free end of the band or leg-encircling

377,480.



portion *b*, the webbing being folded upon the plate B and passed twice through the slot *f*, substantially in the manner and for the purpose set forth.

377,481. REGULATOR FOR AIR-COMPRESSORS. GEORGE R. CULLINGWORTH, New York, N. Y. Filed May 18, 1887. Serial No. 238,634. (No model.)

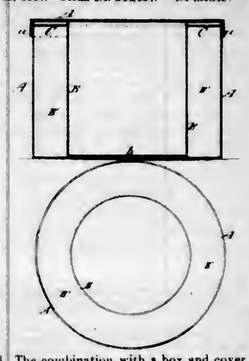


Claim.—1. The combination, with a valve for controlling the supply of steam for operating an air-compressor and an actuating-piston connected with said valve for closing it, of a valve for relieving the pressure before the main compressor-piston, a motor-piston connected with the relief-valve and arranged to be acted on by compressed air, and a valve operated by the motor-piston and serving when opened to admit compressed air to act upon the actuating-piston of the supply-valve for closing said supply-valve, substantially as herein described.

2. The combination, with a valve for controlling the supply of steam for operating an air-compressor and an actuating-piston connected with said valve for closing it, of a valve for relieving the pressure before the main compressor-piston, and a motor-piston connected with said relief-valve and arranged to be acted on by compressed air, and having a hollow rod which serves as a valve for admitting air to act upon the actuating-piston of the supply-valve for closing said valve, substantially as herein described.

3. The combination, with the steam-supply valve D′ and its actuating piston and cylinder D^2 D^3, of the passage B, for connecting the ends of a compressor-cylinder, the relief-valve B′ in said passage, the motor-piston and its hollow rod C c^3, connected with the relief-valve B′ and having the passages c^1 c^2, and the cylinder and cylinder-extension C' c^3 for said motor piston and rod, and having the passages c' c^2 and the pipes c D^4, for supplying compressed air to the motor-cylinder C′ and for conducting compressed air from the passage c^2 to the actuating-cylinder D^2 of the valve D′, substantially as herein described.

377,482. BOX FOR FURS. WILLIAM FLYNN, New York, N. Y. Filed July 12, 1887. Serial No. 244,051. (No model.)



Claim.—1. The combination, with a box and cover, of a cylinder smaller in size than the box and secured at the bottom of the box in a position substantially concentric therewith, and a support at the upper or outer end of the cylinder for holding the cylinder concentric in the box, substantially as herein described.

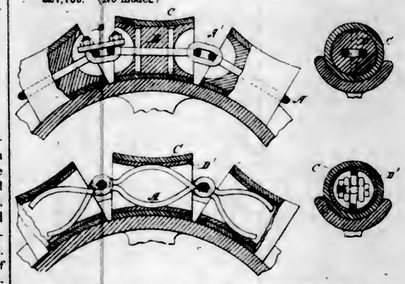
2. The combination, with the box and its cover, of a substantially cylindric muff-holder in the box, and a supporting-ring, C, adjustable on the muff-holder upward and downward in the box, substantially as herein described.

377,483. MEDICINE CUP AND STOPPER. JOHANN B. v. FURSTENWÄRTHER, Brooklyn, N. Y. Filed May 26, 1887. Serial No. 239,402. (Model.)



Claim.—The cup A, combined with the corkscrew *a*, which projects at right angles from the side of the cup, leaving the base of the cup to form a support for the same, substantially as herein shown and described.

377,484. CHAIN OR ROPE BELTING FOR DRIVING MACHINERY. MAURICE GANDY, Liverpool, England. Filed Feb. 16, 1887. Serial No. 227,769. (No model.)



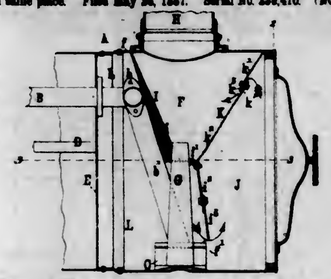
Claim.—1. A belt for driving machinery, consisting of the combination of a flexible metal band, friction-blocks attached thereto, and means, substantially as described, for permitting said blocks to tilt on said band and to accommodate themselves to the surface of the pulleys on which they run.

2. A belt for driving machinery, consisting of the combination of a flexible metal chain, formed of long and short links alternately, and friction-blocks attached thereto, all substantially as described.

3. A belt for driving machinery, consisting of the combination of a flexible metal band and friction-blocks composed of a metal shell covered with a friction-surface, substantially as described.

4. In a belt for driving machinery, the combination of a metal chain, friction-blocks attached thereto, and means, substantially as described, for limiting the longitudinal movement of said block on said band.

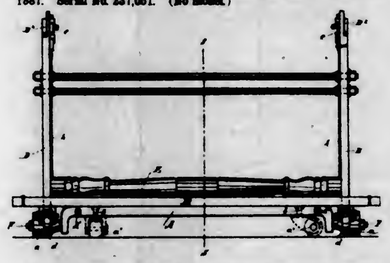
377,485. SPARK-ARRESTER. WILLIAM GILLIS, Parsons, Kans., assignor of two-thirds to William O'Herin and Charles W. Weller, both of same place. Filed May 26, 1887. Serial No. 239,410. (No model.)



Claim.—1. The combination, in a smoke-arch, of the imperforate deflection-plate, the exhaust-nozzles, and the netting K, said netting having an opening, *k*, formed by the space between the two parts of the netting, as described.

2. The combination, in a locomotive smoke-arch, of the steam-pipes, the deflection-plate and diaphragm, and the exhaust-nozzles, said diaphragm and deflection-plate starting from the top of the arch forward of said steam-pipes and extending downward and forward of them, but in the rear of the upper end of the exhaust-nozzles, thence horizontally forward past the exhaust-nozzles, and then downward toward the bottom of the smoke-arch, as described.

377,486. TRUCK. ERNST GRAETZ-Mousselerhausen, and R. FERD. REINHOLD, Neustadt, near Leipsic, Saxony, Germany. Filed May 4, 1887. Serial No. 237,051. (No model.)



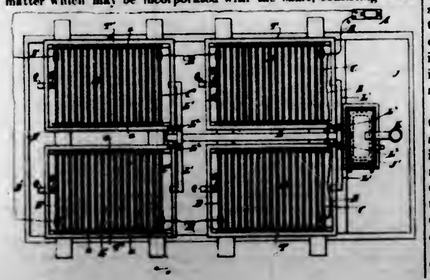
Claim.—The combination of a truck with movable platform B, levers *d*, sectional working-levers D D′, hinged at D^2, and with bolt *e*, cross-bar E, catch-bolt *f*, and connecting-wire *h*, as and for the purpose described.

377,487. PROCESS OF ELECTROLYZING COPPER. EDWARD S. HAYDEN, Waterbury, Conn. Filed Mar. 26, 1887. Serial No. 232,461. (No model.)

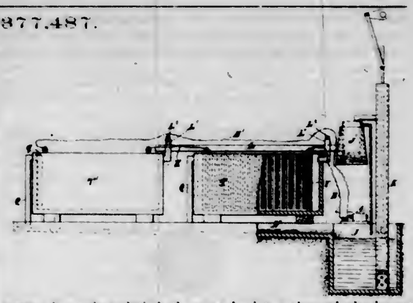
Claim.—1. The process of treating metals, consisting in rolling plates of the metal to be treated, arranging such plates in an electrolytic bath between an anode-plate and a cathode-plate without any connection between said plates which are to be treated, or between any of them and the anode or cathode plate, except through the electrolytic solution, and subjecting the plates to the action of a current of electricity, substantially as specified.

2. The process of separating from copper and like metals foreign matter which may be incorporated with the same, consisting in arranging in an electrolytic bath an anode-plate and a cathode-plate at a considerable distance apart, interposing between them one or more plates of the metal to be treated, leaving such plates unconnected electrically, except through the solution of the bath, supporting such plates above the bottom of the bath, so that the lower edge of the portions subject to electrolytic action will have nothing immediately below them, and subjecting the plates to the action of a current of electricity, substantially as specified.

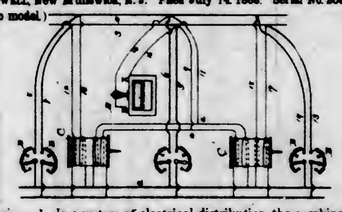
3. The process of separating from copper and like metals foreign matter which may be incorporated with them, consisting in arranging in an electrolytic bath an anode-plate and a cathode-plate, interposing between the latter one or more of the plates to be treated, leaving the same electrically unconnected, save through the solution, in gently circulating the solution from the upper to the lower portion of the bath, and in subjecting the plates to the action of a current of electricity, substantially as specified.



377,487.



377,488. SYSTEM OF ELECTRICAL DISTRIBUTION. JOHN W. HOWELL, New Brunswick, N. J. Filed July 14, 1886. Serial No. 208,021. (No model.)



Claim.—1. In a system of electrical distribution, the combination, with conductors of two feeding-circuits, of indicating-conductors extending from their outer to their inner terminals, and a differentially-wound indicating-instrument having its coils divided between the indicating-conductors of the two feeding-circuits, substantially as set forth.

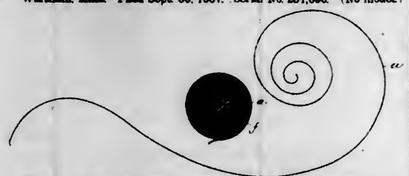
2. In a system of electrical distribution, the combination, with the conductors of two feeding-circuits, one of which is a standard circuit, of indicating-conductors extending from the outer to the inner terminals of each of the conductors of said feeding-circuits, and a four-coil differential galvanometer having one set of coils included in each of said indicating-conductors, substantially as set forth.

3. In a system of electrical distribution, the combination, with omnibus wires, a system of main or lighting conductors, and two or more feeding-circuits connecting them, of an absolute indicator of electro-motive force connected with the outer terminals of one of said feeding-circuits, (the standard circuit,) indicating-conductors extending from the outer to the inner terminal of each conductor of said standard circuit, indicating-conductors extending from the outer to the inner terminal of each conductor of each of the other feeding-circuits, and four-coil differential galvanometers, each having two coils in the indicating-wires from the standard circuit and two coils in the indicating-wires from one of the other feeding-circuits, substantially as set forth.

4. In a three-wire system of electrical distribution, the combination, with omnibus wires, a system of main or lighting conductors, and two or more feeding-circuits connecting them, of two absolute indicators of electro-motive force connected, one with the outer terminals of each side of one of said feeding-circuits, (the standard circuit,) indicating-conductors extending from the outer to the inner terminal of each of the three conductors of said standard circuit, indicating-conductors extending from the outer to the inner terminal of each of the three conductors of each of the other feeding-circuits, four-coil differential galvanometers, each having two coils in the indicating-conductors from the positive and neutral conductors of the

standard circuit and two coils in the indicating-conductors from the corresponding conductors of one of the other feeding-circuits, and other four-coil differential galvanometers, each having two coils in the indicating-conductors from the negative and neutral conductors of the standard circuit and two coils in the indicating-conductors from the corresponding conductors of one of the other feeding-circuits, substantially as set forth.

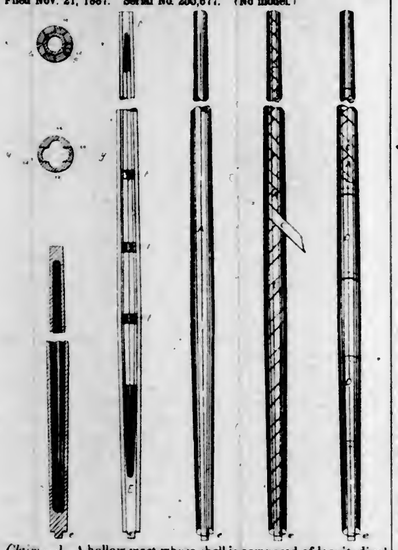
377,489. METHOD OF MAKING WATCH-SPRINGS. JOHN LOGAN, Waltham, Mass. Filed Sept. 30, 1887. Serial No. 251,090. (No model.)



Claim.—1. The improved method hereinbefore described of making mainsprings, the same consisting in coiling the steel ribbon from which the spring is to be made on an arbor of greater diameter than the barrel-arbor to which the completed spring is to be applied, then tempering it while it is so coiled, and finally coiling the spring in a reverse direction on a smaller arbor, as set forth.

2. The improved method hereinbefore described of making mainsprings, the same consisting in first partially drawing the temper of the steel ribbon from which the spring is to be made, then coiling the same on an arbor of greater diameter than the barrel-arbor to which the completed spring is to be applied, then tempering it while it is so coiled, and finally coiling the spring in a reverse direction on a smaller arbor, as set forth.

377,490. HOLLOW MAST. JAMES W. MANSFIELD, Boston, Mass. Filed Nov. 21, 1887. Serial No. 255,677. (No model.)



Claim.—1. A hollow mast whose shell is composed of longitudinal strips gouged out between the joints to form a corrugated interior, substantially as and for the purposes described.

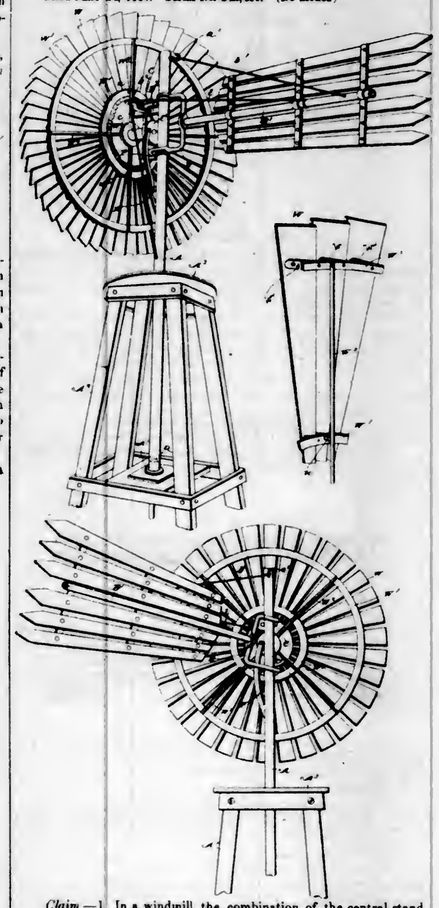
2. A hollow mast whose shell is made of a number of longitudinal strips secured together around internal supporting-rings, F F, placed at intervals in the interior of the mast, substantially as described.

3. A hollow mast whose shell is made of two or more longitudinal strips, the inside joints of which are covered with suitably-prepared strips of cloth and paper, as and for the purpose substantially as described.

4. A hollow mast consisting of a shell covered with an inner spiral coating of cloth, an outer coating of paper, and suitable water-proof material, substantially as described.

5. A hollow mast consisting of a shell covered with an inner spiral coating of cloth treated with a compound of white lead and glue, a coating of paper treated with said compound, and an outer coating of water-proof varnish, substantially as described.

377,491. WINDMILL. ARCHIBALD R. MCNITT, Hartford, Mich. Filed June 24, 1887. Serial No. 242,409. (No model.)



Claim.—1. In a windmill, the combination of the central standard, A, the yoke B, mounted thereon, having an elongated slot formed in the lower part thereof, and the support B' of the tail-vane, substantially as described.

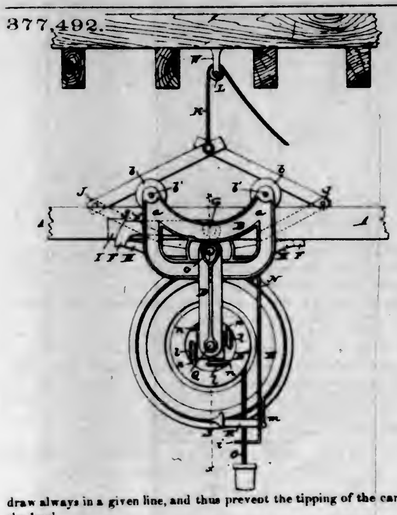
2. The combination, with the blades of the wheel, of the inner and outer rings, W', the independent projecting angularly-arranged metallic strips w', secured at their ends, respectively, to the faces of the individual blades and the said rings W', the brace arms or rods W^2, having their outer ends secured to the outer ring W' and their inner ends secured to the hub of the wheel, and the posts w, connecting the inner ring W' to an intermediate point of the said rods W^2, substantially as described.

3. The combination, with the standard A, of the U-shaped yoke C, connected at its ends to the standard, and formed at its center with a bearing, c, the wheel having its shaft journaled in said bearing, the U-shaped tilting yoke B, having its ends connected to the standard A, the lower end being loosely attached thereto, and the vane bar or arm supported by the yoke B, as set forth.

377,492. HAY OR GRAIN ELEVATOR. EDWIN D. MEAD, Shortsville, N. Y. Filed Apr. 18, 1887. Serial No. 235,220. (No model.)

Claim.—1. In combination with a car or carriage, a windlass carried thereby, consisting of two parts, one movable within the other, whereby the rope wound upon the movable portion may be caused to

377,492.



draw always in a given line, and thus prevent the tipping of the car by the load.

2. In a hay loader and unloader, the combination, with a fixed rail or track, of a car movable thereon and provided with rigid depending arms D, and a windlass or drum suspended from the arms, substantially as and for the purpose set forth, whereby the windlass is adapted to maintain at all times a given position, regardless of the rising and falling of the car in traversing the track.

3. In combination with a rail or track, as A, a car or carriage consisting of side frames, a, provided with wheels or rollers b, a cross bar or plate, C, journaled in said frames, hangers D, carried by the plate C, and a drum or windlass carried by the hangers D, all substantially as described and shown

4. In combination with a car, as B, a compound windlass suspended therefrom and consisting of drums E E', concentric with each other, the drum E' being movable within and relatively to the drum E, substantially as shown and described, whereby the hoisting-rope O is caused to draw always from a point at or about the center of the car, substantially as set forth.

5. In combination with a car adapted to traverse a rail or track a drum, E, carried by a shaft or axle suspended from the car, a post, P, carried by the drum E, and a hollow drum, E', mounted and movable upon the post P, substantially as shown.

6. In combination with a car, a drum, E, suspended therefrom and provided with an axle-post, P, having rollers *l*, and a hollow drum, E', provided with ribs *n* to rest and travel upon said rollers.

7. In combination with a car, as B, hangers D, extending downward therefrom, a cross bolt or shaft, Q, connecting said hangers, a drum, E, provided with a central post or stem, P, and having a ratchet-rim, *o*, a dog, T, pivoted to a portion of the car and adapted to engage with the ratchet-rim, a hoop or rim, S, fitting and free to move a limited distance upon the smooth rim of drum E and provided with an arm, N, in engagement with the pawl T, a guide carried by said rim or hoop, a hollow drum, E', mounted and movable upon post P, and a hoisting-rope, O, attached to drum E and passing downward through the guide, substantially as shown and described.

8. In a car for hay elevators and carriers, the combination of independent side plates, a cross-plate journaled therein, and a windlass suspended from said cross-plate, substantially as set forth, whereby each of the side plates is enabled to move independently of the other and of the windlass and thus to accommodate itself to any irregularities in the track or rail.

9. The combination of a car, as B, hangers D, extending downward therefrom and connected by a cross rod or bolt, Q, a drum, E, mounted and free to rotate upon said rod or bolt, and provided with a ratchet-rim, a dog, T, arranged to engage with said ratchet-rim, a hoop or ring, S, mounted and free to rotate a limited distance upon the smooth rim of said drum, and an arm, U, carried by said hoop and engaging with the dog T, whereby the rotation of the ring or hoop in one direction is caused to lift the dog out of engagement with the ratchet-rim, and its rotation in the other direction is caused to throw the dog into engagement therewith, substantially as explained.

10. In a hay elevator and carrier, the combination, with a car, of a windlass consisting of two sections connected one with the other, substantially as described, whereby they are caused to rotate in unison, but one is permitted to move longitudinally relatively to the other.

11. In combination with car B and drum E, suspended therefrom, drum E', longitudinally movable relatively to drum E, a hoop or ring, S, mounted loosely upon the rim of drum E, and a guide carried by said hoop or ring and adapted to receive the hoisting-rope O.

12. In combination with a rail or track, as A, a car, as B, movable upon said rail or track, locking-bars F, pivoted to said rail or track, locking-levers H, carried by the car and arranged to rise between and engage with the locking-bars F, a plate, C, pivoted in the car B and extending beneath the levers H, and a lifting-rod extending from said plate downward to a point below the car and encircling the hoisting-rope, whereby the locking-levers may be drawn out of engagement when the load is elevated to or nearly to the car.

13. In combination with a supporting rail or track and with a car having locking-levers to hold the car at a given point on said track, locking-bars pivoted to the rail or track and arranged to be carried into or out of position between the ends of the locking-levers, substantially as shown, whereby when the carriage is locked in position it is prevented from moving in either direction.

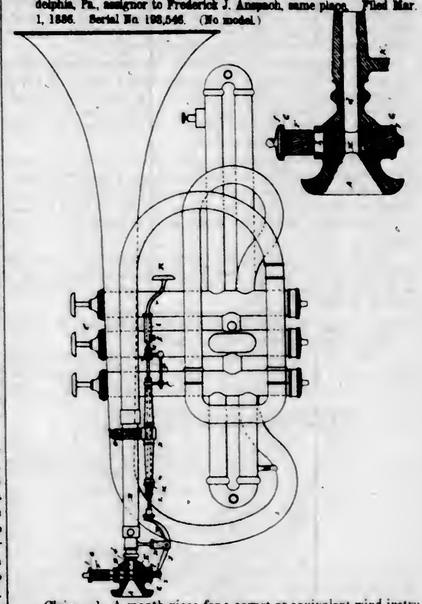
14. In combination with a rail or track, A, and with a car, as B, provided with hoisting mechanism, locking-bars F, pivoted to the supporting rail or track and separated a distance at their inner ends, and locking-levers H H, carried by the car and arranged to rise between and engage with the bars F, substantially as shown, whereby the car when locked in position is prevented from moving in either direction.

15. In combination with a rail or track, as A, and a car, as B, provided with hoisting mechanism and with locking-levers, as H, locking-bars F, pivoted to the rail or track A and provided with projecting arms F', levers J, pivoted to the track or rail and engaging with the arms F', and a lifting-cord, K, connected with the levers J, whereby said levers, and with them the locking-bars, may be raised to permit the release of the car.

16. In combination with rail A, provided with blocks I, locking-bars F, slotted at one end to receive a pivot, G, and curved at their opposite ends to conform to the curvature of the blocks I.

17. In combination with a rail and a car mounted movably thereon, hangers D, extending downward from said car, a drum, E, carried by said hangers and provided with a ratchet-rim, and a dog, T, provided with a series of teeth and arranged to engage with the ratchet-rim, substantially as set forth.

377,493. TREMOLO FOR CORNETS. CHARLES MEISTER, Philadelphia, Pa., assignor to Frederick J. Anspach, same place. Filed Mar. 1, 1886. Serial No. 193,546. (No model.)



Claim.—1. A mouth-piece for a cornet or equivalent wind-instru-

ment, provided with a valve to interrupt the current of air and produce pulsations, in combination with a key to reciprocate said valve, whereby the effects of double and triple tonguing and tremolo may be mechanically obtained, substantially as and for the purpose specified.

2. A mouth-piece for a cornet or equivalent wind-instrument, provided with a valve having a series of orifices or apertures to interrupt the current of air and produce pulsations, in combination with a key to reciprocate said valve, whereby the effects of double and triple tonguing and tremolo may be mechanically obtained, substantially as and for the purpose specified.

3. A mouth-piece for a cornet or equivalent wind-instrument, provided with a valve having two or more orifices or apertures of different sizes or areas to interrupt the current of air and produce pulsations, in combination with a key to reciprocate said valve, whereby the effect of double and triple tonguing and tremolo may be mechanically obtained, substantially as and for the purpose specified.

4. A mouth-piece for a cornet or equivalent wind-instrument, provided with a valve to interrupt the current of air and produce pulsations, whereby the effects of double and triple tonguing and tremolo may be mechanically obtained, in combination with a finger piece or key to reciprocate said valve, substantially as and for the purpose specified.

5. A mouth-piece for a cornet or equivalent wind-instrument, provided with a valve to interrupt the current of air and produce pulsations, whereby the effects of double and triple tonguing and tremolo may be mechanically obtained, in combination with the body portion of the cornet and a finger piece or key to reciprocate said valve, having an extension whereby it is brought to the forward part of the cornet, substantially as and for the purpose specified.

6. A mouth-piece for a cornet or equivalent wind-instrument, provided with a valve to interrupt the current of air and produce pulsations, whereby the effects of double and triple tonguing and tremolo may be mechanically obtained, in combination with the body portion of the cornet and a finger piece or key to reciprocate said valve, having an adjustable extension whereby it is brought to the forward part of the cornet, substantially as and for the purpose specified.

7. A cornet having the usual tone-valves and provided with an auxiliary wind-interrupter in the mouth-piece to admit the air to the valves in pulsations, substantially as and for the purpose specified.

8. A cornet having its mouth-piece provided with a loose valve mechanism for changing the area of the wind-passage and a key to rapidly reciprocate said valve, substantially as and for the purpose specified.

9. The cornet-body, in combination with the extension-section B, the mouth-piece A, having a reciprocating valve, a support, K, removably clamped to the cornet, and a reciprocating rod working in said guide to operate the valve and provided on its end with a finger-piece, substantially as and for the purpose specified.

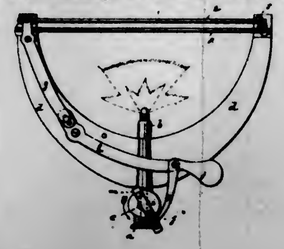
10. The cornet-body, in combination with the extension-section B, the mouth-piece A, having a reciprocating valve, a support, K, removably clamped to the cornet, a reciprocating rod working in said guide to operate the valve and provided on its end with a finger-piece, and stops upon said rod to limit its movement in either direction, substantially as and for the purpose specified.

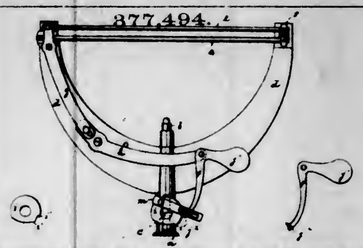
11. The cornet-body, in combination with the extension-section B, the mouth-piece A, having a reciprocating valve, a support, K, removably clamped to the cornet, and a reciprocating rod adjustable as to its length and working in said guide to operate the valve and provided on its end with a finger-piece, substantially as and for the purpose specified.

12. The combination of the cornet mouth-piece A, having the valve F, lever T, to move said valve in one direction, and a spring to move said valve in the other direction, substantially as and for the purpose specified.

377,494. GAS-BURNER. PHILIPP MEISSEN, New York, N. Y. Filed May 16, 1887. Serial No. 238,310. (No model.)

Claim.—1. The combination of a gas-burner with bracket *d*, and with a number of expansible rods, *e*, located above the burner-tip, and with the lever, controlling valve or cock, the rods *e* being pivotally

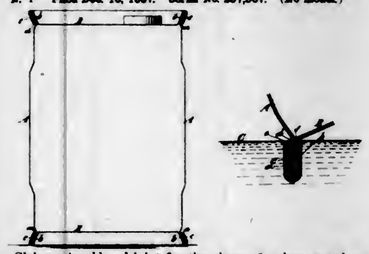




connected to each other, and being also pivotally connected to the bracket and to the lever, and with the weighted pawl *j*, pivotally connected to the lever, and with a disk, *i*, on the gas-controlling cock, said disk having a nose, *i'*, adapted to automatically disengage from the pawl *j*, substantially as specified.

2. The combination of a gas-burner with a bracket, *d*, and with an expansible rod, *e*, above the burner-tip, and with the levers *g h*, pivotally connected to such rod, and with a weighted pawl, *j*, pivotally connected to lever *h*, and having a pin, j^3, and with a disk, *i*, on the gas-supply cock, and having nose *i'*, and with the slotted plate *m* on disk *i*, the disk *i* being engaged by the pawl *j*, and the slotted plate *m* being engaged by pin j^3, substantially as specified.

377,495. SHEET-METAL CAN. HERMAN MILLER, New York, N. Y. Filed Dec. 10, 1887. Serial No. 257,507. (No model.)



Claim.—A soldered joint for the plates of a sheet-metal vessel in which both plates have their marginal portions folded, and the folded portion of one is placed within that of the other, and in which the edges of both plates are presented at the outside of the joint, substantially as herein described.

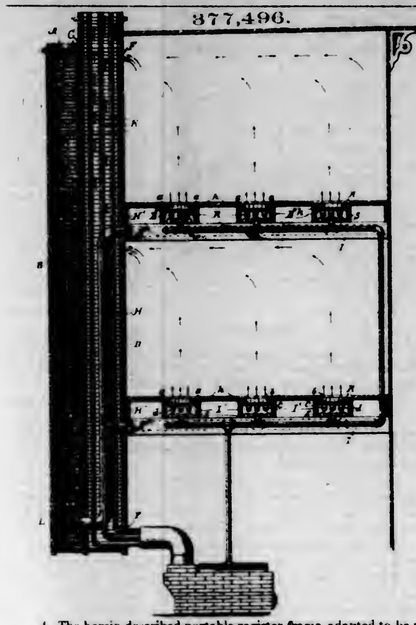
377,496. SYSTEM OF WARMING AND VENTILATING BUILDINGS. GILBERT B. MORRISON, Kansas City, Mo. Filed June 20, 1887. Serial No. 241,845. (No model.)

Claim.—1. The combination, with a building, of a chimney provided with an exit-shaft for foul air and an inlet-shaft for fresh air which is separate from said exit-shaft, said inlet-shaft having a downward draft, substantially as described, one or more fresh-air tubes located in said exit-shaft and in communication with the inlet-shaft, a radiating pipe or pipes, also located in said exit-shaft, and conveying-pipes between said fresh-air tube or tubes and the rooms to be warmed, substantially as specified.

2. The combination, with a building, of a chimney provided with an exit-shaft and an inlet-shaft, one or more fresh-air tubes located in said exit-shaft and having their lower ends connected to said inlet-shaft, conduits located beneath the floor of the rooms to be warmed, said conduits provided with passages for conveying the air from the upper portion of said rooms into said exit-shaft, and connections, substantially as described, between said fresh-air tube or tubes and the conduits located beneath the floor of the rooms to be warmed, and radiating pipe or pipes, also located in said exit-shaft, substantially as specified.

3. The combination, with a building, of a chimney provided with an exit-shaft and an inlet-shaft, one or more fresh-air tubes located in said exit-shaft and connected with the inlet-shaft, a lower series of floor-joists, a main conduit for receiving air from the inlet-shaft of said chimney located in the space between said joists and extending parallel therewith, another series of joists resting upon the first mentioned at right angles thereto, a conduit or conduits located in the space between the upper series of joists and extending transversely to the main conduit and connected thereto, passages leading from said transverse conduits and opening into the rooms to be warmed, a passage or passages opening from the top of the room or rooms into the said exit-shaft, and heat-radiating pipes located in said exit-shaft and extending the full length thereof, substantially as specified.

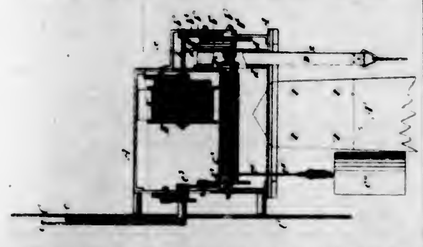
377,496.



4. The herein-described portable register-frame, adapted to be removably secured in the floor of a building, consisting of a framing-plate provided with exit-opening, a supporting-flange by means of which the frame is supported in position, and a number of hollow receptacles which depend from the under surface of the frame and which are provided with transverse apertures for the passage of air, as set forth.

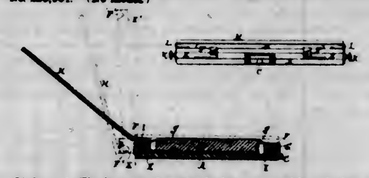
5. The register-frame R, constructed of cast-iron, with flange *a*, by means of which it is supported, and having hollow receptacles *c*, which depend from the under surface of said frame, and which are provided with transverse apertures *d*, located in the sides of the receptacles some distance above their bottom, said frame having slits or openings *b*, which connect the interior of the said receptacles with the air of the room, substantially as specified.

377,497. RAILWAY TIME-SIGNAL. JOHN F. K. O'CONNOR, Yonkers, N. Y. Filed May 19, 1887. Serial No. 238,715. (No model.)



Claim.—The combination, with a time-movement and a rotary stop or detent, as finger b^6, operated continuously thereby, of a free-running second movement having a dial and two hands, and a single driving device, as a weight, and a stop, as pin or projection d', in the path of the stop of the first movement, a resistance device for preventing the operation of the free-running movement, a track lever or device to be secured at the side of the track, and connections through which the track lever or device, when depressed by the wheels of a car, operates to relax or remove the resistance device and permit the instant and free operation of the second movement until it is arrested by the stop pin or projection d' striking against the stop or detent of the time-movement, substantially as herein described.

377,498. METHOD OF PHOTOGRAPHIC PRINTING IN FATTY INKS. CLAUDE RAYMOND, Paris, France. Filed Mar. 7, 1887. Serial No. 229,901. (No model.)



Claim.—1. The improved method of photographic printing which consists in coating a flexible supporting-sheet with gelatine, sensitizing the gelatine, exposing the sensitized sheet to the action of light, desensitizing the exposed sheet, stretching the same over an impression-block, and printing therefrom with fatty inks.

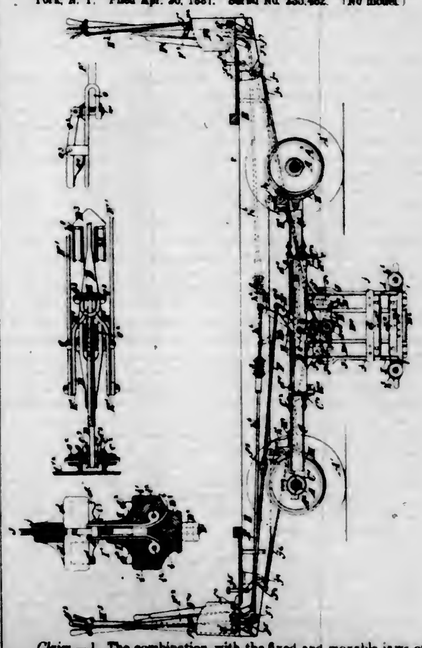
2. The improved method of photographic printing which consists in exposing a flexible sheet coated with sensitized gelatine, washing and swelling the same, drying it sufficiently, stretching it while in a damp condition over a printing-block, and printing from it with fatty ink.

3. The improved method of photographic printing which consists in exposing a sensitized flexible gelatinized sheet, washing and drying it, spreading a dampened absorbent material over an impression-block, stretching the gelatinized printing-sheet over said absorbent, whereby it is kept moist, and printing from it with fatty ink.

4. The improved photo-ink-printing apparatus consisting of the combination of a bottom board, a stretching-frame, and an impression-block mounted on said board within said frame, with its upper surface projecting above the plane of the flexible sheet stretched therein, and with fastenings for holding said frame and board.

5. The combination of a bottom board, an impression-block mounted thereon, a stretching-frame, in two parts, fitting over said block, fastenings for joining said parts together and for holding said frame to the board, a removable bar applied across the rear of said frame, and a lid hinged to said bar.

377,499. CABLE-RAILWAY GRIP. JOHN H. ROBERTSON, New York, N. Y. Filed Apr. 20, 1887. Serial No. 235,462. (No model.)



Claim.—1. The combination, with the fixed and movable jaws of a cable-grip, of a lever and connections for operating the movable jaw, and a movable fulcrum-support for the lever, whereby the lever

and movable jaw may be moved by the fulcrum-support to bring the said jaw into gripping relation to the cable before the jaw is applied by the operation of said lever to grip the cable, substantially as herein described.

2. The combination, with the fixed and movable jaws of a cable-grip, of a lever and connections for operating the movable jaw, a movable fulcrum-support for said lever, and a ratchet-and-pawl lock for said lever, whereby the lever will be held to prevent its swinging on its fulcrum when the fulcrum-support is moved, substantially as herein described.

3. The combination, with the fixed and movable jaws of a cable-grip, of a grip-lever and connections for operating the movable jaw, and a second lever having a cam-shaped slot receiving the fulcrum of the grip-lever and which by its movement serves to shift the grip-lever and move the grip-jaw into gripping relation to the cable, substantially as herein described.

4. The combination, with the fixed and movable jaws of a cable-grip, of a grip-lever and connections for operating the movable jaw, the frame F^3, having slots f^3, in which the fulcrum f of said lever may slide, the lever F^4, having cam-shaped slots f^4, also receiving the grip-lever fulcrum, and a lock whereby the grip-lever may be fixed in the frame at a point above its fulcrum, substantially as herein described.

5. The combination, with a movable grip-jaw and its operating-lever, of the rod F or F', through which said jaw is moved by the lever, the said rod being forked at o, and having the spring-actuated joint-pin o', whereby provision is afforded for disconnecting the lever from the movable jaw, substantially as herein described.

6. The combination, with the head D of the grip-frame and the movable grip-jaw, of the lever E, pivoted in said frame-head and having an arm, e', connected by a rod, e^3, for moving said jaw, the levers E', straddling the frame-head and connected at one end with the lever E, the rods F F', extending, respectively, from the common joint of the levers E E' and from the opposite ends of the levers E', and grip-levers at opposite ends of the car, and with which the rods F F' are connected, substantially as herein described.

7. The combination, with the axles of a car and a frame supported in fixed relation thereto and provided with the removable horizontal guides d^3, of a grip-frame depending from and movable laterally between said guides, and the buffers e', for holding said grip-frame in central position, substantially as herein described.

8. The combination, with a main grip-frame carrying a fixed jaw, of a movable jaw and the lifting-plate and cross-head through which it is operated, and a rod or link connected with the cross-head and having an automatic take-up device for compensating for wear in the jaws, substantially as herein described.

9. The combination, with the movable jaw of a cable-grip and the lifting-plate and cross-head for operating said jaw, of a link or rod for operating the cross-head, an eccentric-pin whereby said link or rod is connected with the cross-head, and which carries a ratchet-wheel, and a pawl upon the grip-frame, which serves, when the cross-head is raised sufficiently, to engage the ratchet, substantially as herein described.

10. The combination, with the fixed and movable jaws of a cable-grip and a head, D^3, carrying the lower jaw, of a throw-off lever pivoted in said head to swing in a vertical plane transverse to the line of cable, and the lifting-connection attached to the said throw-off lever at a point inward of the pivot connecting it with the head, and by which the said lever may be swung upon its pivot, said pivot remaining in fixed position on the head, substantially as herein described.

11. The combination, in a double cable-grip, of a head carrying the lower jaw, the throw-off levers I, movable in said head, and the rods I', whereby said throw-off levers are operated, substantially as herein described.

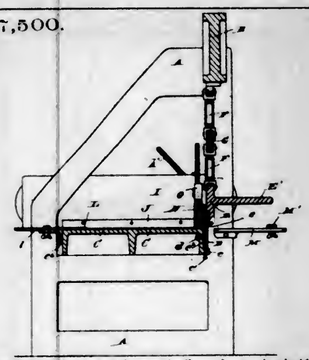
12. The combination, in a cable-grip, of a head carrying the lower jaw, throw-off levers pivoted in said head at opposite ends of the jaw to swing in vertical planes transverse to the line of cable, the three-armed levers J', having crow-connections j^3, and connected by rods J I' with the throw-off levers, and connections from opposite ends of the car to said three-armed levers, substantially as herein described.

377,500. **POWER SHEARING-MACHINE.** LONGLEY L. SAGENDORPH and GEORGE C. KENNE, Cincinnati, Ohio, assignors of one-third to Harlan P. Lloyd, same place. Filed Oct. 24, 1887. Serial No. 253,186. (No model.)

Claim.—1. In a shearing-machine, the bed-plate carrying a suitable knife on the side thereof and means, substantially as set forth, for vertical and lateral adjustment of said knife, in combination with a vertical reciprocating knife adapted to operate at right angles to said laterally-adjustable knife on the bed-plate, and mechanism, substantially as described, for operating said vertically-reciprocating knife, substantially as set forth.

2. In a shearing-machine, the bed-plate C, having knife D suitably secured thereto and capable of vertical adjustment, frames A, and bolts c^2, for lateral adjustment of said bed-plate and knife attached

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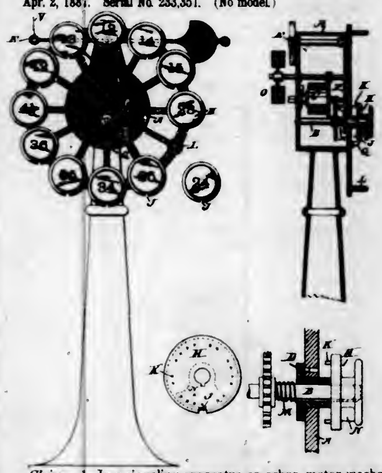
thereto, in combination with a vertically-reciprocating knife, c, adapted to operate at right angles to knife D, substantially as specified.

3. In a shearing-machine, the bed-plate C, having knives D and D' suitably secured thereto and capable of vertical adjustment, frames A, and bolts c^2, for lateral adjustment of knife D, in combination with the vertical reciprocating knives c and J, substantially as set forth, and for the purposes specified.

4. In a shearing-machine, the combination of frames A, bed-plate C, having knife D' attached thereto and capable of vertical adjustment, bar I, having knife J suitably secured thereto, and eccentric K, operating in the recess i in said bar, substantially as set forth.

5. In a shearing-machine, the bed-plate C, having knife D attached thereto and capable of vertical and lateral adjustment, in combination with frames A, guides c', bar E, having knife c, toggle-arms F, bar G, beam B, arm g, and eccentric H, and mechanism, substantially as described, for rotating said eccentric, for the purposes set forth.

377,501. **FIRE-ALARM.** JAMES W. SEE, Hamilton, Ohio. Filed Apr. 2, 1887. Serial No. 233,351. (No model.)



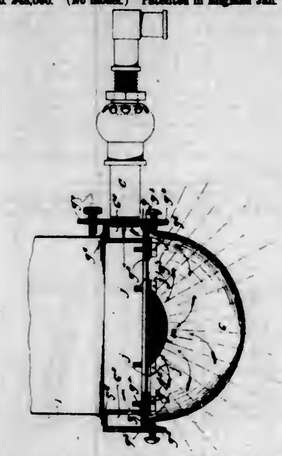
Claim.—1. In a signaling apparatus, an arbor, motor mechanism to revolve the arbor, a trigger-disk fitted to revolve with the arbor and to be moved endwise with reference thereto and provided with a circular series of tappets, a trigger mechanism presenting a tappet end in the path of said tappets and arranged to operate the releasing device of alarm mechanism, and a clutch arranged to normally restrain the rotation of the arbor and be released by the endwise motion of the trigger-disk, combined and arranged for operation substantially as and for the purpose set forth.

2. In a signaling apparatus, an arbor, motor mechanism arranged to revolve the arbor, a trigger-disk provided with a series of tappets and with a notch arranged to be revolved by the arbor and to move endwise with reference thereto, a fixed hook to pass such notch in the trigger-disk and to prevent retreat, except when notch and hook coincide, a clutch to normally restrain the rotation of the arbor and arranged to be disengaged by the endwise motion of the trigger-disk, and a trigger mechanism arranged to be operated by the tappets on the trigger-disk, combined and arranged for operation substantially as and for the purpose set forth.

3. In a signaling apparatus, the combination of a trigger, one or more arbors, motor mechanism arranged to revolve such arbor or arbors, and a series of numbered trigger-disks provided with tappets fitted to engage and operate said trigger and fitted for endwise motion, and a clutch fitted to normally restrain said arbor or arbors against rotation and to be disengaged by the endwise motion of one of said trigger-disks upon its arbor, combined and arranged for operation substantially as and for the the purpose set forth.

4. In a fire-alarm apparatus, the combination of a signal-sounding mechanism, a trigger-cord arranged to cause such mechanism to give one signal-sound for each actuation of the cord, a trigger-arm placed in connection with such cord and arranged to be actuated by tappets on a trigger-disk, and a series of trigger-disks bearing designative numbers and provided with designative groups of tappets and arranged for alternative use, substantially as and for the purpose set forth.

377,502. **INCANDESCENT GAS-BURNER.** JOHN S. SELLON, Hatton Garden, County of Middlesex, England. Filed Aug. 27, 1887. Serial No. 248,060. (No model.) Patented in England Jan. 25, 1887, No. 1,150.



Claim.—1. A lamp or burner provided with a perforated or reticulated gauze or incandescent placed above a chamber having transparent sides or walls, and provided with an inlet for air and gas, substantially as described.

2. A lamp or burner comprising a chamber having transparent sides or walls, inlets for air and gas to said chamber, a chimney, and a gauze or reticulated piece of refractory material placed across the opening from said chamber to said chimney, substantially as described

3. The combination of the globe of glass, the annular mixing-chamber communicating therewith, and the gauze or incandescent placed across the top of the chamber inclosed by said globe, substantially as described.

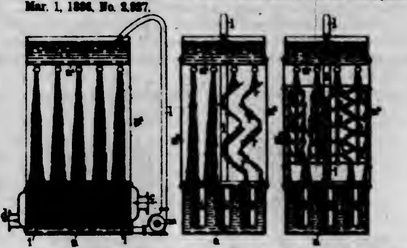
377,503. **SHOE-NAIL.** LAWRENCE STEPHENS, St. Louis, Mo., assignor of two-thirds to Alston L. Ryland, same place, and Charles D. Moody, Webster Groves, Mo. Filed Oct. 15, 1887. Serial No. 252,471. (No model.)



Claim.—1. The herein-described shoe-nail formed of a single piece of metal, tapering as described, its head bent at right angles to the body, and wider at the outer end than where it unites with the nail-body.

2. The combination of the nails A, each having its head a widest at its outer end, a^2, and bent at right angles to the tapering body a', with the heel B, whereby the heel is provided at its outer edge with a metallic protection.

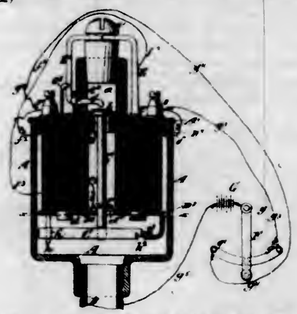
377,504. **APPARATUS FOR CONDENSING AND COOLING PURPOSES.** EDUARD THEISEN, Cologne, Prussia, Germany. Filed Apr. 4, 1887. Serial No. 233,575. (No model.) Patented in Germany July 26, 1885, No. 37,250; in France Oct. 1, 1885, No. 171,436, and in England Mar. 1, 1886, No. 2,927.



Claim.—1. The combination, with the vessel a and the elevated vessel a', for containing cooling liquid, of hollow vessels i within and passing through the vessel a, for containing the liquid to be cooled, a pump and pipes for transferring the liquid from the vessel a up into the vessel a', and mechanism, substantially as specified, connected to the under side of the vessel a', whereby its contents are discharged downwardly in a finely-divided state through the air, and are thereby cooled and fall into the vessel a, substantially as set forth.

2. The combination, with the vessel a and the elevated vessel a', for containing cooling liquid, of hollow vessels i within and passing through the vessel a, for containing the liquid to be cooled, a pump and pipes for transferring the liquid from the vessel a up into the vessel a', spray roses or faucets upon the under side of the vessel a', and plates located between the vessels a a', whereby the contents of the vessel a' are discharged downwardly in a finely-divided state and temporarily arrested by the plates and cooled in passage through the air, and finally fall into the vessel a, substantially as specified.

377,505. **ELECTRIC GAS-LIGHTING BURNER.** LE ROY S. WHITE, Waterbury, Conn., assignor to the Electrical Appliance Manufacturing Company, same place. Filed Sept. 20, 1887. Serial No. 250,176. (No model.)



Claim.—1. In an electric gas-lighting burner, electro-magnets, a gas-valve, and an armature connected with said valve and having provision for both vertical and lateral movement, the said magnets and armature being combined to produce by the energizing of one or all of the magnets both a vertical and lateral movement of translation of the armature, and a catch or stop for holding the armature raised and the gas-valve open, substantially as herein described.

2. In an electric gas-lighting burner, the combination, with two magnet-coils and cores connected to form a horseshoe-magnet, of two electrodes or contact-pieces for producing a spark, an electric circuit including both coils and the electrodes or contact-pieces, and having a branch connected with it between the coils, an armature and its connected gas-valve, and a catch or stop for holding the armature in an elevated position with the gas-valve open, substantially as herein described.

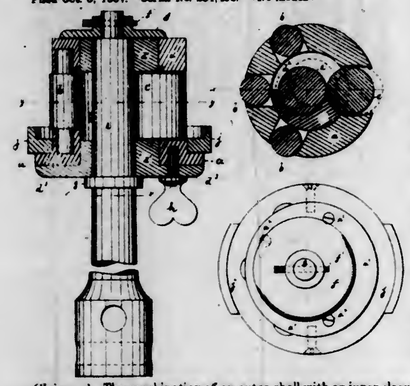
377,506. **COUPLING FOR BOILERS, TANKS, &c.** JAMES J. WHITE, Brooklyn, N. Y. Filed May 26, 1887. Serial No. 239,385. (No model.)



Claim.—1. The combination, with a boiler or analogous article, of a nipple made in one integral piece and comprising a flange, a portion adjacent to the flange adapted to interlock with the boiler or other article through a hole therein, and provided with a notch adjacent to the flange, substantially as specified.

2. The combination, with a boiler or analogous article, of a nipple made in one integral piece and comprising a flange and a notch adjacent to the flange, and a nut engaging with said nipple, substantially as specified.

377,507. **PIPE-EXPANDER.** HERRMANN WOJAN, Brooklyn, N. Y. Filed Oct. 5, 1887. Serial No. 251,496. (No model.)

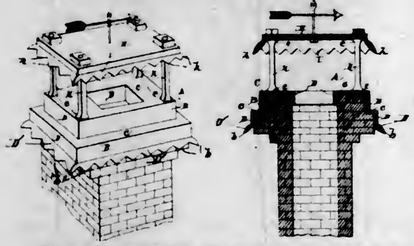


Claim.—1. The combination of an outer shell with an inner sleeve eccentrically bored, and with a mandrel passing through said sleeve, and with a sliding roller, substantially as and for the purpose specified.

2. The combination of outer shell, *a*, carrying rollers *b*, with the eccentrically-bored sleeve *d*, and with the mandrel *e* and sliding roller *c*, the sleeve *d* having disk *d*', provided with eyes *i*, and with set-screw *h*, substantially as specified.

3. The combination of shell *a* with eccentrically-bored sleeve *d* cut away at its center, and with fixed rollers *b*, sliding roller *c*, mandrel *e*, and gage-plate *j*, substantially as specified.

377,508. **CHIMNEY-TOP.** WILLIAM W. WEBSTER, Willink, N. Y. Filed Oct. 17, 1887. Serial No. 252,609. (No model.)

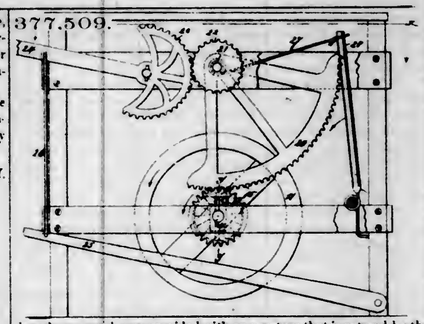


Claim.—The combination, with the chimney-top having the step-like formation at top, of the cap consisting of the horizontal offsets C, the walls B, the flange D, and the flange D', provided with the teeth *b*, the hood H, provided with the flange I, having the teeth *h* overhanging the lower offset C, and the standards K, provided with the upper and lower circumferential shoulders *c c*, and the tapped ends outside of said shoulders engaging nuts, respectively, on the upper side of the hood and the lower side of the cap, substantially as specified.

377,509. **MECHANICAL MOVEMENT.** ABRAHAM L. AKINS, Larimer's Station, Pa. Filed June 8, 1887. Serial No. 240,635. (No model.)

Claim.—1. The combination, with a shaft carrying a disk formed with a toothed face, of a loosely-mounted block carrying a pawl that is arranged to engage said toothed-face disk, a loosely-mounted gear formed with an aperture that is entered by a stem from the pawl, and a means, substantially as described, for moving the gear, as and for the purpose stated.

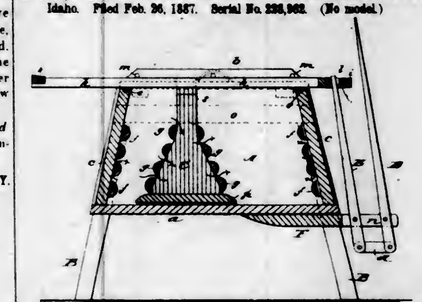
2. The combination, with a shaft, of a toothed-face disk, a loosely-mounted block, a pawl mounted upon said block and formed with a stem, the pawl being arranged to engage the toothed-face disk, a



loosely-mounted gear provided with an aperture that is entered by the pawl-stem, a segmental gear which engages the apertured gear, a means for advancing the segmental gear, and a means for automatically returning the same, substantially as described.

3. The combination, with a shaft, 10, carrying a balance-wheel, 11, and a disk, 12, formed with teeth 13, of a shaft, 14, carrying a loosely-mounted block, 16, and a loosely-mounted gear, 15, a pawl, 17, formed with a stem, 2, which enters an aperture, 3, in the gear 15, said pawl being carried by the block 16 and arranged to engage the disk 12, a segmental gear, 20, a shaft, 21, upon which said gear is mounted, a cord, 27, connected to said shaft, a spring-arm, 28, to which the cord 27 is also connected, a gear, 22, and a segmental gear, 23, which engages the gear 22 and is provided with a handle, substantially as described.

377,510. **WASHING-MACHINE.** JEREMIAH RIDDOCH, Moscow, Idaho. Filed Feb. 26, 1887. Serial No. 228,962. (No model.)



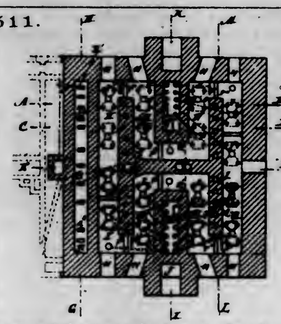
Claim.—In a washing-machine, the combination, with the tub and a reciprocable pounder therein, of the frame *k i k*, provided with a mortise, *l*, in one of its cross-bars, centrally mounted upon the heads of the pounder and adapted to be reciprocated between the sides and over the ends of the tub, upright double levers E D, pivotally connected to a support projecting longitudinally from beneath the tub and adapted to be engaged with the mortise in said frame, as and for the purpose set forth.

377,511. **BRICK-KILN.** JACOB BÜRRER, Constance, Baden, Germany, assignor of one-half to Frank R. Van de Velde, Henry J. Van de Velde, and Bernard F. Van de Velde, all of Cleveland, Ohio. Filed July 21, 1886. Serial No. 208,685. (No model.)

Claim.—1. The combination, in a brick-kiln, of gas-generators J' K', gasometers L' M', combustion-chambers I II III IV V VI VII VIII, apertured partitions *r*', separating the several chambers, gas-burners 16 in the several chambers, valves for controlling the supply of gas to the gas-burners, conduits for furnishing a draft from each chamber through series of smoke-conduits leading from smoke-slots in the chamber-floors to a smoke-collecting channel, air-ducts for supplying heated air to the ignited gas-burners, air-duct for receiving heated air from the several chambers, and valves for controlling the smoke and air ducts, substantially as shown and described.

2. The combination, in a brick-kiln, of gas-generators J' K', gasometers L M, combustion-chambers I II III IV V VI VII VIII, apertured partitions *r*', separating the several chambers, gas-burners 16 in the several chambers, valves for controlling the supply of gas to the gas-burners, means, substantially as described, for furnishing a draft from each chamber to the smoke-chimney, air-ducts for supplying heated air to the ignited gas-burners, air-ducts for receiving the heated

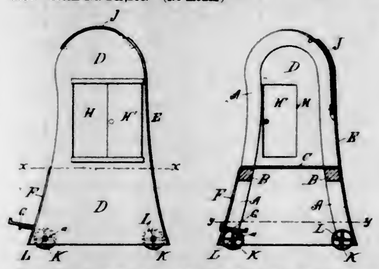
377,511.



air from the several chambers, valve for controlling the smoke and air ducts, and the drying-apartments 1° 2° 3° 4° 5° 6° 7° 8°.

3. A kiln provided with the double combustion-chambers I I' and II II', series of air-ducts leading from air-slots in the combustion-chamber floors to a main air-flue, smoke-slots in the combustion-chamber floors, air-pipes *d* and *n*, located above the combustion-chamber arches, and the coil *c*' in the smoke-collecting chamber R, substantially as shown and described.

377,512. **CHAIR.** ANNIE BUNN, Birdsborough, Pa. Filed July 2, 1887. Serial No. 243,268. (No model.)

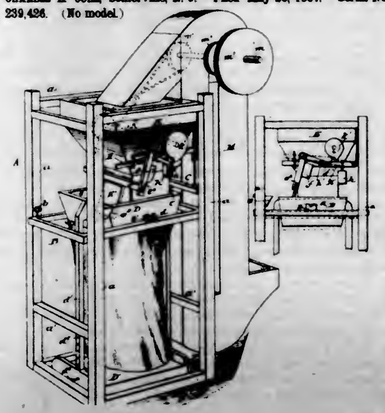


Claim.—1. A chair composed of the main side pieces or frames, A, cross-pieces B B, seat C, back and side inclosing-walls, D E, and the sliding top or cover J, substantially as described.

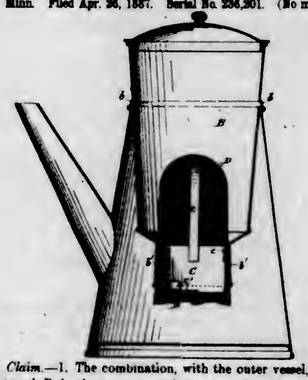
2. The chair composed of the main side pieces or frames, A, cross-pieces B, seat C, and back and side walls, D, the latter provided with the openings H and doors or panels H', substantially as described.

3. The side pieces or frames, A A, connected together by the cross-pieces B B, and inclosed and provided with the seat C, in combination with the shafts L, wheels K, and pins *a*, for locking the wheels, substantially as described.

377,513. **DEVICE FOR WEIGHING AND SACKING GRAIN.** CHARLES E. COLE, Somerville, N. J. Filed May 26, 1887. Serial No. 239,426. (No model.)



377,514. **COFFEE-POT.** HARRY R. CORNISH, Blue Earth City, Minn. Filed Apr. 26, 1887. Serial No. 236,201. (No model.)



Claim.—1. The combination, with the outer vessel, A, of the inner vessel, B, having a cover at its upper end and a conical neck, *b*', at its lower end, the diameter of the neck being greatest at its lowest end, the strainer-frame *c c*, passed upward through the neck into the vessel B, and the fabric D upon the said frame, a coffee-receiving space being formed between the inner side of the vessel and the strainer, substantially as set forth.

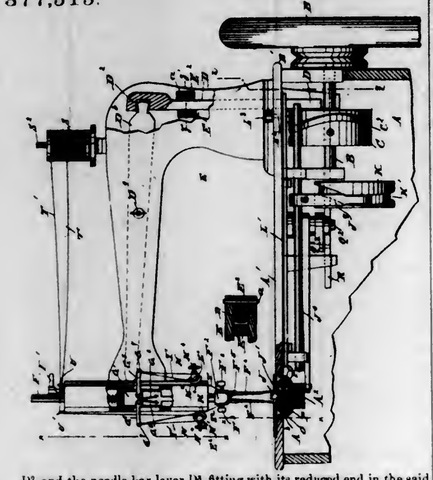
2. The combination, with the inner vessel tapering toward its lower end and the neck *b*', leading from the smaller end of the said vessel and of greatest diameter at its lower end, of the straining-frame comprising the ring C, passed upward into the neck and provided with upward-extending bowed arms *c*, entering the vessel, and with the cross-bar *c*', substantially as set forth.

377,515. **SEWING-MACHINE.** EMILIO QUEROL Y DELGADO, Brooklyn, N. Y., assignor to himself, JAMES WRIGHT, ELIAS DURLACH, and MORRIS BOOKMAN, all of same place. Filed Jan. 21, 1887. Serial No. 225,084. (No model.)

Claim.—1. In a sewing-machine, the combination, with the needle-bar carrying two needles, of a partition having a transverse and a vertical slot, a cross-head traveling in the said transverse slot, two shuttle-carriers secured to the said cross-head, a shuttle in each of the said carriers, and a feed-dog held in the said vertical slot in the partition between the said shuttle and the said needle, and means for actuating the shuttle-carriers and feed-dog, substantially as shown and described.

2. In a sewing-machine, the bed-plate A' and the arm E, having the removable cover E', in combination with the main shaft B, journaled in bearings on the said bed-plate A', the cam-wheel C, having on one face a cam-groove, C', the upright arm D, having its bearing in the said bed-plate and in the said arm E, and provided with the socket

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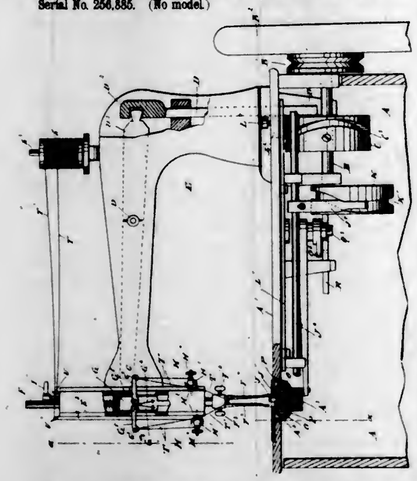


D^2, and the needle-bar lever D^3, fitting with its reduced end in the said socket D^2, substantially as shown and described.

3. In a sewing-machine, the combination, with the bed-plate provided with ways on its under side, of a cross-head held to slide in the said ways, shuttle-carriers secured to said cross-head, a sliding bar, a bell-crank lever connected to said cross-head and sliding rod, and a cam for operating the sliding rod, substantially as herein shown and described.

4. In a sewing-machine, the shuttle-carriers O, the shuttles P, supported in the said shuttle-carriers O, the cross-head N, supporting the said shuttle-carriers, and the partition A^3, having a slot, A^3, in which travels the said cross-head N, in combination with the bell-crank lever Q, connected by one arm with the said cross-head N, the sliding bar R, pivotally connected with the other arm of the bell-crank lever Q, and the cam-wheel C, secured to the main shaft B, and having the cam-groove C^3, in which operates the pin R' of the said sliding bar R, substantially as shown and described.

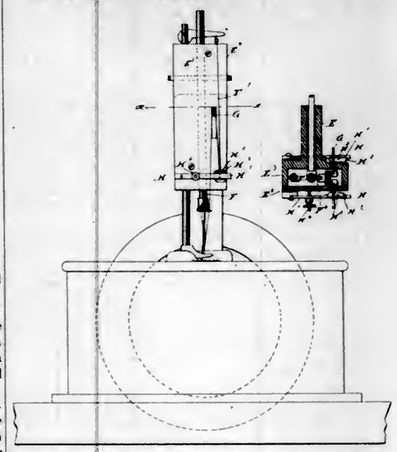
377,516. TAKE-UP FOR SEWING-MACHINES. EMILIO QUEROL Y DELGADO, Brooklyn, N. Y., assignor to himself, James Wright, Elias Durlach, and Morris Bookman, all of same place. Filed Dec. 3, 1887. Serial No. 256,885. (No model.)



Claim.—1. The combination, with the needle-bar F, having the lug F^4, of the upright rod G', having the lug G^3, against which operates the said lug F^4, the spring G^4, operating on the said rod G', the take-up arms G^2, pivoted on the said rod G' and having on their outer ends the eyes G^5, and the tension-springs G^6, holding the said take-up arms in position, substantially as described.

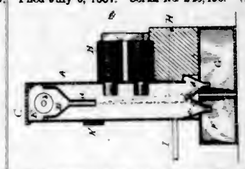
2. The combination, with the rod G' and means for reciprocating the same, of the arms G^2, pivoted to said rod G', and each provided with an eye in its free end, and the springs G^6, secured to the said rod G', and having their free ends bearing upon the pivoted ends of the said arms G^2, substantially as described.

377,517. TENSION FOR SEWING-MACHINES. EMILIO QUEROL Y DELGADO, Brooklyn, N. Y., assignor to himself, James Wright, Elias Durlach, and Morris Bookman, all of same place. Filed Dec. 3, 1887. Serial No. 256,886. (No model.)



Claim.—The combination, with the head of a sewing-machine, of the spring-plate H', secured to the said head and having its free end half-round, and the correspondingly-shaped head H^2, secured to the sewing-machine head and receiving the half-round end of the spring-plate H', the said head H^2 being provided with the notch H^3 in its upper edge, substantially as shown and described.

377,518. MAGNETIC SEPARATOR. THOMAS A. EDISON, Llewellyn Park, N. J. Filed July 6, 1887. Serial No. 243,490. (No model.)



Claim.—1. In a magnetic separator, the combination of a closed air-chamber, feeding devices at the top of the chamber and receptacles at the bottom, and a magnet for altering the trajectory of falling magnetic particles in said chamber, substantially as set forth.

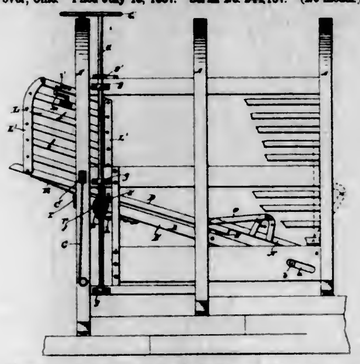
2. The method of separating magnetic from non-magnetic materials, consisting in causing the mingled materials to fall past the poles of a magnet in a closed chamber from which a portion of the air has been removed, whereby the trajectory of the magnetic material is altered, substantially as set forth.

3. In a magnetic separator, the combination of a closed chamber from which a portion of the air is exhausted, feeding devices at the top of the chamber and receptacles at the bottom, and a magnet for altering the trajectory of falling magnetic particles in said chamber, substantially as set forth.

4. In a magnetic separator, the combination, with the horizontally-placed magnet, of the narrow straight-sided feeding-passage above said magnet, whereby the material is delivered past the poles of said magnet in a thin stream, substantially as set forth.

5. In a magnetic separator, the combination, with the feeding-passage, of the magnet below the same on one side, and an opposing magnetic device on the other side of said passage, substantially as set forth.

377,519. STOCK-LOADING CHUTE. JARED C. FERGUSON, Hanover, Ohio. Filed July 13, 1887. Serial No. 244,187. (No model.)



Claim.—1. In a chute for loading and unloading railway-cars, a floor-supporting framing hinged at its rear end to the lower rear portion of the chute, and mechanism, as described, for raising and lowering the free end of the framing, in combination with a longitudinally-movable floor resting on the framing and mechanism for moving the floor, all constructed, arranged, and operating substantially as set forth.

2. In a chute for loading and unloading railway-cars, a floor-supporting framing hinged at its rear end to the lower rear portion of the chute, and mechanism, as described, for raising and lowering the free end of the framing, a longitudinally-movable floor resting on the framing, and mechanism, as described, for operating the same, in combination with a rear gate hinged at its bottom to the lower part of the chute and connected by suitable arms with the movable floor, all constructed, arranged, and operating substantially as set forth, whereby when the floor is drawn within the chute the gate will be raised and close the chute, and when said floor is moved out to communicate with a car the gate will be lowered and form a continuation of the floor.

3. In a chute for loading and unloading railway-cars, the vertical adjustable framing B, having trunnions *b b* at its rear end, mounted in the inclined slotted bearings *a a* and provided with rollers *b' b'*, and the longitudinally-movable floor D, resting on the rollers *b' b'*, provided at its forward end with the adjustable side gates, L L, in combination with the rear closing gate, N, hinged at its bottom to the lower rear part of the chute and having the brackets *n n*, and the arms O O, connecting the floor with the brackets *n n*, all constructed, arranged, and operating substantially as shown and described.

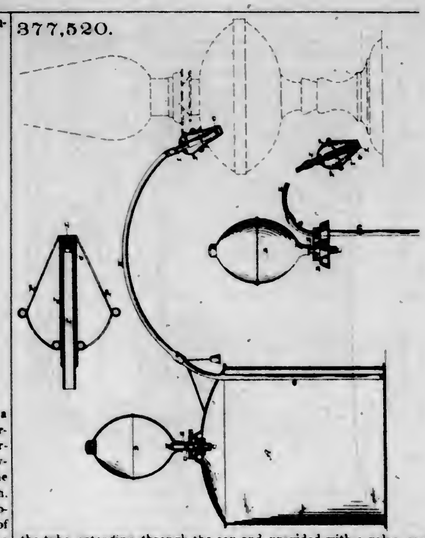
4. In a chute for loading and unloading railway-cars, the forward posts, A' A', having notches *a' a'*, the vertically-adjustable framing B, having trunnions *b b* at its rear end, mounted in the inclined slotted bearings *a a*, and the locking-latch I, having the bent ends *i i* and shank *i'*, in combination with the longitudinally-adjustable floor D, having on its under side the spring-bolt K, engaging with the shank of the locking-latch I, all constructed, arranged, and operating substantially as shown and described.

5. In a chute for loading and unloading railway-cars, the vertically-adjustable framing B, hinged at its rear end to the lower rear part of the chute and supporting the longitudinally-movable floor D, in combination with the chains C C, secured to the forward end of the framing and passing over the pulleys C' C', and secured at their other ends to the horizontal shaft C^3, having on one end the bevel-pinion *c'*, and the vertical shaft *c*, having on its lower end the bevel-pinion c^4, engaging with the pinion *c'*, all arranged and operating substantially as shown and described.

6. In a chute for loading and unloading railway-cars, the vertically-adjustable framing B, having trunnions *b b* at its rear end, mounted in the inclined slotted bearings *a a*, the shaft F, mounted in bearings in the framing and having on one end the bevel-pinion *f*, the vertical shaft G, having the locking pawl and ratchet *g'*, and the bevel-pinion H, sliding and keyed on the shaft G and held in engagement with the pinion *f* by the arm *h*, secured to the framing, in combination with the longitudinally-adjustable floor D, having the chains E E' secured to its opposite ends, the other ends of said chains being secured to and winding in opposite directions around the shaft F, all constructed, arranged, and operating substantially as shown and described.

377,520. GASOLINE-CAN. WILBUR W. HUTCHINS, Newport, Vt. Filed Nov. 21, 1887. Serial No. 255,804. (Model.)

Claim.—1. The combination of the can, the tightly-fitting cap, the tube extending through the cap and provided with a valve, and adapted at its outer end to receive the bulb, the valve being adapted to close from the pressure of air within the can, and thus retain the air whether the bulb is removed or not, substantially as shown.

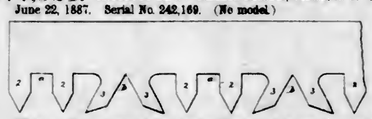


2. The combination of the can provided with an outlet-pipe, G, the flexible tube, the pipes I J, and the springs connected to the pipes, one of the pipes being provided with a plug to close the end of the other pipe and with openings through which the oil escapes, substantially as described.

3. The combination of the oil-can provided with an outlet-pipe, G, the flexible tube connected to the outer end of the pipe G, the metallic pipe I, the pipe J, which fits over the outer end of the pipe I and provided with escape-openings, the plug L, placed in the outer end of the pipe J, and the springs, which are secured to the two pipes, and which are adapted to be compressed by being forced into the opening in the lamp, substantially as set forth.

4. A lamp-filling attachment for oil-cans, consisting of the combination of the cap, a valved air-pipe extending through it, an air-compressor which can be attached to the pipe, an outlet-pipe for the oil secured to the cap, a flexible tube, the metallic pipes I J, and the springs connected to the pipes, substantially as specified.

377,521. CROSSCUT-SAW. PIERSON JACOBUS, Varick, N. Y. Filed June 22, 1887. Serial No. 242,169. (No model.)



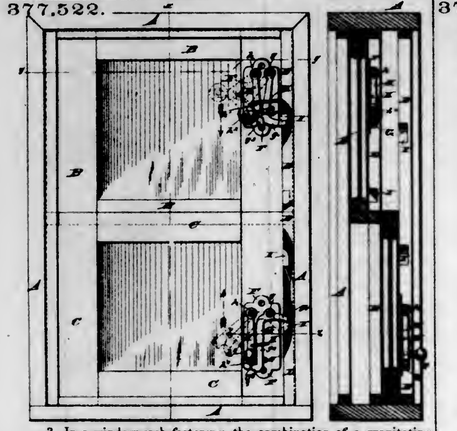
Claim.—A crescent-saw having cutting-teeth, in combination with cleaning or chisel teeth, the chisels being arranged in pairs, the two teeth of each pair slanting in opposite directions, and the side edges of each chisel-tooth being straight and parallel, substantially as shown, and for the purpose specified.

377,522. SASH-FASTENER. JEROME B. KESTER, Clarksburg, W. Va. Filed Sept. 9, 1887. Serial No. 249,264. (No model.)

Claim.—1. A window-sash fastening comprising a gravitating latch pivoted to the sash and adapted to a notch or detent at the window-frame and provided at its pendent part with a shoulder, a gravitating lock pivoted to the window-sash and adapted to overlie the latch-shoulder, and a bridge or catch on the lock allowing it to be withdrawn from the latch-shoulder before acting on the latch to disengage it from the window-frame, substantially as herein set forth.

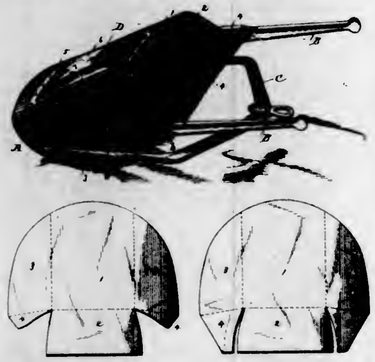
2. The combination, in a sash-fastener, of a plate, F, a gravitating latch, G, pivoted thereto and having an arm, *g'*, adapted to a notch or detent at the window-frame, and provided also with a shoulder, *g''*, a lock, H, pivoted to the plate F and adapted to the latch-shoulder *g''*, and a bridge, K, having a catch, *k*, allowing the lock to be disengaged from the latch-shoulder before disengaging the latch from the window-frame, substantially as herein set forth.

377,522.



3. In a window-sash fastening, the combination of a gravitating latch, G, pivoted to the sash and provided with an arm, g', and a shoulder, g^2, a lock, H, pivoted to the sash and adapted to the latch-shoulder, g^2, a bridge, K, held to the lock and having a catch, k, allowing the lock to be disengaged from the latch-shoulder before disengaging the latch from the window-frame, and a stop, J, limiting the movements of the latch and lock, substantially as herein set forth.

377,523. EARTH-SCRAPER. WILBER E. KILBORN, Sidney, Ohio. Filed Nov. 5, 1887. Serial No. 254,407. (No model.)



Claim.—1. In an earth-scraper, a scoop whose bottom, sides, and back are bent or struck up from a single metal blank, the sides being curved upward from the bottom the entire length of the scoop, and provided with integral wings for securing and re-enforcing the back, said wings varying in width from their upper to their lower ends, for the purposes set forth.

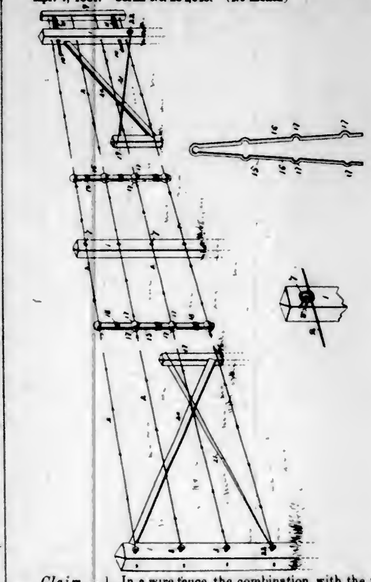
2. In an earth-scraper, a scoop whose bottom, sides, and back are struck up from a single metal blank, the sides being provided with integral wings for re-enforcing the back, said wings meeting midway of the upper portion thereof, substantially as described.

3. The combination, with the scoop, of a single broad concave runner struck up from a sheet of metal, said runner having attaching-flanges in a plane above that of the working-surface, and being wider at its front end than at its rear end, for the purposes set forth.

4. The combination, with the scoop, of a single broad concave runner struck up from a sheet of metal, said runner being wider at its front end than at its rear end, and having rounded sides, for the purposes set forth.

5. The combination, with the scoop, of a single broad concave runner struck up from a sheet of metal, said runner wider at its front end than at its rear end, formed with rounded sides, and having attaching-flanges in a plane above that of the working-surface, all as described, and for the purposes stated.

377,524. WIRE FENCE. JAMES KIRK, Sandusky, Ind. Filed Apr. 7, 1887. Serial No. 234,015. (No model.)

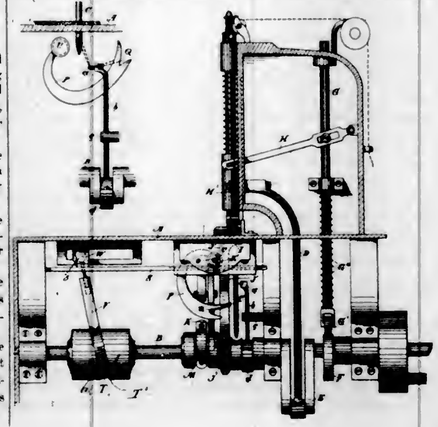


Claim.—1. In a wire fence, the combination, with the posts and the strands 2, of spools 3, held to turn in the end posts, provided with a circular head, 3^a, integral members 4, and a slotted wedge, 5, intervening said members, adapted to hold the wire, and a bar, 6, passing through said end posts and between the members of said spool, substantially as shown and described.

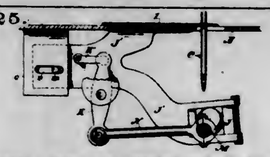
2. In a wire fence, the combination, with the posts 1 and the strands of wire 2, and vertical stay-rods 15, embracing and spacing the several strands 2, of spools 3, held to turn in the end posts, provided with a head, 3^a, integral members 4, a slotted wedge, 5, intervening said members, a bar, 6, passing through said end posts and between the members of the spool, and lap-rings 7, adapted to secure the several strands to the intermediate posts, substantially as shown and described.

377,525. SEWING-MACHINE. MORRIS LACHMAN, San Francisco, Cal., assignor to the Commercial Overseaming Sewing Machine and Manufacturing Company, same place. Filed Oct. 7, 1886. Serial No. 215,631. (No model.) Patented in England Jan. 25, 1887, No. 1,113.

Claim.—1. A vertically-reciprocating thread-carrying needle above and a semicircular or curved hook or needle fixed to a shaft



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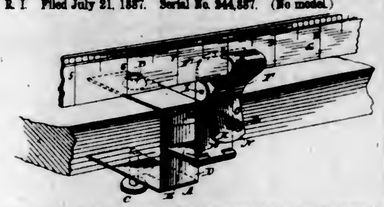


beneath the table, a pinion upon said shaft, and a horizontally-reciprocating rack engaging said pinion, so as to cause it and the shaft to rotate backward and forward, in combination with the grooved enlargement T, the arm V, and the ball-and-socket-joint connection with the rack S, substantially as herein described.

2. The vertically-reciprocating thread-carrying needle moving through the table from above, a hook having a double point and notch at its outer end and fixed to a shaft beneath the table, with mechanism for partially rotating said shaft, so as to alternately carry the hook from below the table through the thread of the reciprocating needle to a point above the edge of the fabric while the vertical needle is carried upward, so as to allow the point of the needle to again pass through the thread-loop before entering the fabric, and returning the hook to a point beneath the table while the vertical needle is again passed downward, in combination with the arm a and means, comprising the shank b, oscillating stud c, and crank d, whereby it engages and holds the bight of the thread-loop while the hook is passing above the table and releases it when the stitch is formed, substantially as herein described.

3. In a feed mechanism for sewing-machines, an arm or bar formed of a single piece having one end slotted to slide upon a guide-pin beneath the table and the opposite end divided into two diverging branches, one of which carries the feed-bar, while the other is fitted to a cam for elevating and depressing said arm, in combination with a centrally-fulcrumed lever and links by which the opposite ends of the same are connected, respectively, with the sliding bar and with an eccentric by which the horizontal motion is produced, as herein described.

377,526. HOLDER FOR YARD-STICKS. MAX LEVY, Newport, R. I. Filed July 21, 1887. Serial No. 244,887. (No model.)



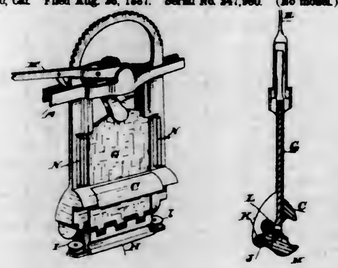
Claim.—1. A holder for yard-sticks, consisting of a U-clamp, an arm projecting laterally from the yoke thereof, and a gripper hinged to said arm, substantially as described.

2. The combination of a counter, a fixed laterally-projecting arm, E, and a yard-stick gripper hinged to swing vertically on and to said arm, substantially as described.

3. In a holder for yard-sticks, the combination of a hinged gripper, a support for the same, and a catch arranged to automatically engage the gripper and hold the same upright, substantially as described.

4. In a holder for yard-sticks, the combination, with the jaw-lever H', of a swinging gripper and a support for said gripper, and a catch therefor consisting of a spring-arm having a slot, N, approached by bevels O, substantially as described.

377,527. CABLE-RAILWAY GRIP. DAVID S. MACKEY, San Francisco, Cal. Filed Aug. 26, 1887. Serial No. 247,960. (No model.)

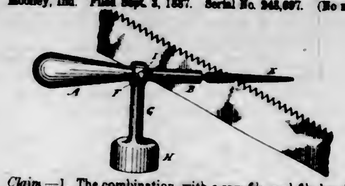


Claim.—1. In a cable-railway grip, the upper stationary jaw and the guides supported from the car, the movable slide moving between said guides and having the lower gripping-jaw hinged to its lower end, in combination with the quadrant-shaped curved slots at the lower end of the frame, and the fulcrum-rod extending through the edge of the movable jaw and into these slots in which it travels, substantially as herein described.

2. The lower movable jaw of a cable-grip having one angle hinged to the vertically-moving slide by which it is opened and closed, in combination with a traveling fulcrum-rod or pins in the outer angle and the quadrant-shaped slots in the stationary portion of the frame within which said fulcrum-rod travels when the grip is opened or closed, substantially as herein described.

3. The lower movable jaw of a cable-grip having one angle hinged to the vertically-moving slide, the fulcrum-rod or pins extending from the outer angle into the curved guide-slots in the stationary portion of the frame, in combination with the roller L, journaled in the frame and bearing against the rear portion of the movable jaw, substantially as herein described.

377,528. SAW-FILE-ADJUSTING WEIGHT. WILLIAM MOORE Mooney, Ind. Filed Sept. 3, 1887. Serial No. 248,697. (No model.)

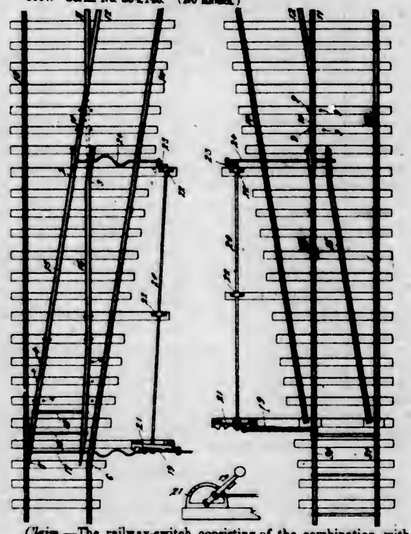


Claim.—1. The combination, with a saw-file and file-handle, of a pendent weight, substantially as described.

2. The combination, with the file E and handle A, provided with the ferrule B, of the pendent weight H, provided with the shank G, the eye F, and thumb-screw I, substantially as described.

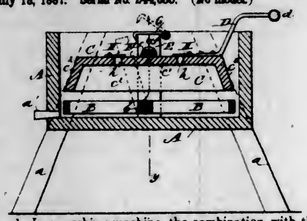
3. As a new article of manufacture, an attachment for file-handles, consisting of the weight H, provided with the shank G, having an eye, F, to receive the file-handle, and with a thumb-screw, I, for securing it in position on the handle, as set forth.

377,529. FROGLESS SWITCH. FRANK NEELANDER, Appleton, assignor of one-half to Fred C. Pestin, Van Dyne, Wis. Filed Apr. 6, 1887. Serial No. 234,146. (No model.)



Claim.—The railway-switch consisting of the combination, with the main-line track or rails, the intermediate main-line rail-section, and the intermediate siding rail section, of the auxiliary rail connecting with either of said intermediate rail-sections, the operating-lever connected to a rod, and the S-shaped crank-connections connected to the said intermediate rail-sections, substantially as and for the purpose set forth.

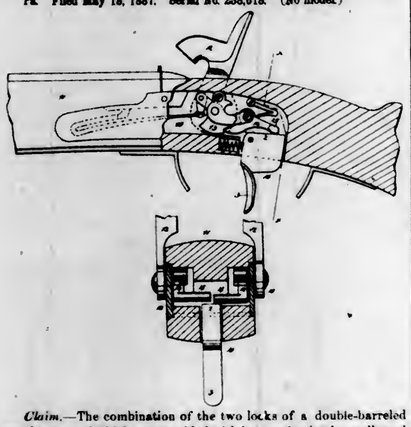
377,530. WASHING-MACHINE. MARVIN NEWTON, Girard, Pa. Filed July 18, 1887. Serial No. 244,635. (No model.)



Claim.—1. In a washing-machine, the combination, with the tub or tank, of the hollow rocking presser journaled therein and provided with valves in its closed upper end, substantially as set forth.

2. The combination, in a washing-machine, of a tub, a rocking rack or open bottom journaled therein, a rocking presser journaled in the tub above the rocking bottom and made hollow at the under side and provided with air-holes and valves closing said holes to induce suction, and means for rocking the presser and bottom, substantially as described, for the purposes set forth.

377,531. LOCK FOR FIRE-ARMS. JACOB NICELY, Enon Valley, Pa. Filed May 18, 1887. Serial No. 238,618. (No model.)



Claim.—The combination of the two locks of a double-barreled gun, the sears of which are provided with lugs projecting inwardly and arranged in different planes, and a trigger centrally located in the stock between the locks, substantially as shown and described, whereby provision is made for releasing either of the hammers or both in rapid succession, as set forth.

377,532. CAR-COUPLING. EDWARD A. OLMSTEAD, Buffalo, N. Y. Filed Oct. 12, 1887. Serial No. 252,129. (No model.)

Claim.—1. A body center plate formed with a central recess defined by a central flange, 22, said flange being adapted to enter an eye formed at the inner end of one of the draw-bar cage-plates.

2. A body center plate formed with a recess, 23, a flange, 22, studs 28, annular recesses 26, and other recesses, 27, substantially as described.

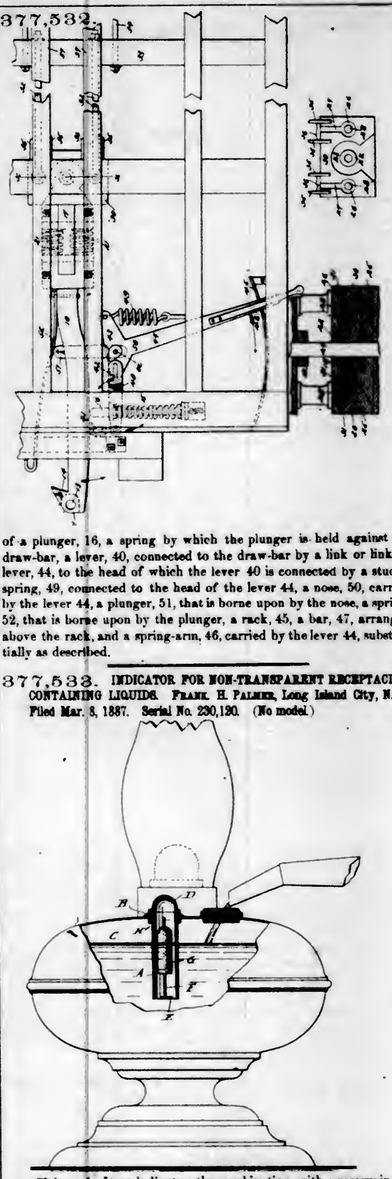
3. A body center plate provided with flanges that are connected by webs and formed with recesses adapted to receive tie-bars, and studs adapted to enter eyes formed in said tie-bars, and a central recess defined by a central flange, substantially as described.

4. The combination, with a draw-bar provided at its inner end with cage-plates, of a body center plate provided with a central flange, said flange being adapted to enter an eye formed at the inner end of one of the draw-bar cage-plates, substantially as described.

5. The combination, with the body center plate formed with recesses 26 and 27 and studs 28, of the tie-bars 32, provided at their ends with eyes, said eyes being adapted to receive the studs 28, substantially as described.

6. The combination, with a draw-bar, of a forwardly-extending spring, 52, connected thereto, a lever, 40, connected to the draw-bar by a link or links, 41, a lever, 44, to which the lever 40 is connected, a nose carried by the lever 44, and a plunger, 51, arranged in connection with the nose and with the spring 52, substantially as described.

7. The combination, with a draw-bar formed with a hooked end,



of a plunger, 16, a spring by which the plunger is held against the draw-bar, a lever, 40, connected to the draw-bar by a link or links, a lever, 44, to the head of which the lever 40 is connected by a stud, a spring, 49, connected to the head of the lever 44, a nose, 50, carried by the lever 44, a plunger, 51, that is borne upon by the nose, a spring, 52, that is borne upon by the plunger, a rack, 45, a bar, 47, arranged above the rack, and a spring-arm, 46, carried by the lever 44, substantially as described.

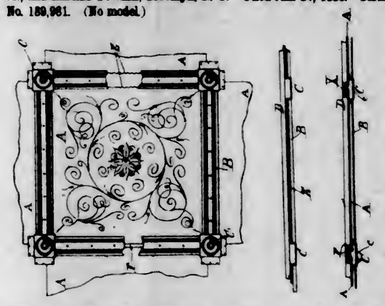
377,533. INDICATOR FOR NON-TRANSPARENT RECEPTACLES CONTAINING LIQUIDS. FRANK. H. PALMER, Long Island City, N. Y. Filed Mar. 8, 1887. Serial No. 230,120. (No model.)

Claim.—1. In an indicator, the combination, with a reservoir and a downwardly-extending tube within said reservoir having perforations near its upper end, of a rod held centrally in said tube, a float adapted to slide freely on said rod, and a transparent cover secured to the top of said tube, substantially as shown and described.

2. In an indicator, the combination, with a reservoir and a downwardly-extending tube within said reservoir having perforations near its upper end, of a cross-piece secured to the lower open end of the tube, a rod extending centrally upward from said cross-piece, a float adapted to slide freely on said rod, and a transparent cover secured to the top of said tube, substantially as shown and described.

3. The combination, with a reservoir, of a tube secured to the top of said reservoir and extending inwardly in the same, a transparent cover secured to the top of said tube, extending beyond the top of the reservoir, and a float adapted to slide freely in said tube, substantially as shown and described.

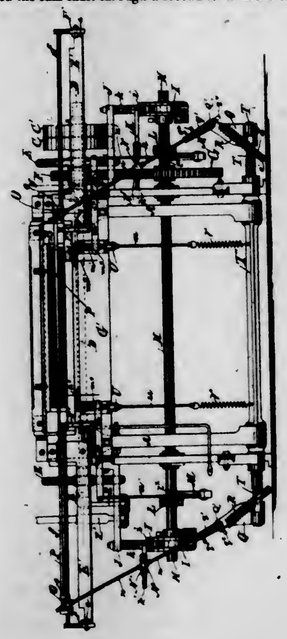
377,534. COVERING FOR WALLS, CEILINGS, &c. GEO. PETTIT, Jr., and ALFRED BOWERS, Brooklyn, N. Y. Filed Jan. 27, 1886. Serial No. 189,961. (No model.)



Claim.—In a metallic ceiling, the combination of the following elements, to wit: the foundation D, consisting of a sheathing of wood provided with ventilating-spaces X at suitable distances apart, as shown, and a metallic plate, A, provided with fluted or corrugated edge, and molding B, said molding covering and concealing said edges in the manner substantially as and for the purpose set forth.

377,535. NEEDLE-LOOM. JOHN N. STRAHM, New York, N. Y. Filed Sept. 11, 1886. Serial No. 213,289. (No model.)

Brief.—The weft is introduced from both sides by needles each of whose carriers moves on a stationary guide on the lay and is connected by a slip-joint to a rod whose lower end is pivoted to the lay rock-shaft, and to which the proper movement is imparted from a cam through an elbow-lever and a second slip-joint. The weft introduced by each needle is held at the opposite selvage by means of a vertically-moving needle normally retracted by a spring, but moved upward at the proper time by a lever pivoted to the lay and actuated from a tappet on the cam-shaft through a second lever and a connecting-rod.



Claim.—1. The combination, with the lay having ways or guides at its opposite ends, of two needle-carriers adapted to reciprocate on the said ways or guides, two needles arranged in line with each other and of proper length to reach entirely through the shed, two rods having double slip-joint connections with the said carriers, and means for vibrating said rods to operate the carriers, substantially as set forth.

2. In a loom, the combination, with the lay having at each end a needle of sufficient length to reach entirely through the shed, of two carriers for the needles, a way or slide at each end of the lay and movable therewith for each of the said carriers, two rods having double slip-joint connections with the said carriers, two levers having double slip-joint connections with the said rods, and means for vibrating said levers, whereby said carriers and needles are alternately reciprocated, substantially as set forth.

3. In a loom, the combination, with the lay having a way or guide, of a needle-carrier adapted to reciprocate thereon, a needle secured to the said carrier, a pivoted rod for operating the latter, a cam, a lever operated by said cam, and double slip-joint connections between the said lever and said rod and between the latter and the said carrier, substantially as set forth.

4. In a loom, the combination, with a needle, a carrier therefor, the lay provided with a way or guide on which the said carrier may reciprocate, a cam, an elbow-lever operated thereby, the lay-shaft, a bracket secured thereto, a rod pivotally connected with said bracket and having a slip-joint connection with said carrier, and a double slip-joint connecting the said elbow-lever and rod, substantially as set forth.

5. The combination, with the lay, of the guiding-rod *f* carried thereby, the needle-carrier *o*, adapted to reciprocate on said rod, the needle P, secured to said carrier, the rod *n*, the slip-joint O, the double slip-joint N N', the elbow-lever K, the grooved cam I, the bracket Q, the sleeve O', the spring R, and the lay-shaft, substantially as set forth.

6. In a loom, the combination, with the lay having at each end a needle and means for guiding and reciprocating the needle on the lay, of the guiding devices *m'*, having tubes *m*⁴, the bars *n*³, sliding in the tubes, the loop-retaining pins *m*³, connected with said bars, the levers *m*, the springs V, connected with said bars, the levers M, connected with the said levers *m*, the shaft H, and the collars L, having arms or tappets *l*³, substantially as set forth.

377,536. NEEDLE-LOOM. JOHN N. STRAHM, New York, N. Y. Filed Sept. 24, 1886. Serial No. 214,408. (No model.)

Brief.—At the end of the lay is fastened a plate upon which moves a vertically-sliding needle, which is normally forced upward by a spring. As the lay moves forward an angle-piece on the breast-beam engages an arm on the needle, and so forces it down, it being caught and retained by a spring-actuated pawl. As the lay recedes this pawl is tripped through suitable connection with the weft-carrying devices, and the needle rises and enters the weft-loop, which it holds till the shed is changed, and from which it is freed at the next advance of the lay.

Claim.—1. The combination, with the lay of a needle-loom, of a loop-retaining pin, a carrier therefor, a spring adapted to give an upward motion to said carrier, the breast-beam, a stationary bracket for forcing the said carrier downward, a pawl for retaining said carrier in its lowered position, and tripping mechanism for releasing said pawl from said carrier, to permit of the upward movement of the latter and of the loop-retaining pin when a needle has entered the shed, substantially as set forth.

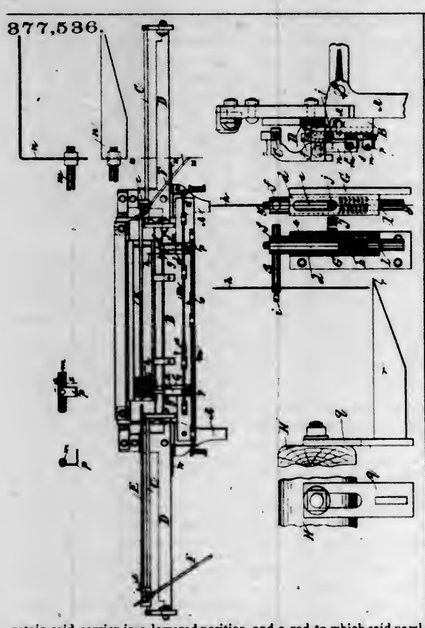
2. In a needle-loom, the combination, with the lay, the needle, and operating mechanism for the latter, of a loop-retaining pin and a carrier therefor, a spring for forcing said carrier upward, the breast-beam, a stationary bracket, *g*, having a tapering arm, *r*, for forcing said carrier downward, a pawl for retaining said carrier in its lowered position, and tripping mechanism for releasing said pawl from said carrier, actuated by the needle-operating mechanism, substantially as set forth.

3. In a needle-loom, the combination, with the lay, of a loop-retaining pin and a carrier therefor, a spring for forcing said carrier upward, a stationary bracket constructed to act on said carrier and lower the same during the forward movement of the lay, a pawl for retaining said carrier in its lowered position, a spring-actuated rod by which said pawl is carried, a tapering angle-bracket attached to said rod, and a moving part, as arm F, to act on said bracket to release the said pawl, substantially as set forth.

4. In combination with the lay of a needle-loom, a loop-retaining pin and carrier therefor, said carrier being provided with a notch, a spring adapted to give an upward motion to said carrier, a pawl adapted to enter the notch in said carrier when said spring is compressed, and a spring-actuated tripping-rod carrying the said pawl, substantially as set forth.

5. In combination with the lay of a needle-loom, a loop-retaining pin and carrier therefor, said carrier being provided with a notch, a spring adapted to give an upward movement to said carrier, a pawl adapted to enter said notch when said spring is compressed and to thus

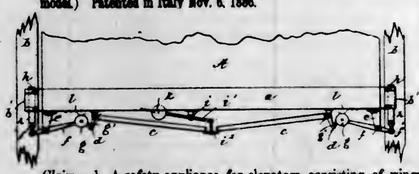
377,536.



retain said carrier in a lowered position, and a rod to which said pawl is secured, the same being adapted to be moved after the needle has entered the shed, whereby said spring is released, substantially as and for the purpose set forth.

6. In a needle-loom, the combination, with the lay, of a loop-retaining pin, *h*, its carrier *f*, having arm *j* and notch *l*, a device, G, which supports said carrier and a spring, *k*, the breast-beam, the bracket *q*, and the spring-actuated rod *m*, having pawl *p* and bracket *n*, substantially as set forth.

377,537. SAFETY APPLIANCE FOR ELEVATORS. AUGUSTO STIGLER, Milan, Italy. Filed Aug. 1, 1887. Serial No. 245,842. (No model.) Patented in Italy Nov. 6, 1886.



Claim.—1. A safety appliance for elevators, consisting of wings pivoted at their outer sides beneath the floor of the cage and provided with hook-levers on their outer sides, levers pivoted beneath the end beams of the floor of the cage, carrying weights having hooks formed thereon adapted to engage with the hooks carried by the wings, wedges linked to the outer ends of the weighted levers and adapted to enter guides fixed to the outer sides of the floor of the cage, and a weighted lever fulcrumed beneath the cage and supporting the inner sides of said wings, substantially as shown and described.

2. The combination, with the cage A, having the guides *b'* fixed to the outer sides of its floor, of the wings *c*, pivoted beneath the floor of the cage and supported at their inner sides by the cross-piece of a weighted lever, *i*, and provided on their outer sides with hooks *d*, levers *f*, pivoted beneath the end beams of the cage, carrying at their inner ends weights *g*, provided with hooks *g'*, and having their outer ends linked to wedges *k*, adapted to enter the guides on said cage between the same and the guide-posts *b*, substantially as described and shown, and for the purpose herein set forth.

3. A safety clutch or attachment for lifts or hoists, consisting of balanced wings beneath the cage, preferably formed of frames covered with a fabric offering resistance to the air, said wings provided with hooks adapted to engage opposing hooks on weighted levers pivoted beneath the cage, and connected to wedges fitted to slide vertically between guides carried by the cage and the sides of the guide-posts in the elevator-shaft, whereby when the descending speed of the cage exceeds its normal limit said wings are caused to rise, thereby releasing the hooks of the weights from the hooks carried by the wings, which weights cause their levers to force the wedges upward and jam them between the guides and posts and arrest the descent of the cage, as herein set forth.

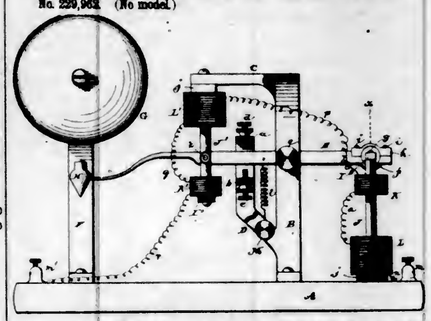
377,538. ELECTRIC-CIRCUIT CLOSER. WILLIAM F. STOCKER, Eureka, Kans., assignor to William H. Byers, same place. Filed Feb. 2, 1887. Serial No. 226,279. (No model.)



Claim.—1. The combination, in an electric-circuit closer, of the axially-bored handle A, formed of the sections *a b c*, the ferrule B, surrounding the smaller end of the handle, the contact-plates *e e' f f'*, carried by the handle-sections, the split conductor *g*, connected with the plates *e f*, and the split conductor *g'*, connected with the plates *e' f'*, substantially as described.

2. As an improved article of manufacture, a circuit-closer formed of the handle A, bored axially and divided into three sections, *a b c*, the ferrule B, surrounding the smaller end of the handle, the contact-plates *e f e' f'*, attached to the sections of the handle, the flexible cord C, provided with conductor *g g'*, connected with the contact-plates, and the flexible covering D, substantially as described.

377,539. ELECTRIC BELL. WILLIAM F. STOCKER, Eureka, Kans., assignor to William H. Byers, same place. Filed Mar. 7, 1887. Serial No. 229,963. (No model.)



Claim.—1. In an electric bell, the combination, with the bell-hammer-operating mechanism, of helices mounted on a plate of magnetic material, electro-magnetic armatures axially in line with the helices and adapted to enter the helices, and the electric connections whereby the polarity of the helices and of the armatures are rendered opposite, substantially as described.

2. In an electric bell, the combination, with the armature-lever E, provided with the bearing *f* and cap *h*, of the bushing *g*, the iron yoke I, provided with the cylindrical central portion fitted to the bushing *g*, the cores J, attached to the yoke I, the bobbins K, carried by the cores J, the helices L, adapted to receive the ends of the cores J, and the iron plate *j*, substantially as described.

3. In an electric bell, the combination, with the armature-lever E, of the base A, the frame B, provided with the arms C D, the limiting-screws *d e*, the retractile spring *l*, the oppositely-arranged helices L L', the electro-magnetic cores J J', the bobbins K K', and the electrical connections, substantially as described.

377,540. WAGON-SEAT. CHARLES VAN HORN, Bethlehem, Pa. Filed June 17, 1887. Serial No. 241,635. (No model.)

Claim.—1. The seat A, provided with the springs B B, secured to the longitudinal center of the seat A, in combination with the pivoted boards D D, provided at the center with the arms *f*, linked together and to the springs B, substantially as described.

2. The seat A, provided with the supporting-irons C, formed in the center with the depressions *b*, in combination with the springs B, secured to the bottom of the seat, substantially as described.

3. The supporting-irons C, formed with the arms C', and with the

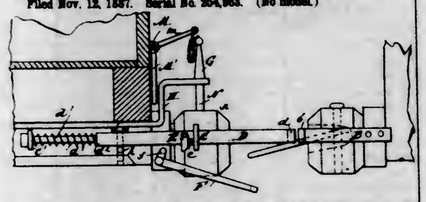
377,540.



side extensions, *c'*, substantially as and for the purposes set forth.

4. The irons E, secured to the board D, and extended to the rear of the board and provided with the pivoted clip A, substantially as described.

377,541. CAR-COUPLING. CARLOS J. WARREN, Jamestown, Dak. Filed Nov. 12, 1887. Serial No. 254,963. (No model.)



Claim.—1. The combination, with a draw-head, a spring-actuated bumper-bar held to slide at one side of the draw-head, and a dog pivoted upon said bar, of a lift-bar pivoted below said bumper, provided with a crank-arm at one end adapted to engage said dog, and a member integral with the other end projecting transversely in front of the draw-head, substantially as shown and described.

2. The combination, with a draw-head provided with a bumper fixed longitudinally at one side, an opposing draw-head, a spring-actuated bumper held to slide at one side of the latter draw-head, and a dog pivoted upon the spring-actuated bumper, of a lift-bar pivoted below the said spring-actuated bumper, provided with a crank-arm at one end aligning the said dog, and a member integral with the other end projecting transversely in front of the draw-head below the same, substantially as shown and described.

3. The combination, with a draw-head, a spring-actuated bumper held to slide at one side of the draw-head, a dog pivoted upon said bumper, a lift-bar pivoted to the draw-head below the bumper, provided with a crank-arm at one end aligning the said dog, and a member integral with the other end projecting transversely in front of the draw-head, of an angular spring-actuated pivoted pin-bar extending partially over the draw-head, provided with a crank-arm at its pivotal end, a similar opposing and aligning fixed pin-bar, a pin held between the said pin-bars, having a conical head, means for manipulating the said pin, and the bumper, substantially as shown and described.

4. The combination, with a draw-head provided with a bumper fixed longitudinally at one side, an opposing draw-head, a spring-actuated bumper held to slide at one side of the latter draw-head, and a dog pivoted upon said spring-actuated bumper, of an angular spring-actuated pivoted pin-bar extending partially over the draw-head, provided with a crank-arm at its pivotal end, a similar opposing and aligning fixed pin-bar, a pin adapted to be held between said pin-bars, having a conical head, and means for raising the pin, substantially as shown and described.

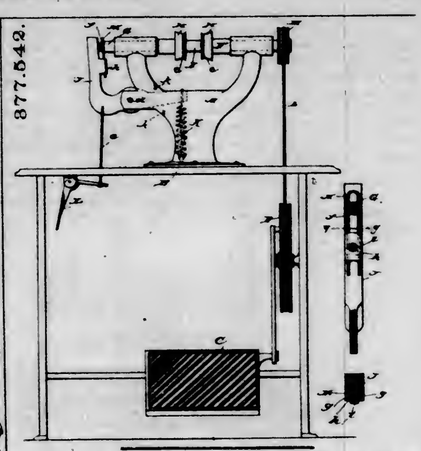
377,542. MACHINE FOR WINDING BOBBINS FOR SEWING-MACHINES. GEORGE H. WILLEY, Abington, Mass. Filed Aug. 10, 1887. Serial No. 246,584. (No model.)

Brief.—The object of the invention is to improve the construction of machines for winding bobbins for sewing-machine shuttles.

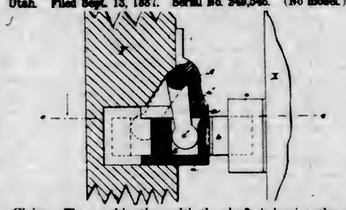
Claim.—1. The combination, with the frame or body A, of the rotatable spindle F, provided with a disk-like bobbin-holder on its inner end, the rotatable and longitudinally-sliding spindle G, having a corresponding bobbin-holder on its inner end, the lever J, connected with said spindle G, a spring applied to said lever operating to force up or inward said spindle G, the lever L, connected with the lever J and adapted to be controlled by the knee of the operator, and the treadle C, with connected devices for rotating the spindle F, essentially as described.

2. The combination, with the rotating and longitudinally-sliding spindle G, of the lever J, and the spindle-shifter M, fitted to slide within or through grooves in said lever and to straddle and engage with said spindle, and the removable face-plate *h*, essentially as shown and described.

377,543.

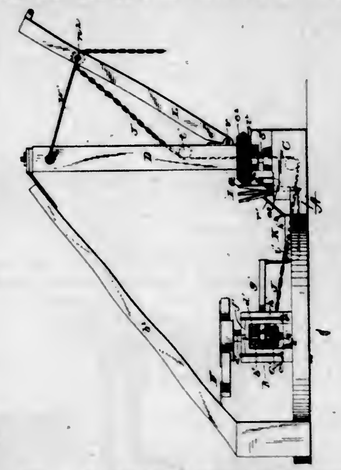


377,543. GATE-LATCH. CHARLES E. ADSELL, Salt Lake City, Utah. Filed Sept. 13, 1887. Serial No. 249,546. (No model.)



Claim.—The combination, with the shaft A, having the weighted crank-like handles A' and an operating-arm, *c'*, and the bolt *b*, having a recess, *b'*, engaged by said arm, of the socket-piece *a*, having a socket to receive and form a guide for the bolt, and a part, *a'*, which houses in the arm *c'* and forms a bearing-cap for shaft A.

377,544. DERRICK. WILLIAM BENTLEY, Bishop's Crossing, Quebec, Canada. Filed Apr. 26, 1887. Serial No. 236,981. (No model.)

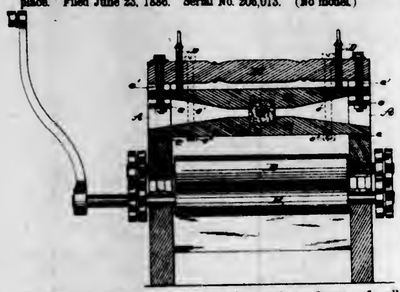


Claim.—1. In a horse-power derrick, the combination, with a winding-drum provided with brake, pawl, and ratchet, and gear-connections, of a rock-shaft, a^3, and lever secured thereto and operating the brake, and the levers fulcrumed on said shaft and operating said connections, substantially as described.

2. The combination, in a horse-power derrick, of the crab having the frame B, brackets a', chain-barrel E, gears b' and c', spindle d', and sweep F, and the mast D and boom L, with the gear-wheel c^2, pinion d^2, shafts e^2 and f^2, wheel g^2, and pinion h^2, and hand-crank, as shown and specified.

3. The combination of the mast D, boom L, wheel c^2, and pinion d^2, with the shaft e^2, having the collar i^2, counter-shaft f^2, having the collar m^2, and the shipping-hands j^2 and l^2, hinged to the lugs k^2, substantially as shown, and for the purpose set forth.

377,545. CLOTHES-WRINGER. WARREN M. BRINKERHOFF, Auburn, N. Y., assignor, by mesne assignments, to Jacob Brinkerhoff, same place. Filed June 23, 1886. Serial No. 206,013. (No model.)

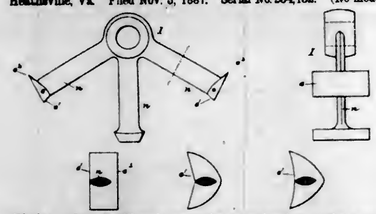


Claim.—1. The combination, with a wringer-frame, of rolls mounted therein, pressure-regulating devices for said rolls, a stop interposed between said pressure-regulating devices and said rolls or their journals, and a bolt extending from and connecting the said stop with a stationary part of the wringer, substantially as described.

2. The combination, with a wringer-frame, of the rolls therein, a movable bearing for one of said rolls, a stop having a part engaging said bearing, pressure-regulating devices engaging said stop, and a screw-threaded bolt and nut connecting said stop with a stationary part of the frame, substantially as described.

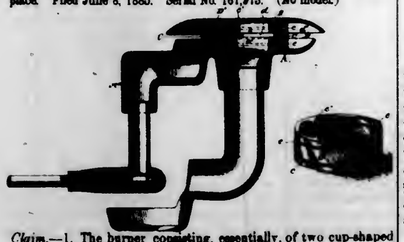
3. The combination, with a wringer-frame, of rolls therein and pressure devices for said rolls, a frame, *e*, engaged by the pressure devices, and a bolt connecting the frame *e* with a stationary part of the wringer-frame, substantially as described.

377,546. FERTILIZER-FEED FOR DRILLS. THOMAS R. CRANE, Heathsville, Va. Filed Nov. 3, 1887. Serial No. 254,152. (No model.)



Claim.—In a fertilizer-hopper, the combination of the bottom having discharge-openings *c*, and the vibrating agitator I, having two side prongs, *n*, each provided with a foot having at one side a blunt push-face, *o'*, and at the opposite side a knife-edge back, o^2, for the purpose set forth.

377,547. BURNER FOR GAS OR VAPOR STOVES. SAMUEL DANIELS, Chicago, Ill., assignor of one-half to Melville R. Dayton, same place. Filed June 8, 1885. Serial No. 167,973. (No model.)

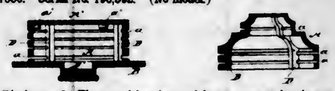


Claim.—1. The burner consisting, essentially, of two cup-shaped disks, A and B, provided, respectively, with opposing flanges a' b, and having their edges and said flanges separated at D and d, and a ring, C, interposed between the disks in position to afford a space, D', exterior to the flanges a' b, and having passages at *c c* out of the plane of the opening D, substantially as and for the purposes set forth.

2. The combination, with the burner-plates A and B, provided, respectively, with opposing flanges a' b, of a ring, C, provided with interior ribs, c', and continuous slots *c c*, substantially as described.

3. The burner composed of the separate opposing flanged disks A and B and interposed ring C, substantially as described, the lower disk being provided with an annular flange, a^2, whereby the burner is adapted to be applied to a base-plate, E', substantially as stated.

377,548. VAPOR-BURNER. SAMUEL DANIELS, Chicago, Ill., assignor of one-half to Melville R. Dayton, same place. Filed Feb. 1, 1886. Serial No. 190,392. (No model.)

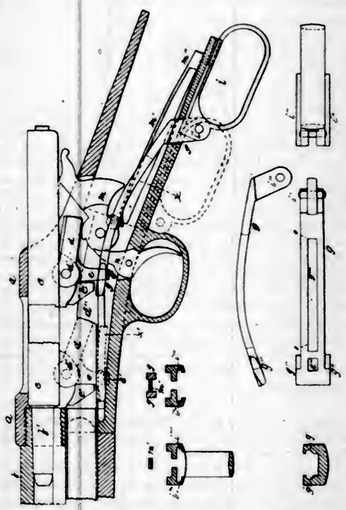


Claim.—1. The combination, with a support having a passage for the fluid to be burned, of a burner-cap resting on said support and covering said passage, said cap having its sides provided with a series of parallel slots which divide the sides into parts, and ribs which connect the said parts of the sides together, substantially as described.

2. The combination, with a base provided with a passage for the fluid to be burned, of an annular rising ribbed flange cast integral with the base and surrounding the passage, said flange being provided with a series of continuous parallel slots, which cut the flange into rings connected with each other by the ribs, and a plate fitted to close the top of the chamber embraced by the flange, substantially as described.

3. A vapor-burner cap provided with a series of continuous slots and with interior ribs cast integral with the slotted portion of the cap and running transverse to the slots, substantially as described.

377,549. MAGAZINE FIRE-ARM. WILLIAM H. ELLIOT, Brooklyn, N. Y. Filed Dec. 2, 1887. Serial No. 256,820. (No model.)

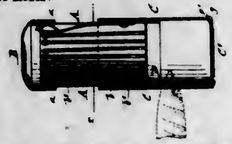


Claim.—1. In a breech-loading fire-arm, the combination of devices substantially as follows: a bolt for closing the chamber, a brace for locking said bolt, pivoted at its forward end to the bolt and provided with an operating-arm, a connecting-strap suitably guided at its forward end by means independent of the bolt in a right line substantially parallel with the band, and joined to the operating-arm of the brace by a loose joint constructed substantially as described, a stationary trigger-guard, and a sliding handle guided by suitable means in a right line substantially parallel with the wrist of the arm and pivotally joined at the forward to the rear end of the connecting-strap, as specified.

2. In a breech-loading fire-arm, the combination of devices substantially as follows: a bolt for closing the chamber, a brace for locking said bolt, pivoted at its forward end to the bolt and provided with an operating-arm, a connecting-strap joined at its forward end to the free end of the operating-arm of the brace and at its rear end to the forward end of the reciprocating handle *i*, a hammer, a trigger, and a mainspring, said strap being constructed with a recess, m'', into or through which the forward end of the mainspring and the lower portion of the hammer pass as the strap is drawn back in the process of opening the arm, substantially as and for the purpose set forth.

3. In a breech-loading fire-arm, the combination of devices substantially as follows: a bolt for closing the chamber, a brace for locking said bolt, pivoted at its forward end to the bolt and provided with an operating-arm, a connecting-strap joined at its forward end to the free end of the operating-arm of the brace and at its rear end to the forward end of the reciprocating handle *i*, a hammer and mainspring which act upon each other at a point below the top of the connecting-strap when the arm is open, and a trigger which acts upon the hammer above the top of the connecting-strap, substantially as specified.

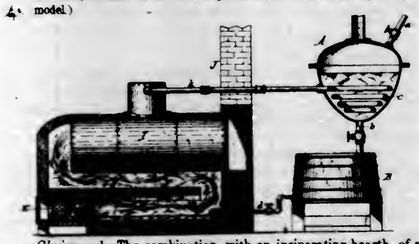
377,550. COMBINED CIGAR-TIP CUTTER AND MATCH-BOX. OTTO P. ELTERICH, Newark, N. J. Filed June 16, 1887. Serial No. 241,484. (No model.)



Claim.—1. The combination of an interior match-box having a hinged and spring-actuated cap at one end and a cutter at the opposite or bottom end, an exterior shell having an opening for inserting the tip of the cigar, and a pivoted lid, and means for guiding the box in said shell, substantially as set forth.

2. The combination of an interior match-box having a hinged cap at one end, a rim next to said lid, and a cutter at the opposite or bottom end, an exterior shell having a side opening and a pivoted lid, and means for guiding said box in the shell, substantially as set forth.

377,551. APPARATUS FOR RECOVERING SODA. RUFUS H. EMERSON, Jackson, Mich. Filed Apr. 11, 1887. Serial No. 234,340. (No model.)



Claim.—1. The combination, with an incinerating-hearth, of a steam-boiler heated by the waste heat from said hearth, and an evaporator heated by steam from said boiler, substantially as set forth.

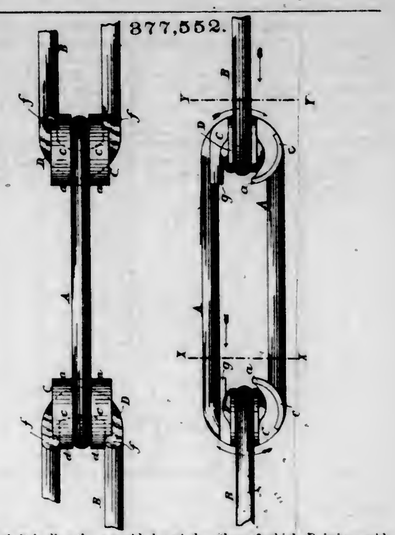
2. The combination, with an incinerating-hearth, of a furnace arranged at one end of said hearth, a flue extending from said furnace over said hearth, a steam-boiler having its flue connected with the exit-flue of the hearth, and an evaporator connected with said steam-boiler, substantially as set forth.

377,552. DRIVE-CHAIN. WILLIAM D. EWART, Chicago, Ill., assignor to the Ewart Manufacturing Company, same place. Filed Nov. 18, 1887. Serial No. 255,456. (Model.)

Claim.—1. A drive-chain composed of alternately transversely-arranged centrally-open links A and B and bearer-blocks C and D, one of which, C, is incapable of any movement relatively to the link with



377,552.



which it is directly assembled, and the other of which, D, is incapable of movement relatively to the link with which it is directly combined when the chain is bent in one direction, as specified, but relatively to which the said link is movable when the chain is bent in the opposite direction, all in the manner and for the purpose hereinbefore set forth.

2. In a cable chain having combined with its centrally-open links interposed bearer-blocks, a bearer-block or casting, C, formed with bearing-surfaces at *c c*, which are plane or flat in a direction transverse to the length of the chain, and which are thus adapted to work in contact with a chain-wheel the periphery of which is plane or flat between the teeth or sprockets, substantially as and for the purposes hereinbefore set forth.

3. In a cable chain comprising transversely-arranged centrally-open links and interposed bearer-blocks, as specified, a bearer-block or casting, C, which is formed, as specified, with bearing-surfaces for the working-faces of the single teeth, and also with bearing-surfaces for the working-faces of the double teeth of that well-known species of sprocket-wheel which has alternately-arranged duplex and single teeth, all substantially as hereinbefore set forth.

377,553. ELECTRIC GAS-LIGHTER. JULIUS FISCH, San Francisco, Cal. Filed Aug. 24, 1887. Serial No. 247,792. (No model.)



Claim.—1. An electric apparatus for lighting the gas at the burner and a frame to which said apparatus is attached, said frame having means for ready attachment to and detachment from the burner, substantially as described.

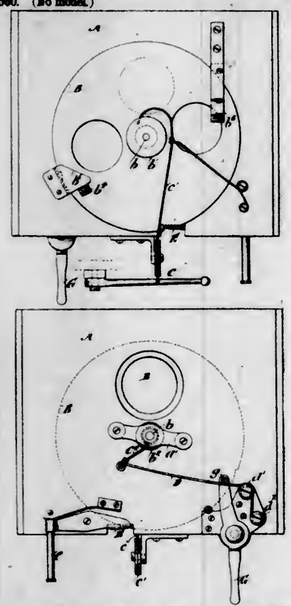
2. A frame or plate having an attaching device whereby it may readily be connected with a gas-burner and removed therefrom, in combination with a magnet and connected parts and a circuit-breaker and contact-point, all carried by said frame or plate and forming part of an electric circuit, whereby the gas may be lighted at the burner, substantially as described.

3. A frame or plate having a collar on its top for fitting over a gas-burner and screws for fixing it in place, in combination with an electric sparking apparatus carried by said frame or plate, whereby the gas may be lighted at the burner, substantially as described.

4. An electric gas-lighting apparatus for lighting the gas at a burner, consisting of a magnet and its connected parts, a circuit-breaker and its contact-point, and a frame to which said parts are attached, said frame having a collar fitted over the burner and set-screws for fixing it in position, substantially as described.

5. In an electric gas-lighting apparatus for lighting the gas at the burner, a frame for carrying the magnet and connected parts and the circuit-breaker and its contact-point, said frame having an arm with a collar fitting over the burner and set-screws for holding it in place on the burner, a casing inclosing the frame and the parts carried thereby, and a cover or lid secured to the top of the frame and to which the casing is secured, substantially as described.

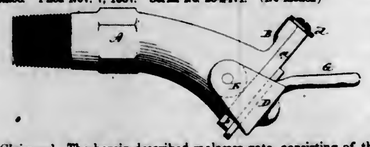
377,554. **SHUTTER MECHANISM FOR PHOTOGRAPHIC CAMERAS.** MATHIAS FLANHARD, Newark, N. J., assignor to The Scovill Manufacturing Company, New York, N. Y. Filed Oct. 17, 1887. Serial No. 252,560. (No model.)



Claim.—1. In a fly-shutter mechanism of a photographic camera, the combination of a board or piece provided with an opening, a rotary disk supported by said board or piece, a pulley secured to said disk, a cord wound upon said pulley, a spring having an integral portion constituting an arm connected to said cord, and a lever having a projection impinging upon the said arm of the spring, substantially as specified.

2. In a fly-shutter mechanism of a photographic camera, the combination of a board or piece provided with an opening, a rotary disk supported upon said board or piece, two pulleys affixed to opposite sides of said disk and rotating with it, a cord wound upon one of the pulleys, a pull-piece connected to this cord, a spring also connected to this cord, a cord reversely wound on the other pulley, a spring having an integral portion constituting an arm connected to the last-named cord, and a lever having a projection impinging upon said arm of the spring, substantially as specified.

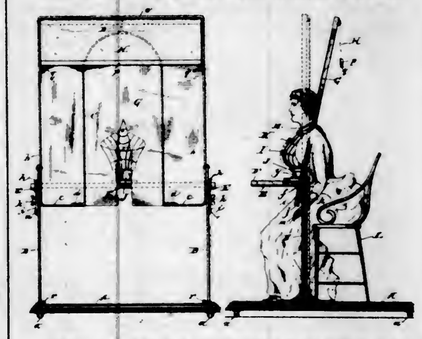
377,555. **MOLASSES-GATE.** JOHN GERARD and RODOLPHUS L. WEBB, New Britain, Conn., assignors to Landers, Frary & Clark, same place. Filed Nov. 7, 1887. Serial No. 254,471. (No model.)



Claim.—1. The herein-described molasses-gate, consisting of the tubular body constructed at one end for attachment to the cask and at its other end constructed with a head presenting a flat face, and the head constructed with parallel guides *a* upon its respective sides, combined with the yoke D across the face side of the said head, its arms extending to the rear of the guides on the head and adapted to take a bearing upon the rear surface of said guides, the yoke constructed with a suitable handle, by which it may be moved, the gate C between the yoke and face, and so as to ride upon the face, the said yoke and gate constructed, the one with a stud and the other with a corresponding recess to connect the two, and a spring between said yoke and gate, substantially as described.

2. The combination of the tubular body A, constructed at one end for attachment to the cask and at the other end with a head, B, said head constructed to present a straight flat face with guides *a* upon its respective sides, the yoke D across said head, its arms extending each side the head and to the rear of said guides, anti-friction rollers F on said arms and adapted to bear upon the rear side of said guides, the gate C, resting against the flat face of the head and inside the yoke, the yoke and gate interlocked, the one with the other, with a spring between said yoke and gate, adapted to bear the gate against the face, and the yoke constructed with a suitable handle, G, substantially as described.

377,556. **PHOTOGRAPHIC ACCESSORY.** JOSEPH C. GOEBEL, Milwaukee, Wis. Filed May 10, 1887. Serial No. 237,696. (No model.)



Claim.—1. A method of photographing living subjects to give a statuesque appearance to the finished picture, that consists in concealing the body of the subject behind a curtain or background, exposing the head and neck in front of this curtain or background, arranging a bust or analogous form so that the neck thereof will fit about the neck of said subject, and then securing a negative in the usual manner, substantially as set forth.

2. A photographic accessory that comprises a suitable frame, and a curtain or background stretched on the frame and provided with an opening, in combination with a bust or analogous form arranged adjacent to the opening in said curtain, substantially as and for the purpose set forth.

3. A photographic accessory that comprises a suitable frame, a curtain or background stretched on the frame and provided with an opening, and a shelf adjacent to said frame, in combination with a bust or analogous form arranged on the shelf adjacent to the opening in said curtain or background, substantially as and for the purpose set forth.

4. A photographic accessory that comprises a suitable frame, a curtain or background stretched on the frame and provided with an opening, and a vertically-adjustable shelf arranged adjacent to said frame, in combination with a bust or analogous form arranged on the shelf adjacent to the opening in said curtain or background, substantially as and for the purpose set forth.

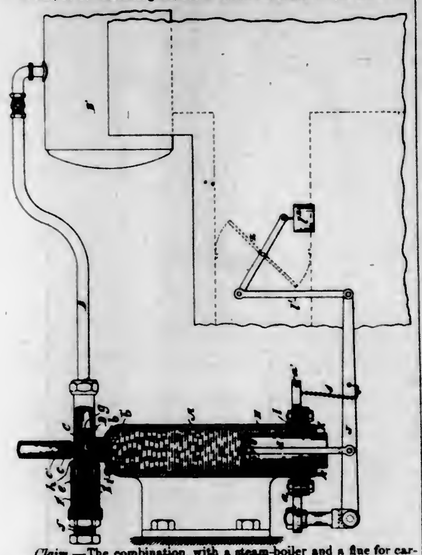
5. A photographic accessory that comprises two vertical standards, a suitable frame pivotally connected to the standards, and a curtain or background stretched on the frame and provided with an opening, in combination with a bust or analogous form arranged adjacent to the opening in said curtain or background, substantially as and for the purpose set forth.

6. A photographic accessory that comprises two vertical standards, a suitable frame pivotally connected to the standards, a curtain or background stretched on the frame and provided with an opening, and a vertically-adjustable shelf secured to the standards, in combination with a bust or analogous form arranged adjacent to the opening in said curtain or background, substantially as and for the purpose set forth.

7. A photographic accessory that comprises a suitable frame, a curtain or background stretched on one side of the frame and provided with an opening, and a roller-curtain or background mounted on the other side of said frame, substantially as set forth.

8. A photographic accessory that comprises a platform mounted on casters, vertical standards secured to the platform, a suitable frame pivotally connected to the standards, a curtain or background stretched on one side of the frame and provided with an opening, a roller-curtain or background mounted on the other side of said frame, and a shelf secured to said standards adjacent to said curtain having the opening therein, substantially as and for the purpose set forth.

377,557. **DAMPER-REGULATOR.** GEORGE A. GOODENOUGH, Green Point, N. Y. Filed Aug. 26, 1887. Serial No. 247,963. (No model.)



Claim.—The combination, with a steam-boiler and a flue for carrying off the products of combustion from a furnace, of a damper arranged in said flue, a lever with which said damper is connected, a cylinder containing water, a piston in said cylinder connected to said lever, a valve-chest provided with a port opening to the external atmosphere and a port opening upon the interior of said cylinder at the end thereof opposite said piston, a valve provided with a port communicating with the boiler and adapted to communicate with said port opening into the interior of the cylinder to admit steam against and above the water in the cylinder and another port adapted to communicate with the port in the valve-chest opening to the external atmosphere and also with the port opening into the interior of the cylinder, and a spring arranged in the valve-chest for moving said valve in one direction, substantially as specified.

377,558. **CLOCK STRIKING MECHANISM.** LARS HALVORSEN, Laurvig, Norway, assignor to Halvor Halvorsen, Paris, France. Filed May 11, 1887. Serial No. 238,008. (No model.) Patented in Belgium Apr. 30, 1887, No. 77,018; in Italy May 17, 1887, No. 21,528/376, and in Spain June 27, 1887, No. 11,080.

Claim.—1. In a clock, the combination, with the usual clock mechanism, of a pivoted weighted lever provided with a segmental rack, a pinion engaging with said rack and operated from the clock mechanism, a hammer, and intermediate mechanism operating said hammer by the pivoted weighted lever, substantially as shown and described.

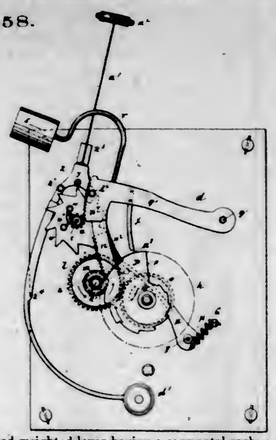
2. In a clock, the combination, with the usual clock mechanism, of a pivoted weighted lever having a rack, *n'*, a pinion engaged with said rack, a toothed or cam wheel operated by a ratchet and pawl from said pinion, a pivoted hammer actuated by said toothed or cam wheel, and mechanism for lifting the weighted pivoted lever by means of the clock mechanism, substantially as shown and described.

3. In a clock, the combination, with the usual clock mechanism of a pivoted weighted lever having a downwardly-projecting part provided with an upper and lower segment rack, a wheel operated by the clock mechanism and engaging the lower rack, a pinion engaged with the upper rack, a toothed or cam wheel operated by said pinion, and a hammer operated by the toothed or cam wheel, substantially as shown and described.

4. In a clock, the combination, with the usual clock mechanism, of the lever *q'*, having the racks *n n'*, mechanism for operating the hammer from the upper rack, *n'*, gearing for driving a wheel which engages with the lower rack, the snail-wheel *p*, and the stop-arm *x* on the lever *q'*, substantially as shown and described.

5. In a clock, the combination, with the usual clock mechanism,

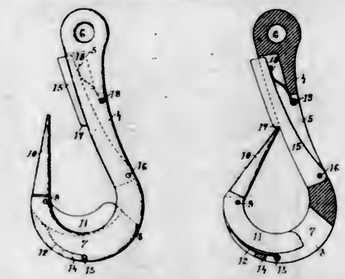
377,558.



of a pivoted weighted lever having a segmental rack, *n*, the wheel *m*, provided with a gap or recess in its rim, which wheel *m* is adapted to engage with the rack *n*, mechanism for driving the wheel *m* from the clock mechanism, and mechanism for operating the hammer from said pivoted lever, substantially as shown and described.

6. In a clock, the combination, with a pivoted weighted lever having a shoulder, *n²*, of the spring-pressed lever M, the wheel *e*, provided with the pin *f*, the pin D on the face of the casing, mechanism for raising the lever *q'* by means of the clock mechanism, and mechanism for operating the hammer from said lever, substantially as shown and described.

377,559. **SNAP-HOOK.** ALBERT L. HITCHCOCK, Pawtucket, R. I. Filed July 29, 1887. Serial No. 245,601. (No model.)



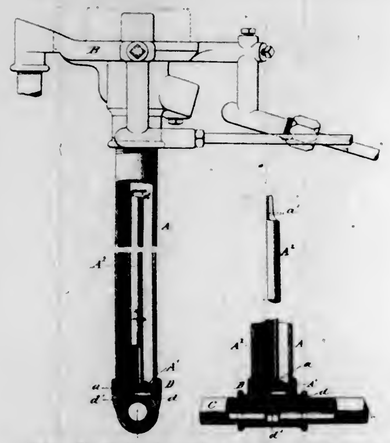
Claim.—1. The combination, as hereinbefore set forth, with the hook formed with the slot or forked bill, of the mousing provided with the push-piece and pivoted within the slit or fork of the bill and provided with a spring for holding the mousing normally open, the push-piece projecting along the bend of the hook, substantially as and for the purpose herein described.

2. The combination, as hereinbefore set forth, with the hook formed with a slit or forked bill, of the mousing provided with a push-piece and pivoted in the fork and provided with a spring, the shank of the hook slotted, and a spring-acted locking-lever pivoted in the said slot and adapted to automatically engage the end of the mousing when closed and to lock the same, substantially as and for the purpose herein described.

3. The combination, as hereinbefore set forth, with the hook having the bill 7, formed with the slit or fork 8, of the mousing 10, provided with the push-piece 11, and pivoted at 9 within the fork, and the spring 12, engaging the push-piece, substantially as and for the purpose herein described.

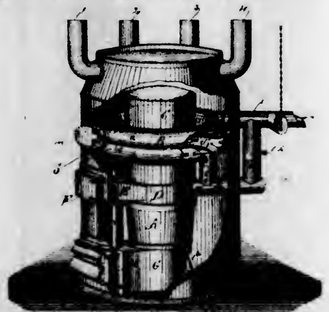
4. The combination, as hereinbefore set forth, with the hook having the bill 7, formed with the slit or fork 8, of the spring-acted mousing or latch 10, provided with the push-piece 11, and hinged at 9, the shank 4 of the hook formed with the slot 5, and the locking-lever 15, pivoted within the slot at 16 and formed with the shoulder 17, and the spring 18, engaging the lever, substantially as and for the purpose herein described.

377,560. **DEVICE FOR REGULATING THE FLAMES OF VAPOR-STOVES.** FREDERICK J. HUBBARD, Chicago, Ill., assignor to the Adams & Westlake Manufacturing Company, same place. Filed Dec. 30, 1886. Serial No. 222,996. (No model.)



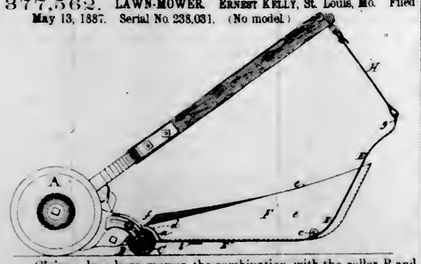
Claim.—The combination, with a main horizontal feed-pipe and coupling provided with an apertured diaphragm, *d*, of a stand-pipe inserted in said coupling and provided with a second apertured diaphragm, and an open-topped tube secured to the latter diaphragm around the aperture therein and rising within the stand-pipe to near the top thereof, substantially as described.

377,561. **HOT-AIR FURNACE.** EDWARD KANALEY, Syracuse, N. Y. Filed July 18, 1887. Serial No. 244,609. (No model.)



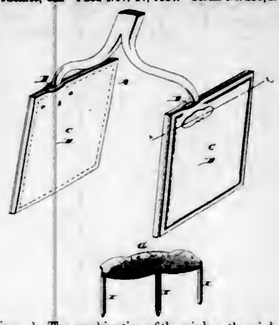
Claim.—The combination of the central section, D, having the feed-chute E and direct-draft pipe *h* made in one piece with the fire-pot A, dome C, and superposed radiator B, connected to both the direct and indirect draft, substantially as and for the purpose set forth.

377,562. **LAWN-MOWER.** ERNEST KELLY, St. Louis, Mo. Filed May 13, 1887. Serial No. 238,031. (No model.)



Claim.—In a lawn-mower, the combination, with the roller B and its spindle C, of rods or wires E, provided with eyes *a*, adapted to encircle the spindle C between the ends of the roller B and its bearings D, said wires E carrying tray or pan F, and connected to handle G by chain or cord H, substantially as shown, and for the purpose described.

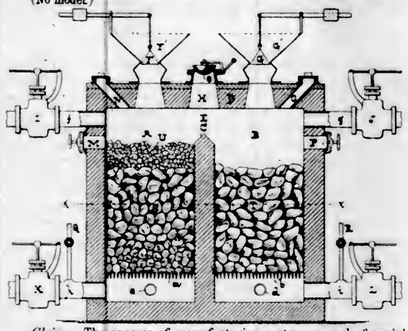
377,563. **BRIDLE-WINKER ATTACHMENT.** EDMUND R. KNAPP, San Jacinto, Cal. Filed Nov. 17, 1887. Serial No. 255,435. (No model.)



Claim.—1. The combination of the winker, the winker-fork having an enlargement at its end inserted in the winker, and the fastener-plate having a series of pins projecting therefrom and inserted through the winker and the enlargement of the winker-fork, substantially as specified.

2. In combination with the winker, the winker-fork inserted within the winker at one end and the fastening-pins passed through the winker-fork and winker to secure the parts together.

377,564. **PROCESS OF MANUFACTURING WATER-GAS.** FREDERICK C. KNIERR, Baltimore, Md. Filed Mar. 29, 1887. Serial No. 232,844. (No model.)



Claim.—The process of manufacturing water-gas and of enriching the same by means of bituminous coal, herein described, which consists in first blasting to incandescence two independent bodies of coke, then depositing on one of the said bodies a charge of bituminous coal, then passing steam through the said body of coke, and its disassociated elements through the charge of coal laid thereon, and conducting the product obtained to a wash-box and a purifier, continuing the said process until the coke becomes too cool to be available for the production of water-gas, and then passing steam through the other body of incandescent coke and its disassociated elements to the other side of the charge of coal and downward through the same and the coke underneath to a wash-box and purifier, substantially as and for the purpose specified.

377,565. **NAIL-EXTRACTOR.** GEORGE W. LANE, Bristol, Conn., assignor to Charles A. Lane, same place, and Emma A. Powell, Plainville, Conn. Filed Oct. 24, 1887. Serial No. 253,219. (No model.)

Claim.—1. A nail-extractor having a stock provided with a jaw, a jaw pivoted to the stock and co-operating with the jaw thereof, and a hand-piece, also pivoted to the stock and located adjacent to the handle thereof, so as to be clasped therewith and connected to the pivotal jaw, which it places directly under the control of the operator, whereby the grip of such jaw upon a nail may be maintained independent of the position of the tool, substantially as set forth.

2. A nail-extractor having a stock provided with a jaw and a rigid shoe, a jaw pivoted to the stock and co-operating with the jaw thereof, and a hand-piece, also pivoted to the stock, co-operating with

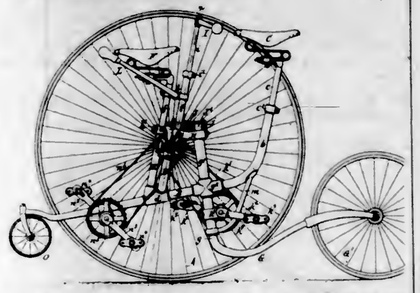
377,565.



the handle thereof, and connected with the pivotal jaw, which it places directly under the control of the hand of the operator, substantially as set forth.

3. A nail-extractor having a frame-piece provided with a jaw and a rigid shoe, a hollow handle connected with the frame-piece, a rammer connected with such handle, a jaw pivoted to the frame-piece and co-operating with the jaw thereof, and a hand-piece pivoted to the frame-piece, co-operating with the said hollow handle, and connected with the pivotal jaw, which it places directly under the control of the hand of the operator, substantially as set forth.

377,566. **VELOCIPEDE.** EMMIT G. LATTA, Friendship, N. Y., assignor to the Pope Manufacturing Company, Portland, Me. Filed Mar. 22, 1887. Serial No. 231,932. (No model.)



Claim.—1. In a tricycle, the combination, with the main frame, driving-wheels attached to the main frame, and a saddle-support attached to the main frame and arranged behind the centers of the driving-wheels, of a steering-post arranged above said frame and pivoted with its lower end thereto, a reach arranged below said frame and saddle-support, and pivoted with its upper end to the main frame, and connecting-gear, whereby the reach and the steering-post are connected, and whereby the reach can be turned on its pivot without moving the saddle, substantially as set forth.

2. In a tricycle, the combination, with the main frame and the driving-wheels attached thereto, of a saddle-post secured to the main frame, a trailing wheel, a depressed reach extending forwardly from the trailing wheel and pivoted to the main frame in front of said saddle-post, and a driving-gear attached to the main frame above the depressed reach, substantially as set forth.

3. In a tricycle, the combination, with the main frame and the driving-wheels attached thereto, of a trailing wheel, a depressed bent reach extending forwardly from the trailing wheel and provided with an upwardly-extending front portion, and a socket formed on the main frame for the reception of the front portion of the reach, substantially as set forth.

4. In a tricycle, the combination, with a main frame and driving-wheels having their axles arranged above the main frame, of a trailing wheel, a reach connecting the trailing wheel with the main frame, and a saddle-support secured to the main frame below the centers of the driving-wheels and above the reach, substantially as set forth.

5. In a tricycle, the combination, with the main frame and two driving-wheels attached thereto, of a trailing wheel and a reach connecting the trailing wheel with the main frame by an inclined pivot at its front end, whereby the trailing wheel is caused to incline toward the center of the circle in turning, substantially as set forth.

6. In a tricycle, the combination, with the main frame provided with a tube, *g'*, and a seat-support, *b*, secured thereto, of a trailing wheel, and a reach, G, provided with an upwardly-extending front portion, *g*, seated in the tube *g'*, substantially as set forth.

7. The combination, in a velocipede, of the longitudinal member B of the main frame, a cross-brace, D, secured thereto below the center of the wheels and provided with exterior axle-supports, and a head, H, secured to the main frame and provided with interior axle-supports, substantially as set forth.

8. The combination, with the main frame, of the head H, cross-brace D, and tubes d^3, secured to the head H and the cross-brace D, substantially as set forth.

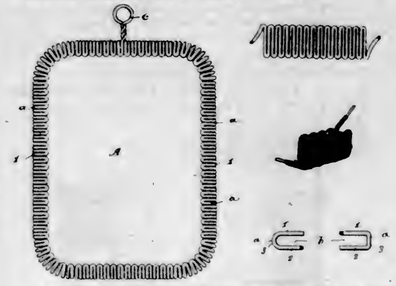
9. The combination, in a tandem tricycle, of a saddle-post, a steering-post arranged parallel with the saddle-post, and a connecting-piece secured to the saddle-post and provided with a bearing in which the steering-post turns, substantially as set forth.

10. The combination, with the saddle-post *f* and the steering-post *i'*, of the clamp *l*, adjustably secured to the saddle-post and provided with an opening in which the steering-post turns, substantially as set forth.

11. The combination, in a tandem tricycle, of a front saddle-post and a front handle-bar adjustably secured to the saddle-post, whereby the front handle-bar can be raised and lowered with the saddle-post or independently thereof, substantially as set forth.

12. In a tandem tricycle, the combination, with the front saddle-post and the steering-post, of an adjustable clamp connecting the saddle-post with the steering-post, and a front handle-bar secured to said clamp, substantially as set forth.

377,567. **PICTURE-FRAME.** FRANK W. LOWE, Boston, Mass. Filed Feb. 14, 1887. Serial No. 227,589. (No model.)

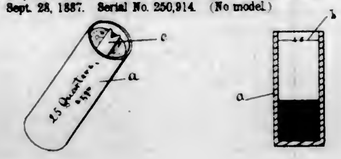


Claim.—1. A picture-frame consisting of a series of adjacent U-shaped loops forming a continuous groove on the inside of the frame for the reception of the picture, said loops being composed of a continuous wire, the arms of each loop being integral with the adjoining arms of adjacent loops, substantially as described.

2. A picture-frame consisting of a series of adjacent U-shaped loops forming a continuous groove on the inside of the frame for the reception of the picture, said loops being composed of a continuous wire, the arms of each loop being integral with the adjoining arms of adjacent loops, the ends of the continuous wire being coiled into an eye at the top of the frame, substantially as described.

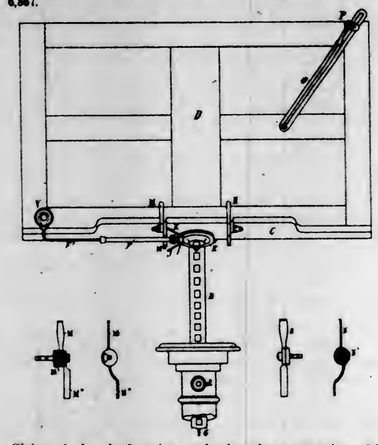
3. A picture-frame consisting of a series of adjacent U-shaped loops forming a continuous groove on the inside of the frame for the reception of the picture, said loops being composed of a continuous coated wire, the arms of each loop being integral with the adjoining arms of adjacent loops, substantially as described.

377,568. **COIN-HOLDER.** CHARLES J. LUCE, Niantic, Conn. Filed Sept. 28, 1887. Serial No. 250,914. (No model.)



Claim.—A coin-holder consisting of a cylinder of impressible material closed at one end, in combination with a pointed curved bar or plate adapted to be flattened and extended, as herein described, to retain the coins within said cylinder.

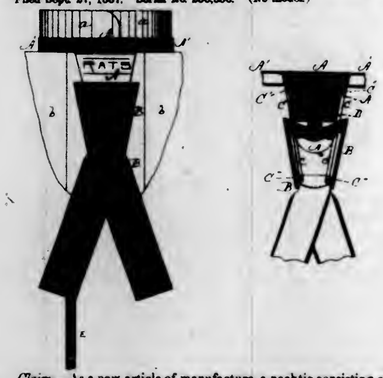
377,569. **LEAF-TURNER.** LOUIS MAAS, Neuilly-sur-Seine, France. Filed May 27, 1887. Serial No. 239,558. (No model.) Patented in France Nov. 12, 1886, No. 179,617, and in England May 10, 1887, No. 6,867.



Claim.—1. In a leaf-turning mechanism, the combination, with a stand and a leaf-turning device, of a finger or holder adjustable on the stand relatively to the music supported therefrom, as described.

2. In a leaf-turning mechanism, the combination, with a pivoted leaf-turning arm having a hub provided with radial fingers, of pivoted spring-actuated holders adapted to press upon the leaves and operated by said radial fingers during the turning movements of the leaf-turning arm, in the manner and for the purpose specified.

377,570. **NECKSCARF.** MICHAEL C. MCDONALD, Boston, Mass. Filed Sept. 27, 1887. Serial No. 250,858. (No model.)

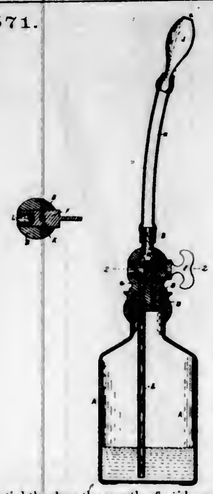


Claim.—As a new article of manufacture, a necktie consisting of a shield having a picture, inscription, or like device upon the front thereof, and having the neckband connected thereto, and a knot or band surrounding and inclosing said shield, and having the pendent ends of the tie firmly connected to it, said knot or band and pendent ends being suspended from the shield by elastic connections, so that they may be pulled down bodily, and when released may resume their original position, substantially as described.

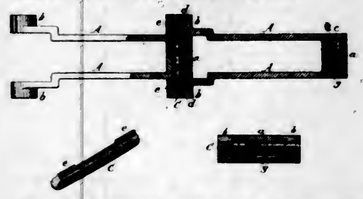
377,571. **INHALER.** JAMES MCGRARY, Boston, Mass. Filed Dec. 2, 1886. Serial No. 220,473. (No model.)

Claim.—In the art of administering liquid tinctures and other liquid medicines for the purposes of inhalation and atomization by charging air with the vapors thereof, means substantially such as used and as herein described, the same consisting of a vessel, A, partially filled or charged with the liquid to be so administered, a plug or stopper, B, to tightly close the mouth of said vessel, an air-passage, G E, leading through said stopper and into said liquid, and below the level thereof open to and in direct and immediate communication with said liquid, and outside of the vessel in communication with the air, a passage, D, also leading through said plug and at one end in communication with the portion of the vessel A not containing and which is directly above and open to said liquid, and at its opposite end open to the outside of the vessel, and a valve or cock, F, having passages K L, corresponding to and for opening and closing the stopper-passages D G, all combined and arranged so that, with the vessel partially filled with the liquid desired and said passages D G opened, air may be entered through passage G and its continuation E directly into the liquid of said vessel, and, passing through said liquid into the chamber of the vessel above its level, to be therein charged with a vapor arising from said liquid, and thence withdrawn and discharged at the outer open end of the passage D, substantially as and for the purposes described.

377,571.



377,572. **DRIVE-CHAIN.** FREDERICK H. C. MEY, Buffalo, N. Y. Filed Nov. 11, 1884. Serial No. 147,857. (No model.)



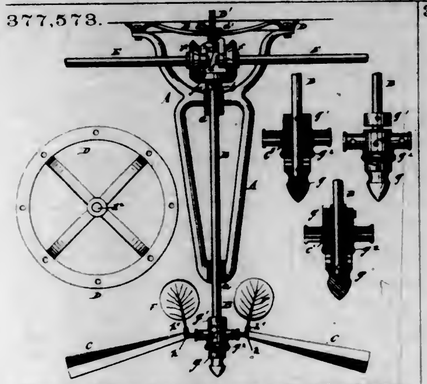
Claim.—The combination, with two links, each composed of two side bars, A, a connecting cross-piece, *a*, provided with a bore, *c*, having a longitudinal groove, *g*, and eye-pieces *b*, having bores *d*, provided with longitudinal grooves *f*, breaking joint with the groove *g*, of a cylindrical connecting-pin, C, provided on its end portions with two raised longitudinal ribs, *e*, seated in the grooves *f*, substantially as set forth.

377,573. **ROTARY FAN.** PETER MURRAY, Jr., Newark, N. J. Filed Mar. 31, 1887. Serial No. 233,137. (No model.)

Claim.—1. The combination of a base-frame, a center screw for attaching the same to the ceiling, said screw having two heads, a hanger-frame attached to the base-frame, hanger-bearings supported by eyes



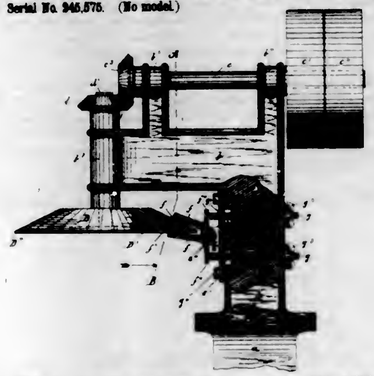
377,573.



or sleeves on the lower head of the center screw, and motion-transmitting shafts supported in said bearings, substantially as set forth.

2. A rotary fan composed of two fan-sections, each being made of a fixed outer blade and pivoted blades connected by a web of suitable material, and of two disk-shaped fans attached to sockets of the outermost movable blades, so as to spread the blades of the fan-sections by the pressure of the air on said disk-shaped fans when the fan is in motion and drop the blades into a folded position when the fan is stopped, substantially as set forth.

377,574. **BURNISHING-MACHINE.** BENJAMIN F. PATCH, Danvers, Mass., assignor to William M. Currier, same place. Filed July 23, 1887. Serial No. 245,575. (No model.)



Claim.—1. In combination with the rotary burnishing-disk D, the forked friction-piece *f* and its blocks *f' f'*, pivoted to the frame *b* and provided with the adjustable presser-rods *g g*, as and for the purpose set forth.

2. In a burnishing-machine, the friction-piece *f* and its blocks *f' f'*, pivoted to the frame *b* and provided with ears or extensions *f' f'*, in combination with the spring-pressed rods *g g*, adapted to bear against the pivoted friction-piece and having the pressure-regulating nuts *g' g'*, as and for the purpose set forth.

377,575. **CONTINUOUS-HEATING BRANDING IMPLEMENT.** MARK POTTER, Syracuse, N. Y. Filed Mar. 8, 1887. Serial No. 230,136. (No model.)

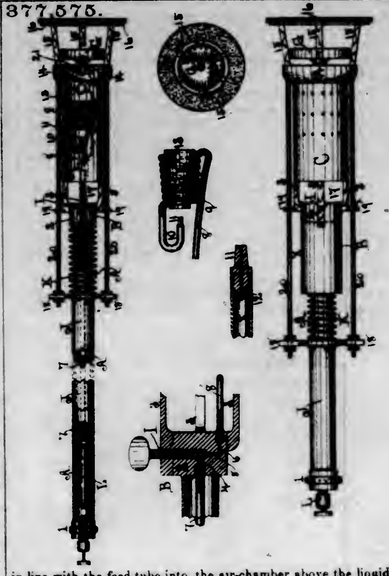
Claim.—1. In a branding implement, the combination of a vaporizing-coil and a cylinder inclosed within the coil, and a vapor-burner opening into the cylinder, substantially as described.

2. In a branding implement, a tubular hood, a vaporizing-coil inclosed within the hood, and an air-chamber between the hood and coil, in combination, substantially as described.

3. In a branding implement, the combination of a cylinder inclosed within the vaporizing-coil and a hood inclosing the cylinder and coil, substantially as described.

4. In a branding implement, a feed-tube passing longitudinally through the liquid-reservoir, in combination with a cylindrical reservoir, and an air-pump inserted longitudinally through the handle and

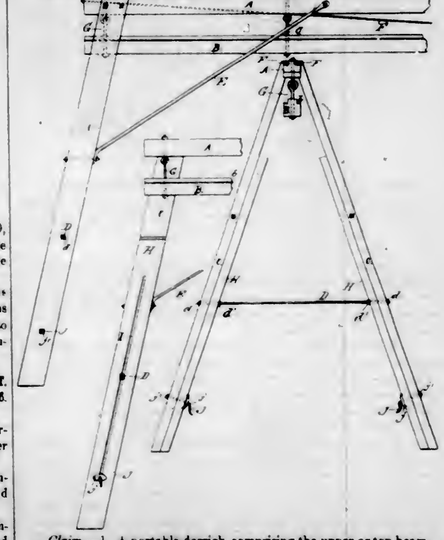
377,575.



in line with the feed-tube into the air-chamber above the liquid, substantially as described.

5. In a branding implement, an air-pump entering the handle or reservoir longitudinally and a feed-tube passing longitudinally through said cylindrical reservoir or handle and substantially up to the air-pump in the handle of the implement, in combination, substantially as described.

377,576. **PORTABLE DERRICK.** PETER RABBITT, Jacksonville, Ill. Filed June 4, 1887. Serial No. 240,296. (No model.)



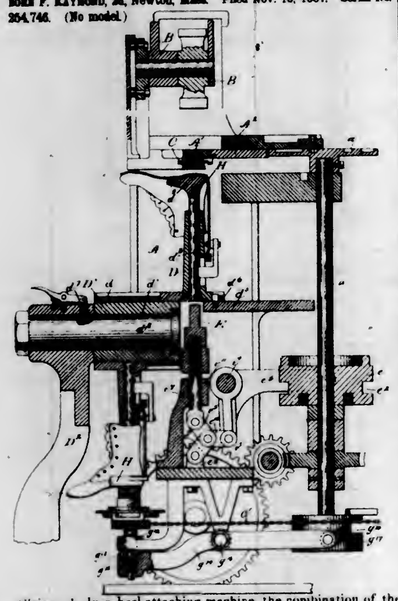
Claim.—1. A portable derrick comprising the upper or top beam, A, the laterally and longitudinally movable lower or track beam, B, the trussing and bracing rods E E and F F, the standards C C, and the longitudinally-slotted adjustable legs H, substantially as and for the purpose described.

2. A portable derrick comprising the upper or top beam, A, the laterally and longitudinally movable lower or track beam, B, the trussing and bracing rods E E and F F, the knuckle-jointed bolts G G, the longitudinally-slotted adjustable legs H H, and the standards C C, substantially as described.

3. A derrick provided with the legs or standards C C, the extension-legs H H, formed with the longitudinal slots I I, the rods D D, provided with the nuts *d* and *d'*, arranged on the outside and inside of said legs, and the tail-bolts J J, provided with the nuts *j j'* and *j j'*, the latter being elongated and having teeth or projections on their inner faces, substantially as and for the purpose described.

4. A portable derrick comprising the top beam, A, the laterally and longitudinally movable track-beam B, the knuckle-jointed bolts G G, the legs or standards C C, the extension-legs H H, rods D D, provided with the nuts *d d'*, the tail-bolts J J, provided with the nuts *j j* and *j' j'*, and the trussing or bracing rods E E and F F, substantially as described.

377,577. HEEL NAILING AND TRIMMING MACHINE. FREEBORN F. RAYMOND, 2d, Newton, Mass. Filed Nov. 10, 1887. Serial No. 254,746. (No model.)



Claim.—1. In a heel-attaching machine, the combination of the templet or pressure-plate, a movable head or support, and a number of jacks carried by said head or support, each of which has a sliding jack-post or spindle and a common pressure-applying head, E, as and for the purposes described.

2. The combination, in a heel-attaching machine, of a stationary pressure-plate or templet, a movable pressure-applying head, and a series of jacks adapted to be moved by mechanism, substantially as specified, between the pressure-head and the templet or pressure-plate, as and for the purposes described.

3. The combination, in a heel-attaching machine, of a templet or pressure-plate, automatic heel-blank supplying and nail-driving devices, a pressure-applying head, and a number of jacks mounted upon a support movable by mechanism, substantially as specified, in relation to said pressure-applying head to bring the jacks between it and the templet, substantially as described.

4. In a heel-attaching machine having a templet or pressure-plate, an automatic heel-blank and top-lift-feeding device, or either of them, automatic nail-driving devices, a pressure-applying head, and a support or head movable by mechanism, substantially as specified, carrying a number of jacks and located or arranged in relation to the templet and the pressure-applying head to move or bring the jacks into operative position between the pressure-applying head and the templet, substantially as described.

5. The combination, in a heel-attaching machine, of the templet A', the last head or support D', having the guideways *d*, the jacks D, carried thereby, each of which has a movable jack post or support, *d*^{3}, and the pressure-applying head, substantially as described.

6. The combination, in a heel-attaching machine, of the templet A', the jack-supporting head or carrier D', having the guides *d*, a table, *d*^{6}, having the guides *d*^{6}, the jacks D, having the slide-last or work-support posts or spindles *d*^{3}, and the pressure-applying head E, substantially as described.

7. The combination, in a heel-attaching machine, of the movable jack, head, or support D', having the guideways *d*, a series of jacks, D, carried thereby, and movable in said guideways, with the registering pin or lock *d*^{7}, substantially as described.

8. The combination, in an organized machine for nailing and trimming heels, of a templet or pressure-plate, a heel-trimming apparatus, a jack support or head movable by mechanism substantially as specified, and two or more jacks carried thereby, the said jack support for head being arranged to carry or move the jacks from operative position in relation to the templet or pressure-plate into operative position in relation to the heel-trimming apparatus, substantially as described.

9. In an organized machine for nailing and trimming heels, the combination, substantially as described, of a heel-attaching mechanism, a heel-trimming apparatus, two or more jacks, and a movable support for the same adapted to transfer the jack or jacks from operative position in relation to the heel-nailing mechanism into operative position in relation to the heel-trimming apparatus, as and for the purposes specified.

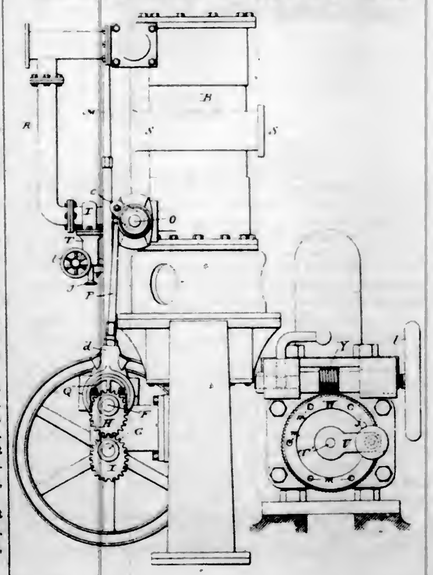
10. In a heel-nailing machine, the combination of a heel-attaching mechanism, a heel-trimming apparatus, two or more jacks, a movable support for the same adapted to transfer the jacks from operative position in relation to the heel-nailing machine into operative position in relation to the heel-trimming apparatus, and a common prime motor for simultaneously operating the heel-nailing devices and the heel-trimming apparatus G, substantially as described.

11. The combination of a templet or pressure-plate, A', the pressure-applying head E, the movable jack support or head D', the jacks D, carried thereby, and the heel-trimming apparatus G, as and for the purposes described.

12. The combination of the movable last-head D', a series of jacks, D, carried thereby, the heel-trimming apparatus G, with which the jacks are adapted to be brought successively into operative position, and a cam and lever for moving said heel-trimming apparatus into operative connection with each last or work-support, as and for the purposes described.

13. In an organized machine for nailing and trimming heels, in combination with an automatic heel-attaching and an automatic heel-trimming apparatus, a jack and a jack-carrier, and mechanism, substantially as specified, for moving or transferring the jack from operative position with the heel-attaching apparatus into operative position with the heel-trimming apparatus, substantially as described.

377,578. VALVE-GEAR FOR ORE-STAMPS. EDWIN REYBOLDS, Milwaukee, Wis. Filed Feb. 10, 1887. Serial No. 227,241. (No model.)



Claim.—1. In combination with the steam-cylinder and piston of an ore-stamp, a steam-pipe communicating with the induction-ports of both ends of the cylinder, oscillating induction-valves applied to said ports, a reducing-valve applied to the steam-pipe between the boiler and the lower induction-valve, and valve-gear, substantially such as described and shown, for causing a variable rate of movement of the steam-valves.

2. In combination with the steam-cylinder and piston of an ore-stamp, steam-valves controlling the induction of steam at both ends of the cylinder, a reducing-valve for regulating the amount of steam delivered to the steam-valve at the lower end of the cylinder, gearing for rotating the reducing-valve stem gradually and evenly, and a connection between said gearing and the valve-stem adapted to be released when desired, to permit the direct operation of the valve-stem.

3. The combination, substantially as herein described and shown, of the steam-cylinder B of an ore-stamp, steam-pipe R, steam-valves at the upper and lower ends of the cylinder, valve-gear, substantially such as described and shown, for actuating said valves, a reducing-valve, T, located in the steam-pipe near the lower steam-valve, arm U, secured upon the stem of the reducing-valve and provided with handle V, having notch *e*, spring *f*, and rod *g* within said handle, the latter provided with lug *k*, worm-wheel W, encircling the valve-stem and provided with recesses *m*, and worm or screw shaft Y.

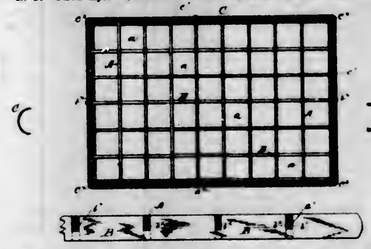
377,579. METALLIC WHEEL. JOHN W. SAVAGE, Toledo, Ohio. Filed Sept. 6, 1887. Serial No. 249,091. (No model.)



Claim.—1. In a metal wheel, a hub having enlarged ends extending beyond the central bearing and of greater diameter internally, a concentric depending flange within the enlarged end, perforations through the hub coincident with the side of the flange, and spokes having bent ends partially embracing the flange and held in place by bearings concentric to the axle, as and for the purpose set forth.

2. In a hub for metal wheels, flanges concentric to the bearing and integral with the hub, and perforations through the ends of the hub coincident with the flanges, said perforated portions being formed integral with the hub, as and for the purpose set forth.

377,580. METAL-BAR MAT. WILLIAM C. SPILMAN, New York, N. Y. Filed Apr. 12, 1887. Serial No. 234,029. (No model.)



Claim.—1. A mat composed of metal bars or strips set to cross each other and mortised and let into each other, with springs between them in the mortises, as set forth.

2. A mat composed of metal strips or bars mortised and let into each other, and a frame surrounding said strips or bars, having projections on one or more of the bars extending in each direction, said projections being passed through and riveted or otherwise fastened in the frame, as set forth.

3. A mat composed of metal bars or strips mortised and let into each other, as described, and a frame having concavo-convex walls provided with incisions in the inturned edges thereof, into which the corners of the bars or strips project, as set forth.

4. A mat composed of metal bars or strips mortised and let into each other, as set forth, and springs in said mortises between the bars, a frame having inturned edges holding the said bars or strips, and means, substantially as described, for holding the bars or strips and frame together.

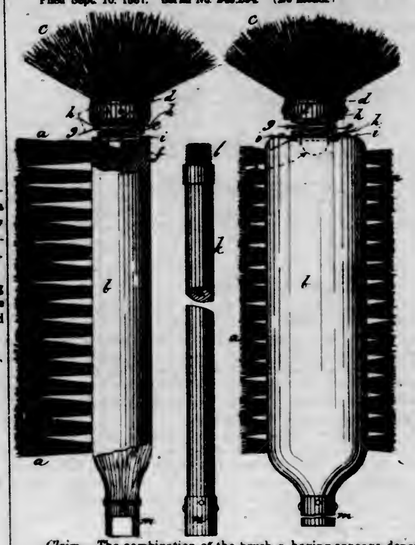
5. A mat composed of a frame, C, having inwardly-projecting edges having notches *c'*, and flat metal bars A and B, having their ends formed to fit the inner face of the frame and projecting into the notches *c'*, substantially as and for the purpose set forth.

377,581. BUTTON. HENRY T. SUMMEY, Waterbury, Conn., assignor to The Scovill Manufacturing Company, same place. Filed Dec. 13, 1887. Serial No. 257,754. (No model.)



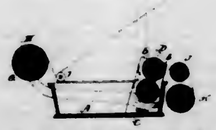
Claim.—The herein-described improvement in that class of buttons which are provided with a tubular shank, consisting in the body of the button constructed with a central recess upon its face, forming a corresponding projection on its rear side, the said recess having a concentric central opening through the bottom, forming a flange around said opening, combined with a tubular shank having an enlarged neck corresponding to the internal diameter of said flange in the button, the shank also constructed with a flange around the enlarged end, the said shank set through the opening in the button to bring the flange of the shank upon the face side of the flange around the opening in the button, and the enlarged neck closed down upon the reverse side of said flange around the opening in the button, substantially as described, and whereby said shank is interlocked with the bottom of the recess in the button.

377,582. DUSTING-BRUSH. JOSEPHINE STEWART, St. Louis, Mo. Filed Sept. 10, 1887. Serial No. 249,294. (No model.)
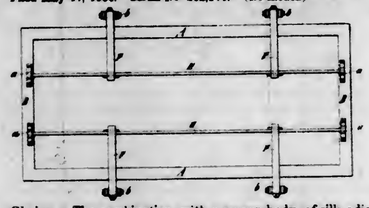


Claim.—The combination of the brush *a*, having concave depression *f*, with brush *c*, provided with stem or shank *e*, spiral spring *g*, and rings *i j*, having cleats *h*, substantially as and for the purpose described.

377,583. METHOD OF COPYING LETTERS AND DOCUMENTS. NORMAN C. STILES, Middletown, Conn. Filed Feb. 19, 1886. Serial No. 192,494. (No model.)



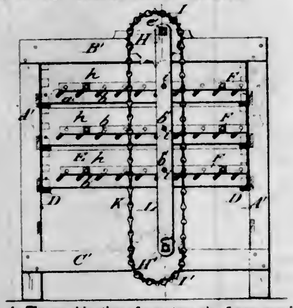
Claim.—The method herein described for copying manuscript documents upon a continuous strip of copying-paper, consisting of the following steps: first, placing the written documents successively upon one surface of the strip of copying-paper; second, dampening the strip, and, third, subjecting the strip and successive documents to pressure, whereby the dampness of the strip will cause the transfer of the contents of the document to the strip, substantially as described.

377,584. **VEHICLE-SPRING.** EDWARD STORM, Poughkeepsie, N. Y. Filed May 17, 1886. Serial No. 202,371. (No model.)



Claim.—The combination, with a wagon-body, of sills adjacent to the ends of said wagon-body, side bars, torsion-springs extending between said sills of approximately the same length as the wagon-body, and a pair of arms extending from each of the side bars to each of said springs and rigidly secured to the springs near their ends, so that there will be a greater distance between the arms for each spring than between said arms and the sills, substantially as specified.

377,585. **HOG-PRESERVER.** ABNEL F. TEMPLE, Muskegon, Mich. Filed Aug. 25, 1887. Serial No. 247,845. (No model.)



Claim.—1. The combination of a rectangular frame provided with cleats D, a series of trays fitted to rest one above another upon the said cleats, the bottom of each tray being formed of rollers and each roller having a crank projecting beyond one side of the tray, a horizontal bar connecting all the cranks of each tray, and a vertical bar attached to one crank of each tray, thereby connecting the several trays, substantially as shown and described.

2. The combination of a rectangular frame, a series of trays fitted to slide one above another into the said frame and to be supported therein, the bottom of each tray being formed of rollers, and each roller having a crank at one end, a horizontal bar beside each tray connecting all the cranks thereof, and a single vertical bar supported upon the frame and provided with a hole on the level of each tray to receive a crank thereof.

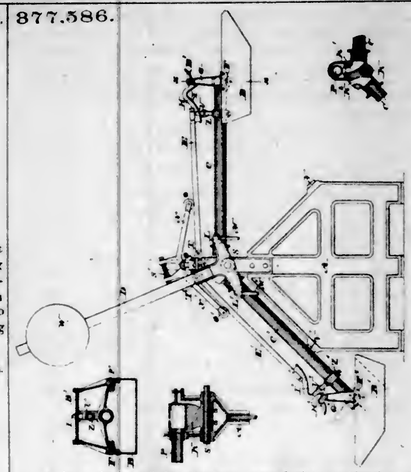
3. The combination of a rectangular frame, two wheels journaled therein, one over the other, and provided with cranks, a vertical bar connecting the said cranks and provided with a series of holes, *i*, a series of trays fitted to slide into the said frame and provided with bottoms formed of rollers, each roller having a crank at one end, horizontal connections between the cranks of each tray, and a crank of each tray adapted to register with the said holes i of the vertical bar, substantially as shown and described.

377,586. **FLUID-MOTOR.** WILLIAM J. THOMAS and ELI I. THOMAS, Malvern, Pa. Filed June 23, 1887. Serial No. 242,220. (No model.)

Claim.—1. An oscillating motor having a rocking shaft with weighted arm attached thereto, and inlet-pipe with a valve communicating with pipes extending outwardly from said shaft, buckets attached to said pipes, and arms pivoted above the center of motion of said pipes and provided with fastening devices having hooked ends adapted to engage bails on said buckets, said parts combined substantially as described.

2. The frame A, having a rocking shaft with weighted arm, in combination with the pipes C C, having an inlet-pipe with valve communicating with either of said pipes C C, buckets pivoted to said pipes and provided with bails B^3, pivoted arms E E, having hooked ends with cam under faces, whereby said buckets are held in position, and a guiding device, substantially as described, secured to each of said pipes and adapted to be in contact with the cam under face of said hooked ends of arms E E, substantially as and for the purpose set forth.

377,586.



3. In a device of the character named, the combination of a frame with a rocking shaft having weighted arm, pipes C C, with inlet-pipe and valve, the arms E E, having hooked ends and cam under faces, the standards Z Z, with rollers U U, respectively, the spring-pressed arms N N, bearing on said arms E E, and buckets pivoted to said pipes C C and having bails B^3, substantially as and for the purpose set forth.

4. The frame A, with a rocking shaft having a weighted arm, in combination with the inlet-pipes C C, an inlet-pipe with valve, buckets pivoted to said pipes C C and having the bails B^3, the pivoted arms E E, having hooked ends with cam under faces, the standards Z Z, with rollers U U, respectively, and the arms N N, having spring pressing said arms on arms E E, substantially as and for the purpose set forth.

5. An oscillating motor consisting of a frame with rocking shaft having weighted arm, the pipes C C, and inlet-pipe with valve, the buckets pivoted to said pipes C C and having bails B^3, the pivoted arms E E, with hooked end portions having cam under faces, the adjustable standards Z Z, with rollers U U, and the spring-pressed arms N N, bearing on said arms E E, said parts being combined substantially as and for the purpose described.

6. An oscillating motor consisting of two oppositely-extending discharge-pipes having an inlet-pipe with a single valve communicating therewith, a rock-shaft with weighted arm, buckets eccentrically pivoted to said discharge-pipes, spring-pressed arms pivoted above said rocking shaft, and provided with means, substantially as described, attached to their outer ends for retaining said buckets in position to hold the liquid from said discharge-pipes when said buckets are raised, the said means being also adapted to be released from said buckets when they are lowered, substantially as and for the purpose described.

377,587. **CARRIAGE-WHEEL.** BRYANT A. TREAT and EDWIN S. PARMELEE, Wallingford, Conn. Filed Oct. 17, 1887. Serial No. 252,528. (No model.)

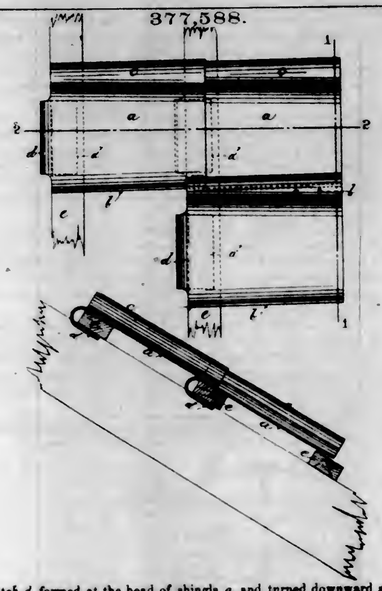


Claim.—The herein-described improvement in carriage-wheels, which consists in making the tenon of the spoke gradually increasing in thickness from the shoulders of the spoke to about midway of the length of the tenon, and from that midway point gradually diminishing toward the inner end of the spoke, substantially as described, the said tenon being adapted to be compressed into the mortise of the hub and expand after its insertion to interlock with the sides of the mortise.

377,588. **GLASS SHINGLE.** EDWARD WALSH, Jr., St. Louis, Mo. Filed June 8, 1887. Serial No. 240,581. (No model.)

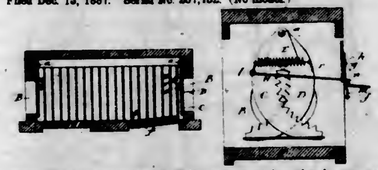
Claim.—In a glass shingle, the combination of the hook or

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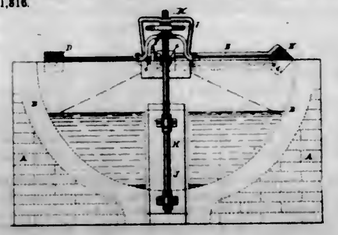
catch *d*, formed at the head of shingle *a*, and turned downward and forward beneath the shingle *a*, as described, lip or flange *b*, and groove or channel *c*, substantially as shown, and for the purpose described.

377,589. **ANIMAL-TRAP.** CHARLES WARNER, Watertown, Conn. Filed Dec. 13, 1887. Serial No. 257,752. (No model.)

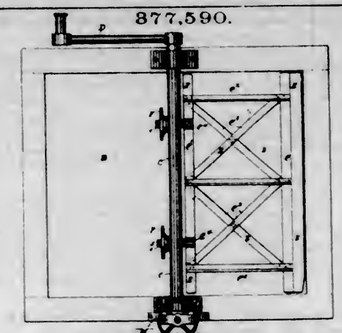


Claim.—The herein-described improvement in animal-traps, consisting of a box or cage having one or more openings into it, a platform pivoted in the floor, a pair of spring-jaws hung to swing in a plane across the opening and parallel therewith, a setting-bar hung to one jaw, and constructed with a shoulder, the other jaw constructed with a catch to engage said shoulder when in the set position, and a trip hung to the body of the trap and in connection with said pivoted platform and adapted to disengage the setting-bar, substantially as described.

377,590. **AMALGAMATOR.** JULES WEIRICH, Beziers, Herault, France. Filed Dec. 8, 1885. Serial No. 185,066. (No model.) Patented in France Oct. 19, 1885, No. 171,735; in England Oct. 27, 1885, No. 12,909; in Brazil Jan. 23, 1886, No. 313; in Canada Feb. 10, 1886, No. 23,391; in India Feb. 12, 1886, No. 19; in Victoria Feb. 19, 1886, No. 4,437; in Italy Mar. 2, 1886, No. 19,319; in New Zealand Mar. 8, 1886, No. 1,741; in Venezuela Mar. 27, 1886; in Austria-Hungary May 1, 1886, No. 41,041 and No. 16,196, and in New South Wales May 3, 1886, No. 1,816.



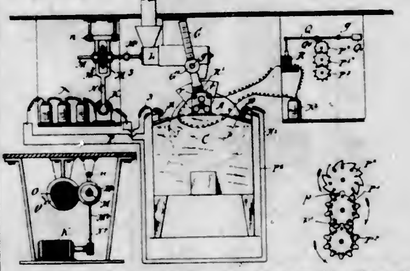
377,590.



Claim.—1. In an amalgamator, the combination, with a semi-cylindrical pan, of a spreader having an oscillating movement, and provided with a blade of rectangular form in cross-section arranged to present one of its angles to the inner surface of the pan, and a crank on the spreader-shaft for oscillating the spreader, substantially as and for the purpose specified.

2. In an amalgamator, the combination, with a semi-cylindrical pan, of a rock-shaft, means, such as described, for imparting to said shaft a rocking motion, a spreader provided with a blade of substantially rectangular form in cross-section arranged to present one of its angles to the inner surface of the pan, and a yielding connection between the spreader and its rock-shaft, substantially as and for the purpose specified.

377,591. **AUTOMATIC GRAIN-WEIGHING APPARATUS.** EDWIN R. WHITNEY, St. Johnsbury, Vt., assignor to the Standard Electric Company of Vermont, same place. Filed Sept. 10, 1887. Serial No. 249,206. (No model.)



Claim.—1. In an automatic grain-weighing machine, the combination, with a suitable framing, of a hopper suspended therein and having two compartments adapted to be filled alternately through separate mouths and having a common discharge-opening, a graduated scale-beam fixed to said hopper and having an adjustable weight thereon, a swinging door adapted to control the discharge of each compartment of the hopper through the common opening, and a pendulous weight in connection with the door and hanging in the central line of gravitation, the whole being combined and arranged so that one compartment will be filled with a regulated quantity of grain while the other is being emptied, substantially in the manner and for the purpose set forth.

2. In an automatic grain-weighing machine, the combination, with a suitable framing, of an annular swinging hopper divided into two compartments having separate mouths and a common discharge-opening, a shaft journaled in said framing and carrying such hopper, a pendulum or counterpoise hung to said shaft, a door hung to a cross-head on the pendulum-rod and adapted to shut off the discharge-opening alternately from each compartment of the hopper, and a vertical scale-beam affixed to the hopper and provided with a sliding weight, substantially as and for the purpose set forth.

3. In an automatic grain-weighing machine, the combination, with a suitable framing carrying electrical contact-pieces, and with an electrical circuit, of an oscillating double-compartment hopper having electrical contact-strips upon its exterior, an intermittent feeding device operated through the electrical circuit by the movement of the hopper, and means whereby the feed and discharge are correspondingly regulated, so as to feed, weigh, and deliver only a specified

quantity alternately from each compartment of the hopper, substantially as and for the purpose specified.

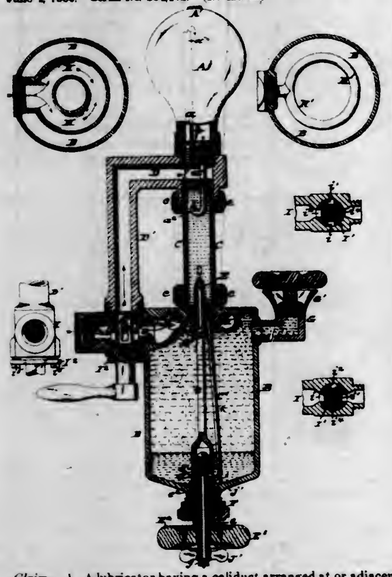
4. In an automatic grain-weighing machine, the combination, with an oscillating double-compartment hopper, of a double electric circuit including a solenoid, a screwed feed-shaft for supplying the hopper, a friction-wheel in connection with said shaft, and a driving-shaft having a corresponding friction-wheel, the whole being so combined and arranged that the oscillation of the hopper will alternately close each branch of the electric circuit, and by influencing the solenoid throw the friction-wheels into contact and actuate the feed-shaft intermittently, for the purpose described.

5. The combination, with the oscillating hopper and casing, both having electrical contact devices, of the screwed feed-shaft S S', pendent hanger N, short shaft M, ball-jointed to said feed-shaft and carried by the hanger, and having friction-wheel M^3, shaft O, having friction-wheel O', and an electric circuit including a solenoid adapted to throw said friction-wheels into contact, substantially as and for the purpose set forth.

377,592. SALVE. GEORGE H. A. WILLIAMS, Concord, N. H. Filed Apr. 30, 1887. Serial No. 236,669. (No specimens.)

Claim.—In a healing-salve, the herein-described ingredients, consisting of pure animal grease, bark of sweet elder, camomile-blossoms, borax, sulphur, and almond-oil, substantially in or about the proportions specified.

377,593. LUBRICATOR. GEORGE W. AMOS, Chicago, Ill. Filed June 4, 1886. Serial No. 204,172. (No model.)



Claim.—1. A lubricator having a caliduct arranged at or adjacent to the point of outlet for the lubricant, with its bottom in a plane above its source of steam-supply, substantially as set forth.

2. The combination, with a lubricator, of a caliduct arranged within the reservoir, with its bottom in a plane above its source of steam-supply, and its walls forming an integral part of the casing of the lubricator-reservoir, substantially as set forth.

3. In a lubricator in which the feed of the lubricant is effected upwardly through a visible feed-discharge tube by the force of a heavier column of water, a caliduct, H, at the upper end of the lubricant-containing reservoir, and with its bottom arranged in a plane above its source of steam-supply, substantially as and for the purpose set forth.

4. The combination, in a lubricator, of a condenser, A, steam-inlet passage D, water-column C, reservoir B, independently-arranged caliduct H, and three-way valve or cock I', substantially as described, and for the purpose set forth.

5. In a lubricator constructed essentially as herein described, the combination, with the inlet-passage D to the condenser and independently-arranged caliduct H and its supply-passage, of a three-way valve having passages i i^2 i^3 and solid portion i^4, essentially as and for the purpose set forth.

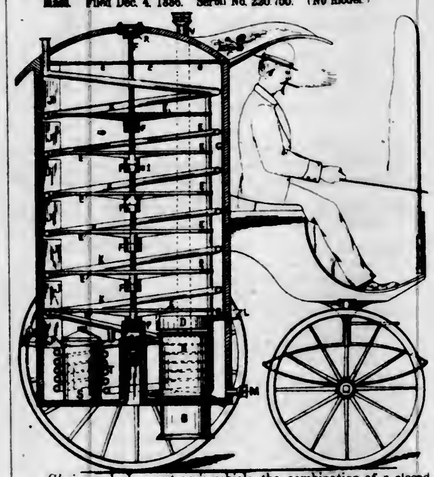
6. In a lubricator, the combination of the condenser A, reservoir B, connecting water-column C, water-conducting tube a', extending down into the water-column and provided with a return-bend or trap portion, a^2, steam-inlet passage D, communicating with the water-column at its upper end, and oil-discharge nozzle E, communicating with the water-column at its lower end, substantially as described.

7. In a lubricator, the combination of the condenser A, reservoir B, connecting water-column C, water-conducting tube a', extending down into the water-column and provided with a return-bend or trap portion, a^2, steam-inlet passage D, communicating with the water-column at its upper end, oil-discharge nozzle E, communicating with the water-column at its lower end, and caliduct H, substantially as described.

8. In a lubricator, the combination, with an oil outlet or nozzle, E, arranged at the upper end of the reservoir, of a valve, E', having a stem extending down through said reservoir and provided with a tubular lower portion forming a valve-seat, and drain-valve J, the parts being arranged and adapted to operate in the manner substantially as herein described.

9. In a lubricator, the combination, with an oil outlet or nozzle, E, arranged at the upper end of the reservoir, of the valve E', having the lower end of its stem made tubular and provided with openings e', in combination with the plug-valve J, having a tubular stem provided with vertical passage j and cross-passage j', essentially as and for the purpose set forth.

377,594. CATERER'S VEHICLE. JOSEPH F. BALDWIN, Cambridge, Mass. Filed Dec. 4, 1886. Serial No. 220,755. (No model.)



Claim.—1. In a caterer's vehicle, the combination of a closed body mounted upon wheels and provided with a central support, a series of shelves carried by said support, door opposite said shelves, a heater, a water-receptacle, and a perforated pipe communicating therewith for supplying moisture to the interior of the vehicle, substantially as and for the purpose set forth.

2. In a caterer's vehicle, the combination with a closed body mounted upon wheels, as described, of a central support within said body, spring-bearings for the support, shelves rotatably carried by said support, and a door opposite the shelves, substantially as and for the purpose set forth.

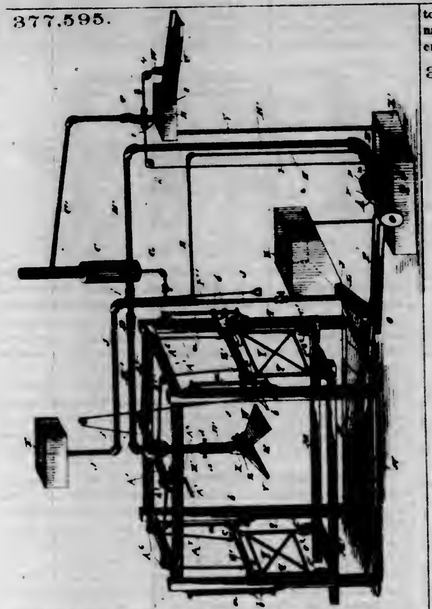
3. In a caterer's vehicle, the combination of a vertical body mounted upon wheels, as described, a central support, a series of independent shelves rotatably mounted upon said support, doors opposite the shelves, a heater, a heating-coil connected therewith and surrounding the shelves, a water-receptacle, and a perforated pipe communicating with the latter for supplying moisture to the interior of the vehicle, substantially as and for the purpose set forth.

4. A caterer's vehicle consisting of a vertical body mounted upon wheels, a spring-seated rod within the body, shelves loosely supported by said rod, doors J, heater B, drum D, perforated pipe G, heating-coil K, vessel S, coil T, surrounding the latter and communicating with the coil K, and pipe L, substantially as and for the purpose set forth.

377,595. STONE-SAWING MACHINE. VALENTINE G. BARNEY, Charles City, Iowa, and R. LESTER BARNEY, Swanton, Vt. Filed Nov. 4, 1886. Serial No. 218,001. (No model.)

Claim.—1. In a stone-sawing machine, the combination, with a

377,595.



reciprocating saw-frame, a distributer, and the vertical sand-cleaner C, situated between the pump and distributer, of the coil-pump composed of the coils p and the receiving-coil p', of larger diameter than the former, which coils are wound on a horizontal drum, the piping connecting said pump with the cleaner, and the piping connecting the cleaner with the distributer, substantially as specified.

2. The combination, in a stone-sawing machine, of a pump secured to a revolving pipe, a, the stationary pipe B, the stuffing-box having the packing t, and the clear-water pipe H, connecting with the stuffing-box B, substantially as specified.

3. In a stone-sawing machine, the combination of the coil-pump consisting of coils wound on a horizontal drum, the tank Q, the cleaner C, the piping connecting said pump and cleaner, the discharge-pipe C' from the cleaner, the distributer, the piping connecting the distributer and cleaner, and the flexible joint in said piping, substantially as specified.

4. The combination, with the tank Q, the pump, the receiver, and the pipe connecting the pump and receiver, the pipe C', flexible pipe T, the weight W', its cord, and the cord connecting the flexible pipe T to a float in the tank Q, the tank S, and spout U, substantially as specified.

5. The combination, with the coil-pump consisting of coils wound on a horizontal drum, of the tank Q and the curved and inclined director blade or plate A', substantially as specified.

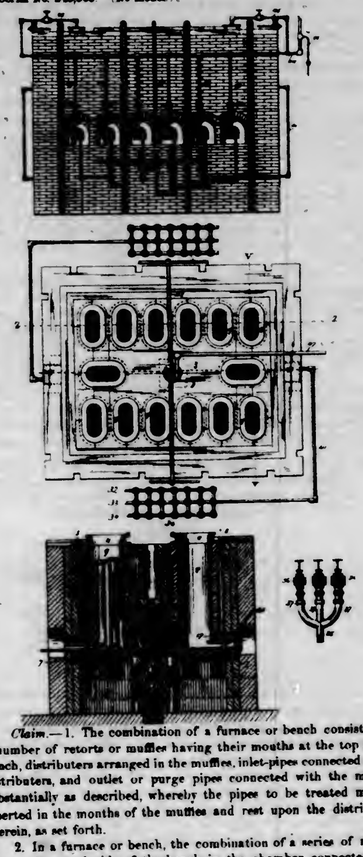
377,596. LATHE-CHUCK. EDMOND P. BAVILLE, Brussels, Belgium, assignor, by mesne assignments, to Stephen Nicholson and Stephen Waterman, both of Providence, R. I. Filed Oct. 27, 1886. Serial No. 217,317. (No model.) Patented in England June 24, 1881, No. 2,771, and Apr. 30, 1886, No. 5,875.



Claim.—1. The combination, with the face-plate A, having the hub A^x formed integrally therewith, and the gripping-blocks adapted to slide on said face-plate, of the radial screws engaging said blocks and having the pinions secured thereto, the crown-wheel A', surrounding and adapted to turn freely upon the cylindrical portion of said hub, and the ring G, secured to said hub for holding the wheel in place.

2. The combination, with the face-plate A, having the perforated hub A^x formed integrally therewith, and screw-threaded both internally and externally, of the gripping-blocks adapted to slide on said face-plate, the radial screws engaging said blocks and having the pinions secured thereto, the crown-wheel A', surrounding and adapted to turn freely upon the cylindrical portion of the hub, and the internally-screw-threaded ring G, screwed onto the hub for holding the crown-wheel in place, substantially as set forth.

377,597. APPARATUS FOR TREATING PIPES AND SIMILAR MATERIALS. HENRY G. BEATLEY, Ithaca, N. Y. Filed June 7, 1887. Serial No. 240,565. (No model.)



Claim.—1. The combination of a furnace or bench consisting of a number of retorts or muffles having their mouths at the top of the bench, distributers arranged in the muffles, inlet-pipes connected to the distributers, and outlet or purge pipes connected with the muffles, substantially as described, whereby the pipes to be treated may be inserted in the months of the muffles and rest upon the distributers therein, as set forth.

2. In a furnace or bench, the combination of a series of muffles arranged on each side of the bench in the chamber connected with the furnaces, shorter muffles, as 40, arranged between the series of muffles, also in the chamber, fire-places arranged below the shorter muffles, a series of flues arranged in the bed below the muffles communicating with the chamber, passages in the bed-tile supporting the muffles, and dampers for controlling the passage of heat through the chamber and flues and around the muffles, substantially as described.

3. A bench or furnace consisting of a bed portion containing the flues and dampers, bed-tile placed over the flues and having passages communicating between the flues and chamber above the tile, a series of muffles arranged upon the bed-tile and having their mouths at the top of the bench, a pier arranged between the muffles, and furnaces arranged in the ends of the bench communicating with the chamber, substantially as described.

4. In a bench or furnace, the combination, with the muffles, of the distributers arranged in the bottom of the muffles, said distributers being provided with conical perforated tops, substantially as described.

5. In a bench or furnace, the combination, with a series of vertical muffles, of the gas-distributers arranged in the bases of the muffles, the said distributers having conical tops provided with perforations, whereby the pipes to be treated will automatically center upon the distributer, substantially as described.

6. In a bench or furnace, the combination, with the muffles, of the distributers arranged in the bottoms of the muffles and adapted to

support the pipes to be treated, and supply-pipes connected to the distributers, whereby the gases may be forced through the distributers, substantially as set forth.

7. The double gas-distributer consisting of a base having two substantially cylindrical bodies joined together and each covered with a perforated conical top, substantially as described.

8. In a bench or furnace, the combination, with the muffles, of the distributers arranged in the bottom of the muffles, a series of pipes connected to a valve-board, and a series of valves connecting said pipes with the distributer, whereby any one or more gases or vapors in said pipes may be supplied to the distributer in any desired order, substantially as described.

9. The combination, with the muffles and gas-distributers located therein, of a series of gas or vapor supply pipes, a series of valves in said pipes, connections between said valves and the exit-pipe, and pipes connecting each exit to its respective distributer, substantially as described.

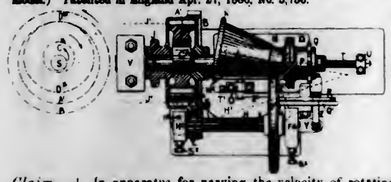
10. In a bench or furnace, the combination, with the muffles, of the distributers arranged in the bottoms of the muffles and adapted to support the pipes to be treated, supply-pipes connected to the distributers, and exhaust purge-pipes connected to the muffles, the said purge-pipes being connected with a vacuum-jet, substantially as described.

11. The combination, with the muffles, of the gas-distributers arranged therein, and the purge-pipes having valves for controlling the discharge of the gases, the said valves being provided with openings, whereby when the valves are closed a passage is provided through the valves for the purpose of keeping up a constant circulation in the muffles, substantially as described.

12. A bench or furnace having a double series of muffles arranged upon opposite sides, a furnace arranged in each end, short muffles arranged above the furnaces, a central pier, a superheater arranged in the pier, gas-distributers arranged in the muffles, and a series of pipes and valves connecting with said distributers, substantially as described.

377,598. APPARATUS FOR VARYING THE VELOCITIES OF ROTATING MECHANISM.

WILLIAM W. BRAUNOUT, Herne Hill, County of Surrey, England. Filed May 5, 1887. Serial No. 237,193. (No model.) Patented in England Apr. 27, 1886, No. 5,736.



Claim.—1. In apparatus for varying the velocity of rotating mechanism, the cone A, in combination with a rotating spindle, S, which is mounted about parallel with one side of the cone, and is attached to the small end of the cone by a flexible joint, a bearing for supporting the larger end of the cone, a motion-transmitting appliance in frictional contact with the side of the cone, and means, as described, for altering the relative position of the cone A and the motion-transmitting appliance, substantially as set forth.

2. The cone A, supported as described, in combination with a rotating spindle, S, which is mounted about parallel with one side of the cone and is attached to the small end of the cone by a flexible joint, a wheel, F, on a spindle, H, which also carries a pinion, E, epicyclic toothed wheels gearing with said pinion, and means, substantially as described, for altering the relative position of the cone A and the wheel F, substantially as and for the purposes set forth.

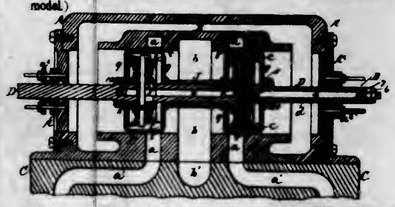
3. The cone A, supported as described, in combination with a rotating spindle, S, to which its small end is connected by ball-and-socket joint P Q, and key E', the friction-wheel F, and a lever for altering the relative position of the cone A and the wheel F, substantially as set forth.

4. A cone, A, in combination with a rotatable spindle, S, to which the small end of said cone is connected by a ball-and-socket joint, P Q, keys E', pins Y', passing through said parts P Q, for securing the keys in place, and a roller, G, on the spindle S, for supporting the large end of the cone A, substantially as set forth.

5. The cone A, supported as described, in combination with a rotating spindle, S, to which the small end of the cone is connected in the manner described, an eccentric, C^3, on the spindle S, a spur-wheel, D^3, which works thereon, epicycloidal toothed wheels A' and B, which gear with the spur-wheel D^4, a pinion, E, which gears with the toothed wheel B, and which is fixed on a spindle, H, whereon is also fixed a friction-wheel, F, adapted to work in contact with the cone A, a lever, R, a brake, X, for the wheel F, and connections between the latter and the cone A for shifting the latter relatively to the wheel F, substantially as set forth.

377,599. PISTON-VALVE.

THOMAS H. BOURKE, Cleveland, Ohio, assignor of one-half to William H. Teare, Thomas R. Teare, and John T. Bourke, all of same place. Filed Apr. 29, 1887. Serial No. 236,553. (No model.)



Claim.—1. The combination, with a steam-chest having a cylindrical valve-seat and having stuffing-boxes at its ends in the line of the axis of the seat, of a double-piston valve having its rod sliding in the stuffing-boxes and having expansible wearing-rings upon the pistons, and a bar extending outside through one end of the steam-chest and provided with means for simultaneously expanding the wearing-rings, as and for the purpose shown and set forth.

2. The combination, with a steam-chest having a cylindrical valve-seat and having stuffing-boxes in its ends, of a double-piston valve within the seat, having its rod sliding in the stuffing-boxes, and having means for expanding its packing-rings from without the steam-chest without opening the latter, as and for the purpose shown and set forth.

3. The combination, with the steam-chest having a cylindrical valve-seat and stuffing-boxes in its ends in the line of the axis of the seat, of a double-piston valve within the seat, having its rod sliding in the stuffing-boxes and formed with the bore extending out through one end and having expansible wearing-rings, and an adjusting-rod in the core of the valve-rod, provided with means for adjusting it longitudinally in the said bore and with means for simultaneously expanding the wearing-rings of the piston by its longitudinal adjustment, as and for the purpose shown and set forth.

4. The combination, with a steam-chest having a cylindrical valve-seat and stuffing-boxes in its ends in the axial line of the seat, of a double-piston valve having expansible wearing-rings upon the pistons and having its rod sliding in the stuffing-boxes of the steam-chest and formed with a bore extending from one end to the end of the piston farthest from the hollow end of the rod, an adjusting-rod within the core of the valve-rod having adjusting-nuts at its outer end bearing against the end of the valve-rod, and expanding heads sliding upon the valve-rod within the pistons and the expansible wearing-rings and rigidly connected to the adjusting-rod, as and for the purpose shown and set forth.

5. The combination of a valve-rod having two outwardly-facing shoulders and having screw-threaded portions extending to the shoulders, two inner piston-plates fitting upon the rod with their central apertures, a spacing-sleeve upon the rod separating the inner plates, two outer piston-plates fitted with their central apertures upon the rod and against the faces of the shoulders, and jam-nuts upon the screw-threaded portions of the valve-rod bearing against the outer piston-plates, as and for the purpose shown and set forth.

6. The combination of a valve-rod having two outwardly-facing shoulders and having screw-threaded portions extending to the shoulders, two inner piston-plates fitting upon the rod with their central apertures, a spacing-sleeve upon the rod separating the inner plates, two outer piston-plates fitting with their central apertures against the shoulders of the rod, expansible wearing-rings placed between the piston-plates and forming tight joints with their edges against the facing sides of each pair of piston-plates, and jam-nuts upon the screw-threaded portions of the rod clamping the outer plates against the edges of the wearing-rings, as and for the purpose shown and set forth.

7. The combination, in a double-piston valve, of the rod, the pistons upon the rod formed by two pairs of plates separated by means of a sleeve upon the rod bearing with its ends against the inner plates and having two expansible wearing-rings placed between the two plates of each pair and having jam-nuts securing the outer plates, and cone-shaped expanding heads sliding within the pistons upon the rod and having means for simultaneously adjusting them within the pistons, as and for the purpose shown and set forth.

8. The combination, with the steam-chest having a cylindrical valve-seat, of a hollow valve-rod having bearings in both heads of the steam-chest, piston-heads loosely mounted upon the piston-rod, an adjusting-rod keyed to the piston-heads and extending outside of the steam-chest, and expansible wearing-rings, as and for the purpose shown and set forth.

9. The combination of a hollow valve-rod having transverse slots, truncated conical piston-heads longitudinally movable upon the rod, an adjusting-bar longitudinally movable within the bore of the rod and having keys sliding in the slots of the rod and secured to the piston-heads and having means for adjusting it in the bore of the rod, and expansible packing or wearing rings, as and for the purpose shown and set forth.

10. The combination, with a valve-rod, plates fixed upon the rod, and expanding and wearing rings held between the plates, of a truncated conical piston-head mounted longitudinally adjustable upon the valve-rod between the plates, as and for the purpose shown and set forth.

11. The combination, with a valve-rod, truncated conical piston-heads loosely mounted and longitudinally adjustable upon the rod, and expansible wearing-rings, of an adjusting-bar keyed to the piston-heads and having means for longitudinally adjusting and locking it, as and for the purpose shown and set forth.

12. The combination of a valve-rod having a tubular end portion provided with transverse slots, an adjusting-bar within the rod and having openings corresponding with the slots, adjusting and lock nuts upon the end of the bar, truncated conical piston-heads, divided expanding rings, keys passing diametrically through the piston-heads and through the slots in the rod and openings in the bar and having their ends projecting between the ends of the divided expanding rings, and split wearing-rings upon the outside of the expanding rings, as and for the purpose shown and set forth.

13. The combination of a valve-rod having a tubular end portion formed with transverse slots, two pairs of plates upon the rod, a sleeve interposed upon the rod between the two pairs of plates, nuts securing the outer plates, an adjusting-bar within the rod and having openings corresponding with the slots, adjusting and locking nuts upon the end of the bar, truncated conical piston-heads, divided expanding rings, keys passed diametrically through the piston-heads and through the slots in the rod and openings in the bar and having the ends projecting between the ends of the divided expanding rings, and split wearing-rings upon the outside of the expanding rings, as and for the purpose shown and set forth.

14. A slide-valve consisting of two pistons, each composed of a packing-ring, an expanding ring, a conical piston-head, and inclosing-plates secured upon a hollow valve-rod and having means for simultaneously longitudinally adjusting the piston-heads upon the valve-rod through a longitudinal bore in the same and outside of the steam-chest, as and for the purpose shown and set forth.

15. The combination, in a double-piston valve, of a valve-rod made hollow with longitudinal slots in planes at right angles to each other, an adjusting-rod within the valve-rod having openings corresponding to the slots and having means for longitudinally moving and adjusting it within the bore of the rod, and expanding heads sliding upon the rod and having keys secured diametrically through them and passing through the slots and openings in the valve-rod and adjusting the keys thus standing in planes at right angles to each other, as and for the purpose shown and set forth.

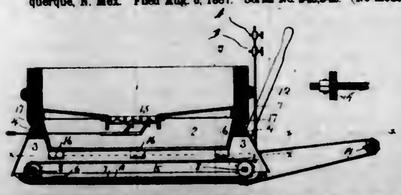
16. In an expansible piston-valve, the combination of a split packing or wearing ring and a slot in one side with an expanding ring having a rib upon one side fitting into the slot of the wearing-ring, as and for the purpose shown and described.

17. In an expansive piston-valve, the combination of a split packing or wearing ring having its ends notched to form a slot, with an expanding ring having a rib upon one side fitting into the slot formed by the notches locking the ends of the ring and closing the joint, as shown and described.

18. In a piston-valve for steam-engines, the split packing-ring S, having its ends notched, as at A, and the two-part ring c, of wedge shape in cross-section, one part whereof has the outer surface rib or projection, *g*, in combination with the conical piston-head 3, having a diameter-opening, *d'*, the hollow piston-rod D, having the cross-slot 2, the rod 4, having the cross-slot 5, the locking-key *e*, and the adjusting and locking nuts 7 6, placed upon the rod 4 exterior to the steam-chest against the exterior hollow end of the piston-rod, substantially as described, for the purpose specified.

377,600. LOCOMOTIVE ASH-PAN.

PERRY J. BROWN, Albuquerque, N. Mex. Filed Aug. 6, 1887. Serial No. 246,342. (No model.)



Claim.—1. The combination of the fire-box, the ash-pan, and the conveyer arranged in the ash-pan, for the purpose set forth, substantially as specified.

2. The combination, in a locomotive, of the fire-box, the ash-pan, the endless conveyer arranged in the ash-pan, and connections between said conveyer and one of the shafts of the locomotive to operate the conveyer when the locomotive is in motion, substantially as shown and described.

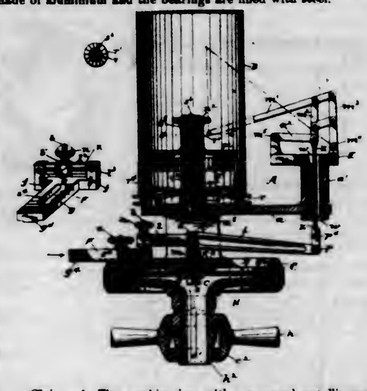
3. The combination of the ash-pan, the pipe to discharge steam or water into the same, for the purpose set forth, and the endless conveyer arranged in the ash-pan, substantially as described.

4. The combination of the fire-box, the hopper 2, depending from the lower side thereof and having the downward-converging sides, the ash-pan arranged below the hopper and having the inclined sides parallel to the sides of the hopper, and the hangers or brackets connecting the sides of the ash-pan to the fire-box, substantially as described.

377,601. STEAM-ENGINE INDICATOR.

WALTER F. BROWN, Providence, R. I. Filed July 7, 1887. Serial No. 243,618. (No model.)

Brief.—The levers and links of the multiplying mechanism are made of aluminium and the bearings are lined with steel.



Claim.—1. The combination, with a mounted metallic spring-diaphragm having a main lever, as L, attached thereto and an adjustable fulcrum for the lever, of recording mechanism actuated by the said main lever, and a paper-carrying spring retractile drum adapted to revolve by means of a flexible connection attached to a reciprocating part of the engine.

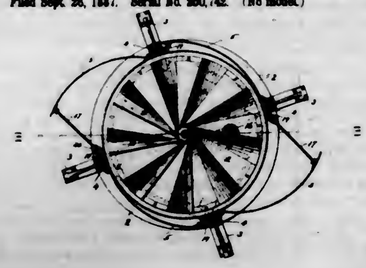
2. The combination, with a pressure-cffamber, a metallic spring-diaphragm mounted therein, and an adjustably-mounted stop for limiting the motion of the diaphragm, of an adjustably-fulcrumed lever, as L, attached to and moving with the diaphragm, a recording mechanism jointed to the free end of the lever, and a spring retractile drum adapted to carry a paper upon which the diagram is made by said recording mechanism, substantially as hereinbefore described.

3. A steam-engine indicator having a mounted metallic spring diaphragm, a paper-carrying drum mounted above the diaphragm, an adjustably-fulcrumed lever attached to said diaphragm and located intermediate thereof and the drum, a recording device or multiplying mechanism jointed to the diaphragm-lever, and a mounted hollow spindle vertically supporting said multiplying mechanism, all combined and operating substantially as hereinbefore described, and for the purpose specified.

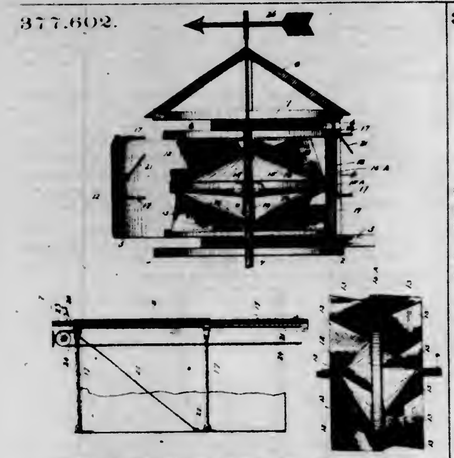
4. In a steam-engine indicator, the combination of a mounted metallic spring-diaphragm, a multiplying mechanism connected therewith, and an adjustable stop for limiting the movement of the diaphragm, substantially as hereinbefore described.

377,602. WINDMILL.

LEONARD A. COOPER, Atchison, Kans. Filed Sept. 26, 1887. Serial No. 250,742. (No model.)



377,602.



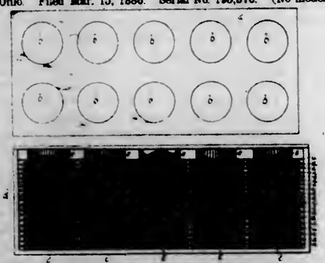
Claim.—1. The combination, with the spindle 9, of a wheel keyed thereon, sails secured to said wheel, a centrally-inclined flooring or plate surrounding said spindle, and a number of balls or weights on said incline, substantially as set forth.

2. The combination, with the sails, of a hollow shell to which said sails are secured, a centrally-inclined plate arranged horizontally in said shell, and a number of balls supported by said plate, substantially as set forth.

3. The combination, with the door 5, sleeve 18, and a rod, 19, of the arms 17, hinged to said door and sleeve, respectively, and the cord 21, connected to said door and passing over pulley 20, connected with said sleeve, substantially as set forth.

4. The combination, with the door 5, sleeve 18, and rod 19, of the arms 17, hinged to said door and sleeve, respectively, and the cord 21, secured to the door and passing over a pulley, 20, on said sleeve, and the cord 24, secured to said sleeve and passing over pulley 23 at the upper end of the rod 19, substantially as set forth.

377,603. **MEANS FOR PACKING FLYING TARGETS.** FREDRICK C. DAMM, Decatur, Ill., assignor to the Cleveland Target Company, Cleveland, Ohio. Filed Mar. 15, 1886. Serial No. 195,370. (No model.)

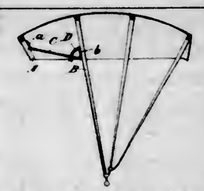


Claim.—1. A packing-case and a series of diaphragms provided with a number of perforations, the perforations of the diaphragms registering with each other in series, in combination with a layer of targets between each two diaphragms, the bases of the targets of each layer being supported by one of such diaphragms and the apices of the targets projecting into the perforations of the opposing diaphragm, substantially as described.

2. A packing-case and a series of diaphragms provided with a number of rows of perforations, the said rows and perforations in the several diaphragms registering with each other, in combination with layers of targets between said diaphragms, the bases of said layers being supported on one of said diaphragms and their apices projecting into the perforations of the opposing diaphragms, whereby the corresponding targets of the several layers are maintained in an axial line, and packing-space between the diaphragms is utilized to a maximum degree, substantially as described.

377,604. **BUGGY-TOP.** WILLIAM DAVIS, Montreal, Quebec, Canada. Filed Jan. 31, 1887. Serial No. 226,048. (No model.)

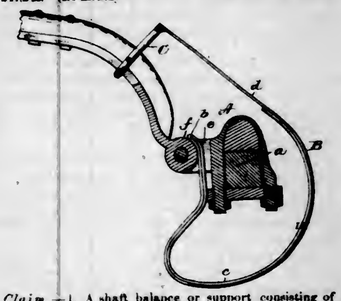
Claim.—1. In a folding buggy-top, the combination of the following elements, viz: the front bow cut away below cover and always radial to pivot-point of second bow, and rigid stay pivoted both to first and second bow, all as herein set forth.



2. The combination of the front bows, A, second bows, B, and rigid stays C, hinged to plates *a* and *b* on first and second bows, all as and for the purposes set forth.

3. In a buggy-top, the combination, with the second bow and cut-away first bow and stay connecting the same, of curved locking-strip, with spring-jaws passing through slot in stay, all as and for the purposes set forth.

377,605. **COMBINED ANTI-RATTLER AND SHAFT-SUPPORT.** ALMOND DELAMATER, Meadville, Pa. Filed Aug. 18, 1887. Serial No. 247,248. (No model.)

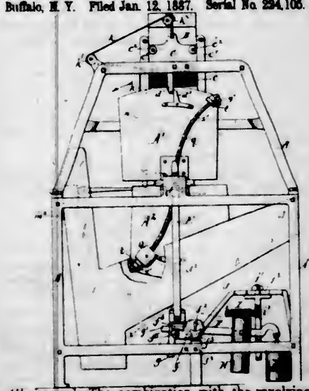


Claim.—1. A shaft balance or support consisting of a spring doubled upon itself and bent as shown, and having at its upper portion a hook end, the whole made in one piece, as shown and described

2. A shaft balance or support consisting of a spring bent at *b* to form a curve, and also provided with a U-shaped bend, *c*, vertical portion *d*, and hook end C, as shown and described.

3. In a shaft balance or support, the combination, with the thill coupling having the recess *e*, of the spring B, having curve *b*, bend *c*, vertical portion *d*, and hook end C, said curve *b* adapted to engage the recess, and the said hook end C engaging the shafts, whereby the said shafts are supported in a vertical position, all constructed and arranged to operate as shown and described.

377,606. **AUTOMATIC GRAIN-SCALE.** CHAUNCEY B. POMEROY, Cleveland, Ohio, assignor to the John T. Noye Manufacturing Company, Buffalo, N. Y. Filed Jan. 12, 1887. Serial No. 224,105. (No model.)



Claim.—1. The combination, with the revolving buckets, of a feed-spout having a vertical discharge-opening, a feed-gate moving in vertical ways, and actuating mechanism connected with the feed-gate and operated by the buckets in two successive movements, whereby the feed-gate is first partially lowered and then completely lowered to shut the spout, substantially as set forth.

2. The combination, with the revolving buckets, of a feed-spout, a feed-gate moving in vertical ways, a lever, K, connected with the feed-gate, and a detent, M, provided with shoulders *m m'*, whereby the lever K is caused to make two successive movements in closing the feed-gate, substantially as set forth.

3. The combination, with the revolving buckets, of a feed-spout, a feed-gate moving in vertical ways, a lever, K, connected with the feed-gate, a detent, M, provided with shoulders *m m'*, and a cam, L, connected with the buckets, substantially as set forth.

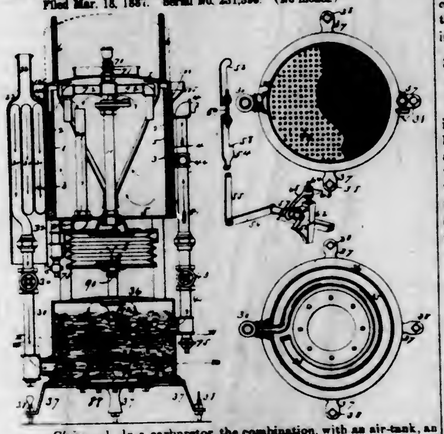
4. The combination, with the revolving buckets, of a rod secured to the buckets diametrically across their axis of rotation, stops formed at the ends of said rod near the outer edges of the buckets, and a movable retarding-weight mounted on said rod, substantially as set forth.

5. The combination, with the revolving buckets, of a rod secured to the buckets diametrically across their axis of rotation, elastic cushions mounted on both ends of said rod, and a movable retarding-weight mounted on said rod, substantially as set forth.

6. The combination, with the revolving buckets, of a rod secured to said buckets and provided with a spiral groove, and a movable retarding-weight mounted on said rod and provided with a projection entering said groove, substantially as set forth.

7. The combination, with the buckets A' A', secured to a shaft, *a*, having a loop, *r*, of a rod, *g*, secured to the buckets and extending through said loop, and a movable retarding-weight, Q, mounted on said rod and adapted to move through said loop, substantially as set forth.

377,607. **CARBURETOR.** MICHAEL A. FOSTER, St. Louis, Mo. Filed Mar. 18, 1887. Serial No. 231,399. (No model.)



Claim.—1. In a carburetor, the combination, with an air-tank, an oil-tank, and a pipe for supplying oil to the air-tank, of an inlet-pipe and an outlet-pipe communicating with the air-tank, said outlet-pipe also communicating with the oil-tank, and a carbureted-air pipe leading from the oil-tank, as and for the purposes set forth.

2. The combination, in a carburetor, with an air-tank, an oil-tank, a pipe connecting the air-tank with the oil-tank, a pipe leading from the oil-tank, and a suitable air-supply for the air-tank, of a pipe for supplying oil to the air-tank, and a pipe provided with suitable cocks connecting the inlet and outlet pipes of the oil-tank, for the purposes set forth.

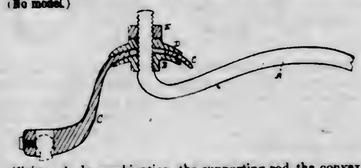
3. The combination, with a carburetor having air-supplying mechanism, substantially as herein described, of an automatic braking mechanism, which consists in a brake-shoe, 50, mounted on the shaft 57, a crank, 56, vertical shouldered plate 54, and a projection on the gasometer for engaging the shouldered plate and applying the brakes to the driving mechanism, as shown and described.

4. In combination with a carburetor made substantially as herein shown and described, mechanism for governing the operation of the air-supply bellows, which consists in a weighted cord, a winding-drum, and intermediate driving-gear, a brake, substantially as described, operated by a projection on the gasometer engaging an adjustable shouldered plate connected to a crank on the brake-shaft, said shouldered plate consisting of the parts 53 58 and adjusting-screw 59, as set forth.

5. In a carburetor, substantially as herein described, the combination, with the mechanism for operating the air-supply, of a brake bearing against a wheel in said mechanism, said brake consisting of a shoe, 50, mounted on shaft 57, a wedge, 62, an arm, 65, on the shaft, a set-screw in the end of the arm bearing upon the wedge, a crank on the shaft, and connected to the crank a rod which is controlled by the gasometer.

6. The combination, with the air-tank and oil-tank, of a pipe, 30, connecting the two tanks, a bellows, 8, supported by a pipe, 11, projecting from the air-tank and making air-connection between the bellows and said tank, perforated plate 39 in the oil-tank, wire-gauze 40 above plate 39, and an outlet, 41, for carbureted air, the said pipe 30 terminating in the perforated coil beneath the plate 39, as and for the purpose set forth.

377,608. **CANOPY-HOLDER FOR CHILDREN'S CARRIAGES.** PETER GENDRON, Toledo, Ohio. Filed Oct. 18, 1887. Serial No. 252,657. (No model.)



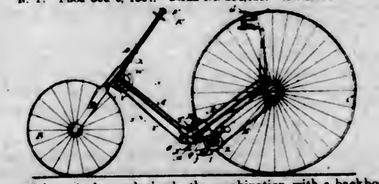
Claim.—1. In combination, the supporting-rod, the convex-faced nut, concave washer, and retaining-nut, with an adjustable arm provided with a concavo-convex slotted head, substantially as and for the purpose set forth.

2. The combination of the supporting-rod A, convex-faced nut B, concave washer D, retaining-nut E, and adjusting-arm C, provided with the slotted head *a*, the parts being constructed, arranged, and operating substantially in the manner and for the purposes set forth.

377,609. **MANUFACTURE OF STEEL AND INGOT-IRON.** PERCY C. GILCHRIST, Westminster, County of Middlesex, England. Filed Aug. 23, 1887. Serial No. 247,682. (No specimens.)

Claim.—The improvement in the manufacture of steel and ingot-iron by the basic process, which consists in charging a basic-lined open-hearth furnace with a portion of the metal to be converted and with a portion of the basic material necessary for its purification, and, when said charge is in a molten or semi-molten state, running in thereon from a basic Bessemer converter a molten charge, together with the basic slag which has been formed, which slag contains excess of lime and iron oxides, substantially as and for the purposes set forth.

377,610. **VELOCIPEDE.** CHARLES H. GOODSELL, Poughkeepsie, N. Y. Filed Oct. 6, 1887. Serial No. 251,623. (No model.)



Claim.—1. In a velocipede, the combination, with a backbone or frame, a driving-wheel, and a steering-wheel, of a steering-bar centrally pivoted to the frame of the steering-wheel, a pulley geared to the driving wheel and having a ratchet on its shaft, and connections between the pivoted steering-bar and a pawl or pawls engaging with the ratchet, substantially as described.

2. The combination, with a backbone or frame and a steering and driving wheel, of ratchets on the shaft of the driving-pulley, pawls engaging with the ratchet, a steering-bar centrally pivoted to the frame, and links and bell-cranks connecting said steering-bar to the pawls, substantially as described.

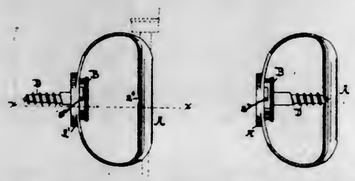
3. The combination, with a backbone or frame and a steering and driving wheel, of a ratchet connected to said driving-wheel, a pawl made to engage said ratchet, and a rocking actuating-handle and releasing mechanism connected to said pawl, substantially as set forth.

4. The combination, with a backbone or frame, a steering and driving wheel, and a ratchet connected to said driving-wheel, of an actuating-handle, a bell-crank lever connected to said handle, and a pawl jointed to said bell-crank lever and made to engage said ratchet, substantially as set forth.

5. The combination, with a backbone or frame and with a driving and a steering wheel, of ratchets on the shaft of the driving-pulley, pawls engaging with said ratchets, bell-cranks mounted on the

frame and connected to said ratchets, links connected to the bell-cranks, and a steering-bar centrally mounted to oscillate on the frame and connected to said links, a loop being carried around the pawl and held by a cam-lever to throw the pawl out of gear with the ratchet, substantially as shown and described.

377,611. **REVERSIBLE SCREW-EYE.** CORNELIUS O. HARLEY, Leeds, Mass. Filed June 17, 1887. Serial No. 241,675. (No model.)



Claim.—1. The reversible screw-eye herein described, consisting of a handle provided with a centrally-perforated hub, said hub having in its face and surrounding the perforation therethrough a depression to receive the head of a screw, a screw the head of which is fitted to said depression, and a centrally-perforated cap fitted to said hub, substantially as set forth.

2. A screw-eye comprising, in combination, an eye or handle and a detachable and reversible screw, said eye or handle having a hub screw-threaded upon its periphery, and having a central bore to receive the shank of the screw and a depression in its face corresponding in size and outline with the head of the screw to receive said head, and a cap adapted to be screwed upon said hub, said cap having a central opening corresponding in size and outline to the depression in the face of hub, substantially as set forth.

3. A screw-eye comprising, in combination, an eye or handle and a detachable and reversible screw, said eye or handle having a hub bored to receive the shank of the screw, and having in its face a depression corresponding in size and shape to the head of the screw, a cap adapted to be secured and have axial movement upon said hub, said cap having a central opening corresponding in size and outline to the depression in the hub, and a stop limiting the axial movement of said cap in both directions, whereby the opening in the cap can be moved into and out of alignment with the depression in the hub with speed and accuracy, substantially as set forth.

4. A screw-eye comprising an eye or handle and a detachable and reversible screw, said eye or handle being provided with a socket or holder for a paint-brush or similar article, substantially as set forth.

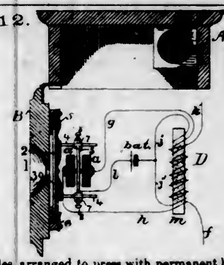
5. A screw-eye comprising the eye or handle A, having the orifice a^4, base A', depression a, hub A^3, having depression a', and cap B, having the opening b', in combination with friction-spring C and screw D, substantially as described.

6. In a screw-eye, the combination, with the eye or handle A, having the hub A^3, said hub being provided with the depression a', to receive the head of a screw, of cap B, having opening b' and slot b, and pin a^3, adapted to be inserted through the eye or handle and to project within said slot b of the cap when the parts are assembled, arranged and operating substantially as set forth.

7. A screw-eye comprising the eye or handle A, detachable and reversible screw D, and means, substantially as described, for locking said screw in both of its positions, said eye or handle A being provided with the exterior groove, a^3, substantially as and for the purpose set forth.

8. A screw-eye consisting of the eye or handle A, having the hub A^3, provided with a central bore and rectangular depression in its face, cap B, having a rectangular opening corresponding in size and outline with the depression in the hub, and screw D, having a rectangular head adapted to closely fit said depression, substantially as described.

377,612. **TELEPHONE-TRANSMITTER.** HAMMOND V. HAYES, Cambridge, Mass. Filed Sept. 5, 1887. Serial No. 248,836. (No model.)



Claim.—1. The combination, in a telephone-transmitter, of a vibratory diaphragm, an electrode adjustably mounted thereon and adapted to be vibrated thereby, a pair of compound-button electrodes, each formed as hereinbefore described, and each independently supported upon an adjustable spring, by which the two buttons are maintained in permanent but variable contact with the said diaphragm-electrode, one on each side thereof, and an induction-coil, having a secondary helix, adapted for inclusion in a main circuit, and a double and differentially wound or connected primary helix, each of the said wires being in circuit with one of the compound buttons, and both with the diaphragm-electrode, substantially as described herein.

2. The combination, in a telephone-transmitter, of a vibratory diaphragm, an adjustable electrode supported upon a bracket mounted on the center of said diaphragm, two spring-supported compound-button electrodes, arranged to press with permanent but variable contact, one on each side of the said diaphragm-electrode, an adjusting-screw for each of the said buttons, whereby the initial contact-pressure thereof may be varied, and an induction-coil having a double-wire primary helix, the two wires of said helix being in circuit each with one of the said compound buttons, and both with a single continuation leading through a battery and through the diaphragm-electrode, whereby the current of said battery is caused to circulate in the two branches of the primary helix in opposite directions, and whereby the said current may, by the vibrations of the diaphragm, be simultaneously increased in one branch and diminished in the other, and vice versa, substantially as described.

377,618. **NUT-LOCK.** GEORGE HEFFNER, Louisville, Ky. Filed Sept. 8, 1887. Serial No. 249,120. (No model.)



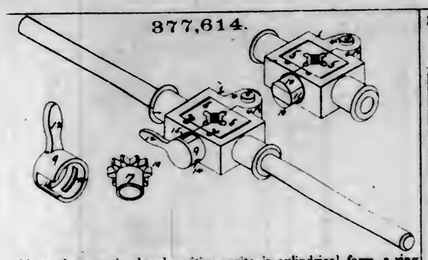
Claim.—In a nut-lock, the combination, with the rails, bolts, nuts, and a flat locking-bar driven endwise beneath said nuts, of a fish-plate having a channeled ledge to receive and support the entire length of the locking-bar, said ledge being provided on its outer edge with a longitudinal rib or flange having a series of elongated recesses, each extending in front of a nut to afford space for using a wrench in turning the nut, and extended also between two adjacent nuts to permit the insertion of an instrument beneath the locking-bar, whereby it is bent or curved upward between two nuts to prevent endwise slipping, substantially as described.

377,614. **SCREW-CUTTING DIE.** EMILE J. HERMAN, St. Louis, Mo. Filed Apr. 2, 1887. Serial No. 233,449. (No model.)

Claim.—1. In a die-stock, the combination of two members hinged together, each having a seat for a die-plate, projections on said members, which projections, when said members are in closed position, unite in cylindrical form, and a ring adapted to fit over said projections and hold the stock in its closed position, substantially as set forth.

2. In a die-stock, the combination of two members hinged together, each having a seat for a die-plate, projections which, when said members are in closed position, unite in cylindrical form, a ring secured to the projection on one member by a slot and pin, whereby it is capable of rotary movement, and having a slot-notch for the passage of the projection on the other member, substantially as set forth.

377,614.



3. In combination with the stock and die-plates, a movable guide-ring, substantially as and for the purpose set forth.

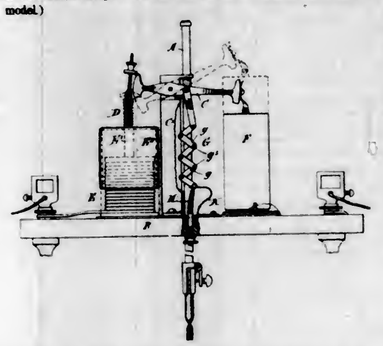
4. In combination with the stock and die-plates, the ring having a notched head, substantially as and for the purpose set forth.

5. In combination with the stock and die-plates, the guide-ring and elongated socket 18, in which the guide is supported, substantially as and for the purpose set forth.

6. In combination with the hinged stock and die-plates, the guide-ring provided with a head, 19, and holder 18, the stock having a counter-seat, 20, substantially as and for the purpose set forth.

7. In a die-stock, the combination of the members hinged together, a die-plate carried by each member, a pair of projections, 10, on one member and a projection, 11, on the other member, said projections being so arranged as to unite in cylindrical form when the members are closed together, the ring 9, secured to one of the projections 10 by a slot and pin, and having a notch, 15, for permitting the projection 11 to enter between the projections 10, substantially as and for the purposes set forth.

377,615. **ELECTRIC-ARC LAMP.** EDWARD K. HIGGINS and JOHN JAMES, St. Johnsbury, Vt., assignors to the Standard Electric Company of Vermont, same place. Filed Mar. 24, 1887. Serial No. 232,336. (No model.)

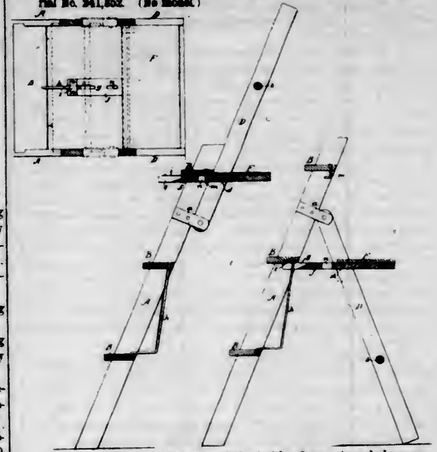


Claim.—1. In an electric-arc lamp, the combination, with the main solenoid or electro-magnet for drawing the arc, of a shunt-coil or derived-circuit magnet, a pivoted rocking bar connected at one end to core of said shunt-coil, a spiral spring connecting the other end of the rocking bar with the core of main solenoid, a clutch for the upper carbon rod connected to and operated by said rocking bar, a spring or springs for connecting said clutch to frame of lamp, and a spring-trip acting to assist in releasing the clutch from carbon rod, all substantially as described.

2. In the feed mechanism of an electric-arc lamp, a clutch constructed of four or more sets of flat metal bars with their sides parallel with the carbon-holder, the several sets being arranged in two lines along carbon rod on opposite sides and toggle-jointed or pivoted together by round bars extending across from one line of flat bars to the other to form a continuous chain or snake, the said round bars gripping the carbon rod, all substantially as shown and described.

3. In the feed mechanism of an electric-arc lamp, the combination, with the stationary frame of same and the movable clutch, of a spring-trip independent of and acting on such clutch only when the same is lowered upon it to disengage the clutch from the carbon rod, as set forth.

377,616. **STEP-LADDER.** JAMES HILL, Wilkes-Barre, Pa., assignor to the I-X L Pump Company, Goshen, Ind. Filed June 20, 1887. Serial No. 241,852. (No model.)

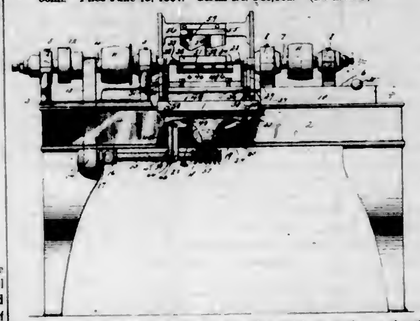


Claim.—1. The combination of the ladder-frame A and the rear bracing-frame, D, the shelf F, pivoted to said bracing-frame and having a bar, f, and the rod h, secured to the latter and adapted to a slot in the bar f, as set forth.

2. The combination of the frame A, the rear frame, D, pivoted so as to form when turned up an extension of the frame A, the shelf F, pivoted to said frame D, and having an arm, f, with slot g and removable retainer i, and the rod h, secured to the ladder and adapted to the slot g, as set forth.

3. The combination of the frame A, the rear frame, D, pivoted so that when turned up it will form an extension of the frame A, the shelf F, pivoted to said frame D, and having an arm, f, with slot n, and the catch m, adapted to said slot when the shelf is turned down, as specified.

377,617. **WOOD-TURNING LATHE.** LYMAN L. HILL, Bridgeport, Conn. Filed June 13, 1887. Serial No. 241,102. (No model.)



Claim.—1. In a lathe, the combination, with a stationary head-stock and a sliding head-stock, both provided with chucks, of a movable centering-rest for carrying the block to be operated upon and a stop which said centering-rest engages when the block is in position to be engaged by the chucks.

2. The stationary and sliding head-stocks and chucks, in combination with a pivoted centering-rest, a spring for drawing it into operative position, a stop to limit its movement, and a spring-rack whereby it is engaged and held when out of operative position.

3. The stationary head-stock and a slide carrying another head-stock, in combination with a pivoted centering-rest, spring-rack 36, and a spring upon the slide by which the rack is caused to engage the centering-rest when out of operative position.

4. The stationary and sliding head-stocks, in combination with a pivoted centering-rest, spring 30, adapted to draw it forward, and stop 31, whereby its forward movement is limited.

5. The stationary and sliding head-stocks, in combination with a

pivoted centering-rest, spring-rack 36, and spring 37 upon the slide, by which the rack is forced into engagement with the centering-rest.

6. Stationary head-stock 3, slide 9, carrying head-stock 6, and a spring and rod, 37 38, in combination with a pivoted centering-rest, spring 30, and stop 31.

7. The combination, with stationary and sliding head-stocks and a movable centering-rest, of swinging rest 49, a cutter, 46, carried thereby, and slide 56, carrying cutter 54.

8. The combination, with the head-stocks, of cutter 46, swinging rest 49, to which it is adjustably secured, guard 51, also secured to said rest, which regulates the depth of the cut, and a cam for moving the cutter into operative position.

9. In a lathe, the combination, with the head-stocks and spindles, of a roughing-cutter and a finishing-cutter, each arranged in a plane parallel to a plane passing through the spindles, the roughing-cutter consisting of a plate having its edge curved in the plane thereof to impart the desired shape to the block, and the finishing-cutter mounted in a carriage and consisting of a plate lying generally in one plane and having its edge formed with curved indentations and projections to correspond to the curvature of the edge of the roughing-cutter and waved crosswise of the general plane of the plate, in order, as said cutter moves forward, to engage the highest portions of the block, and from said highest portions cut with the grain in both directions simultaneously.

10. A finishing-cutter for lathes, consisting of a plate lying generally in one plane and having its edge formed with curved indentations and projections to correspond to the curvature of the block to be finished and waved crosswise of the general plane of the plate, so that in use the projections will engage the highest portions of the block and cut with the grain in both directions simultaneously.

11. The combination, with the head-stocks and the swinging rest carrying the roughing-cutter and having a stump, 53, of slide 56, carrying the finishing-cutter, and a movable centering-rest for the block to be acted upon, which is engaged by stump 53 as the swinging rest moves forward, whereby the centering-rest is carried out of the way before the movement of the slide commences.

12. The combination, with the swinging rest carrying cutter 46, and slide 56, carrying cutter 54, of shaft 20, having at one end a cam which engages the swinging rest to operate cutter 46 and at its other end a crank and a rod connecting it to the slide to operate cutter 54.

13. In a lathe, the combination, with swinging rest 49 and slide 56, of shaft 20, having a worm-wheel, a cam for operating the swinging rest, and a crank for operating the slide, and shaft 15, having a worm, 18, engaging the wheel, whereby motion is communicated to the parts.

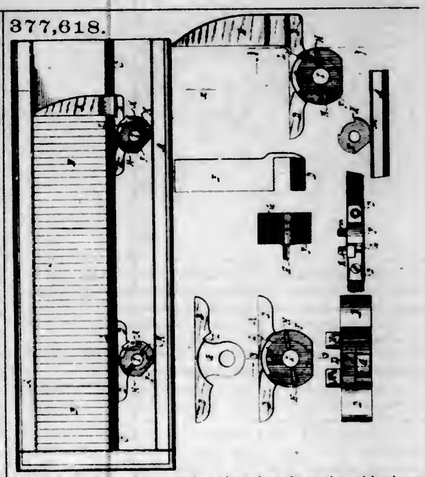
14. In a lathe-shaft, 20, having a worm-wheel, and a hand-wheel having a lug, 43, a shaft, 15, journaled in an oscillating sleeve and having a worm engaging said worm-wheel, in combination with a hand-lever having a collar through which shaft 15 passes, and an L-shaped lever, 42, having a hook on one end adapted to engage the hand-lever to hold the worm in contact with the wheel, the other arm of lever 42 being adapted to be engaged by lug 43, whereby it is tripped and the worm disconnected at the completion of the operation.

15. In a lathe, the combination, with the cutters, a worm-wheel, and intermediate actuating mechanism, of a shaft journaled in an oscillating sleeve and having a worm adapted to engage said wheel, and a lever having a collar through which said shaft passes, whereby the worm is thrown into and out of engagement with the wheel.

16. The combination, with worm-wheel 19 and shaft 15, having worm 18, of an oscillating sleeve, 16, in which said shaft is journaled, a lever, 39, having a sleeve through which said shaft passes, and means, as a lever having a hook adapted to engage lever 39, whereby the worm is held in engagement with the wheel.

17. Shaft 20, carrying a worm-wheel, and a hand-wheel having a lug, 43, in combination with shaft 15, having worm 18, an oscillating sleeve in which said shaft is journaled, lever 39, having a collar through which the shaft passes, and lever 42, having a hook adapted to engage lever 39, whereby the worm is held in engagement with the wheel until lever 42 is tripped by lug 43.

377,618.



377,618. QUOIN. GILBERT E. JONES, New York, N. Y. Filed Oct. 28, 1886. Serial No. 217,459. (No model.)

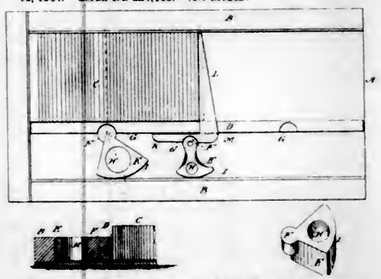
Claim.—1. The quoin G, having the side-lock D and the stop L, in combination with the cam F, having faces to bear, respectively, against the side of the galley and the side-lock of the quoin, said cam being pivoted in the upper side of the quoin and provided at its edge with the stop K, so that when turned and the stop of said cam is brought into engagement with the stop of said quoin, the latter, with its side-lock and the cam, can be introduced into or removed from the galley, substantially as described.

2. The quoin G, having the side-lock D and stop L, in combination with a galley, A, having the side-stick C, and the cam F, having faces to bear, respectively, against the side-lock of the quoin and the side of the galley, said cam being pivoted on the quoin and having a fixed and rigidly-attached lug, H, and an edge-stop, K, so that when turned and the stop of said cam is brought into engagement with the stop on the quoin, the latter, with its side-lock and the cam, can be introduced into or removed from the galley, substantially as described.

3. The quoin G, having the attached side-lock D, and provided with the stop L and vertical pivot I, in combination with the cam F, journaled in the pivot on the upper side of the quoin and provided with the stop K, so that when rotated on said pivot to bring its stop into engagement with the stop on the quoin, the latter, with its side-lock and the cam, can be introduced into or removed from the galley, substantially as described.

4. The quoin G, having the attached side-lock D, extending laterally from each of its sides and provided with the projecting stop L and vertical pivot I, in combination with the cam F, mounted on said pivot and having faces to bear, respectively, against the galley and the side-lock on the quoin, said cam having the stop K, so that when rotated to bring its said stop into engagement with the stop on the quoin, the quoin, with its side-lock and the cam, can be removed from the galley, substantially as described.

377,619. QUOIN. GILBERT E. JONES, New York, N. Y. Filed Feb. 10, 1887. Serial No. 227,163. (No model.)
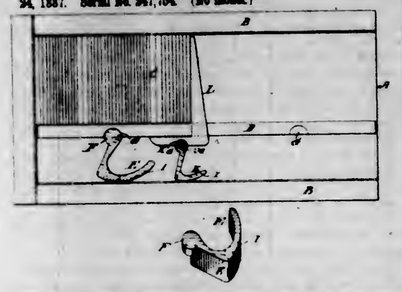


Claim.—1. In combination with a galley, a quoin formed with two ends, one as a pivoting-head, F, pivoted on the side-stick, and the other as a curved cam-surface, I, and having a hand-orifice, H, located adjacent to the cam-surface and eccentrically with reference to the pivoting-point on the side-stick, so that by engaging the fingers with the said orifice the quoin swings in the arc of a circle on said end pivoting-head, substantially as described.

2. A quoin formed with two ends, one as a pivoting-head, F, and the other as a cam-surface, I, and having a circularly-curved hand-orifice, H, located adjacent to the cam-surface and eccentrically to the pivoting end of the quoin, substantially as shown and described.

3. The combination, with a side-stick, D, having grooves or depressions G extending along a portion of the height of the side-stick, of a quoin, E, provided with a head, F, said head F being adapted to engage the side-stick at its grooves, substantially as set forth.

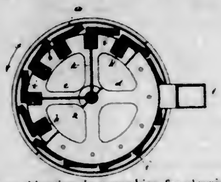
377,620. QUOIN. GILBERT E. JONES, New York, N. Y. Filed Aug. 24, 1887. Serial No. 247,754. (No model.)



Claim.—1. The herein-described quoin E, provided at one end with the head F and at its other end with an arm having an elastic bearing-surface, I, substantially as shown and described.

2. The combination, with the side-stick D, having concaved recess G, of the quoin E, provided at one end with a head, F, to engage said recess, and at its other end with an arm having an elastic bearing-surface, I, substantially as described.

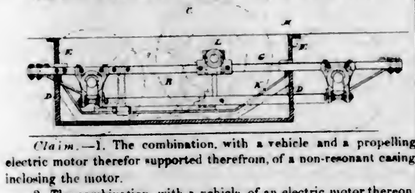
377,621. MACHINE FOR CLEANING COTTON-SEED. HENRY E. KNEER, New Orleans, La. Filed May 26, 1887. Serial No. 239,463. (No model.)



Claim.—1. The combination, in a machine for cleaning cotton-seed, of a rotary cylinder open at both ends and carrying the bars *h* and fan-blades K, the brushes *i*, having flexible backs and secured at one end to the bars *h*, and the perforated stationary casing *a*, substantially as shown and described.

2. In combination with the stationary perforated casing *a*, the cylinder M, rotating therein and consisting of the open heads *d e*, the vertical bars *h*, arranged between said heads, as shown, and the fan-blades K of the brushes *i*, having flexible backs, each of said brushes having one of its ends secured to one of the bars *h*, and its other end overlapping the adjacent bar *h*, the free ends of said brushes being thrown out against the perforated casing *a* by centrifugal force and an air-blast, substantially in the manner shown and described.

377,622. ELECTRIC-MOTOR CAR. WALTER H. KNIGHT, New York, N. Y. Filed May 6, 1887. Serial No. 237,382. (No model.)



Claim.—1. The combination, with a vehicle and a propelling electric motor therefor supported therefrom, of a non-resonant casing inclosing the motor.

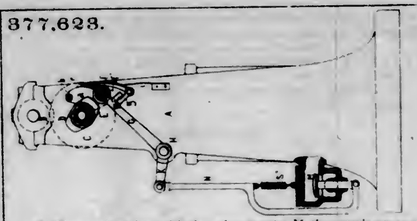
2. The combination, with a vehicle, of an electric motor thereon, speed-reducing gearing between the motor-shaft and car-axle, and a non-resonant inclosing-case for the motor.

3. The combination of a vehicle, a propelling electric motor supported from the axles, and an inclosing-case for the motor, having an expansible part connected to the spring-supported car-body.

377,623. GAS-ENGINE. ERNST KÖRTING, Hanover, Prussia, Germany. Filed Oct. 18, 1887. Serial No. 252,724. (No model.)

Claim.—1. The combination, with the exhaust-valve M and igniting device O, of the rotating tappets D and E, the shafts I and H, the lever-arms F and L, fixed to the shaft I, the lever-arms G and K, fixed to the shaft H, and means for connecting the valve M and the igniting device O, respectively, with the lever-arms K and L and for closing the valve M and returning the igniting device to its normal position, substantially as and for the purpose specified.

377,623.



2. The combination, with the exhaust-valve M, the rotating tappet E, shaft H, lever-arms G and K, and means for connecting the valve M with the lever-arm K and closing the valve, of the wheel C, the weight *a*, pivoted thereto, spring *c*, and parts operated upon by the weight *a* and adapted to lock the lever-arm G, substantially as and for the purpose described.

3. The combination together of the exhaust-valve M, the rotating tappet E, shaft H, lever-arm K, lever-arm G, having the branch *h*, provided with an offset, connecting-bar N, spring S', wheel C, weight *a*, pivoted thereto, spring *c*, lever-arm *f*, pawl *g*, having an offset, and spring *i*, substantially as and for the purpose set forth.

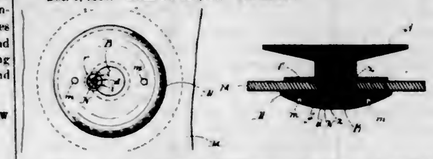
377,624. WINDOW-BAR. KARL KUHNERT, Kensington, Ill. Filed Sept. 3, 1887. Serial No. 248,746. (No model.)



Claim.—1. A window-grating consisting of crossed bars united and supported on the face of the window-frame by means of hooks open at the top, in combination with a hasp at the lower end of said grating and hinged to said grating and held in place by a bolt provided with a tapering head, substantially as specified.

2. A window-grating consisting of crossed bars united and supported on the face of the window-casing by means of hooks open at the top, in combination with eyes *i*, and a vertically-movable bar provided with locking-plates j^2, springs j^3, and bolts *j*, a hinged hasp, and a bolt provided with a tapering head, substantially as specified.

377,625. BUTTON. WILLIAM J. LECKIE, Jr., Boston, Mass. Filed Dec. 9, 1887. Serial No. 257,387. (No model.)



Claim.—1. In a button, the combination of the body A, having the screw-threaded shank B, the washer C, disposed on said shank, the disk D, having a centrally-disposed screw-threaded hole for the reception of the shank B, and the locking-truck N, secured in a socket formed partially in said disk and partially in the shank, substantially as described.

2. A button comprising a body provided with an exteriorly-screw-threaded shank, a washer disposed on said shank, a disk having a screw-threaded hole adapted to receive said shank, and means, substantially as described, for detachably locking the disk to the shank, substantially as set forth.

3. In a button of the character described, the shank B and disk D, provided with the socket *f*, having the enlargement *z*, in combination with the metallic truck N, expanded in said socket, substantially as set forth.

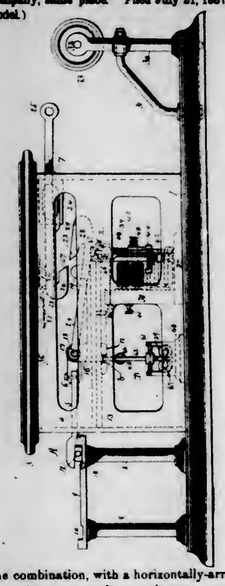
4. In a button of the character described, the metallic truck N, disposed in the socket *f*, said truck being expanded in said socket and provided with the indentation *d*, substantially as specified.

5. In a button of the character described, the combination of the body A, shank B, washer C, disk D, and truck N, said truck being secured in a socket formed in said disk and shank and partially bisected, substantially as and for the purpose set forth.

6. In a button of the character described, the combination of the body A, shank B, washer C, disk D, and truck N, said shank and disk being provided with the socket *f*, having the enlarged portion *z*, and

said trucks secured by being expanded in said socket and provided with the cut *i* for weakening the same, substantially as set forth.

377,626. **ELECTRO-MECHANICAL SIGNAL APPARATUS.** WILLIAM W. LE GRANDE, Louisville, Ky., assignor to the Le Grande Signal and Electrical Company, same place. Filed July 21, 1887. Serial No. 244,876. (No model.)



Claim.—1. The combination, with a horizontally-arranged slide-rest, of a pull-bar carriage mounted to reciprocate on said rest, a hand-lever to reciprocate the carriage, a latch or pull-bar pivotally mounted on said carriage and resting with its free end lower than its pivotal support, and formed with an incline in the under side of its free end, and having an upward-arranged hook formed with an inclined end, a pull-bar arranged to slide on bearings and having its outer end connected to the semaphore-strand, and the free end formed with a hook having an inclined end to engage with the counterpart hook on the pivoted pull-bar, a normally-closed track-circuit, and a relay in said circuit controlling an electro-magnet in a local circuit having an extended case or pole-piece, and a pivoted armature arranged to set against the pole-piece of the magnet at right angles to the face thereof and to drop by gravity under the pivoted pull-bar when released from contact with the electro-magnet, substantially as described, and for the purpose specified.

2. The combination, with a hand-lever and a horizontal pull-bar carriage mounted on ways or supports and formed with a tongue or lug on its bottom, of a pull-bar pivotally mounted on said pull-bar carriage, with its free end to rest at an incline below its pivotal support, and formed with an incline on its under side, and a hook having an inclined end, a pull-bar horizontally supported and having its outer end connected to a signal device and its free end hooked to set within the hook of the pivoted pull-bar, a normally-closed track-circuit having a relay in said track-circuit controlling an electro-magnet in a local circuit having an extended core or pole-piece, a pivoted armature to contact said pole-piece at right angles to the face and arranged to fall under the pivoted pull-bar when released from contact with the core of the magnet, a normally-closed independent circuit having current through bridges mounted to contact insulated metallic connections on the said armature, an electro-magnet in said independent circuit, and a vertically-arranged and pivoted armature to set in the path of the lug on the bottom of the pull-bar carriage and lock said carriage at the limits of its movements, substantially as described, and for the purpose set forth.

3. The combination, with one or more insulated sections of railway-tracks and track-circuits laid thereto, an electro-relay magnet in each of said circuits, and a railway signaling apparatus, of an independent electrical local circuit having current through suitable connections on a non-conducting support, and contact-pieces mounted on insulated supports on the armature of the magnets of the local circuits, and thereby closed and opened, and an electro magnet in said independent circuit having an armature arranged to lock the apparatus in position at the limits of the movement of the apparatus, substantially as described.

4. The combination, with the casing, the horizontally-arranged pull-bar carriage mounted to slide therein, and a hand-lever to reciprocate the pull-bar carriage, of a series of pull-bars pivotally mounted on a shaft in said carriage and arranged to rest with their free ends at an incline below their pivotal support, and formed with inclines on their under edges at their free ends and with hooks having inclined ends, a series of pull-bars arranged in a horizontal plane and to slide independent of each other, and having their outer ends connected to the semaphore-strands, and their free ends formed with hooks to set within the hooks of the pivoted pull-bars, a series of normally-closed track-circuits, a relay in said track-circuits controlling an electro-magnet in each of said circuits having their pole-pieces extended and having armatures pivoted to move in a vertical plane and contact said pole-pieces at right angles to the face thereof and to fall under the pivoted pull-bars when released from contact with the cores of the magnets, an independent local electrical circuit having normally a current through metallic connections mounted on insulated supports and insulated contact-pieces on the armatures of the magnets of the local circuits, and an electro-magnet in said independent circuit having a vertically-arranged armature adapted to lock and unlock the pull-bar carriage, substantially as described.

5. The combination, with the track-circuit, the electro-mechanical signal-actuating mechanism, and the independent local circuit having the interlocking mechanism mounted therein, of the rock-shaft magnet having an armature connected to the rock-shaft, and the rock-shaft having sears to lock the armature of the track-magnet in position, substantially as described.

6. The combination, with the pull-bars of an electro-mechanical signal mechanism, of an electro-magnet formed with a projecting core or pole-piece, and having a pivoted armature vertically arranged to set against the projecting pole-piece of the magnet at right angles to the face thereof, and formed with a projecting arm, 47, at its base to limit its movements, substantially as described, and for the purpose set forth.

7. The combination, with the interlocking magnet, its circuit, and an audible-signal device, of an electro-magnet, C, arranged in the circuit of the interlocking magnet, having an armature which, when the magnet is cut out of circuit, will fall in contact with a contact-piece and complete the circuit to the bell-signal, substantially as described.

8. The combination, with the track-circuit of an electro-mechanical signal apparatus and a local circuit opened and closed by the opening and closing of the relay of the track-circuit, of an interlocking magnet in said local circuit having an armature pivoted to stand in vertical position against the core of the magnet, and formed with a horizontally-arranged projecting arm having an adjustable weight, substantially as and for the purpose specified.

377,627. **SUSPENDER-BUCKLE.** WILLIAM LOEB and JERRY HAAK, Dubois, Pa. Filed Dec. 8, 1887. Serial No. 257,306. (No model.)



Claim.—1. The herein shown and described buckle, composed of the buckle-frame having closed side loops, and having a hook the shank of which has one wire coiled about the other wire, and the cross-bar and prongs integral and supported in the closed loops, and having the prongs pointing down and adapted to act in opposition to the lower portion of the buckle-frame, substantially as described.

2. The combination, with the buckle-frame having side loops, *c*, of the cross-bar having its ends bent to form loops *d*, which are engaged with the said side loops, *c*, the ends being extended past *d* to form the prongs *f*, which act in opposition to the end of the buckle-frame, substantially as specified.
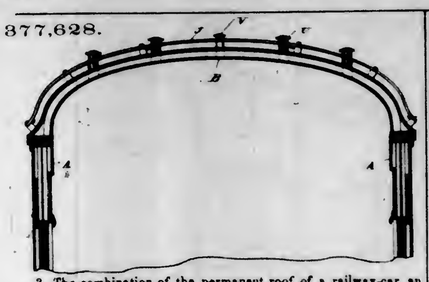
3. A buckle-frame composed of wire, having its lower portion bent to form a hook, one wire of the hook being straight and the other wire coiled about the straight wire, substantially as described.

377,628. **PASSENGER-CAR.** WILLIAM D. MANN, New York, N. Y., assignor to Mann's Boudoir Car Company, same place. Filed July 7, 1887. Serial No. 243,665. (No model.)

Claim.—1. In combination with the permanent roof of a railway-car, an external supplemental roof removably mounted thereon for summer use, substantially as set forth.

2. In combination with the permanent roof of a railway-car, a removable supplemental roof external to the permanent roof and consisting of transverse ribs and a covering of canvas or other suitable fabric stretched thereon, substantially as set forth.

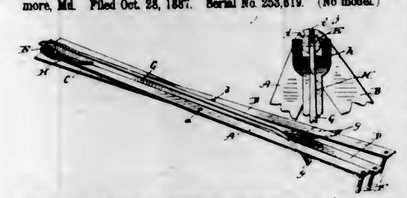
377,628.



3. The combination of the permanent roof of a railway-car, an external and removable supplemental roof, and fastenings extending through spacing-blocks to secure the supplemental roof while permitting its ready removal and affording circulation of air between the permanent roof and supplemental roof, substantially as set forth.

4. The combination of the permanent roof B, supplemental roof-cover J, ribs K, spacing-blocks L, and bolts M, for securing the external supplemental roof to the main roof and permitting its ready removal, substantially as explained.

377,629. **FOLDING MUSIC-STAND.** J. HENRY MACKE, Jr., Baltimore, Md. Filed Oct. 28, 1887. Serial No. 253,619. (No model.)



Claim.—1. A folding music-stand consisting of the lazy-tongs, a pivoted leg for holding the same in an upright position, and a spring for forcing the leg rearward as the lazy-tongs are separated, as and for the purpose described.

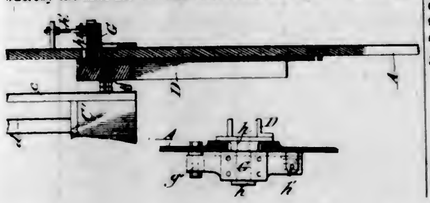
2. A folding music-stand consisting of the lazy-tongs, a supporting-leg pivotally connected with the tongs and adapted to fold against the same and to be locked thereto, and a spring interposed between the leg and lazy-tongs for forcing the leg away from the tongs when the latter are separated to release the leg, as and for the purpose described.

3. A folding music-stand consisting of the notched lazy-tongs, a supporting-leg pivotally connected to the lazy-tongs and having a nib or shoulder adapted to enter the notches of the lazy-tongs to prevent the same from spreading, and a spring for forcing the lower end of the leg away from the lazy-tongs, substantially as described.

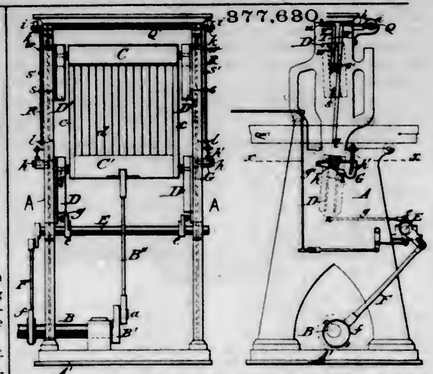
4. A folding music-stand consisting of the pivoted links A B C D, a stud, E, connected to the meeting ends of the links A B, a leg pivoted to the stud and having a projecting nib, *k*, at its extreme upper end above the pivot-pin, adapted to enter one of a series of notches in the links A B, and a spring for forcing the lower end of the leg away from the tongs, as and for the purpose described.

377,630. **SAW-MILL.** HENRY MCEVILLA, Muskegon, Mich. Filed Jan. 22, 1887. Serial No. 225,175. (No model.)

Claim.—1. In combination with the feed mechanism and the driving-shaft of a saw-mill gang, upper and lower slides carrying the saw gate or frame, and mechanism, substantially such as shown, for oscillating the lower slides, connected with and driven by the main driving-shaft, said lower slides having the pins on which they oscillate located below the top of the slides and above the pins on the lower girder of the gate when the latter is at the upper limit of its stroke, whereby the saws are made to recede from the log at the start, and



377,630.



thus the cut during the first quarter of the stroke equalized with the cut during the rest of the stroke, as specified.

2. In a reciprocating-saw mill, the combination, with the upper slides, of prime levers pivoted to the lower ends of the slides and fulcrumed on the frame, secondary levers pivoted to the upper ends of the slides and connected at the lower ends to the prime levers and at the upper to stationary fulcrum-pins, and a shaft provided with eccentrics connecting with the prime levers for operating said levers, substantially as and for the purposes set forth.

3. In a reciprocating-saw mill, the combination, with the upper slides, of a shaft journaled in bearings on the frame and carrying two eccentrics, the prime levers fulcrumed at their lower ends on the frame, connected at their upper ends to the eccentric-straps, and pivotally connected at suitable points to the lower ends of the slides, and the secondary levers pivotally attached at a proper point in their length to the upper part of the slides and connected at their lower ends by links with the prime levers and at their upper ends by links with stationary fulcrum-pins, all arranged to give a backward or forward movement to said slides for the purpose of increasing or decreasing the rake of the saws, substantially as described.

4. In a reciprocating-saw mill, the combination of the saw-gate, the oscillating lower slides, the movable upper slides, the primary levers pivoted to the lower ends of the upper slides and fulcrumed on the frame, and the secondary levers pivoted to the upper part of the upper slides and connected at their lower ends to the primary levers and at their upper ends to stationary fulcrum-pins, substantially as described.

377,631. **CAR-COUPLING.** JOSEPH MCMULLIN, Casey, Iowa, assignor of one-half to George W. Julian, same place. Filed Sept. 22, 1887. Serial No. 250,426. (No model.)



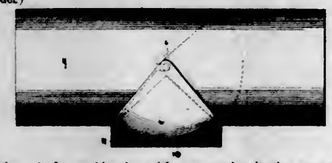
Claim.—In a car-coupling, the combination, with the draw-head having the brackets or hangers E E on its under side, provided with aligned bearings F F, of the transverse shaft G, mounted in the said bearings, the upwardly-extending arms or handles H H, attached to the shaft and arranged on opposite sides of the draw-head, the rigid arms I I on the said shaft, and the push-rods or raisers K K, pivoted to the extremities of the arms I I and operating in inclined openings D D in the lower side of the draw-head, substantially as and for the purpose specified.

377,632. **BODY-WIRE AND HANDLE FOR DISH-PANS.** JAMES R. MELLOY, Philadelphia, Pa. Filed May 18, 1886. Serial No. 202,551. (No model.)



Claim.—The combination, with a dish-pan or similar sheet-metal vessel having a combined body-wire and handles, of a strengthening-wire, D, located between the ends of the handles and held in place by the upper edge of the body of the vessel, substantially as shown and described.

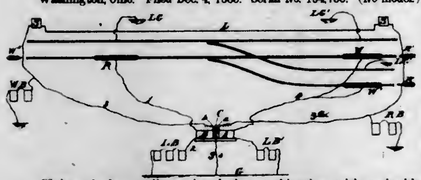
377,633. **COMBINED VENTILATOR AND DAMPER.** GEORGE W. MILLER, Watkins, N. Y. Filed July 21, 1887. Serial No. 244,909. (No model.)



Claim.—1. In combination with a stove-pipe having an opening formed therein, a shield attached over said opening in the stove-pipe, so as to leave an opening at the lower portion of said shield communicating with the interior of the pipe, and a damper pivotally attached to the interior of the stove-pipe on a line with said shield, substantially as shown, and for the purpose set forth.

2. In combination with a stove-pipe having an opening formed therein, a shield rigidly secured thereto and provided with side and top projecting walls, and a curved damper pivotally secured within the pipe and provided with a weighted operating-lever, substantially as shown, and for the purpose set forth.

377,634. **RAILWAY-SIGNAL.** THOMAS S. NICHOLSON, Mount Washington, Ohio. Filed Dec. 4, 1885. Serial No. 184,733. (No model.)



Claim.—1. In a railway-signal, the combination, with a double relay, A B, having an armature, C, pivoted centrally between the contact-points of the magnets, of springs *c*, for holding said armature normally between said contacts, local batteries L B and L B', of different strength, and the two different local circuits, whereby two different currents are sent through the armature C, substantially as described.

2. In combination with the main-line circuit operated by one or more main batteries, the double magnet A B, having its contact-points and armature for establishing two different circuits in the main line and the coils A B in two different local circuits, whereby two different currents are sent through the armature C, substantially as specified.

3. In combination with two main-line circuits and two local circuits, the double magnet A B, having a common armature for making and breaking two main circuits, and the coils A B in the local circuits, the making and breaking of which local circuits operates the armature to make and brake the main-line circuits, substantially as herein specified.

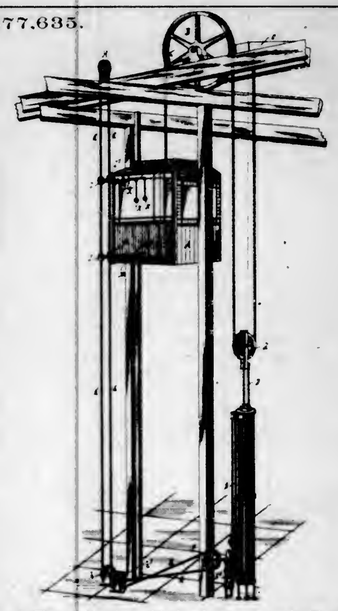
4. In combination with a main-line circuit operated by two equal and opposed batteries, the double magnet A B, having a common armature, C, adapted to make and break the main-line circuits, and having the coils of the magnet in two different local circuits, one of which locals develops greater magnetism on one side of the magnet than the local on the other side, to prevent the breaking of the main-line current when both branches of the local and the coils of the magnet are in circuit at the same time, substantially as herein specified.

5. In a railway-signal, the combination, with a double relay, A B, having an armature, C, pivoted centrally between the contact-points of the magnets, of local batteries L B and L B', of different strength, and the two different local circuits, whereby two different currents are sent through the armature C, substantially as described.

377,635. **ELEVATOR.** CHARLES G. OTIS, Brooklyn, N. Y. Filed Aug. 18, 1887. Serial No. 247,289. (No model.)

Claim.—1. The combination, with an elevator-car, its motor, a valve, and a valve-rope, of a grip carried by the car and having jaws to engage the valve-rope, said grip being adapted to move independently of the car in the direction of the valve-rope, and a lever for operating the jaws of the grip, whereby the valve can be slightly opened, the valve being fully opened by the subsequent movement of the car while the rope is under the grasp of the grip-jaws, substantially as described.

377,635.



2. The combination, with the elevator-car and with the endless valve-rope, of a primary grip carried by the car and having jaws to engage one strand of the valve-rope, said grip being adapted to move independently of the car, a secondary controllable grip carried by the car and having jaws to engage the second strand of the valve-rope, and levers for operating the jaws of said grips, substantially as described.

3. The combination, with an elevator-car, a motor, its valve, and with the valve-rope, of a grip carried by the car, a lever for operating the jaws of the grip and for imparting a motion to the same in the direction of the valve-rope, and a controllable secondary grip constructed to engage with the valve-rope to close the valve, substantially as shown and described.

4. The combination, with a pivoted jaw-carrier, N, and a sliding jaw-carrier, N', of a lever connected with the carrier N, for actuating the same, and a connection between the lever and the pivoted jaw-carrier, substantially as shown and described.

5. The combination, with a pivoted jaw-carrier, N, and a sliding jaw-carrier, N', carried by the same, of a lever pivoted to the carrier N and connected with the carrier N', substantially as shown and described.

6. The combination, with a pivoted jaw-carrier, N, having a longitudinal guideway, a jaw-carrier, N', fitted to said guideway, levers P-P*, pivoted to the jaw-carrier N, and a connecting-link between the levers and the jaw-carrier N', substantially as shown and described.

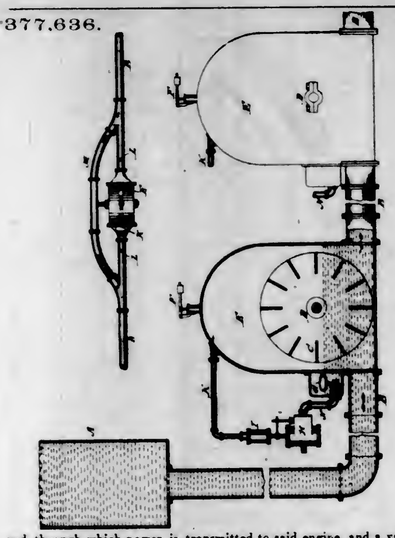
7. The combination, with a pivoted jaw-carrier and a sliding jaw-carrier, of a pair of levers connected with the carrier N', a movable frame in engagement with said levers, and cords or chains attached to the opposite ends of the frame, substantially as shown and described.

377,636. **HYDRAULIC MOTOR.** CHARLES G. OTIS, Brooklyn, N. Y. Filed Aug. 18, 1887. Serial No. 247,290. (No model.)

Claim.—1. In a hydraulic motor, the combination of a conduit containing water under pressure higher than the atmospheric pressure, an air-chamber containing air under pressure equal to the pressure of the water in the conduit and lower part of said chamber, a shaft extending horizontally through the air-chamber at the level of the water, a vertical bucket-wheel mounted on said shaft, and an air-pumping engine communicating with the air-chamber, substantially as described.

2. The combination, with the conduit containing water under pressure higher than the atmospheric pressure, and with an air-chamber connected to the conduit and containing air under pressure equal to the pressure of the water in the conduit, of an air-pumping engine, a pipe extending from said air-chamber into the air-pumping engine

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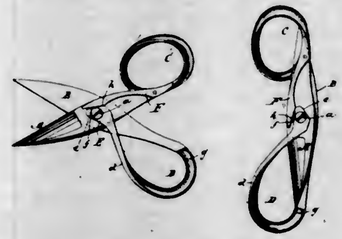


and through which power is transmitted to said engine, and a valve for admitting water to this pipe, substantially as described.

3. The combination, with the conduit containing water under pressure higher than the atmospheric pressure, and with an air-chamber connected to the conduit and containing air under a pressure equal to the pressure of the water in the conduit, of an air-pumping engine, a pipe extending from said engine into the air-chamber, a pipe extending from said air-chamber into the air-pumping engine and through which power is transmitted to said engine, and a valve for admitting water to this pipe, and a float for controlling the position of this valve, substantially as described.

4. The combination of a conduit containing water under pressure higher than the atmospheric pressure, a series of air-chambers communicating with said conduit and containing air under a pressure equal to the pressure of the water in the conduit, water-wheels mounted in said chambers, pumping-engines communicating with the air-chambers through passages sealed by the water in the lower part of said chambers, and cut-out pipes extended around said chambers and connected with the conduit at each end, substantially as described.

377,637. **POCKET-SCISSORS.** AUGUST PAULA, Brooklyn, N. Y. Filed Oct. 13, 1887. Serial No. 252,255. (No model.)



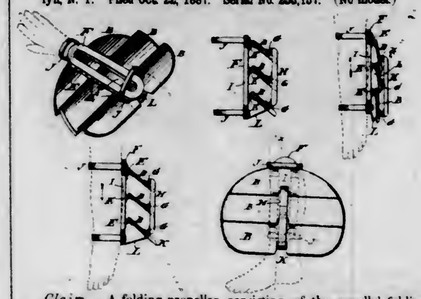
Claim.—1. The combination of the pivoted blades A B, a cam on one of the blades, and a spring-arm on the second blade in engagement with the cam for holding the blades in their folded position, substantially as shown and described.

2. The combination of the pivoted blades A B, a cam on one of the blades, stops for arresting the movement of the blades when folded, and a spring-arm on the second blade in engagement with the cam for holding the folded blades against the stops, substantially as shown and described.

3. The combination of the pivoted blades A B, a cam on one of the blades, located at the pivot-point, and a spring-arm, F, on the second blade, engaging the cam for holding the blades apart when open, substantially as shown and described.

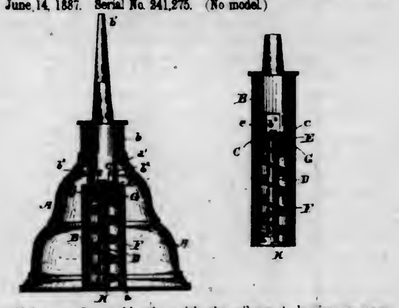
4. The combination of the pivoted blades A B, a cam on one of the blades at the pivot-point, stops on the bows of the blades for arresting the movement of the blades when folded, and a spring-arm, F, engaging the cam when the blades are open for holding the same apart and for holding the folded blades against the stops, substantially as shown and described.

377,638. **SWIMMING APPARATUS.** CARL W. PETERSEN, Brooklyn, N. Y. Filed Oct. 22, 1887. Serial No. 253,137. (No model.)



Claim.—A folding propeller consisting of the parallel folding leaves B, the bars F and M, hinged transversely to the opposite edges of said leaves, the straps J J, attached to the opposite ends of the inner bar, F, and a stop, L, for limiting the unfolding of the leaves, substantially as described.

377,639. **OIL-CAN.** EBENEZER W. RIDER, Racine, Wis. Filed June 14, 1887. Serial No. 241,275. (No model.)



Claim.—1. In combination with the oil-can A, having an apertured bottom, the central tube, B, slotted in each side at b^2 at a point just within the can-top and having the fixed partition C and the plunger-rod D, provided at its upper end with the piston-head E, and the spring F on said rod, substantially as shown and described.

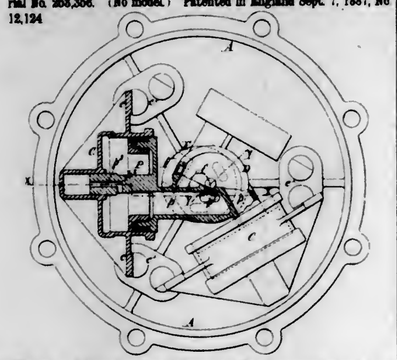
2. An oil-can having an apertured bottom and a central internal tube slotted at its upper end, a fixed diaphragm or partition, and a plunger-rod having a packing thereon and provided at its upper end with a piston-head, and having a spring connected with it and bearing it downward, and moved upwardly by a button in the lower end of the tube, substantially as set forth.

377,640. **PAPER BOX.** THEODORE F. W. SCHMIDT, Dayton, Ohio, assignor of one-half to Laubach & Iddings, same place. Filed Nov. 2, 1887. Serial No. 254,106. (No model.)



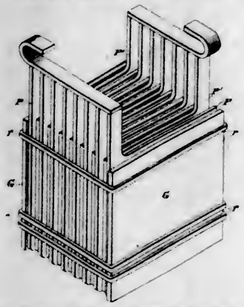
Claim.—A paper box formed from a folded blank, having at each end of two opposite sides the tongues 6, and with angular or inclined extremities 1, and having the stock removed to form the notches *m* on one side or edge of the tongue, and the shoulder *c* and bevel *d*, meeting at an angle on the other edge, and the intermediate flaps or sides, C, having the inclined slots 7 near each end, substantially as described.

377,641. WATER-METER. WILLIAM A. G. SCHÖNHEYDER, Shepherd's Bush, County of Middlesex, England. Filed Oct. 25, 1887. Serial No. 253,356. (No model.) Patented in England Sept. 7, 1887, No. 12,124.



Claim.—A liquid-meter adapted as a fluid-pressure engine, consisting of an air-tight casing, three cylinders free to move to and fro transversely, and each having side wings, *c*, to slide in guides *c'*, a packed piston, P, in each cylinder, and provided with a hollow stem having a port at its inner end, a central boss, D, in the casing, to which the piston-stems are all rigidly secured, said boss being movable over a fixed facing, said facing, boss, and piston-stems having ports, and a shaft, *c'*, passing through the casing and eccentrically engaging the boss, substantially as and for the purposes described.

377,642. SECONDARY BATTERY. JOHN S. SELLON, Hatton Gardens, County of Middlesex, England, assignor to the Electrical Accumulator Company, of New York. Filed Apr. 19, 1887. Serial No. 235,424. (No model.) Patented in England Dec. 14, 1883, No. 5,741.



Claim.—1. In a secondary battery, two or more plates, elements, or supports having a series of insulating-plugs extending through and projecting from both surfaces, combined with plates of insulating material held in contact therewith by hands of insulating material.

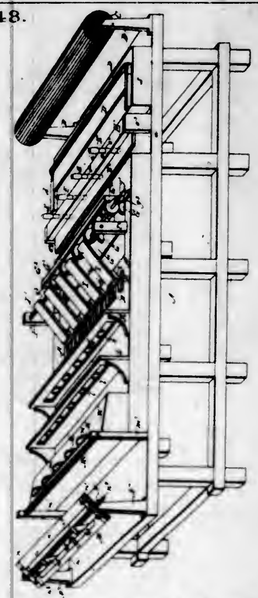
2. In a secondary battery, a series of plates, elements, or supports having a series of rubber plugs extending therethrough and projecting from their surfaces, combined with two plates of insulating material held in contact therewith by rubber bands, substantially as described.

3. In a secondary battery, a series of perforated positive plates and a series of perforated negative plates interleaved therewith, a series of plugs of insulating material extending through and projecting from both surfaces of one series of plates, active material filling the other perforations of said plates, plates of insulating material upon opposite sides of the series of battery-plates, and bands of insulating material uniting the whole, substantially as described.

377,643. MACHINE FOR MAKING PAPER TUBES. ROBERT A. SHEPHAM, Philadelphia, Pa. Filed July 12, 1886. Serial No. 207,807. (No model.)

Claim.—1. A machine for converting a web or roll of paper into multiple rolls of pasted and flattened tubes, said machine comprising, in combination, knives for cutting the paper into strips, rollers for applying paste to the strips, jacks and guides for channeling the strips, rings for folding the channeled strips into tubes and for flattening the same, and a flat reel for winding the tubes and drawing the paper completely through the machine, said parts being constructed and combined substantially as shown and described.

377,648.



2. In a machine for forming paper tubes, the combination of jacks and guides whereby a preliminary or part fold is given to paper strips, with rings of different diameters progressively arranged in separate and independent series, whereby the channeled or partly-folded strips are caused to assume cylindrical form, substantially as shown and described.

3. In a machine for folding strips into tubes, and comprising means, substantially as described, for forming tubes into cylindrical form, the combination, with a support, M', of gages consisting of rings M, fitted therein so as to project partly above their support, said rings being vertically adjustable in their support to vary the extent of their projection, substantially as shown and described.

4. In a machine for forming flattened paper tubes, the combination, with means, substantially as described, for causing paper strips to assume cylindrical form, of gages consisting of rings or eyelets having a portion thereof extending above the support and forming half-round or segmental passages or openings for partly compressing or flattening such cylinders, substantially as shown and described.

5. In a machine for forming paper tubes, the combination, with means, substantially such as described, for partly folding or channeling a strip of paper, of means for completely folding said strips or causing them to assume cylindrical shape and then to flatten them, such means consisting of two rings of different diameters and in different planes, and a half or partly exposed ring of greater diameter and on a higher plane than said folding-rings, substantially as shown and described.

6. In a machine for forming paper tubes, the combination, with a reel-frame comprising blades *n n* and a fastening strip, n^3, of blocks or wedges n^7, substantially as shown and described.

7. In a machine for forming paper tubes, the combination, with a reel-blade, *n*, having a hinged or movable strip, n^3, of a staple, n^5, for preventing strain on the hinge connecting said blade and strip and for keeping said blade and strip in alignment, substantially as shown and described.

377,644. PACKAGE COMPRISING FRAGILE ARTICLES. HENRY SHAW, New Orleans, La., and JOHN A. MCCULLOCH, Glencoe, Md., assignors to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed Sept. 20, 1887. Serial No. 250,252. (Model.)



Claim.—A package comprising a fragile article—such as a mantle for incandescent gas-light illumination—entirely incorporated within

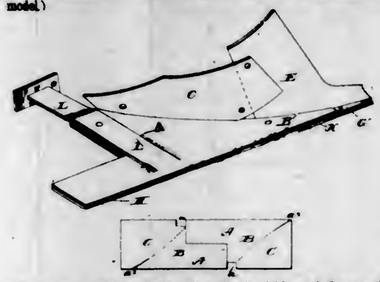
a solid mass of paraffine or like described material, whereby the article is protected from damage during transport and may be safely unpacked, as set forth.

377,645. BENCH-PLANE. JOHN H. SHAW, New Haven, Conn., assignor to Sargent & Company, same place. Filed July 5, 1887. Serial No. 243,253. (No model.)



Claim.—In a plane substantially such as described, the bed upon which the plane-iron rests, constructed with a transverse recess, G, and with one or more bearings, *a*, therein, combined with a screw, F, constructed with annular groove or grooves corresponding to said bearing or bearings and adapted to set therein, the said screw provided with a head upon its outer end, by which it may be rotated, a nut, I, in said recess, and upon said screw, but independent of the cut-adjusting mechanism, the said nut adapted to engage the plane-iron, substantially as and for the purpose described.

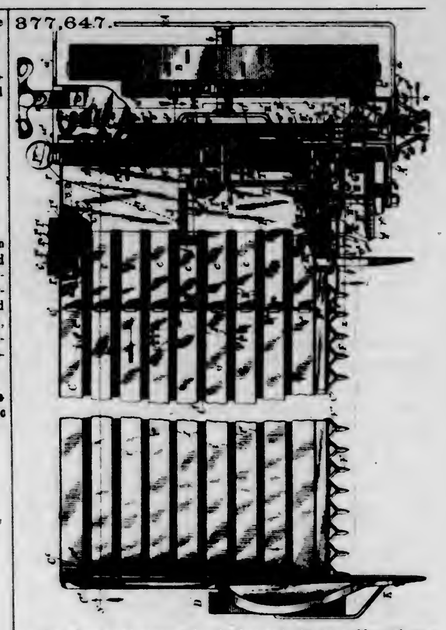
377,646. PLOW. REUBEN W. SHELBOURNE and JAMES H. SUBLETT, Blandville, Ky. Filed Aug. 4, 1887. Serial No. 246,143. (No model.)



Claim.—1. A blank for forming the landside and flange of a plow, consisting of a rectangular plate having a split at one corner and an opening or square recess at the opposite corner, the end of the plate having the recess being extended to form the bar, substantially as shown and described.

2. In a plow, the combination of a back portion consisting of one piece forming the landside or bar and a curved portion bent laterally from said landside portion, said piece being split at its lower point, a mold-board secured to the upper part of the curved portion, a share secured to the lower part and to the point of the landside, a plate or colter secured to the landside, and a standard, substantially as shown and described.

377,647. HARVESTER. GRANT W. SHUMAN, Lake Station, Ind. Filed Oct. 19, 1886. Serial No. 180,316. (No model.)



Claim.—1. The combination, with the grain-platform, the finger-bars I, provided with fingers *i*, and belts I', of an inclined guide-surface for the ends of the fingers formed by a spring, C^6, and a stationary guide-flange, c^6, substantially as described.

2. The combination, with the finger-bars I, provided with fingers *i*, the belts I', wheels I^2 I^4, supporting the belts, and oscillatory guard-fingers N, of means for actuating said parts, comprising a wheel, H, provided with a partial gear, H^3, and with a guide-flange, H^4, and a pin, *h*, a shaft, I^3, having operative connection with the belt-wheels I^4, and provided with a gear-wheel, I^7, intermeshing with the gear H^3, and provided with a guide-surface, i^7, a rock-shaft, N^3, provided with arms n^2 and n^3, a rock-shaft, N', supporting said guard-fingers, provided with an arm, N^5, and a rod connecting the arm N^5 with the arm n^3, substantially as described.

3. The combination, with the twine-arm J, of means for actuating said arm, comprising a rock-shaft, J^3, provided with a crank, J^5, engaged with the said arm, bearing-pins j^3 j^3, secured in said arm between its point of engagement with the crank and its free end, two stationary parallel plates provided with cam-slots engaged by said pins, and means giving an oscillatory motion to said shaft, substantially as described.

4. The combination, with the twine-arm J, of means for supporting and actuating said arm, comprising pins j^3 in the said arm, two parallel stationary plates provided with cam-slots engaged by the said pins, a rock-shaft, J^3, provided with a crank, J^5, engaged with the said arm and with a crank-arm, j^5, a rod or bar, J^6, pivoted upon the machine-frame and connected at its free end with the said crank-arm j^5, and a revolving wheel, H, provided with a pin, *h*, located in position to engage the said bar, substantially as described.

5. The combination, with the twine-arm J, provided with pins j^3, of two parallel stationary plates, J', provided with cam-slots engaged by the said pins, a rock-shaft, J^3, provided with a crank, J^5, engaged with the said arm, and also with a crank-arm, j^5, a rod or bar, J^6, pivoted upon the machine-frame and connected at its free end with the said crank-arm j^5, and a revolving wheel, H, provided with a pin, *h*, located in position to engage the said bar, the latter being provided near its pivotal point with an arm, J^5, also adapted for engagement with the pin *h*, substantially as described.

6. The combination, with the twine-arm J, provided with pins j^3, of two parallel stationary plates provided with cam-slots engaged by the said pins, a rock-shaft, J^3, provided with a crank, J^5, engaged with the said arm, and also with a crank-arm, j^5, a rod or bar, J^6, pivoted upon the machine-frame and connected at its free end with the said crank-arm j^5, and a revolving wheel, H, provided with a pin, *h*, located in position to engage the bar, said bar being provided with a straight part, j^6, and a curved portion, j^7, substantially as described.

7. The combination, with the grain-platform and with binding devices comprising a grain-supporting surface, C^7, of a stationary inclined guide-plate, O', located near the forward edge of the grain-platform, and a butt-evener comprising an oscillating flap pivoted at its vertical edge at one side of the said surface and resting at its free edge in contact with the said guide-plate O', substantially as described.

8. The combination, with the oscillating flap O, supported upon an axis which is movable upon the machine-frame, of means for actuating the flap, comprising an arm, *o*, attached to the flap, a revolving wheel, H, provided with a pin, *h*, a lever, O^4, located in position for engagement with the pin *h*, and a connecting-rod, *o'*, attached to the lever O^4, and having sliding connection with the arm *o*, substantially as described.

9. The combination, with the knotter L and the twine-arm J, of means for actuating said knotter and twine-arm, consisting of a shaft, L', provided with a pinion, *l*, an oscillating shaft, J^3, carrying the twine-arm and provided with a crank-arm, j^5, a bar, J^6, pivoted at one end upon the machine-frame, a bar, j^8, connecting the free end of said bar J^6 with the crank-arm j^5, and a wheel, H, provided with a gear-segment, H^2, engaged with the pinion *l*, and having a pin, *h*, located in position to engage said bar J^6, substantially as described.

10. The combination, with a twine-arm, J, provided with a laterally-projecting head, *j*, and a knotter, of a twine-gripper comprising a hollow revolving open-ended cylinder, K', provided with notches k^2, and a stationary notched cylindric housing or shell, K, having connected

inner and outer walls, *k* and *k'*, said cylinder being arranged with its axis of rotation parallel with the axis of rotation of the twine-arm, whereby the projecting head *j* may pass through the notches and thereby bring the twine into position to be gripped by the gripping device, substantially as described.

11. The combination, with the twine-arm and gripping device, comprising a hollow open-ended notched revolving shell, K', and a casing, K^8, having connected inner and outer walls, *k k'*, and provided with a notch, k^4, of a twine-cutter consisting of an oscillating knife, Q, operating in connection with the lower margin of the knotch k^4 in the outer wall, *k*, of the shell K^3, substantially as described.

12. The combination, with the gripping device comprising a shell, K', a casing, K^8, a revolving shaft, K^3, sustaining the shell K, and provided with ratchet-teeth k^2, a pawl, K^5, and a vibrating lever, K^6, supporting the pawl, of a twine-cutter comprising a knife, Q, an oscillating lever, Q', supporting the knife, a spring, *q'*, applied to throw the knife upwardly, and a vertically-sliding bar, Q^3, engaged with the lever Q', and provided with an arm, *q*, located in the path of the lever K^5, substantially as described.

13. The combination, with the bundle-discharging arms M' and rock-shaft M^3, sustaining said arms, of means for actuating the arms, comprising a crank-arm M^3, upon the rock-shaft, a lever, M^4, pivoted upon the machine-frame and engaged with the said crank-arm, a wheel, H, provided with a pin, *h'*, located in position to engage and actuate the said lever M^4, and a spring-detent, M^5, engaging the lever M^4, and provided with an arm, m^3, extending into the path of the pin *h'*, substantially as described.

14. The combination, with the bundle-discharging arms M', and rock-shaft M^3, sustaining said arms, and provided with a crank-arm, M^3, of a lever, M^4, pivoted upon the machine-frame and engaged with the crank-arm, a revolving wheel, H, provided with a pin, *h'*, located in position to engage and actuate said lever M^4, a spring, m^4, applied to hold the lever M^4 in position for engagement with the pin *h'*, and a spring detent, M^5, engaging the said lever and the pin *h'*, substantially as described.

15. The combination of the rock-shaft M^3, the compressor-arm M, having yielding connection with the shaft, the discharging-arms M', attached to said shaft, and means for actuating the shaft, comprising a crank-arm, M^3, thereon, a lever, M^4, a wheel, H, provided with a pin, *h*, and a spring-detent, M^5, substantially as described.

16. The combination, with the grain carrying and binding devices, the continuously-rotating shaft H, the wheel H', mounted to rotate upon said shaft, and provided with a pin, h^3, fixed in said wheel, and a clutch device detachably connecting the wheel with the shaft, comprising a radially-movable part or detent, R', upon the wheel, of a lever, R^3, pivoted upon the machine-frame and provided with a projecting part, *r'*, constructed to engage the detent R', and having a part or arm, R^4, located in position for engagement with the pin h^3 when the said projecting part *r'* is in position for engagement with the said detent, a spring applied to throw the free end of said lever R^3 outwardly and the part or arm R^3 thereof in position to engage the pin h^3, and tripping devices for operating said lever from the driver's seat, substantially as described.

17. The combination, with the driving-shaft H', provided with a notched collar, R, and the wheel H, loosely mounted upon the shaft and provided with a pin, h^2, of a spring-detent, R', upon the wheel, engaging the collar, a lever, R^3, pivoted to the machine-frame and provided with a laterally-projecting part, *r'*, adapted to engage the detent R, and having a part or arm, R^4, constructed for engagement with the pin h^2, a spring applied to hold the said arm in the path of the pin h^2, and tripping devices for operating said lever from the driver's seat, substantially as described.

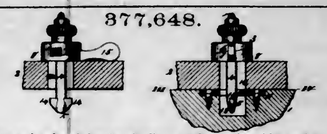
18. The combination, with the driving-shaft H' and the wheel H, mounted loosely thereon, of a clutch device detachably connecting the wheel and shaft, and comprising a movable part or detent, R', upon the wheel, a pivoted lever, R^3, provided with a lateral projection, *r'*, adapted to engage the detent R', and having a part or arm, R^4, constructed for engagement with the pin h^2, a spring applied to hold said arm R^4 in the path of the pin, and a tripping device for operating the lever, consisting of a rock-shaft, R^5, provided with an arm, R^6, resting upon the lever R^4, and with an arm, r^4, and a foot-lever, R^7, connected with said arm r^4, substantially as described.

19. The combination, with the machine-frame provided with a reel-support, S^3, and a reel having a pulley, s^4, of a swinging frame, S', pivoted upon the support S^3, and affording bearings for the reel, a driving-pulley, G^7, upon the machine-frame, a swinging arm, T^3, a shaft, T', mounted upon said arm T^3, and provided with belt-pulleys *t* and *t'*, a belt, T^3, trained over the pulleys *t* and s^4, and an elastic belt, T, passing over the pulleys (G^7 and *t*, substantially as described.

377,648. COFFIN-FASTENER. EMILE SUESSE, St. Louis, Mo. Filed Nov. 7, 1887. Serial No. 254,539. (No model.)

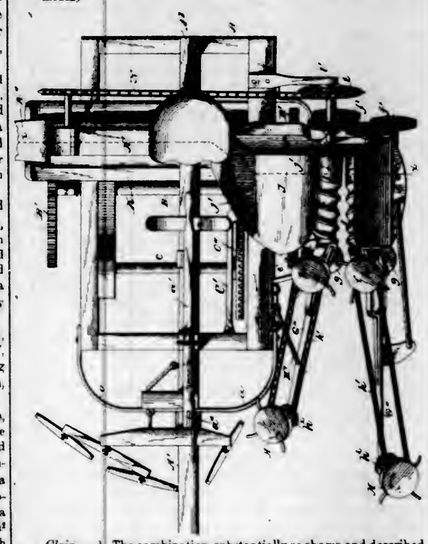
Claim.—The fastener having a shank with a T at the inner end adapted to pass through and engage the slotted plate 11, and at the

377,648.



outer end a head having inclines at its under side, and a cam-collar with an aperture allowing the passage of the T, and inclines on its upper side adapted to work against the inclines of the head, substantially as set forth.

377,649. CORN HARVESTER AND HUSKER. CHARLES F. SMITH, Hutchinson, Kans. Filed Feb. 25, 1886. Serial No. 193,174. (No model.)



Claim.—1. The combination, substantially as shown and described, of the main frame, the gathering-frame supported thereon and provided at its open forward end with forwardly-projecting brackets, bars connected at their rear ends to the forward ends of said brackets by upwardly-inclined pivots and mounted to swing laterally on said pivots, spindles journaled in the brackets parallel to said pivots, armed disks carried by the upper ends of said spindles, and beveled pinions on the other ends thereof, similar disks mounted in the forward ends of the bars connected to the brackets of the gathering-frame, belts or chains connecting the said disks, hooks H', to secure the bars in the desired position of adjustment, the mechanism, as described, for connecting the spindles with the ground-wheels, the stripping-rolls in the rear of the laterally-swinging bars, and husking mechanism consisting of a pair of rolls, a toothed belt to travel above the bight of said rolls, a down-chute leading from the harvesting mechanism to the lower end of the husking-rolls, and the connection between the harvesting and husking mechanisms and the ground-wheels of the machine.

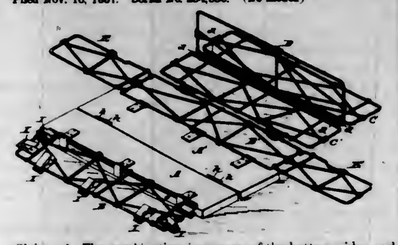
2. The combination, with the main frame, of harvesting mechanism consisting of an open-ended frame having stripping-rolls and bars pivoted in front of said rolls to swing laterally, armed disks and chains carried by said bars and adjusting-hooks, and husking mechanism consisting of a pair of rolls, a toothed belt to travel above the bight of said rolls, a down-chute leading from the harvesting mechanism to the lower end of the husking-rolls, and a single chain or belt for connecting the harvesting and husking mechanisms with the ground-wheels of the machine, substantially as described.

3. The combination, with the main frame and a harvesting mechanism, constructed and arranged substantially as described, of a husking mechanism consisting of a pair of inclined rolls, and a toothed belt mounted at its upper end upon a fixed sprocket or pulley journaled above the rolls and at its lower end upon a sprocket or pulley arranged to be adjusted farther from or nearer to said rolls.

4. In a corn-harvesting machine, the combination, with the main frame and a gathering mechanism consisting of a pair of forwardly and downwardly projecting arms, which are pivoted to the main frame,

and provided with armed disks, which are geared to each other, the arms having mechanism to adjust their inclination one to another, of the husking mechanism consisting of a pair of inclined rolls, and a toothed belt mounted at its upper end upon a fixed sprocket or pulley and at its lower end upon an adjustable sprocket or pulley, so that the belt can be adjusted farther from or nearer to said rolls.

377,650. FOLDING COOP. WILLIAM R. TAYE, Weatherford, Tex. Filed Nov. 10, 1887. Serial No. 254,850. (No model.)



Claim.—1. The combination, in a coop, of the bottom, sides, and ends, the top formed in sections hinged together, whereby one section may be raised without the other, and the partition dividing the coop into compartments and arranged at the juncture of the sections of the top, substantially as set forth.

2. In a folding coop, the combination of the bottom, sides, ends, and top, the latter being formed in sections, and the partition connected with the top at the juncture of its sections, whereby to support such sectional top, substantially as set forth.

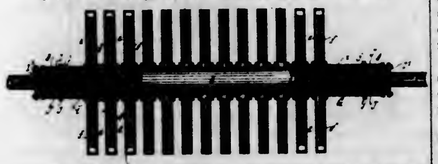
3. The combination, with the ends, the sides, the top, and the partition, of the bottom formed of sections hinged together and provided at their hinged or abutting edges with hooks for engaging and securing the lower edge of the partition, substantially as set forth.

4. In a folding coop, the combination of the sides, the bottom, the end pieces, the top sections, and the partition having short bars or arms *d* secured between their ends to the partition, projected to the opposite sides of said partition, and pivotally connected at their ends to the sections of the top, substantially as set forth.

5. In a coop, the combination of the bottom sections hinged together and provided at their hinged or abutting edges with catches for securing the partition, the ends, the sides hinged to the bottom, and the top hinged to one of the sides and provided with the partition, substantially as set forth.

6. The improved coop herein described, consisting of the bottom sections, A A', hinged together, the side B, hinged to section A, the side B', hinged to section A', the ends E, hinged to side B', the top sections, C C', the former being hinged to side B', and the partition connected with the top sections at the point of connection of the latter, substantially as set forth.

377,651. GRATE FOR REFUSE-BURNERS. EDGAR G. TEED, Brooklyn, N. Y. Filed Apr. 23, 1887. Serial No. 236,484. (No model.)



Claim.—1. The combination, with a furnace for burning refuse matter, of a dumping-grate comprising a tubular body having tubular grate-bars and end trunnions journaled in the walls of the furnace, a water-supply pipe extending lengthwise through the tubular body for discharging water into said tubular grate-bars, a plug in one end of the water-pipe, and means for the escape of the water behind the plug, substantially as described.

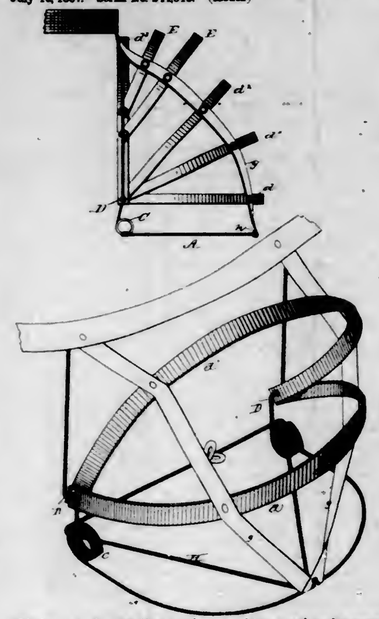
2. In a grate, the combination of the tubular body G, the tubular grate-bars secured thereto, and the supply-pipe H, closed at one end and provided with lateral tubes *f*, entering the grate-bars, said supply-pipe forming with the tubular body G an annular discharge-chamber, substantially as shown and described.

3. In a rocking grate, the combination of the tubular body G, the tubular grate-bars secured thereto, the supply-pipe H, closed at one end and provided with lateral tubes *f*, entering the grate-bars, said supply-pipe forming with the tubular body G an annular discharge-chamber, the sections H' and I, and the glands I' I', substantially as and for the purpose specified.

4. In a grate, the combination of the tubular body G, the tubular grate-bars secured thereto, the supply-pipe H, closed near one end, the lateral tubes *f*, entering the grate-bars, said supply-pipe forming a discharge-chamber with the tubular body, and the openings in the supply-pipe beyond the plug, whereby the discharge-chamber is connected with said supply-pipe beyond the plug, substantially as shown and described.

5. The combination, with a grate constructed with a tubular body, G, of the sectional supply-pipe H, the glands I, and the abutment-rings J secured within and to said tubular body, substantially as and for the purpose set forth.

377,652. BUSTLE. ARCH W. THOMAS, Philadelphia, Pa. Filed July 16, 1887. Serial No. 244,513. (Model.)



Claim.—1. In a folding bustle comprising a series of transverse bows, a waistband, and tapes secured to and supporting the bows, the combination, with said bows, of a base-bow having springs at or near its terminals, and stays which rest against the person of the wearer and which have lateral bends forming shoulders or offsets for the reception and pivotal action of said transverse bows, substantially as set forth.

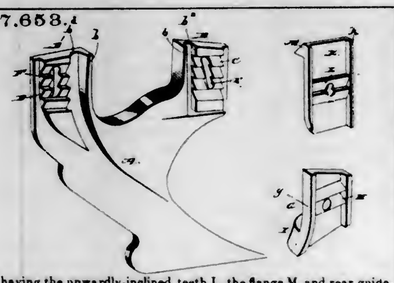
2. In a folding bustle, the combination, with the base-bow, the springs formed at or near the ends thereof, and the stays having lateral bends, shoulders, or offsets, of the main flat wire bows *d d' d^3 d^4*, pivoted upon said shoulders or offsets, the supplementary bows E E', pivoted to the sides of the bow d^3, the supporting-tapes, and the waistband, substantially as described.

3. In a folding bustle, the combination, with the base-bow, the springs formed at or near the ends thereof, and the stays having lateral bends or offsets, of the main and supplementary bows, the supporting-tapes, and the waistband, said main bows being pivoted upon the bends or offsets of the stays, and the supplementary bows pivoted to the side of the topmost main bow, said main bows being constructed and adapted to fold one within the other, while the supplementary bows are constructed and adapted to fold over or above the bow to which they are attached and one within the other, substantially as described.

377,653. PLOW. CHARLES M. THOMPSON, Lexington, N. C. Filed Nov. 11, 1887. Serial No. 254,918. (No model.)

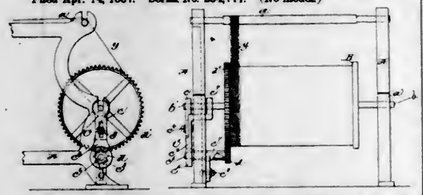
Claim.—The combination, with the plow-standard having the vertical arms B B', the former provided with the vertical rear guide-flange *b*, the downwardly and forwardly inclined slot E, and the downwardly-inclined teeth C, having the rear guide-edge, b^2, and the former provided with the front downwardly and forwardly curved guide-flange *b'*, the vertical slot F, and the upwardly-inclined teeth D, having the front curved guide-edge, b^2, of the plow-beam N, the clip-block

377,653.



K, having the upwardly-inclined teeth L, the flange M, and rear guide-flange *k*, the clip-block G, having the downwardly-inclined teeth H, the flange I, and the front curved guide-flange, *g*, the bolts O, and nuts P, constructed and arranged substantially as and for the purpose specified.

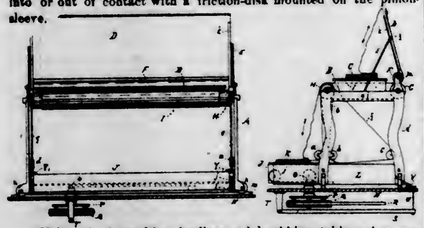
377,654. LET-OFF MECHANISM FOR LOOMS. SAMUEL WATSON, Fall River, Mass., assignor of one-half to Robinson Walmsley, same place. Filed Apr. 14, 1887. Serial No. 234,771. (No model.)



Claim.—The warp-beam, a toothed gear connected to or movable with it, and the two-part sliding friction-stand C, to support one end of the beam and the weight of yarn thereon, combined with the friction-pulley c^3, shaft, and pinion *d*, set in motion by the rotation of the warp-beam, the part *c* of the stand C slotted to receive the adjusting-bolt c^4 and supporting the journal of the warp-beam, the part c^2 provided with the guide portion c^3, forked at its upper end to embrace the journal *b'*, the said part c^2 being adjustable vertically and having its foot shaped to partially embrace the said friction-pulley, the decreasing weight of the yarn on the beam effecting a decrease in the effective pressure of the friction-stand upon the friction-pulley, thus automatically decreasing the friction to be overcome by the beam in its rotation according to the decrease in the weight of the yarn on the beam, substantially as described.

377,655. SPECKING, BURLING, AND KNOBBING TABLE. CHAS. C. WEBBER, Springfield, Mass. Filed Oct. 6, 1886. Serial No. 215,444. (No model.)

Brief.—The table is mounted upon rollers on laterally-extending tracks. A carriage, supported in the lower portion of the table-frame with capacity for movement forwardly and backwardly therein, carries a rectangular rack, with which engages a pinion journaled on a sleeve fixed to the floor. This pinion and rack produce a lateral movement of the carriage and table, carrying the table with the cloth spread over the inclined top thereof from side to side past the operator, and a forward and back movement to the carriage within the table-frame, this latter movement serving, through belts and pawls and ratchet, to produce the intermittent movement of an endless cloth-feeding belt. By means of a pedal the driving-pulley may be thrown into or out of contact with a friction-disk mounted on the pinion-sleeve.



Claim.—1. A specking, burling, and knobbing table and a supporting-frame therefor, in combination with drawing-rolls for moving a strip of fabric over said table, and means, as the rack and pinion shown and described, for moving said supporting-frame in a direction transverse to the line of movement of the fabric over the table, substantially as described.

2. The table, its supporting-frame, a track upon which said frame is adapted to travel, a transversely-movable carriage mounted upon ways in said frame, an endless belt carried by two rolls, one of which is provided at each end with a ratchet-wheel and a loose pulley carrying a pawl, belts connecting each end of the carriage with one of said loose pulleys, said belts being guided by pulleys mounted upon the frame and arranged substantially as shown, a rack constructed in the form of a parallelogram connected with said carriage, and a pinion adapted by its engagement with said rack to impart bodily movement to the frame and transverse movement to the carriage, combined and operating substantially as set forth.

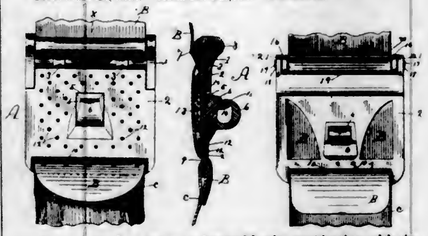
3. The table, its supporting-frame mounted upon a track, a series of rolls and connecting-belt adapted to draw a strip of fabric across the face of the table, one of said rolls being provided at each end with a ratchet-wheel and loose pulley carrying a pawl, a carriage mounted to have transverse movement upon said frame, belts connecting each end of said carriage with one of said loose pulleys, one of said belts passing between two guiding-pulleys mounted upon one of the frame-standards, and the other passing around two guiding-pulleys located, respectively, upon the front and rear frame-standards at the opposite end of the frame, a rack in the form of a parallelogram secured to said carriage, a pinion in engagement with said rack, driving mechanism for said pinion, and means, substantially as shown and described, whereby said driving mechanism can be readily thrown into and out of engagement with said pinion, combined and operating substantially as described.

4. The combination of table D with frame A A', having shelf B, supports L, carriage J, rolls F G H, belt I, loose pulleys X X', pawls *x*, ratchet-wheels *h*, belts *e* and *f*, pulleys *a b c d*, and means, substantially as shown and described, for reciprocating said carriage J, substantially as set forth.

5. The combination of track M, frame A A', mounted thereon, table D, hinged to said frame, rolls G H, endless belt I, carriage J, mounted upon said frame, belts *e f*, pulleys *a b c d*, pawl-carrying pulleys X X', ratchet-wheels *h'*, and rack Z, secured to said carriage, with pinion O, its hollow shaft o^3, friction-wheel P, driving-pulley Q, and means for moving said driving-pulley into engagement with said friction-wheel, substantially as described.

6. In combination with frame A A' and table D, rack Z, secured to said frame, pinion O, adapted by its engagement with said rack to impart bodily movement to said frame, its hollow shaft o^3, friction-wheel P, keyed to said shaft, shaft *g*, having a bearing within said hollow shaft, driving-pulley Q, lever S, supporting the shaft *q* at its lower end, rod U, and pedal V, substantially as shown and described.

377,656. BUCKLE. ALEXANDER P. WADDELL, Union City, Tenn. Filed June 25, 1887. Serial No. 242,801. (No model.)



Claim.—1. In a trace-carrier buckle, the combination, with the sliding plate having means for attachment to the strap, of the hinged plate permanently secured to and adapted to fold thereon, said plates being provided each with a part, which parts interlock and serve to receive and hold the trace, substantially as described.

2. In a trace-carrier buckle, the combination, with the sliding plate 1, having cross-bars and slots to receive the strap, and an outwardly-projecting keeper, of the plate 2, hinged to the plate 1, having a hook to receive the trace-link, and an opening, 5, in the same, through which the keeper of the plate 1 may project, substantially as described.

3. In a trace-carrier buckle, the combination, with the sliding plate 1, having cross-bars and slots to receive the strap, of a hinged plate, 2, having a hook to receive the trace-link, and spurs upon its swinging edge, which project across the slot 9 and pass through the said strap, substantially as described.

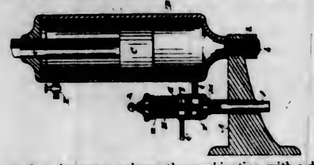
4. In a trace-carrier buckle, the combination, with the sliding plate 1, having cross-bars 7 and 8, of egg-shaped cross-section, arranged as herein described, of a rounded plate, 11, and a slot, 9, over and through which the strap to which the buckle is secured may be passed, substantially as described.

5. In a trace-carrier buckle, the combination, with the sliding plate 1, of the recessed keeper 4 and the plate 2, hinged to said sliding plate having an opening, 5, through which said keeper may pass, and a hook, 6, formed to support the trace-link and interlock with the recess in the keeper, substantially as described.

6. A plate, 2, having a hook, 6, formed to support a trace, and an opening, 5, combined with a plate, 1, pivotally connected with plate 2, and having a keeper, 4, which projects through opening 5 and adjacent to the hook 6, whereby to retrain the trace in engagement therewith, substantially as set forth.

7. In a trace-carrier buckle, the perforated sliding plate 1, and the hinged plate 2, and a pad, 13, secured to the perforations of plate 1, substantially as described.

377,657. DAMPER-REGULATOR. JOHN H. WHITMYER, Harrisburg, Pa. Filed Nov. 3, 1887. Serial No. 254,301. (No model.)



Claim.—1. In a damper-regulator, the combination, with a damper-controlling piston or diaphragm, of an exhaust apparatus operated by the pressure of the steam in the boiler to exhaust the air on one side of said piston or diaphragm and cause the movement of said damper, substantially as described.

2. In a damper-regulator, the combination, with a damper-controlling piston or diaphragm, of an ejector operated by steam from the boiler for exhausting the air on one side of said piston or diaphragm and causing the damper to be operated, substantially as described.

3. In a damper-regulator, the combination, with a damper-controlling piston or diaphragm, of an exhaust mechanism operated by steam from the boiler for exhausting the air upon one side of said piston or diaphragm and a valve for determining the pressure at which said exhaust mechanism shall become operative, substantially as described.

4. In a damper-regulator, the combination, with a damper-controlling piston or diaphragm, of an exhaust mechanism operated by steam from the boiler for exhausting the air on one side of said piston or diaphragm and an adjustable valve between said exhaust mechanism and the boiler, whereby the same may be rendered operative at a greater or less degree of pressure.

5. In a damper-regulator, the combination, with a damper-controlling piston or diaphragm, of an exhaust mechanism operated by steam from the boiler for exhausting air from one side of said piston or diaphragm, a valve between said exhaust mechanism and the boiler, and a spring for holding said valve to its seat, provided with a set-screw for adjusting the tension of the spring and the pressure at which the valve shall be opened and the exhaust mechanism rendered operative, substantially as described.

6. In a damper-regulator, the combination, with a damper-controlling piston or diaphragm, of an exhaust mechanism operated by steam from the boiler for exhausting from one side of said piston or diaphragm, and a spring-pressed piston carrying a valve located between the exhaust mechanism and the boiler, whereby said piston is raised and the valve operated by the pressure of the steam before the exhaust mechanism becomes operative, substantially as described.

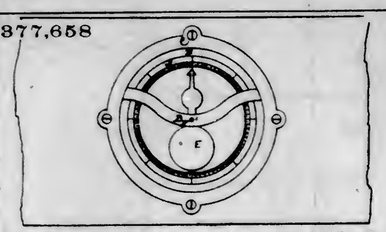
7. In a damper-regulator, and in combination with the exhaust mechanism for operating the damper-controlling mechanism, a conical valve hung loosely on its piston or support for determining the pressure at which the exhaust mechanism shall become operative, substantially as described.

8. In a damper-regulator, the combination, with the piston or diaphragm for controlling the damper, of an ejector for withdrawing air from one side of said piston or diaphragm, consisting of a conical stationary nozzle and a block beneath the same, having the conical aperture therein adjustable with relation to said nozzle, whereby the size of the aperture for the admission of air around said nozzle may be regulated, substantially as described.

377,658. PLUMB-LEVEL. EDWIN A. WENTWORTH and ADELBERT J. TRAVER, Atchison, Kans. Filed Feb. 23, 1887. Serial No. 228,626. (No model.)

Claim.—1. The combination of the pendulum, the supports therefor, the graduated plate having notches A', and the case-sections B B, having lugs or projections B' B' to enter the notches A', all substantially as and for the purpose specified.

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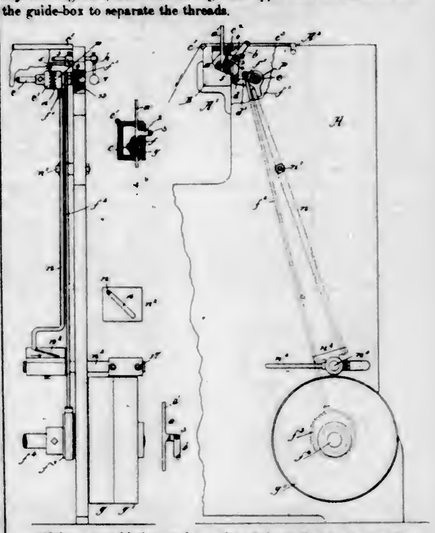


2. The combination of the pendulum and supports therefor, the central graduated plate made in the form of an annulus having an open center, and the case-sections abutting the said central graduated plate at their inner ends, whereby said plate is clamped in position, substantially as set forth.

3. The improved level, substantially as herein described and shown, consisting of the graduated plate A, having an open center and provided with a notch or notches, A', the case-sections B B, having at their inner edges lugs or projections to enter the notches A', the cross-bars D, having bearings for the pendulum-shaft, the pendulum having its shaft journaled in said cross-bars, and the casing-rings C C, all substantially as and for the purposes specified.

377,659. WARPING-MACHINE. WILLIAM BABCROFT, Hopedale, Mass., assignor of one-half to the Hopedale Machine Company, same place. Filed Aug. 31, 1886. Serial No. 212,316. (No model.)

Brief.—The object of the invention is to improve warping-machines, whereby the drop-wires and the dents of the reed may be adjusted together, the dents having their upper ends extended above the guide-box to separate the threads.



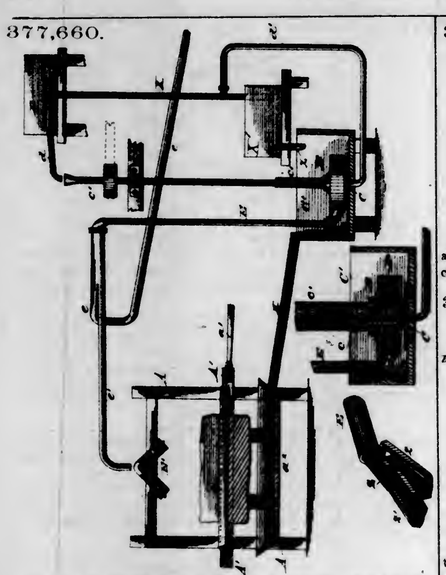
Claim.—A guide-box and a series of dents therein, having their upper ends extended above the guide-box to separate the threads, and having laterally-extended ears, combined with drop-wires—one for each dent—and with means to support the said drop-wires, whereby the lateral adjustment of the dents also effects the lateral adjustment of the drop-wires, a vibrator, and means to operate it, substantially as described.

377,660. STONE-SAWING MACHINE. VALENTINE G. BARNEY, Charles City, Iowa. Filed June 3, 1886. Serial No. 204,060. (No model.)

Claim.—1. In a stone-sawing machine, the combination of the rotatory pump, the receiving-tank surrounding the same, the discharge-pipe having its horizontal portion divided into the upper and lower branches for the used and unused sand, respectively, and means, substantially as described, to distribute the unused sand mixed with water, substantially as specified.

2. In a stone-sawing machine, the combination of the rotatory pump, the surrounding receiving-tank, the discharge-pipe from the

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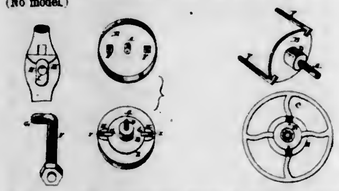


pump, with its horizontal part divided into the upper and lower branches, and the distributer-board situated below the end of the lower branch of the discharge-pipe, substantially as specified.

3. The combination of the pump B, having the wheel or piston B', the receiving-tank C, the discharge-tube E, divided into the two branches *e e'*, the distributer, the sand-box G and connecting-pipes, and the pipes H, connecting the pit of the machine with the receiving-tank, substantially as specified.

4. In a stone-sawing machine, the combination of the rotary pump, consisting of the casing B and piston B', the perforated step C, the tube *c'*, having within a bearing for the upper rounded end of the step C, the clear-water tank D, and the pipes X and *d'*, whereby water is conveyed from said tank to the step C, substantially as specified.

377,661. **MEANS FOR SECURING PULLEYS TO SHAFTS.** LINDLEY M. BATTY, Canton, Ohio. Filed Feb. 20, 1885. Serial No. 156,570. (No model.)



Claim.—1. The combination, with a driving-shaft having rigidly secured thereto a friction-disk, of a fly-wheel or pulley having holes made therein beyond the circumference of the friction-disk and provided with projections and clamping-bolts having one end bent at right angles, which bent ends engage the projections and rest upon the surface of the friction-disk, and nuts upon their opposite ends, whereby the pulley and fly-wheel may revolve independently of the shaft, substantially as described.

2. The combination of the fly-wheel C, having channels I, the pulley E, shaft A, disk B, secured rigidly thereto, having the collar D formed as a part thereof, and the bolts F, having the bent ends G, said bolts passing through the fly-wheel and pulley and secured by means of nuts, substantially as set forth.

377,662. **SHEET-METAL SEAL.** WILLIAM F. BRADLEY, Oxford, N. C. Filed Mar. 24, 1887. Serial No. 232,349. (No model.)

Claim.—1. A seal of metal or other composition formed of a single piece and having a ring-shaped portion, C, and clear space B, the ring portion being integral with the body, substantially as set forth.

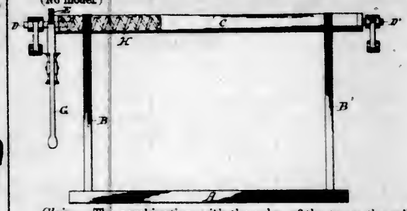
2. A seal of metal or other composition having a ring-shaped portion integral with the body and the body portion furnished with

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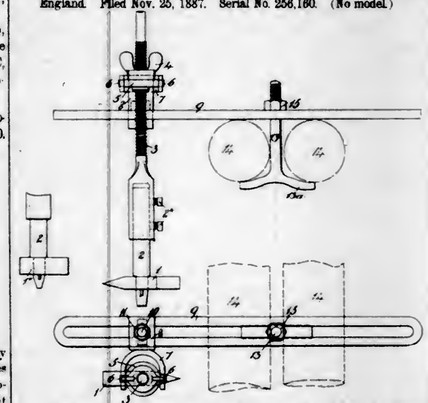
any given design or characters, and perforated to form a coupon or check, substantially as and for the purpose specified.

377,663. **RULING ATTACHMENT FOR BLACKBOARDS.** SEPHORA L. BETTEN, Washington, D. C. Filed July 11, 1887. Serial No. 243,990. (No model.)



Claim.—The combination, with the ruler, of the tapes, the roller, the spring for rotating the said roller to raise the ruler, the detent-wheel, the detent for engagement with said wheel to hold the ruler in adjusted position, and the hand-manipulated spring-actuated lever carrying the said detent, substantially as described.

377,664. **DEVICE FOR CARRYING CHIPPING-HAMMERS OR OTHER TOOLS.** JOHN T. BILLSON, North Shields, County of Northumberland, assignor to himself, and William Cooper, Newcastle-upon-Tyne, England. Filed Nov. 25, 1887. Serial No. 256,160. (No model.)



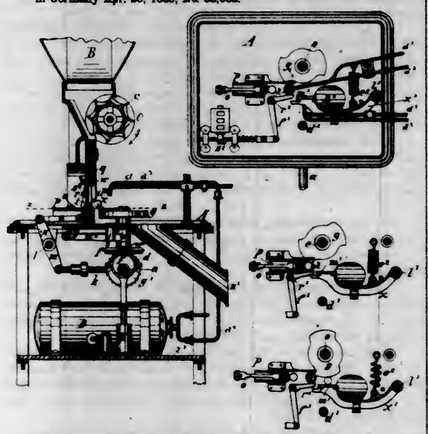
Claim.—1. The combination of the ring 5 and fork 7, pivoted together, and bracket 8, or equivalent, to which said fork 7 is pivoted, substantially as described, for the purpose of supporting a rod or lever carrying a tool, substantially as described.

2. Apparatus comprising a ring, 5, and fork 7, pivoted together, bracket 8, to which said fork is pivoted, and a screw-threaded rod or lever, 3, with nut 4, supported by said ring 5, substantially as herein described, for carrying a chipping-hammer or other tool.

3. Apparatus comprising a ring, 5, and fork 7, pivoted together, bracket 8, to which said fork is pivoted, a screw-threaded rod or lever, 3, with nut 4, supported by said ring 5, slotted bar 9, bolt 10, and nut 12, substantially as herein described, for carrying a chipping-hammer or other tool.

4. Apparatus comprising a ring, 5, and fork 7, pivoted together, bracket 8, to which said fork is pivoted, a screw-threaded rod or lever, 3, with nut 4, supported by said ring, a slotted bar, 9, whereon said bracket can be adjusted and fixed, and means for fixing said slotted bar in position, substantially as herein described.

377,665. **MACHINE FOR BRANDING CORKS, &c.** FRIEDRICH W. A. BOLDT, Hamburg, Germany, assignor to Boldt & Vogel, same place. Filed Dec. 8, 1886. Serial No. 195,070. (No model.) Patented in Germany Apr. 23, 1886, No. 33,682.

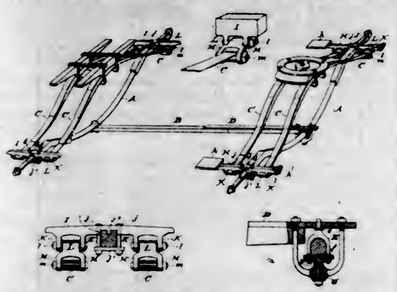


Claim.—1. In machines for branding corks or bungs, the combination of the slide P, provided with the brackets *u* and *v*, with the lever *s t*, provided with the pin *w* and nose *x*, substantially as and for the purpose specified.

2. In machines for branding corks or bungs, the combination of a funnel for holding the corks, the channel *q*, the lower part of which is made of two portions hinged together and adapted to receive the corks from the funnel, and a ring-clamp secured to the lower part of the said channel for keeping the hinged portions of it together, substantially as and for the purpose specified.

3. In machines for branding corks or bungs, the combination of the cams *b'* and *g'*, secured upon a revolving shaft, the lever *a'*, pivoted at one end and provided with the branding-die *z*, actuated from the cam *b'*, the rod *d'*, provided with the adjustable arm *p'*, and branding-die *c'*, actuated from the cam *g'*, the said cams and levers being arranged to brand the opposite ends of the corks simultaneously, substantially as specified.

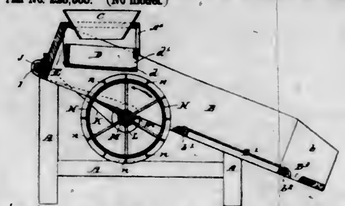
377,666. **RUNNING-GEAR FOR VEHICLES.** EBENEZER H. BOOTH, Kirkwood, N. Y. Filed July 7, 1887. Serial No. 243,668. (No model.)



Claim.—1. In the running-gear of a vehicle, the combination, with the axle, the shackles L, and the pivoted bolts *l*, of the lug-bars provided with the depending lugs *k* and having the recesses J and the pin j^3 therein entering a corresponding socket in the axle, the bolts *j*, and the clip-plates *j'*, substantially as specified.

2. In the running-gear of a vehicle, the combination, with the front axle and the two springs C C, situated, respectively, on opposite sides of said axle, of the lug-bars H, provided on their front ends with the double-armed perforated lugs *h'* for the attachment of the thills, and on their rear ends with the foot-plates A, and having the depending lugs K and recesses J, the plates *j'*, the bolts *j*, engaged by nuts below the said plates, the swinging shackles L, the pivotal bolts *l* thereof, and the receiving-bolts *m*, passing through the openings in the arms M of the shackle and the eyes of the corresponding springs, substantially as specified.

377,667. **MACHINE FOR CLEANING AND SEPARATING CRANBERRIES.** HALE CHADWICK, Pemacook, N. H. Filed Jan. 6, 1887. Serial No. 223,605. (No model.)

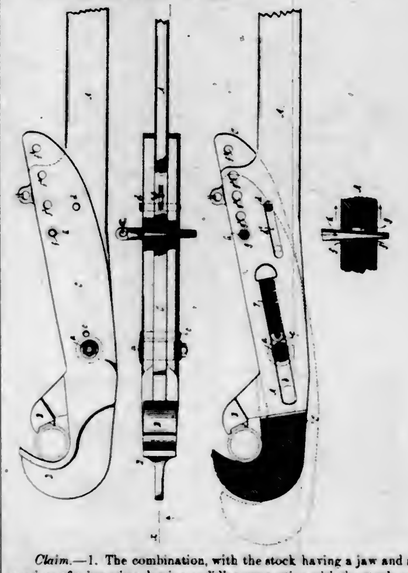


Claim.—1. The combination of a receiving-hopper, a vibratory screen located directly under the same, a rotary cylinder, and radial transverse floats or slats arranged at regular intervals thereon, an inclined chute having a screen or grated bottom adapted to receive the perfect berries from said cylinder, and suitable operating mechanism for the vibratory screen and rotary cylinder, substantially as and for the purpose set forth.

2. The combination of a receiving-hopper, an inclined vibratory screen located directly under the same, a rotary cylinder, and radial floats or slats secured at regular intervals thereon, an inclined chute adapted to receive the perfect berries from said cylinder, having a screen forming a portion of the bottom thereof, and provided at the lower end of said screen with a transverse opening or slot, and operating mechanism, substantially as and for the purpose specified.

3. In a machine for separating cranberries, the combination, with a hopper, a horizontally-vibratory screen, and an inclined chute, of a rotary cylinder located between said screen and chute revolving toward the former, and having radial slats for carrying away the imperfect berries and other refuse, substantially as described.

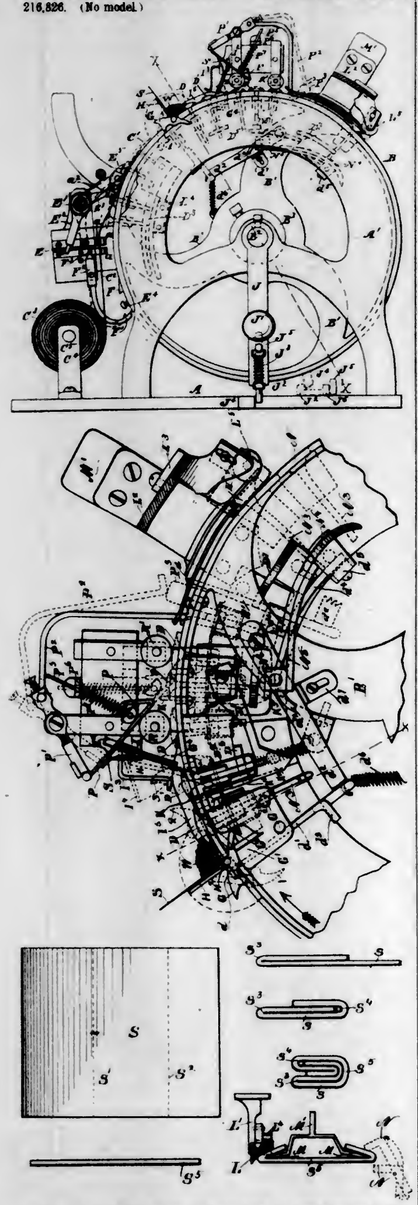
377,668. **PIPE-WRENCH.** JOHN CLARK, Green Point, N. Y., assignor to himself and Michael Gilmartin, same place. Filed June 23, 1887. Serial No. 242,289. (No model.)



Claim.—1. The combination, with the stock having a jaw and an opening, of a jaw-piece having a sliding connection with the stock and an opening corresponding to the opening of the stock, and a key passing through said openings and acting on the jaw-piece to slide the jaw thereof toward the jaw on the stock, substantially as shown and described.

2. The combination, with the stock having a jaw and an opening, *f*, of a spring-pressed jaw-piece having a sliding connection with the stock and an opening, *g*, a guide for the jaw-piece, and a key, G, passing through the openings and acting on the jaw-piece, substantially as shown and described.

377,669. PACKET-FOLDING MACHINE. GEORGE E. DE FREEST and GEORGE W. WYNKOOP, Troy, N. Y. Filed Oct. 21, 1886. Serial No. 216,826. (No model.)



Claim.—1. In a packet-folding machine, in combination with a carrying-table, spring-clamps carried by the table, and a series of fixed cams extending under the table and constructed and arranged to open said clamps together at certain stages of operation and some of them at other stages of operation, substantially as and for the purposes described.

2. In a folding-machine, a carrying-table provided with a hinged leaf, H, having a lever, G, connected therewith, in combination with tripping devices G' and G², fixed to the frame, the parts being so constructed that the tripping devices severally engage each with a different end of said lever, substantially as set forth, for the purposes specified.

3. In combination with a carrying-table provided with retaining-clamps and a cam, an oscillatory sheet-lifting apron, I, which is vertically movable between fixed supports and operated by contact with cam, substantially as set forth and described.

4. In combination with a carrying-table provided with cam I³, the movable lifting-apron I, provided with bent arm I², and fixed slotted supports, substantially as and for the purposes set forth.

5. In combination with pusher P, carried by pivoted levers P', provided with arm P³, a spring-rod adapted to bear against the pusher, one or more press-rolls, and a carrying-table provided with a cam to engage with arm P³, substantially as described, for the purposes set forth.

6. In a packet-folding machine, the combination, with a carrying-table, of retaining-clamps, a presser-roll, and a cam-operated lifting device, as pins K, movably secured to said table, substantially as and for the purpose described.

7. In combination with a carrying-table, folding devices N, movably secured to the table and provided with retaining-springs, and fixed cams N⁴ N⁵, constructed to lift folders N and bring them to inclined positions, substantially as set forth and described.

8. In combination with the moving carrying-table of a folding-machine, a pushing device consisting of a bar, *d*, secured to supports *d'*, carried by pivoted arms *d²*, and a fixed cam, *d⁴*, in position to raise the pusher through an opening in the table, substantially as set forth, for the purpose specified.

9. In combination, with a carrying-table having a trip, E⁴, a perforating-knife which is movable in fixed bearings, a pivoted lever, E⁵, and a rock-shaft provided with two projecting arms, one of which engages with the perforating-knife and the other with said lever, substantially as and for the purposes described.

10. In combination with a carrying-table provided with a trip, F, a fixed bar, *s*, an adjacent presser-bar carried by pivoted levers F², provided with an arm constructed to engage with trip F, substantially as set forth and described.

11. In combination with the carrying-table provided with a hinged folding leaf and means, substantially as described, for lifting it, a movable bolt constructed and arranged to stop the movement of the table when the leaf has been swung upward, substantially as and for the purpose set forth.

377,670. CAR-COUPLING. CHARLES S. EDWARDS, Portland, assignor of one-half to James McGee, Eutaw, Ala. Filed May 23, 1887. Serial No. 239,140. (No model.)

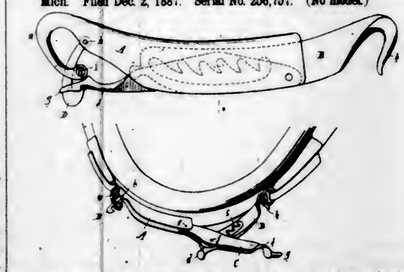


Claim.—1. The draw-head A, having bearing B, combined with the pivoted arm E', having a locking-bar, E, substantially as set forth.

2. In a car-coupling, the draw-head having bearing B, openings F F, and mortise A', combined with the pivoted arm E', having locking-bar E, substantially as set forth.

3. The improvement in car-couplings herein described, consisting of the draw-head having bearing B and openings F, the lifting-lever D, the arm E', and the locking-bar, substantially as set forth.

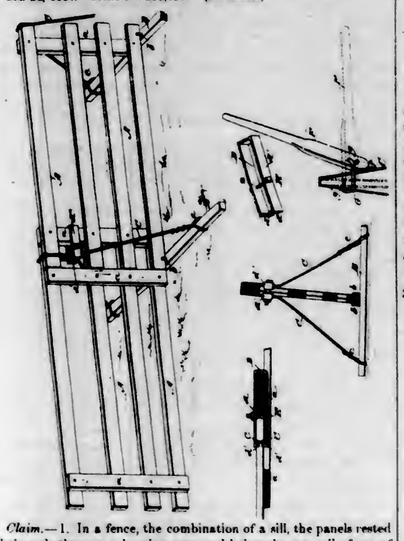
377,671. HAME-FASTENER. JOHN H. D. EVERETT, St. Ignace, Mich. Filed Dec. 2, 1887. Serial No. 256,757. (No model.)



Claim.—1. The combination, with the male and female straps A B and the lever C, pivotally secured to the strap A and engaging into the toothed slot *c*, of the gravity-dog D and the lip *g* on the lever C, substantially as described.

2. In a hame-fastening device, the combination of the female strap A, provided with the hook *a*, the male strap B, provided with the hook *b* and the toothed slot *c*, the slotted lever C, pivotally secured to the strap A and provided with the pin *f* and the lip *g*, the gravity-dog D, and the locking-pin *i*, all combined and operating substantially in the manner and for the purpose described.

377,672. FENCE. REUBEN B. BURANE, Jr., Marysville, Mo. Filed Oct. 21, 1887. Serial No. 253,089. (No model.)



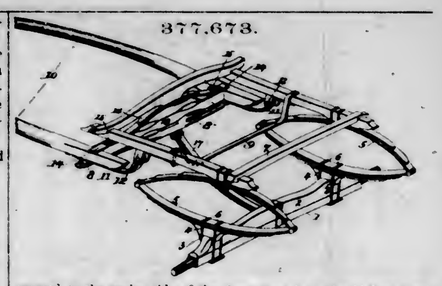
Claim.—1. In a fence, the combination of a sill, the panels rested at their ends thereon, a bearing arranged below the top rail of one of said panels, and the binder-wire connected at its ends with the sill and having its arms drawn inward toward each other at a point below the top rail and engaged with the bearing, substantially as and for the purposes specified.

2. In a fence, the combination of the sill, the panels rested thereon, the bracket supported on the end batten of one of said panels and having hooks which face inwardly toward each other, and the binder secured at its ends to the sill and having its arms drawn inward and engaged with the said hooks, substantially as set forth.

3. In a fence, the combination of the panel having a batten, the bracket D, looped around the batten and having the free ends of its arms extended beyond the edge of the batten and provided at such ends with hooks, and the clamping-bolt connecting the arms of said bearing, whereby they may be drawn together on the batten, substantially as set forth.

4. The combination of the sill, the panels rested thereon, the bracket D, supported on and adjustable vertically along the end batten of one of said panels, and the binder having its ends looped around the sill, whereby it may be adjusted therealong, and having its arms drawn together and engaged with the bearing supported on the batten, substantially as set forth.

377,673. ROAD-CART. PHILIP FISGE, Lanesville, Va. Filed Aug. 12, 1887. Serial No. 246,800. (No model.)

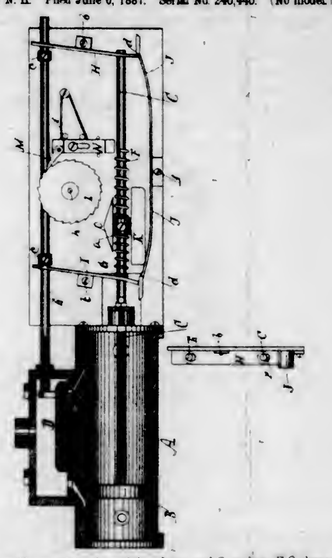


Claim.—1. The combination, with the axle and springs, of the rectangular frame secured at or near its rear corners to the upper members of the springs, the thills extending rearward under the frame and hinged to the side bars thereof between their ends, the cross-bar connecting the thills directly below the front cross-bar of said frame, and the curved spring secured to the under side of the said front bar and bearing at its ends on the upper surface of the said cross-bar, substantially as set forth.

2. The combination, with the axle and the springs, of the rectangular frame 7, secured at or near its rear corners to the upper members of the springs, the thills projecting rearward under the side bars of the said frame and having the upward-curved irons hinged to the under sides of said side bars in front of their centers, the cross-bar connecting the thills directly under the front cross-bar of the frame and having wear-plates and upward-projecting pins, the curved spring secured to the under side of the front cross-bar of said frame and slotted at its ends to receive the said pins, and the cross-bar secured at its ends to the side bars of the rectangular frame in rear of their centers and extending between its ends downward below the frame, substantially as set forth.

3. The combination, with the axle and the elliptic springs secured thereto, of the horizontal rectangular frame secured at its rear corners to the upper members of said springs, and the thills projecting at their rear ends under the side bars of the said frame and having the hinged connection therewith in front of the center of said frame, substantially as set forth.

377,674. PISTON WATER-METER. FREDERICK E. GILFORD, Lake Village, N. H. Filed June 6, 1887. Serial No. 240,440. (No model.)



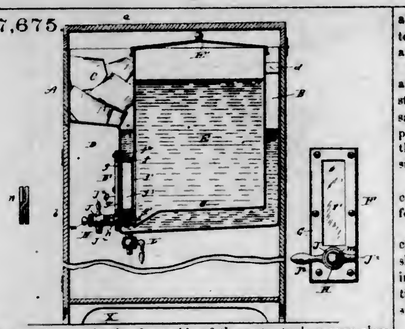
Claim.—The combination of the piston-rod C, springs F G thereon, vibratory levers H I, valve-rod E, catch-lever J, and cam K, moved by the piston-rod, substantially as and for the purpose herein specified.

377,675. MILK-COOLER. JAMES T. HAYS and THOMAS C. HAYS, Emmittsburg, Md. Filed Sept. 12, 1887. Serial No. 249,464. (No model.)

Claim.—1. The combination, in a creamer, of the following instrumentalities: an external case, A, provided with a cover and a front door, a cold-water tank, B, therein, having an offset ice-receptacle, C, formed integral with this tank, a milk-can suspended in this tank and provided with a forwardly and laterally inclined bottom terminating in a depression, *c'*, integral with this bottom, a window-frame hermetically secured to the said tank and can, as described, a gage-glass glazed in a rabbet in the inner edge of this frame, and a straight-bore draw-off cock tapped into the outlet-passage *i* of the window-frame at the lowest point of the depression *c'*, all constructed and adapted to operate substantially as described.

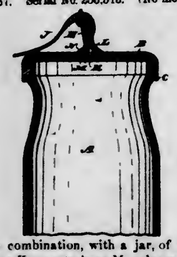
2. In a creaming-can, the combination of a water-tank, B, provided with an opening in its front wall, a milk-can, E, suspended within the said water-tank and provided in its front side with an opening

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similar to the one in the front side of the water-tank, a gage-glass frame, F, interposed between the milk-can and water-tank, and consisting of the portion f^3 and the flange f^3, the inner end of the former being attached securely to the milk-can within the opening therein, the gage-glass set in a rabbet in the inner end of the portion f^3 of the frame F, so as to be removable from within the milk-can, the frame surrounding the opening in the front side of the water-tank, the packings $g\,g$ interposed between the frame G and flange f^3 and the front wall of the water-tank, the screws passing through the frame G, the packings, the front wall of the water-tank and the flange f^3, whereby the frame F is tightly secured to the front wall of the water-tank, and the draw-off cock H, provided with a screw-threaded end, the said cock being tapped into an opening, i, through the lower end of the body of the frame F and passing through the frame G and the front wall of the water-tank, whereby these parts are securely drawn together, substantially as described.

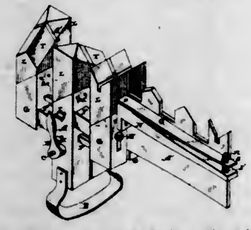
377,676. JAR-FASTENER. WILLIAM HESTON, Mount Union, Ohio. Filed Oct. 27, 1887. Serial No. 253,513. (No model.)



Claim.—1. The combination, with a jar, of the lid B, having a central perforation, as K, counterbore M, valve-seat N, valve L, lever J, and spring-bail E, substantially as described, and for the purpose set forth.

2. The combination, with the jar and the jar-lid provided with a central perforation and a valve-seat surrounding said perforation, of a spring-bail secured to the neck of the jar, a lever pivoted to the bail at its middle portion, and a valve secured to the short arm of the lever and adapted to rest snugly in contact with the said valve-seat when the lever is swung to close the jar, substantially as set forth.

377,677. COMBINED SAW FILER, GAGE, AND GUMMER. GEORGE S. JONES, Laconia, Ind. Filed Sept. 29, 1887. Serial No. 251,043. (No model.)



Claim.—1. In a saw-sharpening device, a clamp in which the saw is secured, and which has teeth to correspond with the shape of the saw-teeth, the teeth being capable of adjustment relative to the saw-teeth, for the purpose described.

2. In a saw-sharpening device, the combination of center standards which form a clamp, and teeth which correspond in shape with the teeth of the saw to be sharpened, and which are capable of horizontal adjustment thereto, substantially as described.

3. In a saw-sharpening device, the combination of center standards, between which the saw is placed, a bolt passing through the standards, and a screw-handle applied to the bolt for clamping the saw, and a spring secured to the lower end of the standards for the purpose of separating them, and teeth arranged in suitable relation to the center standards, which form guides while filing the saw-teeth, substantially as shown.

4. The combination of the center standards in which the saw is clamped, and vertically-adjustable teeth connected therewith, which form guides for sharpening the saw, substantially as set forth.

5. The combination of the center standards in which the saw is clamped, teeth suitably connected therewith, which form guides for sharpening the saw, and supporting-catches secured thereto for catching over the upper edge of the saw, and which are provided with vertical slots and set-screws, whereby they can be adjusted vertically, substantially as specified.

6. The combination, with a saw-sharpening device which is clamped directly to the saw-blade, of a vertically-adjustable gummer-gage secured thereto, and which extends parallel with the saw, substantially as described.

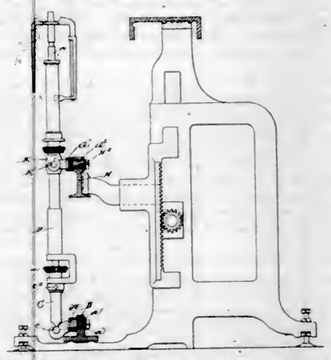
7. The combination, with a saw-sharpening device, of a gummer-gage secured thereto and extending parallel to the saw, and a spring applied to its upper side, and provided with a bolt for bending the spring to correspond to the curve of the upper edge of the saw, substantially as set forth.

8. The combination of the standards A, in which the saw is clamped, the bars F, having their inner ends to pass through the standards, and set-screws for securing the bars therein, and the teeth G, secured to their outer ends by means of the screws H, and the vertical slots in the teeth G, through which the screws H pass, substantially as shown.

9. In a saw-sharpening device, the combination of the standards A and the teeth G, provided with the detachable portions L, substantially as shown and described.

377,678. SPINDLE-TUBE BEARING FOR ROVING-FRAMES. JOHN KERRIVAN, Newton Upper Falls, Mass., assignor to the Pettee Machine Works, same place. Filed Jan. 31, 1887. Serial No. 226,043. (No model.)

Brief.—The invention consists in improved intermediate bearings and end supports for the tubes of roving-frames.



Claim.—1. The tube and the foot-step at its lower end, provided with the foot e, combined with the foot-step holder, having the groove a^2 to receive the said foot, substantially as described.

2. The tube and the foot-step at its lower end, provided with a nearly cylindrical foot and a projection, e^3, combined with the foot-step holder having the substantially semi-cylindrical groove and recess a^2, to operate all substantially as described.

3. The tube, the foot-step at its lower end having a foot, and a foot-step holder for it and the intermediate bearing having a shank provided with a lug, 2, combined with the arm G′, and the hub G, having a longitudinal slot and a second slot intersecting it, all substantially as described.

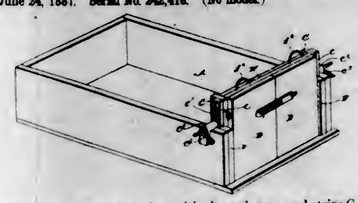
4. The foot-step holder provided with the substantially semicircular groove a^2 and recess a^3, the tube, its attached foot-step, having the foot e and projection e^3, and the arm G′, having the hub G slotted longitudinally, and also provided with a slot, as 3, combined with the intermediate bearing, E, having a shank provided with a lug, 2, to enter the said slot 3, all substantially as described.

377,679. POLE-SOCKET AND NECK-YOKE. JOHN M. KETTLEWOOD, New Brighton, Pa. Filed June 25, 1887. Serial No. 242,403. (No model.)



Claim.—The combination of two sleeve-halves hinged together at one edge and provided with semi-spherical recessed lips projecting from the other edge, each of which lips is provided with a notch in its outer edge, a screw for securing said halves together, and a sleeve having a rearwardly-projecting neck upon its upper side, and a ball upon the end of the neck adapted to fit between the recessed lips upon the sleeve-halves, substantially as and for the purpose shown and set forth.

377,680. RED-GATE. JAMES M. KIDD, Benedict, Kans. Filed June 24, 1887. Serial No. 242,416. (No model.)



Claim.—1. The combination, with the end-gates and strips C, having slots formed therein, as set forth, of the scoop-board provided with trunnions adapted to engage with said slots, substantially as described.

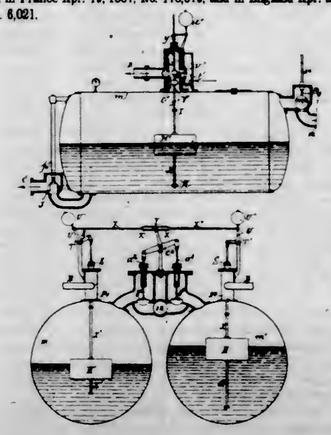
2. In a combined end-gate and scoop-board, the combination of the gates D D, having the slots therein, as set forth, and the scoop-board F, operating in connection with said gates, substantially as described.

3. In combination with the strips C, the slotted guide-iron c, the clamps c^3, and the clamping-nut c^3, substantially as described.

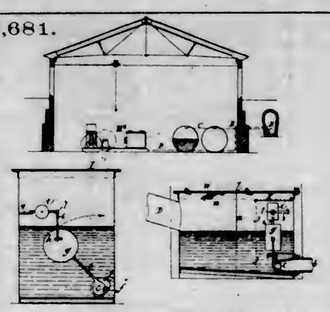
4. In combination with the strips C, the gates D, hinged thereto, the clamping devices to lock the strips to the wagon-body, the guideways or grooves in the gates D, and the scoop-board hinged to the strips C, and having projections or pins to work in the guide grooves or ways of the gates, as set forth.

5. In combination with the strips C, the gates D, hinged thereto, the adjustable clamps connected to the strips and engaging the wagon-bed, the guide grooves or ways in the gates, and the scoop-board hinged to the strips C, and having projections to engage the guideways and locking devices to lock the gate over the scoop-board.

377,681. SEWERAGE OR DRAINAGE OF HOUSES, TOWNS, OR DISTRICTS, AND APPARATUS THEREFOR. ADRIEN LE MARQUAND, Paris, France. Filed May 17, 1887. Serial No. 238,492. (No model.) Patented in France Apr. 19, 1887, No. 170,079, and in England Apr. 25, 1887, No. 6,021.



377,681.



Claim.—1. A system of sewerage or drainage for houses and towns or districts, composed of apparatus which receive the sewage matters from the waste or soil pipes of the houses and discharge them automatically into collecting-conduits, a series of collecting-conduits arranged in arteries and branches throughout the town or district, a pair of collecting-vessels arranged at a suitable point of the town or district, the two vessels of each pair receiving and discharging the sewage matters alternately, a pipe through which the sewage matters are conveyed from the collecting-vessels to pumping-works, another pipe communicating between the upper part of the collecting-vessels and the pumping-works, and pumps or pneumatic engines which maintain a constant barometric depression in the last-named pipe and throughout the system, and also draw the sewage matters from the collecting-vessels, all substantially as set forth.

2. In a system of sewerage or drainage for houses and towns or districts, the combination, in an automatic discharge apparatus that receives the sewage matters from the soil or waste pipe of a house and delivers them to a collecting-conduit, of a valve, c, lever e, float g, releasing device h, and float i, arranged and acting substantially in manner and for the purpose set forth.

3. In a system of sewerage operating by pneumatic power, an automatic discharge apparatus for receiving the waste matters from a house, said apparatus comprising, in combination, a tank or vessel, an outlet-valve controlling the opening into the conduit, the float for operating said valve, the locking and releasing mechanism to permit said float to rise forcibly when the liquid in said vessel reaches a certain level, and an inwardly-opening valve for putting the vessel in communication with the atmosphere when the outlet-valve is opened, substantially as described.

4. In a system of sewerage or drainage for houses and towns or districts, a collecting-conduit forming part of the system, of increased diameter at its outlet end and connected at this end to the upper part of another collecting-conduit, also forming part of the system, substantially as set forth.

5. In a system of sewerage or drainage for houses and towns or districts, the combination, with the sewage collecting or conveying pipe where it has to bend or dip in order to pass under an obstacle, of another bent or dipping pipe connected at its ends to the upper part of the bend of the sewage-pipe, whereby the gases which are traveling with the sewage are provided with a separate pipe for passing under the obstacle, substantially as set forth.

6. The combination, with the pipes y^2 and z^2 and the pieces F F, of the floats f' f', valves i i, and valve-seats c' d', substantially as and for the purpose set forth.

7. In a system of sewerage or drainage for houses, the combination, with the pumps at the central works for producing a barometrical depression throughout the system, of a collecting-reservoir, a pair of collecting-vessels connected therewith, valves for controlling the communication between said reservoir and said vessels, means for operating said valves, and pipes or conduits connecting said vessels with receivers at the central works, substantially as described.

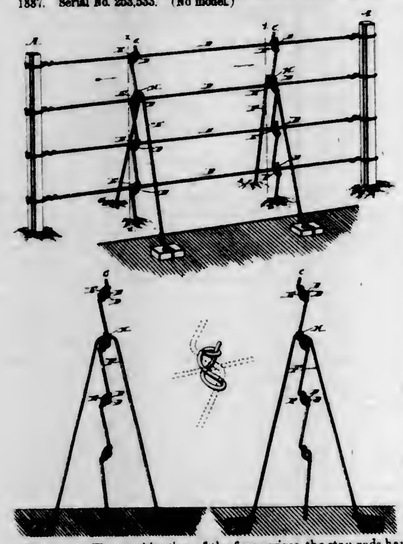
8. The combination, with the receivers and pumps at central works, of a collecting-vessel, a sewage-conduit and a barometric conduit leading from said vessel to said central works, an inlet-pipe leading to said vessel, valves controlling outlets to said barometric conduit and to the atmosphere, respectively, and means, as specified, for closing the first valve and then opening the latter valve when the vessel has filled to a certain level, substantially as described.

9. The combination, with the receiver m of the collecting-vessel and with the supply-pipe A and discharge-pipe C of same, of the chamber r above said receiver, the valve c', communicating with the barometric-depression conduit B, the valve v', communicating with the atmosphere, and the float H′, whose rod actuates said valves c' and v', substantially as and for the purpose set forth.

10. The combination, with the receivers of the two collecting-

vessels and with the float-rods of same, of the balance-beam C', controlling the inlet-valves to said receivers, and of means whereby the fall of the float of the one receiver is transmitted through said beam to the inlet-valve of the other receiver and frees the same, and vice versa, substantially as and for the purpose set forth.

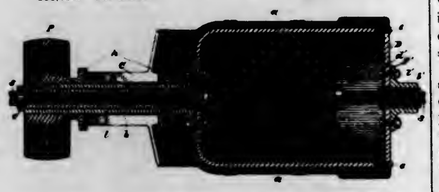
377,682. **FENCE.** ARTHUR LOTT, Biddleville, Tex. Filed Oct. 27, 1887. Serial No. 253,533. (No model.)



Claim.—1. The combination of the fence-wires, the stay-rods having their lower ends fitted in the ground and provided with a series of steps or rests fitted to the fence-wires, a series of tie-wires securing the fence-wires to said steps, and braces twisted around the stay-rods near the upper ends thereof and having their ends secured to buried anchors, substantially as specified.

2. The combination, with the fence-wires, of the stay-rods secured thereto and having a series of steps, the steps of one stay-rod passing over the fence-wires, while the steps of the adjacent stay-rod pass under the fence-wires, and a series of tie-wires securing the said fence-wires to said steps, substantially as specified.

377,683. **ARMATURE FOR DYNAMO-ELECTRIC MACHINES.** RICHARD H. MATHER, Windsor, Conn. Filed Jan. 16, 1886. Serial No. 188,723. (No model.)

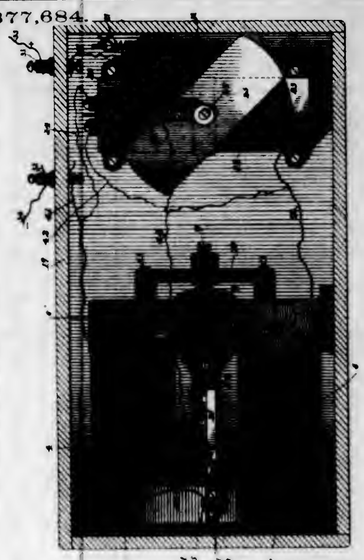


Claim.—1. A cylindrical armature-drum traversed longitudinally by conductors which pass circumferentially from side to side of said drum at one end of the same and diametrically across the other end of the same, substantially as and for the purpose specified.

2. A hollow cylindrical non-magnetic and insulating armature-drum open at one end or closed by a removable cover and containing a stationary core mounted upon the same shaft, substantially in the manner and for the purpose specified.

3. A cylindrical armature-drum of non-magnetic and insulating material open at one end or closed by a removable cover and traversed longitudinally by conductors which pass circumferentially from side to side of such drum, in combination with a stationary core contained in said drum and mounted upon the same shaft, substantially in the manner and for the purpose specified.

377,684. **ELECTRO-MECHANICAL MOVEMENT.** RICHARD H. MATHER, Windsor, Conn. Filed May 3, 1886. Serial No. 200,929. (No model.)



Claim.—1. A relay consisting of an electro-magnet, an armature which is pivoted between pole-pieces of said electro-magnet, a spring acting upon said armature, an insulated contact-strip which is mounted upon said armature, and two contact-plates which are mounted upon opposite sides of said contact-strip, in combination with an electric motor whose field-magnet is excited by two helices connected in series with the helix of said electro-magnet and whose armature, being adapted to rotate in one direction when supplied with current of one polarity and in the opposite direction when supplied with current of the opposite polarity, is connected in parallel with one or the other, or neither, of said field-magnet helices, according as said contact-strip is for the time being in contact with one or the other, or neither, of said contact-plates, substantially as specified.

2. A relay comprising an electro-magnet, an armature thereof, a spring or its equivalent acting upon said armature, an insulated contact-strip actuated by said armature, and two contact-plates within reach of said contact-strip, in combination with a reversible electric motor whose field-magnet is excited by two helices connected in series with the helix of said electro-magnet and whose armature is connected in parallel with one or the other, or neither, of said field-magnet helices, according to the position of said contact-strip for the time being, substantially as specified.

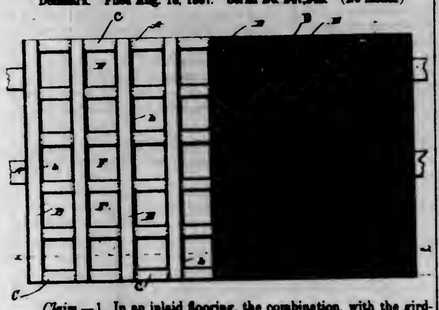
3. An electric motor having two field-magnet helices placed in series, in combination with a two-point switch, one of whose points is connected to the circuit on one side of said helices, while its other point is connected to the circuit on the other side of said helices, and a connection from the switch to the circuit containing said helices at a point between said helices, said connection containing the armature of said motor, substantially as and for the purpose specified.

4. A relay embracing a pair of contacts, a movable conductor for making contact with the same, and an electro-magnet actuating said movable conductor, in combination with a reversible electric motor having two field-magnet helices, an electrical connection constantly closed between one of the terminals of said motor and both of said helices at a point between the latter, and an armature which is brought into serial connection with the helix of said electro-magnet and into parallel connection with one or the other of said helices whenever said movable conductor is carried to a predetermined limit in either direction, substantially as and for the purpose specified.

5. An electric motor whose field-magnet helices, being two in number, are in series with one another and whose armature is in a portion of branch-circuit connection common to both said helices, in combination with an electric switch for completing a branch around one or the other of said helices at pleasure, and a controlling electro-magnet connected to the circuit of said helices, substantially as and for the purpose specified.

6. A reversible electric motor whose field-magnet is excited by two helices in series and whose armature is located in a derived circuit, in combination with a movable conductor whereby said circuit may be closed as a shunt about either of said helices, substantially as specified.

377,685. **INLAID FLOOR.** CHRISTIAN MORSING, Copenhagen, Denmark. Filed Aug. 16, 1887. Serial No. 247,262. (No model.)



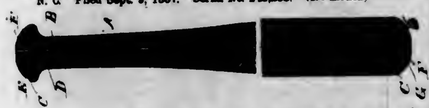
Claim.—1. In an inlaid flooring, the combination, with the girders, the joists, and the intermediate pieces, said pieces provided with longitudinal flanges, of the square or rectangular filling-blocks having their edges undercut, said undercut edges adapted to be supported by the flanges of the intermediate pieces.

2. The combination of the joists provided with rabbeted edges, the filling strips and blocks having grooved edges adapted to fit over the upper tongues formed by the rabbeted edges of the joists or beams, and the inlaid portion or veneering.

3. The combination of the joists or beams having rabbets on opposite edges thereof, the intermediate strips provided with grooved end edges and having longitudinal flanges upon their side edges, the square or rectangular filling-blocks provided with grooves upon two of their edges and under-cuts upon their remaining two edges, and the inlaid portion or veneering superimposed upon said joists or beams.

4. The combination of the joists or beams having rabbets on opposite edges or sides thereof, said rabbets forming upper and lower tongues or flanges, the lower tongue or flange extending laterally a greater distance than the upper tongue or flange, the intermediate filling-strips provided with grooved end edges and having longitudinal flanges upon their side edges, the square or rectangular filling-blocks provided with grooves on two of their edges and under-cuts upon the remaining two edges, and the inlaid portion superimposed upon said joists or beams.

377,686. **BASE-BALL BAT.** JOHN W. MOORE, Mount Pleasant, N. C. Filed Sept. 9, 1887. Serial No. 249,235. (No model.)



Claim.—1. In a base-ball bat, the combination of a bat cored its entire length, with a metallic tube inserted in said core and having its screw-threaded ends projecting slightly beyond the ends of the bat, and apertured caps and nuts for forcing the caps firmly against the ends of said bat.

2. In a base-ball bat, the combination of a bat having a core extending its entire length, seats or recesses formed in the ends of said bat, concaved caps placed in said seats, with a metallic tube inserted in said core and having its screw-threaded ends projecting slightly therefrom and through the apertures in said nuts, and nuts screwed upon the ends of said tube.

3. In a base-ball bat, the combination of a bat having a core extending its entire length, seats or recesses formed in the ends of said bat, concaved caps formed with countersinks placed in said seats, with a metallic tube inserted in said core and having its screw-threaded ends projecting slightly therefrom and through the apertures in the said caps, and slightly-concave nuts screwed upon the screw-threaded ends of said tube and seated in the seats of the concaved caps.

377,687. **PRESERVE-JAR FASTENING.** THOMAS G. OTTEMON, Woodbury, N. J. Filed Sept. 14, 1886. Serial No. 213,808. (No model.)

Claim.—1. A jar having spiral lugs and a lid having a vent and a recess in its upper face, in combination with a button or valve, pin, and clamp or yoke, said button or valve resting in said recess, and being pivoted to the clamp or yoke by the said pin, substantially as described.

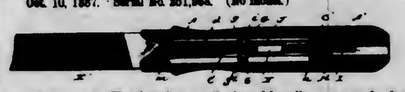


2. The jar A, having spiral lugs, in combination with the lid B, having vent C and recess L, button or valve G, clamp or yoke D, having lips E, and pin H, pivoted to said clamp, substantially as and for the purpose set forth.

3. The jar A, having spiral lugs, in combination with the lid B, having vent C and recess L, clamp or yoke D, having lips E, button or valve G, resting in recess L, and gasket M and pin H, pivoted to said clamp, substantially as described.

4. In a preserve-jar fastening, the combination of the following elements, viz: a lid centrally perforated, a clamp or yoke having bent ends for engaging under the spiral lugs of the jar, a valve pivoted centrally in and to the clamp or yoke by means of a headed pin, the upper side of the valve being plane and arranged to rest against the clamp or yoke and permit it to rotate easily thereon while the lid is being fastened on the jar, substantially as described.

377,688. **TOOL-HANDLE.** CHARLES M. POWERS, Dubois, Pa. Filed Oct. 10, 1887. Serial No. 251,968. (No model.)



Claim.—1. The herein-described tool-handle, composed of the two parts, having the end of one part recessed and the approximate end of the other part correspondingly raised and each part longitudinally bored, the one having longitudinal grooves diametrically opposite to each other, the nut located within the bore of the other part, the threaded stem, the plates having cross-heads, the catches pivoted between the ends of the cross-heads of said plates, the extensions projecting from the catches, and the spring for pressing the ends of the catches together, substantially as and for the purpose described.

2. The combination, with the tool-handle having a bore, of the catches pivotally supported between their ends on diametrically-opposite sides of the bore, and having their inner ends adapted to grip the tang of a tool, the coil-spring J, constructed and arranged to exert a pressure on said catches to one side of their pivotal supports for pressing the ends of the catches together, substantially as and for the purpose described.

3. The combination, with the tool-handle having a bore and longitudinal grooves diametrically opposite to each other, of the plates F, for supporting the tool-clamping devices located in the bore, each plate having a cross-head and the ends of the cross-heads working in the said longitudinal grooves, the catches pivoted between the ends of the cross-heads to grip the sides of a tool-tang between their inner ends, and having extensions which work in the said longitudinal grooves, and the spring for advancing the inner ends of the catches together, substantially as specified.

4. The combination, with the tool-handle made of two parts, A and A', the part A having a bore and longitudinal grooves *d*, the part A' having a bore, C', which is enlarged at its outer end, and the nut fitted in the enlargement of bore C', of the threaded stem adapted to screw into said nut, the plates F, having cross-heads *f* secured to the stem, the catches having extensions pivoted between the ends of the cross-heads, and the spring J, surrounding the plates and bearing against the catches between their inner ends and their pivotal supports, substantially as and for the purpose specified.

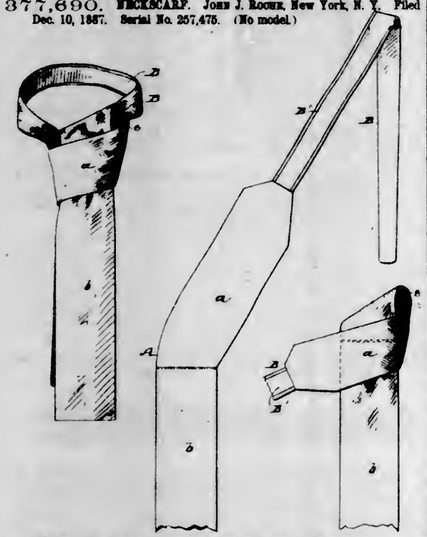
377,689. **CAR-COUPLING.** FRANCIS M. RARIDEN, Waynetown, assignor of one-half to Alfred R. Heath, Covington, Ind. Filed Oct. 13, 1887. Serial No. 252,342. (No model.)



Claim.—In a car-coupling such as described, the combination of coupling-jaws provided with arms pivotally secured in the draw-head

of the said coupler, springs bearing against the said arms to the rear of the pivots, a lever fulcrumed in the said draw-head and provided with an apron resting behind the said coupling-jaws and adapted to be raised by the tilting of the coupling-link, and suitable connections between the rear ends of the said lever and of the said arms, substantially as described, whereby when the end of the said lever behind the coupling-jaws is raised the rear end is depressed and the rear ends of the said arms drawn in.

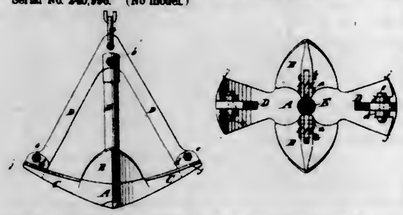
377,690. NECKSCARF. JOHN J. ROCHE, New York, N. Y. Filed Dec. 10, 1887. Serial No. 257,475. (No model.)



Claim.—1. A necktie comprising an apron, a head projecting at an angle from the upper end thereof, and a neckband extending from the outer end of the head and approximately in line therewith, substantially as set forth.

2. A necktie comprising an apron, a head projecting at an angle from the upper end thereof, and a neckband extending from the free end of the head, having its lining or under face facing the outer or right sides of the head and apron, substantially as set forth.

377,691. ANCHOR. EBEN T. STARR, New York, N. Y., assignor of eight-fifteenths to Madge Stone, same place. Filed June 11, 1887. Serial No. 240,996. (No model.)



Claim.—1. The combination, in an anchor, of two arms projecting radially from the crown in opposite directions and having palms at their extremities, two guard-arms projecting from the crown in opposite directions at right angles to the first-mentioned arms, and upwardly-converging guards connected with the said guard-arms at the extremities thereof, substantially as herein described, and for the purpose set forth.

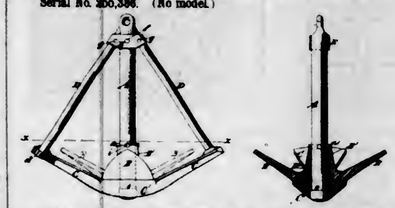
2. The combination, in an anchor, of two shorter arms projecting radially from the crown in opposite directions and having palms at their extremities, two longer arms projecting from the crown in opposite directions at right angles to the first-mentioned arms, and upwardly-converging guards connected with the said longer arms at the extremities thereof, substantially as and for the purpose herein set forth.

3. The combination, with the central shank and crown of an anchor, of arms projecting from the crown in opposite directions and having palms at their extremities, two intermediate arms projecting from the crown in opposite directions at right angles with the first-mentioned arms, and upwardly-converging guards connecting the ends of the last-mentioned arms with the head of the shank, substantially as and for the purpose herein described.

4. The combination, in an anchor, of two opposite fixed arms and upwardly-converging guards on opposite sides of the crown and two interposed pivoted arms furnished with flukes, substantially as and for the purpose herein described.

5. The combination, with the crown A and the arms B, having flukes and pivoted to the crown to be capable of folding, of the fastening-pin *h*, for passing through the crown to secure the pivoted arms either in their spread or their folded positions, substantially as herein described.

377,692. ANCHOR. EBEN T. STARR, New York, N. Y., assignor of eight-fifteenths to Madge Stone, same place. Filed Nov. 17, 1887. Serial No. 256,386. (No model.)



Claim.—1. The combination, in an anchor, of a central shank, palm-bearing arms capable of turning about the axis of the shank, fixed arms rigidly attached to the shank, and fixed diagonal braces connecting the ends of said rigidly-attached arms with the shank, and having a sufficient spread at their connection with the said rigidly-attached arms to permit the palm-bearing arms and their palms to pass between them when the last-mentioned arms are turned in line with the rigidly-attached arms, all substantially as herein described.

2. The combination of the crown C, having arms C, the central shank fitted to said crown, with a shoulder, *c*, the diagonal braces D, fitted to the arms, with shoulders *d*, the socket-piece E, having sockets *b c c* for the shank and braces, and the pins or keys *f g g*, all substantially as herein described.

377,693. CLAMP. WILLIAM C. STICKLER, Belle Plaine, Kans. Filed Oct. 4, 1887. Serial No. 251,417. (No model.)

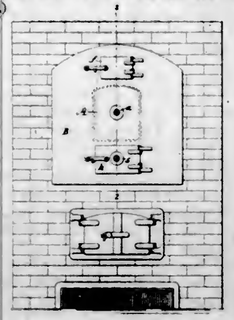


Claim.—1. The herein-described clamp, comprising the bar or arm, the U-shaped clamping-bar, the threaded rod, and the keeper-plate, substantially as shown and described.

2. The combination, with the bar or arm, of the U-shaped bar having the inclined clamping-arms and the threaded rod carrying a keeper-plate, substantially as shown and described.

3. The combination, with the bar or arm having the bent and provided with an aperture, of the clamping-bar, the threaded rod, and the keeper-plate, substantially as shown and described.

377,694. APPARATUS FOR THE MANUFACTURE OF GAS. THOMAS B. STILLMAN, Hoboken, N. J., assignor of three-fourths to Charles R. Harris, New York, N. Y. Filed Mar. 25, 1886. Serial No. 196,575. (No model.)



377,694.

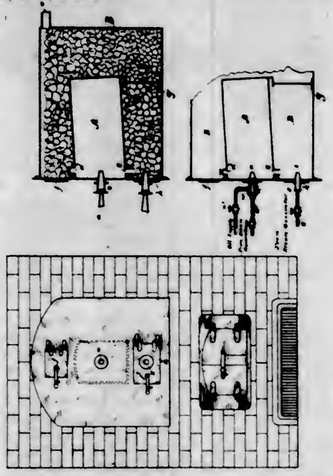


Claim.—1. In an apparatus for the manufacture of gas from oil, the combination of an exterior retort adapted to be mounted in a suitable furnace or fire-place, and having an exit for communication with a suitable gas-receiver, and an interior stationary retort having an inlet for the introduction of oil, and also upper and lower exits which lead into the exterior retort, substantially as and for the purpose set forth.

2. In an apparatus for the manufacture of gas from oil, the combination, substantially as set forth, of an exterior retort adapted to be mounted in a suitable fire-place or furnace, and having an exit, *c*, an interior retort having an upper exit, *d*, leading into the exterior retort, and of such size and so arranged with reference to the exterior retort that the space between the two retorts may be filled with coal or coke, for the purpose set forth, and an injector communicating with the interior retort, for the purpose described.

3. The combination, substantially as set forth, of the exterior retort adapted to be mounted in a suitable fire-place or furnace, its injector, the interior retort, its injector, and upper and lower exits, *d e*.

377,695. PROCESS OF MANUFACTURING WATER-GAS. THOMAS B. STILLMAN, Hoboken, N. J., assignor of three-fourths to Charles R. Harris, New York, N. Y. Original application filed Mar. 25, 1886, Serial No. 196,575. Divided and this application filed Sept. 21, 1886. Serial No. 214,208. (No model.)

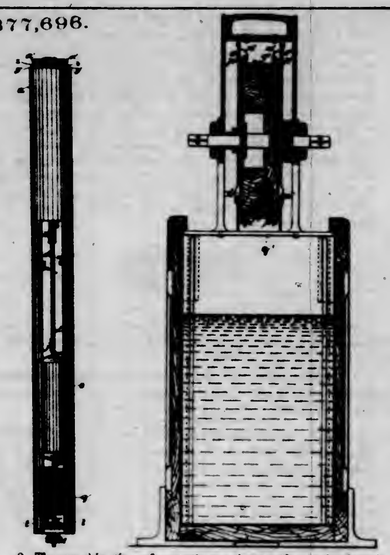


Claim.—The process of producing a permanent illuminating-gas from liquid hydrocarbons, which consists in volatilizing the lighter hydrocarbon gases from the liquid hydrocarbon, then subjecting said gases, when combined with steam, to heat in the presence of heated or ignited solid carbonaceous material to decompose the steam and unite its hydrogen with the partially-decomposed hydrocarbons of the oil to form a series of light hydrocarbon gases, and drawing off the gases thereby produced into a receiver, and at the same time by the application of a higher degree of heat volatilizing the heavier hydrocarbon gases from the residuum left from the above operation, subjecting such gases, when mixed with steam, to heat in the presence of heated or ignited carbonaceous material, and then drawing off the gas thus produced into a receiver.

377,696. NAVIGATIONAL SOUNDING APPARATUS. WILLIAM THOMSON, Glasgow, County of Lanark, Scotland. Filed June 13, 1887. Serial No. 241,186. (No model.) Patented in England Oct. 14, 1886, No. 13,949; in Germany May 2, 1886, No. 37,879, and in France Aug. 14, 1886, No. 177,602.

Claim.—1. The combination of a stationary bottle, the neck, the piston having a scale, the marker having an indicating-wire, and a balance-spring, substantially as described.

377,696.



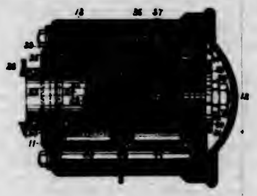
2. The combination of a stationary bottle, the neck, the piston having a scale, the marker, a balance-spring, and a float, substantially as described.

3. The combination of the bottle, the piston, the neck, the marker, the float, and the spiral spring, substantially as described.

4. The combination of the tubular sinker, the lid or cover having a spiral spring, and the deep can supported on the spring, substantially as described.

5. The combination of a drum having flanges and the sheath having springs bearing against the inner faces of the flanges, substantially as described.

377,697. ANTI-FRICTION JOURNAL-BOX. THOMAS TRIPP, Stoughton, Mass. Filed June 24, 1887. Serial No. 242,378. (No model.)



Claim.—1. In an anti-friction journal-box, the combination of the axle 22, provided with sleeves 23, 24, and 25, and thrust-stud 28, with thrust-plate 16, provided with thrust-packings 30 and 31, and washer and nut 32, substantially as described.

2. The combination of an axle provided with a removable sleeve and thrust-stud, with axle-washer 27, thrust-plate 16, provided with thrust-packings, washer and nut 32, packing 34, and packing-plate 35, substantially as described, and for the purposes set forth.

3. The combination of the following elements, substantially as described: roller-carrying ring 38, provided with pins 39, and rolls 40 and 41, axle 22, provided with sleeves 23, 24, and 25, and thrust-stud 28, thrust-plate 16, provided with thrust-packings 30 and 31, and washer and nut.

4. The combination of the following mechanism, substantially as and for the purposes set forth: roller-carrying ring 38, provided with pins 39, and rolls 40 and 41, axle 22, provided with removable sleeve, and axle-box 8, provided with removable bearing.

5. The combination of the following elements, substantially as and for the purposes set forth: roller-carrying ring 38, provided with pins 39, and rolls 40 and 41, axle 22, provided with removable sleeve and thrust-stud, axle-washer 27, thrust-plate 16, provided with thrust-packings, washer and nut 32, packing 34, and packing-plate 35.

377,698. COMPOUND FOR MAKING INCANDESCENT DEVICES. CARL AUER VON WELSBACH, Vienna, Austria-Hungary, assignor to the Welsbach Incandescent Gas Light Company. Filed Feb. 2, 1887. Serial No. 226,317. (No specimens.) Patented in France Nov. 4, 1885, No. 172,064; in Belgium Nov. 4, 1885, No. 70,739, and Sept. 9, 1886, No. 74,502; in England Dec. 12, 1885, No. 15,286, and Mar. 13, 1886, No. 3,582; in Italy Feb 23, 1886, XXXVIII, 310, and Oct. 13, 1886, XI, 415; in Cape of Good Hope Mar. 4, 1886, No. 6/205; in Victoria Mar. 17, 1886, No. 4,472; in Tasmania Mar. 24, 1886, No. 396/9; in South Australia May 3, 1886, No. 678; in New South Wales May 11, 1886, No. 1,839/2; in New Zealand June 11, 1886, No. 1,863; in Queensland June 28, 1886, No. 106; in Finland July 10, 1886, No. 261; in Spain Aug. 10, 1886, No. 9,081/5,858; in Norway Aug. 25, 1886, No. 88, and in India Sept. 2, 1886, No. 1,145.



Claim.—1. An incandescent composed of a mixture of the oxides of lanthanum and yttrium in about equal proportions, substantially as described.

2. A filament, fabric, or textile frame of combustible material impregnated with the salts of lanthanum and yttrium in aqueous solution in about equal proportions, substantially as set forth.

377,699. COMPOUND FOR MAKING INCANDESCENT DEVICES. CARL AUER VON WELSBACH, Vienna, Austria-Hungary, assignor to the Welsbach Incandescent Gas Light Company. Filed Feb. 2, 1887. Serial No. 226,318. (No specimens.) Patented in France Nov. 4, 1885, No. 172,064; in Belgium Nov. 4, 1885, No. 70,739, and Sept. 9, 1886, No. 74,502; in England Dec. 12, 1885, No. 15,286, and Mar. 13, 1886, No. 3,582; in Italy Feb. 23, 1886, XXXVIII, 310, and Oct. 13, 1886, XI, 415; in Cape of Good Hope Mar. 4, 1886, No. 6/205; in Victoria Mar. 17, 1886, No. 4,472; in Tasmania Mar. 24, 1886, No. 396/9; in South Australia May 3, 1886, No. 678; in New South Wales May 11, 1886, No. 1,839/2; in New Zealand June 11, 1886, No. 1,863; in Queensland June 28, 1886, No. 106; in Finland July 1, 1886, No. 261; in Spain Aug. 10, 1886, No. 9,081/5,858; in Norway Aug. 25, 1886, No. 88, and in India Sept. 2, 1886, No. 1,145



Claim.—1. An incandescent composed of a mixture of the oxides of lanthanum and zirconium in about equal proportions, substantially as described.

2. A filament, fabric, or textile frame of combustible material impregnated with the salts of lanthanum and zirconium in aqueous solution in about equal proportions, substantially as set forth.

377,700. COMPOUND FOR MAKING INCANDESCENT DEVICES. CARL AUER VON WELSBACH, Vienna, Austria-Hungary, assignor to the Welsbach Incandescent Gas Light Company. Filed Feb. 2, 1887. Serial No. 226,319. (No specimens.) Patented in France Nov. 4, 1885, No. 172,064; in Belgium Nov. 4, 1885, No. 70,739, and Sept. 9, 1886, No. 74,502; in England Dec. 12, 1885, No. 15,286, and Mar. 13, 1886, No. 3,582; in Italy Feb. 23, 1886, XXXVIII, 310, and Oct. 13, 1886, XI, 415; in Cape of Good Hope Mar. 4, 1886, No. 6/205; in Victoria Mar. 17, 1886, No. 4,472; in Tasmania Mar. 24, 1886, No. 396/9; in South Australia May 3, 1886, No. 678; in New South Wales May 11, 1886, No. 1,839/2; in New Zealand June 11, 1886, No. 1,863; in Queensland June 28, 1886, No. 106; in Finland July 10, 1886, No. 261; in Spain Aug. 10, 1886, No. 9,081/5,858; in Norway Aug. 25, 1886, No. 88, and in India Sept. 2, 1886, No. 1,145.



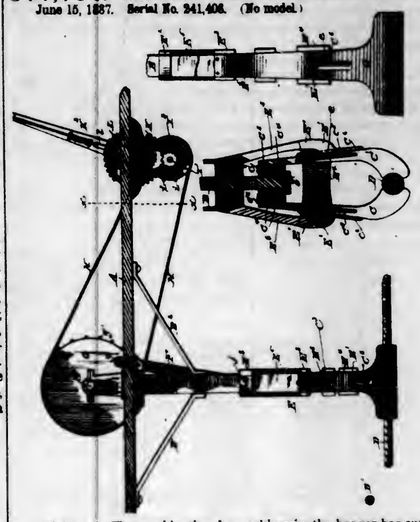
Claim.—1. An incandescent composed of a mixture of the oxides of yttrium and zirconium in about equal proportions, substantially as described.

2. A filament, fabric, or textile frame of combustible material impregnated with the salts of yttrium and zirconium in aqueous solution in about equal proportions, substantially as set forth

377,701. PROCESS OF OBTAINING SALTS OF CERIUM, &c. CARL AUER VON WELSBACH, Vienna, Austria-Hungary, assignor to the Welsbach Incandescent Gas Light Company. Filed Feb. 23, 1887. Serial No. 228,567. (No specimens.) Patented in England July 30, 1886, No. 9,808.

Claim.—The herein-described method of obtaining compounds of the rarer metals—such as cerium, lanthanum, and didymium—by heating mineral earth containing them, plunging the heated earth in water, crushing, dissolving the fragments in a mineral acid and precipitating by oxalic acid, washing and filtering the precipitate, heating it and afterward dissolving it in nitric acid, digesting the solution with excess of the earth, separating into two parts a precipitate and a solution, dissolving the precipitate in nitric acid and so producing cerium nitrate, concentrating the solution and heating it with nitric acid and ammonium nitrate, then separating by fractional crystallization the ammonium double nitrates of lanthanum and of praseodymium and neodymium, substantially as described.

377,702. CABLE-GRIP. JOHN F. WEST, Staunton, Va. Filed June 15, 1887. Serial No. 241,408. (No model.)



Claim.—1. The combination, in a cable-grip, the hanger-bar supported upon the car and terminating a sufficient distance above the level, of cables or cross-cables located beneath the surface to clear them, hinged jaws adapted to slide upon the hanger-bar, and a sliding head supported to slide independently upon said bar, the sliding head serving to thus raise, lower, open, and close the hinged jaws, substantially as and for the purpose described.

2. In a cable-grip, the combination, with the hanger-bar, of hinged jaws and a sliding head, all supported to move independently upon said bar to project below the same when gripping the cable, and to be raised together out of the way of cross-cables by the upward movement of the sliding head, substantially as described.

3. In a cable-grip, the combination, with the hanger-bar, of the sliding head and hinged jaws, all adapted to slide upon said bar independently of the head, to be raised by the head and fall of their own gravity, and a yoke upon the lower end of the sliding head to force the jaws together, substantially as described.

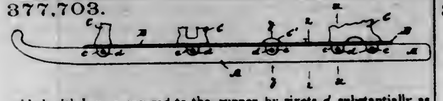
4. The combination, in a cable-grip, of the hanger-bar B, with the sliding head E, the jaws C C', sliding upon the said bar independently of the head E, a yoke, E', upon the sliding head to embrace the jaws beneath the sleeve to which the jaws are attached, and means for raising both the jaws and head together by a single instrumentality or movement, substantially as described.

5. The combination, with the bar B, of the sliding head E, having a yoke, E', at its lower end to embrace gripping-jaws C C', hinged to a sleeve, C^4, springs C^4, for opening the gripping-jaws, and means for raising and lowering the sliding head and jaws, substantially as described.

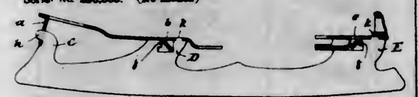
6. In a cable-grip, the combination of the hanger-bar B, sliding jaws C C', sliding head E, for raising, lowering, and closing said jaws, the pitman F, band-wheels G I, the gear-pinion upon the shaft of the wheel I, band H, and a segment-rack and hand-lever, L, substantially as and for the purpose described.

377,703. SKATE. JAMES A. WHELPLEY, Keene, N. H., assignor to the Keene Manufacturing Company, same place. Filed Mar. 9, 1887. Serial No. 230,208. (No model.)

Claim.—In an ice-skate, the runner A, provided with a strengthening or stiffening plate, B, secured thereto by means of hangers provided with lugs *c*, secured to the runner by rivets *d*, substantially as shown and described.



377,704. SKATE. JAMES A. WHELPLEY, Keene, N. H., assignor to the Keene Manufacturing Company, same place. Filed Mar. 9, 1887. Serial No. 230,205. (No model.)



Claim.—1. An ice-skate runner provided with a projection, C, having hook-shaped projection *k*, and a projection, D, having a hook-shaped projection, *j*, and stud *k*, in combination with a toe-plate provided with downwardly-projecting pieces, and holes to fit and lock onto the projections C and D, substantially as shown and described.

2. An ice-skate runner provided with a projection, E, having a hook-shaped projection, *j*, and a stud, *k*, in combination with a heel-plate having a downwardly-projecting piece, *e*, and holes *f* and *g* for locking the same onto the projection E, substantially as shown and described.

377,705. PROCESS OF MANUFACTURING COAL-HODS. EDWARD RARRATH, Cincinnati, Ohio, assignor to Victor R. Knecht, same place. Filed May 4, 1887. Serial No. 237,107. (No model.)



Claim.—1. The method herein described of making a coal-hod, which consists in first shaping a piece of metal into a hollow cone, then forming a portion of the cone extending from its apex toward the base into a series of ledges of different diameter, then crimping said ledges, and finally compressing the crimps and connecting the base with the cone, substantially as described.

2. The method herein described of making coal-hods, which consists, first, in shaping a piece of metal into a hollow cone, then successively forming ledges of different diameter in a portion of the cone extending from the apex of the cone toward its base, then successively crimping the ledges, and finally attaching the cone to the base, substantially as described.

377,706. PREPARED SHEET FOR STENCILS. JOHN BRODRICK, New York, N. Y. Filed May 20, 1886. Serial No. 202,735. (Specimens.)

Claim.—1. A transmitting printing-sheet consisting of a thin porous sheet through which ink is readily transmitted, such as Japanese dental paper or yoshino, filled or coated with a substance impervious to ink, as paraffine, substantially as described.

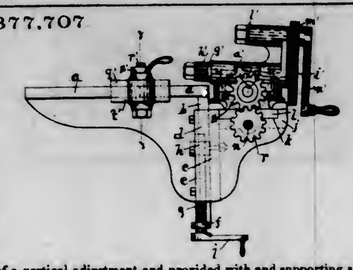
2. A transmitting printing-sheet consisting of a thin porous sheet through which ink is readily transmitted, such as Japanese dental paper or yoshino, filled or coated with a substance impervious to ink, as paraffine, and having this filling or coating removed at the points or lines of printing, substantially as described, for the purpose specified.

3. A prepared sheet for stencils, consisting of a sheet of Japanese dental paper or yoshino, coated with a substance impervious to ink, substantially as described.

377,707. MILLING-MACHINE FOR SCARFING THE ENDS OF BAND-SAWS. ABEL D. CATLIN, Bay City, Mich., assignor to the Chattanooga Machinery Company, Chattanooga, Tenn. Filed June 10, 1887. Serial No. 240,937. (No model.)

Claim.—1. The combination, in a saw-scarfing machine, of a saw-supporting table provided with devices for clamping the saw to the table, and a shaft set at an incline with the table and carrying a rotary cutter reaching over the table, with a supporting journal-box carrying the shaft and provided with a tilting adjustment, whereby the incline of the cutter and shaft may be changed, substantially as and for the purpose herein set forth.

2. The combination, in a saw-scarfing machine, of the saw-supporting table provided with raised guide-pieces and having devices for clamping the saw to the table, with a forward-extending table capable



of a vertical adjustment and provided with and supporting a laterally-sliding plate, a journal-box supported by the sliding plate and provided with a tilting adjustment, and a cutter-shaft journaled within the box and provided with a rotary cutter reaching over the saw-supporting table and with its cutting-edges set at an angle with the surface of the table, substantially as set forth.

3. The combination, in a saw-scarfing machine, of a saw-supporting table provided with saw-clamping devices, and a shaft carrying a rotary cutter reaching over the table, with a supporting-box carrying the shaft and provided with a tilting adjustment, substantially as and for the purpose set forth.

4. The combination, in a saw-scarfing machine, of the saw-supporting table and the saw-clamping device, with a forward-extending table provided with a transverse groove and having a vertical adjustment, a sliding plate within the groove and provided with a lateral adjustment, a box having a tilting adjustment and supported by the sliding plate, a shaft passed through the box and provided with a rotary cutter, and devices rotating the shaft, substantially as and for the purpose set forth.

5. The combination, in a saw-scarfing machine, of a saw-supporting table provided with saw-clamping devices, a shaft set at an incline with the surface of the table and carrying a rotary cutter reaching over the table and provided with a worm-thread, and a box carrying the cutter-shaft and provided with a tilting adjustment, with a sliding plate supporting the box, a feeding-screw secured to the sliding plate and engaging with a rigid nut, and provided on its outer end with a gear-wheel, and a shaft having on one end a gear-wheel engaging with the worm on the cutter-shaft and on its opposite end a gear-wheel engaging with the gear-wheel on the feeding-screw, substantially as and for the purpose set forth.

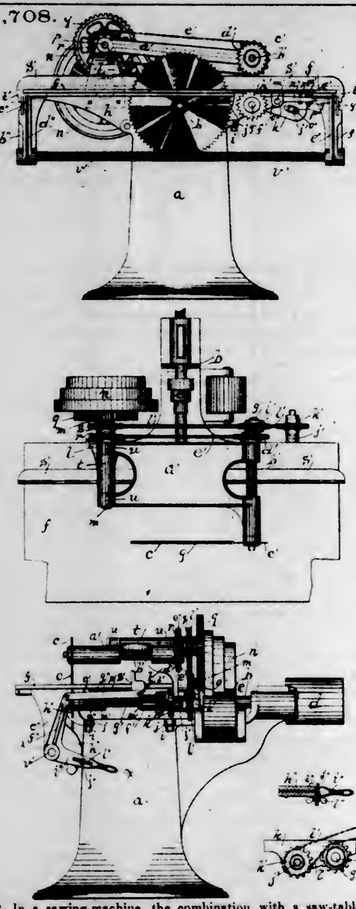
6. The combination, in a saw-scarfing machine, of the saw-supporting table provided with devices for clamping the saw, a forward-extending table having a transverse groove and provided with a vertical adjusting-screw, a sliding plate within the groove and provided with a horizontal feeding-screw and provided on its upper side with trunnion-bearings, and a box provided with a longitudinal shaft-opening and having trunnions extending laterally from its sides and secured in the trunnion-bearings, with a shaft within the box and carrying a rotary cutter extending over the supporting-table and provided with a worm-thread, a shaft passed through the center of the trunnions and provided with a wheel having teeth engaging with the worm-thread and having upon its outer end a gear-wheel engaging with a gear-wheel upon the feeding-screw, substantially as and for the purpose herein set forth.

7. The combination, in a saw-scarfing machine, of the table *a*, provided with the side guides, *c'*, and having a downward-extending portion, *b*, the vertical plate *c*, in front of and adjustably secured to the portion *b*, and having a horizontal plate, *j*, projecting forward and provided with a groove, *k*, a sliding plate, *l*, within the groove, a support, *s*, secured to the upper side of the plate and provided with the trunnion-bearings *t*, the cap-pieces *u*, and screw-bolts *v*, with a box, *a'*, having a shaft-opening, *b'*, and provided with the laterally-projecting trunnions *c'*, resting in the bearings *t*, a shaft, *g'*, within the opening *b'*, and provided with the cutter *h'*, and a feeding-screw, *n*, secured to the plate *l*, and engaging with the nut *o*, and the crank *p* on the feeding-screw, substantially as and for the purpose set forth.

377,708. CIRCULAR SAWING MACHINE. ABEL D. CATLIN, Bay City, Mich., assignor to the Chattanooga Machinery Company, Chattanooga, Tenn. Filed Sept. 27, 1887. Serial No. 250,810. (No model.)

Claim.—1. In a sawing-machine, the combination, with a saw-table and a gage-piece, *d'*, upon the surface of the table and provided with lugs *t'*, extending over and reaching beneath the edges of the table, of a shaft, *v'*, journaled in brackets beneath the table and provided with the extended rear arm, *b''*, and the extended front arm, *f''*, the connecting-piece *e''*, pivoted to the arm *b''* and to the rear lug *t'*, and the connecting-piece *g''*, pivoted to the arm *f''* and to the forward lug *t'*, substantially as and for the purpose set forth.

377,708.



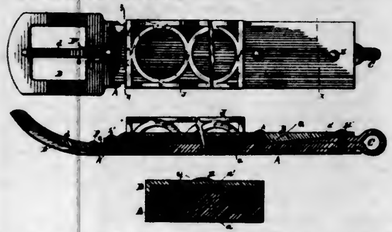
2. In a sawing-machine, the combination, with a saw-table, a gage-piece, *s'*, upon the surface of the table and provided with the lugs *t'*, extending over and beneath the edges of the table, the shaft *v'* beneath the table and provided with the rear arm, *b''*, connected by the piece *c''* to the rear lug, *t'*, and with the front arm, *f''*, connected by the piece *g''* to the forward lug *t'*, the bracket *d''*, supporting the rear end of the shaft *v'*, and the bracket *e''*, supporting the front end of the shaft *v'* and provided with the quadrant *k''*, of the lever *i''*, secured to the shaft *v'* and reaching beyond the periphery of the quadrant, and a bolt, *j''*, passed through the lever and provided with a head reaching over the quadrant, and a lever-nut, *l''*, substantially as and for the purpose set forth.

3. In a sawing-machine, the combination, with an oscillating frame pivotally secured beneath the saw-table and supporting on its rear free end a shaft provided with a rotary motion, and carrying a feeding-disk reaching through the saw-table, and having a forward-extending lever, *n''*, of a spring, *p'*, bearing downward upon the lever *n''*, whereby the feeding-disk is held in engagement with the piece to be sawed, substantially as set forth.

4. In a sawing-machine, the combination, with an oscillating frame pivotally secured beneath the saw-table and supporting upon its rear free end a shaft having a rotary motion, and carrying a feeding-disk reaching through the saw-table, and having a forward-extending lever, *n''*, and a spring bearing downward upon the lever, of an adjusting-bolt, *q'*, passed through the lever *n''*, and with one end rigidly secured above the lever, and provided with a nut, *g''*, on the opposite end and beneath the lever, substantially as and for the purpose set forth.

5. In a sawing-machine, the combination, with a saw and saw table, and an oscillating frame pivotally secured beneath the table and carrying upon its rear free end a shaft having on one end a feeding-disk and upon its opposite end a chain-sprocket, *i''*, of a stud, *j''*, adjustably secured in the slot *o''*, a sprocket, *k'*, upon the stud, and a chain, *l''*, passed over the driving-sprocket *s* and the sprocket *k'*, and with its lower portion engaging with the sprocket *i''*, substantially as and for the purpose set forth.

377,709. HAME-TUG. MILES COMMANDER, Greensborough, Ala., assignor to himself and Cad Jones, same place. Filed Nov. 7, 1887. Serial No. 254,525. (No model.)

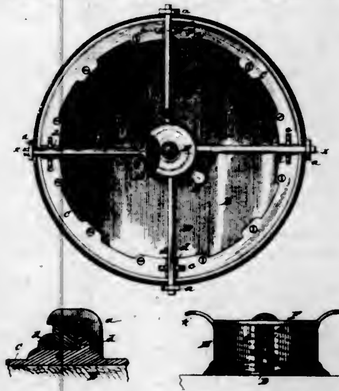


Claim.—1. The within-described hame-tug, having a buckle-frame at one end and a hame-clip at its other end, both formed integral with the main portion of the tug, and a buckle-tongue, all constructed and arranged substantially as described

2. A hame-tug composed of a metallic inner portion formed into a buckle-frame at one end and provided with a proper tongue, and having a hame-clip on its opposite end, and an outer covering metallic portion provided with trace-loops, substantially as described.

3. A hame-tug composed of the metallic portion A, having a central longitudinal rib, a curved buckle-frame and clip at its opposite ends, and a curved buckle-tongue, substantially as described, in combination with the outer portion, B, having a short central longitudinal rib channeled to receive the shank of the clip of portion A and trace-loops, all constructed and arranged substantially in the manner and for the purpose described.

377,710. CHURN-COVER. ANDERSON R. COBBY, Richmond, Va. Filed Dec. 21, 1887. Serial No. 258,625. (No model.)



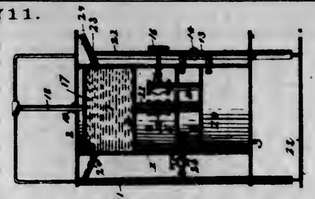
Claim.—1. The combination, with the cover bearing a ring with undercut fulcrum-seats *c*, of the levers D, having ribs *d d* and cross-head *g*, the vertically-slotted shell E, and the screw-cup F, arranged about a vertical axis within the shell and having peripheral threads adapted to receive the cross-heads of the levers, substantially as and for the purpose described.

2. The combination of the marginal ring A with hook-shaped lugs *a* and bead *b*, the cover with marginal ring C, having undercut fulcrum-slots, the levers D, with ribs *d* and cross-head *g*, the vertically-slotted retaining-shell E, the screw-cup F, and the axial shoulder-bolt G, substantially as and for the purpose described.

377,711. BEER-PUMP AND AERATING DEVICE. DENNIS DUSH, Mahanoy City, Pa. Filed Sept. 30, 1887. Serial No. 251,137. (No model.)

Claim.—1. The combination of a casing having an upper chamber

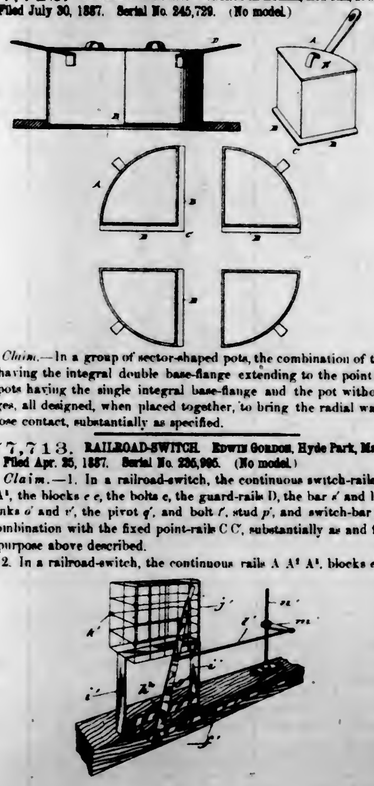
377,711.



or reservoir, a bottom chamber, and an intermediate air-chamber, a pipe connecting the reservoir with the bottom chamber and having a controlling-valve, an air-inlet pipe connecting the bottom chamber with the exterior air, a pipe connecting the bottom chamber with the air-chamber, a faucet leading from the top of the air-chamber, a discharge-faucet in the bottom chamber, the frame, the bottom platform secured thereto, a piston within the reservoir, and the rod secured to the piston and passed through the top plate and connected with the frame.

2. The combination of the cylindrical casing having the top and bottom end plates having the perforated flanges and the transverse partitions, the reservoir having the two opposite openings near its upper end, the open chamber or space, the air-chamber having the faucet near its upper end, the bottom chamber having the discharge-faucet, the pipe connecting the reservoir with the bottom chamber and having the controlling-valve, the air-inlet pipe leading from the exterior air into the bottom chamber and having the controlling-valve, the bent connecting-pipe having the valve and connecting the bottom chamber with the air-chamber, the piston having the operating-rod, the frame having the bottom platform, and the tube connecting the faucet of the air-chamber with the keg on the platform, all substantially as and for the purpose herein set forth.

377,712. COOKING UTENSIL. GEORGE H. EYNER, Red Oak, Iowa. Filed July 30, 1887. Serial No. 245,729. (No model.)



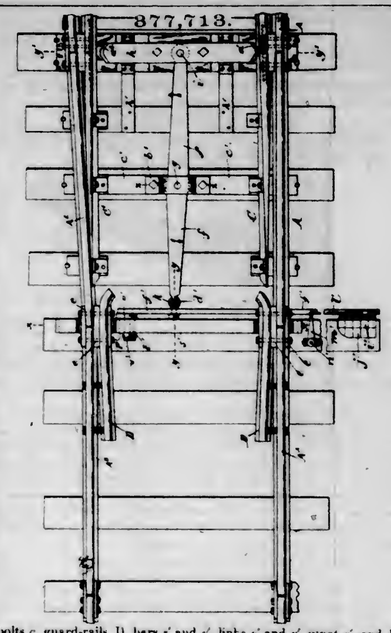
Claim.—In a group of sector-shaped pots, the combination of the pot having the integral double base-flange extending to the point C, the pots having the single integral base-flange and the pot without flanges, all designed, when placed together, to bring the radial walls in close contact, substantially as specified.

377,713. RAILROAD-SWITCH. EDWIN GORDON, Hyde Park, Mass. Filed Apr. 25, 1887. Serial No. 236,905. (No model.)

Claim.—1. In a railroad-switch, the continuous switch-rails A A^1 A^1, the blocks *e e*, the bolts *e*, the guard-rails D, the bar *s'* and bar *r'*, links *o'* and *v'*, the pivot *q'*, and bolt *t'*, stud *p'*, and switch-bar *f'*, in combination with the fixed point-rails C C, substantially as and for the purpose above described.

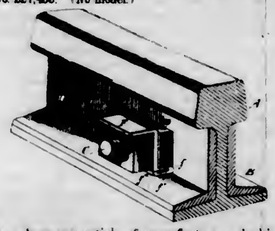
2. In a railroad-switch, the continuous rails A A^1 A^1, blocks *e e*,

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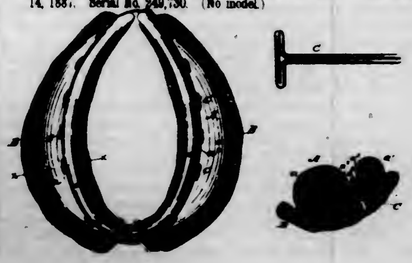
bolts *e*, guard-rails D, bars *s'* and *r'*, links *o'* and *v'*, pivot *q'*, and bolt *t'*, in combination with the device for automatically moving the continuous switch-rails, consisting of the lever *f* and the cross-piece *h* and the piece *k'*, substantially as and for the purpose above described.

377,714. NUT-LOCK. WILLIAM H. HAWS, Washington, Pa., assignor of three-fourths to James M. Haws and James W. Flynn, both of same place, and Andrew J. Haws, Johnstown, Pa. Filed Feb. 12, 1887. Serial No. 227,453. (No model.)



Claim.—As a new article of manufacture, a locking-blank for nuts, consisting of a piece of metal having a perforation to admit a bolt, one end bent and the other end provided with a spring-flange, whereby it may be wedged between a washer and one of the parts bolted together, the other end being long enough to be bent over the nut, so as to lock the same, substantially as described.

377,715. SWEAT-PAD FASTENER. ALBERT HOBT, Wellston, Ohio, assignor to Rodney W. Goddard, trustee, same place. Filed Sept. 14, 1887. Serial No. 249,730. (No model.)



Claim.—The combination, with a horse-collar having a reduced portion and creases formed opposite said reduced portion, of a pad fitted within the collar and formed with reduced quilted portions, and the folded T-shaped cotter-bar, rounded upon one side and flat upon the other, passed through said reduced portions and folded with the creases of the pad and collar, substantially as described.

377,716. **THILL-COUPLING.** CONRAD HUBER, Rochester, N. Y., assignor of one-half to Robert Y. McConnell, same place. Filed Nov. 21, 1887. Serial No. 255,815. (No model.)



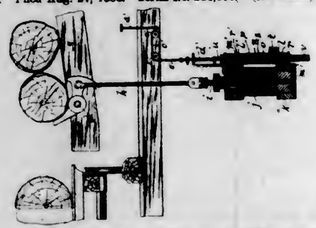
Claim.—1. A thill-coupling comprising a piece of spring metal connected to the axle or running-gear and to the thill, and having formed in it a double coil, and a cylindrical piece of rubber or other elastic material adapted to be inserted in and encircled by the coil, whereby the coil is strengthened and enabled to withstand the strains and jars incident to the traveling of the vehicle, substantially as described.

2. A thill-coupling comprising a piece of spring metal bent in the middle to construct a loop and each leg having formed therein a coil, the ends of the legs being turned perpendicular to their length to form angles, and plates provided with longitudinal grooves forming casings adapted to receive the loop and the legs of the spring-metal portion, the grooves in the plate receiving the legs terminating in depressions or holes for the reception of the angular ends of the legs, whereby they are prevented from being withdrawn from the grooved plate, substantially as and for the purpose described.

3. A thill-coupling comprising a piece of spring metal bent into U shape to construct a loop and having formed in each leg a spiral spring, the ends of the legs being turned perpendicular to their length, forming angles, a plate provided on its upper face with grooves and secured to the axle or running-gear by a clip, a sheet-metal plate secured to the thill and having stamped or otherwise formed therein grooves, and a plate provided on its upper face with grooves terminating in depressions or holes, into which the angle ends of the legs of the spring-metal portion enter, substantially as described.

4. A thill-coupling comprising a piece of spring metal bent into U shape to construct a loop and having formed in each leg a spiral spring, the ends of the legs being turned perpendicular to their length, forming angles, a cylindrical piece of rubber or other elastic material encircled by the spiral springs, which are strengthened thereby, a plate provided on its upper face with grooves and secured to the axle or running-gear by a clip, a sheet-metal plate having stamped or otherwise formed in its lower face grooves, and a plate provided in its upper face with grooves terminating in depressions or holes, substantially as and for the purpose specified.

377,717. **LOG-ROLLING DEVICE.** LEWIS T. KLINE, Bay City, Mich. Filed Aug. 27, 1886. Serial No. 211,968. (No model.)

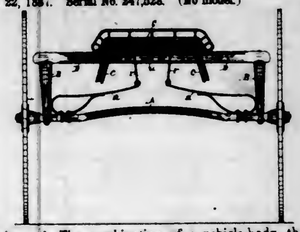


Claim.—1. The combination, in a device for rolling logs, of a log-deck or skidway, a shaft journaled in the skid-timbers and provided with curved arms rigidly secured thereto, and a piston having a rod pivotally connected to one of the arms, with a steam-cushioning cylinder inclosing the piston and provided with a valve and receiving and exhaust ports, for the purpose set forth.

2. The combination, in a device for rolling logs, of a shaft journaled below the log-receiving timbers and provided with extended arms, and a steam-cylinder having a piston connected with the arms and provided with a valve and steam-cushioning ports, with devices operating the valve, consisting, substantially, of a line, *o'*, secured by one end to the valve-stem and supported by one or more pulleys, *e'*, and a standard, *a'*, located near one of the pulleys *e'*, and with its lower end secured to the opposite end of the line *o'*, substantially as herein set forth.

3. The combination, in a device for rolling logs, of a shaft journaled below the log-receiving timbers and provided with extended arms, a steam-cylinder having a piston connected with the arms and provided with a steam-cushioning valve and ports, and a line, *o'*, secured to the valve-stem by one end and to a vertical standard, *a'*, by the opposite end and supported by one or more pulleys, *e'*, with a lever, *f'*, pivotally secured at its lower end and having its upper end extending above the log-receiving timbers, and provided with a pulley, *k'*, on its central portion, and a line, *i'*, secured by one end to the cord *o'* and passed over the pulley *k'*, and a weight, *j'*, secured to the opposite end of the line *i'*, substantially as and for the purpose set forth.

377,718. **TWO-WHEELED VEHICLE.** WILLIAM H. KNAPP, Galesburg, Mich., assignor of one-half to Jackson P. Bristol, same place. Filed Aug. 22, 1887. Serial No. 247,523. (No model.)

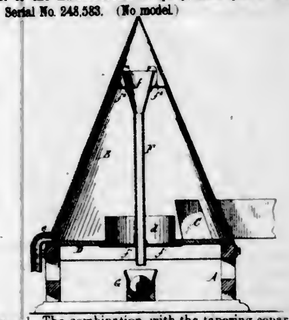


Claim.—1. The combination of a vehicle-body, the axle, the springs having the loop attached to the axle, with the upper bar loosely resting on the lower end of the spring, and the pivoted hangers supporting the body, substantially as set forth.

2. The axle and vehicle-body having the bracket, in combination with the springs having the loop attached to the axle, the lower end of the spring loosely contacting with the upper bar of said spring, and hangers pivoted to the upper end of the springs and to the ends of the bracket, substantially as set forth.

3. The combination of a vehicle-body, an axle, and the springs having the loop attached to the axle, the free end of said loop loosely contacting with the upper bar of the loop, said looped springs being parallel with the axle and their upper end supporting the body, substantially as set forth.

377,719. **DUST-COLLECTOR.** ORVILLE M. MORSE, Jackson, Mich., assignor to the Knickerbocker Company, same place. Filed Sept. 2, 1887. Serial No. 248,583. (No model.)



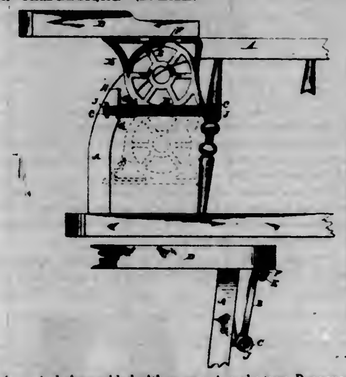
Claim.—1. The combination, with the tapering separating-chamber having its small end closed and provided with an air-exit at its large end, of means whereby the air is caused to rotate in the separating-chamber, and an internal dust-discharge conduit which receives the dust at the small end of the separating-chamber and conducts the dust out of said chamber, substantially as set forth.

2. The combination, with the tapering separating-chamber having its small end closed and provided with an air-exit at its lower large end and a suitable inlet-spout, of a central dust-discharge conduit extending upwardly into the separating-chamber and terminating near the small end thereof, substantially as set forth.

3. The combination, with the separating-chamber provided with an external tangential inlet-spout and having a central air-exit at one end, of an internal dust-discharge conduit arranged axially in the separating-chamber and extending outwardly through the air-exit thereof, substantially as set forth.

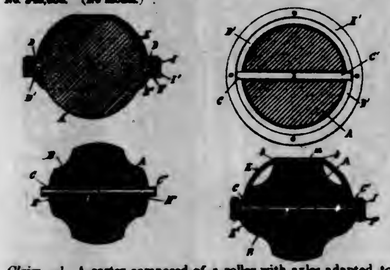
4. The combination, with the tapering separating-chamber having its small end closed and provided with an air-exit at its large end, of means whereby the air is caused to rotate in said chamber, a dust-discharge opening formed at the large end of the separating-chamber, and an internal dust-discharge conduit which receives the dust at the small end of the separating-chamber and conducts the same out of said chamber, substantially as set forth.

377,720. **TRAY-CHAIR.** WILLIAM B. PIERCE, Ashburnham, assignor of one-half to S. Bent & Brothers, Gardner, Mass. Filed Sept. 21, 1886. Serial No. 214,132. (No model.)



Claim.—A chair provided with an arm, A, and a tray, D, connected at one end movably to said arm and having a locking-catch at its other end, in combination with the supporting-bracket B, pivoted in bearings on the chair-arm, and with an actuating-spring, G, applied to said bracket to hold it in variable engagement with the tray-catch, substantially as set forth.

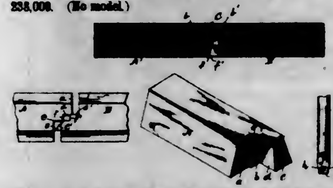
377,721. **CASTER.** JACOB P. REED, New York, N. Y., assignor of one-half to Bertrand B. Wolf, same place. Filed Sept. 7, 1887. Serial No. 249,293. (No model.)



Claim.—1. A caster composed of a roller with axles adapted to turn in opposite directions arranged therein, having its equatorial portion provided with a spherical surface, in combination with a casing made in two separate sections provided with an interior annular bearing-surface, and an exterior flange for joining them together, substantially as shown and described.

2. A caster having a roller provided with axles made in two sections adapted to turn in opposite directions, arranged in a sleeve also made in two sections, in combination with a casing made in two separable sections provided with interior annular bearing-surfaces, and an exterior flange for uniting the sections, substantially as shown and described.

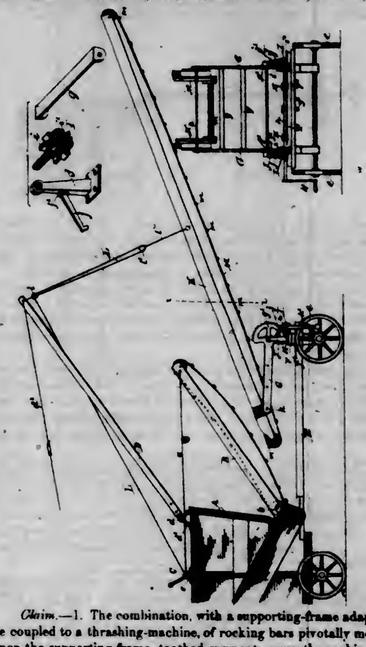
377,722. **DIE FOR CUTTING AND POINTING WIRE NAILS.** HARLEY A. STORR, Worcester, Mass. Filed May 12, 1887. Serial No. 238,009. (No model.)



Claim.—1. A pair of cutting-dies similar in form but reversed in position, each provided with cutting-edges for severing the nail from the rod or wire, and oblique surfaces for swaging the sides and the edges of the point, substantially as described.

2. In a pair of dies having a reciprocating motion in a horizontal line at right angles with the line of feed of the wire, the cutting-edges *f f'*, oblique sides *b b'*, the swaging-surfaces *d c'* and *d' c*, and the abutting surfaces *a a'* and *c c'*, substantially as described.

377,723. **STRAW-STACKER.** ALANSON W. STRADDEN, Lincolnville, Ind. Filed Oct. 20, 1887. Serial No. 252,922. (No model.)

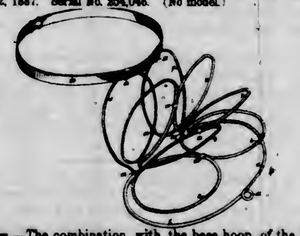


Claim.—1. The combination, with a supporting-frame adapted to be coupled to a thrashing-machine, of rocking bars pivotally mounted upon the supporting-frame, toothed segments upon the rocking bars, a shaft provided with gearing to engage said toothed segments and operate the rocking bars, a straw-stacker pivoted at its rear portion to the free ends of the rocking bars, and a support for the free end of the straw-stacker, substantially as described.

2. The combination, with a supporting-frame adapted to be coupled to a thrashing-machine, of a base-plate secured to said frame, standards secured to said plate, rocking bars pivoted to said standards and provided with toothed segments, a straw-stacker one end of which is pivoted to the free ends of the rocking bars and the other end supported by a derrick and suitable connections, a shaft mounted in suitable bearings on the base-plate, and gear-wheels secured to the shaft and engaging the toothed segments, substantially as described.

3. The combination, with a supporting-frame and a base-plate secured thereto, of standards secured to said plate, rocking bars pivoted to said standards and provided with toothed segments, braces secured to the rocking bars, a straw-stacker pivoted to the rocking bars, a shaft mounted in bearings on the base-plate, double-toothed gear-wheels mounted on said shaft, one set engaging the segments, and locking-pawls pivoted to the standards and engaging the other set of teeth on the gear-wheels, substantially as described.

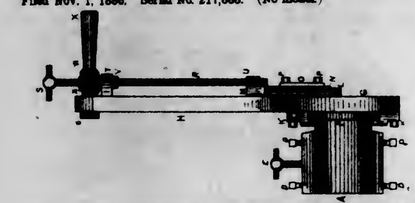
377,724. **BUSTLE.** ALFRED TAYLOR, Bridgeport, Conn. Filed Nov. 2, 1887. Serial No. 254,046. (No model.)



Claim.—The combination, with the base hoop, of the two series of spiral distending-bows adapted to have an upward swinging move-

ment arranged radially above the same, the ends of the topmost bow being returned and secured to the base bow; suitable clasps for securing the corresponding bows of each series together, and a suitable waist-belt.

377,725. PIPE-CUTTER. GILBERT G. THOMPSON, Des Moines, Iowa. Filed Nov. 1, 1886. Serial No. 217,683. (No model.)



Claim.—1. The combination of the chuck A, disk F, oppositely-opposing jaws C, adjustably mounted in chuck A, rotatable arm H, having disk G, clamps K on the latter adapted to engage disk F, and a cutter mounted adjustably on arm H, substantially as set forth.

2. The combination of the chuck A, having recesses B, disk F, jaws C, received by said recesses B, set-screws for adjusting said jaws, rotatable arm H, having disk G, clamps K on the latter adapted to engage disk F, and a cutter mounted adjustably on arm H, substantially as set forth.

3. The combination of the chuck having adjustable jaws, a rotatable arm having an enlargement perforated for the reception of the pipe, suitable means for securing said chuck loosely to said arm, a cutter mounted in a sliding block, and a rod mounted on said rotatable arm adapted to adjust said cutter and its block, substantially as set forth.

4. The combination of a rotatable pipe-cutting device having an operating-arm, a cutter mounted thereon, a rod mounted loosely on said arm and suitably connected with said cutter, a toothed wheel mounted on said rod, and a rotatable handle at the end of said arm having a worm-wheel adapted to engage said toothed wheel and feed the cutter automatically forward as the arm is revolved, substantially as set forth.

377,726. COMBINED PAPER-WEIGHT AND PEN, PENCIL, OR CIGAR HOLDER. GEORGE L. TULLER, Norwalk, Conn. Filed Dec. 7, 1887. Serial No. 257,210. (No model.)



Claim.—1. As a new article of manufacture, a combined paper-weight and pen, pencil, or cigar holder consisting of a head having an upper and lower jaw, one of which is adapted to be moved by the pen, pencil, or cigar when placed between the jaws and hold said pen, pencil, or cigar in place, substantially as set forth.

2. As a new article of manufacture, a combined paper-weight and pen, pencil, or cigar holder consisting of a head having an upper jaw, a pivoted movable lower jaw provided with a supporting-tongue and adapted to be moved by the pen, pencil, or cigar when placed between the jaws and hold said pen, pencil, or cigar in place, substantially as set forth.

3. As a new article of manufacture, a combined paper-weight and pen, pencil, or cigar holder consisting of a head having an upper jaw, a pivoted movable lower jaw held in place by a spring and adapted to be moved by the pen, pencil, or cigar when placed between the jaws and hold said pen, pencil, or cigar in place, substantially as set forth.

4. As a new article of manufacture, a combined paper-weight and pen, pencil, or cigar holder consisting of a head having an upper jaw, a spring-actuated lower jaw provided with a supporting-tongue, and one of said jaws being adapted to be moved by the pen, pencil, or cigar when placed between the jaws and hold said pen, pencil, or cigar in place, substantially as set forth.

377,727. TROTTING-HARNESS. JOHN H. WHITAKER, Davenport, Iowa. Filed Nov. 19, 1887. Serial No. 255,639. (No model.)

Claim.—1. The loose collar or shackle for a horse's hind leg, combined with a yielding connection with the shafts, arranged, as described, to adapt itself to the stride of the horse, substantially as and for the purpose described.

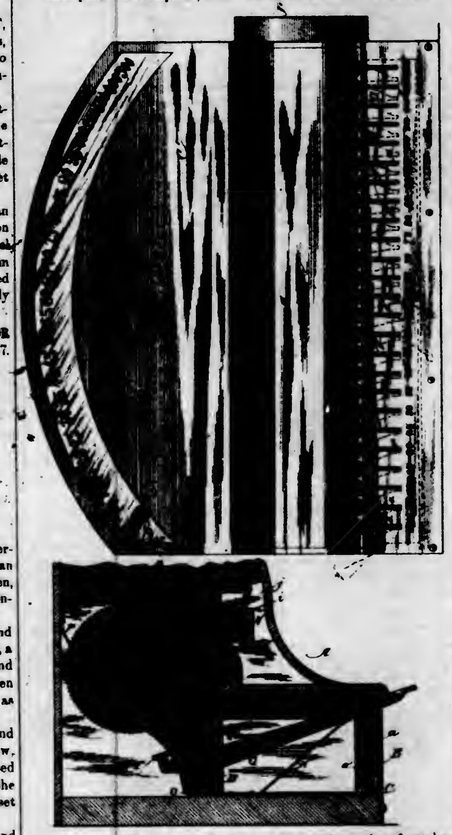
377,727.



2. The collar or shackle for a horse's hind leg, combined with a supporting-strap connecting with the same, and a shaft-connection arranged to adapt itself to the stride of the horse, substantially as and for the purpose described.

3. The combination of the collar or shackle A, the flexible connection *b*, rod *d*, attached longitudinally to the shaft, and a sleeve, *c*, sliding thereon and attached to the flexible connection *b*, substantially as and for the purpose described.

377,728. CASH REGISTER AND INDICATOR. THOMAS CARNEY, Chicago, Ill., assignor to Moses Bensinger and Harry G. Carney, both of same place. Filed Apr. 16, 1887. Serial No. 235,109. (No model.)



Claim.—1. The movable bar V, provided with a series of notches, *d'*, in combination with a rock-shaft, A', a pointer, B', a connecting-bar, *c'*, a series of keys or levers, a series of arms swung by said levers, screws adjustable in the ends of said arms, and registering mechanism, substantially as described, operated thereby, substantially as and for the purposes specified.

2. In an indicating and registering machine, a series of keys or levers, F, each having an arm, I, a sway-bar, J, an adjustable device to determine the distance which the sway-bar moves when acted on by the arms I, a shaft, L, carrying a wheel, R, and devices for partially rotating the shaft L when one of the keys is depressed, substantially as and for the purposes specified.

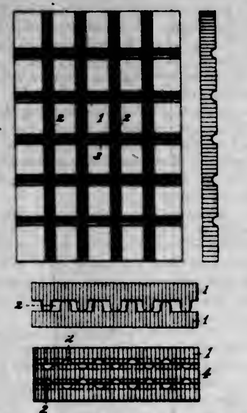
3. In an indicating and registering machine, a series of levers or keys, F, each provided with an arm, I, a sway-bar, J, shaft L, collar *l*, carrying a pin, sliding bar O, carrying a pawl or tooth, *m*, wheels R and P, and devices for partially rotating the shaft L when one of the levers is operated, substantially as and for the purposes specified.

4. In an indicating and registering machine, a series of keys or levers, F, each provided with an arm, I, in combination with a sway-bar, J, keys or levers G, each provided with an arm, M, sway-bar N, shaft L, collar *l*, bar O, provided with a pawl or tooth, *m*, devices for operating the shaft L when one of the keys is depressed, and adjustable devices to determine the distance the sway-bars will move when acted on by the keys, substantially as and for the purposes specified.

5. In an indicating and registering machine, a movable bar, V, provided with notches *d'*, in combination with a rock-shaft, A', a pointer secured to the rock-shaft, a connecting-bar, *c'*, a series of levers or keys, F, each provided with an arm, I, a sway-bar, J, shaft L, carrying a wheel, R, and collar *l*, provided with a pin, bar O, carrying a tooth or pawl, *m*, and wheel P, substantially as and for the purposes specified.

6. In an indicating and registering machine, the combination of a series of levers or keys with a swinging bar, T, provided with an arm, *u*, a bell, U, and a bell-striker, *v*, having a projection, *w*, arranged between two notches, substantially as and for the purposes specified.

377,729. PILE FOR THE MANUFACTURE OF SHEETS OF IRON. ROBERT A. CARTER, Pittsburg, Pa., assignor of one-half to Phillips, Minick & Co., same place. Filed Nov. 24, 1886. Serial No. 219,796. (No model.)



Claim.—1. A pile consisting of two or more plates or covers having portions of their surfaces depressed, thereby forming grooves and projections, and arranged with their depressed surfaces adjacent to each other, for the purpose of forming passages through and into the piles, substantially as set forth.

2. A pile having, in combination, plates or covers provided with projections and a suitable filling, the plates and filling being arranged in such relation to each other as to form passages through and into the piles, substantially as set forth.

3. A pile having a grooved cover, the grooved surface thereof being arranged adjacent to the body of the pile and in such relation thereto as to form passages through and into the body of the pile, substantially as set forth.

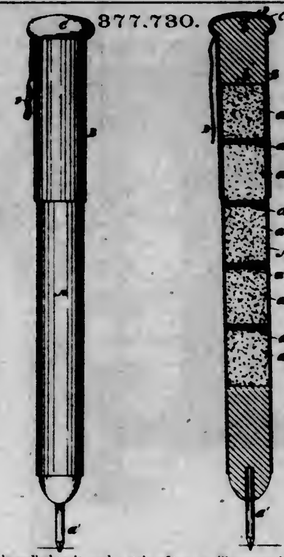
377,730. FIRE-WORK. JACOB J. DETWILLER, Jersey City, N. J. Filed Apr. 16, 1887. Serial No. 235,203. (No model.)

Claim.—1. The combination, with a case or shell, of composition for producing an illuminated signal contained therein, and provided at one end with igniting material capable of ignition only when brought into contact with a certain complementary igniting material, and a cover having said complementary material applied to its exterior surface, substantially as specified.

2. The combination, with a case or shell, of composition for producing an illuminated signal contained therein, and provided at one end with igniting material capable of ignition only when brought into contact with a certain complementary material, and a cover consisting of a tube closed at one end by a plug of wood, whose exterior surface has said complementary igniting material applied to it, substantially as specified.

3. The combination, with a case or shell, of composition for producing an illuminated signal contained therein, and provided at one end with igniting material capable of ignition only when brought into contact with a certain complementary igniting material, a cover having said complementary igniting material applied to its exterior surface, a cap adapted to fit over the portion of the cover which has this

377,730.

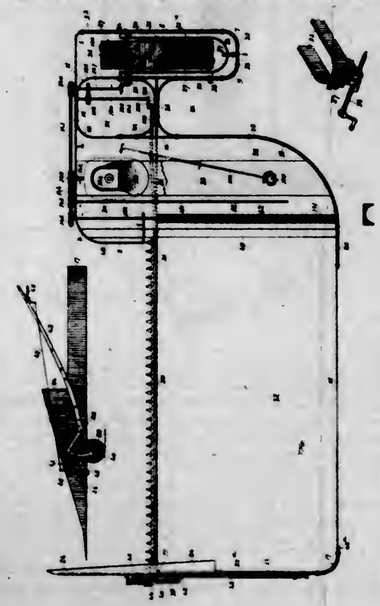


material applied to it, and a strip of tape or like material, whereby such cap may be easily and quickly removed, substantially as specified.

377,731. GRAIN-BINDER. WILLIAM M. PLATT, Mac-o-chee, Ohio, assignor of one-third to Benjamin P. Runkle, same place. Filed Nov. 15, 1886. Serial No. 218,945. (No model.)

Claim.—1. A main frame for a grain-binder, consisting of the bar forming a platform-frame, 32, a binding-table frame, 29, having forward extension, 30, a drive-wheel frame extending as far rearward as a line drawn lengthwise through the middle of the platform-frame, and a neck-frame, 31, connecting the forward extension to the front portion of the driving-wheel frame, forming the recess 28, all substantially as shown and described.

2. A main frame for a grain-binder, consisting of the bar formed with platform-frame, binding-table frame, forward extension to the



377,731.

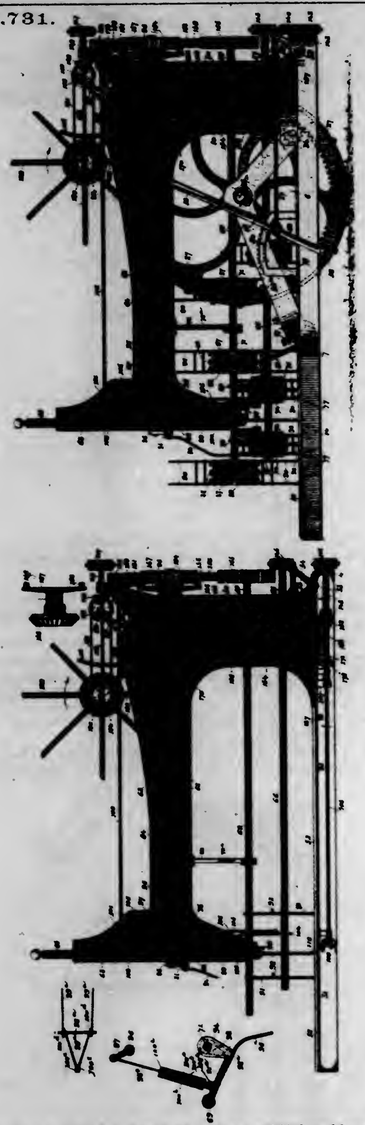


table-frame, neck-frame, driving-wheel frame, and U-shaped brace 22 within the neck-frame, substantially as shown and described.

3. A main frame for a grain-binder, consisting of the bar formed with platform-frame, binding-table frame, forward extension to the table-frame, neck-frame, driving-wheel frame, and the brace 23, having U-shaped portion 25, substantially as shown and described.

4. The combination of the brace-bar 49 with the main frame, consisting of a bar formed with platform-frame, binding-table frame, forward extension to the table-frame, neck-frame, and driving-wheel frame, the brace extending from the curved portion 3 to the straight portion 16 beneath the parallel portions 1 and 20, substantially as shown and described.

5. The combination, with the packer-shaft, the binding-table, and the standard having an arm and head, of the needle-shaft provided with a cam, 86, having a groove, 87, the arms 73, having cam-tracks 74, sprocket-wheels 75, journaled in the arms, endless chain 76, having fingers 77, for advancing the grain beneath the arms, the links 79, secured between the arms, the swinging track 78, suspended from the links, the lever 81, secured to the head, having a wrist-pin, 84, working in the groove of the cam, and a rod, 80, connecting the lever with the swinging track, substantially as described.

6. The combination, with the standard having an arm and head, the binding-table, the inner ejector-shaft, 69, the outer ejector-shaft, 71, cam-tracks 87, extending from shaft to shaft, the sprocket-wheels 88, and endless chain 89, having discharging-arms 90, of the retaining-finger 91, hinged to the inner ejector-shaft, and devices by which the finger is suspended on the outer ejector-shaft and raised and lowered by the latter, substantially as described.

7. The combination, with the inner and outer ejector-shafts, of the retaining-finger 91, hinged to the inner ejector-shaft, having a pin, 92, and the cam 93 on the outer ejector-shaft, having a groove, 94, in which the pin travels, substantially as described.

8. The combination, with the inner and outer ejector-shafts, of the retaining-finger 91, hinged to the inner ejector-shaft, and means on the outer ejector-shaft for raising and lowering the finger, substantially as described.

9. The combination, with the ejectors and the inner and outer ejector-shafts, of the compressor formed of a spring-bar, 99, mounted on the inner ejector-shaft, and mechanism, substantially as shown and described, by which the compressor is raised and lowered.

10. The combination, with the standard formed with an arm and head, the inner ejector-shaft, 69, and a binding-table, of the shaft 96, mounted on the arm, having a crank, 97, link 98, suspended on the crank, and the spring-bar hinged to the inner ejector-shaft and supported on the link, substantially as described.

11. The combination of the rock-shaft 102, having an arm, 103, trigger or trip-arm 104, connections between the trigger or trip-arm and rock-shaft, mutilated gear-wheel 159, needle-shaft 64, loose wheel 156, having cross-bar 157, provided with pin 158, and the spring-hook 161, secured to the mutilated gear-wheel, having a projection, 173, substantially as described.

12. The combination of the trigger or trip-arm, the arm 103, devices connecting the trigger or trip-arm to the arm, the mutilated gear-wheel 159, having spring-latch 161, provided with projection 173, needle-shaft 64, loose wheel 156, having cross-bar 157, provided with pins 158, the compressor, compressor-shaft 96, connections between the compressor and its shaft, and gear-wheel 164, substantially as described.

13. The combination of the trigger or trip-arm, the arm 103, devices connecting the trigger or trip-arm to the arm, the mutilated gear-wheel 159, having spring-latch 161, provided with projection 173, the needle-shaft 64, loose wheel 156, having cross-bar 157, provided with pins 158, the inner ejector-shaft, 69, having gear-wheel 165, the outer ejector-shaft, 71, sprocket-wheels 88, endless chain 89, and discharging-arms 90, substantially as described.

14. The combination of the needle-shaft 64, loose wheel 156, having cross-bar 157, provided with pins 158, mutilated gear-wheel 159, having spring-latch 161, means for operating the latch, compressor-shaft 96, bevel-wheel 169, gear-wheel 164, vertical shaft 168, bevel-wheels 170 and 171, knotter-shaft 108, bevel-wheel 172, and knotting mechanism, substantially as described.

15. The combination of the needle-shaft 64, loose wheel 156, having cross-bar 157, provided with pins 158, mutilated gear-wheel 159, having a segment-gear, 160, the spring-latch 161, pivoted to the mutilated gear-wheel, means for operating the latch, compressor-shaft 96, having gear-wheel 164, inner ejector-shaft having gear-wheel 165, and the outer ejector-shaft, substantially as described.

16. The combination of the needle-shaft 64, loose wheel 156, having cross-bar 157, provided with pins 158, mutilated gear-wheel 159, having a segment-gear, 160, the spring-latch 161, pivoted to the mutilated gear-wheel, means for operating the latch, needle-bar 65, cam 86, having groove 85, lifting-track 78, and means connecting the cam and lifting-track, substantially as described.

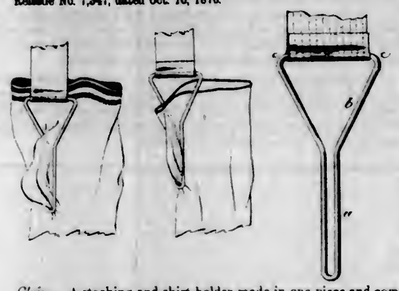
17. The combination of the binding-table, a support over the binding-table, the packer-shaft, the arms 73, having cam-tracks 74, sprocket-wheels 75, journaled in the arms, endless chain 76, having fingers 77, for advancing the grain beneath the arms, the swinging track between the sprocket-wheels, the inner ejector-shaft, the outer ejector-shaft, cam-tracks extending across the ejector-shafts, sprocket-wheels on the ejector-shafts, endless chain having discharging-arms, and retaining-arm hinged to the inner ejector-shaft and supported on the outer ejector-shaft, substantially as described.

18. The combination of the binding-table, a support over the binding-table, the packer-shaft, the arms 73, having cam-tracks 74, sprocket-wheels 75, journaled in the arms, endless chain 76, having fingers 77, for advancing the grain beneath the arms, the shiftable-track portion, the inner and outer ejector-shafts, cam-tracks extending across the ejector-shafts, sprocket-wheels on the ejector-shafts, endless chain having discharging-arms, retaining-arms hinged to the inner ejector-shaft and supported on the outer ejector-shaft, and the compressor hinged to the front ejector-shaft, substantially as described.

19. The combination of the binding-table, a support over the binding-table, the packers for transferring the grain on the table beneath, the inner and outer ejector-shafts, cam-tracks extending across the ejector-shafts, sprocket-wheels on the ejector-shafts, endless chain having discharging-arms, the retaining-arms hinged to the inner ejector-shaft and supported on the outer ejector-shaft, the compressor hinged to the inner ejector-shaft, and the trigger or trip-arm, substantially as described.

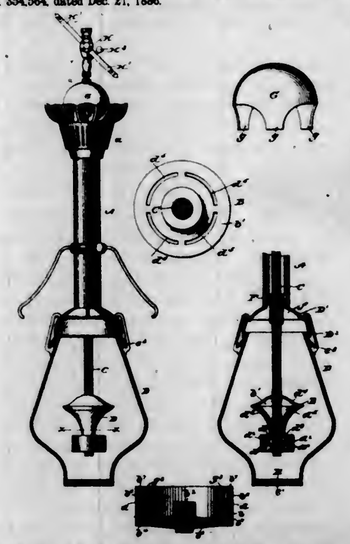
REISSUES.

10,898. **STOCKING AND SKIRT HOLDER.** GEORGE FROST, GEORGE H. PERLEE, and GEORGE A. FROST, Newton, and GEORGIA A. WARREN, Waltham, Mass., assignees of Andrew Warren, deceased. Filed Dec. 23, 1887. Serial No. 258,818. Original No. 159,291, dated Feb. 2, 1875. Reissue No. 7,347, dated Oct. 10, 1876.



Claim.—A stocking and skirt holder made in one piece and comprising the clasp *a*, which, by compression alone, holds the garment, the loop *b*, and the bends *c c*.

10,899. **REGENERATIVE GAS-BURNER.** WILLIAM S. MEAD, Philadelphia, Pa., assignor to the Mead Regenerative Gas Burner Company, New York, N. Y. Filed Jan. 31, 1887. Serial No. 226,045. Original No. 354,564, dated Dec. 21, 1886.



Claim.—1. The combination of an annular burner and a passage or flue passing down through the center of the flame of said burner, said flue being provided with receiving apertures located between said flame and the outlet for the discharge of heated gases given off by said flame, and discharging-apertures located between said flame and the inlet, through which fresh air is admitted to said flame, substantially as described.

2. The combination of an annular burner and a passage or flue provided with receiving-apertures located between the flame of said burner and the outlet for the discharge of the heated gases given off by said flame, and discharging-apertures located between said flame and the inlet, through which fresh air is admitted and in communication with said fresh air introduced upon the inner wantel of said flame, substantially as described.

3. The combination of an annular burner, a hollow deflector forming a passage or flue passing down through the center of the flame of said burner, said flue being provided with receiving-apertures located between said flame and the outlet for the discharge of heated gases given off by said flame, and discharging-apertures located between said flame and the inlet, through which fresh air is admitted to said flame, substantially as described.

4. The combination of a burner and a passage or flue provided with receiving-apertures located between the flame of said burner and the outlet for the discharge of the heated gases given off by said flame, and discharging-apertures located between said flame and the inlet, through which fresh air is admitted to said flame, thus acting as an injector, substantially as described.

5. The combination, with an Argand gas-burner, of a regenerative chamber constructed with projection at the top and a base connecting with the burner, there being passage from the base to the burner, said chamber being provided with openings at or near the top and openings at the bottom, substantially as set forth.

6. The combination, with an Argand gas-burner, of the central regenerative chamber with outward extending top and a base fitting within the burner, leaving a passage between the base and the inner wall of the burner, said chamber being provided with openings at or near the top and openings at the bottom, and a gas-supply pipe passing through the regenerative chamber, substantially as described.

7. The combination, with an Argand gas-burner, of a central regenerative chamber constructed with flaring top and a base fitting within the burner, leaving a passage between the base and the inner wall of the burner, said chamber being provided with openings below the flared top and openings at the bottom, the openings at the bottom discharging at or near the point of ignition of the gas-flame, substantially as set forth.

8. In a regenerative gas-lamp, the burner having a central nozzle, a series of radial gas-passages extending through the arms of a spider-like bottom of the burner, and an inner and outer wall, the latter fitted with a cylindrical casing, and said inner wall having an annulus or deflector fitted upon an offset or shoulder, in combination with the hot-air chamber having in its sides a series of segmental slots or apertures and a series of passages or slots in its lower cylindrical end, said chamber being secured on the gas-pipe and its lower end located within a central compartment of the burner, substantially as shown and described.

9. In a regenerative gas-burner, the combination, with the hot-air chamber having in its sides a series of segmental slots or apertures and a series of passages or slots in its lower cylindrical end, and the burner having a series of radial gas-passages extending through the arms of a spider-like bottom, and the annular chamber formed between the inner and outer walls of said burner, of the chimney suspended by hooks connected to the bell-shaped cap and the dome disposed on the top of the capital or column, said capital being connected to the gas-pipe, substantially as shown, and for the purpose set forth.

10. The combination of the capital or column, the dome disposed thereon, the chimney having an opening or passage and a perforated plate in its lower end, the hooks connected to the cap for securing the chimney by entering-sockets formed in the outer upper surface thereof, the burner, and the hot-air chamber secured on the gas-pipe within said chimney, substantially as shown and described.

11. The combination, with the burner having an annular chamber and a series of radial gas-passages, of a hot-air chamber silvered, nickel-plated, or enameled on its onter periphery, having in its sides a series of segmental slots or apertures and a series of passages or slots in its lower cylindric end, said chamber having its lower end located within said burner and connected to the gas-pipe, substantially as shown, and for the purpose described.

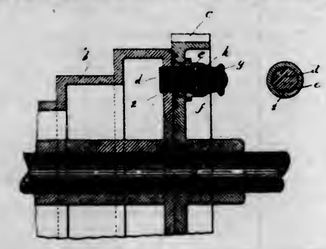
12. In a regenerative gas-burner, the combination of the burner having an annular chamber, a series of radial passages extending through the arms of the spider-like bottom, in communication with a central gas-pipe nozzle, and a hot-air chamber having in its upper flared surface air passages or slots, and the lower cylindrical end provided with passages or slots resting upon said gas-pipe nozzle and adapted to provide a narrow passage between itself and the inner wall of the combustion-chamber, substantially as and for the purpose set forth.

13. The combination of a burner, an outwardly-flaring deflector above the flame of said burner, and passage or flue provided with re-

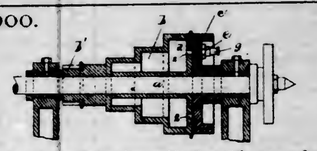
ceiving-apertures located between said flame and the outlet for the discharge of heated gases given off by said flame, and discharging-apertures located between said flame and the inlet through which fresh air is admitted to said flame, substantially as described.

14. The combination of a burner, a passage or flue provided with receiving-apertures located between the flame of said burner and the outlet for the discharge of the heated gases given off by said flame, and discharging-apertures located between said flame and the inlet through which fresh air is admitted to said flame, said flue being heated by direct contact with the flame, substantially as described.

10,900. **LOCK FOR LATHE HEAD-STOCKS.** CHARLES H. WESTON, Medford, assignor of one-half to John C. Nute, East Boston, Mass. Filed Jan. 14, 1888. Serial No. 260,762. Original No. 375,032, dated Dec. 20, 1887.



10,900.



Claim.—1. In a lathe, the combination of the gear *c*, fixed to the lathe-spindle, the pulley *b*, normally loose on said spindle and provided with one or more orifices or recesses, and a movable locking bolt or catch carried by said gear and adapted to detachably connect the gear and pulley, as set forth.

2. In a lathe, the combination, with the gear *c*, fixed to the spindle *a*, and the pulley *b*, normally loose on said spindle and provided with an orifice or orifices, 2, of a spring-projected bolt carried by the said gear and adapted to engage the orifice 2, and devices whereby said bolt may be retracted and held in an inoperative position against the pressure of its spring, as set forth.

3. The combination, with the gear *c* and apertured pulley *b*, of the casing *e*, secured to the gear, the spring-pressed bolt *d*, adapted to slide in said casing and having a screw-threaded shank, and the screw-threaded cap *g*, adapted to retract the bolt, as set forth.

4. The improved locking attachment for lathes, the same consisting of the casing *e*, externally threaded at one end for engagement with the gear *c*, the bolt *d*, having a screw-threaded shank, the spring *h*, which projects said bolt from the casing, and the internally-threaded cap adapted to retract the bolt, as set forth.

NORRIS PETERS PHOTO LITH. WASHINGTON D.C.

ANNUAL REPORT

OF THE

COMMISSIONER OF PATENTS

TO CONGRESS,

FOR THE YEAR ENDING DECEMBER 31, 1887.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., January 31, 1888.

To the Senate and House of Representatives of the United States of America in Congress assembled:

It is provided by section 494 of the Revised Statutes that—

The Commissioner of Patents shall lay before Congress in the month of January, annually, a report giving a detailed statement of all moneys received for patents, for copies of records or drawings, or from any other source whatever; a detailed statement of all expenditures for contingent and miscellaneous expenses; a list of all patents which were granted during the preceding year, designating under proper heads the subjects of such patents; an alphabetical list of all the patentees, with their places of residence; a list of all patents which have been extended during the year, and such other information of the condition of the Patent Office as may be useful to Congress or the public.

It will best subserve the purposes of this requirement to present the subject in a somewhat different order from that prescribed. The receipts and expenditures, the number of patents, &c., can be best shown and illustrated by schedules and tabular statements, which will be set forth at the close of this report.

There are certain subjects which I regard as of paramount importance, to which the attention of Congress should be directed in order that appropriate legislation may be enacted with a view to improving the law applicable to patent property and the condition of the Patent Office for the commodious and expeditious transaction of the public business.

ROOM IN THE PATENT OFFICE.

For several years past the annual reports of my predecessors have called the attention of Congress to the utter inadequacy of room and facilities for conducting the business of the Patent Office. This building, I am advised, was constructed from the fund of the Patent Office, a fund which was not raised by taxation upon the people, but was an accumulation from fees paid in by the inventors of the country, and it may not be inappropriate to say that the inventors themselves, as well as their representatives, attorneys, and others, are properly insisting upon the idea that this building ought to be at least so far devoted to the business of the Patent Office that ample room will be provided for its conduct, and facilities afforded which will secure the consideration of applications for patents and the issuance of the same without unnecessary delay, expense, or inconvenience. But the building is now occupied by the Secretary of the Interior, the Commissioner of the General Land Office, the Commissioner of Indian Affairs, and the Commissioner of Patents. The result is, owing to the increase in business of the Government in all of these various branches, that neither the Secretary of the Interior, the Commissioner of the General Land Office, the Commissioner of Indian Affairs, nor the Commissioner of Patents has sufficient room to conduct the business of his bureau with the dispatch and promptness which the public is entitled to expect. The various divisions of the Patent Office are crowded into narrow, inconvenient, and, in many instances, unhealthy limits. The records and drawings and other material, which should be conveniently arranged and made accessible in proper rooms, are stored in corridors and by-way places, where classification is almost impossible, and where access can only be had to the particular subjects desired after long search and delay. Not only this, but great quantities of valuable records, descriptions, specifications, and drawings are constantly exposed to the danger of conflagrations involving the safety of the entire building. It needs only an examination or investigation to demonstrate the absolute necessity that exists for making some change in the arrangements between the bureaus occupying this building in order that each shall have proper room and facilities to discharge its respective functions. The force under the control of the Commissioner of Patents is scattered and located in remote parts of the building on different floors to such an extent that in order to communicate with the various divisions, transfer records back and forth, and conduct the business much more time and a greater amount of labor are required than would otherwise be involved. If some arrangement could be made by which the force could be located conveniently and compactly, in my judgment almost if not quite enough could be saved in the curtailment of expenses and saving of time to provide for the rental of another building which would meet the demands of either one of the other bureaus mentioned.

The Commissioner of Patents is not possessed of sufficient information to suggest what arrangement should be made, or whether it would be advisable for the Government to rent other buildings in which to locate any one of the bureaus, or whether such bureau should be transferred to some other of the public buildings; but the fact is pointed out that the Commissioner of Patents ought at least to be furnished in a building constructed out of the patent fund with

sufficient room to conduct the business of the Patent Office conveniently, expeditiously, and without delay to its patrons.

I most urgently call the attention of Congress to this subject and request consideration.

OFFICIAL GAZETTE.

Under the present statute the Patent Office publishes 6,500 copies of the OFFICIAL GAZETTE, of which 2,319 copies are sold and delivered upon subscription at the price of $5 per year. Under the provisions of the act of May 18, 1872, 3,235 copies are distributed to public libraries, members of Congress, and public officers. This publication is one of the most useful and complete of the kind which has ever been published. Its usefulness and importance are well known to Congress, and need not be dwelt upon. It will not be inappropriate, however, to call attention to the mechanical features of the publication, the requirements involved for photolithography, and the method of printing the same. This work contains an illustrated and defined history of art, so far as covered by patents, in the United States from the time of its first publication down to the present day. As is well known, the drawings which accompany every application for a patent are necessarily required to be reproduced and made a part of the patent itself when it is issued. Under the present system this photolithographic copy of the drawing, reduced in size, is published by the Office to meet a demand for copies coming from all parts of the United States and from foreign countries. It is not within my power at present to state the number of copies of patents, specifications, and drawings which are called for; but the demand is great, and the charges made for these copies furnish an important source of revenue to the Office. In order to meet this demand it is necessary, as just stated, that the drawing be reproduced of a size requisite to be made a part of the patent and to be conveniently sent to persons requiring copies. This involves the necessity of employing photolithography. It may not be generally known that the OFFICIAL GAZETTE, excepting the front and closing pages, containing opinions and decisions of the courts and the Commissioner and the index, is a purely photolithographic production. The pages containing the drawings and the claims in type are photolithographed.

For several years Congress has appropriated about one hundred and thirty thousand dollars per year to provide for the production of copies of patents, designs, trade-marks, pending applications, and for the reproduction of exhausted copies. This photolithographing is required by statute to be done by contract. On several occasions experiments have been made to have this work done elsewhere than in the city of Washington, but in every instance of which I am aware the experiment proved a failure, the work either not being up to the required standard of excellence or being so delayed as to practically interfere with the work of the Office and prevent the prompt issuing of patents. The inconvenience attending these experiments has been so serious that for several years Congress has inserted in the appropriation bills the requirement found in the act approved March 3, 1885, as follows:

Said photolithographing or otherwise producing plates and copies referred to in this and the two preceding paragraphs to be done under the supervision of the Commissioner of Patents, and in the city of Washington, if it can be there done at reasonable rates; and the Commissioner of Patents, under the direction of the Secretary of the Interior, shall be authorized to make contracts therefor.

The contracts entered into for the performance of this work have generally been made to run from the beginning to the expiration of the fiscal year. Prior to the 30th of June, 1887, the present Commissioner directed an inquiry to be made, and sent an agent to the principal Eastern cities to ascertain at what rates work of this character could be done in those cities, and received what is believed to be entirely reliable and satisfactory information that the rates fixed by the present contract for doing this work are below those which would be demanded elsewhere.

To explain in greater detail the usefulness and manner of conducting this photolithographic work, I quote from the report of my immediate predecessor:

Under the practice which now obtains in this Office, on Friday morning of each week preparations are begun for the patenting of all applications which have been allowed and in which the final Government fee has been paid during the week next preceding. To secure a proper reproduction of such cases, it is necessary that the original drawings be transmitted to the Office where the work of photolithographing is performed. On each Friday morning the drawings which are ready are sent to the photolithographer, where the proof-sheets are prepared. At noon of the same day these are returned to this Office and another lot of drawings taken. About four o'clock of the same day proof-sheets of these last-mentioned drawings are returned, and other drawings again taken; and so this work of photolithographing continues day by day. Upon the return of the proof-sheets to this Office careful comparison with the original drawing must be made by the employés here, and imperfect sheets (which amount to about five per cent. of the whole) must be corrected and returned without delay.

From the fact that the original drawings must be sent to the photolithographer for reproduction, and when it is considered that these drawings constitute the only illustrated record in the Patent Office of the inventions involved—as under the present rules of the Office models are dispensed with—it is apparent that any loss or damage thereto would not only greatly embarrass the Office, but result in serious injury to inventors. Doubtless, in view of these considerations, a requirement was inserted in the present contract that the original drawings and corrected proofs must be returned to the Patent Office within one and one-half day from the delivery to the contractor of such original drawings.

It is not absolutely impracticable that the work of preparing the OFFICIAL GAZETTE be performed elsewhere than in the city, provided the place be not too remote. This undoubtedly would be attended at times with series inconvenience. For manifest reasons, however, the work of preparing the current issues of patents must be done in this city, and the proper reproduction elsewhere is simply impracticable, if not impossible. Inasmuch as proof-sheets of the photolithographs of the current issues are used in the preparation of the OFFICIAL GAZETTE, it need hardly be said that this work entire can probably be more cheaply performed by one firm than by several independent firms or contractors.

I have no doubt that all this work should and will in time be done by the Patent Office itself. It should not be dependent upon contractors. When the patent system is revised, corrected, and improved, as it probably should and doubtless will be in the not distant future, this important subject will be at least carefully considered.

The appropriation of Congress for the present fiscal year was—

For OFFICIAL GAZETTE	$44,000
For copies of patents, designs, trade-marks, exhausted copies, &c.	90,000

LABORATORY.

The attention of Congress has been in former reports of the Commissioners of Patents repeatedly called to the need in this bureau of a laboratory containing the necessary apparatus for testing inventions relating to electricity, and to conduct experiments pertaining to processes and products involving chemical results. This necessity is one which scarcely needs illustration or explanation when it is considered that many of the most important and valuable inventions relate to these two classes of art. Electrical processes and apparatus—such as the telephone and improvements in telegraphy—are so well recognized in importance and value as to require no comment, and yet the determination of whether a new invention has been made in these arts or an improvement involving novelty and utility can be reached only by means of proper testing apparatus. This is also especially true in the field of chemistry—processes for the treatment of iron, producing by chemical means new qualities, and resolving crude iron into fine steel. Such subjects are being continually presented, and the examiner in charge is called upon to determine whether these results are accomplished by the processes claimed. The assertions of the applicants are supported by affidavits of parties in interest and by statements which appear to be reliable, and yet, in the absence of some means of testing the truth of the facts claimed, it is impossible for the Office to determine with that degree of certainty which should exist whether the invention is novel and useful and should be covered by a patent.

I recommend that some reasonable appropriation be made to provide for the purchase, from time to time, of apparatus and materials suitable for a laboratory for these purposes.

EMPLOYÉS.

It is well known that the business of the Patent Office and the number of applications presented are gradually increasing. There are periods when there is some slight decrease; but there is beyond any question a continuous and almost constant increase in the number of applications for patents. There are received in the Office now an average of about eight hundred applications each week, and the Office issues between three hundred and fifty and four hundred and eighty-five patents per week. There is no doubt that these numbers will gradually increase.

On the 30th of June the Commissioner was required by the last appropriation bill to reduce the force in the classified service of the Office to the extent of ten persons. In the present condition of the Office it is my opinion that the existing force, when properly arranged and organized, will be competent to transact the business and keep up the work, and I am gratified to be able to say that I have not felt justified in requesting any increase in the number of employés. I am gradually rearranging and reorganizing the force, and hope within a reasonable time to have it in as excellent working order as it is capable of. I have no doubt that if the Office had the conveniences, rooms, and facilities hereinbefore referred to the present force would be entirely adequate. Not only this, but a large saving in the way of expense would result, and the employés would be enabled to conduct the business with greater comfort and health. There can be no doubt that a great number of the rooms in which the employés of the various divisions are compelled to work are unhealthy and are more fit for storage than for occupancy by human beings.

LEGISLATION.

I beg to call the attention of Congress to the need of legislation on certain subjects which I deem of great importance in view of the present laws relating to patents, their issuance, and other subjects connected therewith.

1. *Date of the patent.*

Section 4885 Revised Statutes provides—

Every patent shall bear date as of a day not later than six months from the time at which it was passed and allowed and notice thereof was sent to the applicant or his agent; and if the final fee is not paid within that period the patent shall be withheld.

This provision enables an applicant who fails to pay the final fee within six months after the allowance of his application to prolong the monopoly of his patent the period of six months, and it not infrequently occurs that parties having what they regard to be valuable inventions permit their applications to forfeit in order that they may avail themselves of section 4897, which allows them to make a renewal application for the same invention upon the payment of a new fee, but without filing any new papers, the original application, specification, and drawings being used. A new allowance is thus obtained of an application for the same invention, and this allowance may remain for six months after the expiration of the intervening two years before the party takes out his patent. The result of this practice is that unless the application is barred by a public use which may intervene an applicant has it in his power under these statutes to prolong the term of the patent which he may secure for an almost indefinite period.

I respectfully suggest that section 4885 be amended so as to require that the term of the patent when issued shall begin with the date on which the application was passed and allowed, and notice thereof sent to the applicant or his agent, applicant of course being allowed six months within which to pay the final fee and take out his patent, and that all renewals authorized in case of a forfeiture for non-payment of final fee be limited to the same claims, except in case of inadvertence or mistake, and that when so renewed the term of the patent begin with the date of the original allowance. The justice of this provision, as well as its wisdom, will be apparent from a consideration of the fact that in issuing the patent there arises by implication a contract between the Government on the one hand and the patentee on the other that the latter shall have the exclusive enjoyment of the patented property for a definite period, at the expiration of which period the property becomes that of the public. The United States extends to patentees more liberal protection and for a longer time than any other government—seventeen years—and it is neither just nor right to the public which is thus liberal and generous that there shall be found under this legislation methods by which the inventor can defeat the provisions which contemplate a termination of the monopoly and be able to prolong its enjoyment for many years beyond the period contemplated by law.

2. *Limitation of term of United States patent by foreign patent.*

Section 4887, after declaring that no person shall be debarred from receiving a patent in this country for his invention or discovery, nor shall any patent be declared invalid by reason of the invention having been first patented or caused to be patented in a foreign country, provides—

But every patent granted for an invention which has been previously patented in a foreign country shall be so limited as to expire at the same time with the foreign patent, or, if there be more than one, at the same time with the one having the shortest term, and in no case shall it be in force more than seventeen years.

It is understood that the object of this legislation

originally was to prevent an inventor from allowing the people of foreign nations to come into the free enjoyment of his invention at an earlier period than was permitted the people of our country, which earlier enjoyment resulted from the fact that the term of American patents, as just stated, is much longer than any allowed by foreign governments, so that it was impossible for an American inventor to take out a foreign patent without disclosing and making public his invention after the expiration of the shorter term in such foreign country. In the meantime the American people were excluded from the free enjoyment of the invention during the period intervening between the expiration of the foreign patent and the American patent. But I believe those conversant with the subject have never seen any wisdom in this provision of the law. A great deal of trouble and annoyance have resulted from it to inventors, both American and foreign, without, so far as is known, advantaging any one.

It is evident that the American patentee is entitled to seventeen years of protection under the patent granted him by this Government. There ought to be no distinction between an American inventor who takes out a patent at home but none abroad and one who takes out patents both in his own and some other country. Yet the American patentee who omits to take out a patent abroad makes his invention public and free in all the countries of Europe during the entire period, because his American patent becomes a publication which discloses the invention and prevents him from taking out any patents in foreign countries under the systems existing there, so that in such cases the people of foreign countries acquire the free use of an invention from the date of its publication in America, while the people of America submit to the monopoly enjoyed by the patentee during the entire period of seventeen years. The consequence of these conditions is that if the American patentee takes out his foreign patent first his domestic patent is limited in term to the short duration of the patent abroad. If, on the other hand, he takes out his American patent first, he is barred from taking out any patent under the foreign systems, which provide that any publication of a patent shall bar a patent in those countries. This inequity of the law has forced inventors both in America and abroad, at much trouble and expense, to arrange, wherever it was possible, to have their foreign and domestic patents issue on the same day, so that neither of the conditions alluded to could attach.

It is also suggested, in view of the fact that the number of Americans taking out patents abroad very largely exceeds the number of foreigners who take out patents in this country, that these conditions of law have operated much more disadvantageously to Americans than to foreigners, and that, therefore, there should be some modification in the law.

These difficulties and others which need not be elaborated in this connection have become so well recognized, for they not only exist between Americans and foreigners, but between the different nations of Europe as well, that for some years past representatives of various governments have met together for the purpose of adopting and establishing articles of an International Union for the Protection of Industrial Property. Conventions were held at Rome and at Paris, and finally articles of a Union were adopted on the 20th of March, 1883, acceded to by Belgium, Brazil, Spain, France, Guatemala, Italy, the Netherlands, Portugal, Salvador, Servia, and Switzerland, the latter State being assigned the position of intermediary, through whom those adhering to the Union were to communicate with other States in relation to its objects. Subsequently other States gave their adhesion and became members of the Union, viz: Great Britain, Tunis, Norway, Sweden, the Dominican Republic, and the United States. A copy of the articles and protocols constituting this Union is attached to this report.

The adhesion of the United States to this Union was ratified on March 29, 1887. The purpose of this Union is to provide that persons who have made applications for patents in one of the States of the Union shall have a definite period thereafter within which to file their applications in other countries as of the same date at which their original applications were filed, and that no publication or use of the invented article during that period can deprive the applicants of their right of priority in all the States in which such applications were filed. It will be seen that this provision was intended to meet one of the very difficulties existing under section 4887 of the Revised Statutes, and which was heightened by the requirement that the term of the American patent should be limited by any patent issued to the patentee in foreign countries.

The advantages to American citizens under this Union are set forth in article 4 of the convention, to the effect that any person who has filed an application for a patent or who has applied for the registration of a trade-mark in the United States shall be entitled to priority in other countries of the Union as against persons making similar applications within a period defined. A person having applied for a patent in this country is entitled to have his case considered, if filed in another country, the same as if filed simultaneously with the application here.

There is great advantage in this in all countries where the patent is granted to the first applicant, which is generally the case in Europe and England; but it unfortunately happens under section 4887 that every patent granted in this country for an invention which has been previously patented in a foreign country is limited to expire with the foreign patent having the shortest term. It is well known that under the American system an examination of all applications must be made before the patent issues, and generally five, six, or seven months elapse after an application is filed before the patent issues. The result is that the American inventor who desires to avail himself of the advantages of the treaty is in danger of having his foreign patent granted first, for the reason, as just stated, that such foreign patent issues almost immediately after the application is filed, and therefore, necessarily, the term of his domestic patent is abridged by it.

This is the manner in which this condition of things affects the American inventor; but the foreign inventor who comes to this country for a patent is not thus injuriously affected, because there is no provision under the European system that their patents shall

be limited by the duration of an American patent; and if there were such, it would produce no limitation, because the American term, as already stated, is generally much longer than the terms provided by most of the European States. In my opinion, there is no reason for continuing this limitation, contained in the last clause of section 4887. While it stands it is almost a complete bar to the enjoyment of the privileges of this Union between the various States named and the United States. The repeal of this clause has been suggested in the reports of Commissioners heretofore. It is a source of much vexation to the inventors and of trouble to the Patent Office, it is out of harmony with the spirit of our patent law, and, in my judgment, it ought to be repealed.

3. *Assignments of patents.*

Section 4898 provides that an assignment, grant, or conveyance shall be void as against any subsequent purchaser or mortgagee for a valuable consideration without notice unless such instrument be recorded in the Patent Office within three months from the date thereof. In my opinion, this requirement operates unjustly in providing that an assignment, if recorded after three months from the date thereof, shall have no effect as constructive notice to a subsequent purchaser or mortgagee for a valuable consideration. The provision, in my judgment, should be modified so as to declare that while the assignment should be valid without recording for the period of three months from and after its date, thereafter it should be void against any subsequent purchaser or mortgagee for a valuable consideration without notice unless it be recorded in the Patent Office prior to the date of such subsequent purchase or mortgage, so that should the assignee fail through forgetfulness or accident to file his instrument of assignment within three months he might still file it for record at a subsequent period, and it should then give constructive notice from the date of its actual filing.

4. *Money paid into the Treasury by mistake.*

Section 4935 provides for the payment of fees to the Commissioner of Patents, or to the Treasurer, or any of the assistant treasurers of the United States, or to any of the designated depositaries, national banks, &c. All moneys received at the Patent Office from every source whatever are required to be paid into the Treasury as received without any deduction for any purpose. Section 4936 provides that the Treasurer of the United States is authorized to pay back any sum or sums of money to any person who has through mistake paid the same into the Treasury or to any receiver or depositary to the credit of the Treasury as for fees accruing at the Patent Office, &c.

The Commissioner of Patents has the unquestioned authority to correct a mistake occurring in his Office and to refund to any individual who has paid money to the financial clerk through mistake or accident if such correction be made before the money has been covered into the Treasury or placed in a depositary of the Treasury. Such corrections are occurring constantly by reason of mistakes in making change and from demands made on account of applications which either are withdrawn or are withdrawn on account of some impropriety or irregularity in their presentment; but when the money has been covered into the Treasury the Commissioner of Patents no longer has the power to correct such mistakes, and as it frequently occurs that the mistake is not discovered until after the money has been covered into the Treasury the party in interest is required to go through the somewhat tedious process of applying to the Treasury and furnishing proofs before he can obtain the correction of the mistake. Generally all evidence of the mistake is disclosed by the records of the Patent Office, and the Secretary of the Treasury is uniformly required to make examination and reference of the matter to this Office before acting on the application. The Patent Office is thus put to the same trouble of inquiry and examination as it would be were the whole matter in the hands of the Commissioner of Patents. The amounts involved are always small sums—either the first filing-fee of fifteen dollars, or the twenty dollars final fee, or some small sum involved in making change. I can see no reason why the Commissioner of Patents should not be authorized to make all corrections of mistakes of this character which occur in his Office and to refund the money, and I recommend that authority be given for that purpose.

5. *The attorneys' fund.*

In this connection I desire to call attention to what may be regarded as equitable claims on behalf of a number of patent attorneys against the Patent Office resulting from a defalcation on the part of the late financial clerk, Mr. Levi Bacon. The claims grew out of the following facts and practice formerly prevailing in this Office: The statutes of the United States require that all payments to be made into the Patent Office for copies, records, or work to be done shall be tendered in advance or simultaneously with the delivery of the copies, records, or work; but persons were constantly sending for such copies of records from remote parts of the country, not knowing what the cost would be, and the Office had been in the habit of responding to such requests with an estimated cost of the work. Thus the delivering of the copies or other work desired was considerably delayed. On the other hand, many parties were in the habit of remitting a larger sum of money than would be required, and directing the Office to furnish the copies or records immediately and return the change. There grew up in the Office, in consequence of the difficulties attending this method of transacting the business, the practice of extending a credit to patent attorneys in good standing and requiring them to remit the amount of their accounts once each month; but after some years' experience considerable sums of money were lost in consequence of the death, disappearance, or inability of the attorneys to pay. In 1878 Mr. Commissioner Spear issued an order authorizing persons dealing with the Office to deposit with the financial clerk a special fund, to be drawn against as they saw proper. After the issuance of this order it was the practice of the financial clerk to receive the money thus deposited and place it in envelopes, upon the back of which was kept the account between the Office and the attorney This fund was regarded as a private fund, at all times the property of the attorney, no part of which went

into the public funds or into the Treasury except as it was so drawn against, and the sum then so drawn was applied and paid over into the Treasury. The balance on hand was always regarded as the money of the individual, subject to his order and liable to be withdrawn at any time he might desire to have it returned. On the death of the financial clerk, Mr. Bacon, in June, 1887, it was found that the various balances which should have been in these envelopes were gone, and that no account could be given of this so-called "Attorneys' Fund," or "Miscellaneous Fund," as it was sometimes termed. At the same time it appeared that the Office had these various attorneys charged with copies, records, and other material furnished which should have been, and but for the defalcation would have been, paid for by the sums of money in the various envelopes to the credit of the parties in interest; but the money not being found, these accounts were regarded as just and valid claims against attorneys, and it was held that the fact that each at some previous time had had in the hands of the financial clerk sufficient money to provide for the payment of these accounts could not be regarded as liquidating the same. The Commissioner of Patents entertained the view that an officer of the Government could not incur a liability without the express provision of law, and that he had no authority to receive private deposits and make the Government liable for them, or to secure such deposits either by the money of the Government or by their equivalent in work, copies, &c. In his opinion, the case was very much the same as though the attorneys had come to the financial clerk with a bill of large denomination, and, instead of tendering the exact sum which was due, intrusted him with the bill, allowing him to make change, and upon his failure to return the change should attempt to hold the Government liable for the difference. No doubt there were a number of these attorneys who deposited their money without much consideration. They find themselves now indebted in small sums of money to the Office, and they naturally insist that they understood they were dealing with the Government, and that the Government ought to indemnify them for their loss. These claims have certainly strong equitable features. The practice grew up out of the order of Commissioner Spear, the money deposited by the attorneys was always made payable to the Commissioner of Patents, and all the correspondence, receipts, &c., were conducted in the name of the Commissioner. In my judgment, Congress should authorize the Commissioner of Patents to adjust these claims, subject to the approval of the Secretary of the Interior, and to pay them by the recognition of orders for copies, records, assignments, &c. This would restore the parties to all their rights without the payment of any cash, by simply supplying these attorneys with what it was originally contemplated they should receive. The amount involved is about five thousand dollars ($5,000.)

It will not be regarded as improper in this connection to call attention to the fact that since the defalcation alluded to was discovered the Commissioner has taken careful steps to guard against any possible misappropriation of the public moneys. All money deposited by attorneys or others is now required to be at once transferred to the Treasury and placed beyond the control of the Patent Office. When this defalcation was disclosed, it was also ascertained that during the long period of Mr. Bacon's possession of the office, though millions of dollars had passed through his hands, there had never been a settlement of his accounts. The practice now prevails of requiring a quarterly and annual adjustment of the accounts of the financial clerk. In addition, an entirely new system of receiving and accounting for the funds received has been adopted, with checks and counterchecks, so that it is believed to be now practically impossible for any mistake or misappropriation to occur without being at once detected. The importance of the subject will be seen when the fact is considered that the daily receipts average about three thousand dollars.

6. *Delay in prosecuting applications.*

I desire to call especial attention to the subject of the delays which occur in the Patent Office on the part of applicants in the prosecution of their applications for patents.

Section 4894 provides—

> All applications for patent shall be completed and prepared for examination within two years after the filing of the application, and in default thereof, or upon failure of the applicant to prosecute the same within two years after any action therein, of which notice shall have been given to the applicant, they shall be regarded as abandoned by the parties thereto, unless it be shown to the satisfaction of the Commissioner of Patents that such delay was unavoidable.

Under this section applicants who desire to prolong their applications and postpone action therein have an ample opportunity to do so. There are two classes of persons who apply for patents, *one* composed of those who are exceedingly anxious to obtain their patents at the earliest practicable moment, the *other* of those who desire to prolong the issue of their patents and to keep the application pending in the Patent Office to the very latest date possible. The second class embraces the more powerful, rich, and influential parties, who are either the inventors or the assignees of the inventors. This section of the statute enables the second class of persons to keep their applications pending in the Office for years before their patents issue. In the meantime they are engaged in manufacturing and putting upon the market the article or improvement, but warning the public that the patent is applied for, the effect of which is to give them the absolute control and monopoly of the invention and to deter all other inventors from entering upon the same field of invention and from manufacturing the article. The manner in which this delay is effected may be briefly explained: The applicant files his application and is allowed two years within which to complete or perfect it. Any action of the Office requiring change or modification or some formal correction can be followed under this section by a further delay of two years before the applicant is required to take any action in response. At the expiration of the two years he perhaps makes some amendment or change in the character of his claims. This involves a corresponding action on the part of the Office, and, however prompt and speedy this action may be, the applicant is permitted another two years before any responsive action can be compelled from him; and so the matter may be continued. There are applications now in the Office which have been kept alive nine or ten years, and the Office is powerless to compel speedier or earlier action on the part of the applicants.

I have recently had occasion to direct an investigation to be made into this matter, and I submit as a part of this report the result reached by a committee on the subject, showing the number of applications in the Office which have been so pending for a number of years.

These repeated actions and these long-continued delays cannot fail to suggest that a great deal of useless and unnecessary labor and consumption of time in the Patent Office are involved. Every application stands in its proper place upon the calendar of the Office, and when reached in its order it must be examined carefully to see whether any action has been had since the last-recorded action of the Office, so that a case which has remained for two years without responsive action from the applicant may probably be examined twenty or thirty times simply to ascertain that nothing has been done. When it is considered that this labor is multiplied by the number of applications which are thus delayed the amount of useless and unnecessary labor expended can be appreciated.

While calling attention to the fact that this two years' period in the case of original applications is too long, it will be a matter of surprise to know that in applications for reissues Congress has omitted to fix any period (except the duration of the original patent) within which they become abandoned for want of prosecution. A reissue application is always alive, and the applicant may file an amendment ten years after it was required by the Office to be made and be entitled to have it considered and acted on.

I earnestly recommend that section 4894 be so modified that there shall be vested in the Commissioner of Patents a discretion to declare any application forfeited for want of prosecution whenever he shall be satisfied that such order should be entered. This power is possessed by all tribunals who have the control of litigation and matters of this character. Of course the exercise of this power should be guarded by proper restrictions, so that injury or wrong cannot be done, and no order of this kind should be made by the Commissioner until ample notice has been given to the applicant to show cause why his application should not be declared forfeited. The power to reinstate a case after it had been declared abandoned should and would be preserved under section 4894, whenever, in case of death, insanity, or other good and sufficient cause, it should be made to appear to the satisfaction of the Commissioner that the want of prosecution was unavoidable, and that the party was incapable of showing cause why the case should not be declared abandoned.

7. *Renewal application where case was forfeited for non-payment of final fee.*

Section 4885 provides that, after the Office has passed and allowed an application and nothing remains but the payment of the final fee to complete the issuance of a patent, if the fee be not paid within the period of six months the patent shall be withheld. I have already called attention to the fact that very frequently the payment of this final fee is purposely omitted in order to permit the applicant to extend the period of his monopoly; but of course this is not always the case. The provision of section 4897, which enables a party who has failed to make such payment to file a renewed application within two years from the date of the allowance of the original application and obtain his patent, is a wise and just provision; but there is very much doubt and uncertainty as to the meaning of this section, in so far as it requires that "such second application must be made within two years after the allowance of the original application." It has been held by high authority that the effect of this provision is by construction to bar the *invention* as well as the *application* if the renewed application be not filed within two years. On the other hand, there is also high authority that such is not the effect, and that even if two years have elapsed after the allowance of the original application the new application may be made and may go to patent, notwithstanding the existence of the original application, its allowance, and its forfeiture for non-payment of the final fee. This section should be amended to remove this uncertainty. I am of the opinion that the limitation should be to the invention; and not only this, but that when an application for a patent has been allowed by the Office and the applicant has failed to pay the final fee within six months, and has also failed to renew the application within two years, the invention should be made public and become public property as of the date of the original allowance. I think this should be the result, from a proper consideration of the relations between the Government and the inventor. The inventor has conceived and presented a new invention. He comes into the Office for the purpose of donating that invention to the public after he shall have first enjoyed its exclusive use for the period provided by law. The Office has made a careful and thorough examination, has discharged all its part of the contract, and extended to the applicant the right to take out his patent upon paying the charges required. The public from this moment is entitled to its part of the consideration of the contract, and ought not to be deprived of it upon the failure of the inventor to fulfill his. The invention has become so far public as to be made known to the Patent Office. The law extends to the applicant the full period of two years within which to avail himself of all his rights and to enjoy his property. Failing in this, he ought not to have it in his power to conceal the invention as a lost art and to deprive the public of it. On the other hand, other inventors may invent the same thing and come into the Office, and by patenting the invention deprive the public of what they have already acquired right to by virtue of the allowance of the first application. In other words, when an invention has been made and disclosed to the Office, and the application has been passed to issue, that invention should be taken out of the field of patentability as to all future inventors, and ought not to be regarded as a concealed or abandoned invention. I therefore recommend the modification of the statute so as to provide that such second application must be filed within two years after the allowance of the original application, and if not so filed the invention shall be regarded as abandoned to and as the property of the public.

8. Joint inventors.

Under the present statutes a patent may issue to a sole inventor or joint inventors, to an inventor and his assignee of a part interest, or to the assignee or assignees of the entire interest. Every patent issued to a sole inventor or to an inventor and his assignee of an undivided part, or to the assignees of the whole interest, is beyond challenge so far as an improper union of persons as patentees is concerned—that is to say, the law authorizes the patent to issue to the inventor or to any person or persons to whom he desires that it shall issue, and this is the principle which underlies the statute authorizing the assignment, grant, or conveyance either of the original invention before patent has been granted or of the patent after it is issued; but while there is no express provision of law declaring that a patent issued to joint inventors is void, should it appear that they were not joint inventors, yet that is the well-settled law, as announced by the courts. The statute also requires that the assignees of the inventor shall be such by virtue of a written formal legal assignment; but in the case of a patent to joint inventors, when it turns out that by mistake or error of law one of them was not a joint inventor, but the sole inventor, the other does not become a patentee as an assignee under a formal legal assignment, although he does become one of the joint patentees with the full consent and wish of his co-patentee. Inasmuch as it is often one of the most perplexing and difficult questions coming before the Office or before the courts to determine whether an invention is actually a sole invention or a joint invention in which two or more persons contributed, there seems no reason why a patent which is thus issued to persons who supposed themselves to be joint inventors should be invalid. Under all other systems within my knowledge the patent is allowed to issue in the name of those persons who demand it in whatever capacity or relation they may make the demand, and it is only requisite that one or more of the patentees shall have been the true inventor. I am aware of no reason why such should not be the law in the United States; and when there is taken into consideration the amount of time, labor, and trouble involved in investigating the question as to whether there was or was not an actual joint invention, and other incidental questions which are constantly arising, as well as the injustice to the patentees themselves of having their patents declared void, I find ample reason for recommending a provision of law expressly providing that patents shall not be held to be invalid by reason of the fact that the persons described as joint inventors were not joint inventors, provided that either one of them thus described was in fact the true and sole inventor.

9. Trade-marks and interstate commerce.

After the decision of the Supreme Court of the United States in the trade-mark cases, (100 U. S., 82,) which held that the acts of Congress approved July 8, 1870, and August 14, 1876, were unconstitutional, and that Congress had no power to legislate upon the subject of trade-marks *per se*, the act of March 3, 1881, was enacted under the provisions of the Constitution conferring upon Congress the power to regulate commerce. That power, it is conceded, extends to commerce with foreign nations, commerce with the Indian tribes, and interstate commerce; but for some cause not apparent in the enactment approved March 3, 1881, Congress saw proper to authorize the registration of only such trade-marks as were used in commerce with foreign nations or with the Indian tribes and left trade-marks which might be used in commerce between the States wholly unprovided for. If there be any reason why the latter class of trade-marks should be excluded from the protection of Federal legislation, or left to the regulations prescribed by the States, or wholly omitted, it is not apparent. The attention of Congress has been called to this subject by my predecessors, and I respectfully renew the suggestion that the provisions of that act be enlarged so as to cover trade-marks used in interstate commerce. This question has become more important in view of the Union hereinbefore referred to for the protection of industrial property. Some additional legislation by Congress is necessary in view of the new situation resulting from this treaty. Article 6 of the convention declares that "every trade or commercial mark deposited in the country of origin shall be admitted to deposit and so protected in all other countries of the Union." It is evident from this declaration that if the article were to be fully carried out in this country it would probably admit to registration trade-marks which otherwise would not be admissible under the existing laws of Congress. In other words, the provision is more liberal than the act of March 3, 1881. It is more liberal than was the common law, because under each there were limitations which excluded trade-marks which were not regarded as lawful in some sense, and which were calculated to mislead, or were regarded as in contravention of religious ideas, morals, &c. The definition of a trade-mark is substantially the same in all commercial countries; but practice varies in the application of these definitions and in respect to the character of marks which may be protected. For instance, the usage in Southern Europe in respect to the employment of sacred names and symbols warrants their adoption as trade-marks in relations which would be offensive and perhaps sacrilegious to much of the American sentiment. In a case where a representation of the Virgin Mary was claimed for soap this Office held that its use in such a connection was offensive to a great proportion of the people of the United States, and therefore that it was not entitled to protection; yet it is actually protected in France, where a different sentiment prevails. Instances of this kind are rare; but the statute should be framed to cover all cases likely to arise. If Congress, therefore, is inclined to make the law of trade-marks conform to the provision of the Convention, the act of March 3, 1881, should be amended so as to admit to registration any trade-mark already lawfully registered in any of the countries of the International Union, subject, of course, to the conditions which require preliminary examination as to prior use and employment in the class of commerce over which the legislation of Congress extends.

Another question in connection with trade-marks which will suggest appropriate legislation relates to the coercive features of the provisions of the treaty intended to give trade-mark property a protection which would be unknown to the common law or to the statutes of this country. These provisions will be found in articles 9 and 10 of the Convention, and may be briefly stated to include seizure upon importation of any article of merchandise bearing an illicit trade-mark or a false or fraudulent intimation of origin. Of course, it is to be understood that the practical operation of such legislation would apply in this country to goods imported from abroad, and would authorize the seizure in this country of such goods. The act of August 14, 1876, provided for the seizure by United States marshals of all appliances used for counterfeiting or the fraudulent imitation of registered trade-marks. Section 2496 of the Revised Statutes, as amended March 3, 1883, refuses entry at the custom-house to foreign goods bearing simulations of the trade-marks of domestic manufactures. These two acts contain all the protection afforded by the United States statutes to our citizens so far as coercive measures are concerned. Of course, the common law and the statutes afford a civil remedy for infringement; but in view of the fact, that as between the owner of a trade-mark in one country and the infringer of it in another, the civil remedy is so expensive, it practically constitutes no protection. Every country seems to have felt the necessity of employing coercive measures to prevent fraud of this character. No act of Congress has ever contemplated the seizure of merchandise bearing counterfeit or simulated trade-marks, and under the present laws the courts of Federal jurisdiction have no jurisdiction to enforce such seizures. Whether such legislation should be made is submitted to the consideration of Congress.

Under Article 6 of the Constitution of the United States this Convention is now a part of the supreme law of the land. The Government may withdraw from it when inclined to do so; but until such withdrawal its provisions must be recognized, and ought to be enforced by appropriate legislation empowering the proper officers to make the required seizures, and determining the due proceedings in our courts which are necessary to enforce the provisions of the treaty and protect the rights of individuals. It is true that under the general provisions of this treaty, as set forth in Article 2, there is only contemplated giving to the citizens and subjects of foreign States the same protection that our own citizens enjoy; but it is to be apprehended that while it is not expected the same procedure and method will be employed, yet the same ample protection will be afforded to citizens of foreign countries which would be demanded for our own citizens.

10. Restriction of some of the evils of the patent system.

The growth and development of the patent system of the United States, and of inventive genius stimulated by the rewards and prospects of rewards growing out of that system, are the subjects of constant comment and public consideration. That this system has been useful and beneficent is beyond question. Quoting from one of the annual reports of Mr. Commissioner Butterworth:

> Touching the first objection, I submit that careful investigation will show that the patent system is the foundation upon which the industrial interests of this country are based. We are, in fact, indebted for our unequaled growth and prosperity as a manufacturing people to its influence. Nor is its healthful influence confined to the shops and factories, but extends to the fields, mines, and forests. The mere desire which all our people naturally feel to secure increased comforts and improved methods would never have resulted in even a distant approach to our present condition as a productive nation but for the great incentive found in securing to the inventor for a term of years the absolute ownership of the improved machine, method, process, or discovery which is the result of his efforts. It has been urged that the inventive genius of our people would have given to the world substantially all the improvements we have now without this incentive. Such a proposition seems so unreasonable that it is hardly worth while to combat it by argument. We sow not only to reap, but in the expectation of reaping an adequate harvest. No one would devote years of patient study, careful and profound thought and investigation, based on experiments, merely to produce a machine for his own individual use. The British Parliament a few years since appointed a committee to take testimony and to make full investigation to ascertain the influence of and necessity for a patent system. That investigation settled beyond all controversy, at least so far as the English nation is concerned, that without the patent system the inventive genius of that people would have remained inactive, and little progress would have been made during several centuries in the direction of developing the great industries which are now the source of English wealth and power.
>
> While preparing the exhibits for the World's Industrial and Cotton Centennial Exposition at New Orleans I endeavored by correspondence to gather what information I could touching the relation our patent system sustains to the growth of our own industries, and from the investigations I have made I feel safe in saying that to this system we are chiefly indebted for our present great industrial prosperity. The percentage of manufacturing establishments in this country which have not utilized the patent system in one way or another, as a means either of founding a business or building up and extending it, is very small. But, as suggested before, it is urged that this exclusive property in a patent imposes burdens upon our people. The exact reverse is true.
>
> In this connection one important fact in the matter of using articles or machines which have been patented seems to be generally overlooked, and that is that no one is compelled to use any patented invention. The blessed privilege of sticking to the old way abides with all of us, notwithstanding the patent system. Farmers are under no obligations whatever to lay aside the sickle, scythe, or cradle, and use the reaper and mower. They may still, if they will, rake and bind wheat and oats with their hands, instead of doing it by machinery. There does not rest upon them the slightest obligation to use a thrasher or separator, since they are at perfect liberty to swing the flail or use the tramping-floor. The hand-loom may still be used, notwithstanding the inventions of Jacquard and Arkwright, supplemented and improved by modern inventions. The old spinning-wheel need not be thrown aside because the inventive genius of man has given us the spinning-jenny and its kindred aids in that art. There rests no obligation upon any of us to use the telephone, the telegraph, the locomotive, or the engine. In fact, in all things we may stick absolutely to the old way, and submit ourselves to all the inconveniences and discomforts of the olden time. Every farmer may continue to build a worm or post-and-rail or stone fence, instead of using barbed wire. In this connection it is proper to remark that he pays for his barbed-wire fence but little, if any, more than fifty per cent. of the cost of the old board or post-and-rail fence, and it has been demonstrated that the farmers of the country have in the last few years saved over sixty millions of dollars by the use of this valuable invention. In fact, all inventions are utilized not simply because they are more convenient, but because they are cheaper and better.
>
> Touching the statement that laborers are thrown out of employment and wages reduced by the use of patented devices, it is sufficient to say that the allegation is entirely at variance with the best information obtainable from the returns of the last census. The utilization of valuable inventions does not throw laborers out of employment, but redistributes labor and opens up new avenues of employment, calls into requisition a higher order of skill, and secures an increase of wages. For example, take the boot and shoe industry, where a few hundred machines have changed the whole course of labor. The census of 1870 showed that there was an average of twenty-nine persons employed in every shoe factory in this country, whereas in 1880 there were fifty-six persons so employed. The same number of persons in 1875 made *three times* as many shoes as in 1845. In a table prepared by Colonel Wright, chief of the Bureau of Labor, it is shown that in 1870 there were employed 91,702 men, women, and children, while in 1880 there were 111,152. In estimates based upon four hundred and sixty shoe-manufacturing establishments in Massachusetts it is shown that three millions of dollars more are paid in wages than the capital invested, and that the labor-saving machinery has given to the laborer in 1880 almost double the wages of 1850.
>
> But for the growth of our industries, due to the patent system, there would have been no employment in this country, otherwise than in the fields, for ten per cent. of the immigrants who have come among us. While an important invention may result in utilizing a machine which will do the work of a dozen men, the result is to open up an avenue of employment which will give work to double the number. The comforts and conveniences of life are made more abundant and cheaper, the consumption larger.
>
> When the advantages which our country derives from the patent system are considered, in connection with the fact that it does not cost the Government a farthing, the whole expense being paid by those having business with the Office, either as applicants for patents or otherwise, it would seem that there should be no hesitation in appropriating at least the money paid in and

received by the Government in trust for the purpose of promptly and efficiently conducting the business of the Bureau. While the Patent Office has been more than self-sustaining, the cost to those having business to transact has been reduced and the facilities increased. A few years since it cost from $2.50 to $35 to obtain a copy of the drawings of a patent. Under the system of photo-lithographing now adopted the Office can supply copies of patents with perfect reproductions of the drawings at nominal cost—viz., twenty-five cents for single copies, or ten cents when twenty or more are ordered. Not only this, but the entire expense of producing these photolithographic copies is more than paid by the proceeds of the sales.

But it is impossible that such a growth and development could have occurred and not be accompanied by greater or lesser evils. The attention of the public has been for years constantly called to the fact that the inventor himself rarely secures the real reward of his invention. This undoubtedly proceeds from the fact that quite as much genius is required to develop a property or manufacture and place it advantageously upon the market in so great a country as this, and to make it remunerative, as is required to make the invention, and it is the misfortune of inventors, as a general rule, not to be possessed of business habits and business faculties. The result has been that nearly all the great and most useful inventions of modern times have fallen into the hands of men of capital or corporations, who alone have the means to bring them before the public, develop their useful qualities, and enable the people directly to see that they are useful and can be produced at prices which remunerate. This condition of things cannot be remedied, and perhaps ought not to be. There should be no legislation which interferes with the right of property which is vested in the inventor from the moment he has created a new subject of invention. The entire system and theory of patent property rest upon the idea that that which a man invents in the sense of its being a new and novel creation is his individual property, which he owns by the right of creation and discovery. It is not the theory of the patent law that when the Government grants a patent to an inventor it confers upon him any such property as it does in the case of a patent for land, which, belonging to the Government at one moment becomes the property of the patentee upon the execution of the instrument; but the patent in the former case recognizes the existence of the property in the individual, but in consequence of its intangible and incorporeal nature it is incapable of protection from invasion by other persons, unless some distinct and specific remedy is afforded the inventor against such invasion and infringement. Letters patent are mere evidence of the fact that, in the opinion of the Government, the patentee has invented a new, useful, and original invention, and the Government undertakes to protect him in the exclusive enjoyment of that property for a definite term. Now, any legislation which departs from this theory and proceeds upon the idea that the patentee should not be entitled to full protection is a mistake. Many suggestions have been made as to the best method of protecting the inventor and enabling him to realize, as far as possible, the value of his invention, and at the same time protecting the public against vast and powerful corporations in patent property exacting greater values than can be justified upon any fair or reasonable consideration, and which by buying in all the succeeding improvements in a certain line of invention are enabled for generations to perpetuate a monopoly which ought to have more reasonable limits. It must be understood that a monopoly which erects and locates itself all over the country in every business center under the provisions of a patent is able in nearly all cases to prolong its life after the patent expires by reason of the possession which it has taken of the market. New manufacturers are unable for years after the expiration of the patent to come into the market and compete with an organization which thus has such complete possession of the field of manufacture.

It has been recommended that some legislation should be had looking toward the restriction of the extension of patents and patented property. In this direction I suggest for the consideration of Congress the propriety of providing that all patents hereafter issuing shall contain a condition that they may be extinguished by the Government at any time upon the payment to the owners of the property, whether the patentee or his assigns, of a reasonable sum of money, such sum to be determined by arbitration or otherwise, as may seem appropriate to Congress. It is probably safe and accurate to say that patent property as a rule is not as valuable as is popularly estimated. The profits which are enjoyed by the owners of property of this character are rather the result of having control of the market and being everywhere firmly established in the business of manufacturing the patented article. It is well known that the licensees under patents make enormous profits in the manufacture of such articles as the barb-wire, after having paid the royalty to the patentee, and it is probably true of all the great concerns engaged in manufacturing patented articles that they would still be able to conduct a large and profitable business were the patent to be extinguished. In view of the fact, already suggested, that in rare instances only do the original patentees obtain any adequate remuneration for their inventions, it seems entirely proper that the Government at any time should have the power in its discretion to extinguish the patent by paying such sum as would be a reasonable consideration for the appropriation of private property for public purposes. Of course, but few inventions would be extinguished in this way, as their importance generally is not such as to justify interference by the Government.

11. *Abridgment of patents.*

I desire to call the attention of Congress to the necessity of making provision for the compilation and publication of a classified abridgment of patents. The necessity for this publication has been earnestly set forth in the Annual Reports of this Office since 1848, when Mr. Commissioner Ewbank first called the attention of Congress to the subject. I hereto append extracts from these reports for a full understanding of the matter. Year by year the need and demand for such a work are more and more forcibly felt. Each field of invention broadens, and the necessary examination to determine the utility, novelty, and usefulness of the invention presented becomes more intricate and difficult. No better illustration need be cited to show that such an abridgment is almost indispensable than the publication of patents relating to electricity. Copies of all patents on this subject from the year 1790 to July, 1880, were compiled and bound for the Electrical Congress held at Paris in 1880. This publication has since been continued, and now comprises forty-nine volumes. It is doubtful whether the work of the Office could keep pace with the vast number of applications which have been filed since the impetus given to inventive genius by the electric light and telephone were it not for these volumes, whereby examinations are facilitated and accuracy secured. In 1881 Congress appropriated $10,000 to begin this work. Fourteen thousand patents relating to agricultural implements were abridged and the briefs made ready for publication. The appropriation, however, was not continued, and the material was boxed and stored away. An appropriation of not less than $20,000 will be required to continue the work of abridging patents and to publish the material already prepared. The ready sale to manufacturers and inventors of such an abridgment would speedily reimburse the Government for all moneys expended in compiling and publishing such a work, and it is believed that the revenues resulting from such sales would largely increase the receipts of the Office.

12. *Exchange of publications.*

Some provision should be made by Congress by which this Office can be furnished, for publication in the OFFICIAL GAZETTE, with certified copies of all decrees, decisions, and judgments made by the Federal courts in patent cases. I recommend that authority be conferred upon the Commissioner of Patents to furnish the OFFICIAL GAZETTE to the clerk of any Federal court, or to the library belonging to the court, in exchange for the decisions rendered by such Federal court.

I further recommend that the Commissioner be vested with authority to exchange the OFFICIAL GAZETTE for any publication of a scientific or useful character published in this or any foreign country, which, in his judgment, would be desirable and valuable to the scientific library of the Patent Office.

BUSINESS OF THE PATENT OFFICE.

The total number of applications received during the calendar year 1887 requiring examination was 41,153. The total number of patents issued was 22,990. The gross receipts were $1,144,509.60; the expenditures, $994,472.22; net surplus after paying every expense incident to the maintenance of the Office, $150,037.38. The following statements exhibit in detail all moneys received and expended, the number of applications received and patents granted, and also other information relating to the business and condition of the Patent Office which the Commissioner of Patents is directed to furnish to Congress:

RECEIPTS.

*Detailed statement of all moneys received for patents, for copies of records or drawings, or from any source whatever.**

Applications:	
Cash received	$977,435 00
Cash refunded	3,435 00
Net cash	974,000 00
Certificates of deposit	46,530 00
Total cash and certificates	1,020,530 00
Copies:	
Cash received	79,734 71
Cash refunded	1,849 19
Net cash	77,885 52
Certificates of deposit	401 65
Total cash and certificates	78,287 17
Recording assignments:	
Cash received	29,187 25
Cash refunded	1,259 05
Net cash	27,928 20
Certificates of deposit	488 25
Total cash and certificates	28,431 45
Subscription to Official Gazette:	
Cash received	14,400 08
Cash refunded	92 60
Net cash	14,307 48
Certificates of deposit	100 00
Total cash and certificates	14,407 48
Registration of labels:	
Cash received	4,110 00
Cash refunded	1,948 50
Net cash	2,861 50
Certificates of deposit	42 00
Total cash and certificates	2,903 50
Aggregates.	
Cash received	$1,104,857 04
Cash refunded	7,904 34
Net cash	1,096,952 70
Certificates of deposit	47,556 90
Total cash and certificates	1,144,509 60

*A large number of copies of patents are furnished to co-ordinate branches of the Government for which no charge is made. The receipts would be considerably increased if the Office received payment for these copies.

EXPENDITURES.

Amount expended by this Office under the several appropriations from January 1, 1887, to December 31, 1887.

Salaries	$639,124 85
Official Gazette	41,734 90
Photolithographing	79,515 12
Scientific library	3,449 04
Transportation of publications to foreign governments	376 96
Total	764,160 87

*Approximate amount expended by the Department of the Interior on account of this Office from January 1, 1887, to December 31, 1887.**

Stationery	$11,046 00
Postage on foreign matter	992 00
Printing and binding	192,152 71
Contingent expenses (including furniture, hardware, carpets, ice, file-holders, desks, cases, washing towels, keeping of horse, &c., telephone, winding clocks, and sundries)†	26,181 14
Total	230,311 85
Aggregate amount of expenditures	994,472 22

RECEIPTS OVER EXPENDITURES.

Total receipts	$1,144,509 60
Total expenditures	994,472 22
Receipts over expenditures	150,037 38

*A literal compliance with the provisions of the statute requiring "a detailed statement of all expenditures for contingent and miscellaneous expenses" is not possible, for the reason that the contingent fund for the several bureaus of this Department was consolidated by the act of March 3, 1883, and hence no part of that fund is disbursed by the Patent Office, and I am furnished only with an approximate sum, expended on behalf of the Patent Office.

†This Office has not been furnished with the item of expenses on account of the watch force, as such expenditure is under the control of the Secretary of the Interior, and the force is distributed through the several bureaus of the Department.

Statement of balance in the Treasury of the United States on account of the Patent fund.

Amount to the credit of the fund January 1, 1887	$3,107,458 53
Amount of receipts during the year 1887	1,144,509 60
Total	4,251,968 13
Deduct expenditures for the year 1887	994,472 22
Balance January 1, 1888	3,257,490 91

SUMMARY OF THE BUSINESS OF THE PATENT OFFICE.

Number of applications for patents for inventions	34,420
Number of applications for patents for designs	1,041
Number of applications for reissues of patents	152
Total number of applications relating to patents	35,613
Number of caveats filed	2,622
Number of applications for registration of trade-marks	1,282
Number of applications for registration of labels	686
Number of disclaimers filed	9
Number of appeals on the merits	941
Total	5,540
Total number of applications requiring investigation and action	41,153
Number of patents issued, including designs	21,378
Number of patents reissued	99
Number of trade-marks registered	1,133
Number of labels registered	380
Total	22,990
Number of patents expired during the year	12,157
Number of patents withheld for non-payment of final fee	3,044

PATENTS ISSUED.

Patents issued to citizens of the United States, with the ratio of population to each patent granted.

States and Territories.	Patents and designs.	One to every—
Alabama	54	28,379
Arizona Territory	3	13,480
Arkansas	65	12,346
California	505	1,712
Colorado	151	1,286
Connecticut	788	790
Dakota Territory	71	1,903
Delaware	34	4,312
District of Columbia	210	845
Florida	41	6,573
Georgia	130	11,862
Idaho Territory	4	8,152
Illinois	1,595	1,929
Indian Territory	3	.....
Indiana	556	3,558
Iowa	438	3,709
Kansas	311	3,202
Kentucky	245	6,729
Louisiana	112	8,392
Maine	151	4,267
Maryland	253	3,695
Massachusetts	1,875	950
Michigan	733	2,233
Minnesota	305	2,559
Mississippi	45	25,146
Missouri	654	3,315
Montana Territory	22	1,779
Nebraska	127	3,592
Nevada	15	4,151
New Hampshire	166	2,090
New Jersey	988	1,144
New Mexico Territory	9	13,295
New York	4,047	1,255
North Carolina	66	21,208
Ohio	1,477	2,165
Oregon	59	2,992
Pennsylvania	2,100	2,030
Rhode Island	224	1,284
South Carolina	52	19,145
Tennessee	121	12,746
Texas	205	6,006
Utah Territory	21	6,855
Vermont	112	2,966
Virginia	132	11,458
Washington Territory	44	1,707
West Virginia	75	8,346
Wisconsin	427	3,000
Wyoming	4	5,197
United States Army	12	.....
United States Navy	6	.....
Total	19,912	.....

Patents issued to citizens of foreign countries.

Argentine Republic	1	Mexico	6
Australia	2	Netherlands	8
Austria-Hungary	36	Newfoundland	1
Belgium	35	New South Wales	5
Brazil	2	New Zealand	9
Canada	294	Norway	6
Corea	1	Russia	11
Cuba	4	Scotland	28
Denmark	11	South Australia	2
England	500	Spain	2
Finland	1	Sweden	20
France	122	Switzerland	51
Germany	291	Syria	1
Hawaii	2	Turkey	3
India	2	Victoria	1
Ireland	8	West Indies	1
Italy	2	Total	1,466
Japan	1		
Luxemburg	1		

Comparative statement of the business of the Office from 1837 to 1887, inclusive.

Year.	Applications.	Caveats filed.	Patents and reissues.	Cash received.	Cash expended.	Surplus.
1837	.....	.....	436	$29,289 08	$33,506 98	.....
1838	.....	.....	520	42,123 54	37,402 10	$4,721 44
1839	.....	.....	325	37,360 00	34,543 51	2,716 49
1840	735	228	479	38,056 51	39,020 67	.....
1841	847	312	495	40,413 01	52,966 87	.....
1842	761	391	517	36,505 68	31,241 48	5,264 20
1843	819	315	510	35,315 81	30,776 96	4,538 85
1844	1,045	380	495	42,509 26	36,244 73	6,264 53
1845	1,246	452	501	51,076 14	39,395 65	11,680 49
1846	1,272	448	638	50,264 16	45,158 71	4,105 45
1847	1,531	553	569	63,111 19	41,878 35	21,232 84
1848	1,628	607	652	67,576 69	58,905 84	8,670 85
1849	1,955	595	1,008	80,752 98	77,716 44	3,036 54
1850	2,193	602	993	86,927 05	80,100 95	6,816 10
1851	2,258	760	872	95,738 61	86,916 93	8,821 68
1852	2,639	996	1,019	112,656 34	95,916 91	16,739 43
1853	2,673	901	961	121,527 45	132,869 83	.....
1854	3,328	868	1,844	163,789 84	167,146 32	.....
1855	4,435	906	2,012	216,459 35	179,540 33	36,919 02
1856	4,960	1,024	2,506	192,588 02	190,331 02	.....
1857	4,771	1,010	2,896	196,132 01	211,582 00	.....
1858	5,964	934	3,695	203,716 16	193,193 74	10,522 42
1859	6,235	1,097	4,504	245,942 15	210,278 41	35,663 74
1860	7,653	1,084	4,778	256,352 59	252,820 80	3,531 79
1861	4,643	700	3,329	187,354 44	221,491 91	.....
1862	5,088	824	3,532	215,774 99	182,810 39	32,944 60
1863	6,014	787	4,184	195,593 29	189,414 14	6,179 15
1864	6,932	1,063	5,025	240,919 78	229,868 00	11,051 98
1865	10,664	1,937	6,616	348,791 84	274,199 34	74,592 50
1866	13,269	2,723	9,458	495,965 38	361,724 28	133,941 10
1867	21,276	3,597	13,026	646,581 92	639,263 32	7,318 60
1868	20,420	3,705	13,410	681,565 86	628,679 77	52,886 09
1869	19,271	3,624	13,997	663,145 81	496,430 78	206,715 03
1870	19,171	3,273	13,333	669,456 76	557,149 19	112,307 57
1871	19,472	3,306	13,056	678,716 46	560,565 08	118,121 38
1872	18,246	3,090	13,613	699,726 39	665,591 36	34,135 03
1873	20,414	3,248	12,864	703,191 77	691,178 98	12,012 79
1874	21,602	3,181	13,599	738,278 17	679,288 41	58,989 76
1875	21,638	3,094	14,837	743,453 96	721,657 71	21,795 65
1876	21,435	2,697	15,595	757,987 65	652,542 60	105,445 05
1877	20,348	2,809	14,187	732,342 85	613,152 62	119,190 23
1878	20,250	2,755	13,444	725,375 55	593,082 80	132,292 75
1879	20,059	2,620	13,213	703,931 47	529,938 97	174,292 50
1880	23,012	2,490	13,947	749,085 32	538,865 17	210,820 15
1881	26,059	2,406	16,584	853,995 89	605,173 28	248,492 61
1882	31,522	2,553	19,267	1,009,219 45	683,867 67	325,351 78
1883	35,577	2,741	22,383	1,146,240 00	675,234 86	471,005 14
1884	36,600	2,582	20,413	1,075,798 80	970,579 76	105,219 04
1885	33,717	2,552	24,223	1,188,698 15	1,024,378 85	163,710 30
1886	35,968	2,513	22,508	1,154,551 40	992,503 40	162,047 95
1887	36,613	2,622	21,477	1,144,509 60	994,472 22	150,037 38

Herewith accompanying this report are lists or indexes, arranged in monthly, quarterly, and yearly form, of all patents granted during the calendar year of 1887, properly classified under subjects of invention; alphabetical lists of all patentees, with their places of residence, and a list containing all patents extended during the year.

Very respectfully,

Your obedient servant,

(Signed) BENTON J. HALL,

Commissioner.

Statement showing the number of the first patent, design patent, and reissued patent, and the number of the first certificate of registration of a trade-mark and a label issued in each calendar year since July 28, 1836, when the present series of numbers of letters patent commenced, together with the total number of each issued during the year.

[The number of patents granted prior to the commencement of this series of numbering (July 28, 1836) was 9,957.]

Year.	Number of first patent and certificate issued in each calendar year.					Number of patents and certificates of registration issued during each calendar year.						
	Patents.	Designs.	Reissues.	Trade-marks.	Labels.	Patents.	Designs.	Reissues.	Total patents.	Trade-marks.	Labels.	Total certificates.
1836 (July 28)	1	.....	.....	.....	.....	100	.....	.....	.....	.....	.....	.....
1837	110	.....	.....	.....	.....	436	.....	.....	.....	.....	.....	.....
1838	546	.....	1	.....	.....	415	.....	6	.....	.....	.....	.....
1839	1,061	.....	7	.....	.....	404	.....	13	.....	.....	.....	.....
1840	1,465	.....	20	.....	.....	458	.....	10	.....	.....	.....	.....
1841	1,928	.....	30	.....	.....	490	.....	6	.....	.....	.....	.....
1842	2,413	.....	36	.....	.....	488	.....	13	.....	.....	.....	.....
1843	2,901	1	49	.....	.....	494	14	11	519	.....	.....	.....
1844	3,395	15	60	.....	.....	477	12	7	496	.....	.....	.....
1845	3,872	27	67	.....	.....	476	17	11	504	.....	.....	.....
1846	4,348	44	78	.....	.....	566	59	13	638	.....	.....	.....
1847	4,914	103	91	.....	.....	495	60	14	569	.....	.....	.....
1848	5,409	103	105	.....	.....	583	46	23	652	.....	.....	.....
1849	5,992	200	128	.....	.....	989	49	30	1,068	.....	.....	.....
1850	6,981	258	158	.....	.....	884	83	26	993	.....	.....	.....
1851	7,865	341	184	.....	.....	757	90	25	872	.....	.....	.....
1852	8,622	432	209	.....	.....	890	109	20	1,019	.....	.....	.....
1853	9,512	540	229	.....	.....	846	86	29	961	.....	.....	.....
1854	10,358	626	258	.....	.....	1,759	57	28	1,844	.....	.....	.....
1855	12,117	693	296	.....	.....	1,891	70	51	2,012	.....	.....	.....
1856	14,008	753	337	.....	.....	2,316	107	83	2,506	.....	.....	.....
1857	16,324	840	420	.....	.....	2,686	113	97	2,896	.....	.....	.....
1858	19,010	973	517	.....	.....	3,407	142	126	3,695	.....	.....	.....
1859	22,477	1,057	643	.....	.....	4,165	108	231	4,504	.....	.....	.....
1860	26,642	1,188	874	.....	.....	4,363	183	232	4,778	.....	.....	.....
1861	31,005	1,366	1,106	.....	.....	3,040	142	147	3,329	.....	.....	.....
1862	34,045	1,508	1,253	.....	.....	3,221	195	116	3,532	.....	.....	.....
1863	37,266	4,703	1,369	.....	.....	3,781	176	227	4,184	.....	.....	.....
1864	41,047	1,879	1,596	.....	.....	3,638	139	248	5,025	.....	.....	.....
1865	45,685	2,018	1,844	.....	.....	6,099	221	296	6,616	.....	.....	.....
1866	51,784	2,239	2,140	.....	.....	8,874	284	400	9,458	.....	.....	.....
1867	60,658	2,533	2,490	.....	.....	12,201	325	400	13,026	.....	.....	.....
1868	72,959	2,858	2,980	.....	.....	12,544	446	420	13,410	.....	.....	.....
1869	85,503	3,304	3,250	.....	.....	12,957	506	534	13,997	.....	.....	.....
1870	98,460	3,810	3,784	1	.....	12,157	737	439	13,333	121	.....	121
1871	110,617	4,547	4,223	122	.....	11,697	905	464	13,056	486	.....	486
1872	122,304	5,442	4,697	608	.....	12,200	884	529	13,613	491	.....	491
1873	134,504	6,336	5,216	1,099	.....	11,616	747	501	12,864	492	.....	492
1874	146,120	7,083	5,717	1,591	1	12,220	886	493	13,599	559	232	791
1875	158,350	7,969	6,200	2,150	233	13,291	915	631	14,837	1,138	232	1,370
1876	171,641	8,884	6,831	3,288	465	14,172	802	621	15,595	950	472	1,422
1877	185,813	9,986	7,452	4,347	987	12,920	699	568	14,187	1,216	392	1,608
1878	198,738	10,385	8,020	5,463	1,320	12,345	580	509	13,444	1,455	492	1,947
1879	211,078	10,975	8,529	6,918	1,821	12,133	592	488	13,213	872	355	1,227
1880	223,211	11,507	9,017	7,790	2,176	12,936	515	506	13,947	849	208	562
1881	236,137	12,082	9,523	8,139	2,379	25,548	565	471	16,584	836	202	1,038
1882	251,695	12,647	9,904	8,973	2,581	18,135	861	271	19,267	947	304	1,251
1883	269,820	13,508	10,265	9,930	2,895	21,196	1,020	167	22,383	902	906	1,808
1884	291,016	14,528	10,432	10,822	3,791	19,147	1,150	116	20,413	1,021	518	1,539
1885	310,193	15,678	10,548	11,843	4,304	23,331	773	119	24,223	1,067	301	1,458
1886	333,404	16,451	10,677	12,910	4,695	21,797	595	116	22,508	1,029	578	1,607
1887	355,291	17,046	10,788	13,939	5,073	20,429	949	99	21,477	1,133	380	1,513
1888	375,720	17,995	10,892	15,072	5,453	.....	.....	.....	.....	.....	.....	.....

THE OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 42—No. 7. TUESDAY, FEBRUARY 14, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
THE OFFICIAL GAZETTE	617
INDEXES TO PATENTS ON ELECTRICITY	617
ATTORNEYS	617
ISSUE OF FEBRUARY 14, 1888	617
DESIGNS	618
TRADE-MARKS	618
LABELS	618
DISCLAIMER	618
PATENTS GRANTED	619
REISSUES	720
DECISIONS OF THE U. S. COURTS—	
Rapid Service Store Railway Company *v.* Taylor *et al*	721
McClain *v.* A. Ortmayer & Son *et al*	724

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Indexes to Patents on Electricity.

Appendix No. 2 to the index to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1883, has been issued, and is now for sale. These indexes, arranged alphabetically, numerically, and by classes, are completed to June 30, 1883, and comprise the following volumes:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages. In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Attorneys.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., February 1, 1888.

SIR: I am directed by the Secretary of the Interior to inform you that the order dated November 3, 1883, disbarring John M. ROUX, of this city, from practice as attorney before the Department and its Bureaus has this day been rescinded.

Very respectfully,

GEO. A. HOWARD,
Chief Clerk.

The Commissioner of Patents.

Issue of February 14, 1888.

Patents	341—	No. 377,732 to No. 378,072, inclusive.
Designs	16—	No. 18,048 to No. 18,063, inclusive.
Trade-Marks	16—	No. 15,173 to No. 15,188, inclusive.
Labels	5—	No. 5,486 to No. 5,490, inclusive.
Reissues	2—	No. 10,901 to No. 10,902, inclusive.
Total issue	380	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	.....	Nebraska	.....	.....
Arizona Territory	.....	.....	Nevada	.....	.....
Arkansas	.....	.....	New Hampshire	2	.....
California	6	.....	New Jersey	18	3
Colorado	3	.....	New Mexico Terri'y	.....	.....
Connecticut	12	.....	New York	76	6
Dakota Territory	1	.....	North Carolina	.....	.....
Delaware	2	.....	Ohio	21	1
District of Columbia	3	.....	Oregon	3	.....
Florida	2	.....	Pennsylvania	29	2
Georgia	3	1	Rhode Island	2	.....
Idaho Territory	.....	.....	South Carolina	.....	.....
Illinois	24	3	Tennessee	3	.....
Indiana	10	1	Texas	3	.....
Iowa	7	.....	Utah Territory	.....	.....
Kansas	11	.....	Vermont	.....	.....
Kentucky	6	.....	Virginia	2	.....
Louisiana	4	.....	Washington Terri'y	.....	.....
Maine	3	.....	West Virginia	2	.....
Maryland	8	.....	Wisconsin	5	.....
Massachusetts	32	1	Wyoming Terri'y	.....	.....
Michigan	9	.....	U. S. Army	1	.....
Minnesota	9	.....	U. S. Navy	.....	.....
Mississippi	.....	.....			
Missouri	10	.....	Total to citizens of the United States	332	18
Montana Territory	.....	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	.....	.....	Germany	4	1
Barbadoes	.....	.....	Ireland	.....	.....
Belgium	.....	.....	Mexico	.....	.....
Bermuda	.....	.....	Netherlands	1	1
Brazil	.....	.....	New South Wales	.....	.....
Canada	4	.....	Russia	.....	.....
China	1	.....	Scotland	.....	.....
Colombia, U. S. of	.....	.....	Spain	.....	.....
Cuba	.....	.....	Switzerland	2	.....
Denmark	.....	.....	Victoria	1	.....
Ecuador	.....	.....			
England	9	.....	Total to citizens of foreign countries	26	3
France	3	1			

DESIGNS.

18,048 to 18,058, inclusive.—CARPET.—*James L. Folsom*, Brooklyn, N. Y., assignor to *The Hartford Carpet Company*, Hartford, Conn. Applications filed January 18, 1888. Serial Nos. 261,172, 261,175, 261,184, 261,187, 261,189, 261,191, 261,200, 261,201, 261,204, 261,205, and 261,208. Term of patents 3½ years.

18,059.—FLUE STOPPER AND COLLAR.—*Zachary T. Hall*, Philadelphia, Pa. Application filed December 31, 1887. Serial No. 259,530. Term of patent 7 years.

18,060.—MISS'S COSTUME.—*Minnie B. Kent*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed January 11, 1888. Serial No. 260,450. Term of patent 3½ years.

18,061.—FRONT OF PIANO-COVER.—*Felix Kraemer*, New York, N. Y. Application filed January 3, 1888. Serial No. 259,748. Term of patent 7 years.

18,062.—LADY'S COSTUME.—*Ellen Moran*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed January 11, 1888. Serial No. 260,437. Term of patent 3½ years.

18,063.—GIRL'S COSTUME.—*Catherine Sheils*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed January 11, 1888. Serial No. 260,453. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,173.—CHAMPAGNE AND OTHER WINES.—*Henri Abelé*, Rheims, France. Application filed December 15, 1887. Used since August 31, 1887.

"The words 'RUBY ROYAL.'"

15,174.—BLOCKS OF NATURAL SALT.—*Chicago Sawed Salt-Block Company*, Chicago, Ill. Application filed December 17, 1887. Used since November 1, 1887.

"The representation of a horse standing in a stall with a groom beside him with one arm outstretched toward the head of the animal, thus calling attention to the block of salt on a shelf over a manger, which the horse is licking, and above which are the words 'SAWED ROCK' and below it 'SALT-BLOCK.'"

15,175.—NATURAL MINERAL WATER AND SALT.—*The Elsner & Mendelson Company*, Philadelphia, Pa. Application filed September 20, 1887. Used since January 1, 1887.

"The representation of a lion issuant and the heraldic representation of a stream of water."

15,176.—CAPSULES CONTAINING MEDICINE.—*James W. Gedney*, New York, N. Y. Application filed December 28, 1887. Used since December 1, 1887.

"The words 'GEDNEY'S PEARLS.'"

15,177.—SPARKLING WINES.—*Gebrüder Hoehl*, Geisenheim, Prussia, Germany. Application filed December 5, 1887. Used since December 15, 1885.

"The word-symbol 'KAISER BLUME' and the representation of a bunch of flowers having blue petals and red centers, with green stalks and leaves."

15,178.—MEDICINE FOR THE CURE OF ALL THROAT AND LUNG DISEASES.—*George M. Brown* and *Joseph M. Hunnicutt*, Atlanta, Ga. Application filed December 27, 1887. Used since November 9, 1887.

"The letters and character 'H T & L C' in a diamond-shaped border, 'H' being in the left-hand angle of the figure and 'C' in the right-hand angle, and attached by a black line to the black rectangular figure which forms the background of the letters and character 'H T & L C.'"

15,179.—TEA.—*C. D. Lathrop & Co.*, Chicago, Ill. Application filed November 30, 1887. Used since May 1, 1887.

"The words 'FLOWER OF JAPAN.'"

15,180.—STRINGED MUSICAL INSTRUMENTS.—*Lyon & Healy*, Chicago, Ill. Application filed March 14, 1887. Used since November, 1883.

"The word 'WASHBURN.'"

15,181.—PHOSPHATES FOR FERTILIZERS.—*H. S. Miller & Co*, Newark, N. J. Application filed January 14, 1888. Used since November 15, 1887.

"The word-symbol 'HARVEST QUEEN' on the blade of a sickle."

15,182.—AMMONIATED DISSOLVED BONE PHOSPHATE.—*H. S. Miller & Co.*, Newark, N. J. Application filed January 14, 1888. Used since November 15, 1887.

"The representation of a crescent, at one side of which is a star."

15,183.—PHOSPHATES FOR FERTILIZERS.—*H. S. Miller & Co.*, Newark, N. J. Application filed January 14, 1888. Used since November 15, 1887.

"The representation of an ox bearing up a globe or sphere across which is a ribbon or scroll having printed thereon the word 'STANDARD.'"

15,184.—FLOUR, OATMEAL, CORNMEAL, HOMINY, AND GRITS.—*Newell Bros.*, Cleveland, Ohio. Application filed January 13, 1888. Used since 1880.

"The word 'BUCKEYE.'"

15,185.—SALTPETER.—*The Preservaline Manufacturing Company*, New York, N. Y. Application filed December 28, 1887. Used since December 1, 1887.

"The word 'ELECTRIC.'"

15,186.—GIN.—*Schade & Buijsing*, Schiedam, Netherlands. Application filed January 5, 1888. Used since 1884.

"The word-symbol 'BLACK-BIRD,' or the pictorial representation of a blackbird."

15,187.—MEDICINE FOR THE CURE OF THE TOBACCO HABIT.—*The Universal Remedy Company*, Lafayette, Ind. Application filed January 3, 1888. Used since July, 1886.

"The word 'NOTOBAC.'"

15,188.—HOSE-SUPPORTERS.—*Warren Hose Supporter Co.*, Boston, Mass. Application filed January 13, 1888. Used since April, 1875.

"The words 'WARREN HOSE SUPPORTER' and a picture of the supporter, the words being placed in a horizontal line above the picture."

LABELS.

5,486.—Title: "HINTON'S HYGIENIC PULMONARY PRESERVER," (FOR A REMEDY FOR COUGHS, &c.)—*Harold Douglas*, New York, N. Y. Application filed January 10, 1888.

5,487.—Title: "DR WHITE'S SARSAPARILLA."—*Adrian Paradis*, Brooklyn, N. Y. Application filed January 9, 1888.

5,488.—Title: "DR WHITE'S SARSAPARILLA."—*Adrian Paradis*, Brooklyn, N. Y. Application filed January 9, 1888.

5,489.—Title: "MRS THOMPSON'S WASHING AND CLEANING COMPOUND."—*Margaret D. Thompson*, Philadelphia, Pa. Application filed January 16, 1888.

5,490.—Title: "GERM EXTERMINATING MEDICINE."—*Alexander H. Tiers*, *Cornelius Tiers*, and *Heyward H. McAllister*, New York, N. Y. Application filed January 4, 1888.

DISCLAIMER.

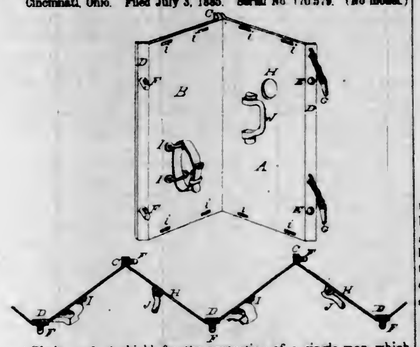
124,614.—*James W. Osgood*, New York, N. Y. IMPROVEMENT IN HOISTING APPARATUS AND SAFETY-HATCHES. Patent dated March 12, 1872. Disclaimer filed February 8, 1888, by the assignee, *Walter C. Rodman*, Philadelphia, Pa.

"Enters his disclaimer to that part of the claim in said specification which is in the following words, to wit: '1. The combination, with a hinged hatch or hatches, of mechanism for actuating the same and controlled by the cab or platform in passing up or down the hatchway, whereby the cab is made to automatically open and close each hatch in succession in a gradual or easy manner, commensurate with the speed of the cab or platform, substantially as specified.'"

PATENTS

GRANTED FEBRUARY 14, 1888.

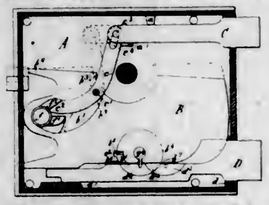
377,732. DIVISIBLE BULLET-PROOF SHIELD. CASSILLY ADAMS, Cincinnati, Ohio. Filed July 3, 1885. Serial No. 170,579. (No model.)



Claim.—1. A shield for the protection of a single man, which shield consists of two portable bullet-proof plates, each plate being provided with a pair of vertical obtuse-angled flanges united by readily-detachable retaining devices, in order that the coupling together of a number of such shields will of necessity form a continuous zigzag or chevron-shaped breastwork, as herein described.

2. A shield for the protection of a single man, which shield consists of two portable bullet-proof plates, each plate being furnished with a pair of vertical obtuse-angled flanges united by readily-detachable retaining devices, in order that the coupling together of a number of such shields will of necessity form a continuous zigzag or chevron-shaped breastwork, one of said plates being provided with a port-hole, H, and handle J, and the other plate having a strap attached thereto, for the purpose specified.

377,733. COMBINED LATCH AND LOCK. JOHN ADAMS, Clay Centre, Kans. Filed Aug. 13, 1887. Serial No. 246,857. (Model.)



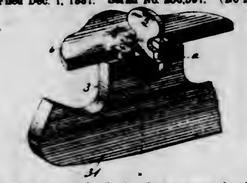
Claim.—1. In a gravitating latch, the tumbler B, having depression b' and portions b^2 and b^3, in combination with the lever c, latch-bolt C, and operating knob-shaft f, having lug f', substantially as and for the purpose described.

2. The combination of the latch-case A, having disk-seat a^1, tumbler B, having disk-seat b^4 and groove b^5, the lock-bolt D, having seats d^2 d^3 and notch d^4, and the disk E, having lug e^2, substantially as and for the purpose described.

3. The combination of the tumbler B, having groove b^5 and lateral groove-extension b^6, and the disk having lug e^2, rim-sectors e e', and spaces e^3 e^4, substantially as and for the purpose described.

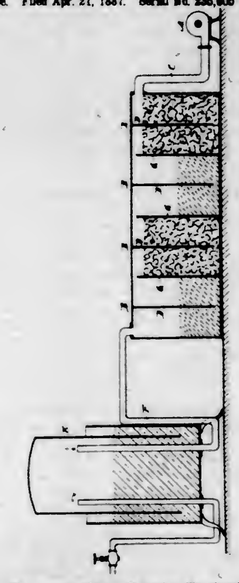
4. The combination of the disk E, having lugs e^2 and rim-sectors e e', and the bolt D, having notch d^4 and seats d^2 d^3, substantially as and for the purpose described.

377,734. SKATE-FASTENING. EVERETT H. BARNEY, Springfield, Mass. Filed Dec. 1, 1887. Serial No. 256,597. (No model.)



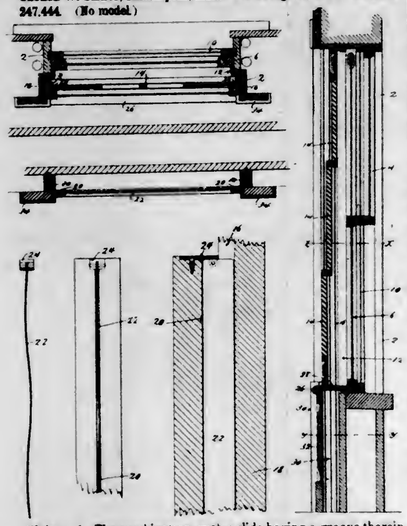
Claim.—The rear standard of a skate-runner, having one or more riveting-studs on its end, combined with a heel-fastening, as described, having a body in which is a slot to receive the end of said standard, and shoulders *a* in its opposite edges, and a projecting part above said body for engagement with the heel of a shoe, and a heel-plate riveted to said standard and slotted centrally to permit said heel-fastening to extend through it, and engaging with the shoulders in said fastening, substantially as set forth.

377,735. PROCESS OF CARBURETING AIR. ROBERT M. REDMAN, Adrian, Mich., assignor to the Petroleum Light and Heat Company same place. Filed Apr. 21, 1887. Serial No. 236,005. (No model.)



Claim.—The process of manufacturing illuminating oil-gas herein described, consisting of a series of like operations, each operation comprising two separate steps, the first consisting in forcing the air through a carbureting-chamber filled with charcoal saturated with hydrocarbon, and the second in forcing the air through soapsuds, substantially as described.

377,736. BALANCE-SPRING FOR WINDOW OR OTHER SLIDES. GEORGE W. BISSOP, Minneapolis, Minn. Filed Aug. 20, 1887. Serial No. 247,444. (No model.)



Claim.—1. The combination, with a slide having a groove therein, of a supporting-strip having corresponding grooves of less width than the groove in the slide, and a bent metal spring secured to the slide and extending longitudinally in its groove and projecting into the groove in the supporting-strip and bearing against its walls, substantially as described.

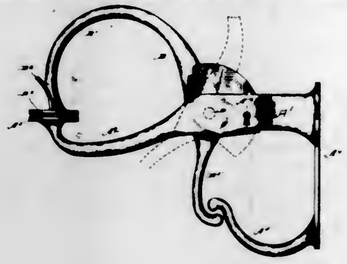
2. The combination, with a slide having a groove extending longitudinally in its edge, of a supporting-strip having a corresponding longitudinal groove of less width than the groove in the slide, and a bent metal spring secured in the groove in the slide and extending longitudinally therein and projecting into the groove in the supporting-strip and bearing against its walls, substantially as described.

3. The combination, with a slide having grooves in its opposite edges, of supporting-strips having corresponding grooves of less width than the grooves in the slide, and bent metal springs secured in the grooves in the slide and projecting into the grooves in the supporting-strips and bearing against their walls, substantially as described.

4. The combination, with the window-casing provided with a pocket, of the sliding shutters adapted to be moved into said pocket, and a sliding panel, 32, the stool 26, the hinged cover 28, and the balance-spring secured to and moving with said sliding panel, substantially as described.

5. The combination, with the window-casing, of the supporting-strips 18, having the grooves 16, the removable strips 30, arranged in a pocket below the window-stool and provided with grooves of greater width than the grooves in the strips 18, the stool provided with the hinged cover 28, the removable panel, and the sliding shutters provided with the springs 22, projecting into said grooves in the supporting-strips, substantially as described.

377,737. HAT AND COAT RACK. WILLIAM L. CALDWELL, Canton, Ohio. Filed Apr. 21, 1887. Serial No. 235,613. (No model.)



Claim.—1. A combined hat and coat rack comprising coat and hat receiving arms recessed to form part of a case for locking mechanism mounted on a securing-plate, and a hat and coat retaining arm having an enlarged portion forming one side of a case for locking mechanism, substantially as specified.

2. In a combined hat and coat rack, the combination of hat and coat receiving arms mounted on a securing-plate and provided with a lock mechanism, with a hat and coat retaining arm pivoted to said hat-receiving arm and provided with a raised annular flange having a notch adapted to receive the latch of the locking mechanism, substantially as specified.

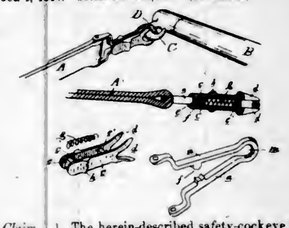
3. In a combined hat and coat rack, the combination of hat and coat receiving arms mounted on a securing-plate, with hat and coat retaining arms pivoted to said hat-receiving arm, and locking mechanism at their pivotal point, and with a key for the same, substantially as specified.

4. In a combined hat and coat rack, the combination of hat and coat receiving arms mounted on a securing-plate, with hat and coat retaining arms pivoted to said hat-receiving arm, locking mechanism at their pivotal point, and a key bearing a number corresponding with the number of the rack, substantially as specified.

5. The combination of the casting A, formed with the securing-plate A^4, having at its upper end a forwardly-projecting hat-receiving arm, A^2, and at its lower end with a coat-receiving hook or arm, A^3, with the casting B, pivoted thereto and comprising a forwardly-projecting hat-retaining arm, B^2, and the coat-retaining arm B^3, substantially as specified.

6. The combination of the casting A, having the arm A^2, recessed as at A^6, provided with the perforated boss A^7, keepers A^{10}, latch A^{11}, springs A^{12} A^9, and hole A^{13}, with the casting B, having the web B^4, perforated as at B^6, and provided with the annular ring B^7, recessed as at B^8 and notched as at B^9, adapted to receive the perforated boss A^7, and with the pivot D, substantially as specified.

377,738. TRACE-FASTENING. JOHN H. CORY, Allen, Mich. Filed Oct. 1, 1887. Serial No. 251,163. (No model.)

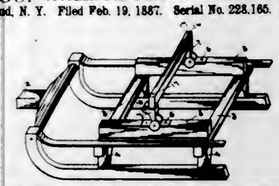


Claim.—1. The herein-described safety-cockeye for trace-fastening, consisting of the combination of the cockeye with a spring latch-bolt sliding thereon and provided with clamping-jaws, substantially as described.

2. In a trace-fastening, the combination of the cockeye D, the slot *b* in the shank of the cockeye and provided with the abutment *f*, the sliding plates *c*, provided with the cross-walls *c c'* and jaws *d*, and the spring *g*, all arranged to operate substantially as described.

3. As an improved article of manufacture, a trace-fastening consisting of the combination of the slotted malleable-iron cockeye having its shank divided in two legs and provided with the abutment *f*, the sliding plates *c*, provided with the jaws *d* and cross-walls *c c'*, integrally formed therewith, and the spring *g*, all arranged to operate substantially as described.

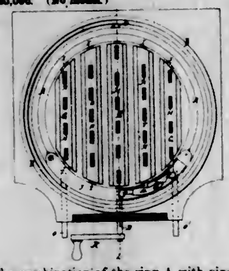
377,739. COUPLER FOR BOB-SLEDS. MATTHEW CROMIE, Westmoreland, N. Y. Filed Feb. 19, 1887. Serial No. 228,165. (No model.)



Claim.—1. The combination, in bobs, of the upper plate secured to the bolster, the lower socket-plate secured to the bobs, and the coupling-link jointed at the front and in the rear to the upper and lower socket-plates, substantially as set forth, for the purposes stated.

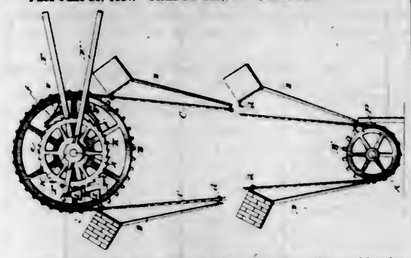
2. The combination, in bobs, of the upper and lower socket-plates joined to the opposite ends of the connecting-link, the upper end of the link being provided with a shoulder forming a rest when the bobs are moving on even or smooth surfaces, substantially as set forth.

377,740. GRATE-BAR. WILLIAM D. CROMIE, Philadelphia, Pa., assignor of one-half to F. W. Detwiler, same place. Filed Jan. 22, 1887. Serial No. 225,094. (No model.)



Claim.—The combination of the ring A with pivots C D, bars E, F, and G, pins O O', bed-plate B, handle K, toothed arm I, arms M, with slots *c*, and pin *d*, carried on pivot of bar G, all arranged and operating substantially as and for the purposes set forth.

377,741. HOD-ELEVATOR. HERBERT CURTIS, New York, N. Y. Filed June 29, 1887. Serial No. 242,881. (No model.)



Claim.—1. In an elevator-operating mechanism, the combination of a shaft carrying a wheel over which the elevator-belt passes, levers adapted to be worked by the feet of the operator, a ratchet-wheel secured to said shaft, and spring-pawls carried by said levers and engaging with the teeth of the ratchet-wheel as the levers are depressed, substantially as described.

2. In an elevator-operating mechanism, the combination of a shaft carrying a wheel over which the elevator-belt passes, levers fulcrumed on said shaft and extending in opposite directions therefrom, their opposite ends being provided with foot treadles or supports, ratchet-wheels carried by said shaft, and pawls carried by the levers and engaging with said ratchet-wheel as each arm of the levers descends, substantially as described.

3. In an elevator-operating mechanism, the combination of a shaft carrying a wheel over which the elevator-belt passes, a ratchet-wheel secured to said shaft to one side of said wheel, levers adapted to be worked by the feet of the operator, fulcrumed to said shaft, one on each side of the ratchet-wheel, and a spring-pawl carried by each lever and engaging with the teeth of the ratchet-wheel as the levers are depressed, substantially as described.

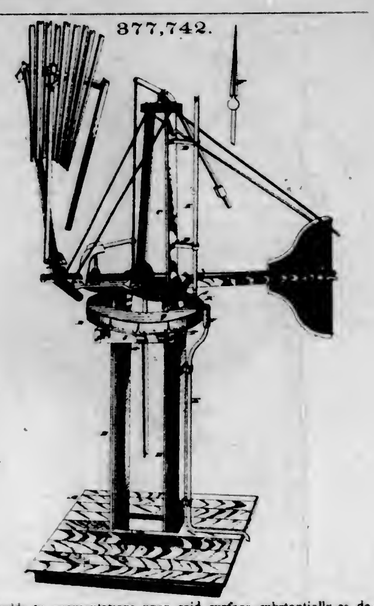
377,742. LIGHTNING-ROD ATTACHMENT FOR WINDMILLS. EUGENE O. DANIELS, Springfield, Ohio. Filed Aug. 25, 1887. Serial No. 247,853. (No model.)

Claim.—1. The combination, with the stationary structure of a windmill and an annular track of conductive material and a portion of a lightning-rod electrically connected with the said track, of the movable or turning portion of the windmill, a portion of a lightning-rod connected thereto, and a spindle connected with the said portion by a yielding joint, and a contact-wheel carried by the spindle and in engagement with the track.

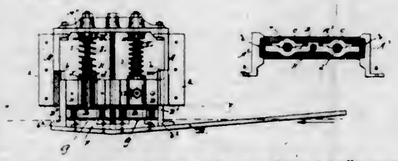
2. The combination, with a lightning-rod section, of a sleeve connected thereto, and a contact device consisting of a spindle rotatably mounted in the sleeve and spring which projects the spindle away from the rod, and the contact-roller carried by the spindle.

3. The combination, with the stationary structure of a windmill, a contact-surface supported thereby, a portion of a lightning-rod electrically connected with said surface, the movable or turning portion of the windmill, and a portion of a lightning-rod secured thereto, of a distinct yielding contact device connected to the latter portion of the said rod and normally projected against the said contact-surface, whereby electrical contact is maintained when the movable portion of the mill changes to the direction of the wind, and whereby the contact yields to accumulations upon said surface, substantially as described.

377,742.



377,743. DEPRESSION-PULLEY FOR CABLE RAILWAYS. GEO W DOUGLAS, San Francisco, Cal. Filed Sept. 9, 1887. Serial No. 249,278. (No model.)



Claim.—1. The combination of the fixed frame A, pulley-carrying slide B, having pulley-boxes C C, the springs I I, pulleys D D, and the inclined bar E, fixed to and forming a part of the slide B, substantially as described, to operate as set forth.

2. In a depression-pulley device for cable railways, the fixed frame A, having guides *b b*, in combination with the pulley-carrying slide B, the springs I I, and the inclined bar E, with bearings for the front ends of the pulley.

3. In a depression-pulley device for cable railways, a pulley-carrying slide or plate, B, guides in which said plate works, a bar or rail, E, connected to said slide, and having an inclined face to receive lateral pressure from the frame of the grip, and springs I, to return the slide or plate into position, combined for operation substantially as described.

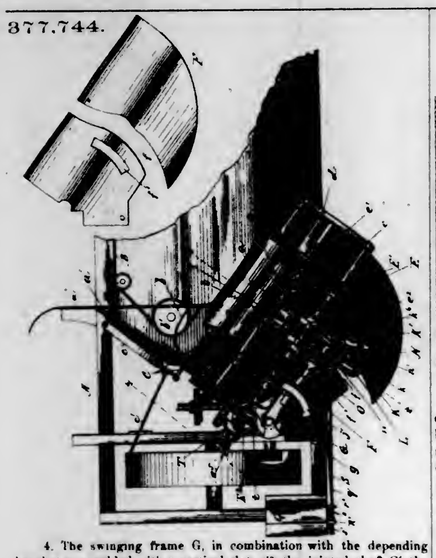
377,744. GRAIN-BINDER. RICHARD EMERSON, Sycamore, Ill., assignor of one-half to Horatio H. Mason, same place. Filed Aug. 31, 1885. Serial No. 175,856. (Model.)

Claim.—1. The elevators, in combination with the rakes, the sliding board C, the supporting-arm *c*, and the rod *c'*, substantially as and for the purposes set forth.

2. The binder deck, in combination with the swinging frame, the breast-plate mounted on the upper portion thereof, and the central supporting-arms, *c*, of the packer, extending forward on each side of the breast-plate, substantially as and for the purposes set forth.

3. The swinging frame, in combination with the cam and gear wheel shaft mounted thereon, the cam and gear wheel provided with two sets of gear-sections and cams and loose on its shaft, clutch mechanism constructed and arranged to be operative when the frame swings outward and inoperative on the return movement, and mechanism whereby a half-turn is given to said shaft on the outward swing of the frame and a backward half-turn on the inward swing, substantially as and for the purposes set forth.

377,744.



4. The swinging frame G, in combination with the depending bracket g, provided with a vertical slot, g^{10}, the jointed shaft G', the outer section of which passes through said slot, the pinion g^3, and the rack G^3, substantially as and for the purposes set forth.

5. The shaft G', in combination with the loose wheel g^3, provided with clutch teeth or wings h^4, the pawl H, pivoted to a support, h, on the shaft and provided with a circular slot, h', through which the shaft passes, the roller h^3 on the pawl, and an actuating-spring, h^4, substantially as and for the purposes set forth.

6. The swinging frame G, in combination with the cam and gear wheel shaft J, mounted on the upper part of the frame, the beveled pinion j, the rack j', the cam and gear wheel K, mounted loosely on the shaft, and clutch mechanism operative in one direction to connect the wheel to the shaft, substantially as and for the purposes set forth.

7. The cam and gear wheel K, provided with the peripheral cam-rim k', provided with shoulder-stops k^2, in combination with an oscillating shaft on which it is loosely mounted, the arm K', fastened to the shaft, and the spring-pawl k^3 and arm k^4, pivoted to said arm, together with a retracting-spring, substantially as and for the purposes set forth.

8. The oscillating shaft J, in combination with the loose cam and gear wheel K, provided with the stops k^2, the spring-pawl k^3, the spring-catch K^3, and the lever k^5, substantially as and for the purposes set forth.

9. The oscillating shaft J, in combination with the loose cam and gear wheel K, provided with the beot flange k' and the stops k^2, the spring-catch K^3, and the spring-catch K^3, substantially as and for the purposes set forth.

10. The pivoted bracket m^4, provided with a friction-roller, m^5, in combination with the compressor M, mounted on the bracket, and the track M^3, provided with the inclined lip m^6, substantially as and for the purposes set forth.

11. The swinging frame, in combination with the discharge-arms N, pivoted to a suitable support on the frame, the crank-arm n', and the link-rod n^3, connected to the crank at one end and to a stationary part of the machine at the other end, substantially as and for the purposes set forth.

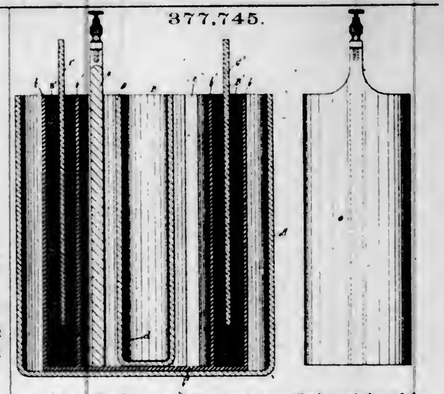
12. The pivoted tension-lever R', in combination with the rod S, spring s, crank-lever S', and swinging frame provided with an arm arranged to operate the crank-lever, substantially as and for the purposes set forth.

13. The bracket R, provided with an eye, r^3, in combination with the tension-lever R', pivoted thereto, the rod S, springs s and s', crank-lever S', and pendant G^3 on the swinging frame, substantially as and for the purposes set forth.

14. The swinging frame provided with a finger, t, in combination with the sliding spring-clutch on the packer-shaft, substantially as and for the purposes set forth.

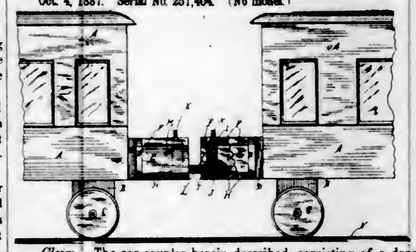
377,745. GALVANIC BATTERY. THEODORE M. FOOTE, Boston, Mass., assignor of fifty-one one-hundredths to Samuel T. Holmes, same place. Filed July 6, 1887. Serial No. 243,587. (No model.)

377,745.



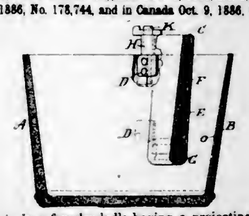
Claim.—The improved battery above described, consisting of the cup D, containing sulphuric acid, with a water-space about it, the zinc being in that water-space surrounded by the carbon with the bichromate-of-potash solution surrounding the carbon, all substantially as described.

377,746. CAR-COUPLING. JOSEPH K. FREEMAN, Seney, Ga. Filed Oct. 4, 1887. Serial No. 251,404. (No model.)



Claim.—The car-coupler herein described, consisting of a draw-head, G, having a base, H, and a top, F, the loose block I, pivoted intermediately between them, for the purpose of engaging and releasing the link J, provided with the projection K and the shaft M, and the link J, whose ends project perpendicularly upward to engage the block I, and having two counterpart slots, J', equidistantly located in both directions from a transverse median line, to afford means for retaining the pin-coupler ordinarily in use at the present time, as herein fully shown and described.

377,747. FOUNDRY-LADLE. GEORGE A. GOODWIN and WILLIAM F. HOW, London, England. Filed Sept. 21, 1886. Serial No. 214,186. (No model.) Patented in England Feb. 3, 1886, No. 1,827; in France Sept. 27, 1886, No. 178,744, and in Canada Oct. 9, 1886, No. 26,092.

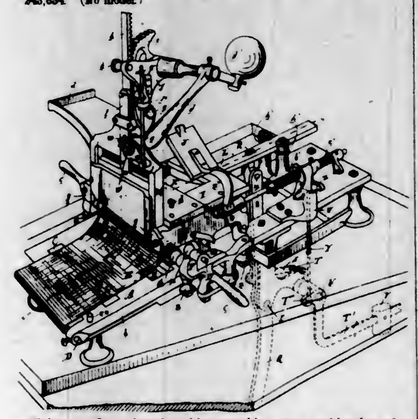


Claim.—1. In a foundry-ladle having a projecting trough-spout a scoria stopper or partition having a metallic frame coated on both sides with refractory material, such as fire-clay, and constructed of a curved shape in horizontal section, and provided with horizontal strips on both sides and with holes between such strips, whereby the adhesion of its coating is insured, substantially as hereinbefore specified

2. In a foundry-ladle having a projecting trough-spout, a scoria stopper or partition having a metallic frame coated on both sides with refractory material and provided at its lower edge with perforated wings G, to protect the coating at the top of the throat between the ladle-body and spout, substantially as hereinbefore specified.

3. The combination of a ladle-body, A, having a fixed projecting trough-spout, B, extending from bottom to top, and provided with guides and cotter-pins, and a scoria stopper or partition, C, which slides in said guides, and is provided with strips and holes and with eyes which embrace said cotter-pins, whereby it is rendered removable, in the manner set forth.

377,748. CIGAR-BUNCHING MACHINE. ALEXANDER GORDON, Detroit, Mich. Filed Sept. 30, 1886. Renewed July 7, 1887. Serial No. 243,634. (No model.)



Claim.—1. In a cigar-bunching machine, the combination of a bunching-table, a bunching-apron secured to said table, a reciprocating carriage carrying a roller for making a bight in the bunching-apron, a filler compression-chamber provided with a horizontally-reciprocating plunger, actuating mechanism for said plunger, the yielding connection, substantially as described, in said mechanism, a weight forming the yielding resistance of said connection, and a vertically-reciprocating gate at the front end of the compression-chamber for forming a pocket in the apron, said gate carrying a knife and having a recess communicating with the aforesaid compression-chamber, and a vertically-sliding plunger in said recess, all arranged to operate as set forth.

2. In a cigar-bunching machine, the combination of a filler compression-chamber, a vertically-reciprocating gate, a reciprocating plunger in said compression-chamber, an actuating-lever for said plunger, the yielding connection, substantially as described, between said actuating-lever and the plunger, and an adjustable weight forming the yielding resistance in said connection, as set forth.

3. In a cigar-bunching machine, the combination of a filler compression-chamber provided with a reciprocating plunger and a vertically-reciprocating gate, actuating mechanism for said plunger, the yielding connection, substantially as described, in said actuating mechanism, a weight forming the yielding resistance of said connection, a pivoted door to the filler compression-chamber, and interlocking mechanism between said door and said yielding connection for automatically unlocking said door, substantially as described.

4. In a cigar-bunching machine, the combination of a bunching-table, a bunching-apron secured to said table, a reciprocating carriage, rollers G H on said carriage, a filler compression-chamber provided with a feed-door and a reciprocating plunger, an actuating foot-lever for said plunger, the yielding connection, substantially as described, between the foot-lever and plunger, a weight forming the yielding resistance in said connection, interlocking mechanism between said yielding connection and the feed-door, a vertically-reciprocating gate at the front end of the compression-chamber, a hand-lever and connection for reciprocating said gate, a knife secured to said gate, said gate having a recess communicating with the filler compression-chamber, a movable plunger in the said recess in the gate, and actuating-connection between said plunger and gate, substantially as described.

5. The combination of the open-ended box I, having door J, filler-mold K in said box, gate M, means for reciprocating said gate, and the reciprocating plunger L, substantially as described.

6. The combination of the reciprocating gate M, box I, standard f, rack-bar h on said gate, guides g and k, geared segment i, lever j, and counter-weight j', supported by said standard, all arranged and operating substantially as described.

7. In combination with the reciprocating gate M, the plunger O, carried by said gate and moving in a recess of said gate, the lug m on the part l of the plunger, the forked lever n, fulcrumed to the gate, the rod o, connected with the forked lever, the fixed guide p on the standard f, the stops q q on said rod, and means for reciprocating said gate, all arranged to operate substantially as described.

8. In combination with the box I, having the feed-door J, rock-arm a', rock-shaft z, carrying said rock-arm, opening-spring b' on said rock-shaft, rock-arm Z, having notch y, detent Y, and means connected with said detent, all arranged to operate substantially as described.

9. In combination with the filler compression-chamber and its plunger, the actuating foot-lever Q, connected to the plunger, the lever R, connected to the foot-lever Q, the link S, connecting the lever R and arm T, the rock-shaft U, the rock-arms T T' on said rock-shaft, the weight V on the rock-arm T', and the stop v, all arranged to operate substantially as described.

10. In combination with the filler compression-chamber and its reciprocating plunger, the actuating foot-lever Q, connected to the plunger, the foot-rest R', pivotally secured to the lower end of said lever, the guide-track t, the offset s', and the heel-roller v in the foot-rest, all arranged to operate substantially as set forth.

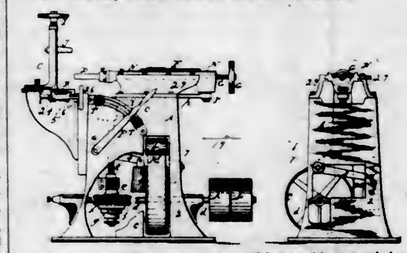
11. The combination of the filler compression-chamber K', plunger L in said chamber, plunger-rod L', foot-lever Q, lever R, link S, rock-shaft U, rock-arms T T' T'', weight V, stop v, detent Y, rock-shaft z, spring b', rock-arm Z, having notch y, rock-arm a', and feed-door J, all arranged to operate substantially as described.

12. The combination of the open-ended box I, filler-mold K, removably secured within said box, and the plunger L, operating in said mold and detachably secured to the plunger-rod L', the plunger-rod, guides h' h', the lever Q, gate M, means for reciprocating the plunger, and the actuating-lever R, carried by the lever Q, and detachably engaging the plunger-rod, substantially as described.

13. In combination with the filler compression-chamber and its plunger, a vertically-reciprocating gate, an actuating-lever, a yielding connection in said actuating-lever, a weight forming the yielding resistance in said connection, and a stop actuated by said yielding connection and arranged to automatically stop the movement of the actuating-lever, all substantially as described.

14. In combination with the actuating-lever Q and its yielding connections, the rock-arm t', connecting-rod t'', pivoted plate t''', dog w, rack-bar w', and the foot-lever R', connected with the said lever Q, all arranged and operating substantially as described.

377,749. MORTISING-MACHINE. RALPH S. GREENLEE, Chicago, Ill. Filed May 9, 1887. Serial No. 237,545. (No model.)



Claim.—1. An improvement in mortising-machines, consisting of the shaft Q, placed parallel with the table B, in combination with the lever 4, made rigid on the shaft, the counter-balance 9, link 6, table B, lever P, made rigid to the shaft Q, spring-stop W Y, and the slotted segment O, carrying two blocks, v, notched at 25, fitted to slide on the segment, and the hand-wheels T T, with the screws for clamping the blocks v at two given points on the segment, as specified.

2. The worm drive-gear e and shaft d, in combination with the worm f f, clutch g, spring j, shaft k, grooved crank-wheel l m, the connecting-rod p, adjustably connected with the wheel l m, and sliding frame N, for operating the chisel D, as specified.

3. The horizontal shaft d and the worm driving-gear e thereon, in combination with the vertical shaft k and the worm-gear f f thereon, the vertically-operating clutch g, the disk-wheel l m, treadle S, and pitman p, as specified.

4. The twisted bit E without a screw-point, and with the cutting-edges inclined forward from the end of the axial line of the same, and extending radially beyond the other portions of the twist, as specified.

377,750. ROSETTE FOR HARNESS. JOHN W. GRUBBON, East Orange, N. J., assignor to the India Rubber Comb Company, New York, N. Y. Filed Nov. 15, 1887. Serial No. 255,184. (No model.)

Claim.—1. The combination, with the shell A, having opening a, lip i, and thread b, with the removable back B, and means, substantially as described, for holding the back on the shell, of the detachable symbol-disk D, and with pins j for holding said disk in position in the rosette, substantially as described.

2. The open shell A, removable back B, having pins j, and means for holding the back on the shell, in combination with the detachable

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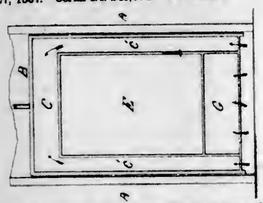


symbol-disk D, having recesses *h*, adapted to receive the pins *j* to hold the disk in position, substantially as described.

3. The back plate, B, having loop *g* and pins *j*, symbol-disk D, having recesses *h*, adapted to receive the pins *j* to hold the symbol in line with the loop *g*, in combination with the open shell A, having lip *i*, and means, substantially as described, for holding the shell A on the back B, substantially as specified.

4. The combination of the open shell A, having lip *i*, back B, having pins *j* and threads *b d*, for holding the parts A B together, detachable symbol-disk D, having recesses *h*, and glass *f* in front of the disk D, substantially as described.

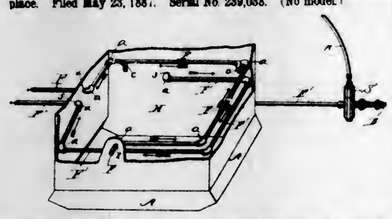
377,751. ELEVATOR-CARRIAGE. CHRISTIAN HAAS, Chicago, Ill. Filed Aug. 27, 1887. Serial No. 248,014. (No model.)



Claim.—1. An elevator-carriage comprising the central chamber, E, the air chambers or compartments C, the compartment G, having the holes *a* and the partitions D and D', all arranged and operating substantially as set forth and described.

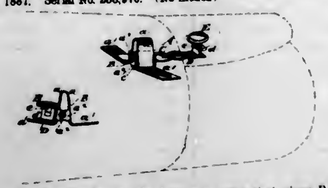
2. In an elevator-carriage, the combination of a shaft, A, with a carriage, B, having the central chamber, E, and air chambers or compartments C and G, all arranged and operating substantially as set forth.

377,752. FEED-WATER HEATER. GEORGE I. HAGARTY, St. Thomas, Ontario, Canada, assignor of one-third to Edwin S. Decker, same place. Filed May 23, 1887. Serial No. 239,038. (No model.)



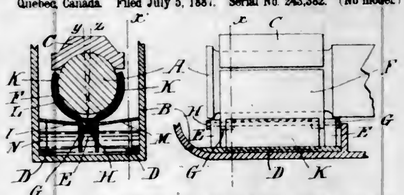
Claim.—In combination with the fire-box, the injectors, the water-supply pipe leading to each injector, also the steam-supply pipes *n n*, and an independent water-supply pipe leading from each injector to and entering the fire-box, passing thence around within said fire-box, entering the mud-drum through the front of said fire-box, each supply-pipe having a valve, C, and a cut-off, Z, said pipes within the fire-box being detachably supported on the brackets *c*, substantially as and for the purposes set forth.

377,753. CUFF-HOLDER. JOHN D. HALL, Philadelphia, Pa. Filed May 21, 1887. Serial No. 238,976. (No model.)



Claim.—A cuff-holder having the jaws *a a*, arms *a' a'*, pivot B in ears a^2 a^2, spring C, having ends *c c*, and plate D, carrying the button E, as shown and described.

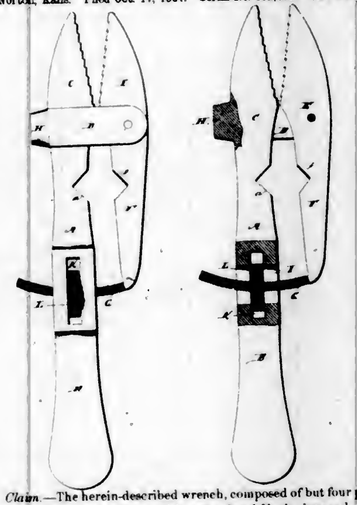
377,754. CAR-AXLE LUBRICATOR. SAMUEL HATT, Montreal, Quebec, Canada. Filed July 5, 1887. Serial No. 243,382. (No model.)



Claim.—1. The combination of the axle-box B, axle A, and bearing C, with a frame, D, to which is pivoted a casing, F, provided with pieces of felt K, arranged so that by capillary attraction they distribute a supply of fluid lubricating material upon the axle A, the whole substantially as described.

2. The combination of the axle-box B, axle A, and bearing C, with a frame, D, to which is pivoted a casing, F, provided with pieces of felt K, arranged so that by capillary attraction they distribute a supply of fluid lubricating material upon the axle A, and with a diaphragm, M, whereby the said fluid lubricating material is prevented from splashing upon the axle and out of the axle-box, the whole substantially as described.

377,755. WRENCH. FRED S. HAZELTON and CHARLES LEACH, Norton, Kans. Filed Oct. 17, 1887. Serial No. 252,612. (No model.)



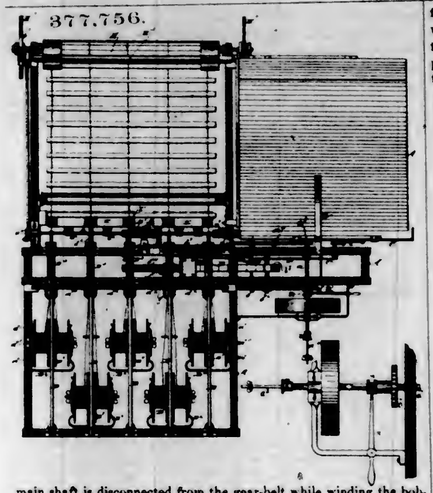
Claim.—The herein-described wrench, composed of but four parts, the shank A, having the integral hammer-head H, the integral perforated ears D, and the integral jaw C, transversely serrated on its inner or meeting edge, and provided with the rectangular notch *a*, and the slots K and L, intersecting each other at right angles, the shank F, having the integral segmental threaded arm G and integral jaw E, transversely serrated on its meeting edge to correspond and coact with the jaw C, and provided with the rectangular notch *f*, opposing the notch *a*, the pivotal pin connecting the shank F to the perforated ears D, and the thumb-nut K, engaging the threaded arm G in the slot K, in which slot the said nut is held while engaging said arm, substantially as specified.

377,756. FENCE-MAKING MACHINE. THOMAS H. HERBELING, Springfield, and ALBERT BERNAUER, Chicago, Ill. Filed Aug. 26, 1886. Serial No. 212,112. (No model.)

Claim.—1. In a fence-machine, the combination, with an inclined table for the pickets, of a spring-arm lying just above the same, beneath which the pickets are passed in a single layer, substantially as and for the purpose set forth.

2. In a fence-machine, the combination, with an endless gear-belt, the twisting devices, and an intermediate connection between the belt and twisters for imparting motion from one to the other, of a main shaft provided with a sliding pinion, a shifting-lever for moving this pinion on the shaft, a gear interposed between said pinion and the endless gear-belt, and a bobbin-spindle on the main shaft, whereby the

377,756.



main shaft is disconnected from the gear-belt while winding the bobbins, substantially as and for the purpose set forth.

3. In a fence-machine, the combination, with a main driving-gear for the wire-twisting mechanism, and a locking-dog pivoted upon the frame and engaging the same, of the endless gear-belt for driving the gear, provided with cam projections for operating the lock, substantially as and for the purpose set forth.

4. In a fence-machine, the combination, with a main gear for driving the twisters, formed with holes or recesses in its body, and a pair of locking-dogs pivoted on the adjacent frame and formed with two inclines, of a double-headed slide lying between the dogs and acting on said inclines to shift them, an angle-lever connected to said slide, and an endless chain belt partially toothed and provided with two cam projections to actuate the lever, substantially as and for the purpose set forth.

5. In a fence-machine, a series of twisting-shafts geared together to rotate in unison in reverse directions, and each provided with two wire spools or bobbins, in combination with a U-shaped tension-spring formed with two elevations on each arm to bear upon the spools, and an adjusting-nut upon the spindle bearing against said spring, substantially as and for the purpose set forth.

6. In a fence-machine, the combination, with a reciprocating frame for forcing the picket into position, of a pair of links pivoted together and to the reciprocating and main frames, whereby when the former is forced back the links form a toggle and lock the frame in place, substantially as and for the purpose set forth.

7. In a fence-machine, the combination, with a reciprocating frame for forcing the picket into position for securing, of a pair of links pivoted together and to the reciprocating and main frames for locking the former, a rod connected to the joint of said links, and a pin or stud upon the main driving gear-belt for actuating this rod to break the lock at the proper time, substantially as and for the purpose set forth.

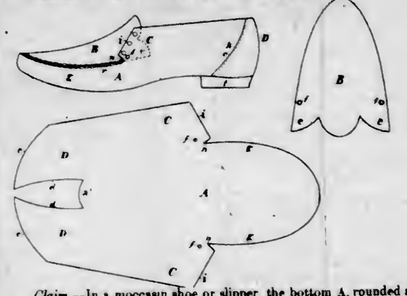
8. In a fence-machine, the combination, with a take-up reel for the completed fence, provided at each end with a ratchet-wheel, and a movable arm provided with the feeding-pawls, of a transverse bar between the pawl-arms and sliding vertically upon the same, and the actuating-pitmen connected to the sliding cross-bar, whereby the pitman-connection is forced away from the reel-center as the fence is wound up, substantially as and for the purpose set forth.

9. In a fence-machine, the combination, with an inclined receiving-table for the pickets, provided with a sliding feeding-arm upon a guide on its lower edge, and a series of levers connecting this slide with a rock-lever on the main frame, of an endless chain or gear belt for driving the twisting mechanism, provided on one edge with a pin or projection to engage and actuate said rock-lever, substantially as and for the purpose set forth.

10. In a fence-machine, the combination, with the twisting mechanism, of an endless driving-belt for the same moving always in the same direction, and formed of a series of jointed links, a portion of which are plain and a portion formed with rack-teeth, whereby the belt, though constantly moving, imparts an intermittent motion to the engaged mechanism, substantially as and for the purpose set forth.

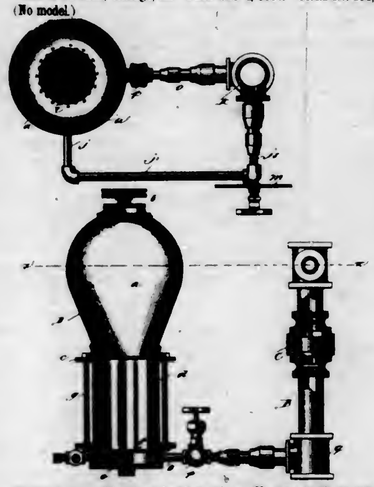
11. In a fence-machine, the combination, with a reciprocating frame for forcing the pickets into position, and a rock-shaft connected with this frame and provided with a projecting hooked arm, of the twisting mechanism and its endless gear driving belt provided with a pin or stud for engaging the hooked arm and operating the sliding frame, substantially as and for the purpose set forth.

377,757. MOCCASIN-SLIPPER. JAMES HICKSON, Bangor, Me. Filed Oct. 19, 1887. Serial No. 252,777. (No model.)



Claim.—In a moccasin shoe or slipper, the bottom A, rounded at the front and forming the sole and sides *g g*, the quarters C C, cut integral with said sole, extending rearward along the same and projecting beyond the heel, forming the parts D D, in combination with a semi-elliptically-shaped tip, B, sewed to the sides *g g*, and extending inside the quarters C C, substantially as shown, and for the purpose described.

377,758. APPARATUS FOR FEEDING CHEMICALS TO FILTERS. OMAR H. JEWELL, Chicago, Ill. Filed Oct. 4, 1887. Serial No. 251,475. (No model.)

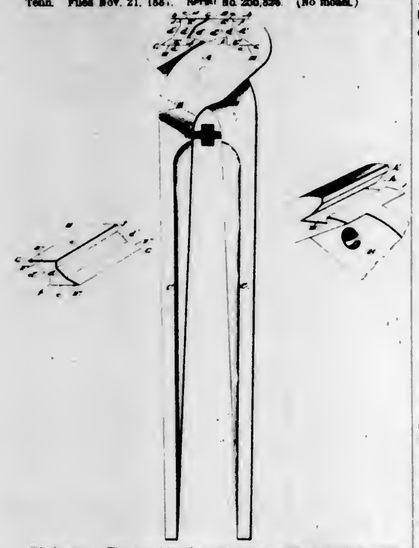


Claim.—1. The combination, with a filtering tank or reservoir and with the supply-pipe thereof provided with a gravitating check-valve, of a receptacle for chemicals and of water-circulating pipes connecting the same with the supply-pipe, one above and one below the gravitating check-valve, substantially as and for the purpose set forth.

2. The combination, with a filtering tank or reservoir and with the supply-pipe thereof provided with a gravitating check-valve, of a receptacle for chemicals composed of a glass tube clamped between the top globe and the base, and communicating through such base by two pipes with the supply-pipe at opposite sides of the check-valve thereof, all substantially as and for the purpose set forth.

3. As an attachment to a water-filter having supply-pipe B, with gravitating check-valve C, the receptacle D, composed of globe *a*, glass tube *d*, and base *e*, and provided with screw-cap *b* and vertical pipe *i*, and connected with the supply-pipe B by pipe *j*, communicating with pipe *i* and with pipe B above valve C, and by pipe *o*, communicating with pipe B below valve C, each pipe *j* and *o* being provided with a stop-valve, all substantially as set forth, to operate as specified.

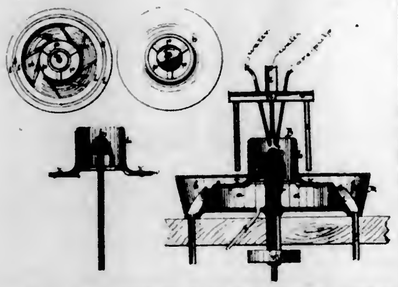
377,759. CUTTING-NIPPERS. ROBERT H. JOHNSON, Chattanooga, Tenn. Filed Nov. 21, 1887. Serial No. 255,826. (No model.)



Claim.—1. The combination, with the nippers having similar transverse dovetailed recesses, H, at corresponding points in its jaws, of the cutter-dies D, each having a web, and similar opposite edge portions, E, provided with cutting-edges G, facing in opposite direction, either of which edge portions can be slid and fitted into the corresponding recess H, with its cutting-edge outward, substantially as specified.

2. The combination, with the nippers having the handles C and similar jaws, B, each provided with the dovetailed transverse recess H and inclined surfaces *h h*, of the cutter-dies D, each provided with a web, *d*, having parallel opposite faces, *d'*, and the edge portions, E, each having the face *e*, inclined surfaces F *f*, and cutting-edge G, the cutting-edges of the two edge portions facing in opposite directions, substantially as specified.

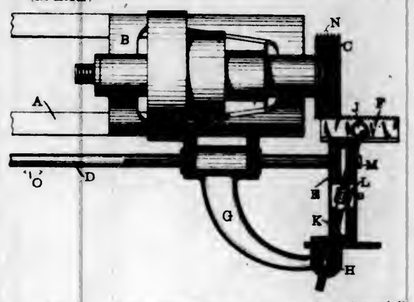
377,760. AMALGAMATOR. WILLIAM JOHNSON and GAREY W. JOHNSON, Portland, Oreg. Filed Dec. 13, 1886. Serial No. 221,479. (No model.)



Claim.—1. The combination, in an amalgamator, of a chamber or bowl, *a*, and a disk working therein and mounted on a spindle, means for revolving said spindle, said bowl having its edges of substantially the height of the upper edge of the disk and constructed to retain the material at the height of the edges of said bowl, and having the walls *d*, forming the chamber *b*, around the bowl *a*, with one or more pipes arranged to discharge water on the upper surface of said disk, and a wall surrounding the chamber *a* and forming a channel outside of and around said chamber *a*, to receive the waste washed off by the water from the pipes, substantially as and for the purpose specified.

2. In an amalgamator, and in combination with a suitable disk, as B, mounted on a spindle, means for revolving the same, the bowl A, having an inner chamber, *a*, surrounded by two walls, the outer being the highest, and between which are the inclined surfaces *c*, to carry off the waste, substantially as described.

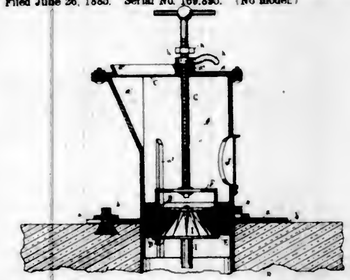
377,761. FEED FOR LATHES. WILLIS C. JONES and WINFIELD S. ROGERS, Cincinnati, Ohio. Filed Aug. 19, 1887. Serial No. 247,356. (No model.)



Claim.—1. In a screw-cutting lathe, the combination, substantially as set forth, of a threaded hob, a chasing-bar adapted to transmit motion of translation to the chasing-tool of the lathe, a T-shaped arm fixed to said chasing-bar, a sectional nut secured in sliding engagement upon said T-shaped arm and adapted to engage said hob, an adjustable pivot upon said T-shaped arm, a pivot upon said sliding nut, a rod journaled to said pivot on the sliding nut and fitted for sliding engagement with the pivot of said T-shaped arm, and a third pivot fitted for sliding engagement with said rod and supported in a fixed journal.

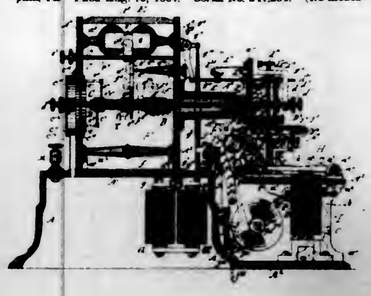
2. In a screw-cutting lathe, the combination, substantially as set forth, of hob C, chasing-bar D, arm E, sliding nut F, bracket G, rod K, and pivots H, J, and L.

377,762. MILLSTONE-FEEDER. LOUIS E. KANE, Cincinnati, Ohio. Filed June 26, 1885. Serial No. 169,895. (No model.)

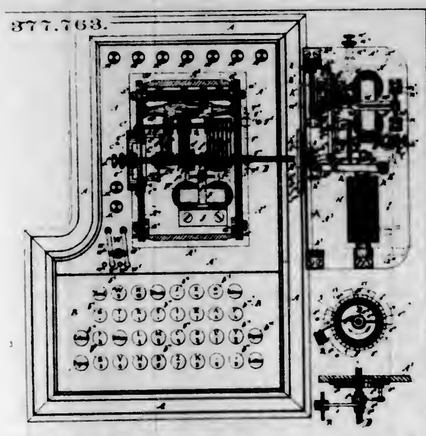


Claim.—The combination, substantially as specified, of the casing A A' *a*, the ring D, fitted to slide vertically within the body of the casing, the non-rotating grinder E, detachably secured to said ring, the screw G, and yoke F, for raising and lowering the same, for the purpose of regulating the feed, the grinding-cone I, and spindle i, for the purpose specified.

377,763. PRINTING-TELEGRAPH. JACOB H. LIEVILLE, Philadelphia, Pa. Filed Aug. 18, 1887. Serial No. 247,236. (No model.)



377,763.



Claim.—1. In a printing-telegraph system, the combination of a battery, a main-line circuit for setting the type-wheels, a sunflower, transmitting-keys with their contact-springs, means for connecting said battery with the sunflower-segments and the segments with said line, a neutral escapement electro-magnet included in said line responding to alternate makes and breaks of circuit therein, wedge-pallets actuated by said electro-magnet, a star-wheel driven by said wedge-pallets, a type-wheel shaft rotated thereby, and a brush carried by said shaft, but insulated therefrom, making contact with the segments of said sunflower alternately in open and closed circuit with said key-contacts and said line, thereby automatically producing the pulsations which actuate said mechanical and electrical devices to propel and arrest said shaft when the alternate succession of makes and breaks of circuit is interrupted by the depression of a key.

2. In a printing-telegraph system, the combination of a sunflower device, a main-line battery-circuit for setting the type-wheels, transmitting-keys with their contacts, electrical devices for connecting said battery with said line and sunflower-segments, a neutral escapement electro-magnet included in said line and responding to alternate makes and breaks of circuit, wedge-pallets actuated by said electro-magnet and driving a star-wheel secured to a type-wheel shaft, and a brush on said type-wheel shaft contacting with alternate open and closed circuit segments of said sunflower, causing pulsations which actuate said devices to rotate said shaft, substantially as and for the purposes set forth.

3. In a printing-telegraph system, the combination of a double sunflower device, two main lines and batteries for controlling, respectively, the type-wheels and the printing mechanism, transmitting-keys and their contact-springs, electrical devices for connecting the batteries with the lines and the sunflower-segments, a neutral escapement electro-magnet included in one of said lines responding to alternate makes and breaks of circuit, wedge-pallets actuated by said electro-magnet, a type-wheel shaft, a star-wheel, and a brush mounted on said shaft, said brush contacting with alternately open and closed circuit segments of one sunflower connected with said type-wheel line, producing pulsations which cause said shaft to be arrested when the alternate succession of impulses is interrupted by the depression of a key, which at the same time actuates said electrical devices connecting the line controlling the printing mechanism with a segment of said sunflower in the printing-line, whereby when the type-wheel shaft is arrested a brush thereon contacts with said segment and an impulse is sent to line.

4. In a printing-telegraph system, the combination of a double sunflower device, two main lines and batteries for controlling, respectively, the type-wheels and the printing mechanism, transmitting-keys with their contact-springs, electrical devices for connecting the said batteries with the lines and sunflower-segments of the type-wheel line, a relay electro-magnet with its coils included in said line, a neutral escapement electro-magnet included in a branch of said line and responding to alternate makes and breaks of circuit, wedge-pallets, a type-wheel shaft, and a star-wheel and two brushes mounted thereon, said escapement electro-magnet actuating said pallets when the pulsations automatically produced by one of said brushes contacting with alternately open and closed circuit segments of the sunflower connected with the type-wheel line are closed in parallel circuit through the neutral escapement electro-magnet, thereby driving the type-wheel shaft and producing prolonged makes or brakes of circuit, which arrest said shaft when the alternate succession of impulses is interrupted by the depression of a transmitting-key, which at the same time actuates said electrical devices connecting the line controlling the printing mechanism with a segment of said sunflower in the printing-line, whereby when the type-wheel shaft is arrested the other brush thereon contacts with said segment and an impulse is sent through said printing-line.

5. In a printing-telegraph system, the combination of a main-line battery and circuit for setting the type-wheels, a sunflower device, keys with their spring-contacts, electrical devices for connecting said battery with said line and sunflower-segments, a relay electro-magnet with its coils included in said line, a neutral escapement electro-magnet responding to alternate makes and breaks of circuit and included in a branch of said main line, and wedge-pallets actuated by said electro-magnet and driving a star-wheel, said star-wheel mounted on the same shaft with a brush which contacts with alternate open and closed circuit segments of said sunflower, causing pulsations which actuate said relay electro-magnet, thereby closing said type-wheel line in parallel circuit through said escapement electro-magnet, substantially as and for the purposes set forth.

6. In a printing-telegraph system, the combination, with a main-line battery and circuit for setting the type-wheels, a sunflower, transmitting-keys with their contact-springs, means for connecting said battery with the sunflower-segments and the segments with said main-line circuit, and a relay electro-magnet with its coils included in said line, of a neutral escapement electro-magnet included in a branch of said line responding to alternate makes and breaks of circuit therein, wedge-pallets actuated by said escapement electro-magnet, a star-wheel driven by said wedge-pallets, and a type-wheel shaft rotated thereby, and a brush carried on the same shaft, but insulated therefrom, making contact with the segments of said sunflower alternately in open and closed circuit with said key-contacts and said line, thereby automatically producing the pulsations which actuate said relay electro-magnet to close said line in parallel circuit through said escapement electro-magnet, causing the rotation of said shaft and arresting of the same when the alternate succession of makes and breaks of circuit is interrupted by the depression of a key.

7. In a printing-telegraph system, the combination, with a battery and a type-wheel main line, of devices for producing electrical pulsations in said main line, an escapement electro-magnet in a branch of said line, and an electro-magnet in said main line, its armature, lever, and contact-point, whereby said branch line is closed in parallel circuit through said escapement electro-magnet, substantially as and for the purposes set forth.

8. In a printing-telegraph system, the combination of a sunflower device, a main-line battery-circuit, a branch circuit thereof, an escapement electro-magnet included in said branch circuit for setting the type-wheels, transmitting-keys with their contacts, electrical devices for connecting said battery with said main line and the segments of said sunflower, a neutral electro-magnet in said main line alternately closing and opening said main line in parallel circuit through the coils of said escapement electro-magnet, wedge-pallets, a type-wheel shaft, a star-wheel thereon, and a brush secured to the same shaft contacting with alternately open and closed circuit segments producing pulsations which cause said shaft to be arrested when the succession of alternate impulses is interrupted by the depression of a key.

9. In a printing-telegraph system, the combination of a sunflower device, a battery, a main-line circuit, transmitting-keys with their contact-springs, electrical devices, substantially such as described, for connecting the said battery with said main-line and sunflower segments, a neutral escapement electro-magnet in said line responding to alternate makes and breaks of circuit, wedge-pallets controlled by said electro-magnet, a type-wheel shaft, a scape-wheel, and a brush suitably mounted thereon and operating to rotate said shaft by pulsations automatically produced by said brush contacting with the alternate open and closed circuit segments of said sunflower, and by which said shaft is arrested when the alternate succession of impulses is interrupted by the depression of a transmitting-key, substantially as and for the purposes set forth.

10. In a printing-telegraph system, the combination of a double sunflower device, two main lines and batteries for controlling the type-wheels and printing mechanism, transmitting-keys with their contact-springs, electrical devices for connecting said batteries with said lines and sunflower-segments, a relay electro-magnet in said type-wheel main line, its armature, lever, and contact-point, a branch circuit of said type-wheel line, and an escapement electro-magnet included therein, wedge-pallets, a type-wheel shaft and a scape-wheel mounted thereon, a bush mounted upon the same shaft, said brush contacting with open and closed circuit segments of one of said sunflowers connected with said type-wheel line, producing pulsations which cause said relay to close the branch circuit through said escapement, and electro-magnet to arrest said shaft when the alternate succession of impulses is interrupted by the depression of a key, which at the same time actuates said electrical devices connecting the said line controlling the

printing mechanism with a segment of said sunflower in the printing-circuit, whereby when the type-wheel shaft is arrested a brush thereon contacts with said segment and an impulse is sent through said printing-line.

11. In a printing-telegraph system, a battery, a main-line circuit, electrical devices, substantially as described, a neutral escapement electro-magnet automatically operated by direct currents, a wedge-pallet escapement controlled by said electro-magnet, a type-wheel shaft, a star-wheel mounted thereon, and means, substantially as described, for arresting said shaft, in combination with a circuit-director and type-wheels mounted on said type-wheel shaft, a local-battery circuit through said director, an electro-magnet with its coils in said circuit and responding to prolonged pulsations, its armature, lever, and retracting-spring, a ratchet-lever, pawl, ratchet-wheels, printing-lever, and hammer, said electro-magnet when energized operating to revolve said ratchet one notch, thereby actuating the printing-hammer, and when demagnetized to move the paper-carriage by the action of its lever, pawl, and retracting-spring to space between letters, substantially as described.

12. In a printing-telegraph system, a battery, a main-line circuit, electrical devices, substantially as described, a neutral escapement electro-magnet automatically operated by direct currents, a wedge-pallet escapement controlled by said electro-magnet, a type-wheel shaft, a star-wheel thereon, and means, substantially as described, for arresting said shaft, in combination with a circuit-director and type-wheels mounted on said shaft, a local-battery circuit through said director, an electro-magnet with its coils in said circuit responding to prolonged pulsations, its armature, lever, shaft, arms, feeding-rod, and retracting-spring, a paper-carriage, its feed-rollers, ratchet-wheel, and ratchet-lever, operating when the director is arrested and the said electro-magnet is energized by prolonged pulsations to revolve said ratchet-wheel one notch, and thereby feed the paper between lines at any point in the excursion of said carriage.

13. In a printing-telegraph system, the combination, with a local battery, a battery and main-line circuit, electrical devices, substantially as described, a neutral escapement electro-magnet automatically operated by direct currents, a wedge-pallet escapement controlled by said electro-magnet, a type-wheel shaft and a star-wheel mounted thereon, and means, substantially as described, for arresting said shaft, of a circuit-director and type-wheels mounted on said shaft, a local-battery circuit through said director, electro-magnets with their coils in said circuit responding to prolonged pulsations, their armature, lever, and mechanism connected therewith and operating when the director is arrested and either of said electro-magnets is energized by prolonged pulsations to shift said type-wheels, substantially as described.

14. In a printing-telegraph system, the combination, with a battery and main-line circuit, electrical devices, substantially as described, a neutral escapement electro-magnet automatically operated by direct currents, a wedge-pallet escapement controlled by said electro-magnet, a type-wheel shaft, a star-wheel mounted thereon, and means, substantially as described, for arresting said shaft, of a circuit-director and type-wheels mounted on said shaft, a local-battery circuit through said director, a ratchet electro-magnet with its coils in said circuit, its armature, lever, retracting-spring, pawl, and counter-pawl, a releasing electro-magnet, its armature, lever, retracting-spring, releasing-arms, and pins, said electro-magnets responding to prolonged pulsations, a paper-carriage, its rack, counter-rack, and dog operating when said director is arrested and said electro-magnets are energized by currents in parallel circuit to release said paper-carriage at any point in its excursion.

15. In a printing-telegraph system, the combination of two sunflowers, a type-wheel shaft concentric therewith carrying brushes insulated therefrom and from each other and contacting with the respective segments of said sunflowers and in the circuits of separate conductors for the type-wheel and printing lines, character-keys in electrical connection with the segments of said sunflower, the closed-circuit keys and the anvils of the open-circuit keys in electrical connection with the type-wheel line, contact-springs for said keys in electrical connection with the segments of the other sunflower, anvils connected with said printing-line, and a neutral escapement electro-magnet with its coils included in the type-wheel line, substantially as and for the purposes set forth.

16. In a printing-telegraph system, the combination, with a battery and type-wheel line, a sunflower and a type-wheel shaft concentric therewith, a brush insulated therefrom in the circuit of said type-wheel line and contacting with the sunflower-segments, open and closed character-keys with their contact-springs electrically connected with said segments, the closed-circuit keys and anvils of the open-circuit keys electrically connected with said line, a neutral escapement electro-magnet with its coils included in said line and operating to actuate a star-wheel, a type-wheel shaft, and said star-wheel mounted thereon and driven by the vibrations imparted to the armature and wedge-pallet levers of said electro-magnet by its retracting-spring and by electrical impulses acting alternately therewith when said impulses are caused by said brush contacting with alternate segments of said sunflower electrically connected with said circuit-keys.

17. In a printing-telegraph system, the combination of a type-wheel line and printing-line, a sunflower with two annular series of segments, a type-wheel shaft concentric therewith carrying two brushes insulated therefrom and from each other in the circuits of the respective lines and contacting, respectively, with the series of segments, open and closed circuit character-keys with their contact-springs electrically connected with the segments included in the type-wheel line, the closed-circuit keys and the anvils of the open-circuit keys electrically connected with said line, contact-springs insulated from the former springs and electrically connected with the segments included in the printing-line, anvils for said springs connected to said line, a type-wheel shaft, a star-wheel thereon, and an escapement electro-magnet included in the type-wheel line and operating to drive said star-wheel by the vibrations imparted to the armature and pallet-levers of said electro-magnet by its retracting-spring, and the electrical impulses acting alternately therewith when said impulses are caused by the brush in the type-wheel line contacting with alternate segments of the series of segments in said line electrically connected with closed-circuit keys, and operating to arrest said type-wheel shaft when said brush contacts successively with two segments connected to or disconnected from the line by the depression of any key, and said printing-line being simultaneously closed when the brush in said line makes contact with a segment in the printing-line connected to a spring of said key.

18. In a printing-telegraph system, the combination, with batteries and type-wheel and printing-circuits, of a type-wheel shaft, a circuit-director thereon revolved by said shaft, electro-magnets in the printing-circuit of said director, the contact-springs of said director being in a branch circuit of said printing-line, an electro-magnet included in said branch circuit, its armature, lever, pawl, and ratchet-wheel, an individualizing circuit-closer, a unison-spiral, the electro-magnet in said branch circuit operating when the type-wheel is arrested at a determinate point to revolve said circuit-closer one notch and successively one notch for each revolution of the type-wheel until the circuit-closers in a series of instruments are arrested in unison, an electro-magnet with its coils in said branch circuit, its armature and lever, a lever pivoted thereto, a unison-latch released thereby when the type-wheel is arrested at a position of the director where said electro-magnet in circuit is energized thereby, circuit contacts, and insulations on the circuit-closing disks included in the printing-circuit and arranged one for each instrument in their order of succession in series, whereby when the circuit-closers are simultaneously rotated the printing-circuits through the director of each instrument are successively closed and interrupted and the branch circuit through the electro-magnet operating the circuit-closer maintained.

19. In a printing-telegraph system, an individualizing cut-out, a battery, and a main-line type-wheel circuit, a circuit-director in a branch of the printing-circuit and controlled by the type-wheel shaft, an electro-magnet, and a circuit-closer with its contact-springs included in said circuit, the circuit-closer being controlled by said electro-magnet, and means, substantially as described, to interrupt the printing-circuit of any instrument in said type-wheel circuit when the director is arrested at a determinate position, substantially as and for the purposes set forth.

20. The combination, with an individualizing cut-out for a telegraphic printer, of a battery and printing-line circuit, a circuit-director included in said circuit, a battery and type-wheel-line circuit, an electro-magnet in said circuit, a type-wheel shaft, and means for rotating and arresting said shaft, a circuit-closer and its contact-springs included in said printing-circuit, an electro-magnet energized by said printing-line, a unison-stop on the shaft of said circuit-closer released by said electro-magnet, said circuit-closer controlled by an electro-magnet in a branch of said printing-circuit, and means, substantially as described, to unison the respective circuit-closers in instruments connected in series in said type-wheel line and to close the printing-circuit through the director in instruments on which a message is to be recorded and to interrupt said printing-circuit in all the other instruments in series, substantially as and for the purposes set forth.

21. In a printing-telegraph system, the combination of a transmitter at a subscriber-station, keys and sunflower-segments in a printing-circuit of a battery and in a type-wheel-line circuit of a battery, an escapement electro-magnet included in said circuit, one electrode of both batteries grounded at said station, annunciator electro-magnets included in a battery-circuit, one electrode of which is grounded at a central station, and means, substantially as described, for connecting the printing-line to the other electrode of said annunciator-circuit, operating, when the line is broken at the transmitter, to demagnetize the annunciator electro-magnet and indicate the number of the subscriber-instrument.

22. In a printing-telegraph system, an instrument organized as a transmitter at a subscriber-station, a printing-circuit, keys and sunflower-segments in said printing-line circuit, a type-wheel-line circuit,

and both circuits connected to ground at said station, printing and type-wheel batteries at a central station, with the electrodes thereof normally connected to ground at said station, a shaft frictionally driven by suitable power and regulated at said central station, a pulsator, a ratchet-wheel, and type-wheel on said shaft in said type-wheel line, an electro-magnet in said printing-line, its armature, detent-lever, and retracting-spring controlling said ratchet-wheel, a printing electro-magnet included in the printing-line operating a printing-platen, a paper-feeding device, and means, substantially as described, for connecting one electrode of said batteries to the subscriber printing and type-wheel lines through said central-station pulsator, whereby the subscriber type-wheel is rotated, the central-station instrument arrested, and the signal thereby recorded in response to the depression of the keys of said transmitter, indicating by suitable characters at the central station the subscriber to be connected through said central-station instrument.

23. In a printing-telegraph system, an instrument organized as a transmitter at a subscriber-station, a printing and a type-wheel circuit, character-keys and sunflower-segments in said printing-line circuit, an escapement electro-magnet in said type-wheel circuit, and both circuits connected to ground at said transmitter-station and a central station, printing and type-wheel batteries at said central station, with the electrodes thereof normally connected to ground, a type-wheel shaft frictionally driven by suitable power and regulated at said central station, a pulsator on the type-wheel shaft, a type-wheel and a ratchet-wheel mounted on the same shaft, an electro-magnet in said printing-line, its armature, detent-lever, and retracting-spring controlling said ratchet-wheel, a printing electro-magnet included in said printing-line operating a platen, a paper-feeding device, instruments organized as receivers at subscriber-stations, with the printing and type-wheel lines connected to ground around the sunflower-segments and key-board, means for connecting the type-wheel and printing-lines of a subscriber-receiver and the type-wheel and printing-lines of a subscriber-transmitter with the batteries at said central station through said pulsator, and printing and detent electro-magnets, whereby the type-wheels of the transmitter and receiver connected in line are rotated in response to pulsations by the said central-station pulsator, and said detent at the central station and the printing at the central and subscriber stations in circuit are controlled by the character-keys of the subscriber-instruments organized as a transmitter.

24. In a printing-telegraph system, an instrument organized, substantially as described, as a transmitter at a subscriber-station, a printing-circuit, and a type-wheel circuit, keys and sunflower-segments in said printing-circuit, an escapement electro-magnet in said type-wheel circuit and both circuits connected to ground at said transmitting and central stations, printing and type-wheel batteries at said central station, with the electrodes thereof normally connected to ground, a shaft driven by suitable power at said central station, a pulsator and a ratchet-wheel frictionally connected with said shaft, an electro-magnet in said printing-line, its armature, detent-lever, and retracting-spring controlling said ratchet-wheel and pulsator, instruments organized, substantially as described, as receivers at subscriber-stations, with the printing and type-wheel lines grounded around the sunflower-segments and key-board, and means for connecting the type-wheel and printing lines of a subscriber-receiver and the type-wheel and printing lines of a subscriber-transmitter with the batteries at said central station through said pulsator and detent electro-magnets, whereby the type-wheels of the transmitter and receiver connected in line are rotated in response to pulsations by the said central-station pulsator, and the said detent at said central station and the printing at the subscriber-station in circuit are controlled by the character-keys of the subscriber-instrument organized as a transmitter.

25. In a printing-telegraph system, an instrument organized as a transmitter at a subscriber-station, a printing-line circuit and a type-wheel-line circuit, keys and sunflower-segments in said printing-line circuit, an escapement electro-magnet in said type-wheel-line circuit and both circuits connected to ground at the transmitting and central stations, printing and type-wheel line batteries at said central station with the electrodes thereof normally connected to ground, a shaft driven by suitable force at said central station, a pulsator, a ratchet-wheel and a type-wheel frictionally connected with said shaft, an electro-magnet in said printing-line circuit, its armature, detent-lever, and retracting-spring controlling said ratchet-wheel and pulsator, instruments organized, substantially as described, as receivers at subscriber-stations, with the printing and type-wheel lines grounded around the sunflower-segments and key-board, and means for connecting the type-wheel and printing lines of a subscriber-receiver and the type-wheel and printing lines of a subscriber-transmitter with the batteries at said central station through said pulsator and printing and detent electro-magnets at the central station, whereby the type-wheels of the transmitter and receiver connected in line are rotated in response to pulsations by the said central-station pulsator, and said detent electro-magnet at the central station and said printing electro-magnets at the subscriber-station in circuit are controlled by the character-keys of the subscriber-instrument organized as a transmitter.

26. In a printing-telegraph system, the combination, with an instrument organized as a transmitter at a subscriber-station, a printing-line circuit and a type-wheel-line circuit, character-keys, and a sunflower device in said printing-line circuit, and both circuits grounded at said transmitting-station and at a central station, printing and type-wheel line batteries at said central station, with the electrodes thereof normally connected to ground, a shaft frictionally driven by suitable power at said central station, a pulsator and a ratchet-wheel connected with said shaft, an electro-magnet in said printing-line circuit, its armature, detent-lever, and retracting-spring controlling said ratchet-wheel and pulsator, of instruments organized, substantially as described, as receivers at subscriber-stations, with the printing-line and type-wheel-line circuits grounded around the sunflower-segments and key-board, and means for connecting the type-wheel and printing-line circuits of a subscriber-receiver and the type-wheel-line and printing-line circuits of a subscriber-transmitter with the batteries at said central station through said pulsator and detent electro-magnets at said station, substantially as and for the purposes set forth.

27. In a printing-telegraph system, the combination, with a battery, a main-line conductor, alternate segments of a sunflower device connected in circuit therewith, a type-wheel shaft, and a contact-brush insulated therefrom, of character-keys and contacts therefor, means for rotating said shaft, a circuit-director thereon, with contacts corresponding to the divisions on the type-wheels, electro-magnets and their actuated devices, a battery and a printing-circuit, and means, substantially as described, for connecting said director and character-keys in the printing-circuit with the respective electro-magnets, whereby the operation of feeding the paper between lines, spacing between letters, releasing the paper-carriage, and shifting the type-wheel is effected, substantially as described.

28. In a printing-telegraph system, the combination of a shaft, a force for driving said shaft, a ratchet-wheel and a pulsator mounted on said shaft, an electro-magnet in a main-line battery-circuit controlling said ratchet-wheel at a central station, and character-keys, their contact-springs and contacts in said main-line circuit at a terminal station controlling the circuit through said ratchet electro-magnet, substantially as and for the purposes set forth.

29. The combination, in a printing-telegraph, of an electromotor, Q, electro-magnets Q', a worm, q^3, carried on the shaft of said motor, a detent and pulsator-shaft, and a worm-wheel, q^2, frictionally mounted thereon, substantially as and for the purposes set forth.

30. In a printing-telegraph system, the combination, with a battery and main-line printing-circuit, a printing electro-magnet, Y, at a central station in a branch of said circuit, and mechanism, substantially such as described, actuated thereby, of a shaft, q^4, a ratchet-wheel, r^2, frictionally mounted on said shaft, a detent electro-magnet in said printing-circuit, and devices actuated by said electro-magnet and operating to arrest said ratchet-wheel and close said branch printing-circuit through said printing electro-magnet, substantially as described.

31. In a printing-telegraph system, the combination, with a shaft, a pulsator mounted thereon, springs in contact with the disk and hub of said pulsator in the circuit of a type-wheel-line battery-circuit, and a ratchet-wheel on the same shaft, of a printing electro-magnet, its armature, lever, printing-platen, and retracting-spring, said electro-magnet being in a branch of a main-line printing-circuit, a feeding device, a detent electro-magnet in the printing-line circuit, its actuated devices, a contact-point, a type-wheel mounted on said shaft, and transmitting-keys with their springs and contacts included in the circuit of said main-line printing-circuit, substantially as and for the purposes set forth.

32. In a printing-telegraph system, the combination, with a signal electro-magnet in a local-battery circuit, its armature, lever, retracting-spring, and an annunciator-drop, metallic blocks and springs, plugs fitting into said blocks, and printing and type-wheel battery-circuits connected to said plugs, of a printing electro-magnet in a branch of said printing-circuit, its actuated devices, a shaft and a ratchet-wheel, a type-wheel, and a pulsator mounted on said shaft, and a detent electro-magnet in the type-wheel line and its actuating devices, substantially as and for the purposes set forth.

33. In a printing-telegraph system, the combination, with a circuit-directing device, S, in a local circuit, of a shaft, and a circuit-closing device mounted on said shaft, springs in said circuit bearing on the disks and hubs of said device, a unison-spiral secured to the same shaft and its latch, an electro-magnet for releasing said latch, a ratchet-wheel, an electro-magnet, P, in said local circuit, and its armature, lever, retracting-spring, and pawl, substantially as and for the purposes set forth.

34. In a printing-telegraph system, the combination, with the electro-magnets G and G', with their armature and lever, a right angular depending bar secured to said armature, lever, and a bell-crank

lever pivotally connected with said bar, of a shaft, a unison-spiral mounted upon said shaft, and a latch-bar journaled to a horizontal rock-shaft, substantially as and for the purposes set forth.

35. In a printing-telegraph, the combination of a transversely-traveling paper-carriage having side bars attached to cross-bars, said side bars carrying feed-rollers, pressure-rollers, and a paper-roller, a channeled guide-bar attached to the base-plate of the instrument, guide-rollers journaled in brackets secured to the cross-bars of said paper-carriage, a rack and counter-rack, rails secured to the instrument and grooved wheels traveling over said rails, a weight for soliciting said carriage, a buffer secured to said carriage, and a spring attached to a fixed standard for determining its retrograde movement, substantially as set forth.

36. In a printing-telegraph system, the combination, with a battery, a printing-line, and a unison electro-magnet included therein and its actuated devices, of a type-wheel shaft, and a loose unison-arm mounted on the same shaft, a coiled spring the extremities of which are attached to said loose arm and to a hub rigidly secured to said shaft, a loose disk having double stop-pins, a spiral spring attached at one end to said disk and at the opposite end to a hub on said shaft, and a fixed disk mounted on the same shaft, having a stop-pin in the face thereof substantially as described.

37. In a printing-telegraph system, the combination, with a unison electro-magnet, its armature, lever, and a stop formed integral with said lever, of a type-wheel shaft, a unison-arm loosely mounted thereon, a helical spring coiled around said shaft and the respective extremities thereof attached to said arm and shaft, and a disk mounted on said shaft having a stop-pin, substantially as and for the purposes set forth.

38. In a printing-telegraph system, the combination, with a battery-circuit and a ratchet electro-magnet included in said circuit, of a shaft, ratchet-wheels mounted thereon and actuated by said electro-magnet, and a printing-hammer operated by said ratchet-wheel, substantially as and for the purposes set forth.

39. In a printing-telegraph system, the combination of an ink-roller frame loosely pivoted between fixed collars, a shifting-rod on which said collars are mounted, an ink-roller journaled to said frame, an adjustable spring to regulate the pressure of said ink-roller against type-wheels, and an adjusting-screw against which a plate impinges when said ink-roller passes over blank spaces on the type-wheels, substantially as described.

40. In a printing-telegraph system, the combination, with the shifting-rod g^{11} and the arm d^{11}, secured thereto, having two concave recesses in its upper surface, of a spring, d^{12}, attached to a plate and carrying pivoted to its extremity a roller which engages in one of the recesses of said arm when the type-wheels are shifted into either position, substantially as described.

41. The combination, in a printing-telegraph, of curved guards consisting of the vertical bars d^{27} and horizontal flanged plates d^{26}, secured to a plate, a^{13}, the stud-pins d^{34}, sleeves d^{35}, and nuts d^{33}, said vertical bars arranged so as to support said horizontal flanged plates in such position as to permit the paper to lie close to but out of contact with the type-wheels, substantially as described.

42. In a printing-telegraph system, the printing-spring d^{24}, adjustably attached to an arm, d^{23}, located between the type-wheels D' and D^2, in combination with the shifting-rod g^{11}, substantially as and for the purposes set forth.

43. In a printing-telegraph system, the face-plate a^{13}, in combination with the curved guards d^{27} and d^{26}, stud-pins d^{34}, sleeves d^{35}, and nuts d^{33}, substantially as and for the purposes set forth.

44. In a printing-telegraph system, the combination, with a type-wheel shaft, two type-wheels loosely mounted on a sleeve secured to said shaft, two shifting electro-magnets with their actuated devices, and means, substantially such as described, for holding the ink-roller and shifting it with said type-wheels, of the ink-roller, and an arm attached to said shifting mechanism, located between said type-wheels and carrying a spring, substantially as and for the purposes set forth.

45. In a printing-telegraph system, the combination, with a metallic side plate, A^4, of a removable metallic cap provided with a flange around the periphery thereof, a central bearing, a shaft held in position in said cap, and an annular ring having integral therewith a recessed rim forming a seat for a sunflower device, whereby said device may be readily removed from the frame-plate without disturbing the conductors leading from said sunflower device, substantially as described.

46. In a printing-telegraph system, a circuit-directing device consisting of an annular ring of insulating material, with a series of metallic contacts therein, said metallic contacts being connected by conductors with the respective electro-magnets of the instrument, in combination with the type-wheel shaft, a hub and disk secured thereto, but insulated therefrom, an arm rigidly secured to said disk, carrying a brush which traverses the segments of said circuit-directing device, a contact-spring, and an insulated block to which said spring is attached and bearing on said hub, all arranged as shown and described.

47. A printing-telegraph instrument consisting of an independent frame composed of two metallic side plates held to each other by means of horizontal posts, said plates being supported on a base, glass sides and top, two removable corner strips for holding said glass sides and top in position, a cylindrical tube supported by one of said metallic plates, a face-plate suitably secured to said tube, a bracket attached to said face-plate for supporting in position a shaft, a removable annular ring recessed to receive a sunflower device, and a removable cap attached to the other metallic plate, forming a bearing for the opposite extremity of said shaft, all arranged, substantially as described, for permitting of the removal of said independent frame from the base without disturbing the electrical and mechanical devices.

48. In a printing-telegraph system, the combination, with a battery and a printing-line circuit, of a paper-carriage, a ratchet electro-magnet included in said circuit, its armature, lever, and retracting-spring, a pawl pivoted to said lever, a stud secured to the table of said instrument, a dog mounted upon said stud, a rack secured to said carriage, a hook-pawl hinged to the lever of said electro-magnet, two ratchet-wheels secured to a shaft, one ratchet-wheel moved step by step by the hook-pawl, causing the other ratchet-wheel to actuate a bell-crank lever mounted on a trunnion, and a printing-hammer operated by said bell-crank lever, substantially as and for the purposes set forth.

49. In a printing-telegraph system, the combination, with a battery and printing-circuit, of a paper-carriage, and mechanism, substantially as described, for actuating said carriage, a releasing electro-magnet in said circuit, and its armature and lever, a shaft journaled in a sleeve secured to the instrument, a T-lever attached to said shaft, and pins in the upper portion of said lever, substantially as and for the purposes set forth.

50. In a printing-telegraph system, the combination, with a battery and a printing-circuit, of a transversely-traveling paper-carriage, a releasing electro-magnet in said printing-circuit and its actuated devices, a ratchet electro-magnet in a parallel circuit, devices actuated by said electro-magnet, a type-wheel shaft, and means, substantially as described, for rotating the same, and a circuit-director mounted on the same shaft, whereby when said circuit is closed through the coils of said electro-magnets the paper-carriage is released at any point in its excursion, substantially as shown and described.

51. In a printing-telegraph system, the combination, with a battery and a printing-circuit, of a transversely-traveling paper-carriage, a director in said circuit, a ratchet electro-magnet in the same circuit, its actuated devices, and a releasing electro-magnet in a parallel circuit therewith through said director and its actuating mechanism, whereby when said electro-magnets are energized, actuating said devices, the paper-carriage is released at any point, substantially as shown and described.

52. In a printing-telegraph system, the combination of a battery and printing-line circuit, a central station, terminal stations, a paper-carriage with its actuating devices at each terminal-station instrument, a detent electro-magnet with its actuating devices at a central station, a circuit-interrupter in a receiver at a terminal station, said electro-magnet and interrupter being in the circuit of said battery, and a detent at said central station released by said electro-magnet when the printing-circuit is interrupted by the retrograde movement of the paper-carriage of a receiver, substantially as described.

53. In a printing-telegraph system, the combination, with a battery, a type-wheel-line circuit, keys with open and closed circuit springs in the circuit of said battery, a sunflower device, a brush traversing the segments of said sunflower device, a neutral escapement electro-magnet in said type-wheel-line circuit, its armature, lever, and wedge-pallets, a shaft, and a star-wheel and type-wheels mounted on said shaft, of a circuit-interrupter, a battery, and a printing-circuit, a central station detent thereat, and an electro-magnet in said circuit, and a paper-carriage and its actuating mechanism, substantially as described, operating to break the said circuit and release the detent at said central station when the paper-carriage has reached the end of its retrograde movement, substantially as set forth.

54. In a printing-telegraph system, the combination, with a battery, a type-wheel circuit, and keys with contact-springs in the circuit of said battery, of a type-wheel shaft, a sunflower, an insulated traversing brush mounted on said shaft, means for rotating said shaft, a neutral electro-magnet in said type-wheel line, its armature, lever, and wedge-pallets, a scape-wheel on said shaft controlled by said pallets, a circuit-interrupting bell-crank lever and spring secured to the instrument, a paper-carriage and means for operating said carriage, and a pawl for actuating said bell-crank lever, and thereby breaking the type-wheel-line circuit by the retrograde movement of said carriage, substantially as described.

55. The combination, in a paper-carriage, of side bars attached to cross-bars, a rack and a counter-rack, feed and pressure rollers, a paper-roller, grooved wheels for the lower track, friction-rollers playing between guides for the upper track, rails secured to the rear of the instrument for said grooved wheels to travel over, and guards secured to the instrument to limit the vertical and lateral play of the friction-rollers, a weight for soliciting said carriage, a buffer secured to said carriage, and an elastic stop secured to the instrument for determining the retrograde movement of said carriage, substantially as described.

56. In a printing-telegraph system, the combination of a battery, a main-line circuit, a type-wheel electro-magnet included therein, a unison electro-magnet in a branch of said circuit, means for transmitting short and long impulses of said line battery-circuit, a neutral escapement electro-magnet, means for diverting the current in said circuit and interrupting the impulses through the coils of said escapement electro-magnet during the prolongation of impulses in said line-circuit and directing the circuits so that impulses of normal duration will energize the coils of said type-wheel electro-magnet, while prolonged impulses of twice the duration energize the unison electro-magnet, and means, substantially such as described, for re-enforcing the diverted current through said type-wheel electro-magnet, substantially as and for the purposes set forth.

57. In a printing-telegraph system, the combination, with a battery and a main-line circuit, of neutral escapement electro-magnets and unison electro-magnets of a transmitter and a receiver in separate line-circuits of the same batteries, the type-wheel electro-magnets, but not the unison electro-magnets, being responsive to short impulses to effect regular continuous rotation of the type-wheels, and the unison electro-magnets being responsive only to prolonged pulsations for releasing the unison-arm, said unison-arm, and means for transmitting short and long impulses of the line-battery, and means, substantially as described, for diverting the current in said line-circuit and interrupting the impulses through the coils of said neutral escapement electro-magnets during the prolongation of impulses in said line-circuit and directing the circuits so that impulses of normal duration will energize the coils of said type-wheel electro-magnets, while prolonged impulses of twice the duration energize the unison electro-magnets.

58. In a printing-telegraph system, the combination, with a battery and circuit, a ratchet electro-magnet included in said circuit, and its actuated devices, of a shaft, a ratchet-wheel mounted thereon and actuated by said electro-magnet, a printing-hammer operated by said ratchet-wheel, a paper-carriage and its actuating mechanism, substantially such as described, a type-wheel shaft, and one or more type-wheels mounted on and rotated by said shaft, all arranged substantially as described, whereby when the printing-hammer strikes a blow it instantly falls back clear of the paper.

59. In a printing-telegraph system, the combination, with a printing and ratchet electro-magnet in a local-battery circuit, devices actuated by said electro-magnet, and a printing-hammer operated thereby, of a paper-carriage and its operative mechanism, a type-wheel shaft, a star-wheel mounted thereon, an escapement electro-magnet in a main-line battery-circuit, wedge-pallets operated thereby, two type-wheels mounted on said shaft, and means, substantially such as described, for shifting said type-wheels, for the purposes set forth.

60. In a printing-telegraph system, the combination, with a battery, a main-line circuit, a sunflower, and circuit-keys, an insulated brush, a type-wheel shaft, and means for rotating and arresting said shaft, type-wheels mounted on a loose sleeve on said shaft, and circuit-directing devices and a star-wheel mounted on the same shaft, of ratchet and releasing electro-magnets in the same circuit and their actuated devices, a paper-carriage, and means, substantially such as described, for advancing and releasing said carriage, substantially as and for the purposes set forth.

61. In a printing-telegraph system, the combination of a main-line battery-circuit, a sunflower, and character-keys in the circuit of said battery, an insulated brush traversing the segments of said sunflower, a shaft, type-wheels mounted thereon, means for rotating and arresting said shaft, a circuit-director mounted on the same shaft, a printing-line battery-circuit, a ratchet, electro-magnet included therein, a printing-hammer, and a paper-carriage, and means, substantially as described, for operating the same, and feeding and releasing electro-magnets, with their devices actuated thereby, substantially as and for the purposes set forth.

62. In a printing-telegraph system, the combination, with a type wheel-line battery-circuit, a sunflower, and circuit-keys included in said line-circuit, a brush traversing the segments of said sunflower, a type-wheel shaft, means for rotating said shaft, a circuit-director mounted on said shaft, and type-wheels rotated thereby, of a battery and a printing-circuit, a ratchet and printing electro-magnet included in said circuit, and a printing-hammer operated by a direct blow through the actuated devices of said electro-magnet, substantially as and for the purposes set forth.

63. In a printing-telegraph system, the combination, with a battery, a type-wheel-line circuit, keys with open and closed contact-springs in the circuit of said battery, a sunflower, substantially as described, with three successive segments connected to closed-circuit springs, and an insulated brush, of a neutral escapement electro-magnet and wedge-pallets operated thereby, a shaft and a star-wheel mounted thereon, a circuit director and corrector mounted on the same shaft, and a unison electro-magnet with its actuated devices, the said unison electro-magnet being included in a branch of said line-circuit, substantially as and for the purposes set forth.

64. In a printing-telegraph system, the combination of a line-battery, a circuit, keys with open and closed contact-springs in the circuit of said battery, a sunflower device, substantially such as described, with three successive segments connected to closed-circuit springs, an insulated contact-brush, a neutral escapement electro-magnet, wedge-pallets actuated thereby, a type-wheel shaft, a star-wheel mounted thereon, a relay electro-magnet included in said line-battery circuit, a circuit-corrector mounted on the same shaft, and a unison electro-magnet with its actuated devices, the said electro-magnet and the escapement electro-magnet being included in a branch of said line-circuit, substantially as and for the purposes set forth.

65. In a printing-telegraph system, the combination, with a battery and a main-line circuit, keys with open and closed contact-springs in the circuit of said battery, a sunflower, substantially as described, an insulated brush on a shaft, said brush connected with said main line and traversing said insulated contacts, causing a prolonged closed circuit in the line once in each revolution of the type-wheel, a neutral escapement electro-magnet in said circuit, its armature, lever, and pallets, a scape-wheel mounted on said shaft, and a relay electro-magnet for closing said circuit through a corrector, of a circuit-correcting device, a unison electro-magnet in a branch of the main-line circuit, and its actuated devices, substantially as and for the purposes set forth.

66. In a printing-telegraph system, the combination of a circuit-correcting device, a type-wheel shaft whereon said device is mounted, means for rotating said shaft, a line-battery circuit, a relay included in said circuit, connected therewith in such manner as to close said circuit through said correcting device, circuit-keys, and a sunflower device, arranged substantially as described, with three successive closed-circuit segments therein, and a unison electro-magnet in a branch of said line-circuit, and the devices actuated by said electro-magnet, substantially as and for the purposes set forth.

67. In a printing-telegraph system, the combination, with a main-line-battery circuit, keys with open and closed contact-springs in the circuit of said battery, a sunflower with three successive contacts connected to closed circuit-springs, and an insulated brush carried on a shaft connected with said main line and traversing said insulated contacts, causing a prolonged closed circuit in the line once in each revolution of the type-wheels of the instrument, of a neutral escapement electro-magnet in a branch of said circuit, its actuated devices, a unison electro-magnet, with its armature, lever, and stop, and a circuit-corrector, the said unison electro-magnet being included in a branch of said main-line circuit, substantially as and for the purposes set forth.

68. In a printing-telegraph system, the combination, with a circuit-directing device, a type-wheel shaft, and means for imparting rotary motion to said shaft, a main-line circuit, a local-battery circuit, transmitting-keys, and a circuit-interrupting device, of a printing and ratchet electro-magnet, its actuated devices, a paper-carriage carrying an angular shaft, and a shaft with feed-rollers thereon, a flanged pinion moving on said angular shaft and engaging in a spur-wheel between said feed-rollers, a rack, counter-rack, pawls, counter-pawls, and feeding and releasing electro-magnets in said local-battery circuit and their actuated mechanism, substantially as and for the purposes set forth.

69. In a printing-telegraph system, the combination, with a local-battery circuit and feeding and releasing electro-magnets included in said circuit, of a paper-carriage, arranged substantially as shown and described, a rack, pawl, and dog, a ratchet electro-magnet in said battery-circuit, devices actuated by said electro-magnet, a shaft, a ratchet-wheel mounted thereon, a printing-hammer operated by said ratchet-wheel, a type-wheel shaft, means, substantially such as described, for revolving and arresting said shaft, type-wheels mounted on and rotated with said shaft, and a circuit-director secured to the same shaft, substantially as shown and described, and for the purposes set forth.

70. In a printing-telegraph system, the combination, with a battery and a local circuit and feeding and releasing electro-magnets included therein, of a paper-carriage carrying an angular shaft and a secondary shaft with feed-rollers thereon, a flanged pinion moving on said angular shaft and engaging in a spur-wheel between said feed-rollers, and an automatic device, substantially such as described, operating to give a signal, thereby indicating to an operator when the paper-carriage has terminated its retrograde movement, substantially as and for the purposes set forth.

71. In a printing-telegraph system, the combination, with a battery and a main-line circuit, an escapement electro-magnet, wedge-pallets actuated thereby, and electrical devices for sending pulsations through said circuit, of a type-wheel shaft, a star-wheel mounted thereon, type-wheels suitably attached to said shaft, a main-line print-

ing-circuit, electrical devices in said circuit, two independent electro-magnets in separate circuits through said electrical devices, a ratchet electro-magnet in said printing-circuit, a printing-hammer, and a paper-carriage, substantially as and for the purposes set forth.

72. In a printing-telegraph system, the combination of a type-wheel shaft and one or more type-wheels suitably mounted thereon, means for rotating the same, a circuit-director on said shaft, springs bearing on said director carrying insulations and contacts, a main-line printing-circuit, a feeding electro-magnet, devices actuated thereby, a printing-hammer, a paper-carriage, and a ratchet electro-magnet in said printing-circuit closed through said director, substantially as and for the purposes set forth.

73. In a printing-telegraph system, the combination, with a neutral escapement electro-magnet and wedge-pallets operated thereby, a battery, a main-line circuit, and an electrical device for sending pulsations through said circuit, of a type-wheel shaft, a star scape-wheel mounted thereon, double type-wheels secured to a sleeve loosely mounted on the same shaft, a local-battery circuit, two independent electro-magnets and their actuated devices for shifting said type-wheels, a printing electro-magnet in said local circuit, and a device attached to said type-wheel shaft for directing the circuits through said electro-magnets, substantially as and for the purposes set forth.

74. In a printing-telegraph system, the combination of a line battery circuit, keys with open and closed contact-springs in the circuit of said battery, a sunflower with contacts electrically connected alternately in open and closed circuits with said contact-springs, a type-wheel shaft and means for rotating said shaft, a circuit-director, a paper-carriage carrying an angular shaft, a shaft with feed-rollers mounted thereon, a flanged pinion moving on said angular shaft and engaging in a spur-wheel on said shaft carrying feed-rollers, a rack, ratchet, and releasing electro-magnets and devices actuated thereby, said electro-magnet operating to release the paper-carriage at any point in its excursion, substantially as described.

75. In a printing-telegraph system, the combination, with a line battery and circuit, keys with open and closed contact-springs in the circuit of said battery, a sunflower with contacts electrically connected alternately in open and closed circuits with said contact-springs, a type-wheel shaft and means for rotating the same, two type-wheels secured to a loose sleeve thereon, two independent electro-magnets with their actuated devices, a circuit-closing device, a local-battery circuit, and ratchet and feeding electro-magnets with their actuated mechanism, said electro-magnets being in said local circuit, of a paper-carriage carrying a shaft with feed-rollers thereon, a ratchet-wheel between said feed-rollers, a ratchet-lever mounted thereon, its pawl and spring, and a feeding-rod secured to arms projecting from a rock-shaft pivoted on a fixed support and actuated by said feeding electro-magnet, substantially as and for the purposes set forth.

76. In a printing-telegraph system, the combination of a battery, a main-line circuit, character-keys, a sunflower in said circuit, a type-wheel shaft, a star-wheel mounted thereon, an escapement electro-magnet and wedge-pallets operated thereby for driving said star-wheel, two type-wheels mounted on said shaft, a local-battery circuit, a circuit-director mounted on the same shaft and circuit-springs bearing on said director for closing the circuit of said battery, two electro-magnets in separate circuits through said director, means, substantially such as described, for shifting said type-wheels, a ratchet electro-magnet with its actuated devices, a printing-hammer, a feeding electro-magnet included in said circuit, and a paper-carriage with its operative mechanism, substantially as described, and for the purposes set forth.

77. In a printing-telegraph system, the combination of a line-battery circuit, keys with open and closed contact-springs in the circuit of said battery, a sunflower with contacts electrically connected alternately in open and closed circuits with said contact-springs, a type-wheel shaft, a star-wheel mounted thereon, an escapement electro-magnet and wedge-pallets operated thereby, an electrical device on said type-wheel shaft and contact-springs bearing on said device for closing the circuits of said battery, a paper-carriage, a local battery and circuit, a ratchet electro-magnet with its actuated mechanism, a feeding electro-magnet included in said local circuit, and its actuated devices, substantially as and for the purposes set forth.

78. In a printing-telegraph system, the combination of a line-battery circuit, keys with open and closed contact-springs in the circuit of said battery, a sunflower with contacts electrically connected alternately in open and closed circuits with said contact-springs, a type-wheel shaft, a star-wheel mounted thereon, wedge-pallets and an escapement electro-magnet for actuating said pallets and thereby driving said star-wheel, type-wheels rotated by said shaft, a local-battery circuit, a circuit-director attached to said type-wheel shaft, contact-springs bearing on said director carrying insulations and contacts for closing the circuit of said battery, two independent electro-magnets in separate circuits through said director, said electro-magnets with their actuated devices operating to shift said type-wheels, a ratchet electro-magnet with its actuated devices and a printing-hammer actuated thereby, and the ratchet electro-magnet energized by impulses in the circuit of said local battery, substantially as and for the purposes set forth.

79. In a printing-telegraph system, the combination, with a battery and a main-line circuit, keys with contact-springs in the circuit of said battery, a sunflower with contacts electrically connected alternately with said contact-springs, and a brush traversing said contacts of a shaft, a star-wheel mounted thereon and means for rotating the same, two type-wheels secured to a sleeve mounted on said shaft, a local battery and circuit, a circuit-director on said shaft, contact-springs bearing on said director having insulations and contacts to close the circuit of said battery, two electro-magnets in separate circuits connected with two of the contacts of said director, said electro-magnets with their hinged lever, armature, shaft, lever-arms, and devices operating to shift said type-wheels, a ratchet, electro-magnet with its armature, lever, retracting-spring, ratchets, and a printing-hammer, said electro-magnets energized by impulses in the circuit of said local battery, substantially as and for the purposes set forth.

80. In a printing-telegraph system, the combination, with a main-line circuit and battery, keys with contact-springs in the circuit of said battery, a sunflower with contacts electrically connected alternately with said contact-springs, and brushes traversing said contacts, of a type-wheel shaft, a star-wheel on said shaft, two type-wheels secured to a sleeve mounted thereon, a local battery and circuit, an electrical device on said shaft, circuit-springs bearing on said device, having insulations and contacts operating automatically to close the circuit of said battery, two independent electro-magnets in separate circuits connected with two of the contacts of said electrical device, said electro-magnets provided with an armature, hinged lever, and mechanism, as described, operating to shift said type-wheels, substantially as and for the purposes set forth.

81. In a printing-telegraph system, the combination, with a battery and a type-wheel-line circuit, keys with open and closed contact-springs in the circuit of said battery, and a sunflower with contacts electrically connected alternately in open and closed circuits with said contact-springs, of a type-wheel shaft, a scape-wheel mounted on said shaft, an electro-magnet, its armature, lever, retracting-spring, pallets for actuating said scape-wheel, two type-wheels secured to a loose sleeve on said shaft, a local battery and circuit, a circuit-director secured to said shaft, springs bearing on said director carrying insulations and contacts for closing the circuits of said battery, and two electro-magnets in separate circuits through said director, substantially as and for the purposes set forth.

82. In a printing-telegraph system, the combination, with a battery and circuit, keys with open and closed contact-springs in the circuit of said battery, a sunflower with contacts electrically connected alternately in open and closed circuits with said contact-springs, a type-wheel shaft, a star-wheel, pallets, and electro-magnetic devices for actuating said shaft, of type-wheels secured to a sleeve on said shaft, a local battery and circuit, a circuit-director secured to said shaft, springs bearing on said director carrying insulations and contacts for closing the circuit of said battery, and two independent electro-magnets in separate circuits through said director, said electro-magnets with their hinged lever, armature, shaft, lever-arms, and devices operating to shift said type-wheels, substantially as and for the purposes set forth.

83. In a printing-telegraph system, the combination of a battery and a type-wheel-line circuit, of a neutral escapement electro-magnet in said circuit, electrical devices for closing the circuit through the coils of said neutral escapement electro-magnet, its armature-lever and wedge-pallets, a type-wheel shaft, a star-wheel mounted thereon, a circuit-correcting device, a unison-arm thereon, and a unison electro-magnet with its actuated means, said unison electro-magnet included in parallel circuit with the neutral electro-magnet through said corrector once in each revolution thereof and responding to pulsations of twice the duration of those employed to actuate the neutral escapement electro-magnet, substantially as and for the purposes set forth.

84. In a printing-telegraph system, the combination, with type-wheel and printing-line circuits and batteries, transmitting-keys, and a double sunflower device, of a neutral escapement electro-magnet included in the type-wheel-line circuit, its armature, lever, retracting-spring, and pallets, a type-wheel shaft, a scape-wheel, type-wheels rotated therewith, a circuit director and corrector, a unison-arm mounted on the same shaft, and a unison electro-magnet with its actuated devices, said unison electro-magnet being included in parallel circuit with the neutral escapement electro-magnet through said corrector once in each revolution thereof and responding to pulsations of twice the duration of those employed to actuate the said neutral escapement electro-magnet, substantially as and for the purposes set forth.

85. In a printing-telegraph system, the combination, with type-wheel and printing-line circuits and batteries, transmitting-keys and a double sunflower device, one series of segmental contacts electrically connected alternately in open and closed circuits with said type-wheel-line circuit, while the other series is connected to open circuit springs and contacts in the printing-circuit, and brushes sweeping over said contacts, of a type-wheel shaft, a star-wheel mounted on said shaft, a neutral escapement electro-magnet, its armature, lever, retracting-spring, and pallets, circuit directing and correcting devices mounted on the same shaft, a unison-arm thereon, and a unison electro-magnet with its actuated devices, said unison electro-magnet included in parallel circuit with said neutral escapement electro-magnet through said corrector once in each revolution thereof and responding to pulsations of twice the duration of those employed to actuate said neutral escapement electro-magnet, substantially as and for the purposes set forth.

86. In a printing-telegraph system, the combination, with type-wheel and printing-line circuits and batteries, transmitting-keys and a double sunflower device, one series of segmental contacts thereof electrically connected alternately in open and closed circuits with said type-wheel-line circuit, while the other series is connected to open-circuit springs and contacts in the printing-line circuit, brushes sweeping over the contacts of said sunflower device, a type-wheel shaft, a scape-wheel thereon, two type-wheels mounted on a sleeve on said shaft, a neutral electro-magnet with its armature, lever, spring, and pallets, a circuit director and corrector mounted on the same shaft with the unison-arm, contact-springs bearing on said director and corrector provided with insulations and contacts for closing the circuits, a unison electro-magnet with its armature, lever, and spring, said unison electro-magnet being in parallel circuit with said neutral electro-magnet through said corrector once in each revolution thereof, two independent electro-magnets in separate circuits connected with two of the contacts of said director, their armature, hinged lever, and the devices operated by said electro-magnets for shifting the type-wheels, a printing-hammer, and a ratchet electro-magnet in said printing-circuit and its actuated mechanism, substantially as and for the purposes set forth.

87. In a printing-telegraph system, the combination, with type-wheel and printing-line circuits and batteries, character-keys, a double sunflower device, substantially such as described, brushes sweeping over the contacts of said sunflower device, a type-wheel shaft, a star scape-wheel and two type-wheels mounted on said shaft, an escapement electro-magnet with its armature, lever, spring, and pallets, a circuit director and corrector on said shaft, contact-springs bearing on said director and corrector, having insulations and contacts for closing the circuit of said batteries, a unison-arm on the same shaft, a unison electro-magnet with its armature, lever, and retracting-spring, said electro-magnet being in parallel circuit with said escapement electro-magnet through said corrector once in each revolution thereof and responding to pulsations of twice the duration of those employed to actuate said escapement electro-magnet, a printing-hammer, a paper-carriage, and means, substantially as described, for advancing and releasing the same, as and for the purposes set forth.

88. In a printing-telegraph system, the combination of type-wheel and printing-line circuits and batteries, transmitting-keys, a double sunflower device, substantially as described, brushes sweeping over the contacts of said device, a type-wheel shaft, a star-wheel and two type-wheels mounted thereon, an escapement electro-magnet with its actuated devices, a circuit director and corrector on said shaft, springs bearing on said devices provided with insulations and contacts for closing the circuit of said batteries, a unison-arm on said type-wheel shaft, a unison electro-magnet with its armature, lever, and retracting-sping, said electro-magnet being in parallel circuit with said escapement electro-magnet through said corrector once in each revolution thereof and responding to pulsations of twice the duration of those employed to actuate said escapement electro-magnet, a printing-hammer, ratchet electro-magnet in the printing-circuit, its armature, lever, retracting-spring, devices actuated by said electro-magnet for operating said printing-hammer, feeding and releasing electro-magnets in the circuit of said printing-battery, and a transversely-traveling paper-carriage, substantially as and for the purposes set forth.

89. In a printing-telegraph system, the combination of type-wheel and printing batteries and circuits, transmitting-keys with their springs and contacts in the circuits of said batteries, a double sunflower, one series of segmental contacts thereof electrically connected alternately in open and closed circuits with said type-wheel line and the other series of said segmental contacts connected to open-circuit springs and contacts in the printing-circuit, brushes sweeping over said segmental contacts, a type-wheel shaft, means for rotating the same, two type-wheels secured to a sleeve mounted on said shaft, a circuit-director on the same shaft, springs bearing on said director provided with insulations and contacts for closing the circuits of said battery, and two electro-magnets in separate circuits connected with two of the contacts of said director, their armature, hinged lever, and devices actuated thereby for shifting said type-wheels, substantially as and for the purposes set forth.

90. In a printing-telegraph system, the combination of type-wheel and printing-line circuits and batteries, transmitting-keys with their springs and contacts in the circuits of said batteries, a double sunflower, one series of segmental contacts thereof electrically connected alternately in open and closed circuits with said type-wheel-line circuit, while the other series of segmental contacts is connected to open-circuit springs and contacts in the printing-line circuit, brushes sweeping over said contacts, a type-wheel shaft, means for rotating the same, two type-wheels secured to a sleeve mounted on said shaft, a circuit-director on the same shaft, springs bearing on said director having insulations and contacts for closing the circuits of said printing-battery, two electro-magnets in separate circuits connected with two of the disks of said director, their armature, lever, spring, and devices actuated by said electro-magnets for shifting said type-wheels, a ratchet electro-magnet in the circuit of said printing-battery, its armature, lever, spring, and mechanism actuated by said electro-magnet, and a printing-hammer actuated thereby, substantially as and for the purposes set forth.

91. In a printing-telegraph system, the combination of main-line type-wheel and printing circuits and batteries, transmitting-keys with their springs and contacts in the circuits of said batteries, a double sunflower with segmental contacts, one series being electrically connected alternately in open and closed circuits with said type-wheel line, while the other series of said segmental contacts is connected to open-circuit springs and contacts in the printing-circuit, brushes traversing over said contacts, a type-wheel shaft, and means, substantially as described, for revolving the same, two type-wheels suitably mounted on said shaft, a circuit-director on the same shaft, springs bearing on said director provided with insulations and contacts for closing the circuits of said printing-battery, and two electro-magnets in separate circuits connected with two of the disks of said director, their armature, hinged lever, and mechanism actuated by said electro-magnets for shifting said type-wheels, of a ratchet electro-magnet in the said printing-battery circuit, its actuated devices, a printing-hammer, a paper-carriage, and feeding and releasing electro-magnets with their actuated devices, substantially as and for the purposes set forth.

92. In a printing-telegraph system, the combination of type-wheel and printing-line circuits and batteries, character-keys, with their springs and contacts in the circuits of said batteries, a double sunflower device with contacts, one series of which is connected with the type-wheel-line circuit and the other series with the printing-line circuit, brushes traversing said sunflower-contacts, a type-wheel shaft, type-wheels mounted on said shaft, a circuit-director on the same shaft, springs bearing on said director, having insulations and contacts for closing the circuits of said printing-battery, a printing and ratchet electro-magnet in the circuit of said battery, its actuated devices, a printing-hammer, a releasing electro-magnet in parallel circuit with said printing and ratchet electro-magnet, its actuated mechanism, a transversely-traveling paper-carriage, and an automatic signaling device to indicate when said carriage has completed its retrograde movement, substantially as described.

93. In a printing-telegraph system, the combination, with a battery, a main-line circuit for setting the type-wheels, transmitting-keys, their contacts, and sunflower devices for connecting the battery with said line and the segments of said device, of a neutral escapement electro-magnet responding to alternate makes and breaks of circuit and included in said type-wheel line, its armature, lever, spring, and wedge-pallets, said electro-magnet actuating said wedge-pallets driving a star-wheel mounted on a shaft rotated in response to pulsations automatically produced by a brush on the said shaft, said brush contacting with open and closed circuit segments of said sunflower, and by which said shaft is arrested when the alternate succession of impulses is interrupted by the depression of a key, a circuit-corrector on the said shaft, and a unison electro-magnet included in parallel circuit with the neutral escapement electro-magnet through said corrector once in each revolution thereof and responding to pulsations of twice the duration of those employed to actuate said neutral escapement electro-magnet, substantially as set forth.

94. In a printing-telegraph system, the combination, with a battery, a main-line circuit for setting the type-wheels, transmitting-keys, their contacts, and a sunflower device, and means, substantially as described, for connecting said battery with said line and segments of the sunflower device, of a neutral escapement electro-magnet responding to alternate makes and breaks of circuit and included in said type-wheel line, its armature, lever, retracting-spring, and wedge-pallets, said electro-magnet actuating said wedge-pallets driving a star-wheel mounted on a shaft rotated in response to pulsations automatically produced by a traversing brush mounted on the same shaft, said brush contacting with open and closed circuit segments of said sunflower device, by which said shaft is arrested when the alternate succession of impulses is interrupted by the depression of a key, a circuit-correcting device and a unison-arm on the same shaft, and a unison electro-magnet included in parallel circuit with said neutral escapement electro-magnet through said corrector once in each revolution thereof and responding to pulsations of twice the duration of those employed to

actuate said neutral escapement electro-magnet, substantially as and for the purposes set forth.

95. In a printing-telegraph system, the combination, with a battery, a main type-wheel-line circuit, transmitting-keys, their contacts and springs, and a sunflower device, of a neutral escapement electro-magnet responding to alternate makes and breaks of circuit and included in said type-wheel line, its armature, lever, retracting-spring, and wedge-pallets, said electro-magnet operating said wedge-pallets, which drive a star-wheel mounted on a type-wheel shaft and rotated in response to pulsations automatically produced by a traversing brush mounted on the same shaft, said brush contacting with open and closed segments of said sunflower device, by which said shaft is arrested when the alternate succession of impulses is interrupted by the depression of a key, and type-wheels suitably mounted on the same shaft, of a circuit-correcting device and a unison-arm mounted on the said shaft, a unison electro-magnet with its armature, lever, and retracting-spring, said electro-magnet being included in parallel circuit with said neutral escapement electro-magnet through said corrector once in each revolution thereof and responding to pulsations of twice the duration of those employed to actuate said neutral electro-magnet, a printing-hammer, a ratchet electro-magnet in a printing-battery circuit, and its actuated devices, whereby said hammer is operated by a direct blow and then falls back clear of the type-wheels, substantially as set forth.

96. In a printing-telegraph system, the combination, with a double sunflower device, of main lines and batteries for controlling, respectively, the type-wheels and the printing mechanism, transmitting-keys, their contact-springs, electrical devices for connecting said batteries with said lines and sunflower-segments, a neutral escapement electro-magnet included in one of said lines and responding to alternate makes and breaks of circuit, said electro-magnet actuating wedge-pallets for driving a star-wheel mounted on the type-wheel shaft, a revolving brush contacting with alternate open and closed circuit segments of one of said sunflowers connected with the type-wheel line, and by which said type-wheel shaft is arrested when the alternate succession of impulses is interrupted by the depression of a key, which at the same time actuates said electrical devices connecting the line controlling the printing mechanism with a segment of the sunflower in the printing-line, whereby when the type-wheel shaft is arrested another brush thereon contacts with said segment and an impulse is sent over said line, a correcting device and a unison-arm mounted on the said type-wheel shaft, and a unison electro-magnet included in parallel circuit with said neutral escapement electro-magnet through said corrector once in each revolution thereof and responding to pulsations of twice the duration of those employed to actuate said neutral electro-magnet, substantially as and for the purposes set forth.

97. In a printing-telegraph system, the combination, with a double sunflower device, of main lines and batteries for controlling, respectively, the type-wheels and printing mechanism, character-keys, their contact-springs, electrical devices for connecting said batteries with said lines and sunflower-segments, a neutral escapement electro-magnet included in one of said lines and responding to alternate makes and breaks of circuit, said electro-magnet actuating wedge-pallets for driving a star-wheel mounted on said type-wheel shaft, a revolving brush contacting with alternately open and closed circuit segments of one of said sunflowers connected with said line, and by which said type-wheel shaft is arrested when the alternate succession of impulses is interrupted by the depression of a key, which at the same time actuates said electrical devices connecting the line controlling the printing mechanism with a segment of said sunflower in the printing-line, whereby when the type-wheel shaft is arrested another brush thereon contacts with said segment and an impulse is sent over said line, a circuit-corrector and a unison-arm mounted on said shaft, a unison electro-magnet included in parallel circuit with said escapement electro-magnet through said corrector once in each revolution thereof and responding to pulsations of twice the duration of those employed to actuate said neutral electro-magnet, and a relay in said type-wheel line for closing the circuit of said line in parallel circuit through said escapement and unison electro-magnets, substantially as and for the purposes set forth.

98. In a printing-telegraph system, the combination, with a battery and main type-wheel-line circuit, of transmitting-keys with their contact-springs, a sunflower device having segmental contacts included in the circuit of said battery, a neutral escapement electro-magnet included in said type-wheel circuit and responding to alternate makes and breaks of circuit therein, its armature, lever, retracting-spring, wedge-pallets carried by said lever, a type-wheel shaft, and a star escape-wheel mounted thereon, said star escape-wheel being driven and arrested by said wedge-pallets actuated by pulsations through said electro-magnet, substantially as and for the purposes set forth.

99. In a printing-telegraph system, the combination of type-wheel and printing-line circuits and batteries, a double sunflower device in an automatically-operating instrument, one series of segments in said sunflower device connected directly with the type-wheel-line circuit, transmitting-keys with their contact-springs, and traversing brushes mounted on a shaft, said keys and brushes operating to alternately make and break the circuit through said type-wheel line to arrest a type-wheel at a character and at the same time close said printing-line through the other segments of said sunflower device, substantially as and for the purposes set forth.

100. In a printing-telegraph system, the combination, with a battery and main-line circuit, of a central-station pulsator, a battery and printing-line circuit and a detent electro-magnet included in said circuit, terminal-station instruments organized as transmitters and receivers, and escapement electro-magnets therein, the transmitter operating to cause said central-station pulsator to be arrested, while at the same time said pulsator is operating said escapement electro-magnets of two connected instruments through said type-wheel line, substantially as and for the purposes described.

101. In a printing-telegraph system, the combination of a paper-feeding device consisting of a feeding-roller mounted on a shaft pivoted to the paper-carriage, a ratchet-wheel secured centrally to said shaft, a ratchet-lever carrying a pawl, said lever turning loosely on said shaft, and a vibrating feeding-rod held in supports and actuated by an electro-magnet, said ratchet-lever traveling in said feeding-rod and operating to feed the paper between lines at any point in the excursion of said carriage, substantially as set forth.

102. In a printing-telegraph, the combination of the face-plate a^{13}, the fixed guards d^{27} and d^{28}, the shaft D, and the shifting type-wheels D' D^2, so arranged relatively to each other that one type-wheel is shielded by said guard d^{28} while the other wheel is in position to give its impression, substantially as described.

103. In a printing-telegraph, the combination of the ink-roller, the disks of felt d^{23}, compressed between removable heads d^{24}, and a spindle, d^{25}, pivoted in the side frames, d^{13} d^{14}, substantially as described.

104. In a printing-telegraph, the combination, in a paper-feeding device, of a source of electricity and circuit, an electro-magnet in said circuit, a transversely-traveling paper-carriage carrying feed-rollers on a shaft pivoted to said carriage, a ratchet-wheel secured centrally on said shaft, and a lever with its pawl turning loosely on said shaft, a rock-arm pivoted to a fixed support carrying rigid arms, and a feeding-rod on which said ratchet-lever freely slides, an armature for the said electro-magnet with its lever, secured to said rock-shaft, and a retracting-spring operating, when said electro-magnet is energized, to feed the paper to space between two lines at any point in the excursion of said carriage.

105. In a printing-telegraph, the combination of the side bars, J J', shaft j^8, feed-rollers in two sections, j^9, roller j^{10}, ratchet-wheel n^6, ratchet-lever n^{17}, with an elongated aperture, n^{18}, pawl n^4, spring n^7, feeding-rod n^{16}, rigid arms n^{13}, rock-shaft n^3, armature-lever n^2, armature n', retracting-spring n^{10}, electro-magnet N, and fixed support A^2, all arranged substantially as and for the purposes set forth.

106. In a printing-telegraph, the combination, in a paper-carriage, of the side bars, J J', bar J^4, brackets j^{36}, channel-bar J^{14}, friction-rollers j^{34}, and pivotal support j^{35}, all arranged substantially as and for the purposes set forth.

107. In a printing-telegraph, the combination of a printing-hammer, h^{22}, an elastic arm; h^{21}, a bell-crank, h^{18}, ratchet-wheels h^{15} h^{16}, hook-pawl h^{14}, pivoted to a ratchet-lever, h', armature h, and a ratchet electro-magnet, H, in the circuit of a source of electricity, whereby when said electro-magnet is energized the printing-hammer is caused to strike a blow and fall back clear of the paper, substantially as described.

108. In a printing-telegraph, the combination of a paper-carriage and a rack attached thereto, a printing and ratchet electro-magnet, its armature, lever, pawls, and retracting-spring, a dog pivoted to a fixed support, a releasing electro-magnet, its armature, lever, pins, and retracting-spring, a shaft, and means for operating said shaft, a director on the same shaft, a source of electrical energy, and a circuit, said electro-magnets energized in parallel circuits closed through said director, substantially as and for the purposes set forth.

109. In a printing-telegraph, the combination of a type-wheel battery and circuit, a sunflower and character-keys included in said circuit and operating to rotate and arrest a shaft by means of pallets driving a star-wheel mounted on said shaft, type-wheels and a circuit-director mounted on the same shaft, a local battery and circuit, said director being included in said circuit, and a printing electro-magnet with its actuated devices, said electro-magnet being energized by pulsations in said circuit, substantially as and for the purposes set forth.

110. In a printing-telegraph, the combination of a type-wheel-line battery and circuit and a printing-line battery and circuit, electrical devices for controlling a neutral electro-magnet in said type-wheel line, a shaft carrying a circuit-directing device, type-wheels and a star-wheel driven and arrested by said electro-magnet, and a printing electro-magnet energized by said printing-line circuit through said directing device, substantially as and for the purposes set forth.

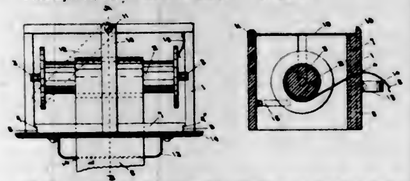
111. In a printing-telegraph, the combination of a type-wheel-line battery and circuit, electrical devices for controlling a neutral electro-magnet in said circuit, a shaft carrying a circuit-directing device, type-wheels and a star-wheel driven and arrested by said electro-magnet, a paper-carriage carrying feed-rollers, a local battery and circuit, an electro-magnet and its actuated devices for operating said feed-rollers, said electro-magnet being energized by said local-battery circuit through said director, substantially as and for the purposes set forth.

112. In a printing-telegraph, the combination, with a paper-carriage and a rack attached thereto, of a ratchet electro-magnet, its armature, lever, pawl, and retracting-spring, a dog on a fixed support, a shaft and means for operating the said shaft, a circuit-director on the same shaft, a source of electrical energy, and a circuit, said electro-magnet being energized by said circuit closed through said circuit-director, substantially as and for the purposes set forth.

113. In a printing-telegraph, the combination, with a paper-carriage, a rack and a counter-rack attached thereto, of a ratchet electro-magnet, its armature, lever, pawl, and retracting-spring, a counter-pawl pivoted to a fixed support and linked to said lever, a dog on a fixed support, a shaft and means for operating said shaft, a circuit-director, a source of electrical energy, and a circuit, said electro-magnet being energized by said circuit closed through said director, substantially as and for the purposes set forth.

114. In a printing-telegraph, the combination, with a type-wheel shaft, type-wheels and a circuit-director on said shaft, and means for controlling said shaft, of a source of electricity and its circuit, an electro-magnet included in said circuit, its actuated devices, and a printing-hammer and its actuating devices, whereby when said electro-magnet is energized by an impulse in said circuit through said circuit-director said printing-hammer is caused to strike a blow and fall back, substantially as described.

377,764. LABEL-CASE. JAMES H. MCCARTHEY, Frankfort, N. Y. Filed Apr. 21, 1887. Serial No. 236,611. (No model.)



Claim.—1. In a label-case having a spool wound with labels, the spool and labels thereon mounted to be rotated in the case, the combination therewith of the stationary and movable sections of the case and the spring for impinging the movable section of the case against the label.

2. In a label-case having a spool wound with labels, the spool being mounted in the case to be rotated, the combination, with the stationary and movable sections of the case, of the spring for maintaining the movable section of the case in contact with the label between the opposing surfaces of the two sections, and the projecting strip of metal having a serrated edge on the front of the case, substantially as set forth.

3. In a label-case, the combination of the stationary and movable front sections thereof, the spring for holding the movable section in contact with the labels between the stationary and movable sections, and the projecting strip of metal having a serrated edge on the front of the case, substantially as set forth.

377,765. WASHING-MACHINE. WILLIAM I. MCCAUSLAND, Temple, Tex. Filed Sept. 29, 1887. Serial No. 251,088. (No model.)



Claim.—1. In a washing-machine, the combination of an outer pan surrounding an inner pan, with an annular chamber between the sides and an inclosed space between the bottoms thereof, and fans provided with mechanism for imparting motion thereto revolving between the bottoms and sides of said pans, substantially as and for the purpose described.

2. In a washing-machine, the combination of an outer pan having an annular flange within its upper edge surrounding an inner pan having an annular flange around its upper edge, an annular chamber between the sides and an inclosed space between the bottoms thereof, and fans provided with mechanism for imparting motion thereto revolving between the bottoms and sides of said pans, substantially as and for the purpose described.

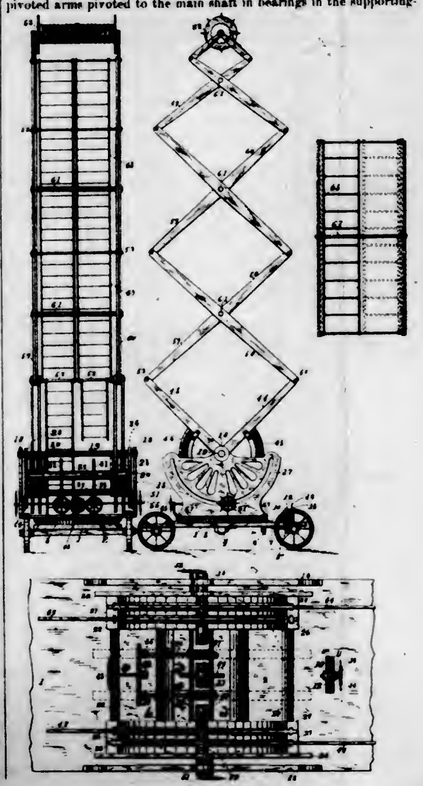
3. In a washing-machine, the combination of the outer pan having annular flange within its upper edge and being provided with projections having handles pivoted thereto, said handles being pivotally attached to claws engaging the annular flange of the inner pan, the said inner pan being surrounded by the said outer pan and forming therewith an annular chamber between the sides and an inclosed space between the bottoms thereof, and fans provided with mechanism for imparting motion thereto revolving between the bottoms and sides of said pans, substantially as and for the purpose described.

4. The combination of an outer pan, an inner perforated pan, revolving blades between the inner pan and the outer pan, and a rubber packing or joint between the upper edges of the pans, substantially as and for the purpose described.

5. The combination of an outer pan, an inner perforated pan, a rubber packing or joint between the upper edges of the pans, a clamping device for holding the pans together, and revolving blades arranged between the pans, as and for the purpose described.

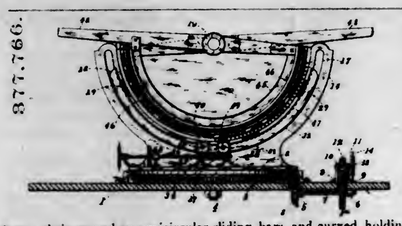
6. The combination of an outer pan, an inner pan provided with perforations inclined at an angle to the radius of the circle in which the water revolves, and revolving blades or beaters arranged between the pans, substantially as and for the purpose described.

377,766. FIRE-ESCAPE. LEONARD J. MESSER, Buffalo, N. Y. Filed May 10, 1887. Serial No. 237,675. (No model.)



Claim.—1. In a fire-escape consisting in part of a system of pivoted levers or arms in the form of a lazy-tongs, the lower pairs of pivoted arms pivoted to the main shaft in bearings in the supporting-

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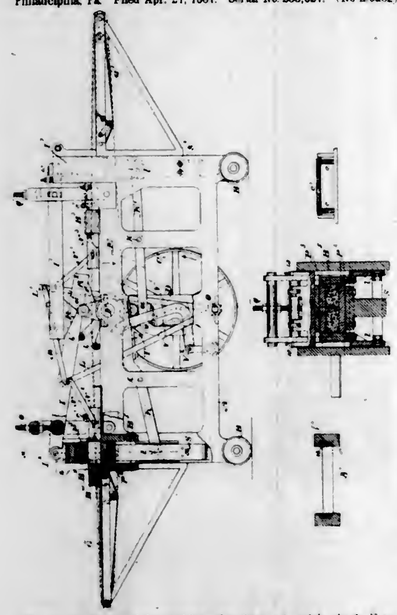


frame, their curved or semicircular sliding bars, and curved holding-ribs and gear-teeth, in combination with correspondingly-grooved semicircular guideways, in which the curved holding-ribs move or slide, gear-wheels on the shafts 49 and 50, for gearing in with the teeth on the curved sliding bars, and a means consisting of hand-wheels on said shafts for operating them, whereby all the parts are securely held in place while free to be easily moved, substantially as described.

2. In a fire-escape consisting in part of a system of pivoted lever-arms in the form of a lazy-tongs, the two lower pairs of arms pivoted to the main shaft in bearings in the supporting-frame, in combination with their curved or semicircular sliding bars, curved holding-ribs, and gear-teeth, corresponding semicircular slideways for receiving and holding the said sliding bars, and mechanism for gearing in with the teeth on the curved sliding bars, a means consisting of hand-wheels for operating them, and a means consisting of the ratchet-wheels and detent-pawls for holding the apparatus at any point it may be elevated, substantially as described.

3. In a fire-escape, the pairs of pivoted bars composing the extensible frame, in combination with the strengthening and wearing plates 68, 69, and 70, the plate 70 having the projecting portion 71, and the plate 69 having the projecting rim 72, as and for the purpose described.

377,767. RECIPROCATING BRICK-MACHINE. JOSEPH P. MILLER, Philadelphia, Pa. Filed Apr. 21, 1887. Serial No. 235,627. (No model.)



Claim.—1. In a brick-machine, the frame A, with shaft F and operating mechanism, substantially as described, for said shaft, a series of cam-arms secured to said shaft and having rollers thereon, the pivoted levers I I', with weighted cam-surfaces, and plungers I^2 I^2, the said plungers being secured to the outer ends of said levers, said parts being combined substantially as described.

2. In a brick-machine, the frame A, with shaft F and operating mechanism therefor, in combination with a series of cam-arms mounted on said shaft and having rollers, the levers I I', with weighted cams, the plungers I^2 I^2, and the pivoted levers K K', with the brick-forming chambers B^3, substantially as described.

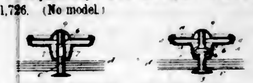
3. In a brick-machine, the frame A, with the shaft F and operating mechanism therefor, in combination with a series of cam-arms with rollers thereon, the levers I I', with cam-pieces, and plungers I^2 I^2, the levers K K, with brick-forming chambers B^3, the levers L L', pivoted at O and connected by link M, the links N N', and shoes N^2 and N^3 substantially as described.

4. In a brick-machine, the shaft F, suitably mounted and having operating mechanism, substantially as described, in combination with a series of cam-arms having rollers, the pivoted levers I I', with weighted cams, the levers K K', with brick-forming chambers B^3, the levers L L', pivoted at O and connected by link M, the shoes N^2 and N^3 and connecting-links N N', and the pivoted bell-crank levers V V', with rollers, substantially as and for the purpose set forth.

5. The combination of the brick-forming chamber with the sliding shoes and the brick-shaping rollers, and mechanism, substantially as described, for operating said parts.

6. In a brick-press, the combination of the plunger-heads I^2 I^2, sliding brick-forming chamber B^3, pivoted levers I K, shaft F, rollers *a a'*, connected to arms attached to said shaft, and levers L L', having links M N, the guide-shoe N^2, and roller *b*, connected with the shaft, substantially as described.

377,768. BUTTON. JOSEPH P. NOYES, Binghamton, N. Y., assignor to Joseph P. Noyes & Co., same place. Filed Oct. 7, 1887. Serial No. 251,726. (No model.)



Claim.—1. The fastening-shank for buttons, consisting of a metallic pin having a head at one end and a solid point, and an opening between its head and point, substantially as described.

2. The fastening-shank for buttons, consisting of a metallic pin having a head at one end and a solid point, and an elongated opening between its head and point, substantially as described.

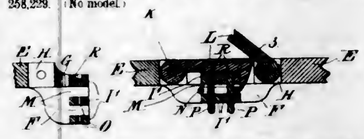
3. The combination, with the button-body, of the fastening-shank *c*, having the head S at one end, a solid point, and an opening, 6, between its head and point, substantially as described.

377,769. COMB. JOSEPH P. NOYES, Binghamton, N. Y., assignor to Joseph P. Noyes & Co., same place. Filed Oct. 7, 1887. Serial No. 251,727. (No model.)



Claim.—In a metal-backed comb, the back *c*, having edges 3 to engage with the channels 2 formed in the back portion, *d*, and having the projecting flanges 4 overlapping the portion *d* to the bases of the teeth, substantially as described.

377,770. CAR-COUPLING. GEORGE D. PEARSON, Montreal, Quebec, Canada, assignor of one-half to George Edward Drummond, trustee, and Robert Cowans, both of same place. Filed Dec. 17, 1887. Serial No. 258,229. (No model.)



Claim.—1. As an improved article of manufacture or construction, a bunter-body having extensions and bridge-pieces, as described, said bridge-pieces being provided with holes for the introduction of the coupling-pin, and with a space between them for the coupling-link, said space for the link being situated (as shown and described) in relation to the body of the bunter so that the link may be placed therein from the back thereof, the whole substantially as described and shown.

2. As an improved article of manufacture or construction, a bunter having extensions and bridge-pieces, said bridge-pieces being provided with holes and counterbore for the reception of the coupling-pin and head thereof, and also provided with a space between them for the reception of the coupling-link, the said space for the link being relatively so situated (as shown and described) that the said link can be placed therein from the back thereof, furthermore, the said bunter being provided with a recess or opening, H, and pivot K, passing through the one end of the pawl and attaching the pawl thereby, and with said pawl, the whole substantially as described and shown.

3. The combination, in car-couplings, of a bunter-body, E, having extensions F, and bridge-pieces I', provided with holes O, and having space M, situated (as described and shown) relatively so that the link N may be placed therein from the back thereof, the said bunter having the said parts, with another bunter similarly constructed, and with pins P and link N, the whole substantially as described and shown.

4. The combination, in car-couplings, of the bunter-body E, extensions F, and bridge-pieces I, arranged to form the spaces G, H, and M, and the bridge-pieces I' being furthermore provided with the holes O and counterbore R, the said space M being relatively so situated to the body of the bunter that the link N may be passed and placed therein from the back thereof, pawl L, pivot-bolt K, by which the said pawl is attached and pivoted in the space H, one bunter having the said parts with another bunter similarly constructed, and with coupling-pins P P and link N, the whole substantially as described and shown.

377,771. WINDOW-SHUTTER. JOSEPH R. PHILLIPS, West Ashford, Conn. Filed July 15, 1887. Serial No. 244,367. (No model.)



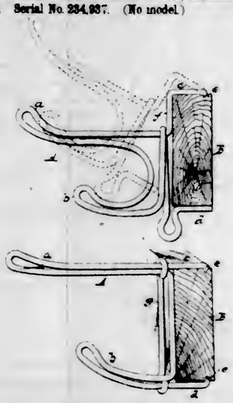
Claim.—1. An improved shutter having one or both of its end rails beveled and provided with a notch, I', bearing-plate *i*, and a spring catch or hook, substantially as and for the purpose described.

2. The combination, with a window-frame having an extended recess or box, of a spring located within said recess, and a series of sliding shutter-sections provided with beveled rails and with catch hooks and notches, as described, whereby they are adapted to automatically and positively engage each other for insuring their proper withdrawal from said recess, substantially as set forth.

3. An improved shutter-section having one or both of its end rails beveled and provided with a notch, I', bearing-plate *i*, spring catch or hook, and the spring-pressed bearing-blocks covered with a cushioning material and adapted to yield relatively to said shutter-section, substantially as specified.

4. The combination, with the window-frame and its extension recess or box and the vertical tracks or beads, of the shutter-sections provided with the beveled rails, catch hooks and notches, the cushion-blocks with their backing-springs, adjusting screws and grooves, the pressure-spring located within the extension-recess, and the bearing-plates for protecting the catch-notches, all substantially as and for the purpose specified.

377,772. HOOK. CHRISTOPHER C. PIERCE, Herkimer, N. Y. Filed Apr. 15, 1887. Serial No. 234,937. (No model.)



Claim.—1. The coat-hook herein described, provided with the two rearwardly-extending supporting-arms, one or both of said arms being elastic, substantially as and for the purpose set forth.

2. As an improved article of manufacture, the bent-wire coat-hook herein described, provided with two rearwardly-extending clamping-arms for attachment of the hook to its supporting-bar.

3. As an improved article of manufacture, the bent-wire coat-hook herein described, provided with two rearwardly-extending clamping-arms, one or both being elastic, for the attachment of the hook to its supporting-bar.

4. The coat-hook herein described, provided with the rearwardly-extending supporting-arms, one or both being elastic, and one of which is provided with a tooth or spur, *e*, as and for the purpose set forth.

5. The coat-hook herein described, provided with the rearwardly-extending supporting-arms *c d*, one or both being elastic, and a device, substantially such as shown and described, connecting the two arms and serving to draw them together.

6. In combination with a bar or support, B, the swinging coat-hook provided with two rearwardly-extending clamping-arms, *c* and *d*.

7. A coat-hook made of a single piece of wire bent to proper form and comprising supporting-hooks *a b*, rearwardly-extending arms *c d*, a tooth or spur, *e*, and an upright portion, *f*.

377,773. COAT-HOOK. CHRISTOPHER C. PIERCE, Herkimer, N. Y. Filed Dec. 10, 1887. Serial No. 257,536. (No model.)



Claim.—1. As an improved article of manufacture, a bent wire coat-hook provided with a spur, *e*, to engage the upper face of a supporting-bar, and with a rearwardly-extending spur, as *g*, to engage the front face of the said supporting-bar.

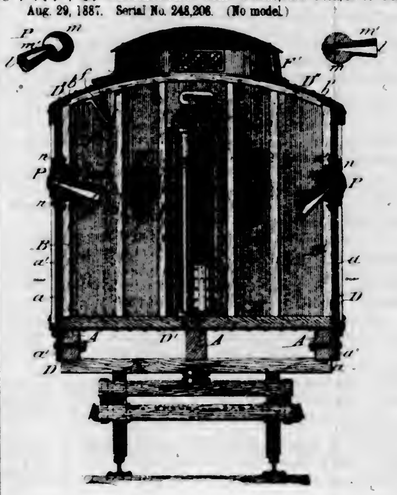
2. The herein-described coat-hook, composed of a single piece of wire comprising hooks *a* and *b*, a rearwardly-extending arm, *d*, provided with a tooth or spur, *e*, to engage the upper face of the supporting-bar, and a spur, *g*, extending rearwardly in the same direction with the arm *d* to engage the front face of the supporting-bar.

3. The herein-described wire coat-hook, composed of a single piece of wire bent to form the hooks *a* and *b*, the upper arm, *a'*, of the hook *a* being bent upward and rearward to form the arms *c d*, and the lower arm, *b'*, of the hook *b* being extended upward, bent over the top of the arm *a'*, and thence downward to form an arm, *f*, and spur *g*, all substantially as shown.

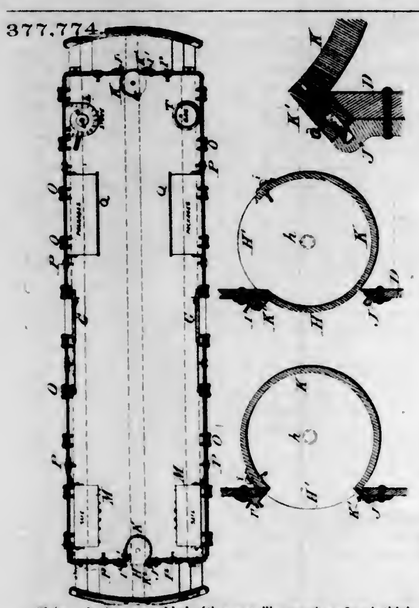
4. A wire coat-hook provided with a rearwardly-extending arm, as *d*, to engage the upper face of a supporting-bar, and provided also with a downwardly and rearwardly inclined stud, *g*, to engage the front face of the bar.

5. A wire coat-hook provided with a rearwardly-extending arm, *d*, to engage the upper face of the supporting-bar, and with a rearwardly-extending barbed stud, *g*, to engage the front face.

377,774. EXPRESS-CAR. JOHN W. POST, New York, N. Y. Filed Aug. 29, 1887. Serial No. 248,206. (No model.)



377,774.



Claim.—1. A car provided with a metallic covering of such thickness and material as to resist the impact of rifle-shot and provided with platforms and rotating hollow cylindrical end doors opening from said platform to the interior of the car, as set forth.

2. A car provided with end platforms and hollow cylindric rotating doors adapted to give entrance and exit between the interior of the car and said platforms, as set forth.

3. A car provided with hollow cylindrical rotating doors turning upon pivots at top and bottom and provided with an opening in one side to allow entrance and exit to and from the interior of said door, substantially as set forth.

4. A car provided with self-closing ports, said ports having an opening through them and socketed in the walls of the car, substantially as described.

5. As an improvement in railway-cars, a car having a sheet of metal of sufficient thickness to resist the impact of a rifle-ball inclosed within the thickness of its outer wall, in combination with a series of automatically-closing ports inserted in said wall, as set forth.

6. As an improvement in railway-cars, the combination of the car-walls inclosing a sheet of metal, the automatically-closing ports inserted in said walls, and the rotating car-doors, all adapted and arranged to give protection to the persons and valuables within said car, as specified.

7. As an improvement in railway-cars, the combination of the perforated car-walls, the flanged collars secured to said walls, and the ports provided with a globular outer end adapted, in connection with the car-walls and flanged collars, to form a ball-and-socket joint, as and for the purpose set forth.

8. A metallic-cased car, in combination with turrets for the admission of light projecting above the roof of said car and provided with metallic shutters adapted to securely close the openings in the same, substantially as set forth.

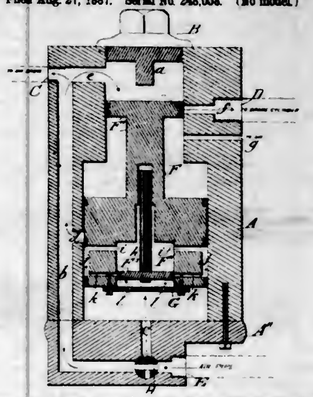
9. A car provided with turrets F, projecting above its roof, the openings in said turrets being closed by pivoted metal slats *e*, attached to a handled rod, *e'*, projecting downward within the car, and provided with stops by which the position of the slats may be controlled, as specified.

10. As an improvement in safety-cars for express matters, a metal-cased car provided with guarded entrances, the turrets F, for the admission of light, and the turrets F‴, for the purpose of ventilation arranged upon the car-roof, as specified.

11. As an improvement in the construction of safety-cars, the combination, with a tubular car-frame, of the clamps O and side walls of the car, said clamps being adapted to secure the side walls to the frame, as specified.

12. As an improvement in safety-cars, the combination, with the hollow cylindric rotating doors provided with flange K', of the beveled casing having covering-strip J riveted thereto, and a suitable lock for securing the flange K' to said strip when desired, substantially as set forth.

377,775. **DEVICE FOR APPLYING PRESSURE TO RAILWAY-BRAKES.** NATHANIEL J. PRITCHARD and JAMES S. TEMPLIN, Milnes, assignors of one-half to Joseph H. Sands and David W. Flickwir, Roanoke, Va. Filed Aug. 27, 1887. Serial No. 248,058. (No model.)



Claim.—1. In an automatic device for applying and relieving the air-pressure to air-brakes, a double-headed piston, and a third piston-head arranged within the double-headed piston, in combination with an inclosing-case provided with properly-located ports, all arranged and adapted to operate substantially as set forth.

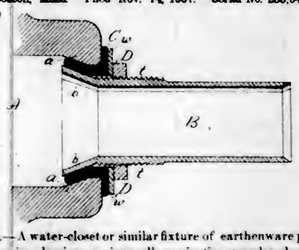
2. In an automatic device for applying and relieving the air-pressure to air-brakes, the combination, with a cylinder having ports leading to the air-drum, main pipe, and brake-cylinder, and suitable passages, located as described, connecting these ports with the interior chamber of the cylinder, and also an exhaust-passage, of a piston having two heads located and operating within said chamber, all the parts being combined and arranged for joint operation, substantially as and for the purpose set forth.

3. The combination of a piston having two heads, as stem F, with heads F' and F‴, with an inclosing-case, as A', having ports C, D, and E, passage *b* between ports C and E, having offshoot passages *c d e*, communicating with the central chamber, passage *f*, and exhaust *g*, all arranged to operate substantially as described.

4. The combination, with the cylinder having ports C, D, and E, passage *b*, with offshoot passages *c d e*, passage *f*, exhaust *g*, and valve-plug H, of a piston operating within the central chamber of the cylinder to accomplish the results specified, substantially as set forth.

5. The piston F, having heads F' and F‴, and head F‴, operating within head F‴, together with suitable ports and passages, in combination with cylinder having ports C, D, and E, substantially as described.

377,776. **COUPLING FOR WATER-CLOSETS.** J. PICKERING PUTNAM, Boston, Mass. Filed Nov. 14, 1887. Serial No. 255,049. (No model.)

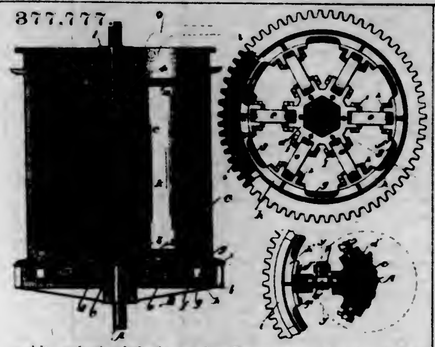


Claim.—A water-closet or similar fixture of earthenware provided with an opening having an inwardly-projecting annular shoulder, in combination with a threaded metal pipe inserted in said opening and having an outwardly-projecting annular shoulder, a clamping-nut on said threaded pipe, and an elastic gasket clamped between said annular shoulders and between the rim of the said opening in the earthenware and the nut, substantially as described.

377,777. **FRICTION-CLUTCH.** JOSEPH W. V. RAWLINS, Hancock, Mich. Filed June 6, 1887. Serial No. 240,391. (No model.)

Claim.—1. The combination, with the supporting-shaft and with the driver-wheel having a friction-flange thereon, of the driven drum

377,777.



and its projecting hub, the toggle-collar set upon said projecting hub, the toggle-arms secured to said collar, and the toggle-blocks carried by said arms and having friction-faces to engage with the flange of the driver-wheel, substantially as described.

2. The combination, with the supporting-shaft, of the drum and its projecting hub mounted thereon, the collar set upon said hub, the toggle-arms secured to said collar, and the toggle-blocks carried by said arms, substantially as described.

3. The combination, with the supporting-shaft and with the drum mounted thereon, and having a projecting hub and recessed rim, of the collar set upon said hub, the toggle-arms secured to said collar, and the toggle-blocks carried by said arms and extending through the recesses in the flange of said drum, substantially as described.

4. The combination, with the supporting-shaft and with the driver-wheel having an inner friction-flange, of the driven drum having a projecting hub and recessed rim, the toggle-collar set upon said hub, the toggle-arms secured to said collar, and the toggle-blocks carried by said arms and extending through the recesses in the rim of said drum, substantially as described.

5. In friction-clutches, the combination, with the circumferential supporting-blocks, of the friction-segments secured thereto, and having limited endwise shift to compensate for the thrust of the supporting-blocks, substantially as described.

6. In friction-clutches, the combination, with the toggle-collar and the series of arms extending therefrom, of the supporting-blocks sustained thereby and the friction-segments bolted to said blocks with limited shift therein, substantially as described.

7. The combination, with the drum having the projecting hub and recessed rim, of the toggle-collar set upon said hub, the toggle-arms secured to said collar, the supporting-blocks carried by said arms, and the friction-segments extending through the recesses of said rim and secured to said blocks, substantially as described.

8. The combination, with the supporting-shaft and with the drum mounted thereon and having a projecting hub, of the shipper-collar, the connecting-rods, the toggle-collar set upon said hub, the toggle-arms secured to said collar, and the friction-blocks carried by said arms, substantially as described.

377,778. **BRICK-MACHINE.** ROBERT M. ROSS, St. Louis, Mo. Filed June 23, 1886. Serial No. 206,406. (No model.)

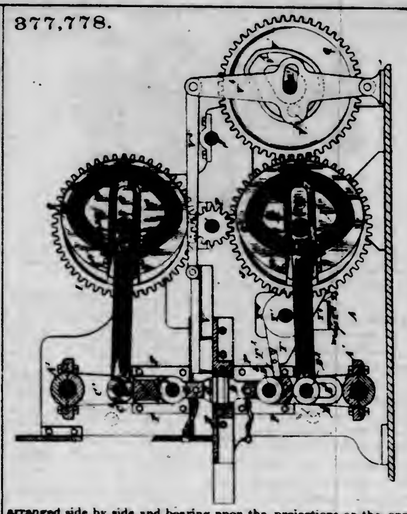
Claim.—1. In a brick-machine, the combination, with the plunger, of toggle-bars for operating it, a pitman connected to the toggle-bars, and a cam for imparting reciprocating motion to said pitman, said cam and the other parts being so disposed that the point of contact between the pitman and cam approaches the center of motion of the cam as the toggle-bars move into line, substantially as set forth.

2. In a brick-machine, the combination, with the plunger and toggle-bars for operating it, of a pitman connected directly to said toggle-bars and having a lateral projection therefrom, and a wheel having a cam-groove in which said projection fits, the cam-groove and the toggle-bars being so disposed that the projection will be moved toward the center of motion of the wheel as the toggle-bars move into line and pressure increases, substantially as set forth.

3. In combination with the plunger of a brick or similar machine, the toggle-bars connecting the plunger to a fixed object, pitman connected to the toggle-bars, a projection on the pitman, and cam-wheel for operating the pitman, the bearing of the cam upon the projection of the pitman approaching the center of the wheel as the plunger enters the mold, as set forth.

4. In combination with the plunger of a brick or similar machine, the toggle-bars connecting the plunger to a fixed object, pitman connected to the toggle-bars, projections on the pitman, and cam-wheels

377,778.



arranged side by side and bearing upon the projections on the opposite sides of the pitman, substantially as and for the purpose set forth.

5. In combination with the upper and lower plungers of a brick-machine, toggle-bars connecting the plungers to the frame of the machine, pitmen connected to the toggle-bars, projections on the pitmen, twin upper and lower cam-wheels provided with grooves to receive the projections, and which act to operate the pitmen and toggle-bars, substantially as shown and described.

6. In combination with the upper and lower plungers of a brick or similar machine, toggle-bars connecting the plungers to the frame of the machine, pitmen connected to the toggle-bars, upper and lower twin cam-wheels provided with grooves to receive the projections on the pitmen, and which act to operate the pitmen and toggle-bars, and straps connecting the pitmen to the axles or journals between each upper and lower pair of wheels, substantially as shown and described, for the purpose set forth.

7. In combination with the plungers of a brick or similar machine, toggle-bars connecting the plungers to the frame of the machine, one of the toggle-bars being provided with a slot, B^4, pitmen connected to the toggle-bars, cam-wheels for operating the pitmen, adjustable levers pivoted to the frame of the machine and engaging beneath the lower plunger, and pins on the lower cam-wheels for coming against the levers and lifting the lower plunger to eject the bricks from the mold, substantially as shown and described, for the purpose set forth.

8. In combination with the plungers of a brick or similar machine, toggle-bars connecting the plungers to the frame of the machine, pitmen connected to the toggle-bars, upper and lower combined cog and cam wheels for operating the pitmen and toggle-bars, combined cog and cam wheel meshing into one of the pitman-wheels, charger, and arm or lever connected to the charger and operated by the charger cam-wheel, substantially as and for the purpose set forth.

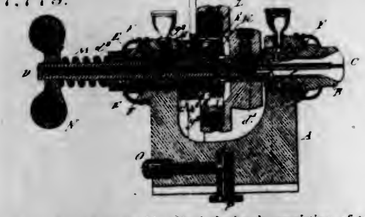
9. The combination, with the plungers and means for operating them, of the pivoted lever T, engaging at one end with the lower plunger and engaged at the other by a moving part for rocking it on its fulcrum, and a vertically-adjustable block to which said lever is fulcrumed, substantially as set forth.

10. In combination with the plunger of a brick or similar machine, toggle-bars connecting the plungers to the frame of the machine, one of the toggle-bars being provided with a slot, B^4, mechanism for operating the toggle-bars, levers secured to a shaft made vertically adjustable by sliding boxes and wedges and engaging beneath the lower plunger, and mechanism for operating the levers to lift the plunger and eject the bricks from the mold, substantially as set forth.

377,779. **LATHE.** CHARLES H. RUSSON, Springfield, Ill. Filed May 2, 1887. Serial No. 237,016. (No model.)

Claim.—1. The arrangement, in a lathe, of the drawing-spindle, the revolving taper bushing, the coiled spring, the hand-wheel, the stationary collar, and the operating-lever, in such relation to each other that the force used in compressing the spring shall be equally borne by the rear end of the main spindle and the forward end of the revolving taper bushing, substantially as shown, and for the purpose specified.

377,779.



2. A revolving taper bushing for lathe-heads, consisting of two parts—viz., a conical ring or thimble and a flanged washer—substantially as shown, and for the purpose specified.

3. A cam-faced lever for lathes, adapted to the double purpose of operating the chuck and the brake, combined and coacting with the stationary collar, the drawing-spindle and connected ring and chuck, and the main spindle and connected pulley, substantially as shown and described, and for the purpose stated.

4. A brake for lathes consisting of a cam-faced lever having a hub coaxial with and supported by a stationary collar fitting loosely around the main spindle, a sliding ring fitting loosely around, and a pulley secured to said main spindle, all so arranged that downward pressure on the lever shall cause the ring to slide on the spindle, and the connecting-screws to press against the end of slot in main spindle, so as to retard or to stop the motion of said main spindle and connected pulley, substantially as shown and described, and for the purpose stated.

5. A collar for lathe-heads having on one of its faces projecting lugs fitting loosely in recesses on the arm of the lathe-head and on its other face projecting pins, in combination with the lathe-head, the main spindle, the drawing-spindle and connected ring, and the cam-faced lever, substantially as shown, and for the purpose stated.

6. A brake-ring for lathes having in one of its faces a circular recess sliding on the main spindle and connected to the drawing-spindle, combined and coacting with the stationary collar, the cam-faced lever, and the drawing-spindle, substantially as shown and described, and for the purpose stated.

7. A lever-standard for lathes consisting of a vertical stem and inclosed spring supporting a plunger, substantially as shown, and for the purpose stated.

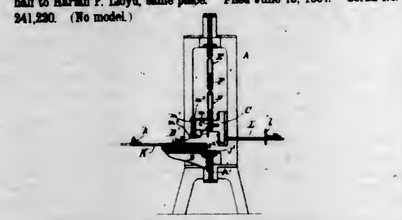
8. The combination, in a lathe, of the main spindle, the hollow drawing-spindle, the coiled spring, and the hand-wheel, substantially as shown, and for the purpose stated.

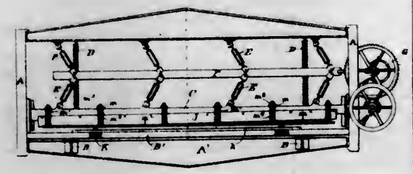
9. The combination, in a lathe, of the main spindle, the hand-wheel, the hollow drawing-spindle, and the connected ring, substantially as shown and described, and for the purpose stated.

10. The combination, in a lathe, of the stationary collar and cam-faced lever, with the ring, the hollow drawing-spindle, and the hand-wheel, substantially as shown, and for the purpose stated.

11. A hollow drawing-spindle for lathes having its forward end internally threaded and fitted with a perforated nut, substantially as shown and described, and for the purpose stated.

377,780. MACHINE FOR SHEARING OR PUNCHING SHEET METAL. LOUDLEY L. SAGENDORPH, Cincinnati, Ohio, assignor of one-half to Harlan P. Lloyd, same place. Filed June 13, 1887. Serial No. 241,220. (No model.)





Claim.—1. In combination with the bar C and toggle-arm mechanism for operating the same, the shearing-bar J, angle-iron J', and shearing-bar J^3, and cross-brace A', substantially as and for the purposes specified.

2. In combination with the bar C and toggle-arm mechanism for operating the same, the shearing-bar J, cross-piece A', table B, angle-iron J', lower shearing-bar, J^3, and clamping mechanism, substantially as and for the purposes specified.

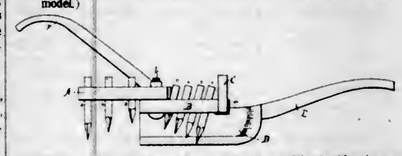
3. In combination with the bar C and toggle-arm mechanism for operating the same, the shearing-bar J, cross-piece A', table B, angle-iron J', lower shearing-bar, J^3, bars *m*, rods *m'*, nuts m^2, springs m^4, and clamping-bar m^3, substantially as and for the purposes specified.

4. In combination with the bar C and toggle-arm mechanism for operating the same, the shearing-bar J, cross-piece A', table B, angle-iron J', lower shearing-bar, J^3, bars *m*, rods *m'*, nuts m^2, springs m^4, and clamping-bar m^3, arms L, and gage *l*, and arms K, and gage *k*, substantially as and for the purposes specified.

5. In combination with bar C and toggle-arm mechanism for operating the same, shearing-bars J J^3, and angle-iron J', and punches H, and dies I, the punches and dies being interchangeable with the angle-iron and shearing-bars, substantially as and for the purposes specified.

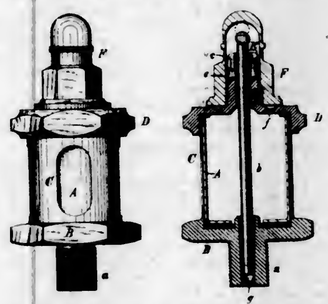
6. In combination with the bar C and toggle-arm mechanism for operating the same, the cross-brace A', shearing-bars J J^3, angle-iron J', and punches H, and dies I, the punches and dies being interchangeable with the angle-iron and shearing-bar, substantially as and for the purposes specified.

377,781. CULTIVATOR AND SCRAPER COMBINED. JAMES A. SCROGGS, near Randolph, assignor of one-half to George W. Stevenson, Sherman Township, Kans. Filed Sept. 6, 1887. Serial No. 248,985. (No model.)



Claim.—In a cultivator, the combination, with a bed having graduated harrow-teeth projecting through it and runners secured to the under side thereof, of a front board secured to the forward edge of the bed adapted to reduce the ridges between the rows, and the adjustable wings pivoted to the bed and provided with graduated harrow-teeth shorter than the harrow-teeth on the bed, substantially as shown and described.

377,782. OIL-CUP. EDWARD P. SHAFFER, Rochester, N. Y. Filed May 31, 1887. Serial No. 239,833. (No model.)



Claim.—1. The combination, with the oil-cup having the upwardly-projecting annular boss or ring with slots of varying depth in its upper edge, of a rod or plunger extending through the cup and into the outlet-passage, provided with the pin or projection thereon resting in the said slots, and the removable cap or cover for limiting the upward movement of the rod or plunger, substantially as described.

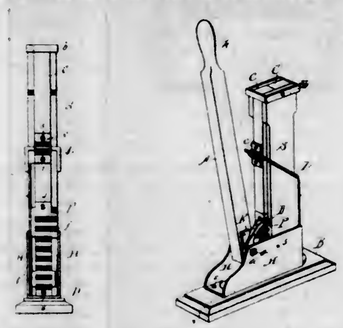
2. The combination, with an oil-cup having the upwardly-projecting annular boss or ring with slots of varying depth in its upper edge, of a rod or plunger extending through the cup and into the outlet-passage, provided with the pin or projection resting in the said slots, and the flat tapering surface *h* within the outlet-passage, substantially as described.

377,783. ROTARY TOOL-DRIVER. GEORGE F. SHAVER, New York, N. Y., assignor to the Shaver Corporation, same place. Filed Sept. 3, 1887. Serial No. 248,707. (No model.)



Claim.—The tool-driving handle A, ferrule K, and driving-shaft B, in combination with the rotating clutch E, composed of an apertured shaft carrying wheel with angular lugs I I I I, disposed upon its periphery and recessed to support friction-pins J J J J, arranged to engage with the ferrule K when the handle is depressed and to disengage when raised, substantially as herein set forth and described.

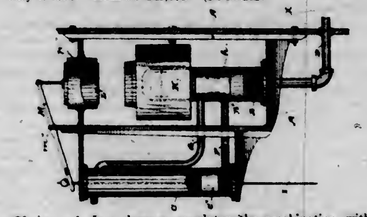
377,784. CARRIAGE-LIFTING JACK. DAVID SIMMONS, Northville, Mich. Filed Oct. 15, 1887. Serial No. 252,495. (No model.)



Claim.—1. In a wagon-jack, the combination of the base, the metal case attached thereto, the side rails, the plungers C C', located between said side rails, the toothed plate P, attached to the plunger C, the toothed plate Z, attached to the plunger C', the link coupling said plungers, the hand-lever having the toothed head which engages with the teeth of the plate P, the dog D, and the head E, having lugs *e e'*, engaging with said dog, as and for the purposes specified.

2. In combination with the base, the metal case, the side rails, the metal band *d*, the plungers C C', each having a toothed plate, as shown, the link L, pivoted to the plunger C, the lever A, having the toothed head E, with lugs *e e'*, and the dog having the nose *m*, said dog and lever being pivoted to the metal case, substantially as and for the purposes specified.

377,785. DAMPER-REGULATOR. JOSEPH ST. MARY, San Francisco, Cal., assignor of one-half to Peter St. Mary, same place. Filed July 7, 1887. Serial No. 243,700. (No model.)



Claim.—1. In a damper-regulator, the combination, with the plunger of the main cylinder B, having steam-pressure from the boiler beneath it, and adapted by its movements to control the admission of steam beneath the piston of the auxiliary cylinder C and is discharged therefrom, of the weighted cap K and the auxiliary weight L, and suitable rods and levers, I and M, connecting the piston of the auxiliary cylinder with the said weight, all arranged substantially as described.

2. In a damper-regulator, the combination of the main cylinder B, plunger B^x, auxiliary cylinder C, with piston C^x, adapted by its movements to operate a damper, the connecting-pipe, the exhaust-passages, and principal weight K and auxiliary weight L, applied to the plunger B^x, and suitable rods and levers connecting the rod of the contrary piston with the weights, substantially as described.

3. In a damper-regulator, a main piston or plunger, B^x, adapted by its movements to control the inlet and exhaust of steam-pressure to and from an auxiliary piston, C^x, in combination with suitable rods and levers connecting the auxiliary piston with a damper-operating shaft, and weight K and auxiliary weight L, acting upon the main piston, and suitable means connecting the auxiliary piston with the weight, substantially as described.

377,786. MAT FOR HORSE-STALLS. LEROY S. STOWE, Newry, Me. Filed Sept. 1, 1887. Serial No. 248,451. (No model.)



Claim.—1. The combination of the wooden strips united by the transverse rods and bound by the nuts thereon, with the intermediate metal strips alternating with said wooden strips, said metal strips also receiving the transverse rods and having legs to support the mat above the floor, all substantially as hereinbefore set forth.

2. In a mat for horse-stalls, a frame-work consisting of the rods *a*, provided with screw-threads and nuts on their ends, and having a larger diameter in the middle to take supplemental threads and nuts *h*, the wooden bars *b*, and the plates *c*, having the downward-projecting legs *d*, all substantially as and for the purposes hereinbefore set forth.

3. The combination of the wooden strips united by transverse rods and bound by nuts thereon with the intermediate metal strips alternating with said wooden strips, said metal strips also receiving the transverse rods and having legs to support the nut above the floor, and being wound with bedding so that ends of the bedding around each iron strip project upon either side of said strip and between it and the adjacent wooden bars, all substantially as hereinbefore set forth.

377,787. GAS-BURNER. CORNELIUS B. TODD, Pittsburg, Pa., assignor, by direct and mesne assignments, to the Campbell Burner Company, (Limited,) same place. Filed Oct. 5, 1886. Serial No. 215,345. (No model.)



Claim.—1. The combination of the gas-burner 2, a surrounding casing, 6, and perforated air-heating plates in the chamber inclosed by the casing 6, extending across the same, said gas-burner being arranged in the middle of said chamber and being isolated from heat-conducting surfaces, substantially as and for the purposes described.

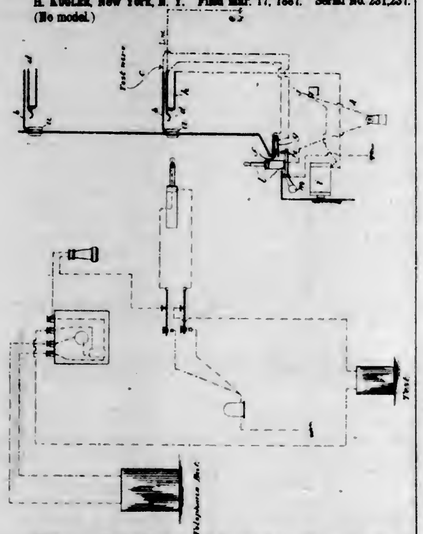
2. The combination of the gas-burner 2, a casing, 6, surrounding the burner, and perforated plates in the chamber inclosed by the cas-

ing 6, extending across the same below the base of the burner 2, said gas-burner being arranged in the middle of said chamber and isolated from heat-conducting surfaces, substantially as and for the purposes described.

3. The combination of the gas-burner 2, a casing, 6, surrounding the burner, and perforated plates in the chamber inclosed by the casing 6, extending across the same below the base of the burner 2, said gas-burner being arranged in the middle of said chamber and isolated from heat-conducting surfaces, and perforated plates arranged in said chamber above the base of the burner, substantially as and for the purposes described.

4. The combination of the gas-burner 2, a surrounding casing, 6, perforated air-heating plates in the chamber inclosed by the casing 6, extending across the same, said gas-burner being arranged in the middle of said chamber and being isolated from heat-conducting surfaces, and a chimney-gallery, 12, provided with perforations, substantially as and for the purposes described.

377,788. TELEPHONE SYSTEM. EDWARD P. THAYER and GEO. H. KUGLER, New York, N. Y. Filed Mar. 17, 1887. Serial No. 231,237. (No model.)



Claim.—1. In a multiple-switch-board system, the combination of a switch having one of its terminals connected with the main line and its other terminal connected with the test-wire, and a subscriber's plug normally carried by the operating-lever of said switch, the said main line normally including the subscriber's instruments.

2. In a multiple-switch-board system, the combination of the usual spring-jack and an open switch normally carrying a subscriber's plug, and in circuit with that terminal of said spring-jack which is connected to the main line and with the tube or mouth-piece of the spring-jack, said tube being electrically connected to the test-wire.

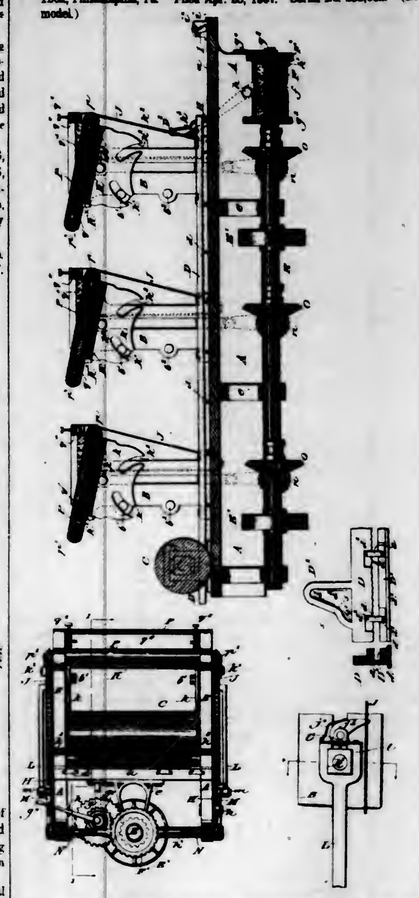
3. In a multiple-switch-board system, the combination of a main line including a subscriber's instruments, a test or dead wire having electrical connections with duplicate spring-jacks, and an automatic circuit-controller independent of said spring-jacks and normally maintained open by a subscriber's plug, said controller being in circuit with the test-wire and with the main line.

4. In a multiple-switch-board system, the combination of a subscriber's plug normally separating two electric contact-points, a main line, a test-wire, and an electrical connection between the test-wire and one of the said contact-points, and another electrical connection between the main line and the other contact-point.

5. In a multiple-switch-board system, the combination of a subscriber's plug, an electric connection independent of a circuit-interrupter between the said plug and the main line, a spring-jack, an open switch normally carrying the subscriber's plug and in circuit with the test-wire, with said spring-jack, and with the main line, and an operator's plug in circuit with the operator's instrument and normally in an open local circuit.

6. The combination of an insulating-block support, multiple spring-jacks mounted thereon having projecting and detachable receiving-tubes, and an insulating face-plate provided with holes which fit upon said projections.

377,789. MACHINE FOR PRINTING OIL-CLOTH. NELSON L. TEUE, Philadelphia, Pa. Filed Apr. 25, 1887. Serial No. 236,262. (No model.)



Claim.—1. In an oil-cloth-printing machine, the following elements in combination: first, a bed upon which the fabric to be printed is laid and along which it is caused to travel; second, an intermittently-operating fabric-feed which acts upon the fabric to occasion its intermittent predetermined advance; third, a series of reciprocating reversing printing-block carriers which alternately simultaneously descend upon the fabric to print it and simultaneously ascend against color-feeds, and, fourth, a series of color-feeds which supply color to the printing-faces of the block-carriers, substantially as set forth.

2. In an oil-cloth-printing machine, the following elements in combination: first, a bed upon which the fabric to be printed is laid and along which it is caused to travel; second, an intermittently-operating fabric-feed which acts upon the fabric to occasion its intermittent predetermined advance; third, fabric-feed-operating devices which occasion the advance and retreat of the fabric-feed; fourth, a series of reciprocating reversing printing-block carriers which alternately simultaneously descend upon the fabric to print it and simultaneously ascend against the color-feeds; fifth, block-carrier-actuating devices which alternately occasion the simultaneous descent and the simultaneous ascent of the block-carriers, and, sixth, a series of color-feeds which supply color to the printing-faces of the block-carriers, substantially as set forth.

3. In an oil-cloth-printing machine, the following elements in combination: first, a bed upon which the fabric to be printed is laid and along which it is caused to travel; second, an intermittently-operating

fabric-feed which acts upon both edges of the fabric to occasion its intermittent advance, and which is composed of two pairs of connected parallel feed-bars; third, a series of reciprocating reversing printing-block carriers which alternately simultaneously descend upon the fabric to print it and simultaneously ascend against color-feeds, and, fourth, a series of color-feeds which supply color to the printing-faces of the block-carriers, substantially as set forth.

4. In an oil-cloth-printing machine, the following elements in combination: first, a bed upon which the fabric to be printed is laid and along which it is caused to travel; second, an intermittently-operating fabric-feed which acts upon the fabric to occasion its intermittent predetermined advance; third, a series of reciprocating reversing printing-block carriers which alternately simultaneously descend upon the fabric to print it and simultaneously ascend against color-feeds; fourth, a series of color-feeds which supply color to the printing-faces of the block-carriers, and are each composed, essentially, of an endless apron operating in connection with a color-trough, substantially as set forth.

5. In an oil-cloth-printing machine, the following elements in combination: first, a bed upon which the fabric to be printed is laid and along which it is caused to travel; second, an intermittently-operating fabric-feed which acts upon both edges of the fabric to occasion its intermittent advance, and which is composed of two pairs of connected parallel feed-bars; third, a series of reciprocating reversing printing-block carriers which alternately simultaneously descend upon the fabric to print it and simultaneously ascend against color-feeds, and, fourth, a series of color-feeds which supply color to the printing-faces of the block-carriers, and are each composed, essentially, of an endless apron operating in connection with a color-trough, substantially as set forth.

6. In an oil-cloth-printing machine, the following elements in combination: first, a bed upon which the fabric to be printed is laid and along which it is caused to travel; second, an intermittently-operating fabric-feed which acts upon both edges of the fabric to occasion its intermittent advance, and which is composed of two pairs of connected parallel feed-bars; third, fabric-feed-operating devices which occasion the advance and retreat of the fabric-feed; fourth, a series of reciprocating reversing printing-block carriers which alternately simultaneously descend upon the fabric to print it and simultaneously ascend against color-feeds; fifth, block-carrier-actuating devices which alternately occasion the simultaneous descent and the simultaneous ascent of the block-carriers, and, sixth, a series of color-feeds which supply color to the printing-faces of the block-carriers, and are each composed, essentially, of an endless apron operating in connection with a color-trough, substantially as set forth.

7. In an oil-cloth-printing machine, the following elements in combination: first, a bed upon which the fabric to be printed is laid and along which it is caused to travel; second, an intermittently-operating fabric-feed which acts upon both edges of the fabric to occasion its intermittent advance, and which is composed of two pairs of connected parallel feed-bars; third, fabric-feed-operating devices which occasion the advance and retreat of the fabric-feed; fourth, a series of reciprocating reversing printing-block carriers which alternately simultaneously descend upon the fabric to print it and simultaneously ascend against color-feeds; fifth, block-carrier-actuating devices which alternately occasion the simultaneous descent and the simultaneous ascent of the block-carriers; sixth, color-feeds which supply color to the printing-faces of the block-carriers, and are each composed, essentially, of an endless apron operating in connection with a color-trough, and, seventh, apron-operating devices which occasion the intermittent advance of the apron with respect to the color-trough, substantially as set forth.

8. In an oil-cloth-printing machine, the following elements in combination: first, a bed upon which the fabric to be printed is laid and along which it is caused to travel; second, an intermittently-operating fabric-feed which acts upon both edges of the fabric to occasion its intermittent advance, and which is composed of two pairs of connected parallel feed-bars; third, oscillatory levers which occasion the advance and retreat of the feed-bars; fourth, a series of reciprocating reversing printing-block carriers which alternately simultaneously descend upon the fabric to print it and simultaneously ascend against color-feeds; fifth, cranks and pitmen which occasion the alternate ascent and descent of the block-carriers; sixth, a series of color-feeds which supply color to the printing-faces of the block-carriers, and are each composed, essentially, of an endless apron operating in connection with a color-trough; seventh, apron-operating devices which occasion the intermittent advance of the apron with respect to the color-trough, and, eighth, means, essentially, for instance, such as set forth, for occasioning the concomitant action of the feed-levers, the carrier cranks and pitmen, and the apron-operating devices, substantially as set forth.

9. In an oil-cloth-printing machine, the following elements in combination: first, a bed upon which the fabric to be printed is laid and along which it is caused to travel; second, an intermittently-operating fabric-feed which acts upon the fabric to occasion its intermittent predetermined advance; third, a series of reciprocating reversing printing-block carriers which alternately simultaneously descend upon the fabric to print it and simultaneously ascend against color-feeds; fourth, a series of color-feeds which supply color to the printing-faces of the block-carriers, and, fifth, a tension-roller, substantially as and for the purposes set forth.

10. In an oil-cloth-printing machine, the following elements in combination: first, a bed upon which the fabric to be printed is laid and along which it is caused to travel; second, an intermittently-operating fabric-feed which acts upon the fabric to occasion its intermittent predetermined advance; third, a series of reciprocating reversing printing-block carriers which alternately simultaneously descend upon the fabric to print it and simultaneously ascend against color-feeds; fourth, color-feeds which supply color to the printing-faces of the block-carriers, and, fifth, arresting devices, essentially such as the toe-cams, to prevent the accidental retreat of the fabric after its advance, substantially such as set forth.

11. A fabric-feed device for an oil-cloth-printing machine, which acts upon the edges of the fabric to be printed, and is composed, essentially, of two pairs of link-connected parallel bars, substantially as set forth.

12. In an oil-cloth-printing machine, the following elements in combination: first, a bed upon which the fabric to be printed is laid and along which it is caused to travel; second, ways formed in or applied to said bed; third, two pair of link-connected parallel bars, one of the bars of each of which pair is adapted to travel in the aforesaid ways; fourth, means, essentially such as the feed-levers, which occasion the intermittent reciprocation of the feed-bars, and, fifth, means, essentially such as the feed-cam, for occasioning the operation of the feed-levers, substantially as set forth.

13. In combination with the feed-bars, the lever-housings, provided each with a reversing face, a draft-face, and an idle face, the oscillatory feed-levers, and means, essentially such as set forth, for operating said levers, substantially as set forth.

14. A color-supplying device or color-feed for the printing-block of an oil-cloth-printing machine, which is composed, essentially, of an endless traveling apron, with reference to which is mounted or superimposed a color-trough, with respect to which it (the said apron) travels, substantially as set forth.

15. A color-supplying device or color-feed for the printing-block of an oil-cloth-printing machine, which is composed, essentially, of an endless traveling apron, with reference to which is mounted or superimposed a color-trough, with respect to which it (the said apron) travels, and which is also provided with a cushioned, elastic, or resilient surface, with respect to which it also travels, substantially as set forth.

16. A color-supplying device or color-feed for the printing-block of an oil-cloth-printing machine, which is composed, essentially, of an endless traveling apron, with reference to which is mounted or superimposed a color-trough, with respect to which it (the said apron) travels, which is also provided with a cushioned, elastic, or resilient surface, with respect to which it also travels, and which is also provided with a doctor to remove surplus color from it, (the said apron,) substantially as set forth.

17. A color-supplying device or color-feed for the printing-block of an oil-cloth-printing machine, which is composed, essentially, of an endless traveling apron, with reference to which is mounted or superimposed a color-trough, with respect to which it (the said apron) travels, which is also provided with a cushioned, elastic, or resilient surface, with respect to which it also travels, and which is also provided with a doctor to remove surplus color from it, (the said apron,) in combination with means, essentially such as set forth, which occasion the intermittent endless travel of the apron with respect to the trough, elastic surface, and doctor, substantially as set forth.

18. A color-supplying device or color-feed for the printing-block of an oil-cloth-printing machine, which is composed, essentially, of an endless traveling apron which as to its active face travels over a cushioned, elastic, or resilient surface, and which as to its passive surface travels through a color-trough provided with a doctor to remove surplus color from it, (the said apron,) in combination with means, essentially such as set forth, which occasion the intermittent travel of the apron with respect to the trough, with a reciprocating reversing printing-block carrier, with a bed upon which the fabric to be printed is laid and along which it is caused to travel, and with an intermittently-operating fabric-feed which acts upon the fabric to occasion its intermittent predetermined advance upon said bed, substantially as set forth.

19. The combination, to form a color-supplying device or color-feed, of an endless traveling apron, a pair of rollers over which said apron travels, adjustable boxings with respect to which the rollers are journaled, a cushion, pad, or other elastic or resilient surface over which the active face of the apron travels, a frame-work for supporting said pad and the adjustable boxes of the rollers, a trough combined with said frame-work, through which the passive surface of the apron

travels and the floor of which trough is composed of said passive surface of said apron, and an adjustable doctor which serves to remove surplus color from the apron after its passage through said trough, substantially as set forth.

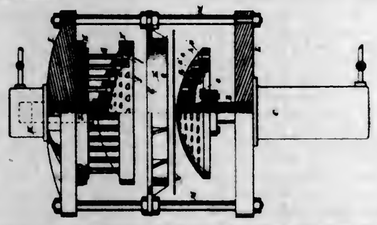
377,790. CORK-EXTRACTOR. EDWIN WALKER, Erie, Pa., assignor to the E. Walker Tool Company, same place. Filed May 27, 1887. Serial No. 239,585. (No model.)



Claim.—1. The combination, in a cork-extractor, of the upright frame A, having the corkscrew G therein, and crank-and-lever mechanism for operating said screw, and a horizontal slot, O, in the base of the cork-chamber H, with the hinged slotted cork-stripper P and its retracting-spring R, substantially as and for the purpose set forth.

2. The combination, in a cork-extractor, of the cork-extractor frame A, having the base B and upwardly-projecting arm C thereon, with the corkscrew G, having the crank L thereon, and the lever D, embracing the shank F of the screw G, and having the slotted bearing D', operating on the friction-roller *c'* in the end of the arm C, substantially as and for the purpose set forth.

377,791. APPARATUS FOR MAKING BOILER-HEADS. HENRY WARDEN, Philadelphia, Pa. Filed July 9, 1887. Serial No. 243,826. (No model.)



Claim.—1. In a machine for flanging and punching boiler-heads, the combination of a former, A, having perforations *a*, a die, E, guiding-die F, and punches G, passing through the die F, said elements being arranged to move relatively to each other, substantially as and for the purpose specified.

2. In a machine for flanging, dishing, and punching boiler-heads, the combination of a convex former, A, having perforations *a*, a die, E, guiding-die F, and punches G, passing through the die F, said elements being arranged to move relatively to each other, substantially as and for the purpose specified.

3. In a machine for flanging, dishing, and punching boiler-heads, the combination of a convex former, A, having perforations *a*, surrounded by flat die-surfaces *a'*, a die, E, guiding-die F, and punches G, passing through the die F, said elements being arranged to move relatively to each other, substantially as and for the purpose specified.

4. In a machine for flanging, dishing, and punching boiler-heads, the combination of a convex former, A, having perforations *a*, surrounded by flat die-surfaces *a'*, a die, E, guiding-die F, having annular flat-faced dies *f* secured upon it, and punches G, passing through the annular dies *f* upon the die F, said elements being arranged to move relatively to each other, substantially as and for the purpose specified.

5. In a machine for flanging and punching boiler-heads, the combination of the movable former A, having punch-holes *a*, the stationary die E, the guiding-die F, and punches G, passing through perforations in the guiding-die, said punches and guiding-die being relatively movable, substantially as and for the purpose specified.

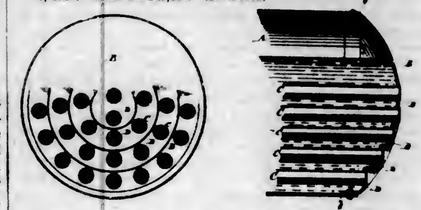
6. In a machine for flanging and punching boiler-heads, the combination of the movable former A, having punch-holes *a*, the stationary die E, the movable guiding-die F, and stationary punches G, passing through perforations in the guiding-die, all substantially as and for the purpose specified.

7. In a machine for flanging, dishing, and punching boiler-heads, the combination of the movable convex former A, having punch-holes *a*, the stationary die E, the movable guiding-die F, and the stationary punches G, passing through perforations in the die F, all substantially as and for the purpose specified.

8. In a machine for flanging, dishing, and punching boiler-heads, the combination of the movable convex former A, having punch-holes *a*, surrounded by flat die-surfaces *a'*, the stationary die E, the movable guiding-die F, and the stationary punches G, passing through perforations in the die E, all substantially as and for the purpose specified.

9. In a machine for flanging, dishing, and punching boiler-heads, the combination of the movable convex former A, having punch-holes *a*, surrounded by flat die-surfaces *a'*, the stationary die E, the movable guiding-die F, having annular dies *f* secured thereon, and the stationary punches G, passing through perforations in the annular dies *f* on die F, all substantially as and for the purpose specified.

377,792. BOILER. HENRY WARDEN, Philadelphia, Pa. Filed July 9, 1887. Serial No. 243,826. (No model.)



Claim.—1. As a new article of manufacture, a tubular boiler-head, B, of dished form, and having flat-bottomed indentations D formed therein and perforated for the reception of the boiler-tubes.

2. As a new article of manufacture, a boiler-head, B, of dished form, and having flat-bottomed indentations D formed therein in concentric rings for the reception of the boiler-tubes.

3. As a new article of manufacture, a tubular boiler-head, B, of dished form, and having separate and independent flat-bottomed indentations D formed therein and perforated for the reception of the boiler-tubes.

4. As a new article of manufacture, a boiler-head of dished form and having separate and independent flat-bottomed indentations D formed therein in concentric rings for the reception of the boiler-tubes.

5. A tubular boiler, A, having tubes C running through it from end to end, and one or more heads or tube-sheets, B, of dished form, provided with flat-bottomed indentations D formed therein for the reception of the said tubes C.

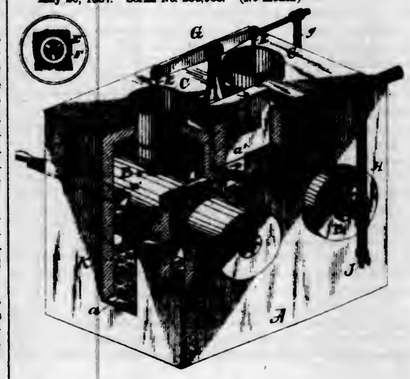
6. A tubular boiler, A, having one or more heads or tube-sheets, B, of dished form, provided with flat-bottomed indentations D formed therein in concentric rings for the reception of the tubes C.

7. A tubular boiler, A, having tubes C running through it from end to end, and one or more heads or tube-sheets, B, of dished form, provided with separate and independent flat-bottomed indentations D formed therein for the reception of the said tubes C.

8. A tubular boiler, A, having one or more heads or tube-sheets, B, of dished form, provided with separate and independent flat-bottomed indentations D formed therein in concentric rings for the reception of the tubes C.

9. In a tubular boiler, the combination of two heads or tube-sheets, B B, each of dished form and provided with flat-bottomed indentations D, with tubes C running through the boiler and having their ends secured in the said indentations D.

377,793. GAS-GENERATOR. AUGUST WEYER, Atlanta, Ga. Filed May 20, 1887. Serial No. 238,905. (No model.)



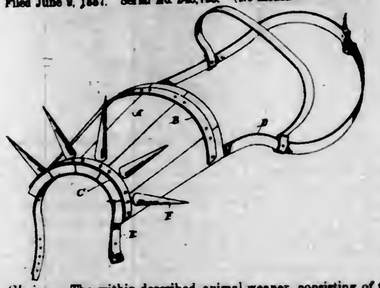
377,793.



Claim.—1. In a gas-generating apparatus, the combination of the retorts B and resin-supply tanks C, each tank having an outlet through the opening F and connected to said retorts by the pipes *e*, the needle-shaped rods E, attached to an oscillating lever, and means for operating the same, whereby a continuous flow of resin from the tank to the retort is effected, substantially as set forth.

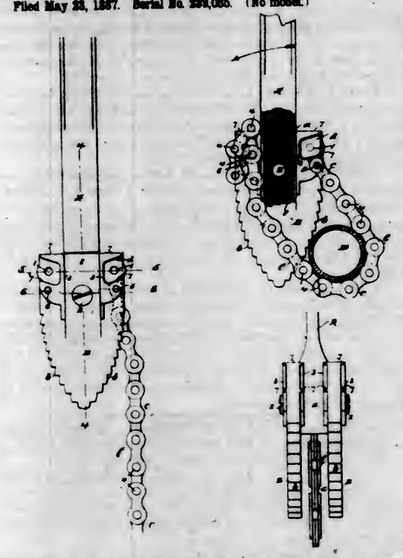
2. In a gas-generating apparatus, the combination, with the retorts B B, provided with the resin-supply tanks C C, placed directly over said retorts, of a furnace consisting of the fire-box, the vertical partition-walls and horizontal partition-walls forming a chamber around the lower part of the resin-tank, said walls having flues *l* and *m*, respectively, and the latter provided with dampers *l'* and *m'*, whereby a uniform heat may be maintained about the retort and supply-tanks, substantially as specified.

377,794. ANIMAL-WEANER. WILLIAM H. WHEELER, Spiva, Mo. Filed June 9, 1887. Serial No. 240,795. (No model.)



Claim.—The within-described animal-weaner, consisting of the wooden staves A, having beveled edges and a wooden spike in one end, disposed in a segmental cone-shaped section, and leather pieces B and C, to which they are suitably secured, with straps at one end to fit over the animal's head and at the other to extend around the muzzle, substantially as described.

377,795. CHAIN-WRENCH. JAMES H. WILLIAMS, Brooklyn, N. Y. Filed May 23, 1887. Serial No. 239,055. (No model.)

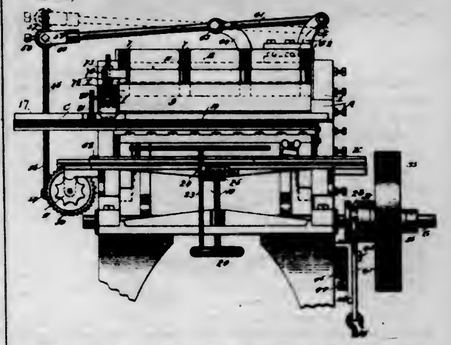


Claim.—1. In a chain-wrench, the combination, with the handle A and the jaws B, having the shoulders 7, of the chain C, having a link at one end provided with the head to engage with the shoulders 7, substantially as described.

2. In a chain-wrench, the combination, with the handle A and the jaws B, having the shoulders 7 and recesses 1, of the chain C, having the head *d* and projecting pins 9, substantially as described.

3. In a chain-wrench, the combination, with the handle A and the jaws B, having the shoulders 7 and recesses 1, of the chain C, having the special link provided with the heads *d e* and pins 9, to engage with the shoulders 7, substantially as described.

377,796. COMBINED PRINTER AND INDEX-CUTTER. THOMAS WRIGLEY, Oak Park, Ill. Filed May 7, 1887. Serial No. 237,494. (No model.)



Claim.—1. In a machine of the kind described, the combination, with the vertically-reciprocating knife, of a stationary knife extended in front of the reciprocating knife and presenting an edge for the reciprocating knife to shear against on the leaf side of the work, and at the same time the face of the stationary knife forming a support for the leaf, and a vertically-adjustable work-supporting table in front of the stationary knife, as set forth.

2. In a machine of the variety described, the combination of the vertically-adjustable bracket-frame D, having screws 19, for adjusting it, a table, E, sliding on said frame D, and a T-bar, 23, having a curved stem adjustable vertically on the edge of said table, as set forth.

3. In a machine for the purpose described, the combination of the sliding table E, provided with a series of holes, 30, a gage-bar, 27, having pin 29, for engagement with holes 30, to set the bar upon the table, and a clamp-plate, 33, as and for the purpose described.

4. In a machine for the purpose described, the combination, with the shelf-piece C, having an upwardly-projecting pawl, 81, a lower stationary knife held on said shelf-piece, a vertically-reciprocating knife and the frame in which it is held, a printing-cylinder secured on the reciprocating-knife frame, and a ratchet-wheel, by means of which the printing-cylinder is turned before reaching its lowest position by contact with the pawl, as set forth.

5. In a machine for the purpose described, the combination of the shearing and printing devices and shaft for operating them, with a loose pulley, 35, mounted on said shaft, a collar fixed upon the shaft beside said pulley, a pin or bolt, 38, passed loosely through the collar, and a spring, 39, for keeping said pin or bolt normally disengaged from the pulley, and a fork, 41, under control of the operator, for causing the pin or bolt to engage the pulley when desired, as set forth.

6. In a machine for the purpose described, the combination, with the shearing and cutting devices and adjustable work-holding table having a rack-bar, as described, of the gear-wheel 50, for feeding said table for longitudinal adjustment, a bell-crank pawl, 54 55, operating upon the gear 50, a rod, 56, connected to the pawl, a vibrating bar, 61, connected to the rod 56 at one end and to a portion of the reciprocating frame at the other, and a fulcrum for said bar, consisting of a horizontally-adjustable bracket, 64, held in a groove in the machine-frame, and provided with means for setting it at different positions, as set forth.

7. In a machine for the purpose described, a frame, 1, open on its under side and at one upper corner, a type-holding cylinder, 74, held in the frame and projecting below the open lower edge of the frame in wheels 78 and 79, the latter revolving in front of the corner opening, a ratchet-wheel, 80, on end of type-cylinder, and a pawl, 81, on the stationary bed, whereby the type-cylinder is operated in its descent, as set forth.

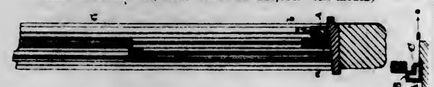
8. In a machine for the purpose described, the combination of the frame 1, type-cylinder 74, carried in frame 1, ratchet-wheel 80 on the

type-cylinder shaft, having conical sockets, a socket, 83, projecting from frame I, a plug, 84, in socket 83, and a spring in socket 83 back of plug, said plug having a conical end, as and for the purpose set forth.

377,797. VARNISH FOR FINISHING WOOD. LUCY C. BOLTON, Peoria, Ill. Filed Oct. 12, 1887. Serial No. 252,156. (No specimens.)

Claim.—A varnish or finishing compound consisting of water, mineral oil, glue, saltpeter, alum, and tartaric acid mixed together, substantially as described.

377,798. WINDOW-VENTILATOR. THEODORE BURY, Cleveland, Ohio. Filed Feb. 16, 1887. Serial No. 227,768. (No model.)



Claim.—In combination with the window frame and sash, the reversible ventilator A, having a series of angular ports, whereby the air can be admitted either vertically or horizontally.

377,799. BARREL-HOOP. CORODON S. CARSON, Ligonier, Ind. Filed Dec. 19, 1887. Serial No. 258,336. (No model.)

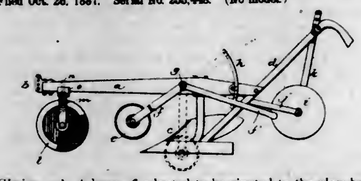


Claim.—1. A barrel-hoop consisting of a flexible strap, the loops or rings secured to the ends of the straps, and a tie-wire passed around and alternately through said loops, substantially as set forth.

2. A barrel-hoop consisting of a flexible strap, the loops or rings having extensions to receive the ends of the strap, and a tie-wire passed through and around said loops or rings, substantially as specified.

3. A barrel-hoop consisting of a flexible strap having tongues at its ends, loops or rings having extensions through and around which said tongues are passed, and a tie-wire for securing said loops or rings, substantially as described and shown.

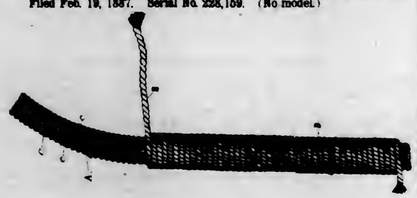
377,800. GAGE-WHEEL. DANIEL H. CARPENTER, Orlando, Fla. Filed Oct. 26, 1887. Serial No. 253,443. (No model.)



Claim.—1. A lever, *f*, adapted to be pivoted to the plow-beam on the landside of the plow, and provided with a gage-wheel at its lower end, in front of and above the plow-point, when used solely as a gage-wheel, and for transportation and turning purposes adapted to be let down below the level of the landside of the plow, and to contact therewith and form a rest therefor and balance the plow, and having a handle and rack, the former within reach of the plowman at the plow-handles for operating said lever and gage-wheel, substantially as described.

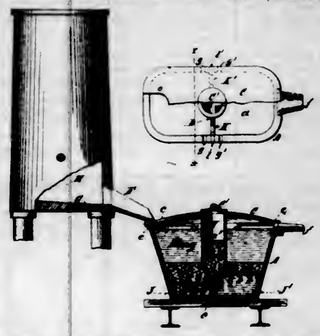
2. The combination, with the plow, of a width-gage, and a roller arranged upon one and the same side of the beam, and a depth-gage or pivot wheel arranged upon the other, and constituting a triangular wheel-support for the plow, substantially as described.

377,801. RUBBER HOSE. JAMES CRAMPTON, San Francisco, Cal. Filed Feb. 19, 1887. Serial No. 228,159. (No model.)



Claim.—As an improved article of manufacture, a rubber hose having its entire outer surface provided with deep spiral grooves separated by spiral ribs and wound between said spiral ribs with rope, which covers the entire surface of the rubber hose, substantially as specified.

377,802. APPARATUS FOR SEPARATING LEAD OR BASE BULLION IN SMELTING FROM SLAG, &c. WALTER R. DEVEREUX, Aspen, Colo. Filed Feb. 25, 1886. Serial No. 193,200. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, with a smelting-furnace, of a portable receiver-well into which said furnace discharges, a lead-well and diaphragm, constructed and arranged so that they may be raised, lowered, or removed at pleasure, placed in said vessel, whereby the same is subdivided into two compartments, an opening at the base of said lead-well, whereby the lead or base bullion tapped into the first compartment is caused to rise in said lead-well in proportion to static pressure in said compartment, and one or more openings at or near the top of said diaphragm, whereby the contents of the one compartment, when the same becomes full, may overflow into the other compartment.

2. The combination, substantially as hereinbefore described, with a smelting-furnace, of a portable receiving vessel or well into which said furnace discharges, a diaphragm placed in said receiving-well, so constructed and arranged that it may be removed from or shifted therein at pleasure, whereby the same is divided into two compartments, a lead-well attached to said diaphragm, so constructed and arranged that it may be removed from or shifted therein at pleasure, one or more openings at or near the top of said diaphragm, whereby the contents of one compartment may overflow into the other, and means, substantially as described, for attaching and holding said lead-well and diaphragm and discharging said receiving-vessel.

3. The combination, substantially as hereinbefore set forth, with the portable receiving-vessel subdivided interiorly into two compartments, of a discharge-spout attached to either of said compartments at such a point that the contents of the same may be discharged automatically upon reaching any desired height.

4. The combination, substantially as hereinbefore set forth, with the receiving-well subdivided interiorly by a diaphragm having a lead-well thereto attached, so constructed and arranged that it may be removed therefrom or shifted therein at pleasure, of the flanged cover C, covering said vessel, having an opening therein through which said well projects upward, and the movable cover C', covering said lead-well.

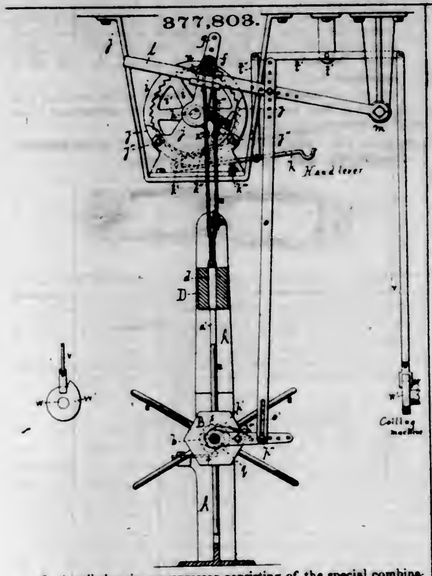
5. The combination, substantially as hereinbefore set forth, of a portable receiving-well, a diaphragm having a lead-well thereto attached, placed in said receiving-well, so constructed and arranged that it may be removed therefrom or shifted therein at pleasure, whereby the same is subdivided in two compartments, one or more openings in the side wall of said receiving-well at or near the bottom, whereby the contents thereof may be discharged, and means for closing the same, substantially as described.

377,803. COILED-SPRING COMPRESSOR. WILLIAM I. GODDARD, Brooklyn, assignor to Peter Schneider Sons & Co., New York, N. Y. Filed Feb. 17, 1887. Serial No. 228,010. (No model.)

Claim.—1. In a coiled-spring compressor, a rotating drum having a series of spoke-bearing faces as a means of presenting successive springs to the compressing-head, in combination with a weight acting by gravity alone as such compressing-head and mechanism, substantially as described, to drop and lift it.

2. In a coiled-spring compressor consisting of a compressing-head and spoke-bearing rotating drum, substantially as described, the combination of crank *g*, sliding block *n*, rods *l* and *o*, lever *p*, pawl *p'*, and rack *q*, substantially as and for the purpose described.

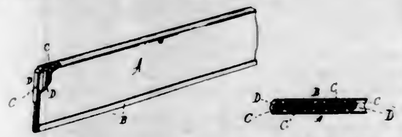
377,803.



3. A coiled-spring compressor consisting of the special combination of parts shown—viz., frame A, drum B, spokes *c*, weight D, strap *e*, frame *j*, crank *g*, shaft *h*, loose pulley *i*, having rack *i'*, arm *x*, pawl *x'*, stationary piece *y*, lever *k*, sliding block *n*, rods *l* and *o*, lever *p*, pawl *p'*, rack *q*, spring *r*, and rack *s*, substantially as and for the purpose described.

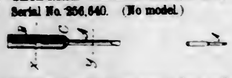
4. In combination with a coiled-spring compressor in which the compressing-head is propelled against the spring directly in the line of its length, substantially as described, the lever *l*, arms *l'* and *v*, and cam *w'*, affixed to a shaft of a coiling-machine to operate the compressor automatically by the coiling-machine.

377,804. SHOE-NAIL STRIP. DAVID S. GRANT, Lawrence, Mass. Filed Dec. 1, 1887. Serial No. 256,639. (No model.)



Claim.—The herein-described shoe-nail strip for feeding nails into shoe-nailing machines, the same consisting, essentially, of the wrapper A B and the corrugated strip C, placed longitudinally within said wrapper and having the spaces upon each side of the strip formed by its corrugations filled by the shoe-nails, substantially as and for the purpose set forth.

377,805. SHOE-NAIL. DAVID S. GRANT, Lawrence, Mass. Filed Dec. 1, 1887. Serial No. 256,640. (No model.)



Claim.—The herein-described improved shoe-nail, consisting, essentially, of the relatively thin lower or entering portion, A, of even thickness or diameter above the point, and the relatively thick upper portion or shank, B, of even thickness or diameter, substantially as and for the purpose set forth.

377,806. COMBINATION OFFICE-CHAIR AND OPERATING TABLE. FRED E. GRAVES, Rockford, Ill. Filed Mar. 7, 1887. Serial No. 230,058. (No model.)

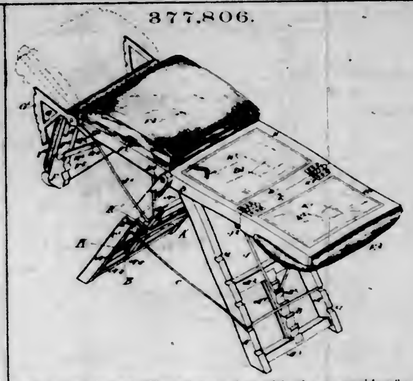
Claim.—1. The combination, with the chair back and seat, of the legs A, provided with slots *a*, and secured together by frame-work, the tilting legs J J', the toothed bar B', and the locking-frame C, substantially as set forth.

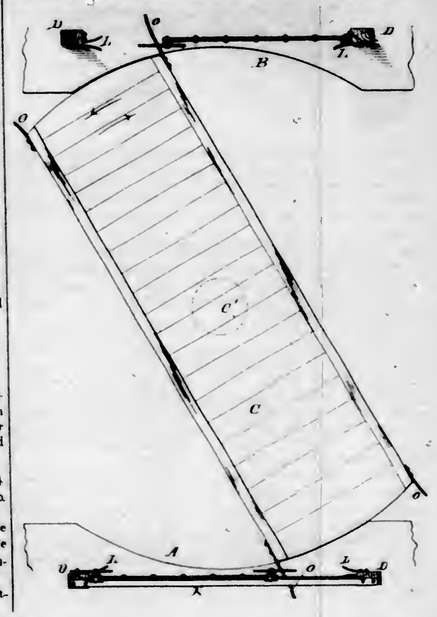
2. In a combination office-chair and operating-table, the segment-rack having the spur G^2 continuous therewith, the upper side of said spur being provided with a slot, G^3, the cross-bar K, the chair-seat, and bar-detents H H' attached thereto, substantially as described, and for the purpose specified.

3. The combination, with the main frame-work D, of the head-rest E^4, hinged to one end of said frame-work, the chair-seat F^5, hinged to the other end of the frame-work D, the segment-racks G, pivotally mounted upon the frame-work D, and the bar-detents H H', adapted to engage with and lock the segment-racks G, for the purpose set forth.

4. The combination, with the legs A A', of the locking-frame C, main frame-work D, head-rest E^4, chair-seat F^5, the segment-rack G, bar-detents H H', and tilting legs J J', substantially as described, and for the purpose specified.

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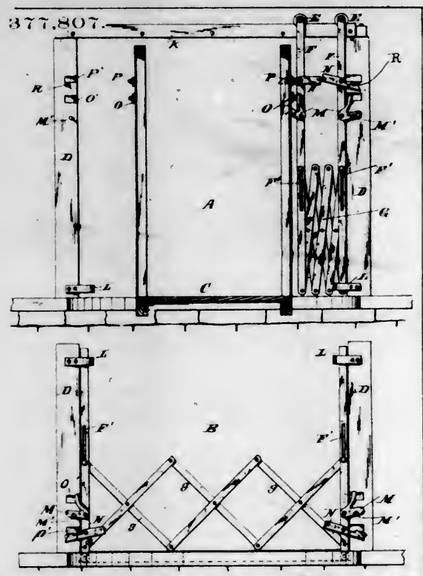


377,807. DRAW-BRIDGE GATE. DAVID GREENBOOT, Cincinnati, Ohio. Filed Nov. 9, 1887. Serial No. 254,671. (No model.)

Claim.—1. In combination with the swinging draw-bridge, the folding gate G, provided with hooks for fastening the gate to the side supports, which are automatically released by the bridge in the act of being opened, substantially as and for the purpose described.

2. In combination with a swinging draw-bridge, the folding gate G, provided with hooks which automatically engage with fingers or arms on the bridge, so that when the bridge is closed the gate will be

377,807.



drawn shut and when shut the hooks automatically released from the bridge and the gate locked, substantially as and for the purpose described.

3. The folding gate G, provided with hooks M M and N N, for locking it to the bridge or to the supports D D, substantially as and for the purpose specified.

377,808. TOY PISTOL. EDWARD R. IVES, Bridgeport, Conn., as signor to Ives, Blakeslee & Co., same place. Filed Nov. 14, 1887. Serial No. 255,069. (No model.)



Claim.—As a new manufacture, a pistol having a hammer, trigger, and spring of ordinary construction, and a body cast in two parts in imitation of handle, cylinder, and barrel, one of said parts being provided with a trigger-guard cast integral therewith projecting over the other part, and situated centrally of the whole structure, substantially as described.

377,809. PROCESS OF SEPARATING PRECIOUS METALS AND IMPURITIES FROM SOLUTIONS OF COPPER, SALTS, ORES, MATTES, &c., IN ACIDS. THOMAS KIDDIE, New Brighton, N. Y., assignor to the Orford Copper Company, of New Jersey. Filed Jan. 3, 1885. Serial No. 154,585. (No specimens.)

Claim.—1. The hereinbefore-described process of removing precious metals and impurities from copper mattes, ores, &c., consisting in dissolving the same after calcination in sulphuric acid in quantities sufficient to form a neutral solution, and in adding thereto hydrates of the alkaline or iron metals of varying degrees of oxidation, with or without heat or agitation, whereby said impurities are precipitated, and settle with the precious metals and other portions not dissolved by the sulphuric acid, and a reduction of the salts in the solution to salts of suboxides of iron and copper is effected.

2. The hereinbefore-described process of removing precious metals and impurities from copper mattes, ores, bullion, &c., consisting in dissolving the same after desulphurization and calcination in sulphuric acid in quantities sufficient to form a neutral solution, and in adding iron hydrates to the neutral solution, whereby the impurities are precipitated and settle with the precious metals not dissolved by the sulphuric acid, leaving a comparatively pure solution of iron and copper salts.

377,810. PAINT FOR COATING SHIPS. EDWIN L. KITCHINGMAN, Collingwood, Victoria, assignor of one-half to Arthur Andrews, Albury, New South Wales. Filed May 2, 1887. Serial No. 236,757. (No specimens.) Patented in New Zealand Apr. 12, 1886, No. 1,739, and in Queensland May 21, 1886.

Claim.—A composition of matter formed of tar, oxide of iron, resin, sugar of lead, and soap, substantially in the manner and in the proportions herein set forth.

377,811. DRIVE-CHAIN. SYLVANUS D. LOCKE, Hoosick Falls, N. Y. Filed Nov. 21, 1887. Serial No. 255,721. (Model.)



Claim.—A chain-link formed from a single piece of wire having two side bars joined at one end by a hollow cylindrical coil constituting a sprocket-bar, and formed at the other end with a substantially centrally divided pivot-bar, in combination with a sleeve, substantially as described.

377,812. DRAFT-EQUALIZER. HAMILTON MCCOY, Indianapolis, Ind. Filed June 15, 1887. Serial No. 241,428. (No model.)

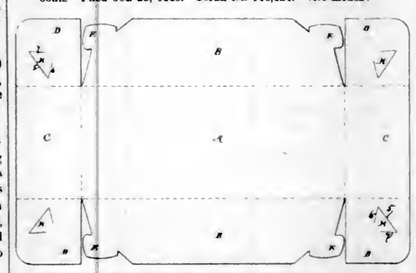


Claim.—1. In a draft-equalizer, the combination of the doubletree A, levers B, pivoted to the doubletree and constructed from two plates, an upper one, *b*, bent upwardly at its inner end, and at its outer end curved downwardly to meet the lower plate, *b'*, to which it is fastened by bolts or rivets, and the straight under plate, *b'*, having its inner end projecting under the doubletree to give support to the pin *m*, the intermediate draft-plate, D, connected to the levers by the clevises E, the link C, encircling the outer ends of the levers B, the U-shaped clevises F through the ends of the doubletree A, for the purposes specified, and the singletrees attached to the outer ends of the levers B and to the central draft-plate, all substantially as described and set forth.

2. The combination, with the doubletree A, of the levers B, made in two sections, the upper section, *b*, lying on top of the doubletree and having its outer end bent down to rest on the section *b'*, and the straight lower section, *b'*, projecting under the doubletree and provided with a series of equidistant holes corresponding in position with holes in the outer end of the upper section, adapting the two sections to be bolted together to form the levers B and allowing the outer ends of the levers to be varied in length to regulate the draft-strain, the central draft-plate, D, attached to the levers by clevises E, the link C on the ends of the levers, and the three singletrees attached thereto, substantially as described and specified.

3. The combination, with a doubletree, A, having two equalizing-levers pivoted on the top thereof and carrying three detachable singletrees, of the clevises F in the ends of the doubletree, each adapted to attach a singletree and allow the tripletree to be changed into a doubletree, as described and specified.

377,813. KNOCKDOWN BOX. HARVEY S. MUNSON, New Haven, Conn. Filed Oct. 25, 1883. Serial No. 110,021. (No model.)



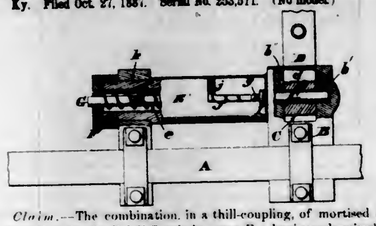
Claim.—1. A lock for uniting the separable parts of articles made from paper or similar material, consisting of a locking-tongue having projections 2 4 and a locking-pocket formed by incisions 5 6 7, substantially as described.

2. A locking-pocket for uniting the parts of articles made from paper or similar material, consisting of a main incision, 5, the extremities of which unite with angular converging incisions 6 7, substantially as described.

3. The combination, with a pocket consisting of an angular incision, 5, of a tongue having projections 2 4 and a curved upper edge, substantially as described.

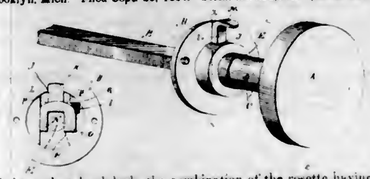
4. The herein-described box, consisting of the bottom A, sides B B, and ends C C, made integral with each other, the ends C being provided with the flaps D, lying inside of the sides B, and having the locking-pockets H, located in close proximity to the corners of the box, and the sides B, lying upon the outside of the flaps D and being provided with the locking-tongues E, which extend inward and upward through the locking-pockets and lie upon the inside of the box, substantially as described.

377,814. THILL-COUPLING. LUDWIG RHEINELAND, Maysville, Ky. Filed Oct. 27, 1887. Serial No. 253,511. (No model.)



Claim.—The combination, in a thill-coupling, of mortised and perforated main clip B *b b'* C, tubular case E *e*, having a longitudinal slot, J, and transverse slot *j*, spring-bolt G H, having a handle, I, secondary clip K, perforated at *k* to admit one end of said case, the screw-cap F, and the pierced thill-iron head D *d*, as herein described, and for the purpose stated.

377,815. KNOB-LOCK. LLOYD A. SELLECK and GEORGE J. KEENAN, Brooklyn, Mich. Filed Sept. 29, 1887. Serial No. 251,078. (No model.)



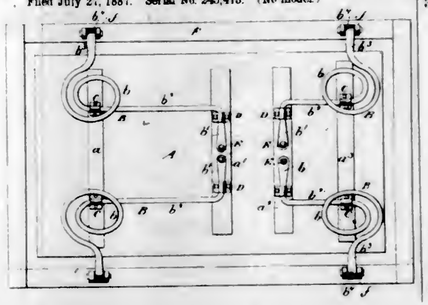
Claim.—In a knob-lock, the combination of the rosette having the groove F, and the recess G and stop H in the walls of the said groove, the spindle inserted through the rosette, the spring arranged in the recess G, and the bolt sliding in the groove F and provided at its upper end with an integral lateral projection, M, and at its lower end with a yoke adapted to engage the spindle, one of the arms of said yoke having a lip, O, substantially as specified.

377,816. CARTRIDGE-SHELL. FRANK STINER and ESEK R. DARLING, North Monson, assignors of one-third to Charles Atwater, Pittsfield, Mass. Filed Sept. 19, 1887. Serial No. 250,054. (No model.)



Claim.—A non-metallic cartridge-shell having an internal coating of adhesive and practically non-combustible material, whereby the wads may be secured, said coating enabling the shell to be repeatedly used without blistering, as set forth.

377,817. VEHICLE-SPRING. HENRY C. SWAN, Oshkosh, Wis. Filed July 27, 1887. Serial No. 245,413. (No model.)



Claim.—In a vehicle having torsion-springs, the combination, with the bottom cross-bars, *a a' a² a³*, and the side bars, F F, of the four corresponding springs B B B B, each one consisting of the straight transverse arm *b'*, end-fastened at E and passing loosely through the box D, the longitudinal arm *b²*, placed at right angles thereto and passing loosely through a box, C, in alignment with its shackle on the side bar, the coil *b*, passing under the arm *b²* and gradually increasing in a plane at about forty-five degrees angle to the vehicle-bottom, and the arm *b³*, provided with the end eye, *b⁴*, to connect with the side-bar shackle, whereby each spring turns freely in the boxes C D, thereby obtaining a greater length of twist, and consequently greater elasticity, while all tendency to twist the shackle-bolt by a laterally-oscillating motion is prevented, as set forth.

377,818. VEHICLE-SPRING. HENRY C. SWAN, Oshkosh, Wis. Filed Nov. 14, 1887. Serial No. 255,077. (No model.)



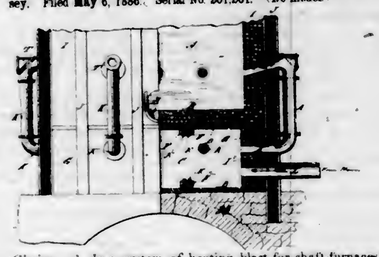
Claim.—1. A flexible packing, *k²*, having two free ends and a bearing in two concaved sections, *k' k'*, in combination with the rock-shaft arms *h' h'* of a vehicle-spring, as and for the purpose specified.

2. In a vehicle-spring, the combination, with the rock-shaft H, cranked at *h*, of the hooks I, and equalizing-lever M, the former pivoted between ears *m m* of the latter, as and for the purpose set forth.

3. In vehicle-springs, the spring L, coiled on a vertical bolt, the box E, placed over said spring, and an equalizing-lever attached to said box to prevent side motion, in the manner set forth.

4. In vehicle-springs, the lever M, having a journaled cross-bar at one end and at the other a box, E, and ears *m m*, to adapt it to be used as described.

377,819. APPARATUS FOR HEATING BLAST FOR SHAFT-FURNACES. JOHN I. THOMSON, Bergen Point, N. J., assignor to Walter B. Devereux, Aspen, Colo., and the Orford Copper Company, of New Jersey. Filed May 6, 1886. Serial No. 201,261. (No model.)



Claim.—1. In a system of heating blast for shaft-furnaces by means of the waste heat of the furnace, the combination, substantially as hereinbefore set forth, of a shaft-furnace having a hollow bottom, a blast-pipe connected with said bottom, whereby the cold blast is supplied thereto from the blower, and a series of pipes whereby hot blast is supplied to the tuyeres from the said hollow bottom.

2. In a system of heating blast for shaft-furnaces by means of the waste heat of the furnace, the combination, substantially as hereinbefore set forth, with a shaft-furnace, of a hollow bottom constructed wholly or partly of metal for heating the blast supplied to the tuyeres.

377,820. ICE-PITCHER. JAMES E. WHITE, Malden, assignor to James W. Tufts, Medford, Mass. Filed Aug. 25, 1887. Serial No. 247,884. (No model.)

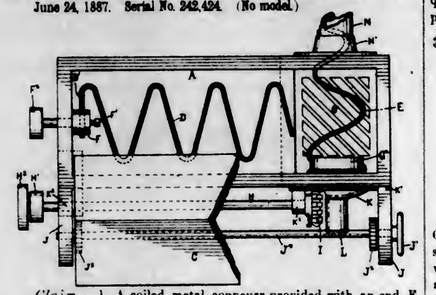


Claim.—1. In an ice-pitcher, the combination, with the body A and its hinged cover B, of a swiveling catch, C, consisting of a spring-

arm pivoted at one end and adapted to be swung over the hinged cover B and enter a notch or depression therein, substantially as described.

2. In an ice-pitcher, the combination, with the body A and its hinged cover B, of a swiveling catch, C, consisting of a spring-arm pivoted at one end to the spout D, and adapted to be swung over the hinged cover B and enter a notch or depression therein, substantially as described.

377,821. **CONVEYER.** AARON WISSLER, Brunnersville, Pa. Filed June 24, 1887. Serial No. 242,424. (No model.)



Claim.—1. A coiled metal conveyer provided with an end, E, having an increased diameter and pitch, substantially as shown, and for the purpose set forth.

2. A coiled metal conveyer provided at one end with a projecting foot, E', in combination with a collar, G', provided with a hole adapted to receive said projecting foot, and a drum, G^2, and miter-wheel G, formed integral with said collar, substantially as shown and described.

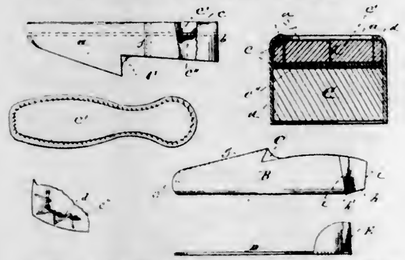
3. A coiled metal conveyer provided with an end having an increased diameter and pitch and a projecting foot, E', in combination with the miter-wheel G, having collar G' and drum G^2, the shaft L, the frame K, having flange K' and bearing K^3, the miter-wheel I, shaft H, bearing K^4, and pulley H', substantially as shown and described, and for the purpose set forth.

4. A coiled metal conveyer having its end D' adapted to fit in the enlarged hub on shaft F and to be adjustably held therein by the set-screw F', in combination with the hub on shaft F and set-screw F', substantially as shown and described.

5. As an improvement in thrashing-machines, the tailing-box A, provided with conveyers D and E and brackets J, in combination with the divider-frame C, having metallic ends C', provided with racks C^2, pinions J^3 J^3, hand-wheel J', and shaft J^4, substantially as shown and described, and for the purpose set forth.

6. An apparatus compriaing the following elements: the tailing-box A, the conveyer-box B, the removable screen O, the feed-coil D, conveyer-coil E, case N, running from said conveyer-box through the feeding-table, miter-wheels G and I, shafts L and H, brackets J, shaft J^4, pinions J^3 J^3, divider-frame C, and ends C', provided with rack C^2, all substantially as shown and described, and for the purpose set forth.

377,822. **SHOE OR SLIPPER.** ALBERT ZIMMERMANN, Chicago, Ill. Filed Nov. 7, 1887. Serial No. 254,576. (No model.)



Claim.—1. In a shoe, a felt upper, a composite sole united by a marginal row of stitches, another row of stitching interlocking therewith and uniting the said upper with the sole, all combined substantially as and for the purpose specified and shown.

2. In combination, a felt upper, a composite sole united by a marginal row of stitches, another row of stitching interlocking therewith and uniting the said upper with the sole, an inner sole, D, provided with a stiffening-plate, and the inner lining, B, substantially as and for the purpose described.

3. The combination of the upper A, lining B, said lining cut in one piece, having edges e e and f f', said edges when sewed together forming the vamp and toe, and edges h h' and i i', forming the quarter, and the inner sole, D, provided with a plate, E, said plate E sewed to the inner sole before being pasted into the shoe, substantially as and for the purpose specified.

4. The combination of the upper A, lining B, sole C, consisting of felt and leather, and united together by stitches, another row of stitches interlocking therewith, by which the edges of the vamp and quarter are sewed to the sole, and inner sole, D, having a stiffening-plate sewed to it, substantially as specified and shown.

377,823. **CALCULATING-MACHINE.** FREDERICK L. BANCROFT, St. Paul, Minn. Filed Aug. 19, 1887. Serial No. 247,388. (No model.) Patented in Canada July 2, 1887, No. 27,113.

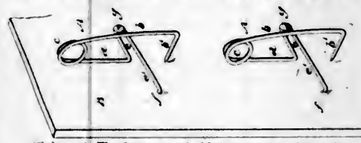


Claim.—1. In a calculating-machine, the eccentric-cam D, shaft O, collar F, and set-screw a, combined with the pawl G, pivot g, arm K, spring L, pin b, lever I, pivot f, spring M, pin c and pin c', with the wheels C, pins C', and pins Q, all arranged and operating substantially as set forth and described.

2. In a calculating-machine, the numbered wheel C, pins C', pin Q, and shaft O, combined with the eccentric D, pawl G, lever I, arm J, arm K, and springs M and L, all arranged and operating substantially as set forth.

3. The calculating-machine consisting of a cylinder, A, with a numbered cover-plate colored in desired colors, with slots S and S', board B, slots B', the wheel C, with numbers and pins C' on the periphery, the pins Q, pawl G, pivot g, arm K, lever I, pivot f, pins b, c, and c', springs L and M, cam D, shaft O, collars F and H, pin k, the shaft P, spring R, and set-screw a, all arranged as set forth and described.

377,824. **FASTENER OR HOLDER FOR PAPER OR OTHER MATERIALS.** CECIL M. DURELL, Fayette, Mo., assignor to Jack B. Duncan, same place. Filed June 14, 1887. Serial No. 241,296. (No model.)



Claim.—1. The fastener or holder A, composed of a piece of spring-wire bent to form a spring clamping-arm, b, having an inner bent front holding-end portion and rear stiffening-coil, c, the latter terminating beneath the clamping-arm b in a forwardly-extending arm, d, bent at its outer end to form a transverse open-loop extension, e e', the one portion of which passes to one side of the clamping-arm b and the other or outer arm portion of which projects beyond the opposite side of said clamping-arm and terminates in a crook or bend, f, essentially as shown and described.

2. The spring-wire fastener or holder constructed with a double hook, the one e e' f of which is adapted to engage with the board or surface to which the fastener is applied, and the other one, b b', of which occupies a transverse relation to the former hook and serves to clamp or hold the articles secured by the fastener, substantially as specified.

377,825. **DRAW-GEAR FOR STREET-CARS.** JOSEPH W. EVANS, Newburyport, Mass. Filed Nov. 9, 1887. Serial No. 254,679. (No model.)



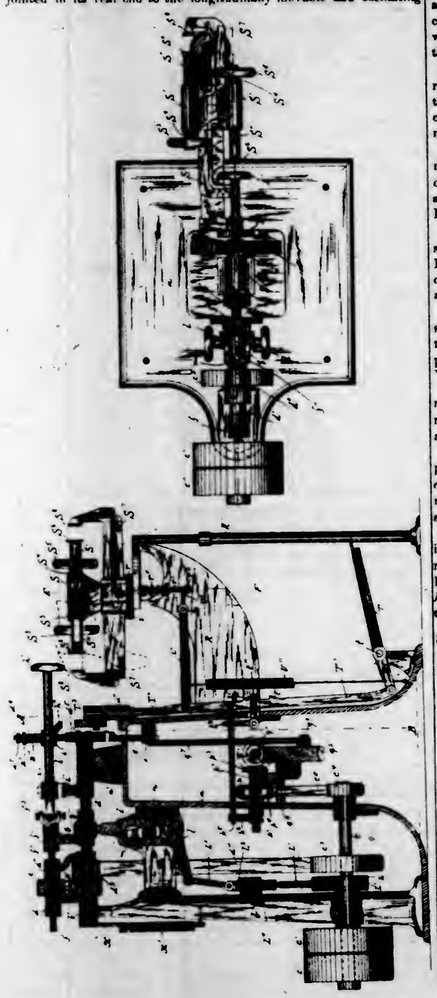
Claim.—1. The combination, with the dasher-rail and draw-bar of a street-railway car, of a bracket rigidly secured to said dasher-rail, a lever pivotally secured to said bracket, and a lifting-rod pivotally suspended from said lever and sustaining the draw-pin, said parts being constructed and arranged to allow the point on the lever at which the lifting-rod is suspended to swing past the center when the rod is lowered, substantially as and for the purpose set forth.

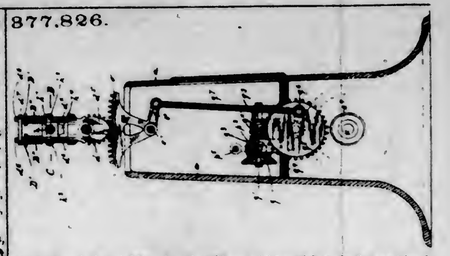
2. The combination of the dasher-rail A', bracket D D' D'', pivot d', lever E E' E'', pivot e, lifting-rod H, bent at H', as described, draw-pin I, and draw-bar B, substantially as and for the purpose described.

377,826. **BURNISHING-MACHINE.** ALFRED B. FOWLER, Exeter, N. H., assignor to the Rockingham Machine Company. Filed June 6, 1887. Serial No. 240,398. (No model.)

Claim.—1. In a burnishing-machine, the rotary burnisher-shaft A, universally jointed to the longitudinally-movable and oscillating shaft f, combined with the yielding front bearing, A'', pivoted to ears A^3 A^3, adapted to slide on the rods d^6 d^6, secured to a block on the rock-shaft d, and provided with springs D'' D'' and regulating-nuts D' D', as and for the purpose set forth.

2. In a burnishing-machine, the rotary burnisher-shaft universally jointed in its rear end to the longitudinally movable and oscillating





shaft f, and the yielding bearing h'' on said burnisher-shaft, combined with the vertically-adjustable tool-lifter T^4, and suitable connection to the foot-treadle of the machine, as and for the purpose set forth.

3. In a burnishing-machine, the rotary burnishing-shaft A, arranged in yielding bearings relative to the rock-shaft d, combined with the lobed gears d^8 o, the former mounted on said rock-shaft and the latter actuated with a rocking movement, as described, for the purpose of causing the burnisher-tool to move along the carved path of the heel with a uniform speed relative to the carvature of the heel, as and for the purpose set forth.

4. In a burnishing-machine, the shipper-rod p^3, for regulating the rocking motion of shaft d, the tool-lifter T^4, for raising the burnisher-tool away from the heel, and the spring locking-pin r' on the jack, in combination with a single treadle, T, and a spring, U'', for simultaneously operating such parts, as and for the purpose set forth.

5. In a burnishing-machine, the duplex rotary jack, as described, mounted in guides r r upon the bracket R, and adapted to be drawn out of such guides, rotated half a revolution, and again inserted in said guides and automatically locked in position upon the said bracket R, substantially as and for the purpose set forth.

6. In a burnishing-machine, the improved duplex jack, as described, consisting of post S, adapted to slide and rotate on the bracket R, and having the sleeves S' S' and screw-pressed insole-rests S^6 S^6, combined with the top-lift supporting-arms S^7 S^7, secured to post S, as and for the purpose set forth.

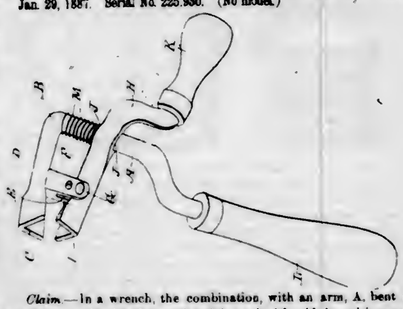
7. In a burnishing-machine, the waxing device, as described, consisting of the tube or case V, with its screw-shaft and piston v' v'', the bracket V', journaled on the burnisher-shaft and having rods V'' V'', projecting into perforations in the bearing h'', and adjustable collars V^3 V^3 on the burnisher-shaft, as and for the purpose set forth.

8. In a burnishing-machine, the rotary and longitudinally-reciprocating burnisher-shaft arranged in yielding bearings relative to the rock-shaft d, combined with the arm X, secured to the said rock-shaft, and the spring X', for the purpose as set forth and described.

9. In a burnishing-machine, the rocking shaft d, having loose pulley d^8 and arms d' d'', firmly secured to it, combined with the pulley e, loosely mounted in said arms and having longitudinally-movable and rotary shaft f, arranged within it, and the burnisher h', secured to the shaft h, universally jointed to shaft f', as and for the purpose set forth.

10. In a burnishing-machine, the rocking lever l and its connecting mechanism to the driving-shaft c, as described, combined with the rock-shaft d, and the arm g, adapted to slide upon said rock-shaft, and having a bearing in its upper end for the shaft f', and the burnisher h', secured to the shaft h, universally jointed to shaft f', as and for the purpose set forth.

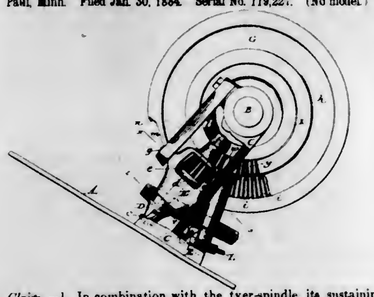
377,827. **WRENCH.** HENRY W. HACKLEY, Kokomo, Ind. Filed Jan. 29, 1887. Serial No. 225,936. (No model.)



Claim.—In a wrench, the combination, with an arm, A, bent at B, said bent end being flattened and formed with a V-shaped jaw, and a slotted stud, D, secured to said bent portion, of an arm, H, provided

with a hole, J, through which the arm A passes, said arm H being formed with a V-shaped jaw at one end and having its body portion pivoted between the ends of the slotted stud D, and a spring, M, substantially as described.

377,828. CORD-TYER FOR GRAIN-BINDERS. PAUL HANSON, St. Paul, Minn. Filed Jan. 30, 1884. Serial No. 119,227. (No model.)



Claim.—1. In combination with the tyer-spindle, its sustaining-frame, journaled at an intermediate point in its length, and the wheel provided with two cam-faces arranged to act alternately on the frame and on opposite sides of the journals, whereby the frame is moved positively to and fro.

2. The driving-wheel G, provided with the teeth and delay-surfaces to operate the tyer, the tooth and delay-surface to operate the rotary clamp, and the incline *l*, to effect the swinging action of the tyer.

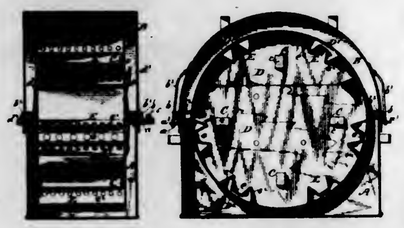
3. In combination with the rotary tying-bill, the rotary cord-clamping disk L, the stationary co-operating plate M, and means, substantially as described, for rotating the disk toward the tyer, whereby the cord is clamped at a point distant from the tyer and gradually slackened to the latter during the looping operation.

4. In combination with the tyer and the swinging frame in which it is mounted, a cord-clamp, and a knife secured rigidly to the swinging frame and arranged to act upon the cord between the clamp and tyer.

5. In combination with the rotary tyer having a pivoted finger with the heel-extension, the supporting-frame provided with a notch, *u*, and a spring, *s*, as described, to seat the heel end of the finger in said notch, whereby the accidental rotation of the tyer is prevented.

6. The combination of a cord-tying bill, a rotary clamp adapted to hold the cord at its periphery, a binder-arm or cord-carrier whereby the cord is presented to the grasp of the clamp at a peripheral point distant from the tyer, and a driving-gear whereby the tyer is turned and its forward rotation limited to carry the clamping-point toward the tyer, and thus slacken the cord gradually to the latter during the tying operation.

377,829. WASHING-MACHINE. NATHAN S. JOHNSON, Portland, Oreg. Filed May 23, 1887. Serial No. 239,114. (No model.)

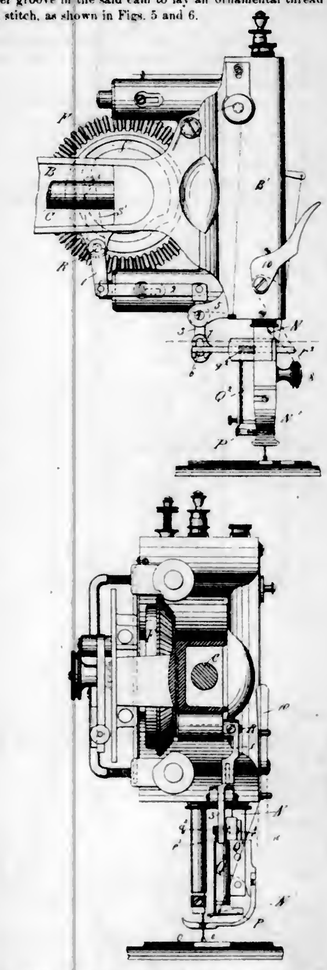


Claim.—1. In a washing-machine, the combination of a boiler, a cylinder therein having transverse slots in its periphery, with interior troughs having two ribs provided with perforations in the valley between said ribs, the latter perforations being opposite the slots in the cylinder, substantially as and for the purpose described.

2. In a washing-machine, the combination of a boiler, a cylinder therein having transverse slots in its periphery, and perforated troughs opposite said slots, said boiler having also perforations *c* in its side walls and imperforated plate-shields C opposite said perforations and standing parallel with said walls, substantially as and for the purpose described.

377,830. SEWING-MACHINE. JOHN KAYSER, Kaiserslautern, Bavaria, Germany. Filed Mar. 23, 1887. Serial No. 232,164. (No model.) Patented in England Jan. 18, 1886, No. 756; in Germany Jan. 19, 1886, No. 37,403, and Dec. 23, 1886, No. 40,136, and in Austria-Hungary July 9, 1886, No. 3,138 and No. 32,384.

Brief.—This machine has a sliding head carrying the needle-bar, which is vibrated by a cam for producing the zigzag stitch. A looping-hook carrying an independent thread is actuated by means of another groove in the said cam to lay an ornamental thread in the zigzag stitch, as shown in Figs. 5 and 6.



Claim.—1. In a sewing-machine, the combination, substantially as described, of the following elements: a vertically and horizontally reciprocating needle, a presser-bar operated as usual, and a hook having an oscillating motion above the work-plate of the machine and co-operating with the needle to introduce an additional thread, *z*, into the zigzag stitch formed by said needle, as shown.

2. In a sewing-machine, the combination, substantially as described, of the following elements: a horizontally and vertically reciprocating needle, a presser-bar operated as usual, a hook having an oscillating motion above the work-plate of the machine, around said needle, and co-operating therewith to introduce an additional thread, *z*, into the zigzag stitch formed thereby, as shown, and a connection between said hook and the presser-bar, for the purpose specified.

3. In a sewing-machine, the combination, with a horizontally and vertically reciprocating needle to produce a zigzag stitch, and a wheel, F, operated from a driving part of the machine and provided with a cam-groove, of a hook, P, for introducing an additional thread into the zigzag stitch, a lever operated by the cam-groove of the wheel F, and a connection between the lever and hook to vibrate the latter, substantially as and for the purpose specified.

4. In a sewing-machine of the class described, the combination, with the zigzag stitch-forming devices, the wheel F, provided with a cam-groove, *f'*, and the hok P, of the rock-shaft R, the lever S, provided with a stud that rides in said cam-groove, and whereby said rock-shaft and lever are oscillated, and transmitting mechanism to transmit the oscillatory motion of the shaft to said hook P, substantially as and for the purpose specified.

5. In a sewing-machine of the class described, the combination, with the zigzag stitch-forming devices, the endwise-movable wheel F, provided with a cam-groove, *f'*, and the hook P, of the endwise-movable rock-shaft R, the lever S, provided with a stud that rides in said cam-groove, and whereby said rock-shaft and lever are oscillated, and transmitting mechanism to transmit the oscillatory motion of the shaft to said hook P, substantially as and for the purpose specified.

6. In a sewing-machine of the class described, the combination, with the zigzag stitch-forming devices, the wheel F, provided with a cam-groove, *f'*, and the hook P, of the endwise-movable rock-shaft R, a spring to return said shaft into its normal position when moved out of it, the lever S, provided with a stud that rides in said cam-groove, and whereby said rock-shaft and lever are oscillated, and transmitting mechanism to transmit the oscillatory motion of the shaft to said hook P, substantially as and for the purpose specified.

7. The combination, in a sewing-machine of the class described, with the zigzag stitch-forming devices, the presser-bar, the wheel F, for imparting a horizontal reciprocating movement to the needle-bar, provided with a cam-groove, *f'*, the rock-shaft R, provided with a radial arm, S, having a stud, *i*, projecting into cam-groove *f'*, of an attachment for introducing a fancy thread, *z*, into the zigzag stitch, comprising a support connected with the presser-bar and provided with a tubular bearing-sleeve, a hook, P, having its bearings in said sleeve, and connecting and transmitting mechanism for connecting the hook with and oscillating the same from the rock-shaft, substantially as and for the purpose specified.

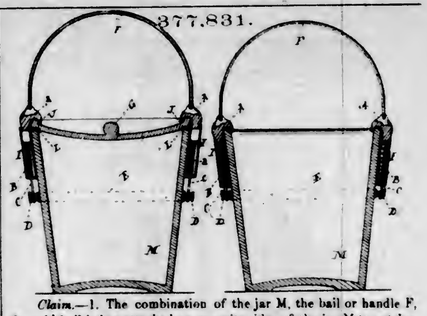
8. The combination, in a sewing-machine of the class described, with the zigzag stitch-forming devices, the presser-bar, the wheel F, for imparting a horizontal reciprocating movement to the needle-bar, provided with a cam-groove, *f'*, and the rock-shaft R, provided with a radial arm, S, having a stud, *i*, projecting into cam-groove *f'*, of an attachment for introducing a fancy thread, *z*, into the zigzag stitch, comprising a support connected with the presser-bar and provided with a tubular bearing-sleeve, a presser-foot connected with said support, a hook, P, having its bearings in said sleeve, and connecting and transmitting mechanism for connecting the hook with and oscillating the same from the rock-shaft, substantially as and for the purpose specified.

9. In a machine of the class described, the combination, with the zigzag stitch-forming devices and the presser-bar, of an attachment for introducing a fancy thread, *z*, into the zigzag stitch, comprising a support connected with the presser-bar, a hook, P, for introducing the said fancy thread, having its bearings in the support, a vibrating lever vibrated by a driving element of the machine, a transmitting device operating to transmit the vibrations of the lever to the hook, and a self-adjusting connection between the vibrating lever and transmitting device operating to maintain the same in connection when the presser-bar is lifted, substantially as and for the purpose specified.

10. The combination, in a sewing-machine of the class described, with the zigzag stitch-forming devices, the presser-bar, the wheel F, for imparting a horizontal reciprocating movement to the needle-bar, provided with a cam-groove, *f'*, the rock-shaft R, provided with a radial arm, S, having a stud, *i*, projecting into cam-groove *f'*, and a radial arm, 1, of an attachment for introducing a fancy thread, *z*, into the zigzag stitch, comprising a support detachably connected with the presser-bar, a hook, P, having its bearings in said support, a pinion on the upper end of the shank of the hook, a rack-bar operating in the head of the support and meshing with said pinion, a vibrating lever connected with the rack-bar, and a connecting-rod connecting said lever with the arm 1 of the rock-shaft, substantially as and for the purpose specified.

11. The combination, with the presser-bar and the vibrating lever 3, vibrated by a driving element of the machine, of the support Q, the hook P, mounted in said support and carrying a pinion, q^3, and the rack-bar r^3, operating in the head of the support and meshing with the pinion q^3, said rack-bar having at one end a forked bearing, 7, for engagement with a stud, 6, on said vibrating lever, substantially as and for the purpose specified.

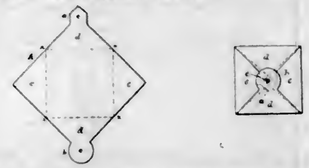
377,831. JAR-FASTENING. JOSEPH M. KELLER, Philadelphia, Pa. Filed Dec. 17, 1886. Serial No. 221,880. (No model.)



Claim.—1. The combination of the jar M, the bail or handle F, the said bail being attached on opposite sides of the jar M to catches A A, the said catches having their hooks J J projecting inwardly, thus bearing on the lid when the same is applied, and on the edge of the jar when the said lid is removed, the aforesaid catches being securely fastened in the upper ends of the tubes I I, the latter inclosing springs B B, and rods C C, connected with the band E, substantially as and for the purpose described.

2. In combination, the jar or vessel M, the bail or handle F, the latter attached on opposite sides to catches A A, which catches have their hooks J J projecting inwardly, so as to bear on the lid when the said lid is applied, and on the upper edge of the jar when the aforesaid lid is removed, the aforesaid catches A A being connected with springs B B on opposite sides, and the said springs being attached at their lower ends to a band or collar, E, the said band encircling the jar or vessel M, the whole operating for the purpose set forth in the description.

377,832. DOMINO. SAMUEL S. KIMBALL, Bangor, Me. Filed Mar. 7, 1887. Serial No. 229,912. (No model.)



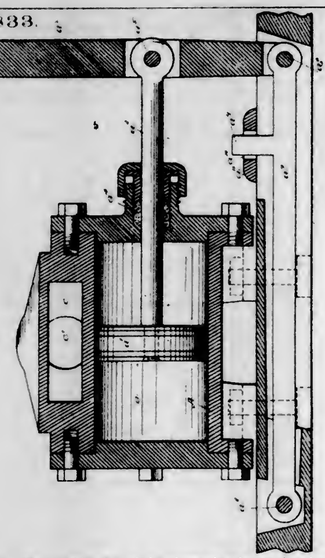
Claim.—1. A square domino made of a square blank having projecting flaps *a b* on diagonally-opposite corners, the four corners of the blank being bent over the back of the domino with the flaps *a b* on the outside, one flap covering the other, and the parts being held by a rivet passed through the overlying flaps *a b*, substantially as set forth.

2. The herein-described set of square dominos, comprising twenty-eight dominos, having the pips arranged and disposed on two opposite sides of each domino, substantially as described, so that the set shall include all the possible dissimilar combinations of blanks and pips from blank to six, and each piece which has pips on two opposite edges having also on the two adjacent remaining edges figures corresponding in denomination with the number of pips, substantially as set forth, and a supplemental set of seven pieces, each piece having, on one edge at least, an arbitrary symbol, such as a crown, and the seven having on the opposite edge one a crown and the remainder pips varying in number from one to six, consecutively, as set forth.

3. The herein-described set of square dominos, comprising twenty-eight dominos, having the pips arranged and disposed on two opposite edges of each domino, substantially as described, so that the set shall include all the possible dissimilar combinations of blanks and pips from blank to six, and each piece which has pips on two opposite edges having also on the two adjacent remaining edges figures corresponding in denomination with the number of pips, substantially as set forth, and each piece on which the aggregate sum of the pips or figures, or both, is divisible by five having on its center an arbitrary symbol, such as a crown, and a supplemental set of seven pieces, one of which has on each of its four edges an arbitrary symbol, such as a crown, and the remaining pieces having on one edge a crown, on the opposite edges pips ranging in number from one to six, consecutively, and on the remaining adjacent edges figures ranging from one to six, consecutively, each piece having similar numbers on opposite edges, substantially as set forth.

377,833. FORCE-PUMP. CLAUDE W. KINDER, Tien-Tsin, Chihli, China. Filed Oct. 14, 1886. Serial No. 216,210. (No model.)

377,833.



Claim.—The combination of the piston-chamber a, the piston a', the spindle a^3, long lever a^5, the long radius-bar a^7, to the end of which the lever a^5 is connected, a horn or arm, a^8, the steadying-plate a^{11}, having the hole a^{10}, which receives the horn or arm a^8, substantially as described.

377,834. COFFIN-DEPOSITOR. ANDREW M. LEWELLEN, Rosendale, Mo. Filed Apr. 23, 1887. Serial No. 235,582. (No model.)



Claim.—1. In an apparatus for depositing coffins and caskets in graves, the combination, with the main frame, of uprights extending therefrom and bearing rollers and ropes by means of which the lowering is accomplished.

2. In an apparatus for depositing coffins and caskets in graves, the combination, with a main frame composed of two parts hinged together for the purpose of folding, of uprights extending therefrom and attached thereto by means of hinges, braces connecting the uprights and main frame, said braces being jointed or hinged to permit of folding with the uprights, and rollers journaled in the uprights, substantially as shown.

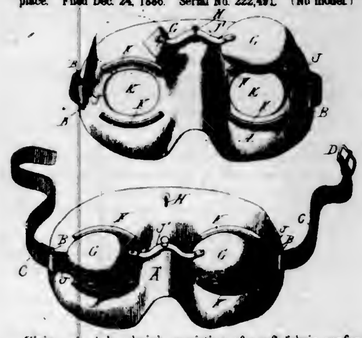
3. In an apparatus for depositing coffins and caskets in graves, the combination, with the main frame hinged at its center and having pivotal legs attached thereto, of uprights, one set of which is hinged to the main frame and the other set attached to a frame sliding upon the main frame, substantially as specified.

4. In an apparatus for depositing coffins and caskets in graves, the combination, with the main frame, of uprights extending therefrom, one set of said uprights being attached to the main frame, the other attached to a frame sliding thereon, the main frame being provided with a scale for the purpose of adjusting the apparatus to any desired length, substantially as shown and described.

5. In an apparatus for depositing coffins in graves, the combination of the main frame centrally hinged for the purpose of folding, uprights hinged to the main frame near one end and uprights hinged to the sliding frame upon the opposite end of the main frame, a strap beneath the main frame attached to the sides thereof near one end, and a similar strap attached to the sides of the sliding frame at the opposite end, the straps being for the purpose of supporting the coffin before lowering it into the grave, substantially as set forth.

6. In an apparatus for depositing coffins and caskets in graves, a crank-roller having perforations therein for the attachment of the lowering-ropes, there being a longitudinal groove connecting said perforations, and a brake for locking the crank-roller, consisting of a strap rigidly secured to some convenient point of the frame of the apparatus and passing partially around the roller and connected to a pivoted cam-lever, as set forth.

377,835. HOODWINK. FRANK H. LYMAN and ANDREW J. JOHNSON, Chicago, Ill., assignors to themselves and Henry N. Anable, same place. Filed Dec. 24, 1886. Serial No. 222,491. (No model.)

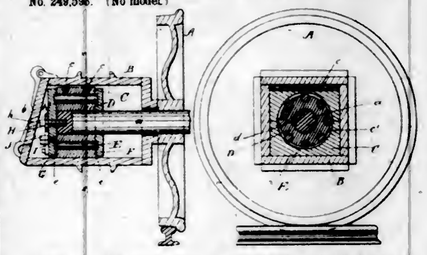


Claim.—1. A hoodwink consisting of a soft fabric conforming to the features of the face about the eyes, provided with sight-apertures, in combination with eye-pieces which set over the apertures and directly upon the surface of the pad.

2. The combination of the fabric pad, conforming to the features about the eyes and having sight-apertures with surrounding ribs, and eye-pieces secured to the pad by straps and secured to each other and adapted to cover the sight-apertures.

3. The combination of a soft-fabric pad, which conforms to the features about the eyes and having sight-apertures and surrounding ribs, with a strap to secure the pad on the head, and eye-pieces connected together, secured to the pad by elastic straps, and adapted to rest on the pad between the eyes and over the apertures.

377,836. ROLLER-JOURNAL FOR CAR-AXLES. HENRY L. MOYER and GEORGE W. YOULLS, Shickshinny, Pa. Filed Sept. 13, 1887. Serial No. 249,593. (No model.)



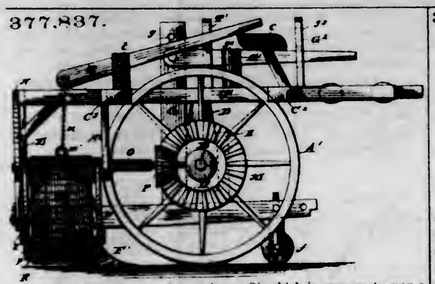
Claim.—1. The combination of the axle, the axle-block secured thereupon, the anti-friction rollers carried in recesses in said block, the pedestal having a circular bearing-cavity for said rollers, the disks secured to the axle against the ends of the pedestal and having circular recesses for the ends of the rollers, and the screw-bolt for removably securing the outer disk to the axle, substantially as set forth.

2. The combination of the axle, the axle-block secured to the axle, the anti-friction rollers carried in recesses in said block, the pedestal having a circular bearing-cavity for said rollers, the disks secured to the axle against the ends of the pedestal and having circular recesses for the ends of the rollers, the screw-bolt for removably securing the outer disk to the axle and provided with the ratchet at its head, the spring-pawl engaging with said ratchet, and the square-headed stud-bolt for disengaging said pawl when desired, substantially as and for the purpose set forth.

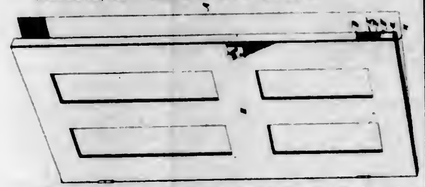
377,837. DITCHING-PLOW. JOHN L. OLSON, Warren, Minn. Filed Sept. 30, 1887. Serial No. 251,106. (No model.)

Claim.—In a ditching-plow, the combination, with the frame, depending arms D, and axle B, provided with suitable carrying-wheels, of a beam, F, having a caster-wheel and plow, and upright G, secured to said beam and pivoted to a lever, G', which is arranged upon a post, g^2, said upright G, and a guide, H, embracing the axle, and a headed pin, J, secured to the rear end of the beam and adapted to work in a slot, E, formed in a bracket, E, substantially as described.

377,837.

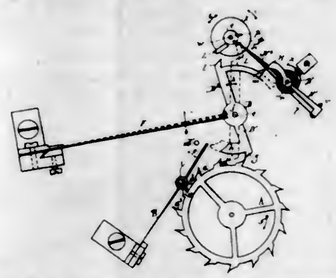


377,838. WEATHER-STRIP. LEWIS M. PRATT, Belleville, Kans. Filed Nov. 3, 1887. Serial No. 254,302. (No model.)



Claim.—The combination of the door having the horizontal recess C in its lower edge, and the vertical grooves D in its side edges, the plates D', fitted in the grooves D, and having the longitudinal slots E, provided with beveled edges, the retaining-screws inserted through said slots into the door, and the roller H, journaled in and between the lower ends of the plates and rotating in the recess C, substantially as set forth.

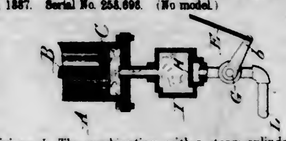
377,839. CHRONOMETER-ESCAPEMENT. PAUL T. A. RODROK, Amsterdam, Netherlands. Filed Sept. 5, 1887. Serial No. 249,125. (No model.) Patented in France Aug. 9, 1887, No. 185,256; in England Aug. 9, 1887, No. 10,916, and in Italy Sept. 30, 1887, XLIII, 468, XXI, 22,151.



Claim.—1. In a chronometer-escapement, the combination, with the balance-staff, the escapement-wheel, and a locking-tooth for controlling the rotation of the wheel, of an escapement-lever adapted to control the locking-tooth of the escapement-wheel and oscillate the balance-staff in one direction, and adapted to be itself impelled by the escapement-wheel in one direction, a driving element for impelling the lever in a reverse direction, and a locking-tooth controlled by the movements of the balance-staff and adapted to control the oscillations of the escapement-lever when impelled by the escapement-wheel, substantially as and for the purpose specified.

2. The combination, substantially as herein described, of the balance-staff W, the pallets *l*, *p*, connected therewith, the escapement-wheel A, and the spring-actuated locking-tooth *i* B, of the escapement-lever D, provided with teeth *l m g* and the arm *A*, the spring-actuated lever N, the spring P, secured thereto, and the locking-tooth M on the lever-pivot, said parts being adapted for operation substantially as and for the purpose specified.

377,840. CUSHIONING DEVICE FOR STEAM-PISTONS. EDWIN F. SMITH, Brooklyn, assignor to the H. S. Smith Manufacturing Company, (Limited,) Geneva, N. Y. Filed Apr. 16, 1886. Renewed Dec. 22, 1887. Serial No. 258,698. (No model.)



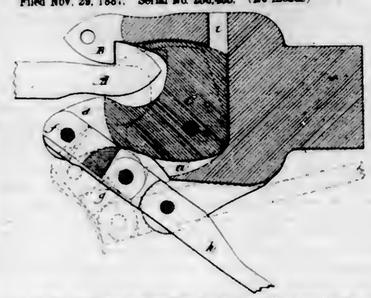
Claim.—1. The combination, with a steam-cylinder containing a steam-piston, of a cushioning device for the piston at the lower extremity of its stroke, consisting of a pipe connecting the steam-supply with the lower cylinder-head, a swinging check-valve within said pipe, and a supply-valve, also in the pipe and automatically opened by a suitable leverage connection having a tripper that is acted upon at the proper point by contact with mechanism upon the piston-rod, substantially as described.

2. The combination, with the steam-cylinder containing a steam-piston whose piston-rod carries a slide moving in guideways, of a supplemental steam-supply pipe entering the lower cylinder-head, a swinging check-valve within said pipe, a second valve, also within the pipe, and having a crank connecting by a link with a trip-lever pivoted on one of the guideways in the path of the moving slide, all adapted to operate in the manner shown and set forth.

3. The combination, with a steam-cylinder containing a steam-piston, of a supplemental steam-supply device for admitting an additional amount of steam to the lower end of the cylinder to cushion the descending piston, said device being automatically operated by suitable leverage connections with the piston-rod, substantially as shown and set forth.

4. The combination of the steam-cylinder A, guides K K, piston B, having slide J, supply-pipe I, having valves H and G, and the operative mechanism for said valve G, consisting of crank *b*, link E, and tripper F, all arranged to operate substantially as described.

377,841. CAR-COUPLING. ALEXANDER STORY, Washington, Iowa. Filed Nov. 29, 1887. Serial No. 256,405. (No model.)



Claim.—1. In a car-coupling, a horizontally-movable draw-head provided with a guard-hook, B, a pointed unlocking device, C, being an operating-toe and long arm *d*, operated by the lever *h*, and connecting-link and spring *g*, all as shown and described.

2. A double-pronged uncoupling appliance, C, having operating-lever *h* and connecting-link *g*, and pivoted, as described, in the recess of the draw-head, in combination with the hook A and hook B, as shown and described.

3. In a car-coupling, the combination of the draw-head having the hook B upon one of its sides, the U-shaped uncoupling appliance pivoted near its center and having the long arm *d*, the link connecting this arm with the operating-lever, the spring attached to the link and bearing upon the hinge-joint formed by the lever and link, the lever-extension beyond its pivot, and the operating-chain, substantially as shown and described.

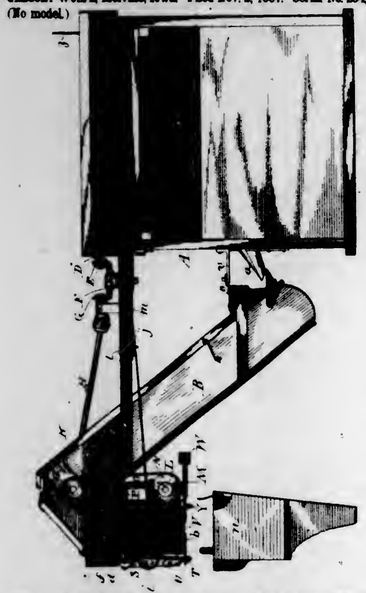
4. In a car-coupling, the draw-head having the hook B, and uncoupling device C, having link-connection with the lever *h*, in combination with the lever-extension, the pulley and chain, and the centrally-pivoted lever across the end of the car, having the chain extending to the top thereof, whereby the car may be uncoupled from either side or from the top, as set forth.

5. In a car-coupling having the hook B and double-pronged uncoupling device pivoted near its center, the combination, with said uncoupling device, of a horizontal recess in the draw-head, whereby a wedge or bolt may hold the parts in uncoupled position, for the purpose described.

377,842. TONIC COMPOUND. CHARLES W. STOWE, Salina, Kans. Filed June 4, 1887. Serial No. 240,297. (No specimens.)

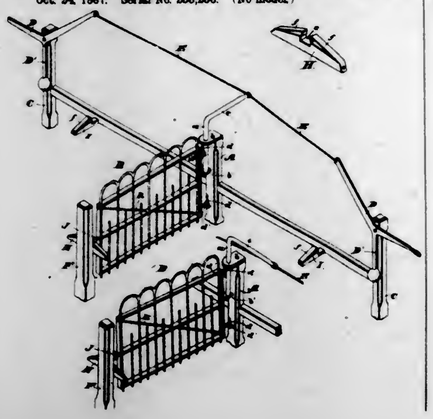
Claim.—The tonic medicinal compound herein described, composed of tincture of nux vomica, tincture of gentian, Horsford's acid phosphate, simple sirup, and alcohol, in about the proportions specified.

377,843. AUTOMATIC GRAIN METER AND REGISTER. J. GREGORY WOLFE, Melville, Iowa. Filed Nov. 2, 1887. Serial No. 254,122. (No model.)



Claim.—A combined grain meter and register, in connection with a hinged elevator composed of the shaft D with pinion E, and wheel F with pinion G, and tumbling-rod H with pinions I and J, and belt-wheels K and L, in connection with the crank-shaft M and rod N and lever O, and bar P, with its cross-head Q, by means of which the grain is pressed against the cross-head R, and the bottom of the meter is allowed to open for the purpose of letting the grain drop out, and the registering-lever Z, with its operating-rod Y, and ratchet *d*, and registering-wheels *f*, *g*, and *h*, by means of which the grain is made to register itself, and the sliding board *t*, with its operating-rod *u*, and hinged bottom V, with its attached weight W, and movable rack *m*, with its dog *j* and spring *l*, all constructed, arranged, and operated substantially as above described.

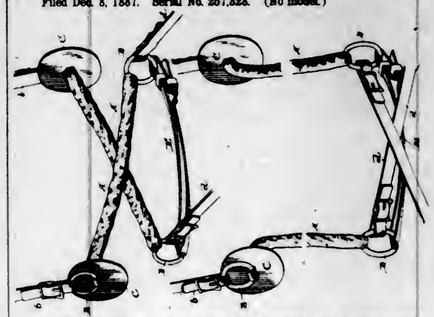
377,844. FARM-GATE. JEREMIAH J. BUSHMAN, Justus, Ohio. Filed Oct. 24, 1887. Serial No. 253,258. (No model.)



Claim.—1. The combination of the gate B, hinged to the post A and to the bar *a*, and provided at its free end with the roller J, the arms D, provided with the pendent weighted arms D', the pull-cords E, and the lever *c*, substantially as and for the purpose specified.

2. The combination of the gate B, hinged to the post A and to the bar *a*, the arms D, provided with the pendent arms D', the pull-cords E, and the lever *c*, substantially as and for the purpose specified.

377,845. BRIDLE-BIT. RICHARD O. BURGESS, Providence, R. I. Filed Dec. 8, 1887. Serial No. 257,328. (No model.)



Claim.—1. In a bridle-bit, two mouth-pieces free to move longitudinally with relation to each other and each provided at one end with a ring, B, adapted to be connected with one of the cheek-straps of a bridle, and having its opposite end free from connection with the bridle and provided with a ring, D, to which the driving-rein is adapted to be secured, substantially as described.

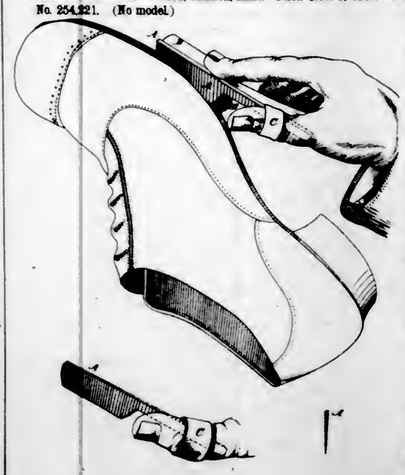
2. In a bridle-bit, two crossed mouth-pieces, each connected at one end only with the cheek straps or pieces of the bridle, and connected at the opposite end with the driving-rein, substantially as described.

3. In a bridle-bit, two crossed flexible mouth-pieces, A A, connected with cheek-pieces and the bridle-straps, and at their ends opposite the cheek-pieces to the driving-reins, substantially as described.

4. In a bridle-bit, two crossed mouth-pieces, each connected at one end only with the bridle-straps, and connected at the opposite end to the driving-rein, the ends of the two mouth-pieces connected to the driving-reins being connected with each other by a strap, E, substantially as described.

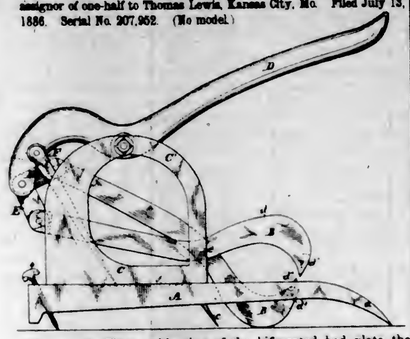
5. In a bridle-bit, two mouth-pieces, A A, each provided centrally with links *a* and at one end with a ring, B, adapted to be connected with one of the cheek-straps of a bridle, and its opposite end provided with a ring, D, to which the driving-rein is secured, substantially as described.

377,846. TOOL FOR INKING THE SOLE-EDGES OF BOOTS OR SHOES. FRANK P. BUNNELL, Malden, Mass. Filed Nov. 3, 1887. Serial No. 254,221. (No model.)



Claim.—The herein-described inking-tool, consisting of a suitable brush and an independent guard, as A, adapted to be connected to the hand of an operator by a ring or similar connecting device, substantially as described.

377,847. CARPET-STRETCHER. JOHN CARTER, Emporia, Kans., assignor of one-half to Thomas Lewis, Kansas City, Mo. Filed July 13, 1886. Serial No. 207,952. (No model.)

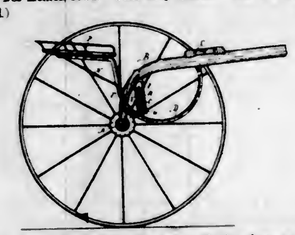


Claim.—1. The combination of the bifurcated bed-plate, the standard, the gripping-jaws, the operating-lever hinged to the standard, and the links that connect the end of the operating-lever to the gripping-jaws, substantially as set forth.

2. The combination of the bifurcated bed-plate having spreading and downwardly-projecting arms *a*, the set-screws *b* at the rear end of the bed-plate, the uprights C, the operating-lever hinged thereto, the gripping-jaws, and the link-connections between the gripping-jaws and the operating-lever, substantially as set forth.

3. The combination of the bed-plate, the spreading arms *a*, the uprights C, the operating-lever hinged thereto, the gripping-jaws arranged between the uprights C and connected with the operating-lever, the pawl F, and the toothed rack on the bed-plate, with which the pawl engages, substantially as set forth.

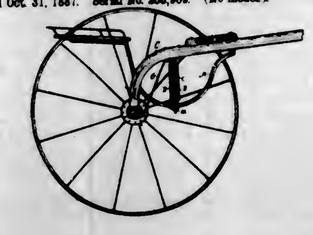
377,848. TWO-WHEELED VEHICLE. JAMES H. CLOYES and EDGAR R. GRAY, Kalamazoo, Mich., assignors to the Des Moines Buggy Company, Des Moines, Iowa. Filed July 1, 1887. Serial No. 243,099. (No model.)



Claim.—1. A fulcrumed body or seat bars, the brackets, each end being turned at right angles, the lower end provided with the lugs and attached to the axle, the upper end attached to the thills, and spiral-spring hangers pivotally attached to the sides of the body and to the upper bar of the brackets, in combination, substantially as set forth.

2. In combination, a fulcrumed body or seat-bars, the axle, and brackets mounted thereon, the thills, and the hangers consisting of the frame, the sliding nut, the rod screw-threaded in said nut, and the spiral spring on said rod, substantially as set forth.

377,849. TWO-WHEELED VEHICLE. JAMES H. CLOYES, Des Moines, Iowa, assignor to the Des Moines Buggy Company, same place. Filed Oct. 31, 1887. Serial No. 253,909. (No model.)

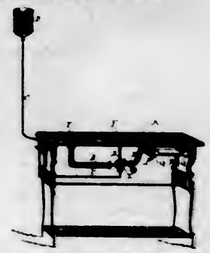


Claim.—1. The hanger consisting of the frame having the end pocket provided with the perforated block, and the guide-rod, the rod having the internally-cored end, a cap on said end, and the perforated plug in said end, and the spiral spring, all arranged substantially as set forth.

2. The hanger consisting of a frame having the perforated block at one end and the guide-rod at the other end, the internally-cored rod passed through said block, and provided with the perforated plug through which the guide-rod is passed, a cap at this end of the cored rod, the spring between the cap and block, and a flexible tube between the latter-named rod and spring, substantially as set forth.

3. In a vehicle, the combination of the thills, fulcrumed body or seat-bars, and hangers consisting of the frame having the guide-rod at one end, the perforated block at the other end, the rod having the hollow end, the perforated plug in said end through which the guide-rod is passed, the cap on the end of said rod, and the spiral spring between the block and cap, substantially as set forth.

377,850. VAPOR OR GAS STOVE. HENRY FLYNT, Kansas City, Mo., assignor of one-half to Charles E. Cooke, same place. Filed Mar. 9, 1887. Serial No. 230,255. (No model.)



Claim.—1. The herein-described reversible burner for vapor or gas stoves, comprising the short tube H, swiveled upon the conducting-tube D, the perforated tube G, extending the tube H, the shield K, surrounding the perforated tube on three sides, and the perforated face M, secured to the edges of said shield, in combination with a frame-work within which said burner is supported, substantially as described.

2. The herein-described reversible burner for vapor or gas stoves, comprising the short tube H, provided with the hole A, adapted to receive a reversing-pin, I, said tube being swiveled upon the conducting-tube D, the perforated tube G, extending the tube H, the shield K, surrounding the perforated tube on three sides, the netting M, connecting the edges of the shield, the frame L, covering said netting, and the bolts N, passing through the edges of the shield, netting, and frame for securing them together, in combination with a frame-work within which said burner is supported, substantially as described.

3. In a reversible burner for vapor or gas stoves, the combination, with the burner proper having the short tube H at one end and the rod J at the other, of a frame-work within which said rod is journaled, and a conducting-tube swiveled to said tube H, as and for the purpose set forth.

4. The combination, with the reversible burner, the tube H, provided with the hole A, and the pin I, of the frame-work for supporting the burner, provided with the lugs S' and the supply-tube D, for the purpose stated.

5. In a vapor or gas stove, the combination, with a reversible burner and a conducting-tube connected thereto, of a frame-work within which said burner is journaled midway between its bottom and top, said frame-work having an open top and being provided with slides Q near its bottom, as and for the purpose set forth.

6. In a vapor or gas stove, the combination, with the stove-table A and the hanger frame-work, the latter comprising depending arms P', having the slides Q, of the reversible burner journaled midway between said stove-table and slides, for the purpose set forth.

7. In a vapor or gas stove, the combination, with the stove-table A, the lugs S, secured thereto, and the hanger frame-work comprising the depending arms P', having the slides Q at their lower ends, said frame-work being open at its top, of the reversible burner journaled in said lugs below said stove-table, substantially as described.

377,851. ELECTRIC FUSE. PERRY G. GARDNER, North Adams, Mass., assignor of one-half to Russell S. Penniman, Dover, N. J. Filed Apr. 14, 1887. Serial No. 234,803. (No model.)

Claim.—1. In an electric fuse, the combination, substantially as hereinbefore described, of the wire which is made incandescent for firing, and a protecting-shield for and in close contact with said wire, composed of solid adhesive explosive matter.

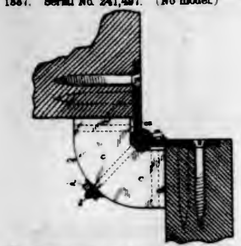
2. In an electric fuse, the combination, substantially as hereinbefore described, of the wire which is made incandescent for firing, and

377,851.



a mass of fulminate of mercury adhesively applied to said wire and serving as a protecting-shield therefor, and also as an initial explosive medium in close contact with said wire.

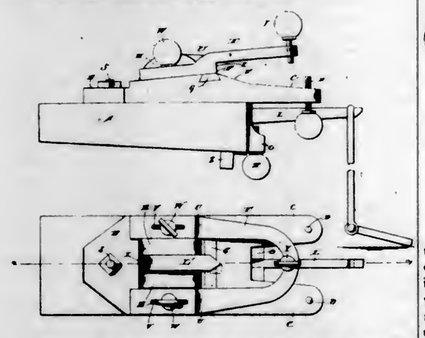
377,852. DOOR-CHECK. S. HERBERT GIBBY, Washington, D. C. Filed June 16, 1887. Serial No. 241,497. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the buffer-block, the laterally-projecting shank, and the ring on the outer end of the shank for securing it to a hinge.

2. The combination, substantially as set forth, of a door-hinge, a buffer-block, *c*, having an end, *c'*, adapted to rest against a frame or adjacent wall, a notch, c^2, to form a seat for the hinge socket or sockets, and a side, c^3, at an angle to the end *c'*, against which the door or similar structure abuts, and the shank *b*, carrying the buffer-block and secured to the hinge midway between the leaves thereof.

377,853. SAW-SET. SAMUEL HARGRAVE, Sr., Pomona, Ill. Filed Mar. 30, 1887. Serial No. 233,992. (No model.)



Claim.—1. In a saw-set, the combination of the plate B, the anvil attached to the plate, and the pivoted lever L, having the arm L', forming the punch, the free end of the said arm being arranged above the anvil, for the purpose set forth, substantially as described.

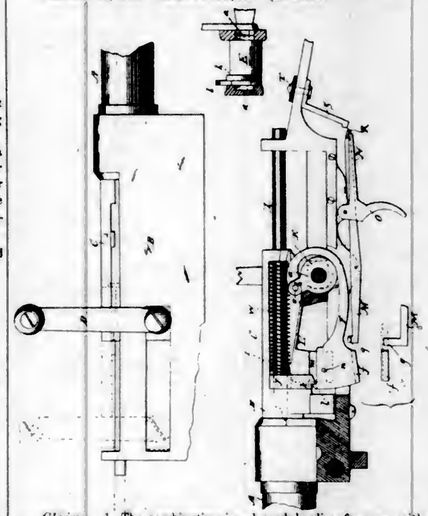
2. The combination, in a saw-set, of the plate B, having the transverse dovetailed groove F, and the metallic bar G, forming the anvil and secured in the said groove, and the lever L, pivoted to the plate B and having the curved arm L', forming the punch, the free end of the said arm being arranged above the center of the anvil, substantially as described.

3. The combination of the plate B, having the front arms, C, provided with the vertical set-screws D, the said plate having the transverse inclined offset or shoulder E and provided with the anvil, the gage secured to the plate and movable longitudinally thereon, the said gage having the offsets or shoulders X and forward-projecting portion extending over the arms C and provided with the adjusting-screw Y and the lever L, pivoted in and extending through an opening in the plate B, the said lever having the arm L', forming the punch, substantially as described.

4. The combination of the block A, the plate B, secured on the upper side of the block and having the forward-projecting arms C, the anvil on the said plate, the adjusting-screws D, extending through the said arms C to support the outer edge of the saw and adjust the same to any desired inclination with reference to the anvil, the pivoted lever L, having the arm L', forming the punch, and the spring to normally raise the lever, and thereby raise the punch, and the adjusting-screw R, extending upward and bearing under the lever to regulate the descent thereof, substantially as described.

5. In a saw-set, the combination of the block A, having the slot K, the plate B, secured on the upper side of the block and having the forward-projecting arms C, the transverse offset or shoulder E, and ears H, the anvil secured to the plate, the adjusting-screws D, extending upward in the outer ends of the arms C, the lever L, extending through the slot K and having its inner end curved upward and forward to form the arm or punch L', the said arm or punch being pivoted between the ears H, the spring bearing under the lever to raise the same the adjusting-screw R, to limit the downward movement of the lever, and thereby regulate the stroke of the punch, and the longitudinally-movable gage T, secured on the upper side of the plate, provided with the shoulders or offsets X, for the purpose set forth, and extending forward over the arm C and provided with the adjusting-screw Y, all combined and arranged to operate substantially as described.

377,854. FIRE-ARM. BENJAMIN HEMMING, New Haven, Conn. Filed Dec. 20, 1886. Serial No. 222,053. (No model.)



Claim.—1. The combination, in a breech-loading fire-arm, with the breech-piece C and lever D, connected to shaft E, of the lever F, operating in conjunction with the notched finger J, shaft I, carrying the spring W, the said lever F, having a projection, *f*, engaging with an arm, *g*, on the lever M, the said lever M being actuated by means of trigger O through the medium of arm N on said trigger, and stop R on lever M, all as shown and described.

2. In a breech-loading fire-arm, the combination of the breech B, breech-piece C, and lever D, operating with the shaft E, having ear *b* and cam *h* and operating in connection with the lever F, which, having the pin *n* resting in a groove, *m*, in the spring L, serves to maintain the lever F in contact with the notch *k* of the finger J, as shown and described.

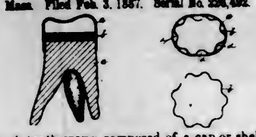
3. In a breech-loading fire-arm, the combination of the breech B, breech-piece C, lever D, through-shaft E, and ear *b*, connecting with the lever F, the said lever F having the flange *f*, which, by contact with the lug *g* on lever M, serves, through the medium of the said lever M, stop R thereon, arm N, and trigger O, to release the projection *l* on the said lever F from contact with the notch *k* on the finger J, as set forth.

4. In a breech-loading fire-arm, the combination of the breech B, breech-piece C, lever D, shaft E, lever F, spring H, shaft I, and finger J, the said breech B having the spring *d* and the said shaft E having cam A, which jams spring *d* down on breech B, when a rearward movement of the breech-piece C occurs, checking it, substantially as shown and described.

5. In a breech-loading fire-arm, the combination of the breech B, having the recesses *t t*, barrel A, having the lugs *s s*, and hand-lever V, having a pin, *v*, partially cut away to permit the breech and barrel to be unlocked, the said pin and lugs securing the breech and barrel, as shown and described.

6. In a breech-loading fire-arm, the combination of the breech B, having set-screw T, safety-arm S, operating in conjunction with the stop R on lever M, arm N, trigger O, and lever M, having lug *g*, engaging with the flange *f* on lever F, said lever being operated by lug *b* on shaft E, and lever D, operating said shaft and retracting breech-block C, all as set forth.

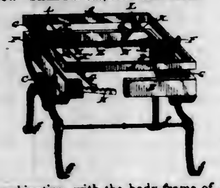
377,855. ARTIFICIAL TOOTH-CROWN. CORNELIUS S. HURLBUT, Springfield, Mass. Filed Feb. 3, 1887. Serial No. 226,492. (No model.)



Claim.—1. A tooth-crown composed of a cap or shell and an interior ledge to rest on the root, with vertical openings for anchorage, substantially as stated.

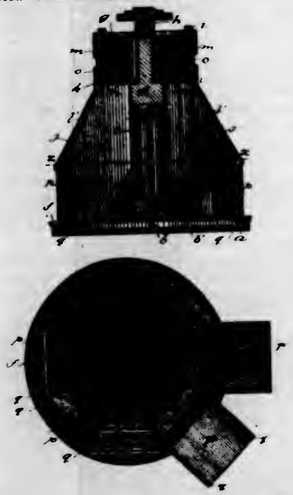
2. In a tooth-crown, the combination of the cap or shell with an interior ledge with vertical openings, said ledge being formed of a corrugated or bent plate or piece, substantially as stated.

377,856. PIANO-STOOL. ADOLPH G. HOFSTATTER, New York, N. Y. Filed Oct. 31, 1887. Serial No. 253,855. (No model.)



Claim.—The combination, with the body-frame of an adjustable stool, of a separate seat-frame, guides controlling the vertical movements of said frame, racks fixed to the body-frame, pawls pivoted to the seat-frame to engage said racks automatically, a rotating shaft mounted in the seat-frame, and cords connecting said shaft with the pawls, whereby a rotation of the shaft is made to lift the pawls, all substantially in the manner and for the purpose herein set forth.

377,857. SHOW-CASE. HARVEY B. KIPP, Hartford, Conn. Filed Nov. 5, 1887. Serial No. 254,382. (No model.)



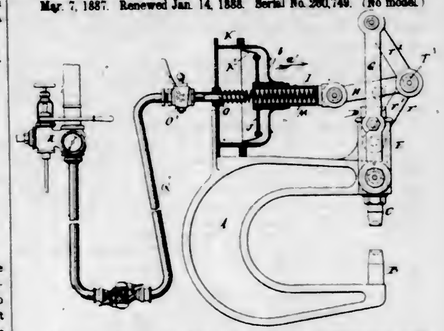
Claim.—1. In combination, a base, a spindle rising from the base, a standard supported by the spindle, and partitions projecting radially from the standard, each space between the partitions being closed on top by a cover, on the bottom by a floor, and in front partly by a glass and partly by a door located below the glass and hinged at its bottom, so as to open outward and downward, the said spaces being contracted at their bottom in front of the doors, all substantially as described, and for the purpose specified.

2. In combination a base, a spindle rising from the base, a standard supported by the base, radial partitions projecting from the standard, shelf *g*, floor *f*, horizontal partitions *k*, prismatic jars *o*, carried in the sockets *m*, diaphragms *r*, for contracting the outlet to the chambers, plates *s*, for sifting the contents as they pass out, the doors *p*, with wires *q* passing through the floor *f*, and the glass fronts *l'*, substantially as described, and for the purpose set forth.

3. In a revolving show-case of the within-described class, in combination with the radial chambers having an outward-opening door at the bottom, the inclined diaphragm *r*, to contract the outlet, substantially as described, and for the purpose specified.

4. In a revolving show-case of the within-described class, in combination with the radially-arranged chambers, the doors *p*, hinged at their bottom to the floor of the structure in such manner as to swing outward and downward in opening, all substantially as described, and for the purpose specified.

377,858. TOOL-OPERATING MECHANISM. LOUIS P. LAWRENCE, Passaic, N. J., assignor to the Lawrence Railway Brake Company. Filed May 7, 1887. Renewed Jan. 14, 1888. Serial No. 260,749. (No model.)



Claim.—1. The combination, with a frame or support, of a toggle-lever on the same, a vacuum-cylinder on the frame, a piston in said cylinder, which piston is connected with the toggle-lever, and a tool-holder connected with the toggle-lever, substantially as herein shown and described.

2. The combination, with a U-shaped frame or support, of a toggle-lever on the same, a vacuum-cylinder on the frame, and a piston in said cylinder, which piston is connected with the toggle-lever, substantially as herein shown and described.

3. The combination, with a U-shaped frame, of a guide on the same, a slide in said guide, a toggle-lever connected with said slide, a vacuum-cylinder on the frame, and a piston in said cylinder, which piston is connected with the toggle-lever, substantially as herein shown and described.

377,859. MOLD FOR CASTING LOOSE PULLEYS. JOHN MCCAFFREY, Lawrence, Mass. Filed Mar. 26, 1887. Serial No. 232,519. (No model.)



Claim.—1. The combination of an internal disk-core, an external ring-core, and lugs provided on one of such parts and leading to the other, substantially as set forth.

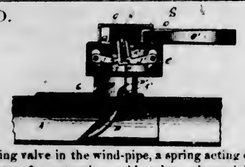
2. The combination of the core A, having cylindrical portion B and disk portion C, the ring-cores F F, and the lugs E, all substantially as described, and for the purposes specified.

377,860. TREMOLO ATTACHMENT FOR CORNETS. FRIEDRICH MERSEBURGER, Jersey City, N. J. Filed July 8, 1887. Serial No. 243,738. (No model.)

Claim.—1. A tremolo attachment for cornets or like instruments, consisting of a swinging valve in the wind-pipe and a finger-lever for operating said valve, substantially as herein shown and described.

2. A tremolo attachment for cornets or like instruments, consist-

377,860.



ing of a swinging valve in the wind-pipe, a spring acting on said valve, and a finger-lever for actuating said valve, substantially as herein shown and described.

3. A tremolo attachment for cornets or like instruments, consisting of a swinging valve in the wind-pipe, a spring acting on said valve, a finger-lever for actuating the valve, and a spring acting on said finger-lever, substantially as herein shown and described.

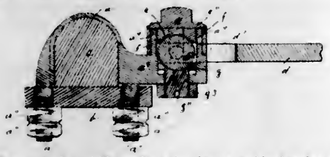
4. In a tremolo attachment for cornets or like instruments, the combination, with a pipe, of a swinging valve in the same, pivoted levers for actuating the valve, and a finger-lever for actuating said levers, substantially as herein shown and described.

5. In a tremolo attachment for cornets or like instruments, the combination, with a pipe, of a swinging valve in the same, a lug on one end of the valve, a pin or stem on said lug, pivoted levers above the upper end of said pin or stem, and a finger-lever for actuating said levers above the upper end of the pin or stem, substantially as herein shown and described.

6. In a tremolo attachment for cornets and like instruments, the combination, with a pipe, of a valve in the same and a finger-lever for actuating the valve, which finger-lever is provided with a recess in its under side, substantially as herein shown and described.

7. In a tremolo attachment for cornets or like instruments, the combination, with a pipe, of a valve in the same, pivoted levers provided with upwardly-projecting arms, which levers actuate the valve, and a finger-lever mounted to move over the upper ends of said arms, that part of the finger-lever which passes over the upper ends of the said arms being provided with a cam-surface on its under side, substantially as herein shown and described.

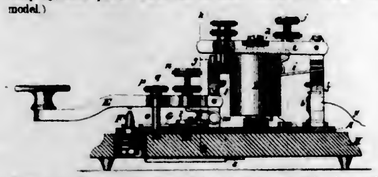
377,861. **THILL-COUPLING.** DANIEL MURRAY, Salem, Mass. Filed Oct. 19, 1887. Serial No. 252,847. (No model.)



Claim.—1. In a thill-coupling, the clasp *a* and its bearing a^3, having the shell a^4 and cup-shaped plug *e e'*, in combination with the shaft-iron *d*, having forked end d', trunnions d'' d'', and ball d^3, and the adjustable cup-bearing *g*, having screw-threaded shank *g'* and check-nut g^4, as and for the purpose set forth.

2. In a thill-coupling, the bearing-piece a^3 and its shell a^4, and the shaft-iron *d*, with its forked end d', trunnions d'' d'', and ball d^3, in combination with the cup-shaped upper plug, *e e'*, the inclosing ring *f*, and lower adjustable cup-bearing, *g*, having screw-threaded shank *g'* and check-nut g^4, as and for the purpose set forth.

377,862. **COMBINED TELEGRAPH KEY AND SOUNDER.** BARTHOLOMEW OEHMEN, New York, N. Y., assignor to the New Haven Clock Company, same place. Filed Oct. 13, 1887. Serial No. 252,206. (No model.)



Claim.—1. The combination of the plate A, post *f*, having series of holes, pivoted lever *e*, and spring *i*, inserted at one end in one of the perforations of said post *f* and bearing at its other end upon the lever *e*, whereby the tension of said spring is regulated, substantially as described.

2. The combination of the plate A with the anvil F, for connection with a line-wire, said anvil having a shoulder, *x*, above the plate A, and with the slotted and forked longitudinally-sliding switch G and guide-posts *l* and *o*, entering said slots and fork, respectively, substantially as described.

3. The combination of the metal plate A, electro-magnet B, one pole being electrically connected with the plate A, sounder-lever *e*, and sounder-posts *f* and D with the key-lever E, pivoted in the sounder-post, longitudinally-sliding switch G, insulated anvil F, conductors *s r z* and *b y*, all arranged so that both said conductors are used by the key and by the sounder, as specified.

377,863. **MACHINE FOR FOLDING SHEET METAL.** CASPAR REISING, Plantsville, Conn. Filed Sept. 20, 1887. Serial No. 250,159. (No model.)



Claim.—1. The combination of a base-frame having fixed yoke-shaped end standards, a stationary folding-plate attached to the said standards, a hinged folding-bar guided by said end standards, a spring-clamp below the stationary plate, and a hinged adjustable and spring-actuated gage having fingers guided in grooves of said folding-bar, substantially as set forth.

2. The combination of an L-shaped base-frame having fixed yoke-shaped end standards, a stationary folding-plate attached to said standards, a folding-bar guided by ribbed end plates in circular grooves of the standards, a spring-clamp below the stationary plate, a gage having fingers guided in grooves of said folding-bar, said gage being hinged to a bracket-plate guided in the folding-bar, and a set-screw engaging said bracket-plate and folding-bar for adjusting the gage, substantially as set forth.

3. The combination, in a sheet-metal-folding machine, with the hinged folding-bar having top grooves, of a gage having fingers, a bracket-plate guided by a rod in said folding-bar, the gage being hinged to said bracket-plate, an adjusting-screw engaging said bracket-plate and a socket in the folding-bar, and spiral springs located in sockets of the folding-bar for raising the fingers of the gage out of the grooves of the folding-bar, substantially as set forth.

4. The combination of a supporting-frame having fixed yoke-shaped end standards, a stationary folding-plate attached to said standards, a hinged folding-bar guided by said standards and provided with an interior shoulder, a clamp supported on bent springs below the stationary plate, said springs being engaged by the shoulder of the folding-bar, and a hinged and adjustable gage having fingers guided in grooves of the folding-bar, substantially as set forth.

5. The combination of a supporting-frame having fixed yoke-shaped end standards, a stationary folding-plate attached to said standards, a hinged folding-bar, a spring-clamp below said stationary plate, a hinged adjustable and spring-actuated gage having fingers guided in grooves of the folding-bar, and means for locking the gage flush with the folding-bar, substantially as set forth.

377,864. **WIRE-DRAWING MACHINE.** MARTIN F. ROBERTS, Kilburn, County of Middlesex, England. Filed May 13, 1887. Serial No. 238,087. (No model.) Patented in England Sept. 24, 1886, No. 12,136; in France May 11, 1887, No. 183,502; in Belgium May 11, 1887, No. 74,420, and in Canada June 15, 1887, No. 26,957.

Claim.—1. The combination, with the driving-shaft, a counter-shaft driven therefrom, a friction-disk mounted on a feather-key on said counter-shaft, and means for adjusting the position of said disk on the shaft, of a second friction-disk driven at varying speeds, as required, by the first-named friction-disk and secured on a shaft upon which a drawing-through pulley is also secured, substantially as herein set forth, for the purposes specified.

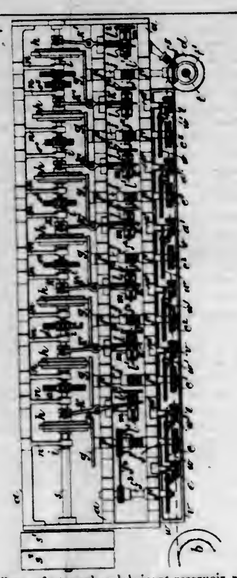
2. The combination, with the driving-shaft, a counter-shaft driven therefrom, a friction-disk mounted on a feather-key on said counter-shaft, and means for adjusting the position of said disk on the shaft, of a second friction-disk driven by the first-named friction-disk and secured on a shaft geared to a shaft on which is secured a wire-drawer's block, substantially as herein set forth, for the purposes specified.

3. The combination, with a series of counter-shafts driven at varying speeds, as required, from a driving-shaft, of adjustable friction-disk gearing, a series of shafts driven at varying speeds from said gearing, the shaft which carries the wire-drawer's block geared to one of said series of shafts, and the drawing-through pulleys on the remaining shafts of said series, substantially as herein set forth, and for the purposes specified.

4. The combination, in a wire-drawing machine, with a series of pulleys, *c*, driven at increasing surface speeds, of friction-disks *g* and *h*, respectively, for altering and adjusting the speed of said pulleys, as required, substantially as herein set forth, for the purposes specified.

5. The combination of a series of counter-shafts driven at varying speeds from a driving-shaft and transmitting motion by adjustable frictional gearing to a series of shafts on which are secured the drawing-through pulleys, of a trough or lubricant-reservoir, revolving disks, and a channel for collecting and guiding the lubricant onto the wire passing through an open channel secured to the die-holder, substantially as herein set forth, for the purposes specified.

377,864.



6. In a wire-drawing machine, the combination, with a bracket located in the path of the wire being drawn, of a die-holder and a universal joint or connection suspending the die-holder from or upon the bracket and connecting it positively therewith independently of the wire operated upon, substantially as herein set forth, and for the purposes set forth.

7. The combination, with a trough or reservoir containing lubricant and a revolving disk for raising said lubricant, of means, such as the channel *w'*, for collecting and guiding said lubricant onto a channel forming part of the die-holder, and through which channel the wire passes, substantially as herein set forth, for the purposes specified.

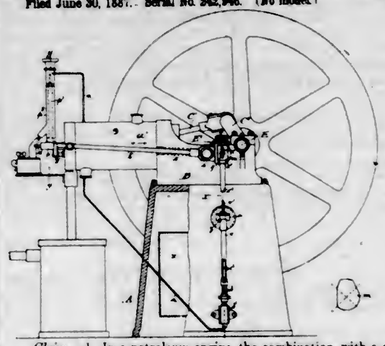
8. The combination, with a bracket secured adjustably to the frame, of a die-holder suspended by a gimbal device, substantially as herein set forth, for the purposes specified.

377,865. **SPIKE-EXTRACTOR.** EMANUEL SPEARS, Lafayette, Ind. Filed May 16, 1887. Serial No. 238,386. (No model.)



Claim.—The combination, with the lever having an offset, B, and a seat, *a*, of an integral fixed claw-head, C, slotted as described, and a swinging claw, D, having opposite openings G G, to permit the head of the spike to be grasped on three sides, and provided with a perforated stem, *d*, which is adjustably pivoted within the slot of the fixed claw-head, substantially as described.

377,866. **PETROLEUM-ENGINE.** ADOLF SPIEL, Berlin, Germany. Filed June 30, 1887. Serial No. 242,946. (No model.)



Claim.—1. In a petroleum-engine, the combination, with a cylinder and a piston traveling in said cylinder and imparting a rotary motion to the main driving-shaft, of an auxiliary shaft, *b*, connected with the main driving-shaft, and making one revolution to two strokes of said piston, the eccentric-pin *f*, formed on said auxiliary shaft *b*, the pitman c^3, operated by said eccentric-pin *f*, and the oil-pump *d*, operated by said pitman c^3, substantially as shown and described.

2. In a petroleum-engine, the combination, with a cylinder and a piston traveling in said cylinder and imparting a rotary motion to the main driving-shaft, of an auxiliary shaft, *b*, connected with the main driving-shaft, and making one revolution to two strokes of said piston, the eccentric-pin *f*, formed on said auxiliary shaft *b*, the pitman c^3, having a vertical slot, *e*, into which said eccentric-pin *f* extends, the screw *r*, against which said eccentric-pin *f* operates, and the oil-pump d', operated by said pitman c^3, substantially as shown and described.

3. In a petroleum-engine, the combination, with a cylinder and a piston traveling in said cylinder, of a main driving-shaft receiving a rotary motion from said piston, the auxiliary shaft *b*, receiving a rotary motion from said main driving-shaft and making one revolution to two revolutions of said driving-shaft, the cam *m*, secured on said auxiliary shaft *b*, the rod *b'*, receiving an outward motion from said cam *m*, the spring *s'*, imparting a return movement to said rod *b'*, said rod *b'* being adapted to open the outlet-valve b^4 and to close the igniting-pipe *p* by the valve *n*, substantially as shown and described.

4. In a petroleum-engine, the combination, with a cylinder and a piston traveling in said cylinder, of a main driving-shaft receiving a rotary motion from said piston, the auxiliary shaft *b*, receiving a rotary motion from said main driving-shaft and making one revolution to two revolutions of said driving-shaft, the cam *m*, secured on said auxiliary shaft *b*, the rod *b'*, receiving an outward motion from said cam *m*, the spring *s'*, imparting a return movement to said rod *b'*, the valve *n*, operated by said rod *b'* and closing the connection between the igniting-chamber and the cylinder, substantially as shown and described.

5. In a petroleum-engine, the combination, with a cylinder and a piston traveling in said cylinder, of a main driving-shaft receiving a rotary motion from said piston, the auxiliary shaft *b*, receiving a rotary motion from said main driving-shaft and making one revolution to two revolutions of said driving-shaft, the cam *m*, secured on said shaft *b*, the rod *b'*, receiving an outward motion from said cam *m*, the spring *s'*, imparting a return movement to said rod *b'*, the lever b^3, operated by the extreme outer end of said rod *b'*, and the valve b^4, supported by said lever b^3 and opening at the second return-stroke of said piston, so as to permit the escape of the burned gases, substantially as shown and described.

6. In a petroleum-engine, the combination, with the auxiliary shaft *b*, provided with the cam *m*, carrying the eccentric-pin *f*, of the slotted pitman-head *c'*, the screw *r*, screwing in said pitman-head *c'*, to increase or diminish the stroke of said pitman-head, the pitman c^3, supporting said pitman-head, the oil-pump d', operated by said pitman, the pin *y*, extending from said pitman c^3, the spindle *v*, having a projection, *u*, against which said pin *y* operates, and the spring-valve v^3, connected with said spindle *v* and adapted to open and close alternately the opening leading from the oil-pump to its supplying-reservoir, substantially as shown and described.

7. In a petroleum-engine, the oil-supply pipe *a* and the heating-pipe *p'*, into which said pipe *a* discharges, in combination with the igniting-pipe *p*, into which said pipe *p'* opens, substantially as shown and described.

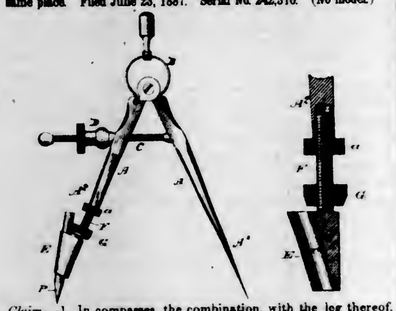
377,870. **ELECTRO-MEDICAL APPARATUS.** CHARLES F. WILLIAMS, Boston, Mass. Filed Dec. 19, 1887. Serial No. 258,135. (No model.)

2. In an electro-medical apparatus, in combination, a source of

8. In a petroleum-engine, the oil-supply pipe *a*, the heating-pipe *p'*, into which said pipe *a* discharges, and the igniting-pipe *p*, into which said pipe *p'* opens, in combination with the discharge-pipe *a'*, leading from said igniting-pipe *p* to the channel *o'*, the cylinder-head F, provided with said channel *o'*, and having an opening, o^3, adapted to be connected with said igniting-pipe *p*, and the air-supply pipe *h*, having a valve, *g*, and leading into said channel *o'*, substantially as shown and described.

9. In a petroleum-engine, the oil-supply pipe *a*, the heating-pipe *p'*, into which said pipe *a* discharges, and the igniting-pipe *p*, into which said pipe *p'* opens, in combination with the discharge-pipe *a'*, leading from said igniting-pipe *p* into the channel *o'*, and also provided with a check-valve, a^2, the cylinder-head F, provided with said channel *o'*, and having the opening o^3, adapted to be engaged with said igniting-pipe *p*, the air-supply pipe *h*, having a valve *g*, and leading into said channel *o'*, and the valve *n*, for connecting said channel *o'*, with the igniting-pipe *p*, and disconnecting it from the same, substantially as shown and described.

377,867. DRAFTSMAN'S COMPASSES. JOSHUA STEVENS, Chicopee Falls, Mass., assignor to the J. Stevens Arms and Tool Company, same place. Filed June 23, 1887. Serial No. 242,310. (No model.)

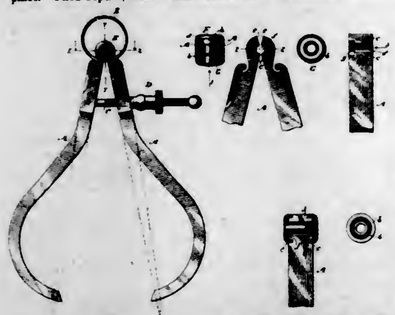


Claim.—1. In compasses, the combination, with the leg thereof, of a pencil or needle holder having a hole or socket to receive the pencil or needle, a screw arranged at an acute angle to the axis of said socket, and a clamping-nut screwing on said screw and adapted to bear against the exterior of the pencil or needle.

2. In compasses, the combination, with the leg thereof, of a pencil or needle holder having a hole or socket to receive the pencil or needle, a screw arranged at an acute angle to the axis of said socket and screwing into said leg or holder in order to adjust the length of the leg, and a clamping-nut screwing on said screw and adapted to bear against the exterior of the pencil or needle.

3. In compasses, the combination, with the leg thereof, of a pencil or needle holder having a hole or socket to receive the pencil or needle, a screw fixed to said holder at an acute angle to the axis of said socket and screwing into said leg in order to adjust the length of the leg, a set-nut on said screw to be tightened against said leg, and a clamping-nut screwing on said screw and adapted to bear against the exterior of the pencil or needle.

377,868. CALIPERS OR DIVIDERS. JOSHUA STEVENS, Chicopee Falls, Mass., assignor to the J. Stevens Arms and Tool Company, same place. Filed Sept. 9, 1887. Serial No. 249,223. (No model.)



Claim.—1. Dividers or calipers the upper ends of the legs of which are formed entirely on opposite sides of a plane coincident with the hinge-axis, and hinged together by means of washers on opposite sides of the head, and interfitting concentric annular ribs and grooves formed on the legs and on one or both of said washers, respectively.

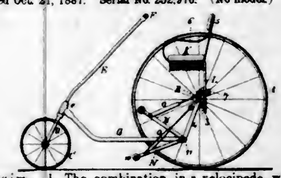
2. Dividers or calipers the upper ends of the legs of which are formed entirely on opposite sides of a plane coincident with the hinge-axis, combined with a pintle passing between them, and heads or washers on opposite sides united by said pintle and constructed with interfitting concentric annular ribs and grooves formed on the legs and on one or both of said washers, respectively.

3. Dividers or calipers the upper ends of the legs of which are formed entirely on opposite sides of a plane coincident with the hinge-axis, and having grooves *c* concentric with said axis, in combination with a washer having an annular rib, *b*, entering said grooves, with a washer or head on the opposite side of the legs, and a pintle passing through from side to side between the legs with its opposite ends fixed to the respective washers.

4. Dividers or calipers consisting of the combination of legs A A, formed with recess *g* on one side and concentric grooves *c* on the other, washer G, formed with rib *b* entering said groove, washer F, coming against the opposite side of the legs and having boss *h* entering said recess *g*, and pintle *a*.

5. Dividers or calipers the upper ends of the legs of which are formed entirely on opposite sides of a plane coincident with the hinge-axis, cut away at *e e*, and hinged together by means of washers on opposite sides of the head, and interfitting concentric annular ribs and grooves formed on the legs and on one or both of said washers, respectively, and combined with a cylindrically-curved leaf-spring arranged to inclose the head.

377,869. VELOCIPEDE. CHARLES F. STILLMAN, New York, N. Y. Filed Oct. 21, 1887. Serial No. 252,976. (No model.)



Claim.—1. The combination, in a velocipede, with the driving and steering wheels and the cranked axle and driving-gear, of a single tube or frame, G, extending downwardly and backwardly from the fork-head of the steering-wheel, a fork, 4, connected at its lower central portion to the back end of the frame G, and extending backwardly and upwardly, and having at its upper ends bearings for the cranked axle, substantially as specified.

2. The combination, in a velocipede, with the driving and steering wheels and the cranked axle and driving-gear, of a single tube or frame, G, extending downwardly and backwardly from the fork-head of the steering-wheel, a fork, 4, connected at its lower central portion to the back end of the frame G, and extending backwardly and upwardly, and having at its upper ends bearings for the cranked axle, the seat K, and the standards L, attached to the same and extending vertically below the back edge thereof, and screws for connecting the standards to the bearings for the axle, substantially as specified.

3. The combination, in a velocipede, with the driving and steering wheels and the cranked axle, of a single tube or frame, G, extending downwardly and backwardly from the fork-head of the steering-wheel, a fork, 4, connected at its lower central portion to the back end of the frame G, and extending backwardly and upwardly and having at its upper ends bearings for the cranked axle, the treadles N, and connecting-rods O, and the pivots 11, at the back ends of the treadles and at or near the junction of the said fork and frame and below and behind the forward edge of the seat, whereby the treadles are in a position to receive a nearly vertical thrust, substantially as specified.

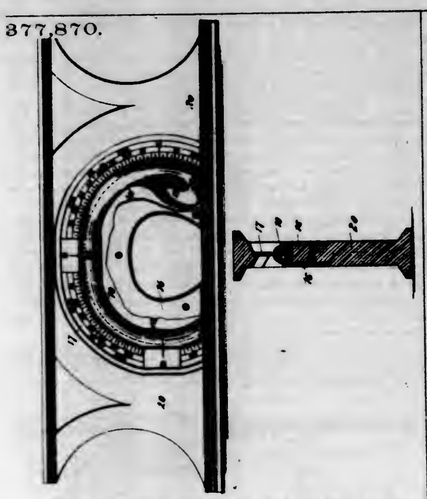
377,870. SPIRIT-LEVEL AND INCLINOMETER. ENOS F. ST JOHN, Highland Station, Mich. Filed Sept. 26, 1887. Serial No. 250,758. (No model.)

Claim.—1. As an improved article of manufacture, a combined level and plumb consisting of a stock, a tube formed with quadrant-sections 10 and a central section, 11, said tube being fitted in the stock, and a graduated plate arranged in connection with the tube, substantially as described.

2. As an improved article of manufacture, a combined level and plumb consisting of a stock, a tube formed with quadrant-sections 10, a central straight section, 11, and a section, 12, at right angles to the section 11, said tube being fitted within the stock, and a graduated plate arranged in connection with the tube, substantially as described.

3. In a combined level and plumb, the combination, with a stock, of a tube formed with quadrant-shaped sections 10, a central straight section, 11, a straight end section, 12, and a globe, 13, that is connected to the main body of the tube by a neck, 14, and a graduated plate, the tube being held by the stock and the plate being mounted in connection with the tube, substantially as described.

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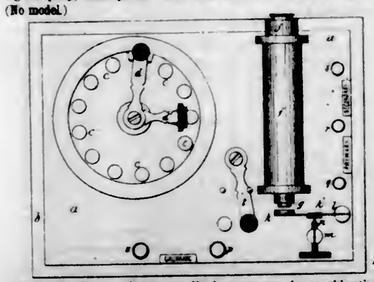
377,871. RING AND TRAVELER FOR SPINNING-MACHINES, &c. JOHN TATHAM, Rochdale, County of Lancaster, England. Filed May 11, 1881. Serial No. 33,040. (No model.) Patented in England Apr. 16, 1879, No. 1,482, and Oct. 16, 1879, No. 4,135, and in France Oct. 17, 1879, No. 133,296.

Brief.—The invention consists in an improved construction of the ring and traveler, whereby the delivery of the yarn by the traveler to the cop is regulated according to the varying diameter of the cop.



Claim.—The combination, with a ring for ring-spinning, having at the upper edge inwardly and outwardly projecting flanges, of a traveler engaging said flanges and affording an extended loop, *a'*, through which the thread may be passed and then lapped around the wire of the traveler, the length of the traveler from its bearing on the ring to its inner end being less than the radius of the ring, so that in use the traveler will not extend past the center of the cop, substantially as herein set forth.

377,872. ELECTRO-MEDICAL APPARATUS. THEODORE R. TEN BROECK, New York, N. Y., assignor to the Galvano-Faradic Manufacturing Company, same place. Filed July 23, 1887. Serial No. 245,041. (No model.)



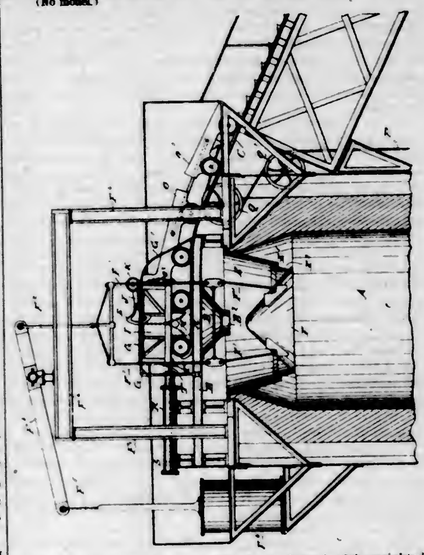
Claim.—1. In an electro-medical apparatus, in combination, a source of electricity, connections for forming a closed working-circuit therewith, and an electro-magnetic make-and-break device included in a shunt-circuit around the closed circuit, whereby a remittent galvanic current is caused to flow through said closed circuit.

2. In an electro-medical apparatus, in combination, a source of electricity, a closed circuit, including the primary coil of an inductorium and the working-circuit, and a shunt-circuit around the working-circuit, including the make-and-break device.

3. In an electro-medical apparatus, in combination, the battery *e*, the contact-point *n* of the make-and-break device connected to one terminal of the battery, the armature *k*, connected to the post *r*, the primary coil *h* of the inductorium *g*, connected at one end to the post *r* and at the other end to the battery, the secondary coil *i*, connected to the posts *r* and *s*, the post *q*, joined to the contact-point *n*, and the working-circuit connected to the posts *s* and *q*, substantially as set forth.

4. In an electro-medical apparatus, in combination, the battery *e*, binding-posts *p* and *o*, connected thereto, switch *l*, connected to one end of the battery, the contact-point *n* of the make-and-break device connected to the other end of the battery, the armature-spring *k'*, connected to the post *r*, the primary coil *h* of the inductorium *f*, connected at one end to the post *r*, the contact-plug *u*, joined to the other end of the primary coil, the secondary coil of the inductorium connected at one end to the post *r*, the post *s*, joined to the other end of the secondary coil, and the post *q*, connected to the contact-point *n*, substantially as set forth.

377,873. APPARATUS FOR FILLING BLAST-FURNACES. SAMUEL THOMAS, Catasauqua, Pa. Filed Dec. 31, 1886. Serial No. 223,144. (No model.)



Claim.—1. The combination, with the stock-car I, of the weighted lever J, pivoted on the said car and having the segmental end L, the chain M, connected with the said end L, and the drop-bottoms N, pivoted on the bottom of said car, substantially as shown and described.

2. The stock-car I and the dumping mechanism H, consisting of the weighted lever J, pivoted on the said car and having the segmental end L, the friction-roller K, attached to the said lever J, and the chain M, attached to the said end L and connected with the drop-bottom N of the car, adapted to be operated by the frame G, erected on the top of the furnace A, and having the inclined side G', on which operates the said friction-roller K of the dumping mechanism H, substantially as shown and described.

3. The stock-car I, having the head I' and traveling on the tracks D and C, in combination with the dummies O and O', coupled together, of which the dummy O has the pushing-head O^3, and means for moving the said dummies O and O' on the narrow track C', placed within the track C, substantially as shown and described.

377,874. AUTOMATIC CAR-BRAKE. WILLIAM R. TURNER, New York, N. Y., assignor to the Turner-Beard Automatic Brake Company, of New York. Filed July 2, 1887. Serial No. 243,202. (No model.)

Claim.—1. In a car-brake wherein the combined action of both draw-bars is requisite for bringing the brake mechanism proper into operation, the combination, with said draw-bars and the connections between them, of mechanism consisting of notched plate G', supported

377,874.



upright rod G^3, lever G^4, gravity-pawl G^5, segment-plate G^6, provided with opposite studs d' d^3, and chain-and-rod connection L L' L^3, substantially as herein shown and described, adapted and arranged to be operated by hand for the purpose of making the brake mechanism operative in either direction of the car motion or to render it inoperative, as the case may be, as set forth.

2. In a car-brake wherein the combined action of both draw-bars is requisite for bringing the brake mechanism proper into operation, the combination, with said draw-bars, their connected front plates, push-bars, and multiplying-levers, of a continuous rod-and-chain connection between said multiplying-levers and a sliding double pulley-block holding the bight of said chain, substantially as herein shown and described, whereby the inward motion of the draw-bars is transmitted through the pulley-block to suitable mechanism for applying the brake, as set forth.

3. In a car-brake wherein the combined action of the draw-bars is requisite for bringing the brake mechanism proper into operation, the combination, with said draw-bars and their connections proper, as set forth, and continuous rod-and-chain connection F^r F^3 F^3 b^4 b^4 b^4 between the draw-bars, and with suitable mechanisms for applying the brake, of an adjustable rod-and-chain attachment, L L' L^3, capable of being tightened or slackened by hand-operated mechanism and forming a connecting-link between the draw-bar connections proper and the brake-applying mechanism proper, substantially as herein shown and described, whereby the inward thrust of the draw-bars may, at will, be made effective or ineffective, as the case may be, for applying the brake.

4. In a buffer-brake, the combination, with an attachment fixed on the car and embracing a plate, G^4, provided with studs d' d^3 and fixed on a supported rod and adapted to be turned by hand to make the brake mechanism operative in either direction of the car motion or to render it inoperative, as the case may be, of a rod-and-chain connection, L L' L^3, connecting said hand attachment with the brake mechanism proper and adapted to be slackened or tightened by the operation of said attachment, as and for the purposes set forth.

5. In a car-brake wherein the combined action of the draw-bars is requisite for bringing the brake mechanism proper into operation, the combination, with the hand attachment consisting of support G, notched plate G', step G^2, rod G^3, lever G^4, gravity-pawl G^5, and the plate G^6, with studs d' d^3, and the rod-and-chain connection L L' L^3, connecting the hand attachment with the brake mechanism proper, and with the draw-bars and their connections D' E F F' F^3, as specified, of the guide-sheave b^4 and the sliding double block F^3, substantially as herein shown and described, whereby the tension or tightening of the said rod-and-chain connection F^r F^3 by the compression of the draw-bars is made to operate to apply the brake through the medium of the said rod-and-chain connection L L' L^3, as set forth.

6. In a car-brake wherein the combined action of the draw-bars is requisite for bringing the brake mechanism proper into operation, the combination, with the draw-bars and their connections proper, D', E, F, F', and F^3, of the guide-sheave b^4 and sheave b^4, of the sliding double block F^3, all arranged substantially as herein shown and described, whereby the inward movement of either draw-bar is made to operate to pull said pulley-block rearward, and whereby the inward movements of both draw-bars are made to operate in one and the same direction in relation to the brake mechanism proper, as set forth.

7. The combination, with the hand attachment, substantially as herein specified, chain-and-rod connection L L' L^3, rod M, spring M', and elbow-lever I, which serves as a bearing for the friction-wheel shaft, of the pulley-block sheave f and guide-sheave f', substantially as herein shown and described, whereby the said chain-and-rod connection is supported and guided, as and for the purposes set forth.

8. In a buffer-brake, the combination, with the draw-bar connections proper and the brake-applying mechanism proper, substantially as herein specified, of a device consisting of looped chain L, having its ends secured to opposite corners of a plate adapted to be swung by hand through an arc of a circle, and a rod, L', secured at one end to the center of the bight of said chain and having its other end secured to a chain, L^3, which engages over suitable sheaves, constituting an intermediate connection or link between the two, said device being capable of being tightened or slackened by hand-operated mechanism, substantially as and for the purposes described.

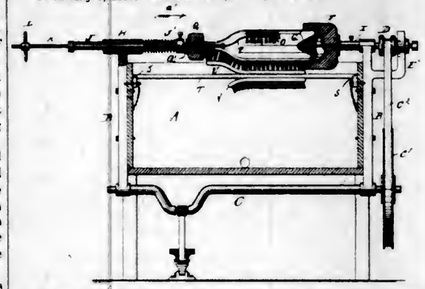
9. In a buffer-brake in which a portion of the mechanism for applying the brake consists of an axle-collar and friction-wheel and shaft, the combination, with said shaft, of a reversible clutch constructed substantially as herein shown and described, consisting of eccentric flanged barrel O, dog O', provided with cam A^2 and collar A^4, curved recessed eccentric double wedge O^2, fitting between the clutch barrel and shell, and shell O^3, all constructed and arranged substantially as set forth.

10. In a buffer-brake, the combination, with a reversible clutch, of a sprocket-wheel secured to or made an integral part of the clutch-shell, substantially as and for the purpose set forth.

11. In a buffer-brake provided with a reversible clutch for making the brake-applying mechanism operative in either direction of the car motion or to render it inoperative, and provided with a hand-operated device, substantially as herein shown and described, the combination, with said clutch and hand-operated device, of a connection between the two consisting substantially of rod P, hooked rocking-lever P', lever P^3, rod l, cam-groove lever Q, and clutch-fork Q', as set forth.

12. In a buffer-brake, as a means for multiplying the power transmitted from the axle-collar through the friction-wheel to the brake-applying mechanism, the combination, with the friction-wheel shaft, of a reversible clutch to which is secured a small sprocket-wheel, a larger sprocket-wheel fixed on an independent shaft around which the brake-chain is designed to be wound for the purpose of applying the brake, and an endless chain connecting the two sprocket-wheels, substantially as herein shown and described.

377,875. BOTTLE-WASHER. ADOLPH VON SCHADE, Newport, R. I. Filed May 5, 1887. Serial No. 237,180. (No model.)



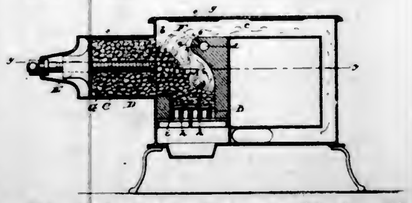
Claim.—1. In a bottle-washing machine, the combination, with a short shaft and means for revolving said shaft and a recessed block on one end of the shaft, of a tube mounted to slide longitudinally and in line with said short shaft, a recessed block mounted loosely on said tube, a spring acting on said tube, and a rod passed through the tube and carrying a brush on its end, substantially as set forth.

2. In a machine for cleaning bottles, the combination, with a short shaft and mechanism for rotating the same, of a block on one end of said shaft, a brush held in a recess of the block, and mechanism for pressing the butt or base end of the bottle against said block, substantially as shown and described.

3. In a machine for cleaning bottles, the combination, with a shaft, and a block on one end of the same for receiving the base or butt end of the bottle, of the fixed sleeve H, the sliding tube J, the recessed block Q, mounted to rotate on the tube J, the sliding rod K, passed through the tube J, and the brush-wire P, held on one end of said rod K, substantially as shown and described.

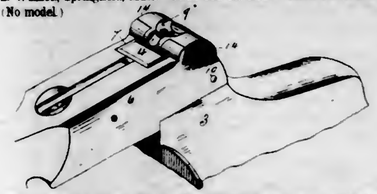
4. In a bottle-washer, the combination, with a tube, of a longitudinally-split bolt screwed into one end of the same, a spring-wire having one end bent rectangular and held within the split bolt, and a brush on the outer end of said wire, substantially as herein shown and described.

377,876. STOVE. HENRY WATERMAN, Brooklyn, N. Y., assignor, by direct and mesne assignments, to himself, John G. F. Metcalf, and Edward R. Coker, all of same place. Filed Feb. 24, 1887. Serial No. 228,700. (No model.)



Claim.—The fire-chamber A of the stove, provided on its one side with a horizontal hollow inwardly-projecting upper breast, F, having a longitudinal aperture, d, leading through the sides of the stove, and transverse air outlets or perforations e, in combination with the grate B, the externally-projecting feeding-chamber C, having an open inner end and arranged on the opposite side of the fire-chamber to the breast F, the follower E within said feeding-chamber, and means for operating said follower, substantially as and for the purposes specified.

377,877. BARREL-CATCH DEVICE FOR REVOLVERS. DANIEL B. WESSON, Springfield, Mass. Filed Oct. 10, 1887. Serial No. 251,900. (No model.)



Claim.—Barrel-catch devices for revolving fire-arms, consisting of the combination, with the catch-post of the arm, having a notch, 5, in its rear side, of the barrel-strap 6, having a perforation to receive said catch-post, a catch-dog pivoted in said strap at one side of said perforation capable of engaging with said notched post, and having laterally-projecting finger-pieces thereon, and a spring to swing said dog against said post, substantially as set forth.

377,878. REVOLVER. DANIEL B. WESSON, Springfield, Mass. Filed Dec. 27, 1887. Serial No. 259,011. (No model.)

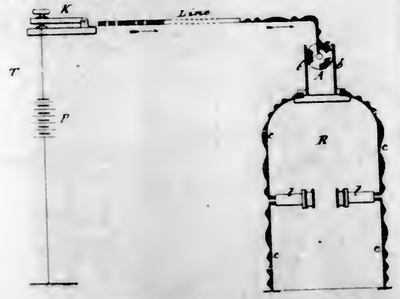


Claim.—1. In a breech-loading fire-arm, a catch-post provided with an abutment-shoulder formed by a block of suitable material harder than that of which said catch-post is formed, and let into a recess thereof and there rigidly secured, substantially as and for the purpose described.

2. In a breech-loading fire-arm comprising a catch-post on the stock, and an apertured barrel-strap provided with a spring-actuated dog, an abutment-shoulder on said catch-post formed by a block of suitable material harder than that of which said catch-post is formed let into a recess thereof, substantially as and for the purpose described.

3. In a breech-loading fire-arm, a malleable or wrought iron catch-post, 6, provided with an abutment-shoulder formed by a segmental steel block having on its under side a groove, and let into an arc-shaped recess milled in the rear of said catch-post and there secured by swaging said catch-post, substantially as and for the purpose described.

377,879. TELEGRAPHY. CLEMENT ADER, Paris, France. Filed July 1, 1887. Serial No. 243,124. (No model.) Patented in England May 18, 1887, No. 7,265.



Claim.—1. The reception of electric signals by subdividing the electric current into pulsations succeeding one another at a constant velocity which corresponds to the vibrations of an audible note, and passing the subdivided current through a telephonic receiver, thereby producing in the latter a sound of uniform pitch, the intensity of which varies according to the undulations of the subdivided current, whereby the electric signals are acoustically translated.

2. The transmission of electric signals by sending a succession of electric impulses over the line, subdividing the resulting undulatory current at the receiving-station into pulsations succeeding one another at a constant velocity which corresponds to the vibrations of an audible note, and passing the subdivided current through a telephonic receiver, whereby the electric signals are acoustically translated.

3. The combination, with an electric signaling-circuit, of a commutator at the receiving-station adapted to subdivide the currents arriving over said circuit into pulsations succeeding one another at a velocity corresponding to the vibrations of an audible note, and a telephonic receiver through which the subdivided current is passed.

4. The combination, with an electric signaling-circuit divided into two branches, of a commutator adapted to direct the current into said branches alternately and to shift it from one to the other with a frequency corresponding to the rapidity of vibration of an audible note, whereby the current is subdivided into rapidly successive pulsations in said branches, and with a telephonic receiver intercalated in one of said branches.

5. The combination, with an electric signaling-circuit divided into two branches, of a commutator adapted to direct the current into said branches alternately and to shift it from one to the other with a frequency corresponding to the rapidity of vibration of an audible note, whereby the current is subdivided into rapidly successive pulsations in said branches, and with telephonic receivers intercalated in said branches.

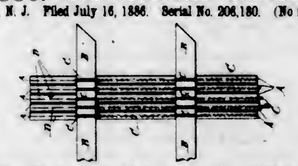
6. The combination, with an electric signaling-circuit and a telephonic receiver, of a commutator at the receiving-station adapted to subdivide the current arriving over said circuit into pulsations succeeding one another at a constant velocity corresponding to the vibrations of an audible note, and circuit-connections between said commutator and the telephonic receiver, substantially as described, so that the successive pulsations are passed through said receiver in alternately opposite directions.

7. The combination, with an electric signaling-circuit, of a commutator at the receiving-station adapted to subdivide the current arriving over said circuit into pulsations succeeding one another at a velocity corresponding to the vibrations of an audible note, a telephonic receiver through which the subdivided current is passed, and a source of power independent of said circuit for actuating said commutator, whereby the said commutator may be caused to act with a constant velocity uninfluenced by variations in the signaling-circuit.

8. The combination, with an electric signaling-circuit, of a vibratory commutator at the receiving-station adapted to subdivide the currents arriving over said circuit, a telephonic receiver through which the subdivided current is passed, and a rheotomic magnet for vibrating said commutator, adjusted to vibrate it at a constant velocity corresponding to the vibrations of an audible note.

9. The combination, with an electric signaling-circuit and a telephonic receiver, of a commutator at the receiving-station adapted to subdivide the currents arriving over said circuit, a rheotomic magnet for vibrating said commutator, adapted to vibrate it with a velocity corresponding to the vibrations of an audible note, and a source of electric current independent of said circuit for actuating said rheotome, whereby the rapidity of vibration thereof may be rendered constant.

377,880. BINDING BLANK-BOOKS. THOMAS BECKETT, Jersey City, N. J. Filed July 16, 1886. Serial No. 208,180. (No model.)



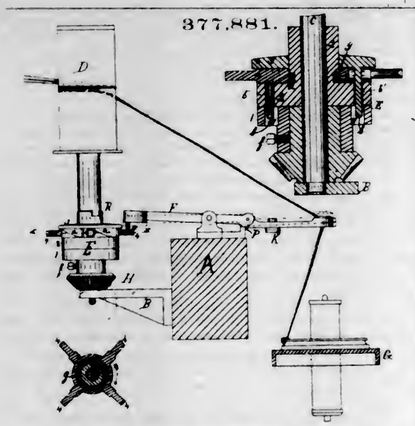
Claim.—The herein-described blank-book, consisting of a series of leaf-sections, A, each having its leaves connected together along the fold by a row of stitches, D, and the several sections connected together by the parchment bands B and the stitches C, as specified.

377,881. STOP-MOTION MECHANISM FOR DOUBLING AND TWISTING MACHINES. HENRY T. BROADBENT, Philadelphia, Pa. Filed Sept. 22, 1887. Serial No. 250,459. (No model.)

Brief.—The invention consists in an improved device for stopping the rotation of the vertical delivery-roller of a doubling-machine when one or more of the strands break.

Claim.—A clutch-box having a part, 1, with slots S S, a part, 2 with recess d, coiled spring g, and holes for pins b b, a part, 3, with stud-pins b b and cams a a, a part, 4, with four arms, and connected with part 2 by the coiled spring g, in combination with the delivery-roller D, balanced guide F, and a twisting device, as shown, described, and for the purpose specified.

377,881.



377,882. CAR-COUPLING. GEORGE F. BROWN, Constable Hook, N. J. Filed Sept. 8, 1887. Serial No. 249,172. (No model.)



Claim.—1. In a car-coupling, the combination, with a rack held to slide in the draw-head, of a segmental gear-wheel meshing into said rack, an arm extending from said gear-wheel, and a coupling-pin held on the outer end of said arm, substantially as shown and described.

2. In a car coupling, the combination, with a draw-head having on its front end a cross-piece, of a rack held to slide in the said draw-head, a segmental gear-wheel meshing into said rack, an arm attached to said segmental gear-wheel, and a coupling-pin held on the outer end of said arm and adapted to engage the cross-piece of the draw-head, substantially as shown and described.

3. In a car-coupling, the combination, with a draw-head having on its front end a cross-piece, of a rack held to slide in the said draw-head, a segmental gear-wheel meshing into said rack, an arm attached to said segmental gear-wheel, a coupling-pin held on the outer end of said arm and adapted to engage the cross-piece of the draw-head, and means, substantially as described, for imparting a sliding motion to said rack, as set forth.

4. In a car-coupling, the combination, with a draw-head having a cross-piece at its front end, of a double rack held to slide in said draw-head, a segmental gear-wheel meshing in the upper teeth of said rack, an arm extending from said segmental gear-wheel, a coupling-pin held in the outer end of said arm and adapted to engage the cross-piece of the draw-head, a gear-wheel meshing into the under teeth of said rack, and a shaft carrying said gear-wheel and extending to the sides of the car, substantially as shown and described.

5. In a car-coupling, the combination, with a draw-head having a cross-piece at its front end, of a double rack held to slide in said draw-head, a segmental gear-wheel meshing in the upper teeth of said rack, an arm extending from said segmental gear-wheel, a coupling-pin held in the outer end of said arm and adapted to engage the cross-piece of the draw-head, a gear-wheel meshing into the under teeth of said rack, a shaft carrying said gear-wheel and extending to the sides of the car, and means, substantially as described, for turning the said shaft and locking it in place, as set forth.

377,883. GRINDING-MACHINE. JOHN B. COMSTOCK, New Orleans, La. Filed Apr. 6, 1887. Serial No. 233,901. (No model.)

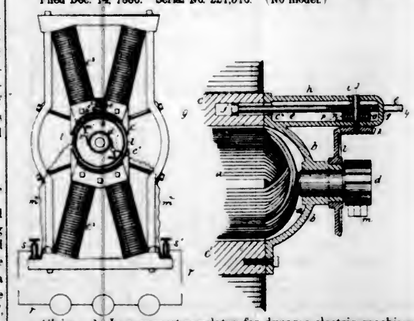
Claim.—1. The combination, with the frame B B', the upper and lower horizontal shafts, J C, journaled therein, the gearing connecting the outer ends of said shafts, the grinding-wheel Q on the inner end of shaft J, and the pinion R on the inner end of the shaft C, of the bracket U, projecting from the inner end of the frame, and having a stud, T, extending up from its outer end at an obtuse angle to the shaft C, the large gear-wheel S on the said stud, the screw-shaft V', secured to the gear-wheel S in line with the stud T, and the nuts W, substantially as set forth.

2. The combination, with the frame, the shaft J, having the grinding-wheel, the shaft C, having the pinion R below the grinding-wheel, and the gearing connecting the two said shafts, of the bracket U, having the stud T secured to its outer end at an obtuse angle to the shaft C, the large gear-wheel S on the said stud, the plate V, secured to the said gear over the stud, the screw-shaft V', secured to said plate in line with the stud, and the nuts W, substantially as set forth.

3. In a grinding-machine, the combination, with the grinding-wheel shaft J and the grinding-wheel Q, secured on said shaft, of the bearing K, supporting one end of said shaft J, the screws N, on which said bearing K is hung, the bearing L, supporting the other end of said shaft J and adapted to slide vertically, the spring O, supporting said bearing L, and the screw P, against which said bearing is pressed by said spring O, substantially as shown and described.

4. In a grinding-machine, the combination, with the main driving-shaft C and the bevel-pinion R, secured on said shaft, of the bevel gear-wheel S, meshing into said pinion R and provided with an annular groove, S', the stud T, on which rotates the said bevel gear-wheel S, being held at an obtuse angle to said main shaft C, and the rest W', adapted to engage said annular groove S', and serving to support said bevel gear-wheel S, substantially as shown and described.

377,884. CURRENT-REGULATOR FOR DYNAMO-ELECTRIC MACHINES. WALTER A. CROWDUS and HENRY M. SUTTON, Dallas, Tex. Filed Dec. 14, 1886. Serial No. 221,510. (No model.)



Claim.—1. In a current-regulator for dynamo-electric machines, in combination, an iron rod or bar provided with a piston-head, a field-magnet provided with a cylindrical cavity, within which the piston is placed, thereby acting as a dash-pot to the rod, a rotating brush-carrier, and a motion-transmitting device connecting the rod and brush-carrier together.

2. In a current-regulator for dynamo-electric machines, in combination, the pole of a field-magnet provided with a hole or cylindrical cavity, an iron rod arranged to slide freely in the cylindrical cavity, a brush-carrier and collecting-brushes held thereon, a motion-transmitting device joining the rod and brush-carrier, and a retractile spring arranged to act on the rod in opposition to the magnetism of the field-magnet pole.

3. In a current-regulator for dynamo-electric machines, a brush-carrier fitted to oscillate on a center coincident with the axis of the commutator, an iron rod arranged to slide longitudinally in a hole formed in one of the pole-pieces of the field-magnet system in direction parallel to the axis of the commutator, and gears connecting the rod to the brush-carrier, by which the sliding motion of the rod is converted into rotary motion at the brush-carrier.

4. In a current-regulator for dynamo-electric machines, in combination, the field-magnet pole *c*, provided with a cylindrical cavity, c^4, the rod *e*, carrying the piston *f*, fitting loosely in such cavity, the brush-carrier *l*, connected to the rod *e* by gearing *i k*, the brushes *m m'*, and the commutator *d*, substantially as set forth.

5. In combination, the rod *e*, provided with rack-teeth, and actuated by an electro-magnet, the pinion *i*, the spring *n*, one end of which is secured to the shaft of the pinion and the other end to the drum *o*, fitted loosely on the pinion-shaft and provided with a ratchet-wheel, *p*, and the pawl *q*, whereby the ratchet-wheel may be held and the spring adjusted as desired, substantially as and for the purpose set forth.

6. In a current-regulator for dynamo-electric machines, in combination, the field-magnet pole *c*, provided with a cylindrical cavity, c^4, the rod *e*, provided with a piston, *f*, fitting loosely in such cavity and having rack-teeth formed thereon, the pinion *i*, the spring *n*, one end of which is secured to the pinion-shaft and the other to the drum *o*, the drum *o*, ratchet-wheel *p*, and pawl *q*, the bevel-pinion *k*, secured on the pinion-shaft, the brush-carrier *l*, provided with teeth meshing into the bevel-pinion, the brushes *m m'*, and the commutator *d*, substantially as set forth.

377,885. FISH-PLATE. THOMAS A. DAVIES, New York, N. Y. Filed Nov. 14, 1887. Serial No. 255,091. (No model.)

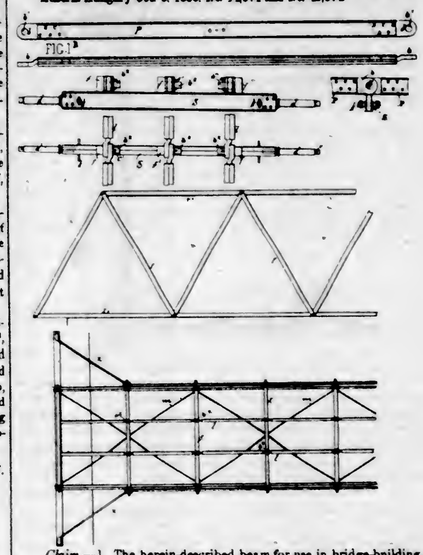
Claim.—A fish-plate provided with a head having a substantially cylindrical surface of a sufficient width to extend to the web of the rail, and with an outwardly-projecting longitudinal lip at the base, the inner surface of the plate being curved and the outer surface straight, substantially as herein shown and described.

377,886. PORTABLE VAPOR AND HOT-AIR BATH APPARATUS. JOSEPHINE G. DAVIS, New York, N. Y. Filed Mar. 17, 1885. Serial No. 159,304. (No model.)

Claim.—1. The curved rails B B, pivoted together and formed with the sleeves *f*, and each slotted at *c*, and one provided with the clip *e*, in combination with the curved bars C C, each held to the rails B by a sleeve, *f*, and a pin, *d*, working in the slot *c*, substantially as described.

2. The curved rails B B, pivoted together and each formed with a sleeve, *f*, and one provided with a clip, *e*, and the curved rails C C, attached to the rails B by the sleeves *f* and pins *d*, working in slots *c*, in combination with the supports A A, formed with vertical slots at each end, substantially as described.

377,887. BRIDGE. THOMAS DE DIETRICH BROCHOCKI, Paris, France. Filed Mar. 5, 1887. Serial No. 230,336. (No model.) Patented in France Mar. 30, 1886, No. 161,065; in Italy Apr. 28, 1886, No. 19,844, and in Austria-Hungary Oct. 6, 1886, No. 14,574 and No. 45,574.



Claim.—1. The herein-described beam for use in bridge-building, the same comprising a straight bar, P, and a tenon-piece, *b*, at each end thereof of substantially half the lateral thickness of said bar, said tenon-pieces being bent to the right and left at the opposite ends of said bar, respectively, whereby their outer faces are flush with that of the bar, and said tenon-pieces being provided with transverse holes *b'*.

2. The herein-described transverse floor-beam for use in bridge-building, the same comprising a straight bar, S, having axial pins *d*, extending from each end thereof, and L-shaped pins *f b'*, extending from its side.

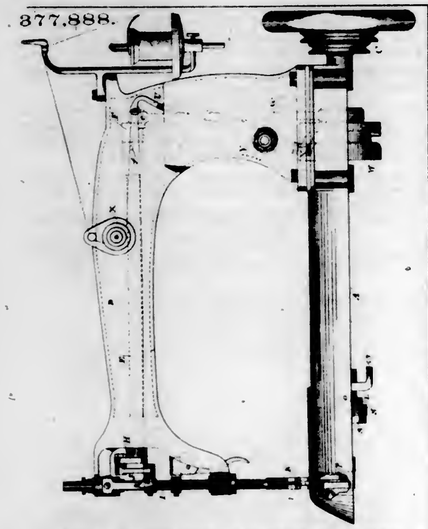
3. The herein-described bridge, the chord, truss, and tie pieces whereof are composed of uniformly-sized beams P, having laterally-perforated tenons *b* at each end, and the transverse floor and brace beams whereof are composed of uniformly-sized beams S, having axially-extending pins *d*, passing through the eyes in said tenons for locking the parts together.

4. In a bridge, the combination, with the chord, truss, tie, and transverse beams, of the sway-brace connecting said transverse beams, said brace comprising four rods, *m*, each secured at one end to the transverse beams near their ends, the two U-shaped pieces *n*, to the ends of which the other ends of said rods *m* are attached, and the bolt *o*, passing through the centers of said U-shaped pieces for tightening the brace, substantially as described.

5. In a bridge, the combination, with the transverse bars, of the chord-bars, the latter comprising a number of equally-sized beams, P, and a number of equally-sized beams, P', the latter being double the length of the former, each of said beams being provided with laterally-perforated tenons at each end and the larger beams with central perforations, by means of which perforations the beams are fastened in position, substantially as described.

377,888. SEWING-MACHINE. ORVILLE C. DOLLOFF, Chelsea, and RUFUS M. EASTMAN, Boston, Mass. Filed Dec. 27, 1886. Serial No. 222,544. (No model.)

377,888.

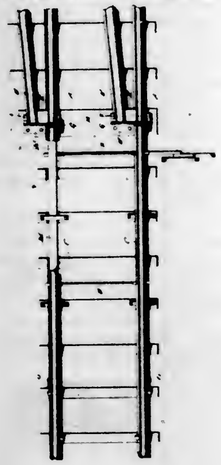


Claim.—1. A rotary looper for sewing-machines, consisting of the body portion T, widest near its center and tapering thence in both directions laterally, as shown, and the stem or shaft S^2, having the notch *c* on its side toward the point of the looper and adjacent to the said body portion, the latter having the curved hook *a* and near its middle the crosswise shoulder *b*, the inner end of which is opposite said notch, substantially as set forth.

2. A sewing-machine bed-plate having an overhanging forward end and overhanging curved sides extending from the standard of the bracket-arm or goose-neck to the said forward end, and the latter being curved or rounded both horizontally and vertically, substantially as set forth.

3. In a sewing-machine, the combination, with the bed-plate A, having the overhanging curved sides and end, as shown, of the rotary looper T, widest near its center and tapering thence laterally toward its curved point or hook *a* and its heel, and having the crosswise shoulder *b* and the stem S^2, provided with notch *c*, the needle-bar, its needle, the feed-bar, and take-up or thread-controller, and means for operating the moving parts, substantially as set forth.

377,889. **RAILROAD-SWITCH.** BURTON J. DOWNING, Seely, Kans. Filed May 11, 1887. Serial No. 237,882. (No model.)

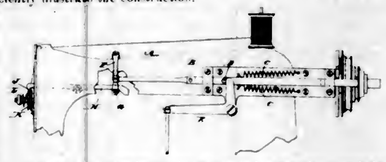


Claim.—1. In a railway-switch, the combination of the frog-rails A B, the switch-rails C, and the bars M, arranged under the free portions of the switch-rails and secured in recesses in the ties, one end of each bar having ears O connected to one of the switch-rails at a distance from the rear end thereof and the opposite end of each bar being secured under the ends of the frog-rails, substantially as described.

2. The combination, in a railway-switch, of the chairs comprising the plates having the vertical flanges G near their central portions, the frog-rails having their converging ends secured on the upper side of the plates, the corners of the plates being bent upward against the outer sides of the frog-rails to form clamping-ears I, the switch-rails having their free ends in proximity to the flanges G, and the bars M, arranged under the free portions of the switch-rails, having the ears O at one end secured to the said switch-rails, and having their opposite ends secured under the frog-rails, substantially as described.

377,890. **TENSION-RELEASING DEVICE FOR SEWING-MACHINES.** HARRY M. ESSINGTON, Camden, N. J., assignor to the Essington Button-Hole Finishing Machine Company. Filed Jan. 22, 1887. Serial No. 225,126. (No model.)

Brief.—The object of the invention is to release the tension of the thread by the same operation that opens the clamp of the button-hole machine for which it is especially designed. The claims sufficiently illustrate the construction.

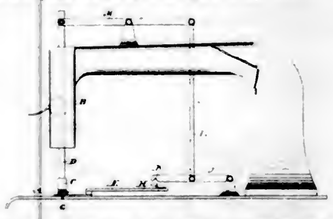


Claim.—1. A tension device for a sewing-machine, consisting of friction-disks and a sliding bar with a stud thereon, and having ways secured to the needle-guiding arm A of the machine, springs secured to the bar and to the said arm A, a lever pivoted at its upper end to the arm and provided with a pin, and a second lever having a nose at one end and adapted by the operation of the said pivoted lever with the pin to separate the said disks, and means, substantially as described, for operating said sliding bar, substantially as described.

2. The combination of the elbow-lever E, connected with a treadle, with the machine-arm A and ways thereon, the bar B, sliding in said ways and having the stud D thereon, the springs C, secured to said sliding bar and to the machine-arm A, the lever F, pivoted to the machine-arm A and to the bar B, and provided with a stud, G, the pivoted lever H, having the nose I, the friction-disks K, and spring for holding the same, substantially as described.

377,891. **CLAMP-CENTERING DEVICE FOR SEWING-MACHINES.** HARRY M. ESSINGTON, Camden, N. J., assignor to the Essington Button Hole Finishing Machine Company. Filed Feb. 8, 1887. Serial No. 226,935. (No model.)

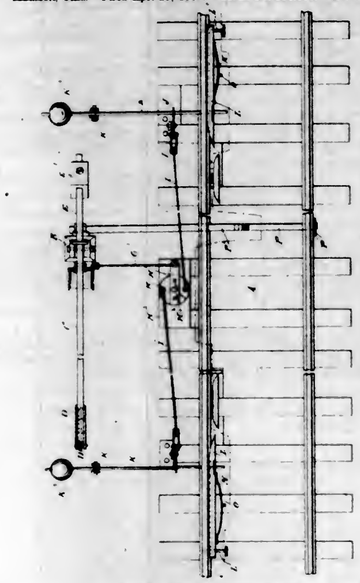
Brief.—The clamp-plate has a wedge-block attached to the rear end, which block is engaged by a V-shaped notch in a lever. The lever is, by means of connecting links and levers, depressed by the raising of the presser-foot, thus centering the clamp.



Claim.—1. An attachment to a sewing-machine for the purpose herein set forth, consisting of a slide having at its front end an oblong throat and the toothed surface G and at its rear end the wedge-shaped wedge-block H, the lever J, pivoted at one end to a standard connected with the table of the machine and having the recess K, and the pivoted lever M, having its rear end connected by the link L to the lever J and its front end being slotted for engagement with the bar of the presser-foot, said parts being combined substantially as described.

2. In a sewing-machine, the table A, the slide E, having oblong throat F and a wedge-block, H, a lever pivoted to the table and having a V-shaped recess on under face, the rear wall of which is adapted to be brought in contact with the said wedge-block, and means, substantially as described, for connecting said lever and the guiding-bar of the presser-foot, whereby when the said presser-foot is raised said slide is moved forward, as stated, the parts being combined as set forth.

377,892. **RAILROAD-SIGNAL.** RANDOLPH F. HAGEMAN, New Madison, Ohio. Filed Apr. 25, 1887. Serial No. 236,096. (No model.)



Claim.—1. In a railroad-signal, the combination, with two levers located at opposite sides of the crossing and pivoted to the inside of the rail, of a weighted lever operated by said pivoted levers when the flanges of the wheels of a train of cars pass over said levers, a signal-arm operated by said weighted levers, and a signal held on the outer end of the signal-arm, substantially as shown and described.

2. In a railroad-signal, the combination, with two levers located at opposite sides of the crossing and pivoted to the inside of the rail, of a weighted lever operated by said pivoted levers when the flanges of the wheels of a train of cars pass over the said levers, a signal-arm operated by said weighted lever, a signal held on the outer end of the signal-arm, and a spring-bolt adapted to lock said weighted lever in a horizontal position, substantially as shown and described.

3. In a railroad-signal, the combination, with two levers located at opposite sides of the crossing and pivoted to the inside of the rail, of a weighted lever operated by said pivoted levers and the flanges of the wheels of a train passing over said levers, a signal-arm operated by said weighted lever, and a signal held on the outer end of the said signal-arm, a spring-bolt adapted to lock said weighted lever in a horizontal position, and a transverse lever operated by the flanges of the car-wheels and located between said rails near the crossing, and adapted to unlock said bolt from said weighted lever, substantially as shown and described.

4. In a railroad-signal, the combination, with a post located at one side of the crossing, of a signal-arm pivoted to said post and extending across the crossing, a signal held on the outer end of said arm, a lever pivoted to said post below the signal-arm, and having its inner end engaging the under side of the signal-arm and its outer end provided with a weight, substantially as herein shown and described.

5. The combination, with a signal-arm and a casing rigidly secured on the outer end of said arm, of a signal pivoted on the outer end of said arm and held between the sides of said casing when said signal-arm is in an inclined uppermost position and held free from said casing when the signal-arm is in a horizontal position, substantially as shown and described.

6. In a railroad-signal, the combination of the pivoted lever L, the spring N, for holding the lever in contact with the inside of the rail, the pivoted and weighted lever K, connected to lever L, the signal-arm C, and intermediate mechanism between the weighted lever K and the signal-arm, substantially as described.

7. In a railroad-signal, the combination, with the lever L, of the weighted lever E, operated by said lever L, the signal-arm C, operated by one end of said lever E, and the signal D, pivoted on the outer end of said signal-arm C, substantially as shown and described.

8. In a railroad-signal, the combination, with the lever L, of the lever E, operated by said lever L, the signal-arm C, operated by one end of the lever E, the signal D, pivoted on the outer end of said signal-arm C, and the casing D′, rigidly secured to the outer end of the signal-arm C and adapted to receive said signal D when said signal-arm C is in its uppermost position, substantially as shown and described.

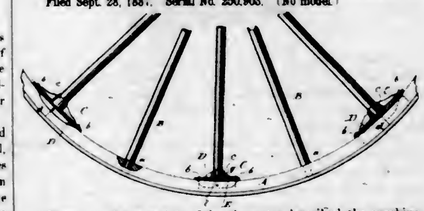
9. In a railroad-signal, the combination, with the weighted lever E, having the shoulder E^3, of the signal-arm C, operated by said weighted lever E, the casing D′, rigidly secured to the outer end of said signal-arm C, the signal D, pivoted to the extreme outer end of said arm C and adapted to be inclosed by said casing D′ when the signal-arm C is in its uppermost position, and the spring-bolt R, adapted to engage said shoulder E^3, so as to hold the lever E in a horizontal and locked position, substantially as shown and described.

10. In a railroad-signal, the combination, with the weighted lever E, having the shoulder E^3, of the signal-arm C, operated by said weighted lever E, the casing D′, rigidly secured to the outer end of said signal-arm C, the signal D, pivoted to the extreme outer end of said arm C and adapted to be inclosed by said casing D′ when the signal-arm C is in its uppermost position, the spring-bolt R, adapted to engage said shoulder E^3, so as to hold the lever E in a horizontal and locked position, and the transverse lever P, adapted to unlock said spring-bolt R from the shoulder E^3, substantially as shown and described.

11. In a railroad-signal, the combination, with the lever L, of the weighted lever K, connected with said lever L, the bell-crank lever J, connected with said lever K, the rod I, connected with said bell-crank lever J, the horizontal disk H, connected with said rod I, the bell-crank lever G, connected with said disk H, and the weighted lever E, connected by a link with said bell-crank lever G, substantially as shown and described.

12. In a railroad-signal, the combination, with the post B, provided with the bracket V, for supporting a lamp, the weighted lever E, and means for pulling the said lever downward, of the casing U and link T, for connecting the casing to said lever E, substantially as herein shown and described.

377,893. **SPOKE-SOCKET.** WILLIAM E. HARDIN, Monterey, Ky. Filed Sept. 28, 1887. Serial No. 250,903. (No model.)



Claim.—1. In an article of the character described, the combination, with the body portion adapted to be secured to the inner periphery of the felly having projection or wall, of a plate having projection or wall adapted to lie upon and be secured to said body portion, substantially as and for the purpose described.

2. In an article of the character described, the combination, with the body portion adapted to be secured to the inner periphery of the felly, having projection or wall *f* and a groove or way, *h*, of a plate, E, having a projection or wall, *g*, adapted to lie in said way and to be secured to said body portion, substantially as and for the purpose described.

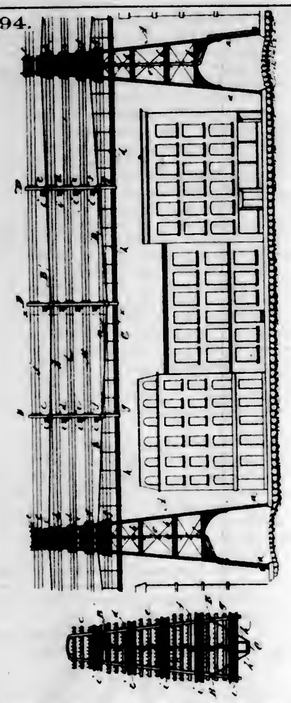
3. In an article of the character described, the combination, with the body portion adapted to be secured to the inner periphery of the felly having projection or wall *f*, of a plate, E, having projection or wall *g* and extension *l*, adapted to be secured to said body portion, substantially as and for the purpose described.

4. In an article of the character described, the combination, with the body portion adapted to be secured to the inner periphery of the felly, having projection or wall *f* and a groove or way, *h*, of a plate having projection or wall *g* and extension *l*, adapted to lie in said way and to be secured to said body portion, substantially as and for the purpose described.

377,894. **SUPPORT FOR ELECTRIC CONDUCTORS.** MAURICE J. HART, New Orleans, La. Filed Dec. 6, 1887. Serial No. 257,101. (No model.)

Claim.—1. The combination, with a series of towers provided with conductor-supporting cross-bars, of two or more cables supported by the towers and intermediate trestles supported by the cables and provided with conductor-supports, substantially as described.

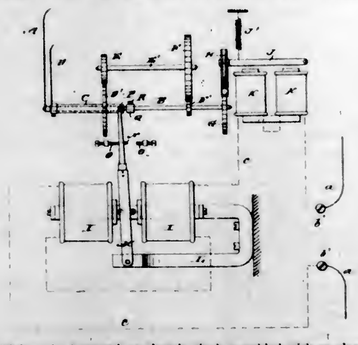
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2. The combination, with a series of towers provided with conductor-supporting cross-bars, of two or more cables supported by the towers, intermediate trestles supported by the cables and provided with conductor-supports, and a foot-bridge suspended from the cables, substantially as described.

3. The combination, in an electric conductor-support, of towers A, having hollow columns *a* and platforms *b*, series of cross-bars *c d e f g*, adapted to support the electric conductors, cables B B B', trestles D, supported by the cables and provided with the cross-bars *c d e f g* and platforms *i*, and the bridge C and suspenders *k*, substantially as described.

377,895. SECONDARY ELECTRIC CLOCK. WIRT B. HARVEY, Memphis, Tenn. Filed Aug. 25, 1885. Serial No. 175,300. (Model.)



Claim.—1. A secondary electric clock provided with an electro-magnet arrangement for operating the hands and a polarizing electro-magnet and polarized armature for arresting one or both hands, the said electro-magnet coils being in the same electric circuit, substantially as herein shown and described.

2. The combination, with an electric clock having a projection on the spindle of the hour-hand and an electro-magnet for operating the hands of the clock, of a polarized electro-magnet and polarized armature, the coils of the said polarized electro-magnet being in the circuit with the coils of the hand-operating electro-magnet and the armature adapted to engage the projection on the spindle of the hour-hand, substantially as herein shown and described.

3. The combination, with an electric clock having projections on the spindles of the hour and minute hands and an electro-magnet for operating the hands of the clock, of a polarized electro-magnet and polarized armature, the coils of the said polarized electro-magnet being in the circuit with the hand-operating electro-magnet, and the polarized armature adapted to engage either of the said projections, substantially as herein shown and described.

4. In a secondary electric clock, the combination, with a spindle carrying the minute-hand, a sleeve surrounding the spindle and carrying the hour-hand, and an electro-magnet and intermediate mechanism for operating the hands from said electro-magnet, of projections on the spindle and sleeve, a polarizing electro-magnet and polarized armature, the said polarizing electro-magnet coil or coils being in the same electric circuit with the hand-operating electro-magnet coil or coils, and the polarized armature adapted to engage the said projections for the purpose of synchronizing the hands, substantially as herein shown and described.

377,896. STOP-WATCH. EDOUARD HEUER, Bienne, Switzerland. Filed Apr. 20, 1887. Serial No. 235,487. (No model.) Patented in Germany Feb. 6, 1887, and in France May 3, 1887.



Claim.—1. The snail-shaped cam O and wheel *b*, both mounted upon the same arbor, *a*, the pinions *e* and *g*, both mounted upon arbor *f*, and driving-wheel F, in combination with the arbor *a*, vibrating arbor *f*, front plate, B, levers G and P, and cam-wheel H, and means for turning said cam-wheel, substantially as described, the arbor *f* being stepped in the plate B, and lever G, as specified.

2. The wheel *b* and toothed wheel *j* on arbor *a*, toothed wheel J, and pointer *l*, in combination with star-wheel K and minute-counter arbor *m*, all arranged so that the arbor *a* and arbor *m* will revolve and carry their respective hands over the face of the watch in the same direction, substantially as herein shown and described.

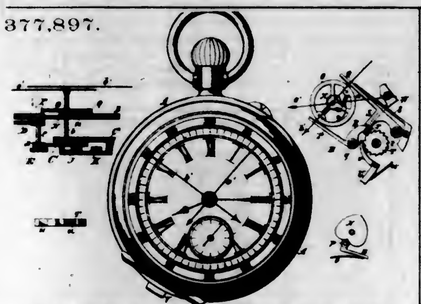
3. The wheel H, actuated from the stem of the watch and adapted to move levers P and G alternately and in unison, in combination with said levers, snail-cam O, and wheels *b j* on arbor *a*, and wheel J, carrying pointer *l*, star-wheel K, cam M, and separate lever N, all arranged so that the arbors *a* and *m* will revolve in the same direction, substantially as described.

4. In a stop-watch, the sliding stem *a'*, combined with means, substantially as described, for vibrating the arbor *f*, one end of which is stepped in the front plate, B, thereby throwing into gear with the train of the watch the arbor *a*, carrying the hand *d*, and the arbor *m*, of the minute-indicating hand *v*, and with means, substantially as described, for afterward throwing said arbors out of gear simultaneously and stopping both hands *d* and *v*, and for finally returning both said hands while they are out of gear with the train back to their respective zero positions, as specified.

377,897. STOP-WATCH. EDOUARD HEUER, Bienne, Switzerland. Filed Apr. 30, 1887. Serial No. 235,488. (No model.) Patented in Germany Feb. 6, 1887, and in France May 3, 1887.

Claim.—1. The arbor *b*, cam J, and wheel C, rigidly secured thereto, levers K E, pinion *d*, vibratory arbor *e*, carrying said pinion, wheel D for driving arbor *e*, and cam-wheel F, operated from the stem *a*, in combination with the cam N, rigidly secured to arbor *b*, and wheel O, loose on arbor *b*, and operated by cam N, the arbor *e* being journaled at one end in the lever K, whereby the pinion *d* may be thrown into and out of gear with the wheel C, while the arbor *e* is still being driven by the wheel D, substantially as described.

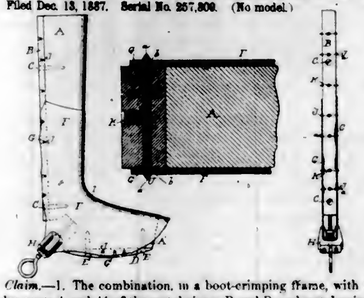
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2. The ratchet-wheel T, having alternating cut-away teeth *u*, in combination with lever P, and arm R on said lever, said arm R having the beveled portion *r* to correspond with the beveled tooth *u* on wheel T, all arranged so that the pressure of a straight tooth of wheel T on arm R will move lever P out of contact with wheel O, substantially as described, and for the purposes set forth.

3. In a watch-movement, the arbor *b*, cam N, wheel O, spring-pressed pawl *s*, engaging said cam and provided with a roller, *p*, in combination with levers P Q, having arms R and S resting against each other, the arm R, having a beveled portion, *r*, ratchet-wheel T, having alternating beveled teeth *u*, and lever U, for operating wheel T, all arranged so that the pressure of a straight tooth of wheel T on arm R will move lever P and also lever Q, by means of arm S, out of contact with wheel O, substantially as described.

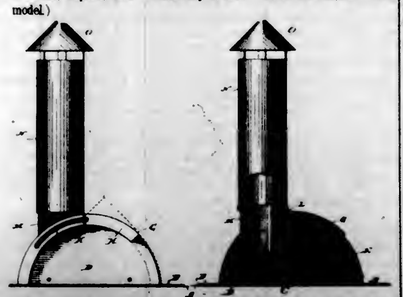
377,898. BOOT-CRIMPING FRAME. EMILE HOUD, Grafton, Mass. Filed Dec. 13, 1887. Serial No. 257,809. (No model.)



Claim.—1. The combination, in a boot-crimping frame, with the wooden parts A and A', of the metal pieces B and D, and metal-pointed pins J, permanently secured in said pieces, substantially as and for the purposes set forth.

2. The combination, in a boot-crimping frame, with the metal parts B and D, of the pins J, provided with points *a a*, holding-serrations *b b*, and set-screws K, substantially as and for the purposes set forth.

377,899. ADJUSTABLE CHIMNEY. ISAAC N. JOHNS and PETER C. ELSER, Dupont, Ohio. Filed July 2, 1887. Serial No. 243,299. (No model.)

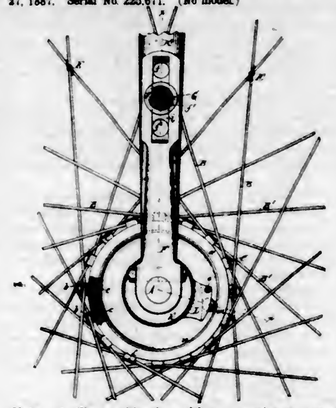


Claim.—1. The combination, with the chimney-cap, of the slide secured thereon and carrying the draft-pipe and capable of curvilinear adjustment.

2. The combination of the cap having the convex upper side provided with the opening, and the slide adapted for the attachment of the pipe and fitting on the convex upper side of the cap and adjustable thereon, for the purpose set forth, substantially as described.

3. The combination of the plate adapted to be secured on the roof and having the opening and the flanges D, the cap having the convex upper side provided with the opening F, the lower edges of said cap fitting over the flanges D, and the slide fitting on the convex upper side of the cap, adjustable thereon, having the opening L registering with opening F, and adapted for the attachment of the pipe, substantially as described.

377,900. VELOCIPEDE. EMMIT G. LATTA, Friendship, N. Y., assignor to the Pope Manufacturing Company, Portland, Me. Filed Jan. 27, 1887. Serial No. 225,671. (No model.)



Claim.—1. The combination, with two crossing spokes, of a binding-loop, E, provided with bends *e e* and *e' e'*, arranged in different planes and embracing the spokes, substantially as set forth.

2. The combination, with the crank and the pedal-shaft G, provided with a screw-threaded shank, *g*, of a fastening-nut, H, having a round extension, *h*, adjacent to the crank, substantially as set forth.

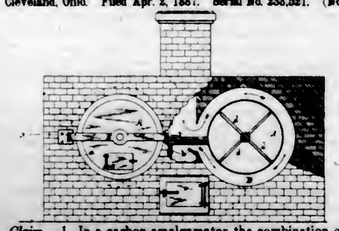
3. The combination, with the crank provided with a series of openings, *f f f*^{3}, extending through the crank, and a groore, *i*, connecting said openings and extending partly into the crank, of a pedal-shaft, G, provided with a shoulder, *j*, entering said groove, and with a screw-threaded shank, *g*, and a screw-nut, H, substantially as set forth.

4. The combination, with the crank provided with an opening, *f*, having an enlargement, *h'*, at its rear end, of a pedal-shaft, G, provided with a screw-threaded shank, *g*, and a screw-nut, H, provided with a round extension, *h*, entering the enlargement *h'* of said opening, substantially as set forth.

5. The combination, with the hub having an annular flange, of a fork provided with an arm, L, having an eccentric groove, *l*, and a ball, *m*, arranged in said groove and within the hub-flange, substantially as set forth.

6. The combination, with the hub having an annular flange, of a fork provided with an arm, L, having an eccentric groove, *l*, a ball, *m*, arranged in said groove, and a removable stop, *o*, secured across the open end of the groove *l*, substantially as set forth.

377,901. CARBON-AMALGAMATOR. WASHINGTON H. LAWRENCE, Cleveland, Ohio. Filed Apr. 2, 1887. Serial No. 233,521. (No model.)



Claim.—1. In a carbon-amalgamator, the combination of a horizontal revolving vessel, a furnace for heating said vessel, and stirring-arms revolving therein at a speed different from that of the containing-vessel, substantially as and for the purposes set forth.

2. In a carbon-amalgamator, the combination of a horizontal revolving vessel, a furnace for heating the same, stirring-arms revolving in said vessel, and mechanism for revolving each independently, substantially as described.

3. In a carbon-amalgamator, the combination of a horizontal revolving vessel, stirring-arms revolving therein in the same direction as the vessel, a furnace for heating said vessel, and mechanism for revolving the arms independently of the vessel, substantially as described.

4. In a carbon-amalgamator, the combination of a horizontal cylindrical revolving vessel, a furnace for heating the same, a shaft centrally revolving in said vessel, stirring-arms extending from said shaft in alternating series, and mechanism for revolving both the vessel and the shaft at different speeds, substantially as described.

5. In a carbon-amalgamator, the combination of a horizontal revolving cylindrical vessel, a furnace for heating the same, a shaft centrally revolving in said vessel, stirring-arms extending from said shaft in alternating series, and mechanism for revolving both the vessel and the shaft in the same direction, but at different rates of speed, substantially as described.

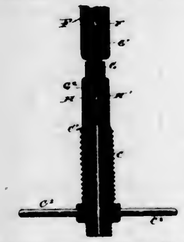
6. In a carbon-amalgamator, the cylindrical vessel A, surrounded by a heating-flue and supported horizontally in frames, permitting its free revolution therein, in combination with a shaft provided with stirring-arms and extending centrally through the vessel, and means for revolving said cylinder and shaft independently, substantially as described.

7. The combination, in a carbon-amalgamating apparatus, of a revolving cylindrical vessel horizontally supported in bearing-frames, a heating flue or flues surrounding the cylinder, a shaft extending centrally through the cylinder and bearing stirring-arms, and mechanism for simultaneously revolving the cylinder and shaft at different rates of speed, substantially as described.

8. The combination, in a carbon-amalgamating apparatus, of two or more horizontal cylindrical vessels arranged in series and heated by flues from the same furnace, with dampers for directing and regulating the heat to each cylinder, a shaft with stirring-arms arranged centrally in each cylinder, and mechanism for revolving the several cylinders and shafts independently, all substantially as described.

9. The combination of the flue B, revolving cylinder A, shaft D, arms *d*, sleeve *f*, bearings E, and gears *g h l l*², all arranged and operating substantially as described.

377,902. STEP FOR SPINDLES. FREDERICK LEININGER, New York, N. Y., assignor to Charles De B. Shepard, same place. Filed June 4, 1887. Serial No. 240,294. (No model.)



Claim.—1. The combination, with a spindle, of a hollow step-case, a hollow spindle-step, and a series of perforated rotatable disks arranged in said step, and an oil-duct communicating therewith, substantially as specified.

2. The combination, with a spindle, of a hollow spindle-step, a series of perforated rotatable disks made of different metals, and an oil-duct communicating therewith, substantially as specified.

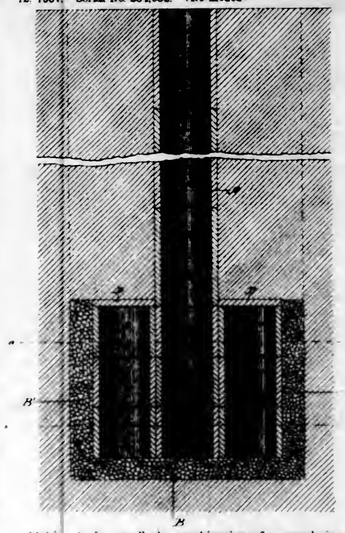
3. The combination, with a spindle and a hollow step for the same, of a lower spindle mounted in the end of the spindle, a series of perforated disks interposed between the lower end of the lower spindle and spindle-seat, and an oil-duct communicating therewith, substantially as specified.

4. The combination, with a spindle, of a hollow exteriorly-screw-threaded spindle-step mounted in a fixed step-case, a series of perforated rotatable disks or washers arranged between the spindle and within the step, and an oil-duct communicating with the step, substantially as specified.

5. The combination, with a spindle, of a step-case mounted in a fixed bushing in the machine and provided with an interposed lining or sleeve, a screw-threaded hollow spindle-step mounted in the step-case, projecting pins for adjusting said spindle-step, and a set-wheel mounted thereon for retaining the seat in an adjusted position, substantially as specified.

6. The combination, with the base A, having the bridge A^3 and opening A^2, and the bushing A^4, of the step-case B and its lining or sleeve, the spindle F, having the recess F', the lower spindle, G, the washers H, perforated as at H', the spindle-step C, pipe D', the nut D, and the oil-duct E', having the cup E, substantially as shown and described.

377,903. WELL. BENJAMIN F. MCCANN, Ewing, Ind. Filed Nov. 12, 1887. Serial No. 254,952. (No model.)



Claim.—1. In a well, the combination of a stand-pipe formed in sections and extending from the top to the bottom of said well and having a porous lower end, and a series of porous tributary cells arranged eccentrically of and in a chain or series around the lower end of said stand-pipe, substantially as described.

2. In a well, the combination of the centrally-located stand-pipe formed in sections and having a porous lower end, and a chain or series of tributary cells arranged around the lower end of said stand-pipe, and also formed of porous sections placed one above the other, substantially as described.

3. In a well, the combination of the centrally-located stand-pipe formed in sections and having a porous lower end, and a chain or series of tributary cells arranged around the lower end of said stand-pipe, and also formed of porous sections placed one above the other and having openings or notches between their joints, substantially as described.

4. In a well, the combination of a stand-pipe formed in sections, a chain or series of porous tributary cells arranged eccentrically around the lower end of said stand-pipe and having closed upper ends and open lower ends, and a layer of broken stone or gravel placed beneath the said cells, substantially as described.

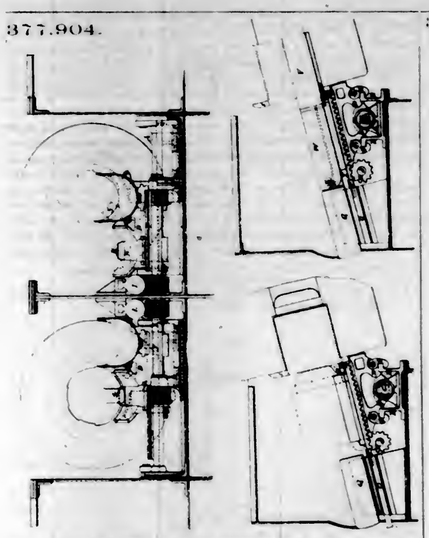
5. In a well, the combination of the sectional earthenware stand-pipe having a porous lower end and extending from the top to the bottom of the well, a chain or series of tributary cells, C C' C², &c., also formed of porous earthenware sections and arranged around the lower end of said stand-pipe, and layers B B', of broken stone or gravel, located, respectively, beneath and around said chain or series of cells and the stand-pipe, substantially as described.

377,904. HYDRAULIC OPERATING MECHANISM FOR BREECH-LOADING ORDNANCE. CHARLES H. MURRAY, Newcastle-upon-Tyne, England, assignor to W. G. Armstrong, Mitchell & Co., (Limited,) same place. Filed June 9, 1887. Serial No. 240,767. (No model.) Patented in England Sept. 16, 1885, No. 10,998.

Claim.—1. In apparatus for opening and closing a gun-breech, the combination of the bed-plate; the saddle detachably connected with and traversing the bed-plate in rear of and transversely to the gun and acting upon the breech-block to turn it for locking and unlocking, and the hydraulic cylinder with its ram moving transversely to the gun for traversing the saddle with which said ram is detachably connected, substantially as and for the purpose set forth.

2. In apparatus for opening and closing a gun-breech, the combi-

377,904.



nation of the bed-plate, the saddle traversing the bed-plate in rear of and transversely to the gun and acting upon the breech-block to turn it for locking and unlocking, the clips detachably connecting the saddle with the bed-plate, the saddle-traversing hydraulic cylinder on the bed-plate with its ram moving transversely to the gun, and the cross-head of the ram detachably engaged with the forked projection on the under side of the saddle, substantially as and for the purpose set forth.

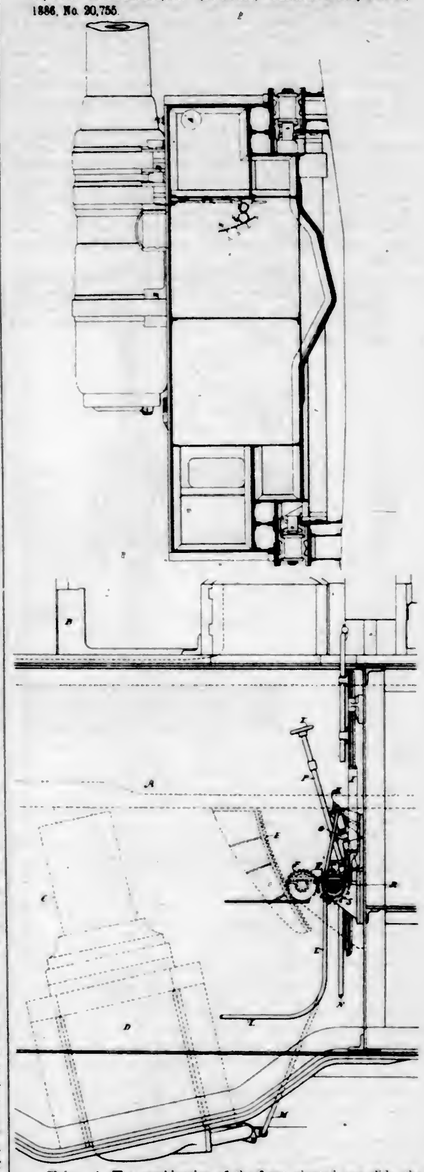
3. In apparatus for opening and closing a gun-breech, the combination of the saddle moving transversely to the gun and in rear thereof, the rack hooked at its front end, having a guideway in the saddle acting upon the breech-block to turn it for locking and unlocking, and moving transversely to the path of movement of the saddle, the main shaft rotated intermittingly and in opposite directions in rear of and parallel to the saddle, the pinion on the main shaft engaging said rack, and the telescopic loading-tray carried by the saddle, with the front section of the tray sliding beneath the adjacent rear section thereof, and provided with a hook beneath its rear end for engagement with the rack-hook, substantially as and for the purpose set forth.

4. The combination of the gun provided with a breech-screw having the hook at its rear end, the saddle acting upon the breech-screw to turn it for locking and unlocking and moving transversely to and in rear of the gun, the rack hooked at its front end, having a guideway in the saddle and moving transversely to the path of movement of the saddle, the main shaft rotated intermittingly and in opposite directions in rear of and parallel to the saddle, the pinion on the main shaft engaging said rack, the telescopic loading-tray carried by the saddle, the front section of which tray slides beneath the adjacent rear section thereof and is provided with a hook beneath its rear end, the stationary rack-pocket beneath the rear of the loading-tray, and the locking devices for preventing inopportune actuation of the rack, substantially as and for the purpose set forth.

5. The combination of the gun provided with the breech-screw, the end plate secured to the breech-screw and having its periphery provided with projections and with notches coinciding with the divided thread of the breech-screw, the inner ring surrounding the end plate and having projections engaging the notches thereof, and also provided with the toe or striking-piece, and the outer ring or guide-plate secured to the gun, cut away for the passage of the striking-piece, and overlapping the inner ring, substantially as and for the purpose set forth.

6. The combination of the gun provided with the locking-bolt recess, and having the breech-screw provided with the striking-piece, the safety locking-bolt moving endwise in the striking-piece, the spring (or springs) acting upon the locking-bolt to thrust it into its locking position in engagement with the rear recess in the gun, the wedge passing through the locking-bolt and striking-piece, and the saddle traversed transversely to and in rear of the gun and acting upon the wedge to move it endwise, substantially as and for the purpose set forth.

377,905. HYDRAULIC OPERATING MECHANISM FOR ORDNANCE. CHARLES H. MURRAY, Newcastle-upon-Tyne, England, assignor to W. G. Armstrong, Mitchell & Co., (Limited,) same place. Filed June 15, 1887. Serial No. 241,381. (No model.) Patented in Italy Dec. 31, 1886, No. 20,756.



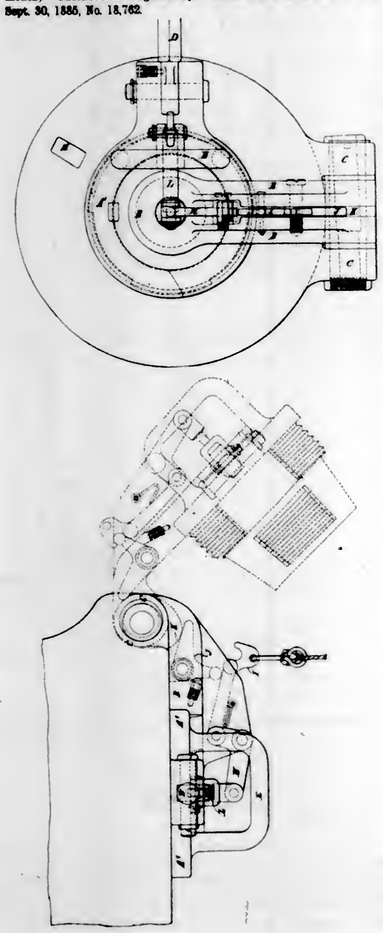
Claim.—1. The combination of the front pivoted gun-slide, the supporting ram and cylinder beneath the gun-slide for vertically adjusting it at rear, the pipes and valve controlling the passage of liquid to and from the cylinder, the transverse shaft beneath the gun-slide and between its pivot and the ram, the gear connecting the gun-slide with the transverse shaft, the worm-wheel fixed on this shaft, the end-

wise-moving shaft adapted to be turned in either direction and coupled with the controlling-valve, and the worm on this shaft engaging the worm-wheel on the transverse shaft, substantially as and for the purpose set forth.

2. The combination of the front pivoted gun-slide, the supporting ram and cylinder beneath the gun-slide for vertically adjusting it at rear, the pipes and valve controlling the passage of liquid to and from the cylinder, gearing operating the controlling-valve and connected with the gun-slide, which gearing is actuated by hand to open the valve and automatically actuated to close the valve, and the sight-bar, also gear-connected with the gun-slide, substantially as and for the purpose set forth.

3. The combination of the front pivoted gun-slide, the supporting ram and cylinder beneath the gun-slide for vertically adjusting it at rear, the pipes and valve controlling the passage of liquid to and from the cylinder, the downwardly-projecting rack of the gun-slide, the transverse shaft actuated by said rack and having the worm-wheel, the endwise-moving shaft coupled with the controlliug-valve and having the worm engaging with said worm-wheel, and the sight-bar geared with the transverse shaft, substantially as and for the purpose set forth.

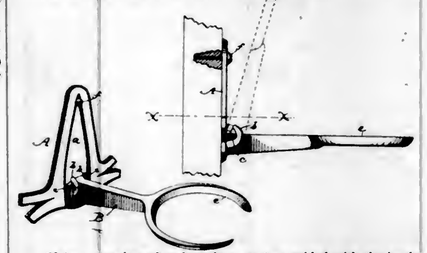
377,906. **BREECH-LOADING ORDNANCE.** ANDREW NOBLE, Newcastle-upon-Tyne, England, assignor to W. G. Armstrong, Mitchell & Co., (Limited,) same place. Filed May 10, 1887. Serial No. 237,734. (No model.) Patented in England Apr. 10, 1885, No. 4,470, and in Italy Sept. 30, 1885, No. 18,762.



Claim.—1. The combination, substantially as set forth, of the gun having the interrupted screw-threads in its breech, which is of less diameter at front than at rear and tapered to gradually enlarge it from the front backward, the breech-piece supported by the hinge-joint at the side of the breech and provided with interrupted screw-threads for engaging the breech-threads, and tapering from its small or inner end toward its larger rear end correspondingly with the taper of the interior of the breech, whereby when the breech and breech-piece threads have been disengaged the breech-piece can be turned aside on the hinge-joint at once, or without being first drawn directly backward.

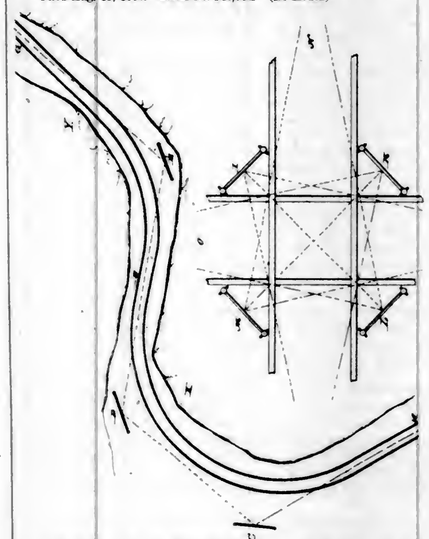
2. The combination of the gun, with the interior of its breech stepped or made of two or more diameters, having the interrupted screw-threads, and with the innermost step made of less diameter at front than at rear and tapered to gradually enlarge it from the front backward, and the breech-piece supported by a hinge-joint at the side of the breech and stepped, threaded, and tapered correspondingly with the breech, substantially as and for the purpose set forth.

377,907. **LAMP-BRACKET.** LYMAN P. PELL, Woburn, Mass. Filed Feb. 23, 1886. Serial No. 192,813. (No model.)



Claim.—In a lamp-bracket, the part A, provided with the hooks or catches *b b* and the tapering slot or opening *a*, in combination with the part B, composed of the C-shaped supporter *c*, the arm *d*, and prongs *c c*, all being arranged and for use substantially as shown and described.

377,908. **RAILROAD-SIGNAL.** JOHN T. PHILLIPS, New Castle, Pa. Filed Aug. 15, 1887. Serial No. 246,984. (No model.)

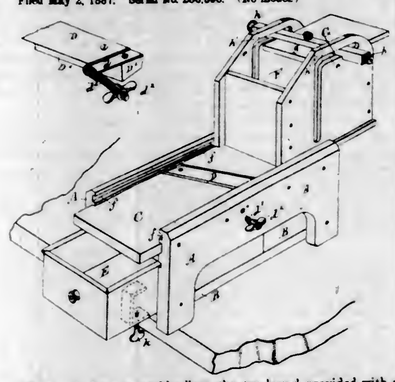


Claim.—1. As an improvement in railroad-signals, a series of mirrors each of which is fixedly supported at an angle to the line of the track, substantially as and for the purpose set forth.

2. As an improvement in railroad-signals, a series of fixed mirrors supported at angles to the line of the track and also at angles to each other, as set forth.

3. As an improvement in railroad-signals, a series of fixed mirrors each of which is supported at an angle to each of the intersecting tracks, as set forth.

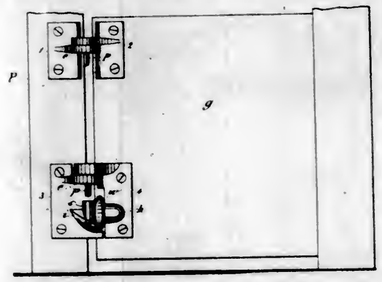
377,909. **VEGETABLE-SLICER.** HENRY J. POHATH, St. Louis, Mo. Filed May 2, 1887. Serial No. 236,890. (No model.)



Claim.—1. In a vegetable-slicer, the top board provided with a cutting-knife and a hopper which slides back and forth between the frame of the machine and above the top board, said hopper being provided with a follower having a cross-piece provided with handles and adapted to operate within slots in the sides of the hopper, said slots being made of the Γ shape shown for the purpose of allowing the follower to be pushed back out of the way and to rest on the rear wall of the hopper, substantially as and for the purpose set forth.

2. In a vegetable-slicer, the frame A, provided with a segmental slot, *c'*, and the top board, C, in combination with the knife D, secured to a cross-piece, D', the arm *d*, the bolt *d'*, passing through the segmental slot *c'* in the frame A, and the nut d^3, for securing the knife D, substantially as herein shown and described, and for the purpose set forth.

377,910. **GATE-HINGE.** JESSE R. PUGH, Indianapolis, Ind. Filed Sept. 12, 1887. Serial No. 249,425. (No model.)



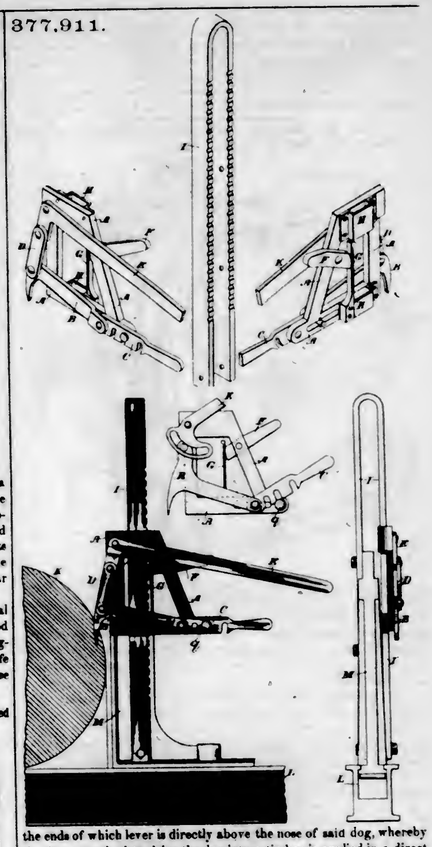
Claim.—A gate-hinge composed of a pair of leaves connected by a pintle and socket at their upper ends, and supported near their lower by a friction-wheel mounted on a stub-axle connected with one leaf, resting upon and adapted to ascend an incline connected with the other, the upper pintle being of sufficient length to remain in the socket of the ear until the periphery of the friction-wheel strikes the under side of such ear, preventing the gate from being lifted from its hinges until the screws are removed, substantially as shown and described.

377,911. **SAW-MILL DOG.** WILLIAM S. REEDER, St. Louis, Mo. Filed July 26, 1887. Serial No. 245,341. (No model.)

Claim.—1. The combination, in a saw-mill, with a standard thereof, of a dog, and an adjustable handle to which the same is pivoted, whereby the nose of the dog can be moved in or out to have a greater or less purchase upon a timber to be sawed.

2. The combination, as hereinbefore set forth, of a saw-mill dog, a frame-piece to which the same is pivoted, and an operating-lever also pivoted to said frame-piece independently of said pivoted dog, one of

377,911.



the ends of which lever is directly above the nose of said dog, whereby the force required to drive the dog into a timber is applied in a direct line with said nose, substantially as described.

3. The combination, in a saw-mill, with a standard thereof, of a dog, an adjustable handle to which the same is pivoted, whereby the nose of the dog can be moved in or out to have a greater or less purchase on a timber, and a pivoted lever operating the aforementioned dog and having one of its ends directly above the nose of said dog to apply the force in a direct line with said nose, for the purpose described.

4. The combination of a notched bar, as I, a frame, as A, carrying a dog, a spring, G, fixed to said frame and having a tooth and a lever, F, pivoted to the frame for holding the spring in engagement with the notches on said bar, substantially as and for the purpose described.

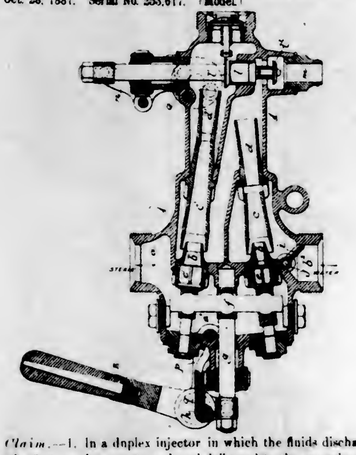
5. The combination, substantially as hereinbefore set forth, to form a saw-mill dog, of a frame-piece, a pivoted dog carried thereby, a notched handle to which the dog is pivotally secured also carried thereby, a pin or other device on said frame-piece adapted to be engaged by said notched handle, whereby the dog can be regulated to have a greater or less hold upon a timber, and means connected with said frame to force the dog into the timber to be sawed, substantially as and for the purpose described.

6. The combination, as hereinbefore set forth, to form a saw-mill dog, of a frame, A, a dog, B, pivoted to a notched handle, C, the pivot joining the same working in a slot in the frame, with a pin or other means upon the frame adapted to engage the notches in said handle, whereby the dog can be adjusted to have a greater or less hold upon the timber to be sawed, a lever, E, pivoted to said frame, and connecting mechanism between the latter and the dog B to force the same in a timber, substantially as described.

7. The combination, as hereinbefore set forth, of a frame-piece, as A, a dog, B, pivoted to a notched handle, C, the pivot of which

plays in a slot in said frame, a lever, E, pivoted to said frame having intermediate mechanism between it and said dog to force the same in engagement with the timber to be sawed, ears H H upon said frame adapted to hold the same to an upright bar, a spring, as G, secured to the frame, and a lever, F, bearing thereupon to hold the same in engagement with the aforementioned bar, substantially as described.

377,912. **INJECTOR.** LOUIS SCHUTTE, Philadelphia, Pa. Filed Oct. 28, 1887. Serial No. 253,617. (Model.)



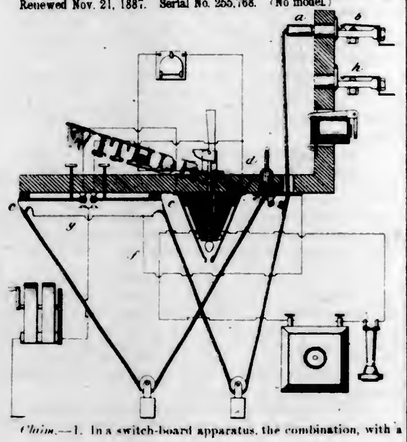
Claim.—1. In a duplex injector in which the fluids discharged from the first nozzle are returned and delivered to the second nozzle, the body diminishing in size toward the delivery end, in combination with the two nozzles arranged therein side by side in lines converging toward the delivery end, whereby the velocity of the fluids discharged from the first nozzle is maintained during their passage therefrom to the second nozzle.

2. In a duplex injector, the converging nozzles arranged side by side in lines converging toward the delivery end, in combination with the inclosing-body reduced in size internally toward its delivery end, and provided with the passage for returning the fluids from the delivery end of one nozzle to the receiving end of the other.

3. In an injector, the lever B, controlling the steam admission, in combination with the eccentrics thereon, the connecting-bar *p*, the lever *o*, the link *n*, and overflow-valve *l*.

4. In a duplex injector having substantially horizontal nozzles and the inclosing-body, the vertically-reciprocating starting-valves *l l*.

377,913. **CIRCUIT FOR DOUBLE-STRANDED TELEPHONE-SWITCH-BOARD CORDS.** CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Dec. 27, 1886. Renewed Nov. 21, 1887. Serial No. 255,768. (No model.)



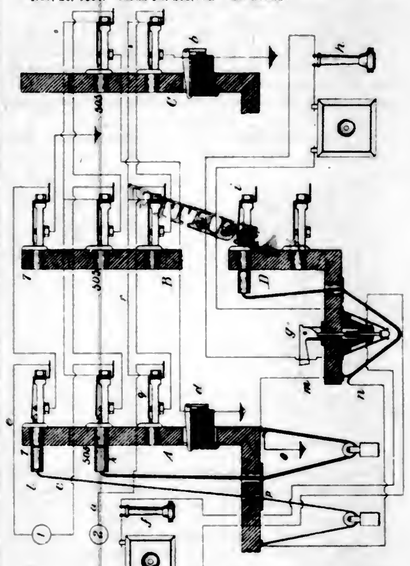
Claim.—1. In a switch-board apparatus, the combination, with a pair of loop-plugs and their pair of double-stranded cords, of a metallic plate, *c*, in connection with one of said strands, and the heel-pieces of said plugs connected with the tips, respectively, whereby when one plug is inserted in a spring-jack the two strands will be connected together, substantially as described.

2. The combination, with the two terminals of a spring-jack, *b*, of a loop-plug inserted therein and the strands of a flexible cord, and another loop-plug with its heel which connects with its tip resting upon a metallic plate or connection which is connected with a strand, *g*, of the cords, whereby circuit is closed between the different terminals of said spring-jack through the different strands of the cord, substantially as and for the purpose specified.

3. In a telephone-exchange switch-board apparatus, a pair of loop-plugs and their pair of double-stranded cords, one strand including the telephone and the other strand being connected with a metallic connection with which the heel-piece of either of the plugs may be connected, in combination with the two terminals of a spring-jack in which either of the plugs may be inserted, whereby the two terminals of the spring-jack may be connected together through the different strands, substantially as described.

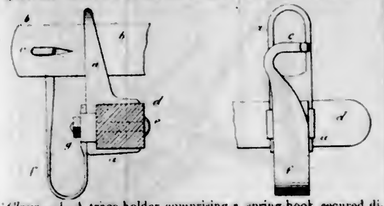
4. In a telephone switch-board, the combination of a double-stranded cord, two double terminal plugs, the two strands, respectively, connected together, the two insulated portions of the plugs, metallic heels, one to each plug, each connected with one of the terminals of its plug and with the same strand of the cord, a plate with which the heels of the plugs may make contact, and a connection from said plate to the strand of the cord which is not normally in connection with the heels of the plugs, whereby contact between the heel of a plug and the plates connects together the two strands of the cord, while lifting the plug removes that connection and leaves the branch connection to the plate open.

377,914. **LONG-DISTANCE CONNECTION FOR MULTIPLE SWITCH-BOARDS.** CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Jan. 3, 1887. Renewed Nov. 21, 1887. Serial No. 255,774. (No model.)



Claim.—In a telephone-exchange system, the combination, with the multiple switch-boards, each provided with a different connection for each of the telephone-lines, of the special connections upon one or more of said boards for the return portions or sides of the metallic circuits, the annunciators of the metallic circuits being placed upon the said one or more boards which are provided with the extra switches in the return portions of said metallic circuits, and switching apparatus at said one or more boards, whereby any of these metallic circuits may be connected with one another, with other lines of the exchange, or extended by a loop-connection to the long-distance room, substantially as described.

377,915. **SPRING TRACE-HOLDER.** WALTER B SILVERS, Indianapolis, Ind. Filed Oct. 25, 1887. Serial No. 253,377. (No model.)

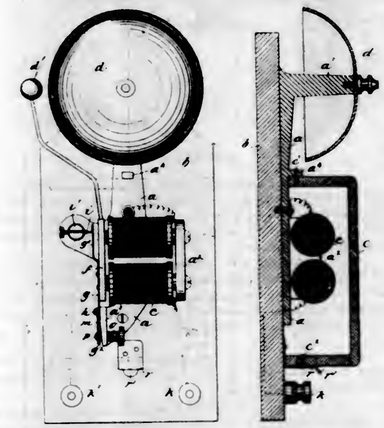


Claim.—1. A trace-holder comprising a spring-hook secured directly to the back of the shaft-bar, an eye also secured to such cross-bar by the same bolt which secures the spring-hook, and an opening in the eye through which the end of the trace is passed in line with the tang of the hook which holds the trace, substantially as shown and described.

2. A trace-holder comprising a spring-hook to hold the trace, and an eye through which the trace is passed, located directly in front of the hook, the two united to the rear of the shaft-bar by a single bolt, the base of the eye formed into a clip for straddling the cross-bar, substantially as shown and described.

3. A trace-holder comprising a hook connected with a loop-shaped spring whose inner end is secured to the rear of the cross-bar by a bolt which also unites thereto an eye whose lower portion is formed into a clip which clamps the cross-bar, substantially as shown and described.

377,916. **ELECTRIC BELL.** JACOB P. TIERELL, Somerville, Mass., assignor to the Electric Gas Lighting Company, Portland, Me. Filed Feb. 23, 1887. Serial No. 228,490. (No model.)



Claim.—The combination of the electro-magnet and its armature and supporting-spring for said armature with an upright having a projecting seat to which said spring is attached, said spring being extended beyond said seat, an adjusting-screw working in said upright and engaging the projecting end of said spring, and a retaining-screw working in said adjusting-screw, by which said spring is held firmly against the end of said adjusting-screw, substantially as described.

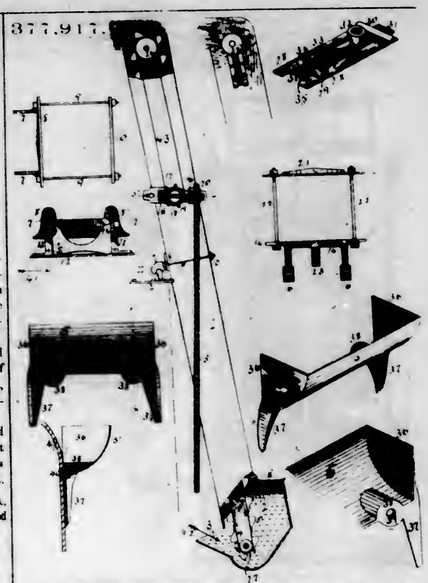
377,917. **GRAIN-ELEVATOR.** THOMAS J. UNDERWOOD, Decatur, assignor of one-half to Elias Dunkel, Emery, Ill. Filed May 12, 1887. Serial No. 238,008. (No model.)

Claim.—1. The bucket having back and sides, the downward extensions 37, and the perforated cavities 38, as and for the purpose set forth.

2. The bucket having back and sides, the downward extensions 37, and means at the lower termination of the bucket for securing the same to a belt, as and for the purpose set forth.

3. The elevator-casing, the belt-pulleys provided each with bearings adapted to be shifted, the adjustable clamp-bracket carrying the gearing, the main sprocket-chain, the secondary sprocket-chain, and the sprocket-wheel on the shaft of the upper belt-pulley, all in combination, as and for the purpose set forth.

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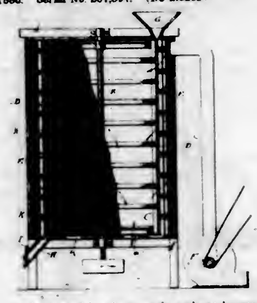


4. The hinge-clamp 7 8 9 10 and the coacting plate 12, with the bearings 11 and the web 24, as and for the purpose set forth.

377,918. **METALLIC ALLOY.** JAMES WEBSTER, Birmingham, County of Warwick, England. Filed June 8, 1886. Serial No. 204,538. (No specimens.)

Claim.—A metallic alloy containing copper, spelter, nickel, tin, aluminium, and bismuth in the following proportions by weight, viz.: copper, 53; spelter, 22.5; nickel, 22; tin, 5; aluminium and bismuth, 1.5.

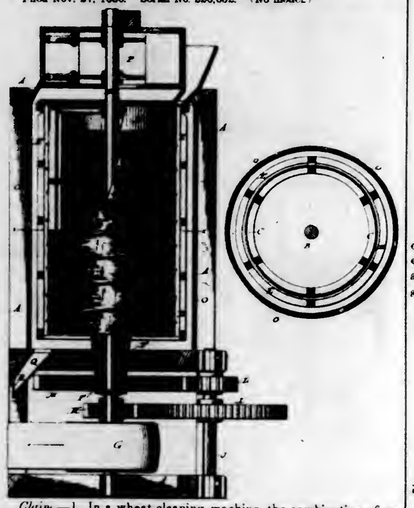
377,919. **GRAIN-SCOURING MACHINE.** ROSIA W. WELCH, Baltimore, Md., assignor, by direct and mesne assignments, to the Welch Wheat Cleaning and Manufacturing Company of Baltimore City. Filed July 9, 1886. Serial No. 207,597. (No model.)



Claim.—1. In a machine for scouring wheat by attrition between the kernels, the combination of an outer cylinder, an inner concentric rotary cylinder provided on its outer surface with small ribs trending downward and forward, their peripheral surfaces widely separated from the outer cylinder, and an adjustable gate for retaining the grain between the cylinders, whereby the maintenance of a solid column of grain and a prolonged movement of the kernels upon and against each other are secured.

2. In a wheat-scouring machine, the combination of an outer vertical pervious cylinder, a jacket completely encircling the same, an exhaust-fan communicating with the interior of said jacket, a central rotary cylinder provided on its outer surface with spiral ribs of slight elevation adapted to act upon the inner surface only of the grain-column, and a gate for controlling the escape of the grain, that a solid column may be at all times maintained between the cylinders.

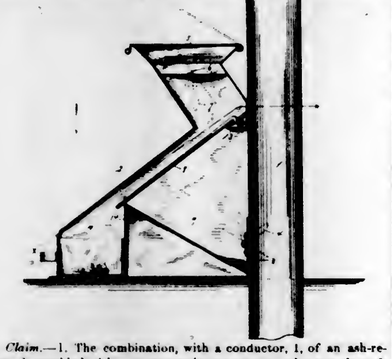
377,920. WHEAT-SCOURING MACHINE. ROSIA W. WELCH, Baltimore, Md., assignor, by direct and mesne assignments, to the Welsh Wheat Cleaning and Manufacturing Company of Baltimore City. Filed Nov. 27, 1886. Serial No. 220,052. (No model.)



Claim.—1. In a wheat-cleaning machine, the combination of an upright inner cylinder clothed with wire-cloth and provided with the spiral lifting-rib, the outer concentric cylinder, also clothed with wire-cloth, and mechanism, substantially as described, for revolving said cylinders in one and the same direction at different speeds.

2. In a wheat-scouring machine, the combination of the outer revoluble cylinder and the inner revoluble cylinder, the latter provided at its upper end with the smooth surface D and with the wire-cloth covering and the spiral rib.

377,921. CONDUCTOR FOR ASHES. JAMES H. WHITTLE, Worcester, Mass. Filed Dec. 12, 1887. Serial No. 257,577. (No model.)



Claim.—1. The combination, with a conductor, 1, of an ash-receiver, 2, provided with a cover upon its upper open end, a trap-door, 6, in its upper part, a series of inclined rods or bars supported within the body of the receiver, upon which the ashes fall to be screened, and an inclined surface leading from the lower end of said bars to the opening into the conductor 1, along which the sifted ashes pass to enter said conductor automatically upon the opening of the trap-door 3, and said trap-door 3, for closing the opening between the conductor and the ash-receiver, all constructed and arranged substantially as shown and described.

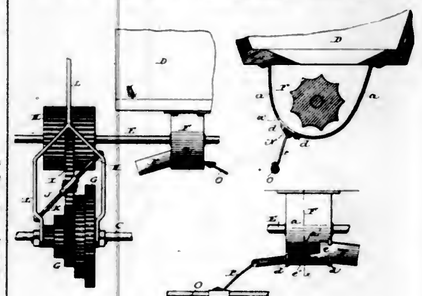
2. In an ash-receiver, a series of inclined removable bars or rods, forming a screen and dividing the receiver into two chamber, for the purpose stated, and upon which the ashes fall, to be automatically screened or sifted before passing out of said receiver, substantially as shown and described.

377,922. THILL-SUPPORT. ALBERTIS ARGUE, St. Johnsville, N. Y. Filed Dec. 16, 1887. Serial No. 258,050. (No model.)



Claim.—In a thill-support, the combination, with the thill and clip for attaching it to the axle, of a toggle-lever connected at one end to the thill and at the opposite end to an arm secured to the clip and terminating at its rear end in a brace to bear against the axle, substantially as and for the purpose specified.

377,923. SEEDING-MACHINE. WILLIAM D. ARNETT, Denver, Colo. Filed June 23, 1887. Serial No. 242,299. (No model.)



Claim.—1. In a seeding-machine, the main axle and the cone-gear fastened thereon, in combination with the seeder-shaft and the elongated cylindrical gear thereon, the intermediate pinion, I, and the lever L, provided with an oblique guide, K, having a pinion-support arranged to slide thereon.

2. In combination with the feed-cup and the fluted distributer-roll therein, the transversely-sliding gate N, forming the lower edge and one end of the delivery-orifice and adapted to change its angle in moving to and fro, as described, whereby the lower edge of the orifice is given an increasing obliquity as its width is diminished, and vice versa.

3. The feed-cup and the fluted distributer-roll therein, in combination with the angular transversely-sliding gate N, having its edges *e* and *e'* substantially as described.

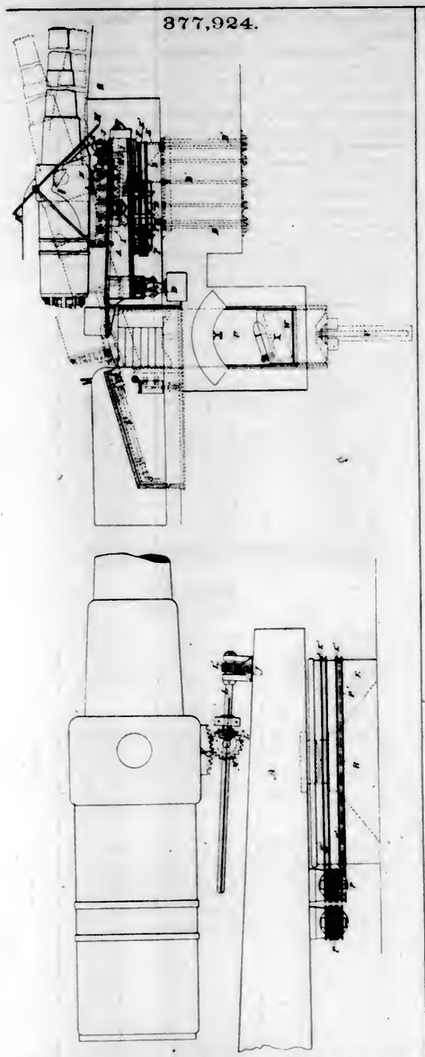
377,924. HYDRAULIC LOADING AND OPERATING MECHANISM FOR ORDNANCE. RALPH T. BRANKSTON, Newcastle-upon-Tyne, England, assignor to W. G. Armstrong, Mitchell & Co., (Limited,) same place. Filed July 2, 1887. Serial No. 243,238. (No model.) Patented in Italy Mar. 31, 1887, No. 21,481.

Claim.—1. The combination, substantially as set forth, of the carriage carrying the gun, the horizontally-turning platform supporting the carriage and along which it recoils, the vertical lift in rear of the gun when the platform is centrally placed, the ammunition stores on either side of the gun and sunk beneath it, the tunnel between the ammunition-stores and the shaft in which the lift works, and the mechanical rammer which drives the charge forward from the cage of the lift into the gun.

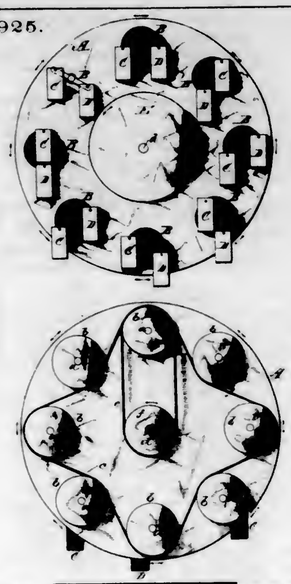
2. The combination of the gun-carriage, the gun-platform, the hydraulic cylinder on the front of the gun-platform and extending transversely to the gun, the rack on this cylinder, the pinion in gear with this rack, the longitudinal axis on the gun-platform, and which at its front end carries this pinion, the pinion sliding on this axis, and the transverse axis and its gearing on the gun-carriage by which the sliding pinion is geared with the arc of teeth beneath the gun.

3. The combination of the pivoted horizontally-turning gun-platform, the two hydraulic cylinders beneath and carried by the gun-platform, the drum concentric with the pivot of the gun-platform, pulleys on said cylinders and their rams, and chains passing around said pulleys and around the drum, substantially as and for the purpose set forth.

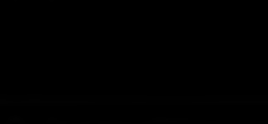
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377,926. ATTACHABLE AND DETACHABLE BACK FOR RAZOR-BLADES. ALFRED V. BROKHAHNE, New York, and CHARLES LANGBEIN, Brooklyn, N. Y.; said Brokhahne assignor to said Langbein. Filed Apr. 6, 1887. Serial No. 233,818. (Model.)



Claim.—1. An attachable and detachable spring-back having a socket, *a*, for holding the tangless blade of a razor for stropping the same or for use in shaving, and a tang, B, with a longitudinal slot, *f*, therein, in combination with the handle C, pivoted in said slot and adapted to fit in the socket of said spring-back when the latter is closed down upon the said handle, substantially as herein described.

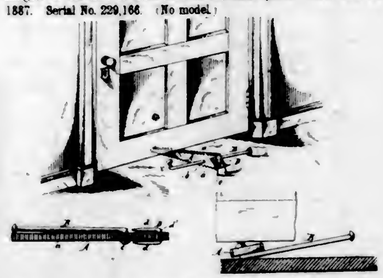
2. The combination, with the short handle C, of the spring-back A, having slotted tang B, pivoted to the end of said handle, and having a dovetailed socket-groove adapted to receive a removable tangless blade, substantially as and for the purpose set forth.

377,925. ADVERTISING DEVICE. FERNANDO C. BRIGGS, St. Johnsville, N. Y. Filed Dec. 8, 1887. Serial No. 257,307. (No model.)

Claim.—1. In an advertising device, the combination, with a stationary disk, of a series of revolving carriers having loosely mounted thereon and depending therefrom suitable advertising-cards, said carriers revolving independent of each other, and a central disk or carrier around which the smaller carriers revolve, to serve as a central advertising medium, substantially as and for the purpose set forth.

2. In an advertising device, a stationary disk having a central advertising disk or carrier and a series of smaller carriers having loosely mounted thereon and depending therefrom suitable advertising-cards, the shafts of the carriers having pulleys and a belt for imparting thereto a revolving motion, substantially as and for the purpose specified.

377,927. DOOR-SECURER. SAMUEL R. CAMPBELL, Buffalo, N. Y., assignor of one-half to Edward Michael, same place. Filed Feb. 28, 1887. Serial No. 229,166. (No model.)



Claim.—1. In a door-fastener, the combination, with the tapering plate or block A, of a detent, D, hung to said plate or block, substantially as set forth.

2. In a door-fastener, the combination, with the tapering plate

or block A, of a reversible detent, D, hung to said plate or block and provided with duplex points, substantially as set forth.

3. In a door-fastener, the combination, with the tapering plate or block A, of a transverse bar or lever, B, and a detent, D, hung to said plate, substantially as set forth.

4. In a door-fastener, the combination, with the tapering serrated plate or block A, provided with an opening, *b*, of a transverse bar or lever, B, inserted loosely through said opening and provided at its ends with heads which prevent the withdrawal of the lever from the opening *b*, and with a bent knee, *c*, at one end which permits the bar to be laid closely against the plate, substantially as set forth.

377,928. **METHOD OF TREATING FIBROUS WARE.** HENRY CARMICHAEL, Malden, Mass. Filed Feb. 15, 1887. Serial No. 227,734. (No specimens.)

Claim.—1. The process of treating fibrous ware, which consists in subjecting it to the action of a mixture of colophony and asphalt, as described.

2. The process of treating fibrous ware, which consists in subjecting it to the action of a mixture of colophony and asphalt and subsequently baking the article, substantially as specified.

3. The process of treating fibrous ware, consisting in saturating the ware when thoroughly dried and heated with a mixture of colophony and asphalt, substantially as described.

4. The process of treating fibrous ware, which consists in first depriving it of its moisture by any suitable means and then subjecting the articles previously raised to a steam heat or above to the action of a mixture of colophony and asphalt, substantially as described.

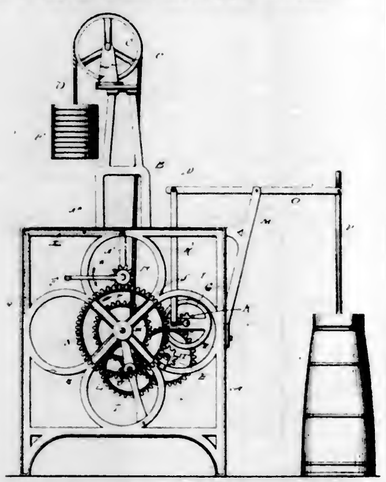
5. The process of treating fibrous ware, which consists in saturating the article, previously raised to a high temperature, with a mixture of colophony and asphalt in the proportion of about one-fifth part, by weight, of the latter to one of the former.

6. The process of indurating fibrous ware, consisting in first depriving it of its moisture, then raising it to a temperature of steam heat or above, and while in that condition subjecting it to the action of a mixture of colophony and asphalt and subsequently baking the ware so treated, substantially as described.

7. The process of treating fibrous ware, consisting in forcing into the porous ware a mixture of colophony and asphalt by exhausting the air of the vessel in which the fibrous ware is treated, substantially as described.

8. The process of treating fibrous ware, which consists of placing the same in a suitable vessel and admitting to it, under pressure, a liquid mixture of colophony and asphalt, substantially as described.

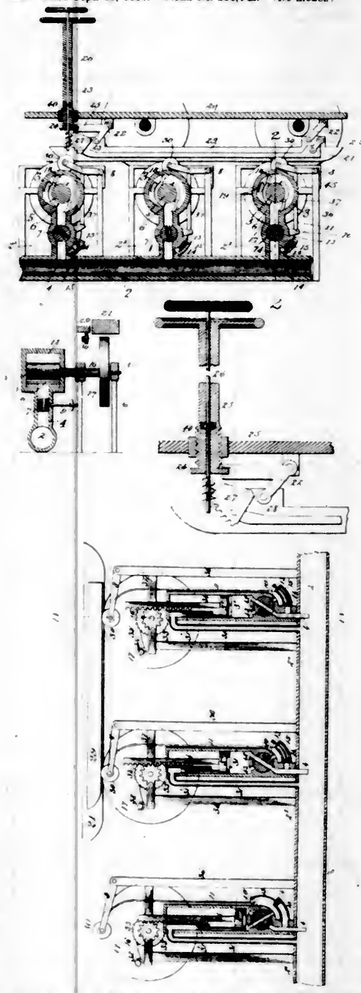
377,929. **WEIGHT-MOTOR.** ISAAC H. COLLER, Poughkeepsie, N. Y. Filed Sept. 20, 1886. Serial No. 214,087. (No model.)



Claim.—1. A weight-motor comprising the drum having the wheel N, the crank wheel or disk, the intermediate speed-multiplying gear-wheels connecting the said crank-wheel to the drum-shaft, the walking-beam, the pitman connecting the latter to the crank-wheel, the rope attached to the drum and having the weights, the lever having the vertically-movable hanger, the pinion journaled in said hanger and adapted to mesh with the wheel S, for the purpose set forth, and the crank connected to said pinion to rotate the latter, substantially as described.

2. The combination of the main frame A, the vertical frame B on the upper side thereof, the standard C, swiveled on frame B and having the pulley U journaled therein, the shaft E, journaled in center of main frame, the drum E^2, secured to said shaft, the wheel N, loose on said shaft, pawl-and-ratchet mechanism connecting said wheel to said shaft, spur-wheel S, rigid on shaft E, the crank wheel or disk, the intermediate speed-multiplying gear-wheels connecting said crank-wheel to wheel N, the walking-beam, the pitman connecting the same to the crank-wheel, the rope attached to the drum and passed over the pulley C, the detachable weights secured to the free end of said rope, the lever X, having the vertically-movable hanger, and the pinion W, journaled to said hanger, adapted to mesh with wheel S, and having the crank F, substantially as described.

377,930. **STREET-CAR ROAD.** WILLIAM M. ECCLES, St. Louis, Mo. Filed Sept. 19, 1887. Serial No. 250,142. (No model.)



Claim.—1. A street-car road having a series of wheels in the road-bed, a continuous steam or compressed-air tube along the line of the road, and a series of suitable engines automatically operated, whereby the wheels are caused to revolve and the car propelled.

2. In a street-car road, a series of wheels situated in the road-bed and operated upon by compressed air or steam from a continuous air or steam tube operating to cause the wheels to revolve and to propel cars, substantially as above described.

3. A shoe running laterally along the bottom of the car and attached thereto by movable parallel arms set at an acute angle with the bottom of the car, in combination with an upright stem passing through the frame-work of the car and having screw-threads engaging female threads in the frame-work, and a ring at its lower end and a hand wheel or crank at the top, said ring engaging lips in one of the parallel arms, whereby the shoe is elevated or depressed upon the wheels in the road-bed and the car is propelled along the track.

4. In a street-car road, a shoe running laterally along the bottom of the car and attached thereto and adapted to be raised from or depressed upon wheels in the road-bed, in combination with another elongated shoe running laterally along the bottom of the car and adapted to move up and down in parallel planes with the bottom of the car and adapted to open valves along the compressed-air or steam pipe, all operating to cause the steam or compressed air to act on the rotating head and cause the wheels to revolve, and at the same time to impinge the shoe upon the revolving wheels and cause the car to move along the track, substantially as described.

5. In a street-car road, a series of outlet-valves placed along the main air or steam pipe and communicating therewith, in combination with an elongated shoe attached underneath the bottom of a car and moving along with the car, and adapted to be moved up and down through successive parallel planes with the bottom of the car equally throughout its entire length, so as to press uniformly on the arms of the valves as the car moves along, operating to open the valves in proportion as the shoe is depressed and the car is passing and allow the valves to close when the car has passed.

6. In a street-car road a cylinder communicating with a main compressed-air tube and receiving compressed air or steam therefrom, and incasing a rotating head and provided with an escape-hole for the escape of compressed air, in combination with a wheel or drum impinging upon a shoe attached to a car, operating to move the car along the track by the action of the compressed air in the main tube pressing upon the rotating head in the cylinder.

7. In a street-car road, the combination of a stem having a screw on the end engaging a female thread in the body of a car and a projecting ring or shoulder engaging jaws of a lever, in combination with a shoe attached to a car by pendent arms, said stem, when turned, operating to raise the shoe or lower the same equally in all its parts from end to end.

8. In a street-car road, the combination of an upright stem situated inside of a like stem, and provided at the lower end with a screw and in the body of the stem with a flange or projecting ring engaging a groove in the outside stem and adapted to turn in the outside stem, but not move up or down, in combination with an adjustable shoe running along the car longitudinally and attached thereto, all operating to raise and lower the shoe equally in all its parts from end to end.

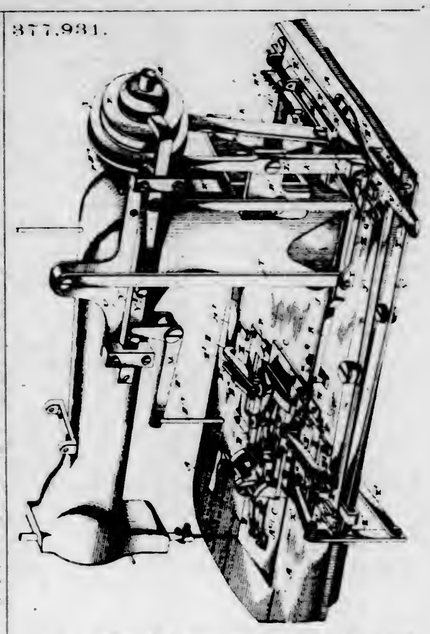
377,931. **BUTTON-HOLE-BARRING MACHINE.** HARRY M. ESSINGTON, Camden, N. J., assignor to the Essington Button-Hole Finishing Machine Company. Filed June 24, 1886. Serial No. 206,109. (No model.)

Brief.—The button-hole to be finished is placed over an upwardly-projecting guide-piece, which just fits the hole. This is then moved in such a manner that at the end of the button-hole two or more long barring-stitches are made, which are then overlapped by a series of short stitches made at right angles to the others, as illustrated in Figs. 8 and 9. A positive stop mechanism stops the machine with the needle up.

Claim.—1. A machine for finishing button-holes, provided with a slide having a clamp and a guide for holding the material with the button-holes therein, stitch-forming mechanism, and means connected with the driving-shaft and the said slide for transmitting reciprocating, longitudinal, and transverse motion to said slide, whereby an under row of stitches and an overlying row at right angles thereto may be made by the continuous action of the machine at the unfinished end of the button-hole, all substantially as described.

2. In a button-hole-finishing machine, the table A, in combination with the slide C, having guide-piece $A^\times$ and clamps B, the slide E, having attached thereto the guides D D for the slide C, the guides F F, in which the slide E reciprocates, secured to the plate A, and means, substantially as described, for imparting longitudinal or transverse motion to said slide C and transverse motion to the slide E, all substantially as and for the purpose set forth.

3. In a button-hole-finishing machine, the table A, having the slide C thereon, and provided with the arm G, a rod having lugs adapted to engage with said arm, a vertical bar pivoted to the said rod, and means, substantially as described, for oscillating said bar so as to impart motion to said slide, all substantially as described.



4. In a button hole-finishing machine, the slide C, longitudinally movable on the slide E, the slide E, transversely movable on the table A, the guides D D, secured to the slide E, the shaft A', with means for rotating the same, the cam L^2, mounted on said shaft A', the lever K^2, pivoted to the sliding bar G', the bars H^2 J^2 H^3, the dogs E^2, pivoted to the guides D; and the dogs B^2, pivoted to the table A and carrying pins B^3 and spring B^4, all of said parts being combined and arranged substantially as and for the purpose set forth.

5. The slide C, with arm G, in combination with the bar J, having lugs H, means, substantially as described, for imparting a reciprocating rectilinear motion to said bar J, the bar R, with pin *a*, and means, substantially as described, for automatically lowering said bar R, so that said bar J may be engaged with the slide C, all substantially as described.

6. The slide C and arm G, connected therewith, in combination with the bar J, having lugs H, the vertical bar K, the follower M, and grooved switch-cam P, all substantially as described.

7. A machine for finishing button-holes having stitch-forming mechanism, and the sliding bar V, with shoulder W, means, substantially as described, for operating said bar V, and the loose pulley Y, engaged by said sliding bar V and mounted on the driving-shaft A', the pulley Y being engaged by said shoulder W, all substantially as described.

8. A machine for finishing button-holes having stitch-forming mechanism, the sliding bar G', the pivoted lever K', the driving-shaft A', with cam L^2, the levers H^2 J^2, pivoted to bar G', the arm H^3, connected to the arm H^2, and the slide E, having dogs B^2 pivoted thereto, all substantially as and for the purpose set forth.

9. In a machine for finishing button-holes having a stitch-forming mechanism, the sliding bar V, in combination with the bar D', pivoted to said bar V, the reciprocating sliding bar G' and means, substantially as described, for imparting motion to the same, the pawl F', secured to said bar G', the rack-bar M', operated by said pawl, the slide C, with clamp B, and mechanism, substantially as described, for imparting a reciprocating longitudinal motion to said slide, all substantially as described.

10. In a machine for finishing button-holes having stitch-forming mechanism, the rack-bar M', having nose N', with mechanism, substantially as described, for imparting a step-by-step movement to the same, in combination with the bar S, having a notch adapted to register with the said nose N', the slide C, and means, substantially as described, intermediate of said bar S and said slide, for operating the latter, all substantially as described.

11. In a machine for finishing button-holes having stitch-forming mechanism, a slide with cloth-clamp, and the dogs B', pivoted to said slide, the table A, having dogs B^2 pivoted thereto, and means for operating said dogs B^2, which dogs are adapted to be engaged by said slide, means for imparting motion to said slide, and the spring B^4, all combined substantially as described.

12. The table A, with lifting-cam Q, in combination with slide C, having arm G, stitch-forming mechanism, the rods J, with lugs H H, and arm supporting said rod J and having a projection resting on said cam Q, and means, substantially as described, for moving said supporting-arm and thereby lowering the said rod J, whereby the lugs H H thereon become engaged with the arm G, all substantially as described.

13. The table A, in combination with slide C, having arm G and dogs B', the bar J, with lugs H, the levers H', H^3, and J', stitch-forming mechanism, the sliding bar G', with means, substantially as described, for imparting reciprocating-motion thereto, the pawls F', the rack-bar M', with nose N', the pivoted bar S, with recess P' and stop Q', and the spring B^5, all substantially as described.

14. In a button-hole-finishing machine having stitch-forming mechanism, the table A, in combination with slide C, having cloth-clamp thereon, the arm G on slide C, the rod J, with lugs H H, adapted to engage the said arm, the vertical bar K, connected to said rod J, and means, substantially as described, for oscillating the said bar K, all substantially as and for the purpose set forth.

15. In a button-hole-finishing machine having stitch-forming mechanism, the slide C, longitudinally movable on the slide E, the slide E, having the guides D D secured thereto and transversely movable on the table A, the cam L', mounted on the shaft A' of the stitch-forming mechanism, the lever K', pivoted to the sliding bar G', mechanism, substantially as described, intermediate the said sliding bar G' and the slide, for imparting transverse motion to the said slide, the pawls F', the sliding rack-bar M', having nose N', the pivoted bar S, with notch P' and spring B^5, all combined substantially as described.

16. The slides C and E, the former having arm G, the rod J, with lugs adapted to engage said arm G, the shaft A', mechanism, substantially as described, intermediate of said shaft A' and said rod, for imparting motion to said rod, the pivoted bar S, the rod R, pivoted to said bar S and having the pin *a*, the lifting-cam Q, secured to the table A, and mechanism, substantially as described, for operating said bar S, all combined and arranged substantially as described.

17. A button-hole-finishing machine having stitch-forming mechanism, the shaft A', with clutch-pulley Y, mounted thereon and having a segmental slot, and provided with a stop pivoted thereto and having a pin, and a spring connected to said stop and pulley, the pin of said stop working in said slot of the clutch-pulley, and the slide C, with means, substantially as described, connected to said driving-shaft and said slide, for securing longitudinal and transverse motion to said slide, all of said parts combined substantially as described.

18. A button-hole-finishing machine having the shaft A', with pulley Y, having a yielding stop, the wheel Z, with a shoulder adapted to engage said stop, the slide-bar V, having an arm engaging said wheel Z, means, substantially as described, for operating said slide-bar V, and the slide C, with means, substantially as described, intermediate of said slide and driving-shaft and connected thereto, for imparting longitudinal and transverse motion, as described, to said slide, all substantially as described.

19. A button-hole-finishing machine having stitch-forming mechanism, the driving-shaft of which is provided with clutch-pulley Y, having yielding stop B^x pivoted thereto, and provided with the pin B^x, and the wheel Z, having shoulder C, and means, substantially as described, for engaging and disengaging said pulley and wheel, all substantially as described.

20. In a button-hole-finishing machine having stitch-forming mechanism, a clutch, the slide-bar V, provided with the stud V^2, the lever T, pivoted to a support and to the rod R, the rod R, pivoted to the bar S, the bar S, with notch P', and the bar M', with nose N', and the spring R', all combined substantially as described.

21. In a button-hole-finishing machine having stitch-forming mechanism, the slide-bar V, the lever D', pivoted to said slide-bar, the sliding bar G', and means, substantially as described, for imparting reciprocating motion thereto, the pawls F', hung on the sliding bar G' and adapted to be raised by the lower end of said lever D', all substantially as and for the purpose set forth.

22. In a button-hole-finishing machine, the slide E, having a cloth-clamp and a rack-bar, Y', attached to said slide, the pawls X', adapted to engage the said rack-bar, the rock-shaft Z', on which said pawls are secured, and mechanism, substantially as described, for oscillating said rock-shaft, all combined substantially as and for the purpose set forth.

23. In a button-hole-finishing machine, the slides C and E, with guides substantially as described, the pivoted bar S, having roller U', and means, substantially as described, for vibrating said bar, the bar S', having notch T', and the bar V', having the pin W', adapted to raise the pawls X' from the rack Y', all combined substantially as and for the purpose set forth.

377,932. CLAMP-CENTERING DEVICE FOR BUTTON-HOLE SEWING-MACHINES. HARRY M. BESSINGTON, Camden, N. J., assignor to the Bessington Button-Hole Finishing Machine Company. Filed Jan. 23, 1887. Serial No. 225,125. (No model.)



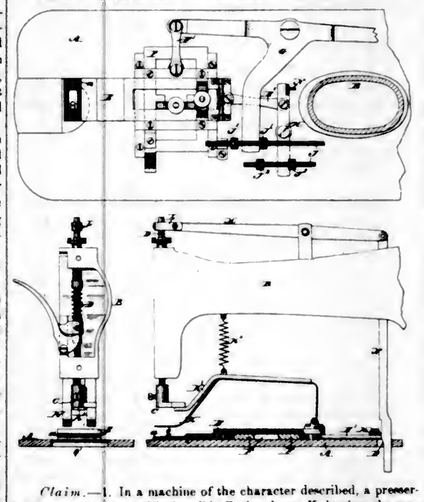
Claim.—1. A button-hole-finishing or other sewing-machine having the table A, with the throat-plate B, a slide having a plate carrying the guide J thereon, clamping mechanism, substantially as described, connected with said plate, and means, substantially as described, for imparting motion to said plate, whereby the guide J is automatically centered in relation to the throat-plate, the parts being combined substantially as described.

2. In a button-hole-finishing or other sewing-machine, a slide having a plate with a guide thereon, in combination with the oscillating head G, pivoted to the said plate and having a cloth-clamping device attached thereto, and a rotary head journaled in arms attached to the said slide and adapted to bear against either the oscillating head or the clamping mechanism, all substantially as described.

3. The table A, with throat B, the slide C, and plate H, having guide J thereon, the pivoted head G, with plate E, connected thereto by springs F, the stationary block K' and spring L, secured to said head G, and slide C, said parts being combined substantially as described.

4. The table A, with throat B, in combination with slide C, having plate H, with guide J thereon, the head G, having beveled heel, as shown, the block K', secured to the ways D', and the head N, journaled in arms M and having the handle P, all substantially as and for the purpose set forth.

377,933. CLAMP-CENTERING DEVICE FOR BUTTON-HOLE SEWING-MACHINES. HARRY M. BESSINGTON, Camden, N. J., assignor to the Bessington Button-Hole Finishing Machine Company. Filed Apr. 21, 1887. Serial No. 235,614. (No model.)



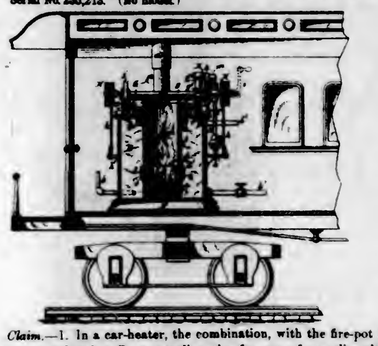
Claim.—1. In a machine of the character described, a presser-foot, in combination with the slide E, the clamp K, having the arm K', and mechanism, substantially as described, connected to said presser-foot and slide for operating the said slide, whereby the same is centered, substantially as and for the purpose described.

2. In a machine, substantially as described, the slides with clamping device, the connected levers of said slides, and means for operating the same, in combination with a bar having a cam-face which is adapted to engage with one of said levers, the lever M, and the presser-foot, said lever M being connected with said bar and presser-foot, substantially as set forth, whereby when the machine is stopped the elevation of the presser-foot centers the clamping device or locates it at the correct starting-point, as stated.

3. The presser-foot C, in combination with the arm, the bed-plate A, the slide E, the clamp K, secured to said slide E and having the arm K', the spring K^3, secured to said arms B and K', and mechanism, substantially as described, connected to said arms B and K', for operating the slide, whereby the same is centered, substantially as and for the purpose set forth.

4. In a machine of the character described, the presser-foot C, having rod D, with link L, attached thereto, in combination with the pivoted lever M, the bar N, having on its lower end the cam-face P, the slide E, with throat Q, and mechanism, substantially as described, for operating the slide E, connected thereto and including the pivoted lever H, substantially as and for the purpose set forth.

377,934. CAR-HEATER. LEANDER G. GILBERT and MARTIN W. LOWE, Buffalo, N. Y., assignors, by direct and mesne assignments, to said Gilbert and Tobias Witmer, Jr., same place. Filed Apr. 18, 1887. Serial No. 235,213. (No model.)



Claim.—1. In a car-heater, the combination, with the fire-pot A and a water-chamber, B, surrounding the fire-pot, of an adjustable cylinder, C, arranged above the fire-pot and forming the inner wall of the water-chamber and the flame-passage, substantially as set forth.

2. In a car-heater, the combination, with the fire-pot A, having a recess, *d*, around its upper edge and provided with a suitable packing, *e*, and a water-chamber, B, surrounding said fire-pot and provided at its top with an opening, *c*, and stuffing-box *f*, of a cylinder, C, extending through the stuffing-box and resting with its lower end in the recess *d* against the packing *e*, so as to form the inner wall of the water-chamber and the flame-passage for the fire-pot, substantially as set forth.

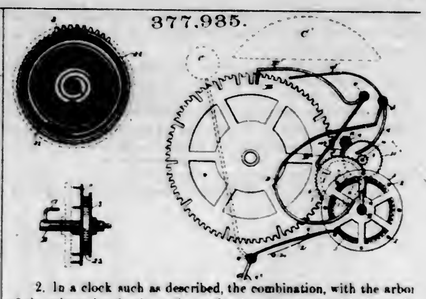
3. In a car-heater, the combination, with the fire-pot A and chamber B, surrounding the fire-pot, of a cylinder, C, extending through the chamber B and resting upon the upper edge of the fire-pot, a plate, G, secured to the top of the cylinder C, a shaft, *g*, journaled in bearings secured to the plate G, pulleys H, mounted on said shaft, and cables *h*, secured to the pulleys H and to the wall of the chamber B, substantially as set forth.

4. In a car-heater, the combination, with the fire-pot A and a water-chamber, B, surrounding the fire-pot, of a cylinder, C, extending through the water-chamber and resting upon the upper edge of the fire-pot, a plate, G, secured to the top of the cylinder C and provided with drums H, cables *h*, and ratchet mechanism K *k*, whereby the cylinder C is held in place upon the fire-pot, and springs J, interposed between the plate G and the top of the chamber B and adapted to raise the cylinder C when the ratchet mechanism K *k* is released, substantially as set forth.

5. In a car-heater, the combination, with the fire-pot A and a water-chamber, B, surrounding the fire-pot, of a cylinder, C, extending through the chamber B and resting upon the upper edge of the fire-pot, a plate, G, secured to the top of the cylinder C, a shaft, *g*, journaled in bearings secured to said plate and provided with pulleys H, and cables *h*, connecting said pulleys with the wall of the heater, a ratchet-wheel, K, secured to the shaft *g*, a pawl, *k*, engaging with the ratchet-wheel, and a hanging lever, L, pivoted to the shaft *g* and adapted to release the pawl *k* from the ratchet-wheel K, substantially as set forth.

377,935. STRIKING MECHANISM FOR CLOCKS. EMILE GROUX, Wilkes-Barré, Pa., assignor of one-third to Samuel Hirsch, same place. Filed Feb. 20, 1887. Serial No. 228,258. (No model.)

Claim.—1. In a clock such as described, the combination, with the arbor of the minute-hand, of a spring secured thereto by one of its ends, its other end being connected to the striking-train through a frictional connection, whereby the striking-train is operated by the power of said spring and the arbor of the minute-hand is not arrested in its forward movement, substantially as described

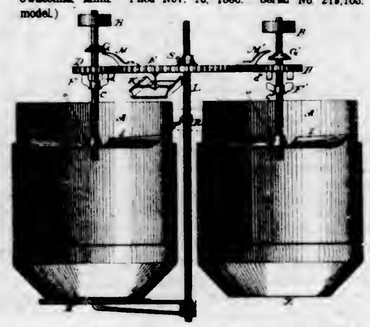


2. In a clock such as described, the combination, with the arbor of the minute hand, of a spring and a barrel in train with the striking mechanism inclosing the same, mounted on the said arbor, one end of said spring being secured to the arbor, while its opposite end is connected to said barrel through a frictional connection, substantially as described.

3. In a clock such as described, the combination, with the arbor of the minute-hand, of a spring and barrel for inclosing the same, mounted on said arbor, one end of the spring being secured thereto, its opposite end being in fractional engagement with the barrel, which latter is provided with a series of pins for engaging the hammer lever or arm to operate the same, substantially as described.

4. The combination, with the hammer of a striking mechanism and its arm or stop for engaging a stationary stop to arrest the movement of the hammer, of a spring engaging said arm or stop to partially arrest the movement of the hammer before the two stops engage, substantially as described.

377,936. AUTOMATIC GRAIN-MEASURE. CHARLES W. HADLEY, Owatonna, Minn. Filed Nov. 16, 1886. Serial No. 219,103. (No model.)



Claim.—1. In combination with the cylinders A and A', the shafts C and C', pinions D and D' on said shafts, the segment E, and the horizontally-revolving wings I and I', respectively, at the ends of said shafts C and C' and having their front edges turned up.

2. In combination with the vertical shafts C and C', flanges G and G', and pinions D and D', each provided with a clutch on its under surface, the clutches F and F', the cams M and M', and the segment E, substantially as and for the purpose set forth.

3. The cylinders A and A', and shaft L, and the movable bottom H, attached to its lower end, in combination with the vertical shafts C and C', each having on its lower end a horizontally-revolving wing with upturned edges, and mechanism, substantially as described, whereby said bottom alternately covers the lower end of one or the other cylinder, substantially as set forth.

4. In combination with the shafts C and C', each having a flange, G or G', the pinions D and D', loosely placed on said shafts, the cams M and M', and the segment E, to which the said cams are secured, and the clutches whereby the said pinions are alternately held fast to be alternately engaged with said segment, substantially as and for the purpose set forth.

5. The combination of the detent-pawls W W', fixed to the bracket, the shafts C and C', and cogs or pinions D D', loosely mounted thereon, the clutches *d d'* on the pinions and the clutches F F' on the shafts, whereby the pinions alternately engage with their operative mechanism, substantially as set forth.

6. In an automatic grain-measurer, extensible cylinders, combined with horizontally-revolving wings secured to the operative mechan-

ism, substantially as described, whereby when the cylinders are length-

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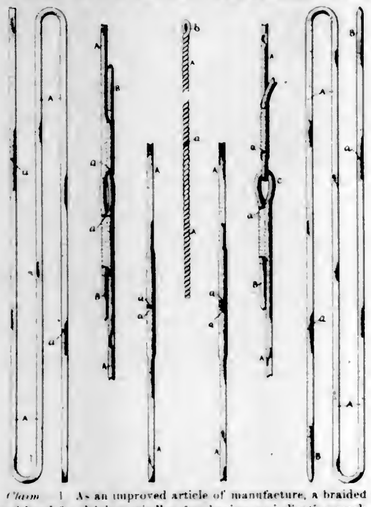
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377,941.

ism, substantially as described, whereby when the cylinders are lengthened the wings can be correspondingly moved, substantially as and for the purpose set forth.

7. In a grain-measuring device, in combination with a movable shaft, horizontally-revolving wings adapted to be raised by the inflowing grain as it fills the cylinder in which the said wings revolve, and the mechanism operating said shaft, whereby said shaft is automatically thrown into and out of gear with the mechanism which moves it, substantially in the manner and for the purpose set forth.

377,937. **DRIVING-BAND FOR SPINDLES.** JOHN J. HEYWOOD, Fall River, Mass. Filed May 20, 1887. Serial No. 238,846. (No model.)



Claim.—1. As an improved article of manufacture, a braided or twisted band for driving spindles, &c., having an indicating mark or marks thereon, substantially as described, to show where the ends should be joined to make the band the proper length, substantially as set forth

2. As an improved article of manufacture, a braided or twisted band for driving spindles, &c., having indicating-marks thereon, substantially as described, to show where the ends should be joined to make the band the proper length, and having its ends provided with tips, substantially as described, to enable them to be readily passed through the body of the band, substantially as set forth.

377,938. **STEAM-PUMP.** THOMAS HILL, Quincy, Ill., assignor to Smith, Hill & Co., same place. Filed Oct. 28, 1886. Serial No. 217,492. (No model.)

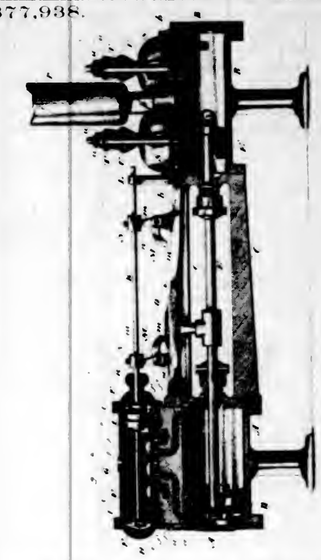
Claim.—1. In a direct-acting steam-engine, a main steam-valve which is primarily moved by the impingement of a supplemental steam-valve and receives its principal final motion from steam that is controlled by said supplemental valve, substantially as and for the purpose specified.

2. In a direct-acting steam-engine, a main steam-valve which has its movement initiated by the direct impingement of a supplemental steam-valve, and such movement then continued and completed by the operation of steam that is controlled by said supplemental valve, substantially as and for the purpose shown.

3. In a direct-acting steam-engine, a main steam-valve which, through suitable intermediate mechanism, receives positive initiatory movement from the piston, and such movement is then continued and completed by the direct action of steam, substantially as and for the purpose set forth.

4. In a direct-acting steam-engine, mechanism, substantially as described, for controlling the admission of steam to and its escape from the cylinder, which is in part actuated positively by the movements of the piston and in part by the direct action of steam, substantially as and for the purpose specified.

5. In a direct-acting steam-engine, mechanism, substantially as described, for controlling the passage of steam to and its escape from the cylinder, which has its movements initiated by the indirect action of steam through positively-actuating mechanism, and such movements continued and completed by the direct action of the same, substantially as and for the purpose shown.



6. In a direct-acting steam-engine, a piston-valve which by movements lengthwise of its casing is adapted to control the passage of steam to and its escape from the cylinder, in combination with two positively-moved supplemental valves that are located at opposite ends of the main valve, and are each adapted to impinge upon and move the same through a part of its stroke and to admit steam to its rear, whereby, by the direct action of the former, said main valve will be moved to the end of its stroke in such direction, substantially as and for the purpose set forth.

7. In a direct-acting steam-engine, in combination with a steam-valve which operates to control the admission of steam to and its escape from the cylinder, two supplemental valves that are each adapted to positively move said main valve through a portion of its stroke and to cause such movement to be continued and completed by admitting steam directly against its rear, substantially as and for the purpose shown and described.

8. In a direct-acting steam-engine, a valve-rod which is positively moved longitudinally in opposite directions by the movements of the piston, two supplemental piston-valves that are secured to and move with said valve-rod, and a main valve which is placed upon and adapted to slide over the latter between said supplemental valves, in combination with each other and with a valve-casing that is provided with suitable ports, whereby the forward movement of each of said supplemental valves will first cause said main valve to be given a positive forward movement, and such movement then continued and completed by the admission of steam to its rear, substantially as and for the purpose specified.

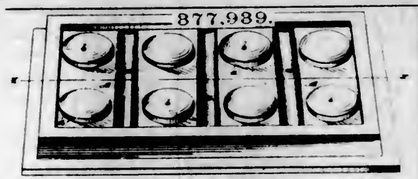
9. In a direct-acting steam-engine, as a means for reciprocating the valve-rod longitudinally, two L-shaped pivoted levers, each of which has one of its arms pivoted to or connected with said rod, in combination with an arm that is secured upon the piston-rod and adapted to move beneath and engage alternately with the free arms of said levers and is provided with an engaging-face that centrally is parallel with said valve-rod, and from such central portion to its ends has relatively opposite inclinations, substantially as and for the purpose shown.

377,939. **ILLUMINATING-TILE.** JACOB JACOBS, New York, N. Y. Filed Feb. 16, 1884. Serial No. 120,985. (No model.)

Claim.—1. An illuminating-tile in which is comprised a metal base that has upwardly-curved parallel ribs or corrugations with intervening plane horizontal portions that are provided with light-openings, lenses placed within or over such openings and resting upon the adjacent plane portions of the base, and cement placed upon said base



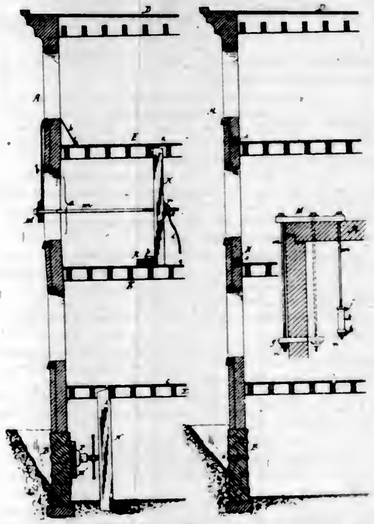
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around and between the lenses and flush with their upper ends, so as to form a walking-surface which is composed wholly of glass and cement, substantially as and for the purpose specified.

2. A vault or area cover, composed of a supporting-frame that contains one or more tiles, each of which consists of a metal base that has upwardly-curved parallel ribs or corrugations, with intervening plane portions that are provided with light-openings, lenses placed within or over such openings and resting upon the adjacent plane portions of the base, and cement placed upon said base around and between the lenses and flush with their upper ends, substantially as and for the purpose shown.

377,940. **STRAIGHTENING WALLS.** PHILIP B JOHNSON, Baltimore, Md., administrator of Samuel Hevner, deceased. Filed June 20, 1887. Serial No. 241,857. (No model.)



Claim.—1. The mode herein described of straightening walls, said mode consisting in imparting pressure to the wall on one side until the truth is restored, then wedging up the other side of the wall until the strain is equalized, all substantially as set forth.

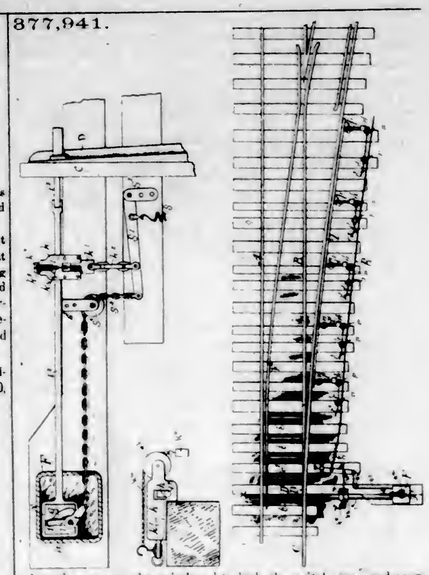
2. The mode herein described of straightening walls, said mode consisting in imparting pressure to the wall on one side until its truth is restored, then wedging up the other side of the wall until the strain is equalized, and, finally, removing the pressure devices, all substantially as specified.

3. The mode herein described of straightening walls, said mode consisting in applying pressure to the bulging side of the wall until it is brought into line, and then wedging supporting materials into crevices or channels and against the bearing-faces naturally or artificially formed on the opposite side of the wall, all substantially as specified.

377,941. **AUTOMATIC RAILWAY-SWITCH.** FRANK N. KELSEY and WILLIAM A. STEVENSON, New Haven, Conn. Filed Mar. 29, 1887. Serial No. 232,926. (No model.)

Claim.—1. In automatic railway-switches, the combination, with the main line, switch, and siding or branch line, of the switch-stand, shaft, and connecting-rod for moving the switch, the tread-plate and counterweighted levers supporting it, the sliding rod and connections attached to the weighted ends of the levers, the switch-crank and connections for operating the sliding rod and tread-plate, a locking-bolt

877,941.



adapted to engage the switch-rod to lock the switch open, and counter-weight for actuating the bolt as the switch is thrown open and the tread-plate is drawn down, and the connections for disengaging the bolt by the action of the tread-plate weights, whereby the bolt is drawn and the switch and main line are automatically restored as the train clears the tread-plate, substantially as described.

2. In automatic railway-switches, the combination of the switch-stand F, provided with a notch, e^4, in the edge of its upper face, the arm u^3, secured to the switch-shaft located eccentrically with relation to the notched stand, the handle u', pivoted in the end of the arm, the pawl e', pivoted to the arm interior to the handle and adapted to drop into the notch as the switch is opened, and provided with a projection, u^4, extending over the inner end of the switch-handle, whereby the pawl is disengaged from the locking-notch as the switch-handle assumes a vertical position, substantially in the manner and for the purpose specified.

3. The combination, with the main line, switch, and siding, of the switch-stand F, the shaft f', actuating-spring w, switch-crank f^3, cam g, and connecting-rod f^2, provided with the projection h, the tread-plate l, the fulcrums n, lever l', supporting the tread-plate, counterweights n', for raising the tread-plate and closing the switch, the sliding rod R, the hooks r^3, the connecting-chains r', attached to the hooks and the weighted ends of the levers, the chain-pulleys $p\ p'$ and their bearings p^3, the lever s', the spring s, connecting the sliding rod and the lever s', the switch-crank t, secured upon the switch-shaft, the chain s^2, connecting the crank t and lever s', the pulley s^4 and its support s^5, the locking-plate k, through which the switch-rod passes, the locking-bolt k', guided in the plate and adapted to engage the projection on the rod to lock the switch open, the weight k^2, and connecting-chain k^4, for locking the bolt, the pulley k^3, guiding the chain, the chain k^5, connecting the lock-bolt to the lever s', and a switch lever or handle secured to the shaft for opening the same, all combined and arranged substantially in the manner and for the purpose specified.

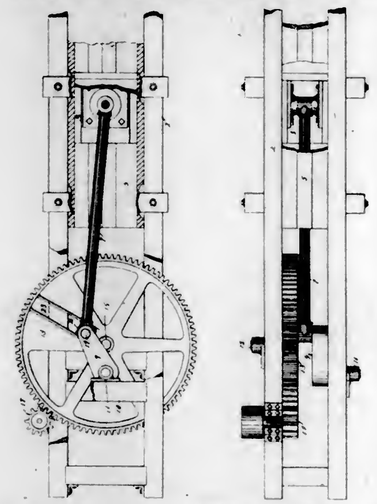
4. In railway-switch mechanism, the combination, with the shaft, switch-crank f^3, and connecting-rod, of the cam-block i, secured at the end of the rod and engaged by the switch-crank, and provided with a cam-slot, g, so shaped that when the switch is thrown open the slot is continued for a distance in the path of the crank for the purpose of permitting the further motion of the crank t, switch-shaft, and connections to raise the tread-plate lever-weights and allow the tread-plate to lower, and also permit the locking-bolt r' to engage the notch h and lock the switch open, substantially in the manner and for the purpose specified.

5. In automatic railway-switches, the combination, with the main line, switch, and siding, of the switch-stand, shaft, and connecting-rod for moving the switch, the tread-plate and counterweighted levers and connections attached to the weighted ends of the levers, the switch-crank and connections for operating the sliding rod and tread-plate,

and a spring or elastic connection interposed between the connections

and a spring or elastic connection interposed between the connections uniting the switch-crank and sliding rod, a spring coiled upon the switch-shaft and adapted to throw the shaft to operate the switch, a locking-bolt adapted to engage the switch-rod to lock the switch, the counter-weight for locking the bolt, and the connections for unlocking the bolt by the action of the tread-plate weights, whereby the lock-bolt is drawn and the switch operated, substantially in the manner described.

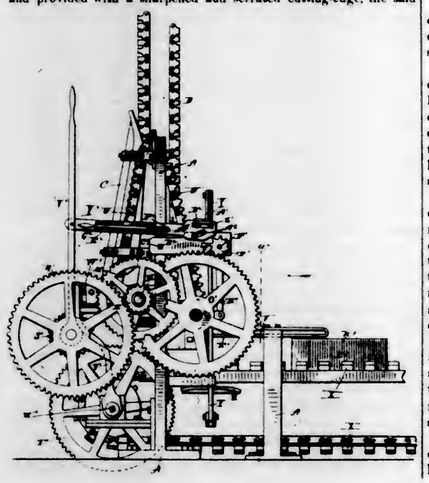
377,942. **BALING-PRESS.** OWEN B. KENNARD, Minneapolis, Minn. Filed Apr. 3, 1886. Serial No. 197,652. (No model.)



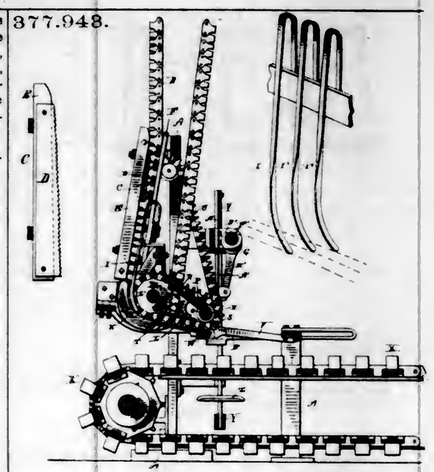
Claim.—The combination, in a baling-press, with the reciprocating plunger and pitman, of the wheel having the radial slot 23, the crank 9, the crank-pin 19, to which the pitman is connected, and the block 21, fitting in the slot 23 and having the crank-pin secured thereto, substantially as described.

377,943. **MATCH-MACHINE.** LEVI KITTINGER, Akron, Ohio. Filed Aug. 16, 1887. Serial No. 247,098. (No model.)

Claim.—1. In a match-machine, the combination, with the carrier-chain, of the knife-holder or clamp C, adjacent to the said carrier-chain, and the dividing-knife D, supported by the said knife-holder and provided with a sharpened and serrated cutting-edge, the said



377,948.



cutting-edge increasing in projection from one end to the other, for the purpose herein described.

2. In a match-machine, the combination, with a carrier-chain for carrying match-splints and a separating-knife, of a splint-separating mechanism consisting of diverging guides in the line of travel of the said carrier-chain, whereby they are separated longitudinally after being cut by the knife, substantially as described.

3. The combination, with the carrier-chain and separating-knife of a match-machine, of diverging arms arranged in the line of travel of the said carrier-chain and provided with knife-edges to engage the splints, whereby the same are separated longitudinally after being cut by the knife, substantially as described.

4. In a match-machine, a splint-separating mechanism consisting of diverging guides formed of spring-arms, substantially as described.

5. In a match-machine, a splint-separating mechanism consisting of diverging guides formed of fixed and spring arms, between which the splints pass after leaving the knife or divider, substantially as described.

6. In a match-machine, a splint-separating mechanism consisting of diverging guides formed of opposing arms, each provided with knife-edges, substantially as described.

7. In a match-machine, a splint-separating mechanism consisting of diverging guides provided with spring-arms of different lengths, substantially as described.

8. In a match-machine, a splint-separating mechanism consisting of diverging guides formed of fixed and spring arms having knife-edges, the spring-arms being of different lengths, substantially as described.

9. In a match-machine, the combination, with the main carrier-chain, a delivery mechanism located at a distance therefrom, and a knife for cutting the splints carried by the said main chain, of the carrier-chains S and U, arranged upon each side of the main chain and extending to the said delivery mechanism, whereby the cut splints are taken from the main carrier-chain and conveyed to the point of delivery, and supporting-plates L beneath the said chains S and U, substantially as described.

10. The combination, in a match-machine, of a main carrier-chain, a knife inserted between the carrier-chain links to cut the match-splints, diverging arms arranged in the line of travel of the said carrier-chain and adapted to separate the splints longitudinally after they are cut, and the carrier-chains S and U, arranged on each side of the said main chain and extending to a point of delivery somewhat removed from the main chain, whereby the cut and separated splints are taken from the main carrier-chain and deposited at said point of delivery, substantially as described.

11. In a match-machine, the combination, with the carrier-chains and a depositing or dropping mechanism for directing the match-splints from the said chains, of a tray-conveyer traveling horizontally under the said dropping mechanism, and trays on said conveyer to receive the splints as they are directed from the carrier-chains, substantially as described.

12. In a match-machine, the combination of a horizontal traveling tray-conveyer, trays upon the said conveyer for receiving and holding the splints, and a vertically-moving agitator adapted to strike

the said conveyer, whereby it is jarred in a direction perpendicular to its line of travel, substantially as described.

13. In a match-machine, the combination of a tray-conveyer and an agitator provided with arms arranged to impart blows to the conveyer in alternately-opposite directions.

14. In a match-machine, the combination, with a horizontal tray conveyer and spring-arms attached to a fixed portion of the machine, of a vertically-moving agitator provided with arms arranged to engage the spring-arms and to impart blows in alternate directions to the conveyer.

15. In a match-machine, the combination, with a depositing mechanism, of a wedge-shaped block acting to separate the ends of the splints at the point of deposit and slotted on the under side to guide the match-receiving trays, substantially as described.

16. In a match-machine, the combination, with an agitator and tray-conveyer engaged thereby, of a slotted block sustained by a spring-arm and arranged to be engaged by the agitator and receive the edges of the trays, substantially as described.

17. The combination of the match carrying and dropping mechanism, the slotted guide B', the horizontally-traveling conveyer, and the match-trays carried by the said conveyer and adapted to receive the matches as they come from the dropping mechanism, the said trays being provided with vertically-extending side walls which enter the slotted guide B', substantially as described.

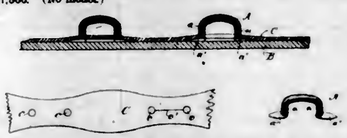
18. The combination of the match carrying and dropping mechanism, the horizontally-traveling conveyer beneath the said dropping mechanism, an agitator adapted to jar the said conveyer, and trays upon the said conveyer adapted to receive the matches from the dropping mechanism, the said trays being provided with lateral division-walls to prevent the matches assuming a horizontal position in the trays when jarred by the agitator, substantially as described.

19. In a match-machine, the combination, with a depositing mechanism, a slotted guide, B', and a tray-conveyer, of a tray for receiving the matches, provided with side walls higher than the end walls and having lateral partitions, substantially as and for the purpose described.

20. In a match-machine, the combination, with a tray conveyer and agitator, of a driving-gear for the same, consisting of a train of gear, members of which are mounted on a lever the fulcrum of which is the axis of another member of the gear, and a shaft driven by the gear and mounted upon pivotal bearings controlled by the said lever, substantially as described.

21. The combination, in a match-machine, of a shaft, F', journaled in a movable bearing, B^3, and a link, Y', provided with a longitudinal and an inclined slot and movable longitudinally, the longitudinal slot guiding the link on a fixed part of the machine, and the inclined slot engaging a pin on the movable bearing B^3, to move it, substantially as described.

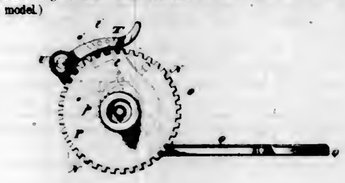
377,944. **OVERDRAW CHECK-LOOP FOR BRIDLES.** NAPOLEON B. LE BLOND, Minneapolis, Minn. Filed May 11, 1887. Serial No. 237,800. (No model.)



Claim.—1. As an improved article of manufacture, the overdraw-loop A, having the legs *a a*, and the flattened metal bases *a' a'* projecting from said legs in opposite directions, leaving a free space between the legs, substantially as described.

2. The combination, with the crown-piece of a bridle, of the leather layer or strip C, having the holes *c c*, and the loop A, having the legs *a a* and the separate flattened tapering metal bases *a' a'*, said leather layer being secured to the crown-piece, and said loop having its legs projecting through the holes *c c* and its bases between the layer C and the crown-piece, substantially as described

377,945. **PINION-CUTTING MACHINE.** FRANK LEMAR, Elgin, Ill. Filed Aug. 5, 1886. Renewed Aug. 18, 1887. Serial No. 247,287. (No model.)



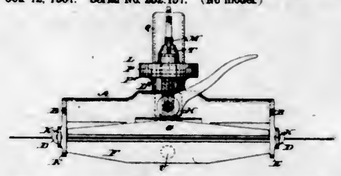
377,945.



Claim.—1. In combination with the reciprocating slide of a gear-cutter, and with a chuck-spindle which is journaled thereon and adapted to be arranged in a line with or at an angle to the line of motion of said slide, a bar that is pivoted at one end to the latter, and is provided with a longitudinal cam-groove which engages with a stationary stud, and by the reciprocation of said slide is given a lateral movement of its rear end, together with a curved bar that is pivoted at one end to the index-operating pawl-lever, and at its opposite end is connected with the outer end of said cam-bar, substantially as and for the purpose specified.

2. In combination with the cam-bar and with the pawl-lever which moves in a plane at an angle to the plane of motion of said cam-bar, a jointed connecting-bar that extends between and is connected with said parts, and is adapted to communicate the motion of said cam-bar to said pawl-lever, substantially as and for the purpose shown.

377,946. **SAW-CLAMP.** CHARLES F. LEOPOLD, Philadelphia, Pa., assignor to the American Manufacturing Company, same place. Filed Oct. 12, 1887. Serial No. 252,157. (No model.)



Claim.—1. A saw-clamp having a frame consisting of the central piece, C, the side pieces or uprights, B, the bosses D, and the depending pieces E, forming the space *a*, with the side pieces, B, and a stationary jaw, F, connected to said depending pieces E, said parts being combined substantially as described.

2. In a saw-clamp, a frame with central piece, C, and uprights B, the depending pieces E, the stationary jaw F, secured to said depending pieces E, and a movable jaw, G, pivoted to central piece, C, and means, substantially as described, for operating said movable jaw, said parts being combined substantially as and for the purpose set forth.

3. In a saw-clamp, a frame with central piece, C, uprights B, bosses D, with screws K, the depending pieces E, forming space *a* between them and the sides B, the overhanging stationary jaw F, and the movable jaw G, having supporting-piece G', pivoted to piece C and mechanism, substantially as described, for operating said movable jaw, said parts being combined substantially as and for the purpose set forth.

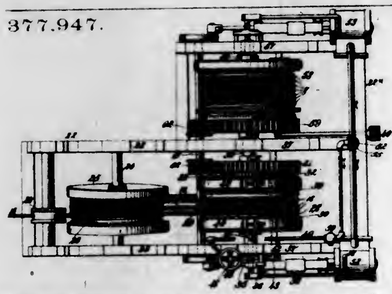
4. In a saw-clamp, the frame A, having a stationary and a movable jaw connected thereto, and having the knuckle-joint L' on the central piece, C, thereof, in combination with the knuckle-joint L^3, the clamping-arm Q, with a boss and screw S, the eyebolt M, fitted on a pin of the knuckle L', and the nut T, said parts being combined substantially as and for the purpose set forth.

5. In a saw-clamp, a frame provided with a stationary and a movable jaw, in combination with the sleeve U, secured to said stationary jaw, the rod T', connected to said sleeve, and the journal W, fitted on said rod and provided with the screw X, said parts being combined substantially as and for the purpose set forth.

377,947. **HOISTING AND CONVEYING MACHINE.** MILO W. LOCKE, Wilmington, Del. Filed Aug. 16, 1887. Serial No. 247,093. (No model.)

Claim.—1. The combination, with a cable and with a carriage running thereon, of a rope having its ends connected to said carriage, a guiding or forward drum and a rope-drum, around both of which the rope is carried in successive coils, a brake-band for the rope-drum, a hoisting-drum of equal diameter on the same shaft therewith, and a

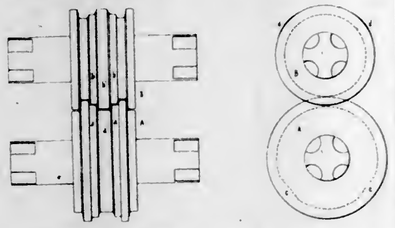
377,947.



tackle-block connected to the carriage by the hoisting-rope, substantially as described.

2. The combination, with a cable and with a carriage running thereon, of a grooved guide-drum having an inclined axis, a grooved rope-drum in rear thereof, a conveyer-rope passing over pulleys on the cable-support and around both drums and having its ends connected to the carriage, a hoisting-drum on the same shaft with the rope-drum, means for clutching and unclutching either drum separately, a brake-band for the rope-drum, and a tackle-block connected to the carriage by a hoisting-rope carried by the hoisting-drum, substantially as described.

377,948. **FINISHING-ROLLS FOR THE MANUFACTURE OF IRON RAILWAY-SLEEPERS.** ADOLF MÄRKLIN, Hoerde, Prussia, Germany, assignor to Hoerder Bergwerks und Hüttenverein, same place. Filed Dec. 1, 1887. Serial No. 256,681. (No model.) Patented in England May 30, 1884, No. 8,428; in Belgium June 3, 1884, No. 65,362; in Luxemburg June 4, 1884, No. 408, and in France Sept. 20, 1884, No. 164,401.



Claim.—1. In a rolling-mill, the combination together of the roll A, having the cylindrical parts *a a* and the groove *a'*, with recesses *c c*, and the roll B, having the cylindrical parts *b b* and the projecting part *b'*, substantially as and for the purpose described.

2. In a rolling-mill, the combination together of the roll A, having the cylindrical parts *a a* and the groove *a'*, with recesses *c c*, and the roll B, having the cylindrical parts *b b* and the projecting part *b'*, with the elevations *d d*, corresponding to the recesses *c c*, substantially as and for the purpose specified.

377,949. **GAGE-PIN FOR PRINTING-PRESSES.** EDWARD L. MEGILL, Brooklyn, N. Y. Filed June 23, 1884. Serial No. 136,731. (No model.)



Claim.—A gage-pin consisting of the prong A, crook B, gage C, and drop-curve D, the latter retaining the lower corner of the upright gage below the platen-paper, substantially as herein described.

377,950. **GAGE-PIN FOR PRINTING-PRESSES.** EDWARD L. MEGILL, Brooklyn, N. Y. Filed Apr. 27, 1885. Serial No. 163,506. (No model.)



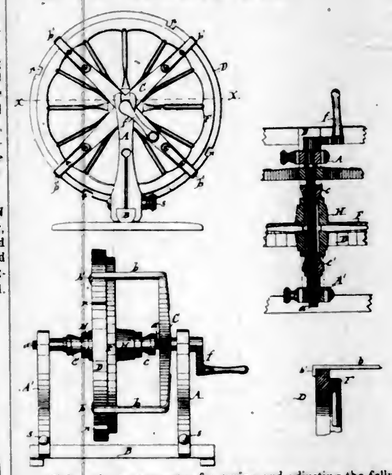
Claim.—A gage-pin, as herein described, made of a single piece of wire, consisting of the prong A, gage C, loop E, and stem B, the latter projecting forward of the gage, substantially as set forth.

377,951. **GAGE-PIN FOR PRINTING-PRESSES.** EDWARD L. MEGILL, Brooklyn, N. Y. Filed Apr. 24, 1885. Renewed Jan. 26, 1887. Again renewed Aug. 6, 1887. Serial No. 246,283. (No model.)



Claim.—A gage-pin made of a single piece of wire, the central or nearly central portion of which is bent in the form of an upright gage, B, of one end is formed the prong A and of the other end a loop to overlap said prong, substantially as herein described.

377,952. **MEANS FOR REPAIRING VEHICLE-WHEELS.** LEWIS MILLER, JOHN ERSKINE, and MAURICE L. WRIGHT, Mexico, N. Y. Filed Mar. 14, 1887. Serial No. 230,810. (No model.)



Claim.—1. An apparatus for truing and adjusting the felly of a wheel to its requisite plane, consisting of a mandrel adapted to pass through the eye of the hub of the wheel and provided with screw-threads, an annulus adapted to bear against the side of the felly, and a spider mounted on the screw-threaded portion of the aforesaid mandrel and provided with corresponding screw-threads and sustained in a plane at right angles to the mandrel, and bearings on said spider pressing against the side of the felly, substantially as and for the purpose set forth.

2. An apparatus for truing and adjusting the felly of a wheel to its requisite plane, consisting of a screw-threaded mandrel adapted to pass freely through the eye of the hub of the wheel, cones mounted on the mandrel and disposed with their apices toward each other to enter the ends of the hub-eye and thereby center the same on the mandrel, an annulus adapted to bear against the side of the felly, a spider mounted on the mandrel at the opposite side of the wheel and provided with corresponding screw-threads, and arms extended from the spider and adapted to engage the annulus and draw the same toward the wheel, substantially as described and shown.

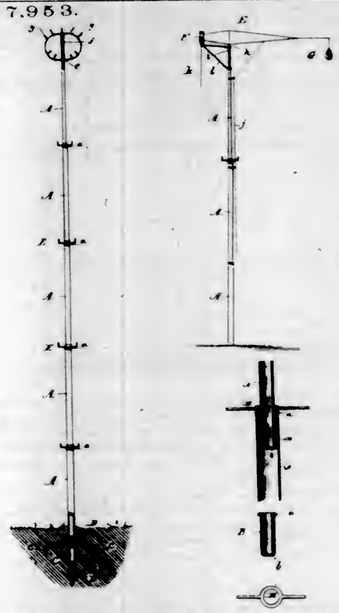
3. In combination with the wheel-supporting mandrel, the base B, having parallel undercut side edges, the standard A, secured to one end of said base, the standard A', mounted movably on the opposite end of the base and having its lower end bifurcated and embracing the side edges of the base, and the clamping-screw *s*, for fastening the standard A' on the base, substantially as described and shown.

377,953. **TUBULAR METALLIC POLE FOR TELEGRAPHIC AND OTHER USES.** ARNON MILLS, U. S. Army, assignor of one-half to Nelson A. Miles, U. S. Army. Filed Mar. 14, 1887. Serial No. 230,938. (No model.)

Claim.—1. The combination, with the tubular metallic pole-sections, of the internally and externally flanged sleeve B, interposed between the male and female parts of the joints connecting said sections, the arrangement being such that the joint is composed of the three concentric thicknesses of metal of the two sections and the intermediate joint-sleeve, substantially as and for the purposes hereinbefore set forth.

2. In combination with the sections and the interposed sleeve B,

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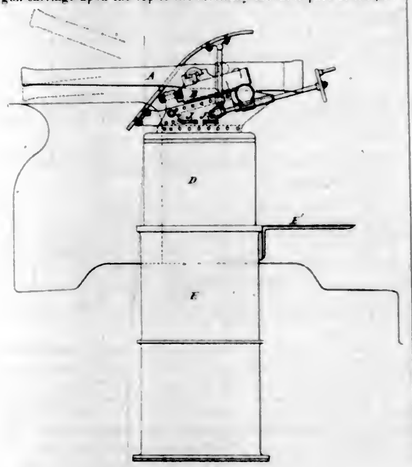


the cross-tree or saddle having a collar which fits the upper section and rests upon the head of the sleeve, as and for the purposes hereinbefore set forth.

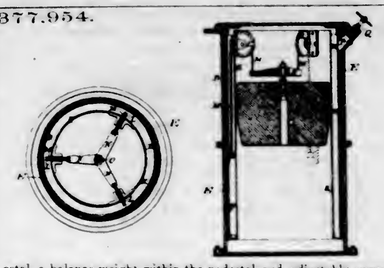
377,954. **OPERATING ORDNANCE.** ANDREW NOBLE, Newcastle-upon-Tyne, England, assignor to W. G. Armstrong, Mitchell & Co., (Limited,) same place. Filed May 31, 1887. Serial No. 239,864. (No model.)

Claim.—1. The combination of a telescopic pedestal, a gun supported by its carriage and recoiling along a slide inclined upward from front to rear upon the top of the vertically-movable part of the pedestal, and a balance-weight within the pedestal and adjustably connected with the movable part thereof, whereby said part and weight move simultaneously in opposite directions and the gun is adapted to be automatically lowered upon firing and to be readily raised, substantially as set forth.

2. In a gun-mounting, the combination of a telescopic pedestal, a gun-carriage upon the top of the vertically-movable part of the pedestal, a balance-weight within the pedestal and adjustably connected with the movable part thereof, and a friction-block adjustably supported by the fixed part of the pedestal and acting on the movable part thereof, substantially as and for the purpose set forth.

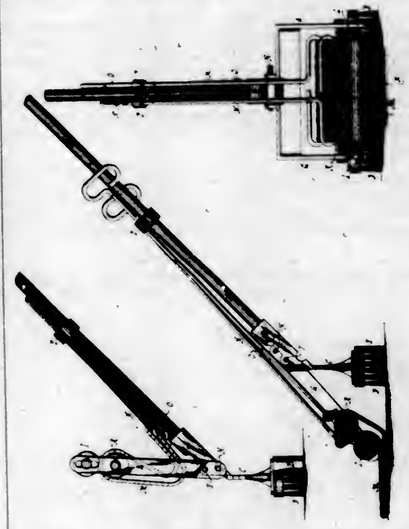


377,954.



3. The combination of a telescopic pedestal, a gun supported by its carriage and recoiling along a slide inclined upward from front to rear upon the top of the vertically-movable part of the pedestal, a balance-weight within the pedestal, ropes or chains connected at their opposite ends with the weight and the movable part of the pedestal, and pulleys supported within the pedestal above the weight, over which pulleys the ropes or chains pass, whereby the gun is adapted to be automatically lowered upon firing and to be readily raised, substantially as set forth.

377,955. **COMBINED MOP AND BRUSH.** ANTHONY W. O'BLENIS, River Edge, N. J. Filed Apr. 7, 1887. Serial No. 234,031. (No model.)

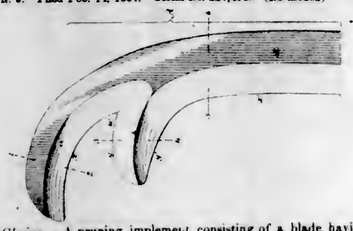


Claim.—1. The combination, in a cleaning or scouring device, of a handle, A, having a head, B, a brush, D, connected with the head, and a mop-carrying frame, G, pivoted to the said head to swing in a vertical plane on its pivot for raising the mop from contact with the surface to be cleaned and permitting the brush to act alone, substantially as described.

2. The combination, in a cleaning or scouring device, of a handle, A, having a head, B, a brush, D, connected with the head, a mop-carrying frame, G, pivoted to the said head to swing in a vertical plane on its pivot for raising the mop from contact with the surface to be cleaned, and a locking device for holding the mop-carrying frame in its lowered and elevated positions, substantially as described.

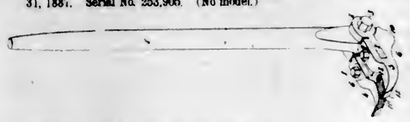
3. The combination of the handle A, a frame, G, connected with the handle and provided with rollers I and K, a mop, M, passing about the rollers, guides on the handle, and rods N O, connected with the mop and adapted to reciprocate lengthwise in the guides on the handle, substantially as described.

377,956. **PRUNING IMPLEMENT.** JOSEPH N. PARKER, Vineland, N. J. Filed Feb. 14, 1887. Serial No. 227,498. (No model.)



Claim.—A pruning implement consisting of a blade having a shank with a hook at the outer end, and a finger projecting from the front of the blade below the hook and in substantially the same plane as the latter, said blade forming, with the hook, a tapering V-shaped throat, and the inner edge of the hook and outer edge of the finger being sharpened so as to form cutting-edges, all substantially as specified.

377,957. **CLAW-BAR.** WILLIAM S. PATER, Kingman, Kans., assignor of one-third to Arista W. Berkey, Kansas City, Mo. Filed Oct. 31, 1887. Serial No. 253,905. (No model.)

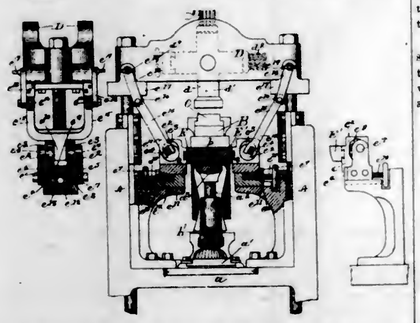


Claim.—1. In a claw-bar, the combination of a lever having a cam and a projection beneath the cam, bracket pivoted to the lever, and jaws attached to the bracket, between which jaws the cam is adapted to engage, substantially as and for the purpose set forth.

2. In a claw-bar, the combination of a lever provided with a cam, a projection beneath the cam, bracket secured to the lever, corrugated jaws secured to the bracket, between which the cam is adapted to engage, and a spring interposed between the jaws, substantially as and for the purpose set forth.

3. The combination, in a claw-bar, of the lever 1, bracket 2, attached thereto, corrugated jaws 4 5, pivoted to the bracket, having heel-shaped projections 10, spring 13, interposed between the jaws, and cam 15 and projection 16 on the lever, said cam being adapted to engage between said jaws, substantially as and for the purpose set forth.

377,958. **HEEL-ATTACHING MACHINE.** FREEBORN F. RAYMOND, 2d, Newton, Mass. Filed Nov. 12, 1887. Serial No. 254,946. (No model.)



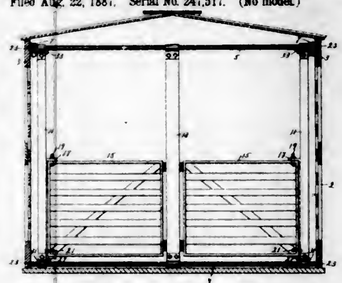
Claim.—1. The combination of the dies E E', the slide-blocks and eccentrics, and levers connected with the eccentrics for rotating them, substantially as described.

2. The combination, with the heel-attaching devices, of dies E E', the die-holding blocks *c*, the eccentrics *c' c³*, the blocks *c⁴*, the levers c^{16}, and the reciprocating cross-head D, substantially as described.

3. The combination, with the heel-attaching devices, of the dies E E', the die-holding blocks *c c'*, the blocks *c⁴*, eccentrics *c³*, the levers c^{16}, having rolls c^{15}, and the links c^{18}, and reciprocating cross-head D, having the bearing-blocks c^{17}, substantially as described.

4. The combination of the heel-attaching devices, the heel-side-compressing dies E E', their slide-blocks *c*, the blocks *c⁴*, and means for adjusting them horizontally, the eccentrics *c³*, levers c^{16}, and reciprocating cross-head, substantially as described.

377,959. **STOCK-CAR.** ROYAL H. RIPLEY, Minneapolis, Minn. Filed Aug. 22, 1887. Serial No. 247,517. (No model.)



Claim.—1. The combination, with a suitable car, of a partition pivotally secured at its upper end upon a suitable support and adjustable longitudinally of the car, locking means for securing said partition in a vertical position or in a substantially horizontal position in the top of the car, and a suitable gate or gates wholly supported and secured upon said partition.

2. The combination, with a suitable car, of an adjustable partition adapted to be moved lengthwise of the car and pivotally secured at its upper end upon a suitable support and provided with a suitable gate or gates wholly supported and secured upon said partition.

3. The combination, with a suitable car, of horizontal supporting bars or rails near the top of the car, a transverse bar supported on said bars and adjustable thereon lengthwise of the car, and a partition secured upon said bar and provided with a suitable gate or gates wholly supported and secured upon said partition.

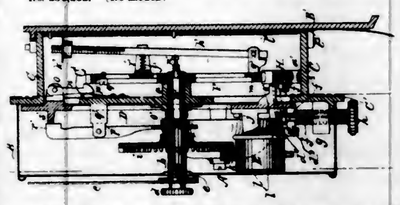
4. The combination, with a suitable car, of the horizontal supporting-bars 3, arranged in the upper part of the car, the transverse partition provided with the lower hollow bar, 9, and the upper hollow bar, 5, supported in said bars 3, and forming a pivot for said partition, and the bolts 23, arranged in said bars 9 and 15, and adapted to engage sockets in the walls of the car at points near the top and bottom of the partition, substantially as described.

5. The combination, with a suitable car, of a partition hinged at its upper end upon a suitable support and provided with hinged gates adapted to open toward the door of the car, substantially as described.

6. The combination, with a suitable car, of the partition having the hollow bars 5 and 9 and the posts 11, the sliding bolts 23, arranged in the ends of said hollow bars and provided with the handles 27, and the rings on said posts 11, adapted to engage said handles, substantially as described.

7. The combination, with a suitable car, of a partition pivotally supported at its upper end and adapted to be moved lengthwise of the car, and provided with a hinged gate or gates, and a securing device for securing said gates when closed to said partition, substantially as described.

377,960. **FARE REGISTER AND RECORDER.** REUBEN M. ROSE, Norwalk, Conn. Filed June 24, 1885. Renewed Sept. 20, 1887. Serial No. 250,232. (No model.)



Claim.—1. In a fare register and recorder, the combination, with the wheel F, having the rim *m* and beveled surface *p*, of a movable catch, *n*, arranged to engage the rim *m*, as herein specified.

2. The combination, in a fare register and recorder, of the sliding frame D, spring-acted catch *n*, carried thereby, the wheel F, having the rim *m* and inclined surface *p*, and the stop or screw *q*, inserted in the wheel at the side of the beveled surface, as herein specified

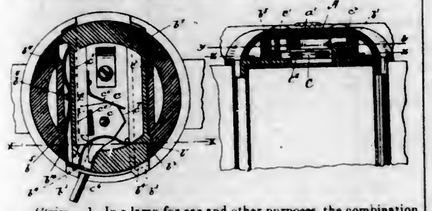
3. The combination of the casing B, provided with the dial A, the casing or box C, hinged to the casing B, the plate C', provided with the sleeve *a*, the hollow spindle *b*, journaled in said sleeve and carrying the index *c*, the rod *m'*, with the pin *o'* passing through its inner end and the screw *n'* engaged in an opening in its outer end, the pivoted rod *K'*, the toothed wheel *K'*, engaged on the threaded end thereof, the strip *l'*, secured within the box C, the pivoted lever *p'*, having the ring on its lower end to engage against the pin *o'*, the vertically-moving frame D, having the lug *s'*, and means, substantially as described, to raise and lower said plate.

4. The combination of the hinged casings B and C, the hollow spindle *b*, said spindle carrying the index *c*, the plate C', having the sleeve *a*, in which said spindle is journaled, the rod *m'*, pin *o'*, and screw *n'* with the pivoted rod *k'*, toothed wheel *K'*, strip *l'*, secured within the casing C, the pivoted lever *p'*, frame D, provided with the lug *s'* and screw *f*, passing through an opening in the casing B, engaging in a threaded opening in the lug *g* of the plate C, and having its reduced part f^3 engaged between the lugs d^2 of the frame D, so as to raise and lower said frame, substantially as specified.

5. The combination of the spindle *b*, the plate C', having the sleeve *a*, in which said spindle is journaled, the crown-wheel *i*, rotating with the spindle *b*, the vertically-moving frame D, provided with the lugs d^2, the counter E, the bracket *j*, forming part of the frame D and having the counter E secured to it, the pinion *k*, attached to and actuating said counter and arranged to mesh with said crown-wheel *i*, and the screw *f*, passing through an opening in the casing B, engaging a threaded opening in the lug *g* of the plate C', and having the reduced part f^3 held between the lugs d^2 of the frame D, substantially as specified.

6. The combination of the slip *l'*, secured within the box C and having a portion, *m'''*, passed through the slot *l''* in said box and arranged and adapted to receive the signature and notes of the conductor, with the spindle *b*, pin *o'*, pivoted lever *p'*, lug *s'* on the vertically-moving plate D, screw *n'*, pivoted rod *k'*, spring *j'*, and toothed wheel *k'*, all constructed and arranged substantially as and for the purpose specified.

377,961. **CAR-LAMP.** CHARLES W. SHERBURNE and FREEMAN A. TABER, Somerville, assignors to the Star Brass Manufacturing Company, Boston, Mass. Filed June 4, 1887. Serial No. 240,206. (No model.)



Claim.—1. In a lamp for car and other purposes, the combination of the lamp-holder A and its brackets or supporting-arms *a*, said lamp-holder A having a horizontal recessed guideway, *a'*, formed across the surface thereof and open at both ends, with the lamp-body B, having the horizontal slide-section *b*, which fits the said guideway, and a latch or lock for securing the lamp-body to the lamp-holder, substantially as described.

2. In a lamp for cars and other purposes, a lamp-holder having a recessed guideway, in combination with a lamp-body having a slide adapted to fit the guideway, a projection upon the slide which enters a recess in the guideway, and a spring on the lamp-body adapted to press against the holder to maintain the projection in the recess, as and for the purposes described.

3. In a lamp for cars and other purposes, the combination of the lamp-holder having a cross-recess, *a'*, the lamp-body B, having a slide-section to enter the guideway, and the spring D, interposed between the lamp-body and the lamp-holder, to force the lamp-body downward therefrom, as and for the purposes described.

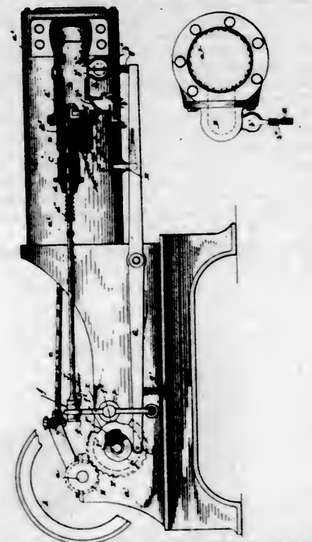
4. In a lamp for cars and other purposes, the combination of a lamp-holder having a cross-guide, *a'*, a lamp-body, *b*, having the slide-section to fit the guideway *a'*, and the springs $D' D^2$, arranged to bear against the surface of the lamp-body, as and for the purposes described.

5. In a lamp for cars and other purposes, the combination of the lamp-holder having a cross-guideway, *a'*, in its under surface, the lamp-body having a slide-section to enter the guideway, a latching device for locking the slide in the guideway, and a spring or springs for exerting an outward pressure upon the lamp-body, as and for the purposes specified.

6. The combination of the lamp-holder A, its recessed guideway *a'*, having a hole or cavity, b^3, upon one face, a lamp-body having a slide-section to loosely fit the guideway, and having a projection from one surface thereof adapted to enter said hole or cavity, a spring interposed between one side of the guideway and the slide, to act against the slide and maintain the projection in said hole or cavity, and a cam-lock, C, pivoted to the lamp-body, having a handle, c^4, a spring, c^5, and adapted to bear or act against the surface of the lamp-holder in locking the body to the holder, substantially as described.

7. The combination of a lamp-holder having a horizontal recessed guideway, a hole or cavity formed in one of the walls of said guideway, a lamp-body having a slide-section which loosely fits said guideway, a projection formed upon one side of the slide-section and adapted to enter the hole or cavity in the wall of the guideway, and a lock attached to the lamp-body, one section of which bears or is adapted to be brought in contact with a surface of the lamp-holder, to force and hold the said projection upon the slide-section in said hole or cavity, as and for the purposes described.

377,962. **GAS-ENGINE.** REUBEN F. SMITH, Pleasant Hill, Ala. Filed Sept. 19, 1887. Serial No. 250,103. (No model.)



Claim.—1. In a gas-engine, the combination, with the gear-wheels, the cylinder, and ignition-chamber, together with the inlet and exhaust valves, of the horizontally-disposed lever having a roller secured to one end in engagement with a cam of one of said gear-wheels, the coil-spring, and the bell-crank lever, all arranged substantially as shown and described.

2. In a gas-engine, the combination, with the gear-wheels, the cylinder, the ignition-chamber, and the insulated electrode, of the vertical lever carrying the roller engaging a cam on the inner periphery of one of said gear-wheels, the connecting-rod, and the spring-held rod having a bent end normally in contact with the flanged end of said electrode, substantially as shown and described.

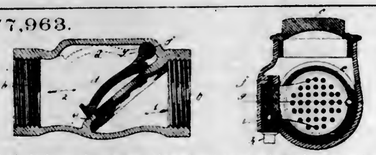
3. In a gas-engine, the combination of the gear-wheels, the vertical lever, the spring-held rod, the connecting-rod having a slot formed in one end thereof, provided with an elastic cushion, and the horizontally-disposed lever having a spring-bearing and engaging a cam of one of said gear-wheels, as and for the purpose stated.

4. In a gas-engine, the combination, with the piston, its cylinder, the crank-shaft, and the pinion or gear-wheel, of the large pinion or gear-wheel, the outer flange having a cam and a depression, the inner flange provided with a cam, the ignition-chamber, the electrode, the spring-held inlet and exhaust valves, the horizontally-disposed lever carrying a roller, the bell-crank lever having one end secured to said former lever, the vertical lever having a roller, the connecting-rod, and the spring-held rod having a bent inner end, all constructed and arranged substantially as shown and described.

377,963. **CHECK-VALVE.** SIDNEY SMITH, Cambridge, Mass. Filed Apr. 7, 1887. Serial No. 233,960. (No model.)

Claim.—1. In a check-valve, the combination of the casing having a valve-seat arranged in a substantially-vertical plane diagonally across the way or passage through the casing, a fixed substantially-

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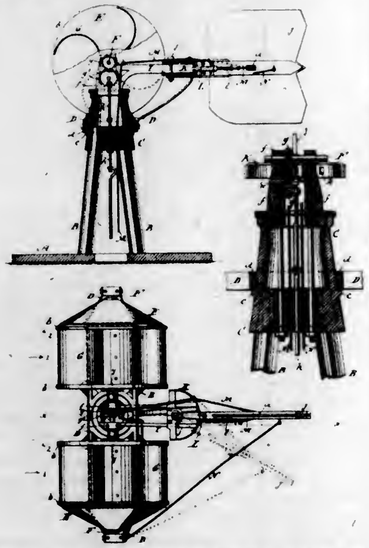
vertical pintle or pivot at one side of said seat, and a valve formed to cover said seat, and having a hinge member loosely surrounding said pintle, so as to swing around the same and to rock or tip slightly thereon, substantially as described.

2. The casing provided with the valve-seat *e*, extending in a practically-vertical plane diagonally across the water-way, and having a substantially-vertical pintle, *f*, in combination with the valve having the hinge member perforated with a hole centrally contracted to closely fit the pintle and enlarged at its ends, whereby the valve is enabled to rock slightly on the vertical pintle, as set forth.

3. The casing provided with the valve-seat *e*, in combination with the valve having the hinge member perforated with a hole centrally contracted and enlarged at its ends, the fixed substantially-vertical pintle in said hole, and formed to closely fit the contracted portion thereof, and the rounded boss or screw end on which the hinge member rests, as set forth.

4. The combination of the valve-casing, the valve-seat arranged in a substantially-vertical plane and extending diagonally across the way or passage through the casing, a vertical pintle at one side of said valve-seat, a valve pivoted on said pintle and having its hinge loosely surrounding the same, so as to permit of a slight rocking movement as well as the swinging movement thereon, and a projection on said valve in position to prevent the valve from swinging against the inner surface of the casing, as set forth.

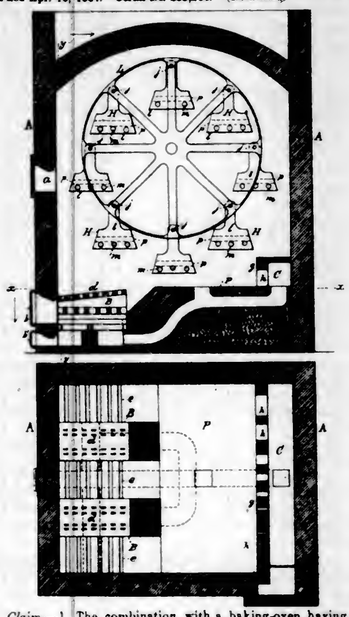
377,964. WINDMILL. MOSES STEINER, Bluffton, Ohio. Filed Sept. 3, 1887. Serial No. 249,147. (No model.)



Claim.—1. The combination, with a swiveled wind-wheel, of a pivoted vane, a locking-bolt, substantially as described, adapted to secure said vane at varying angles to the wheel, an operating chain or connection secured to said vane on one side and acting directly thereon to vary the angle with the wind, and an operating chain or connection on the other side of the vane secured to said locking-bolt, substantially as set forth.

2. The combination, with a swiveled wind-wheel, of a vane-support, I, and vane J, a segment, K, having holes *k*, a spring-actuated locking device, L, a chain or connection, M, attached thereto and carried to the tower at an angle with one side of the vane, and the connection N, attached to said vane and carried to the tower at an angle with the opposite side of said vane, substantially as described.

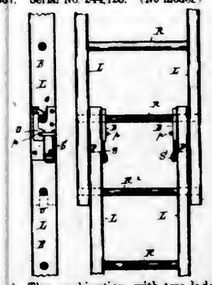
377,965. REEL-OVEN. CHARLES STEWART, Philadelphia, Pa. Filed Apr. 18, 1887. Serial No. 235,261. (No model.)



Claim.—1. The combination, with a baking-oven having a fire-pot situated in the lower front part of the oven-space and an exit-flue leading from a remote portion of oven-space, of an arched perforated cover for said fire-pot, said cover being inclined from the front of the fire-pot toward the exit-flue, as herein shown and described.

2. A baking-oven having a fire-pot in the front thereof communicating with the interior of the oven-space and a wall in the rear of the oven between the oven-space and the outlet-flue, said wall having graduated openings, the larger openings being farther from the outlet-flue than the smaller openings.

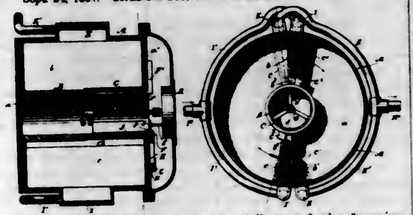
377,968. LADDER. JOHN S. TILLEY, West Troy, N. Y. Filed July 13, 1887. Serial No. 244,125. (No model.)



Claim.—1. The combination, with two ladder-lengths that are each constructed with the slots U, arranged in the ends of their sides and adapted to lap past each other so that the said slots in one end of the sides of one of the lengths will grasp the end round of the other length, and the slots in the sides of the other length will grasp the subtending ends of the round of the other length, substantially as described, of the pivoted latch D, made with the spring S, and adapted to grasp the end round of one of the ladder-lengths, substantially as and for the purposes set forth.

2. The combination, with two ladder-lengths that are each made with slots U in the ends of their sides, of the brace B^3, having the sides $S' S^3$, and the connecting-rods $N' N^3$, adapted to connect said ladder-lengths at their ends, substantially in the manner as and for the purposes set forth.

377,967. GAS-METER. FORREST M. TOWL, Brooklyn, N. Y. Filed Sept. 24, 1887. Serial No. 250,607. (No model.)



Claim.—1. The combination, substantially as set forth, of a casing, the intermittently-actuated cylinders arranged therein, wings on opposite sides of each cylinder, inlet and outlet ports elongated in a direction parallel with the outer edges of the wings, arranged side by side in the opposite sides of the casing, and locking mechanism by which the cylinders are alternately locked with the wings between the ports, for the purpose described.

2. The combination of the casing, the hollow cylinders arranged end to end and having their bearings on each other, the wings carried by the cylinders, the ports, the partition, the locking mechanism mounted on the partition, and the locking-arms carried by the cylinders.

3. The combination of the casing having inlet and outlet ports on opposite sides thereof, the cylinders arranged therein, the wings on the opposite sides of each cylinder, and the locking mechanism arranged within the casing.

4. The combination of the casing having ports therein, the cylinders, their wings, the locking-arms, and locking devices arranged within the casing, which lock the wings between the ports and automatically act on the arms to move the wings respectively past the outlet and inlet ports, for the purpose described.

5. The combination, with the casing having suitable ports, the cylinders, wings, and locking-arms, of spring-acting locking devices having a pivoted spring-catch, G, with an inclined face, *g*, for acting on the locking-arms, substantially as set forth.

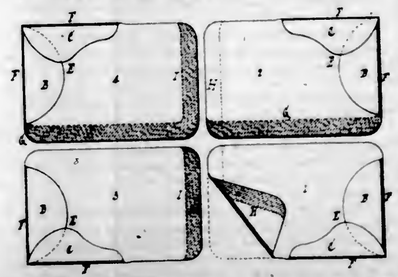
6. The combination of the casing having suitable ports, the hollow cylinders and wings thereon, the partition in which the open end of one of the hollow cylinders has its bearing, the locking-arms, and the locking mechanism and registering mechanism arranged in the compartment between the partition and the cap or cover of the meter.

7. The combination of the casing having suitable ports, the cylinders, the wings thereon, the locking-arms, and the reversely-arranged pivoted spring-acting catches G H.

8. The combination, substantially as set forth, of a casing, the intermittently-actuated cylinders arranged therein, wings carried by the cylinders, inlet and outlet ports in the casing, and locking mechanism arranged within the casing, by means of which the cylinders are alternately locked with the wings between the ports, for the purposes described.

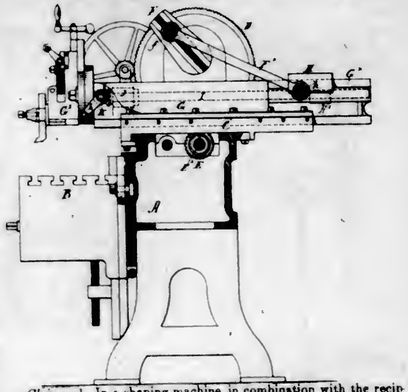
9. The combination of the casing having suitable ports therein, the intermittently-actuated cylinders with wings, the locking mechanism within the casing, the registering mechanism, also located within the casing, and the intermittently-operating connecting mechanism between one of the rotating cylinders and the registering mechanism, whereby the latter is periodically operated, substantially as and for the purpose set forth.

377,968. BOOK-PROTECTOR. PHILIP F. VAN EVEREN, Brooklyn N. Y. Filed Oct. 28, 1886. Serial No. 217,433. (No model.)



Claim.—A book-cover consisting of four separate sections, 1, 2, 3, and 4, each having folding flaps B C meeting at one of the corners of each section, and formed with curved edges adapted to overlap midway between the folding lines, the sections 1 and 2 being each provided on the outside at one end with gummed surfaces H, the section 2 being gummed along one side edge of its inner side at G, the section 3 along one end edge of its inner side at I, and the section 4 along one side edge and one end edge of its inner side at G I, substantially as shown and described.

377,969. SHAPING-MACHINE. WILLIAM H. WARREN, Worcester, Mass. Filed Oct. 1, 1887. Serial No. 251,211. (No model.)



Claim.—1. In a shaping-machine, in combination with the reciprocating slide-bar carrying the tool-supporting head and the operating crank and connecting-rod by which movement is imparted to said head the connecting-rod pivot adjustable in its connection with said slide-bar, and an adjusting shaft and handle engaging therewith for effecting adjustment, whereby the position of the tool-carrying head can be varied in relation to the operating-connections while the machine is in motion, substantially as and for the purpose set forth.

2. In a shaping-machine, substantially as described, with the tool-carrying head G', having the reciprocating slide-bar G, provided with a guideway, G^3, of the adjustable connection-block H, carrying the connecting-rod pivot mounted on said guideway, a screw-shaft, I, engaging a threaded part attached to said connection-block, the transverse shaft K, connecting-gearing *i*, and hand-crank L, for the purposes set forth.

3. In a shaping-machine, the combination, substantially as described, of the main operating-crank F, carrying the adjustable wrist-pin *f*, the connecting-rod F', the slide-bar G, carrying the tool-supporting head G', and provided with a guideway, G^3, the connection-block H, carrying the connecting-rod pivot *h*, adjustable on said guideway, the shaft I, confined in bearing J on said slide-bar and screw-threaded to said connection-block, the transverse shaft K, the gears *i*, and hand-crank L, for the purposes set forth.

377,970. ARTIFICIAL TOOTH. THOMAS S. WATERS, Baltimore, Md. Filed Sept. 24, 1887. Serial No. 250,605. (No model.)



Claim.—1. A detachable tooth-crown having a spring soldered thereto, and adapted to hold its place on the root by the tension of said spring, substantially as specified.

2. The combination, with a tooth-cap, of detachable bridge-work, including a tooth-crown fitted thereto, and having a spring or springs attached to said crown to hold the same to the cap or incasement by frictional tension, substantially as specified.

3. A tooth-crown band having U-shaped springs soldered thereto, substantially as specified.

377,971. BAND-COUPLING. CLINTON A. WEED, Racine, Wis. Filed Aug. 18, 1885. Serial No. 174,774. (No model.)



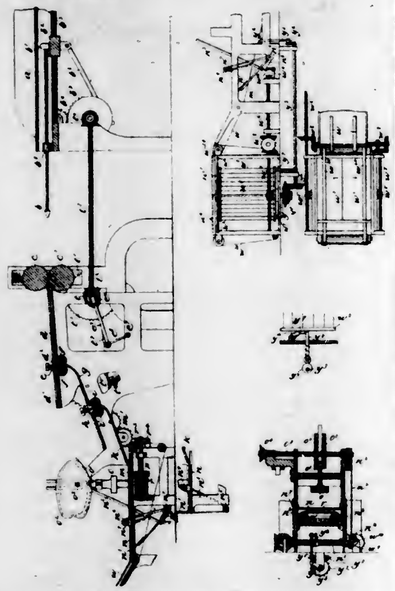
Claim.—1. A band-fastening consisting of an arched plate having an adjustable loop attached thereto, through which the ends of

the bands are adapted to be passed and secured, substantially as described.

2. In a band-fastener, the combination of an arched plate having apertures therein, and a U-shaped binding-loop having its ends placed in said apertures and provided with adjusting-nuts, substantially as described.

3. In a band-fastener, the combination of an arched plate having apertures formed in its upper or crown portion, near the edges thereof, and a U-shaped binding-loop beneath said arch having its ends placed in said apertures and provided with adjusting-nuts, substantially as described.

377,972. BAG TURNING, FOLDING, AND PRINTING MACHINE. JOHN W. WELLS, Manchester, N. H. Filed Jan. 22, 1887. Serial No. 225,067. (No model.)



Claim.—1. The combination of the reciprocating turning devices, and rolls that draw the turned bag therefrom, with the folding-table that receives the bag from said rolls, and folding devices operating upon the bag on said folding-table, and actuating mechanism, substantially as described, common to said turning and folding devices, whereby their operations are timed with relation to one another, substantially as set forth.

2. The combination of the reciprocating turning devices, and rollers that draw the turned bag therefrom, and the folding-table that receives the bag from said rolls, and folding devices operating upon the bag on said folding-table, with a platen or support that receives the folded bag, and a printing device that operates on said folded bag, and actuating mechanism, substantially as described, common to all said devices.

3. The combination of the turning devices having a to-and-fro and lateral movement, and actuating mechanism, substantially as described, that produces the said to-and-fro movement and causes the turning devices to dwell in their forwardmost separate position, with a pair of rolls that receive the turned bag and draw it off from the turning devices while in their forward position, substantially as described.

4. The combination of the turning devices having a to-and-fro and lateral movement, and actuating mechanism, substantially as described, that produces the said to-and-fro movement and causes the turning devices to dwell in their forwardmost separate position, and a pair of rolls that receive the turned bag and draw it off from the turning devices while in their forward position, and a folding-table that receives the bag from said rolls, and folding devices, whereby the bag is removed from said table and folded while another bag is being turned and fed upon the table, substantially as described.

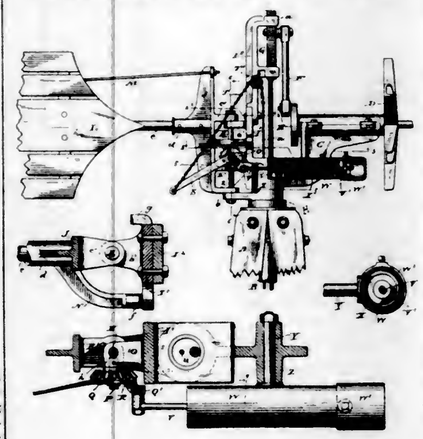
5. The bag-receiver pivoted on a shaft, as described, combined with actuating mechanism, substantially as described, by which the said receiver is intermittingly rotated on its shaft, for the purpose set forth.

6. The combination of the folding devices and movable platen, on which the folded bags are delivered therefrom, with a printing device above and an ink-receptacle below the said platen, tapes for conveying the bags onto and off from the said platen, and a movable stop for arresting the bags on the platen while being printed, and actuating mechanism, substantially as described, common to all the said devices, whereby the operations of folding, printing, and delivering are performed at the proper times, substantially as described.

7. The combination of a movable platen and printing device above and ink-receptacle below the said platen, with a movable ink distributer or apron in said receptacle, and actuating mechanism, substantially as described, therefor, governed by the movement of the platen, as described, whereby the said ink-distributer is in motion while the platen is beneath the printiog device and has its motion cease when the platen is removed from beneath the printing device, and the latter descends upon the ink-distributer, substantially as described.

8. The combination, with a receiver or basket capable of rotation, with a separable two-part support or table above said basket, of actuating mechanism, substantially as described, for the said table and basket, whereby the latter is turned while the table is closed over it, and the table is then separated to drop the article supported on it into the basket, substantially as described.

377,973. WINDMILL. WALTER C. WESTAWAY, Decorah, Iowa, assignor of one-half to Andrew J. Bennett, same place. Filed Sept. 17, 1887. Serial No. 249,928. (No model.)



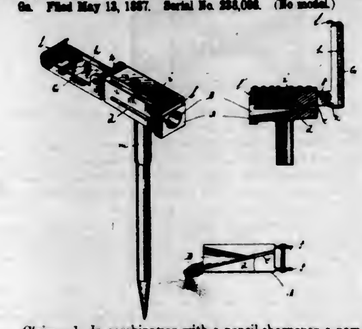
Claim.—1. In a windmill, the combination of a pivotal vane-casting, a cylinder pivoted to the wheel-support, a rod having a loose bearing in one end of the cylinder, a spring inclosed by said cylinder and arranged on the rod to be actuated by a movement of the latter, and mechanism, substantially as described, for connecting said vane-casting and rod, whereby a movement of one will actuate the other, as set forth.

2. In a windmill, the combination of a pivotal vane-casting, a rod, a spring arranged on the wheel-support to be contracted by a movement of the rod, a toothed segment on the vane-casting, a pinion connected to said rod and arranged to mesh with the segment, an arm secured to the pinion, and a pull-out chain or rod united to the arm, substantially as set forth.

3. In a windmill, the combination of a pivotal vane-casting, a rod, a head adjustable on the rod, a spring arranged on the wheel-support to impinge against the head, and mechanism, substantially as described, for connecting said vane-casting and rod, whereby a movement of one will actuate the other, as set forth.

4. In a windmill, the combination of a pivotal vane-casting, a cylinder, a removable head or cap for the cylinder, a rod having a loose bearing in the opposite end of the cylinder, a head adjustable on the rod, a spring inclosed by the cylinder and arranged to impinge against the head, and a mechanism, substantially as described, connecting said vane-casting and rod, whereby a movement of one will actuate the other, substantially as set forth.

377,974. PENCIL-SHARPENER. WESLEY H. WEHLEN, Augusta, Ga. Filed May 13, 1887. Serial No. 238,098. (No model.)



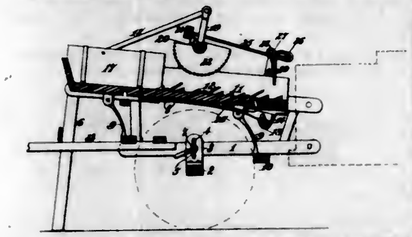
Claim.—1. In combination with a pencil-sharpener, a name-plate or stamp, for the purpose set forth.

2. In combination with a pencil-sharpener having a name-plate or stamp connected therewith, an ink-pad and cover adapted to fit over the stamp when not in use, as specified.

3. In combination with a pencil-sharpener provided with a name-plate or stamp, a pivoted cover adapted to close over the name-plate or stamp, an ink-pad arranged within the cover, and a spring for automatically opening the cover when its catch is released, substantially as described.

4. In combination with a pencil-sharpener, an outwardly-projecting side tube forming an integral part thereof, said tube adapted to receive either end of a pencil, and thus form either a pencil-head or point-protector, substantially as and for the purpose set forth.

377,975. BAND-CUTTER AND FEEDER. OLIVER ANDERSON, Port Totten, Dak. Filed Nov. 2, 1886. Serial No. 217,534. (No model.)



Claim.—1. In a band-cutter and feeder, the combination, with a reciprocating feed-apron, of cutters having a circular edge, a rock-shaft on which said cutters are eccentrically mounted, and means for vibrating said cutters in a direction opposite to the movement of the apron, substantially as described.

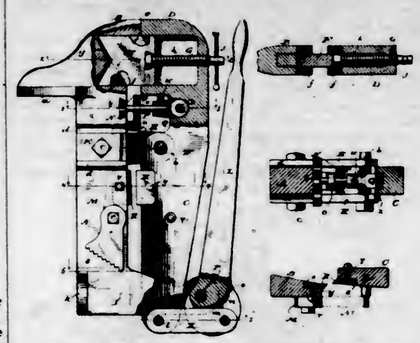
2. The combination, with a frame, a feed-apron, and forwardly-inclined pivotal supports therefor, of a crank-shaft for vibrating said apron, a rock-shaft journaled above the same and provided with an upwardly-extended arm, and cutters rigidly and eccentrically mounted upon said rock-shaft, and a pitman connecting the arm on the rock-shaft with the reciprocating apron, substantially as described.

3. The combination, with a vibrating feed-apron, of a rock-shaft, rods secured thereto and having downwardly-extending feed-regulating points, a cranked shaft supporting the said points, an arm rigidly attached to one end of the cranked shaft, and means for adjusting and locking the arm at any point within its arc of adjustment, substantially as described.

4. The combination, with a reciprocating feed-apron having transverse combs, of semicircular cutters eccentrically mounted above said apron, a rock-shaft carrying the cutters and having an upwardly-projecting arm, and a pitman attached at one end to the upright arm and at the other end to the feed-apron, whereby the reciprocation of the apron gives the cutters movement in a direction opposite to that of the apron, substantially as described.

5. The combination, with the frame and a rock-bar journaled in bearings thereon, of rods having downwardly-extending feed-regulating points, and having one end supported by said rock-bar, a cranked shaft supporting the other ends of the rods, an arm rigid on one end of the cranked shaft, and a rack by which the arm may be held at any point, substantially as described.

377,976. COMPOUND METAL-WORKING MACHINE. R. STILLMAN BABCOCK, Milton, Wis., assignor of one-half to Paul M. Green, same place. Filed July 21, 1887. Serial No. 244,806. (No model.)



Claim.—1. The combination of a stationary standard and a swinging standard pivoted thereto, the said standards being provided at their upper ends with vise-jaws, with an operating-lever having a cam-head pivoted to the base-frame of the machine and united by a link to the lower end of the said swinging lever, substantially as and for the purpose set forth.

2. The combination of a stationary standard, a swinging standard pivoted thereto, an operating-lever having a cam-head pivoted to the base-frame of the machine and linked to the lower part of the swinging standard, and vise-jaws and punching and shearing devices carried by the said standards and adapted to be operated by a movement of the said lever, substantially as and for the purpose set forth.

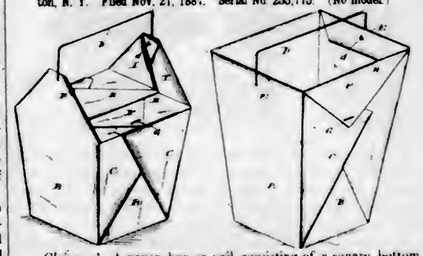
3. The combination of a stationary standard and a swinging standard pivoted thereto, each standard having a head with straight and V-shaped concave-faced vise-jaws formed on their opposing inner surfaces, and an operating-lever pivoted to the base-frame of the machine and linked to the swinging standard, a pin or stop projecting from one of the standards, and a detent with notched face for engagement with said pin or stop, pivoted to the other standard, substantially as set forth.

4. The combination of stationary standard A, having head B, provided with V-shaped concave-faced vise-jaw *f*, centrally cut away, so as to leave an interior convex-faced V-shaped surface, *g*, with swinging standard C, having head D, provided with V-shaped concave-faced vise-jaw *f*, having central groove, *h*, sliding block F, and adjusting-screw G, and operating-lever L, substantially as set forth.

5. The combination of stationary standard A, provided with a transverse groove and perforated block N, adjustable therein, and supporting-block O, bolted to said standard below said groove and having an opening through its upper offset portion, with the swinging standard C, pivoted to standard A and bearing stock Q and punch P, and the operating-lever L, substantially as set forth.

6. The combination of stationary standard A and swinging standard C, pivoted thereto, with the shearing-blades R R, secured by bolts *y y* within recesses *z z* in said standards opposite each other, and the operating-lever L, having a cam-head pivoted to the base-frame of the machine and linked to the swinging standard C, substantially as set forth.

377,977. PAPER BOX OR PAIL. STEWART E. BAKER, Binghamton, N. Y. Filed Nov. 21, 1887. Serial No. 255,775. (No model.)

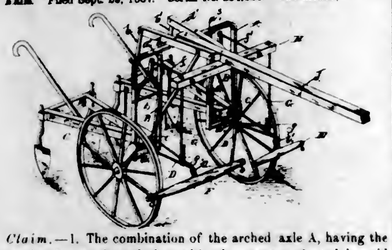


Claim.—1. A paper box or pail consisting of a square bottom, keystone-shaped sides, doubled triangular corner-flaps doubled over the sides, cover portions at the tops of two sides, formed with the tri-

angular upper flaps folded over upon them and folding over the top of the box or pail, and triangular ears for a handle formed by the three-ply triangular flaps of the two other sides, having their side portions doubled in, all constructed of a creased or folded blank, as shown and set forth.

2. A paper box or pail consisting of a square bottom, keystone-shaped sides, doubled triangular corner-flaps doubled over the sides, cover portions at the tops of two sides, formed with the triangular upper flaps folded over and secured by fasteners and folding over the top of the box or pail, triangular ears formed by three-ply triangular flaps at the tops of the two other sides, and a wire bail having its hook-shaped or doubled ends inserted through the said ears, all constructed of a creased or folded blank, as shown and set forth.

377,978. **DRAFT-EQUALIZER.** ALANSON H. BALES, Washington, Kans. Filed Sept. 29, 1887. Serial No. 251,080. (No model.)



Claim.—1. The combination of the arched axle A, having the rectangular frames formed therewith, the eveners pivoted in said frames, the cross-beam H, the hook-rods G D, connected together, said rods D made in V-shaped form, and the beams C, connected to rods D and to the eveners, as shown and described.

2. The combination of the arched bar having depending rectangular frames, the eveners pivoted within the frames and having connections to a cross-beam by means of rods at the top and bottom portions of said eveners, substantially as shown and described.

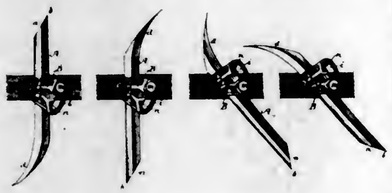
3. The combination, with an arched bar, A, having a depending rectangular frame, and the eveners B B, pivotally connected to said frame and carrying one end of each of the beams C, said beams having V-shaped rods D, of the cross-beam H, having depending rods G, with hook ends *g*, for supporting rods D, and the rods *f f'*, connected to the upper end of the eveners, and also secured to the cross-beam H, as shown and described.

4. The combination, with the arch having rectangular frame, the tongue, and trees, of the evener-frame pivoted in the rectangular frame, the rods connecting the trees and equalizers, and the pendent loop-rods, said looped rods sustaining the trees and equalizers, as shown and described.

377,979. **LINIMENT.** ANN ELIZA BANES, Bland Court-House, Va. Filed June 3, 1887. Serial No. 240,192. (No specimens.)

Claim.—The herein-described liniment to be used for the relief of burns and external sores, consisting of castor-oil, linseed-oil, lard, spirits of turpentine, sulphur, opium, lime, and kerosene-oil, in the proportions specified.

377,980. **COMBINED HARROW AND CULTIVATOR.** FRANK BATEMAN, Spring Mills, N. J., assignor to E. S. and F. Bateman, same place. Filed May 19, 1887. Serial No. 238,786. (No model.)

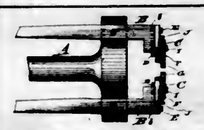


Claim.—The within-described tooth for a combined harrow and cultivator, said tooth consisting of a bar, diamond-shaped in cross-section, sheared at an angle from back to front at one end, and expanded and otherwise shaped to form a cultivator-tooth at the opposite end, all substantially as specified.

377,981. **BOLT-THREADING MACHINE.** JAMES A. BECHER, Mishawaka, Ind. Filed May 9, 1887. Serial No. 237,610. (No model.)

Claim.—1. In a bolt-threading machine, the combination, with the spindle-shank and the jaws secured thereto, of detachable sliding

377,981.



heads removably mounted on said jaws and the cutters secured on said heads, all substantially as and for the purpose described.

2. In a bolt-threading machine of the character described, the combination, with the pivotal jaws B, having the radial slots in their outer faces, of detachable cutter-bearing heads having ribs on their under surfaces engaging the slots in the jaws, and means for locking the heads in these slots, substantially as set forth.

3. In a bolt-threading machine, the combination, with the spindle-shank and its jaws, of detachable sliding cutter-bearing heads secured on said jaws and detachable cutters adjustably secured on said heads, all substantially as specified.

4. The combination, in a bolt-threading machine, of the jaws B, having grooves *b* in their outer faces, heads C, removably secured to the jaws and having ribs D engaging the grooves *b*, with detachable cutters G, secured to the heads C, all constructed substantially as and for the purpose described.

5. In combination with the cutter-bearing heads of a bolt-threading machine, substantially as described, the cutters G, constructed and arranged to operate substantially in the manner and for the purpose set forth.

6. The combination, with jaws B and detachable heads C, mounted thereon and having the upstanding flanges F, F, and *f*, forming the cutter-seat, of the cutters G, having heads *g*, notches H, and suitable means for retaining them in their seats on heads C, all constructed and arranged to operate substantially in the manner and for the purpose specified.

7. In a bolt-threading machine, the combination of the detachable heads C, having ribs F, F, and *f*, forming the cutter-seat, opening *c* in said seat, and adjusting-bolt J, with the similar opposite cutters, G, having heads *g g*, and adjoining notches H H, and the bolt I, passing through notches H H and engaging in opening *c* of the cutter-head, all constructed and arranged substantially as and for the purpose described.

377,982. **TRACE-DETACHER.** JOHN D. BLAKEMAN, Smith's Grove, Ky. Filed Aug. 31, 1887. Serial No. 248,368. (No model.)



Claim.—1. In a trace-detacher, the combination, with a whiffletree provided with a stud projecting therefrom, of a collar fitting loosely on the stud of the whiffletree and provided with a guard-arm and with an inwardly-projecting arm and a pivoted lever loosely pivoted to the inwardly-projecting arm of the collar, substantially as described.

2. In a trace-detacher, the combination, with a whiffletree provided with a stud projecting from its end, of a collar fitting loosely on the stud of the whiffletree and provided with a guard-arm and with an inwardly-projecting arm, and a lever pivoted in the end of the whiffletree and provided with arms, one of which is loosely pivoted to the inwardly-projecting arm of the collar and the other adapted to engage the said arm, substantially as herein shown and described.

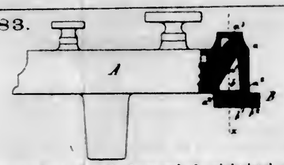
3. In a trace-detacher, the combination, with the slotted ferrule B, provided with the stud *b*, of the collar D', provided with the guard-arm D and the inwardly-projecting arm D^3, having jaw *d'*, and the spring pressed and pivoted lever E, provided with the slotted arm e^4, to which the arm D^3 is pivoted, and the locking-arm e^4, substantially as herein shown and described.

4. In a trace-detacher, the combination, with the ferrule B, provided with the slot *b'* and the stud *b*, of the collar D', provided with the guard-arm D and the inwardly-projecting arm D^3, having jaw *d* and pin *d*, the lever E, provided with the eye *e'*, the arm e^4, having slot e^5 and the arm e^4, and the spring F, having its free end engaging the end of the lever E, substantially as herein shown and described.

377,983. **NIGHT-LATCH.** WILSON BOHANNAN, Brooklyn, N. Y. Filed Nov. 15, 1887. Serial No. 255,219. (No model.)

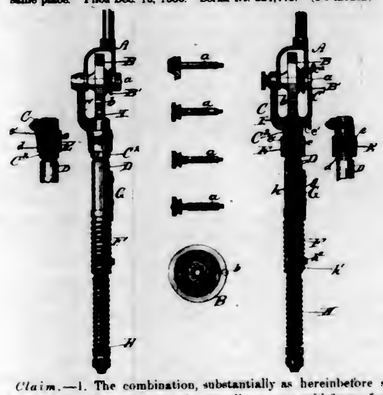
Claim.—1. In a night-latch and its keeper, the combination of the latch-bolt *a*, housing *a*, having flange a^2, with the keeper B, having staple *b* and groove *b'*, substantially as and for the purpose described.

377,983.



2. A housing formed on the front end of a night-latch and around the latch-bolt, and a keeper, said housing and keeper being constructed with surfaces which, when the latch is locked, jointly form a corrugated or angular joint, substantially as and for the purposes described.

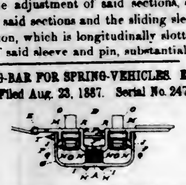
377,984. **DENTAL PLUGGER.** WILLIAM G. A. BONWILL, Philadelphia, Pa., assignor to the S. S. White Dental Manufacturing Company, same place. Filed Dec. 16, 1886. Serial No. 221,775. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of a forked frame, an axis-pin extending across said frame from one of its members to the other, a belt-pulley of said axis-pin fitted between said members of said frame, and a joint and fastening for one member of said frame, whereby it may be moved to admit of the insertion of the belt and then be secured to inclose the pulley, as described.

2. The combination of the sectional casing adjustable by screw-threads, the inclosed spindle and its striking hammer, and the locking device to maintain the adjustment of said sections, consisting of the locking-ribs of one of said sections and the sliding sleeve and locking-pin of the other section, which is longitudinally slotted to permit the endwise movement of said sleeve and pin, substantially as described.

377,985. **LUG-BAR FOR SPRING-VEHICLES.** EBENEZER H. BOOTH, Kirkwood, N. Y. Filed Aug. 23, 1887. Serial No. 247,672. (No model.)



Claim.—1. The combination, with the lug-bar having the middle depression with bolt-holes in the vertical arms thereof, and the lugs on its under face near its opposite ends, of the downwardly-curved brace, the barrel-shackles, and the long bolt-rod passed through the lug-bar and barrel-shackles and secured in place by nuts, substantially as specified.

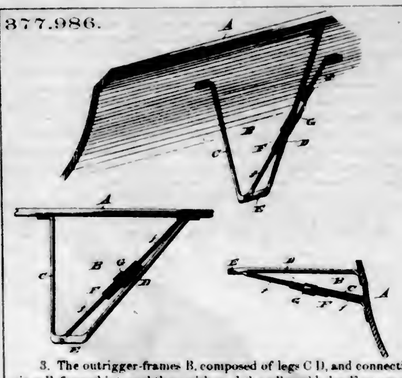
2. The combination, with the axle, of the lug-bar, recessed in the under face of its middle downwardly-projecting portion, the downwardly-curved brace, the long bolt-rod, and the barrel-shackles, substantially as specified.

377,986. **OUTRIGGER FOR BOATS.** MITCHELL E. BORCA, Lansingburg, N. Y. Filed May 21, 1887. Serial No. 238,998. (No model.)

Claim.—1. In an outrigger, the combination, with the outstanding legs carrying the oar-lock rest, of an adjustable leg secured to the rest and to the side of the boat, and devices for lengthening or shortening this leg, substantially as described.

2. In an outrigger for boats, the combination, with the opposite outstanding legs supporting the oar-lock rest, of the adjustable leg F, composed of pieces *f f*, and turn-buckle G, all constructed and arranged substantially as and for the purpose specified.

377,986.

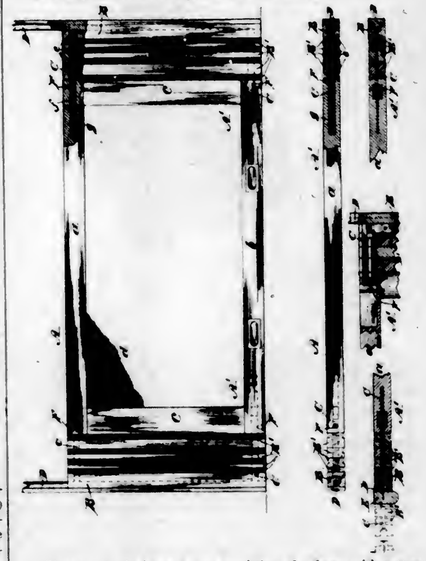


3. The outrigger-frame B, composed of legs C D, and connecting-piece E, formed integral therewith, and the adjustable leg F, connected at one end to piece E, and means for lengthening or shortening this leg, substantially as and for the purpose described.

4. In combination with a boat, A, an outrigger-frame, B, composed of leg C, standing at right angles to the boat, the leg D, secured to the boat and inclining forward and outward to the end of leg C, and the connecting-piece E between said legs, and the adjusting-leg F, composed of rods *f f*, and turn-buckle G, all substantially as specified.

5. The combination, with boat A, of an outrigger-frame, B, composed of an upwardly-inclined leg, C, secured at its inner end to the boat near its water-line, the inclined leg D, connecting with leg C by a short oar-lock-bearing piece, E, and secured to the gunwale of the boat, and parts C D E, formed integral, and the adjusting-leg F, composed of the short rods *f f*, united, respectively, to the piece E and to the boat A near its water-line, and having their adjoining ends oppositely screw-threaded, and the turn-buckle G, uniting and adjusting the rods *f f*, substantially as set forth.

377,987. **INSECT-SCREEN.** JOHN W. BOUGHTON, Philadelphia, Pa. Filed Aug. 12, 1887. Serial No. 246,772. (No model.)



Claim.—1. An insect-screen consisting of a frame with netting and separate side bars, with pins for securing said side bars to said frame, whereby said frame may be increased in width, substantially as described.

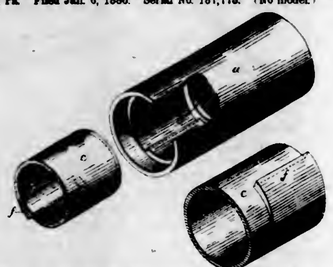
2. An insect-screen having the sides thereof provided with de-

tachable side and removable intermediate bars, whereby said screen may be adjustable in width by the removal of one or more of said intermediate bars, substantially as described.

3. An insect-screen, in combination with the bar B, bars B' intermediate of said bar B and the frame of the screen, and pins C, connected with the bar B, passing through the bars B' into said frame and secured thereto, substantially as described.

4. An insect-screen having side and removable intermediate bars and fastening devices therefor, substantially as described, whereby said side and intermediate bars are secured to the side stiles of the frame, substantially as and for the purpose set forth.

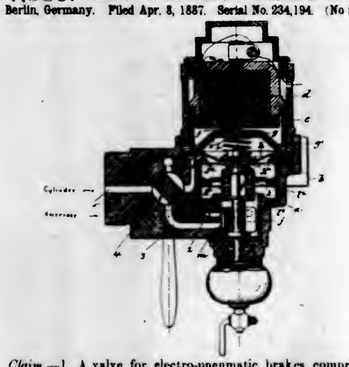
377,988. **PIPE-JOINT.** MOSES C. BOWERS, McKeesport, assignor, by direct and mesne assignments, to Edmund C. Converse, Allegheny City, Pa. Filed Jan. 6, 1886. Serial No. 187,773. (No model.)



Claim.—1. A cylindrical pipe-coupling sleeve the internal surface of which gradually increases in curvature from a given point in its circumference, thus giving an eccentric or cam-like interior surface, substantially as described.

2. The combination of a cylindrical pipe-coupling sleeve the internal surface of which gradually increases in curvature from a given point in its circumference, thus giving an eccentric or cam-like interior surface, with pipes having counterpart projections, substantially as described.

377,989. **VALVE FOR AIR-BRAKES.** J. FAIRFIELD CARPENTER, Berlin, Germany. Filed Apr. 8, 1887. Serial No. 234,194. (No model.)



Claim.—1. A valve for electro-pneumatic brakes, comprising a shell having an inlet-port from the main pipe, ports for connecting with the brake-cylinder and auxiliary reservoir, and an exhaust-port, a cock for controlling such ports with relation to the valve proper, a septum dividing the shell into two air-chambers, an electrically-operated release-valve in one of said chambers, a floating piston-valve in the other chamber controlling the inlet, the reservoir, and the cylinder-ports, and a slide-valve arranged in connection with the cylinder and exhaust ports and operated from the floating piston-valve, substantially as described, the valve as a whole being rendered operative by the electric device, by air, or by the two combined, as set forth.

2. An electro-pneumatic valve comprising a magnet, a valvular armature, a floating piston-valve, and a slide-valve, combined with an electro-pneumatic valve and an interposed lever operated thereby and connected with the slide-valve, substantially as described.

377,990. **SASH-FASTENER.** GEORGE J. CLINE, Goshen, Ind. Filed Nov. 5, 1887. Serial No. 254,350. (No model.)

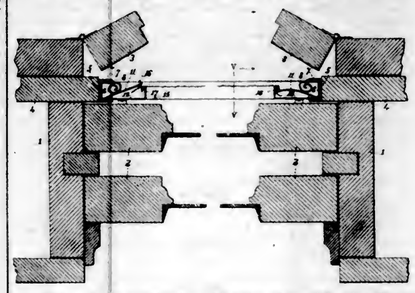
Claim.—The sectional tubular case having an elongated opening at its smaller end, which forms an internal shoulder, in combination

377,990.



with the bolt having the shoulders *d* and *e* and the enlarged annular portion *f*, the spring on the said bolt having one end bearing against the shoulder *e* of the bolt and its opposite end bearing against the inner shoulder of the case, and the ferrule on the case, substantially as specified.

377,991. **WINDOW-SCREEN.** WILLIAM J. CONNELL, Charleston, W. Va. Filed Aug. 10, 1887. Serial No. 246,598. (No model.)

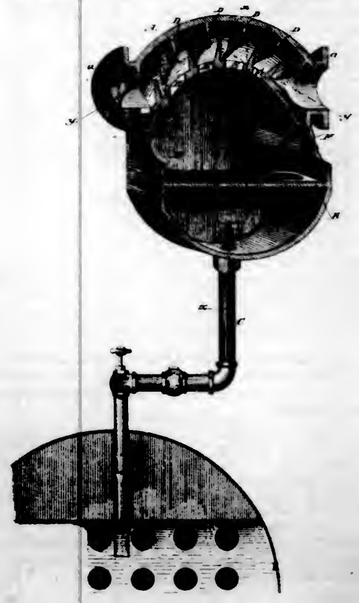


Claim.—1. In combination with strips of metal forming the top, bottom, and sides of a frame and having spring-engaging edges lengthwise of the strips, a removable netting or wire screen secured by said engaging edges to the frame, substantially as set forth.

2. In combination with a window-frame, the upper and lower sashes, a frame for netting or wire screen, provided with spring-catches on its inner side at both top and bottom adapted to automatically engage the upper sash when raised and when lowered, substantially as and for the purpose set forth.

3. A sheet-metal frame for screens, having a spring-lip, and a recess in which the lip engages to hold the netting in place, substantially as set forth.

377,992. **STEAM-SEPARATOR.** ALEXANDER DAVIDSON, Chicago, Ill. Filed Oct. 31, 1887. Serial No. 253,828. (No model.)



Claim.—1. In a steam-purifier, a steam pipe or section provided with spiral ribs arranged in series, the ribs or sections of such series following each other, substantially as described, and for the purposes specified.

2. In a steam-purifier, a steam pipe or section provided with a series of spirally-arranged ribs, the ends of the adjacent ribs being extended past each other, substantially as set forth.

3. In a steam-purifier, a steam pipe or section provided with a series of spirally-arranged ribs following each other, which ribs are made wider at one end or portion than at others, substantially as set forth.

4. In a steam-purifier, a steam pipe or section arranged or deflected out of a straight line and having within it a spiral rib or ribs, which spiral rib or ribs are made of an extreme width in excess of the semi-internal diameter of the pipe or section, all being substantially as and for the purposes specified.

5. In a steam-purifier, a steam pipe or section arranged or deflected out of a straight line, combined with a spiral rib or ribs therein, substantially as set forth.

6. In a steam-purifier, substantially as herein described and shown, a steam pipe or section arranged or deflected out of a straight line and provided with a series of spirally-arranged ribs, the ends of the adjacent ribs being extended past each other, and such ribs being made wider at one end or portion than at others, substantially as set forth.

7. In a steam-purifier, a steam pipe or section having within it a spiral rib or ribs made of an extreme width in excess of the semi-internal diameter of the pipe or section, whereby the steam cannot blow straight through said pipe or section, substantially as set forth.

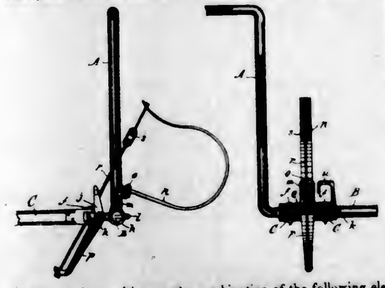
8. In a steam-purifier, the combination of a steam pipe or section, an obstruction or obstructions therein, a collector-chamber, an opening or openings being provided leading from the steam-pipe into the collector-chamber, and an opening being provided leading from the collector into the steam pipe or section, and a deflector-plate arranged in advance of the latter opening, substantially as set forth.

9. In a steam-purifier, the combination, with the collector-chamber and a steam pipe or section communicating therewith and provided with an obstruction or obstructions to the free passage of the steam, of an inwardly-projected stop-flange extended around the walls of said collector-chamber, substantially as set forth.

10. In a steam-purifier, the combination of the steam pipe or section having an obstruction or obstructions to the free passage of the steam, and having its under side or plate perforated, the collector-chamber located below such pipe or section, and having at its rear end an opening leading thereinto, the bottom plate of said pipe or section being extended down in advance of the said opening, forming a deflector, substantially as set forth.

11. The improved steam-purifier herein described, consisting of the steam pipe or section having an opening or openings in its under side and provided with an obstruction or obstructions to the free passage of the steam, a collector-chamber arranged below the steam pipe or section and having an opening leading into the steam pipe or section, a deflector-plate extended down in advance of said opening, and a stop-flange extended around the wall of said collector-chamber, substantially as set forth.

377,993. **LIFTING-SPRING FOR CULTIVATORS.** CALVIN R. DAVIS, Indianapolis, Ind., assignor to the Kimberlin Manufacturing Company, same place. Filed Sept. 19, 1887. Serial No. 250,052. (No model.)

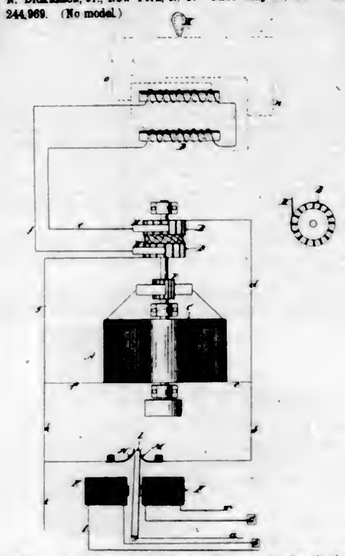


Claim.—1. In a cultivator, the combination of the following elements, namely: a horizontal axle, a bracket rigidly secured to the axle and having a pair of rearwardly-projecting arms, a plow-beam coupling pivoted to said arms so as to swing vertically thereon, an arm projecting from said coupling, a plow-beam pivoted to said coupling so as to swing horizontally, a bow-spring having one end secured to said bracket, and a rod connecting the free end of the spring and the end of the arm projecting from the plow-beam coupling, all arranged to co-operate substantially as specified, whereby the spring is secured in a fixed position on the axle and is at its greatest tension and exerts its least lifting force when the plow-beam is in working position.

2. In a lifting-spring for cultivators, the combination, with the plow-beam, the axle, the bracket *h*, rigidly secured to the axle and having arms *i* and *j*, and the plow-beam coupling pivoted thereto and having arm *p*, of the standard *m*, spring *n*, and rod *r*, all arranged to co-operate in the manner and for the purpose specified.

3. In a cultivator, the combination, with the axle, the plow-beam coupling, the plow-beam, and the lifting-spring, of the bracket consisting of a hollow cylindrical portion adapted to embrace the axle and having arms *i* and *j* and standards *m* formed integral therewith, and the bolt *l*, passing through the cylindrical portion of the bracket and the axle and securing them rigidly together, substantially as described.

377,994. **SYSTEM OF ELECTRICAL CONVERSION.** EDWARD N. DICKERSON, Jr., New York, N. Y. Filed July 22, 1887. Serial No. 244,969. (No model.)



Claim.—1. The system of electrical conversion herein described, which consists in causing a direct current to flow upon a main circuit and through a current-reverser in reversing a subordinate circuit supplied from the main circuit, and in converting the said reversing-circuit into a circuit of different tension by means of a converter, substantially as described.

2. The combination of a main circuit carrying a direct current, a reversing apparatus for reversing a subordinate circuit derived from said main circuit and driven from the main circuit, a converter for converting said reversing-circuit into a circuit of a different electrical tension, and a circuit connected with said converter for carrying said converted current, substantially as described.

3. The combination of the circuit *a k*, carrying a direct current, a reversing-commutator, B B, operated by a motor, A, the circuit *e f*, carrying a current from the commutator to the converter, the converter D, and the subordinate converted circuit *n o*, carrying the electricity to the point where it is utilized, substantially as described.

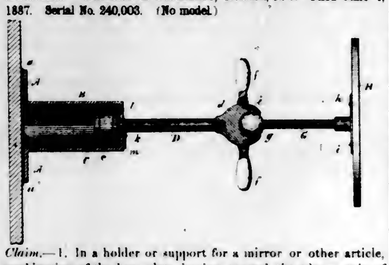
4. The combination of the circuit *a k*, carrying a direct current, a reversing-commutator, B B, operated by a motor, A, driven from the main circuit, the circuit *e f*, carrying a current from the commutator to the converter, the converter D, and the subordinate converted circuit *n o*, carrying the electricity to the point where it is utilized, substantially as described.

5. The combination of the circuit *a k*, carrying a direct current, a reversing-commutator, B B, operated by a motor, A, driven from the main circuit and acting as a resistance to force the required current through the reversing-commutator, the circuit *e f*, carrying a current from the commutator to the converter, the converter D, and the subordinate converted circuit *n o*, carrying the electricity to the point where it is utilized, substantially as described.

6. The combination of the switch L, the circuit *a k*, controlled by

said switch, the motor A, operated from the main circuit, the converting-commutator B B, converting said main circuit through circuit *e f*, carrying a current from the commutator to the converter, the converter D, and the circuit *n o*, carrying the electricity to the point where it is utilized, substantially as described.

377,995. **PNEUMATIC HOLDER FOR MIRRORS AND OTHER ARTICLES.** CLARENCE E. DOUGHERTY, Newark, N. J. Filed June 1, 1887. Serial No. 240,003. (No model.)

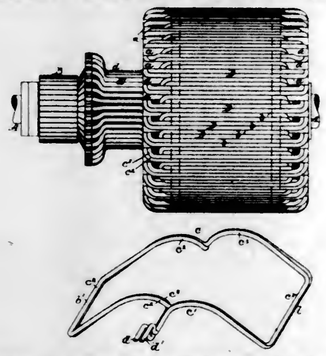


Claim.—1. In a holder or support for a mirror or other article, the combination of the base-plate having around the edge a strip of rubber or like material, a cylinder carried by said plate, a piston for exhausting air from behind said plate, a piston-rod, and holding devices attached to said rod, substantially as described.

2. The combination of the base, the cylinder and piston for exhausting air from behind the same, the piston-rod, the holding devices connected with said rod by a universal joint, and clamping devices, substantially as described.

3. The combination of the base-plate, cylinder, piston, piston-rod provided with a groove, and a spring-catch for engaging therewith, substantially as described.

377,996. **DYNAMO-ELECTRIC MACHINE.** RUDOLF EICKEMEYER, Yonkers, N. Y. Filed May 11, 1887. Serial No. 237,862. (No model.)



Claim.—1. A dynamo-electric armature coil or winding which at one side of what may be termed "its axial line" is of lesser external dimensions than the internal dimensions of the opposite portion, both of said portions being alike in contour, substantially as described.

2. In a dynamo-electric armature-winding, a series of coils which are counterparts in contour, each complete and separable from the others, and each having substantially one half thereof of lesser external dimensions than the internal dimensions of the other half, substantially as described, whereby portions of each of said coils overlie and other portions underlie appropriate portions of other coils.

3. In a dynamo-electric armature-winding, a series of coils, each at one side of its axial line being of lesser external dimensions than the internal dimensions of the other half, and all mounted upon an armature drum or core with the smaller portions of the several coils alternating with the larger portions in their positions at the periphery of the drum or core, substantially as described.

4. In a dynamo-electric armature, a winding composed of detachable counterpart coils, each of which is placed in immediate contact with the periphery of the armature-core at one side only, substantially as described.

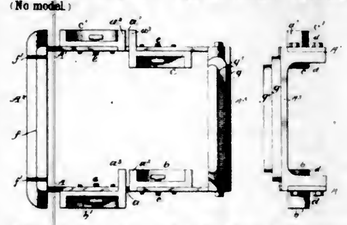
5. In a dynamo-electric armature, the combination, substantially as hereinbefore described, of an armature drum or core and a winding of wire in independent armature-coils which are of equal length and each of which occupies diametrically-opposite portions of the periphery of said drum or core.

6. In a dynamo-electric armature, a winding composed of independent separable coils of wire and in which the wire of the several convolutions lies upon the periphery of the armature drum or core in lines parallel with its axis and lies side by side in flattened webs edgewise to the ends of the core or drum and in parallel paths in crossing from one side or face of said core to the opposite side thereof.

7. In a dynamo-electric armature, an armature-coil inclosing a portion of the armature drum or core longitudinally and having at the ends of the coil and core portions lying in contact with said core and other portions of said coil at its ends offset adjacent to its axial line and removed from such contact, substantially as described.

8. A dynamo-electric armature-coil adapted to inclose an armature drum or core longitudinally and having the wire at its ends curved to occupy two evolute paths which merge at the center with a path which is parallel with the axial line of the coil, substantially as described.

377,997. **FRAME FOR WINDING ARMATURE-COILS.** RUDOLF EICKEMEYER, Yonkers, N. Y. Filed Dec. 31, 1887. Serial No. 259,498. (No model.)



Claim.—1. An armature-coil-winding frame having a bearing-surface on which the wire in one side of an armature-coil may be laid and formed, another bearing-surface of lesser length on which the wire in the opposite side of said coil may be laid and formed, and slots or paths in and through which portions of the wire in the ends of the coil may be laid and formed into a flat web, substantially as described.

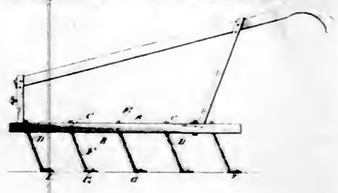
2. An armature-coil-winding frame having two or more bearing-faces of unequal lengths, oppositely-located pairs of cheek-pieces, and a slot or path between the cheek-pieces of each pair, substantially as described.

3. In a coiling-frame or former for winding armature-coils or circuits, the combination, substantially as hereinbefore described, of two or more straight parallel bearing-faces of unequal length, four bearing or forming faces oppositely arranged in pairs and interposed between two of said parallel faces, and lateral guiding-paths at the adjacent ends of each pair of said interposed bearing-faces.

4. A coiling-frame or former for winding armature coils or circuits, substantially as hereinbefore described, having one or more straight parallel forming or bearing faces of unequal lengths at each end of said frame, upon which wire for the sides or effective portions of a coil can be grouped or massed in straight parallel lines in one or more layers, and having at each side of said frame a movable cheek-piece at the outer surface of said frame, also a similar cheek-piece at the inner surface, said cheeks affording forming-faces on which the wire of the ends of the coil can be grouped side by side in a bent flat web or layer, and also having in each side of said frame a transverse slot, affording a guiding-path for wire extending from the forming-face of one cheek to the face of another and for maintaining that portion of grouped wire in a flat web parallel with the sides of the coil.

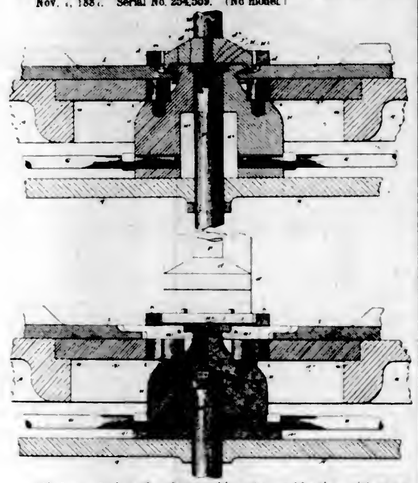
5. In a coiling-frame or former for winding detachable armature coils or circuits, a forming-face longitudinally curved in an evolute line, substantially as described, for defining the path of wire in passing from one effective side of a coil across its ends to the opposite side of said coil.

377,998. **CULTIVATOR-FOOT.** SIMEON R. ESTEP, Lady Lake, Fla. Filed Sept. 17, 1887. Serial No. 249,934. (No model.)



Claim.—The combination of the shank, formed with the vertical and inclined portions and with a flat apertured thin plate at its lower end, which extends rearwardly at an angle to the inclined portion, with a triangular plate having its forward edges beveled to produce cutting-edges, and having an upper convex portion, and bolts or rivets for securing said triangular plate to the plate of the shank.

377,999. **FLANGING-MACHINE.** GEORGE A. FORD and CHARLES R. HUSSEY, Cleveland, Ohio; said Hussey assignor to said Ford. Filed Nov. 7, 1887. Serial No. 254,559. (No model.)



Claim.—1. In a flanging-machine, the combination, with an expansible former consisting of side sections and a middle section, the latter having a movement at right angles to the movement of the side sections, of rods connected to said side sections and devices for positively actuating the rods, whereby said side sections are moved toward and away from each other, substantially as set forth.

2. In a flanging-machine, the combination, with an expansible former consisting of two side sections and a central section, the latter adapted to move at right angles to the movement of the side sections, of rods connected to the side sections and cams for actuating the rods substantially as set forth.

3. In a flanging-machine, the combination, with an expansible former consisting, essentially, of side and middle sections, the former mounted on ways so as to move toward and away from each other in the same plane, of rods connected to the side sections, devices for moving the rods, and a lever and cam for moving the central section, substantially as set forth.

4. In a flanging-machine, an expansible former consisting of side sections and a middle section, the side sections capable of moving apart to admit the middle section between the side sections, and the middle section capable of retiring into a recess in the side sections to allow the side sections to approach each other, substantially as set forth.

5. In a flanging-machine, the combination, with an expansible former consisting, essentially, of two side sections and a middle section, the said side sections being recessed on their inner faces, of rods for moving the side sections and a lever for moving the middle section, substantially as set forth.

6. In a flanging-machine, the combination, with a sectional expansible former, of a primary flanging-die, the latter operating in a plane perpendicular to the face of such former and in alignment with the middle section of the expansible former, substantially as set forth.

7. In a flanging-machine, the combination, with a sectional expansible former, of a primary flanging-die, the latter operating in a plane perpendicular to the face of the former and in alignment with the middle section of the expansible former, and a set of lateral flanging-dies having a movement toward and from the sides of such former and perpendicular to this movement of the primary die, substantially as set forth.

8. In a flanging-machine, the combination, with an expansible former consisting, essentially, of two side sections and a middle section, of a primary flanging-die operating in a plane perpendicular to the face of such former and lateral dies moving in a plane at right angles to the primary flanging-die, substantially as set forth.

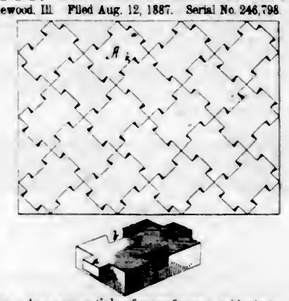
9. In a flanging-machine, the combination, with an expansible sectional former consisting of two side sections and a middle section, of plungers movable toward and from each other, the one plunger bearing the primary flanging-die and the other plunger bearing the middle section of the former, substantially as set forth.

10. In a flanging-machine, the combination, with an expansible sectional former consisting, essentially, of two side sections and a middle section, of plungers operating in a plane perpendicular to the face of such former, said plungers having a movement toward and from each other, the one plunger bearing the primary flanging-die and the other plunger bearing the middle section of the former, substantially as set forth.

11. In a flanging-machine, the combination, with the sectional expansible former and a primary flanging-die, substantially as indicated, of a punch set in the face of the primary flanging-die and a hole in the middle section of the former for receiving the punch when the die is closed upon the former.

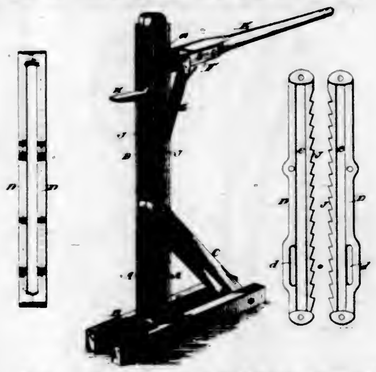
12. In a flanging-machine, the combination, with a sectional expansible former and primary and lateral flanging-dies, substantially as indicated, of mechanism, substantially as described, for actuating the plungers, the dies, and the different members of the former, the parts being timed to co-operate with each other, substantially as set forth.

378,000. **ARTIFICIAL-STONE PAVEMENT.** FRANK P. GIFFORD, Englewood, Ill. Filed Aug. 12, 1887. Serial No. 246,798. (No model.)



Claim.—As a new article of manufacture, a block for pavements, having two of its sides provided with projections, and its two opposite sides provided with recesses, as set forth.

378,001. **ADJUSTABLE VEHICLE-JACK.** LORD B. GIFFORD, Toledo, Ohio. Filed Aug. 24, 1887. Serial No. 247,782. (No model.)



Claim.—1. The combination of the frames A, the two vertical ratchet-bars D, arranged side by side between the frames and each having an internal vertical trackway, *e*, a support, H, extending between the ratchet-bars and having a T-head, *h*, engaging the internal tracks of said bars, and a lever for raising the latter, substantially as described.

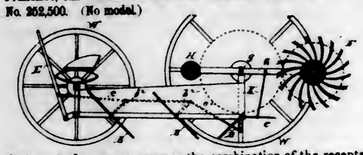
2. The combination of the frames A, the two vertical ratchet-bars D, arranged side by side between the frames and each provided with an internal vertical track, *e*, and a slot, *d*, near its lower end, a support, H, extending between the ratchet-bars and having a T-head, *h*, engaging the said internal tracks, the fulcrum-arms G, having pivot-pins *g* at the lower end passing through the frames and engaging the said slots

pivoted to the truck-frame, a prime motor on the boat and ro-

of the ratchet-bars, and a lever, E, connected with the upper portions of the ratchet-bars and having a pivotal connection with the upper ends of the fulcrum-arms, substantially as described.

3. In a lifting-jack for vehicles, the combination of the side bars, A A, base-pieces B B, braces C C, ratchet-bars D D, support H, connecting-arms G G, fulcrum-plates F F, having branches *f f*, and lever E, arranged and operated as described and specified.

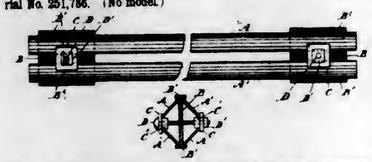
378,002. STREET-SWEEPING MACHINE. WILLIAM HAAS, San Francisco, Cal. Filed Jan. 27, 1885. Renewed Oct. 15, 1887. Serial No. 252,500. (No model.)



Claim.—1. In a street-sweeper, the combination of the receptacle A, having its bottom formed of tilting sections B, the hinged apron C, the operating hand-lever E, levers *b*, and connections *c c*^{2}, and the swinging frame G, carrying the brush-cylinder F and counter-balance H, and connected with the hinged apron by the rod, as a means of moving the frame to bring the brush into and out of action.

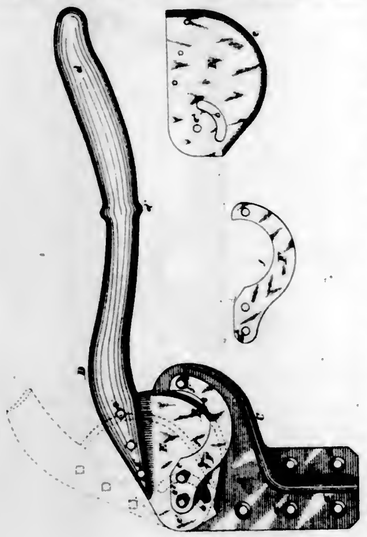
2. In a street-sweeping machine, a receptacle, A, having tapering sides, a tilting bottom formed of pivoted sections B B, a hinged apron, and the lever E and connections *c c*^{2}, in combination therewith, substantially as herein described.

378,008. COMPOUND STRUCTURAL BAR. JAMES S. HEATH and EDWIN C. WATERS, Brantford, Ontario, Canada. Filed Oct. 6, 1887. Serial No. 251,786. (No model.)



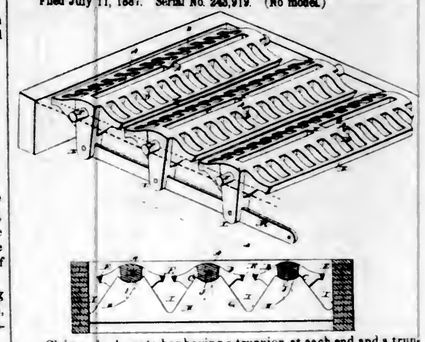
Claim.—The combination of the laterally-inclined convergent bars A A', plates B and B at intervals along their length, and having ribs B' B', resisting the divergent edge of the bars, washers C and C, resisting the convergent edge of the bars, and having a lug, C', and a rivet or bolt, D, connecting the plate and washer, as set forth.

378,004. ROPE-CUTTER. BENTON HEATON and PHILIP HOHMANN, Humansville, Mo. Filed Oct. 14, 1887. Serial No. 252,398. (No model.)



Claim.—The combination of the rope-support having a curved rope-seat therein, the guide-plate secured to the support, and the curved cutting-knife hinged between the support and guide-plate and provided with a curved slot, and a guide-bolt which extends through said slot.

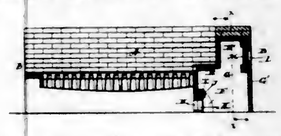
378,005. FURNACE-GRATE. WILLIAM H. HERSON, Baltimore, Md. Filed July 11, 1887. Serial No. 243,919. (No model.)



Claim.—1. A grate-bar having a trunnion at each end and a trunnion at its middle, said trunnions being in an axial line with each other, and the middle trunnion having a semicircular bearing, substantially as and for the purpose set forth.

2. In a furnace-grate, the combination of a number of grate-bars, each having a trunnion at its end and a trunnion at its middle, said trunnions being on an axial line with each other, and the middle trunnion having a semicircular bearing, a partition across the furnace below the grate, having a number of semicircular bearings adapted to receive the middle trunnions of the bars, and having deep V-shaped recesses between the semicircular bearings, substantially as and for the purpose set forth.

378,006. SMOKE-CONSUMING FURNACE. WILLIAM H. HERSON, Baltimore, Md. Filed July 11, 1887. Serial No. 243,920. (No model.)



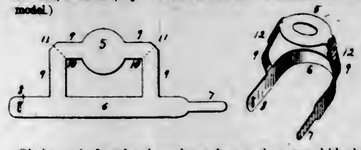
Claim.—1. The combination, with a furnace having a series of air-inlet openings formed in the rear end of the ash-pit and the perforated slide-valve controlling the said openings, of the side inlet-ducts, the air-chamber G in the rear end of the furnace, having a series of air-outlet openings formed in it near its upper end, and a perforated slide-valve controlling the said outlet-openings, substantially as and for the purpose set forth.

2. The combination, with a furnace having a series of air-inlet openings formed in the rear end of the ash-pit, and the perforated slide-valve controlling the said inlet-openings, of the side air-inlet ducts, the air-chamber having a series of outlet-openings formed in it near its upper end, the perforated slide-valve controlling the said outlet-openings, and the centrally-pivoted pitman connecting the said slide-valve and the operating-rod, substantially as and for the purpose set forth.

3. The combination, with a furnace having a series of air-inlet openings formed in the rear end of the ash-pit, and having the upper openings, R, through which the smoke escapes into the air-chamber, and the perforated slide-valve controlling the said inlet-openings, of the side air-inlet ducts, the air-chamber having a series of outlet-openings formed in it near its upper end, the perforated slide-valve controlling the said outlet-openings, and a centrally-pivoted pitman connecting the said slide-valve and the operating-rod, substantially as and for the purpose set forth.

4. The combination, with a furnace having a series of air-inlet openings formed in the rear end of the ash-pit, and having the upper openings, R, through which the smoke escapes into the air-chamber, of the perforated slide-valve controlling the said inlet-openings, the side air-inlet ducts, and the air-chamber having a series of outlet-openings formed in it near its upper end, having a perforated valve controlling the said outlet-openings, substantially as and for the purpose set forth.

378,007. CORK-RETAINER. FREDERICK E. HEINIG and SAMUEL LEDDEN, Louisville, Ky. Filed Dec. 27, 1887. Serial No. 259,074. (No model.)



Claim.—1. In a bottle-cork retainer, a sheet-metal blank comprising in one piece a band adapted to encircle the neck of a bottle and having one pair of ends adapted to be secured together, a cap to cross over the cork in a bottle, and side straps permanently connecting two opposite edges of the cap with one edge of the band, substantially as shown and described.

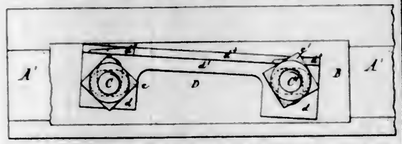
2. A blank for a bottle-cork retainer, comprising in one piece a band, a cap located at a little distance from one edge thereof, and side straps each having a side offset and connecting the cap with the band, substantially as shown and described.

3. A bottle-cork retainer comprising in one piece a band to encircle the neck of a bottle, a cap to cross over a cork in the bottle, and diagonally-crimped side portions joining the cap with the band, substantially as shown and described.

4. A blank for a bottle-cork retainer having a band, a cap portion, and side portions with angular offsets and adapted to be crimped diagonally at the angle of the offset, substantially as shown and described.

5. In a bottle-cork retainer, side straps formed with angular offsets and crimped diagonally at the angles and the crimp folded down against the strap to bring the two portions of the strap into line, substantially as shown and described.

378,008. NUT-LOCK. WILLIAM A. JORDAN, New Orleans, La. Filed Dec. 2, 1887. Serial No. 256,765. (No model.)

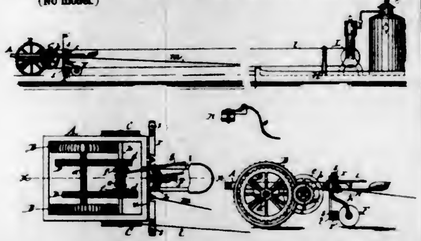


Claim.—1. The nut-locking device D, having a flange, d^3, and elongated or enlarged bolt-holes d^5, and connected plates *d* with downwardly-increasing thickness, substantially as and for the purpose described.

2. The locking device D, having connected wedge-shaped plates *d*, constructed with enlarged or enlongated holes d^5, flange d^3, and inclined surfaces d^4, substantially as and for the purpose described.

3. The nut-locking device D, having a flange, d^3, elongated or enlarged bolt-holes d^5, and sliding connected washer-plates *d*, substantially as and for the purpose described.

378,009. APPARATUS FOR TOWING CANAL-BOATS. DAVID W. KINSLEY, Liverpool, N. Y. Filed Dec. 9, 1887. Serial No. 257,397. (No model.)

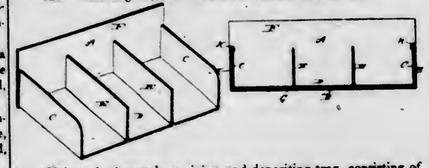


Claim.—1. A boat-towing apparatus consisting of a truck or carriage having traction-wheels mounted on the tow-path, gears on the traction-wheel axle, a driving-shaft meshing with the aforesaid gears and adapted to be thrown in and out of gear, a prime motor mounted on the boat and provided with a driving-pulley, and a belt or cable connecting said two driving-pulleys, substantially as described and shown.

2. The combination of a truck having traction-wheels mounted on the tow-path, a driving-pulley on said truck arranged to transmit motion to the traction-wheels, a steering-wheel connected to a steering-post pivoted to the truck-frame, a prime motor on the boat and provided with a driving-pulley, and a belt or cable connecting said two driving-pulleys, substantially as described and shown.

3. The combination of a truck having traction-wheels mounted on the tow-path, gear-wheels of different diameters fixed to the traction-wheel axle, a driving-shaft on the truck, pinions of different diameters mounted loosely on the driving-shaft and meshing with the aforesaid gear-wheels, clutches sliding on a spline on the driving-shaft and adapted to engage and release the pinions, a driving-pulley on the driving-shaft, a prime motor on the boat provided with a driving-pulley, and a belt or cable connecting the said two driving-pulleys, substantially as described and shown.

378,010. MATCH-MACHINE TRAY. LEVI KITTINGER, Akron, Ohio. Filed Aug. 16, 1887. Serial No. 247,134. (No model.)



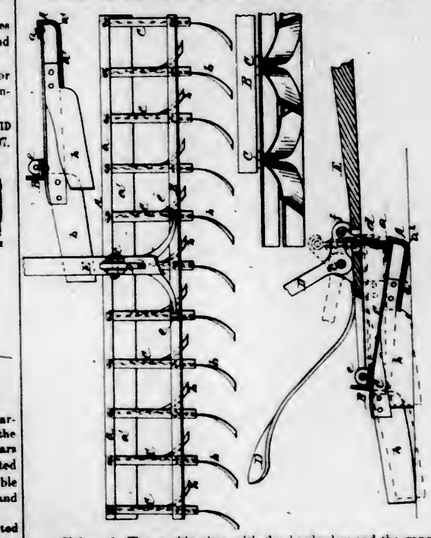
Claim.—1. A match receiving and depositing tray, consisting of the part A, provided with a bottom, D, end walls C, partition-walls E, parallel with the end walls C, and a side wall, one side of this part being left open, and the part B constructed with a bottom, end walls I, and a side wall, the part A being adapted to slide laterally into the said part B, substantially as set forth.

2. A match receiving and depositing tray, consisting of the part A, provided with a bottom, end walls, and a side wall, one side of this part being left open and the part B provided with a bottom, end walls, and a side wall, one side of this part being also left open, the part A being adapted to slide laterally into the said part B, as and for the purpose set forth.

3. A tray for a match-machine, consisting of a two-part separable box, one part being provided with end walls having turned-over edges to receive the end walls of the other part, substantially as described.

4. A tray for a match-machine, consisting of a two-part separable box, one part having a bottom, end, and division walls, and but one side wall, and the other part having a bottom, end walls with turned-over edges to receive the end walls of the other part, and but one side wall, substantially as described.

378,011. HARROW AND CLOD-CRUSHER. JAMES T. LIGHTON, New Haven, Conn. Filed July 7, 1887. Serial No. 243,679. (No model.)



Claim.—1. The combination, with the leveler-bar and the gang-bar, of the series of tie-bars uniting the two bars, and the earth-treat-

ing devices secured to each side of said tie-bars, substantially as described, for the purpose specified.

2. The combination, with the leveler-bar composed of a flat piece of metal having its upper front part folded over, forming the ledge *a*, the body *a'*, and the round nose a^2, and the gang-bar, of the tie-bars having their front ends fitted in between the ledge and body portions of the leveler-bar and secured at their rear ends to the gang-bar, and the earth-treating devices carried by said tie-bars, substantially as set forth.

3. The combination, with the leveler-bar, the gang-bar, and the tie-bars carrying the earth-treating devices, uniting the two bars, of the draft-tongue pivotally connected with the gang-bar, and provisions, substantially as described, adjustably connecting the tongue and the leveler-bar, substantially as and for the purpose described.

4. The combination, with the leveler-bar, the gang-bar, and the tie-bars carrying the earth-treating devices, of the draft-tongue pivotally connected with the gang-bar, the bell-crank lever mounted upon the draft-frame, and the chain-connections interposed between and connecting the lever with the leveler-bar, substantially as set forth.

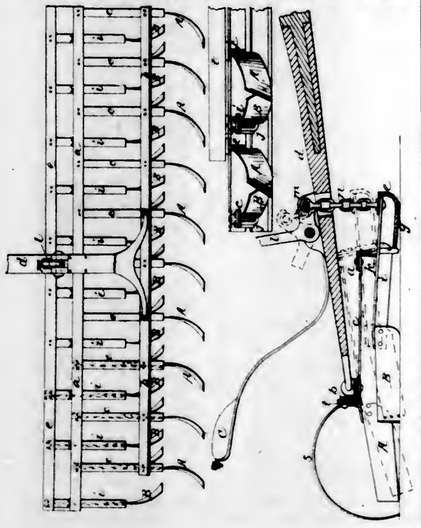
5. The combination of a frame composed of a front and a rear transverse bar and tie-bars uniting the said front and rear bars, and a series of trailing blades or teeth carried in pairs on the opposite sides of said tie-bars, one in advance of the other, and a lever carried by said tongue having a free connection with said front bar and a pivoted connection with said rear bar, substantially as described.

6. The harrow-frame composed of the front shoe-bar, A, of angle-iron having the overturned top ledge, *a*, the rear angle-bar, B, and the angle tie-bars C, riveted together, the trailing harrow-blades riveted to the opposite sides of a web of said tie-bars, one in advance of the other and curving laterally in opposite directions, in combination with a tongue pivoted to the rear angle-bar, and a lever carried by said tongue having flexible connection with the shoe-bar, substantially as described.

7. The combination, substantially as set forth, of the tongue, a frame having its rear gang-bar hinged to the rear end of said tongue, and a front shoe-bar having a free connection with said tongue in front of its hinge, so as to rise and fall independently of and beneath said tongue, the tie-bars uniting the said shoe-bar with the rear gang-bar beneath said tongue and carrying the trailing blades, and a lever carried by and above said tongue having a chain-connection with the shoe-bar, substantially as described.

8. The combination, substantially as hereinbefore set forth, of the leveler or clod-crusher, the rear angle-bar, and the tie-bars having the cultivating devices and forming a single rigid frame, the tongue hinged to the rear gang-bar, a lever having a free connection with the shoe-beam, and the driver's seat mounted upon the hinged tongue, whereby the weight of the driver is transferred from the leveler-beam to the rear part of the rigid frame and its cultivating devices.

378,012. HARROW AND CLOD-CRUSHER. JAMES T. LEIGHTON, New Haven, Conn. Filed July 7, 1887. Serial No. 243,680. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the rigid frame having the trailing cultivating devices, the tongue hinged to the rear part of said frame, and the leveler or clod-crusher having drag-bars carrying trailing cultivating devices and confining and bracing hangers for each drag-bar, secured to the front part of said frame and forming an abutment for said leveler, whereby the latter is free to rise and fall independently of the tongue.

2. The combination, substantially as set forth, of the rigid frame with its trailing cultivating devices, the tongue hinged to the rear part thereof, the leveler or clod-crusher having the drag-bars provided with the trailing cultivating devices, the hangers for said drag-bars, and means for raising the leveler.

3. The combination of the crusher-bar having drag-bars provided with trailing cultivating devices, a rigid frame having trailing cultivating devices, separate depending hangers for each separate drag-bar, and a downward-projecting fulcrum-bearing for the gang of drag-bars, means for raising the crusher-bar against said fulcrum-bearing, and a tongue hinged to the rigid frame in rear of said hangers, substantially as set forth.

4. The combination, substantially as set forth, of a tongue, a rigid frame to the rear part whereof the tongue is hinged, a crusher-bar suspended from the front of said frame, trailing cultivating devices for said frame and crusher-bar, a seat for the driver, overhanging the cultivating devices, and a lever pivoted upon the tongue, having a free connection with said crusher-bar in advance of the rigid frame.

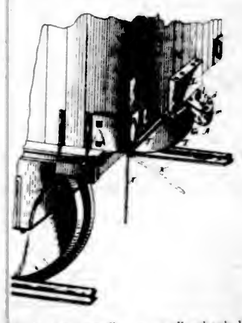
5. The combination of the crusher-bar, the rigid frame arranged over the latter and having suspending hangers therefor arranged between the front of said frame and the crusher-bar, the tongue hinged to said frame in rear of said hangers, and trailing cultivating devices carried by said frame and crusher-bar, substantially as set forth.

6. The combination, substantially as hereinbefore set forth, of a front crusher-bar, a rigid frame, a tongue hinged thereto in rear of the crusher-bar, trailing cultivating devices carried by said frame and bar, and a rake carried by said frame in rear of the cultivating devices.

7. The combination, substantially as hereinbefore set forth, of the rigid frame, a tongue hinged to the rear thereof, a crusher-bar suspended to the front of said frame, trailing cultivating devices carried by the frame and the crusher, a rake hinged to said frame in rear of the hinged connection of said tongue, and a seat overhanging said cultivating devices, carried by the tongue and having a free connection with the crusher-bar in front of its point of suspension.

8. The combination, substantially as hereinbefore set forth, of a rigid frame, a crusher-bar having a fixed point of suspension at the front side of said frame, trailing cultivating devices carried by said frame and crusher-bar, a tongue hinged to said frame in rear of said suspension-point, and a lever carried by said tongue, connected to the front end of said crusher-bar, whereby the latter is raised and its trailing devices depressed.

378,013. CAR-COUPLING. SYLVANUS D. LOCKE, Hoosick Falls, N. Y. Filed Dec. 22, 1887. Serial No. 258,780. (No model.)

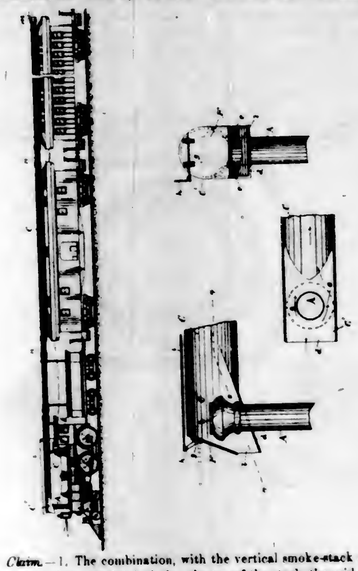


Claim.—1. In a car-coupling, a coupling-hook having its hook part constructed integral with its body part, combined with an opening and locking lever pivoted in the neck thereof and working against another hook coupled therewith, whereby the hooks are driven apart and locked against recoupling until after the cars are separated, substantially as described.

2. In a car-coupling, the combination of the hooks A, combined with the slotted lever G, pivoted therein, and an operating-lever, substantially as specified.

3. In a car-coupling, the hook A and elbow-lever G, combined with the arm I, rock-shaft J, and hand-lever K, substantially as and for the purpose set forth.

378,014. LOCOMOTIVE SMOKE-CONDUIT. BENJAMIN T. LOCKIE, Baltimore, Md. Filed Apr. 25, 1887. Serial No. 235,961. (No model.)



Claim.—1. The combination, with the vertical smoke-stack of a locomotive, of the conduit inclosing the top of the stack, the said conduit having an inclined bottom and an opening in front, the upper part of which is closed by a valve when the locomotive is running forward, leaving an opening below, the valve being raised when the locomotive is backing to give free egress to the products escaping from the stack, substantially as specified.

2. The combination, with the vertical stack of a locomotive, of a conduit inclosing the top of the same, the said conduit having an inclined bottom extending from below the top of the stack at an angle upward and rearward, an inclined valve partially covering the opening at the front of the inclosure, and mechanism for opening and closing said valve, substantially as specified.

378,015. ARTIFICIAL TOOTH. JOHN W. MOFFITT, Philadelphia, Pa., assignor to the S. S. White Dental Manufacturing Company, same place. Filed Aug. 18, 1887. Serial No. 247,279. (No model.)



Claim.—The method of making a continuous gum-work artificial denture, hereinbefore described, consisting in soldering the fastening-rim by lips thereon at intervals to the plate, then fitting straddling teeth on said rim, and then building up the body, substantially as hereinbefore set forth.

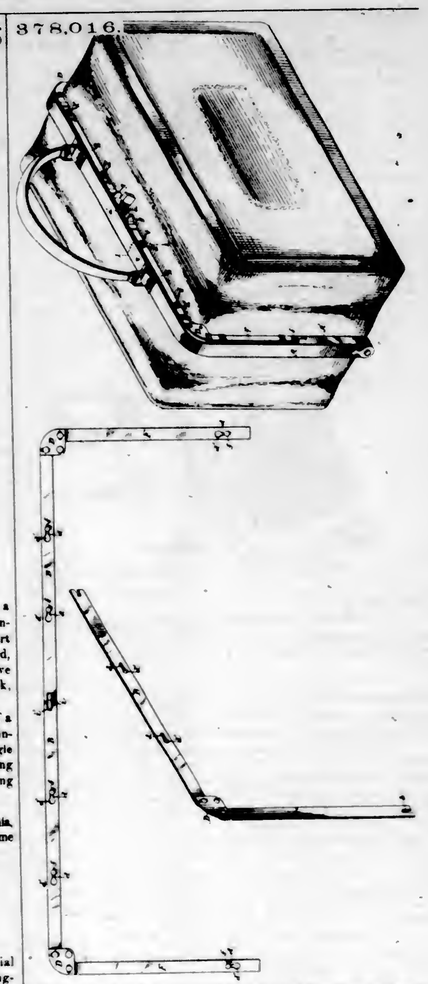
378,016. FASTENING FOR TRAVELING-BAGS OR VALISES. HENRY W. MORROW, Wilmington, Del. Filed Oct. 24, 1887. Serial No. 253,159. (No model.)

Claim.—1. The combination of the frames of a bag or valise, retaining-catches on one frame, and top and side bolts carried by the other frame, and having portions which engage with or are released from said catches as the bolts are moved, said top and side bolts being joined at the corners of the frame, whereby each side bolt is controlled by the top bolt, all substantially as specified.

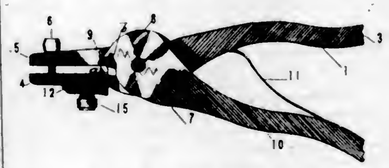
2. The combination of the frames of a bag or valise, retaining-catches on one frame, top and side bolts carried by the other frame, joined at the corners thereof, and having portions which engage with or are released from the catches as the bolts are moved, and a locking device acting on the top bolts and serving to prevent retraction of the same, all substantially as specified.

3. The combination of the frames of a bag or valise, retaining-catches on one frame, top and side bolts carried by the other frame, and having portions which engage with or are released from said catches as the bolts are moved, and levers whereby the top and side bolts are joined at the corners of the frame, all substantially as specified.

378,016. [illegible]



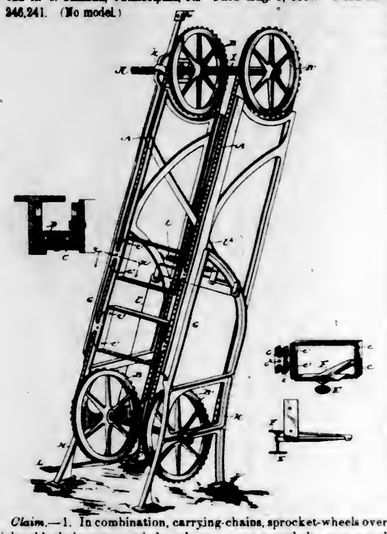
378,017. SAW-SET. WILLIAM H. NELSON, Washington, D. C. Filed Dec. 22, 1886. Serial No. 222,255. (No model.)



Claim.—The saw-set described, consisting of the body portion 1, having the supporting-arms 4 and 5, the lower supporting-arm having the inclined bearing-surface *a*, the saw-set portion 7, having the tongue 9, provided with the bearing-surface *b*, and the gage-plate having the slot 13, bearing-fingers 14, and set-screw 15, as set forth.

adapted for the passage of a branching wire or wires thereat, substan-

378,018. CARD-GILDING MACHINE. CASPER PADMORE and MANUEL A. T. GILLBER, Philadelphia, Pa. Filed Aug. 5, 1887. Serial No. 246,241. (No model.)



Claim.—1. In combination, carrying-chains, sprocket-wheels over which said chains are carried, and one or more card-clamps secured to said carrying-chains.

2. In combination, carrying-chains, sprocket-wheels over which said chains are carried, and one or more card-clamps secured to said carrying-chains, and means to cause one set of sprocket-wheels to revolve.

3. In combination, carrying-chains, sprocket-wheels over which said chains are carried, one or more card-clamps secured to said carrying-chains, means to cause one set of sprocket-wheels to revolve, and ways extending from the lower to the upper sprocket-wheels.

4. In combination, carrying-chains, sets of sprocket-wheels over which said chains are carried, one or more clamps secured to said chains, a main driving-shaft, a shaft connecting the upper sprocket-wheels, a clutch connected with said main driving-shaft, and intermediate mechanism, whereby the sprocket-wheels may be thrown in or out of gear with the driving-shaft.

5. In combination, carrying-chains, sets of sprocket-wheels over which said chains are carried, one or more clamps secured to said chains, a main driving-shaft, a shaft connecting the upper sprocket-wheels, a clutch connected with said main driving-shaft, treadle L, cord *l*, spring *l'*, and lever *l²*, whereby the sprocket-wheels may be thrown in or out of gear with the driving-shaft.

6. In combination, carrying-chains, sprocket-wheels over which said chains are carried, and one or more card-clamps flexibly connected with said chains.

7. In combination, carrying-chains, sprocket-wheels over which said chains are carried, one or more card-clamps, wings attached to said clamps, and means to attach said wings to said sprocket-chains.

8. In combination, carrying-chains, sprocket-wheels over which said chains are carried, one or more card-clamps, wings attached to said card-clamps, screws passing through said wings, and the chains and wedges, whereby said card-clamps are attached to said sprocket-chains.

9. In combination, carrying-chains, sprocket-wheels over which said chains are carried, one or more card-clamps connected with said chains, and ways extending above the lower sprocket-wheels, and mechanism attached to said clamps which moves in said ways.

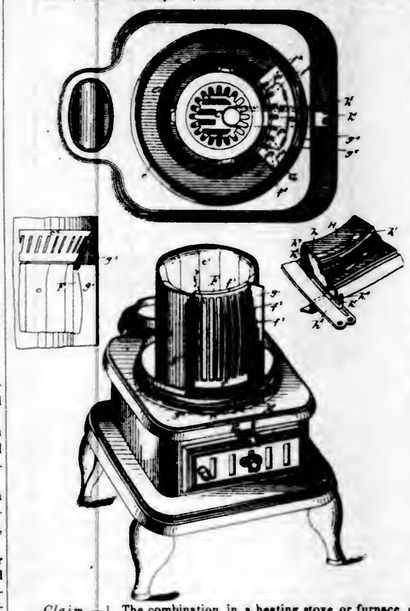
10. In combination, carrying-chains, sprocket-wheels over which said chains are carried, ways extending from the lower to the upper sprocket-wheels, one or more card-clamps, wings attached to said card-clamps, screws passing through said wings, and the chains and wedges constructed to travel in the ways.

11. In combination, carrying-chains, sprocket-wheels over which said chains are carried, ways extending above the lower sprocket-wheels, one or more card-clamps, wings attached to said card-clamps, screws passing through said wings, and the chains and wedges constructed so as to travel in the ways, whereby the card-clamp is attached to the sprocket-chain and guided in the ways.

12. In combination, carrying-chains, sets of sprocket-wheels over which said chains are carried, one or more card-clamps flexibly attached to said chains, the lower set of sprocket-wheels being of sufficient diameter to bring the card-clamps outward in front of the operator, and means to cause said sprocket-wheels to revolve.

13. A card-clamp which consists of a frame, a hinged leaf, and a screw to force said hinged leaf up under the cards, substantially as and for the purpose described.

378,019. HEATING STOVE OR FURNACE. L. LEMOY ROWE, Boston, Mass. Filed Apr. 26, 1886. Serial No. 200,163. (No model.)



Claim.—1. The combination, in a heating stove or furnace, of the continuous fire-pot casing or shell *c*, the outer casing, *e*, and the vertical partition-plates *g g'*, forming the downflues E E, the combustion-chamber D, the section g^3 of the upper base-plate, forming, with the partition-plates *g g'*, the chamber G, which is closed at its bottom and sides and which opens into the downflues E E, and the section F of the fire-pot wall, having the openings f^3 extending from the fire-pot into the chamber G, as and for the purposes described.

2. In a heating stove or furnace, in combination with the fire-pot C and the combustion-chamber D, the chamber G, formed by the plates *g*, *g'*, and g^3 and opening into the downflues E E, the section F of the fire-pot wall, having the openings f^3 connecting the fire-pot with the said chamber G, the casing c^3, having an opening, g^4, to the said chamber G, and the door g^5, for closing said opening, substantially as described.

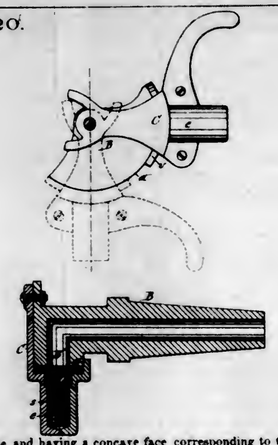
3. The combination of the chamber G, the base-plate g^3, the opening *h* in the base-plate from the chamber G, the cover or plate H, hinged to the base-plate to swing downwardly into the ash-pit, and the closing arm or device h^4, substantially as described.

4. The combination, in a heating stove or furnace, of the chamber G, having an opening, *h*, to the ash-pit chamber, which is normally closed by a hinged cover or plate, H, the said cover or plate H, the grate slide or bar h^2, and a device connecting the slide or bar with the cover or plate H, adapted to be operated by the movement of the slide or bar h^2 in oscillating the grate to automatically release the cover H to expose or uncover the opening *h*, substantially as described.

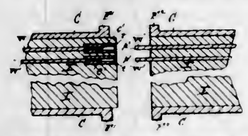
378,020. FAUCET. ELIJAH U. SCOVILLE, Manlius, N. Y. Filed Apr. 29, 1884. Serial No. 129,703. (No model.)

Claim.—The combination of the barrel B, having the discharge end of its duct terminated at right angles to the longitudinal axis of the barrel, and provided thereat with a segmental convex valve-seat concentric with the longitudinal axis of the barrel, and having its axis in line with said axis of the barrel, a gate formed with arms pivoted on the barrel at right angles to the aforesaid axis, and a valve carried on said gate and having a concave face corresponding to the convex valve-seat, all constructed and combined substantially in the manner specified and shown.

378,020.



378,021. UNDERGROUND ELECTRICAL CONDUIT. ROBERT F. SILLIMAN, Troy, N. Y. Filed May 23, 1887. Serial No. 239,036. (No model.)



Claim.—1. In an underground electrical conduit, the combination of an inclosing-pipe or cable-case made in sections adapted to connect at the ends by flanges and bolts and joints, an insulating material filling the section, made to project at one end of each of the pipe or case sections beyond the latter, and at each of the other ends of each of the sections made flush with the latter, and a washer arranged around the end-projecting insulating material and between the end-connecting flanges of the cable-case or pipe sections, substantially as and for the purposes set forth.

2. In an underground electrical conduit, an inclosing-pipe or cable-case made in sections and adapted to connect at the ends, substantially as described, wires arranged within the pipe or cable-case sections, embedded in insulating material, which wires at one of the ends of each section, together with the insulating material, subtend coincidently the end of the pipe or case sections, and which wires at their opposite ends project beyond the ends of the pipe or case sections, with the insulation ending flush with the end of the pipe or case sections, substantially as and for the purposes set forth.

3. In an underground electrical conduit, the combination of a pipe or exterior case made in sections that are adapted to connect at each end substantially as described, an insulating material arranged in each of the case-sections, filling the spaces between the wires thereof, said insulating material being at one end of each of said pipe or case sections made to subtend the latter and at the other end made flush therewith, wires arranged within the case, and insulating material with the connecting ends of the wires at one end of each of the pipe or case sections made flush with the subtending end of the insulating material and at their opposite ends made to project beyond the insulation where the latter is flush with the pipe or case sections, substantially as and for the purposes set forth.

4. In an underground electrical conduit, the combination of a pipe or case made in sections that are adapted to be connected at the ends, and insulating material arranged in each pipe or case section, filling the spaces between the wires thereof, which insulating material at one end of each pipe or case section subtends the latter and at each of the other ends is flush with the pipe or case end, wires arranged within the insulating material so as to have their coupler ends at one end of the pipe or case sections flush with the subtending end of the insulating material thereat and at their other ends to project beyond the insulating material where flush with the pipe or case sections, and a gasket or washer arranged around the projecting end of the insulating material and between the end flanges of each section, said gasket being adapted for the passage of a branching wire or wires thereat, substantially as shown and described.

5. An underground conduit for electric wires, consisting of a series of pipe or cable-case sections, C, adapted to connect substantially as described, an insulating material in each section arranged at one end to project beyond the pipe or cable-case section and at the other end to be flush therewith, wires arranged in each section of pipe or cable-case, said wires having tube-form coupler ends within the subtending end of the insulating material that are flush therewith and at their opposite ends made to project beyond the insulating material and pipe or case end, substantially in the manner as and for the purposes set forth.

6. An underground conduit composed of a series of sections adapted to connect by means of flanges and bolts at the ends of the cable-case sections, with the insulation and wires of each section made to subtend coincidently one of the ends thereof, and at the other end with the insulation flush with the ends of each of the cable-case sections and the wire ends projecting beyond the insulation, a washer or gasket around the subtending end of the insulating material and between the flanges of each section-case, and a branch wire or wires passing out through the flanges and within the gasket, as shown and described.

378,022. INK-BOTTLE. EDWARD R. SHEDIGAR, Maynard, Iowa. Filed Mar. 22, 1887. Serial No. 232,050. (No model.)



Claim.—1. In a pocket ink-bottle, the combination of valve F, spindle G, nut D, and sliding cap C, substantially as shown and described.

2. The combination, in a pocket ink-bottle having projecting pieces E, of case H, provided with end pieces I, having slots L, substantially as shown and described.

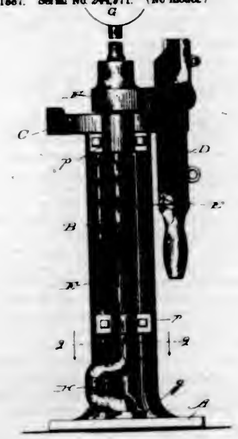
3. In a pocket ink-bottle, the combination, with the case H, of a perpetual calendar and watch-dial, substantially as shown and described.

378,023. METHOD OF MAKING CORSETS. XAVIER STUDLER, Jr., and JULES CARONNEL, Bar-le-Duc, Meuse, France. Filed Mar. 11, 1886. Serial No. 194,783. (No model.) Patented in France Aug. 28, 1884, No. 163,966, and in England July 14, 1885, No. 8,521.



Claim.—The herein-described improvement in the art of making corsets, which consists in weaving the corset of double thickness between as well as at the bone-pockets and connecting the two plies of the corset in the loom along the lines of the bone-pockets in the process of weaving, as set forth.

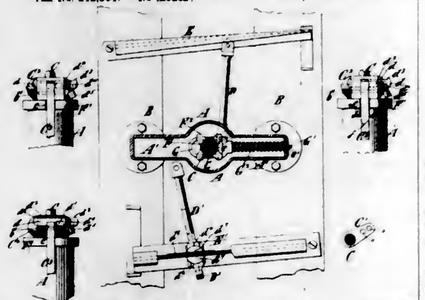
378,024. SWITCH-STAND. AXEL A. STROM, Austin, Ill. Filed July 22, 1887. Serial No. 244,971. (No model.)



Claim.—1. In a switch-stand, the combination, with the spindle and table, of a vertical column, B, having a longitudinal groove, *r*, to receive the spindle, substantially as and for the purpose set forth.

2. In a switch-stand, the combination of a vertical column, B, having a longitudinal groove, *r*, and provided with a flat base, A, carrying a rigid bearing, *q*, a table, C, upon the column, a rotatory spindle, E, extending outside the column beyond the upper end of the same to form the target or semaphore rod, and having a crank, H, at its lower end working in the bearing *q*, and a lever, D, connected with the spindle, substantially as described.

378,025. SWITCH-STAND. DWIGHT TRACY, New York, N. Y., assignor to Oliver H. Harris, Worcester, Mass. Filed Sept. 3, 1886. Serial No. 212,591. (No model.)



Claim.—1. The combination, with a switch-stand, a crank-shaft and crank, and an operating-handle, of a sleeve loosely surrounding the shaft, and which has no connection with the shaft save through the operating-handle, and engaging devices between the sleeve and stand, one of which is arranged to yield in a direction transverse to the shaft to the action of the other, substantially as herein described.

2. The combination, with a switch-stand, a crank-shaft and crank, and an operating-handle, of a sleeve surrounding the shaft and provided with a cam or engaging device, a yielding spring-actuated device on the stand, and a notched head or flange on the sleeve, with which the operating-handle may engage to connect the shaft and sleeve, substantially as herein described.

3. The combination, with a switch-stand, a crank-shaft and crank, and an operating-handle, of a sleeve surrounding the shaft and provided at one end with a notched head, with which the operating-handle may engage to connect the shaft and sleeve, and provided at the other end with a cam, and a yielding spring-actuated engaging device arranged to move transversely to the shaft and acting upon the cam, substantially as herein described.

4. The combination, with the switch-stand, the crank-shaft and its pivoted operating-handle, of a sleeve surrounding the shaft and provided with a notched head and a cam, and a spring-actuated yoke receiving the shaft through it and having a shoulder bearing against said cam, substantially as herein described.

5. The combination, with a switch-stand and a crank-shaft provided at one end with a crank and at that end fitting a bearing in the stand and provided at the other end with a pivoted operating-handle, of the sleeve F, fitting a bearing in the top of the stand and there provided with a notched head for the engagement of the operating-handle, and provided with a cam, F^3, and the spring-actuated yoke and guide-rod G G', forming a yielding engaging device, substantially as herein described.

6. As a new article, the switch-stand herein described, having a crank-shaft the crank of which is constructed for attachment of a switch-operating rod at different distances from its center, an operating-handle pivoted so as to swing in a vertical plane, a yielding lock for opposing a yielding resistance to the turning of the shaft when operated with a split or point switch, and a positive lock for holding the shaft positively against turning when operated in connection with a stub-switch, substantially as herein described.

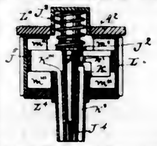
7. The combination, with the stand, crank-shaft, and yielding engaging devices of a safety-switch stand, of an operating-handle pivoted to swing in a plane parallel with the shaft and closing against the stand when swung into its locked position, and locking devices for holding the handle in such locked position, so that a lever or bar cannot be introduced between the handle and stand for turning the shaft, substantially as herein described.

8. The combination, with a switch-stand, a crank-shaft, and pivoted operating-handle, of a sleeve surrounding the shaft and provided with a head in which are notches for the engagement of the operating-handle at equidistant points around its circumference, and also provided with a cam, and a spring-actuated engaging device arranged upon the frame and acting upon said cam, substantially as herein described.

9. The combination, with the crank-shaft of a safety-switch stand, provided at the end with a head wherein is pivoted an operating-handle, of a locking-key fitted to a slideway in said head and notched to permit the swinging of the handle when the key is adjusted to proper position, but not otherwise, substantially as herein described.

WITHDRAWN.

378,026. COMBINATION-LOCK. OLUF VOLKERTS, Sac City, Iowa. Filed May 14, 1887. Serial No. 238,262. (Model.)



Claim.—1. The bolt B^3, formed in sections having cavities inside, the rod B^5, having a head inclosed in the said cavities, and the spring B^4, in combination with the case B, for the purposes stated.

2. The detachable case-section A^3, having a fixed post, J, the spring J^3, placed on said post, and the flanged collar J^2, placed over the said spring and on said post, constructed and combined with a case, A, substantially as shown and described, for the purposes stated.

3. The tubular stem J^4, having an enlargement, J^5, and radial slots in said enlargement, a series of sliding keys, *k*, having screw-seats *k'*, and adjustable stems *k''*, having screw-threaded ends extended through said screw-seats, constructed and combined to operate in the manner set forth, for the purposes stated.

4. The barrel L, having a fixed bottom, L^2, and guards *m''* on the inside face of said bottom, a fixed top, L^4, having guards *m'''* on its inside face, in combination with the tubular stem J^4 J^5, carrying the keys *k*, and the fixed post J, for the purposes stated.

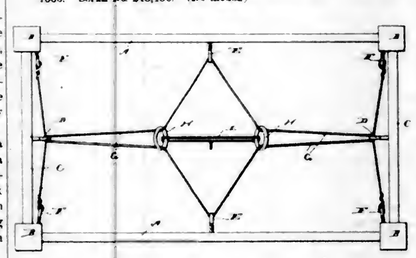
5. The rotating tubular stem J^4 J^5, having a cam, L^3, in combination with the rotating barrel L, and the case A, having fixed guards *m* and *m'*, for the purposes stated.

6. The rotating barrel L, having cogs on its periphery, the pivoted lever F^4, and the latch F, having a rack on its edge, constructed and combined in a case, to operate in the manner set forth.

7. The post J, the collar J^2, the spring J^3, the rotating device J^4 J^5, the keys *k k'*, the adjustable stems *k''*, the barrel L, having fixed bottom L^2 and fixed top L^4, and guards *m''* and *m'''*, constructed and combined to operate in the manner set forth.

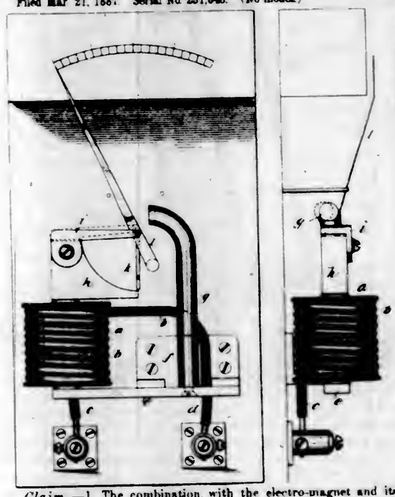
8. The key comprising the body *n*, having extension *n'*, the adjustable stem *r*, having a tongue, *r'*, on one of the said extensions, the mating-sections r^2, and the key-stem r^{3}, constructed and combined to operate in the manner set forth, for the purposes stated.

378,028. BRACE FOR BEDSTEADS. DUNBAR G. WARFIELD, Brownwood, assignor to Wade B. Morris, Sidney, Tex. Filed Sept. 9, 1886. Serial No. 213,130. (No model.)



Claim.—The combination, with the bedstead having bolts F at the corners, the hooks D at the centers of the end rails, and the hooks E at the centers of the side rails, of the two wires on each side having their ends secured to the bolts F, engaging the hooks D, and passing to the side of the bed and engaging the hooks E, the rings H, strung on and embracing the adjoining wires between the hooks D and E, so as to cause the wires to be brought together, and the cord or strap I, connecting the said rings so as to slide the rings upon the wires, whereby when the cord is tightened the four sides of the bed will be drawn together, substantially as specified.

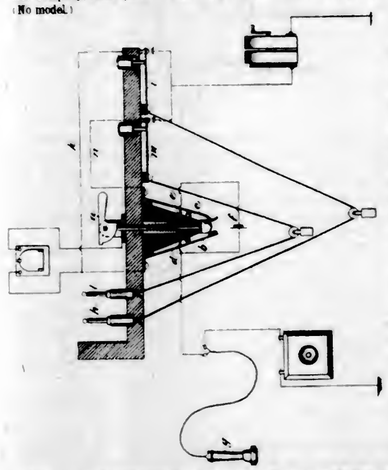
378,029. ELECTRIC-CURRENT INDICATOR. ERNEST P. WARNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Mar 21, 1887. Serial No. 231,645. (No model.)



Claim.—1. The combination, with the electro-magnet and its extended poles, one of said poles being fixed and the other adjustable, of an armature suspended between the poles, said armature being adjustable with respect to the fixed pole, a needle carried by the armature, and a uniformly-graduated scale to which the needle is adjusted to indicate units of current strength, as described.

2. The combination, with the extended poles of the electro-magnet, of an adjustably-suspended armature between said poles, one of said poles being adjustable and the other fixed, the said fixed pole presenting a concave surface to the free end of the suspended armature, the pivoted center of the armature being above the radial center of the curved surface to cause the swinging end of the armature to approach gradually nearer thereto as it is swung upwardly to balance the weight of the armature, as described.

378,030. TELEPHONE-EXCHANGE CENTRAL-OFFICE CONNECTION. ERNEST P. WARNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Nov. 17, 1887. Serial No. 255,450. (No model.)



Claim.—1. The combination, with a pair of cords and plugs, of a loop-switch and a test-battery in circuit between two contact-points of the switch, and contact-springs normally resting on said contact-points to close the battery to the cords, and a telephone in a circuit branched from one of the contact-points to ground, substantially as described.

2. The combination, with a pair of cords and plugs, of a telephone included in a branch circuit to ground, a loop-switch, with a battery in circuit between two contacts of the switch, and circuit-changing devices for disconnecting the telephone and battery from the cords and connecting the two cords together, substantially as described.

378,031. MANUFACTURE OF WIRE. ELBRIDGE WHEELER, Boston, Mass., assignor to himself, Ware R. Gay, and George W. Gogin, trustees, all of same place. Filed Apr. 30, 1886. Renewed July 21, 1887. Serial No. 244,925. (No model.)



Claim.—1. The art or method of forming wire, which consists, first, in placing a core of non-metallic material within a mold; second, pouring or casting molten metal into said mold to envelop and surround said core with a metal body; third, reducing the ingot thus formed into blooms; fourth, capping or plugging the ends of said blooms, and, lastly, reducing said blooms to form a wire having a non-metallic core or center, substantially as described.

2. As a new article of manufacture, a wire consisting of a seamless metal body containing and enveloping a core of non-metallic material, substantially as described.

3. The art or method of forming wire, which consists, first, in placing a core of non-metallic material within a mold; second, pouring or casting molten metal into said mold to envelop and surround said core with a metal body; third, reducing the ingot thus formed into blooms, and, lastly, reducing said blooms to form a wire having a non-metallic core or center, substantially as described.

378,032. METHOD OF MAKING CUFFS. ALVINZE WHITED, Troy, N. Y., assignor to Holmes & Ide, same place. Filed Aug. 5, 1884. Serial No. 139,992. (No model.)



Claim.—The method herein described for uniting and completing an apparel-cuff, which consists in cutting from the fabric two half-facings, f' f^3, of unequal transverse widths, then sewing a border-hem, H, in the straight inner edge of the wider part facing, then disposing a full-form facing, F, between ply-forms F' F^3 and the two part facings f' f^3, the said two part facings being lapped at the longitudinal middle of the cuff, with the hemmed edge on the outside, then securing all the parts together by a line of border-stitches, S', then turning the full-width facing to the outside through the opening between the two part facings, then running a line of border-stitches, R, around the edge of the turned parts, and then running a line of stitches, S^2, through the meeting or lapped edges of the two part facings and through the other blanks of the cuff, substantially as described, and for the purpose stated.

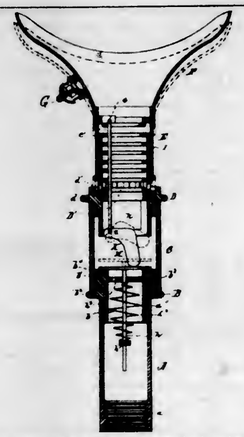
378,033. INHALER. BASIL M. WILKINSON, Baltimore, Md., assignor to the S. S. White Dental Manufacturing Company, Philadelphia, Pa. Filed Oct. 19, 1883. Serial No. 109,470. (No model.)

Claim.—1. In an inhaler, a tubular pipe portion fitted with a feed or inlet opening, and a sliding pipe-section fitted to slide on said pipe portion and open and close said feed-opening, substantially as described.

2. In an inhaler, a tubular pipe portion fitted with a feed or inlet opening or openings in its periphery, a sliding pipe-section fitted to slide on said pipe portion and open and close said feed-opening, and a spring to maintain said sections in a normal position with respect to each other and return them thereto when the operating pressure is released, substantially as described.

3. An inhaler provided with an exhalation-passage, a separate air-inlet passage, and a third passage to be opened upon the closing of

378,033.



said air-passage to admit of breathing the anæsthetic, substantially as described.

4. The combination, in an inhaler, of a pipe portion, one section of which slides upon another, a gas-valve, and a cam operated by sliding one of said sections upon the other to lock and release said gas-valve, substantially as described.

378,034. BOOT OR SHOE. CAROLINE H. WINTER, Philadelphia, Pa., assignor of one-half to Sarah C. Johnson, same place. Filed July 30, 1887. Serial No. 245,703. (No model.)



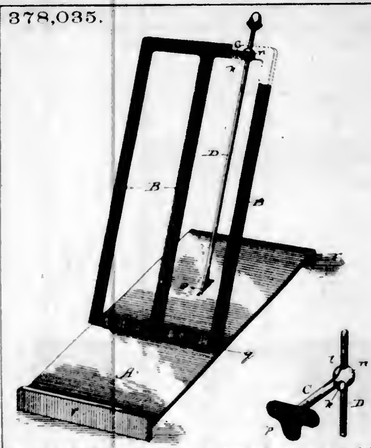
Claim.—A straight shoe, or shoe made to fit either foot, having a row of buttons at the free edges of the central slit in the upper, and having the said edges extending only partly upon the instep, and provided with a central double flap, formed like two of the usual flaps for button shoes, united by a central seam and covering the open space between the edges of the central slit, and provided with a row of button-holes at each edge, the buttoned shoe presenting a row of buttons upon its outer side when worn on either foot, as shown and described.

378,035. DISPLAY-STAND. JAMES J. ANDERSON, Chicago, Ill., assignor of one-half to John E. Waugh, same place. Filed Oct. 28, 1887. Serial No. 253,625. (No model.)

Claim.—1. A display-stand for supporting and displaying cloth or the like in rolls or bolts, comprising, in combination, a horizontal base, A, a back, B, supported on the base transversely thereof at a line from which the portion of the base at the front side of the back will afford a surface for directly supporting the undermost roll or bolt to be displayed, and adapted to be oscillated toward the opposite ends of the base, and a supporting-rod, D, pivotally connected at one end to the base at the rear side of the back and adjustably connected toward its opposite end with the back near the upper end thereof, substantially as described.

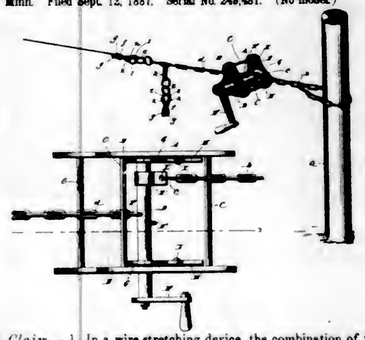
2. A display-stand for supporting and displaying cloth or the like in rolls or bolts, comprising, in combination, a base, A, a back, B, hinged to the base transversely thereof between its opposite ends at a line from which the portion of the base at the front side of the back will afford a surface for directly supporting the undermost roll

378,035.



or bolt to be displayed, a clamping device having an arm rigidly secured to the back near its upper end and provided with a rigid perforated head, and a supporting-rod, D, pivotally connected at one end with the base at the rear side of the back and extending toward its opposite end through the perforated head to be held therein, and whereby, on releasing it, the perforated head in oscillating the back B slides up and down upon the supporting-rod, and the supporting-rod oscillates upon its pivot with the back, substantially as described.

378,036. WIRE-STRETCHER. FREDERICK O. BJUGSTAD, Watson, Minn. Filed Sept. 12, 1887. Serial No. 249,481. (No model.)



Claim.—1. In a wire-stretching device, the combination of the frame A, the shaft B, journaled therein, and having the ratchet-wheels and the eyes adapted for the attachment of a hooked chain, for the purpose set forth, the dogs or pawls pivoted to the frame and adapted to engage the ratchet-wheels, and the ring fitted loosely on the shafts, and also adapted for the attachment of a hooked chain, substantially as described.

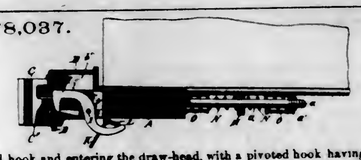
2. The combination of the frame A, the shaft journaled therein, having the crank-handle and provided with the ratchet-wheels, the pawls or dogs pivoted to the frame and engaging the ratchet-wheels, the ring K on the shaft, the chain connecting said ring to a fixed point, and the chain *c*, attached to the said shaft, adapted to be coiled thereon when the shaft is rotated, and provided with the wire-clamping device, and the supplemental chains *k*, attached to the chain *c* and provided with the independent wire-clutching devices, substantially as described.

378,037. CAR-COUPLING. PERRY BROWN, Louisville, Ky. Filed May 3, 1887. Serial No. 236,912. (No model.)

Claim.—1. The combination, in a coupling, of a draw-head and a swinging hook, as C, with a locking-hook, as H, constructed to perform the double function of locking the hook C and engaging with a link, substantially as described.

2. The combination, in a coupling, of a draw-head and a swinging hook provided with an arm arranged substantially at right angles to

378,037.



said hook and entering the draw-head, with a pivoted hook having its point constructed to drop in front of said swinging arm, substantially as described.

3. The combination, in a coupling, of a draw-head adapted to receive a link, an automatically-locking hook, as C, and a hook, as H, constructed to hold a link, substantially as described.

4. The combination, in a coupling, of a swinging hook, C, having arm C', a vertically-acting lock provided with a rear extension, and a shaft, as J, constructed to operate the hook from the side of the car, substantially as described.

5. The combination, in a coupling, of a draw-head having a horizontal opening and a vertical recess crossing said opening, and a hook, as C, provided with an arm at right angles thereto and constructed to swing into said opening, with a pivoted hook constructed to lock said hook C, and supported by the front walls of the recess, substantially as described.

6. The combination, in a coupling, of a draw-head, A, having ears G G', and a hook swinging on a pivot set in said ears and provided with projections catching into notches on one of said ears, substantially as and for the purpose specified.

7. The combination, in a coupling, of a draw-head, A, having ears G G', one of said ears being provided with notches, a hook swinging on a pivot set in said ears and provided with projections catching into said notches, and a spring constructed and arranged to press said projections into said notches, substantially as described.

8. The combination, in a coupling, of a draw-head having ears G G', said ears having notches *g g* and a recess, F, and a hook swinging on a pin forced downward by a spring around said pin and concealed in said recess and provided with projections catching into said notches, substantially as shown and described.

378,038. CAR-COUPLING. PERRY BROWN, Louisville, Ky. Filed Aug. 27, 1887. Serial No. 248,059. (No model.)



Claim.—1. A draw-head of the character described, having its mouth formed on the arc of a circle drawn substantially at right angles to the axis of the draw-head, combined with a clutch pivoted to said draw-head at the rear of one end of said arc and having the outer face of its hook formed substantially on the arc of a circle, as set forth.

2. The combination, with the draw-head and the clutch pivoted thereto, of a dog pivoted to said draw-head and working in a chamber therein and engaging the arm of the clutch, and a spring secured at one end directly to the rear end of the dog and at its other end to the draw-head, substantially as described.

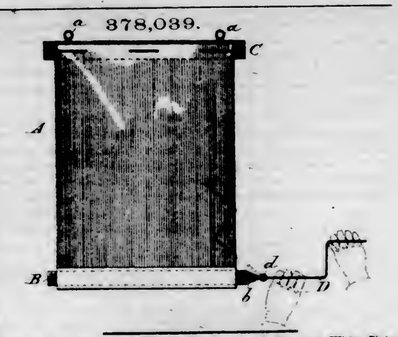
3. The combination, with the draw-head having a horizontal recess and a chamber, *b*, of a clutch pivoted to said draw-head and having an arm working in said recess, and a pivoted dog working in said chamber, with its side engaging the point of said arm, substantially as described.

378,039. WINDOW-SHADE ATTACHMENT. SOLON O. CAMPBELL, Goshen, Iowa. Filed July 19, 1887. Serial No. 244,763. (No model.)

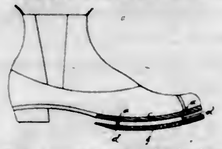
Claim.—1. The combination, with a hanging shade and lower rod attached thereto, of a crank bent from a wire rod and movably connected with one end of the curtain-rod, whereby said rod may be revolved and the curtain elevated and then held in any desired position by throwing said crank to one side of the curtain, substantially as described.

2. The combination, with a curtain and its lower rod, upon which the curtain rolls when being elevated, of a device for rolling said rod, consisting of a crank connected by an eye in the end thereof to a staple in one end of the curtain-rod, said crank being adapted to be moved into engagement with the edge of the curtain for the purpose of maintaining it in any desired position, substantially as shown and described.

378,039.



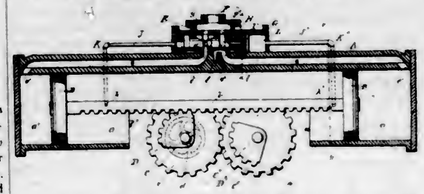
378,040. BOOT OR SHOE. GEORGE T. CHAPMAN, White Plains, N. Y. Filed June 9, 1887. Serial No. 240,819. (No model.)



Claim.—1. The combination, with a shoe having metallic sockets in the ordinary permanent sole, one near the toe and the other well back of the ball, near the shank, of the detachable sole having corresponding studs adapted to engage in and secure said sole by the sockets, substantially as described.

2. The combination, with a shoe having metallic sockets in the ordinary permanent sole, one near the toe and the other well back of the ball, near the shank, of the detachable sole having corresponding hook-studs adapted to engage the sockets when shifted apart by springing the detachable sole, and to secure the same, by the resilience thereof, substantially as described.

378,041. STEAM-ENGINE. FRANCIS A. CRESWELL, Strongstown, Pa. Filed Apr. 11, 1887. Serial No. 234,376. (No model.)



Claim.—1. The combination of the main cylinder open centrally on one side, the similar pistons moving in the complete ends of said cylinder, the piston-rod connecting said pistons and having a rack formed upon it, the similar shafts provided with equal-sized intermeshing gear-wheels, the similar segmental gears secured to their respective shafts in such positions that one engages with the rack on the piston-rod as the other disengages therewith, and that the said change of engagement occurs at the end of each stroke of the pistons, substantially as specified.

2. The combination, with the main cylinder having the steam-ports *e e* and exhaust-port *e'*, the two similar pistons and the rod connecting the latter, of the steam-chest having the steam-ports *g g'* in its cylindrical portion, the hollow piston-valve provided with the port H' and exhaust-spaces *i i'*, and the steam-tubes J J' and K K', respectively opening into the cylinder at the points *k k'*, substantially as specified.

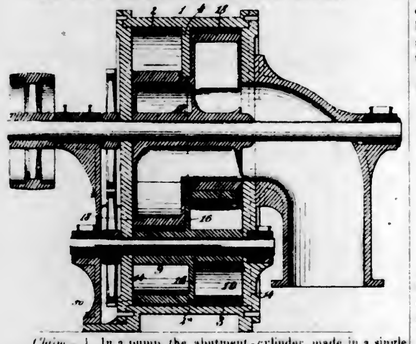
3. The combination, with the main cylinder having the steam-ports *e e* and exhaust-port *e'*, the two pistons and connecting piston-rod of the steam-chest having the ports *g g'* in its cylinder, the piston-valve provided with the steam-ports H', *h*, and *h'*, and exhaust-spaces I, *i*, and *i'*, the tubes J J' and K K', opening into the main cylinder at the points *k k'*, and mechanism, substantially as described, to half rotate the piston-cylinder.

4. The combination, with the main cylinder having the steam

ports *e e* and exhaust-port *e'*, and the two pistons and connecting piston-rod, of the steam-chest having the steam-ports *g g'* on its cylinder G, the piston-valve provided with the steam-ports H', *h*, and *h'*, and exhaust-spaces I, *i*, and *i'*, the steam-tubes J J' and K K', the toothed portion L of the piston-valve, and the straight rack-bar *l*, engaging therewith, substantially as specified.

5. The combination, with the main cylinder having the open part *a*, complete end parts, *a'*, steam-ports *e e* and exhaust-port *e'*, the two pistons B, and piston-rod *b*, having the rack *b'* formed upon it, the two shafts C C', connecting the intermeshing gear-wheels *c c'*, and the segmental gears D D', secured, respectively, in said shafts, of the steam-chest provided with the steam-ports *g g'* on its cylinder G, the piston-valve provided with the port H' and steam-spaces *i i'*, and the steam-tubes J J' and K K', opening into the end ports, *a'*, of the main cylinder at the points *k k'*, substantially as specified.

378,042. **DUPLEX PUMP OR BLOWER.** JOSIAH DOW, Lowell, Mass. Filed Oct. 23, 1886. Serial No. 217,442. (No model.)



Claim.—1. In a pump, the abutment-cylinder, made in a single piece, having opposite alternately-arranged peripheral openings or cavities, and provided with interior chambers the open ends of which lie against the vertical walls of the abutment-seat, substantially as described.

2. In a pump, the combination of the abutment-cylinder, made in one piece, and having recesses or cavities in its periphery, the casing or shell having a vertical partition and a rim-shaped bottom continuation thereof, and the detachable end heads, with the piston-cylinder bearing upon the abutment-cylinder, and having pistons adapted to work in its cavities or recesses, substantially as herein set forth.

3. In a pump, the combination of the abutment-cylinder having peripheral cavities and openings extending from end to end with the casing and heads and the piston-cylinder, substantially as described.

4. In a pump, the combination, with the abutment-cylinder, having alternate and opposite peripheral cavities, and provided with grooves in its ends adapted to hold fluid for the purpose of packing, of the casing having a central packing-rib, the heads, and the piston-cylinder, the grooves in the said abutment-cylinder opening against the vertical walls of the abutment-seat, substantially as described.

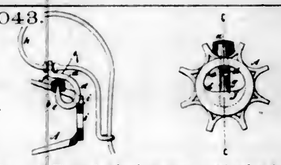
5. The combination, with the casing having an abutment-seat and a discharge-pipe, of a bridge-piece arranged between the two, the abutment-cylinder having peripheral cavities, and the piston-cylinder having pistons operating in said cavities, a relief-space being provided between the bridge-piece and the said pistons and between the pistons and the entrances of the peripheral openings of the abutment-cylinder, said spaces decreasing as the pistons advance in said openings, and being closed as at or about at the central part thereof, from which point the pistons have a firm bearing, substantially as described.

6. The combination, with the pump-casing having an abutment-seat, and provided with fluid-filled recesses extending from the ends toward the center, of a central packing-rib, and an abutment-cylinder turning upon said rib, said abutment-cylinder having interior chambers the open ends whereof lie against the vertical walls of the abutment-seat, substantially as described.

7. In a pump, the combination, with the casing having a discharge-pipe upon one side, of the abutment-cylinder having peripheral openings, pistons co-operating with the same, and a bridge intermediate between the discharge and the abutment cylinder, a relief-space being provided between said bridge and the piston, substantially as specified.

378,043. **SETTING FOR ORNAMENTS.** WILLIAM C. ROSE, Newark, N. J. Filed May 28, 1887. Serial No. 239,633. (No model.)

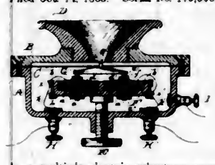
878,043.



Claim.—1. The rod *d*, having prong *e* and point *f* and adapted to pass within the holder, combined with the inverted cup *a*, carried by the holder A, with its interior *b* facing the center of the holder, the cup *a* resting on the point *f* of the rod *d* within the holder, substantially as described.

2. The rod *d*, adapted to be connected with a suitable support and having the prong *e* and the retaining part *g*, combined with the holder A, and cup *a*, carried by said holder, the interior of cup *a* facing the center of the holder A, the prong *e* being adapted to pass within the holder and to receive the cup *a* upon its point *f*, the part *g* preventing the withdrawal of the rod *d* while the parts are in position, substantially as described.

378,044. **TELEPHONE-TRANSMITTER.** THOMAS A. EDISON, Menlo Park, N. J. Filed Oct. 14, 1885. Serial No. 179,868. (No model.)



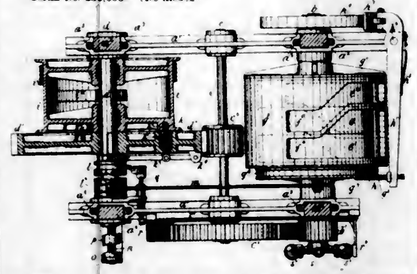
Claim.—1. In a multiple electric telephone-transmitter, the combination of two or more sets of electrodes supported by a common carrier mounted on a central adjusting-screw and turning therewith, substantially as set forth.

2. In a multiple electric telephone-transmitter, the combination of two or more sets of electrodes supported by a common carrier mounted on and turning with a central adjusting-screw, with a turning-yoke bearing on such electrodes and connected centrally with the diaphragm, substantially as set forth.

3. In a multiple electric telephone-transmitter, the combination of two or more sets of electrodes mounted upon a common metallic support and having separate insulated bearing or contact plates, connected with insulated circuit-connections, substantially as set forth.

4. In a multiple telephone-transmitter, the combination of the central adjusting-screw supporting a metallic electrode-carrying plate turning therewith, two or more sets of electrodes carried by said plate and connected together on one side electrically by such plate, separate insulated bearing or contact plates for such electrodes connected mechanically with the diaphragm, insulated rings on the carrier-plate with which said separate contacts are electrically connected, springs bearing on such insulated rings, and insulated binding-posts for such springs, substantially as set forth.

378,045. **ELEVATOR-CONTROLLING DEVICE.** QUIMBY N. EVANS and WILLIAM SCHWANHAUSSER, Brooklyn, N. Y. Filed Sept. 19, 1887. Serial No. 250,053. (No model.)



Claim.—1. In an elevator comprising a driving-shaft, pulleys, a belt-shifter, a main shaft, and connecting-gears, in combination therewith a cable-drum on the main shaft, having an inclined groove in its end and driven positively in one direction by studs projecting from the gear secured to the main shaft, a sliding pin in the gear resting in the inclined groove on the end of the drum, and connecting devices joining the sliding pin to the belt-shifter, whereby the belt-shifter is actuated when the drum moves slower than the main shaft in unwinding the cable.

2. In an elevator comprising a driving-shaft, pulleys, a belt-shifter, a main shaft, and connecting-gears, in combination therewith a gear-wheel secured to the main shaft, a drum fitted loosely thereon having an inclined groove on its end, a spring connecting the drum and shaft, driving-studs on the wheel acting against lugs on the drum, a sleeve on the shaft provided with clutch-teeth, a spring-pin fitted in the wheel and extending into the inclined groove on the end of the drum, a lever connecting the spring-pin to the sleeve-clutch, a rocking yoke-piece provided with clutch-teeth, and a link connecting the yoke to the belt-shifter, substantially as and for the purpose set forth.

3. In an elevator comprising a driving-shaft, pulleys, a belt-shifter, a main shaft, and connecting-gears, in combination therewith a centrifugal governor on the end of the driving-shaft, an arm carried by a shaft and located in the path of the expanding parts of the governor when the speed of the same exceeds a prescribed limit, and mechanism connecting the shaft of the arm to the belt-shifter, whereby the belt-shifter is actuated to stop the elevator when the governor strikes the arm.

4. In an elevator comprising a driving-shaft, pulleys, a belt-shifter, a main shaft, and connecting-gears, in combination therewith a sleeve-clutch on the main shaft, a yoke in line therewith provided with clutch-teeth and connected to the belt-shifter, a sliding spring-acting rod provided with a tongue arranged to move the sleeve-clutch, a shaft fitted in bearings at right angles to the driving and main shafts, provided with a tappet at one end which bears against the end of the sliding rod, and a spring to hold this shaft from rotating, an arm secured to the other end of this shaft and held parallel to the driving-shaft, and a centrifugal governor secured to the end of the driving-shaft.

5. In an elevator, the combination, with a driving-shaft, a central pulley secured thereto, two loose pulleys in close proximity to this fast pulley, and a straight and a crossed belt, of two connected inclined guides concentrically arranged relative to the pulleys, through which the leading sides of the belts pass, and adapted to be rocked on the axis of the driving-shaft and to be retained in three positions: first, to hold the belts on their respective loose pulleys; second, to move and hold the straight belt onto the fast pulley without disturbing the crossed belt, and, third, to move and hold the crossed belt onto the fast pulley without disturbing the straight belt.

6. In an elevator, a rotating belt-shifter consisting of a cylindrical shell provided with heads or end bearings and having openings partly straight and partly inclined to act as belt-guides, in combination with a shaft passing through the end bearings of the shell, three pulleys, one fast and the others loose on the shaft, located within the shell, and two belts passing through the openings in the shell and around the pulleys.

7. In an elevator, a rotating belt-shifter consisting of a cylindrical shell provided with heads or end bearings, and having openings partly straight and partly inclined, to act as belt-guides, in combination with a shaft passing through the end bearings of the shell, three pulleys, one fast and the others loose on the shaft, located within the shell, two belts passing through the openings in the shell and around the pulleys, a brake-wheel on one end of the shaft, a brake-lever having a shoe at one end in line with the brake-wheel, and a cam secured to the side of the belt-shifter and arranged to act on the other end of the brake-lever to apply the brake when the belt-shifter is in position to hold the belts on their respective loose pulleys.

8. In an elevator, in combination, the main shaft *d*, the drum *i*, the spring i^3, the gear-wheel d^2, provided with driving-studs *j j*, the spring bolt or pin *k*, the lever k^2, the sleeve-clutch *l*, the yoke l^2, the link *m*, the driving-shaft *b*, the pulleys *c c' c²*, and the rotary belt-shifter *g g' g² f⁵ f⁶*, substantially as and for the purpose set forth.

9. In an elevator, in combination, the main shaft *d*, the screw n^3, the clutch-teeth o' o^2, the nut *p*, the guide *n*, the yoke l^2, the link *m*, the driving-shaft *b*, the pulleys *c c' c²*, and the rotary belt-shifter *g g' g² f⁵ f⁶*, substantially as and for the purpose set forth.

10. In an elevator, in combination, the main shaft *d*, the sleeve-clutch *l*, the yoke l^2, the link *m*, the driving-shaft *b*, the pulleys *c c' c²*, the rotary belt-shifter *g g' g² f⁵ f⁶*, the centrifugal governor on the end of the driving-shaft, the arm r^2, the shaft r', the tappet r, the spring r^3, the sliding rod *q*, the spring q^2, and the hinged tongue q', substantially as and for the purpose set forth.

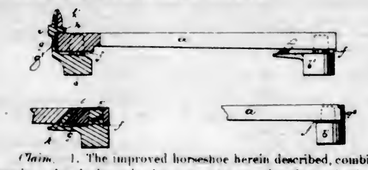
11. In an elevator, in combination, the driving-shaft *b*, the fast pulley *c*, the loose pulleys *c' c²*, the heads *g g'*, and the cylindrical shell g^2, provided with the inclined belt-guide openings f^5 and f^6 and the belt-clearance openings f^8 and f^7, substantially as and for the purpose set forth.

12. In an elevator, in combination, the driving-shaft *b*, the fast pulley *c*, the loose pulleys *c' c²*, the heads *g g'*, the cylindrical shell g^2, provided with the inclined belt-guide openings f^5 and f^6 and the belt-clearance openings f^8 and f^7, the cam A on the head *g*, the brake-lever h' h^2, and the brake-wheel h^3, secured to the shaft *b*, substantially as and for the purpose set forth.

13. In an elevator, in combination, a gear-wheel on the driving-shaft, a drum fitted loosely on the shaft and driven positively in one direction by studs on the gear-wheel, a clutch on the shaft, a shifting device connected to the moving part of the clutch and actuated by the drum when it moves relatively to the gear-wheel, a belt-shifter connected to the other part of the clutch, a rod provided with a hinged tongue extending in a groove in the sliding part of the clutch, a centrifugal governor on the end of the driving-shaft, a tappet device controlling the rod having the hinged tongue, and a pivoted arm connected to the tappet device and located in close proximity to the governor, substantially as and for the purpose set forth.

14. In an elevator, in combination, a belt-shifter, a pivoted yoke provided with clutch-teeth, an automatic stop connected to the pivoted yoke and constructed to actuate the same when the elevator reaches either of its extreme limits, a clutch-sleeve adapted to engage with the pivoted yoke, a slack-cable stop connected to the sliding sleeve, by which the said sleeve is caused to actuate the pivoted yoke when the cable tends to become slack, and a speed-regulator arranged to operate the sliding sleeve and move it to engage with the pivoted yoke when the speed of the elevator exceeds its prescribed limit.

378,046. **HORSESHOE.** JAMES B. FINCH, Newark, N. J. Filed Nov. 5, 1886. Serial No. 218,035. (No model.)

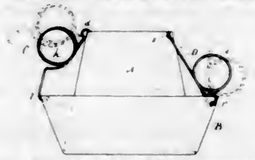


Claim.—1. The improved horseshoe herein described, combining therein a shoe-body, *a*, having recesses to receive the projections of the calk, and a calk having a tapering projection, *d*, an arm, *g*, extending from the body of the calk and adapted to be bent by a blow of a hammer, and a lug, teat, or projection formed on said arm and adapted to engage the shoe at an angle to said tapering projection and hold or lock the parts together, substantially as set forth.

2. The improved horseshoe, combining a shoe-body having recesses *e* and *h'*, a recess, *g'*, and a toe-calk, *b*, having a tapering projection lying in the recess *e*, an arm, *g*, extending upward in front of said shoe-body and lying in said recess *g'*, and provided with an inwardly-extending teat or projection, *h*, a space, *f*, being provided between the body of the calk and that of the shoe, substantially as and for the purposes set forth.

3. In a horseshoe, the combination, with the body thereof, of a toe-calk provided with a projection, *d*, and arm *g*, teat *h*, and holding lug or projection *i*, to receive the pliers and allow the teat *h* to be drawn from its perforation or recess to release the calk from the body, substantially as set forth.

378,047. **TRANSPLANTING-POT.** ISAAC N. FOSTER, Pembroke, Mass. Filed Sept. 19, 1887. Serial No. 250,046. (No model.)



Claim.—1. In a transplanting-pot of the character described, the combination of a pan, an expansible body, said body being in the shape of a hollow truncated cone, an elastic hinge connecting the body and pan, and an elastic clamp for securing the body in the pan, substantially as described.

2. In a transplanting-pot, the pan B, body A, hinge C, and clamp D, constructed, combined, and arranged to operate substantially as set forth.

3. The combination of the body A, provided with a hole near its upper end, and the pan B, also provided with a hole near its upper edge, and the hinge C, composed of elastic wire and provided with hooks at its opposite ends for engaging said hole and with an intermediate coil, *k*, adapted to serve as a handle, substantially as described.

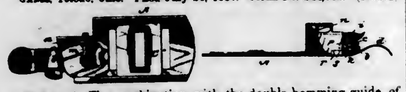
4. The combination of an expansible body, A, composed of a sheet-metal strip provided at one end with a socket for receiving the other end, and also provided with notches on its upper edge near its meeting ends, a detachable bottom for said body, a hinge connecting said

bottom and body, and a clamp, also connecting said bottom and body and engaging said notches for holding the body in closed position.

5. The body A, composed of sheet metal or analogous material, and having the socket *x* and recesses *v*, in combination with the elastic clamp D, elastic hinge C, and pan B, substantially as set forth.

6. In a device for transplanting plants, an expansible body composed of sheet metal, said body being in the shape of a hollow truncated cone, in combination with a pan for said body, a fastener for securing the body to the pan, and a fastener for keeping said body closed when filled with earth, substantially as described.

378,048. **HEMMER FOR SEWING-MACHINES.** WILLIAM H. GAMB, Toledo, Ohio. Filed July 21, 1887. Serial No. 244,922. (Model.)

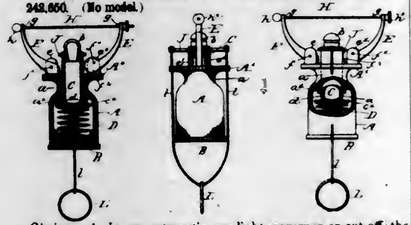


Claim.—1. The combination, with the double hemming-guide, of the adjustable gage-plate having an upper angular shoulder, a lower rectangular shoulder, and an intermediate lip to enter between the folded edges of two pieces of fabric, whereby the inturned edges are separated and carried out of line with each other at a properly-regulated distance, substantially as specified.

2. The combination, with the flat plate carrying the double hemmer-guides and the upwardly-projecting slotted bracket, of the gage-plate provided with guide-shoulders and a separating-lip, and the set-screw working within the bracket-slot, whereby said plate may be adjusted, substantially as specified.

378,049. WITHDRAWN.

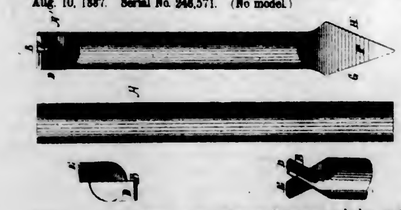
378,050. **AUTOMATIC GAS-LIGHT GOVERNOR.** CHARLES GREINER and JACOB GRUPP, Philadelphia, Pa. Filed June 27, 1887. Serial No. 242,650. (No model.)



Claim.—1. In an automatic gas-light governor or cut-off, the combination, with a casing, A, adapted to be secured to a gas-pipe, a sliding tubular section, C, fitted in an orifice in said casing, the lower end of which forms a cut-off-valve seating on the inside of the casing, and a spring, D, adapted to close said valve, of a fixed arm, F, a metallic rod, H, and a movable arm, E, said movable arm being pivoted to the casing A, and having an eccentric or cam end, f^3, which bears against section C when the rod H is expanded, substantially as described.

2. In an automatic gas-light governor or cut-off, the combination, with the tubular casing A, having an internal valve-seat, *a'*, the hollow cylindrical section C, sliding in said casing A, and provided with a valve, *f*, at its lower end and openings *d d* in its walls, the yoke J, secured to said section C, and the wires *l l* and spring D, of the fixed arm F and movable arm E, the latter being pivoted to said casing and having a cam-like end, f^3, adapted to bear against the section C, and an expansible rod, H, through which the movement of said arm is governed, all being constructed, arranged, and operating substantially as described.

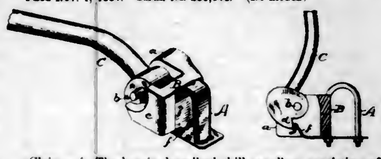
378,051. **FENCE-POST.** J. WOOL GRIFWOLD, Troy, N. Y. Filed Aug. 10, 1887. Serial No. 246,571. (No model.)



Claim.—1. As a new article of manufacture, a tubular metal fence-post having at one extremity the flattened portion A', slit longitudinally to form the crotch D E, substantially as described.

2. As a new article of manufacture, a tubular metal fence-post having at one extremity the flattened and pointed portion F and at the other extremity the flattened portion A', slit longitudinally to form the crotch D E, substantially as described.

378,052. **THILL-COUPLING.** WILLIAM HIER, Bethlehem, Conn. Filed Nov. 1, 1887. Serial No. 253,978. (No model.)



Claim.—1. The herein-described thill-coupling, consisting of the frame or shackle B, having one long ear bearing the coupling-pin and one short ear cut away to leave a space around that end of the coupling-pin for the lateral passage of the thill-iron, and the thill-iron C, fitted to said coupling-pin and space at the end of the short ear, and having the projection *d*, for entering the space between said long and short ears when said thill-iron is in position for use, substantially as described, and for the purpose specified.
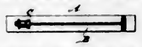
2. The combination of the frame or shackle B, having one long ear bearing the headless coupling-pin and one short ear cut away to leave a space around that end of the coupling-pin, the thill-iron C, adapted to slip laterally through said cut-away space on and off said coupling-pin, and having a shouldered projection, *d*, on its head at a point opposite the body of the thill-iron, and the spring *f*, secured at the under side of the frame or shackle, substantially as described, and for the purpose specified.

378,053. **SEAMLESS UNDER-GARMENT.** LEWIS C. HOPKINS, Brooklyn, assignor to the Dr. Jaeger's Sanitary Woolen System Company, New York, N. Y. Filed Nov. 17, 1887. Serial No. 255,418. (No model.)



Claim.—As a new article of manufacture, a seamless under-garment provided with an unbroken elastic waistband, a body intended to embrace the hips and the abdominal and lumbar regions, the recess D, and thigh-pieces provided on their inner and rear sides with hollow lobes G and terminating in elastic thigh-bands, substantially as described.

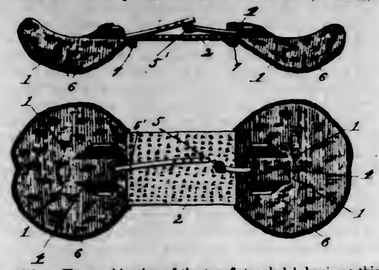
378,054. **SAFETY-CATCH FOR BREASTPINS.** JOHN JOHNSON, Baton Rouge, La. Filed Aug. 2, 1887. Serial No. 245,916. (No model.)



Claim.—1. In breastpins and similar articles, the combination, with a base-plate, a pin-tongue hinged thereon, a fixed post, a fixed socket attached thereto, said socket and post being provided with a recess for inserting the point of the pin-tongue, a sliding socket guided on the fixed socket, a spring acting on the sliding socket and pressing the same over the fixed socket, and means, substantially as described, for stopping the sliding socket in either direction, so as to permit either the releasing or inserting of the point of the pin-tongue, substantially as set forth.

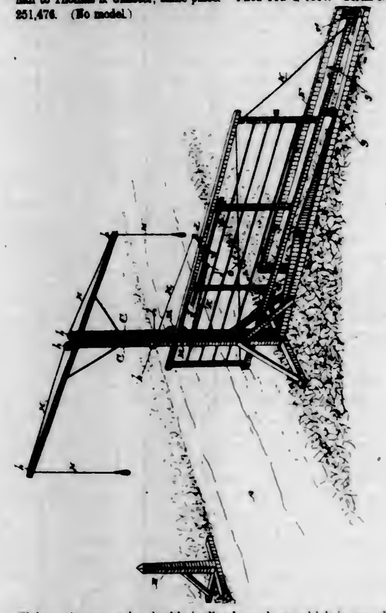
2. In breastpins and similar articles, the combination, with a base-plate and hinged pin-tongue, of a fixed post, a fixed socket attached thereto, said post and socket having a recess for the point of the pin-tongue, a sliding and spring-actuated socket guided on the fixed socket, said socket having an inwardly-bent flange at one end, and a screw-stud having an enlarged head, inserted into the outer end of the fixed socket, substantially as set forth.

378,055. **HORSE-COLLAR PAD.** FREDERICK W. KRAUSE, Sand Creek, Wis. Filed Apr. 20, 1887. Serial No. 235,542. (No model.)



Claim.—The combination of the two flat pads 1 1, having a thick under lining, 6, of soft material, and upper projections, 4, to retain the collar, the cross-strips 7, of pliable material, secured to the inner opposing ends of the pads 1, the thin webbing connected to the inner opposing ends of the pads 1, above the cross-stripe 7, and buckles 5 and strap 5', arranged substantially as described, and for the purposes set forth.

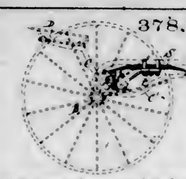
378,056. **GATE.** ROBERT B. LYON, Sonoma, Cal., assignor of one-half to Thomas R. Gleister, same place. Filed Oct. 4, 1887. Serial No. 251,476. (No model.)



Claim.—A gate and a double inclined track on which it travels, in combination with operating-cords and the means for attaching the cords to the gate, consisting of a pivoted lever to which the cords are attached, said lever being in the top center of the gate, and having its lower end forked, a sliding bar mounted in the gate, and having a pin playing between the arms of the lever, and a chain or cord connecting the bar with the gate-post, of such a length as to move the bar longitudinally at the end of each movement of the gate, whereby the pivoted lever is thrown from one side of the gate to the other and locked, substantially as and for the purpose herein described.

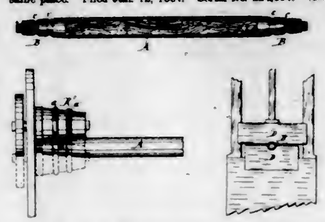
378,057. **TWO-WHEELED VEHICLE.** HARVEY A. MOYER, Syracuse, N. Y. Filed Sept. 7, 1887. Serial No. 249,014. (No model.)

Claim.—1. In a two-wheeled vehicle, the combination of the bars C C, curved downward from the spot and formed with the forward extension, C', the leaf-springs S S, secured transversely to the cross-bar *t* and connected at the forward ends to the ends of the bar-extensions C' C', and the stirrups *b b*, suspended from the rear ends of the aforesaid springs and connected to the central portion of the bars C C, substantially as described and shown.



2. In combination with the cross-bar of the thills and the bars C C, the springs S, secured at their central portion to the cross-bar of the thills crosswise thereof and composed of leaves lying one upon the other, and having the top leaf extending rearward from the end of the subjacent leaf, the bottom leaf extending forward from the end of the superposed leaf and connected to the forward ends of the bar-extension C', and stirrups *b b*, suspended from the rear ends of the springs and connected to the central portion of the bars C, substantially as described and shown.

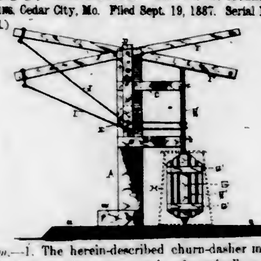
378,058. **VEHICLE-AXLE.** EDGAR PECKHAM and EMIL LAASS, Syracuse, N. Y.; said Laass assignor to himself and Charles H. Duell, same place. Filed Jan. 12, 1887. Serial No. 224,097. (No model.)



Claim.—1. As an improved article of manufacture, a vehicle-axle having planished end portions presenting smooth, condensed, and hardened surfaces, substantially as specified.

2. The process of finishing the spindles or journals of vehicle-axles, consisting in subjecting said spindles while cold to the strokes or impingement of hard smooth-faced planishing tools or dies, and thereby smoothing, condensing, and hardening the surfaces of said spindles or journals, substantially as set forth.

378,059. **CHURN-MOTOR.** ITHAMER W. STUART and ROBERT J. GUBBINS, Cedar City, Mo. Filed Sept. 19, 1887. Serial No. 250,101. (No model.)



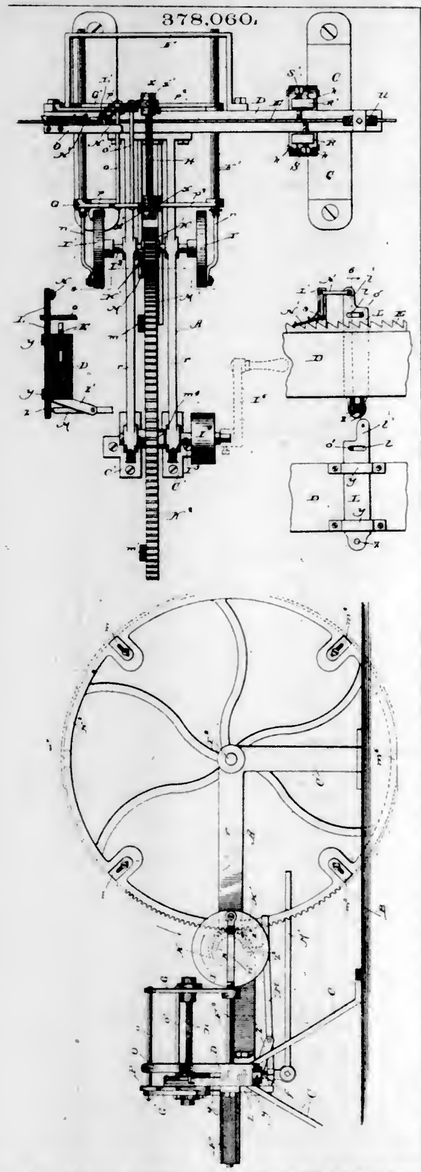
Claim.—1. The herein-described churn-dasher motor, consisting of a vertical supporting-post, a pair of vertically-oscillating levers mounted upon the said post, the pulleys on opposite sides of said post below the levers and standing at different heights thereon, and a rope having its ends attached to the adjoining ends of said levers, passing under said pulleys and around the churn-dasher handle, the pulleys being so arranged as to prevent the rope binding upon itself around the dasher-handle, all substantially as and for the purpose specified.

2. The combination of the post A, the arms B and C, mounted thereon and provided with notches *b c* in their outer ends, respectively, the bracket-pieces D D', pulleys E *e*, mounted on said bracket-pieces and post A, and the vertically-oscillating levers F F', mounted on said post and bracket-pieces above the pulleys and arms, with the churn-dasher G, its handle *g*, and the actuating-cord I, all constructed and arranged substantially as and for the purpose described.

378,060. **SAW-FILING MACHINE.** EMIL TYDEN, Chicago, Ill. Filed Apr. 26, 1887. Serial No. 236,143. (No model.)

Claim.—1. In a saw-filing machine, the combination of a reciprocating frame carrying a file and adapted to be automatically ele-

378,060.



with the said frame and carrying on its other arm a hooked link to engage with a saw-tooth, substantially as and for the purpose set forth.

3. In a saw-filing machine, the combination of a reciprocating frame carrying a file, H, and adapted to be automatically elevated and lowered, a stationary head, D, to support the saw while being operated upon, an automatic feed connected with the said file-carrying frame and actuated intermittently by the rise of the said frame to feed the saw, a set-screw, P, and a lever, P', connected with the said set-screw and with the said frame, substantially as and for the purpose set forth.

4. In a saw-filing machine, the combination of a reciprocating frame carrying a file, H, and adapted to be automatically elevated and lowered, a stationary head, D, to support the saw while being operated upon, an automatic feed connected with the said file-carrying frame and actuated intermittently by the rise of the said frame to feed the saw, a rock-shaft, Q, actuated intermittently by the driving-power of the machine, an oscillatory lever, *g*, on the rock-shaft, and pivotal arms R and R', supported on opposite sides of the head D and yieldingly maintained in contact with the ends of the lever *g*, and carrying setting-points S and S', substantially as and for the purpose set forth.

5. In a saw-filing machine, the combination of a horizontally-reciprocating frame carrying a file, H, adapted to be automatically elevated and lowered, a stationary head, D, to support the saw while being operated upon, a rotary gear-wheel, K^3, carrying a striker-block, a rotary pinion, K, in mesh with the gear-wheel and connected with the said frame to reciprocate it, a cam, K', on the pinion, a lever, M extending into the paths of the said striker-block and cam, and a pivotally-supported bell-crank lever, N, connected at one arm with the said frame and carrying on its other arm a hooked link, N', to engage with a saw-tooth, substantially as and for the purpose set forth.

6. In a saw-filing machine, the combination of a horizontally-reciprocating frame carrying a file, H, adapted to be automatically elevated and lowered, a stationary head, D, to support the saw while being operated upon, a rotary gear-wheel, K^3, carrying an adjustably-sliding striker-block, a rotary pinion, K, in mesh with the gear-wheel and connected with the said frame to reciprocate it, a cam, K', on the pinion, a lever, M, extending into the paths of the said striker-block and cam, and a pivotally-supported bell-crank lever, N, connected at one arm with the said frame and carrying on its other arm a hooked link, N', to engage with a saw-tooth, substantially as and for the purpose set forth.

7. In a saw-filing machine, the combination of a horizontally-reciprocating frame carrying a file, H, adapted to be automatically elevated and lowered, a stationary head, D, to support the saw while being operated upon, a rotary gear-wheel, K^3, carrying a striker-block, a rotary pinion, K, in mesh with the gear-wheel and connected with the said frame to reciprocate it, a cam, K', on the pinion, a lever, M, extending into the paths of the said striker-block and cam, a pivotally-supported bell-crank lever, N, connected at one arm with the said frame and carrying on its other arm a hooked link, N', to engage with a saw-tooth, a set-screw, P, and a lever, P', connected at one end with the said set-screw, and at its opposite end with the said frame, substantially as and for the purpose set forth.

8. In a saw-filing machine, the combination of a horizontally-reciprocating frame carrying a file, H, adapted to be automatically elevated and lowered, a stationary head, D, to support the saw while being operated upon, a rotary gear-wheel, K^3, carrying striker-blocks on opposite sides, a rotary pinion, K, in mesh with the gear-wheel and connected with the said frame to reciprocate it, a cam, K', on the pinion, a lever, M, extending into the paths of a striker-block on one side of the gear-wheel and cam, a pivotally-supported bell-crank lever, N, connected at one arm with the said frame and carrying on its other arm a hooked link, N', to engage with a saw-tooth, a lever, M', extending into the path of a striker-block on the opposite side of the gear-wheel, and a saw-set actuated by the said striker-block through the said lever M', substantially as and for the purpose set forth.

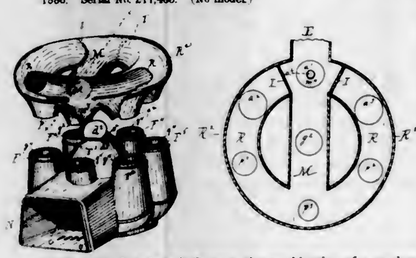
9. In a saw-filing machine, the combination of a horizontally-reciprocating frame carrying a file, H, adapted to be automatically elevated and lowered, a stationary head, D, to support the saw while being operated upon, a rotary gear-wheel, K^3, carrying striker-blocks on opposite sides, a rotary pinion, K, in mesh with the gear-wheel and connected with the said frame to reciprocate it, a cam, K', on the pinion, a lever, M, extending into the paths of a striker-block on one side of the gear-wheel and cam, a pivotally-supported bell-crank lever, N, connected at one arm with the said frame and carrying on its other arm a hooked link, N', to engage with a saw-tooth, a rock-shaft, Q, carrying near one end a lever, M', extending into the path of a striker-block on the opposite side of the gear-wheel, an oscillatory lever, *g*, on the rock-shaft toward its opposite end, and pivotal arms R and R', supported on opposite sides of the head D and maintained in contact with the opposite ends of the lever *g* by a spring, T, and carrying near their upper ends set-screws S and S', the whole being constructed and arranged to operate substantially as and for the purpose set forth.

vated and lowered, a stationary head to support the saw while being operated upon, a pivotally-supported bell-crank lever connected toward one end with the said frame and adapted to engage from its opposite end with a saw-tooth, a rotary cam, and a lever connected near one end with the said frame and extending at its opposite end into the path of the rotary cam, substantially as and for the purpose set forth.

2. In a saw-filing machine, the combination of a reciprocating frame carrying a file and adapted to be automatically elevated and lowered, a stationary head to support the saw while being operated upon, and a pivotally-supported bell-crank lever connected at one arm

10. In a saw-filing machine, the combination of a frame, A, a head, D, having a recess, *q*, to receive the saw to be sharpened and provided with means for adjusting the saw in position in the recess, a horizontally-reciprocating frame carrying a file, H, and adapted to be automatically elevated and lowered, and comprising brackets G and G' at opposite sides of the head D, rods *o* and *o'*, and rods F' and F^3, a rotary gear-wheel, K^3, carrying adjustable striker-blocks *m*, *m'*, m^2, and m^3 on one side and striker-blocks m^4 and m^5 on the opposite side, a rotary pinion, K, on a shaft, I^2, and in mesh with the gear-wheel and provided with a cam, K', wheels I and I' on the shaft with the pinion and connected eccentrically with the rods F' and F^3, a vertically-movable bar, L, having a slot, *l*, through which the rod *o'* extends, a pivotally-supported bell-crank lever, N, having one arm connected with the bar L and carrying on its opposite arm a hooked link, N', a set-screw, P, extending laterally into the recess *q*, a lever, P', connected at one end with the screw P and at its opposite slotted end with the rod *o*, a spring, O, a lever, M, connected at one end with the bar L and extending thence into the paths of the cam K' and striker-blocks *m*, *m'*, m^2, and m^3, a rock-shaft, Q, carrying near one end a lever, M', extending into the paths of the striker-blocks m^4 and m^5, an oscillatory lever, *g*, on the rock-shaft toward its opposite end, and pivotal arms R and R', supported on opposite sides of the head D, a spring, T, maintaining the said arms normally in contact with opposite ends of the lever *g*, and set-screws S and S', carried by the said arms near their upper ends, the whole being constructed and arranged to operate substantially as and for the purpose set forth.

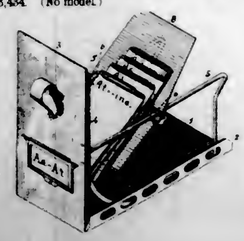
378,061. **HOT-AIR FURNACE.** GURDON G. WOLFE, Troy, N. Y., assignor to the Fuller & Warren Company, same place. Filed Oct. 28, 1886. Serial No. 217,483. (No model.)



Claim.—1. In a hot-air furnace, the combination of a combustion-chamber provided with upcast vertical flue parts, a ring-form horizontal flue formed with downcast flue parts to connect with the flue parts of the combustion-chamber and having a transversely-cross exit-flue opening at one end into the said ring-form flue and at the other end passing through said ring-form flue, and a flue part, *a'*, projecting downward from the cross exit-flue at its passage through the ring-form flue to connect with an upcast flue on the combustion-chamber, and provided with a diaphragm arranged therein, formed with an aperture, a^4, whereby the area of the flue *a'* is made smaller than the respective areas of those flues which are farther from the line of direct draft, substantially as described.

2. The combination, in a hot-air furnace, of a dust-flue connecting with the bottom of the fuel-supply passage at its upper end and at its lower end with the clinker-cleaning area of the furnace, a damper arranged transversely in said dust-flue, a link-plate connected to said damper, a latch-plate made with a latch at its outer end and at its inner end connected to said link-plate, and a latch-catch arranged on the inner face of the hinged door of the clinker-cleaning area, adapted to engage with said latch, substantially in the manner as and for the purposes set forth.

378,062. **FILE-BOX.** EDWARD E. BAKER, Morgantown, W. Va., assignor to the Globe Company, Cincinnati, Ohio. Filed July 5, 1887. Serial No. 243,434. (No model.)



Claim.—1. A machine for straightening and polishing metallic shafting, having a flier provided with straightening-dies arranged alternately on opposite sides of the said shafting and revolving around the same, and a polisher in axial line with said flier, and so arranged that the shafting to be operated on will pass from the flier to the straightening device to the polisher, substantially as described.

2. A machine for straightening and polishing metallic shafting, having a flier provided with straightening-dies arranged alternately on opposite sides of said shafting and revolving around the same, and a polisher arranged in axial line with said flier, and each having rotation in the opposite direction from the other, substantially as described.

3. The flier *a* and polisher *b*, in combination at each end of the machine with feed-rolls *i i*, wheels *i' i'*, worm-wheel i^3, and worm n^2, and with shaft a^2, pulley *l*, and a suitable frame, *f*, substantially as described.

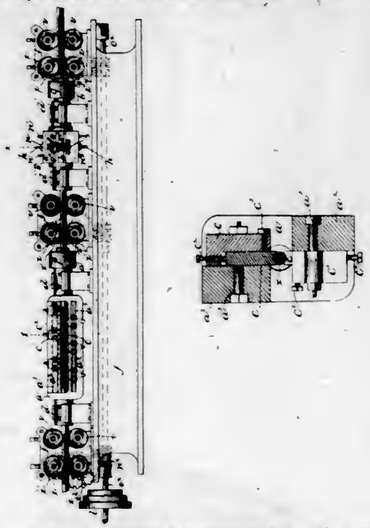
4. The flier *a*, having side bars, a^3, formed with slots a^5, and provided with dies *c*, set-screws c^2 c^3, and holders *c'*, bolted to bars a^3 through said slot, and pulley *p*, substantially as described.

5. The polisher *b*, having hinged sides b^2 b^3, formed to contain blocks E E, slots *m m m*, recess *m'*, hinged pin *s*, having head *s'*, and provided with spring s^2 and cams *o o'*, substantially as described

6. The polisher *b*, containing, and in combination with, blocks E, rubber cushions E', and follower E^2, and set-screws *n'*, substantially as described.

7. The polisher *b*, containing, and in combination with, blocks E, rubber cushions E', follower E^2, set-screws *n'*, screw-bolt *h*, and nut *n*, substantially as described.

378,063. **MACHINE FOR STRAIGHTENING AND POLISHING METALLIC SHAFTING.** AARON P. BALDWIN and THOMAS L. SEDGWICK, Akron, Ohio, assignors to the Akron Iron Company, same place. Filed Sept. 16, 1886. Serial No. 213,744. (No model.)



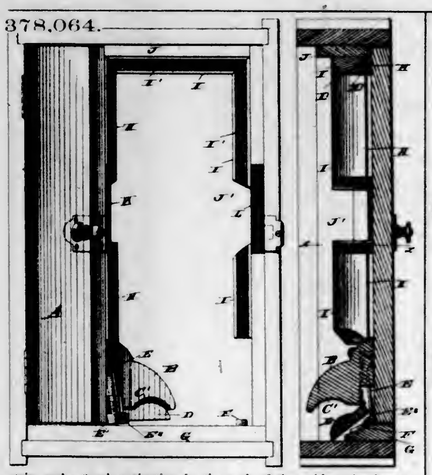
Claim.—1. In a file receptacle or holder, the combination, with the box proper, 1 3, and with the guiding and supporting rails 5, of the follower-plate 8, having the orifices 6 in the obliquely-bent portions 7, substantially as and for the purposes set forth.

2. As a new article of manufacture, the file-box consisting of the combination of the box proper, 1 2 3 4, formed of a single piece of sheet metal, the guiding and supporting rails 5, and the follower-plate 8, having the orifices 6 in the obliquely-bent portions 7, as set forth.

378,064. **WEATHER-STRIP.** FRANKLIN P. BURCAW, Hazleton, Pa. Filed Sept. 14, 1887. Serial No. 249,634. (No model.)

Claim.—1. The combination, with the molding B, having a longitudinal groove, C, in its lower face, and the strip D, hinged to the inner edge of the molding and shaped on its upper edge to fit the groove C, and the plate-spring E, having laterally-projecting arms E' E^2 at its lower end, one of which engages the inner edge of the hinged strip to hold the strip in a horizontal position with its upper face in the groove C, and the other projects beyond the end of said

378,064.



strip, and a fixed projection in the path of the said projecting arm E^2, substantially as set forth.

2. The combination, with the door and its casing having molding respectively provided with tongue and groove, as described, the said molding being cut away or removed at the lock, of the flanged metallic V-shaped strip L, secured by its flange to the casing at the inner side thereof, where the molding is cut away or removed, and the flanged V-shaped metallic strip K, secured to the door where its molding is removed and entering the groove of the strip L, substantially as set forth.

378,065. **HAND-STAMP.** JOHN J. FINKE, South Pueblo, Colo. Filed Nov. 1, 1884. Serial No. 147,019. (No model.)

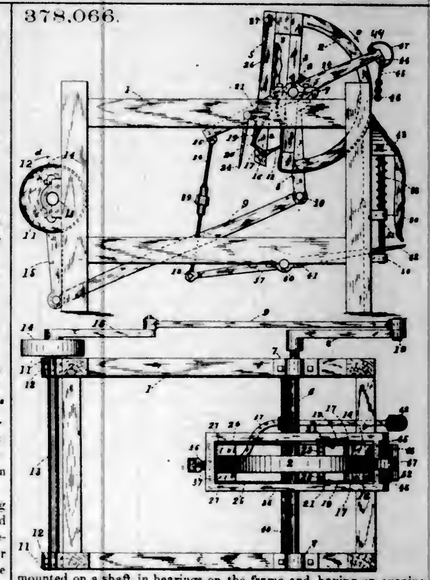


Claim.—In a hand-stamp, the combination of the frame, arranged as described, the bail, fulcrumed at *a* to the sides of the frame, the stamp-carrier, having its upwardly-bent wings pivoted at *b* to the legs of the bail, the link F, pivoted to one side of the frame and carried at points in vertical planes with the pivots *a b*, and the link F', pivoted to the other side of the frame and carrier at points oblique to the pivots *a b*, whereby the bottom of the carrier will be maintained parallel to the bottom of the frame through all its adjustments.

378,066. **MACHINE FOR STAKING, STRETCHING, AND SOFTENING LEATHER.** WILLIAM M. HOFFMAN, Detroit, Mich., assignor to the Hoffman Machine Company, of Michigan. Filed July 2, 1887. Serial No. 243,286. (No model.)

Claim.—1. In a stretching and softening machine, the combination of a semicircular or curved stretching-bar mounted on a shaft in bearings on the frame and having at its under plane portion an opening to receive a portion of the skin, mechanism, substantially as above specified, for gripping, holding, and releasing the skin and for giving the semicircular stretching-bar its oscillating movements, and a stake-plate secured to a stake-post on the frame of the machine for alternately gripping, stretching, and releasing the skin during the process of stretching and softening, as above described.

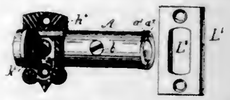
2. In a stretching and softening machine, a curved stretching-bar



mounted on a shaft in bearings on the frame and having an opening to receive the skin, and mechanism, substantially as specified, for gripping, holding, and releasing it, in combination with an arm rigidly secured to the shaft and connected by a connecting-rod to a crank for giving it an oscillating motion, a stake-plate secured to the machine, a yielding block facing the stake-plate and having an outwardly-inclined face over which the skin is drawn during the operation of stretching and softening, a vertical shaft upon which the yielding block is mounted, set in bearings in the frame, and a spring for supporting the block, substantially as described.

3. In a stretching and softening machine, the combination of a curved stretching-bar supported on a shaft on the frame of the machine and having an opening to receive the skin, and mechanism for receiving, holding, and releasing it, substantially as above described, an arm and connecting-rod connecting it with a crank for giving it an oscillating motion, a frame, 34, carrying the friction-rollers 46, and a treadle and connecting-rod for operating it, a stake-plate, and a yielding inclined-faced block supported on a vertical shaft in bearings on the stake-post, and a spiral spring, 33, substantially as and for the purposes described.

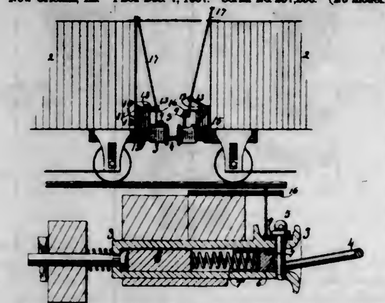
378,067. **BOLT.** HOBART B. IVES, New Haven, Conn., assignor to H. B. Ives & Co., same place. Filed Dec. 7, 1887. Serial No. 257,238. (No model.)



Claim.—1. The combination, with the sliding bolt and the operating crank-disk, of the spring connecting-rod fastened to the bolt at one end and having its opposite end bent over at right angles to its main part and journaled in the crank-disk with its end projecting through the disk, and the inclosing-case having a circular seat or bearing in which the crank turns and a circular recess joining the seat of less diameter than the circle in which the crank end of the connecting-rod swings and adapted to receive the projecting end of the rod and permit its free rotation, for the purpose specified.

2. The combination, with the sliding bolt and its operating crank or disk, of the spring connecting-rod fastened to the bolt at one end and having its opposite end hooked or journaled in the crank, and the case having a circular cavity or bearing in which the crank turns, and a stop-shoulder projecting from the wall of the bearing on the side toward the bolt in position to engage the connecting-rod on its outer dead-center to hold the bolt in its locked position, substantially in the manner as specified.

378,068. **AUTOMATIC CAR-COUPLING.** EPHRAIM LATHAM, Washington, D. C., assignor of two-thirds to Thomas J. Powell, New York, N. Y., Ethan A. Sawyers, Brownsville, Oreg., and Louis W. Perkins, New Orleans, La. Filed Dec. 7, 1887. Serial No. 257,256. (No model.)



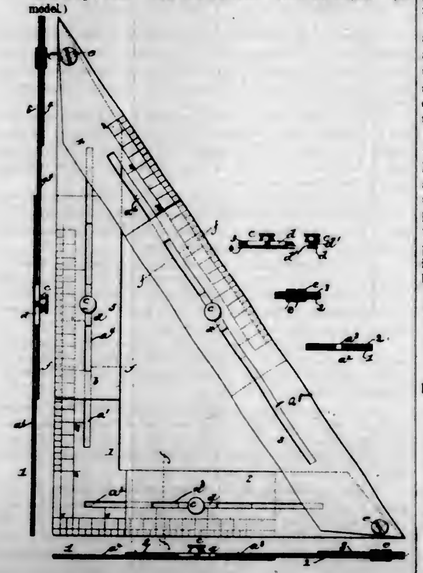
Claim.—1. The combination of the bell-crank lever 10, the ring 9, adapted to receive the body of a coupling-pin, and the connections 14, as shown and described.

2. The combination, with a device for lifting a coupling-pin, of a ring, 9, connected therewith and having an aperture of a size adapted to receive the body of the coupling-pin, substantially as shown and described, whereby any coupling-pin may be supported and yet be free for removal.

3. The combination of a throated draw-head, a push-plug fitted to slide therein and recessed at its upper side and forward end, forming a pin-step with a shoulder to take against the rear side of the pin, a spring behind the push-plug, a block of wood or similar easily-worked material fitted into the bottom of the throat, a coupling-pin, and an arm or bracket fixed to the wood-work of the car above the pin and in position to hold the pin in the step in the push-plug, substantially as shown and described, whereby the length of push-plug, spring, and block united may be readily fitted to the depth of the throat, and whereby they will be retained in place when pushed in at the mouth of the draw-head.

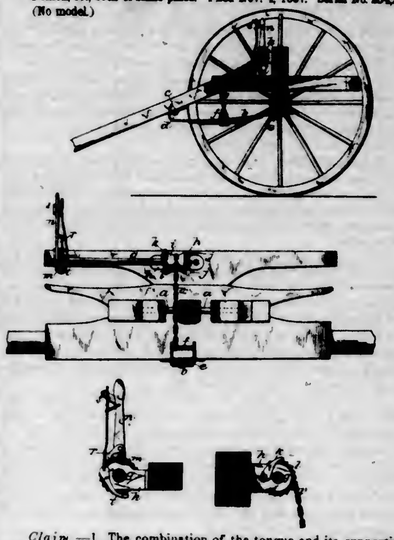
4. The combination, with a throated draw head or bar, of the recessed and chambered push-plug described fitted loosely therein, a spring fixed into the plug free of the throat, and a block forming a base for the spring in the throat, substantially as shown and described.

378,069. **ADJUSTABLE PITCH-BOARD.** GEORGE W. OLIVER, Chattanooga, Tenn. Filed Oct. 14, 1885. Serial No. 179,883. (No model.)



Claim.—The combination of the square 1, having the beveled-edge slots a' a^3, and the extensions 2 5, having slots a^1 a^4, with the sections 4 3, the former having beveled-edged slot a^2 and the latter slot a^4, the thumb-screws *c*, and bar *d*, having beveled sides *d'*, substantially as shown and described.

378,070. **TONGUE-SUPPORT.** FREDERICK G. WIENER, Leavenworth, Kans., assignor of two-thirds to John H. Atwood and Thomas P. Fenlon, Jr., both of same place. Filed Nov. 4, 1887. Serial No. 254,263. (No model.)



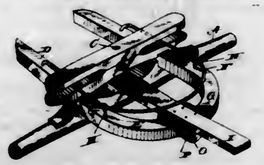
Claim.—1. The combination of the tongue and its supporting-spring with a tongue raising and lowering device attached to the running-gear and consisting of the suspending chain for the supporting-spring, the pulley to which the chain is attached provided with thumb-handles, and a ratchet-wheel and a pawl pivoted to one of the supporting-brackets for said pulley, the said chain passing from said pulley to said spring over the tongue-bolt, substantially as described, for the purpose set forth.

2. The combination of the tongue and its supporting-spring with a tongue-raising device attached to the bolster of the running-gear and consisting of a pulley and shaft, a suspending chain connecting the spring and pulley, a ratchet, *m*, fixed upon the shaft, a hand-lever, *n*, loosely mounted on the shaft, and a ratchet-pawl, *l*, controlled by said hand-lever, arranged to be operated by the driver to raise the tongue, as described.

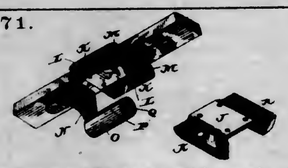
3. In a wagon-tongue support, the winding and unwinding device attached to the bolster, consisting of a shaft mounted in brackets having a fixed pulley on one end provided with a fixed end handle, *j*, and a ratchet-wheel, *l*, a pawl, *k*, controlling said pulley, a fixed ratchet, *m*, on the outer end of said shaft, and a loose hand-lever having a pawl, *r*, controlling said ratchet, in combination with a tongue-supporting spring, arranged as described, and a chain connecting the pulley and spring, passing over the tongue-bolt, whereby the tongue is raised and lowered from the pulley end of the shaft and elevated by the driver with the hand-lever device, as set forth.

378,071. **REACH-SLIDE FOR WAGONS.** FREDERICK G. WIENER, Leavenworth, Kans., assignor of one-half to John H. Atwood and Thomas P. Fenlon, Jr., both of same place. Filed Dec. 15, 1887. Serial No. 257,970. (No model.)

Claim.—1. In combination with the curved portion of the front hounds of a wagon and the reach, rollers journaled at the sides of



378,071.



the reach to travel upon the upper side of the curved portion of the hounds, and rollers journaled in a bracket to travel against the under side of the curved portion of the hounds, as shown and described.

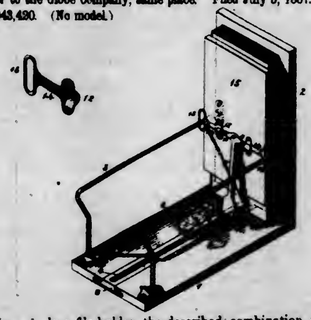
2. In combination with the forward wagon-hounds having a curved rear-portion and the reach, two sets of rollers journaled each set upon one pin parallel to the reach at the sides of the same, the sets of rollers traveling upon the upper side of the curved portion of the hounds, as shown and described.

3. In combination with the forward wagon-hounds having a curved rear portion and the reach, two sets of rollers journaled each set upon one pin parallel to the reach at the sides of the same and having covering-boxes for their upper sides, the sets of rollers traveling upon the upper side of the curved portion of the hounds, as shown and described.

4. In combination with the forward wagon-hounds having a curved rear portion and the reach, two sets of rollers journaled each set upon one pin parallel to the reach at the sides of the same and provided with covering-boxes over their upper sides, and a bracket upon the under side of the reach, having a forwardly-projecting arm or box having a set of rollers journaled within it upon one pin, the upper set of rollers bearing against the upper side of the curved portion of the hounds and the lower set of rollers bearing against the under side of the same, as shown and set forth.

5. In combination with the forward hounds of a wagon, said hounds having a curved rear portion, and the reach, a frame or casting secured to the under side of the reach above the hounds and formed with two cylindrical boxes at the sides of the reach, sets of rollers journaled each set upon one pin within the boxes and bearing against the upper side of the hounds, a downwardly-projecting bracket formed with a forwardly-projecting cylindrical box, and a set of rollers journaled in the said box and bearing against the under side of the hounds, as shown and set forth.

378,072. FILE-HOLDER. HENRY C. YERKES, Cincinnati, Ohio, assignor to the Globe Company, same place. Filed July 5, 1887. Serial No. 243,420. (No model.)



Claim.—1. In a file-holder, the described combination, with the guide-rails, the follow-board, and the T-headed clamping-lever, of the two combined guide-eye, web, and socket pieces, each piece being formed of a single integral casting or forging, 12 13 14, as represented.

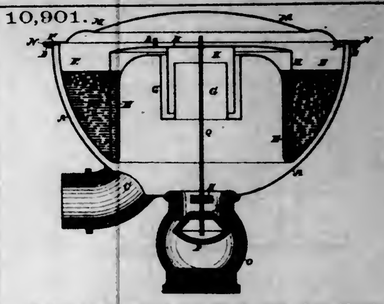
2. The file box or holder consisting of the combination of the grooved receptacle proper, 1 2, the bracing and guiding rails 3, the follow-board 15, the clamping-lever 7, and the described pair of guide, web, and socket pieces 12 13 14.

REISSUES.

10,901. AUTOMATIC GAS-REGULATOR. MYRON J. ANDIX, Portland, Oreg. Filed Jan. 4, 1888. Serial No. 259,515. Original No. 333,584, dated Jan. 5, 1886.

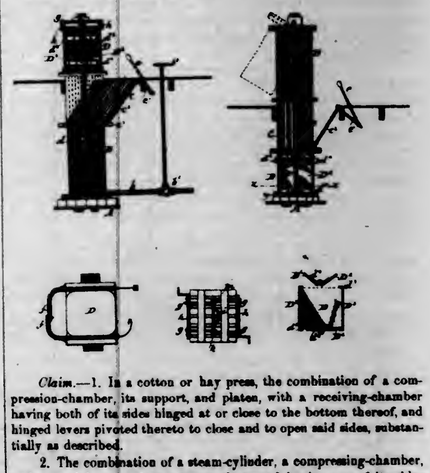
Claim.—1. In a gas-regulator, the combination of the flanged hemispherical case A, the flanged inner circular casting, E, and the double tubular guide G, all constructed and arranged substantially as set forth.

10,901.



2. In a gas-regulator, the combination of the flanged hemispherical case A, the flanged inner circular casting, E, the double tubular guide G, the gas-drum, the guide K, carried by the gas-drum, and the weight R', applied to one side of the drum, substantially as set forth.

10,902. COTTON-PRESS. ABNER D. THOMAS, Little Rock, assignor to Daniel H. Thomas, Pulaski, Ark. Filed May 20, 1887. Serial No. 238,925. Original No. 354,270, dated Dec. 14, 1886.



Claim.—1. In a cotton or hay press, the combination of a compression-chamber, its support, and platen, with a receiving-chamber having both of its sides hinged at or close to the bottom thereof, and hinged levers pivoted thereto to close and to open said sides, substantially as described.

2. The combination of a steam-cylinder, a compressing-chamber, and a receiving-chamber between them and having one of its sides hinged at the bottom to a horizontal bar, with the connecting-rods uniting the foundation to the top beam of the press, substantially as and for the purpose described.

3. The combination of a steam-cylinder, a compressing-chamber, and a receiving-chamber between them and having its sides formed of slats hinged at the bottom to horizontal bars, with operating-levers, substantially as and for the purpose described.

4. The combination of a steam-cylinder, a compressing-chamber, a receiving-chamber between them, and with the connecting-rods uniting the foundation to the top beam of the press, and the end doors of the compressing-chamber hinged upon said connecting-rods, substantially as and for the purpose described.

5. The combination of the grooved upper and lower platens of a compressing-chamber, with independent trough shaped metal guides *f*, extending from one platen to the other, substantially as and for the purpose described.

6. The combination of a compressing-chamber, a filling-chamber having its sides hinged above the latter, and a steam-cylinder above the filling-chamber, with the connecting-rods *d*, supporting said steam-cylinder and forming the pivot for the end doors and for the cylinder, substantially as and for the purpose described.

7. The combination of the baling-chamber, the platen, the side doors, D^2, and the crank-rods A, pivoted thereto, with the hooked rods *g*, engaging with said crank-rods and hinged together by a rod, and spring *i*, substantially as and for the purpose described.

H. PETER, Photo-Lithographer, Washington, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Eastern District of Michigan.

THE RAPID SERVICE STORE RAILWAY COMPANY *v.* TAYLOR *et al.*

Decided August 3, 1887.

1. McCARTY—CASH-CARRIERS.
The third, fourth, and seventh claims of Patent No. 325,425, granted to Robert A. McCarty September 1, 1885, for a cash and parcel carrier, adjudged valid and to have been infringed.

2. COMBINATION CLAIMS—THE ESSENTIALS OF.
In claims for combinations it is unnecessary to include any element except such as are essential to the peculiar combination and affected by the invention.

3. INFRINGEMENT—WHEN IT OCCURS.
The complainant's patent is held to claim a spring-impelled cash-carrier and to have been infringed by a cash-carrier impelled by the expansion of compressed air.

STATEMENT OF THE CASE.

This was a bill in equity for the infringement of Letters Patent No. 325,425, issued to Robert A. McCarty, September, 1885, for a cash and parcel carrier, and Patent No. 325,618, issued to McCarty upon the same date, for a new and useful improvement in store-service apparatus. The principal patent for a cash and parcel carrier contained the following statement of the invention:

The invention consists, principally, in projecting the carrier containing or supporting the cash or parcel along the way over or upon which it travels by giving it an initial impetus of sufficient force to impel it to its destination, as distinguished from impelling the carrier by a continuously-acting force, as by gravity, in the use of inclined ways down which the carrier travels.

In carrying out my invention I prefer to employ springs in which the force is stored up to project the carriers, and these springs I prefer to make stationary, as distinguished from being supported by the carriers and traveling therewith. I also prefer to use a horizontal way over which a carrier travels back and forth, and to locate a projecting device at each end of the way for giving the carrier an initial impetus sufficient to drive it to the other end of the way. * * *

For the purpose of illustration I have shown and shall now describe a specific form of apparatus embodying my invention, wishing it to be understood, however, that I do not limit myself specifically thereto, since the principle of the invention is capable of being embodied in various forms of apparatus.

Claims 1, 3, 4, 6, and 7 are claimed to have been infringed by defendants, and they are as follows:

1. In a cash or parcel carrier, the combination, with a way and carrier adapted to move on said way, of means for giving an impetus to said carrier, for the purpose of propelling it upon said way, substantially as set forth.

3. In a cash or parcel carrier, the combination, with a way and carrier adapted to move on said way, of a spring constructed and arranged to give an initial impetus to said carrier for the purpose of propelling it on said way, substantially as set forth.

4. The same as the third, except that the spring is described as a "stationary" spring.

6. In a cash or parcel carrier, the combination, with a way and carrier adapted to move on said way, of a projecting device located at each end of said way, for giving such carrier an initial impetus sufficient to drive it over the way, substantially as set forth.

7. The same as No. 6, except that the words "stationary spring" are substituted for "projecting device."

Patent No. 325,618 describes a peculiar detachable cup, and it was claimed that defendants infringed the seventeenth claim of this patent.

Messrs. Parker & Burton and *Mr. M. B. Phillip* for the plaintiff.

Mr. George H. Lothrop for the defendants.

BROWN, *J.*:

(1.) Objection is taken to the first claim of plaintiff's principal patent (and the sixth is like unto it) that it is an attempt to assert a monopoly for every method of giving an impetus to a cash-carrier, irrespective of the motive power. In other words, that it is a claim for the principle of propulsion, and not for a mechanical contrivance. We think this claim is either too broad or too indefinite to be of any service to the plaintiff. If it be construed as a combination of a way, a carrier adapted to move on such way, and of any and every means for giving an impetus to such carrier, then it is too broad, since it would include propulsion by the hand. It is an attempt to patent the principle of propelling a carrier by an impetus given at the end of the wire. It is well settled that this cannot be done. Thus in *Wyeth* v. *Stone* (1 Story, 273) it was held that a claim for cutting ice of a uniform size by means of an apparatus worked by other power than human was the claim of an abstract principle, and therefore void. So in *O'Reilly* v. *Morse* (15 Howard, 62, 112) the eighth claim of the Morse patent, which was the use of the motive power of the electric or galvanic current, however developed, for marking or printing intelligible characters at any distance, was held to be an attempt to shut the door against inventions of other persons to bring about the same result, and therefore not maintainable. (Curtiss on Patents, sections 243, 244.) But if this general description is to be construed as limited by the concluding words of the claim, "substantially as set forth"—and this we deem to be the proper construction (*Stone* v. *Sprague*, 1 Story, 270; *Gray* v. *James*, Pet. C. C., 394; *Seymour* v. *Osborne*, 11 Wall., 516, 547)—a new difficulty is encountered, since his use of springs is only one and the "preferable" method of giving the carrier "an initial impetus of sufficient force to impel it to its destination, as distinguished from impelling the carrier by a continuously-acting force, as by gravity, in the use of inclined ways." The "initial impetus" here described is quite as general, and, in fact, a mere restatement in slightly different language of "the means for giving an impetus" stated in the claim, and is equally objectionable as embodying a principle. We are forced, then, to construe this claim in connection with the springs described in the specifications and illustrated in the drawings, and, thus limited, the first and sixth claims are

practically the same as the third and fourth—viz., claims for the way the carrier and the springs are used in producing the impetus.

(2.) No infringement is claimed of the second and fifth claims. It is also argued that the third and fourth claims are void upon their face, because they do not contain elements enough to make an operative combination. They are for a way, a carrier, and a spring; but no mention is made of the means of putting the spring under tension—viz., the cord by which the rubber spring is elongated—nor of any means of holding the car while the spring is being put under tension—viz., the catch which holds the car until the spring is stretched and then releases it and permits the spring to propel it. We had occasion to consider this subject very fully in the case of the *Hancock Inspirator Company* v. *Jenks*, (21 Fed. Rep., 911,) and then came to the conclusion that in drawing the claims for a combination patent it was unnecessary to include any elements except such as were essential to the peculiar combination and affected by the invention. Other portions of the machine are usually shown in the drawings to exhibit their relations to the patented combination; but they are wholly unnecessary to the validity of the claims. As said by the Supreme Court in the *Loom Company* v. *Higgins*, (105 U. S., 580, 586:)

> In setting forth his claims the patentee may begin at the point where his invention begins and describe what he has made that is new and what it replaces of the old. That which is common and well known is as if it were written out in the patent and delineated in the drawings.

It is perfectly manifest to the ordinary observer that a cord passing over a pulley is necessary to stretch the rubber spring, and the catch to hold the car while the tension is being applied; but neither of them were any part of the invention. While the omission of anything absolutely material to the utility of the invention described is a fatal defect in a description, this rule does not apply where the omission would naturally be supplied by any person skilled in the art when making the device.

In *Carr* v. *Rice* (1 Fish, 198, 204) it is said that the patentee need not specify the kind of power to be applied nor the method of applying it in working the machine. Indeed, it is extremely dangerous to the validity of a claim to include unnecessary elements of a combination, since an infringement would be avoided by the omission of any one of the elements. Of course the omission of an element becomes easier as the number of elements is increased. For example, if the patentee had included the cord and catch and the infringer had discovered some method by which the spring could be operated without such cord or catch, it would be fatal to plaintiff's case, though the infringing device had included every other element of its claim. The claims themselves speak of a spring "constructed and arranged" to give the carrier an initial impetus; but the details of such construction and arrangement are quite unnecessary to be specified. In this view the cord and catch are really a part of the spring itself.

(3.) Starting, then, with the assumption that this is a patent for a spring-projector of a carrier over a wire railway, we are next led to consider whether it is anticipated by any of the devices offered in evidence. The English patent to Jacob Brett, issued in 1845, for atmospheric propulsion and the manufacture of tubes for atmospheric railways, covers an atmospheric railway in which compressed air distributed from a reservoir through pipes is employed to propel a car or train of cars. The general arrangement of the device is as follows: At a central station at which the air is compressed is a reservoir or holder for the air. From this reservoir or holder the air is distributed through pipes to devices which project upward through the track, and which are intended to operate in connection with the car when it comes along. The projections upward through the track are placed at or about the distance of eight thousand yards apart, and from one of these upwardly-projecting devices to the other the train is supposed to travel by the impulse it receives while passing over the upwardly-projecting device, which is in fact a fixed piston co-operating with a slotted tube placed underneath the engine or car. The patent is obviously the result of some of the futile experiments that were made in England when the science of railway travel was in its infancy, and before the present method of propelling railway-trains had become firmly established.. The device does undoubtedly contain a way and carrier and a method of propulsion by means of atmospheric elasticity, and is thus within the literalism of plaintiff's patent. At the same time, we think it very far from being an anticipation of this patent. It is not in any sense of the term a cash-carrier or a device adapted for use as such. Indeed, it is intended for a purpose so entirely dissimilar to that of a cash-carrier that not only would it require invention to adapt it to that purpose, but we cannot conceive that it would be of any service to McCarty as a suggestion of a cash-carrier. It lies so far out of the track of the patentee's invention that if he had seen it while engaged in his experiments he would probably never have given it a second thought. We do not mean to say that a railway-car might not be constructed and propelled along a suspended cable in such a way as to suggest an adaptation of the same principle to that of a cash-carrying device; but we are very clear that no such hint is contained in the Brett patents. We understand that under the case of *Tucker* v. *Spaulding*, (13 Wall., 453,) in order to constitute a double use, the structure and action of the prior machine must be such as to suggest to the mind of an ordinarily-skillful mechanic another use to which it could be applied without material change. Indeed, considering the recognized manner in which all railway-cars are and ever have been propelled along the rail, we may take judicial notice of the fact that the Brett device is an old and abandoned experiment, which never was nor could have been of any practical use, although as a mechanical device it might be made to send a locomotive a short distance.

The patent to Thomas Swinburne of 1846, for an atmospheric railway, is open to the same criticism, and contains, if possible, a slighter suggestion of the McCarty device than the Brett patent. It refers to and describes an impossible and useless method of propelling trains over a track by giving them at intervals an impulse by the use of compressed air in the direction of their movement. As an anticipation of the McCarty patent it is hardly worth a serious consideration.

The Taylor patent is for a windlass water-elevator. It shows an inclined track upon which travels a water-bucket and carrier. The wire as it leaves the house is for a short distance nearly horizontal, and then descends rapidly to the spring. It is provided with a car to which is attached a bucket. The car and bucket are let down the wire by an ordinary windlass. After the bucket is filled with water it is hauled up by the windlass and cord, and when it reaches the horizontal way it catches the end of a spring and is drawn against the force of the spring to the house, where it is emptied. On the windlass being released or thrown in the other direction the operation of the spring is to draw the car and bucket along the horizontal portion of the way until it reaches the incline, when it descends by the force of gravity. This undoubtedly resembles the McCarty patent somewhat more nearly than the two devices heretofore considered. The initial impetus, however, given by the spring in this case was not designed to propel the car over the way, but, as the patentee himself states, merely "to discharge it from the receiver, so that it may pass down the wire by its own gravity, the wire within the receiver being nearly horizontal." The weight of the rope attached to the car, and by which it is hauled up, and the friction caused by the necessity of unwinding the windlass would effectually destroy the projectile force of the spring and prevent its operating to give an initial impetus to the carrier for the purpose of propelling it on the way in the manner described in plaintiff's patent. If the wire in the Taylor patent were horizontal, there would have to be another rope to haul it in the opposite direction from that in which the windlass hauls it, and the pull on this rope would not only be against the car, but also against the other rope and the windlass for working it. No initial impetus could be given to the bucket and the carriage which would be sufficient to suddenly set the windlass in motion and keep it in motion. The device is a slight modification of another and familiar device by which cars are drawn over wires by ropes pulling in opposite directions, or by a rope in one direction and the force of gravity in the other.

The loom patents, in all of which a shuttle is thrown from one end of its path to the other by the blow or push of a picker-staff operated by the force of a spring; the Hotchkiss patent, by which a toy mouse is projected by an interior spring, and the Ireland patent, by which a toy fire-engine is propelled from its house by the recoil of a rubber spring, are all claimed as anticipations of the McCarty patent; but in none of them is there a way or a carrier in any proper sense of the word. They no more contain the principle of McCarty's invention than does the ordinary spring-gun, to which they are much more closely allied. They all resemble the McCarty patent in that they contain the principle of propulsion by a spring, which is as old as the use of the bow and arrow; but none of these could be adapted to a cash-carrier without the employment of the inventive faculty. But if there were any doubt regarding this question, we should still consider it our duty to resolve the doubt in favor of the patent in this case, since it is shown that the device has gone into very general use, and has largely supplanted cash-carriers propelled by other means. While the single fact that the device has gone into general use and has displaced other devices which had previously been employed for analogous uses does not establish in all cases that the later device involves a patentable invention, it may, however, always be considered, and when the other facts in the case leave the question in doubt it is sufficient to turn the scale. (*Smith* v. *The Goodyear Dental Vulcanite Company*, 93 U. S., 486, 495.)

(4.) Beyond doubt the most important and serious question in this case is that of infringement. Defendant's apparatus, as described by the plaintiff's expert, Mr. Brevoort, is as follows:

> Defendant's device consists of an upright cylinder with a piston in it, which piston can be by the operator moved up and down within the upright cylinder. Projecting at right angles from the lower part of the cylinder is another cylinder smaller in diameter than the upright cylinder, and having within it a piston attached to one end of a piston-rod, which projects through the forward end of the horizontal cylinder. This piston-rod at the end is provided with a spring-plunger the shaft of which is smaller than the piston-rod. This plunger can be pushed into the piston-rod for the distance of about half or three-eighths of an inch. On the end of the horizontal cylinder two jaws are arranged, which are provided with springs, and which jaws are forced apart by the outward movement of the end of the piston-rod. The catches at their outer extremities are provided with hooks or jaws which catch around the carrier. Thus the carrier cannot move along the wire until these jaws or catches have separated, and this separation is effected by the advance movement of the piston-rod of the horizontal cylinder.

It will be observed here that the defendant does not employ a metallic or rubber spring to project its carrier; but we apprehend, and we understand it to be admitted in this case, that if the carrier be actually propelled over the way by the elastic expansion of an imprisoned body of compressed air the McCarty patent is infringed. The theory of the defendants in this connection is that the air contained in the cylinders between the pistons is simply a medium which transmits the power applied to the main or upright piston to the plunger or horizontal piston. It becomes material, then, to inquire whether the piston in the horizontal cylinder is propelled by the elasticity of the compressed air behind it, or whether, if the two cylinders had been filled with a non-elastic liquid, like water, the same effect would be produced. It is very evident that, if the two cylinders and pistons could be made perfectly air-tight, as they are in one of the exhibits furnished the court, the descent of the main piston would compress the air, and when this piston had reached a certain point the elasticity of the air so compressed would be sufficient to drive the horizontal piston, which would start suddenly forward and project the carrier. On the other hand, if the pistons were very loosely fitted to the cylinders, no amount of force and no rapidity of movement would be sufficient to propel the horizontal cylinder, since the air would escape so rapidly as to be of no service. This is manifest in the defendant's device, since if the lever is pulled down slowly and the air is thus given time to escape the horizontal piston is not moved. It is thus essential to the operation of defendant's device, first, that the pistons fit so tightly that the air will not escape as fast as it is compressed by the main piston, and yet so loose that it will move easily along the cylinder; second, that the lever be pulled rapidly down in order that the air shall not be given time to escape. So that for every inch of travel by the main piston the plunger-piston travels five and two-tenths inches, the relative cubic capacity of the two cylinders being as nine to four.

The experiments of Mr. Brevoort tend to show that, assuming that it takes four-tenths of a second to make the whole stroke of the lever from top to bottom, the lever must pass over more than one-third of its stroke before the horizontal piston moves at all—in other words, the air must be compressed to a certain degree before the plunger will start. We apprehend that if the vertical cylinder and its piston were removed altogether no amount of atmospheric force applied—as, for example, by a pair of hand-bellows—would be sufficient to drive the plunger-piston. The only impression we can get from the testimony and the experiments is that it is the elasticity of the compressed air that drives the plunger-piston forward, and hence that the device is an infringement. Even if defendant's theory were correct, that the air acts simply as a medium through which the power is transmitted from one piston to the other, we are inclined to think that this air-impelling device is such a well-known equivalent of a spring device as to constitute an infringement. In the Stever patent for the shuttle-motion for looms there is an example of initial impulse given directly by a spring. An ordinary barrel or clock spring having been previously wound up, is let off at the proper time and throws the shuttle to the opposite side of the machine, while a duplicating arrangement throws it back again. In the Ross loom patent of 1873 there is a similar spring employed to drive the shuttle back and forth. In the Richardson patent of 1872, which is also a loom mechanism, there is a car which travels across the machine and carries the shuttle. This car is impelled by the movement of a piston in a cylinder, the movement of the piston being transmitted to the shuttle-carrier by a body of air interposed between them. There is therefore shown in this patent an air-impelling device having a large chamber and a small chamber and means for compressing the air to throw a shuttle as a mechanical substitute for the spring device used in the other patents. The patent in suit is one of considerable importance, and appears to be the first in which the idea of propelling the carrier over a way by an initial impulse was reduced to a practical form. We think it entitled to a liberal application of the doctrine of mechanical equivalents, and as defendants' device is a manifest attempt to seize upon the dominating idea of the patent and to evade the letter of the claims, we think plaintiff is entitled to the benefit of any reasonable doubt upon the question of infringement.

(5.) The seventeenth claim of Patent No. 325,618 is as follows:

In a store-service apparatus, the combination, with a stretched wire way, of a wheeled carrier traveling thereon, a receptacle removably locked to such carrier, and a spring-cover for the receptacle held permanently by the carrier, substantially as set forth.

The receptacle is locked to the carrier by a ring containing two slots in the ordinary manner in which a lamp is inserted in a lantern from the bottom. The spring is such as is sometimes used in the top of a lantern to hold the glass firmly in place. The invention consists only in combining the two, in inserting the cash-box into the carrier, and in holding it firmly by the aid of the springs. As both elements of the combination are shown to exist in a lantern offered in evidence, though acting independently, we think there was no invention in combining the two, and the plaintiff's claim under this patent is not maintainable.

There must be a decree for the plaintiff upon the third, fourth, and seventh claims of the first patent, an injunction, and the usual reference to a master to compute the damages.

U. S. Circuit Court—Northern District of Illinois.

McCLAIN *v.* A. ORTMAYER & SON *et al.*

Decided January 9, 1888.

1. CONSTRUCTION OF CLAIMS.
Where a claim calls for a device "as an attachment" to something, it may be subject to the construction that it is a claim for the device baldly, and the words descriptive of its use rejected as surplusage, on the theory of *Roberts* v. *Ryer*, (91 U. S., 157,) that a patent covers a device in all the uses to which it may be applied.

2. COMBINATION—INVENTION.
A reconstruction of a machine so that a less number of parts will perform all the functions of the greater may be invention of a high order; but the omission of a part with a corresponding omission in function, so that the retained parts do just what they did before in the combination, cannot be other than a mere matter of judgment, depending upon whether it is desirable to have the machine do all or less than it did before.

3. SAME—NON-INVENTION.
Hence, where a device is made double and experience shows that one-half of it is superfluous, no invention is required to dispense with such superfluous portion, and a patent for the part retained will be held void.

4. CONSTRUCTION OF PATENT.
Where a patentee says that he expects in practical operation to use a device—as, for example, a rivet—to accomplish a certain thing, but does not confine himself specifically to it, any other device which secured the result intended would be allowable and open to him.

5. MCCLAIN—PAD FOR HORSE-COLLARS—259,700.
The first claim of Patent No. 259,700, issued June 20, 1882, to Edward L. McClain, for a pad for horse-collars, *Held* to be for the use of elastic double springs *s s*, and not infringed by the use of a single non-elastic hook.

6. SAME—SAME—267,011—INVALID.
Patent No. 267,011, issued November 7, 1882, to Edward L. McClain, for a pad for horse-collars, *Held* to be for the elastic single spring S and void for want of novelty, as being merely for one-half of the spring shown in the first patent.

7. SCHERLING—PAD-FASTENING FOR HORSE-COLLARS—INVALID.
The claim of Letters Patent No. 298,626, issued May 13, 1884, to John Scherling, for a pad-fastening for horse-collars, is in substance for a hook formed of wire with a safety-pin integral with the hook for attaching the hook to the pad, *Held* void for want of novelty, or, if valid, not infringed by the defendants.

Mr. James Moore for the complainant.

Messrs. Banning & Banning for the defendants.

BLODGETT, *J.*:

The bill in this case seeks to restrain the alleged infringement of Letters Patent No. 259,700, granted to complainant June 20, 1882, for a pad for horse-collars; Patent No. 267,011, granted to complainant November 7, 1882, for a pad for horse-collars, and Patent No. 298,626, granted May 13, 1884, to John Scherling and L. D. Randall & Co., for a pad-fastening for horse-collars, which last letters patent complainant now holds by assignment. All these patents relate to devices for fastening the pad to a horse-collar, the pad being a sort of cushion made of soft cloth stuffed with hair, to be interposed between the collar and neck of the horse, used, mainly, for heavy-draft horses. The pads themselves are admitted to be old, and these patents have only to do with contrivances for fastening them to the collar.

The first patent covers a fastening consisting of two elastic steel hooks fixed firmly by rivets to the pads, with the hooks so adjusted that one clasps the front roll or wale of the collar, while the other hook clasps the after roll of the collar, the hooks being of elastic material set so as to firmly grip or clasp the rolls of the collar, and thus keep the pad in place, and by reason of the elasticity of the springs the pad, while held properly in place, is readily detachable from the collar. This patent contains two claims, but infringement is charged only as to the first, which is in these words:

1. As attachments to a sweat or other horse-collar pad, the elastic springs *s s*, substantially as described, and for the purposes set forth.

The second patent shows a device similar in all respects to the first, except that only one elastic hook is used, which is so arranged as to clasp the fore roll of the collar, the hook for grasping the back roll of the collar being dispensed with. This patent contains two claims, and infringement is charged as to both. These claims are as follows:

1. As an attachment to a horse-collar pad or other harness-pad, and as a means of adjustably attaching a pad to a horse-collar or other part of harness, the elastic single-roll or single-curved spring S, constructed, arranged, attached, and operating substantially in the manner shown and described, and for or with the purpose set forth.

2. The combination, with a horse-collar pad, of the elastic single-roll or single-curve spring S, substantially in the manner shown or described, and for the purposes set forth.

The third patent covers a single safety pin and hook so constructed that the shaft of the pin is thrust into the soft material of the pad and its point secured in the safety-lock, while a bow or hook springing from the guard of the pin is clasped over the fore roll of the collar substantially in the same way shown in the McClain second or single-hook patent, the only difference being that in McClain's second patent the hook is riveted to the pad, while in the Scherling patent the hook is pinned to the surface of the pad. Infringement is charged of the first claim of this patent, which is:

The described safety pin and hook, formed of wire, consisting of the bows *b b* and the part *a* connecting the bows with suitable integral devices for attachment to the collars formed upon the ends of the bows, substantially as described.

The defenses are:

1. That defendants do not infringe either patent.

2. That the two last-mentioned patents are void for want of novelty.

The defendants use a strong stiff wire hook fastened to a stiff piece of leather, which is riveted to the pad and adapted to clasp the front roll only of the collar, depending for its ready connection with and grip of the collar rather upon the yielding nature of the collar than the elasticity of the hook, although there is undoubtedly some elasticity in the wire from which defendant's hook is made; yet it is manifest that the hook is intended to operate by forcing the collar-roll into the throat of the hook instead of opening a light flexible spring, and snapping it around the collar-roll, as would be done in applying the spring shown in either of the McClain patents.

As to the first of these patents, I think there can be no doubt that the first claim, and for that matter both claims, require the use of the double spring *s s*, one arranged to grasp the front and the other the back roll of the collar. The claim is for the attachment of these springs *s s* to a horse-collar pad. The patentee says in his specifications "one end of a spring is so curved as to partly encircle the fore wale or small roll of the collar, and to hug it so closely as to keep out of the way of the hame, and the other end is so curved as to similarly partly encircle and hug the after wale or body side of the collar and yet not interfere with the hame." Here he describes two hooks or elastic springs for the purpose of attaching the pad to a horse-collar, and claims this device as his invention. A study of the specifications of this patent also shows, I think, very clearly that the patentee intended to use hooks which should depend mainly for their operation on their quality of elasticity. Now, as the defendants use only one hook, and that not dependent on its elasticity for its effective operation, as I think a stiff hook of cast or malleable iron would work as well as defendants' wire hook, it is clear to me that they do not infringe the first claim of this patent.

It was urged on behalf of defendants upon the argument that this first claim is baldly for the elastic springs *s s*, and that the words "as attachments to a sweat or other horse-collar pad" are surplusage, on the ground that an inventor is entitled to all the uses to which his invention is applicable, (*Roberts* v. *Ryer*, 91 U. S., 157,) and that this claim, not being for a combination of the springs *s s* with the collar-pad, is for the springs alone. This claim may be subject to this construction; but I do not base my opinion upon this view of it, as it is palpable to my mind that the claim only covers the two springs *s s* when used together to fasten a pad to a horse-collar, and that the use of one spring is not an infringement. In fact, the complainant must, I think, be held to have admitted that his first patent required two springs by his subsequent application for a patent on his single-hook attachment.

The second patent is for the elastic single spring S, constructed and arranged so as to clasp only the fore roll of the collar. It in no respect differs in construction, mode of operation, and result from the spring shown in the first patent, which was intended to encircle and hug the fore roll of the collar. In other words, the patentee has cut the two springs of his first patent apart, rejected the one intended to clasp the back roll of the collar, and taken a new patent upon the single spring or hook which fastened the pad to the fore roll of the collar in the first patent.

Undoubtedly, experience in the use of the device covered by the first patent showed that the back fastening was practically unnecessary; that in use the pad was held sufficiently in place by the fore fastening, and that the back fastening, if not a hinderance and objection, could at least be dispensed with. But it did not require invention to reject this useless or superfluous back fastening and rely only upon fastening to the fore roll of the collar. Any teamster who had become tired of applying the two hooks where one was all that he deemed necessary could have broken off the back hook to save himself needless trouble and used only the fore hook.

This patent comes directly within the principle stated by this court in *Stow* v. *City of Chicago*, (8 Biss., 47; 3 B. & A. P. C., 91,) where it was said:

A reconstruction of a machine so that a less number of parts

will perform all the functions of the greater may be invention of a high order; but the omission of a part, with a corresponding omission in function, so that the retained parts do just what they did before in the combination, cannot be other than a mere matter of judgment, depending upon whether it is desirable to have the machine do all or less than it did before.

In his first patent McClain provided fastenings to the front and rear rolls of the collar. He found by use that the front spring alone was a sufficient fastening for practical purposes, and there was therefore no invention in omitting the rear spring from his device and using the front spring alone to perform the same functions it did in the first patent.

It is true that when only the forward spring is used it enables the person using the pad to fix its location on the collar more readily than when two springs are used, as in that case the two must be so located as to enable both springs to clasp their respective rolls of the collar, and as the rolls of the collar diverge the double spring could fix the pad only at one place on the collar. But the convenience that may follow the use of this front spring alone does not give to this front spring any new function or features. In other words, it was nothing but a convenient mechanical adaptation of this first patent to the uses for which it was designed to cut off one of these springs when experience had shown the back one was not necessary. The single spring shown in the second patent does not do all that was done by the two springs in the first patent; but it does enough for practical purposes. Mr. McClain having by his claim and specifications clearly limited himself by his first patent to the two springs used together as shown, I do not think there was any patentable novelty in dispensing with one of these springs, and hence conclude that the second McClain patent is void for want of novelty.

In regard to the Scherling patent, as already stated, it shows a common and well-known safety-pin combined with a hook of the same material and integral with the pin, the material being elastic wire, so that the hook may be secured or fastened to the pad by means of the pin, and the pad then attached to the collar by clasping the hook over the fore roll of the collar. The drawings and specifications show two forms of this device. In Figures 1, 4, and 5 of the drawings the safety-pin is shown, and in Figs. 2 and 3 the hook is attached to the pads by pins inserted in the texture of the pad, with no safety loop or lock to hold the pin in place.

The proof shows that the safety-pins with hooks integral with the pins are much older in the art than the Scherling patent. They are shown in the English patent of Montelart, of February, 1864; in the American patent of Moore, of March, 1869; in the American patent of Marston, of January, 1872; in the American patent of Jenkins, of August, 1880; in the American patent of Judd, of March, 1882, while the Canadian patent to McClain, the complainant in this case, of July, 1883, shows a pad fastened to a horse-collar by a wire hook fastened to the pad by inserting therein a pin integral with the hook.

The only difference that I can perceive between this patent and the two McClain patents is that this device, especially in the safety-pin form, gives an axial movement of the hook; but it seems to me that McClain had in view some mode of attaching the hook to the surface of the pad, similar in its action and result to that obtained by the Scherling pin and hook. In both his patents McClain says in substance that he could deviate from his patent to fasten his springs to a surface-piece, and then fasten such surface-piece to the surface of the material of the pad by stitching; and it will clearly be seen that by so doing some flexibility between the pad and hook would be secured; for, the surface of the pad being of cloth, quite a free movement of the hook back and forth would be obtained from the looseness and flexibility of the cloth. But without saying that McClain anticipated Scherling in this particular, I am satisfied that with safety-pins and hooks combined, as shown in the Jenkins and Judd patents, there was no room for invention in substituting a safety-pin and hook such as are shown in the Scherling patent for the single hook or spring shown in the McClain patent of 1882.

While McClain says in his single hook that he expected in practical operation to fasten his hook by means of rivets, yet at the same time, as he does not confine himself specifically to that mode of fastening, I apprehend that any mode by which the spring could be fastened to the pad and secure the result intended to be secured by the patented device would be allowable and open to McClain. Hence, if in the device covered by his single-hook patent McClain found that it was better, on the ground of economy or for any other reason, to fasten the hook or spring, as he called it, directly to the surface of the material of the pad with a pin, or in any other manner which was practically useful, he would have had the right to do so under his patent of 1882, while his Canadian patent shows the use of a wire hook and spring fastened into the surface material of the pad by a pin, not a safety-pin, it is true, but by thrusting the pin into the material of the pad, substantially as is shown in the Scherling drawings Nos. 2 and 5. But if I am wrong in this construction, I am satisfied that the defendants do not infringe the Scherling patent. The claim of that patent, in substance, is for a hook formed of wire, with a safety-pin integral with the hook for attaching the hook to the pad.

The claim says the pin is for the attachment of the hook to the collar; but this is evidently a mistake, and it was undoubtedly intended that the safety-pin should attach the hook to the pad. The defendants do not use a pin integral with their hook for the purpose of fastening their hook to the pad; but the hook is fastened to a piece of leather in such manner as to give it an axial or rolling motion, and this leather is riveted to the pad by rivets passing through the material of the pad.

In view of the patents to McClain, this Scherling patent must be confined to the special devices shown and claimed, and cannot be enlarged or expanded by construction, because hooks, both double and single, with which to fasten pads to collars and performing the same function in the same way as is done by Scherling, were shown in the two McClain patents now in suit and also in McClain's Canadian patent; and hence, as the defendants do not use a safety-pin integral with their hook to attach their pads to the collars they cannot be said to infringe the Scherling patent.

For these reasons I conclude the complainant's bill must be dismissed for want of equity.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

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CONTENTS.

	Page.
ISSUE OF FEBRUARY 21, 1888	727
DESIGNS	727
TRADE-MARKS	728
LABELS	728
PATENTS GRANTED	729
REISSUES	None
DECISIONS OF THE U. S. COURTS—	
Matthews v. The Iron Clad Manufacturing Company	827
The Vulcanite Paving Company v. The American Artificial Stone Pavement Company	828
The Celluloid Manufacturing Company v. The Arlington Manufacturing Company	828
Wright v. Yuengling. Same v. Beggs	829
PATENT LAW OF GUATEMALA	830

Issue of February 21, 1888.

Patents	345	No. 378,073 to No. 378,417, inclusive.
Designs	47	No. 18,064 to No. 18,110, inclusive.
Trade-Marks	38	No. 15,189 to No. 15,226, inclusive.
Labels	7	No. 5,491 to No. 5,497, inclusive.
Reissues	2	No. 10,903 to No. 10,904, inclusive.
Total issue	439	

TO CITIZENS OF THE UNITED STATES.

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Arizona Territory	.....	.....	Nevada	.....	.....
Arkansas	4	.....	New Hampshire	2	.....
California	12	.....	New Jersey	9	3
Colorado	2	.....	New Mexico Territ'y	.....	.....
Connecticut	16	1	New York	97	21
Dakota Territory	.....	.....	North Carolina	1	.....
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Georgia	3	.....	Rhode Island	1	.....
Idaho Territory	.....	.....	South Carolina	1	.....
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Indiana	4	.....	Utah Territory	.....	.....
Iowa	6	.....	Vermont	.....	.....
Kansas	5	.....	Virginia	.....	.....
Kentucky	4	.....	Washington Territ'y	.....	1
Louisiana	2	1	West Virginia	1	.....
Maine	4	.....	Wisconsin	15	2
Maryland	7	.....	Wyoming Territory	1	.....
Massachusetts	38	8	United States Army	.....	.....
Michigan	13	.....	United States Navy	.....	.....
Minnesota	2	.....			
Mississippi	.....	.....	Total to citizens of the United States	362	43
Missouri	6	.....			
Montana Territory	3	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	.....	.....	Germany	7	.....
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Austria-Hungary	.....	.....	Mexico	.....	.....
Belgium	.....	.....	New South Wales	.....	.....
Bermuda	.....	.....	New Zealand	.....	.....
Brazil	.....	.....	Norway	.....	.....
Canada	5	.....	Russia	1	.....
Chili	.....	.....	Scotland	2	.....
Colombia, U. S. of	.....	.....	Sweden	.....	.....
Cuba	.....	.....	Switzerland	.....	.....
Denmark	.....	.....	Victoria	.....	.....
England	8	2			
Finland	.....	.....	Total to citizens of foreign countries	30	2
France	7	.....			

DESIGNS.

18,064.—PAPER-WEIGHT.—*Dayton Ball*, Albany, N. Y. Application filed January 18, 1888. Serial No. 261,146. Term of patent 7 years.

18,065.—CALENDAR.—*Frederick Brackett*, Washington, D. C. Application filed January 23, 1888. Serial No. 261,664. Term of patent 3½ years.

18,066 and 18,067.—BUCKLE.—*George F. Eberhard*, Cleveland, Ohio. Applications filed December 27, 1887. Serial Nos. 259,189 and 259,190. Term of patents 3½ years.

18,068 to 18,097, inclusive.—CARPET.—*James L. Folsom*, Brooklyn, N. Y., assignor to *The Hartford Carpet Company*, Hartford, Conn. Applications filed January 18, 1888. Serial Nos. 261,169 to 261,171, inclusive, 261,173, 261,174, 261,176 to 261,183, inclusive, 261,185, 261,186, 261,188, 261,190, 261,192 to 261,199, inclusive, 261,202, 261,203, 261,206, 261,207, and 261,168. Term of patents 3½ years.

18,098.—INCANDESCENT LAMP.—*David J. Hauss*, Cincinnati, Ohio. Application filed January 6, 1888. Serial No. 260,020. Term of patent 7 years.

18,099.—FRAME FOR DYNAMOS.—*David J. Hauss*, Cincinnati, Ohio. Application filed January 6, 1888. Serial No. 260,021. Term of patent 7 years.

18,100.—ORNAMENTATION OF SKIRTS.—*August Hildt*, New York, N. Y., assignor to *L. Dryfoos & Co.*, same place. Application filed January 7, 1888. Serial No. 260,063. Term of patent 7 years.

18,101.—COOKING-STOVE.—*William J. Keep* and *Charles Wipfler*, Detroit, Mich., assignors to *The Michigan Stove Company*, same place. Application filed June 18, 1887. Serial No. 241,801. Term of patent 7 years.

18,102 to 18,104, inclusive.—CARPET.—*Thomas E. Meagher*, Philadelphia, Pa., assignor to *Schofield, Mason & Co.*, same place. Applications filed January 20, 1888. Serial Nos. 261,397, 261,399, and 261,400. Term of patents 3½ years.

18,105.—BOTTLE-STOPPER.—*Stephen S. Newton*, Brooklyn, N. Y. Application filed January 4, 1887. Serial No. 223,404. Term of patent 14 years.

18,106 to 18,109, inclusive.—CARPET.—*Oscar Righter*, Philadelphia, Pa., assignor to *Dornan Brothers*, same place. Applications filed January 20, 1888. Serial Nos. 261,418, 261,422, 261,423, and 261,425. Term of patents 3½ years.

18,110.—BROOM-FERRULE.—*Alphonso Walrath*, Fort Plain, N. Y. Application filed November 10, 1887. Serial No. 254,899. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,189.—CHEWING-GUM.—*Adams & Sons*, Brooklyn, N. Y. Application filed January 5, 1888. Used since December 1, 1887.
"The word 'MALT.'"

15,190.—SAFE.—*Alpine Safe Co.*, Cincinnati, Ohio. Application filed January 4, 1888. Used since January 1, 1887.
"The word 'ALPINE.'"

15,191.—PRINTED, WHITE GRANITE, GENERAL EARTHENWARE, AND GLAZED TILES.—*T. & R. Boote*, Burslem, England. Application filed December 5, 1887. Used since September 1, 1879.
"A shield having quarters of gules and lion rampant and a surmounting crown having a circlet, crosses, and fleurs-de-lis."

15,192.—KEROSENE-OIL.—*William Briscoe & Son*, London, County of Middlesex, England. Application filed October 24, 1887. Used since February 22, 1887.
"The word 'SILVER RAY.'"

15,193.—ALBUMENIZED PAPER FOR PHOTOGRAPHIC USE.—*Buchanan, Bromley & Co.*, Philadelphia, Pa. Application filed November 26, 1887. Used since December 17, 1885.
"A picture of the heads of three kings arranged with the back parts of two heads together, having above them a third head and shoulders, the decorations on the said shoulders forming the crown for each of the lower heads."

15,194.—ENSILAGE CORN.—*D. H. Burrell & Co.*, Little Falls, N. Y. Application filed January 18, 1888. Used since April, 1881.
"The letters and character 'B. & W.'"

15,195.—SALVE.—*Ludie A. Canterbury*, Brownwood, Tex. Application filed December 20, 1887. Used since December 1, 1887.
"The representation of a bee-hive."

15,196.—BASE-BALL GOODS AND OUTFITS.—*Robert F. Fenno*, New Orleans, La. Application filed January 21, 1888. Used since November 24, 1887.
"The words 'TEXAS LEAGUE.'"

15,197.—WINES, WHISKIES, BRANDIES, AND OTHER DISTILLED SPIRITS.—*Fischer & Heinrichs*, New York, N. Y. Application filed January 23, 1888. Used since August 1, 1880.
"The words 'POLO CLUB' and the letters and character 'F. & H.'"

15,198.—GARTERS.—*George Frost & Co.*, Boston, Mass. Application filed January 13, 1888. Used since April, 1878.
"A combination of the words 'GENTLEMEN'S BOSTON GARTER' and the picture of a human foot and leg below the knee, on which is shown a sock supported by a garter of the kind known as the 'Gentlemen's Boston garter.'"

15,199.—SHIRTS, COATS, JACKETS, AND OVERALLS.—*Gallt & Branch*, Port Byron and New York, N. Y. Application filed January 16, 1888. Used since May 1, 1887.
"The word 'PENNANT.'"

15,200.—MAINSPRINGS FOR TIME-PIECES.—*L. Hammel & Co.*, New York, N. Y. Application filed January 26, 1888. Used since September 1, 1887.
"The representation of a star."

15,201.—CANDY.—*Hawley & Hoops*, New York, N. Y. Application filed November 4, 1887. Used since March 3, 1877.
"The word 'PREMIUM.'"

15,202.—LAUNDRY-BLUE.—*Robert F. S. Heath*, Camden, N. J. Application filed January 17, 1888. Used since December 1, 1887.
"The words 'SOCIETY BLUEING.'"

15,203.—BISCUITS, CRACKERS, WAFERS, AND SIMILAR ARTICLES.—*Holmes & Coutts*, New York, N. Y. Application filed January 28, 1888. Used since January 21, 1888.
"The representation of a cord passing around or partly around the package and in contrast with the color of the surface of the wrapper on which it is printed or painted."

15,204.—BISCUITS, CRACKERS, WAFERS, AND SIMILAR ARTICLES.—*Holmes & Coutts*, New York, N. Y. Application filed January 28, 1888. Used since January 21, 1888.
"The representation of a chain passing around or partly around the package and in contrast with the color of the surface of the wrapper on which it is printed or painted."

15,205.—PERFUMERY.—*Ladd & Coffin*, New York, N. Y. Application filed January 19, 1888. Used since January 1, 1888.
"The words 'GOYA LILY.'"

15,206.—HAMBURG EMBROIDERIES.—*Léon Lévy & Bros.*, New York, N. Y. Application filed December 9, 1887. Used since December 5, 1887.
"The representation of a white Greek cross on a red shield and the words 'HELVETIA EMBROIDERY.'"

15,207.—TIN AND TERNE PLATES.—*Merchant & Co.*, Philadelphia, Pa. Application filed January 23, 1888. Used since June 1, 1887.
"The word 'EDGWARE.'"

15,208.—TIN PLATES.—*Merchant & Co.*, Philadelphia, Pa. Application filed January 23, 1888. Used since January 1, 1888.
"The word 'CREAMERY.'"

15,209.—GROUND-BONE FERTILIZERS.—*H. S. Miller & Co.*, Newark, N. J. Application filed January 14, 1888. Used since November 15, 1887.
"The figure of a bovine skull in front elevation, having around it representations of long leg-bones, which form a quadrangular figure."

15,210.—BOOTS AND SHOES.—*T. Miles' Sons*, Philadelphia, Pa. Application filed January 18, 1888. Used since the year 1828.
"The word 'MILES.'"

15,211.—TABLE-WARE CONSTRUCTED OF SILVER OR OF OTHER METALS AND THEN PLATED OR TINNED.—*G. I. Mix & Co.*, Yalesville, Conn. Application filed November 30, 1887. Used since May 20, 1887.
"The words 'CROWN PRINCE.'"

15,212.—BLOOD-PURIFYING MEDICINE.—*Moore Manufacturing Company*, Seattle, Wash. Ter. Application filed December 10, 1887. Used since May 31, 1887.
"The combination of the words 'MOORE'S REVEALED REMEDY,' with a shield inclosing a monogram formed of the letters 'M R R,' and the apparent fastening of said shield to a background by screws placed therein."

15,213.—TONIC BEVERAGE.—*Phillip Best Brewing Company*, Milwaukee, Wis. Application filed January 19, 1888. Used since July, 1887.
"The three words 'THE BEST TONIC,' composed of letters executed in the marking-brush style, and printed in red."

15,214.—RUBBER VALVES.—*Revere Rubber Company*, Boston, Mass. Application filed January 14, 1888. Used since January 1, 1887.
"The word 'BESSEMER.'"

15,215.—NON-ALCOHOLIC BEVERAGE.—*Charles H. Sagar*, Auburn, N. Y. Application filed January 16, 1888. Used since January 8, 1888.
"The word 'FRUI-MIZ.'"

15,216.—TOY MUSICAL INSTRUMENTS.—*A. Schoenhut & Co.*, Philadelphia, Pa. Application filed November 9, 1887. Used since March 1, 1887.
"The representation of the letter 'S,' upon the front or face of which is drawn a lyre, and superimposed upon said devices a clown's head and shoulders, the whole being inclosed in a ring or circle."

15,217.—EMOLLIENT.—*Walter W. Scott*, New York, N. Y. Application filed January 21, 1888. Used since May 1, 1887.
"The words 'VELOCTINE CREAM.'"

15,218.—LADIES' RUCHINGS.—*Emile Sloyton*, New York, N. Y. Application filed January 3, 1888. Used since September 1, 1887.
"The words 'EAGLE RUCHING,' with the representation of an eagle's head."

15,219.—HAIR-CLEANSER.—*Smith Brothers*, Boston, Mass. Application filed December 15, 1887. Used since April 1, 1887.
"The words 'LEROY'S MEXICAN EGG SHAMPOO CREAM' and the representation of the seal of New Mexico."

15,220.—CERTAIN SUPPLIES AND INSTRUMENTS FOR DRAFTSMEN AND ENGINEERS.—*E. G. Soltmann*, New York, N. Y. Application filed January 13, 1888. Used since May, 1883.
"The word 'CRESCENT' inclosed in quotation-marks."

15,221.—HOSIERY.—*Edward B. Sudbury*, New York, N. Y. Application filed November 16, 1887. Used since January, 1886.
"The words 'VULCAN HEEL AND TOE.'"

15,222.—HOSIERY AND GLOVES.—*Edward B. Sudbury*, New York, N. Y. Application filed November 16, 1887. Used since January, 1886.
"The words 'CASTLE GATE.'"

15,223.—FURROW-PLOWS.—*The Universal Plow Company*, Canton, Ohio. Application filed December 9, 1887. Used since January 19, 1885.
"The word 'UNIVERSAL.'"

15,224.—FLOUR.—*Samuel W. Weidler*, Cincinnati, Ohio. Application filed December 16, 1887. Used since July, 1886.
"The words 'STANDARD MILLS.'"

15,225.—METALLIC ALLOYS AND ARTICLES MADE THEREFROM.—*The Phosphor Bronze Smelting Company, (Limited,)* Philadelphia, Pa. Application filed November 30, 1887. Used since July, 1871.
"The words 'PHOSPHOR BRONZE.'"

15,226.—ALLOYS AND ARTICLES MADE THEREFROM.—*The Phosphor Bronze Smelting Company, (Limited,)* Philadelphia, Pa. Application filed November 30, 1887. Used since June, 1874.
"The words 'PHOSPHOR BRONZE' in script letters."

LABELS.

5,491.—Title: "THE HOWARD ALBUM INTERCHANGEABLE CARDS."—*Irving H. Brown*, New York, N. Y. Application filed December 5, 1887.

5,492.—Title: "BELT STUD." (FOR STUDS FOR LEATHER AND RUBBER BELTS.)—*Greene, Tweed & Co.*, New York, N. Y. Application filed December 14, 1886.

5,493.—Title: "DR. WHITE'S PULMONIC BALSAM."—*Adrian Paradis*, Brooklyn, N. Y. Application filed January 24, 1888.

5,494.—Title: "DR. WHITE'S PULMONIC BALSAM."—*Adrian Paradis*, Brooklyn, N. Y. Application filed January 24, 1888.

5,495.—Title: THE "BEST" TONIC.—*Phillip Best Brewing Company*, Milwaukee, Wis. Application filed January 19, 1888. (Trade-Mark Registered.)

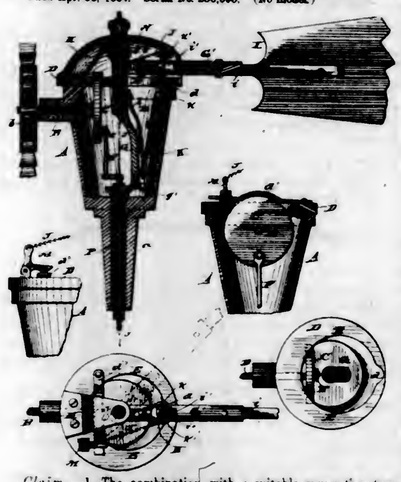
5,496.—Title: "INDURATED FIBRE." (FOR WARE MADE OF INDURATED WOOD FIBRE.)—*Union Indurated Fibre Company*, New York, N. Y. Application filed January 24, 1888.

5,497.—Title: "WHITNEY'S SPRING TONIC AND ALTERATIVE COMPOUND."—*William Whitney*, Gouverneur, N. Y. Application filed January 30, 1888.

PATENTS

GRANTED FEBRUARY 21, 1888.

378,073. WINDMILL. THOMAS J. ALEXANDER, Westerville, Ohio. Filed Apr. 30, 1887. Serial No. 236,696. (No model.)



Claim.—1. The combination, with a suitable supporting turn-table or head, of an eccentric ring, D, having cam-faces E E mounted thereon, a vane pivoted by its shaft to a suitable support on said head above the ring D, spring-controlled rod K, playing through a vertical slot in the vane-arm, and a friction wheel or roller, *k*, on rod K, adapted to engage the cam-faces E E of the ring to return the vane to normal position after displacement, all substantially as described.

2. The combination, in a windmill, of the head A, the wind-vane pivoted centrally thereon, the ring D, having cam-faces E E and recess *d*, with the friction-wheel *k*, mounted on a spring-controlled rod playing through a vertical slot in the vane-arm, and engaging with the cam-faces E E to return the vane to its normal position after displacement and with the recess *d* to hold it in such position, all constructed and arranged substantially as and for the purpose described.

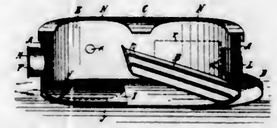
3. The combination, with a turn-table bearing a wind-wheel and wind-vane, the latter swinging freely in either direction, of cams mounted on the turn-table, and a spring-controlled friction-pulley engaging with said cams and the vane, whereby the latter is automatically returned to its normal position after displacement, substantially as described.

4. In a windmill, the combination of a support, A, having a tapered tubular neck, a wind-wheel, a crank-wheel having a pitman-rod connected to a tubular rod, P, a bent portion, G, having an upper tubular portion cupped and receiving the lower end of a lubricating device, and also provided with a foot-collar connecting it to the tube which surrounds the rod P, an eccentric ring, D, and a wheel playing therein connected to the pull-chain and also to the part G, all constructed and adapted to operate substantially as described.

5. The combination, with the vane and a turn-table, of the ring D, having an offset, *d*, and a wheel, *k*, spring-actuated and connected to the oscillating part G and to the vane, substantially as described.

6. The combination of the head A, the wind-wheel *b*, shaft B, wheel C and brake-strap therefor mounted thereon, the crane G, and hollow pitman F, constructed and arranged substantially as described, with the vane I, rod K, wheel *k*, spring L, cam-ring D, the pulleys *j k*, crank-lever M, and chain J, all constructed and arranged to operate substantially as and for the purpose described.

378,074. COOKING-STOVE. ALEXANDER ANDERSON, London, Ontario, assignor of one-half to Sarah C. Walker, Chatham, Canada. Filed Jan. 14, 1886. Serial No. 188,546. (No model.)



Claim.—1. In a summer-stove, the combination of a body, A, formed with openings K in the sides thereof, removable top C, formed with holes N N, cold-air chamber E, inclined or sloping fire-bottom B, openings K', and pipe F, substantially as shown and described, and for the purpose specified.

2. In a summer-stove, the combination of the body A, formed with openings K in the sides thereof, removable cover C, formed with holes N N, cold-air chamber E, inclined or sloping fire-bottom B, openings K', and perforation K, substantially as shown and described, and for the purpose specified.

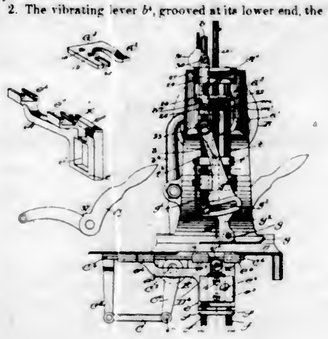
3. In a summer-stove, the combination of the body A, formed with perforations K in the sides thereof, removable cover C, formed with holes N N, cold-air chamber E, inclined or sloping fire-bottom B, openings K', pipe F, perforation J in the bottom of said stove, and adjustable cover I, substantially as shown and described, and for the purpose specified.

378,075. SEWING-MACHINE. EDWIN E. ANGELL, Boston, Mass., assignor to the Addax Basting Machine Company, Portland, Me. Filed June 18, 1886. Serial No. 205,520. (No model.)

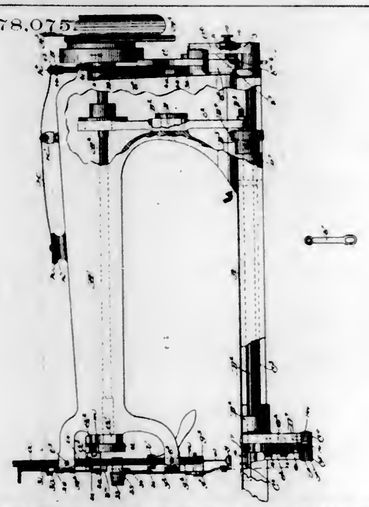
Brief.—The feed-regulating lever has a cam which operates on a rod connected with the tension, whereby the tension is automatically adjusted as the length of stitch is raised. Special feeding-bar-carrying devices are also shown.

Claim.—1. The main shaft, the cam B, lever b^4, moved by it, the rock-shaft having arms C^2 C^3, the link C^5, and feed-bar having the rigid arm C^6, combined with the block engaged by both the lever b^4 and the arm C^2, and with the link b^5 and lever C, to operate substantially as described.

2. The vibrating lever b^4, grooved at its lower end, the rock-shaft



378,075.



having the grooved arm C^3, and the block 4 therein, and pin to carry the block, combined with the lever C and link b^7, having a slot embracing the said pin to enable the lever b^4 and arm C^3 to be vibrated without moving the lever C, substantially as described.

3. The presser-bar, the lifting-plate G^2, surrounding the presser-bar loosely and provided with an arm, G^3, and the cam to act upon the said arm, combined with the stop 26 and the spring 24, to operate substantially as described.

4. The presser-bar *b*, the block b^{14}, surrounding the said bar loosely, the link 26, and lever to lift it, combined with the plate G^2, having the arm G^3, the cam to move it, and the spring 24 and a stop, 22, to govern the descent of the said plate, substantially as described.

5. The combination, with the presser-bar, of the lever g^3, pivoted at or near its upper end to said bar, and having the slot g^4 and the pivoted foot *g*, the screw g^4, and a retracting-spring for said lever, substantially as set forth.

6. The feed-bar carrier having a series of guides for the reception of the feed-bar and an opening, c', the block c^2, fitted into the said opening, the plate c^3, means to attach the said block and plate, and means, substantially as described, to raise and lower the said feed-bar, combined with the feed-bar C^3 and a crank and rock-shaft to move it variable distances, substantially as described.

7. The feeding mechanism and the feed-regulating lever provided with a cam, combined with the tension device, the tension-regulating lever-spring H, and the rod 39, the lower end of which impinges against said cam and the upper end of which is connected with the said lever-spring, substantially as set forth.

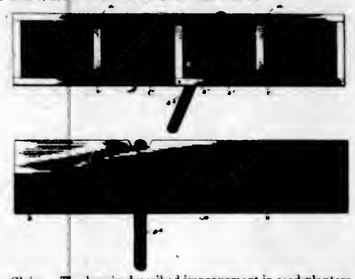
8. The combination, with the thread-rest *h'*, of the tension-regulating lever H, the clamping-plate *h* at the forward end of said lever, the block H', to which the said lever is pivoted between its ends, and an adjustable abutment, as block 43, to act on the rear end of said lever to vary the pressure of the clamping-plate on the thread, substantially as set forth.

378,076. COFFIN. ELMER RANCH, Cortland, N. Y. Filed June 11, 1887. Serial No. 240,992. (No model.)



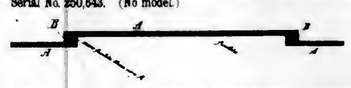
Claim.—The combination, with a burial-casket, of a lid divided longitudinally at the center of its width and each half subdivided into longitudinal sections, the inner sections hinged to the outer sections, transversely-slotted plates secured to the outer sections, and guide-pins projecting from the top of the side walls of the casket and through the slotted plates and provided with heads above said plates, substantially as described and shown.

378,077. SEED-PLANTER. AMOS BARKER, Spencer, Ind. Filed Dec. 5, 1887. Serial No. 257,042. (No model.)



Claim.—The herein-described improvement in seed-planters, comprising the hopper having its bottom provided with a series of zigzag or tortuously-arranged holes or apertures, and the slide or cut-off having oppositely-disposed step-like recesses, substantially as shown and described.

378,078. CONDUCTOR FOR ELECTRICAL FIRE-ALARM SYSTEMS. WILLIAM A. BARNES, Bridgeport, Conn. Filed Sept. 26, 1887. Serial No. 250,643. (No model.)



Claim.—1. As a new article of manufacture, a conductor for electrical fire-alarms, consisting of a wire formed of sections of metallic compound fusible at a certain comparatively low temperature, united by joints formed of a metallic compound fusible at a temperature lower than that of the fusing-point of said sections, substantially as described.

2. In combination with an electrical-alarm system, a conductor formed of sections of wire of a metallic compound fusible at a certain comparatively low temperature, united by joints formed of a metallic compound fusible at a temperature lower than the fusing-point of said sections, substantially as described.

378,079. WINDOW-SHADE FIXTURE. ROBERT J. BETTS, Milton, Del., assignor of one-half to Thomas A. Connolly, Washington, D. C. Filed May 26, 1887. Serial No. 239,431. (No model.)



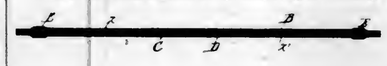
Claim.—1. A shade-fixture bracket, E, having a vertical conoidic slot, F, in its side, said slot tapering as it descends, substantially as shown and described.

2. The combination, with shade-roller B and bracket E, having slot F and openings *f f'* above the roller B, of the cord G, passing through said openings and around the roller, whereby a pull on the cord will raise the end of the roller, substantially as shown and described.

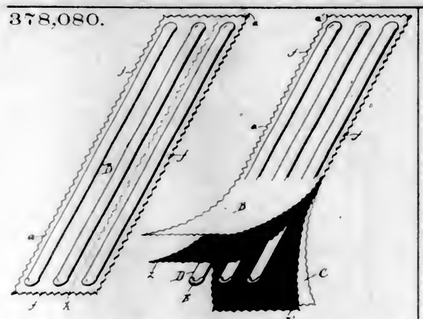
3. In window shades and fixtures, the combination, with the shade-roller and shade, of the cord G, passing over the end of the roller and through an opening or openings above the roller in one of the brackets, the end of the roller fitting in a conoidic slot in the side of the bracket, and thereby preventing the roller from being turned by the pull of the shade-weight.

378,080. GARMENT-STAY. ENOCH C. BOWLING, Ypsilanti, Mich., assignor of one-half to Henry P. Glover, same place. Filed Aug. 13, 1887. Serial No. 247,265. (No model.)

Claim.—The herein-described stay, comprising the stiffening-blade

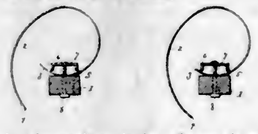


378,080.



having metallic end caps, and fabric coverings projecting beyond the edges and capped ends of the stiffening-blade, with interposed sheets of gutta-percha tissue, said parts adhering together and forming the textile fabric stitching-edges *f f*, as and for the purposes specified.

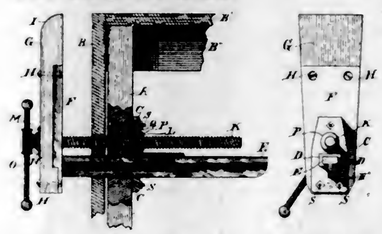
378,081. HARROW. J. MORRIS CHILDS, Utica, N. Y. Filed Oct. 22, 1887. Serial No. 253,103. (No model.)



Claim.—1. A harrow-frame having a flat seat, in combination with a spring curved adjustable tooth and a fastening-clip adapted to engage the tooth off from its bearing on the seat on the horizontal surface of the tooth only, whereby the tooth may be longitudinally adjusted and held when adjusted under spring tension.

2. A harrow-frame having a flat seat, in combination with a spring curved adjustable tooth and a fastening-clip, the ends of which engage the inner horizontal surface of said tooth only.

378,082. VISE. BURNAM R. CLARK, Union Grove, Wis. Filed May 2, 1887. Serial No. 236,785. (No model.)



Claim.—1. In a wood-worker's vise, the wooden-faced jaw G, affixed to the plate F, and the traveling arm E, rigidly affixed to the plate F, in combination with a bench provided with a plate, C, in which the arm E is adapted to travel, and the screw K, adapted to move the jaw G toward and from the bench, substantially as described.

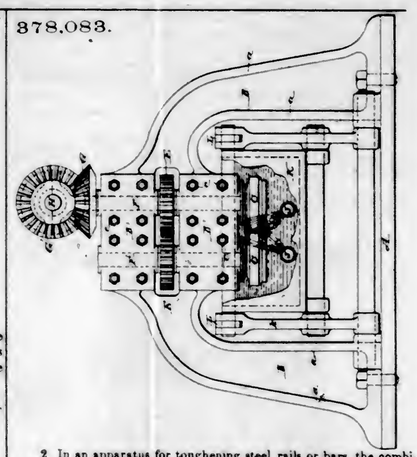
2. In a wood-worker's vise, the wooden-faced jaw G, with recesses G' G', in combination with the plate F, provided with flanges F' F', adapted to enter recesses G' G', and the traveling arm E, rigidly affixed to the plate F, all substantially as described.

3. In a wood-worker's vise, a bench provided with a leg, A, the thereto rigidly-attached plate C, provided with sleeve D, in combination with the traveling arm E, secured to the jaw G, a jaw, G, and a screw, K, adapted for moving the jaw G, substantially as described.

378,083. APPARATUS FOR TOUGHENING STEEL RAILS. JOHN COFFIN, Johnstown, Pa., assignor to the Cambria Iron Company, same place. Filed Dec. 15, 1887. Serial No. 257,999. (No model.)

Claim.—1. In an apparatus for toughening steel rails or bars, the combination, with a series of clamping-rollers that are adapted to fit the sides of a rail or bar, shafts that support the rollers, and adequate means for supporting and rotating the shafts, of a rising-and-falling bosh adapted to immerse a clamped hot rail in a suitable cooling-bath, substantially as set forth.

378,083.



2. In an apparatus for toughening steel rails or bars, the combination, with a series of clamping-rollers that are supported in a straight line and are adapted to bear on the sides of a rail at opposite points throughout its length, of a horizontal shaft, bevel-gears on this shaft, vertical shafts to which the clamping-rollers are affixed, and bevel-gears on these shafts that mesh with the gears on the horizontal shaft, substantially as set forth.

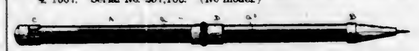
3. In an apparatus for toughening steel rails or bars, the combination, with a base-plate and a series of upright housings arranged in pairs on the base-plate, of a series of vertical parallel shafts, rollers affixed to the lower ends of the vertical shafts, bevel-gears secured to the upper ends of the vertical shafts, a horizontal shaft supported to rotate, and bevel-gears mounted and secured upon the horizontal shaft to mesh with the other bevel-gears, substantially as set forth.

4. In an apparatus for toughening steel rails and bars, the combination, with a base-plate, housings mounted on the base-plate, a series of vertical shafts, and rollers affixed to the lower ends of these shafts, which rollers have their peripheries fashioned to conform to the sides of a rail or bar, of two pipes or tubes foraminated on their upper sides to throw water on a hot rail held between the rollers, and means for rotating the rollers, substantially as set forth.

5. The combination, with a base-plate, a series of paired housings secured at short intervals throughout the length of the base-plate, a series of vertical parallel shafts supported to rotate in boxes formed in the housings, and rollers fixed to the lower ends of the vertical shafts that have their peripheral edges adapted to closely bear upon the sides of a rail or bar introduced between them, of a series of spur-gears, a series of bevel-gears, a horizontal shaft supported in brackets, and a rising-and-falling water-bosh adapted to immerse a hot rail or bar held between the paired rollers, substantially as set forth.

6. In an apparatus for toughening steel rails or bars, the combination, with a series of clamping-rollers adapted to fit the sides of a rail or bar, shafts for supporting the rollers, and adequate means for supporting and rotating the shafts, of pipes or tubes connected to a source of water-supply and perforated to throw jets of cooling-liquid upon a clamped hot rail, and a bosh supported on bell-cranks below the clamping-rollers, whereby a rising and falling of the bosh may be effected, substantially as set forth.

378,084. PENCIL. JAMES F. DODD, Delaware, Ohio. Filed May 4, 1887. Serial No. 237,108. (No model.)



Claim.—1. A pencil made in two parts cut away and shouldered, and also grooved on their inner faces to contain the lead and secured together at the tip and head, as set forth, whereby a slot is provided between the two parts, and combined with a driver provided with means for holding the lead, substantially as and for the purpose set forth.

2. In combination with a pencil made substantially as described, a cap, C, provided with internal flanges, *c*, substantially as and for the purpose set forth.

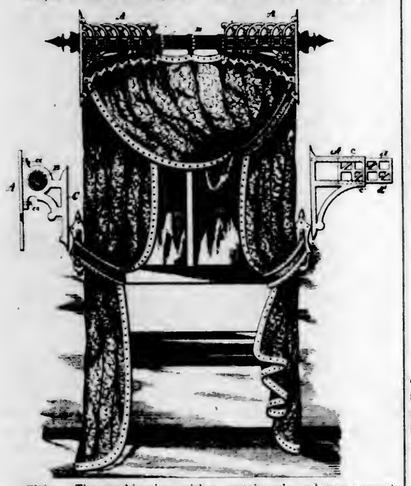
3. A driver, D, for a pencil, substantially as described, having within it a spring-tube, *d*, for receiving and gripping the end of the lead, substantially as and for the purpose set forth.

4. A pencil made in two parts and internally grooved for the lead, and also shouldered, the two parts held asunder to allow the passage for the driver by means of the shoulder at one end and a detachable cap at the other and secured together by means of said cap and a band near the tip, substantially as and for the purpose set forth.

5. In a pencil, a detachable cap provided with a spring whereby it can be held in position, substantially as and for the purpose set forth.

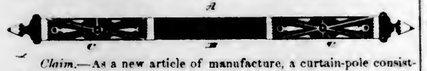
6. A lead-pencil made in two parts and held together at one end by a detachable cap and at the other by a band or tip and provided with a driver having its body screw-threaded.

378,085. CURTAIN-POLE COVERING. ALBERT D. FIELD, New York, N. Y. Filed Nov. 21, 1885. Serial No. 183,559. (No model.)



Claim.—The combination, with a curtain-pole and two supporting-brackets, of two extensible covering-pieces, one secured to each bracket, substantially as set forth.

378,086. UPHOLSTERED CURTAIN-POLE. ALBERT D. FIELD, New York, N. Y. Filed Nov. 21, 1885. Serial No. 183,560. (No model.)



Claim.—As a new article of manufacture, a curtain-pole consisting, essentially, of a core having an upholstered section and end pieces or sleeves fitting on the ends of the pole and overlapping the upholstered section, the external faces of said sleeves being constructed to permit the curtain-rings to slide thereon, substantially as set forth.

378,087. ADJUSTABLE OR EXTENSION CURTAIN-POLE. ALBERT D. FIELD, New York, N. Y. Filed Sept. 3, 1887. Serial No. 248,723. (No model.)

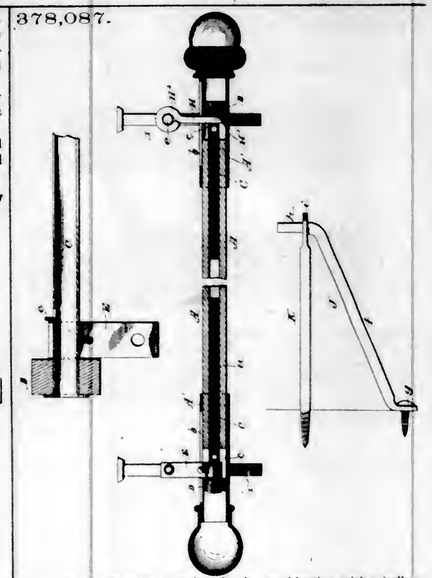
Claim.—1. In an adjustable curtain-pole, the combination, with a hollow central section, of one or more tubular sections adapted to be moved endwise on the central section, and an extension-rod adapted to slide in the central section and form a bearing for one of the tubular sections, substantially as set forth.

2. In an adjustable curtain-pole, the combination, with a central section that is axially perforated, an extension-rod, and a guide-block, of a tubular section placed upon one end of the central hollow section and adapted to move thereon endwise and on the guide-hook, substantially as set forth.

3. In an adjustable curtain-pole, the combination, with a central section that is perforated axially, one or more slotted tubular end sections, and an extension-rod that slides in the central section, of a guide-block to loosely fit the hollow end section, and a bracket-lug affixed to the extension-rod and adapted to slide in the longitudinal slot of the tubular end section, substantially as set forth.

4. In an adjustable curtain-pole, the combination, with a hollow central section, and a slotted tubular end section, of an extension-rod carrying a guide-block and a bracket-lug and adapted to be moved in the central section independently of the sliding movement of the adjustable tubular end section, substantially as set forth.

378,087.

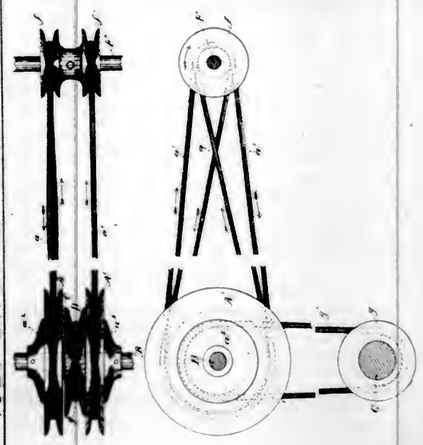


5. In an adjustable curtain-pole, the combination, with a hollow center section and a tubular section adapted to slide on the central section, of an extension-rod carrying a guide-block and a bracket-lug and adapted to slide in a longitudinal slot formed in the tubular end section to afford a means of adjustment for the bracket-lug independent of the central section or tubular end section of the curtain-pole, substantially as set forth.

6. In an adjustable curtain-pole, the combination, with a longitudinally-perforated central section, an extension-rod, and a guide-block affixed to the end of the extension-rod, of a tubular end section slotted longitudinally, and brackets that are adapted to support the curtain-pole, substantially as set forth.

7. The combination, with a central section, an extension-rod mounted therein and provided with a guide-block, and a tubular end section secured to said central section and guide-block, of socket-flanges placed on the ends of the pole, substantially as set forth.

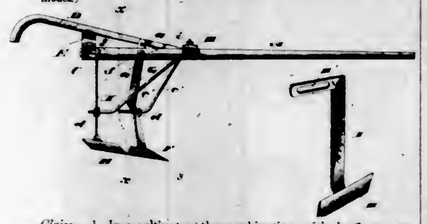
378,088. CLUTCH. THEODORE M. FOOTE, Boston, Mass., assignor to William Lumb, trustee, same place. Filed Apr. 23, 1887. Serial No. 235,947. (No model.)



Claim.—1. In combination, driving-shaft G, driven shaft B, driving-wheel *g*, driven wheel D, loose pulley A, collar a^1, and screw C, the collar and screw being fast to the shaft B, and the driving-wheel D forming a nut for the screw C, all substantially as and for the purpose set forth.

2. In combination, driving-shaft G, driven shaft B, driving-wheel *g*, driven wheel D, loose pulleys A A', collars a^1 a^2, and screw C, the collars and screw being fast to shaft B, and the driven wheel D forming a nut for the screw C, all substantially as described.

378,089. CULTIVATOR. JOSEPH F. GLIDDEN and PHINEAS W. VAUGHAN, De Kalb, Ill. Filed Nov. 16, 1887. Serial No. 255,362. (No model.)



Claim.—1. In a cultivator, the combination, with the frame consisting, essentially, of the shafts extended rearwardly and connected by cross-bars, the forward bifurcated standard having the upper portions of its branches perforated, the rear angular standards having their angular branches slotted, bolts for adjustably securing the said standards, and threaded rods secured to the forward cross-bar and adjustably connected with the respective standards, substantially as specified.

2. In a cultivator, the combination, with a forward bifurcated standard adapted to be vertically and longitudinally adjustable, of rearward lateral standards carrying shovels and adapted to be vertically, laterally, and longitudinally adjusted, substantially as specified.

378,090. WINDOW-SCREEN. HARVEY H. GREENMAN, Cortland, N. Y. Filed Aug. 22, 1887. Serial No. 247,503. (No model.)



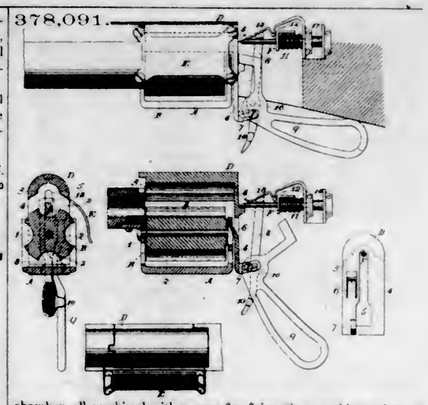
Claim.—1. The combination of the frame A, provided internally with the channels *c c* and the stile A', the supplemental stile C, adapted to slide on the stile A', the independently-operating links *a a*, pivoted to the supplemental stile and sliding in the aforesaid channels, and provided with shoulders at their free ends, and the pins *b b*, passing transversely through the channels and adapted to engage the shoulders of the links, substantially as described.

2. The combination of the frame A, provided internally with the horizontal channels *c c* and stile A', the supplemental stile C, provided with the vertical groove *d*, in which the stile A' of the frame is held, the links *a*, pivoted to the supplemental stile and extending into the channels *c c*, and provided with the elongated notches *n*, the pins *b b*, passing through the frame and through the notches *n*, and the spring *e*, seated in the groove of the supplemental stile and arranged to press the same outward from the stile A', substantially as described and shown.

378,091. REVOLVER. AUGUST GRETH, San Francisco, Cal. Filed Jan. 10, 1887. Serial No. 223,955. (No model.)

Claim.—1. The cover D, provided with the breech-piece 4, and the shield E, attached to said cover, the revolving chamber provided with semicircular grooves for receiving the cartridges, said revolving chamber having on one end the ratchet G, the spring-pawl connected with the breech-piece and engaging with the ratchet to revolve the chamber simultaneously with raising the cover to allow a cartridge to be introduced, and the pivoted actuating-lever connected by means of a bolt with an elongated slot in the tail-piece, whereby the depression of the same about its pivot raises the cover and revolves the

378,091.



chamber, all combined with means for firing the cartridge, substantially as set forth.

2. In combination with the grooved part B, provided with a ratchet and supported to revolve within guard A, the cover D, provided with the tail-piece 4, having slot 5, spring-pawl 6, attached to said tail-piece of the cover, and mechanism for moving the tail-piece to raise the cover to admit a cartridge under the same and for simultaneously moving the pawl, and part B, to bring a previously-introduced cartridge in the path of the firing-pin, substantially as set forth.

3. The combination of the cover D, having a slotted tail-piece, 4, and slotted lug, 7, connected to said tail-piece, the trigger 8, provided with stop 10, secured to the lower end of the trigger and in the path of lever 9, said actuating-lever 9 connected by a pivot to the trigger and by a bolt with the slot in lug 7, a needle and an actuating-spring, 11, substantially as specified, whereby, on the depression of the lever against the slot the needle is retracted and the spring compressed simultaneously with the raising of the cover to admit a fresh cartridge.

4. The combination of the guard A, part B, supported therein to revolve on axis 1, and provided on its end with ratchet G, spring-pawl 6, and releasing-pin 13, arranged to be pushed between the ratchet and pawl to hold the latter disengaged while the chamber B may be revolved to the left to unload the gun, substantially as set forth.

5. The combination of guard A, slotted to allow the movement of a spring-pawl, 6, part B, supported to revolve therein on axis 1, cover D, provided with tail-piece 4, having spring-pawl 6, and means for moving the cover, tail-piece, and pawl, substantially as specified.

378,092. SPARK-ARRESTER. JACOB HAISH, De Kalb, Ill. Filed Oct. 24, 1887. Serial No. 253,260½. (No model.)

Claim.—1. In combination with the usual locomotive, a smoke-stack, D, having a deflected or angular interior and provided with the horizontal wall F, the annular flange J, and the suspended plate H, substantially as shown, and for the purpose described.

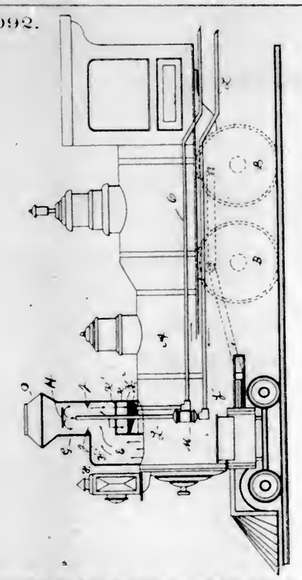
2. In combination with the usual locomotive, a smoke-stack, D, bent horizontally at or near its central portion, and provided with the annular flange J and suspended interior plate, H, and the inlet water-pipe M, adapted to discharge the water in small quantities against the under surface of the plate H, substantially as shown, and for the purpose described.

3. In combination with the usual locomotive, a smoke-stack, D, provided with the suspended interior plate, H, and injecting water-pipe M, adapted to discharge a continuous small stream of water against the lower surface of said plate, and the removable drawer K, having perforated upper and lower surfaces, K' and K^3, substantially as shown, and for the purpose described.

4. In combination with the usual locomotive, a smoke-stack, D, provided with the interiorly-suspended plate H, and induction-pipe M, provided with means for discharging a continuous small stream of water against the under surface of said plate H, the drawer K, provided with the perforated top K' and perforated bottom K^3, the filter N, and return water-pipe O, substantially as shown, and for the purpose described.

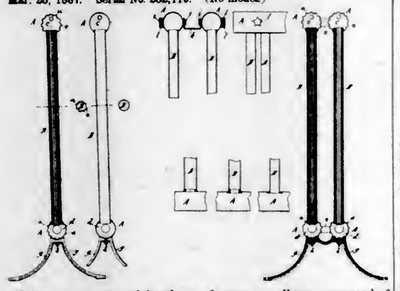
5. In combination with the usual locomotive, a smoke-stack, D, provided with the horizontal wall F and interior annular flange, J, the interior plate, H, the discharge water-pipe M, adapted to deliver a continuous small stream of water against the under surface of said plate H, the drawer K, provided with the perforated top K' and per-

378,092.



forated bottom K^2, the filter N, and return water-pipe O, substantially as shown, and for the purpose described.

378,093. **RADIATOR.** JOHN HOPSON, Jr., New London, Conn. Filed Mar. 23, 1887. Serial No. 232,119. (No model.)



Claim.—As a new article of manufacture, a radiator composed of thin-metal upper and lower headers with end plugs covered by caps and vertical connecting-tubes, the upper headers having nibs and connecting-braces on adjacent sides, and the lower headers having supporting-legs holding them in fixed relation to each other, said nibs having a connection of solder with the upper headers, and said legs secured by bolts having a connection of solder with the lower headers, whereby screw-thread connections and unnecessary joints are obviated and the upper and lower parts of the radiator are secured and held, all substantially as specified.

378,094. **CUFF-HOLDER.** ERVIN R. HORTON, Medford, Mass. Filed June 18, 1887. Serial No. 241,722. (No model.)



Claim.—1. As an improved article of manufacture, the herein-described cuff-holder made of wire, it having a pin-attaching device, substantially as described, at one end, and a separable spring-actuated button-receiving loop at the opposite end, substantially as and for the purposes specified.

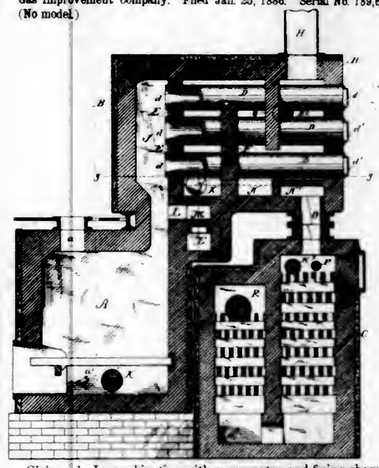
2. As an improved article of manufacture, the herein-described cuff-holder made of wire, it having a pin-attaching device at one end, a separable spring-actuated button-receiving loop at the opposite end, and a compressible loop or middle portion, 8, formed by the legs which form the sides of the button-receiving loop crossing each other near the said button-receiving loop, substantially as and for the purposes specified.

3. The attaching device for purposes described, which consists of a loop, 4, a band, 6, having a central opening, and a pin, 7, as and for the purposes set forth.

4. In the cuff-holder herein described, a two-part or separable button-receiving loop, the extremity of one part being bent outward to form a loop, substantially as and for the purposes specified.

5. In the cuff-holder herein described, an attaching device at one end to engage the sleeve, combined with two legs, 2 3, the ends 5 of which are bent to form a two-part or separable button-receiving loop, substantially as and for the purpose specified.

378,095. **APPARATUS FOR THE MANUFACTURE OF GAS.** ALEXANDER C. HUMPHREYS, Philadelphia, Pa., assignor to the United Gas Improvement Company. Filed Jan. 25, 1886. Serial No. 189,615. (No model.)



Claim.—1. In combination with a generator and fixing-chamber, a retort-chamber containing retorts for the distillation of bituminous coal, and a system of gas-passages, one or more leading into the retort-chamber and one or more direct to the fixing-chamber, whereby the supply of gases for each chamber is independent of the other.

2. In combination with a generator and fixing-chamber, a retort-chamber containing retorts for the distillation of bituminous coal, and having an independent stack or gas-escape and a system of gas-passages, one or more leading into the retort-chamber and one or more direct to the fixing-chamber, whereby the supply of gases for each chamber is independent of the other and combustion may be continued in the retort-chamber while gas is being stored.

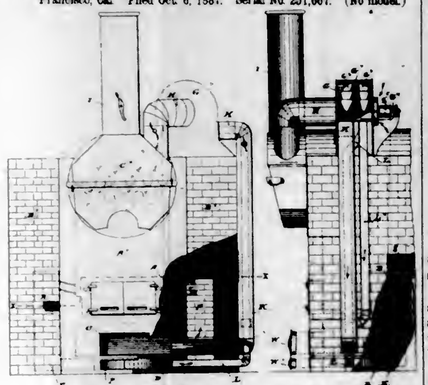
3. In combination with a generator and a fixing-chamber, a retort-chamber containing retorts for the distillation of bituminous coal, and provided with gas-supply passages independent of the passages leading to the fixing-chamber, and having an independent gas-escape provided with means for creating a strong draft through the chamber.

4. In combination with a generator and a fixing-chamber, a retort-chamber containing retorts for the distillation of bituminous coal, and having a gas-supply passage independent of the passages leading to the fixing-chamber, and an adjustable valve whereby the quantity of gas admitted to said retort-chamber may be regulated at will.

5. In combination with a generator and fixing-chamber, a retort-chamber containing retorts for the distillation of bituminous coal, and having open-ended retorts opening into a chamber or passage, J, a gas-passage leading to the combustion-chamber of the retort-chamber, and gas-passages leading to the fixing-chamber situated between the open ends of the retorts, and the gas-passage leading to said combustion-chamber, whereby the coal-gases are substantially all conveyed to said fixing-chamber.

6. In combination with a generator, A, and fixing-chamber, C, the retort-chamber B, having a passage or chamber, J, situated over the generator and divided from the combustion-chamber by a wall, E, through which the open-ended retorts D project, the passage L L' L^3, leading into the retort-chamber and having valve M, the independent stack H, and air-pipes K' K^2, and the gas-passages N, leading to the fixing-chamber.

378,096. **SMOKE-CONSUMING FURNACE.** JOHN KRANZ, San Francisco, Cal. Filed Oct. 6, 1887. Serial No. 251,667. (No model.)



Claim.—1. The combination, with a steam-boiler furnace, of the double suction-blower G, the exhaust-pipe H, leading directly from the boiler-breeching to the blower, the conductor K, leading from the pressure side of the blower down to and terminating in the ash-pit, the air-chambers D E F F, said chambers E F F provided with apertures delivering into the fire-box, the air-pipes L L^x, and a damper in smoke-stack, all connected and arranged as described, for operation as set forth.

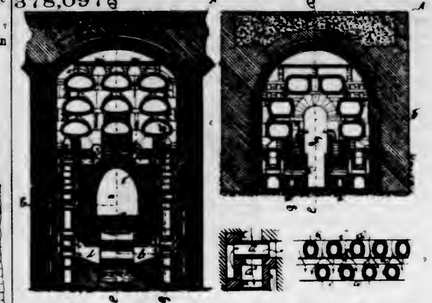
2. In a smoke-preventing apparatus for boilers, an air-chamber, D, under the ash-pit, opening into the atmosphere, with upright extensions into the bridge-wall and at the sides of the fire-chamber, and with apertures therefrom delivering through the top of the bridge-wall and across the fire-space, in combination with a suction-blower having connection directly with the boiler-breeching, the conductor K, leading from its pressure side into the ash-pit, and a suction-blower adapted to take air from the outside and to deliver it into the conductor K and the air-chamber below the ash-pit.

3. In a smoke-preventing apparatus for steam-boilers, the double suction-blower G, exhaust-pipe H, adapted to draw directly from the boiler-breeching, conductors K L L^x, and air-chambers D E F, all constructed, arranged, and operating substantially as described.

4. A boiler-furnace having an air-chamber under the ash-pit and separate therefrom, with chambers E and F, provided with apertures d, in combination with means, consisting of a suction-blower, constructed and arranged substantially as described, whereby air is drawn from the outside atmosphere and is forced under pressure into said air-chambers and through its apertures into the fire-chamber, for operation as set forth.

5. In a steam-boiler furnace, the combination of an air-chamber under the ash-pit and separate therefrom, with chambers E F, provided with apertures, a boiler-breeching having a smoke-stack with a damper and exhaust-outlet and pipe H, a suction-blower having a conductor, as K, from the pressure side delivering under the grate-surface of the furnace, and a fresh-air pipe adapted to deliver air into said conductor K from a pressure-blower, all constructed, arranged, and combined for joint operation substantially as specified.

378,097. **APPARATUS FOR HEATING RETORTS AND MUFFLES.** AUGUST KLÖNNE, Dortmund, Prussia, Germany. Filed Jan. 2, 1885. Serial No. 152,362. (No model.) Patented in England Mar. 22, 1882, No. 1,220, and Mar. 13, 1883, No. 1,339; in Germany Apr. 20, 1882, No. 25,127, and July 18, 1882, Nos. 25,201 and 26,906; in France June 19, 1882, No. 137,478, and in Austria-Hungary July 20, 1885, No. 11,310 and No. 37,908.

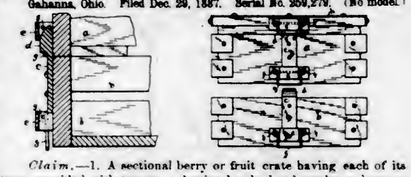


Claim.—1. A recuperator, E, provided with a set of tiles, Q, each having a passage, Q', for inflowing air, and a passage, Q^2, for outflowing products of combustion, these passages being at right angles to each other and arranged in quincunx order, as shown, in combination with a fire-box, an arch over it having an opening or openings for the escape of the products of combustion, and a set of retorts arranged above said fire-box, substantially as set forth.

2. A recuperator provided with a set of tiles, Q, each having a passage, Q', and a passage, Q^2, the one for inflowing air and the other for outflowing products of combustion, these passages being arranged at right angles to each other and in quincunx order, for the purpose set forth.

3. A recuperator consisting of tiles Q, each having a passage, Q', and a passage, Q^2, said passages being arranged in quincunx order and at right angles to each other, for the purpose stated, in combination with supplemental movable tiles, x', t, and s, which allow said tiles Q to be moved, substantially as set forth.

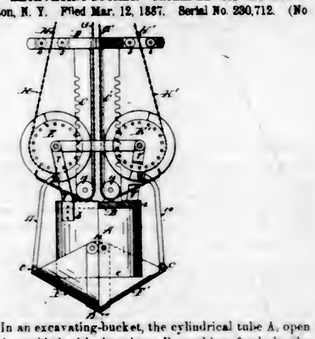
378,098. **BERRY OR FRUIT CRATE.** SAMUEL R. KRAMER, Gahanna, Ohio. Filed Dec. 29, 1887. Serial No. 259,279. (No model.)



Claim.—1. A sectional berry or fruit crate having each of its trays provided with tongues c, having heads d and staples or keepers e, the latter having spring-bearing pins f and spring-latches g, substantially as and for the purpose specified.

2. In a sectional fruit or berry crate, the combination, with the trays having tongues c, provided with heads d and staples or keepers e, the latter having spring-bearing pins f and spring-latches g, of the lid h, having on each of its ends a staple or keeper, e, provided with pin f and spring-latch g, substantially as and for the purpose specified.

378,099. **EXCAVATING-BUCKET.** THOMAS LAWLER and JOHN J. LAWLER, Clifton, N. Y. Filed Mar. 12, 1887. Serial No. 230,712. (No model.)



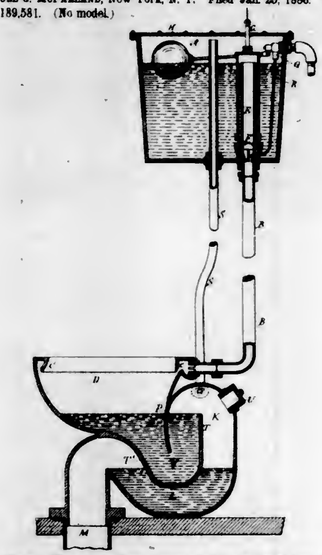
Claim.—1. In an excavating-bucket, the cylindrical tube A, open at both ends and provided with the piston B, working freely in the said cylinder A, in combination with the grapple-scoops F and F', pivoted to the said cylinder A and closing under same, substantially as and for the purpose specified.

2. In an excavator-bucket, the cylinder A, having a piston, B, provided with toothed racks C and C', and said racks engaging with the wheels E and E', connected at their upper end with cross-head D, substantially as and for the purpose specified.

3. In an excavator-bucket, the wheels E and E', mounted on the cylinder A and engaging with toothed racks C and C', and having the hauling-chains G and G' and backing-chains H and H' attached to said wheels, and the wheels being connected to the scoops F and F' by the rods 10 and 11, substantially as and for the purpose specified.

4. In an excavator-bucket, the hauling-chains G and G', passing under the sheaves 15 and 16, secured to the top of piston B, and the said chains connected to the wheels E and E', mounted on the cylinder A, substantially as and for the purpose specified.

378,100. FLUSHING APPARATUS FOR WATER-CLOSETS. SAMUEL G. MCFARLAND, New York, N. Y. Filed Jan. 25, 1886. Serial No. 189,581. (No model.)



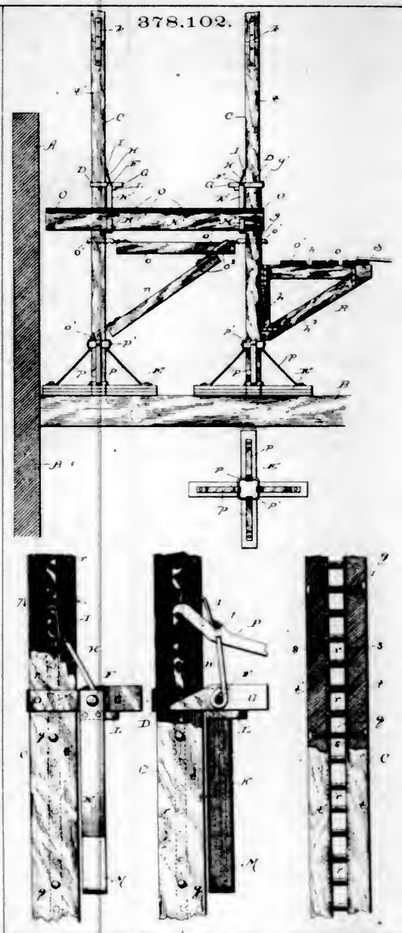
Claim.—The water-closet cistern having a closed top, in combination with the water-supply cock and float within the cistern, a pipe, S, opening near the under side of the cistern-cover and passing to the siphon of the closet, the flushing-pipe B, leading to the rim of the closet, a valve at the upper end of such pipe, a siphon-tube connected with the valve, and a rod passing through the cover of the cistern and connected to the siphon and valve for lifting the same when the closet-pull is operated, substantially as set forth.

378,101. HOT-AIR FURNACE. WILLIAM MILLER, Grand Rapids, Mich. Filed July 28, 1886. Serial No. 209,334. (No model.)



Claim.—In a hot-air furnace, a radiator consisting of a continuous flue having a passage of uniform area and rectangular cross-section, also having semicircular return-bends, the sides of said flue consisting of two end and two side plates, said end plates having flanges engaging with said side plates, said flanges being located at the concave side of said side plates, where the return-bends occur, substantially as described.

378,102. BUILDER'S SCAFFOLD. EDMUND S. MOSS, Chicago, Ill. Filed Apr. 12, 1887. Serial No. 234,478. (No model.)



Claim.—1. In a movement for operating the movable platform, supported by uprights, of a builder's scaffold, the combination of a yoke, D, to embrace an upright, C, a dog, G, supported on the yoke to engage with the upright, a hanger connected with the yoke to carry the platform, and means, substantially as described, for actuating the yoke upon the upright, substantially as and for the purpose set forth.

2. In a movement for operating the movable platform, supported by uprights, of a builder's scaffold, the combination of a yoke, D, to embrace an upright, C, a dog, G, supported on the yoke to engage with the upright, a hanger connected with the yoke to carry the platform, a link, H, extending from the yoke, and a lever, P, to engage with the upright as a fulcrum and with the link H and permit raising of the yoke and platform carried by the yoke, substantially as described.

3. In a movement for operating the movable platform, supported by uprights, of a builder's scaffold, the combination of a yoke, D, to embrace an upright, C, a dog, G, supported on the yoke to engage with the upright, a hanger connected with the yoke to carry the platform, a link, H, extending from the yoke, a safety-hook, I, upon the link, and a lever, P, to engage with the upright as a fulcrum and with the link H and permit raising of the yoke and platform carried by the yoke, substantially as described.

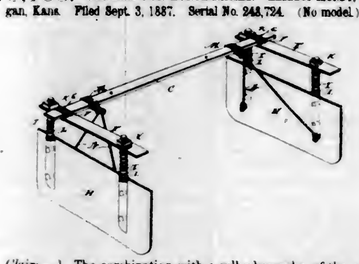
4. In a movement for operating the movable platform, supported by uprights, of a builder's scaffold, the combination of a yoke, D, to embrace an upright, C, a dog, G, supported on the yoke to engage with the upright, a hanger connected with the yoke to carry the platform, a bracket, L, bracing the arms K K' and dog G toward its rear end and yoke D, a link, H, extending from the yoke, a safety-hook, I, upon the link, and a lever, P, to engage at one end with the said upright and with the link H, substantially as and for the purpose set forth.

5. In a builder's scaffold, the combination of uprights C, having fulcrum-bolts and placed in parallel rows along the line of a wall, yokes D, embracing the uprights and provided with dogs G to engage with the fulcrum-bolts, hangers connected with the yokes and carrying timbers N, supporting a platform, O, links H, extending from the yokes, and a lever, P, to engage with the fulcrum-bolts and a link of each movement, substantially as and for the purpose set forth.

6. In a builder's scaffold, the combination of uprights C, having fulcrum-bolts and placed in parallel rows along the line of a wall, yokes D, embracing the uprights and provided with dogs G, to engage with the fulcrum-bolts, hangers connected with the yokes and carrying timbers N, supporting a platform, O, links H, extending from the yokes, a lever, P, to engage with the fulcrum-bolts of each movement, and brackets R, connected with the yokes D to be supported to one side of the platform O and carrying an auxiliary platform, O', substantially as and for the purpose set forth.

7. In a builder's scaffold, the combination of uprights C, placed in parallel rows along the line of a wall, and each comprising two upright timbers, *t* and *t'*, having interposed bolts *r* a predetermined distance apart and secured together by means of bolts *q*, yokes D, embracing the uprights and provided with dogs G to engage with the bolts *r q*, hangers, each comprising arms K and K' and a cross-bar, M, connected with the yokes and carrying timbers N, supporting a platform, O, brackets L, bracing the arms K K', the dogs G toward their rear ends, and the yokes, links H, extending from the yokes, safety-hooks I upon the links, and a lever, P, to engage at one end with the bolts *r q* and with a link, H, the whole being constructed and arranged to operate substantially as and for the purpose set forth

378,103. FENDER FOR HORSE-RAKES. LEBBEUS MUNDY, Morgan, Kans. Filed Sept. 3, 1887. Serial No. 248,724. (No model.)



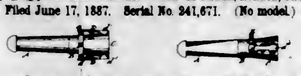
Claim.—1. The combination, with a sulky hay-rake, of the cross-bar C, detachably secured to the thills of the rake, the bars E at the ends of the bar C, and the fenders depending from said bars E, substantially as described.

2. The combination, in a fender attachment for sulky hay-rakes, of the cross-bar C, the bars E, attached to the ends thereof, the fenders H, having the vertical standards secured to the bars E and vertically adjustable, the clips M on the bar C, and the rods N, pivotally connected to the said clips and to the fenders, substantially as described.

3. In a fender attachment for sulky hay-rakes, the combination of the cross-bar C, the bars E, attached to the ends thereof, the fenders having the vertical standards secured to the bars E and vertically movable therein, and the springs bearing down upon the fenders, for the purpose set forth, substantially as described.

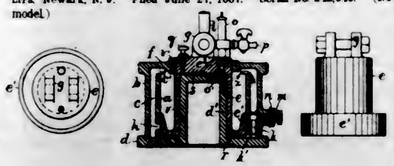
4. The combination, in a fender attachment for sulky hay-rakes, of the cross-bar C, the bars E, attached to the ends thereof, the fenders having the vertical standards secured to the bars E and vertically movable therein, the springs bearing down upon the said fenders, and the brace-rods connecting the inner sides of the said fenders to the cross-bar, substantially as described.

378,104. CIGAR-HOLDER. JOHN H. NOBLE, London, Ontario, Canada. Filed June 17, 1887. Serial No. 241,671. (No model.)



Claim.—In a cigar-holder, a pair of levers, D D, hinged centrally at *a* to the exterior of said holder, the ends *d d* of which levers are connected and controlled by spring E, the opposite ends *d' d'* being provided with teeth F, which project therefrom and pass through orifices in the outer end of the holder, so as to bite into and retain the end of the cigar when inserted in the holder, substantially as shown and specified.

378,105. DASH-POT FOR STEAM-ENGINES. FRANKLIN PHILLIPS, Newark, N. J. Filed June 27, 1887. Serial No. 242,646. (No model.)



Claim.—1. In a dash-pot, the combination, with an annular cylinder closed at one end and having at the other end a head bored to receive a movable sleeve, of an annular piston provided with a sleeve movable through such cover and fitted to the hub of the annular cylinder, and means for transferring the fluid in the cylinder from one side of the piston to the other, as and for the purpose set forth.

2. In a dash-pot, the combination, with an annular cylinder closed at one end and having at the other end a head bored to receive a movable sleeve, of an annular piston provided with a sleeve movable through such cover and fitted to the hub of the annular cylinder, and passages formed in the shell of the cylinder with ports leading into the opposite ends of the cylinder, as and for the purpose set forth.

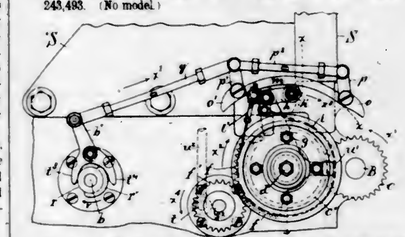
3. In a dash-pot, the combination, with an annular cylinder closed at one end and having at the other end a head bored to receive a movable sleeve, of an annular piston provided with a sleeve movable through such head and fitted to the hub of the annular cylinder, and passages formed in the shell of the cylinder with ports leading into the opposite ends of the cylinder, the ports leading into the lower end of the cylinder being inclined, as and for the purpose set forth.

4. In a dash-pot, the combination, with an annular cylinder closed at one end and having at the other end a head bored to receive a movable sleeve, of an annular piston provided with a sleeve movable through such head and fitted to the hub of the annular cylinder, passages formed in the shell of the cylinder with ports leading into the opposite ends of the cylinder, and an independent passage from the bottom of the cylinder to the top with a regulating-valve inserted therein, as and for the purpose set forth.

5. In a dash-pot, the combination, with a base having a projecting central hub, of a cylindrical shell having longitudinal passages cast therein with ports leading into the upper end of the cylinder, and ports adjacent to the lower end of the cylinder, an integral head formed with central opening for a sleeve, an annular piston formed with sleeve fitted to such head and to the central hub, and means for securing the cylindrical shell and its integral head to the base, as and for the purpose set forth.

6. The combination, in a dash-pot having annular cylinder with head bored to receive a sleeve, of a hub fitted within said cylinder, an annular piston fitted to the cylinder and hub, the piston-sleeve extended through such head, a longitudinal groove, *v*, in the sleeve and in the head, and a key, *v'*, fitted thereto, as and for the purpose set forth.

378,106. FRICTION FEED MECHANISM FOR IRON-PLANERS. FRANKLIN PHILLIPS, Newark, N. J. Filed July 6, 1887. Serial No. 243,483. (No model.)



Claim.—1. The combination, with the reversible driving-shaft of a planer, of a friction-drum rotated therewith, a strap encircling the drum, a lever to tighten the strap, a fulcrum-bearing pivoted upon the axis of the drum to carry the said lever, a segment with movable end sections operated alternately by the planer-shifting mechanism, and tool-feeding mechanism, as the feed crank-pin *t*, actuated by the oscillations of the lever-fulcrum, substantially as herein set forth.

2. The combination, with the reversible driving-shaft of a planer, of a friction-drum rotated therewith, a concave segment concentric with the drum, a toothed sector and arm movable concentric with the drum, a lever pivoted upon the arm and carrying a roller in contact with the segment, a drum-strap connected with such lever and tightened by pressure upon the roller, hinged sections applied to the ends of the segment and operated alternately by the planer-shifting mechanism, and a toothed wheel meshing with the sector *f* and operating the feeding mechanism for the planer-tools, substantially as herein set forth.

3. The combination, with the reversible driving-shaft of a planer of a friction-drum rotated therewith, a concave segment concentric with the drum, a toothed sector and arm movable concentric with the drum, a lever pivoted upon the arm and carrying a roller in contact with the segment, a drum-strap connected with such lever and tightened by pressure upon the roller, the hinged sections *o o'*, pivoted at the ends of the segment, arms *p p'*, attached to such sections and connected by link *p²*, the shaft *b*, oscillated by the planer-shifting mech-

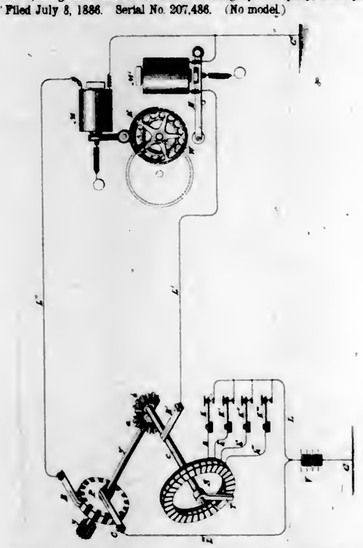
anism, the crank *b'* and connection *q* for actuating the sections *o o'*, and a toothed wheel meshing with the sector *f* and operating the feeding mechanism for the planer-tools, substantially as herein set forth.

4. The combination, with the reversible driving-shaft of a planer, of a friction-drum rotated therewith, a concave segment concentric with the drum, a toothed sector and arm movable concentric with the drum, a lever pivoted upon the arm and carrying a roller in contact with the segment, a drum-strap connected with such lever and tightened by pressure upon the roller, the hinged sections *o o'*, pivoted at the ends of the segment, arms *p p'*, attached to such sections and connected by link p^3, the shaft *b*, oscillated by the planer-shifting mechanism, the crank *b'* and connection *q* for actuating the sections *o o'*, and the shaft *s*, provided at one end with the toothed wheel *f''*, meshing with the toothed sector, and at the opposite end with the feed crank-pin *t*, adjustable to and from the shaft *s*, and provided with the feed-rod u^2 for actuating the feeding mechanism of the planer-tools, substantially as herein set forth.

5. The combination, with the reversible driving-shaft of a planer, of a friction-drum rotated therewith, a strap pressed upon such drum by a lever and segment, movable sections applied to the ends of such segment, a cam oscillated by the planer-shifting mechanism, and means actuated by the cam for throwing the movable sections alternately into the arc of the segment, as and for the purpose set forth.

6. The combination, with the reversible driving-shaft of a planer, of a friction-drum rotated therewith, a strap pressed against such drum by a lever and segment, movable sections applied to the ends of such segment and operated alternately by the planer-shifting mechanism, tool-feeding mechanism, as the feed crank-pin *t*, actuated by the strap, and stops for arresting the movement of the strap when released from the friction-drum, as and for the purpose set forth.

378,107. PRINTING-TELEGRAPH. DANIEL E. PIKE, New York, N. Y., assignor to the Western Union Telegraph Company, same place. Filed July 8, 1886. Serial No. 207,486. (No model.)



Claim.—1. In a printing-telegraph system, two main lines, one for controlling the type-wheels and the other the press mechanism, a constantly-rotating pulsator in the type-wheel circuit, a sunflower arrangement whose arm rotates with the pulsator, and transmitting-keys in connection with the press-circuit, for the purpose described.

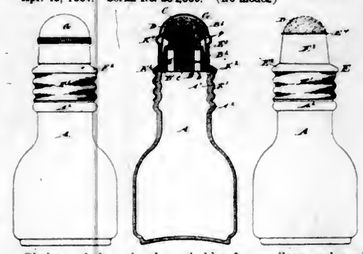
2. In a printing-telegraph system, a rotating pulsator and a sunflower-arm rotating in unison therewith, a type-wheel circuit connected with said pulsator, and a printing-circuit connecting with the sunflower devices, the arrangement being such that characters may be printed during rotation of the pulsator and type-wheels, substantially as described.

3. A rotating pulsator or its equivalent, a sunflower device having an arm which rotates in unison with the pulsator, a series of transmitting-keys connected with said sunflower arrangement, a main line for controlling the press mechanism, and a second main line connected with pulsator for controlling the type-wheels, substantially as described.

4. In a printing-telegraph transmitter, a rotating pulsator and a sunflower arrangement, two sets of transmitting-keys, one for closing the press-circuit and the other for arresting the pulsator, and two circuits, one controlled by the pulsator and the other by the sunflower device, substantially as described.

5. In a printing-telegraph transmitter, a rotating pulsator, a set of arresting-keys, a second set of keys provided with electrical contacts, and a press-circuit which is controlled by said second set of keys.

378,108. BOTTLE-TOP. ISAAC POMEROY, Newark, N. J. Filed Apr. 15, 1887. Serial No. 234,869. (No model.)



Claim.—1. In a bottle or holder for mucilage and analogous fluids, the combination, with the bottle or vessel A, of a block, B, having holes *b* independent of the holes for the brush, and of a brush, C, and sponge D, arranged for joint operation, as herein specified.

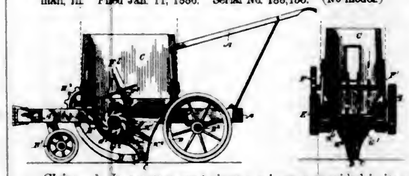
2. In a bottle or holder for mucilage and analogous fluids, the block B, having a top, B^3, smaller than the body B^2, the brush C and its fastening means *m*, and the sponge D and its fastening means *p*, all combined and arranged to serve relatively to each other and to a bottle, A, as herein specified.

3. In a bottle for mucilage, the block B, having a flange, B', body B^2, and smaller top, B^3, the brush C and sponge D and their fastening means *m p*, the block B being provided with holes *b*, distinct from those which receive the brush material, and the several parts are combined substantially as herein specified.

4. The brush C and holding means *m*, in combination with the sponge D and its confining means *p*, and with the block B, metal shell E, and cap G, as herein specified.

5. In a bottle-top, the block B and separate metal shell E, the latter flared at its top, as shown by E^4, combined with each other and with the sponge D, bottle A A', and cap G, substantially as herein specified.

378,109. COTTON-SEED PLANTER. BASIL B. PRITCHETT, Chrisman, Ill. Filed Jan. 11, 1886. Serial No. 188,153. (No model.)

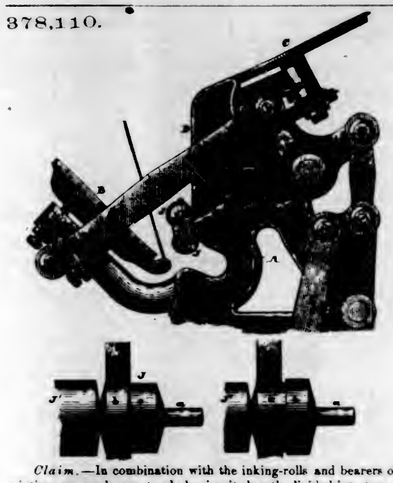


Claim.—1. In a cotton-seed planter, a hopper provided in its upper compartment with an agitator comprising radial arms, a feeder or dropper comprising sharp-pointed saw-like blades or hooks located between the upper and lower compartments, and a radially-armed knocker located in the lower compartment and in close proximity to the feeder or dropper, in combination with gearing arranged so that the agitator, feeder, and knocker are rotated at different rates of speed, the speed accelerating from the first to the last mentioned device, substantially as and for the purpose set forth.

2. A hopper provided with an agitator in its upper compartment, in combination with a feeder or dropper located between the upper and lower compartments and having two rows of saw-like blades or hooks, and a knocker located in the lower compartment in close proximity to the feeder or dropper and having three radial arms, one of which operates between the blades of said feeder or dropper and the other two on the outside of said blades, substantially as set forth.

378,110. INKING APPARATUS FOR PRINTING-PRESSES. GEO. W. PROUTY, Boston, Mass. Filed June 9, 1887. Serial No. 240,706. (No model.)

378,110.

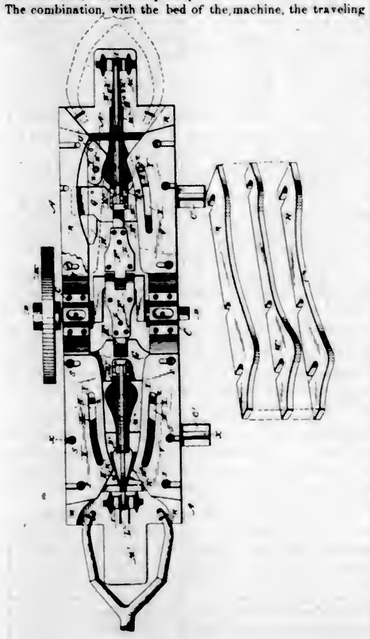


Claim.—In combination with the inking-rolls and bearers of a printing-press, a bearer-truck having its length divided into two sections of slightly-different diameters and adapted to be used with either section resting upon the bearer, according as the inking-rollers are of full diameter or reduced in diameter by shrinkage or wear.

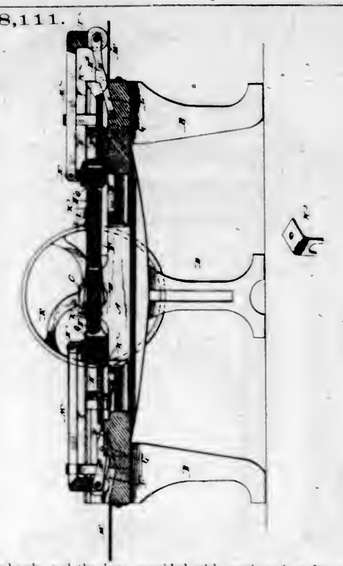
378,111. HORSESHOE-MACHINE. ZACHARIAH V. PURDY, Birmingham, Ala. Filed Apr. 21, 1887. Serial No. 235,674. (No model.)

Claim.—1. The combination, with the traveling cross-heads, the bending-jaws, and the forming-dies $H^\times$, of the fingers working in converging grooves at each side of the forming-dies, and the traveling carriage to which said fingers are attached, the grooves having inclined bearing-surfaces upon which the fingers ride to lift and deliver the blanks when finished, substantially as specified.

2. The combination, with the bed of the machine, the traveling



378,111.



cross-heads, and the jaws provided with cutting-edges for severing the bar, of the adjustable guides and gibs and the grooved bar-guides whereby the blank bar may be fed to the machine and gaged and cut, substantially as set forth.

3. The combination, with the bed of the machine, the traveling cross-heads, and the forming-dies, of the bending-jaws provided with cutting-edges for severing the bars, the adjustable guides and gibs, the grooved bar-guides, the fingers $H^\times$, their carriage, and the inclined guides L', substantially as described.

4. The combination, in a horseshoe-machine, of the traveling cross-heads curved at E' and actuated by a crank, the pitman-rods and their adjustable connections with the said cross-heads, the forming-dies, the bending-jaws pivoted to the cross-heads and provided with cutters and anti-friction rollers, the laterally-adjustable guides and gibs, the fingers $H^\times$ and their carriages, and the arms M^2, pivotally connecting the carriages to bearings on the cross-heads, all substantially as described.

5. The combination, with the horseshoe-forming dies and their jaws and the traveling cross-heads, of the flatters K^2, secured to the cross-heads between said jaws, and adapted to operate substantially as described.

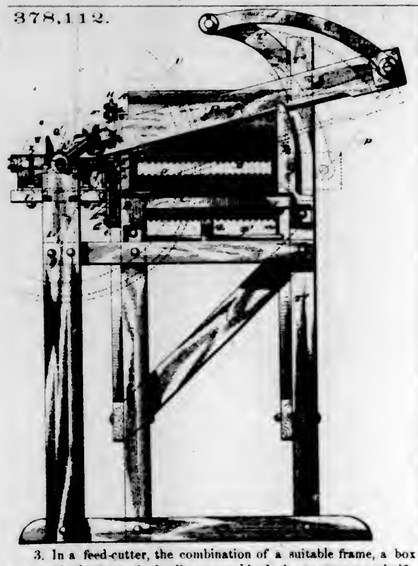
6. The combination, with the cross-heads, the pitman-rods and their connections with said cross-heads, of the angle-irons K^3, the horseshoe-forming dies and jaws, the guides and gibs, the cam-slotted plates V, and the flatters K^2, all substantially as described.

378,112. FEED-CUTTER. EBENEZER W. RIDER, Racine, Wis. Filed Dec. 27, 1886. Serial No. 222,635. (No model.)

Claim.—1. In a feed-cutter, the combination of a box mounted in a frame, feed-rolls operatively arranged in the box and having their journals at one end provided with ratchet-wheels, arms loosely arranged on said journals and carrying pawls to engage the ratchet-wheels, a plate loosely connected to the adjacent side of said box, links uniting the pawl-arms and loose plate, a pinion having its journal provided with a crank-arm, a rod uniting the loose plate with the crank-arm, and a drive-shaft having a pinion arranged to mesh with the one above specified, substantially as and for the purpose set forth.

2. In a feed-cutter, the combination of a box mounted in a frame, feed-rolls operatively arranged in the box and having their journals at one end provided with ratchet-wheels, arms loosely arranged on said journals and carrying pawls to engage the ratchet-wheels, a loose rack-plate operatively connected to the adjacent side of said box and united by links with the pawl-arms, a pivoted dog arranged to be brought into engagement with the rack-plate, a pinion having its journal provided with a crank-arm, a rod having a loose bearing in an ear of said rack-plate and connected with the crank-arm, a spring arranged on the rod, and a drive-shaft having a pinion arranged to mesh with the one above specified, substantially as and for the purpose set forth.

378,112.



3. In a feed-cutter, the combination of a suitable frame, a box mounted in the frame, feed-rolls arranged in the box, a transverse knife, a crank-shaft loosely connected to one end of the knife, a lever-arm likewise connected to the other end of said knife, ratchet-wheels fast on the journals at one end of the feed-rolls, suitable arms loose on said journals and provided with pawls to engage the ratchet-wheels, a sliding plate connected to said box, links uniting the pawl-arms and plate, a crank-arm; a rod uniting the sliding plate and crank-arm, and a pinion-gear connecting said crank-arm and crank-shaft, substantially as and for the purpose set forth.

378,113. PROCESS OF REFINING COTTON-SEED OIL. GEORGE W. SCOLLAY, New York, N. Y. Filed May 25, 1887. Serial No. 239,329. (No specimens.)

Claim.—1. The process, substantially herein described, of producing a refined cotton-seed oil and a paint as the resultants of a single operation, which process consists of mixing the oil and the impurities carried in it with a refining agent not ultimately injurious to the oil as an article of food, and which unites with the oily impurities, producing a paint, and of subsequently separating the paint and oil.

2. The process, substantially herein described, of refining cotton-seed oil and making paint in a single operation, which process consists of mixing the oil with a suitable metallic chloride not ultimately injurious to the oil as an article of food, such as chloride of iron, and a suitable alkali, such as caustic soda, and of subsequently separating the oil and paint.

378,114. PROCESS OF REFINING COTTON-SEED OIL. GEORGE W. SCOLLAY, New York, N. Y. Filed May 25, 1887. Serial No. 239,330. (No specimens.)

Claim.—1. The process of refining cotton-seed oil, substantially herein described, which consists of mixing said oil with ocher and alkali and subsequently separating the oil from the residuum.

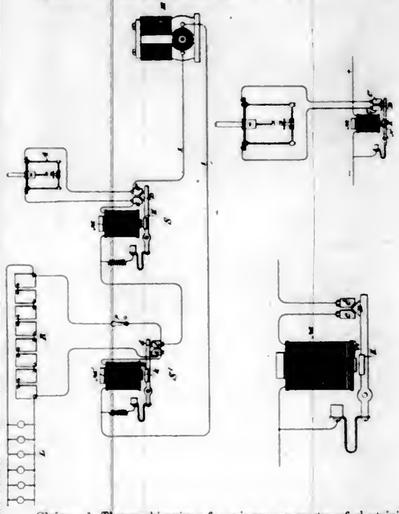
2. The process of refining cotton-seed oil, substantially herein described, which consists of mixing said oil with ocher and alkali, and then with a suitable neutralizing agent, such as chloride of calcium, and subsequently separating the oil from the residuum.

3. The process of refining cotton-seed oil and making paint in a single operation, substantially herein described, which consists of mixing said oil with ocher and with alkali, and then mixing it with a suitable neutralizing agent, such as chloride of calcium, and subsequently separating said oil and paint.

4. The process of refining cotton-seed oil and converting its residuum into a paint, substantially herein described, which process consists of mixing said oil with ocher and alkali, of separating said oil and residuum, and then separately mixing either the oil or the residuum, or both, with a suitable neutralizing agent, such as chloride of calcium.

5. The process of refining cotton-seed oil and making paint in a single operation, substantially herein described, which consists of mixing said oil with ocher and with alkali in a dry state, and then mixing it with a suitable neutralizing agent, such as chloride of calcium, and subsequently separating said oil and paint.

378,115. SYSTEM OF ELECTRICAL DISTRIBUTION BY SECONDARY BATTERIES. JOHN S. SELLON, Hatton Gardens, County of Middlesex, England, assignor to the Electrical Accumulator Company, of New York. Filed Aug. 30, 1887. Serial No. 248,259. (No model.) Patented in England Jan. 13, 1883, No. 217.



Claim.—1. The combination of a primary generator of electricity, a main circuit supplied with electricity thereby, a secondary battery and a different species of translating device fed from the main circuit, a working-circuit for the secondary battery containing a separate translating device, and a device for inserting and withdrawing the battery operated by changes in the current strength of the main circuit.

2. The combination of a primary generator of electricity, a main circuit supplied with electricity thereby, a secondary battery and a second species of translating device fed from the main circuit, a working-circuit for the secondary battery containing a separate translating device, and means for inserting and withdrawing said second species of translating device responsive to predetermined variations in the current strength of the main circuit.

3. The combination of a primary generator of electricity, a main circuit supplied with electricity thereby, a secondary battery and an arc light to be fed from the main circuit, a working-circuit for the secondary battery containing a third species of translating device, and two electro-magnets operated by variations of current strength in the main circuit for inserting the light and withdrawing the battery, and vice versa, with respect to the main circuit.

4. The combination of a primary generator of electricity and a main circuit therefor, a translating device and a secondary battery supplied with electricity from said circuit, a working-circuit for the secondary battery containing a separate translating device, and two electro-magnets in the main circuit, one responsive to a predetermined variation in current strength, the other responsive to a different and predetermined variation of current, and both operating to insert and withdraw the first-named translating device or the battery with respect to the main circuit.

5. The combination of a primary generator of electricity, a main circuit therefor, an arc light and a secondary battery supplied from said circuit, a working-circuit for said battery containing incandescent lamps, and a switch operated by variations of current strength in the main circuit to change the connection of said battery with respect to said circuit.

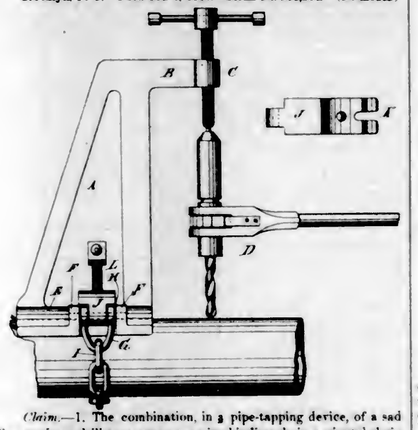
6. The combination of a primary generator of electricity, a main circuit to be supplied with electricity thereby, a translating device absorbing current at a predetermined rate, a second translating device absorbing current at a different and predetermined rate, an electro-magnetic switch to cut out the last-named translating device, operated by the current assigned to the first device, and an electro-magnetic switch to cut out the first-named device, operated by the current assigned to the second, substantially as described.

7. The combination of a dynamo-electric machine, a circuit supplied with electricity thereby, an electric-lighting device in said circuit, an electro-magnet operated by variations in the current of said circuit, two fixed contact-stops connected to the main circuit upon opposite sides of said electric-lighting device, and a movable contact controlled by the said electro-magnet to electrically connect the fixed contacts.

8. The combination of a dynamo-electric machine, a circuit supplied with electricity thereby, a secondary battery in said circuit, an electro-magnet operated by variations in the current of said circuit, two fixed contact-stops connected to the main circuit upon opposite sides of said secondary battery, and a movable contact controlled by the said electro-magnet to electrically connect said fixed contacts.

9. The combination of a dynamo-electric machine, a circuit supplied with electricity thereby, a secondary battery in said circuit, an electric-lighting device to be operated in said circuit, an electro-magnet for said battery, an electro-magnet for said lighting device, fixed contact-points connected to the main circuit upon opposite sides of the battery, fixed contact-points connected to the main circuit upon opposite sides of the lighting device, and movable contacts operated by the said magnets under the influence of variations in the current flowing in said circuit to electrically connect each pair of fixed contacts, respectively.

378,116. DEVICE FOR TAPPING MAINS. CHARLES H. SIMMONS, Brooklyn, N. Y. Filed Oct. 1, 1887. Serial No. 251,264. (No model.)



Claim.—1. The combination, in a pipe-tapping device, of a saddle carrying a drill-press support, a pipe-binding chain, a pivotal chain-tightening lever, and an adjusting-screw for the lever, substantially as described.

2. The combination, in a pipe-tapping device, of a saddle carrying a drill-press support, a binding-chain having an end clevis, a chain-tightening lever, and a pivot-pin connecting both the clevis on the chain and the lever to the eye-lugs on the saddle, substantially as described.

3. A chain-tightening lever formed with a pivot-hole at one end and a forked chain-hook at the other end, as and for the purpose specified.

4. The combination of a pipe-saddle having a V-shaped top and bottom, a binding-chain, a V-shaped chain-tightening lever pivoted transversely on the saddle-top, and an adjusting-screw working in the inclined part of the lever against and perpendicularly to the correspondingly-inclined part of the saddle-top, substantially as described.

378,117. LEAD-PENCIL SHARPENER. THOMAS H. STAFFORD, Concord, N. H. Filed Aug. 22, 1887. Serial No. 247,529. (No model.)



Claim.—1. A pencil-sharpener stamped from a single sheet of metal, formed substantially as described, comprising cutters adapted to make a tapering cut on opposite sides and lengthwise of a pencil, and a suitable pocket-hook and combining spring-rolls for properly separating said cutters, and a cigar-cutter, substantially as set forth.

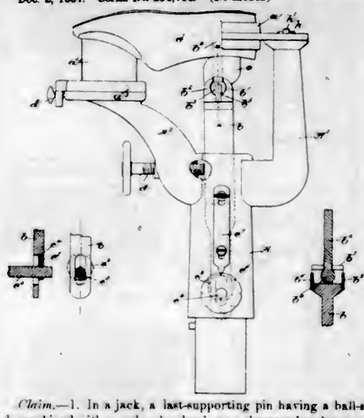
2. In a pencil-sharpener, the oppositely-inclined spring-cutters adapted to make a tapering cut on opposite sides of a pencil, and suitable spring-rolls for separating said cutters as required.

3. In a pencil-sharpener, the oppositely-inclined spring-cutters adapted to make a tapering cut on opposite sides of a pencil, and suitable rolls hung eccentrically for properly separating said cutters as required.

4. A pencil-sharpener stamped from a single sheet of metal and formed substantially as described, and comprising cutters adapted to make a tapering cut on opposite sides and lengthwise of a pencil, a hook or shield for hanging the same upon a pocket, and suitable interlocking parts for preventing lateral movement during the expansion and contraction of the cutters, as set forth.

5. A pencil-sharpener stamped from a single piece of metal and formed substantially as shown, comprising cutters adapted to make a tapering cut on opposite sides and lengthwise of a pencil, and a suitable pocket-hook, and combining spring-rolls for separating said cutters, substantially for the purpose set forth.

378,118. LASTING-JACK. SETH D. TRIPP, Lynn, Mass. Filed Dec. 2, 1887. Serial No. 256,791. (No model.)



Claim.—1. In a jack, a last-supporting pin having a ball-shaped end, combined with a rod or bar having an elongated socket to receive the ball of the pin, and with a locking device to secure said ball-shaped pin in its socket, substantially as and for the purpose set forth.

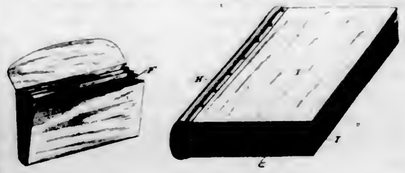
2. In a jack, a hollow standard, A, a shaft, c^3, a bar or rod, b, having ears b^5 b^5, concaved to form an oblong socket, combined with a last-holding pin, b^4, having a ball-shaped end fitted loosely within the said socket, as and for the purpose specified.

3. In a jack, a hollow standard, A, a shaft, c^3, a bar or rod, b, having ears b^5 b^5, concaved to form an oblong socket, combined with a last-holding pin, b^4, having a ball-shaped end fitted loosely within the said socket, and with a locking device, substantially as described, to secure the ball-shaped pin in its socket, substantially as described.

4. In a jack, a hollow standard, a bar or rod having ears b^5 b^5, concaved to form an oblong socket, a pin having a ball-shaped end fitted into said socket, combined with a shaft, a^3, and a locking device to prevent rotation of said shaft, substantially as described.

5. The heel-clamp and toe-rest, and the bar b and pivoted pin mounted thereon, combined with means, substantially as described, to force the said bar toward the heel-clamp, to operate substantially as described.

378,119. STAMP-PROTECTOR. WILLIAM P. TROWBRIDGE, New Haven, Conn. Filed Oct. 17, 1887. Serial No. 252,515. (No model.)



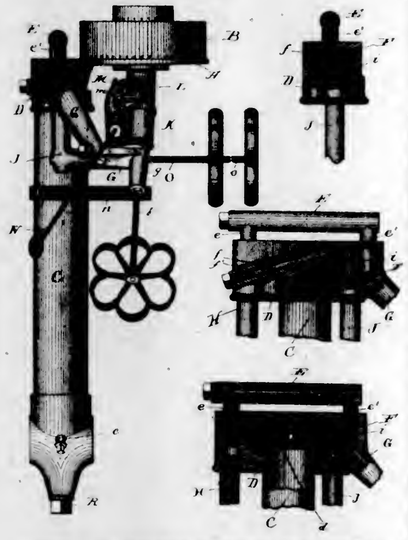
378,119.



Claim.—1. A protector for postage-stamps and other articles having gummed or adhesive surfaces, provided with a surface suitably roughened for receiving the contact of said gummed or adhesive surfaces, substantially as shown and described.

2. A protector for postage-stamps and other articles having gummed or adhesive surfaces, provided with a series of sheets of suitably-roughened material for receiving the contact of said gummed or adhesive surfaces, substantially as shown and described.

378,120. **GENERATING VAPOR-BURNER.** J. BENNETT WALLACE, Chicago, Ill., assignor to George M. Clark & Company, same place. Filed Feb. 7, 1887. Serial No. 226,736. (No model.)



Claim.—1. In a vapor-stove, a generating-burner consisting of a burner proper, a generator, a cushioning-chamber independent of the generator, a conduit extending from the generator to the cushioning-chamber, and a feed-conduit from said cushioning-chamber to the burner proper, in combination with a non-generating burner and a feed-conduit connecting such non-generating burner with the cushioning-chamber of the generating-burner, substantially as set forth.

2. In a vapor-stove, a generating-burner consisting of a burner proper, a generator, a cushioning-chamber separate from the generator, a conduit extending from said generator to the bottom of said cushioning-chamber, and a feed-conduit from said chamber to the burner proper, in combination with a non-generating burner and a feed conduit from the top of said chamber to said last-named burner, substantially as set forth.

3. The combination, in a generating vapor-burner, of the burner-cap B, the plate A under said burner-cap, a casting, D, located at the side of said plate, and the generating-tube E, located above the plane of the plate A and in proximity to the burner B and connected to said casting by feed and discharge pipes *e e'*, substantially as specified.

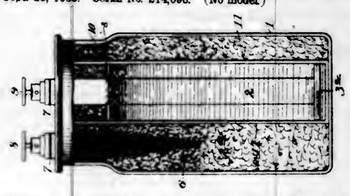
4. In a vapor-burner, the casting D, in one piece with base-plate A and having chamber F and passage *d* formed therein, in combination with burner B, plate A, and the generator-tube connecting said chamber and passage, substantially as set forth.

5. In a generating vapor-burner, the combination, with the induction-tube and needle-valve, of the movable mixing-tube K, located between the valve and the induction-tube and at a remove from the latter, so that the air will be admitted to the vapor at the mouth of both tubes when both are in use simultaneously, substantially as specified.

6. In a generating vapor-burner, the combination, with the induction-tube and the needle-valve, of the movable mixing-tube K and a deflector-tube, M, substantially as specified.

7. In a generating vapor-burner, the combination, with the induction-tube and needle-valve, of the mixing-tube K and deflector-tube M, the tubes K and M being fastened together and movably hinged to the induction-tube at a remove from the latter, so that when the mixing-tube is in use air will be admitted to both it and the induction-tube, substantially as set forth.

378,121. **GALVANIC BATTERY.** HUGO WALTER, Cincinnati, Ohio, assignor to the National Galvanic Battery Company, of New York. Filed Sept. 20, 1886. Serial No. 214,098. (No model.)

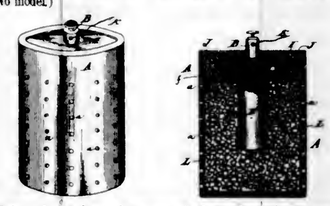


Claim.—1. A battery for open-circuit work, consisting of a permanently hermetically sealed or closed cell containing a negative electrode composed of crushed or granular carbon packed around and in contact with the solid carbon by which the current is led out, and a positive electrode composed of zinc having a protective wrapping of absorbent material, substantially as specified.

2. A battery composed of a wide-mouthed jar, a negative electrode consisting of crushed or granular carbon confined and closely packed within an annular space in the cell, said space being formed by a cylindrical bag of fabric and by the wall of the jar, a piece of solid carbon around which the granular carbon is packed and by which the current is led out, a positive electrode arranged within the said cylindrical bag and provided with a collar at its lower end, an energizing solution, and a permanent seal closing the cell, substantially as specified.

3. In a battery, a negative electrode consisting of crushed carbon having a piece of solid carbon packed therein and arranged within an interior annular space formed by an inner bag or sack of fabric and by the wall of the cell, and a positive electrode arranged within said cylindrical sack, and provided with a collar upon its lower end, which rests upon the bottom thereof, substantially as specified.

378,122. **GALVANIC BATTERY.** HUGO WALTER and WILLIAM E. H. MARSH, Cincinnati, Ohio, assignors to the National Galvanic Battery Company, of New York. Filed May 12, 1887. Serial No. 238,002. (No model.)



Claim.—1. An electrode composed of a perforated cup constructed of non-absorbent material, a filling of crushed carbon, a piece of solid carbon packed therein, and a fabric interposed between the crushed carbon and the wall of the cup to prevent the loss of the particles of carbon through the perforations, substantially as specified.

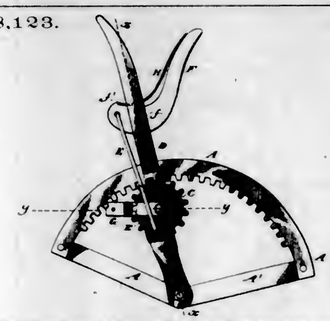
2. An electrode composed of a perforated cup of non-absorbent material, a filling of crushed carbon packed closely around a central piece of solid carbon, a fabric interposed between the crushed carbon and the perforated wall of the cup, a wooden bridge-strip overlying the solid carbon and having a binding-post, and a platinum wire soldered to the binding-post and having its ends plugged into the solid carbon, substantially as specified.

3. The combination, with the perforated non-absorbent cup containing crushed carbon packed around a piece of solid carbon, of a support resting upon said carbon filling, a binding-post on said support, a platinum wire having one end buried in the solid carbon and the other end connected to the binding-post, and a seal inclosing and covering said parts, substantially as specified.

378,123. **WAGON-BRAKE LEVER.** WALTER A. WESTBROOK, Kingman, Kans. Filed Oct. 8, 1887. Serial No. 251,810. (No model.)

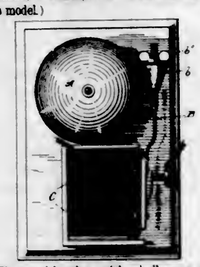
Claim.—1. In brake-levers, the grip-lever connecting-rod provided with an end hook, E, adapted to be used in connection with the pinion, as shown and described.

378,123.



2. In brake-levers, the combination of the main lever D, having the slot *d*, the grip-lever F, pivoted in said slot and having shoulder *f*, and the flat grip-lever spring H, passing through slot *d*, as shown and described.

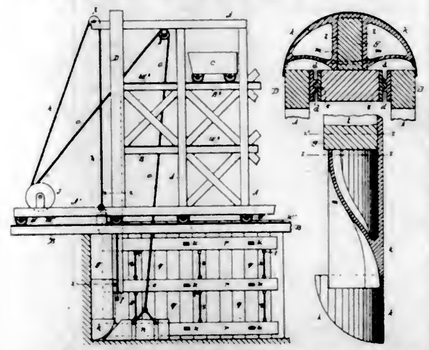
378,124. **ELECTRO-MAGNETIC BELL.** JOSEPH WETZLER and SIGMUND WETZLER, Hoboken, N. J. Filed Jan. 28, 1887. Serial No. 225,812. (No model.)



Claim.—1. The combination, with a bell-gong, an electro-magnet, and a hammer-arm connected with the armature thereof, of a striker consisting of a conical piece adjustable upon the hammer-arm, as and for the purpose set forth.

2. The combination, with a bell-gong and a hammer-arm, of a striker consisting of a conical piece adjustable upon the said arm, substantially as and for the purpose set forth.

378,125. **EXCAVATOR.** JOSEPH S. WHITCOMB, Minneapolis, Minn. Filed May 3, 1887. Serial No. 236,921. (No model.)



Claim.—1. A cutter for an excavating apparatus, consisting of a cutting-blade and a body having its inner surface convex and tapering to said blade, in combination with an operating-bar and guides therefor, substantially as set forth.

2. A cutter for an excavator, consisting of a blade and a body having its sides bent rearwardly and its inner surface convex and tapering to said bent sides and blade, substantially as set forth.

3. In combination, in an excavator, a vertically-operating cutter having a convex inner surface, and an elevating-bucket arranged to receive the earth as it is cut off by said cutter, substantially as set forth.

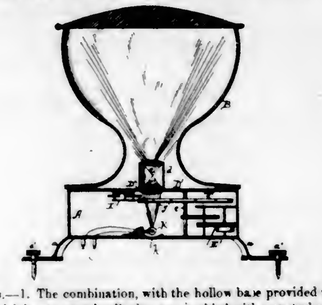
4. In combination, in an excavator, a rolling frame provided with upright guides, a sliding piece in said guides, a cutter attached to said sliding piece so as to travel outside of said guides, the said cutter having inwardly-turned edges and a body convex on the inside and tapering toward its sides and toward the cutting-edge, substantially as set forth.

5. In an excavating apparatus, a rolling frame, horizontal tracks therein, dumping-cars for said tracks, upright guides in said frame, a sliding bar in said guides, a cutter connected thereto having a tapering convex inner surface, and an elevator-bucket for receiving the earth as it is cut off by said cutter, substantially as set forth.

6. In combination with a cutter for cutting earth from the head of a trench and a bucket for removing the loosened earth, of a rolling frame constructed, substantially as described, for supporting the sheathing of the trench.

7. The combination, with the sheathing of a trench, of a movable supporting-frame composed of horizontal planks having rollers engaging the sheathing, loosely-socketed cross-pieces connecting opposite planks, and rods coupling adjoining planks so as to permit independent movement thereof.

378,126. **AQUASCOPE.** PARVIN WRIGHT, Denver, Colo., assignor of one-half to Cecilia R. Northrop, same place. Filed Nov. 26, 1887. Serial No. 256,240. (No model.)



Claim.—1. The combination, with the hollow base provided with a train of driving-gear and a diaphragm provided with a central opening having a tube adjacent thereto, said tube being provided with double lenses, of a revolving picture-disk located within the hollow base, a hood having a ground-glass receiving-plate, a lamp within the base, and mirrors for reflecting the rays from the lamp and the pictures upon the receiving-plate, substantially as set forth.

2. In an aquascope, the combination, with the hollow base, the picture-disk, and its actuating-train of gearing located therein, of the hood provided with the glass disk, the diaphragm having an opening in which is seated a tube having double lenses, and a lamp within the base for reflecting the pictures and rays of light upon the glass disk, substantially as specified.

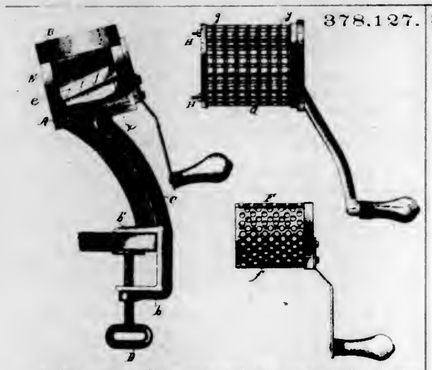
3. The combination, with the hollow base containing the train of gearing, the picture-disk revolving therein, and the diaphragm having its apertures provided with a lens, of the hood provided with the ground-glass disk in its upper enlarged end, substantially as set forth.

4. The combination, with the hollow base containing the train of actuating-gearing, the revolving picture-disk located therein, the tube provided with the lenses located adjacent to an aperture in a diaphragm of the hollow base, of the lamp within the base, the hood, and the view-plate connected therewith, substantially as specified

378,127. **GRATER.** EDWIN BALTLEY, Philadelphia, Pa. Filed Oct. 16, 1886. Serial No. 216,441. (Model.)

Claim.—1. A grater composed of a body having portions removed therefrom at intervals, forming a series of openings and cutting-edges flush with the surface of the body, substantially as set forth, for the purpose specified.

2. The improved grater hereinbefore described, consisting of a casing supported on a standard and provided with a lateral feed-opening and a longitudinal downwardly-inclined cylindrical bore, the upper end of which is of a diameter sufficient to admit the ready insertion or removal of the grating-cylinder, a gravity grating-cylinder fitting and adapted to revolve in the cylindrical inclined bore of the casing, and adapted to be raised and lowered through the open upper end thereof or be removed therefrom at pleasure, and a stop or collar arranged to limit the downward movement of the grating-cylinder, substantially as set forth.

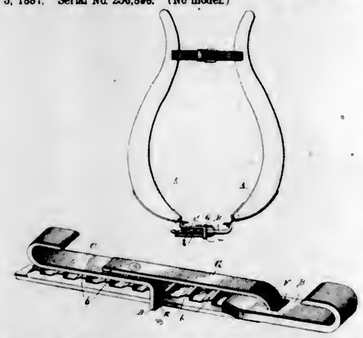


3. The grating-cylinder composed of a series of rings having blades projecting laterally therefrom.

4. The grating-cylinder composed of a series of rings sharpened to a knife-edge, and having blades projecting laterally therefrom which are beveled from their front edge.

5. The grating-cylinder composed of a series of rings sharpened to a knife-edge having blades projecting laterally therefrom, and provided with inwardly-projecting perforated lugs, and bolts passed through the lugs and binding the rings together, substantially as shown and described.

378,128. HAME-FASTENER. EDWARD F. BUTLER, Whitewater, Wis., assignor of one-half to James G. Kestol, same place. Filed Dec. 3, 1887. Serial No. 256,898. (No model.)



Claim.—1. The combination, with the hames having rings on their lower ends, of the toothed strap B, having a hook on one end to engage one of the said rings, and the strap C, having a hook to engage the other ring, and a slotted ear, D, to engage the toothed strap, substantially as specified.

2. The combination of the metallic toothed strap B, having the slot F, the metallic strap C, having the ear D, provided with a slot, E, to receive the toothed strap, and the flexible strap G, attached to the strap C and adapted to pass through the slot F and engage in the slot E, substantially as and for the purpose specified.

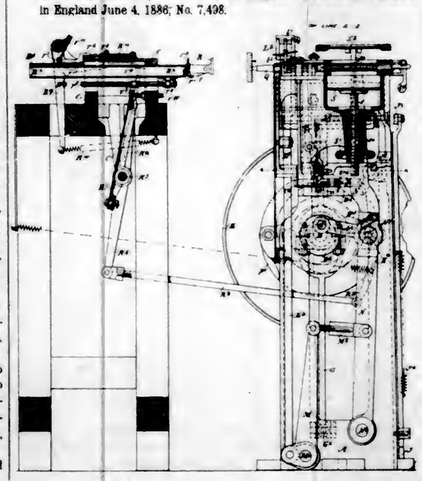
3. The combination, in straps for the connection of the ends of the hames, or like purposes, of the strap B, having teeth or serrations *b* on its inner side, the strap C, having the slot E to receive the toothed strap, and the strap G, or its equivalent, inserted in the outer end of the slot E to hold the inner end of the slot in engagement with the said teeth or serrations, substantially as and for the purpose specified.

378,129. SAND-SIFTING MACHINE. JOSEPH J. CARR, Wilkes-Barre, Pa., assignor of one-half to Dominic F. Sweeney, same place. Filed Mar. 31, 1887. Serial No. 233,138. (No model.)

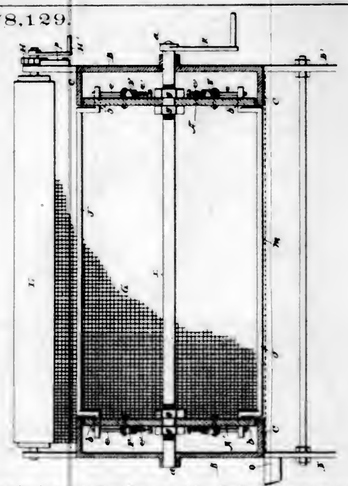
Claim.—1. In a sand-sifting machine, the combination, with two end plates, two rollers mounted on the end plates, a screen secured to these rollers, and an adjustable means of holding the rollers from rotation, of a center shaft mounted to rotate, two circular flanges secured to the shaft, and sand-agitator bars pivoted in these flanges, substantially as set forth.

2. In a sand-sifting machine, the combination, with two end plates, longitudinal securing-bolts, a screen, and two rollers adapted to hold the screen in stretched condition, of a center shaft, two circular flanges, sand-agitators having cranks on their ends pivoted to swing in holes in said flanges, levers fixed to the pivot ends of these cranks, cams that are adapted to move the scraper-edges of the agitators toward and from the screen, and springs attached to the levers to permit a yielding action of the sand-agitators, substantially as set forth.

378,130. APPARATUS FOR INSERTING AND FIXING THE BRISTLES OF BRUSHES, &c. JEAN V. GANE, Paris, France, assignor to Frederick John Page and Charles Fountain Page, Norwich, England. Filed Nov. 18, 1886. Serial No. 219,299. (No model.) Patented in England June 4, 1886, No. 7,498.



378,129.



plates having projecting flanges and longitudinal connecting-bolts and jam-nuts, a center shaft, circular flanges, and sand-agitators adjustable with regard to the screen, of a screen, two supporting-rollers attached to the screen, and a means of securing the rollers from rotation, substantially as set forth.

3. In a screen for a sand-sifting machine, the combination, with the sections of screen-netting or wire-cloth formed with bent or hooked edges, of connecting-plates having corresponding hooked edges to engage the edges of the wire-cloth and clamping-bolts that pass through these attached hooked portions to bind them together, substantially as set forth.

4. In a sand-sifting machine, the combination, with two end plates, longitudinal securing-bolts, a screen, and two rollers adapted to hold the screen in stretched condition, of a center shaft, two circular flanges, sand-agitators having cranks on their ends pivoted to swing in holes in said flanges, levers fixed to the pivot ends of these cranks, cams that are adapted to move the scraper-edges of the agitators toward and from the screen, and springs attached to the levers to permit a yielding action of the sand-agitators, substantially as set forth.

Claim.—1. In combination with the driving-pulley E, the friction-cone, the cone-operating lever and spring, the arm H, attached to said lever and provided with shoulder *h*, the lever J', provided with shoulder *j*, and the treadle J, connected to lever J'.

2. In combination with the inserter-tube Q, through which the bristles and anchors are delivered to the brush-stock, the reciprocating head or carrier N and the inserter-blade secured to and adjustable longitudinally in reference to said head, whereby the advance of said head in relation to the tube may be changed, as and for the purpose described.

3. In a machine such as described, the inserter-tube Q, constructed in two principal parts, such as *q q'*, with removable wearing parts q^4, q^6, and q^7, held together by pins q^3 and sleeve q^4, substantially as specified, and shown in the accompanying drawings.

4. In a brush-machine, in combination with the anvil-block L, the two punches, as shown, the first adapted to cut the central notch and the other to give external shape to the anchors, as described.

5. In a machine such as described, the combination, with the abutment-plate R^5 of the flexible lever R^6 R^7, pawls r^8, engaging with rack r^9 and the cam r^{10}, and levers R^{11} and R^{12}, for raising the pawls, the whole constructed and operating substantially as specified, and illustrated in Figs. 1, 2, and 5 of the accompanying drawings.

6. In a machine such as described, the trident or apparatus for separating the fibers or bristles into layers, and consisting of a central prong, such as T, to which is imparted only a reciprocating movement in a direction across the path traversed by the bristles, and two outer prongs, such as *f* and f^3, to which are imparted reciprocating movements both across and in the direction of the path of the bristles, substantially as specified.

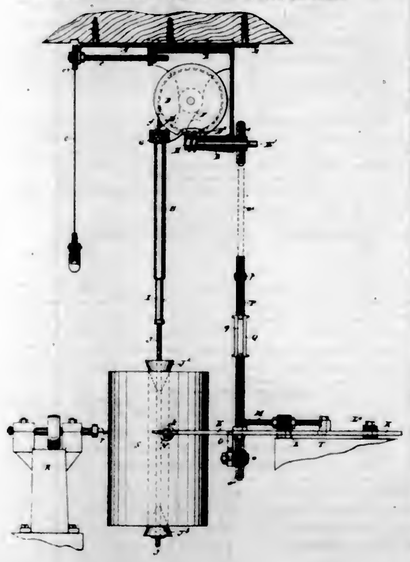
7. In a machine such as described, the combination, with the endless chain T^5, of a comb, such as U, to which is imparted the reciprocating movements, the one across and the other in the direction of the passage of the bristles or fibers, substantially as specified, and shown in the accompanying drawings.

8. The reciprocating and rocking comb U, in combination with the rod U^2 and the movable bar U^4, having the inclined surface, whereby the cone may be thrown out of its operative position at will.

9. In a machine such as described, the separator V and counter-separator V', in combination with the comb U, adjustable guides S^6 and T^3, slide *x*, and adjusting-screw *x'*, the whole arranged and operating substantially as and for the purpose specified.

10. In a brush-machine, the combination of the nipping-jaws K and K^1, trigger o^2, lever o^3, spring O^8, crank-lever *o*, provided with stud *o'*, and forked rod H, as and for the purpose described.

378,131. MACHINE FOR BORING BRUSH-BODIES. JEAN V. GANE, Paris, France, assignor to Frederick John Page and Charles Fountain Page, Norwich, England. Filed Jan. 5, 1887. Serial No. 223,473. (No model.) Patented in England Oct. 21, 1886, No. 13,448.



Claim.—1. In a mechanism for supporting brush-bodies while being bored, the extensible pendulous spindle, a suspending-wire connected to the lower member of said spindle, the winding-drum for said wire, and the operating mechanism for said drum, substantially as described, whereby the lower end of the spindle is permitted to swing freely in a lateral direction and rendered capable of vertical adjustment at will.

2. In combination with a horizontal guide, the sliding frame B, the extensible spindle suspended therefrom by a universal joint, the winding-drum, the wire or chain suspending the lower member of the spindle from said drum, and mechanism, substantially as described, for turning the drum, whereby a brush-body may be supported, adjusted horizontally, raised and lowered, and permitted to swing laterally.

3. In combination with the extensible spindle, the suspending-wire, the winding-drum, the worm-gear for turning said drum, the endless chain and its supporting-links for operating the worm, the sleeve Q, for moving said chain, and an adjustable stud to limit the movement of the sleeve.

4. In a machine for boring brush-bodies, and in combination with an overhead guide, the frame movable horizontally thereon, the frame-adjusting devices, and the pendent cord or belt for moving the same, and the pendent spindle to support the brush-body.

5. In combination with the rod J, the telescopic rods H and I, the supporting-frame B, and the gimbal-joint connecting the tube H with said frame, whereby the cylindrical brush-body may be held and guided, subject to longitudinal rotary and lateral movements.

6. In combination with the pendent brush-body, supporting-rod J, and the adjacent pulley *e*, for adjusting the same vertically, the adjustable bar K, provided with a rest to act against the brush-body, a pulley, *o'*, carried by said bar, and a connecting chain or belt, *c'*, extended from the pulley *o'* to the pulley *e*, as described, whereby the parts are maintained in operative relation to each other, notwithstanding the changes in the position of the bar K.

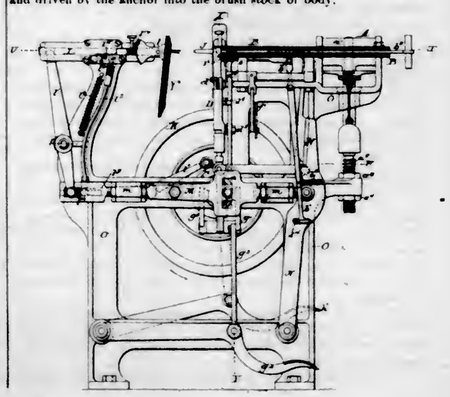
7. In combination with the telescopic supporting-spindle and the adjusting-pulley *e*, connected thereto by intermediate mechanism, the chain *c'*, for operating the pulley, the rod P, provided with an adjustable stud, *p*, and the sliding sleeve Q, provided with the finger *q*, substantially as described.

8. In combination with the pendent brush-body supporting-spindle, the longitudinally-adjustable bar K, and the rest N, transversely adjustable on said bar, as described.

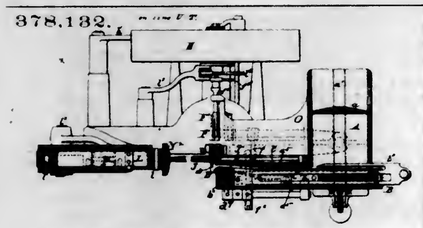
9. In combination with a boring-machine, R, having a tool, *r*, a pendent spindle adapted to sustain a cylindrical brush-body in front of said tool, and a guide or support, K, adapted to bear against the periphery of the brush-body, substantially as described.

378,132. MACHINE FOR MAKING BRUSHES. JEAN V. GANE, Paris, France, assignor to Frederick John Page and Charles Fountain Page, Norwich, England. Filed Aug. 29, 1887. Serial No. 248,178. (No model.) Patented in France Jan. 26, 1877, No. 115,504, and May 2, 1877, No. 116,974; in England Feb. 26, 1877, No. 783; in Belgium Feb. 28, 1877, No. 41,433; in Italy Mar. 5, 1877, XII, 9,035, and in Austria-Hungary Sept. 11, 1877, No. 22,035.

Claim.—1. In a brush-machine, the tubular needle having a side opening for the admission of the bristles and an opening in rear of the first for the admission of the anchors to and across its interior, in combination with the thin reciprocating blade or inserter, whereby the anchor may be advanced against the bristles and the latter folded over and driven by the anchor into the brush stock or body.



378,132.



2. In combination with a reciprocating blade or inserter, the tubular needle provided with longitudinal internal grooves.

3. In a brush-machine, the combination of the tubular needle having the two side openings, the bristle-feeding mechanism arranged to deliver the bristles into the forward opening, the anchor-feeding devices adapted to deliver the anchors into the rear opening, and the reciprocating blade or inserter, whereby the anchors and the bristles are brought together and driven to their places in the brush stock or body.

4. In combination with the tubular needle having the side opening for the bristles, the inserter-blade, the bristle-passage C, and the vibratory separator, whereby the bristles are divided into tufts and the tufts delivered from the passage into the needle.

5. In a brush-machine, the tubular needle, in combination with the punches adapted to produce sheet-metal anchors, the feeder to deliver said anchors into and across the bore of the needle, and the reciprocating blade or inserter to advance said anchors through and beyond the end of the needle.

6. The tubular needle, the inserter-blade therein, the feeder to deliver the bristles into the needle, the punches to form the anchors, the feeder to deliver the anchors into the needle in rear of the bristles, and operating mechanism to move said parts in the described relation, said members constructed and combined for joint operation only, as described.

7. In an organized machine for the manufacture of brushes, the combination of a bristle-inserter, a support for the brush stock or body movable to and from the inserter, and the locking pawl or dog by which the support may be locked against retrograde motion, as described, whereby the stock may be firmly sustained during the insertion of the bristles.

8. In combination with a bristle-inserter, a reciprocating support for the brush stock or body and an operating mechanism therefor, substantially as shown, including a spring through which the motion is transmitted to the support, whereby the machine is adapted to operate on stocks varying in thickness and the stock supported firmly against the inserter without danger of breakage.

9. In combination with the sliding-stock support I, the actuating-lever l', its operating-bar M, the interposed spring, and the crank-pin to actuate the bar M.

10. In combination with the movable support I, and the yielding devices for advancing the same, a locking-pawl, l^8, and mechanism, substantially as described, for operating said pawls.

11. In combination with the bristle-receiver A and the follower a' therein, the endless toothed chain to advance the bristle.

12. In combination with the receiver A, the follower, and the endless feed-chain, the plate b^3, having the finger to pierce the bristles and separate those at the front from the remainder.

13. In combination with the receiver A and the feed-chains traversing its mouth, the longitudinal plates adjustable forward and backward, as described.

14. In combination with a bristle-inserting tool, a channel or passage, C, through which the bristles are delivered laterally, and a divider or separator movable transversely across the end of the channel to separate the tufts and transfer them one at a time to the inserting devices.

15. The divider consisting of the members D E, pivoted and combined with the connecting-spring.

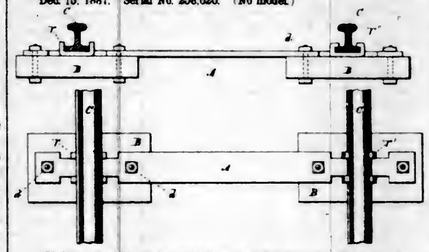
16. In a brush-machine, the combination of a vibrating stock-feeding arm, F, a second arm, F', operated by the pull of the stock-strip thereon, a clutch mechanism through which the machine is driven, a catch to hold said mechanism in action engaged upon arm F', and a device to disengage the catch attached to arm F, whereby any slip or failure of the stock to advance causes the driving-clutch to disengage.

17. In a brush-machine, the two punches I, arranged side by side, the first adapted to incise the edge of the blank strip and the second to separate the anchors from the end of the strip and form teeth in their edges.

18. The feeding device and the tubular needle, with its inserter blade, in combination with the intermediate anchor-cutting punches, whereby the anchors are automatically formed and delivered into the needle.

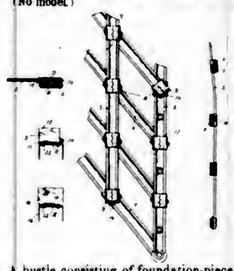
19. In combination with a tubular needle, an inserter-blade having a pointed end to expand the anchors or bristle-holding devices.

378,133. RAILWAY-TIE. JAMES M. GIBERSON, Elsah, Ill. Filed Dec. 15, 1887. Serial No. 258,020. (No model.)



Claim.—A railway-tie consisting of a flat bar of metal secured to foundation-blocks, as described, and having ears r for securing the rails, said ears being formed of strips cut and partly detached from the sides of the parts of the tie-plates upon which the rails rest, so as to form a chair or seat for the rail, in which the latter is secured by turning the ears r down upon the base-flange of the rail, all of said parts constructed, combined, and adapted to operate substantially as and for the purpose set forth.

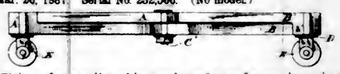
378,134. BUSTLE. M. BURDETTE HAMMOND, Bridgeport, assignor to I. Newman & Sons, New Haven, Conn. Filed Dec. 7, 1887. Serial No. 257,186. (No model.)



Claim.—1. A bustle consisting of foundation-piece, ribs, connecting-strip, returning-spring, &c., of ordinary construction, and clips 9 and 10, the bases of which are pivotally secured together and the arms of which embrace the respective parts to be joined together, and are provided with lugs and corrugations to engage the ribs and hold them firmly.

2. A pivotal connection for the operative parts of bustles, consisting of a pair of clips pivoted together, each clip consisting of a base and arms, substantially as shown, one of said bases having a lateral extension curved upward to cover the end of a rib or stay.

378,135. STOVE-TRUCK. GUSTAVUS HESS, Monroeville, Ohio. Filed Mar. 26, 1887. Serial No. 232,566. (No model.)



Claim.—In an adjustable truck or frame for moving stoves, the combination of two pairs of pivoted bars constructed to be interposed between each other in such manner that the upper bar of one pair crosses over the lower bar of the other pair, and vice versa, the lower bars, A' B, having projections a' b, and the upper bars, A B', having offsets a b', respectively, arranged to operate conjointly, substantially as and for the purpose described.

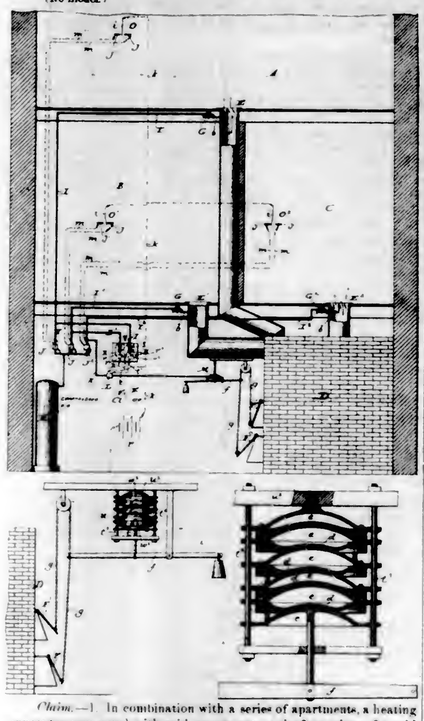
378,136. PROCESS OF PRODUCING ALUMINUM. JAMES S. HOWARD, Springfield, Mass., and FREDERICK M. HILL, Brooklyn, N. Y., assignors, by mesne assignments, to the Aluminium Product Company, of New York. Filed July 12, 1886. Serial No. 207,822. (Specimens.)

Claim.—1. In the process of obtaining aluminium from its ores, boiling the ore in muriatic acid, cooling, mixing with it Spanish white or lime, then evaporating the free acid by exposure to a high degree of heat, and then raising the temperature to 1,000° Fahrenheit, more or less, for the purpose of volatilizing the chloride of iron formed, substantially as explained.

2. The process of reducing aluminous ores and obtaining an alloy of the metal, which consists in charging a lime-lined crucible with the ore which has been heated with muriatic acid and subsequently heated, as described, and with lime, charcoal, fluor-spar, cryolite, and bisulphate of potassium, covering the charge with chloride of tin and chloride of sodium, and subjecting the charge to a smelting temperature.

3. The herein-described process of producing aluminium, the same consisting in boiling in muriatic acid, cooling, mixing with Spanish white or lime, and then evaporating the free acid by heat and raising the temperature to sublime the chloride of iron, adding the fluxes and charcoal, covering the mixture with chloride of tin or a described equivalent and chloride of sodium, heating the mass, cooling and removing the alloy, melting the same in lead or bismuth, skimming off the aluminium and impurities, and purifying the same by exposure to heat upon a bed of porous material, all substantially as explained.

378,137. AUTOMATIC TEMPERATURE-REGULATOR. WARREN S. JOHNSON, Milwaukee, Wis. Filed Apr. 9, 1887. Serial No. 234,214. (No model.)



Claim.—1. In combination with a series of apartments, a heating apparatus connected with said apartments, a draft-regulator for said heater, a series of thermostats located in the different apartments, and the intermediate connections, substantially as described, adapted to be operated by the joint action of the thermostats to control the draft-regulator, whereby the heater is automatically stopped when the temperature is raised to a predetermined limit in all the apartments, but not otherwise.

2. In combination with a series of apartments, each provided with a register or valve to control the admission of heat thereto, a furnace or heater communicating through said registers or valves with the respective apartments and provided with a draft-regulator, a series of thermostats mounted in the respective apartments and each controlling the register of its apartment, and the intermediate devices, substantially as described, connecting the thermostats in series with the draft-regulator, whereby they are adapted to co-operate in controlling said regulator.

3. In combination with a furnace or heater having a draft-door or damper, a fluid-pressure device to actuate said door, a valve controlling the delivery of fluid-pressure to said device, and a plurality of thermostats connected and arranged to operate jointly in controlling said valve, as described.

4. A series of rooms or apartments, a heater communicating with each of said rooms and provided with a draft-door or damper, and a register or valve controlling the admission of heat to each room, in combination with a fluid-pressure device and an electric-controlling valve connected with each register, a thermostat located in each room and controlling the valve which regulates the temperature of that room, a fluid-pressure device to actuate the draft-door of the heater, and intermediate connections, substantially as described, through which all the thermostats act jointly in controlling the pressure device of the draft-door, whereby the admission of heat to each room is independently controlled by its thermostat, but the action of the heater controlled by the united or cumulative action of thermostats in the different rooms.

5. In combination with the furnace having a draft-door or damper, the weighted lever tending to open said door, the fluid-pressure device to actuate the lever and close the door, an electric valve, L, controlling the delivery of fluid to said device, and a plurality of thermostats operating jointly to control said valve, whereby the thermostats are prevented from individually stopping the draft.

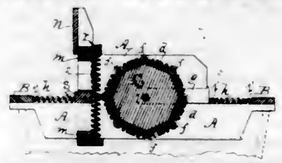
6. The registers, the fluid-pressure devices G G', &c., by which they are individually actuated, the valves J J' J^3, controlling the delivery of a fluid to said devices, the fluid-pressure device M, connected with and controlling the action of a heater or furnace, a pipe, K, through which fluid is received from valve J^3 and conducted to pressure device M, an auxiliary valve, L, in said pipe K, and connections, substantially as shown, whereby the valve L is permitted to open only when the valves J J' J^3 are all opened, as and for the purpose described.

7. In combination with the fluid-pressure device or expansion-chamber M, connected to and operating the draft-door of a furnace, the pipe K, connected therewith, the valves J J' J^3, through the last of which the pipe K is supplied, the electric valve L on the pipe K, the expansion-chambers R and R', receiving fluid through the valves J and J', respectively, electric circuits through which the valve L is controlled, and switches operated by the expansion-chambers R and R' and controlling said circuits, substantially as described, to open the valve L only when the valves J, J', and J^3 are all open, whereby the valves J, J', and J^3 are enabled to act jointly, but not individually, in effecting the stoppage of the furnace.

8. In combination with a valve operated thereby, a series of non-communicating expansion-chambers, e, placed side by side and acting one upon another, fluid-supply pipes leading to the respective chambers, and valves controlling the respective pipes, whereby one or more of the chambers may be expanded independently of the others.

9. In combination with the draft-door or damper of a furnace, a fluid-pressure device to control the same, consisting of a series of distinct expansion-chambers arranged to co-operate as described, and a series of thermostatically-operated valves through which fluid under pressure is admitted to the respective chambers, substantially as described.

378,138. WASHING-MACHINE. JOSEPH F. KUHLMAN, Anamosa, Iowa. Filed Feb. 14, 1887. Serial No. 227,623. (No model.)



Claim.—1. In a cylinder for washing-machines, the combination of coiled springs with fluted bars or sections of corrugated surface to produce a series of ribs that project at right angles to the bars or corrugations, for the purposes set forth.

2. An improved washing-machine comprising a portable frame, A B, a rotating cylinder, C, in a sliding frame, g g', a series of coiled springs, 1 2 3 4, fixed to cross-pieces m, a sliding bar, s, and springs h, for pressing the cylinder C and the bar s toward the flexible washboard, composed of the said series of springs 1 2 3 4, arranged and combined substantially as shown and described, to operate in the manner set forth.

378,139. CHAIN FOR CONVEYERS. BENJAMIN A. LEGG, Columbus, Ohio, assignor to the Lechner Manufacturing Company, same place. Filed Dec. 18, 1886. Serial No. 221,934. (No model.)

Claim.—The herein-described chain for conveyers, having the separable side bars provided at their ends with downwardly-projecting lugs, the upper edges of the side bars being substantially straight from end to end, in combination with anti-friction rollers between the lugs of the side bars, and the conveyer-sections mounted upon the upper edges of the side bars, substantially as set forth.

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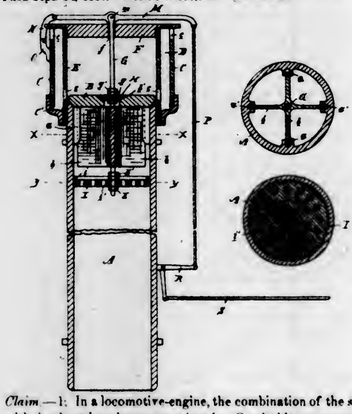
2. The combination, with a revolving chuck or can-holder, B B',

378,145.

378,139.



378,140. **THROTTLE-VALVE.** CHARLES LOSON, Detroit, Mich. Filed Sept. 24, 1887. Serial No. 250,538. (No model.)



Claim.—1. In a locomotive-engine, the combination of the steam-pipe with the throttle-valve, an exterior pipe, C, suitably connected with the steam-pipe, the cap F, and the pipe E, the parts being constructed and arranged substantially as and for the purposes described.

2. In a locomotive-engine, and in combination, a steam-pipe, a throttle-valve, and a strainer suspended below said valve, substantially as described.

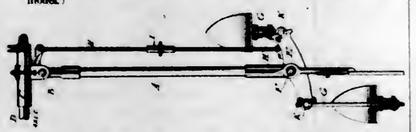
3. The combination of the steam-pipe of a locomotive-engine with a throttle-valve, an auxiliary valve, and a strainer below the valves, substantially as described.

4. The combination, in a locomotive-engine, of a steam-pipe with a strainer below the throttle-valve, substantially as described.

5. The combination, in a locomotive-engine, of a steam-pipe provided with the throttle-valve B, auxiliary valve H, exterior pipe, C, suitably connected to the steam-pipe, the cap F, and interior pipe, E, all substantially as described.

6. In a locomotive-engine, the combination of the steam-pipe, channels *a*, and the throttle-valves, substantially as specified.

378,141. **CULTIVATOR.** EDWARD P. LYNCH, Davenport, Iowa. Filed Feb. 26, 1887. Renewed Nov. 21, 1887. Serial No. 256,766. (No model.)



Claim.—1. The laterally-swinging beam or drag-bar, a cross-head or arm connected thereto by a vertical axis, two shovel-standards carried by said cross-head, and a longitudinally-adjustable connecting-rod, H, whereby the horizontal angle of the cross-head to the line of draft may be varied.

2. The laterally-swinging beam, the arm or arms pivoted thereto, the adjustable rod H, controlling the position of said arm, the shovel-standards, and the standard-fastening devices adapted to permit the standards to be turned horizontally in relation to their support.

378,142. **PARALLEL-RULER AND SECTION-LINER.** WILLIAM C. MEYER, Boston, Mass. Filed May 17, 1887. Serial No. 238,463. (No model.)

Claim.—1. In a universal ruler and section-liner, the combination, with a ruler or straight-edge, of a carriage consisting of a shaft provided with friction-wheels at its opposite ends, a stationary sleeve surrounding said shaft, a feed-wheel, a pawl, an oscillating pawl-carrying bar supported by the said sleeve and prolonged, as shown, to actuate the feed-wheel, substantially as described.

2. In a universal ruler and section-liner, the combination, with a ruler or straight-edge, of a carriage consisting of a shaft, *a'*, having friction-wheels a^3 a^4, a sleeve, a^2, a feed-wheel, *b*, a pawl to engage said wheel, a pawl-carrying bar, b^2, an adjusting-screw, c^2, a hub, c^3, having lugs c^4 c^4, forming limiting-stops for the said pawl-carrying bar, and a spring, *c*, substantially as described.

3. In a universal ruler and section-liner, the combination, with a ruler or straight-edge, of a carriage consisting of a shaft, *a'*, having friction-wheels a^3 a^4, a sleeve, a^2, a feed-wheel, *b*, a pawl to engage said wheel, a pawl-carrying bar, b^2, an adjusting-screw, c^2, a hub, c^3, having lugs c^4 c^4, forming limiting-stops for the said pawl-carrying bar, and a spring, *c*, substantially as described.

4. In a universal ruler and section-line, a shaft, *a'*, having wheels a^3 a^4, a sleeve, a^2, a feed-wheel, *b*, a pawl to engage said wheel, a pawl-carrying bar, b^2, a spring, *c*, an adjusting-screw, c^2, a hub, c^3, having lugs c^4 c^4, and a ruler or straight-edge, A, adjustably secured to the said hub, substantially as described.

5. The combination, with a ruler or straight-edge, of a shaft, *a'*, a sleeve, a^2, a feed-wheel, *b*, a pawl, *b'*, a pawl-carrying bar, b^2, and an adjustable collar, *c*, and needle-point *c'*, to operate substantially as described.

6. In a universal ruler or section-liner, the combination, with a ruler or straight-edge, of a shaft having wheels at its opposite ends, a sleeve, a^2, a feed-wheel mounted on said shaft, a pivoted pawl adapted to engage and be disengaged from the said feed-wheel, and means, substantially as described, to lock the said pawl in either position, substantially as specified.

7. The combination, with a ruler or straight-edge, of a shaft, *a'*, a sleeve, a^2, a feed-wheel, *b*, and an adjustable collar, *c*, and needle-point *c'*, to operate substantially as described.

8. The combination, with a ruler or straight-edge, of an arm, c^{10}, and lever pivoted thereto and adapted to carry a pen or pencil, a shaft, *a'*, a sleeve, a^2, a feed-wheel, *b*, an adjustable collar, *c*, and needle-point *c'*, to operate substantially as described.

378,143. **DOUBLE-SEAMING MACHINE.** EDWIN NORTON and JOHN G. HODGSON, Maywood, assignors to said Edwin Norton and Oliver W. Norton, Chicago, Ill. Filed June 23, 1887. Serial No. 242,276. (No model.)



Claim.—1. In a can-seaming machine, the combination of a double-seaming tool, F F', mounted on a rocking and radially-reciprocating slide, *f*, with tools C and D, mounted on rocking and radially-reciprocating slides *c d*, substantially as specified.

2. The combination, with a revolving chuck or can-holder, B B', of seaming-tools C D and double-seaming tool F F', reciprocating slides *c*, *d*, and *f*, upon which said tools are journaled, rocking tool-holders H and F^3, carrying said slides *c*, *d*, and *f*, and cams for reciprocating said slides as the tool-holders rock, substantially as specified.

3. The combination, with a revolving chuck or can-holder, B B', of seaming-tools C D and double-seaming tool F F', reciprocating slides *c*, *d*, and *f*, upon which said tools are journaled, rocking tool-holders H and F^3, carrying said slides *c*, *d*, and *f*, and cams for reciprocating said slides as the tool-holders rock, mechanism, substantially as described, for rocking said tool-holder H, mechanism, substantially as described, for rocking said tool-holder F^3, and mechanism, substantially as described, for reciprocating said can-holder or chuck-disk B', substantially as specified.

4. The combination, with a revolving chuck or can-holder, B B', of seaming-tools C D and double-seaming tool F F', reciprocating slides *c*, *d*, and *f*, upon which said tools are journaled, rocking tool-holders H and F^3, carrying said slides *c*, *d*, and *f*, and adjustable slides or blocks K and F^3, mounted on slideways on the frame of the machine and furnished with cams *c'* *d'*, and *f'* for operating said slides *c*, *d*, and *f*, substantially as described.

5. The combination, with a revolving chuck or can-holder, of seaming-tools C and D, tool-slides *c* and *d*, rocking tool-holder H, cam-block K, having cams *c'* and *d'*, double tool F F', tool-slide *f*, rocking tool-holder F^3, and cam-block F^3, having cam *f'*, substantially as specified.

6. The combination, with a revolving chuck or can-holder, of seaming-tools C and D, tool-slides *c* and *d*, rocking tool-holder H, cam-block K, having cams *c'* and *d'*, double tool F F', tool-slide *f*, rocking tool-holder F^3, cam-block F^3, having cam *f'*, rock-shaft f^2, gear f^3, segment f^4, disk N, and connecting-rod *n*, rock-shaft *h*, having arm *h'*, link h^2, cam-lever h^3, and cam G, substantially as specified.

7. The combination, with a revolving chuck or can-holder, of seaming-tools C and D, tool-slides *c* and *d*, rocking tool-holder H, cam-block K, having cams *c'* and *d'*, double tool F F', tool-slide *f*, rocking tool-holder F^3, cam-block F^3, having cam *f'*, rock-shaft f^2, gear f^3, segment f^4, disk N, and connecting-rod *n*, rock-shaft *h*, having arm *h'*, link h^2, disk G, cam-lever h^3, shafts G' N' P, and gears *p*, *p'*, p^2, p^3, and p^4, all combined and operating substantially as specified

378,144. **CHURN.** SAMUEL D. PALMER, Rockford, Ill. Filed Dec. 16, 1887. Serial No. 258,075. (No model.)



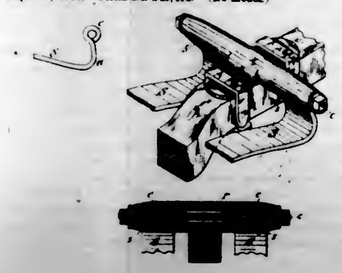
Claim.—1. The combination, with a churn having bails pivoted thereto, of a removable head, and a cam secured to the said head to engage the free portions of the bails, substantially as set forth.

2. The combination, with a churn provided with a ring-head fixed thereto, the said ring-head having ears rising therefrom, of bails pivoted to the said ears, a removable head, and a cam secured to the removable head to engage the free portion of the bails, substantially as set forth.

3. In a churn-head, in combination with bails, an oscillating cam-fastening having independent inclines, the upper portion of the lower end portions of said inclines forming rests to receive the bails, substantially as set forth.

4. In combination with a churn provided with bails, an oscillating cam-fastening for the bails, the said cam-fastening provided with a transverse vertical web, forming a hand-hold, substantially as set forth.

378,145. **SPRING-VEHICLE.** HENRY W. PELL, Rome, N. Y. Filed Sept. 12, 1887. Serial No. 249,418. (No model.)





Claim.—1. The spring S, having its attaching ends formed with the abrupt upwardly-bent crank *a*, maintained in the same vertical plane with the main portion of the spring, substantially as described and shown.

2. The spring S, formed with the abrupt upwardly-bent cranks *a a*, and with the eyes *e e* on the ends of said cranks, all integral with the spring and in one and the same vertical plane, substantially as described and shown.

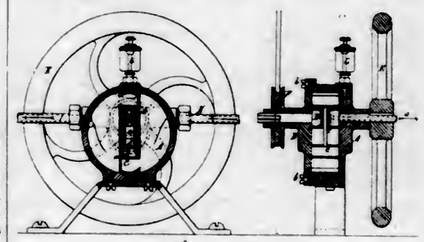
3. The combination, with a vehicle-axle and brackets secured to the end portions of said axle, of springs arranged at opposite sides of the axle and terminated with rigid abruptly upwardly-turned cranks and hung by said cranks on the aforesaid brackets, as set forth.

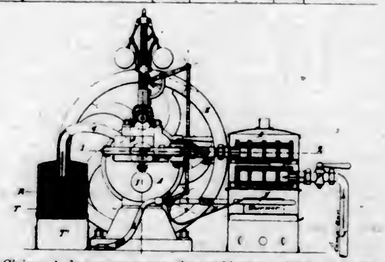
4. The combination, with the axle A, of the brackets B B, rigidly mounted on the end portions of the axle and formed with the barrels *r r*, projecting at right angles from opposite sides of the axle, the springs S S, terminated with abrupt upward cranks *a a*, and with eyes *e e* on said cranks, and coupling-bolts *c c*, passing through the barrels and eyes of the springs, substantially as set forth.

5. In combination with the cross-springs S S, the saddle D, formed with the trusses *f f*, spanning across the springs, and with the pivotal bearings *h* and fifth-wheel sections *i i*, all in one piece, substantially as described and shown.

6. In combination with the cross-springs S S, the saddle D, formed with the central arch, *l*, standing lengthwise the springs, the trusses *f f*, spanning across the springs at opposite ends of the central arch, the pivotal bearing *h* over the center of the arch, the arms *o o*, extending from the trusses, and the fifth-wheel sections *i i* on said arms, all formed in one piece, substantially as described and shown.

378,146. **ROTARY MOTOR OPERATED BY FLUID-PRESSURE.** VICTOR POPP, Paris, France. Filed Sept. 29, 1886. Serial No. 214,846. (No model.) Patented in France May 30, 1885, No. 169,278; in England Dec. 15, 1885, No. 10,666; in Belgium Aug. 11, 1886, No. 74,187; in Italy Mar. 31, 1887, XXXI. 406, and in Austria-Hungary June 12, 1887, No. 7,072.





Claim.—1. In a rotary motor, the combination, with the inclosing-cylinder having inlet and outlet openings, of an eccentric rotary piston therein consisting of two radially-movable parts embracing the axle, the space between the two parts being provided with an external opening permitting the escape of any fluid that may enter it.

2. The combination, with a rotary motor, of an external supply of compressed air by which the motor is operated, a heating device connected to the air-pipe and adjusted to prevent injurious cooling of condensed moisture at the exhaust of the motor, a load-indicator for the motor connected with and controlling the said heating device, and a regulator for the motor controlling the admission of the compressed air, substantially as described.

3. In a compressed-air motor, the combination, with the inlet-pipe, of a gas-burner for raising the temperature of the ingoing air, a governor controlling the admission of air to the motor, and a regulator for the gas-burner connected therewith, whereby the heating may correspond to the work of the motor.

4. The combination, with the gas-burner, of the main supply-pipe, a small supplementary pipe, M, and a cock, L, at the junction of the main and supplementary pipes for admitting the gas alternately to the two pipes.

378,147. GARMENT-SUPPORTER. CHARLES A. PRESTON, Cambridgeport, assignor to George Frost, George H. Phelps, and George A. Frost, all of Newton, Mass. Filed Dec. 2, 1887. Serial No. 256,777. (No model.)



Claim.—1. The herein-described garment-supporter, consisting of the button-receiving portion comprising two arms, *a' a'*, combined with a locking device or loop, said button-receiving portion and locking device or loop being hinged one with relation to the other, substantially as described.

2. In a garment-supporter, the button-receiving portion comprising two arms, *a' a'*, which receive between them the button, combined with a locking device to close the passage between the two arms at or near the outer ends of the said arms, substantially as described.

378,148. GARMENT-SUPPORTER. CHARLES A. PRESTON, Cambridgeport, assignor to George Frost, George H. Phelps, and George A. Frost, all of Newton, Mass. Filed Dec. 2, 1887. Serial No. 256,778. (No model.)

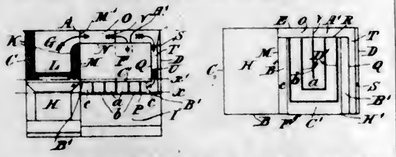


Claim.—1. The herein-described garment-supporter, consisting of the jointed locking device, substantially as herein specified, combined with the button-receiving loop *a*, said locking device and loop being hinged or swiveled one to the other, as and for the purposes set forth.

2. In a garment-supporter, the locking device consisting of two parts or loops, *b b'*, hinged one to the other, combined with the button-receiving loop with which the locking device is connected, substantially as described.

3. The herein-described garment-supporter, consisting of the jointed spring-acting locking device, substantially as herein specified, combined with the button-receiving loop, substantially as and for the purposes specified.

378,149. STOVE. GEORGE R. PROWSE, Montreal, Quebec, Canada. Filed June 13, 1887. Serial No. 241,173. (No model.)



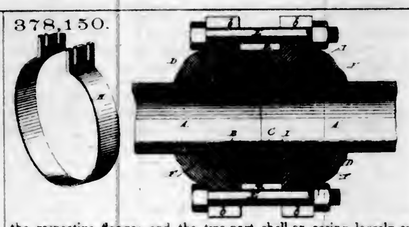
Claim.—The combination, in a cooking stove or range, of the oven F, downtake A' T, uptake O, as shown and described, the detached plate bottom C, (of the oven F,) provided with hollow projections D' E' and flange F', which, with the plate P, form flues *a*, *b*, and *c* under the said plate or bottom C, with the plate P, the whole constructed and arranged substantially as described.

378,150. PIPE-COUPLING. ARCHIBALD H. ROWAND, Allegheny, Pa. Filed Jan. 22, 1887. Serial No. 225,143. (No model.)

Claim.—1. The two pipe-sections, each provided with a fixed annular flange at a distance from its end, in combination with the elastic packings surrounding the pipes in rear of the flanges, the two-part shell loosely encircling the pipe-sections behind the respective packings and flanges and bearing against the packings, the plastic material filling the interior of the shell and surrounding the pipe and flanges, and the bolts or connecting devices holding the shoulder-sections firmly together.

2. The two pipe-sections provided with flanges fixed thereon, in combination with an elastic packing, F, encircling the sections beyond

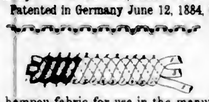
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the respective flanges, and the two-part shell or casing loosely encircling the two sections to admit of said sections changing their relative positions, and bearing at its ends directly and firmly against the packings, as shown and described.

3. The two pipe-sections, each provided with an external flange fixed thereon at a distance from the end, in combination with the ring C, encircling the adjacent ends of the pipe, the packing F F, applied behind the flanges, the two-part shell having the annular flange-joint *a*, the plastic filling, and the bolts for forcibly contracting the shell, whereby the shell-sections are seated firmly against the packings F and the plastic material forced into intimate contact with all the internal surfaces.

378,151. FABRIC FOR DRIVING-BELTS. GEORG SCHNEIDER, Cologne, Germany. Filed Nov. 16, 1885. Serial No. 182,960. (No specimens.) Patented in Germany June 12, 1884, No. 29,737.



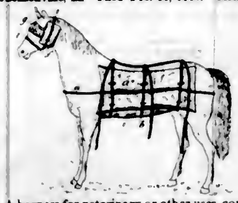
Claim.—A hempen fabric for use in the manufacture of driving-belts, composed of twined tightly-spun warp-threads and loose untwined soft weft-threads of hackled hemp, finer than the said warp-threads, the warp-threads being interwoven with the weft-threads in a three-leaved twill, as described.

378,152. DISH-WASHER. JAMES S. STEVENS and GEORGE CAUNTER, Cleveland, Ohio. Filed Jan. 22, 1887. Serial No. 225,093. (No model.)



Claim.—In a dish-washer, the rotary agitating-wheel, composed of shaft F, and metallic sheets S, having paddles 7, formed integral therewith, one side or edge of said paddles being curved in one direction and their opposite edges being curved in an opposite direction, substantially as herein set forth.

378,153. HARNESS FOR VETERINARY PURPOSES. LANSING C. TIFFANY, Jacksonville, Ill. Filed Feb. 16, 1887. Serial No. 227,780. (No model.)



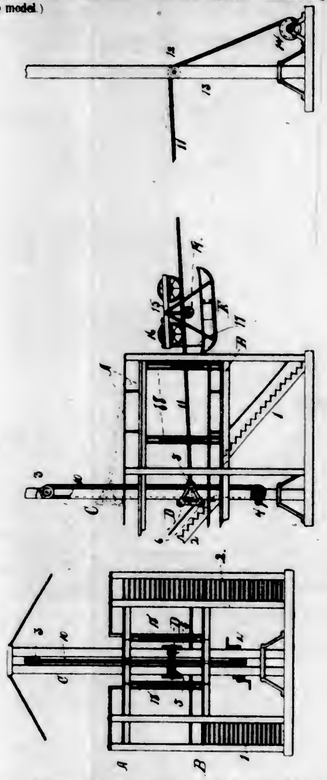
Claim.—1. A harness for veterinary or other uses, consisting of the side straps, *a*, the strap *c*, and one or more girths or bands, *b*, having one or more extended ends for detachably connecting said harness to a tilting table, substantially as described.

2. The combination, with a tilting table, of a harness for veterinary or other uses, consisting of the side straps, *a*, the strap *c*, and one or more girths or bands, *b*, having one or more extended ends for detachably connecting said harness to said tilting table, substantially as described.

3. An independent harness for veterinary and analogous purposes, consisting of the side straps, *a a*, strap *c*, and bands and girths *b b*, having ends extending from the main portion of said harness and adapted to be removably secured to a tilting table or its operating mechanism, substantially as described.

4. A harness for veterinary and analogous uses, comprising side straps, *a*, strap *c*, one or more girths or bands, *b*, having one or more extended ends, a cushion, *a*⁴, having straps or loops *e e*, and a pillow, *f*, provided with suitable attaching devices, substantially as described.

378,154. CABLE COASTER, CARRIER, AND FERRIER. JACOB VAN ZANDT, Syracuse, N. Y. Filed Dec. 12, 1887. Serial No. 257,564. (No model.)



Claim.—1. The combination, with the standard C, of the traveler D, constructed with a frame composed of sides and front and rear cross-bars, the front cross-bar carrying pulleys bearing against the front of the standard, the rear cross-bars carrying pulleys bearing against the rear of the standard, and a draft-bar mounted upon a front and a rear cross-bar of the frame, and provided with an eye in the front end to receive the end of the cable, and intermediate eyes, 8, to receive the ends of the adjusting-rope, substantially as described.

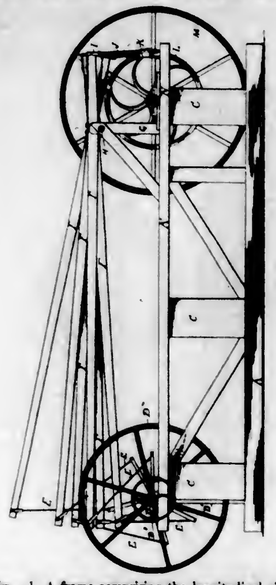
2. A traveler consisting of a frame composed of sides and front and rear cross-bars, pulleys mounted upon said cross-bars, and a draft-bar mounted upon the cross-bars and provided with eyes 8 and 9, substantially as described.

3. The combination, with the car, of the guide-rolls erected between the platforms and impinging against the sides of the car, substantially as described.

4. The combination, with the cable and car dependent from a carriage mounted thereon, of a platform slotted longitudinally to permit the vertical adjustment of the car and cable through the slot, substantially as described.

5. The combination, with the cable and car dependent from a carriage mounted thereon, of two platforms vertically above each other and both slotted longitudinally to receive the car, substantially as above described.

378,155. LEVER-POWER ENGINE. EDWARD T. WHERY, Oakdale, Cal. Filed Oct. 12, 1887. Serial No. 252,181. (No model.)



Claim.—1. A frame comprising the longitudinal sills A, the longitudinal beams A', the cross-sills B, and posts C, in combination with the standards D', and connecting devices consisting of the shaft D with the radial cranks, the arms E, the levers F, the shaft D', having attached to it the crank-balance D², and the pulley D³, the shaft H, the posts G, the clips I, the hangers J, the shaft N, having the pulley M and the wheels L thereon, the grips K, with the rollers *k*, mounted in the lower ends of hangers J and adapted to bear on the faces of wheels L, substantially as set forth.

2. A series of levers the longer ends of which are connected at the rear to crank-shafts having a power-applying connection, and the shorter ends of which have loosely-attached grips adapted to be applied to the faces of a series of wheels in such manner as to positively move the wheels in one direction and to freely ride over the wheels in the reverse direction, all combined substantially as described.

378,156. ALTERATIVE TONIC. WILLIAM WHITNEY, Gouverneur, N. Y. Filed June 3, 1887. Serial No. 240,128. (No specimens.)

Claim.—The herein-described composition of matter to be used as a medicine, as above prescribed, consisting of Virginia snake-root, mezereon-bark, frost-wort, guaiacum-chips, prince's-pine, prickly-ash, tag-alder bark, sarsaparilla-root, burdock-root, yellow-dock root, mandrake-root, iodide of potassium, liquor potassæ, sugar, alcohol, and water, in the proportions specified.

378,157. LEATHER-SPLITTING MACHINE. WILLIAM R. ADAMS, Lynn, Mass. Filed Apr. 7, 1886. Serial No. 198,102. (No model.)

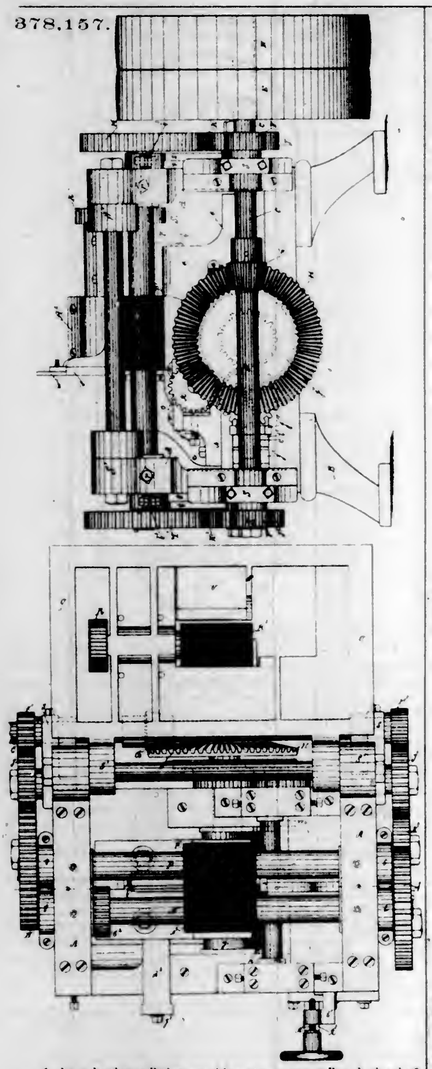
Claim.—1. The combination, with the laterally-sliding boxes, in which are journaled the feed-roll shafts, of the equalizer-arms *t*, pivoted thereto at their upper ends and at their lower ends pivoted to the vertically-sliding blocks *u*, for the purposes and substantially as set forth.

2. In a leather-splitting machine, the combination, with the main shaft C, having the gears F F' and the beveled pinion G, of the feed-rolls N' P', their shafts N and P, connected by gearing with the said gears F and F', the presser-roll *g*, set at right angles to the rolls N' and P', a shaft by which the said presser-roll is carried, and the beveled gear H on said shaft, substantially as set forth.

3. In a leather-splitting machine, the combination, with the feed-rollers P' N', of the vertical splitting-knife, its adjustable support *c*, and the adjusting-piece *d* and its operating-screws, substantially as described.

4. In a leather-splitting machine, the combination, with the horizontal feed-rolls, the edge-guide, the vertical splitting-knife, and the opener, of the horizontal carrying-roll and pressing-rolls set at right angles to the said feed-rolls, substantially as set forth.

378,157.



5. In a leather-splitting machine, the presser-rolls *g h*, the shaft of roll *h*, having sliding journal-boxes provided with springs j^2, in combination with the adjusting-piece *i'*, provided with wedge-shaped projections acting in reversely-inclined slots in the frame, and an adjusting-screw whereby, by moving the piece *i'*, the pressure of the rolls may be increased or diminished, substantially as set forth.

6. In a leather-splitting machine, the combination, with the feed-rolls and edge-guide, of a splitting-knife and opener secured to the same support, whereby their adjustment relative to said guide may be accomplished simultaneously, substantially as set forth.

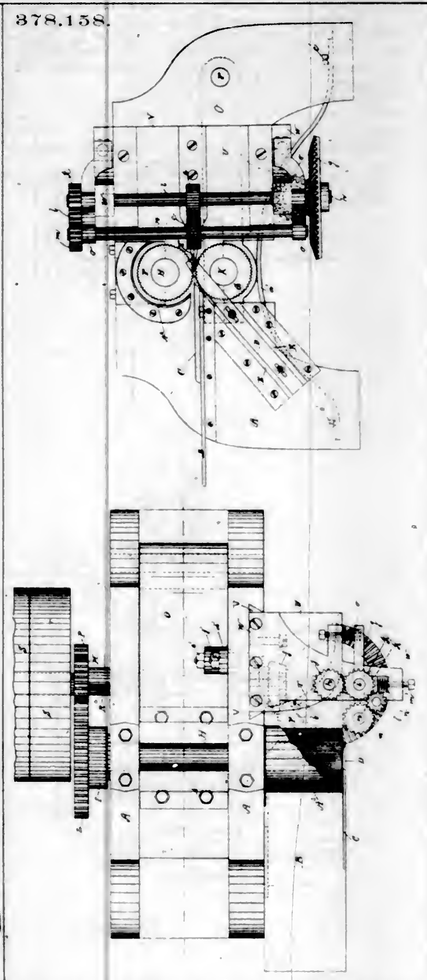
378,158. **LEATHER-SPLITTING MACHINE.** WILLIAM E. ADAMS, Lynn, Mass. Filed Aug. 26, 1886. Serial No. 211,894. (No model.)

Claim.—1. A leather-splitting machine having two feed-rolls, one of which is movable from and toward the other, a trimming-knife at the end of said feed-rolls, a splitting-knife set behind said rolls on a movable support and located inside said trimming-knife, thereby leaving a space between its outer end and the trimming-knife, an opener secured to the knife-support, and pressing-rolls which operate on the leather after it has passed the splitting-knife, substantially as described.

2. In a leather-splitting machine, the combination of a splitting-knife and opener mounted on a movable block and pressing-rolls journaled in supports also mounted on said movable block, substantially as shown and described.

3. A leather-splitting machine having the splitting-knife, opener, a feed-roll for feeding the split piece onto the opener, and two pressing-rolls, all mounted on a movable block, whereby, when the position of the knife is changed by varying thicknesses of leather, the parts which operate upon the leather after it passes the edge of the splitting-knife will move with the knife, substantially as set forth.

378,158.



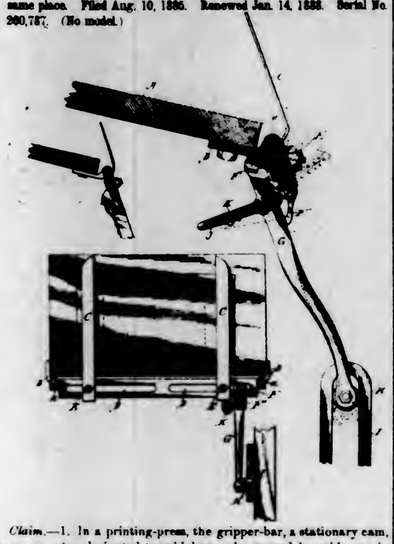
378,159. **BEADING-CUTTER.** JOHN H. ANTHONY, Garland, Tenn. Filed Oct. 5, 1887. Serial No. 251,519. (No model.)

Claim.—The described beading-cutter provided with a shank for attachment to a cylinder, a grooved and longitudinally-curved working-face, and in front with a filing-face intersecting the groove and forming therewith cutting-points, substantially as and for the purpose set forth.

378,159.



378,160. **GRIPPER FOR PLATEN PRINTING-MACHINES.** HENRY F. BUCHMAN, Chicago, Ill., assignor to the Schniedwend & Lee Company, same place. Filed Aug. 10, 1886. Renewed Jan. 14, 1888. Serial No. 260,787. (No model.)

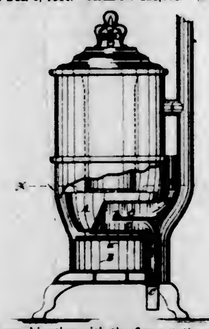


Claim.—1. In a printing-press, the gripper-bar, a stationary cam, and an arm or rod pivoted to said bar and actuated by said cam, in combination with a flexible connection between said arm and the gripper-bar, substantially as and for the purpose described.

2. The platen and the gripper-bar pivotally secured thereto, and the adjustable grippers, in combination with the connecting-rod G, pivotally connected to said bar, the spring K, and gripper-cam I, substantially as described.

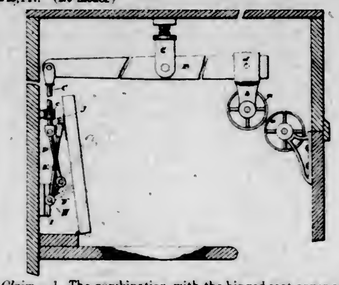
3. The grippers, the platen, the gripper-bar pivoted to said platen, in combination with the connecting-rod, and a pivot-connection between said rod and bar eccentric to the axis of the bar, substantially as described.

378,161. **STOVE OR FURNACE.** GEORGE D. BLOSSOM, Fulton, N. Y. Filed Dec. 9, 1886. Serial No. 221,091. (No model.)



Claim.—In combination with the fire-pot, the air-heating conduit C, extending into one side of said fire-pot part way the width thereof, and arranged with a grate-surface around its base, and provided with the horizontal partition *b*, extending part way the length of the conduit C, and the receiving-pipe *d* and discharge-pipe *e*, communicating with said conduit, respectively, below and above the partition *b*, substantially in the manner described and shown.

378,162. **DEVICE FOR CLOSING THE LIDS OF WATER-CLOSETS.** AUGUSTE CHAINAY, New Orleans, La. Filed July 23, 1887. Serial No. 245,147. (No model.)



Claim.—1. The combination, with the hinged seat-cover and arm for moving the same forward of its center of gravity, as described, of a lever connected to said arm at one end, the other end being provided with a friction-wheel for engagement with a similar wheel on the door, substantially as described.

2. The combination, with the hinged seat-cover and arm for moving the same forward of its center of gravity, secured to a suitable shaft, of another arm secured to said shaft and connected through suitable connecting-rods to a lever operated by the movement of the entrance-door, whereby when said door is opened the seat-cover is closed, substantially as described.

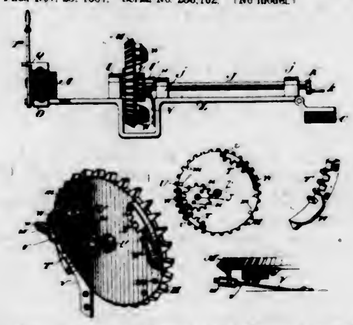
378,163. **CAR-COUPLING.** DANIEL M. COWNER and JOHN L. NUNER, Mapleton Depot, Pa. Filed Nov. 14, 1887. Serial No. 255,128. (No model.)



Claim.—1. The combination, with the draw-head having a rear transverse shoulder, B, of the trigger-supporting block having a rear extension, E, adapted to impinge upon the shoulder B, and the trigger working within the body of said block, substantially as specified.

2. The combination of the draw-head, the block C, secured within the same and having its lower front portion cut away, and having an inclined recess within its body communicating with the cut-away portion, and a trigger working in said inclined recess, substantially as specified.

378,164. **CORN-PLANTER.** JOHN DE BUTTS, Centreville, Md. Filed Nov. 25, 1887. Serial No. 256,162. (No model.)



Claim.—1. In combination with a seed-slide and a shaft for operating the same, a locking device engaging an attachment of said shaft and a rotating toothed segment which meshes with a gear-wheel for driving said shaft, said segment being also provided with a flange for releasing said locking device, substantially as set forth.

2. In combination with a seed-slide and a shaft for operating the same, a locking device engaging an attachment of said shaft, gearing

for driving said shaft, and a rotating flange having an inclined face which releases said locking device, substantially as set forth.

3. In combination with a seed-slide and a shaft for operating the same, a locking device engaging an attachment of said shaft, a pinion fixed on said shaft, and a wheel provided with a series of segments which successively engage said pinion, each segment being provided with a flange for removing said locking device from engagement, for the purpose set forth.

4. In combination with a seed-slide and a shaft for operating the same, a pinion turning with said shaft and having a recess formed therein, a pin arranged to enter said recess, a spring to which said pin is attached and which is provided with an outwardly-extending arm, W', and a rotating segment provided with a flange or projection arranged to act against said arm and withdraw said pin from said pinion, substantially as set forth

5. A segment having internal teeth and a raised flange, in combination with a wheel to which said segment is attached, a pinion meshing with said segment and having recesses *u*, a spring provided with a pin for entering said recesses, a roller to be struck by said flange for withdrawing said pin, a shaft turning with said pinion, and a seed-slide operated by said shaft, substantially as set forth.

6. In combination with the frame A and hinged supplemental frame C, the plate or bar L, pivoted at its front end to the latter frame, the shaft turning in bearings thereon, the seed-slides and connections between them and said shaft, the lever for moving said bar laterally, and the operating-gearing which is separated or brought together by this lateral motion, substantially as set forth.

7. The bar L, laterally movable at one end and pivoted at the other, in combination with a hinged frame, C, to which its pivoted end is attached, a shaft mounted in bearings on said bar, the feed-slides, and supporting and driving mechanism, substantially as set forth.

378,165. LOOPER FOR SEWING-MACHINES. RICHARD FRYER, Brooklyn, N. Y., assignor to A. G. Jennings & Sons, same place. Filed May 5, 1887. Serial No. 237,176. (No model.)



Claim.—1. The looper G, consisting, substantially as described, of the part *o*, having the hook *r*, which projects outward beyond the face *s* of the looper, and the part *p*, having the beveled portion *t*, and the parts *o* and *p*, having the straight edges *u u*, as set forth.

2. The looper G, consisting, substantially as described, of the part *o*, having the hook *r*, which projects outward beyond the face *s* of the looper, and the part *p*, having the beveled portion *t*, in combination with the double needle E, having the two prongs *b b* and the single shank *a*, substantially as herein shown and described.

378,166. ALARM LETTER-BOX. GEORGE F. GIRVAN, Little Falls, N. Y. Filed Oct. 17, 1887. Serial No. 252,602. (No model.)



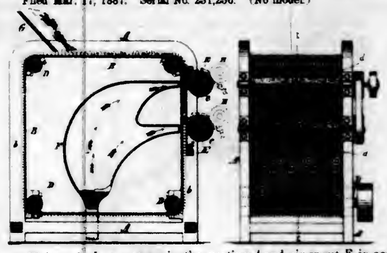
Claim.—1. The combination, in an alarm for letter-boxes, of the lid or door G, having the toothed or corrugated arm L, and the bell or gong attached to a support capable of vibratory motion and engaged by the toothed or corrugated arm, substantially as described.

2. The combination, in a letter-box alarm, of the hinged door or lid G, having the toothed or corrugated arm L, the pivoted arm N, adapted to vibrate, and the bell or gong R, secured to the said arm N and arranged in the path of the teeth on the arm L, whereby the arm N will be vibrated and the gong or bell sounded when the lid or door is opened or closed, substantially as described.

3. The combination, in a letter-box alarm, of the door or lid G, having the toothed or corrugated arm L, the pivoted arm N, the stop P, the spring pressing the free end of the said arm normally against the said stop, and the gong or bell secured to the said arm and having one edge arranged in the path of the teeth or corrugations of the arm L, whereby the arm N will be vibrated and the bell or gong sounded when the door G is opened or closed, substantially as described.

4. The combination, in an alarm for letter-boxes, of the lid or door G, having the toothed or corrugated arm L, the vibratory arm N, and the bell or gong attached to said vibratory arm and having one edge arranged in the path of the toothed or corrugated arm L, substantially as described.

378,167. COTTON-GIN. ABRAHAM G. JENNINGS, Brooklyn, N. Y. Filed Mar. 17, 1887. Serial No. 231,236. (No model.)

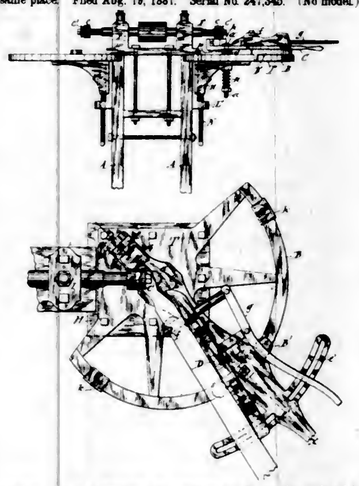


Claim.—1. In a cotton-gin, the grating *d* and air-spout F, in combination with the carrier B, and means, substantially as described, for drawing the fibers of the cotton through the grating, as set forth.

2. In a cotton-gin, the air-spout F, combined with the grating *d*, carrier B, and roller E, substantially as described.

3. In a cotton-gin, the combination of a perforated carrier with an air-spout on one side and a grating on the other side, whereby the air from said spout forces the fiber against said grating, as set forth.

378,168. MACHINE FOR CUTTING SCROLLS ON ENDS OF BARS. JOSEPH KOHN, Oneida, N. Y., assignor of one-half to J. Herbert Kennedy same place. Filed Aug. 19, 1887. Serial No. 247,345. (No model.)



Claim.—1. In a machine for cutting scrolls on the ends of bars, the combination of a rotary arbor mounted in fixed bearings, cutters secured to said arbor, a bar-carrier mounted on a pivot axially at right angles to the arbor and arranged movably longitudinally toward and from the cutters, and a curved stationary guide arranged eccentric in relation to the aforesaid pivot to control the bar-carrier in its reciprocating movement, substantially as set forth.

2. In combination with the rotary cutters *c c'*, the pivot-pin *a*, at right angles to the axis of the cutters, the eccentric guide B, the carrier-arm C, provided with the slot *b*, and connected thereby to the pivot-pin *a*, and the guide B', pivoted on the arm C and sliding on the guide B, substantially as described and shown.

3. In combination with the table T and rotary cutters *c c'*, the pivot-pin *a*, at right angles to the axis of the cutters, the carrier-arm C, swinging on said pivot-pin, the breast D on said arm, and the clamp for holding the bar to be operated on against said breast, substantially as set forth.

4. In combination with the rotary cutters *c c'*, the pivot-pin *a*, at right angles to the axis of the cutters, the carrier-arm C, provided with the slot *b* and connected thereby to the aforesaid pivot-pin, the stationary eccentric guide B, the guide B' on the arm C, sliding on the stationary guide, and a clamp on said arm for holding the bar to be operated on, substantially as described and shown.

5. In combination with the rotary cutters *c c'*, the pivot-pin *a*, at right angles to the axis of the cutters, the carrier-arm C, swinging on said pivot-pin, and the bar supporting breast D, secured adjustably in its lineal position on the arm C to and from parallelism with the longitudinal center thereof, substantially as and for the purpose set forth.

6. In combination with the rotary cutters *c c'*, the pivot-pin *a*, at right angles to the axis of the cutters, the carrier-arm C, swinging on said pivot-pin and provided with the segmental slots *e e'*, and the breast D, connected to the arm C by bolts passing through the aforesaid slots, substantially as described and shown.

7. In combination with the rotary cutters *c c'*, the table T, supported adjustably vertically, the pivot-pin *a*, arranged on said table at a point in front of the cutters, the arm C, swinging on said pivot-pin, the breast D, connected to said arm, and a clamp for holding on the breast the bar to be operated on, substantially as set forth and shown.

8. In combination with the rotary cutters *c c'*, the pivoted arm C, the breast D, the grip *f*, sliding transversely in said breast, and the lever *g*, connected with the grip, substantially as and for the purpose shown and set forth.

9. In combination with the cutters *c c'*, the pivoted arm C, the abutment A, secured to the arm at one end, and a clamp connected to the opposite end of the arm for holding thereon the bar to be operated on, substantially as set forth.

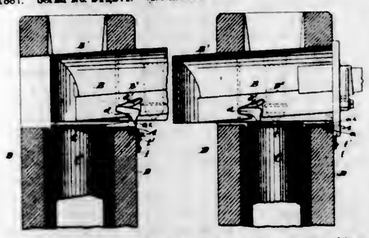
10. In combination with the cutters *c c'*, the pivoted arm C, abutment A, connected to one end of said arm adjustably toward and from the pivot of the arm, and the breast D, connected to the opposite end of the arm adjustable to and from parallelism with the longitudinal center of said arm, substantially as described and shown.

11. In combination with the cutters *c c'*, the table T, supported adjustably vertically, the arm C, pivoted on said table and provided with the slot *b*, the abutment A, composed of wood and sliding in said slot, the metal bolt *l*, secured to the abutment and provided with the head *l'*, and the set-screw *m*, bearing on said head, substantially as described and shown.

12. In combination with the cutters *c c'*, the table T, provided with the hub O, the pivot-pin *a*, arranged movably longitudinally in said hub, the spring *u*, arranged to resist the movement of said pin, and the arm C, connected to the pivot-pin and provided with the cam *p*, substantially as described and shown.

13. In a machine for cutting scrolls on the ends of bars, the combination of a rotary arbor, the cylindrical cutter *c*, with the V-shaped cutter *c'* in front thereof mounted on said arbor, the carrier-arm C, swinging on a pivot arranged axially at right angles to the arbor, and a clamp on said arm for holding thereon the bar to be operated on, substantially as described and shown.

378,169. EXTRACTOR MECHANISM FOR BREECH-LOADING GUNS. WILHELM LORENZ, Carlsruhe, Baden, Germany. Filed July 14, 1887. Serial No. 244,371. (No model.)



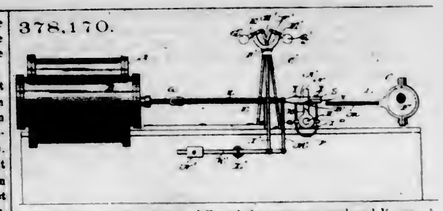
Claim.—In a breech-loading gun, the gun D, having a rabbet at the outer edge of the breech-block opening, the ejector A, adapted to engage at its front edge under the rim *c* of the cartridge-shell C, said ejector having a lip embedded in said recess, whereon the ejector turns pivotally, and also having upwardly-extending noses a^2, the plate *f*, and screws *f''*, removably securing said plate to the gun over said rabbet, for the purpose set forth, in combination with the breech-block B, having shoulders adapted to strike said noses when it is withdrawn, substantially as specified.

378,170. GOVERNOR FOR STEAM-ENGINES. JOHN A. MARSHALL, Imlay City, Mich. Filed Oct. 26, 1887. Serial No. 253,467. (No model.)

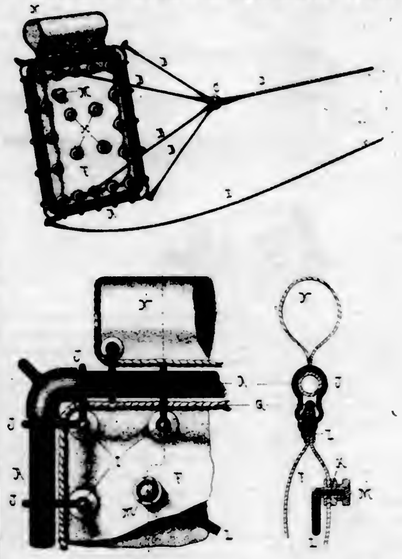
Claim.—1. The combination, in a steam-engine, of the valve stem or rod, the rocking arm N, the rod Z, attached to the valve-stem, a connection between said rod Z and rocking arm N, whereby the former is vertically adjustable on the latter, the weighted lever K', having rod M', connecting it to rod Z, and the governor and rod l', connecting said governor to the weighted lever, substantially as described.

2. The combination, in a steam-engine, of the rocking shaft having the arm N, the box S, connected to the said arm and adjustable vertically thereon, the cut-off valve having the stem or rod, the rod Z, connecting the latter to the box S, the weighted lever K', the governor connected thereto, and the rod M', connecting the lever K' to the rod Z, substantially as described.

3. The combination, in a steam-engine, of the rock-shaft having the rocking arm N, provided with the ears O, the vertically-movable yoke P, secured to and guided by the said ears, the box S, attached to the said yoke and having the rollers engaging the arm N, one of said rollers being adjustable to compensate for wear, substantially as set forth, the cut-off valve having the stem or rod, the rod Z, connecting the latter to the box S, the governor, the weighted lever K', connections between the governor and the said lever K', and the rod M', connecting the said lever K' to the rod Z, substantially as described



378,171. FLOATING ANCHOR AND OILER. MICHAEL MCCARTHY, Middletown, Conn. Filed Oct. 13, 1887. Serial No. 252,216. (No model.)



Claim.—1. A floating anchor and oiler consisting of a flat bag, made of canvas or other porous material and provided with rigid edges and adapted to hold oil, and to be held in the water at some distance from the deck of a ship by means of a rope extending from the apparatus at substantially right angles to the surface thereof to the vessel, all substantially as described.

2. The combination of a rigid frame and a flat bag, made of canvas or its equivalent and adapted to hold oil, and removably fastened within the frame, so as to operate therewith and be detachable therefrom, all substantially as described.

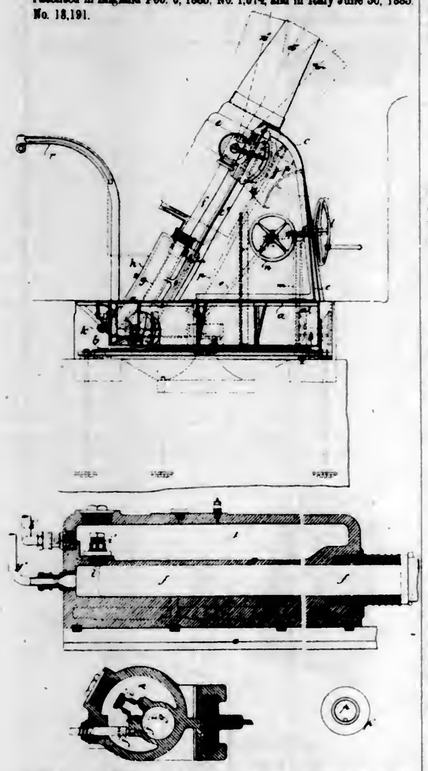
3. The combination of the frame A, consisting of pipes and elbows united by right and left hand screw-threads, with the flat bag F, made of canvas or other porous material and adapted to hold oil, and held within the frame by the rings J, or their equivalents, all substantially as described.

378,172. OPERATING ORDNANCE. ANDREW HOGLE NEWCOMB-

lating material, and covering the core thus prepared with a water-

jaws are closed and engaged with the hollow spindle during the time

378,172. OPERATING ORDNANCE. ANDREW NOBLE, Newcastle-upon-Tyne, England, assignor to W. G. Armstrong, Mitchell & Co., (Limited,) same place. Filed June 8, 1887. Serial No. 240,610. (No model.) Patented in England Feb. 6, 1885, No. 1,674, and in Italy June 30, 1885, No. 18,191.



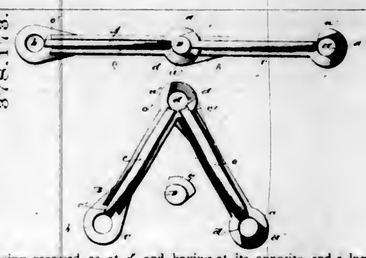
Claim.—1. The combination, substantially as described, of the slide inclined downward from front to rear, the gun-carriage upon the slide, the hydraulic cylinder with its ram parallel to the slide and supporting the gun-carriage immediately in rear of the gun-trunnion bearing, the air-vessel adjacent to the cylinder, and the passage by which the cylinder communicates at or near its end with the air-vessel, and through which liquid passes from the cylinder to the air-vessel, for the purpose set forth.

2. The combination of the slide inclined downward from front to rear, the gun-carriage upon the slide, the hydraulic cylinder with its ram parallel to the slide and supporting the gun-carriage immediately in rear of the gun-trunnion bearing, the air-vessel adjacent to the cylinder, the passage by which the cylinder communicates at or near its end with the air-vessel, the non-return valve of this passage, the by-pass passage between the cylinder and the air-vessel, and the valve of the by-pass, substantially as and for the purpose set forth.

3. The combination of the slide inclined downward from front to rear, the gun-carriage upon the slide, the hydraulic cylinder with its ram parallel to the slide and supporting the gun-carriage immediately in rear of the gun-trunnion bearing, the air-vessel adjacent to the cylinder, the passage by which the cylinder communicates at or near its end with the air-vessel, the non-return valve of this passage, the by-pass passage between the cylinder and the air-vessel, the valve of the by-pass, the pump, the suction-pipe of the pump connected with the cylinder, and the delivery-pipe of the pump connected with the air-vessel, substantially as and for the purpose set forth.

378,173. DRIVE-CHAIN. BENJAMIN OTHER, Marion, assignor to Joseph Andrew Jeffrey, Columbus, Ohio. Filed Apr. 5, 1884. Serial No. 126,769. (Model.)

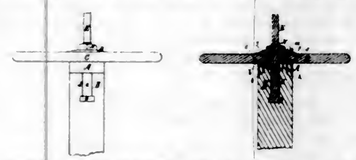
Claim.—In a drive-chain, the herein-described U-shaped link having side bars, A A, united by a tubular end bar, one of said side bars



being recessed, as at *d'*, and having at its opposite end a lug, *e'*, in combination with a pintle, D, having a projecting flange, *e*, adapted to enter the recess *d'* and engage with the lug *e'*, substantially as set forth.

378,174. JACK-SPOOL. LEVI N. PARER, Winchendon, Mass., assignor, by mesne assignments, to himself and George H. Goodspeed, same place. Filed Oct. 26, 1887. Serial No. 253,427. (No model.)

Brief.—The invention is an improvement upon that described in the application filed by the same inventor October 19, 1885, forfeited, renewed December 15, 1887, and allowed of even date herewith. The cap is provided with spurs entering both body and head. A lock-nut is applied to the gudgeon outside of the disk, and provision is made for pins to pass through disk, head, and cap and to enter the body.

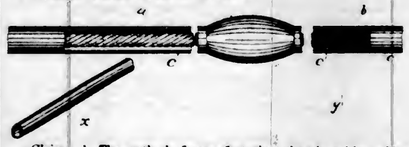


Claim.—1. The combination of each or either gudgeon, screw-threaded and provided with the cross-head, as described, the wooden body chambered to receive the said gudgeon and having in the chamber with said gudgeon a filling-piece, the cap or thimble arranged on the said body and filling-piece, the wooden head placed on the gudgeon and against the said cap, spurs projecting from the said cap or thimble into the said head and body, and the metallic-disk screwed upon the said gudgeon and against the said head, all being substantially as set forth.

2. The combination of each or either gudgeon, screw-threaded and provided with the cross-head, as described, the wooden body chambered to receive the said gudgeon and having in the chamber with said gudgeon a filling-piece, the cap or thimble arranged on the said body and filling-piece, the wooden head placed on the gudgeon and against the said cap, spurs projecting from the said cap or thimble into the said head and body, the metallic disk screwed upon the said gudgeon and against the said head, and the clamp-nut screwed on the said gudgeon and against the said disk, all being substantially as set forth.

3. The combination of the gudgeon, screw-threaded and provided with the cross-head, as described, the wooden body chambered to receive the said gudgeon and a filling-piece, the cap or thimble having slots in its top and arranged on the said body and filling-piece, the wooden head placed on the gudgeon concentrically thereof and against the said cap or thimble, spurs projecting from the said cap or thimble into the said head and body, the metallic disk having holes in it, as represented, and screwed upon the said gudgeon, and the pins or screws going through such disk and thimble and into the wooden body, all being substantially as set forth.

378,175. TELEGRAPH-CABLE. WILLIAM R. PATTERSON, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Nov. 17, 1887. Serial No. 255,407. (No model.)



Claim.—1. The method of manufacturing electric cables, which consists in providing a dry core of conductors insulated by fibrous material, saturating said core in alternate sections with melted insulating material, and covering the core thus prepared with a waterproof sheathing.

2. The method of manufacturing electric cables, which consists in immersing the core of insulated conductors at alternate sections in melted paraffine or other insulating material and covering the core with a sheathing or pipe of lead, substantially as described.

3. As a new article of manufacture, an electric cable consisting in the combination, with the lead pipe, of a core of insulated conductors placed therein, the alternate sections of said core being saturated, substantially as described.

378,176. WIRE-JOINING MACHINE. ORLANDO M. POND and JOHN PROVAN, Independence, Iowa. Filed Dec. 5, 1887. Serial No. 257,015. (No model.)



Claim.—1. The combination, with the reciprocating rack-bars having teeth on their top faces and adjacent sides, of the slotted coilers engaging with the teeth on the face of the rack-bars and actuated thereby, and the pinion G, substantially as described.

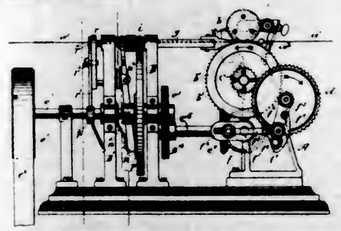
2. The combination, with the reciprocating rack-bars having teeth on their top faces and adjacent sides, of the slotted toothed coilers actuated thereby, the pinion G, and a holding-clamp for the wire arranged at right angles to the axes of the coilers, as set forth.

3. The combination, with the reciprocating rack-bars having teeth on their top faces and adjacent sides and the holding-clamp arranged at right angles to the axes of the coilers, of the coilers, each comprising a slotted shaft provided with a lip, *f*, and a pinion on said shaft actuated by the rack-bars, and the pinion G, as set forth.

4. The combination, with the bed-plate and the rack-bars, of the pinion G, journaled in said bed-plate and arranged to actuate said rack-bars in opposite directions, the coilers supported by said bed-plate with their axes at right angles to that of the pinion, and the holding-clamp for the wire, substantially as described.

5. The combination, with the rack-bars and coilers, of the bar J, arranged at right angles to the axes of the twisters, the clamp-bar K, movable on the bar J, and the lever L, having a cam-head engaging the bar K, substantially as and for the purpose specified.

378,177. MACHINE FOR MAKING WIRE FASTENERS FOR BOTTLE-STOPPERS. JAMES H. REED and JOHN R. WHEELER, Lynn, Mass.; said Reed assignor to said Wheeler. Filed Dec. 7, 1885. Serial No. 184,953. (No model.)



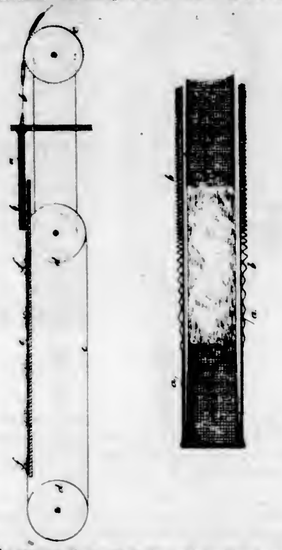
Claim.—1. The combination of mechanism for intermittingly feeding a pair of wires forward in unison, a guide through which the said wires pass, having a mouth which prevents the wires from turning one about the other in the said guide, and a gripping and twisting device and actuating mechanism therefor, by which the wires are seized at a point beyond the mouth of the guide and rotated with relation thereto, twisting the wires one about the other between the said guide and gripping device, substantially as described.

2. The combination of mechanism for feeding a pair of wires forward in unison with a holding device, as guide *g*, and gripping and twisting mechanism for holding the said wires stationary at one point and rotating them at another point to twist them about each other, and a cutter, whereby the wires are cut into lengths having the middle portion twisted and the ends untwisted, substantially as set forth.

3. The combination of the intermittingly-operating feed mechanism with the stationary guide, a revolving spindle provided with a pinion, a wire-gripping device and shipper therefor, and a mutilated gear co-operating with the said pinion, and a cam co-operating with the said gripping device, substantially as described, whereby the said jaws are closed and engaged with the hollow spindle during the time that it is rotated by the mutilated gear, as set forth.

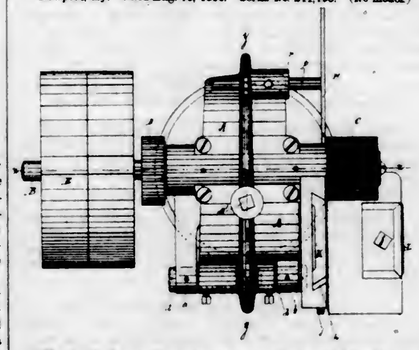
4. The combination of mechanism for feeding forward a pair of wires and for holding said wires stationary at one point with the wire-gripping jaws and actuating mechanism by which they are engaged with the wires and caused to rotate, and a stop for said jaws, by which they are held, when disengaged from the wires, in position to receive the said wires side by side upon their next engagement therewith, substantially as described.

378,178. PROCESS OF MAKING SURGICAL BANDAGES. WILLIAM BRADBURY ROBINSON and ELISABETH ROBINSON, Brampton, County of Derby, England; said Elisabeth Robinson assignor to said William Bradbury Robinson. Filed Aug. 8, 1887. Serial No. 246,423. (No model.)



Claim.—The process of manufacturing pads and bandages, consisting in collecting a length of tubular fabric on the outside of a tube and drawing it off through the inside of the tube while cotton, wool, or other material is introduced into it either intermittently or continuously, substantially as described.

378,179. LEATHER-SPLITTING MACHINE. SIMON ROSS, Jr., Newport, Ky. Filed Aug. 18, 1886. Serial No. 211,193. (No model.)

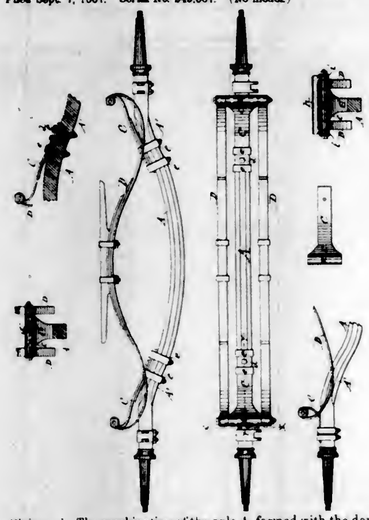


Claim.—1. In a leather-splitting machine, the combination, with a pair of feed-rolls and a movable support for one of the said rolls, of a splitting-knife, a movable knife-block, a link, as *k*, pivotally attached to said movable support, and an eccentric-bolt by which the said link and knife-block are connected, whereby the said knife may be adjusted relatively to the movable feed-roll, substantially as set forth.

2. The combination, with the fixed feed-roll C and its shaft B, of

the movable feed-roll G, its shaft F, the movable support in which the said shaft F is journaled, the spring J, for pressing the movable rolls toward the fixed roll, the splitting-knife having its edge parallel to the axes of the said rolls, and the movable knife-block connected with the said movable support, substantially as set forth.

378,180. SPRING-VEHICLE. AUGUST SCHUBERT, Oneida, N. Y. Filed Sept. 7, 1887. Serial No. 249,007. (No model.)



Claim.—1. The combination of the axle A, formed with the downwardly-curved portions A' A', the spring-arms C C, secured to the top of the axle portions A' A' and rising outward therefrom, and the springs D D at opposite sides of the axle and hung on the outer ends of said spring-arms, substantially as described and shown.

2. In combination with the axle, the spring-arms C C, secured to the end portions of the axle and rising therefrom parallel with the axle and terminating in the lateral flares *c*, and the springs D D, hung on the flaring ends of the spring-arms, as set forth and shown.

3. In combination with the axle, the spring-arms C C, secured to the top of the end portions of the axle and rising outward therefrom and parallel therewith and terminating in the lateral flares *c*, and eyes *a* on said flares, and the springs D D, hung on said eyes, substantially as described and shown.

4. The combination of the axle provided with the recesses *b b*, the leaf spring-arm C C, mounted on top of the end portions of the axle and rising therefrom lengthwise thereof, the bolts *d d*, fastening the leaves of the springs and entering the aforesaid recesses, clips *e e*, fastening the spring-arms to the axle, and the springs D D, hung on the free ends of the spring-arms, substantially as described and shown.

378,181. MULTIPLE TELEGRAPHY. CHARLES SELDEN, Baltimore, Md. Filed Apr. 15, 1887. Serial No. 234,967. (No model.)

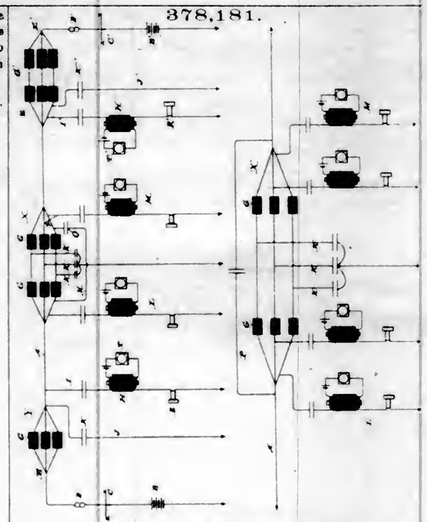
Claim.—1. The combination, with a telegraph-line composed in part of branch or multiple-arc circuits and graduators arranged in said branch circuits, of a derived line connected to said main line by separators, and a coudenser branch connecting the line to ground, substantially as described.

2. The combination, with a telegraph-line a part of which is composed of multiple-arc circuits, of graduators in said arc circuits, derived circuits connected with said arc circuits, and condenser-shunts connecting said multiple-arc circuits to earth, substantially as described.

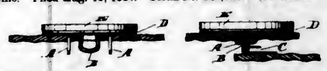
3. The combination, with a telegraph-line a part of which, at a way-station, is composed of branch or multiple-arc circuits, of graduators in said branch circuits, and a shunt, including a condenser, around the graduators in one of the arc circuits, substantially as described.

4. The combination, with a telegraph-line composed in part of multiple-arc circuits, of graduators in said multiple-arc circuits, derived circuits connecting said arc circuits to ground, and a condenser-shunt around said multiple-arc circuits, substantially as described.

378,181.

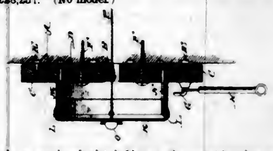


378,182. BUTTON AND FASTENER. ANNA STORCK, Cincinnati, Ohio. Filed Aug. 15, 1887. Serial No. 247,028. (No model.)



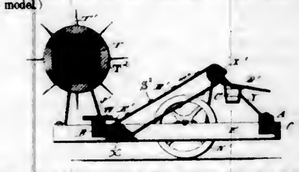
Claim.—The plate D, having points A for securing the same to a fabric, and a slot, *d*, punched therein, in combination with a button having its stem passed through the aperture of the plate and having the displaced metal of the slot turned back on the said stem and into the eye thereof, substantially as specified.

378,188. MECHANICAL TELEPHONE. NATHAN R. STUBBLEFIELD and SAMUEL C. HOLCOMB, Murray, Ky. Filed Feb. 19, 1887. Serial No. 228,231. (No model.)



Claim.—In a mechanical telephone, the combination of the base-board A, the drum arranged on the base-board and having projecting pins N to enter the same, the cloth diaphragm stretched over the drum and secured thereto, the button on the outer side of the diaphragm and having the eye projecting through the center thereof, and the wire P, passed through an opening in the base-board and attached to the eye of the button, substantially as described.

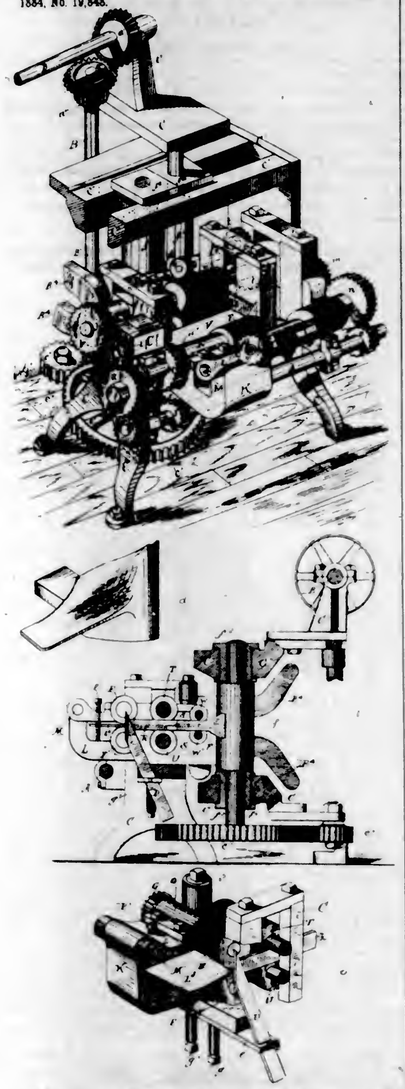
378,184. CLOVER-HARVESTER. AUGUSTUS W. THOMASSON and ROBERT S. PENCE, Kearney, Mo. Filed Dec. 10, 1886. Serial No. 221,213. (No model.)



Claim.—In a seed-harvester, the combination of a frame, a platform secured thereto and projecting from the front side, a rotary cylinder journaled to supports on the main frame and arranged above and slightly in advance of the platform, said rotary cylinder having a series of comb-teeth projecting beyond its periphery, which rotate rearwardly through the grain or grass and comb the seeds therefrom

over the platform, an endless elevator arranged in rear of the platform and having the cross-slats secured thereto, and a flexible strip intermediate the elevator and the platform and secured at one edge to the latter, the opposite free edge of the said strip being extended into the path of the cross-slats, to be struck thereby and vibrated, substantially as described.

378,185. LEATHER-SPLITTING MACHINE. GEORGE L. TYLER, Lynn, Mass. Filed Oct. 19, 1885. Serial No. 180,288. (No model.) Patented in England July 8, 1884, No. 9,922, and in Canada July 28 1884, No. 19,848.



Claim.—1. In a leather-splitting machine, the combination, with an edge-trimming knife and a splitting-knife, of feeding-rolls for carrying the pieces of scrap to be trimmed and split against the said knives, an edge-guide adjacent to the end of the said splitting-knife, but with a space between to leave a hinge in the scrap, and pressing devices for flattening out the pieces which have been split, substantially as set forth.

2. In a leather-splitting machine, the frame K, having a pivoted top, L, in which is journaled the shaft of the feed-roll E, the said top L being provided with bolt P, surrounded with an elastic cushion or washer, by which proper tension of the rolls is obtained, substantially as described.

3. In a leather-splitting machine, the combination, with an edge-trimming knife and a splitting-knife, of feeding-rolls for carrying the pieces of scrap to be trimmed and split against the said knives, an edge-guide adjacent to but slightly separated from the end of the said splitting-knife, and pressing-rolls *f f'*, for smoothing out the split pieces, substantially as set forth.

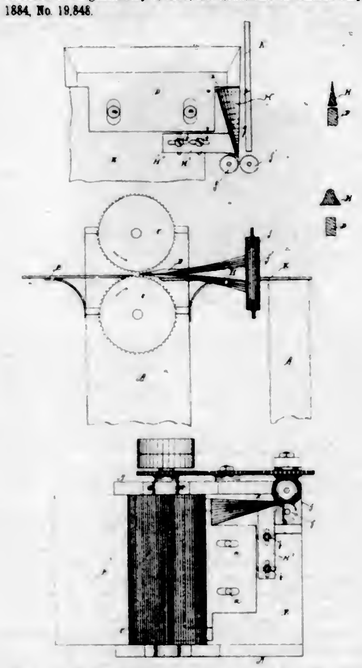
4. The guide R, provided rearwardly of the splitting-knife with a groove adapted to receive the unsplit edge of the piece of leather, in combination with the flaring opener *d*, adapted to spread the flaps of the piece until they are in substantially the same plane, all as set forth and described.

5. The combination of the opener *d*, the guide R, and the pressing and smoothing rolls *f f'*, substantially as described.

6. The splitting-knife and its feed-rolls, in combination with the opener *d*, guide R, feed-rolls W W', and the pressing-rolls *f f'*, for the purposes and substantially as described.

7. A leather-splitting machine consisting of a trimming-knife and its feed-rolls, an edge-guide set rearwardly of and on a line with the face of the trimming-knife, a splitting-knife and its feed-rolls, the splitting-knife being set slightly from the guide, so as to leave the edge of the piece of leather next the guide unsplit, an opener adapted to separate the flaps of the split leather, and the pressing and smoothing rolls, substantially as described.

378,186. LEATHER-SPLITTING MACHINE. GEORGE L. TYLER, Lynn, Mass. Filed Oct. 23, 1885. Serial No. 180,761. (No model.) Patented in England July 8, 1884, No. 9,922, and in Canada July 28, 1884, No. 19,848.



Claim.—1. In a leather-splitting machine, the piece H, shaped as shown, with a narrow end adapted to enter the cut made by the knife in the leather and flaring rearwardly, whereby the flaps of the split piece are separated as they pass over it and are brought toward the same plane, substantially as shown and described.

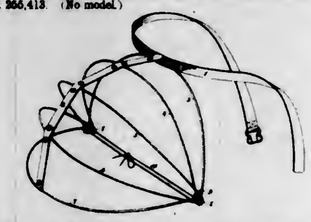
2. In a leather-splitting machine, a splitting-knife, in combination with a flaring opener set rearwardly of the edge of said knife, whereby as a piece of leather which has been split to a hinge at the edge

passes the knife the flaps of the split piece will be spread toward or into the same plane, substantially as described.

3. The combination, in a leather-splitting machine, of the splitting-knife, the flaring opener, and the guide, substantially as described.

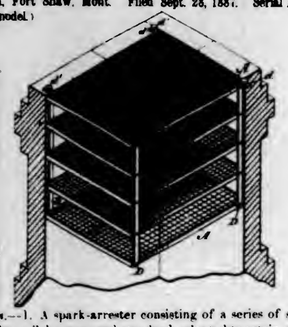
4. The combination, with the feed-rolls of a leather-splitting machine, of the splitting-knife, the opener, the guide, and a pressing roll or rolls, whereby as the split piece passes the knife it is spread and pressed into a flat piece, substantially as described.

378,187. BUSTLE. SAMUEL S. WILLIAMSON, Bridgeport, Conn., assignor to Thomas P. Taylor, same place. Filed Nov. 17, 1887. Serial No. 255,413. (No model.)



Claim.—In a bustle, the combination, with a suitable waistband and check-tape, of a series of radial distending bows extending from one lower corner of the bustle to the other lower corner of the bustle, a plurality of spring-loops arranged at said lower corners, said loops interposed one between the meeting ends of each two bows and connected to and affording resilient action for said bows, and a lacing-cord whereby the looped ends of the bows are secured and retained in their assembled operative position, substantially as set forth.

378,188. SPARK-ARRESTER. FREDERICK BRUHN and JEROME RAUH, Fort Shaw, Mont. Filed Sept. 28, 1887. Serial No. 250,905. (No model.)



Claim.—1. A spark-arrester consisting of a series of spaced and graduated parallel screens and standards adapted to retain said screens in a horizontal position, provided with outwardly-projecting upper ends at right angles to the body, and knobs secured upon said projections, substantially as herein shown and described, and for the purpose herein set forth.

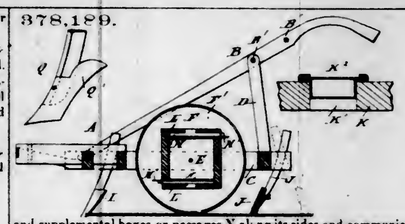
2. The combination, with the U-shaped frames A and a series of graduated screens, B, secured in said frames, of the vertical standards D, attached to each frame and adapted to retain the screens in a parallel and spaced horizontal position, substantially as shown and described.

3. The combination, with the U-shaped frames A and a series of graduated screens, B, secured in said frames, of the vertical standards D, attached to each frame and adapted to retain the screens in a parallel and spaced horizontal position, projections *d*, formed at the top of said standards at right angles to the body, and knobs *d'*, secured to said projections, substantially as shown and described, and for the purpose herein set forth.

378,189. CORN-PLANTER. ANDERSON BURRY, Columbia County, Ark. Filed Aug. 5, 1887. Serial No. 246,192. (No model.)

Claim.—1. In a planter, the combination, with a frame, a plow or opener, and a covering-shovel, of a corn-dropping box rotating on a shaft held upon said frame, said box containing supplemental boxes held in opposite sides thereof, which supplemental boxes communicate with openings in the sides of the dropping or containing box, and are provided with slides adapted to regulate the outflow of the contents of the containing or dropping box, substantially as set forth.

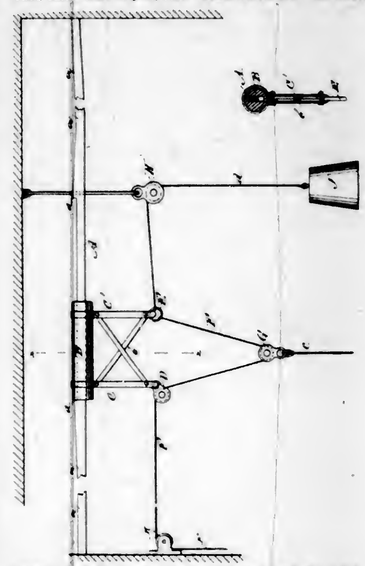
2. In a planter, an angular rotary corn-dropping box having a filling-opening, K, provided with a suitable cover, discharge-openings,



and supplemental boxes or passages N along its sides and communicating with the interior of the main box beyond the said discharge-openings and leading thereto, substantially as set forth.

3. In a planter, the angular corn-dropping box F, having a filling-opening provided with a suitable cover, discharge-openings I^2 in the middle of its sides, and supplemental boxes or passages N communicating with the interior of the main box at one corner thereof and discharging at the opposite corner of the same side, and provided with an intermediate opening, N^2, registering with the opening I^2, whereby the corn may be discharged at two points from each supplemental box or passage, substantially as set forth.

378,190. HAY-CARRIER. LINDLEY CLARK and ELLWOOD CLARK, Cuba, Ohio. Filed May 12, 1887. Serial No. 238,013. (No model.)



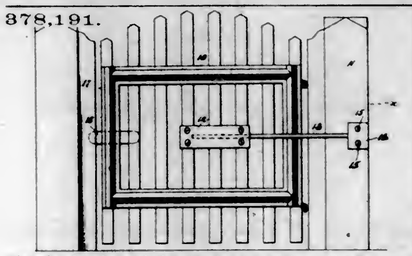
Claim.—In a hay-carrier, the combination, with the rod A, having shoulders *a a* and inclines *a' a'*, of the sleeve B, movable on the rod, the front and rear straps C C, the pulley D at the lower end of the forward strap, the rope F, secured to the lower end of the rear strap and passed over the pulley D, the fork-pulley G on the operating-rope between its point of connection and the pulley D, the pulley H, the rope *d*, and the weight J, substantially as set forth.

378,191. GATE-SPRING. THEODORE CLOUGH, Dobbs Ferry, N. Y. Filed Dec. 8, 1887. Serial No. 257,299. (No model.)

Claim.—A gate or door spring comprising three separate and distinct parts—viz., a plate-spring, 13, an apertured plate, 14, under which the inner end of the spring is clamped between said apertures

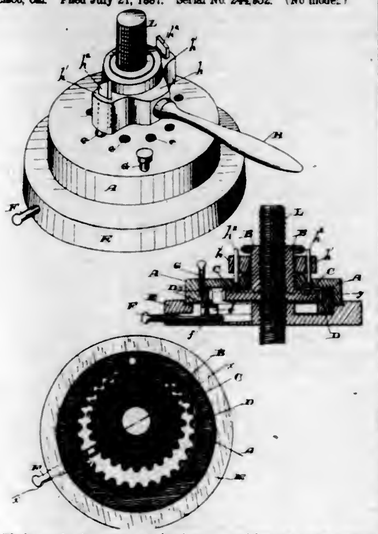


378,191.



when the plate is attached, and a housing, 12, into which the outer end of the spring projects and slides, substantially as set forth.

378,192. POWER MECHANISM. GEORGE COTTRELL, San Francisco, Cal. Filed July 21, 1887. Serial No. 244,952. (No model.)



Claim.—1. A power mechanism comprising an outer rotary eccentric, an inner rotary toothed part, and an intervening swaying toothed disk or gear acted upon by the outer eccentric and engaging the inner part, the teeth of said inner part and swaying disk or gear being differential in number, substantially as herein described.

2. A power mechanism comprising an outer rotary eccentric to which the power is primarily applied, an inner rotary part having external teeth, and a swaying annular disk intervening between the outer eccentric and the inner part, said disk engaging the eccentric externally, and having internal teeth engaging the teeth of the inner part and differential in point of number, substantially as herein described.

3. A power mechanism comprising an outer rotary eccentric to which the power is primarily applied, an inner rotary part having external teeth, an annular disk intervening between the outer eccentric and the inner part, said disk engaging the eccentric externally, and having internal teeth engaging the teeth of the inner part and differential in point of number, and a lock for the annular disk, whereby it is permitted to sway by the action of the eccentric, but is prevented from rotating, substantially as herein described.

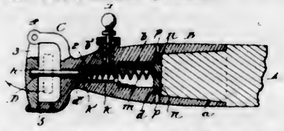
4. A power mechanism comprising an outer rotary eccentric to which the power is primarily applied, an inner rotary part having external teeth, a swaying annular disk intervening between the outer eccentric and the inner part, said disk engaging the eccentric externally, and having internal teeth engaging the teeth of the inner part and differential in point of number, a sliding pin seated in the frame of the mechanism for locking the disk to prevent its rotating and for relieving it again, and a sliding pin for locking the eccentric and disk together, whereby they may rotate in unison, substantially as herein described.

5. A power mechanism comprising an outer rotary eccentric, an inner rotating toothed part, a swaying annular gear engaging said inner part, and having its teeth differential in point of number to the teeth of said part, an eccentric operating externally on said swaying gear and having external teeth, and a swaying annular disk intervening between the outer eccentric and the inner eccentric, and having internal teeth engaging and differential in point of number to the teeth of said inner eccentric, substantially as herein described.

6. In combination with the basket, the follower, and the fixed screw of a press, the mechanism for operating the follower, consisting of an externally-toothed nut traveling on the screw and bearing in the follower, a swaying annular disk having internal teeth engaging the teeth of the nut and differential in point of number, and an outer rotary eccentric encircling and actuating the swaying disk, substantially as herein described.

7. In combination with the basket, the follower, and the fixed screw of a press, the mechanism for operating the follower, consisting of an externally-toothed nut traveling on the screw and bearing in the follower, a swaying annular disk having internal teeth engaging the teeth of the nut and differential in point of number, an outer eccentric encircling and actuating the swaying disk, a lever for rotating the eccentric, a sliding pin for locking and relieving the swaying disk, and a sliding pin for locking the eccentric and disk together and for relieving them, substantially as herein described.

378,193. HORSE-DETACHER. NOAH CRIM, Galton, Ill. Filed Dec. 12, 1887. Serial No. 257,630. (No model.)



Claim.—1. The combination, with a ferrule having the eye C, contracted and shouldered passage $b\ b^3$, and slot *f*, of the bolt-spindle D, having pin *l*, and the spiral spring *m*, substantially as and for the purpose described.

2. The combination, with the ferrule having eye C, passage $b\ b^3$, and slot *f*, of the bolt-spindle D, having pin *l*, the spring *m*, and the spring-catch 1, substantially as and for the purpose stated.

3. The combination, with the ferrule having socketed eye C, socket *a*, contracted and shouldered passage $b\ b^3$, and slot *f*, of the shouldered and socketed bolt-spindle D, having pin *l*, the spiral spring *m*, and an abutment at the rear of said spring, substantially as and for the purpose described.

4. The combination, with the ferrule B, having eyes C, provided with the hinged bar 3 and means for securing the bar, and slotted at *f*, of the spring-actuated bolt-spindle D, provided with the pin *l*, substantially as and for the purpose described.

5. The combination, with a whiffletree, of the ferrules B, having socketed eye C, socket *a*, contracted and shouldered passage $b\ b^3$, and slot *f*, the shouldered and socketed bolt-spindles D, having pin *l*, provided with eye F^2, the spiral springs *m*, and the disks *n*, secured in the ferrule-socket *a*, all substantially as and for the purpose described.

6. The combination, with the evener-bar A^3 and whiffletrees A A, each provided at their ends with slotted ferrules B, having spring-actuated spindle-bolt provided with pin *l*, of the pivoted levers *r r* on said bar A^3, the connections *q* between said pins *l* and the ends of said levers *r*, and the connections *t*, all substantially as and for the purpose described.

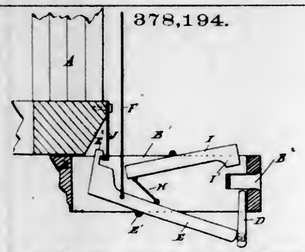
7. The combination, with a double whiffletree comprising the evener-bar A^3 and the whiffletrees A A, of the ferrules B, having eye C, socket *a*, contracted passage $b\ b^3$, and slot *f*, the bolt-spindles D, having pin *l*, spring *m*, and abutment therefor, the pivoted levers *r* on said bar A^3, the connections *q* between said pins *l* and the ends of said levers *r*, and the connections *t*, all substantially as shown, and for the purpose described.

378,194. CAR-COUPLING. WILLIAM H. DAWSON, Harlan, Iowa. Filed Oct. 27, 1887. Serial No. 253,497. (No model.)

Claim.—1. In a car-coupling, the combination, with a lever and means for operating the same, of a coupling-pin held on the front end of said lever and adapted to engage the coupling-link, a guide-lever adapted to engage the inner end of the coupling-link, and a link pivotally connecting said lever with said guide-lever, substantially as shown and described.

2. In a car-coupling, the combination, with a draw-head having a front opening and a vertical slot, of a lever operating in said vertical slot and fulcrumed on said draw-head, a coupling-pin held on the front end of the said lever and moving at the inner end of said front opening in the draw-head, and a guide-lever pivotally connected by a link with the said lever, substantially as shown and described.

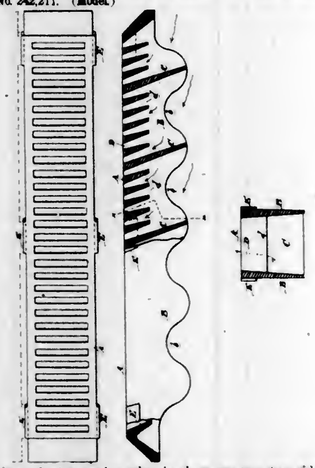
378,194.



3. In a car-coupling, the combination, with a draw-head having a front opening and a vertical slot, of a lever operated from the top of the car and fulcrumed on said draw-head, a coupling-pin held on the front end of the said lever and moving at the inner end of said front opening in the draw-head, a guide-lever having a shoulder and pivotally connected by a link with the said lever, and a spring adapted to engage the inner end of said lever, so as to lock the latter in place when uncoupled, substantially as shown and described.

4. In a car-coupling, the combination, with a draw-head and a coupling-link adapted to pass through the front opening in the said draw-head, of a lever fulcrumed on the said draw-head, a foot-lever on top of the car and connected with said lever, a coupling-pin held on the front end said lever and adapted to engage the said coupling-link, a guide-lever having a shoulder adapted to engage the said coupliuk, a link connecting said guide-lever with said lever, and a spring adapted to engage the inner end of said lever, so as to lock the latter in place, substantially as shown and described.

378,195. GRATE-BAR. ISAAC N. DICKINSON, Reading, Pa., assignor to the Pennsylvania Iron Works, same place. Filed June 23, 1887. Serial No. 242,211. (Model.)



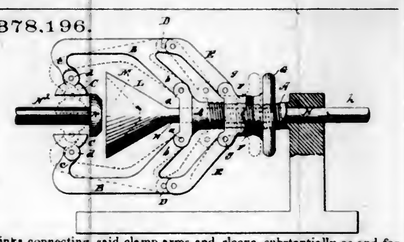
Claim.—1. A grate-bar wherein there are two deep side webs parallel to each other, having cast thereto a series of shallow oblique cross-webs, forming air-spaces which are rectangular parallelogram in form and increase in area as they are removed from the surface of the bar, and deep cross-webs arranged at intervals apart and including between two such deep cross-webs a series of shallow cross-webs, the said deep oblique webs having the same direction of obliquity as the shallow webs and extending considerably below said shallow webs.

2. A grate-bar having a flat top and two deep side webs having serrated lower edges, the top being perforated between the said webs, forming oblique air-passages, which increase as they are removed from the surface of the bar.

378,196. MACHINE FOR TRUING VALVE PLUGS, SEATS, &c. DANIEL F. DUNN, Columbus, Ohio, assignor of one-half to John S. Ellis, same place. Filed Oct. 15, 1887. Serial No. 252,429. (No model.)

Claim.—1. The combination, with a tubular spindle having clamp-arms pivoted thereto, of a sliding sleeve fitting upon the spindle and

378,196.



links connecting said clamp-arms and sleeve, substantially as and for the purpose described.

2. The combination, with a screw-threaded tubular spindle having clamp-arms pivoted thereto, of a sliding sleeve fitting upon the spindle, links connecting said clamp-arms and sleeve, and screw-nut G, substantially as and for the purpose described.

3. The combination, with a tubular spindle having clamp-arms pivoted thereto provided with pivoted clamp-jaws C, of a sliding sleeve fitting upon the spindle and links connecting said clamp-arms and sleeve, substantially as and for the purpose described.

4. The combination, with a screw-threaded tubular spindle having clamp-arms pivoted thereto provided with pivoted clamp-jaws, of a sliding sleeve fitting upon the spindle, links connecting said clamp-arms and sleeve, and screw-nut G, substantially as and for the purpose described.

5. The combination, with a tubular spindle having clamp-arms pivoted thereto, a sliding sleeve fitting upon the spindle, and links connecting said clamp-arms and sleeve, of a shaft having rotatable and sliding bearing in said sleeve, provided with a burring or grinding head, substantially as and for the purpose described.

6. The combination, with a tubular spindle having clamp-arms pivoted thereto, a sliding sleeve fitting upon the spindle, and links connecting said clamp-arms and sleeve, of a shaft having rotatable and sliding bearing in said sleeve, provided with a funnel-shaped opening, M, with burring or grinding surface, substantially as and for the purpose described.

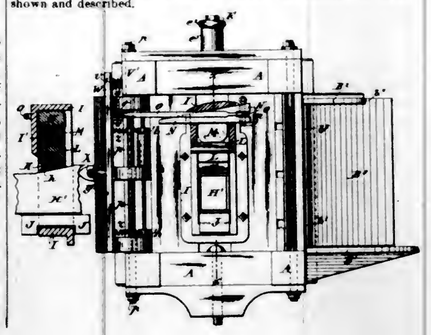
7. The combination, with a screw-threaded tubular spindle having clamp-arms pivoted thereto, a sliding sleeve fitting upon the spindle, links connecting said clamp-arms and sleeve, and screw-nut, of a shaft having rotatable and sliding bearing in said spindle, provided with a burring or grinding head, substantially as and for the purpose described.

8. The combination, with a screw-threaded tubular spindle, A, having clamp-arms B B pivoted thereto, provided with pivoted clamp-jaws C C, a sliding sleeve, F, fitting upon the spindle, links E E, connecting said clamp-arms and sleeve, and screw-nut G, of a shaft, H, having enlargement L, with funnel-shaped opening M, with burring or grinding surface, and provided with crank-handle K, all substantially as shown and described, for the purpose specified.

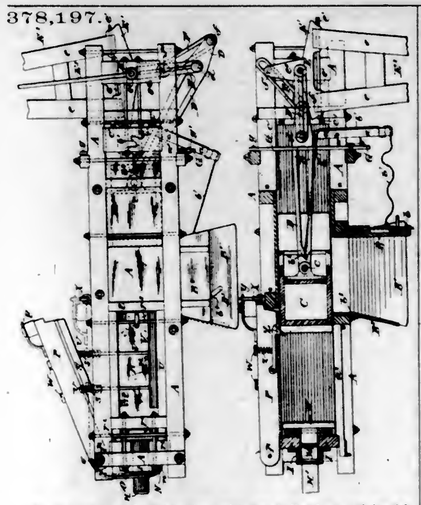
378,197. HAY-PRESS. GEORGE ERTEL, Quincy, Ill. Filed Mar. 22, 1884. Serial No. 125,163. (No model.)

Claim.—1. In a hay-press, the combination, with the press-case A, the feed-door B, the table B', and the hood B^3, of the hinged side B^3, provided with the stop or shoulder b^4, substantially as herein shown and described, and for the purpose set forth.

2. In a hay-press, the combination, with the follower-lever D, of the notched lever G and the cord or chain g', substantially as herein shown and described.



378,197.



3. In a press, the combination, with the baling-box and its follower, of a movable head-block facing the follower, said head-block having a backwardly-extending beam, and gripping devices engaging the beam of the head-block to lock the latter in position, substantially as described.

4. In a press, the combination, with the baling-box and a follower, of a movable head-block having a backwardly-extending beam and gripping devices acting to clamp the head-block yieldingly to place, substantially as described.

5. The combination, with the movable head-block and its beam H', of inclines or shoulders h and gripping devices acting on the inclines for locking the head-block in place, substantially as described.

6. The combination, with the movable head-block H and one or more inclines or shoulders, h, on its beam H', of a grip-block, K, seated on the inclines, and of a clamp for holding the block K to the beam, substantially as described.

7. The combination, with the movable head-block H and one or more inclines or shoulders, h, on its beam A', of a grip-block, K, held with one face on the beam and so as to rock in direction of the length of the beam, and a clamp for holding the block K to the beam, substantially as described.

8. The combination, with the movable head-block H and one or more inclines or shoulders, h, on its beam H', of a grip-block, K, held to bear on the beam, and seated by a concavo-convex joint in a block, L, and a clamp for holding the grip-block to the beam, substantially as described.

9. The combination, with the movable head-block H and inclines or shoulders h on its beam H', of a grip-block, K, held by spring-pressure against the beam, substantially as described.

10. The combination, with the movable head-block H and inclines or shoulders h on its beam H', of a grip-block, K, and a key, N, for holding the grip-block on the beam, substantially as described.

11. The combination, with the movable head-block H and inclines h on its beam H', of a grip-block, K, a key, N, and a spring interposed between the key and grip-block, substantially as described.

12. The combination, with the movable head-block H and inclines or shoulders h on its beam H', of the grip-block K, the block L, on or in which the block K rocks in direction of the length of the beam, a key, N, and a spring, M, interposed between the key and block L, substantially as described.

13. The combination, with the movable head-block H, having inclines or shoulders h on its beam H', and a clamp for holding the beam, of a removable block, J, substantially as described.

14. The combination, with the movable head-block H, having inclines or shoulders h on its beam H', of the grip-block K, a clamp for holding the grip-block to the beam, a removable block, J, held at the side of the beam opposite the gripping devices, and a box or casing, I, in which the gripping devices are held loosely to place, substantially as described.

15. The combination, with the movable head-block H, having inclines or shoulders h on its beam H', and the removable block J, of the grip-block K, and a clamp for holding said block to the beam, said block K and holding devices being held in a box or casing, I, having a partial cover, I', which keeps the grip-block K in place in box I when the block J is in place and permits the removal of said block K when the block J is removed, substantially as described.

16. The combination, with the movable head-block H and its beam H', having inclines or shoulders h, of the box I, having partial cover I', the block J, held loosely in the box, the self-seating grip-block K L, the spring M, and a key, N, fitted in the box I and adapted to press the grip-block to the beam, said parts K L M being held to place by the cover I', substantially as described.

17. In a press, the movable head-block H, constructed with a beam, H', having inclines h, ranging upward and inward, and an incline, h', ranging downward and inward, and said incline h' so located with relation to the beam-clamp that the latter will be relieved from pressure while the head-block H rests against the end wall of the press-case, and so that the grip-block shall readily ride up said incline h' as the head-block is pushed in for pressing the first charge of material for the next bale, substantially as described.

18. In a press, the following elements in combination: a follower for pressing the successive charges of material, a movable head-block, a clamp for holding the head-block against the thrusts of the follower, and a driving-lever, D, pivoted to the follower and connected to the sweep by a loose link, F, and a pivoted arm, D', whereby when the lever D is forced past the longitudinal center of the press the follower shall be forced backward by the expansion of the successively-pressed charges of material, and with the parts D D' F in position for the next instroke of the follower by a return-stroke of the sweep, substantially as described.

19. In a press, the combination of a follower, a movable head-block, and a clamp for holding the head-block in the different positions, said clamp being operated to release and bind the head-block by the opening and closing of the bale-discharge door of the press-case, substantially as described.

20. The combination, with the movable head-block H, its beam H', having inclines or shoulders h, and a grip-block, K, for holding the head-block, of a clamp for clamping the block K on the beam H' and a rod connecting said devices with the door P of the press-case, substantially as described.

21. The combination, with the movable head-block H, its beam H', having inclines or shoulders h, the grip-block K, and the key N, of the rod O, connecting the key with the door P, so that said key N will be loosened and tightened by the opening and closing of the door P for releasing and binding the head-block H, substantially as described.

22. A press constructed with a relief or slack side to the baling-box, and means operated from a bale-discharge door at one side of the press-case for holding or binding the slack side against the outward pressure of forming the bale, substantially as described.

23. The combination, with the press-case and baling box, of the slack side R, the bar r, secured to the inner end of the slack side and engaging a cross-piece or bolt of the press-frame, and a transverse plate, r', secured to the outer end of slack side and resting on a fixed cleat, r^3, on the press-case, substantially as described.

24. The slack side R of the baling-box, having an incline, T, along its front edge, in combination with the wedge-block V, adapted to enter at the rear edge of side R between said side and a shoulder of the press-frame, a wedge, S, on the door P, and means, substantially as described, for tightening the rear wedge, V, by the closing of the door P as said door forces its front wedge, S, on the incline T of slack side R, substantially as described.

25. The combination, with the slack side R, having incline T, the door P, having a wedge, S, the wedge V, and plate U, of the bars V', fixed to the wedge, and the projections W, fixed to the door P, substantially as described.

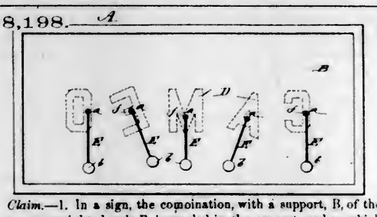
26. The combination, with the wedge V, plate U, and slack side R, of the springs s, acting to loosen the wedge as the door P is opened, substantially as described.

27. The combination, with the slack side R, wedge V, rods V', and springs s, of the stops t, substantially as described.

28. In a press, the following elements in combination: a follower, C, its pivoted lever D, connected with the sweep by a loose link, F, arms D', pivotally tying the sweep to the lever D, a movable head-block held by a clamp while the successively-pressed charges of material expand to force the follower C outward and project the lever D to either side of the press-case, intermediate mechanism for connecting the door P and the head-block clamp, whereby the head-block will be released and clamped by the opening and closing of the door P, and a slack side, R, to the baling-box, released and bound by the door P simultaneously with the gripping and releasing of the head-block, the whole arranged for successive action in pressing the bales, substantially as described.

378,198. SIGN. ANDREW F. FOAHS, New York, N. Y. Filed Jan. 5, 1888. Serial No. 259,864. (No model.)

378,198.



Claim.—1. In a sign, the comoination, with a support, B, of the bent counterweighted rods E, journaled in the support, and to which the letters are attached, substantially as and for the purposes described.

2. The sign herein shown and described, the same consisting of the support B, letters D, and rods E, journaled in said support, one end of each rod being counterweighted, the other being bent to form a crank, *d*, to which the letter is attached, substantially as described.

3. In a sign, the rods E, counterweighted at one end and bent to form the horizontal portion *c*, in combination with the letters D and support B, in which the rods are journaled, substantially as shown and described.

4. In a sign, the support B, formed with orifices *a*, in which are fitted the tubes *f*, in combination with the bent and counterweighted rods E, journaled in said tubes, and the letters D, secured to the rods, substantially as described.

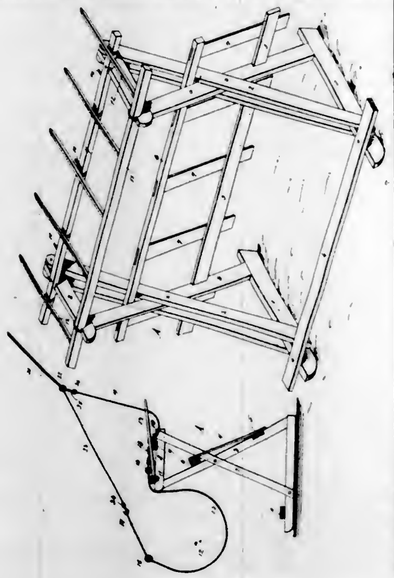
378,199. GATE-HINGE. OSCAR M. HAWLEY, Church's Corners, Mich. Filed July 12, 1887. Serial No. 244,059. (No model.)

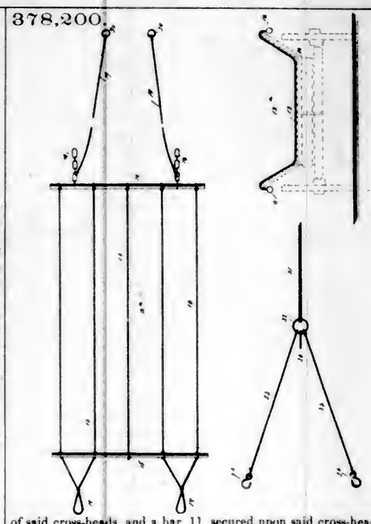


Claim.—The slotted bar A, having the horizontal arms *a*, provided with apertures *a'*, and with the legs *b*, in combination with the bracket D, the wheel D', and the bolts for securing the bracket to the bar, substantially as herein shown and described.

378,200. HAY UNLOADER AND STACKER. OVANDO HOYT, Ovando, Mont. Filed Aug. 18, 1887. Serial No. 247,275. (No model.)

Claim.—1. A rack provided with crossed end bars, 2 and 3, horizontal bases 1, a longitudinal guide-beam, 5, attached at one side to the end bars, a longitudinal bar, 6, adapted to rest in the upper crotch of the end bars, having a series of slats, 7, attached at right angles thereto, adapted to rest upon the guide-beam 5, cross-heads 8, uniting the end bars, a longitudinal pin-carrying bar, 9, secured near one end





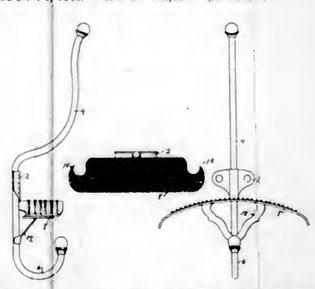
of said cross-heads, and a bar, 11, secured upon said cross-heads having attached slats adapted to project beyond and rest upon the pin-carrying bar, substantially as and for the purpose herein set forth.

2. A sling for unloading hay, consisting of a series of parallel spaced lines, 13, attached at each end to poles 15 and 16, loops 17, secured to the pole 15 near each end, chains 18, secured to the said pole 16 near its ends, and ropes 19, provided with rings 20, attached to said chains, substantially as and for the purpose herein set forth.

3. A sling for unloading hay, consisting of a series of parallel spaced lines, 13, poles 15 and 16, secured to said lines, loops 17, projecting from the outer side of said pole 15 at each end, aligning centrally the space intervening the outer lines, 13, and the next adjoining line, chains 18, secured to the outer side of the pole 16, aligning the loops 17, and ropes 19, carrying rings 20, secured to said chains, substantially as and for the purpose herein set forth.

4. The combination, with the rack A, provided with the upper fixed longitudinal bar, 9, having attached pins 10, the parallel bar 11, provided with slats 12, the guide-bar 6 and attached slats 7, and the guide-bar 5, of the sling 12*, consisting of the parallel spaced lines 13, attached poles 15 and 16, the loops 17, secured to the pole 15, chains 18, secured to the pole 16 in alignment with said loops, said chains adapted to engage the rack-pins 10, ropes 19, attached to said chains, carrying rings 20, and means for manipulating said sling upon the rack substantially as set forth.

378,201. COAT-HOOK. WILLIAM H. JACOBY, Minneapolis, Minn. Filed Nov. 8, 1887. Serial No. 254,612. (No model.)



Claim.—1. In a coat-hook, the combination of the curved supporting-plate 8, having the roughened or uneven upper surface, and the screw-plate 2, secured to the said supporting-plate, in the manner and for the purpose substantially as described.

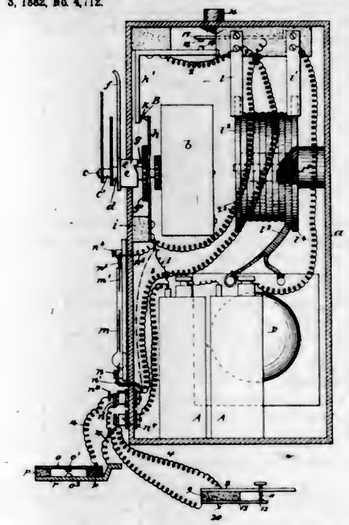
2. A coat-hook provided with the curved supporting-plate 8, having the roughened or uneven surface, and having the pointed hooks 10 at or near the back corners of said plate.

3. A coat-hook of the class described, provided with the curved plate 8, having the roughened or uneven upper surface, substantially as described.

4. In a coat-hook, the combination of the curved supporting-plate 8, having the roughened or uneven upper surface, the screw-plate 2, and the projecting hook 6, all substantially as described.

5. The coat and hat hook comprising the curved plate 8, provided with a roughened or uneven upper surface, the projecting upper hook, 4, the lower hook, 6, and the screw-plate 2, all arranged substantially as described.

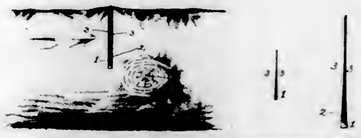
378,202. ELECTRIC TIME, TEMPERATURE, AND BURGLAR ALARM AND CALL-BELL. HARRY P. F. JENSEN, BROWNE W. WEBB, and JENS JENSEN, London, County of Middlesex, England. Filed May 24, 1887. Serial No. 239,256. (No model.) Patented in England Oct. 3, 1882, No. 4,712.



Claim.—1. The combination, with a carriage or hand clock, of an electrical battery located within the frame of the clock, a rotary drum carrying flexible conductors having their terminals connected with an electrical bell in circuit with aforesaid battery, a device arranged around the hour-hand shaft, carrying an indicator and adapted to close circuit at a predetermined time, a thermometer connected with the frame of said clock and in the electrical circuit with aforesaid battery and bell, a burglar-alarm, servants' signal and call in circuit with the aforesaid battery and bell, the whole forming a complete device.

2. The combination, in a clock-movement, of the sleeve encircling the outer shaft of the clock-hands, said sleeve mounted with an indicator adapted to be adjusted in front of the dial or face of the clock, the rear end of said sleeve provided with a notch adapted to receive a pin screwed to a wheel of the clock-movement, said wheel adapted to be pushed forward by means of an electrical contact-spring in circuit with a battery and bell, substantially as shown and described.

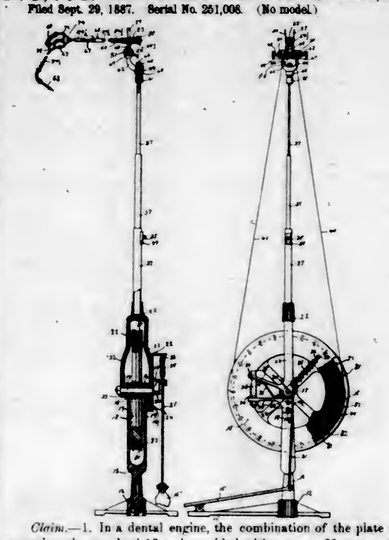
378,203. SAW. LOUIS LOEHMAN, Jacksonville, Fla. Filed May 27, 1887. Serial No. 239,555. (No model.)



Claim.—1. A reciprocating saw-blade having concaved and gradually-tapering sides from the points of the teeth to its opposite edge.

2. A saw-blade of taper form transversely from the points of the teeth to the rear edge of the blade and having concaved side faces, substantially as set forth.

378,204. DENTAL ENGINE. WILLIAM B. MANN, Baltimore, Md. Filed Sept. 29, 1887. Serial No. 251,008. (No model.)



Claim.—1. In a dental engine, the combination of the plate 24, secured to the standard 13 and provided with an arm, 25, a stop, 26, the foot 28, extended from the vibrating arm 22, and a spring, 31, for the purpose set forth.

2. In a dental engine, the combination of the plate 24, secured to the standard 13, the arm 25, extending from one side of the plate 24, the stop 26, the foot 28, extended from the vibrating arm 22, the spring 31, the arm 32, extended from the other side of the said plate 24, the pitman 21, the crank 20, and the spiral spring 35, for the purpose set forth.

3. In combination with a dental engine, the arm 32, extended from the standard 13 and rising to a point above the crank 20 when the said crank is at its highest point, the pitman 21, the crank 20, and the spiral spring 35, one end of the said spiral spring 35 being secured to the crank end of the pitman and the other end thereof secured to the extremity of the arm 32, for the purpose set forth.

4. In a dental engine, the combination of a driving-pulley, 18, with a groove, 81, around its periphery, the elastic plugs 82, set in the said groove 81, and the ends of said plugs projecting therefrom, the shaft 17, the crank 20, the treadle 15, the driven pulley 55, and the belt 40, for the purpose set forth.

5. In combination with a dental engine, the vibrating arm 22, provided at its free end with the cone 41, on which is seated and free to rotate thereon the pulley-head 43, and a pulley-head, 43, consisting of the bifurcated frame 42, the bearing-screws 48, the plate 51, the guard 56, the bearing 59, the pulley 55, the shaft 54½, and a locking device composed of the locking-lever 57, the spring 59, and the slots 62, formed in the frame 42, for the purpose set forth.

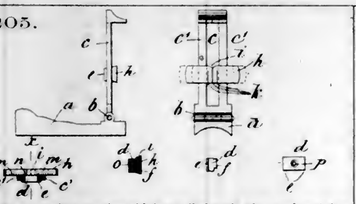
6. In combination with a dental engine, the pulley-head 43, the pulley 55, and a flexible shaft consisting of the sectional shaft 54½, the twisted-wire shaft 80, and the sectional casing 65 68, the sections forming the said casing 65 68 being joined by the hinge 67 on one side thereof, and the opposite side thereof provided with a slotted stop-plate, 69, and tongue 72, whereby the movement of said hinge 67 is limited and additional support rendered the said joint, for the purpose set forth.

7. In combination with a dental engine, the pulley-head 43, the pulley 55, and a flexible shaft consisting of the sectional shaft 54½, the twisted-wire shaft 80, and the sectional casing 65 68, the sections forming the said casing being connected by a hinge, 67, a slotted stop-plate, 69, a tongue, 72, and a swivel-joint, 74, whereby a universal movement may be given this joint, for the purpose set forth.

378,205. SIGHT FOR FIRE-ARMS. JOSEPH MARTON, Montreal, Quebec, Canada, assignor of one-half to Charles Carter Newton, same place. Filed Nov. 25, 1887. Serial No. 256,062. (No model.)

Claim.—1. In sights for fire-arms, the combination of a bar provided with ordinary sights and marks, also having a dovetailed groove, a block having a dovetailed projection arranged to fit the dovetailed groove of the said bar, the same being so arranged that the said bar

378,205.

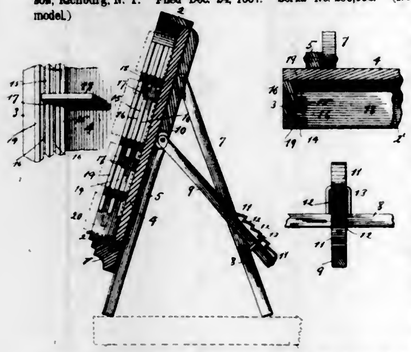


may slide transversely upon the said dovetailed projection, and uprights *c' c'*, arranged to form a guide to the said block in its vertical movement, the whole substantially as described.

2. In sights for fire-arms, the combination of the uprights *c' c'*, block *d*, arranged to slide between and be guided by the said uprights, and provided with a dovetailed projection, *f*, and flanges *e*, bar *h*, provided with dovetailed groove *g*, fitted to slide on the dovetailed projection *f*, the whole substantially as described.

3. In sights for fire-arms, the combination of the uprights *c' c'*, block *d*, arranged to slide between the said uprights, and provided with a dovetailed projection, *f*, and flanges *e*, also having set-screw *o*, with bar *h*, having groove *g*, arranged to slide upon the projection *f*, the whole substantially as described.

378,206. **STAND FOR DISPLAYING GOODS.** RALPH H. MAXSON, Richburg, N. Y. Filed Dec. 24, 1887. Serial No. 258,988. (No model.)

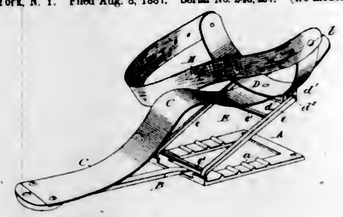


Claim.—1. In a stand for displaying goods, a casing having an open front and sides formed with grooves connecting at intervals with spaces, and shelves with ends having projections adapted to engage said grooves and rest on strips forming said grooves, substantially as described.

2. A stand for displaying goods, consisting of an open-front casing having sides formed with grooves connecting at intervals with spaces, and shelves with projections on their ends adapted to slide in said grooves and resting on short strips forming the grooves, and an adjustable folding pivoted brace-support, substantially as described.

3. A stand for displaying goods and other articles, consisting of open-front casing 1, having its sides 2, with open spaces 20 at their ends, and provided with grooves 16, extending between spaces 17, movable shelves 18, having projections 19, engaging strips 15, supporting strips or legs 5, and a folding support, 6, and folding brace arm 9, having shouldered spring-catch 11, engaging loop 13 on support 6, substantially as described.

378,207. **HEAD-REST FOR COFFINS.** JOHN MCGRATH, New York, N. Y. Filed Aug. 8, 1887. Serial No. 246,427. (No model.)

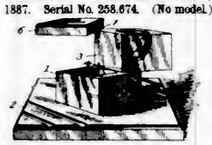


Claim.—1. A head-rest for a corpse, consisting of a base, a longitudinal curved plate attached to said base adapted to the contour of the neck and head, a concave plate transversely attached to said curved plate, and means for vertically adjusting the combined plates over the base, substantially as set forth.

2. A head-rest for a corpse, consisting of a base, a longitudinal plate attached to said base curved to conform to the contour of the neck and head, a concave plate secured transversely to said longitudinal plate, a detachable chin-strap attached to said concave plate, and means for adjusting the combined plates above the base, substantially as and for the purpose herein set forth.

3. A head-rest for a corpse, consisting of a base having a racked upper surface, a longitudinal plate attached to said base curved to conform to the contour of the neck and head, a concave spring-plate secured transversely to the longitudinal plate, provided with a detachable chin-strap, and a frame pivoted beneath the longitudinal plate, adapted to engage the racked surface of the base, substantially as and for the purposes herein set forth.

378,208. **INKSTAND.** FREDERICK MITCHELL, Brooklyn, N. Y. Filed Dec. 22, 1887. Serial No. 258,674. (No model.)



Claim.—1. A double inkstand consisting of one inkstand pivoted to and resting upon another, forming a cover thereto, and provided with a suitable cover, substantially as described.

2. The combination, with an inkstand, of an inkstand connected thereto by a detachable pivot-pin, and resting thereon to form a cover, and having a detachable cover pivoted thereto, substantially as described.

3. A double inkstand consisting of an inkstand with a detachable cover resting upon another inkstand and serving as a cover thereto, and connected therewith by a detachable pivot-connection, substantially as described.

4. A double inkstand consisting of inkstand 1, having the base 2, and the inkstand 3, having the cover 6 pivoted thereto by means of pin 7, resting in the socket 8, the inkstand 3 being pivoted to the inkstand 1 by means of pivot-pin 4, resting in the sockets 5 of the inkstand 3 and inkstand 1, substantially as described.

378,209. **ROLLS FOR ROLLING GIRDER-RAILS.** ARTHUR J. MOXHAM, Johnstown, Pa. Filed Dec. 19, 1887. Serial No. 258,285. (No model.)

Claim.—1. Rolls for rolling wide-flanged girder-rails, provided with one or more dummy passes, whose action in said passes is concentrated on the outer or extreme edges of the lower flanges of the rails, substantially as and for the purposes set forth.

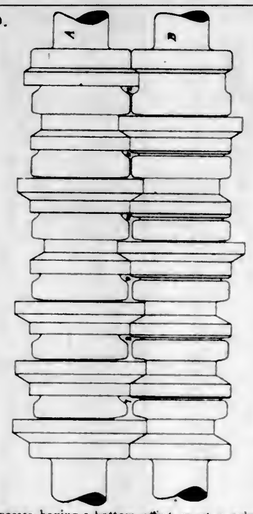
2. Rolls for rolling wide-flanged girder-rails, provided with one or more dummy passes, whose action in said passes is concentrated on the outer or extreme edges of the lower flanges of the rails, and with edging-passes, wherein the maximum draft of the rolls is concentrated on the inner and thicker points of said flanges, substantially as and for the purposes set forth.

3. Rolls for rolling wide-flanged girder-rails, provided with passes substantially of the shape or form showo in the accompanying drawings, and numbered from 1 to 9, inclusive, as and for the purposes set forth.

378,210. **ROLLS FOR ROLLING GIRDER-RAILS.** ARTHUR J. MOXHAM, Johnstown, Pa. Filed Dec. 19, 1887. Serial No. 258,286. (No model.)

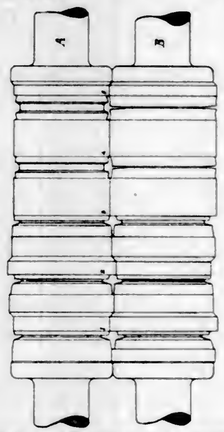
Claim.—1. Rolls for rolling girder-rails, provided with one or more dummy passes having a bottom offset, as at *p*, substantially as and for the purposes set forth.

378,210.



2. Rolls for rolling girder-rails, provided with passes substantially of the shape or form shown in the accompanying drawings, and numbered from 1 to 12, inclusive, as and for the purposes set forth.

378,211. **ROLLS FOR ROLLING FLANGELESS CENTER-BEARING RAILS.** ARTHUR J. MOXHAM, Johnstown, Pa. Filed Dec. 19, 1887. Serial No. 258,288. (No model.)



Claim.—1. Rolls for rolling flangeless center-bearing rails, provided with finishing dummy passes having therein the draft of the rolls concentrated upon the metal being rolled on the upper portion of the side trams adjoining the head of the rail, and also on the under side of said trams on either side of and adjoining the web of the rail substantially as described, for the purposes set forth.

2. Rolls for rolling flangeless center-bearing rails, provided with passes having substantially the shapes or combinations respectively shown in the accompanying drawing, and numbered from 1 to 5, inclusive.

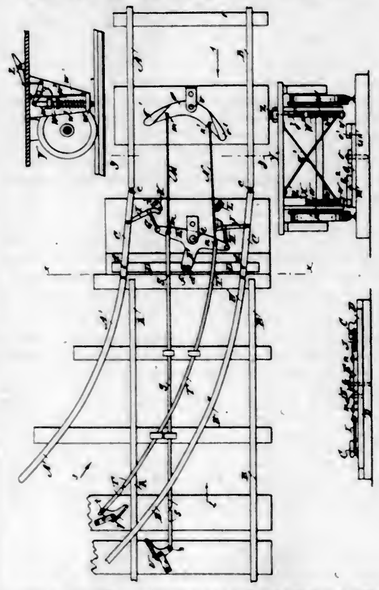
378,212. **METHOD OF FOLDING MOSQUITO-NET, TARLATAN, AND OTHER PIECE GOODS.** ISAAC R. PALMER, Middletown, Conn. Filed Oct. 22, 1887. Serial No. 253,048. (No model.)

Claim.—The method of folding mosquito-net and other piece goods, consisting in first folding the goods lengthwise and from opposite directions alternately, as from *a* to *b*, to *c*, to *d*, in then folding the goods transversely to their length and from opposite directions alternately, as from *e* to *f*, to *g*, to form plies of determined length, and in finally folding the said plies also transversely to the length of the goods to form a compact package, substantially as herein described.

378,212.



378,213. **RAILROAD-SWITCH.** JOHN J. PRETZ, Galveston, Tex., assignor to himself and Edward J. Biering, same place. Filed Mar. 18, 1887. Serial No. 231,403. (No model.)



Claim.—1. The combination, in a railroad-switch and with the main-line rails A B and siding-rails A' B', of pivoted switch-rails C C, a bar, D, connecting them, a lever, E, fulcrumed to the road-bed and having an arm, F, slotted at *f*, a pin, *d'*, passed through said slot into the bar D, latch-bars I J, pivoted to the switch-rails, links G H, connecting the bars I J with the lever E, and lugs L K on the road-bed, against which the bars I J are adapted to lock to hold the switch open and closed, substantially as shown and described.

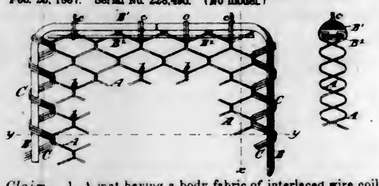
2. The combination, in a railroad-switch and with the main-line rails A B and siding-rails A' B', of pivoted switch-rails C C, a bar, D, connecting them, a lever, E, fulcrumed to the road-bed and having an arm, F, slotted at *f*, a pin, *g'*, passed through said slot into the bar D, latch-bars I J, pivoted to the switch-rails, links G H, connecting the bars I J with the lever E, lugs K L on the road-bed, against which the bars I J are adapted to lock, a lever, O, fulcrumed to the road-bed, and rods M N, connecting the levers E O, substantially as shown and described.

3. The combination, in a railroad-switch, of main-line rails A B, siding-rails A' B', pivoted switch-rails C C, a bar, D, connecting the switch-rails, a lever, E, fulcrumed on the road-bed and having an arm, F, slotted at *f*, a pin, *d'*, passed through said slot into the bar D, latch-bars I J, pivoted to the switch-rails, links G H, connecting the bars I J with the lever E, lugs K L on the road-bed, against which the bars I J may lock, a lever, U, fulcrumed to the road-bed, and a rod, S, connecting the levers E U, substantially as shown and described.

4. The combination, in a railroad-switch and with the main-line rails A B and siding-rails A' B', of pivoted switch-rails C C, a bar, D, connecting them, a lever, E, fulcrumed to the road-bed and having an arm, F, slotted at *f*, a pin, *d'*, passed through said slot into the bar D, latch-bars I J, pivoted to the switch-rails, links G H, connecting the bars I J with the lever E, lugs K L on the roadside, against which the bars I J may lock, a lever, V, fulcrumed to the road-bed at the siding-rails, and a rod, T, connecting the levers E V, substantially as shown and described.

5. A trip-bar device carried by an engine or car for operating a railroad-switch, and comprising a bar, as X, fitted on the engine or car, a spring, x^3, adapted to normally lift the bar, and a cylinder, Z', containing a piston, connected to the bar X, substantially as shown and described.

378,214. WIRE MAT. WILLIAM R. PITT, Brooklyn, N. Y. Filed Feb. 23, 1887. Serial No. 228,490. (No model.)

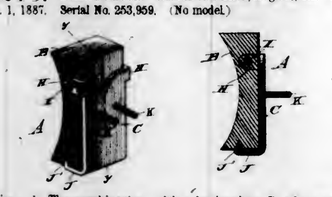


Claim.—1. A mat having a body fabric of interlaced wire coils extending parallel with each other and with the opposite side edges or margins of the mat, and having its coils at their points of interlaced contact united by solder, and a frame surrounding and bracing the body fabric, and serving to hold it in its flat state and to prevent deflection and the consequent breaking of the solder at the points of connection, substantially as herein described.

2. A mat composed of a body fabric of connected wire coils extending parallel with each other and with opposite edges or margins of the mat, and a frame formed of side bars or portions, B, extending through the side coils parallel with their axes, and which are embraced by the side coils and are much larger in transverse section than the wire of which the coils are made, and end bars or portions to which the ends of the coils are secured, substantially as herein described.

3. A mat composed of a body fabric of connected wire coils extending parallel with each other and with opposite edges or margins of the mat, and a frame consisting of side bars or portions, B, extending through the side coils parallel with the axes thereof, and which are embraced by the regular convolutions of the side coils, and double end bars between the two parallel members of which the end portions of the coils are secured, and which when the two parallel members are combined are not greater in depth than the thickness of the mat, whereby provision is afforded for the mat to rest throughout its extent upon a flat surface, substantially as herein described.

378,215. BRAKE-BLOCK. GEORGE A. POSSON, Angwin, Cal. Filed Nov. 1, 1887. Serial No. 253,959. (No model.)

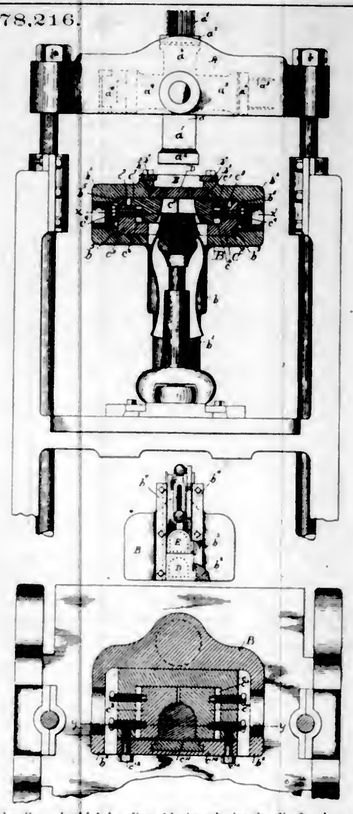


Claim.—1. The combination, with a brake-shoe, B, of a metallic back formed with upper side flanges, H, embracing the sides of the block, and with bottom flange, J, having upward-projecting points J' entering the lower end of the shoe, substantially as set forth.

2. As a new article of manufacture, a back for brake-shoes comprising the metal plate C, formed with upper side lugs, H, the bottom flange, J, having points J', and the attaching-bolts K, projecting from the rear face of said plate, substantially as set forth.

3. The combination, with a brake-shoe, of a back provided at its upper end with flanges fitting over the sides of said brake-shoe, a bolt passing through said flanges and through said brake-shoe transversely, a flange formed on the lower end of said back and provided with upwardly-projecting lugs passing into the bottom of the brake-shoe, substantially as shown and described.

378,216. HEEL FORMING AND ATTACHING MACHINE. FREEBORN F. RAYMOND, 2d, Newton, Mass. Filed Nov. 21, 1887. Serial No. 255,673. (No model.)



Claim.—1. The combination, in a heel attaching or forming machine, of the templet, a die-block, and the die-sections c^4 c^4, horizontally adjustable in relation to each other in the die-block, substantially as described.

2. In a heel attaching or forming machine, a die-block and the die-sections c^4 c^4, horizontally adjustable in the die-block, substantially as described.

3. In a heel attaching or forming machine, the combination of a die with a plate or block, c^{11}, a surface of which forms the breast end of the die and which is adjustable lengthwise the die for the purpose of increasing the length of the die, as and for the purposes described.

4. In a heel attaching and forming machine, a die having the vertically-movable breast plate or block, as and for the purposes described.

5. In a heel attaching or forming machine, the combination of the die-block C, the sections c^4 c^4 of a die supported thereby, and the adjusting-screws c^5, substantially as described.

6. The combination, in a heel attaching or forming machine, of the die-block having the shoulders c^4 c^5, with the die-sections c^4 c^4, having the flanges c^7, and the screws c^6, substantially as described.

7. The combination, in a heel attaching or forming machine, of the die-block or die, the plate or block c^{10}, and the adjusting-screws c^{12}, substantially as described.

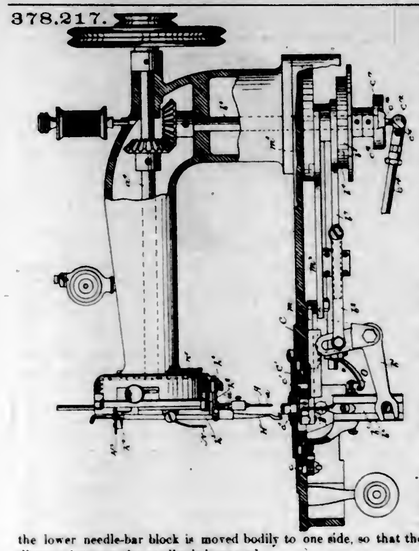
8. The combination, in a heel attaching or forming machine, of the die-block C, the die-sections c^4 c^4, their adjusting-screws c^6, the breast plate or block c^{10}, and their adjusting-screws c^{12}, substantially as described.

9. The combination, in a heel attaching or forming machine, of a vertically-movable table, a templet carried by the said table, a die-block also supported by said table, a sectional die supported by said die-block and adjustable as to size, a support for the boot or shoe or heel blank, and a pressure-block, a gang of awls, and gang of drivers adapted to be brought successively into operative position and to be reciprocated, substantially as described.

378,217. BUTTON-HOLE STITCHING AND BARRING MACHINE. JAMES H. REED, Lynn, Mass., assignor, by mesne assignments, to the Globe Button-Hole Machine Company, Kittery, Me. Filed Dec. 16, 1886. Serial No. 221,721. (No model.)

Brief.—Two reciprocating eye-pointed needles pierce the material at such a distance apart that one is upon the line of the depth-stitch and the other at the edge. Upper and lower looping devices co-operate with the needles to form the binding-stitch. To form the bar

378,217.



the lower needle-bar block is moved bodily to one side, so that the distance between the needles is increased.

Claim.—1. In a button-hole stitching and barring machine, the combination of a clamp-plate and means for providing it with an intermittent feed-movement with a needle and means for reciprocating it continuously in the same direction or vertical path or plane and another needle and means for reciprocating it first in one vertical path or plane during the stitching of a certain part of the button-hole and for moving the needle and continuing its reciprocation upon another vertical path or plane during the stitching of the bar of the button-hole, and suitable looping devices, substantially as and for the purposes described.

2. The combination of the clamp-plate and means for providing it with an intermittent feed movement, the needles and mechanism for reciprocating them upon parallel planes or in parallel paths during the stitching of the sides and eye of the button-hole, and devices for increasing the space between them without interrupting their movement or reciprocation, with proper looping devices and devices for automatically stopping or limiting the feed movement of the clamp-plate at the instant that the change in the relative positions of the needles takes place, substantially as described.

3. The combination of the clamp-plate and means for imparting to it an intermittent feed movement, the upper needle, A, and its needle-bar a' and cam for operating the same, the lower needle, B, and its needle-bar b' and cam for operating the same, and the needle-bar block b^3 and means for moving said block laterally and for holding it in its new position, substantially as described.

4. The combination of the upper needle, A, and means for reciprocating it, the lower needle, B, and means for reciprocating it, the looper H, having the point h, the rounded surfaces h' h^2, and the groove h^1, and means for moving the same, substantially as described.

5. The combination of the upper needle, A, and means for reciprocating it, the looper-arm h^3, having the point h, the rounded surfaces h' h^2, and groove h^1, the operating-cams h^3 h^{11} and intermediate devices connecting the cams with the looper-arm, and the lower eye-pointed needle, B, and means for reciprocating it, substantially as described.

6. The combination of the needle A and means for reciprocating it, the looper-arm h^3, pivoted by a pivot, h^9, the cam h^3, the lever h^5, the link h^7, connecting the end of the lever with the looper-arm h^3, the plate h^{13}, having the cam-slot h^{11}, and the end h^{10} of the looper-arm which enters said cam-slot, substantially as described.

7. The combination of the reciprocating eye-pointed needles A B and means for varying their relations to each other automatically during their operation, with upper and lower thread-carrying and loop-forming devices having an invariable throw or movement for the two positions of the needles, and the clamp-plate provided with means for giving the same an intermittent feed movement, substantially as described.

8. The combination of the clamp-plate provided with means for giving the same an intermittent feed movement during the stitching of the sides and eye of the button-hole, the reciprocating upper straight eye-pointed needle, A, the reciprocating lower straight eye-pointed needle, B, and means for moving the same, whereby it is reciprocated upon one plane during the stitching of the sides and eye of the button-hole, and then automatically transferred to a new position to increase the distance between it and the needle A and reciprocated, and a loop-forming device above the clamp-plate, and a loop-forming device below the clamp-plate, both of which have invariable movements for both positions of the needle, substantially as described.

9. The combination of the reciprocating needle A, the reciprocating needle B, the needle-bar b', its under needle-bar block, b^3, the arm F, the clamp-plate provided with means for giving the same an intermittent feed movement, and a latch operated by the clamp-plate to release a spring for moving the said arm F with the said spring, substantially as described.

10. The combination of a reciprocating needle, B, the needle-bar b', the under needle-bar block, b^3, a clamp-plate having an intermittent feed movement, a latch operated by the movement of the clamp-plate against it to release a spring adapted to move said block b^3 laterally, and said spring, substantially as described.

11. The combination of the needle B, the needle-bar b', the needle-block b^3, a spring constantly acting upon the needle-block b^3 to move it horizontally in one direction, a latch or similar holding device for holding the needle-bar in a given position in opposition to the stress of the spring, and means for moving the latch or holding device to release the needle-bar and permit the spring to move the needle-block, substantially as described.

12. The combination of the needle B, the needle-bar b', the lever b^5, connected with the needle-bar b' in a manner to permit of the horizontal movement of the bar in relation to the movable needle-block b^3, a spring bearing against the same, and a latch or lock for holding the needle-block in opposition to the stress of the spring, and devices for moving or actuating the latch or lock, substantially as described.

13. The combination of a clamp-plate provided with means for giving the same an intermittent feed movement, the movable needle-block b^3, the needle B and needle-bar b', the arm g upon the needle-block b^3, and the wedge-block G and holding-block G' thereon, with a slide-plate having the wedge-block G^2 and movable holding-block G^3, substantially as described.

14. The combination of the clamp-plate provided with means for giving the same an intermittent feed movement, the needle B, the needle-bar b', the needle-block b^3, its arm g, the wedge-block G, the holding-block G^3, the slide-plate and the wedge-block G^2, a slide-block, G^4, and spring g^4, for moving the slide-block, substantially as described.

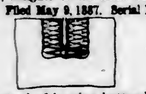
15. The combination of the movable under needle-bar block, b^3, the clamp-plate, a slide-plate, c', the clamp-plate provided with means for giving the same an intermittent feed movement, and mechanism connecting the clamp-plate with the slide-plate c', whereby the said slide-plate is adapted to be moved by the clamp-plate to release the needle-block b^3, and a device connecting the slide-plate with the block b^3, whereby upon the movement of the clamp-plate and release of the slide-plate c' the under needle-bar block is returned to its original position, substantially as described.

16. The combination of the upper reciprocating eye-pointed needle, A, with the looping mechanism comprising the slide m, the block M, having the thread-engaging point m', the pin m^2, carried by the slide m, the curved arm m^4, pivoted at m^3 and having the loop-spreading point m^4, and spring m^5, substantially as described.

17. The combination of the arm F, having the slot f^2, the stud f^4, the under needle-bar block, b^3, and the adjusting-screws f^5 f^6, substantially as described.

18. The combination of the clamp-plate provided with means for giving the same an intermittent movement, the reciprocating upper needle, A, the reciprocating lower needle, B, the under needle-bar block, b^3, the upper looper, H, the lower looping devices, m' m^2, the upper take-up, N, and the lower take-up, O, as and for the purposes described.

378,218. METHOD OF BARRING BUTTON-HOLES. JAMES H. REED, Lynn, Mass., assignor to the Globe Button-Hole Machine Company, Kittery, Me. Filed May 9, 1887. Serial No. 237,534. (No model.)



Claim.—The method of barring button-holes with two threads herein described, comprising the forming of holes in the material in which the button-hole is formed, one upon each side of the button-hole slit at the end opposite the eye, passing the bight of one thread through one of the holes, opening its loop upon the under side of the material, and passing the bight of the second thread through said loop and the other hole, and opening the bight above the material to form a

hum for the reception of the bight of the first-named thread in the

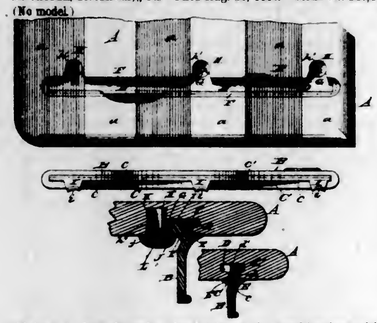
378,221. PROPELLER-WHEEL. WALTER L. STRONG, San Fran-

mally connected to said shaft to be rotated by and with it, and mech-

Claim.—1. A receptacle and display-box for containing and sup-

loop for the reception of the bight of the first-named thread in the formation of the second stitch, so forming two or more stitches of a length twice or substantially twice that of the length of the stitch of the edge of the button-hole, and then forming a shorter locking-stitch by forming two holes closer to each other than those first named and passing the bights of the two threads through the holes and opened loops, as specified, as and for the purposes set forth.

378,219. SEAT OR BACK FASTENING FOR FURNITURE. JOHN M. SAUDER, Bloomsburg, Pa. Filed Aug. 20, 1887. Serial No. 247,432. (No model.)
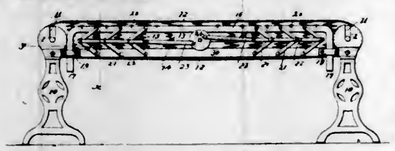


Claim.—1. In a fastening for furniture, the combination, with a seat or back provided with an undercut groove, D, having lateral extensions or recesses G H, and an arm or iron provided with a flange, C, engaging the groove D, and provided, also, with faces i, which with the outer parts of the recesses G H form holes to receive fastening devices, of fastening studs or pins fitted in said holes, substantially as herein set forth.

2. In a fastening for furniture, the combination, with a seat or back provided with an undercut groove, D, having lateral recesses or extensions G H, the parts H of which are deeper than the parts G thereof, and an arm or iron provided with a flange, C, engaging the groove D and provided, also, with faces i, which with the outer parts of the recesses form holes to receive fastening devices, of fastening studs or pins fitted in said holes, substantially as herein set forth.

3. In a fastening for furniture, the combination, with a seat or back provided with an undercut groove, D, having lateral extensions or recesses G H, of an arm or iron provided with a flange, C, engaging the groove D, and provided, also, with flanges E, adapted to bear on the seat or back, and said arm or iron also having faces *i*, which with the outer parts of the recesses G H form holes to receive fastening devices, and fastening studs or pins fitted in said holes, substantially as herein set forth.

378,220. HOSPITAL TRANSFER-BED. ELIZABETH DOUGLAS STAPLES, West New Brighton, and HUGH E. ASHCRAFT, Goshen, N. Y., assignors to said Elizabeth Douglas Staples. Filed Oct. 11, 1887. Serial No. 252,098. (No model.)

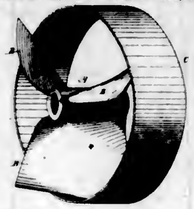


Claim.—1. The combination, with a bed-frame, of drums supported thereby, a belt supported by the drums, and springs mounted upon cross-slats that are supported by the bed-frame and arranged to support the upper length of the belt, substantially as described.

2. The combination, with a bed-frame, of drums supported thereby, an endless belt carried by the drums, side bars loosely connected to the bed-frame, rollers journaled in said side bars, and a means, substantially as described, for raising the side bars, as and for the purpose stated.

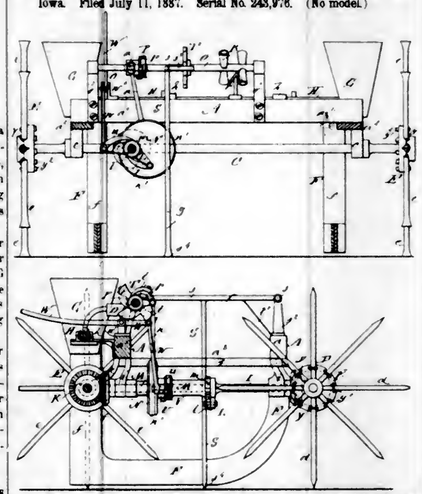
3. The combination, with a bed-frame, of rollers or drums supported thereby, a belt supported by the rollers, springs mounted upon slats and arranged to support the upper length of the belt, side bars, 16, provided with downwardly-extending legs 17, clips 19, by which the legs are loosely held to the bed-frame, toggle-levers 21, connected to the bed-frame and to the side bars, 16, a central drum, and connections between said central drum and the toggle-levers, substantially as described.

378,221. PROPELLER-WHEEL. WALTER L. STROUD, San Francisco, Cal. Filed Dec. 22, 1887. Serial No. 258,771. (No model.)



Claim.—The propeller consisting of the hub and spirally-disposed blades projecting radially therefrom, in combination with the hoop or band secured to and inclosing the forward portion of the blades, while the rear portion of the blades are inclosed and extend rearwardly from the hoop or band, substantially as herein described.

378,222. CHECK-ROW PLANTER. AUGUST F. TIEDE, Deep Creek, Iowa. Filed July 11, 1887. Serial No. 243,976. (No model.)



Claim.—1. In a check-row planter, the combination, with a frame, A, shafts B C, journaled thereon, and spacers D E, fixed to the shafts, substantially as specified, of a shaft, I, journaled on the frame between the shafts B C, and gearing J K on the shafts B C I, substantially as shown and described, whereby the spacers and their shafts will be caused to rotate in unison, as and for the purposes set forth.

2. In a check-row planter, the combination, with a frame, A, shafts B C, journaled thereon, spacers D E on said shafts, and a shaft, I, journaled on the frame between the shafts B C, substantially as specified, of a seed box or boxes on the frame, a slide, H, adapted to drop the seed and provided with an arm, *r*, a cam-wheel or eccentric, N, held on the shaft I, a strap, *n'*, on said wheel and provided with an arm, *n*, a shaft, O, journaled on the frame and carrying tappets R and a ratchet, P, a loose arm, *o*, on shaft O and provided with a pawl, *p*, engaging ratchet P, and said arm *o* connected to the strap-arm *n*, substantially as described, for the purposes set forth.

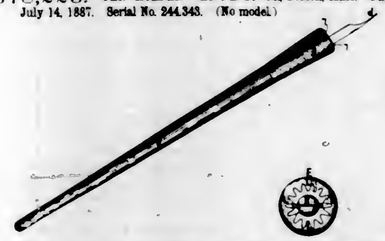
3. In a check-row planter, the combination, with a frame, A, shafts B C I, journaled thereon and geared together at J K, and carrying spacers D E, substantially as specified, of a cam-wheel, N, held to the shaft I, a strap, *n'*, on said wheel and provided with an arm, *n*, a shaft, O, journaled on the frame and carrying a tappet-wheel, T, and a ratchet, P, a loose arm, *o*, on shaft O and provided with a pawl, *p*, engaging the ratchet P, and said arm *o* connected to the strap-arm *n*, a marker-bar, S, fixed to a lever, *s*, fulcrumed on the frame, and said lever engaged by the tappet-wheel T, substantially as described, for the purposes set forth.

4. In a check-row planter, the combination, with a frame carrying seed-boxes and a slide adapted to drop seed therefrom, spacers supporting the frame from the ground, and a shaft, as I, driven from the spacer-shaft, of a sleeve placed loosely on the shaft I and normally connected to said shaft to be rotated by and with it, and mechanism connecting the cam-wheel with the seed-slide-operating devices, substantially as specified, whereby the cam-wheel may be set independently of the shaft I or the spacers to adjust the seed-dropping slide to assure planting in accurate check-row, as herein set forth.

5. In a check-row planter, the combination, with a frame, A, carrying a seed box or boxes, and a slide, H, adapted to drop seed therefrom, spacers supporting the frame from the ground, a shaft, I, driven from the spacers, a shaft, O, journaled on the frame and carrying a ratchet, P, and a loose arm, *o*, provided with a pawl, *p*, engaging the ratchet, and devices on shaft O actuating the seed-dropping slide H, substantially as specified, of a sleeve, M, loose on the shaft I and provided with a ratchet, *m*, an arm, L, fixed to said shaft and carrying a pawl, *l*, engaging the ratchet *m*, a cam-wheel or eccentric, N, fixed to the sleeve, a strap, *n'*, on wheel N, and having an arm, *n*, connected to the arm *o* on the shaft O, substantially as shown and described, whereby as the shaft I is turned from the spacers the sleeve M and cam-wheel N will be turned to actuate the seed-dropping slide, and whereby, also, the cam-wheel may be set independently of the shaft I to adjust the slide to assure planting in accurate check-row, as herein set forth.

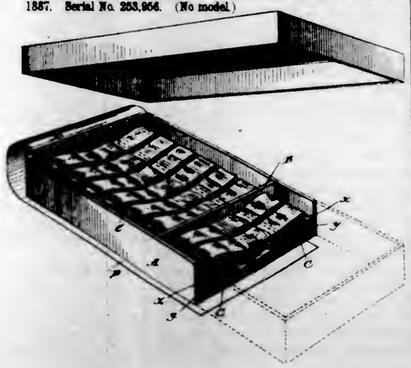
6. In a check-row planter, the combination, with a frame, A, carrying a seed box or boxes, and a slide, H, adapted to drop seed therefrom, spacers supporting the frame from the ground, a shaft, I, driven from the spacers, a shaft, O, journaled on the frame and carrying a ratchet, P, and a loose arm, *o*, provided with a pawl, *p*, engaging the ratchet, and devices on shaft O actuating the seed-dropping slide H, substantially as specified, of a sleeve, M, loose on the shaft I and provided with ratchets *m* V, an arm, L, fixed to shaft I and carrying a pawl, *l*, engaging the ratchet *m*, a cam-wheel or eccentric, N, fixed to the sleeve, a strap, *n'*, on wheel N, and having an arm, *n*, connected to the arm *o* on the shaft O, an arm, U, loose on shaft I and carrying a pawl, *u*, engaging the ratchet V, a lever, W, fulcrumed on the frame A, and a connection, *w*, between said lever and the arm U, all arranged for operation substantially as described, for the purposes set forth.

378,223. PEN-HOLDER. LEVI L. TOWER, Boston, Mass. Filed July 14, 1887. Serial No. 244,343. (No model.)



Claim.—A pen-holder consisting of the body portion A, provided with a tenon, B, having an annular socket or groove, D, provided with a cork sleeve, E, one end of which is fitted within the said groove, and its opposite end portion provided with a re-enforce metal tube, H, having a series of points, L, which contact with the end of the said sleeve, as shown, all being constructed and arranged substantially as described.

378,224. DISPLAY-BOX FOR NECKTIES. JOHN W. M. UHRIG, New York, N. Y., assignor to James French, same place. Filed Nov. 1, 1887. Serial No. 253,956. (No model.)



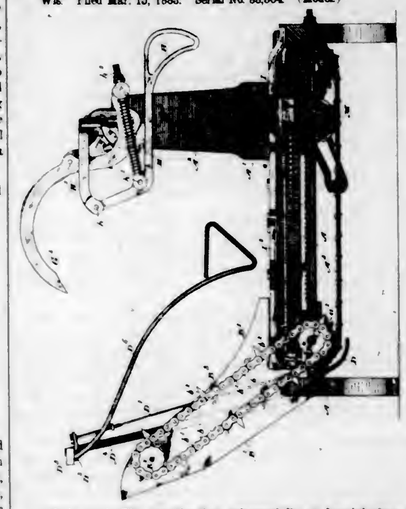
Claim.—1. A receptacle and display-box for containing and supporting neckties, of substantially the character described, having its side walls provided with longitudinally and inwardly extending wings, substantially as described.

2. A receptacle and display-box for containing and supporting neckties, of substantially the character described, having its side walls provided with longitudinally-extending side wings, each formed of an angularly-bent strip of suitable stiff material, one angular portion of which is secured by paste or cement to one of the inner sides of said box, substantially as and for the purpose described.

3. A receptacle and display-box for containing and supporting neckties, of substantially the character described, having its side walls intermediate of its height provided with longitudinally-extending side wings, and having a transverse partition, B, substantially as and for the purpose described.

4. A receptacle and display-box for containing and supporting neckties, of substantially the character described, provided with a transverse partition, B, and having its side walls intermediate of its height provided with longitudinally-extending side wings, each formed of an angularly-bent strip of suitable stiff material, one angular portion of which is secured by paste or cement to one of the inner sides of said box, all substantially as and for the purpose described.

378,225. GRAIN-BINDER. CHARLES B. WITHINGTON, Janesville, Wis. Filed Mar. 15, 1883. Serial No. 88,304. (Model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the trip-lever, its rock-shaft, the cam secured to the end of said rock-shaft and having two concentric tracks connected by an incline, the pivoted arm resting upon said cam-tracks, the link suspended from the end of said arm, and the trip-stop or shipper actuated by said link.

2. The combination, substantially as hereinbefore set forth, of the trip-lever, its rock-shaft, the block pinned to the end of said rock-shaft, the compensating cam sleeved loosely on the rock-shaft, and the clamping-nut taking from the end of the block into a curved slot in the cam, whereby said cam may be adjusted radially about the rock-shaft.

3. The combination, substantially as hereinbefore set forth, of the trip-lever, its rock-shaft, the compensating cam adjustable radially about the end of said shaft, the pivoted arm having a roller which follows the tracks of the cam, and the link connecting the end of said arm with the trip-stop or shipper.

4. The combination, substantially as hereinbefore set forth, of the grain-chute, its ledges, the feed-chain mounted between said ledges with its teeth projecting above their edge, and the sprocket-wheels at the head and foot of the ledges, whereby said chain is supported and driven.

5. The combination, substantially as hereinbefore set forth, of the ledges on the grain-chute for the passage of the binder-arm, outwardly curved at their feet, the trip-lever overhanging said ledges at their lower ends, and the toothed feed-chain mounted on sprocket-wheels at the head and foot of said chute between two of said ledges.

6. The combination, substantially as hereinbefore set forth, of the reciprocating binding-carriage, the chain by which it is driven, the inner sprocket-wheel which actuates said chain, the tripping-clutch between the sprocket-wheel and its driving-shaft, the trip arm or lever to throw said clutch into engagement whenever a gavel of proper size accumulates, and mechanism operated by a wiper or tappet upon the carriage-chain to throw said clutch out of engagement.

7. The combination, substantially as hereinbefore set forth, of the continuously-rotating shaft, the driving-dog pivoted midway of its length to a pin rigid with said shaft, the wheel and stop-pin with which said dog engages, and mechanism acting alternately on either of the dog to rock it upon its pivot and throw it in and out of engagement.

8. The combination, substantially as hereinbefore set forth, of the disk upon the driving-shaft, the driving-dog pivoted to a pin from said disk, the sprocket-wheel and its stop, the pin from the dog projecting through a slot in the disk, and means whereby said dog may be caught or latched at each extreme of its movement along said slot.

9. The combination, substantially as hereinbefore set forth, of the disk fixed to the driving-shaft, the driving-dog pivoted to said disk, the sprocket-wheel and its stop, and the trip-stop or shipper arranged to be lifted into the path of the heel of said dog to tip it upon its pivot and bring it against the stop upon the sprocket-wheel to drive the latter.

10. The combination, substantially as hereinbefore set forth, of the disk fixed to the driving-shaft, the driving-dog pivoted to said disk and having a pin projecting through a slot in the disk, the sprocket-wheel and its stop against which said dog may be thrown, the trip-stop or shipper arranged to be lifted into the path of the heel of the dog to tip the latter upon its pivot and bring it against the stop, and the disengaging-stop adapted to be brought against the projecting pin to push the dog up along the slot and disengage it from the stop.

11. The combination, substantially as hereinbefore set forth, of the disk fixed to the driving-shaft, the driving-dog pivoted to said disk and having a pin projecting laterally through a slot in the disk, the sprocket-wheel and its stop, and the disengaging-stop adapted to be brought against the pin to push the dog up along the slot and disengage it from the stop.

12. The combination, substantially as hereinbefore set forth, of the disk fixed to the driving-shaft, the driving-dog mounted upon a pivot-pin fixed to said disk, the cam upon the end of said pivot-pin, the spring-pressed block in the dog, and the roller carried by said block, pressing against the edge of the cam in order to latch the dog at the extremes of its vibration.

13. The combination, substantially as hereinbefore set forth, of the disk fixed to the driving-shaft, the driving-dog mounted upon a pivot-pin fixed to said disk, the heart-cam upon the end of said pin, the spring-pressed sliding block in the body of said dog, the roller carried by said block and pressing against the edge of the cam, the sprocket-wheel and its stop, the pin projecting from the dog through a slot in the disk, the trip-stop or shipper, and the disengaging-stop.

14. The combination, substantially as hereinbefore set forth, of the slotted disk fixed to the driving-shaft, the driving-dog pivoted to said disk, the sprocket-wheel and its stop, the trip-stop or shipper acting against the heel of said dog, the trip-lever operating said shipper, and the disengaging-stop to return the dog into position at the end of the binding operation to throw the dog away from the stop or driving-pin.

15. The combination, substantially as hereinbefore set forth, of the driving-dog pivoted to the fixed disk, the sprocket-wheel and its driving-pin, the chain driving the reciprocating binding-carriage, the tappet on said chain, the pawl lifted by said tappet, and the disengaging-stop brought into effective position by said pawl.

16. The combination, substantially as hereinbefore set forth, of the pawl, the tappet by which it is lifted, the shaft or spindle which it rocks, and the disengaging-stop pivoted to said shaft or spindle in such manner as to be permitted a further motion irrespective of the pawl after it has been lifted into position for action by the latter.

17. The combination, substantially as hereinbefore set forth, of the reciprocating binding-carriage, the chain by which it is moved back and forth, a lug or shoulder on said chain, and a pawl upon the fixed frame-work adapted to drop behind said shoulder and prevent retrograde movement of chain and carriage.

18. The combination, substantially as hereinbefore set forth, of the carriage-chain, the tappet fixed upon said chain, the clutch between the sprocket-wheel and the driving-shaft, the disengaging-stop, the pawl by which said stop is brought into position when lifted by the tappet, and the shoulder behind said tappet into which the pawl drops to prevent retrograde motion of the carriage.

19. The combination, substantially as hereinbefore set forth, of the binder-arm, the cord-tucker pivoted thereto, and the stop-motion by which said tucker is operated in the sweep of the arm.

20. The combination, substantially as hereinbefore set forth, of the binder-arm, the tucker pivoted thereto, the disk fixed to the support ing-bracket and provided with two curved tracks, with an intermediate tooth, and the curved shoes upon the heel of the cord-tucker, with intermediate recess to receive said tooth, whereby the tucker is locked in between the sides of the binding-arm during a portion of the movement of the latter, and then advanced quickly and locked at a fixed distance in front thereof during the remainder of its movement.

21. The combination, substantially as hereinbefore set forth, to form a knotting device, of a cam-surfaced conoidal shell serving to guide and deflect the cord as it revolves, jaws pivoted within such shell and adapted to be projected through an aperture in its crown to form a practical continuation thereof, and means whereby said jaws may be retracted within the shell after they have seized the ends of the cord.

22. The combination, substantially as hereinbefore set forth, to form a cord-knotter, of a cam-surfaced conoidal shell, a jaw pivoted within such shell, so as to be projected and retracted through an aperture in the crown thereof, and a second jaw connected to the shank of the first, so as to slide relatively thereto, and forming the upper jaw, a link connected to the shank of said second jaw, and means whereby the link may be reciprocated to project the jaws and open the upper away from the lower, and to close and retract them.

23. The combination, substantially as hereinbefore set forth, in a cord-knotter, of two jaws opening away one from the other, a stop or shoulder upon the crown of the outer jaw, exposed when said jaw is open to check the cord-loop from slipping off, and raised sides to the inner, between which said shoulder sinks as the jaws close to permit the escape of the loop.

24. The combination, substantially as hereinbefore set forth, of the two jaws connected in such manner that one may slide relatively to the other to open and close them, the shoulder upon the crown of the upper jaw to prevent the loop from slipping off while the two are open, and the raised sides to the lower jaw, beneath which said shoulder sinks when the two are closed.

25. The combination, substantially as hereinbefore set forth, of the cam-surfaced conoidal shell, the lower jaw pivoted therein, the upper jaw connected to said lower jaw in such manner that its shank slides along the shank of the other, the shoulder on the crown of the upper jaw, and the raised sides to the lower jaw, between which said shoulder sinks as the jaws are closed.

26. The combination, substantially as hereinbefore set forth, of the cam-surfaced conoidal shell, the lower jaw pivoted therein, the upper jaw connected to the first, so as to slide relatively thereto, the link attached to the shank of the upper jaw to project it and the other through the opening in the crown of the shell and open said upper jaw away from the lower jaw and to close and retract them, and the stop against which the shank of the upper jaw comes as the two are retracted to open said jaws for the release of the knot.

27. The combination, substantially as hereinbefore set forth, of the cam-surfaced conoidal shell, the jaws pivoted therein, the pinion fixed to the tubular shank of said shell, the link depending through said shank and operated to project and retract said jaws at the proper moment, and the rack by which the shell and jaws are rotated.

28. The combination, substantially as hereinbefore set forth, to form a slack-give-up for the knotter, of the channeled supporting-block, the bar sliding therein, the flange upon said bar, the pin projecting laterally from said flange, the finger pivoted above the flange and having a shoe whereby it is lifted as the flange passes beneath, and also a lateral pin corresponding to the pin upon the flange.

29. The combination, substantially as hereinbefore set forth, of the cord-holder, the binding-arm, the revolving knotter or tying-bill, the vibrating finger serving to lift and guide the cord ends as the knotter revolves and direct them into its open jaws, and a slack-give-up between said knotter and binding-arm operating to store up a slack length of the spool-cord and yield it as the knotter demands.

30. The combination, substantially as hereinbefore set forth, of the revolving tying-bill, the sliding bar, its flange and lateral pin, the guide-finger pivoted above said flange and raised and locked thereby, the lateral pin from said finger, and the heel projection of said finger, whereby a slack length is formed in the cord and afterward yielded up to the knotter and the two strands of cord guided between the jaws of the knotter.

31. The combination, substantially as hereinbefore set forth, of the channeled block slotted to admit the cord, the stationary holding-jaw supported on one side of the slot, the spring-pressed holding-jaw acting against said stationary jaw and projecting over the channel, and the laterally-grooved sliding bar embracing said spring-pressed jaw and having shoulders which come on each side thereof to force the cord between it and the stationary jaw.

32. The combination, substantially as hereinbefore set forth, of the channeled block slotted to admit the cord and having a re-entrant notch or recess, as described, the stationary jaw on one side of said slot, the spring-pressed jaw acting against said stationary jaw and beveled or slanting toward the slot, projecting over and covering the re-entrant notch and partly over the channel in the block, and the laterally-grooved sliding bar embracing said projecting portion of the spring-pressed jaw and having shoulders which force the cord on each side thereof and between it and the stationary jaw.

33. The combination, substantially as hereinbefore set forth, with the beveled spring-pressed jaw and the laterally-grooved sliding bar embracing said jaw and having shoulders to force the cord against it, of the stationary jaw cut away beyond the clamping-point to permit the escape of fag ends.

34. The combination, substantially as hereinbefore set forth, of the beveled spring-pressed jaw, the channeled supporting-block, the stationary jaw or lug rising therefrom, and the face-plate, of hardened metal, laid against said jaw or lug, grooved to receive the ribbed edge of the movable jaw.

35. The combination, substantially as hereinbefore set forth, of the channeled block slotted to admit the cord, the stationary holding-jaw on one side of said slot, the spring-pressed jaw acting thereagainst, the laterally-grooved sliding bar and its shoulders, and the knife overlying said sliding bar and acting against its upper shoulder to sever the cord between the holder and the knotter.

36. The combination, substantially as hereinbefore set forth, of the cord-holder, a slack-storing device intermediate between it and the knotter, and a sliding bar so controlled as to advance a suitable distance during the movement of the knotter to yield up slack from the storing device and then make another and distinct advance to carry the cord ends into the holder.

37. The combination, substantially as hereinbefore set forth, of the knotter, the cap covering and protecting it, the cylindrical lug on said cap, the cord-gate fixed to a pivot or spindle within said lug and projecting across the cord-slot, the spring within the lug, whereby the gate is held closed, and the arm and pin acted upon by the incline upon the segment-rack which drives the knotter to open the gate to admit the cord as the binder-arm descends.

38. The combination, substantially as hereinbefore set forth, with the knotter, of the segment-rack pivoted to the reciprocating binding-carriage, the eccentric-pin on said segment, and the cam-track in the transverse casting, into which said pin takes, whereby the rack is operated during a portion of the traverse and held fixed during another portion.

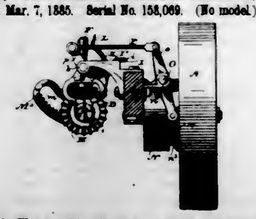
39. The combination, substantially as hereinbefore set forth, of the knotter, its retracting jaws, the link connected to said jaws, the elbow-lever to which said link is collared, the pin or anti-friction roll at the other end of said lever, and the cam-track in the transverse casting, having straight sections and an intermediate incline, whereby the link and jaws are held projected during a portion of the traverse, are quickly retracted during a succeeding portion, and are held in said retracted position during the remaining portion.

40. The combination, substantially as hereinbefore set forth, of the sliding bar in the knotting-head, the swinging arm to which it is connected, the pin on said arm, and the cam-track which said pin follows, having two inclined portions and intermediate and terminating straight portions, whereby said bar is stationary at the commencement of the outward traverse, is then moved to give up slack, and again held stationary, next moved to push the cord into the holder and to sever it, and finally again held stationary during the remainder of the outward traverse.

41. The combination, substantially as hereinbefore set forth, with the knotter, of the segment-rack, the cam-track by which it is actuated, the elbow-lever, and the cam-track by which said lever is operated, said tracks being shaped and relatively arranged as described.

42. The combination, substantially as hereinbefore set forth, of the reciprocating binding-carriage, the knotter, the segment-rack by which it is operated, the retracting jaws and the elbow-lever operating them, the cord holder and cutter, the sliding bar and the arm to which it is connected, the transverse casting, and the three cam-tracks in said casting operating said rack, elbow-lever, and arm in the manner described.

378,226. GRAIN-BINDER. CHARLES R. WITHINGTON, Janesville, Wis. Filed Mar. 7, 1885. Serial No. 158,069. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of a knotter mounted in an oscillating head, a cord-holder located in the plane of oscillation of said knotter, so that the knotter may move toward the holder in the tying operation, and means whereby the oscillating head is positively swung on its axis to move the knotter toward the holder.

2. The combination, substantially as hereinbefore set forth, of a knotter mounted in an oscillating head, a cord-holder located in the plane of oscillation of said knotter, a lever-arm from the head, and a pitman connected with said lever-arm to swing the head in its bearings.

3. The combination, substantially as hereinbefore set forth, of a knotter mounted in an oscillating head, a bevel-pinion on the knotter-shaft, an intermeshing bevel-gear on a short shaft mounted in said head, a pinion on said short shaft, and a segment-rack, with which said pinion engages, whereby the knotter is rotated as the head is oscillated.

4. The combination, substantially as hereinbefore set forth, of a knotter mounted in an oscillating head, a cord-holder, toward which the knotter is swung in the tying operation, and a cord-cutter mounted upon said oscillating head to accompany the knotter in its movements.

5. The combination, substantially as hereinbefore set forth, of a knotter mounted in an oscillating head, a cord-holder, toward which the knotter is swung in the tying operation, and a cord-guide mounted upon the oscillating head between said knotter and holder and accompanying the knotter in its movements toward and from the holder.

6. The combination, substantially as hereinbefore set forth, of a knotter mounted in an oscillating head, a cord-holder consisting of two slotted cheeks and a pivoted jaw, toward which the knotter is swung in the tying operation, a cord-cutter consisting of a pivoted blade and a curved arm or bracket from the oscillating head, to which bracket said blade is pivoted, and a pin from the pivot of the holder-jaw entering a cam-slot in said bracket and projecting through a second cam-slot in the shank of the cutter-blade, whereby the holder and cutter are actuated as the knotter is swung toward and from the holder.

7. The combination, substantially as hereinbefore set forth, to form a cord-knotter, of a rotating knotting-tube, a cord-hook reciprocating therein, a saddle-piece pivoted to said knotting-tube and provided with curved embracing-arms for the tube and with clamping-shoulders which bind the cord thereagainst to prevent it from being pulled through prior to and during the knotting operation, and means whereby the saddle-piece is opened away from and closed against the tube to receive and clamp the cord.

8. The combination, substantially as hereinbefore set forth, in a cord-knotter, of the rotating knotting-tube, the cord-hook reciprocating therein, the saddle-piece pivoted to said tube and having curved embracing-arms and clamping-shoulders, which latter serve to bind the cord-strands against the tube to prevent them from being pulled through during the knotting operation, the peripheral groove in the knotting-tube opposed to said shoulders, and means whereby the saddle-piece is opened from and closed against the tube to receive and clamp the cord.

9. The combination, substantially as hereinbefore set forth, in a cord-knotter, of the rotating knotter-tube, the cord-hook reciprocating therein, the lug upon the cord-hook playing through a slotted side of the tube, the saddle-piece pivoted to the tube and having curved arms and clamping-shoulders, which latter serve to bind the cord-strands against the tube to prevent them from being pulled through during the knotting operation, and the pin arranged near the pivot of said saddle-piece, with which the lug upon the cord-hook engages to open it, and with which the shank of the hook engages to force it shut.

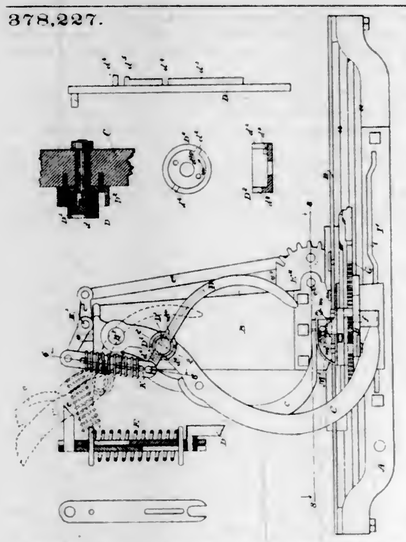
10. The combination, substantially as hereinbefore set forth, of the oscillating stock, the knotter mounted therein, the rock-shaft having an arm connected by a link with an arm from the stock, and the cam-slotted drum upon a constantly-driven shaft, with which another arm from said rock-shaft engages to oscillate the stock and knotter.

11. The combination, substantially as hereinbefore set forth, of the cutter-bracket having a cam-slot composed of two straight reaches and an intermediate deflection, the pivoted cutter-blade having a shank with a cam-slot extending along the other and composed of an initial straight reach, a deflection, and then a short straight reach corresponding to the first reach and deflection and part of the second reach of the first-named slot and another deflection and farther reach, and a pin playing along said cam-slots to operate the cutter-blade.

378,227. GRAIN-BINDER. CHARLES R. WITHINGTON, Janesville, Wis. Original application filed Jan. 14, 1881, Serial No. 94,009. Divided and this application filed Jan. 15, 1884. Renewed July 23, 1887. Serial No. 245,076. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, of the binder-arm, the compressor pivoted thereto and closed positively thereby as the arm descends, and means whereby said compressor is given a further elastic movement at the end of its positive movement.

378,227.



2. The combination, substantially as hereinbefore set forth, of a vibrating binding-arm, a compressor connected with the binder-arm practically as explained, whereby it is opened and closed by the opening and closing of said arm, and means whereby after the closing of the binder-arm and compressor the latter is independently operated to first still further compress the bundle and then return to the starting-point of said independent movement to release said bundle to the initial state of compression.

3. The combination, substantially as hereinbefore set forth, of the binder-arm, the compressor pivoted thereto practically as explained, whereby it has a sliding movement independent of its pivotal movement, the rock-shaft connected to the compressor, the pitman, the mutilated gear, and means for operating said gear.

4. The combination, substantially as hereinbefore set forth, of the binder-arm, the compressor pivoted thereto practically as explained, whereby it has a sliding movement independent of the pivotal movement, the rock-shaft connected to the compressor, the mutilated gear connected to the rock-shaft, the sliding carriage upon which the foregoing parts are mounted, and the rack and delay-tracks on the stationary frame.

5. The combination, substantially as hereinbefore set forth, of the binder-arm, the compressor pivoted thereto practically as explained, whereby it has a sliding movement independent of its pivotal movement, the yielding link and the rock-shaft connected to the heel of the compressor by said link, and means for oscillating said rock-shaft after the binder-arm has closed to give the compressor an additional pivotal movement.

6. The combination, substantially as hereinbefore set forth, of the binder-arm, the compressor, the pivot-pin through which said compressor slides, the rib on said compressor, slotted and having a stop, as described, the stop-pin beyond the rib, the guard-rim fixed to the side of the binder-arm and encircling the pivot-pin and slotted at points diametrically opposite each other, the internal stop-lug alongside one of said slots, the rock-shaft, and the link connecting the heel of the compressor with said rock-shaft.

7. The combination, substantially as hereinbefore set forth, of the knotter, composed of two jaws arranged to close upon each other, and a stripper bearing upon said knotter to shed the loop, and slotted at its point to admit the crossed ends held within the jaws, whereby said loop will be run up toward the gavel while the ends are still held.

8. The combination, substantially as hereinbefore set forth, of a knotter or tying-bill composed of two jaws arranged to close upon each other, a stripper bearing upon said jaws to shed the loop, and slotted at its contacting end to admit the strands held within said jaws, and mechanism actuating the knotter practically as explained, to revolve it sufficiently to take the cord and form the loop and grasp the end stranda, next to close the jaws upon said strands, and finally reverse said knotter to shed the loop and draw the end strands through.

9. The knotter composed of two jaws, one of which opens away from the other, in combination with the spring-pressed stripper having a notch in its outer end coming opposite the crevice between said jaws.

10. The combination, substantially as hereinbefore set forth, of the lower knotter-jaw having a pendent stop, the upper jaw opening and closing toward the other, and the notched spring-pressed stripper.

11. The combination, substantially as hereinbefore set forth, of the tubular shaft carrying one jaw of the knotter, the inclosed spindle carrying the second jaw, the lever yoked to the lower end of spindle, the reciprocating carriage bearing said knotter and lever, and the cam-slot in the stationary way upon which said carriage slides, receiving the free end of the lever, whereby the said lever is vibrated to open and close the jaws as the carriage moves inward and outward.

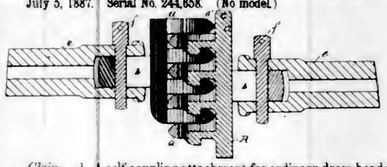
12. The combination, substantially as hereinbefore set forth, with the knotter or tying-bill, of the vibrating cord-guide, its rock-shaft, the tappet extending from said rock-shaft, and the guide-flange on the actuating-sector, having a cam-notch, into which the end of said tappet drops at the proper time to lower the cord-guide away from the knotter.

13. The combination, substantially as hereinbefore set forth, of a rotating knotter or tying-bill, a pinion upon its shank, a vibrating sector provided with a single section of gear-teeth, a crank-arm attached to the sector, a reciprocating carriage upon which the knotter and sector are mounted, and a cam-slot in a stationary plate on the frame over which said carriage travels, of essentially the shape described, whereby the sector is vibrated to rotate the hook in one direction to form the loop, and then is reversed toward the end of its movement to cause the knotter to shed the loop and draw the end strands through.

14. The combination, substantially as hereinbefore set forth, of a reciprocating clamping-bar, a slotted plate in which it moves over friction-surfaces which form the converse part of the holder, and mechanism operating to move said bar to seize the spool-cord first on one side of the slot and then to seize the same cord on the other side of said slot, carrying it in the reverse direction to provide a slack length, and finally to return the bar in the original direction to give up the slack to the holder and to grasp the new strand from the spool.

15. The combination, substantially as hereinbefore set forth, of the reciprocating holder-bar, constructed as described, the friction-plates over which it moves, the crank-arm to actuate it, the traversing binding-carriage, upon which said parts are mounted, and the cam-slot in the stationary plate over which said carriage travels to operate the crank-arm and thereby the holder-bar.

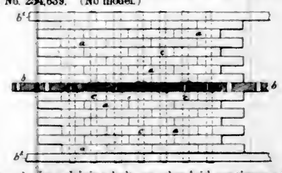
378,228. CAR-COUPLING. HENRY L. ARNOLD, Denver, Colo. Filed July 5, 1887. Serial No. 244,658. (No model.)



Claim.—1. A self-coupling attachment for ordinary draw-heads of railroad-cars having the combination, with the multiple link adapted to be held in the draw-head, of a vertically-adjustable pin having a series of hooks projecting from one of its sides adapted and arranged to have a vertical movement within the multiple link, whereby a link or series of links passed into the multiple link may be held or relieved at the will of the operator, substantially as described and set forth.

2. In a self-coupling attachment for railroad-cars, the combination of the multiple link *a* with the gripping-pin A, provided with an eccentric adjusting-lever, *g*, substantially as described and set forth.

378,229. DRIVING-BELT. FENELON R. BROCK, Washington, D. C., assignor to Charles A. Schieren, Brooklyn, N. Y. Filed Nov. 8, 1887. Serial No. 254,639. (No model.)



Claim.—1. In a driving-belt, an edge-laid continuous break-joint strip provided with a series of holes, in combination with a series of pins headed in said strip and passing therethrough in opposite directions.

2. A driving-belt composed of a series of links adapted to break joint with each other, in combination with a continuous edge-laid break-joint strip, and a series of pins headed in the strip and passing therethrough alternately or in opposite direction and through said links.

3. A driving-belt composed of a series of links, in combination with a continuous edge-laid break-joint strip, a series of pins secured in said strip and extending in opposite directions, and another series of pins passing through the belt in alignment with the first series.

4. A driving-belt composed of a series of links adapted to break joint with one another, in combination with one or more edge-laid break-joint strips, and a series of pins uniting the links and strip or strips, whereby both transverse and longitudinal flexure is imparted to the belt, substantially as set forth.

378,230. PROCESS OF TREATING LIQUIDS IN VACUUM-PANS. PAUL CASAMAJOR, Brooklyn, N. Y.; Louise J. Casamajor executrix of said Paul Casamajor, deceased. Filed June 30, 1887. Serial No. 243,022. (No model.)



Claim.—The herein-described process of treating saccharine solutions or other liquids by placing the same in a vacuum-pan, creating and maintaining a vacuum therein until the temperature falls and ebullition ceases, then conducting a current of steam to and through a liquid contained in an auxiliary vessel, thereby reducing its temperature and pressure, and, finally, introducing it into the vacuum-pan substantially as described.

378,231. PROCESS OF TREATING CINCHONA-BARK. PAUL CASAMAJOR, Brooklyn, N. Y.; Louise Jane Casamajor executrix of said Paul Casamajor, deceased. Filed Mar. 26, 1887. Serial No. 232,580. (No specimens.)

Claim.—1. The process of extracting the medicinal properties from cinchona-bark by treating the ground bark separately with an acid and with an alkali, mixing the solutions obtained from such treatments, and finally separating the resulting precipitate from the liquid, substantially as described.

2. The process of preparing cinchona or Peruvian bark for medicinal use by treating the bark with an alkali to remove the acid constituents, separating the bark from the solution and treating it with an acid to remove the alkaline constituents, bringing both acid and alkaline solutions to neutrality, mixing the two solutions together, and separating the precipitate resulting therefrom, substantially as described.

3. As a new manufacture, the precipitate of cinchona or Peruvian bark, containing both the natural acids and the alkaloids of such bark, substantially as described.

378,232. PROCESS OF TREATING SACCHARINE SOLUTIONS. PAUL CASAMAJOR, Brooklyn, N. Y.; Louise Jane Casamajor executrix of said Paul Casamajor, deceased. Filed June 9, 1887. Serial No. 240,821. (No specimens.)

Claim.—1. In the purification of saccharine solutions, the improvement consisting in treating the solution, after one or more carbonations and filtrations in the usual way, with an excess of carbonic acid, so as to precipitate the lime in solution, then redissolving the precipitate wholly or in part, and subsequently driving off the excess of carbonic acid, substantially as described.

2. The herein-described process of treating saccharine solutions after one or more carbonations and filtrations, by adding thereto an excess of carbonic acid to precipitate the lime in solution, causing the precipitate to be redissolved by further addition of carbonic acid, driving off the carbonic acid in excess by raising the temperature to the required degree, as specified, and thereby causing the lime to be deposited as an insoluble precipitate, and removing such precipitate by filtration, substantially as described.

378,233. TREATMENT OF CINCHONA-BARK. PAUL CASAMAJOR, Brooklyn, N. Y.; Louise Jane Casamajor executrix of said Paul Casamajor, deceased. Original application filed Mar. 26, 1887, Serial No. 232,580. Divided and this application filed Sept. 23, 1887. Serial No. 250,490. (No specimens.)

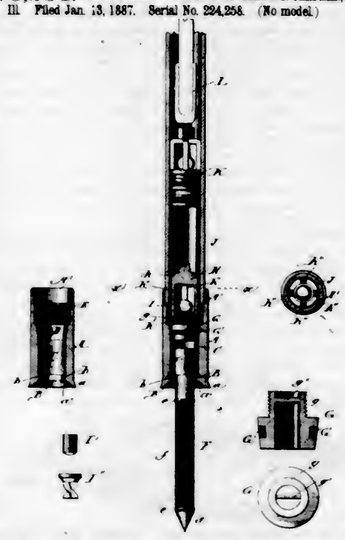
Claim.—1. The process of extracting the medicinal constituents of cinchona-barks by treating the same bark successively with an acid and with an alkali, then precipitating the acids from the alkaline solution and the alkaloids from the acid solution and mixing the precipitates, substantially as described.

2. As a new manufacture, the medicinal preparation described, the same consisting of the alkaloids and acids of cinchona-barks precipitated from the same bark and mixed together, substantially as set forth.

3. In the treatment of cinchona-bark for removal of its medicinal constituents, the improvement consisting in treating the bark with an alkaline carbonate and then with an acid, (or vice versa,) and then separating the natural acids and alkaloids from their respective solutions, substantially as described.

4. In the treatment of cinchona-barks, the improvement consisting in acting on the bark successively with an acid and with an alkaline carbonate, then again treating the bark with an acid, and, finally separating the alkaloids and acids from their respective solutions, substantially as described.

378,234. PIPE-WELL COUPLING. MATTHEW T. CHAPMAN, Aurora, Ill. Filed Jan. 13, 1887. Serial No. 224,258. (No model.)



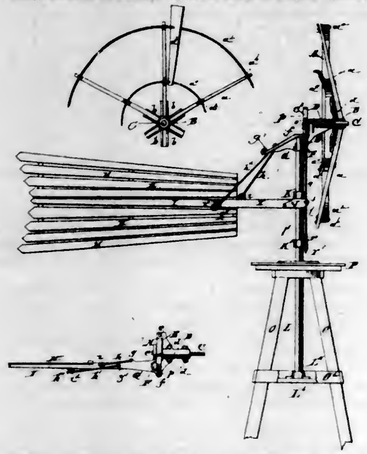
Claim.—1. A coupling, A, provided with an interior opening formed of a straight wall portion, B, a straight wall portion, C, a tapering wall portion, D, and a portion having a screw-thread, E, substantially as and for the purpose specified.

2. A coupling comprising the straight wall portions B and C, a

378,240. by rods N and intermediate rods, O, arranged and operating substan-

tapering wall portion, D, an interior screw-thread, E, the strainer or point F, base or plug G, a valve-case and valve, and a tube or casing, J, substantially as and for the purpose described.

378,235. **WINDMILL.** MATTHEW T. CHAPMAN and MARK C. CHAPMAN, Aurora, Ill. Filed Mar. 24, 1884. Serial No. 125,498. (No model.)



Claim.—1. The arm G and head or socket F, in combination with a mast or standard and a vane or rudder connected loosely with the mast or standard and suspended from the arm G by rods *h h'* for turning the vane or rudder as its rear end is elevated, substantially as specified.

2. The rods *h h'* and the arm G and plates J, attached, respectively, to the top and side of the rudder post or staff and at different points in relation to each other, in combination with a rudder or vane free to rise and fall at its rear end for turning the vane by the act of rising or falling, substantially as specified.

3. The rudder or vane H I and plates J, in combination with the limit-stop K K' K'', arm G, rods *h h'*, and mast or standard L, for allowing the rear end of the vane or rudder to rise and fall to a limited extent, substantially as and for the purpose specified.

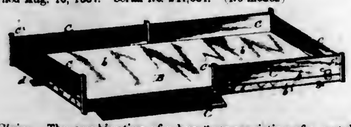
4. The rudder or vane H I, plates J, rods *h h'*, means for enabling the vane to move on the pivots at the ends of said rods, and horn or catch *j*, in combination with the collar K, having an arm, *k*, mast or standard L, and a wind-wheel for locking the rudder or vane in a horizontal position to the mast or standard and the wheel, substantially as and for the purpose specified.

5. The wheel or disk C, in combination with the brake-bands *o o'*, and lever-link *p*, fulcrumed in the free end of the band *o*, for enabling both bands to operate on the wheel in the direction of the power, substantially as specified.

6. The wheel or disk C, the brake-bands *o o'*, and lever-link *p*, fulcrumed in the free end of the band *o*, in combination with the rod *q*, and a vane or rudder having its rear end free to rise and fall for releasing and applying the brake irrespective of the position of the rudder, substantially as specified.

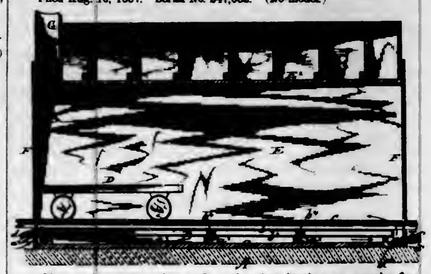
7. The wheel or disk C, brake-bands *o o'*, and lever-link *p*, fulcrumed in the free end of the band *o*, in combination with the rod *q*, spring or cushion *r*, and a rudder or vane whose rear end is free to rise and fall, substantially as and for the purposes specified.

378,236. **BRICK-DRIER.** WILLIAM E. COLE, Montgomery, Ala. Filed Aug. 16, 1887. Serial No. 247,081. (No model.)



Claim.—The combination of a box-floor consisting of a metal top plate, *b*, and a bottom, *b*², united at their edges, and a series of parting-blocks between said top plate and bottom, with a steam-leading pipe at one end and an escape-pipe at the other, and boards C, secured alongside of said box-floor, substantially as and for the purpose described.

378,237. **BRICK-DRIER.** WILLIAM R. COLE, Montgomery, Ala. Filed Aug. 16, 1887. Serial No. 247,082. (No model.)



Claim.—In combination with a chamber having an uptake-flue at one end and a substantially air-tight floor, a series of props upon said floor, and upon said props a box-floor having a sheet-metal top and bottom, parting-blocks between them, a steam-admitting pipe at one end and an escape at the other, and an air-flue under substantially the whole of said box-floor, substantially as and for the purpose described.

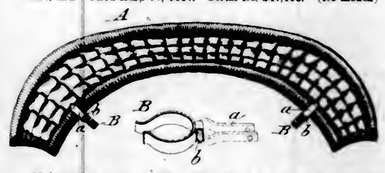
378,238. **CLASP.** DANIEL F. DALTON, Waterbury, Conn., assignor to the Chapman & Armstrong Manufacturing Company, same place. Filed July 9, 1887. Serial No. 243,812. (No model.)



Claim.—1. In a garment-clasp, a pair of spring-arms having hooks at their lower ends, in combination with a guard-plate provided with sleeves fitting and adapted to slide upon said arms and provided with a guard portion adapted to cover the said hooks, the upper ends of the arms being formed into a T-shaped loop having a straight upper bar and projecting laterally over said guard-plate.

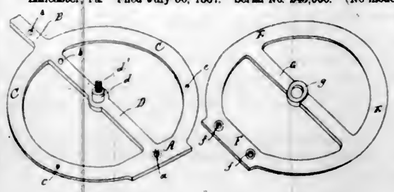
2. In a garment-clasp, a pair of spring-arms having hooks at their lower ends, in combination with a guard-plate, 4, slotted laterally to form tongues which are bent, the upper pair toward the rear and the lower pair toward the front of said plate, thereby forming a pair of sleeves surrounding and sliding upon said arms, and a second pair of sleeves upon the front face of the plate, said plate being adapted to pass down behind the points of the hooks and the second pair of sleeves to inclose the front of the hooks, as set forth.

378,239. **SWEAT-PAD FASTENER.** EMORY O. DARR, Shelbyville, Ind. Filed Aug. 17, 1887. Serial No. 247,193. (No model.)

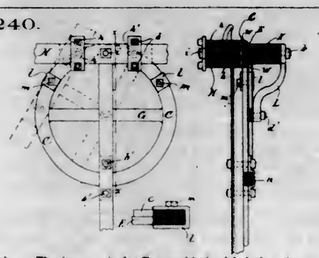


Claim.—The combination, with pad A, of straps *a a*, encompassing the inner edge and secured on opposite sides of said pad, and clamps, B B, having loops *b b*, that slide on said straps *a a*, substantially as and for the purpose specified.

378,240. **FIFTH-WHEEL FOR VEHICLES.** PHILIP DORESON, Lancaster, Pa. Filed July 30, 1887. Serial No. 245,660. (No model.)

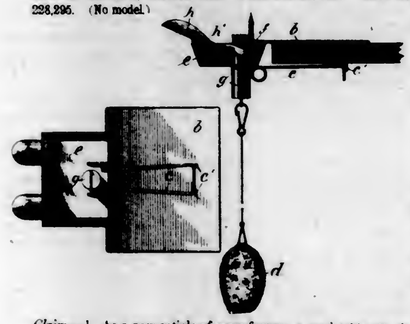


378,240.



Claim.—The lower circle, E, provided with holes *f*, arranged as shown and described, and at its center with hollow hub *g*, in combination with upper circle, C, having a hole, *a*, corresponding to the location of holes *f*, a king-bolt in the center of said circle C, an axle and bolster, bolts for attaching the circle E thereto through holes *f*, and a head-block and bolt, which secures the circle C, passing through hole *a*, all substantially as and for the purpose set forth.

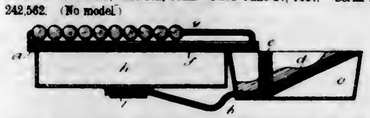
378,241. **CARD-TABLE ATTACHMENT.** LOUIS DRUDE and EDMOND ST. ARNAULD, Meriden, Conn. Filed Feb. 21, 1887. Serial No. 228,295. (No model.)



Claim.—1. As a new article of manufacture, a card-table attachment consisting of a cup having attached to one side inclined cigar-troughs, and having attached to top edge of the other side a slate and to the bottom edge of the latter side a clamp, all substantially as described, and for the purpose specified.

2. As a new article of manufacture, a card-table attachment consisting of a cup provided with sockets *f* and *g* and troughs *h*, and having attached to the top edge of one side a slate and to the bottom edge of the same side a clamp, all substantially as described.

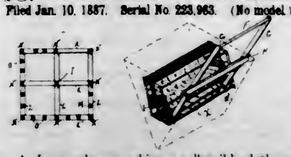
378,242. **CARD-TABLE ATTACHMENT.** LOUIS DRUDE and EDMOND ST. ARNAULD, Meriden, Conn. Filed June 27, 1887. Serial No. 242,562. (No model.)



Claim.—1. In combination with the plate *a*, the cup *c* and sliding slate *f*, all substantially as described, and for the purpose set forth.

2. In combination with the plate *a* and cup *c*, the spring *b* and the case *h*, provided with a socket, *i*, all substantially as described, and for the purpose set forth.

378,243. **WASHING-MACHINE.** WILLIAM C. EDWARDS, Winsted, Conn. Filed Jan. 10, 1887. Serial No. 223,963. (No model.)



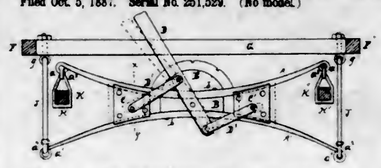
Claim.—1. In a washing-machine, a collapsible clothes-receptacle consisting of parallel bars K and transverse parallel bars L, at the ends, said bars being pivotally connected at their intersecting points by rods N and intermediate rods, O, arranged and operating substantially as described.

2. In a washing-machine, the combination, with a tub or suds-holder, of a clothes-receptacle consisting of the rods N, pivotally connecting at each end, the parallel bars K, with the transverse parallel bars L at the intersecting points of said bars, intermediate rods, O, and means for imparting a vibratory movement to one of said rods N, and through said rod to the receptacle, substantially as and for the purpose set forth.

3. In a washing-machine, the combination, with a tub or suds-holder, of a clothes-receptacle consisting of parallel bars K and transverse parallel bars L at the ends, rods N, pivotally connecting said bars, and intermediate rods, O, and having journals I at the ends, and bearings located within the tub for supporting said journals, substantially as set forth.

4. The combination, with a tub or suds-holder, of the clothes-receptacle having the compound levers at the ends, rods N O, connecting said levers, and having the journals I projecting beyond said ends and resting in suitable supports upon the inner side of the wall of the tub, and an operating-lever consisting of the bars G, shaft H, and hand-bar F, said shaft being journaled in the wall of the tub, and said bars G having slotted inner ends embracing one of the rods of the clothes-receptacle, substantially as shown and described.

378,244. **VEHICLE-SPRING.** JAMES ENGLAND, White Lake, Mich. Filed Oct. 5, 1887. Serial No. 251,529. (No model.)



Claim.—1. The combination, with vehicle-springs, of movable supports and means to adjust said supports, substantially as described.

2. The combination, with springs A and A', united by an intermediate block, of movable supports located at the ends of said block and between the ends of said springs, substantially as described.

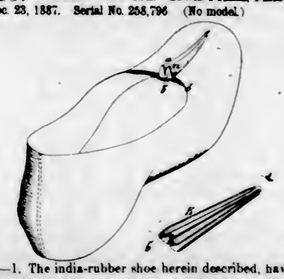
3. The combination, with springs A and A', united intermediate of their ends, of movable supports located between the ends of said springs, and lever mechanism to operate said supports, substantially as described.

4. The combination, with a vehicle provided with seat-supporting arms, of springs A and A', the one engaged upon the said arms and the other supported upon the vehicle, and movable supports located between said springs, substantially as described.

5. The combination, with springs A and A', of movable supports located between said springs and a locking device to hold said supports in a given position, substantially as described.

6. The combination, with a vehicle provided with seat-supporting arms, of springs A A', having their convexed portions engaged intermediate of their ends, one of said springs engaged at its extremities upon said arms and the other spring supported at its ends upon supports depending from the shafts, substantially as and in the manner described.

378,245. **RUBBER OVERSHOE.** EDWIN PORTER, Flatbush, N. Y. Filed Dec. 23, 1887. Serial No. 258,796. (No model.)



Claim.—1. The india-rubber shoe herein described, having in its upper portions flutes or corrugations extending longitudinally from the edge of the foot-opening toward the toe, the ends of the flutes or corrugations which are at the edge of the foot-opening being closed to prevent the entrance of snow and water, substantially as herein described.

2. The india-rubber shoe herein described, having its material

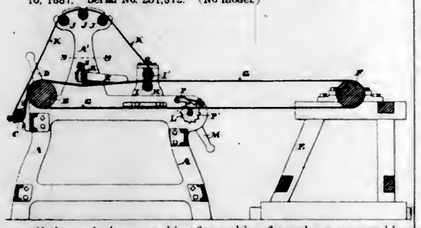
gathered in flutes or corrugations *a*, and having a key-piece, B, of material stiffer than the shoe-upper, introduced between the upper and its lining, and conforming in transverse section to the shape of the flutes or corrugations, and serving to maintain the flutes or corrugations in shape, substantially as herein described.

378,246. REFINING CANADIAN AND SIMILAR PETROLEUM OILS. HERMAN FRASCH, London, Ontario, Canada. Filed Feb. 21, 1887. Serial No. 228,403. (No specimens.)

Claim.—1. The process of purifying Canadian and similar petroleum-oils which contain sulphur compounds whose presence gives to said oil the property of dissolving lead oxide by distilling the same with the oxidating oxides, especially the roasted and oxidated residues of previous operations, mixed with or dissolved in the oil under treatment, substantially as described.

2. The process of purifying Canadian and similar petroleum-oils which contain sulphur compounds whose presence gives the said oil the property of dissolving lead oxide by distilling the same with the oxidating oxides, especially the roasted and oxidated residues of previous operations, mixed with or dissolved in the oil under treatment, and washing the distillate from such operation with sulphuric acid, substantially as described.

378,247. MACHINE FOR MAKING FIGURED GOSSAMER RUBBER GOODS. DANIEL HARKINS, Hudson, Mass., assignor of one-half to L. Dewart Apsley and Judson H. Coffin, both of same place. Filed Oct. 10, 1887. Serial No. 251,872. (No model.)

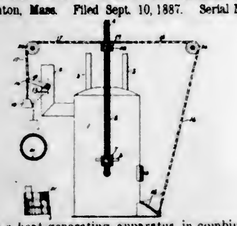


Claim.—1. In a machine for making figured gossamer rubber goods, the combination, with a pair of rolls constructed and arranged to support, strain taut, and feed an endless band of fabric to be coated, of an endless band having a series of perforations cut through the same and arranged to move in contact and in unison with the fabric to be coated, and a doctor-plate constructed and arranged to press upon said perforated band, and provided with guard-flanges near each end thereof, substantially as described.

2. The combination of the rolls B, C, F, I, I', and J, the perforated endless band K, the doctor-plate R, provided with the guard-flanges R', and means, substantially as described, for adjusting the roll I' to strain said perforated band taut, substantially as set forth.

3. In a machine for making figured gossamer rubber goods, the combination, with a pair of rolls constructed and arranged to support and feed an endless band of fabric to be coated, of an endless band having a series of figures or designs cut through the same, a series of rolls, as C, I, and J, for supporting said band and causing it to move in contact and in unison with said endless band of material, and a doctor-plate, R, constructed and arranged to operate substantially as and for the purpose described.

378,248. AUTOMATIC TEMPERATURE-REGULATOR. JOHN T. HAWKINS, Taunton, Mass. Filed Sept. 10, 1887. Serial No. 249,373. (No model.)



Claim.—1. In a heat-generating apparatus, in combination with and connected to a damper or dampers for regulating the combustion of its fuel, an automatic temperature-regulator consisting of helical or annular strips of differentially-expansible metals, secured together substantially as described, and surrounding a pipe conveying a fluid whose temperature is variable, the most expansible metal adjoining and subjected to the fluctuations in temperature of said pipe forming part of said apparatus, substantially as and for the purposes set forth.

2. In a heat-generating apparatus, a temperature-regulator consisting of the following-named elements in combination: a heat-transmitting pipe or core, coils of metals of differential expansibility surrounding said core and secured to an adjustable lever, as 6, and to a vibratory lever, as 10, connected to a fuel damper or dampers, the whole arranged and operating substantially as described, for the purposes set forth.

378,249. FUEL COMPOSITION. EDUARD HENN, Jersey City, N. J. Filed Apr. 6, 1887. Serial No. 233,863. (No specimens.)

Claim.—The herein-described fuel composition, consisting of pulverized charcoal, anthracite or coke, starch, sugar of lead, and alum, substantially as set forth.

378,250. TELEPHONE-SWITCH. JOSEPH R. H. HINTON, Baltimore, Md. Filed June 3, 1887. Serial No. 240,149. (No model.)



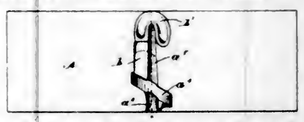
Claim.—1. In a telephone-switch, the combination of an insulating-roller, contact-springs operated by the roller, the telephone-hook operating the roller, and a grooved bracket within which the hook moves and is guided in the act of removing and suspending the telephone, substantially as shown and described.

2. In a telephone-switch, the combination, with the hook C, of the bracket E to the rear thereof, having a groove in which the curved arms of the hook move, substantially as described.

3. In a telephone-switch, the combination of the insulating-roller B, formed or provided with rib *c* and groove *d*, the hook C, having arm *g*, fitting said groove, and the springs F F and F' F', bent, as shown, and having the line and battery wires attached, all substantially as and for the purpose described.

4. In a telephone-switch, the combination, with the front piece, A, having slot *a*, and the bearing-plate *b*, attached to the rear thereof, of the roller B, supported by said bearing-plate and having rib *c* and groove *d*, the hook C, having arm *g*, fitting in said groove and extending through slot *a*, the springs F F and F' F', bent at their opposing ends, as shown, and adapted to be brought in and out of contact electrically, and the bracket E, having a groove in which the curved branches *h h'* of the hook move in the act of detaching and suspending the telephone, substantially as described.

378,251. DIE FOR MAKING AUGER-BITS. CHARLES H. IRWIN, Wilmington, Ohio, assignor to the Irwin Auger Bit Company, same place. Filed Oct. 15, 1887. Serial No. 252,415. (No model.)



Claim.—1. In dies for heading auger-bits, the die A, having the grooves a^2, a^3, a^3, and b' and the depression b, in combination with the die B, having the grooves b^4 and depression b^5, substantially as set forth.

2. In dies for heading auger-bits, the dies C and D, having the grooves d' and d^2 and the large grooves d^3, the die C having the peculiarly-shaped depression d^5, in combination with a suitable plunger-die, substantially as set forth.

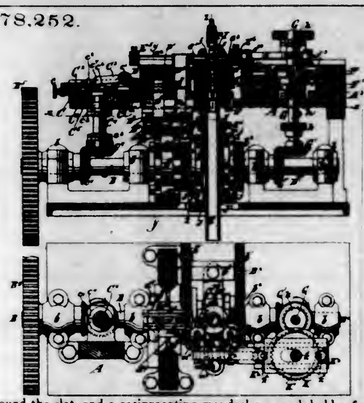
3. In dies for heading auger-bits, the dies C and D, having the grooves d' and d^2 and the large grooves d^3, the die C having the peculiarly-shaped depression d^5, in combination with the plunger-die E, having the cone-shaped cavity e' and the cut-away portion e^3, substantially as set forth.

4. In dies for heading auger-bits, the dies C and D, the dies C having the peculiarly-shaped groove or depression d^5, in combination with a suitable plunger-die, as E, substantially as set forth.

378,252. MACHINE FOR MAKING CHAIN. JULIUS KINDER, Brooklyn, N. Y., assignor to the Solid Link Chain Manufacturing Company, of New York. Filed May 24, 1887. Serial No. 239,185. (No model.)

Claim.—1. The combination, with a reciprocating gripper for feeding periodically forward a flattened strip, of a die and punch for slotting the strip and rounding the edges on one face of the blank

378,252.



around the slot, and a reciprocating mandrel or punch-holder for the punch working below the die and slotting the blank by an upward movement, substantially as herein described.

2. The combination, with a reciprocating gripper for feeding periodically a flattened strip, of a die and punch for slotting the strip and rounding the angles around the slot on one face of the strip, a reciprocating mandrel or punch-holder for the punch working below the die, and a curved scrap-guide leading from above the die and serving to properly direct the scrap downward, substantially as herein described.

3. The combination, with a reciprocating gripper for feeding periodically a flattened strip and a slotting punch and die, of a base-plate from which the punch springs, a holder constructed with a dove-tailed or undercut slideway receiving said base-plate, a reciprocating mandrel or block, and screws connecting the holder with the mandrel or block, substantially as herein described.

4. The combination, with a reciprocating gripper for feeding periodically a flattened strip, and slotting and cutting off punches and dies arranged one in advance of the other, and a channel or slideway for blanks rising from the cutting-off die, of a reciprocating mandrel or holder carrying both the punches and arranged below the dies, so as to cut by an upward movement, substantially as herein described.

5. The combination, with a punch and die, of a slide carrying a gripping-lever, a shaft, and a compound eccentric on the shaft composed of an eccentric-disk and an annular piece or ring having in it an opening eccentric to its circumference and receiving the eccentric-disk and having formed on its surface a cam for operating the gripping-lever, whereby the movement imparted to the slide may be varied as desired, substantially as herein described.

6. The combination, in a chain-making machine, of the link opening and bending mechanism, substantially as described, a channel or slideway for blanks, a slide and a pusher carried thereby for pushing the uppermost blank from said channel or slideway into the chain, slotting and cutting-off dies and punches arranged one in advance of the other at the lower end of the channel or slideway, a reciprocating holder or mandrel below the dies and carrying the upwardly-presented punches, and a reciprocating gripper for feeding periodically a flattened strip, substantially as herein described.

7. The combination, with a reciprocating gripper for feeding periodically a flattened strip, of slotting and cutting-off punches and dies, a reciprocating punch-mandrel working below the dies and carrying the punches, and guides for the mandrel having V-shaped faces, the mandrel being divided in the plane of the guides or composed of two parts secured together by screws, which serve to take up lost motion between the mandrel and guides, substantially as herein described.

8. The combination, with the reciprocating delivery-tube and openers and bending-fingers operated thereby, of the main shaft composed of two separated sections in line with each other and substantially in the same plane as the tube and a side shaft, B^3, and gears b' b^3, connecting the two sections of the main shaft, substantially as herein described.

9. The combination, with a reciprocating slide for feeding the link-blanks and a delivery-tube armed at the top with opening-fingers, of an upper cross-head provided with a pressing-die and supported by upright rods on opposite sides of the tube, and two slides—one supporting said rods and the other clamped upon said tube and arranged side by side—and cams for operating said slides, substantially as herein described.

10. The combination, with a fixed head and an oscillating head above the same, of two opening fingers or needles having an upward movement through opposite ends of the link-blank for opening the ends thereof and guided in the fixed head, and bending-fingers, also having an upward movement to preliminarily bend the ends of the link-blank and also guided in the fixed head, a reciprocating slide carrying a pusher to advance the straight blanks into the chain, and reciprocating dies moving in a plane parallel with the slide and pusher for completing the bending of the links, substantially as herein described.

11. The combination, with a fixed head surmounted by an oscillating head and a reciprocating delivery-tube below the fixed head, of opening fingers or needles and bending-fingers arranged in planes transverse to each other and all secured to and projecting above the tube through guides in the fixed head, reciprocating dies for completing the bending of the links, and a reciprocating slide carrying a pusher for entering link-blanks into the chain, both said dies and slide working in substantially the same plane as that in which the opening fingers or needles are arranged, substantially as herein described.

12. The combination, with the fixed head and the turnable head arranged above the same and provided with gear-teeth, of two upright shafts having pinions on their upper ends gearing into the teeth of the turnable head, a reciprocating cam-actuated slide, and two sectors geared with pinions on the lower ends of the said shafts and connected with said slide, substantially as herein described.

13. The combination, with the oscillating head E^3 and its circle of gear-teeth, of the upright shafts K^3, provided with pinions k^3 k^4, the former of which engage the head, the sectors *m*, the cam-actuated slide K^4, and the block *m'*, secured thereto by adjusting-screws and having projections which engage with and operate the sectors, substantially as herein described.

378,253. VELOCIPEDE. EMMIT G. LATTA, Friendship, N. Y., assignor to the Pope Manufacturing Company, Portland, Me. Filed Sept. 16, 1887. Serial No. 249,852. (No model.)



Claim.—1. The combination, with the main frame, of a rear driving-wheel mounted in the main frame, a front steering-wheel mounted in a frame pivoted to the main frame, and a saddle connected with the pivoted frame of the steering-wheel, whereby the movements of the steering-wheel are controlled by the saddle, substantially as set forth.

2. The combination, with the main frame and a handle-bar secured thereto, of a rear driving-wheel mounted in the main frame, a front steering-wheel mounted in a frame pivoted to the main frame, and a saddle connected with the pivoted frame of the steering-wheel, substantially as set forth.

3. In a velocipede, the combination, with the front steering-wheel and rear driving-wheel, of a jointed frame connecting the two wheels, a saddle secured to the frame of the front steering-wheel, and handles secured to the frame of the rear wheel, substantially as set forth.

4. The combination, with the steering-wheel and its frame and the driving-wheel and its frame, of a saddle, handle-bars, and interchangeable supports, whereby the saddle and handle-bars can be secured to either frame of the machine, substantially as set forth.

5. In a velocipede provided with a rear driving-wheel, a steering-post and a saddle supported by the steering-post, substantially as set forth.

6. The combination, with the saddle, handle-bars, and the main frame provided with an upright tube, F, of the steering-wheel B, having a tubular post, *g*, arranged in said tube, and supports or sockets arranged in the main frame in front and in rear of the tube F, and whereby the saddle can be connected to the post of the steering-wheel and the handle-bar to the main frame, or vice versa, substantially as set forth.

7. The combination, with the saddle and handle-bars and the main frame provided with an upright tube, F, of the front fork provided with a steering-post arranged in said tube, a clamp applied to the upper end of said steering-post, and a saddle-post and handle-bar

post, either of which can be connected with the steering-post by said clamp, substantially as set forth.

8. The combination, with the main frame, and the rear wheel mounted therein, of the front wheel, a front fork, G, pivoted to the main frame, and a crank-shaft bracket, M, secured to the main frame and provided with an offset or bend, n^1, which permits the front fork to be folded closely against the main frame, substantially as set forth.

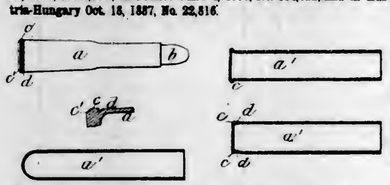
9. The combination, with the main frame and the crank-shaft c', of a bracket, M, supporting the crank-shaft and provided with segmental slots n, and clamping-bolts n', passing through said slots, and whereby the bracket is adjustably secured to the main frame, substantially as set forth.

378,254. REFRIGERATOR. GILBERT M. LEE, Jefferson, Kans. Filed June 20, 1887. Serial No. 242,585. (No model.)



Claim.—The combination, in a refrigerator having air-inlets at its upper part, of a plurality of superposed compartments, each having an inclined bottom, D, and its rear wall separated from that of the refrigerator and inclined downwardly and forwardly to form a deflector, E, substantially as and for the purpose specified.

378,255. CARTRIDGE FOR FIRE-ARMS. JAMES F. LEE, Ilion, N. Y., assignor to Charles M. Dally, Montclair, N. J. Filed June 24, 1887. Serial No. 242,349. (No model.) Patented in England Apr. 23, 1887, No. 6,233; in France June 4, 1887, No. 184,922, and in Austria-Hungary Oct. 18, 1887, No. 22,816.



Claim.—1. A metallic cartridge formed with a flange of a diameter to constitute a retaining-flange merely, and with a circumferential groove or recess immediately in front of said flange, whereby the engaging surface or shoulder for the extractor is formed by the retaining-flange and the groove conjointly, as herein set forth.

2. A metallic cartridge provided with a head or flange projecting slightly beyond the body of the shell and beveled or chamfered at its edge, and a circumferential groove formed in the shell immediately in front of the flange, whereby the shoulder or engaging-surface of said flange is widened, substantially as and for purpose set forth.

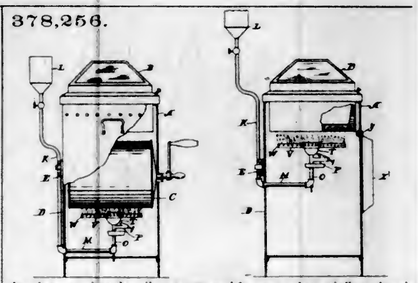
378,256. PEANUT-ROASTER. THOMAS LEE, Cincinnati, Ohio. Filed Nov. 26, 1886. Serial No. 219,943. (No model.)

Claim.—1. In combination with the case A, having a heater, bearings for the cylinder, an opening in front, and slots, as set forth, the removable pan-shaped shield X, provided with hooks Y, substantially as and for the purposes set forth.

2. In roasters, the combination of a frame or case having a warming-chamber and a removable roasting-cylinder beneath, with a vertically-adjustable burner and oil-reservoir, whereby the burner can be elevated to take the place of the removable roasting-cylinder, substantially as herein set forth.

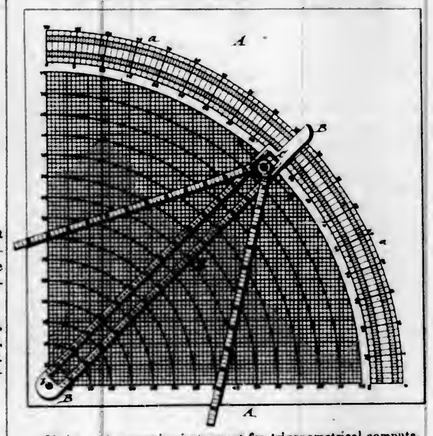
3. In roasters, the combination of the frame or case having a warming-chamber and a removable roasting-cylinder beneath, and provided on one side with a vertical slot, with a clamp having guide-arms thereon secured to the side of the roaster above the slot, and

378,256.



the pipe carrying the oil reservoir and burner, substantially as herein set forth.

378,257. INSTRUMENT FOR TRIGONOMETRICAL COMPUTATIONS. ALEXANDER J. LESCHORE, Phœnixville, Pa. Filed Dec. 21, 1887. Serial No. 258,560. (No model.)



Claim.—A measuring-instrument for trigonometrical computations, composed of a graduated quadrantal base-plate, a slotted radial arm pivoted to the apex of the angle of the quadrant, a slide-piece guided in the radial arm, and auxiliary arms pivoted to said slide-piece, the radial and auxiliary arms being graduated so as to correspond to the graduation of the sides of the quadrantal base-plate, substantially as set forth.

378,258. MANUFACTURE OF INCANDESCENT ELECTRIC LIGHTS. THEODORE MACK, New York, N. Y. Filed Feb. 15, 1887. Serial No. 227,715. (No specimens.) Patented in England July 27, 1886, No. 9,694.

Claim.—1. The process of preparing thread for the manufacture of incandescents, consisting in saturating a carbonizable thread with an oxygen-bearing compound of aluminium capable of being decomposed by the application of heat and yielding thereby alumina, and then applying heat and by it alone decomposing said compound and leaving alumina, substantially as described.

2. The process of making an aluminous carbon incandescent, consisting in first saturating a carbonizable thread with an oxygen-bearing compound of aluminium and then heating and thereby carbonizing the thread and at the same time reducing said compound to alumina, substantially as set forth.

3. In the manufacture of incandescents by the impregnation of a carbonizable thread with alumina, the method of effecting thorough incorporation of the materials by first submitting the thread to a bath of hot water or steam and then to a bath of an aluminium compound capable of forming the oxide by the application of heat, substantially as described, whereby the impurities of the thread are expelled and its pores opened for the absorption of the salt.

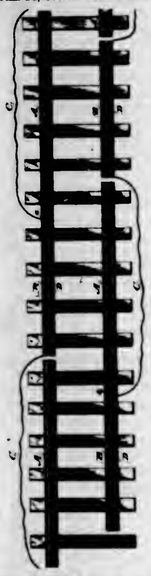
4. In the manufacture of incandescents, the method of finishing consisting in dipping the carbonized incandescent into a liquid containing alumina, then drying the same, and finally consolidating the structure by heating with an electric current, substantially as described

5. In the manufacture of carbonaceous incandescents containing alumina, the method of regulating the resistance and compacting the bond between the alumina and the carbon, consisting in dipping the incandescents into a liquid containing alumina in solution and combination, drying the same, and then, by means of the electric current, heating the incandescent to a temperature beyond that at which it is to be used, substantially as described.

6. In the manufacture of carbonaceous incandescents containing alumina, the method of regulating the resistance and compacting the bond between the alumina and the carbon, consisting in dipping the incandescent into a liquid containing alumina in solution or combination, drying the same, and then, by means of the electric current and with the exclusion of free oxygen, heating the incandescent to a temperature beyond that at which it is to be used, substantially as described.

7. In the manufacture of carbonaceous incandescents containing alumina, the method of regulating the resistance and compacting the bond between the alumina and the carbon, consisting in dipping the incandescent into a liquid containing alumina in solution or combination, drying the same, and then, by means of the electric current and with the exclusion of free oxygen and in partial vacuum, heating the incandescent to a temperature beyond that at which it is to be used, substantially as described.

378,259. ELECTRIC RAILWAY. CHARLES T. MASON, Sumter, S. C., assignor to the Maryland Electric Motor Manufacturing Company, Baltimore, Md. Filed Jan. 22, 1887. Serial No. 225,182. (No model.)



Claim.—1. In an electric-railway system, contact-points of the conductors for the incoming and outgoing currents, arranged diagonally opposite each other at intervals along the track, whereby the distance between such contacts is increased, substantially as described.

2. In an electric-track system, alternate insulated rails in combination with alternate electrically-connected rails, substantially as described.

3. An electric-railway system having a double line of rails, each line made up of alternately-insulated and electrically-connected rails, the insulated rails in one line arranged opposite shorter electrically-connected rails in the other line, substantially as described.

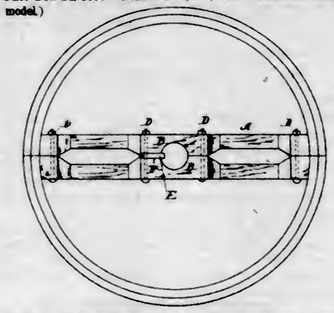
4. In an electric-track system, the combination, with alternate insulated rails in combination with alternate electrically-connected rails, each insulated rail placed opposite a connected rail, and an electric conductor circuiting all the connected rails, substantially as described.

5. In an electric-track system, the combination of the alternate insulated rails and the alternate connected rails, the rails of the different sets being of unequal length, substantially as described.

6. In an electric-track system, the combination, with alternate connected and insulated rails, of the conductor insulated from the track and the track-crossings, substantially as described.

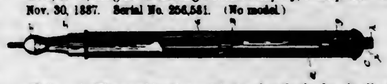
7. In an electric-track system, copper-plated rails electrically connected, in combination alternately with insulated rails of greater length, substantially as described.

378,260. KEY FOR PULLEYS. PATRICK MCDERMOTT, Memphis, Tenn., assignor to the Milburn Gin and Machine Company, same place. Filed Dec. 24, 1886. Renewed Sept. 7, 1887. Serial No. 249,061. (No model.)



Claim.—The combination of the cross-bars, each grooved and recessed as described, with the key and the bolts passing through the bars and key, said key being adapted to enter the groove in the shaft, substantially as described.

378,261. COMBINATION-INSTRUMENT. FRANK MCINTYRE, New York, N. Y., assignor to the Eagle Pencil Company, same place. Filed Nov. 30, 1887. Serial No. 256,581. (No model.)



Claim.—1. The combination, with the sheath, the longitudinally movable lead-containing tube or rod, and the lead-grasping mechanism located at one end of the sheath, of the cover or stopper placed at and adapted to close the opposite end of the sheath and hinged or loosely jointed to said longitudinally-movable lead-containing tube, and the retracting-spring operating to move the said tube in the direction necessary to cause the stopper to close its end of the sheath.

2. The combination, with the sheath, the longitudinally-movable lead-containing tube and clamping-jaws, the longitudinally-movable compressing-tip for said jaws, and the retracting-spring, of the freely-sliding pen-holder or other article adapted to project from the end of the sheath opposite to that from which the lead projects, and the cover or stopper hinged or loosely jointed to said lead-containing tube, the combination being and acting substantially as set forth.

3. The combination, in an automatic pencil-holder, with the sheath, the lead-containing tube, and the lead-grasping jaws, of a jaw-compressing tip provided with a nozzle, T, which covers and conceals said jaws and is perforated for the passage of the lead, substantially as and for the purposes hereinbefore set forth.

4. The combination, with the sheath or case and the cover or stopper, of the longitudinally-movable lead-containing tube forming a pusher-rod for said cover or stopper, and the presser-rod mounted and longitudinally movable in said stopper and hinged or loosely jointed to said lead-containing tube, as and for the purposes hereinbefore set forth.

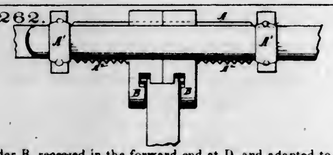
5. The combination of the longitudinally-movable lead-containing tube, the sheath, the cover or stopper C, the presser rod and cap mounted and longitudinally movable in said stopper and hinged or loosely jointed to said tube, and the spring i, as and for the purposes hereinbefore set forth.

6. The combination of the sheath, the longitudinally-movable lead-containing tube terminating at its outer end in clamping-jaws, the longitudinally-movable jaw-compressing tip or nozzle, the retracting-spring E, the cover or stopper C, the freely-sliding tubular holder for a pen or other article, the longitudinally-movable presser-rod mounted in and carried by the stopper and hinged or loosely jointed to the lead-containing tube, and the spring i, these parts being arranged together for joint operation substantially as and for the purposes hereinbefore set forth.

378,262. ADJUSTABLE THILL-COUPLING. JOHN W. PENDLETON, Greenville, Cal. Filed July 9, 1887. Serial No. 243,828. (No model.)

Claim.—1. In thill-couplings, the plate A, combined with the thill-

378,262.



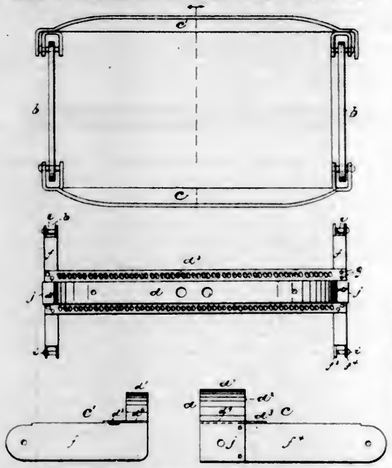
iron holder B, recessed in the forward end at D, and adapted to slide on said plate A, the dog K, the thill-iron, and the cushion I, substantially as described.

2. In thill-couplings, the plate on the under side of the axle projecting on the front and rear sides, having its forward edge serrated, in combination with a bisected thill-iron holder having grooves which engage with the projecting axle-plate, and a dog, K, having a serrated edge in the cavity of the thill-iron holder, substantially as herein set forth.

3. In a thill-coupling, the adjustable separable thill-iron holder having on its forward side a circular socket, the lower wall of which is inclined, in combination with a thill-iron head provided with a rearwardly-projecting retractile pin having its lower end angled, substantially as herein set forth.

4. In a thill-coupling, the combination of an adjustable separable thill-iron holder and a serrated plate on the axle, said separable holder having in the rear wall of the socket a stud or pin, the rear end of which engages with the serrated plate, and the thill-iron head and rest-pin, substantially as herein set forth.

378,263. BAG OR SATCHEL FRAME. WILLIAM ROEHNER, Newark, N. J. Filed Mar. 30, 1887. Serial No. 232,987. (No model.)



Claim.—1. In a bag or satchel frame, the combination, with end sections *b b* of a frame, of jaws *c c'*, pivoted at the opposite ends of and connecting said end sections, each of said jaws consisting, essentially, of a seat, *d'*, a vertical portion, d^2, to elevate said seat, and a perforated flange, d^3, to receive the body material, and end sections *f f*, secured to the ends of said section *d*, and provided with ears f^3 f^4, pivoted on the end sections *b b* of the frame, substantially as set forth.

2. In combination with jaws *c c'* of a bag-frame, strap-like end sections *b b*, disposed vertically edgewise at the ends of the frame and providing pivotal bearings for said jaws, substantially as and for the purposes set forth.

3. In combination, in a bag-frame with end bars or sections *b b*, providing pivotal bearings, jaws *c c'*, consisting of longitudinally-bent portions *d*, and sections *f f*, secured at the ends of said longitudinally-bent portions, providing ears f^3 f^4, said parts being arranged and combined substantially as and for the purposes set forth.

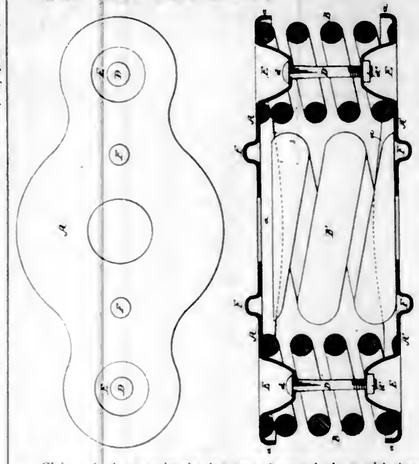
4. In a bag-frame substantially such as described, the combination, with end sections *b b*, of jaws *c c'*, provided with sections *f f* at the ends thereof, said sections *f f* being each of a single piece bent to form ears f^3 f^4, substantially as described.

5. In a bag-frame substantially such as described, a jaw combining therein end sections *f f*, and a longitudinal section, *d*, having flanges d^3, a vertical portion and an elevated seat, the last being rounded down at the extremities of said section *d*, and bent to lie flush or approximately flush with the ends of said flange d^3, substantially as herein described.

6. In a bag-frame substantially as described, end sections *b b*, jaws *c c'*, with end sections *f f*, rigidly secured to and connected by longitudinal parts or sections *d*, and pivotally secured upon the extremities of the said sections *b b*, and adapted to lie, when in their closed positions, parallel with said end sections *b b*, the said longitudinal section *d* having a seat, *d'*, raised above the said sections *f f* when in said closed positions, substantially as and for the purposes set forth.

7. In a bag-frame, the combination of end bars or sections *b b*, longitudinal sections *d d*, and end sections *f f*, connecting said longitudinal sections with said end sections *b b*, being pivotally secured upon said end sections *b b*, as at *i*, and the longitudinal sections being raised above the sections *f f* to form a raised seat at the center of the closed bag, substantially as set forth.

378,264. CAR-SPRING. CHARLES T. SCHOEN, Philadelphia, Pa., assignor to the Charles Scott Spring Company, same place. Filed July 25, 1887. Serial No. 245,231. (No model.)



Claim.—1. A car-spring having wrought-metal plates with deep sockets drawn or pressed up out of the bodies of the plates of a depth to allow for the full movement of the bolts on compression of the springs under load, substantially as set forth.

2. A car-spring having its top and bottom plates of wrought metal precisely alike, with deep sockets drawn or pressed up out of the body of the metal, the sockets in both plates being jointly of a depth to allow the full movement of the bolts on compression of the springs under load, substantially as described.

3. A car-spring plate of wrought metal having deep sockets pressed or drawn up out of the body of the metal, with their walls of a curved shape, substantially as and for the purpose described.

378,265. CAR-COUPLING. DANIEL SCHOFIELD, Camden, N. J. Filed Jan. 3, 1888. Serial No. 259,674. (No model.)

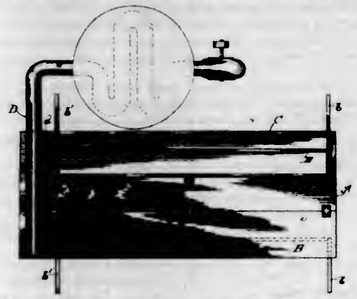


Claim.—1. The combination of the draw-heads and the coupling levers pivoted thereto, springs tending to maintain said levers in the intermediate position, and pins engaging with the arms of the levers to prevent uncoupling of the same, all substantially as specified.

2. The combination of the draw-heads, the coupling-levers pivoted thereto and having meeting faces, each consisting of a rounded projection and a rounded recess adjacent thereto, and springs acting on the levers to maintain them in mid-position, all substantially as specified.

3. The combination of the top and bottom plates of the draw-head, the coupling-lever, and the pivot-pin shouldered to prevent binding of said lever by the plates, as set forth.

378,266. PAPER-DRYING MACHINE. ALVAN A. SIMONDS, Dayton, Ohio. Filed Oct. 30, 1886. Serial No. 217,595. (No model.)



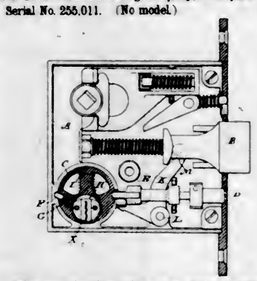
Claim.—1. The combination, with the narrow tube or box having openings in its ends for the passage of a web of paper therethrough and an air-inlet near one end, of adjustable sides within the box, whereby the space therein may be limited to correspond with the width of the paper web, substantially as described.

2. The combination, with a narrow tube or box having openings in its ends for the passage of a web of paper therethrough, of an air-inlet at one end extending within said box, and movable sides within said box, said movable sides being provided at one end with a broad arm extending across the discharge end of the air-inlet, whereby the space within the box may be limited to the width of the paper web and the discharge of the air-inlets reduced, substantially as described.

3. The combination, with a paper-drier, of an air-tube connected to said drier by a chute discharging within the same, and a damper in said chute having a constant engagement with the side of the chute farthest from the paper and adjustable to and from the side of the chute nearest the paper, said damper being capable of different adjustments at different points, substantially as described.

4. The combination, with a narrow tube or box having openings at its ends for the passage of a paper web therethrough, of an air-pipe connected to said tube or box by a chute discharging within the same, a damper in said chute to regulate the flow of air into said box, and movable sides within said box said sides having at one end an arm closing said chute, substantially as described.

378,267. LOCK. WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Nov. 12, 1887. Serial No. 255,011. (No model.)



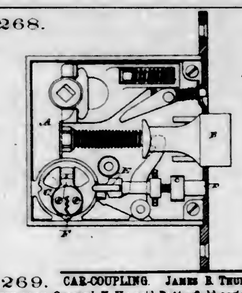
Claim.—1. The combination, with an escutcheon or tumbler-case, of a spring-plunger and a slotted or cam-acting hub, substantially as set forth.

2. In a lock, an escutcheon provided with a plunger which, except when the key is inserted in the hub and turned to the proper position, engages the escutcheon with the lock-case, so that the escutcheon cannot be removed.

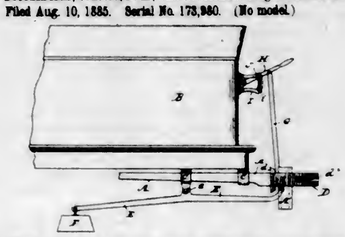
378,268. LOCK. WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Nov. 12, 1887. Serial No. 255,012. (No model.)

Claim.—The combination, with an escutcheon and key-hub, of a tail-piece or projection from the hub adapted to bear against the lock-case and prevent the unscrewing or removal of the escutcheon, except by use of the key, substantially as set forth.

378,268.



378,269. CAR-COUPLING. JAMES B. THURSTON and FINLEY B. BUTTERFIELD, Concord, N. H.; said Butterfield assignor to said Thurston. Filed Aug. 10, 1885. Serial No. 173,980. (No model.)



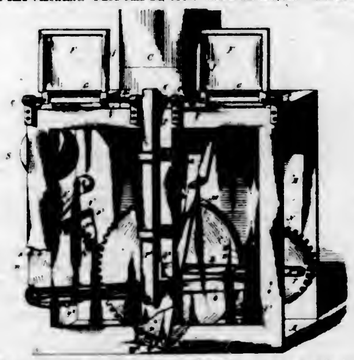
Claim.—1. In an automatic car-coupling, the combination, with a draw-bar, of a vertically-adjustable draw hook or jaw adapted to slide down below the draw-head of an adjacent car for the purpose of uncoupling from the same, and means whereby said jaw may be raised automatically to its normal position.

2. In an automatic car-coupling, the combination, with a draw-bar, of a vertically-adjustable draw hook or jaw adapted to slide down below the draw-head of an adjacent car for the purpose of disconnecting from the same, a lever attached at some convenient point upon a car or a locomotive-tender for lowering said jaw, and means whereby said jaw may be raised automatically to its normal position.

3. In an automatic car-coupling, the combination, with a draw-bar, of a vertically-adjustable draw hook or jaw, a lever attached at some convenient point upon a car or a locomotive-tender for lowering said jaw for the purpose of uncoupling from an adjacent car, and means whereby said sliding jaw may be raised automatically and retained at various heights relative to the said draw-bar, for the purpose set forth.

4. In combination, with the grooved jaw, of the weighted lever, the tongue on the draw-bar, the rod, the lever, and the slotted arc head provided with a thumb-screw for adjusting said lever, as set forth.

378,270. CARD-EXHIBITOR. WALTER D. VALENTINE, San Francisco, Cal., and HOWARD S. BAILEY, Denver, Colo.; said Bailey assignor to said Valentine. Filed Jan. 24, 1887. Serial No. 225,403. (No model.)



Claim.—1. In a card-exhibitor, a hollow column or vertical tube adapted to receive and confine the cards, a reciprocating follower

moving under said tube or column for moving the lowermost card from under it, means for operating said follower, and vibrating card holders or frames on each side of the column adapted to receive the card from the follower and to move it up to a vertical position to be exhibited, substantially as herein described.

2. In a card-exhibitor, the combination of a vertical tube or hollow column for receiving and confining the cards and having openings or apertures at the base of its sides through which a card may pass, a reciprocating follower moving under the column and having a cross-strip adapted to come in contact with the edge of the lowermost card, whereby it is forced outwardly through the aperture or opening in the side of the column, means for reciprocating said follower, and a vibrating card-holder on each side of the column adapted to receive the card from the follower in a horizontal position and to raise it to a vertical position, substantially as herein described.

3. In a card-exhibitor, the vibrating card holder or frame having an open inner side to receive the card and an open base to discharge it, and a horizontally-reciprocating follower and means for operating the same, in combination with the curved rests G under the base of the card-holder for supporting the card before it is discharged, substantially as herein described.

4. In a card-exhibitor, the combination of a vertical tube or hollow column for receiving and confining the cards and having openings or apertures at the base of its sides through which a card may pass, a reciprocating follower moving under the column and having a cross-strip adapted to come in contact with the edge of the lowermost card, whereby it is forced outwardly through the aperture in the side of the column, means for operating the follower, a vibrating card-holder on each side of the column adapted to receive a card from the follower, and a fixed rest under the card-holders to sustain the card and permit it to be dropped when the holder moves it beyond the rest, substantially as herein described.

5. In a card-exhibitor, a vertical tube or hollow column for receiving and confining the cards and having apertures in its base for allowing the exit of the lowermost card, in combination with the follower having a cross-strip for pushing the cards out and the means for reciprocating said follower, consisting of a pivoted lever, Q, secured to its base and pivoted below, the periodically-moving gear N, having a crank or wrist pin, and a link, R, connecting said pin with the lever Q, substantially as herein described.

6. In a card-exhibitor, the card holders or frames, in combination with the means for vibrating them, consisting of a rock-shaft to which they are secured, said shaft having a segmental pinion, a vertically-moving rod having a rack on its upper end and engaging said pinion, a pivoted lever with which the lower end of the vertically-moving bar is connected, and a periodically-moving pinion having a crank-pin over which the lever is slotted, substantially as herein described.

7. In a card-exhibitor, a vertical tube or hollow column for receiving and confining the cards and having exit apertures or openings at its base, a reciprocating follower having a cross-piece for coming in contact with the edge of the lowermost card to force it outwardly, and a vibrating card-holder on each side of the vertical column for receiving the cards from the follower, in combination with the means for reciprocating the follower and vibrating the card-holders, comprising a periodically-moving mutilated gear, mutilated pinions meshing with each side of said gear, a pivoted lever connected with the follower, and a link connecting said pivoted lever with the crank-pin on one of the mutilated side pinions, a pivoted lever slotted over a pin on the other mutilated pinion, a vertically-moving bar connected with said slotted lever and having a rack on its upper end, and a rock-shaft to which the card-holders are attached, having a segmental pinion with which the rack of the vertically-moving bar engages, substantially as herein described.

8. In a card-exhibitor, a vertical tube or column for the cards, having exit-openings at its base, a reciprocating follower having a cross-piece for forcing the lowermost card out, and the vibrating card-holders receiving the cards from the follower, in combination with the mutilated pinions and connections from said pinions to the follower and card-holders, whereby they are operated, a periodically-moving mutilated central gear meshing with the mutilated side gears alternately, an arm on said central gear, and pins on the sides of the pinions, whereby they are brought around to their engagement at the proper times, substantially as herein described.

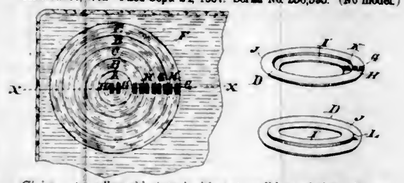
9. In a card-exhibitor, a vertical tube or column for receiving the cards, a reciprocating follower with a cross-piece for forcing the cards out, and vibrating card-holders for receiving the cards from the follower, in combination with pivoted levers and connections for reciprocating the follower and vibrating the card-holders, mutilated gears and pinions periodically rotating for operating the levers and connections, a gong, and a swinging hammer operated by one of the mutilated pinions to strike the gong, whereby an alarm is given at the commencement of the operation, substantially as herein described.

10. In a card-exhibitor, a vertical tobe or hollow column for receiving the cards and having exit-openings at its base, a follower having a cross-piece for forcing the cards outwardly through said openings, and a vibrating card-holder on each side of the vertical column for receiving a card at each stroke of the follower, in combination with pivoted levers and connections for reciprocating the follower and vibrating the card-holders, periodically-moving mutilated gears and pinions for operating the levers and connections, a mutilated power-gear and a mutilated pinion meshing therewith, and connections between said pinion and the mutilated gears for operating the levers, substantially as herein described.

11. In a card-exhibitor, the vertical card-holding tube or column, the follower beneath the same, and means, substantially as described, for reciprocating the same, the power-gear I, having teeth for a portion of its circumference and the remainder smooth, and a lug or pin on its side, in combination with the counter-shaft L, having a mutilated pinion engaging the gear and a collar with a pin with which the lug on the gear is adapted to come in contact, whereby the mutilated pinion is turned to engage with the gear, substantially as described.

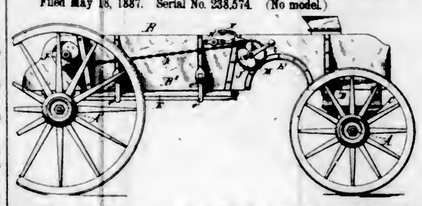
12. In a card-exhibitor, a vertical card-holding tube or column, a follower beneath the same, means for horizontally reciprocating the same, vibrating card-holders and means for actuating them, and a power-gear and transmitting mechanism having a friction-pulley, X, in combination with the means for governing the power-transmitting mechanism, comprising the rotating sleeve t', to which the power is transmitted, the pivoted balls or weights U, carried by said sleeve and having arms with upper ends, u', the vertically-movable rod t, having a grooved collar in which the upper ends of the arms play, the spring-actuated lever upon which the lower end of the movable rod rests, and the brake-shoe carried by said lever and operating against the face of the friction-gear X, substantially as herein described.

378,271. ADJUSTABLE STOVE-COVER. SARAH WATERMAN, Milwaukee, Wis. Filed Sept. 24, 1887. Serial No. 250,595. (No model.)



Claim.—An adjustable interlocking stove-lid consisting of a central part, A, and a series of successively encompassing rings, B C D E, each of the rings being provided with a recess, K, and the center piece, A, and each of the rings except the outside one being provided with a guide-lock, L, adapted to enter the corresponding recess K, the center piece, A, and each of the rings being also provided with a recess, G, and a supporting-flange, J, and the rings each having a ledge, I, all located, constructed, and arranged substantially as described.

378,272. DUMPING-WAGON. DAVID S. WATSON, Stratford, N. Y. Filed May 18, 1887. Serial No. 238,574. (No model.)



Claim.—1. The combination, with the front and rear axles, A A', and bolster C, of the body B, composed of the side pieces, B' B², secured to the bolster C and rear axle, A', and provided in their under sides with recesses b^3, in rear of the front axle, a front cross-piece, B³, connecting the side pieces, B' B², in rear of the recesses b^3, a rear cross-piece, B⁴, and hinged bottom sections, E E, substantially as set forth.

2. The combination, with the wagon-body provided with a plane front plate, c, and a king-bolt fitted snugly in said front plate, of the front axle provided with a bearing-plate, a, having its upper surface made convex laterally and straight longitudinally, the axle and plate a being formed with an opening, a', which fits snugly around the king-bolt at its upper end and which flares downwardly and laterally, substantially as set forth.

3. In a dumping-wagon, the combination, with the body B and bottom sections, E, of elbow-shaped arms c', whereby the bottom sections are hinged to the body, said arms being each composed of a lower horizontal portion, c, to which the bottom section is secured, and an upright portion, c^2, pivoted to the side of the body, substantially as set forth.

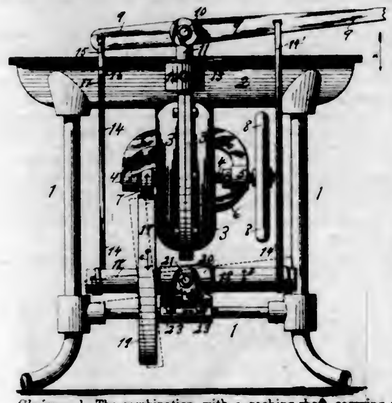
4. In a dumping-wagon, the combination, with the body B, provided with bottom sections, E, hinged at their sides to the body, of the horizontal drums G G', arranged at the front and rear ends of the body B, chains or ropes whereby said drums are connected with the hinged front and rear ends of the bottom sections, and means whereby the drums G G' are rotated simultaneously to open and close the hinged bottom, substantially as set forth.

5. In a dumping-wagon, the combination, with the body B, provided with hinged bottom sections, E, of drums G G', arranged at the front and rear ends of the body and mounted upon horizontal shafts g g', chains or ropes h h' h^3 h^4, connecting the front and rear ends of the sections E with the drums G G', and drums or pulleys J J', mounted on the outer ends of the shafts g g', and connected by a chain, k, substantially as set forth.

6. The combination, with the shaft g, provided with a ratchet-wheel, M, of the stop-pawl N, engaging with said ratchet-wheel and composed of two jointed arms, n' n^2, substantially as set forth.

7. The combination, with the body, of the hinged bottom, a windlass whereby the bottom is closed, a ratchet-wheel secured to the shaft of said windlass, and a stop-pawl jointed between its pivoted and its free ends, whereby the bottom can be released by turning the parts of the stop-pawl on their connecting-joint, substantially as set forth.

378,273. DRIVING MECHANISM FOR FORGES. EDWARD R. WEBB, Fitchburg, Mass., assignor of one-half to Hosea Stone, same place. Filed July 8, 1887. Serial No. 243,715. (No model.)



Claim.—1. The combination, with a rocking shaft carrying a driving-wheel, of a lever, and straps or cords connecting said lever with said shaft for imparting a revolving motion to said shaft, first in one direction and then in the other, and causing said shaft and the driving-wheel thereon to be tilted down and raised up, for the purpose stated, substantially as set forth.

2. The combination, with a shaft carrying a driving-wheel and supported in a swivel-bearing, and said bearing, and check-bolts for regulating the swivel motion thereof, of two straps or cords connected at one end with the ends of said shaft and adapted to be wound and unwound thereon, and connected at their other ends with a lever pivoted at a point between said straps or cords, and said lever, for operating said shaft through said straps or cords to impart a continuous motion in one direction to mechanism connected with the driving-wheel on said shaft, in the manner substantially as set forth.

3. The improved mechanism for operating the fan of a blacksmith's forge, consisting of a rocking shaft, 18, carrying a driving-wheel, 19, in combination with straps or cords 14 and 14', secured at their lower ends to the ends of said shaft 18, and adapted to be wound thereon and unwound therefrom, and secured at their upper ends to a lever, 9, and said lever 9 pivoted at a point between said straps and adapted to operate the shaft 18 through the intervention of said straps, in the manner substantially as set forth.

378,274. BIT-BRACE. ASHLEY D. WHITE, Buffalo, N. Y. Filed Oct. 24, 1887. Serial No. 253,216. (No model.)

Claim.—1. The combination, with the bit-socket and a tubular supporting-frame, C, provided with a movable sleeve, E, having a transverse pin or bar, of a crank provided at its end with a longitudinal slot engaging over said pin, and a transverse notch or recess communicating with said slot and in which said pin engages by turning the parts upon each other, substantially as set forth.

2. The combination, with the tubular bit-socket A, provided in its bore with a transverse pin, h, of the crank D, provided in its end with a longitudinal slot, g, having a transverse recess, g^2, substantially as set forth.

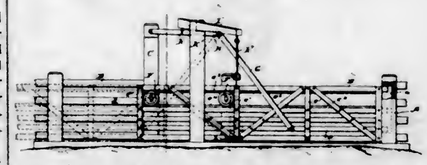
3. The combination, with the supporting-frame C, of the bit-socket A and sleeve E, provided, respectively, with transverse pins h and g', the shank a and crank D, provided, respectively, with longitudinal slots h' and g, having transverse recesses, and a universal joint connecting the sleeve E and shank a, substantially as set forth.

4. The combination, with the bit-socket and its shank provided with jaws i', and the crank D, provided with a sleeve, E, having jaws j', of the universal joint F, connecting said sleeve and shank, and composed of a ring or frame, i, pivoted to the jaws i', a ring or frame, j, pivoted to the jaws j', and connecting-links k, having their pivots arranged at right angles to the pivots of the rings, substantially as set forth.

5. The combination, with the bit-socket A, provided in its bore with a transverse pin, h, and the crank D, provided at its end with a longitudinal slot, g, of an angular detachable frame, C, provided at one end with a movable sleeve, E, having a transverse pin, g', adapted to engage with the slot g of the crank, and at its opposite end with a shank, a, having a longitudinal slot, h', adapted to engage with the pin h of the bit-socket, a universal joint, F, connecting the inner ends of the shank a and sleeve E, and a handle, L, secured to the frame C, substantially as set forth.

6. The combination, with the bit-socket A and crank D, of the detachable angular frame C, connecting the crank D and socket A, and provided with a handle, L, arranged in rear of the vertical plane of the socket A, substantially as set forth.

378,275. GATE. WILLIAM R. WHITE, Neoga, Ill. Filed Aug. 2, 1886. Serial No. 209,791. (No model.)



Claim.—The combination, with the sliding gate, the posts B and C, and the rollers carried by said posts, upon which the gate is supported, of the swinging rod or link G, pivoted to the gate, near the bottom thereof, at a point in front of post B, when the gate is closed, and arranged to have its lower end move past said post as the gate opens and closes, a horizontal lever, H, pivoted at one end to post C and pivotally connected at the other end with rod G, and the gate-opening levers I I', pivoted upon opposite sides of the gate and flexibly connected with lever H near its fulcrum, said parts being arranged substantially as described, whereby the gate may be both opened and closed by a short downward pull upon the outer end of either of the opening-levers

378,276. BOTTLE ATTACHMENT. GEORGE P. WHITTLESEY, Washington, D. C., assignor of one-half to Lillian C. Whittlesey, same place. Filed Sept. 27, 1887. Serial No. 250,868. (No model.)



Claim.—1. The combination, with a vessel, of a removable spoon-holder composed of a device to attach it to the vessel and a device affording a bearing-point for each edge of a spoon-handle, substantially as described.

2. A spoon-holder composed of a shank provided with a hook affording a bearing-point for each edge of a spoon-handle, and means for attaching it to a vessel, substantially as described.

3. A spoon-holder composed of a shank provided with a ring to engage with the bottle, and a hook made of springy material and thereby adapted to clasp the spoon-handle, substantially as and for the purpose set forth.

4. A spoon-holder composed of the shank A, the drip-cup B, the ring C, and the hook D, substantially as described.

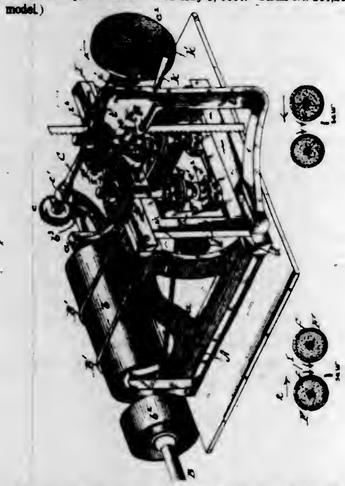
5. A spoon-holder composed of the shank A, the drip-cup B, the adjustable ring C, and the hook D, substantially as described.

6. A spoon-holder composed of a telescopic shank, A, a drip-cup, B, a ring, C, and a hook, D, substantially as described.

7. A spoon-holder composed of a shank, A, a removable drip-cup, B, a ring, C, and a hook, D, substantially as described.

8. A blank for a spoon-holder, substantially as described, consisting of a shank, *a*, a disk, *b*, two arms, *c c*, having a series of holes, *c' c'*, and a tongue, c^3, and an arm, *d*, substantially as shown, and for the purpose set forth.

378,277. DEVICE FOR SHARPENING SAWS. GEORGE W. AMESBURY, Philadelphia, Pa.; George M. Brill administrator of said George W. Amesbury, deceased. Filed May 5, 1886. Serial No. 201,206. (No model.)



Claim.—1. In a saw-sharpener, a reciprocating frame, D, a pair of grinding-disks placed edge to edge and mounted on said frame, actuating mechanisms for said frame and disks to cause them to operate to sharpen alternate teeth of a saw, and a feeding device for the saw, substantially as set forth.

2. In a saw-sharpener, the combination of reciprocating frame D, rotary disks F, mounted on said frame and placed edge to edge, feed-bars H, saw holder or clamp I, and actuating devices for said frame, disks, and feed-bars, substantially as set forth.

3. The combination, with a saw-holder, of the reciprocating frame D, rotary grinding-disk F, mounted on said frame, and actuating devices, substantially as set forth.

4. In a saw-sharpener, the combination of the reciprocating frame, rotary grinding-disks mounted on said frame, saw-feeding bars, saw-holder, devices for actuating the disks and feeding-bars, and devices for adjusting the disks to and from the saw-feeding bars and for varying the inclination of the disks and for moving them to and from the saw-holder, substantially as set forth.

5. The combination of a reciprocating frame, brackets or yokes in said frame, rotary grinding or sharpening disks in said brackets, and actuating devices for said frame and disks, substantially as set forth.

6. In a saw-sharpener, the combination of reciprocating frame D, rotary grinding-disks F, mounted upon said frame and revolving in opposite directions, and actuating devices, substantially as set forth.

7. In a saw-sharpener, the combination of a reciprocating frame, D, rotary disks F, mounted on said frame, and actuating mechanism for the frame and disks, substantially as and for the purpose set forth.

8. In combination with drum-shaft B, sliding frame D, rotary disks F in said frame, actuating mechanism for the latter, and power-transmitting devices between shaft B and disks F, substantially as set forth.

9. The combination of a saw-holder, a feeding device consisting of inclined bars, sharpening-disks, and actuating devices for rotating and reciprocating said disks, substantially as set forth.

10. In a saw-sharpener, the combination of the sliding frame D, pivoted or tilting and sliding brackets or yokes E, and grinding-disks F, supported in said yokes, and actuating devices for said frame, yokes, and disks, substantially as set forth.

11. In a saw-sharpener, the combination of a reciprocating frame, D, rotary grinding-disks F, mounted upon said frame, a saw-holder composed of two jaws having spring closing devices, a sliding block located between the jaws, a feeding device, and actuating mechanism for the frame, disks, and feeding device, substantially as set forth.

12. The pivoted inclined feed-bars H, in combination with adjustable bracket K, having stop-screws k^4 for the feed-bars, substantially as and for the purpose set forth.

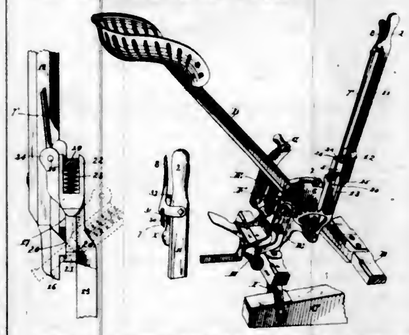
13. In combination with frame D, having lugs *d'*, with slot d^5 and lip d^6, brackets or yokes E, having bearings *e* and lugs e^5, and set-screws d^4 and d^5, substantially as and for the purpose set forth.

14. In a saw-sharpener, the combination of a reciprocating frame, a pair of oppositely-inclined feed-bars pivoted to said frame, rotary grinding-disks mounted on said frame, and actuating devices for the frame and disks, substantially as set forth.

378,278. COMBINING METALS WITH ALUMINUM. WILLIAM A. BALDWIN, Chicago, Ill., assignor of one-fourth to Ammi A. Thomas, J. Clement Smith, and James J. Sheehy, all of Washington, D. C. Filed July 20, 1887. Serial No. 244,830. (No specimens.)

Claim.—The process of combining a metal with aluminum, consisting in first fusing clay or like substances containing alumina with carbonaceous matter and sodium chloride, the sodium chloride being in excess of the other substances, fusing the metal to be combined, and introducing the metal thus fused into the said fused mass, substantially as specified.

378,279. CORN-PLANTER. JOSEPH C. BARLOW, Quincy, Ill. Filed Nov. 16, 1887. Serial No. 255,339. (No model.)



Claim.—1. In a corn-planter and similar implements, the combination, with the foot-lever, of the adjusting mechanism, a toothed segment connected to said foot-lever, and a hand-lever provided with a toothed segment gearing into the segment on the foot-lever and located on the right-hand side of the operator, substantially as described.

2. In a corn-planter, the combination, with the operating-crank and attached foot-levers supported beneath or in rear of the seat-standard, of a hand-lever pivotally supported on the frame and connected to the crank through geared segments, substantially as described.

3. In a corn-planter, and in combination with the foot-levers and the gear-segment secured thereto, the hand-lever provided with gear-segment and a locking device, substantially as described.

4. In a corn-planter, and in combination with the hand-lever connected to the runner-actuating devices through gear-segments, as described, the locking-dog and a detent for holding said dog retracted, as and for the purpose set forth.

5. In a corn-planter such as described, the combination, with the actuating-crank and foot-levers, one of the latter being provided with a gear-segment, of the stationary segmental plate and the hand-lever provided with gear-segment and a dependent lug for engaging said plate to retain the lever in position, substantially as described.

6. In a corn-planter such as described, the combination, with the detachable foot-lever provided with a gear-segment and the frame with its segmental locking-plate, of the hand-lever provided with a gear-segment, a lug and dog engaging said segmental plate, substantially as and for the purpose set forth.

7. In a corn-planter such as described, and as a means for locating and retaining the locking-dog in position, the socket 17, formed with an opening, 20, for the bolt, a transverse slot, 18, and a cross-piece, 19, and the dog 5, formed with an engaging bolt and furcated end, constructed and applied substantially as described.

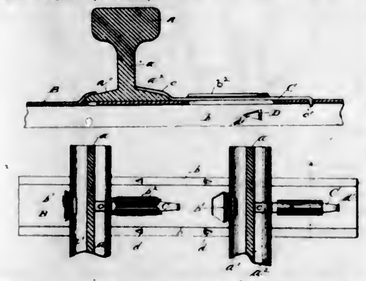
8. In a corn-planter such as described, and in combination with the operating hand-lever provided with a socket, 17, such as described, and a lug or shoulder, 16, co-operating with the notched plate for retaining said lever in working position, a dog, 5, inserted in a socket in said hand-lever and held in position by engagement with the notched plate, substantially as described.

9. In a corn-planter such as described, and in combination with the hand-lever connected to the crank and foot levers by gear-segments, a locking mechanism consisting, essentially, of a notched plate and movable dog, a lever connected to said dog, and a second pivoted dog supported in position to engage said lever to hold it retracted, substantially as described.

10. In combination with the hand-lever connected to the actuating devices and the locking-dog carried thereby, the lever connected to said dog, and the pivoted and weighted dog provided with a shoulder for co-operating with said last-mentioned lever to hold it partially retracted, substantially as described.

11. In a corn-planter, the combination, with the movable runner-frame and adjusting devices, of the rearwardly-projecting foot-lever H, provided with a gear-segment, and a hand-lever pivotally supported upon the frame in position to engage the segment on lever H, substantially as described.

378,280. METALLIC RAILWAY-TIE AND FASTENING THEREFOR. FRANK L. BARROWS, Milwaukee, Wis. Filed Apr. 5, 1887. Serial No. 233,712. (No model.)



Claim.—1. A metallic tie having lips and keepers formed adjacent to each other on its upper surface, in combination with a locking device consisting of a strip bent at one end to conform to the shape of a rail-flange and having its other end bent down to enter a hole in said tie, substantially as set forth.

2. A metallic tie having lips and keepers struck or formed from or on its top surface and perforations beyond the keepers, in combination with elastic locking-strips bent at one end to conform to and bear against the rail-flanges and at the other end provided with hooks to enter the described perforations, substantially as set forth.

3. A metallic tie provided with side flanges having tongues struck therefrom and turned in at an angle thereto, substantially as set forth.

378,281. STEAM-INJECTOR. LOUIS M. BERRY, Reading, Pa. Filed Dec. 1, 1887. Serial No. 256,618. (Model.)



Claim.—1. As an improvement in steam-injectors, the overflow branch or pipe comprising two channels or passage-ways and an upper cylindrical extension, and the ball-valve located in said cylindrical extension and having a movement about equal to the diameter of said channels or passage-ways, substantially as shown and described.

2. The overflow branch or pipe having two channels or passage-ways, the ball-valve, and the funnel-like pipe or chamber having a series of apertures, substantially as shown and described.

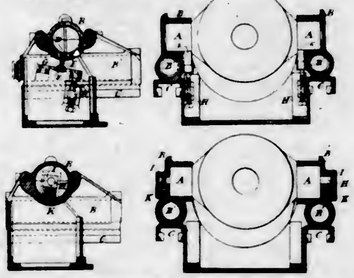
3. As an improvement in injectors, the funnel-like pipe or chamber secured to the overflow branch or pipe and having a series of apertures, as shown, and for the purpose stated.

4. In a steam-injector, the combination, with the casting or casing having an aperture in its upper portion, of the overflow branch or pipe having two channels or passage-ways and upper and lower cylindrical extensions, the plug screwed in the upper one of said extensions and having an inner curved wall, and the ball-valve normally resting on said aperture of the casing and having a limited movement in said upper extension, substantially as shown and described.

5. The combination, with the casing, of the end plug having a threaded portion fitting a corresponding thread of said casing and an apertured extension, the steam-inlet jet-tube held by said plug and provided with a thread, the lifting and combining tubes, and the apertured cylinder or jacket secured to said steam-inlet jet-tube and to said lifting-tube, substantially as shown and described, said lifting-tube and cylinder or jacket and combining-tube being screwed together, as stated.

6. The herein-described improved injector, comprising the steam-inlet jet-tube, the apertured cylinder or jacket, the lifting, combining, and delivery tubes, the overflow branch or pipe having two channels or passage-ways, the ball-valve, and the funnel-like pipe, all constructed and arranged substantially as shown and described.

378,282. TRUNNION-BEARING FOR ORDNANCE, &c. RALPH T. BRANDTON, Elswick Works, Newcastle-upon-Tyne, England, assignor to W. G. Armstrong, Mitchell & Co., (Limited,) same place. Filed June 1, 1887. Serial No. 239,973. (No model.) Patented in Italy Dec. 31, 1886, No. 20,838.



Claim.—The combination of the trunnions, the bearings or annular supports surrounding the trunnions, and the auxiliary spring-sustained supports exerting upward pressure on the trunnions, and thereby relieving the bearings or annular supports from weight, substantially as set forth.

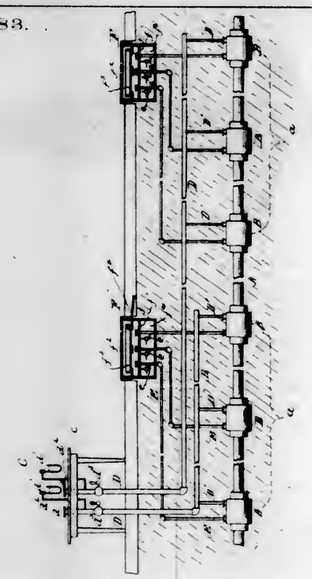
378,283. MEANS FOR DETECTING LEAKAGE FROM GAS-MAINS. SAMUEL R. BRICK, Stapleton, N. Y. Filed Oct. 9, 1886. Serial No. 215,797. (No model.)

Claim.—1. The combination, with a line of pipe or conduit having its section joints or unions inclosed in casings, of indicating devices assembled at a central station along the line of the pipe, and ventilating-pipes leading from said casings to the indicating devices at the central station, substantially as and for the purpose set forth.

2. The combination of a line of pipe having all its joints inclosed in casings, indicating devices assembled at a station, and a ventilating-pipe connecting each said casing with an indicating device at said station, substantially as and for the purpose set forth.

3. The combination of a line of pipe having its joints inclosed in

378,283.



casings, a station having indicating devices assembled therein, and ventilating-pipes having cut-off valves for connecting said casings to said indicating devices, substantially as set forth.

4. The combination of a line of pipe having its joints inclosed in casings, a station having indicating devices assembled therein, ventilating-pipes connecting said casings with said indicating devices, and other separate ventilating-pipes leading from said casings and provided with indicating devices, substantially as set forth.

5. The combination of a line of pipe having its joints inclosed in casings, a station having indicating devices assembled therein, and ventilating-pipes having cut-offs and branch pipes connecting said casings and indicating devices, substantially as set forth.

6. The combination, with a line of pipe having its joints inclosed in casings, of indicating devices assembled at a central or main station, ventilating-pipes connecting said casings and indicating devices, separate indicating devices assembled at local or sub stations, and separate ventilating-pipes connecting said casings with the indicating devices at the sub-stations, substantially as set forth.

7. The combination of a line of pipe having its joints inclosed in casings, a station having a number of indicating devices and ventilating-pipes leading to said casings, and other separate ventilating-pipes leading from said casings to indicating devices assembled at sub-stations located at intervals along the length of the line of pipe, substantially as set forth.

8. In combination with a line of pipe having its joints inclosed in casings, a main station having an assemblage of indicating devices, ventilating-pipes having cut-off valves connecting said casings and indicating devices, sub-stations located at intervals along the line of pipe, indicating devices assembled at said sub-stations, and separate ventilating-pipes connecting said casings with the sub-station indicating devices, substantially as set forth.

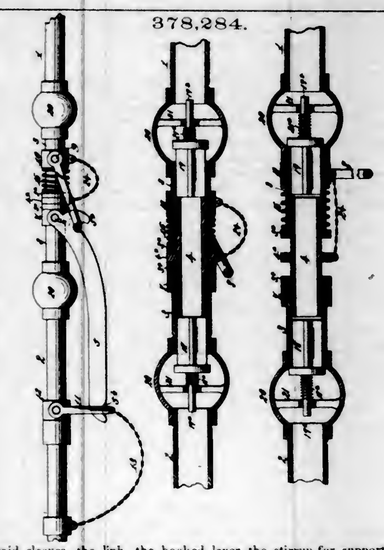
9. The combination, with a line of pipe having its joints inclosed in casings, of ventilating-boxes or sub-stations located at intervals along the line of pipe, separate indicating devices assembled in said sub-stations, and a ventilating-pipe leading from each of said indicating devices to a casing on the line of pipe, substantially as set forth.

378,284. COUPLING AND CUT-OFF FOR STEAM AND AIR PIPES FOR CAR HEATERS, BRAKES, &c. JOHN BRISCOE, Custer City, Pa. Filed Apr. 7, 1887. Serial No. 234,058. (No model.)

Claim.—1. A pipe-coupling and automatic cut-off comprising the flanged barrels, a flanged and hollow center plug, sleeves on said flanged barrels, a link carried by one sleeve, a lever hung upon the other sleeve, a stirrup for supporting the lever, and valves operating in the flanged barrels, substantially as described.

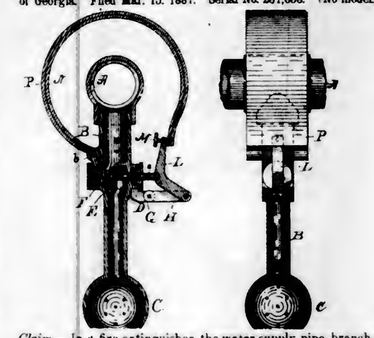
2. The combination, with the flanged barrels, hollow center plug, and cut-off valves, of the two sleeves, the spring bearing upon one of

378,284.



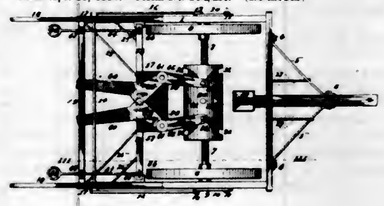
said sleeves, the link, the hooked lever, the stirrup for supporting the lever, and the chain connected with said stirrup, substantially as described.

378,285. FIRE-EXTINGUISHER. WALKER G. BROWNE, Atlanta, Ga., assignor to the United States Automatic Water Cut-Off Company, of Georgia. Filed Mar. 15, 1887. Serial No. 231,038. (No model.)

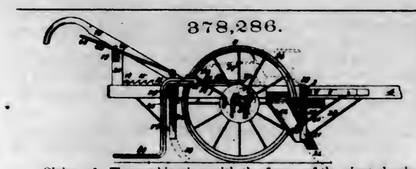


Claim.—In a fire-extinguisher, the water-supply pipe, branch pipe and nozzle, a valve, E, opening against a spring, the pressure of the water forming a resisting force, an elbow-lever, L, having an oscillating fulcrum, and a compound plate, P N, hinged to the branch pipe and provided with an adjusting-screw, all combined and arranged as shown and described, for the purpose of automatically opening said valve upon an increase of temperature, as set forth.

378,286. COMBINED CORN AND COTTON PLANTER, CULTIVATOR, AND COTTON-CHOPPER. JOHN W. CARLEY, Thornton, Tex. Filed Apr. 11, 1887. Serial No. 234,421. (No model.)



378,286.

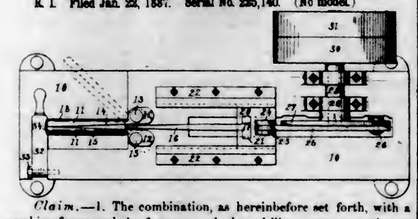


Claim.—1. The combination, with the frame, of the pivoted axle-straps 10, elevating-rods 12, having locking-bar 14, and the racks 16, having teeth 15, substantially as described.

2. The combination, with the frame, of the removable cross-bar, vertical bars 20, handles 18, connecting-rod 19, and the levers 64, secured to the cross-bar and fulcrumed to the connecting-rod, substantially as described.

3. The combination, with the frame, of the driving-wheels 8, axle 7, roller 30, formed with cam-grooves 32, the cross-bar 56, table 57, arms 59, pivoted to the table, extending rearward and downward, having rearwardly-extending chopper-blades 60, and the forward extensions, 63, having rollers 33 working in the cam-grooves, substantially as described.

378,287. MACHINE FOR MAKING HOLLOW METALLIC KNIFE-HANDLES. RICHARD CHADWICK and GEORGE S. BOUTWELL, Providence, R. I. Filed Jan. 22, 1887. Serial No. 225,140. (No model.)



Claim.—1. The combination, as hereinbefore set forth, with a machine-frame and the formers, each shaped like a part or section of the form to be produced, of an expander for expanding the formers, and means for supporting and actuating the expander, substantially as herein described.

2. The combination, as hereinbefore set forth, with a machine-frame and a pair of pivoted formers, of interchangeable graduated expanders for expanding the formers, and means for supporting and actuating the expanders, substantially as herein described.

3. The combination, as hereinbefore set forth, with a machine-frame, of a pair of formers having variable cross-sections and pivoted in the same plane and lying apart, a detachable expander and a reciprocating expander-carriage therefor, and means for actuating the expander-carriage, substantially as herein described.

4. The combination, as hereinbefore set forth, with a machine-frame and pivoted formers, each having a variable cross-section, of a detachable expander and a reciprocating expander-carriage therefor, a drive-shaft and a crank-wheel provided with a wrist-pin, and a pitman intermediate of the wrist-pin and expander-carriage, substantially as herein described, whereby the revolution of the drive-shaft may force the expander between the formers and withdraw it, for the purpose set forth.

5. The combination, as hereinbefore set forth, with the machine-frame and pivoted formers, and the expander for entering among the formers, of a swinging bed co-operating with said formers and expander, substantially as herein described.

6. The combination, as hereinbefore set forth, with the separable formers 11, each shaped like a portion or section of the form to be produced, of the expander 16 for entering among and expanding the formers, substantially as and for the purpose herein described.

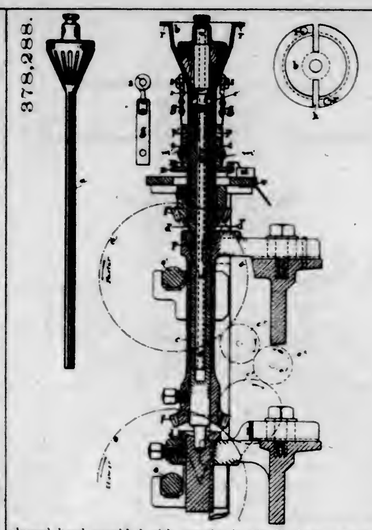
378,288. SPINNING-MACHINE. MAXIMIN CHAPON, Cours, Rhône, France. Filed Dec. 13, 1886. Serial No. 221,396. (No model.) Patented in France July 26, 1884, No. 163,516; in England Aug. 5, 1884, No. 10,962; in Germany Jan. 17, 1885, No. 32,813, and in Belgium July 30, 1885, No. 69,771.

Brief.—The object of the invention is to facilitate the spinning of threads of large size directly from the carding or other machine and to wind such threads as they are spun into the form of cops ready for use in the loom.

Claim.—1. The combination of the spindle *a*, the trumpet *b*, means for rotating spindle *a*, and means for rotating trumpet *b* in the same direction as spindle *a* at a different velocity, substantially as described.

2. The combination of the spindle *a*, having an inverted-cone-

378,288.



shaped head provided with exterior longitudinal grooves, the trumpet *b*, provided with longitudinal openings *k* in its sides, within which trumpet said cone fits, and means for rotating said spindle and trumpet in the same direction, but at different velocities, substantially as described.

3. The combination of the spindle *a*, provided with an inverted-cone-shaped head, the trumpet *b*, within which said cone fits, and means for rotating the cone *b* and spindle *a* in the same direction, but at different velocities.

4. The combination of the hollow spindle *c*, having interior stops, *p p'*, the spindle *a* within said hollow spindle *c*, said spindle *a* having exterior longitudinal grooves engaging said stops, and being also provided with an inverted-cone-shaped head, the trumpet *b*, within which said cone fits, and means for rotating the cone *b* and spindle *c* in the same direction, but at different velocities.

5. The combination of the hollow spindle *c*, having interior stops, *p p'*, the spindle *a* within said hollow spindle *c*, said spindle *a* having exterior longitudinal grooves engaging said stops, and being also provided with an inverted-cone-shaped head, the trumpet *b*, within which said cone fits, the barrel of said trumpet being provided with exterior longitudinal slots, *t*, the sleeve *m*, surrounding said hollow spindle *c* and carrying thread-guides *s*, the screws *m'* on said sleeve extending into said slots *t*, and means for rotating the cone *b* and spindle *c* in the same direction, but at different velocities.

6. The combination of the hollow spindle *c*, having interior stops, *p p'*, the spindle *a* within said hollow spindle *c*, said spindle *a* having exterior longitudinal grooves engaging said stops, and being also provided with an inverted-cone-shaped head, the trumpet *b*, within which said cone fits, the barrel of said trumpet being provided with exterior longitudinal slots, *t*, the sleeve *m*, surrounding said hollow spindle *c* and carrying thread-guides *s*, the screws *m'* on said sleeve extending into said slots *t*, the piece *x*, engaging said sleeve, means for imparting an upward and downward motion to said piece *x* and through it to the sleeve *m*, and means for rotating the cone *b* and spindle *c* in the same direction, but at different velocities.

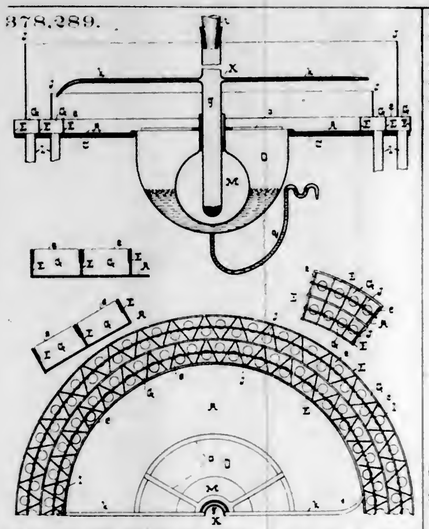
7. The combination of the hollow spindle *c*, the exterior circular collar, *d'*, thereon, trumpet *b*, supported by said collar, interior spindle, *a*, having a head fitting within said trumpet, and means for rotating said spindle *c* and trumpet *b* in the same direction at different velocities, substantially as described.

378,289. SULPHURIC-ACID-DISTRIBUTING APPARATUS. FRANCIS W. CHAPPELL, Baltimore, Md. Filed Mar. 1, 1887. Serial No. 229,357. (No model.)

Claim.—1. In a sulphuric-acid-distributing apparatus, the combination of an acid-distributer, an inclosing-hoop against which the distributed acid impinges, and receiving-compartments to which the acid flows from the hoop, substantially as and for the purpose specified.

2. In a sulphuric-acid-distributing apparatus, the combination of an acid-distributer, an inclosing-hoop against which the distributed acid impinges, arranged, substantially as described, to guide the acid

378,289.



to the receiving-compartments, substantially as and for the purpose specified

3. In a sulphuric-acid-distributing apparatus, an acid-distributing wheel adapted to deliver to different horizontal planes, substantially as and for the purpose specified.

4. In a sulphuric-acid-distributing apparatus, a distributing-wheel adapted to deliver to different horizontal planes, combined with two or more receiving-hoops, against which the different streams of acid, as delivered, impinge, substantially as and for the purpose specified.

5. In a sulphuric-acid-distributing apparatus, a circular receiving-pan having partitions with their upper portions adjustable with reference to the said pan, substantially as and for the purpose specified.

6. In a sulphuric-acid-distributing apparatus, a circular receiving-pan having partitions diagonal or oblique with reference to radial lines, substantially as and for the purpose specified.

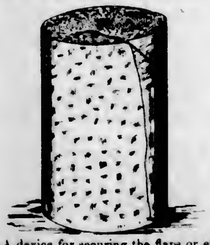
7. In a sulphuric-acid-distributing apparatus, a base-plate for the same, having a central well adapted to hold acid, substantially as and for the purpose specified.

8. In a sulphuric-acid-distributing apparatus, a base for the receiving-pan, having a well in the center thereof adapted to hold acid, with a tight joint where the well connects or unites with the base, substantially as and for the purpose specified.

9. In a sulphuric-acid-distributing apparatus, an acid-distributing wheel having its central pipe extending into a flask, to which it is secured, substantially as and for the purpose specified.

10. In a sulphuric-acid-distributing apparatus, a base for a receiving-pan, having a well in the center thereof, with a tight joint where it connects with the base, and the said well provided with an adjustable overflow-pipe to regulate and maintain the depth of liquid in the well, substantially as and for the purpose specified.

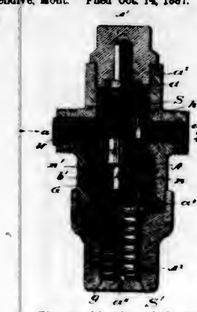
378,290. **DEVICE FOR SECURING THE ENDS OF CARPET IN ROLLS.** DAVID P. CLARK and MANFRED U. LOREE, Miamisburg, Ohio. Filed July 25, 1887. Serial No. 245,210. (No model.)



Claim.—1. A device for securing the flaps or ends of carpet in rolls, consisting of an elastic cord and a metallic pin with perforated head or eyelet, through which is passed said elastic cord having at one end a metallic hook, substantially as herein set forth.

2. In a device for securing the flaps or ends of carpet in rolls, a metallic pin having a perforated head or eyelet to receive a cord, in combination with said cord having a hook at one end, substantially as herein set forth.

378,291. **FLUID-PRESSURE REGULATOR.** WILLIAM S. CLARKSON, Glendive, Mont. Filed Oct. 14, 1887. Serial No. 252,317. (No model.)



Claim.—1. The combination of the body of the valve, having the upper and lower caps and the side connections provided with ingress and egress ports, the valve-stem centrally mounted within the body, having a disk, *d*, and collar *d'* thereon, the open-sided valve mounted in connection with said stem between said disk and collar, the piston-head at the lower end of said stem, the dish-shaped packing-ring between said piston-head and lower collar, *d'*, the bushing projecting into the valve, and the coiled spring bearing against the under side of the piston-head, substantially as described.

2. The combination of the body having the upper and lower caps and the side connections having ports, the spring-actuated valve-stem, the open-sided valve carried at the upper portion of said valve-stem, and the bushing projecting into the said valve and acting as a guide therefor, substantially as described.

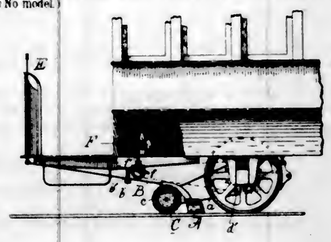
3. The combination, with the valve-body having the bushing projecting inward through one side thereof, of the centrally-mounted valve-stem having an upper disk, *d*, and a collar, *d'*, below said disk, the valve having a rectangular opening mounted on said stem between said disk and collar, the flat spring between said stem and valve, and the rod passing across the opening of said valve and bearing against the valve-stem, substantially as described.

4. The combination, with the valve-body, of the centrally-mounted spring-actuated valve-stem, the piston G, the collar B, having the peripheral spring *b'*, and the dish-shaped washer C, within which said collar B sets, substantially as described.

5. The combination, with the body of the valve, of the valve-stem, the valve H, carried at the upper end thereof, the piston-head G at the lower end thereof, and the collar B and dish-shaped packing C above said piston-head, substantially as described.

6. The combination of the valve-body having an upper and lower cap and two cylinders of different dimensions and two side ports, the centrally-mounted valve-stem having disks thereon with a space between the same, the valve carried on the upper portion of said stem between said disks, the packing-ring having a circular spring-pressure exerted against the same to form a tight joint, the piston-head and retaining-nut, the coiled spring bearing against said piston-head and the washer in the lower apertured cap, against which the lower end of the spring bears, substantially as described.

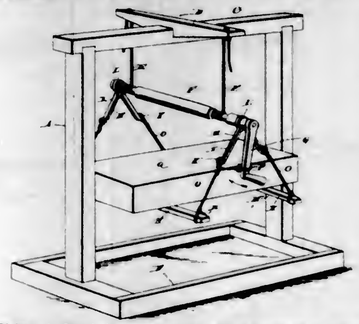
378,292. **TRACK-SCRAPER FOR STREET-RAILWAYS.** GEORGE W. DAVIS, Hot Springs, Ark. Filed Nov. 23, 1887. Serial No. 256,021. (No model.)



Claim.—1. In a street-car, a track-cleaning device consisting of the scrapers A and the pulverizers C, carried on the frame of the car, the pulverizers being revolved by belt-connection with the axle of the car, substantially as shown and described, and for the purpose specified.

2. In a street-car, a track-cleaning device consisting of the levers B, the scrapers A, the adjustable pivoting-screw *b*, the toothed actuating-bar E, and the pawl *e*, all combined and operating substantially as described.

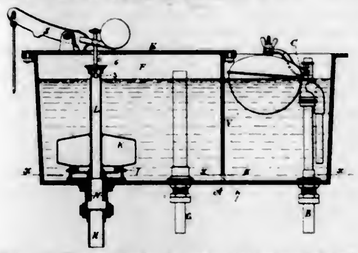
378,293. **DEVICE FOR RAISING AND LOWERING WEIGHTS.** MARTIN V. DAVIS, Harrison, Ark. Filed Nov. 3, 1887. Serial No. 254,197. (No model.)



Claim.—1. In a hoisting apparatus, the combination of the depending ropes E, the winch secured to the lower ends of said ropes and provided with an operating-crank, the hangers swiveled to the winch, and the slings attached to the hangers, substantially as set forth.

2. The combination, in a hoisting apparatus, of the depending ropes E, the winch secured to the lower ends of the said ropes, adapted to coil and uncoil the same and provided with the crank, the hangers swiveled to the winch and having the diverging arms, the slings M, attached to the lower ends of the said hanger-arms and adapted to support the object to be hoisted, and the hook adapted to engage the crank-arm and thereby prevent the winch from rotating, for the purpose set forth, substantially as described.

378,294. **WATER-CLOSET CISTERN.** JOHN DEMAREST, New York, N. Y., assignor to The J. L. Mott Iron Works, same place. Filed Oct. 17, 1887. Serial No. 252,546. (No model.)

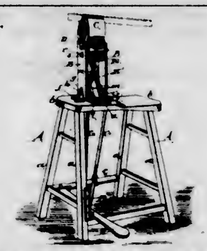


Claim.—1. The combination, in a water-closet cistern, of a minus pressure-chamber closed at the top and having a pipe, G, leading to the siphon of the closet, the flushing-pipe H, valve 1, float K, tubular stem L, and the stem 4, passing through the top of the minus pressure-chamber, and a valve, 6, at the top of the tube L, substantially as set forth.

2. The combination, in a water-closet cistern, of a minus pressure-chamber, a flushing-pipe passing therefrom to the closet, a suction-pipe leading to the siphon of the closet, a valve to the suction-pipe, and a float for sustaining the same when lifted, and a valve acted upon by the float to close an air-inlet opening into the minus pressure-chamber and to keep such valve closed until the float and valve commence to descend, substantially as set forth.

378,295. **STITCHING-HORSE.** HERMAN DOERING, Reedsburg, Wis. Filed Dec. 21, 1887. Serial No. 258,562. (No model.)

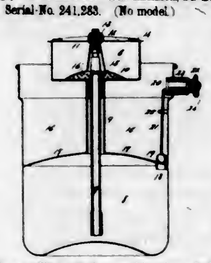
Claim.—1. The combination, with the frame A, provided with the seat-frame, the operating foot-lever, and the rock-shaft, of the vertically-adjustable side pieces, the crossed levers pivoted together between said side pieces, the jaws C, pivoted together and to the short arms of the levers, and a strap or connection between the lower ends of the levers and the operating foot-lever, substantially as described.



2. The frame A, having the recessed seat portion, the foot-lever, and the rock-shaft, in combination with the slotted side pieces, the lugs and bolts by which they are vertically adjusted, the levers E E', pivoted together and moving in opposite directions, a spring acting upon the long arms of said levers, the jaws pivoted together and having their short arms pivoted or hinged to the short arms of the levers, and the strap-connection between the levers and foot-lever, and a holding pawl and rack for the lever, substantially as described.

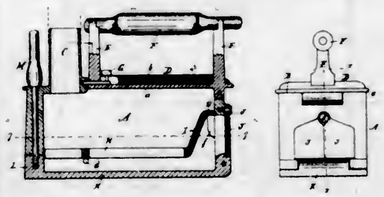
3. The seat portion having the recess and opening, the adjustable and slotted side pieces, the pivoted crossed levers, and the pivoted spring-actuated gripping-jaws hinged thereto, in combination with the brackets L, the rollers mounted therein, and the strap connected with the long arms of the levers, passing over said rollers and through openings in the seat portion and connected with the foot-lever, substantially as described.

378,296. **COFFEE-POT.** LEO EHRLICH, St. Louis, Mo. Filed June 14, 1887. Serial No. 241,283. (No model.)



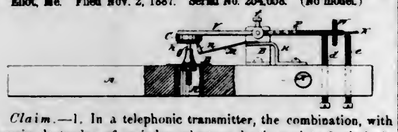
Claim.—In a coffee-pot, the combination of the body, perforated partition located in the body and dividing it into two chambers, tube passing through the partition into the lower chamber and open at its lower end, chamber for holding the ground coffee, located on the upper end of the tube and communicating therewith, a valve for controlling the opening in the partition, and means for operating the valve, consisting of an eccentric provided with a turning knob and a rod connecting the eccentric to the valve, substantially as and for the purpose set forth.

378,297. **TAILOR'S CHARCOAL-IRON.** FREDRICK W. EISENBERG, Ann Arbor, Mich. Filed May 12, 1887. Serial No. 237,960. (No model.)



Claim.—In a tailor's iron, the combination of the body A, rigid top plate, B, neck C, cover D, handle F, locking-slide G, slatted grate H, deflecting-plate I, draft-doors J, hinged bottom K, formed at one end with upwardly-projecting lug L, and threaded locking-pin M, the parts being constructed, arranged, and operating substantially in the manner and for the purposes set forth.

378,298. **TELEPHONIC TRANSMITTER.** MOSES G. FARMER, Eliot, Me. Filed Nov. 2, 1887. Serial No. 254,058. (No model.)

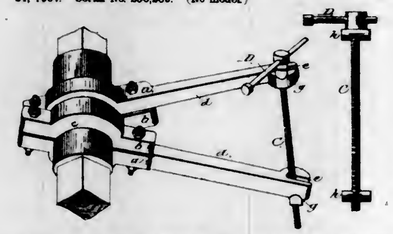


Claim.—1. In a telephonic transmitter, the combination, with the main electrodes, of an independent conducting-point of relatively small mass electrically connected to one of the terminals of the transmitter and in permanent yielding contact with the electrodes of the opposite terminals, as set forth.

2. In a telephonic transmitter, the combination, with the main electrodes, of a light independently spring-supported carbon point in permanent yielding contact with the vibrating carbon electrode and in electrical connection with the opposite terminal of the instrument, as set forth.

3. The combination, with the shaft L, the arm V and the electrode A carried thereby, the electrode O, the counterbalancing arm P, and the spring K, of the bracket H, the spring M, and contact-point n carried thereby and bearing upon the electrode A, as described.

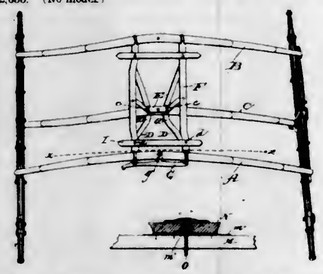
378,299. **WRENCH.** JOHN L. FISCH, Warwick, N. Y. Filed Sept. 21, 1887. Serial No. 250,289. (No model.)



Claim.—1. A wrench consisting of a plural number of independent two-part clamping-sections adapted to be applied to the meeting ends of the pipe or other object to be coupled or uncoupled, and a power device, substantially as described, connecting the outer ends of the sections and moving the section of the pipe in opposite directions.

2. Two clamping-sections, one of which is adapted to be secured to each meeting end of the pipe or object to be coupled or uncoupled, said sections having curved faces for engaging said pipe or object by frictional contact, in combination with an operating-screw engaging said sections and moving them in opposite directions, substantially as described.

378,300. **VEHICLE-SPRING.** ABNER C. FISH, Racine, Wis., assignor to Marion L. Fish, same place. Filed Mar. 28, 1887. Serial No. 232,633. (No model.)



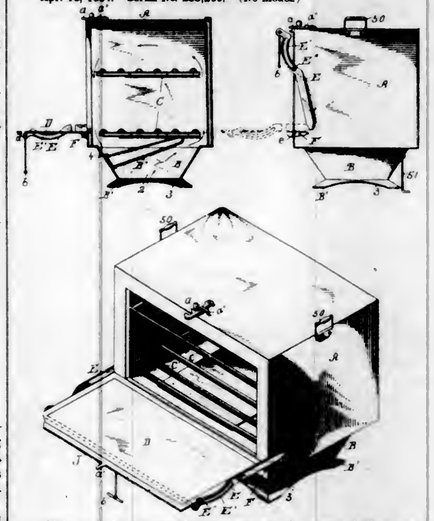
Claim.—1. The combination, with a triple-spring gear, of warped braces the centers of which are clipped to the center spring, independent body-rests extending from one side spring to the other, and a center brace connecting the said spring, braces, and body-rests together, as set forth.

2. The combination, with a triple-spring gear, of warped braces the centers of which are clipped to the under side of the center spring and having holes near their ends, main body-rests extending from one side spring to the other above the warped braces and having holes coinciding with those in the latter, additional body-rests extending from one of the main body-rests to the other and resting upon them, and provided with holes coinciding with those in the main body-rests and warped braces, and bolts passing through said holes and uniting the said parts together at their points of contact, substantially as set forth.

3. The combination, with the side springs, of cross-braces or main body-rests and additional body-rests extending from one of the cross-braces to the other and resting thereon, as set forth.

4. The combination, with the side springs and their center bolts, of a pair of cross-braces and a rub-iron, the latter extending from one cross-brace to the other and secured to the side springs by their center bolts, as set forth.

378,301. **OVEN FOR VAPOR-STOVES.** HENRY FLINT, Kansas City, Mo., assignor of one-half to Charles E. Cook, same place. Filed Apr. 18, 1887. Serial No. 235,269. (No model.)



Claim.—1. In an oven for vapor-stoves, the outer shell, A, provided with a contracted portion, B, having an open bottom and oblique walls, and provided with apertures 4, in combination with a deflector, B″, extending partly across the contracted portion and secured thereto at a point below said apertures, in the manner and for the purpose substantially as described.

2. In an oven for vapor-stoves, the combination of the outer shell, A, the door D, hinged thereto and provided with slotted arms E, hinged to said shell upon opposite sides of said door, the lugs E″, operating within said slots, the bar G, connecting the free ends of said arms, the lugs F, forming a rest for the arms, and the attaching-hook 51, located upon the side of the oven opposite the door, all adapted to operate as described.

3. In an oven for vapor-stoves, a door provided with a pair of arms hinged to the oven upon opposite sides of the door, said arms being provided with curved slots and a cross-bar at their free ends, in combination with lugs upon the door operating within said slots, and supporting-lugs forming hinges for the door, substantially as described.

378,302. **CARRIAGE-WHEEL.** SAMUEL D. FORBES, Wilmington, Del. Filed Nov. 4, 1887. Serial No. 254,292. (No model.)

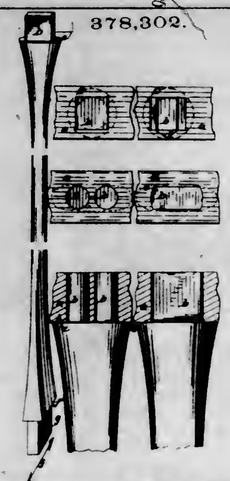
Claim.—1. The combination of a spoke having a tenon broad in the plane of the wheel and a felly having a long mortise to fit said tenon, substantially as shown and described.

2. The reel-shaped spoke described, being broad at its outer end in the plane of the wheel and broad at its inner end in the plane of the wheel's axis.

3. A wheel-spoke broad at its outer end in the plane of the wheel and thin transversely thereto and having a tenon to enter the felly.

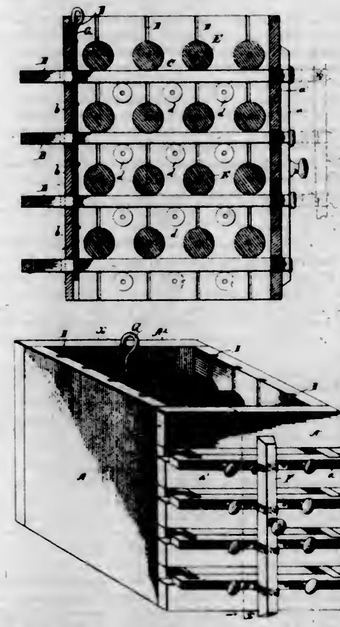
4. A wheel-spoke provided with a tenon to enter a felly and having broad shoulders beside the tenon in the direction of the plane of the wheel for the felly to rest on and narrow shoulders at the other sides of the tenon.

5. A spoke broader at its outer end in the plane of the wheel than its thickness in a direction at right angles thereto and provided with a tenon similarly proportioned, and having a tenon on its inner end whose greatest breadth is in the direction of the wheel's axis, substantially as shown and described.



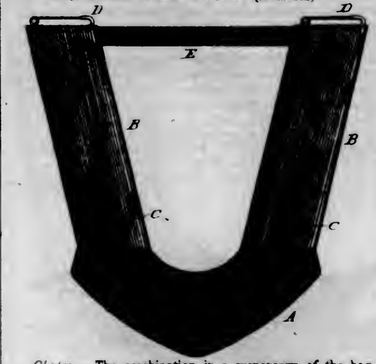
6. A spoke broader shouldered at its outer end in the plane of the wheel than in the direction at right angles to the said plane, as described.

378,303. **EGG-PRESERVER.** JOSEPH FORD and ARTHUR H. DELBRIDGE, Flint, Mich. Filed June 13, 1887. Serial No. 241,162. (No model.)



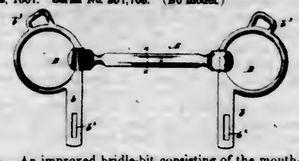
Claim.—The herein shown and described egg preserving and storing device, composed of the case having vertical guideways in its sides, the series of slides, the anti-friction rollers supporting the slides, the bar connecting the slides together, the rollers resting upon the slides and having their journals fitted in said guideways, and the stop-bar for limiting the outward movement of the slides, substantially as set forth.

378,304. **SUSPENSORY.** BUSHAN GALLAHD, New York, N. Y. Filed Apr. 4, 1887. Serial No. 233,648. (No model.)



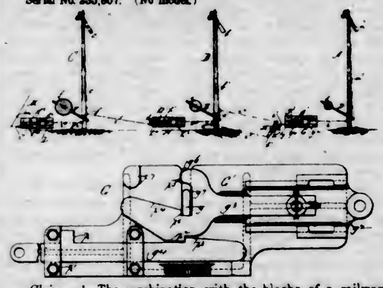
Claim.—The combination, in a suspensory, of the bag A, the non-elastic strips B B, secured thereto at opposite sides, the elastic strips C C, secured to the bag and to said strips B B, and the strip E, all adapted for attachment to an under-garment, substantially as described.

378,305. **BRIDLE-BIT.** OSCAR R. GLEASON, New York, N. Y. Filed Dec. 12, 1887. Serial No. 257,708. (No model.)



Claim.—An improved bridle-bit consisting of the mouth-piece A, square in cross-section, and the rings B, provided with the downwardly-projecting arms *b* and the upwardly-projecting loops or eyes *b*², substantially as herein shown and described.

378,306. **AUTOMATIC BLOCK-SIGNAL SYSTEM FOR RAILWAYS.** FREDERICK S. GUBERNER, Allentown, Pa. Filed Apr. 22, 1887. Serial No. 235,807. (No model.)



Claim.—1. The combination, with the blocks of a railway and signals protecting said blocks and having levers with progressively-increasing weights, of mechanical connections between said signals and instruments interpolated therein, said instruments being adapted to be tripped by a passing train, whereby a train on entering a block automatically sets the signal thereof to "danger," and on leaving said block automatically restores it to "safety" by setting the signal of the subsequent block to "danger," substantially as shown and described.

2. A track-instrument constructed substantially as herein described, and comprising bed-piece G′, lever *g*, slide *g*⁴, and latches *g*³ *g*⁵, substantially as set forth.

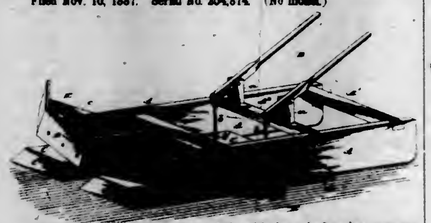
3. The combination, with a series of signals, of weighted levers connected therewith, and instruments located between said signals and connected with each, the weights of said levers increasing progressively, whereby they act successively upon the signals and instruments, substantially as shown and described.

4. The combination, with signals *a b c* and weighted levers D E F, of the track-instruments G H L, each of said track-instruments com-

prising a lever, a slide, and two latches, and intermediate connections, substantially as described, between said signals, weighted levers, and track-instruments, whereby a passing train automatically changes and restores the signal indications, substantially as shown and described.

5. The combination, with two or more signals, levers therefor with progressively-increasing weights, and track-instruments, whereby the indications of said signals are automatically changed by a passing train, of a manually-operated lever at the end of the connected signals, and instruments for restoring the final signal and instrument to normal or operative position, substantially as shown and described.

378,307. **SNOW-SCRAPER.** JOHN W. HAINES, Fort Fairfield, Me. Filed Nov. 10, 1887. Serial No. 254,814. (No model.)



Claim.—1. The combination of the side boards forming runners, the adjustable scrapers, the hand-levers for adjusting said scrapers, and the fenders, constructed as set forth and arranged on the top of the scrapers against the forward ends of the runners, substantially as described.

2. The combination of the side runners having top, front, and rear cross-braces and a central brace carrying fulcrum-brackets, hand-levers mounted in said brackets and having link-rods secured to the front ends, the slotted scrapers, to the rear portion of which the link-rods are also connected, the pivot-bar C', the beams C² and *d*, the hinged fenders D, and the brace-strips E, substantially as described.

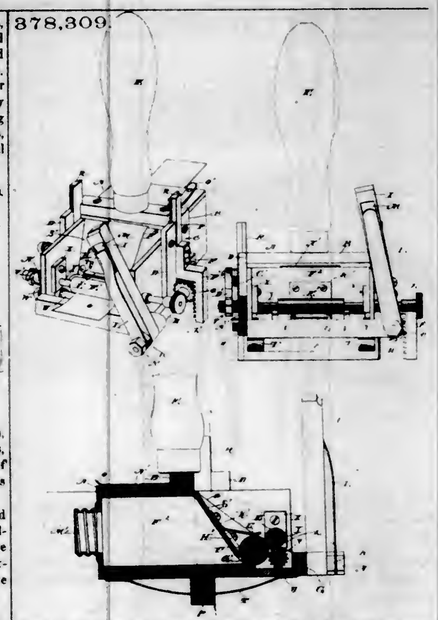
378,308. **HOSE-NOZZLE.** ALBERT HALLOWELL, Lowell, Mass., assignor of two-thirds to John C. Hoyt, William R. Potter, and Gershom C. Bassett. Filed July 5, 1887. Serial No. 243,398. (No model.)



Claim.—1. The hose-nozzle which consists of the main water-tube provided with its interior liquid-passage, the port in its side, the valve upon its forward end, and the oblique wing upon its exterior and near to the said valve, the liquid-controller upon the exterior of said main water-tube and having a valve-seat and a chamber at its forward end, said chamber inclosing said oblique wing and said port when the valve is near said forward end of the liquid-controller, means for adjusting the longitudinal position of said liquid-controller with respect to said main water-tube, and the delivery-nozzle, with its discharge-orifice, attached to said liquid-controller, and forming therewith a chamber between said liquid-controller and said discharge-orifice, unobstructed except by said valve, which it surrounds, substantially as described, and for the purposes specified.

2. The hose-nozzle consisting of the main water-tube, with its interior liquid-passage, the port in its side, the valve upon its forward end, the oblique wing upon its exterior near to said valve, and the screw-thread upon its exterior surface, combined with the liquid-controller upon the exterior of said tube, provided with the screw-thread in its interior, which engages with the screw upon the exterior of said tube, the valve-seat, and the chamber at its forward end, said chamber inclosing said oblique wing and said port when said valve is near the end of said liquid-controller, means for preventing the escape backward of liquid between said main water-tube and said liquid-controller, and the delivery-nozzle, with its discharge-orifice, attached to said liquid-controller, and forming therewith a chamber between said orifice and said liquid-controller, unobstructed except by said valve, which it surrounds, and contracted toward said discharge-orifice, substantially as described, and for the purposes specified.

378,309. **MAILING-MACHINE.** JAMES G. HARDIE, Jr., Canton, N. Y. Filed June 8, 1887. Serial No. 240,647. (No model.)



Claim.—1. In a mailing-machine, the combination of the case A, having the rigid jaw G at its front side, the rock-shaft H, journaled on one side of the case and having the swinging jaw I and the pinion O, the vertically-movable frame P, having the rack-arm engaging the pinion O, and the springs to normally lower the said frame P, for the purpose set forth, substantially as described.

2. In a mailing-machine, the combination of the case having the rigid jaw G at its front side, the rock-shaft on one side of the case, having the swinging jaw I, the spring L, bearing against the front side of the said swinging jaw, and the vertically-movable operating-frame geared to the rock-shaft, for the purpose set forth, substantially as described.

3. The combination, in a mailing-machine, of the case A, the shafts U and Y, journaled in the said case and geared together, said shaft U having the spurred wheels V and the shaft Y having the roller E' and the ratchet-wheel V', the vertically-movable frame P, having the arm C', the spring-actuated pawl D', depending from the said arm and adapted to engage the ratchet-wheel, and the springs T, to move the frame P downward normally, and thereby cause the pawl V' to partly turn the shafts V and Y by engaging one tooth of the pawl, substantially as described.

4. In a mailing-machine, the combination of the case A, having the feed mechanism and the operating cutting-jaws, and the paste-reservoir F², adapted to fit in the case A and to be detached therefrom, said reservoir having the opening G' at its lower front side, the paste-roller I', journaled on the front side of the reservoir, removable therewith, and arranged over the opening G', and the strap or plate having the slot L', to guide the paper strip over the roller I', substantially as described.

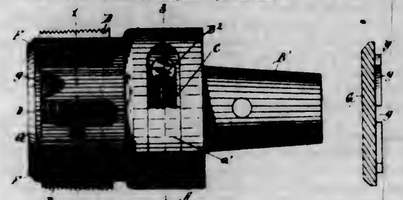
5. In a mailing-machine, the combination of the case A, having the feed mechanism and the cutting mechanism, and the longitudinal groove N' in the under side of its top, the reservoir F², adapted to fit in the said case and provided at its front end with the pasting-roller and the guide for the paper, and the detent to lock the reservoir in place in the case A, substantially as described

6. A mailing-machine having a removable paste-reservoir provided at its rear end with an opening for the admission of paste, the opening G' in its lower front corner, the blocks H' on the front side of the reservoir, the roller I', journaled in said blocks and arranged over the opening G', and the strap or plate K', secured to the front end of the reservoir extended over the roller, and having the slot L', substantially as described.

7. In combination with the case A, the vertically-movable operating-frame having a vertical handle on its upper side, the paste-reservoir arranged under the handle, the guiding-groove for the paper formed between the top of the reservoir and the lower end of the handle, the roller I', closing the outlet to the reservoir, journaled on the front side of the same, and removable therewith, and the plate K', with slot L', arranged above the roller I' and secured to the reservoir, substantially as described.

8. In a mailing-machine, the combination of the case A, having the rigid jaw G on its front side, the rock-shaft journaled on one side of the case, the cutting-jaw I, attached to the said rock-shaft and the spring-actuated vertically-movable frame geared to the rock-shaft and extending below the case, being thereby adapted to be operated by contact with the object on which the machine is downwardly pressed, substantially as described.

378,310. **COLLAPSING TAP.** JAMES T. HAYDEN, Chicago, Ill., assignor to the Crane Bros. Manufacturing Company, same place. Filed Oct. 15, 1887. Serial No. 252,498. (No model.)



Claim.—1. The combination, with the head and the radially-movable cutters, of the spindle provided with a cam for actuating the cutters, said spindle being capable of a limited movement of rotation within the head, substantially as and for the purposes specified.

2. The combination, with the head provided with the radially-movable cutters and with a transverse slot, of the spindle provided with a cam to operate the cutters and with a transverse pin to engage with the walls of the slot, and thereby limit the rotation of the spindle within the head, substantially as and for the purposes specified.

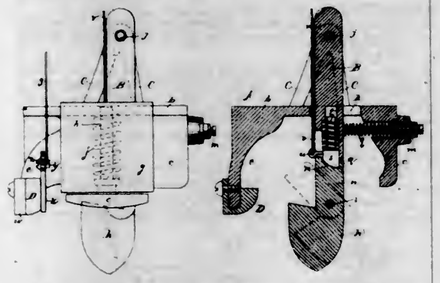
3. The combination, with the head provided with the radially-movable cutters and with a transverse slot, of the spindle capable of a limited movement of rotation within the head and provided with a cam to actuate the cutters and springs to hold the cutters in contact with said cam, substantially as and for the purposes specified.

4. The combination, with the head and the spring-controlled radially-movable cutters, said head being provided with a transverse slot, of the spindle provided with a cam to actuate the cutters and with a transverse pin to engage with the walls of the slot, substantially as and for the purposes specified.

5. The combination, with the head provided with the threading-cutters, of reaming-cutters arranged between each pair of threading-cutters and extending forward of the same, substantially as and for the purposes specified.

6. The combination, with the cam C, of the head A, provided with the radially-movable cutters D, each having a seat, *d*, the springs E, arranged in the inclined apertures *e*, the screw-plugs E', for closing the outer ends of said apertures, and the disks *d'*, held against the seat *d* by said springs, substantially as and for the purposes specified

378,311. **CAR-COUPLING.** IVORY HAZELTON, Boston, assignor of one-half to Leverett Saltonstall, Newton, Mass. Filed Nov 21, 1887. Serial No. 255,722. (No model.)

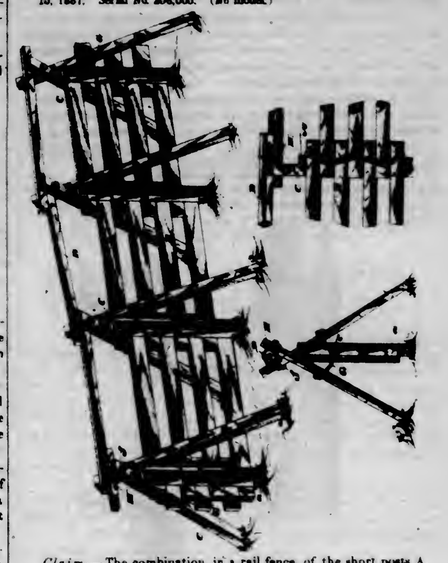


Claim.—1. The combination of draw-bar B, its laterally-vibrating head A, formed with seat *p*, and lip *q*, detent *s*, spring *t*, and cord *r*, all substantially as specified.

2. The combination, with frame A and draw-bar B, of locking-block D, formed with a vertical groove to receive a flange, *c*, of said frame, and with an elongated slot to receive the securing-screw *w*, and the angle-lever *x*, pivoted upon frame A, and having one of its arms pivotally connected with said block, and cord 3, attached to the other arm of said lever, all substantially as specified.

3. The combination, with frame A and draw-bar B, pivoted to stay C, of spring 1 seated in a passage in frame A at right angles to said bar, and provided with the adjusting-screw *m*, substantially as specified

378,312. **FENCE.** OREN D. HEARD, Lebanon, Tenn. Filed Dec. 15, 1887. Serial No. 258,005. (No model.)



Claim.—The combination, in a rail fence, of the short posts A, panels B, secured thereto by wires, inclined stakes C, bearing against the tops of the posts, riders D, and the bracing-wires G and H, one arranged above and the other below the fork of the stakes, the ends of each wire being secured by staples to the opposite sides of the respective stakes, substantially as specified.

378,313. **STONE-DRESSING TOOL.** MILTON P. HIGGINS, Worcester, Mass. Filed Mar. 11, 1886. Serial No. 194,770. (No model.)



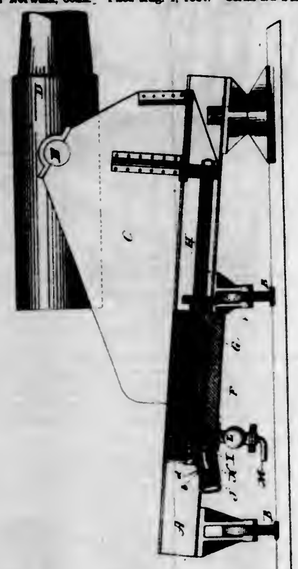
Claim.—1. A grindstone or emery-wheel dressing tool comprising the holder H, having the axle F near its end, a rotating cutter consisting of a hub carrying blades of nearly uniform thickness, and having flat surfaces, said blades extending from said hub, and their cutting-edges formed by their exterior ends standing oblique to the axis of the cutter and having their meeting edges united and supporting each

other, thus forming angles on both sides of the cutter, substantially as above set forth.

2. The combination, with the holder H, provided with hubs I, having openings in their inner surfaces, of the axle F, for supporting the cutter, having a slot in one end thereof, and a pin, G, for holding said axle in the hub I, and preventing it from turning therein, substantially as shown and described.

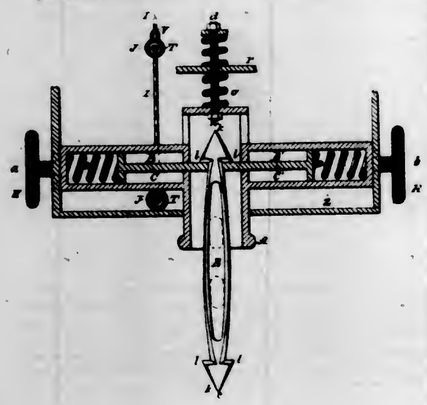
3. A rotary wheel cutter comprising a central perforated hub with a surrounding integral angular flange or corrugated wing, of substantially uniform thickness throughout, whereby the periphery of the wheel presents a thin zigzag edge continuously from the full-sized wheel until worn down to the hub, substantially as shown.

378,314. RECOIL-CUSHION FOR GUN-CARRIAGES. EBENEZER HILL, South Norwalk, Conn. Filed Aug. 1, 1887. Serial No. 245,778. (No model.)



Claim.—In a gun-carriage having as a part of it a chamber adapted to act as a cushion to resist recoil, the method of increasing the resisting force of said cushion, which consists in producing an explosion in said chamber concurrent with the discharge of the gun, substantially as described.

378,315. COMBINED COUPLING AND BRAKE. ALEXANDER HODGSON, Coochranville, Pa. Filed June 13, 1887. Serial No. 241,230. (No model.)



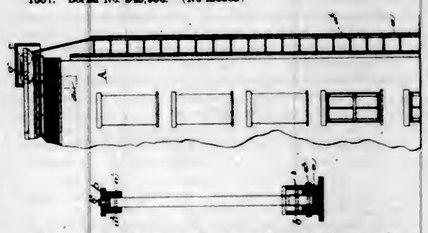
Claim.—1. In a car coupling and brake, the combination consisting of the safety coupling-link E, adapted to fit into a draw-head, A, having guides B B', provided with sliding jaws C C', which are operated by the springs D D, cams F F, and rock-shaft G, arranged as shown, and connected with the weighted hand wheels or levers H H and chain I, hand-wheel K, and rod J in the hollow brake-shaft T, also having the brake hand-wheel U, as described and shown, and for the purpose set forth.

2. In a car coupling and brake, the combination consisting of the safety coupling-link E, adapted to fit into a draw-head, A, having guides B B', provided with sliding jaws C C', which are operated by the springs D D, rods L O P, or chains M Q, levers N N W, chain I, hand-wheel K, and rod J, also having the brake hand-wheel U, all connected as shown, and for the purpose described.

3. The safety coupling-link E formed as shown, and having the vertical height back of the barbs *l l* greater than the transverse width at the same point, the barbed point *k l l* having the form of a four-sided pyramid with beveled angles, so that when the link is partially turned about forty-five degrees on its axis by derailment of the car or other accident the sliding jaws C C' will be forced apart, the link released, and the cars uncoupled, substantially as set forth.

4. The hollow brake-shaft T, containing the coupling-rod J, as shown and described.

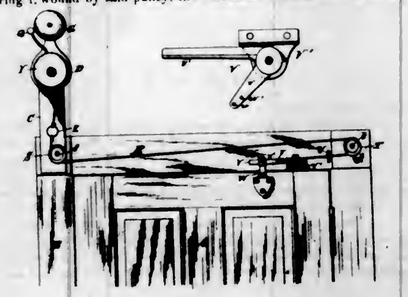
378,316. FIRE-ESCAPE. THOMAS P. HOLT, Boston, Mass., assignor to the G. W. & F. Smith Iron Company, same place. Filed July 11, 1887. Serial No. 243,958. (No model.)



Claim.—1. In a fire-escape, the channel-bar *a*, having side pieces, *b*, combined with the channel-bar *a'*, having a back, *b'*, and with rounds *a⁴*, pivoted to said channel-bars, the said back *b'* co-operating with the sides *b* to form a chamber when the ladder is folded up, and wherein the rounds are concealed and protected from inclement weather, substantially as described.

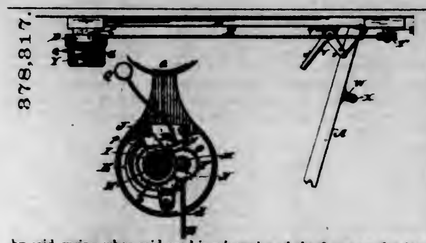
2. In a fire-escape, the channel-bar *a*, having side pieces, *b*, combined with the channel-bar *a'*, having a back, *b'*, and with rounds *a⁴*, pivoted to said channel-bars, the said back *b'* co-operating with the sides *b* to form a chamber when the ladder is folded up, and wherein the rounds are concealed and protected from inclement weather, and with a counterbalancing-weight, *d*, attached to the upper end of the sides *a'*, substantially as described.

378,317. DOOR-BELL. ANTHONY ISER, Lancaster, Pa., assignor to Israel L. Landis, same place. Filed Apr. 22, 1887. Serial No. 235,758. (No model.)



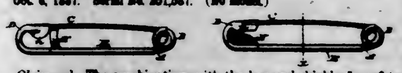
Claim.—1. A lever and a finger attached to the door for holding said lever stationary while the door is closed, in combination with a winding-pulley, the mainspring of an alarm mechanism, and a cord attached to said lever and attached to and wound around said pulley in order that a pull on said cord may wind the alarm mechanism, substantially as set forth.

2. The bell-crank lever V, having a series of holes, *w w'*, for the purpose stated, the cord R, attached thereto, and the guide-pulleys *t s*, in combination with the winding-pulley E, operated by said cord, the spring I, wound by said pulley, the wheels and bell-hammer actuated



by said spring when said cord is released, and the finger on the door which normally engages said lever to hold said cord against such release, substantially as set forth.

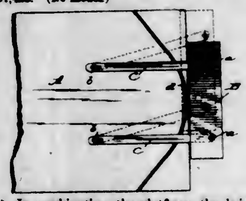
378,318. SAFETY-PIN. JOEL JENKINS, Montclair, N. J. Filed Oct. 6, 1887. Serial No. 251,567. (No model.)



Claim.—1. The combination, with the bar and shield of a safety-pin, of a re-enforcing sleeve encircling the bar, having a guard-piece formed integrally therewith to project radially therefrom in front of the shield, substantially in the manner and for the purpose herein set forth.

2. The combination, with the bar of a safety-pin, of a re-enforcing sleeve, a shield, and a guard, all formed in one piece and clamped upon said bar, to encircle the same and complete and re-enforce the pin, substantially in the manner and for the purpose herein set forth.

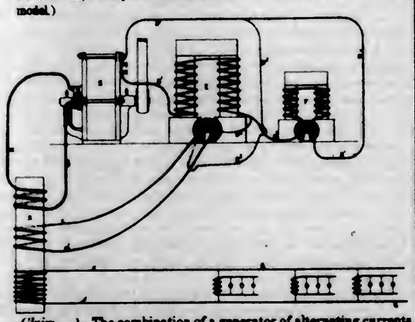
378,319. STOCK-GANGWAY. HIRAM T. KIMBALL, Chicago, Ill., assignor of one-half to Olney Newell, Denver, Colo. Filed May 7, 1887. Serial No. 237,423. (No model.)



Claim.—1. In combination, the platform, the bridge arranged with its edge to be parallel with the car, said bridge being connected to and supported at two points upon said platform and having movement laterally and toward and from the front edge of the platform, substantially as described.

2. In combination with the platform A, the bridge B, supported upon the bars C C, said bars being pivotally connected to the platform, whereby the bridge is adapted to be shifted, substantially as described.

378,320. ALTERNATING-CURRENT TRANSFORMER. RANKIN KENNEDY, Glasgow, County of Lanark, Scotland, assignor of one-half to Robert Dick, same place. Filed Apr. 6, 1887. Serial No. 233,837. (No model.)



Claim.—1. The combination of a generator of alternating currents with a main transformer having its core continuously magnetized in one direction, and having its primary circuit receiving an alternating current and with translating devices in its secondary circuit.

2. The combination of a generator of alternating currents and a transformer having a primary circuit receiving an alternating current, a secondary circuit, and translating devices in the latter, with a third conductor of a continuous current controlling the magnetism of the transformer-core, substantially as described.

3. A main transformer wound with primary and secondary conductors, and also with a third conductor for a continuous current, in combination with an alternating-current generator supplying an alternating current to the primary and a continuous-current generator supplying a continuous current to the third conductor, for the purpose set forth.

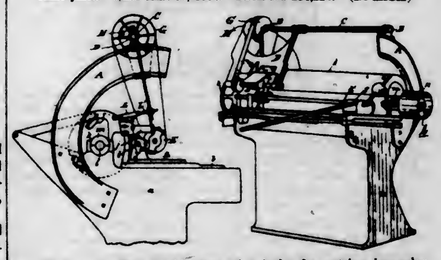
378,321. TRANSFORMATION AND DISTRIBUTION OF ELECTRIC ENERGY. RANKIN KENNEDY, Glasgow, County of Lanark, Scotland, assignor of one-half to Robert Dick, same place. Original application filed Dec. 20, 1886, Serial No. 222,260. Divided and this application filed Apr. 30, 1887. Serial No. 236,649. (No model.)



Claim.—1. A secondary generator or transformer of alternating currents of electric energy, consisting of a number of thin iron plates built together with insulating material between them to form a central magnetic iron block, and having projecting teeth to form magnetic poles of north and south polarity on both their edges, with channels between the teeth to receive the sections of the primary and secondary conductors, the whole being inclosed between two flat blocks of iron plates secured together on edge with insulating material between them, substantially as herein set forth.

2. Two or more flat magnetic blocks forming with their coils transformers and laid one upon the other, with coil opposite coil and tooth opposite tooth, and with poles of opposite polarity facing each other, in combination with an inclosing sheathing formed of laminated iron plates on top and bottom of the whole.

378,322. LATHE FOR TURNING IRREGULAR FORMS. PETER KETTENRING, Defiance, Ohio, assignor to the Defiance Machine Works, same place. Filed Mar. 17, 1887. Serial No. 231,237. (No model.)



Claim.—1. The combination of a lathe for cutting irregular forms, a swinging frame carrying an auxiliary cutter-head and provided with a shoe, and an auxiliary cam upon the live-spindle of the lathe to govern the proximity of such auxiliary cutter-head to the blank to be operated upon, substantially as described.

2. The combination, in a lathe for cutting irregular forms wherein a templet or cam on the live-spindle governs the proximity of the work to the revolving cutter head or heads, of an auxiliary cutter-head, an auxiliary templet on the live-spindle to govern the proximity of the auxiliary cutter-head to the work, and a swinging frame in which the auxiliary cutter-head is journaled to swing it in and out of contact with the work, substantially as described.

3. The combination of a lathe for cutting irregular forms provided with a sliding bed, a swinging frame carrying an auxiliary cutter-head, an auxiliary cam upon the live-spindle of the lathe, and a standard rising from the sliding table and connected by means of a pivoted slotted link to the swinging frame, the parts being constructed, arranged, and operating substantially in the manner and for the purposes described.

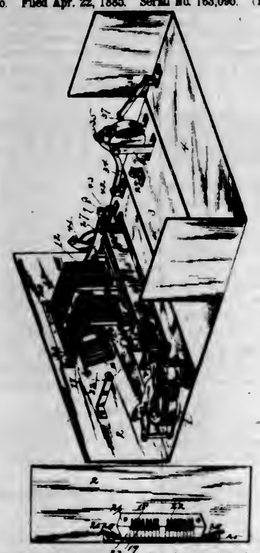
4. The combination, with a spoke-lathe, substantially as described, of an attachment consisting of curved standards secured to the ends of the frame, a pendent swinging frame adjustably hinged to said standards, a revolving cutter-head journaled in said frame, and a cam or templet to govern the proximity of the cutter-head to the work, substantially as described.

5. In attachments for spoke-lathes of the kind described, and provided with a sliding table, *b*, the combination of the swinging frame A, the revolving cutter-head E, journaled in said swinging frame, the shoe I, secured to said swinging frame, the templet or cam J, to gov-

ers the proximity of the swinging frame to the work, and the standard K and slotted link L, arranged to form an automatically-operating connection between the swinging frame and the sliding table of the lathe, substantially as described.

6. The combination of the curved standards A, the shaft C, the adjustable bearings B, the swinging frame D, the cutter-head E, and the drive-pulleys F, G, and H, all arranged to operate substantially as described.

378,323. FIRE AND BURGLAR ALARM. ROBERT J. LA RUE, Mexico, Mo. Filed Apr. 22, 1885. Serial No. 163,095. (Model.)



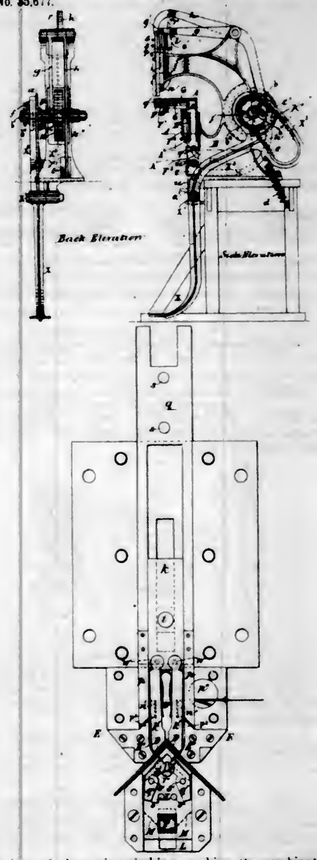
Claim.—1. In a signaling and registering device, the combination of a pulley journaled in the window-frame, with its periphery projecting into the way of the sash and having one portion of its periphery cut away, and having a spring for returning the pulley to its original position, a cord or wire extending to the signaling apparatus and winding in the grooved periphery of the pulley, and a long box upon the sash, having an elastic strip secured in it engaging the periphery of the pulley, as and for the purpose set forth.

2. The combination of the casing having the downwardly-unfolding bottom and front, the sliding bolt or rod having means for releasing and sliding it and having means for releasing the bottom and front, the lamp pivoted between brackets upon the bottom, the match-socket upon the arm pivoted to the back of the casing and pivotally connected by a connecting-rod to the rod pivoted to the front, and the shaft vertically pivoted and having the friction-face projecting from it and the stud projecting from it at a right angle to the friction-face and in the line of the end of the bolt or rod, as shown and set forth.

3. The combination of the casing having the folding bottom and front, the box having the bearings and the L-shaped slots, the sliding rod having the spring for forcing it to one end and having the bail with its arms projecting and sliding in the slots, the spring-latch upon the top of the casing and the stud upon the bottom, and the cam-arms having their heads bearing against the raised and set bar of the bail and having springs forcing them down and rods for drawing their outer ends up, as shown and set forth.

4. The combination of the casing having the folding bottom and front, the box having the bearings and the L-shaped slots, the sliding rod having the spring and the long bail, the cam-levers having the V-shaped springs, the rods at the ends of the cam-levers, having the eyed ends and the shoulders, the notched plate over the slot in the top of the casing, the pivoted plate upon the top of the casing, the latch-spring upon the top of the casing, the stud upon the bottom, the alarm-works having a stop engaged by the end of the set sliding rod or bolt, the lamp suspended between the brackets upon the bottom, the arms pivoted to the back and to the front and having the connecting-rod and provided upon the curved portion of the upper arm with the match-socket, and the shaft having the segmental and projecting friction-face, and the stud projecting at a right angle to the face and in the line of the sliding rod or bolt, as shown and set forth.

378,324. BOX-STAPLING MACHINE. CARL LOUIS LASCH, Reudnitz, Leipsic, Saxony, Germany. Filed Dec. 15, 1885. Serial No. 185,764. (No model.) Patented in Germany June 13, 1884, No. 29,782, Aug. 26, 1884, No. 32,571, Nov. 14, 1884, No. 33,191, and Dec. 26, 1885, Nos. 37,290 and 37,489; in France Nov. 29, 1884, No. 165,649; in Belgium Nov. 29, 1884, No. 67,060; in England Dec. 8, 1884, No. 16,137, and June 15, 1886, No. 7,961, and in Austria-Hungary Aug. 22, 1886, No. 4,233 and No. 35,677.



Claim.—1. In a wire-stitching machine, the combination, with the staple-driver, the lever for operating it, and the cam-wheel for moving said lever, of a shaft, *b'*, carrying the ratchet-teeth, a pair of pinions mounted to turn freely about the axis of said shaft, a pawl secured to each of said pinions for engaging said ratchet-teeth, and a pair of reciprocating racks situated upon opposite sides of said shaft and engaging the respective pinions, substantially as set forth.

2. The combination of a vertically-movable arm, A, the wedge-shaped slide *t*, means, substantially as set forth, for operating said slide, friction-roller *u*, by which said slide is supported, and adjusting-screw *a'*, substantially as and for the purpose described.

3. A wedge piece or trip, *r*, secured to the lever A, a lever, *o*, connected to and adapted to act on the bending-anvil lever *n*, and spring *m*, connected to said lever *o*, so as to cause the advance and withdrawal of the anvil *n'*, in combination with the lever *g*, having the stop *l*, substantially as herein shown and described, and for the purpose stated.

4. The combination, with the head having a channel converging downward, of a plunger and a pair of driving and bending plates hinged at their upper ends to said plunger and projecting downward into said channel, said channel and plates being so arranged that the lower extremities of the plates will be moved toward each other as they descend by impinging against the walls of the channel, substantially as set forth.

5. The combination, with the head having the channel with walls converging downward, of a pair of hinged driving-plates and a spring interposed between said plates, substantially as set forth.

6. The combination, with the vertically-movable work-supporting saddle or table and the staple-driving mechanism, substantially as described, of a pair of pivoted clinching-levers located beneath the table, and a reciprocating plate to which they are pivoted, substantially as set forth.

7. The combination, with the staple-driving mechanism, substantially as described, and the work-supporting table, having its top side inclined toward the center, of the reciprocating plate L, located beneath the table, the clinching-levers *q'*, pivoted thereto, and the bearings *r'*, secured to and carried by said plate, substantially as set forth.

8. The combination, with the staple-driving mechanism, substantially as described, and the work-supporting table, of the reciprocating plate L, located beneath said table, the clinching-levers *q'*, pivoted thereto, the inclined shoulders M, and the stops *e*, all constructed and arranged to operate substantially as set forth.

9. In a staple-driving machine, the combination, with a fixed head having a channel for the passage of the staples and a staple-driver, of a vertically-movable work-supporting saddle, substantially as set forth.

10. The combination, with the staple-driver and the head in which it works, of a vertically-movable work-supporting saddle adapted to be elevated so as to bring the work thereon in contact with the said head, and clinching-plates situated beneath said saddle, adapted to be operated after the saddle has reached the limit of its upward movement, substantially as set forth.

11. The combination, with the staple-driving mechanism, substantially as described, and the vertically-movable saddle having the anti-friction roller *u*, of the sliding wedge *t*, upon which said roller bears, substantially as set forth.

12. The combination, with the staple-driving mechanism, substantially as described, and the work-supporting saddle, of the movable clinching device located beneath said saddle, the bell-crank F^6, the rod H, the levers connecting said rod with said clinching device, and the treadle-lever having the lug X^2, all constructed and arranged to operate substantially as set forth.

13. The combination, with the staple-driving mechanism, substantially as described, and the work-supporting saddle, of the clinching device, the vertically-movable plate L, to which it is secured, the pivoted lever F, engaging said plate at one extremity, the pivoted lever G, having slotted connection at one end with the lever F, the rod H, engaging the other end of the lever G, the bell-crank F^6, and the treadle-lever, all constructed and arranged to operate substantially in the manner and for the purpose set forth.

14. In a staple-driving machine, the combination, with staple-driving mechanism, substantially as described, and its operating-lever, of a cam-wheel, a shaft to which it is secured, a pair of ratchet-wheels secured to said shaft, a pair of pinions mounted to revolve freely about the axis of the shaft, and having the pawls secured thereto for engaging the respective ratchets, and the treadle-lever carrying racks engaging the respective pinions, substantially as set forth.

15. In a stapling-machine, the combination, with the operating lever, the cam-wheel by which it is operated, and the shaft to which said wheel is secured, of a pair of ratchet-wheels also secured to said shaft, a pair of pinions mounted to revolve about the axis of said shaft, and having pawls for engaging the respective ratchet-wheels, and the pivoted treadle-lever having the enlarged eye provided on its opposite sides with the segmental racks engaging the respective pinions, substantially as set forth.

16. In a wire-stapling machine, the combination, with the pivoted anvil and the staple-driver, of a lever for operating said driver, connection engaged by said lever and engaging said anvil for holding it in operative position while the staple is being formed, the staple-forming plates, and a lever for operating it having a trip for throwing the anvil out of operative position immediately upon the completion of the staple, substantially as set forth.

17. The combination, with a pair of levers, *g* A, a pivoted anvil, and a lever, *o*, pivoted to the rear side of said anvil, of a stop secured to the lever *g* for pressing the anvil forward into operative position the cutting and forming plates *p*, connected to the lever A, a trip, *r*, also secured to the lever A, for engaging the lever *o*, the driving-plates connected to the lever *g*, and means for operating said levers, substantially as set forth.

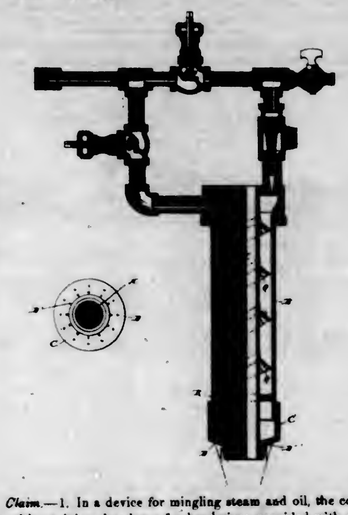
18. The combination, with the staple-driver and a fixed head in which it works, of a vertically-movable work-supporting saddle adapted to be moved up to the fixed head, and clinching-plates carried by said saddle, adapted to be operated after the saddle has been moved into contact with the head, substantially as set forth.

378,825. POLISHING COMPOUND FOR THE SOLES OF SHOES. CHARLES L. LEONARD, Grafton, Mass. Filed May 7, 1887. Serial No. 237,297. (No specimens.)



Claim.—As an improved article of manufacture, a roll of shoe-polish, G, for boots or shoes, consisting of carnauba-wax, French chalk, tallow, turpentine, and benzine and kerosene-oil, and incased or wrapped in tin-foil, D, *b*, and E, and paper, F, substantially as and for the purposes set forth.

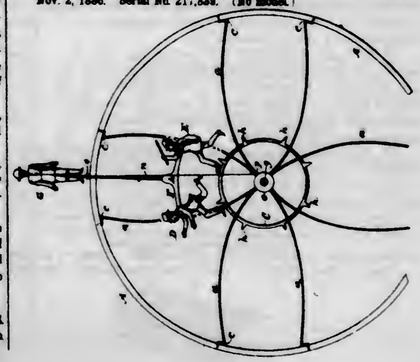
378,826. APPARATUS FOR MINGLING AND COMMINGLING GASES. ALBERT G. LEWIS, Brooklyn, N. Y. Filed Jan. 31, 1887. Serial No. 226,089. (No model.)



Claim.—1. In a device for mingling steam and oil, the combination, with a mixing-chamber, of a head-piece provided with slanting and converging perforations from which the mingled oil and steam are discharged and a gauze partition through which the vapors are driven before being discharged, substantially as described.

2. In a device for mingling steam and oil, the combination, with a mixing-chamber, of a head-piece provided with slanting and converging perforations through which the mingled oil and steam are discharged, a spiral flange for communicating to the vapors a rotary motion, and a gauze partition against which they strike obliquely and through which they are driven, substantially as described.

378,827. HOOP FOR TRUNDLING. JOHN F. LIPPHARD, Washington, D. C., assignor of one-half to Richard Copp, New York, N. Y. Filed Nov. 2, 1886. Serial No. 217,539. (No model.)

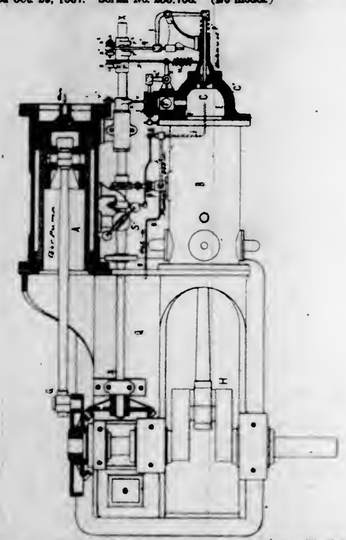


Claim.—1. A hoop for trundling having spokes which are formed of wire, two pieces of wire being bent at their central parts and twisted together, as set forth, to form a ring at the center of the hoop, substantially as and for the purposes described.

2. In combination with a hoop having a hub and spokes, substantially as shown, a toothed rim, C, secured to the spokes, a handle having a loose connection with the hub, a frame carried by the handle and extending upward therefrom, and one or more images pivotally connected with the frame and held in position above the rim C, for the impingement of teeth *h* against the feet of the images, substantially as and for the purposes described.

3. In combination with a hoop having a handle loosely connected with it at the center, a wire frame carried by the handle and extending upward and over the rim of the hoop, an image carried by said frame and fixed thereto above the said rim, the limbs of said image having a loose connection with its body, a fixed stud near the center of the hoop, and a cord, *n*, connected with the stud and with the limbs of the image, substantially as set forth and described.

378,328. PETROLEUM-MOTOR. VICTOR LIST and JACOB KOSAKOFF, Moscow, Russia, assignors of one-third to Georg Adolf List, same place. Filed Oct. 29, 1887. Serial No. 253,706. (No model.)



Claim.—1. In a petroleum-motor, the combination, with the air-pump A, cylinder B, explosion-chamber C, and exhaust-pipe L, of the jacket C', surrounding the chamber C, means of communication between the said jacket and the pump A, a petroleum-evaporator composed of two metallic surfaces having between them a narrow space, *m*, two channels connecting the space *m* with the jacket C' and the chamber C, the casing M, communicating with the exhaust-pipe L and inclosing the evaporator, and the petroleum-supply pipe i, substantially as and for the purpose described.

2. In a petroleum-motor, the combination, with the explosion-chamber C, of an igniting device comprising the plate *c'*, the cover *d'*, the tubular slide *a'*, and means for operating said slide, and the stationary piston *b'*, fitting or located in said slide, these parts being constructed and arranged for joint operation, substantially as and for the purposes hereinbefore set forth.

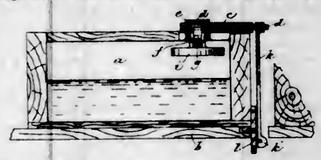
3. In a petroleum-motor, the combination, with the explosion-chamber C, of an igniting device comprising the plate *c'*, with aperture *l'*, the cover *d'*, with aperture *k'*, the slide *a'*, having a cylindrical boring, an aperture, *m'*, and a channel, *k'*, the stationary piston *b'*, located in the said boring, the conical igniting-chamber *f'*, and means for operating the slide, substantially as and for the purpose specified.

378,329. SLATE-PENCIL SHARPENER. THOMAS J. MANNING, Grafton, Mass. Filed Nov. 21, 1887. Serial No. 255,686. (No model.)



Claim.—As a new article of manufacture, a slate-pencil sharpener consisting of a block, 2, of X shape in cross-section, and having four longitudinal V-shaped grooves therein coated with abrading material, and projecting parts 4, extending out in opposite directions from the central part of said block, and provided with angular ends, for the purpose stated, substantially as shown and described.

378,330. INDICATOR FOR OIL-TANKS. FRANK S. MASON, Cambridge, Mass. Filed Jan. 15, 1887. Serial No. 224,408. (No model.)



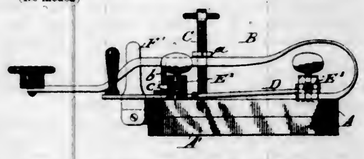
Claim.—1. The combination, with the tank having a horizontal top and adapted for attachment to the under side of a freight-car, of the horizontal bearing located in the top of said tank and having an enlargement formed on one end thereof and containing a chamber communicating with said tank, the shaft fitted in said bearing, the arm secured to said shaft in said chamber, the float attached to the other free end of said arm, the indicator arm or pointer, and the graduated plate, all constructed and arranged substantially as shown and described.

2. The combination, in a tank adapted for attachment to the under side of a freight-car, of a bearing located in the top of said tank, a shaft snugly incased in said bearing, a float connected with said shaft, and means for holding said shaft in a turned position to maintain the float in an elevated position, substantially as set forth.

378,331. LUBRICATING COMPOSITION. DAVID L. MCKITRICK, Baton Rouge, La. Filed Mar. 26, 1887. Serial No. 232,572. (Specimens.)

Claim.—The herein-described composition to be used as packing for journal-boxes, which consists of crude asbestus, powdered plumbago, powdered soapstone, powdered borax, and lard-oil, when the same are thoroughly mixed and combined in substantially the proportions specified.

378,332. TELEGRAPH KEY AND INSTRUMENT. WILLIAM A. MELBOURNE, Swanwick, Ill. Filed Oct. 15, 1887. Serial No. 252,443. (No model.)



Claim.—1. The combination of the casing having a base portion, the series of eight plates secured to said base relatively as specified, the rotative switch-rod having two separate series of three plates each located thereon, as shown, the two main lines, the connecting-wires, and the key, substantially as described.

2. The rotating switch consisting of a rod having two series of three plates each arranged in longitudinal lines, in combination with the base of the casing, provided with a series of eight parallel plates with which the switch-rod plates form connections, substantially as and for the purposes described.

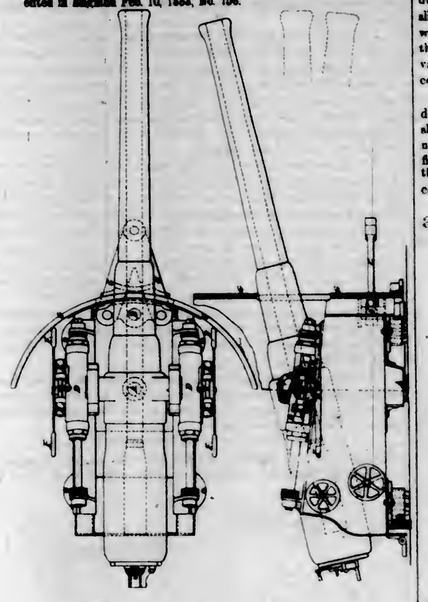
3. The combination of a rotating switch-rod having two series of three plates each thereon, a horizontal series of eight plates which the switch-rod operates to connect, as set forth, the two main lines, a suitable system of connecting-wires between the plates and the main lines, and the key, substantially as described.

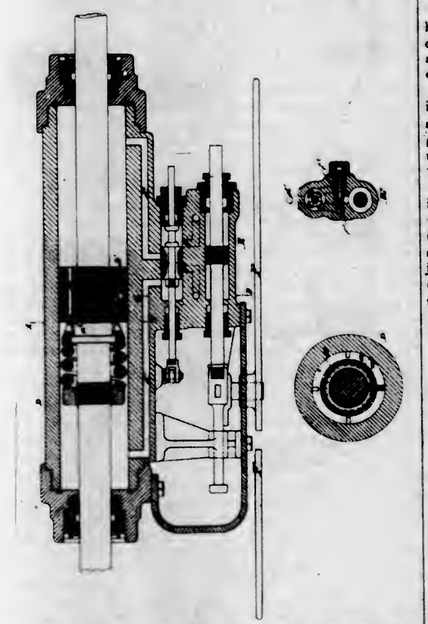
4. The combination of the hollow base, the rotative switch-rod provided with plates, the horizontal series of plates beneath the switch-rod, the connecting-wires between the plates, the two main lines, the key, and connections between them, substantially as described.

5. The combination of the hollow base, the key mounted thereon, the rotating switch within the casing, provided with a suitable handle operating in suitable guides and kept in place by a spring within the casing, and the series of eight parallel plates beneath the switch, the connecting-wires, and the two main lines, all substantially as described.

6. The combination of hollow base A, having base A', the eight plates H I J K L M N O, secured to said base, the switch-rod F, provided with plates *g h i* and *k l m*, the two main lines, connecting-wires, and key, substantially as described.

378,333. GUN-CARRIAGE. ANDREW NOBLE, Bowcastle-upon-Tyne, England, assignor to W. G. Armstrong, Mitchell & Co., (Limited,) same place. Filed May 10, 1887. Serial No. 237,733. (No model.) Patented in England Feb. 10, 1883, No. 756.



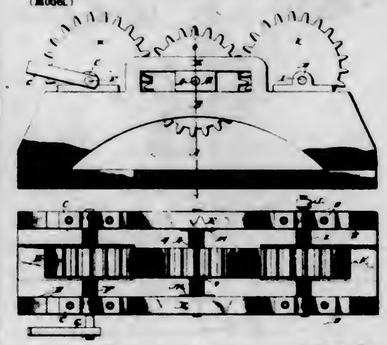


Claim.—1. The combination, substantially as described, of the gun-slide, the pair of hydraulic cylinders, one on either side of the gun, carrying the gun by its trunnions and moving along the slide, pistons within the cylinders connected by their rods with the slides, and passages in the pistons by which liquid passes from one end of the cylinders to the other when the gun recoils.

2. The combination, substantially as set forth, of a pair of hydraulic cylinders, one on either side of the gun which they carry, the slide supporting the cylinders and along which they recoil, pistons within the cylinders connected by their rods with the slide, passages through the pistons, valves fitted to these passages, springs holding the valves to their seats, and the external passages fitted with valves and connecting the ends of the cylinders.

3. The combination, substantially as set forth, of a pair of hydraulic cylinders, one on either side of the gun which they carry, a slide along which the cylinders recoil, pistons within the cylinders connected by their rods with the slide, passages through the pistons, valves fitted to these passages, springs acting upon the valves to hold them to their seats, passages connecting the ends of the cylinders, and pumps connected with these passages.

378,334. DEVICE FOR CONVERTING MOTION. JOHN H. PEMBERTON, Los Angeles, Cal. Filed Oct. 18, 1887. Serial No. 252,738. (Model.)

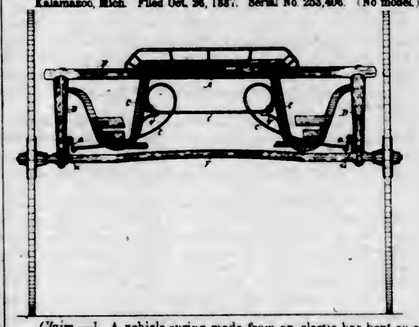


Claim.—1. The combination of the eccentric wheels H and K, having their axes journaled in stationary bearings, and the intermediate elliptical wheel O, engaging the wheels H and K and having its axis movable back and forth in suitable guideways, substantially as described.

2. The combination of the shaft F, journaled in stationary bearings, the gear-wheel H, secured eccentrically to the said shaft F, the shaft N, movable back and forth in suitable guideways, the elliptical gear-wheel O, meshing with the eccentric wheel H, the shaft I, journaled in stationary bearings, and the eccentric gear-wheel K, meshing with wheel O, substantially as described.

3. The combination of the shaft F journaled in stationary bearings, the gear-wheel H, secured eccentrically to the shaft F, the guideways E, the blocks M, movable longitudinally in the said guideways, the shaft N, journaled in the said blocks, the elliptical gear-wheel O, secured to the shaft N and meshing with the wheel H, the shaft I, journaled in stationary bearings, and the eccentric gear-wheel K, secured to the said shaft and meshing with the gear-wheel O, substantially as described.

378,335. TWO-WHEELED VEHICLE. DANIEL S. PENBROOK, Kalamazoo, Mich. Filed Oct. 26, 1887. Serial No. 253,406. (No model.)



Claim.—1. A vehicle-spring made from an elastic bar bent so a to form the separated loops, having a portion of the bar connecting

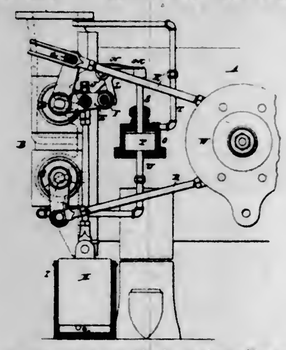
them and the free ends of the bar extended from the loop laterally in opposite directions, substantially as set forth.

2. The combination of a vehicle-body fulcrumed at the forward end, the axle, thills, and a spring bent so as to form the loops, with a portion of the spring connecting said loops, the latter being attached to the body, the ends of the spring being extended from the loops toward the wheels and attached to suitable supports, substantially as set forth.

3. The combination of the fulcrumed seat-bars provided with the brackets, the spring having its loops attached to said brackets, and the free ends of said spring supported by the axle, substantially as set forth.

4. The combination of the seat-bars, the axle, and the spring having a loop attached to each seat-bar, with a portion of the spring connecting said loop, and also serving as a stay-brace to the seat-bars, substantially as set forth.

378,336. VALVE MECHANISM FOR AIR-COMPRESSORS. ERWIN REYNOLDS, Milwaukee, Wis. Filed May 3, 1887. Serial No. 236,980. (No model.)



Claim.—1. In an air-compressor, blowing-engine, or like machine, the combination of a self-opening delivery-valve, a rod having a sliding connection with said valve and serving, when moved in one direction, to close the same, a catch adapted to hold the valve closed, and a movable stem or trip subject to the opposing pressure of the fluid in the receiver and in the compressor and arranged to act upon the catch, whereby the catch is caused to hold the delivery-valve closed until the trip is moved by the pressure of the fluid in the compressor overcoming the pressure or resistance of the fluid in the receiver and then to release the valve, thereby permitting the latter to open.

2. In combination with the delivery-valve of an air-compressor, blowing-engine, or like machine, a connecting device between said valve and a moving part of the machine for closing the valve, a catch or hook for holding said valve closed, a weight or spring for opening said valve when released by the catch, and a trip controlled by the pressures in the air-cylinder and in the receiver for releasing the catch, whereby the delivery-valve is released and opened when a certain predetermined relation is established between the receiver and cylinder pressures.

3. In an air-compressor, blowing-engine, or like machine, the combination of a self-opening delivery-valve, a catch for holding said valve closed, a rod or connection extending from a moving part of the machine to the valve and serving to close the latter, a cylinder communicating at opposite ends with the air-cylinder and the receiver and a piston arranged within said cylinder and serving to release the catch when the pressure on the face of the piston receiving air from the air-cylinder overcomes the pressure on the face receiving air from the receiver.

4. In combination with the delivery-valve of an air-compressor, blowing-engine, or like machine, a catch adapted to engage said valve and hold it closed and a trip for releasing said catch actuated and controlled by the relative pressures in the air-cylinder and in the receiver.

5. In combination with the delivery-valve of an air-compressor, blowing-engine, or like machine, a catch adapted to engage and hold said valve out of action, a trip for releasing said catch actuated and controlled by the relative pressures in the air-cylinder and in the receiver, and an adjustable resistance for varying the point of relative pressures at which the trip shall release the catch.

6. In combination with air-cylinder A, head B, provided with valve-chambers, inlet-valve C, delivery-valve D, wrist-plate W, rod R, connecting valve C with the wrist-plate, slotted rod R', connecting valve D and the wrist-plate, arm E, attached to stem of valve D and provided with block G, hook or catch L, provided with tail M, cylinder O, piston P, arranged within said cylinder, rod S, extending from the piston to a point just beneath tail M, and pipes T and U, respectively connecting opposite ends of cylinder O with the air-receiver and the air-cylinder.

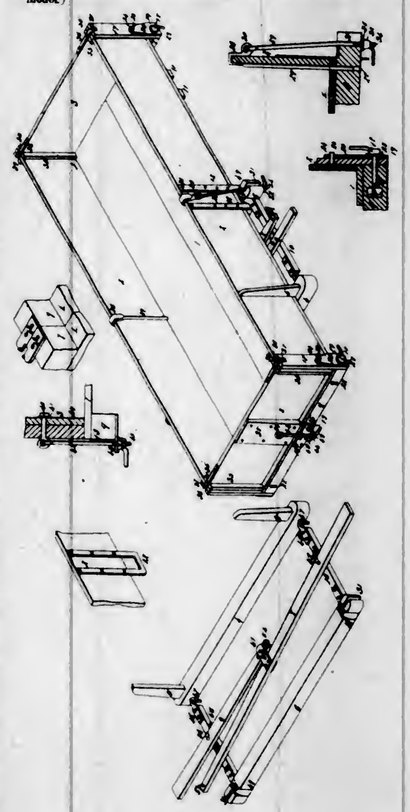
7. In an air-compressor, blowing-engine, or like machine, the combination of a delivery-valve provided with a weighted arm and with a projecting block or lug, a pivoted catch adapted and arranged to engage with said lug and to hold the valve closed, a cylinder communicating at its opposite ends with the air-receiver and air-cylinder, and a piston located within said cylinder and serving to release the catch when the pressure from the air-cylinder reaches a prescribed relation to that from the receiver.

8. In an air-compressor, blowing-engine, or like machine, the combination, with the delivery-valve D, of two arms rigidly attached to its stem, a pin, *a*, carried by one of said arms, a slotted rod connected with a moving part of the machine and straddling said pin, a pivoted catch, L, adapted to engage with the second arm and provided with a tail, M, a spring, N, bearing upon said tail, cylinder O, communicating at opposite ends, respectively, with the air-receiver and the air-cylinder, piston P within said cylinder, and rod S, extending from said piston to a point just beneath tail M when the valve is closed.

9. In combination with valve D, catch-hook L, and tripping devices therefor, constructed and arranged to operate as set forth, a variable depressing device applied to the tail of said latch, for the purpose explained.

10. In combination with valve D and its described tripping mechanism, spring N, and set-screw Q, bearing upon said spring and serving to vary the resistance of the catch to the force exerted by the piston of the tripping mechanism.

378,337. COMBINED WAGON BED AND BRAKE. STEPHEN R. RIFFLE, Foley, Mo. Filed Sept. 30, 1887. Serial No. 251,126. (No model.)



Claim.—1. In a wagon bed and brake, the combination of the sectional bottom 1, in two parts, the coupling-plates 14, the bifurcated ends 13 of said plates, and flat-headed pins 15, that they embrace, arranged to lock the sections of the bed-bottom together, substantially as and for the purpose set forth.

2. In a wagon bed and brake, the combination of the sectional bottom in two parts, the side-boards 2, and end-slotted cross-tree sills 6, the stirrup-straps 12, that carry said cross-tree sills, the saddle-hooks 26, that ride the side-boards, the pendent bolts 27, the hooked bolts 29, having loose connection with the saddle-hooks, said bolts connecting the saddle-hooks with the cross-tree sills, and the thumb-screw nuts 34, that secure the bolts 29 to the sill in the slots, substantially as described, and for the purpose set forth.

3. In a wagon bed and brake, the combination of the sectional bed-bottom, the sections secured together by coupling-plates, the sides 2, the cleats on out ends of sides, the bifurcated ends of said cleats, the thumb-screw bolts 18, that said bifurcated ends straddle, and the captive nuts 21, in which the screw-bolts 18 engage, arranged to tighten the bifurcated ends of the cleats on the out ends of the side-boards to the out ends of the sectional cross-sills, substantially as and for the purpose set forth.

4. In a wagon bed and brake, the combination of the sectional bed-bottom, the coupling-plates and catch-pins that lock the sections, the side-boards, the bifurcated-ended cleats 17, the thumb-screw bolts they straddle, the captive nuts in which said screws engage, and the washers 19 and coupling-plates 20, that they carry, and catch-pins 25, on which the perforations 24 of the coupling-plate engage, arranged to hold down the side-boards to the end cross-sills and lock their coupling together, substantially as and for the purpose set forth.

5. In a wagon bed and brake, the combination of the sectional bed-bottom, the coupling-plates and catch-pins that lock the sections together, the side-boards, the thumb-screws, captive nuts, coupling-plates, and catch-pins that couple the side-boards to the bed-bottom the end-gates 3, the middle cleats, 38, the eyelet-bolts 39, and screw-nuts 40, and the hooked screw-bolts 42, that engage in the eyelet-bolt, the twin plates 43 on the cross-section sills, and thumb-screw nuts 44, arranged to lock down the end-gates to the bed-bottom, substantially as and for the purpose set forth.

6. In a wagon bed and brake, the combination of the sectional bed-bottom and side-boards, their locking devices, the end-gates, the eyelet-bolts 39, and hooked screw-bolts 42, that hang pendent from the eyelet-bolts, the twin plates 43 and thumb-screw nuts 44, arranged to hold down the end-gates to the bed-bottom, and the strap-hooks 36 on the end-gates, that clutch the side-boards to hold them from spreading, substantially as and for the purpose set forth.

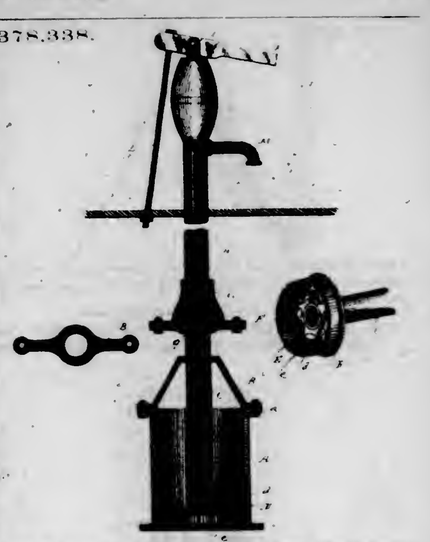
7. In a wagon bed and brake, the combination of the sectional wagon-bed and its attachment devices, and the detachable coupling-straps or brake-carriers 10, the toggle brake-levers 8 and 9, pivoted to the latter, the clevis on the former lever, and the bifurcated end of the latter that engages with the bolt 51 of the clevis, arranged to make a knockdown toggle-lever in connection with the sectional wagon-bed, substantially as and for the purpose set forth.

8. In a wagon bed and brake, the combination of the sectional wagon-bed and its attachment devices, and the coupling-straps or brake-carriers 10, the hooks 46 and eyelet-bolts 47, that connect said straps to the rear bolster, and the saddle-hooks 48, that embrace the cross-tree sill 6, the operative brake-lever 8 and its pivot-pin 52, the attendant brake-lever 9 and its pivot-pin 55, the clevis 50, secured to the brake-lever 8, and the bifurcated end 54 of the brake-lever 9, that engages in the bolt 51 of the clevis 50, arranged to make a knockdown brake attachable and detachable to and from the sectional wagon-bed, substantially as and for the purpose set forth.

378,338. FORCE-PUMP. ALFRED D. SHELBUTT, Louisville, Ky., assignor of one-third to William H. Logan, same place. Filed Feb 15, 1887. Serial No. 227,673. (No model.)

Claim.—1. The herein-described pump, consisting, essentially, in the combination of a cylinder having an open top, an upwardly-extending guide secured to the top edge of said cylinder and provided with a central opening, a tube working through said guide, a flat casting or piston-head carried by the lower end of said tube and operating in the cylinder and provided with openings, downwardly-swinging valves to close said openings against upward pressure, a plate or casting removably secured around the upper end of said tube, a downwardly-closing valve to close the upper end of the same, a hollow casting secured upon the upper surface of said plate to form a check-valve chamber, an upper tube screwed into the upper end of said hollow casting, a water-chamber upon the upper end of the upper tube, a spout in the tube below said chamber, and a pivoted operating-lever, substantially as described.

2. In combination, a cylinder having an open top, a guide carried by said cylinder, an upwardly-extending tube working in said guide, a flat solid piston-head having a central opening, in which the



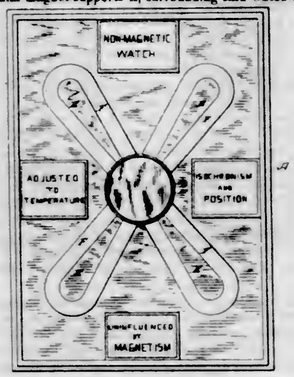
lower end of said tube is secured and provided with inlet ports or apertures, packing attached to the under side of said piston-head and extending downward from the lower edges of the same to tightly fit the cylinder below the piston-head and form a cup-shaped bearing-surface, valves or covers to close said inlet-ports in the piston-head against upward pressure and being formed by cutting away portions of the packing upon the lower side of the piston-head, a check-valve to close the upper end of said tube, a plate and casting to form a check-valve chamber at the upper end of said tube, an upper tube secured in said chamber, and an operating-lever, substantially as described.

378,339. DISPLAY-STAND FOR NON-MAGNETIC WATCHES. ALFRED C. SMITH, New York, N. Y. Filed Dec. 17, 1887. Serial No. 258,185. (No model.)

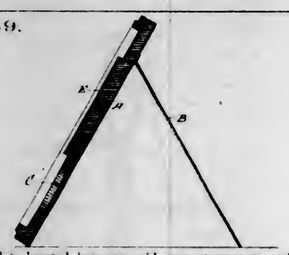
Claim.—1. In a display-stand, the combination of one or more magnets supported upon said stand, and a watch or watch-movement also supported upon said stand and arranged in proximity to said magnet or magnets for the purpose of attracting attention to the magnetic character of said watch or watch-movements, substantially as described.

2. A display-stand for exhibiting the non-magnetic character of watches, consisting of a tray or board, A, having a central recess, C, for receiving a watch or watch-movement, and a series of radial supports, E, for holding horseshoe-magnets, and arranged to encircle said central recess, substantially as described.

3. A display-stand for exhibiting the non-magnetic character of watches, consisting of a tray or board, A, having a central watch-recess, C, radial magnet-supports E, surrounding said watch-recess, and

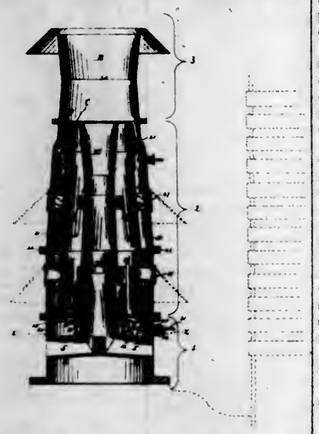


378,339.



a series of tablets located between said magnet-supports, and upon which are inscribed the characteristics of the watches exhibited, substantially as described.

378,340. EXHAUST APPARATUS FOR LOCOMOTIVES. JOHN Y. SMITH, Doylestown, Pa. Filed Sept. 23, 1887. Serial No. 250,929. (No model.)



Claim.—1. In an exhaust apparatus such as described, the combination of an annular steam-nozzle and surrounding confining-flue, an annular air-passage within and adjacent to said nozzle, a flue or passage located within and forming the inner wall of said air-passage, and a central air tube or passage located within the lower end of said flue or passage and forming, in conjunction with the latter, an annular steam-nozzle, substantially as described.

2. In an exhaust apparatus such as described, the combination, with the central air-tube and surrounding flue extended beyond said air-tube, and forming, in conjunction with the latter, an annular steam-nozzle, of an annular steam-nozzle surrounding the upper end of said flue, but removed therefrom to form a passage between said nozzle and flue, substantially as described.

3. In an exhaust apparatus such as described, the combination, with the central air-tube, annular steam-nozzle, and the flue forming an extension or prolongation of said nozzle, of an annular nozzle located at or near the upper end of said flue, air-passages between said last-named nozzle and flue, and inlet-passages located at different distances from the outer annular nozzle, substantially as described.

4. In combination with a series of flues or draft-pipes and a chamber or uptake into which they open, an exhaust apparatus, such as described, located in said chamber or uptake, and provided with inlet-openings below the blast-nozzle and at different heights with respect to said chamber and flues, substantially as described.

5. In combination with a series of flues or draft-pipes and a chamber or uptake into which they open, an exhaust apparatus, such as described, located within said chamber and provided with a series of inlet-openings disposed at different points in its length below the blast-nozzle, and valves for controlling said openings, substantially as described.

6. In combination with a series of flues or draft-pipes and a chamber or uptake into which they open, an exhaust apparatus, such as described, comprising an inner annular steam-nozzle and central air-tube, the latter having an inlet communicating with the lower portion of the uptake or chamber, and an outer annular steam-nozzle and air-passage, the latter provided with inlet-openings communicating with the chamber or uptake at points above the first-named inlet and below the outer steam-nozzle, both of said steam-nozzles communicating with a common steam-supply, substantially as described.

7. In an exhaust apparatus such as described, the combination, with the hollow base and central air-tubes supported upon hollow radial arms, of the flue supported upon said base, with its lower end surrounding the central air-tube, and forming, in conjunction with the latter, an annular nozzle and steam-chamber, ports or passages connecting said chamber with the interior of the base, and a valve controlling said passages, substantially as described.

8. In an exhaust apparatus such as described, the combination, with an annular nozzle, A, confining flue or passage B, and annular air-passage C, of a flue, E, inner air-pipe F, and annular nozzle D, substantially as described.

9. In an exhaust apparatus such as described, the combination, with inner and outer walls 20 21, of a steam chamber or passage terminating in an annular nozzle, A, a flue, E, terminating at or about in line with said nozzle A, said flue forming the inner wall of an air-chamber, C, a central air pipe or passage, F, projecting within the lower end of flue E, and an annular steam-nozzle, D, surrounding the upper end of pipe F and communicating with the interior of flue E, substantially as described.

10. In an exhaust apparatus such as described, comprising the annular nozzle A, passage C, flue E, nozzle D, air pipe or passage F, and a base or steam-chamber with ports leading to passages or chambers communicating with said nozzles and in combination therewith, and valves controlling the said ports for cutting off the supply of steam to either nozzle, substantially as described.

11. In an exhaust apparatus such as described, containing an outer annular nozzle, an inner annular nozzle, and a separate air-passage within and surrounded by each of said nozzles and in combination therewith, and a common steam-chamber, a separate valve controlling the steam ports or passages leading to each of said nozzles, and a shaft or operating device engaging said valves to simultaneously shift them in opposite directions, substantially as described.

12. In an exhaust apparatus such as described, and in combination with the annular nozzle A and steam-passages leading thereto, the double tapered flue E, supported within and exteading in rear of said nozzle, the tapered air-pipe F, projecting within the rear end of said flue and co-operating with the inclined inner face of the latter to form an annular nozzle, D, substantially as described.

13. In an exhaust apparatus such as described, and in combination with the flue E and a steam-nozzle and air-pipe opening into said flue, an inclosing wall or casing, an annular nozzle, A, an air-passage opening between said nozzle A and the flue E, and inlet-passages through the inclosing wall located at intervals in rear of the nozzle A, substantially as described.

14. The hereinbefore-described improved exhaust apparatus, consisting, essentially, of the base 1, provided with air-pipe F, the flue E, provided with a flange at its lower end resting upon and partially closing the top of base 1, the section 2, provided with an annular steam-chamber, terminating at the upper end in a nozzle, A, and the upper section, 3, extending beyond and forming a prolongation of the outer wall of the nozzle A, substantially as described.

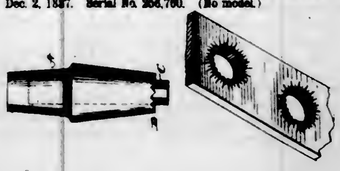
15. The combination, in an apparatus such as described, of the inner and outer steam-nozzles, air-passages adjacent thereto, and the confining-flue surrounding the inner steam and air nozzles, substantially as described.

16. In combination with a central air-passage, annular steam-nozzle and confining-flue constituting the inner ejector, a second ejector surrounding the exit end of the said confining-flue, and provided with an air-passage and steam-nozzle, substantially as described.

17. In an apparatus such as described, the combination of an inner ejector and an outer ejector, a confining-flue in advance of the inner ejector, and a confining-flue common to both ejectors, substantially as described.

18. In an apparatus such as described, containing inner and outer ejectors communicating with a common steam supply, the combination, with the outer ejector and central air-tube, of the intermediate confining-flue co-operating with the central air-tube to form the annular steam-nozzle of the inner ejector, substantially as decribed.

378,341. METAL-PUNCH. WILLIAM SHER, Pittsburg, Pa. Filed Dec. 2, 1887. Serial No. 256,760. (No model.)

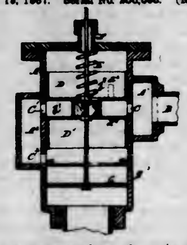


Claim.—1. A metal-punch consisting of a body, A, having a cutting part, C, at its lower end, the said part C being encircled by a series of downwardly-projecting teeth, D, substantially as set forth.

2. The combination, with the tubular body A, provided with the downwardly-projecting teeth or serrations D, of the removable and adjustable punch or cutter C, substantially as and for the purpose set forth.

3. The combination of the tubular parts A B, provided with an annular series of downwardly-projecting teeth, D, the central punch or cutter, C, and the binding-screw E, whereby the same may be adjusted within the body A B, substantially as and for the purpose shown and set forth.

378,342. PRESSURE REGULATOR AND CUT-OFF. WILLIAM D. THOMAS, Pittsburg, Pa., assignor of one-half to T. B. Atterbury, same place. Filed Sept. 19, 1887. Serial No. 250,068. (No model.)



Claim.—1. In a pressure-regulator, the casing having inlet and outlet ports located opposite each other, and a chamber communicating with one of said ports and with a port in the chamber below the same communicating with the exit-pipe, in combination with a double plunger having a space to communicate with said inlet and outlet ports arranged to reciprocate within said cylinder, substantially as described.

2. In a pressure-regulator, the casing having inlet and outlet ports located opposite each other, and a chamber communicating with one of said ports and with a port communicating with the interior of the chamber and with the exit-pipe, in combination with a double plunger having a space communicating with said oppositely-located ports and arranged to reciprocate within said cylinder, and a spiral spring located above the plunger to act thereon, substantially as described.

3. In a pressure-regulator, the combination, with a casing, of a plunger adapted to reciprocate therein to open and close ports between the casing and supply-pipe, and a disk secured to the plunger to be raised or lowered and close against a seat within the casing when the plungers have been raised and the ports of the casing closed thereby, substantially as set forth.

4. In a pressure-regulator, the combination, with the casing A, having ports C C' C² and chamber A², of plungers D D', having a space, d', between the same, a channel d^2, upon the periphery of the plunger D, and a hole, d^3, passing through the plunger D', and an inlet and outlet pipe connected with the casing, substantially as set forth.

5. In a pressure-regulator, the combination, with the casing A, having ports C C' C² and chamber A², of plungers D D', having a space, d', between the same, a channel, d^2, hole d^3, and a boss, d^4, inlet and outlet pipes, and an opening in the upper end of the casing to give access to the boss d^4, substantially as described.

6. In a pressure-regulator, the combination of the casing, the plunger adapted to reciprocate therein to open and close the ports between the casing and supply-pipe, with the flange a, with which the same engages, substantially as and for the purpose set forth.

378,343. DWELL-CAM. JOHN THOMSON, Brooklyn, N. Y., assignor to the Colt's Patent Fire Arms Manufacturing Company, Hartford, Conn. Filed Oct. 12, 1887. Serial No. 252,174. (No model.)

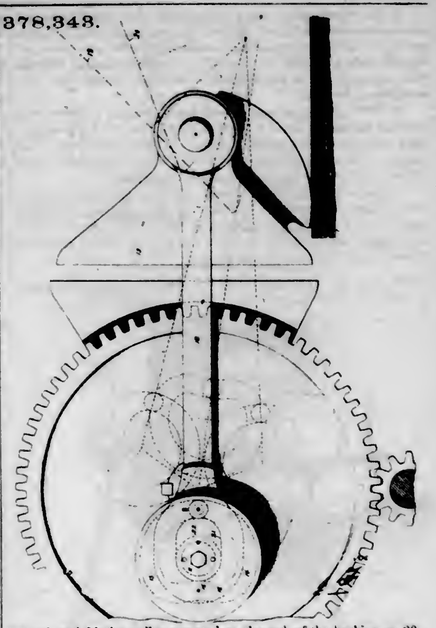
Claim.—1. The combination, with a moving portion of a press, of a crank-pin, a slotted connecting-rod between the pin and moving portion of the press, a cam mounted on the pin, and a friction-roll mounted on the rod and engaging the cam and arranged between the crank-pin and moving portion of the press, substantially as described.

2. The combination, with a connecting-rod mounted on a crank-pin, of a cam secured to the pin, and a friction-roll mounted on the connecting-rod between the pin and operating end of said rod, the bearing surface of the cam at the dwell portion having the shortest radius, substantially as described.

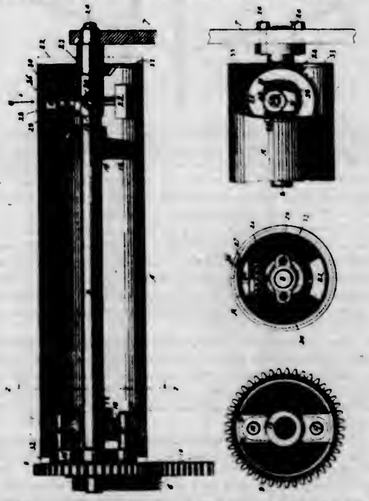
3. The cam, in combition with the crank-pin, slotted connecting-rod, and friction-roller mounted on the rod, the dwell portion of the cam, as 15 16, being of less radius than the idle portion, as 13 14, substantially as described

4. The combination, with the cam, the crank-pin, slotted connecting-rod, and friction-roller mounted on the rod, of the bushing, as 22, mounted on the crank-pin and acting within the slot of the rod, whereby the said bushing acts alternately as a fixed bearing and as a friction-roller, substantially as described.

378,348.



378,344. DEVICE FOR IMPARTING COMBINED ROTARY AND RECIPROCATING MOVEMENT. JOHN THOMSON, Brooklyn, N. Y., assignor to the Colt's Patent Fire Arms Manufacturing Company, Hartford, Conn. Filed Oct. 12, 1887. Serial No. 252,175. (No model.)



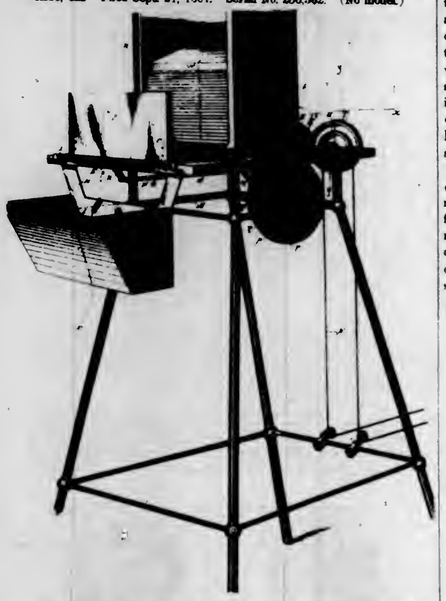
Claim.—1. The combination, with a rotary shaft, of a cylinder mounted so as to rotate therewith and free to reciprocate longitudinally thereon, a stationary gear, a gear carried by the shaft meshing with said stationary gear, and an eccentric connection between said gear and the cylinder, substantially as described.

2. The combination, with a rotary shaft, of a cylinder mounted so as to rotate therewith and free to reciprocate longitudinally thereon and provided with engaging-lugs, a stationary beveled gear surrounding said shaft, a beveled gear carried by the shaft meshing with the stationary gear, and a pin mounted eccentrically on said gear, substantially as described.

3. The combination, with a revolving shaft and a cylinder freely mounted thereon, of a boss or hub, as 15, fixed on the shaft and provided with driving-pins, as 16 17, thereby causing the rotation of the cylinder, while at the same time permitting it to be reciprocated upon the shaft and driving-pins, substantially as described.

4. The combination, with a rotary shaft and a reciprocating cylinder mounted thereon, said cylinder being provided with engaging-lugs, of a fixed gear, a sleeve carried by the shaft and provided with a bearing-pin, and a gear mounted on said bearing-pin and having an eccentric stud, substantially as described.

378,345. CARD-EXHIBITOR. WALTER D. VALENTINE, San Francisco, Cal. Filed Sept. 21, 1887. Serial No. 250,362. (No model.)



Claim.—1. In a card-exhibitor, a hollow column or casing for containing the cards, and having an opening at its base, in combination with the slide for entering the open base of the column and pushing a card out, and the mechanism for reciprocating the slide, consisting of a rotating cam, and a pivoted lever connected with the slide and operated by the cam, substantially as described.

2. In a card-exhibitor, a hollow column or casing for holding the cards, and having an opening at its base, in combination with a slide for entering the opening and pushing a card from under the column, and the mechanism for reciprocating the slide, consisting of a rotating wheel having a cam-groove and a pivoted lever secured to the slide, and having a stud fitting in the cam-groove, substantially as described.

3. In a card-exhibitor, a hollow column or casing for containing the cards, in combination with a holder for receiving a card from said casing, and the mechanism for vibrating the holder to receive and expose the card, consisting of a rotating cam, a pivoted lever operated by the cam, and connections between said lever and the card-holder, substantially as described.

4. In a card-exhibitor, a hollow column or casing for containing the cards, and having an open base, and a reciprocating slide for pushing the card from under the column, in combination with a card holder for receiving the card as it is pushed out from under the column, and the means for vibrating the card-holder to receive and expose the card, consisting of a rotating cam, a pivoted lever operated by said cam, and connections between said lever and the holder, substantially as described.

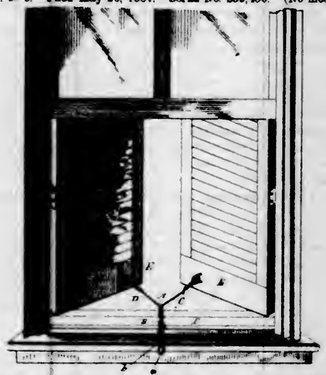
5. In a card-exhibitor, a hollow column or casing for holding the cards, and having an opening at its base, and a reciprocating slide for entering the opening and pushing the card from under the column, in combination with a card-holder for receiving the card as it is pushed out and exposing it, and mechanism for vibrating the holder, consisting of a pivoted shaft to which the holder is attached, a rotating wheel having a cam-groove, a pivoted lever having a stud fitting in said groove, a crank-arm on the holder-shaft, and a link connecting said crank-arm with the lever, substantially as described.

6. In a card-exhibitor, a hollow column or casing for the cards, and having an opening at its base, a reciprocating slide for pushing a card from under the column, and a vibrating holder for receiving and exposing the card, in combination with the mechanism for operating the slide and the holder, consisting of a rotary wheel having a cam-groove on each side, a pivoted lever connected with the slide and having a stud fitting in one of the cam-grooves, and a pivoted lever connected with the vibrating holder and having a stud fitted in the other of said cam-grooves, substantially as described.

7. In a card-exhibitor, a hollow column or casing for holding the cards, and having an opening at its base, a reciprocating slide for entering the opening and pushing the card from under the column, and a vibrating holder for receiving and exposing the card when pushed out, in combination with the mechanism for operating the slide and the holder, consisting of a drive-shaft having a worm, a worm-gear with which the worm engages, said gear having a cam-groove on each side, a pivoted lever connected with the slide and having a stud fitting in one of said grooves, a pivoted lever having a stud fitting in the other of said grooves, a crank-shaft to which the holder is attached, and a link connecting the crank of said shaft with the last-named lever, substantially as described.

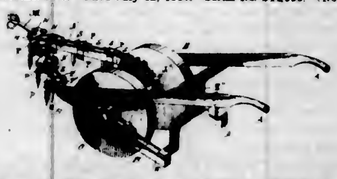
8. In a card-exhibitor, a hollow column or casing for holding the cards, and having an opening at its base, in combination with a reciprocating slide for entering the opening of the base and pushing a card from under the column, a supporting-plate attached to said slide and moving under the card as it is pushed out, and a card-holder having open ends for receiving the card pushed out and moving it to a vertical position, in which its lower edge rests upon the supporting-plate, substantially as described.

378,346. SHUTTER-BOWER. ARNOLD A. WHEELOCK, Washington, D. C. Filed May 26, 1887. Serial No. 239,436. (No model.)



Claim.—A shutter-bower consisting of a wire or wires bent to form a shank with a series of loops or eyes therein for attaching the same adjustably to a permanent point, and with an outer bifurcated or separated end to form arms for attaching to the shutters, all substantially as described, for the purpose set forth.

378,347. AGRICULTURAL IMPLEMENT. LEWIS WHITTY, Pollocksville, N. C. Filed July 12, 1887. Serial No. 244,096. (No model.)



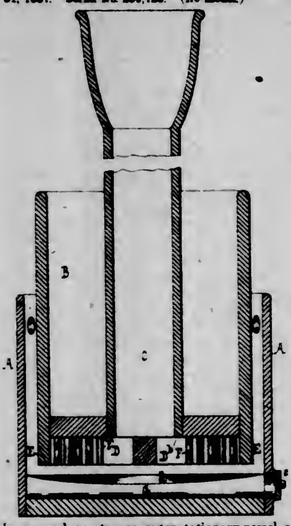
Claim.—1. The combination of the frame, the shanks formed with piece R' and lugs S at top and bottom at each end of the piece, and clips P between the lugs, having a plate, P', and nuts P'', substantially as described.

2. The shank formed with slot Q, piece R', and top and bottom lugs S on each end of the piece, and provided with clip P, plate P', and nuts P'', substantially as described.

3. The stalk-cutter comprising rollers B, bars L', spindles L, slotted sleeve J', knives J, and bolts O', substantially as described.

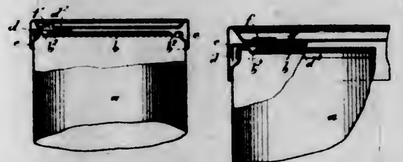
4. The combination of the frame A', handles A, plate R'', rollers B, sleeve J', journals O, harrow-points, and adjustable clevis-hook, substantially as described.

378,348. AMALGAMATOR. JOSEPH WILKINS, Baltimore, Md. Filed May 31, 1887. Serial No. 239,729. (No model.)



Claim.—In an amalgamator, an outer stationary vessel, combined with an inner vessel having its wall projecting downward beyond the bottom, whereby a peripheral rim is formed, a central stand-pipe for feeding purposes extending upward from the bottom of the said inner vessel, where it is open, pins which project in a downward direction from the said bottom, radial wings attached to the said bottom, which divide the said pins into groups, and means, substantially as described, for vibrating the said inner vessel and its connections within and independently of the outer one, substantially as and for the purpose specified.

378,349. CAN-OPENER. WILLIAM R. WILLIAMSON and GEORGE H. WILLIAMSON, Worcester, England. Filed June 15, 1887. Serial No. 241,391. (No model.) Patented in England Sept. 7, 1886, No. 11,373, and Dec. 17, 1886, No. 16,614; in France June 2, 1887, No. 183,973; in Belgium June 2, 1887, No. 77,691, and in Canada July 11, 1887, No. 27,148.



Claim.—The combination, with a loose cover adapted to protect the contents of a box or can after said box or can has been opened, of a cutter attached to and adjustable on said loose cover, whereby it is adapted to remove or cut away the taggers-tin top or other top of the box or can by rotating the loose cover thereon, substantially as described.

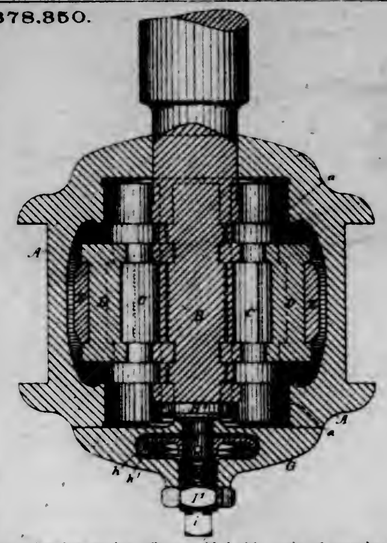
378,350. ANTI-FRICTION BEARING. MILTON R. WOOD, Chicago, Ill. Filed Oct. 19, 1887. Serial No. 252,267. (No model.)

Claim.—1. The combination, with the inclosing-box or housing provided with tracks near each end, of the shaft or journal provided with reduced portions and intermediate collars, a series of anti-friction rollers provided with collars to fit within the reduced portions and with grooves to receive the collars of the shaft or journal, said anti-friction rollers having reduced ends which travel upon the ways of the box or housing, spacing-rollers provided with a reduced central portion and with enlarged ends to enter the grooves in the anti-friction rollers, and a retaining-ring to fit upon the reduced portions of the spacing-rollers and hold the same in position, substantially as and for the purposes specified.

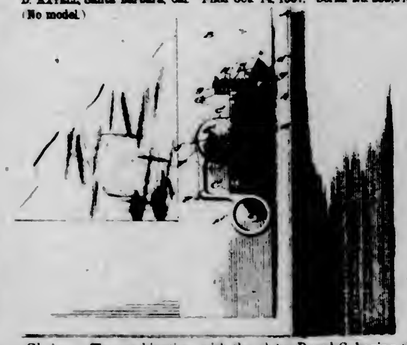
2. The combination, with the shaft or journal and the inclosing-box or housing, of anti-friction rollers arranged between the two, spacing-rollers for separating the anti-friction rollers, and a divided retaining-ring provided with means for tightening the same to take up wear, substantially as and for the purposes specified.

3. The combination, with the shaft or journal and its anti-friction and spacing rollers, of the retaining-ring E, provided with tongue *e* and recess *e'*, the bearings *f*, mounted on the ends of said ring, and the threaded rods F, provided with nuts F', substantially as and for the purposes specified.

4. The combination, with the journal B, the inclosing-box, and the cap G, provided with the oil-chamber *h'*, of the shaft H, provided at one end with the disk H', to bear against the end of the journal rounded or convex at the other end, and carrying the wheel *h*, and the screw-bolt I, recessed to receive the end of the shaft H and provided with a lock-nut, I', substantially as and for the purposes specified.

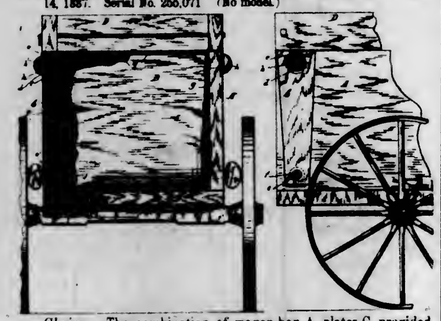


378,351. SASH FASTENER AND HOLDER COMBINED. JOSEPH D. AYRELL, Santa Barbara, Cal. Filed Oct. 14, 1887. Serial No. 252,315. (No model.)



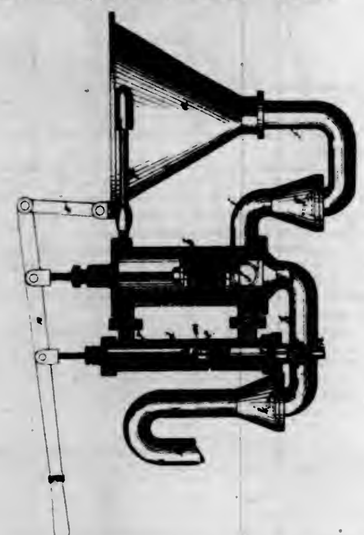
Claim.—The combination, with the plates D and C, having the ear *d'*, and inclosing the rubber frictional contact-fastening, and the cam F, for operating the same, of the plate G, having end apertured ears, *g*, the bolt H, having the finger-piece *h*, adapted to engage with either side of said ear *d'*, and the coiled spring S, substantially as described.

378,352. END-GATE. PETER BARTSCH, Huron, Ohio. Filed Nov. 14, 1887. Serial No. 255,071. (No model.)



Claim.—The combination of wagon-box A, plates C, provided with openings *d d'*, end-gate B, provided with trunnions *h*, journaled in said openings, and thumb-screws *f*, adapted to engage with said gate, substantially as set forth.

378,353. PUMP WATER-CLOSET. WILLIAM BISHOP, Brooklyn, N. Y. Filed July 18, 1887. Serial No. 244,604. (No model.)



Claim.—1. The combination, with a water-closet bowl, of an air-pump and a water-pump, the water-pump being arranged to discharge into the air-pump, while the air-pump discharges into the bowl, substantially as herein shown and described.

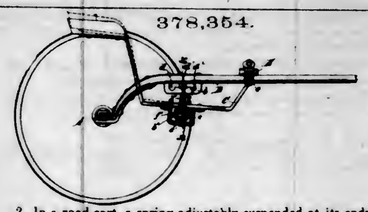
2. The combination, in a pump water-closet, with the bowl and separate soil and water pumps, of a water-discharge pipe or duct extending from the water-pump to the idle-chamber of the soil-pump cylinder above the piston thereof, and a second pipe or duct extending from said chamber to the bowl, substantially as and for the purpose set forth.

3. An improved marine closet formed by the combination of the bowl *a*, pumps *c b* and *d e m l*, having open connection with each other and with the bowl, operating device *n*, operating said pumps, pipes *f k*, leading from the bowl to the pump *c b*, and from thence to the discharge-outlet, and the pipes *r* and *p*, connecting the pumps and the bowl, respectively, substantially as set forth.

378,354. ROAD-CART. ZACHRIAH T. BURR, Stanton, Mich. Filed Oct. 28, 1887. Serial No. 253,651. (No model.)

Claim.—1. In a road-cart, a spring adjustably supported at its ends and free at its middle portion, and having bearings for the frame of the box between its ends and its middle portion, substantially as described.

378,354.



2. In a road-cart, a spring adjustably suspended at its ends from the thills and being free at its middle portion, and in connection therewith seat-bars bent to form the frame of the box and having bearings between the ends and the middle portion of the spring, through which said spring is movable longitudinally, substantially as described.

3. In a road-cart, a spring adjustably suspended at its ends from the thills and left free at its middle portion, and having anti-friction bearings for the frame between its ends and middle, and in connection therewith means, as set forth, for adjusting the spring for heavy or light loads, substantially as described.

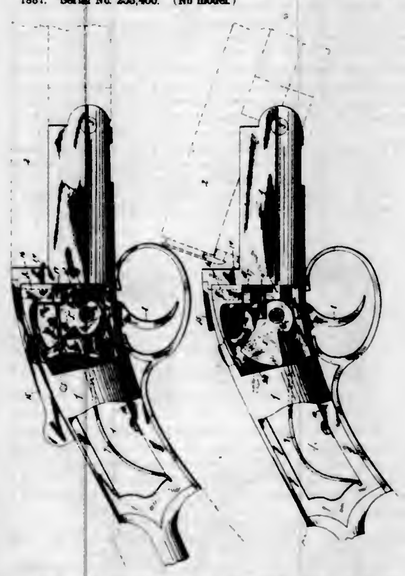
4. In a road-cart, seat-bars bent to form the frame of the box and provided with hangers for engaging the spring, substantially as described.

5. In a road-cart, seat-bars pivotally connected to the draft-bar and bent to form the frame of the box, said seat-bars provided with brackets and adjustable hangers to engage the spring, substantially as described.

6. In a road-cart, the spring adjustably connected at its ends to the thills and free at its center, and seat-bars pivotally connected to the draft-bar, said seat-bars being bent to form the frame for the box and being provided with brackets and adjustable hangers to engage the spring, substantially as described.

7. In a road-cart, the spring adjustably suspended at its ends from the thills by means of loops or bails, and in connection therewith notched brackets, said loops or bails adapted to be adjustably engaged upon the notched bracket, substantially as described.

378,355. BREECH-LOADING FIRE-ARM. MARTIN BYE, Worcester, Mass., assignor to Sullivan Forehand, same place. Filed Oct. 26, 1887. Serial No. 253,400. (No model.)



Claim.—The combination, with the external lever, 15, having a stem, 16, and an arm, 17, on said stem, and the locking-bolt 4, having a rigid extension, 4', upon its inner end engaged by said arm 17 to operate said bolt, of the trigger, the hammer, and the trigger lock-lever 12, the upper end of which lever extends through the breech-block, and the lower end engages and locks the trigger, the hammer being cocked, and the lock-lever operated to lock the trigger by means of the rigid extension 4' on said locking-bolt 4 coming in direct contact therewith, substantially as set forth.

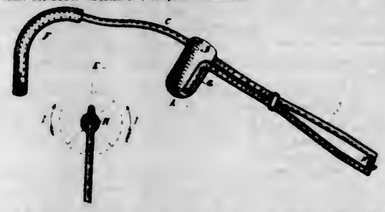
378,356. DOOR-MAT. SOLOMON L. COHEN, New York, N. Y. Filed Nov. 19, 1886. Serial No. 219,361. (No model.)



Claim.—1. The combination, with a door-mat, of a ring having a flat face for a name or inscription and an eye therefor fixed to the mat upon the face and at a distance from the edge thereof and receiving the ring, whereby said ring is caused to lie securely upon the upper surface of the mat, the inscription of ownership is prominently exposed, and means are provided for securing the mat to a doorway, all substantially as set forth.

2. The combination, with a door-mat, *a*, of the ring *b*, having upon its face a flat surface for inscription of ownership, the bifurcated staple *c*, having an eye, *d*, receiving the ring, and the washers *e f* on the upper and under side of the mat, the staple passing through the washers and clamping the mat between them, and securing the ring to the upper surface thereof, so that the inscription shall be prominently exposed, for the purpose set forth.

378,357. ATOMIZER. ALLEN DE VILBISS, Toledo, Ohio. Filed Mar. 31, 1886. Serial No. 197,293. (Model.)



Claim.—A liquid-receptacle located upon an air-tube into which it opens, so that the two have interior connection, in combination with a liquid or fluid tube passing out from the side of said receptacle, and a spray-point arranged and adapted to be turned at right angles to the line of the said tubes, substantially as shown and described.

378,358. INCANDESCENT-ELECTRIC-LAMP FIXTURE. HARRY M. DOUBLEDAY, Columbus, Ohio. Filed Sept. 23, 1887. Serial No. 250,513. (No model.)



Claim.—The combination of the ceiling-block A, having electrical connections and cut-out fixed thereto, metal shield B, removably connected to said ceiling-block, non-conducting perforated button C, supported at the base of said shield, and electric-lamp wires E, suspended from said button and connected to the electrical connections on the ceiling-block, substantially as and for the purpose set forth.

378,359. DOOR. LEVI S. ENOS, Andover, N. Y. Filed Apr. 11, 1887. Serial No. 234,394. (No model.)

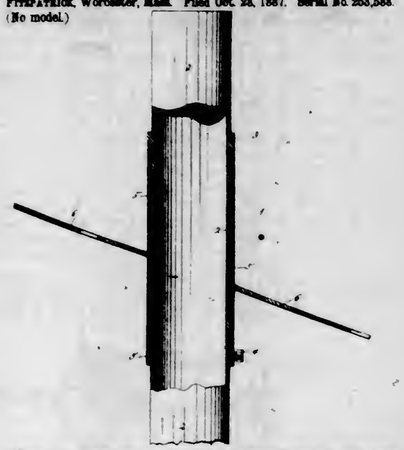


Claim.—1. The brace D, having flanged and corrugated edges *d d*, in combination with the corrugated panel, the brace being fitted over the panel, substantially as described.

2. The combination, with the door frame and moldings, of the corrugated panel provided with plain flat surfaces at its longitudinal and transverse edges, the said transverse edges being also provided with flanges *d'*, formed at right angles to the panel and adapted to fit snugly against the inner edges of the end pieces of the door-frame, whereby by means of the moldings the panel may be readily and firmly secured within the frame of the door, substantially as described.

3. As a new article of manufacture, a door consisting of a frame of ordinary construction, moldings of ordinary construction, a panel corrugated over its entire surface, with the exception of narrow plain flat surfaces around its edges, which by means of the moldings enables it to be rigidly secured within the door-frame, as described, and the transverse braces D, secured upon opposite sides of the door and having their inner faces corrugated to fit the corrugations of the panel, the said braces being secured to the side pieces of the door-frame, all arranged substantially as herein set forth.

378,360. ROOF CAST-IRON SOIL-PIPE CONNECTION. JOHN T. FITZPATRICK, Worcester, Mass. Filed Oct. 28, 1887. Serial No. 253,588. (No model.)



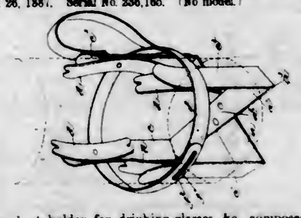
Claim.—1. As an improved article of manufacture, a cast-iron-pipe connection consisting of a cast-iron pipe, 2, provided with a collar, 3, thereon, and a wrapping of lead or analogous material, 5, encircling said pipe 2 and fitting at one edge against said collar, so as to form a tight joint, for the purpose stated, substantially as shown and described.

2. As an improved article of manufacture, a cast-iron-pipe connection provided with two collars or flanges thereon, and a wrapping or coating of lead or analogous metal encircling said pipe and extending between the two collars, for the purpose stated, substantially as shown and described.

3. The combination, with a pipe of cast-iron provided with two collars or flanges thereon, of a wrapping or coating of lead or analogous metal encircling said pipe and extending between said collars, for the purpose stated, substantially as shown and described.

4. The combination, with a sheet of lead or analogous metal having an opening therein, of a cast-iron pipe extending through said opening and provided with a wrapping or coating of lead or analogous metal encircling and forming a part of said pipe at the point where it extends through said sheet of lead, for the purpose stated, substantially as shown and described.

378,361. GLASS-HOLDER. CLARENCE W. FOX, Saugus, Mass. Filed Apr. 26, 1887. Serial No. 236,165. (No model.)

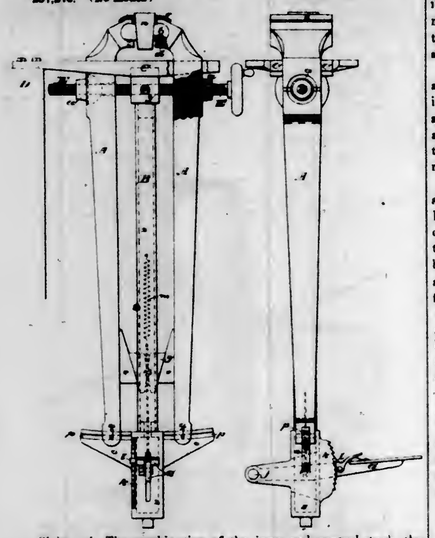


Claim.—1. A holder for drinking-glasses, &c., composed of a number of yielding or spring arms, a base integral therewith, and

curved bearing-strips *d*, attached to said arms at their outer ends, combined with an expansible ring encircling said arms, and a handle connected to one of said arms, substantially as described.

2. A holder for drinking-glasses, &c., composed of a number of yielding or spring arms and a base from which they rise and which is integral therewith and supports the tumbler when placed therein, a ring encircling the said arms, and a handle connected to one of said arms, substantially as described.

378,362. **FOOT-POWER BENCH-VISE.** JOSEPH GOODRICH, Henry, Ill., assignor, by direct and mesne assignments, to Moses A. Hawkes, Evanston, Ill., and John C. McKee, Allegheny City, Pa. Filed June 19, 1884. Renewed Jan. 21, 1887. Again renewed Dec. 8, 1887. Serial No. 257,276. (No model.)



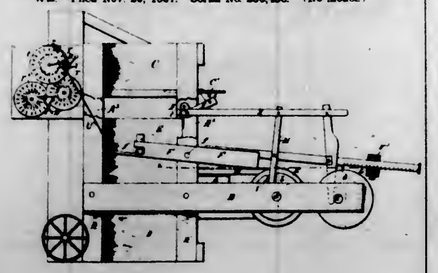
Claim.—1. The combination of the jaws and central stock, the head-screw and rocking nuts, the wedge and inclined planes, the retracting-spring for the wedge, the foot-lever coupled to the wedge, the ratchet and the pawl mounted on the foot-lever, all arranged to operate substantially as and for the purposes set forth.

2. The central stock, B, of the vise, composed of the tubular part or section *x*, the head-piece *y*, and the hollow foot-piece *z*, in combination with the vise-jaws and their inclined planes, the head-screw, the wedge, the retracting-spring, the rod *i*, and the treadle with its ratchet device, substantially as set forth.

3. In a vise, as a means for spreading the tails of the jaws, the inclined planes on the jaws, and the wedge *g*, made in two parts and hinged together at the middle, substantially as and for the purposes set forth

4. In a vise, as a means for spreading the tails of the jaws, the inclined planes on the jaws, and the wedge *g*, made in two parts and hinged together, and said inclined planes and wedge provided, respectively, with dovetails, substantially as and for the purposes set forth

378,363. **AUTOMATIC GRAIN-SCALE.** JOSEPH GUDDINGER, Hika, Wis. Filed Nov. 29, 1887. Serial No. 256,490. (No model.)



Claim.—1. The combination, with the vertically-movable measure and the sliding bottom, of the cross-head, the vertical guide-bar connecting the cross-head and the said sliding bottom and permitting a free vertical movement of the measure, and means for moving the cross-head, substantially as described, for the purpose specified.

2. The combination of the vertically-movable measure having a sliding bottom, the cross-head, means for sliding the cross-head back and forth, and the positive connection between the cross-head and sliding bottom, whereby the measure is free to have a vertical movement independent of the cross-head, substantially as and for the purpose set forth.

3. In a grain-measure, the combination, with the vertically-movable measure and the scale-beam supporting the said measure on its inner end, of the revoluble disk L, and the bar M, carried by and movable with the scale-beam, and adapted to travel on a portion of the said disk and hold the measure down when discharging its load substantially as and for the purpose described.

4. In a grain-measure, the combination, with the vertically-movable measure and the scale-beam supporting the grain-measure on its inner end, of the revoluble disk L, having an approximately radial slot, and the bar M, carried on the outer end of the said scale-beam and adapted to rest on the disk when the measure is at its lowest position, and adapted to enter the said slot and permit the measure to rise, substantially as and for the purpose described.

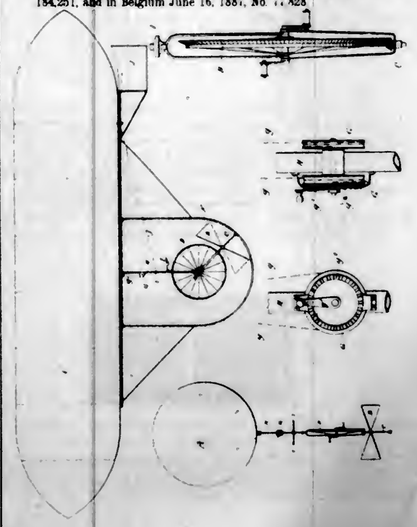
5. The combination, with the measure, the scale-beam, and the shaft N, of the idle-pulley O, having a lateral projection, *o*, the wheel P, the dog *p*, having one end adapted to rest against shaft N and its other end extending within the path of the projection *o*, the spring, the trip-arm R, pivoted between its ends to the outer end of the scale-beam, and the bar S, pivotally supported at its inner end and pivotally connected with the upper end of trip-arm R, substantially as set forth.

6. The combination of the measure, the scale-beam, the shafts J and N, the wheels K and P, mounted on the shafts J and N, respectively, and connected to revolve together, the idle-pulley, the dog *p*, the projection *o*, the slotted disk L, the lock-bar, and trip-arm, substantially as described.

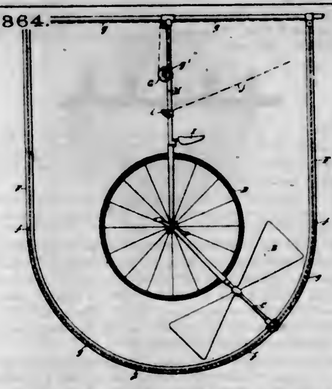
7. The combination, with the measure, the scale-beam, the shafts J and N, the wheels K and P, the idler O, means for connecting O and P, and the slotted disk L, of the lock-bar and the trip-arm pivotally connected with the scale-beam and having their ends extended upward, and the bar S, whereby the upper ends of the lock-bar and trip-arm are connected together and with the frame of the device, substantially as and for the purpose described.

8. The combination of the measure, the scale-beam, the registering mechanism, the pawl U, the rod U', and the pointer V, having an eye through which the rod U' passes and is guided in its movements, substantially as described

378,364. **AERIAL NAVIGATION.** WALD GUSTAFSON, London, England. Filed June 27, 1887. Serial No. 242,673. (No model.) Patented in England June 8, 1887, No. 8,255; in France June 15, 1887, No. 184,251, and in Belgium June 16, 1887, No. 77,828.



378,364.



Claim.—1. In an aerostat, the combination, with a suitable driving-wheel, of a propeller, a semicircular supporting guide-frame arranged in a vertical plane concentric with said wheel, on which the propeller-shaft is adjustable, and means, substantially as described, for adjusting said propeller-shaft on the guide from a horisontal position on one side of said wheel to a horizontal position on an opposite side thereof, substantially as set forth.

2. In an aerostat, the combination, with a suitable driving-wheel, of a propeller, a propeller-shaft connected with the axis of said wheel and extending radially therefrom beyond the propeller, a guide-frame arranged in a vertical plane concentric with said wheel beyond the propeller, a socket or foot-step for the propeller-shaft movable along said guide-frame, and means, substantially as described, for adjusting the propeller around the driving-wheel, substantially as described.

3. In an aerostat, the combination, with a suitable driving-wheel, of a propeller, its shaft C, a segmental H-shaped supporting-guide, F, a socket in which is mounted the end of shaft C, movable upon said guide, and anti-friction rollers carried by the socket engaging with bearing-faces on opposite sides of the guide, substantially as described.

4. In an aerostat, the combination, with a suitable driving-wheel, of a propeller, its shaft C, a segmental H-shaped supporting-guide, F, a socket, E, in which is mounted the end of the shaft C, anti-friction rollers *e e*, carried by the socket and engaging with the central web of the frame, and anti-friction rollers *e' e'*, also carried by the socket and engaging with the edges of the side flanges of the frame opposite rollers *e*, substantially as described.

5. In an aerostat, the combination, with a suitable driving-wheel, of a propeller and its shaft adjustable around said wheel, a segmental guide concentric with the said wheel, upon which the propeller-shaft is partially supported, guide-wheels *f*, mounted in a channel in said guide, and an adjusting-cord supported on said wheels and connected with the propeller-shaft, substantially as described.

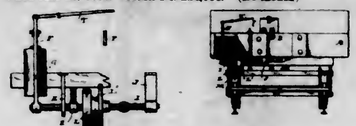
6. In an aerostat, the combination, with a suitable driving-wheel of a propeller and its shaft adjustable around the same, an H-shaped segmental supporting guide-frame, two cords connected with the propeller-shaft and extending oppositely therefrom, guide-rollers for said cords, and winding-pulleys to which the ends of said cords, mounted in the channel formed between the flanges of the said frame, are connected, substantially as described.

7. In an aerostat, the combination of a supporting-shaft, H, a driving-wheel provided with pedals supported thereby, an operator's seat, I, supported on said shaft above the driving-wheel, a propeller and its shaft driven by said wheel, and means, substantially as described, for adjusting the propeller around said wheel, substantially as described.

8. In an aerostat, the combination of a supporting-shaft, H, a driving-wheel provided with pedals supported thereby, an operator's seat above the driving-wheel, a propeller driven by said wheel and adjustable relatively thereto, flexible connections for moving said propeller, and suitable adjusting devices, substantially as described, situated above in front of the seat I and within reach of the operator, for moving said flexible connections, substantially as described.

9. In an aerostat, the combination of the support H, driving-wheel D at the lower end thereof, a propeller driven by said wheel, a seat, I, above the driving-wheel, flexible connections for moving the propeller around its driving-wheel, an adjusting device, G, supported on said shaft H within convenient reach of the operator on seat I, for moving said flexible connections, a rudder, and a rudder-shifting device, also supported on support H in proximity to seat I, substantially as described.

378,365. **AIR-BRAKE.** ISAAC HARVEY, Sr., Dagus Mines, Pa. Filed Jan. 21, 1887. Serial No. 224,998. (No model.)



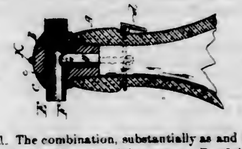
Claim.—1. The combination of the shaft carrying the friction-wheel, the cylinder having a piston therein and directly connected with said shaft, as by rod F, and the air-pipe communicating with said cylinder, and the chain connecting said shaft with the brake-levers, said parts being arranged and operating substantially as described.

2. The combination of the shaft carrying the friction-wheel to bear on the tread of the car-wheel, the air-cylinder, the piston working therein and directly connected with said shaft, as by rod F, a spring influencing said friction-wheel, and the chain connecting said shaft with the brake-levers, said parts being arranged and operating substantially as described.

3. The combination of the shaft carrying the friction-wheel, the vertically-moving rod connected with said shaft, the lever connected to said rod, a catch for said lever to engage with and adapted, as described, to be automatically released, and a chain connecting the friction-wheel shaft with the brake-levers, substantially as described.

4. The combination of the shaft carrying the friction-wheel, the piston-cylinder, the piston working therein and directly connected with said shaft, an air-pipe communicating with the cylinder, a lever connected to the piston-rod, a catch for said lever to engage with, and a chain connecting the friction-wheel shaft with the brake-levers, said parts being arranged and operating substantially as described.

378,366. **FAUCET BOTTLE-STOPPER.** LEWIS S. HOYT, Boston, Mass., assignor to the Faucet Bottle Company, Nashua, N. H. Filed May 13, 1887. Serial No. 238,028. (No model.)



Claim.—1. The combination, substantially as and for the purpose set forth, with the elastic and yielding stopper B, of the faucet E, the flange *b* on the same, and the head I, having the shoulder *a* thereon.

2. The combination, substantially as and for the purpose set forth, of the stopper B, the faucet E, passing transversely through the same, the arm H, attached to the head of the faucet, the ring L, and the catch *d*.

378,367. **RESERVOIR OR TANK APPARATUS FOR WATER-CLOSETS.** GEORGE W. HUBBARD, Brooklyn, N. Y. Filed Oct. 20, 1887. Serial No. 252,924. (No model.)

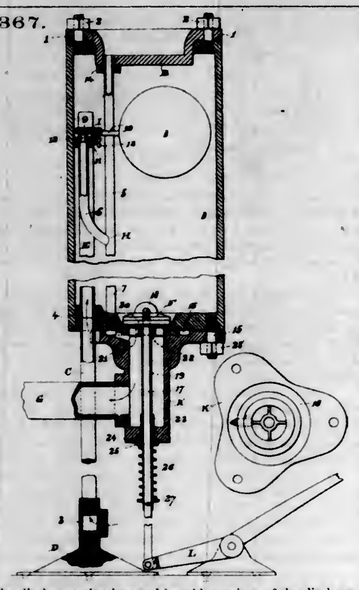
Claim.—1. The combination, with the closed tank having water inlet and discharge pipes, and provided, also, with a discharge-valve, of the air or waste-water pipe having three branches or openings, through one of which it communicates with the interior of the tank, through another with the outside atmosphere, and through the third with the discharge-pipe beyond the discharge-valve, and a self-acting valve which closes the opening into the tank, substantially as described.

2. The combination, with the closed tank having water inlet and discharge pipes, and provided, also, with a discharge-valve, of the air or waste-water pipe having three branches or openings, through one of which it communicates with the interior of the tank, through another with the outside atmosphere, and through the third with the discharge-pipe beyond the discharge-valve, and a self-acting float-valve which closes the opening into the tank, substantially as described.

3. The combination, with the tank having the discharge-opening in the bottom and provided with a discharge-valve, and a hollow casting having a side opening to receive the discharge-pipe and secured to the bottom of said tank below said discharge-opening by means which permit said casting to be adjusted about a vertical axis to present said side opening in different directions, of a waste-water or air pipe which communicates with the interior of said casting below the discharge-valve through a circular passage at the outside of said casting adjacent to said tank, so that on adjustment of said casting there is still communication with said pipe, substantially as described.

4. The combination, with the hollow casting having a side open-

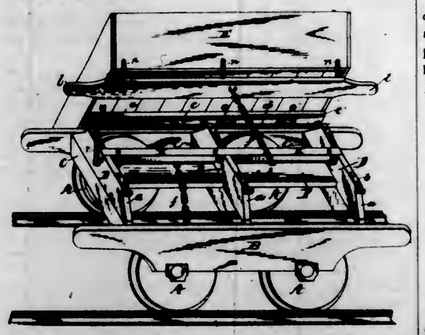
378,367.



ing and the discharge-pipe inserted in said opening, of the discharge-valve having a stem which projects through the bottom of said casting, and the bushing in said bottom around said stem, which bushing extends upward to the level of the discharge-pipe, substantially as described.

3. The combination, with the closed tank, of the water-inlet pipe, the air or waste water pipe having three branches or openings, the float-valve applied to one of said branches or openings, the hollow casting communicating with said pipe through another of said branches or openings and having an outlet-opening in the side, the discharge-pipe inserted in said outlet-opening, the discharge-valve having a depending stem which extends through said casting, and means for lifting the valve by acting on said stem, substantially as described.

378,368. **DUMPING-CAR.** JAMES M. HUGHES, Ashland, and JESSE D. WILLIAMS, Denton, Ky. Filed Oct. 10, 1887. Serial No. 251,890. (No model.)



Claim.—1. The combination, in a dumping-car, of the beams D, having the inclined ends, the hook-irons *b*, secured thereto, the beams F, having perforations *s*, the chains *f*, eyebolts *g*, spiral springs *h*, the beds E, strap-irons *e*, bars *d*, and means for locking the beds to the frame of the car, substantially as described.

2. The combination, in a dumping-car, of the beams D, having inclined ends, the hook-irons *b*, the beams F, having perforations *s*, the chains *f*, the eyebolts *g*, springs *h*, strap-irons *e*, bars *d*, the spring-catches *n*, the bar H, having the catches *o* attached thereto, the rod K, adjustable eccentrics *p*, and lever *r*, substantially as described.

378,369. **RUBBER MAT FOR STORE CASES AND COUNTERS.** CHARLES S. HYER, Washington, D. C. Filed Oct. 25, 1887. Serial No. 253,348. (No model.)



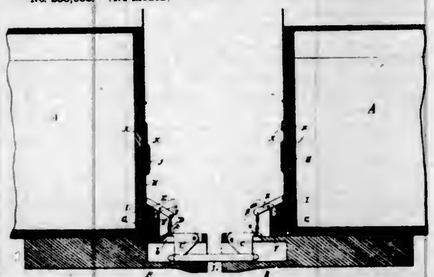
Claim.—1. As an improved article of manufacture, a mat for the purposes set forth, constructed of rubber or rubber compound and having upwardly-projecting teats or nipples formed individually with cavities or made hollow.

2. A rubber mat for the purposes set forth, having teats or nipples inclosing a re-enforcement which is integral with a re-enforcement in connection with the base of the mat.

3. As an improved article of manufacture, a mat constructed of rubber or rubber compound, having upwardly-projecting teats or nipples, the base whereof as an entirety and the teats or nipples individually being provided with a re-enforcement of suitable material, the continuity of rubber surface being at all points preserved, whereby the teats or nipples are strengthened against breakage and disfiguration avoided, substantially as described.

4. The herein-described rubber mat, having upwardly-projecting teats or nipples provided with cavities therein, and a suitable fabric with an adhesive mixture thereon, which lies against the base or bottom support of the mat and is pressed into the cavities formed in the teats or nipples.

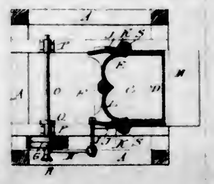
378,370. **CAR-COUPLING.** CHARLES R. KING, AARON P. ATEN, and WILLIAM B. FLOYD, Lampasas, Tex. Filed Oct. 21, 1887. Serial No. 253,006. (No model.)



Claim.—1. The combination, with the coupling-dog and link, of the lever E, the chain D, connecting the outer end of said lever to the coupling-dog, the spring I, holding the inner end of said lever normally elevated, and means for depressing the said end of the lever, substantially as specified.

2. The combination of the coupling-dog, the head-block, the fulcrum-iron secured thereto, the lever E, pivoted on said fulcrum-iron and connected to the coupling-dog by a chain, D, the rod H, to depress the inner end of the said lever, and the spring I, acting in opposition to rod H, substantially as described.

378,371. **ORE-FEEDER.** EDWARD C. LOFTUS, Oakland, Cal. Filed Jan. 26, 1887. Serial No. 225,560. (No model.)

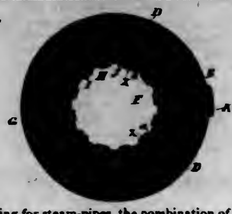


Claim.—In an ore-feeder, the combination of the hopper, the feed-chamber, the oscillating double curved-faced plunger, the central vertical pivot, and means for oscillating the plunger, substantially as herein set forth.

378,372. **BOILER-COVERING.** CHARLES B. MANVILLE, Milwaukee, Wis. Filed Dec. 20, 1886. Renewed Jan. 30, 1888. Serial No. 262,470. (No model.)

Claim.—1. The boiler-covering herein described, composed of alternate layers of paper and a compound composed of an adhesive paste and wool shoddy intermixed and applied before drying between said paper and adapted when dry to adhere to said paper, substantially as set forth.

378,372.

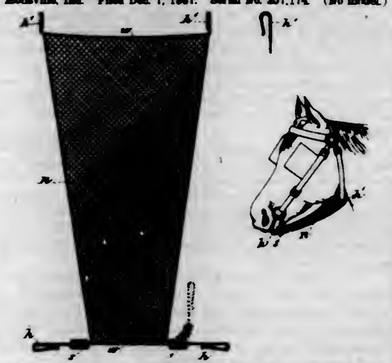


2. In covering for steam-pipes, the combination of the cylindrical section G, adapted to nearly surround the pipe, and the wedge-shaped section E, respectively composed of paper and a compound consisting of paste and wool shoddy ground or intermixed together and applied between and adapted to adhere to the layers of paper forming said sections, substantially as set forth.

3. In steam pipe and boiler covering, the combination of the alternate layers of paper and layers composed of adhesive paste and wool shoddy, with the inner bearing clay surface, H, formed in ridges and grooves, substantially as and for the purpose specified.

4. In steam-pipe covering, the combination of the circular section G, wedge-shaped section E, adhesive paste *a a*, interposed between the contiguous ends of said sections, grooved clay-bearing surfaces H, and metallic band K, all substantially as and for the purpose specified.

378,373. **THROAT-PROTECTOR FOR HORSES.** WILLIAM O. MILLS, Evansville, Ind. Filed Dec. 7, 1887. Serial No. 257,174. (No model.)



Claim.—1. A throat-protector for horses, comprising the body portion *a*, attached at its rear end to a spring-wire provided with hooks for locking over the throat-strap, and at its front end to a spring-wire having hooks for engaging with the rings of the bridle-bit, substantially as shown and described.

2. A throat-protector for horses, composed of a body portion made of netting or other suitable material, its rear end wider than its front, and connected at such rear end to a spring-wire with hooks for locking over the throat-strap, and its narrower or front end to a wire whose ends are formed into hooks for engaging with the rings of the bridle-bit, and coiled springs formed upon such wire between the hook and the central part, to which the protector is connected, for permitting lateral expansion, substantially as shown and described.

3. A throat-protector for horses, composed of a body portion made of netting or other suitable material, connected at its rear end to a spring-wire with hooks for locking over the throat-strap, and its narrower or front end to a wire whose ends are formed into hooks for engaging with the rings of the bridle-bit, and coiled springs formed upon such wire between the hook and central part, to which the protector is connected, for permitting lateral expansion, substantially as shown and described.

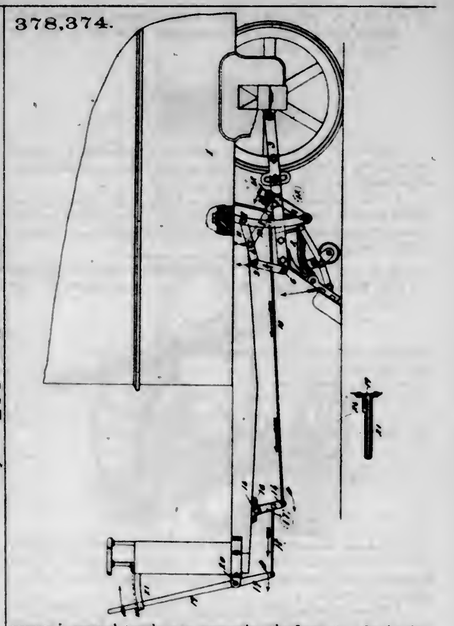
378,374. **TRACK-CLEANING ATTACHMENT FOR STREET-CARS.** CHRISTIAN PIPER and CHARLES O. BOSSIERT, St. Louis, Mo.; said Bossiert assignor of one-half his right to said Piper. Filed Dec. 31, 1887. Serial No. 258,697. (No model.)

Claim.—1. In a track-cleaner, the combination of the frame to which the scraper is secured and means for lifting the frame, consisting, essentially, of toggle-arms or bars, a bar connected to the toggle-arms, and a lever located at the end of the car, to which said bar is connected by suitable arms and rods, substantially as and for the purpose set forth.

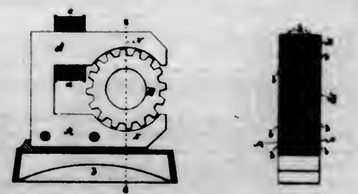
2. In a track-cleaner, the combination of the frame to which the scraper is secured, toggle-arms connecting the frame to a fixed point, a bar connected to the toggle-arms, an arm to which the bar is connected, a hanger to which said arm is pivoted, a second arm pivoted to said hanger, rod connected to said second arm at one end, and a lever to which said rod is connected and by which the parts are operated, substantially as and for the purpose set forth.

3. In a track-cleaner, the combination of the frame to which the scraper is secured, toggle-arms connecting the frame to a fixed point, hanger secured to the bottom of the car and to which the toggle-arms are connected at one end, a bar connected to the toggle-arms, arms pivoted to the lower end of said hanger and to one of which said bar is connected, a rod connected at one end to the other of said arms, an arm pivoted to the bottom of the car, to which said rod is connected, arms pivoted to the front portion of the car, to one of which said rod is connected and to the other of which one end of a rod, 18, is connected, and an operating-lever to which the other end of said rod 18 is connected, substantially as and for the purpose set forth.

4. In a track-cleaner, the combination of the frame to which the scraper is secured, toggle-arms 4, bar 10, hanger 8, to which the toggle-arms are connected, a rock-shaft secured to the lower end of said hanger, an arm, 9, to which the said bar 10 is secured, arm 12, rod 13, one end of which is connected to said arm 12, arm 14, to which the other end of the rod 13 is connected, arm 17, rod 18, and lever 19, all substantially as and for the purpose set forth.

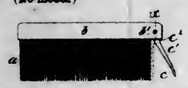


378,375. **CORE FOR DYNAMO-ELECTRIC MACHINES.** WENCESLAS C. RECHNIEWSKI, Paris, France. Filed Dec. 8, 1887. Serial No. 257,347. (No model.) Patented in France Jan. 3, 1887, No. 180,060.



Claim.—In a dynamo-electric machine, the combination of a toothed armature with a field magnet or magnets formed of plates or lamina stamped out from sheets of wrought-iron, said plates or lamina being placed side by side and insulated from one another, substantially as described.

378,376. **WEAVER'S COMB.** PATRICK ROONEY, Fall River, Mass., assignor to C. F. Sylvester & Co., same place. Filed Nov. 2, 1887. Serial No. 254,055. (No model.)



Claim.—1. As an improved article of manufacture, a weaver's comb having a series of rigidly-fastened teeth and a movable tooth, substantially as and for the purpose described.

2. The combination of the back or frame, with a series of teeth rigidly fastened therein, and a tooth pivotally connected with the said frame, with its point movable toward or from the other teeth, substantially as described.

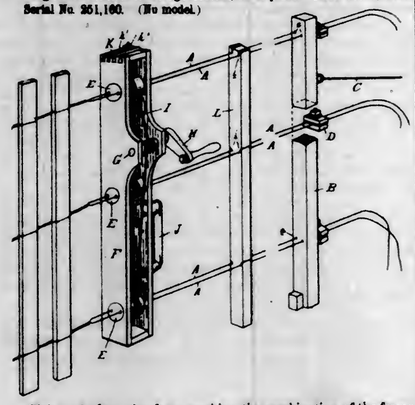
378,377. **CULTIVATOR.** JOSHUA SCHERMERHORN and THEODORE JURY, Terra Cotta, Kans. Filed Nov. 17, 1887. Serial No. 255,425. (No model.)



Claim.—1. In combination with the carrying-wheels, the tongue, and the arched frame, the standards B, adjustable vertically on said frame, the yoke Y, having perforations, and the plow-beams, substantially as described.

2. In combination with the tongue, the yoke Y, straddling the tongue and provided with bolt-holes and bolts, and the beams, whereby the beams and weed-cutters are adjustable vertically, substantially as described.

378,378. **FENCE-MACHINE.** THOMAS J. SMITH, Jackson, Mich., assignor of one-half to George Merrill, same place. Filed Oct. 1, 1887. Serial No. 251,160. (No model.)

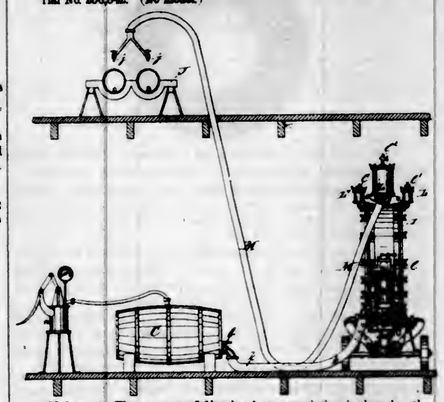


Claim.—1. In a wire-fence machine, the combination of the frame F, the twisters E, journaled therein, the actuating crank-shaft G, and the rope I, arranged to form a series of coils around said crank-shaft and twisters and having its ends secured to said crank-shaft, substantially as described.

2. In a wire-fence machine, the twisters E, provided with the enlarged wire-passages *k*, and the spreader-bars *l*, removably secured upon the ends of the twisters between the wire-passages, substantially as described.

3. The wire-fence machine described, consisting of the frame F, the twisters E, journaled in said frame, the crank-shaft G, journaled in said frame parallel with the twisters to one side of the central line, the crank H, the rope I, wound around all of said twisters and arranged to impart a limited rotary motion to the twisters and having its ends adjustably secured to the crank-shaft G, the handle J, and the slat-guide K, all arranged substantially as described.

378,379. **FILTERING PROCESS FOR BEER.** HEINRICH STOCKHEIM, Mannheim, Baden, Germany, assignor to Simon Uhlmann and Frederick Uhlmann, both of New York, N. Y. Filed Nov. 28, 1887. Serial No. 256,342. (No model.)



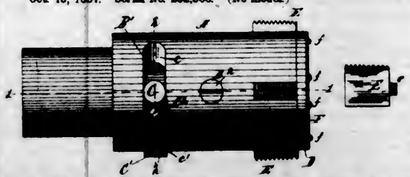
Claim.—1. The process of filtering beer, consisting in drawing the beer to be filtered from the cask under a pressure exceeding atmospheric pressure, conducting the same to and through a filtering apparatus in which that pressure is maintained during the filtering operation, keeping the filtering apparatus full of beer, collecting and carrying off any air entering the filter along with the beer and gas separating from the beer during the filtering operation, and discharging the filtered beer from the filter under pressure, substantially as hereinbefore set forth.

2. The described process of filtering and kegging beer, which consists in forcing the beer under a pressure exceeding atmospheric pressure from the store-cask through a filtering apparatus and thence to the keg, keeping said apparatus full of beer during the operation, and collecting and carrying off from the beer during its passage from the store-cask to the keg air that may be mingled with the beer and gas that may separate from the beer, substantially as and for the purposes hereinbefore set forth.

3. The process of filtering beer, consisting in drawing the beer from the cask under a pressure exceeding ordinary atmospheric pressure, forcing the beer under said pressure through a filter, maintaining that pressure in the filter during the filtering operation, and creating and maintaining a back-pressure in the filter, so as to keep the filter full of beer, substantially as described.

4. The process of filtering beer, consisting in drawing the beer from the cask under a pressure exceeding ordinary atmospheric pressure, forcing the beer under said pressure through a filter, maintaining that pressure in the filter during the filtering operation, creating and maintaining a back-pressure in the filter, so as to keep the filter full of beer, and collecting and carrying off from the beer any gas separating from the beer on its way from the store-cask to or through the filtering apparatus, substantially as described.

378,380. **COLLAPSING TAP.** BYRON B. SWITZER, Chicago, Ill., assignor to the Crane Bros. Manufacturing Company, same place. Filed Oct. 15, 1887. Serial No. 252,508. (No model.)

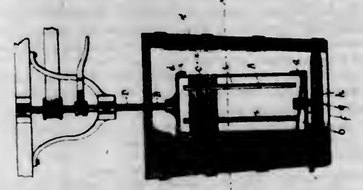


Claim.—1. The combination, with the head provided with the radially-movable cutters and with a peripheral slot, of the cam for actuating the cutters, provided with a spindle extending into said head, and a hand-lever secured to the spindle and extending outward through the slot, substantially as and for the purposes specified.

2. The combination, with the head and the radially-movable cutters provided with forward-projecting pins, of the cam provided with an incline for each cutter, the end disk having eccentric slots, with which the pins on the cutters engage, a spindle to actuate the cam and extending rearward into the head, and a hand-lever secured to said spindle and extending radially outward through a suitable slot in the head, substantially as and for the purposes specified.

3. The combination, with the head A, provided with slots *c*, of the radially-movable cutters E, the cam B and its spindle B', the hand-lever C, and the adjustable stop C', substantially as and for the purposes specified.

378,381. **EMULSIFIER.** GEORGE W. TOWAR, Jr., Detroit, Mich. Filed May 13, 1887. Serial No. 238,194. (No model.)

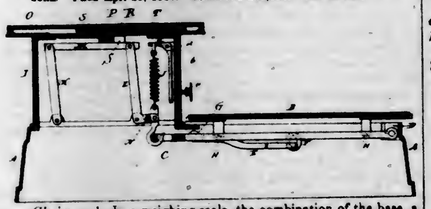


Claim.—1. In an emulsifier, a cylindrical vessel provided with a closed top, a spirally-formed bottom, and perforated plates near its top, substantially as described.

2. In an emulsifier, a cylindrical vessel provided with a spirally-formed bottom, a series of perforations near its top, a detachable cover, and one or more interior ribs, the whole arranged for operation in connection with a stationary tub, substantially as described.

3. In an emulsifier, the combination, with the tub A, of the cylinder B, provided with the spiral blades *a*, detachable cap C, having a step formed in its center, ribs *i*, perforations *c*, and the detachable vertical shaft D, all arranged to operate substantially as described.

378,382. **WEIGHING-SCALE.** ANDREW TURNBULL, New Britain, Conn. Filed Apr. 25, 1887. Serial No. 236,051. (No model.)



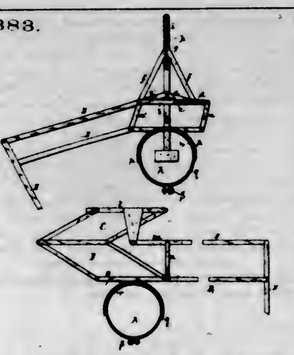
Claim.—1. In a weighing-scale, the combination of the base, a system of levers within said base, a platform resting on said levers, a resisting-spring in connection with said levers, levers K L, hung to the base and extending upward, one of said levers, as L, being in connection with the platform-levers, a stationary dial in a horizontal plane and above said levers, a vertical central shaft, P, supported in the frame below the dial and extending up through the dial, a toothed rack in connection with said levers, and a pinion on said shaft, with which said rack engages, substantially as and for the purpose described.

2. The combination of a base, a horizontal system of levers carrying a platform, a vertical spring, one end being connected to the principal lever of said system, a frame extending upward from the base, a bell-crank lever hung in said frame upon a horizontal axis, one arm of said lever extending horizontally inward, the upper end of the spring being fixed to said arm, the other arm of said bell-crank lever extending downward, an adjusting-screw adapted to bear against said other arm for the purpose of adjusting the tension of the spring, a stationary dial supported in said frame and in a horizontal plane, a pointer on said dial, and mechanism substantially such as described between said system of levers and said pointer, substantially as and for the purpose described.

378,383. **EMBROIDERING ATTACHMENT FOR SEWING-MACHINES.** JULIUS W. VON PITTLER, Gohlis, Leipsic, Saxony, Germany. Filed June 19, 1886. Serial No. 205,690. (No model.) Patented in Germany Dec. 30, 1885, No. 36,491; in France Jan. 22, 1886, No. 173,682; in Belgium Feb. 15, 1886, No. 71,980; in England May 31, 1886, No. 7,264; in Sweden June 1, 1886, No. 920; in Spain June 4, 1886, No. 9,551; in Norway June 8, 1886, No. 126; in Italy June 22, 1886, No. 20,564; in Denmark Oct. 14, 1886, No. 768, and in Austria-Hungary Feb. 5, 1887, No. 34,694 and No. 60,653.

Claim.—1. An embroidering attachment for sewing-machines, comprising a cloth-frame provided with an inner frame or ring and an intermediate frame or ring, and a pantograph lever mechanism provided with clamping-jaws, substantially as described.

378,383.



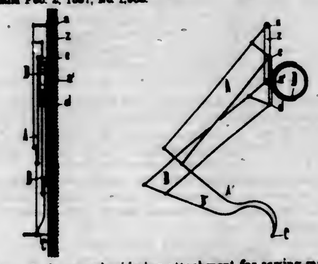
2. An embroidering attachment for sewing-machines, comprising a cloth-frame provided with an inner ring and an intermediate ring, a pantograph lever mechanism provided with clamping-jaws, and a guide rail or plate adapted to be secured to the cloth-plate of a sewing-machine, substantially as described.

3. An embroidering attachment comprising a cloth-frame provided with an inner plain ring, and an intermediate ring formed with a rough inner surface and having an adjusting-screw, and a pantograph having spring clamping-jaws which engage the said cloth-frame, substantially as described.

4. The combination of the cloth-frame A, having an inner ring, *r*, and intermediate ring, *q*, a guide-rail, *i*, and pantograph lever mechanism having clamping-jaws which engage the said cloth-frame, substantially as described.

5. The combination of the cloth-frame A, links *a a'*, toggle-levers *e f f'*, having pivot *d*, bar *b*, having slot *c*, guide-rail *i*, having slot *h*, and the arms B of the pantograph, substantially as described.

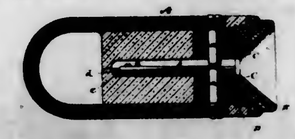
378,384. **EMBROIDERING ATTACHMENT FOR SEWING-MACHINES.** JULIUS W. VON PITTLER, Gohlis, Leipsic, Saxony, Germany. Filed Mar. 2, 1887. Serial No. 229,402. (No model.) Patented in England Feb. 2, 1887, No. 1,682.



Claim.—1. In an embroidering attachment for sewing-machines, the combination of two pantographs united at a common tracing-point and having a cloth holder or holders, substantially as described.

2. In an embroidering apparatus, the combination of two pantographs, such as A and B, united at a common tracing-point, C, and connected to the cloth holder or holders by a bar, *c d*, whereby a uniform motion is imparted to the said holder or holders, substantially as hereinbefore described.

378,385. **TELEPHONE-RECEIVER.** ALONZO W. BROWN, Evanston, Wyo. Filed Apr. 7, 1887. Serial No. 234,016. (No model.)



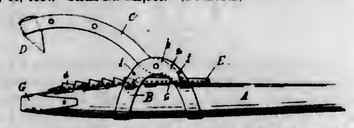
Claim.—1. The combination, with the U-shaped magnet and its inward projecting polar extensions, each having a bobbin thereon, of the box held between the arms of the magnet and having the longitudinal opening, and the tongue secured at its inner end in the rear

part of said opening and extending at its forward end into the space between the two polar extensions, substantially as set forth.

2. The combination, with the U-shaped magnet and its inward-projecting polar extensions, each having a bobbin thereon, of the box held between the arms of the magnet and having a longitudinal opening, a resonant board within said opening, and the tongue secured at its inner end to the said board and extending into the space between the said polar extensions, substantially as set forth.

3. The combination, with the U-shaped magnet A and its inward-projecting polar extensions *a*, screwed in its ends, the bobbins on said extensions, and the box B, having a longitudinal opening, of a resonant board, *c*, within said opening, a metal plate, *d*, upon the same, the tongue *b*, the screw *c*, passed through the tongue, plate, and board into the box, the free end of the tongue extending into the space between the polar extensions, and the ear-piece C, substantially as set forth.

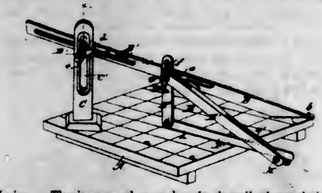
378,386. **CANT-HOOK.** LEWIS L. COOK, Knapp's Creek, Wis. Filed July 11, 1887. Serial No. 243,916. (No model.)



Claim.—1. In combination with the stock or staff of a cant-hook, a radially-swinging hook, a toothed sliding plate, and a bracket on said stock forming a guide for said plate and as a support for the fulcrum of the hook, substantially as described.

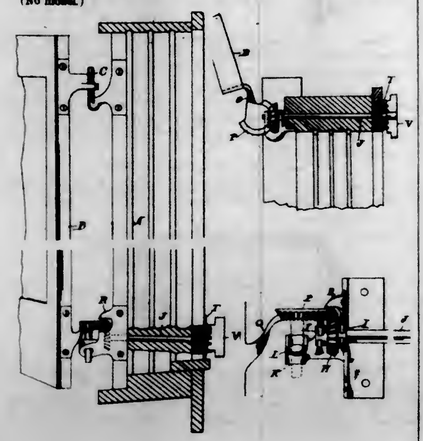
2. In a cant-hook, the combination of the stock A, provided with the bracket B, the hook C, fulcrumed between the ears of said bracket, and sliding plate E, provided with toothed flanges, when constructed, arranged, and operating substantially in the manner and for the purposes described.

378,387. **RAFTER-GAGE.** JOHN M. CRIMON, Elizabethtown, Ill. Filed May 12, 1887. Serial No. 238,016. (No model.)



Claim.—The improved gage herein described, consisting of the base A, the hip-bar B, pivoted at *b* to the base, the upright C, connected adjustably with the hip-bar, and the bevel E, having stock E', blades F F', and clamps G H, substantially as and for the purpose specified.

378,388. **SHUTTER-WORKER.** LEO A. DOSCH and OLIVER L. DOSCH, Miamisburg, Ohio; said Oliver L. Dosch assignor to said Leo A. Dosch. Filed Aug. 23, 1886. Renewed Sept. 24, 1887. Serial No. 250,584. (No model.)



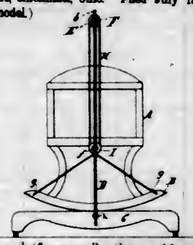
Claim.—1. In a shutter-worker, the adjustable spindle J, having on its outer end the thumb-piece V, combined with the ratchet-plate T, and the bevel-pinion H, and clinched lugs I, forming bearings therefor, substantially as described.

2. The combination of the spindle J, the bevel-pinion H, the ratchet-plate T, and the section D of the hinge, having journal F, as described, and vertical opening L, with the section N of the hinge, having ratchet Q and vertical stem M, adapted to fit into the opening L, all substantially as described.

3. In a shutter-worker, as described, the member N, having twisted wing O, and plate P, slotted at S in the rim, combined with the member D, having lug R, whereby, when desired, the shutter may be lifted from its hinges, substantially as described.

4. In a shutter-worker, the combination of the horizontal and adjustable spindle J, having at its inner end the thumb-piece V, the member D, having the opening L and lug R, the ratchet-plate T, and the bevel-pinion H, journaled as described, with the member N, having stem M, ratchet Q, and plate P, slotted at S, all as and for the purpose set forth.

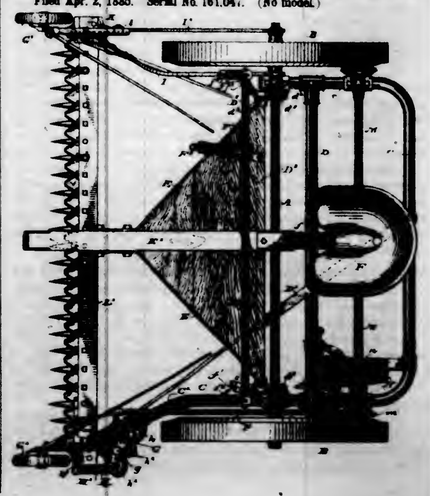
378,389. **CRADLE.** ARTHUR DUFFY, Ivanhoe, and CHARLES J. RELING, Cincinnati, Ohio; said Reling assignor, by mesne assignments, to Miller Outcalt, Cincinnati, Ohio. Filed July 15, 1887. Serial No. 244,404. (No model.)



Claim.—1. In a platform-cradle, the combination, with the platform and cradle resting thereon, of an upright support secured at its lower end to said platform and carrying at its upper end a horizontal fan-shaft extending over the cradle and provided with a fan, a grooved pulley secured on said fan-shaft near the upright support, and a cord passed around said pulley and having its ends secured to the rocker of the cradle on opposite sides, whereby the rocking of the cradle vibrates the fan, substantially as described.

2. The combination of the platform C, cradle A, and rocker B, upright support D, provided with the loop *a*, bent portion *b*, and eye *c*, horizontal fan-shaft E, carrying the adjustable fan G and provided with the grooved pulley F, double-grooved pulley I, and cord H, passed around said pulleys and connected to the rocker B on opposite sides by the springs *g*, substantially as described.

378,390. **MOWER.** LAMBERT ERPELDING, Leonardville, Kans., assignor to the McCormick Harvesting Machine Company, Chicago, Ill. Filed Apr. 2, 1885. Serial No. 161,047. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, in a center-draft mower, of the main frame supported upon the axle, hangers from said main frame, brackets pivoted to said hangers, a metal strap connecting said brackets in advance of and alongside the axle, and the hounds and draft-frame secured to said brackets and strap.

2. The combination, substantially as hereinbefore set forth, in a center-draft mower, of the main frame supported upon the axle, hangers from said main frame, brackets pivoted to said hangers, the metal strap connecting said brackets, the hounds and draft-frame secured to said brackets and strap, the lifting rock-shaft mounted in open sockets in the ends of the brackets, and the keys confining said rock-shaft in the sockets.

3. The combination, substantially as hereinbefore set forth, in a center-draft mower, of the main frame, the finger-bar, the ball-stud projecting from a bracket-casting depending from the rigid arm of the main frame, and the shoe at the heel end of the finger-bar, having a ball-socket at its rear receiving said ball-stud.

4. The combination, substantially as hereinbefore set forth, in a center-draft mower, of the long arm of the main frame, the casting secured to its advance end, the hanger from the rear of said casting, having a forwardly-projecting ball-stud, the subtending flange at the front of said casting, and the shoe at the heel of the finger-bar, having a ball-socket at its rear to engage with said ball-stud, and as to its toe normally resting upon said subtending flange.

5. The combination, substantially as hereinbefore set forth, in a center-draft mower, of the casting at the free end of the finger-bar, the oblique thrust-bar pivoted to the axle inside the wheel and to said casting, and a second thrust-bar extending from the axle outside the wheel also to said casting.

6. The combination, substantially as hereinbefore set forth, in a center-draft mower, of the casting at the free end of the finger-bar, the oblique thrust-bar pivoted to the axle inside the wheel and riveted to said casting, and the straight thrust-bar pivoted to the axle outside of the wheel, and also riveted to said casting.

7. The combination, substantially as hereinbefore set forth, in a center-draft mower, of the casting at the free end of the finger-bar, having a ball-socket formed in a hanger at its rear and a hooded subtending flange, and the finger-bar shoe at said end, having a rearwardly-projecting ball-stud to engage in said socket, and as to its toe resting upon said flange when in normal position.

8. The combination, substantially as hereinbefore set forth, in a center-draft mower, of the main frame and its long arm, the casting on the end of said main frame, the thrust-bars and the casting at their end, and the finger-bar pivoted at its rear to each casting by a universal joint.

9. The shoe at the heel end of the finger-bar, formed, substantially as described, with the bridge at its rear, the rearward-extending lug or ear, and the bearings formed in said bridge and ear for the reception of the bell-crank lever.

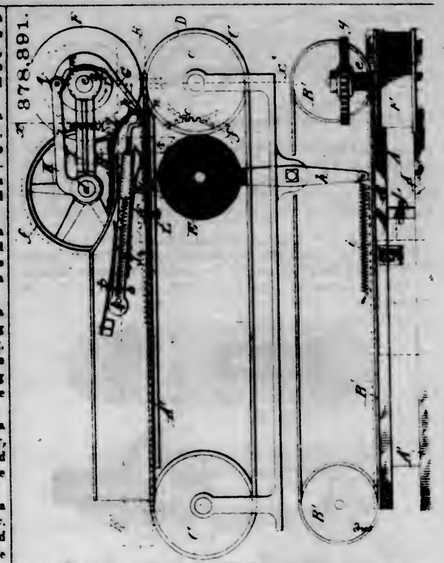
10. The shoe at the heel end of the finger-bar, formed, substantially as described, with a rearwardly-extending bridge, a lug, and bearings formed in said bridge and lug for the elbow-lever, and also with the ball-socket for the reception of the converse member of the coupling.

11. The combination, substantially as hereinbefore set forth, with the main frame and the gearing located at one corner thereof, of the shield subtending and protecting said gearing and bolted to said frame and its tie-bar at or about the four points stated, and for the purpose described.

12. The shield formed, substantially as described, with an outline subtending and following the outline of the prime gear and pinion, and with the four arms for attachment to the main frame at the points indicated.

13. The bracket for the support of the draft-frame and lifting rock-shaft, formed, substantially as described, with a bearing for attachment to its pivot and a seat to receive the end of the metal strap which ties it to the other, and an upper socket for the reception of the rock-shaft at its upper end.

378,391. **MACHINE FOR MARKING MAIL MATTER.** MARTIN V. B. BYERDEN, Boston, Mass. Filed Apr. 5, 1886. Serial No. 198,229. (No model.)



Claim.—1. The combination, with a feed-belt for the letters, cards, or other mail matter to be acted upon, of a projection or knob located in the letter-path at a sufficient distance from the printing mechanism to raise the forward end of each individual piece of mail matter so that it will be superimposed on the preceding piece, substantially as described.

2. The combination of the separated bands A and A', the stationary knob L, projecting between said bands, the impression-roll C, having the smooth annular surface D, likewise situated between said bands, the downwardly-projecting pivoted timing-lever *k*, provided with a spring, *l*, and the printing-cylinder F, all arranged to operate substantially as described.

3. The combination of the printing-cylinder F, the rocker-frame I, and the support H for the same, of the clamping-foot G, the rocker-arm K, the tubular box J, and mechanism consisting of cams upon the cylinder-shaft, whereby the said clamping-foot is actuated to introduce the letter or card between the type and impression cylinders, substantially as herein described and shown.

4. The combination of the rocker-frame I, fulcrumed upon the shaft *d*, the supporting-post H, the printing-cylinder F, mounted rigidly on a shaft, *e*, journaled in the rocker-frame and provided with cams *r* and *s*, the rocker-arm K, clamping-foot G, and tubular box J, horizontally depressed by a spring, *t*, and having a forwardly-extending pressure-guide, *u*, substantially as shown and described.

5. The combination of the conveying-belts, the clamping-foot having a plane-faced portion at *m*, a spindle portion, and an intermediate plate, *n*, the tubular box for receiving the spindle portion, the retracting-spring, and suitable cam mechanism, substantially as described, for actuating said foot for the purpose of moving it horizontally forward until the letter is caught between the type and impression roll and then elevating the foot off the roll, as set forth.

6. In a postmarking apparatus, the clamping-foot G, provided with a slotted plate, *n*, through which the timing-lever extends into the path of the letter, in combination with a tubular box inclosing the spindle portion of the foot and held in a horizontally-depressed position by a pressure-spring, and actuating mechanism, substantially as described, for pushing the foot forward and elevating it at proper intervals, as set forth.

7. The combination, with a driving or impression roll, C, having an encircling smooth surface, D, of a blotting-roller, E, journaled into a pivoted shaft, A, so held by a spring, *i*, that the roller E will bear against the surface D, substantially as described.

8. The combination, with the printing-cylinder F, having a transverse slot upon its peripheral surface, of a detachable and removable canceling-die, X, held within said slot by means of a pin, P, substantially as described.

9. The combination, with the moving support for the letters, cards, &c., and the table beneath the same, of a rearwardly-inclined knob having a perpendicular forward face and secured upon the table and in the letter-path, substantially as and for the purposes set forth.

10. The combination, with the divided belts, of the projecting knob located between them, said knob being formed with an inclined rear face and a perpendicular forward face, substantially as specified

378,392. **AUTOMATIC UNCOUPLER.** WILSON R. PUSH, Cleveland, Ohio. Filed June 26, 1887. Serial No. 242,471. (No model.)

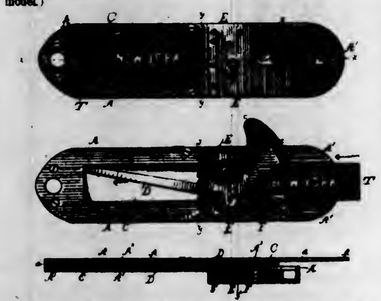
Claim.—1. A coupling-link having the inclined back and the rounded portions, and one of whose points is secured near the end of the other and said other point projecting, so as to engage in a loop or eye.

378,392.



2. A coupling-link having the inclined back and the rounded portions, and one of whose points is secured near the end of the other and said other point projecting, in combination with a draft-rope, a swiveled eye, and an elevator-drum, whereby upon operating said drum and winding up the rope the link may be automatically uncoupled.

378,393. COMBINED TAG-HOLDER AND HASP-LOCK. ROBERT W. GREENE, Savannah, assignor of one-half to Samuel P. Hamilton, Chatham County, Ga. Filed Nov. 22, 1887. Serial No. 255,953. (No model.)



Claim.—1. The hasp formed of the two plates A and A', slightly separated and with the narrow strip *a'* along each side and rear end to form the recess A^3, the entrance to which is in line with the staple-slot *a*, the plate A, forming the bottom, being solid and with the staple-slot *a* therein, and the plate A', with an opening, C, therein, combined with the spring D, extending longitudinally of the hasp and resting upon the bottom plate, A, as described, for the purposes specified.

2. The combination, in a hasp-lock, of the hasp having the staple-slot *a*, the lock forming an integral part of said hasp and composed of a case, E, within which is pivoted a hook, *e*, having a notched end, e^3, bolt F, provided with the projection *f*, engaging said hook, spring e^4, for reacting the hook *e*, and spring *f'*, for reacting the bolt F, as described, for the purposes specified.

3. As an improved article of manufacture, the combined hasp-lock and tag-holder herein shown and described, composed of the hasp A A', with the usual staple-slot, *a*, opening C, and longitudinal slot A, whose entrance is adjacent to the staple-slot for the address-tag, and lock forming an integral part with said hasp for securing the hasp in place, composed of the case E, hook *e*, having hooked end e^3, for engaging projection *f* on bolt F, and springs e^4 and *f'*, all constructed and arranged substantially as and for the purposes specified.

378,394. SHOULDER-PAD. WILLIAM B. HASKINS, Osceola, assignor of one-half to R. W. Friend, Pecan Point, Ark. Filed Apr. 21, 1887. Serial No. 235,663. (No model.)



Claim.—1. The herein-described shoulder-pad, consisting, substantially as described, of a blank of flexible material shaped to fit the human shoulder, with its inner edge upturned and ends extended, and a single securing-strap secured at the inner corners of the extended ends and diagonally with relation to the upturned inner edge of the pad.

2. A shoulder-pad consisting, substantially as described, of a blank of flexible material shaped to fit the human shoulder, with its inner edge upturned and ends extended, a metal plate secured to the central part of the blank and shaped to conform thereto, and the securing-strap connected to the inner corners of the extended ends diagonal to the upturned inner edge of the pad.

3. A shoulder-pad consisting of a flexible blank having both edges curved in the same direction and shaped to fit the human shoulder, with its inner or concave edge upturned, a metal plate secured to the central part of the blank and shaped to conform thereto, and a securing-strap secured to the inner corners of the extended ends of the pad diagonal to the inner edge.

378,395. PROCESS OF TREATING PEAT. SALOMON HEIMANN, New York, assignor of two-thirds to Frank L. Pommer, Stapleton, and Albert R. Hachfield, Brooklyn, N. Y. Filed May 20, 1887. Serial No. 238,531. (No specimens.)

Claim.—1. The process herein described of treating peat, which consists in pressing, drying, and grinding the same, next mixing it with caoutchouc and pulverized sulphur, forming it in suitable shapes, and vulcanizing the same, substantially as set forth.

2. A non-conducting composition consisting of a vulcanized mixture of dry pulverized peat, caoutchouc, and sulphur, substantially as set forth.

3. A non-conducting composition consisting of a vulcanized mixture of dry pulverized peat, caoutchouc, sulphur, and plaster-of-paris, substantially as set forth.

378,396. PILLOW-SHAM HOLDER. BOSBIE S. HEMMENWAY, Boston, and GEORGE F. STRATTON, Malden, Mass., assignors to the R. S. Hemmenway Company, Portland, Me. Filed Feb. 26, 1887. Serial No. 228,974. (No model.)
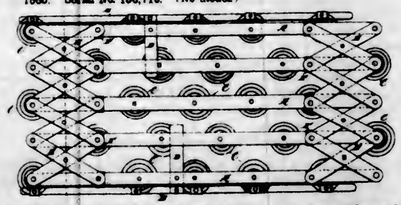


Claim.—1. A pillow-sham holder composed of a bar having U-shaped arms *h*, provided with a vertical locking portion, *h'*, and adapted to be engaged with devices on the bedstead, and a frame composed of lengths of wire jointed or pivoted to each other and to the bar, as set forth.

2. A pillow-sham holder consisting of a bar, *s*, and a frame composed of lengths of wire detachably jointed or pivoted to each other and pivotally connected to the bar to permit them to fold parallel therewith, as set forth.

3. A pillow-sham holder consisting of a bar and a frame composed of lengths of wire jointed or pivoted to each other and pivotally connected to the bar, in combination with U-shaped arms *h*, having a vertical locking portion, *h'*, said frame being made in two independent sections, as set forth.

4. A pillow-sham holder consisting of a bar and a frame composed of lengths of wire jointed or pivoted to each other and pivotally connected to the bar, said frame being made in two independent sections, each section being provided with a hooked finger, *f g*, to detachably engage the other section, as set forth.

378,397. BED-BOTTOM. ROBERT W. HOMAN, Brooklyn, N. Y., assignor to the Farren Bros. Company, of Connecticut. Filed Feb. 24, 1885. Serial No. 156,716. (No model.)



Claim.—1. In a spring bed-bottom, the combination, with a series of slats united together by double cross-jointed links, one end thereof attached to or near the end of said slats and the other to sliding devices or clips embracing said slats, adapted for simultaneous adjustment, and each held and supported in parallel relation to each other, of the two outer slats secured together, one of which is supported above the other by means of a bent springy arm of metal, in addition to the coiled springs, substantially as and for the purpose set forth.

2. A spring bed-bottom consisting of a series of parallel slats forming a base-support, the combined width of which is adapted for

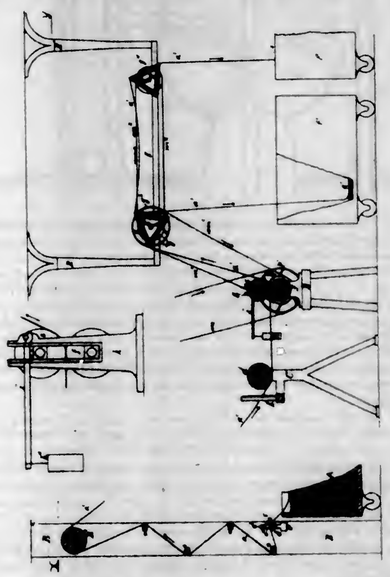
simultaneous expansion and contraction by means of double cross-jointed links and sliding clips united together, said links extending across, connecting with, and sustaining each slat in a fixed parallel and endwise relation to each other, a series of coiled springs, and two elevated side slats connecting with and supported above the outer slats of the former, all arranged to operate as described.

3. In a spring bed-bottom, the combination, with a series of parallel base-slats united at or near their ends by double cross-jointed connecting-links, sliding clips, and coiled springs, of one or more angular springs rigidly secured to and connecting the outer base-slats and the said elevated side slats, substantially as and for the purpose set forth.

4. In a spring bed-bottom, the combination of a series of parallel base-slats, each connected, supported, and adapted for lateral adjustment by means of double-jointed cross-links, one end of which is pivotally connected to said slats and the other to sliding clips, coiled springs, elevated side slats, and flat angularly-arranged springs D, connecting and supporting the latter, as described.

378,398. CHAINED YARN DOUBLING AND SPLITTING MACHINE. SAMUEL M. JOHNSON, Saco, Me., assignor of one-half to the York Manufacturing Company, same place. Filed Apr. 21, 1887. Serial No. 235,643. (No model.)

Brief.—The invention consists in the improved apparatus for the manipulation of chained yarns preparatory to dyeing, and in the subsequent preparation thereof for transfer to beams or spools.



Claim.—1. The combination of the stationary friction-bars *o*, guide-rolls B' and *d*, raddles *b* and *b'*, and drawing-rolls *e* and *f*, substantially as and for the purpose specified.

2. The combination of the stationary friction-bars *o*, movable friction-bar o^3, guide-rolls B' and *d*, raddle *b*, weighted roll *e*, and centrally-journaled roll *f*, as and for the purpose specified.

3. The combination of fixed and movable raddles, fixed and movable friction-bars, guide-rolls, and drawing-rolls, arranged as shown and described, with means for securing the contact of the drawing-rolls, and means for communicating motion to said rolls, substantially as herein shown and described, and for the purpose specified.

4. A machine for doubling and splitting yarns consecutively, consisting of the raddles *b* and *b'*, friction-bars o o o o and o^3, guide-rolls B' and *d*, drawing-rolls *e* and *f*, and triangular rolls *h* and h^3, in combination, as shown and described, and for the purposes set forth.

378,399. MUSIC-BOX. ANTOINE L'HERIN, Sainte Suzanne, Doubs, France. Filed Sept. 4, 1887. Serial No. 248,143. (No model.) Patented in France Sept. 2, 1886, No. 178,316, and Sept. 4, 1886, No. 178,344.

Claim.—1. In a music-box, the combination, with a barrel, of supporting-lugs C D, adapted to engage said barrel, one of said lugs being made movable, and a lever provided with an inclined locking

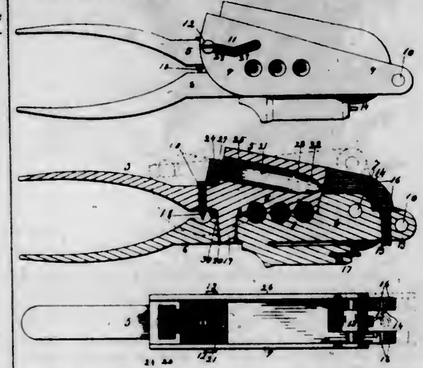


surface or wedge, I, adapted to engage said movable lug, substantially as set forth.

2. In a music-box, the combination, with a barrel, of supporting-lugs C D, adapted to engage said barrel, one of said lugs being made movable and provided with a retracting-spring, N, and a lever provided with an inclined locking surface or wedge, I, adapted to engage said movable lug, substantially as set forth.

3. In a music-box, the combination, with a removable barrel and lugs adapted to engage said barrel, or forks or rests O, adapted to receive or support said barrel, substantially as and for the purpose set forth.

378,400. CARTRIDGE IMPLEMENT. HENRY A. LYON, Sioux City, Iowa, assignor of one-half to James W. Boyd, Chardon, Nebr. Filed June 22, 1887. Serial No. 242,127. (No model.)



Claim.—1. The combination of two arms pivoted together, one arm being provided with cheek-plates at the joint, notched, as at 16, to receive the flange of a cartridge, and the other arm having a tenon entering between the said cheek-plates, and a stud, 15, screw-threaded into the said tenon, substantially as shown and described, whereby the said stud is made adjustable, for the purpose specified.

2. The combination of two arms pivoted together, one arm being provided with cheek-plates at the joint, notched, as at 16, to receive the flange of a cartridge, and the other arm having a tenon entering between the said cheek-plates, and a screw having one end smaller than the other and reversibly fitted to screw through the said tenon, substantially as shown and described.

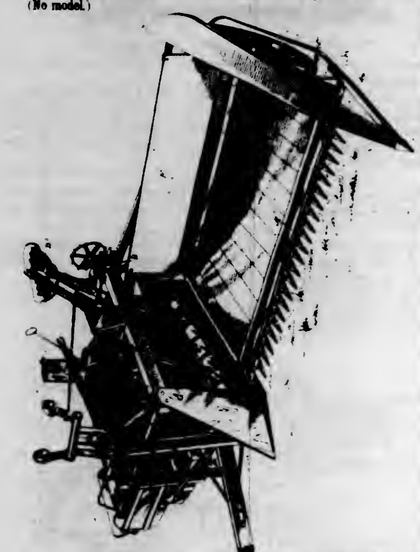
3. The combination of two arms pivoted together near one end and provided with hand-levers at the other end, and having bullet-molds formed at their joint, one arm being provided with a dowel-pin and the other arm having a hole fitted to register with the said pin, the said pin-hole being shaped as a trimming-die for bullets cast in the molds, and the said dowel-pin being flattened on its end as a follower to force bullets through the die, substantially as shown and described.

4. The combination of two arms pivoted together and shaped as a bullet-mold, one of the arms being provided with a dowel-pin and the other arm having a hole registering therewith to hold the arm in correct alignment therewith, the said dowel-pin being shaped as an expander or reamer to open the mouth of a shell to receive the bullets cast in the said mold, substantially as shown and described.

5. The combination of two arms, 5 and 6, pivoted together near one end and shaped as a bullet-mold, a neck-cutter plate, 9, at one side of the mold, pivoted to the arm 6 at 10, and having a curved or angular slot, 11, a pin, 12, secured to the other arm to enter the said slot, a follower, 24, and an extractor, 25, upon the cutter-plate, registering and co-operating with a chamber in the arm 5, shaped in conformity with the exterior of a cartridge, substantially as shown and described.

6. The combination of two arms pivoted together, one of the said arms being chambered in conformity with the exterior of a cartridge, a plate or plates pivoted to the other arm and having guide-slots, a follower and extractor secured to the said plate or plates and registering with the said chamber, and guide-pins for the said slots, substantially as shown and described.

378,401. GRAIN-BINDER. CYRUS H. MCCORMICK, Jr., and HENRY R. PRENDERGAST, Chicago, Ill., assignors to the McCormick Harvesting Machine Company, same place. Filed May 29, 1885. Serial No. 167,106. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the platform apron or carrier, the main wheel, the reciprocating binder-carriage intermediate between the delivery end of the carrier and the main wheel, the tripping-lever at the inner end of the binding-table, and packing mechanism immediately at the delivery end of the platform-carrier to force the grain against said tripping-lever and start the carriage.

2. The combination, substantially as hereinbefore set forth, of the platform apron or carrier, the main wheel, the binder-frame intermediate between said carrier and the main wheel and having ways inclined toward the top of said wheel, the binder-carriage reciprocating upon said ways, the tripping-clutch by which the mechanism actuating said carriage in its movements is set in motion, the tripping-lever connected to said clutch, and the packing rakes or drum elevating the grain from the delivery end of the carrier to the lower and inner end of the binding-table and packing it against the tripping-lever.

3. The combination, substantially as hereinbefore set forth, with the platform apron or carrier and a binder-frame adjustable transversely of the machine, of a wind-board at the rear of said binder-frame and a screen at the rear of the platform, both supported by and from the binder-frame, whereby they partake co-ordinately of its adjustments.

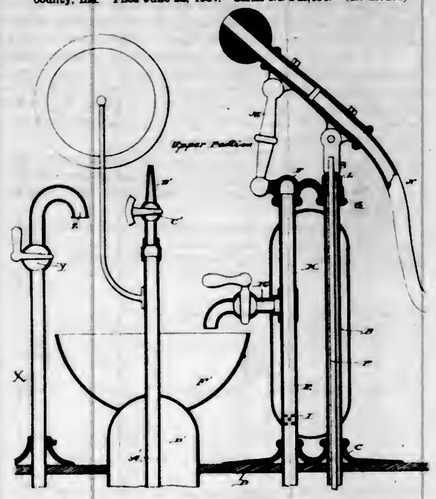
4. The combination, substantially as hereinbefore set forth, in a harvester-binder, of a platform apron or carrier, a main wheel, a binder-frame intermediate between said carrier and the main wheel, ways upon which said binder-frame is adjustable back and forth transversely of the platform-apron, a screen or wind-board for the rear of the platform suspended from an overhung arm attached to the binder-frame, and a support or slide-rest for said arm between the binder-frame and the screen.

5. The combination, substantially as hereinbefore set forth, with the reciprocating binder-carriage and the vibrating binder-arm carried thereby, of the gear-wheel at the inner end of the binder-frame, the pitman connecting a wrist-pin thereon with the binder-carriage, an upright arm or fork from said pitman, studs or anti-friction rolls carried by the pitman and by said arm or fork, the crank from the binder-arm shaft, and the link having oblique and cam-shaped slots into which said studs take, whereby the proper motions are given to both the binder-carriage and the binder-arm by said pitman.

6. The combination, substantially as hereinbefore set forth, to form a grain feeding or packing drum, of the revolving shaft, the disks or spiders carried thereby, the oscillating shafts carred in bearings in said disks and having teeth, the two crank-arms at the ends of said shafts, the cam-plate, and the cam-tracks having the outline shown and described.

7. The combination, substantially as hereinbefore set forth, with the reciprocating binder-carriage, the binder-arm and compressor carried thereby, and with the tripping-lever by which said carriage is started, of the retaining-arm which receives and retains the gavel until the descent of binding-arm and compressor after the tripping-lever yields and starts the machine.

378,402. PUMP. ELIJAH NEFF, Rochester, Ind., assignor of three-fourths to James Gilchrist, Lima, Ohio, and Andrew W. Feits, Fulton County, Ind. Filed June 22, 1887. Serial No. 242,158. (No model.)



Claim.—1. The combination of the cylinder A, the reciprocating piston R therein, the suction-pipe having the valve V, the pipe E, communicating with the suction-pipe and with the cylinder and having the check-valve W, the said pipe being provided, also, with the stop-cock K, the compression-chamber H, communicating with the pipe E, the pipe X, communicating with the pipe E, the cylinder G, communicating with the pipe X, the piston H′ in the said cylinder and having the rod I′ projecting from the same, for the purpose set forth, the pipes A′, communicating with the pipe X, and the compression-chamber D′, communicating with the pipe E′, all combined and arranged to operate substantially in the manner and for the purpose described.

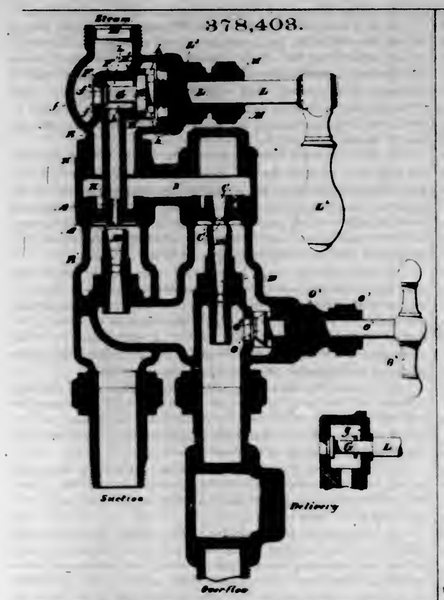
2. The combination of the compression-chamber H, having the cock K, the pipe B, extending down through the compression-chamber, the cylinder A, attached to the lower end of said pipe, the pipe E, extending through the chamber H, communicating therewith at I, and also communicating with the lower end of cylinder A, and having the check-valve W, the inlet-pipe having valve V, the cap F, secured on the projecting upper ends of pipes B and E, the piston R in cylinder A, and having rod P extending upward through pipe B, the link M, attached to cap F, and the handle-lever attached at different points to the upper end of link M and the upper end of rod P, substantially as described.

378,403. INJECTOR. CHARLES E. RANDALL, Boston, Mass., assignor to the Hancock Inspirator Company, same place. Filed Sept. 6, 1886. Serial No. 212,845. (Model.)

Claim.—1. In an injector provided with the steam-inlet-valve opening, the passage A, in communication with the lifter steam-jet tube, and a port or ports connecting such passage with a passage leading to the forcer steam-jet tube, the valve for closing the inlet-valve opening on the inner side thereof, the valve for closing port or ports leading from passage *h*, connected rigidly with the former valve, and means for moving the valves, substantially as and for the purpose specified.

2. In an injector provided with the inlet-port *f*, the passage *h*, into which the port admits steam, and one or more ports, *h′*, opening from such passage, the valve F′, for closing the discharge side of the inlet-port, the valve H, connected with valve F′, and means for moving the valves, substantially as and for the purpose shown.

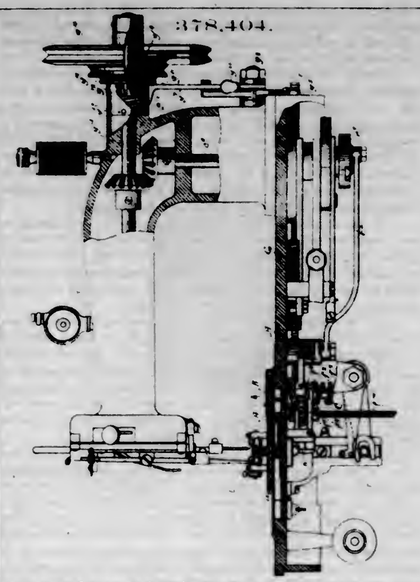
3. In combination with the inlet-port *f*, passage *h*, into which the port *f* admits steam, in communication with the lifter steam-jet tube, one or more ports, *h′*, leading from passage *h* and communicating with the forcer steam-jet tube, the valve F′ on the inner or discharge side of port *f*, and the valve H, connected with valve F′ and adapted to close ports *h′* and keep them closed while the valve F′ is moved sufficiently to open port *f*, and to unclose them upon further movement of the valves, substantially as and for the purpose set forth.



4. In an injector, in combination with the steam-inlet port *f*, the passage *h*, into which the port *f* admits steam, and the ports *h′ h′*, the valve F′ on the inner or discharge side of port *f*, the piston-valve head H, the stem connecting the two valves, and means, substantially as described, for operating the valves, substantially as and for the purpose described.

5. In an injector provided with a steam-inlet-valve opening, a passage communicating therewith and with the lifter steam-jet tube, and a second valve-opening connecting such passage with a passage leading to the forcer steam-jet tube, a valve controlling the inlet-valve opening located on the discharge side thereof, and a second valve connected with the former and controlling the second valve-opening, and means, substantially as described, for operating the valves, whereby the second valve shall be and remain closed, except when the first or inlet valve is wide open, substantially as and for the purpose set forth.

378,404. BUTTON-HOLE STITCHING AND BARRING MACHINE. JAMES H. REED, Lynn, Mass. Filed Mar. 3, 1887. Serial No. 229,634. (No model.)



Claim.—1. The combination, in a button-hole machine, of a bed-plate having a guiding-slot, a^3, clamp-plate A′, having a pin to enter said gulding-slot, and the teeth *a′*, the gear B, arranged to engage said teeth *a′*, and a ratchet and feed-pawl for moving said gear intermittingly in one direction, and mechanism—such as a draw-cord actuated by a spring or equivalent power, and adapted to be wound upon a drum carried by the gear-shaft for rotating the gear continuously in a reverse direction—whereby the clamp-plate is fed forward with an intermittent movement during the stitching of the sides and eye of the button-hole and is automatically returned by a continuous movement to its original position, as and for the purposes described.

2. The combination, in a button-hole-stitching machine, of the clamp-plate A′, having the movements specified, its driving-gear B, mounted upon a shaft, *b*, a drum carried by said shaft, having one end of a draw cord or chain attached thereto, and a second drum upon which the cord or chain is in part wound before the movement of the gear B to wind the cord or chain upon the drum connected therewith, and a spring for communicating a rotary movement to the said second drum, as and for the purposes described.

3. The combination, in a button-hole-stitching machine, of the clamp-plate A′, having the movements specified, its driving-gear B, mounted upon the shaft *b*, a drum carried by said shaft having one end of a draw cord or chain attached thereto, and upon which the cord or chain is in part wound upon the movement of the gear B, and a spring connected with the said second drum and adapted to be wound to have its tension increased by the movement of the drum upon the unwinding of the cord or chain therefrom, and a clutch or releasing device for releasing the shaft *b*, substantially as described.

4. The combination of the clamp-plate A′, guided in relation to the stitch-forming devices as specified, and having the teeth *a′*, the gear B, adapted to mesh or engage with the teeth *a′*, and mounted upon a shaft, *b*, a barrel for receiving a drawing cord or chain, also mounted upon said shaft, and a member of a clutch fastened thereto, with a ratchet-wheel having a section of a clutch fastened thereto and made movable vertically upon said shaft, whereby its section of the clutch is adapted to engage with the first-named section and to be disengaged therefrom, the feed-pawl *c* upon the lever *c′*, and means for vibrating the same, and detent upon the lever *d*, and means for operating the same, substantially as described.

5. The combination of the clamp-plate, the driving-gear B, its ratchet-wheel, and a reciprocating pawl engaging the ratchet, and means for vibrating the same, whereby the driving-gear is rotated in one direction, and a spring-drawn cord or chain for rotating the gear B in a reverse direction, as and for the purposes described.

6. The combination of the clamp-plate driving-gear B, its shaft *b*, carrying the driving ratchet-wheel, and a clutch, one member of which is fastened to the ratchet-wheel and the other to the shaft, and means for moving said ratchet-wheel vertically upon said shaft, and for bringing its clutch into engagement with the fast member of the clutch, substantially as described.

7. The combination of the clamp-plate driving-gear B, its shaft, a ratchet-wheel carried thereby, a feed-pawl having a reciprocating movement imparted to it, a holding-plate for varying the position of the feed-pawl in relation to the ratchet-teeth, whereby the operative extent of its movement is varied, the arm *d*, carrying said plate, and the movable plate D′, connected with said plate *d* by the bent lever *d′*, and adapted to be moved by the clamp-plate pin a^3, and the spring d^3, substantially as described.

8. The combination of the work-plate having the groove a^2, the clamp-plate having a pin, a^1, the clamp-plate driving-gear B, a ratchet and pawl for intermittingly moving the same, a plate, D′, having the ledges or extensions d^5, arranged in relation to the guide-slot, as specified, the fulcrum-pins d^6, and a pawl-moving plate, D, connected with said plate D′, whereby upon its movement the plate D′ is moved relatively to the feed-pawl, as and for the purposes described.

9. The combination of the clamp-plate, the feeding-gear B, a ratchet and feed-pawl for intermittingly rotating it, the pawl-moving plate or arm D, supported by the lever *d*, the lever d^9, connected with the movable block d^{10}, and the spring d^8, substantially as described.

10. In a button-hole stitching and barring machine, the combination of a clamp-plate and means for feeding the same, with a stop-motion mechanism comprising a reciprocating pawl, G, a connecting rod, *g′*, having ratchet-teeth g^4 for controlling the position of an operating releasing-block, g^5, with said releasing-block, and a movable

member of a clutch having a pin, g^{10}, adapted to be brought in contact with the releasing-block g^8, when said block is moved into position to engage it, as and for purposes described.

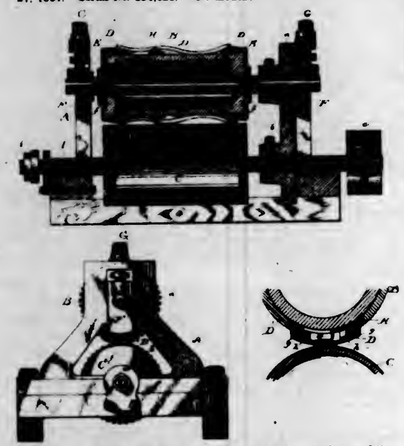
11. The combination, in a button-hole stitching and barring machine, of a clamp-plate and means for moving the same, with a movable rod, g', adapted to release the mechanism for disengaging the driving member of a clutch, having teeth adapted to be engaged by a reciprocating pawl, with said reciprocating pawl, and a plate or arm for holding said pawl from engagement with said teeth until the completion of the last side of the button-hole, and then adapted to be moved by contact of the clamp-plate with a movable block connected with said holding-plate, as and for the purposes described.

12. The combination of the reciprocating pawl G, the clamp-plate and means for feeding it, a holding-plate governed as to its position by the clamp-plate, as specified, a releasing-bar or rod, g', having the ratchet-teeth g^8, and the notches g^9, with automatic stop-motion mechanism for moving the driving member of the clutch from the driven member of the clutch, substantially as described.

13. The combination, in a button-hole stitching and barring machine, of the clamp-plate and means for feeding it, the bar g', operated as specified, and having notches g^9, with the lever g^5, one end of which engages said notches and the other of which communicates motion to the lever g^7, with said lever g^7, the driving member of a clutch and the driven member g^{11}, having a pin by which it is moved out of engagement with the driving member upon coming in contact with the end g^6 of the lever, substantially as described.

14. The combination, in a button-hole stitching and barring machine, of the clamp-plate and means for feeding it, the driving member of a clutch loose upon the shaft which it drives, the driven member of a clutch, g^{11}, fastened to a sleeve secured to the shaft by a pin which extends through an inclined slot therein, a spring for moving the driven member of the clutch in contact with the driving member, and maintaining that position, and a wedge arm or block adapted to be moved into a position to be engaged by said pin, whereby said pin upon coming in contact therewith is caused to move the driven member of the clutch from engagement with the driving member, substantially as described.

378,405. METHOD OF AND APPARATUS FOR CUTTING RUBBER SOLES. MARTIN SNYDER and ANTONE ROHT, New Brunswick, N. J., assignors to themselves and Clarence M. Slack, same place. Filed Mar. 21, 1887. Serial No. 231,626. (No model.)



Claim.—1. In the machine herein described for cutting and forming rubber soles, the combination, with a revolving cutting-die having the shape of a sole and provided with beveled running edges, of means for maintaining the heat of the goods to the running point, substantially as set forth.

2. In the machine herein described for cutting and forming rubber soles, the combination, with a revolving cutting-die having the shape of a sole and provided with beveled running edges, of a revolving roller upon which the die acts and means for maintaining the heat of the goods to the running point, substantially as set forth.

3. In a machine for cutting and forming rubber soles, the combination, with a revolving cutting-die having the shape of a sole and provided with beveled running edges, of a revolving roller upon which the die acts, said roller being hollow and having a connection for admitting steam or other heating agent thereto, substantially as set forth.

4. In a machine for cutting and forming rubber soles from a heated sheet of goods, the combination, with a roller, of a die with a cutting-edge having the shape of a sole with a narrow shank, wider heel portion, and still wider toe portion, such cutting-edge describing a cylinder in its revolution and striking the goods first at the center of the toe, then at the heel, and then progressively toward the shank on the forward side and around the toe and heel to the shank on the rear side of the die, substantially as set forth.

5. In the machine herein described for cutting and forming rubber soles from a heated sheet of goods, the combination, with a continuously-revolving roller and means for maintaining the heat of the goods to the running point, of two or more sole-shaped cutting-dies provided with beveled running edges and located in succession upon said roller, and means for advancing the sheet of goods continuously under such die-roller, substantially as set forth.

6. In the machine herein described for cutting and forming rubber soles from a heated sheet of goods, the combination, with the continuously-revolving die-roller having one or more sole-shaped cutting-dies provided with beveled running edges and means for maintaining the heat of the goods to the running point, of a continuously-revolving roller upon which the dies act, the sheet of goods being continuously advanced between such rollers, substantially as set forth.

7. In a machine for cutting and forming rubber soles, the combination, with a roller, of one or more sole-shaped cutting-dies mounted removably thereon and provided with beveled running edges, and the hollow roll adapted to be heated for maintaining the goods to the running point, substantially as set forth.

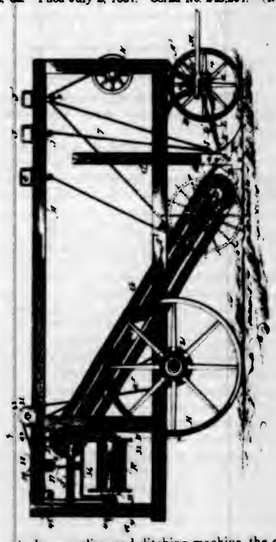
8. In a machine for cutting and forming rubber soles, the combination, with the die-roller, of a holding-plate secured removably upon said roller, and a sole-shaped die held removably by such plate, substantially as set forth.

9. In a machine for cutting and forming rubber soles, the combination, with the die-roller having end teeth, of a die-holding plate having teeth engaging the teeth on the roller for fixing its position, a sole-shaped die carried by the holding-plate, and means for removably securing the holding-plate to the roller, substantially as set forth.

10. In a machine for cutting and forming rubber soles, the combination, with the die-roller having end teeth, of a die-holding plate having teeth engaging the teeth on the roller for fixing its position, a sole-shaped die carried by the holding-plate, and clamping-disks turning on screw-threads on the roller-shaft and clamping the ends of the holding-plate to the roller, substantially as set forth.

11. The method of cutting and forming rubber soles, consisting in heating a sheet of rubber goods to the running point, and passing said sheet while its heat is maintained under a revolving cutting and forming die, substantially as set forth.

378,406. GRADING AND DITCHING MACHINE. JOHN C. SAGE, Atlanta, Ga. Filed July 2, 1887. Serial No. 243,291. (No model.)



Claim.—1. In a grading and ditching machine, the combination, with a main frame or platform, A, carrying plows E, of the main conveyer G, disposed to receive the earth from the plows, said conveyer adjustably connected to the main frame A, and provided at its lower end with the power-wheels P P, (said wheels having the drive-pulley 29,) and the pulleys 6 6, at its upper end, adapted to impart motion to the conveyer through the chain or belt 60, substantially as shown.

2. In a grading and ditching machine, the main conveyer G, said conveyer being adjustably secured at its lower end to the main frame A by means of the cross-piece *e*, chain or cable 1, pulleys 10 A, and windlass H', and movably secured to the main frame at its upper end, substantially as shown.

3. In a grading and ditching machine, the main conveyer G, adjustably secured at its lower end to the main frame A and movably secured at its upper end to the main frame, said conveyer having the shaft 1, carrying the drum *i*, said shaft journaled in sliding boxes 3, said boxes adapted to slide in grooves in the cross-piece *f*, substantially as shown.

4. In a grading and ditching machine, the main conveyer G, adjustably connected at its lower end to the main frame and provided at its upper end with the shaft 1, said shaft provided with the drum or belt pulley *i*, the body portion of said shaft being square in cross-section, said shaft provided with the drive-pulleys 6 6, and securing-clamp 5 5, the ends of said shaft being round, adapted to journal in sliding boxes 3, said boxes adapted to slide in the grooves 4, substantially as shown.

5. In a grading and ditching machine, the combination, with the main conveyer, of the auxiliary conveyer R, said conveyer being adjustably suspended transversely to the main conveyer on the main frame and adapted to a movable adjustment by means of the lock-pins 40, and holes 31× and 41, substantially as shown.

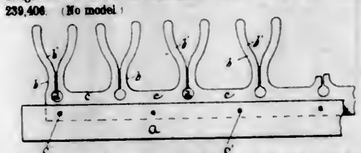
6. In a grading and ditching machine, the combination of the main frame of the beam C, having the plow-frame D, said frame having the plows E E and colter F and apron 30, secured thereto, the clevis K and draft-chains L L', secured to the dog-bar 14, said beam and plows adapted to vertical and lateral adjustment by means of the cross-bar J, cable 7, pulleys 8 and 9, and windlass H, substantially as shown.

7. In a grading and ditching machine, the combination of the plow-frame D, having the plows, said frame provided with the drag-chain L of the dog-bar 14, said bar connected with the drag-chain, substantially as shown.

8. In a grading and ditching machine, the combination of pole M, having notches in its upper face, of the dog-bar, said bar adapted to embrace the pole, and provided with the spur to enter the notches in the pole, and provided with the rearwardly-extending arm, said arm having holes to receive the lock-pin 18, and provided with the ring 13, adapted to receive the end of drag-chain, substantially as shown.

9. In a grading and ditching machine, the main conveyer G, provided with a transverse shaft at its lower end, the said shaft having a screw-threaded journal adapted to receive the power-wheels P, the spokes of said wheels passing through the tire, substantially as shown.

378,407. DISPLAY-FRAME. LEOPOLD STRAUSS, Norwich, Conn., assignor to Strauss & Co., same place. Filed May 26, 1887. Serial No. 239,406. (No model.)



Claim.—A display-frame consisting of a multiple of clasps supported and connected by an intervening bar, each of said clasps being formed with a gradually-narrowing slit to receive the fabric, and having also an enlarged relieving-opening at the base of said slit, as and for the purpose specified.

378,408. DIES FOR MAKING AUGER-BITS. FRANCIS THOMAS, Cincinnati, and CHARLES H. IRWIN, Martinsville, Ohio; said Thomas assignor to said Irwin. Filed Sept. 19, 1887. Serial No. 250,042. (No model.)



Claim.—In dies for finishing auger-bits, the dies A B, having a series of grooves, as *a*, corresponding to and receiving one-half of the central spindle of the bit, and having a series of recesses, *d*, obliquely across the grooves *a*, said recesses in each die corresponding in shape to one-half of one of the single convolutions of the spiral rib, the grooves *a* being so shaped at each end that they receive the inclined surfaces of the blade between the convolutions, and the recess D and depression *b'*, for receiving the cutting end and point of the blade or rib, and the recess *a'* for the shank of the bit, substantially as set forth.

378,409. CAR-COUPLING. JAMES F. THORNTON, Nicholas Court-House, W. Va. Filed Nov. 19, 1887. Serial No. 255,644. (No model.)



Claim.—1. In a car-coupling, the combination of the draw-head, the slide-bar extended to or nearly to the top of the car and having the coupling-pin at its lower end, and a spring or springs for depressing said slide-bar, substantially as set forth.

2. In a car-coupling, the combination of the draw-head and the grapples or hooks extended thereover and separated, forming a way between them for a part on a meeting draw-head, substantially as set forth.

3. In a car-coupling, the combination, with a draw-head or support, of grapple-arms pivoted at their rear ends and movable laterally in opposite directions onto and off the draw-head or support, substantially as set forth.

4. In a car-coupling, a draw-head or support and grapple arms or bars pivoted at their rear ends, whereby they may be adjusted or swung laterally, as described, in combination with latches or detents for securing said arms in their different adjustments, substantially as set forth.

5. The combination, with the draw-head or support, the projections F on opposite sides thereof, and the grapple-arms pivoted at their rear ends, whereby they may be turned laterally inward over the support or outward over projections F, of the latches consisting of spring-plates secured at one end to the arms and provided at their free ends with pins to enter sockets in the draw-head or support, and the projections F in the different adjustments of the grapple-arms, substantially as set forth.

6. In a car-coupling, the combination, with the draw-head and suitable guides, of the slide-bar movable vertically in said guides and extended approximately to the top of the car, and the coupling-pin rigidly connected with the lower end of the slide-rod, substantially as set forth.

7. In a car-coupling, a vertically-movable slide-bar provided with a cross-head arranged to be engaged by grapples or hooks of a meeting coupling, substantially as set forth.

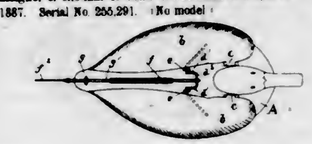
8. In a car-coupling, the combination of the draw-head having a link-mortise and the vertical slide-bar provided with a cross-head and with the coupling-pin, whereby the pin may be elevated for the insertion of the link by the contact of the cross-head with the grapple hooks or bars, substantially as set forth.

9. The vertical slide-bar, combined with the cross-head, pivotally connected therewith, whereby it may be elevated out of operative position, and a latch for securing the cross-head in its different adjustments, substantially as set forth.

10. The combination of the draw-head, the grapple-bars, and the vertical slide-bar provided with the coupling-pin and with the cross-head, substantially as and for the purposes specified.

11. The combination of the draw-head, the grapple-bars pivoted at their rear ends and adjustable over said draw-head, the vertical slide-bar, and the cross-head supported thereby, substantially as set forth.

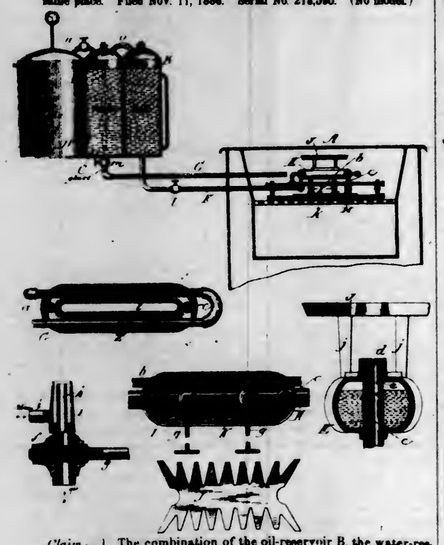
378,410. DECOY-DUCK. WILLIAM D. TRIMBLE, Hampden, Md., assignor of one-half to John T. Freeland, same place. Filed Nov. 16, 1887. Serial No. 255,291. (No model.)



Claim.—1. A decoy-duck having staples or eyes secured to the back thereof, through which pass the arms *nf* a double-crank lever, said arms being prolonged and bent upward to vibrate the wings of the decoy through a connecting rod and cord attached to said double-crank lever, substantially as specified.

2. A decoy-duck provided with a double-crank-armed rocking lever adapted to operate the wings of said decoy by means of a wire connected thereto, having a cord connected to the outer end thereof, as shown and described.

378,411. DEVICE FOR GENERATING AND BURNING GAS OR VAPOR. MICHAEL ZECK, Chicago, Ill., assignor to himself and Ann Doney, same place. Filed Nov. 11, 1886. Serial No. 218,595. (No model.)



Claim.—1. The combination of the oil-reservoir B, the water-reservoir C, the gas-generator E, a pipe, F, for conveying oil to the gas-generator, a water-pipe, G, passing through the gas-generator, one or more burners, I, a pipe, H, that supports and communicates with said burners, a vertical pipe, *c*, leading from the gas-generator to the pipe H, and a horizontal pipe, *b*, that communicates with the water-pipe and burners to convey water-vapor to the burners, substantially as shown and described.

2. The combination of a gas-generator, E, an oil-reservoir, B, a water-reservoir, C, a pipe, F, leading from the oil-reservoir to the gas-generator, a pipe, G, leading from the water-reservoir and passed through the gas-generator, an air-chamber, D, a direct pipe-connection, *n*, between the air-chamber and water-reservoir, and a direct pipe-connection, *o*, between the water and oil reservoirs, substantially as shown and described.

378,412. METHOD OF FORMING HOLLOW SPHEROIDAL BODIES FROM SHEET-METAL TUBES. JOHN BURKHARDT, New York, N. Y., assignor of one-half to William H. Jackson & Co., same place. Filed Jan 3, 1887. Serial No. 223,206. (No model.)

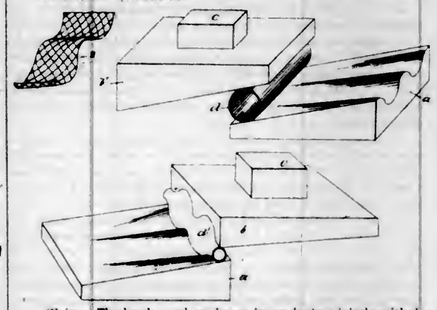


Claim.—1. The process herein described of forming hollow spheroidal bodies from thin sheet metal oblate at their extremities, which consists in first forming the metal into a tube, then placing a short section of said tube between two dies having the form of the body to be made, and compressing the tube in the said dies.

2. The process described of embellishing spheroidal metal bodies, consisting of the interposition of flexible metal jackets in sections, embodying ornamental designs in relief, between such spheroidal bodies and the dies employed for forming the same, as set forth.

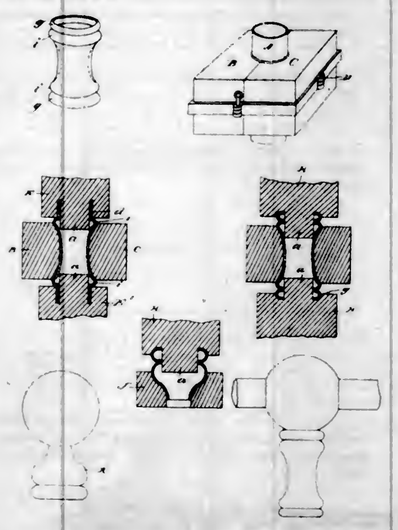
3. The process of attaching stems, rods, or sections of railings to concavo-convex spheroidal metal bodies, consisting of the compression of the metal of such bodies around the stems, rods, or railings during the operation of forming such spheroidal bodies, as set forth.

378,413. DIE FOR FORMING HOLLOW ORNAMENTAL METALLIC BODIES. JOHN BURKHARDT, New York, N. Y., assignor of one-half to William H. Jackson & Co., same place. Filed Jan. 3, 1887. Serial No. 223,209. (No model.)



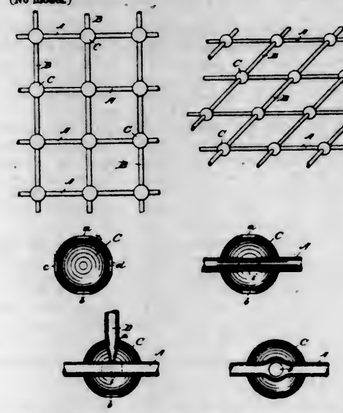
Claim.—The hard-metal netting or its equivalent jointly with the corrugated converging former-plates *a b*, for embellishing the ornamental hollow balusters, posts, or rails, in the manner described.

378,414. METHOD OF FORMING ORNAMENTAL STUDS OR PILLARS. JOHN BURKHARDT, New York, N. Y., assignor of one-half to William H. Jackson & Co., same place. Filed Mar. 4, 1887. Serial No. 229,708. (No model.)



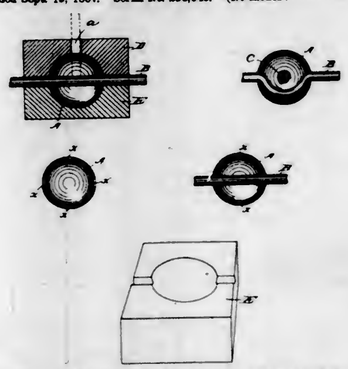
Claim.—The method herein described of forming studs, pillars, or pedestals, which consists in first forming the metal into a tube, then placing the tube in the yoke or clamp B C, then placing the tube with the yoke around it between annular dies E E' and compressing it, forming the collars or rings *i i*, and then placing the tube with the yoke around it between the dies H H' and compressing it between them, forming the collars *g g* around the ends of the tube, and at the same time compressing the central portion of the tube into the form of the interior of the yoke or clamp B C.

378,415. CONSTRUCTION OF SCREENS, GRATES, and PANELS. JOHN BURKHARDT, New York, N. Y., assignor of one-half to William H. Jackson & Co., same place. Filed Sept. 3, 1887. Serial No. 248,768. (No model.)



Claim.—The screen or grating with hollow joint-covers C, having openings *a b c d*, in combination with bars or rods A, having perforations *e*, for the insertion of cross-rods B, constructed in the manner described.

378,416. WIRE-SCREEN, &c. JOHN BURKHARDT, New York, N. Y. Filed Sept. 19, 1887. Serial No. 250,049. (No model.)



Claim.—1. The above-described method of forming wire screens and similar articles, which consists in inserting the longitudinal wire through a hollow perforated body or joint-cover, then producing a bend of said wire within the interior of said body, and then passing the transverse wire through other perforations of the body and through the bend of the longitudinal wire therein, as set forth.

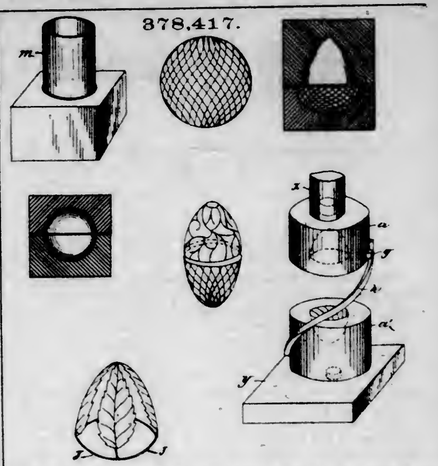
2. The wire screen consisting of a series of straight wires or rods and a transverse series of bent wires, in combination with the covers A, each of which includes a single joint or intersection of a straight and a bent wire at the bend thereof, substantially as and for the purpose set forth.

378,417. MECHANISM FOR FORMING ORNAMENTAL SPHEROIDAL AND ANALOGOUS BODIES. JOHN BURKHARDT, New York, N. Y. Filed Jan. 3, 1887. Renewed Nov. 21, 1887. Serial No. 255,786. (No model.)

Claim.—1. Dies of spiral interior configuration, in combination with the mechanism shown at *g h*, or its equivalent, for causing circular movement of the dies, for the purpose specified.

2. Flexible metal jackets, as described and shown in Figs. 5 and 7, embodying designs in relief, in combination with hollow dies for

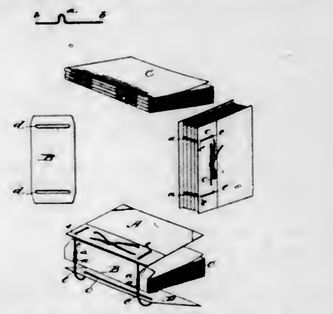
378,417.



embellishing the variously-shaped ornamental bodies, substantially as described.

REISSUES.

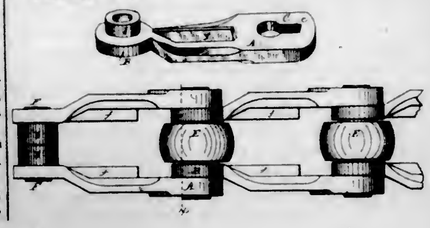
10,903. BINDER. NEHEMIAH HAWKINS, Brooklyn, N. Y. Filed Dec. 22, 1887. Serial No. 258,745. Original No. 372,467, dated Nov. 1, 1887.



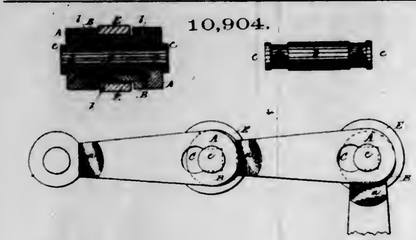
Claim.—1. In a binder, the combination, with a cover, of a retaining-strip formed with an open loop and a flexible yielding cord, substantially as described.

2. The combination, with a pair of covers formed with apertures, of a transversely-slotted flexible back, retaining-strips formed with open loops, and a flexible yielding binding-cord, all parts being arranged substantially as described.

10,904. DRIVE-CHAIN. BENJAMIN A. LEGG, Columbus, Ohio, assignor, by mesne assignments, to himself and William D. Park, same place. Filed June 24, 1884. Serial No. 138,807. Original No. 282,536, dated Aug. 7, 1883.



10,904.



Claim.—1. In a drive-chain, the combination of a series of links having separable side bars provided at their ends with pintle-seats, a series of pintles mounted at their ends in the side bars, and a series of tubular extensions rigidly connected with the side bars and projecting inward from the side bars and mounted on the pintles, substantially as set forth.

2. In a drive-chain, the combination of a series of links having separable side bars, and provided at their ends with pintle-seats, a series of pintles mounted at their ends in the side bars, a series of tubular extensions rigidly connected with the side bars and projecting inward from the side bars and mounted on the pintles, and anti-friction rollers mounted upon tubular extensions, substantially as set forth.

3. In a drive-chain, the combination of links, each having separable side bars provided at one end with tubular extensions and at their opposite end with a pintle-seat, and a series of pintles mounted loosely in the tubular extensions and locked to the ends of adjacent links, so as to be incapable of rotation relative thereto, and operating to prevent the side bars from lateral displacement, substantially as set forth.

4. In a drive-chain, the combination of the separable parallel side bars, each having a key-hole-shaped opening in one end and a separable tubular bearing for the pintle at the other end, and the pintle provided with flat sides at its ends to enter the portions *c c* of the key-hole-shaped openings, the flanges and the round portion adapted to fit the tubular bearings, substantially as set forth.

5. In a drive-chain, the combination of the separable parallel side bars, each having a key-hole-shaped opening in one end and a separable tubular bearing for the pintle in the other end, and the pintle provided at its ends with lateral projections, said pintle being seated in the tubular end bars and the key-hole-shaped openings, and operating to retain the tubular bearing and the separable side bars in proper working relation, substantially as set forth.

6. In a drive-chain, the combination of the separable side bars, each having a key-hole-shaped opening in one end and a separable tubular bearing in the other end, with the anti-friction roller, and the pintle provided at its ends with lateral projections and operating as a pivotal connection for the links, and also to retain the tubular bearing, the separable side bars, and the anti-friction roller in proper working relation, substantially as set forth.

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DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

MATTHEWS *v.* THE IRON CLAD MANUFACTURING COMPANY.

Decided January 23, 1888.

1. MATTHEWS—SODA-WATER FOUNTAIN.

The second claim of Reissued Letters Patent No. 8,837, granted to John Matthews August 5, 1879, for soda-water apparatus, if limited by the terms of the patent and the state of the art, *Held* not to have been infringed, and, if not so limited, to be invalid.

2. CLAIM LIMITED BY SPECIFICATION AND TESTIMONY OF PATENTEE.

Where the specification described joining the end caps to the outer shell without flanges or projections by tin joints made by soldering with pure tin, and the patentee testified that he adopted a solder of pure tin and dispensed with rivets, the claim to the fountain as a new article of manufacture "in the manner substantially as described" limited the patent to a fountain in which the caps were connected with the outer cylinder by pure tin solder without rivets or flanges.

3. INFRINGEMENT—WHERE IT DOES NOT TAKE PLACE.

Where defendant united the same parts with a solder of half tin and half lead, as well as by rivets and flanges, there was no infringement of complainant's claim.

4. CLAIM IN REISSUE RENDERED INVALID BY OMISSION OF WORDS OF THE ORIGINAL CLAIM.

Where the claim in the reissue omitted certain words in the corresponding original claim, if the same effected an enlargement of the invention, the reissue is invalid.

APPEAL from the Circuit Court of the United States for the Southern District of New York.

Mr. A. v. Briesen for the appellant.

Mr. Frederic H. Betts and *Mr. E. C. Webb* for the appellee.

Mr. Justice GRAY delivered the opinion of the Court.

This was a bill in equity for the infringement of letters patent issued June 25, 1872, and reissued August 5, 1879, for an improvement in soda-water fountains.

The opinion delivered by the circuit court in dismissing the bill is reported and drawings of the fountain of each party given in 22 Blatchford, 427.

The only claim relied on at the argument of this appeal was the second claim of the reissue, being the one most like the single claim of the original patent. The specifications, the drawings therein referred to, and the claims in question were alike in the two patents, differing only, as shown below, by omitting in the reissue the words of the original patent which are printed in brackets and by inserting the words printed in italics, and three additional claims immaterial to the present inquiry. After a general reference to the drawings, the specification proceeds as follows:

My invention consists in a novel construction of a tin-lined steel fountain for soda-water and other aerated or gaseous liquids, such fountain combining lightness with strength, and being of cylindrical form and uniform dimensions, or thereabout, throughout its length, thereby adding to the convenience of packing and handling; also, being exempt from expansion or permanent lateral distention by the interior pressure to which it is subjected, thus preserving its form and contributing to its durability. Fountains for the like purpose, as previously made, have been largely expansive, and retained the set given to them by extension, and being otherwise objectionable.

In the accompanying drawings, A represents a block-tin interior body of cylindrical form, with hemispherical or reduced ends, the same constituting the tin lining of the fountain, and being provided at one of its ends with a neck, *b*, for introduction of the usual or any suitable connections by which the fountain is charged and its contents drawn off, said neck receiving or having screwed into it a screw-coupling, *c*, secured by a nut and washer, *d e*, on the exterior of an outer end cap, B, for making the connection.

C is the exterior shell or body proper, made of galvanized sheet-steel, as may also be the end caps, B B', which are soldered to or over the extremities of the same, and constitute, as it were, parts of said body C that [closely] surrounds or fits over the tin lining A. The end caps, B B', are united to the body C, without flanges or projections, by tin joints, as at *f f*, made by soldering with pure tin, which, being a ringing metal, unites closely with the steel exterior to make a firm and durable joint, as other solders having lead in them will not do.

Bands *g g* of brown paper or other non-conducting material are introduced between the tin lining A and steel body C, at the ends of the latter, to prevent the tin of the lining from being melted by the heat used in making the pure tin joints *f f*. The fountain is also filled with water for the same purpose, prior to making said joints.

The non-stretching character of the body C, by reason of the same being of steel, insures the fountain preserving its shape, and the absence of end flanges provides for the close packing of a series of such formations when transporting or storing them.

[What is here claimed, and desired to be secured by Letters Patent, is—]

I claim—

2. The tin vessel A, incased by a [steel] cylinder, C, and ends B B', [soldered to the latter,] in the manner substantially as described, as a new and improved article of manufacture, for the purpose specified.

It has been argued for the plaintiff that the patent is for the combination of an inner flexible vessel of tin or its equivalent with an outer vessel of steel or its equivalent, the outer vessel being composed of a central cylinder and of end caps that are slipped on to the cylinder and united thereto by tin solder or its equivalent. But the only claim of the original patent is for "the tin vessel, incased by a steel cylinder, and ends soldered to the latter, in the manner substantially as described;" and the manner described in the specification of fastening the end caps to the body of the outer shell is, "without flanges or projections, by tin joints, made by soldering with pure tin, which, being a ringing metal, unites closely with the steel exterior to make a firm and durable joint, as other solders having lead in them will not do."

The patentee himself testified that when he made his invention he knew of others having used iron fountains lined with sheet block-tin; that the first fountains he made were soldered with tin and lead solder, usually known as "soft solder," and he found that would not do, and therefore adopted a solder of pure tin, and that he dispensed with rivets because they prevented the fountain being repaired without tearing the shell in taking out the rivets.

In short, by the terms of the specification and claim, in the then existing state of the art, and according to the intention of the patentee, his patent was limited to a fountain in which the caps were connected with the outer cylinder by pure tin solder, without rivets or flanges. In the fountain made by the defendant, on the other hand, the caps are fastened to the body at both ends by a solder of half tin and half lead, as well as by rivets, and there are vertical flanges at one end, through which the rivets pass. It is quite clear, therefore, that if the original patent had remained unaltered there would have been no infringement. The reissue was taken out seven years after the original patent and a year or two after the patentee knew that the defendant was making such a fountain as is now alleged to be an infringement. The repetition of the original specification in the reissue, word for word, (except only in the unimportant variation of omitting the word "closely" in speaking of the fitting of the shell to the lining,) as well as the testimony of the patentee, proves that there was no defect or insufficiency in the original specification, and no error, inadvertence, or mistake in framing it. If the omission in the claim of the reissue, after the mention of the outer cylinder and the ends, of the words "soldered to the latter," before the words "in the manner substantially as described," still leaves the claim to be construed and limited by the previous description in the specification, the patentee is no better off than if he had not taken out a reissue. But if the effect of omitting the words in question is to extend the claim to a fountain the outer cylinder and ends of which are fastened together in any other manner than by a solder of pure tin, the claim is enlarged by omitting an essential element of the patentee's invention, and the reissue is invalid by the settled law of this Court. (*Miller* v. *Brass Co.*, 104 U. S., 350; *Mahn* v. *Harwood*, 112 U. S., 354; *Parker & Whipple Co.* v. *Yale Clock Co.*, 123 U. S., 87.)

Decree affirmed.

U. S. Circuit Court—Eastern District of Pennsylvania, Third Circuit.

THE VULCANITE PAVING COMPANY *v.* THE AMERICAN ARTIFICIAL STONE PAVEMENT COMPANY.

Decided October 10, 1887.

1. STUART—COMPOSITE PAVEMENT.
   Letters Patent No. 269,480, granted to Peter Stuart, for a composite pavement, do not appear from the evidence to be anticipated or to lack patentable novelty, and they are infringed by respondent's pavement.
2. SAME—ANTICIPATION—PROOF.
   To overthrow the presumption arising from the patent the evidence should be satisfactory, convincing.
3. SAME—ANTICIPATION—PRIOR PATENT TO SAME PATENTEE—DEDICATION TO THE PUBLIC.
   The respondent contended that a certain contrivance, for which Letters Patent No. 269,480 were granted, was shown in a prior patent to the same patentee. *Held* it was not clear that this contrivance was shown in the prior patent. *Held*, following *McMillan* v. *Rees*, (17 O. G., 1222; 1 Fed. Rep., 722,) even if this contrivance were shown in the prior patent, that this did not constitute a dedication to the public.

Before Judges MCKENNAN and BUTLER.

BUTLER, *J.*:

The evidence does not satisfy us that the complainant's contrivance to avoid the danger of slipping on smooth-surfaced composite pavements was anticipated, nor that it lacked patentable novelty. In this respect the case is doubtless near the line and calculated to inspire doubt. To create doubt, however, is not sufficient to overthrow the presumption arising from the patent; the evidence should be satisfactory, convincing. Nor is it clear that this contrivance is shown by the record of complainant's former patent for composite pavements. That patent was exclusively for other elements than the face. It is very doubtful whether the ideas embraced in this contrivance could have been gathered from the drawings of the former patent, and it is not suggested that any hint of them is to be found elsewhere in the record. If this were otherwise, however, the result would be the same, as appears from *McMillan* v. *Rees* (17 O. G., 1222; 1 Fed. Rep., 722) and other cases to the same effect preceding and following it.

A decree must therefore be entered for an account and an injunction, with costs.

U. S. Circuit Court—District of New Jersey.

THE CELLULOID MANUFACTURING COMPANY *v.* THE ARLINGTON MANUFACTURING COMPANY.

Decided January 10, 1888.

PRELIMINARY INJUNCTION—WHEN WILL BE GRANTED.
The mere fact that a defendant has ceased to infringe a patent is not a sufficient reason to withhold the issuance of preliminary injunction.

APPLICATION for a preliminary injunction.

Mr. Rowland Cox for the complainant.
Mr. John R. Bennett for the defendant.

WALES, *J.*:

The patent has been held to be valid. The defendant admits, or at least does not deny, infringement, but claims that it had ceased to infringe before the bill was filed, and does not intend to renew the use of the infringing machine. It still continues in possession of all the contrivances and appliances to enable it to violate the patent, but promises not to use them for that purpose. This is a naked and unsupported promise. The practice of the courts in such cases is well settled. In *Woodworth* v. *Stone* (3 Story, 752) it was decided that—

a bill for an injunction will lie, if the patent-right is admitted or has been established, without any established breach, upon well-grounded proof of an apprehended intention on the part of the defendant to violate the plaintiff's right.

A fortiori should an injunction issue where, as in the present case, the defendant has already infringed, and nothing but a mere promise stands in the way of its doing so again.

The general rule is stated in Walker on Patents, section 676, and concludes as follows:

Indeed, no injunction can be averted by affirmative evidence that the defendant has ceased to infringe, even though coupled with a promise that he will infringe no more.

See, also, Curtis on Patents, section 422, which gives the same rule, only in different language. Further authority on the same patent may be found in *Rumford Chemical Works* v. *Vice*, (14 Blatch., 179,) and in *Losh* v. *Hague*, (1 Webs. Pat. Cas., 200.)

If the defendant intends in good faith to keep its promise, the injunction will not harm it; otherwise it will be a security for the plaintiff that its rights will not again be invaded. The plaintiff is entitled to a decree.

U. S. Circuit Court—Southern District of New York.

WRIGHT *v.* YUENGLING. SAME *v.* BEGGS.

Decided February 13, 1888.

1. WRIGHT—ENGINE-FRAMES.
   The second claim of Letters Patent No. 144,818, granted November 18, 1873, to William Wright, for an improvement in frames for horizontal engines, *Held* to be invalid for lack of invention, and the first and third claims adjudged not to have been infringed.
2. INFRINGEMENT—NONE WHERE FORMS OF PARTS NOT CLAIMED HAVE BEEN COPIED.
   When the forms of the several parts of the apparatus of the patent in suit have been copied by the defendant, but the forms have not been claimed, there is no infringement.

Mr. Andrew J. Todd for the plaintiffs.
Mr. Benjamin F. Lee for the defendants.

WHEELER, *J.*:

These suits are brought upon alleged infringements of Letters Patent No. 144,818, dated November 18, 1873, and granted to the orator for an improvement in frames for horizontal engines.

The specification describes an engine-frame consisting of a cylinder-head connected with a cylindrical cross-head guide having openings giving access to the cross-head by a cylindrical piece having a circular opening in its upper side giving access to the stuffing-box of the cylinder-head, of a trough-shaped piece connecting the other end of the cross-head guide with a base and raised on one side over the base to furnish a support for the crank-shaft and curved downward between the sides to make room for the connecting-rod, and of a strengthening-rib under the cross-head guide and its connections from the base to the cylinder-head.

There are three claims. The first is for a horizontal engine-frame in which a cylinder for guiding the cross-head is combined with the cylinder-head and semicircular connecting-piece, substantially in the manner described. The second is for the combination, in a horizontal engine-frame, of the guiding-cylinder, base, and trough-like connection, and the third is for a horizontal engine-frame composed of the cylinder-head, guiding-cylinder, connecting-piece, trough, base, and web, all combined substantially in the manner described.

The question is whether the defendants have taken any part of the orator's invention that is patentable and has been actually patented to him in this patent.

A corporation, with which the defendant in one case is connected as an officer, has made and sold to the defendant in the other case, who has used, an engine with a frame consisting of a cylindrical cross-head guide, with openings in its sides giving access to the cross-head and stuffing-box, bolted to the cylinder-head, and of a trough-like connection between the guide and base, and of a base and a strengthening-web like those of the orator's patent. This engine-frame has no connecting-piece between the cross-head guide and cylinder-head separate from the guide; but the cross-head guide is bolted directly to the cylinder-head, and the latter does not form any part of what is called the "engine-frame" in the patent. Therefore the combination of the first claim is not to be found in that engine-frame, and that claim is not infringed by it.

The trough-like connection between the cross-head guide and base of the second claim performs nothing new nor anything different from other connections in that place; neither does the guide or the base of that claim do anything more or different from what other guides and bases in the same relations had previously done, and these parts together do nothing new, or anything in any new way, or with any different effect from what similar parts had for a long time previously done. If anything new is involved in this combination, it consists in the form of the respective parts, or some of them, and such new form is not covered by this patent. Therefore this claim does not cover any patentable invention and is not valid. (*Machine Co.* v. *Murphy*, 97 U. S., 120.)

The third claim covers all the parts of a horizontal engine-frame, including the cylinder-head as an element, in combination. As the engine-frame of the defendants does not take in the cylinder-head as a part of it, after the manner of the patent, and has not the connecting-piece of the patent between the cross-head guide and cylinder-head, it does not appear to infringe that claim.

And, generally, steam-engines have had and must have rigid frames connecting the working cylinders with the crank-shafts to keep them in their proper relative positions, and horizontal engines have had and must have bases to sustain the parts. The cross-head guide usually lies in the direction of the frame and is connected with or forms a part of it. Cylindrical guides were not new with this invention, and those composed of bars for slides were open, affording access to the cross-heads and to the stuffing-boxes of the cylinder-heads. There would not appear to be any patentable invention in leaving openings for such access in cylindrical guides. The orator added no new part but the connecting-piece, which the frame of the defendants does not have. The parts made use of in the frames of the defendants operate precisely in the same manner that similar parts operated before his invention and accomplish precisely the same result. The form given by him to several of the parts appears to be taken; but the form was not patented. The patent covers only mechanical operation, and does not appear to be valid to cover anything of that which has been taken. (*Estey* v. *Burdett*, 109 U. S., 633; *Thatcher Heating Co.* v. *Burtis*, 121 U. S., 286.)

On any view which the case is capable of the patent does not appear to be valid in any part covering the engine-frame of the defendants, if at all.

Let there be a decree dismissing the bill of complaint with costs.

PATENT LAW OF GUATEMALA.

The following translation of the Guatemalan Patent Law has been furnished for publication by Messrs. William Thompson & Co., Patent Agents, 6 Lord Street, Liverpool, and 323 High Holborn, London.

Decree No. 148—Legislative Assembly of the Republic of Guatemala.

In consideration that it is desirable to elucidate in a manner suitable to the interests and in conformity with liberal principles, Article 20 of the Constitution, which in one of its parts guarantees to the author or inventor the proprietorship of his work or invention, and at the same time to define clearly and precisely the functions which the said article vests in the Executive, decrees:

Article 1. Every discovery or invention, in whatsoever description of industry, gives to its author exclusive right to utilize his invention or improvement, for the time and subject to the conditions stipulated by this law.

Art. 2. Every Guatemalan or stranger domiciled in Guatemala, who shall invent or improve any machine, instrument or mechanical appliance, manufacture of any kind or process of useful application for the arts or sciences shall be able to obtain from the Executive a "Patent of Invention" or "Patent of Improvement," which shall secure to him for a period of from five to fifteen years the possession of his invention or improvement.

Art. 3. In order to obtain this patent, the person interested must apply to the Ministerio de Fomento, personally or by proxy, making declaration of his invention or improvement, setting it forth clearly and requesting the privilege.

Art. 4. If the patent be granted, the grantee is required to file within 40 days an accurate drawing of the respective machine or mechanical appliance or a detailed description of the new process, accompanying same by a sample of the manufacture or product if this be possible, and if the same be capable of being preserved, in order that they may be deposited in the archives of the Chamber, under the charge of the official intrusted therewith, and may serve as evidence in case of dispute arising as to the patent.

Art. 5. Patents may be granted to persons who have obtained the same in other countries, as long as their discovery has not become public property and provided there exist a convention thereon between the nation from which the application proceeds and Guatemala. These patents will cease and determine at the same time as the foreign patents; but if such period should be more than 15 years, the privilege cannot exceed this space of time.

Art. 6. Every privilege conceded will be registered in a special book, which shall be kept by the respective secretariats.

Art. 7. In the patent which is granted there shall be inserted, in case of the grant of the concession, the citation of this law, the invention or improvement of which it treats, the duration of time comprised and the declaration of possession of the privilege, and it shall be sealed with the seal of the Ministry of Commerce.

Art. 8. The Executive, by the concession of a patent, does not guarantee that the discovery or invention be the property of the person who appears as inventor or author, nor yet its correctness or utility. It will be for those interested to prove the contrary before a court of law.

Art. 9. Every application for a patent shall be published four times in one month in the Official Gazette, and the patents granted shall be published at least twice in the same publication.

Art. 10. Patents become void, in addition to the case provided for in Art. 4, in the following circumstances:

1. When they have been granted to the prejudice of the rights of a third party in the opinion of a competent tribunal.
2. When a year shall have elapsed without the industry or improvement for which they were granted being put into practice.
3. When after commencement the industry or improvement be abandoned for more than one year.
4. When products are supplied inferior to the samples filed by reason of adulterations made in them.

Art. 11. Patents will not be granted in the following cases:

1. When the invention or improvement is contrary to prior rights, to public safety and order or to morality and good customs.
2. When the formalities prescribed by the law have not been fulfilled.

Art. 12. The patent granted will be solely for the process or means of making and producing; not for the products which manufactured according to other methods may be freely prepared and sold.

Art. 13. Every person has a right to improve upon the invention of another but not to use the invention itself except with the consent of its owner; in the same way the inventor cannot make use of improvements and additions made by a subsequent inventor without the consent of the latter.

Art. 14. The grant of a patent cause in favor of the National Treasury a tax of five to fifty pesos for each year of the concession, which the patentee must pay annually in advance.

Art. 15. When the prescribed term of the patent has elapsed, the specifications of the author or inventor and copies of the drawings or models will be furnished, at his own expense to any person requiring them; and it will be henceforth permissible to manufacture according to this system or process.

Art. 16. The offenses of falsification, imitation, and so forth, against the patented articles will be punished according to the provisions of the penal code.

Art. 17. The Executive may grant concessions in favor of works of public utility which may be established in the country or of persons who propose to establish new industries or to improve those already existing.

Art. 18. These concessions may be: exemption from or diminution of the amount of the fiscal duties for the introduction of machinery or material, the loan gratuitously of public buildings or lands during the term of the concession, exemption from military service of the operatives engaged in the industry to which the concession relates, actual subventions and premiums, according to the circumstances of the case.

In case of remission or diminution of the duties, the principals or administrators of the favored undertakings must present, in order to obtain delivery of the goods, a petition to the respective custom-house which sets forth the following details:

1. That the undertaking is included among those which enjoy a concession.
2. That the goods of which the delivery is desired are not in excess of the necessity or requirements for the existence of the said undertaking.
3. Give the name of the vessel conveying the goods, marks and number of packages.
4. An inventory of the goods existing in their warehouses or stores, previously imported.

The officials intrusted with the forwarding of these goods will adopt the necessary precautions to assure themselves of the conformity thereof with the application and may suspend the arrangement if any discrepancy appears. If the undertaking favored with exemption from payment of duties shall cease by reason of the concession having terminated or for any other cause, it shall present to the respective custom-house a copy of the formal inventory of the articles in existence belonging to the undertaking, and if the said articles are destined for the consumption or use of a third party it remains responsible for the payment of the corresponding dues.

Art. 19. Any person who desires to obtain a concession for the establishment of an undertaking of public utility or introduction or improvement of a special industry shall address himself to the Secretariate of Commerce setting forth fully and explicitly the conditions of the undertaking or industry or improvement which he may desire to introduce.

The Ministry, with the assistance of two or more experts, will report upon the application to the Council of State. The decision of this body having been pronounced, if it be favorable, the concession will be granted, subject, however, to the confirmation of the Assembly, which will take it into consideration during the next following ordinary sessions. The grantee will be permitted to commence to use the concession granted as soon as it has been allowed; but in case the same be not confirmed by the Assembly, he will have no claim to any compensation.

Every application for a concession four times during one month in the Official Gazette before being submitted to the consideration of the Council of State in order that if there should be any one whose rights would be prejudicially affected, he may present himself before the same Secretariate.

Art. 20. No especial concessions shall be granted for the introduction of machines for domestic use and other objects of ordinary commerce.

Art. 21. The concession granted in favor of a given enterprise will be annulled if it is discovered that the grantee traffics with the raw materials or articles which he imports.

Art. 22. In the case provided for by the preceding article, in addition to the forfeiture of the concession, the grantee shall pay the duties corresponding to the whole of the importations which he shall previously have made thereunder together with forty per cent. upon the total amount.

Art. 23. Concessions also become void in the following cases:

1. When the time has expired within which the grantee was obliged to introduce the industry or improvement, or to commence the works to carry the same into practice.
2. When after the planting it should be abandoned for more than one year.

Art. 24. The articles 436 and 437 of the II chapter, division X, Fiscal Code, book I, are hereby repealed.

Submitted to the Executive for publication and fulfillment.

Given in the Sessional Hall, in Guatemala, the twenty-first day of May, eighteen hundred and eighty-six.

(Signed) MANUEL RAMIREZ, *President.*
EMETERIO AVILA, *Secretary.*
VENTURA SARAVIA, *Secretary.*

Palace of the Executive Power, Guatemala, 27th of May, 1886. Agreed.

M. L. BARILLAS.

The Secretary of State in the Ministry of Commerce:
RAFAEL SALAZAR.

THE

OFFICIAL GAZETTE

OF THE

United States Patent Office.

[*BY AUTHORITY OF CONGRESS.*]

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CONTENTS.

	Page.
THE OFFICIAL GAZETTE	831
INDEXES TO FOREIGN PATENTS	831
INDEXES TO PATENTS ON ELECTRICITY	831
ISSUE OF FEBRUARY 28, 1888	831
DESIGNS	832
TRADE-MARKS	832
LABELS	832
PATENTS GRANTED	833
REISSUES	None
DECISIONS OF THE U. S. COURTS—	
Celluloid Manufacturing Company *v.* American Zylonite Company *et al*	961
Emerson, Smith & Company, (Limited,) *v.* Lippert	964

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Indexes to Foreign Patents.

The following indexes to foreign patents have been translated, compiled, and published under the authority of the Commissioner of Patents, and may be obtained as a Patent Office publication at the prices given below:

INDEX TO FRENCH PATENTS, 1791 to 1876, inclusive, (subject-matter, one volume, 935 pages, bound in cloth	$10 00
INDEX TO ITALIAN PATENTS, 1848 to May 1, 1882, (subject-matter,) one volume, 130 pages—	
Bound half-turkey	2 50
Bound in cloth	1 25
Paper covers	1 00

Indexes to Patents on Electricity.

Appendix No. 2 to the index to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1883, has been issued, and is now for sale. These indexes, arranged alphabetically, numerically, and by classes, are completed to June 30, 1883, and comprise the following volumes:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages. In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Issue of February 28, 1888.

Patents	441—No. 378,418 to No. 378,858,	inclusive.
Designs	13—No. 18,111 to No. 18,123,	inclusive.
Trade-Marks	25—No. 15,227 to No. 15,251,	inclusive.
Labels	7—No. 5,498 to No. 5,504,	inclusive.
Reissues	None.	
Total issue	486	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	....	Nebraska	5	1
Arizona Territory	1	....	Nevada	3	....
Arkansas	....	....	New Hampshire	1	....
California	10	1	New Jersey	16	1
Colorado	7	....	New Mexico Terri'y	....	....
Connecticut	24	3	New York	100	4
Dakota Territory	3	....	North Carolina	....	....
Delaware	2	....	Ohio	35	1
District of Columbia	4	1	Oregon	2	....
Florida	1	....	Pennsylvania	47	4
Georgia	7	1	Rhode Island	3	....
Idaho Territory	....	....	South Carolina	....	....
Illinois	22	1	Tennessee	3	....
Indiana	16	2	Texas	4	....
Iowa	8	....	Utah Territory	1	....
Kansas	8	....	Vermont	2	....
Kentucky	2	....	Virginia	2	....
Louisiana	....	....	Washington Terri'y	1	....
Maine	2	....	West Virginia	....	....
Maryland	4	....	Wisconsin	9	....
Massachusetts	38	4	Wyoming Terri'y	....	....
Michigan	16	1	U. S. Army	....	....
Minnesota	6	....	U. S. Navy	1	....
Mississippi	....	....			
Missouri	9	1	Total to citizens of		
Montana Territory	1	....	the United States	428	26

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	1	....	Germany	11	....
Barbadoes	....	....	Ireland	....	1
Belgium	....	....	Mexico	....	....
Bermuda	....	....	Netherlands	....	....
Brazil	....	....	New South Wales	....	....
Canada	3	....	Russia	....	....
China	....	....	Scotland	....	....
Colombia, U. S. of	....	....	Spain	....	....
Cuba	....	....	Switzerland	2	....
Denmark	....	....	Victoria	....	....
Ecuador	....	....			
England	7	5	Total to citizens of		
France	2	....	foreign countries	26	6

DESIGNS.

18,111.—WRITING-DESK.—*Francis A. Coffin*, Indianapolis, Ind. Application filed December 15, 1887. Serial No. 258,033. Term of patent 7 years.

18,112.—CABINET-DESK.—*Francis A. Coffin*, Indianapolis, Ind. Application filed December 15, 1887. Serial No. 258,038. Term of patent 7 years.

18,113.—CARPET.—*Eugene H. Hill*, Philadelphia, Pa., assignor to *Schofield, Mason & Co.*, same place. Application filed January 20, 1888. Serial No. 261,396. Term of patent 3½ years.

18,114.—HEATING-STOVE.—*William J. Keep* and *Charles Winfler*, Detroit, Mich., assignors to *The Michigan Stove Company*, same place. Application filed July 6, 1887. Serial No. 243,593. Term of patent 7 years.

18,115.—CARPET.—*Thomas E. Meagher*, Philadelphia, Pa., assignor to *Schofield, Mason & Co.*, same place. Application filed January 20, 1888. Serial No. 261,398. Term of patent 3½ years.

18,116 to 18,121, inclusive.—CARPET.—*Oscar Righter*, Philadelphia, Pa., assignor to *Dornan Brothers*, same place. Applications filed January 20, 1888. Serial Nos. 261,417, 261,419, 261,420, 261,421, 261,424, and 261,426. Term of patents 3½ years.

18,122.—CHECK OR COUNTER.—*William M. Welling*, New York, N. Y. Application filed December 16, 1887. Serial No. 258,141. Term of patent 7 years.

8,123.—FURNACE-FRONT.—*Francis A. Williams*, Brooklyn, assignor to *Rutzler & Blake*, New York, N. Y. Application filed December 24, 1887. Serial No. 258,931. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,121 and upward are registered under the act of March 3, 1881.]

15,227.—CRACKERS, BISCUITS, AND KINDRED ARTICLES.—*C. D. Boss & Son*, New London, Conn. Application filed January 25, 1888. Used since December 31, 1868.

"The representation of two crossed flags, one having on it a cracker with the word 'Boss' across the face thereof, and the other the words 'THE FAMOUS LUNCH MILK BISCUIT.'"

15,228.—WORSTED AND WOOLEN YARNS.—*A. J. Cameron & Co.*, Philadelphia, Pa., Chicago, Ill., and New York, N. Y. Application filed January 26, 1888. Used since August 27, 1879.

"The representation of a thistle-bloom."

15,229.—WHISKY.—*Dublin Whisky Distillery Company*, (*Limited.*) Dublin, Ireland. Application filed July 23, 1887. Used since 1874.

"The representation of a pot-still in the lower portion of which appears the following: 'D. W. D WHISKY' and in the upper portion 'THE FINEST WHISKY IN THE WORLD.'"

15,230.—CEMENT.—*Howard Fleming*, New York, N. Y. Application filed January 21, 1888. Used since February 1, 1887.

"The representation of a St. Andrew's cross."

15,231.—PILLS.—*George Higgins*, Omaha, Nebr. Application filed December 17, 1887. Used since October 21, 1887.

"The picture of a lion guardant."

15,232.—ATOMIZERS.—*August P. Lighthill*, Boston, Mass. Application filed January 30, 1888. Used since January 1, 1888.

"The words 'AMERICAN NEBULIZER.'"

15,233.—PANTALOONS, COATS, AND VESTS.—*Marx & Haas*, St. Louis, Mo. Application filed December 19, 1887. Used since January 1, 1886.

"The representation of the head of a hare or rabbit."

15,234.—GAGE-PINS, FEED-GUIDES, AND OTHER REGISTERING APPARATUS, TOOLS, AND MACHINERY USED IN PRINTING.—*Edward L. Megill*, New York, N. Y. Application filed December 20, 1887. Used since January, 1887.

"The representation of the head and shoulders of a boy wearing a paper cap and associated with a mask of the Satanic Majesty."

15,235.—PILLS.—*Charles W. Palmer*, New Haven, Conn. Application filed November 25, 1887. Used since November 15, 1886.

"The two words 'PERFECT LIVER.'"

15,236.—WASHING-MACHINES.—*Charles E. Ross*, Lincoln, Ill. Application filed January 6, 1888. Used since January 1, 1882.

"The word 'WORLD'S.'"

15,237.—BLEACHING-BLUING.—*George F. Soter*, Washington, D. C. Application filed January 25, 1888. Used since April 3, 1877.

"The word 'PALMER'S' on the label, a red band around the neck of the bottle, and a white tin-foil cap."

15,238.—FLOUR.—*Edward Steinbrügge*, New York, N. Y. Application filed August 31, 1887. Used since September 19, 1885.

"The words 'GLADIATOR MILLS.'"

15,239.—SOCKS.—*The Western Knitting Company*, Detroit, Mich. Application filed January 24, 1888. Used since January 1, 1887.

"The words 'HUDSON BAY.'"

15,240.—TRACING-CLOTH.—*Archibald Winterbottom & Sons*, Manchester, county of Lancaster, England. Application filed February 1, 1888. Used since January 1, 1885.

"The word 'UNIVERSAL.'"

15,241.—TRACING-CLOTH.—*Archibald Winterbottom & Sons*, Manchester, county of Lancaster, England. Application filed February 1, 1888. Used since June 30, 1883.

"The word 'EXCELSIOR.'"

15,242.—TRACING-CLOTH.—*Archibald Winterbottom & Sons*, Manchester, county of Lancaster, England. Application filed February 1, 1888. Used since June 30, 1867.

"A quartered shield surmounted by a crown, above which are crossed branches and a spear-head."

15,243.—TRACING-CLOTH.—*Archibald Winterbottom & Sons*, Manchester, county of Lancaster, England. Application filed February 1, 1888. Used since June 30, 1867.

"The word 'IMPERIAL.'"

15,244.—MEDICINAL LOTION FOR THE SKIN.—*J. A. & D. F. Davenport*, Americus, Ga. Application filed November 25, 1887. Used since January 10, 1887.

"The compound word 'DERMA-LOTION' and the representation of an owl perched upon a crescent."

15,245.—COUGH CURE AND CERTAIN PROPRIETARY MEDICINES IN THE FORM OF TABLETS.—*Frederick Hiller, Jr.*, San Francisco, Cal. Application filed January 31, 1888. Used since January, 1887.

"The representation of the figure of a man carrying a light, and in connection therewith the words 'DR. HILLER'S CURE' and the fac-simile of the signature of the Hiller Drug Co."

15,246.—MEDICINE FOR THE CURE OF HEADACHE, SEA-SICKNESS, EPILEPSY, AND NERVOUS DEBILITY.—*F. Newbery & Sons*, London, England. Application filed January 17, 1888. Used since August, 1887.

"The words 'BRAIN SALT.'"

15,247.—HERB COMPOUND FOR CERTAIN DISEASES, A LINIMENT, AND A WORM MEDICINE.—*Ambrose S. Palmer*, Elkhart, Ind. Application filed January 20, 1888. Used since March 25, 1887.

"The word 'SILVER.'"

15,248.—INJECTION OF MILKWEED.—*Roy Drug Co.*, Boston, Mass. Application filed January 30, 1888. Used since November 28, 1887.

"The representation of a branch of milkweed appearing on a black background of oval shape."

15,249.—CURE FOR AND PREVENTIVE OF VENEREAL DISEASES.—*Sackett & Neal*, New Albany, Ind. Application filed February 6, 1888. Used since April 1, 1887.

"The word 'MCO-WUMP.'"

15,250.—MEDICINES FOR FEMALE DISEASES.—*Justus H. Schaaf*, Gallipolis, Ohio. Application filed January 21, 1888. Used since April, 1873.

"The word 'CARACULA.'"

15,251.—CERTAIN NAMED MEDICAL REMEDIES.—*Standard Medicine Company*, New York, N. Y. Application filed January 27, 1888. Used since January, 1886.

"The words 'STANDARD MEDICINE Co.,' appearing on a banner which is ornamented by cords and tassels and surmounted by a battle-ax, and which has in its center two horsemen engaged in a conflict, one of them holding a standard in his hand."

LABELS.

5,498.—Title: "THE FAMOUS LUNCH MILK BISCUIT."—*C. D. Boss & Son*, New London, Conn. Application filed May 31, 1887. (Trade-Mark Registered.)

5,499.—Title: "GERMAN KNITTING WORSTED."—*A. J. Cameron & Co.*, Philadelphia, Pa., New York, N. Y., and Chicago, Ill. Application filed January 26, 1888. (Trade-Mark Registered.)

5,500.—Title: "GERMAN KNITTING WORSTED."—*A. J. Cameron & Co.*, Philadelphia, Pa., New York, N. Y., and Chicago, Ill. Application filed January 26, 1888. (Trade-Mark Registered.)

5,501.—Title: "GERMAN KNITTING WORSTED."—*A. J. Cameron & Co.*, Philadelphia, Pa., New York, N. Y., and Chicago, Ill. Application filed January 26, 1888. (Trade-Mark Registered.)

5,502.—Title: "DR. ROY'S WHITE INJECTION OF MILK-WEED."—*Roy Drug Co.*, Boston, Mass. Application filed January 30, 1888. (Trade-Mark Registered.)

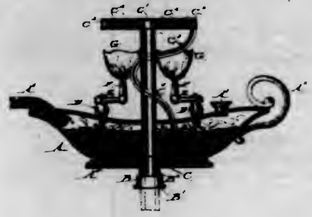
5,503.—Title: "LEROY'S MEXICAN EGG SHAMPOO CREAM."—*Smith Brothers*, Boston, Mass. Application filed November 9, 1887. (Trade-Mark Registered.)

5,504.—Title: "PEPTIC," (FOR A REMEDY FOR INDIGESTION.)—*Standard Medicine Company*, New York, N. Y. Application filed January 27, 1888. (Trade-Mark Registered.)

PATENTS

GRANTED FEBRUARY 28, 1888.

378,418. **GAS-ENRICHING APPARATUS.** JOSEPH H. AMES, Reading, Pa. Filed Mar. 8, 1887. Serial No. 230,104. (No model.)



Claim.—In a gas-enriching apparatus, the combination of the following elements: a hydrocarbon-reservoir having a suitable connection to a gas-supply pipe, a coiled heater, C C', placed above said reservoir, a vertical inlet-pipe, C, from the supply-pipe to said heater, a connecting-pipe, C², from said heater to the top of the reservoir, and one or more burners attached to horizontal arms E, said arms being secured in heads D, attached to the top of said reservoir, whereby the burner or burners may be adjusted horizontally under said heater, substantially as shown and described.

378,419. **PRINTING-TRANSFER PROCESS.** JOHN RAYNER, Westchester County, N. Y. Filed May 18, 1887. Serial No. 238,682. (No specimens.)



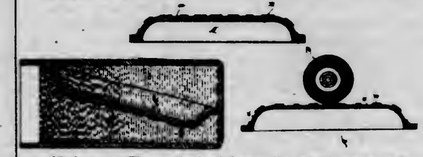
Claim.—1. The method, substantially as hereinbefore described, of ornamenting articles, which consists in coating a transfer-sheet with a sensitive acid-resist, printing the pattern on said resist in ink after exposure, removing the portions of the resist corresponding to the pattern, and transferring the remaining portions to the surface of the article to be ornamented.

2. The method, substantially as hereinbefore described, of ornamenting articles, which consists in coating a transfer-sheet, applying the sensitive acid-resist to one surface thereof, producing the pattern on the surface of the resist in ink, exposing the resist to light and removing the portions thereof protected by the ink, applying said pattern to the object to be ornamented, and removing the transfer-sheet and coating therefrom and subjecting the article to an etching process.

3. The method, substantially as hereinbefore described, of ornamenting articles, which consists in covering a sheet of paper with a coating which is soluble in water, applying a sensitive acid-resist thereto, printing the desired pattern or ornamentation upon the resist in ink, exposing the resist to light and removing the portions covered by the ink, applying an adhesive coating to the pattern-sheet thus formed and securing it to the article to be ornamented, removing the pattern-sheet from the hardened resist, and etching the article at the exposed parts to produce the pattern.

4. An adhesive negative transfer-sheet having its coated surface covered with a sensitive acid-resist and the pattern of the ornamentation printed directly thereon in ink, substantially as described.

378,420. **METHOD OF DECORATING METAL.** JOHN RAYNER, Westchester County, N. Y. Filed May 21, 1887. Serial No. 238,960. (No specimens.)



Claim.—1. The method of decorating metal, substantially as hereinbefore set forth, which consists in plating with a different metal, photographing designs thereon in resist, etching the exposed surfaces and buffing the edges thereof.

2. The method of decorating metallic surfaces, substantially as hereinbefore set forth, which consists in photo-etching, staining the sunk and roughened portions, and rounding the edges thereof by buffing.

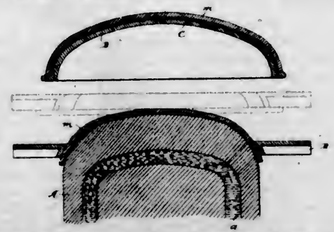
378,421. **METHOD OF ORNAMENTING METAL.** JOHN RAYNER, Westchester County, N. Y. Filed May 21, 1887. Serial No. 238,992. (No specimens.)



Claim.—1. The method hereinbefore described, which consists in applying a metal foil to the article, removing the foil from all parts except those to be ornamented, coating the whole with a sensitive acid-resist, exposing the coated plate to light, removing the foil and resist corresponding to the design, and etching the plate.

2. The method hereinbefore described, which consists in coating the article with varnish, applying a sheet of metal foil thereto, cutting and removing the foil except that corresponding to the portions to be ornamented, coating the whole with a sensitive acid-resist and exposing it to light, then removing the foil, resist, and varnish from the parts corresponding to the design, and finally etching the design on the plate.

378,422. **METHOD OF DECORATING METALLIC SURFACES.** JOHN RAYNER, Westchester County, N. Y. Filed May 21, 1887. Serial No. 238,993. (No model.)



Claim.—The process described of producing dishing or irregular negatives adapted for use on corresponding irregular surfaces, which consists in making the negative in a plane condition, afterward dampening and dishing or molding it to the required form, and subsequently hardening and retaining it in the irregular condition for future use, all substantially as herein described.

378,423. METHOD OF ETCHING ON ONE OR BOTH SIDES. JOHN BAYNES, Westchester County, N. Y. Filed May 23, 1887. Serial No. 239,554. (No model.)

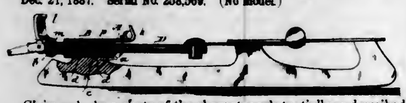


Claim.—1. The process, substantially as hereinbefore set forth, of ornamenting plates, which consists in covering both sides of the plate with an acid-resist, in leaving the parts to be perforated exposed on both sides and the parts to be recessed exposed on one side only, and then subjecting the plate to the etching process.

2. The process, substantially as hereinbefore set forth, of ornamenting plates, which consists in coating both sides of the plate with an acid-resist, the parts of the plate to be perforated being exposed, the exposed parts on one side being proportionately smaller than the corresponding parts on the other side, whereby when the plate is etched to different depths upon each side the perforations will be practically of a uniform cross-section.

3. The process, substantially as hereinbefore set forth, of ornamenting plates, which consists in covering the plate with an acid-resist at all portions except the outlines of the part to be perforated, etching said outlines, filling said outlines with a resist not affected by the solvents of the first resist, producing the pattern thereon, and subjecting the same to the etching process.

378,424. SKATE. EVERETT H. BARNEY, Springfield, Mass. Filed Dec. 21, 1887. Serial No. 258,569. (No model.)



Claim.—1. In a skate of the character substantially as described, the combination, with the rear runner-standard provided with the studs *d*, of a heel-plate bracket of trough shape in cross-section, provided with the lateral wings *h h*, integrally formed and struck up from a single metal blank, the separately-formed heel-plate secured to said bracket, and the heel-clamp comprising the rear abutments, *l l*, the apertured web *m*, and the forked arms *p p*, extending forwardly therefrom, all substantially as shown, and for the purpose described.

2. In combination with the rear runner-standard of a skate, provided with the studs *d*, an integrally-formed heel-plate bracket of trough shape in cross-section, struck up from a single metal blank, and provided with the apertures *c*, all substantially as and for the purpose described.

378,425. FENCE. JOSEPH F. BAKILL, St. Paris, Ohio. Filed May 31, 1887. Serial No. 239,923. (No model.)



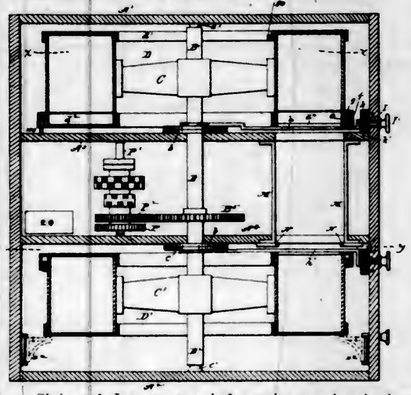
Claim.—1. In a fence formed with panels having overlapping ends adapted to rest on the base-pieces, a stay-wire secured at either end to said base-pieces, said stay-wire being provided with a loop inclosing two or more of the overlapping rails of said panels, a tension-rod inserted between the sides of said loop and turned in a horizontal plane to cross the wires of said loop above and below the said inclosed rails, and means for holding said tension-rod against revolution, substantially as set forth.

2. In a fence the panels of which are adapted to join at right angles to form a corner, a base-piece on which the respective panels are adapted to rest, a double stay-wire wrapped about the upper rail of one of said panels and adapted to receive the inner end of the respective rails of the other panel between the sides of the said stay-wire, a pin or pins behind said stay-wire, and a tension device adapted to draw the stay-wire against the respective panels, substantially as set forth.

3. In a fence the panels of which are provided with overlapping rails adapted to rest on a common base-piece, anchor-stakes on opposite sides of said base-piece and on either side of the lower rails of the respective panels, said anchor-stakes being each adapted to engage with a wire loop extending over said base-piece, a stay-wire secured at either end to said base-piece and passing over the respective rails of the respective panels, and a tension device in said stay-wire, substantially as set forth.

4. The overlapping panels resting on a common base-piece, a stay-wire attached at either end to said base-piece and provided with a loop inclosing two or more rails of the panels, anchor-stakes on either side of the said panels and on opposite sides of said base-piece, and a wire loop twisted and passed over said base-piece and engaging with said anchor-stakes, substantially as specified.

378,426. AUTOMATIC ELECTRIC PHOTOGRAPHING APPARATUS. EDWARD H. BLISS and JAMES F. MIDDLETON, Newark, N. J. Filed Apr. 13, 1887. Serial No. 234,614. (No model.)



Claim.—1. In a camera, a shaft carrying at each end a drum, one of which drums is adapted to hold sensitive plates and the other adapted to hold the same plates after they have been exposed, the drums being tight on the shaft and turning with it, as described.

2. In a camera, a shaft carrying at each end a drum, one of which is adapted to hold sensitive plates and the other adapted to hold the same plates after they have been exposed, the drums being tight on the shaft and turning with it, in combination with a motor for moving the shaft, as described.

3. In a camera, a shaft carrying at each end a drum, one of which is adapted to hold sensitive plates and the other adapted to hold the same plates after they have been exposed, the drums being tight on the shaft and turning with it, in combination with a motor for moving the shaft located within the camera, as set forth.

4. In a camera, the combination, with a permanent shaft having connections with a suitable motor, of a removable shaft having clutches for attachment to the permanent shaft, the said removable shaft forming the support for a plate holder or reservoir, as set forth.

5. A camera consisting of two drums, one of which is adapted to revolve above the other, each provided with receptacles for sensitive plates, a chamber between the said drums, and a holding or retaining device within the said chamber, the chamber being provided with the usual opening for the exposure of a plate, and the said opening being covered by a shutter, as set forth.

6. A camera consisting of two drums and a chamber between the same, both drums being connected with a common shaft and each having receptacles for sensitive plates, the upper drum having a slot in its lower cover or cap, and the lower drum having a corresponding slot in its upper cover, the said slots registering at their edges with vertical slots in the chamber, as and for the purpose set forth.

7. A camera consisting of two drums and a chamber between the same, both drums being connected with a common shaft and each having receptacles for sensitive plates, the upper drum having a slot in its lower cover or cap, and the lower drum having a corresponding slot in its upper cover, the said slots registering at their edges with vertical slots in the chamber, a retaining device within the said chamber, the chamber being provided with the usual opening for the exposure of a plate, and the said opening being covered by a shutter, as and for the purpose set forth.

8. The combination, with a drum having receptacles for sensitive plates, of retaining devices for the said plates, a motor for rotating the drum, and releasing devices brought into operation by the rotation of the drum for dropping the plates successively, as set forth.

9. In a camera, a sectional shaft provided with clutches for making proper joints, two of the sections supporting plate holders or reservoirs and being detachable and removable, for the purpose set forth.

10. In a camera having hinged or removable top and bottom, the combination, with the said top and bottom, of pintles attached thereto or formed thereon, and a sectional shaft, for which the said pintles form the bearings when the top and bottom are in place.

11. In a camera having hinged or removable top and bottom, the combination, with the said top and bottom, of pintles attached thereto or formed thereon, and a sectional shaft, for which the said pintles form the bearings when the top and bottom are in place, the said shaft being provided with clutches for making proper joints, two of the sections supporting plate-reservoirs and being detachable and removable, for the purpose set forth.

12. The combination, with a drum having receptacles for holding sensitive plates, and a motor for rotating the said drum, of a cap covering the bottom thereof, the said cap being stationary and being provided with a slot, through which the plates are adapted to fall successively as the drum is rotated.

13. The combination, with a rotating drum having receptacles for holding sensitive plates, of a cap covering the bottom thereof, the said cap being stationary and being provided with a slot, through which the plates are adapted to fall successively, as described.

14. The combination, with a rotating drum having receptacles for holding sensitive plates, of a stationary cap covering one end thereof, the said drum and cap being provided with interlocking devices, whereby the removal of the drum also causes the removal of the cap, as and for the purpose set forth.

15. The combination, with a rotating drum having receptacles for holding sensitive plates, of a stationary cap covering one end thereof, the said drum being provided with a horizontal flange which slides upon rollers attached to the cap, substantially as set forth, whereby the drum can be rotated freely while the cap remains stationary.

16. The combination, with a rotating drum having receptacles for holding sensitive plates, of a stationary cap covering one end thereof, a slot in the said cap, and a slide adapted to cover said slot, the drum, cap, and slide being secured together, whereby the drum can be removed without exposing the sensitive plates.

17. In a camera, the combination, with a shaft supporting a drum which is provided with receptacles for holding sensitive plates, of a slide covering a slot in one end of the said drum, the said slide being swiveled to the shaft and having a detachable handle, which extends through one wall of the camera in a manner to be operated from the outside thereof.

18. In a camera, the combination, with a plate holder or reservoir, of a number of folding brackets attached to the walls of the camera, the said brackets being connected with each other and with a lever extending through one wall by bell-cranks and rods, substantially as described.

19. A shutter for photographic cameras, consisting of a pair of screens mounted on arms adjustably secured to a shaft, whereby the shutter may be worked alternately from one side to the other without resetting.

20. The combination, with a pair of shutter-arms adjustable upon a shaft, of a fixed arm with which the shutter-arms have connection.

21. The combination, with a pair of shutter-arms adjustable upon a shaft, of a slotted fixed arm, a pin moving in a slot therein, and a pair of links connecting said pin with the shutter-arms, for the purpose of regulating the time of exposure.

22. In a camera, the combination, with a shutter having adjustable arms and a motor for operating the said shutter, of adjustable detents for limiting its motion in either direction.

23. The combination, with the commutators R R' R², of an electric generator and circuits and connections, as described, including a circuit-closer and electro-magnets, whereby, as a result of the operation of the circuit-closer, the camera-shutter will be reversed, the plate dropped, the drum released, rotated, and locked, and a new plate inserted in place of the old, the said operated parts being located within a camera-box.

24. In a camera, the combination, with a shutter, of an electro-magnetic motor for operating the same, a commutator in the circuit of the said motor, and electro-magnetic devices operated by the closure of the motor-circuit for reversing the commutator-connections, whereby repeated closures of the motor-circuit will actuate the shutter in opposite directions without resetting.

25. In a camera, the combination, with a shutter, a plate-supporter, a plate holder or reservoir, and a detent for the said plate-holder, of electro-magnetic devices and circuits and connections, substantially such as described, whereby a single closure of the circuit will operate the shutter, remove and restore the plate-supporter, release the plate-reservoir and rotate the same for the dropping of a new plate, and restore the detent.

26. In a camera, the combination, with a drum having receptacles for holding sensitive plates and a shaft on which said drum is mounted, of an electro-magnetic motor operatively connected with the said shaft, as and for the purpose set forth.

27. In a camera, the combination, with plate-supporting arms or levers centrally pivoted, of pins projecting from said arms or levers into an opening of substantially triangular shape in an armature rod or bar, whereby, on the operation of the magnet connected with the armature of the said lever, the outer ends of the said plate-supporting arms or levers will be spread apart and release the plate, as set forth.

28. In a camera, the combination, with an electric generator, a motor in the circuit thereof, and a shutter operated by the said motor, of detents for the said shutter forming the terminals of a second circuit, the said second circuit being operatively connected with devices for releasing a sensitive plate, whereby the shutter is first reversed to expose the plate and the plate is afterward dropped.

29. In a camera, the combination, with an electric generator, a magnet in the circuit thereof, and plate-supporting arms or levers which are operated to release the plate when the magnet is energized, of a circuit-closer brought into operation by the release of a plate for closing another circuit through a magnet which operates a detent for the plate holder or reservoir.

30. In a camera, the combination, with a battery, a magnet in the circuit thereof, and a detent for the plate-holding drum or reservoir operated by the said magnet, of a circuit-closer brought into operation by the action of the said magnet, the said circuit-closer serving to close another electric circuit through a magnet which operates the drum or reservoir.

31. In a camera, the combination, with a drum having receptacles for holding sensitive plates, of a series of holes formed in the wall or casing of the said drum, a spring-bolt adapted to enter any one of the said holes, and an electro-magnet for operating the said bolt, as and for the purpose set forth.

32. The combination, with a rotating drum having receptacles for holding sensitive plates, of a stationary cap covering the bottom thereof, a rib extending centrally along the said cap, and a series of rods each provided with a flange which extends along the bottom of one of the said receptacles and supports a sensitive plate, the said rib and cap being cut away to form a slot, through which the said plates are adapted to fall successively as the drum is rotated.

33. The combination, with a ratchet mounted upon a shaft which forms part of a battery-circuit, and an armature also forming part of a circuit of the same battery, of an insulated pawl for operating the said ratchet, the said pawl being attached to the said armature, and the said shaft carrying a series of commutators connected up in circuit with photographic apparatus, substantially as and for the purpose set forth.

34. The combination, with a rotating drum having receptacles for holding sensitive plates, with a battery and a primary-circuit closer in circuit therewith, of secondary-circuit closers controlling branch circuits and operated electro-magnetically by the actuation of the first-named circuit-closer, the said branch circuits having a return-connection between the primary-circuit closer and the battery, whereby the circuits controlled by the said secondary-circuit closers will be operated, even though the first circuit-closer should be released before their operation is accomplished.

35. In a camera, the combination, with a drum having receptacles for holding sensitive plates, a series of holes formed in the wall or casing of the said drum, and an electro-magnetically-operated spring-bolt adapted to enter any one of the holes, of a spring on the said bolt which is brought into contact with a second spring when the bolt is drawn, the two springs forming the terminals of a circuit which includes an electro-magnetic motor for operating the said drum, as and for the purpose set forth.

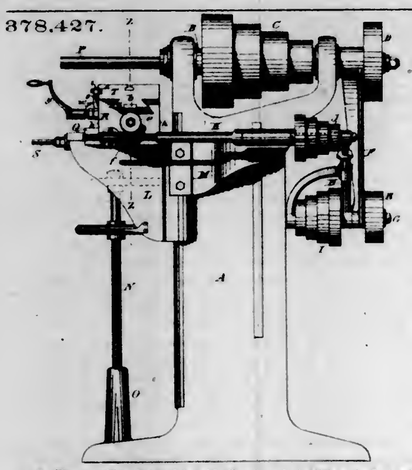
36. The combination, with a conducting-frame within which a sensitive plate is adapted to slide, of a spring pin or bolt actuated by the said plate when in place and a spring pressing against the said pin, the said spring and frame constituting the terminals of an electric circuit which includes an electro-magnet for releasing a plate-holder, whereby as soon as a plate is dropped the plate-holder is released and made ready to be moved forward for supplying a new plate in place of the old.

378,427. MILLING-MACHINE. AMOS H. BRAYARD, Hyde Park, Mass. Filed May 26, 1887. Serial No. 239,239. (No model.)

Claim.—1. In a milling-machine, the combination, with the linearly-reciprocating feed-table provided with a rack, of a shaft duly driven and carrying an endless screw arranged to be enmeshed with and disconnected from said rack, and a pinion duly journaled and enmeshed with said rack and arranged to be actuated by a crank to linearly move said table, all substantially as specified.

2. In a milling-machine, the combination of a work-table provided with a rack, a worm-gear-actuated shaft, a screw on said shaft arranged to be enmeshed with or disengaged from said rack, and a pinion enmeshed with said rack and provided with means whereby it may be rotated by a hand-driven crank, all substantially as specified.

378,427.



3. The combination, with table T, of rack *b*, tilting shaft *d*, with means to rotate and tilt it, screw *c*, carried by said shaft, and pinion *e*, duly journaled and enmeshed with said rack, and means whereby said pinion may be rotated by a crank, substantially as specified.

4. The combination of tilting shaft *d*, lever *k*, bearing *j*, supporting said shaft, latch *p*, arranged to engage and support the lever, and adjustable cam *t*, arranged to actuate said latch and liberate said lever, all substantially as specified.

5. The combination, with tilting shaft *d*, of lever *k*, connected with said shaft, and latch *p*, arranged to be engaged with and disconnected from said lever, substantially as specified.

6. In a milling-machine, the combination, with the work-supporting table provided with a rack, of a screw arranged to engage said rack and mounted upon a shaft provided with means whereby it may be raised and lowered to engage and disengage said screw with and from the rack, substantially as specified.

7. In a milling-machine, the combination, with the work-supporting table and its rack, of a driving screw-shaft journaled near one end in a bearing supported upon fixed pivots and at the opposite end supported in a bearing arranged to be raised and lowered, whereby said screw may be enmeshed with and disconnected from said rack, substantially as specified.

8. The combination, with screw-shaft *d*, journaled in pivotal bearing *g*, of pivoted lever *k*, and the journal-bearing *j* of said shaft pivoted to said lever, substantially as specified.

378,428. **RAILWAY-CAR.** JOHN A. BRILL, Philadelphia, Pa. Filed Nov. 18, 1887. Serial No. 255,480. (No model.)

Claim.—1. A railway-car having separate passenger-apartments *a* and *a'* and intervening vestibule-platform, B, having closed side *b* and open side *b'*, substantially as set forth.

2. A railway-car having separate passenger-apartments *a* and *a'* and intervening vestibule-platform, B, and an inclosed engineer's or driver's apartment, a^3.

3. A railway-car having separate passenger-apartments *a* and *a'*, an intervening vestibule-platform, B, and an inclosed engineer's apartment, a^3, having recess or projection a^4 extending into the aisle of the car between the seats, substantially as set forth.

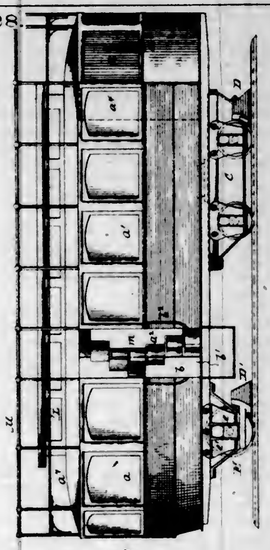
4. A railway-car having at its front end an engineer's apartment provided with a rearwardly-extending recess, a^4, in the aisle of the car between the seats, substantially as set forth.

5. A railway-car having side seats extending from end to end of the car, and at its front end an engineer's apartment provided with an angular recess, a^4, extending into the aisle of the car between the seats, substantially as set forth.

6. A railway-car having separate apartments *a* and *a'*, intervening vestibule-platform, B, communicating with both of said apartments, an engineer's or driver's apartment, a^3, in advance of apartment *a'*, a four-wheel truck pivoted to the car-body in front of platform B, and a pair of wheels having axle-box pedestals secured to the car-body to the rear of platform B, substantially as set forth.

7. A railway-car having separate apartments *a* and *a'*, intermediate vestibule-platform, B, having closed side *b* and open side *b'*, and running-gear in advance of and to the rear of said platform, and

378,428.



part of said running-gear having a truck-frame with pivotal connection with the car-body, substantially as set forth.

8. A railway-car having apartments *a* and *a'*, intervening vestibule-platform, B, running-gear in front of and to the rear of said platform, and fenders D D', for said running-gear, both said fenders pointing in the same direction and located in advance of their respective running-gear, substantially as set forth.

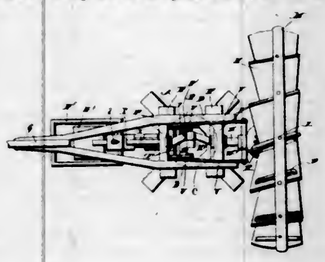
9. A railway-car having apartments *a* and *a'*, intervening vestibule-platform, B, having closed side *b* and open side *b'*, and a stairway on said platform adjacent to said closed side *b* and leading to the roof of the car, substantially as set forth.

10. In combination with a car-truck, a bolster running from side to side of the truck-frame, and having a large central opening or frame, an electric motor supported within said bolster-space, and driving mechanism between the motor-shaft and one or more axles of the truck, substantially as set forth.

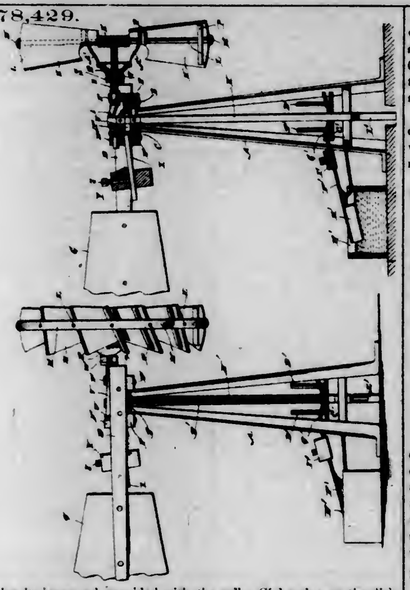
378,429. **WINDMILL.** WILLIAM BURROWS, Littleton, Ill. Filed July 2, 1887. Serial No. 243,235. (No model.)

Claim.—1. The combination, in a windmill, of the vertically-reciprocating disk C, provided with the vertical guide-rods D', and the float-lever having the collar G' at its inner end, bearing on the disk, and having the circular opening through which the rods D' extend, substantially as described.

2. In a windmill, the combination of the turn-table, the crank-shaft journaled thereon, the wind-wheel attached to said shaft and having the feathering-blades, the reciprocating pump-rod attached to and depending from the crank-shaft, the rock-shaft T, journaled in the turn-table and having the weighted lever X, the bell-crank levers attached to said shaft, connections between the said bell-crank levers and the feathering-blades, the rods B', connected to and depending from the bell-crank levers, the disk C', connecting the lower ends of said rods and having the vertical guide-rods D', and the float-lever

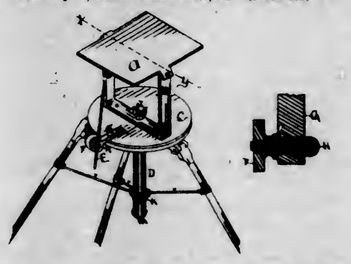


378,429.



having its inner end provided with the collar G', bearing on the disk C', and through which the guide-rods extend, substantially as described.

378,430. **CAMERA-TRIPOD.** WILLIAM H. CARPENTER, Cadillac, Mich. Filed July 23, 1887. Serial No. 245,064. (No model.)



Claim.—1. In a camera-tripod, the combination of an upper plate, A, adapted to be revolved upon a double standard, B, vertically with said standard B, rigidly attached to or forming a part of a lower plate, C, substantially as and for the purpose above set forth.

2. In a camera-tripod, the combination of the plate A, the double standard B, and the plate C, with the lower plate, L, said plate C being adapted to be revolved horizontally about a center pin, *s*, upon the plate L, or to be rigidly attached to plate L by a thumb-screw, I, on the center pin, *s*, as and for the purpose above set forth.

3. In a camera-tripod, the combination of an arm, G, attached to or a part of a plate, C, and provided at its outer end with a clamping-bolt, H, with a rod, E, attached at its upper end by a flexible joint to the plate A and passing through the clamping-bolt H, substantially as above set forth.

4. The combination, with a camera-tripod, of a magazine or dark-chamber attached to a lower plate, L, of the head to which the legs of the tripod are attached, said magazine being situated between said legs and attached thereto by brace-rods *r*, substantially as above set forth.

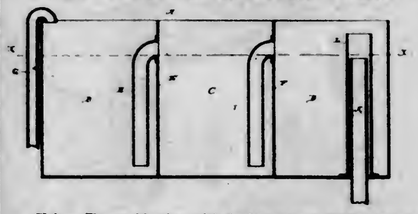
5. The combination, with a camera-tripod, of a magazine or dark-chamber of two concentric tubes, D and Q, of such diameters that Q is adapted to slip within and closely fit D, substantially as above specified.

6. The combination, with a camera-tripod, of a magazine consisting two concentric tubes provided with a slot, *o*, in the outer tube, D, adapted to engage the pins *n* of the inner tube, Q, with said pins *n* of said tube Q substantially as above set forth.

7. The combination, in a camera-tripod, of a magazine composed of two tubes, D and Q, the tube D being rigidly attached to the under side of the plate L and closed at its top by the plate L, and the tube Q being permanently closed at the lower end by the fixed cap *m* and the upper end closed by a movable cap, *t*, all substantially as above set forth.

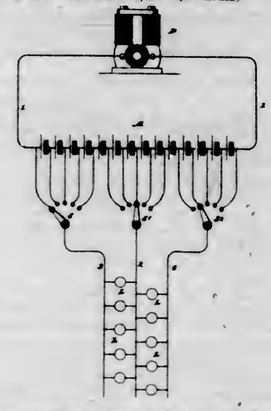
8. The combination, in a camera-tripod, of a magazine or dark-chamber attached to a plate, L, and provided with a sliding collar, K, which is attached by flexible joints to the legs of the tripod by brace-rods *r*, substantially as above set forth.

378,431. **FILTER.** THOMAS CLARKE and JOHN R. CONROY, Jersey City, N. J. Filed Aug. 10, 1887. Serial No. 246,599. (No model.)



Claim.—The combination, with the box or tank divided into the compartments B, C, and D by the partitions E F, of the pipe G, discharging into the compartment B over the edge thereof, the pipes H and I, rising in the compartments B and C, respectively, from points near the floors thereof, and respectively opening into the compartments C and D near the tops thereof, the overflow-pipe K, and the tubular strainer L, rising around said overflow-pipe to a point above the water-line, substantially as specified.

378,432. **SYSTEM OF ELECTRICAL DISTRIBUTION.** THOMAS P. CONANT, Brooklyn, N. Y., and ZACH LATHAM, McKeesport, Pa., assignors to The Electrical Accumulator Company, of New York. Filed Sept. 8, 1887. Serial No. 249,078. (No model.)



Claim.—1. The combination of a secondary battery, a working-circuit consisting of three conductors, and means for adjustably connecting two or more of said conductors to different points in said battery, whereby the difference of potential between any two conductors may be regulated.

2. The combination of a dynamo-electric machine in circuit with a secondary battery, a working-circuit consisting of three conductors connected to different point in said battery, respectively, and a series of translating devices in two divisions, each division between a separate pair of conductors.

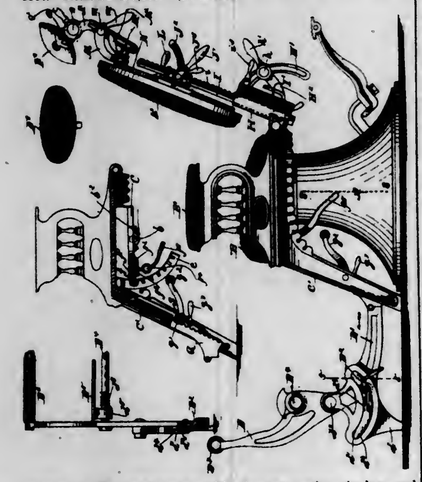
3. The combination of a series of cells of secondary battery electrically connected, a working-circuit consisting of three or more conductors, a series of fixed contact-points connected to different points in the series of cells, and movable contacts for two or more of said conductors, each in position to make contact with two or more of said fixed contacts.

4. The combination of a dynamo-electric machine, a series of cells of secondary battery connected in circuit therewith, a working-circuit consisting of three conductors, translating devices divided in two series, each series located between a different pair of conductors,

and a switch for each of said conductors, whereby the point of connection between either of said conductors and the battery may be changed, varied, or altered.

5. The combination of a dynamo-electric machine, a series of cells of secondary battery, a working-circuit consisting of three conductors, and switches a d' s^3.

378,433. DENTAL CHAIR. JOHN W. COOPER, Boston, Mass., assignor of one-half to Robert A. Holliday, Atlanta, Ga. Filed Mar. 15, 1887. Serial No. 230,969. (No model.)



Claim.—1. The combination, with the seat-casting, the legs, and the adjustable plates, of the foot-rest composed of two parts pivotally connected together, secured to said plates by a pivotal connection, substantially as and for the purpose described.

2. The combination, with the seat and the part D′ of the foot-rest, having a curved slot, d', at its forward end and the teeth d'^2 at one side of the slot, of the part D, pivotally connected with the part D′ and extending in opposite directions from the pivotal connection, and the pawl carried by the part D and adapted to engage with the teeth and hold the parts relatively adjusted.

3. The combination, with the part D′, having the curved slot d', provided with the teeth d'^2 on its under side, of the part D, pivotally connected with the part D′, and having its lower end extended, the pawl mounted upon the end of the part D and adapted to engage with the teeth d'^2, and the spring d'^4, bearing upon the upper side of the curved slot for holding the pawl in engagement with the teeth, substantially as set forth.

4. The combination, with the foot-rest composed of two side pieces, the foot-supporting cross-bar uniting the side pieces at their upper ends, and the cross-bar D^4, uniting them midway of their ends, of the foot-support D^5, having brackets depending therefrom, which are mounted upon and adapted to tilt about the cross-bar D^4, and the springs d^6, coiled about the cross-bar D^4 and fastened at one end to the brackets and at the other ends to the cross-bar, substantially as set forth.

5. The combination, with the seat and the arm H^3, projected rearwardly and upwardly therefrom, of the back-supporting casting pivotally connected at its lower end with the seat, the slotted bar H′, extended rearwardly and downwardly from the upper end of the back-supporting casting, the bolt A, and the hand-nut A′, for coupling the bar against the arm H^3, substantially as and for the purpose described.

6. The combination, with the back-supporting casting having a socket, and the back-support or toothed bar passed through said socket, of the pinion journaled upon a horizontal shaft and meshing with the rod, the hand-lever bifurcated and embracing the pinion, the pawl carried by said lever and adapted to engage with the teeth of the pinion, and the pawl carried by said casting for holding the bar in an adjusted position, substantially as set forth.

7. The combination, with the seat, the casting J, and means, substantially as described, for adjustably connecting the casting J with the seat, of the casting K, secured to the back and pivotally connected with the casting J, the slotted arm J^3, projected rearwardly and upwardly from the casting K, and the hand-nut J^4, substantially as and for the purpose specified.

8. The combination, with the seat, the casting J, means, substantially as set forth, for adjustably connecting the casting with the seat, and the hand-hold L, forming a part of the casting J, of the casting K, pivotally connected with the casting J, and means, as the slotted arm J^3 and the hand-nut J^4, for holding the casting K in an adjusted position, substantially as described.

9. The combination, with the back-casting K, the bolt M′, extended therefrom, the bracket M, bifurcated at its upper end and mounted upon the bolt and adapted to tilt about it as an axis, and the hand-nut M^3, placed upon the bolt for clamping the bracket between the casting K and the hand-nut, of the slotted casting N, fitted in the bifurcated end of bracket M, the bolt m, the hand nut m', the casting O, carrying the head-rest, the bolt o, and the hand-nut o', for connecting casting O with casting N, substantially as set forth.

10. The combination of the section A, the telescoping section A′ the oil-reservoir a, the oil-chamber a', the valve a^2, the tube Q, the plunger R, and the tube S, substantially as set forth.

11. The combination, with the section A, having the oil-reservoir a and the communicating oil-chamber a', the telescoping section A′, the plunger connected with and carried by the section A′, and the tube surrounding the plunger and communicating with the oil-chamber a', of the valve a^2, the horizontal rod a^4, and the rod a^5, mounted to work in the vertical bearings, substantially as specified.

12. The combination of the section A, having an oil-reservoir, a, and the oil-chamber a', the valve a^2, means, substantially as described, for operating the valve, the tube S, communicating with the oil-chamber a' and connected with the section A, the telescoping section A′, the tube Q, connected at its lower end with the section A′, the plunger secured to and depending from the tube Q, and means, substantially as described, for moving said section A′, for the purpose specified.

13. The combination of the section A, the telescoping section A′, the rack c, and the pawl p, the projection p', the stop p^3, and the foot-lever P, substantially as described.

14. The combination of the section A, the telescoping section A′, means, substantially as specified, for moving the section A′, the rollers e, the section A^2, and the chains passed over the rollers e and connected at their ends with the sections A and A^2, substantially as set forth.

15. The combination of the section A, having the oil-reservoir a and the oil-chamber a', the hinged valve a^2, the horizontally-sliding rod a^4, having its inner end bearing against the valve, the vertically-moving rod a^5, the tube S, the telescoping section A′, the tube Q, fitted over the tube S and secured at its lower end to the section A′, the plunger carried by the tube Q, the section A^2, the chains passed over the section A′ and secured at their ends to the sections A and A^2, respectively, the rack, the pawl provided with the projection p', the pin p^3, for disengaging the pawl from the rack on the back-stroke of the pawl, and the front lever, substantially as set forth.

16. The combination, with the section A, the telescoping section A′, and the operating-lever P, of the rack, the pawl having the projection p', and the pin p^3, for engaging with the projection and disengaging the pawl from the rack, substantially as and for the purpose specified.

17. The combination, with the seat and the seat-casting, pivotally connected with the seat and provided in its front edge with a socket, and the slot extending into the socket, of the curved notched bar e, secured to and depending from the seat, the pawl f and the spring f^2, seated in said socket in the seat-casting, the shaft f^4, journaled in bearings depending from the seat-casting, the arm f^5, extended from the shaft and having its outer end projecting through said slot and engaging with pawl f, and the foot-lever f^6, substantially as and for the purpose specified.

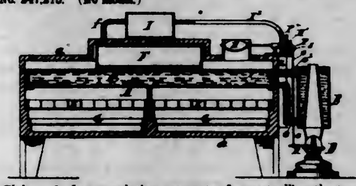
378,434. HOG-TROUGH. SOLOMON CORDERMAN, Waveland, Iowa. Filed Aug. 22, 1887. Serial No. 247,627. (No model.)



Claim.—1. A feed-trough guard consisting of the frame B, composed of the lower rail, i, and upper rail, e, connected by uprights or pins m, cross-bars t, secured to the lower rail, and bows or protectors secured to the cross-bars and upper rail, substantially as described.

2. The combination, with a feed-trough provided with pins in its ends, of a guard consisting of a lower rail having apertures in its ends, in which the pins of the trough fit, an upper rail connected to the lower rail by uprights or pins, cross-bars secured to the lower rail, and bows or protectors secured to the cross-bars and upper rail, substantially as described.

378,435. TEMPERATURE-REGULATOR FOR INCUBATORS. CHARLES A. CORBAN, Cochituate, Mass. Filed Aug. 17, 1887. Serial No. 247,315. (No model.)



Claim.—1. In a regulating apparatus for controlling the temperature of a chamber, a pneumatic thermo-regulator disposed within said chamber and a pneumatic thermo-regulator disposed outside of the chamber, both having a common connection for simultaneous conjoint action, in combination with a balance and float for receiving and transmitting the motion induced by fluctuation of the pneumatic pressure within said indicators, substantially as set forth, whereby the action of one thermo-regulator is qualified, counteracted, or augmented by the action of the other to give a mean resultant action, due to both the external and the internal temperatures.

2. In a heat-regulating appliance for incubators, the combination of an expansion air-chamber located within the incubator-case, an auxiliary expansion air-chamber located outside the incubator-case, a pneumatically-actuated balance, and a tubular connection from said balance communicating with the interior of both of said air-chambers, substantially as and for the purpose set forth.

3. The combination, with an incubator-chamber having a heat-radiator arranged therein, of a thermo-regulating mechanism consisting of two pneumatic thermo-regulators, one within and one without the incubator-chamber, and connecting-pipes communicating therefrom for simultaneous action, with a balance and float mechanism and connections actuated by the movement of said float for controlling the heat-producing flame, substantially as set forth.

4. The combination, with the chamber A, having the heating devices C and egg-trays E, of the cylinder F, having air-pipe f, the cylinder I, having air-pipe I′, the pneumatic liquid-balance J K, with bent pipe J′, the float N, lever P, connecting-rod O, lever R, and burner-slide d, for the purposes set forth.

5. The combination of the ventilator H, mounted on a rotating shaft provided with the pinion H′, the lever P, carrying the gear-segment P^2, meshing with said pinion, the incubator-case a, the pneumatic chambers F and I, connecting-pipe I′, and the pneumatic balance device and lever-actuating float N, as and for the purposes set forth.

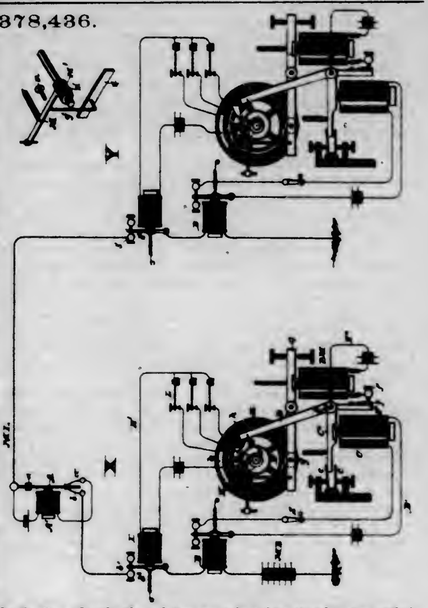
6. The bulb J, cup K, and connecting-bend J′, containing mercury, M, in combination with the pipe I′, inclosed pneumatic chamber F, and exposed pneumatic chamber I, the float N, the actuating-lever P, and burner-controlling devices, substantially as and for the purposes set forth.

378,436. PRINTING-TELEGRAPHY. PATRICK B. DELANY, New York, N. Y. Filed Dec. 12, 1886. Serial No. 221,432. (No model.)

Claim.—1. The combination, substantially as set forth, with a main line, a source of electric energy, and a constantly-acting current-pulsator by which intermittent electrical impulses are constantly thrown upon the line from said source, of printing-telegraph instruments of a class which transmit by eliminating one or more of said impulses from the line and receive by responding to such eliminations of current, and have their actuating relays or magnets connected directly in the line, whereby the printers move in unison step by step as their actuating-magnets are magnetized by the impulses traversing the line, and any one printer may transmit to the others at pleasure.

2. The combination, substantially as set forth, of a main line, a source of electric energy, a constantly-acting current-pulsator entirely independent of any of the instruments and located at any suitable point in the line by which impulses of electricity are constantly thrown upon the line from said source, and printing-telegraph instruments of a class which transmit by eliminating one or more of said impulses from the line and receive by responding to such eliminations of current, and have their actuating relays or magnets connected directly in the line, whereby the printers move in unison step by step as their actuating-magnets are magnetized by the impulses traversing the line, and any one printer may transmit to the others at pleasure.

3. The combination, substantially as set forth, of a main line, a source of electric energy, a constantly-acting pulsator consisting of an electrically-actuated automatic vibrator or reed located at any suitable point in the circuit, by which impulses of electricity are constantly thrown upon the line from said source, and printing-telegraph instruments of a class which transmit by eliminating one or more of said impulses from the line and receive by responding to such eliminations of current, and have their actuating relays or magnets connected directly



in the line, whereby the printers move in unison step by step as their actuating-magnets are magnetized by the impulses traversing the line, and any one printer may transmit to the others at pleasure.

4. The combination, with a main-line and printing-telegraph instruments which operate step by step in response to electrical impulses sent over the line, of a source of electric energy and an electrically-actuated automatic vibrator or reed by which impulses of electricity are thrown upon the line from said source.

5. The combination of the actuating-magnet of a printing-telegraph instrument, its armature-lever and push-arm, and elastic or spring limiting stop or stops against which it works.

6. The combination of a magnet, C, its vibrating armature, the limiting spring stop or stops against which it vibrates, another magnet, PM, its local circuit, and the contacts of said circuit which are operated by the vibrating armature.

7. The combination of the continuously-acting circuit-interrupter, the main battery, the type-wheel shaft, wheel, and sunflower, electro-magnetic devices for rotating the shaft by the action of the vibratory impulses of electricity sent into the line through the medium of the circuit-interrupter, the print devices, magnet, and circuit, the keys of the sunflower segments and their local circuits, the magnet I in said local key-circuits, and its armature in the line, substantially as set forth.

8. The combination of a sunflower having its key-segments placed so that the distance between them is substantially equal to the width of the segments, the circuits and keys of the segments, the type-wheel, means for actuating the type-wheel step by step and thereby causing the trailer at each movement to cross a key-segment and pause between it and the next key-segment, and printing devices which take impressions from the type-wheel during such pauses.

9. The combination of the sunflower having its segments separated by intervening spaces of suitable width, the sunflower-trailer, the segment circuit and keys, the type-wheel, means for actuating the type-wheel step by step and thereby causing the trailer at each movement to cross a key-segment and pause on the adjoining space, and printing devices which are thrown into operation by the passage of the trailer across a segment and take an impression from the type-wheel when the trailer and wheel have paused.

10. The combination of the sunflower having its segments separated by intervening insulated spaces of suitable width, the sunflower-trailer, the segment circuit and keys, the type-wheel, means for actuating the type-wheel step by step and thereby causing the trailer at each movement to cross a key-segment and pause on the adjoining insulated space, and printing devices which are thrown into operation by the passage of the trailer across a segment and take an impression from the type-wheel when the trailer and wheel have paused.

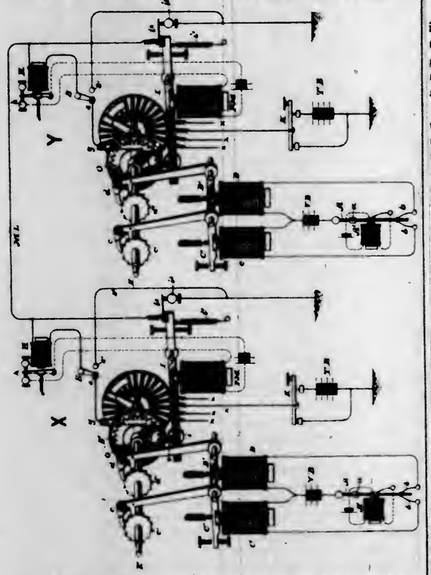
11. In a printing-telegraph, the combination of the sunflower, its segments, and segment circuits and keys, the type-wheel shaft and its actuating-star, a ratchet-wheel, step-by-step actuating devices for actuating said wheel, the sunflower-trailer rotated step by step by the type-wheel shaft and moved across a segment at each step, a unison device and its stop mechanism which checks the apparatus with the trailer on the zero-segment of the sunflower, and the print-lever which throws off the unison-stop on the depression of the zero or starting key of the sun-flower.

12. In a printing-telegraph system, the combination of an automatic circuit-interrupter or impulse-sender and contacts against which it works, one contact for effecting its automatic actuation, one for connecting the main line with a main battery, and one for connecting the line to earth, substantially as and for the purpose set forth.

13. The combination of a main line, a printing-instrument, the sunflower and its trailer, the segments of the sunflower separated by intervening spaces upon which the trailer pauses when at rest, and the circuits and keys of said segments, the type-wheel and printing devices, step-by-step actuating devices whereby the type-wheel is actuated and the trailer at each step moved across a key-segment and checked between it and the next key-segment, and printing devices which upon the depression of the keys take impressions from the type-wheel during such momentary pauses.

14. The combination, with a source of electricity and a line, of step-by-step actuating mechanism connected in the line, whereby a printer is actuated step by step in correspondence with pulsations or intermittent impulses of electricity sent over the line, the type-wheel, sunflower and keys, and key-circuits of said printer, a maguet in the key-circuits which momentarily opens the line when a key is depressed and its circuit completed, thereby eliminating one or more of said actuating impulses from the line and causing a momentary pause of the type-wheel, and a print-lever actuated to take impressions from the type-wheel during such momentary pauses without interrupting the further step-by-step movement of the wheel, substantially as set forth.

378,437. PRINTING-TELEGRAPH. PATRICK B. DELANY, New York, N. Y. Filed Mar. 17, 1887. Serial No. 231,301. (No model.)



Claim.—1. The combination of the main line, two or more telegraphic-printing instruments having their printing-relays permanently connected directly with the main line, each of said instruments having an automatically electrically-actuated vibrator or circuit-interrupter, through the medium of which it is advanced step by step, means for adjusting the speed of said vibrator, whereby the several instruments may be brought to an approximately uniform rate of rotation, message-transmitting devices whereby a message may be sent from one station to another, and print mechanism at each station by which the message is recorded.

2. The combination of the main line, two or more telegraphic-printing instruments having their printing-relays permanently connected directly with the main line, each of said instruments having an automatically electrically-actuated vibrator or circuit-interrupter, through the medium of which it is advanced step by step, means for adjusting the speed of said vibrator, whereby the several instruments may be brought to an approximately uniform rate of rotation, message-transmitting devices whereby a message may be sent from one station to another, print mechanism at each station by which the message is recorded, and correcting or synchronizing mechanism which is thrown into action at each instrument when a signal or letter is made or printed.

3. The combination of the automatically electrically-actuated vibrator, duplicate driving-magnets CD, their battery, circuits, and contacts, whereby the circuit of one magnet is completed when the vibrator is on each side of its normal central position, the actuating levers or armatures of said magnets, and a driving-shaft, E, substantially as set forth.

4. The combination of the electrically-actuated automatic vibrator or reed, electro-magnetic driving devices controlled thereby, a type-wheel shaft driven by said electro-magnetic devices, the type-wheel thereon, the corrector-wheel connected with the type-wheel, a frictional connection between the type-wheel and corrector-wheel and the shaft, the sunflower and its segments and key-circuits, the main line electrically connected with the sunflower-trailer, the magnet H in the line, the print-magnet and its circuit controlled by the magnet H, the print-lever, the correcting-wedge thereon, and the main-line grounding-contacts which are brought in contact when the print-lever is actuated by an impulse sent into or received from the line.

5. The combination, in a printing-telegraph, of a type-wheel, its correcting or synchronizing devices, a print-lever and its print-magnet, a main line, and circuit-connections and grounding-contacts operated by the print-lever to ground the line immediately after the printing of each character.

6. The combination, in a printing-telegraph, of a type-wheel, a print-lever and its print-magnet, a main line, and circuit-connections and contacts operated by the print-lever to ground the line immediately after the printing of each character.

7. The combination of a main line, a printing-instrument having its relay connected directly in the line, a ground-connection connected to the line on the outside or line side of said relay, and normally-open grounding-contacts connected with earth and with said ground-connection, through which the line is grounded immediately after each actuation of the printing devices.

8. The combination, in a printing-telegraph, of the print-lever, the insulated elastic grounding-finger thereon, an electrical connection extending from the main line outside of the printing-instrument to said finger, and a stop or contact permanently connected with the earth against which the elastic finger is drawn to ground the line upon the actuation of the print-lever.

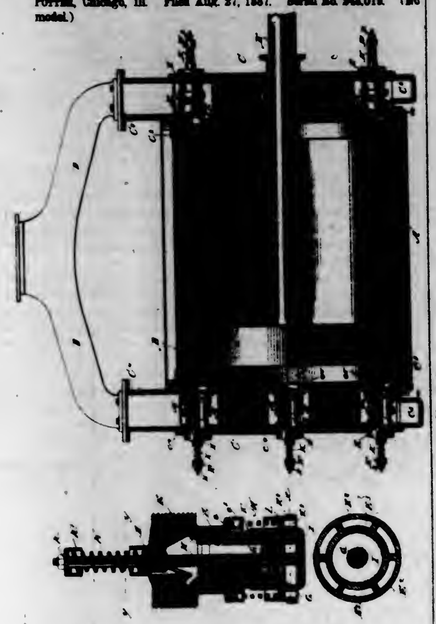
9. The combination, with a continuously-actuated vibrator, of a contact-finger bearing thereon and means for adjusting the finger lengthwise of the vibrator to regulate its rate of vibration.

10. The combination of the vibrator, the two elastic fingers which embrace it, and means for adjusting the fingers lengthwise of the vibrator to regulate its rate.

11. The combination of a main line, printing-instruments, a type-wheel, sunflower, keys and key-circuits for each printer, local devices for continuously and regularly operating the printer step by step independently of main-line currents, message-transmitting devices, and circuit-connections, whereby the depression of any one or more keys at any printer sends a message-transmitting impulse or impulses over the line, and printing devices which are thrown into operation by said impulse or successive impulses to take impressions from the tye-wheels corresponding to such depressed key or keys during the momentary pauses of the type-wheels without interrupting their regularity of movement, the step-by-step motion of the instruments being automatically regularly continued irrespective of the release of the depressed key or keys, substantially as set forth.

12. The combination of a main line, printing-instruments, the sunflower and trailer, the segments of the sunflower, their circuits and keys, and the type-wheel and printing devices of each printer, local means whereby the type-wheel of each printer is actuated step by step irrespective and independently of main-line currents and its trailer at each movement caused to cross a key-segment and pause between it and the next key-segment, message-transmitting devices and circuit-connections, whereby the depression of a key at any printer sends a message-transmitting impulse over the line, and printing devices which are thrown into operation by such impulses to take impressions from the type-wheels during the ordinary momentary pauses of the type-wheels without interrupting their regularity of movement, the step-by-step motion of the instruments being automatically regularly continued irrespective of the release of the depressed transmitting-key.

378,438. VALVE MECHANISM FOR BLOWING-ENGINES, PUMPS, AND SIMILAR APPARATUS. ROBERT FORSYTH and JOHN A. POTTER, Chicago, Ill. Filed Aug. 27, 1887. Serial No. 248,019. (No model.)



Claim.—1. A two-way-valve mechanism consisting of a casing for the inlet-valve, a valve for obstructing said casing, a base for said casing, perforated externally thereto, and a valve for controlling the flow through the perforated base, substantially as described.

2. A two-way-valve mechanism comprising the combination of a casing, a spring-seated valve for obstructing said casing, an annular spring-seated valve encircling said casing, and a perforated base or seat for said valve, substantially as described.

3. A two-way-valve mechanism comprising the combination of a casing provided with brackets, a valve for obstructing said casing, having a stem passing through said brackets, a spring encircling said valve-stem, an annular valve encircling said casing, a perforated base or seat for said annular valve, and a spring encircling the casing and bearing upon the annular valve, substantially as described.

4. A two-way-valve mechanism comprising the combination of a casing formed of the separate parts E and F, a valve for obstructing said casing, an annular valve encircling said casing, a perforated base or seat for said valve, and a spring encircling said casing and bearing upon the annular valve, substantially as described.

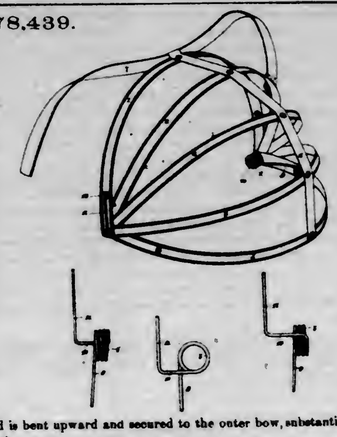
5. The combination, with the compression-cylinder, of the perforated double heads or plates forming a chamber, a suitable discharge-pipe leading from said chamber, and a two-way-valve mechanism comprising a casing extending between the two heads and having its ends fitted to the perforations thereof, a valve for obstructing said casing, a discharge-passage leading from the compression-cylinder to the chamber formed by the double heads, and a valve for obstructing said passage, substantially as described.

6. The combination, with the compression-cylinder, of the perforated double heads or plates forming an air-chamber, the perforations of one of said plates being screw-threaded, and valve mechanism comprising an exteriorly-screw-threaded casing, a valve for obstructing said casing, a perforated base for said casing, and a valve for controlling the flow through said perforated base, substantially as described.

378,439. BUSTLE. JAMES GALVIN, Bridgeport, Conn., assignor to Thomas P. Taylor, same place. Filed Dec. 16, 1887. Serial No. 258,056. (No model.)

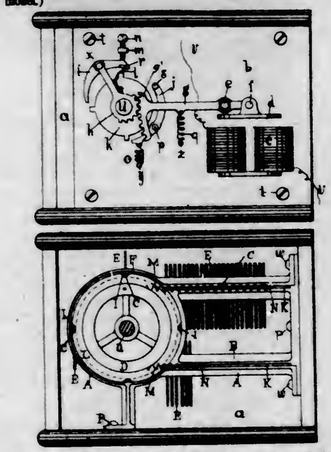
Claim.—The combination, with the collapsible distending bows and a suitable waistband and check-tape, of the coiled spring, one end of which is secured to the inner bow, and the other end of which is passed backward through the coils and the extremities of the bows

378,439.



and is bent upward and secured to the outer bow, substantially as set forth.

378,440. ELECTRIC RAILWAY-STATION INDICATOR. GEORGE GUPPY, Wilkes-Barre, Pa. Filed Mar. 16, 1885. Serial No. 159,017. (No model.)



Claim.—1. The combination of the frames provided with upper and lower guide-slots, a series of indicator-cards having pivots projecting from their sides above their centers of gravity and sliding in the said guide-slots, and the intermittently-revolving pulleys provided with notches for the card-pivots, for transferring the cards from one guide-slot to the other.

2. The combination of the intermittently-revolving grooved pulleys provided with notches for the card-pivots, the frames provided with the upper and lower guide-slots, the loops extending around the pulleys and the middle portions entering the grooves of the pulleys, and a series of indicator-cards having pivots projecting from their sides above their centers of gravity, sliding in the said guide-slots, and transferable from one to the other by the said pulleys.

3. The combination of the frames provided with upper and lower guide-slots, a series of indicator-cards pivoted above their centers of gravity in the said guide-slots, the intermittently-revolving pulleys provided with notches for the said card-pivots for transferring the cards from one guide-slot to the other, the helical tension-springs, the followers secured to the ends of the springs and bearing against the last cards, and the loose pulleys for carrying the springs.

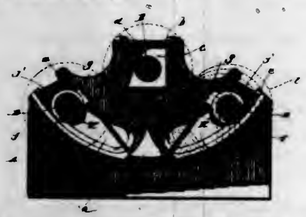
4. The combination of the intermittently-revolving grooved pulleys provided with notches for the card-pivots, the frames provided with the upper and lower guide-slots, a series of indicator-cards pivoted above their centers of gravity in the said guide-slots, an electro-magnet provided with an armature for operating the said pulleys, and

the intermediate ratchet-lever mechanism connecting the said armature with the pulleys, substantially as and for the purpose set forth.

5. The combination of the electro-magnet, the pivoted lever *g*, provided with the toothed rack, the armature pivoted to the lever, and the resistance-spring *q*, the loose toothed segment *k*, gearing into the said rack, the spring-pawl *i*, pivoted to the said segment, the intermittently-revolving ratchet-wheel *k*, operatively connected to the indicator-spindle *u*, and a stationary set-screw for holding the said pawl out of gear with the ratchet-wheel when in its normal position, substantially as and for the purpose set forth.

6. The combination of the electro-magnet, the pivoted lever *g*, provided with the toothed rack, the armature pivoted to the lever, and the resistance-spring *q*, the loose toothed segment *k*, gearing into the said rack, the spring-pawl *i*, pivoted to the said segment, the intermittently-revolving ratchet-wheel *k*, operatively connected to the indicator-spindle *u*, a stationary set-screw for holding the said pawl out of gear with the ratchet-wheel when the lever *g* is in its normal position, the pivoted stop-pawl *j*, operated by lever *g*, and the spring *o*, connected to the said stop-pawl, substantially as and for the purpose set forth.

378,441. INK-DISTRIBUTING DEVICE FOR PRINTING-MACHINES. JAMES HACKETT, Taunton, Mass. Filed Aug. 16, 1887. Serial No. 247,069. (No model.)



Claim.—1. The combination, in an ink-distributing device for printing-presses, of the frame having the bearing for the roll B, and a curved slot, C, arranged eccentrically with said bearing, a roll, B, mounted in the latter, the second roll having its journal mounted in a casting, *f*, in the slot C, and a jam-nut, substantially as set forth.

2. The combination, in an ink-distributing device for printing-presses, of a frame having the bearing, and the curved slot C, arranged eccentrically therewith, and having marginal recesses, as described, a roll, B, mounted in said bearing, a casting, *f*, having the portion *j* located in the marginal portion of the slot, and a second roll having its journal or shaft bearing in said casting, substantially as set forth.

3. The combination, in an ink-distributing device for printing-presses, of the frame or casting having the bearing for the roll B, and slots C, arranged eccentrically with said bearing, lug *i*, located on said casting, bearings *f*, mounted in the slots C, screw-bolts *h*, passing through said bearings *f*, and engaging said lug, and rolls mounted in said bearings *f*, and having the journals D, provided with jam-nuts K, for the purpose set forth, substantially as described.

378,442. EMBOSSED METALLIC PLATE. ALFRED C. HAFELY, New York, N. Y. Filed Apr. 4, 1887. Serial No. 233,630. (No specimens.)

Claim.—1. The method herein specified of producing ornamental embossed metallic plates, consisting in oxidizing or discoloring the surface of the metal to render the same dark, embossing the sheet or foil of metal, and polishing the higher portions of the embossed metal to reveal the contrasting color below the oxidized surface, substantially as set forth.

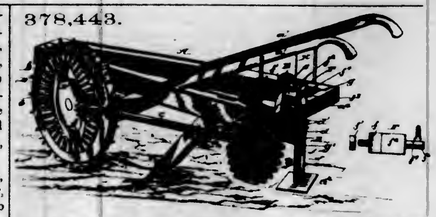
2. The method herein specified of producing ornamental embossed copper plates, consisting in oxidizing uniformly the surface of the copper by sulphuret of potash or similar chemical substance to render the same dark and embossing the foil or sheet of copper, substantially as set forth.

3. The embossed copper plate having a dark oxidized surface and the dark color removed on the high portions to reveal the contrasting colors, substantially as set forth.

378,443. COTTON-CHOPPER. WILLIAM H. HARPER, JOSEPH M. BOYD, and ALBERT C. SHELTON, Pine Log, Ga. Filed Sept. 29, 1887. Serial No. 251,041. (No model.)

Claim.—1. In a cotton-chopper, the combination, with the frame and a spur-wheel mounted at the forward end thereof, of a gear-wheel pivoted to the rear cross-beam and having a series of holes arranged spirally around its center, a gear-and-shaft connection leading from the spur-wheel and adapted to impart motion to said gear-wheel, and a chopper-arm adapted to operate in conjunction with said gear-wheel, substantially as set forth.

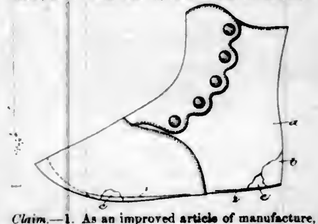
378,443.



2. In a cotton-chopper, the combination, with the frame and driving-gear, of the gear-wheel centrally pivoted upon the rear cross-beam of the frame, and a chopper-arm pivoted at its upper end to a vertically-adjustable block, said chopper-arm having a crank-connection with the gear-wheel and having choppers at its lower end, substantially as set forth.

3. In a cotton-chopper, the combination, with the frame and a spur-wheel mounted at the forward end thereof, of a gear-wheel pivoted to the rear cross-beam and having a series of holes arranged spirally around its center, a gear-and-shaft connection leading from said spur-wheel and adapted to impart motion to said gear-wheel, a standard mounted upon the rear cross-beam of the frame and having a vertical slot, a block vertically adjustable within said slot, a chain or other device for adjusting the block, and a chopper-arm pivoted at its upper end to said block and provided with a longitudinal slot engaged by a crank-pin in one of the series of holes in the gear-wheel, and having choppers at its lower end, substantially as set forth.

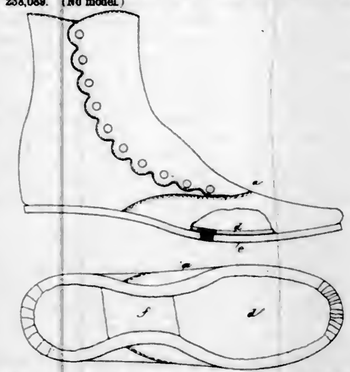
378,444. LASTING BOOTS AND SHOES. JESSE W. HATCH, Rochester, N. Y. Filed Feb. 15, 1887. Serial No. 227,659. (No model.)



Claim.—1. As an improved article of manufacture, an upper and a heel-stiffener within it, both stitched together along the lower straight edge of the stiffener, as at 2, substantially as described.

2. As an improved article of manufacture, an upper and a heel-stiffener within it and a lining, all stitched together along the lower straight edge of the stiffener, as at 2, substantially as described.

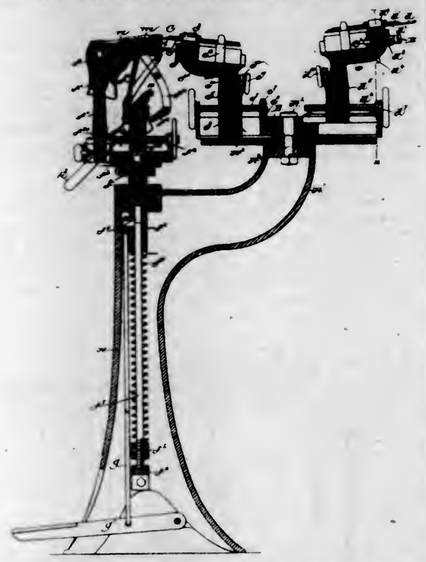
378,445. METHOD OF MANUFACTURING BOOTS AND SHOES. JESSE W. HATCH, Rochester, N. Y. Filed May 13, 1887. Serial No. 238,089. (No model.)



Claim.—1. That improvement in the art or method of lasting shoes which consists in applying to a last an upper the edges of which have been previously cemented and partially dried, drawing the edges of the said upper above the bottom of the last, laying upon the bottom of the last, within the drawn-up cemented edges of the upper, an inner sole previously cemented at its outer side and dried, laying the said drawn-up edges of the upper over upon the inner sole, with their cemented surfaces in contact, then applying to the upper and inner sole, over upon which the edges of the upper have been laid, as stated, an outer sole previously cemented and dried, and forcing the cemented surfaces of the outer sole and inner sole closely together, thus uniting them, substantially as described.

2. That improvement in the art or method of lasting shoes which consists in applying to a last an upper the edges of which have been previously cemented and partially dried, drawing the edges of the said upper above the bottom of the last, laying upon the bottom of the last, within the drawn-up cemented edges of the upper, an inner sole previously cemented at its outer side and dried, coating with india-rubber cement the outer edge of the overturned portion of the upper immediately overlying the inner sole, laying the said drawn-up edges of the upper over upon the inner sole, with their cemented surfaces in contact, then applying to the upper and inner sole over upon which the edges of the upper have been laid, as stated, an outer sole previously cemented and dried, and forcing the cemented surfaces of the outer sole and inner sole closely together, thus uniting them, substantially as described.

378,446. LASTING-MACHINE. JESSE W. HATCH, Rochester, N. Y. Filed May 31, 1887. Serial No. 239,749. (No model.)



Claim.—1. In a lasting-machine, a pivoted spring-supported lasting-jack, combined with a movable table located at one side the pivot of the jack, and the independent heel and toe lasting appliances mounted thereon, opposite which the heel and toe of the last may be placed in succession by the rotation of the jack, substantially as described.

2. In a lasting-machine, the guide-block c^4, the slide-block c^5 therein, having teeth and a stud, c^6, the jaws pivoted on the said stud and lever c^{17}, combined with gearing between the said lever and slide-block, and with a ratchet-plate and pawl to hold the slide-block in place, substantially as described.

3. In a lasting-machine, a jack to hold a shoe to be lasted, and a slide-plate having a stud, c^6, provided with a rounded or beveled seat, combined with a pair of jaws, the said rounded or beveled seat permitting the said jaws to tip and adapt themselves to the bottom of the last, substantially as described.

4. In a lasting-machine, a jack to hold the shoe to be lasted, and a slide-plate, c^4, having a stud, c^6, combined with a crimping-slide, a pair of crimping-jaws, and means to actuate them, whereby the crimping-slide is made to act upon the toe of the upper and lay it over upon the toe of the inner sole prior to the action of the said crimping-jaws upon the upper at the sides of the last back of the toe and between the toe and ball of the last, substantially as described.

5. The table B, the adjustable carriage thereon, the pivoted guide-block having the ear c^{13} thereon, the slide-block, and jaw, combined with the screw c^{10}, to adjust the guide-block on the said carriage, substantially as described.

6. The rotating jack, the table pivoted at one side of the center of rotation of the jack, the carriage thereon, the guide-block, slide-block, and heel-carrying jaw, combined with the counter-holder E, located just below the heel-jaws to impinge against and hold the counter or heel of the upper to the last while the plates of the heel-jaw lay the counter over on the inner sole, substantially as described.

7. The jack, its spindle f^4, spring f^{13}, to support the jack, and link *g*, connected to the said spindle and the treadle, combined with a table and with toe or heel jaws, to operate substantially as described.

8. A guide-block, a toothed slide-block therein, jaws pivoted thereon, and an intermediate gear in engagement with the slide-block, combined with a lever and gear moved by it to actuate the said intermediate gear, substantially as described.

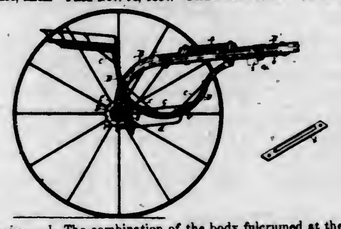
9. The head, a heel pin or standard to support the last, and the shank or rod, combined with a spring, f^{15}, to support the head, and with a treadle to depress the rod and head, substantially as described.

10. The head, a heel pin or standard to support the last, and the shank or rod, combined with a spring, f^{15}, the rod *g*, connected to the shank, the treadle, and the nut f^8, to adjust the said spring, substantially as described.

11. In a lasting-machine, a guide-block, a slide-block therein, a pair of jaws, and means to move them, combined with a jointed counter or upper holder, E, located just below the said jaws, to operate substantially as described.

12. The jack, the notched bed, and the table, and toe or heel jaws, and means to operate them, combined with a lever or locking device to co-operate with the notched bed according to the boot or shoe to be lasted, substantially as described.

378,447. TWO-WHEELED VEHICLE. BYRON J. HEALY, Kalamazoo, Mich. Filed Nov. 10, 1887. Serial No. 254,766. (No model.)



Claim.—1. The combination of the body fulcrumed at the forward end, the axle with the spring-supports pivoted to said body and shackled to the axle, as described and shown.

2. The combination of the axle, a body or seat-bars fulcrumed at the forward ends, the spring-supports pivoted to said bars at their forward ends and their rear ends shackled to said axle, the spring shackled at its ends to said spring-supports and rigidly attached to the body, all in combination, as shown and described.

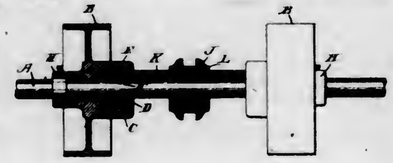
3. The combination, in a two-wheeled vehicle, of the seat-supporting bars D, consisting of a single curved bar each side of the body and held to their shape by a series of brace-irons, c c c, running lengthwise of the bars, the connecting ends of which cross and pass by the point of contact with the bar of its adjoining brace before attaching to said bar.

4. The combination of the body fulcrumed at the forward end, the spring-supports pivoted to said body and attached to the axle by the thill-clips.

5. In combination, a vehicle-spring and spring-supports, said supports fulcrumed at one end to a vehicle-body, and the other end attached to the axle or bolster, and the springs located between and their ends attached to the supports and to the body.

6. The combination of the axle, the body, the thills, and the T-shaped plates for attaching the front portion of the thills, as shown and described.

378,448. FRICTION-CLUTCH. WILLIS C. JONES and WINFIELD S. ROGERS, Cincinnati, Ohio. Filed Oct. 15, 1887. Serial No. 252,413. (No model.)



Claim.—1. In friction-clutches, the combination, substantially as set forth, of a pulley having a bore to fit its shaft, said bore being counterbored at one end, a shaft fitting the bore of the pulley, an integral ring fitting said shaft and filling said counterbore and provided with a wedge-shaped gap and secured to the shaft, as by a pin, a wedge shifting collar fitted to said shaft, a wedge secured to said collar and projecting therefrom along and directly against the shaft into engagement with said gap, and a collar fast on the shaft at the rear of the pulley.

2. In friction-clutches, the combination, substantially as set forth, of a shaft, a friction-ring provided with a wedge-shaped gap and fitting upon the shaft and secured thereto, as by a pin, a wedge-shifting collar fitted to said shaft, a wedge secured thereto and projecting along the shaft into engagement with the gap of the friction-ring, a journal-box engaging the shaft, a collar secured to said journal-box and projecting endwise therefrom, and a pulley provided with a counterbore on each of its hub-faces engaging, respectively, said friction-ring and collar.

3. In friction-clutches, the combination, substantially as set forth, of a shaft, a pulley with a counterbore, a friction-ring provided with a wedge-shaped gap and secured to said shaft and fitting said counterbore, a collar on the shaft opposite the friction-ring, a wedge-shifting collar, and a wedge secured thereto and fitted to slide upon said shaft and engaging the friction-ring with its inner end, said wedge having a transverse notch engaging the notch of the wedge-shifting collar.

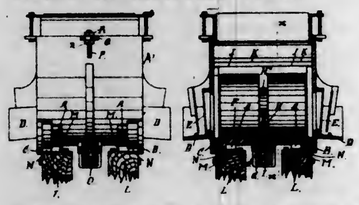
378,449. STOVE. A. LESLIE KENDALL, Brooklyn, assignor to William Stanley, New York, N. Y. Filed Aug. 2, 1887. Serial No. 245,941. (No model.)



Claim.—1. The combination of a stove cover or lid and a stove-top provided with a slot or slots adjacent to and extending under the cover, substantially as and for the purposes set forth.

2. The combination of a stove-cover and a stove-top provided with an opening for the cover, and having in its upper surface a slot or depression extending under and partially overlapped by the cover when the latter is in position on the cover-opening, substantially as and for the purposes set forth.

378,450. ORE-CRUSHER. STEPHEN KENDALL, San Francisco, Cal. Filed Dec. 11, 1886. Serial No. 221,342. (No model.)



Claim.—The combination of the rocking pan with the movable die or lining formed in sections, each having a rib or rounded projection on its upper face to form a flange or dividing-ridge, and a grooved roller in said pan straddling the flange as a guide for the roller, substantially as described.

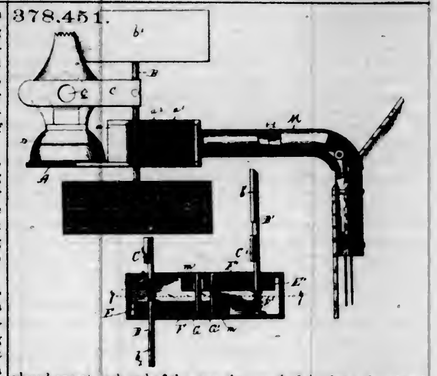
378,451. RAILROAD-SIGNAL. TRUMAN C. LEWIS, Delaware, Ohio. Filed Sept. 13, 1887. Serial No. 249,604. (No model.)

Claim.—1. A railroad-signal comprising the following elements in combination: a case, the two parallel shafts placed at opposite ends of the case, the pinions keyed to the shafts, the two independent gear-wheels, one gear-wheel meshing with one of the said pinions and the other gear-wheel with the other, and the two operating connections fastened at one end to the said gear-wheels, and having their other end extending within convenient reach, substantially as described, for the purpose specified.

2. In a railroad-signal, the combination, with the platform, the case erected on a part of the platform, and the two shafts provided with day and night signals, the night-signals extending over the platform to project across the lamp placed thereon, of the pinions keyed to the shafts, the gear-wheels meshing with the pinions, the operating-cords, and the spiral springs, substantially as and for the purpose described.

3. In a railroad-signal, the combination, with the case and the platform extended therefrom to receive a lamp, of the two shafts

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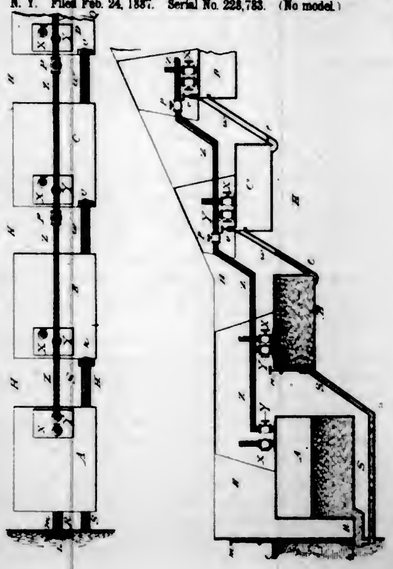


placed one at each end of the case, the one shaft having a day-signal below the platform and a night-signal above the case, and the other shaft having a corresponding night-signal and a day-signal above the case, the night-signals extending across or in front of the platform, and mechanism, substantially as described, for operating the shafts independently of each other, substantially as described.

4. In a railroad-signal, the combination, with the case, the shaft carrying a signal, and the spiral spring, of the pinion keyed to the shaft, the gear-wheel meshing with the pinion and having a slot, the shaft passing through the slot for limiting the movement of the gear-wheel in each direction, and the operating-cord, substantially as specified.

5. In a railroad-signal, the herein shown and described signal, composed of the platform, the case erected on the rear part of the platform, the two shafts placed at opposite ends of the case and extended above and below the same, the flag-signal secured to one of the shafts below the platform, and the night-signal secured thereto above the case, the corresponding night-signal and the flag-signal secured to the other shaft above the case, the night-signals extending in front of and on each side of the platform, the spiral springs, the pinions, the gear-wheels meshing with the pinions and having slots, the shaft of one gear-wheel passing through the slot of the other gear-wheel, and the operating-cords secured to the gear-wheels and extending within convenient reach, substantially as set forth.

378,452. TIDE-WATER ELEVATOR OR SYSTEM OF UTILIZING THE RISE AND FALL OF THE TIDES. ERNEST P. LOBER, New York, N. Y. Filed Feb. 24, 1887. Serial No. 228,783. (No model.)

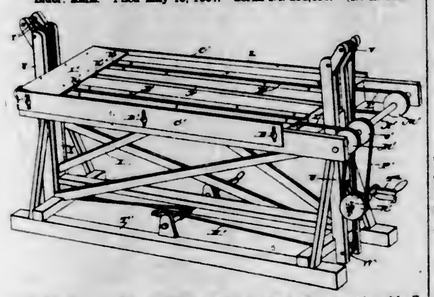


Claim.—1. The combination, with the compressor A, having an opening, R, controlled by a gate, *m*, for the ingress and egress of tide-water, of a valve, X, to the open air, and a pipe, Z, with valves Y and P, which is used exclusively for the passage of air from and to compressor A and the reservoirs B C D and any succeeding similar reservoirs, substantially as set forth.

2. The combination, with the reservoir B, having an inlet, S, for the liquid to be elevated, controlled by a gate, *n*, and an outlet for the passage of liquid into reservoir C, indicated by *w*, supplied with a check-valve, *t*, of a valve, X, to the air, and the pipe Z, used for the passage of air from compresser A to B, which is furnished with valves P and Y for controlling the action or cutting B out of the circuit when not employed, substantially as set forth.

3. The combination, with the compressor A and its parts, of the reservoir B and its parts, together with the reservoir C, or any succeeding similar reservoir, having an inlet for the admission of liquid to be elevated from the preceding reservoir on a lower level, as B, indicated by *w* and controlled by the gate *v*, and an outlet for the passage of said liquid into a succeeding reservoir on a higher level, as D, marked *w*, supplied with a check-valve, *t*, also having a valve, X, to the open air, and the pipe Z, used for the passage of air from A to C, or any succeeding similar reservoir, and from C or any succeeding similar reservoir to A, supplied with valves P and Y, for controlling the action or for cutting C or any succeeding similar reservoir out of the circuit when not employed, substantially as set forth.

378,453. PLASTERING-MACHINE. DUDLEY W. MILES, Glen Elder, Kans. Filed May 13, 1887. Serial No. 238,130. (No model.)



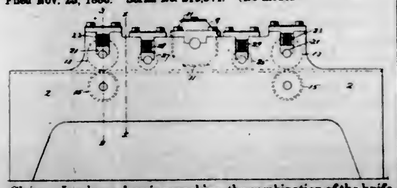
Claim.—1. The combination of the vertically-movable table Z, having the grooves B' and the vertically-adjustable sides C, with the longitudinally-movable plate I', arranged on the table and having the depending tongues fitting in the grooves B', for the purpose set forth, substantially as described.

2. The combination of the vertically-movable table, having the vertically-movable sides C, with the longitudinally-movable inclined plate I', arranged on the upper side of the table, substantially as described.

3. The combination of the table adapted to receive the mortar, having the grooves B', the pulleys at the ends of the table, the endless belts connecting the pulleys and extending through the grooves, and the longitudinally-movable plate arranged on the table and connected to the endless belts, substantially as described.

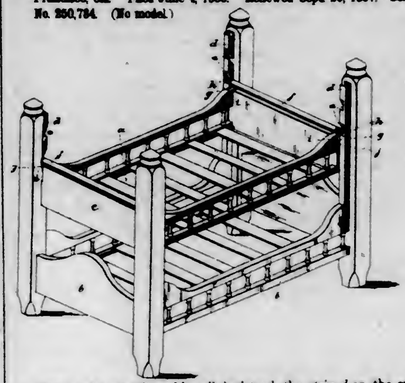
4. The combination of the table adapted to receive the mortar, the pulleys at the ends thereof, the endless belts connecting the pulleys and extending over the table, the longitudinally-movable plat arranged on the table and connected to the endless belts, the crank-shaft S', having the pulleys R', and the endless belt connecting the said pulley to the pulleys that operate the plate, substantially as described.

378,454. HOOP-DRESSING MACHINE. JOHN J. MOSER, Green Bay, Wis., assignor of one-half to Peter B. Warren, Minneapolis, Minn. Filed Nov. 23, 1886. Serial No. 219,571. (No model.)



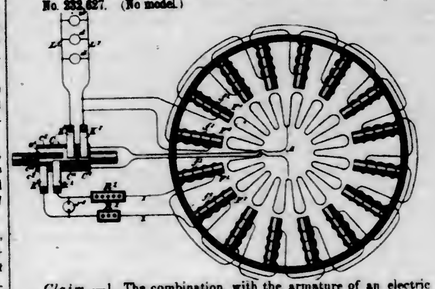
Claim.—In a hoop-dressing machine, the combination of the knife-cylinder 11, the two sets of feed-rolls 13 and 15 at opposite ends of the machine, the lower roll of each being formed with grooves corresponding in shape to the exterior of the hoops to be dressed, the revolving yielding pressure-rolls 25 and 27, located on opposite sides of said cylinder, between it and the feed-rolls, one of which pressure-rolls is adapted to strike the end of the moving hoop and exert a moving and yielding pressure thereon to press it toward the cutting-cylinder after leaving the front feed-rolls, and the bed-plate 3, formed with grooves corresponding to those in the feed-rolls, and extended from one set of feed-rolls to the other and under the pressure-rolls and knife-cylinder to form an unbroken grooved bed under the pressure-rolls and between the knife-cylinder and feed-rolls, substantially as described.

378,455. ADJUSTABLE CRIB-BEDSTEAD. CARRIE MOSES, San Francisco, Cal. Filed June 4, 1886. Renewed Sept. 26, 1887. Serial No. 250,784. (No model.)



Claim.—In an adjustable crib-bedstead, the strip *d* on the crib-bedstead posts, having recesses *e*, in which the bolts *h* or the ends of rods passing through the rollers are caught, the arms *g*, pivoted on bolts *j*, set in the cut *i*, and pivoted on bolts *h* in the rollers *f*, in combination with the adjustable bed-frame *c*, stationary bed-frame *b*, and crib-bedstead *a*, substantially as and for the purpose herein described.

378,456. SELF-EXCITING ALTERNATE-CURRENT ELECTRIC GENERATOR. OTTO A. MOSES, New York, N. Y., assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Mar. 28, 1887. Serial No. 232,627. (No model.)



Claim.—1. The combination, with the armature of an electric generator, of a series of field-magnets for the same and circuit-controlling devices connecting the alternate coils in circuit with the armature alternately.

2. The combination, with the armature of an electric generator, of field-magnet coils for the same arranged in two sets and circuit-controlling devices connecting alternate sets of the coils alternately in circuit.

3. The combination, with the armature of an electric generator, of field-magnet coils arranged in two sets and circuit-controlling devices therefor connecting one of said sets of coils in circuit with the armature during the production of currents of one polarity and the other set during the production of currents of the opposite polarity.

4. The combination, with the armature of an electric generator, of field-magnet coils arranged in two sets, the members of one of which sets are between one terminal of the armature-coils and its other terminal during the production of currents of a given polarity, and devices for connecting the other coils in circuit during the production of currents of the other polarity.

5. The combination, with the armature of an electric generator, of field-magnet coils arranged in two sets, the members of one of which

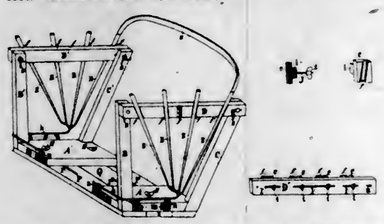
sets are between one terminal of the armature-coils and its other terminal during the production of currents of a given polarity, and devices for connecting the other coils in circuit with the armature in multiple arc during the production of currents of the other polarity.

6. The combination, with the armature of an electric generator, of two sets of alternately-arranged field-magnet cores and their respective coils, the coils of each set being arranged in multiple arc with each other, collecting-rings connected with the respective terminals of the armature-coils, contact-brushes respectively making alternate contact with one of said rings and respectively connected with one terminal of said sets of coils, and conductors respectively connecting the remaining terminals of said sets of coils with the contact-rings.

7. The hereinbefore-described method of maintaining the field of force of an alternate-current electric generator, which consists in establishing by successive currents of one polarity lines of magnetic force at certain points and by currents of the other polarity lines of force at other points.

8. The hereinbefore-described method of maintaining the field of force of an alternate-current electric generator, which consists in transmitting successive currents of one polarity through one circuit and successive currents of the other polarity through another circuit, and in causing such currents by their combined action to induce such field of force.

378,457. ADJUSTABLE FORM FOR SETTING AND BUILDING CARRIAGE-TOPS. CUMMINS C. OAKES, Newport, Me. Filed Sept. 17, 1887. Serial No. 249,958. (No model.)



Claim.—1. An adjustable form for setting and building carriage-tops, consisting of the movable bases longitudinally adjustable on parallel sliding bars and secured thereto by bolts passing through slots in the free ends of said bars, upwardly-projecting standards secured to said bases and connected at their upper ends by connecting-bars having angularly-disposed grooves on their outer faces, and means for securing the carriage-top rails to the base of the form, substantially as shown and described.

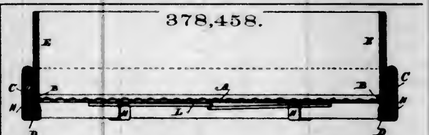
2. In a form for setting carriage-tops, an adjustable rail-supporter connected to the base of the form, consisting of the metallic plate *m*, having a longitudinal slot, *o*, through its center, a vertical iron, *n*, having a similar slot, *o'*, connected to the plate *m* by a bolt passing therethrough, said vertical iron above the plate being bent at an angle extending outward and having means to secure the top-rail at its outer extremity, substantially as described.

3. The adjustable connecting-bars, each having a longitudinal slot running through its center and adjustable blocks provided with a transverse groove across the outer face of each for receiving the carriage-top sockets, secured to the connecting-bars by bolts having thumb-nuts passing through said slots fastening the socket-blocks at any desired angle and distance on the bars, substantially as shown, and for the purpose described.

4. The combination of the adjustable base-blocks having secured thereto the upwardly-projecting standards having slots in their upper ends, the connecting-bars containing bolts extending through said slots in the upper end of the standards connecting them, the adjustable socket-holders having transverse socket-grooves secured to the connecting-bars by bolts having thumb-nuts passing through the longitudinal slots in said connecting-bar, and the adjustable rail-supporters consisting of metallic plates secured to the base-blocks, each plate having a slot running longitudinally through its center, and a vertical iron bent outward at its upper end, having a similar slot connected to the plate by a bolt passing through their respective slots, and having means to connect the carriage-top rail to said last-named iron, substantially as described.

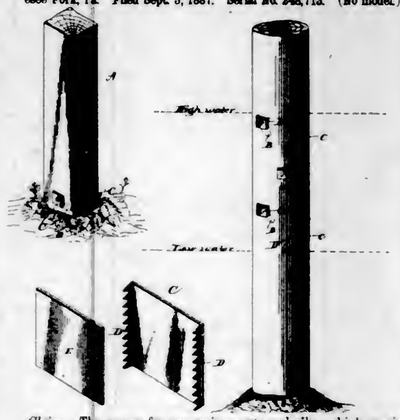
378,458. RIDDLE OR SIEVE. EBENEZER OLIVER, New York, N. Y., assignor to W. Shepard Estey, Jersey City, N. J. Filed Oct. 14, 1886. Serial No. 216,212. (No model.)

Claim.—1. The combination, with the screen or riddle A, of the body-hoop C and inner hoop, D, and the vertical metallic clamping-bands H, inclosing the top edge of the body-hoop C and the bottom edges of the body and inner hoops, and the removable cylindrical body E, substantially as specified.



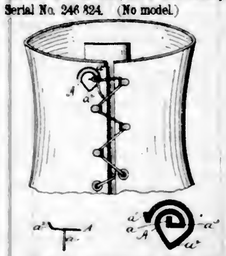
2. The combination, with the screen A, having a metallic band around its edge, of the inner hoop, D, upon which the edges of the screen rest, the body-hoop C, inclosing the screen and the inner hoop, the vertical metallic clamping-bands H, inclosing the top edge of the body-hoop C and the bottom edges of the body and inner hoops C D, and the removable cylindrical body E, within the body-hoop C, and resting at its lower edge upon the band B of the screen, substantially as set forth.

378,459. PRESERVING POSTS, &c. CHARLES W. PARKER, Geneseo Fork, Pa. Filed Sept. 3, 1887. Serial No. 248,713. (No model.)



Claim.—The means for preserving posts and piles, which consists in the combination of inclined holes bored in the said posts and piles at the points where they are subject to alternate wetting and drying, a preserving material placed in the said holes, and cans fitted over the said holes and provided on the inner surface with a soft material and teeth upon their edges to hold them in place.

378,460. FASTENING DEVICE. CHARLES H. PRATT, Butte City, assignor of one-half to C. M. Buck, Silver Bow County, Mont. Filed Aug. 13, 1887. Serial No. 246,824. (No model.)



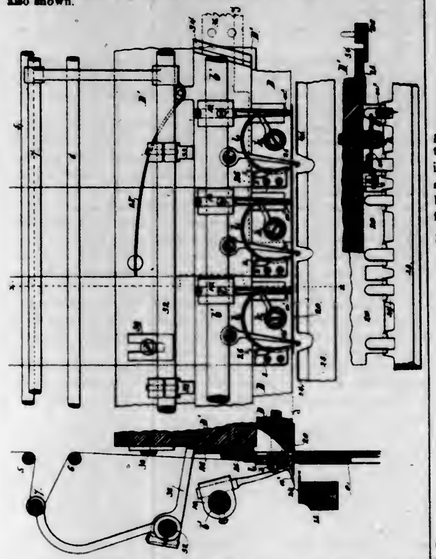
Claim.—1. In the herein-described fastening device, a helix of spring metal, the coils of which lie in substantially the same plane, having the turned-up lip a^2, and having, also, means whereby the ends of said helix may be secured to any desired article, substantially as and for the purpose specified.

2. A fastener for shoes, gloves, &c., consisting of a helix of spring metal, the coils of which lie in substantially the same plane, having the arms *a a'* and the turned-up lip a^2, substantially as and for the purpose specified.

3. A fastener for shoes, gloves, &c., consisting of a helix of spring metal, the coils of which lie in substantially the same plane, having the arms *a a'*, the turned-up lip a^2, and an abrupt bend near the center of the helix and in the direction of its curvature, substantially as and for the purpose specified.

378,461. BOOK-SEWING MACHINE. JOHN R. REYNOLDS, Hartford, Conn., assignor to the Smyth Manufacturing Company, same place. Filed Aug. 14, 1886. Serial No. 210,898. (No model.)

Brief.—An improvement on the Smyth type of machine, in which the semicircular needles all stand in the same direction and the groove in the back extends entirely to the point. Take-up and looping devices and a plate for holding the signature firmly upon the arm are also shown.



Claim.—1. The combination, in a book-sewing machine, of a range of semicircular needles, all standing in the same direction and moving simultaneously to carry the threads through the signatures, loopers to hold the threads as the needles draw back and to present the loops to the same needles from which the threads were drawn after such needles have passed through the next signature, and means for operating the said needles and loopers, thereby uniting the signatures by the ranges of interlooped threads, substantially as set forth.

2. The combination, in a book-sewing machine, of semicircular needles, shafts for holding and oscillating such needles, loopers for taking loops from the needles as the points emerge from the signatures, and means, substantially as specified, for moving the loopers to present the loops to the same needles at the next stitch, and loop-tighteners and mechanism for moving the same and drawing up the respective stitches, substantially as set forth.

3. The combination, with the loopers and looper-shaft, of a sleeve with inclined slots, a cross-pin and collar, a spring between the sleeve and the looper-shaft, and stops to limit the end movement given to the looper-shaft, whereby the looper-shaft is turned and the loopers swung by a continuation of the end movement given to the sleeve, substantially as set forth.

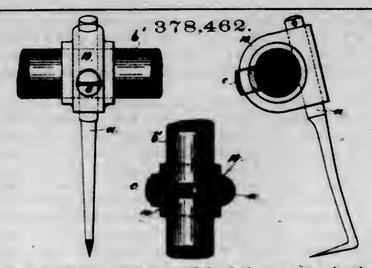
4. The combination, with the semicircular needles and the shafts for the same, of the loopers and the notched plate 20, projecting from the under side of the bar D and against which the fold of the signature rests while the sewing is performed, substantially as set forth.

5. The combination, in a book-sewing machine, of the semicircular needles and their shafts, the loopers and looper-shaft, the arms for holding the signature while being sewed, the notched plate 20, against which the signature is held, and the bar for pushing the signatures back, and the loop-tighteners that pass in between the sewed signature and the signature that is presented for sewing, substantially as set forth.

6. The semicircular or nearly semicircular needle having a groove upon its periphery extending from the shank to the point, and an eye through the needle near the point and opening into the groove, in combination with the grooved guide-block 2, substantially as set forth.

378,462. CLAMP FOR LOOPERS FOR SEWING-MACHINES. JOHN R. REYNOLDS, Hartford, Conn., assignor to the Smyth Manufacturing Company, same place. Filed June 11, 1887. Serial No. 240,995. (No model.)

Claim.—The combination, with the shaft having a peripheral



groove, of a clamping-collar around the shaft, a screw passing through the collar at one side, and a transverse hole passing across the clamping collar at the other side, and a looper or other instrument having a cylindrical shank to pass into the hole and be clamped to the shaft by the action of the screw after being adjusted, substantially as specified.

378,463. CULTIVATOR. NICHOLAS ROSSY, Walnut, Ill. Filed Dec. 1, 1887. Serial No. 256,701. (No model.)

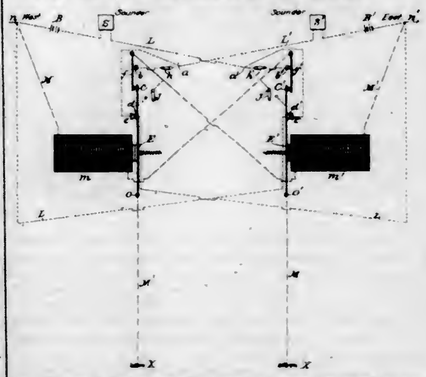


Claim.—1. In a cultivator, the stem A, provided with the foot B and upwardly-formed divergent angles C C therein, substantially as shown, and for the purpose described.

2. The knife D, provided with the divergent upward angles E E therein, and the depressed front portion, F, and slightly-raised rear portion, G, substantially as shown, and for the purpose described.

3. In a cultivator, the combination of the stem A, provided with the supporting-foot B, with divergent upward angles C C therein, and the knife D, provided with the upward divergent angles E E, and the downwardly-depressed portion F and rearwardly-depressed portion G, substantially as shown, and for the purpose described

378,464. TELEGRAPH-REPEATER. LOUIS RUSSELL, Cherokee, Kans. Filed June 4, 1886. Serial No. 204,123. (No model.)



Claim.—1. In a system of telegraphy, the combination of two normally-closed main circuits, two normally-closed local circuits, a helix in each main circuit, an armature to each helix, a retractile spring to each armature, a contact-point mechanically connected to each armature, but electrically insulated therefrom, and each in one of said local circuits, spring contact-levers in each main circuit and pressing upon con-

tacts mechanically connected with said armatures and electrically connected to earth, and contact-points forming branch circuits to said local circuits and normally out of contact with said spring contact-levers, the said local circuits being electrically connected to said main circuits.

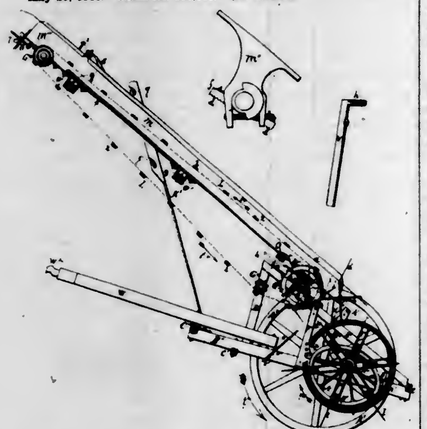
2. In a system of telegraphy, the combination of an east main line normally including at any way-station a helix, a spring contact-lever, the east main line containing also a contact-point having operating-connection with the armature of a helix which is located in the west main line and with an earth-terminal and pressing upon said lever, a second helix, a second spring contact-lever, both located in a west main line, a second contact-point having electrical connection with the armature of the first-named helix and with an earth-terminal, and pressing upon a spring contact-lever which is in said west main line, two normally-closed local circuits, each passing through a contact having operating-connection the one with one helix and armature and the other with the other helix and armature, one local circuit being electrically connected with one main line and the other with the other main line, and branch circuits from each local circuit terminating in contact-points normally separated from said contact spring-levers.

378,465. KNITTED UNDER-GARMENT. JEREMIAH A. SCRIVEN, New York, N. Y. Filed Dec. 30, 1885. Serial No. 187,094. (No model.)



Claim.—An under-garment consisting of the longitudinally-elastic knitted body A and the laterally and longitudinally elastic knitted insertions B between the longitudinal sections of the body A, the said insertions being more elastic than the body A, as specified.

378,466. HAY RAKE AND LOADER. CHARLES P. SLAGHT, Iowa City, assignor of one-third to Louis R. Chamberlin, Tiffin, Iowa. Filed May 29, 1885. Serial No. 167,009. (No model.)



Claim.—1. The combination, with the rotating raking-cylinder in a hay rake and loader, of two stationary dividers hung in proximity to the ends of the cylinder, each of said dividers being smaller at its inner end next the cylinder than at its outer end, and the inner end being curved to approximate an arc of the circle of the cylinder, and hung at such height as to correspond substantially with the position of the lowest arc of the cylinder end, substantially as shown and described, and for the purpose set forth.

2. The combination of the vertically-adjustable cylinder I, the dividers 8' 8', hung in proximity to the ends of the cylinder, and formed substantially as shown and described, and means, substantially as shown and described, for raising and lowering said dividers to correspond with the adjustment of the cylinder, substantially as and for the purpose set forth.

3. The combination, with the rotating raking-cylinder I, of the stop-board L', adapted to prevent the carrying of the hay raised by the cylinder beyond the point desired, together with the means, substantially as shown and described, for adjusting said stop-board, and thus changing its position with reference to the cylinder.

4. The combination, with the vertically-adjustable raking-cylinder I, of the stop-board L', placed above said cylinder, the rod e, adapted to adjust the stop-board backward or forward with reference to the body of the machine, and the means shown and described for changing the vertical position of the board with reference to the foot K, to which each end is pivoted, substantially as and for the purpose set forth.

5. The combination of the cylinder I, the stop-board L', and the fingers *d*, fastened to the front of the stop-board and extending forward along the surface of the cylinder, substantially as shown and described, and for the purpose set forth.

6. The combination, in a hay-loader, of a rotating raking-cylinder, a stop-board above the cylinder adapted to prevent the carrying of hay over the cylinder, an endless elevator adapted to take the hay from the cylinder and carry it forward and discharge it, a compressor or condenser above said elevator consisting of a series of rods whose front ends are fastened to a vertically-adjustable cross-bar, and a series of guides fastened to said stop-board and corresponding in number to said condenser-rods, each of said guides being adapted to permit vertical but not lateral motion of the rear end of one of said rods, substantially as shown and described, and for the purpose set forth.

7. The combination of the cylinder I, the stop-board L', the sprocket-wheels G'' G'', an endless elevator, L, the rods *a*, and cross-bar *g'*, and the staples *b*, secured to the stop-board L' and regulating the movements of the free ends of the rods *a*, substantially as shown and described, and for the purpose set forth.

8. The combination of the side boards, M, sprocket-wheels G'' G'', endless elevator L, the cross-bar *g'*, hinged links 6, the rods *a*, staples *b*, and stop-board L', substantially as shown and described, and for the purpose set forth.

9. The combination of the sprocket-wheels G'' G'', the endless chains L, running over said sprocket-wheels, suitable slats fastened to said chains to form an endless hay-carrying elevator, a series of rocking levers, V, pivoted to each of the sprocket-wheels G'' G'' and arranged in corresponding positions on the two wheels, a series of slats, i, extending from one series of levers to the other and fastened to the corresponding levers of each set, and means, substantially as shown and described, whereby said slats are alternately thrown outward from the axis of the wheels G'' by the chains L, and drawn inward toward said axis by their own weight, substantially as shown and described, and for the purpose set forth.

10. The combination of the sprocket-wheels G'' G'', the chains L, the levers V, rocking on pivots *k*, the slats *i*, fastened to the ends of the levers, the teeth *j*, set on said slats, and the fingers *h*, formed on the levers and adapted to engage the chains L, substantially as shown and described, and for the purpose set forth.

11. The combination, with the side boards, M, cross-bars O O'', sprocket-wheels G'' G'', and endless elevator L, of the rods *p*, converging from rear to front, fastened at their front ends to the cross-bar O'' and passing through the cross-bar O, or an attachment thereof, together with nuts engaging the ends of said rods and adapted to draw them tight, substantially as shown and described, and for the purpose set forth.

12. The combination of the cross-bars O O'', the rods *p*, bent downward at their front ends, the plates *q'*, fastened to the cross-bar O'', and engaging the ends of the rods *p*, and nuts on the rear ends of the rods for tightening the same, substantially as described and shown, and for the purpose set forth.

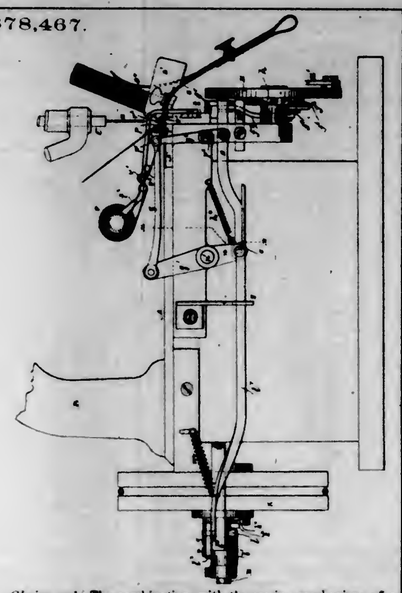
13. The combination, with the main frame of the machine, of the cams H H', attached to the opposite sides of the said frame by means, substantially as shown and described, adapted to permit vertical adjustment of both ends of each of said cams, substantially as shown and described, and for the purpose set forth.

14. The combination of the main frame of the machine, cams H H', fastened to said frame by means adapted to allow vertical adjustment of both ends of each cam, the shaft H'', journaled in said cams, the cylinder I, fastened to and rotating with said shaft, and the rakes N, rotating with said cylinder, but thrown in and out with reference to the shaft by the cams H H', substantially as shown and described, and for the purpose set forth.

378,467. BOOK-SEWING MACHINE. DAVID M. SMYTH, Hartford, Conn., assignor to the Smyth Manufacturing Company, same place. Filed May 27, 1886. Serial No. 203,357. (No model.)

Brief.—The signature-carrying table, which has a convex surface upon which the back edges of the sewed signatures rest, is moved under the needle in a step-by-step manner. An automatic stop mechanism stops the operation of the machine at the end of the stitching of each signature. The signatures are stitched to a strip of fabric.

378,467.



Claim.—1. The combination, with the sewing mechanism, of a table and arms carrying a roller and a strip of fabric, a feed mechanism to move the table progressively, the signature-needles, the bar r^3, and arms r^2, carrying the signature-needles, substantially as set forth.

2. The combination, with the sewing mechanism and the table for holding and moving the signatures, of a feed mechanism for acting upon the table, and the disk E, cam-studs *h*, stop-bar H, the bolt *i*, crank-arm k^3, and mechanism, substantially as specified, connected to the stop-bar H and operating the arm k^4, for stopping the machine automatically at the completion of the sewing of each signature, substantially as set forth.

3. The combination, with the sewing mechanism and the table for holding and moving the sheets, of the mechanism for moving the table, the signature-needles, the bar for holding the same, and the cam-disk E, stop-bar H, rock-shaft *n'*, cranks *n* and *q'*, and links for moving the sewed signature away from the path of the needle, substantially as set forth.

4. The combination, with the sewing mechanism and the table for holding and moving the signatures, of the disk E, link E', lever E^3, link E^4, and slide *t*, to hold and move the table, the step-by-step mechanism to rotate the disk E, the cams *h*, stop-bar H, crank *n*, notched rod l^9, lever l^2, sleeve l', finger *l*, and clutch-bolt, main shaft D, and driving-wheel K, substantially as set forth.

5. The combination, with the sewing mechanism and means for moving back the successive signatures after being sewed, of a table having a convex surface upon which the folded back edge of the sewed signatures are supported, substantially as and for the purposes specified.

6. The combination, with the sewing mechanism, means for moving back the sewed signatures, a table for supporting the sewed signatures, and means for reciprocating the table, of the signature-needle r^4 for keeping open and holding each signature in place while being sewed, substantially as and for the purposes specified.

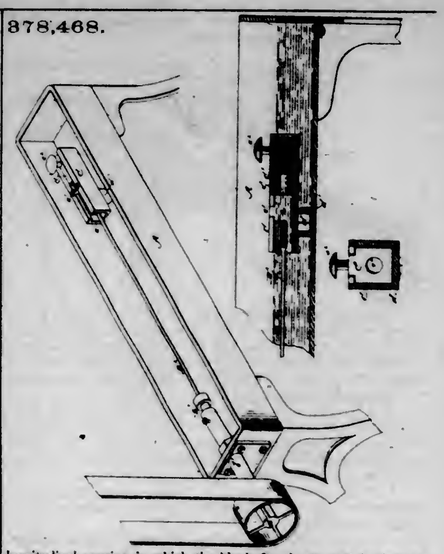
378,468. MACHINE FOR TAPPING NUTS. FREDERICK M. STEELE, Chicago, Ill., administrator of Lewis Wilkinson, deceased. Filed Apr. 23, 1887. Serial No. 235,911. (No model.)

Claim.—1. In a machine for tapping nuts, the combination, with a revolving tap, of a stationary guide provided with a slot or passage of the size and shape of the nut, and a slide therein to press the blank to the tap, substantially as and for the purpose set forth.

2. In a machine for tapping nuts, a blank-holder formed with a passage in which the blank is held, and having an opening in one side for the insertion of the blanks, in combination with a slide therein for pressing the blank to the tap, substantially as and for the purpose set forth.

3. In a machine for tapping nuts, the combination, with a box or receptacle for holding oil, of a removable blank-holder formed with a

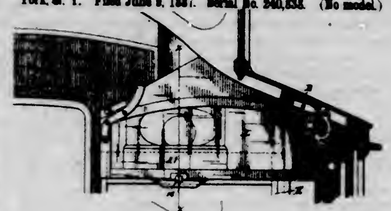
378,468.



longitudinal opening in which the blank fits closely, and having an opening in one side just large enough to admit a single blank, and a pressure-slide behind the blank having its forward end recessed, substantially as and for the purpose set forth.

4. The box A, provided with a driving-shaft, B, having a clutch, B^2, and tap B^3, and partially filled with oil, in combination with the removable blank-holder C, formed with the longitudinal hole e and side slot, *c'*, and the slide C', all constructed and arranged to operate substantially as and for the purpose set forth.

378,469. TRAM-CAR LAMP-HOUSE. JOHN STEPHENSON, New York, N. Y. Filed June 9, 1887. Serial No. 240,535. (No model.)



Claim.—1. A tram-car having a lamp-house the door of which is hinged on a line approximating the plane of the car-roof, so that the outer end of the door may swing higher than the end toward the side wall of the car, as and for the purposes described.

2. A tram-car with the floor of its lamp-house lessened in width to make space behind the floor for the upraised end sash, and the lower section of the lamp-house back wall with the end sub top rail constituting the side walls and ceiling of a chamber occupied by the head-rail of the end sash, as and for the purpose described.

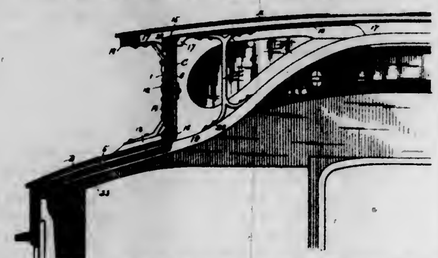
3. A lamp-house having a door hinged at the top, with the hinge-joints at an angle with the horizon, the hinges having limbs secured to the head-rail and stile of the door, so that when the door is open it will conform somewhat to the plane of the car-ceiling, as and for the purposes described.

4. A tram-car lamp-house with its door-head arched and hinged at an angle corresponding to the shape of the car-roof, the hinge made of curved form, with limbs to fasten to stile and head-rail of the door, as and for the purpose described.

5. A tram-car with its lamp-house constructed with a floor cut away at its back edge and its rear wall rising therefrom vertically for a desired distance, and thence horizontally till it contacts with the sub top rail, to which it is properly secured to be air-tight, and with air-ducts at the lower edge of the end head-panel and diagonally through the end top rail and into the lamp-chamber, as and for the purpose described.

378,470. TRAM-CAR ROOF. JOHN STEPHENSON, New York, N. Y.

Filed June 9, 1887. Serial No. 240,839. (No model.)



Claim.—1. A tram-car having the longitudinally-central part of its roof elevated, and with the side walls of the elevation built upon the rafters, the end sections of each side wall occupied with adjustable ventilators, and the central space between those end vent-sections occupied with fixed glass having lettering visible day and night, as and for the purpose described.

2. A tram-car with transparent lettering panel in a fixed frame lodged on the car-roof, distant from its edge, the vent-sill intervening between the lettering glass frame and the roof-rafters, and the vent top rail intervening between the lettering glass frame and the cross-rafters, as and for the purpose described.

3. A tram-car with "Bombay top," bulk-heads opened, and in the openings fixed glass signals illuminated by the car-lamps, as and for the purpose described.

4. A tram-car with its ceiling over the seats at the inclined part of the roof perforated at its lower and upper margins, and placed at a distance below the roof-boards, permitting air to enter the lower perforations and pass upward between the roof and ceiling, and out through the upper holes, escaping at openings above, as and for the purpose described.

5. A tram-car with a lettered glass frame in the side walls of the elevated roof, the frame supported at each end by a stile-plate, one edge of which is secured to the frame and the other edge serrated in unison with the vent-pillar stay, and fastened to the same vent-pillar, as and for the purpose described.

6. A tram-car with lettered glass frame resting on the roof-rafters, and with cross-rafters resting on the lettered glass frame, the cross and roof rafters held from separation by stays remote from the side walls of the elevated roof, as and for the purpose described.

7. A tram-car with lettered glass side walls to the elevated roof mounted in a channeled metal frame, and the section-joints of the glass filled with lead or other suitable substance, as and for the purpose described.

8. A tram-car with parts of the roof over the seats inclined and ceiled with perforated panels, unobstructed air-spaces between the ceiling and the roof-boards, perforations near the lower and upper ends of the side ceiling panels, and above the upper ends of the ceiling panels in the side walls of the elevated roof openings or passages for outgoing air, as and for the purpose described.

378,471. TRAM-CAR SASH-RAIL. JOHN STEPHENSON, New York, N. Y.

Filed June 9, 1887. Serial No. 240,840. (No model.)

Claim.—1. A car-body with its sub top rails made wider, (deeper,) its sash-runs extended upward behind the widened sub top rail, obscuring the sash head-rail, the pillar-caps lengthened to accord with the new form of pillars, and the sash-runs extended downward to carry down the increased length of sash, as and for the purpose described.

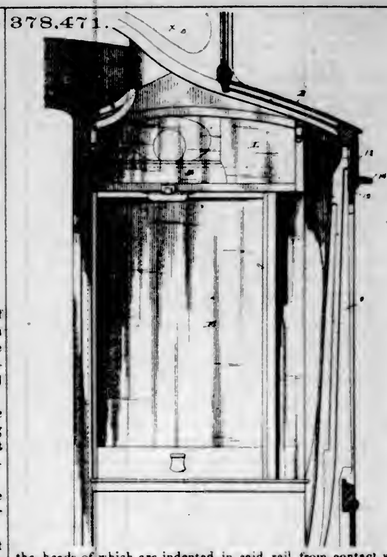
2. A tram-car with its end window-sashes extending upward above the floor of the lamp-house between the rear wall of the lamp-house and the end sub top rail of the car-body, and the head-rail of the sash exposing a portion obscured to correspond in width with the metal side stiles, as and for the purpose described.

3. A tram-car with its end window-sashes extending upward between the door-carrying rail and the end sub top rail of the body, and the head-rail of the sash obscured, as and for the purpose described.

4. A tram-car with the head-rails of its window-sashes sliding up and obscured behind the sub top rail, the sub top rails channel-molded, and the drip-rails secured by screws inserted through the sub top rail,



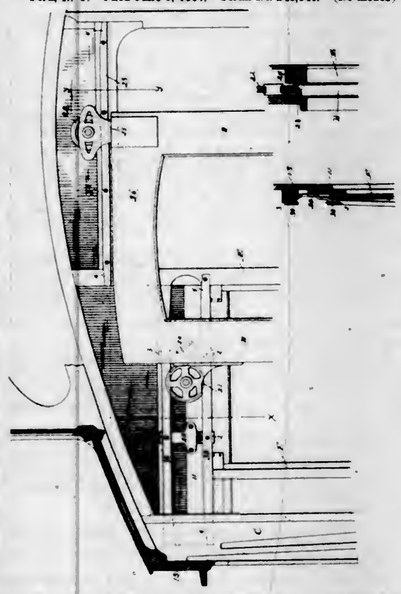
378,471.



the heads of which are indented in said rail from contact with the sash-head, as and for the purpose described.

378,472. TRAM-CAR-DOOR HANGING. JOHN STEPHENSON, New York, N. Y.

Filed June 9, 1887. Serial No. 240,841. (No model.)



Claim.—1. A sliding-door hanger for tram-cars, consisting of a sheave mounted on the top of the door and traveling on a rail secured to the lintel above the door-opening, a second sheave mounted on the door on a level below the other sheave, a rail, and a bracket adapted to suspend said rail a distance removed from the car end and on which rail said second sheave is adapted to travel, substantially as described.

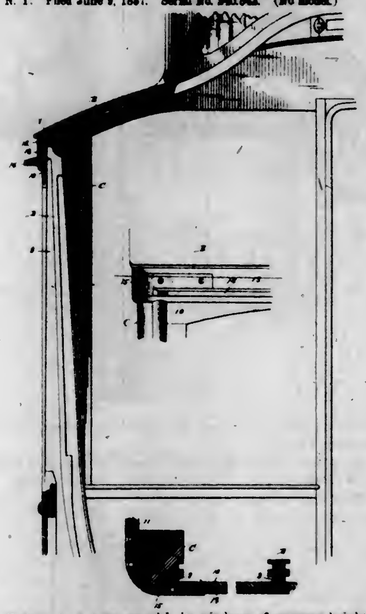
2. A sliding-door hanger for tram-cars, consisting of two sheaves mounted on the door at different levels, a rail for the upper sheave, a rail upon which the lower sheave is adapted to travel, and a bracket sustaining said rail secured to the car end to leave a space between

the rail and bracket and the car end for the passage of the head-rail of a window-sash, as and for the purpose described.

3. A sliding-door hanger for tram-cars, consisting of one sheave mounted on top of the door, a rail secured above the door-lintel upon which said sheave travels, a second sheave mounted to the back edge of the door and traveling on a rail below the level of the first rail, and brackets supporting said second rail to extend a distance from the head-panel of the car end to allow the head-rail of the end sash to pass between said panel and the brackets and rail, as and for the purpose described.

378,473. TRAM-CAR WINDOW. JOHN STEPHENSON, New York, N. Y.

Filed June 9, 1887. Serial No. 240,842. (No model.)



Claim.—1. A tram-car with its windows of extreme height and with its side pillars gained into the sub top rail, and the sub top rail gained into the side pillars, as and for the purpose described.

2. A tram-car with sashes of extreme height and the sub top rails contacting the top rails and gained into the side pillars, and the side pillars gained into the sub top rails, the sub top rails groove-molded on their inner faces, in which grooves are lodged out of contact with the sashes the heads of screws holding the drip rails or ledges, as and for the purpose described.

3. A tram-car with its sub top rail in contact with the top rail and gained into the side pillars, which are also gained into the sub top rail, and the sash-run extended up so near the head of the pillar that the arched head-rails of the sashes may reach the top rail, the lower parts of the side pillars curved, and the sash-runs continued downward to the car-sill, so that the sashes when dropped are supported by the car-sill, as and for the purpose described.

4. A tram-car with sashes of extreme height and the sub top rails raised up to the top rails of the car-body, the sub top rails gained into the side pillars and the side pillars into the sub top rails, with the framing-joints covered externally by a panel and its ends secured by metal plates reaching around the corners of the body, and with each corner-plate combining the corner pillar with its side and end top rails, side and end sub top rails, and side and end top panels, as and for the purpose described.

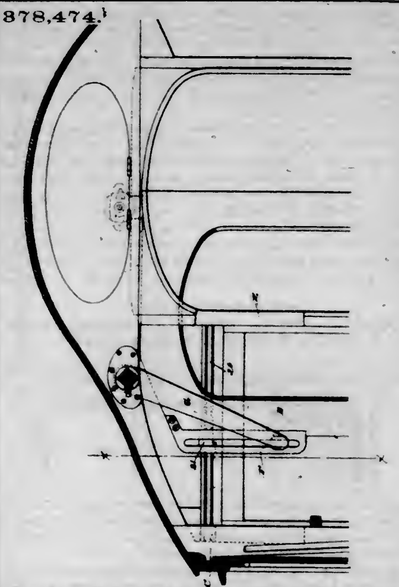
378,474. TRAM-CAR-DOOR HANGER. JOHN STEPHENSON, New York, N. Y.

Filed June 17, 1887. Serial No. 241,636. (No model.)

Claim.—1. A tram-car with its door-edge fastened to a metal bar, a slotted frame forming part of said bar and having as part of itself a slide for carrying its side of the door, as and for the purpose described.

2. A tram-car provided with a door-carrying rail, a sliding device secured to the door, adapted to slide on said rail and flanged to contact with four sides of the rail, as and for the purpose set forth.

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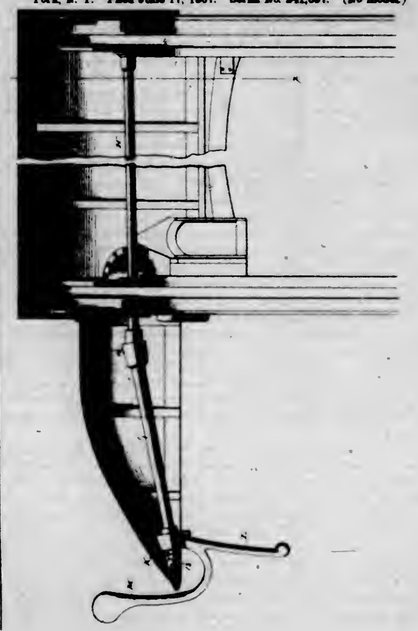


3. In a tram-car, a sliding device secured to the door, having in its upper or bearing surface a socket and a shoe-bearing with a stem or projection extending into or through the socket in the upper wall of the slide, as and for the purpose described.

4. A tram-car-door slide device consisting of a carrying-rail and a slotted frame secured to the side of the door, having a slide adapted to the rail formed integral with the slotted frame, as and for the purpose described.

378,475. TRAM-CAR-DOOR OPERATOR. JOHN STEPHENSON, New York, N. Y.

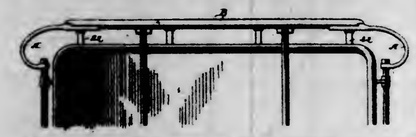
Filed June 17, 1887. Serial No. 241,637. (No model.)



Claim.—1. A tram-car having a sliding door at one end of the car adapted to be operated by the driver at the other end, a rock-shaft connected to the door and extending to the forward part of the car, a handle connected to the rock-shaft for operating it, and a weighted counter-balance, also connected to the rock-shaft, whereby the door may be operated by the driver and held open or shut by the counter-balance, substantially as described.

2. In a tram-car, the combination of its door, an inclined section of a rock-shaft supported over the platform and having its outer end supported by the car-bonnet, a handle secured to said rock-shaft and having a loaded or weighted extension to balance and hold the door open or closed when so placed, a second or main section of rock-shaft extending between the inclined section and the door united to the said section by a flexible joint, an arm secured to the end of the main section of rock-shaft adapted to move between the end car-wall and its partition, and a slotted frame secured to the rear of the door engaged by a pin on said arm, all substantially as and for the purpose described.

378,476. TRAM-CAR DASH-CAP. JOHN STEPHENSON, New York, N. Y. Filed July 21, 1887. Serial No. 244,916. (No model.)



Claim.—1. A tram-car having its dash-rail covered with a different metal, preferably the same as the dash-handles, with which the cap joins at each end, overlapping on their top side and grasping the two vertical sides, as and for the purpose described.

2. A tram-car with its platform dash-rail covered with a shell of bronze or other metal secured in position by screws from beneath and through the iron dash-rail and into the metal cap, as and for the purpose described.

3. A tram-car with its platform dash-rail covered with a shell of bronze or other metal, the shell having cross-bars uniting the two sides of the shell, and the bars fitted to the dash-rail and secured by bolts hooking over or into the bars and passing down through the dash-rail and fastened with screw-nuts beneath, as and for the purpose described.

4. A tram-car with usual iron dash-rail capped with bronze or other metal having unbroken or unperforated surface, and its ends, in conjunction with handles of similar metal, united to dash-rail by tenon-and-socket joint, fastened together by the head of the dash-pillar passing through tenon and socket and secured by a nut above the dash-rail covered by the dash-rail cap, as and for the purpose described.

5. A tram-car dash-rail capped with bronze or other metal corresponding with the dash-handles, the ends of the cap fitted to the top and sides of the handle-socket, preventing displacement and so harmonizing in finish with the handles as to give the dash-cap and dash-handles appearance of oneness, as and for the purpose described.

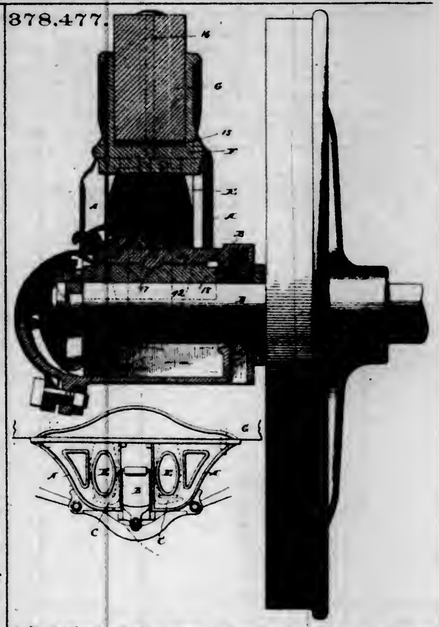
378,477. CAR-AXLE BOX. JOHN STEPHENSON, New York, N. Y. Filed July 21, 1887. Serial No. 244,917. (No model.)

Claim.—1. A car-axle-box shell with its ceiling having a cross-bar centrally located between the front and rear walls, the cross-bar indented into the upper surface of the journal-bearing, the contracting vertical walls of the indent and cross-bar not parallel to each other, but diverging from their centers endward, whereby the indent and cross-bar, while holding the bearing central to the axle-journal, permit the bearing to take any position within the box-shell to which the axle-journal may incline, as and for the purpose described.

2. A tram-car pedestal holding within its jaws an axle-box having a definitely-located saddle, its pendent limbs carrying at each side of the box a bearing-spring with freedom for swinging motion, and a rubber or other elastic cushion between the pedestal bed-plate and the body-sill, to which the pedestal is fastened by vertical bolts central to and at right angle with the axle-journal, as and for the purpose described.

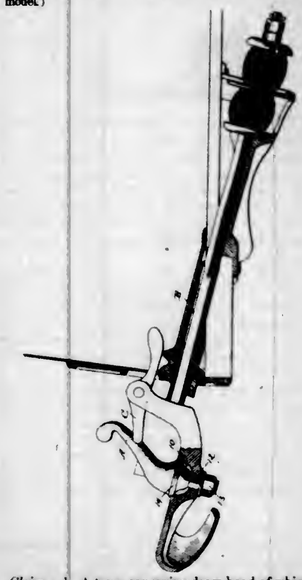
3. A tram-car axle-box straddled by a saddle confined central to an axle journal-bearing, each pendent limb terminating in a shell for a bearing-spring, having liberty for transverse swinging motion, the axle-box shell with its ceiling having a cross-bar centrally located between the front and rear walls, the cross-bar indented into the upper surface of the journal-bearing, with freedom and room for the bearing to take any position to which the axle-journal may incline, the axle-journal retained in the axle-box by a key check-plate, interlocking box and journal, and the axle-box within the jaws of a pedestal supporting a car-body, with rubber or other cushion intervening between the pedestal bed-plate and the sill to which it is secured by

378,477.



bolts passing vertically through sill, rubber, and pedestal, as and for the purpose described.

378,478. DRAW-HEAD HOOK FOR TRAM-CARS. JOHN STEPHENSON, New York, N. Y. Filed July 21, 1887. Serial No. 244,918. (No model.)

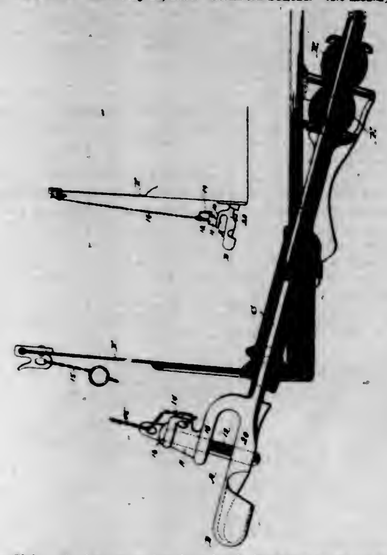


Claim.—1. A tram-car spring draw-head of which the horn forms part of the draw-hook and is separable from the slide-bar, as and for the purpose described.

2. A tram-car draw-head with its horn fitted into a socket or cup in the slide-bar, the socket being so formed as to prevent the fitting hook-piece from turning around when the nut on the shank is adjusting, as and for the purpose described.

3. A tram-car draw-head with horn-piece forming part of the draw-hook secured in the slide-bar by an enlarged base fitting in a socket of the slide-bar, which has a lug or lugs holding a latch reaching to the horn and closing the mouth of the hook, as and for the purpose described.

378,479. DRAW-BAR FOR TRAM-CARS. JOHN STEPHENSON, New York, N. Y. Filed July 21, 1887. Serial No. 244,920. (No model.)



Claim.—1. A tram-car jaw draw-head with sliding bar in a socket, the sliding bar having at its tail end a yielding spring and at its front end mouthless jaws for receiving the whiffletree, which crosses the jaws and is retained between the jaws by a draw-pin passing vertically through jaws and whiffletree and turret-chamber, as and for the purpose described.

2. A tram-car draw-head having on its upper jaw a turret-chamber in which is a draw-pin held up vertically by a hand-chain hooked to the dash, as and for the purpose described.

3. A tram-car draw-head holding the whiffletree in mouthless jaws by a vertical draw-pin passing upward through a turret-chamber and lifted by a hand-chain to the desired elevation and there limited by a check-chain, as and for the purpose described.

4. A tram-car draw-bead consisting of a bar, C, having jaws 10 20, a support and bunter, D, on one jaw and a turret, 11, on the other jaw, and coupling-pin 12, substantially as described.

378,480. AISLE-CAR. JOHN STEPHENSON, New York, N. Y. Filed Aug. 3, 1887. Serial No. 246,049. (No model.)

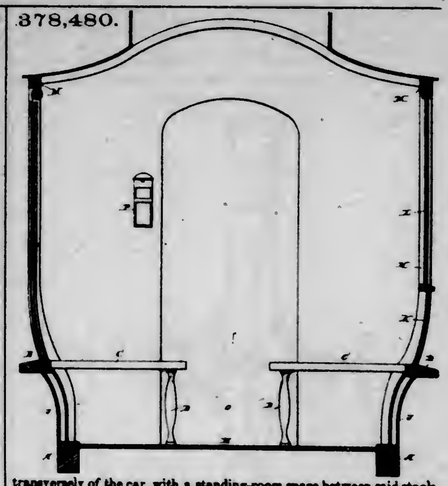
Claim.—1. A tram-car having an aisle through its center, a series of transverse stools arranged upon opposite sides of said car, with their outer ends secured to the false-bottom side or fender-rail of the car and forming a portion of the stools, a series of transverse benches consisting of a seat and a back fixedly secured thereto, centrally pivoted on a fixed pivot upon said stools, and adapted to rotate horizontally thereon, and a locking device to secure each transverse bench in its adjusted position to the stool, substantially as described.

2. A tram-car having an aisle through its center, a series of transverse stools arranged upon opposite sides of said car, with their outer ends secured to the false bottom or fender-rail of the car and forming a portion of the stools, a series of transverse seats pivoted upon said stools, adapted to horizontal rotation thereon, and provided with a circular plate upon its under side, and a weighted lever device mounted on the stool and adapted to engage with said plate to hold the seat against rotation, substantially as described.

3. A tram-car provided with a false bottom side or fender-rail, B, a foot-panel consisting of the concave-curved side J, extending between said rail and the car-sill, transverse stools having their upper surface flush with the upper surface of said fender-rail, and seats mounted upon said stools to rotate horizontally thereon and having their outer ends lapping over and resting on the fender-rail, substantially as described.

4. A tram-car provided with a series of permanent stools arranged

378,480.

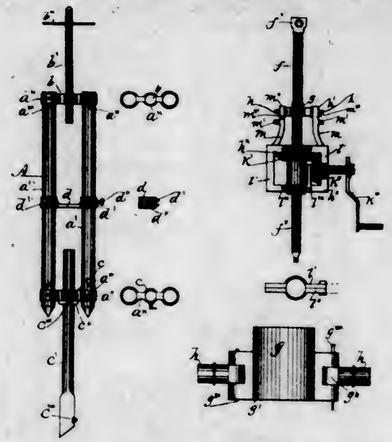


transversely of the car, with a standing-room space between said stools, and the car ends, armless seats with their backs supported by metal plates at the angle uniting seats and backs, seats mounted to rotate horizontally on said stools, a center aisle through the car, and a fire-box at each end of the car, as and for the purpose described.

5. A tram-car provided with a series of permanent stools arranged transversely of the car and a series of benches pivotally mounted to rotate horizontally on said stools, said benches consisting of a fixed back and sideless seat united at their sides by metallic corner-plates 15, substantially as described.

6. A tram-car provided with permanent stools and horizontally rotating seats pivotally mounted thereon and having upon their under side holes or indents, and a weighted lever pivotally mounted to each of the stools and to be held therein by the weight of the lever, having ends adapted to enter said holes to lock the seats to the stools, substantially as described.

378,481. DRILL FOR MINING COAL. WILLIAM A. J. THOMPSON, Ottumwa, Iowa. Filed June 20, 1887. Serial No. 241,936. (No model.)

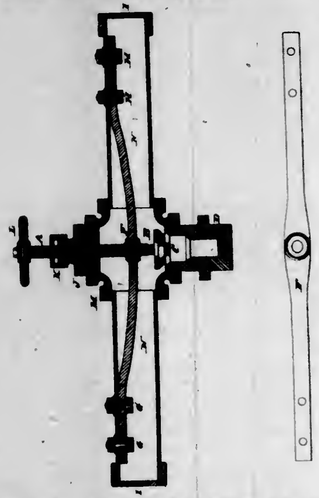


Claim.—1. A separable and extensible post for suspending and operating a mining-drill, composed of two straight parallel tubes, a cross-piece having a female screw, a cross-piece having a perforation coinciding with said female screw, and a vertically-adjustable cross-piece adapted to carry a drill, a screw fitted in said female screw, and a straight bar having an adjustable collar fitted in the perforated cross-piece or clasp, to operate in the manner set forth, for the purposes stated.

2. A drill-supporting frame having arms *m*, provided with trun-

nions *m'*, cross-pieces *g'* and *g''*, and pivoted bearings *h*, the frame *n'*, having trunnion-bearings *n'''*, and the bar *c*, constructed, arranged, and combined in a drift, to operate in the manner set forth.

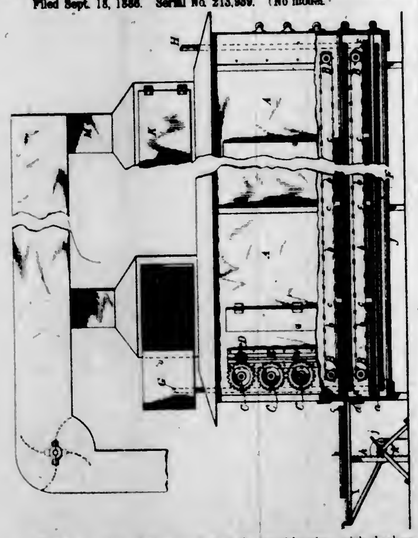
378,482. STEAM-TRAP. JAMES R. WADE, St. Louis, Mo. Filed June 28, 1887. Serial No. 242,814. (No model.)



Claim.—1. The combination, with the fitting M, of the pipes N N, secured to either side thereof and provided with caps on their outer ends, the expansion-plate secured to the pipes, the valve, and the valve-stem, the latter made adjustable in the expansion-plate, substantially as shown and described.

2. The combination, with the fitting M, provided with a removable valve-seat, of the pipes N N, secured to either side thereof and provided with caps on their outer ends, the expansion-plate secured to the pipes, the valve, and the valve-stem, the latter made adjustable in the expansion-plate, substantially as shown and described.

378,483. FRUIT-EVAPORATOR. ELI WHITE, Mount Morris, N. Y. Filed Sept. 18, 1886. Serial No. 213,939. (No model.)



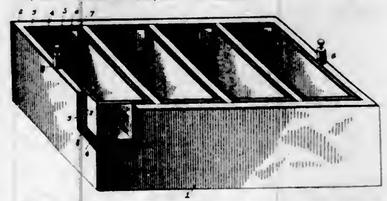
Claim.—1. In a fruit-evaporator, the combination, with the housing containing a series of ways or tracks for the fruit-sieves and chains or equivalent devices for moving the sieves on any of said ways independently of those on the others, of mechanism for moving said chains, consisting of gear-wheels connected thereto and a movable pinion for engaging any one of said gear-wheels, provided with a crank or handle for rotating it, substantially as described.

2. In a fruit-evaporator, the combination, with the housing containing a series of tracks or ays for the fruit-sieves and chains or equivalent devices for moving the sieves on any of said ways independently of those on the others, of mechanism for moving said chains, consisting of gear-wheels located outside of the casing and connected to said chains, a track or slide, and a pinion mounted thereon for engaging any one of said gear-wheels, and a crank or handle for rotating it, substantially as described.

3. In a fruit-evaporator, a sieve consisting of a lower frame carrying a sprocket which projects through the upper frame, an upper frame, the sieve held between the two frames, rollers attached to said frames, and screws and bolts to draw the whole arrangement together, substantially as described.

4. In a fruit-evaporator, a series of fruit-carriers, with a steam-coil arranged beneath each of said carriers, each of said coils having independent connections with a common steam-supply pipe and a common exhaust-pipe, each of the outer pipes of one coil leading from the steam-supply pipe in the opposite direction from that of the corresponding pipes in adjacent coils, whereby the hottest direct steam is alternately thrown on opposite sides of the evaporator, substantially as described.

378,484. BATTERY-VESSEL. JOHN WIEST, York, Pa. Filed Sept. 17, 1887. Serial No. 249,960. (No model.)



Claim.—1. A battery-vessel of fibrous material impregnated with the silicate of an alkali and an alkaline earth and coated with waterproofing material.

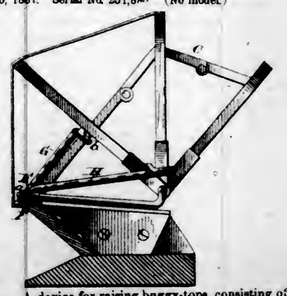
2. A battery-vessel of fibrous material impregnated with the silicate of an alkali, lined throughout with glass, and sealed at all joints with an acid-proof material.

3. A battery tank or vessel coated with an acid-proof material and lined throughout with glass, all joints of the glass being sealed with an acid-proof material.

4. A battery tank or vessel of fibrous material impregnated with a silicate of an alkali, coated inside and outside with a compound of a silicate of an alkali and lime, having the inside lined with glass, and the joints of the glass lining sealed with the compound, as set forth.

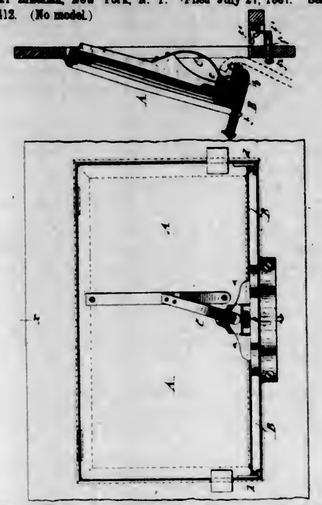
5. A battery tank or vessel of fibrous material impregnated with silicate of soda, coated inside and outside with a compound of silicate of soda and lime, having the inside lined with glass secured thereto, and the faces and joints of the glass lining coated with an acid-proof material, as and for the purpose set forth.

378,485. BUGGY-TOP. GEORGE WIGGINS, Cleveland, Tenn. Filed Oct. 10, 1887. Serial No. 251,898. (No model.)



Claim.—A device for raising buggy-tops, consisting of a cross-rod secured to the back of a buggy-seat, its ends loosely secured to the rear ends of the top side joints, in combination with a parallel rotating rod secured loosely to the back of said seat and provided with integral projecting hand-levers and integral curved arms, their outer ends bent round and loosely clasping around said top-joints, whereby the top may be raised or lowered by the movement of either hand-lever as the said joints slide within said bent ends of said curved arms, substantially as shown and specified.

378,486. MUSIC-RACK ATTACHMENT FOR UPRIGHT PIANOS. HENRY ZIEGLER, New York, N. Y. Filed July 27, 1887. Serial No. 245,412. (No model.)

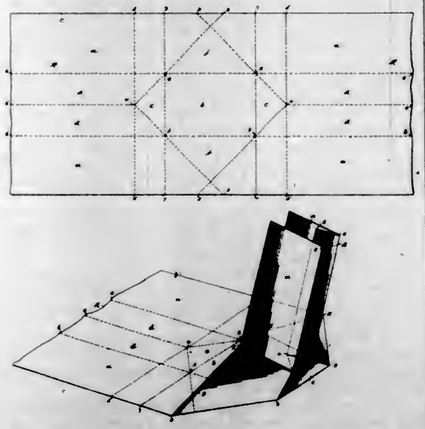


Claim.—1. The combination of a panel hinged to the front of a piano-case, a sliding and spring-actuated ledge guided at the lower end of said panel, means for locking the ledge and panel in closed position, and means for releasing said ledge and panel, substantially as set forth.

2. The combination of a panel hinged at its upper end to the front of a piano-case, a sliding ledge guided at the lower end of said panel, and a spring attached to the panel and pressing on the ledge for holding the same in forward position, substantially as set forth.

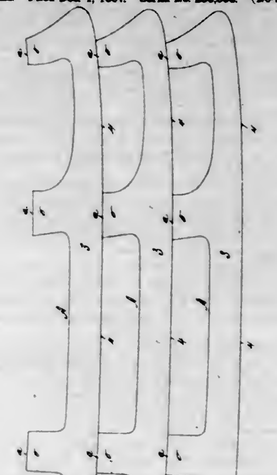
3. The combination of a panel hinged at its upper end to the front of a piano-case and provided with a center bracket and corner guide-pieces, a sliding ledge having a fixed rail guided in said center bracket, a spring attached to the panel and acting on the rear end of the sliding ledge, a catch at the under side of the ledge, a fulcrumed and spring-actuated locking-lever, and a button for releasing said locking-lever from the catch of the ledge, substantially as set forth.

378,487. PAPER BAG. DANIEL APPEL, Cleveland, Ohio, assignor to the Union Paper Bag Machine Company, Philadelphia, Pa. Filed Dec. 15, 1886. Serial No. 221,629. (Model.)



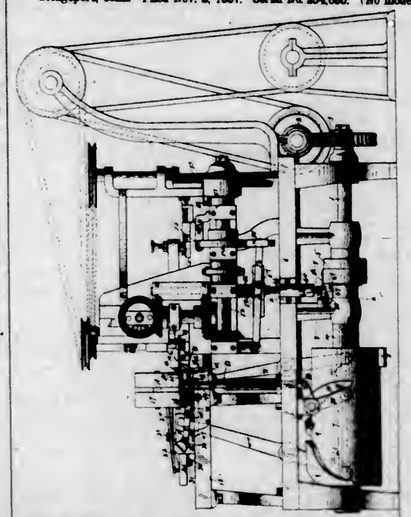
Claim.—The herein-described paper bag, having bellows sides and a seamless satchel bottom, and having the material folded on the lines 2 3 to define two sides of said bottom, and having the points *f* folded over on the lines 2 2 and 3 3 and secured to the outside of the bag to define the remaining two sides of the bottom, substantially as described.

378,488. SKATE-RUNNER BLANK. EVERETT H. BARNEY, Springfield, Mass. Filed Dec. 1, 1887. Serial No. 256,586. (No model.)



Claim.—As an improved article of manufacture, a skate-runner blank having the bottom or tread line, 4, thereof and the lines *a* of the ends of the standards *a* at uniform distances of separation, whereby said standards are made of equal height from said tread-line, substantially as set forth.

378,489. NEEDLE-GROOVING MACHINE. PHILO M. BEERS, Bridgeport, Conn. Filed Nov. 2, 1887. Serial No. 254,085. (No model.)



Claim.—1. The combination, with a hopper for needles and an agitating-spring, of upper and lower cross-slides adapted to pass under the hopper and having formed between them a groove of sufficient size to receive a single needle.

2. The hopper terminating in a curved passage, 20, and an intermittently-acting agitating-spring, in combination with cross-slides 28 and 29, having undercut edges to form a needle-groove.

3. The combination, with the hopper, of an upper cross-slide undercut at its forward edge, and a lower cross-slide having at its forward end a projection, 29^b, undercut at its rear edge, a needle-groove being formed between said edges, having for its bottom the lower cross-slide.

4. The combination, with the hopper and the reciprocating cross-slides having a groove adapted to receive a needle from the hopper, of a curved finger adapted to engage the groove and move longitudinally therein to carry the needle forward.

5. The combination, with the table and hopper, of carriage 19, the cross-slides having a groove adapted to receive a needle, and finger 43.

6. The combination, with the table and hopper, of carriage 19, carrying a switch-cam, and a lever, 30, pivoted to the table, one end of said lever being connected to the cross-slides and the other adapted to engage the switch-cam.

7. The hopper and lever 30, in combination with the upper and lower cross-slides, the latter having a slot, 29^b, and pin 30^c, which connects the lever with the upper cross-slide and engages the slot in the lower cross-slide, whereby the movement of the upper cross-slide in both directions is caused to begin first.

8. The combination, with lever 30, of the upper cross-slide undercut at its forward edge, the lower cross-slide having slot 29^b, and projection 29^b, undercut at its rear edge, and pin 30^c, connecting the lever with the upper cross-slide and engaging the slot in the under cross slide.

9. The combination, with the hopper and lever 30, of the upper cross-slide having slot 29^b and projection 29^b, said projection and upper slide forming between them a needle-groove having the under slide for its bottom, and pin 30^c, connecting the lever with the upper slide and engaging the slot in the lower slide, whereby the upper slide is caused to start backward first to widen the groove and to start forward first to clamp the needle between the slides.

10. The combination, with the table and hopper, of carriage 19, carrying a switch-cam, the cross-slides, a two-part lever pivoted to the table, which engages the switch-cam and reciprocates the cross-slide, a spring, 34, to hold the hopper in operative position, and a spring, 35, between the parts of said lever, which yields to prevent breakage should the cross-slides become wedged.

11. The combination, with the table, the carriage, and the cross-slides, of lever 30, made in two parts, both of which are pivoted to the table, spring 34, which holds the lever in operative position, and a spring, 35, between the parts of said lever, as and for the purpose set forth.

12. The combination, with the table, carriage, and cross-slides, of two-part lever 30, springs 34 and 35, and adjusting-screw 35^a.

13. The combination, with the table, carriage, and cross-slides, of lever 30, switch-cam 32, and springs 33 and 34.

14. The combination, with the carriage and cross-slides, of the gripping-jaws, and lever 44, whereby said jaws are operated and the carriage is reciprocated.

15. The combination, with the carriage and the cross-slides having a needle-groove, of the gripping-jaws upon the carriage, slide 48, and a link connecting said slide with the gripping-jaws, substantially as described.

16. The combination, with the carriage and lever 44, of jaw 36, whose shank is pivoted to the carriage to permit movement in the vertical plane, and jaw 37, pivoted to jaw 36 and adapted to swing in the horizontal plane, the shanks of said jaws having inclines 50 at their rear ends, which are engaged by lever 44 to close the jaws.

17. The combination, with lever 44 and jaw 36, pivoted to swing in the vertical plane, of jaw 37, pivoted to jaw 36 midway its length, to swing in the horizontal plane, the shanks of said jaws having inclines 50, as and for the purpose set forth.

18. The carriage, jaw 36, pivoted thereto, and jaw 37, pivoted to jaw 36, in combination with slide 48, and a link connected to said slide and to jaw 36, whereby the reciprocation of the slide is caused to impart an upward and downward movement to the jaws.

19. The carriage, the jaws having shanks provided with inclines 50, and the slide having recessed plate 47, in combination with a link connecting the slide to the jaws, and lever 44, which engages the inclines to close the jaws and engages plate 47 to raise and lower the jaws, substantially as described.

20. The carriage having plate 70, the jaws having shanks with inclines 50, and the slide having recessed plate 47, in combination with link 49, pivoted to the slide and to one of the jaws, and lever 44, which engages plate 47 to reciprocate the slide, carries said plate against plate 70 to move the carriage forward, and engages the inclines to close the jaws and return the carriage to its retracted position.

21. Jaw 36, whose shank is pivoted to the carriage, and jaw 37, pivoted to said jaw midway its length, the shanks of both jaws having inclines 50, in combination with lever 44, which engages the inclines to open the shanks, thereby closing the jaws, and a set-screw, 40, in one jaw, which engages the other to limit the movement of the shanks toward each other in opening the jaws.

22. The combination, with the cross-slides having a needle-groove, of the carriage, jaws 36 and 37, and a finger carried by jaw 36, which, as the carriage moves forward, engages said groove and carries the needle to the operating mechanism.

23. The combination, with the carriage and the cross-slides having a needle-groove, of jaws 36 and 37, pivoted to the carriage, and a finger carried by jaw 36 and adapted to engage the needle-groove, as and for the purpose set forth.

24. The combination, with the cross-slides having a needle-groove, of the jaws and an adjustable slide carried by one of said jaws, and having a finger adapted to engage the needle-groove, as and for the purpose set forth.

25. The combination, with the carriage, jaws, and cross-slides, of lever 44 and a cylinder, 7, having cam projections adapted to oscillate said lever.

26. The combination, with the carriage, jaws, cross-slides, and connecting mechanism, substantially as described, of an oscillating lever for actuating said parts, and a friction-spring, 35^b, bearing against a portion of the carriage to insure steady movement of the parts.

27. The combination, with the hopper, carriage, jaws, and the cross-slides having a needle-groove, of slide 48, a link connecting the slide with the jaws, a finger carried by one of said jaws and engaging the needle-groove, and oscillating lever 44, whereby the needles are taken from the hopper, carried to the operating mechanism, extracted therefrom, and dropped, substantially as described.

28. The combination, with the dies and reciprocating die-carriage, of the cross-slides and carriage 19, carrying the jaws, and finger 43, whereby the needles are fed to the dies singly and removed therefrom after being acted upon.

29. In a needle-grooving machine, the die-carriage having an opening, 77, and a swinging plate adapted to cover said opening or to drop down out of the way, in combination with an oscillating lever, 71, adapted to engage said plate to return the carriage to its normal position or to pass into said opening without moving the carriage when the plate has dropped down.

30. The combination, with the die-carriage having opening 77, of plate 74, adapted to cover said opening, and a spring, 76, adapted to throw said plate downward, leaving the opening uncovered, substantially as described.

31. The combination, with the die-carriage having opening 77, the dies, and lever 71, of a plate adapted to cover said opening, and having a finger, 75, a spring acting to throw said plate downward to uncover the opening, and an intermittently-acting cam, which alternately engages the plate to hold the finger away from the needle and releases it, permitting the finger to drop against a needle in the dies or to swing past the dies, permitting the plate to drop down if no needle has been received.

32. The combination, with the cross-slides having a needle-groove, the jaws, and finger 43, of the die-carriage having an opening, 77, the dies, a plate adapted to cover said opening or to drop down out of the way, and having finger 75, a cam adapted to alternately engage and release said plate, and an oscillating lever, 71, which engages the plate to retract the die-carriage when said plate is held up by a needle in the dies, and passes into said opening when the plate drops down.

33. The combination, with the jaws, the die-carriage having opening 77, the dies, and a plate pivoted to the die-carriage which is adapted to cover said opening or to drop down out of the way, of oscillating lever 71, which engages the plate to retract the die-carriage when a needle has been received by the dies, and passes into the opening without moving the die-carriage when no needle is received by the dies and the plate drops down.

34. The combination, with the jaws, the die-carriage having opening 77, the dies, and a plate pivoted to the die-carriage which is adapted to cover said opening or to drop down out of the way and is provided with a finger, 75, adapted to engage the needle held by the dies, of oscillating lever 71, which engages the plate to retract the die-carriage when a needle has been received by the dies, and passes into the opening without moving the die-carriage when the plate is not held up by engagement of the finger with a needle in the dies.

35. In a needle-grooving machine, the combination, with the die-carriage having an opening, 77, of a plate pivoted to the carriage and adapted to cover said opening, and oscillating lever 71, substantially as described.

36. The combination, with the die-carriage having opening 77, and a swinging plate, 74, adapted to cover said opening, of lever 71, and cylinder 7, having a cam projection which is engaged by said lever, as and for the purpose set forth.

37. The combination, with the die-carriage having opening 77, plate 74, adapted to cover said opening, and oscillating lever 71, of rock-shaft 73, having a cam adapted to engage said plate, as and for the purpose set forth.

38. In a needle-grooving machine, the combination, with plate 74 and rock-shaft 73, having a cam adapted to engage said plate, and a crank, of rod 83, having a yoke engaging the crank-rod, a bell-crank lever engaging cam projections on cylinder 7, and a link connecting said rod with the bell-crank lever.

39. The combination, with the hopper, the cross-slides having a needle-groove, and finger 43, of rock-shaft 73, having cam 73^a, the upper and lower dies, and intermediate mechanism, substantially as described, whereby the oscillation of the rock-shaft causes the automatic opening and closing of the dies.

40. The combination, with the feeding mechanism, the dies, and the cutters, of rock-shaft 73, and intermediate connections, substantially as described, for opening and closing the dies.

41. The combination, with the upper and lower dies, and rock-shaft 73, having cams 73^a, of lever 14^a, pivoted to the upper die, and lever 14^b, which engages the cam and is engaged by lever 14^a, whereby the latter is tilted to close the dies upon the needle.

42. The upper and lower dies, and a lever, 14^a, pivoted to the upper die, in combination with a rock-shaft having a cam, and a lever, 16^a, which engages the cam and is engaged by lever 14^a.

43. The combination, with the dies, the die-carriage having opening 77, a plate adapted to cover said opening, and lever 71, for moving the carriage backward, of a lever for closing the upper die, and a rock-shaft having cams 73^a and 78, one of which engages said plate and the other actuates the lever which closes the die.

44. The combination, with the dies and the rock-shaft having cam 73^a, of levers 14^a and 16^a, having set-screws 14^b and 16^b, as and for the purpose set forth.

45. In a needle-grooving machine, the combination, with the die-carriage and a cylinder having cam projection 11, of the two-part lever 71, spring 79 between the parts of said lever, and a set-screw for adjusting said parts, whereby, should the die-carriage become set, the spring would yield and prevent breakage of the parts.

46. The combination, with the die-carriage and an intermittently-rotating cylinder having a cam projection, 11, of two-part lever 71, one of said parts having a set-screw engaging the die-carriage and the other a roller engaging the cam projection, and a spring, 79, between the parts of said lever, which is adapted to yield should the die-carriage become set.

47. The combination, with the jaws, oscillating lever 44, the grooving-cutters, the die-carriage having a plate, 61, and an oscillating lever for retracting the die-carriage, of a shaft, 52, clutch 51, actuated by said plate, through which motion is imparted to said shaft to move the cutters into operative position when the die-carriage is retracted, a cylinder having cam projections which actuate the levers, and a clutch, 5, through which motion is imparted to said cylinder when the grooving operation is completed.

48. The combination, with the jaws, the cutters, the die-carriage, and oscillating levers 44 and 71, of a cylinder having cam projections which actuate said levers, shaft 52, through which the cutters are moved into operative position, clutch 51, through which motion is imparted to said shaft when the die-carriage is retracted, and clutch 5, through which motion is imparted to the cylinder when the grooving operation is completed.

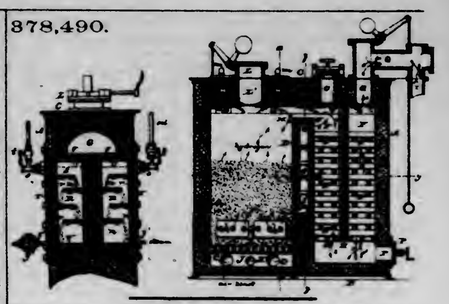
49. The combination, with power-shaft 1, shaft 4, having a cylinder with cam projections, and clutch 5, having a clutch-dog, 67, adapted to connect said shafts, of a stationary cam, 69, for withdrawing the dog, a spring-latch, 66, to hold it withdrawn, and a lever, 65, whereby the spring-latch is tripped, substantially as described.

50. The clutch, cross-slide, jaws, die-carriage having plate 74, and rock-shaft 73, in combination with levers 44, 71, and 80, and an intermittently-rotating cylinder having cam projections engaged by said levers, whereby the needles are fed forward to be acted upon and extracted and dropped at the completion of the operation.

378,490. PROCESS OF MANUFACTURING WATER-GAS. REINHOLD BOECKLEN, Brooklyn, N. Y. Filed Mar. 26, 1887. Serial No. 232,506. (No specimens.)

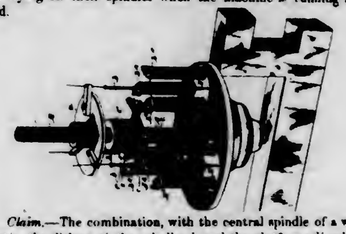
Claim.—The process of manufacturing gas, which consists in gradually feeding the crude petroleum from the top downwardly within the furnace or retort, thereby subjecting it to successive degrees of heat as it gradually descends, eliminating the light vapors from the petroleum by subjecting the same to the heat of the retort, superheated steam, and gases resulting from the decomposition of the steam and oil by contact with the fuel, and passing said light vapors through a heated tile-fixing chamber, subjecting the residual petroleum to a body of incandescent fuel into which steam is delivered, said petroleum being delivered in proximity to said steam-delivery pipes, and then conducting the gases thus produced through said fixing-chamber simultaneously with the other gases.

378,490.



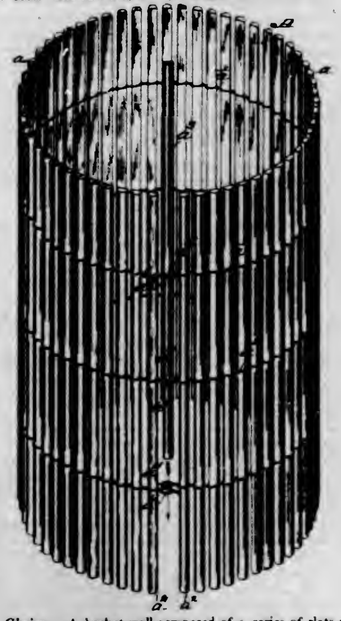
378,491. MACHINE FOR MAKING CORD OR ROPE. CHARLES R. BRAINARD, Moodus, Conn. Filed Apr. 30, 1887. Serial No. 236,678. (No model.)

Brief.—The object of the improvement is to prevent the bobbins from flying off their spindles when the machine is running at high speed.



Claim.—The combination, with the central spindle of a whirligig twister, the disks *a a'*, the spindles *b*, and the platforms *b'*, adapted to carry the bobbins, of a collar, C, having integral arms *c*, of curved configuration, as set forth, whereby the bobbins are retained in their relative positions when the machine is running at a high rate of speed, substantially as described.

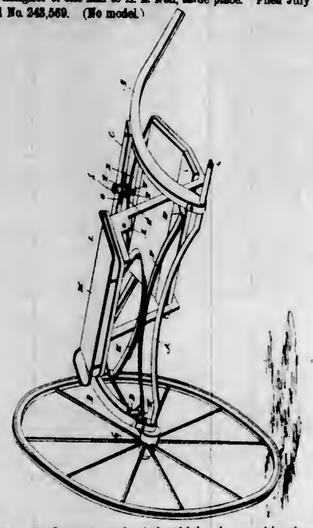
378,492. BASKET. LEWIS A. BROWN, St. Louis, Mo. Filed Aug. 9, 1887. Serial No. 246,491. (No model.)



Claim.—A basket-wall composed of a series of slats wired to

gether, and having the ends of the series united by means of the slat passed through the loops of the ties, substantially as described.

378,493. TWO-WHEELED VEHICLE. WILLIAM H. BRYAN, Ada, Ohio, assignor of one-half to H. R. Neff, same place. Filed July 6, 1887. Serial No. 243,569. (No model.)

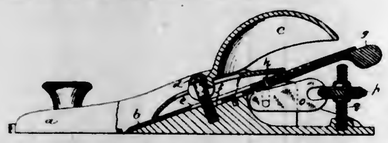


Claim.—1. In a two-wheeled vehicle, the combination of the body having the side plates, K, the thills, the pivotal links connecting the front end of the body to the cross-bar of the thills, the semi-elliptic spring F, having its ends flexibly connected to the thills and arranged over the axle, the elliptic spring H, secured to the center of the spring F on the upper side thereof, and the bar I, having its central portion attached to the upper side of spring H and its ends attached to the plates K near the rear of the body, substantially as described.

2. The combination, in a two-wheeled vehicle, of the thill having the cross-bar C, the springs supporting the rear end of the body, the latter being provided with the side plates, K, bent to form the integral cross-bar N at the front end of the body, and the link P, depending from the cross-bar C and pivotally connected to the center of cross-bar N, for the purpose set forth, substantially as described.

3. The combination, in a two-wheeled vehicle, of the thills having the cross-bar C, the springs arranged between the rear end of the thills, the body having its rear portion supported on the said springs, and the link-bar P, depending from the cross-bar C, vertically adjustable therein, and having its lower end pivotally connected to the front end of the body at the center thereof, substantially as described.

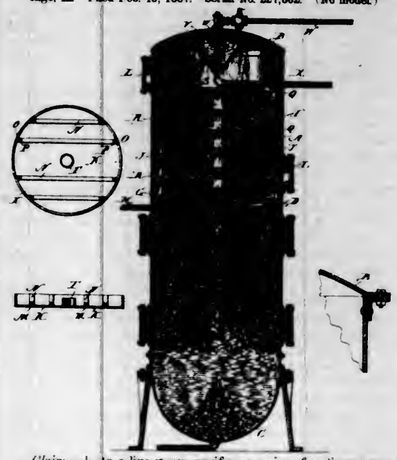
378,494. BENCH-PLANE. HENRY M. CLARK, New Britain, Conn., assignor to the Stanley Rule and Level Company, same place. Filed July 23, 1887. Serial No. 245,046. (No model.)



Claim.—1. In a bench-plane, the combination of the laterally-adjusting lever, the mechanism for operating directly upon said lever for adjusting it longitudinally, and the cutting-bit connected to said laterally-adjusting lever, whereby said lever forms an essential part of the mechanism for adjusting the cutting-bit longitudinally, substantially as described, and for the purpose specified.

2. In a bench-plane, the combination of the cutting-bit having a series of holes, *m*, the laterally-adjusting lever let into the face of the frog and fulcrumed thereon by a pin-and-slot connection, said lever also having a pin for insertion in one of the holes *m*, and mechanism applied directly to said lever for adjusting it, and through it the bit in a longitudinal direction, substantially as described, and for the purpose specified.

378,495. FEED-WATER PURIFIER. EDWARD G. T. COLLINS, Chicago, Ill. Filed Feb. 15, 1887. Serial No. 227,662. (No model.)



Claim.—1. In a live-steam purifier, a series of sediment-pans located in the steam-chamber and detachably connected together, each of said pans being composed of sections detachably connected together, substantially as described.

2. In a live-steam purifier, the steam-chamber and man-holes provided with removable caps opening therein, in combination with a series of sediment-pans located in said chamber detachably connected together, and each of said pans composed of sections detachably connected together and of a width less than the diameter of said man-holes, substantially as described.

3. In a live-steam purifier, a deflector or spreader suspended in the steam-chamber and having the shape of an inverted hollow cone, in combination with an open-ended feed-water pipe projecting into said spreader, substantially as described.

4. In a live-steam purifier, a deflector or spreader suspended in the steam-chamber and having the shape of an inverted hollow cone, in combination with an open ended feed-water pipe projecting into said spreader, and a steam-pipe opening on the apex of said cone-shaped spreader, substantially as described.

378,496. BICYCLE-SUPPORT. JOSEPH F. COMLEY, Rockford, Ill. Filed Oct. 14, 1887. Serial No. 252,361. (No model.)



Claim.—1. The support for bicycles comprising the support or table attached to the front of the machine, the lever G, pivoted thereto and extending over the handle of the machine, the handle F, corresponding in shape to the said handle and arranged directly over the same, the legs O, connected to the lever and carrying wheels or rollers on their lower ends, and the spring to normally hold the lever raised, substantially as specified.

2. The support for bicycles, comprising the lever pivoted to a suitable portion thereof, the legs O, attached thereto and bearing wheels or rollers on their lower ends, the spring to normally hold the lever raised, and the hook S, attached to the lever and adapted to engage the handle of the machine, substantially as specified.

3. In a support for a bicycle, the combination of the table secured to the front of the machine, the lever G, pivoted to the table, the bar H, pivoted at the upper end to the lever, the spring I, coiled around the bar between the lever and the table, and the legs O, pivoted at the upper end to the lower end of the bar H and carrying rollers or wheels on the lower ends, substantially as and for the purpose specified.

4. In a support for a bicycle, the combination of the table attached to the front of the machine, the lever G, pivoted to the table, the bar H, pivoted at the upper end to the lever, the spring around the said bar, the guide-eyes N', secured to the forks of the machine near the lower ends, the legs O, pivoted at the upper ends to the bar H and passing through the eyes N', the said legs being provided at the lower ends with sockets O', and the adjustable bars P, adapted to fit in the said sockets and carrying the wheels R on the lower ends, substantially as and for the purpose specified.

5. In a support for bicycles, the combination of the table or support secured to the front of the machine and having the opening *h* therein, the lever G, pivoted to the table, sliding bar H, pivoted to the lever and operating in the opening *h*, the spring I around the bar H, the adjustable guide-arms L, attached to the forks of the machine and carrying the guide-eyes N', the said arms being adapted to be lengthened or shortened to change the position of the guide-eyes, the legs O, adjustable in length, which are pivoted at the upper ends to the bar H and pass through the guide-eyes N', and the wheels or rollers R on the lower ends of the legs O, substantially as and for the purpose specified.

6. In a support for a bicycle, the combination of the table C, having the opening *h* therein and the apertured ears on the front end, the lever G, pivoted between the said ears and extending over the handle of the bicycle, the bar H, pivoted to the lever and operating in the opening *h*, the guide-arms L, secured to the forks of the machine and comprising the socket-arm L', having the clamp L^2 on the rear end to secure to the fork, the adjustable bar N, adapted to be received in the said socket and carrying the eye N', and the set-screw to bind the bar N in the socket, the extensible legs O, pivoted at the upper end to the bar H and passing through the eye N', the said legs comprising the main portions, having sockets on the lower ends, and provided with set-screws, and the bars P, fitting in the said sockets and secured therein by the screws, and the wheels on the lower ends of the extensible legs, all constructed and arranged substantially as and for the purpose specified.

7. In a support for bicycles, the combination of the table C, having the downwardly and rearwardly extending arms C', provided at the extremities with clamps to secure the arms to the forks of the bicycle, the said table having the opening *h* therein, the lever G, pivoted at the front end to the front end of the table, the handle K on the rear end of the lever over the handle of the bicycle, the hook S on the handle K to engage the handle of the bicycle, for the purpose described, the bar H, pivoted to the lever and operating in the opening *h*, the spring I around the bar, the adjustable or extensible guide-arms L on the lower ends of the forks, the extensible legs O, pivoted at the upper ends to the bar H and passing through the eyes on the ends of the guide-arms, and the wheels or rollers on the lower ends of the legs, substantially as and for the purpose hereinbefore specified.

8. In a support for bicycles, the legs or supports attached at the upper end to the head of the machine and carrying rollers at their lower ends, springs for normally holding the rollers off the ground, and operating connections to force the legs or supports, with their rollers, in contact with the ground.

9. In a support for bicycles, the lever pivoted thereto, the horizontally-adjustable guide-eyes attached to the forks of the machine, and the legs O, engaging in the said eyes and attached to the lever, substantially as specified.

10. In a support for bicycles, the combination of the legs O O, connected at their upper ends to the head of the machine and having sockets O' on their lower ends, and the bars P, mounted adjustably in the said sockets and bearing wheels or rollers on their lower ends, substantially as specified.

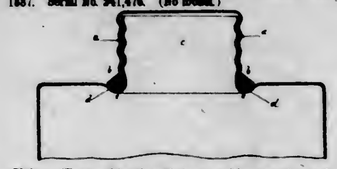
11. In a support for bicycles, the combination of the lever pivoted thereto, the legs O, attached to the lever and having rollers on their lower ends, the sockets attached to the forks of the machine, the guide-arms mounted therein and having eyes on their free ends engaging the legs O, and the set-screws in the sockets locking the said arms at any desired adjustment, substantially as specified.

378,497. PLAYING-CARDS. FRANKLIN COUCH, White Plains, N. Y. Filed Nov. 22, 1887. Serial No. 255,917. (No model.)



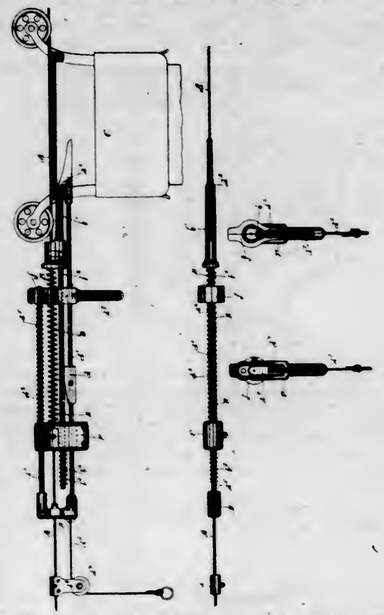
Claim.—A pack of playing-cards divided into several series, each series being marked to represent a different base-ball nine, each card in each series being also marked to indicate the field position of the player it represents, substantially as described.

378,498. MEANS FOR HERMETICALLY CLOSING JARS, &c. CHARLES H. P. LEVRAUD DE VILMORIN, Paris, France. Filed June 16, 1887. Serial No. 241,476. (No model.)



Claim.—The combination of the vessel having the neck *c* and the groove *e*, situated at the junction of the neck *c* and the vessel, with the cover *a*, having the flared flange *b*, and with the luting *d*, placed around the neck of the vessel in the groove *e*, and adapted to be compressed by the flange *b* into the groove *e*, substantially as described.

378,499. STORE-SERVICE APPARATUS. GILBERT R. ELLIOTT, Boston, Mass., assignor to the Continental Cash Car Company, Baltimore, Md. Filed Oct. 1, 1883. Serial No. 107,846. (No model.)



Claim.—1. In a store-service apparatus, the combination, with a track, A, and a carrier mounted thereon, of springs B d^6, a retractor, a hook for engaging with said carrier, a releasing-block, and an abutment contacting therewith, substantially as set forth.

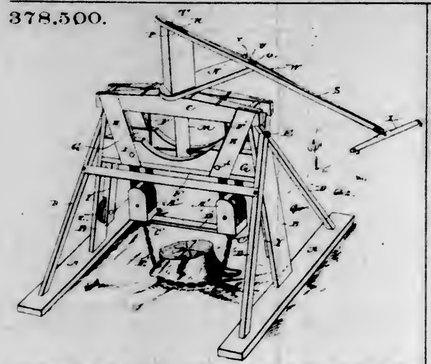
2. The combination, in a store-service apparatus, of the abutment F, block d, rod d', hook d^3, and operating mechanism, substantially as described, whereby the carrier is released and permitted to receive its initial impetus, as set forth.

3. In a store-service apparatus, the combination of a track, a carrier mounted thereon, the hook d^3, rod d', and collar f, having spring d^7, whereby the carrier is received and held in position at the end of the track, as described.

378,500. STUMP-EXTRACTOR. OSCAR L. GALLUP, Holton, Mich. Filed Nov. 8, 1887. Serial No. 254,648. (No model.)

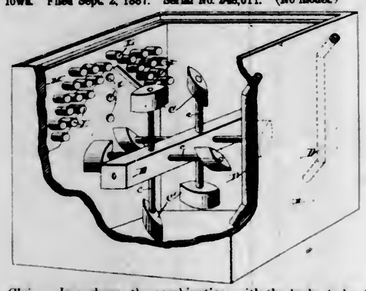
Claim.—The frame comprising the sills A, the inclined standards B, secured thereto, the beam C, connecting the upper ends of the said standards, the beam F, also connecting the standards B and arranged below the sill C, the hangers H, depending from the beam C and secured to the beam F, the cross pins or bolts I, connecting the said hangers, the pulleys K, journaled on said cross pins or bolts, in combination with the windlass journaled in the beam C and having its lower end stepped in the beam F, the blocks A', having the pulleys R', and the elevating ropes or chains attached to the beam C, passed

378,500.



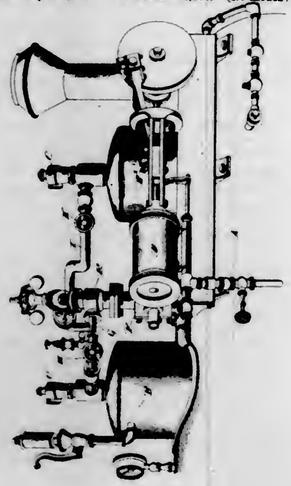
around the pulleys K and B', and having their inner end attached to the windlass, substantially as described.

378,501. CHURN. EUGENE S. GIBBS and EDWARD HARPER, Lyons, Iowa. Filed Sept. 2, 1887. Serial No. 248,611. (No model.)



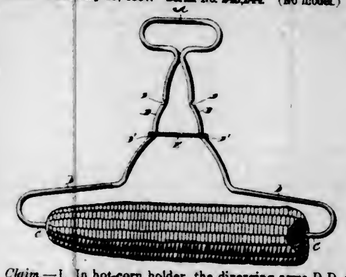
Claim.—In a churn, the combination, with the body A, having a series of perforations, K, arranged in a vertical line on one side thereof, and the revolving dasher journaled in the body, of the breaker-plate H, having a central opening, K', to align with either of the perforations K, the pin I, to pass through the perforation K' and one of the perforations K, to secure the plate at the desired elevation, and the pins I I on the said plate, arranged substantially as and for the purpose specified.

378,502. TRACTION-ENGINE. ANDREW K. GIBSON, Kimbolton, Ohio. Filed Sept. 30, 1887. Serial No. 251,139. (No model.)



Claim.—The combination of the boiler having the steam-domes at opposite ends, the steam-engine having the vertical steam-pipe E, provided with the governor, the pipe G, connecting one of the domes to the pipe E, the pipe I, connecting the other dome to the pipe G, the cut-off valve K in the pipe I, and the cut-of valve H in the pipe G at a point between the juncture of pipe I with said pipe G and the adjacent dome, substantially as described.

378,503. HOT-CORN HOLDER. PHILIP J. GODFREY, Taunton, Mass. Filed July 25, 1887. Serial No. 245,244. (No model.)



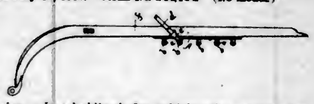
Claim.—1. In hot-corn holder, the diverging arms D D, notched on the outer sides, the hooks C C on the ends of the said arms, and the ring E, to slide on the said arms and engage in the said notches to hold the arms at the proper adjustment, substantially as specified.

2. In a hot-corn holder, the handle A, arms D D, diverging from the side of the said handle, having notches D D' in the outer sides thereof, horizontal extensions *b b* of the said arms, hooks C C on the ends of the said extensions, and the ring E, sliding on the diverging portions of the arms B B and engaging in the notches in the outer sides thereof, substantially as specified.

378,504. CATARRH REMEDY. THOMAS S. GREENE, Walnut Grove, Ala. Filed Nov. 10, 1887. Serial No. 254,823. (No specimens.)

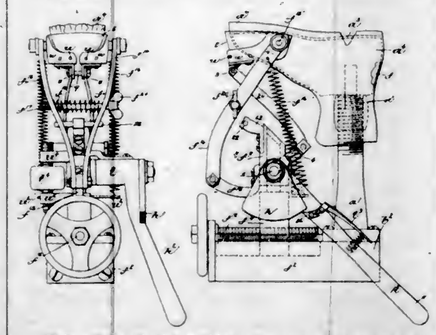
Claim.—The herein-described composition to be used in the treatment of nasal catarrh, comprising bear's-foot root, queen of the meadow, red pepper, water, lard, oil-spike, oil-turpentine, and gum-camphor, in substantially the proportions specified.

378,505. HOLDBACK. HENRY HARBERGER, Millersport, Ohio. Filed July 13, 1887. Serial No. 244,184. (No model.)



Claim.—In a holdback for vehicles, the combination, with the thills of a vehicle, of metallic plates *a*, secured to the under side of said thills and having projecting therefrom perforated lugs *b*, which are adapted to be made to engage hooks *c*, carried on the ends of the holdback-straps, substantially as and for the purpose specified.

378,506. LASTING-MACHINE. JESSE W. HATCH and JOSEPH PITCHER, Rochester, N. Y. Filed May 9, 1887. Serial No. 237,566. (No model.)



Claim.—1. In a lasting-machine, a base and a heel pin or standard, combined with the toe-wiper, the movable arms f^{14}, upon which the toe-wiper is pivoted, and arms 24, also pivoted to the toe-wiper, and means to actuate the arms 24, whereby it may be moved up against the upper and longitudinally with relation to the last, substantially as described.

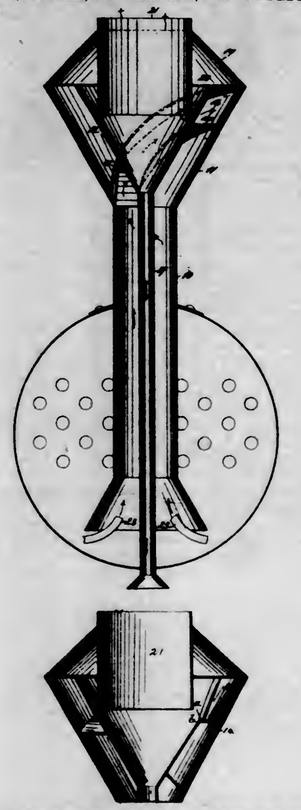
2. The base and a heel pin or standard to support the last, combined with the expansible toe-wiper, composed of the plates *w w* and the leather or non-fibrous center 2, and with the arms on which the toe-wiper is pivoted, substantially as described.

3. The base and heel pin or standard thereon to support a last, and the toe-wiper and the arms f^{14} and 24, on which it is jointed at front and rear, combined with the spring f^{15} and means, substantially as described, to move the arms 24.

4. The base, a heel pin or standard, a carriage and arms f^{14} and 24, pivoted thereon, and a toe-wiper carried by the said arms, combined with means to operate the arms 24, substantially as described.

5. In a lasting-machine, the base f^{3}, the heel pin or standard, the adjustable carriage mounted on the said base, shaft 5, arm 4, arms 24, and the toe-wiper pivoted thereon near its center, combined with the arms f^{14}, pivoted upon a projection of the carriage, substantially as described.

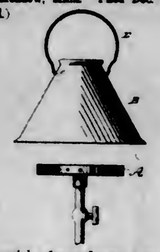
378,507. SPARK-ARRESTER. ANDREW M. HENDERSON and JOHN W. MARTIN, Fort Collins, Colo. Filed June 2, 1887. Serial No. 240,047. (Model.)



Claim.—1. In a spark-arrester, the combination of an inverted-bell-shaped projection, an inner casing mounted in the projection and having its wall cut at *a b*, forming a flap, 18, which is secured to the inner face of the projection, and division-walls arranged between the projection and inner casing, substantially as herein shown and described.

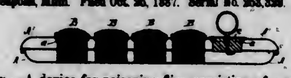
2. In a spark-arrester, the combination, with a stack, of a projection extending upward from the upper end thereof, a case arranged within the projection, a tube extending downward from the case, dividing-walls arranged spirally between the case and the walls of the projection, and a cap fitted upon the projection and provided with a central tube which extends downward within the inner case, substantially as described.

378,508. SOOT-COLLECTOR FOR GASOLINE-STOVES. MARGARET M. JOSLYN, Grand Meadow, Minn. Filed Dec. 6, 1886. Serial No. 220,840. (No model.)



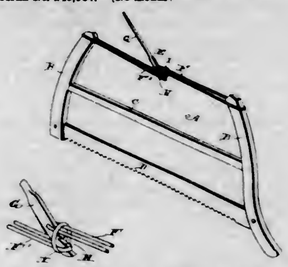
Claim.—As a new article of manufacture, a soot-collector for gasoline-stoves, comprising the inverted funnel B, having imperforate sides and a perforated disk, C, secured permanently in its contracted end, and the bail D, having its ends connected to opposite sides of the funnel at or near its upper end, substantially as set forth.

378,509. DEVICE FOR POISONING FLIES. JOHN B. KIHLER, Minneapolis, Minn. Filed Oct. 26, 1887. Serial No. 253,329. (No model.)



Claim.—A device for poisoning flies, consisting of a suitable vessel containing the poison, a cover for such vessel provided with apertures, and suitable wicks therein having their ends exposed, substantially as set forth.

378,510. WOOD-SAW. ADAM G. LAPELOT, La Grange, Mo., assignor of one-third to Louis Schneider, same place. Filed Sept. 17, 1887. Serial No. 249,967. (No model.)



Claim.—The combination of the side bars, B, the loops F F', having their outer ends passed around the upper ends of the side bars, B, the lever G, having the inner end of the loop F passed through its body, and provided with ratchet-teeth H near its lower end on its edge between the outer and inner ends of the loop F, the opposite edge of said lever being entirely smooth, and the inner end of the loop F' being engaged by the teeth H of the lever, and ring I, playing on the lever and the loop F', substantially as specified.

378,511. SWITCH FOR STORE-SERVICE APPARATUS. HENRY L. LOVEJOY, Lowell, Mass., assignor to the Lamson Cash Railway Company, same place. Filed May 19, 1885. Serial No. 166,065. (No model.)

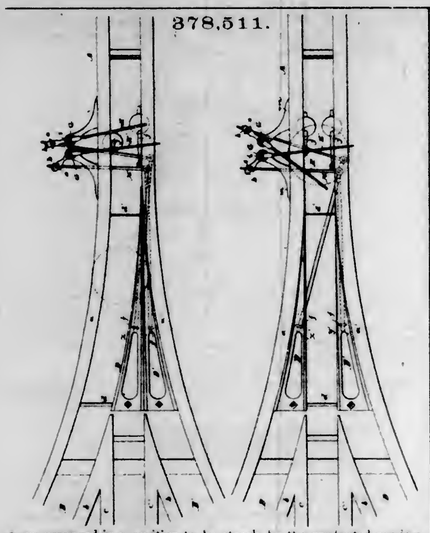
Claim.—1. The combination, with the main track and two branch tracks of a store-service apparatus, of two bodily-sliding switch-tongues, each with side edges constructed to form continuations of the main track and of each branch track, according to the positions of said tongues, substantially as set forth.

2. The combination of the main track and two branch tracks and two independent switch-tongues, each of the latter adapted to be moved throughout its length toward either side of the main track, and having edges *y y' x x'*, that may be brought in line with the main and branch rails, substantially as described.

3. The combination of the main track and two branch tracks, two independent switch-tongues, each adapted to be carried bodily toward either side of the main track, and arms extending adjacent to the main track adapted to be operated by the graduated carriers thereon and each connected to one of the switch-tongues, substantially as described.

4. The combination of the two sliding switch-tongues, each adapted to be carried bodily to either side of the main track, two

378,511.



arms arranged in a position to be struck by the graduated carriers, and connections between each arm and one of the tongues, substantially as described.

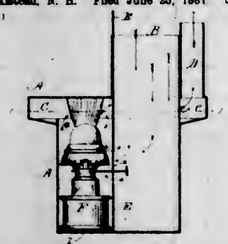
5. The combination, with the independent bodily-sliding tongues, each having bearings on each edge, of arms arranged in different positions with respect to the main track, and connections between each arm and corresponding tongue, whereby some of the carriers are caused to strike one of the arms to adjust one of the tongues and others to strike both of the arms to adjust both of the tongues, substantially as described.

6. The combination, with the main and two branch tracks, of independent tongues, both capable of sliding laterally bodily between the rails and the main track, and a vertical shaft provided with two arms, one arranged to be struck by the carriers and the other connected by a lever with one of the tongues, and a weight tending to maintain each tongue in its normal position, substantially as described.

7. The combination of the bodily-sliding tongues, crank-levers, each connected to one of the tongues, vertical shafts, each provided with an arm connected to one of the levers and with an arm arranged to be struck by the carriers, and weights acting to restore the tongues to their normal positions after adjustment by a carrier, substantially as described.

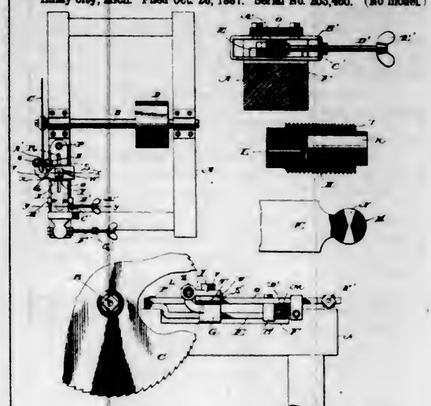
8. The combination of the main track, two branch tracks, two independent tongues having bearing-edges $x\ x'\ y\ y'$ and arms, and connections between the arms and the tongues, whereby the latter are adjusted by contact of the carriers with the arms, and restoring devices whereby each tongue is restored to its normal position after the passage of the carrier, substantially as set forth.

378,512. **WATER OR LIQUID HEATER.** CHARLES G. MARSHALL, Langdon, assignor, by mesne assignments, to himself and James W. Bascome, Alstead, N. H. Filed June 23, 1887. Serial No. 242,232. (No model.)



Claim.—The water or liquid heater, substantially as described, consisting of the box, its indnct leading into said box, flue surrounding said box, and educt or chimney into which the flue opens, and the removable perforated partition within the induct and with its shelf and lamp, all arranged essentially in manner and for use as set forth.

378,513. **GUIDE FOR CIRCULAR SAWS.** JOHN S. MARSHALL, Imlay City, Mich. Filed Oct. 26, 1887. Serial No. 253,465. (No model.)



Claim.—1. The combination of the pivoted plate E, the guide-arm adjustably mounted thereon and provided with the guide-pin to bear against the inner side of the saw, the pivoted plate O, arranged above the plate E, the guide-arm adjustably mounted thereon and provided with the guide-pin to bear against the outer side of the saw means connecting the free end of the plate E to the plate O, and the adjusting-screws to operate the plates O and E, substantially as described.

2. The combination of the pivoted plate E, having the guide-arm G, for the purpose set forth, the plate O, arranged on the plate E, pivoted at one end, and having the longitudinally and laterally adjustable guide-arm V, for the purpose set forth, the yoke B', attached to the plate O, the adjusting-screw D', engaging the said yoke and swiveled to the plate E to move the latter independently of the plate O, and the adjusting-screw F', to move the plates O and E simultaneously, substantially as described.

3. The combination of the plates E O, pivoted together at one end, the guide-arms G V, adjustably mounted on the plates E O, respectively, connections between the plate O and the free end of the plate E, the adjusting-screw D', to operate the plate E independently of the plate O, and the adjusting-screw F', to operate the said plates simultaneously, as set forth.

4. The combination of the plate O, pivoted at one end, the guide-arm mounted thereon and adjustable both longitudinally and laterally thereof, and the adjusting-screw acting on the free end of the plate to operate the same, substantially as set forth.

5. The combination of the guide-arms having transverse internally-threaded openings in their ends and the sleeves mounted in said openings and having a recess, I, in one end to receive a plug, and an opening, I', in the other end communicating with the recess I, substantially as set forth.

6. In a saw-guide, the plates E O, pivoted together at one end and each provided with the adjustable guide-arms between their ends, and the screws for operating on the outer or free ends of the plates and moving the same, as set forth.

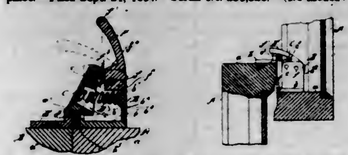
378,514. **TRACK FOR STORE-SERVICE RAILWAYS.** ROBERT A. MCCARTY, Detroit, Mich., assignor to the Rapid Service Store Railway Company, same place. Filed May 17, 1887. Serial No. 238,501. (No model.)



Claim.—1. In a store-service railway-track of the class in which a car is propelled over the track, a laterally-curved supporting-piece around which the track-wire is led and from either end of which the track-wire inclines downward to a station.

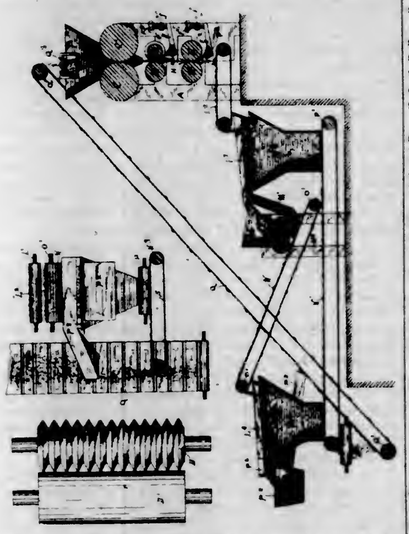
2. In a store-service railway-track of the class in which a car is propelled over the track, a track consisting of a wire strained around a laterally and vertically curved supporting-piece which is located in the course of said track at a point higher than is the track at either of the terminal stations.

378,515. **FASTENER FOR MEETING-RAILS OF SASHES.** HUGH J. MURPHY, Lowell, Mass., assignor of one-half to Henry Edwards, same place. Filed Sept. 21, 1887. Serial No. 250,330. (No model.)



Claim.—The combination of the case, the lever pivoted therein and provided with a handle, the bolt pivoted in said case in front of said lever, the spring pressing the lower end of said bolt forward and normally causing it to project out of said case, and holding the upper end of said bolt against the front side of said lever above the pivot of said lever, said lever being provided with a catch-surface arranged at the top of said front side and between said front side and said handle, and adapted, when said handle is drawn forward, to engage the upper end of said bolt and to prevent the forward movement of the lower end of said bolt, as and for the purpose specified.

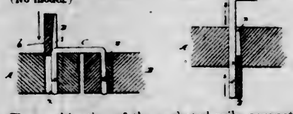
378,516. **GUNPOWDER PRESS AND GRAINER.** PAUL A. OLIVER, Oliver's Mills, Pa. Filed June 14, 1887. Serial No. 241,270. (No model.)



Claim.—1. The combination of a pair of revoluble press-rolls for forming the ground powder into cakes, a pair of revoluble graining-rolls, one roll being grooved to cut up the cakes, a second pair of revoluble smooth graining-rolls driven at unequal speed, and a frame-work supporting all the said rolls in horizontally-arranged pairs, substantially as and for the purpose set forth.

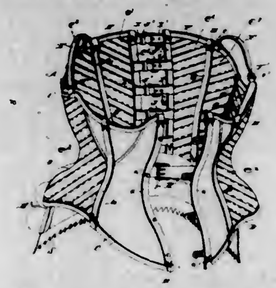
2. The combination of a pair of revoluble press-rolls for forming the ground powder into cakes, a pair of graining-rolls journaled beneath the press-rolls, one roll being grooved to cut up said cakes, and a frame-work supporting the said rolls in horizontally-arranged pairs, substantially as and for the purpose set forth.

378,517. **RAIL-CONNECTION FOR ELECTRIC RAILWAYS.** EDWARD L. ORCUTT, Somerville, Mass. Filed Oct. 29, 1886. Serial No. 217,582. (No model.)



Claim.—The combination of the socketed rails, connecting-strip bent at the ends, and pins having longitudinal channels increasing in depth toward one end and wedging the ends of the strip in the socket, substantially as described.

378,518. **COMBINED CORSET AND BUSTLE.** PHEBA PARMENTER, Lamar, Mo., assignor of one-half to A. M. Stearns, same place. Filed Apr. 4, 1887. Serial No. 233,630. (No model.)



Claim.—1. The combination, with the corset having its sections yieldingly connected together and provided with supporting-loops Q, of a bustle provided with a waistband, O, and the hooks P, mounted on said waistband and having a limited play thereon and engaging the supporting-loops Q, substantially as described.

2. A corset having a metallic pocket fitted over the end of the steel thereof, said pocket having the pairs of arms lying on opposite sides of the corset, one pair of the arms having the prongs which pass through the corset on opposite edges of the steel and which are bent over the free ends of the other pair of arms of the pocket, as and for the purpose described.

3. The combination, with the sectional corset, of the yielding straps G, connecting the front and rear sections thereof, the hip-pads L, secured to and depending from the bottom straps, G, the straps L', and the straps M, connecting the opposite edges of the said pads to the rear and front sections of the corset, respectively, as set forth.

4. The combination of the corset provided with the loops Q, the hooks P, engaging said loops and having the cross-bar p', thereby forming the loops $p\ p$, and the bustle provided with a waistband, O, having slack portions passed through said loops and over said cross-bar, substantially as set forth.

5. The combination of the front and rear corset-sections, the elastic straps G, connecting the adjacent edges of said sections and arranged in two inclined series which cross and recross each other, and fastenings g', passed through said straps at the several points of crossing, substantially as specified.

6. The combination of the corset flexibly connected, the bustle suspended therefrom by sliding hooks P, and the stiff fabric, S, substantially as described.

378,519. **THREE-WAY SAFETY-SWITCH.** WILLIAM F. D. PASCOE and JAMES W. RAUB, South Easton, Pa. Filed July 22, 1887. Serial No. 245,004. (No model.)

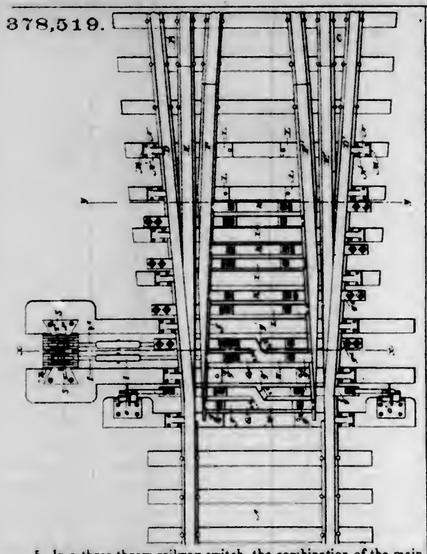
Claim.—1. The combination of the rigid main rails, the movable switch-rails, and the arms rigidly secured thereto and projecting outward through openings in the webs of the adjacent main rails, and the bars passing under the bases of the main rails and connecting the projecting arms of each switch-rail to its companion switch-rail, substantially as described.

2. In a railway-switch, the combination of the switch-rails and the jointed bars connecting the said switch-rails, the said bars passing under the bases of the main rails and having the inwardly-extending arms passed through openings in the webs of the main rails, substantially as described.

3. The combination of the rigid main rails, the movable switch-rails, the arms rigidly secured to the switch-rails and projecting through openings in the adjacent main rails, and the pivotally-jointed connecting-bars passing under the bases of the main rails and having their end sections rigidly secured to the projecting arms of the switch-rails and to the base-flanges of their companion switch-rails, substantially as described.

4. In a three-way railway-switch, the combination of the rigid diverging rails D and D', the point switch-rails E E' and F F', and the bars connecting the said switch-rails together in pairs, the said bars being each composed of a series of sections pivotally jointed together, having their inner ends provided with bracket-plates rigidly bolted to the flanges on the inner sides of the inner switch-rails, and their outer ends passed under the bases of the opposite rigid and switch rails, and provided at their outer ends with inwardly-extending extension-arms passed through openings in the webs of the rigid rails and rigidly connected to the outer sides of the webs of their companion switch-rails, substantially as described.

378,519.

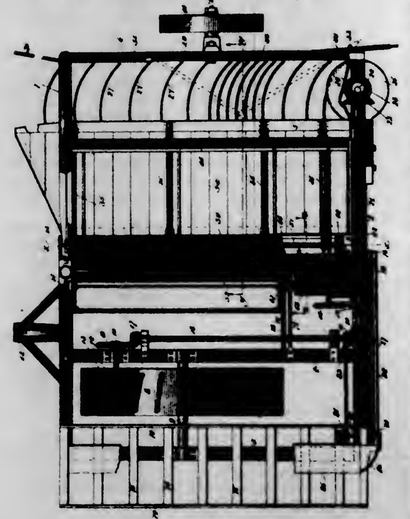


5. In a three-throw railway-switch, the combination of the main rails D D', the switch-rails E E' F F', the pivotally-jointed bars H, connecting with the switch-rails F' at one end, then passing under the bases of the opposite switch and rigid rails, and having inwardly-extending arms to connect with the rails E, and the jointed bars G, arranged in a similar manner, but connecting the rails F E', the said bars G H being crossed, and the straight jointed bars K I, connecting the switch-rails in a manner similar to the arrangement of the bars G H, as set forth.

378,520. **MANUFACTURE OF PAPER.** TRUMAN J. PEARCE and MELVIN W. BEARDSLEY, Oakland, assignor to the Paraffine Paint Company, San Francisco, Cal. Filed Mar. 9, 1887. Serial No. 230,307. (No specimens.)

Claim.—As a new article of manufacture and of commerce, paper coated or saturated with maltha, substantially as herein set forth.

378,521. **CORN-HARVESTER.** DARIUS T. PHILLIPS, Chicago, Ill., assignor to the Phillips Corn Harvester Company, same place. Filed June 26, 1886. Serial No. 206,364. (No model.)



Claim.—1. In a corn-harvester, the combination, with a cutter located at the rear of the machine, of a shield, substantially as described, for arresting the stalks which then fall forward, and the folding fender-plates hinged together at their meeting ends and located forward of the cutter, normally projected into the line of the incoming stalks in a partially-folded condition, and held so as to be pushed aside by the passage of the stalks and restored as soon as the stalk or hill of stalks is passed, substantially as and for the purpose set forth.

2. In a corn-harvester, the combination, with a circular cutter located at the rear of the machine and with a shield secured above such cutter, of a bed or support located in front of the cutter to receive the severed stalks, an endless apron or elevator located to one side of the bed or support, and folding fender-plates located on the opposite side of said bed or support, said fender-plates being centrally hinged together and hinged at one end to the side frame and working loosely through guides thereon at the other end, and a spring secured to the back of said fender-plates all substantially as and for the purpose set forth.

3. In a corn-harvester, the combination, with a circular cutter located at the rear of the machine and with a shield secured above such cutter, of a series of spring-arms arranged in front of such cutter, extending across the passage-way for the stalks, said arms having capacity for individually yielding rearwardly to permit the corn to pass them, substantially as and for the purpose set forth.

4. In a corn-harvester, the combination of the following elements: a cutter located at the rear of the machine, endless chains to receive and convey the cut stalks and ears sidewise, rollers 39 and 40, spring guide arms or wires, and a reel arranged at the discharge side of said chains, whereby the ears and stalks carried over the top of the upper roller and the stalks carried back between the two rollers without the ears and at the same time exposed to the action of the reel are separated from the stalks, and suitable gearing for operating the several parts, as set forth.

5. In a corn-harvester, the combination, with a cutter and a receiving grate or support for the cut stalks, of endless chains located to the side of the receiving grate or support, and a pair of separating-rollers, one of said rollers having sprocket-wheels of smaller diameter than the roller-surface at points in its length, and the endless chains working over said sprocket-wheels, and a reel operated close to said rollers at the discharge end of said aprons, as set forth.

6. In a corn-harvester, the combination of the following elements: a cutter, a receiving grate or support for the cut stalks, endless chains to receive the stalks and ears from the grate or support, rollers 39 and 40, and arms or wires which guide the stalks and ears over the top roller and the stalks between the two rollers to separate the ears from the stalks, a separate husking mechanism, an endless chain to receive the detached ears and deliver them to the said husking mechanism, and suitable gearing for operating the several parts.

7. In a corn-harvester, the combination, with the circular cutter 25, journaled to the rear beam, 2, between longitudinal beams 5 and 6 of the frame, and means for operating said cutter, of spring-arms 27, secured to beam 5 and extending across the space between the beams 5 and 6, and permitting the stalks to pass between their free ends and beam 6 by the yielding spring-arms, substantially as set forth.

8. In a corn-harvester, the combination of the following elements: the circular cutter 25, journaled to beam 2 of the frame, and means for operating the cutter, the shield 28, secured above the said beam, and hinged fender-plates 29 and 30, secured upon the side beam, 6, and spring 33, connected to the plates and operating to fold them, in the manner and for the purpose substantially as described.

9. In a corn-harvester, the combination of the following elements: cutter 25, endless chains 35, conveying the cut stalks, rollers 39 and 40, the upper one of said rollers having sprocket-wheels of smaller diameter than itself let in between sections of the said roller, the said endless chains working over said sprocket-wheels, and suitable gearing for operating the parts, as set forth.

10. In a corn-harvester, the combination of the following elements: cutter 25, endless chains 35, located at the side and forward of the cutter and passed over sprocket-wheels 36, interposed between sections of roller 39 and rollers 39 and 40, spring-wires 47, extending up and curved over roller 39, and springs 49, extending down the rear side of roller 39, as set forth.

11. In a corn-harvester, the combination of the following elements: cutter 25, endless chains 35, rollers 39 and 40, reel 50, endless chain 52, located beneath the rollers 39 and 40 and carrying the corn to and along the husking-rollers, and suitable gearing for operating the parts, as set forth.

12. In a corn-harvester, the combination, with a husker, of the elevator 77, a platform composed of side boards, 74, and transverse slats 75, having hooks 76 on the under side, and the board 86, inclined downward from its receiving end, whereby a series of sacks are held open and filled, as set forth.

13. In a corn-harvester, the combination, with a husker, of the elevator 77, segmental platform 85, platform 74 75, and board 86, inclined downward from its receiving end, substantially as and for the purpose set forth.

378,522. **HOLDER FOR SAND-PAPER.** THOMAS L. PREVOST, Racine, Wis. Filed Apr. 21, 1887. Serial No. 236,616. (No model.)

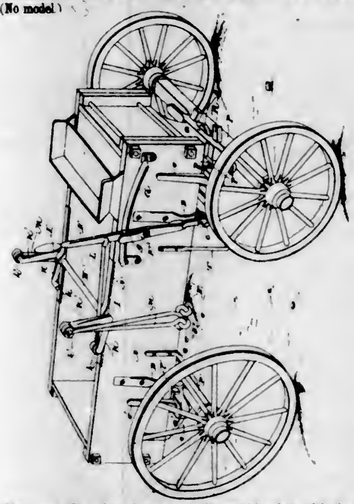


Claim.—1. The combination, with the base-plate, of a hand-grasp attached thereto, and the pivoted clamping-jaws having operating-extensions in close proximity to the said hand-grasp, said extensions being rigidly connected with said clamping-jaws, substantially as described.

2. The combination, with the base-plate, of a hand-grasp attached thereto provided with recesses, and the pivoted clamping-jaws having operating extensions within the recesses of the hand-grasp, the said extensions being rigidly connected with said clamping-jaws, substantially as described.

3. The combination, with the base-plate, of the hollow hand-grasp attached thereto, and provided with recesses on each side of the pivoted clamping-jaws, having operating-extensions extending within the recesses of the hand-grasp and a spring interposed between said extensions, substantially as described.

378,523. **DUMPING-WAGON.** ALEXANDER ROGERS and WILLIAM T. HATTEN, Roseland, Nebr. Filed Oct. 26, 1887. Serial No. 253,362. (No model.)



Claim.—1. In a dumping-wagon, the combination, with the body A, of the bottom B, comprising the leaves C C, pivoted near the outer ends to the said body, the angle-lever I, pivoted to the side of the body, and the operating-rods M M, connecting one arm of the said lever to the free ends of the leaves, substantially as and for the purpose specified.

2. In a dumping-wagon, the combination, with the body A, of the bottom B, comprising the leaves C C, pivoted at the outer ends to the wagon and having the laterally-projecting eyes secured to the inner ends, the angle-lever I, pivoted to the upper edge of the body and having the arm K, provided with an inwardly-extending pintle or stop, *k*, and the arm K', and the operating-rods M M, connecting the end of the arm K' to the eyes on the free ends of the leaves C C, respectively, substantially as and for the purpose specified.

3. In a dumping-wagon, the combination, with the body A, of the leaves C C, having the trunnions *c c* on the sides thereof near the outer ends journaled in bearings on the lower edge of the body, the angle-lever I, pivoted to the side of the body, operating-rods M M, connecting one of the arms of said lever to the free ends of the leaves C C, respectively, and the lever F, pivoted to the side of the body and connected to the other arm of the lever I, all constructed, arranged, and operated substantially as specified.

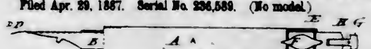
4. In a dumping-wagon, the combination, with the body A, having the depending bearings D D secured to the lower edge thereof, of the movable bottom B, comprising the sections C C, provided near the outer ends with trunnions journaled in the bearings D, guide-bar G on the side of the wagon, lever F, journaled on the projecting end of one of the said trunnions and operating between the guide-bar G and the side of the body, angle-lever I, having the arms K and K', operating-rods M M, connecting the arm K' to the free ends of the leaves C C, respectively, and the connecting-rod L, connecting the arm K to the lever F, all constructed and arranged substantially as and for the purpose specified.

5. In a dumping-wagon, the combination, with the body A, of the leaves C C, journaled near the outer ends to the said body, the guide-bar G, having a notch, *g*, therein, lever F, pivoted to the side of the body and adapted to engage in the said notch *g*, the spring F', secured to the lever and adapted to bear on the opposite side of the bar G from the lever, for the purpose described, the transverse shaft H, journaled in bearings at the upper edge of the body, near the center, the angle-levers I I on the outer ends of the shaft and having the arms K and K', the operating-rods M M, connecting the arm K' to the free ends of the leaves C C, respectively, and the rod L, connecting the arm K to the lever F, all constructed and arranged substantially as and for the purpose specified.

6. In a dumping-wagon, the combination, with the body, of the leaves C C, journaled therein and adapted to be depressed at the inner ends, the angle-lever I, comprising the arms K and K', having at their extremities, respectively, the inturned pintle and stop *k* and the outwardly-turned pintle *k'*, the operating-rods M M, connecting the pintle *k'* to the free ends of the leaves C C, respectively, and the lever F, pivoted to the body and connected to the extremity of the arm K, the pintle or stop *k* on the end of the said arm K being adapted to engage the upper edge of the body to limit the motion of the angle-lever, all constructed, arranged, and operated substantially as and for the purpose specified.

7. In a dumping-wagon, the front axle provided with the fifth-wheel R, combined with the perch S, attached to the front axle only within the fifth-wheel, and the rods T, connecting the other end of the perch to the side of the wagon-body, substantially as specified.

378,524. **FILLING DEVICE FOR FOUNTAIN PENS OR TUBES.** REUBEN C. RUTHERFORD and FERDINAND S. BARTRAM, New York, N. Y. Filed Apr. 29, 1887. Serial No. 236,589. (No model.)



Claim.—1. In a fountain pen or tube, a self-filling device consisting of a cylinder having perforated heads adjusted within the tube or case, in combination with a movable stop of ovoid conformation within said cylinder, said stop being provided with poles sufficiently elongated to project through said perforations, and around which poles air and ink or fluids may pass to operate to open or to close either of said perforations by the automatic action of said stop, produced by contact with or displacement of air and ink or fluids within said tube, substantially as in the manner hereinbefore described, and for the purposes specified.

2. In a fountain pen or tube, a self filling, retaining, and dispensing device for fluids, consisting of a cylinder having perforated upper and lower heads adjusted within the tube and incasing a movable stop of globular, oval, or other suitable or variable body or form, from which extend in opposite directions two arms or poles sufficiently elongated to project through said perforations, and around and between which poles and perforations air and fluids may pass above or below said cylinder, and may be restricted and excluded from further passage by the automatic reciprocating movement of said stop within the cylinder when operated by the filling of said tube by immersion or by exhausting the air therefrom.

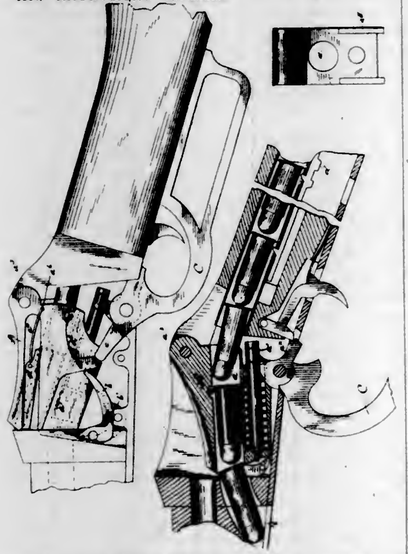
3. In a tube, a floating stop partially immersed and moved by the fluid, in combination with a tubular opening and closing screw or plug at its upper end, having its lower orifice conformed to the periphery of the stop at their points of contact for the purpose of closing the upper extremity of the tube and preventing the fluid from rising above the upper surface of the stop when being charged or filled by immersion or suction, and constructed substantially as hereinbefore described.

4. In a fountain pen or tube having a perforated top or cap, one or more perforated disks adjusted within the tube, in combination with one or more floating stops below, above, or between said disks, all jointly or separately operating in the manner described, and for the purposes specified.

5. A fountain-pen consisting of a tube, a pen, *d*, feed-bar *b*, cage *e*, containing the stop *f*, in combination with the tubular screw G, for

the purposes declared, all constructed and arranged for joint operation substantially as hereinbefore described.

378,525. MAGAZINE FIRE-ARM. ARTHUR W. SAVAGE, New York, N. Y., assignor to Marcellus Hartley, same place. Filed Nov. 11, 1887. Serial No. 254,938. (No model.)



Claim.—1. In a fire-arm, a block constituting a combined cartridge-conduit and breech-block made in one piece, pivoted at its rear end to swing downward in opening and upward in closing the breech of the barrel, said block having a passage entirely through it, to form a closed conduit from the magazine behind to the cartridge-chamber in the barrel in front of said block, substantially as described.

2. A block constituting a combined cartridge-conduit and breech-block made in one piece, pivoted at its rear end to swing downward in opening and upward in closing the breech of the barrel, said block having a passage entirely through it to form a closed conduit from the magazine behind to the cartridge-chamber in the barrel in front of said block, in combination with an operating-lever arranged beneath the breech mechanism, substantially as described.

3. A combined cartridge-conduit and breech-block made in one piece, pivoted at its rear upper corner and swinging in a vertical plane to open and close the breech of the barrel, said block having a passage entirely through it to form a closed conduit from behind to the cartridge-chamber in front and carrying the firing mechanism, in combination with a magazine in the stock of the gun behind the block, and a lever for operating the breech-block arranged beneath the breech mechanism, substantially as described.

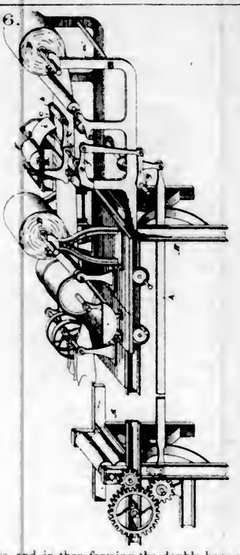
4. A combined cartridge-conduit and breech-block made in one piece, pivoted at its rear upper corner, having a passage entirely through it carrying the firing mechanism for igniting the charge, and a detent for normally arresting the cartridges in their forward movement, but to release them one by one upon the upward movement of the block, in combination with the magazine in the rear stock and an operating-lever beneath the breech mechanism.

5. In a magazine fire-arm, the combination, with the chamber and with the magazine in the rear stock, of a swinging breech-block having a passage through it which forms a continuation of the magazine, and one or more side recesses, a^3, and an operating-lever provided with one or more arms, c, which work in said recess or recesses to operate the breech-block, the top walls of the recesses a^4 being arcs of a circle concentric with the axis of the lever when the parts are in the loading position, substantially as and for the purpose described.

378,526. MANUFACTURE OF PAPER BAGS. CARL F. SCHMIDT, Eiberfeld, Germany, assignor, by mesne assignments, to Lucius G. Fisher, Chicago, Ill. Filed Apr. 25, 1885. Serial No. 163,445. (No model.)

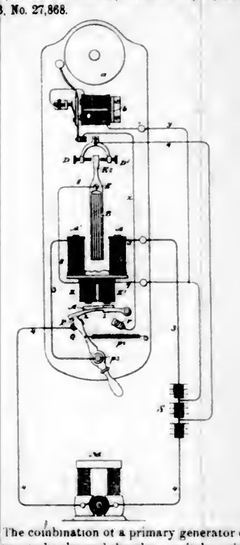
Claim.—The within-described mode of forming double paper bags and sealing the bottom of the inner section, the same consisting in pasting both sections together transversely at intervals equal to the lengths

378,526.



of the blanks, and in then forming the double bags with the bottom seam of the bag at the point where the two sections are pasted together, substantially as set forth.

378,527. AUTOMATIC SWITCH FOR SECONDARY BATTERIES. JOHN S. SELLON, Hatton Gardens, County of Middlesex, England, assignor to The Electrical Accumulator Company, of New York. Filed Aug. 30, 1887. Serial No. 248,258. (No model.) Patented in England Jan. 13, 1883, No. 217; in France June 20, 1883, No. 156,156, and in Germany July 17, 1883, No. 27,868.



Claim.—1. The combination of a primary generator of electricity, a secondary battery to be charged thereby, a switch or circuit-changer consisting of a contact-stop and a pivoted bar normally caught and held in contact therewith against suitable retractile force, and means for releasing said pivoted bar operated by variations in the condition of the battery, substantially as described.

2. The combination of a primary generator of electricity, a secondary battery supplied with electricity therefrom, an electro-magnet

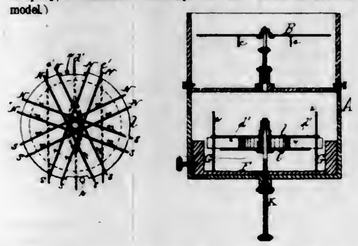
operated by variations in the polarity of current, an electro-magnet operated by a local circuit controlled by the first-named magnet, a circuit-breaker in the supply-circuit, and an electro-magnetic alarm operated by the second magnet.

3. The combination of a secondary battery and a primary generator of electricity in the main circuit, an electro-magnet operated by variations in the polarity of current, a circuit-breaker in the main circuit, and an electro-magnetic alarm, both controlled by the first-named electro-magnet.

4. The combination of a dynamo-electric machine, a secondary battery to be charged thereby, a switch or circuit-changer operated by variations in the condition of the battery to break the charging-circuit, and a signal or indicator in a local circuit.

5. The combination of a dynamo-electric machine, a secondary battery to be charged thereby, a switch or circuit-changing device operated by variations in the condition of the battery, and a signal or alarm operated by said switch.

378,528. CORRECTING DEVICE FOR SHIPS COMPASSES. LEON SIRIEIX, San Francisco, Cal., assignor to the Sirieix Mariners Compass Company, of California. Filed Apr. 16, 1887. Serial No. 235,116. (No model.)



Claim.—1. A correcting-compass, $l\,l'$, provided with two sets of magnetic bars, one set being underneath the card of the compass and the other set on its top, in combination with a prime compass having magnetic bars, substantially as specified.

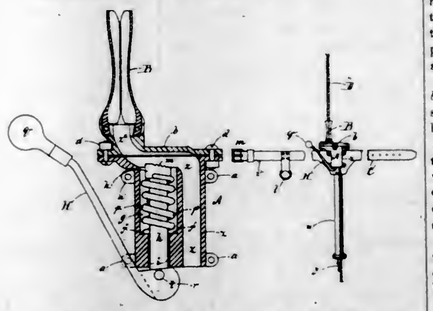
2. In a compensating compass, the combination, with a prime compass and a correcting-compass, of the soft-iron blocks G, mounted beside and moved with the correcting-compass, as set forth.

3. In a compensating compass, the combination, with a prime compass and a correcting-compass, of the soft-iron blocks G, mounted beside and moved with the correcting-compass, and means, substantially as described, for adjusting the said blocks and correcting-compass in a horizontal plane, as set forth.

4. In a compensating compass, the combination, with the prime compass and a correcting-compass, of the soft-iron blocks G G, and bar F, on the ends of which they are mounted, and the guides or stops $r\,r$ on bar F, to hold the correcting-compass within slight limits of rotation, as set forth.

5. In a compensating compass, the combination of a prime and a correcting compass, and the upright soft-iron blades P, arranged relatively to the correcting-compass, as described, to compensate the magnetism from vertical iron, substantially as specified.

378,529. FIRE-ESCAPE. DAVID H. SWEENEY, Fitchburg, Mass. Filed Dec. 9, 1887. Serial No. 257,401. (No model.)



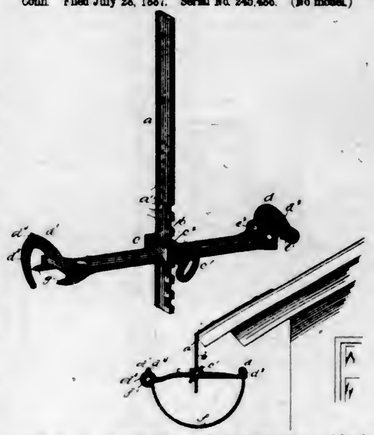
Claim.—1. In a device of the character described, the combination of the following instrumentalities, to wit: a body, provided with an opening for receiving the rope, a cap bolted to said body and provided with an opening for the rope, the opening in the cap registering with that in the body, a handle consisting of two disks or parts pivoted, respectively, on each side of the opening in said cap, a vertically-arranged bar disposed in a chamber and hole in said body, and having a serrated head projecting into the opening in said body, a coiled spring disposed around said bar within said chamber and adapted to force it into said opening, a lever provided with a cam-shaped head and pivoted to the lower end of said bar, a harness connected with said body for securing the same to the person, and a rope inserted in the opening in said body and cap, substantially as set forth.

2. In a fire-escape, the body A, provided with the chamber g, hole i, and opener z, the cap b, having the opening z^3 and secured to said body, the bar h, spring p, pivoted cam-lever H, harness C, and rope D, combined and arranged to operate substantially as described.

3. In a fire-escape, the handle B, composed of two disks and pivoted to the cap b, having the opening z^3, in combination with the body A, having the opening z, chamber g, and hole i, the bar h, disposed in said hole and chamber and provided with the beveled serrated head k and coiled spring p, the lever H, having the cam-shaped head r and pivoted to said bar, the rope D and harness C, substantially as set forth.

4. In a fire-escape of the character described, a body having a circuitous opening for the rope, a handle pivoted at one end of said opening, said handle consisting of two disks concave in cross-section and adapted to clasp said rope, a brake-bar fitted to slide within said body and provided with a spring adapted to press it against the rope with sufficient force to prevent the body from sliding thereon, a cam-lever pivoted to said bar and adapted to withdraw it from the rope, and a harness for securing said body to the person, substantially as set forth.

378,530. EAVES-TROUGH HANGER. HENRY R. TODD, Meriden, Conn. Filed July 28, 1887. Serial No. 245,456. (No model.)



Claim.—1. In combination with the suspending-rod having the notched edge, the cross-bar having a rod-socket and a clamp device to secure it to the rod, and the adjustable cross-bar having on its ends the attaching device, consisting of the curved arm bearing the inturned punches and the corresponding socket in the bar end, all substantially as described.

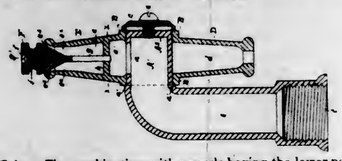
2. In combination with the suspending-rod a, having the notches b and leveling-gage a', the cross-bar c, with the rod-socket c^2, clamp-screw c', and sockets c^3, the said bar terminating in the curved arm d^2, bearing the punches d', all substantially as described.

3. In combination with an eaves-trough, a cross-bar secured to the edges and spanning the trough and having a suspending-bar socket with a clamp device, and a suspending-rod consisting of a single piece or bar of metal and having along its length a series of dots or marks constituting a bending and leveling gage, all substantially as described.

4. In combination with the suspending-rod a, the cross-bar c, with the rod-socket c^2 and the clamp-screw c', the said bar terminating at one end with the spurs g, and curved arm d^2, having on its back the holding-point d^4, all substantially as described.

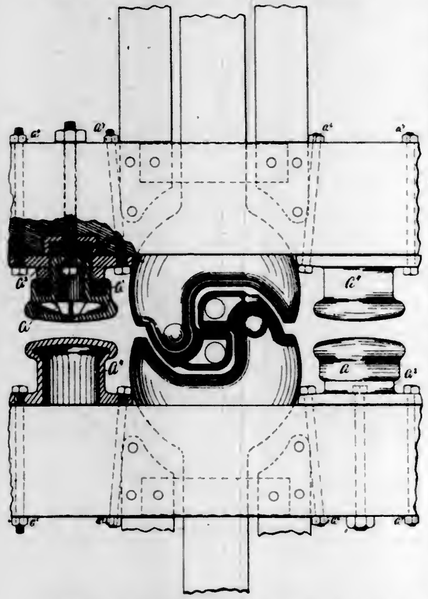
5. In a trough-hanger, the suspending-rod and the cross-bar secured to the suspending-rod, the said cross-bar terminating at one end with the spurs g, and the curved arm d^2, that is adapted to inclose the rolled edge of the trough, all substantially as described.

378,531. NOZZLE. CHARLES I. TRAVIS, Minneapolis, Minn. Filed June 14, 1887. Serial No. 241,245. (No model.)



Claim.—The combination, with a nozzle having the lower portion of its bore tapering outward, the outer portion straight and terminating in a conical mouth, of a cone-shaped plug adjustably supported with its apex in said mouth, the inclinations of said plug and mouth being in straight courses, and the angle of the former to the axial line being greater than the latter, a threaded spring-rod for carrying and adjusting said plug centrally to the mouth, and a bridge at the base of the nozzle for supporting said rod, substantially as set forth.

378,532. CAR-BUMPER. ALVIN W. VAN DORSTON, South Bend, Ind. Filed June 30, 1887. Serial No. 242,980. (No model.)



Claim.—1. In a freight-car buffer, the combination of the frame a^3, the piston e, and head a, with the bolt a^2, substantially as shown, and for the purpose set forth.

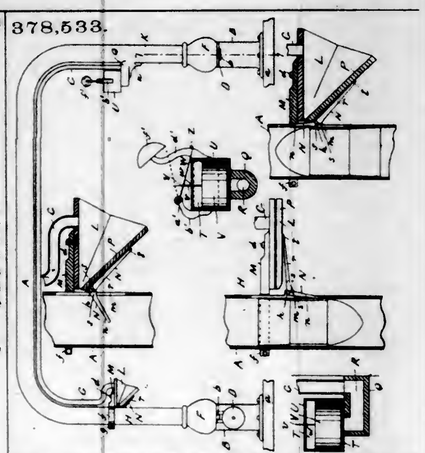
2. In a freight-car buffer, the combination of the frame a^3, the piston e, and head a, with the india-rubber cushions a' and a^3, substantially as and for the purpose set forth.

3. In a car-buffer, the head a and piston e, having india-rubber cushion a', in combination with the frame a^3, and cushion a^3, forming a reciprocating buffer to the rigid block a^4, substantially as described, and for the purpose set forth.

378,533. PNEUMATIC CASH-CARRIER APPARATUS. WILLIAM A. WHEELER, Medford, Mass. Filed Apr. 13, 1887. Serial No. 234,669. (No model.)

Claim.—1. The combination, with a pneumatic tube for the transmission of a carrier, &c., therethrough, of an independent tube or passage having communication with a suitable indicator or signaling or sounding device and with a bellows or collapsible and expansible chamber, said bellows or collapsible and expansible chamber being suitably connected to said pneumatic tube for operation by the carrier, &c., as it travels along the pneumatic tube.

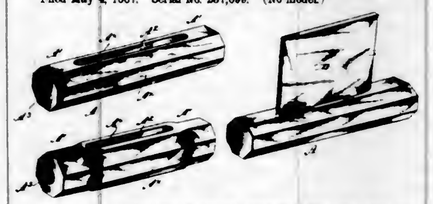
2. The combination, with a pneumatic tube for the transmission of a carrier, &c., therethrough, and an independent tube or passage



having communication with a suitable indicator or signaling or sounding device and with a bellows or collapsible and expansible chamber, of a pivoted lever arranged to act upon said bellows or collapsible and expansible chamber and extending into the pneumatic tube in proper position for the carrier, &c., as it travels along said pneumatic tube, to strike or abut against said lever and operate said bellows, for the purpose specified.

3. The combination, with a pneumatic tube for the transmission of a carrier, &c., therethrough, and an independent tube or passage having communication with a suitable indicator or signaling or sounding device and with a bellows or collapsible and expansible chamber, of a jointed pivoted lever, one of its arms arranged to act upon said bellows or collapsible and expansible chamber, and its other arm extending into the pneumatic tube in proper position for the carrier, &c., as it travels along said pneumatic tube, to strike against said lever and operate said bellows, for the purpose specified.

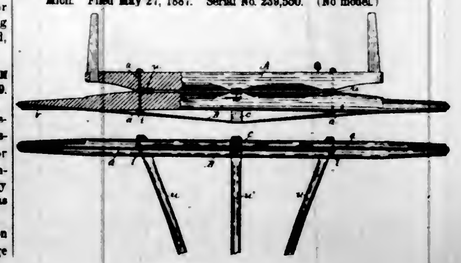
378,534. TURN-BUCKLE. CHARLES H. WILLIAMS, Cleveland, Ohio. Filed May 4, 1887. Serial No. 237,099. (No model.)



Claim.—1. A turn-buckle having seamless head and body portions, the latter bent outwardly between the heads and provided with a transverse opening, substantially as and for the purpose specified.

2. A turn-buckle having seamless head and body portions of polygonal cross-sections, and a transverse opening through the body, the walls of said opening being free from a seam, substantially as specified.

378,535. WAGON-AXLE TRUSS. OSCAR J. WILLIAMS, Lawton, Mich. Filed May 27, 1887. Serial No. 239,550. (No model.)

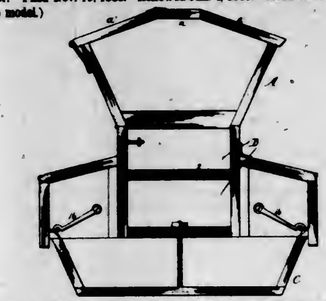


Claim.—1. A vehicle-axle having a projection on the under side, combined with a truss composed of two rods, their inner ends being lapped by each other and extending well outward beyond the axial projection upon which both rods rest, and each lapped end being attached to the axle at individual points a little removed from the inner end of the skeins, whereby each rod independently trusses separate portions of the axle each side of its center between its ends, substantially as set forth.

2. In combination with a vehicle axle and bolster, the lapping truss-rods having the angled ends passed up through the axle and bolster and serving as bolts, substantially as set forth.

3. In combination with a vehicle-axle and the braces having the eyed end, the lapping truss-rods having the bolt end passed up through the eye of the brace and the hole in the axle, substantially as set forth.

378,536. FEEDING BIN AND TROUGH. JOHN T. WOODS, Superior, Nebr. Filed Nov. 19, 1886. Renewed Jan. 4, 1888. Serial No. 259,796. (No model.)



Claim.—1. A feeding bin and trough consisting of the bin A, box B, having a perforated partition, 2, therein and a perforated bottom, 13, trough C, the feeding-pipes 1, extending through the bottom of bin A, cut-offs 3, pivoted to the upper face of the partition 2, sliding bar 7, held in place by cleats 10, U-shaped wires 8, one end working in perforations 9 in said sliding bar and the other in the free ends 6 of the cut-offs 3, lever 22, having its inner end bent down and working in the perforations 24 in said bar 7, its other end extending out through the end of the box B, the lower feed-pipes, 11, secured to the partition 2 and the perforated bottom 13, divider 17, running immediately under perforations 14 in the bottom 13, cut-off 18, supported by cross-beams 19 and 20, partitions 15 in the trough C, and the lids D, protecting said trough C, all substantially as shown and described, and for the purposes set forth.

2. In a feeding bin and trough as above described, the combination, with the said trough and the pipes, of the partition 2, perforated sliding bar 7, secured in place on the upper face of the partition by cleats 10, the cut-offs 3, pivoted to the upper face of said partition, U-shaped wire 8, one end working in the perforation of the free end 6 of said cut-off slide, the other end in perforation 9 of the sliding bar 7, and lever 22, its inner end, 23, bent down and working in perforation 24 of said bar 7, substantially as shown and described.

378,537. CARRIER FOR STORE-SERVICE APPARATUS. MILTON F. ADAMS, New York, N. Y., assignor to the Rapid Service Store Railway Company, same place. Filed Feb. 3, 1887. Serial No. 226,360. (No model.)



Claim.—1. In store-service apparatus, the combination, with a carrier, of a spring-clip, a spreader for opening the jaws of the clip, and adjustable means holding such jaws normally closed, substantially as set forth.

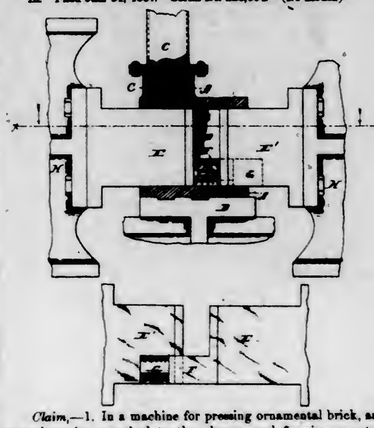
2. In store-service apparatus, the combination, with a carrier, of a normally-closed spring-clip, a lever pivoted to one jaw of said clip and passing through the other jaw, and a spreading plate or wiper carried by said lever between said jaws, substantially as set forth.

3. In store-service apparatus, the combination, with a carrier, of a normally-closed spring-clip, a spreader for opening the jaws of such clip, adapted to be drawn downwardly by the forefinger of the operator, and an extension on said clip for receiving the upward thrust of the thumb of the operator, substantially as set forth.

4. In store-service apparatus, the combination, with a carrier, of a spring-clip, the holding bolt and nut, the spreading-lever carrying the spreading-plate, the pivoted operating-link, and the extension thumb-piece, substantially as set forth.

5. The combination of the two jaws E of a spring-clip, a bolt carried by one jaw and having a nut bearing upon the other, a lever, G, pivoted to one jaw and having a wiper for spreading the jaws apart, and an operating-link, I, substantially as described.

378,538. BRICK-MACHINE. JAMES C. ANDERSON, Highland Park, Ill. Filed Jan. 31, 1887. Serial No. 226,004. (No model.)



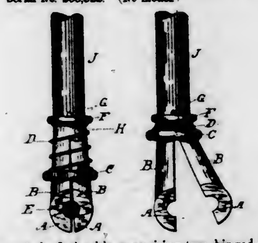
Claim.—1. In a machine for pressing ornamental brick, an ornamental portion attached to the plunger and forming a part of the walls of the mold when the brick is being pressed, and mechanism, substantially as described, for pressing the clay into form and ejecting the brick from the mold without injury to the ornament.

2. In a brick-machine of the character described, the plungers E E', provided with the ornamented extensions F, which project forward and form a portion of the wall of the mold, as set forth.

3. In a mechanism and molds for forming brick, the combination of the plungers E E' and the plunger-extension F, and recess G, substantially as described.

4. In a mechanism and molds for ornamental brick, the plunger E, having the projection F placed at right angles to the surface of the die-matrix, to be operated in conjunction with a plunger, E', substantially as described.

378,539. DRAFT-SHACKLE FOR VEHICLES. JAMES R. BOSFORD, Auburn, and THOMAS L. CHURCH, Syracuse, N. Y. Filed July 17, 1886. Serial No. 208,322. (No model.)



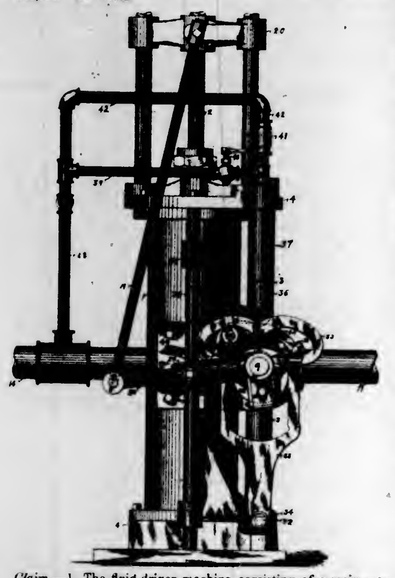
Claim.—A draft-shackle comprising two hinged jaws, B B, a divided eye, A A, a yoke, C, and spring D, all combined and operating as above described, together forming an improved self-adjusting draft-shackle for vehicles.

378,540. HANDLE ATTACHMENT. FRANK BROUSE, Indianapolis, Ind. Filed Apr. 2, 1887. Serial No. 233,453. (Model.)



Claim.—As an improvement in devices for extending the handles of brooms and similar implements, the perforated hollow cylinder open at both ends and provided with an inclined partition, as shown and described, said cylinder being adapted to receive the ends of a handle and its extension, as set forth.

378,541. MACHINE TO BE DRIVEN BY FLUID-PRESSURE. WILLIAM P. CANNING, Lowell, Mass. Filed Jan. 27, 1887. Serial No. 225,621. (No model.)



Claim.—1. The fluid-driven machine consisting of a main cylinder and a piston reciprocating therein, a valve controlling the motion of said piston, a rocking tumbler-driver actuated by said piston, a tumbler primarily actuated by said tumbler-driver and actuating said valve, a pointed bodily-reciprocating cam pressing on said tumbler, a cam-support to which said cam is pivoted, an eccentric actuated by said piston and rocking said cam on its supporting-pivot, a fluid-actuated cam-presser provided with a supply-conduit leading thereto, a quantity-controller in said supply-conduit, a secondary conduit connected with said supply-conduit between said cam-presser and said quantity-controller, and an automatically-working valve in said secondary conduit opening to allow the driving-fluid to leave said cam-presser and kept normally closed by fluid-pressure, substantially as described, and for the purposes specified.

2. In a fluid-driven machine, a main cylinder and a piston reciprocating therein and a valve controlling the motion of said piston, combined with a pointed bodily-reciprocating cam, a tumbler working in connection with said cam, means connected with said piston for forcing said tumbler under and past the point of said cam, and a cam-presser forcing said cam against said tumbler, and thereby forcing said tumbler along in its course when it has been forced past the point of said cam, substantially as described, and for the purposes specified.

3. The combination, in a fluid-driven machine, of a main cylinder and a piston reciprocating therein, with a valve controlling the motion of said piston, a tumbler-driver actuated by said piston, a tumbler primarily actuated by said driver and actuating said valve, a pointed bodily-reciprocating cam, a cam-presser forcing said cam against said tumbler, and an eccentric or its equivalent actuated by said piston for bringing the point of said cam and the said tumbler together before said piston has reached the end of its stroke, substantially as described, and for the purposes specified.

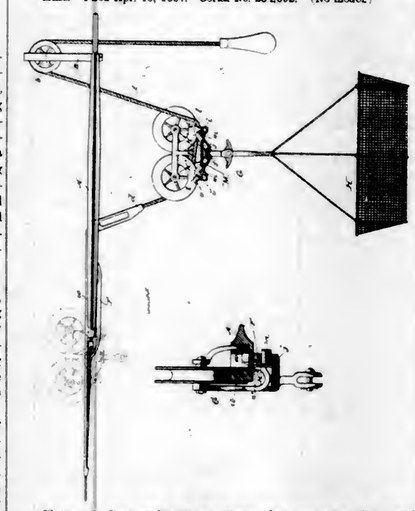
4. The combination, in a fluid-driven machine, of a main cylinder and a piston reciprocating therein, with a valve controlling the motion of said piston, a tumbler-driver actuated by said piston, a tumbler primarily actuated by said driver and actuating said valve, a pointed bodily-reciprocating cam, a fluid-actuated cam-presser forcing said cam against said tumbler to give said tumbler a secondary motion independent of the motion of said tumbler-driver, and a means for bringing said tumbler and the point of said cam together before said piston has reached the end of its stroke, substantially as described, and for the purposes specified.

5. The combination, in a fluid-driven machine, of a main cylinder and a piston reciprocating therein, with a valve controlling the motion of said piston, a tumbler-driver actuated by said piston, a tumbler primarily actuated by said driver and actuating said valve, a pointed bodily-reciprocating cam, a fluid-actuated cam-presser forcing said cam against said tumbler to give said tumbler a secondary motion independent of said tumbler-driver, a supply-conduit leading to said fluid-actuated cam-presser, a secondary conduit leading from said fluid-actuated cam-presser, an automatically-working valve in said secondary conduit opening outwardly from said fluid-actuated cam-presser, and a means for bringing said tumbler and the point of said cam together before said piston has reached the end of its stroke, substantially as described, and for the purposes specified.

6. The combination, in a fluid-driven machine, of a main cylinder and a piston reciprocating therein, with a valve controlling the motion of said piston, a tumbler-driver actuated by said piston, a tumbler primarily actuated by said tumbler-driver and actuating said valve, a bodily-reciprocating pointed cam that is pressed against said tumbler, a cam-support to which said cam is pivoted, and an eccentric actuated by said piston and rocking said cam upon its supporting-pivot to bring the point of said cam and said tumbler together before the end of the stroke of said piston, substantially as described, and for the purposes specified.

7. The combination, in a fluid-driven machine, of a main cylinder and a piston reciprocating therein, with a valve controlling the motion of said piston, a rocking tumbler-driver actuated by said piston, a tumbler primarily actuated by said driver and actuating said valve, a pointed bodily-reciprocating cam pressing on said tumbler, a cam-support to which said cam is pivoted, an eccentric actuated by said piston and rocking said cam on its supporting-pivot, a fluid-actuated cam-presser provided with a fluid-supply conduit leading thereto, a secondary conduit leading from said fluid-actuated cam-presser, and an automatically-working valve in said secondary conduit opening to allow fluid to leave said fluid-actuated cam-presser, substantially as described, and for the purposes specified.

378,542. STORE-SERVICE APPARATUS. JAMES T. COWLEY, New York, N. Y., assignor to the Lamson Store Service Company, Boston, Mass. Filed Apr. 13, 1887. Serial No. 234,692. (No model.)



Claim.—1. In a cash and parcel carrying apparatus, the combination, with the supporting-bracket for the way, of a trip device secured to the bracket and consisting of an arm, F, having inclined ends, and a car traveling the way, provided with automatic spring-actuated gates adapted to contact with and be tripped by said trip device, substantially as set forth.

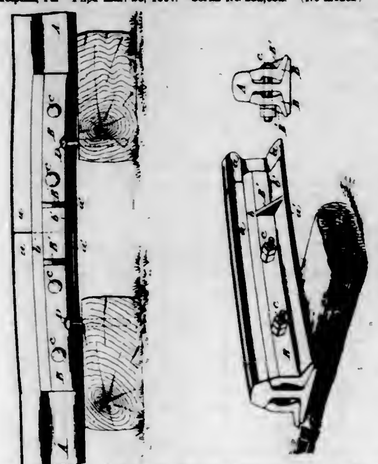
2. In cash or parcel cars, the combination, with the yoke or frame carrying the grooved wheels, of gates H' H', pivoted to the yoke, as shown, and a spring connecting the gates, said gates having projections extending laterally from their sides, whereby the gates may be tripped, substantially as described.

3. The combination, with a wheeled carrier, of yielding gates pivoted thereto and provided with ears v, substantially as described.

4. The combination, with the track or way and means for supporting the same, of a flexible elevator, and a car traveling the way, provided with spring-actuated gates for preventing displacement thereof from said way, said gates having ears v, substantially as and for the purpose described.

5. The combination, with a wheeled carrier, of the pivoted gate H', having contacting-roller m, slot l, and a guide-lug, i, substantially as described.

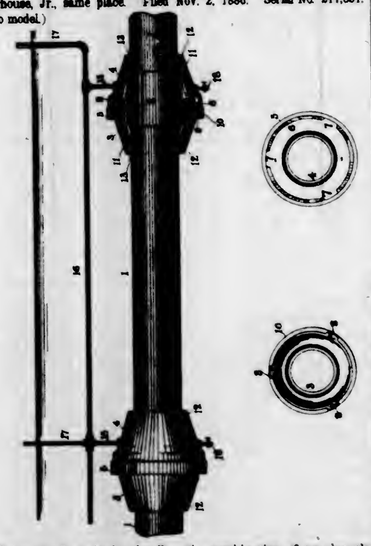
378,543. RAIL-SPLICE OR FISH-PLATE. HENRY F. COX, Philadelphia, Pa. Filed Mar. 28, 1887. Serial No. 232,652. (No model.)



Claim.—1. As a new article of manufacture, a railway splice or fish-plate having a gradual upward curvature from its ends to its center, substantially as and for the purpose specified.

2. As a new article of manufacture, a railway splice or fish-plate provided with upwardly and outwardly extending flanges, said plate having a gradual upward curvature from its ends to its center, and having wings or buttresses B', all substantially as and for the purpose specified.

378,544. MEANS FOR CARRYING OFF ESCAPING GAS FROM GAS-MAINS. JONAH W. ELLS, Pittsburg, Pa., assignor to George Westinghouse, Jr., same place. Filed Nov. 2, 1886. Serial No. 217,851. (No model.)



Claim.—1. In a single pipe-line, the combination of two lengths of pipe with a chamber formed around the pipe ends by the junction of two bowls or shells adjustable along said lengths of pipe, and an enlarged or expanded rim on one bowl or shell that extends over the rim of its adjoining bowl or shell, and a means for the free escape of gas from said chamber.

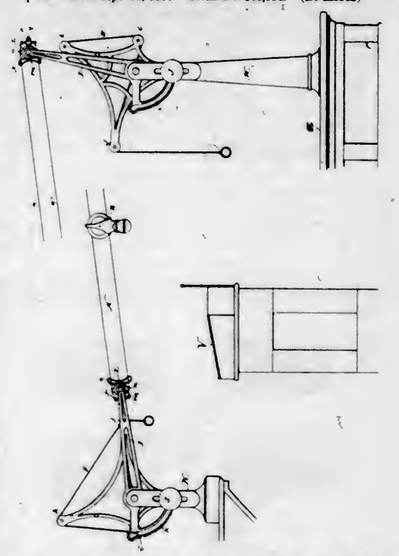
2. The combination of two lengths of pipe with a chamber formed around the pipe ends by the junction of two bowls or shells adjustable along said lengths of pipe, an enlarged or expanded rim on one bowl or shell that extends over the rim of its adjoining bowl or shell, and a means for the free escape of gas from said chamber.

3. The combination of two lengths of pipe with a chamber formed around the pipe ends by the junction of two bowls or shells adjustable along said lengths of pipe, an enlarged or expanded rim on one bowl or shell that exteuds over the rim of its adjoining bowl or shell, and an interlocking device whereby the shells or bowls are securely held together.

4. The combination of two lengths of pipe with a chamber formed around the pipe ends by the junction of two bowls or shells adjustable along said lengths of pipe, an enlarged or expanded rim on one bowl or shell that extends over the rim of its adjoining bowl or shell, a suitable interlocking device, whereby the shells are held together, and a packing interposed between the ends of said bowls and the inclosed gas-pipe.

5. The combination of two lengths of pipe with a chamber formed around the pipe ends by the junction of two bowls or shells adjustable along said lengths of pipe, and a means whereby liquid matter collected in said chamber may be drawn off or blown out.

378,545. STORE-SERVICE APPARATUS. THEODORE P. FARMER, Boston, Mass., assignor to the Lamson Cash Railway Company, same place. Filed Sept. 12, 1885. Serial No. 176,951. (No model.)



Claim.—1. A store-service track consisting of two parallel rails in the same vertical plane and adjustable supports for the track, each support consisting of a single arm loosely connected at one end to the track and pivotally supported at its opposite end, whereby the track can be inclined to direct carriers thereon from end to end, substantially as described.

2. The combination of adjustable supports adjacent to the main desk and counter of a store, and a track consisting of two parallel rails connected to the supports and provided with a carrier, and spring-buffers at the ends of the track and located between the rails thereof, substantially as described.

3. The combination of a store-service track consisting of two parallel rails, standards at the ends of the track, arms pivoted to the standards at one end and pivotally connected to the track at the opposite end, and guide-pulleys supported by the standards, and cords connected to the arms and guided by said pulleys, substantially as described.

4. The combination of the track consisting of two parallel rails, and spring-buffers, each consisting of a plate-spring extending across between the track-rails, substantially as described.

5. The combination of the track, standards, arms pivoted to the standards at one end, attachments pivotally connecting the track

control the position of the brush upon the armature in accordance

378,549. SPRING-PUNCH. WESLEY C. JONES, Waxahachie, Tex.

Claim.—1. A blast-furnace having water-cooled horizontal bosh-

5. The combination of the track, standards, arms pivoted to the standards at one end, attachments pivotally connecting the track to the opposite end of the arms, and cords connected to the arms to operate the same, substantially as described.

6. The combination of the slotted standard, pivoted and slotted arm connected to the track, and securing device J, substantially as described.

7. The combination of the pivoted arms, pivoted blocks, and track connected to said blocks, substantially as described.

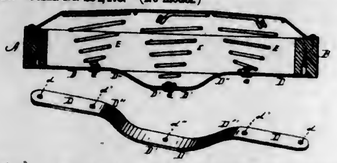
8. The combination, with the pivoted arm, of a pivoted block track consisting of wires, and a tightening device supported by the block to which the wires are connected, substantially as described.

9. The combination of the pivoted arm, pivoted block, wires, and adjustable cross-piece to which the wires are connected, substantially as described.

10. The combination of the wheel, yoke, receptacle, and guide-rollers *f, f*, substantially as described.

11. The combination of the wheeled carrier adapted to parallel rails in the same vertical plane and a guard extending over the upper rail, substantially as described.

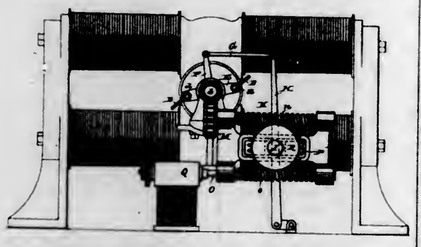
378,546. CAR-SEAT. FRED H. HENRY, Wakefield, Mass., assignor to the Wakefield Rattan Company, of Massachusetts. Filed Nov. 7, 1887. Serial No. 254,475. (No model.)



Claim.—1. In a seat or chair for railway-cars, the combination, with the frame A B and springs E, of the herein-described supporting-slat, consisting, essentially, of the outer horizontal flat portions, D D, and the central depressed horizontal flat portion, D', substantially as and for the purpose set forth.

2. In a seat or chair for railway-cars, the combination, with the frame A B and springs E, of the herein-described metallic supporting-slat, consisting, essentially, of the outer horizontal flat portions, D D, and the central depressed horizontal flat portion, D', said springs being secured to said slat by rivets *c*, substantially as and for the purpose described.

378,547. REGULATOR FOR ELECTRIC GENERATORS. WARREN S. HILL, Boston, Mass. Filed Apr. 21, 1887. Serial No. 235,686. (No model.)



Claim.—1. The combination, with an electric generator, of a mechanism driven by the armature thereof, and another mechanism driven by a motor included in the circuit of the machine, and connections between said mechanisms and the brushes, whereby the position of the brushes may be regulated in accordance with the relations of the speed of said mechanisms, substantially as described.

2. The combination, with an electric generator and brush-operating mechanism, of connections between said brush-operating mechanism and the shaft of the armature, and other connections between said brush-operating mechanism and a motor included in the circuit of the machine, the arrangement being such that when said connections operate normally the brushes will be maintained in their proper position upon the commutator, and when the relations of the connections vary the brush-operating device will vary the position of the brushes in accordance with such variations, substantially as described.

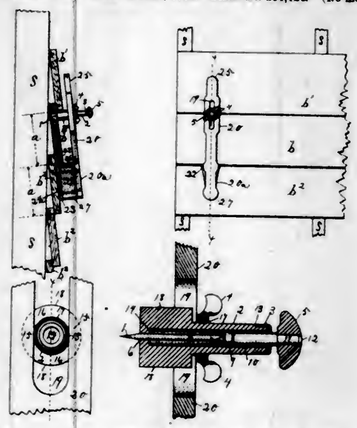
3. The combination, with an electric generator and brush-operating mechanism, of a worm connected with the shaft of the armature of the machine, and another worm connected with a motor included in the external circuit of the machine, the said worms operating to control the position of the brush upon the armature in accordance with their relative speeds, substantially as described.

4. The combination, with an electric generator and movable brushes, of a system of levers connected to the brushes, connections between the levers and the armature-shaft, a motor connected in the circuit of the generator, and connections between the motor and said system of levers, whereby the position of the brushes may be changed in accordance with the variations of the current in the circuit, substantially as described.

5. The combination, with an electric generator and movable brushes thereon, of a system of levers connected with said brushes, a wheel operating said levers, a worm-gearing with the said wheel and connected with the armature-shaft, and another worm also gearing with the said wheel and connected with the motor in the external circuit of the machine, substantially as described.

6. The combination, with an electric generator and movable brushes, of a system of levers connected with said brushes, a wheel connected with said levers, a frame forming a guide for said wheel, a worm-gearing mounted in said frame and connected with the armature-shaft of the generator, and another worm-gearing also mounted in the frame and connected with a motor included in the circuit of said generator, substantially as described.

378,548. WEATHER-BOARDING GAGE. ELISHA HOTCHKISS, Cincinnati, Ohio. Filed Mar. 16, 1887. Serial No. 231,120. (No model.)



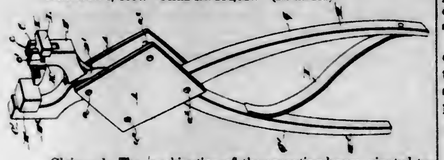
Claim.—1. In a weather-boarding gage, the combination of a recessed board-supporting post, an awl working within the recess of the post, and the binding-clamp 8, fastened to the awl and engaging the walls of the recess of the post, the said post being suitably adjustably connected to the main parts of the gage, substantially as set forth.

2. In a weather-boarding gage, the combination of a board-supporting post having a central longitudinal recess, 6 14, and an awl working within the recess of the post, and having the enlarged bearing part 9 working in the recess 14, the reduced bearing part 1 working in the hole 6, and the reduced bearing part 10 working in the hole in the cap 3, the said post being suitably adjustably connected to the main parts of the gage, substantially as set forth.

3. In a weather-boarding gage, the combination of the body having an upwardly-extending slotted part, a board-supporting post having an integral longitudinal prolongation projecting in line with the post proper, and projecting concentrically with the axis of the post and through the slot in the said slotted extension and adapted to fit and be adjusted lengthwise in the said slot, and a nut on the post prolongation, the said post having bearing parts, which with the nut are adapted to clamp the post to the body-extension, substantially as set forth.

4. In a weather-boarding gage, the combination of the body having an upwardly-extending slotted part, a board-supporting post having a prolongation adapted to fit and be adjusted in the slot in the said slotted extension, a nut on the post prolongation, and an awl working in the recess in the post, the said post having bearing parts, which with the nut are adapted to clamp the post to the body-extension, and the awl being supported and guided by its bearings in the post, whereby it is adapted to pierce the board at or near the end of the post, and whereby both the post and awl may be adjusted together relatively to the slotted body-extension, substantially as set forth.

378,549. SPRING-PUNCH. WESLEY C. JONES, Waxahachie, Tex. Filed Nov. 5, 1887. Serial No. 254,647. (No model.)



Claim.—1. The combination of the operating-levers, pivoted together and having the arms J J' on opposite sides of their pivot, and the jaws, similarly pivoted together and having the slotted arms D D', engaged by the arms J J' of the operating-levers, substantially as set forth.

2. The combination of the jaws pivoted together and having the arms D D', the operating-levers pivoted together and having the arms J J', engaging the arms D D', and the stop-pins a^2 a^2, substantially as set forth.

3. In a punch, the combination of the side plates, A A, the bolts or pins *a a'* between the plates, the levers G G', mounted on the bolt *a'* and comprising the handles H H' and the fingers J J', the spring I between the handles to normally hold them separated, the levers B B', mounted on the bolt or pin *a* and comprising the slotted arms D D', meshing with the fingers J J', and the jaws C C' and the bolts or pins a^2 a^2 between the side edges of the plates A, to limit the lateral motion of the arms D D', substantially as and for the purpose specified.

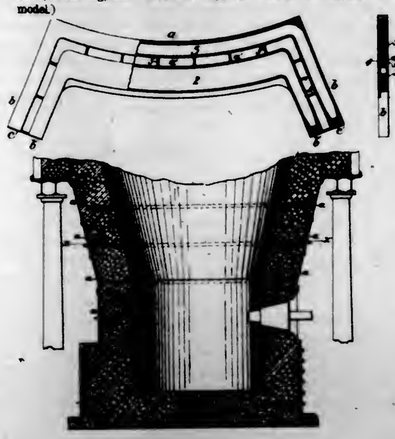
4. In a punch, the combination of the spring-actuated levers G G', comprising the handles H H' and the curved fingers J J', and the levers B B', comprising the jaws C C', and the arms D D', having curved slots *d d'* in their rear ends to receive the fingers J J', all constructed and arranged as specified.

5. In a punch, the combination of the pivoted handles H H', having the fingers J J' on their inner ends, the independent pivoted jaw C, having a slot, *c*, in the end to receive a die, and the independent pivoted jaw C', having a block, E, on the end to strike against the said die, the said jaws being provided, respectively, with the rearward-extending arms D D', which are connected to the fingers J J', substantially as specified.

6. In a punch, the combination of the pivoted handles H H', the jaw C, connected to the handle H and having a slot, *c*, in the end, provided with a transverse bolt, M, the jaw C', connected to the handle H', and having a block, E, on its outer end, and the die secured in the slot *c* and mounted on the bolt therein, substantially as and for the purpose specified.

7. In a punch, the combination of the pivoted jaw C', having the block E thereon, the jaw C, having the longitudinal slot *c* in the end, the transverse bolt M in the slot, the rotary die-holder N, mounted on the said bolt and having its rim provided with a series of tapped apertures, the dies O, secured in the said apertures, the said holder being adapted to be adjusted to cause either of the dies to strike against the block E, and the pivoted handles H H', geared to the said jaws, substantially as and for the purpose specified.

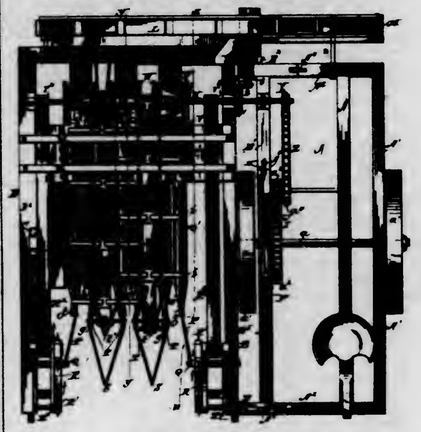
378,550. BOSH-PLATE FOR BLAST-FURNACES. JULIAN KENNEDY, Pittsburg, Pa. Filed Dec. 12, 1885. Serial No. 185,433. (No model.)



Claim.—1. A blast-furnace having water-cooled horizontal bosh-plates, constructed substantially as described, embedded in the walls of the bosh, and a practically-unbroken exterior wall of masonry, substantially as and for the purposes described.

2. A bosh-plate for furnaces having two separate water pipes or channels extending through it, with a supporting-flange extending between the pipes or channels, and an open space between the adjacent sides of the two pipes or channels, substantially as and for the purposes described.

378,551. CORN-HARVESTER. JESSE L. LANGUT, Atkinson, Ill. Filed Feb. 18, 1887. Serial No. 228,101. (No model.)



Claim.—1. The combination, with the parallel rollers of equal diameter, spaced to grasp the stalks of the corn and the stems and husks of the ears, and having longitudinal ribs, and mechanism for rotating them in opposite directions toward each other, of the curved shields over the rollers, spaced to prevent husked ears from falling between the rollers, and provided with longitudinal guide-ribs, and the endless belts having the laterally-projecting fingers extending across said guide-ribs over the spaces between the shields, substantially as set forth.

2. The combination, with the rollers spaced to grasp the stalks of corn, the stems of the ears, and the adhering husks, and mechanism for rotating the rollers toward each other in opposite directions, and the shields above the rollers spaced to allow the rollers to husk the ears and then receive the husked ears within the trough formed between and above them, of the endless belt having fingers projecting across said trough, a driving mechanism, a shaft having a pulley around which the said belt passes, and gearing, substantially as described, connecting said shaft with the driving mechanism, said pulley and gearing being relatively proportioned to move the belt rearward at the same rate of speed as the machine moves forward, substantially as set forth, whereby the stalk will be held vertical while being drawn downward between the rollers while the ears are being simultaneously stripped and husked.

3. In a corn-husking machine, the combination, with the main frame open at its front end and the husking mechanism carried thereby, of forwardly and downwardly inclined elevator-frames mounted at opposite sides of said open front end and movable freely in the direction of their lengths, pulleys journaled in the ends of said frames, and the wheels R^4, journaled at the lower ends of said frames, and endless toothed belts on said pulleys, and means for operating said belts to raise down stalks, whereby the said frames will rise and fall according to the inequalities in the ground, substantially as set forth.

4. The combination, with pairs of rollers and gearing for rotating the rollers of each pair in opposite directions toward each other, of endless belts traveling between the pairs of rollers and having fingers projecting laterally beyond their opposite sides and extending into or across the spaces above each pair of rollers, substantially as set forth.

5. The combination, with the rollers and their operating mechanism, of an endless belt having hinged outwardly-extending fingers extending across the space between and above the rollers, and rods or bars above the belt and converging at their forward downward-curved ends to separate and throw the fingers outwardly at the front upper side of the belt, substantially as set forth.

6. The combination, with the pairs of rollers and mechanism for rotating the rollers of each pair in opposite directions toward each other, of the endless belt having hinged fingers extending across the opening between and above the rollers, and the longitudinally-extending rods or bars extending from the rear end of the belt forward and carved downward and joined at their forward ends to form separators and guides for the fingers above the belt, substantially as set forth.

7. The combination, with the frame open at its front end, the pair of longitudinally-extending rollers journaled therein, and mechanism for rotating them in opposite directions toward each other, of the inclined slotted frames having a free sliding movement at the opposite sides of the forward ends of the frame, the bolts extending through the said slots into the said forward ends, spiked or toothed endless belts carried by said frames, and means for operating said belts, substantially as set forth.

8. The combination of the frame B, open at its front end, the shaft X, journaled near the rear end thereof and having the pairs of gear-wheels W, and pulleys *e* between each pair of gear-wheels and of less diameter than said wheels, the pairs of rollers O, having pinions V, meshing with wheels W, the longitudinally-extending rods or bars T, having pulleys *f* at their upturned forward ends, the endless belts *h* on said rollers and having fingers *i*, extending over the spaces between the pairs of rollers, the guides P for the outer rollers, the guides S, and the chutes K, leading rearward from between each pair of gear-wheels W to receive the ears from spaces above each pair of rollers, substantially as set forth.

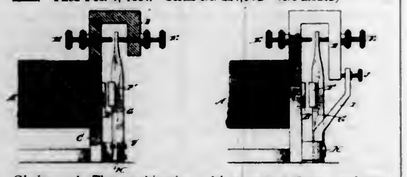
9. The combination, with the frame A, having the axle *a* and drive-wheels *a' a'*, and the guide posts or bars A^3, of the vertically-adjustable frame B, sliding on the said posts A^3 at its inner side, the vertically-adjustable guide C at the outer side of the frame B, and the adjustable wheel *b*, clamped thereto, the stripping and husking rollers O on the frame B, and the shaft X, for operating said rollers and driven indirectly from the axle *a*, substantially as set forth.

10. The combination, with the frame A, having the drive-wheels, of the vertically-adjustable frame B, open at its front end, the rollers O, having pinions V at their rear ends, the shaft X on frame B and having the gear-wheels W, meshing with the pinions V, the pulleys *e* between each pair of wheels W, and the plain wheels X' between the wheels W of each pair, the pulleys *f*, supported at the front ends of the rollers between the inner and outer pairs thereof, the endless belts *h* upon the pulleys *e f* and having the fingers *i*, folded by the wheels W in the rearward movement of the belts, the chutes K behind plain wheels X', and the plate T', covering the rear parts of the rollers O and the pinions V, substantially as set forth.

11. The combination, with the frame A, the wheels *a'*, and axle *a*, of the vertically-adjustable frame B, the harvesting-rollers, the operating-shaft X at the rear end of the frame, intermediate gearing between the shaft X and axle *a*, the carrier L at the rear end of the frame B to receive the ears from the rollers, the elevator or conveyer frame M', rods M^3, connecting said frame to the carrier-frame, the slotted box M^2 on the under side of the frame M', bolt 10, passing through said slot and the rear bar of frame A, and the gearing operating the carrier and elevator belts from the shaft X, whereby when frame B is adjusted the operating-gearing will not be thrown out of gear, substantially as set forth.

12. The combination, with the frame B, open at its front, the shaft X, the rollers O, belts *h*, having fingers *i*, and the operating mechanism, of the vertically-sliding inclined frames R, the pulley-shafts *r*, the endless spiked belts R', the belts R^3, passing from shaft X to upper pulley-shafts on frames R, and the tension-pulleys R^2, for automatically taking up slack in belts R^3 when the frames R move upward, substantially as set forth.

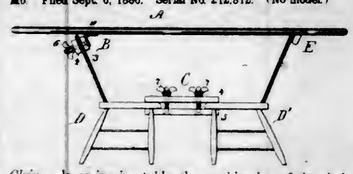
378,552. RELAY-MAGNET. EDWARD L. ORCUTT, Somerville, Mass. Filed Feb. 7, 1887. Serial No. 227,064. (No model.)



Claim.—1. The combination, with a magnet, frame, and stops, of an armature and armature-lever, a spring fixed at or near its ends and carrying said lever near its center, and adjusting means for twisting said spring to suit the power of the magnet, substantially as described.

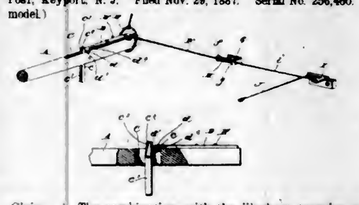
2. The combination, with a magnet, frame, and stops, of an armature and armature-lever, a spring fixed at or near its ends and supporting said lever, a yoke secured to the spring near its ends, and an adjusting-screw carried by said yoke bearing against some fixed part of the device, substantially as described.

378,553. IRONING-TABLE. THOMAS B. PORTER, Kansas City, Mo. Filed Sept. 6, 1886. Serial No. 212,812. (No model.)



Claim.—In an ironing-table, the combination of the chairs D D', the clamp C, composed of separate removable jaws 4 and 5, adjustably held opposite each other by the thumb-screws 7, and being adapted to engage the seats of said chairs and rigidly hold them in position, the ironing-board A, adapted to be removably secured to the backs of said chairs, the cleat E, located on the under side of one end of the board, and the clamp B at the opposite end of the ironing-board and composed of oppositely-located removable jaws 2 and 3, held together by thumb-screw 6, said jaw 3 being directly hinged to the bottom of the ironing-board, and the clamp adapted to engage the opposite faces of the back of one of said chairs, substantially as described.

378,554. SHEET-RING DETACHER FOR VESSELS. ANDREW D. POST, Keyport, N. J. Filed Nov. 29, 1887. Serial No. 256,460. (No model.)

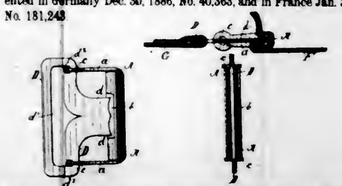


Claim.—1. The combination, with the jib-sheet traveler, of the slotted traveler-bar, the detents pivoted in the slots therein and projecting both above and below the slots, the levers pivoted on the upper side of the traveler-bar and having their inner ends engaging the upper ends of the corresponding detents, and the disengaging mechanism for said levers, constructed substantially as specified.

2. The combination, with the jib-sheet traveler, of the slotted traveler-bar, the detents pivoted in the slots therein, projecting both above and below said slots, and having their inner edges above the traveler-bar beveled upwardly and outwardly, the levers pivoted near their centers on the traveler-bar, and provided at their inner ends with the hooks having the straight edge *d'* and inclined edge d^3, to engage the upper end of the corresponding detents, and the lever-releasing mechanism, constructed substantially as specified.

3. The combination, with the jib-sheet traveler, the slotted traveler-bar, the detents pivoted in said slots, and the levers pivoted near their centers on the traveler-bar and engaging the corresponding detents, of the stiff rods secured to the ends of the outer arms of said levers and rendering through perforated brackets secured to the bulwarks and collars on the rods forward of the brackets, and means, substantially as described, for drawing said stiff rods aft, as specified.

378,555. BUCKLE. AUGUST PEYN, Stolberg, near Aachen, Prussia, Germany. Filed Nov. 25, 1887. Serial No. 256,095. (No model.) Patented in Germany Dec. 30, 1886, No. 40,363, and in France Jan. 31, 1887, No. 181,243.



Claim.—1. As an improved article of manufacture, a buckle made of sheet metal, consisting of a clamping part, D, provided with an extending prong, *d*, and of a U-shaped prong-bearing, A, having a recess, *b*, on one side to be entered by a strap, F, and prong *d*, and two side arms, *a a*, ending in hooks *c c*, serving as a bearing for the clamping part D, substantially in the manner and for the purpose as described.

2. As an improved article of manufacture, a buckle made of sheet metal, consisting of a clamping part, D, provided with a loop, *d'*, and an extending prong, *d*, and of a U-shaped prong-bearing, A, having a recess, *b*, on one side, to be entered by strap F and prong *d*, and two side arms, *a a*, ending in hooks *c c*, serving as a bearing for the clamping part D, substantially in the manner and for the purpose described.

378,556. MAGAZINE-GUN. EDWARD R. REDFIELD, Linkville, Oreg. Filed May 7, 1887. Serial No. 237,469. (No model.)



Claim.—1. In a magazine-gun, the combination of the longitudinally-movable breech-bolt having the side flanges, X, provided with the vertical recesses Z and A', with the vertically-movable carrier having the sides provided with the open recesses B^2 and the inwardly-projecting flanges D^2, adapted to pass through the recesses in the breech-bolt, for the purpose set forth, substantially as described.

2. In a magazine-gun, the combination of the vertically-movable carrier to receive the cartridge from the magazine, the longitudinally-movable breech-bolt having the depending tongue or plate extending into the carrier and across the rear end of the magazine, said tongue or plate having the compound curved slot C, the operating-lever having the arm engaging the said curved slot to operate the breech-bolt and the offset or shoulder N^3 near its fulcrum, the lever F^3, adapted to be operated by the said shoulder or offset, and the link connecting said lever to the carrier, substantially as described.

3. In a magazine-gun, the combination of the carrier movable bodily across the inner ends of the magazine and of the barrel, the operating-lever S', the lever F^3, adapted to be operated by the lever S', and the link connecting the lever F^3 to the carrier and adapted to fold under the carrier as the latter is lowered, substantially as described.

4. In a gun, the combination of the longitudinally-movable breech-bolt, the locking-block movable at right angles to the breech-bolt and across its line of movement, the firing-pin made in two sections, one of said sections being in the breech-bolt and the other being in the locking-block, for the purpose set forth, the lever R^1, pivoted to the breech-bolt, engaging the firing-pin section therein, and the hammer arranged in the path of lever R^1 and adapted to trip the same when the breech-bolt is at the rear limit of its movement, substantially as described.

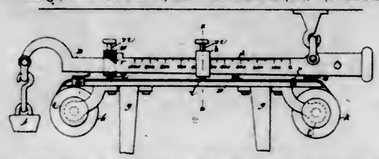
5. In a magazine-gun, the combination of the longitudinally-movable breech-bolt having the cartridge-shell extractor and the side flanges, X, provided with the vertical recesses Z and A', the vertically-movable carrier to receive the cartridge from the magazine, having the sides provided with the open recesses B^2 and the inwardly-projecting flanges D^2, adapted to pass through the recesses in the breech-bolt, and the lever to operate the breech-bolt and connected to the carrier to move the latter directly across the path of the breech-bolt to a point in front of the same when the breech-bolt is at the rear limit of its movement, and thereby eject the discharged cartridge-shell, substantially as described.

6. In a gun, the combination of the longitudinally-movable breech-bolt, the locking-block movable at right angles to the breech-bolt and across the line of movement, and the firing-pin made in two sections, one of the said sections being in the breech-bolt and the other being in the locking-block, whereby the said sections of the firing-pin will align when the locking-block moves over the rear end of the breech-bolt, substantially as described.

7. The combination of the longitudinally-movable breech-bolt having the slot C and one section of the firing-pin, the locking-block movable transversely across the path of the breech-bolt and having the slot K and the other section of the firing-pin, and the operating-lever having the arm engaging the slot C and the arm engaging the slot K, substantially as described.

8. The combination of the longitudinally-movable breech-bolt, the carrier movable across the path of the breech-bolt to a position at the front end of the same and having the rounded rear upper corners, and the guard-plate arranged on the upper side of the breech-bolt, having its rear end pivoted thereto, the front end of said guard-plate being adapted to slide over the carrier when the breech-bolt moves forward, substantially as described.

378,557. RECORDING WEIGHING-SCALE. WILLIAM R. SELLECK, Chicago, Ill. Filed Feb. 15, 1887. Serial No. 227,669. (No model.)

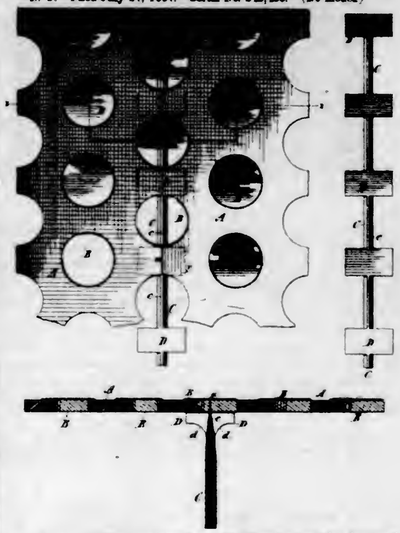


Claim.—1. The combination, with a scale-beam and its poise, having a marker, of a removable weight, *w*, slotted to straddle the beam, also having a marker, the lip *r*, a notch for holding the weight *w* in place, and a ribbon or sheet provided with a graduation similar or corresponding to that upon the beam and arranged adjacent to the beam and in position to be acted on by said markers, substantially as described.

2. A series or set of removable weights of different sizes for a scale-beam, each weight being slotted to straddle the beam, and provided with a marker and with means for holding it in a fixed position upon the beam, the markers being of different shape or character, so as to indicate the different weights, substantially as described.

3. The combination, with a scale-beam and its poise or poises, each provided with a marker, of the table D, the ribbon *m*, provided with graduations similar or corresponding to the graduations upon the beam, and the spools *k* for containing and advancing said ribbon along said table, substantially as described.

378,558. ILLUMINATING-TILE. THEODORE SHARTS, New York, N. Y. Filed July 27, 1887. Serial No. 245,400. (No model.)



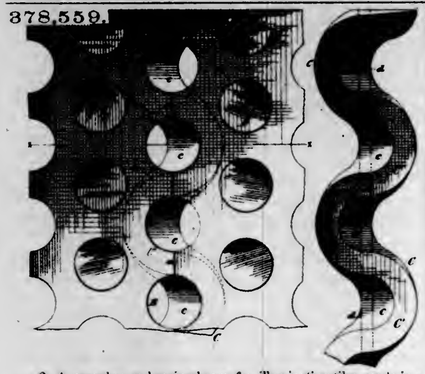
Claim.—1. The combination, with illuminating-tiles having half light-openings along their meeting edges, of the supporting-bars provided at regular intervals on their upper sides with the broad bearings as at D, having re-enforcing flanges *d d*, and the upper edges of the bar between these bearings, which are adapted to come beneath the light-openings, tapered so as to permit the entrance of light, substantially as specified.

2. As an improved article of manufacture, a supporting-bar for the purpose described having its upper edge tapered to nearly a feather edge, and provided at regular intervals with broad bearings re-enforced by flanges beneath them, substantially as specified.

378,559. ILLUMINATING-TILE. THEODORE SHARTS, New York, N. Y. Filed Aug. 5, 1887. Serial No. 246,171. (No model.)

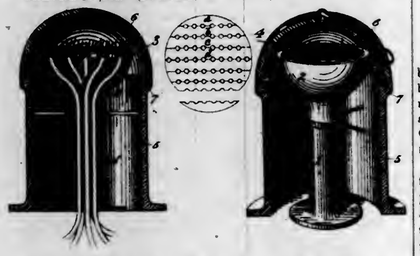
Claim.—1. The combination of illuminating-tiles having half light-openings along their sides or edges, with a cross-bar or bearing-beam made in a corrugated form, so as to pass beneath the uniting edges, and partly around the full light-openings thus formed, substantially as described, and for the purpose set forth.

378,559.



2. A cross-bar or bearing-beam for illuminating-tiles, made in a corrugated form, the corrugations being oblique from the top downward, substantially as described, and for the purpose set forth.

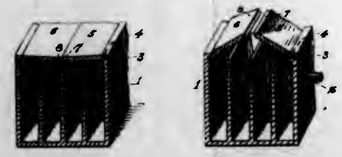
378,560. TEST-BOX FOR UNDERGROUND ELECTRIC WIRES OR CABLES. RICHARD S. WARING, Pittsburg, Pa. Filed Feb. 4, 1886. Serial No. 190,806. (No model.)



Claim.—1. In a testing-box for underground electric wires or cables, a hollow post or standard having an enlarged head and located at or near the curb of the street, projecting above the general level of such street, a switch-board supported by such post or structure, a shell surrounding said post, and a hemispherical cover therefor, substantially as set forth.

2. In a test-box for underground electric wires or cables, a hollow post or structure located at or near the curb of the street and above the general level thereof, a switch-board arranged within such structure, a box or cover for the structure, an auxiliary or inner shield or cover fitting within the structure, and springs arranged within the said lids or covers, substantially as set forth.

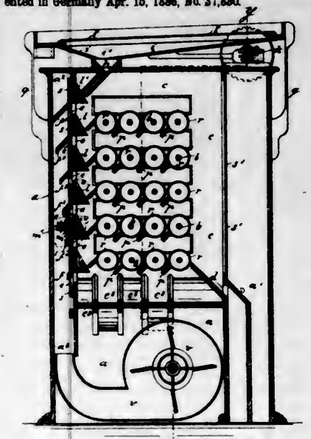
378,561. CONDUIT FOR ELECTRIC WIRES OR CABLES. RICHARD S. WARING, Pittsburg, Pa. Filed Feb. 4, 1886. Serial No. 190,809. (No model.)



Claim.—1. A conduit for electric wires or cables, having in combination an open-sided box and a removable cover therefor, said cover being composed of two or more parts, and being so constructed as to be sprung in place on the box and held therein by the resilient pressure of the sides of said box, substantially as set forth.

2. A conduit for electric wires or cables, having in combination an open-sided box or trough, the sides of said box being grooved, as described, and a removable cover therefor, said cover being composed of two or more parts united by a tongue-and-groove joint, the outer edges of the cover being provided with tongues adapted to fit within the grooves in the sides of the box, substantially as set forth.

378,562. SEPARATING-MACHINE FOR CLEANING GROATS. EMIL WEISS, Berlin, Germany, assignor of one-half to Louis Fraenkel, same place. Filed Feb. 16, 1887. Serial No. 227,842. (No model.) Patented in Germany Apr. 15, 1886, No. 37,830.



Claim.—1. In separating-machines for cleaning groats, the combination of the feed-hopper, outer casing, the blast-fan, the vertical blast-trunk having lateral blast-openings, a series of movable rolls arranged transversely of the outer casing, with intervals between them and forming dividers for grading the material falling through the air-current, and the spouts or troughs c^4, arranged to receive the graded material, substantially as set forth.

2. The combination of the feed-hopper, the outer casing, the blast-fan, the vertical blast-trunk having lateral blast-openings, the inclined plates attached to the inner wall of the blast-trunk, the series of movable rolls having intervals between them and serving as dividers for the falling material, and the boards or scrapers p, substantially as set forth.

3. The combination of the feed-hopper, the outer casing, the movable dividing-rolls, the blast-fan, the vertical blast-trunk having lateral openings, the vertical slide s, having openings e and registering therewith, and the inclined deflecting-boards f f', &c., attached to said slide above the openings e and graduated in width, the widest being the uppermost, substantially as set forth.

378,563. NUT-LOCK. HORATIO O. WHYMAN, Norfolk, Nebr. Filed May 26, 1887. Serial No. 239,458. (Model.)



Claim.—1. A nut-lock consisting of a spiral band, one end of which is tapered and adapted to enter the spiral groove between the bolt and nut, substantially as set forth.

2. The combination, with the interlocking faces of a bolt and nut, the latter having the outer turn of its groove cut deeper than the remaining turns, of a spiral nut-lock tapering at the end and adapted to enter the deep-cut turn of the groove when locking the nut, substantially as set forth.

378,564. GATE. CURTIS WILSON, Cordelia, Cal., assignor of one-half to Henry Goossen, same place. Filed Mar. 23, 1887. Serial No. 232,189. (No model.)



378,564.



Claim.—The combination of the sill, the two pairs of double-inclined parallel rails provided with terminal hooks secured thereon, one at each end, the loose rollers traveling on said rails and having annular flanges which rest between and against the inner sides thereof, and the gate with its rear guide-frame, the bottom rails of which rest on the flanges of the rollers and are provided with a track-iron passing between said flanges, all substantially as specified.

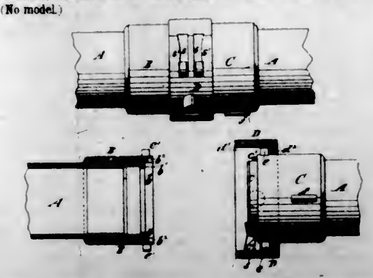
378,565. FISHING-REEL. PHILLIP H. YAUMAN, Rochester, N. Y. Filed Oct. 25, 1887. Serial No. 253,302. (No model.)



Claim.—1. In a fishing-reel, the line-spool, its shaft, the main-spring, and its independently-revolving frame or case, combined with the pinion b, toothed wheel b', fixed pinion b^4, integral with the wheel b', and internally-toothed wheel b^3, fixed to the spring frame or case and rotating therewith, substantially as described.

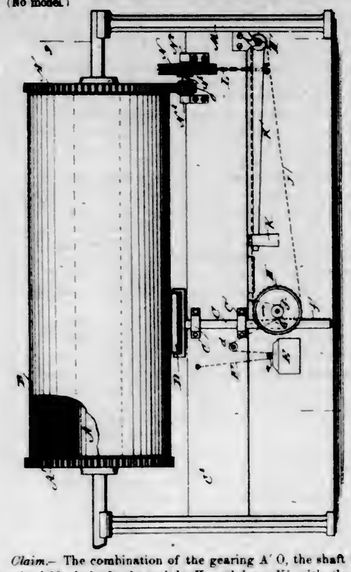
2. In a fishing-reel, the line-spool, combined with the line-guide attached to the shaft composed of the flat plate 5, and the independent wire loop 6, secured to its outer end at right angles thereto, substantially as described.

378,566. HOSE-COUPLING. FRANK ATHERTON and MANTON T. BENTLEY, Paterson, N. J. Filed Aug. 25, 1887. Serial No. 247,818. (No model.)



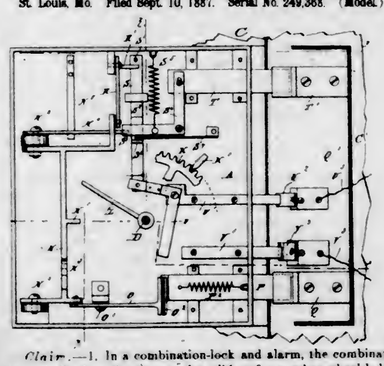
Claim.—The combination, in a hose-coupling, of the members B C, which are to be secured to the hose-sections, and which are fitted together with dowels and have lugs c c', which are then in line, a packing between the members, and the band D, having the lengthwise channels d', receiving the lugs and closed by flanges at the inner ends, and also having the pairs of arc-shaped slots s, leading circumferentially from the channels for receiving the lugs, and having their back walls convex, so as to tighten together and subsequently relieve the members by turning the band, substantially as herein described.

378,567. TENSION DEVICE FOR THE WARP-BEAM OF LOOMS. CHESTER BAILEY, Janesville, Wis. Filed June 7, 1887. Serial No. 240,532. (No model.)



Claim.—The combination of the gearing A' O, the shaft N', friction-wheel N, chain L, the weight K, and lever K', with the weight E, its cord F, the sliding follower C, its roller D, and strap f', the drum H, pulley H', and chain J, all arranged and operating as shown and described.

378,568. COMBINATION-LOCK AND ALARM. ROBERT BAUMANN, St. Louis, Mo. Filed Sept. 10, 1887. Serial No. 249,368. (Model.)



Claim.—1. In a combination-lock and alarm, the combination, with a shaft adapted to turn and to slide, of a number-wheel held on the said shaft, a radial arm secured on the said shaft, and a lever connected with the locking bolt or bolts and having a lug adapted to be engaged by the outer end of said radial arm, substantially as shown and described.

2. In a combination-lock and alarm, the combination, with an outer casing having an aperture in its rim, of a number-wheel held in said casing and provided on its rim with numerals, one of which appears at a time through said aperture in the casing, a shaft having a turning and sliding motion and carrying the said number-wheel, a

radial arm secured to said shaft, a lever having a lug adapted to be engaged by the outer end of said radial arm, and a second lever pivotally connected with said first-named lever and provided with a segmental arm adapted to engage the inner end of the locking-bolt, substantially as shown and described.

3. In a combination-lock and alarm, the combination, with an outer casing having an aperture in its rim, of a number-wheel provided on its rim with numerals, one of which appears at a time through said aperture, a shaft adapted to be turned and slid and carrying said number-wheel, a gear-wheel secured on the rear end of said shaft, and a fixed pin adapted to engage the teeth of said gear-wheel when said shaft is moved forward, thus locking the shaft in position, substantially as shown and described.

4. In a combination-lock and alarm, the combination, with a locking-bolt and keeper, of a segmental arm adapted to engage the inner end of said locking-bolt, a horizontal lever carrying said segmental arm, a vertical lever pivotally connected with said horizontal lever, and a radial arm adapted to engage a lug on said vertical lever, said radial arm being secured to a shaft having a turning and sliding motion, substantially as shown and described.

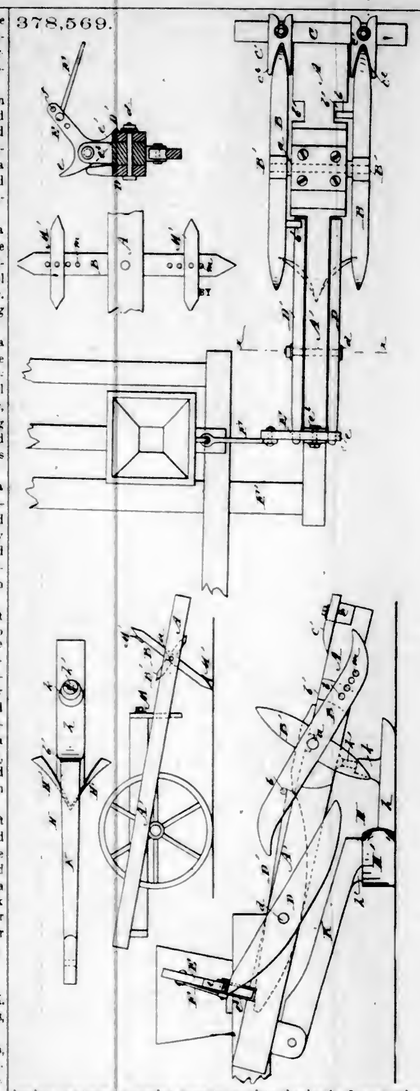
5. In a combination-lock and alarm, the combination, with a locking-bolt and keeper, of a segmental arm adapted to engage the inner end of said locking-bolt, a horizontal lever carrying said segmental arm, a vertical lever pivotally connected with said horizontal lever, and a radial arm adapted to engage a lug on said vertical lever, said radial arm being secured to a shaft having a turning and sliding motion, and a spring-latch having a vertical sliding motion and adapted to engage an incline formed on said vertical lever, substantially as shown and described.

6. In a combination-lock and alarm, the combination, with a shaft adapted to turn and slide in its bearings, and a radial arm secured to said shaft, of a vertical lever provided with a lug and adapted to be engaged by the said radial arm, a spring-arm operated on by the upper end of said vertical lever, a bell-crank lever held in a locked position by the outer end of said spring-arm, and a locking-plate pivotally connected with the said bell-crank lever, substantially as shown and described.

7. In a combination-lock and alarm, the combination, with a shaft adapted to turn and slide in its bearings, and a radial arm secured to said shaft, of a vertical lever provided with a lug and adapted to be engaged by the said radial arm, a spring-arm operated on by the upper end of said vertical lever, a bell-crank lever held in a locked position by the outer end of said spring-arm, a locking-plate pivotally connected with the said bell-crank lever, a vertical arm connected with said bell-crank lever and operated on by a spring, a second bell-crank lever connected with the said arm and pivoted to a plate, a second plate adapted to be connected with said second bell-crank lever, and spring-plates adapted to be connected with the said plates and also connected with a battery and an alarm, substantially as shown and described.

8. In a combination-lock and alarm, the combination, with a shaft adapted to be turned and slid in its bearings, and a radial arm secured to said shaft, of a lever having a lug adapted to be engaged by the free end of said radial arm, a bell-crank lever pivotally connected by one of its arms with said vertical lever, a vertical arm carrying a pin adapted to be engaged by a similar pin on the said bell-crank lever, a spring operating on said vertical arm, and a bell-crank lever pivotally connected with said vertical arm and adapted to establish or break an electrical circuit, substantially as shown and described.

378,569. ATTACHMENT FOR CORN-PLANTERS. WILLIAM H. BOWMAN, South Solon, Ohio, assignor of one-half to Alexander B. Lukens, same place. Filed Sept. 20, 1887. Serial No. 250,180. (No model.)



Claim.—1. The ground-marking attachment for corn-planters, wherein the marker proper consists of a single centrally-hung revolving bar which acts upon the ground at its ends, marking it at intervals, substantially as set forth.

2. In a grounnd-marking attachment for corn-planters, the marker proper consisting of a single centrally-hung revolving bar having its ends pointed and curved in opposite directions, substantially as specified.

3. In a ground-marking attachment for corn-planters, the centrally-hung revolving marking-bar provided with pins or projections near relatively-opposite ends and having their ends adapted to more or less enter and mark the ground, in combination with actuating-levers hung upon the bar carrying the said marking-bars, and which levers operate the corn-dropping-slide-actuating mechanism, substantially as set forth.

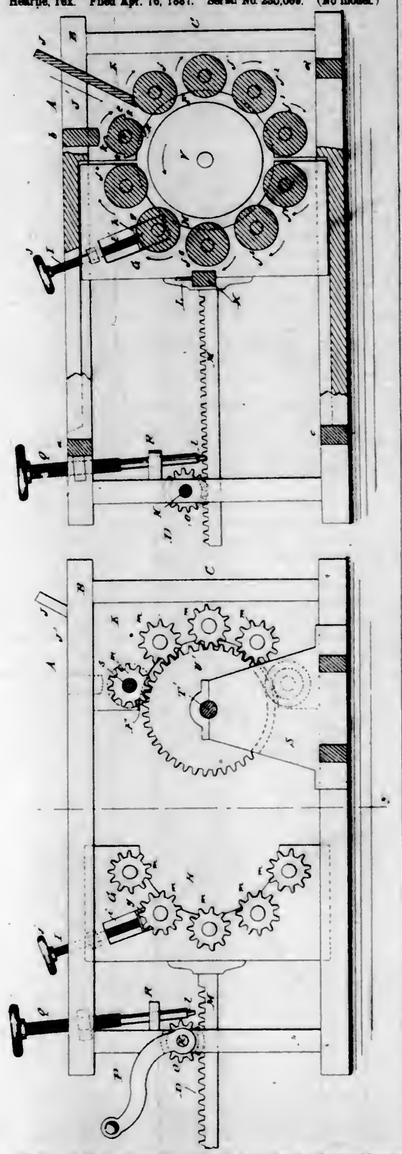
4. In an attachment for corn-planters, the combination, with the bar adapted to be applied to the frame of the planter and carrying side levers actuating the corn-dropping-slide-actuating mechanism, of the ground-markers supported upon said bar and provided with adjusting-apertures to receive stops to regulate the depth of penetration of the arms of the markers, substantially as set forth.

5. The combination, with the bar carried by the corn-planter frame and carrying side levers actuating the corn-slide-operating mechanism, and markers provided with pins acting upon said levers, of the drag-bar pivoted or connected to the aforesaid bar and carrying a supporting and adjusting screw, substantially as set forth.

6. The combination, with the bar adapted to be applied to the planter-frame and carrying side levers actuating the corn-slide-actuating mechanism and operated upon by pins projecting from markers, of a supporting and adjusting bracket, substantially as specified.

7. The combination, with the bar adapted to be applied to the frame of the planter and carrying side levers actuating the corn-slide-operating mechanism, and the markers acting upon said levers, of the bifurcated scrapers adjustable upon the said planter-frame and adapted to receive the markers, substantially as set forth.

378,570. COTTON-PRESS. PETER L. BRADY and WILLIAM BRADY, Hearne, Tex. Filed Apr. 16, 1887. Serial No. 235,069. (No model.)



Claim.—1. The combination, with the frame having the fixed heads and the opposing sliding heads, each having a series of rollers, the baling-space between which is central, divided by the meeting edge of the two sets of heads, of a rack or its stated equivalent for adjusting the movable heads, and means for rotating the series of rollers in the same direction, substantially as set forth.

2. In a cotton-press, the combination, with the frame A and the fixed heads E, having a series of rollers, one of which is a feed-roller, of the sliding heads G, having slots and adjustable bearings therein, and a series of rollers journaled in said sliding heads, one of the rollers being journaled in the said adjustable bearings, substantially as set forth.

3. The combination, with the frame and the series of rollers journaled therein, of a disk closing the space between said rollers at one end, and a second disk adjustable toward and from the first-named disk to regulate the width of the baling-space between the two said disks, substantially as set forth.

4. The combination, with the frame and the series of rotating rollers journaled therein, of a disk closing the space between the rollers at one end and rotating independently thereof in the same direction, and a second disk at the opposite end adjustable into and out of said space and rotating independently of said rollers and in the same direction therewith, substantially as set forth.

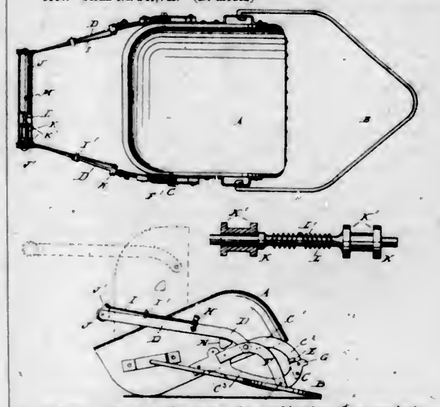
5. In a cotton-press, the combination of the frame A, heads E, rollers f f' f^2 f^3, and the fluted feed-roller e, the hopper J', the movable heads G, the rollers f^4 f^5 f^6 f^7, and the movable roller g, and means for withdrawing the heads G, with their rollers, from the heads E, with their rollers, substantially as described.

6. The combination, with the heads G, with their series of rollers, one of which is outwardly adjustable, of the bar K, provided with pins I for guiding the bale-tie to the bale, substantially as described.

7. The combination, with the frame A, the heads G, and rollers carried thereby, of the rack-bars M, pinions O, the shaft N, and the fastening-screws Q, substantially as described.

8. The combination, with the frame, the fixed heads E, the sliding heads G, and the series of rollers journaled in said heads G E, and having pinions m at their opposite ends, of the aligned shafts T T', provided with disks closing the space at the ends of the rollers, and gears engaging the series of pinions, one shaft being longitudinally adjustable in its bearings and passing freely through the gear-wheel upon it, substantially as set forth.

378,571. EARTH-SCRAPER. JULIUS D. BRAINARD, Highmore, Dak., assignor to himself and James H. Lynch, same place. Filed June 18, 1887. Serial No. 241,745. (No model.)



Claim.—1. In an earth-scraper, the combination of a scoop-locking device, a rotary handle-bar, and connections between the two for operating said locking device, substantially as described.

2. In an earth-scraper, the combination of a catch, a rotary handle-bar, and mesne connections for operating said catch, handle-levers, a rod supported by said levers, on which rod the handle-bar turns, and a coiled spring surrounding said rod and connecting the same with the handle-bar, substantially as described.

3. In an earth-scraper, the combination of a lug on the scoop, handle-levers, a pivotal catch and a rotary handle-bar on the same, and a device connecting the catch with a crank portion of the handle-bar, substantially as described.

4. In an earth-scraper, the combination of a scoop, A, rigid members C^3 and F, and a handle-lever, D, working and guided between said members, which bear at different points on opposite sides of the handle-lever, as and for the purpose set forth.

5. In an earth-scraper, a frame for holding the handle-lever to the scoop, composed of the member C', attached to the scoop, the rear guide member, C^4, projecting above the scoop, and the brace member C^5, connecting said members C' and C^3, and the outside guide member, F, connecting the members C' and C^3, substantially as described.

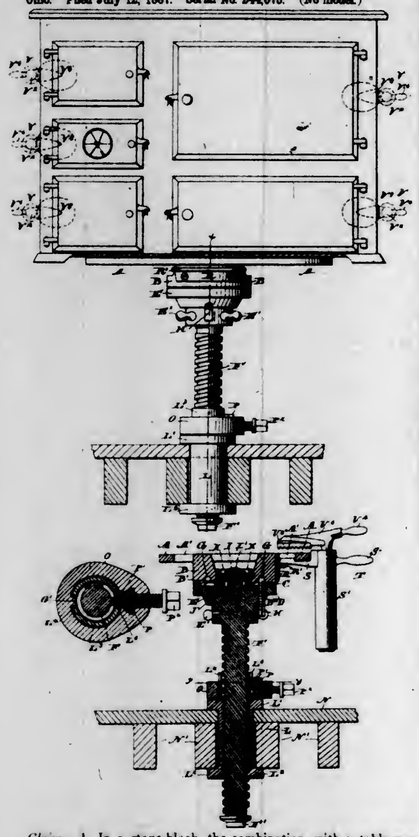
6. In an earth-scraper, the combination of a scoop, a handle-lever pivoted thereto, and a shoulder projecting laterally from the scoop, forward of the pivot and in the path of the handle-lever, and so ar-

ranged as to uphold the same when the scoop is overturned, substantially as described.

7. In an earth-scraper, the combination of a scoop, a rigid pivotal draw-bail, and a shoulder, F', on the scoop in the path of the draw-bail, and arranged to rest upon the same and uphold the closed end of the scoop when the same is overturned, substantially as described.

8. A handle-bar for connecting the handle-levers of an earth-scraper, constructed of a central tension-rod, compression-collars on said rod between the handle-levers, and a rotary tubular bar mounted loosely on said compression-collars, substantially as shown and described.

378,572. STOVE-BLOCK. WILLIAM CARROLL and CHARLES A. HILL, Columbus, Ohio, assignors, by direct and mesne assignments, to said Carroll, Amelia C. Oldham, same place, and John Callam, Kenton, Ohio. Filed July 12, 1887. Serial No. 244,075. (No model.)



Claim.—1. In a stove-block, the combination, with a table provided with a hub having on its under side a series of recesses, of a disk on which said hub is mounted to turn, and a set-screw screwing in said disk and engaging one of said recesses in the hub, so as to secure said hub to said disk, thereby preventing the turning of the table, substantially as shown and described.

2. In a stove-block, the combination, with a screw, of a nut in which said screw turns, a collar held in said nut, and a clamp held in said collar and adapted to engage the thread of said screw, so as to lock the latter in place on said nut, substantially as described.

3. In a stove-block, the combination, with a screw, of a fixed nut provided with a sleeve having slots, a collar held loosely on said sleeve and having an inwardly-projecting tooth engaging one of said slots of the sleeve, a clamp held in said collar and passing through the other slot in the sleeve against the thread of the said screw, and a screw for pressing said clamp against said thread of the screw, as set forth.

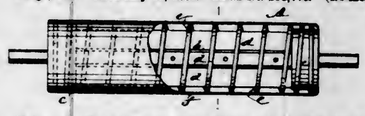
4. In a stove-block, the combination, with a table having a hub and a segment forming a flange secured to said hub, of a clamp having a projection held between the bottom of said table and the top of said flange of the segment, and a spring-jaw formed on said clamp and adapted to engage the top of the bottom plate of the stove resting on said table, substantially as shown and described.

5. In a stove-block, the table A, having the openings A', and the hub B, formed centrally on said table A and provided in its bottom with an annular groove, C, in combination with the disk E, which is vertically adjustable and provided on its top with an annular projection, D, fitting into said annular groove C in the hub B, substantially as shown and described.

6. In a stove-block, the combination, with the table A, provided with the hub B, having an annular groove on its under side, of a disk mounted to revolve, and provided with an annular flange or projection entering the annular groove of the hub, and with an upwardly-projecting spindle, and a nut on the end of the spindle and engaging the hub of the table, substantially as herein shown and described.

7. In a stove-block, the combination, with the table A, provided with the hub B, having an annular groove on its under surface, of a disk mounted to revolve, and provided with annular projection entering the groove of the hub, and with the spindle I, the flanged sleeve J, and the nut K, substantially as herein shown and described.

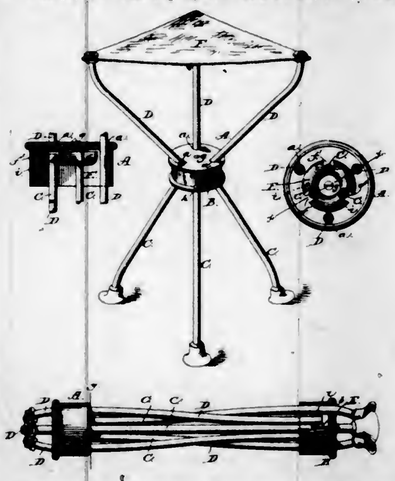
378,573. FELTING-ROLL FOR HAT-SIZING MACHINES. AARON T. CLARK, Newburg, N. Y., assignor to himself and GEORGE J. FERRY, Orange, N. J. Filed May 19, 1887. Serial No. 238,776. (No model.)



Claim.—1. The within-described felting roll or roller for hat-sizing machines, consisting of a central rigid body-core, yielding supports outside of said core, a spiral spring encircling said yielding supports, and a flexible covering or clothing inclosing said spring, substantially as specified.

2. In a felting roll or roller, the combination of the central longitudinal body-core, *b*, the longitudinal elastic strips or blocks *d*, the spiral spring *e*, secured at its ends upon the heads of the roller, and the outer flexible covering or clothing, *f*, essentially as shown and described.

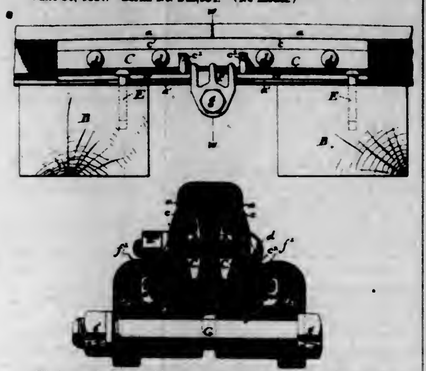
378,574. FOLDING STAND FOR CAMP-STOOLS. ALBERT COOPER, Brooklyn, N. Y. Filed Aug. 12, 1887. Serial No. 246,780. (No model.)



Claim.—1. The folding stand or camp-stool herein shown and described, the same consisting of the two apertured cups or frames A B, the legs C, hinged to the cup A and passed through the cup B, and the seat-rods D, hinged to the cup B and passed through the cup A, substantially as shown and described.

2. The cups A B, provided with notched and channeled plates E, in combination with the legs and seat-rods hinged in the notches of said plates E, substantially as described.

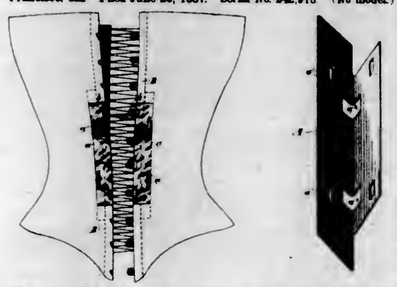
378,575. RAIL-JOINT. HENRY F. COX, Philadelphia, Pa. Filed June 30, 1887. Serial No. 242,951. (No model.)



Claim.—1. In combination with the abutting ends of railway-rails, cambered fish-plates C C, having flanges *c'* extending over the top of the rail-base, a clamp, F, having jaws f^3 resting upon the top of the flanges *c'*, and supporting-surfaces *f* resting against the bottom of the rail beneath the jaws f^3, and a bolt, G, whereby the clamp is drawn together and made to grasp and compress the base and the flanges *c'* of the fish-plate together, all substantially as and for the purpose specified.

2. In combination with the abutting ends of railway-rails, cambered fish-plates C C, having flanges *c'* extending over the top of the rail-base, and bracing-wings c^4 c^4, a clamp, F, having jaws f^3 resting upon the top of the flanges *c'* between the bracing-wings c^4 c^4, supporting-surfaces *f* resting against the bottom of the rail beneath the jaws f^3, and a bolt, G, whereby the clamp is drawn together and made to grasp and compress the base and the flanges *c'* of the fish-plate together, all substantially as and for the purpose specified.

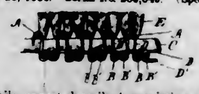
378,576. CORSET-STEEL PROTECTOR. ELLEN CUMMING, San Francisco, Cal. Filed June 29, 1887. Serial No. 242,918. (No model.)



Claim.—1. The combination, with a corset, of a corset-steel protector made of a single independent piece or strip of metal bent longitudinally and fitted over or embracing the steel of the corset, said piece or strip having its folds of unequal lengths and projecting beyond the steel, whereby it may be fastened to the corset, substantially as described.

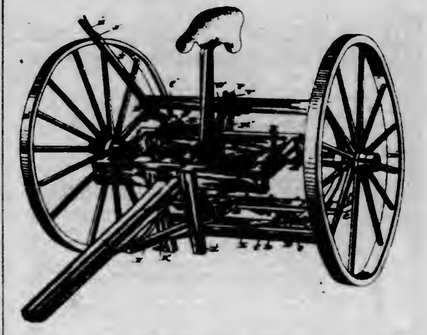
2. The combination, with a corset, of a corset-steel protector made of a single piece or strip of metal bent and folded longitudinally, whereby it may be fitted over the steel of the corset, and provided at its longitudinal center with slots or eyes for the passage and exposure of the hooks and eyes of said steel, substantially as herein described.

378,577. WOVEN PILE FABRIC. JAMES DOBSON, Philadelphia, Pa. Filed July 26, 1886. Serial No. 209,049. (Specimens.)



Claim.—The pile carpet described, consisting of a ground fabric in which the pile is secured entirely above the filling-threads and upon the top surface proper of the fabric, composed of a series of bottom weft-threads woven in pairs, a single top surface-weft to each pair of bottom wefts, intermediate stuffer warp-threads, and a series of tying-in threads interwoven in pairs, which tying-in threads pass alternately to the upper surface of the ground fabric and over the top weft, and which at the back of the fabric pass in opposite directions to each other alternately over and under the two contiguous weft-threads, and pile-threads bound in the fabric below the top weft, between the tying-in threads, and above the filling, substantially as described.

378,578. SULKY-HARROW. MARCUS B. DOOLITTLE, North Haven, and WILSON A. DOOLITTLE, Hamden, Conn. Filed June 13, 1887. Serial No. 241,157. (No model.)



Claim.—1. In a sulky-harrow, the combination, with the tongue thereof, of a pole extending parallel with such tongue and pivoted at its forward end thereto to have vertical but not lateral pivotal action and similarly pivoted at its rear end to the harrow, a draft-iron secured to such pole, and guards depending from the tongue on opposite sides of the pole, which plays up and down between them, substantially as set forth.

2. In a sulky-harrow, the combination, with a harrow consisting of a rigid frame having harrow-teeth secured to its lower face, of an operating-lever secured to a shaft located in bearings attached to the vehicle-frame, an arm rigidly secured to such shaft, a bar pivoted to the outer end of such arm, and one or more springs directly secured to such bar and to the harrow-frame, which is raised, lowered, and pressed downward by it or them, substantially as set forth.

3. In a sulky-harrow, the combination, with a harrow consisting of a rigid frame having harrow-teeth secured to its lower face, of an operating-lever secured to a shaft located in bearings mounted upon the vehicle-frame, an arm rigidly attached to said shaft, a head having a vertical series of holes pivoted to such arm through one of the holes, a bar secured to such head, and one or more bow-shaped springs directly attached to such bar and to the harrow-frame, which is raised, lowered, and pressed downward by it or them, substantially as set forth.

4. In a sulky-harrow, the combination, with a harrow consisting of a rigid frame having harrow-teeth secured to its lower face, of an operating-lever mounted upon the vehicle-frame, a bar connected with such lever, one or more bow-shaped springs attached to such bar and to the harrow-frame, and a stop consisting of a post attached to the bar and extending downward in position to engage with the harrow-frame to limit the flexion of the spring or springs, substantially as set forth.

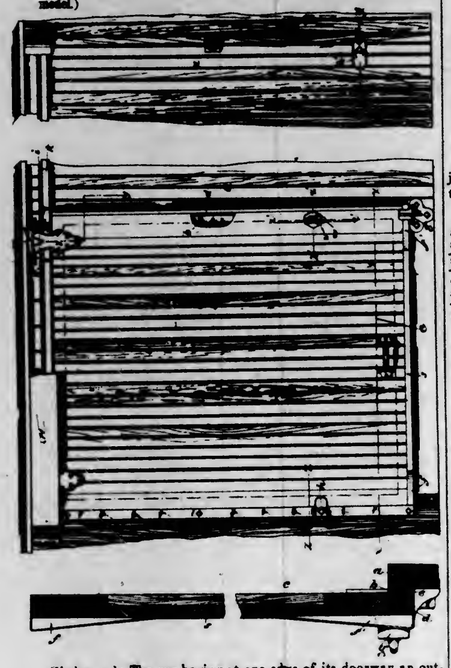
5. In a sulky-harrow, the combination, with the tongue thereof, of a harrow, a pole pivoted directly to the tongue and pivotally connected with the harrow, an operating-lever mounted upon the vehicle-frame, one or more bow-springs positively connected with such lever and attached to the harrow, which is raised, lowered, and pressed downward by it or them, substantially as set forth.

6. In a sulky-harrow, the combination, with the harrow thereof, of a clod-crusher located upon and sliding forward and back upon the teeth thereof, substantially as set forth.

7. In a sulky-harrow, the combination, with the harrow thereof, of an adjustable clod-crusher consisting of a steel-shod bar clamped against the lower edges of the harrow-teeth by plates supported upon their upper edges, substantially as set forth.

8. In a sulky-harrow, the combination, with the tongue thereof, of a harrow, a pole pivoted directly to the tongue and pivotally connected with the harrow, an operating-lever pivoted to the forward end of the harrow and extending upward through the vehicle-frame, an operating-lever mounted upon such frame, and one or more bow-springs positively connected with such lever and attached to the harrow, which is raised, lowered, and pressed downward by it or them, substantially as set forth

378,579. SLIDING DOOR FOR FREIGHT-CARS. CHARLES H. DURHAM, Boston, Mass. Filed Oct. 31, 1887. Serial No. 253,570. (No model.)



Claim.—1. The car having at one edge of its doorway an outwardly-projecting strip, *b*, combined with the sliding door having an inwardly-projecting strip, *d*, secured rigidly to its inner edge and overlapping the strip *b*, the latter being between the strip *d* and the doorway, as set forth.

2. The combination of the car having at one edge of its doorway an outwardly-projecting strip, *b*, the sliding door having at its rear edge an inwardly-projecting strip, *d*, overlapping the strip *b*, and a stop for the front edge of the door, arranged in such relation to the strip *b* that the strip *d* cannot come in contact with the strip *b*, but is separated therefrom by an air-space when the door is closed, as set forth.

3. The combination of the car having the strip *b* at the rear edge of its doorway, the door having at its rear edge the vertical inwardly-projecting strip *d* and at its lower portion the wedge *f'*, and the fixed guide *g*, adapted to co-operate with the wedge *f'* and press the rear edge of the door and its strip *d* inwardly against the side of the car, whereby the strip *d* is caused to overlap the fixed strip *b* when the door is closed.

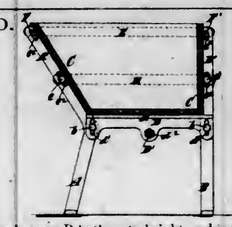
4. The door having the wedges *f f'*, projecting outwardly from its lower portion, respectively, at its front and rear edges, combined with the lower bracket or guide, *g*, formed to co-operate with said wedges in holding either the front or the rear edge of the door, and the guides *h h'*, arranged, respectively, to hold the front and rear edges of the door, as set forth.

5. The hanger having the divided or slotted rider-bar, the lower edge or bearing-surface of which has a gentle longitudinal curvature highest at the central part of the rider-bar, whereby the axle is prevented from wearing unevenly and from wearing a groove or journal-bearing in the rider-bar, as set forth.

6. The hanger having the divided or slotted rider-bar, the lower edge of which has the described concave longitudinal curvature highest at its central part, and the curved stops 8 8, the acting sides of which have a greater radius than the axle on which the rider-bar travels, as set forth.

378,580. ADJUSTABLE FRAME FOR LAUNDRY-TUBS. CHARLES J. EVERETT, Tenafly, N. J. Filed Mar. 3, 1887. Serial No. 229,533. (No model.)

Claim.—1. The frame for supporting stone or porcelain laundry-tubs and other analogous vessels, having legs and flanged supports or bearers D, which serve to support the vessel through its bottom and are adjustably secured to the legs, to provide for the independent adjustment of the bearers D both as to height and inclination, substantially as herein described.

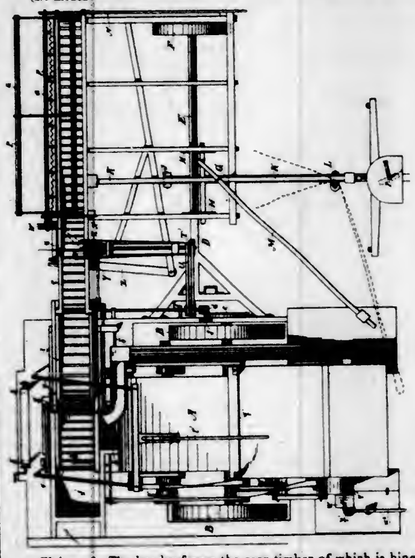


2. The frame for supporting stone or porcelain laundry-tubs and analogous vessels, having legs, and flanged supports or bearers D, adjustably connected with the legs, to provide for their independent adjustment both as to height and inclination, and a brace-rod or stretcher extending between said supports or bearers, and having its ends adjustably connected with them for varying their distance apart, substantially as herein described.

3. The frame for a laundry-tub or other analogous vessel, composed of legs, supports, or bearers on which the vessel may rest, and which are adjustable both as to height and inclination relatively to the legs, and bars above the bearers D, for inclosing or surrounding the vessel, and adjustably connected, to adapt them for variations in the size or form of vessels, substantially as herein described.

4. The combination, with the legs and uprights A A' B B', and the supports or bearers D, having bolt-and-slot connections with the legs, of the brace-rod D', the side bars, E, having bolt-and-slot connections with the uprights, and the front and back rods, F F', having bolt-and-slot connections with the uprights, substantially as herein described.

378,581. COMBINED HARVESTER AND THRASHER. MOSES P. FARNHAM, Germantown, Cal. Filed July 26, 1886. Serial No. 209,169. (No model.)



Claim.—1. The header-frame the rear timber of which is hinged to the side of the thrasher, extending horizontally at right angles from it, and a bearing-wheel for the outer end of the header-frame, the axle of which is journaled above the timber, in combination with the pole to which the team is attached, the front of said pole being hinged to brackets below the said timber, and having the lever K, fulcrumed in standards supported upon the front end of the pole, which extends back above the pole, substantially as herein described.

2. The header having one side hinged to the side of the thrashing-machine by means of a timber extending horizontally at right angles from the thrashing-machine, a bearing-wheel by which the outer end of the header-frame is supported, the axle of said wheel being journaled above the rear timber of the header-frame, the draft-pole having its front end hinged to or connected with brackets which extend lower than the rear timber of the header-frame, while its rear end is supported by a trailing or caster wheel, and a lever having its front end connected with the front of the header-frame, its fulcrum supported upon the front end of the pole, and weighted, as shown, in combination with a lever, M, resting upon the lever K, having its long arm exteeding diagonally across the thrashing-machine and its short arm connected with the pole, so as to raise and lower the sickle, substantially as herein described.

3. The combination of mechanism for driving the sickle, consisting of a horizontal shaft journaled upon the side of the thrashing-machine, having a pinion which receives motion from a gear-wheel upon the main axle of the thrashing-machine, a counter-shaft upon the header-frame parallel with the first-named shaft, pulleys and belts whereby motion may be transmitted from one to the other, a crank-wheel upon the shaft on the header-frame, a slotted depending pivoted lever through which the crank-pin passes, and a pitman connected with a sway-bar which is connected to the sickle-bar, substantially as herein described.

4. The combination of the sickle reciprocating in guards at the front of the header-frame, a sway-bar having its front end connected with said sickle, its rear end permanently hinged to the rear of the header-frame, a depending pivoted vibrating slotted lever having its upper end fulcrumed or hinged upon the header-frame, its lower end connected with the sway-bar by a pitman or link, and a slot formed in this lever, within which the crank-pin of the driving-wheel may slide as the wheel revolves, substantially as herein described.

5. The header-frame having one end hinged to the side of the thrasher, the outer end supported upon a bearing-wheel about the shaft of which the header-frame is rocked for raising and lowering the sickle, and a short inclined stationary spout through which this carrier-belt passes, in combination with the hinged movable spout upon the thrasher, having a second carrier-belt upon which the grain is delivered from the primary belt and by which it is carried upward to the thrashing-machine, substantially as herein described.

6. The header-frame hinged to the side of the thrashing-machine, having a horizontal shaft parallel with the side of the thrashing-machine, a corresponding shaft journaled upon the side of the thrashing-machine, from which motion is transmitted to the header-shaft by belts, as shown, and a pinion fixed to the shaft on the thrashing-machine, in combination with a crown-wheel loosely attached to the bearing shaft or axle of the thrashing-machine, so as to engage the pinion on the driving-shaft, said crown-wheel having a square socket in its hub fitted upon a similar sleeve on the squared end of the axle, and friction-rollers upon the frame, against which the rim of the crown-wheel travels and by which it is held in engagement with the pinion, substantially as herein described.

7. The header hinged to the side of the thrashing-machine, and the draper or carrying-belt extending upward a short distance from the side of the header, in combination with a spout hinged upon the side of the thrasher, extending downward, so as to receive the straw from the carrying-belt on the header, and a supplemental belt having its frame hinged to the hinged spout, so that the straw is carried up between the two belts, substantially as herein described.

8. The hinged spout with its elevating-belts by which the grain is elevated and delivered above the feeder-belt of the thrashing-machine, in combination with a supplemental belt and box to which it is hinged, whereby the grain may be received from the carrier-belts and delivered into the box instead of passing to the cylinder, substantially as herein described.

9. The box situated at the opposite side of the feeder-belt from the carrier and elevating belts and having horizontal guides or slots upon its upper edge, in combination with a frame having rollers journaled in its ends and a short carrier-belt upon which the straw from the elevator-belt may be received, said supplemental carrier having one of its rollers journaled in the slots on the top of the box, so that it may be moved from end to end thereof, substantially as herein described.

10. A device for holding the sacks, consisting of the grooved ring having points upon which the top of the sack may be hooked, and the lever-arm a^3, for supporting said device, in combination with the ring surrounding the grooved disk and the lever by which it may be caused to clamp the sack, substantially as herein described.

11. The grooved rings with pins and clamping ring and lever, in combination with the lever fulcrumed upon the sacker's platform and connected with the sack-holding ring, and a mechanism, comprising a lever and sliding holder, whereby the sack may be removed from the grain-spout after the grain has been settled therein, substantially as herein described.

12. The combination, with complementary driving and supply mechanisms, of the adjustable draper or carrying-belt frame hinged to the side of the thrasher, and the spring by which its lower end is supported and held in adjustment with the header-spout, substantially as herein described.

378,582. CARRIAGE-DOOR LOCK. WILLIAM P. PEET, Brooklyn, assignor to J. R. Brewster & Company, New York, N. Y. Filed Sept. 12, 1887. Serial No. 249,698. (No model.)



Claim.—In combination with a carriage-door, a lock adapted to be mortised into the door, having its face-plate separable from and independent of the side plate, and said face-plate being provided with a lug or lugs overlapping the side plate, and suitable screw-holes whereby the side plate can be made fast to the face-plate when the latter is in position on the door, substantially as described.

378,583. INSECTICIDE. FRIEDRICH FRESENIUS, Adams, assignor to Henry Fuchs, Offenbach-on-the-Main, Germany. Filed Jan. 20, 1887. Serial No. 224,837. (No specimens.)

Claim.—1. An antiphylloxera preparation consisting of tannin and sulphate of ammonia in the proportion of two parts of the latter to from one to five parts of the former, substantially as herein described.

2. The antiphylloxera preparation consisting of about one to five parts, by weight, of tannin, about two parts, by weight, of ammonium sulphate, and about two parts, by weight, of potassium silicate, substantially as herein described.

378,584. WRENCH. GEORGE GAVIN and LAWRENCE W. CROMER, Eureka, Nev., assignor to themselves and Fred M. Heitman, same place. Filed June 3, 1887. Serial No. 240,137. (No model.)



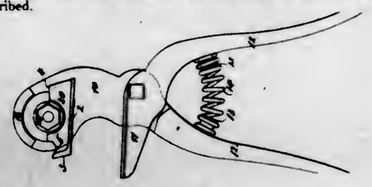
Claim.—1. In a wrench, the combination of the body A, provided with a stationary jaw, and having a longitudinal recess and slot intersecting said recess, a rod carrying a movable jaw and having a neck between it and the jaw working in the said slot, and provided with an outer screw-threaded end, an internally screw-threaded sleeve held to turn on the outer screw-threaded end of the said rod, and a collar connected to the said sleeve, substantially as herein shown and described.

2. In a wrench, the combination, with the body A, provided with an integral upper jaw, A', a central longitudinal recess, *a'*, and an intersecting longitudinal surface slot, *b*, the rod *b'*, adapted to slide in said recess, the integral lower jaw, B, and intervening neck, b^3, of the sleeve D, adapted to engage said body, the flanged tube D', adapted to turn in said sleeve and receive the end of said rod, and a grip-collar, E, attached to said tube, operating substantially as herein shown and described.

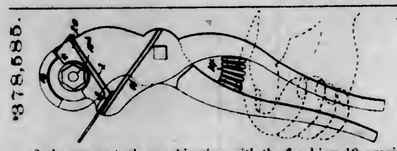
3. In a wrench, the combination, with the body A, provided with an integral upper jaw at one end and a reduced exteriorly-threaded portion, *a*, at the other, a central circular recess, *a'*, and an intersecting longitudinal surface slot, *b*, the sliding rod *b'*, exteriorly threaded at one end and carrying the lower jaw, B, at the other, and a neck, b^3, intervening said jaw and rod, of the sleeve D, provided with shoulders d' d^3, the flanged and slotted tube D', adapted to revolve in said sleeve, the grip-collar E, and cap H, all arranged to operate substantially as herein shown and described.

378,585. WRENCH. WALTER L. GIBSON, Oviedo, Fla., assignor to himself and James H. Lee, same place. Filed June 20, 1887. Serial No. 241,890. (No model.)

Claim.—1. In a wrench, the combination, with the fixed jaw provided with a projection and a movable jaw pivoted to said fixed jaw, of a block formed with bearing-surfaces approximately at right angles to each other and pivoted to the said fixed jaw, substantially as described.



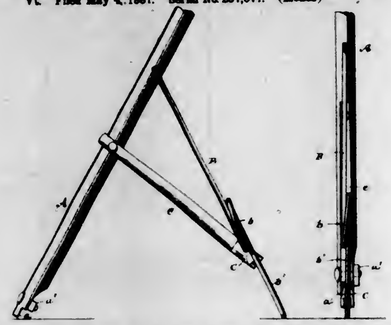
378,585.



2. In a wrench, the combination, with the fixed jaw 10, provided with the projection 16, and the movable jaw 11, of the block 20, pivoted to the fixed jaw and provided with the bearing-surfaces 2 and 3, and with the shoulders 4 and 5, substantially as herein shown and described.

3. The herein-described wrench, consisting of the fixed jaw 10, having a handle and provided with the projection 16, the block 20, pivoted to the fixed jaw and provided with the faces 2 and 3 and with the shoulders 4 and 5, the movable jaw 11, having a handle and pivoted to the stationary jaw, and the spring 14, interposed between the handles, as specified.

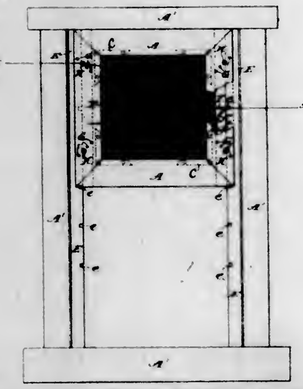
378,586. MOP-HOLDER. BENJAMIN F. GILBERT, Jr., Fair Haven, Vt. Filed May 4, 1887. Serial No. 237,077. (Model.)



Claim.—1. The combination, with the handle A, of the bail B, pivotally secured thereto, and the clamp-jaw C, also pivotally secured to said handle, the said bail forming a guide for the ends of the said clamp-jaw, substantially as shown and described.

2. The combination, with the handle A, formed with the rabbet *a* at its end, and provided with a catch-block, *a'*, adjacent to said rabbet, of the bail B, pivotally secured to said handle, and the clamp-jaw C, also pivotally secured to said handle and formed with grooved ends, by which it is guided on bail B, all substantially as shown and described.

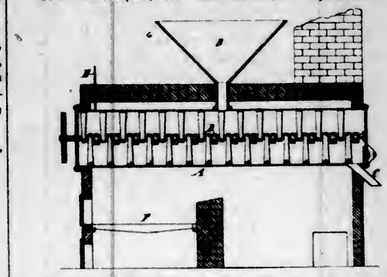
378,587. WINDOW SCREEN AND FIXTURE. GEORGE H. GOULD, West Lebanon, Me. Filed July 21, 1887. Serial No. 244,888. (No model.)



Claim.—1. A window-screen provided at opposite sides with deep grooves D D, and having series of holes G in its side bars, in combination with guide-strips E E, fixed to the window-frame, and pins H, passed into the holes G to bear on the guides, substantially as described, for the purposes set forth.

2. A window-screen provided at opposite sides with deep grooves D D, and having series of holes G in its side bars, in combination with guide-strips E E, fixed to the window-frame and provided with edge notches *e*, pins H, passed into the holes G to bear on the guides, and spring-catches F, fitted in the screen-frame and adapted to the guide-notches *e*, substantially as described, for the purposes set forth.

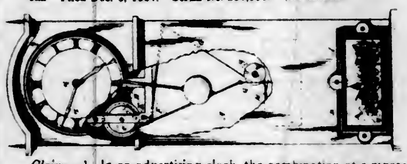
378,588. TREATMENT OF ORE. IRA HERSEY, New York, and MICHAEL R. COULEY, Brooklyn, assignors to William Bell, New York, N. Y. Filed Sept. 9, 1886. Serial No. 213,067. (Specimens.)



Claim.—1. As a new composition of matter, granular iron ore having eliminated from it all but a small amount of the oxygen—say about eight to thirteen per cent.—being mixed with liquid carbonaceous material, and the whole formed into bricks, blocks, or lumps, substantially as and for the purpose specified.

2. The process of treating granular iron ore, consisting in eliminating from it all but a small amount of the oxygen—say about eight to thirteen per cent.—by treating it in a closed retort, then mixing with the product carbonaceous material in a liquid state, and ultimately pressing it into bricks, blocks, or lumps, substantially as specified.

378,589. ADVERTISING-CLOCK. GUSTAV HOIBOLT, Watsonville, Cal. Filed Dec. 8, 1887. Serial No. 257,359. (No model.)



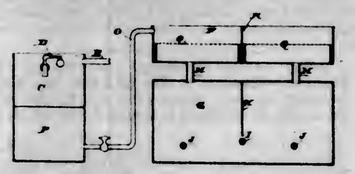
Claim.—1. In an advertising-clock, the combination of a pivoted lever located within the clock-casing and attached at one end to the card to be advertised, and a rotary cylinder or drum within said case, against which the other end of the lever impinges, whereby it is held in one position, said cylinder or drum having a cam groove or slot, into which the end of the lever drops, whereby the lever assumes another position and the card to which it is attached is successively brought into and retired from view, substantially as described.

2. In an advertising-clock, a series of independent pivoted levers located within the clock-casing and attached at one end to cards to be advertised, in combination with a rotary cylinder or drum in said case, against which the other ends of the levers impinge, said cylinder or drum being connected with the clock-gearing and provided with a spirally-directed cam groove or slot made in sections occupying different vertical planes, whereby the levers are successively dropped from an elevated position and returned thereto as their ends drop into sections of the cam groove or slot of the cylinder or drum or bear on the unbroken surface thereof, substantially as described.

3. In an advertising-clock, a rotary cylinder connected with the clock-gearing and having a spirally-directed cam groove or slot in its periphery made in sections in different vertical planes, in combination with independent pivoted levers within the casing having one end impinging on the cylinder and in planes coincident with the sections of its groove or slot, whereby said levers are alternately dropped and raised again, strings or cords attached to the other ends of the levers, and advertising-cards secured to said strings or cords, substantially as described.

4. An advertising-clock comprising the casing provided with its dial and indicating-hands and an aperture or window in its front, and with suitable clock-work mechanism, a cylinder or drum deriving rotation from said mechanism and provided with a spirally-directed cam groove or slot made in short sections in different vertical planes, independent pivoted levers having their upper ends impinging on the cylinder and in planes coincident with the sections on its groove, whereby they are dropped and again raised to position, cords or strings attached to the lower ends of said levers, and advertising-cards attached to the lower ends of the strings or cords, whereby they are successively brought into view at the window or aperture of the clock-casing and retired again, substantially as described.

378,590. HYDROCARBON-BURNER. HENRY L. HOWES, San Francisco, Cal. Filed May 24, 1887. Serial No. 239,264. (No model.)



Claim.—1. A device for the combustion of hydrocarbon liquid fuel, consisting of an upper and lower chamber having vertical transverse partitions, by which they are divided, water and oil supply pipes opening into the lower chamber, and small connecting-pipes leading from the lower to the upper chambers, and a means for maintaining the water at a certain level within the upper chamber, as shown, in combination with the horizontal gauze or wire screens or partitions fixed within the upper chambers, substantially as described.

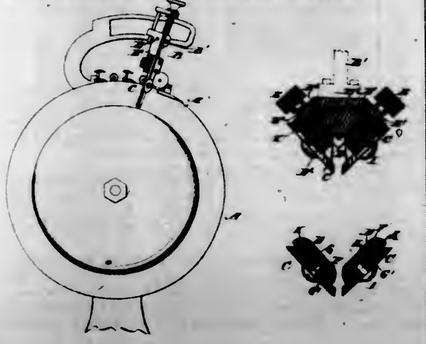
2. The burner composed of the upper and lower independent chambers having the connecting pipes or passages, and the horizontal perforated screens in the upper chamber, in combination with the second water-chamber situated at the side of the burner-chamber connected therewith by pipes, and an air-passage through which air is supplied from the rear of the second chamber and discharged over the burner-chamber, in combination with a supply pipe or pipes and reservoir, and adjustable cocks, by which the supply may be controlled and regulated, substantially as described.

3. The hydrocarbon-liquid burner composed of an upper and lower burner-chamber united by connecting-pipes having vertical transverse diaphragms, and the horizontal perforated screens in the burner-chamber, as shown, in combination with the supplemental water and supply chamber, and connecting-pipe and the receiver with pipes and regulating-cocks, together with an overflow-pipe leading from the burner-chamber to a receiver, substantially as herein described.

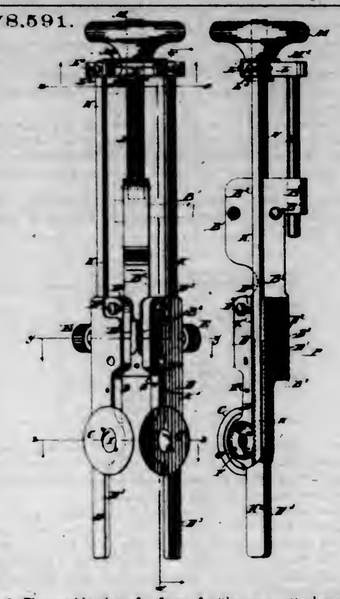
378,591. GAGE ATTACHMENT FOR CANE-SHAVING MACHINES. LOUIS JAMES, Brooklyn, assignor, by mesne assignments, to Mathilde Salomon, New York, N. Y. Filed Apr. 22, 1887. Serial No. 236,236. (No model.)

Claim.—1. In a gage attachment for cane-shaving machines, the combination of a pair of knife-disks, gears for turning the same, a longitudinally-movable rack-bar engaging each of said gears, a movable block, to which both rack-bars are connected, and means for adjusting said block to move both rack-bars simultaneously lengthwise, substantially as described.

2. In a gage attachment for cane-shaving machines, the combination of a knife-disk, a gear for turning the same, a rack-bar engaging the gear, a screw-bar, a nut working thereon, and a connecting device, through which the rack-bar is moved lengthwise by the play of the nut on the screw-bar, substantially as described.



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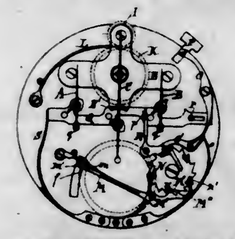
3. The combination of a frame for the gage attachment, knife-disks, gears and rack-bars for turning the knife-disks, an adjustable block, to which the rack-bars are connected, and a slide-bar and keeper for guiding the movement of the block, substantially as described.

4. The combination of a frame for the gage attachment, a carrier mounted to slide laterally thereon, a knife-disk and its actuating-gear on the carrier, a rack-bar engaging the gear, and an adjustable block for moving the rack-bar lengthwise, and attached thereto by a pin-and-slot connection, substantially as described.

5. In a gage attachment for cane-shaving machines, the combination of a knife-disk carrier, a headed stud screwed therein, a knife-disk and its turning-gear mounted to turn freely on the said stud, and a stiffening-spring interposed between the carrier and the gear of the knife-disk, substantially as described.

6. In a gage attachment for cane-shaving machines, the combination of a frame having forward converging vertical sides, in which are formed transverse dovetail grooves, sliding knife-disk carriers having dovetail ribs adapted to said grooves and threaded sockets formed lengthwise of and in the ribs, adjusting-screws working in the threaded sockets, and bearings fixed on the frame, in which the adjusting-screws are mounted to turn, substantially as described.

378,592. STOP-WATCH. VICTOR JEANNOT, Geneva, Switzerland. Filed Sept. 29, 1887. Serial No. 251,008. (No model.)



Claim.—1. The combination, with the hands A B C, balance-wheel *f*, and gearing for actuating said hands and balance-wheel, of the cam N, lever M, pin *m'* upon said lever, spring *m*, lever O, pawl *o'*, and push-piece P, substantially as and for the purposes specified.

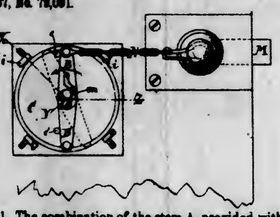
2. The combination, with the hands A B C, heart-cams on the arbors of said hands, balance-wheel *f*, and gearing for actuating said hands and balance-wheel, of the cam N, lever M, pin *m'* upon said lever, spring *m*, lever O, pawl *o'*, push-piece P, slide Q, spring S, lever

R, and the stops d', d'', and d''' upon the slide S for returning the hands A B C to 0, substantially as set forth.

3. The combination, with the mechanism for operating the hands A B C, of the additional hands A′ B′ C′ upon the arbors of the hands A B C, respectively, separate heart-cams for said hands A′ B′ C′, the slide Q′, spring S′, spring-lever T, and push-piece P′, substantially as and for the purposes specified.

4. The combination, in a stop-watch, of two sets of hands, a train of gearing for driving both sets of hands simultaneously, mechanism for stopping both sets of hands simultaneously, and independent mechanism for returning either set of hands to 0, substantially as set forth.

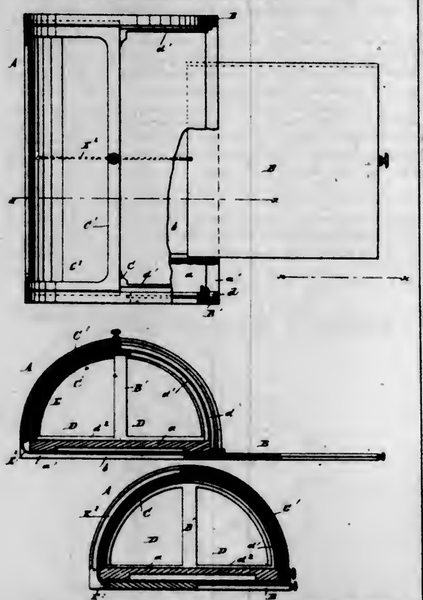
378,593. LOCK. VICTOR JEANNOT, Geneva, Switzerland. Filed Oct. 22, 1887. Serial No. 253,092. (No model.) Patented in Belgium Oct. 4, 1887, No. 78,091.



Claim.—1. The combination of the stem A, provided with circular grooves a' and a^2, handle A′, and lever B, having one or more arms, with a pin, c, and with the disks D, wheels G, and button e, substantially as shown and described, and for the purpose specified.

2. A lock substantially composed of a stem, A, having grooves a' and a^2, handle A″, and lever B, a plate, F, box C, with pins c and c', lever B, with hook m, bolts i, stems E, with buttons e and pin g, wheels G, provided with a number of notches, the one of which is beveled, the springs H, and disks D, provided with notches d and pins b, substantially as shown and described, and for the purpose specified.

378,594. SHOW-CASE. JAMES J. KELLY, Albany, N. Y. Filed Jan. 5, 1888. Serial No. 259,899. (No model.)

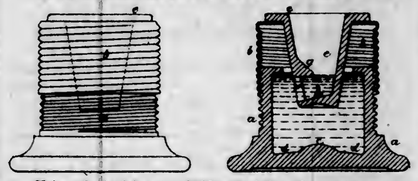


Claim.—1. The combination, with a case provided with a sectional cover, one part adapted to slide over the other, and a detachable auxiliary outer bottom, of a shelf sliding in said auxiliary bottom, and a cord or chain connecting said shelf and sliding cover, substantially as shown and described, whereby when the shelf is drawn out the sliding cover is raised, and vice versa, as set forth.

2. The combination, with a segmental case provided with a sectional cover, one fixed and the other sliding over the stationary section, the said sliding section having metal tongues, of a detachable auxiliary bottom, a shelf sliding in said auxiliary bottom, and a cord or chain uniting the shelf and sliding cover of the case, substantially as shown and described.

3. The combination, with a segmental case provided with lighted ends D, having grooves d upon the inner face and flanges d' below said grooves, a fixed sectional cover, C, and a lighted cover, C′, sliding over the said stationary cover, provided with metal tongues entering the grooves d, of an auxiliary detachable recessed bottom, a shelf sliding in said auxiliary bottom, and a cord or chain connecting the sliding cover and shelf, substantially as and for the purpose herein set forth.

378,595. INK POT OR HOLDER. ALFRED KEMPSON, Tunbridge Wells, County of Kent, England. Filed Apr. 8, 1886. Serial No. 161,567. (No model.) Patented in England June 3, 1884, No. 8,053; in France Mar. 16, 1886, No. 167,868, and in Germany Mar. 28, 1885, No. 33,737.



Claim.—1. An ink pot or holder consisting of a receiver, a, provided with a cap, b, vertically adjustable thereon, and with a dipping-cup, c, hung on such cap and adjustable thereby, and whereby the ink can be maintained at the required level in the dipping-cup and the cup may be readily lifted and removed from the cap, all as set forth.

2. In combination with the ink-receiver, a vertically-adjustable dipping-cup provided with a side inlet, f, an interior projection, g, above such inlet, and an inclined bottom, i, as and for the purposes set forth.

3. The improved inkstand described, consisting of the receiver a, provided with the projection c and groove d, the adjustable cap b, and the dipping-cup e, placed in and readily removable from such cap, all as and for the purposes set forth.

378,596. COMPOSITION FOR FILLING UP CRACKS IN BARRELS AND OTHER VESSELS. SAMUEL KLEIN and ALEXANDER SCHATTNER, Lugos, Austria-Hungary. Filed May 21, 1887. Serial No. 238,260. (No specimens.)

Claim.—The compound of vaseline, paraffine, porcelain clay, and gutta-percha hereinbefore described, substantially as and for the purpose set forth.

378,597. JERSEY-STAY. SAMUEL KRAMER and JACOB LEVY, New York, N. Y. Filed Oct. 12, 1887. Serial No. 252,124. (No model.)

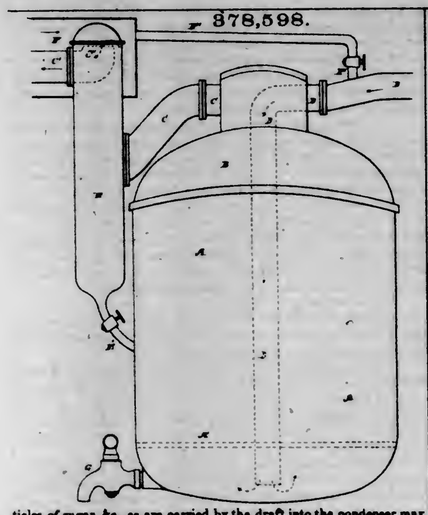


Claim.—A jersey garment having a pin-hook, A, comprising a frame, E, and sharpened prongs C, fastened to the inside of said garment at or near its lower edge by stitching A′, the prongs C setting inward and their free ends projecting in a direction upward from the bottom of the garment, as and for the purpose specified.

378,598. EVAPORATING APPARATUS. PIERRE LARRIEU, Paris, France. Filed June 23, 1887. Serial No. 242,201. (No model.) Patented in France Aug. 14, 1886, No. 177,856; in England Aug. 26, 1886, No. 10,911; in Spain Aug. 28, 1886, No. 9,634, and in Belgium Feb. 5, 1887, No. 76,941.

Claim.—1. The combination of the vacuum-pan, the hot-air-induction pipe D, the fluid-supply vessel, the pipe F, leading from the supply-vessel into the hot-air pipe, the eduction-pipe C, the condenser, the exhaust-pipe connected with the condenser, and a connection between the bottom of the condenser and the pan, whereby such particles of sugar, &c., as are carried by the draft into the condenser may be returned to the pan.

378,598.



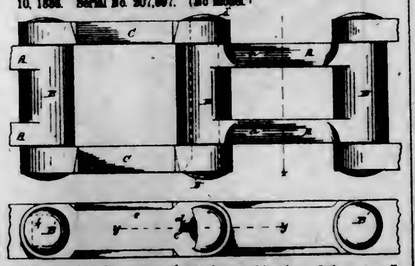
2. The combination, with a vacuum-pan, of the hot-air-induction pipe, the eduction-pipe C, an exhaust-pipe by which the steam and hot air are drawn from the pan, a fluid-chamber, F, through which the exhaust-pipe passes, and a pipe-connection between the fluid-chamber and the hot-air-induction pipe, whereby the heated fluid from the chamber F may be supplied to the pan through the hot-air-induction pipe, substantially as set forth.

3. The combination of the vacuum-pan, the hot-air-induction pipe, an eduction-pipe, C, an exhaust-pipe through which the hot air and steam are withdrawn from the pan, a fluid-supply vessel through which the exhaust-pipe passes, a pipe-connection, F′, between the fluid-supply vessel and the induction-pipe D, and a cock in the pipe F′, whereby the heated supply-fluid may be fed to the pan in a regulated quantity through the hot-air-induction pipe D.

4. The combination of the pan, the hot-air-induction pipe D, the eduction-pipe C, the condenser with which the pipe C communicates, an exhaust-pipe, C′, communicating with the top of the condenser, the fluid-supply vessel F, through which the exhaust-pipe passes, and the pipe-connection F′ between the fluid-supply vessel and the hot-air-induction pipe D, substantially as set forth.

5. The combination of the pan, the hot-air-induction pipe, an eduction-pipe, an exhaust-pipe through which steam and air are withdrawn from the pan, the fluid-supply vessel through which the exhaust-pipe passes, a pipe-connection, F′, between the fluid-supply vessel and the hot-air-induction pipe D, and the tap G, arranged at the bottom of the pan, substantially as set forth.

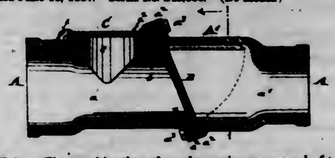
378,599. DRIVE-CHAIN. BENJAMIN A. LOSH, Columbus, Ohio, assignor to the Lechner Manufacturing Company, same place. Filed July 10, 1886. Serial No. 207,897. (No model.)



Claim.—1. In a drive-chain, the combination of the centrally-open lugs A A B B, the side bars, C C, and the pintles locked to and turning with the bars C C, substantially as set forth.

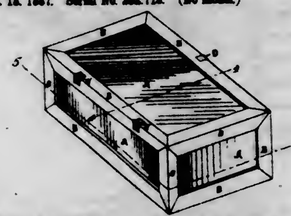
2. In a drive-chain, the combination, with the pintle and the side bars, of the centrally-open links A B, having their lower faces bevided to form cutting-edges a a, substantially as described.

378,600. SEWER-VALVE. PHILIP F. LEMMART, Brooklyn, N. Y. Filed June 10, 1887. Serial No. 240,886. (No model.)



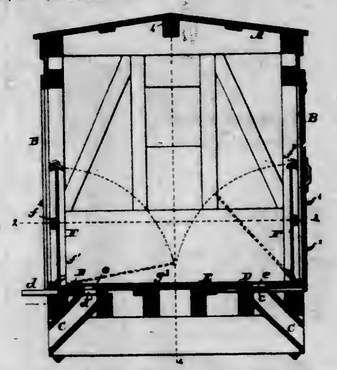
Claim.—The combination of a valve-casing composed of two sections coupled together at a suitable inclination to the axis of the casing, a valve hinged to the upper part of the inner section, a hand-hole at the upper part of the inner section back of the valve, tapering guide-lugs at both sides of the hand-hole, and a detachable cover having straight converging side portions retained by said lugs, substantially as set forth.

378,601. BOX. ALBERT T. LINDEMAN, Whitehall, Mich. Filed Oct. 18, 1887. Serial No. 252,712. (No model.)



Claim.—A packing-box consisting of right-angular angle-woods B, embracing every corner, joined at their ends, with their inner and outer surfaces even at the joints, and severally having grooves in their edges, and of the panels of thin material fitting into the grooves, substantially as described.

378,602. FREIGHT-CAR. HENRY V. LOCAS, St. Paul, Minn., assignor to Louise Locas, same place. Filed Sept. 17, 1887. Serial No. 249,940. (No model.)



Claim.—1. The car-body having the chute leading downward through the bottom of the car-body and outward to or toward the side of the car, and at its upper end provided with a slide, as and for the purpose described.

2. The combination of the car-body, the chute, and the slide provided with arms, said slide working horizontally beneath the flooring and above the inlet to the chute, substantially as described.

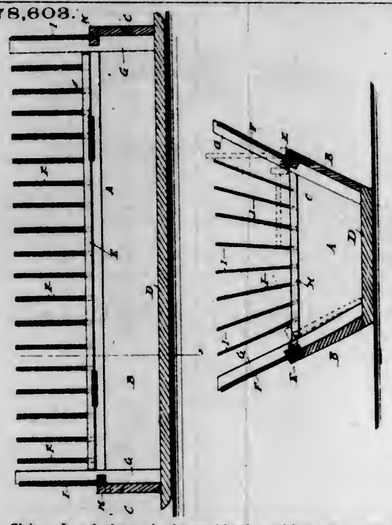
3. The combination of the car-body, the chute, the slide provided with the arms and working beneath the flooring and above the chute-inlet, and the journaled car-door, substantially as described.

4. The journaled grain-door, combined with the catch f^3, as and for the purpose described.

5. The combination of the car-body, the chute, the slide, the recessed car-floor, and the journaled grain-door, substantially as described.

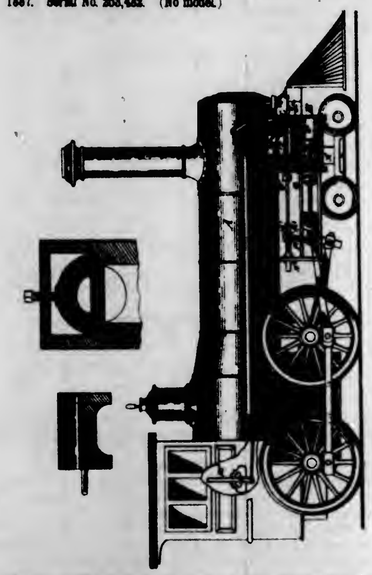
378,603. FEED-TROUGH. ALVIN H. MAIN, Pittsfield, Ill. Filed Aug. 3, 1887. Serial No. 246,094. (No model.)

378,603.



Claim.—In a feed-trough, the combination, with a box provided with end pieces having upwardly-extending pins, and also provided with inclined sides, of bars hinged on the upper ends of the inclined sides, and pins extending from said bars which are adapted to swing inward, substantially as shown and described.

378,604. REVERSING-VALVE. PHILO MALTBY, Cleveland, Ohio, assignor of one-half to L. G. Hine, Washington, D. C. Filed Oct. 27, 1887. Serial No. 253,482. (No model.)



Claim.—1. The combination, with a single steam-cylinder, of the reversing twin valves adapted to be moved simultaneously toward or from each other, so as to change the induction-ports to admit steam to either end of the cylinder at will in order to reverse the engine, substantially as specified.

2. The combination, with the valves operated by the eccentric of an engine to alternately change the ports to operate the piston, of the reversing twin valves and the mechanism whereby the induction-ports are changed to admit steam to either end of the cylinder at will for the purpose of reversing, substantially as specified.

3. The combination, with the reversing twin valves, of the rack-bars and intermediate pinion and mechanism for operating the valves, so that they may move simultaneously to change the ports for the purpose of reversing, substantially as specified.

4. The combination, with the valves operated by the eccentrics of an engine to alternately change the ports to operate the pistons, of two sets of reversing twin valves, one set located upon the outside of each steam-cylinder, and mechanism whereby each set of reversing-valves may be operated simultaneously to change the induction-ports to admit steam to either end of the cylinder, substantially as specified.

5. The combination, with the steam-cylinders of an engine, of twin valves, one set located on the outside of each cylinder, the rack-bars secured to each set of twin valves, and the pinions intergearing with each set of rack-bars, respectively, and mounted on a common rock-shaft to shift the valves simultaneously, substantially as specified.

6. The combination, with the cylinders of a locomotive, of the pinion-shaft extending through the same, the pinions and rack-bars, the twin reversing-valves, the connecting-arm, and the rod extending to the cab, substantially as and for the purpose specified.

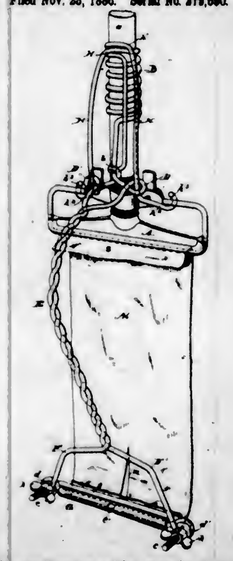
7. The combination, with the valve-chest, constructed in two sections, having cylindrical chambers extending from end to end thereof, and suitable ports, as described, of the reversing twin valves and their operating mechanism, and the piston-valves, whereby the direction of the induction and eduction of steam is changed for reversing, substantially as specified.

8. The combination, with the valve-rod and a support within which it slides, of the sword-arm or curved lever, the connecting-lever or rocker-arm, the sliding block pivoted thereto, and the box secured to the valve-rod, wherein said block is adapted to slide, substantially as specified, whereby the valve-rod is given a rectilinear movement.

9. The combination, with the steam-cylinders of a locomotive, of the twin valves, one set located on the outside of each cylinder, the rack-bars secured to each set of twin valves, the pinions intergearing with each set of rack-bars, respectively, and mounted on a common shaft to shift the valves simultaneously, and means whereby each set of twin valves may be operated independently of each other, substantially as specified.

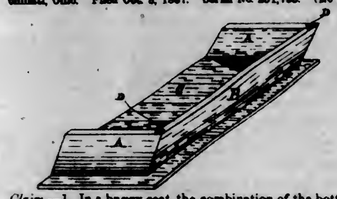
10. The combination, with the reversing-valve of an engine, of a tube leading from an opening to the valve, and provided with a two-way cock and an oil-cup, whereby oil may be fed to the valve and any steam that may be confined between the valve and its cover permitted to escape alternately, substantially as specified.

378,605. MOP ATTACHMENT. CALEB MANBARGER, East Greenbush, N. Y. Filed Nov. 23, 1886. Serial No. 219,690. (No model.)



Claim.—The combination, with a mop head and handle, of an attachment consisting of a coil, B, adapted to surround the handle, provided with aligning eyes D D', the integral flexible arm E, extending normally above and beyond the mop-head, said arm provided with a bifurcated end, F F', a detachable stay, H, adapted to enter said eyes D D', the said stay having hook ends h^3, adapted to clamp the mop-head, and clamping-bars e e', carried by said arm E, substantially as shown and described, whereby a cloth is held in a horizontal adjustable position between the mop-head and the clamping-bars e e', as set forth.

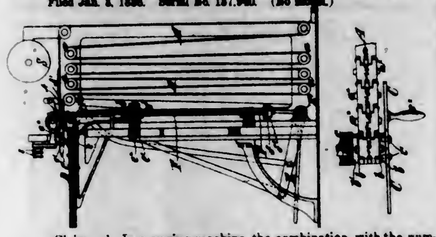
378,606. SEAT-CORNER FASTENING. JAMES W. MARCY, Cincinnati, Ohio. Filed Oct. 3, 1887. Serial No. 251,795. (No model.)



Claim.—1. In a buggy-seat, the combination of the bottom C, the sides A, and back B, secured thereon, and the staple D, for securing the corners, substantially as shown and described.

2. A corner-fastening for buggy-seats consisting of the flat metal staple D, having diverging legs, substantially as and for the purpose set forth.

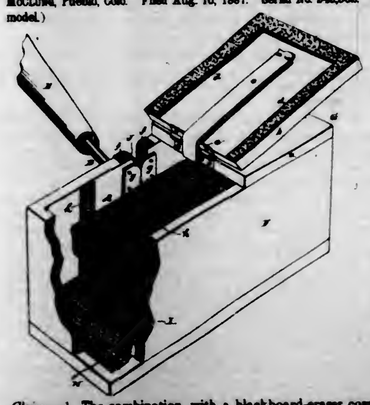
378,607. PAGING-MACHINE. JOHN MCADAMS, Brooklyn, N. Y. Filed Jan. 3, 1886. Serial No. 187,940. (No model.)



Claim.—1. In a paging-machine, the combination, with the numbering-chain and the shaft whereby the chain is moved step by step, of a bearing for the shaft on the inner side of the chain, the shaft being destitute of a bearing on the outer side of the chain, and a leaf-turner secured to the end of the shaft on the outer side of the chain, substantially as herein described.

2. The combination, with the numbering-chain and the shaft B, of a bearing for the shaft on the inner side of the chain, the shaft being destitute of a bearing on the outer side of the chain, and the leaf-turner C, placed against the outer end of the shaft and screwed or otherwise secured thereon, substantially as herein described.

378,608. CLEANER FOR BLACKBOARD-ERASERS. JAMES S. MCCLURE, Pueblo, Colo. Filed Aug. 10, 1887. Serial No. 246,582. (No model.)



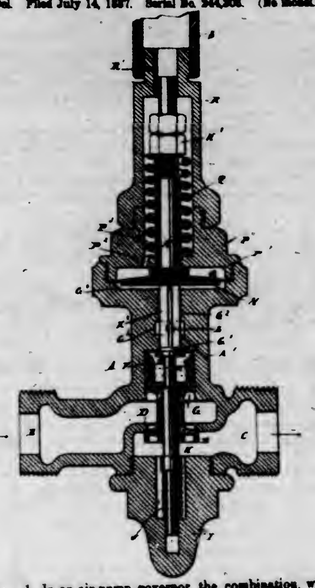
Claim.—1. The combination, with a blackboard-eraser comprising a block or back, of the rod D, applied to the side of said block or back, and handle E, applied to said rod, substantially as described.

2. A blackboard-eraser cleaner formed of the box F, provided with a hinged cover and a false bottom formed of wire-cloth, and having in one side thereof a slot for the introduction of the handle of the eraser, substantially as described.

3. The combination, with an eraser, A, provided with the rod D and handle E, of the box F, having the slot J, lined with fibrous material and provided with rubber strips *g*, a false bottom formed of the ribs H and the wire-cloth I, and the hinged cover-section *b*, provided with the rubber spring *c*, substantially as described.

4. The combination, with an eraser, A, provided with the rod D and handle E, of the box F, having the slot J, lined with fibrous material and provided with rubber strips *g*, a false bottom formed of the ribs H and the wire-cloth I, the hinged cover-section *b*, provided with the rubber spring *c*, the packing *d*, and the fibrous strips *h*, substantially as described.

378,609. AIR-PUMP GOVERNOR. EDWARD G. MOORE, Wilmington, Del. Filed July 14, 1887. Serial No. 244,208. (No model.)



Claim.—1. In an air-pump governor, the combination, with the diaphragm held under spring-pressure and acted upon by compressed air, of a valve opened by said diaphragm, a second valve seated and unseated by the steam-pressure and having a longitudinal bore through it, and a spindle extending through said bore and closing the valve opened by the diaphragm, substantially as set forth.

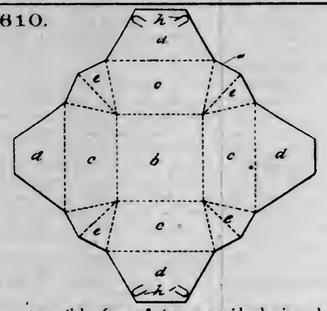
2. In an air-pump governor, the combination, with the diaphragm held under spring-pressure and acted upon by compressed-air pressure, of a valve operated upon by said diaphragm, and a hollow steam-valve, which first-named valve has its stem entering the hollow valve and acting upon a spring-pressed spindle, also entering the said hollow valve, substantially as set forth.

3. In an air-pump governor, the diaphragm O, supported by the spring Q, and exposed on its upper face to the action of the compressed air, in combination with the valve K, connected by its stem K^2 with the under side of said diaphragm, and the valve E, receiving a stem, K', of said valve K, having the piston F, and adapted to be unseated and seated by the steam-pressure and through the action of said first-mentioned valve, said stem K' resting upon a spring-pressed spindle entering the said valve E, substantially as shown and described.

378,610. CUSPIDOR. DANIEL H. MURPHY, Hartford, Conn. Filed July 14, 1887. Serial No. 244,246. (No model.)

Claim.—1. As a new article of manufacture, a folded paper cuspidor having a bottom, side walls bent outward and upward from the bottom, the gores formed between the corners of the side walls being folded against and fastened to the side walls, and the inward and downward sloping aprons, formed by bending over the tops of the side walls, having an opening through its center, and tongues cut from the flaps to hold the aprons in position, substantially as described, and for the purpose specified.

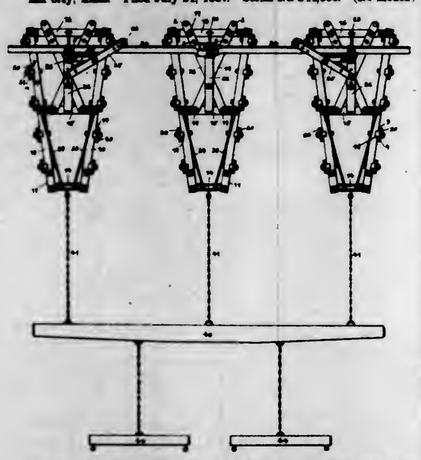
378,610.



2. As a new article of manufacture, a cuspidor having a bottom, side walls bent upward from the bottom, the gores formed in the corners between the side walls being turned inward and fastened to the side walls, and the apron formed by folding inward and downward the tops of the side walls, the whole being folded from a single sheet of material, all substantially as described.

3. A polygonal-shaped blank cut from a sheet of paper and creased to leave a rectangular portion, *b*, to form the bottom, four oblong portions, *c*, adjacent to the bottom, to form side walls, eight gores, *e*, between the portions *c*, and the portions *d* adjacent to the portions *c*, to form the apron of a cuspidor, substantially as shown, when folded to shape.

378,611. HARROW FOR LISTED CROPS. HUGH A. MURPHY, Elk City, Kans. Filed July 31, 1887. Serial No. 244,586. (No model.)



Claim.—1. The combination, with the harrow-beams and a forward arched bar pivotally connecting the forward ends of the beams together, of a central and rear extensible bridge and diagonal braces connecting the said central and rear bridges, substantially as herein shown and described.

2. The combination, with two or more harrow sections, of standards swiveled to the said sections, and an elevated connecting-bar to which the upper ends of the standards are secured, substantially as herein shown and described.

3. The combination, with two or more harrow-sections, each having their beams connected by cross-bars, of standards swiveled to one of the said cross-bars, a connecting-bar to which the upper ends of the standards are secured, and braces extending from the rear cross-bars to the standards, substantially as herein shown and described.

4. The combination, with two or more harrow-sections, each having their beams connected by arched bars or bridges, of standards swiveled to one of the said arched bars or bridges of each harrow-section and provided with downwardly-projecting stops on their rear sides, a connecting-bar to which the upper ends of the standards are secured, and braces extending from the rear arched bar or bridge of each section to the swiveled standard of said section, substantially as herein shown and described.

5. The combination, with the harrow-sections, of the standards 22, swiveled to the said sections, the sectional connecting bar or rod 24, connected to the upper ends of the standards of the side sections, and their ends pivotally connected to the standard of the central section, and the braces 25 and 27, secured to the standards of the side sections and to the said connecting bar or rod, substantially as herein shown and described.

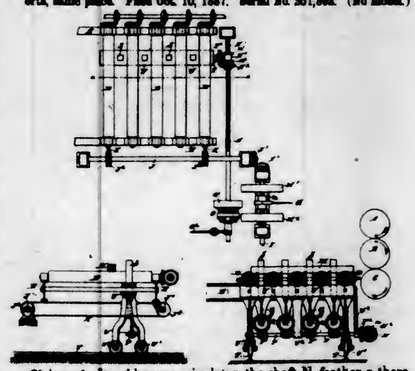
6. The combination, with harrow-beams 10, of plates 11, formed with apertured ears 12, arches 14, formed with legs 13, which pass through the apertures of the ears 12, a central adjustable bridge, 15, and a rear adjustable bridge, 16, substantially as described.

7. The combination, with harrow-beams 10, of plates 11, formed with apertured ears 12, arches 14, formed with legs 13, which pass through the apertures of the ears 12, a central adjustable bridge, 15, a rear adjustable bridge, 16, a standard, 22, connected to the bridge 15, and a brace extending from the standard to the bridge 15, substantially as described.

8. The combination, with the harrow-beams 10, and the arched bar 14, pivotally connecting the forward ends of the said beams, of the adjustable arched bars or bridges 15 and 16 and the diagonal braces 18, pivoted to the bridge 15, and having their rear ends adjustably connected to the bridge 16, substantially as herein shown and described.

9. The combination, with the bridge 15 and the standard 22, pivoted thereto, of the double-armed stop *l*, secured to the standard, substantially as herein shown and described.

378,612. BLOOM-MANIPULATOR FOR ROLLING-MILLS. ROBERT NATHUSIUS, Pittsburg, Pa., assignor to himself and William H. Roberts, same place. Filed Oct. 10, 1887. Serial No. 251,893. (No model.)



Claim.—1. In a bloom-manipulator, the shaft N, feather a thereon, and means for rotating said shaft, in combination with the sleeve N′, interiorly recessed to receive said feather and having the end collars, n' n^3, the bevel gear-wheel N^2, connected to said sleeve, the shaft P and the bevel gear-wheel P′ thereon, engaging said bevel gear-wheel N^3, the end of said shaft P engaging between said collars, as and for the purpose specified.

2. In a bloom-manipulator, the series of rams S, connecting-rods R, and worm-wheels Q, with their crank-pins Q′, all mounted on the carriage U and driven simultaneously by worms P′ on the single shaft P, as herein specified.

3. In a bloom-manipulator, the carriage U, chain K, reversible shaft J, with its pulleys H′ H^2, and an idle-shaft, J^4, with its pulleys J^3, in combination with the vertically-reciprocating rams S, carried on said carriage, and with the table-rolls D, frame E, and main rolls A B C, arranged for joint operation, as herein specified.

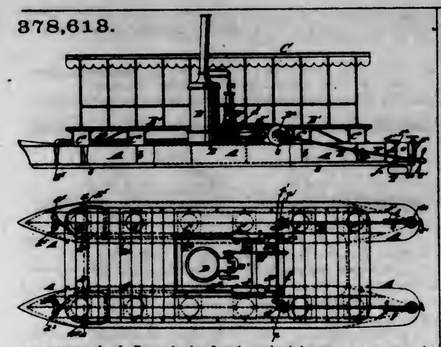
4. In a bloom-manipulator, the transverse shaft N, feather n, sleeve N′, and bevel gear-wheel N^2, in combination with each other and with the bevel gear-wheel P^2 and the positive mechanical connections of the latter to the rams S, all arranged for joint operation, as herein specified.

5. The combination, with the main rolls A B C, of the reversible rolls D, carried in a frame, E, which may be raised and lowered, and of the manipulator-rams S, operated by cranks carried in the carriage U, and of the chains K and their reversible operating-wheels J′, all arranged for joint operation, substantially as herein specified.

378,613. CONSTRUCTION OF BOATS. ANDREAS OLSEN, Ephraim, Utah. Filed May 19, 1887. Serial No. 238,716. (No model.)

Claim.—1. The combination, with two hulls constructed to form air-tight compartments, and a lower deck for machinery extending between the hulls, of an upper deck and tubular supports therefor

378,618.

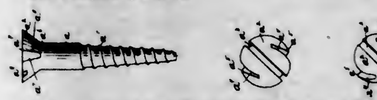


erected on the hulls, and also forming air-tight compartments, substantially as herein described.

2. The combination, with two hulls and a lower deck for machinery, connecting the hulls about midway of their length, of an upper deck extending between and supported by the hulls in front of and behind the machinery-deck, substantially as herein described.

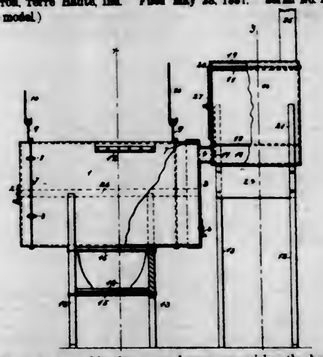
3. The combination, with two hulls, each having at the stern a rudder well or compartment open at the bottom, of a deck extending between the hulls, rudder shafts or posts, one in each well or compartment and each provided with a rudder, and bearings wherein said shafts or posts may be turned and raised vertically, substantially as herein described.

378,614. SCREW. LEVI H. PALMER, Gloversville, N. Y., assignor of one-half to H. J. Brockway, same place. Filed Sept. 24, 1887. Serial No. 250,573. (No model.)



Claim.—A screw having the screw-thread *a′*, the cylindrical uncut shank *a*, the head a^2, having the drive-slot a^3, and one or more spiral or inclined cutting edges or teeth, a^3, formed by the grooves or tangential recesses a^4, arranged in the head in relation to the drive-slot, as indicated, as and for the purposes described.

378,615. STOVE FOR BURNING LIGHT FUEL. RAYMOND O. PEYTON, Terre Haute, Ind. Filed May 23, 1887. Serial No. 238,638. (No model.)



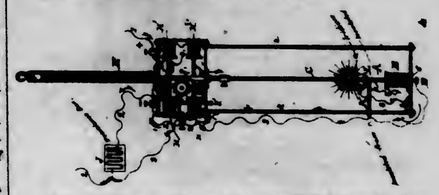
Claim.—1. A combined stove and oven comprising the horizontal cylindrical stove-body 1, closed at its front end and having a removable head fitting on its rear open end, an outlet-thimble, 4, near the upper end of said head, and a draft-opening, 6, in the lower end of said head, the horizontal detachable oven 16, formed of two cylinders, one within the other, a space, 19, being formed between the two cylinders, the thimble 4 leading into the lower forward end of said space, the smoke-outlet 25 at the upper end, and the door 27 at one end of the inner cylinder, substantially as set forth.

2. A portable stove comprising a tubular sheet-metal body, 1, closed at its front end, a detachable rear head, 3, fitting on said open end and having the thimble 4 in its open end and the draft-opening 6 in its lower end, the draft-opening 2 in the front end, the bands 7, secured around the cylinder near its opposite ends, and provided with bails 9, whereby the stove may be carried, substantially as set forth.

3. A cylindrical stove-body, 1, closed at its front end, a central damper, 2, in said closed end, and the detachable head 3 for the rear end of the stove, having a smoke-outlet, 4, at its upper end and a damper, 6, in its lower end below the smoke-outlet, substantially as set forth.

4. In a stove, the combination, with the body 1, closed at one end and provided with a central draft-opening, 2, of a removable central rod, 26, a detachable head, 3, having a flue-thimble, 4, and draft-opening 6, and means for supporting said body, substantially as shown and described.

378,616. ARC LIGHT. LAWRENCE H. P. POLAND, Cincinnati, Ohio. Filed Apr. 21, 1887. Serial No. 235,582. (No model.)



Claim.—1. The combination of the solenoid B, the negative-electrode holder controlled by said solenoid and carrying a contact-maker, a spring to hold the negative electrode up until the arc is formed, a resistance placed in the line of the main negative, the short-circuit wire 3 and its contact-point arranged in the path of the contact-maker controlled by said negative-electrode holder, so that the resistance is short-circuited when the arc is formed, substantially as hereinbefore set forth.

2. The combination, substantially as set forth, of the positive-electrode holder, a brake actuated by the main and shunt solenoids for controlling its movements, the solenoid B and negative-electrode holder forming the arc of said solenoid carrying a contact-maker, a spring within said solenoid B, to close the arc, a regulating-screw to determine the length of the arc, a resistance placed in the main negative line, a short-circuit wire having a contact-point to be brought in electrical connection with the negative electrode contact-maker when the arc is formed, and thus short-circuit the resistance-box.

3. In an electric-arc lamp of the character described, the combination of the toothed holder E, the main solenoids and shunt solenoids arranged opposite each other, the cog F, meshing with the toothed holder, the brake-wheel F′, the brake G *g*, and brake-rods *g′ g′*, the opposite ends of which are the cores of the opposite solenoids, the solenoid B at the bottom of the lamp, the incombustible negative electrode, the negative-holder A, and spring within solenoid B, to hold it up, a regulator to determine the length of the arc, the resistance J in the main negative line, the short-circuit wire 3, and the contact-pieces K and L, to short-circuit the resistance when the arc is formed.

4. In an electric line having lamps arranged as described, the resistance-box J, interposed in the negative line of each arc lamp, a short-circuit wire and its contact-point, and the movable negative electrode carrying a contact-maker, to be brought in electrical connection with the short-circuit wire and cut out the resistance-box when the arc is formed, substantially as described.

378,617. HEEL-NAILING MACHINE. FREEMAN F. RAYMOND, 2d, Newton, Mass. Filed Dec. 9, 1887. Serial No. 257,366. (No model.)

Claim.—1. The combination herein described of a last or work-support, a heel-forming die and a block or plate supporting it, and two series of nail-attaching devices adapted to be used successively in driving two gangs or groups of nails into the compressed heel-blank, substantially as described.

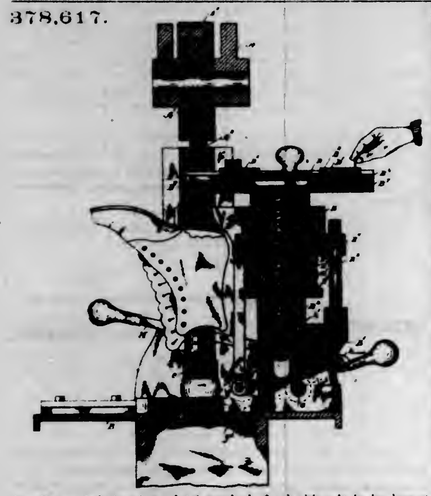
2. The combination of the last or work-support, a table or block, E, the heel-compressing die mounted thereon, the rotary table B^2, the templets B^7 B^8, nail-carriers D^7 D^8, and the nail-driving devices, substantially as described.

3. The combination of the last or work-support, a heel-forming die, two templets, B^7 B^8, adapted to be moved successively into operative position in relation to the die, and the nail-driving devices, substantially as described.

4. The combination of the last or work-support, the vertically-movable heel-compressing die-holding plate K, the heel-compressing die carried thereby, a latch or lock for holding it locked in its lowest position, and the independently-movable table B^3, substantially as described.

5. The combination of the last or work-support, the independently-movable table B^3 and its templets, the plate E, a heel-compres-

378,617.



ing die carried thereby, a latch or lock for locking it in its lowest position, and a pressure plate or block to close the upper open end of the die and move it forcibly downward, substantially as described.

6. The combination of the last or heel-support, the plate E, the die supported thereby, the rod G, links *g*, arm *g'*, and lever G', substantially as described.

7. The combination, in a heel-compressing machine, of the vertically-movable plate E, the die carried thereby, the links *g*, the cross rod or latch g^3, and a latch, g^4, substantially as described.

8. The combination of a last or work-support, the vertically-movable die-plate E, and die carried thereby, with the rotary table B, the templets B^7 B^8, the nail-carriers D' D^3, and the nail-driving devices substantially as described.

9. The combination of the post B^3, the table B^2, having a vertical movement on said post, and also adapted to be rotated thereon, the templets B^7 B^8, the plate E, having a vertical movement on the sleeve of said table, and a heel-compressing die carried thereby, substantially as described.

10. The combination of the last or heel-support, the post B^3, the table B^2, having the sleeve B^4 to surround said post; the table being vertically movable upon the post and also being adapted to rotate thereon, the spring B^5, the plate E and die carried thereby, vertically movable upon said sleeve B^4, but held from rotating therewith, the spring E', and independent latching or locking devices for independently locking the plate E and die and the table B^2 and its templet in their lowest positions, and the nail-driving devices, substantially as described.

11. The combination herein described of nail-driving devices, a templet, and a heel-compressing die movable toward and from the templet, as and for the purposes described.

12. The combination herein described of nail-driving devices, a templet, a heel-compressing die movable toward and from the templet, and a latch or locking device for holding the die removed from the templet, substantially as described.

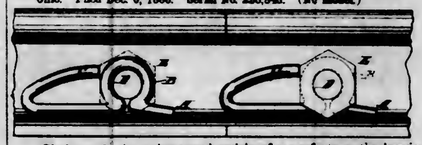
13. The combination herein described of nail-driving devices, a templet, a heel-compressing die movable toward and from the templet, a spring for moving the die toward the templet and holding it from the last or work-support, a latch or lock for holding it depressed upon the last or work-support, and said last or work-support, substantially as described.

14. The combination herein described of nail-driving devices, a templet vertically movable in relation to the last or work-support, and a latch or lock for holding it depressed thereon, a spring for returning it to its normal position, a die vertically movable independently of the movement of the templet, a latch or lock for holding it depressed, a spring for returning it to its normal position, and the last or work-support, substantially as described.

15. The combination herein described of two groups of nail-driving devices, two templets adapted to be brought successively into the same operative position, a heel-compressing die vertically movable in relation to said templet, and a last or work-support, substantially as described.

16. The combination, in a heeling-machine, of a support for the templet and an independent or separate reversible templet-block, as and for the purposes described.

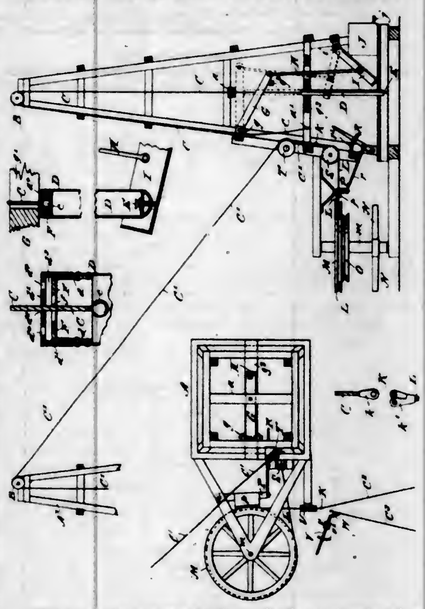
378,618. NUT-LOCK. FRANK RESSIE and JOHN RESSIE, Dayton, Ohio. Filed Dec. 6, 1886. Serial No. 220,843. (No model.)



Claim.—1. As an improved article of manufacture the herein-described nut-lock, consisting of a rod, A, formed between its ends with a bolt-receiving loop, B, the ends being approximately tangential to the circle thereof, and one of said ends being bent over upon itself toward the loop and forming the nut-locking arm C, adapted to be bent out of the plane of the loop, substantially as set forth.

2. The combination, with the fish-plate, the bolt, and nut, of the loop B upon the bolt behind the nut and serving as a washer therefor, as shown, and arms at opposite sides of the lower part of the loop resting on the flange of the fish-plate to hold the lock in position, one of said arms being bent over upon itself, as shown, to form the locking-arm C, the end of which rests against the edge of the nut out of the plane of the loop, substantially as set forth.

378,619. SYSTEM OF RAILING WELLS. SOLOMON C. RHODES, Bradford, Pa. Filed Sept. 28, 1886. Serial No. 214,755. (No model.)

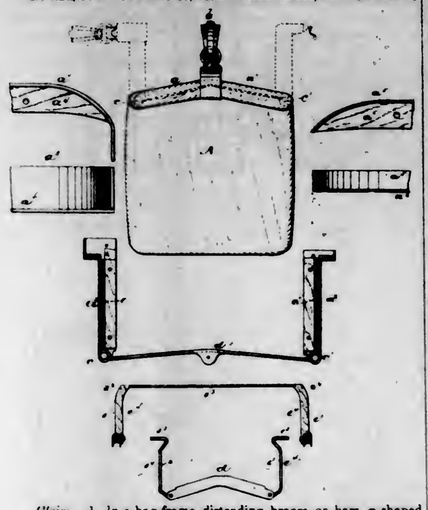


Claim.—1. In a system of bailing wells, the combination of a master-wheel, a driving-rope thereon, two ropes attached each at one end with a bailer by a slip connection, and said bailer-ropes connected at their other ends with opposite ends of the master-wheel driving-rope, substantially as shown and described, whereby wells having unequal fluid-levels may be bailed by alternate operation of the two connected bailers, as set forth.

2. The combination, with the bailer D and its suspending-rope C, adapted to dip through a hole, d^3, in the bailer-head, and said head provided with vent-holes d^3, of a loose valve, F, having a hole, *f*, for the passage of the enlarged end or head c of the bailer-rope, and adapted to close the vent-holes d^3, substantially as shown and described.

3. The bailer made with an internal collar, *d*, a cap, *d'*, fitted externally on the collar *d*, a valve, F, supported on said collar in a space between it and the end of the bailer, and the bailer having holes d^3, which the valve is adapted to close, substantially as shown and described.

378,620. FRAME FOR TRAVELING-BAGS. WILLIAM ROSSER, Newark, N. J. Filed Oct. 15, 1886. Serial No. 214,312. (No model.)



Claim.—1. In a bag-frame, distending braces or bars ∩-shaped in cross-section, inlays hinged at the ends thereof, and outer sections riveted to said inlays, all parts being combined and arranged substantially as set forth and shown.

2. In a bag-frame, the combination with the jaw-inlays thereof, of outer sections provided with a flange, a^{10}, bent at or approximately at right angles to form the flange a^9, substantially as and for the purposes herein set forth.

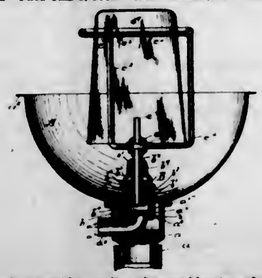
3. In a bag, the combination, with distending bars or braces ∩-shaped in cross-section and outer sections, of inlays hinged at their ends to said bars or braces and bent to form a considerably-elongated ⌐-shaped section, substantially as set forth.

4. In a bag or satchel, the combination, with distending bars or braces adapted to be arranged at the ends of the bags, of strap-like inlays consisting of parts c^4 c^5, of which parts c^4 c^4 the former are adapted to assume vertical positions in the closed bag and lie parallel with each other, and the latter are adapted to extend beneath the body material and lie flat thereunder against said body material, and outer sections adapted to be secured to said inlays, substantially as set forth and shown.

5. In a bag or satchel, the combination, with the jaws *a a'*, of distending-bars ∩-shaped in cross-section, substantially as and for the purposes set forth.

6. In a bag-frame, the combination, with distending-bars and suitable outer sections, of inlays hinged to said distending-bars and bent or formed as at c^4 c^5, and again bent at said angles to cause the portions c^5 of said inlays to lie in planes at or approximately at right angles to the planes of the portions c^4 thereof, substantially as and for the purposes set forth.

378,621. TUMBLER OR BOTTLE WASHER. L. LEROY ROWE, Boston, Mass. Filed Jan. 3, 1887. Serial No. 223,206. (No model.)

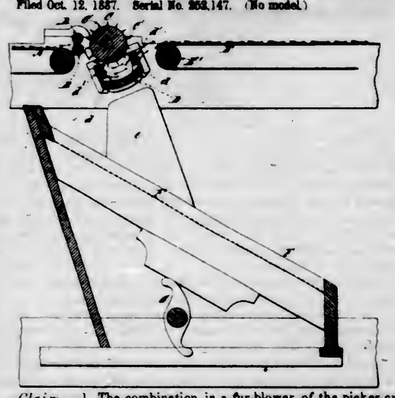


Claim.—1. In a tumbler-washer, the combination of the casting having the waste-passage *b*, the screw-sleeve *a*, the integral section a^4 for supporting the section B of the washer, and the coupling-teat a^3, with the basin A, attached to said casting, and the section B of the tumbler or bottle washer, having the valve *b'*, and a tube or quill, b^2, for opening the same, and supporting-arms for sustaining the tumbler or bottle to be washed, substantially as described.

2. In a tumbler or bottle washer, the combination, with the valve-casing b^3, having the valve-seat b^4, of the quill or tube b^2, having the flange *c'* and the holes b^{10}, the valve *b'*, carried by the said quill or tube, the stuffing-box *c* in the said valve-casing, the cap b^6, having a screw-threaded connection with the said casing and serving as a vertical guide for the tube b^2, the gland C, the spring b^7, housed within the said cap and arranged between the said gland and flange, and rests or supports extending horizontally from the said quill or tube, substantially as set forth.

3. In a tumbler or bottle washer, the combination, with the valve-casing b^3, having the valve-seat b^4, of the quill or tube b^2, having the flange *c'* and the holes b^{10}, the valve *b'*, carried by the said quill or tube, the stuffing-box *c* in the said valve-casing, the cap b^6, having a screw-threaded connection with the said casing and serving as a vertical guide for the said quill or tube, the gland C, the spring b^7, housed within the said cap and arranged between the said gland and flange, the block *c*, having the chamber *c'*, the tube or teat c^2, extending vertically from said chamber, the tubes c^3, extending horizontally from the said chamber and then vertically, and the perforated ring c^4, supported by the tubes c^3, substantially as set forth.

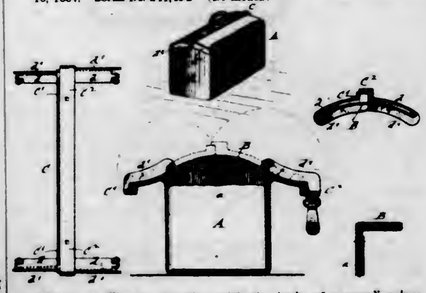
378,622. FUR-BLOWER. THEODORE J. SAYER, Newark, N. J. Filed Oct. 12, 1887. Serial No. 252,147. (No model.)



Claim.—1. The combination, in a fur-blower, of the picker-cylinder and the bat-belt with a flat draft-board the surface of which is transversely inclined at an angle of about thirty degrees from the horizontal, and which is arranged at a suitable distance below the axis of the picker-cylinder and extends at its upper edge partially across the space between the picker-cylinder and the adjoining bat-belt roller substantially as shown and described.

2. The combination, in a fur-blower, of the picker-cylinder with a draft-board arranged beneath the level of the picker-cylinder, and means for imparting vibratory movements to the said draft-board, as and for the purpose set forth.

378,623. FRAME FOR TRAVELING-BAGS. FERDINAND C. SCHMIDT, Newark, N. J., assignor to R. Neumann & Co., same place. Filed June 16, 1887. Serial No. 241,464. (No model.)



Claim.—1. The combination, with the body of a traveling-bag,

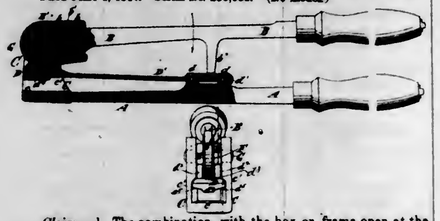
of arc-shaped transverse braces to which the upper ends of the end walls of the said bag are applied, and jaws hinged to the ends of said braces, said jaws being provided with flanged arc-shaped end pieces which overlap the transverse braces, to which end pieces and jaws the extensions of the side walls of the bag-body are attached, substantially as set forth.

2. A frame for traveling-bags, composed of arc-shaped transverse braces, and of jaws hinged to the ends of said braces and provided with arc-shaped end pieces having flanges overlapping said braces, substantially as set forth.

3. The combination, with the body of a traveling-bag, of arc-shaped transverse braces to which the upper ends of the end walls of the said bag are applied, said end walls being lapped around said braces, the lapped ends being united with the body by lines of stitching passing through the same and through the lining below said braces, and jaws hinged to the ends of said braces, said jaws being provided with flanged arc-shaped end pieces which overlap the transverse braces, to which end pieces and jaws the extensions of the side walls of the bag-body are attached, substantially as described.

378,624. SEAL-PRESS. ALBERT R. SCHOFIELD, Jersey City, N. J.

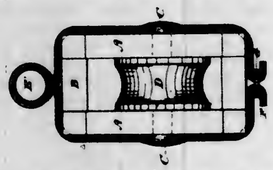
Filed June 1, 1887. Serial No. 239,963. (No model.)



Claim.—1. The combination, with the box or frame open at the outer end and comprising a bottom and side portions or walls, of a die substantially filling the space between the side walls and movable toward and from the bottom, a cam-shaft journaled in the side portions of the box or frame and provided with a cam acting upon the die and having a flattened or cut-away portion on one side of its center in order to relieve the die once in each revolution, and having its remaining periphery gradually increasing in radius around the circumference of the cam from one end to the other of said flattened portion, and an operating lever or handle having a ratchet-and-pawl connection with the cam-shaft, substantially as herein described.

2. The combination, with the box or frame C, having a bottom and side portions, of a die or presser, D, movable toward and from the bottom of the box or frame, and which has on its back the bearers or projections d^3, and the intervening space, d^4, of the cam-shaft having the cams or divided cam E E acting on said bearers or projections, and the operating lever or handle having a ratchet-and-pawl connection with the cam-shaft between the cam portions E E, and which is received in said space d^4, substantially as herein described.

378,625. PULLEY-BLOCK. SIMON H. M. SKIS and FREDERICK G. SKIS, Newark, N. J. Filed Mar. 24, 1887. Serial No. 232,350. (No model.)

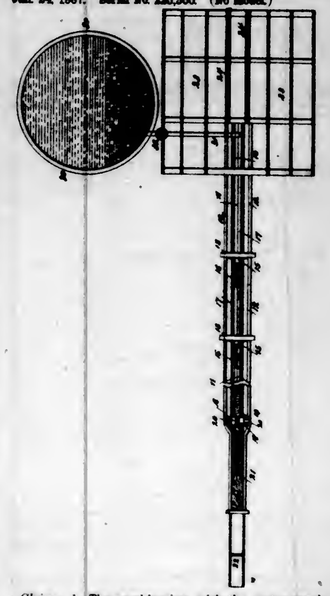


Claim.—1. In a pulley-block, the combination, with the block and sheave thereof, of journal-bearings having recessed or grooved heads, and a binding-wire passing through said grooved heads and holding the same in place and binding the block together, as set forth.

2. In a pulley-block, the combination, with the sheave thereof, of a block composed of four parts, as A A and B B, journal-bearings having recessed or grooved heads, a single binding-wire formed into a ring or eye at one end of the block, passing around the block and through said recessed heads, and having its ends firmly united or bound together at the other end of the block, substantially as and for the purposes set forth.

3. In a pulley-block, the combination, with the block thereof, of a binding-wire having its ends formed into hooks, and a link engaging in holding relation with said hooks, substantially as and for the purposes set forth.

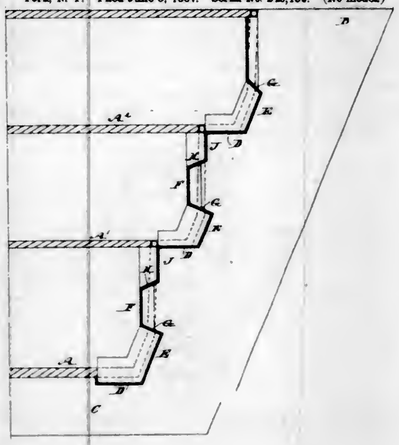
378,626. ORE-WASHER. THOMAS SHARP, Nashville, Tenn. Filed Jan. 24, 1887. Serial No. 225,300. (No model.)



Claim.—1. The combination, with the water-supply tank, of the inclined chute having pipe-connection with said tank and contracted in width at its lower portion, said chute having in its bottom passages, over which, within the greater width of chute, is arranged a screening-plate having openings or mesh, and a second screening-plate of coarser mesh arranged in the contracted portion of the chute, said passages having lateral discharge-outlets, substantially as set forth.

2. The combination, with the water-supply tank, of the chute having pipe-connection with said tank and inclined at a certain angle for a portion of its length and at a greater angle for the rest of its length, said chute having its bottom provided with passages having lateral discharge-outlets, and covered in the wider portion of the chute with a screening-plate having fine openings and in the contracted or narrower portion of the chute with a screening-plate having a coarser mesh, and swinging barriers or gates arranged in said chute, substantially as set forth.

378,627. CONSTRUCTION OF BUILDINGS. ADDISON SMITH, New York, N. Y. Filed June 3, 1887. Serial No. 240,139. (No model.)

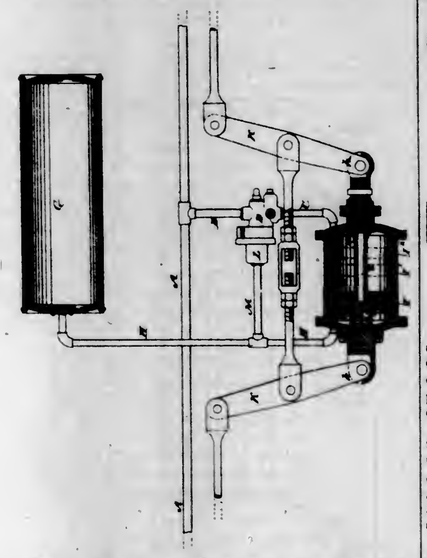


Claim.—1. A building formed with the side window, D, in extension of one of the side walls, and the front window, E, set diagonal to the window D, the remainder of the front of the building and the doorway being set in from the front diagonal building-line, substantially as described.

2. The side window, D, set in line with the side wall, the front window, E, set diagonal to the window D, the diagonal windows G H, and the window J and doorway F, at right angles to the walls, substantially as described.

3. The window J, built at right angles to the wall A and set in from the front building, in combination with the diagonal windows H G, diagonal window E, and side window, D, substantially as described.

378,628. AUTOMATIC AIR-BRAKE. REMALDO SOLANO, Brooklyn, assignor to Howard & Morse, New York, and David R. Morse, Brooklyn, N. Y. Filed July 5, 1887. Serial No. 243,317. (No model.)



Claim.—In an automatic fluid-brake system, the method described, consisting of, first, reducing the active controllable pressure to a desired degree upon a valve piston or diaphragm, whereby a permanently-stored pressure on the opposite side of the diaphragm or valve-piston is allowed to act; second, simultaneously severing and partially exhausting the active controllable pressure from the brake-cylinder, which allows the stored air to expand to a degree below the controllable pressure; third, arresting the exhaust-pressure from the brake-cylinder and simultaneously restoring the active controllable pressure thereto, (which is effected by the reduction of the permanently-stored air-pressure on the opposite side of the valve piston or diaphragm,) which compresses the stored air-pressure in the brake-cylinder to an equal pressure to retain the brake action, and, fourth, increasing the active controllable pressure in the brake-cylinder to effect a release of the brake action.

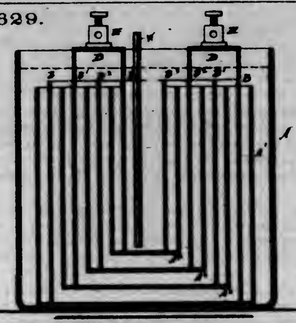
378,629. SECONDARY BATTERY. MAX STROHER, Philadelphia, Pa., assignor of one-half to Charles Wiegmann, same place. Filed Mar. 18, 1887. Serial No. 231,349. (No model.)

Claim.—1. A secondary battery formed of a series of porous cells, one within the other, circular lead plates or rings between the walls of the several cells, and oxide of lead packed in between the sides of the lead plates and the sides of the porous cells, substantially as shown and described.

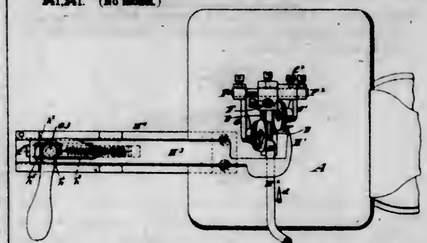
2. In a secondary battery, the combination, with a series of porous cells, one placed within the other, of the circular lead rings in the spaces between the sides of the cells, the alternate rings being connected with each other, substantially as shown and described.

3. A secondary battery composed of a series of porous cells, one within the other, and oxide of lead between the walls of the several cells, substantially as shown and described.

378,629.



378,630. SEWING-MACHINE. JOHN STEWART, New York, and GEORGE W. WEBB, Brooklyn, N. Y. Filed June 14, 1887. Serial No. 241,241. (No model.)



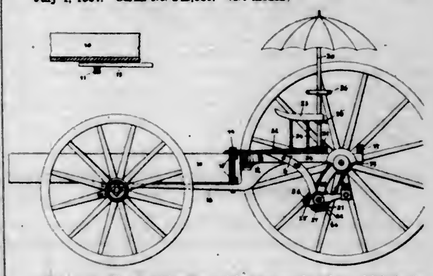
Claim.—1. The combination, with the needle of a sewing-machine and a feed-dog having feeding-surfaces on opposite sides of the needle, of two rotary pressers working on opposite sides of the needle, one being directly opposite the needle and the other being behind the plane of the needle and behind the first presser, substantially as herein described.

2. The combination, with the needle of a sewing-machine and a feed-dog having feeding-surfaces on both sides of the needle, of two rotary pressers on opposite sides of the needle, and a presser-bar, one of said pressers being supported by an arm fixed to the presser-bar and the other by a pivoted arm, and a spring applied to the pivoted arm to hold its presser against the work, substantially as herein described.

3. The combination, with a sewing-machine needle and lower and upper guide-fingers for plaiting, of a slide carrying the upper finger, a lever for imparting a definite length of movement to said slide and holding it in position, and a movable fulcrum for the lever, adjustable to vary the position of the slide produced by its definite movement, substantially as herein described.

4. The combination of the finger H' and its slide H^3, the extension slotted bracket H^4, the shouldered screw d^8, the slide on the bracket and through which the screw is inserted, the spring A^3, and the lever H^3, substantially as herein described.

378,631. VELOCIPEDE. ALLEN M. STONER, Topeka, Kans. Filed July 1, 1887. Serial No. 243,089. (No model.)



Claim.—1. The combination, with a rear axle, of a vehicle-body supported thereby, a forward axle-frame pivotally connected to the vehicle-body, a shaft carrying a drum or sheave supported by said frame, and a flexible connecting device wound about the drum or

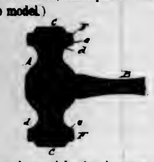
sheave and connected to the vehicle-body, substantially as described.

2. The combination, with an axle, of a vehicle-body supported thereby, a forward axle-supporting frame pivotally connected to the vehicle-body, a rearwardly-extending tongue carried by said frame and arranged to pass beneath the vehicle-body and above a guide, such as the rear axle, a sprocket-wheel mounted on the forward axle, a driving-shaft, a second sprocket-wheel carried by the driving-shaft, connection between said sprocket-wheel and the sprocket-wheel of the forward axle, treadle-levers loosely mounted on the driving-shaft, ratchets connected to the treadle-levers, and pawls carried by the treadle-levers and arranged to engage said ratchets, substantially as described.

3. The combination, with a driving-shaft provided with ratchets, of treadle-levers loosely mounted on said shaft, pawls pivotally connected to the treadle-levers, and limit-pins carried by the treadle-levers and entering slots that are formed in the pawls, substantially as described.

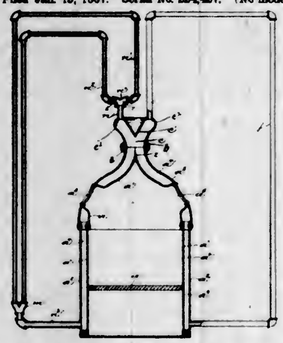
4. In a quadricycle, the combination, with a vehicle-body and its supporting-axle, of a forward axle, a frame by which said forward axle is carried, a bolt by which said frame is connected to the vehicle-body, a driving mechanism, and a seat adjustably connected to the forward axle-supporting frame, substantially as described.

378,632. MALLET. CLARK A. SWENSON, Buffalo, N. Y., assignor of one-half to William W. Oliver, same place. Filed June 8, 1886. Serial No. 204,509. (No model.)



Claim.—The combination, with the hammer-head A, having its end provided with an external screw-thread, of a removable beating-face having a laterally-projecting base and a collar surrounding the removable face, and having an internal screw-thread engaging with the threaded end of the head, whereby the removable-face is secured to the head, and projecting inwardly at the outer end to overlap the projection of the face, substantially as set forth.

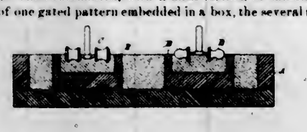
378,633. HOT-WATER HEATER. JAMES M. THAYER, Randolph, Mass. Filed Jan. 15, 1887. Serial No. 224,427. (No model.)

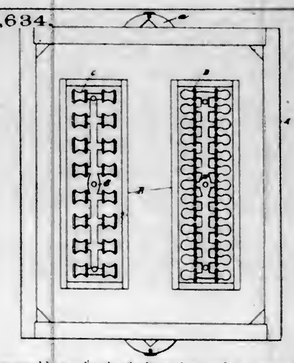


Claim.—In an apparatus for heating by the circulation of hot water, the heater consisting of the water-jacketed combustion-chamber having the conical top part provided with the dividing-wall 2, in combination with a combined separator and distributer, *c*, arranged substantially as shown, and the circulating-pipes leading from said distributer back to the water-jacket, all arranged to operate substantially as set forth.

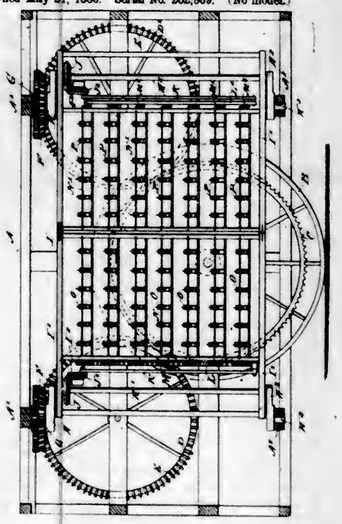
378,634. MATCH FOR MOLDING WITH GATED PATTERNS. JOSEPH WACHALAC, Cleveland, Ohio. Filed Oct. 24, 1887. Serial No. 253,244. (No model.)

Claim.—The combination, with a flask-section, of matches, each consisting of one gated pattern embedded in a box, the several matches being removably set in the flask-section, and a removable filling between the matches and the flask-section, substantially as set forth.





378,635. COTTON-PICKER. JAMES W. WALLIS, Memphis, Ala. Filed May 31, 1886. Serial No. 202,869. (No model.)



Claim.—1. In a cotton-picker, the main frame and driving-wheels, in combination with the picking-frames carried by shafts connected to crank-arms geared to the driving-wheels, said picking-frames carrying shafts provided with pickers geared to racks carried by crank-arms and a pitman, one of said latter crank-arms being geared to one of the main frame-carrying shafts, substantially as and for the purpose set forth.

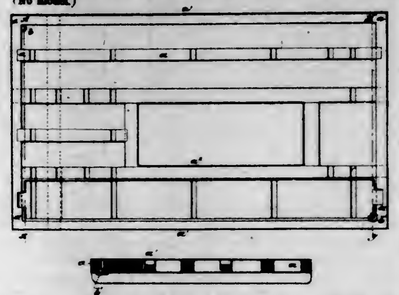
2. In a cotton-picker, the crank-arms H and the shafts H', in combination with the picking-frames I and the picking devices O, the same comprising stationary circular saws, between which oscillates a circular saw, inclined stationary straight saws, between which slides an inclined straight saw, and means for imparting the respective motions to the sliding and oscillating saws, substantially as shown and described.

3. In a cotton-picker, the crank-arms H, the shafts H', and the gear-wheels J, in combination with the picking-frame I, the gear-wheels J', the pitman K, the racks L, the pinions M, meshing into the said racks L, the shafts N, and the picking devices O, substantially as shown and described.

4. In a cotton-picker, the shaft N, the crank-arm U, and the bars Q^2 and R^2, in combination with the oscillating circular saw Q', the sliding inclined straight saw R', the stationary circular saws Q, and the stationary inclined straight saws R, substantially as shown and described.

5. In a cotton-picker, the stationary circular saws Q and the stationary inclined straight saws R, in combination with the circular oscillating saw Q' and the sliding inclined saw R', substantially as shown and described.

378,636. SEWING-MACHINE TABLE. JOSEPH WERTHEIM, Frankfort-on-the-Main, Germany. Filed May 9, 1887. Serial No. 237,644. (No model.)

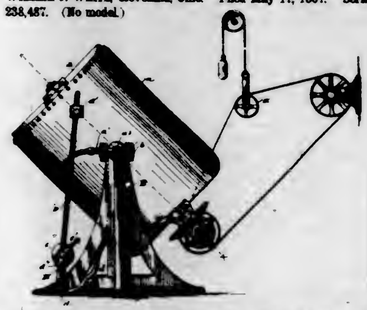


Claim.—1. A sewing-machine table-top which is saturated with a liquid and inclosed at top, bottom, and sides by plates or sheets secured thereto, substantially as shown and described.

2. In a sewing-machine, the table-top having in its upper surface a connected series of ramifying grooves to contain a liquid, which are covered by a thin wooden plate, substantially as set forth.

3. A sewing-machine table-top saturated with a hygroscopic solution, substantially as specified.

378,637. MACHINE FOR MANUFACTURING CHEWING-GUM. WILLIAM J. WHITE, Cleveland, Ohio. Filed May 17, 1887. Serial No. 238,487. (No model.)



Claim.—1. In a chewing-gum machine, a mixing-kettle provided with pivot-supports at its sides, near its center, whereby it may be inclined at any desired angle and tilted, in combination with a spiral mixing and scraping blade working in contact with the inside of the kettle and a mixing and scraping blade working over the bottom of the kettle, substantially as set forth.

2. In a chewing-gum machine, a kettle provided with a heating-jacket about its side and bottom and a frame on which the kettle is pivoted to be tilted, in combination with a spiral scraper-blade, a shaft on which the scraper is mounted, and a scraper at the bottom of the kettle, substantially as set forth.

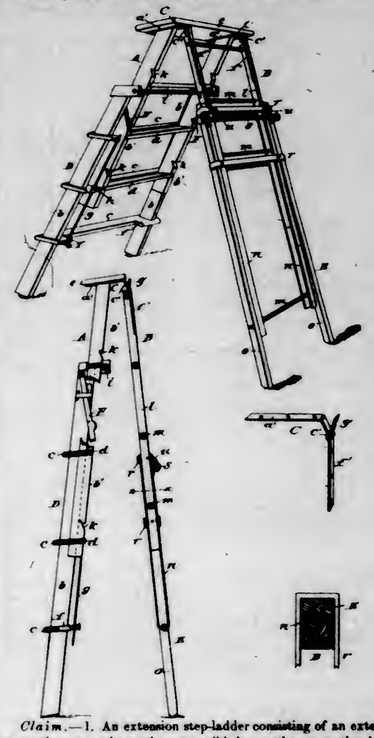
3. In a chewing-gum machine, a cylindrical kettle having a heating-jacket surrounding it and trunnions on its sides opening into said jacket, in combination with a combined scraper and stirrer in said kettle, substantially as set forth.

4. In a chewing-gum machine, a kettle, a frame on which the kettle is pivoted, and an adjusting device to hold the kettle at any desired inclination, in combination with a scraper in the kettle, a shaft, and a gear to operate the shaft at any angle of the kettle, substantially as set forth.

5. In a chewing-gum machine, a kettle and a support on which the kettle is pivoted and tilted, said kettle being open at one end to introduce and remove the material, in combination with a shaft provided with bearings at the ends of the kettle, a cutter and mixer on the shaft, and gearing to drive the same, attached to the kettle and tilted therewith, substantially as set forth.

6. In a machine for mixing chewing-gum, a kettle and a support for holding the kettle in an inclined position, said kettle being provided with a beating-jacket at its sides and lower end, in combination with a shaft supported in bearings at the ends of the kettle, a spiral scraping and mixing blade attached to the shaft and working in contact with the sides of the kettle, and a scraper at the bottom of the kettle, substantially as set forth.

378,638. STEP-LADDER. ALFRED M. WHITNEY, Brooklyn, N. Y. Filed Sept. 20, 1887. Serial No. 251,086. (No model.)



Claim.—1. An extension step-ladder consisting of an extensible step portion or section and an extensible leg portion or section hinged or jointed together above, and independent supporting-frames, up and down which said portions or sections are fitted to bodily and jointly slide, which step portion or section has a sliding rod-and-eye connection with one independent supporting-frame, while the leg portion or section has a sliding strap-like brace connection with the other independent supporting-frame, substantially as specified.

2. In an extension step-ladder, substantially as described, the combination, with the extensible leg portion or section and independent supporting leg or frame, up and down which said extensible leg portion is free to slide, of the turning cross bar or shaft *a*, provided with teeth *u*, adapted to engage said extensible and supporting leg portions or sections at different heights in the movement of the sliding leg-section, essentially as shown and described.

3. In combination with the step portion or section A of a step-ladder and the leg portion or section B thereof, the hinges C, constructed of a strap portion, *a'*, having a bent extension, *c'*, and of a second strap portion, *f'*, provided with an extension or leaf, *g'*, said strap portions being separately connected with said ladder-sections A B and pivoted or jointed together, with their extensions *c' g'* arranged to hold the ladder at its extreme lateral stretch, substantially as specified.

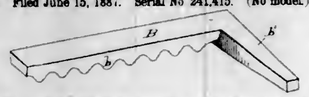
378,639. RATCHET DRILL-STOCK. CORYDON H. WILSON, Terre Haute, Ind. Filed Aug. 13, 1887. Serial No. 246,598. (No model.)



Claim.—1. In a ratchet drill-stock, the combination, with the drill-shaft, the ratchet-wheel secured thereto, the operating-lever mounted on the shaft and carrying a pawl which engages said ratchet-wheel, the handle, also mounted on the shaft, and the toothed lever pivoted to the handle and attached to the operating-lever, of the recessed collar C, having one or more pawls, *i*, pivoted in the upper face thereof, and the cog-wheel arranged to turn on the shaft and to intermesh with said toothed lever, and having on one side a ratchet-toothed annular projection arranged to engage the pawls on the collar, in the manner and for the purpose specified.

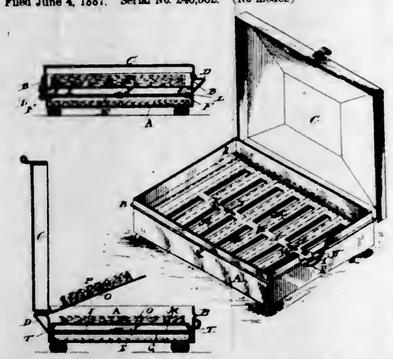
2. In a ratchet drill-stock of the above-described class, the combination of the drill-shaft having the recessed collar C, the pawls pivoted in said recess, the cog-wheel D, having the ratchet-teeth *k*, the collar E, the handle B, and the lever J, all arranged to co-operate substantially as and for the purpose specified.

378,640. ADJUSTABLE FLASK-CLAMP. ALEXANDER C. ALLBEE, Wakefield, assignor to the Smith & Anthony Stove Company, Boston, Mass. Filed June 15, 1887. Serial No. 241,415. (No model.)



Claim.—As an improved article of manufacture, an adjustable flask-clamp in two sections, one of which, the section A, has the finger *a*, the long recess a^3, the cross projection a^4, and the pivoted locking-bar C, and the other of which, the part B, has the jaw, finger, or lug b', the long arm *b*, of a shape to fit the recess a^3, having cross projections b^3, and a flat surface upon which the pivoted locking-bar C is adapted to be moved in fastening the two sections of the clamp together, substantially as described.

378,641. BLOTTER-BATH. HENRY F. ARNOLD, Manchester, Iowa. Filed June 4, 1887. Serial No. 240,302. (No model.)



Claim.—1. In a blotter-bath, the combination of a pan, a closely-fitting lid or cover hinged thereto, a false bottom within said pan, provided with apertures, means, substantially as described, for regulating the size of said apertures, and a grate above said false bottom.

2. In a blotter-bath, the combination of a pan, a closely-fitting lid hinged thereto, a false bottom within said pan, provided with apertures, a slide upon said false bottom, provided with apertures registering with the apertures in said false bottom, and a grate above said false bottom.

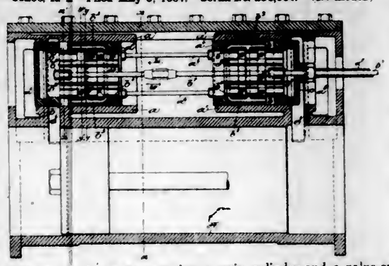
3. In a blotter-bath, the combination of a pan, a closely-fitting lid hinged thereto, a false bottom within said pan, having a series of apertures at each side transversely to the bottom, leaving a solid portion through its middle and having its edges flanged, a slide upon said bottom, having apertures, and a solid portion registering with the false bottom and having two slots in its solid portion, rivets projecting through said slots, a knob or button, and a grate above said false bottom.

4. In a blotter-bath, the combination of a pan, a closely-fitting cover hinged thereto, ribs or projections upon the interior of said pan, a false bottom upon said ribs, and a grate above said false bottom.

5. In a blotter-bath, the combination of a pan, a closely-fitting cover hinged thereto, a false bottom within the pan, and a grate above the false bottom, said grate consisting of a single piece of metal the edges of which are bent down to form supports and having cross-bars formed across its body portion by cutting away the material between them.

6. In a blotter-bath, the combination of a pan, a closely-fitting cover hinged thereto, a false bottom within said pan, a grate supported above said false bottom, and a second grate hinged at one of its edges to the side of the pan above said first-mentioned grate.

378,642. CUT-OFF PISTON-VALVE. PARDON ARMINGTON, Providence, R. I. Filed May 3, 1887. Serial No. 236,907. (No model.)

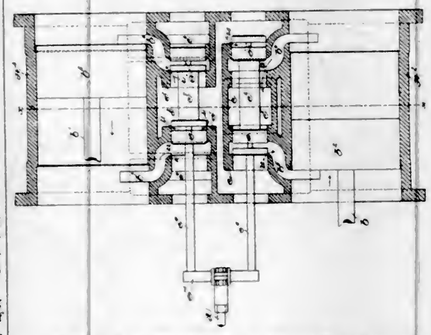


Claim.—1. In a steam-engine, a main cylinder and a valve-cylinder, combined with a main piston-valve located in said valve-cylinder, and provided with a main port-opening, *b*, and an auxiliary port-opening, b^2, and passage b^3, connecting the said port-openings, and with an auxiliary piston-valve movable within the main piston-valve and provided with a port to register with the auxiliary port-opening of the main piston-valve, substantially as described.

2. In a steam-engine, a main cylinder and a valve-cylinder, combined with a main piston-valve located in said valve-cylinder, and provided with a main port-opening, *b*, and an auxiliary port-opening, b^2, and passage b^3, connecting the said port-openings, and with an auxiliary valve movable within the main piston-valve to control the said main and auxiliary port-openings, substantially as described.

3. In a steam-engine, a main cylinder and a valve-cylinder connected to each end of the said main cylinder, combined with a main piston-valve located in each of said valve-cylinders, and provided with a main port-opening and an auxiliary port-opening connected to the said main port-opening, and with an auxiliary piston-valve movable within each main piston-valve and provided with a port to register with the auxiliary port-opening of the main piston-valve, the said main auxiliary piston-valves being connected together, substantially as described.

378,643. STEAM-ENGINE. PARDON ARMINGTON, Providence, R. I. Filed May 13, 1887. Serial No. 238,088. (No model.)



Claim.—1. In a steam-engine, two engine-cylinders, two valve chambers or cylinders communicating therewith, one of said valve-cylinders having a steam-inlet port at its ends and an exhaust-port near its center, the other valve-cylinder having an exhaust-port at its ends and a steam-inlet near its center, and a valve in each cylinder, combined with a governor operatively connected to the said valves to operate them, substantially as described.

2. In a steam-engine, two engine-cylinders, A^2 A^2, two valve-cylinders intermediate of and communicating with the said engine-cylinders, one of said valve-cylinders having a steam-inlet port at its ends and an exhaust-port near its center, the other valve-cylinder having an exhaust-port at its ends and a steam-inlet near its center, and a piston-valve in each cylinder, combined with a governor operatively connected to the said piston-valves, to operate them substantially as described.

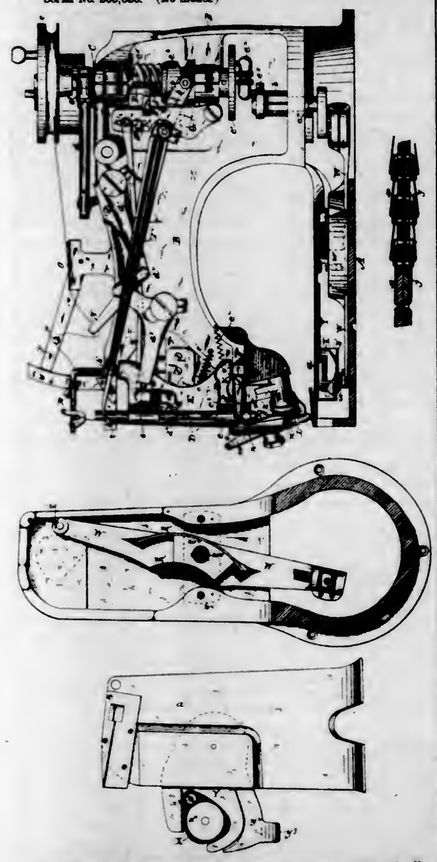
378,644. ART OF UNITING FABRICS BY SEWING. SATTERLEE ARNOLD, New York, N. Y., assignor to Anna M. Arnold, same place. Filed May 4, 1886. Serial No. 201,084. (No model.)



Claim.—1. The herein-described method of uniting fabrics by sewing, said method consisting in passing a needle, with its thread, through the fabrics, interlocking the needle-thread with a second thread, then again passing the needle and its thread through the fabrics at a point behind the first point and interlocking the threads, as before, and repeating these operations to form a seam of lock-stitches with the alternate stitches rearward of the advance or forward stitches, substantially as set forth.

2. The combination, with two or more sections or thicknesses of fabric, of a series of lock-stitches of which alternate needle-punctures are back of the others, with three lengths of sewing-thread on both sides of the work between alternate punctures, substantially as set forth.

378,645. SEWING-MACHINE. SATTERLEE ARNOLD, New York, N. Y., assignor to Anna M. Arnold, same place. Filed May 22, 1886. Serial No. 203,023. (No model.)



Claim.—1. In a sewing-machine, the combination, with a feeding mechanism, of a vertically and horizontally reciprocating needle-bar, the horizontal movements of the said bar being in a line parallel with the line of movement of the work, or approximately so, and timed to occur when the needle is out of the latter, substantially as set forth.

2. In a sewing-machine, the combination, with the work-plate and bracket-arm, of a feeding-wheel above the former, a swinging needle-bar frame, a needle-bar reciprocating vertically, in said frame, and mechanism, substantially as described, for intermittingly moving said frame horizontally, said mechanism being constructed and timed, as set forth, to move the said needle-bar horizontally in a line parallel, or approximately so, to that in which the work is moved by the said feeding-wheel and during the intervals when the needle is out of the work.

3. The combination, with the horizontal feed-shaft H, having a gear-wheel at its forward end, the vertically-movable bearing *h* for the said shaft, and a lifting device for said bearing, of the feeding-wheel and intermediate connecting mechanism between said shaft and wheel, whereby, when the said bearing is lifted, the said gear-wheel will be disconnected from the said intermediate connecting mechanism, substantially as set forth.

4. The combination, with the feed-hanger, the feeding-wheel, and the feed-wheel-operating shaft K, of the supporting-bracket M for the said wheel pivoted upon the said shaft, substantially as set forth.

5. The combination, with the feed hanger or bracket J, of the feed-wheel, the supporting-bracket M, pivotally connected with the said feed-hanger and provided with a projection or lug, as *m'*, and a spring pressing against said projection or lug, and thus adapted to hold the said feed-wheel in or out of working position, substantially as set forth.

6. The combination, with the feed-wheel, of the pivoted supporting-bracket M, carrying the said wheel and having the lug or projection *m'* and the handle m^2, and the spring pressing against said lug and serving to hold the said wheel in or out of working position, substantially as set forth.

7. The combination, with a sewing-machine feeding-wheel, of a throat-plate or work-plate having on its upper side a concave portion curved to correspond to the periphery of the said wheel, or approximately so, whereby the said wheel is enabled to take a strong hold on the work, substantially as set forth.

8. In a sewing-machine, the combination, with a continuously-moving feeding device or wheel, of a loosely-supported needle-bar frame, a light retracting-spring for the latter, and a stop to limit the backward movements of the said frame, under the action of the said spring, whereby, when the needle is in the work, the said frame will be free to follow the movements of the latter, but will be returned to its original position when the needle rises from the work, substantially as set forth.

9. The combination, with the needle-bar-operating lever *d'*, the tension device O, the thread-eye *p*, and the adjustable lever P, by which the said thread-eye is carried, of the pull-off V, attached to the said needle-bar lever and arranged to act on the thread between the said tension device and the said thread-eye, substantially as set forth.

10. The combination, with the tension device O and its support *o*, of the lever P, pivoted to said support and provided with the thread-eye *p*, the spring-post U, adapted to hold the said lever in place, and the movable pull-off V, arranged to act on the thread between the said eye and the said tension device, substantially as set forth.

11. The combination, with the take-up lever T, extending from the rear end of the machine to the forward end thereof, and having the longitudinal hollow stiffening rib or corrugation, of the rotating cam for operating the said lever, substantially as set forth.

12. The combination, with the needle-bar and its operating mechanism, of a stationary shuttle, a longitudinally-reciprocating and centrally-pivoted looper-rod having a curved guide near its center, and mechanism for operating said looper-rod, substantially as set forth.

13. The combination, with the pivoted horizontally-swinging shuttle-holder having a shelf or support on which the shuttle can rest horizontally, of the stationary shuttle entirely supported by the said swinging holder, and thereby adapted to be moved in and out therewith, substantially as set forth.

14. The combination, with the work-plate, of the horizontally-swinging shuttle-holder pivoted to the said work-plate, and having a shelf or support on which the shuttle can rest horizontally, and the stationary shuttle entirely supported by the said swinging holder, and thus adapted to be moved in and out horizontally therewith, substantially as set forth.

15. The combination, with the work-plate provided with a stop, as pin a^4, of a pivoted and horizontally-swinging shuttle-holder having a spring-arm adapted to engage said stop to retain said holder in position, and a shuttle supported vertically by the said holder, substantially as set forth.

16. The combination, with the work-plate having a stop, as pin a^4, of a shuttle-holder pivoted to said work-plate and provided with a spring-arm adapted to engage said stop and having a projecting finger-piece, substantially as set forth.

17. The combination, with the stationary shuttle and pivoted shuttle-holder, of a looper adapted to travel around said shuttle, a longitudinally-reciprocating and centrally-pivoted looper-rod by which

said looper is carried, and mechanism for operating said looper-rod, substantially as set forth.

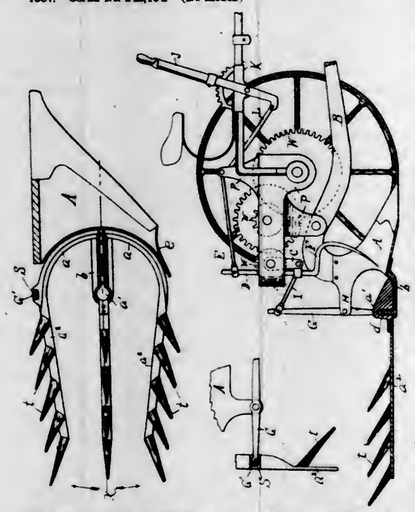
18. The combination, with a sewing-machine shuttle and a bobbin within the same, of a tension-spring arranged to press on the body of the thread of the bobbin within or between the flanges of the latter, and means for adjusting the tension of the said spring, substantially as set forth.

19. The combination, with a shuttle-shell having an open top or upper side, of a bobbin within the said shell, a tension-spring projecting within or between the flanges of the bobbin, and thus adapted to retain the latter in the shuttle-shell, and means for adjusting the tension of the said spring, substantially as set forth.

20. The combination, with the shuttle shell or body having the pin x^4, of the split sleeve x^5, tightly fitting said pin, and the tension-spring x', attached to said sleeve, substantially as set forth.

21. The combination, with the needle and its operating mechanism, of a stationary shuttle, a longitudinally-reciprocating and centrally-pivoted looper-rod having a curved guide near its center, mechanism for operating said looper-rod, a looper carried by said rod to co-operate with the said needle, a take-up lever, and a grooved cam for operating said lever positively in both directions, whereby the take-up lever will be caused to follow the irregular movements of the looper at all times and when the machine is running at high rates of speed, substantially as set forth.

378,646. POTATO-DIGGER. CHARLES BABCOCK, Troy, N. Y., assignor of one-fourth to J. Marshall Foster, same place. Filed June 22, 1887. Serial No. 242,104. (No model.)

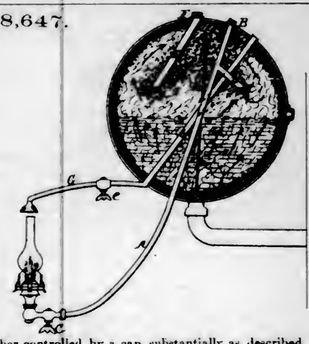


Claim.—1. The combination, with a sulky potato-digger plow provided with a vertical separator-pivot projected rearwardly therefrom, of a horizontally-vibratory separator consisting of a frame circular at one end and terminating in rearwardly-projecting arms at the other end, the circular end being provided with a central pivot-socket and the arms with upwardly and rearwardly projecting teeth, and means for communicating to said separator vibratory movements, substantially as described, and for the purposes set forth.

2. The combination, with the plow of a potato-digger and vibratory separator pivotally supported in the wake of the plow and provided with means, substantially as described, for imparting to said separator horizontally-vibratory movements, of a side-board, *e*, secured to the side of said plow, substantially as described, and for the purposes set forth.

378,647. CARBURETING-LAMP. ORSON W. BENNETT, Washington, D. C., assignor, by mesne assignments, to the Standard Gas Machine and Portable Gas Lamp Company, same place. Filed Nov. 1, 1886. Serial No. 217,753. (No model.)

Claim.—1. The combination, in a carbureting-lamp, of a chamber for containing hydrocarbon and an absorbent, with a pipe passing entirely through said chamber having an air-inlet at its outer end controlled by a cap, and having a branch pipe opening into said chamber above the level of an overflow-opening therein and conducting vapor to the burner, and an independent air-supply opening in the top of said



chamber controlled by a cap, substantially as described, for the purpose specified.

2. In a carbureting-lamp, the combination, with the lamp-chamber for containing hydrocarbon oil and an absorbent, of a pipe passing entirely through said chamber having a branch pipe opening therein above the level of an overflow-opening and conducting vapor to the burner, and an air-supply opening in the top of said chamber controlled by a cap, substantially as and for the purpose specified.

3. In a carbureting-lamp, the combination of a chamber for containing hydrocarbon liquid and an absorbent and divided into communicating spaces by plate *a*, with a pipe conducting vapor to the burner passing entirely through said chamber, having an air-inlet at its outer end provided with a cut-off, and a lateral supply branch pipe opening into said chamber above the level of an overflow-opening therein, and a pipe, E, opening at the top of said chamber extending and opening therein above the level of said overflow-opening and provided with a cut-off at its upper open end, the said burner-pipe and its supply branch arranged in one compartment of said chamber and the pipe E arranged in the other compartment of said chamber, substantially as described, for the purpose specified.

4. In a carbureting-lamp, the combination, with the burner and a chamber for containing hydrocarbon liquid and an absorbent and divided into communicating spaces by a plate, *a*, of the burner-supply pipe A, passing entirely through said chamber having the screw-cap B, and the lateral branch D and the pipe E, having the screw-cap F, the said pipes arranged on opposite sides of the said division-plate, and the said supply branch D and pipe E opening into said chamber at a point always above the level of an overflow-opening therein, as described, and for the purpose stated.

5. In a carbureting-lamp, the combination of a chamber for containing hydrocarbon liquid and an absorbent with a pipe conducting vapor to the burner, a pipe supplying air to said chamber, and an air-heating pipe passing entirely through said chamber open at its upper end and having a bell at its lower end directly over the burner, and a regulating-valve, substantially as described, for the purpose specified.

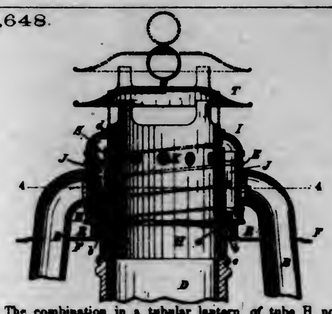
6. In a carbureting-lamp, the chamber for holding the hydrocarbon oil having the vertical partition-plate *a*, and between it and the walls of the chamber the opening *b c*, the said chamber for containing an absorbent, in combination with a pipe conducting vapor to the burner, having a lateral branch opening into the chamber on one side of said plate *a*, an air-supply pipe opening into said chamber on the other side of said plate *a*, and an air-heating conducting-pipe passing entirely through said chamber and having a heat-regulating valve, *e*, placed between the burner and the lamp, substantially as described.

378,648. TUBULAR LANTERN. CHARLES BERGNER, Rochester, N. Y., assignor to the C. T. Ham Manufacturing Company, same place. Filed July 8, 1887. Serial No. 243,759. (No model.)

Claim.—1. The combination, with the base, the burner, the globe supported on said base, the reflector, and the side air-tubes of a tubular lamp, of the annular dome E and tube H, the two forming an annular air-chamber, J, closed at top by the dome and open at bottom, said dome E having openings R at its base and immediately above the reflector, and said inner tube, H, being provided with perforations K near the top of the annular chamber, substantially as described, whereby downward currents of air striking the upper side of the reflector are directed into the chamber communicating both with the external air-tubes and the inner tube over the globe.

2. The combination, with the air-tubes of a tubular lantern, of dome E and perforated tube H, the two forming the annular air-chamber J, closed at its top by the dome and open at its bottom, said dome having openings R, and the reflector F, having flange *c* around its inner margin, substantially as described.

378,648.

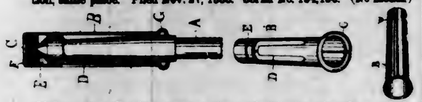


3. The combination, in a tubular lantern, of tube H, normally forming an extension of the globe, a dome, E, air-tubes secured to said dome and communicating with the space within the dome, and a reflector supported to leave an opening, as *b*, next the tube H and an opening, as R, near the lower margin of the dome, substantially as specified.

4. The combination, in a tubular lantern, of a dome, E, rigidly secured to the air-tubes, the sliding tube H, provided with a shoulder, *a*, a spring surrounding the tube, and having a bearing on said shoulder at one end and on the interior of the dome at the other, and strips *v*, for retaining the spring in place and guiding the globe, substantially as specified.

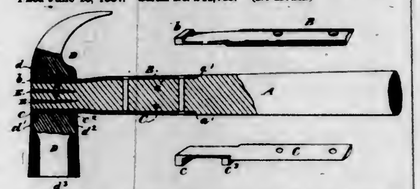
5. The combination, in a tubular lamp or lantern, of the dome E and sliding tube H, normally an extension of the globe and open at the top, the two forming an annular air-chamber, J, closed at its top by the dome and open at its bottom, said sliding globe-supporting tube H being provided with shoulder *a*, and the spring S, surrounding the smaller portion of the tube, and bearing upon the shoulder and against the inner side of the dome, substantially as specified.

378,649. FURNITURE-CASTER. JULIUS BERKEY and WILLIAM R. FOX, Grand Rapids, Mich., assignors to the Furniture Caster Association, same place. Filed Nov. 27, 1885. Serial No. 184,136. (No model.)



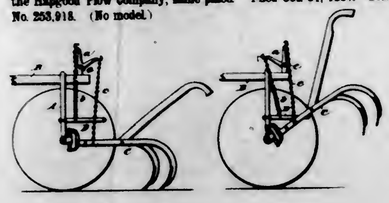
Claim.—In a furniture-caster, the cylindrical socket formed of a single piece of wrought or sheet metal, having a spring formed integrally therewith and provided with an interior stop at its upper end, substantially as described.

378,650. HAIL-HAMMER. DAVID P. BIGELOW, Bariville, Iowa. Filed June 18, 1887. Serial No. 241,763. (No model.)



Claim.—The combination of a wooden handle having open end slots, a^3, metallic straps B C, having shoulders *b c* c^3, a hammer-head having the notches d' d^2, and the wedges E E, having shoulders *e e*, whereby the shoulders *b c* c^3 may be forced into and held in the notches d' d^2 d^3, as described.

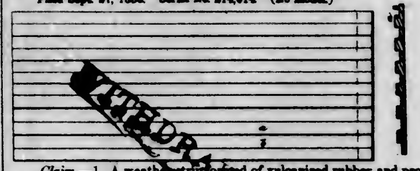
378,651. CULTIVATOR. JOSEPH P. BLACK, Alton, Ill., assignor to the Hapgood Plow Company, same place. Filed Oct. 31, 1887. Serial No. 253,918. (No model.)



Claim.—1. The V-shaped walking-beam having two arms extending from their pivoted center at right angles from each other and pivotally connected to the cultivator-frame, and either arm adapted to be turned to a vertical position while the other arm extends in a horizontal plane, in combination with a spring, a chain or rod, and a cultivator drag-bar, substantially as and for the purpose set forth.

2. In a cultivator, the combination, with the frame and drag-bars, of a two-armed walking-beam, a spring, and a suspension-chain, the said spring and chain attached to opposite ends of the walking-beam, and the said chain also connected to the drag-bar and adapted to suspend the plow by the action of the spring, and said walking-beam adapted to be rocked to bring its pivotal center at or near a dead-center or a straight line between the ends of the spring when at work, or between the ends of the suspension-chain when the plows are lifted, substantially as and for the purpose set forth.

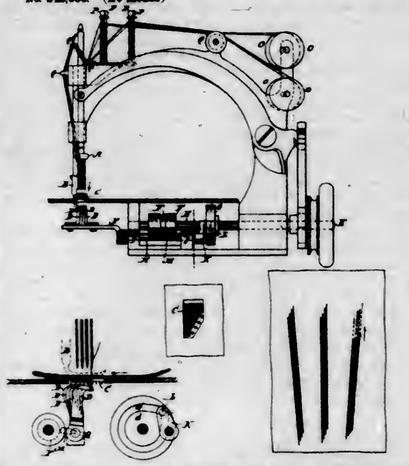
378,652. WEATHER-STRIP. DANIEL W. BOSLEY, Chicago, Ill. Filed Sept. 27, 1886. Serial No. 214,614. (No model.)



Claim.—1. A weather-strip formed of vulcanized rubber and provided with a thin flat web and a thick flat rib of substantially the same width, substantially as described.

2. A sheet of rubber weather-strips composed of a series of alternating flat ribs and intersecting webs of different thicknesses, adapted to be separated into strips by cutting the same along the sides of the ribs, substantially as described.

378,653. SEWING-MACHINE. ARTHUR A. BOUTON, Brooklyn, assignor to Julius Kayser, New York, N. Y. Filed June 27, 1887. Serial No. 242,636. (No model.)

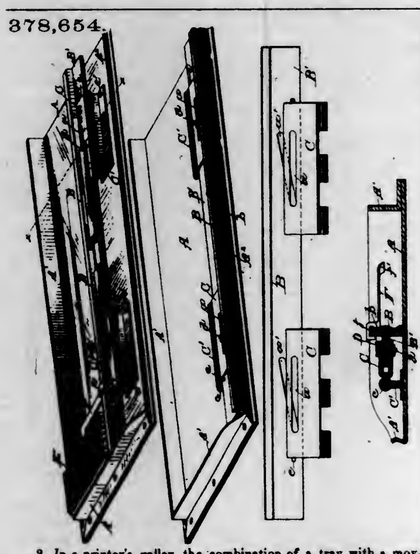


Claim.—The described improvement in sewing-machines, consisting in two or more needles placed one in front of the other relative to the line of feed, correspondingly-arranged looping-hooks rigidly attached to a rocking and longitudinally-moving arm or plate underneath the cloth-plate, appliances for supplying and guiding the threads to the needles, a pressure-foot and feed mechanism, and mechanism for operating the said devices, substantially as set forth.

378,654. PRINTER'S GALLEY. FREDERICK H. BOYNTON, Milwaukee, Wis., assignor of one-half to Alonzo Fowle, same place. Filed Mar. 27, 1886. Serial No. 160,230. (No model.)

Claim.—1. In a printer's galley, the combination of a side-stick having a horizontal flange hinged to the tray, the horizontal leaves of the hinges, and the flange having slots, the slots in one part being longitudinal or straight and the slots in the other part being oblique, with a movable strap having pins extending through the slots and uniting the flange and hinges, substantially as set forth.

378,654.



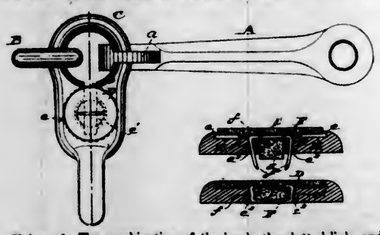
2. In a printer's galley, the combination of a tray with a movable side-stick secured thereto, and having a slotted flange adapted to be extended laterally, and pins working in said slots and connected together by a strap capable of longitudinal movement only, whereby one movement of said strap in either direction will operate both pins and cause the slotted flange to laterally advance or recede equally or parallel with the side-stick its entire length, as set forth.

3. In a printer's galley, the combination of a hinged laterally-extensible side-stick having a furrowed face with a side rim or flange curved to correspond to said furrows, substantially as set forth.

4. In a printer's galley, the combination of slotted hinges with a laterally-extensible slotted side-stick secured thereto, the slots in each part being of the same length, one set being straight and the other set oblique, a strap having operating pins or projections extending through said slots, and the side-stick having pins or lugs to prevent longitudinal movement, whereby, when the stick is moved from or toward the hinges, its movement will be equal and parallel its entire length, substantially as set forth.

5. In a printer's galley, the combination of the tray with a side-stick permanently attached thereto and laterally extensible, said stick being provided on its operative face with a series of smooth rounded furrows, whereby contact between the said side-stick and the matter in the galley will be reduced to a minimum, while the said matter will be in contact with the top and bottom inner edges of the said side-stick, and thereby be maintained always in a vertical position, substantially as and for the purpose set forth.

378,655. CAR-SEAL. LEWIS A. BROWN and VOLNEY S. KETCHUM, St. Louis, Mo., assignors of one-third to Jacob B. Ulrich, same place. Filed Nov. 22, 1887. Serial No. 255,946. (Model.)



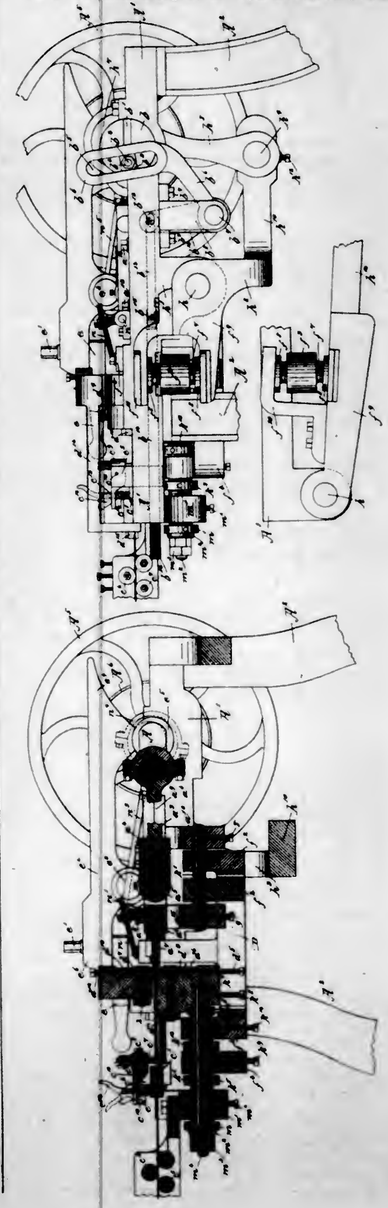
Claim.—1. The combination of the book, the slotted link, and a seal crossing said link-slot, substantially as and for the purpose described.

2. The combination of the slotted link having the depression in its front and crossing the link-slot, and having a central raised portion provided with an overhanging edge, with the seal, substantially as described.

3. The combination of the slotted link, perforated as described, the staple, and the seal, substantially as described.

4. The combination of the slotted link having the depression in its front and crossing the link-slot, the staple, and the seal, said depression having a surrounding overhanging edge, substantially as described.

378,656. NAIL-MAKING MACHINE. FORRESTER BRYANT, Haverhill, Mass., assignor to the Bryant Nail Company, Portland, Me. Filed Jan. 18, 1886. Renewed Aug. 15, 1887. Serial No. 247,009. (No model.)



Claim.—1. In a nail-making machine, the cutter-carriers and cutters carried thereby, and means, substantially as described, to operate said carriers, combined with the round-ended threaded spindles to adjust said cutter-carriers to place the cutters in correct position ...ch with relation to the other, as and for the purpose set forth.

2. In a nail-making machine, the cutter-carriers, cutters carried thereby, and means to operate said carriers, combined with the sleeves k^4 and k^{13}, to adjust each of said cutter-carriers longitudinally independently of the other, substantially as specified.

3. In a nail-making machine, the cutter-carriers and cutters carried thereby, and means to operate said carriers, combined with the sleeve m, to adjust both of said carriers longitudinally together, as and for the purpose set forth.

4. In a nail-making machine, the feeding mechanism and the lever b^3, having a slot located at an angle to a line intersecting the pivoted part of the said lever, and the shaft carrying the crank-pin to vibrate said lever, combined with intermediate connecting mechanism, substantially as described, to join the said lever operatively with the said feeding mechanism, whereby the forward stroke of the feeding mechanism is made at a faster speed than its return-stroke, as and for the purpose set forth.

5. The upper die, d^7, and the pivoted lever d^8, to support said die, combined with the pivoted arm d^{14}, to prevent rocking of the upper die, substantially as described.

6. The upper die, d^7, the pivoted lever d^8, and pivoted arm d^{14}, connected to said lever, combined with the lower die, d^2, the plate B, and with the guideway d', and pieces d'', extended across said guideway to keep the wire in said guideway, and to prevent said wire being disengaged from the lower die when the upper die is raised, substantially as described.

7. The lower die, d^2, the upper die, d^7, and pivoted lever d^9, combined with the pivoted arm c, the lever c^3, and cam c^5, acting on said lever to turn it on its pivot to cause the upper die to grip the wire during one part of the revolution of the main shaft, and with means, substantially as described, to raise said upper die during another part of said revolution, as and for the purpose set forth.

8. The two pivoted cutter-carriers, their spindles f^{11}, slippers f^{12}, levers f^9, and arms f^{10}, combined with means, substantially as described, to vibrate the said levers, for the purpose set forth.

9. In a nail-making machine, the pivoted cutter-carriers, cutters carried thereby, the round-ended threaded spindle therein, the slippers, the lever f^9 and arms f^{10}, and the sleeves to effect the longitudinal adjustment of the said carriers, combined with means, substantially as described, for vibrating the said levers, as and for the purpose specified.

378,657. AUTOMATIC ELECTRIC AIR-BRAKE. J. FAIRFIELD CARPENTER, Berlin, Germany. Filed Apr. 13, 1887. Serial No. 234,725. (No model.)

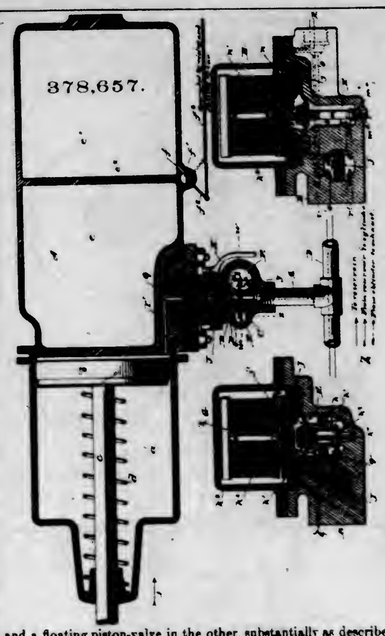
Claim.—1. In an electro-pneumatic brake system, a combined brake-cylinder and auxiliary reservoir, in combination with an electro-pneumatic valve for applying the brakes, a second electro-pneumatic valve for releasing the brakes, a three-way cock interposed in the passages between the main pipe, the brake-cylinder, auxiliary reservoir, and valves, and a casing common to and containing the valves and cock, substantially as described.

2. An auxiliary reservoir for air-brakes divided into communicating compartments, a cock interposed in the passage-way between said compartments, and connections between the car and said cock whereby the air-pressure may be regulated in accordance with the load in the car as the latter rises and falls, substantially as described.

3. In an electro-pneumatic brake system, a brake-cylinder and a connected auxiliary reservoir, combined with a main pipe and an electro-pneumatic valvular apparatus interposed in or between the reservoir and brake-cylinder on the one hand and the main pipe on the other, and comprising in one shell or casing an electro-pneumatic valve for applying the brake, an electro-pneumatic valve for releasing the brake, and a three-way cock arranged in the passage-ways between the main pipe, valves, brake-cylinder, and auxiliary reservoir, substantially as described.

4. The combination, with a main pipe, an auxiliary reservoir, and a brake-cylinder, of an electric circuit and a valve comprising in one shell or casing ports communicating with the said pipe, cylinder, and reservoir, and a chamber divided by a septum into two air-receiving compartments, an electric valve in one of such compartments and an air-valve in the other, substantially as described, whereby the electric current or variations in air-pressure, or the two agencies combined, may be employed to operate the valve.

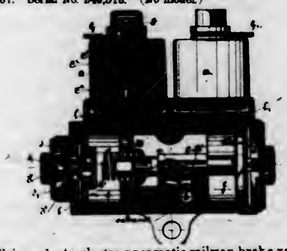
5. The combination, with a main pipe, a brake-cylinder, and an auxiliary reservoir, of an electro-pneumatic valve for applying the brakes, having ports communicating with the main pipe, brake-cylinder, and auxiliary reservoir, a septum dividing the shell into two air-chambers, an electrically-operated valve in one of said chambers,



and a floating piston-valve in the other, substantially as described, the said first-named valve being rendered operative by variations in air-pressure, substantially as described.

6. An electro-pneumatic valve for applying brakes, an electro-pneumatic valve for releasing the brakes, and a three-way cock controlling passages leading to and from said valves, combined with a casing common to all and which contains and incloses them, substantially as described.

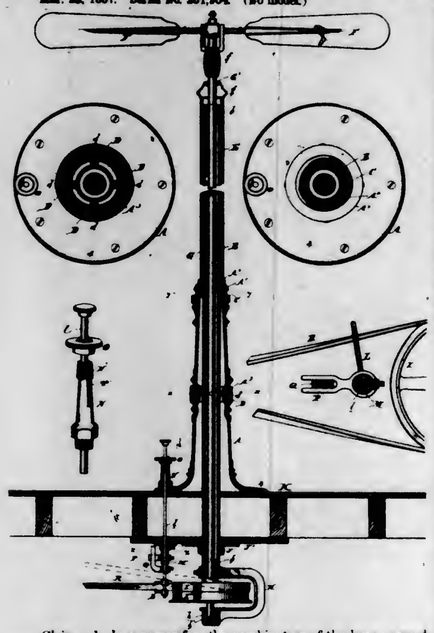
378,658. VALVE FOR ELECTRO-PNEUMATIC RAILROAD-BRAKES. J. FAIRFIELD CARPENTER, Berlin, Germany. Filed Sept. 12, 1887. Serial No. 249,518. (No model.)



Claim.—1. An electro-pneumatic railway-brake valve mechanism, comprising a valve-box, a double piston arranged therein, a slide-valve operated by the said piston and controlling communication between the auxiliary reservoir, brake-cylinder, and atmosphere, a valve interposed between the main pipe and one end of this double piston, and an electric valve controlling communication of the chamber between the last-named valve and piston and the atmosphere, substantially as set forth.

2. A valve for pneumatic railway-brake systems, comprising a valve-box, a double piston arranged in said valve-box, a slide-valve connected to said double piston and controlling communication between the auxiliary reservoir, brake-cylinder, and atmosphere, and a compound piston-valve interposed between one end of said double piston and the main air-pipe, and adapted to admit air into the valve-box between itself and said end of the double piston to operate the said double piston and slide-valve to release the brakes, and also operable by a reduction of pressure of the main air-pipe to exhaust the air from the aforesaid chamber, and thereby permit the movement of the double piston in the opposite direction to apply the brakes, substantially as set forth.

378,659. **POWER-FAN.** JOSEPH CARR, Philadelphia, Pa. Filed Mar. 22, 1887. Serial No. 231,904. (No model.)



Claim.—1. In a power-fan, the combination of the lower or pedestal part of the column, having a broad flange to rest upon the floor, the upper or tubular part of the column passing down into and through the pedestal portion and secured therein and extending entirely through the pedestal portion and provided with suitable bearings, a rotating shaft passing up through said tubular portion and extending from both ends thereof, a fan supported upon the upper part of said shaft, and a belt-pulley upon the lower end of said shaft and below the pedestal, whereby the shaft, fan, and pulley may be raised and lowered without disturbing the pedestal.

2. In a power-fan, the combination of the lower or pedestal part of the column, having a broad flange to rest upon the floor, the upper or tubular part of the column passing down into and through the pedestal portion and secured therein, extending entirely through the pedestal portion, provided with suitable bearings, a rotating shaft passing up through said tubular portion and extending from both ends thereof, a fan supported upon the upper part of said shaft, a belt-pulley upon the lower end of said shaft and below the pedestal, whereby the shaft, fan, and pulley may be raised and lowered without disturbing the pedestal, and a thrust-bearing for said shaft supported upon and movable with the tubular portion of the column.

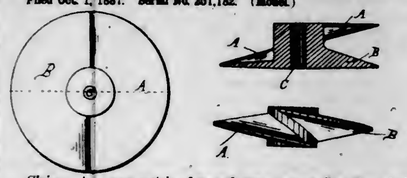
3. In a power-fan, the combination of the lower or pedestal part of the column, the upper or tubular part of the column passing down into and through the pedestal portion and secured therein, and provided with suitable bearings, a rotating shaft passing up through said tubular portion, a fan supported upon the upper part of said shaft, a belt-pulley upon the lower end of said shaft, and a belt-shifter secured to the pedestal part of the column and extending down below the same.

4. In a fan-column, the combination of the pedestal part A, having the bearing A′ at the top, with the tubular portion B, having one or more bearings for the fan-shaft, and adjusting-screws D, substantially as and for the purpose specified.

5. In a fan-column, the combination of the pedestal part A, having the bearing A′ at the top, with the tubular portion B, having one or more bearings for the fan-shaft, clamping-screw C, and adjusting-screws D, substantially as and for the purpose specified.

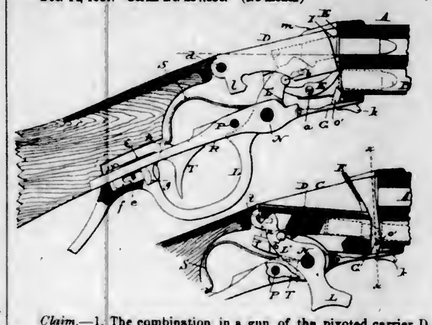
6. The combination of the pedestal or base portion of the column, the tubular portion secured to and extending above said pedestal portion, two bearings in said tubular portion having cup-shaped tops, and the lower part of the upper bearing being made conical to guide the flow of oil to the shaft, the fan-shaft, and a fan upon said shaft.

378,660. **PROPELLER.** WILLIE N. CHANDLER, Norwood, N. Y. Filed Oct. 1, 1887. Serial No. 251,182. (Model.)



Claim.—As a new article of manufacture, a propeller whose hub-surface is uniformly parallel to and concentric with its axis, and is encircled by two or more integral independent spiral semi-circumferential blades whose planes are approximately parallel to each other and project equidistantly from said hub-surface, as though each alternate half-section of a continuous screw-thread were removed from the hub, for the purpose and in the manner illustrated and set forth.

378,661. **MAGAZINE-GUN.** ROSWELL F. COOK, Hion, N. Y. Filed Dec. 14, 1887. Serial No. 257,850. (No model.)



Claim.—1. The combination, in a gun, of the pivoted carrier D, having the sliding breech-block I mounted therein, and the pivoted lever L, provided with the arm L′, having the projection *b* thereon, said arm L′ being arranged to engage with the breech-block, all being constructed and arranged to operate substantially as shown and described.

2. The combination, in a gun, of the carrier D, pivoted at its rear end to the receiver at a point below the line of the bore, the sliding breech-block mounted in said carrier, and the pivoted lever L, having its arm L′ arranged to engage with and operate the carrier and breech-block, substantially as herein set forth.

3. The combination, in a gun, of the pivoted guard-lever L and trigger T, with the sliding safety-catch provided with the hook *f*, to engage with the guard-lever, and with the plate or slide *i*, to engage with the trigger, whereby said safety-catch is caused to lock both the guard-lever and the trigger, substantially as shown and described.

4. In combination with the sliding breech-block I, mounted in the pivoted carrier D, the firing-pin O, provided with the lateral projection *l*, and the arm L′ of the pivoted lever L, arranged to engage with the projection on the firing-pin, all being constructed and arranged to operate substantially as and for the purpose set forth.

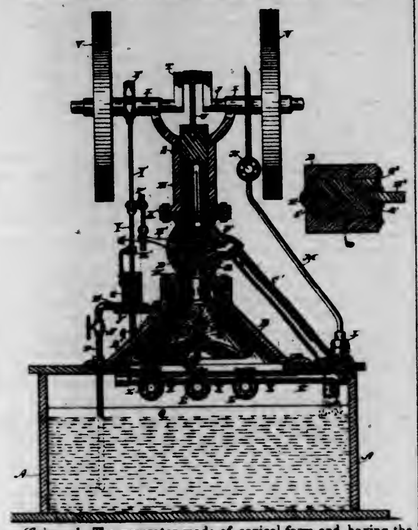
5. The ejector E, provided with the vertical arms arranged to engage with the flange of the cartridge at opposite sides of the same, said ejector being pivoted to the side wall of the receiver at a considerable distance below and in rear of the rear end of the barrel, as shown, in combination with the pivoted carrier D, provided with the pin or projection *p*, arranged to strike the arm of the ejector directly in rear of its pivot, whereby a rapid and long movement is given to the ejector, substantially as and for the purpose set forth.

378,662. **WHIP-STOCK CORE.** HENRY S. CUSHMAN, Milford, Mass. Filed Oct. 31, 1887. Serial No. 253,877. (No model.)



Claim.—The whip-stock consisting of the core *a* and longitudinal stripe of leather or rawhide, A B, having longitudinal overlapping edges upon opposite sides of the core, as set forth.

378,663. **STEAM-MOTOR.** OTIS B. DAVIDSON, Nashville, Tenn. Filed May 6, 1887. Serial No. 237,371. (No model.)



Claim.—1. The generator made of conical form and having the concave bottom, in combination with heating appliances beneath it and means for introducing water within it, substantially as described.

2. In combination with the conical generator having the concave bottom and provided with the perforated head or nozzle located centrally, the appliances arranged for heating it.

3. The conical generator having the concave bottom and the screw-threaded upper end or neck, whereby it is rendered removable, substantially as described.

4. The combination, with the conical generator having the concave bottom, of the means for introducing or spraying water into said generator, the conical inclosing-case, and means for heating, substantially as described.

5. The combination, with the generator, of the means for introducing water or spray within it, the means for heating, the valve-casing and valve arranged above said generator and in communication therewith, and the steam-cylinder and its piston arranged above the valve-casing and mounted thereon, substantially as described.

6. The combination, with the main shaft, of the pump driven therefrom, the generator and connections between it and the pump, means, substantially such as described, for heating the generator, the cut-off valve connected to the pump, and the main cylinder and its piston connected to the crank of the main shaft.

7. The combination, with the main shaft, of the pump driven therefrom, the generator and connections between it and the pump, the cut-off valve having inlet and exhaust ports, adjustable connections, substantially such as described, between the cut-off valve and the pump, and the main cylinder and its piston connected to the crank of the main shaft.

8. The combination, with the pump, of the generator supplied from the same, the main cylinder and its piston, the cut-off valve provided with the arm, and the adjustable clamp and jointed rod forming the connection between the valve-arm and the piston-rod of the pump, substantially as described.

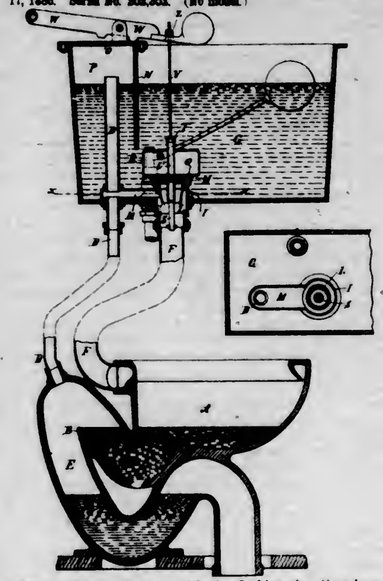
9. The combination, with the base, the generator, and the casing around the generator, of the laterally-swinging burners arranged within the base below the generator, substantially as described.

10. The combination, with the base, of the water tank or reservoir arranged therein, the generator and its inclosing-case, the pump, the cut-off valve, the main cylinder, and the driving-shaft, all arranged substantially as described.

11. The combination, with the base, of the water tank or reservoir arranged therein, the generator and its inclosing-case, the pump, the cut-off valve, the main cylinder and the driving-shaft and connections, and the exhaust-pipe for conveying the exhaust-steam from the exhaust-cylinder back to the water-tank.

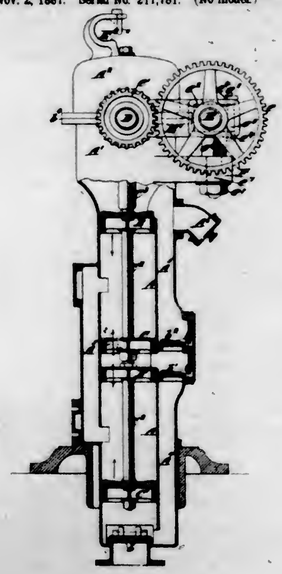
12. The combination, with a rotary cut-off valve having recessed ends, of the bearing Q′ around the operating-shaft, and the spring-pressed stud S′, bearing against the opposite end of the valve, whereby it is pressed against the said bearing Q′ and leakage of steam prevented, substantially as described.

378,664. **WATER-CLOSET CISTERN.** JOHN DEMAREST, New York, N. Y., assignor to The J. L. Mott Iron Works, same place. Filed May 17, 1886. Serial No. 202,262. (No model.)



Claim.—The combination, with the flushing-pipe F and an exhausting-pipe, D, leading to the closet, of a supply-cistern, G, and a minus pressure-chamber, P, into which the exhausting-pipe D opens, a valve, Q, at the upper end of the flushing-pipe F, and a float, R, to hold up such valve until after the water has descended to admit air into the minus pressure-chamber P, substantially as set forth.

378,665. **CRANK-PUMP.** J. JOSEPH DE RICK, New York, N. Y. Filed Nov. 2, 1887. Serial No. 217,781. (No model.)



Claim.—1. The combination, with the pump-barrel and piston, of a crank-shaft for operating the piston, a closed casing directly surmounting the pump-barrel, provided at the opposite sides with stuffing-boxes for the crank-shaft and divided horizontally through the stuffing-boxes, and bearings inward of the stuffing-boxes, and comprising caps which are secured to the main lower portion of the casing independently of the removable upper portion of the casing, whereby the upper portion of the casing may be removed without releasing the crank-shaft from its bearings, substantially as herein described.

2. The combination, with a pump-barrel and piston and a crank-shaft for operating the piston, of a closed casing directly surmounting the pump-barrel and divided horizontally in a plane coincident with the axis of the shaft, and provided on opposite sides with stuffing-boxes and with segmental seats d^3, which form continuations of the bores of the stuffing-boxes, and bearings for the crank-shaft, removably secured in the casing inward of the stuffing-boxes and centered by said seats, substantially as herein described.

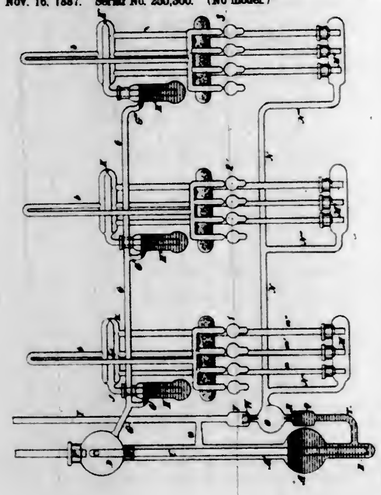
3. The combination, with the horizontally-divided casing A' A^3, having the stuffing-box bores in its line of division, and having seats d^3, which form continuations of such bores, of the bearings for the crank-shaft, consisting of ring-sections d^3, externally fitting the seats, and caps d^4, secured to the lower portion of the casing, said bearings forming the bottoms of the stuffing-boxes, and the stuffing-box glands d^2, substantially as herein described.

4. The combination, with a pump-piston and the crank-shaft D for operating it, constructed at the end for the attachment of a hand-crank, of the counter-shaft E, connected by gear-wheels e and pinions e' with opposite end portions of the crank-shaft, and also constructed at the end for the attachment of a hand-crank, the sliding boxes e^2 for the counter-shaft, supports having slots e^3 longer than the boxes, and in which the boxes are fitted, and keys or analogous devices whereby such boxes may be held positively in position with the said wheels and pinions engaged with or disengaged from each other, substantially as herein described.

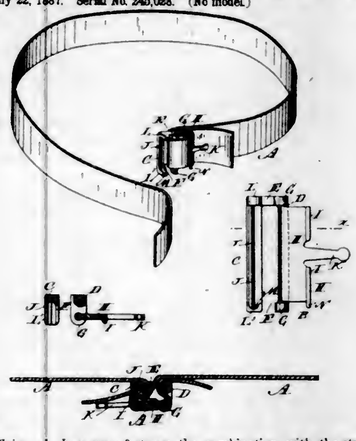
5. The combination, with the pump-piston and crank-shaft D, of the counter-shaft and gears for connecting it with the crank-shaft, swinging links or bars pivoted concentrically with the crank-shaft, boxes for the counter-shaft, fitted to slide in said links or bars toward and from the crank-shaft, and securing devices for holding said boxes positively in position with the gears which connect the crank-shaft and counter-shaft either engaged or disengaged, substantially as herein described.

6. The combination, with a pump-casing and ears or lugs F, projecting therefrom, of the crank-shaft D, the counter-shaft E, gear-wheels and pinions connecting said shafts, swinging links or bars E', pivoted concentric with the crank-shaft and having a detachable connection with said lugs or ears, boxes e^2 for said counter-shaft, fitted to slide in the links or bars toward and from the crank-shaft, securing devices for fixing the said sliding boxes positively in place, and a rest at the top of the pump-casing for supporting the counter-shaft when swung upward above the crank-shaft, substantially as herein described.

378,666. AIR-PUMP. HENRY J. DOBER, Newark, N. J. Filed Nov. 16, 1887. Serial No. 255,300. (No model.)



378,667. BUCKLE. JAMES ENGLAND, New York, N. Y. Filed July 22, 1887. Serial No. 245,028. (No model.)



Claim.—1. In a strap-fastener, the combination, with the strap, of a buckle having cross-bars C and D, and a pivotal clamp, H, having a tongue, K, one end of the strap being received on the tongue K and passed around the bar D, and the other end of the strap adapted to be passed over the bar C and be bound thereon by the clamp H, substantially as described.

2. A buckle formed of cross-bars C and D, connected at one end by a yoke, E, but separated at the other end to form a laterally-opening slot, F, and a clamp, H, pivoted on the cross-bar D, and having a biting-edge adapted to engage with the cross-bar C, substantially as described.

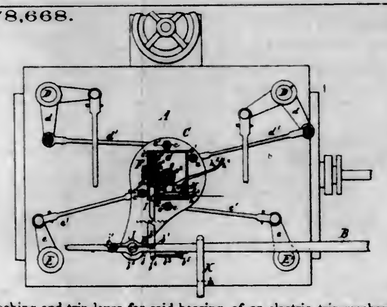
3. In a buckle, the combination of cross-bars C and D, a yoke, E, uniting the ends of the same, apertured lugs G on the ends of the bar D, a clamp, H, having pivots held in the apertures of the lugs G, and end lugs, L L', projecting from the bar C, between which latter lugs the clamp H is adapted to swing in clasping, substantially as described.

4. In a buckle, the combination of separated cross-bars C and D, a yoke, E, connecting the same at one end, a clamp, H, pivotally connected to the bar D and having a projecting end pin, N, and a lug, M, on the free end of the bar C, recessed to receive the pin N, substantially as described.

378,668. ELECTRICAL STOP-MOTION FOR STEAM-ENGINES. ROBERT EXLEY, Philadelphia, Pa. Filed Oct. 15, 1887. Serial No. 252,433. (No model.)

Claim.—1. In an electric stop-motion for steam-engines, the combination, with an eccentric-rod having a divided wrist-pin bearing and

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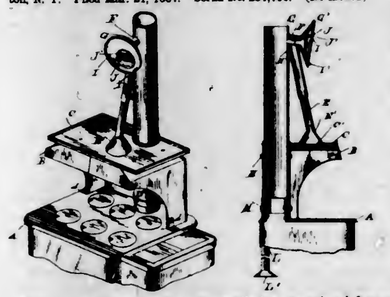


a locking and trip lever for said bearing, of an electric trip mechanism, F, whereby the trip-lever is operated and the eccentric-rod disconnected from the valve, substantially as and for the purpose described.

2. The combination of the magnet H, armature h', check-bolt h, having lug h^3, spring-bolt I, and an eccentric-rod having half-bearings J b^4, and locking-lever b, substantially as and for the purpose described.

3. In a steam-engine, the combination of an electric trip mechanism and a separable eccentric or valve rod connection, whereby the steam-engine is stopped by a switch of said trip mechanism and without shutting off the steam-connection with the boiler, substantially as and for the purpose described.

378,669. STOVE-HOOD VENTILATOR. ASA S. FISK, Binghamton, N. Y. Filed Mar. 21, 1887. Serial No. 231,706. (No model.)



Claim.—1. The combination of a ventilating stove-hood formed of two sections, the inner vertical edges of which are upon diametrically-opposite sides of the lower section of the stove-pipe, a short section, D^3, the edges of which are flanged, a shelf, and means, substantially as described, for securing the inner edges of the sections of the hood to the flanges upon the section D^3, and for securing the pipe in position, substantially as set forth.

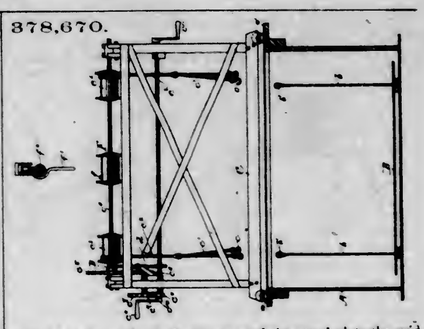
2. The combination of the hood having the inwardly-inclined upper end, the shelf having the central opening, the stove-pipe, the main ventilating-pipe having the funnel at its lower end, the short auxiliary ventilating-pipe connecting the upper end of the main ventilating-pipe with the stove-pipe, and the movable sleeve having the side opening and the valve at its outer flaring or funnel-shaped end, substantially as set forth.

3. The combination of the hood, preferably formed in two sections and adapted to be secured upon the stove, and having the inwardly-inclined upper end, the shelf having the central opening, the lower length of pipe formed in two longitudinal sections with the edge flanges, the stove-pipe, the inclined main ventilating-pipe having the funnel at its lower end, the short auxiliary ventilating-pipe connecting the upper end of the main ventilating-pipe with the stove-pipe, the movable sleeve having the side opening and the valve at its outer funnel-shaped end, and the lower auxiliary ventilating-pipe having the funnel-shaped lower end extending down within a short distance of the floor, all substantially as and for the purpose herein set forth.

378,670. HIDE LIFTER AND CARRIER FOR TANNERIES. ANDREW M. FLETCHER, Winchester, Mass. Filed Mar. 28, 1887. Serial No. 232,894. (No model.)

Claim.—1. The elevator-lifter and skin and hide transferring frame, truck, or car comprising a frame-work, C, mounted upon rolls or wheels and having the windlasses or drums c^4 mounted at the top

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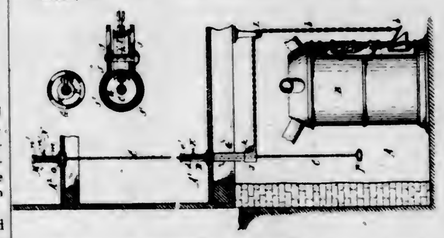
of said frame upon the shaft c^4, ropes or chains attached to the said drums or windlasses, and each of which ropes or chains is divided into two sections or ends, each of such ends having a hook, and means for rotating said shaft c^4, as and for the purposes described.

2. The combination of a portable frame, truck, or car for lifting hides and skins from the vats and transferring the same, comprising the frame-work C, the drums or windlasses c^4, mounted upon a horizontal shaft upon the upper part of said frame, the ropes or chains c^5, adapted to be connected with the vat-elevator ropes or chains, the gear-wheel c^6, the pinion c^8, gear c^9, pinion c^8 on the crank-shaft, said crank-shaft, and the cranks c^{11}, substantially as described.

3. The combination, in a portable vat-elevator-lifting machine, of the windlasses or drums c^4, mounted upon the shaft c^4 and adapted to be rotated by cranks c^{11} and intermediate gearing, with a clutch for connecting and disconnecting the shaft c^4 with and from the gear mounted thereon, as and for the purposes described.

4. The combination of the portable car, truck, or frame C of a vat elevator and transferring mechanism having a shaft, c^4, and a drum or windlass, F, one or more cranks connected with said shaft by suitable gearing, an elevated rail or track, f^3, a truck, f', to travel thereon, and a chain or rope connecting said truck with said windlass or drum F, as and for the purposes specified.

378,671. ADJUSTING DEVICE FOR DAMPERS. FRANK A. GARRETT, Syracuse, N. Y. Filed Feb. 3, 1887. Serial No. 226,404. (No model.)



Claim.—1. The combination, with a damper or valve, of an adjusting-rod, C, connected with the damper or valve and provided with a projection, E, and a standard, D, provided with a vertical slot, d, and branch slots e e' at different heights, substantially as set forth.

2. The combination, with a damper or valve, of a vertical adjusting-rod, C, connected with the damper or valve, a locking-standard, D, a casing, G, and a pulley, I, adjustably attached to said casing substantially as set forth.

3. The combination, with a damper or valve, of a vertical adjusting-rod, C, connected with the damper or valve, a locking-standard, D, provided at its lower end with a screw-thread, g, and a casing, G, provided at its upper end with a screw-thread, g', substantially as set forth.

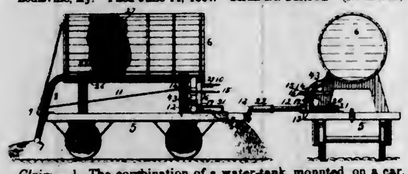
4. The combination, with the tubular casing G, of a pulley, I, and a pulley-bearing, J, embracing the casing G and made horizontally and vertically adjustable thereon, substantially as set forth.

5. The combination, with the tubular casing G, of a pulley, I, and a pulley-bearing, J, composed of two arms, j j, applied to opposite sides of the casing and secured together by a clamping-screw, k, substantially as set forth.

6. The combination, with a damper or valve, of an adjusting-rod, C, a locking-standard, D, a casing, G, surrounding said rod, a collar, H, secured to said rod, a chain, h, connecting said collar with the

damper or valve, and a guide-pulley, I attached to the casing G, substantially as set forth.

378,672. RAILWAY STREET-SPRINKLER. JOHN R. GATHRIGHT, Louisville, Ky. Filed June 11, 1887. Serial No. 240,964. (No model.)



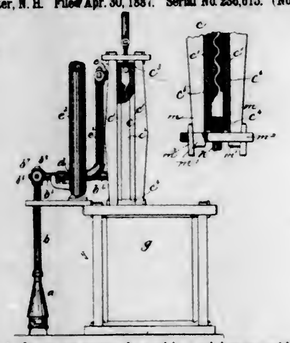
Claim.—1. The combination of a water-tank mounted on a car, a sprinkler-pipe perforated along one side and pivoted at one end upon the forward part of the car beside the tank, and a pipe connecting the sprinkler-pipe with the tank, substantially as shown and described, whereby a sprinkler-pipe is adapted to rest its length upon the car in one position and to swing from the side of the car, as shown in Fig. 2, and to deliver water from its side.

2. The combination of a water-tank mounted on a car, a sprinkler-pipe perforated along one side and pivoted at one end upon the forward part of the car beside the tank, a pipe connecting the sprinkler-pipe with the tank, and another sprinkler-pipe perforated along one side and arranged to telescope with the first-named sprinkler-pipe, substantially as shown and described, whereby a sprinkler-pipe is adapted to rest its length upon the car, also to be swung away from the side of the car to various positions, as shown in Fig. 2, and to be lengthened or shortened when in any position to cover paths of different widths, and to deliver water from its side throughout its whole length under all the above conditions.

3. The combination of two sprinkler-pipes arranged to telescope together, each being perforated along one side, the interior of one pipe being somewhat larger than the exterior of the other, allowing water-space between them, the outer pipe being provided with an internal packing-ring at its end, to fit and slide upon the inner pipe, and the inner pipe being enlarged at its end, and provided with apertures through said enlargement, through which water may freely pass from the inner pipe to the space between the pipes, substantially as shown and described.

4. The combination of the car 5, the pipe 12, perforated along one side and provided with a pivot, 19, connecting it with the car, the arm 20, connected with the pipe 12, and the circular segment 21, fixed upon the car concentrically with the pivot 19 and adapted to be engaged by the arm 20, substantially as shown and described.

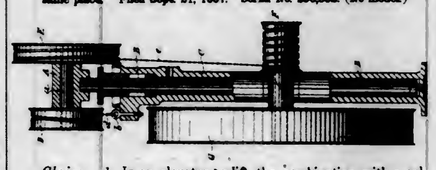
378,673. APPARATUS FOR MAKING SULPHUROUS ACID. CHARLES GITCHELL, Waltham, Mass., assignor of one-half to Stephen N. Bourne, Manchester, N. H. Filed Apr. 30, 1887. Serial No. 236,615. (No model.)



Claim.—1. In an apparatus for making sulphurous acid, a combining-chamber having walls of large area, but at small distance apart, the said walls being provided with transverse projections or ridges, as described, producing a thin sinuous or zigzag passage between them, said chamber being provided with an inlet for water near its upper part and inlet and outlet passages for acid fumes, whereby the water and fumes both pass wholly through the chamber and are brought into intimate contact with one another in such passage, substantially as described.

2. In an apparatus for making sulphurous acid, a combining-chamber having its walls close together, the said walls being provided with ridges, producing a sinuous or zigzag passage between them, said chamber being provided with an inlet for water and an outlet for acid fumes near its upper part and an inlet for acid fumes at its lower part, whereby the water and fumes are brought into intimate communication with one another in their passage through the chamber.

378,674. HYDRAULIC OR OTHER ELEVATOR. WILLIAM P. GIBSON, London, England, assignor to the American Elevator Company, same place. Filed Sept. 21, 1887. Serial No. 250,332. (No model.)



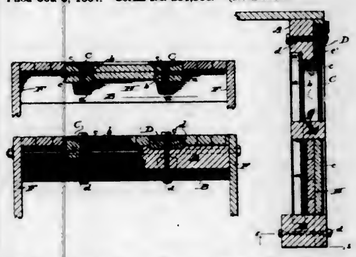
Claim.—1. In an elevator or lift, the combination, with a cylinder, its piston and piston-rod, of a pair of wheels mounted in bearings upon the piston-rod, and a removable drum, one of the wheels having a chain or rope connected thereto and to a fixed point, and the other wheel having a chain or rope connected to it and to the revoluble drum, and connections between the latter and a cage, whereby when the piston is moved the pair of wheels will be revolved to thereby revolve said drum to actuate the cage, substantially as described.

2. In an elevator or lift, the combination, with a cylinder, its piston and piston-rod, of a pair of wheels of different diameters mounted in bearings to travel with the movement of the piston, a drum adapted to be rotated by the rotation of said wheels, two independent chains or ropes, one for each of said wheels, the end of one of the said chains or ropes connected to a fixed point, and the other of said chains or ropes connected to and wound upon said drum, and connections between the latter and a cage for actuating it, substantially as described.

3. In an elevator or lift, the combination, with the cylinder, its piston and piston-rod, of wheels D and E, secured upon a shaft, *a*, and mounted to turn in bearings on the piston-rod, drum F and cage-drum G, mounted to revolve together in fixed bearings, independent chains *d e*, one secured to the wheel D and to a fixed point and adapted to be wound on and unwound from said wheel, and the other secured to the wheel E and to the drum F, and adapted to be wound on and unwound from said wheel and drum, substantially as described.

4. The combination of the cylinder provided with a bearing for a shaft, *f*, and drums mounted on said shaft upon opposite sides of said bearing, the piston and its rod, a bearing for a shaft, *a*, secured to the end of the piston-rod and arranged parallel with the first-named bearing and shaft, wheels secured to said shaft *a*, one upon opposite sides of the bearing, a rope or chain wound upon one of said wheels and secured to a fixed point, and a second rope or chain wound upon the other of said wheels and connected with one of said drums, substantially as described.

378,675. RAILWAY-CAR. HERMANN C. GROSS, Milwaukee, Wis., assignor of two-thirds to Charles Stuppe and Peter Elx, same place. Filed Oct. 3, 1887. Serial No. 251,300. (No model.)



Claim.—1. A railway-car pillar made from a section of track-rail having its tread and web cut away for a certain distance from each end to leave the extremities of said tread projecting beyond those of the web, substantially as set forth.

2. In a railway-car, the pillars thereof made from sections of track-rails having their extremities shaped to engage the adjacent timbers of the car, suitable castings interposed between the terminals of the flanged portions of the pillars and said timbers, and suitable means for securing all of said parts in their relative positions, substantially as set forth.

3. In a railway-car, the pillars thereof made from sections of track-rails having their treads and webs cut away a certain distance from each end, in combination with head and base timbers mortised to engage the ends of said treads, and blocks or castings interposed between said timbers and the flanged ends of said pillars, and suitable means for retaining all of said parts in their relative positions, substantially as set forth.

378,676. CAR-COUPLING. JACOB HAHN, De Kalb, Ill. Filed Dec. 7, 1887. Serial No. 257,262. (No model.)



Claim.—1. The combination of the rock-shaft K, provided with end cranks on handles K', the draw-head C, provided with cross-rib L, the pin B, rigidly seated on said shaft within said draw-head, and the link A, whereby the elevation and depression of the outer end of said link can be controlled from and by said handles K', substantially as shown, and for the purpose described.

2. The combination of the stirrup G, suitably attached at one end of the car, the draw-head C, pivotally seated at its inner end, and the bar F, provided with supporting sides parallel with and at variant distances respectively from its axis of rotation and adapted to be interposed between said draw-head and stirrup and rotate on the latter, and support said draw-head at variant heights, substantially as shown, and for the purpose described.

3. The combination of the draw-bar C, projected within the inner end of the draw-head C and provided transversely with the slot C^4, the draw-head C, provided with corresponding slot C^4, and the pin H, adapted to enter but not laterally fill said slot, substantially as shown, and for the purpose described.

378,677. ELECTRIC GAS-LIGHTING APPARATUS. CHARLES W HOLTZER, Brookline, Mass. Filed Sept. 9, 1887. Serial No. 249,227. (No model.)



Claim.—1. An electric gas-lighting instrument comprising a burner-tube and gas-cock that controls the passage of gas therethrough, the said gas-cock having a limited range of movement, combined with an actuating-arm connected with said gas-cock, provided with a toothed arc, and an electro-magnet and armature therefor provided with a finger or projection co-operating with the teeth of the said valve-actuating arm, and a vibrating electrode or circuit-breaker in circuit with said magnet, and a second electro-magnet and armature therefor provided with a finger co-operating with a projection on the valve-actuating arm nearer to its pivotal center or axis than the toothed arc, substantially as described.

2. An electric gas-lighting instrument comprising a burner-tube and gas-cock that controls the passage of gas therethrough, the said gas-cock having a limited range of movement, combined with an actuating-arm connected with said gas-cock, provided with a toothed arc, and an electro-magnet and armature therefor provided with a finger of projection co-operating with the teeth of the said valve-actuating arm, and a vibrating electrode or circuit-breaker in circuit with said magnet, and an electro-magnet and its armature co-operating with said valve-actuating arm to close the valve, substantially as described.

3. An electric gas-lighting instrument comprising a burner-tube and gas-cock that controls the passage of gas therethrough, the said gas-cock having a limited range of movement, combined with an actuating-arm connected with said gas-cock, provided with a toothed arc, and an electro-magnet and armature therefor provided with a spring-finger connected with said armature at a distance from the extremity of said spring, that co-operates with the teeth of the valve-actuating arm, and a rest or support for said spring-finger near the said extremity, substantially as and for the purpose described.

4. An electric gas-lighting instrument comprising a burner-tube and gas-cock, and actuating-arm connected with said gas-cock, provided with a toothed arc and projection, combined with two electro-magnets and co-operating armatures therefor pivoted on a common axis at the middle of the burner-tube and provided with projections co-operating with the said valve-actuating arm, substantially as described.

378,678. TROLLING-SPOON HOOK. JOHN R. HARLOW, Auburn, N. Y., assignor to the Brinkerhoff Company, same place. Filed Aug. 25, 1887. Serial No. 247,232. (Model.)



Claim.—1. A trolling-spoon having a seat for the bill or point of the fish-hook and a slot at or near one end through which the hook may protrude when struck by a fish, substantially as and for the purpose set forth.

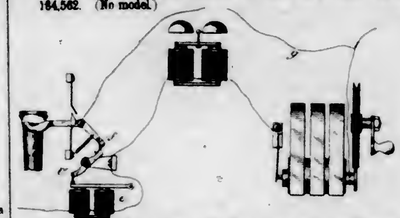
2. The combination, with a trolling-spoon provided with a slot at or near one end and a seat for the point or bill of the hook to rest against, of a spring-actuated hook secured to the reverse side of the spoon, substantially as and for the purpose set forth.

3. A trolling-spoon fish-hook comprising a spoon, and a fish-hook yieldingly attached to one side of the spoon, with the main part of its body exposed to the strike of the fish and its point seated against the opposite face of the spoon, so as to prevent the hook from catching or entangling with obstructions as it is drawn through the water, substantially as and for the purpose set forth.

4. A trolling-spoon provided with a slot at or near one end through which the hook may protrude, said hook being actuated by spring-power to throw the point of the hook toward the spoon, substantially as and for the purpose set forth.

5. An artificial bait provided with a spring-actuated hook, the force of said spring tending to throw the point of the hook toward the body of the bait, as and for the purpose set forth.

378,679. LOCK-OUT BOX AND SHUNT-CIRCUIT FOR TELEPHONE-EXCHANGES. CHARLES H. HASKINS, Milwaukee, Wis., assignor to the Western Electric Company, Chicago, Ill. Filed Dec. 3, 1885. Serial No. 184,562. (No model.)

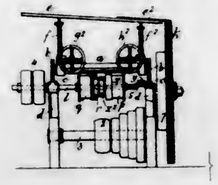


Claim.—An electro-magnet in the circuit of a telephone-line, a telephone-switch, shunt-circuit *g* around the bell and generator, a circuit-closing device operated by the armature of said electro-magnet, and a battery at the central office included in the circuit, whereby the shunt-circuit may be closed around the box, substantially as and for the purpose specified.

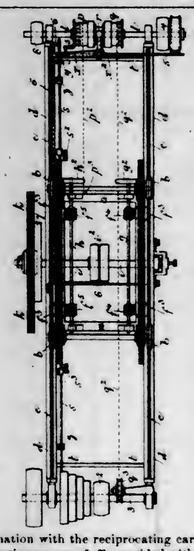
378,680. MACHINERY FOR REVELING THE EDGES OF PLATES OF GLASS. OBED C. HAWKES, Birmingham, County of Warwick, England. Filed July 12, 1887. Serial No. 244,107. (No model.) Patented in England Feb. 10, 1887, No. 2,114; in France July 2, 1887, No. 184,584, and in Belgium July 6, 1887, No. 78,065.

Claim.—1. In combination with the reciprocating carriage *a*, carrying the adjustable table *c*, the rotating grinding-wheel *k*, the rod *s*, provided with adjustable tappets, the reversing mechanism *r*, actuated by the rods *s*, and the arms *u*, secured to the reciprocating carriage and adapted to be moved into or out of the path of the tappets on the rod *s*, substantially as described.

2. In combination with the rotating grinding-wheel *k*, the reciprocating carriage *a*, carrying an adjustable table, *c*, the winding-drums *p q*, the bands p^3 q^3, and mechanism, such substantially as described, for automatically throwing said winding-drums alternately into and out of gear with the shaft they are mounted on, for the purpose specified.

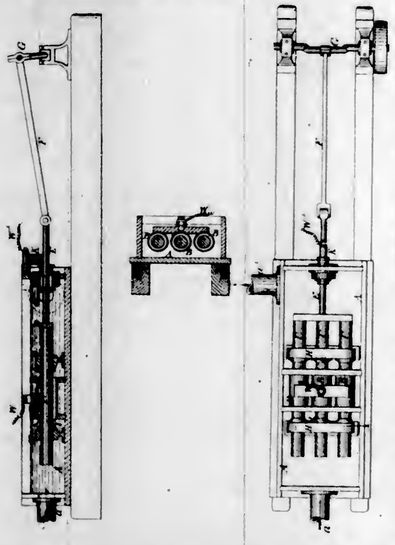


378,680.



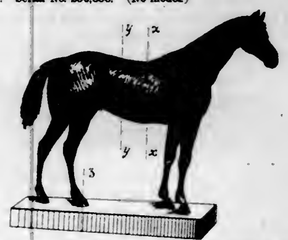
3. In combination with the reciprocating carriage *a*, the table *e*, supported by adjusting-screws *f f'*, provided with gear-wheels f^3 f^3, and the shafts *g h*, carrying the worms f^4 f^5, all constructed and arranged to adjust the table *e* in both a vertical and horizontal plane substantially as shown and described.

378,681. APPARATUS FOR BLEACHING BY ELECTROLYSIS. EUGENE HERMITE and CHARLES F. COOPER, Pownall Road, Dalston, County of Middlesex, England, assignors of one-third to Edward James Paterson, same place. Filed Oct. 25, 1887. Serial No. 253,354. (No model.) Patented in England Feb. 8, 1887, No. 1,993.



Claim.—In apparatus for electrolyzing, bleaching, or disinfecting liquor, the combination of a set of horizontal cylinders, of platinum or its equivalent, fixed insulated in a trough through which the liquor flows, with zinc plungers moving to and fro within the said cylinders and through guides armed with scrapers, substantially as described.

378,682. STATUETTE. FRANK J. HERRICK, New Britain, assignor of one-half to William Edgar Simonds, Hartford, Conn. Filed May 2, 1887. Serial No. 236,838. (No model.)



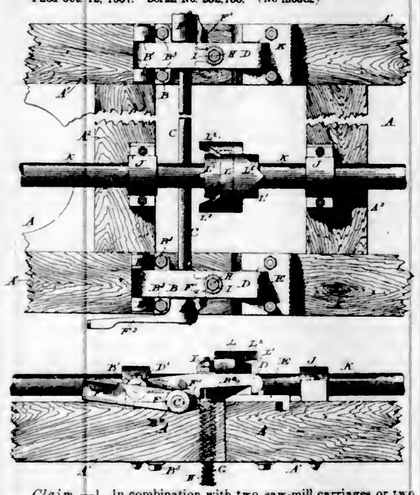
Claim.—1. The hollow figure parts *a b*, provided with internal prongs, *c*, and held together by plaster, *p*, or the like, all substantially as described, and for the purpose set forth.

2. The hollow figure parts *a b*, provided with internal prongs, *c*, the plaster, *p*, or the like, and the orifice *d*, for introducing the plaster, all substantially as described, and for the purpose set forth.

3. The hollow figure parts *a b*, provided with internal prongs, *c*, the plaster, *p*, or the like, holding the parts together and filling the joint between the figure parts, all substantially as described, and for the purpose set forth.

4. The base-plate *g*, provided with holes i, the figure-foot *f*, provided with button *h*, and a uniting medium, *j*, all substantially as described, and for the purpose set forth.

378,683. SAW-MILL CARRIAGE. GEORGE M. HINKLEY, Milwaukee, Wis., assignor of one-half to Edward P. Allis & Co., same place. Filed Oct. 12, 1887. Serial No. 252,135. (No model.)



Claim.—1. In combination with two saw-mill carriages or two sections of a carriage, each provided with suitable set-works, a coupling device for connecting the two carriages or the two carriage-sections, and a coupling device for connecting the set-shafts of the different carriages.

2. In combination with two saw-mill carriages or carriage-sections, hooks, as D D, pivoted to one of said carriages on its front and rear sides, and plates or keepers E E, secured upon the other carriage in position to be engaged by the hooks, all substantially as shown, whereby the ends of the carriage when brought together are prevented from moving relatively to each other.

3. In combination with two saw-mill carriages or carriage-sections, hooks, as D D, pivoted to the longitudinal timbers of one of the carriages, plates or keepers, as E E, secured upon the other carriage in position to be engaged by the hooks, a rock-shaft extending transversely across one of the carriages beneath the hooks and there provided with arms F' F', and a lever, F^9, secured upon the shaft, all combined and arranged for operation substantially in the manner explained.

4. In combination with two saw-mill carriages or carriage-sections, hooks, as D D, pivoted to one of the carriages, plates E E, secured to the other carriage in position to be engaged by the hooks, a rock-shaft, C, journaled in the carriage carrying the hooks, a hub secured upon one end of the shaft and provided with a finger or arm, F', to project beneath one of the hooks, and a second hub secured to the opposite end of the shaft and provided with a similar finger, F', to project beneath the other hook, and provided, also, with a lever or extension, as F^9.

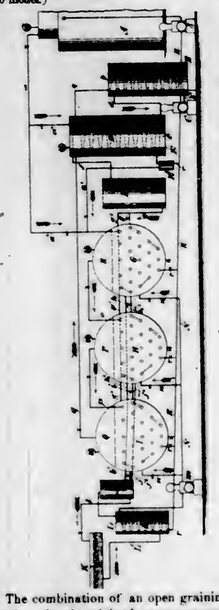
5. In combination with two saw-mill carriages or carriage-sections adapted to abut squarely against each other, a coupling device for the carriages or sections applied to the longitudinal timbers of the latter at both sides of the center of the carriages, whereby the two sections are prevented from swinging or moving independently of each other.

6. In combination with two saw-mill carriages or carriage-sections, plates or keepers E E, secured to one of said carriages, hooks D D, pivoted in the other carriage and adapted to engage the keepers, a shaft, C, journaled upon the carriage and provided with arms F', to extend beneath the hooks, and a lever, F^9, secured to said shaft C and adapted to rock the shaft.

7. In combination with carriages A A, provided with pivoted hooks or catches D D, and plates or keepers E E, a rod or stem, H, carried by each hook or catch, a stud or projection upon the lower end of the rod, a spring encircling the rod, bearing at opposite ends against the stud and a fixed part of the carriage, and nuts I, mounted upon the rod H and serving to adjust the spring, all substantially as shown.

8. In combination with two saw-mill carriages or carriage-sections provided, respectively, with hooks D D and plates E E, a rod, H, carried by each hook, and a spring, G, encircling each rod and bearing at opposite ends against a fixed part of the carriage, and a shoulder or nut upon the rod.

378,684. APPARATUS FOR MANUFACTURING SALT. HASCAL A. HOBEL and OLIVER I. F. BROWNE, Syracuse, assignors to themselves and Ethelbert Belknap, Yonkers, N. Y. Filed Mar. 11, 1887. Serial No. 230,495. (No model.)



Claim.—1. The combination of an open graining-tank, an auxiliary brine-heater, I_4, a closed graining heater-evaporator, a trap, J, and a pump between these two heaters, and means for the simultaneous drawing away of the steam formed in said closed graining heater evaporator and utilization of same, as set forth.

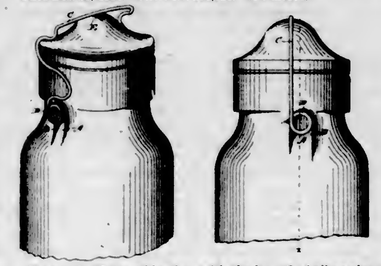
2. In a liquid purifying and evaporating apparatus, the combination of an occluding-dehydrator for dehydrating impurities of said liquids, a clarifier communicating with said dehydrator, an evaporator communicating with said clarifier, a heater within said evaporator communicating with the steam-space of said dehydrator and with the source of steam for heating the brine in the evaporator, a pump and an auxiliary heater, I_4, a graining-tank, and a pipe, L^2, connecting the tank with the heater I_4, as set forth.

3. In an apparatus for making salt, the brine-vessel B, steam-coil *b* in said vessel, for heating the brine, occluding-dehydrator E, and the brine-coil D, within said dehydrator, in combination with the filter F, connected with the brine-coil D, as set forth.

4. In an apparatus for making salt, the vessel B, containing a brine-coil, *b*, occluding-dehydrator E, and filter F, connected with the dehydrator E, in combination with closed heater-evaporators G, H, and I, containing steam-coils for heating the evaporating brine, trap J, and means for passing liquid and steam from one to the other, as set forth.

5. In an apparatus for making salt, the vessel B, dehydrator E, filter F, heater-evaporators G, H, and I, and trap J, in combination with tank K and heater I_4, and means for passing liquid and steam from one to the other, substantially as described, and for the purposes set forth.

378,685. JAR-FASTENER. THOMAS B. HOWE, Scranton, Pa., assignor of two-thirds to G. A. Clearwater and M. A. Goodwin, same place. Filed Dec. 30, 1887. Serial No. 258,590. (No model.)



Claim.—1. The combination, with the jar, of a bail passing over its top, having the convolutions or coils at its ends fitting within the recesses or sockets on the jar and constituting the pivoted bearings of the bail, substantially as described.

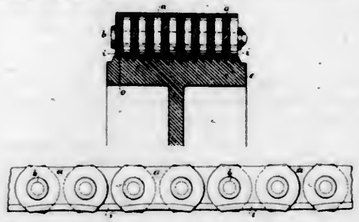
2. The combination, with the jar formed with the open recesses or sockets in its sides, of a bail passing over the top of the jar, having convolutions or coils thereon fitting within said open recesses or sockets and constituting pivots on which the bail swings, substantially as described.

3. The combination, with the jar, of a bail passing over its top, having convolutions or coils thereon, some of which fit within bearings on the jar and constitute the pivotal bearings for the bail, the other portions of which are outside of said bearings on the jar for giving the required amount of spring to the bail, as set forth.

4. The combination, with the jar, of a bail passing over its top, having convolutions or coils thereon fitting within bearings on the jar and constituting the pivotal bearings of the bail, the side portions of the bail above said bearings being formed into substantially S shape, as set forth.

5. In a jar-fastening, the combination, with the bail passing over the top of the jar, having the convolutions or coils at its lower ends, of bearings on the jar for said convolutions or coils, standing above its general surface, and consisting of the straight surfaces at right angles to the jar-body and the sloping outer surfaces, substantially as described.

378,686. CHAIN BELT. CHARLES W. HUNT, West New Brighton, assignor to the C. W. Hunt Company, New York, N. Y. Filed Dec. 8, 1887. Serial No. 257,280. (No model.)

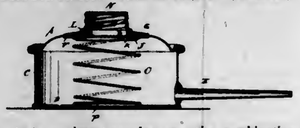


Claim.—1. The chain belt composed of flat links perforated and united by cross-rods, each link having the edge that comes into con-

tact with the pulley beveled, so as to adapt such chain belt to a pulley with V-shaped peripheral grooves, substantially as set forth.

2. The chain belt composed of flat links perforated and united by cross-rods, the links having the edges that come into contact with the pulley beveled in opposite directions and the links placed together in pairs, so that the beveled edges of two lines of links are adapted to pass into one V-groove upon the pulley, substantially as set forth.

378,687. INSECT-POWDER GUN. JULIUS JAEGER, Rutherford N. J. Filed Dec. 23, 1887. Serial No. 259,239. (No model.)



Claim.—1. In an insect-powder gun, the combination, with a casing, of a centrally-apertured diaphragm on the same, a neck provided with a flange passed through the central aperture of the diaphragm, said flange being at the inner side of the diaphragm, and said neck having an external projection above the upper surface of the diaphragm, which flange and projection serve to hold the neck on the diaphragm, substantially as set forth.

2. In an insect-powder gun, the combination, with a casing, of a centrally-apertured diaphragm on the same, sheet-metal rings on the upper and lower faces of the diaphragm, a neck provided with a bottom flange having its edge bent down, which neck is passed through the central aperture of the diaphragm, the flange being at the under side of the diaphragm, and a spiral spring in the casing, the upper end of said spring surrounding the bent-down edge of the flange on the neck, substantially as set forth.

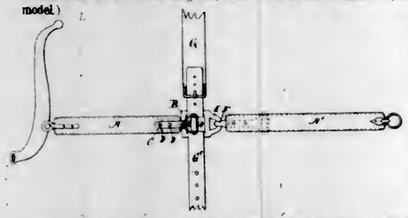
3. In an insect-powder gun, the combination, with a casing, of an apertured diaphragm secured on the same, the sheet-metal rings F G on opposite sides of the same, the neck H, having the flange K, provided with a bent-down edge, J, and secured on the said plates and diaphragm, the flange Q of the sheet-metal ring F, and the spiral spring O in the casing, the upper end of said spring being located between the bent-down edge J and the flange Q, substantially as set forth.

4. In an insect-powder gun, the combination, with a casing having a centrally-apertured diaphragm on the same, of a neck held in the central aperture of the diaphragm and provided at its inner end with a flange having its edge bent down, and a spiral spring in the casing, the upper end of said spring surrounding the bent-down edge of the flange on the inner end of the neck, substantially as set forth.

378,688. FERTILIZER. PAUL C. JENNEY, Chicago, Ill. Filed Dec. 6, 1886. Renewed Feb. 2, 1888. Serial No. 262,806. (No specimens.)

Claim.—A process of manufacturing a dry fertilizer from nitrogenous animal matter, such as tankage or tank-water residue, which consists in drying such matter at a low temperature, then adding to it suitable quantities of unslaked lime, the dried matter and lime being broken up convenient for handling, then thoroughly mixing and pulverizing the compound until it is brought into the condition of a powder.

378,689. CLIP FOR TRACE ATTACHMENTS. CHARLES J. KING, Woodstown, N. J. Filed Aug. 25, 1887. Serial No. 247,816. (No model.)

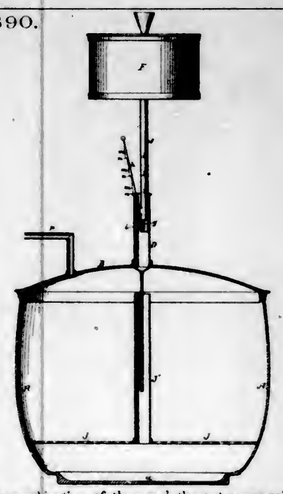


Claim.—The divided trace A A', provided with the hook F and with the clip having a tongue for insertion in the trace and an eye for engagement with the hook, all substantially as set forth.

378,690. CULINARY VESSEL. JOHN P. KING, Philadelphia, Pa. Filed Jan. 6, 1887. Serial No. 223,563. (No model.)

Claim.—1. The combination of the vessel and its lid, the water-reservoir carried by the lid, an elevated support for the vessel, and a tube or conduit whereby water is conveyed from the reservoir on the lid to a point beneath said elevated support, the area of the opening for the discharge of the water being contracted, so that the water enters the vessel in limited volume, all substantially as specified.

378,690.

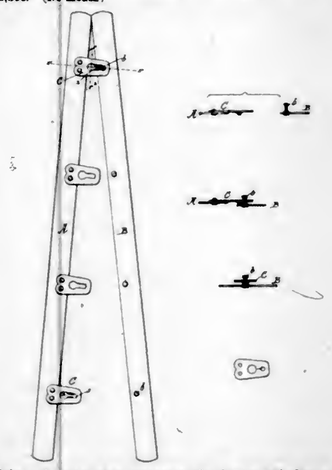


2. The combination of the vessel, the water-reservoir having a stem with a discharge-opening, a valve adapted to said discharge-opening, a valve-lever having an arm forming a series of inclined planes, and the lid of the vessel having a pipe or passage for the reception of said stem and its valve-lever, whereby the vertical adjustment of the reservoir in respect to the vessel governs the rate of flow of the water from said reservoir into the vessel, all substantially as specified.

3. The combination of the vessel and its lid, with the independent reservoir having a stem with discharge-opening, a valve adapted to said opening, and a valve-lever having a series of inclined planes with intervening shoulders, all substantially as specified.

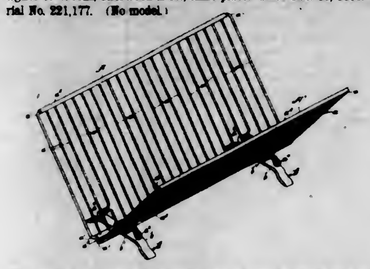
4. The combination of the vessel, the lid having a water-reservoir, a perforated plate supported above the bottom of the vessel, a discharge-stem for directing the water from the reservoir on the lid to the bottom of the vessel, and a tube inclosing the mouth of said discharge-stem, all substantially as specified.

378,691. CORSET-CLASP. PERLEY LAFLIN, Warren, assignor to T. C. Bates, North Brookfield, Mass. Filed Mar. 7, 1884. Serial No. 123,368. (No model.)



Claim.—A corset-clasp composed of a sheet-metal plate provided with a stud-receiving eye and with a smaller stud-retaining eye, the plate between the said eyes being cut to form projections, the ends of which, forming part of the cut edge of the clasp, are bent or turned away from the main body of the clasp to constitute projections located in the passage between the two eyes, which projections present between them a passage narrower than the smaller eye, 3, the projections bent over from the edges of the metal left by cutting the eye yielding to the passage of the stud from the larger to the smaller eye, and arresting the ready movement of the stud backward from the small into the large eye, substantially as described.

378,692. DISH-HOLDER. CYRUS H. LAWHAN, Lowell, Mass., assignor to Woods, Sherwood & Co., same place. Filed Dec. 10, 1886. Serial No. 221,177. (No model.)

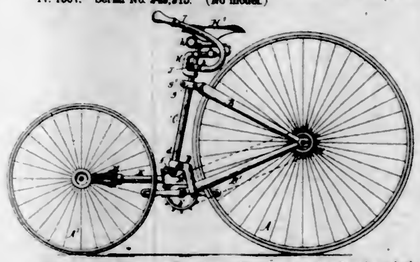


Claim.—1. A dish-holder consisting of two independent leaves provided with spaces to receive the edges of dishes, said leaves being separately pivoted to feet common to said leaves, said leaves being adapted to be folded together when not in use, as and for the purpose specified.

2. The combination, with suitable feet, of two leaves independently pivoted thereto, each of said leaves consisting of parallel wires bent near their ends at about right angles and arranged in the same plane, the bent portions of said wires measuring the interval between the middle parts of said wires, and strips of sheet metal bent over the bent ends of said wires, and having their edges brought into contact with each other between said wires, as and for the purpose specified.

3. The combination of two leaves, each consisting of parallel bars or wires arranged at intervals and connected at their ends, and feet, each formed in two parts, the lower of which parts supports said leaves, and the upper of which parts forms a clamp and is adapted to be secured to said lower part, said feet being adapted to embrace the connecting parts of said leaves between the upper and lower parts of said feet, as and for the purpose specified.

378,693. VELOCIPEDE. ERNST G. LATTA, Friendship, N. Y., assignor to the Pope Manufacturing Company, Portland, Me. Filed Sept. 17, 1887. Serial No. 249,915. (No model.)



Claim.—1. The combination, with the steering-head and the spindle provided with a gear-segment, of a steering-post centered above and between the spindle and its gear-segment and provided with a gear-segment meshing with the gear-segment of the spindle, substantially as set forth.

2. In a velocipede, a main frame composed of an upright tube, C, upper and lower forks, B B', and a steering-head, D, secured with its upper end to the lower end of the upright tube C and with its lower end to the front end of the lower fork, B', substantially as set forth.

3. The combination, with the main frame and the driving and steering wheels, of a steering-head and spindle located at or near the center of the machine and inclined forwardly, substantially as set forth.

4. The combination, with the upright tube C and the steering-post F, arranged within the same, of the saddle-supporting tube G, adjustably secured in the tube C and surrounding the steering-post F, substantially as set forth.

5. The combination, with the upright tube C and the saddle-supporting tube G, arranged adjustably therein, of the steering-post F, passing through the tubes C G, and handle-bars J, adjustably secured to the upper end of the steering-post, substantially as set forth.

6. The combination, with the steering-post, of a handle-bar support attached to the steering-post, handle-bars pivoted to said support and made laterally movable on their pivot toward and from the steering-post, and a clamp whereby the handle-bars are secured against the steering-post in position for use, substantially as set forth.

7. The combination, with the handle-bars and the steering-post F, provided with a dovetail groove, f^3, in its front side, of an adjustable block, J, to which the inner ends of the handle-bars are pivoted, and provided with a dovetail tenon or feather arranged in the groove f^3, and a clamping-bolt, k, connecting the handle-bars in rear of the steering-post, substantially as set forth.

8. In a tricycle, the combination, with two wheels, of two axle-sections, each carrying one of said wheels, a support receiving the inner ends of said sections and permitting longitudinal movement of the sections with reference to each other, and fastenings whereby said sections are held in position in said support, substantially as set forth.

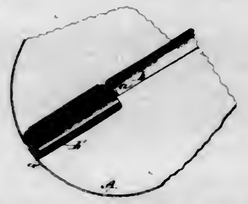
9. In a tricycle, the combination, with two wheels, of two axle-sections, each carrying one of said wheels, a coupling or support provided with two openings, one above the other, for the reception of the inner ends of said sections, and fastenings whereby the sections are adjustably secured in said openings, substantially as set forth.

10. In a tricycle, the combination, with two wheels, of an axle or transverse frame connecting said wheels, and composed of two sections provided with spiral grooves or ways, and a coupling connecting the inner ends of said sections and provided with pins or studs engaging in said grooves or ways, substantially as set forth.

11. In a tricycle, the combination, with two wheels, of an axle or transverse connecting-frame having bent outer ends to which the wheels are attached, and a support in which the axle or frame can be turned for reversing the bent axle ends, thereby reducing or increasing the length of the wheel-base, substantially as set forth.

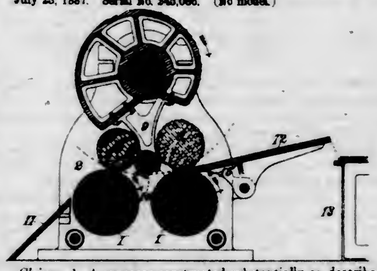
12. In a tricycle, the combination, with two wheels, of an axle or transverse supporting-frame provided with two sections, each carrying one of said wheels and having bent outer ends, and a support in which said sections can be turned and also adjusted lengthwise with reference to each other, whereby the length and width of the wheel-base can be increased or reduced, substantially as set forth.

378,694. SHEET-METAL PIPE. ALBERT J. LINDEMANN and CHAS. LINDEMANN, Milwaukee, Wis. Filed Sept. 3, 1883. Serial No. 105,408. (No model.)



Claim.—A sheet-metal pipe-section having interlocked flanges a b and a' b', separated by a transverse cut, the flanges a b bent out of a radial, and the flanges a' b' bent down upon the body of the pipe-section at an obtuse angle to said flanges a b, as set forth.

378,695. SQUEEZER. GUSTAV LINDENTHAL, Pittsburg, Pa. Filed July 23, 1887. Serial No. 245,066. (No model.)



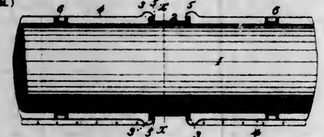
Claim.—1. A squeezer constructed substantially as described, in combination with a rotating arm arranged to engage the completed bloom and remove the same from the squeezer, substantially as set forth.

2. A squeezer constructed substantially as described, in combination with arms secured to the cam or eccentric and provided with a roller at their lower ends, substantially as set forth.

3. A squeezer constructed substantially as described, in combination with a rotating arm and a pivoted table, said parts being arranged to automatically deliver a ball to the squeezer and discharge the bloom therefrom, substantially as set forth.

4. A squeezer constructed substantially as described, in combination with arms secured to the cam or eccentric of the squeezer, a roller mounted in the lower ends of the arms, a guard-plate extending along behind the roller, and a pivoted table, substantially as set forth.

378,696. **CABLE FOR SUSPENSION-BRIDGES.** GUSTAV LINDENTHAL, Pittsburg, Pa. Filed Nov. 23, 1887. Serial No. 255,976. (No model.)



Claim.—1. The combination of a bridge-cable and a sheet-metal mantle forming a continuous cover around the cable, substantially as set forth.

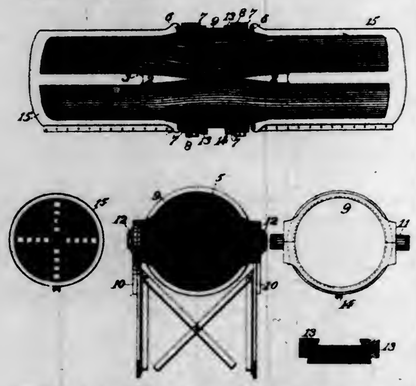
2. The combination of a bridge-cable and a mantle or covering surrounding the same, but separated therefrom for the purpose of forming an air-space, substantially as set forth.

3. The combination of a bridge-cable, sleeves for suspender-rings provided with flanges, and a mantle surrounding the cable and provided with flanges engaging the flanges of the sleeves, substantially as set forth.

4. The combination of a bridge-cable formed in sections and a mantle formed of metal sheets surrounding said cable, substantially as set forth.

5. The combination of a bridge-cable, a flanged sleeve for the suspender-ring, a mantle having flanged ends engaging the sleeve, and a ring or collar for supporting the mantle intermediate between the sleeves, substantially as set forth.

378,697. **SUSPENDER-CONNECTION FOR BRIDGE-CABLES.** GUSTAV LINDENTHAL, Pittsburg, Pa. Filed Nov. 23, 1887. Serial No. 255,977. (No model.)



Claim.—1. A cable for suspension-bridges, in combination with expansion-blocks forming a concave seat between them, a bearing-sleeve secured in said seat, and trunnion-rings mounted on the bearing-sleeve, substantially as set forth.

2. A cable for suspension-bridges, in combination with a bearing-sleeve secured as against movement on said cable, and a trunnion ring mounted on the bearing-sleeve, substantially as set forth.

3. A cable for suspension-bridges, in combination with a bearing-sleeve provided with retaining-ribs, and wire wound between said ribs for the purpose of holding the sleeve in place, substantially as set forth.

4. A cable for suspension-bridges, in combination with a bearing-sleeve provided with abutments near each edge, a trunnion-ring mounted on said sleeve, and means interposed between the abutments and ring for holding the latter in place, substantially as set forth.

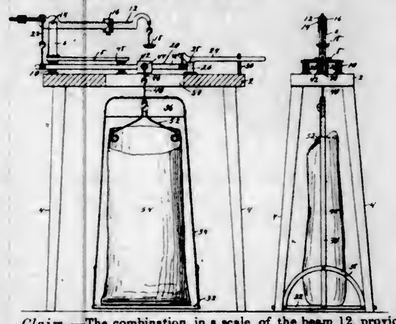
5. A cable for suspension-bridges, in combination with a bearing-sleeve provided with abutments, a trunnion-ring mounted on said sleeve, and wedge-rings interposed between the abutments and trunnion-ring for adjusting and holding the latter in place, substantially as set forth.

6. The combination of a cable formed of a number of wires, angle-pieces dividing said cable into sections, and a wire-serving for securing said sections together, substantially as set forth.

7. The combination of a cable formed of a number of wires, angle-pieces dividing said cable into sections, wedges oppositely arranged between said sections, and a wire-serving, substantially as set forth.

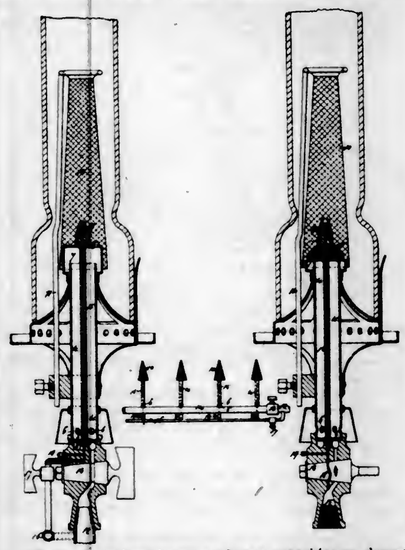
8. A bridge-cable consisting of a number of straight and parallel wires arranged in independent sections, substantially as set forth.

378,698. **WEIGHING-SCALE.** MARSHALL B. LLOYD, Orvaller, assignor of one-fourth to John Conmee, Walsh County, Dak. Filed Oct. 17, 1887. Serial No. 252,541. (No model.)



Claim.—The combination, in a scale, of the beam 12, provided with the series of graduations, the beam 20, connected with said beam 12, and provided with the notches 48, corresponding to the graduations on the beam 12, and the slide 42, mounted on said beam 20, and supporting a suitable platform, whereby said slide may be arranged over either of said notches, and the weight will be indicated by the corresponding graduation on the beam 12.

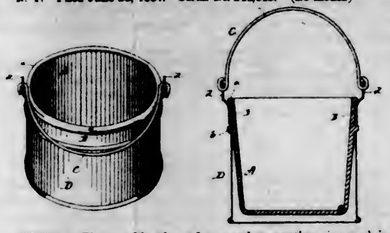
378,699. **INCANDESCENT GAS-BURNER.** JAMES MACTEAR, Westminster, County of Middlesex, England. Filed May 19, 1887. Serial No. 238,744. (No model.) Patented in England Apr. 12, 1887, No. 5,322.



Claim.—1. An incandescent gas-burner comprising an elongated mixing-chamber having gas and air inlets and having an outlet near its top, a refractory cap, 10, over the outlet, a hollow cone, 9, at the center of the outlet, and a gas-supply tube, 15, passing centrally through the chamber and burner and cone, all substantially as described.

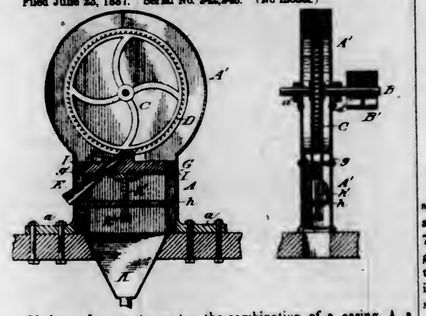
2. An incandescent gas-burner comprising an elongated mixing-chamber, 4, having gas and air inlets and having an outlet near its top, a refractory cap, 10, over the outlet, hollow cone 9 at the center of the outlet, a gas-supply tube, 15, passing centrally through the chamber 4 and burner and cone, and a cock controlling the gas-inlets for both mixing-chamber and tube 15, all substantially as described.

378,700. **CULINARY VESSEL.** HENRY A. MARBURG, New York, N. Y. Filed June 20, 1887. Serial No. 241,815. (No model.)



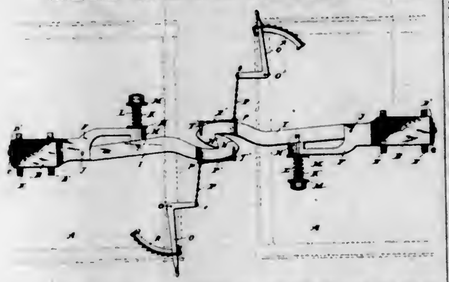
Claim.—The combination of a vessel presenting a porcelain or vitreous surface, constructed with an annular bead around its upper edge and with an angular projecting shoulder below said bead, the said vessel diminishing in diameter below said shoulder, combined with a metallic band around said vessel between said bead and shoulder, a bail hung to said band, and a metal skirt around the vessel below said shoulder, the upper edge of the skirt closed over said shoulder, substantially as described.

378,701. **HYDRAULIC MOTOR.** GEORGE W. MASON, Sharon, Pa. Filed June 23, 1887. Serial No. 242,943. (No model.)



Claim.—In a water-motor, the combination of a casing, A, a water-wheel within said casing, a frame below said water-wheel, a sliding shoe carried by said frame, an adjusting-screw for regulating the position of said shoe, and springs interposed between said shoe and frame, substantially as described.

378,702. **CAR-COUPLING.** JOHN B. MCCRAY and DAVID R. SHADE Corbin, Kans. Filed Oct. 11, 1887. Serial No. 252,049. (No model.)

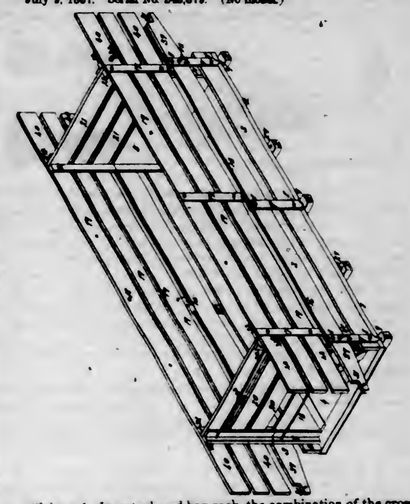


Claim.—1. In a car-coupling, the combination, with the spring-casing having a slotted curved bar provided with a perforated head, of a draw-bar pivoted to the slotted portion of the curved bar and connected to the head of said curved bar by means of a spring-bolt, as shown and described, and for the purposes set forth.

2. In a car-coupling, the combination, with the casing having a curved bar provided with a slot at the intersection of said casing and bar, said bar also provided at its outer end with a perforated head, of a draw-bar pivoted in the slot of the curved bar and connected at the head thereof by means of a headed bolt and a coiled spring on said bolt, as shown and described, and for the purposes set forth.

3. In a car-coupling, the combination, with the casing having a curved bar provided with a slot and head, a spring-bolt located in said casing, said bolt having a head located and operating in the slot of the curved bar, of a draw-bar pivoted to the slot and head of the curved bar, said head of said curved bar provided with a spring, and a lever having a chain connected to the hook end of the draw-bar at two different points, as shown and described.

378,703. **WAGON-RACK.** JOHN W. MCMASTER, Sparta, Ill. Filed July 9, 1887. Serial No. 243,879. (No model.)



Claim.—1. In a stock and hay rack, the combination of the cross-sills that carry the bottom 1 with the side-boards 3 and end-gates 4 5 and cross-tie rods 13 of the lower bed, the same being bound by straps 7, said straps, in conjunction with straps 17 and their connecting elongated bolts 16, forming strap-hinges, the upper straps of which carry the side-boards or raves 19 of the upper rack, which, when elevated, in conjunction with the end-gates 20 and 21 and cross-tie rods 23, constitutes a stock-rack for hauling stock, &c., substantially as described, and for the purpose set forth.

2. In a stock and hay rack, the combination of the lower wagon-bed bound with straps 7, said straps, in conjunction with straps 17 and their connecting elongated bolts, forming strap-hinges, the upper straps of which carry the raves of the upper rack, which provides the means of unfolding the upper section of the vertical sides or raves and turning them down onto the cross-tree bearers 30, with their angle-irons 33, and the bracket-braces 25, arranged to widen out the rack for hauling hay, &c., and the ladder and vertical pins that ascend from the cross-tree bearers, all substantially as described, and for the purpose set forth.

3. In a stock and hay rack, the combination of the wagon-bed, the elongated pintle-bolts and strap-hinges, the raves that are secured by said bolts and hinges to the wagon-bed, whereby they are adapted to be swung up in a vertical position, the end-gates and cross-tie rods constituting therewith a stock-rack, the cross-tree bearers at the ends of the wagon-body, and bracket-braces onto which the raves are adapted to rest to constitute a hay-rack, or by removal of said raves and their attachments to constitute a grain-rack, substantially as set forth.

4. In a stock and hay rack, the combination of the skeleton wagon-bed, longitudinal extensions 39 to its upper side-boards, cross-tree bearers 30, seated on said extensions, and the longitudinal extensions 40, of rave-boards that rest on said bearers to increase the holding capacity of the rack when the raves are extended to form a hay-rack, substantially as described, and for the purpose set forth.

378,704. **BENCH-PLANE.** CHARLES L. MEAD, New York, N. Y., and JUSTUS A. TRAUT, New Britain, Conn. Filed Aug. 24, 1885. Serial No. 175,142. (No model.)

378,704.



Claim.—In a bench-plane, the laterally-adjusting lever pivoted to the frog just underneath the cutter and connected directly with the cap-iron by a pin-and-slot connection, the pin of which extends through the slot in the cutter, but does not engage the cutter, substantially as described, and for the purpose specified.

378,705. RUFFLING ATTACHMENT FOR SEWING-MACHINES. THOMAS L. MELOSH, Chillicothe, Ohio. Filed May 17, 1883. Serial No. 95,189. (Model.)



Claim.—1. In a ruffling attachment, the combination, with the main plate having a longitudinal slot, of a slide secured to the under side of said plate and having an upturned portion extending through said slot, to which the ruffling-blade is secured, and a horizontal arm pivoted beneath the main plate and having connection with said slide and the shuttle movement, as set forth.

2. A ruffling attachment for sewing-machines having a main plate adapted to be secured in the shuttle-slide opening, a lug extending downwardly and outwardly therefrom, and a lever pivoted horizontally to the said lug and adapted to receive motion from the shuttle-arm and transmit it to a slotted plate on the under side of the main plate, as set forth.

3. A ruffling attachment for sewing-machines consisting of a main plate, A, downwardly and outwardly projecting lug B, lever C, having arm *c*, and the slide D, situated beneath and extending upward and through a slot in the main plate, for operating a ruffling-blade, as set forth.

4. A ruffling attachment for sewing-machines, as described, with a main plate having a slide bearing the ruffling-blade, the said slide moving upon the upper and lower surfaces and in a guide-slot of the main plate, substantially as described.

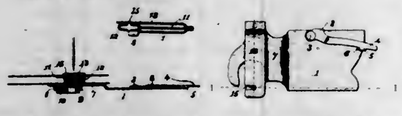
5. The ruffling-blade having an opening in the side as a guide for a re-enforcing piece, as set forth.

6. In a ruffling attachment for sewing-machines, the main plate having a slot, as described, and a slide, D, carrying the ruffling-blade and extending through said slot and resting and sliding upon both faces of the plate, in combination with the presser-foot H, substantially as herein described.

7. In a ruffling attachment for sewing-machines, a presser-foot having guide-openings in its opposite sides, in combination with a ruffling-blade having an opening in its side, as and for the purpose set forth.

8. In a ruffling attachment for sewing-machines, a presser-foot having openings in its opposite sides forming guides for the goods to be operated on, and provided with a flexible plate attached to the under surface of the presser-foot between the guide-openings for separating the goods, as described.

378,706. HEMSTITCHING ATTACHMENT FOR SEWING-MACHINES. THOMAS L. MELOSH, Chillicothe, Ohio. Filed Mar. 10, 1885. Serial No. 158,327. (Model.)



Claim.—1. In a hem-stitcher, the combination, with the feed-dog of the sewing-machine engaging the under strip of cloth, of a cloth-clamp consisting of a pair of arms placed one above the other, and means for rigidly connecting said clamp with the said feed-dog, substantially as set forth.

2. In a hem-stitcher, the combination, with a base-plate having means for connecting it with the feed-dog, of a cloth-clamp consisting of a pair of spring-arms fixed to said plate one above the other, the lower one of the springs constituting said clamp bearing directly upon the upper surface of the feed-dog, substantially as set forth.

3. In a hem-stitcher, the combination, with the base-plate, of a cloth-clamp consisting of a pair of spring-arms one above the other, the lower one of which is provided with an enlargement or head upon which the upper one bears, substantially as set forth.

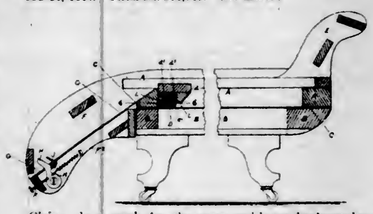
4. In a hem-stitcher, the combination, with the movable plate 1, having lugs 8 9, adapted to be engaged by the feed-dog, of the spring-arm 11, secured to the plate 1 and having the enlarged head 12, adapted to bear upon the feed-dog, and the spring-arm 13, also secured to said plate 1 and bearing upon the enlarged head 12 of the arm 11, said arms being provided with slots for the passage of the needle, substantially as set forth.

378,707. BENDING ELECTROTYPE-PLATES. JOHN R. MILLER and JAMES DALE, Chicago, Ill.; said Miller assignor of one-half his right to said Dale. Filed June 10, 1887. Serial No. 240,867. (No model.)



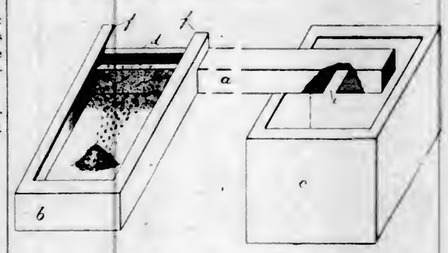
Claim.—The method of bending an electrotype or stereotype plate to fit it to the form-cylinder of a printing-press, which consists in making it greater in length or width at opposite sides of the form upon it than the form itself, passing it between bending-rollers, and then removing the tangential edges produced by the bending, substantially as described.

378,708. COUCH-BED. JOSEPH P. MILLER, Boston, Mass. Filed Oct. 11, 1887. Serial No. 251,985. (No model.)



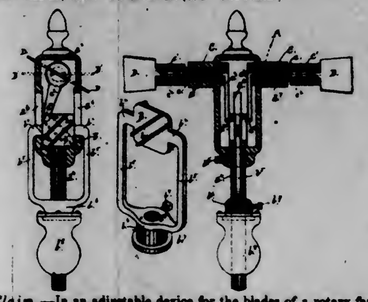
Claim.—In a couch, &c., the upper and lower horizontal seat-sections, A B, hinged together at one side, a head-rest, E, at o end and in continuation of the upper seat-section, to serve as a head-rest to the couch, with its seat-sections closed, a head-rest, F F^2, at the opposite end of the upper seat-section, made in sections, one, F, in continuation of the upper seat-section, and the other, F^2, hinged at one side to section F, to be closed thereon and opened therefrom, and the two together when opened to be supported and to act as a head-rest for the width of the opened seat-sections A B, in combination with a leg, D D^3, hinged end to end and mounted in a guideway, L, of the upper seat-section, to be slid in and out thereof, substantially as described, for the purpose specified.

378,709. ANT-TRAP. MARSHALL C. MILLER, Ennis, Tex. Filed Dec. 29, 1886. Serial No. 222,935. (Model.)



Claim.—In an ant-trap, the combination of a tube having a longitudinal slot in its top at one end and a transverse slot in the bottom near the other end, the top of the tube on each side of the longitudinal slot being bent downward, a pen secured to the end of the tube having the longitudinal slot, a portion of one side piece of the pen forming an end for the tube and the other side piece being cut away and secured to the tube, and a receptacle under the end of the tube having the transverse slot, the upper edges of the pen and of the receptacle being bent or flared inward.

378,710. ROTARY FAN. WILLIAM J. MIMBLE, Lancaster, Pa. Filed Jan. 22, 1887. Serial No. 225,094. (No model.)



Claim.—In an adjustable device for the blades of a rotary fan, the combination of the following elements: the sliding cross-head B, provided on its upper side with angular guide-slots formed by the ribs *b b*, and arranged in opposite directions from each other, and its lower end connected with a swiveling handle, all as set forth, and the relatively-fixed body A, adapted to inclose the working parts of the device and fit the end of the driving-shaft, as set forth, and provided with hubs *a a'* on its sides forming bearings for the shafts C C, said shafts C C having blades D D attached, the inner ends of said shafts being provided with crank-levers c^2 c^3, and said crank-levers with pins c^4 c^4, as described, which are adapted to engage in the angular slots of the vertically-sliding cross-head aforesaid, whereby when this cross-head is raised or lowered by said swivel-handle said pins c^4 c^4 are adapted to travel in said angular slots from one edge to the other of said cross-head, as set forth, partially rotating the shafts C C, thus changing the inclination of the blades D D, substantially as set forth, and for the purpose described.

378,711. CLOTHES-POUNDER. MILFORD A. NELSON, Windsor, Mo. Filed Oct. 14, 1887. Serial No. 252,322. (No model.)



Claim.—1. In a clothes-pounder, the combination of the outer lower conical shell having top apertures, the inverted conical bottom cap mounted within the said outer shell above the bottom thereof, the peripheral air-tubes, the centrally-mounted socket for the handle, and the top cap having semicircular apertures out of alignment with the apertures in the outer shell, substantially as described.

2. In a clothes-pounder, the combination of the outer conical shell having top apertures, the bottom inverted conical cap mounted within said shell and above the base thereof, and having peripheral semicircular apertures therein, the semicircular air-tubes mounted against the inner surface of the outer shell, extending to near the bottom thereof at their lower ends, and secured at their upper ends in the semicircular apertures in the bottom cap, the centrally-mounted socket extending up through the outer shell and resting at its lower end in the apex of the bottom conical cap and adapted to receive the handle of the pounder, and the top cap, of conical cylindrical configuration, mounted over the top of the outer shell and around the socket, and having semicircular apertures therein which are out of alignment with the apertures in the outer shell to prevent egress of water from the pounder at this point, substantially as described.

378,712. MANUFACTURE OF SASH-BALANCES. STEPHEN PALMER, Lansingburg, N. Y. Filed Nov. 25, 1887. Serial No. 256,084. (No model.)



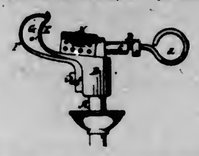
Claim.—1. The method herein described of making sash-balance cases, which consists in cutting blanks from ordinary flat sheet metal of commerce, swaging the same into forms or shapes consisting of a series of connected semi-tubular swellings, placing one series of semi-tubular swellings into juxtaposition with another in a position such that one series supplements the other and unites with it to form a sash-balance case composed of connected tubular swells, and then securing the parts in the position described, substantially as described, and for the purposes set forth.

2. The method herein described of making sash-balance cases, which consists in cutting blanks from ordinary flat sheet metal of commerce, swaging the same into forms or shapes consisting of a series of connected semi-tubular swellings, and at the same time forming in the metal beads to produce stiffening-ribs, placing one series of semi-tubular swellings into juxtaposition with another in a position such that one series supplements the other and unites with it to form a sash-balance case composed of connected tubular swells, and then securing the parts in the position described, substantially as described, and for the purposes set forth.

3. The method herein described of making sash-balances, which consists in cutting blanks from ordinary flat sheet metal of commerce, swaging the same into forms or shapes consisting of a series of connected semi-tubular swellings, and at the same time forming in the metal beads to produce stiffening-ribs, placing one series of semi-tubular swellings into juxtaposition with another in a position such that one series supplements the other and unites with it to form a sash-balance case composed of connected tubular swells, and then, after inserting the axle, securing the parts in the position described, substantially as described, and for the purposes set forth.

4. The method herein described, of making sash-balance cases, which consists in cutting blanks from ordinary flat sheet metal of commerce and forming a series of marking-spurs along one edge of the blanks, swaging the same into forms or shapes consisting of a series of connected semi-tubular swellings, the marking-spurs being located centrally of the semi-tubular swellings, placing one series of semi-tubular swellings into juxtaposition with another in a position such that one series supplements the other and unites with it to form a sash-balance case composed of connected tubular swells, and then securing the parts in the position described, substantially as described, and for the purposes set forth.

378,718. VAPOR-BURNER. WILLIAM B. PARK, Philadelphia, Pa. Filed May 5, 1887. Serial No. 237,189. (No model.)



Claim.—1. In a plate vapor-burner, the combination of the vapor-nozzle with a spreader-plate perforated to permit a portion of the vapor to pass through the same and a supplementary deflecting-plate located beyond the said spreader-plate in the direction of the jet issuing from the nozzle, the said plates forming a heating-chamber, by which the spreader-plate is kept in a highly-heated condition, substantially as described.

2. The combination, in a plate vapor-burner, of the spreader-plate and nozzle with a finely-perforated and open-sided jacket covering the nozzle and projecting in advance and in the rear of the same, all substantially as and for the purpose set forth.

3. The combination of the nozzle and spreader-plate of the vapor-burner with a deflecting-plate located beyond the spreader-plate in the direction of the jet, forming with the spreader-plate a heating-chamber, the said deflecting-plate being detachably secured in position, all substantially as specified.

378,714. COUPLING FOR VEHICLES. CHARLES M. PARKER, Lincoln, Nebr. Filed Apr. 30, 1886. Serial No. 164,054. (No model.)

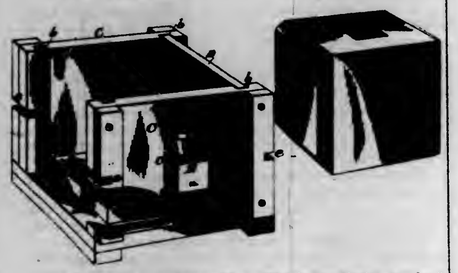


Claim.—The herein-described reach-coupling, consisting of two forks or yokes, A B, which are secured at their widened ends to the

axles and formed with flattened disks at their inner opposing reduced ends, and provided with apertures which receive a joining pivot-bolt, whereby the forward axle will be allowed to turn from the said central point of pivotal union, substantially as described.

378,715. MANUFACTURE OF ARTIFICIAL-STONE BLOCKS.

JAMES S. PEIRCE, Minneapolis, Minn. Filed June 8, 1885. Serial No. 168,056. (No model.)

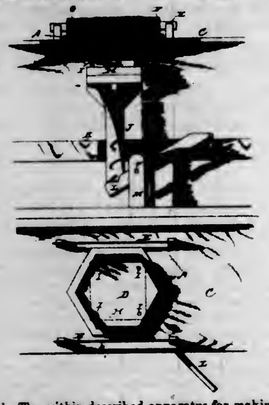


Claim.—1. The mold for making artificial-stone blocks, composed of removable sides and base, strips *a*, and a removable core to extend through opposite sides of the mold and be removed without removal of the sides, substantially as described.

2. The combination of the base, the side pieces formed with openings opposite to each other and having ways or grooves formed in their inner faces, the end pieces fitting into said ways, and the removable core passed through the openings in the side pieces and secured by pins passing through their ends, substantially as described.

378,716. MEANS FOR MOLDING ARTIFICIAL-STONE BLOCKS OR TILES FOR PAVING AND OTHER PURPOSES.

JAMES S. PEIRCE, Savannah, Ga. Filed June 6, 1887. Serial No. 240,396. (No model.)



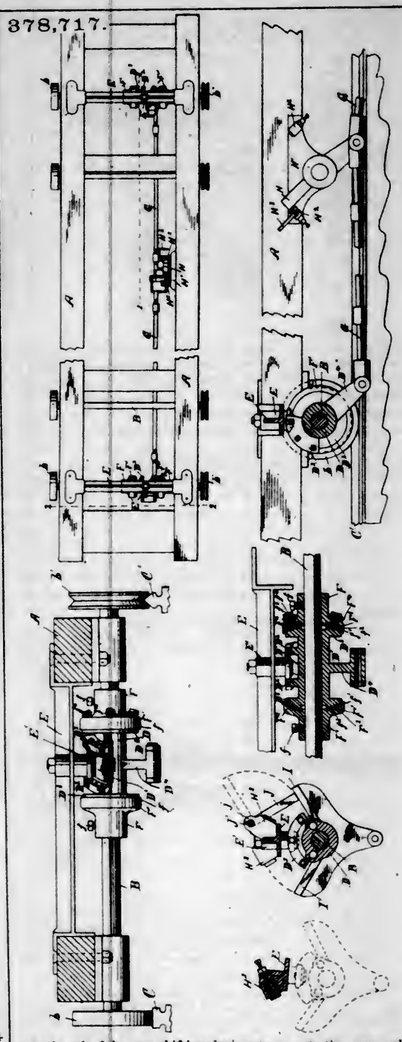
Claim.—1. The within-described apparatus for making artificial-stone tiles, the same comprising a mold, A, and a cover, F, to drop around and be lifted from the same, and provided with an inwardly-projecting flange to fit over the top edge of the mold, substantially as and for the purposes described.

2. The within-described apparatus for making artificial-stone tiles, the same comprising a mold, A, a cover, F, to drop around and be lifted from the same, a false bottom to the mold adapted to be removed therefrom, and means for lifting said false bottom, substantially as and for the purposes described.

3. The within-described apparatus for making artificial-stone tiles, the same comprising a mold, A, and straight-edges E on opposite sides of the mold, substantially as and for the purposes set forth.

378,717. OFFSET MECHANISM FOR SAW-MILL CARRIAGES.

DE WITT C. PRESCOTT, Marinette, Wis. Filed Nov. 9, 1887. Serial No. 254,707. (No model.)



Claim.—1. In a saw-mill carriage, the combination, with the truck-axles, of the carriage-frame capable of lateral movement on the axles, one or more cam-shifting devices mounted loosely on the axles, corresponding projections connected to the carriage-frame and engaging said cam-shifting devices, and friction-collars secured on the axles at each end of the cam-shifting devices to operate the same, substantially as and for the purposes specified.

2. In a saw-mill carriage, the combination, with the truck-axles, of the carriage-frame capable of lateral movement on the axles, one or more cam-shifting devices mounted loosely on the axles, corresponding projections on the carriage engaging said cam-shifting devices, stops to limit the motion of the cam-shifting devices, and friction-collars secured on the axles at each end of the cam-shifting devices to operate the same, substantially as and for the purposes specified.

3. In a saw-mill carriage, the combination, with the truck-axles and the carriage-frame capable of lateral motion thereon and provided with a projection, of a sleeve mounted loosely on one or more of the axles and provided with a cam-groove with which the said projection engages, friction-disks on the ends of the said sleeve, and collars secured on the axle at each end of the sleeve and provided with friction-disks to bear against the corresponding disks on the sleeve, substantially as and for the purposes specified.

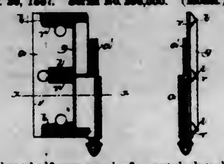
4. The combination, with the truck-axle B and the carriage-frame laterally movable thereon and provided with a suitable projection, of the sleeve D, mounted loosely on the axle and provided with a cam-groove to receive the projection, the end friction-disks, D^2, the collars

F, secured on said axle at each end of the sleeve and having flanged disks F', and the washers F^2, arranged between the said disks, substantially as and for the purposes specified.

5. The combination, with the axle B, sleeve D, with friction-disks D^2, and collars F, with friction-disks F', of the washers F^2, the annulus F^3, arranged behind one of said washers, and the springs f^3, of adjustable tension, for regulating the friction, substantially as and for the purposes specified.

378,718. BUTT-HINGE.

EDWIN PRESCOTT, Arlington, and WARREN R. LOCKE, West Somerville, Mass.; said Locke assignor to said Prescott. Filed Apr. 20, 1887. Serial No. 236,555. (Model.)



Claim.—1. A butt-half composed of a metal plate having two or more ribs surmounted by marking lips or projections *l*, to cut and indent the wood sufficiently to form a guiding-groove for the point of a bit, substantially as described.

2. A butt-half composed of a metal plate recessed or chambered to leave a shoulder parallel to the longitudinal edge of the butt and having transverse ribs *r*, substantially as described.

378,719. COMBINED BLOTTER AND PEN-WIPER.

EDWIN PRIME, Philadelphia, Pa. Filed Nov. 17, 1887. Serial No. 255,408. (No model.)



Claim.—1. As an improved article of manufacture, a combined blotter and pen-wiper, which consists of one or more layers of blotting-paper or similar absorbent substance, one or more layers of cloth or similar absorbent substance, and one or more layers of cloth, paper, card-board, or like material, cut to such shape and so colored or marked as to represent some object of interest or article of trade, all said layers being by suitable means fastened together at some point or points, substantially as set forth.

2. In a blotter and pen-wiper, a design-piece which consists of a piece or strip of cloth, paper, card-board, or like material cut to such shape that its outlines correspond to the outlines of some object of interest or some article of trade, and of such color and so marked on the side presented to view as to better represent such object or article, substantially as set forth.

3. In a blotter and pen-wiper, the combination of design-piece C, with flap B, and pad A, substantially as set forth.

4. In a blotter and pen-wiper, the combination of flap B, with the piece C, for advertising, and pad A, substantially as set forth.

378,720. EXCAVATOR.

BENJAMIN K. REED, Buena Vista, Colo. Filed May 18, 1887. Serial No. 238,671. (No model.)

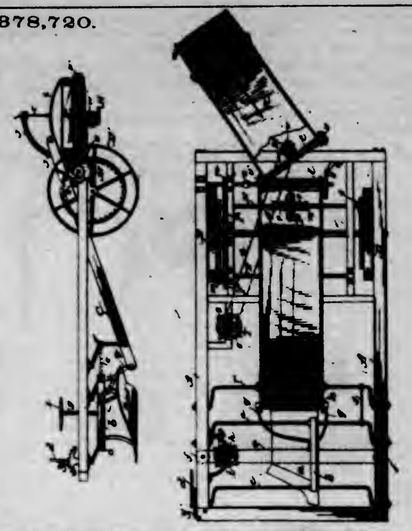
Claim.—1. The combination, in an excavator, of the plow, the carrier for conveying the material to the rear, and a parallel-bar mechanism for simultaneously raising or lowering the plow and carrier, substantially as described.

2. The combination, in an excavator, of the plow, the carrier for conveying the material to the rear, means for simultaneously raising or lowering the plow and carrier, and means for shifting the carrier from side to side in unison with the movement of the plow from right to left, substantially as described.

3. In an excavator, the plow, the eccentric-bars *c e*, supporting the plow and adapted to elevate or depress the same, and the chain for shifting the plow to right or left, in combination with the carrier and intermediate means connected to the plow-beam and carrier, whereby the carrier is adapted to move correspondingly with the movement of the plow, substantially as described.

4. In combination with the carrier C, the supplemental carrier K, pivotally supported at the rear end thereof, whereby it is adapted to be shifted from side to side, and mechanism at either end of the roller-shaft of said carrier adapted to engage with suitable driving-gear, whereby the material is conveyed to the side of the machine, substantially as described.

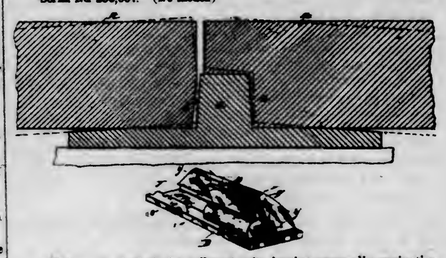
5. In combination with the plow and the carrier C, the supplemental carrier K, and means operated by the hand-wheel 5 for shifting the said supplemental carrier to the right or left, and the rope 1, fastened to the bow-shaped piece *z* and passing over a pulley on the crane *j j*, said rope being adapted to raise or lower the carrier K, substantially as described.



6. In combination with the main supporting-wheel D, having the internal gear-teeth, the shaft M, meshing with said internal gears, said shaft carrying the double-beveled wheel P, so that when the carrier K is shifted to either side of the machine the small bevel-wheels *v v* on the roller-shaft will mesh with the wheel P, and thus movement be imparted to the carrier K to convey the material to the side of the machine.

378,721. MEANS FOR PREVENTING THE CREEPING OF RAILS AND RAIL-JOINTS.

JAMES J. REILLY, Spokane Falls, Wash., assignor of one-fourth to C. W. Toner, San Francisco, Cal. Filed May 21, 1887. Serial No. 238,007. (No model.)



Claim.—1. A chair for railroad-rails, having upwardly-projecting clamping-pieces and a downwardly and backwardly inclined bearing-face at each end, substantially as specified.

2. The combination, in a rail-joint, of the chair provided with an abutment, as at *d*, tapering as shown, with a rail having a corresponding incline at its end, for the purpose set forth.

3. In a rail-joint, the combination, with a railroad-rail provided at one of its ends with an angular "cut-out," and its other end made angular for a portion of its height in cross-section, of a chair having a central abutting piece having corresponding angles, as set forth.

4. A railroad-chair having a guide-seat for the rail, an abutting central tongue, tapering as described, two upwardly holding and binding braces, and means for securing the chair to the cross-ties, as shown.

5. A railroad-chair having a guide-seat for the rails, upwardly holding and binding braces united by a central tongue-piece, a groove for the insertion of the rail at one end, and an opening in the other end for the side insertion of the rail, as set forth.

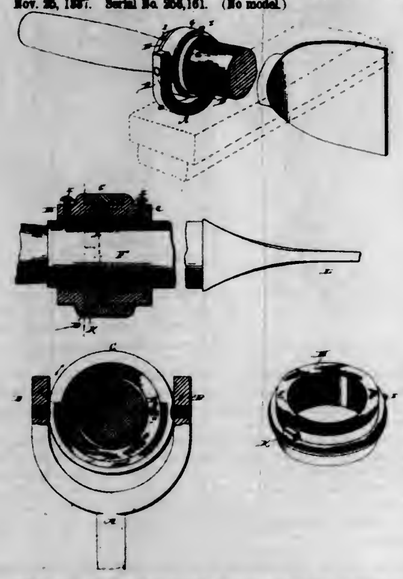
6. A chair for rail-joints having a guide-seat for the rails, an abutting central tongue, tapering as described, upwardly-projecting binding-braces, and fulcra on its ends, substantially as described.

7. A rail provided with a cut-out at one of its ends, a portion of the web and base having an angular face, the cut-out being adapted

to receive and conform to the shape of an abutting piece in a chair, and the other end of the rail having a downwardly-inclined face for a portion of its height, substantially as described.

8. The herein-described method of correcting the creeping of railway-tracks, which consists in laying the rails so as to have a limited free longitudinal movement and causing the rails individually to be pushed slightly back by the wheels in passing off them, substantially as set forth.

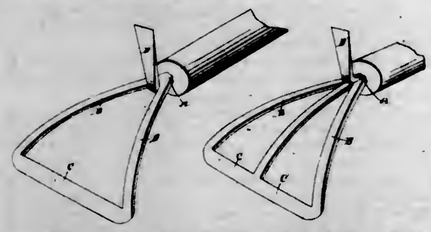
378,722. OAR-LOCK. WILLIAM H. RICE, Addison, N. Y. Filed Nov. 26, 1887. Serial No. 256,161. (No model.)



Claim.—1. In an oar-lock, the combination of the pivoted ring C, having a slot, D, in its inner edge, the oar passing through the ring, the outer collar, G, embracing and secured to the oar and bearing against the outer side of the ring C, and the inner collar, H, secured rigidly to the oar and bearing against the inner side of the ring, and having the stop or stud K to operate in the slot D and limit the axial rotation of the oar, substantially as and for the purpose specified.

2. In an oar-lock, the combination, with the oar, of the swivel A, the ring C, pivoted between the arms thereof and having the semicircular slot D in its inner edge, the outer collar, G, embracing the oar and having the flange *g* fitting in the ring, the inner collar, H, embracing the oar and having the flange *h* fitting in the ring and provided with a stop or stud, K, to operate in the slot D, and the set-screws I I in the collars to secure them rigidly to the oar, substantially as and for the purpose specified.

378,723. HOE. ROBERT S. RINKER, Rinkerton, Va. Filed July 26, 1887. Serial No. 245,370. (No model.)



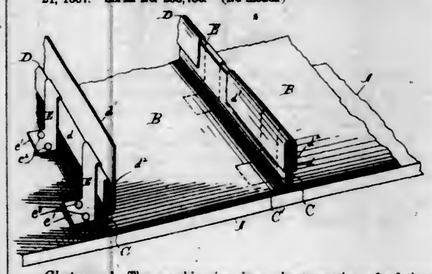
Claim.—In a hoe, the combination, with the shank A, diverging arms B B at the free end thereof, and the transverse blade C at the extremities of the said arms, of the blade D, at an angle to the said shank and sharpened at the free edge, substantially as specified.

378,724. REGULATING ATTACHMENT FOR CORN-PLANTERS. WELLER M. ROBINSON, Montpelier, Iowa. Filed Sept. 17, 1887. Serial No. 249,985. (No model.)



Claim.—A regulating attachment for corn-planters, consisting of a crank rock-shaft secured to the rear cross-beam of the planter-frame by eyebolts, connecting-rods pivoted to the crank ends of said shaft, slotted bearing-blocks secured to the forward cross-beam of the planter, standards pivoted to said bearing-blocks and pivoted at their upper ends to the ends of the connecting-rods, the lower ends of said standards formed with stub-axles, wheels mounted on said axles, and a pivoted lever having the spring-catch and the curved rack.

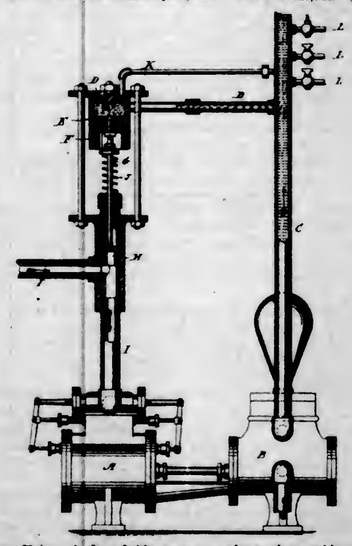
378,725. SHEET-METAL ROOF. FRANK R. SAGENDORPH, Chicago, Ill., assignor of one-half to R. Starr Lloyd, same place. Filed Nov. 21, 1887. Serial No. 255,750. (No model.)



Claim.—1. The combination, in a sheet-metal roof, of sheets having upturned flanges upon their respective sides, a cap having flanges, one wide and one narrow, bent in opposite directions, and having the latter placed over one of the flanges of said sheet, a series of cleats overlapping the narrow flange of the cap thus placed and rigidly secured to the roof, and in turn covered, together with the upturned flange of the adjacent sheet, by the overlapping of the wide flange of said cap, substantially as shown and described.

2. In a standing seam for sheet-metal roofs, the combination of the flanges C C, the cap D, and cleat E, the flange *d* of the cap D being bent over and upon and so as to cover said flanges C C and cleats E and lock said flanges together, substantially as shown and described.

378,726. PRESSURE-REGULATOR FOR PUMPS. PHILIPP SCHUPP, New York, N. Y. Filed Sept. 8, 1887. Serial No. 249,140. (No model.)



Claim.—1. In a fluid-pressure regulator, the combination of the cylinder A, having inlet-pipe I, the pump B, having a delivery-pipe C, provided with outlets L, the chamber E, the pipes D and K, connecting said delivery-pipe and chamber, the plunger F, the valve H, having a stem, *i*, connected with said plunger, and the spring J, substantially as described.

2. In a fluid-pressure regulator, the combination of the cylinder A, having inlet-pipe I, the pump B, having a delivery-pipe, C, the chamber E, the pipes D and K, connecting said delivery-pipe and chamber, the loaded plunger F, and the valve H, substantially as described.

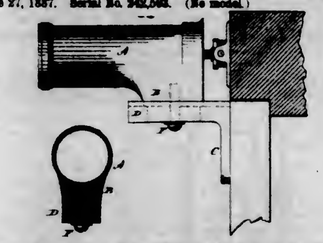
378,727. TOBACCO-HANGER. WALTER J. SCHLYHORF, Columbian Grove, assignor of one-half to Charles M. Hardy, Wattsborough, Va. Filed Aug. 27, 1887. Serial No. 248,089. (No model.)



Claim.—1. A tobacco-hanger consisting of a beveled-sided body-piece provided with a handle and having pins secured thereto, said pins being set at an angle to the lines of the sides of the body-piece and secured to the body-piece alternately on opposite sides, substantially as and for the purposes specified.

2. A tobacco-hanger consisting of a body-piece provided with a wire handle made in the shape of a loop, said body-piece being constructed with beveled sides and made widest at its bottom and provided with upwardly and outwardly inclined pointed pins, substantially as and for the purposes specified.

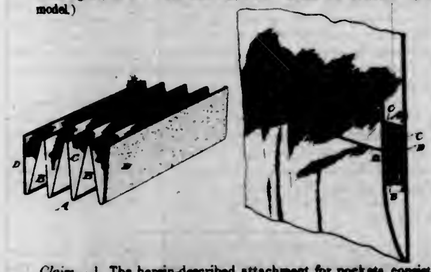
378,728. DOOR-CHECK. JOHN H. SHAW and WILLIAM GILFILLAN, New Haven, Conn., assignors to Sargent & Company, same place. Filed June 27, 1887. Serial No. 242,563. (No model.)



Claim.—1. In a door-check substantially such as described, the combination of the bracket consisting of the attaching-flange C and the outwardly-projecting arm D with the cylinder A, having the projection B therefrom, adapted to set upon the arm D, and a bolt through said arm adapted to adjustably secure the cylinder to the arm, substantially as described.

2. In a door-check substantially such as described, the combination of a bracket by which the cylinder is secured, the said bracket constructed with an arm extending outwardly therefrom increasing in thickness vertically toward its outer end, the bracket constructed with a longitudinal vertical slot, the cylinder of the check adapted to slide upon the upper surface of said arm, and a bolt through the said slot in the arm to engage the cylinder with the arm, substantially as described.

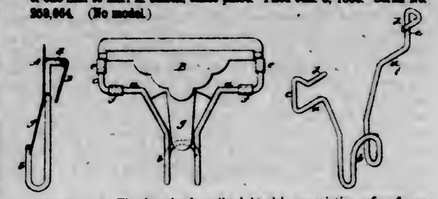
378,729. ATTACHMENT FOR POCKETS. JAMES T. SIMPSON, Washington, D. C. Filed Nov. 22, 1887. Serial No. 255,889. (No model.)



Claim.—1. The herein-described attachment for pockets, consisting of a strip of suitable material having an oleaginous surface and folded so as to form a series of separate compartments, substantially as described.

2. The combination, with a pocket, of a series of partitions arranged within the pocket, said partitions being provided with an oleaginous surface, as and for the purpose described.

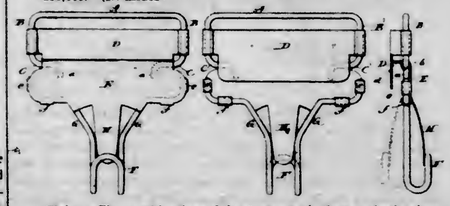
378,730. BUCKLE. DWIGHT L. SMITH, Waterbury, Conn., assignor of one-half to Earl A. Smith, same place. Filed Jan. 3, 1888. Serial No. 259,864. (No model.)



Claim.—1. The herein-described buckle, consisting of a frame made from a single piece of wire bent to form the hook *b*, the lower bar, *a*, and the two ends of the frame, *c c*, with the extreme ends of the wire turned inward from said ends *c c* to form pivots *d d*, combined with a bearing-plate, A, rigidly secured to said frame in a plane parallel with the pivots, but distant therefrom, with a lever, B, hinged upon said pivots, the edge of the lever turned toward and so as to impinge upon said bearing-plate, substantially as described.

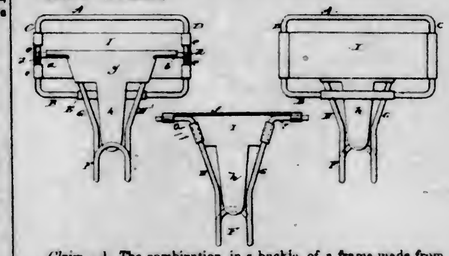
2. In a buckle, the frame made from a single piece of wire bent to form the lower bar, *a*, and the hook *b*, dependent therefrom, and the two ends *c c* of the frame, the wire at the top of the frame upon each end turned at right angles to the plane of the frame, and the extreme ends of the wire then turned again at right angles horizontally toward and into line with each other to form pivots *d d*, said pivots being parallel with but out of the plane of the frame, combined with a bearing-plate, A, rigidly secured to said frame, with a lever, B, hinged to said pivots *d d*, the edge of the lever turned toward and so as to impinge upon said bearing-plate, substantially as described.

378,731. BUCKLE. DWIGHT L. SMITH, Waterbury, Conn., assignor of one-half to Earl A. Smith, same place. Filed Jan. 3, 1888. Serial No. 259,865. (No model.)



Claim.—The combination of the frame made from a single piece of wire bent to form the top bar, A, two ends, B B, and the pivots C C, and one or more stops, *a*, the bearing-plate D, made from sheet metal and secured to the two ends of said frame, with the lever E, made from sheet metal, hinged to said pivots, its upper edge turned toward said bearing-plate and so as to impinge thereon, and the hook F, made from wire doubled to form the tip of the hook, and the two branches, extending to the right and left, secured to the said lever E, so as to permanently unite said hook and lever, substantially as described.

378,732. BUCKLE. DWIGHT L. SMITH, Waterbury, Conn., assignor of one-half to Earl A. Smith, same place. Filed Jan. 9, 1888. Serial No. 260,206. (No model.)



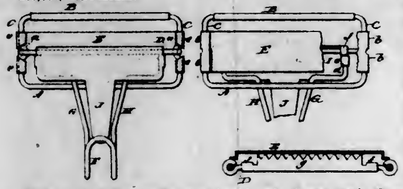
Claim.—1. The combination, in a buckle, of a frame made from wire, consisting of the two sides A B and two ends, C D, a sheet-metal bearing-plate, I, in a plane parallel with but distant from the plane of the frame, the ends of the frame, and the corresponding portions of the plate which are closed around the said ends of the frame, the one constructed with recesses to form pivot-bearings *d* and the other serving to cover said recesses, a lever made from wire, its two branches

G H turned, respectively, to the right and left to form pivots *a b*, the said pivots resting in the said pivot-bearings *d*, and a jaw-plate, *g*, closed upon said branches G H of the lever, the upper edge of the said jaw-plate turned toward the bearing-plate to form the jaw F, substantially as described.

2. The combination, in a buckle, of a frame made from wire, consisting of two sides, A B, and two ends, C D, the said two ends at corresponding points bent out of the plane of the frame to form pivot-bearings *d*, a bearing-plate, I, in a plane parallel with but distant from the plane of the frame, the two ends of the said plate closed around the respective ends of the frame, a lever made from wire, its two branches G H turned, respectively, to the right and left to form pivots *a b*, the said pivots resting in said pivot-bearings *d*, and a jaw-plate, *g*, closed upon said branches G H of the lever, the upper edge of the said jaw-plate turned toward the bearing-plate to form the jaw *f*, substantially as described.

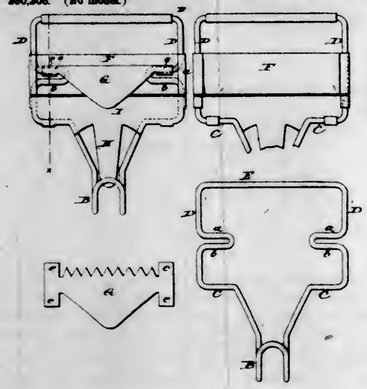
3. The combination, in a buckle, of a frame made from a single piece of wire forming the two sides A B and two ends, C D, the said ends constructed with a U-shaped bend at corresponding points and in planes at right angles to the plane of the frame, a bearing-plate, I, made from sheet metal, secured to the respective ends of the frame and upon that side upon which the pivot-bearings open, the said bearing-plate being in a plane parallel with the plane of the frame, but distant therefrom, a lever made from a single piece of wire bent to form the hook F, the two branches G H of which turn to the right and left and terminate in horizontal pivots *a b*, resting in said pivot-bearings *d*, a jaw-plate, *g*, secured to said lever, its upper edge turned toward the bearing-plate to form the jaw *f*, and the said plate *g* extended to form the spring-tongue *h*, substantially as described.

378,788. BUCKLE. DWIGHT L. SMITH, Waterbury, Conn., assignor of one-half to Earl A. Smith, same place. Filed Jan. 9, 1888. Serial No. 260,307. (No model.)



Claim.—The combination, in a buckle, of a frame made from wire bent to form the two sides A B and two ends, C C, the said two ends constructed with a corresponding inward bend, *a*, the hinge-bar D, made from wire, its two ends closed around in the bends *a a*, the bearing-plate E, made from sheet metal, its two ends closed around the respective ends of the frame, the said plate being in a plane parallel with but distant from the plane of the frame, a lever made from wire bent to form the attaching-hook, its two branches terminating in the upward projections *d d*, with a jaw-plate, I, made from sheet metal, secured to the said lever, and constructed with ears *f f*, closed upon the hinge-bar D, the edge of the jaw-plate turned toward the bearing-plate and adapted to impinge thereon, substantially as described.

378,734. BUCKLE. DWIGHT L. SMITH, Waterbury, Conn., assignor of one-half to Earl A. Smith, same place. Filed Jan. 9, 1888. Serial No. 260,306. (No model.)



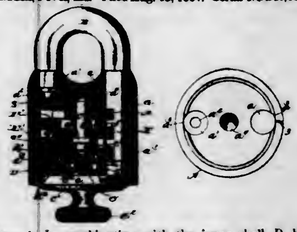
Claim.—The herein-described buckle, the frame of which is made of a single piece of wire bent to form the attaching-hook B, the lower side, C, two ends, D D, and the upper side, E, the said two ends bent to form inward U-shaped projections opening outward, the said inward projections forming legs *a b*, combined with the bearing-plate F, secured to the respective ends of the frame and parallel with the plane of the frame, and the lever G, made from sheet metal, bent to form the jaw *d*, and constructed with ears *e*, closed around one of the said legs on each end of the frame, the said legs thereby forming pivots upon which the lever will swing, substantially as described.

378,785. CANE-STRIPPER. RICHARD P. SORRELS, Hartford, Ky. Filed Sept. 10, 1887. Serial No. 249,404. (No model.)



Claim.—In a cane-stripper, the combination of a metallic support, A, constructed in the form of a frustum of a cone, having slots or recesses in its outer surface and formed with a central opening, a series of converging cutters removably secured in the slots or recesses in the outer surface of the support A at their inner ends, and having laterally-projecting cutter-heads *c* at their opposite ends, and a follower provided with an integral handle for separating the cutters, and also constructed in the form of a frustum of a cone and having an opening therein of less diameter than the opening in the support A to form a projecting rim of metal which bears against the support A when said follower is not in operation, substantially as described.

378,736. COMBINATION-PADLOCK. JOSEPH B. SPENCER and JOHN C. SANDERS, Jewel, Md. Filed Aug. 15, 1887. Serial No. 247,008. (Model.)



Claim.—1. In combination with the inner shell, D, having the opening *d* extending vertically therethrough, and the opening *d'* extending only partially through the vertical height of the said casing, the centrally-mounted spindle, the tumblers E, F, and G, having semicircular depressions in their edges adapted to register with the opening *d* in the casing D, and the interposed collars E' and F', having lugs on one side thereof projecting through the opening *d'*, and openings on the opposite side permanently engaging with the opening *d* in the shell D, substantially as described.

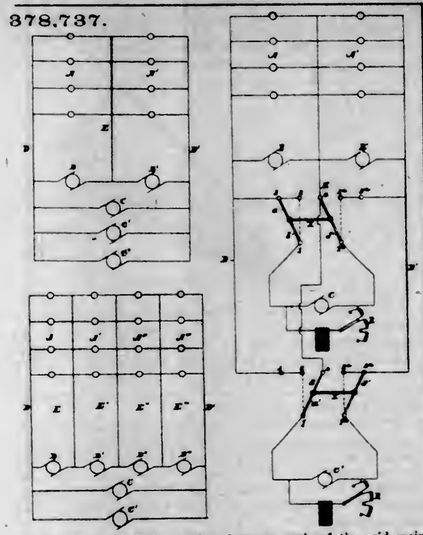
2. In combination with the outer shell or casing, A, having internal vertical grooves, the inner removable shell, D, carrying the tumblers and the tumbler-operating mechanism, the collar or boss formed integrally with the top edge of the shell D, and the screw *s*, adapted to secure or release the shell D from the outer casing, A, as set forth, whereby the entire mechanism may be readily removed from the outer casing without disturbing the tumblers, substantially as described.

3. In combination with the lower section of the spindle, constructed with a socket, *c*, and having a groove, c^2, as set forth, the knob and dial-plate being integrally formed with said portion of the spindle, the lower tumbler, E, having a collar, *e*, integrally formed therewith and depending from the lower side thereof, and the set-screw *s'*, passing through the collar *e* into the groove c^2 in the spindle for securing the tumbler E in connection therewith, as set forth, substantially as described.

378,737. SYSTEM OF ELECTRIC DISTRIBUTION. THOS. SPENCER, Westbrook, Conn. Filed June 14, 1887. Serial No. 241,280. (No model.)

Claim.—1. In a compensating system of electric distribution, the combination, with two compensating dynamos connected in series, of the two main wires, a third wire leading from a point between the

378,737.



two dynamos, translating devices between each of the said main wires and the third wire, and a main dynamo adapted to give an electro-motive force equal to the total electro-motive force of the said two dynamos connected directly to the two main wires.

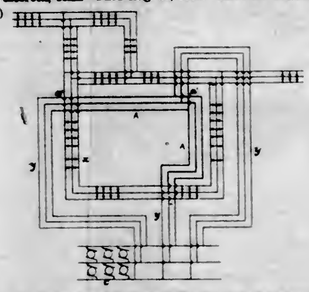
2. In a system of electric distribution, the combination of two or more compensating dynamos in series, groups of translating devices connected in series between the two main wires, compensating wires leading from points between the dynamos to points between the groups of translating devices, and a main dynamo connected directly to the two main wires and adapted to give an electro-motive force equal to the total electro-motive force of the compensating dynamos.

3. In a system of electric distribution, the combination of a main dynamo connected to the two main wires, a compensating dynamo, groups of translating devices in series between the said main wires, and a third wire leading from a point between the said groups to one terminal of the compensating dynamo, the other terminal being connected to one of the main wires.

4. In a system of electric distribution, the combination of the main wires D and D', the main dynamos C and C', normally in multiple arc, the compensating wire E, and the switches *a* and *a'*, adapted to connect the two dynamos in series with the main wires D D' and to a circuit leading from the wire E to a point between the two dynamos, substantially as described.

5. In a system of electric distribution, the combination of the main wires D D', the two main dynamos C and C', normally in multiple arc with the said wires, means for reducing their electro-motive force at will, the third wire, E, and a switch adapted to connect the said dynamos in series to the main wires D D' and to connect the third wire, E, to a point between the two dynamos, substantially as described.

378,788. SYSTEM OF ELECTRIC DISTRIBUTION. THOS. SPENCER, Westbrook, Conn. Filed Aug. 13, 1887. Serial No. 246,879. (No model.)

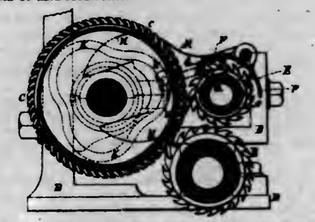


Claim.—1. In a system of electric distribution, the combination, with mains having a plurality of feeding-points and feeders, of low-resistance equalizing-conductors independent of the feeders and connecting the mains at the feeding-points, substantially as set forth.

2. The combination of a central station, electric-light mains, a plurality of feeders connecting said station with different points on said mains, and equalizing-conductors independent of the feeders and connecting the mains at the feeding-points, substantially as set forth.

378,739. MECHANISM FOR CLEANING TOOTHED FEED-ROLLS. HENRY THISSELL, Harrison, assignor to Emily R. Parkhurst, Montclair, N. J. Filed July 11, 1887. Serial No. 243,970. (No model.)

Brief.—Each end of the main cylinder is formed with a cam-groove having several undulations, and in each groove plays a stud or roller upon a forked plate, which embraces the shaft of said cylinder. The outer ends of said forked plates are pivoted to links, which are pivoted upon the shaft of the feed-roller. Said links carry a cleaning-plate, which, by the mechanism described, is vibrated in order to clean the teeth of said feed-roller.



Claim.—The combination, with the feed-roller having tapering hook-shaped teeth and the toothed cylinder, in a barring or picking machine, of a cleaner-blade, the links to which the blade is connected at its ends, the bifurcated end plates guided by the shaft of the toothed cylinder, and the cam having two or more leaves or undulations and acting upon studs or rollers on the end plates, substantially as set forth.

378,740. CASTER-SOCKET. WILLIAM P. TRACY, Grand Rapids, Mich. Filed Mar. 24, 1887. Serial No. 232,309. (No model.)

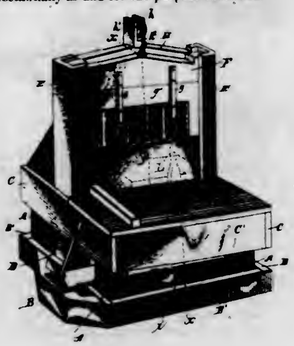


Claim.—1. A shell for casters composed of a single piece of sheet metal provided with slots parallel to each other throughout their whole extent, whereby a strip of metal is left between them connected at each end to the body of the shell, the said material being swaged down, so as to present a curved spring surface on the interior of the shell adapted to hold the spindle by friction, combined with a cap-piece, substantially as described.

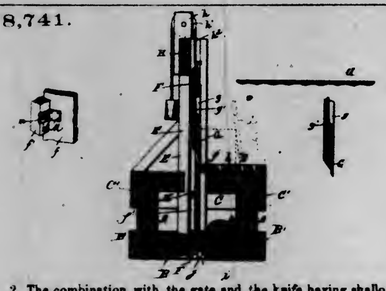
2. A shell for casters composed of a single piece of sheet metal, said sheet metal being provided with parallel slots to leave a strip of metal between them connected at each end, the said material being swaged down to present a curved spring surface to the spindle, an interior spar or projection upon the opposite side, and a cap-piece having a depression formed therein to receive and hold the upper end of the shell, substantially as described.

378,741. VENEER-MACHINE. JOHN W. TROUT, Cherry Vale, Kans. Filed June 17, 1887. Serial No. 241,616. (No model.)

Claim.—1. In a veneer-machine, the combination, with the knife, of the guides, having their lower ends tapered to the plane of said knife, substantially as and for the purpose described.



378,741.



2. The combination, with the gate and the knife having shallow channels arranged transversely across its face, of the guides, having their lower portions tapering to the plane of the blade and secured thereto and their upper portions secured to the gate, substantially as set forth.

3. The combination, with the table having a series of depressions or openings in its top and the standards, of the gate carrying the blade, the tapering guides, and the lever adapted to have its lower end fitted in one of said openings or depressions, substantially as and for the purpose specified.

4. The herein shown and described machine for making veneers, composed of the corner-posts, the top and bottom sides, and end sills, the top having a series of depressions or openings, and the guide, the standards, the gate carrying the knife and working between and guided by the standards, the cross-beam having an overhanging bracket, the weighted cord passing over said bracket and secured to the gate, the shaft having an enlargement and journaled in said end sills, and the strap secured at one end to the enlargement and at its other end to the gate, substantially as set forth.

378,742. DISTRIBUTING-TIP FOR LIQUID-RECEPTACLES. WALTER H. UNDERWOOD, Denver, Colo. Filed Apr. 13, 1887. Serial No. 234,563. (No model.)



Claim.—1. A flexible elastic tip for liquid-receptacles, having a part adapted to operate as a spreader and having a slit or slits transverse to said spreader, substantially as described.

2. A flexible elastic distributing-tip having a closed or solid end and provided on its side or sides with one or more transverse slits, substantially as described.

3. A flexible elastic distributing-tip for liquid-receptacles, provided with a slit, and having the material reduced in thickness at and adjacent to said slit to aid in securing the easy opening thereof, substantially as described.

4. A flexible elastic distributing-tip for liquid-receptacles, having portions of its walls or sides strengthened, substantially as described.

378,743. BOTTLE-STOPPER. WALTER H. UNDERWOOD, Denver, Colo. Filed June 21, 1887. Serial No. 241,967. (No model.)

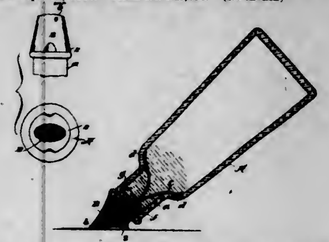


Claim.—1. A flexible elastic cap or tip adapted to be applied to the neck or opening of a liquid-receptacle, said tip having solid walls and a flattened distributer, substantially as described.

2. A flexible elastic cap or tip adapted to be applied to the neck or opening of a liquid-receptacle, said tip having solid walls which are adapted to be slit to form a discharge opening or openings, and are thickened adjacent to the point of the slit or slits to form a distributer, substantially as described.

3. A flexible elastic cap or tip adapted to be applied to the neck or opening of a liquid-receptacle, said tip having solid walls which are adapted to be slit, an index mark or marks to indicate the position of the slit or slits, and a flattened distributer, substantially as described.

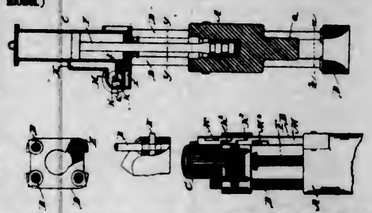
378,744. COMBINED SPREADER AND STOPPER FOR MUCILAGE AND OTHER BOTTLES. WALTER H. UNDERWOOD, Denver, Colo. Filed Sept. 15, 1887. Serial No. 249,753. (No model.)



Claim.—1. A combined spreader and stopper for mucilage and other similar bottles, which is formed and adapted to close the discharge-opening of the bottle and is provided with a flexible elastic connection for attaching it to the bottle, which holds it normally in position to close the discharge-opening of the bottle, but will yield when pressure is applied to the spreader, so as to open the discharge-opening, substantially as described.

2. The combination, with a mucilage or similar bottle, of a combined spreader and stopper formed and adapted to close the discharge-opening of the bottle, and a flexible elastic connection for connecting the same to the bottle, which normally holds the spreader and stopper in position to close the discharge-opening, but will yield when pressure is applied to the spreader, so as to open the discharge-opening, substantially as described.

378,745. STEAM PILE-DRIVING HAMMER. JAMES H. WARRINGTON, Chicago, Ill. Filed July 22, 1887. Serial No. 245,095. (No model.)



Claim.—1. The combination, with the reciprocating hammer-head attached to the piston of the piston-cylinder, the oscillatory valve G, arranged within a chamber, H, provided with the inlet-port K, the port I, leading to the lower end of the piston-cylinder, and the exhaust-port L, substantially as described, arms on the oscillatory-valve spindle, and the two cams upon a rod or bar which rises from the hammer-head, said cams being arranged for alternately engaging one and the other of the two arms upon the valve-spindle, substantially as described.

2. The combination, with the reciprocating hammer-head carried by the piston, of the oscillatory valve provided with arms A^1 and A^2, arranged in parallel planes, and the arm or bar rising from the hammer-head, and provided with cams disposed in parallel planes for acting upon said arms, substantially in the manner described.

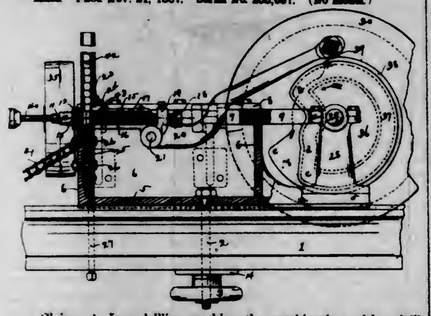
378,746. APPARATUS FOR TEMPERING WIRE. EDWIN J. WATSON, Worcester, Mass. Filed Dec. 18, 1886. Serial No. 221,913. (Model.)



Claim.—In a wire-tempering apparatus, the improvement consisting of the pipe *k*, having an outlet and discharge pipe, *j*, at a convenient point between its extremities, also inclined or curved downward sufficiently at its rear end to bring the extremity of said end beneath the surface of the heating-bath, and its forward end connected with means, substantially as described, for supplying said pipe *k* with a continuous stream of oil or other cooling-fluid, said fluid entering at said forward end where convenient and passing out through the aforesaid discharge outlet and pipe, in combination with the heating-tank

and the aforesaid means for supplying the cooling-fluid to pipe *k*, substantially as and for the purpose set forth.

378,747. DRILLING-MACHINE. WILLIAM WATTIE, Worcester, Mass. Filed Nov. 21, 1887. Serial No. 255,637. (No model.)



Claim.—1. In a drilling-machine, the combination, with a drill-carrying spindle, of a cam-actuated reciprocating plunger-carrier, a cam-actuated gripping-plunger acting in the direction of the length of the drill-spindle at right angles to the face of the piece to be drilled, and a magazine or feed-chamber, substantially as described.

2. In a drilling-machine, the combination, with a drill-carrying spindle, of a magazine or feed-chamber, a cam-actuated reciprocating plunger-carrier provided with a head-bar containing a hole for guiding the drill, and concentric with the hole a centering recess or socket, into which the work to be drilled is forced by a gripping-plunger, and said gripping-plunger acting in the direction of the length of the drill, substantially as described.

3. In a drilling-machine, the combination, with a drill-carrying spindle, of a magazine or feed-chamber, a cam-actuated reciprocating plunger-carrier provided with a spring-confined head-bar, and a gripping-plunger, substantially as described.

4. In a drilling-machine, the combination, with a drill-carrying spindle, of a magazine or feed-chamber, a reciprocating plunger-carrier, a gripping-plunger, a grip-operating cam-lever, a cam-shaft at right angles to the length of the drill-spindle, carrying actuating-cams for the said plunger-carrier and gripping-plunger, and a pulley and pinion shaft parallel with the length of the drill-spindle and geared to the said cam-shaft, substantially as described.

5. In a drilling-machine, the combination, with a drill-carrying spindle, of a cam-actuated reciprocating plunger-carrier, a gripping-plunger, a magazine or feed-chamber, and an adjustable table or stop upon which the pieces to be drilled rest, substantially as shown and described.

378,748. MULTIPLE DRILL. FREDERIC C. WEIR, CHARLES FARRINGTON, NATHANIEL O. GOLDSMITH, and EDWARD W. HARDEN, Cincinnati, Ohio, assignors to The Weir Frog Company, same place. Filed Nov. 28, 1887. Serial No. 256,346. (No model.)

Claim.—1. The combination, with a drill-frame, of a drill-stock moving on ways and longitudinally adjustable by means of the rack-bar 21 and spur 22 on the rear of said stock, and mechanism mounted on the top of said stock and connected with a driving-shaft for driving the drill-shaft, substantially as specified.

2. In combination with a drill-stock, the drill-shaft driven by mechanism mounted on the top of said stock and fed by means of the rack-bar 51 and unshipping-gear 50, substantially as specified.

3. In combination with the drill-frame and drill-stocks E F, mounted thereon, the driving-shafts 9 and 13, for driving one drill by gear meshing with the upper shaft and another drill by gear meshing with the lower shaft, substantially as specified.

4. In combination with the drill having a series of stocks, E F, and driving-shafts 9 13, the feed-shaft 47, journaling in said stocks E F, and the unshipping-gear 50, for attaching and disconnecting the feed, substantially as specified.

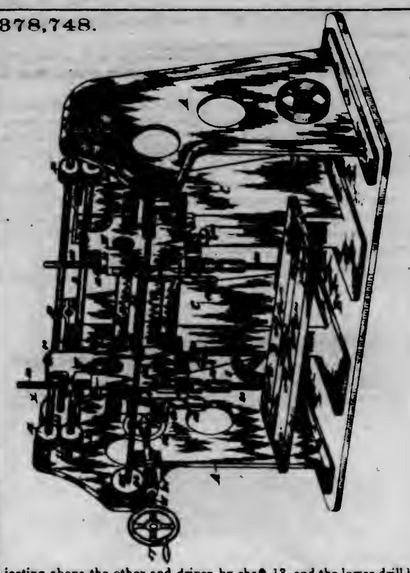
5. In combination with the common feed-shaft, 47, and drill-stock, the unshipping gear-frame 48, swiveled upon said shaft 47 and carrying the unshipping-gear 50, substantially as specified.

6. In combination with the unshipping gear-frame 48, the latch 52, engaging in notches of lug 54, substantially as specified.

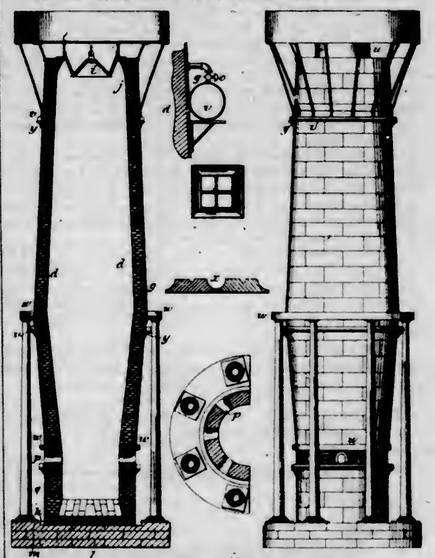
7. In combination with the feeding-shaft 47, the sectional shaft 37, for connecting and disconnecting the feed-shaft with the movement of the driving-gear, substantially as specified.

8. A multiple drilling-machine composed, substantially, of feed-stocks E F, mounted upon ways in the frame of said drill, one projecting above the other and driven by shaft 13, and the lower drill by shaft 9, with mechanism for longitudinally adjusting said drill-stocks on the plane of the frame, substantially as specified.

378,748.



378,749. BLAST-FURNACE. EARL A. WHEELER, Sharon, Pa. Filed Feb. 28, 1887. Serial No. 229,231. (No model.)



Claim.—1. In a furnace, the combination, with the furnace-jacket *g*, having an iron bottom plate and inclosing the brick walls and bottom of the furnace, of a separate bottom, *k*, composed of grooved plates and having surface water-passages and placed below the iron bottom of the furnace-jacket, substantially as described.

2. In a furnace, the combination of the following elements: a foundation having a raised rim, a channeled bottom, *k*, composed of grooved plates, an iron plate forming the bottom of the furnace-jacket and resting on said bottom *k*, and a water-pipe for supplying

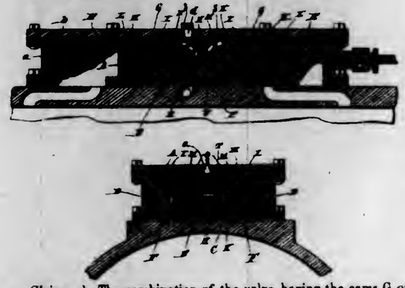
water to the said passages below the said furnace-jacket, substantially as described.

378,750. PROCESS OF AMALGAMATING GOLD AND SILVER. WILLIAM W. WHEELER, Meriden, Conn. Filed Oct. 3, 1884. Serial No. 145,011. (No specimens.)

Claim.—1. In the process of amalgamating metals, the method herein described, which consists in subjecting the ores in the form of pulp containing the precious metals to the action of soluble metallic salts and adding thereto aldehyde alcohol—as, for instance, glucose—substantially as described.

2. In the process of amalgamating metals, the method herein described, which consists in subjecting the ores in the form of pulp containing the precious metals to the action of soluble metallic salts and adding thereto aldehyde alcohol—as, for instance, glucose—and then adding a caustic alkali, substantially as described.

378,751. BALANCED SLIDE-VALVE. LOUIS ADAMS, Terre Haute, Ind. Filed Nov. 9, 1887. Serial No. 254,696. (No model.)



Claim.—1. The combination of the valve having the cams G on its upper side with the frames H, bearing on the said cams, and means, substantially as set forth, to move the said frames outward, for the purpose set forth, substantially as described.

2. The combination, with the valve having the cams G on its upper side extending in opposite direction, of the wedge-shaped packing-frames H, arranged on the said cams, and the springs to force the packing-frames outward, substantially as described.

3. The valve having the recess C on its upper side, the sides of which are provided with the oppositely-extending inclined cams G, in combination with the wedge-shaped frame H, bearing on the said inclined cam, and having the pivoted beveled plates L at their outer ends, and the springs normally pressing the said frames apart, substantially as described.

4. The combination of the valve having the recess C in its upper side, and the outward-extended wedge-shaped cams G formed on the sides of the said recess, with the packing-frames H, arranged on the said wedge-shaped cams G, the ring P, connections between the same and the frames, and the screw passing through the said ring and engaging the valve, substantially as described.

5. The combination, with the valve having the recess C on its upper side, and the inclined cams G on the inside of the said recess, of the packing-frames H, bearing on the inclined cam, one of said frames having the lap-plates M at its inner end bearing against the inner end of the opposing frames, for the purpose set forth, substantially as described.

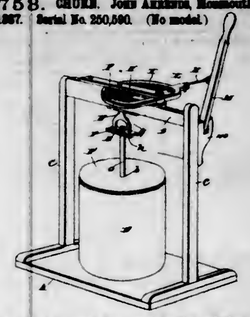
6. In combination with the packing-frames H, the springs to force the same outward, the links T, connected to the frames and adapted to draw the same together against the tension of the springs.

378,752. BOTTLE. HENRY ADER, Somerset, Ind. Filed June 28, 1887. Serial No. 242,802. (No model.)



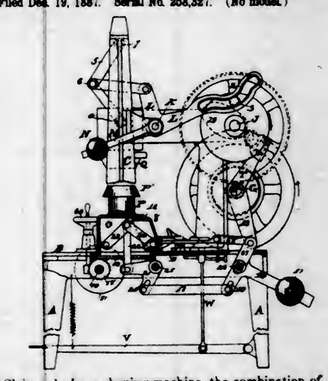
Claim.—The improved bottle herein described, consisting of the cylindrical body having its ends threaded, and provided between said ends with a cross-partition dividing it into two compartments, the cap threaded onto the lower end of the body and the top threaded onto the opposite end of the body, and having a mouth to receive a stopper, substantially as set forth.

378,758. CHURN. JOHN ARENDS, Monmouth, Kans. Filed Sept. 24, 1887. Serial No. 250,590. (No model.)



Claim.—In a churn, the combination of the uprights C C, cross-bar D at the upper ends thereof, having a bearing, *d*, in the center, segmental gear I, pivoted to the upper side of the cross-bar and having interior gear-teeth, plate K, to hold the segmental gear in place, lever M, pivoted to one of the uprights and connected to the said segmental gear, vertical shaft E, journaled in the bearing *d* and having the gear-wheel on the upper end to mesh with the segmental gear and the fork or yoke G on the lower end, the slotted bar H, secured to the extremities of the said yoke and having the slot *h* in the center, and the dasher-shaft O, provided at the lower end with a dasher and passing at the upper end through the slot *h*, the said shaft O being held in place in the slot by the key or pin P, passed through a perforation therein, substantially as and for the purpose specified.

378,754. DIE-PRESS FOR FORMING COAL-HODS. EDWARD BARRATH, Cincinnati, Ohio, assignor to Victor R. Knecht, same place. Filed Dec. 19, 1887. Serial No. 258,327. (No model.)



Claim.—1. In a shaping-machine, the combination of the die P with the die Q, operated by the bell-crank lever L, and the toggle mechanism, substantially as herein specified.

2. In combination with the vertically-moving die Q and the toggle mechanisms, the bell-crank lever L, provided with a curvilinear slot engaging the crank-pin 2 of the driving-disk, substantially as herein specified.

3. In combination with the driving-disk operating the bell-crank lever and plunger, the cam 29, operating the lever 13, and a secondary set of levers and toggle-joints for moving the die 8, substantially as specified.

4. The shaping-die 8, adapted to be moved laterally by means of toggle-joints and levers operated by the cam 29 of the driving-disks during a portion of its revolution, substantially as herein specified.

5. In combination with the die 8, operated by toggles and levers, substantially as specified, the lever 16 and weight 17, for automatically retracting the die 8 when the cam 29 is disengaged, substantially as specified.

6. In combination with the main driving-disk, the bell-crank lever L, toggle and mechanism for operating the die Q during one portion of its revolution, and the cam 29, for operating the levers 13 and 16, and the toggles for moving the die 8 during another portion of the revolution of the driving-disk, substantially as specified.

7. In combination with the shell-base O and die 8, the mechanism for laterally moving said parts, consisting, essentially, of the shaft 49, the driving-palleys 51 52, and the cone-clutch 50, and mechanism for automatically setting the shaft 49 in motion, substantially as specified.

8. In combination with the shell O, the rack-bars operated by means of pinions 57 58, mounted upon shaft 49, and intermittently operated by the automatic engagement and disengagement of the cone 50 with the palley 51, substantially as specified.

9. In combination with the pulley 52, the cone-clutch 40, the sleeve 48, and shaft 49, with the automatic unshipping device, consisting of the disk 60 and the collar 61, provided with projections 64 66, substantially as herein specified.

10. In combination with the shell O, the laterally-moving mechanism consisting, substantially, of the racks and pinions, the shaft 49, the sleeve 48, and the two sets of driving-palleys 51 52, and the cone-clutch 50, whereby the said shell is moved out and in by the reverse movement of the shaft 49, substantially as herein specified.

11. In a cone-shell-shaping machine, the combination of the die Q, operated by one set of mechanism, with the die P and the laterally-moving die 8, working within the base of die P while the dies Q and P are held in contact, substantially as herein specified.

12. In combination with the die P and the die 8, moving laterally, the outside clamping mechanism consisting of the plunger 70 and the clamping-faces 75, operated by means of the crank 67 on shaft 26, substantially as herein specified.

13. In combination with the pulley 51 and the cone-clutch 50, the automatic engaging mechanism consisting of the roller 40, the lever 41, intermediately connected to the cone 50, the tripping-arm 36, connecting-rod 34, operated by the arm 32, and shaft K, substantially as herein specified.

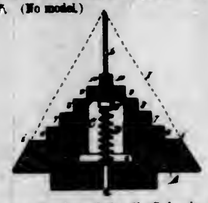
14. A coal-hod-shaping machine consisting of the dies P and Q and 8 and the outside clamping devices intermittently operated by the bell-crank L, the driving-disk, the cam 29, the levers 13, and the shafts K, 48, and 26 and their connecting mechanisms, substantially as herein specified.

15. In combination with the treadle-rod W, the driving-pinion 79, crank 80, and hook-lever 81, for automatically locking the treadle, substantially as specified.

16. The shaping mechanism consisting, substantially, of the laterally-moving die 8 and the outside clamping devices operated simultaneously by means of the shaft 26 and the mechanism connected thereto upon each side of the table, substantially as herein set forth.

17. In combination with the shell O, the laterally-moving die 8, operated by cranks and levers to move laterally and give the scoop shape to the cone-shell, substantially as specified.

378,755. DIE FOR COAL-HODS. EDWARD BARRATH, Cincinnati, Ohio, assignor to Victor R. Knecht, same place. Filed Dec. 27, 1887. Serial No. 259,155. (No model.)



Claim.—1. The combination of the die C, having a series of annular ledges, with the die E, having a series of different-sized orifices for compressing a cone into the shape of the die C, substantially as specified.

2. In combination with the die F, the die E, having a series of annular openings for completing preliminary crimps formed by means of dies C and E, substantially as specified.

3. In combination with the supporting-die G, the die H, having an annular opening to receive the crimps of the shell, and the annular flange *b*, for finishing the joint of a coal-bucket, substantially as specified.

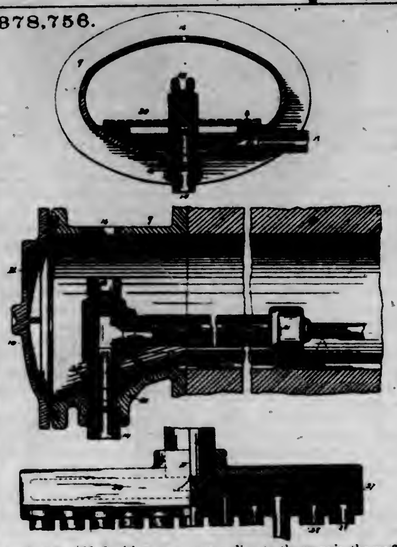
4. In combination with the dies A C, the stem *b* and spiral spring D, substantially as herein specified.

5. In combination with the dies A C E and cone 1, the guiding-stem *b*, projecting up through the die C, supported upon a yielding spring, and its point engaging with the inner point of the cone 1, substantially as and for the purpose specified.

378,756. APPARATUS FOR TREATING METAL PIPES. HENRY G. BEATLEY, Ithaca, N. Y. Filed Nov. 11, 1887. Serial No. 241,056. (No model.)

Claim.—1. In an apparatus for treating pipes, the combination, with a bench of muffles, each muffle being provided with a way, of a

378,756.



carriage provided with ways corresponding to the ways in the muffles, a frame carrying a distributer to which the pipes to be treated are attached, and means for drawing said frame, distributer, and pipes from the ways on the carriage to the ways in the muffles, substantially as described.

2. A muffle provided with ways, a frame adapted to support the articles to be treated and sliding on said ways, and a distributer connected to and carried by said frame, substantially as described.

3. The combination, with a muffle the mouth-piece of which has an inclined base provided with a socket, of a distributer provided with a socket-piece adapted to fit said socket, substantially as described.

4. A muffle the mouth-piece of which is inclined and provided with a socket, in combination with a frame adapted to slide in said muffle, and a distributer carried by said frame and having a socket-piece adapted to fit the socket, substantially as described.

5. The combination, with a muffle the mouth-piece of which is provided with a socket, of a distributer the body of which is provided with side projections having sockets into which the pipes or bars are fitted, and an inlet-pipe having a socket-piece to fit the socket in the muffle, substantially as described.

6. A distributer consisting of an inlet-pipe and a body having lateral projections provided with sockets into which the articles to be treated are fitted, and a deflector arranged in front of the inlet-pipes, substantially as described.

7. The combination, with a muffle the mouth-piece of which is inclined and provided with a socket, of a distributer consisting of an inlet-pipe and lateral projections, and a vertical connection provided with a socket-piece adapted to fit the socket in the inclined base, substantially as described.

8. The combination, with a muffle, of a frame adapted to slide therein, the said frame being provided with knife-edged supports, upon which the articles to be treated in the muffle are arranged, substantially as described.

9. The combination, with a muffle, of a frame sliding therein, the said frame being provided with knife-edged supports for the articles to be treated, and a distributer connected to the articles and secured to said frame, substantially as described.

10. The combination, with a muffle, of a distributer having sockets to which the pipes to be treated are connected, inlet-pipes leading to the distributer, and a purge-pipe opening, as 17, located at the front end of the muffle, whereby the gases pass through the distributer to the inside of the pipes and back over the outside of the pipes to the purge-pipe, substantially as described.

378,757. BASKET-BOTTOM. ALBERT W. BECKETT, St. Catharines, Ontario, Canada. Filed June 22, 1887. Serial No. 242,183. (No model.)

Claim.—1. A basket-bottom formed of suitable material having a rim provided with corrugations, and perforated, substantially as described, to receive the side stakes of a basket, as specified.

2. A bottom for wicker-work ware having an outer perforated

378,757.



rim, and an annular depression having a perforated inner wall, in combination with the side stakes and wicker-work sides, substantially as described.

3. A basket having a bottom formed of sheet metal or other similar material struck up with corrugations, substantially as described, in combination with the side stakes fitted within said corrugations or standards and wicker-work sides.

4. A basket-bottom having a perforated and corrugated rim, in combination with the side stakes or standards and wicker-work sides, substantially as described.

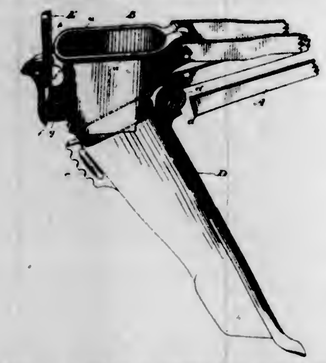
5. A basket-bottom having a raised center, a circumferential depression, and an upturned rim, perforations in said rim and in the inner wall of said circumferential depression, in combination with side standards and wicker-work sides, substantially as described.

6. A basket-bottom having a raised and corrugated center, a circumferential depression, an upturned rim, and perforations in said rim and in the inner wall of said circumferential depression, in combination with the side standards and wicker-work sides, substantially as described.

7. A basket-bottom, A, having inner corrugations, a, a corrugated flange, a', perforations a^4, a depressed rim-section, A', and perforations a^3 in the inner wall of said rim-section, in combination with the side standards and wicker-work sides, substantially as described.

8. A basket-bottom, A, having a flange, a', perforations a^3 a^4, and a lip or bearing, a^5, formed by turning up the metal alongside of the perforation, in combination with the side standards and wicker-work sides, substantially as described.

378,758. SEEDING-MACHINE. GEORGE W. W. BILLINGS, Oshawa, Ontario, Canada. Filed Nov. 2, 1887. Serial No. 254,065. (No model.) Patented in Canada Sept. 3, 1885, No. 22,384.



Claim.—1. A drill-hoe or cultivator-tooth having formed on one side of its upper end a recess or projection designed to engage with the hub or recess formed upon or connected to the drag-bar, and a notch or notches on the opposite side of its upper end adapted to engage with an adjustable roller carried in a head or bracket attached to the said drag-bar, substantially as and for the purpose specified.

2. A drill-hoe or cultivator-tooth having formed on one side of its upper end a recess or projection designed to engage with a hub or recess formed upon or connected to the drag-bar, and a notch or notches on the opposite side of its upper end, in combination with a roller f, carried in suitable slots, g, made in the head B and operated by the key E, substantially as and for the purpose specified.

3. The key E, fitted into a passage-way made in the head B, and having a longitudinal groove, h, formed in it to receive the teat f, in combination with the roller f, suitably supported in the slots g, formed in the head B and adapted to engage with one of the notches e, substantially as and for the purpose specified.

378,759. MOISTENING ATTACHMENT FOR SHOE-SEWING MACHINES. GEORGE BLAKESLEY, Cincinnati, Ohio, assignor of one-half to Charles H. Krippendorf, same place. Filed May 9, 1887. Serial No. 237,580. (No model.)

Claim.—1. The combination, with the horn, presser-foot, and needle of a shoe-sewing machine, of a water-head whose duct leading

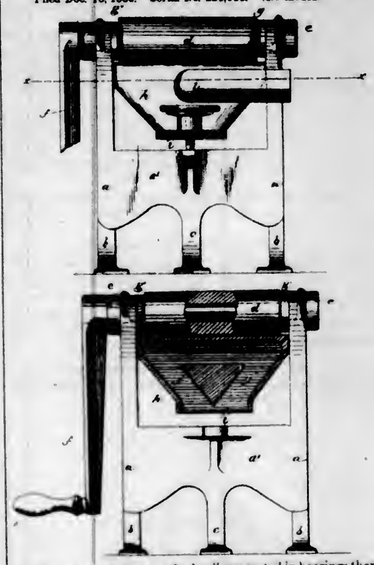
378,759.



therefrom has a discharge-nozzle near the presser-foot on the side remote from the needle, and a cock or regulator whereby the stock is moistened immediately in advance of the descending needle, substantially as and for the purpose set forth.

2. In combination with the horn, presser-foot, needle, and reciprocating fulcrum-post of a shoe-sewing machine, a water head whose duct leading therefrom has a discharge-orifice near the presser-foot on the side remote from the needle, a cock, and connections between the fulcrum-post and the cock whereby the cock is periodically operated by the said post, substantially as and for the purpose set forth.

378,760. BURNISHER. WARREN H. BOLES, Syracuse, N. Y. Filed Dec. 18, 1886. Serial No. 221,988. (No model.)



Claim.—1. A frame, a feed-roll supported in bearings therein, and a polishing-tool having a heating-surface coextensive with or somewhat in excess of the length of the feed-roll and provided with a centrally-arranged inlet for a heater, flues or channels extending laterally from said inlet to the ends of the tool and communicating with another flue or channel common to both and next to the polishing-surface of the tool, and an outlet for said flues, substantially as set forth.

2. A polishing-tool provided with a main centrally-arranged inlet for a heater, flues or channels extending laterally from said inlet to the ends of the tool and communicating with another flue or channel common to both and next to the polishing-surface of the tool, and a common outlet, substantially as described.

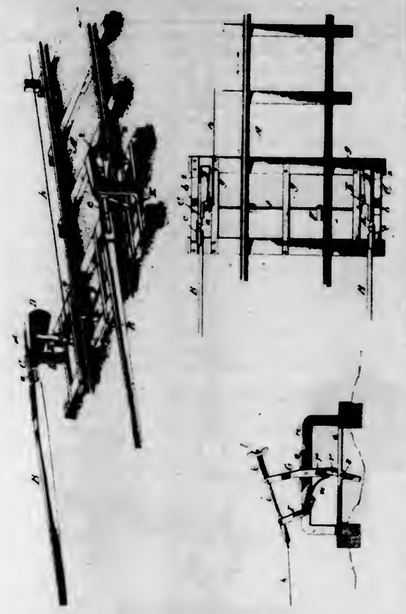
3. A polishing-tool having an inlet, channels or flues extending from the said inlet laterally to the ends of the tool, another flue or channel arranged immediately under the polishing-surface of said tool and extending from end to end of the tool, and a central outlet, substantially as described.

4. A polishing-tool having an inlet, channels or flues extending from said inlet laterally to the ends of the tool, another flue or channel arranged immediately under the polishing-surface of said tool and extending from end to end of the tool, and an outlet leading rearwardly from the last-named flue laterally to and beyond one end of the tool, substantially as described.

5. A burnisher comprising a frame, a feed-roll, an operating-handle at one end of said feed-roll, and a polishing-tool containing a main

inlet for the heater, heat-distributing flues, and an outlet for said flues extending rearwardly from the polishing-tool and thence laterally to the side of the machine opposite to that at which the operating-handle is arranged, substantially as described.

378,761. RAILWAY-GATE. JAMES BOLZ, Sidney Hill Haven, Pa., assignor to himself and John T. Delbert, same place. Filed Sept. 30, 1887. Serial No. 251,112. (No model.)



Claim.—1. In a railway-gate, the gate-arms and independently-pivoted counter-weights, in combination with toggle-levers connected to said weights and to a transverse rod, a trip device connected to said rod and weighted, as described, and a returning-wire connecting the toggle-lever with a mechanism operated by the rim of the car wheel of the passing train, substantially as and for the purpose set forth.

2. The combination, with a railway-gate, of a mechanism for operating the same, consisting of a transverse rod having a suitable trip device operated by the rim of the car-wheel, a slotted and pivoted lever connected to the rod by an arm that carries a pin working in the slot, a bell-crank or releasing lever provided with a spring, a rod pivoted to the bell-crank lever and swiveled to the slotted lever, a spring and adjusting-nut for the same, and a wire connecting the rod to the gate mechanism, substantially as and for the purpose described.

378,762. LOCOMOTIVE SMOKE-STACK. PERRY J. BROWN, Winslow, Ariz. Filed Oct. 12, 1886. Serial No. 216,070. (No model.)



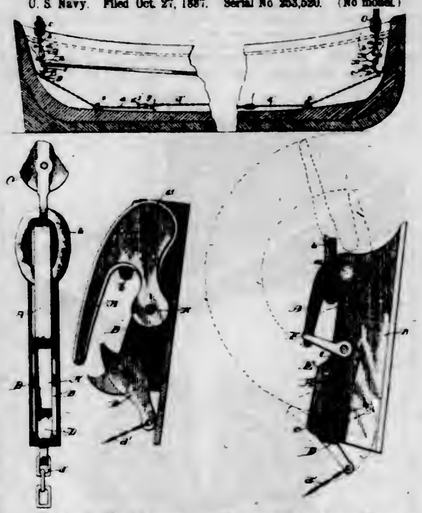
Claim.—1. The combination of the stack, the cone arranged above the upper end thereof, the screen 3, having the opening 17 in its lower side, the screen 4, inclosing the screen 3 and having the opening 6 in its lower side, the funnel inclosing the screen 4, and the clearance-pipe 8, depending from the lower end of the funnel, substantially as described.

2. The combination of the inclined funnel-shaped pipe 8, having the funnel 5 at its upper end, the vertical stack 1, extending upward through an opening in one side of pipe 8, the deflecting-cone above the top of the stack, the screens 3 and 4, arranged one within the other and inclosed in the funnel, an annular flue or space, 7, being formed between the sides of the funnel and the outer screen and communicating with the upper end of pipe 8, substantially as described.

3. The combination of the stack, the cone arranged above the same, the screen 3, arranged over the cone, the screen 4, arranged over said screen 3, the funnel enveloping said screen 4 and having the depending clearance-pipe, an annular space or flue being left between the opposing sides of the screen 4 and funnel, substantially as described.

378,762.

378,763. BOAT-DETACHING APPARATUS. ROBERT M. G. BROWN U. S. Navy. Filed Oct. 27, 1887. Serial No. 253,530. (No model.)



Claim.—1. The U-shaped reversible hook consisting of the hook proper, A, and the shank or tail A', in combination with the pivoted trigger overlapping the shank and normally pressed by said shank outwardly, or in a direction to release the hook, and trigger-locking mechanism, by which the trigger is held in place against said pressure, as hereinbefore set forth.

2. The two pivoted reversible hooks A A', secured to opposite ends of the boat, in combination with the two pivoted trigger-levers, one for each hook, and trigger-releasing mechanism, whereby said trigger-levers are simultaneously operated to release their hooks, as and for the purposes hereinbefore set forth.

378,764. GARMENT-STRETCHER. FREDERICK CADMUS, Philadelphia, Pa. Filed Oct. 28, 1887. Serial No. 253,704. (No model.)

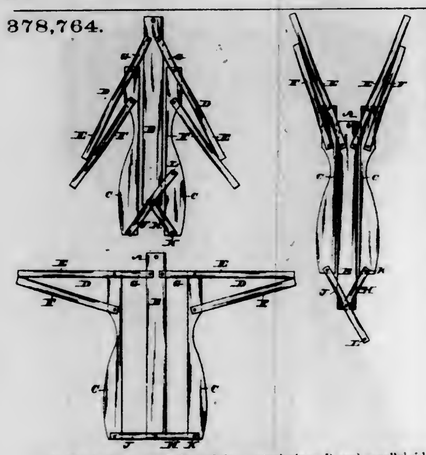
Claim.—1. A garment-stretcher having a body consisting of a central and side pieces and provided at one end with bars each of which is pivotally connected to both the central piece and one of the side pieces, and bars pivoted to the side pieces, and having at the other end bars each of which is pivoted to the central piece and one of the side pieces, said parts being combined substantially as described.

3. In combination with the main box, plates secured thereto and

Claim.—1. The combination, in a trap, of pivoted spring-jaws,

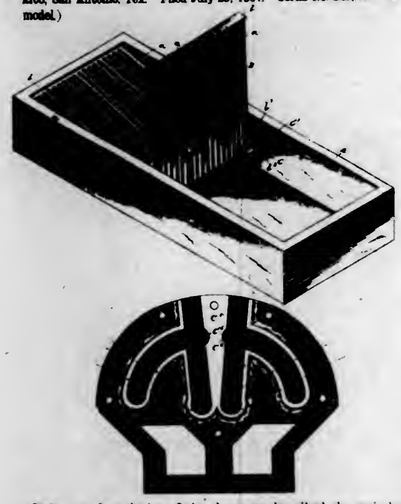
Claim.—1. The combination, with the dasher-rod having the pinion secured upon it and formed with the annular grooves, of the

378,764.



2. The body A, consisting of the central piece, B, and parallel side pieces, C, the bars E, each of the latter being pivoted to said central piece and one of the side pieces, the bars F, each of which is pivoted to one of the side pieces, the bar J, pivoted to the central piece and to one of the side pieces, and the bar H, pivoted to the other side piece and the central piece, the bar H having the pin K and the bar J having an opening, L, to engage said pin, said parts being combined substantially as and for the purpose set forth.

378,765. **BOX FOR WASHING GRAVEL, &c.** THOMAS W. CARRICO, San Antonio, Tex. Filed July 25, 1887. Serial No. 245,248. (No model.)



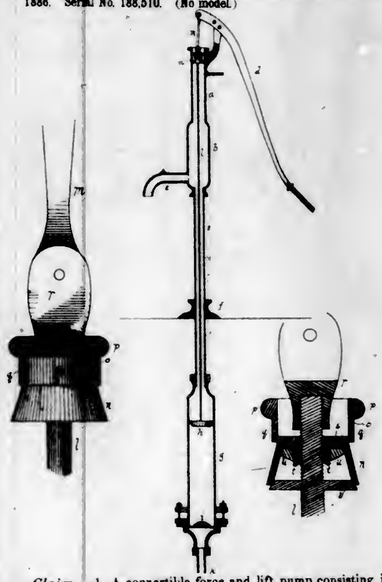
Claim.—1. In a device of the character described, the main box having grates situated therein, the lower edges of which are extended outwardly, and the lugs formed upon the said grate, in combination with plates secured to the sides of the said box and having grooves for the reception of the said lugs and the extended portion of the grates, all arranged and combined to operate substantially as shown and described.

2. In a device of the character described, the main box provided at its inner ends with cleats and having grates situated in the said box, the lower extremities being extended outwardly and the sides having lugs or projections, in combination with plates secured to the sides of the box and formed with vertical and curved grooves for the reception of the extended portion of the grates and the said lugs, respectively, all combined and arranged to operate in the manner and for the purpose substantially as herein shown and described.

3. In combination with the main box, plates secured thereto and having vertical and curved grooves and a projection between the vertical grooves, substantially as herein shown and described.

4. In combination with the main box, plates secured thereto and having vertical and curved grooves, and a projection between the vertical grooves formed on its opposite sides with grooves, and the grates having lugs running in the said grooves, all arranged and combined in such a manner that access can be had to the bottom of the box without removing the grates, substantially as shown and described.

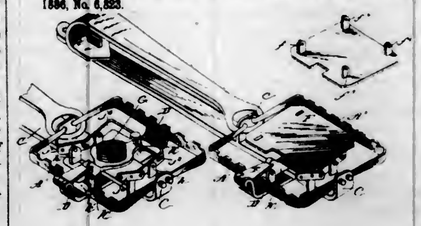
378,766. **PUMP.** JAMES C. CARTER, Decatur, Ill. Filed Jan. 14, 1886. Serial No. 188,510. (No model.)



Claim.—1. A convertible force and lift pump consisting in the combination of a cylinder, means for supporting the cylinder on a well-platform, means for connecting the cylinder with the water of the well, a lateral discharge-spout for the cylinder, a pivoting-handle for the cylinder, a piston-rod in the cylinder connected with the handle in a suitable manner, a lift-valve on the piston-rod below the discharge-spout, a valve in the cylinder below the lift-valve on the piston-rod, an expansible inverted bucket-valve screwed onto the piston-rod above the discharge-spout, and a bevel-edged disk rigid on the piston-rod immediately below the inverted bucket-valve, as and for the purpose set forth.

2. A convertible force and lift pump consisting in the combination of a cylinder having a lateral discharge-spout, a piston-rod in the cylinder threaded at its upper end, a lift-valve on the piston-rod below the discharge-spout, a valve in the cylinder below the piston-rod, a beveled disk rigid on the piston-rod near the top of the cylinder and above the discharge-spout, and an inverted bucket-valve screwed onto the threaded portion of the rod immediately over the disk, as and for the purpose set forth.

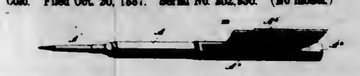
378,767. **ANIMAL-TRAP.** THOMAS R. CATTELL, Wootton Wawen, and ALFRED H. SUMNERS, Tanworth, County of Warwick, assignors of one-half to Cyril Walker, Wolverhampton, England. Filed May 28, 1887. Serial No. 239,721. (No model.) Patented in England May 21, 1886, No. 6,823.



Claim.—1. The combination, in a trap, of pivoted spring-jaws, devices for holding said jaws open, a bait-platform, F, a releasing-lever arranged beneath the platform F and adapted to be acted upon thereby to release the jaws, and a pressure device arranged to act upon the under side of the platform, said device being adapted to take up the weight upon the bait-platform to a certain point and prevent the trap from springing, but to allow the platform to operate the releasing-lever when the weight upon the platform exceeds the tension of the pressure device, substantially as described.

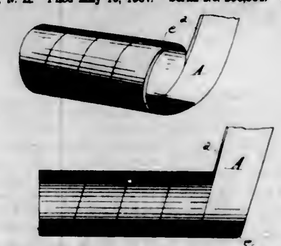
2. The combination, with the spring-jaws, of the catch E, the releasing-lever K, the platform F, mounted upon pivoted arms adapted to act upon the lever K, and the pressure device between the platform and the releasing-lever, whereby the said platform is held out of contact with the releasing-lever until the weight thereon overcomes the tension of the said device, substantially as described.

378,768. **PENCIL OR PEN CASE.** ALBERT B. CRANE, Pueblo, Colo. Filed Oct. 20, 1887. Serial No. 252,930. (No model.)



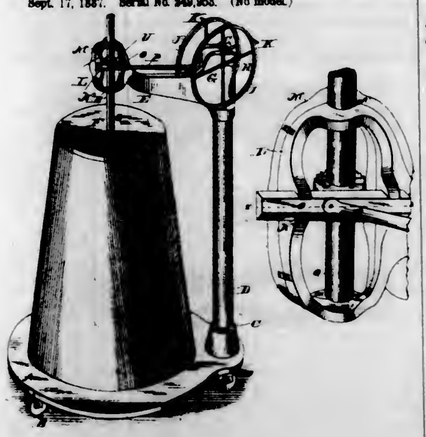
Claim.—The combination, with a pencil or pen case, of the upper cylinder integrally formed therewith and having a narrow slot therein, the outer movable cylinder mounted over the integrally-formed cylinder and forming a space with the same and also provided with a slot, and the cap mounted in connection with said cylinders to preserve the space between the same, the said inner cylinder being adapted to receive a roll of paper, and the space between the inner and outer cylinders being also filled with paper, as set forth, which is fed from the roll of paper in the inner cylinder, substantially as described.

378,769. **MANUFACTURE OF SHEET-METAL TUBES.** EDWARD K. COAR, Providence, R. I., assignor to the Providence Cylinder Company, Nashua, N. H. Filed May 16, 1887. Serial No. 238,331. (No model.)



Claim.—The mode herein described of making a sheet-metal cylinder, consisting in coiling a ribbon of sheet metal having plain beveled edges to the form of a tube, with the bevels of the edges overlapping, and in subjecting the tube thus formed to a solder bath, substantially as described.

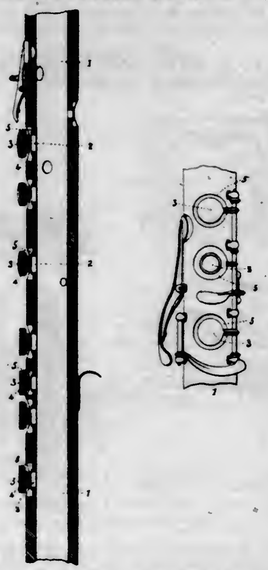
378,770. **CHURN.** ROBERT F. COLLINS, Manchester, Ohio. Filed Sept. 17, 1887. Serial No. 249,953. (No model.)



Claim.—1. The combination, with the dasher-rod having the pinion secured upon it and formed with the annular grooves, of the bracket having the perforated ears and the frame at its inner end formed of the stationary and hinged halves having the bearings, the crank-shaft, the balance-wheels having the operating-handles, the pitman, and the bar having the rack reciprocating in the hinged frame, substantially as set forth.

2. The combination, with the base-plate mounted upon the rollers and formed with the socket, of the upright, the casting formed with the perforated ears, and the frame at its inner end formed of the stationary and hinged halves having the bearings, the crank-shaft, the balance-wheels having the operating-handles, the pitman, the bar having the rack reciprocating in the hinged frame, and the dasher-rod having the paddles or blades secured in the slots in its lower portion, formed at its upper end with the annular grooves, and having the pinion secured upon it between the said grooves, all substantially as and for the purpose set forth herein.

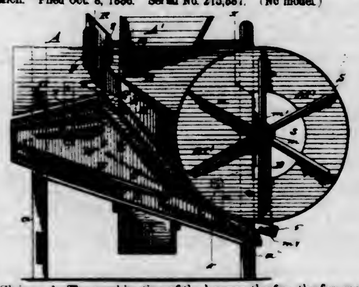
378,771. **WIND-INSTRUMENT.** CHARLES G. COBB, Elkhart, Ind. Filed Aug. 6, 1887. Serial No. 246,243. (No model.)



Claim.—1. A wind-instrument having suitable keys and holes countersunk to receive said keys, substantially as set forth.

2. In a wind-instrument, the combination of the tube 1 with holes countersunk, as shown, and padded keys 3, arranged to enter said countersinks, substantially as set forth.

378,772. **FANNING-MILL.** JOHN S. CONSTANT, White Pigeon, Mich. Filed Oct. 8, 1886. Serial No. 215,887. (No model.)



Claim.—1. The combination of the hopper, the fan, the fan-casing, the blast-chamber running upward from the lower part of the fan-casing to a point immediately below the outer and lower corner of the hopper, the detachable separator-trunk having a vertical portion, an

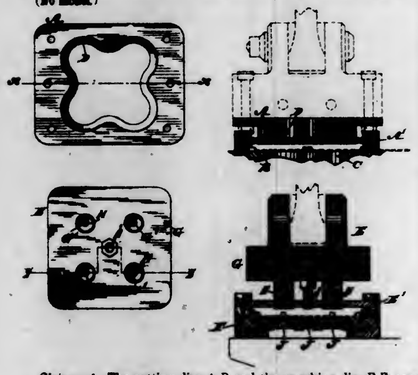
opening below said portion opposite the discharge-opening from the hopper, and a discharge-opening opposite said opening that receives from the hopper, and the adjustable door K, to regulate and direct the discharge from the separator, substantially as specified.

2. The combination of the fan, the fan-case receiving the draft through openings in its ends, the blast-chamber communicating with the fan-case, the detachable separator-case, the hopper having its discharge-opening vertically above the junction of the separator-case and the blast-chamber, and the pivoted door K, substantially as specified.

3. The combination of the fan, the fan-casing, the blast-chamber running upward from the lower part of the fan-casing and with its top and bottom converging upward, the hopper having a discharge-opening into the upper end of the blast-chamber, the grain-discharge passages below the blast-chamber, the screens inclined oppositely to said passages and rearward therefrom, and the door pivoted in such position that it can be turned to direct the grain from the hopper either into said discharge-passage or on the said screens, substantially as specified.

4. The combination of the fan, the fan-case, the upwardly-converging blast-chamber, the separator-trunk, the hopper discharging through the separator, the pivoted door to direct the grain, the cant-board 16, and the adjustable detent-board 17, substantially as specified.

378,773. DIE FOR MAKING CAR-SPRING PLATES. NATHAN H. DAVIS, Philadelphia, Pa. Filed Nov. 14, 1887. Serial No. 255,104. (No model.)



Claim.—1. The cutting-dies A B and the punching-dies E F, combined substantially as described.

2. The head G, with punches H and the central punch, H', and the die F, having openings J for said punches, combined substantially as described.

3. The flanging-die K, having plungers M N, and the die L, having openings P for said plungers, substantially as described.

4. The die K, having dies Q, and the die L, having dies R, for forming dowels in the spring-plate, substantially as described.

5. The die having removable bushings in the openings thereof, substantially as described.

6. The dies provided with bushings and screws for removably holding the same in position, substantially as described.

7. The head K', having plungers, and the die L, having openings for flanging purposes, in combination with the stripper V, interposed between said head and die, substantially as described.

8. In a die, a stripper, in combination with the screws W, which are connected with said die and have said stripper freely fitted to them, substantially as described.

9. The die K, having bolts X secured to its head K' and passed freely through the stripper V, and die L, in combination with the cross-head Y, which is connected with said head K', and carrying followers which enter the working-openings of the die L, substantially as described.

10. The dies K L and stripper V, in combination with the bolts W, freely connected with the stripper and secured to the die K, and bolts Y', which are secured to said stripper and passed freely through the head K' of said die K, the upper end of said bolts Y' having nuts Z', against which the head K' abuts when fully elevated, substantially as described.

11. A die or head having plungers which are movably connected therewith and adapted to yield laterally, substantially as described.

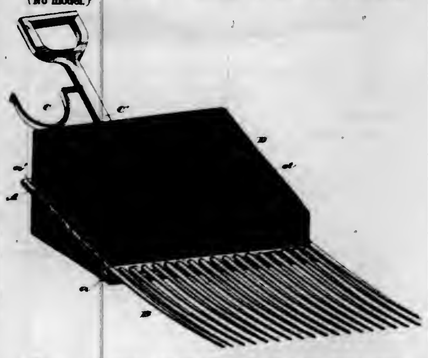
12. A die having a plunger freely fitted in an opening, thus permitting said plunger to move laterally when the plate operated upon contracts, substantially as described.

378,774. PROCESS OF TREATING SLUDGE ACID. HECTOR DE GROUILLIERS, Potsdam, Prussia, Germany. Filed Sept. 6, 1887. Serial No. 248,971. (No specimens.)

Claim.—1. The hereinbefore described process of recovering sulphuric acid, consisting in first removing the petroleum or tarry impurities by floating said impurities, then adding to the waste recovered thereby sulphate of soda or potash, and precipitating the bisulphate formed therefrom by boiling and evaporation, then depriving the precipitate of its aqueous substance by heat, and finally in vaporizing and condensing the sulphuric acid therein, all substantially as described.

2. The hereinbefore-described process, consisting in adding to the waste containing sulphuric acid sulphate of soda or potash, then precipitating the bisulphate obtained therefrom by boiling and evaporation, and finally depriving the precipitate of its aqueous substance by heat in a furnace, all substantially as described.

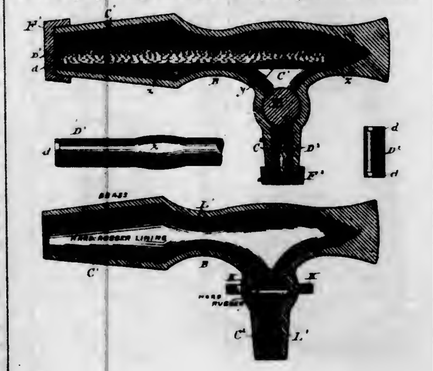
378,775. DEVICE FOR PICKING CRANBERRIES. ANDREW J. DENROW, Old Bridge, N. J. Filed Nov. 24, 1886. Serial No. 219,812. (No model.)

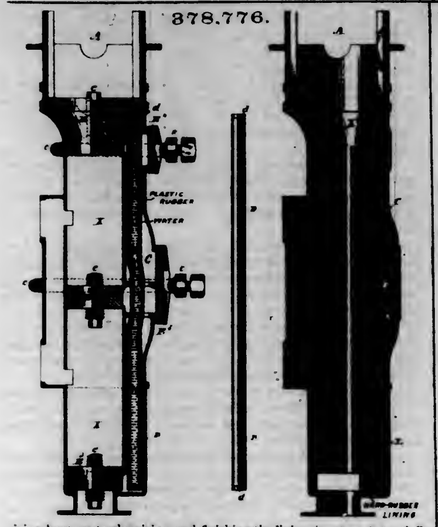


Claim.—A cranberry-gatherer consisting of a bent metal frame, A, to the front projecting ends of which is secured a transverse bar, *a*, carrying forward-projecting teeth B, a handle, C, attached to the rear bar, *a'*, and provided with a laterally-projecting bent bar, C, a wire-gauze receptacle, D, the edges of which are supported by a wire frame, *d*, said receptacle having inclined sides, as shown, the same being attached to the frame A so that the bottom thereof will be below the projecting teeth and the handle will incline upwardly, while the side and rear walls of the receptacle extend above and below the side and rear bars of the frame A, substantially as shown, and for the purpose set forth.

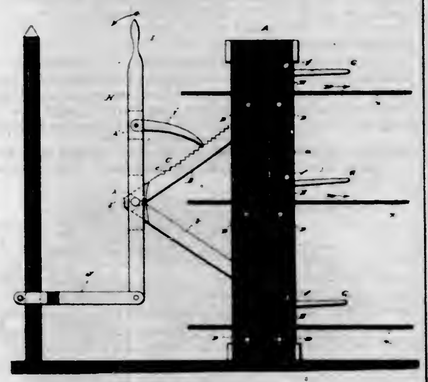
378,776. ART OF LINING HOLLOW ARTICLES WITH HARD RUBBER. MYER DITTENHOEFER, New York, N. Y. Filed Nov. 4, 1887. Serial No. 254,313. (No model.)

Claim.—The within-described process of lining a chamber or chambers in a hollow article with hard rubber or other vulcanizable compound, consisting in forming the compound while plastic into a tubular bag or bags, filling the same with an inflating material, as water, hermetically closing the bag or bags with the same or an analogous compound and inserting them into the chamber or chambers to be lined, tightly closing said chambers, subjecting the whole to vulcanizing heat, and vulcanizing and finishing the lining *in situ*, substantially as hereinbefore specified.





378,777. WIRE-AND-PICKET-FENCE MACHINE. WILLIAM DIXON, Clay Centre, Kans. Filed Nov. 12, 1887. Serial No. 254,991. (No model.)



Claim.—1. The combination, with the main frame, composed of the two upright parallel side beams and suitable transverse pieces, of the transverse pairs of rollers between said beams, the vertically-movable roller centrally above each of said pairs, a clamping-bar to force and hold said movable roller down on the wires passing over the corresponding set of rollers, and the mechanism, substantially as described, whereby the main frame is moved and held in the direction to extend and tighten the clamped wires, substantially as specified.

2. The combination, with the main frame provided with the side beams, *a a*, the pairs of rollers D D, the vertically-moving rollers E, the clamping-lever bars G, and retaining-rods *f*, of the mechanism, substantially as described, whereby the main frame is drawn and held in the direction to extend and tighten the clamped wires, substantially as specified.

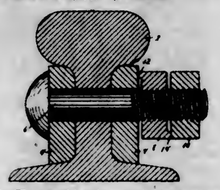
3. The combination, with the main frame, pairs of rollers, vertically-movable rollers, and clamping-bars, of the beams B *b*, secured to the main frame and converging thence to their meeting ends, the rack on the upper edge of the beam B, the lever H, provided with the handle I, the detent-bar pivoted to the lever below the handle, and the retaining-bar pivoted to the lower end of the lever H, substantially as specified.

378,778. WEATHER-STRIP. GEORGE P. DOREN, Great Neck, N. Y. Filed Dec. 16, 1887. Serial No. 258,057. (No model.)



Claim.—A weather-strip composed of an elastic tubing or cord held in a doubled strip of cloth, leather, or like material along the closed edge of said doubled strip, the two adjacent faces of said doubled strip being united by adhesive material, substantially as herein shown and described.

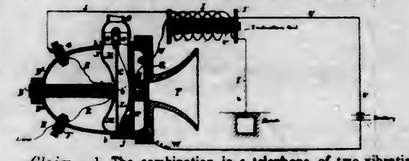
378,779. NUT-LOCK. JOHN EDGAR, Rochester, Minn. Filed Oct. 17, 1887. Serial No. 252,553. (No model.)



Claim.—1. The combination, with the bearing-plate and the bolt 6, passing through said plate, of the nut 8, bearing against the plate at one edge only, and the jam-nut 10, bearing against the opposite edge of the nut 8 at a point diagonally opposed to the first bearing, in the manner and for the purpose substantially as described.

2. The combination, with the bolt 6 and the bearing-plate, of the nut 8, having the projection 12 on one face and at the edge thereof and the projection 14 on its other face at the diagonally-opposite edge, and the nut 10, bearing upon said projection 14, all substantially as described, and for the purpose set forth.

378,780. TELEPHONE. LEO EBELING, BENJAMIN DUBBERKE, and GUSTAVUS RIEK, St. Louis, Mo.; said Dubberke and Riek assignors to said Ehrlich. Filed June 6, 1886. Serial No. 204,224. (No model.)



Claim.—1. The combination, in a telephone, of two vibrating diaphragms parallel with each other, with two closed chambers, one each side of the inner or receiving diaphragm, and having a tube leading from the chambers to the outside of the case, all substantially as shown and described.

2. In a telephone receiving and transmitting instrument, the combination, with two vibrating diaphragms parallel with each other, two closed chambers, one on each side of the inner or receiving diaphragm, and a tube leading from each of said chambers to the outside of the case, of a plate, T, arranged between said diaphragms, and a button, S, secured to plate T, and thereby held in contact with the outer or transmitting diaphragm, substantially as set forth.

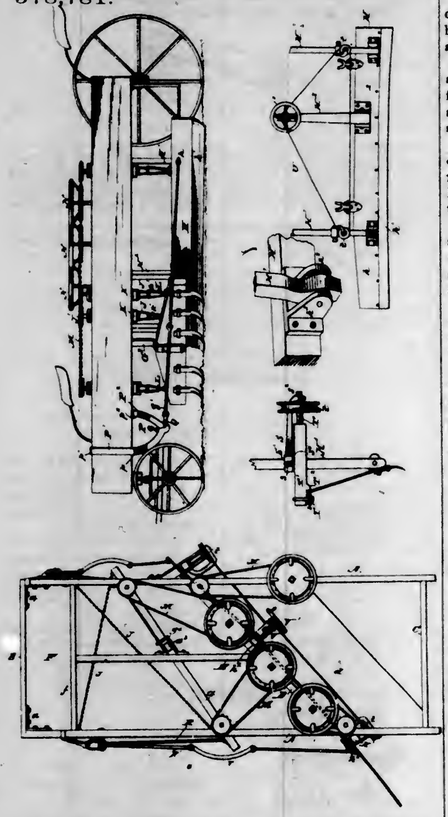
3. The combination, with the vibrating diaphragm of a telephone having electrical connection with one pole of a battery, of a button electrically connected with the other pole of a battery, and a plate formed of mica, to which plate the button is secured and by which the button is cushioned, substantially as set forth.

4. In a telephone, the combination of a permanent magnet having one pole in the form of a bell or cup and the other pole consisting of a core-bar extending axially from the apex, a wire, E, coiled helically around said core-bar and having its ends electrically connected to the binding-screws F and G, inserted in the bell-formed pole of the magnet, a secondary wire, I, of an induction-coil making connection between binding-screw G and the earth, a line-wire, H, connected to binding-screw F, a chamber of which said bell-formed pole forms part of the wall, and a conducting ear-tube extending from said chamber, as set forth.

378,781. ROAD-MACHINE. ALBERTO PIRES, New Berlin, N. Y. Filed May 28, 1887. Serial No. 239,267. (No model.)

Claim.—1. In a road-machine, substantially as described, the combination, with the framing and the road-making devices to be

378,781.



elevated, of the screw supported on the main frame and turning in a nut or threaded bearing connected with the road-making devices, a sprocket-wheel on said screw, an operating-wheel, and a belt connecting the sprocket and operating wheels, substantially as set forth.

2. The combination, in a road-machine, substantially as described, of the screw-support having a bearing for the screw and guide-rails, as described, the block or nut engaging said rails and having a threaded opening, the screw journaled in its support and engaging the threaded opening of the nut, the road-making devices, connections for joining said nut or block with the road-making devices, the sprocket-wheel connected with the screw, the operating-wheel, and the belt connecting said wheels, substantially as set forth.

3. The combination of the framing, the screw-supporting frame having a bearing for the screw and guides for the nut-block, the nut or block engaging said guides and having a threaded opening for the screw, the screw journaled in the frame and engaging the threaded opening of the nut, and the hanger-arms pivotally connected at their upper ends to the nut or block and having their lower ends connected with the part to be elevated, substantially as set forth.

4. The nut or block having a threaded opening or bore and provided with depending bars k', having a foot-piece, K', perforated at k^3, the bar l, pivoted at its upper end to the foot-piece K', and having its lower end connected with the device to be elevated, the guides for said nut or block, and the screw engaging the same, substantially as set forth.

5. The combination of the framing, the frame I, secured thereto, and having bearing i and guide-rails i', the nut or block K, engaging said rails, and having depending arms k' and perforated foot-piece K', the arm l, pivoted to said foot-piece, the screw journaled in bearing i and engaging the block K, the sprocket-wheel on said screw, the sprocket-wheel n, having hand-wheel n', and the belt connecting said sprocket-wheels, substantially as set forth.

6. In a road-machine, substantially as described, the combination of the digger-bar g, the plate g', secured to the under side thereof, the bar having a socket, g^3, above the plate g', the tooth G', having lug g^2, and the clip G^2, substantially as set forth.

7. In combination with the main frame, the digger-bar capable of an endwise oscillation or play, the scraper, and the drag-connections for said scraper extended past the outer ends of the digger-bar and arched laterally outward at points opposite the said digger-bar, substantially as set forth.

8. The combination, in a road-machine, with the main frame, the operating bar or bars suspended therefrom, and the drag-connections for connecting such operating-bars with the bracket, of the bracket P, having shoulder-like portions p, p', and p^2, substantially as and for the purposes specified.

9. The combination, with the scraper pivotally supported, of screws arranged to tilt said scraper on its pivotal supports and provided with pulleys and connections between the said pulleys, whereby the screws may be turned equally to effect an even adjustment of the scraper, substantially as set forth.

10. The scraper pivotally supported, combined with a bar connected therewith and having a bearing for a screw, a screw engaging said bearing, and a support for said screw, whereby the scraper may be tilted on its pivotal support, substantially as set forth.

11. The combination of the scraper pivotally supported, the bar T, having shoulder T^2 and roller T^3, engaging on opposite sides of the scraper, the screw engaging said bar, and the support for said screw, substantially as set forth.

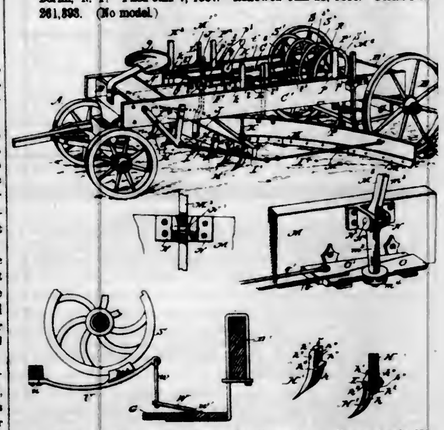
12. The combination of the scraper, the upright pivotally connected therewith, the bar connected with the scraper and slotted, whereby it may fit over the upright, the screw engaging said bar, and the support for said screw, substantially as set forth.

13. The combination of the scraper pivotally supported, the screws arranged to tilt the same on its pivotal supports, and provided with pulleys, the belt connecting said pulleys, the drum or shaft engaged by said belt, whereby the latter may be operated, and an adjustable support for said draft or drum, substantially as set forth.

14. In a road-machine, the combination of the scraper pivotally supported, the bearing-bar S, secured at one end to the upright and having its opposite end provided with a bearing for the screw, the screw, and the bar engaged by said screw and connected with the scraper, substantially as set forth.

15. The combination, in a road-machine, of an operating-bar or road-making device, a screw, a support in which said screw is journaled, a threaded bearing engaged by said screw, guides for said threaded bearing, and a connection joining said threaded bearing with the operating-bar, substantially as and for the purposes specified.

378,782. ROAD DIGGER AND GRADER. ALBERTO FIRES, New Berlin, N. Y. Filed Jan. 7, 1887. Renewed Jan. 25, 1888. Serial No. 261,893. (No model.)



Claim.—1. The combination of the digger-bar, a digger-tooth, H', having a lug, h^2, and a shank, h', provided with a depression, h^3, in its front side, and with spurs h^4, projected from its rear side, and the clip I, substantially as set forth.

2. In a machine, substantially as described, a scraper having its front side and under or lower edge concaved from end to end, substantially as set forth.

3. In combination with the scraper-bar, the metallic scraper-sections M', having lugs m and extensions m', substantially as set forth.

4. The combination of the framing, the scraper-uprights M^3 M^3, pivoted to the scraper and extended below their pivotal connections therewith, and adjusting means arranged and operating between such extensions and the scraper, substantially as set forth.

5. The combination, with the scraper pivotally supported, and extensions or bearings, as m^3, of wedge-blocks arranged between said bearings and the scraper and movable, substantially as described, and for the purposes specified.

6. The combination of the scraper, a bearing, as m^3, the wedge-blocks O O', the pivoted lever, and connections between the wedge-blocks O O' and the lever, substantially as set forth.

7. The combination of the framing having guides M^4 M^4, having rollers m^3, the scraper, and the uprights M^3 M^3, connected with the scraper and extended up through the guides M^4 M^4, substantially as set forth.

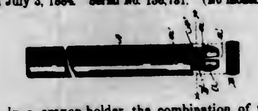
8. The combination of the framing, the shafts L, L', and Q, having sprocket and pinion wheels, the digger and scraper having joined to them elevating-connections having racks meshed by the pinions of the shafts L, L', and Q, the elevating-connection P, having a rack, the shaft R, having a pinion, p^3, meshing rack P', and provided with a fixed hand-wheel, S, the wheels S, S', and S^2, journaled on the shaft R, and having sprockets and sprocket-belts connecting the sprockets of said wheels with those of the shafts, substantially as set forth.

9. The combination of the framing, the brackets I^2, depending therefrom, the digger and scraper suspended from the frame and drag-connections between said digger and scraper, and the brackets I^2, substantially as set forth.

10. The combination of the scraper pivotally supported and having its front side and lower edge concaved, as described, and means for adjusting the angle of such scraper, substantially as set forth.

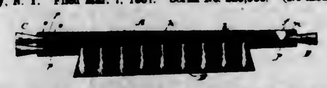
11. The combination of the frame, the steady-post J', and the guide-keeper J^4, formed of rods j and j', all arranged substantially as set forth.

378,783. SLATE-PENCIL HOLDER. LEVI P. FOUREA, Westfield, Ind. Filed July 3, 1884. Serial No. 136,781. (No model.)



Claim.—In a crayon-holder, the combination of the stock or handle, consisting of a hollow body slitted at its lower end to form spring-jaws and elliptical in cross-section, and an independent ring shaped interiorly to conform to the exterior contour of the jaws, whereby the jaws may be pressed together by a circular movement of the ring, substantially as described.

378,784. BRUSH. ROBERT FOSTER and BERNARD J. KENNEDY, Troy, N. Y. Filed Mar. 7, 1887. Serial No. 230,000. (No model.)



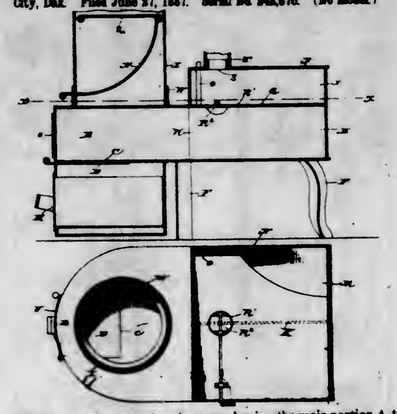
Claim.—A brush consisting of a brush-block having an approximately rectangular body varying in thickness throughout its entire length and having its thick end rounded and its thin end terminating in a tapering projection, a series of bristle tufts projecting from the lower face of the body of said block, auxiliary tufts inserted horizontally in the edge of the block at one corner of the rounded end thereof, and auxiliary tufts projecting horizontally and longitudinally from the tapering projection on the opposite end of the block, all substantially as shown and described.

378,785. FLOUR-BOLTING REEL. WASHINGTON GILLELAND, Land, Ga. Filed July 8, 1887. Serial No. 243,794. (No model.)



Claim.—The combination, with the reel-frame having ribs B^4, which are triangular in cross-section, of the sections c of bolting-cloth, one edge of each such section being glued to the edge of the outer side, b^4, and nailed on the other side, b', of a rib, B^3, and the edge of the next section c overlapping the former and being nailed to the other angular side, b^5, of the same rib, all as shown and described.

378,786. STRAW-BURNING STOVE. FRED GUTZMER, Big Stone City, Dak. Filed June 27, 1887. Serial No. 243,670. (No model.)



Claim.—1. The straw-burning stove having the main portion A, the fire-box extending therefrom and communicating therewith, the horizontal diaphragm G, arranged in the portion A and dividing the same into an upper and lower compartment, said diaphragm having the opening at its rear corners communicating with the said compartments, the vertical longitudinal diaphragm K, dividing the lower compartment into horizontal flues L and M, the damper N at the front end of one of the said flues, the damper R^2 in the front end of diaphragm G, at the center thereof, the top of the stove being provided with the escape flue or opening S, arranged directly above the damper R^2, substantially as described.

2. A straw-burning stove having the main portion A, provided in its lower side with the longitudinal flues L and M, the chamber I, arranged above the said flues and communicating with the rear ends thereof, the escape-opening in the upper side of the stove to communicate with the stove-pipe, the damper R^2 in the bottom of the chamber I, directly below the escape-opening, the fire-box arranged on the front side of the main portion A and communicating with the flues L and M, the feeding-drum arranged on the upper side of the fire-box, the slide in the lower side thereof, the removable ash-pan arranged under the fire-box, and the damper N, arranged at the front end of one of the flues, for the purpose set forth, substantially as described.

378,787. MACHINE FOR TURNING AND MOLDING WOOD. CHARLES L. GOSSELINS, Allegheny, Pa. Filed July 26, 1887. Serial No. 245,257. (No model.)

Claim.—1. The combination of one or more spring-actuated laterally-moving carriages provided with cutters upon their upper ends, and an endwise-moving pattern which is placed between the carriages, with the endwise-moving sliding table, the dogs mounted upon the sliding table, and an endwise-moving revolving shaft carrying one of the dogs, whereby the lumber is given a rotary and endwise movement as it is being acted upon by the cutter or cutters, substantially as shown.

2. The combination of a rotary cutter placed upon the top of the table, a spring-actuated carriage for moving the cutter laterally in relation to the piece of lumber being dressed, a pattern, and a slide for moving the pattern back and forth, with the sliding table, two dogs between which the lumber is held, and a shaft which causes the lumber to revolve, and which shaft is carried back and forth by the table in its movements, substantially as described.

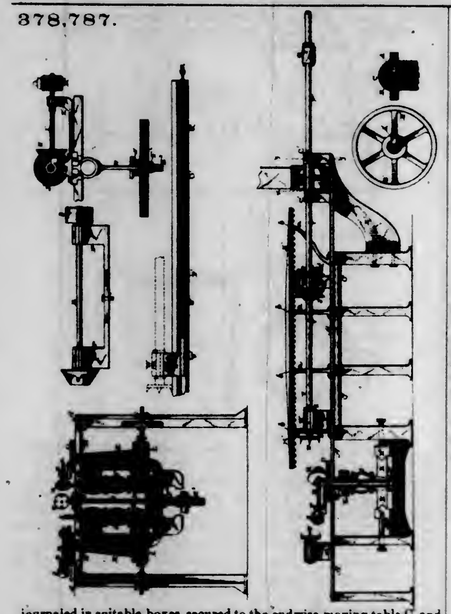
3. The combination of the laterally-adjustable cutter or cutters, the endwise-moving table, the dogs secured to the table and carried back and forth thereby, the grooved revolving shaft journaled by means of suitable boxes upon the sliding table, the boxes C, through which the shaft passes, and the pulley B', the boxes and pulley being provided with a spline, A', substantially as set forth.

4. The combination of the boxes C, the revolving collars D', placed inside of the boxes and provided with a spline, A', and the endwise-moving shaft V, substantially as specified.

5. The combination of the endwise-moving table C, the boxes mounted thereon, the shaft V, passing through the boxes and provided with a dog at one end, and a mechanism, substantially as described, for causing the shaft to move at a slow rate of speed as it is carried back and forth by the table C, substantially as shown.

6. The combination of the shaft V, the endwise-moving table

378,787.



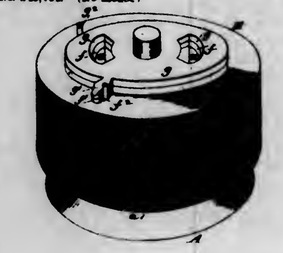
journaled in suitable boxes, secured to the endwise-moving table C, and provided with a wheel, J', the shaft I', placed at an angle to the shaft V and provided with a gear, H', and a pinion, M', and the stationary rack with which the pinion meshes, substantially as described.

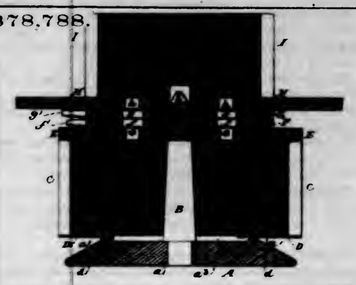
7. The combination of the spring-actuated carriage or carriages, the endwise-moving slide, the pattern, the slotted table, a friction-roller for each carriage to bear against the pattern, a projection upon the upper end of the carriage to extend through a suitable slot in the table A, a horizontal supporting-plate connected to the carriage, and an adjustable horizontal pivoted cutter mounted upon the support, substantially as specified.

8. The combination of a spring-actuated carriage or carriages provided with bearings upon their inner lower corners, the friction-roller for each carriage and which is applied to the bearing, the endwise-moving pattern which is placed between said rollers, and the endwise-moving slide which supports the pattern, with the slotted table, the endwise-moving table C, and the dogs between which the lumber is supported, the rotary endwise-moving shaft which is carried back and forth by the table C, and which has one of the dogs secured to it, and the cutters for acting upon the lumber placed upon opposite sides of the table C, substantially as shown.

9. The combination of the table A, having a slot through its top, the endwise-moving table C, placed in the slot, a mechanism for moving the table, the shaft V, for causing the lumber to revolve, and the horizontal cutters placed at an angle to the timber which is being operated upon, one of the cutters being placed slightly in advance of the other and each cutter being placed upon a spring-actuated carriage, so as to be laterally removable in relation to the lumber, substantially as described.

378,788. INSECT-TRAP. EPHRAIM HERRINGTON, Mount Vernon, assignor of one-half to M. M. Bush, Towns, Ga. Filed Sept. 14, 1887. Serial No. 249,701. (No model.)

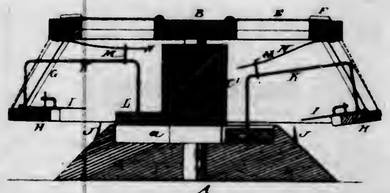




Claim.—1. In an insect-trap, the base A, having the incline *a* extending from the bottom up and inwardly to an edge, *a'*, in combination with the annular toothed plate D, projecting inwardly from and at right angles to the cylinder C, the top of said cylinder being adjustable on a central screw, as shown, whereby the teeth of plate D may be brought more or less close to the edge *a'*, as and for the purpose set forth.

2. In an insect-trap, the combination of the cover E, having holes *e*, the turn-boards F G, having holes *f g* adapted to register therewith, and the independent upper chamber, I, having the bottom holes, *h*, adapted to register with holes *e f g*, as and for the purpose specified.

378,789. ANIMAL-TRAP. EPHRAIM HERRINGTON, Mount Vernon, assignor of one-half to M. M. Bush, Towns, Ga. Filed Sept. 14, 1887. Serial No. 249,702. (No model.)



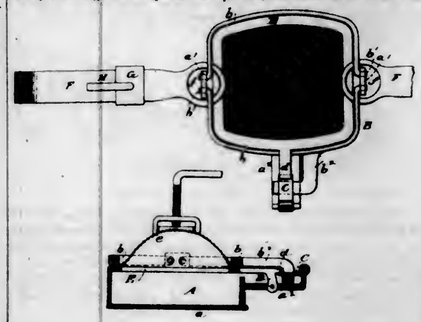
Claim.—1. An animal-trap having fixed vertical points and superposed hinged needles, between which the animals may enter, the vertical points being in the base and the needles on horizontal plates, as shown and described.

2. The needle-plates H and platform I of an animal-trap, in combination with the rods K, having two arms connecting with said parts H I, and the springs N, connecting with the subjacent rods by rings M, as and for the purpose set forth.

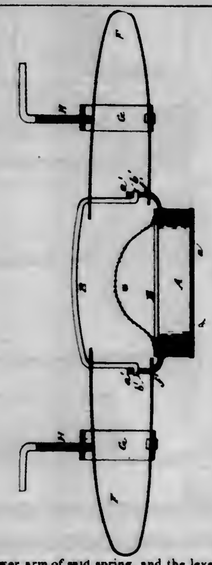
378,790. LIVE-BAIT ANIMAL-TRAP. EPHRAIM HERRINGTON, Mount Vernon, assignor of one-half to M. M. Bush, Towns, Ga. Filed Sept. 19, 1887. Serial No. 250,095. (No model.)

Claim.—1. In a live-bait animal-trap, the trip-arm C, hinged to a projection, a^3, of the receptacle A, in combination with a cover, E, having the integral hinged arm D, provided with the stud *d*, to catch on said trip-arm, as shown and described.

2. In an animal-trap, the combination, with a bait-receptacle having the bearings *a'*, and the clamping-jaws having the trunnions *b* working in said bearings, of the metallic spring F, having the aperture *f'*, through which passes the part *a'*, the band G, riveted at the

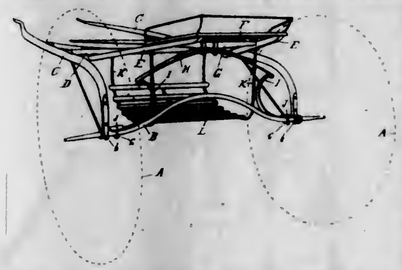


378,790.



bottom to the lower arm of said spring, and the lever-screw H, working in a thread of said band, as and for the purpose specified.

378,791. TWO-WHEELED VEHICLE. CHARLES W. JEWETT and GEORGE H. JEWETT, Jackson, Mich., assignors of one-half to Fred B. Crego, same place. Filed Oct. 22, 1887. Serial No. 253,072. (No model.)



Claim.—1. In a road-cart, the combination of the thills and axle, seat-bars pivotally secured to the cross-bar between the thills, and a semi-elliptic spring secured to the seat, with inwardly-curved C-shaped supporting-springs connecting the ends of the semi-elliptic spring with the axle, substantially as described.

2. In a road-cart, the combination of the axle B, thills C, seat-bars E, pivotally secured to the cross-bar between the thills and carrying a seat, F, upon their rear ends, with the semi-elliptic spring H, and the inwardly-curved C-shaped supporting-springs I, connecting said semi-elliptic spring with the axle, substantially as described.

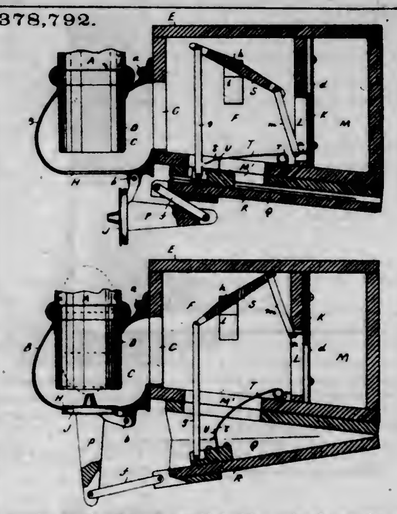
3. In a road-cart, the combination of the axle B, thills C, seat-bars E, seat F, head-block G, semi-elliptic spring H, cross-bar D of the thills, the inwardly-curved C-shaped supporting-springs I, and a foot-rest suspended between the cross-bar of the thills and the seat-bars, the parts being constructed, arranged, and operating substantially in the manner for the purposes described.

378,792. PNEUMATIC CASH-CARRIER APPARATUS. GEORGE B. KELLY, Boston, Mass. Filed Apr. 1, 1887. Serial No. 233,394. (No model.)

Claim.—1. The combination, with a pneumatic tube for the transmission of a carrier, &c., therethrough, provided with a valve arranged to close and open the receiving end or opening for the carrier, &c., of means connected to said valve and adapted to be operated by air from the operating-bellows or other air-motor, by which said valve is held closed, for the purpose specified.

2. The combination, with a pneumatic tube for the transmission of

378,792.



a carrier, &c., therethrough, provided with a valve for opening and closing communication between said tube and the operating-bellows or other air-motor, of means connected to said valve and adapted to be operated by air from the operating-bellows or other air-motor, by which said valve is held open, for the purpose specified.

3. The combination, with a pneumatic tube for the transmission of a carrier, &c., therethrough, provided with a valve arranged to close and open its receiving end or opening for the carrier, &c., and a valve for opening and closing communication between said receiving-tube and the operating-bellows or other air-motor, of means connected to the two valves and adapted to be operated by air from the operating-bellows or other air-motor, by which said valves are held respectively closed and opened, for the purpose specified.

4. The combination, with a pneumatic tube for the transmission of a carrier, &c., therethrough, provided with a valve arranged to close and open its receiving end or opening for the carrier, &c., and a valve for opening and closing communication between said tube and the operating-bellows or other air-motor, of a bellows or expanding and collapsible chamber connected to said valves and adapted to be operated by air from the operating-bellows or other air-motor for operation on said valves, substantially as and for the purpose specified.

378,793. FENCE. WILLIAM KELLY, Saranac, Mich. Filed Apr. 16, 1887. Serial No. 235,056. (No model.)

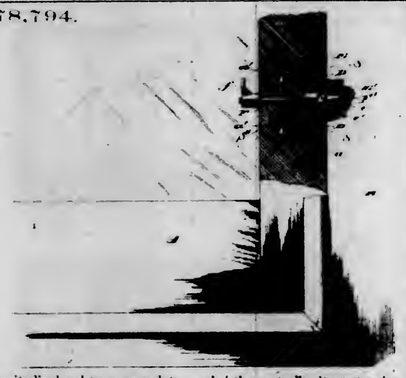


Claim.—In a rail fence, the combination, with the pairs of X-braces standing at right angles to the line of fence, and their upper uniting-rails, B and C, supported thereby, of the inclined short pieces D, secured to one leg of each brace below its point of intersection, and the oppositely-inclined pieces E, similarly secured to the remaining leg of each brace, both pieces D and E standing in the line of the fence, and the rails F and G secured to the pieces D and E and supported solely by said pieces below the points of intersection of the braces, all constructed and arranged substantially as and for the purpose described.

378,794. SASH-FASTENER. ORLANDO C. KEPNER, Montezuma, Ohio. Filed Nov. 12, 1887. Serial No. 255,015. (No model.)

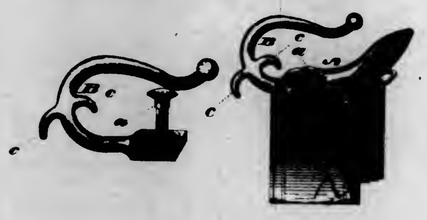
Claim.—The combination of the housing or supporting frame, the bolts D, movable in said frame and encircled by coiled springs, a spring-actuated plate, E, secured to said bolts and formed with inwardly-curved ends and provided with an integral collar, E', provided with

378,794.



longitudinal and transverse slots *e* and *e'*, the centrally-situated spring-encircled bolt F, and the collar *f'* on said bolt, having a lug, *f*³, adapted to engage with the slots in the integral collar of the spring-actuated plate, substantially as described.

378,795. CHECK-HOOK. FREDDIE C. KIMBALL, Jackson, Mich. Filed Dec. 20, 1887. Serial No. 258,479. (No model.)



Claim.—1. As an improved article of manufacture, the check-hook herein described, having lateral arms or stops on the upwardly-curved portion thereof, substantially as specified.

2. As an improved article of manufacture, the check-hook herein described, having downwardly-curved arms arranged on opposite sides of the upwardly-curved portion thereof, and about midway of the height of the same, substantially as described or specified.

378,796. LUMBER TRIMMING AND ASSORTING MACHINE. ALBERT T. LINDERMAN, Whitehall, Mich., assignor to Ella A. Linderman, same place. Filed Mar. 6, 1886. Serial No. 194,223. (No model.)

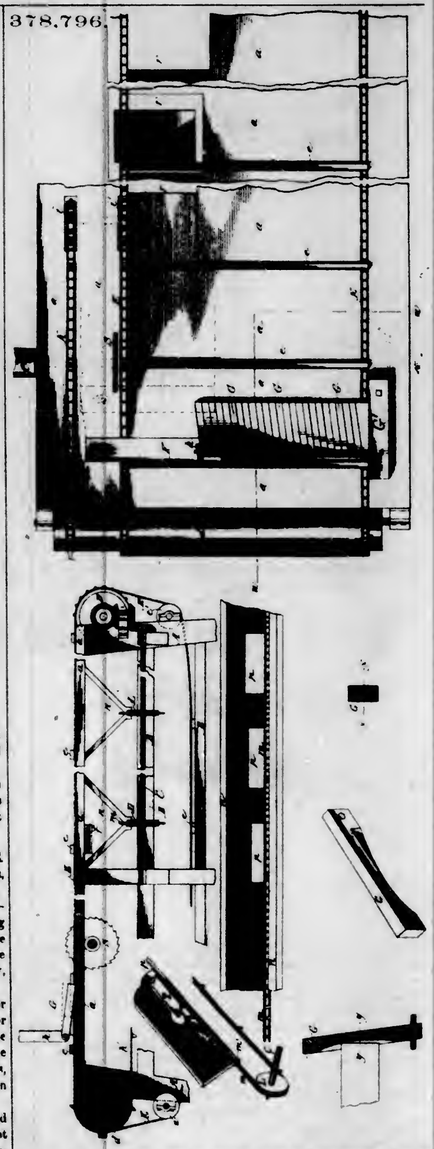
Claim.—1. In a machine for trimming lumber, the series of gage-keys G G, &c., severally, one end of each of which is pivotally hung above the passing lumber, the other end falling obliquely toward the saw, whereby the end of the passing lumber contacts with one of the keys and is adjusted to a definite position as it passes onto the saw, substantially as shown and described.

2. A lumber trimming and assorting machine having a conveyer mechanism for moving the lumber along a supporting-table, a saw for trimming the lumber during its transit, and graduated openings, the smallest opening being nearest the saw, in the supporting-table of the conveyer, through some of which openings the trimmed lumber falls, whereby it is assorted according to its length, substantially as shown and described.

3. In lumber-assorting machines, a conveyer having an inclined bottom to hold by gravity the lower edge of the passing lumber against the lower side board of the conveyer, an endless conveying mechanism traveling in a recess in the bottom of the conveyer for moving the lumber along the conveyer, and graduated openings in the inclined bottom of the conveyer, the smallest opening being next the point of entry of the lumber to the conveyer, for allowing the lumber to drop through or out of the conveyer when the lumber reaches an opening sufficiently wide, whereby the passing lumber is assorted and dropped at different points along the conveyer, according to its width, substantially as shown and described.

4. A lumber trimming and assorting machine having the following elements: an endless-chain conveye, for carrying the lumber sidewise along the conveyer-table, gage-keys for regulating the position of the lumber on the conveyer-table, a saw for cutting off the lumber in transit, graduated openings in the conveyer-table through which the

378,796.

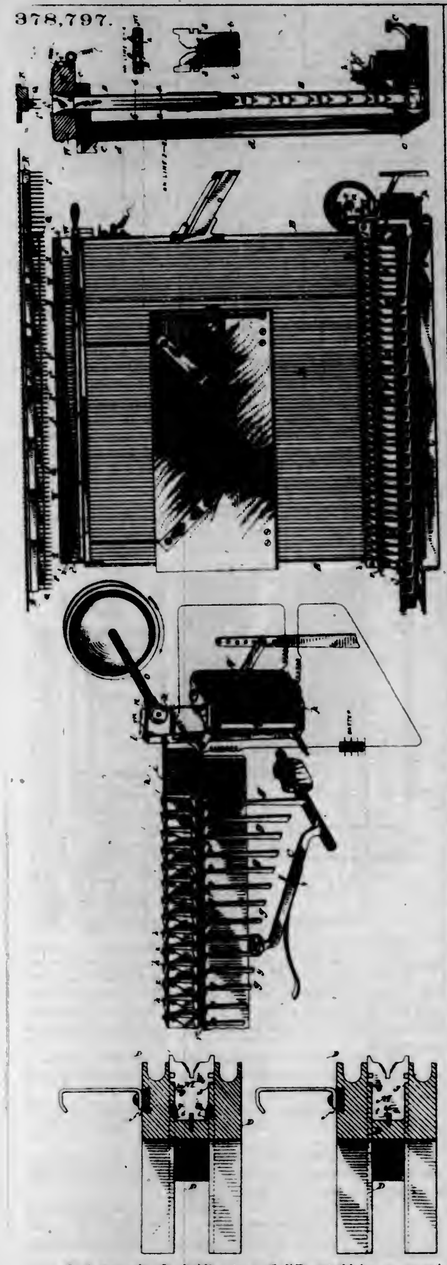


lumber drops according to its length, thereby being assorted as to length, a conveyer-trough underneath these openings into which the lumber falls, and graduated openings in the inclined bottom of this trough through which the lumber in passing falls, thereby assorting the lumber as to width, substantially as shown and described.

378,797. MACHINE FOR FORMING TYPE-BARS. OTTMAR MERGENTHALER, Baltimore, Md., assignor to the National Typographic Company, of West Virginia. Filed Mar. 23, 1886. Serial No. 196,270. (No model.)

Claim.—1. A magazine-tube for matrices or type, provided on its inner surface with ribs or projections, substantially as described and shown, whereby the matrix is enabled to descend freely through the tube.

378,797.



2. A magazine for holding type of different thicknesses, consisting of a series of tubes of uniform size provided with internal ribs or projections extending inward different distances in the respective tubes, according to the width of the type to be contained therein.

3. A magazine-tube for matrices or type, consisting of a sheet-metal tube indented or creased from the outer side to form longitudinal ribs on the inner surface, substantially as described.

4. The herein-described method of forming magazine-tubes for type of different thicknesses, consisting in forming rectangular tubes of uniform size and subsequently creasing or indenting said tubes longitudinally from the outer side inward.

5. The magazine-tubes provided with the longitudinal inwardly-projecting ribs extending upward from their lower ends, but terminating below the upper ends, whereby the tube is adapted for the free admission of the matrices at its upper end.

6. In a mechanism for composing type or matrices, the combination of a main frame with a detachable secondary frame, *d*, connected, substantially as described, to the upper and lower ends of a series of magazine-tubes, and provided at its upper end with supporting-shoulders to engage the main frame, said parts constructed, substantially as described, to admit of the magazine being lifted bodily from the main frame at will.

7. In combination with the main frame having an overhead support therefor, the removable frame *d*, having the series of magazine-tubes and a key mechanism connected thereto.

8. The removable frame *d*, provided with the magazine-tubes and a key mechanism, in combination with the main frame provided with the lip or shoulder to sustain the frame *d*, and with screws *f*, whereby the lower end of the magazine and the key mechanism may be adjusted horizontally.

9. In a composing mechanism, a series of upright magazine-tubes, a secondary frame to which they are secured, a main frame from which the secondary frame is suspended, and adjusting devices, substantially as described, to effect the horizontal movement of the tubes at the lower end.

10. The combination of a magazine-tube, the finger-key and its connections to deliver the type from the tube one at a time, and the automatic lock, substantially as described, to hold the key momentarily in its depressed position.

11. In a composing mechanism, the magazine-tubes, the finger-keys to discharge the matrices or type therefrom, the dogs or detents *h*, to lock said keys in their depressed positions, the bar *i*, to unlock said dogs, its actuating-spring, and the constantly-rotating ratchet-wheel *n*, connected by intermediate devices with the bar *i*, whereby said bar is prevented from unlocking the keys until a predetermined time has elapsed.

12. The finger-keys, their locking-dogs, the plate *i*, to unlock said dogs, its actuating-spring, the ratchet-wheel driven from a constantly-moving part of the machine and connected with plate *i*, substantially as described, the plates *r r'*, the electro-magnet, and the electric connections, combined for joint operation, substantially as shown, said elements combined for joint operations.

13. The combination of the finger-keys, the dogs to lock the respective keys, their actuating-springs, the bar *i*, to release the dogs, the spring *k*, to move said bar, the electro-magnet *q*, to move the bar *i* against the action of spring *k*, a retarding-dog connecting the bar *i* with a constantly-moving part of the machine, and electric connections, substantially as described, whereby each key is automatically locked when depressed and automatically unlocked after the lapse of a predetermined period.

14. In a type assembling or composing mechanism, the channel or conductor having the open side and admitting the type through said side at different points in its length, in combination with the retaining device *u*, substantially as described, extending lengthwise of the conductor and adapted to laterally engage the type after their admission into the conductor.

15. In a mechanism for assembling matrices or type, the series of magazine-tubes, the series of finger-keys by which the type are delivered from the respective tubes, an open channel or guide into which the type are delivered, and the longitudinal laterally-movable retaining device, substantially as described, adapted to loosely engage the type and prevent their escape from the channel during their movement therethrough.

16. In a type assembling or composing mechanism, the conductor having the open side admitting the type thereto at various points in its length, in combination with the finger-key mechanism for inserting the type through said open side, and the laterally-movable retaining device extended longitudinally of the conductor and connected with the series of finger-keys, as described, whereby the action of the keys is caused to effect the insertion of the type and also to control the retaining device.

17. In a mechanism for assembling matrices or type, the guide or channel through which the type are delivered to the point of assemblage, open at one side for the admission of the type, in combination with the longitudinal laterally-movable bars *u*.

18. The combination of the type guide or channel open at one side, the obliquely-slotted bars *u*, and the series of finger-keys connected with said bars by means substantially as described.

19. The oscillating type-discharging keys *c*, provided with arms *g*, in combination with the type guide or channel D, the bars *u*, the

bar *r*, the vibratory air-nozzle and connections, substantially as described, from the bar *r* to the nozzle, and the bars *u*, whereby the depression of a key is caused to discharge a type or matrix into the guide, to deflect the air-blast temporarily from the line, and to retract the bars *u*, that the matrix may enter the guide in position to be engaged by said bars when the key rises.

20. In a type composing or assembling mechanism, the guide or channel D and laterally-movable locking-bars *u* near its base, in combination with a series of type or matrices, M, provided at their upper ends with sustaining-shoulders and adapted at their lower ends to engage the bars *u*, whereby the type are retained in an upright position during their discharge through the guide, so that the air-blast may act effectively upon them.

21. In a machine for assembling matrices or type, a guide or channel open at one side for the introduction of the type and provided with means, substantially as described, for engaging and guiding the type at both ends, in combination with a conductor for delivering a blast longitudinally through said channel, whereby the type are retained in position transversely across the channel while being driven therethrough.

22. In a composing mechanism, the cam *i'* and arm *K'*, actuated thereby, in combination with the hand-lever *g'*, adapted to engage said arm, the reciprocating bar *f''*, and the pawls *d''*, connected with the bar, whereby the pawls may be automatically reciprocated to assemble the matrices and then advanced a greater distance by hand to transfer the assembled matrices.

23. In a composing mechanism, the combination of the type guide or channel, the blast-delivery tube to effect the advance of the type through the channel, the elastic detent to arrest the advancing type, and the pawls to engage the type and prevent them from rebounding.

24. In a distributing mechanism, the distributer-rail, substantially as described, attached to the frame at one end only, in combination with the traveling carrier-plate adapted to engage and sustain said rail.

25. The distributer-rail attached to a support at one end and provided with the dovetailed rib on its edge, in combination with the traveling plates R, to engage said rib, and the stationary frame A, with ears or guide to support the plates R, as described and shown.

26. In combination with the distributer-rail, the carrier-plates R, provided with fixed projecting pins b^4.

27. The distributer-rail and the carrier-plates provided with rigid projecting pins, in combination with mechanism, substantially as described, for lifting the type or matrices between the successive pins into engagement with the rail.

28. The rails L, supporting the type or matrices temporarily, in combination with the distributer-rail at a higher level and the intermediate blocks, O, presenting inclined surfaces to guide the matrices over the lower rails to the distributer-rail.

29. In combination with the temporary supporting-rails L and the distributer-rail at a higher level, the lifting-finger P and the blocks O, having inclined upper surfaces.

30. In combination with the rails L and the lifting-finger P, the yielding plates z^4.

31. In combination with the distributing-rail, the blocks O, having inclined upper surfaces, the rails L, to support the matrices temporarily, the yielding plates *t'*, and the vertically-reciprocating finger acting between the rails L and plates z^4, substantially as described.

32. In combination with the distributer-rail, the matrix-supporting teeth or ribs having a downward inclination toward the distributer, and means, substantially as described, for lifting the matrices into engagement with said inclined teeth, whereby the matrices are delivered to the rail with a descending motion.

33. In combination with a series of magazine-tubes and a mechanism, substantially as described, for carrying the matrices in a pendent position over the same to the respective tubes, a series of flexible cords extending above and between the tubes, electric circuit-closing devices controlled by said cords, and an electric circuit embracing electro-magnetic devices controlling the matrix-carrying mechanism.

34. In a mechanism for distributing type or matrices, a traveling carrier to advance the type, a clutch mechanism through which said carrier receives motion, an electro-magnet controlling said clutch, an electric circuit embracing said magnet, and circuit-controlling devices, substantially as described, arranged to be actuated by the moving matrices or type which may fall from their proper positions, whereby the displacement of a type is caused to automatically stop the carrier.

35. In combination with the magazine-tubes, the frame W, the flexible partitions g^3 therein, the threads h^3, connected with the conducting-fingers i^3, the electric circuit and its magnet l^3, the driving-clutch controlled by said magnet, and a mechanism, substantially as described, driven by said clutch and acting to carry the matrices or type transversely above the partitions g^3, substantially as described.

36. In a type or matrix distributing mechanism, the combination of a series of upright magazine-tubes, a positively-acting carrier whereby the type are advanced to the appropriate tubes above the mouths of those which precede them, and an intermediate frame provided with yielding partitions g^3, to prevent breakage of the parts in the event of the type being displaced during its motion.

37. In combination with a series of magazine-tubes and a transversely-moving carrier thereover, intermediate yielding partitions adapted to conduct the type into the respective tubes.

38. The mechanism for holding and delivering the space-bar, consisting of a receptacle provided with the inclined upper edges and the stop-shoulders *m'*, combined with the arms *o'*, to lift the forward space-bar out of engagement and permit its escape.

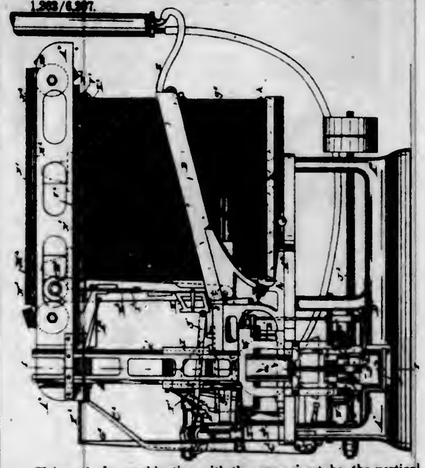
39. In combination with the space-bar receptacle having inclined upper edges and detaining-shoulders *m'*, the vibrating finger *q'*, adapted to act on the foremost bar at the lower end.

40. In combination with the space-bar receptacle having inclined surfaces to cause the gravitation of the bars toward its front and the detaining-shoulders *m'*, to arrest their advance, the fingers *o'* and *q'*, acting, respectively, on the upper and lower ends of the bars.

41. In combination with the receptacle having inclined edges or shoulders to sustain the space-bars, the overlying plate *n'*, the lifting-fingers *o'*, and the finger-key C, connected therewith, whereby the depression of the finger-key is caused to deliver a space-bar.

378,798. MACHINE FOR PRODUCING TYPE-BARS.

OTTMAR MERGENTHALER, Baltimore, Md. Filed July 17, 1886. Serial No. 208,266. (No model.) Patented in England Aug. 17, 1886, No. 10,805; in France Aug. 17, 1886, No. 178,094; in Belgium Aug. 17, 1886, No. 74,946; in Austria-Hungary Aug. 17, 1886, No. 32,336 and No. 63,490; in Italy Aug. 17, 1886, Nos. 20,405/334, and in Spain Aug. 17, 1886, Nos. 1,263/6,267.



Claim.—1. In combination with the magazine-tube, the vertical slide provided with the finger to engage and discharge the matrices.

2. In combination with the series of magazine-tubes, each provided with a longitudinally-movable slide to deliver the matrices endwise therefrom one at a time, the guide or conductor D, extending past the mouths of the tubes and presenting an open side to receive the matrices.

3. In combination with the magazine-tube, the vertical discharging-slide, the guide or conductor thereunder, and the longitudinal wire therein to retain the matrices delivered by the slide.

4. The magazine-tube, in combination with the discharging-slide and the yielding side or mouth plate to prevent the escape of the bottom matrix in advance of the action of the slide.

5. The magazine-tube, in combination with the discharging-slide, the yielding mouth-plate, and the upper arm on said plate to arrest and temporarily sustain the upper matrices.

6. The magazine-tube, in combination with the discharging-slide, its actuating-lever, a stop to prevent the action of the lever, and means, substantially as described, to hold the stop out of action when the tube contains a matrix.

7. The discharging-slide and its actuating-lever, in combination with the stop for said lever, the spring tending to throw the stop into action, and the yielding side plate provided with the arm whereby the stop is held out of its active position by means of a matrix within the magazine, whereby the discharging devices are prevented from working when the magazine is empty.

8. The upright magazine-tube, its vertical slide to deliver the matrices, the slide-actuating lever pivoted at a middle point, the finger-key or lever, also pivoted at a middle point, the intermediate rod communicating motion from the key to the lever, and the lifting-spring to restore the slide to its normal position, said elements combined substantially as described.

9. The series of vertical magazine-tubes terminating in a line oblique to the horizon, the open inclined trough or conductor beneath their mouths, the vertical discharge-slides, the slide-actuating levers, the finger-key levers mounted in a horizontal beak below the conductor, and the rods g^3, rising from the key-levers to the slide-actuating levers, as described, whereby the action of the keys is caused to deliver the matrices endwise in an upright position into the conductor, said elements combined substantially as described.

10. In combination with the magazine-tubes having their lower ends terminated at different heights, as described, the matrix guide or conductor arranged in an inclined position thereunder and in proximity thereto, whereby the tubes are enabled to deliver all the matrices endwise in an upright position into the conductor.

11. The open matrix guide or channel D, adapted to maintain the matrices in an approximately vertical position and inclined downward in the direction of the matrix-delivery, in combination with a blast-tube to direct a current of air downward longitudinally therethrough.

12. In combination with the magazine-tubes, the guide or conductor D, lying at one end in an inclined position beneath the tubes, but extended at the opposite end beyond the tubes in a horizontal position.

13. In combination with the matrix guide or conductor D, one or more wires stretched longitudinally therein to engage the matrices and retain them in position while they are passing through the conductor.

14. In combination with the guide or conductor D, to maintain the assembled matrices, the resisting-finger *u*, pivoted to its carrier to swing horizontally out of the path of the matrices, whereby they are permitted to advance past the same when required.

15. In combination with the conductor D, to sustain the matrices, the horizontally-swinging resistant *u*, its carrying-slide, and the latch to hold it normally in position across the conductor.

16. The conductor or guide D, in combination with the resistant *u*, the slide to which it is pivoted, the latch to hold the resistant, and the spring tending to move the slide and to hold the resistant against the advancing matrices.

17. The guide D, in combination with the pivoted resistant *u*, its sustaining-slide *v*, the spring *x*, to move the slide, and the latch *w*, engaging the guide D to hold the slide, and also engaging the resistant *u*, as described, whereby the latch is caused to lock the resistant from turning, and also to hold the slide and resistant as they are advanced step by step and prevent them from retreating.

18. In combination with the guide or conductor D, to sustain the assembled matrices, the vertically and laterally movable arms J J', for transferring the matrices laterally.

19. In combination with the guide D, a horizontal slide, the two vertically-swinging arms J J', carried by said slide, the spring tending to close said arms together, and means, substantially as described, for maintaining the separation of the arms until they descend to grasp the matrices.

20. The arm J and its tubular shaft, in combination with the loose arm J', the spring L', the spindle to hold arm J' backward against the action of the spring, and the stop to actuate the spindle.

21. As a means of clamping and transferring a line of assembled matrices, the guide or conductor D, in combination with the laterally-movable arms J J', substantially as described, to grasp the assembled matrices between them, and a slide or support whereby the arms are sustained and permitted to move laterally with the matrices.

22. In combination with the matrix-clamping vertically-swinging arms J J', their sustaining-slide, the spring to move the slide, the dog or pawl to prevent its movement, and means, substantially as described, whereby the arms in descending to grasp the aligned matrices are caused to disengage the dog, so that the arms may move laterally while holding the matrices.

23. In combination with the matrix-clamping arms J J' and their sustaining device, substantially as described, the spring to raise them and hold them normally in an elevated position.

24. The arms J J', their sustaining-slide, and their lifting-spring, in combination with the pawl or latch to hold them down.

25. In combination with the arms J J', their lifting-spring, and the latch to hold them down, the fixed pin or arm to disengage the latch when the arms complete their lateral movement.

26. In combination with a guide or conductor, D, to sustain the assembled matrices, a movable carrier having two arms, as J J', to grasp and transfer the assembled matrices, and the spring to advance said carrier, substantially as described.

27. In combination with a carrier having arms, as J J', substantially as described, to grasp the assembled matrices, a spring to advance the carrier in one direction and a cam mechanism, substantially as described, for positively returning the carrier to its normal position.

28. In combination with the matrix guide or conductor and the spring-actuated carrier to advance the assembled matrices, the pawl or dog Q, to retain the carrier in position against the influence of the spring.

29. The pivoted resistant *u*, to oppose the advance of the matrices, its retracting-spring, and the latch to hold the resistant in operative position, in combination with the horizontally-movable carrier-arms arranged to unlatch the resistant as they grasp the matrices, whereby the resistant is permitted to retreat past the side of the matrices as they are carried forward.

30. In combination with the guide D, on which the matrices are assembled, the mold located at a different level and the vertically-movable head or yoke I, for presenting the matrices to the mold.

31. In combination with the guide or rail D, on which the matrices are assembled in line, the mold at a lower level, the distributing mechanism at a higher level, the head or carrier I, and operating mechanism, substantially as described, whereby said head is caused to lower the matrices to the mold and subsequently lift them to the distributer.

32. The stationary head or abutment and its laterally-movable jaws, in combination with a vertically-movable head or lifter whereby the assembled matrices are placed between the jaws.

33. The stationary head and its laterally-movable jaws, in combination with a vertically-movable head or lifter to place the assembled matrices between the jaws, and the mold movable to and from the abutment to effect the clamping of the intermediate matrices.

34. In combination with the stationary clamp and the laterally-acting jaws, the movable mold-wheel, the movable melting-pot, and means, substantially as described, for lowering the aligned matrices to their operative positions between the mold and clamps.

35. The mold and the distributing mechanism at a higher level, in combination with the guide D, at an intermediate elevation, and a lifting-head, I, whereby the matrices are first lowered to the mold and subsequently raised to the distributer.

36. In combination with the lifting-head I and the arm or lever for actuating the same, the intermediate spring-link adapted, as described, to be lengthened or shortened by excessive strains.

37. In combination with a lifting-head, I, and an arm or actuating device, *s'*, the spring-link consisting of the body, the two plungers or pistons bearing normally against a solid stop, and the two springs, applied as described, to resist the outward movement of one piston and the inward movement of the other.

38. The lifting-head I, the yielding link, the actuating-lever, and the cam acting to move said lever positively in both directions, said elements combined for joint operation, substantially as described.

39. In combination with the mold and the movable head or carrier I, for presenting the matrices thereto, the adjustable stop to limit the movement of the head, and thus insure the presentation of the matrices in the precise position demanded.

40. In combination with the mold, the plates *o' o'* and the knives *q' q'*, arranged adjacent thereto to act upon the bars or castings as they leave the mold.

41. In combination with the knives *q' q'*, the plates *o' o'* and the spring-supporting plate *p'*, to assist in guiding the bars or castings as they are passed between the knives.

42. In a mechanism for operating the space-bars to justify the line, the combination of a slide for lifting said bars and means, substantially as described, for advancing said slide by two distinct movements—the first to advance the space-bars nearly to their operative positions and the other to complete the movement.

43. In combination with the slide to actuate the space-bars, the small weight to cause its preliminary advance and the large weight and its connections to cause the final advance.

44. The slide O^2 and its actuating-lever U^2, provided with a heavy weight, in combination with the secondary frame N^2, carried by the first, the weighted chains connecting the two frames and urging the secondary frame upward with respect to the other, the hooks to hold the secondary frame down, and means, substantially as described, for tripping said hooks.

45. In a mechanism for actuating justifying-slides such as herein described, a vertically-movable slide, mechanism for moving the same up and down, a second slide therein, intermediate devices, substantially as described, urging the second slide upward, locking devices, substantially as described, to hold it downward and to draw it downward after its elevation, and a trip to disengage said locking devices as the main slide rises, and thus permit the elevation of the secondary slide, said elements constructed and combined for joint operation.

46. In combination with the matrix-lifting head I and the elevated receiving-rails A^2, the two transfer-slides B^2 and F^2 and means, substantially as described, for actuating them.

47. In combination with the receiving-rails A^2, the slide B^2, the slide F^2, and its pawls, the levers and cams to retract the slides alternately, and springs acting to urge the slides forward, whereby the

matrices are transferred to the rails and pushed constantly toward the distributer.

48. The slide H^3, provided with separate recesses to receive the matrices and the space-bars, whereby the two are carried in opposite directions.

49. In combination with the rails A^3, to sustain the matrices and intermediate space-bars, the slide H^3, movable past the end of the rail and recesses to receive the matrices and space-bars in its face, substantially as described.

50. The slide or carrier bar to carry the single matrices, as described, in combination with the wiper lying adjacent thereto to act upon the matrices.

51. In combination with the mold and the distributer and mechanism, substantially as described, for transferring the matrices from one to the other, a wiper located at an intermediate point to clean the surfaces of the matrices before they reach the distributer, said parts constructed and arranged substantially as described.

52. In combination with the distributer-rail and the slide for lifting the matrices thereto, the horizontal slide to sustain the matrices while moving horizontally into engagement with the rail.

53. In combination with the distributer-rail toothed or ribbed longitudinally, as described, the slide having the inside ribs to enter and temporarily sustain the individual matrices, and a carrier, substantially as described, to advance the matrices lengthwise of the slide and rail.

54. In combination with the toothed carrier-plates for advancing the matrices along the distributer-rail, the pinion, as decribed and shown, engaging said teeth, whereby the plates receive an intermitting motion.

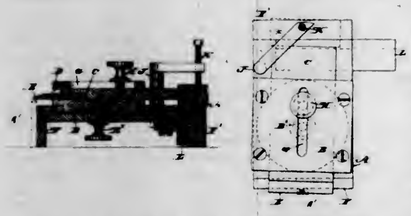
55. In combination with the bodies of the carrier-plates, the slotted metal plates N^3, formed and applied thereto substantially as described, whereby they are adapted to engage the edges of the matrices.

56. In a mechanism for the distribution of metallic matrices, the distributer, its driving-clutch, and the magnet to disengage the clutch, in combination with the insulated frame V^2 and an electric circuit embracing the magnet and connected at its terminals to the distributer and the frame V^2, respectively, whereby the lodgment of a matrix will cause the circuit to be completed therethrough and the distributer to be stopped.

57. In combination with a distributing mechanism, a magnetically-controlled clutch to operate the same and a normally-open electric circuit to control said clutch, said circuit having its terminals arranged in the path of the type delivered by the distributer, whereby the lodgment of the type between said terminals will close the circuit and cause the stoppage of the distributing mechanism.

58. In combination with the distributer-rail and means, substantially as described, for advancing the matrices along the same, the magazine-tubes thereunder and the intermediate pivoted plates, W^3, and their actuating-springs.

378,799. APPARATUS FOR FITTING UP MATRICES. GUSTAV MOHR, Philadelphia, Pa. Filed Aug. 23, 1886. Serial No. 211,680. (No model.)



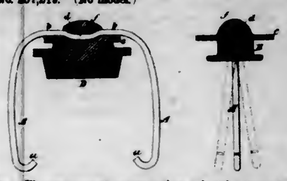
Claim.—1. A device for fitting up matrices, having a gage and a rotatable bed carrying the same, substantially as described.

2. A device for fitting up matrices, having an adjustable plate or gage, a bed carrying the gage, and a stand supporting the bed, said gage being adapted to project from either end of the bed over the stand, and rotatable with the bed, substantially as described.

3. The stand A, bed B, screw B', gage C, screw H, the post J, and screw K, the bed being rotatable on the stand and the gage movable in the bed in relation to the sides F F' of the stand, the several parts being combined and forming together an apparatus for fitting up matrices, as stated.

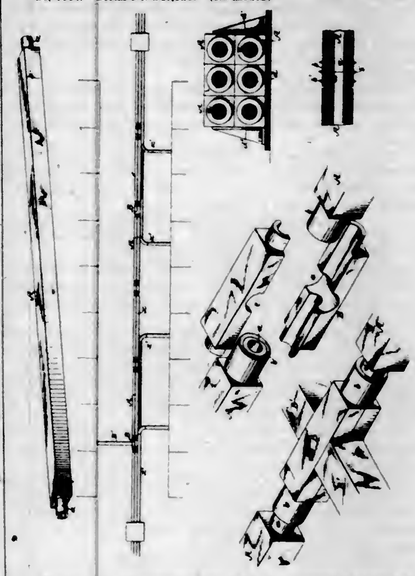
4. A device for the purpose named, consisting of a stand with parallel opposite ends, a rotary bed pivoted thereon, a sliding gage fitted in said bed, and a post attached to said stand and provided with a clamping-screw, substantially as described.

378,800. BOTTLE-STOPPER. FREDERICK P. MORRISON, Bennington, Vt., assignor to Henry W. Putnam, same place. Filed Dec. 7, 1887. Serial No. 257,219. (No model.)



Claim.—The process of constructing a bottle-stopper herein described, said process consisting in first casting the stopper-body directly and firmly upon a bail having a central eccentric portion, and in then by force causing the stopper-body to turn somewhat on the bail to loosen it and to allow a slight degree of oscillation, as set forth.

378,801. UNDERGROUND CONDUIT FOR ELECTRICAL CONDUCTORS. M. RICHARDS MUCKLE, Jr., Philadelphia, Pa. Filed Aug. 26, 1887. Serial No. 247,929. (No model.)



Claim.—1. The combination, in an underground conduit, of a trunk-line conduit extending from man-hole to man-hole, with branch conduits extending part way between the man-holes parallel with the trunk-line conduit, but independent thereof, and having rounded connections with lateral branches leading to the points of distribution between the man-holes, all substantially as specified.

2. The combination of the long sections of the conduit, interposed short sections made in halves, and the slip-sleeves whereby said half-sections are secured together and to the long sections of the conduit, all substantially as specified.

3. The combination of the pipe-sections, reduced at the ends, with a coupling-sleeve having external sharp-edged ribs, substantially as specified.

4. The combination of a conduit consisting of a number of polygonally-shaped tubes, with a supporting-plate therefor, and lateral confining-brackets secured to said plate, substantially as specified.

5. The combination of a series of underground conduits, a man-hole chamber having below the top a distributing-chamber extending around said man-hole chamber from conduit to conduit, and detachable plates forming the inner sides of said distributing-chamber, all substantially as specified.

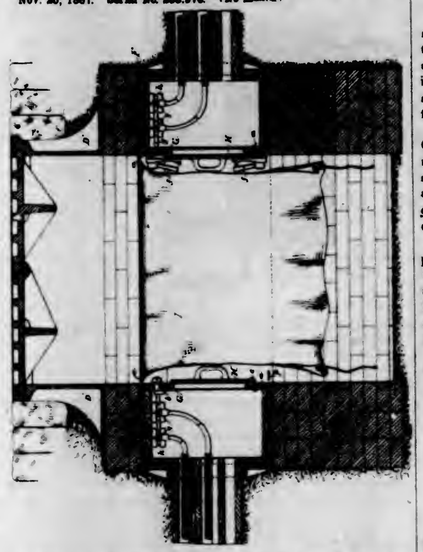
6. The combination of the masonry-lining of the man-hole chamber, the top structure supporting the cover-plate, and a box interposed between the top structure and the masonry-lining and communicating with the conduits, substantially as specified.

7. The combination of the top structure of the man-hole chamber, the box beneath the same, and removable supporting posts or braces at the inner edges of said box, substantially as specified.

8. The combination of the man-hole with the distributing-box extending around the man-hole chamber and having at the inner side detachable cover-plates adapted to grooves in the box at their upper edges and engaging with tongues on the box at their lower edges, all substantially as specified.

9. The combination of the man-hole chamber having a distributing-chamber below the top, with a lining for said distributing-chamber, consisting of top, back, and bottom slabs wedged into the chamber, all substantially as specified.

378,802. MAN-HOLE CHAMBER FOR UNDERGROUND ELECTRICAL CONDUITS. M. RICHARDS MUCKLE, Jr., Philadelphia, Pa. Filed Nov. 23, 1887. Serial No. 255,978. (No model.)



Claim.—1. The combination of the casing of a distributing-chamber, extending around the man-hole chamber and communicating with the conduits, with plates closing the openings around the inner side of the casing, said closing-plates having openings provided with detachable cover-plates, all substantially as specified.

2. The combination of the casing of the distributing-chamber, having an opening around the inner side, closing-plates constructed to form overlapping joints with the casing and with each other, and clamps for drawing these joints together, all substantially as specified.

3. The combination of the casing of the distributing-chamber, having an opening around its inner side, with closing-plates forming a rounding joint at the bottom of said opening and a beveled joint at the top of the same, all substantially as specified.

4. The combination of the distributing-chamber, and the closing-plates around the inner side of the same, with a protecting-sheet extending around the man-hole chamber and secured above the casing of the distributing-chamber, whereby it is adapted to cover and protect the closing-plates, all substantially as specified.

5. The combination of the casing of the distributing-chamber, and closing-plates around the inner side of the same, with a protecting-sheet extending around the man-hole chamber and secured above the casing of the distributing-chamber, said sheet being such that it can be drawn up above the mouth of the man-hole chamber, all substantially as specified.

6. The combination of the casing of the distributing-chamber, the wood lining applied thereto, and the intervening drainage-space having outlet-openings, all substantially as specified.

7. The combination of the distributing-chamber with conducting-rods supported therein, and providing the means of connection between the conductors of the different conduits, all substantially as specified.

8. The combination of the distributing-chamber, the conduits, conductors therein, the conducting-rods extending around the distributing-chamber, and cut-outs in the connections between the rods of the distributing-chamber and conductors in the conduit, all substantially as specified.

378,803. FRICTION-CLUTCH. WILHELM OESTERLEIN, Cincinnati, Ohio, assignor to Louise Oesterlein, same place. Filed June 20, 1887. Serial No. 242,864. (No model.)



Claim.—1. The combination of the ring or wheel C, having hub c and flange c^4, a cross-head and its shaft mounted in said disk, a friction-band having its opposite ends secured to the opposite ends of the cross-head, a crank-arm secured to the cross-head shaft and extending inward to the path of the hub-flange, and a sliding collar provided with a nose-piece, by which the cross-head shaft is rocked to tighten the friction-band, substantially as and for the purpose set forth.

2. The combination, substantially as specified, of the ring or wheel C, having lug C', hub c c^4, and flange c^4, the cross-head F and shaft F', mounted on lug C', the friction-band D E and clips D', and bolts d, for securing the opposite ends of said band to the arms of the cross-head, and the adjustable crank-arm consisting of the arms G H, set-screws $g\,h'$, the sliding collar J, and the nose-piece I, for rocking the shaft and cross-head.

3. The combination, substantially as set forth, of the shaft B, the pulley A, having flange A' projecting from arms a, ring or wheel C, having flange c^4, and cut-away hub c, having flange c^4, the cross-head F, shaft F', and arms G H, the set-screws $g\,h'$, for adjusting said arms, the friction-band D E, the clips D', and bolts d, for securing the band of the cross-head, and the collar J, sleeved over the shaft B and having piece I, for the purpose specified.

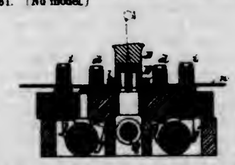
378,804. SEWING-MACHINE. JOHN W. POST, New York, N. Y., assignor to the Model Sewing Machine Company. Filed Oct. 26, 1886. Serial No. 180,963. (No model.) Patented in England Nov. 21, 1885, No. 14,277.



Claim.—1. In a sewing-machine, the combination, with the overhanging arm having the conical socket, of the needle-operating lever having the bearing pin or stud thereon provided with the longitudinal perforation, the screw operating to hold the stud in its bearing and to be adjusted to take up wear, and the screw operating through the perforation in the stud to lock the first-mentioned screw in adjusted position, substantially as described.

2. In a sewing-machine, the combination, with the overhanging arm having the conical socket, of the needle-operating lever having the tapered bearing-pin provided with the longitudinal perforation, the screw operating to hold said stud or bearing pin in position, and the locking-screw having the long smooth portion and the threads near its outer end, adapted to bear against the first-mentioned screw and hold it in position, substantially as described.

378,805. FEEDING MECHANISM FOR PUNCHING-PRESSES. FRANCIS H. RICHARDS, Springfield, Mass., assignor to the Mason Cotton Harvester Company, of South Carolina. Filed Feb. 17, 1887. Serial No. 227,961. (No model.)



Claim.—1. In a punching-press feeding mechanism, the combination of a fixed bed, a transverse slide on said bed, mechanism to reciprocate the same, a work-holding clamp attached to the bed, a similar clamp located on the slide, and mechanism to simultaneously release the movable jaw of one clamp and tighten the jaw of the other clamp, so that whether the work be moved forward by the transverse slide or remain motionless on the bed it shall be always gripped by one of the clamps, substantially as set forth.

2. In a punching-press feeding mechanism, the combination of a

fixed bed, a horizontal transverse slide on said bed, mechanism to reciprocate the same, a work-holding clamp attached to the bed, a similar clamp located on the slide, and mechanism to simultaneously release the movable jaw of one clamp and tighten the jaw of the other clamp, so that whether the work be moved forward by the transverse slide or remain motionless on the bed it shall be always gripped by one of the clamps, substantially as set forth.

3. The combination of a vertically-reciprocating punch, a fixed bed beneath the punch, a transverse slide on said bed, mechanism to reciprocate the same, a set of work-holding clamps attached to the bed, a set of work-holding clamps located on the slide, and mechanism to simultaneously release the movable jaws of one set of clamps and tighten the jaws of the other set of clamps, so that whether the work be moved forward by the transverse slide or remain motionless on the bed it shall be always gripped by one set of the clamps, substantially as set forth.

4. The combination of a vertically-reciprocating punch, a fixed bed beneath the punch, a transverse slide on said bed, mechanism to reciprocate the same, a vertically-reciprocating work-holding clamp attached to the bed, a similar clamp located on the slide, and mechanism located beneath the upper surface of the bed to simultaneously release the movable jaw of one clamp and tighten the jaw of the other clamp, so that whether the work be moved forward by the transverse slide or remain motionless on the bed it shall be always gripped by one of the clamps, substantially as set forth.

5. The combination of a vertically-reciprocating punch, a fixed bed beneath the punch, the fixed bed being provided with a raised portion, a transverse slide on said bed, the slide being provided with a recess adapted to receive the raised portion of the bed, mechanism to reciprocate the slide, work-holding clamps attached to the bed, work-holding clamps located on the slide, and mechanism to simultaneously release the movable jaws of one set of clamps and tighten the jaws of the other set of clamps, so that whether the work be moved forward by the transverse slide or remain motionless on the bed it shall be always gripped by one of the clamps, substantially as set forth.

6. The combination of the bed A, the slide T, movable thereon, the vertically-movable clamps *i* in said slide, provided with springs *k'*, rack S on said slide, rock-shaft Q, having gear R, engaging with said rack, movable clamps *d* in said bed, provided with springs *k'* and rock-shafts *a* and *c*, having lifting-cams *j*, acting upon said clamps, substantially as described.

7. The combination of the bed A, the slide T, movable thereon, the vertically-movable clamps *i* in said slide, provided with springs *k'*, rack S on said slide, rock-shaft Q, having gear R, engaging with said rack, movable clamps *d* in said bed and provided with springs *k*, rock-shafts *a* and *c*, having lifting-cams *j*, acting on said clamps, segmental gear X on shaft *a*, sleeve U, having segmental gear W and crank-arms V and Y, link Z, crank-arm *b* on shaft *c*, crank-arm P on shaft Q, and driving mechanism for vibrating said crank-arms P and V, substantially as described.

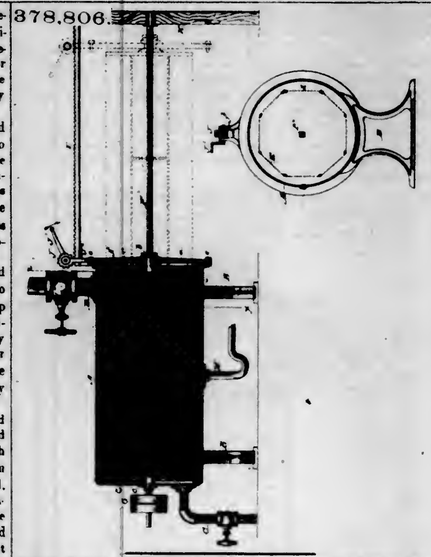
8. The combination of the bed A, the frame B, the shaft H, cams I and J on said shaft, connecting-rods L and M, actuated by said cams, crank-arms P and V, shaft Q, gear R on said shaft, slide T, rack S on said slide, vertically-moving clamps *i* in said slide, provided with springs *k'*, sleeve U, segmental gear W on said sleeve, shaft *a*, segmental gear X on said shaft, crank-arm Y on said sleeve U, link Z, shaft *c*, crank-arm *b* on said shaft *c*, vertically-moving clamps *d* in said bed and provided with springs *k*, and lifting-cams *j* on shafts *a* and *c*, substantially as described.

378,806. APPARATUS FOR TREATING CEREALS. HENRY R. ROGERS, Jr., Baltimore, Md., assignor of one-half to Chauncey M. Bennighaus, same place. Filed Sept. 20, 1887. Serial No. 250,260. (No model.)

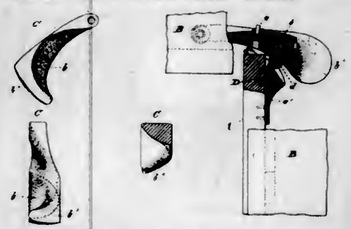
Claim.—1. The combination, with a fixed cylinder, A, having independent inlet and outlet steam-pipes C and D, provided, respectively, with valves, of a rotary shaft extending through said cylinder and beyond the end thereof, and a reel or cage connected to the shaft for rotation therewith, and arranged, as described, to slide out of the cylinder upon the shaft, substantially as and for the purpose described.

2. The combination, with a fixed cylinder, A, of a rotary shaft extending through said cylinder and beyond the end thereof, and having its portion within the cylinder angular and the portion outside round, a reel or cage having one head fitted to slide on the angular portion of the shaft, a swiveling sleeve attached to the other head and fitted upon the round portion of the shaft, and a head, A', for the outer cylinder encompassing the swiveling sleeve, substantially as shown and described.

3. The combination, with the stationary cylinder, the elongated shaft, and the reel sliding thereon, of a head, A', for the cylinder, having a swiveled connection with the reel, hanger-bars J^3, pinion J, with crank-handle, and rack-bar I, substantially as and for the purpose described.



378,807. DOOR-CLOSER. GEORGE W. RODECAP, Middletown, Ind. Filed Nov. 26, 1887. Serial No. 256,238. (No model.)



Claim.—1. A gravitating door-closer consisting of a weight-lever pivoted at one end to the door-casing and having the integral thickened outer or free end and inclined concavo-convex lower face, substantially as specified.

2. In a gravitating door-closer, the combination of the inclined concave cam-lever, the pin seated therein, and the roller secured to the door-surface, substantially as specified.

3. In a door-closer, the combination, with the door and the door-frame, of the inclined concave cam-lever C, the pivot *a*, the pin E, the rollers *d e*, and the guide-track *e'*, substantially as specified.

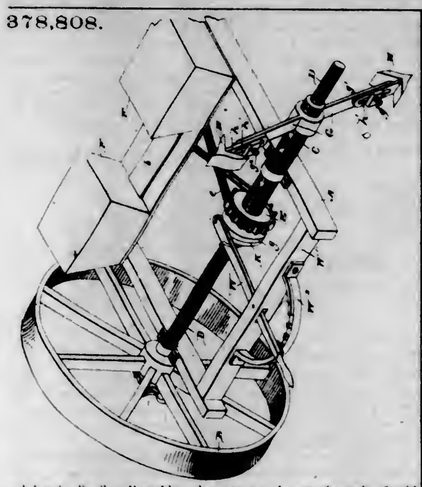
378,808. AUTOMATIC CORN-DROPPER. JAMES H. STIGGLEMAN, Lincolnville, Ind., assignor to A. W. Straughn, same place. Filed Nov. 8, 1887. Serial No. 254,657. (No model.)

Claim.—1. In a seed-planter, the combination, with the driving shaft or axle and the seed-dropping mechanism, of a sleeve loosely embracing said axle, a sprocket-wheel keyed upon the inner end of the sleeve and connected with the dropping mechanism, a marker keyed to the opposite end of said sleeve, and a spring-actuated clutch keyed to the axle in sliding adjustment at the inner end of said sleeve, whereby the marker and dropping mechanism can be thrown in and out of gear with the driving-wheels, substantially as described.

2. In combination, a main driving shaft or axle, a sleeve loosely embracing said axle, a marker keyed to said sleeve, a gear-wheel keyed to the inner end of the sleeve and provided with a series of openings in its inner face, a clutch keyed to the axle in sliding adjustment at the inner end of the sleeve, projecting pins upon the side of the clutch to enter the openings in the gear-wheel, a spring to hold the clutch in engagement with the gear-wheel, and a lever pivoted to the clutch for operating the same, substantially as described.

3. The combination, with a main driving shaft or axle and a sleeve loosely mounted thereon, of a marker keyed to the outer end of the sleeve, said marker being composed of two oppositely-extending arms,

378,808.

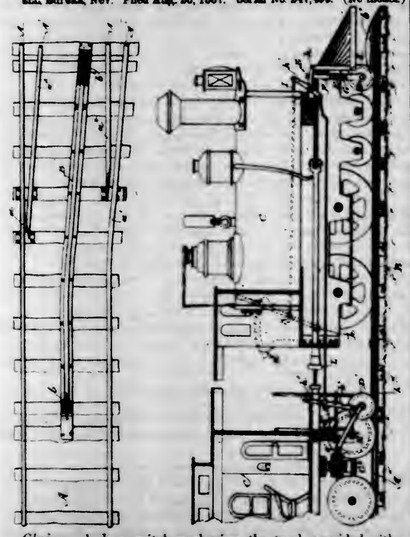


and longitudinally-adjustable colters mounted upon the ends of said arms, said colters being provided with slotted shanks and having their cutting or digging portions V-shaped, as described.

4. In combination, a main driving shaft or axle, a seed-dropping mechanism, a sleeve loosely mounted on said shaft or axle, a marker keyed to the sleeve, a sprocket-wheel keyed upon the inner end of the sleeve, a sprocket-chain engaging said sprocket-wheel and operating the dropping mechanism, a clutch located on the axle opposite the inner end of the sleeve in sliding adjustment, a spring upon the axle and bearing against the clutch to hold it in engagement with the sleeve and sprocket-wheel, and a lever for operating said clutch, as set forth.

5. The combination, with the seed-dropping mechanism and a driving shaft or axle, of a rotary marker, consisting of oppositely-extending arms, longitudinally-adjustable colters carried upon the ends of the arms, said colters having slotted shanks and V-shaped cutting or digging edges, and bolts passing through said slotted shanks and adjustably clamping the colters to the arms, substantially as described.

378,809. AUTOMATIC RAILROAD-SWITCH. WILLIAM H. STOWELL, Eureka, Nev. Filed Aug. 20, 1887. Serial No. 247,499. (No model.)



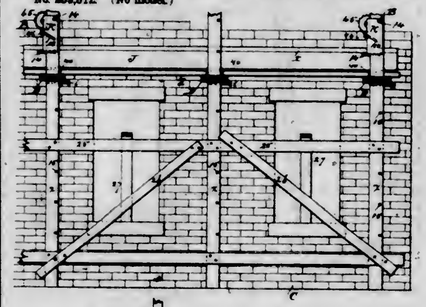
Claim.—1. In a switch mechanism, the track provided with a guide-rail arranged between and parallel with the main-track rails and between and parallel with the rails of the branch track, in combination with mechanism supported upon the car or engine to engage said guide-rail, which guide-rail is inclined at one end and provided with a wedge-shaped projection at its other end, substantially as set forth.

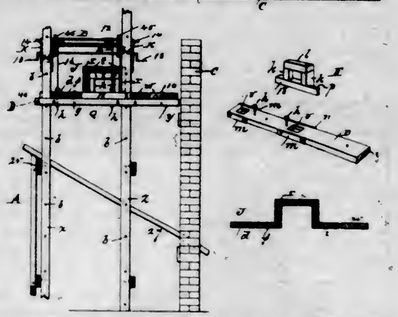
2. In a switch mechanism, the combination, with the car or engine, of the flanged guide-wheel supported beneath said car or engine, adapted to be raised or lowered thereon, and a wedge-shaped projection upon the track for raising the said guide-wheel, substantially as described.

3. The combination, with the car, of a vertically-moving arm carrying a guide-wheel adapted to run upon a guide-rail on the track, a spring operating upon said arm to hold it down to the rail, and a rock-lever for raising and locking the arm in its raised position.

4. The combination, with the car and engine of a train, of flanged guide-wheels supported upon said car and engine, to be vertically raised and lowered thereon to engage with a guide-rail upon the track, and means for supporting and connecting said guide-wheels and operating them conjointly from a single point on the train, substantially as described.

378,810. STAGING. EDWARD R. STROUT, Lynn, Mass., assignor of one-half to Winfield Smith, same place. Filed May 25, 1887. Serial No. 239,312. (No model.)





Claim.—1. The combination of the inner posts, *z*, and outer posts, *x*, provided with pin-holes *b* and 15, the cross-timbers D, provided with mortises through which said posts are passed, the pins for supporting said timbers on the posts, the windlass B, the adjustable perforated grip-plates adapted to slide on said posts and in which said windlass has its bearings, the pins for supporting said grip-plates in holes of the posts, and the ropes attached to said windlass and connected to said cross-timbers, substantially as described.

2. The combination of the inner posts, *z*, and outer posts, *x*, provided with two series of pin-holes, the cross-timbers D, provided with mortises through which said posts are passed, the pins for supporting said timbers on the posts, the floor-planks *d f w*, secured to the timbers D, the windlass B, the perforated adjustable grip-plates in which said windlass has its bearings, the pins for supporting said grip-plates, and the cords passing over said windlass and secured to said timbers, substantially as described.

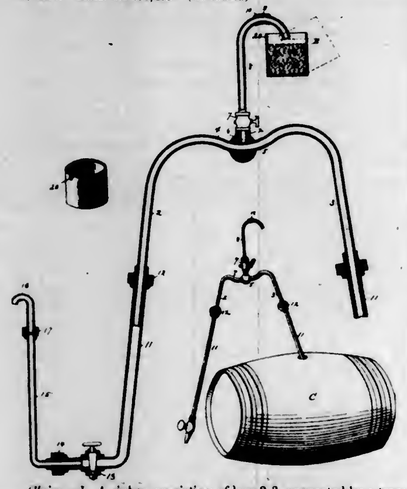
3. The combination of a series of vertical outer posts, a series of vertical inner posts, a platform adapted to slide vertically on said posts and projecting beyond the inner posts, a windlass mechanism mounted on said posts and vertically adjustable thereon, and ropes connecting said windlass mechanism and platform, substantially as described.

4. In a staging of the character described, the drum 12 and crank-shaft 13, mounted in the sliding plates K, in combination with the posts *x z*, means for adjustably securing said plates on said posts in-

dependently of the platform, the platform Q, and ropes 16, substantially as set forth.

5. In a staging of the character described, the bench supports or legs E, each consisting of the base or sill 18, standards *k k*, and cap *l*, said base being cut out at one side, as shown at *p*, in combination with the posts *x x* and platform Q, substantially as described.

378,811. SIPHON. CHARLES N. TYLER, Buffalo, N. Y. Filed Apr. 2, 1887. Serial No. 233,423. (No model.)



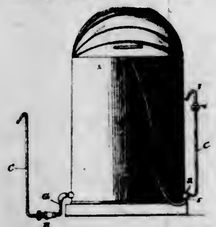
Claim.—1. A siphon consisting of legs 2 3, connected by a transverse portion having a depression constituting a trap, said transverse portion being higher at one side of the trap than at the other, as described, in combination with a feed-tube communicating with said trap, and a cock in the line of the feed-tube open to the air at its upper end, substantially as and for the purpose set forth.

2. A siphon consisting of legs 2 3, connected by a transverse portion having a depression constituting a trap, said transverse portion being higher at one side of the trap than at the other, as described, in combination with a feed-tube communicating with said trap and terminating at its free end in a secondary siphon, substantially as and for purpose set forth.

3. A siphon consisting of substantially-parallel legs 2 3, a downwardly-curved portion, 4, connecting the upper ends of the legs, and a feed-tube, 6, communicating with the depression in the portion 4 and having a cock, 7, in combination with a supplemental siphon, 8, communicating with the feed-tube and having a port at its highest point, and a valve therefor, substantially as and for the purpose described.

4. A siphon consisting of the substantially-parallel legs 2 3, connected by a depressed portion, 4, constituting a trap, a feed-opening in the trap, and a slot, *x*, in the feed-opening, in combination with a feed-tube adjustable within said opening and having a shoulder adapted to close the slot therein, and a stop-cock, 7, substantially as and for the purpose set forth.

378,812. FLUID-DISCHARGE DEVICE. CHARLES N. TYLER, Buffalo, N. Y. Filed Apr. 5, 1887. Serial No. 233,771. (No model.)

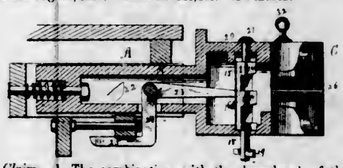


Claim.—1. The combination of a receptacle, A, a discharge-tube, and a separate pipe containing a transparent graduated section, said section being vertically adjustable relatively to the fluid-line, substantially as set forth.

2. The combination of the receptacle A, discharge-tube C, pivotally connected therewith, flexible pipe E, and transparent section 6 in the line of said pipe, substantially as set forth.

3. The combination of a receptacle, A, a socket-piece, B, inserted therein, an L-shaped tube, C, turning in said socket, a nozzle-section, 3, of smaller size than said L-shaped section, sliding therein and also turning around its longitudinal axis, and a fluid-tight connection between tube C and the nozzle-section, substantially as set forth.

378,813. CAR-COUPLING. WILLIAM T. VAN DORN, Lincoln, Nebr. Filed Aug. 31, 1887. Serial No. 248,408. (No model.)



Claim.—1. The combination, with the draw-head, of the vertically-pivoted coupling-jaw B, formed with the rearward extension 6, having inclined lugs 9 on its vertical face end, the vertically-sliding lock-bar 15, having slots to permit engagement of the lugs on the vertical face end of the coupling-jaw, and provided with a slot or seat in the rear, and a lever fulcrumed within the draw-bar for lifting the locking-bar, substantially as described.

2. The combination, with the draw-heads formed with recesses to fit and take the coupling-jaws of the opposite car, of coupling-jaws adapted to interlock and set in interlocked position with the entire end faces impacted against substantially the entire area of the recesses in the draw-head, and means, substantially as described, for locking the coupling-jaws in interlocked connection, substantially as specified.

3. The combination, with the draw-head and the vertically-pivoted coupling-jaw, of the vertically-pivoted abutment-block mounted on the draw-head opposite to the coupling-jaw, said abutment-block being mounted on inclined bearings, whereby it is carried by gravity from connection with the coupling-jaw to a position against the side of the draw-head, substantially as described.

4. The combination, with the draw-head formed with a solid face-piece extended partly across its mouth, and the vertically-pivoted coupling-jaw, of the vertically-pivoted abutment-block mounted on the draw-head opposite to the coupling-jaw, and formed with an extended abutting surface to set against the solid face-piece of the draw-head, substantially as described.

5. The combination, with the draw-head and the vertically-pivoted coupling-jaw formed with a link-recess and to take a coupling-pin, of the vertically-pivoted abutment-block mounted on inclined bearings on the draw-head opposite to the coupling-jaw and formed with a link-recess, said abutment-block being arranged to impact the face of the draw-head with its entire rear face, and formed with a curved projection to set behind the end of the coupling-jaw, and with its front face extended beyond the front face of the coupling-jaw, substantially as described, and for the purpose stated.

6. The combination, with the draw-head and the vertically-pivoted coupling-jaw, of the abutment-block mounted on vertical bearings on the draw-head opposite to the coupling-jaw, and formed to set with its rear face against the face of the draw-head and with its front face in advance of the coupling-jaw, whereby the impact of the couplings is on the abutment-block, substantially as described.

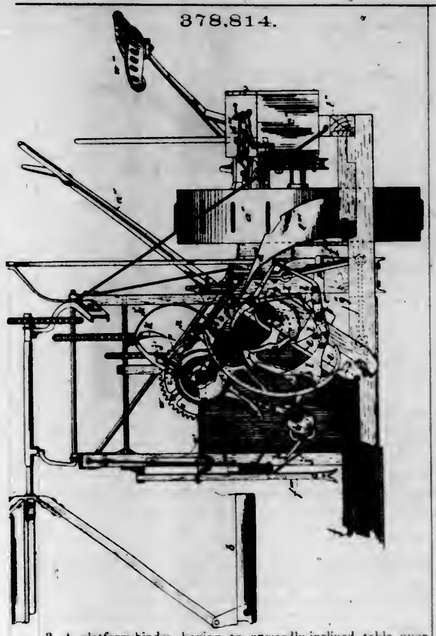
7. The combination, with the draw-head, of the vertically-pivoted coupling-jaw formed with inclines on the end of its inner arm, the vertically-sliding lock-bar formed with lugs on its outer face, a lever fulcrumed in the draw-bar to lift the sliding lock-bar, and a slide-bar mounted to actuate the lever, substantially as described.

8. The combination of the draw-head A, having bearing-lugs 3, one or both of which are formed with a stop or lug, as *a*, on the bearing-face, and the vertically-pivoted coupling-jaw B, formed with a bearing to rest between the lugs 3, said bearing having a shouldered recess, as *b*, to engage a stop on the bearing-lugs, whereby the outward swing of the coupling-jaw is limited, substantially as and for the purpose stated.

378,814. COMBINED HARVESTER AND BINDER. WILLIAM N. WHITELEY and WILLIAM BAYLEY, Springfield, Ohio. Filed Feb. 5, 1883. Serial No. 83,994. (No model.)

Claim.—1. A rear-cut platform-binder provided with an upwardly-inclined table to which the grain is elevated and on which it is bound, an overhanging shield that with said table forms a confined passage-way for the grain, a cord-carrying arm on a shaft below said table, and a knotting device above said shield, a suitable sheaf-ejecting device, and a downwardly-inclined chute exterior to the table for the proper discharge of the bound sheaves.

378,814.



2. A platform-binder having an upwardly-inclined table upon which the grain is elevated as well as bound, a system of packers for elevating and compacting the grain into sheaf form, a band-carrying arm and a knotting device, an inclined chute down which the grain, when bound, is discharged, and a compress device at or near the apex of the angle formed by the aforesaid table and chute.

3. A platform-binder having an upwardly-inclined table upon which the grain is elevated as well as bound, and a chute down which the bound sheaves are discharged, said table and chute forming an angle whose apex is at the summit of said table, in combination with the operating-shaft of a system of grain-accumulating packers and a shaft upon which the binding-arm oscillates, located in the angular space covered by said binding-table and chute and thereby secured against interruption by foreign matter.

4. A platform-binder having an upwardly-inclined table upon which the grain is elevated as well as bound, a chute down which the bound sheaves are discharged, said table and chute inclosing an angular space in which is located a system of grain-accumulating packers, a binding-arm and shaft, and a shaft upon which a compress device is oscillated or rotated, whereby said operating parts are shielded against the interruption of foreign matter.

5. The packer-actuating mechanism consisting of a bevel-gear, *z' i'*, sprocket-wheels *K''*, and a chain, *j''*, combined with the spur-wheels *K'' l''*, a chain, *m''*, and two sprocket-wheels, one of which is fast to the shaft of the spur-wheel *l''* and the other to the packer-shaft *c'*, substantially as and for the purpose specified.

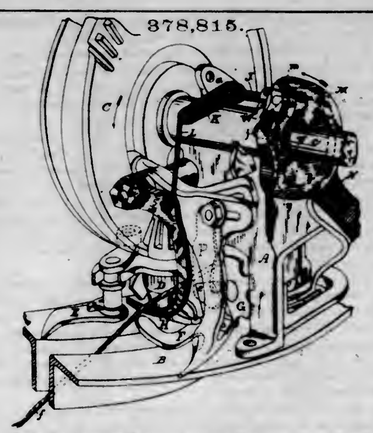
6. The projection *f''*, forming a part of the binder-frame *t*, in combination with a spring-pitman, *n o*, and an oscillatory compress-finger, *m*, as and for the purpose specified.

7. The projection *f''*, forming a part of the binder-frame *t*, in combination with a spring-pitman, *n o*, oscillatory compress *m*, spring connecting-rod *z a'*, and latch *h'*, substantially as and for the purpose specified.

378,815. KNOTTING DEVICE FOR GRAIN-BINDERS. WILLIAM N. WHITELEY, Springfield, Ohio. Filed Sept. 16, 1886. Serial No. 213,682. (No model.)

Claim.—1. In a knotting device for a grain-binder, a cord-supporting finger pivoted to the frame in a plane exterior to the bill-hook and stripper, combined with means for transmitting motion to said finger from the tyer-wheel shaft independent of the cord-gripping and knot-stripping devices, to place said finger in position to receive and support the cord in front of the bill-hook before the stripper retreats, and to cause it to remain in that position until the stripper returns to its initial position successively after the binding of each sheaf.

378,815.



2. In the knotting device of a grain-binder, a pivoted cord-supporting finger located and operated outside of the knot-stripping and cord-retaining device to furnish a support for the cord outside of said stripper during the interval in which the stripper is out of its initial position in stripping the knot, and consequently inoperative as a cord-guide.

3. In the knotting device of a grain-binder, a cord-supporting finger pivoted to the pivot-stud of the stripper, but outside of said stripper combined with means for operating said finger independent of the stripper and cord-holder, as set forth, for the purpose of furnishing a support for the cord during the interval in which the stripper is out of its initial position in stripping the knot, and consequently inoperative as a cord-guide.

4. In the knotting device of a grain-binder, a cord-supporting finger located outside of the knot-stripper and cord-guide, and a cam to operate the same fixed to the tyer-wheel shaft, and having formed upon it an ejector-arm, substantially as shown and described, and for the purpose of conveniently operating said cord-finger and assisting in discharging the bound bundle.

378,816. MOWING-MACHINE. WILLIAM N. WHITELEY and WILLIAM BAYLEY, Springfield, Ohio, assignors to the Toronto Reaper and Mower Company, same place. Filed Nov. 24, 1886. Serial No. 219,792. (No model.)



Claim.—1. In a harvester, a main frame composed of a tongue and two tubular journal-boxes, C C³, for the main shaft, provided with lugs for attachment of said tongue, and the side braces, D *l*, forming a triangular frame, and the lug *f*³, for attachment of the shield B³,

combined with said shield B^3 and the sprocket-wheel B, substantially in the manner and for the purpose shown and described.

2. In a harvester employing a drive-chain for transmitting power from the main axle to the cutting apparatus, or to operative parts connected therewith, an adjustable gear-cover, one portion of which is adapted to bear upon the chain to tighten the same, substantially in the manner shown and described.

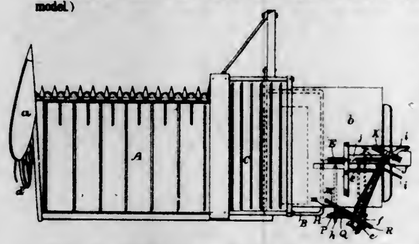
3. In a harvester, a cutting apparatus, two parallel brace-levers, one of which is jointed at one end to the inner shoe of said cutting apparatus and at the other end to the main frame, or some fixed part thereof, and the other lever jointed to the inner shoe at one end and at the other end pivoted to a link dependent from and pivoted to the main frame, or some fixed part thereof, in combination with a suitable hand-lever mounted on the frame and its connections for lifting said brace-levers and the cutting apparatus, substantially in the manner and for the purposes shown and described.

4. In a harvester, a device for tilting or elevating or depressing the points of the fingers of the cutting apparatus, consisting of a drag-bar fixed to the inner shoe and extending forward and upward, and pivoted to the outer extremity of a swinging frame mounted upon a pivot parallel with the draft-tongue, or some fixed part thereof, in combination with a suitable hand-lever and connecting mechanism for operating the same, substantially in the manner shown and described, and for the purposes set forth.

5. In a harvesting-machine, a whiffletree frame or support rigidly attached to and extending downward from the draft-tongue, combined with the frame O, mounted upon a pivot parallel with said tongue, the drag-bar, and means for swinging said frame O to tilt the guard-fingers, substantially in the manner and for the purpose shown and described.

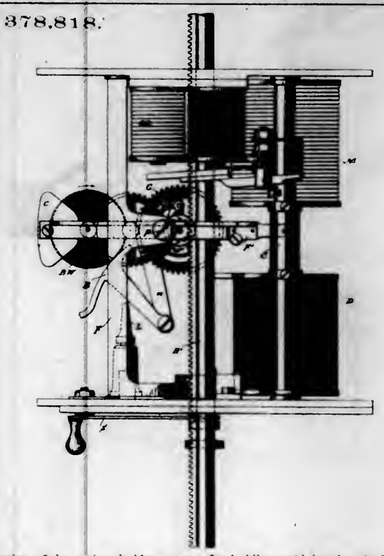
6. In combination, in a mowing-machine, a rock-shaft arranged parallel with the tongue and provided with a controlling hand-lever, a tilting frame, O, mounted upon a pivot parallel with the tongue and attached to the cranked end of said rock-shaft by a suitable device, and the drag-bar jointed at its front end to said tilting frame for the purpose of raising and lowering the points of the fingers, substantially in the manner shown and described.

378,817. GRAIN-BINDING HARVESTER. WILLIAM N. WHITELEY, Springfield, Ohio. Filed Mar. 25, 1887. Serial No. 232,376. (No model.)



Claim.—In a grain harvesting and binding machine, the combination, with the binder-frame mounted at the rear of the binder-deck, of the binder-gearing mounted on said frame in the rear of the axle of the main wheel on the vertical post of the binder-frame and nearer the wheel than the bundle holding and compressing devices, the latter and the knotter being situated farther from the wheel than the binder-gearing, and the tyer-wheel shaft extending obliquely forward and outward from said gearing to the knotter.

378,818. DOUBLE-ARC LAMP. MERLE J. WIGHTMAN and EINAR RASMUSSEN, Hartford, Conn. Filed Aug. 19, 1886. Serial No. 211,270. (No model.)



Claim.—1. The combination, in a double-arc lamp, of a main and derived magnet controlling the length of the arc, two carbon-holders, and a locking-tooth holding one in reserve, operated by the aforesaid magnets that control the arc for putting the second in circuit.

2. The combination, in a double-arc lamp, of two carbon-holders, one of which is adapted to be brought into operation first, two sets of carbons carried thereby, a locking-tooth holding the second out of operation, and a friction-gear operated by the first carbon-holder to keep said locking-tooth in engagement with the second.

3. In a double-arc lamp, a pivoted frame carrying a train of gearing for regulating the feed of the lamp, two carbon-holders supported thereby, a locking device, also mounted on said pivoted frame, for holding one of said carbon-holders out of operation, and a trip for throwing said locking device out of engagement with said holder and putting it in operation as said pivoted frame becomes abnormally tilted.

4. In a double-arc lamp, a supplemental carbon-holder, a locking device therefor, gearing co-operating therewith actuated by the operation of the carbon-holder proper for holding said locking device in engagement with said supplemental carbon-holder, and a liberating mechanism or trip for actuating said locking device in opposition to the means holding it in engagement with said supplemental carbon-holder.

5. In a double-arc lamp, a supplemental carbon-holder, a locking device therefor, a friction-wheel actuated by the carbon-holder proper, operating the latter for holding it in engagement with said supplemental carbon-holder, a spring for keeping the two in contact, and means for liberating said supplemental carbon-holder after the carbon-holder proper stops operating.

6. In a double-arc lamp, a supplemental carbon-holder, a locking device therefor, a friction-wheel actuated by the carbon-holder proper, operating the latter for holding it in engagement with said supplemental carbon-holder, a spring for keeping the two in contact, an adjustable stop for limiting the play of the locking device, and means for liberating said supplemental carbon-holder after the carbon-holder proper stops operating.

7. The combination, in a double-arc lamp, of a pivoted frame carrying a gear feeding and brake mechanism and supporting two carbon-holders, a spindle journaled in said frame carrying a sleeve loosely thereon, pinion-wheels on said spindle and sleeve near each end intermeshing with said carbon-holders, respectively, a spur-wheel loosely mounted upon said spindle intermediate of said pinions, pawls and ratchets co-operating therewith for coupling either carbon-holder to the gear feeding and braking mechanism, a second pivoted frame swung upon said sleeve and carrying a locking-tooth for one of said carbon-holders, a friction-wheel secured to said spindle, upon which friction-wheel bears an extension of said second pivoted frame for operating it to throw the locking-tooth in engagement with said carbon-holder as the spindle is rotated by the other one, and a device for throwing said locking-tooth out of engagement with said carbon-holder to put it in operation when the pivoted frame carrying the aforesaid gearing is abnormally operated.

8. The combination, in a double-arc lamp, of a gear feeding mechanism, two carbon-holders, a spindle having a pinion-wheel thereon, forming a part of said gear feeding mechanism for one carbon-holder, a sleeve loosely mounted upon said spindle, having thereon a pinion-wheel for the other carbon-holder, a spur-wheel loosely mounted upon said spindle, pawls and ratchets for coupling either carbon-holder to the gear feeding mechanism, a frame free to vibrate carrying a locking-tooth for the latter carbon-holder, a device for keeping the frame and locking-tooth in operative position to lock said carbon-holder by the operation of the other one, and an adjustable trip for throwing the locking-tooth and frame out of operative position to liberate the second carbon-holder.

9. In a double-arc lamp, a supplemental carbon-holder, a friction-wheel actuated by the operation of carbon-holder proper, a locking device for said supplemental carbon-holder, kept in engagement therewith by said friction-wheel, means for throwing the same out of engagement with said supplemental carbon-holder to allow it to come into operation, and a rest for the locking device to keep it in a position to be operated.

10. In a double-arc lamp, a supplemental carbon-holder, a friction-wheel actuated by the operation of carbon-holder proper, a locking device for said supplemental carbon-holder, kept in engagement therewith by said friction-wheel, means for throwing the same out of engagement with said supplemental carbon-holder to allow it to come into operation, a rest for the locking device to keep it in a position to be operated, and an adjustable stop for regulating its play.

11. In a double-arc lamp, two sets of carbons, an electro-magnet in a constantly-closed derived circuit which controls the arc formed between the first set, a trip, and devices for putting the second set in action, brought in contact with said trip by the same magnet which governs the arc when it becomes abnormally long.

12. In a double-arc lamp, two sets of carbons, one of which is held in reserve by a locking-tooth, a trip upon the frame of the lamp, and an arc-controlling electro-magnet the coils of which are in a constantly-closed derived circuit for putting the second set in action.

13. In a double-arc lamp, two sets of carbons, an ordinary arc-controlling main-line magnet, a locking-tooth for holding one set of carbons in reserve, a trip, and an ordinary arc-controlling derived-circuit magnet whose coils are in a constantly-closed circuit for disengaging said locking-tooth.

14. The combination, in a double-arc lamp, of the magnets M and D in main and derived circuits, respectively, the pivoted frame F', carrying the train of gearing and friction-wheel and bearing a counterpoise, c, a let-off, L, upon the base of the lamp, two carbon-holders, H' and H², carried by said pivoted frame F', pinion-wheels n' and n^2 therefor upon the shaft s' and sleeve s^2, respectively, means for coupling the shaft or the sleeve to said train of gearing, a friction-wheel, f^3, upon said shaft s^2, a locking mechanism for the carbon-holder H², mounted upon the pivoted frame F' and bearing upon the friction-wheel f^3, a spring for holding the two together, a rest, s^5, for said locking mechanism, and an adjustable stop, g^4, for limiting its play.

378,819. STOCKING. FRANK WILCOMB, San Francisco, Cal. Filed Aug. 4, 1886. Serial No. 209,958. (No model.)



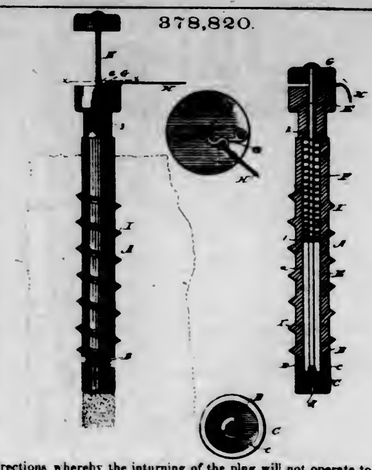
Claim.—1. A stocking formed with a seamless bulge heel and a seamless toe and lower foot portion, the said foot portion having a widened gusset, the junction of the lower foot portion with the heel being made by uniting loops on the former with loops and selvages on the latter, substantially as described.

2. A stocking formed with a seamless heel and a seamless toe and lower foot portion, with seams along the side and under the instep between the heel and lower foot portions, and a widened gusset seamed to the selvages of the heel above the narrowed portion, substantially as described.

378,820. BLASTING-PLUG. ALFRED WIDDER, Washington, D. C. Filed Aug. 20, 1887. Serial No. 247,460. (No model.)

Claim.—1. The blasting-plug herein described, consisting of the body or main portion having a longitudinal bore, and provided externally with a spiral rib or thread and having a threaded extension at its lower end, the cap-support threaded on such extension, the hammer-rod operating through the bore of the body or main portion, and the detent pivoted to the body or main portion and arranged to engage the hammer-rod, substantially as set forth.

2. A blasting-plug having its body or main portion provided externally with a spiral rib or thread, and having its lower end formed with a threaded extension to receive the removable cap-support, combined with the cap-support, the hammer-rod, and the detent, the threads on the body or main portion and on its extension being formed in similar directions, whereby the inturning of the plug will not operate to turn off the cap-support, substantially as described.



378,821. SLEIGH. DAVID S. ANDERSON, McGrawville, N. Y. Filed Jan. 17, 1888. Serial No. 260,981. (No model.)



Claim.—1. The combination, with the sleigh-body, of a runner formed of two parts secured to the sill of said body, with a space, C, between the adjacent running-surfaces thereof, substantially as described.

2. The combination, with the sleigh-body, of the runner formed in two parts secured to the sill of said body and curved at their adjacent portion, with a space, C, between them, substantially as described.

3. The combination, with the sleigh-body and the cross-beams, of the runners having their adjacent curved ends secured to said body, the clip D, the brace-rods E F, the curved braces h i, and the lateral brace G, all constructed and arranged substantially as described.

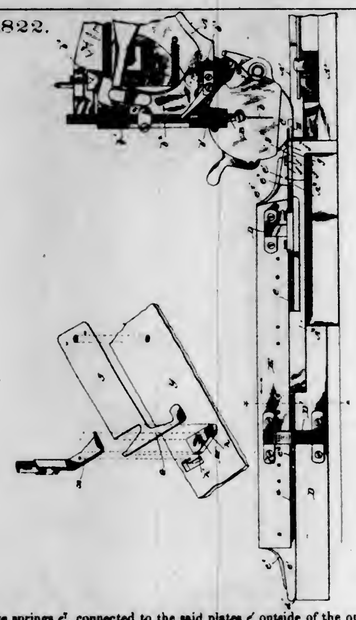
378,822. APPARATUS FOR GUIDING, STRAIGHTENING, AND EVENING FABRICS. SATTERLEE ARNOLD, New York, N. Y. Filed Mar. 4, 1887. Serial No. 229,691. (No model.)

Claim.—1. In a fabric-guiding apparatus, the combination, with two guide-plates arranged adjacent to each other, with an interval between them, and extending lengthwise in the direction in which the fabrics are to be guided, of a series of spring-actuated presser-plates attached to one of the said guide-plates and adapted to adjust themselves automatically to varying thicknesses of fabrics, the said presser-plates being placed edgewise vertically and end to end in the direction in which the fabrics are to be guided.

2. The combination, with two guide-plates arranged adjacent to each other, with an interval between them, one of the said plates having on its guiding-edge a small guiding-rib, of a series of spring-held presser-plates attached to the other of the said guide-plates and adapted, collectively, to form a rib registering with the aforesaid rib.

3. The combination, with the guide-plates D and E, arranged lengthwise in the direction in which the fabrics are to be guided, and the spring-actuated presser-plates e, placed edgewise vertically and end to end in the direction in which the fabrics are to be guided, of the end spring-held presser-plates e', having slots e^4, the guiding-pins in the said slots and of lesser diameter than the width of the latter.

378,822.



and the springs e^3, connected to the said plates e' outside of the outer guiding-pins.

4. In a fabric-guiding apparatus, two guide-plates arranged adjacent to each other, with an interval between them, and extending lengthwise in the direction in which the fabrics are to be guided, and a series of spring-actuated presser-plates attached to one of the said guide-plates and adapted to adjust themselves automatically to varying thicknesses of fabric, the said presser-plates being placed edgewise vertically and end to end in the direction in which the fabrics are to be guided, combined with a feeding-wheel arranged in line with the said guide-plates, and thus adapted to draw the fabrics directly therefrom.

5. In the fabric-guiding apparatus, the combination, with a lower or work-supporting plate, of a series of spring-actuated presser-plates placed edgewise vertically above the said work-supporting plate and arranged end to end in the direction in which the fabrics are to move, and an upper plate or support to sustain the said presser-plates and to permit them to automatically adjust themselves to varying thicknesses of fabrics.

6. The combination, with the straightening-plates, the interposed loosely-held divider, and the deflector movable with the latter, of a spring or spring-arm for yieldingly pressing one of the said plates toward the other, and thus permitting the passage of different thicknesses of material between the said straightening-plates and on opposite sides of the said divider.

7. A straightening and evening apparatus consisting of the combination of two straightening-plates, one of which is yieldingly supported relative to the other, a movable or yielding separating plate or divider between the said straightening-plates, and an inclined deflector extending on both sides of the said divider and arranged at the inner edge of the latter.

8. The combination, with the lower stationary straightening-plate, F, of the divider G, the spring-carrying arm or plate g, the deflector H, movable with the said divider, the upper straightening-plate, F', and its spring-carrying arm f.

9. The combination, with the straightening-plates, the divider, the carrying-arm for the latter, and the deflector, of the carrying-arm f, provided with an adjustable stop.

10. The combination, with the straightening-plates, the divider, and the vertically-movable deflector, of the machine work-plate having a recess or opening for the reception of the lower part of the said deflector.

11. In a sewing-machine, the combination, with a laterally-moving needle-bar and needle, of a device for evening the edges of the fabrics, a stationary stitch-retaining finger arranged to extend between the two vertical paths of descent of the said needle, and a holder by which the said finger may be secured in place.

12. In a sewing-machine, the combination, with a laterally-moving needle-bar and needle, a device for evening the edges of the fabrics, a stitch-retaining finger, and a holder for the latter, of a feed-wheel rotating in a plane parallel, or approximately so, with the said finger.

13. The combination, with the guide-plates, of the straightening-plates, the divider, the deflector, and the stitch-retaining finger.

14. The combination, with the lower or work-supporting plate, a divider, and an inclined deflector at the inner edge of the latter, of an upper yieldingly-held plate or member adapted to serve as a presser-foot.

15. An automatic evening device comprising a vertically-movable pressing member, a divider for separating two pieces of fabric to be evened, and a work-supporting plate or surface beneath the said divider, combined with an inclined guide or deflector at the inner edge of the divider, and adapted to deflect and even the edges of the fabric, substantially as set forth.

378,823. DEVICE FOR STRAIGHTENING AND EVENING FABRICS FOR SEWING-MACHINES. SATTERLEE ARNOLD, New York, N. Y.

Filed Mar. 4, 1887. Serial No. 229,692. (No model.)



Claim.—1. An evener consisting of the combination of two outer plates, a central separator-plate or divider, and an inclined guide or deflector at the inner edge of the divider and extending on both sides of the latter into recesses in the said outer plates, the said three plates being all connected together at one point, so as to register from a common center.

2. In an evener, the combination, with a central separator-plate or divider and an inclined guide or deflector at the inner edge of the divider and extending on both sides thereof, of two outer straightening plates or pressers attached to the said divider and having their free ends movable relative thereto, so that the said plates may be separated for the introduction of the work.

3. In an evener, a separator-plate or divider, an inclined guide or deflector at the inner edge of the divider and extending on both sides thereof, and one or more straightening plates or pressers bent to have their free ends spring apart from the said divider, combined with a holding-stop adapted to impinge against the upper of said plates to close them together.

4. The combination, with the straightening-plates, the central separator-plate or divider, and the deflector, said plates being bent to spring apart at their free ends normally, of a device to press on the work and a stop vertically movable with the said work-pressing device for closing the said plates together.

5. The combination, with the straightening-plates, the central separator-plate or divider, and the deflector, said plates being bent to spring apart at their free ends, of the pressing feed-wheel and a stop vertically movable with the latter for pressing on and thus closing said plates together when the said wheel is lowered.

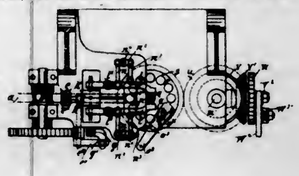
6. An evener consisting of the combination of a central separator-plate or divider, an inclined guide or deflector at the inner edge of the latter, and two outer pressing or straightening plates, the working ends of which are movable toward and from the said divider.

7. The combination, with the divider G and the inclined guide or deflector at the inner edge of the same, of the straightening-plates F and F', having the inclined horns or projections f^3, substantially as and for the purpose set forth.

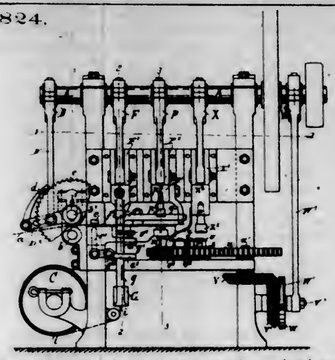
8. The combination, with the machine work-plate having the opening a, of the divider G, having the projection g, provided with the opening g', the inclined guide or deflector I at the inner edge of the said divider, and the straightening-plates F and F', substantially as and for the purpose set forth.

378,824. MACHINE FOR MAKING UPHOLSTERERS' NAILS. FRANZ J. BERGMANN, Nobeim-on-the-Ruhr, Westphalia, Germany. Filed June 1, 1887. Serial No. 239,965. (No model.)

Claim.—1. In a nail-making machine, the combination, with an anvil, of a pivoted lever, a punch carried by the said lever, a reciprocating head, and an arm connected to the said head and provided



378,824.



with a lug engaging the free end of the punch-carrying lever, substantially as described.

2. In a nail-making machine, the combination, with an anvil, a reciprocating head, a pivoted lever, and a punch on one end of the said lever, of an arm connected to the reciprocating head and provided with a lug for engaging the free end of the punch-carrying lever, and with a wire-clamping head at its lower end, substantially as herein shown and described.

3. In a nail-making machine, the combination, with a reciprocating head and a swage carried thereby, of an arm secured to the said head and provided with a wire-clamping head on its lower end, and gripping and cutting dies arranged under the swage, substantially as herein shown and described.

4. In a nail-making machine, the combination, with the die p, made in two parts and adapted to be opened and closed, of the planchet-cutter p', operating on said die and having a vertical movement, substantially as shown and described.

5. In a nail-making machine, the combination, with a reciprocating head, of a planchet-cutter carried by said head, a two-part die held under the cutter, a former under the die, and mechanism for separating the die, substantially as herein shown and described.

6. In a nail-making machine, the combination, with a reciprocating head, of a planchet-cutter carried by said head, a two-part die under the cutter, pivoted levers connected to the said die, an arm on the reciprocating head and adapted to pass between the ends of the levers, and a former under the die, substantially as herein shown and described.

7. In a nail-making machine, the combination, with reciprocating heads, a swage carried by one head, and a planchet-cutter carried by the other head, of gripping and cutting dies under the swage, a two-part die under the planchet-cutter, levers connected to the said dies and cutter, and an arm on one of the said reciprocating heads for operating the levers, substantially as herein shown and described.

8. In a nail-making machine, the combination, with the die p and the planchet-cutter p', of the formers r, secured in a circle on a revolving wheel, so that the said formers are successively brought directly under the said die p, substantially as shown and described.

9. In a nail-making machine, the combination, with reciprocating heads, a planchet-cutter carried by one head and a finishing-tool carried by the other head, of a two-part die under the planchet-cutter, pivoted levers connected to said dies, an arm on the cutter-head engaging the said levers, a former below the die, and mechanism for bringing the former under the finishing-tool, substantially as herein shown and described.

10. In a nail-making machine, the combination, with reciprocating heads, a planchet-cutter carried by one head and a finishing-tool by the other head, of a two-part die under the cutter and operated from the reciprocating cutter-head, a series of formers mounted in a circle on a wheel, and gearing for revolving said wheel, substantially as herein shown and described.

11. In a nail-making machine, the combination, with the gripping and cutting die K and the reciprocating head P', provided with the arm q, of the pivoted levers l, connected to the die and adapted to receive the arm q between their ends, substantially as described.

12. In a nail-making machine, the combination, with the grippin and cutting die K, the pivoted levers l, and means for operating the levers, of the two-part die p, the pivoted levers n^2, the links n, connecting the levers l n^2 together, and the links n^3, connecting the levers n^2 with the die, substantially as herein shown and described.

13. In a nail-making machine, the combination, with a former, of a pivoted extractor having a forked end and a slot leading from the fork to one side, substantially as described.

14. In a nail-making machine, the combination, with a reciprocating head and a former, of a pivoted extractor having a forked end and a slot leading from the fork to one side, and a connection between the extractor and reciprocating head, substantially as herein shown and described.

378,825. PAVING-TILE. FELIX BRANNIGAN, New York, N. Y., assignor of one-half to James M. Ewing, Wheeling, W. Va. Filed Feb. 14, 1887. Serial No. 227,580. (No model.)

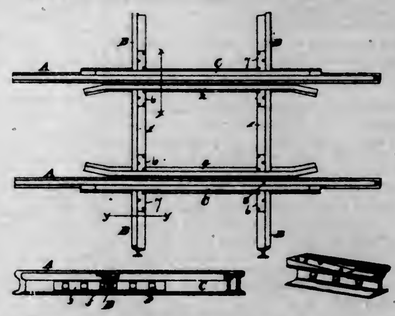


Claim.—A new article of manufacture consisting of a tile formed of iron slag with ribs on its under surface, with arched grooves between the ribs, the sides of the grooves being slightly flaring outward, substantially as described.

378,826. PAINT. HIRAM BURNETT, East Portland, Oreg. Filed Nov. 27, 1886. Serial No. 220,040. (No specimens.)

Claim.—The herein-described composition of matter constituting a paint, consisting of tar, rosin, cement, benzine, and litharge thoroughly amalgamated, in the proportions specified.

378,827. RAILWAY-CROSSING. J. FOSTER CROWELL and FREDERIC C. WEIR, Cincinnati, Ohio. Filed Dec. 9, 1887. Serial No. 257,444. (No model.)



Claim.—1. The combined tram-rails 1 and T-rails 2, the former having supplemental inclined portions to carry the wheels over the latter without cutting the same, substantially as described.

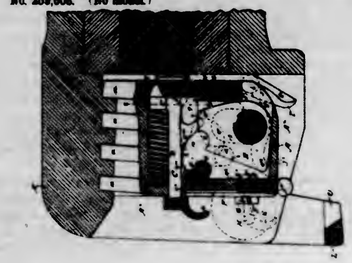
2. In combination with the rails 1 and 2, secured by braces 3 and bolts 4 5, the sub-rail 6, bolted to the top of rails 1, substantially as specified.

3. The combination of the abutting rail C with the rails B B, secured together by braces 3 and bolts 4 5, to form the continuation of a crossing over the rails A, substantially as specified.

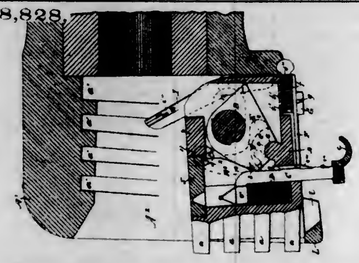
4. In combination with the rails B and the abutting rail C, secured together, the inclined sub-rail 7, secured to rails B, substantially as specified.

5. In combination with a railway-crossing having the heads of the two lines of rails A B at a different plane, the sub-rail bolted to the top of the lower rails, B, forming an incline to form a crossing over the other set of rails, A, which are higher and continuous, substantially as specified.

378,828. BREECH-LOADING ORDNANCE. WILLIAM H. DRIGGS and BEATON SCHROEDER, Washington, D. C. Filed Jan. 3, 1888. Serial No. 259,606. (No model.)



378,828.



Claim.—1. In a breech-loading gun, the combination of a breech-block, which first moves downward in opening, then rotates backward and downward, and which is provided with cam or guide grooves in its sides, the breech-walls provided with guide pins or studs fitting in said grooves, and a cam mounted on an operating-shaft or bolt and engaging with and imparting the directions of movement named to said block, substantially as described.

2. In a breech-loading gun in which the breech-block first moves downward in opening, then rotates backward and downward, the combination of a chambered breech formed with openings in its walls, an axial bolt fitted in said openings, a breech-block formed in its interior with a central cavity, a cam secured to said axial bolt and arranged within said central cavity, cam-grooves and pins or studs, respectively, in the block and breech-walls, and means for rotating said bolt and cam and for moving and guiding said breech-block downward, then backward and downward, and for returning the same to its original position, substantially as described.

3. In a breech-loading gun in which the breech-block first moves downward in opening, then rotates backward and downward, the combination of the chambered gun-breech A', provided with grooves in its upper interior surface, the breech-block A, provided on its upper surface with bands *a a*, adapted to fit said grooves and hold said breech-block firmly in place, provided with the elongated opening 13, and with a central cavity, A^2, in its interior, the axial bolt B, fitted in openings in the breech-walls and passing through said elongated opening, the cam E, secured to said axial bolt and located in said central cavity, and means for rotating said cam and, in connection with the cam-groove and pins or studs, respectively, in the block and breech-walls, guiding said breech-block downward, backward, and then downward, and for returning the same to its original position, substantially as described.

4. In a breech-loading gun in which the breech-block first moves downward in opening, then rotates backward and downward, the combination of the chambered breech formed with openings in its walls, an axial bolt fitted in said openings, a breech-block formed with cam or guide grooves in its sides, with an elongated opening, and with an interior central cavity having a horizontal wall, an inclined wall and a rounded shoulder, stationary pins or studs secured in the walls of the breech and fitting in said cam or guide grooves, a cam secured to said axial bolt and arranged within said cavity and formed with an upper front point, a toe, and a circular recess, substantially as and for the purpose described.

5. In a breech-loading gun, a breech-block formed with a central cavity, with a circular cavity in its upper portion, and with firing-pin holes in its front and rear walls, in combination with a firing-pin arranged in said circular cavity and projecting through the hole in the rear wall of said block and provided with an upturned head and a downwardly-extending cocking-lug, a spiral actuating-spring arranged above said firing-pin, and having its front and rear ends, respectively, bearing against the head of said pin and the rear wall of said block, and a rotary cam for retracting said firing-pin, substantially as described.

6. In a breech-loading gun, the combination of a breech-block having a downward movement in opening, then a rotary backward and downward movement, and which is formed with an interior central cavity, with a firing-pin arranged in the upper part of said cavity and provided with studs for holding it full or half cocked, and with a downwardly-projecting cocking-lug, an actuating-spring for said firing-pin seated between an upturned head on the latter and the rear wall of the cavity, and a rotary cam arranged within said cavity and adapted to come in contact with and retract said firing-pin, substantially as described.

7. In a breech-loading gun, the combination of a breech-block formed with a central cavity, with firing-pin holes in its front and rear walls, and also with a vertical mortise in said rear wall, a firing-pin arranged in the upper part of said cavity and provided at its front end with an upturned head, on its lower side with a cocking-lug and full and half cock lugs, a vertically-sliding leaf arranged in said mortise and adapted to hold said studs when the pin is retracted, a spring arranged above and in contact with said firing-pin, a spring arranged beneath said vertically-sliding leaf, and a rotary cam for retracting the firing-pin, substantially as described.

8. In a breech-loading gun in which the breech-block first moves downward in opening, then rotates backward and downward, the combination of the chambered breech formed with openings in its walls, an axial bolt fitted in said openings, a breech-block formed in its interior with a central cavity, a cam secured to said axial bolt and arranged within said central cavity, a firing-pin arranged in the upper part of said cavity and provided on its under side with studs for holding it full or half cocked, and with a downwardly and forwardly projecting cocking-lug arranged to come in contact with and be operated by said cam for retracting said firing-pin, and means for rotating said bolt and cam, and thereby, in connection with the pins or studs and cam-grooves, respectively, in the breech walls and block, moving and guiding said breech-block downward, then backward and downward, and for returning the same to its original position, substantially as described.

9. In a breech-loading gun, firing-pin holding and releasing mechanism, consisting of a breech-block formed with a vertical mortise and a cylindrical recess, in combination with a coiled spring placed within said recess, a removable plug for closing the lower end of said recess, a sliding leaf fitted in said mortise and having a circular lug extending over said coiled spring, and also having a laterally-extending arm, and means for moving said arm downward, substantially as described.

10. In a breech-loading gun, firing-pin holding and releasing mechanism, consisting of a breech-block formed with a vertical mortise and a cylindrical recess, in combination with a spring-controlled firing-pin, a coiled spring placed within said recess, a removable plug for closing the lower end of said recess, a sliding leaf fitted in said mortise and having a circular lug extending over said coiled spring, and also having a laterally-extending arm, and a rock-shaft provided at its inner and outer ends, respectively, with a trip and trigger, substantially as described.

11. In a breech-loading gun, the combination of a breech-block formed with a vertical mortise and a cylindrical recess in its rear face, a spring-controlled firing-pin arranged in the upper part of said block, a coiled spring placed in said cylindrical recess, a vertically-movable leaf arranged in said mortise and provided with a lug projecting over the coiled spring in said recess, and means for moving said leaf downward and releasing the firing-pin, substantially as described.

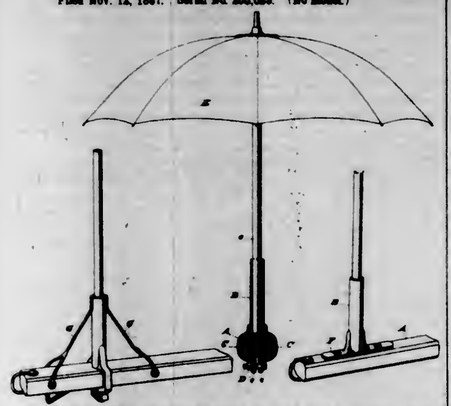
12. In a breech-loading gun in which the breech-block first moves downward in opening, ther rotates backward and downward, the combination of the gun-breech A', the breech-block A having formed in its sides, along its front and bottom, recesses J J and lower deeper recesses or steps, J' J', the latter having upper curved walls, *j j*, the cartridge-shell extractor, consisting of the upwardly-extending arms I I, formed to fit said recesses and provided with heads *i' i'*, with lateral pivots *i i*, working in openings in the breech-walls, and with curved projections *i' i'* on their lower rearwardly-projecting ends, said projections extending into and being operated by said deeper recesses or steps, and means for moving said breech-block downward, then backward and downward, substantially as described.

13. In a breech-loading gun in which the breech-block first moves downward in opening, then rotates backward and downward, the combination of the gun-breech A', the breech-block A having formed in its sides, along its front and bottom, recesses J J and lower deeper recesses or steps, J' J', the latter having upper curved walls, *j j*, merging into abrupt curves *j' j'* at their rear ends, the cartridge-shell extractor, consisting of the upwardly-extending arms I I, formed to fit said recesses and provided with heads *i' i'*, with lateral pivots i i, working in openings in the breech-walls, and with curved projections *i' i'* on their lower rearwardly-projecting ends, said projections extending into and being operated by said deeper recesses or steps, and means for moving said breech-block downward, then backward and downward, substantially as described.

14. In a breech-loading gun, the combination of a breech-block which first moves downward in opening, then rotates backward and downward, and which is provided with rearwardly-projecting firing mechanism, with a tray or support arranged at the rear end of the breech and rigidly suspended from its walls and formed with a central recess for the passage of such firing mechanism, substantially as and for the purpose described.

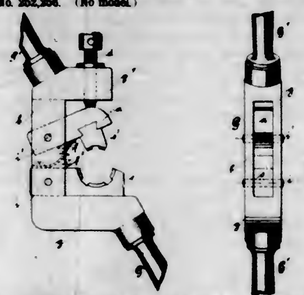
15. In a breech-loading gun, the combination of a breech-block and mechanism for moving the same downward, backward and downward in opening, and for returning the same to its original or closed position, with the gun-breech provided on its exterior surface with a recess which is formed with a sloping or inclined rear surface and with a vertical wall at its front, and a handle for operating the breech mechanism, provided with a spring-catch adapted to move in said recess, substantially as and for the purpose described.

378,829. **SUNSHADE ATTACHMENT FOR VEHICLES.** ELMER E. DUTTON, Vineland, N. J., assignor to John Perotus Gage, same place. Filed Nov. 12, 1887. Serial No. 255,039. (No model.)



Claim.—The combination, with the tongue of a vehicle, of the socket B, provided with the arms C, the bolt and nut D, the brace-rods G, supporting the socket on the tongue, the shelter, and the shelter-rod with its lower end inserted in the socket, substantially as specified.

378,830. **SCREW-STOCK.** EDUARD ESCHLA Remscheid, and BRUNO WEBELHAEH, Hamburg, Prussia, Germany. Filed Oct. 13, 1887. Serial No. 252,256. (No model.)



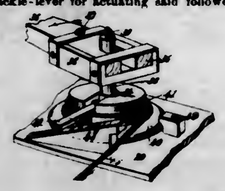
Claim.—1. The combination, with a housing open at one side, of a stationary die-section, a movable carrier adapted to receive a die or cutter arranged in line with the stationary die-section, and an adjusting-screw engaging the carrier, substantially as shown and described.

2. The combination, with a housing open at one side, of a stationary die-section, a pivoted carrier adapted to receive a die or cutter, and an adjusting-screw engaging the carrier, substantially as shown and described.

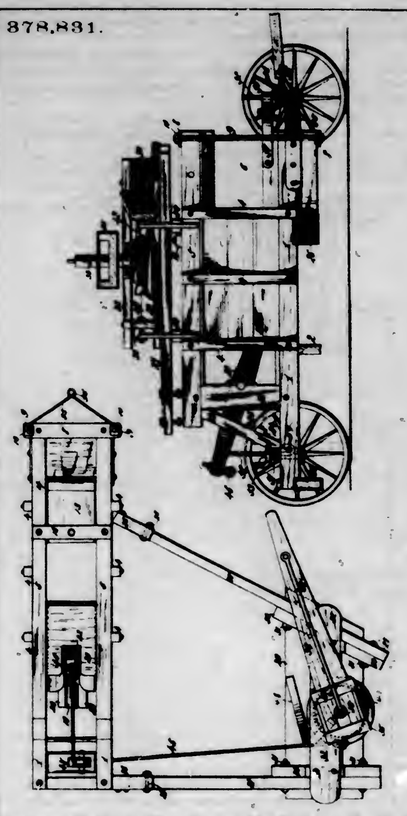
3. The combination, with a housing open at one side and having the opposite side slotted, of a stationary die-section and a carrier, pivoted at one end in the slot and provided at its other end with means for receiving a die or cutter, and an adjusting-screw, substantially as shown and described.

378,831. **BALING-PRESS.** FRANKLIN FREY and HENRY W. SCHWARZBURG, Quincy, Ill. Filed Oct. 13, 1887. Serial No. 252,247. (No model.)

Claim.—1. The combination, with a horizontally-movable follower and a knuckle-lever for actuating said follower, of a horse-



378,831.



power comprising a drum having a pivoted latch, a loose collar placed on said drum and adapted to be automatically engaged with and disengaged from the drum-latch, a cable for connecting said collar with the follower-lever to draw down and extend the lever, means, substantially as described, for automatically releasing the drum-latch from the rotating collar when the follower has finished its forward stroke, and a stop for limiting the rebound of the released collar, substantially as described.

2. The combination, with a horizontally-movable follower and a knuckle-lever for actuating said follower, of an adjustable tension bolt mounted in the free end of the said knuckle-lever, a cable attached to said bolt, and a horse-power for partially winding the cable to extend the lever and actuate the follower, said horse-power being provided with devices, substantially as described, for automatically releasing the cable to permit the rebound of the follower and its knuckle-lever when the forward stroke of the follower is completed, substantially as described.

3. The combination, with a horizontally-movable follower and a knuckle-lever for actuating said follower, of a cable connected with said lever, a horse-power located at the side of the press for winding the cable, and a cable-guide sheave journaled in a bearing pivoted in the press-frame, substantially as described.

4. The combination, with a horizontally-movable follower and a knuckle-lever for actuating said follower, of socket-pieces attached to one side of the press-frame, detachable sills adapted to be secured in said sockets to project on one side of the press, and a portable horse-power adapted to be detachably secured to said detachable sills, substantially as described.

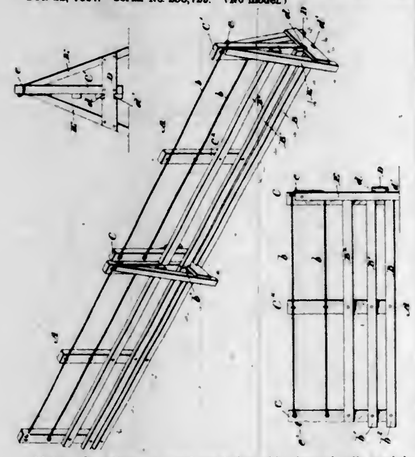
5. The combination, with a horizontally-movable follower and a knuckle-lever for actuating said follower, of socket-pieces attached to one side of the press-frame, and a detachable and portable horse-power located at the side of the press on sills secured in said socket and comprising a drum, a cable connected with the knuckle-lever and drum, and

mechanism, as described, for automatically releasing the cable from the drum, substantially as described.

6. The combination, with a portable baling-press, of detachable wheeled axles having adjustable screw-bolts provided with hooked ends to engage the press-frame or its attachments and nuts for tightening said bolts, substantially as described.

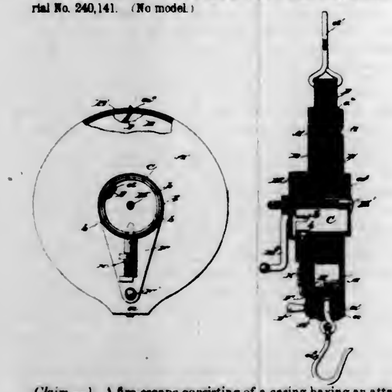
7. The combination, with a portable baling-press having a transverse rod at the rear end of its frame and at its forward end a yoke provided with an eye, of detachable wheeled axles having adjustable screw-bolts with hooked ends to engage said rod and yoke and an upper yoke to brace the forward axle, substantially as described.

378,832. FENCE. WILLIAM A. FRENHOUR, Urbana, Ind. Filed Dec. 22, 1887. Serial No. 258,729. (No model.)



Claim.—In a fence, a panel consisting of horizontal rails, upright posts secured to the opposite ends of said rails, the ends of the two bottom rails projecting beyond the post at one end of the panel, a horizontal sill secured to the outer edge of the post at the opposite end of the panel, inclined braces secured at their upper ends to said post and at their lower ends to the sill, said sill being provided with notches or recesses oppositely located in its top and bottom edges, a hook projecting from the upper outer edge of one post, and a staple similarly located upon the upper outer edge of the opposite post, whereby one end of the panel is supported by the braces and the opposite end is supported at its upper portion by the hook and staple and its lower portion by the two projecting ends of the rails entering the recesses in the sill of the adjoining panel, substantially as described.

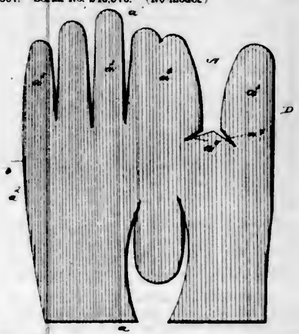
378,833. PORTABLE FIRE-ESCAPE. GEORGE GAVIN, LAWRENCE W. CROMER, and FRANK GILMOR, Eureka, Nev. Filed June 3, 1887. Serial No. 240,141. (No model.)



Claim.—1. A fire-escape consisting of a casing having an attached hook, a carrier journaled in said casing, a tape wound upon said carrier, projecting through the casing and provided with a hook, a cap bearing upon the casing, a crank-arm adapted to compress said cap and produce friction between the casing and carrier, a plate attached to said cap, provided with a handle, and a spring-actuated lock-bolt secured upon said plate, adapted to engage the carrier, substantially as herein shown and described, whereby the tape is rewound when run out and the descent regulated by the operator, as set forth.

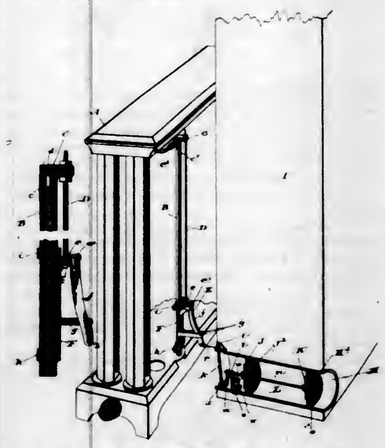
2. In a fire-escape, the combination, with the casings A A', the drum C, having slots *b*, the attached disks B B', and carrying tape D, wound upon said drum between said disks, of the cap E, the integral plate F, having a handle, F', a locking device secured upon said plate, adapted to engage the slots in the drum, the bolt E', and crank-arm E², all arranged to operate substantially as herein set forth.

378,834. GLOVE. DANIEL B. GUNN, Red Oak, Iowa. Filed Aug. 8, 1887. Serial No. 246,370. (No model.)



Claim.—The improved glove herein described, consisting, essentially, of the blank comprising the back and palmer portion, all of the index and small fingers, the backs of the middle fingers, and the front of the thumb, the same having a V-shaped slit, as shown, between the index-finger and front of the small finger, the piece D for the back of the thumb sewed to the front thumb-piece in the main blank and extending therefrom to the wrist, and the front pieces for the second and third fingers, substantially as specified.

378,835. TEMPERATURE-REGULATOR. EDWARD GURNEY and CHARLES W. PENISTON, Toronto, Ontario, Canada, assignors to the E. & C. Gurney Company, (Limited,) same place. Filed June 20, 1887. Serial No. 241,880. (No model.)



Claim.—1. An air-flue provided with two valves acting upon two seats formed within the air-flue at a suitable distance apart, so as to leave a dead-air space between them when the valves are seated, in combination with mechanism arranged to connect the valves with a radiator or other heater, and so constructed that the increase or decrease of the temperature of the radiator is utilized for the purpose of opening and closing the valves located within the air-flue, substantially as specified.

2. The combination of the cap C, having a passage, *d*, and connected by a coupling with elbow-pipe C', attached to a radiator, the expansion-pipe B, sleeved on said cap, and the rod D, rigidly attached at one end to said cap and which actuates a lever, substantially as described, and for the purpose specified.

3. The combination of the bored cap C, on which the expansion-pipe B is sleeved, and connected by a coupling with the elbow-pipe C', attached to a radiator, the rod D, and the bent lever E, pivoted in bearings formed on the half-sleeve F, which is secured to the expansion-pipe B, and which communicates motion to valves in the air-flue, substantially as specified.

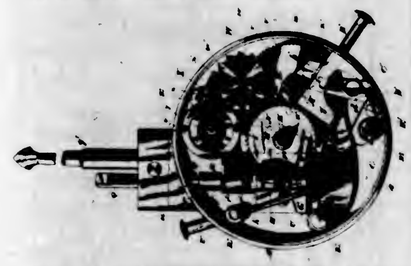
4. The combination of the expansion-pipe B, connected by a bored cap, C, and elbow-pipe C' to a radiator, the rod D, bent lever E, pivoted on bearings formed in the radiator, the cord *r*, pivoted lever *k*, handle *m*, and valve-rod *n*, adapted to slide in suitable bearings formed in an air-flue, H, and carrying a valve which is moved from its seat by motion derived from the expansion of the pipe B when seated, substantially as specified.

5. The combination of the bored cap C, on which the expansion-pipe B is sleeved, and connected by a coupling with the elbow-pipe C', attached to a radiator, rod D, and bent lever E, pivoted on a bearing formed on the half-sleeve F, attached to the expansion-pipe B, the long arm *f* of the bent lever E being adapted to move between guides *g*, also formed in said half-sleeve F and connected by the cord *r* to the pivoted lever *k*, which is pivotally connected with an attachment formed at the inner end of the valve-rod *n*, carrying, by means of suitable bearings, the valves J and K, adapted to open and close the apertures in the valve-seats J' and K', formed in the air-flue H, substantially as described and specified.

6. The combination, with the air-flue, the brackets *o*, and the valve-shaft *n*, supported by said brackets, of the pulley *u*, having bearings in said flue, the cord *t*, passed over said pulley and attached to the inner end of the valve-shaft, and the weight *w*, adapted to reseat the valves in the air-flue when the radiator has become cooled, substantially as described.

7. The combination, with a radiator, an expansion-pipe attached thereto, an air-flue, a valve-rod and valves in said flue, and a series of levers connected together and connecting said pipe and rod, of a weight carried by a cord connected by said levers and acting in opposition to the expansive force of said pipe, substantially as and for the purpose specified.

378,836. SPEED-INDICATOR. GEORGE S. HEATH, Hartford, Conn. Filed Jan. 20, 1887. Serial No. 224,858. (No model.)



Claim.—1. A speed-indicator in which are combined mechanism for registering the rotations of a spindle, mechanism for measuring time, and mechanism whereby, by the manipulation of one device, the registering-hands may be set at zero and the actuating-spring of the time-measuring mechanism simultaneously placed under tension, substantially as and for the purpose specified.

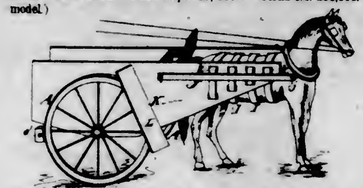
2. A speed-indicator in which are mechanisms for registering the rotations of a spindle and for measuring time, in combination with mechanism that, by the manipulation of one device, is adapted to simultaneously set the registering-hands at zero and to place under tension the spring employed for actuating the time-measuring mechanism, substantially as and for the purpose shown.

3. A speed-indicator which is provided with a spindle that is adapted to have its outer end engaged with a shaft or other part to be timed, and may be connected with and caused to actuate registering mechanism, in combination with a second similar spindle which is arranged parallel with said first spindle and connected therewith by two engaging gear-wheels having equal numbers of teeth, whereby when either spindle is rotated the other spindle will move simultaneously and with equal speed in the opposite direction, substantially as and for the purpose set forth.

4. In a speed-indicator, a time-train which is driven by means of a reciprocable spring-pressed bar that is journaled upon the main wheel-arbor and has its outer end adapted to engage with the toothed periphery of the main wheel, substantially as and for the purpose shown and described.

5. The combination of a spring-pressed lever adapted to engage with one of the wheels of the time-train, a spring-pressed lever or pawl adapted to lock the former out of engagement with said wheel, and a radial rotating arm that is adapted to release said locking lever or pawl, substantially as and for the purpose specified.

378,837. HORSE-BREAKING VEHICLE. EPHRAIM HERRINGTON, Mount Vernon, Ga. Filed Sept. 19, 1887. Serial No. 250,096. (No model.)



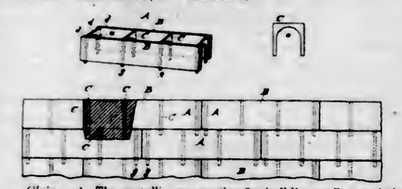
Claim.—1. In a horse-breaking vehicle, the shafts made broad or deep, provided with slots *k*, and made integral with the side-boards K, as and for the purpose set forth.

2. In a horse-breaking vehicle, the curved shield E, arranged in front of the body of vehicle and held forward by springs, as and for the purpose specified.

3. In a horse-breaking vehicle, the padded spring-supported plate G, arranged on the inside of the front D', as and for the purpose set forth.

4. In a horse-breaking vehicle, the protector-plates I, L, arranged on a backward incline over the front of the wheels, as and for the purpose specified.

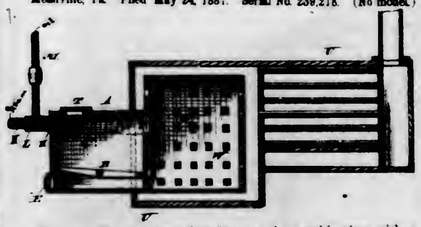
378,838. BUILDING WALLS. ELWOOD R. HIATT, Noblesville, Ind., assignor of one-half to Ralph R. Vansant, same place. Filed Dec 3, 1887. Serial No. 256,940. (No model.)



Claim.—1. The metallic case-section for building walls, consisting of the parallel sides B, having the rigid tie-partitions or transverse braces C arched below, and having the ends of the arched portion projecting downward below the level of the lower edges of said sides to form bracing-lugs *g*, the outer edges of which stand just within the planes of the inner faces of said sides, substantially as specified.

2. In a wall, the combination, with the hollow metallic parallel-sided case-sections A, arranged in courses and having the interior transverse tie-partitions, and the downwardly-projecting brace-lugs *g*, of the cement filling binding the case-sections together and forming the interior wall, substantially as specified.

378,839. FURNACE. ARTHUR C. HUIDEKOPER and LUC HOUEL, Meadville, Pa. Filed May 24, 1887. Serial No. 239,218. (No model.)



Claim.—1. In a hydrocarbon-furnace, the combination, with a furnace having a fire-box, of a combustion and heat-storing chamber occupying said fire-box, and an auxiliary fire-chamber located outside said fire-box, having a grate and communicating with said combustion-chamber, and a series of hydrocarbon-supply pipes and steam-jet pipes, all substantially as and for the purpose described.

2. The combination, with a furnace having a fire-box and a combustion and heat-storing chamber located in said fire-box, of a fire-

chamber provided with a grate and steam and oil injecting pipes, and

378,842. WHEEL-HUB. CHARLES A. KITTLEY, Raymilton, assignor

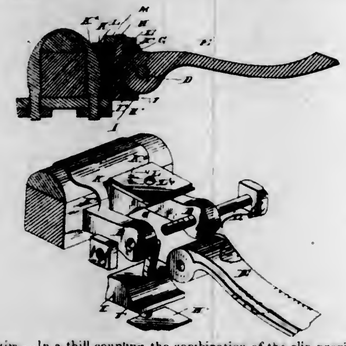
ing-chamber of the next cooler-pan, and a liquid-conducting pipe lead-

378,845.

chamber provided with a grate and steam and oil injecting pipes, and air-flues communicating at one end with the steam and oil pipes and at the other end with the combustion-chamber, substantially as and for the purpose described.

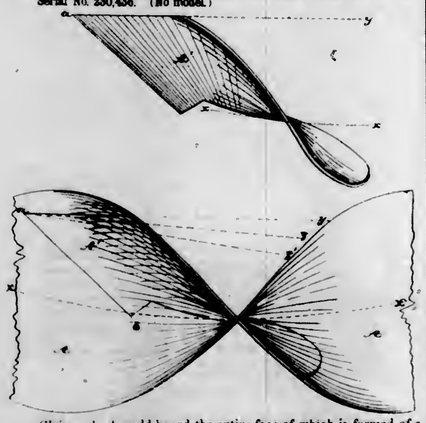
3. The combination, with the fire-box of a boiler-furnace and an auxiliary fire-chamber having a grate located outside said box, and oil, steam, and air supply pipes therefor, of a combustion and heat-storing chamber located in said fire-box, wherein the gases from the fire-chamber are consumed, so as to absorb and store the heat and supply it to the combustion-chamber of a boiler-furnace, and the air-pipes communicating with said combustion-chamber, substantially as and for the purpose described.

378,840. THILL-COUPLING. GEORGE W. HYATT and WILLIAM DICK, Three Mile Bay, N. Y. Filed Sept. 17, 1887. Serial No. 249,949. (No model.)



Claim.—In a thill-coupling, the combination of the clip provided with the forwardly-projecting parallel ears formed with registering apertures, the thill-iron of ordinary construction, and the pivotal bolt with apertured rubber blocks, the upper one of which is formed with flat upper and lower and curved forward and rear portions, while the lower one is formed with a curved forward and flat upper, lower, and rear portions, the curved threaded bolt having at its lower end the flat plate, upon which the flat base of the lower rubber block is seated, the perforated plate having the points or teeth upon its lower face, and the retaining and adjusting nut.

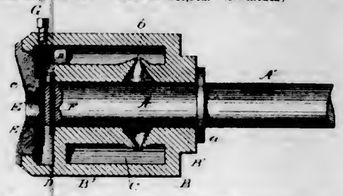
378,841. MOLD-BOARD. ROBERT JONES, Waynesburg, Ohio, assignor of one-half to Charles H. Jones, same place. Filed Mar. 10, 1887. Serial No. 230,436. (No model.)



Claim.—1. A mold-board the entire face of which is formed of a part of a single spiral, the axis whereof is a curved line forming part of a true circle lying on a level with the bottom of the landside of the plow, substantially as described.

2. A mold-board the entire face of which is formed of a part of a single spiral, and the axis of which is on a level with the bottom of the landside of the plow and forms part of a true circle, the concave face of the axis facing the landside, substantially as described.

378,842. WHEEL-HUB. CHARLES A. KINNEY, Raymilton, assignor of one-third to Bryan H. Osborn, Franklin, Pa. Filed Oct. 17, 1883. Renewed Aug. 15, 1887. Serial No. 246,962. (No model.)

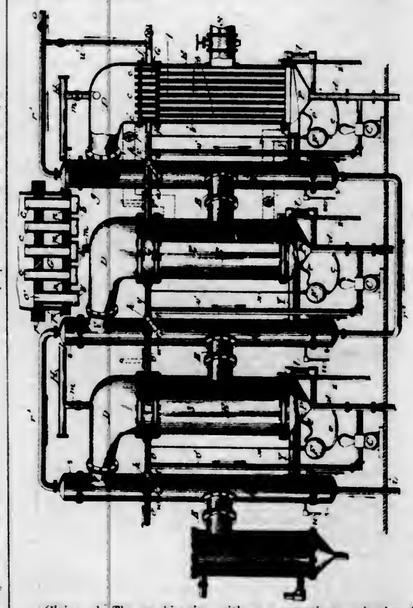


Claim.—1. The cap E, having a concaved exterior and a central aperture, in combination with a hub which is provided with a lubricating-chamber that receives oil from said aperture and supplies it to the spindle, substantially as set forth.

2. The hub proper and outer jacket, in one piece, having a chamber, C, between them, and provided with perforations communicating with the axle-spindle in conical projections into said chamber, in combination with a cap, E, having a concave exterior and a central aperture through which oil is supplied to said chamber, substantially as set forth.

3. In a lubricating-hub, the combination, with the pin F, of the plug G, located nearly over said pin, whereby said pin may be inserted or removed, in the manner and for the purposes set forth.

378,843. VACUUM APPARATUS FOR EVAPORATING LIQUIDS. S. MORRIS LILLIE, Philadelphia, Pa. Filed Mar. 25, 1887. Serial No. 232,366. (No model.)



Claim.—1. The combination, with an evaporating-pan having the dome D, collecting-chamber P, heating-chamber E, pipes *b*, and feeding devices for said pipes, of a second evaporating-pan having the same construction, vapor-conduits between the dome D and chamber P of the first pan and the heating-chamber E of the second pan, and a liquid-conducting main connecting the chamber P of the first pan with the feeding devices of the tubes *b* of the second pan, substantially as specified.

2. The combination of two or more evaporating-pans to form a multiple-effect apparatus, each pan being provided with a heating-chamber, E, containing evaporating-tubes *b*, which tubes communicate at one end with the dome D and with a feeding device, G, having restricted connections to the several tubes, and at the other end with the collecting-chamber P, a vapor-conduit for each pan, excepting the last one of the series, leading from the dome of the same to the heating-chamber of the next cooler-pan, and a liquid-conducting pipe leading from the collecting-chamber of the former pan to the feeding device of the evaporating-tubes of the latter pan, substantially as described.

3. The combination of the battery of evaporating-tubes, their surrounding heating-chamber E, and collecting-chamber P, common to the said tubes of an evaporating-pan operated substantially as described, the heating-chamber and its contained evaporating-tubes of a second similarly-operating pan, a vapor-conduit leading from the collecting-chamber P of the first pan to the heating-chamber E of the second pan, and a liquid-conducting pipe and connections leading from the chamber P of the former to the feed ends of the evaporating-tubes of the latter, substantially as and for the purpose described.

4. The combination of the battery of evaporating-tubes *b*, their surrounding heating-chamber E, and collecting-chamber P, common to the said tubes of an evaporating-pan operating substantially as described, the heating-chamber E and tubes *b* of a second similarly-operating pan, and a vapor-conduit leading from the collecting-chamber P of the first pan to the heating-chamber E of the second pan, substantially as and for the purpose specified.

5. The combination, with two consecutive pans of a multiple-effect evaporating apparatus, each pan being provided with the evaporating-tubes *b* and collecting-chamber P, of a pump, C, having its suction-pipe connected with the chamber P of the first of the two pans and its eduction-pipe *c'* with the feed ends of the evaporating-tubes *b* of each pan, the pump and its connections operating to draw liquid from the chamber P of the first pan and to deliver it to the evaporating-tubes of the same pan or to the tubes of the second pan, or to both, substantially as specified.

6. The combination, with two consecutive pans of a multiple-effect evaporating apparatus, each pan being provided with the evaporating-tubes *b* and collecting-chamber P, of a pump, C, having its suction-pipe connected with the chamber P of the first of the two pans and its eduction-pipe *c'* with the feed ends of the evaporating-tubes of the second pan, the pump and its connections operating to draw liquid from the chamber P of the first pan and to deliver it to the evaporating-tubes of the second pan, substantially as specified.

7. The combination, with an evaporating-pan, of a surface-heater adapted to heat a liquid, and a second evaporating-pan, each connected with the first pan by a suitable vapor-conduit, the surface-heater operating to utilize a portion of the vapors generated in the first pan for heating a liquid passing through the said heater, and the second pan operating to utilize another portion of the vapors for evaporating a liquid, substantially as specified.

8. The combination, with an evaporating-pan constructed and operating substantially as set forth, of a surface-heater and a second evaporating-pan, the collecting-chamber of the first pan being connected by suitable vapor-conduits with the surface-heater and with the heating-chamber of the second pan, substantially as specified.

9. The combination, with an evaporating-pan constructed and operating substantially as set forth, of a surface-heater and a second evaporating-pan, the dome of the first pan being connected by suitable vapor-conduits with the surface-heater and with the heating-chamber of the second pan, substantially as specified.

10. The combination, with an evaporating-pan constructed and operating substantially as set forth, of a surface-heater and a second evaporating-pan, the dome and the collecting-chamber of the first pan each being connected by suitable vapor-conduits with the surface-heater and with the heating-chamber of the second pan, substantially as specified.

378,844. CAR-WHEEL. GEORGE G. LONDELL, Wilmington, Del. Filed Oct. 31, 1887. Serial No. 253,866. (No model.)



Claim.—1. A car-wheel center or body portion consisting of hub, rim, and connecting side plates inclosing an annular space, D, and provided as to the hub and one or both side plates with strengthening-ribs *e f*, extending into but not across said annular space D, all substantially as and for the purposes set forth.

2. A car-wheel consisting of a hub, rim, and connecting side plates inclosing an annular space, D, with ribs extending into but not across said annular space D, all substantially as specified.

378,845. GRAIN-BINDER. FREDERICK A. MURDOCK, Auburn, assignor to the D. M. Osborne & Company, New York, N. Y. Filed June 23, 1887. Serial No. 242,293. (No model.)



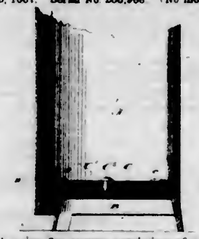
Claim.—1. The rotary tyer, the vibratory cord-guiding arm, and the needle, in combination with the tucker mounted on the arm and adapted to be actuated by the needle, substantially as described.

2. In combination with the rotary tying-bill and the movable cord-guiding arm, a tucker or cord-confining finger movably mounted on the arm and adapted to engage over the cord from the outer side, as shown.

3. In a grain-binder, and in combination with suitable cord tying and clamping devices, a movable knife-carrier, and a cord-tucker movably attached to said carrier, substantially as described, to close over the cord.

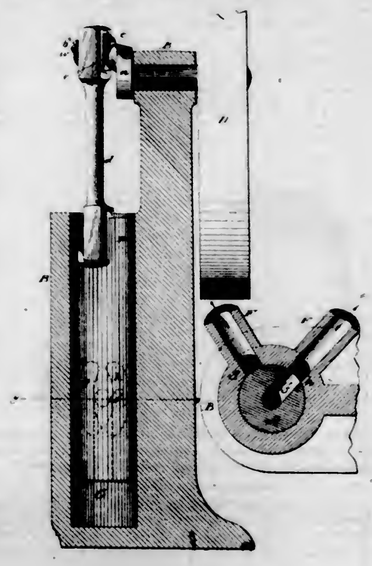
4. The tucker-blade and its sustaining rock-shaft, having the crank-arm, in combination with the retracting-spring, and the binding-needle arranged to act first on the crank and thereafter on the tucker-blade, whereby the needle is enabled to operate the tucker without the employment of levers or other intermediate movable parts.

378,846. PUMP-VALVE. MICHAEL W. MURPHY, Whitehall, N. Y. Filed Nov. 23, 1887. Serial No. 255,988. (No model.)



Claim.—A valve for pumps consisting of a rubber disk having metallic strips embedded therein, united at their central portion by a suitable bolt, and turned upward at their ends over the top of the said disk, as shown and described.

378,847. MECHANICAL MOVEMENT. LEWIS H. NASH, Brooklyn, assignor to the National Meter Company, New York, N. Y. Filed Apr. 15, 1886. Serial No. 199,001. (Model.)



Claim.—1. The combination of a connecting-rod, a shaft, an inclined crank-pin attached to said shaft, and a compound bearing part joining said crank-pin and connecting-rod adapted to permit motion in two directions about axes having an angular relation to each other, substantially as described.

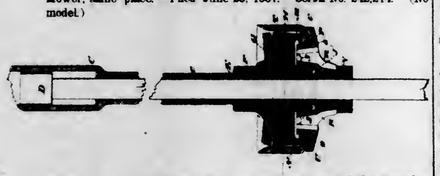
2. The combination of a shaft having an inclined crank-pin, a plunger, a connecting-rod, and compound bearing parts for each end of said rod joining it with said crank-pin and said plunger, said compound bearing parts each being adapted to permit of motion in two directions about axes having an angular relation to each other, substantially as described.

3. The combination of a shaft having an inclined crank-pin, a body to which motion is communicated, a connecting-rod, and compound bearing parts for each end of said rod, joining it with said crank-pin and said body, said compound bearing parts each being adapted to permit of motion in two directions about axes having an angular relation to each other, substantially as described.

4. The combination, with the case B, having the chamber C and inlet and outlet ports, of a plunger having a port communicating with said case-ports, a connecting-rod, a crank-shaft having its crank-pin inclined to the axis of the shaft, a fly-wheel, D, and bearing parts *e e* for each end of the connecting-rod, having cylindrical interior and exterior bearings arranged at right angles to each other, substantially as described.

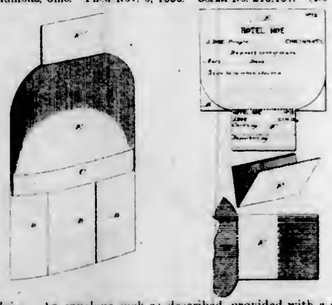
5. The combination of the crank-shaft having the axis of its crank-pin inclined to the axis of said shaft, a cylindrical plunger having the ports *f f'*, and an inclosing-case for said plunger having the ports *g h*, with the connecting-rod *d*, the bearing-pieces *e e*, formed with interior and exterior bearings, and the plunger connecting-pin *e*, substantially as described.

378,848. COMBINED PUMP-PISTON AND CHECK-VALVE. Joseph M. Normand, Springfield, Ohio, assignor of one-half to Jacob K. Mower, same place. Filed June 23, 1887. Serial No. 242,214. (No model.)



Claim.—The combination, with the rod or stem, of the exterior shoulder, the fixed disk thereon below the shoulder, the annular frame on the rod or stem and next to the disk and having water-passages, an annular downwardly-extending bead on the said frame and a depending hub, an annular skeleton seat having a screw-threaded eye screwed on the rod or stem and enlarged in the upper part to receive said hub and having water-passages and an upwardly-projecting bead which extends within said downwardly-extending bead, a cup-shaped packing having an inwardly-extending flange lying between the bead of the frame and the seat and turned upwardly by the body of the seat, and a jam-nut.

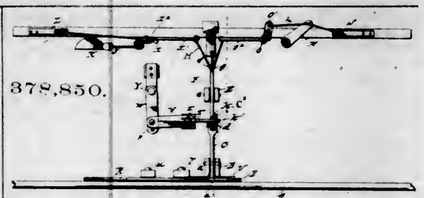
378,849. ENVELOPE. Elmer L. Potter and George B. Upham, Columbus, Ohio. Filed Nov. 6, 1886. Serial No. 218,187. (No model.)



Claim.—An envelope such as described, provided with a coupon attached to one of the flaps, said coupon consisting in a double length of paper folded upon itself and sealed, substantially as set forth.

378,850. RAILROAD SIGNALING DEVICE. Toppan P. Rodgers, Taunton, Mass. Filed Apr. 23, 1887. Serial No. 235,890. (No model.)

Claim.—1. In a railroad signaling device, the combination, with a quadrant-bar and a pair of levers loosely connected at their adjacent



ends, of a signal and a flexible connection loosely connecting the signal to one of the levers, so that the former is operated by a motion of said levers, substantially as set forth.

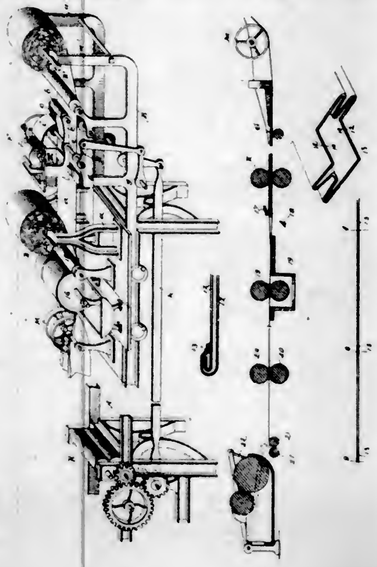
2. In a railroad signaling device, the combination, with a quadrant-bar and its integral abutment, a tripping-lever, and a vibrating lever, of a wire rope or other flexible appliance adapted to cause the sounding of a gong when the abutment is depressed and released suddenly, and a gong or bell located at a distance from the quadrant-bar, substantially as set forth.

3. In a railroad signaling device, the combination, with a quadrant-bar and its attached abutment, a tripping-lever, a vibrating lever connected pivotally to the tripping-lever, and two wire ropes that are extended to a point distant from the quadrant and its mechanism, of a gong and a lantern, the gong being connected to one wire rope, the lantern to a second wire rope, each being operated to give alarm-signals by the vertical depression and release of the quadrant-bar, substantially as set forth.

4. In a railroad signaling device, the combination, with a quadrant-bar, a tripping-lever, a vibrating lever, a wire rope, and a gong connected to sound when the quadrant-bar is acted upon by the wheel of a locomotive or car, of a guard-block that is connected to the quadrant-bar and is adapted to rock it and prevent a signal being sounded when a car-wheel or locomotive-wheel strikes this guard-block before striking the quadrant-bar, substantially as set forth.

5. In a signaling device for railroads, the combination, with a quadrant-bar and mechanism that communicates motion to a gong and a lantern when the quadrant-bar is vertically depressed and released by a movement of a car or locomotive over the quadrant-bar, of a pivoted guard-block and a weighted bent lever pivotally attached to it and having sliding engagement with the slotted body of the quadrant-bar to cause it to rock and carry its abutment below the top surface of a railroad-rail near which these devices are located, and thus prevent a signal when the guard-block is struck by a car or locomotive before striking the quadrant-bar, substantially set forth.

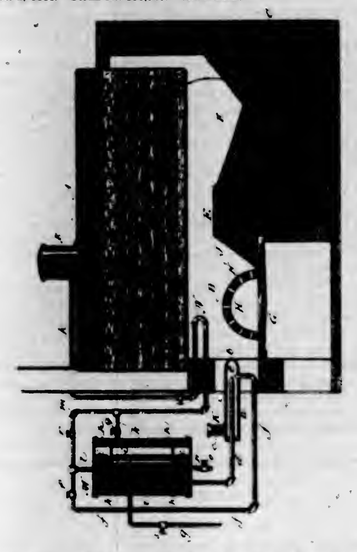
378,851. MACHINE FOR THE MANUFACTURE OF PAPER BAGS. Carl F. Schmidt, Elberfeld, Germany. Filed Aug. 6, 1887. Serial No. 246,330. (No model.)



Claim.—1. In a machine for forming double paper bags, the combination of supports for rolls for the inner and outer sections, a paster for applying a transverse line of paste to the inner face of one of the sections at intervals equal to the lengths of the blanks from which the bags are made, tubing mechanism adapted to form the two sections into a duplex tube, and bag-forming mechanism whereby the duplex tube is formed into double bags with the bottom seam at the point where the two sections of the double bag are pasted together, substantially as described.

2. In a machine for forming double paper bags, the combination of supports for two rolls of paper, one for the inner and the other for the outer section of the double bag, a paster applying a transverse line of paste to the inner face of one of the sections at intervals equal to the lengths of the blank from which the bags are made, a roll around which said sections are passed to unite them on said transverse line, tubing mechanism for forming said transversely-pasted sections into tubular form, severing mechanism timed with respect to the operation of said transverse paster, whereby the tube is severed at one side of said transverse lines of paste, and bottom pasting and folding mechanism, whereby the blanks are formed into double paper bags, substantially as described.

378,852. HYDROCARBON-FURNACE. William R. Smith, Chicago, Ill., assignor of one-half to Merrill Spalding, same place. Filed Feb. 2, 1886. Serial No. 190,575. (No model.)



Claim.—1. The combination, with a furnace and with an oil-reservoir connected with the boiler and with the injector, and provided at its upper end only with a discharge-opening for the hydrocarbon into the steam-passage connecting the boiler with the injector, a steam-jacket entirely surrounding said reservoir, and a passage or passages connecting said jacket with the boiler and with the injector, of an injector consisting of a shell provided with an air-inlet in the upper side thereof and an opening into the furnace, a steam-pipe projecting in said shell, a combined oil and steam pipe opening into the shell in the path of the steam of the steam-pipe, and a mixing-chamber in said shell at a point between the discharge-openings of said pipes and the discharge-opening of the shell, substantially as described.

2. The combination, with a furnace, of an injector opening into the fire-chamber, an oil-reservoir connected with the boiler and with the injector and provided at its upper end only with a discharge-opening for the hydrocarbons into the steam-passage connecting the boiler with the injector, a steam-jacket entirely surrounding said reservoir, and a passage or passages connecting said jacket with the boiler and with the injector, substantially as described.

3. A furnace and an injector therefor, in combination with a reservoir provided with a discharge-opening at its upper end, a steam-passage opening into said discharge-opening and connecting the boiler and injector therewith, a steam-jacket entirely surrounding said reservoir, a steam-passage connecting said jacket with the boiler and opening into said jacket at a point opposing the upper portion of the reservoir, and a steam-passage connecting the lower end of the reservoir with the injector, substantially as and for the purpose specified.

4. The herein-described method of utilizing hydrocarbon as a fuel in furnaces, the same consisting in first fully vaporizing the hydrocarbon in a chamber isolated from steam and air, then combining said vapors with live steam to the exclusion of air, and afterward discharging the same into a mixing-chamber into which are simultaneously introduced separate bodies of live steam and air not superheated, which steam and air are mixed with the hydrocarbon vapors and steam immediately before being discharged into the fire-chamber, substantially as and for the purpose described.

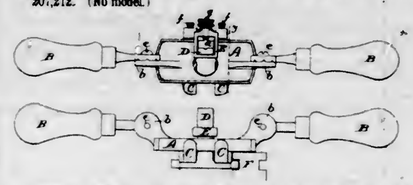
378,853. EGG-TESTER. Rudolph Stuckwisch, Cory, Ind. Filed Sept. 3, 1887. Serial No. 248,717. (No model.)



Claim.—1. The combination of the box A, having egg-openings C in its top, the supporting-wire *c*, below said openings, and the sight-slot *a* in its side below the egg-opening, and provided with an adjusting slide, *c'*, with the inclined mirror D, secured in the box A, below and to one side of the openings C and facing slot *a*, and the movable reflector E, secured to box A by bent hinge-straps F F, all constructed and arranged substantially as and for the purpose described.

2. The combination, with the box A, provided with egg-openings C in its top and sight-slot *a* in its side, and the mirror D, secured within box A, and the exterior adjustable reflector, E, constructed substantially as described, movably secured to box A by bent straps F F, of the top G, removably secured on top of box A, having a front opening adapted to be closed by reflector E when the latter is raised, and a lamp-flue opening, *h*, and the lamp H, all constructed and arranged substantially as and in the manner and for the purpose described.

378,854. GROOVING AND BOXING TOOL FOR CARRIAGE-MAKERS. Justus A. Traut, New Britain, Conn., assignor to the Stanley Rule and Level Company, same place. Filed July 6, 1886. Serial No. 207,212. (No model.)



Claim.—1. The combination of the stock A, having handles B B the T-shaped cutter D, having a cutting-edge at each end of its cross member, whereby right or left hand cuts may be made without special adjustment, mechanism for holding said cutter, and the gages C C, substantially as described, and for the purpose specified.

2. The combination of the stock, right and left gages and cutters adapted for use in cutting lateral grooves either on the right or left side of vertical faces, and the handles B B, pivoted on axes which are substantially parallel with a transverse line across the under face of the stock and adapted to be adjusted and secured at different angles to the stock, substantially as described, and for the purpose specified.

3. The herein-described convertible rooter and boxer, consisting of the stock A, having a flat under face, the rooting and boxing cutters fitted for separate application to the stock, clamping mechanism for holding either of said cutters with their cutting end projecting below the bottom face of the stock, and attachable and detachable transverse gages for attachment to the bottom face of the stock, substantially as described, and for the purpose specified.

378,855. SHUTTLE FOR SEWING-MACHINES. Le Roy Williams, Lansing, Mich., assignor to the White Sewing Machine Company, Cleveland, Ohio. Filed May 18, 1886. Serial No. 202,532. (No model.)

Claim.—1. The combination, with a shuttle having a cylindrical shell open at one end, a spindle rigidly secured to the bend of the shuttle, and a spool mounted loosely on the spindle, of a carrier for operating the shuttle and retaining the spool in the shuttle, substantially as set forth.

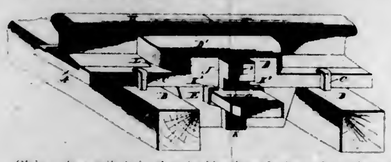
378,855.



2. The combination, with a shuttle, the same having a pointed head and substantially a cylindrical shell open at the rear end, a spindle rigidly secured to the head, and a bobbin mounted loosely on the spindle inside the shell, of a horizontally-vibrating carrier, the latter having suitable projections for engaging and moving the shuttle and holding the bobbin in place on the spindle, substantially as set forth.

3. The combination, with a shuttle having an open end, a spindle rigidly secured to the head of the shuttle, and a bobbin arranged substantially as indicated, of a horizontally-vibrating carrier, the same having lips for engaging the shuttle, the rear lip also serving to retain the bobbin in the shuttle, substantially as set forth.

378,856. RAIL-CHAIR. ISRAEL WOLFE, Goshen, Ind. Filed May 17, 1887. Serial No. 238,522. (No model.)



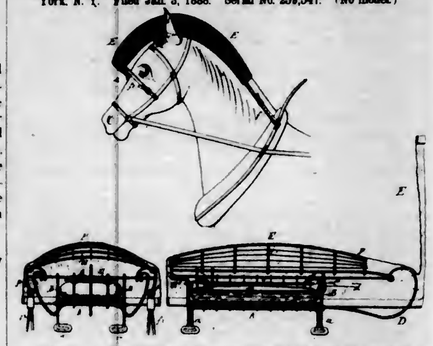
Claim.—In a rail-chair, the combination of a base-plate adapted to be secured to two adjacent ties having the stationary jaws D, formed with notch J, and having the casting E, formed with transverse slot E', with the movable jaw F, having the stem G, formed with transverse slot I, and the key K, fitting in notch J and slot I, and having the tongues K^2 bent around the stem G from the sides of its lower portion, as shown and set forth.

378,857. BOLT. WESLEY W. WOODFORD, Unionville, assignor to the Upson Nut Company, Farmington, Conn. Filed Dec. 28, 1887. Serial No. 259,266. (No model.)



Claim.—The herein-described bolt, the same consisting of the head and body portions having at the junction of said head and body the conical portion *d*, the holding wings or keys *f* on said conical portion, and an annular face, *g*, on the under side of the head outside of said conical portion, substantially as described, and for the purpose specified.

378,858. HORSE-HEAD PROTECTOR. HARRY ENYEART, New York, N. Y. Filed Jan. 3, 1888. Serial No. 259,547. (No model.)



Claim.—1. The horse-head protector herein described, consisting of a receptacle, a cooling-bag in said receptacle, means for retaining the cooling-bag, and an arched frame and covering for said receptacle, substantially as set forth.

2. The horse-head protector, consisting of a basket-shaped receptacle adapted to rest on the forehead of the horse, a cooling-bag in said receptacle, a cover stretched over said cooling-bag, an arched frame hinged to said receptacle, a hood-shaped covering extending over the arched frame, and means for attaching the receptacle and covering to the head-gear and hame of the horse, substantially as set forth.

3. The combination herein described, of a receptacle provided with feet, and an exterior flange or seat, a cooling-bag in said receptacle, a cover stretched over the bag, an arched frame hinged to rear arms of the receptacle and resting on the flange of the same, a hood-shaped covering extending over the hinged frame and receptacle, and straps for connecting the receptacle and covering to the head-gear and hame, substantially as set forth.

4. The combination herein described, of a wire receptacle provided with feet, a cooling-bag in said receptacle, a cover hinged to one end of the receptacle and attached by a fastening device to the opposite end of the receptacle, a flange extending around said receptacle, curved arms extending back of the receptacle, an arched frame hinged to said arms, a hood-shaped covering extending over the frame and receptacle and back over the neck of the horse, front straps attached to the arched frame, and back straps attached to the rear end of the covering, so as to attach the receptacle and covering, respectively, to the head-gear and hame, substantially as set forth.

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DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—District of Massachusetts.

CELLULOID MANUFACTURING COMPANY *v.* AMERICAN ZYLONITE COMPANY *et al.*

Decided September 7, 1887.

1. HYATT—MANUFACTURE OF SHEETS OF CELLULOID AND OTHER PLASTIC COMPOSITIONS.—PATENTABLE NOVELTY.

In an action for the infringement of Letters Patent No. 199,908, issued to John W. Hyatt February 5, 1878, for an improvement in the manufacture of sheets of celluloid and other plastic compositions, the specifications and claims describing the invention as relating to an apparatus and process consisting in piling a number of rough sheets of celluloid upon a grooved plate in a chase or mold; subjecting the celluloid to heat and great pressure, by which it is solidified into a single compact, rectangular slab, and portions of it are forced into the grooves; then cooling it so that it shrinks, and those portions operate as clutches to hold the slab firmly in place; then planing the slab into sheets, and finally stretching these sheets upon a frame to prevent their wrinkling or warping while drying: *Held*, that the process and apparatus was a patentable novelty.

2. SAME—INFRINGEMENT.

The plate in the apparatus for retaining the plastic composition in place, provided on its upper surface with grooves, apertures, or indentations, upon which the material in shrinking can exert tension, *Held* infringed by defendants' device employing an iron plate perforated by holes with screw-threads, with plugs of zylonite screwed in, and depressions left around the heads of the plugs, into which portions of the celluloid are pressed and welded to the zylonite plugs, and pressed into the apertures around the heads of the plugs.

3. SAME—SAME.

The process consisting of subjecting the slab of celluloid to pressure, then heating the mass from below, then applying the heat above, *Held* infringed by defendants' process, in which the heat is first applied from above and afterward from below.

Mr. William D. Shipman, *Mr. Frederick H. Betts*, *Rowland Cox*, and *Messrs. Warner & Brandeis* for the plaintiff.

Mr. Benjamin F. Thurston, *Mr. Horace M. Ruggles*, and *Mr. Edwin M. Felt* for the defendants.

Before GRAY, Justice, and COLT, Judge.

This was a bill in equity for the infringement of letters patent issued to John W. Hyatt February 5, 1878, for an improvement in the manufacture of sheets of celluloid and other plastic compositions. The material parts of the specification were as follows:

The invention relates to an improved apparatus and process for the manufacture of sheets of plastic composition, and in the present instance is applied to the article known as "celluloid."

Heretofore the great obstacle to successfully planing or reducing plastic or pliable material to sheets by securing it upon a surface and then feeding it to a fixed cutting-edge has been that the material was apt to rise from the surface supporting it and ride up the knife, thus cutting the material irregularly or arresting the operation. Hence, to hold the slab of material firmly upon the surface sustaining it pending the operation of shaving or planing it into strips has been esteemed a great desideratum, and is one of the objects effected by the mechanism and process hereinafter set forth.

The objects of the invention are accomplished by causing the union in a single slab of a number of sheets or pieces of celluloid, this being effected by means of pressure and heat, which contemporaneously amalgamate the sheets into a slab, and also force portions of the under side thereof into channels or inclined grooves in the surface upon which the slab rests, which grooves are so arranged that upon the hardening and shrinking of the material the portions thereof in the grooves operates as a series of hooks or clutches to retain the slab in place, after which the plate supporting the slab is placed upon a machine for planing, whereby the material is shaved or planed off in sheets or pieces of any desired thickness, according to the capacity of the machine, the sheets being subsequently dried in open frames, whereby they acquire and retain formation.

Unseasoned celluloid, when heated above 150° (one hundred and fifty degrees) Fahrenheit, becomes plastic, and can be easily manipulated so long as it is warm; but becoming cool it hardens, and, while losing its caloric, has a slight tendency to shrink.

In the accompanying drawings, A represents a plate having a tongue, *a*, along its edge, and nozzles *d* and *e*, intended, respectively, to be connected, when required, with pipes supplying steam or water.

The plate A is hollow, for the purpose of receiving either steam or water, as circumstances demand, and is provided near its edge with suitable bolt-holes, *f*, to afford a means of securing the chases hereinafter mentioned.

The central portions of the upper surface of the plate A are occupied by a slightly-raised boss, B, the entire upper surface of which is covered by the grooves D and the intermediate ridges or elevations, *i*. The grooves D, upon one side of the vertical longitudinal center of the boss, incline inward and downward toward the vertical central longitudinal plane of the plate A, and upon the other side of said center incline in a similar manner toward said plane.

The purpose of this construction is hereinafter set forth, and may be effected, though not so satisfactorily, by means of apertures of any desired form, which have an inclination downward toward the said plane, the apertures, or certain thereof, on opposite sides of the said center of the plate having similar inclinations toward the said central plane.

The edges of the plate A, above the boss B, are level, for the purpose of receiving the side and end chases, E, which are hollow and provided with suitable inlets and outlets for steam, or other suitable means of heating, or water, or other means of cooling; or they may be provided with apertures leading into their cavities, which can be placed over apertures in the plate A, and the supply of heating or cooling agent thus derived. The screws *x'''* are provided at the end of the chases for the purpose of opening the chases after the slab has been formed. These chases are firmly secured in a vertical position, and in a steam-tight manner about the boss B, forming a rectangular inclosure, open above, the walls and bottom of which can be heated or cooled, as desired.

The plate A, with the chases E, is placed upon the platen F of a hydraulic press, a non-conducting surface, H, preferably composed of a sheet of metal superposed upon a sheet of paper, being interposed between the lower surface of the plate A and the upper portion of the platen F. The plate A is secured upon the platen F by means of the brackets *l*, that extend over the tongues *a* on each side of the plate. The platen rests upon two upward-acting hydraulic rams, I, operated by the hydraulic cylinders L, which are placed upon the base M of the press in such position as to sustain the platen F horizontally.

Upon the under surface of the top of the press, and separated therefrom by a sheet of non-conducting material, is firmly secured the dependent platen T, of such dimensions as to nicely, but not in an air-tight manner, fill the inclosure between the chases E. This platen T is also made hollow and provided with suitable means for supplying its cavity with either steam or water, or other heating or chilling agents.

The operation is as follows: The requisite number of sheets of celluloid are superposed, one above the other, upon the boss B, which is placed exactly below the platen T, the chases being in place and there secured by the frame V and its clamp-screws. Hydraulic pressure is now communicated to the rams I, which elevate the platen F, plate A, chases E, and material therein until the dependent platen T enters the space between the chases, compressing the material between its lower surface and the upper surface of the boss B, which pressure is continued until equaling two hundred and fifty (250) pounds, more or less, to the square inch, which pressure is maintained throughout the entire operation. It is plain, however, that the degree of pressure must be varied to suit the nature of the material to be affected through its action. The requisite pressure being reached, the heating agent

is next admitted into the cavity in the plate A until it is properly affected. Now, as this heat is communicated from below, the lower stratum of the celluloid upon the boss is first heated and solidified, which expels the air from the bottom upward through the material and through the spaces between the edges of the material and the faces of the chases. Meantime, under the action of the heat, the lower surface of the celluloid has become plastic, and the pressure being continued, the parts thereof above the same are gradually forced into and completely fill the grooves D. The pressure and heat are maintained until the air is thoroughly expelled from the material, when the heating agent is gradually introduced into the cavity in the dependent platen T, now in contact with the celluloid, which, under the operation of the heat thus being supplied, becomes plastic, and under the pressure is solidified into a single compact slab. The pressure being still sustained, the next step is to fill the plate A, chases, and platen T with water or other suitable cooling agent, which forthwith chills the celluloid, whereupon it hardens in place, any lateral shrinkage being prevented by the pressure, while the plate and platen, being placed upon non-conducting material, are not affected by the temperature of the adjacent surfaces. The chases are now removed and the material is found in a homogeneous slab secured upon the boss B. Being exposed to the air the celluloid shrinks somew at, which causes the portion thereof which has been forced into the inclined grooves to operate as clutches or hooks, grasping the metal with immense power and holding the slab firmly by a tension toward the center against any movement or force either lateral or upward.

Thus is the prime object of the invention accomplished. It is plain, however, that pieces of scrap-celluloid of other form than sheets may be placed upon the boss and compressed into a slab and similarly attached to the plate, suitable solvents, such as spirits of camphor, being mingled with the fragments to expedite the reunion and improve the result of the operation.

It is also plain that the above mechanism may be effectively used to secure various substances that become fluid or plastic under the action of heat upon a surface, preparatory to further manipulation.

The apparatus next involved relates more immediately to the planing or shaving the material into sheets. This mechanism consists of a frame of any desired strength and construction, provided with a traveling bed-plate, A′, held in place by brackets or other suitable means, and operated by means of a traveling screw, or any other means which will give the bed-plate A′ a reciprocating movement.

The operation of planing is effected simply by securing the plate A, carrying the slab of celluloid, upon the bed-plate A′, and causing the latter to move, thereby bringing the material secured upon the plate A in contact with the edge of the plane, which is depressed, as desired, according to the thickness of the sheet to be removed from the slab.

It is obvious that after one of the slabs has been shaved off, leaving only a thin film of celluloid upon the plate, a second slab may be secured thereon by means of collodion, cement, or other suitable solvents, that will cause the slab to unite homogeneously with the film remaining upon the plate, when the slab thus attached may be manipulated the same as though secured upon the plate in the manner first above detailed. The sheet of celluloid is now placed in the frame Z″, so that its edges are between the two sections X″ thereof, which are clamped together by means of the bolts z″ and nuts x″, holding the material securely within the frame, where it is permitted to dry, during which operation it shrinks slightly, which draws it taut and straight across the frame, so that it hardens into a flat smooth sheet, after which it may be removed from the frame, being now finished.

The plate A may be grooved laterally or otherwise, and bars of wood secured in the grooves so as to be flush with or slightly above the surface of the plate, and the slab formed upon this formation.

The purpose of retaining the slab in position may be effected, also, by vertical apertures in the plate, or, in fact, apertures or elevations of any order, in or upon or about which the plastic composition can be forced, and there permitted to harden, the essence of this element of the invention being to affix a plate of plastic composition upon a plate immovably by combined heat and pressure and subsequent cooling.

Obviously the plate A may be utilized, even if it be solid and not hollow, since the material may be made plastic before being put thereon, when it can be crowded into the grooves, or it may be crowded therein by great pressure.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A slab of material secured upon a surface, through the operation of the power it exerts in shrinking, acting upon two or more elevations or depressions on or in the surface on which the slab is placed, substantially as set forth.

3. A plate for retaining plastic composition in place, provided on its upper surface with apertures or indentations, upon which the material in shrinking can exert tension, substantially as set forth.

4. A plate for retaining plastic composition, provided with apertures or grooves inclining toward the longitudinal central plane of the plate, substantially as set forth.

6. A hollow plate or table provided with means of receiving a heating and cooling agent, and having its surface grooved, indented, or corrugated, substantially as set forth, and for the purpose specified.

20. The process of solidifying pieces of composition, which consists in subjecting them to pressure, then heating the mass from below, then applying heat above, the pressure being sustained pending the heating operations, as and for the purpose specified.

21. The process of solidifying pieces of composition, which consists in subjecting them to pressure, then heating the mass from below, then heating it from above, then cooling it while still under pressure, substantially as set forth.

23. The process of simultaneously consolidating several pieces of composition and affixing the slab thus formed to a plate, which consists in rendering it plastic while under pressure, whereby a portion of it is forced into suitably-shaped apertures in the plate, which portion is hardened while therein, substantially as specified.

28. The within-described process of making sheets of plastic composition, which consists, first, in forming and causing the adhesion of a slab of the composition to a plate; second, subjecting such slab to the operation of a plane to reduce it to sheets, and, third, drying the sheets thus produced in a frame, substantially as set forth.

29. A slab of plastic composition fixed upon a bed or plate by the means substantially as herein specified, for the purpose of enabling the division or planing of the slab, substantially as set forth.

31. A plate carrying a slab of plastic composition, affixed thereon by means of heat and pressure, substantially as set forth, and for the purpose specified.

The other facts of the case, so far as they are necessary to the understanding of the decision, are stated in the opinion.

GRAY, *J.*:

Pyroxyline, otherwise called "nitro-cellulose" or "gun-cotton," is made by subjecting a fibrous material, such as paper or cotton rags, to the action of nitric and sulphuric acids. Celluloid, or zylonite, is made by combining pyroxyline with a solvent of camphor and alcohol, and passing the compound through heated rollers into the form of rough sheets or slabs. The evidence clearly establishes that, in the state of science and knowledge before the experiments and discovery of Hyatt, no one had been able to form a massive rectangular slab or block of celluloid, and that the attempt to form such a slab or block was attended with very great danger on account of the explosive character of the material.

The improvement of Hyatt, as described in his specification, consists in piling a number of rough sheets of celluloid upon a grooved plate in a chase or mold, subjecting the celluloid to heat and great pressure, by which it is solidified into a single, compact, rectangular slab, and portions of it are forced into the grooves; then cooling it so that it shrinks and those portions operate as clutches to hold the slab firmly in place; then planing the slabs into sheets; and finally stretching these sheets upon a frame to prevent their wrinkling or warping while drying.

Notwithstanding some phrases, which, taken by themselves, might admit of a broader construction, it is quite clear, upon a view of the whole specification, that the apparatus and process patented are limited to the manufacture of celluloid and those kindred compositions, the base of which is pyroxyline, which under the influence of heat become plastic and can be pressed into new shapes without being reduced to a liquid, which shrink in cooling, and which can be planed into sheets, but which are with difficulty held in place to be planed. A few quotations from the specification will put this beyond doubt. The specification begins with the statement that—

> The invention relates to an improved apparatus and process for the manufacture of sheets of plastic composition, and in the present instance is applied to the material known as "celluloid."

It presently afterward declares that—

> The objects of the invention are accomplished by causing the union in a single slab of a number of sheets or pieces of celluloid.

It emphasizes the fact that—

> Unseasoned celluloid, when heated above 150° Fahrenheit, becomes plastic, and can easily be manipulated so long as it is warm, but, becoming cool, it hardens, and, while losing its caloric, has a slight tendency to shrink.

In describing the operation the specification states that, in the first place, "the requisite number of sheets of celluloid are superposed one above the other;" that, on applying the heat from below, "the lower stratum of the celluloid" is first heated and solidified, and "the lower surface of the celluloid" becomes plastic; that "the celluloid," upon afterward applying the heat from above, "becomes plastic, and under the pressure is solidified into a single compact slab;" that the subsequent cooling "chills the celluloid, whereupon it hardens in place," and that on being exposed to the air "the celluloid shrinks somewhat." It further states that the operation of planing is effected by securing "the plate carrying the slab of celluloid" upon the bed-plate, and causing the latter to move so as to bring "the material secured upon the plate" against the edge of the plane, and, lastly, that "the sheet of celluloid" is placed upon the drying-frame. And each of the claims, although it does not mention celluloid by name, but uses the general term "material" or "plastic composition," yet, by the words "substantially as set forth," or "for the purpose specified," refers to the description in the specification, and is limited accordingly.

It is equally clear that the specification and claims are limited to an apparatus and process in which the plate on which the slab of celluloid rests has grooves or depressions into which portions of the celluloid may be forced, and which may thereby aid in holding down the slab as it shrinks in cooling and while it is subjected to the action of the plane. The specification, at the outset, states that a principal object of the invention is—

> to hold the slab of material firmly upon the surface sustaining it, pending the operation of shaving or planing it into strips—

and that this object is accomplished—

> by causing the union in a single slab of a number of sheets or pieces of celluloid, this being effected by means of pressure and heat, which contemporaneously amalgamate the sheets into a slab, and also force portions of the under side thereof into channels or inclined grooves in the surface upon which the slab rests, which grooves are so arranged that, upon the hardening and shrinking of the material, the portions thereof in the grooves operate as a series of hooks or crutches to retain the slab in place.

It first describes an apparatus for doing this, in which the middle of the upper surface of the plate is a slightly-raised boss wholly covered with grooves and intermediate ridges or elevations, and the grooves on either side of the central vertical longitudinal plane of which incline inward and downward toward that plane; and it afterward, near the end of the descriptive part, adds that—

> the purpose of retaining the slab in position may be effected, also, by vertical apertures in the plate, or, in fact, apertures or elevations of any order in or upon or about which the plastic composition can be forced and there permitted to harden, the essence of this element of the invention being to affix a plate (slab?) of plastic composition upon a plate immovably by combined heat and pressure and subsequent cooling.

The claims are equally limited either by express mention of the grooves, depressions, or apertures in the plate or by reference to the previous description.

The patent so construed sets forth a new and useful invention. It describes a process by which a mass of crude celluloid may be held down firmly upon a plate, taking advantage of the tendency of the mass to shrink while cooling, to assist in holding it down, then heated gradually and under great pressure, so as to expel all air and gas, and afterward cooled and, before it has become quite cold and hard, planed or cut into sheets, and those sheets then stretched upon a frame, so that they may dry smoothly. All processes previously known were not only attended with great danger, but left the material more or less spongy and porous, and therefore not fit to be used for so many purposes. Hyatt, by the process described in his patent, was the first to produce a large, hard, tough, compact, homogeneous slab, more durable, susceptible of a better polish, and capable of a greater variety of uses. The result is a new product, differing from any known before, not merely in degree of usefulness and excellence, but in kind, having new properties and uses; and, according to all the authorities, a process producing such a result is the proper subject of a patent, although some or even all of the parts of the machinery or apparatus used are not new. (*Corning* v. *Burden*, 15 How., 252, 267; *Smith* v. *Dental Vulcanite Co.*, 93 U. S., 486, 494; *Cochrane* v. *Deener*, 94 U. S., 780, 788; *Tilghman* v. *Proctor*, 102 U. S., 707, 722–726; *Railroad* v. *Truck Co.*, 110 U. S., 490, 494, 495, 4 Sup. Ct. Rep., 220; *Fermentation Co.* v. *Maus*, 122 U. S., 413, 428, 7 Sup. Ct. Rep., 1304; *Cannington* v. *Nuttall*, L. R. 5 H. L., 205; *Smith* v. *Goldie*, 9 Can. Sup. Ct., 46.)

The holding the crude mass of celluloid down firmly upon a grooved, indented, or perforated plate, the heating and cooling it under pressure, the cutting it, while still warm and plastic, into sheets, and the stretching of those sheets on a frame, so as to dry smoothly, are successive steps in one process, the purpose and effect of which are to produce sheets of celluloid of a size and quality not before obtainable. The case is thus distinguished from *Manufacturing Co.* v. *Manufacturing Co.*, (114 U. S., 523, 5 Sup. Ct. Rep., 1007,) cited for the defendants, and the cases there referred to.

Hyatt's patent being for a process, the modifications in some particulars of the apparatus used by the defendants are unimportant. Although the defendants have not made such grooves in the iron plate on which the slab of celluloid rests as are specifically described in the patent of Hyatt, they have used an iron plate perforated by holes with screw-threads, with plugs of zylonite screwed into those holes, and depressions left around the heads of those plugs, into which portions of the slab of celluloid are pressed. The pressure not only welds the slab of celluloid to the celluloid plugs, but it forces portions of it into the apertures around the heads of the plugs. The evidence leaves no doubt but that the defendants intended and expected by this contrivance to take advantage of the tension of the celluloid while cooling and shrinking, and that they accomplished that result.

The facts that the defendants apply the heat first from above and afterward from below, while the plaintiff applies the heat first from below and afterward from above, and that the sides of the defendants' chase or mold are not, like those of the plaintiff's, made hollow for the purpose of containing steam, do not constitute any substantial difference in the process used by both parties. The case in this respect falls within the principle of the decisions of the Supreme Court in *Tilghman* v. *Proctor*, 102 U. S., 707, 730, and of this court in *Machine Co.* v. *Teague*, 15 Fed. Rep., 390.

Decree for the plaintiff.

U. S. Circuit Court—Western District of Pennsylvania.

EMERSON, SMITH & COMPANY, (LIMITED,) *v.* LIPPERT.

Decided August 16, 1887.

1. LIMITATION OF UNITED STATES PATENTS BY FOREIGN PATENTS PREVIOUSLY GRANTED—EFFECT OF PROVISIONAL PROTECTION.

Upon application made May 31, 1871, letters patent of the United States for an invention were granted on February 6, 1872. On October 12, 1871, the inventor caused application to be made in England for letters patent for the same invention, and a provisional specification was then filed. Pursuant to this application letters patent of Great Britain for said invention were sealed April 3, 1872, and dated October 12, 1871. The complete specification for the English patent was filed April 12, 1872, the same having been subscribed March 22, 1872. *Held* that the invention was not "first patented, or caused to be patented," in England, within the meaning of the twenty-fifth section of the act of July 8, 1870, (sec. 4887 R. S.,) and that the life of the United States patent was not abridged by the antedating of the foreign patent.

2. SAME—COMPLETE SPECIFICATION.

No opinion expressed as to the effect on the life of a United States patent of the filing in a foreign country of a complete specification.

3. ENGLISH PATENTS—PROVISIONAL SPECIFICATION.

The filing of a "provisional specification" in the English Patent Office secures to the applicant for the term of six months "provisional protection"—*i. e.*, during this period the invention may be used and published without prejudice to any letters patent to be granted for the same, but does not invest the applicant with any of the powers, rights, or privileges of a patentee.

4. SAME—COMPLETE SPECIFICATION.

The filing of a complete specification not only protects the invention for six months, but during that period the applicant is clothed with the like powers, rights, and privileges as if letters patent had already issued.

Mr. William L. Pierce for the complainants.

Messrs. Bakewell & Sons for the defendant.

ACHESON, *J.*:

The plea goes to the right of the complainant to maintain its bill as to one of the patents sued on—viz., letters patent to James E. Emerson, No. 123,466, the allegation being that prior to the granting thereof the invention therein described and claimed had been patented, or caused to be patented, by said Emerson in Great Britain, and that this foreign patent, and hence also the patent in suit, had expired on October 12, 1885, before the suit was brought. The twenty-fifth section of the act of Congress of July 8, 1870, (under which the patent sued on was issued,) provides—

that no person shall be debarred from receiving a patent for his invention or discovery, nor shall any patent be declared invalid by reason of its having been first patented or caused to be patented in a foreign country, provided * * * that the patent shall expire at the same time with the foreign patent, or, if there be more than one, at the same time with the one having the *shortest term*. * * *

Pursuant to this application letters patent of Great Britain for said invention were granted to Holmes and sealed April 3, 1872, and dated October 12, 1871. The complete specification for the English patent was filed April 12, 1872, the same having been subscribed by the patentee on March 22, 1872. The act which then regulated the granting of letters patent for inventions in Great Britain is that of July 1, 1852, (15 & 16 Vict. c. 83; 91 British St. at Large, 597.) Referring to this act, it will be found that by its provisions the applicant for letters patent for an invention may file with his petition either a "provisional specification"—*i. e.*, one simply "describing the nature of the said invention"—or a "complete specification." If a complete specification is filed, the invention is not only protected for the term of six months from the date of application, but during that period the applicant is clothed with the "like powers, rights, and privileges" as if letters patent had already issued; but where a provisional specification is filed it is to be referred to the law officer, who, if satisfied, will give a certificate of allowance to be filed in the office of the commissioners of patents, whereupon, for the said term of six months, "provisional protection" is secured to the applicant—*i. e.*, during that term the invention may be "used and published without prejudice to any letters patent to be granted for the same." Within six months after application, upon the warrant of the law officer, the letters patent are to be granted; and they may be sealed and bear date as of the day of the actual sealing thereof, or of any other day between the day of application and the day of such sealing:

Provided, always, That, save where such letters patent are granted for any invention in respect whereof a complete specification has been deposited upon the application for the same under this act, no proceeding at law or in equity shall be had upon such letters patent in respect of any infringement committed before the same were actually granted. (Id., 413, sec. XXIV.)

The question now to be determined is whether before the granting to Emerson, on February 6, 1872, of letters patent of the United States the Emerson invention had been patented in Great Britain, within the meaning of the twenty-fifth section of the act of 1870. I have no hesitation in holding that the invention had not been so patented. No opinion need be expressed as to the effect on the life of a United States patent of the previous filing in a foreign country of a complete specification, which, though in advance of the grant of the foreign patent, yet confers upon the applicant the like rights as if letters patent had actually issued. The court is not dealing with such a case. The filing of the provisional specification on October 12, 1871, had merely temporarily secured to Holmes "provisional protection," within the narrow limits of saving any letters patent to be thereafter granted from prejudice, by reason of the intermediate use and publication of the invention. Clearly, before the actual sealing of the English patent, on April 3, 1872, Holmes was not invested with any of the powers, rights, or privileges of a patentee. Nor is it a matter of any moment that the English patent was dated as of October 12, 1871. That date was an arbitrary one. It gave to the instrument no retrospective operation. Much less, then, is the life of the United States patent issued before the sealing of the foreign patent to be abridged by the antedating of the latter

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United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

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CONTENTS.

	Page.
ORDER No. 461	965
ISSUE OF MARCH 6, 1888	965
DESIGNS	965
TRADE-MARKS	966
LABELS	966
PATENTS GRANTED	967
REISSUES	1059
DECISIONS OF THE COMMISSIONER—	
Ex parte Barnitz	1061
DECISIONS OF THE U. S. COURTS—	
Munson v. City of New York—No. 160. City of New York v. Munson—No. 161	1061
Ingham *et al. v.* Pierce *et al.*	1062
Stevenson *v.* Magowan *et al.*	1063

Order No. 461.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 1, 1888.

It is hereby directed that Sub-class 78, Truck-Changers, in Class 57, Hoisting, Division XII, be abolished, and that the patents in such sub-class be transferred to a new sub-class to be established as Truck-Changers, in Class 104, Railways, Division IV.

BENTON J. HALL,
Commissioner.

Issue of March 6, 1888.

Patents	345	No. 378,859 to No. 379,203, inclusive.
Designs	51	No. 18,124 to No. 18,174, inclusive.
Trade-Marks	24	No. 15,252 to No. 15,275, inclusive.
Labels	6	No. 5,505 to No. 5,510, inclusive.
Reissues	3	No. 10,905 to No. 10,907, inclusive.
Total issue	429	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	.....	Nebraska	2	.....
Arizona Territory	.....	.....	Nevada	1	.....
Arkansas	1	.....	New Hampshire	1	.....
California	6	1	New Jersey	22	1
Colorado	3	.....	New Mexico Territ'y	.....	.....
Connecticut	12	.....	New York	100	1
Dakota Territory	1	.....	North Carolina	2	.....
Delaware	1	.....	Ohio	14	.....
District of Columbia	2	.....	Oregon	.....	.....
			Pennsylvania	31	1

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	.....	.....	Germany	6	2
Australia	.....	.....	Italy	.....	.....
Austria-Hungary	.....	.....	Mexico	.....	.....
Belgium	.....	1	New South Wales	.....	.....
Bermuda	.....	.....	New Zealand	.....	.....
Brazil	.....	.....	Norway	.....	.....
Canada	3	.....	Russia	.....	.....
Chili	.....	.....	Scotland	.....	.....
Colombia, U. S. of	1	.....	Sweden	.....	.....
Cuba	.....	.....	Switzerland	1	.....
Denmark	.....	.....	Victoria	.....	.....
England	13	.....			
Finland	.....	.....	Total to citizens of foreign countries	25	3
France	1	.....			

DESIGNS.

18,124 to 18,152, inclusive.—CARPET.—*James L. Folsom*, Brooklyn, N. Y., assignor to *The Hartford Carpet Company*, Hartford, Conn. Applications filed January 26, 1888. Serial Nos. 262,044, 262,046 to 262,048, inclusive, 262,050, 262,051, 262,053 to 262,062, inclusive, 262,064 to 262,069, inclusive, 262,071, and 262,073 to 262,078, inclusive. Term of patents 3½ years.

18,153.—CABINET-DESK.—*Francis A. Coffin*, Indianapolis, Ind. Application filed December 15, 1887. Serial No. 258,040. Term of patent 7 years.

18,154 and 18,155.—CARPET.—*Otto Heinigke*, New Utrecht, N. Y., assignor to *The Hartford Carpet Company*, Hartford, Conn. Application filed January 26, 1888. Serial Nos. 262,085 and 262,086. Term of patents 3½ years.

18,156.—FONT OF PRINTING-TYPE.—*Charles E. Heyer*, Chicago, Ill., assignor to *Barnhart Bros. & Spindler*, same place. Application filed December 24, 1887. Serial No. 258,930. Term of patent 14 years.

18,157 to 18,162, inclusive.—CARPET.—*Henry Hunt*, Greenville, N. J., assignor to *The Hartford Carpet Company*, Hartford, Conn. Applications filed January 26, 1888. Serial Nos. 262,087 to 262,089, inclusive, and 262,091 to 262,093, inclusive. Term of patents 3½ years.

18,163.—FONT OF PRINTING-TYPE.—*Herman Ihlenburg*, Philadelphia, Pa., assignor to *The MacKellar, Smiths & Jordan Company*, same place. Application filed February 9, 1888. Serial No. 263,529. Term of patent 14 years.

18,164.—FONT OF PRINTING-TYPE.—*William W. Jackson*, Philadelphia, Pa., assignor to *The MacKellar, Smiths & Jordan Com-*

U. S. Circuit Court—Western District of Pennsylvania.

EMERSON, SMITH & COMPANY, (LIMITED,) *v.* LIPPERT.

Decided August 16, 1887.

1. LIMITATION OF UNITED STATES PATENTS BY FOREIGN PATENTS PREVIOUSLY GRANTED—EFFECT OF PROVISIONAL PROTECTION.

Upon application made May 31, 1871, letters patent of the United States for an invention were granted on February 6, 1872. On October 12, 1871, the inventor caused application to be made in England for letters patent for the same invention, and a provisional specification was then filed. Pursuant to this application letters patent of Great Britain for said invention were sealed April 3, 1872, and dated October 12, 1871. The complete specification for the English patent was filed April 12, 1872, the same having been subscribed March 22, 1872. *Held* that the invention was not "first patented, or caused to be patented," in England, within the meaning of the twenty-fifth section of the act of July 8, 1870, (sec. 4887 R. S.,) and that the life of the United States patent was not abridged by the antedating of the foreign patent.

2. SAME—COMPLETE SPECIFICATION.

No opinion expressed as to the effect on the life of a United States patent of the filing in a foreign country of a complete specification.

3. ENGLISH PATENTS—PROVISIONAL SPECIFICATION.

The filing of a "provisional specification" in the English Patent Office secures to the applicant for the term of six months "provisional protection"—*i. e.*, during this period the invention may be used and published without prejudice to any letters patent to be granted for the same, but does not invest the applicant with any of the powers, rights, or privileges of a patentee.

4. SAME—COMPLETE SPECIFICATION.

The filing of a complete specification not only protects the invention for six months, but during that period the applicant is clothed with the like powers, rights, and privileges as if letters patent had already issued.

Mr. William L. Pierce for the complainants.

Messrs. Bakewell & Sons for the defendant.

ACHESON, *J.*:

The plea goes to the right of the complainant to maintain its bill as to one of the patents sued on—viz., letters patent to James E. Emerson, No. 123,466, the allegation being that prior to the granting thereof the invention therein described and claimed had been patented, or caused to be patented, by said Emerson in Great Britain, and that this foreign patent, and hence also the patent in suit, had expired on October 12, 1885, before the suit was brought. The twenty-fifth section of the act of Congress of July 8, 1870, (under which the patent sued on was issued,) provides—

that no person shall be debarred from receiving a patent for his invention or discovery, nor shall any patent be declared invalid by reason of its having been first patented or caused to be patented in a foreign country, provided * * * that the patent shall expire at the same time with the foreign patent, or, if there be more than one, at the same time with the one having the shortest term. * * *

At the hearing of the plea the following-recited facts were admitted or shown, viz: On May 31, 1871, James E. Emerson made application in the United States for letters patent for an improvement in saws, and in pursuance of this application letters patent of the United States No. 123,466 for said invention were granted to Emerson on February 6, 1872, for the full term of seventeen years. On October 12, 1871, Joseph Ellicott Holmes, as agent for Emerson, made application in England for letters patent for said invention, and then filed in the office of the commissioners of patents for Great Britain a provisional specification. Pursuant to this application letters patent of Great Britain for said invention were granted to Holmes and sealed April 3, 1872, and dated October 12, 1871. The complete specification for the English patent was filed April 12, 1872, the same having been subscribed by the patentee on March 22, 1872. The act which then regulated the granting of letters patent for inventions in Great Britain is that of July 1, 1852, (15 & 16 Vict. c. 83; 91 British St. at Large, 597.) Referring to this act, it will be found that by its provisions the applicant for letters patent for an invention may file with his petition either a "provisional specification"—*i. e.*, one simply "describing the nature of the said invention"—or a "complete specification." If a complete specification is filed, the invention is not only protected for the term of six months from the date of application, but during that period the applicant is clothed with the "like powers, rights, and privileges" as if letters patent had already issued; but where a provisional specification is filed it is to be referred to the law officer, who, if satisfied, will give a certificate of allowance to be filed in the office of the commissioners of patents, whereupon, for the said term of six months, "provisional protection" is secured to the applicant—*i. e.*, during that term the invention may be "used and published without prejudice to any letters patent to be granted for the same." Within six months after application, upon the warrant of the law officer, the letters patent are to be granted; and they may be sealed and bear date as of the day of the actual sealing thereof, or of any other day between the day of application and the day of such sealing:

Provided, always, That, save where such letters patent are granted for any invention in respect whereof a complete specification has been deposited upon the application for the same under this act, no proceeding at law or in equity shall be had upon such letters patent in respect of any infringement committed before the same were actually granted. (Id., 413, sec. XXIV.)

The question now to be determined is whether before the granting to Emerson, on February 6, 1872, of letters patent of the United States the Emerson invention had been patented in Great Britain, within the meaning of the twenty-fifth section of the act of 1870. I have no hesitation in holding that the invention had not been so patented. No opinion need be expressed as to the effect on the life of a United States patent of the previous filing in a foreign country of a complete specification, which, though in advance of the grant of the foreign patent, yet confers upon the applicant the like rights as if letters patent had actually issued. The court is not dealing with such a case. The filing of the provisional specification on October 12, 1871, had merely temporarily secured to Holmes "provisional protection," within the narrow limits of saving any letters patent to be thereafter granted from prejudice, by reason of the intermediate use and publication of the invention. Clearly, before the actual sealing of the English patent, on April 3, 1872, Holmes was not invested with any of the powers, rights, or privileges of a patentee. Nor is it a matter of any moment that the English patent was dated as of October 12, 1871. That date was an arbitrary one. It gave to the instrument no retrospective operation. Much less, then, is the life of the United States patent issued before the sealing of the foreign patent to be abridged by the antedating of the latter. (*Telegraph Company* v. *Telegram Company*, 23 Fed. Rep., 340, 343.)

In none of the cases relied on as sustaining the plea was the question here raised passed on, nor do I find any decision inconsistent with the conclusion the court has reached. On the other hand, that conclusion perfectly accords with what Mr. Justice Strong said in *Smith* v. *Goodyear Dental Vulcanite Company*, (93 U. S., 498,) viz:

Of the English patent of Charles Goodyear, it is enough to say that, though the provisional specification was filed March 14, 1855, the complete specification was not until the eleventh of September following. It was therefore on the last-mentioned date that the invention was patented.

The plea is overruled.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[*BY AUTHORITY OF CONGRESS.*]

VOL. 42—No. 10. TUESDAY, MARCH 6, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
ORDER NO. 461	965
ISSUE OF MARCH 6, 1888	965
DESIGNS	965
TRADE-MARKS	966
LABELS	966
PATENTS GRANTED	967
REISSUES	1059
DECISIONS OF THE COMMISSIONER—	
Ex parte Barnitz	1061
DECISIONS OF THE U. S. COURTS—	
Munson *v.* City of New York—No. 160. City of New York *v.* Munson—No. 161	1061
Ingham *et al. v.* Pierce *et al*	1062
Stevenson *v.* Magowan *et al*	1063

Order No. 461.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 1, 1888.

It is hereby directed that Sub-class 78, Truck-Changers, in Class 57, Hoisting, Division XII, be abolished, and that the patents in such sub-class be transferred to a new sub-class to be established as Truck-Changers, in Class 104, Railways, Division IV.

BENTON J. HALL,
Commissioner.

Issue of March 6, 1888.

Patents	345	No. 378,859 to No. 379,203, inclusive.
Designs	51	No. 18,124 to No. 18,174, inclusive.
Trade-Marks	24	No. 15,252 to No. 15,275, inclusive.
Labels	6	No. 5,505 to No. 5,510, inclusive.
Reissues	3	No. 10,905 to No. 10,907, inclusive.
Total issue	429	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	.....	Nebraska	2	.....
Arizona Territory	.....	.....	Nevada	1	.....
Arkansas	1	.....	New Hampshire	1	.....
California	6	1	New Jersey	22	1
Colorado	3	.....	New Mexico Territ'y	.....	.....
Connecticut	12	.....	New York	109	1
Dakota Territory	1	.....	North Carolina	2	.....
Delaware	1	.....	Ohio	14	.....
District of Columbia	2	.....	Oregon	.....	.....
Florida	2	.....	Pennsylvania	31	1
Georgia	2	.....	Rhode Island	1	1
Idaho Territory	1	.....	South Carolina	1	.....
Illinois	30	5	Tennessee	1	.....
Indian Territory	.....	.....	Texas	3	.....
Indiana	9	.....	Utah Territory	.....	.....
Iowa	5	.....	Vermont	2	.....
Kansas	6	.....	Virginia	2	.....
Kentucky	3	.....	Washington Territ'y	.....	.....
Louisiana	4	.....	West Virginia	.....	.....
Maine	3	.....	Wisconsin	7	.....
Maryland	6	.....	Wyoming Territory	.....	.....
Massachusetts	43	16	United States Army	.....	.....
Michigan	15	.....	United States Navy	.....	.....
Minnesota	5	.....			
Mississippi	1	.....	Total to citizens of the United States	371	27
Missouri	9	1			
Montana Territory	1	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	.....	.....	Germany	6	2
Australia	.....	.....	Italy	.....	.....
Austria-Hungary	.....	.....	Mexico	.....	.....
Belgium	.....	1	New South Wales	.....	.....
Bermuda	.....	.....	New Zealand	.....	.....
Brazil	.....	.....	Norway	.....	.....
Canada	3	.....	Russia	.....	.....
Chili	.....	.....	Scotland	.....	.....
Colombia, U. S. of	1	.....	Sweden	.....	.....
Cuba	.....	.....	Switzerland	1	.....
Denmark	.....	.....	Victoria	.....	.....
England	18	.....			
Finland	.....	.....	Total to citizens of foreign countries	25	3
France	1	.....			

DESIGNS.

18,124 to 18,152, inclusive.—CARPET.—*James L. Folsom*, Brooklyn, N. Y., assignor to *The Hartford Carpet Company*, Hartford, Conn. Applications filed January 26, 1888. Serial Nos. 262,044, 262,046 to 262,048, inclusive, 262,050, 262,051, 262,053 to 262,062, inclusive, 262,064 to 262,069, inclusive, 262,071, and 262,073 to 262,078, inclusive. Term of patents 3½ years.

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18,164.—FONT OF PRINTING-TYPE.—*William W. Jackson*, Philadelphia, Pa., assignor to *The MacKellar, Smiths & Jordan Company*, same place. Application filed February 9, 1888. Serial No. 263,530. Term of patent 7 years.

18,165.—MISS'S COAT.—*Mary V. Kavanagh*, New York, N. Y., assignor to *The Butterick Publishing Company, (Limited,)* same place. Application filed December 9, 1887. Serial No. 257,467. Term of patent 3½ years.

18,166 to 18,168, inclusive.—CARPET.—*William E. Sayers*, New York, N. Y., assignor to *The Hartford Carpet Company*, Hartford, Conn. Applications filed January 26, 1888. Serial Nos. 262,080 to 262,082, inclusive. Term of patents 3½ years.

18,169.—ORNAMENTATION OF SPOON-HANDLES.—*Edward T. Schoonmaker*, New York, N. Y., assignor to *The Rogers & Hamilton Company*, Waterbury, Conn. Application filed January 31, 1888. Serial No. 262,588. Term of patent 14 years.

18,170.—ORNAMENTATION OF SPOON-HANDLES.—*Edward T. Schoonmaker*, New York, N. Y., assignor to *The Rogers & Hamilton Company*, Waterbury, Conn. Application filed January 31, 1888. Serial No. 262,589. Term of patent 7 years.

18,171.—LADY'S COSTUME.—*Jennie Sheils*, New York, N. Y., assignor to *The Butterick Publishing Company, (Limited,)* same place. Application filed January 11, 1888. Serial No. 260,448. Term of patent 3½ years.

18,172.—BURIAL-CASKET.—*William A. Sparks*, Rochester, N. Y. Application filed April 20, 1885. Serial No. 162,881. Term of patent 7 years.

18,173.—GIMP.—*Samuel Steinecke*, Brooklyn, N. Y., assignor to *Christian A. Schmidt*, Hoboken, N. J. Application filed January 9, 1888. Serial No. 260,243. Term of patent 14 years.

18,174.—LADY'S COSTUME.—*Mary Turner*, New York, N. Y., assignor to *The Butterick Publishing Company, (Limited,)* same place. Application filed January 11, 1888. Serial No. 260,451. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,252.—LOTION FOR THE SKIN.—*L. Stanton Brigham*, Boston, Mass. Application filed February 3, 1888. Used since September 20, 1887.
"The word 'MOLLIRIS.'"

15,253.—SOAP.—*James C. Davis & Son*, Boston, Mass. Application filed February 3, 1888. Used since January 1, 1888.
"The words 'OLD DAVIS.'"

15,254.—LUBRICATING-OIL.—*William P. Feeney*, New York, N. Y. Application filed January 12, 1888. Used since February, 1885.
"A circular figure representing the end of a journal or axle with three arrows pointing toward it from different directions."

15,255.—CATTLE-FOOD.—*George Fraser*, Worcester, Mass. Application filed January 19, 1888. Used since August, 1887.
"The representation of an escutcheon or shield horizontally and vertically divided to mark the chief with a quartered field below, and bearing upon the chief the representation of a horse, and upon the respective quarterings a bull and a sheep in the two upper and a pig and poultry in the two lower quarters."

15,256.—WOOD-WOOL AND WOOD-WOOL WADDING.—*Paul Hartmann*, Heidenheim, Würtemberg, Germany. Application filed January 12, 1888. Used since May 19, 1886.
"The representation of a red Greek cross and two Esculapian staves crossed behind it."

15,257.—LAUNDRY SOAP.—*James S. Kirk & Co.*, Chicago, Ill. Application filed December 31, 1883. Used since July 21, 1875.
"The word 'INDIA.'"

15,258.—FLOUR.—*Marshall, Kennedy & Co., (Limited,)* Pittsburg, Pa. Application filed January 14, 1888. Used since January 1, 1880.
"The word 'CAMELLIA.'"

15,259.—PROPRIETARY INVIGORANT MEDICINE.—*Samuel B. Murray*, San Francisco, Cal. Application filed January 25, 1888. Used since January, 1886.
"The representation of a body of falling water being dashed into spray and having near or about it a resulting mist, cloud, or fog with the word-symbol 'SPRAY.'"

15,260.—POTATO-FLOUR AND POTATO-STARCH AND ALL POTATO-STARCH PRODUCTS, INCLUDING DEXTRINE.—*The Norddeutsche Kartoffelmehl Fabrik*, Küstrin, Germany. Application filed February 2, 1888. Used since October 16, 1875.
"The letters 'BKMF.'"

15,261.—WEBB'S COCOA SHELLS.—*Henry L. Pierce*, Boston and Milton, Mass. Application filed December 16, 1887. Used since July 1, 1881.
"The representation of a shield with a wide horizontal band, on which is the letter 'W' in relief, surmounted by an eagle and scrolls, and the words 'WEBB'S COCOA SHELLS.'"

15,262.—WEBB'S DOUBLE VANILLA CHOCOLATE.—*Henry L. Pierce*, Boston and Milton, Mass. Application filed December 16, 1887. Used since July 1, 1881.
"The representation of four medals connected by scrolls and a tablet with spear-shaped ends, with the words 'WEBB'S CHOCOLATE' thereon, and between those words the words 'DOUBLE VANILLA.'"

15,263.—CRACKED COCOA.—*Henry L. Pierce*, Boston and Milton, Mass. Application filed December 16, 1887. Used since July 1, 1881.
"The figure of an eagle holding a scroll with the words 'ESTABLISHED 1843' thereon, and a shield having a broad horizontal band and the letter 'W' in relief thereon, and the words 'WEBB'S PREMIUM' above the shield and the words 'CRACKED COCOA' below."

15,264.—CRACKED COCOA.—*Henry L. Pierce*, Boston and Milton, Mass. Application filed December, 16, 1887. Used since April 30, 1866.
"The words 'WALTER BAKER & Co.,' before the words 'PREMIUM CRACKED COCOA,' and a circle inclosing the design of a branch, leaves, and pod of the cocoa plant or tree, with the words 'W. BAKER & Co.'s PREMIUM CRACKED COCOA' and 'ESTABLISHED 1780' in the border."

15,265.—BROMA.—*Henry L. Pierce*, Boston and Milton, Mass. Application filed December 16, 1887. Used since July 1, 1881.
"The words 'ESTABLISHED 1843. WEBB'S BROMA,' and a shield with a horizontal band, on which in relief is the letter 'W,' the word 'WEBB'S' above and 'BROMA' below the shield."

15,266.—MANUFACTURED CHOCOLATE.—*Henry L. Pierce*, Boston and Milton, Mass. Application filed December 16, 1887. Used since July 1, 1881.
"The letter 'W' in relief on a wide horizontal band across the shield, with the word 'WEBB'S' above and the word 'CHOCOLATE' below the shield."

15,267.—FRENCH SWEET CHOCOLATE.—*Henry L. Pierce*, Boston and Milton, Mass. Application filed December 16, 1887. Used since July 1, 1886.
"The words 'FRENCH SWEET CHOCOLATE CINQUIÈME' upon a section of a circular scroll in part covering flowers and a tablet of rhomboidal shape upon which rests the said words 'CHOCOLATE CINQUIÈME,' and upon the right cobweb figures in bright-vermillion color."

15,268.—WEBB'S PURE COCOA.—*Henry L. Pierce*, Boston and Milton, Mass. Application filed December 16, 1887. Used since July 1, 1881.
"The representation of a shield with a broad horizontal band on which is the letter 'W' in relief and the words 'WEBB'S' above and 'PURE COCOA' below."

15,269.—SWEET CHOCOLATE.—*Henry L. Pierce*, Boston and Milton, Mass. Application filed December 16, 1887. Used since July 1, 1886.
"An ornamented blue tablet with the word 'EXCELSIOR' printed in gilt block letters thereon, the word 'SWEET' above and the word 'CHOCOLATE' below, and an ornamented border."

15,270.—CHOCOLATE.—*Henry L. Pierce*, Boston and Milton, Mass. Application filed December 16, 1887. Used since July 1, 1881.
"An oval formed by deep-red curved bands, on the upper one of which are the words 'EAGLE CHOCOLATE' and on the lower the words 'JOSIAH WEBB & Co.,' inclosing an eagle and shield, and having at their ends gilt disks."

15,271.—JOSIAH WEBB & CO.'S PREMIUM CHOCOLATE.—*Henry L. Pierce*, Boston and Milton, Mass. Application filed December 16, 1887. Used since July 1, 1881.
"A border of branches of the cocoa with the leaves, nuts, and pods over and around an eagle holding a scroll on which are the words 'JOSIAH WEBB & Co.'s,' and underneath the words 'PREMIUM CHOCOLATE.'"

15,272.—FRENCH SWEET CHOCOLATE.—*Henry L. Pierce*, Boston and Milton, Mass. Application filed December 16, 1887. Used since July 1, 1882.
"The representation of an eagle with wings displayed and the words 'FRENCH SWEET' on a scroll above and the word 'CHOCOLATE' on a tablet below, with medals on the upper corners of the label, all on a bright-red ground."

15,273.—SWEET VANILLA CHOCOLATE.—*Henry L. Pierce*, Boston and Milton, Mass. Application filed December 17, 1887. Used since July 1, 1881.
"An oblong colored background in the center of which is a white tablet extending horizontally, with a short diagonal tablet at each end thereof, and having on it the word 'CARACAS,' and on the short ones 'SWEET' and 'VANILLA,' and above it the word 'WEBB'S,' and below it 'CHOCOLATE,' and also a shield with a horizontal bar having the letter 'W' in relief and the words 'WEBB'S' above and 'CHOCOLATE' below."

15,274.—MEDICINE FOR RELIEVING EPILEPTIC FITS AND OTHER NERVOUS DISEASES.—*The Dr. S. A. Richmond Nervine Company*, St. Joseph, Mo. Application filed December 8, 1887. Used since May 1, 1884.
"An engraved portrait of Dr. S. A. Richmond."

15,275.—OXIDE OF ZINC, DRY AND IN OIL, SPELTER, AND SHEET-ZINC.—*La Société de la Vieille Montagne*, Chênée, Belgium. Application filed December 24, 1887. Used since January 1, 1837.
"The words 'VIEILLE MONTAGNE.'"

LABELS.

5,505.—Title: "YARDS IN DETAIL." (FOR BLEACHED GOODS.)—*Nathan H. Baker*, Providence, R. I. Application filed January 30, 1888.

5,506.—Title: "ZENITHIA SOAP."—*James S. Kirk & Co.*, Chicago, Ill. Application filed February 8, 1886. (Trade-Mark Registered.)

5,507.—Title: "WASHTUB SOAP," (FOR LAUNDRY SOAP.)—*James S. Kirk & Co.*, Chicago, Ill. Application filed February 15, 1886. (Trade-Mark Registered.)

5,508.—Title: "COMMONWEALTH," (FOR TOILET SOAP.)—*James S. Kirk & Co.*, Chicago, Ill. Application filed February 16, 1886. (Trade-Mark Registered.)

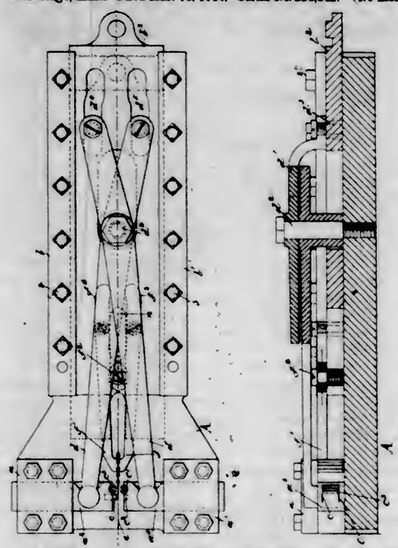
5,509.—Title: "WHITE LAYOLITE," (FOR A WASHING COMPOUND.) *James S. Kirk & Co.*, Chicago, Ill. Application filed February 17, 1886. (Trade-Mark Registered.)

5,510.—Title: "THUESDALE'S HEALING SALVE, 'BORO' THYMOL COMPOUND."—*J. Truesdale Woodhull*, Jersey City, N. J. Application filed January 18, 1888.

PATENTS

GRANTED MARCH 6, 1888.

378,859. MACHINE FOR MAKING FLEXIBLE NAIL-STRIPS. EDWARD B. ALLEN, Portland, Me., assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Mar. 10, 1887. Serial No. 230,369. (No model.)



Claim.—1. The combination, in a machine for making flexible nail-receiving strips of the following instrumentalities, viz: two die-blocks, cutting-blades actuated thereby to slit the strip at intervals, oppositely-extended pressing or bending devices provided with nail-passages and adapted to act upon the opposite sides of the slitted strip and bend it aside between the said slits for the reception of a nail or fastening, and means for moving the said die-blocks toward and from each other, substantially as described.

2. In a machine for making flexible nail-receiving strips, two die-blocks having cutting-blades to slit the strip, and bending or pressing devices for opening the said slits, combined with operating-levers, and a working plate or bar for moving the levers and die-blocks toward and from each other, substantially as described.

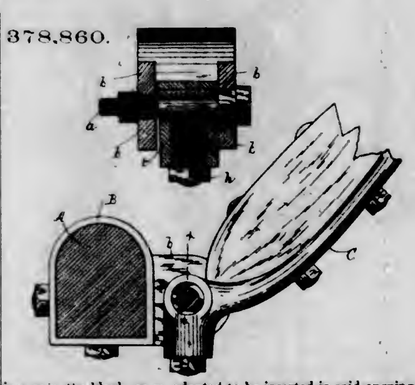
3. In a machine for making flexible nail-receiving strips, the die-blocks having cutting and bending devices for cutting and opening slits in the strip, combined with pivoted operating-levers for moving the die-blocks toward and from each other, pivoted clamping-levers for feeding the strip forward, and a working plate or bar for moving both the operating-levers and the clamping-levers, substantially as described.

4. In a machine for making flexible nail-receiving strips, the die-blocks having independent cutting and bending devices for cutting and opening opposite slits in the strip, the bending devices, including co-operating tubular projections on the said die-blocks, combined with strip-feeding devices, substantially as described.

378,860. THILL-COUPLING. SULLIVAN H. ATKINS, Lynn, Mass. Filed Sept. 23, 1885. Serial No. 177,899. (No model.)

Claim.—1. In combination, the bolt *a*, having a plane cylindrical portion, the bushing *c*, surrounding said cylindrical portion and arranged within the thill-iron, said bushing being formed with an open

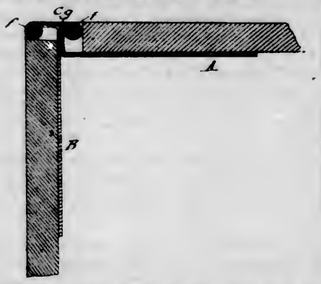
378,860.



ing, as *n*, the blank, as *m*, adapted to be inserted in said opening and to bear upon the bolt, and the screw for applying pressure to said blank, substantially as described.

2. In combination, the bolt *a*, having a plane cylindrical portion, the bushing *c*, surrounding said cylindrical portion and arranged within the thill-iron, said bushing being formed with an opening, as *n*, the blank, as *m*, fitted to said opening, the rubber block arranged upon the outer side of said blank to press it against the bolt, and the screw to act upon the rubber block, substantially as described.

378,861. HINGE. BENJAMIN S. ATWOOD, South Abington, Mass. Filed Apr. 4, 1884. Serial No. 126,689. (Model.)



Claim.—A box-hinge composed of the parts *d* and *e*, to be placed, respectively, on the inside of the box and of the cover, provided with end pieces turned at a right angle to their main portions, having the knuckles *f f*, fitting, respectively, into places in the side of the box and of the cover, and united by the plate *g* and pins *h h*, said plate *g* being placed on the outside of the box, and so arranged as to furnish a bearing to the cover when it is closed, and to permit the cover to be removed entirely from the top of the box when it is open, substantially as above described.

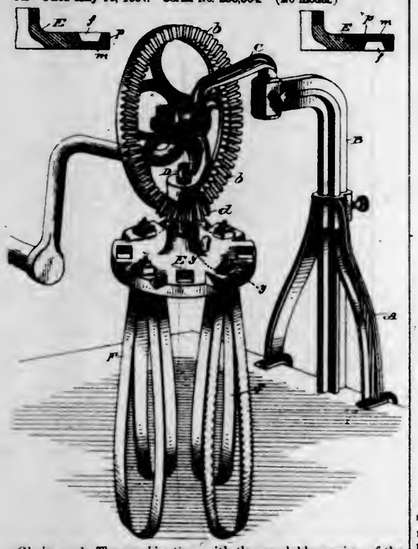
378,862. CUFF-HOLDER. SYLVESTER P. BABCOCK, Adrian, Mich. Filed Sept. 7, 1887. Serial No. 249,057. (No model.)



Claim.—1. The cuff-holder herein described, consisting of the main body portion A, provided with the button C and the hooked tooth N, and the tongue E, having the oblong hole I, the body and tongue pivoted together, and operating substantially as set forth.

2. The improved cuff-holder herein described, consisting of the body A, having a hooked tooth formed therein, and a button, and the tongue E, provided with the hole I, adapted to operate with the hooked tooth, all constructed and operating substantially as set forth.

378,863. CULINARY BEATER. EDWIN BALTHLEY, Philadelphia, Pa. Filed May 16, 1887. Serial No. 238,364. (No model.)



Claim.—1. The combination, with the revoluble carrier, of the knife-beater composed of a thin flat bar connected at its upper end with the carrier rigid or unyielding in the direction of the motion of the carrier, and having its lower end free to swing laterally or outward, substantially as and for the purpose described.

2. The combination, with the revoluble carrier, of the knife-beater composed of a flat bar formed into a loop, the ends of which are separated and fixedly secured to the carrier, having the outer ends free to swing outward, substantially as and for the purpose described.

3. The combination, with the revoluble carrier, of the knife-beater connected with the carrier and rigid or stiff in the direction of its motion and free to swing outward, substantially as and for the purpose described.

4. The combination, with the revoluble carrier, of the knife-beater composed of a flat bar tapering in width and connected with the carrier at its upper end rigid or unyielding in the direction of the motion of the carrier and free to swing outward at its lower end, substantially as set forth.

5. The combination, with the revoluble carrier, of the knife-beater having knife-edges composed of a flattened bar tapering in width and thickness from top to bottom and connected with the carrier at its upper end rigid or unyielding in the direction of the motion of the carrier and free to swing outward at its lower end, substantially as set forth.

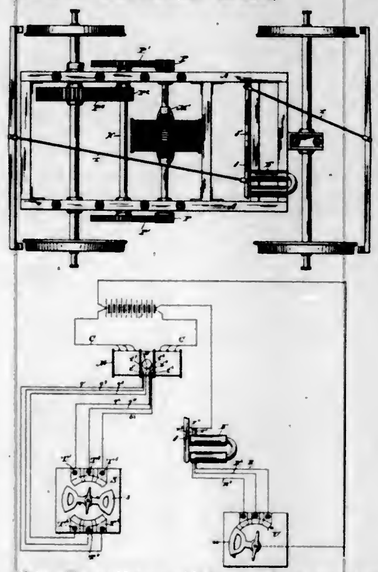
6. The combination, with the carrier having openings therein and the knife-beaters, of the block fitted into the opening, and means, substantially as described, for clamping the beater between its side and the side of the opening, substantially as set forth.

7. The combination, with the carrier having openings and the ends of two knife-beaters fitted in the opening, of the block inserted between said ends, and means, substantially as described, for clamping them between its sides and the sides of the opening, substantially as specified.

8. The combination, with the carrier having openings and the loop-shaped beater having its ends inserted in one of the openings, of the block inserted between the ends, and means, substantially as described, for clamping the ends of the beater, the sides of the block, and the sides of the spring.

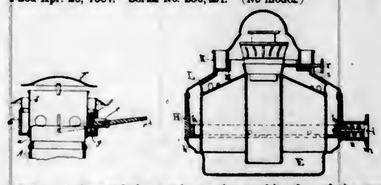
9. The combination, with the carrier having openings and the loop-shaped beater having its ends fitted in the opening, of the two wedge-shaped blocks fitted between said ends and the bolt for drawing the blocks together, substantially as set forth.

378,864. APPARATUS FOR THE PROPULSION OF CARS BY ELECTRICAL ENERGY. ALEXANDER H. BAUER, Boston, Mass. Filed June 13, 1887. Serial No. 241,141. (No model.)



Claim.—The combination, with the axles of a car and a framing supported on said axles independent of the car-body, of an electro-motor wound in sections and supported on the framing, and connected by intermediate gearing with the axles, suitable wires connecting the sections of the motor with a battery located in the body of the car, and a switch having two or more double terminals, whereby the circuit can be closed through one or more of the sections of the motor, all constructed, arranged, and operating substantially as shown and described, as and for the purpose set forth.

378,865. CAR-LAMP. CHARLES L. BETTS, Brooklyn, N. Y., assignor of one-half to the Climax Manufacturing Company, Chicago, Ill. Filed Apr. 28, 1887. Serial No. 236,421. (No model.)



Claim.—1. In a tubular car-lamp, the combination of the upper ring or band sustained by the tubes, the globe, the globe-holding band, the yoke embracing the band and pivotally connected with the same on opposite sides, the projecting lever forming an extension of said yoke, said lever being fulcrumed in arms connected to the tube-supported ring or band, and the spring bearing upon the lever, substantially as specified, whereby the globe-holding band can be easily lifted from the globe without touching the heated parts of the lamp situated immediately above the exit for the products of combustion.

2. In a tubular lamp, the combination, with the base-ring perforated to receive air from the tubes, and a disk, as I, of the removable lamp-pot provided with a perforated disk fitting against the under side of the first-named disk and arranged to close the annular space between the disk of the base-ring and the lower margin of the cone, and also the slot for the wick-raising shaft in said disk, substantially as specified, whereby when the lamp-pot is inserted its upper movement is limited and all air admitted within the base-ring is directed to the interior of the cone.

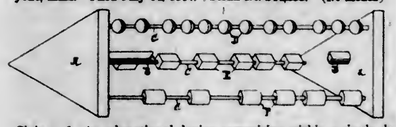
3. In a tubular lamp, the combination, with the base-ring having the disk mounted thereon, of the oil-pot and burner, the disk being

slotted to permit the passage of the wick-ratchet shaft, substantially as shown and described.

4. In a tubular car-lamp, the combination of the removable lamp-pot and the upwardly flaring or beveled band, the air-tubes connected to said band and communicating with the interior thereof, the retaining-ring having a recessed flange and a projecting stem, said ring being made flaring or beveled to correspond with the bevel of the band and separating the band from the lamp-pot, whereby an air-chamber is provided, the retaining-pins on the exterior of the lamp-pot, the spring, thumb-piece, and detent, substantially as specified, whereby a ring adapted to sustain a lamp-pot in a manner to permit its ready removal or insertion is securely supported by its outer wall fitting and resting against the wall of the band which incloses the air-chamber.

5. In a tubular car-lamp, the lamp-pot carrying the burner and projecting wick-ratchet shaft, the retaining and guiding pins applied upon the lamp-pot, the recessed retaining-ring, the guides, and the lower ring or band uniting the tubes, all combined substantially as shown and described.

378,866. ABACUS. EMBURY P. CLARK and DAVID L. WREN, Holyoke, Mass. Filed July 14, 1887. Serial No. 244,255. (No model.)

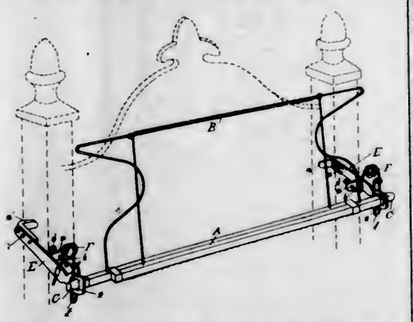


Claim.—1. An educational device comprising within a single device means for teaching form, color, and combinations of numbers, said means consisting of a frame having movably mounted thereon two or more series of blocks, the blocks of each series having a uniform shape which is distinctive from the shape of the blocks composing either of the other series, and the individual blocks of each series being of different colors, substantially as and for the purpose set forth.

2. An educational appliance comprising a frame supporting one or more wires, and blocks having the form of spheres, cubes, and cylinders, respectively, mounted so as to move freely upon said wire or wires, said blocks being colored to represent the three primary and also the three secondary colors, substantially as and for the purpose described.

3. An educational appliance composed of the frame consisting of end pieces, A A, and rod B, wires C C C, extending between said end pieces, and spheres D, cubes E, and cylinders F, mounted upon said wires, respectively, each of said spheres, cubes, and cylinders being colored substantially as described, arranged and operating substantially in the manner set forth.

378,867. PILLOW-SHAM HOLDER. FRANKLIN E. CLARK, Detroit, Mich. Filed June 20, 1887. Serial No. 241,878. (No model.)

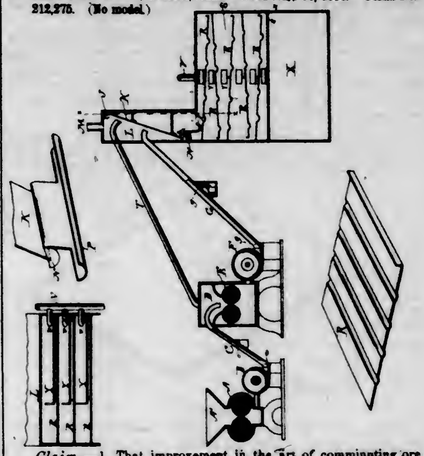


Claim.—1. In a pillow-sham holder, the bracket E, provided with jaw *a* and adjustable jaw *a'*, and socket *e*, clamp-screw *b*, and spring F, all substantially as and for the purposes specified.

2. In a pillow-sham holder, the bracket E, provided with jaw *a* and adjustable jaw *a'*, and socket *e*, clamp-screw *b*, provided with pad *d*, and spring F, all substantially as and for the purposes specified.

3. In a pillow-sham holder, the combination of the bar A, provided with flat bearing-faces, the bracket E, having jaws *a a'*, and clamping-screw *b*, the eye *e* of the bracket having flat bearing-faces for the head-bar, and the spring F, secured at one end to said bracket and provided with a loop, *f*, embracing the eye of the bracket, all arranged to operate substantially as described.

378,868. ART OF SEPARATING METALS FROM THEIR ORES. SAMUEL H. COCHRAN, Everett, Mass. Filed Aug. 30, 1886. Serial No. 212,275. (No model.)



Claim.—1. That improvement in the art of comminuting ore which consists in blowing the ore while cold into and through an intensely-hot flame, whereby the ore is suddenly heated to a high degree of temperature, then submitting it while still heated to the action of a roller-mill, then heating it suddenly a second time and collecting the residue while still hot in a sheet of cold water, whereby said residue shall be chilled and carried to a suitable place of deposit, all as set forth.

2. That improvement in the art of separating metals from their ores which consists in blowing the ore while cold into and through an intensely-hot flame, whereby the ore shall be suddenly heated to a high degree of temperature, then submitting it while still heated to the action of a roller-mill, whereby the ore shall be crushed and the metal polished, heating it suddenly a second time and collecting the residue while still hot in a sheet of water, and passing said sheet of water containing said residue over amalgamating-plates, all as set forth.

3. In an ore-separating apparatus, in combination with means whereby the pulverized ore may be fed to the blast, a blower, a tube to convey said pulverized ore to a roller-mill, and means whereby it may be exposed to the direct action of a flame in transit, a roller-mill located to receive the roasted ore, and means for collecting the same after it has been rolled, all substantially as and for the purposes set forth.

4. In combination with an ore-burning apparatus consisting of a furnace-tube, G, at one end of which is the fan F, and which is provided with one or more furnaces of the kind described, the slanting plate K, located in front of and near to the mouth of said ore-burning apparatus, a water-supply pipe, J, provided with holes whereby water can be spread upon said plate in front of said mouth, and a suitable depository of the kind described, whereby the contents of said plate may be collected, all substantially as described.

5. In combination with an ore-comminuting apparatus of substantially the kind described, the water-covered slanting plate K and its water-supply, the trough N, of a length equal to the width of the plate K, and shaped in the form of three-fourths of a cylinder closed at each end, and the overflow-trough P, of greater length, the trough N, located to receive the contents of the nearly-vertical plate K, and the trough P, located to receive the overflow from the trough N, substantially as and for the purposes described.

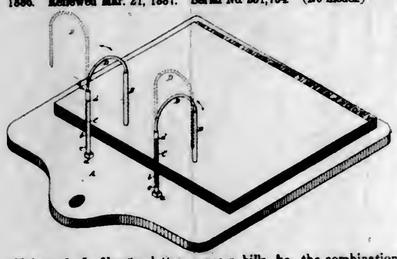
6. In an ore-reducing mechanism, the combination of a grinding-mill, a furnace-tube provided with one or more furnaces, whereby the dust from said mill will be suddenly heated by an intense heat and conveyed away, a suitable fan of the kind described connected with said tube, whereby the said dust will be forced through said tube, means for supplying a sheet of water so located as to receive the heated contents of said tube, and a suitable depository of the kind described for the dust and water, all as set forth.

7. In an ore-reducing mechanism, the combination of a grinding-mill, a furnace-tube located to convey the ground material therefrom, a crushing-mill located at the mouth of the said tube, a second furnace-tube located to convey the crushed material from said crushing-mill, said tubes being provided with one or more furnaces, substantially as described, blower-fans located to force the product of said mills

through their respective tubes, means for supplying a stream of water so located as to receive the contents of said second tube, and a depository, substantially as described, for said dust and water, all as set forth.

8. The amalgamating-chamber above described, consisting of a series of plates, one below the other, slanting in opposite directions, the higher end of each plate overlapping the lower end of the plate above it, said chamber being provided with a series of steam-jets located so as to fill said chamber with steam, substantially as and for the purposes described.

378,869. FILE FOR LETTERS, BILLS, PAPERS, &c. WILLIAM A. COOKE, Jr., and CHARLES S. COOKE, Brooklyn, N. Y. Filed June 18, 1886. Renewed Mar. 21, 1887. Serial No. 231,764. (No model.)



Claim.—1. In files for letters, papers, bills, &c., the combination of a tablet, a tubular socket fixed thereto, an arched wire having one end connected with the tubular socket and the other end free, the said wire being susceptible of limited longitudinal and vibratory motion, and a fixed wire, also connected with the tablet, and with which the free end of the arched wire interlocks by a vibratory and longitudinal motion in sequence, and unlocks and diverges therefrom by the same motions in reversed order, substantially as specified.

2. The combination of a tablet, a fixed wire or needle, and a movable arched transfer or keeper wire having one end or leg pivoted in a suitable support and the other end free, the arched wire being susceptible of a limited longitudinal motion, for the purpose of connecting the free end of the arched wire with the fixed wire and to disconnect it therefrom, and a limited vibratory motion, by which the free end is caused to align with the fixed wire or to diverge therefrom, substantially as specified.

3. In a file for letters, papers, bills, &c., the combination of a tubular impaling needle or standard, a corresponding transfer-wire, and a tubular socket, the transfer-wire being placed in the tubular socket and connected therewith by a bayonet-joint, substantially as specified, and for the purpose set forth.

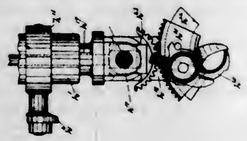
4. The combination of a tubular impaling needle or standard, a socket or tube provided with slots *b d*, and a transfer-wire having its upper end curved, so as to join with and enter the tubular impaling-needle, and its straight portion or shank entered into the tube or socket and provided with a pin, *e*, which projects into the slot *b* and guides the transfer-wire when raised and lowered, and when turned or swung out of conjunction with the impaling-needle enters slot *d* and sustains the transfer-wire out of connection with the impaling-needle, substantially as specified.

5. The combination of the tubular impaling-needle having its upper end squared off and a transfer-wire having the end *g* squared off, so as to form with the upper end of the impaling-needle a perforator or punch for the papers, substantially as specified.

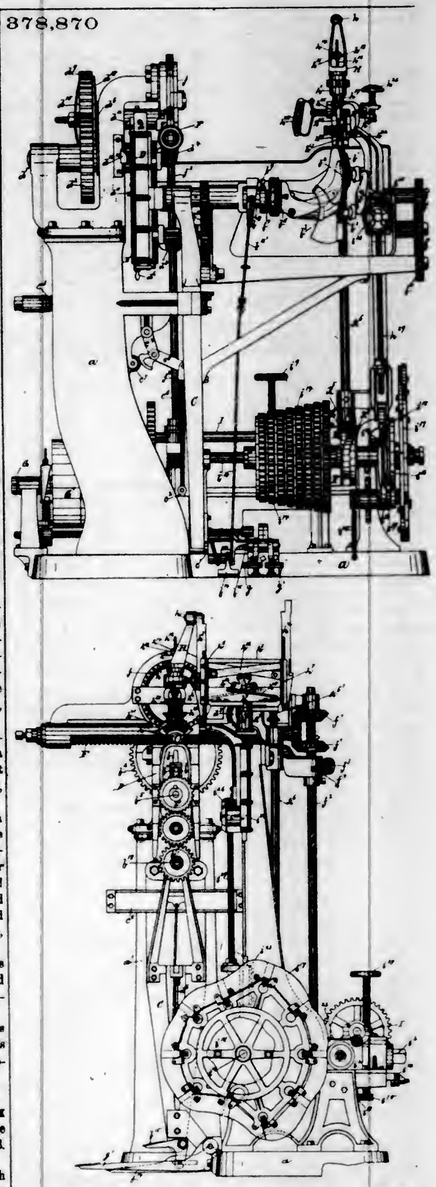
6. The combination of the tube or socket C, provided with slots *b d*, the transfer-wire having a pin, *e*, in its shank and the end *g* of its curved portion squared off, and the tubular impaling-needle B, substantially as specified.

378,870. MACHINE FOR TRIMMING SOLE-EDGES. FREDERICK W. COY and GEORGE A. FULLERTON, Boston, Mass., assignors to the Champion Trimmer Company, of New Hampshire. Filed Dec. 20, 1883. Serial No. 115,136. (No model.)

Claim.—1. Reciprocating jack-carriage D, in combination with rotary frame *d*, locked and unlocked automatically, substantially as described.



378,870



2. In combination with the jack-carriage and its jack, the frame C, substantially as described.

3. In combination with the jack-carriage and its jack, the frame C and counterbalanced frame c^4, substantially as described.

4. The jack, its inner shaft, b^2, and outer shaft, b^3, in combination with a cross-shaft and gears, whereby the shafts b^2 b^3 are rotated coincidently, substantially as and for the purpose set forth.

5. The jack above described, having a clamp, b b^3, for the fore part of the sole and a clamp, b' b^3, for the shank of the sole, substantially as described.

6. In a jack, the sole-plates b b', in combination with the lever b^4 and shaft b^5, substantially as described.

7. In a jack, the inner plates, b^2 b^3, each independently adjustable, substantially as described.

8. In a jack, the inner plates, b^2 b^3, in combination with frame b^4, pivoted to shaft b^5, substantially as described.

9. In combination, slide A^{21}, guide A^{22}, and knife A^{20}, the curves of the knife-holder and guide being arcs of circles whose center is near the cutting-edge of the knife, substantially as and for the purpose set forth.

10. In combination, slide A^{21}, guide A^{22}, frame A^{19}, and its stem A^{19}, constituting a knife-holder, substantially as described.

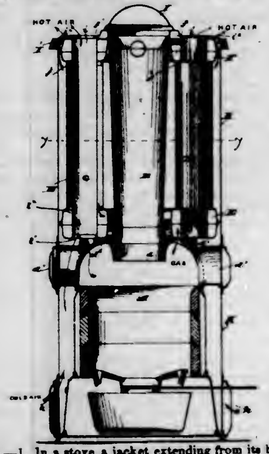
11. The knife mounted in a holder, in combination with a standard, A^5, capable of up and down motions, and frame A^3, capable of a motion on its axis, substantially as described.

12. In combination, a carriage having alternate sliding and semi-rotary motions, a rotating pattern-cam, a knife or marker, and actuating mechanism, substantially such as is described, for giving motion to the carriage and cam, and other mechanism, substantially such as is described, for connecting the cam with the knife or marker.

13. The mechanism herein described for giving variable motions to the pattern-cam i^{17}, consisting of a series of gears, i^{14}, and other mechanism, substantially such as described, for actuating the gears i^{14}, each gear i^{14} having the same number of teeth for the toe as for the heel part of the sole, and a different number of teeth for the parts of the sole between the toe and heel, substantially as and for the purpose set forth

14. In combination, cam K, tool-holder H, and mechanism, substantially such as described, for causing the holder to be inclined to bring its tool into proper relation to the varrying bevels of the sole-edge, substantially as and for the purpose set forth.

378,871. HEATING-STOVE. JAMES W. CUMMER, Cadillac, Mich. Filed Dec. 13, 1886. Serial No. 221,439. (No model.)



Claim.—1. In a stove, a jacket extending from its base to its top and provided with fresh-air inlets, in combination with two drums within the jacket and apart therefrom to leave an air-passage between said parts, fresh-air tubes passing through both drums, and heat-carrying flues connecting the drums and enveloping the fresh-air tubes, whereby the heat in the drums and on both sides of the heat-carrying flues is utilized to heat the air, substantially as set forth.

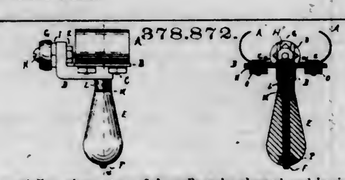
2. In a stove, a jacket provided with fresh-air inlets, substantially as described, two drums connected by heating-flues, fresh-air tubes passing through said drums and flues, and communicating with the space between the stove and jacket at one end and with the open air at the other, all combined and arranged substantially as set forth.

3. In a stove, the combination of a dome above the fire-pot, having a series openings, a drum communicating with said dome, and a jacket outside said drum, in combination with a second drum above the first, heat-carrying flues connecting said drums, and fresh-air tubes passing through said flues and drums, substantially as set forth.

378,872. AUTOMATIC ROLL-CLEANER FOR SPINNING-MACHINES. THOMAS C. CUNNINGHAM, Holyoke, Mass. Filed Apr. 21, 1887. Serial No. 235,645. (No model.)

Claim.—1. A cleaner for the rolls of spinning and other machines, consisting of a carriage having secured thereto curved scrapers adapted

378,872.



to partially embrace two of the rolls to be cleaned, and having a propelling-wheel, and means, substantially as described, for holding said wheel in contact with either of said rolls at an angle thereto, combined and operating substantially as set forth, whereby when said wheel is in contact with one of said rolls the carriage will be moved longitudinally thereof in one direction, and when it is in contact with the other of said rolls the carriage will be moved in the opposite direction.

2. In a cleaner for the rolls of spinning and other machines, the combination of a carriage having curved scrapers adjustably secured thereto adapted to partially embrace the rolls to be cleaned, with a propelling-wheel, a bracket having at one end a bearing for said wheel and connected at the other end to the carriage, and means, substantially as described, for adjusting said bracket at any desired angle to the carriage, substantially as and for the purpose set forth.

3. The combination, with the carriage B, having the curved scrapers A A' secured thereto, of the bracket D, the wheel G, mounted in a bearing at its outer end, and a bolt and nut connecting the inner end of said bracket to the carriage, whereby said bracket may be secured at different angles to the carriage, substantially as and for the purpose described.

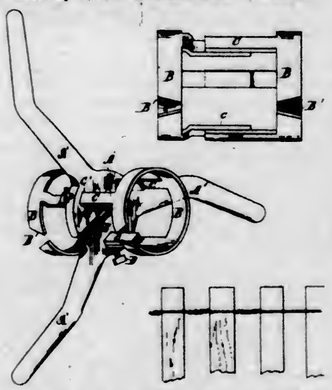
4. The combination of carriage B, scrapers A A', bracket D, wheel G, and handle E, having the fixed nut P, with bolt F, connecting said carriage, bracket, and handle, arranged and operating substantially as set forth.

5. The combination of the carriage B, having the centrally-disposed slot, and having the scrapers A A' adjustably secured thereto, of bracket D, wheel G, handle E, bolt F, passing through the slot in the carriage and through said bracket and handle, and nut P, seated within a socket in the handle, substantially as set forth.

6. The combination, with the carriage having the scrapers A A' secured thereto, of the bracket D, having the vertical slotted outer end, as shown, wheel G, bolt H, passing through the center of said wheel and through the slot in the bracket, nuts I and K upon said bolt, and a nut and bolt securing the inner end of said bracket to the carriage, whereby provision is made for adjusting said wheel G both vertically and laterally with respect to the carriage, substantially as set forth.

7. The combination, with the carriage and propelling-wheel arranged and operating substantially as shown and described, of the scrapers A A', each having a slotted horizontal extension, as shown, bolts C, passing through the slots therein and through the carriage, and nuts O, substantially as set forth.

378,873. HAND FENCE-MACHINE. BOURBON CURRENT, Paris, Ky. Filed July 16, 1887. Serial No. 244,496. (No model.)



Claim.—1. In a portable fence-machine or wire-twisting device for wires, a central disk having a slot and radial arms and provided with adjustable gages on both faces of the disk for regulating the distance between the palings, substantially as herein set forth.

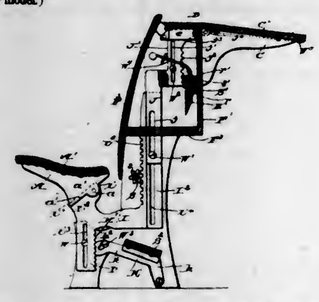
2. In a portable fence-machine, the combination of a central disk or body having a slot and radial arms, with an open ring on each side of the central disk, provided with lugs which pass through the disk, and adjusting-screws to regulate the distance between the palings, substantially as herein set forth.

378,874. **BALE-TIE.** JOHN R. DAVIS, Wakefield Station, assignor of one-half to C. R. Carter, Appomattox County, Va. Filed Aug. 13, 1887. Serial No. 246,866. (No model.)



Claim.—A bale-tie consisting of the male and female parts A B, having cross-slots a^4 b^4, the part A having the back *a*, carrying the inside projection, *a'*, provided with tongues a^2 a^3, and the part B having the cavity *b'* and shelves b^2 b^3, as shown and described.

378,875. **ADJUSTABLE SCHOOL DESK AND SEAT.** OLE G. DOCKEN, Mount Horeb, Wis. Filed July 22, 1887. Serial No. 245,006. (No model.)



Claim.—1. In a school-desk, the combination of the standards F, the seat A', hinged to and adapted to be supported by vertically-moving slides I, having a serrated or ratchet surface, K', at the lower portion thereof and a rack-surface, i^3, on an extended arm of said slide, a shaft, S, having a spur, *s*, engaging the rack-surface i^3 and operated by a crank for raising and lowering said seat and slide, and a foot-rest, S^3, secured to detent-arms K, having forward serrated surfaces engaging with the similar surfaces, K', of the slides I and operating to retain the seat in its adjusted position, substantially as described.

2. The combination, with the sides F, of the seat A', the slides or supports I, having serrations K' on their lower portions and rack-teeth i^2 on the edge of an upper extension or arm, the gearing for raising and lowering the said slides or supports, the locking-detents K, having the serrated ends engaging with the serrations K' of the slides I, and the foot-board S^3, secured to the locking-detents K, substantially as described.

3. In a school-desk, the combination of the supporting-standards having a book case or receptacle formed in their upper portion, a hinged cover for said receptacle, a desk or rest provided with hinged brackets or supports on its under side, slides J, held to and movable vertically on the standards, and means for operating the said slides, the desk or rest being hinged to the upper ends of the said slides J, substantially as set forth.

4. In a school-desk, the combination of the supporting-standards having a book-receptacle formed in their upper portions, a desk or rest secured to sliding plates adapted to be elevated or depressed at the rear portion of said book case or receptacle, and means, as set forth, for operating the several parts, substantially as described.

5. In a school-desk, the combination of the seat hinged to and supported by the vertically-moving slides I, having serrated surfaces K' at their lower portions and a rack-surface, i^3, on extended arms of the same, a shaft, S, having spurs *s*, engaging the rack-surfaces i^3 and adapted to be operated to raise and lower the seat and slide, and a foot-rest, S^3, secured to and operating detents to hold the slides and seat in an adjusted position, substantially as set forth.

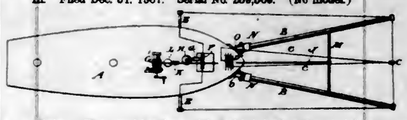
6. In a school-desk, the combination, with the standards F, having a rear covering, F', in the upper part and a back rest, F^3, secured to the forward part, forming a book case or receptacle, of a hinged lid for said book case or receptacle, the desk or rest hinged to the vertically-sliding arms J, having extensions provided with rack-teeth j^3, a shaft, S', having spurs *s*, engaging the teeth j^3, and a pawl, W', engaging the spur *s'* and holding the desk in an elevated position, substantially as described.

7. In combination with the seat, the slide or support I, by which the seat is carried, the rocking foot-rest, the gearing for elevating and lowering the seat, and the detent carried by the foot-rest to lock the seat at any point of its movement, as set forth.

8. In combination with the supporting-standards, the seat, the slide or support I, having a pin-and-slot connection with the supporting-standards, the arm I^3 on the support I, also having a pin-and-slot connection with the supporting-standards, the teeth i^2 on the arm I^3, the gear S, for engaging with the said teeth, and the rocking foot-rest having a detent, K, to engage with teeth K' on the support I, as set forth.

9. In combination with the back rest, F^3, the receptacle or case for books formed in rear of the back rest, said receptacle or case being flush with the sides and top of the back rest, the cover D for the top of the case or receptacle, the adjustable desk or rest C', connected to the receptacle or case, and the mechanism for raising and lowering the desk C', said mechanism being located inside the case or receptacle, as set forth.

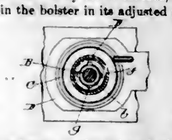
378,876. **ELECTRIC SHIP-SIGNAL.** JOHN W. DOOLEY, Wyoming, Ill. Filed Dec. 31, 1887. Serial No. 259,509. (No model.)



Claim.—The combination, with a ship's hull, galvanic battery, and electric wires, substantially as described, of the front poles, B B, having sockets K, turning on shafts L and provided with mechanism G H I J, as and for the purpose set forth.

378,877. **SUPPORT FOR SPINNING-SPINDLES.** WILLIAM F. DRAPER and GEORGE A. DRAPER, Hopedale, Mass., assignors to George Draper & Sons, same place. Filed Aug. 15, 1887. Serial No. 246,994. (No model.)

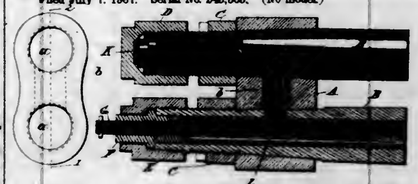
Brief.—The object of the invention is to improve the construction of that class of spindle-supports which have a bolster with tapering bore to receive the tapering pintle of the spindle. The bolster and step are adjustably connected by screw-threads, and locking devices are provided to retain the bolster in its adjusted position.



Claim.—1. The bolster-case, the bolster *b*, placed therein loosely, and having a tapering interior, and the threaded step upon which the spindle rests and to which the said bolster is adjustably attached, combined with locking devices to hold the said bolster in adjusted position, substantially as described.

2. The spindle, the bolster-case, and bolster held therein, made to constitute a lateral bearing portion, a step portion and means to connect them in an adjustable manner, combined with two pins or projections to restrain the rotation of both the bolster and the step by the action of the spindle, yet permit the said parts to be adjusted one with relation to the other longitudinally when desired, as and for the purpose set forth.

378,878. **RETURN-BEND.** ROBERT G. BURDON, New York, N. Y. Filed July 7, 1887. Serial No. 243,805. (No model.)

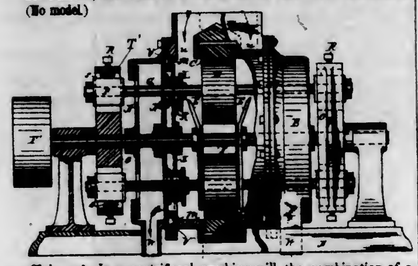


Claim.—1. A return-bend in which the tube ends pass entirely through the same, the tubes communicating with each other by a side opening in each through a channel in the return-bend, the tube ends being threaded, and the tubes held in the return-bend by nuts on the threaded parts thereof bearing against the same, the tube ends being closed by nuts on the extreme threaded ends thereof.

2. A return-bend in which the tube ends pass through the same, the joints therewith being conical, the tubes communicating with each other by a side opening in each through a channel in the return-bend.

3. A return-bend in which the tube ends pass through the same, the tubes being held therein by nuts on the threaded parts thereof and communicating by side openings in each through a channel in the return-bend, the tube ends being closed as follows: one by a plug having a ground joint with the tube end, being held therein by a bottomed nut on the threaded end thereof, and the other by a plug fitted with a gage cock or valve projecting through the nut by which it is held on the end of the tube, all constructed and arranged as shown.

378,879. **MILL FOR CRUSHING OR GRINDING QUARTZ.** GIDEON FERBER, New York, N. Y. Filed Jan. 17, 1887. Serial No. 224,645. (No model.)



Claim.—1. In a centrifugal crushing-mill, the combination of a crushing-ring, a crushing-roller, a shaft on which said roller is carried, arms set outside of said chamber for imparting motion to said roller, and springs against which said shaft cushions, said roller revolving about the axis of said crushing-ring and being by centrifugal action forced against the interior of said crushing-ring, and said springs constantly tending to throw said roller away from said ring, substantially as described.

2. In a crushing-mill, the combination of a revolving shaft carrying a crushing-roller, a crushing-chamber, a revolving side plate provided with perforations through which said shaft passes, and a disk attached to said revolving shaft between said side plate and said crushing-roller, substantially as and for the purpose specified.

3. In a crushing-mill, an inclosing-chamber provided with an inner circumferential groove, combined with a revolving side plate forming part of said inclosing-chamber, and a fan carried on said side plate and traveling in said groove, substantially as described

4. In a crushing-mill, the combination of an inclosing-chamber provided with an inner circumferential groove, a crushing-ring, a crushing-roller, a shaft revolving about the center of said ring and carrying said roller, a revolving side plate, N', forming part of said inclosing-chamber, and a fan carried on said side plate and traveling in said groove, substantially as described.

5. In a crushing-mill, the combination, with a crushing-ring and crushing-roller, of a plurality of flat sieves revolving in parallel planes, with an intervening space between them, said space being open at its periphery, substantially as described.

6. In a crushing-mill, a crushing ring and roller and a plurality of revolving sieves of different mesh set one in front of the other, with an intervening space between them, said space being open at its periphery, combined with a revolving fan, arranged substantially as described, to travel about the periphery of said intervening space.

7. In a crushing-mill, a revolving shaft carrying a crushing-roller, and a side plate through which said shaft passes, combined with a disk attached to said shaft a distance inside of said side plate to prevent by centrifugal action of said disk leakage through said side plate, substantially as described.

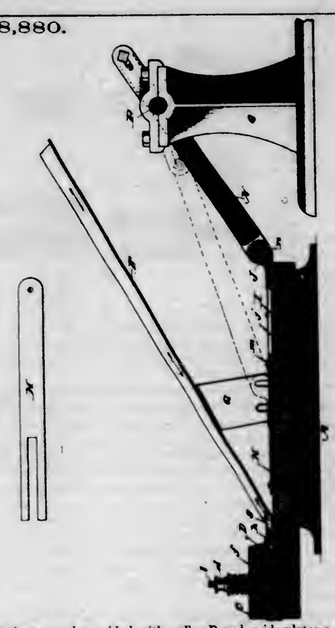
378,880. **TYPE-RUBBING MACHINE.** FRIEDRICH GEISSEL, Chicago, Ill. Filed Nov. 21, 1887. Serial No. 255,727. (No model.)

Claim.—1. In a type-rubbing machine, the frame B, with cutter *e*, and block C, with cutter *f*, and roller D, in combination with inclined feed-plate F and with reciprocating push-bar H, bifurcated at its forward end, substantially as set forth.

2. In a type-rubbing machine, frame B, with cutter *e*, and block C, with cutter *f*, roller D, and guide-plates *g* and *h*, in combination with inclined feed-plate F and with push-bar H, bifurcated at its forward end, substantially as set forth.

3. In a type-rubbing machine, the frame B, with cutter *e*, and block C, with cutter *f*, guided on studs *b* and yieldingly compressed

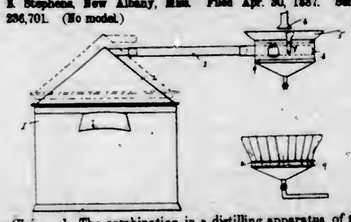
378,880.



by springs *c*, and provided with roller D and guide-plates *g* and *h*, in combination with inclined feed-plate F and with push-bar H, all substantially as set forth, for the purpose specified.

4. In a type-rubbing machine, the frame B, with cutter *e* and with guide-stripe *j*, and the block C, with cutter *f*, and roller D, with pulley E, in combination with push-bar H, connected by pitman N with crank O of shaft P, having mounted pulley R, for transmitting motion to roller D by a cord, S, all substantially as set forth, to operate as specified.

378,881. **APPARATUS FOR DISTILLING WATER AND OTHER LIQUIDS.** ROBERT D. GLADNEY, Keownville, assignor of one-half to R. B. Stephens, New Albany, Miss. Filed Apr. 30, 1887. Serial No. 236,701. (No model.)



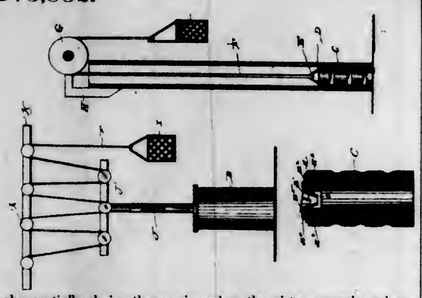
Claim.—1. The combination, in a distilling apparatus, of the flat-bottomed portable boiler having a removable cover, the condenser, the pipe connecting the top of the boiler and the condenser, these parts being made separable and sufficiently small to be inclosed in the boiler, the open removable water-vessel covering the condenser, and a water-supply pipe, all substantially as set forth, whereby the condenser and pipes may be inclosed in the boiler for transportation or storage.

2. The combination, in a distilling apparatus, of the flat-bottomed portable boiler having a removable cover, the condenser, the pipe connecting the top of the boiler and the condenser, these parts being made separable and sufficiently small to be inclosed in the boiler, an extension of the vapor-pipe within the condenser having perforations on its upper side adjacent to the lowest part of the water-vessel covering the same, the open removable water-vessel covering the condenser, and a water-supply pipe, all substantially as set forth.

378,882. **FIRE-ESCAPE.** JAMES H. GLASCOCK, Sherman, Tex. Filed Nov. 28, 1887. Serial No. 256,353. (No model.)

Claim.—1. In a fire-escape, the combination, with the cylinder having its upper end open, of the hollow piston working in said cylinder, having an opening and valve arranged above said opening, said

378,882.



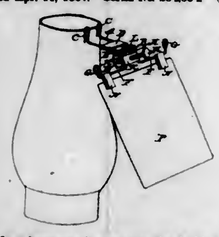
valve partially closing the opening when the piston ascends and entirely uncovering the opening when the piston descends, whereby the ascent and descent of the piston are controlled by the valve, substantially as and for the purpose described.

2. In a fire-escape, the combination, with the cylinder having its upper end open, and pulley arranged above said end, of the hollow piston having an opening and working in said cylinder, a valve carried by the piston, which partially closes the opening when the piston ascends and uncovers the opening when the piston descends, the piston also having one end of a rope attached to it, which passes over the pulley, and at its other end is secured to a cage or basket, substantially as and for the purpose described.

3. In a fire-escape, the combination, with the plunger having the central opening therein, of the valve attached thereto and comprising the leather or flexible strip, the metal plate having the conical cup and the extension or lug, and the spring-plate having the conical plug, all combined and adapted to operate for the purpose set forth, substantially as described.

4. In a fire-escape, the combination, with the cylinder having its end closed, of a plunger moving in said cylinder having a rod attached thereto carrying a cross-piece, pulleys on said cross-piece, a fixed bar having pulleys thereon, and a rope or chain passing over the pulleys on the cross-piece and fixed bar and carrying the basket, for the purpose set forth.

378,883. LAMP-SHADE HOLDER. PATRICK H. GRIFFIN, Brooklyn, N. Y. Filed Apr. 11, 1887. Serial No. 234,354. (No model.)



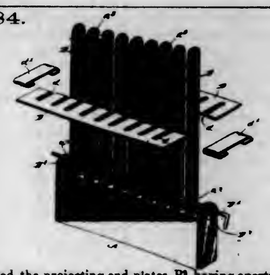
Claim.—1. In a lamp-shade support, the holder constructed of two wires, each bent at a right angle to form arms of unequal length, the shorter arms being coiled to form terminal eyes, in combination with a coupling-plate clasping and uniting said arms, and clips secured to the longer arms, substantially in the manner and for the purpose herein set forth.

2. The combination, in a lamp-shade support, of a hook-frame constructed of a wire whose ends are bent to form hooks, and whose intermediate portion is bent in the form of a parallelogram having its angles coiled to constitute eyes, a transverse re-enforce plate, a holder constructed of two wires, each bent to form arms of unequal length, the ends of the shorter arms being coiled to form eyes, a central plate clamping at its ends said shorter arms, clips secured to the longer arms, a pivot-pin passing through the eyes of the hook-frame and holder, a curved plate depending from said transverse re-enforce plate, and a set-screw passing through the central clamping-plate and bearing against said curved plate, all substantially in the manner and for the purpose herein set forth.

378,884. RUG-MAKING DEVICE. ABBIE L. HALL, Chestertown, N. Y. Filed May 25, 1887. Serial No. 239,470. (No model.)

Claim.—1. In a rug-making device, the combination of a series of knife-plates, B, having apertures formed in both ends thereof, the single frame A, having a series of slots, a', in which the said knife-plates

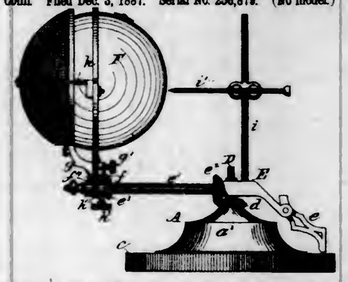
378,884.



B are mounted, the projecting end plates, B^2, having apertures therein, the removable wire rod B', for securing the knife-plates B in connection with the frame A, and the metallic pressure-combs D, substantially as described.

2. The combination, with the vertically-supported knife-plates B, having intersecting spaces when mounted, of the metallic combs D, having the slots d, adapted to pass over the knife-plates, and the clasps d', fitted on the ends of the combs to secure them together, substantially as described.

378,885. TELLURIAN. CHARLES W. HOLBROOK, Windsor Locks, Conn. Filed Dec. 3, 1887. Serial No. 256,879. (No model.)



Claim.—1. In combination with the stand of a tellurian having the marginal ring, the removable annular map of the zodiac, and the clamp whereby the map is secured to the stand, all substantially as described.

2. In combination, in a tellurian, the stand consisting of the frame having an annular rim, the raised central portion, the cover of the frame with its downturned flange, the ring-clamp and its flange, and the annular map of the zodiacal circle, all substantially as described.

3. In combination with the metallic frame a, having the flat marginal ring a^2 and raised central part, a', the cover a^3, the annular map b, the ring-clamp with clamping-edge engaging the map, and the fastening-pins, all substantially as described.

4. In combination with the stand A, having the removable annular map b of the zodiacal circle, the post D, secured to the center of the stand and bearing the rigid cog-wheel d, the rotary arm E, the solar index e, attached to the arm, the rotary sleeve e', bearing the cog-wheels e^2 and e^3, the block f^3, fast to the arm E and bearing the rotary cog-wheel f, and the arm g, supporting the globe F and removably secured to the sleeve of the cog-wheel f, all substantially as described.

5. In combination with the base A, rotary arm E, rotary cog-wheel f, borne on a stud on the arm E, the arm g, the block f^3, pivoted on an axis fast to the arm, and the removable day-circle h, removably secured to the outer end of the arm E and bearing the night-shade made of a net-work of wire, all substantially as described.

6. In combination with the rotary arm E of a tellurian, the block f^3, secured thereto, the day-circle h, having a base, h', with socket h^2, into which the block f^3 is fitted, and the clamp-screw, all substantially as described.

7. In a tellurian, in combination with the rotary arm E, the block f^3, secured thereto, the day-circle h, having a base, h', with socket h^2, and clamp-screw h^3, whereby the day-circle may be adjustably secured to the block on the arm E, and the night-shade made of a net-work of wire secured to the day-circle, all substantially as described.

8. In combination with the base A, having the central post, D, the rotary arm E, pivoted on said post, the solar index e, the rotary sleeve e', bearing the gears e^2 e^3, the arm g, with socket adapted to fit upon the post D and supporting the globe F, and the lunar mechanism L, all substantially as described.

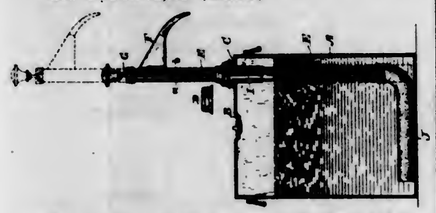
9. In a tellurian, in combination with the rotary arm E, supporting the rotary sleeve e', with the sleeve-driving mechanism of intermeshing gear-wheels, the central post, k, secured against rotation to a rigid projection on the arm E, the clamp k^3, connecting the moon-globe M with the central post, k, and the rotary tube k', supported on the post k and bearing the hemispherical hollow shade l, all substantially as described.

10. In combination with the stand A, bearing the fixed gear-wheel d, the rotary arm E, pivoted to said base, the solar index e, attached to the rotary arm, the rotary sleeve e', bearing the gear-wheels e^2 e^3 and supported on said arm, the lunar mechanism L, detachably secured to a rigid projection on the outer end of the arm, the lunar index l^2, supported on the central post of the lunar mechanism, and the arm g, removably secured to a central post on the stand and supporting the globe F, all substantially as described.

11. In combination with the base or stand A, the rotary arm E, the lunar mechanism operated on the outer end of the arm, and the globe F, supported on the arm g, having one socket in a line at an angle of twenty-three and one-half degrees with the axis of the globe, and another making an angle of twenty-eight and one-half degrees with the axis of the globe, and whereby the said arm may be removably secured to the central post rising from the base or standard A, all substantially as described.

12. In combination with the base A, having a peripheral groove, the rotary arm E, the extension n, secured to said arm and bearing on its outer end a shaft, n', with rotary pulley n^2, having an annular groove and supporting a pencil, p, and the cord or belt connecting the said base and the pulley, all substantially as described.

378,886. OIL-CAN. JOHN S. HOY, Albany, N. Y. Filed Sept. 2, 1887. Serial No. 248,614. (No model.)



Claim.—1. In a pump for oil-cans and similar vessels, the combination, with the can having opening C surrounded by a threaded flange, of the pump-tube having a suitable sucker-rod and sucker and provided with a short cylindrical sleeve, I, the upper end of which terminates in a screw-cap adaped to fit the threaded flange, the sleeve being adapted to secure the pump-tube to any altitude to which it may be brought, substantially as described.

2. In a pump for oil-cans and similar vessels, the combination, with the can having opening C, of the pump-tube having a suitable sucker-rod and sucker and provided with the sleeve I, terminating at its top in a screw-cap, and the flexible extension attached to said pump-tube, provided with a spirally-coiled wire or core, substantially as described.

378,887. HOOF-PAD. HORACE L. HUBBARD, Centre Lisle, N. Y. Filed Sept. 19, 1887. Serial No. 250,089. (No model.)



Claim.—1. The combination, with the strips secured together near their edges and near their top edge to form two longitudinal pockets, of the draw-strap placed in the upper pocket and the chemical reagents, and the absorbent material for holding the moistening medium placed in the lower pocket, substantially as described.

2. The herein-described pad for the purpose specified, composed of the strips secured together to form an upper and a lower longitudinal pocket, the draw-strap placed in the upper pocket, the roll of chemical reagents, and the roll of absorbent material arranged in the lower pocket, the roll of reagents being secured to the inner strip, and the absorbent material being arranged over the roll of reagents, substantially as and for the purpose specified.

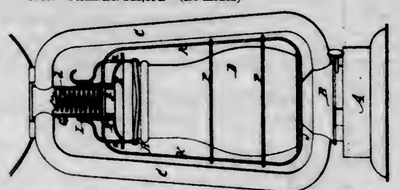
378,888. ROAD-CART. JOHN S. HULETT, Napanee, Ontario, Canada. Filed June 16, 1887. Serial No. 241,502. (No model.)

Claim.—The combination of the coil-springs X and the bars B and D and the frame G, all substantially as set forth.

378,888.



378,889. LANTERN. JAMES H. KELLY and EDWARD P. FOLLETT, Rochester, N. Y.; said Follett assignor to said Kelly. Filed Sept. 6, 1886. Serial No. 212,851. (No model.)



Claim.—1. In a tubular lantern, the combination, with the central tube, G, of the perforated stationary bell E, the movable band I, mounted on said tube above said bell, the globe-ring H, and the arms a a, passing through said perforations in bell E and connecting the band I and globe-ring, as and for the purpose specified.

2. In a tubular lantern, the combination, with a central tube, a bell-top, and a globe, of a clamping-ring for holding the top of the globe, a supporting-disk for the globe, a collar on the central tube, and stay-wires attached to or connected with the disk and collar and having movement independent of the bell-top, as set forth.

3. In a tubular lantern, the combination, with a central tube, a bell-top, and a globe, of a clamping-ring for holding the top of the globe, stay-wires inclosing and supporting the same, and collars on the tube, with which the clamping-ring and stay-wires respectively connect, and by which they are independently operated, as set forth.

4. In a tubular lantern, the combination, with a central tube, a bell-top, a globe, and a clamping-ring for holding the top of the globe, of a supporting-disk for the globe and stay-wires inclosing and supporting the globe (said stay-wires being attached to the globe-supporting disk) and revolubly connected with the central tube, forming guards capable of rotary or vertical movement, as and for the purpose specified.

5. In a tubular lantern, the combination, with a central tube, a bell-top, a globe, and a clamping-ring for holding the top of the globe, of a supporting-disk for the globe, stay-wires inclosing and supporting the globe (said stay-wires being attached to the globe-supporting disk) and revolubly connected with the central tube, forming guards capable of rotary or vertical movement, and the separate guard rieg or rings encircling the stay-wires, as and for the purpose specified.

6. In a tubular lantern, the combination of a central tube, a bell top, a globe, a clamping-ring for holding the top of the globe, stay-wires inclosing the globe and connected with the globe-supporting disk and a collar on the tube, with which the stay-wires are connected, said stay-wires standing intermediately of the side tubes, forming guards between the side tubes, and capable of being turned to one side to allow the insertion and removal of the globe, as described.

7. The combination, with the central tube of a tubular lantern, said tube being slotted, as shown, of a stationary bell-top, a movable band mounted on said tube, provided with a pin or pins working in the slots of the central tube, a spring in said tube resting on said pin or pins, a globe-ring, and arms connecting the globe-ring and movable band, as and for the purpose specified.

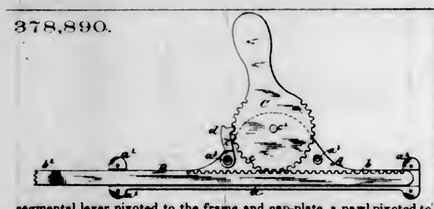
8. The combination, in a tubular lantern, of a central tube, bell-top, and clamping-ring for holding the top of the globe, said tube being slotted, as shown, a movable band mounted on said tube, provided with a pin or pins working in the slots of the central tube, a spring in said tube resting upon said pin or pins, a globe, a supporting-disk for the globe, and stay-wires connected with the globe-supporting disk and movable band, forming guards and capable of rotary or vertical movement, as described.

378,890. BENCH-DOG. FREDERIC LARSON, Royalton, Minn. Filed Dec. 27, 1887. Serial No. 258,063. (No model.)

Claim.—1. A bench-dog consisting of the frame A, having lugs at each end, a turned-up edge between said lugs, and a pendent pin at each end, with a dog having teeth on one of its edges, a toothed segmental lever, a pawl pivoted to the frame A, and a cap-plate extending the whole length of said frame, substantially as and for the purpose described.

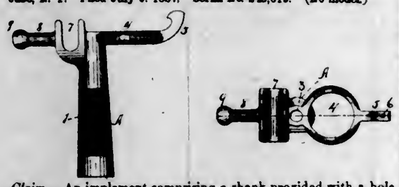
2. The combination of the frame A, having the turned-up edge a the whole length thereof, the cap-plate secured to said frame, a toothed

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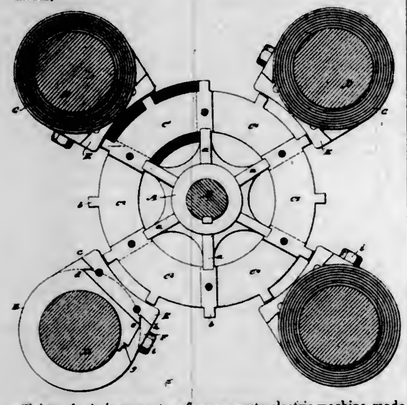
segmental lever pivoted to the frame and cap-plate, a pawl pivoted to said frame and adapted to engage with the teeth of the lever, and a dog having teeth on one of its edges and its forward end curved up at an acute angle to its body, substantially as and for the purpose described.

378,891. WINDOW AND PICTURE HOOK. HENRY LOPTIE, Syracuse, N. Y. Filed July 9, 1887. Serial No. 243,819. (No model.)



Claim.—An implement comprising a shank provided with a hole, 3, a handle-socket, jaws 7, a stud, 8, secured to the shank, a ring, 4, and a hook, 5, (provided with opening 6,) also secured to the shank, substantially as described, for the purposes set forth.

378,892. MAGNETO-ELECTRIC MACHINE. OSBORN P. LOOMIS, Somerville, Mass., assignor to the Loomis Electric Manufacturing Company, New York, N. Y. Filed Dec. 15, 1886. Serial No. 221,645. (No model.)



Claim.—1. A ring-armature for a magneto-electric machine, made up of laminated arc-shaped pieces suitably insulated, which overlap one another, having notches at their overlapping portions, which register with one another, a spider upon which the same is mounted, the radial webbing of which engages the notches in said arc-shaped pieces, and thereby secures the same to the armature-shaft, and coils wound about said ring.

2. An armature for a magneto-electric machine, made up of laminated arc-shaped pieces constituting a ring, which arc-shaped pieces overlap and are suitably insulated from one another, notches therein at the overlapping portions, which register with one another, means for securing the arc-shaped pieces together, a spider keyed to the armature-shaft engaging the notches in said arc-shaped pieces by its radial webbing, so as to secure the same to said shaft, projections from said arc-shaped portions, and coils wound between said projections, constituting together an armature of the Pacinotti type, all constructed and combined essentially as set forth, whereby efficiency is secured.

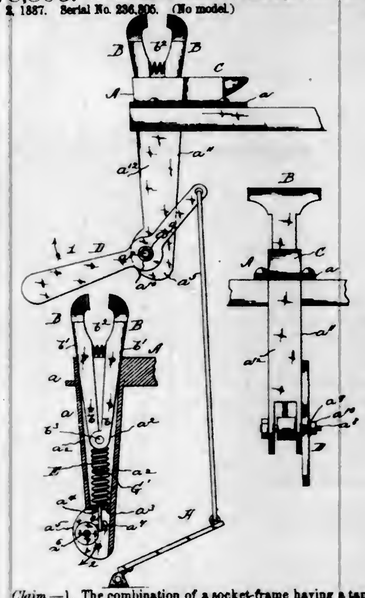
3. In a magneto-electric machine, the combination of a pole-shoe built up of dovetailed plates suitably insulated from one another, and a correspondingly-dovetailed pole-piece, to which the same is adapted to be fastened by the engagement of said dovetailed portions, insulating devices for securing said plates together, and means for insulating said pole-shoe from said pole-pieces.

4. The combination, in a magneto-electric machine, of a pole-shoe built up of dovetailed plates insulated from one another, with insulating-rods for securing the same together, a pole-piece having an engaging projection at one side, a hooked clamping-jaw at the other side for attaching said dovetailed plates to the pole-piece, and means for insulating the pole-piece from said pole-shoe.

5. The combination, in a magneto-electric machine, of the pole-piece H, made substantially as described, the laminated dovetailed pole-shoe E, whose parts are insulated from one another and from said pole-piece, the insulated clamping-jaw F, and clamping-screws, as *i i*, all combined and operating as set forth.

6. The combination, in a magneto-electric machine, of the insulated overlapping arc-shaped pieces C C', &c., having extensions *b b*, with notches at said overlapping portions, the web *a a*, &c., of a spider engaging said notches for securing the same to the armature-shaft E, to which it is keyed, coils wound about said arc-shaped pieces between the extensions *b b*, and field-magnets co-operating therewith, each consisting of a core, D, having a coil or coils, as G, thereabout, a pole-piece, H, extending therefrom, having a laminated pole-shoe, E, insulated therefrom, and a clamping-jaw, F, also insulated from the same.

378,893. VISE. JOHN W. MCINTYRE, Philadelphia, Pa. Filed May 2, 1887. Serial No. 236,805. (No model.)



Claim.—1. The combination of a socket-frame having a tapering bore, a pair of vise-jaws loosely connected adapted to said socket-bore, a spring for spreading the jaws apart, a shaft on said frame, a connection between said shaft and jaws, an operating handle or lever for said shaft, and a spring for elevating the jaws in said socket-frame, substantially as set forth.

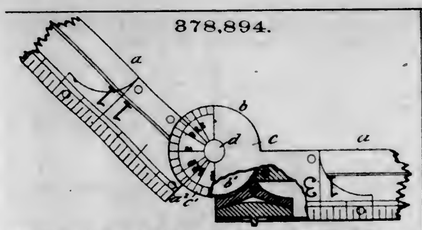
2. The combination of socket-frame A, shaft a^9, mounted thereon and having a threaded end, a^{10}, a handle, D, located between the socket side a^{11} and a washer and nut on end a^{10}, a pair of hinged jaws loosely fitting the socket in frame A, connection between said jaws and shaft, and springs for elevating the jaws in the socket-frame and spreading them apart, substantially as set forth.

3. In combination with a socket-frame, A, a pair of vise-jaws loosely fitting the socket of said frame, a shaft on said frame, a connection between said jaws and frame, reacting springs for the jaws, and mechanism for rotating said shaft, as and for the purpose set forth.

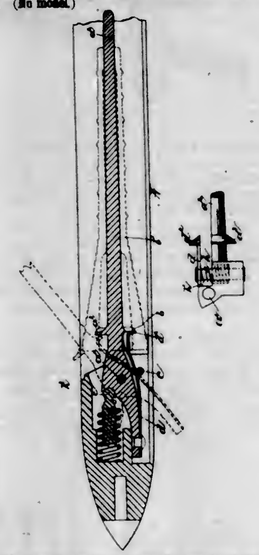
378,894. POCKET-RULE. JOSEPH MCLEAN, Rockville, Conn. Filed Mar. 16, 1887. Serial No. 231,092. (No model.)

Claim.—In combination with the hinged sections of a rule, the joint *b*, composed of the tongue *b'*, with a roughened edge, the pivot *d*, and the socket *c*, the tilting block *f*, hinged within the fold of the joint-section and having the hooked end *f'*, and the sliding bolt *g* with rounded face fitting the recessed back of the tilting block and having the projecting stud *g'*, all substantially as described.

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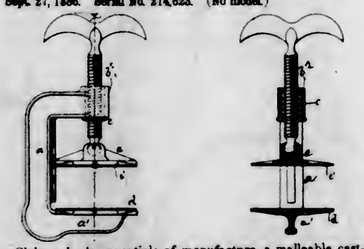


378,895. SHUTTLE FOR LOOMS. GUY C. MILLS, Nashua, N. H., assignor to Frank H. Ayer, same place. Filed Sept. 26, 1887. Serial No. 250,717. (No model.)



Claim.—The shuttle-body, the spindle provided with the projection a^2 at one side, to engage an inside groove in the bobbin, and an independent spring-catch, *d*, located at the opposite side and attached to the heel of the spindle, the said spring-catch having at its free end a lip, to also enter and engage an inside groove in the base of the bobbin, combined with means to operate the said spring-catch to relieve the bobbin when the spindle is turned out of the shuttle-body, substantially as described.

378,896. SCREW-CLAMP. JOHN MOONEY, Syracuse, N. Y. Filed Sept. 27, 1886. Serial No. 214,623. (No model.)



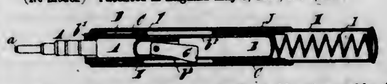
Claim.—1. As an article of manufacture, a malleable cast-metal clamp, *a a'*, as herein described, formed of a single U-shaped casting having a stationary removable thimble, *c*, as set forth, in combination therewith, for the purposes described.

2. In a screw-clamp, as herein described, the combination of the follower-bar *c*, having a T-formed groove in one end thereof, with the main bar *a*, having a rib thereon, the counterpart in its cross-section of the groove on the follower-bar sliding thereon, by which the bar is held in position in the manner herein described.

3. In a screw-clamp formed of the frame *a a'*, as described, and the follower-bar *c*, the removable sliding follower-plate *c'*, constructed and combined as and for the purposes specified.

4. In the screw-clamp herein described, the combination of the sliding bed-plate *d* with the lower bar of the frame *a'*, constructed as herein described.

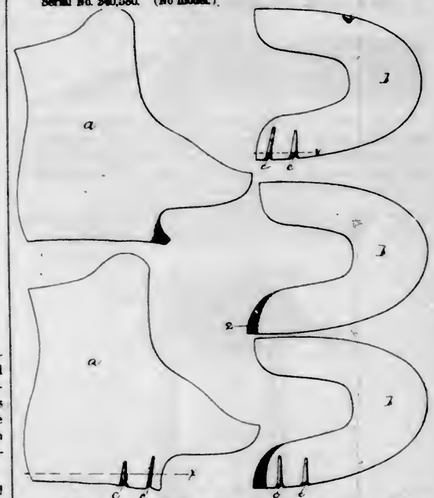
378,897. HOLDER FOR PENCILS. ADOLPH MYERS, Birmingham, County of Warwick, England. Filed Sept. 14, 1887. Serial No. 249,642. (No model.) Patented in England May 3, 1887, No. 6,492.



Claim.—1. In a pencil or other similar holder, the combination, with the tube B and the movement A, reciprocating therein, of the gravitating latch G and catch b^2, for holding the movement in its protruded position, the spring D, acting upon the movement to retract it, and the pressure-cap H, for protruding the movement against the tension of the spring D, substantially as described.

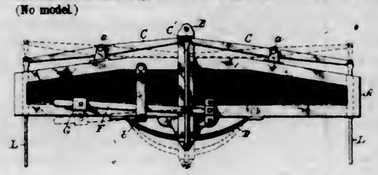
2. In a pencil or other similar holder, the combination, with the movement A and the gravitating latch G, of the spring D, for retracting the movement, the tube B, the catch b^2, for engaging with the latch and the pressure-cap H, and the spring I, for protruding the cap, substantially as described.

378,898. BOOT OR SHOE UPPER. THOMAS MALLY, Lynn, Mass., assignor of one-half to James Phelan, same place. Filed June 8, 1887. Serial No. 240,580. (No model.)

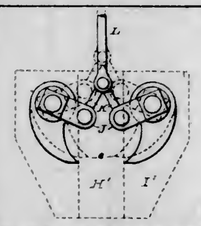


Claim.—A boot or shoe upper having a vamp cut with a fullness or excess of stock, 2, at its inside end and an inside quarter, also cut with a corresponding fullness, 2, at that end which is stitched to the vamp, the said vamp and the said quarter being each provided with one or more corrugations, *c*, whereby the excesses 2 2 are taken up and the parts reduced to the outline or area necessary for the convenient stitching of one to the other, as set forth.

378,899. SAFETY ATTACHMENT FOR ELEVATORS. ALBERT NEUBURGER, Kansas City, Mo. Filed Aug. 5, 1887. Serial No. 246,173. (No model.)



378,899.



Claim.—1. The combination of a car or cage provided with a strap to which the suspending-cable is attached, spring-dogs or safety-pawls arranged to be thrown into contact with the guide posts or strips of the elevator, and a weighted lever, substantially as described, connected to said strap and acting in conjunction with the spring-power which actuates the pawls.

2. The combination of a car or cage provided with cross-beam A, carrying levers C, strap B, spring D, rods L, two pair of safety-pawls connected to the lower ends of rods L, the guide-strips of the elevator, and the weighted lever F, having one end pivoted to said cross-beam and carrying weight G and connected to said strap at a point intermediate of its inner end and the weight, substantially as described.

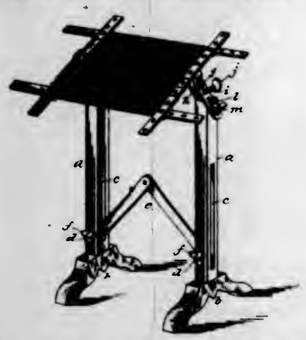
3. The combination of a car or cage, a strap to which the cable is attached, safety dogs or pawls arranged to be thrown into contact with the guide-strips of the elevator, a lever connected to said strap, and a weight adjustably located upon said lever, substantially as described.

378,900. PLOW. ADOLPH OLSON, Butler, Mo. Filed Nov. 22, 1887. Serial No. 255,862. (No model.)



Claim.—The combination, with the landside having grooved surfaces, of the bar or arm having an upper groove corresponding to that of said landside, and pivoted at its forward end, and the rod or short bar passed through a thickened or widened portion and held by a set-screw, substantially as shown and described.

378,901. EMBROIDERY-STAND. ANDREW M. PARCELLS, Denver, Colo. Filed May 16, 1887. Serial No. 238,338. (No model.)

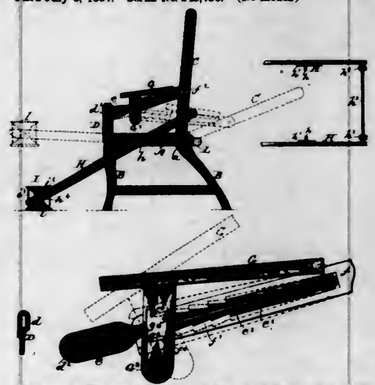


Claim.—1. An embroidery-stand consisting of the uprights *a a*, provided with slots *c*, a jointed lever, *e*, pivoted at one end in said slots and adapted to be folded therein when the uprights are moved together, and clamps connected with the uprights for grasping and holding the work-frame, as set forth.

2. In an embroidery-stand, the combination, with the uprights, of the clamps A, consisting of the jaws *g h*, pivoted together, as described, and the latter jaw having the elongated shank provided with the slot *l*, and a bolt and nut, *m*, on the upper ends of the uprights for clamping said elongated shanks to said uprights, as set forth.

3. The clamp A, consisting of the jaws *g h*, pivoted together, as described, the latter jaw having an elongated shank provided with a slot, *l*, and a rod or bolt, *i*, having a screw-threaded connection with the shank of one jaw and adapted at its inner end to bear against the inner face of the other jaw, as set forth.

378,902. RECLINING-CHAIR. CHARLES H. PEW, Jamestown, N. Y. Filed July 8, 1887. Serial No. 243,750. (No model.)

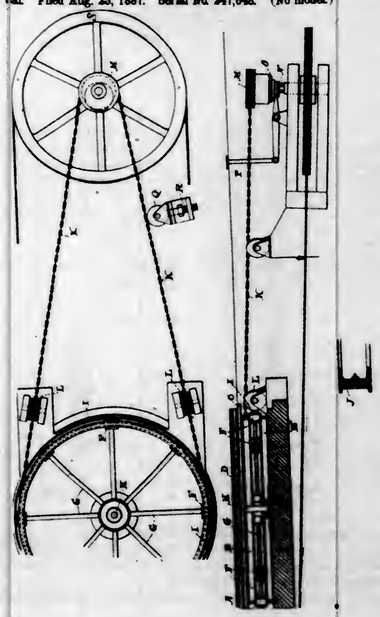


Claim.—1. The combination of the rigid frame of a chair-seat, standards secured thereto adjacent to the front thereof, a back pivoted to said frame adjacent to the rear end thereof, a rod pivoted to each standard and provided with teeth on the top and bottom thereof, a forked rod having teeth on the inner side of the arms of said rod, and means, substantially as described, for releasing the toothed rods from engagement, substantially as set forth.

2. The combination of the rigid frame of a chair, a back pivoted to said frame, a forked rod pivoted to said back and having teeth on the inner side of the arms of said rod, a rod, *e*, pivoted to the chair-frame and provided with teeth on the top and bottom thereof, and an arm, G, having a secondary arm, G^3, provided with means, as set forth, for releasing the toothed rods from engagement, substantially as described.

3. The combination of the rigid frame of a chair-seat, bars H, pivoted thereto and connected at the rear thereof, and a foot-rest pivoted to the forward end of said bars, said rest consisting of a board, *i*, standards i^3, and rods i^2, substantially as described.

378,903. CABLE RAILROAD. WILLIAM S. PHELPS, San Francisco, Cal. Filed Aug. 23, 1887. Serial No. 247,648. (No model.)



Claim.—In cable railways, as a means of moving the turn-table at the terminus, the combination, with the spindle of the tail-sheave, of the loose sheave M, clutch O, lever P, chain K, chain sheave J on table, and a suitable turn-table, arranged and operating as set forth.

378,904. BINDER-GUIDE FOR SEWING-MACHINES. THOMAS G. ROBINSON, Boston, assignor of one-half to H. B. Welch, Cambridge, Mass. Filed Apr. 20, 1886. Serial No. 200,509. (No model.)



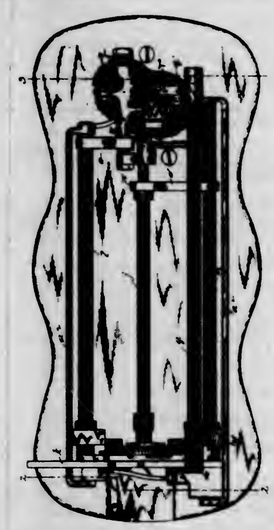
Claim.—1. A binder-guide for sewing-machines, having a U-shaped guide-eye, and provided with a spring tension device located in said guide-eye and adapted to apply tension to the binding tape or braid passing therethrough, as set forth.

2. A binder-guide for sewing-machines, having a U-shaped guide-eye, and provided with a spring tension device located in the guide-eye at substantially the center of the eye and at or near the forward end thereof, as set forth.

3. A binder-guide for sewing-machines, having a U-shaped guide-eye, and provided with a spring tension device located in the guide-eye, and consisting of a spring-pressed pin bearing against the tape or binding-braid passing through the guide at the center of the eye and at or near the forward end thereof, as set forth.

4. A binder-guide for sewing-machines, having a U-shaped guide-eye, and a spring tension device located in the guide-eye and adapted to apply tension to the binding tape or braid passing therethrough, and a supplemental guide, *g*, extending rearwardly from the heel of the guide proper, as set forth.

378,905. BASTING-MACHINE. THOMAS G. ROBINSON, Boston, assignor to H. Baker Welch, Cambridge, Mass. Filed Apr. 7, 1887. Serial No. 233,971. (No model.)

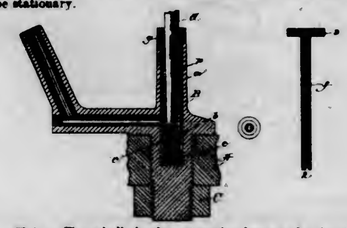


Claim.—1. In a basting-machine, the combination, with the feed-bar adapted to be moved vertically and horizontally, of two rock-shafts having a crank-connection each with the opposite ends of said bar to impart vertical motion thereto, and a third rock-shaft, also having a crank-connection with said bar to reciprocate the same horizontally, substantially as set forth.

2. In a basting-machine, the combination, with a slotted feed-bar, *k*, rock-shaft *l*, provided with crank-arm *l'*, block l^3, operating in one of the slots of said bar, rock-shaft *m*, provided with crank-arm *m'*, block m^3, operating in the other slot of said bar, rock-shaft *q*, crank-arm *p*, and link *p'*, substantially as set forth.

378,906. SUPPORT FOR SPINNING-SPINDLES. CHARLES F. ROPER, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Nov. 4, 1887. Serial No. 254,353. (No model.)

Brief.—The invention is an improvement upon that form of spindle-support wherein a bolster having a tapering bore is made adjustable upon a screw-threaded step by turning the bolster. The step is made as a screw accessible from the top of the bearing-tube through its interior, and the step is adjusted vertically, leaving the bearing-tube stationary.



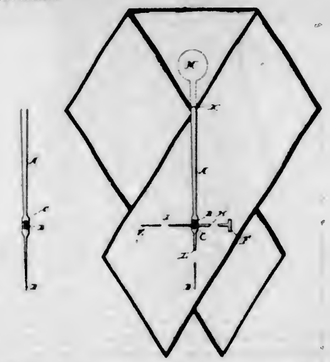
Claim.—The spindle having a tapering lower end, a bearing-tube having a tapering interior and a support or holder therefor, combined with a screw-threaded step having a head accessible by a screw-driver or key through the upper end of the said tube, whereby the step-screw may be adjusted vertically while the tube is at rest, substantially as described.

378,907. CORK-EXTRACTOR. JOHN P. STEPP, Brooklyn, assignor to Haff & Walbridge, New York, N. Y. Filed June 10, 1887. Serial No. 240,892. (No model.)



Claim.—The combination, with the cap C, having the downwardly-projecting grip-flange *a*, adapted to overlap the upper edge of the bottle-neck, of the prongs *b b*, carried by said cap and adapted to enter the neck of the bottle, substantially as described.

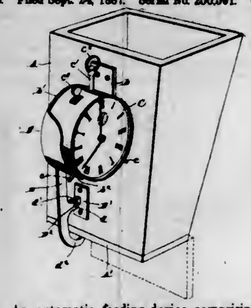
378,908. PIN AND ATTACHMENT FOR JEWELRY. LOUIS STERNE, London, England. Filed May 28, 1887. Serial No. 239,723. (No model.)



Claim.—1. In combination with a scarf-pin or similar article having a perforated pin by which it may be secured to a garment, another pin of smaller size passing freely transversely through the perforation in the pin and having its end pointed, whereby it is adapted to engage with and pass through the fabric and thus secure the pin against loss, substantially as set forth.

2. In combination with a scarf-pin or a similar article having a pin, A, by which it may be attached to an article of clothing, enlarged near its lower end and provided in said enlarged portion with an aperture, a pin, E, passing loosely through said aperture, pointed at one end and having a head at the other end, substantially as set forth.

378,909. AUTOMATIC HORSE-FEEDER. PETER DODD and JAMES H. THOMAS, Newark, N. J.; said Thomas assignor to Josephine Thomas, same place. Filed Sept. 24, 1887. Serial No. 250,591. (No model.)



Claim.—1. An automatic feeding device comprising a feed-box with a lower hinged door, a lever having a rack-arm, and an alarm-clock having a pinion in connection with the alarm mechanism adapted to engage with the rack-arm of the lever, substantially as described.

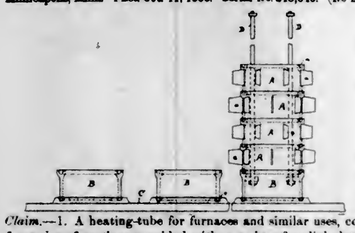
2. The automatically-operating feed-box, comprising the box proper having the lower hinged door, the lever having the lower curved end and the rack-arm at the upper end thereof, the bracket-casting constructed as set forth, and the clock supported in said casting and having an alarm mechanism, with one portion of which a pinion is provided which engages with the rack-arm of the lever, substantially as described.

3. The combination, with the side of the feed-box, of the curved-shell bracket-casting having the front recesses and the rear annular ring adapted to support an alarm-clock, as set forth, and the lever D, fulcrumed to said box, substantially as described.

4. The combination of the extended shaft S, of the clock-alarm mechanism having the pinion S' thereon, and the integral thumb-piece, and the lever D, carrying a rack-arm on its upper end to engage with the pinion S', and having its lower end curved, as set forth, whereby a door is held in a closed position and released when desired, substantially as described.

5. An automatic feed-box comprising the box proper having a hinged door at its lower end provided with a recess, *a*, the bracket-casting B, the alarm-clock C, having the extended shaft S and pinion S', and the lever D, having the lower curved end and provided with the upper rack-arm fulcrumed on the plate D', substantially as described.

378,910. HEATING-TUBE FOR FURNACES. HENRY TILDEN, Minneapolis, Minn. Filed Oct. 11, 1886. Serial No. 215,846. (No model.)

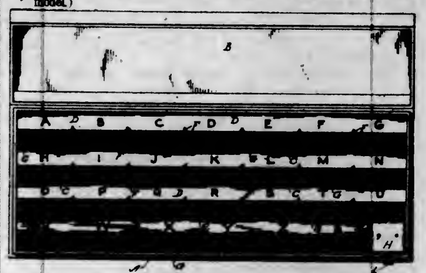


Claim.—1. A heating-tube for furnaces and similar uses, consisting of a series of sections provided with a series of radial plates extending inside and outside of said sections and disposed on both sides longitudinally of the axis of said sections, the plates being shorter than the sections and of similar form both inside and outside of the same, the plates of each section being placed to break joints with the plates of the adjacent section or sections, substantially as described.

2. A heating-tube for furnaces, consisting of sections, the sections intermediate the end sections being provided with radial plates extending inside and outside of said sections and disposed longitudinally of the axis of the sections and of the same form on both sides, the plates of each section being placed so as to break joints with the adjacent section or sections, and connections uniting the end sections, substantially as described.

3. A heating-tube for furnaces and similar uses, consisting of a series of sections provided with a series of radial plates extending inside and outside of said sections, the plates inside being of different lengths, but all disposed longitudinally of the axis of the section, the plates of each section being placed so as to break joints with those of the adjacent section or sections, substantially as described.

378,911. BOX FOR HOLDING GUMMED LETTERS, &c. HENRY WILSON, Chicago, Ill. Filed Nov. 5, 1887. Serial No. 254,368. (No model.)



Claim.—1. A box for holding gummed letters, characters, or labels provided with a series of parallel partitions, a corresponding series of lower intervening ledges, transverse partitions between the ledges and said partitions first named, whereby compartments are formed between said transverse partitions for the reception of said characters, and characters or names upon said ledges opposite to said partitions, respectively, substantially as shown and described.

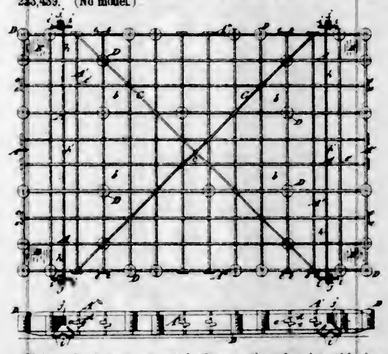
2. As an improved article of manufacture, a receptacle for holding paper letters, characters, or labels, consisting of a box provided with a series of parallel partitions, transverse divisions forming separate compartments corresponding in number to the various characters or labels to be placed therein, intervening ledges arranged between and below the top of said parallel partitions, and characters or words thereon to designate the contents of said respective compartments, all combined and constructed substantially as shown and described.

3. The combination, with a receptacle for holding paper letters, characters, or labels, of the parallel partitions C, cross-partitions F, and ledges D, having characters or letters thereon opposite the respective compartments, substantially as shown and described.

4. The combination, with a box for holding paper letters, characters, or labels, of the parallel partitions C, cross-partitions F, ledges D, having characters or letters thereon arranged opposite the respective compartments, and a lid for covering said box and retaining said letters in place when the box is moved, substantially as described.

5. The combination, with the box A, of the partitions C and F, ledges D, marked as described, and the supplemental removable box H, substantially as set forth.

378,912. METAL MAT. MICHAEL H. WILSON, Nutley, N. J., and WILLIAM D. THOMAS, Brooklyn, N. Y. Filed Jan. 5, 1887. Serial No. 223,439. (No model.)



Claim.—1. A mat composed of two series of strips wide in proportion to their thickness, formed with notches by which they are engaged at the points of their intersection, and having holes formed in them between their notches and distant from their upper and lower edges, whereby the mat is made lighter without decreasing its strength or scraping-surface, and whereby the cells of the mat are vented one into another and prevented from filling with mud and water, substantially as herein described.

2. A mat composed of two series of strips wide in proportion to their thickness and formed with notches by which they are engaged at their points of intersection, the outside strips of the two series, which constitute the margins of the mat, being of less width than the others

of the series, and the strips of each series being tapered in width at the ends, so as to form a mat which is of reduced thickness at the edges, substantially as herein described.

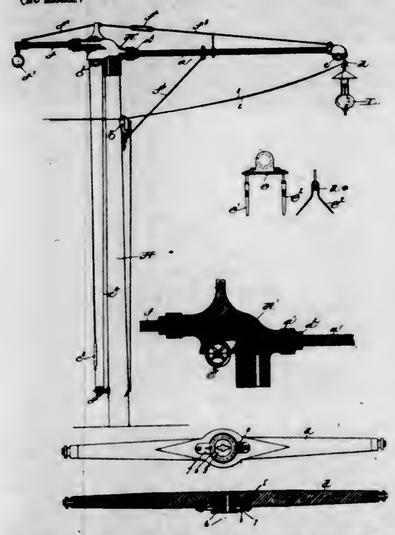
3. The combination of the two intersecting series of metallic strips engaging with one another by notches at their intersections, and having notched bracing-strips C, engaging with the two series at their notched intersections and extending obliquely to the strips of the series, the bracing-strips and the strips of the two series being all interlocked by notches at the same points, whereby the strips of the two series are held most effectively in proper relative position, substantially as herein described.

4. The combination, in a mat, of the two intersecting series of strips engaging with each other by notches at their intersections and two sets of notched bracing-studs applied to the strips at their points of notched engagement and at opposite sides or faces of the mat, whereby the edges of the strips on both faces of the mat are maintained coincident by bearing on the bottom of the notches in the studs, substantially as herein described.

5. A mat composed of strips of metal, wide in proportion to their thickness and intersecting each other and having elastic or spring supports, substantially as herein described.

6. The combination, with the two series of strips engaging with one another by notches at their intersections, of reversible spring-supports pivotally inserted through the strips of one series, substantially as herein described.

378,913. SUPPORTING-CRANE FOR ELECTRIC LAMPS. LEANDER J. WING, Lexington, Mass. Filed May 3, 1887. Serial No. 236,931. (No model.)



Claim.—1. In a crane or support for electric lamps, the vertical post, the head A', the counterbalanced tubular jib or arm, and the counterbalancing-arm *f*, combined with a lamp-carrying cable placed within the tubular arm *a*, the said cable having the lamp suspended freely from one end and the lamp-balancing weight c^4 secured to the other end thereof, and an operating cord or chain which is held taut by the pulleys c^3 and c^5 at the top and bottom of the mast, respectively, for moving the lamp-carrying cable, substantially as described.

2. In a crane or support for electric lamps, the vertical support and the head A', combined with the arm *a*, the tapering sleeve *a'*, and the screw cap or nut a^3, substantially as and for the purposes set forth.

3. The lamp L and its cross-bar, combined with a retaining device, substantially as described, for holding the lamp in position, as set forth.

4. The lamp L, having the tongue at its upper end, combined with the cross-bar *d*, having the central socket or recess for the tongue, substantially as described.

5. The lamp L and its cross-bar, combined with the collar and clamp, permitting the lamp and collar to be partly rotated at will.

378,914. QUILTING-FRAME. JAMES ARBOGAST, Catawba, Ohio. Filed Nov. 2, 1887. Serial No. 254,044. (No model.)

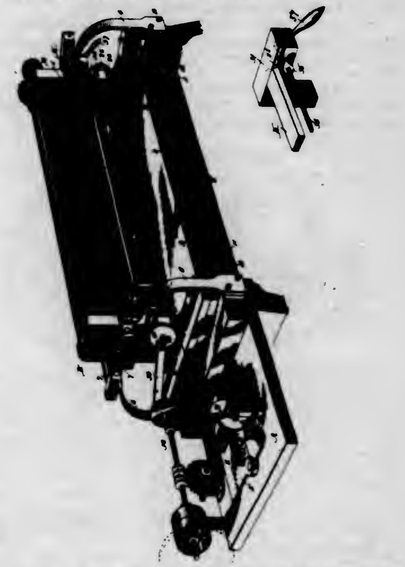


Claim.—1. In a quilting-frame, the combination, with two sets of supporting-legs, of a cross-piece secured to each set and having an open slot in either end thereof, a cam-lever pivoted to each of said pieces, and two bars to which the quilt is to be attached, each having a tenon at either end reduced to fit said slots.

2. In a quilting-frame, the combination, with a cross-piece thereof, having an open slot therein, the entrance of which is wider than the inner end thereof, of a cam-lever pivoted to said piece, and a quilt-bar having a square tenon near the end thereof adapted to revolve in the wider portion of the slot and to slide in the narrower portion and arranged to be forced out of the slot by the cam-lever.

3. In a quilting-frame, the combination, with two sets of supporting-legs having cross-braces, of a longitudinal brace notched to fit the cross-braces, and locking turn-buttons pivoted to the longitudinal brace and adapted to engage the under edges of the cross-braces.

378,915. QUILTING-MACHINE. AUGUST REIK, Chicago, Ill. Filed May 4, 1886. Serial No. 201,044. (No model.)



Claim.—1. In a quilting-machine, the two vertically-reciprocating needle-bars, combined with a reciprocating support for directing the fabric under the needle-bars, and means for reciprocating one of the needle-bars transversely to the line of feed and simultaneously with but in directions opposite to the movements of the said reciprocating support, substantially as described.

2. The two sewing-machines geared together, whereby one may be operated from the other, combined with means for bodily reciprocating one sewing-machine while the other is held bodily stationary, and with a cloth-carriage and means for reciprocating the same at the same time with but in opposite direction to the reciprocating sewing-machine, substantially as described.

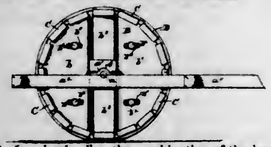
3. The two sewing-machines, one stationary and the other susceptible of a bodily-reciprocating movement, combined with the reciprocating cloth-carriage, and a connecting mechanism, substantially

as described, between the cloth-carriage and the reciprocating sewing-machine, whereby a movement in one direction of the cloth-carriage shall effect a movement in the opposite direction of the reciprocating sewing-machine, substantially as described.

4. A stationary sewing-machine and a bodily-reciprocating sewing-machine, each machine having a row of needles, the rows being parallel, in combination with the reciprocating cloth-carriage, the pattern-cam, and a reciprocating mechanism, substantially as set forth.

5. The combination, with the two sewing-machines and the cloth-carriage therefor, of mechanism for reciprocating one of the machines and the cloth-carriage, comprising connections to the said machine and cloth-carriage, the reciprocating bar E, the oscillating gear E', the reciprocating rack E², and the rotary cam D, for operating the rack, all constructed and combined for operation substantially as set forth.

378,916. LAND-ROLLER. JOHN R. BELCHER, Charlotte, Mich. Filed Aug. 22, 1887. Serial No. 247,576. (No model.)



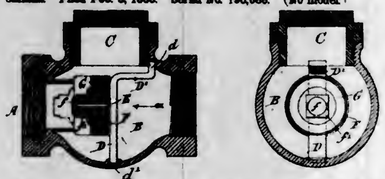
Claim.—1. In a land-roller, the combination of the heavy central shaft having shouldered ends, the adjustable head-pieces composed of sections placed on said shouldered ends, the staves or boards having grooved ends, and the tire, substantially as shown and described.

2. The combination, with the heavy central shaft, of the head-pieces or wheels composed of sections, those of one head-piece or wheel being disposed at right angles to those of the other, and the staves or boards, substantially as shown and described.

3. The combination, with the heavy central shaft, of the head-pieces or wheels composed of sections, the natted bolts working in slots of one section, and the staves or boards, substantially as shown and described.

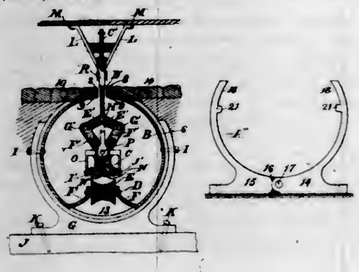
4. The combination, with the heavy central shaft and the adjustable head-pieces or wheels, of the staves or boards having grooved ends fitting said head-pieces or wheels, and the tire, substantially as shown and described.

378,917. CHECK-VALVE. JOHN H. BERRY, Montreal, Quebec, Canada. Filed Feb. 3, 1886. Serial No. 190,668. (No model.)



Claim.—The combination, with the valve-chamber having a side opening closed by a removable cap, C, and recesses *d* and *d'*, a standard, D, having one end supported by the recess *d'* at about the middle of one side of the chamber, and having a bent arm connected to the recess *d*, adjacent to the side opening, and secured therein by removable cap C, a spindle, E, projecting at right angles from said standard, a valve-seat in the chamber, and a sliding valve, F, on said spindle, substantially as and for the purposes specified.

378,918. CABLE-RAILWAY SYSTEM FOR STREET-CARS. ALBERT G. BIERBACH, Milwaukee, Wis. Filed June 4, 1887. Serial No. 240,314. (No model.)



Claim.—1. In a cable-railway system for street-cars, the combination of a slotted tubular metallic receptacle, B, roller-retaining struck-up brackets F, and cable-supporting rollers E, substantially as and for the purpose specified.

2. In a cable-railway system for street-cars, the combination of a slotted tubular metallic receptacle, B, the several sections of which are formed in a single piece, supporting-brackets G, secured to a supporting-base, J, by spikes K K, and to the tubular receptacle B by set-screws I I, circular plate 6, interposed between said bracket G and the exterior surface of said tubular receptacle B, cable C, cable-supporting roller E, and supporting-brackets F, substantially as and for the purpose specified.

3. In a cable-railway system for street-cars, the combination, with a series of slotted tubular metallic sections provided with cable-supporting rollers, of the circular bracket G, located at the joints of the several sections, and the jointed brackets A‴, provided with lugs 21 21, adapted to engage in apertures formed therefor in said slotted tube, and consisting of the two parts 14 and 15, hinged together by a bolt, 17, and secured to said tubular receptacle B at intervals between said brackets G, substantially as and for the purpose specified.

4. In a cable-railway system for street-cars, the combination of the slotted tubular metallic cable-receptacle B, provided with water escapes or apertures 13, cable-supporting roller E, supporting-brackets A‴ and G, and the man-hole inclosing door 11, secured to said tubular receptacle by hinges 12 12, substantially as and for the purpose specified.

5. The combination of a slotted tubular receptacle, A, with the L-shaped brackets 8 8, rigidly affixed to said receptacle upon the respective sides of the slot by retaining-bolts 9, and supporting-bracket G, encircling said tubular receptacle and secured to the supporting-base J by spikes K K, substantially as and for the purpose specified.

378,919. WASHING-MACHINE. MARLY L. BLACKWELDER, Concord, N. C., assignor of one-half to Daniel R. Hoover, same place. Filed Apr. 20, 1887. Serial No. 235,533. (No model.)



Claim.—1. A washing-machine consisting of a swinging body or suds-box, lateral trunnions, one of which is provided with diametrical end grooves, a frame having bearings to receive said trunnions, and a swinging locking device arranged upon said frame to engage one or another of the grooves in said journal, substantially as described.

2. In a washing-machine, a swinging suds-box or body, lateral trunnions, one of which is grooved diametrically, bolts and fastenings for reversibly securing the trunnions to the suds-box, and a frame or standard having bearings for said trunnions, and a locking device for engaging said grooved trunnion, all combined and arranged substantially as described.

378,920. DENTAL PLUGGER. WILLIAM G. A. BONWILL, Philadelphia, Pa., assignor to the S. S. White Dental Manufacturing Company, same place. Filed Oct. 11, 1887. Serial No. 252,016. (No model.)

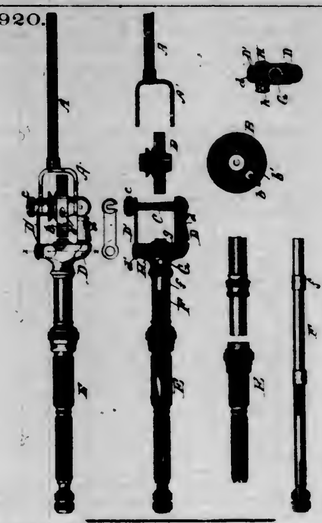
Claim.—1. The combination of the hand-piece frame and its fixed axis-pin, the detachable hammer and yoke, and the swinging arm and clamp-nut, substantially as described.

2. The revolving hammer fitted with a laterally-adjustable hammer projection.

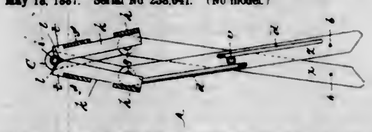
3. The revolving hammer fitted with a reversible hammer projection and a locking device to fix said projection in its reversed position, substantially as described.

4. The combination of the hand-piece frame, the tool-carrying spindle fitted to reciprocate or move endwise therein, the screw-sleeve, and the adjusting screw or worm geared therewith, substantially as described, whereby to regulate the strength of the blows delivered upon the operating-tool.

378,920.



378,921. WASH-BENCH. WILLIAM N. COCHRANE, Charlestown, Mass., assignor of one-half to William R. Stronach, same place. Filed May 18, 1887. Serial No. 238,641. (No model.)



Claim.—A wash-bench having a pair of pivoted legs at each end, folding cross-ties hinged at their inner ends and pivoted at their outer ends to the upper ends of said legs, longitudinal slats attached to said cross-ties, and a folding stiffening-bar attached to said slats between said cross-ties, said stiffening-bar being in two parts hinged together at their inner ends, and provided at their inner ends on their upper sides with raised projections flush with the upper faces of the slats, substantially as described.

378,922. REVERSIBLE ROAD SCRAPER AND GRADER. HIRAM D. COOK, Dry Brook, N. Y. Filed July 15, 1887. Serial No. 244,430. (No model.)

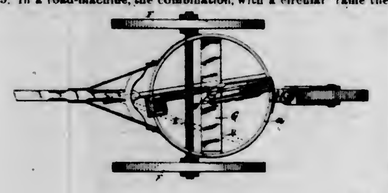
Claim.—1. In a road-scraper, the combination, with a supporting-frame, of depending scraper-supports, a scraper reversible by rotation upon a line parallel with its axis pivotally secured to its supports, and locking devices for securing the scraper in position, as set forth.

2. In a road-scraper, the combination, with a supporting-frame, of depending scraper-supports, a scraper pivotally secured to the latter and provided with projecting lugs or wings, and pivoted locking dogs to engage said lugs or wings, substantially as described.

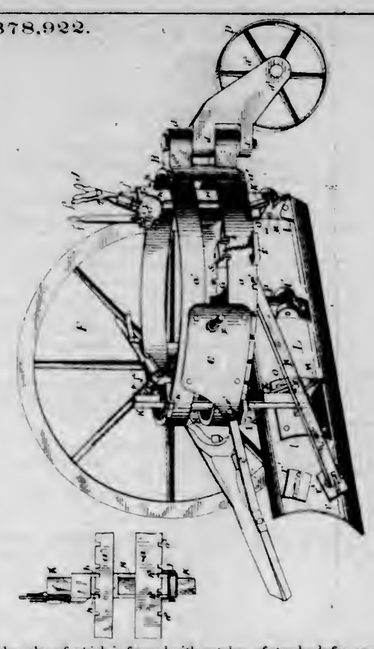
3. In a road-scraper, the combination, with the frame, of adjustable standards, a scraper reversible by rotation upon a line parallel with its axis pivotally secured to said standards, and devices for locking the scraper in working position, as set forth.

4. In a road-scraper, the combination, with the frame and with adjustable standards, of a scraper-blade provided centrally on one side with brackets or lugs, within which the ends of the standards are pivoted, and also with projecting lugs or wings, and forked dogs pivoted upon the standards and adapted to engage the projecting lugs or wings to lock the scraper in position, substantially as described.

5. In a road-machine, the combination, with a circular frame the



378,922.



under edge of which is formed with notches, of standards for supporting the scraper, adjustable boxes for sustaining said standards and provided with arms which embrace the edges of the frame, and spring-bail devices adapted to enter said notches and lock the boxes against movement after adjustment, as described.

6. The combination, with the circular notched frame, of radially-adjustable boxes provided with arms to embrace the edges of the frame, and spring-bails secured upon the boxes and adapted to enter said notches, substantially as described.

7. The combination, with a circular notched frame, of radially-adjustable boxes and means for securing the latter in their adjusted positions, adjustable standards arranged within said boxes and provided with rack-teeth, as described, a scraper secured to the lower ends of the standards, and lifting and depressing levers, notched segments, and locking-dogs secured upon said casings for controlling the vertical adjustment of the scraper, as set forth.

8. In a road-machine, the combination, with a circular frame consisting of rings braced together by means of plates provided with bearings for the axle of the machine and with forwardly-projecting ears or arms to receive the draft appliances, of radially-adjustable boxes, standards vertically adjustable within said boxes, and a reversible scraper pivotally secured to the standards, as described.

9. The combination, with the notched frame, of the radially-adjustable boxes and their locking-bails, the adjustable standards, and the scraper, and an adjusting-lever fulcrumed upon a pin extending across bracket-extensions of the box, and a toothed wheel and segment arranged adjacent to said lever, and a locking-lever, substantially as described.

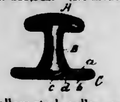
10. The combination, with the circular frame, of a diametrical brace formed with a central opening, and a reversible scraper pivotally secured to the standards of the machine, and also pivoted to a braced guide-rod, which latter extends through the opening in said diametrical brace, as set forth.

11. The combination, with the frame of the machine, of the plates C C, having projected perforated ends, and the tongue-hounds made of spring metal and provided with hooks to enter the openings in the ends of the plates, substantially as described.

12. In a road-scraper, the combination with a supporting-frame, of depending scraper-supports, a reversible scraper, and a brace extending from one end of the scraper to the frame, substantially as described.

13. In a road-scraper, the combination, with a supporting-frame, of depending scraper-supports, a reversible scraper, and a brace adapted to be secured to one end of the scraper and to either of two adjustable boxes on the frame, substantially as set forth.

378,923. BUTTON. SHUBAEL COTTLE, New York, N. Y. Filed Oct. 28, 1887. Serial No. 253,582. (No model.)



Claim.—1. A hollow stud, collar, or sleeve button formed of a single piece of thin metal and without an opening into its interior, substantially as described.

2. A stud, collar, or sleeve button having a head, a shank or post, and a base, and integrally formed of a hollow continuous closed metallic shell, substantially as described.

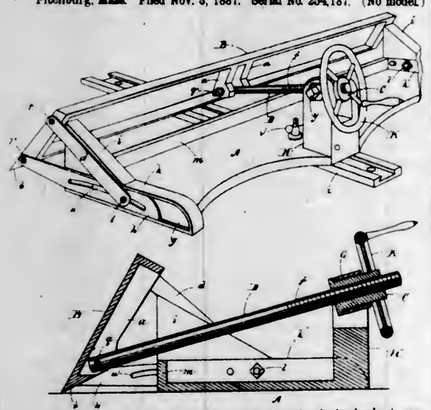
3. A stud, collar, or sleeve button having a head, a shank or post, and a double back or base, and integrally formed of a hollow continuous closed metallic shell, substantially as described.

4. A stud, collar, or sleeve button integrally formed of a hollow continuous closed metallic shell having a head, a shank or post, and a double back, the said double back comprising an annular upper plate and a disk-shaped lower plate, substantially as described.

5. A stud, collar, or sleeve button integrally formed of a hollow continuous closed metallic shell having a head, a shank or post, and a double back, the said back comprising an annular upper plate and a disk-shaped lower plate, and at the center of said lower plate a convex brace or stay, substantially as described.

6. A stud, collar, or sleeve button integrally formed of a hollow continuous closed metallic shell and having a head, A, shank B, and base C, the said base being composed of the parts *a* and *b*, and in the part *b* the convex brace or stay *c* and surrounding depression *d*, substantially as described.

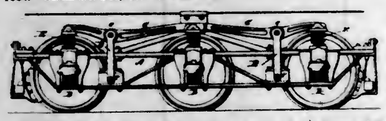
378,924. GAGE FOR SAW-BENCHES. FREDERIC E. FARWELL, Fitchburg, Mass. Filed Nov. 3, 1887. Serial No. 254,187. (No model.)



Claim.—1. In a gage of the character described, the body A, provided with the flanges *m k* and stops *i*, the guide B, having the beveled edge *h*, the arms *d*, pivoted at their outer ends to the upper portion of the guide B and at their inner ends to the flanges *k*, the plates *h*, provided with the slots *w* and pivoted at their outer ends to the lower portion of the guide B, the sleeve G, pivoted in the standard H, the screw-threaded shaft D, provided with the nut C and jointed to the guide B, and the nut and screw *v*, all constructed, combined, and arranged to operate substantially as described.

2. In a gage of the character described, the guide B, and the plates *h*, pivoted to the guide B and provided with the curved slots *w*, in combination with the bolts *l*, flanges *k*, body A, pivoted arms *d*, and a screw for moving said guide back and forth, substantially as set forth.

378,925. CAR-TRUCK. JOHN R. FISH, Grand Rapids, assignor to Henry C. Hodges and Charles C. Hodges, Detroit, Mich. Filed July 19, 1887. Serial No. 244,739. (No model.)



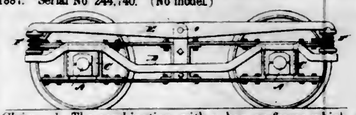
Claim.—1. The combination, with a car-truck and two of the axles thereof carrying journal-boxes, of an equalizing-bar pivotally engaged with the truck at a point intermediate said axles, springs bearing upon the journal-boxes and located beneath and engaging with each end of the equalizing-bar, through which the load is transmitted to the journal-boxes, the pivotal engagement being nearer to one extremity than the other of said bar, whereby the load upon any equalizing-bar may be unequally divided at its extremities, substantially as described.

2. The combination, with a six-wheel truck, of two sets of equalizing-bars, one in front of and one in rear of the middle axle, said equalizing-bars pivotally engaged with the truck-frame and provided with springs beneath their ends, through which the load is transmitted to the journal-boxes, the pivotal engagement of each bar being nearer to one extremity than to the other of said bar, whereby the load upon any equalizing-bar may be unequally divided at its two extremities, substantially as described.

3. The combination, with a six-wheel truck, of two sets of equalizing bars pivotally engaged therewith, one set in front of and one in rear of the middle axle, and provided with springs beneath their ends, whereby the load is transmitted to the journal-box and pivotal engagement, said equalizing-bars being at their points about one-third of their length from the extreme axles, whereby they are adapted to equalize the load between the three axles, substantially as described.

4. The combination, with a truck-frame, of an equalizing-bar pivotally engaged therewith intermediate two of the axles thereof, the stirrup D, connected at one end with the equalizing-bar and at its other end pivoted to the truck-frame, and the springs E, engaging with each end of the equalizing-bar and bearing upon the journal-boxes of the axles, substantially as described.

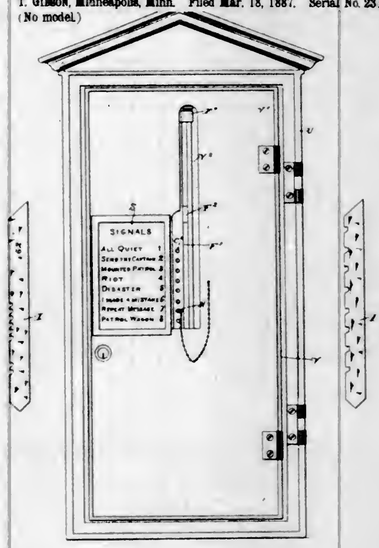
378,926. CAR-TRUCK. JOHN R. FISH, Grand Rapids, assignor to Henry C. Hodges and Charles C. Hodges, Detroit, Mich. Filed July 19, 1887. Serial No. 244,740. (No model.)



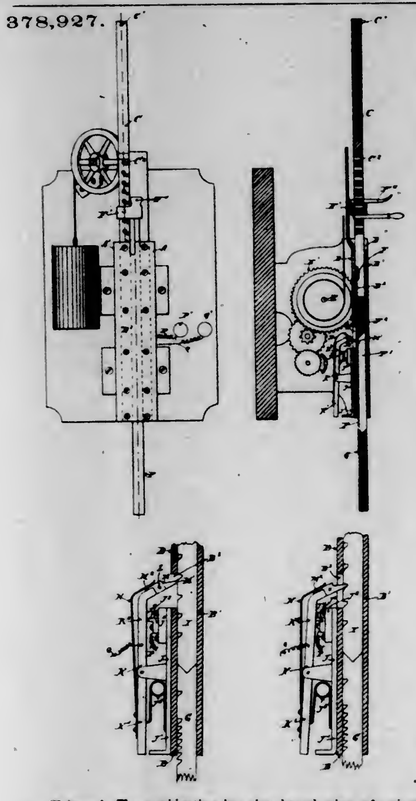
Claim.—1. The combination, with a bar or frame which unites the journal-boxes, of an equalizing-bar pivoted or trunnioned to the truck-frame, and springs located beneath the ends of the said equalizing-bar, said springs supported by the bar or frame which connects the journal boxes or bearings, substantially as described.

2. The combination of a bar or frame connecting the journal boxes or bearings, and an equalizing-bar pivotally connected with the truck-frame, and springs located beneath the ends of said equalizing-bar, said springs supported by said bar or frame at points either between or beyond the said boxes or bearings and not over the latter, substantially as and for the purposes described.

378,927. POLICE, FIRE, AND DISTRICT TELEGRAPH. EDWARD T. GIBSON, Minneapolis, Minn. Filed Mar. 18, 1887. Serial No. 231,352. (No model.)



378,927.



Claim.—1. The combination, in a signal mechanism, of a pivoted circuit-breaking lever, a rack provided with a circuit-breaking strip constructed to give the number of the box, an independent removable circuit-breaking strip, and connecting means for securing said independent strip to said rack, whereby said strip may be connected to the rack and engaged by the circuit-breaking lever to give its signal in connection with that of the box-number, and may be readily removed when the operation is finished, and a suitable clock-work engaging said rack-bar and moving the same past said pivoted lever, substantially as specified.

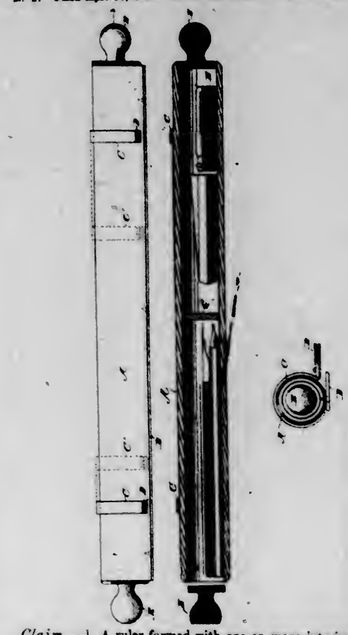
2. The combination, in a signal mechanism of the class described, of the rack-bar F, the circuit-breaking strip G, secured to said rack-bar, the separate circuit-breaking strip I, adapted to be temporarily secured to said rack-bar in line with said strip G, and a circuit-breaking lever arranged to be operated by said strips G and I, substantially as described.

3. The combination, in a signal mechanism of the class described, of the rack-bar F, the circuit-breaking strip secured thereto, the removable circuit-breaking strip I, adapted to be temporarily secured to said rack-bar, the pivoted lever K, the pivoted claw M on said lever, the spring N, bearing on said claw, and the contact-point J^4, all substantially as described.

4. The combination, in a signal mechanism of the class described, with the sliding strip provided with circuit-breaking teeth or notches, of the pivoted lever K, the claw M, pivoted to said lever and arranged to bear on said strip, the spring N, secured to said lever and pressing upon said claw, the contact-point J^4, and the spring J^5, all substantially as described.

5. The combination, in a signal mechanism, with the frame composed of the four plates A A′ B B′, with a rectangular opening between them, and a rod, C, secured to said plates and provided with the series of openings C^2, of the sliding rack-bar F, carrying a circuit-breaker and provided with a hook, F^4, and with a collar, F′, embracing the rod C, and the pin H, adapted to engage either of the openings C^2, substantially as described.

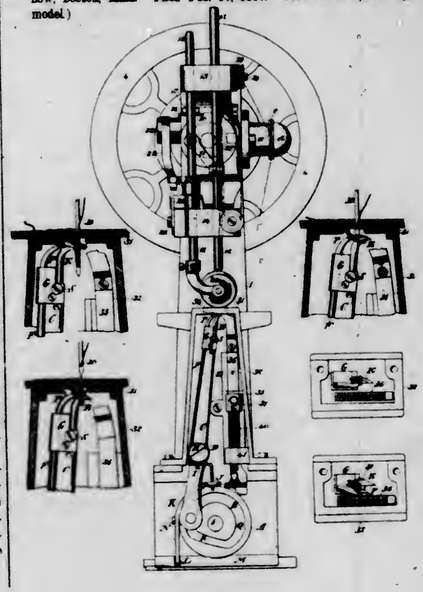
378,928. COMBINATION-RULER. HERMAN GOLDSMITH, Brooklyn, N. Y. Filed Apr. 30, 1887. Serial No. 236,709. (No model.)



Claim.—1. A ruler formed with one or more interior compartments, and provided with an independent base or protecting plate or rod, substantially as described.

2. A ruler formed with one or more interior compartments and provided with a base or protecting plate and adjustable rings, substantially as described.

378,929. WAX-THREAD SEWING-MACHINE. CHARLES F. HARLOW, Boston, Mass. Filed Feb. 17, 1887. Serial No. 227,970. (No model.)



Claim.—1. In a sewing-machine, the combination, with a reciprocating eye-pointed needle, a work-support, and a vibrating looper for engaging the thread to form a loop beneath the said support, of a loop-spreader and means to cause said spreader to vibrate coincidently with the looper, the point of the spreader having a seat at the side of the looper, and means for rocking the spreader away from and toward the looper in a plane at right angles to the path of the needle, substantially as set forth.

2. In a sewing-machine, in combination with a vertically-reciprocating eye-pointed needle and a work-support, a vibrating looper-bar, a looper-hook on the end of said bar, a vibrating spreader-bar, a spreader-hook at the extremity of said spreader-bar and disposed beside said looper-hook, the points of said hooks being substantially coincident, and mechanism for rotating said spreader-bar on its own axis to cause said spreader-hook point to diverge from said looper-hook point, and thereby to open the loop received upon said hooks in a horizontal plane, substantially as described.

3. In a sewing-machine, in combination with a vertically-reciprocating eye-pointed needle and a work-support, a pivoted looper-bar, C, looper-hook E, spreader-bar F, supported upon said looper-bar C, spreader-hook P, mechanism for vibrating said looper-bar on its pivot, and mechanism for vibrating said spreader-bar on its own axis, substantially as described.

4. In a sewing-machine, in combination with a vertically-reciprocating eye-pointed needle and a work-support, the rotary shaft S, disk A, having face cam-groove B, looper-bar C, looper-hook E, spreader-bar F, supported on said looper-bar C, spreader-hook P, and mechanism for vibrating said spreader-bar on its own axis, substantially as described.

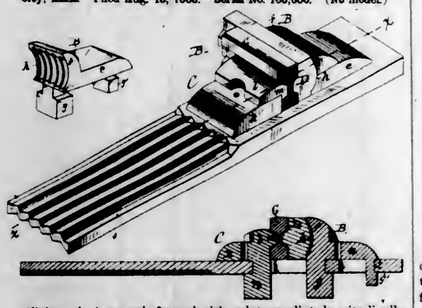
5. In a sewing-machine, in combination with a vertically-reciprocating eye-pointed needle and a work-support, the rotary shaft S, disk A, having peripherical groove O, pivoted vibrating looper-bar C, looper-hook E, spreader-hook P, pivoted lever K, having pin N, entering said groove O, and slotted bar J, substantially as described.

6. In a sewing-machine, in combination with a vertically-reciprocating eye-pointed needle and a work-support, the rotary shaft S, disk A, having peripherical groove O and face cam-groove B, pivoted looper-bar C, looper-hook E, spreader-bar F, supported on said looper-bar C, spreader-hook P, pivoted lever K, having pin N, entering said groove O, and slotted bar J, substantially as described.

7. The combination, with stitch-forming mechanism and the vibrating looper-bar C, provided with guides, as G and H, and with a locking-pin, as I, of a spreader-bar extending loosely through openings in the guides G and H and into engagement with the pin, whereby the said spreader-bar is allowed a rocking motion and is locked in vertical adjustment, substantially as set forth.

8. The combination, with the vibrating looper-hook E, curved in one plane only, of the spreader-hook P and means to vibrate the same coincidently with the looper-hook, said spreader-hook having a bend in a plane substantially parallel with that in which looper-hook is bent, and also a lateral bend a short distance back from its point, whereby the two hooks may be readily inserted between the thread and needle, substantially as set forth.

378,930. RAILROAD TIE AND JOINT. JAMES HILL, Arkansas City, Kans. Filed Aug. 13, 1883. Serial No. 103,606. (No model.)



Claim.—1. A cross-tie formed with an intermediate longitudinally-corrugated portion and flat end portions, each of the latter provided with a slot, *c*, cut out at its center, substantially as shown, a plain slot, *d*, and fastening devices, as and for the purpose specified.

2. The rail-chair consisting of outside and inside sections, the former curved and corrugated upon its inner face and composed of a body, *e*, adapted to rest upon the tie or plate, a projecting lip, *f*, and depending lugs *g g'*, integrally formed, and the latter composed of integral parts *k*, adapted to rest upon the tie or plate, elevated part *l*, the inner face, *m*, constructed to fit the rail-stem, and a depending lug, *n*, substantially as described.

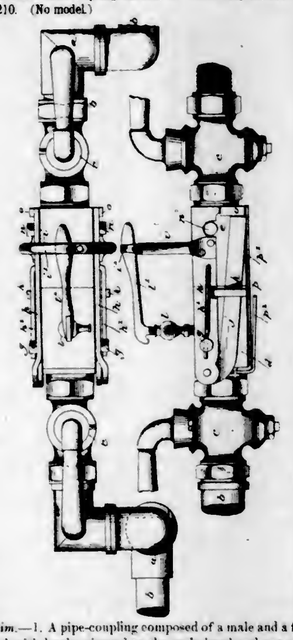
3. In combination with a railroad-rail and cross-tie, the independent chair-sections B C, the former curved and corrugated upon its inner face and provided with depending lugs or arms *g g'*, and the latter constructed upon its inner face to fit the rail-stem, and provided with a depending lug or arm, *n*, and a wooden fastening-wedge adapted to fit the rail-stem and the curved inner face of the outer chair-section, substantially as described.

378,931. GAME OF DRAUGHTS TO BE PLAYED BY THREE PERSONS, AND APPARATUS THEREFOR. JOHN HYDE, Acton, near London, County of Middlesex, England, assignor of one-half to George Henry Howard, Niagara Falls, Canada. Filed Feb. 24, 1887. Serial No. 228,725. (No model.) Patented in England Jan. 30, 1886, No. 1,346.



Claim.—The triangular board on which the within-described game is to be played, divided into eighty-one equilateral triangles, forty-five of one color, and thirty-six white, (or of another color,) and with the thirty pieces, men, or counters with which the said game is to be played, as herein specified.

378,932. COUPLING FOR STEAM-PIPES. HENRY KNAUR, York, and GEORGE KNAUR, Spring Garden, Pa. Filed May 14, 1887. Serial No. 238,210. (No model.)



Claim.—1. A pipe-coupling composed of a male and a female head, combined with hooks pivoted to the male head and engaging lugs on the female head, and arms connected to the said hooks and projecting forwardly to engage the female head to assist in uncoupling the male and female heads, substantially as described.

2. A pipe-coupling comprising a male and a female head, hooks pivoted to the male head and extending forwardly, lugs on the female head with which the hooks engage, arms connected to the hooks below the pivotal points of the latter and projecting forwardly, and abutments on the female head located at a point short of the throw of the said arms, substantially as described.

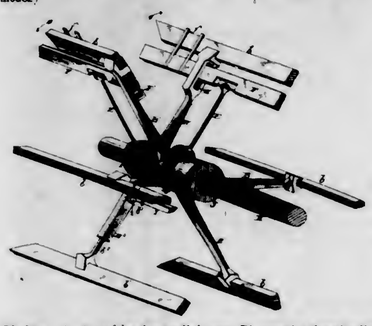
3. A pipe-coupling composed of a male and a female head, combined with hooks pivoted to the male head and engaging lugs on the female head, springs connected to the hooks and tending to elevate them, a locking device to retain the hooks in engagement with the said lugs, and arms connected to the said hooks and projecting forwardly to engage the female head to assist in uncoupling the male and female heads, substantially as set forth.

4. The male and female heads, the former provided with pivotal hooks and the rigid bow-handle connecting them, and the latter provided with lugs with which the said hooks engage, a vent-cock having a rigid handle, and a spring-clip on the bow-handle for connecting the handle and bow-handle, substantially as described.

5. A pipe-coupling composed of a male head having a tapering nozzle and a female head having a tapering socket to receive said nozzle, hooks pivoted to the male head and engaging lugs on the female head, and arms connected to the said hooks and projecting forwardly to engage the female head to assist in uncoupling the male and female heads, all combined substantially as set forth.

6. In a pipe-coupling, a male and a female coupling-head, combined with a spring shelf or guide composed of the right-angled plate p' and the supporting-bracket p^3, projecting forwardly from the male head to direct the female head in effecting the coupling of the two, and means for holding the two heads in connection, substantially as described.

378,933. REELING-FRAME. EUGENE MASSON, Philadelphia, Pa. Filed Sept. 3, 1884. Renewed July 23, 1887. Serial No. 245,075. (No model.)



Claim.—1. A reel having radial arms B', carrying longitudinal strips *b*, socket-arms B^2, with lateral slots, arms resting in said sockets and carrying a lateral strip, and a longitudinally-movable strip, I, having inclined shoulders passing through said slots, in combination with the main shaft on which the arms are supported, substantially as described.

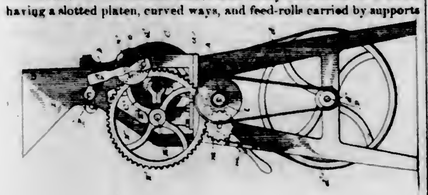
2. A reel consisting of a shaft, radial arms, and longitudinal strips carried by said arms, collars on the shaft, rods pivoted to said collars, strips F, parallel to the longitudinal strips and connected to said rods, and passing through slots E' in said radial arms, and pins *f*, projecting from said strips F, substantially as set forth.

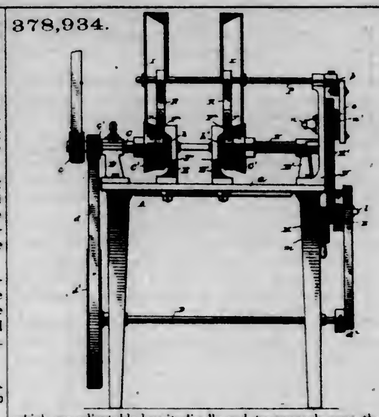
3. The combination of the main shaft, radial arms B', strips *b*, connected to the arms, socket-arms B^2, provided with slots, arms b^2, resting in said sockets, and strip *b'*, a shouldered strip, I, passing through said slots, rods, collars on the main shaft, rods E, strips F, passing through slots in the radial arms, and pins projecting from said strips, substantially as specified.

4. The combination of the frame provided with bearings for the main shaft, an extended bearing, with a part on a level with and a short distance from the bearing for the reel-shaft, the reel, and a piece with hooked ends, and trunnions near said ends, the whole operating substantially as and for the purpose set forth.

378,934. MACHINE FOR POINTING SKEWERS. LINDSAY B. MCNUTT, Ashtabula, Ohio, assignor to the Muncie Skewer Company, Muncie, Ind. Filed July 2, 1887. Serial No. 243,269. (No model.)

Claim.—1. The combination, substantially as set forth, of a frame having a slotted platen, curved ways, and feed-rolls carried by supports





which are adjustable longitudinally and transversely upon the platen, and cutter-heads adjustable lengthwise of the supporting-shaft with which they rotate.

2. The combination, substantially as set forth, of the platen, the curved ways and brackets supported above the platen, sleeves journaled upon the brackets and carrying feed-rolls, and a cutter-shaft passing through said sleeves and having an independent lateral adjustment therein.

3. The combination, substantially as set forth, of the platen, the curved ways, and feed-wheels supported above the platen, a hopper secured above the curved ways, a cutter-shaft, a rock-shaft carrying feeding-fingers operating above the apron, the apron disposed above the feed-wheels and cutters and projecting toward the curved ways, and intermediate devices connecting the cutter-shaft and rock-shaft, and comprising the gear-wheel upon the cutter-shaft, the intermediate pinion, the pitman, and a crank upon the rock-shaft, whereby motion from the cutter-shaft is communicated to operate the rock-shaft and its feeding-fingers.

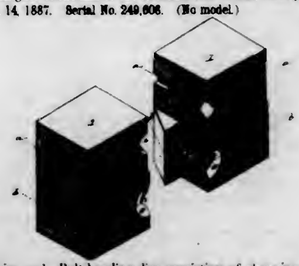
378,935. HORSESHOE-NAIL. ANDREW R. MUTERSPAUGH, Shepherd, Mich. Filed July 11, 1887. Serial No. 243,921. (No model.)



Claim.—1. A horseshoe-nail provided with a shouldered head, said shoulders being rounded to meet the bevel of the head, and a point beveled from the straight side of the body of the nail, substantially as described.

2. A horseshoe-nail consisting of the head *b*, provided with the rounded shoulders *c*, and having its point beveled from the straight side, or upon the side opposite to the bevel of the head, substantially as and for the purposes set forth.

378,936. BOLT-HEADING DIE. FREDERICK MUTTNER, Rockford, Ill., assignor of one-half to the Rockford Bolt Works, same place. Filed Sept. 14, 1887. Serial No. 249,606. (No model.)



Claim.—1. Bolt-heading dies consisting of clamping-dies and a plunger, said clamping-dies grooved on their meeting faces to clamp the bar from which to make the bolt-blank, the end of said grooves on the heading-face of the dies enlarged, one to receive the first com-

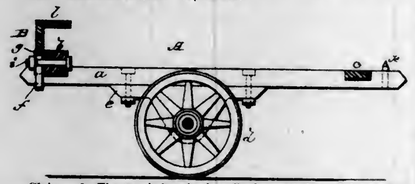
pression of the bar and the other to give conformation to the head portion of the bolt-blank, said dies and plunger having a recess between a portion of their meeting faces, substantially as and for the purpose set forth.

2. Bolt-heading clamping-dies grooved on their meeting faces to clamp the bar from which to make the bolt-blank, the end of said grooves on the heading-faces of the dies enlarged, one to receive the first compression of the bar and the other to give conformation to the head portion of the bolt-blank, said dies recessed on their faces toward the plunger, whereby a greater distance is left between the face of the die and the face of the plunger at the termination of one compression than at the termination of another compression, substantially as and for the purpose set forth.

3. The combination, with bolt-heading clamping-dies provided with different sets of blank-receiving grooves on their meeting faces, of a cutter projecting from the grooved face of one of the dies and constructed to enter a recess in the grooved face of the opposite die and to form an abutment for the end of the bolt during the pressure of the plunger, substantially as set forth.

4. The combination, with the bolt-heading clamping-dies, grooved on their meeting faces to clamp the bar from which to make the bolt-blank and to receive the bolt-blank, the end of the said grooves in the heading-faces of the dies enlarged, one to secure the first compression of the bar and the other to give comformation to the head end portion of the bolt-blank, of the cutter to cut the bolt-blank from the bar, said cutter projecting from one of the dies to enter a recess in the opposite die to form an abutment for the end of the bolt during the finishing of the bolt, substantially as set forth.

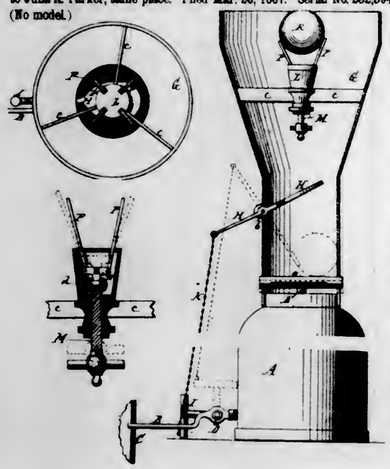
378,937. TRUCK. FRED. H. OTTO, Galva, Iowa. Filed Oct. 10, 1887. Serial No. 251,891. (No model.)



Claim.—1. The truck herein described, consisting of the parallel side bars provided with the spikes and connected front and rear by the end cross-bars, the front bar having the groove and the angular iron having the forked end, the bolt for securing it, and the transporting-wheel journaled thereto, the whole combined and operating as shown, and for the purpose set forth.

2. In a truck for binders, in combination therewith an adjustable angle-iron forked at its lower end and bolted thereto, and spikes arranged on the rear portion of the truck, whereby the latter is removably secured to a binder, as and for the purpose set forth.

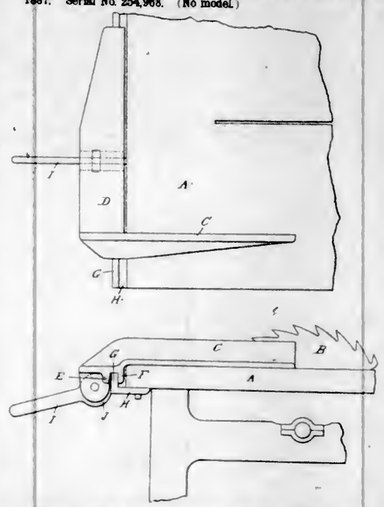
378,938. APPARATUS FOR EXTINGUISHING FIRES AND LIGHTS IN RAILWAY-CARS. MELVIN O. PARKER, Rochester, N. Y., assignor to Julia A. Parker, same place. Filed Mar. 26, 1887. Serial No. 232,594. (No model.)



Claim.—1. The combination, with the extinguisher A and funnel G, of the pipe leading from the extinguisher to the stove, the cock in the pipe, the cross-head attached to or forming a part of the cock, the rock-lever mounted in the funnel, the chain connecting the cross-head and rock-lever, the said cross-head forming a gage to limit the throw of the cock, and the weight in the funnel mounted so as to be dislodged by the tipping of the car, as described.

2. The combination of the bearing L, provided with holes in its top, the screw M, resting therein, the head N, swiveled in the top of the screw, and the arms P P P, jointed to head N and passing through the holes of the bearing, as shown and described, and for the purpose specified.

378,939. FENCE FOR SAWS. CHARLES SEYMOUR, Defiance, Ohio, assignor to the Defiance Machine Works, same place. Filed Nov. 12, 1887. Serial No. 254,968. (No model.)



Claim.—1. The fence C, provided with the arm D, projecting at right angles therefrom, the flanges E F, depending from the under side of said arm, and the binder I, pivoted to the arm D and terminating at its inner end in the eccentric J, substantially as and for the purpose specified.

2. The combination, with the table A and the guide-rail H, secured to the front edge of said table and provided with upwardly-projecting flange G, of the fence C, provided with arm D at right angles thereto, the guide-flanges E F on the under side of said arm, and the binder I, pivoted to the under side of said arm and terminating at its inner end in the eccentric J, substantially as and for the purpose specified.

378,940. APPARATUS FOR MANUFACTURING GASEOUS FUEL OR ILLUMINATING-GAS. EDWIN H. SHAW, Boston, assignor of nine-tenths to William B. Frink and Andrew W. Hayes, both of Revere, Mass. Filed Mar. 23, 1887. Serial No. 232,113. (No model.)

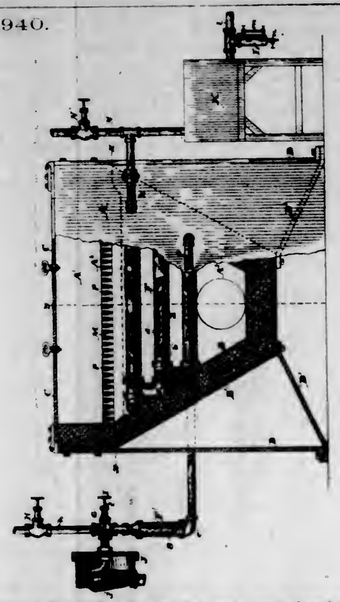
Claim.—1. In apparatus for manufacturing gas, a retort composed of an outer cylindrical shell, an inner cylinder having its ends closed and conical or rounded, and a series of radially-projecting pins or lugs set in or formed upon said inner cylinder and extending to the inner periphery of said outer shell.

2. In apparatus for manufacturing gaseous fuel or illuminating-gas, and for other like purposes, a retort composed of a series of parallel tubes connected together by half turns or bends, and a series of inner cylinders having closed conical or rounded ends and diameters less than the inner diameters of said tubes, located within said tubes, and each provided with a series of pins or lugs projecting radially therefrom and extending to the inner periphery of its inclosing tube or shell.

3. The combination of the furnace casing or shell, fitted with fire-brick lining provided with the steps a, a', and a^2, so constructed



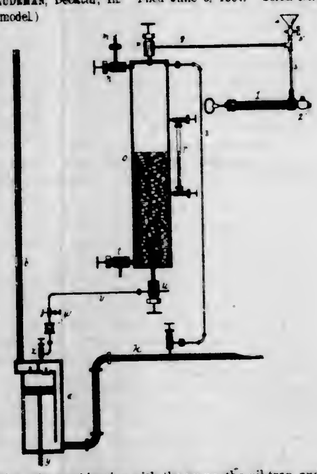
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and arranged that each step below the upper one projects into the furnace farther than the one above it, the fire-grate M p, the oil-inlet pipe c, the gas-outlet pipe k, and the multitubular retort E, all constructed and arranged substantially as described.

4. The combination, with a furnace and a retort exposed to the heat thereof, of a steam-supply pipe and an oil-supply pipe arranged to discharge their contents into the same chamber, a discharge-pipe leading from said chamber to the retort, and a current-breaking cylinder located in said pipe between said retort and chamber and provided with radially-projecting lugs or pins extending to the inner periphery of the inclosing cylindrical casing, as shown.

378,941. OILING APPARATUS FOR GAS-COMPRESSORS. FRANK SHLAUDEMAN, Decatur, Ill. Filed June 6, 1887. Serial No. 240,434. (No model.)



Claim.—In combination with the pump, the oil-trap, and the suction-pipe of a gas-compressor, an oil-reservoir, a pipe connecting the reservoir with the lower portion of the oil-trap, a pipe connecting the reservoir with the pump-cylinder, and a pipe connecting the upper portion of the reservoir with the suction-pipe of the gas-compressor.

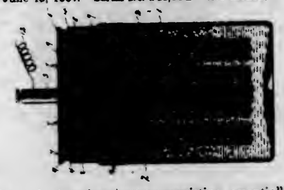
378,942. FEED-TROUGH. DANIEL L. SPICHER, Wabash, Ind. Filed Oct. 18, 1887. Serial No. 252,688. (No model.)



Claim.—1. The feeding apparatus consisting of the trough, the hopper the cylinder provided with a grain-receptacle and journaled to revolve in the space between the lower edges of the sides of the hopper and provided with eccentrics 11, and the stirring device provided with extensions 10, substantially as specified.

2. The feeding apparatus consisting of a trough provided with a longitudinal and transverse partition, a hopper provided with a transverse partition, and a cylinder provided with two grain-receptacles and journaled to revolve in the space between the lower edges of the sides of the hopper, and the stirring device whereby it is adapted to separately feed different kinds of grain to different animals and in different quantities, substantially as specified.

378,943. CARBON BATTERY. GEORGE E. TERRELL, Ansonia, Conn. Filed June 13, 1887. Serial No. 241,114. (No model.)



Claim.—1. A carbon battery consisting, essentially, of a jar, a cork having holes to receive the zinc and carbons, and a top plate having downwardly-projecting lugs which surround and engage the carbons, whereby increased contact-surface is given.

2. In a battery, the combination, with a series of carbons, of a top plate having openings surrounded by spring-lugs 7, which embrace the carbons firmly on all sides, so that the greatest amount of contact-surface is insured and the carbons are held without supplemental devices.

3. The combination, with a top plate having downwardly-projecting lugs forced from the metal thereof, and a cork to which said plate is secured, of a series of carbons passing through holes in the cork and held in position by the lugs.

4. The combination, with the jar of a battery, of a cork whereby the top is sealed, a series of carbons, and a rod of zinc passing through said cork, and a top plate secured to the cork and having a series of downwardly-projecting lugs, whereby the carbons are held in place.

5. The combination, with the jar, of a cork and a rod of zinc provided with a hooked lug adapted to engage the cork, whereby the zinc is held firmly in place.

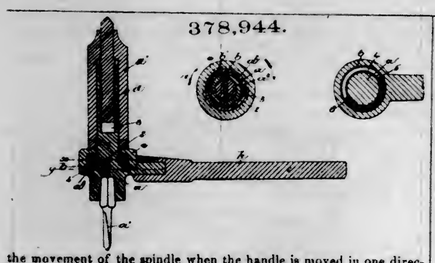
6. The combination, with the jar of a battery, of a cork which closes the jar and is provided with holes 8, a top plate having lugs extending downward into said holes, a series of carbons passing through said holes and held in position by said lugs, and a zinc, also passing through the cork and having a hooked lug engaging therewith, whereby it is held in place.

378,944. FRICTION-DRILL. JOHN H. VIETOR, Boston, Mass., assignor of two-thirds to Edward O. Ely, same place, and George E. Parker Chelsea, Mass. Filed June 28, 1887. Serial No. 242,744. (No model.)

Claim.—1. In a friction ratchet-drill, the spindle to be moved intermittingly, its independent hub having recesses provided with an inclined side, combined with a spring-controlled slotted loose ring encircling the hub, rollers placed in the slots of the loose ring and entering the recesses of the hub, and an inclosing ring or cap, c, and handle, substantially as described.

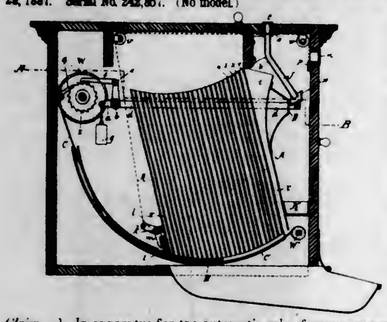
2. In a ratchet-drill, the spindle and hub, the surrounding cap or ring having an attached handle, the cap and hub being separated one from the other to leave a ring-receiving space, and a series of notches with inclined sides cut into one of the side walls of said space, combined with a spring-controlled loose ring provided with a series of rollers adapted to co-operate with the inclined sides of said notches to effect

378,944.



the movement of the spindle when the handle is moved in one direction, but not interfering with the movement of the spindle when the handle is moved in the opposite direction, substantially as described.

378,945. AUTOMATIC APPARATUS FOR THE SALE OF NEWSPAPERS, &c. RICHARD ALEXANDER-KATZ, Berlin, Germany. Filed June 29, 1887. Serial No. 242,857. (No model.)

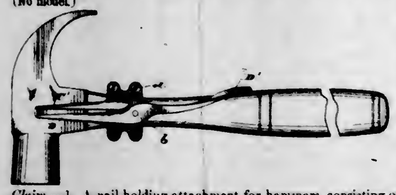


Claim.—1. In apparatus for the automatic sale of newspapers or other articles, a series of upright compartments, a movable bottom for said compartments, a shaft and cord for moving said bottom, a lever, pawl, and ratchet-wheel for turning said shaft with a step-by-step motion, each step of such motion uncovering the lower end of one of the compartments in order that the newspaper or other article contained therein may fall by its own gravity, substantially as set forth.

2. A series of upright compartments, a movable bottom therefor, and a shaft and cord for moving the latter, in combination with a ratchet-wheel, pawl, and lever for operating said bottom by a step-by-step motion, and a coin-receiver arranged in relation to said lever in order that the fall of each coin into said receiver shall determine the operation of said lever and pawl on said ratchet, and the consequent uncovering of the lever end of one compartment through which the newspaper contained therein falls by its own weight, substantially as set forth.

3. The channel *f* and the coin-receiver *m*, in combination with the lever *d*, on one end of which said coin-receiver rests, the pawl *s*, carried by said lever, the ratchet-wheel *z*, engaged by said pawl, a shaft and pulleys turning with said ratchet, a series of upright compartments for holding newspapers or other articles, a movable bottom for said compartments, and cords extending from said bottom to said pulley in order that the fall of each coin into the coin-receptacle may cause the lower end of one of the compartments to be uncovered and the newspaper or other article contained therein to drop through, substantially as set forth.

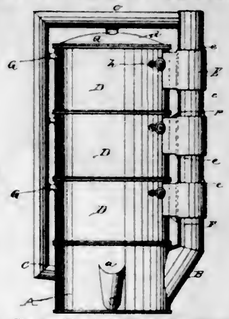
378,946. NAIL-HOLDING ATTACHMENT FOR HAMMERS. JOHN H. BAKER, Aurelius, N. Y. Filed Oct. 19, 1887. Serial No. 252,827. (No model.)



Claim.—1. A nail-holding attachment for hammers, consisting of a plate removably connected to the hammer-handle, a jaw rigidly connected to said plate, and a movable jaw pivoted thereon, the movable jaw being provided with a lever for holding said jaw in operative position, the said jaws being adapted to extend over and adjacent to a portion of the hammer, substantially as described.

2. A nail-holding attachment for hammers, consisting of a plate removably connected to the hammer-handle, a jaw rigidly connected to said plate, and a movable jaw pivoted thereon, the movable jaw being provided with a lever for holding said jaw in operative position, the said jaws having straight inner faces and adapted to extend over and adjacent to a portion of the hammer, substantially as described.

378,947. STEAM COOKING APPARATUS. HENRY C. BALLARD, Red Oak, Iowa. Filed Apr. 27, 1887. Serial No. 236,305. (No model.)



Claim.—1. The combination of the boiler, the vertical steam-pipe rising therefrom, the steam-vessels attached by sleeves to and turning on the steam-pipe, the steam-chambers connecting the vessels with the corresponding sleeves and communicating with the steam-pipe through the openings *f* and with the vessels through the openings *f'*, and the sliding doors H of the steam-vessels on one side of the corresponding steam-chambers, the said slides moving on ways in the interior of the vessels and being provided with handles *h'*, that move in slots in the sides of the vessel to close the opening *f'*, substantially as specified.

2. The combination of the boiler, the steam-pipe rising therefrom and having its upper end perforated, the upwardly-opening valve in the steam-pipe below said perforations, and the pipes C *c*, extending from the steam-pipe above said valve and opening below into the boiler, substantially as specified.

3. The herein-described steam-cooker, consisting of the boiler A, the steam-pipe B, rising therefrom and provided with the perforations b^4 in its upper end, the valve b^3, situated in the steam-pipe a suitable distance below said perforations, the pipes C *c*, running from the steam-pipe above the valve and opening below into the boiler, the steam-vessels D, connected to the steam-pipe by the sleeves, the steam-chambers F, which communicate with the steam-pipe through the openings *f* and with the corresponding steam-vessels through the openings *f'*, and the sliding doors H, moving in the ways *h* and provided with the handles *h'*, moving in the slots h^2, all constructed and arranged substantially as specified.

378,948. HEAD-REST FOR SLEEPING-CARS. THOMAS A. EDSELL, Buffalo, N. Y. Filed Mar. 17, 1887. Serial No. 231,233. (No model.)

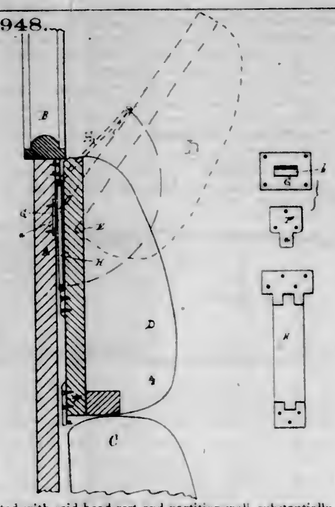
Claim.—1. The combination, with a seat-back and partition-wall between the seats or sections of a sleeping-car, of a combined head-rest and wall-pocket, and a double hinge pivotally connecting said head-rest and partition-wall, substantially as described.

2. In combination with a seat-back and partition-wall between the seats or sections of a sleeping-car, a head-rest formed independent of said seat-back, and the means, substantially as described, pivotally connecting said head-rest and partition-wall for elevating such head-rest into an inclined position with relation to such partition-wall, and a tongue on said head-rest to engage the partition-wall, substantially as and for the purposes specified.

3. In combination with the partition-wall between the seats or sections of a sleeping-car, a head-rest, the means, substantially as described, pivotally connecting said head-rest and partition-wall for elevating such head-rest and converting the same into a wall-pocket, and the means, substantially as described, on said rest, engaging a socket in the partition-wall for locking the same in that position, substantially as set forth.

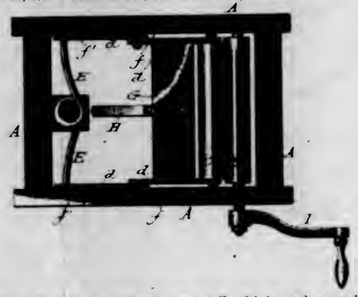
4. The combination, with the partition-wall A, having socket *b* and the head-rest, of the plate F, secured to the lower end of said head-rest, and provided with tongue *a*, and the double hinge H, pivotally

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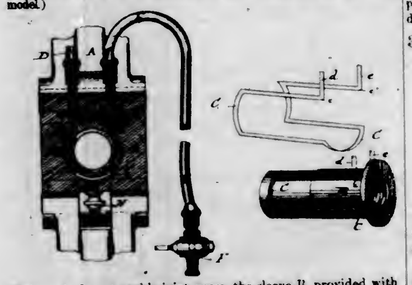
connected with said head-rest and partition-wall, substantially as and for the purpose specified.

378,949. MOP-WRINGER. HENRY BLAKE, Worcester, Mass. Filed Apr. 30, 1887. Serial No. 236,736. (No model.)



Claim.—In a mop-wringer, the spring E, with its ends extended so as to run in the guide-slots *f'* of the frame A, and having pivoted thereon the ends of the movable arms *d d*, provided with elbow-joints at their centers, cross-bar G, lever H, and journal-bearings at their opposite ends, in which runs the roller C, constructed and operating substantially as described.

378,950. SCREW-BEARING FOR PRESSES. GEORGE B. BOOMER, Mount Pleasant, N. Y. Filed June 18, 1887. Serial No. 241,716. (No model.)

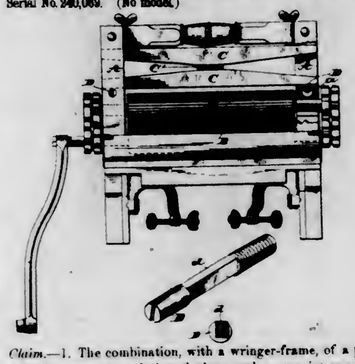


Claim.—1. In a knuckle-joint press, the sleeve B, provided with screw-threads on its inner surface, and having grooves or channels on its outer surface adapted and arranged for the passage of water through the same, as and for the purpose set forth.

2. In a knuckle-joint press, the combination, with the nut A, of the sleeve B, provided on its inner surface with screw-threads, and having grooves or channels on its outer surface arranged and adapted for the passage of water through the same, as and for the purpose set forth.

3. In a screw-press, the combination, with the screw, of the nut having a sleeve provided with grooves or channels on its outer surface, arranged and adapted as and for the purpose set forth.

378,951. CLOTHES-WRINGER. JOHN J. BRINKERHOFF, Auburn, N. Y., assignor to Jacob Brinkerhoff, same place. Filed June 2, 1887. Serial No. 240,069. (No model.)



Claim.—1. The combination, with a wringer-frame, of a pair of rubber rolls, pressure-regulating devices, and a stop interposed between each of said regulating devices and said rolls, substantially as described.

2. The combination, with a wringer-frame, rubber rolls therein, and pressure-regulating devices for said rolls, of a stop applied in the path of some part transmitting the force of each pressure-regulating device toward the said rolls and their journals, substantially as and for the purposes set forth.

3. In a clothes-wringer, the combination, with a pair of rubber rolls, pressure devices, and a pair of standards, of movable parts in said standards transmitting pressure toward said rolls, and a stop applied in the path of some movable part transmitting pressure from the pressure devices toward said rolls and their bearings, substantially as described.

4. In a clothes-wringer, the combination, with a supporting-frame, a pair of rolls, and pressure devices, of a bolt or bar attached to said frame and extending into the path of some part transmitting the force of each pressure device toward said rolls and their journals, substantially as described.

5. In a clothes-wringer, the combination, with the supporting-frame, a pair of rolls located therein, and pressure devices for said rolls, of bolts rotatably mounted in said frame and having an eccentric polygonal portion located in the path of some movable part transmitting the force of each pressure device toward the said rolls and their journals, substantially as described.

6. In a clothes-wringer, the combination of a pair of rubber rolls, pressure devices, and a pair of standards, with movable parts in said standards transmitting pressure toward said rolls, and an adjustable stop in the path of some movable part transmitting pressure from each pressure device toward said rolls and their journals, substantially as described.

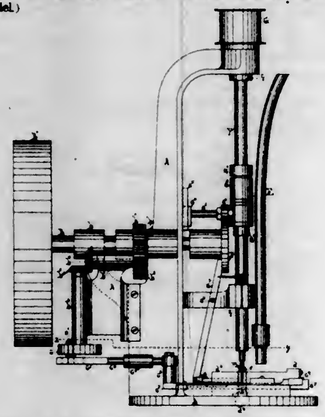
378,952. SHAM PILLOW. LOUIS BURTROCK, Allegheny City, Pa. Filed Nov. 12, 1886. Serial No. 218,723. (No model.)



Claim.—1. A pillow formed in two sections having a muslin cover, and the two parts united by sewing them together at their edges, substantially as specified.

2. The method of preparing sham pillows, consisting in moistening sheets of stout paper and stretching the same over a former, then cutting the material to the desired size, then applying a layer of adhesive substance to the said sections, then covering the whole with muslin while moist, and sewing the sections together at their meeting edges, substantially as specified.

378,953. MACHINE FOR TRIMMING CARTRIDGE-SHELLS. PAUL BUTLER, Lowell, Mass. Filed Oct. 18, 1883. Serial No. 109,327. (No model.)



Claim.—1. In combination with the reciprocating trimming-cutter *m*, the reciprocating shell carrier and holder *d*, moving in a path substantially at right angles to that of the former, as and for the purpose set forth.

2. In combination with the reciprocating trimming-cutter *m*, the shell-holder composed of parts *d* and d^1, formed to receive and hold the shell between them, substantially as described.

3. In combination with the shell-holder *d* d^1, the feeding-tube E and the trimming-cutter *m*, substantially as described.

4. In combination with the shell-holder *d* d^1 and the trimming-cutter *m*, the shell-discharge aperture d^3, substantially as described.

5. The combination of the shell-holder d^1, the ejector *e*, and the aperture d^3 with the trimming-cutter *m*, substantially as described.

6. In combination with the reciprocating trimming-cutter *m*, the shell carrier and holder *d*, the disk *c*, pin *c'*, and slot c^3 in plate c^2, and suitable connecting driving mechanism between said plate and shell carrier and holder, said pin and slot being so arranged and adjusted that slide *d* is stationary during the trimming action of the cutter, substantially as described.

7. The combination of the reciprocating trimming-cutter *m* and the reciprocating shell-carrier *d*, respectively, with a single driving-shaft, B, by suitable connecting mechanism operating them, substantially as and for the purpose described.

8. In combination with the shell-holder *d* d^1, the reciprocating shell-trimming cutter *m*, adapted to advance upon the shell during its operation in trimming automatically and with a pressure adapted to the rate of trimming until it reaches a predetermined point, and then receding positively therefrom, substantially as described.

9. The combination, with shaft F, of sleeve c^4, rod c^5, cam H, and driving-shaft B, substantially as described.

10. In combination with cam H, reciprocating shaft F by suitable intervening mechanism, the projection on the rear face of said cam, lever c^7, and shell-ejector *e*, substantially as described.

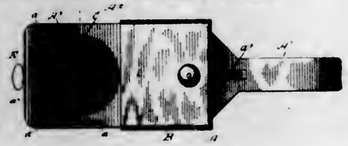
11. In combination with the reciprocating shell-carrier *d* and abutment d^2, the curved arm d^5, substantially as described.

12. The combination of sliding shell-carrier *d*, slide c^2, post c^6, rod c^5, plate c^2, provided with slot c^3, pin *c'*, and plate *c*, substantially as described.

13. In combination with a machine for trimming cartridge-shells, a shell-feeding tube, E, substantially as described.

14. In combination with the reciprocating shaft F, the fixed collars *c' c'*, the sleeve c^4, rod c^5, the sliding guide c^6, and the cam H, substantially as described.

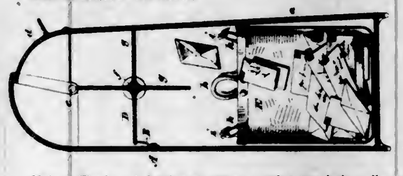
378,954. BLACKING-BOX HOLDER. GEORGE P. CRAGIN, Ada, assignor to W. R. Smith, Fergus Falls, and Ida L. Cragin, Ada, Minn. Filed June 23, 1887. Serial No. 242,278. (No model.)



Claim.—1. A blacking-box holder provided with a cavity to receive a blacking-box, a handle and wedge-shaped strips, and a cover constructed and adapted to slide upon said block and be locked by said wedge-shaped strips, substantially as described.

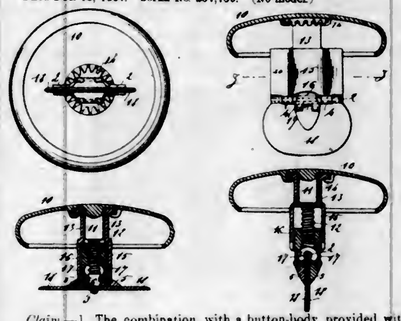
2. A blacking-box holder provided with a blacking-box cavity, a handle, wedge-shaped strips and grooves in its edges, a sliding cover fitted at its edges within said grooves, and a thumb-screw for impinging against the blacking-box and holding the same in place within said cavity, substantially as described.

378,955. LETTER-BOX. EDWARD A. DUBEY, Brooklyn, N. Y., assignor of one-fourth to James Langan, same place. Filed Sept. 20, 1887. Serial No. 250,194. (No model.)



Claim.—The box A, having an upper opening to admit mail matter and the self-closing oscillating cover *d*, combined with the turnstile D, carried within said box, spring B, and the bag E and hooks *i i*, for holding said bag with its mouth wide open within said box and below said turnstile, as and for the purposes specified.

378,956. SLEEVE-BUTTON. LOUIS D. FREMOT, Newark, N. J. Filed Dec. 13, 1887. Serial No. 257,759. (No model.)

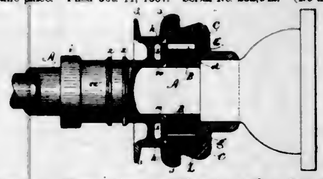


Claim.—1. The combination, with a button-body provided with a threaded post or shank, of a sleeve loosely connected to the button-body, a nut mounted within said sleeve and held against rotary motion, said nut being engaged by the threaded post or shank of the button-body, and leaves hinged to each other and to the nut, substantially as described.

2. The combination, with a button-body provided with a threaded post or shank, of a sleeve loosely connected to the button-body, a nut mounted within said sleeve and held against rotary motion, said nut being engaged by the threaded post or shank of the button-body, and leaves hinged to the sleeve and to the nut, substantially as described.

3. The combination, with a button-body, of a threaded post or shank, a sleeve loosely connected to the button-body and inclosing said post or shank, a nut mounted within the sleeve and held from turning thereby, said nut being engaged by the threaded post or shank, and leaves that are connected by a hinge-joint to each other and to the sleeve and by other hinge-joints to arms formed upon the nut, substantially as described.

378,957. CLUTCH FOR WHEELS AND AXLES. JAMES HARTNESS, Torrington, Conn., assignor to the Union Hardware Company, same place. Filed Oct. 11, 1887. Serial No. 252,042. (No model.)



Claim.—1. The combination, with an internal ratchet-wheel, of a pawl-cage and pawls within the wheel, cranks upon the pawls for swinging the same, a sleeve into holes in which the cranks are received, and projections from the sleeves acting against projections upon the pawl-cage to give motion to the same, there being sufficient play between the arms and the projections to swing the pawls into or out of contact with the ratchet-wheel, substantially as set forth.

2. The combination, with a shell fixed upon the shaft and having internal ratchet-teeth, of a chain-drum loose upon the shaft, arms projecting from the drum into the recess of the shell, pawls, a pawl-cage, and rings forming the pivots for the pawls, and projections against which the arms of the chain-drum act, and cranks upon the pawls for moving the same into and out of contact with the ratchet-teeth, substantially as set forth.

3. The combination, with the shell, of a separate steel ring having internal ratchet-teeth and secured within the shell, an axle or shaft for the shell, a pawl-cage around such axle, and the pawls thereupon acting against the ratchet-teeth, a chain-drum having projections that act against the projections on the pawl-cage, and crank-arms for throwing the pawls into and out of action, substantially as set forth.

4. The combination, with the shell and internal ratchet-teeth and the shaft or axle, of a pawl-cage, pawls pivoted to the cage, a chain-drum having projections that act against projections on the pawl-cage, the cam *f'*, shaft, and lever *f*, for throwing the pawls out of action and locking the parts, substantially as set forth.

378,958. COTTON CHOPPER AND CULTIVATOR. LOUIS HELLER, Warrenton, Tex. Filed Nov. 17, 1887. Serial No. 255,438. (No model.)

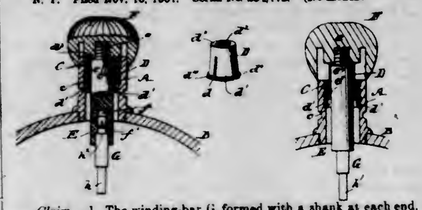


Claim.—1. As an improvement in cultivators of the class herein described, the adjustable plates having a series of perforations and notches in their side edges, in combination with the supplementary frame, to the under side of the side bars of which said adjustable plates are connected, and the standards having upper bifurcated ends engaging said notched side edges of the adjustable plates, substantially as shown and described.

2. The herein-described improvement in cultivators, comprising the arched axle, the main frame having a lateral rod or bar connected thereto and provided with downwardly-projecting staples, the supplementary frame, the forwardly-projecting plate adapted to engage said staples, the loops or eyes adapted to hinge and slide upon said rod or bar, the operating-lever, the connecting-chain, and the plate or holder S, whereby the supplementary frame may be elevated or moved from side to side, substantially as set forth.

3. The combination of the main frame, comprising longitudinal side beams and transverse front beams, the rear one of which is provided with staples upon its under side and with a longitudinal rod, a supplementary frame carrying the plows or other devices and pivotally mounted upon said rod and provided with a forwardly-projecting plate adapted to engage said staples, an adjusting-lever pivotally mounted at its front end upon the main frame, and a chain connecting the lever and supplementary frame, whereby when the latter is elevated the plate is withdrawn from engagement with the staple and transverse adjustment with relation to the main frame permitted, substantially as set forth.

378,959. WATCH-CASE PENDANT. PETER HENRY, New York, N. Y. Filed Nov. 10, 1887. Serial No. 254,772. (No model.)



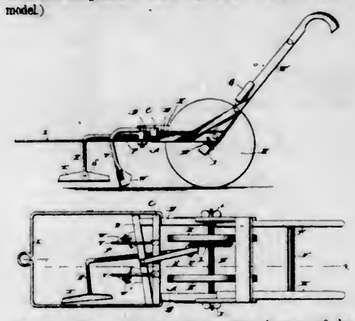
Claim.—1. The winding-bar G, formed with a shank at each end, in combination with the holder E, formed with a recess to receive either end of the winding-bar, substantially as described.

2. The pendant A, provided with the screw-threaded sleeve C, enlarged at *c*, in combination with the spring D and stem or holder E, the spring being secured to the said stem or holder, substantially as described.

3. The stem or holder E, formed with screw-shank *e* and shoulder *e'*, and the sleeve C, screwed into the pendant and enlarged to form the shoulder *c'*, in combination with the burr F and cup-shaped spring D, held upon the shoulder *c'* by the burr, substantially as described.

4. As a new article of manufacture, the spring D, having the orifice d^3 and made cup-shaped, with converging sides, slotted at *d* to form spring tongues or sections d^4, having flanges d^5 at their edges, the sections or tongues d^4 being curved from the top of the slots outward, substantially as described.

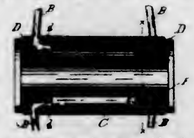
378,960. COTTON CHOPPER AND CULTIVATOR. ROBERT T. HUGGINS, Darlington, S. C. Filed May 5, 1887. Serial No. 237,267. (No model.)



Claim.—1. The combination, in a cotton-chopper, of the frame A, having the handles, the cross-bar C near its front end, the oblique bar D, having the rearward-extending oblique arm N, provided with a depending bracket-arm, the shaft H, journaled in frame A and having the supporting-wheels and the gear-wheel L, the shaft P, arranged obliquely and journaled in the depending bracket-arm and in the cross-bars C and D, said shaft having arm R, provided with the foot S, to which the hoe is attached, the pinion U, secured to shafts P and working with wheel L, and the standards having the scrapers, substantially as described.

2. In a cotton-chopper, the frame carrying the rotating chopping-hoe and having the standards V, provided at their lower ends with the rearward-converging obliquely-arranged scrapers W, the rear upper corners of which are bent inward and downward, substantially as described.

378,961. VEHICLE-WHEEL. GEORGE M. HUGHES, Auburndale, Ohio. Filed Oct. 28, 1887. Serial No. 253,649. (No model.)



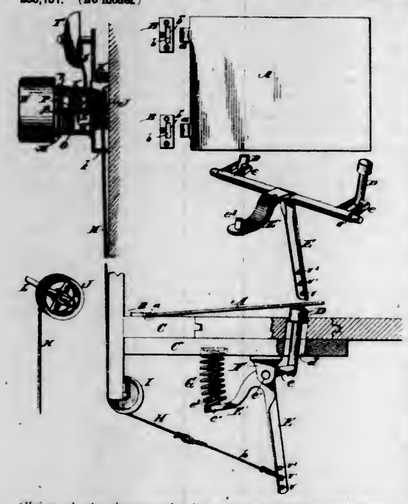
Claim.—1. In a vehicle-wheel, the combination of an apertured metal hub provided with radial spoke-notches upon its end and longitudinal spoke-notches extending therefrom into the aperture of the hub, wire spokes provided with longitudinal bends upon their inner ends and engaging into these notches, thimbles provided with longi-

tudinal spoke-notches for the bent end of the spokes and pressed into the apertures of the hub, and caps formed integrally with said thimbles and provided with radial spoke-notches for the straight inner ends of the spokes, all substantially as described.

2. The combination, in a vehicle-wheel, of single-wire spokes provided with longitudinal bends upon their inner ends, a metal hub provided with radial and longitudinal spoke-notches to engage with said spokes, and combined thimbles and caps secured into the ends of the hub, said thimbles being tapering and said thimbles and caps having radial and longitudinal spoke-notches correspondingly with the hub, substantially as described.

3. In a vehicle-wheel, the combination of the wire spokes B, provided with the hooks or bends *d*, the hub C, provided with the radial spoke-notches *a* and longitudinal spoke-notches *b*, the thimbles E and caps D, integrally combined and provided with radial spoke-notches *f* and longitudinal spoke-notches *c*, and the skein F, the parts being secured together substantially as described

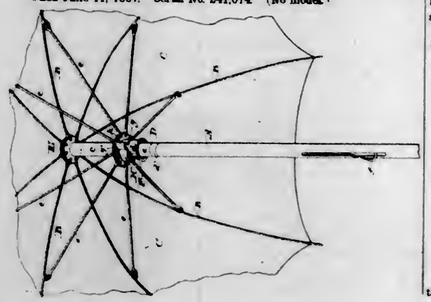
378,962. DOOR-MAT BELL. ANTHONY IBKE, Lancaster, Pa., assignor to Israel L. Landis, same place. Filed Apr. 22, 1887. Serial No. 235,757. (No model.)



Claim.—1. An alarm mechanism provided with a mainspring and a winding-pulley, a cord passed around said pulley and attached thereto at one end, a lever to which the other end of said cord is attached, a door-mat having a stiff-hinged base supported by said lever, and a spring operating against said lever to hold said mainspring normally under tension, substantially as set forth.

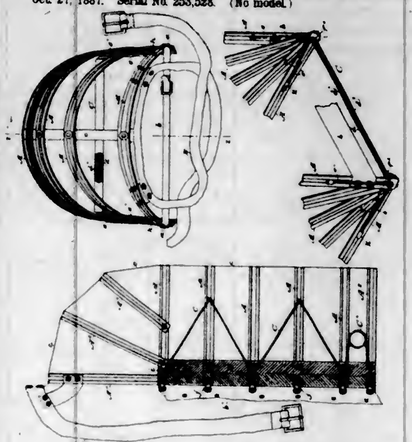
2. A lever having an arm, E', and the holes *e e' e²*, arranged in series, as shown, in combination with alarm mechanism having a winding-pulley and a mainspring, a cord passing from one of the holes of said lever to and around said pulley, and a spring operating against arm E' to hold said mainspring normally under tension, substantially as set forth.

378,963. UMBRELLA. EDMUND Q. IBON, Long Island City, N. Y. Filed June 11, 1887. Serial No. 241,014. (No model.)



Claim.—The combination, with the handle of an umbrella and a sleeve adapted to revolve thereon, having integral with one end the usual slotted head adapted to receive the ribs, of a runner provided with a revolvible ring having an inverted-U-shaped projection integral with one side, and means for retaining said runner in an elevated position upon the sleeve, substantially as herein shown and described.

378,964. BUSTLE. FRANK M. JEFFERY, Jersey City, N. J. Filed Oct. 27, 1887. Serial No. 253,528. (No model.)



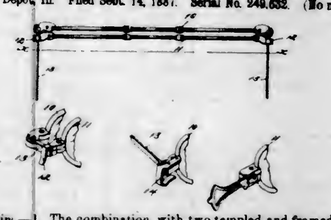
Claim.—1. In a bustle, the combination, with the bows and with a connector that limits their distention, of a torsional distending-spring consisting of two or more springs which have main or body portions loosely connected and extending across the bustle, and at the opposite ends of these main portions acting-arms, the arms of each spring being bent in different directions and attached at their free ends to the bows of the bustle, whereby the lateral expansibility of the series of bows is limited by the length of the said torsional spring, substantially as set forth.

2. In a bustle, the combination, with the bows and a flexible connector that limits their distention, of a torsional distending-spring consisting of two or more springs which have main or body portions loosely connected and extending across the bustle, and at the opposite ends of these main portions acting-arms, the arms of each spring being bent in different directions and attached at their free ends to the bows of the bustle, said springs being arranged within the hollow of the bustle with their several arms directed forward, substantially as set forth.

3. In a bustle, the combination, with the flexible side strips, as E, of the projecting bows, as A, each end of which is attached to said strips at two points, as described, the torsional distending-spring C, arranged in the hollow of the bustle and having the free ends of its arms attached to the respective bows A between the points of attachment of the bows to the side strips, and means for attaching the bustle to the person of the wearer, substantially as set forth.

4. The combination, with the flexible side strips, as E, of a bustle, the projecting bows, as A A, attached at their ends to said strips, the torsional distending-springs, as C, arranged as described, and means for attaching the bustle to the person of the wearer, of the lower bow, as A^2, and the coiled distending-springs $C^\times$, substantially as set forth.

378,965. COMBINATION-SPECTACLES. BERNARD KRAUSE, O'Fallon Depot, Ill. Filed Sept. 14, 1887. Serial No. 249,632. (No model.)



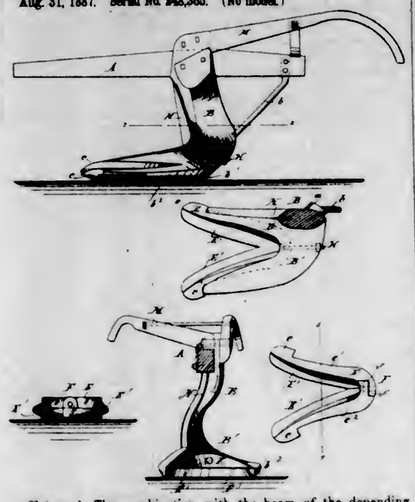
Claim.—1. The combination, with two templed and framed spectacle-lenses, of two supplemental detachable untempled framed spectacle-lenses connected with and bodily removable from the templed frame for drawing the focus of the templed from distance to reading spectacles, substantially as described.

2. The combination, with a lens-frame, of a second detachable and bodily removable lens-frame, and means, substantially as described, for connecting the frames.

3. The combination, with a lens-frame, of a second detachable lens-frame, and spring-clips by which the frames are connected, as described.

4. The combination, with a templed spectacle-frame, of a detachable templeless spectacle-frame provided with clips to engage the bows of the templed spectacle-frame, as described.

378,966. GRUBBER. AUSTIN R. LYMAN, Warren, Ohio. Filed Aug. 31, 1887. Serial No. 248,365. (No model.)



Claim.—1. The combination, with the beam, of the depending standard, and a V-shaped shoe secured or connected at the rear end of one side to the lower end of the standard and provided with the V-shaped knife above its bottom face, substantially as set forth.

2. The combination, with the beam A, of the standard B, depending therefrom and curved thereunder, the V-shaped shoe B' at one side of the lower end of the beam, and the knife secured within the shoe above its lower face, substantially as set forth.

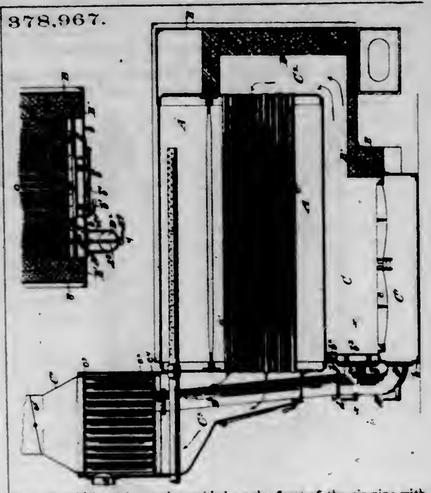
3. The combination, with the beam A, of the standard B, the V-shaped shoe B' at the lower end of the standard, and provided between its upper and lower faces with the groove D, the two-part carrier E within said groove, and the knife or cutter secured by said carrier, substantially as set forth.

4. The combination, with the beam A, of the standard B, the V-shaped shoe integrally connected at one side at its rear end with the lower end of the standard and having the groove D between its upper and lower faces, the knife-carrier E, formed of the sections $e' e^2$ having an interlocking joint, F, at their rear ends, and the knife-sections having projections *c* engaging the outer ends of the shoe, and the bolt H, securing the knife-sections and the carrier at the rear end of the shoe, substantially as set forth.

378,967. FURNACE FOR STEAM-GENERATORS. THOMAS MAIR, Jersey City, N. J. Filed May 18, 1887. Serial No. 238,639. (No model.)

Claim.—1. The combination, with the front of a steam-generator furnace and a perforated lining-plate above the grate, forming a space between it and the front and having its depth inward of the front, of an air-heater and a hot-air pipe leading from said heater and communicating by branches with the front of said space above and below the grate, and valves provided with stems leading forward through said branches and pipes and controlling openings through the front, substantially as herein described.

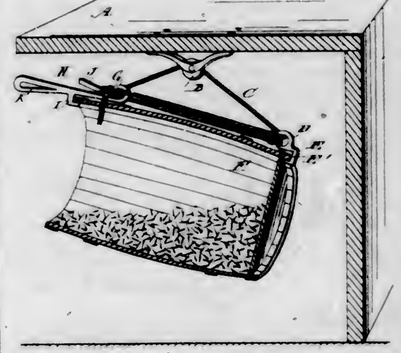
2. The combination, with the furnace-front *b* of a steam-generator furnace and the inner perforated lining, b^3, above the grate, of a heater, the hot-air pipe and branches d^5 d^6, communicating with the front *b*, the rotary disk or register valves d^5 d^7, controlling the openings in the front, and their operating-stems d^8, leading outward



through said branches and provided on the front of the air-pipe with handles, substantially as herein described.

3. The combination, with an internal tubular steam-generator furnace and a front plate closing the outer end of the furnace, of a perforated inner plate or lining above the grate, forming within the furnace and inward of the front thereof an air-space, an air-heater and a hot-air pipe leading therefrom and provided with branches communicating with the front plate above and below the grate, and valves controlling the communication of said branches with the said air-space and with the furnace below the grate, substantially as herein described.

378,968. HOLDER FOR KEGS, BARRELS, &c. CARY A. MANNER, Louisville, Nebr. Filed Sept. 5, 1887. Serial No. 248,852. (No model.)

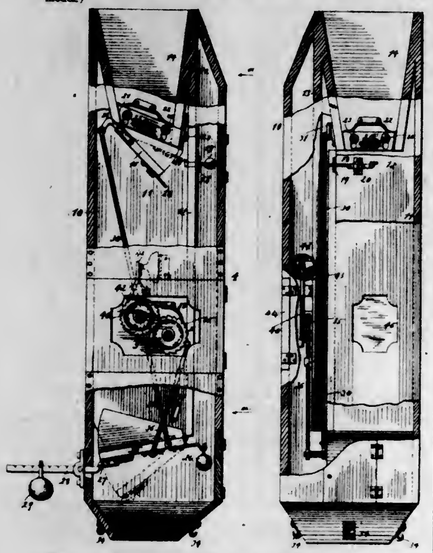


Claim.—1. In a holder for handling kegs, barrels, &c., the combination, with a pulley hung on the under side of a support, of a rope passing over said pulley, a bottom-clamp to which one end of said rope is secured, said clamp engaging the bottom end of the barrel to be suspended, and a head-clamp through which said rope passes loosely and to which the free end of the rope is secured, said clamp engaging the head of the said barrel, substantially as shown and described.

2. In a holder for handling kegs, barrels, &c., the combination, with a pulley held on the under side of a support, of a rope passing over said pulley, a bottom-clamp having an eye in which one end of the said rope is fastened and being provided with a hook engaging the bottom rim of the barrel, and a head-clamp provided with an eye through which said rope passes loosely, a hook formed on said head-clamp and adapted to engage the head end of the barrel, and an arm formed on said head-clamp and serving to secure the free end of the rope, substantially as shown and described.

3. In a holder for handling kegs, barrels, &c., a head-clamp formed with a hook to engage the barrel, an eye and an arm to receive the rope, and a handle-arm, substantially as shown and described.

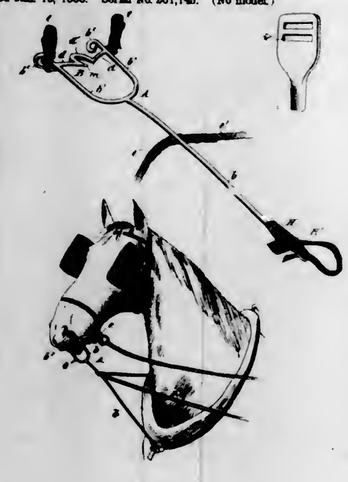
378,969. AUTOMATIC GRAIN-WEIGHING MACHINE. JOSEPH C. MORRIS, Amalia, Ind. Filed Nov. 16, 1887. Serial No. 255,285. (No model.)



Claim.—1. In a grain-weighing machine, the combination, with a chute, of a hopper, a trap arranged beneath the hopper, a second trap arranged beneath the chute, weighted catches arranged in connection with the traps, and a rod by which the traps are connected, substantially as described.

2. In a grain-weighing machine, the combination, with a chute, of a hopper arranged above the chute, a trap mounted beneath the hopper, a catch-arm carried by the trap, a weighted lever with which the catch-arm engages, a second trap arranged at the lower end of the chute, connection between the two traps, a counterbalancing-weight carried by the second trap, a spring-catch also carried by the second trap, and a weighted lever with which said catch engages.

378,970. BRIDLE-BIT. JAMES MORRISSEY, West Islip, N. Y. Filed Jan. 18, 1888. Serial No. 261,143. (No model.)



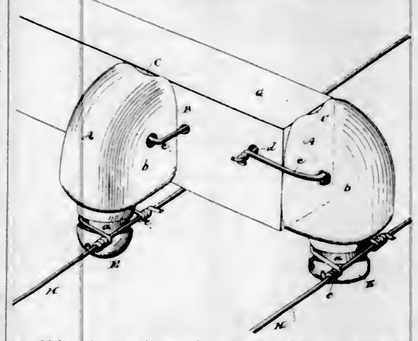
Claim.—1. The combination, with an ordinary bit, of an auxiliary bit consisting of a rigid bar provided with a forked upper end having its members connected by a port centrally and upwardly curved, substantially as and for the purpose herein set forth.

2. The combination, with an ordinary bit, of an auxiliary bit consisting of a rigid bar having a bifurcated upper end, and a port uniting the prongs, provided with spaced nipples upon the under side and an outwardly and upwardly curved projection upon the upper side, substantially as and for the purpose herein set forth.

3. The combination, with an ordinary bit and harness of a horse, of an auxiliary bit consisting of a rigid bar having a bifurcated upper end, a port uniting the prongs, provided with spaced nipples upon the under side and an outwardly and upwardly curved projection upon the upper side, and means, substantially as described, for attaching the auxiliary bit to the harness and ordinary bit, as set forth.

4. An auxiliary bit for horses, consisting of a rigid bar having a bifurcated upper end and a port uniting the prongs, provided with nipples upon the under side and an upwardly and outwardly curved projection upon the upper side, substantially as and for the purpose herein set forth.

378,971. INSULATOR. LEWIS M. NEAL, North Middletown, Ky. Filed Nov. 15, 1887. Serial No. 255,215. (No model.)

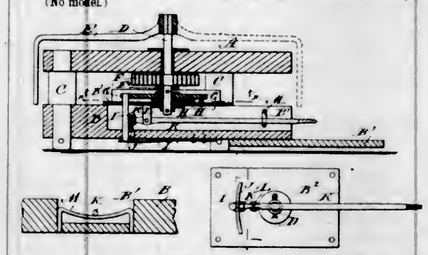


Claim.—1. As an improved article of manufacture, an apertured block of insulating material having a grooved inner surface and a convex outer surface, and provided with a downwardly-projecting and circumferentially-grooved post, as set forth.

2. An insulator consisting of an apertured block of insulating material having a straight inner surface and a convex outer surface, and provided with a downwardly-projecting and grooved post, and with an annular groove around said post, substantially as described.

3. An insulator consisting of a block of insulating material having the straight inner surface, B, and provided with the downwardly-projecting and grooved post E, and with the annular groove F, forming the annular under edge, D, inclined toward the surface B, substantially as and for the purpose set forth.

378,972. ANIMAL-TRAP. LA FAYETTE W. PAGE and SAMUEL HARDEMAN, Franklin, Tenn. Filed July 25, 1887. Serial No. 245,281. (No model.)



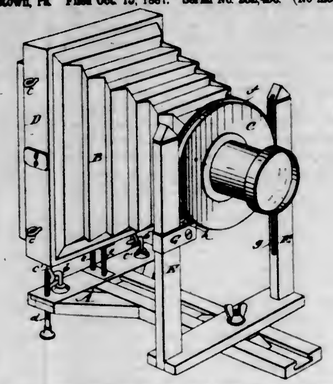
Claim.—1. In an animal-trap, the combination of a striker, a spring-actuated rotary shaft on which the same is mounted, a disk mounted loosely on the shaft, a ratchet and pawl connecting said shaft and disk and permitting free rotation of the shaft for winding the spring, and a detent for engaging said disk, substantially as described.

2. In an animal-trap, the combination of a striker, a rotary disk connected therewith, having a stop-shoulder and an eccentric approach

to said stop-shoulder, and a spring-actuated detent adapted to ride on said eccentric approach to the stop-shoulder, substantially as described.

3. In an animal-trap, the combination, with the co-operating mechanism of the trap, of a vertically-sliding detent, a concave carved camway, and a pivotal bait-lever adapted to ride on said camway and operate the detent, substantially as described.

378,973. PHOTOGRAPHIC CAMERA. FRANCIS H. PATTERSON, Norristown, Pa. Filed Oct. 15, 1887. Serial No. 252,433. (No model.)



Claim.—1. The combination, with the base A, of the hooks *b* thereon, the detachable oblong camera-back D, having eyes *c* and *c'* upon a long and a short side, respectively, of it, and the closing-screw *d*, essentially as described.

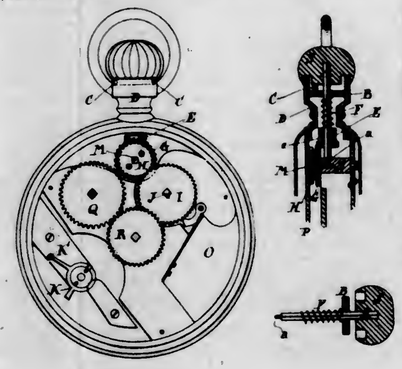
2. The combination of the detachable oblong camera-back D, having eyes *c c'* upon a long and a short side, respectively, of it, the base A, the hooks *b* thereon, and the adjusting and clamping screws *e e*, for operation in relation with each other, substantially as and for the purposes specified.

3. In a photographic camera, the combination of the grooved uprights E E of the focusing-slide, the camera-bellows B, the circular front end board or lens-mount, C, attached to said bellows, and provided with a circular tongue, *f*, adapted to fit the grooves in said uprights, and the sliding lever-stop G, essentially as described.

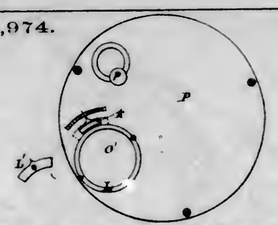
4. The combination of the circular front end board, C, having a tongue, *f*, on its periphery, the grooved uprights E E of the focusing-slide, the sliding lever stop or clamp G, the bellows B, the reversible swing-back D, having eyes *c c'* on a longer and shorter side, respectively, the base A, the hooks *b b*, and the adjusting and clamping screws *e e*, substantially as shown and described.

378,974. STEM-WINDING WATCH. DAVID PERRET, Neufchâtel, Switzerland. Filed July 1, 1887. Serial No. 243,062. (No model.) Patented in France May 28, 1887, No. 183,837.

Claim.—1. A winding-up mechanism for watches, composed of a stem, A, of square metal, affixed to the crown S, and a disk, B, and a pivot, *a*, combined with a screw, *c*, passing eccentrically through the pendant D, a spring, F, sliding pinion E, pillar N, screw M, and double wheel G H, substantially as shown and described, and for the purpose specified.

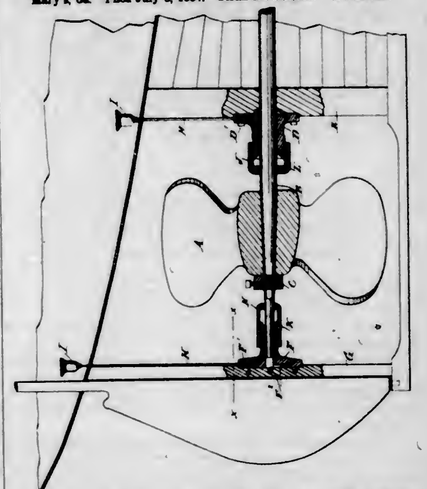


378,974.



2. The combination, with the gears H M and stem-winding mechanism, of the plate P, that retains such gears in place, and is provided with an opening, and the movable crescent L', that is connected with the regulator, substantially as specified.

378,975. PROPELLER-SHAFT BEARING. JOHN RICHARDSON, St. Mary's, Ga. Filed July 5, 1887. Serial No. 243,768. (No model.)



Claim.—1. The combination, with a propeller-shaft lengthened beyond the rear end of the hub of the propeller-screw, of a bearing secured to the stern-post of the vessel and a bearing secured to the rudder-post of the vessel, each of said bearings being provided with oil-holes, pipes connected with said oil-holes and extending upward through the bottom of the vessel, and oil-cups secured to the upper ends of said pipes, substantially as shown and described.

2. The bearing F, provided with the oil-passage F' and downwardly-extending groove F², in combination with the cap K and ring N, substantially as herein shown and described.

378,976. TUBE. MATTHEW L. RITCHIE, New York, N. Y., assignor to the Eagle Tube Company, same place. Filed Oct. 10, 1887. Serial No. 251,899. (No model.)



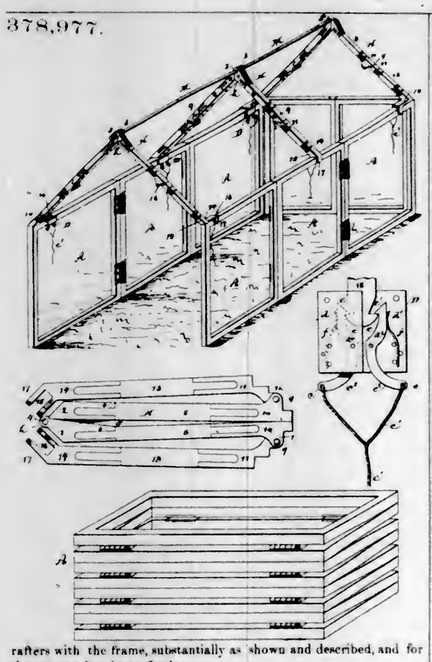
Claim.—1. The wrought-iron or steel tube, with the end closed by conical corrugations, welded together at the apex, substantially as set forth.

2. The wrought-iron or steel tube, with the end closed by conical corrugations, welded together at the apex and to an inserted plug, substantially as set forth.

378,977. FOLDING TENT. LAURENCE F. RYAN, New York, N. Y. Filed Aug. 8, 1887. Serial No. 246,431. (No model.)

Claim.—1. The combination, with a folding frame, of hinged rafters detachably secured to said frame, a sectional ridge-pole passing through and connecting said rafters, and means for connecting the

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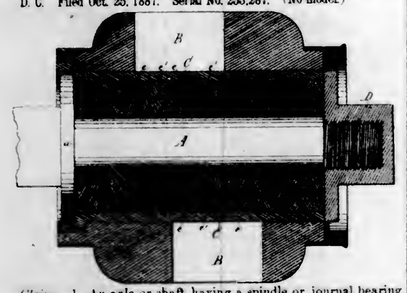
rafters with the frame, substantially as shown and described, and for the purpose herein set forth.

2. The combination, with the folding frames A and the locking devices D, secured at the upper edge of said frames, of hinged rafters detachably secured to said frames by said locking devices, and a sectional ridge-pole connecting said rafters at the angle thereof, substantially as shown and described.

3. The combination, with the folding frames A and a locking device attached to the upper side of said frames, consisting of the plates d d', the opposing spring-actuated levers d^3, shaped with a compound curve and provided with a hook at their upper ends, of the hinged rafters H, provided with a lower section adapted to rest upon the frames, having an integral substantially arrow-shaped lug, 18, adapted to be engaged by said levers, and a sectional ridge-pole passing through and connecting said rafters, substantially as shown and described.

4. In a folding tent, a rafter adapted to support the roof thereof, consisting of the slotted and hinged metal ridge-section h, the intermediate slotted and hinged metal sections, 9, the interposed interlocking blocks 8 and 13, and slotted metal locking-sections 14, attached to said blocks 13, and provided with opposing lugs 17 and 18, the lug 18 having a substantially arrow-shaped head, substantially as and for the purpose herein specified.

378,978. ANTI-FRICTION AXLE. MATTHEW RYAN, Washington, D. C. Filed Oct. 25, 1887. Serial No. 253,287. (No model.)



Claim.—1. An axle or shaft having a spindle or journal bearing surface consisting of a single layer of closely-adjoining anti-friction rings slipped loosely upon the axle-spindle or the journal end of the shaft, and proportioned, respectively, in diameter and breadth of periphery relatively to the length and diameter of the axle-spindle or journal end of the shaft, and arranged to have a wearing contact against the wheel eye, hub, or journal-box, substantially as and for the purpose described.

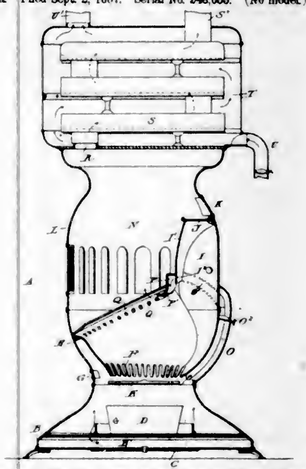
2. The anti-friction rings E, arranged in a single layer, and proportioned, respectively, in diameter and breadth of periphery relatively to the length and diameter of the axle-spindle or journal end of the shaft, and slipped upon an axle-spindle or journal end of the shaft, made to adjoin one another, and held laterally in position between inner and outer shoulders or stops, in combination with the wearing-surface of a wheel eye, hub, or journal-box, substantially as and for the purpose described.

3. An axle or shaft having a spindle or journal bearing surface formed of a single layer of closely-adjoining anti-friction rings which have depressions in their faces and are slipped upon the axle-spindle or journal end of the shaft, and proportioned, respectively, in diameter and breadth of periphery relatively to the length and diameter of the axle-spindle or journal end of shaft, substantially as and for the purpose described.

4. An axle-spindle or shaft having a journal-bearing surface formed of a single layer of closely-adjoining anti-friction rings provided with passages for the circulation of lubricating material, said rings being slipped upon the axle-spindle or journal end of the shaft, and proportioned, respectively, in diameter and breadth of periphery relatively to the length and diameter of the axle-spindle or journal end of the shaft, substantially as and for the purpose described.

5. An axle or shaft having a journal-bearing surface formed of anti-friction rings which are beveled on their faces, said rings being slipped on a spindle or journal, substantially as described.

378,979. HEATING-STOVE. CHARLES H. L. SCHLAPP, Davenport, Iowa. Filed Sept. 2, 1887. Serial No. 248,655. (No model.)



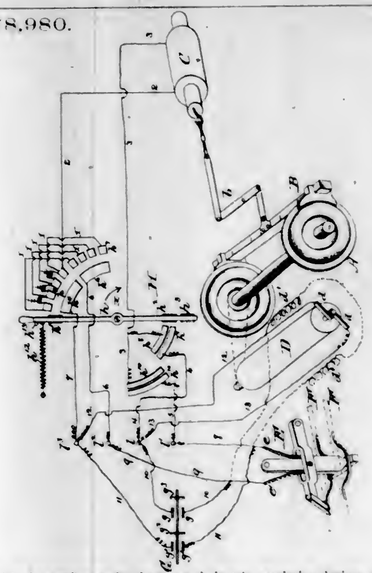
Claim.—1. The combination, with the stove having a fire-pot and a combustion-chamber, N, into which the open upper end of said fire-pot opens, of the magazine I inside of the combustion-chamber, at one side thereof, just above the fire-pot, the mixing-chamber P aronnd the lower inner edge of the magazine, and the air-supply passages leading to the said mixing-chamber, substantially as set forth.

2. The combination, with the stove having draft-openings in its ash-pit, a fire-pot suspended at its upper end within the stove and provided with apertures Q around its upper end, a space being formed between the fire-pot and the stove body, and the combustion-chamber N, into which the upper end of the fire-pot opens, of the magazine I within the combustion-chamber at one side thereof, the mixing-chamber P around the lower inner edge of said chamber, and the passage O, leading from the ash-pit along the outer side of the fire-pot into the mixing-chamber P, substantially as set forth.

378,980. ELECTRIC-RAILWAY CAR-BRAKE. WM. M. SCHLEININGER, Philadelphia, Pa. Filed Aug. 26, 1887. Serial No. 247,976. (No model.)

Claim.—1. The combination of a car or vehicle, an electric motor for propelling the car, a supply-circuit for the motor, electrically-actuated brake appliances for the car, and electric regulating devices and circuit-connections for successively cutting the motor out of its supply-circuit, for including the brake appliances in the circuit of the motor-armature, and for including the brake appliances in the supply-circuit for the motor, substantially as set forth.

378,980.



ated brake appliances for the car, and electric regulating devices and circuit-connections for successively cutting the motor out of its supply-circuit, for including the brake appliances in the circuit of the motor-armature, and for including the brake appliances in the supply-circuit for the motor, substantially as set forth.

2. The combination of a car or vehicle, an electric motor for propelling the car, a supply-circuit for the motor, electrically-actuated brake appliances for the car, and electric regulating devices and circuit-connections having adjustable resistances and arranged for operation to successively cut the motor out of its supply-circuit, for including the brake appliances in the circuit of the motor-armature, and for including the brake appliances in the supply-circuit for the motor, substantially as set forth.

3. The combination of a car or vehicle, an electric motor propelling the car, a line-circuit, a traveling current-collector on the car in contact with the line-circuit, electrically-actuated brake appliances for the car, and electric regulating devices for cutting out the motor from the line-circuit and for successively including the brake appliances in the armature-circuit of the motor and in the line-circuit or a loop therefrom, substantially as set forth.

4. The combination of a car or vehicle, an electric motor, electrically-actuated brakes, a supply-circuit for said motor, a regulator, H, comprising contact-plates h^4 h^5, h^6 h^7, h^8 h^9, and h^{10} h^{11}, pivoted lever h, having insulated bridges h', h^3, and h^2, and circuit-connections between said plates and the brake appliances, the motor-armature, and the supply-circuit, substantially as set forth.

5. The combination of a car or vehicle, an electric motor, electrically-actuated brakes, a supply-circuit for said motor, and a regulator, H, comprising contact-plates h^4 h^5, h^6 h^7, h^8 h^9, and h^{10} h^{11}, pivoted lever h, having insulated bridges h' h^3 h^2, and circuit-connections, including resistances i, between said plates and the brake appliances, the motor-armature, and supply-circuit, substantially as set forth.

6. The combination, with a car having an electric motor, supply-circuit for the motor, and electrically-actuated brakes, of electric regulator and circuit-connections for cutting the motor out of its supply-circuit, for including the brake appliances in the circuit of the motor-armature, and for including said brake appliances in a loop or branch from said supply-circuit for quickly slowing the speed of the car first by the armature-circuit of its motor, and for successively and quickly slowing down the speed of the car from a slow to a still slower speed until it stops by the supply or line current, substantially as set forth.

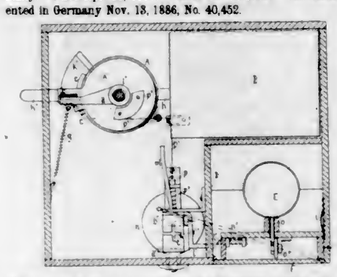
7. The combination of a magnet or solenoid, C, switch H, circuit-connections between said switch and magnet, an electric motor, a line or supply circuit including a cut-out switch for the motor, and circuit-connections between the line or supply circuit and switch H, and between the latter and the armature of the motor, whereby a movement of switch-lever of switch H places the solenoid C successively in the armature-circuit and in the line-circuit, substantially as set forth.

378,981. CAN-STOPPER. HOWARD SELVAGE, Brooklyn, N. Y. Filed June 22, 1887. Serial No. 242,092. (No model.)



Claim.—The combination, with a can having a nozzle with an orifice too small to permit the egress of oil in a stream and the simultaneous entrance of air through it, of an air-tight removable stopper having an orifice through it, and with which is connected a tube so arranged as to project into a vessel while liquid is poured from the nozzle into the vessel, substantially as described.

378,982. VENDING APPARATUS. MAX SIELAFF, Berlin, Germany. Filed Apr. 11, 1887. Serial No. 234,404. (No model.) Patented in Germany Nov. 13, 1886, No. 40,452.



Claim.—1. In a mechanism for transmitting motion by means of a coin, d, of determinate size, the combination of the movable coin-grasping arms having a coin-receiving slot or slit, through the medium of a coin held in which slot or slit motion can be transmitted from one to the other of said arms, with the stationary ledge c, bounding one end of said slot or slit, the arrangement being such that the coin when dropped edgewise into the slot or slit will be suspended in that position between one end of the slot and the stationary ledge c at the opposite end, substantially as and for the purposes hereinbefore set forth.

2. The combination, with the movable coin-grasping arms having a coin-receiving slot and the stationary ledge c, between which and the opposite end of the slot the coin when inserted edgewise in said slot is supported, of a second stationary ledge, c^2, between which and the free end of the movable arm to which motion is transmitted through the coin is a second coin-receiving slot, and the coin-guiding tube k, having extension k^2, these parts being arranged for joint operation substantially as and for the purposes hereinbefore set forth.

3. The combination, with the coin-guiding tube k and the mechanism for delivering a determinate supply of any ware, of the movable coin-grasping arms having a coin-receiving slot and the stationary ledge c, between which and the opposite end of the slot the coin is suspended in edgewise position, that one of the movable arms to which movement is transmitted through the coin being connected to and adapted to operate the said delivering mechanism, substantially as and for the purposes hereinbefore set forth.

4. The combination, with the coin-guiding tube k, having extension k^2, and the mechanism for delivering a determinate supply of ware, of the movable coin-grasping arms having a coin-receiving slit, the coin-supporting stationary ledge c, and the second stationary coin-supporting ledge c^2, bounding one end of second coin-receiving slot, the other end of which is bonnded by the free end of the movable arm, to which motion is transmitted through the coin, the combination being and acting substantially as hereinbefore set forth.

5. An apparatus comprising the movable coin-grasping arms having a coin-receiving slot, the stationary coin-supporting ledge c, bounding one end of said slot or slit in such manner that a coin dropped edgewise into the slit will be suspended between one end of the slot and the ledge c at the opposite end, a measuring-faucet, A, the plug whereof is fixed to that one of the movable arms to which motion is transmitted through the coin, a reservoir, B, connected to the faucet, and the coin-guiding tube k, substantially as and for the purposes hereinbefore set forth.

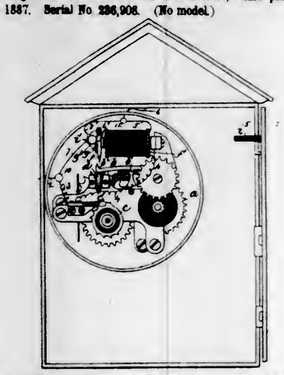
6. An apparatus comprising the movable coin-grasping arms having a coin-receiving slot, the stationary coin-supporting ledges c and c^2, arranged to operate in connection with said arms, as described, the coin-guiding tube k, having extension k^2, a measuring-faucet, A, the

plug A' whereof is fixed to that one of the movable arms to which motion is transmitted through the coin, and a reservoir connected to the faucet, all substantially as hereinbefore set forth.

7. An apparatus comprising the movable parts *a b*, having a coin-receiving slot, the stationary ledge *c*, the coin-guiding tube *k*, a measuring-faucet, A, whose plug A' is connected to and operated by the part *b*, the reservoir B, the movable parts *a' b'*, the stationary ledge c^3, the coin-guiding tube k^3, latch *l*, fixed to the part b^3, tube *m*, slide *p*, means for retracting the slide *p* by the plug-A' and for returning it to its normal position, case D, door F, rotative disk *n*, having slit *n'*, and means of connection between the disk *n* and the door F, all substantially as hereinbefore set forth.

378,983. FIRE-ALARM SIGNAL-BOX.

ALSON A. SMYTH, Newton, Mass., assignor of one-half to Frederick W. Cole, same place. Filed May 3, 1887. Serial No. 236,908. (No model.)



Claim.—1. The combination of a main circuit and break-wheel with a controlling electro-magnet and armature, the coils of which magnet are normally included in said main circuit, and an additional circuit around said magnet, and circuit-closer therein operated by the armature of said magnet, substantially as and for the purpose described.

2. The combination of the main circuit and break-wheel therein with a controlling electro-magnet and armature, the coils of which magnet are normally included in the main circuit and an additional circuit around the coils of said magnet, and circuit-closer in said additional circuit, operated by the armature of said magnet, which when retracted closes the said additional circuit, and a mechanically-operated circuit-breaker in said additional circuit, by which the latter may be opened independently of the attraction of said magnet, substantially as described.

3. The combination of the break-wheel of a fire-alarm signal-box and a controlling electro-magnet and armature, with a shunt-circuit around the break-wheel and magnet, and a circuit-closer therein controlled by the armature of said magnet, and a device controlled by the door of the box for mechanically operating the said circuit-closer, substantially as and for the purpose set forth.

4. The combination of the break-wheel and controlling electro-magnet and armature, with a circuit-controlling device operated by said armature, whereby the said magnet is removed from the main circuit when the said armature is retracted, a spring connected with said armature, and a movable cam-plug operated by the door of the box and co-operating with said spring, substantially as described.

378,984. BOOK-SEWING MACHINE.

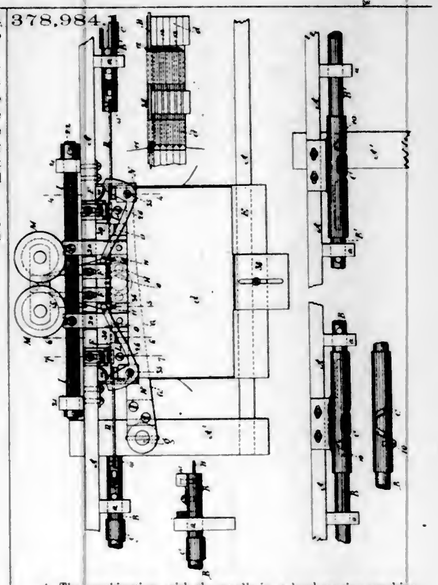
DAVID M. SMYTH, Hartford, Conn., assignor to the Smyth Manufacturing Company, same place. Filed Aug. 27, 1887. Serial No. 248,003. (No model.)

Claim.—1. The combination, with a table upon which the sewed signatures are received, of a sheet-holding arm to present the signatures in succession, the edge of the arm being channeled and notched, the reciprocating needle-bar and looping-needle having a hook near the point, the presser-bar, and the spring-fingers for acting upon the folded back edge of the signature, substantially as set forth.

2. The combination, in a book-sewing machine, of a looping-needle, a swinging sheet-holding arm grooved and notched on its edge, a guide-arm for presenting the thread to the looper-needle, a notched presser-bar, and spring-fingers for depressing portions of the signature at the folded and sawed back, substantially as set forth.

3. The combination, in a machine for sewing books, of a presser-bar, a rock-shaft for supporting and moving the same, spring-fingers upon the presser-bar, a swinging sheet-holding arm, and reciprocating looping-needles, substantially as set forth.

378,984.



4. The combination, with the needle in a book-sewing machine, of stationary inclined fingers and a sheet-holding arm having a notched edge that acts against the fingers to cut the paper against the edges thereof and press aside one portion of the folded back of the signature for the passage of the needle or looper, substantially as set forth.

378,985. BOOK-SEWING MACHINE.

DAVID M. SMYTH, Hartford, Conn., assignor to the Smyth Manufacturing Company, same place. Filed Aug. 27, 1887. Serial No. 248,004. (No model.)

Brief.—An oscillating arm presents the signatures to the sewing mechanism. The reciprocating thread-carrying needles enter each end of the signatures, and a looping bodkin or needle engages the loop and carries a thread through the same and across the back of the book. The arm, in swinging into place with the signature, engages with cutter-fingers and cuts the back of the signatures for the entrance of the needles.

Claim.—1. The combination, in book-sewing machines, with the reciprocating eye-pointed needles, of looping-bodkins, a holder for the bodkins, and mechanism for reciprocating the same and passing the points of the bodkins into the loops of needle-thread within the signature and holding such loops of thread while the needles are withdrawn, substantially as set forth.

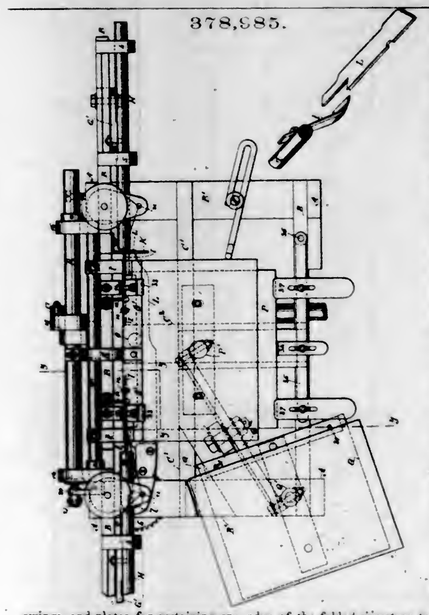
2. The combination, in a book-sewing machine, of reciprocating eye-pointed needles, looping-bodkins, mechanism, substantially as set forth, for actuating the parts, a table for supporting the signatures while being sewed, and a presser-bar for forcing down the sewed signatures and table, substantially as set forth.

3. The combination, in a book-sewing machine, of a swinging sheet-holding arm, a wheel and rack for actuating the same, reciprocating eye-pointed needles, looping-bodkins and mechanism for moving the same, a presser-bar, a rock-shaft for actuating the same, and fingers for pressing down the end portions of the folded signature at the back edge, and needle-holders, and needles for passing into the fold of the signature, substantially as set forth.

4. The combination, with the reciprocating eye-pointed needle and looping-bodkins and mechanism for moving the same, of a table to support the signatures while being sewed, a presser-bar for forcing down the sewed signatures and table, a platform for holding the unsewed signatures, and a walking-beam connecting the platform and the table, so that the platform and unsewed signatures are elevated by the depression of the table as the sewed signatures accumulate thereon, substantially as set forth.

5. The combination, in a book-sewing machine, of mechanism for sewing the signatures, the swinging sheet-holding arm for receiving and conveying the signatures to the sheet-sewing mechanism, vertical gages between which the sheets to be sewed are to be placed, an arm for holding two of the gages and below which the sheet-holding arm

378,985.



swings, and plates for sustaining one edge of the folded signature to allow such signature to hang for the sheet-holding arm to swing into it, substantially as set forth.

6. The combination, in a book-sewing machine, of reciprocating eye-pointed needles and their needle-bars, a sheet-holding arm grooved upon its edge for the passage of the eye-pointed needles, and being also notched, looping-bodkins, mechanism for supporting and reciprocating the same, fingers for pressing down the paper at the fold of the signature at the end portions of the back, and a presser-bar and mechanism, substantially as specified, for giving motion to the respective parts to carry in the sheet and perform the sewing, substantially as set forth.

7. The combination, with the sheet-holding arm provided with a notch, in a book-sewing machine, of a moving finger that acts as a shear by engaging the edge of the said notch in the arm to cut the fold of the paper and bend the paper aside for the passage of the needle, substantially as set forth.

378,986. FOUNTAIN-PEN.

WILLIAM W. STEWART, Brooklyn, N. Y. Filed Aug. 4, 1886. Serial No. 209,952. (No model.)



Claim.—1. A fountain-pen constructed with a vent-duct leading from the air-space in the ink-reservoir and opening to the air beneath the pen and communicating with the under side of the pen, substantially as set forth.

2. A fountain-pen constructed with a vent-duct leading from the air-space in the ink-reservoir and opening to the air beneath the pen and with a capillary conduit for ink opening from said duct to the under side of the pen, substantially as set forth.

3. A fountain-pen constructed with a vent-duct leading from the air-space in the ink-reservoir and opening to the air beneath the pen, and with a capillary conduit extending down from the ink-reservoir and communicating with the pen, substantially as set forth.

4. A fountain-pen constructed with a vent-duct leading from the air-space in the ink-reservoir and opening to the air beneath the pen and communicating with capillary interstices against the pen, substantially as set forth.

5. A fountain-pen constructed with a feed-bar beneath the pen, having capillary interstices against the under side of the pen, and a vent-tube extending from the reservoir down through the feed-bar and terminating beneath the same, substantially as set forth.

6. A fountain-pen constructed with a tubular feed-bar beneath the pen, adapted to conduct ink to the pen, and a vent-tube extending through said feed-bar into the reservoir and adjustable in said bar to different positions, substantially as set forth.

7. A fountain-pen constructed with a tubular feed-bar having capillary holes or slit and a vent-tube inserted in said bar and having a capillary slit coinciding with said holes or slit in the bar, substantially as set forth.

8. A fountain-pen constructed with a capillary slit extending downward from the reservoir and communicating with the under side of the pen, and with a vent-duct extending from the upper part of the reservoir and opening to the air beneath the pen, substantially as set forth.

9. A fountain-pen constructed with a vent-duct extending down from the reservoir and opening to the air beneath the pen, and with obstructions *g* in said duct, consisting of parallel strands filling the same, as described.

10. A fountain-pen constructed with a vent-duct extending down from the reservoir and opening to the air beneath the pen, and with obstructions in said duct, consisting of parallel strands of broom-corn, as described.

11. A fountain-pen constructed with a vent-duct extending from the air-space in the reservoir and opening to the air beneath the pen, and a head or plug, *i*, adapted to close the lower end of said duct, substantially as set forth, whereby the admission of air through said duct is controlled.

12. A fountain-pen constructed with a vent-duct extending from the air-space in the reservoir and opening to the air beneath the pen, a wire or strand, *h*, held frictionally therein, and a head, *i*, on said wire or strand adapted to close the lower end of said duct and adjustable toward or from the same, substantially as set forth, whereby the admission of air through said duct is controlled.

13. A fountain-pen constructed with a vent-duct extending from the reservoir and opening to the air beneath the pen, a head or plug, *i*, adapted to close the lower end of said duct, the cap C, and a pin, *j*, fixed therein for closing said head against said duct, combined and operating substantially as described.

14. The combination, with a reservoir pen-holder and a pen, of a feed-bar located in the end of the holder and provided with a feeder-recess extending beneath a portion of the pen, and a capillary slit or channel leading directly from said recess along the under side of the pen to the reservoir, substantially as set forth.

15. The combination, with a reservoir pen-holder and a pen, of a feed-bar located in the end of the holder and provided with an elongated feeder-recess directly beneath the pen, an ink-conduit leading from the reservoir to a point beneath the feeder-recess, and a capillary slit or channel connecting the feeder-recess, reservoir, and ink-conduit, substantially as set forth.

16. The combination, with the pen-holder and the pen, of an adjustable feed-bar located in the end of the holder and provided with an ink-conduit extending from a point beneath the pen to the ink-reservoir, and with a capillary slit or channel extending from a point below the center of the pen along underneath the pen to its upper end and thence to the ink-reservoir in the holder, substantially as set forth.

17. In a fountain-pen, a feed-bar adjustably secured in the end of a reservoir-holder and provided with a capillary channel extending nearly its entire length, the said channel being open to the outer surface of the plug, and a feeder-recess, the latter being located at the outer end of the plug, substantially as set forth.

378,987. FOUNTAIN-PEN.

WILLIAM W. STEWART, Brooklyn, N. Y. Filed Apr. 27, 1887. Serial No. 236,272. (No model.)

Claim.—1. A fountain-pen having an irritant of non-absorbent material formed with longitudinal loops and arranged in the ink duct or passage leading from the reservoir to the writing-point.

2. A fountain-pen constructed with a reservoir and an ink-duct leading thence to the writing-point and having in said duct an irritant of non-absorbent material formed into successive longitudinal loops at intervals.

3. A fountain-pen constructed with a reservoir and an ink-duct leading therefrom, and with a capillary slit along said duct, and having an irritant extending through said duct and looped at intervals therein.

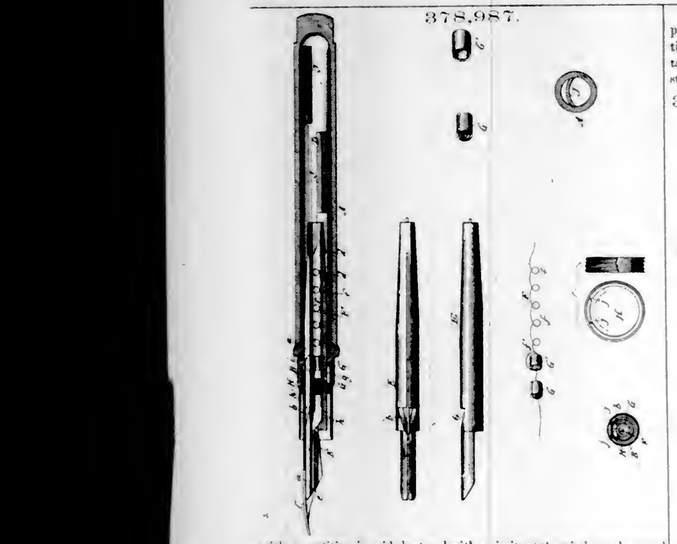
4. A fountain-pen constructed with a reservoir in its holder and with a feed-bar inserted therein, with an ink-duct through said bar and a capillary slit along the same, combined with a looped irritant arranged in said ink-duct.

5. A fountain-pen constructed with a reservoir and an ink-duct leading therefrom, with one or more partitions in said duct, and with an irritant extending through said duct and looped at intervals therein.

6. A fountain-pen constructed with a reservoir and an ink-duct leading therefrom, and with a capillary slit along said duct, combined with a capillary partition in said duct and with an irritant extending through said duct.

7. A fountain-pen constructed with a reservoir and an ink-duct leading therefrom, and with a capillary slit along said duct, combined

378,987.



with a partition in said duct and with an irritant therein looped around said partition.

8. A fountain-pen constructed with a reservoir and an ink-duct leading therefrom, combined with a capillary partition in said duct and with an irritant therein extending through said partition.

9. A fountain-pen constructed with a reservoir and an ink-duct leading therefrom, combined with an irritant in said duct and a capillary partition therein consisting of a strip rolled into spiral form with capillary interstices between its convolutions.

10. A fountain-pen constructed with a reservoir and an ink-duct leading therefrom, and with a capillary slit along said duct, combined with a capillary partition in said duct filling the same and separating it from said slit, and with an irritant in said duct extending through said partition.

11. The combination, with a fountain-holder, of a removable feed-bar insertible in the nozzle thereof, and a ring, H, entering within the nozzle and passing over said bar and the pen to bind them together.

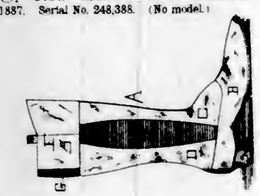
12. The combination, with a fountain-holder, of a removable feed-bar insertible in the nozzle thereof and adapted to fit against the under side of the pen, a ring, H, adapted to pass over said bar and bind the pen thereto, and screw-threads on said ring and in the nozzle, whereby the ring may be screwed into the nozzle upon the insertion of the feed-bar therein.

13. The combination, with a fountain-holder and its nozzle, the latter having a recess, *g*, of the feed-bar fitting the throat of the nozzle, and the ring H, fitting over said bar and adapted, when inserted in the nozzle, to close the recess *g*, and form thereby a suction-chamber, *i*.

14. The combination, with a fountain-holder, of an adjustable capillary partition, J, having the form of a section of a hollow cylinder arranged in the ink-reservoir and held in place therein by frictional contact of its edges with the walls thereof.

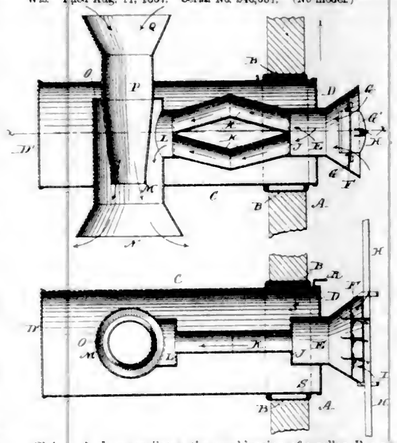
15. The combination, with a fountain-holder, of an adjustable partition, J, having the form of a section of a hollow cylinder arranged in the reservoir, its edges binding frictionally against the inner walls thereof and its convex side arranged in capillary proximity to the wall of the reservoir on one side.

378,988. BOOT. ANDREW M. WARREN, Reidsville, N. C. Filed Aug. 31, 1887. Serial No. 248,388. (No model.)



Claim.—The boot A, composed of whole vamp B, front piece, C, provided with concaved side edges above the instep, whole back portion, D, provided with concaved side edges above the instep, the double tapered elastic gorings E, and the topping F and its gore G, all substantially as set forth.

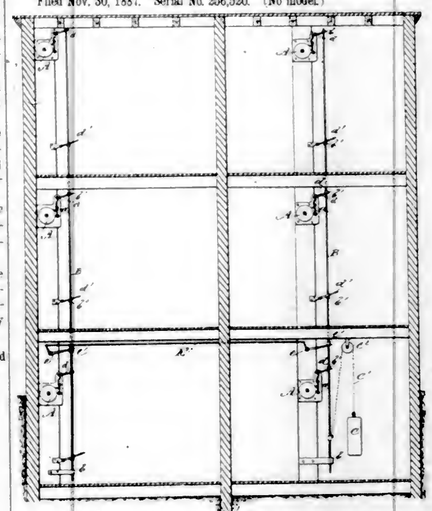
378,989. VENTILATOR. FREDERICK C. WERNER, Watertown, Wis. Filed Aug. 11, 1887. Serial No. 246,681. (No model.)



Claim.—1. In a ventilator, the combination of a collar, B, a revoluble cylinder, C, carrying transverse induction and eduction pipes, and formed with slots S, and a catch, R, attached to the collar B and adapted to engage the slots S, substantially as shown and described.

2. A ventilator constructed of a cylinder, C, having heads D D', closing the ends thereof, a main draft-pipe, E, leading through the head D, an interior pipe, K, connected with the pipe E, an eduction-pipe, M, into the side of which the pipe K leads, leading out through one side of the cylinder C, and an induction-pipe, P, running through the opposite side of the cylinder C into the pipe M, substantially as shown and described.

378,990. FIRE-ALARM. JAMES WEST, St. Louis, Mo., assignor to himself, Nathaniel G. Pierce, and George D. Markham, all of same place. Filed Nov. 30, 1887. Serial No. 256,520. (No model.)

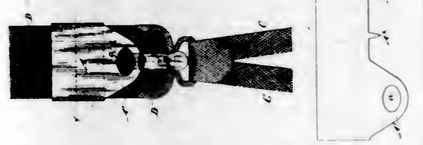


Claim.—1. The combination, with a series of alarm-bells arranged upon the various floors of a building, and their tripping-arms, of a reciprocating rod extending through the said floors, provided with collars engaging the said tripping-arms, and hand-levers upon each floor engaging other collars upon said rod, substantially as herein set forth.

2. The combination, with a series of alarm-bells arranged upon the various floors of a building, and their attached tripping-arms, of a reciprocating counterbalanced rod extending through the said floors, provided with collars engaging the said tripping-arms, and hand-levers upon each floor engaging other collars upon said rod, substantially as and for the purpose herein set forth.

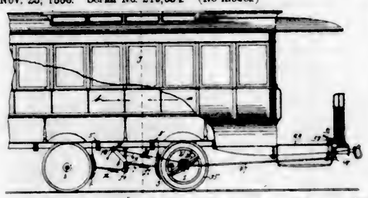
3. The combination, with a series of alarm-bells arranged upon various floors of a building, and their attached tripping-arms, reciprocating counterbalanced rods extending through the said floors, provided with collars engaging said tripping-arms, and hand-levers upon each floor engaging other collars upon the rods, of bell-cranks pivoted adjacent to the vertical reciprocating rods, engaging offsets upon said rods, and a horizontal connecting-bar uniting said bell-cranks, all adapted to operate substantially as herein set forth.

378,991. BUCKLE. HENRY C. WHITMARSH, Brooklyn, assignor to himself and Charles C. Carpenter, New York, N. Y. Filed Aug. 18, 1887. Serial No. 247,235. (No model.)



Claim.—The buckle described, comprising the flat tubular portion A, the extension A', and the teeth A^3, the latter being on the lower rear edge of the tubular portion A, substantially as and for the purpose specified.

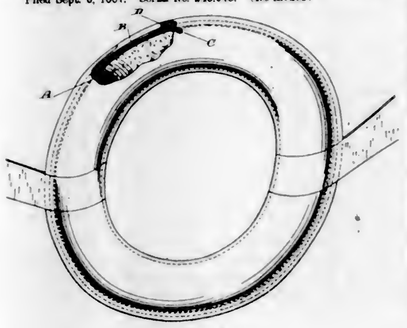
378,992. AUTOMATIC CAR-BRAKE. HERMANN WIEDLING, New York, N. Y., assignor to the Wiedling Motor Company, same place. Filed Nov. 23, 1886. Serial No. 219,634. (No model.)



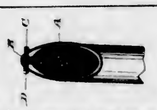
Claim.—1. The combination, with the platform of a car, of the stop 66, rack 64, pedal 51, and rod 58 to connect said pedal with the brake mechanism of a car, substantially as and for the purposes set forth.

2. The combination, with the brake mechanism of a car, of the shaft 47, provided with U-shaped key 46, pins 42 43 44 45, cylinder 32, provided with openings 38 39 in its head, and cylinder 31, provided with openings 40 and 41 in its head, whereby the brake mechanism of the car can be set by rotating the shaft 47, substantially as and for the purposes set forth.

378,993. LIFE-FLOAT. HERBERT H. WILLIAMS, Thomaston, Me. Filed Sept. 6, 1887. Serial No. 248,973. (No model.)



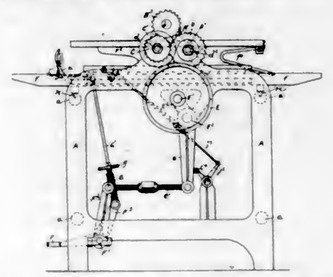
378,993.



Claim.—1. A ring-buoy provided with an encircling pipe forming a reservoir for oil and provided with a suitable outlet, by which the oil may escape, substantially as described.

2. A ring-buoy having an encircling pipe forming a reservoir for oil, and provided with open outlet-pipes directed to each side or surface of the buoy, substantially as and for the purpose described.

378,994. IRONING-MACHINE. EDGAR WILSON and JOHN WM. BINDER, Philadelphia, Pa.; said Binder assignor to said Wilson. Filed Nov. 17, 1886. Serial No. 219,195. (No model.)



Claim.—1. The combination, with two standards, an ironing-roller journaled to said standards and carrying a gear-wheel, two studs, two gear-wheels and two friction driving-wheels mounted thereon, a longitudinal track-frame centrally pivoted to transverse bars secured to said standards, a reciprocating carriage provided with a table, and a rack secured to the bottom thereof, of a horizontal shaft, a pinion mounted on said shaft and engaging with said rack, a rocker-shaft provided with bearings in which said horizontal shaft is supported, a friction driven wheel attached to the latter shaft, a depending arm formed integral with said rocker-shaft, a shaft journaled in said standards, a treadle, vertical arm, and bifurcated arm formed integral with said shaft, an adjustable connecting-rod pivoted to said vertical arm and to said depending arm, a holder pivoted to said bifurcated arm, and a rod secured to said holder and pivoted to said track-frame, substantially as and for the purposes set forth.

2. In an ironing-machine, the combination, with an ironing-roller carrying a gear-wheel, two studs, two gear-wheels, and two friction-wheels mounted on said studs, a reciprocating carriage, a table mounted on and carried thereby, and a rack on the under side of said carriage, of a horizontal shaft, a pinion mounted on said shaft and engaging with said rack, a rocker-shaft having bearings in which said horizontal shaft is supported in position, a frictional driven wheel attached to said shaft, a depending arm formed integral with said rocker-shaft, a horizontal shaft, a vertical arm, a treadle, and a bifurcated arm formed integral with said shaft, a longitudinal rod pivoted to said vertical arm and to said depending arm, a holder hinged to said bifurcated arm, and a rod fitting into said holder and pivoted to a longitudinal frame, substantially as and for the purposes set forth.

3. In an ironing-machine, the combination, with two standards, an ironing-cylinder journaled in said standards, a gear-wheel mounted on one of the journals of said cylinder, fast and loose pulleys mounted on the same journal, a longitudinal track-frame pivoted centrally to the upper supporting-bars of said standards, a reciprocating carriage, and an ironing-table mounted thereon, of two studs, two gear-wheels and two friction-wheels mounted on said studs, a horizontal shaft and a friction-wheel mounted thereon, said shaft being held in bearings upon a rocker-shaft, and the rocker-shaft journaled in said standards and having cast therewith a depending arm, a vertical arm and a bifurcated arm cast with the treadle-shaft journaled in said standards, a treadle, a longitudinally-adjustable connecting-rod pivoted to said vertical arm and to said depending arm, a holder hinged to said bifurcated arm, and a rod pivoted to said track-frame and adjustable in said holder, substantially as and for the purposes set forth.

4. In an ironing-machine, the combination, with two standards, a reciprocating carriage, and an ironing-table mounted thereon, of a horizontal shaft journaled to said standards, a treadle, a vertical arm and a bifurcated arm formed integral with said shaft, and means, substantially as described, connected with said bifurcated arm, for elevating said carriage by depressing said treadle, an adjustable connecting-rod pivoted to said vertical arm and to a depending arm, a rocker-

shaft, a horizontal shaft held in bearings upon said rocker-shaft, a friction-wheel mounted on said horizontal shaft, an ironing-cylinder journaled in said standards, a gear-wheel mounted on one of the journals of said cylinder, a swinging arm and studs, and two gear-wheels and two friction driving-wheels mounted thereon, substantially as and for the purposes set forth.

5. In an ironing-machine, the combination, with two standards, a reciprocating carriage and an ironing-table mounted thereon, four anti-frictional rollers, semicircular recesses formed in the longitudinal frames of said carriage for receiving the journals of said rollers, two longitudinal grooved rails pivoted centrally to supporting-bars secured to said standards, a rack attached centrally to the bottom of said carriage, an ironing-cylinder journaled in said standards, a gear-wheel on one of the journals of said cylinder, studs, a swinging arm, and two gear-wheels and two friction driving-wheels mounted on said studs and said swinging arm, of a horizontal shaft held in bearings upon the rocker-shaft, a pinion mounted on said horizontal shaft, a friction driven wheel on the extremity of said shaft, a rocker-shaft, a depending arm formed integral therewith, a longitudinal connecting-arm pivoted to a vertical arm and to said depending arm, said vertical arm forming part of a horizontal shaft journaled in said standards, and to which the treadle is connected, and the treadle, all arranged substantially as and for the purposes set forth.

6. In an ironing-machine, the combination, with a carriage and a cam-plate having an operating-lever arm centrally pivoted to said carriage, of a bracket having two curved arms secured to the end extremities of said carriage, a vertical stop-pin in one of said arms, two gripping-jaws journaled in said bracket, a helical spring between the legs of said jaws, a pin projecting from one of said jaws, a longitudinal rod held by a lug secured to the anvil-shaped supporting-bar of said carriage, and a spring coiled around said rod, all arranged substantially as and for the purposes set forth.

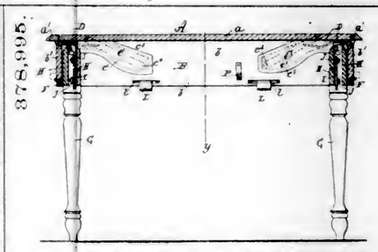
7. In an ironing-machine, the combination, with a carriage carrying a support for an ironing-table, of a semicircular neck-clamp fitting into a recess in said table, a curved arm attached to said neck-clamp, said curved arm being mounted on a shaft held in brackets secured to the bottom of said ironing-table, a U-shaped lever attached to said shaft, a longitudinal rod pivoted to said lever, a curved lever pivoted to said longitudinal rod, a spring coiled around said longitudinal rod, a cam-plate centrally pivoted to said carriage, and its operating-lever arm, substantially as and for the purposes set forth.

8. In an ironing-machine, the combination of a carriage, an ironing-table supported thereby, a bracket attached to the extremity of said carriage, having curved arms, a stop-pin in one of said arms, two gripping-jaws journaled in said curved arms, a spring between the legs of said jaws, a lateral stop-pin extending from the side of one of said jaws, a longitudinal rod attached to one of said jaws, having a helical spring coiled around the same, a cam-plate pivoted to said carriage, a lever attached to said plate for operating the same, a semicircular neck-clamping device having a curved arm mounted on a shaft held in bearings in brackets secured to the under side of said table, a U-shaped lever attached to said shaft and to a longitudinal rod, a spring coiled around said longitudinal rod, and a curved lever attached to said rod and engaging with the projections of said cam-plate, substantially as and for the purposes set forth.

9. In an ironing-machine, the combination, with two standards, an ironing-cylinder journaled to said standards, a gear-wheel on one of said journals, studs, a swinging arm, two gear-wheels and two friction driving-wheels mounted on said studs and said swinging arm, a reciprocating carriage carrying an ironing-table, four anti-frictional rollers, recesses formed in the longitudinal frames of said carriage for receiving the journals of said anti-frictional rollers, two longitudinal rails pivoted to supporting-bars secured to said standards, a rack attached to the bottom of said carriage, stops *h* on the sides of said carriage, a rock-shaft, *i*, held in bearings of said longitudinal frames, arms i^2, having anti-frictional rollers on their free extremities, the shaft i^3, journaled in brackets extending vertically from said standards, the arm i^4, with an anti-frictional roller on its free extremity, levers *j* and j^2, and the adjustable connecting-rod j^3, of a horizontal shaft held in bearings upon a rocker-shaft, a pinion mounted on said horizontal shaft, the friction driven wheel E on the extremity of said shaft, the rocker-shaft E^2, the depending arm *e*, formed integral therewith, longitudinally-adjustable connecting-rod *e'*, pivoted to the vertical arm E^3 and to said depending arm *e*, said vertical arm forming part of a horizontal shaft journaled in said standards, a treadle and a central bifurcated arm formed integral with said shaft, a holder hinged thereto, and a rod supported thereby and pivoted to said longitudinal frames, substantially as and for the purposes set forth.

378,995. COMBINED TABLE AND SOFA. JOHN E. ALDEN, Lake George, N. Y. Filed June 16, 1887. Serial No. 241,525. (No model.)

Claim.—1. The combination, in a table and sofa, of a frame, table-legs pivoted thereto and adapted to fold within said frame, a top



having hinged end parts which when unfolded form legs to the table-frame when inverted, and a sofa-top comprising hinged sections adapted for application to the inverted table-frame to form a sofa and to be stowed away within the frame, substantially as described, for the purposes set forth.

2. A combined table and sofa constructed substantially as herein shown and described, and consisting of a frame, B, legs G, pivoted thereto, a lever, I, and lock-bars J J, arranged to lock the legs in extended positions, a table-top, A, formed of a part, *a*, fixed to the frame B, and two hinged end parts, *a' a'*, which when unfolded form legs to the table-frame when inverted, bars C, pivoted to the part *a'* and having holes c^3 at their free ends, levers D D, pivoted to the frame and having studs *d*, adapted to the bar-holes c^3, to support the parts *a'*, cross-bars L, fitted loosely to the frame B, and sofa fixtures comprising hinged bottom and head parts, M N O, and a hinged back comprising parts R S, having dowel-pins T, adapted to holes in the table-frame, supports P, for the sofa-bottom on the frame B, and a locking device, U, holding the parts R O to each other, and said sofa fixtures adapted for folding and stowage in the table-frame, all substantially as described, for the purposes set forth.

3. In a combined table and sofa, the table made with a frame, B legs G, hinged to and adapted to fold within the frame, and a top, A, comprising a part, *a*, fixed to the frame, and two hinged end parts, *a' a'*, which when unfolded form legs on the inverted table-frame for the sofa, substantially as shown and described.

4. In a combined table and sofa, the table made with a frame, B, legs G, hinged to and adapted to fold within the frame, a top, A, formed of a fixed part, *a*, and two hinged end parts, *a' a'*, combined with bars C C, pivoted to each end part *a'*, and levers D D, having studs *d*, adapted to lock the bars to hold the parts *a'* rigid as sofa-legs, substantially as shown and described.

5. In a combined table and sofa, the table made with a frame, B, legs G G, pivoted at each end of the frame, and said legs connected by a cross bar or bars, H, in combination with a lever, I, and locking-bars J J, attached to opposite ends of the lever and adapted to enter holes in the table-frame, substantially as described, for the purposes set forth.

6. In a combined table and sofa, the table-frame provided with notches *l*, combined with a sectional sofa-top fitting within the frame, and removable cross-bars L, adapted to the frame-notches for retaining the sofa-top in the frame, substantially as herein set forth.

7. In a combined table and sofa, the table-frame made with sides *b* and ends *b'*, narrower than the sides, in combination with a removable sofa formed with a bottom which rests on the ends *b'* and between the sides *b*, substantially as described, for the purpose set forth.

8. In a combined table and sofa, the table-frame made with sides *b* and ends *b'*, narrower than the sides, and provided with hinged blocks F, combined with a removable sofa formed with a bottom which rests on the ends *b'* and between the sides *b* when the blocks F are unfolded, substantially as described, for the purposes set forth.

9. In a combined table and sofa, the table-frame B, formed with sides *b*, wider than its ends *b'*, and with legs G, adapted to fold within the frame, combined with a removable sofa formed with hinged bottom parts, M N, which rest on the ends *b'* and between the sides *b*, and supports P, fixed to the sides near the joint between the parts M N substantially as described, for the purposes set forth.

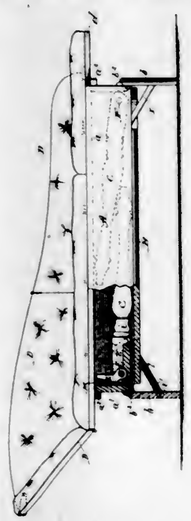
10. In a combined table and sofa, the table-frame provided with holes *t* in the lower edge of one side, and having hinged legs G, adapted to fold within the frame, in combination with a removable sofa made with hinged bottom sections, M N, and head-piece O, bottom rests, P, and a hinged back section formed of parts R S, hinged to fold edgewise, and having dowels T, adapted to the frame-holes *t*, and a latch device holding the parts R O together, substantially as described, for the purposes set forth.

11. In a combined table and sofa, the combination, with the section R of the removable sofa and its head-piece O, of a catch-plate, U, made in angular form and provided with studs *u u'*, locking into the parts R O, substantially as shown and described.

12. In a combined table and sofa, the removable sofa formed of bottom sections, M N, hinged together, a head-piece, O, hinged to the part M, a back formed of sections R S, hinged edgewise at *r'*, and provided with dowels T, and a latch device, U, holding the parts R O together, substantially as shown and described

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378,996. COMBINED SOFA AND TABLE. JOHN E. ALDEN, Lake George, N. Y. Filed Aug. 16, 1887. Serial No. 247,132. (No model.)



Claim.—1. The combination, in a sofa and table, of a frame, A, table-legs C, pivoted thereto and adapted to fold within said frame, a top, B, having hinged parts *b b*, which when unfolded form legs to the inverted table-frame, a sofa-top adapted for support on the inverted table-frame, and locking devices for the hinged parts *b b*, consisting of braces I, connected to said hinged parts and provided with notches *i*, arms G, pivoted to the table-frame, and latches H, pivoted to the arms G and adapted to the brace-notches, substantially as herein set forth.

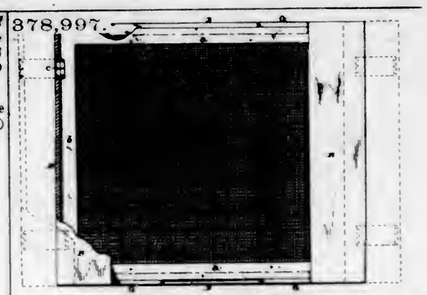
2. The combination, in a table adapted when inverted to support a sofa-top, of a frame, A, legs C, pivoted thereto and adapted to fold within said frame, a top, B, having hinged parts *b b*, which when unfolded form legs to the inverted table-frame, and locking devices for said hinged parts *b b*, consisting of braces I, connected to said legs and provided with notches i, arms G, pivoted to the table-frame, and latches H, pivoted to the arms G and adapted to the brace-notches, substantially as herein set forth.

3. The combination of the table-frame A, a top, B, thereon, having hinged parts *b b*, which when unfolded form legs to the inverted table-frame, a shaft, F, journaled to the frame A, legs C C, connected by a cross-bar, E, and pivoted on the shaft F, braces I, pivoted to the legs *b* at *i'*, and provided with notches *i*, arms G, fixed to the shaft F, and latches H, held to the arms and adapted to the brace-notches, substantially as herein set forth.

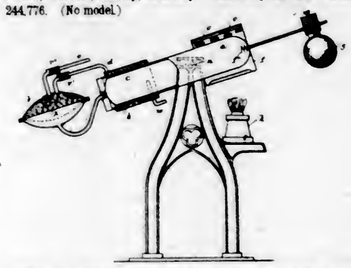
4. The combination of the table-frame A, a top, B, thereon, having hinged parts *b b*, which when unfolded form legs to the inverted table frame, a shaft, F, journaled to the frame A, legs C C, connected by a cross-bar, E, and pivoted on the shaft F, braces I, pivoted to the legs *b* at *i'* and provided with notches i, arms G, fixed to the shaft F, latches H, held to the arms, and a spring, M, operating to automatically engage the latches with the brace-notches, substantially as herein set forth.

378,997. WINDOW-SCREEN. JUDSON A. BALDWIN, Winooski, assignor to the Queen Ann Screen Company, Burlington, Vt. Filed Aug. 6, 1887. Serial No. 246,324. (No model.)

Claim.—The combination of the screen A, provided with top pieces, *a*, and end pieces, *b*, with the closed box-like sliding brackets B, which snugly fit over the ends of the frame, and which are provided with the guides G, which catch over guiding-strips secured to the frame of the screen, and the flexible stops C, which are secured to the ends of the screen-frames and the brackets, substantially as shown.



378,998. SELF-ACTING MOTOR AND PUMP. FRIEDRICH G. BARTHEL, Niederpoyritz, near Dresden, assignor to Paul Alexander Kühne, Dresden, Saxony, Germany. Filed July 19, 1887. Serial No. 244,776. (No model.)



Claim.—1. The combination of a pivoted cylinder and a smaller cylinder movable inside of it, with a heating device acting on one end of the former cylinder, a water-jacket surrounding the other end of said cylinder, a reservoir provided with a flexible diaphragm, a pipe extending from the space on one side of said diaphragm to said water-jacket, and a pipe extending from the space on the other side of said diaphragm to the interior of the cylinder at the end surrounded by said water-jacket, for the purposes set forth.

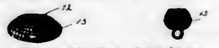
2. The cylinder *a*, provided with trunnions, in combination with the supporting-frame in which they are mounted, the springs *f f'* at each end of said cylinder, the smaller cylinder, C, sliding within cylinder A and against said springs, the reservoir B, the water-jacket K, surrounding one end of cylinder A and supplied by said reservoir, and the pipe *r*, conducting air from the interior of said cylinder to said reservoir, for the purpose set forth.

3. The cylinder A and the cylinder C, sliding therein, in combination with a water-jacket surrounding one end of the former cylinder, a heat-jacket covering the other end thereof, a heating device arranged under said jacket, a reservoir for supplying said water-jacket and mounted on the same end of said cylinder, and a counterbalance-weight carried by the other end of said cylinder, substantially as set forth.

378,999. PROCESS OF PRESERVING FRUITS, &c. HARRY I. BLITS, Philadelphia, Pa. Filed Feb. 9, 1887. Serial No. 227,062. (No specimens.)

Claim.—The herein-described process of preserving fruits, consisting in first arranging fruit and sugar in alternate layers and allowing the same to stand for a time; secondly, drawing the sweetened juice from the fruit, exposing the latter to a dry heat in jars, and subsequently pouring the previously prepared and heated sirup on the fruit in the heated jars.

379,000. BUTTON. ADOLPH BLUMENBERGH, New York, N. Y. Filed Jan. 14, 1888. Serial No. 260,679. (No model.)

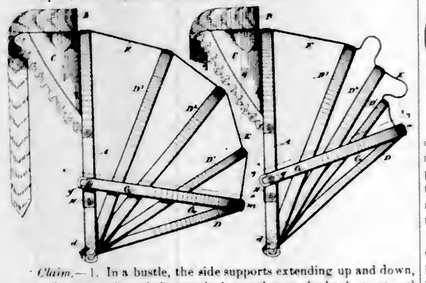


Claim.—1. The combination, with a button-blank, of an ornamental inner cover placed thereon and an outer cover connected thereto, the outer cover being formed with a central opening, substantially as described.

2. The combination, with a button-blank, of an inner embroidered cover placed thereon and an outer knit crocheted cover connected thereto, the outer cover being formed with a central opening to expose the ornamented portion of the inner cover, substantially as described.

3. The combination, with a button-blank, of an inner embroidered cover and an outer cover placed thereon, the outer cover being formed with a central opening to expose the inner cover.

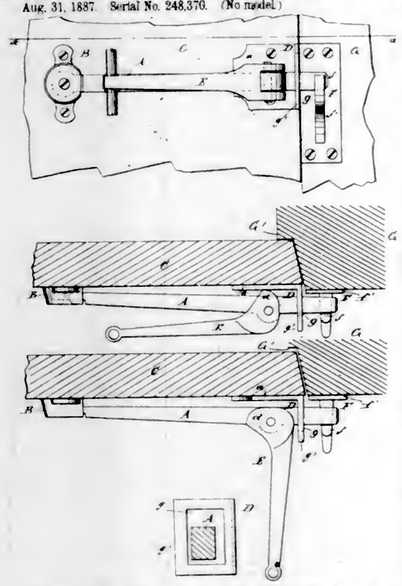
379,001. BUSTLE. CHARLES C. CARPENTER, New York, N. Y. Filed Sept. 1, 1887. Serial No. 248,429. (No model.)



Claim.—1. In a bustle, the side supports extending up and down, two spring-bows, D and G, attached together at the back at *m* and free to spring, as shown, in combination with the pivots *d* and *g*, set at different heights in the side supports, and with a flexible band or tape, E, connecting the fastening *n* at the back with the waistband, as herein specified.

2. In a bustle, the foundation spring-bow A, extending across and serving as the frame on each side, in combination with the spring-bows D G, pivoted to said bow A at *d g* and riveted at *m*, and with the spring-bows D' D² D³ and connecting-tape E, and with a suitable waistband, B, and connecting-piece C, as herein specified.

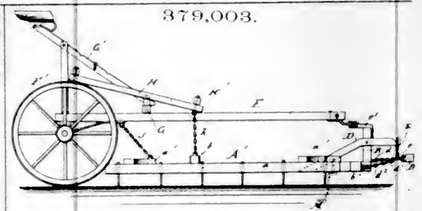
379,002. DOOR-SECURER. FRANK T. CLADEK, Rahway, N. J. Filed Aug. 31, 1887. Serial No. 248,376. (No model.)



Claim.—1. The combination, with the pivoted latch-bar A and keeper F, of the lever E, pivoted to the latch and formed with the cam *d*, substantially as and for the purposes described.

2. The angle-plate D, having the apertured frame *g* and friction-plate *a*, the keeper F, and the pivoted latch A, in combination with the lever E, pivoted to the latch and formed with the cam *d*, substantially as described.

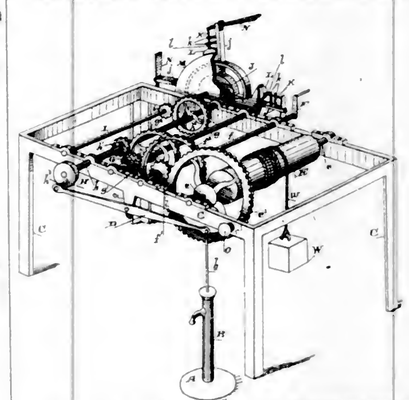
379,003. HARROW. GEORGE COFFMAN, Spearville, Kans., assignor to himself, Philip J. Upp, and William A. Reid, all of same place. Filed Sept. 22, 1887. Serial No. 250,419. (No model.)



Claim.—1. The combination, with the harrow-sections hinged to one another and provided with an inclined draft-adjusting plate, the draft-connections, and the lift-chain, of a truck, a V-shaped reach-bar projected from said truck over the harrows, a flexible connection between the reach-bar and harrows, a foot-lever pivoted upon said reach, a lifting-bar secured to said lever, and a flexible connection between the lifting-bar and harrows, substantially as set forth.

2. The combination, with the harrow-sections A and A', hinged to one another and having their ends stepped in opposite directions and provided with auxiliary detachable teeth *k*, an inclined draft-adjusting plate, D, the draft-connections *d'* and *d*³, and the lift-chain E, of a truck, F', a V-shaped reach-bar, F, projected from said truck over the harrows, a flexible connection between the reach-bar and harrows, a foot-lever pivoted upon said reach, a lifting-bar secured to said lever, a flexible connection between the lifting-bar and harrows, and S-shaped detachable shoes or runners attached to the under side of the harrows at the front, substantially as shown and described, and for the purpose herein set forth.

379,004. MOTOR. CHANCEY E. COOLEY and EDWARD G. NASON, Fort Jones, Cal. Filed Aug. 31, 1887. Serial No. 248,419. (No model.)

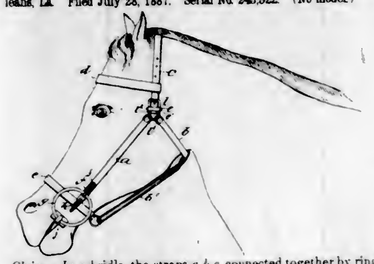


Claim.—1. In a motor, a pivoted lever, D, connected with the machine to be driven, and a shaft, *h*, carrying a crank-disk, H, connected with one end of the pivoted lever, in combination with a shaft *e*, a drum on said shaft, a weight, W, a cord suspending said weight from the drum, a train of gearing between the drum-shaft and the crank-shaft, whereby the latter is operated, and a brake mechanism comprising a fixed and a rotating disk and sliding rods carrying brake-shoes, substantially as herein described.

2. In a motor, a drum, a weight suspended therefrom, whereby it is rotated, and a train of gearing between said drum and the mechanism to be driven, in combination with the means for controlling the speed, comprising a rotating disk operated by the train of gearing, arms on said disk carrying pivoted blades or wings, sliding rods carried by the arms and having brake-shoes, and a fixed disk against which the shoes are forced by the movement of the vanes or wings of the arms, substantially as herein described.

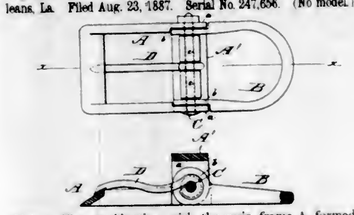
3. In a motor, the pivoted lever or walking-beam connected with the machine to be driven, the crank connected with said lever, the winding-drum and the weight suspended therefrom, and a train of gearing between said drum and the crank-shaft, in combination with the shaft I, gears by which said shaft is rotated from the crank-shaft, the disk on the end of said shaft I, the arms with pivoted vanes carried thereby, the spring-actuated sliding rods operated upon by said vanes and having brake-shoes, and the fixed disk M, against which the brake-shoes operate, whereby the power is controlled, all arranged and adapted to operate substantially as herein described.

379,005. BRIDLE. EDWIN CRIPPEN and WILLIAM KING, New Orleans, La. Filed July 28, 1887. Serial No. 245,522. (No model.)



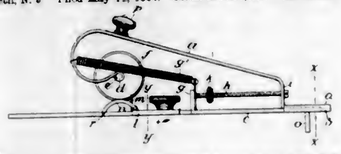
Claim.—In a bridle, the straps *a b c*, connected together by rings, and a buckle having a detachable shackle, substantially as and for the purposes set forth.

379,006. BUCKLE. EDWIN CRIPPEN and WILLIAM KING, New Orleans, La. Filed Aug. 23, 1887. Serial No. 247,656. (No model.)



Claim.—The combination, with the main frame A, formed with the apertured cheek-pieces *a a*, of the shackle B, bolt C, buckle-tongue D, and loop A', substantially as shown and described.

379,007. BUTTON-HOLE CUTTER. DAVID H. CUNNINGHAM, Elizabeth, N. J. Filed May 11, 1887. Serial No. 237,897. (No model.)



Claim.—1. The combination, with a button-hole cutter herein described, of the sliding carriage having guides integral therewith adapted to engage with the base-plate *c*, the forward end of the said carriage carrying a rotary cutter, substantially as shown and described.

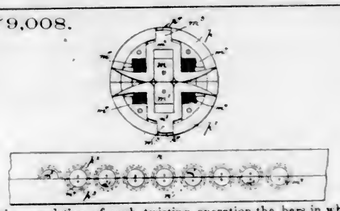
2. The combination, with a rotary button-hole cutter herein described, of the retracting-spring *g'*, having one end thereof connected with the lug *g* of the base-plate *c*, the other end of said retracting-spring connected with the forward end of the sliding carriage, substantially as shown and described.

3. The combination, with the button-hole cutter herein described, of the horizontal screw having one end connected with the vertical lug or standard of the base-plate, the other end playing in a perforation made in the sliding carriage, and the threaded nut mounted on said horizontal screw, the whole of which forms the distance-regulator, substantially as shown and described.

379,008. MACHINE FOR MAKING WIRE-NETTING. WILLIAM F. DENNER, London, England. Filed Sept. 7, 1886. Serial No. 212,959. (No model.) Patented in England Sept. 3, 1885, No. 10,456; in India Dec. 9, 1885, No. 1,209; in Victoria Dec. 12, 1885, No. 4,354; in Cape Colony Feb. 5, 1886, No. 161; in Queensland Feb. 6, 1886, No. 103; in Canada Feb. 16, 1886, No. 23,437; in France Feb. 24, 1886, No. 174,380; in Belgium Feb. 24, 1886, No. 72,132; in New South Wales Mar. 2, 1886, No. 568; in South Australia Apr. 10, 1886, No. 672; in New Zealand Apr. 15, 1886, No. 1,794; in Natal July 14, 1886, No. 9, and in Spain Feb. 17, 1887, No. 6,720.

Brief.—The series of half-spindles which carry the body-wires are, except the half-spindle at the end of the series, locked in pairs to the bipart sleeves and rotate with them an odd number of half-times.

379,008.



At the completion of each twisting operation the bars in which the bipart sleeves are journaled are both moved lengthwise in opposite directions to shift the spindles. Each spindle, by reason of its rotating an odd number of half-times, is carried first in one of the bars and then in the other, and it will therefore travel from one end to the other of the bars. The end spindle is not locked to its sleeve and is not rotated with it, but is rotated by other means an even number of half-times, so that at the completion of its rotation it will, by the endwise movement of the bars, be carried back toward the other end of the series. By this arrangement the general direction of the body-wires of the netting produced is diagonal instead of longitudinal.

Claim.—1. In a machine for making wire-netting, the semi-cylindrical spindles which carry the wires, having bipart driving-sleeves, substantially as set forth.

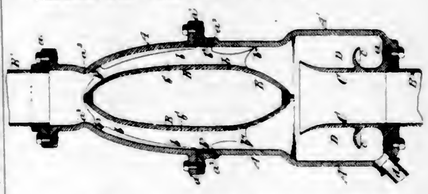
2. In a machine for making wire-netting, the combination, with semi-cylindrical spindles provided with longitudinal passages for the wire, of bipart sleeves embracing said spindles and providing bearings therefor, and clutch devices, substantially as described, whereby the spindles are compelled to rotate with the sleeves when required so to do.

3. In a machine for making wire-netting, the combination, with the bars *n n'* and mechanism for imparting reciprocating motion thereto, of the bipart sleeves mounted rotatively in said bars, mechanism for imparting rotary motion to said sleeves, the semi-cylindrical twisting-spindles mounted in said sleeves, and automatic clutch mechanism carried by said spindles, substantially as and for the purposes set forth.

4. In a machine for making wire-netting, the combination, with the bipart sleeves *p p'*, of the semi-cylindrical spindles *m m'* and the clutch mechanism borne by said spindles, said mechanism comprising the horned sliding pieces m^3 m^3, having projections m^5, to engage recesses p^4 in the sleeves, and springs m^4, substantially as set forth.

5. In a machine for making diagonally-wired netting, the combination, with the continuous bars in which the twisting-spindles are mounted, and mechanism for imparting a reciprocating motion to said bars, of the semi-cylindrical twisting-spindles, mechanism for imparting to the body-wire or intermediate spindles an odd number of half-revolutions, first in one direction and then in the other, and mechanism for imparting to the selvage-wire or terminal spindles an even number of half-revolutions, whereby the spindles carrying the body-wires are caused to travel gradually to and fro from one end of the series to the other.

379,009. SEPARATOR. J. JOSEPH DE RYCKE, New York, N. Y. Filed Nov. 2, 1887. Serial No. 254,076. (No model.)



Claim.—1. The combination, with a steam pipe or passage, of a core or body located substantially concentric in the pipe or passage, made conical or conoidal at the front end, and provided on its exterior with spiral channels, and an annular well or receptacle located at the base or back end of said core or body, substantially as herein described.

2. The combination, with a steam pipe or passage having provision for the attachment of a supply-pipe at one end and a delivery-pipe at the other end, of a core or body located substantially concentric within the pipe or passage and provided on its exterior with spiral channels, the pipe or passage having at the front or upper end of said core or body an inward contraction, a^3, to direct the entering steam upon the core or body, and an annular well or receptacle, D, at the back or lower end of said core or body, and through the center of

379,013.

379,015.

which steam passes to the delivery-pipe, substantially as herein described.

3 The combination, with a steam pipe or passage, of a core or body arranged substantially concentric therein, and having a conical or conoidal form at opposite ends and spiral ribs or flanges forming spiral channels on its exterior, and an annular well or receptacle constructed in the pipe or passage at the back or lower end of the core or body, substantially as herein described.

4. The combination, with a steam pipe or passage divided transversely to its length, of a substantially-concentric core or body having spiral ribs or flanges upon its exterior, and which is supported in a rabbet formed between the two sections of which the pipe or passage is composed, and an annular well or receptacle, D, constructed in the pipe or passage at the lower or back end of the core or body and through the hollow center of which the steam passes to the delivery-pipe, substantially as herein described.

5. The combination, with the pipe or passage A and the core or body B, constructed with spiral ribs or flanges upon its exterior, of the wall or throat C, forming a well or receptacle, from which leads an outlet, and having the hooked flange *c*, for directing liquid to the bottom of the well or receptacle, substantially as herein described.

6. The combination, with a steam pipe or passage having the annular enlargement A′ and the circular throat or flange C, arranged opposite the said enlargement and forming therewith a well or receptacle, of a core or body having spiral ribs or flanges and arranged substantially concentric in the pipe or passage, substantially as herein described.

7. The combination, with the pipe or passage A, having connected with it at one end the supply-pipe B′, and having in its opposite end the the annular well D, formed by the circular wall C, and the delivery-pipe B², extending from the central passage through the well, which is formed by the circular wall C, of a central core or body, B, having spiral channels formed on its periphery and arranged in the pipe or passage A, and the outlet-pipe *d*, leading from the annular well direct to a steam-boiler, and provided with a check-valve, *d′*, substantially as herein described.

379,010. **STOPPER-EXTRACTOR.** BENJAMIN J. GREELY, Boston, Mass. Filed Sept. 3, 1887. Serial No. 248,736. (No model.)

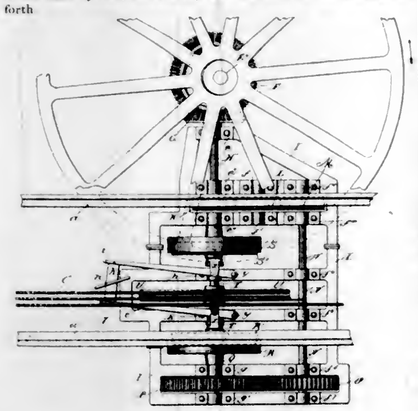


Claim.—The improved stopper-extractor herein described, made of a piece of metal, *a*, having a lengthwise groove, *b*, in the surface of the extractor, and at one end a sidewise extension, *a*, substantially as and for the purpose set forth.

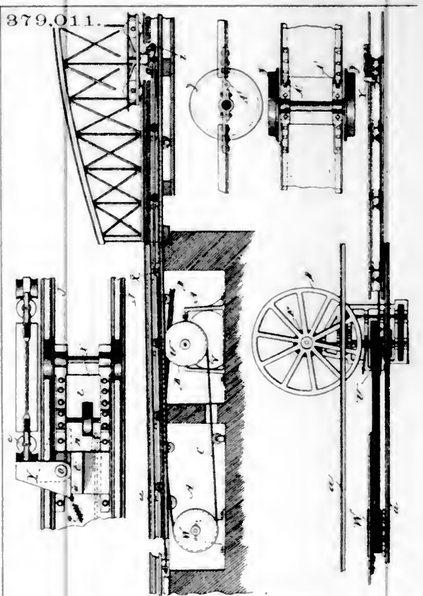
379,011. **VEHICLE-TRANSPORTER.** VICTOR GUSTAVSON, Chicago, Ill. Filed Feb. 28, 1887. Serial No. 229,256. (No model.)

Claim.—1. A vehicle transporter consisting of the movable truck X, operated by the subsidiary cable C, substantially as described.

2. A vehicle-transporter consisting of the movable truck X, operated by the subsidiary cable C, the latter operated by the main cable of the cable system, substantially as shown, and for the purpose set forth.



379,011.

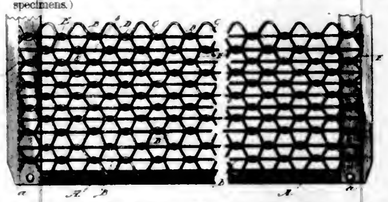


3. A vehicle-transporter for cable-cars, consisting of the movable truck X, operated by the subsidiary cable C from the main terminal pulley D by shafts and gearing, substantially as shown, and for the purposes set forth.

4. A vehicle-transporter for cable-cars, consisting of the movable truck X, in sections, hinged at A′ to permit vertical movement, driven by the subsidiary cable C around the drums U and W from the pulley D by the shafts H, N, Q, and T, clutches S S′ and R R′, and gears F, G, K, L, M, O, and P, substantially as described, and for the purpose set forth.

5. In a vehicle-transporter for cable-cars, the combination of the truck X, in sections, hinged to permit vertical movement, and provided with the arm Y, operated by the spring *q*, the arm *v*, and wheels *l*, and the cable C and drums U and W, operated by the pulley D through the shafts H, N, Q, and T, clutches S S′ and R R′, gearing F G K L M O P, and necessary boxes, the levers *i i′*, pivoted at *y y*, and provided with the forks *x x* and stretcher *k* and guide *n*, and the frame-work I, substantially as shown, and for the purpose set forth.

379,012. **WIRE FABRIC FOR MATTRESSES.** FREDERICK HAINSWORTH, Chicago, Ill. Filed Aug. 23, 1887. Serial No. 247,649. (No specimens.)



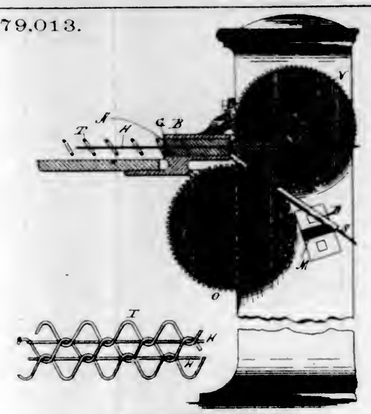
Claim.—As an article of manufacture, wire fabric for mattresses, &c., made of coils of wire and straight wire, the straight wires being within the coils and embraced or clasped by the two coils at each point of interlocking, substantially as shown.

379,013. **MACHINE FOR MANUFACTURING WIRE FABRICS.** FREDERICK HAINSWORTH, Chicago, Ill. Filed Sept. 22, 1887. Serial No. 250,385. (No model.)

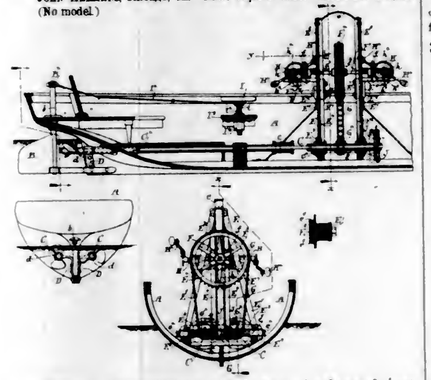
Claim.—1. A coiling device provided with a hole through the length of the spindle, as and for the purpose shown.

2. In combination with a coiling device provided with a hole through the length of the spindle, the push-wheels I and K, as and for the purpose shown.

379,013.



379,014. **BOAT PROPELLING AND STEERING APPARATUS.** JOHN HERMANS, Chicago, Ill. Filed Sept. 6, 1887. Serial No. 248,943. (No model.)



Claim.—1. The combination, with the supporting-frame of a boat-propelling apparatus and a propeller-shaft, of a horizontal shaft, F, mounted in said frame above and parallel with the propeller-shaft, pulleys upon said propeller-shaft and shaft F, and a driving-belt placed over said pulleys, and two transverse shafts mounted in bearings adjustably secured upon the said frame and detachably connected by gearing with the shaft F, whereby one or both of said transverse shafts may be disconnected from the shaft F, as described.

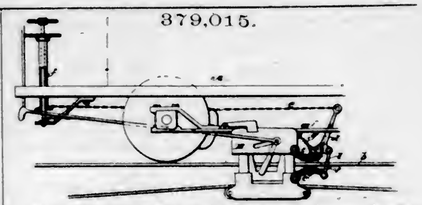
2. The combination, with the supporting-frame of a boat-propelling apparatus and a propeller-shaft, of a horizontal shaft, F, mounted in said frame above and parallel with the propeller-shaft, pulleys upon said propeller-shaft and shaft F, a driving-belt placed over said pulleys, a transverse shaft connected by gearing with the shaft F and provided with a hand crank or cranks, and bearings for said shaft F and for the transverse shaft having vertically-adjustable connection with the said frame, substantially as described.

3. A hand propelling apparatus for boats, comprising two propeller-shafts and a driving-pulley, a frame having a transversely-arranged horizontal slot at its lower portion, laterally-movable bearings for said propeller-shafts adjustably secured in said horizontal slot, and a driving-belt passing around the driving-pulley and both propeller-shafts, whereby the propeller-shafts may be adjusted laterally to tighten or loosen the driving-belt, substantially as described.

379,015. **FRICTION-BRAKE FOR CABLE-RAILWAY CARS.** LEWIS M. HOSEA, Cincinnati, Ohio, assignor to the Lane & Bodley Company, same place. Filed Dec. 7, 1887. Serial No. 257,234. (No model.)

Claim.—1. In a cable railway, in combination with the railway-car, an adjustable friction-clamp adapted to engage by frictional sliding contact against the upper and lower surfaces of the slot-rail and carried upon the car for actuating the same as a brake to the momentum of the car, substantially as set forth.

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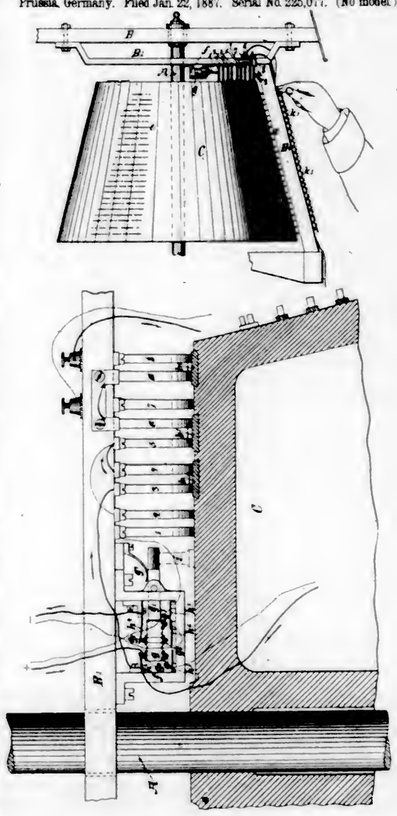


2. In combination with a cable-railway car, (and attached to the same directly or to the grip by which the same is connected to the propelling-cable,) a friction-clamp consisting, essentially, of two friction-blocks and a toggle lever or levers connecting the same through the tunnel-slot and operating to clamp said blocks against the upper and lower surfaces of the slot-rails as a friction-brake to the momentum of said car, substantially as set forth.

3. In a cable railway, in combination with the railway-car, a friction-brake consisting, essentially, of two friction-blocks pivotally connected to the car or some attachment thereof in the vertical plane of the tunnel-slot and respectively above and below the slot-rail surface, a connecting-link passing through the slot and toggle-lever, connecting the link and the upper block, whereby the blocks may be adjusted vertically into frictional relations with the slot-rail surfaces to control the movements of the car, substantially as described.

4. The combination, with the slot-rails and car of a cable railway, of the friction-blocks *c c′*, toggle-lever *d*, and link, substantially as set forth.

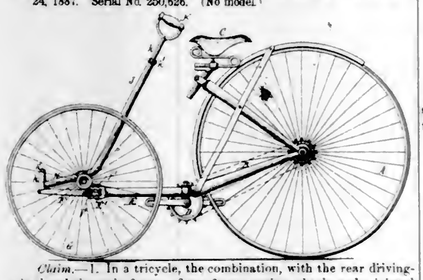
379,016. **ELECTRIC TELEGRAPH.** DAVID KUNHARDT, Aachen, Prussia, Germany. Filed Jan. 22, 1887. Serial No. 225,077. (No model.)



Claim.—1. In an electric telegraph, the combination of a number of rotating cones provided with the dots and dashes of the Morse system, with keys, and a pawl arrangement adapted to engage the keys, and with nose d' on the cones for releasing the keys, substantially as specified.

2. In an electric telegraph, the combination of a series of rotating cones with the plates g, attached to levers g', and provided with the contact-points g^2 g^3, with frames f, attached to plates B', and with springs h^2 h^3 and springs i, attached to the cones, substantially as specified.

379,017. VELOCIPEDE. EMMIT G. LATTA, Friendship, N. Y., assignor to the Pope Manufacturing Company, Portland, Me. Filed Sept. 24, 1887. Serial No. 250,626. (No model.)



Claim.—1. In a tricycle, the combination, with the rear driving-wheel and the main frame, of two front steering-wheels, and a jointed frame which supports the steering-wheels and is adapted to fold backwardly and inwardly, substantially as set forth.

2. The combination, with the rear driving-wheel and the main frame, of two front steering-wheels, lateral arms pivoted with their inner ends to the main frame, wheel-supporting arms pivoted to the outer ends of the lateral arms, and a transverse brace connecting the wheel-supporting arms, substantially as set forth.

3. The combination, with the rear driving-wheel and the main frame provided at the front with laterally-extending arms, of independent steering-wheel supports pivoted to said arms and extending rearwardly therefrom, and two front steering-wheels attached to said supports in rear of the pivots thereof, substantially as set forth.

4. The combination, with the rear driving-wheel and the main frame provided with a reach, E, of the lateral arms F, pivoted to the reach, arms H, pivoted to the outer ends of the arms F and extending rearwardly therefrom, steering-wheels G, supported by the arms H, and a jointed cross-brace, I, connecting the arms H, substantially as set forth.

5. The combination, with a rear driving-wheel, its frame, and the reach, of arms F, pivoted at their inner ends to the reach by a vertical bolt, f', a clamping-bolt, f^2, connecting the arms F in front of the bolt f', steering-wheels G, independent wheel-supports H, pivoted to the arms F, and a jointed brace, I, connecting the supports of the steering-wheels, substantially as set forth.

6. The combination, with the rear driving-wheel and the frame provided with a reach, E, of the arms F, pivoted to the reach, the arms H, pivoted to the arms F, steering-wheels G, mounted on the arms H, and a connecting-brace, I, composed of screw-threaded sections and a screw-sleeve, substantially as set forth.

7. The combination, with the rear driving-wheel and the main frame provided at the front with laterally-extending arms, of independent steering-wheel supports pivoted to said arms and extending rearwardly therefrom, two front steering-wheels attached to said supports in rear of the pivots thereof, and a transverse brace connecting said steering-wheel supports, substantially as set forth.

8. The combination, with the rear driving-wheel and its frame, of two front steering-wheels, independent pivoted supports to which the steering-wheels are attached, and an independent steering-lever attached to each steering-wheel support, substantially as set forth.

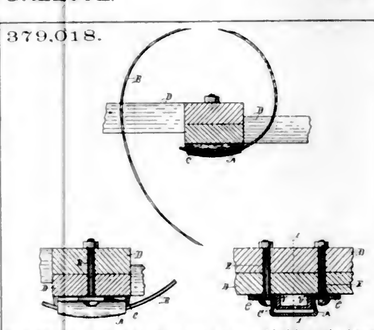
9. The combination, with the rear driving-wheel and the main frame, of two independent pivoted arms, H, steering-wheels attached to the arms H, and independent steering-levers J K, secured to the arms H, substantially as set forth.

379,018. HARROW-TOOTH HOLDER. WILLIAM S. LAWRENCE, Kalamazoo, Mich. Filed Nov. 16, 1887. Serial No. 255,290. (No model.)

Claim.—1. The combination, with a harrow tooth and frame, of the seat having the sides hollowed out, the binder having the bent sides with shoulders fitting in the hollow portion of said seat, and the securing-bolts, substantially as set forth.

2. The combination of a harrow beam and tooth, a detachable block constituting a seat for the tooth, a binding-clip having the bent

379,018.



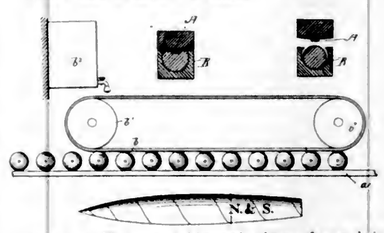
sides engaging the sides of the seat, so as to bind it to the beam, and the securing-bolts, substantially as set forth.

379,019. CAKE-CUTTER. LUCAS MAURER, Boston, Mass. Filed Aug. 6, 1887. Serial No. 246,334. (No model.)



Claim.—The drum or cylinder b, hollow and provided with the filling-orifice and having its surface perforated, in combination with the molds or cutters secured to said cylinder, whereby pulverized sugar within the cylinder is shaken into the molds as the cutter is rotated, as set forth.

379,020. IMPRESSING LETTERS AND MARKS ON CIGARS. GEORGE F. MCINDOE and JAMES W. MCINDOE, Boston, Mass. Filed Jan. 31, 1887. Serial No. 226,001. (No model.)



Claim.—1. The process of impressing letters, figures, designs, trade or other marks, &c., in cigars, consisting in tempering the cigar or its wrapper by moisture, and then while in this moist condition subjecting it to the action of devices for impressing the letters, figures, &c., therein, substantially as described.

2. The process of impressing letters, figures, designs, trade or other marks, &c., in cigars, consisting in tempering the cigar or its wrapper by moisture, and then while in this moist condition subjecting it to the action of a heated relief or impression die, substantially as described.

379,021. PROCESS OF PREPARING GLUE-STOCK. THOMAS P. MILLIGAN, South Orange, N. J. Filed Oct. 17, 1887. Serial No. 252,595. (No specimens.)

Claim.—1. The treatment of glue-stock to expel the contained fluids, consisting in the application to the stock of hot water or steam at a temperature to produce a sudden contraction of the tissues, substantially as herein set forth.

2. The treatment of glue-stock to remove the fatty ingredients, which consists in drying the stock at a temperature sufficiently high to melt the tallow contained therein, and to thus separate the same from the stock, substantially as herein set forth.

3. The method herein shown and described for removing the grease from glue-stock, which consists, first, in drying the stock at a temperature sufficiently high to melt the tallow contained therein, to separate the same from the stock, and, secondly, in immersing the

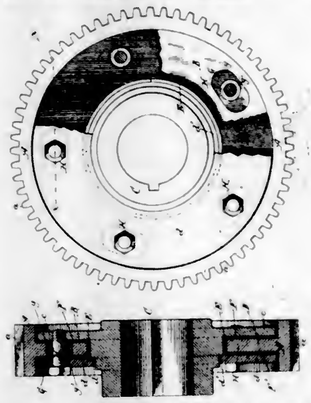
stock in a dry state in a bath of hot alkali to melt and disengage the grease adhering thereto, substantially as herein set forth.

4. The treatment of glue-stock to expel the contained fluids and separate the body of the tallow therefrom, consisting, first, in the application to the stock of hot water or steam at a temperature to produce a sudden contraction of the tissues, and, secondly, in drying the same stock at a heat sufficiently high to melt the tallow contained therein, as and for the purpose set forth.

5. The treatment of glue-stock to fit it for boiling, which consists, first, in the application to the stock of hot water or steam at a temperature to produce a sudden contraction of the tissues; secondly, in drying the same stock at a heat sufficiently high to melt the tallow contained therein, and, thirdly, in immersing such dry stock in a bath of hot alkali to separate the grease therefrom, as and for the purpose set forth.

6. The treatment of glue-stock to fit it for boiling, which consists, first, in the application to the stock of hot water or steam at a temperature to produce a sudden contraction of the tissues; secondly, in drying the same stock at a heat sufficiently high to melt the tallow contained therein; thirdly, in immersing such dry stock in a bath of hot alkali to separate the grease therefrom, and, fourthly, the treatment of said stock to a bath of alum-water to neutralize the alkali and harden the stock, substantially as herein set forth.

379,022. GEAR-WHEEL. CHARLES H. MORGAN, Buffalo, N. Y. Filed Nov. 7, 1887. Serial No. 254,493. (No model.)



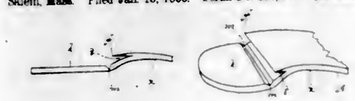
Claim.—1. The combination, with the wheel-rim having an internal flange and the hub having an external flange, one of said flanges being provided with enlarged bolt-holes, of fastening-bolts secured to one of said flanges and passing through the enlarged bolt-holes in the opposite flange, and elastic cushions arranged in said enlarged bolt-holes, substantially as set forth.

2. The combination, with the wheel-rim having an internal flange, B, provided with enlarged bolt-holes g, and a hub provided with an external flange, c, on one side of the flange B, of a ring, d, arranged on the opposite side of the flange B, bolts H, and elastic cushions G E F F', interposed between the contiguous metallic surfaces, substantially as set forth.

3. The combination, with the wheel-rim provided with an internal flange, B, and the hub having an external flange, c, of the ring d, fastening-bolts H, stay-sleeves g', applied to the bolts H, and elastic packings F F', arranged on both sides of the flange B, substantially as set forth.

4. The combination, with the wheel-rim provided with an internal flange, B, having enlarged openings g, and the hub having an external flange, c, of the ring d, fastening-bolts H, stay-sleeves g', elastic cushions G, arranged in the openings g around said sleeves, and the elastic packings E F F', arranged between the hub and its flange, the rim-flange, and the ring d, substantially as set forth.

379,023. SOLE FOR BOOTS OR SHOES. FREDERICK W. MUNROE, Salem, Mass. Filed Jan. 13, 1888. Serial No. 260,600. (No model.)



379,023.

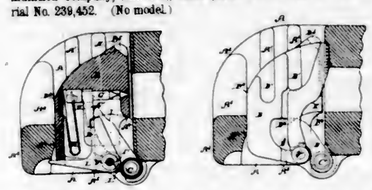


Claim.—1. The sole proper, A, provided with the slit t and groove m, said sole being extended rearward of said groove to form the cap-lift k of the heel, substantially as described.

2. In a boot or shoe sole, the sole proper, A, provided with the groove m, slit t, and portion k, in combination with the lifts d and v, the forward end of one of the lifts, d, being inserted in said slit, and the forward end of the lift v overlapping the lip f, said sole and lifts being connected in any suitable manner, substantially as set forth.

3. The sole proper, A, provided with the groove m, slit t, lip f, and extended portion k, in combination with a heel secured to said sole, substantially as described.

379,024. BREECH-LOADING ORDNANCE. THORSTEN NORDENFELT, Westminster, England, assignor to the Nordenfelt Guns and Ammunition Company, (Limited,) same place. Filed May 26, 1887. Serial No. 239,452. (No model.)

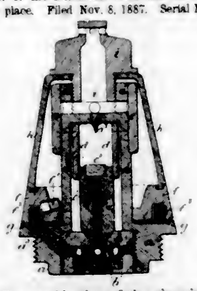


Claim.—1. The combination of the barrel, the breech-block movable in the breech-opening and having the recess or recesses B^3, the solid abutment behind the breech-block, the lever-actuated axis transverse to the barrel, and the hook-like arm or arms D on the axis, entering the recess or recesses B^3 and acting on opposite walls thereof to open and close the breech, whereby on turning the axis to open the breech the breech-block is moved first rectilinearly and transversely to the barrel, being then confined to this movement by the abutment behind it, and next is turned about the axis, substantially as set forth.

2. The combination of the barrel, the breech-block movable in the breech-opening and having the recess or recesses B^3, the guide-ribs on opposite surfaces of the breech-opening, the corresponding guide-grooves in the breech-block, the solid abutment behind the breech-block, the axis transverse to the barrel, and the hook-like arm or arms engaging the recess or recesses B^3 and acting on opposite walls thereof to open and close the breech, whereby on turning the axis to open the breech the breech-block is moved first rectilinearly and transversely to the barrel, being then confined to this movement by the guide-ribs and abutment, and next is turned about the axis, substantially as set forth.

3. The combination of the barrel, the breech-block movable in the breech-opening and having the rigid fins on opposite sides for engaging with the cartridge to eject an empty shell from the barrel, and the axis transverse to the barrel and having connection with the breech-block, about which axis in opening the breech the breech-block turns after having been first moved rectilinearly and transversely to the barrel, substantially as set forth.

379,025. SHELL-FUSE. THORSTEN NORDENFELT, Westminster, England, assignor to the Nordenfelt Guns and Ammunition Company, (Limited,) same place. Filed Nov. 8, 1887. Serial No. 254,616. (No model.)

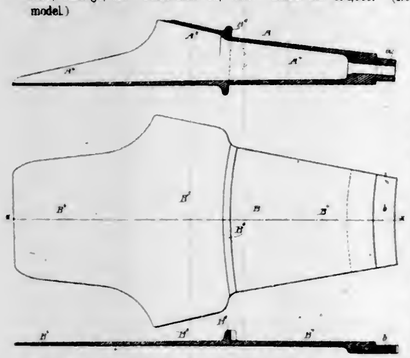


Claim.—1. The combination of the plug-piece adapted to be screwed into a projectile and having the projecting cylindrical pillar and the annular shoulder with the composition-filled passage therein leading toward the bursting charge in the projectile, the split ring

yieldingly embracing the outer end of the pillar, the time-ring surrounding the inner end of the pillar supported on the annular shoulder of the plug-piece, and having the composition-filled groove in its face adjacent to the plug-piece shoulder and communicating with the passage in the shoulder, and the primer in a perforation leading from the interior surface of the time-ring to its composition-filled groove and adapted to be fired by being struck by the split ring when the projectile is propelled, substantially as set forth.

2. The combination of the plug-piece adapted to be screwed into a projectile and having the projecting cylindrical chambered pillar and annular shoulder, the split ring yieldingly embracing the outer end of the pillar, the time-ring surrounding the inner end of the pillar supported upon the annular shoulder of the plug-piece, and having the composition-filled groove in its face adjacent to said shoulder, the primer in the perforation leading from the interior surface of the time-ring to its composition-filled groove and adapted to be fired by being struck by the split ring when the projectile is propelled, the plug closing the base of the pillar-chamber and having the side perforations and the cavity filled with explosive composition, the composition-filled passage communicating with the composition-filled groove in the time-ring and with the side perforations of the plug, the longitudinally-perforated pellet within the pillar-chamber and resting at the inner end thereof, the split ring within and at the opposite end of the pillar-chamber and yieldingly embracing the pellet, the priming carried by the pellet, and the point at the outer end of the chamber, against which the priming strikes upon the impact of the projectile by the forward movement of the pellet, together with the split ring previously caused to move along it and to the inner end of the chamber upon the firing of the projectile by the propelling charge, substantially as set forth.

379,026. MANUFACTURE OF WAGON-SKEINS. SENECA R. PARSONS, Chicago, Ill. Filed Nov. 11, 1887. Serial No. 254,896. (No model.)



Claim.—1. The process or method of forming tubular axle-skeins and collars for the same, which consists in first shaping from a pile or rough bar a flat blank having a solid integral flange thereon and then forming from said flat blank a tubular skein, substantially as described.

2. A blank for sheet-metal axle-skeins, provided with a curved solid integral rib or flange, substantially as described.

3. The process of forming axle-skeins, which consists in swaging or forging from a rough bar or pile a flat blank having a curved flange on its side face and an offset lip at its end, and then bending said blank to tubular form and welding its edges to form the skein, substantially as described.

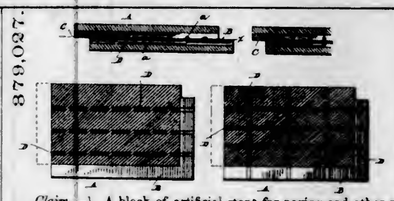
4. The blank described, consisting of a flat plate provided with a curved rib or flange, B^3, and having a thickened offset lip, *b*, at its end margin, substantially as described.

5. The novel axle-skein described, consisting of a tapered metal tube provided with an integral collar, C^3, substantially as described.

6. The novel axle-skein described, consisting of a tapered metal tube provided with an integral collar, C^3, and with an integral cylindric extension, *a*, at its end, substantially as described.

379,027. BLOCK FOR PAVING, &c. FRANK M. PICKERING, Cincinnati, Ohio. Filed Jan. 5, 1888. Serial No. 259,844. (No model.)



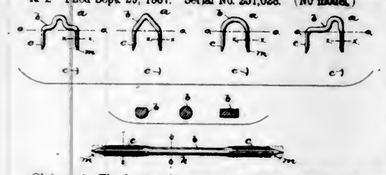


Claim.—1. A block of artificial stone for paving and other purposes, having lips or ledges on the edges thereof, and strengthening-bars extending through and forming a portion of said lips or ledges, as set forth.

2. A pavement or sidewalk composed of blocks of artificial stone or other material, said blocks being provided with supporting-lips, offsets, or ledges in their edges, said ledges being strengthened by metallic or other suitable bars.

3. In an artificial-stone block for paving and other purposes, a strengthening-bar embedded in said block having an enlarged central portion, said bar being cut away at its ends through such enlarged portion to form an enlarged bearing-surface on the lips or ledges of the block, as set forth.

379,028. BUTTON-FASTENER. GEORGE W. PRENTICE, Providence, R. I. Filed Sept. 29, 1887. Serial No. 251,028. (No model.)



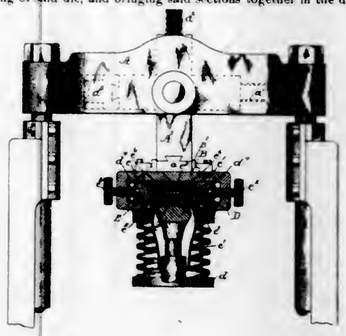
Claim.—1. The button-fastener staple herein described having its upper or head portion substantially uniform in cross-section, and having its prongs or clinching portion broader than said upper or head portion and concavo-convex in cross-section, substantially as shown and specified.

2. The button-fastener staple herein described having prongs concavo-convex in cross-section, and having the fastener intermediate of the prongs narrower than said prongs and bent to retain the eye of a button, and of the normal shape of the wire, substantially as hereinbefore described.

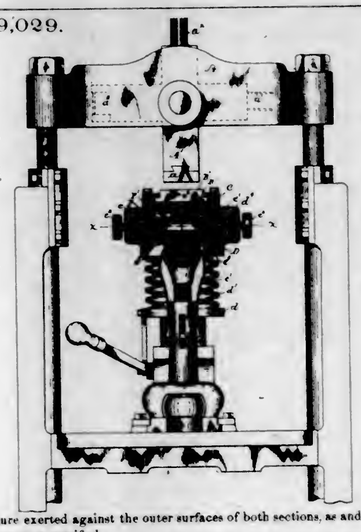
3. The button-fastener staple herein described having the upper portion thereof uniform in cross-section with the wire or blank from which it is made and adapted to retain the eye of a button, and having the prongs or legs broader than said upper portion and bent or shaped to a concavo-convex cross-section throughout their length, and terminating in points adapted to readily penetrate the fabric, substantially as specified.

379,029. METHOD OF FORMING AND ATTACHING HEELS. FREEBORN F. RAYMOND, 2d, Newton, Mass. Filed Nov. 28, 1887. Serial No. 256,296. (No model.)

Claim.—1. The method of forming and compressing French, ogee, or other under-molded heels or heel-blanks, consisting in forming a heel-blank in two sections, inserting one section into the under opening of a suitably-shaped die and the other section into the opposite opening of said die, and bringing said sections together in the die by



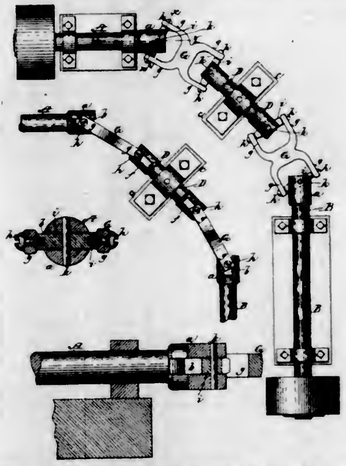
379,029.



pressure exerted against the outer surfaces of both sections, as and for the purposes specified.

2. The method of compressing, forming, and attaching French, ogee, or other under-molded heels or heel-blanks in two sections, inserting one section into one opening of a suitably-shaped die and the other section into the opposite opening of said die, placing a boot or shoe upon a last or work-support, and locating it in line with the larger of the two heel-sections, and bringing said sections of the heel-blank together in the die and upon the heel end of the outsole upon the last or work-support by pressure exerted against the outer surface of one or both sections of the heel-blank, and attaching said heel-blank to the soles of the said boot or shoe while the two parts or sections are held compressed, substantially as described.

379,030. UNIVERSAL SHAFT-COUPLING. ANDREW ROBES, Somerville, Mass. Filed Nov. 14, 1887. Serial No. 255,175. (No model.)

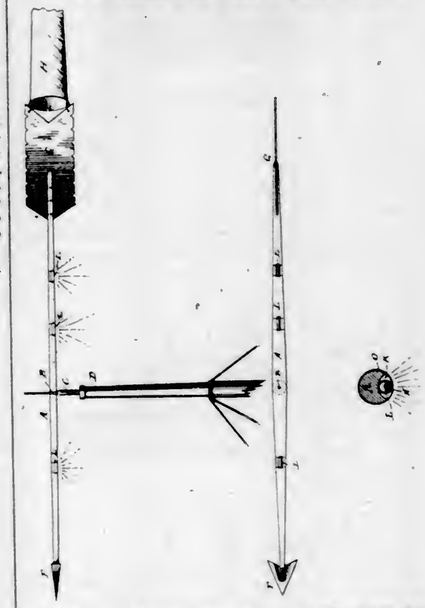


Claim.—1. The herein-described universal shaft-coupling, consisting of an intermediate shaft supported in suitable bearings between two main shafts, and a pair of coupling-links or connecting-pieces provided with jaws at their opposite ends and arranged one between the end of each main shaft and the opposite end of the intermediate shaft and connected with the ends of said shafts by means of a pair of oscillating bars, each pivoted at its center within the slotted end of one of the said shafts in line with the axis thereof and having its opposite ends pivoted or journaled within the adjacent jaws of the coupling-link, substantially as and for the purpose set forth.

2. In a universal shaft-coupling, the combination, with a pair of shafts, A B, each having a slot at its end, of an intermediate connecting-shaft, D, supported in suitable bearings between the ends of the shafts A B and having a slot at each end, and a pair of coupling-links or connecting-pieces, G G, bifurcated at each end to form jaws *g g* and arranged one between each of the main shafts and the adjacent end of the intermediate shaft and connected with said shafts by a pair of oscillating bars, *i i*, each pivoted at its center on a pin, *k*, within the slotted end of one of the said shafts in line with the axis thereof and having its opposite ends pivoted or journaled within the adjacent jaws of the coupling-link, all operating substantially in the manner and for the purpose described.

3. In a universal shaft-coupling, the combination, with a pair of shafts adapted to run at different angles or levels, or both, and each having a slot at its extremity, of a connecting piece or link, G, having its opposite ends bifurcated to form jaws, and a pair of oscillating bars, *i i*, each placed within the slotted end of one of the shafts and pivoted therein at the center of its length directly in line with the axis of the shaft by means of a pin or bolt, *k*, and having its opposite ends pivoted or journaled within the adjacent jaws of the coupling piece or link G, all operating substantially as and for the purpose set forth.

379,031. ILLUMINATED WIND-VANE. DWIGHT ROCKWELL, South Windsor, Conn., assignor of one-half to Lucius H. Mattison, New York, N. Y. Filed Oct. 14, 1887. Serial No. 252,355. (No model.)



Claim.—1. A wind-vane containing luminous bodies, substantially as herein shown and described.

2. The combination, with a wind-vane, of transparent receptacles on the same and luminous bodies in said receptacles, substantially as herein shown and described.

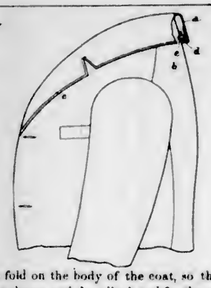
3. The combination, with a wind-vane having recesses or cavities in its under side, of transparent receptacles in said recesses and luminous bodies in said receptacles, substantially as herein shown and described.

4. A wind-vane having one luminous body held on its shaft in front of the spindle and two luminous bodies held on its shaft behind the spindle, substantially as herein shown and described.

379,032. COAT. MICHAEL SCHLOSS, Baltimore, Md. Filed Nov. 29, 1887. Serial No. 256,395. (No model.)

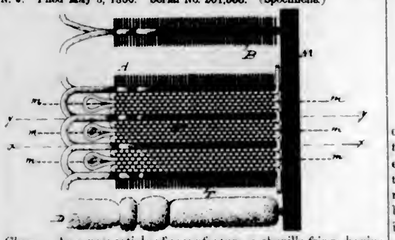
Claim.—A coat provided with an undetachable collar having a hook secured to its central under face, and the body of the coat having an eye secured in contact with its central back-seam, said collar

379,032.



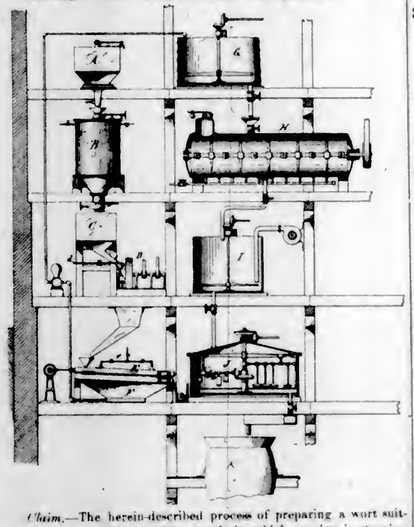
being adapted to fold on the body of the coat, so that said hook engages said eye, as shown and described, and for the purpose set forth.

379,033. CHENILLE FRINGE. CHRISTIAN A. SCHMIDT, Hoboken, N. J. Filed May 8, 1886. Serial No. 201,533. (Specimens.)



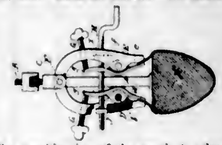
Claim.—As a new article of manufacture, a chenille fringe having one or more loops formed on the chenille pendants, said loops being formed of weft-threads, in addition to the ordinary weft-threads, the additional weft-threads passing loosely over those warp or pile threads which lie between the warp or pile threads at which the additional weft-threads cross, the additional weft-threads also extending beyond the edge of the fabric, substantially as shown and described.

379,034. METHOD OF PREPARING AND TREATING STARCH. JOHN C. SCHUMAN, Akron, assignor to William T. Jebb, New York, N. Y. Filed Aug. 11, 1887. Serial No. 246,649. (No specimens.)



Claim.—The herein-described process of preparing a wort suitable for the manufacture of beer and ale, which consists in steeping the corn, comminuting the corn with water, separating the starch liquid from the offal, developing the starch liquid by heat, cooling the starch liquid, mashing the developed starch liquid together with malt, and draining off the wort, substantially as set forth.

379,035. LASTING-TOOL. JOSEPH SPRING, New Haven, Conn. Filed Jan. 16, 1888. Serial No. 260,888. (No model.)



Claim.—The combination of the stock A, adapted to rest upon the bottom of the last, the screw B, vertically adjustable in said stock, the two principal jaws D E, hung to said screw B, companion jaws *d e* for each of said principal jaws, the said jaws *d e* extended to form tails *g*, adjusting-screws G through said principal jaws and upon the tails of said jaws *d e*, with the adjusting-screw H through said jaws and adapted to force the jaws toward each other, substantially as described.

379,036. NUT-LOCK. ALLEN W. TALLEY, Lynchburg, Va. Filed Dec. 20, 1887. Serial No. 258,509. (No model.)



Claim.—1. In a nut-lock, the combination, with the nut and bolt of ordinary construction, of an angular washer passing on the bolt on the inner side of the nut and engaging the latter, and provided in the edge of its central opening with the notch *f*, having the radial edge f', the inclined edge f^2, converging outwardly to the edge f', and the radial extension f^3 at its apex, and the detent-tongue E, permanently but loosely attached to the washer by having its edges slightly upset in said extension, so that its point can turn outwardly and inwardly with reference to the rail-joint, substantially as specified.

2. In a nut-lock, the combination, with the bolt A and nut B, of ordinary construction, of the rectangular washer C, provided with the detent D, having the stud E at its free end and with the notch *f* in the edge of its central opening, which notch has the edges f f' and the extension f^3, and the detent-tongue F, permanently but loosely attached to the washer by slightly upsetting its edges in said extension f^3, so that its point can turn laterally inward and outward from the washer for a distance equal to the height of the stud E, substantially as specified.

379,037. DYNAMO-ELECTRIC MACHINE. OSCAR URBAN and MERLE J. WIGHTMAN, Hartford, Conn.; said Urban assignor to the Schuyler Electric Company, Middletown, Conn. Filed Aug. 27, 1886. Serial No. 212,002. (No model.)



Claim.—1. A cylindrical armature for electric apparatus, having a cord made up of ring-sections, insulating-washers separating the same from each other, cut-away or open disks forming the last sections, hubs carried by the latter, a shaft carrying said hubs, coils wound upon said core, and longitudinal air-spaces between the coils at the ends of the core.

2. A cylindrical rotary armature for electrical apparatus, having a core made up of ring-sections, insulating-washers separating the same from each other, insulating-rods carrying said rings and bolted to cut-away or open disks forming the end sections of said core, hubs upon said end sections, a shaft keyed thereto, and coils wound upon said core, having longitudinal air-spaces at the ends for ventilating and insulating purposes and communicating with the hollow interior of said core through the passages afforded by said open sections.

3. A cylindrical rotary armature for an electrical apparatus, having a core made up of ring-sections, insulating-rods carrying said rings and bolted to cut-away or open disks forming the end sections of the core, hubs upon said end sections, a shaft keyed thereto, and coils wound upon said core, having radial air-spaces at the ends communicating with the hollow interior of said core through the passages afforded by said open sections, and longitudinal air-spaces about the periphery of the armature, also communicating with said hollow interior.

4. A rotary armature of cylindrical or other shape having open ends and longitudinal air-spaces between the coils at the ends, for the purpose set forth.

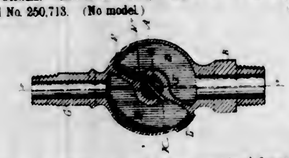
5. A rotary cylindrical armature for electrical apparatus, having a core composed of ring-sections secured together and to open end sections keyed to the armature-shaft, making a hollow interior, means for separating and insulating the ring-sections from one another, coils wound thereupon, and air-spaces between the coils along the periphery and between the coils at the ends of the armature, affording a circulation of air between the hollow interior of the core and the external air at the ends and along the periphery of the armature for ventilating and insulating purposes, substantially as set forth.

6. A rotary armature for electrical apparatus, having coils wound thereupon with air-spaces between the coils along and about the periphery communicating with its interior and communicating longitudinal air-spaces at the ends of the armature for cooling the same by the forces imparted to the air by the rotation of said armature.

7. The combination, in a rotary armature for electrical apparatus, of two systems of coils, as C and C^2, wound upon a hollow open end core, means for separating them from one another at the ends of the armature for ventilating and insulating purposes, and means also for separating and insulating them from one another along the periphery of the armature, and slots in the insulation along the face of the armature communicating with the hollow interior of said core, whereby the forces imparted to the air by the rotation of the armature serve to ventilate it at the ends and throughout the armature.

8. The combination, in a rotary armature for an electrical apparatus, of two systems of coils, as C and C^2, wound longitudinally thereupon, a core made up of ring-sections suitably insulated from each other and having open end sections to which the shaft is keyed, means for separating said systems of coils from one another at the ends of the armature for ventilating and insulating purposes, and means also for separating and insulating said systems from one another along the periphery of the armature, which latter means is slotted, so as to provide air-passages from the hollow interior of said core, whereby the forces imparted to the air by the rotation of the armature serve to ventilate it at the ends and throughout the armature.

379,038. COMBINED COCK AND SIPHON FOR STEAM-PRESSURE GAGES. EDWIN A. WOOD, Utica, N. Y. Filed Sept. 26, 1887. Serial No. 250,713. (No model.)

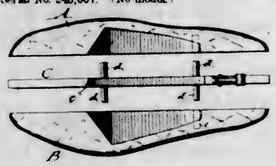


Claim.—1. A steam cock and siphon combined for steam-gages, consisting of a chamber divided into two compartments by a perforated partition, said perforation opening into one compartment above the discharge-outlet into the other, and one of said compartments to communicate with the boiler and the other with the gage, the gage-outlet being located above the inlet-opening from the boiler, and a cock or plug for opening and closing the passage-way between the compartments, substantially as set forth.

2. In a combined cock and siphon for steam-gages, a chamber divided into two compartments by a perforated partition, the receiving end of the perforation located above the discharge end, an inlet-pipe entering the bottom of one compartment and an outlet-pipe extending from the top of the other, to communicate with the gage, and a hand cock or valve for controlling the passage-way between the two compartments, as set forth.

3. In a combined cock and siphon for steam-gages, a chamber divided into two compartments by a perforated partition, the receiving end of the perforation located above the discharge end, an inlet-pipe, an outlet-pipe extending from the top of one compartment above the inlet of the other compartment and communicating with the gage, and a trap or opening in the outlet-compartment by which it can be drained, as set forth.

379,039. LAST. ABRAHAM S. ADLER, Baltimore, Md. Filed July 29, 1887. Serial No. 245,607. (No model.)



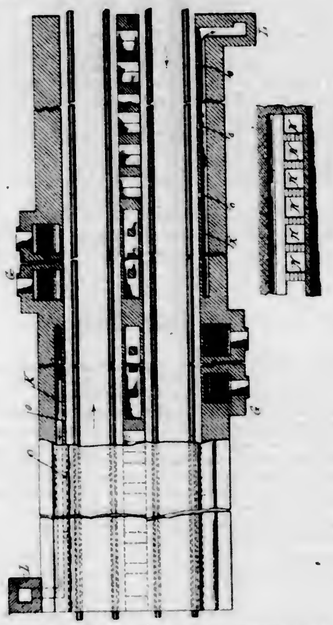
379,039.



Claim.—1. A last, substantially as herein described, consisting of the foundation-block C, provided with the pawl *c*, in combination with the side pieces, A and B, and the instep-block D, provided with the graduated grooves *d'*, all constructed as and for the purpose set forth.

2. The foundation-block C, provided with the pawl *c* and dowel-pins *d*, in combination with the side pieces, A and B, perforated to receive the dowel-pins, and the instep-block D, provided with a gradnated scale of grooves on its rear end, and constructed and arranged to operate substantially as and for the purpose set forth.

379,040. BRICK-KILN. JAMES C. ANDERSON, Highland Park, Ill. Filed Aug. 17, 1887. Serial No. 247,204. (No model.)



Claim.—1. A kiln for burning brick, &c., composed of two parallel tunnels for the continuous passage of cars of loaded brick, with a furnace in the outer wall of each tunnel, said furnaces communicating with a flue or chamber which passes over both tunnels, as set forth, whereby the bricks are burned by the heat transmitted through the inner walls of the tunnels without bringing the articles into direct contact with the products of combustion.

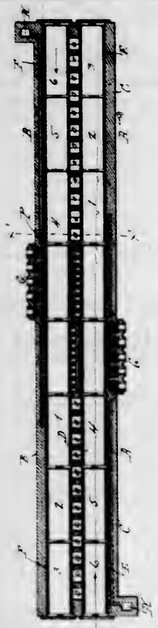
2. A kiln for burning brick of the character described, the furnaces of which are located at both sides of the tunnels, said furnaces communicating with flues which pass over both tunnels and through flues in the sides of the tunnels, and then to the stacks located at each end of the tunnels, whereby the outgoing heat or tail of the flame is utilized to water-smoke and heat the brick without bringing the fumes in contact with the same.

3. In kilns for burning brick of the character described, the openings O in the arches of the tunnel, which communicate with the flues K, whereby the water-smoke is carried away from each tunnel without coming in contact with the burned brick in the opposite tunnel.

379,041. METHOD OF BURNING BRICK. JAMES C. ANDERSON, Highland Park, Ill. Filed Aug. 17, 1887. Serial No. 247,205. (No model.)

Claim.—1. The method herein described of burning brick in a continuous kiln, which consists in passing two bodies of brick past each other in opposite directions, past suitable furnaces, which burn the brick to the proper point, whereby the heated and burned portions of

379,041.



each of the brick-bodies are utilized to heat and water-smoke the brick in the other column or body of brick, as set forth.

2. The method herein described of burning brick in a continuous kiln, which consists of passing two trains of cars loaded with the brick to be burned through tunnels in opposite directions, said brick being burned by the direct and transmitted heat from suitable furnaces located at both sides of the tunnels, the heat of the burned brick on the cars in one tunnel being imparted to water-smoke and partially burn the green brick on the cars in the adjacent tunnel, as set forth.

3. The method herein described of burning brick, which consists in decomposing and utilizing the water-smoke, as hydrogen gas, generated in the initial burning of the green brick by superheating and projecting the same into the hottest part of the kiln and causing said gases to impinge and ignite at this point with the gaseous products of combustion of the fuel from the furnaces, substantially as described.

379,042. **INHALER FOR CHLOROFORM, &c.** JOSEPH W. BATTERSHALL, Attleborough, Mass. Filed Sept. 29, 1886. Serial No. 214,899. (No model.)



Claim.—1. The combination, as hereinbefore set forth, with the cylinder or receptacle A for the absorbent, of the end cap, M, provided with the slotted feed-tube J, the slotted cover H for the feed-tube, the delivery-tube C, provided with the valve L, and the face-hood R, provided with the connecting-tube S, substantially as herein described.

2. The combination, as hereinbefore set forth, with the receptacle A, provided with the feed-tube J, and the delivery-tube C, provided with the slot D, of the face-hood R, provided with the connecting-tube S, formed with the slot T, substantially as herein described.

3. The combination, as hereinbefore set forth, with the receptacle A, of the end cap, M, provided with the feed-tube J, formed with the slot E, the cover H, formed with the slot K for said feed-tube, the supply-tube F, provided with the cover G, and the delivery-tube C, provided with the cover I, substantially as herein described.

4. The combination, as hereinbefore set forth, with the receptacle A, provided with the feed-tube J, and the delivery-tube C, of the gas-coupling N, adapted to fit over the feed-tube, substantially as herein described.

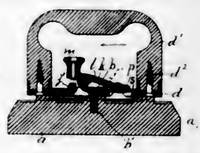
379,043. **BUGGY-BOOT.** JACOB J. BEHLEN and CHARLES A. BEHLEN, Cincinnati, Ohio. Filed Oct. 6, 1887. Serial No. 251,568. (No model.)



Claim.—1. The frame C, and covering D, properly secured thereon, in combination with flexible fingers or clamps E, attached to the under side of the boot, and which are capable of embracing both exterior and interior sides of the body, substantially as shown and described, and for the purposes noted.

2. In a buggy-boot, a covering, as D, of any suitable material, properly attached to and supported on a frame, as C, whose edges are integral therewith and capable of overlapping the edges of body A, in combination with flexible fingers E, embracing both inner and outer sides of the body, substantially as shown and described, and for the purposes specified.

379,044. **SAD-IRON WITH REMOVABLE HANDLE.** JAMES F. BLESS, Newark, N. J. Filed May 28, 1887. Serial No. 239,622. (No model.)



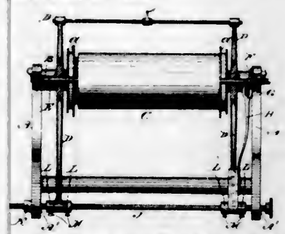
Claim.—1. In a sad-iron with removable handle, the combination, with the iron-body, of a wrought-iron stud provided with flaring or conical head, a handle-plate provided with aperture *g*, having beveled seat *f'* upon its rear edge to fit the head of such stud, and flaring edge *g'* upon its front side to guide the stud into the aperture, and a latch pivoted upon the plate and adapted to engage the head of the stud, substantially as herein shown and described.

2. In a sad-iron with removable handle, the combination, with the iron-body, of a central stud with flaring head, the pointed oval lugs *c*, and the handle-plate *d*, provided with marginal rib *h*, and seats *i*, fitted to the sides of the lugs *c*, the handle-plate being provided with an aperture to receive the stud, and a latch pivoted upon the plate to engage with the same, the whole arranged and operated substantially as herein set forth.

3. In a sad-iron having a removable handle and an iron-body with a stud projected from the same to engage with the handle-plate, and with a latch pivoted thereon, the combination, with the handle-plate provided with a recess, *e*, and having the sockets *o* at its opposite sides open upon the under side of the plate, of the latch formed with lever *k*, hook *l*, handle *m*, and projection *n'*, and with integral pivots *n*, fitted to the said sockets, and the spring *s*, applied to the recess and operating upon the projection, as and for the purpose set forth.

379,045. **WARP-BEAMING MACHINE.** NICHOLAS BOYLE, Norristown, Pa. Filed Oct. 20, 1887. Serial No. 252,899. (No model.)

Brief.—The invention consists in the improved devices for supporting and longitudinally reciprocating the pressing-roller which rests upon the warps as they are beamed.



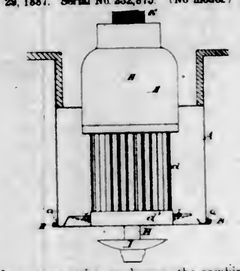
Claim.—1. A beaming-machine having the warp-roller B suitably journaled in one end of the sides thereof, the pivot-rod J, secured in the other end of the sides, the frame D, pivotally secured to said rod J, the roller C, journaled in the sides of said frame D and having shaft E, the spiral collar F on said shaft, and the arm H, with fork G, said parts being combined substantially as and for the purpose set forth.

2. The frame A, in combination with the roller B, journaled therein, the frame D, pivotally secured to said frame A, the roller C, having its shaft E journaled in the side bars of said frame D, the spiral collar F on said shaft E, the spring-arm H, secured to said frame D, and having fork G, substantially as and for the purpose set forth.

3. The frame A, in combination with the warp-roller B, having flanges *a* and journaled in said frame, the frame D, pivotally secured to said frame A, the roller C, having its shaft E journaled in said frame D, the spiral collar F, and the spring-arm H, with fork G, substantially as and for the purpose set forth.

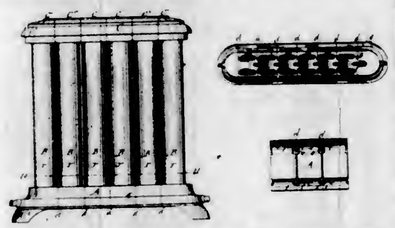
4. The frame A, in combination with the warp-roller B, journaled therein, the pivot-rod J, having screw-threaded ends and the nut K, the frame D, pivotally secured to said rod J, the retaining-collars L, the roller C, having its shaft E journaled in the side bars of said frame D, the spiral collar F on said shaft E, and the spring-arm H, with fork G, substantially as and for the purpose set forth.

379,046. **GAS-BURNER.** HENRY A. BROGHARD, Philadelphia, Pa. Filed Mar. 29, 1887. Serial No. 232,875. (No model.)



Claim.—In a regenerative gas-burner, the combination of a perforated annulus, *d'*, at the lower end of the gas-tubes, a cylinder, A, provided with an annular flange, *a*, surrounding the burner, and a sheet-metal ring having its inner edge turned up to form a cylinder which slips loosely over the annulus *d'*, and its outer part bent downward and then upward to serve as a flame plate or deflector, and also to form an annular recess for the reception of the flange *a*

379,047. **STEAM OR HOT-WATER RADIATOR.** ALFRED CATCHPOLE, Geneva, N. Y. Filed May 7, 1887. Serial No. 237,429. (No model.)



Claim.—1. A steam or hot-water radiator-tube composed of the vertical tubular ribs *r r*, arranged side by side with the space *h* between them and united back of said space and at the top, the vertical rib *r'*, projecting rearward from the junction of the ribs *r r* and communicating with the same, and the chamber-section A, formed integral with the aforesaid tube, substantially as described and shown.

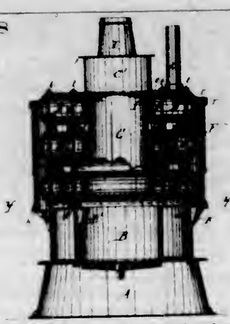
2. In a steam or hot-water radiator, the radiator-tubes, each composed of vertical tubular ribs arranged parallel side by side with a space between them and united at one of their longitudinal edges, and a vertical tubular rib projecting from the junction of the parallel ribs and communicating with the same at their upper ends and arranged in the space between the parallel ribs of the adjacent radiator-tube, substantially as described and shown.

379,048. **BOILER.** ALFRED CATCHPOLE, Geneva, N. Y. Filed July 11, 1887. Serial No. 243,948. (No model.)

Claim.—1. In combination with the combustion-chamber F, the annular pipe E, formed with the outward-projecting rim *e*, and downward-deflected flange *e'* on said rim and embracing thereby the top portion of the combustion-chamber, substantially as described and shown.

2. In combination with the combustion-chamber F, annular pipes D D, and vertical connecting-pipes *d d*, the annular pipe E, formed with the inward-projecting rim *e*, outward-projecting rim *r*, and downward-deflected flange *r'* on the latter rim embracing the top portion

379,048



of the combustion-chamber, and the magazine C, provided with the flare *f* and suspended thereby from the internal rim, *e*, substantially in the manner described and shown.

3. The combination, with the hollow fire-pot shell B, of the sets of pipes D D and D' D', arranged concentrically with each other and communicating separately from each other with the interior of the shell B, respectively, at diametrically-opposite points in the circumference thereof, and the dome E, arranged over the sets of pipes and communicating separately with the same at diametrically-opposite points in the circumferences thereof, whereby the water is caused to circulate across the interior of the dome, substantially as described and shown.

379,049. **LETTER-FILE.** GEORGE F. CHAPPELL, New York, N. Y., assignor to Louisa Lawrence, same place. Filed Sept. 1, 1887. Serial No. 248,497. (No model.)



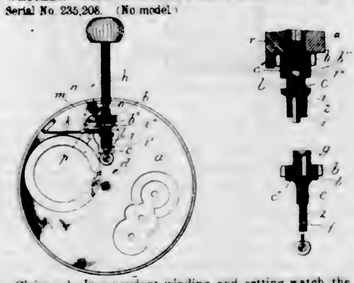
Claim.—1. In a letter-file, a lever (having one or more wires affixed thereto) pivoted vertically at or near one end and adapted to vibrate in a plane parallel with the board or tablet.

2. In a letter-file, a lever (having one or more wires affixed thereto) pivoted vertically at or near one end to vibrate, as set forth, and provided at its other end with a handle or extension.

3. In a letter-file, the combination of a lever (having one or more wires affixed thereto) pivoted vertically at or near one end to vibrate, as set forth, and a catch or retaining device to keep said lever in its closed position.

4. In a letter-file, the combination of the base-plate 5, the duplex puncturing-wires, the lever 9, pivoted vertically at or near one end beyond said wires to vibrate, as set forth, and having affixed thereto the duplex transfer-wires.

379,050. **STEM WINDING AND SETTING MECHANISM FOR WATCHES.** DUANE H. CHURCH, Newton, Mass. Filed Apr. 18, 1887. Serial No. 235,208. (No model.)



Claim.—1. In a pendant winding and setting watch, the combination, with the winding and dial trains, the winding-pinion and geared sliding clutch-sleeve which respectively impel said trains, and the pivoted locking-lever and the shifting-lever which control said sleeve, of the winding-arbor located wholly within the margin of the pillar-plate and prevented from endwise movement by its bearings, and the lon-

gitudinally-movable winding-bar having a rotative engagement with the winding-arbor within the margin of the pillar-plate and engaged with the pivoted locking-lever, as set forth.

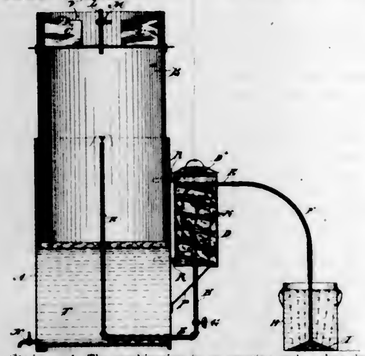
2. The combination, in a pendant winding and setting watch-movement, of the socketed winding-arbor located wholly within the margin of the pillar-plate and prevented from moving endwise by its bearings, the longitudinally-movable winding-bar, which projects into the movement, has no positive connection with the case, and is separably engaged with the socket of the winding-arbor, a sleeve which is movable on and rotatable by the winding-arbor and is adapted to be engaged alternately with the winding-pinion and with a member of the dial-train, and the intermediate shifting-lever and clutch-spring, engaged, respectively, with the winding-bar and the sliding sleeve, said lever serving to detachably connect the winding-bar with the movement, as set forth.

3. In a pendant winding and setting watch-movement, the dial-train, the winding-pinion having a clutch member, and the sliding sleeve having the clutch and the crown-teeth, adapted, respectively, to engage the clutch of the winding-pinion and a member of the dial-train, combined with the socketed winding-arbor supporting said sleeve, located wholly within the margin of the pillar-plate and prevented from endwise movement by devices substantially as described, the male winding-bar which projects into the movement and is longitudinally movable in and separable from the socket of the winding-arbor, said winding-bar having no positive connection with the case, the shifting-lever engaged with the winding-bar and detachably securing the latter to the movement, and the clutch-spring engaged with the sliding sleeve and arranged to be operated by the shifting-lever, as set forth.

4. The shifting-lever engaged, as described, with the winding-bar and secured to the watch-plate by a screw having a beveled enlargement fitting a beveled orifice in the lever, whereby the lever may be secured and loosened by adjustments of the screw, as set forth.

5. The combination of the dial-train, the socketed winding-arbor, the sliding sleeve on said arbor having crown-teeth formed to engage a member of said train, the longitudinally-movable winding-bar, the shifting-lever engaged with said bar, and an arm or lever, as *k*, which is operated by the shifting-lever and moves said sleeve toward the dial-train, and is provided with a spring, as 7, whereby the sleeve is permitted to yield when its teeth do not properly coincide with the teeth of the corresponding member of the dial-train, as set forth.

379,051. APPARATUS FOR AERATING AND COOLING MILK. EDWARD W. COFFIN, Ashland, N. J. Filed Aug. 4, 1887. Serial No. 246,153. (No model.)

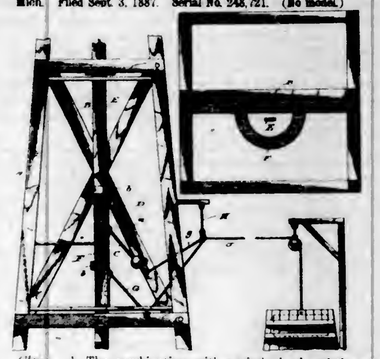


Claim.—1. The combination, in an aerating and cooling device for milk or like liquids, of a vessel containing water, a chamber resting therein containing air, a pipe extending from a point in the air-chamber above the water to and through an ice box or chest, and a flexible tube having a perforated nozzle, substantially as described.

2. A combined aerating and cooling device consisting of the vessel A, containing water; the air-vessel B, having the weight-chamber V, and pipe L, with valve M, the weight C, the ice-chest D, the pipe E, extending from within the air-vessel B through vessel A and ice-chest D, and the flexible pipe F, substantially as described.

3. In a device of the character named, a water-vessel, an air-vessel within said water-vessel and provided with a weighted chamber, a pipe leading from the air-chamber to the atmosphere and having a valve therein, an ice-chest and a pipe leading from the air-chamber through the water-vessel and the ice-chest and provided with a cock, and a flexible pipe secured to said last-mentioned pipe, said parts being combined and arranged substantially as and for the purpose set forth.

379,052. WINDMILL-REGULATOR. OSCAR COLVIN, Buchanan, Mich. Filed Sept. 3, 1887. Serial No. 248,721. (No model.)



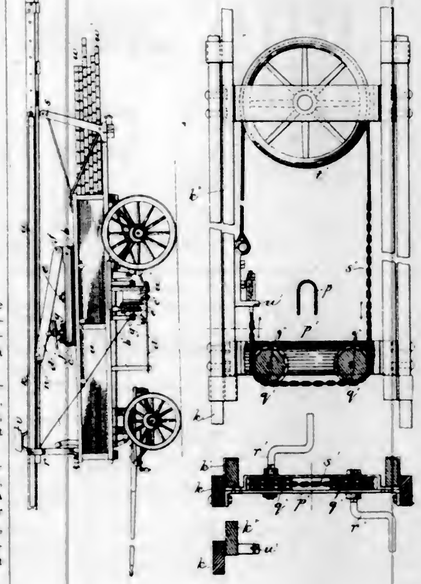
Claim.—1. The combination, with a wind-wheel and the pump-rod thereof, of a vertically-movable rack connected with the mechanism for throwing the wheel into and out of operation, a dog journaled on the said rod and actuated by a float and adapted to engage the rack, and a dog journaled in a fixed member and also actuated by the float and adapted to engage the said rack, substantially as specified.

2. The combination, with a wind-wheel, the pump-rod thereof, and the mechanism for throwing the wheel into and out of operation, of the guide-loops on the pump-rod, the fixed post F and the guide-loop thereon, in the same vertical plane as the loops *b*, the vertically-movable rack and the dogs journaled in the pump-rod and post, respectively, and a float whereby the said dogs may be thrown into and out of operation with the rack, substantially as specified.

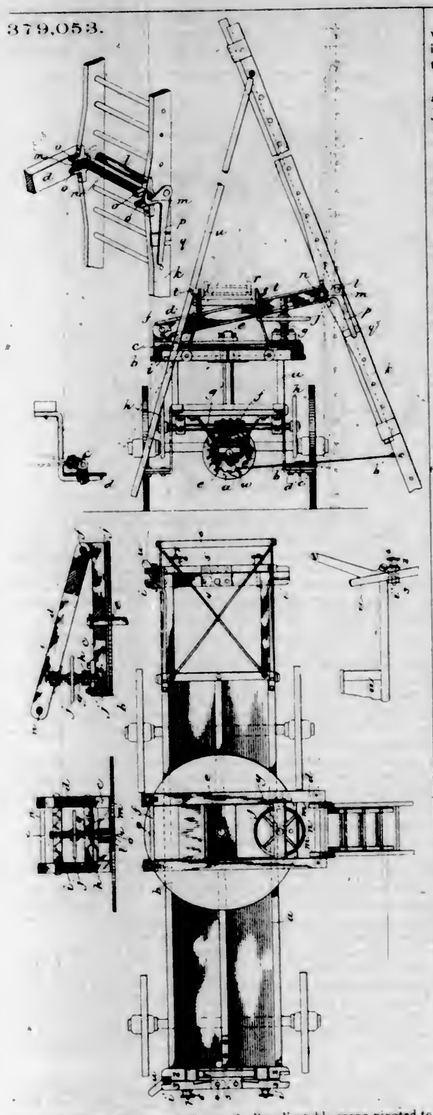
379,053. TRUCK AND LADDER. JOHN L. CRAFTS, Somerville, Mass. Filed Nov. 14, 1887. Serial No. 255,110. (No model.)

Claim.—1. The combination of the truck, the crane-carrier adapted to rotate horizontally thereon, the crane pivoted to said carrier, means for raising and lowering the crane, the ladder jointed to the crane, and means, substantially as described, for swinging the ladder toward and from a vertical position, as set forth.

2. The combination of the truck, the crane-carrier adapted to



379,053.



rotate horizontally thereon, the vertically-adjustable crane pivoted to said carrier, the ladder pivoted to the swinging end of the crane, means for raising and lowering the crane, the drum journaled in bearings on the truck, means for rotating the drum, and the rope connecting the drum with the lower portion of the ladder, as set forth.

3. The combination of the truck having the circular horizontal track, the crane-carrier pivoted to rotate on said track, the crane pivoted to said carrier, the ladder pivoted to the swinging end of said crane, and means for vertically adjusting the swinging end of the crane, as set forth.

4. The combination of the truck having the horizontal track, the crane-carrier pivoted to rotate on said track, the ladder-supporting crane pivoted to said carrier, and the right-and-left screw working in nuts on the carrier and crane, whereby the crane may be quickly adjusted, as set forth.

5. The combination of the truck, the horizontally-rotatable and vertically-adjustable crane mounted on said truck, and the ladder having the lugs *o o* and hooks *m m*, adapted to engage a rod or bar, *n*, on the crane, as set forth.

6. The combination of the truck having the rest *r*, the rotatable and vertically-adjustable crane mounted on the truck, the ladder jointed to the crane, and means (the right-and-left screw) for moving the crane vertically to engage the ladder with and remove it from the rest *r*, as set forth.

7. The truck provided with the clamps *i*, combined with the crane mounted to rotate on the truck and the ladder jointed to the crane and provided with brace-rods *u u*, adapted to be held by said clamps, as set forth.

8. A ladder-section having wheels, as *q' r'*, arranged between the side pieces with their axes at right angles with the rungs of the ladder, as set forth.

9. The combination of a main ladder-section having wheels, as *q' r'*, arranged between the side pieces with their axes at right angles with the rungs of the ladder, a section adapted to slide on the main section, and a chain or rope secured to the sliding section and engaged with the wheels of the main section, as set forth.

10. The ladder-section having sprocket-wheels *q' q'* and a chain or rope guiding pulley, *t'*, all arranged between the side pieces of the ladder with their axes at right angles with the rungs thereof, as set forth.

11. The ladder-section *k*, having the sprocket-wheels *q' q'* and pulley *t'*, arranged, as described, between the sides of the section and with their axes at right angles with the rungs thereof, combined with the sliding section k^2 and the chain secured to said sliding section and running upon the said sprocket-wheels and pulley, as set forth.

12. The ladder-section *k*, having the U-shaped rung or cross-bar *p'*, and the cranked sprocket-wheels journaled in the sides of said rung, as set forth.

13. The ladder-section having the sprocket-wheels *q'*, arranged, as described, between the side pieces with their shafts at right angles with the rungs of the ladder and having sockets in said shafts to receive removable cranks.

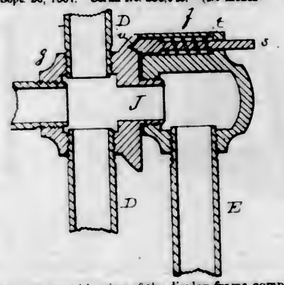
379,054. MARKING-TAG. SIMON DARCYGER, Dayton, Ohio. Filed Sept. 14, 1887. Serial No. 249,673. (No model.)



Claim.—1. The marking-tag herein described, having the ends of the blank folded together to embrace an article of merchandise, with a wire clasp having the ends bent at a right angle to the body and entering orifices in one end of said blank, one point bent down upon the inner surface of said blank and the other point entering an orifice of the opposite end of said blank and terminating within the other orifice, substantially as described.

2. In a folded marking-tag, the clasp herein described, formed of wire having the ends bent at a right angle to the body, one end of which is bent down on the inner surface of the end of said tag and the other to engage the opposite end of the same, substantially as described.

379,055. DISPLAY-FRAME. SIMON DARCYGER, Dayton, Ohio. Filed Sept. 26, 1887. Serial No. 250,649. (No model.)



Claim.—The combination of the display-frame composed of parts A B C and standards E E, said frame supported on the pivotal couplings *f*, uniting said parts, and having shallow orifices *u* in the face of said coupling, and the couplings *g*, having bearings for said pivots, and a housing carrying a spring-actuated bolt to engage said orifices and screwed to the tops of said standards, substantially as set forth.

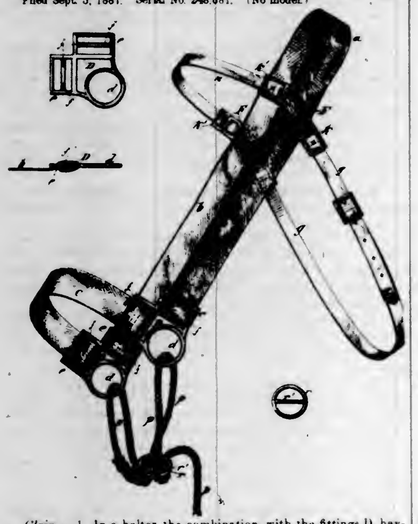
379,056. HALTER. MARSHALL R. DOWLIN, North Adams, Mass. Filed Sept. 3, 1887. Serial No. 248,681. (No model.)

379,058. APPARATUS FOR EXTINGUISHING FIRES IN RAILWAY-CARS. WILLIAM C. EDWARDS and ORVILLE R. SACKETT, Suppen-

Claim.—1. The combination, with the axle A and the springs B, of the foot-platform E, the thills F, secured thereto, the bars D, the cross-spring C, and the crow-bar E, substantially as described.

to fit into and slide in said channel and having an angle end engaging it to said nut, and an arm carried by said stem and extending at an angle thereto and adapted to be attached to said retracting-spring, as

379,056. HALTER. MARSHALL R. DOWLIN, North Adams, Mass. Filed Sept. 3, 1887. Serial No. 248,681. (No model.)



Claim.—1. In a halter, the combination, with the fittings D, having the stud-buckles *c*, of the strap *a b*, having each of its ends impaled on the studded bars of the buckles and thence wound or doubled around the stud-bar and the impaled end in a spiral or coiled manner, substantially as herein shown and described.

2. In a halter, the combination, with the fittings D D, having the stud-buckles *c c* and eyes *d d*, of the straps *a*, *b*, and *c*, having their ends secured to said buckles, and a hitching strap or line secured in said eyes, substantially as shown and described.

3. The combination, with main strap *a b*, of barred clasps F, secured thereon and having stud-buckles *k k'* at each end thereof, with the straps *g* and *n* secured in said stud-buckles, substantially as shown and described.

4. In a halter having a nose-piece, the combination, with eyes on the ends thereof and the partitioned noose-ring *r*, of the looped rope *p*, attached at one end to the ring and looped between the ring and the eyes, forming an adjustable chin band and tie, and thence hanging pendent from said ring to form the hitching-stale, substantially as shown and described.

5. In a halter, the combination, with the straps *a*, *b*, and *c*, of fittings D, securing said straps together, and having distinct isolated eyes *d*, with the partitioned ring *r*, and rope or stale *p*, secured to said ring and looped through the eyes *d*, substantially as shown and described.

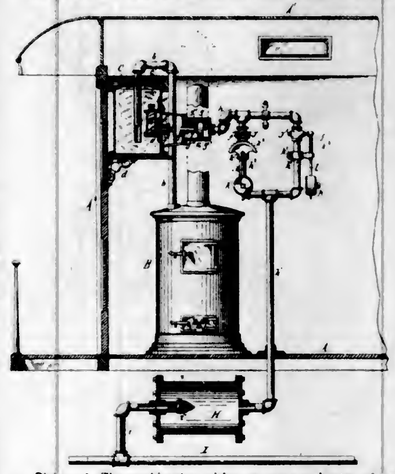
379,057. LINING FOR FIRE-PLACES. JOHN DWYER RUSTON, assignor of one-half to J. W. Holbert, Homer, La. Filed Aug. 2, 1887. Serial No. 245,954. (Model.)



Claim.—1. The combination, with the fire-back or jambs provided with notches in their lower edges and transverse perforations vertically above said notches, of the removable triangular feet having lugs at their lower rear corners engaging the notches and teats at their upper corners engaging said perforations, substantially as specified.

2. The combination, with the fire-back or jambs having the notches F and perforations G, of the detachable feet having the downwardly-projecting spurs K, the lugs J, engaging the notches F, and the teats I, engaging the perforations G, substantially as described.

379,058. APPARATUS FOR EXTINGUISHING FIRES IN RAILWAY-CARS. WILLIAM C. EDWARDS and ORVILLE R. SACKETT, Suspension Bridge, N. Y. Filed May 25, 1887. Serial No. 239,353. (No model.)



Claim.—1. The combination, with a car stove or heater, of a gas-generator provided with a fragile acid-receptacle and a discharge-pipe connected with said stove or heater, an air cylinder and piston, a valve by which compressed air is admitted to said cylinder, and a rod or bolt which is operated by said cylinder and piston and which causes the breaking of the acid-vessel, substantially as set forth.

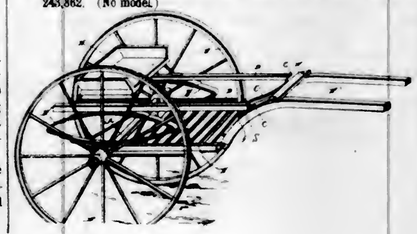
2. The combination, with a car-stove and a gas-generator provided with an acid-vessel, of a bolt or rod adapted to break the acid-vessel, a piston and air-cylinder adapted to operate said bolt or rod, a pipe whereby compressed air is supplied to the air-cylinder, a valve arranged in said supply-pipe whereby the admission of air to the air-cylinder is controlled, and a depending weighted arm connected with said valve, whereby the valve is automatically opened when the car assumes an abnormal position, substantially as set forth.

3. The combination, with a car-stove, the reservoir C, and the acid-vessel E, of a sliding bolt or hammer adapted to break the acid-vessel, an air-cylinder, G, a piston, *g*, arranged in the air-cylinder G and operating said sliding bolt, a pipe whereby compressed air is delivered to the air-cylinder, and a valve arranged in said supply-pipe and provided with a depending weighted arm, substantially as set forth.

4. The combination, with a car-stove, the reservoir C, and the acid-vessel E, of a sliding bolt, *f*, a piston, *g*, an air-cylinder, G, a brake-pipe, I, an air-supply pipe, *h*, connected with the brake-pipe I and delivering compressed air to the cylinder G, valves J J', arranged in the supply-pipe *h* and provided with depending weighted arms *k l*, moving at different vertical planes, substantially as set forth.

5. The combination, with the reservoir C, and acid-vessel E, arranged in the reservoir C, of a bolt, *f*, moving in an opening in the side of the reservoir C, a cylinder, G, a piston, *g*, moving in said cylinder and having a piston-rod, *g'*, adapted to strike the bolt *f*, a pipe whereby compressed air is delivered to the cylinder G, a valve, J, arranged in said supply-pipe and provided with a gear-segment, *j*, and a weighted arm, *k*, provided with a gear-segment, *k'*, substantially as set forth.

379,059. TWO-WHEELED VEHICLE. OSWALD B. FYSH, Moose Jaw, Northwest Territory, Canada. Filed July 9, 1887. Serial No. 243,862. (No model.)



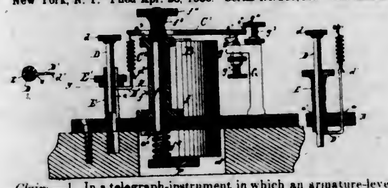
Claim.—1. The combination, with the axle A and the springs B, of the foot-platform E, the thills F, secured thereto, the bars D, the cross-spring C, and the cross-bar F, substantially as described.

2. The combination, with the bars D and the thills F, of the spring C, the eyebolts *e* and *f*, and the safety-straps S, substantially as described.

3. In combination with the bars D, extended from the seat, the thills, the cross-spring C, connecting the bars D, the cross-bar of the thills connecting with the spring C, and the adjustable connection S between the thills and the bars D, as set forth.

4. In combination with the axle, the platform E, rigid therewith and extending therefrom, the thills connected to the platform, the bars D, extending from the seat, the cross-spring C, connecting the bars D, and the straps S, connecting the bars D and the thills, as set forth.

379,060. TELEGRAPH-INSTRUMENT. EMERY M. HAMILTON, New York, N. Y. Filed Apr. 23, 1886. Serial No. 200,443. (No model.)



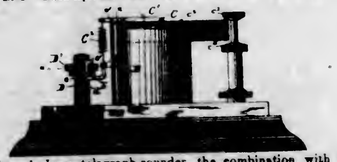
Claim.—1. In a telegraph-instrument in which an armature-lever is vibratory between stops and has a retracting-spring, the combination, with said lever and spring, of a rod connected to said spring, a support in which said rod is seated and in which it has free movement in the direction against the tension of said spring, an arm carried by said rod, and a screw-seated motion-limiting stop in engagement with said arm, whereby the movement of the said rod in the direction of the tension of said spring is adjustably limited, as and for the purpose set forth.

2. In a telegraph-instrument in which an armature-lever is vibratory between stops and has a retracting-spring, the combination, with said lever and spring, of a rod, a hollow and slotted post, in which said rod is fitted to slide, and in which said rod has free movement in the direction against the tension of said spring, an arm carried by said rod and working in said slotted post and connected at its free end to the retracting-spring, and a nut working on a thread on the exterior of said post and engaging said arm to adjustably limit the movement of said rod in the direction of the tension of said spring, as and for the purpose specified.

3. In a telegraph-instrument in which an armature-lever is vibratory between stops and has a retracting-spring, the combination, with said lever and spring, of a rod, a hollow externally-threaded post adjustably screw-seated in the recessed base of the instrument, and in which the rod is fitted to slide and have free movement in the direction against the tension of said spring, and beyond the seated end of which said rod extends, together with an arm carried by said rod at its said extended end and in engagement with the end of said post and connected to said retracting-spring, whereby the movement of the rod in the direction of the tension of said spring is adjustably limited, as and for the purpose set forth.

4. In a telegraph-instrument in which the armature-lever is located parallel to the base-plate, as described, the magnet-cores mounted on a bar in a recess in the base of the instrument and extending upwardly perpendicular to the base, toward the armature, through a slot in the base-plate, together with a rod fixed to said bar and extending upwardly, a hollow post with a threaded upper end provided with a nut thereon bearing on said post, and a spring having bearing between said core-bar and the base-plate, as described, and for the purpose set forth.

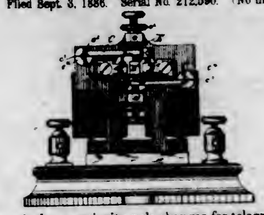
379,061. TELEGRAPH-SOUNDER. EMERY M. HAMILTON, New York, N. Y. Filed Apr. 23, 1886. Serial No. 200,444. (No model.)



Claim.—1. In a telegraph-sounder, the combination, with the armature-lever vibratory between stops, and its retracting-spring, of a post fixed in the base of the instrument and provided with an exterior thread and a channel extending longitudinally of its exterior surface, a nut adapted to turn upon the thread of the post, a stem adapted to fit into and slide in said channel and having an angle end engaging it to said nut, and an arm carried by said stem and extending at an angle thereto and adapted to be attached to said retracting-spring, as and for the purpose set forth.

2. In a telegraph-sounder, the combination, with the armature-lever vibratory between stops, and its retracting-spring, of the threaded and slotted post D, the nut D', and the arm E, connected to said spring and attached to said nut by rod *e* and angle end *e'*, all constructed and arranged to operate as and for the purpose specified.

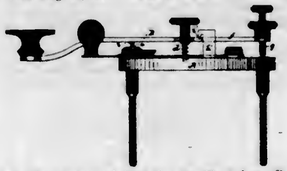
379,062. POLE-CHANGER. EMERY M. HAMILTON, New York, N. Y. Filed Sept. 3, 1886. Serial No. 212,590. (No model.)



Claim.—1. In a continuity pole-changer for telegraphs, the combination, with the vibratory armature-lever and the yielding pole-changing levers, of adjustable stops located one on the side of each of said pole-changing levers which is opposite to the side of said lever having contact with the armature-lever, whereby, while the motion of the armature-lever is adjustably limited, the pole-changing levers are prevented from breaking or disturbing their contact with said armature-lever when struck thereby in its vibrations, as and for the purpose set forth.

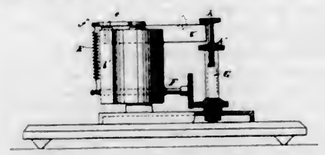
2. In a telegraph-instrument, the combination, with the vibratory armature-lever working between motion-limiting stops and slotted at b^2, of the retracting-spring F, the set-screw f^3, which passes longitudinally through said spring and has the head f', between which and one side of said lever said spring bears, and a lug or support, f^2, located on the side of the lever diametrically opposite to that side upon which said spring bears and to which said set-screw extends through said slot in said lever and in which said screw works in a threaded seat formed therein, substantially as described.

379,063. TELEGRAPH-KEY. EMERY M. HAMILTON, New York, N. Y. Filed Aug. 29, 1887. Serial No. 248,122. (No model.)



Claim.—In a telegraph-key, the cruciform lever B, made of a single piece of metal and provided with a set-screw, *g*, carried on the short arm *f*, and with a contact-point, *b*, carried on its long arm *a*, and the spring *d*, located between the fulcrum of the lever and the said contact-point, the said lever being fulcrumed near the extremities of its cross-arms *j j'* on the separate studs *k k'* by the lips *i i'* and the recesses *k k'*, all constructed and combined to operate as and for the purpose described.

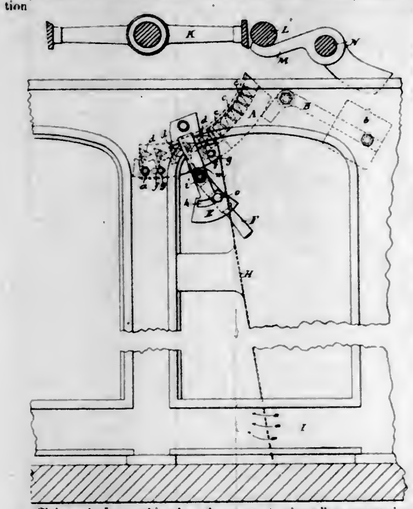
379,064. TELEGRAPH-SOUNDER. EMERY M. HAMILTON, New York, N. Y. Filed Mar. 13, 1885. Renewed Aug. 29, 1887. Serial No. 248,165. (No model.)



Claim.—In a telegraph-sounder or other telegraph-instrument having an armature-lever vibratory between stops and provided with a retracting-spring, the combination, with the armature-lever and its stops and retracting-spring, of conical-ended fulcrum-points supported beneath the lever and recesses in the under face of said lever adapted to engage said points, as and for the purpose specified.

379,065. YIELDING GRATE FOR COTTON-OPENERS. LAYCOCK HARGREAVES, Accrington, County of Lancaster, England. Filed June 13, 1887. Serial No. 241,185. (No model.) Patented in England Aug. 26, 1884, No. 11,590.

Brief.—The frame of the grate is pivoted at one end and at the other end rests upon the short arms of weighted levers, whereby the same may yield slightly under any balled cotton or unusual obstruction

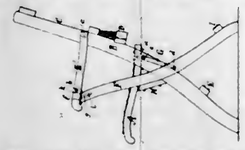


Claim.—1. In combination, the grate A, pivotally supported at one end, and a yielding support for the other end, substantially as described.

2. In combination, the movable grate A and a yielding support therefor, substantially as described.

3. In combination, the movable grate, the pivoted arms B, and the adjustable weight carried by said arms, substantially as described.

379,066. FOLDING CHAIR OR SETTEE. HERBERT J. HARWOOD, Littleton, assignor to the Harwood Manufacturing Company, Boston, Mass. Filed July 23, 1887. Serial No. 245,095. (No model.)



Claim.—1. The combination of the standards B, constituting the side posts for the back C and also the front legs, and having the chair-seat pivoted thereto, the bars D and E, connecting said standards B with each other, the standards F, forming the rear legs and the support for the arm-rests, and connected with each other by the bars H and I and with the standards B by the arm-rests E' and links G, jointed thereto, said standards F having a plate, *f*, provided with a perforated fin, *k*, secured to their tops, said fin to enter a groove in the arm-rest and receive a pin to connect it with said arm-rest, all substantially as shown and described.

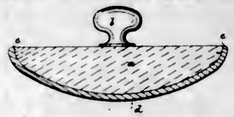
2. The combination of the standards B, constituting the side posts for the back and also the front legs of the chair, and having the seat arranged between and pivoted thereto, and being connected with each other by bars D and E, with the standards F, which, forming the rear legs of the chair, are connected with each other by the bars H I and extended above the seat, so as to form supports for arm-rests E', jointed thereto and to the standards B, said standards B and F also being connected by links G, pivoted to each, all being arranged and to operate substantially as set forth.

3. The combination of the standard F, its lipped plate *f*, tang *g*, notch *h*, screw or pin *i*, and perforated fin *k*, with the grooved arm-rest E' and pin *h*, all essentially as set forth.

4. The plate *f*, provided with a lip and a tang, *g*, notched as shown, and having a perforated fin, *k*, as set forth.

5. The combination of the standards B, having the seat arranged between them and pivoted thereto, said standards being connected with each other by the bars D E, also the rear legs of the chair arranged between said standards and jointed to them by the links G, and connected with each other by the bars H I, with the supports for the arm-rests secured to the said bar H, as shown, and extended upward directly in front of the standards B, the arm-rests E' being pivoted to their supports and to the front edge of the standards, as shown, and all being arranged and to operate substantially as described.

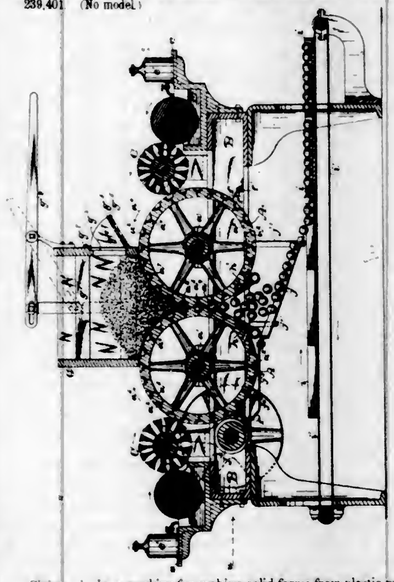
379,067. INK-BLOTTER. HORST HEINEK, New York, N. Y. Filed Dec. 12, 1887. Serial No. 257,647. (No model.)



Claim.—1. A blotting composition consisting of glue, powdered brick, chalk, and borax in about the proportions named, substantially as specified.

2. The combination of block *a* and felt *c* with a coating, *d*, consisting of glue, powdered brick, chalk, and borax, substantially as specified.

379,068. MACHINE FOR FORMING BALLS, &c., FROM PLASTIC MATERIAL. FREDERICK HELLER and IRVIN G. HOOPER, Newark, N. J.; said Hooper assignor to said Heller. Filed May 26, 1887. Serial No. 239,401. (No model.)



Claim.—1. In a machine for making solid forms from plastic material, the combination, with contiguously-arranged forming-cylinders provided with forming-cavities on the peripheries thereof which coincide as said cylinders revolve and form inclosed cavities at the point of contact of said cylinders, of blast-nozzles or tubes arranged beneath said forming-cylinders and so placed as to cause the air-blast to dislodge the formed bodies from their forming-cavities, for the purposes set forth.

2. In a machine for making solid forms from plastic material, the combination of contiguously-arranged forming-cylinders provided with forming-cavities on the peripheries thereof, which coincide as said cylinders revolve and form inclosed cavities at the point of contact of said cylinders, each of said forming-cavities being provided with an air-duct leading therefrom, and an oiling device for applying a suitable lubricant to the peripheral surface of each of said cylinders, for the purposes set forth.

3. In a machine for making solid forms from plastic material, the combination of contiguously-arranged forming-cylinders provided with forming-cavities on the peripheries thereof, which coincide as said cylinders revolve and form inclosed cavities at the point of contact of said cylinders, each of said cavities being provided with an air-duct leading therefrom, distributing brush-rolls placed contiguous to said forming-cylinders, oil-rolls engaging with said distributing-rolls, and an oil-tank in which said oil-rolls revolve, for the purposes set forth.

379,069. ELECTRIC RAILWAY. WILLIAM W. HOPKINS, St. Louis, Mo., assignor of one-half to Irving McGowan, same place. Filed Jan. 27, 1887. Serial No. 225,675. (No model.)



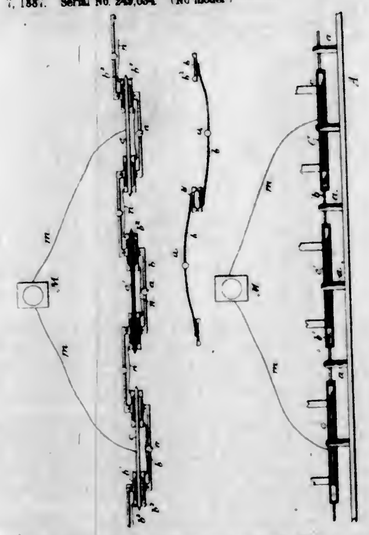
Claim.—1. In an electric railway having a conductor composed of sections having at each of their ends a pair of circuit-closers normally in contact, a divided circuit-breaker longer than the conductor-sections connected to an electromotor on a moving body and having an automatic switch adapted to make contact successively with the two divisions of the circuit-breaker, substantially as described.

2. In a railway having a sectional conductor provided with a series of circuit-closers, substantially as described, and in combination with a car having an electromotor, a divided circuit-breaker longer than the conductor-sections carried by such car, a switch at the point of division in electrical connection with the motor, and means located at the end of each section of the conductor for placing the switch in contact successively with each division of the circuit-breaker, substantially as set forth.

3. In an electric railway having a sectional conductor the sections of which are connected by circuit-closers arranged in pairs, the combination, with each pair of circuit closers, of a hinged shield or protector adapted to be displaced by the passage of a car on the track and to automatically resume its normal position, substantially as described.

4. In an electric railway having a sectional conductor the sections of which are connected by circuit-closers arranged in pairs, the combination, with each pair of circuit-closers, of a shield or protector composed of two separately-hinged plates normally in contact and adapted to be separated by the passage of a car, and then by their own weight to resume their normal position, substantially as described.

379,070. ELECTRIC RAILWAY. WILLIAM W. HOPKINS, St. Louis, Mo., assignor of one-half to Irving McGowan, same place. Filed Sept. 7, 1887. Serial No. 249,034. (No model.)

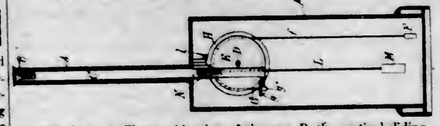


Claim.—1. In an electric railway, a series of pillars or supports, each provided with a horizontal spring-arm, such arm having at each end a double contact-piece, substantially as described.

2. In an electric railway having a conductor formed in sections, a series of pillars or supports, an arm carried by each support and partly overlapping a similar arm on the next support, and a double contact-piece carried by each end of each of said arms, substantially as described.

3. In an electric railway having a divided or sectional conductor connected by circuit-closers normally in contact, a divided circuit-breaker composed of two conducting-bars connected to an electric motor, and one or more intermediate non-conducting bars for breaking the line-circuit at a point or points between the motor-connections, substantially as described.

379,071. COIN-RELEASED HEIGHT-MEASURING APPARATUS. WILLIAM P. INGHAM, Middlesbrough, County of York, England. Filed Sept. 26, 1887. Serial No. 250,715. (No model.)



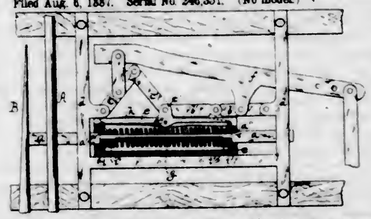
Claim.—1. The combination of the arm B, the vertical sliding bar or rod C, provided at its lower end with an aperture, the weight *g*, the double pulley or wheel E, the balance-weight F, and the cords *f* and G, substantially as and for the purpose set forth.

2. The combination of the arm B, rod or bar C, with the aperture in the end, the spindle D, carrying the indicating hand or pointer, the pulley E, the balance-weight F, suspended at one side, and the weight *g* at the other, and the button *g'*, to engage the weight *g*, substantially as described.

3. The combination of the arm B, rod or lever C, hand or pointer J, the pulley E, the cords and weights, the brake-wheel H, the coin-trough provided with the slot, and the lever I, moving in the slot in the path of the coin to be acted upon by said coin to be disengaged thereby from the wheel, substantially as described.

4. The combination of the arm B, rod or bar C, with the aperture in its end, the spindle D, the double pulley or wheel E, the cords *f* and G, the weights *g* and F, the button *g'*, and the hand or pointer J, substantially as described.

379,072. RAILWAY-SWITCH. ROBERT H. ISBELL, New York, N. Y., assignor, by mesne assignments, to the Isbell Machine Company. Filed Aug. 6, 1887. Serial No. 246,351. (No model.)



Claim.—1. In a railway-switch, the combination of a compressible spring lying within a frame, a switch-bar adapted to compress the spring against the frame by movement in either direction, a rocking bar pivoted to the frame and adapted to alternately lock the switch-bar to such frame in each direction while leaving it free in the other, and means to rock such bar upon its pivot at the end of each shifting of the switch.

2. In a switch operated by double toggle-joints, the combination of arms *b b' c c'* and the rocking bar *h*, both pivoted to *c*, with the frame *e*, containing and supporting the collars *i*, switch-bar *a*, and spring *g*.

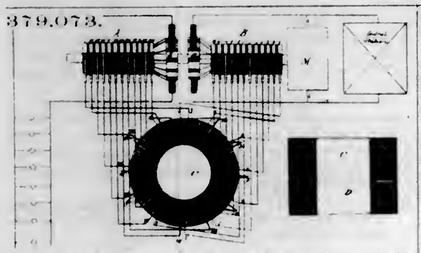
379,073. CONTINUOUS AND ALTERNATING TRANSFORMER. FRANCIS JEHL, Paris, France. Filed Feb. 25, 1887. Serial No. 228,800. (No model.)

Claim.—1. A transformer consisting of two cores wound with primary and secondary coils of wire and arranged in such close inductive proximity that the lines of magnetic force in each core may be completed through the other core.

2. A transformer composed of two iron cores wound with primary and secondary coils, one of said cores being of annular form and arranged in inductive proximity to the other, whereby the lines of force in each core may be completed through the other.

3. A transformer composed of two iron rings, and primary and secondary coils wound on said rings, the said rings being arranged close together in order that each may serve for completing the lines of force generated in the other.

379,073.



1. A transformer composed of a hollow iron cylinder wound with primary or secondary coils, in combination with an iron cylinder arranged therein and wound with coils, whereby the lines of force crossing through said inner cylinder react upon the coils thereon and are utilized.

5. A transformer composed of iron cores arranged in close inductive proximity, so that the lines of magnetic force in each core may be completed through the other and said cores wound with primary and secondary coils, in combination with two commutators, to one of which the primary windings are connected and to the other of which the secondary windings are connected, in such manner that when the commutators are revolved and a current is sent through the primary commutator a current may be taken off from the secondary commutator.

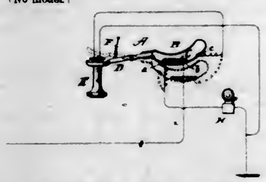
6. A transformer having two stationary iron cores arranged in close inductive proximity and wound with primary and secondary coils divided into sections, in combination with a rotary distribution-commutator in connection with the sections of the primary coil.

7. The combination, with a transformer having primary and secondary coils, of a distribution-commutator consisting of a rotary shaft, insulated sections or bars borne thereby, a series of disks or rings or segments of disks or rings, each of which is in electrical connection with its corresponding bar and insulated from the others, a series of stationary brushes or conductors in contact with said disks and in connection with the respective sections of the coils, and the main brushes for conducting the current to and from the sections or bars.

8. The combination, with a transformer having primary and secondary coils, of a distribution-commutator consisting of a rotary shaft, insulated sections or bars borne thereby, a series of disks or rings or segments of disks or rings, each of which is in electrical connection with its corresponding bar and insulated from the others, a series of stationary brushes or conductors in contact with said disks and in connection with the respective sections of the primary coil, the leading-in brushes for conducting the primary current to and from the sections or bars, and a second commutator of essentially like construction, with its brushes connected to the sections of the secondary coil, and take-off brushes for conducting the secondary current from the sections or bars of the second commutator.

9. The distribution-commutator consisting of a series of insulated bars of successively different lengths, having projections at their opposite ends and arranged with the projections at their one ends all in one plane, in combination with main brushes arranged in the same plane with said projections, and with a series of brushes connected to the respective coils and arranged in different planes corresponding with the paths traversed by the opposite ends of the bars of the commutator.

379,074. **ELECTRICAL CONTACT MAKER AND BREAKER.** CARVOSO LAMBDIN, Barranquilla, United States of Colombia, assignor to Samuel R. Lambdin, New York, N. Y. Filed Nov. 14, 1887. Serial No. 255,063. (No model.)



Claim.—1. The combination, with a telephone and its support and the usual bell and receiver circuits, of a circuit-controller connected with the latter, the said circuit-controller consisting of a sealed chamber secured to and moved by the receiver-support, containing a line-terminal, and also the terminals of the said bell and receiver circuits, and a relatively-movable conductor within the said chamber adapted to be moved by the movements of the support, so as to connect the line and the bell circuit terminals or the line and the telephone circuit terminals, as and for the purpose set forth.

2. A circuit-controller consisting of a sealed chamber containing circuit-terminals in line with a poised terminal, with which either of the said terminals may be brought into contact when the chamber is moved, the said controller being connected with and moved by the telephone-support, as and for the purpose set forth.

3. The combination, with a pivoted telephone-support, of a telephone supported on one side of the pivot, and a sealed chamber carrying circuit-terminals, and a movable conductor or connector supported on the opposite end of the support, as set forth.

379,075. **STOP-WATCH.** HENRY A. LOURIE, Brooklyn, N. Y. Filed June 6, 1887. Serial No. 240,383. (No model.)



Claim.—1. In stop-watches, a motion-transmitting gearing for the quarter-seconds and auxiliary minutes hands, formed of minutely-toothed conoidal gear-wheels, substantially as set forth.

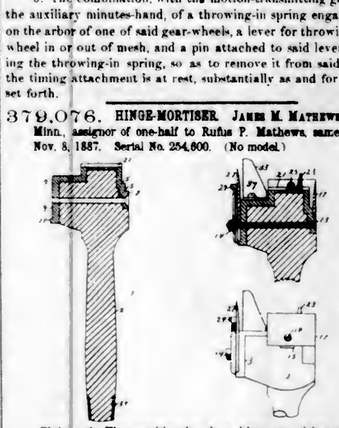
2. In stop-watches, the combination of minutely-toothed conoidal transmitting gear-wheels on the arbors of the fourth wheel and of the quarter-seconds hand, with an intermediate inclined pinion and means for supporting said pinion, substantially as set forth.

3. In stop-watches, the combination, with the motion-transmitting gear-wheels of the quarter-seconds and auxiliary minutes hands, of throwing-in springs and lifting-levers whereby said throwing-in springs are moved out of contact with the said transmitting gear-wheels whenever the timing attachment is in its normal position of rest, substantially as set forth.

4. In a stop-watch, the combination, with the motion-transmitting gear-wheels of the quarter-seconds hand, of the throwing-in spring having a pin attached to its shank, and the lever for raising one of the transmitting gear-wheels, said lever also engaging the pin on the shank of the throwing-in spring, so as to remove the latter from the transmitting gear-wheel whenever the timing mechanism is at rest, substantially as and for the purpose set forth.

5. The combination, with the motion-transmitting gear-wheels of the auxiliary minutes-hand, of a throwing-in spring engaging a collar on the arbor of one of said gear-wheels, a lever for throwing said gear-wheel in or out of mesh, and a pin attached to said lever and engaging the throwing-in spring, so as to remove it from said arbor when the timing attachment is at rest, substantially as and for the purpose set forth.

379,076. **HINGE-MORTISER.** JAMES M. MATHEWS, Minneapolis, Minn., assignor of one-half to Rufus P. Mathews, same place. Filed Nov. 8, 1887. Serial No. 254,600. (No model.)



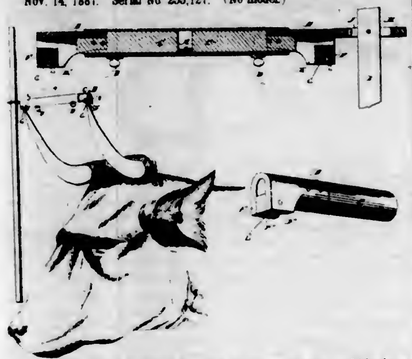
Claim.—1. The combination, in a hinge-mortising tool, with the handle 2 and the metal cap 3, having the dovetailed groove 21 extending transversely across its face, of the rectangular knife 17, secured upon said cap, and the sliding gage-plate 23, arranged between the parallel sides of said knife and adapted to slide in said groove, substantially as described.

2. The combination, in a hinge-mortising tool, with the handle 2 and the metallic cap 3, of the rectangular knife 17, secured upon said cap, the sliding width-gage 23, arranged to slide transversely upon the face of said cap between the two parallel sides of said knife, the knife 27, secured upon the side of said cap, and the adjustable depth-gage 33, all substantially as described.

3. The combination, in a hinge-mortising tool, with the handle 2, of the metal cap 3, provided at its sides with the depending flanges 7, 9, and 15, the shoulders 5 upon the flanges 7 and 15, and the shoulder 11 upon the flange 9, the rectangular knife 17, bearing upon said shoulders 5, and the knife 27, secured upon the flange 9 and bearing against the shoulder 11, substantially as described.

4. The combination, in a hinge-mortising tool provided with the rectangular knife 17 and width-gage 23, of the knife 27, the adjustable gage 29, secured upon the face of said knife, and the adjustable depth-gage 33, secured upon the end of the stock and adjustable toward and from the knife 27, substantially as described.

379,077. **HORN-TIP.** HENRY A. MILLER, Ogallala, Nebr. Filed Nov. 14, 1887. Serial No. 255,127. (No model.)

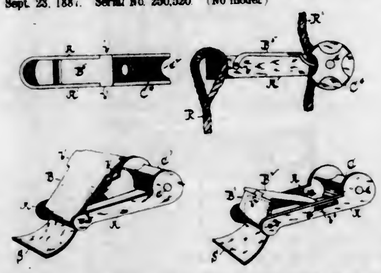


Claim.—1. A horn-tip consisting of a central tube and blocks secured upon the horns and adjustably held in said tube, substantially as set forth.

2. A horn-tip having a slotted plate swiveled to one end and a poke-bar inserted through said plate and pivotally mounted therein, substantially as specified.

3. A horn-tip consisting of a tube, rods adjustably secured in the ends of the tube, and blocks carried by said rods and adapted to be secured upon the ends of the horns, as set forth.

379,078. **BUCKLE.** ERASTUS N. PARKER, Springfield, Mass. Filed Sept. 23, 1887. Serial No. 250,520. (No model.)



Claim.—1. In the buckle or similar device herein described, a frame, a roll having ribs or teeth thereon journaled in said frame, and a contact device mounted in said frame in such manner that one end thereof can be engaged with and disengaged from the ribs or teeth on said roll, substantially as described.

2. In the buckle or similar device herein described, a frame, a roll having two or more longitudinal ribs or teeth thereon journaled in said frame, and a contact device pivotally mounted in said frame in such position that its free end can be caused to engage the ribs or teeth on said roll, substantially as and for the purpose described.

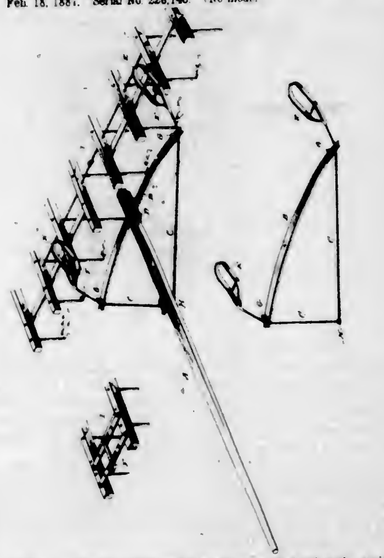
3. In the buckle or similar device herein described, a frame, a roll having a series of longitudinal ribs or teeth thereon journaled in said frame, a contact device pivotally mounted at one end in said frame and having its opposite end adapted to engage one of the ribs or teeth on said roll, and one or more stops to limit the movement of said contact device, substantially in the manner set forth.

4. In the buckle or similar device herein described, a frame, a roll journaled therein having a series of longitudinal ribs or teeth and a curved surface between said ribs or teeth, and a contact device pivotally mounted in said frame, and having a portion thereof adapted to be inserted between the ribs or teeth on the roll and curved to conform substantially with the surface of the roll between said ribs or teeth, substantially as set forth.

5. In the buckle or similar device herein described, a frame comprising the side pieces, A A, a roll having longitudinal ribs or teeth thereon journaled in said frame at or near one end thereof, a contact device mounted upon a pivot at or near the opposite end of said frame and having its front end adapted to enter between the ribs or teeth on the roll, and means for securing a strap or similar device to said contact device between its pivot and the roll, substantially as and for the purpose described.

6. As an article of manufacture, a buckle consisting of side pieces, A A, roll C, having ribs or teeth c', journaled between said side pieces, near one end of the latter, and contact device B, mounted upon pivot b near the opposite end of said side pieces, said contact device having its front end curved, as shown, and having the laterally-projecting lugs b', substantially as shown and described.

379,079. **HARROW.** CHARLES A. PERIN, Beetown, Wis. Filed Feb. 18, 1887. Serial No. 228,140. (No model.)



Claim.—1. The combination of the tongue A, having the guide-loop D, with the draw-bars C C and the curved supporting-bar B, as described.

2. The draw-bars C C, having curved pivotal loops E E, in combination with the hinge-pieces F F, as and for the purposes described.

379,080. **FISH-HOOK.** WILLIAM H. RICE, Addison, N. Y. Filed Dec. 20, 1887. Serial No. 258,537. (No model.)



Claim.—1. A fish-hook provided with a shield consisting of springs arranged below the shank of the hook, and a plate secured to said springs and normally held thereby against the point of the hook, substantially as set forth.

2. A fish-hook provided with a shield consisting of springs arranged below the shank of the hook, and a plate secured to said springs and normally held thereby against the point of the hook, the said plate having a series of barbs or teeth along its lower edge, as set forth.

3. A fish-hook provided with a shield, consisting of springs arranged below the shank of the hook and extended beyond the point of the hook to form a trigger, and a plate carried by said springs and normally held by the same against the point of the hook, as set forth.

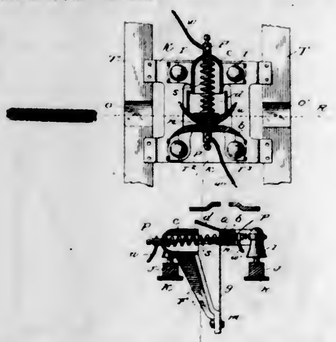
4. A trolling-spoon having a shield loosely mounted on its under side and normally covering the point of the hook, the said shield being

adapted to be moved longitudinally of the spoon and disclose the hook when struck by the fish in the act of biting, substantially as described.

5. The combination of the spoon having the sleeves B B on its under side, the hook, and the sliding spring-shield mounted in the sleeves and normally covering the point of the hook, substantially as set forth.

6. The combination of the spoon having the sleeves B B and the springs F G, united at their forward ends in one of said sleeves, the springs F extending into and bearing against the other of said sleeves, and the springs G extending downward and carrying a shield for the point of the hook, as set forth.

379,081. **SPRING-JACK FOR ELECTRIC RAILWAYS.** SIDNEY H. SHORT, Denver, Colo., assignor, by direct and mesne assignments, to the United States Electric Company, same place. Filed Feb. 16, 1887. Serial No. 227,797. (No model.)



Claim.—1. In an electric railway having a single sectional conductor and a current-collector, a spring-jack arranged between the ends of the sectional conductor, consisting of metallic faces *a b*, connected to the adjoining sections of the conductor, said faces being normally in contact, one movable and the other fixed, and arranged in the line of movement of the current-collector, to be separated by the said collector acting directly upon them, substantially as described.

2. In an electric railway having a single sectional conductor, a spring-jack arranged between the ends of the sections, consisting of metallic contact-faces *a* and *b*, one of said faces being stationary and the other being supported so as to have lateral movement with a suitable spring for returning and keeping it normally in contact with the fixed face, substantially as described.

3. In an electrical railway having a single sectional conductor, a spring-jack arranged between the ends of the sections, said jack consisting of two contact-faces, one of said faces being fixed and the other being supported upon a spring, *g*, and adapted to have lateral movement away from the fixed face, and a spring, S, in rear of the moving part adapted to keep it normally in contact with the fixed face, substantially as described.

4. A spring-jack adapted to be used between the ends of the sections of an electrical railway, having a single sectional conductor consisting of metallic contact-faces, one of said faces being fixed and the other being supported upon spring *g*, so as to have lateral movement, a coil-spring bearing against the rear of said face and being partially contained within a covered pocket, and a flaring hood extending from the said contact-face rearwardly, whereby the spring is protected, substantially as described.

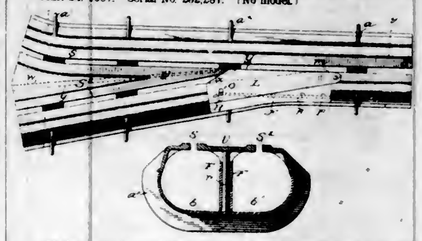
5. A spring-jack for a single sectional conductor of an electrical railway, consisting of two parts, each of said parts being secured to bell-shaped insulators, substantially as described.

6. A spring-jack having a single sectional conductor of an electrical railway, consisting of two parts, each of said parts being secured to a bell-shaped insulator, and the insulator secured to a suitable support for working, substantially as described.

7. A spring-jack for the ends of the sections of the single sectional conductor of an electrical railway, consisting of a fixed contact-face provided with stationary binding-post, a movable contact-face supported from a fixed bracket by a spring and in electrical connection therewith, and a fixed binding-post upon said bracket, substantially as described.

8. In an electrical railway, a spring-jack between the sections of the conductor, consisting of opposing faces normally in contact, one movable and the other fixed, and arranged to be separated by the passage of the current-collector between the opposing faces, substantially as described.

379,082. **SLOT-SWITCH FOR ELECTRICAL AND CABLE RAILWAYS.** SIDNEY H. SHORT, Denver, Colo., assignor, by direct and mesne assignments, to the United States Electric Company, same place. Filed Mar. 24, 1887. Serial No. 232,287. (No model.)

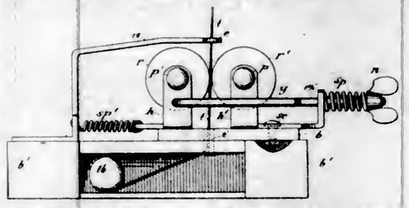


Claim.—1. In a railway having slotted conduits of main and branch lines with the tangent points of the slots in different places, an automatic turn-out cover pivoted at the point of tangency of the main or straight line with the branch and extending toward the point between the diverging lines of the slots, with its edge coincident throughout with the edge of the straight slot, so as to cover the V-shaped opening, said cover being inclined at its free end *x*, and having a spring and devices to limit its movement, substantially as described.

2. In a railway having a slotted conduit and siding, the plate adapted to cover the V-shaped slot at the junction of the slots of the main track and siding, said plate having an inclined free end, *x*, and a spring, N, arranged underneath within the conduit and bearing upon a stud fixed to the plate and projecting down through a slot in the conduit, substantially as described.

3. In combination, the conduit having the straight slot, the branch slot having its tangent point at *m*, the covering-plate pivoted at the tangent point and extending toward the point V, its edge being coincident with the straight edge of the main slot and having its free end inclined, as at *x*, and crossing the branch slot, substantially as described.

379,083. **TENSION FOR SELF-BINDERS.** WILLIAM H. STINE, Marietta, Ind. Filed July 21, 1887. Serial No. 244,928. (No model.)



Claim.—The combination, in a tension device, of the twine-box *b'*, the eye *c'* in the base *b*, the base *b*, the holder *h*, with its slot *sl*, the set-screw *sc'* in the base *b* and through the slot *sl*, the arm *a*, its lower end fastened to the top of the box *b'* and its upper end projecting over the roller *r*, holder *K'*, with its vertical arms to form bearings for the journals of the roller *r'*, and its vertical extension to form a bearing for the extension of the yoke *y*, the rollers *r r'*, the journals P P', the yoke *y*, secured at one end to the holder *h* and having at the other end an extension, *ex*, the nut *n*, the springs *sp sp'*, and the eye *e* in the upper end of the arm *a*, all substantially as above described, and for the purpose set forth.

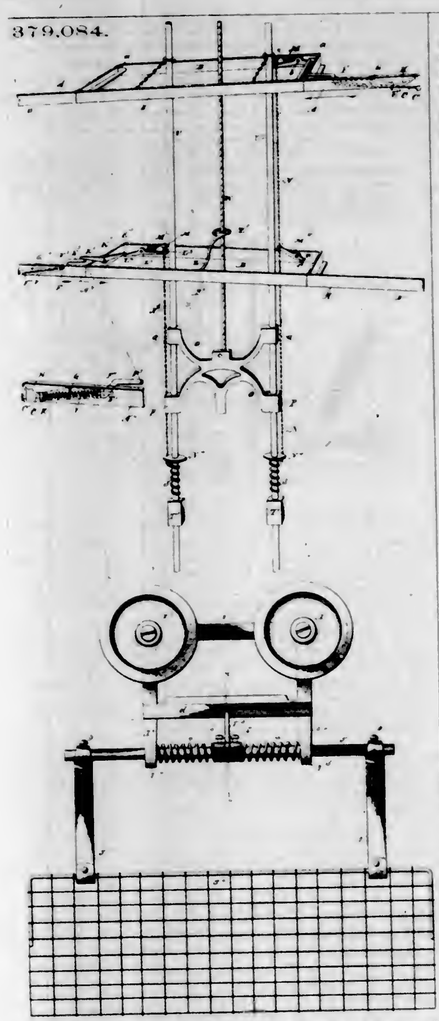
379,084. **CASH AND PACKAGE CARRIER.** HORATIO THOMAS, Chicago, Ill., and LOUIS G. BOSTEDO, Atlantic, Iowa, assignors to the Bostedo Package and Cash Carrier Company, Atlantic, Iowa. Filed Sept. 28, 1887. Serial No. 250,913. (No model.)

Claim.—1. The combination, with a track, a back-stop, and an elevator-frame, of a movable spring-bearing indirectly connected to the back-stop and adapted to be engaged by the elevator-frame when the latter is at a point below the lower track, substantially as set forth.

2. The combination, with an elevator-frame and track, of a pivoted back-stop, a movable spring-bearing, and a flexible connection between the back-stop and bearing, whereby when the elevator-frame is in its lowered position the back-stop is held clear of the track, substantially as set forth.

3. The combination, with an elevator-frame and track, of a pivoted back-stop, a bearing on which the elevator-frame rests when in its lowered position, a spring supporting said bearing, and a flexible connection between the bearing and back-stop, whereby when the

379,084.



elevator-frame is in its lowered position the back-stop is held clear of the track, substantially as set forth.

4. The combination, with an elevator-frame and a pull-cord, of a free track-section and an arm, the latter having an eye through which the pull-cord passes, substantially as set forth.

5. In a car for a cash or package carrier, the combination of two wheels, a frame-piece, two standards depending from this piece, two cross-bars secured to the standards, a goods or cash receptacle, two hangers attached to the receptacle, a bar adjustably secured to the hangers, and an adjustable arm adapted to engage the cross-bars and limit the side-swing of the basket or goods-receptacle, substantially as set forth.

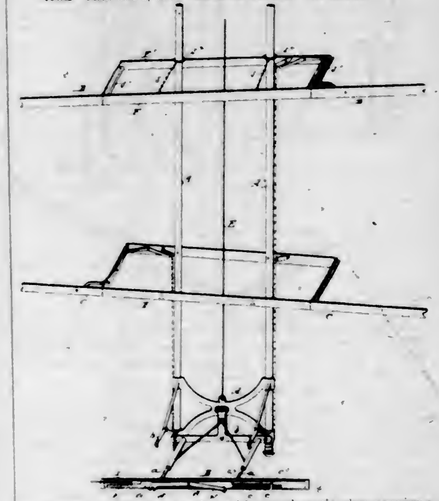
6. The combination, with a car, a rod slidingly connected thereto, and a receptacle secured to said rod, of springs mounted on the rod and engaging the car-frame, substantially as set forth.

7. The combination, with a car, a rod slidingly connected thereto, and a receptacle secured to the rod, of an arm secured to the rod, and a spring encircling the rod at a point between said arm and one of the depending standards in which the rod is mounted, substantially as set forth.

8. The combination, with a car having depending standards, a rod loosely mounted in said standards, and a receptacle secured to the rod, of an arm secured on the rod at a point between the standards, and springs located on the rod between the arm and standards, substantially as set forth.

9. The combination, with a car having depending standards, a rod loosely mounted in said standards, a spring on said rod, and a cross-bar connecting the standards at a point above the rod, of a receptacle rigidly secured to the rod, and an arm adapted to engage the cross-bar, substantially as set forth.

379,085. **CASH-CAR ARRESTER.** HORATIO THOMAS, Chicago, Ill., assignor to the Bostedo Package and Cash Carrier Company, Atlantic, Iowa. Filed Oct. 8, 1887. Serial No. 251,829. (No model.)



Claim.—1. The combination, with a track-section bar carrying a ratchet-bar, a spiral spring, and a tripping-lever for engaging the ratchet-bar and holding the spiral spring compressed, of a locking-bar pivoted to the ratchet-bar and adapted to engage with one end a pin on a car and with the other end to engage the surface of the track-section bar to lock the car in position, substantially as set forth.

2. The combination, with an elevator carrying a track-section, the latter having a notched under side, of a ratchet-bar, a spiral spring to arrest recoil, a tripping-lever, and a vibrating locking-bar having a pin adapted to be moved up into the notch and engage a flange on the track-section bar for holding the locking-bar elevated, substantially as set forth.

3. The combination, with a track-section bar and its ratchet-bar, of a pivoted locking-bar that has a crotched end and a lug or pin projecting from its other end and adapted to lock the crotched end fast to a pin on the car, substantially as set forth.

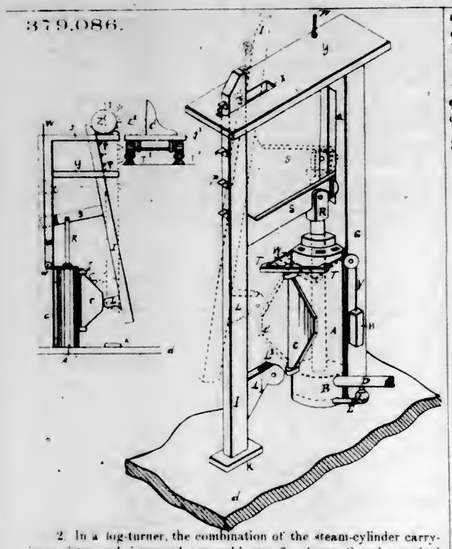
4. The combination, with a car that has a projecting pin on its frame, of the track-section bar of an elevator, a ratchet-bar on this track-section bar, and a locking-bar pivoted on the track-section bar, forked to straddle the projecting pin on the car-frame and be held in locked contact by the engagement of its other end with the surface of the track-section bar, substantially as set forth.

5. The combination, with a track-section bar that may be held in alignment with the upper and lower tracks of a two-track apparatus, of a toothed and spring-actuated ratchet-bar, a tripping-lever, a latch-bar pivoted at one end, and an abutment-plate secured to the ratchet-bar, the swinging end of the latch-bar being adapted to hold the guard-piece of the frame of a car between it and the adjacent edge of the depending abutment-plate, substantially as set forth.

379,086. **STEAM LOG-TURNER.** JOHN TORRENT, Muskegon, Mich. Filed Apr. 13, 1885. Serial No. 162,096. (No model.)

Claim.—1. In a log-turner, the combination, with a suitable frame, of the steam-cylinder supported upon the frame-base, a piston and piston-rod working therein, and a vertical toothed bar, I, operated by the piston and connected thereto by means of a rod, S, said rod being fixed at one end to the bar I and pivoted to the piston, and a rear extension on said rod projecting into a slot in the rear post, G, of the frame, whereby it is guided vertically, substantially as described.

379,086.



2. In a log-turner, the combination of the steam-cylinder carrying a piston and piston-rod, a movable cam-faced gate, C, and a toothed bar connected to the piston-rod of said cylinder and fitted to engage with said gate, which is pivoted to the cylinder or a post directly in rear of the said toothed bar, substantially as described.

3. In a log-turner, the combination, with a suitable frame, of a steam-cylinder mounted on said frame, a piston and piston-rod working therein, a vertical toothed bar in front of said frame operated by the piston and connected thereto by means of a rod, S, which is connected to the bar I at one end and pivoted to the piston at the other end, and a cam-faced gate, C, pivoted to the cylinder or a post directly in rear of said bar I, with which it is adapted to engage, and the ropes W W, substantially as described.

4. In a log-turner, the combination, with a suitable frame, and a toothed bar guided therein, of the fixed cylinder having a piston and piston-rod, said toothed bar being pivoted to said piston-rod and adapted to be moved thereby, substantially as described.

5. A steam log-turner with a fixed cylinder, a toothed bar having two projections, to one of which the power is applied and the end of which moves in suitable guides, the other arm engaging with a movable cam-faced gate, said movable cam-faced gate pivoted in rear of said toothed bar, all constructed and operating substantially as described.

379,087. ANIMAL-TRAP. CYRIL WALKER and WILLIAM ALLSOPP, Wolverhampton, County of Stafford, England; said Allsopp assignor to said Walker. Filed Apr. 18, 1887. Serial No. 235,187. (No model.) Patented in England Oct. 5, 1886, No. 12,654.



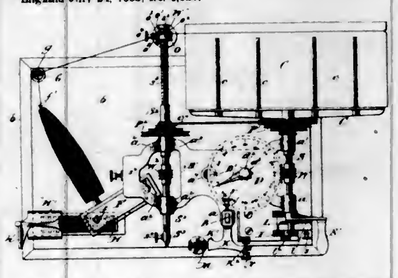
Claim.—1. An animal-trap consisting of the combination of a base-plate, the jaws pivoted thereto and adapted to close together, a spring pressing upward against said jaws adjacent to their pivots and tending thereby to close them, and a counterweighted pivoted catch-piece, which, when the trap is set, hooks over the spring and holds it down, whereby the trap sets itself on the compression of the spring.

2. An animal-trap consisting of the combination of a base-plate, the jaws pivoted thereto and adapted to close together, a spring pressing upward against said jaws adjacent to their pivots and tending thereby to close them, a pivoted catch-piece, which, when the trap is set, hooks over the spring and holds it down, and which is beveled on its upper side in order to be displaced by the compression of the spring, a releasing-plate in connection with said catch-piece, and a counterweight for pressing up the catch and plate.

3. An animal-trap consisting of the combination of pivoted jaws, a spring for closing them, and a lever fulcrumed near the free end of the spring and formed with a catch above its fulcrum for engaging the spring, with a plate on one side of its fulcrum and a counter-weight on the opposite side of its fulcrum for pressing up said plate and moving said catch over the spring when the latter is compressed.

4. In an animal-trap, the combination of jaws C C, spring B, plate D, hinge-piece *a*, connected to said plate and having a counterweighted extension, *c*, and catch *d*, for engaging the spring, beveled so as to be displaced by the spring as the latter is compressed, and axial pin *b*.

379,088. MECHANISM FOR TESTING YARNS OR THREADS. ROGGERSDER WALLWORK, Manchester, County of Lancaster, England, assignor to James Whaley Shepherd and William Ayrton, same place. Filed May 19, 1887. Serial No. 238,748. (No model.) Patented in England July 24, 1885, No. 8,927.



Claim.—1. In a machine of the class described, mechanism for winding thread or yarn, comprising a winding-shaft carrying the device on which the yarn or thread is wound, and a measuring-wheel operated from said shaft and indicating the revolutions thereof, in combination with mechanism for traversing the thread, comprising a screw-threaded shaft revolving in unison with the winding-shaft, and a nut fitted on said shaft and provided with a thread-guide, substantially as and for the purpose specified.

2. In a machine of the class described, mechanism for winding thread or yarn, comprising a winding-shaft carrying the device on which the thread or yarn is wound, a measuring-wheel operated from said shaft and indicating the revolutions thereof, and a traversing device for traversing the yarn or thread as it is wound, in combination with a stationary thread-guide and an adjustable cop or bobbin holder, substantially as and for the purpose specified.

3. In a machine of the class described, mechanism for winding the thread or yarn, comprising a winding-shaft carrying the device on which the thread or yarn is wound, a measuring-wheel operated from the shaft and indicating the revolutions thereof, and mechanism for traversing the thread or yarn as it is wound, comprising a screw-threaded shaft revolving in unison with the winding-shaft, and a nut fitted on said shaft and provided with a thread-guide, in combination with a stationary thread-guide and an adjustable cop or bobbin holder, substantially as described, for the purpose specified.

4. In a machine of the class described, mechanism for winding the thread or yarn, comprising a winding-shaft carrying the device on which the thread or yarn is wound, and a measuring-wheel operated from the shaft and indicating the revolutions thereof, in combination with mechanism for traversing the thread as it is being wound, comprising a weighted nut provided with an elongated slot screw-threaded at its upper end to fit the thread of the shaft, and a thread-guide connected with the out, substantially as and for the purposes specified.

5. In a machine of the class described, mechanism for winding the thread or yarn on a card or plate, comprising a revoluble shaft, a card or plate holder secured thereto, and a measuring-wheel operated from the shaft and indicating the revolutions thereof, in combination with mechanism for traversing the yarn or thread, consisting of a screw-threaded shaft operated from the winding-shaft, and a nut fitted on said shaft and provided with a thread-guide, substantially as and for the purpose specified.

6. In a machine of the class described, the mechanism for testing the breaking strength of yarn or thread, comprising a shaft provided at one end with a thread-clamp for clamping one end of the yarn or thread, and an index operated from said shaft, indicating the revolutions thereof, in combination with a support for said shaft, provided with a vertically-slotted bearing, a vertical bar graduated to inches and fractions, adjustable vertically in said bearings, a bracket adjustable vertically on the bar, and a spring-scales provided with means for attaching the other end of the yarn or thread thereto, substantially as and for the purposes specified.

7. In a machine of the class described, mechanism for testing the breaking strength of yarn or thread, comprising a shaft provided at one end with a thread-clamp for clamping one end of the yarn or thread, and an index operated from said shaft indicating the revolutions thereof, in combination with a support for said shaft, provided with a vertically-slotted bearing, a vertical bar graduated to inches and fractions, adjustable vertically in said bearing, a bracket adjustable vertically on the bar and provided with a thread-clamp, and a hooked weight movable vertically in said bracket, whereby the yarn or thread tested may be subjected to a uniform initial strain previous to being clamped to the bracket and previous to ascertaining the breaking strain thereof, as described.

8. In a machine of the class described, mechanism for ascertaining the number of twist in a given length of yarn or thread, comprising a revoluble shaft provided at one end with a thread-clamp, and an index operated from the shaft to indicate the number of revolutions thereof, in combination with a support for said shaft, a horizontally-slotted bearing parallel to the shaft, a horizontal bar adjustable in said bearing and graduated to inches and fractions, a bracket adjustable on the horizontal bar, and a thread-clamp on said bracket, substantially as and for the purpose specified.

9. In a machine of the class described, mechanism for ascertaining the number of twist in a given length of yarn or thread, comprising a revoluble shaft provided at one end with a thread-clamp, and an index operated from the shaft to indicate the number of revolutions thereof, in combination with a support for said shaft, a horizontally-slotted bearing parallel to the shaft, a horizontal bar adjustable in said bearing and graduated to inches and fractions, a bracket adjustable on the horizontal bar, a thread-clamp on said bracket, and a hooked weight movable vertically on the bracket, whereby the yarn or thread tested may first be subjected to an initial strain after having been clamped to the shaft and before being clamped to the bracket, substantially as and for the purpose specified.

10. In a machine of the class described, mechanism for ascertaining the breaking strength of a single length of yarn or thread, comprising a screw-threaded revoluble shaft, a weighted nut mounted thereon and provided with means for securing one end of the yarn or thread thereto, and an index operated from the shaft to indicate the revolutions thereof, in combination with a support for the said devices provided with a horizontally-slotted bearing, a horizontal bar graduated to inches and fractions adjustable in said bearing, and a bracket adjustable on the bar and provided with means for securing the other end of the yarn or thread thereto, substantially as and for the purposes specified.

11. In a machine of the class described, mechanism for ascertaining the breaking strength of a single length of yarn or thread, comprising a screw-threaded revoluble shaft, a weighted nut mounted thereon and provided with means for securing one end of the yarn or thread thereto, and an index operated from the shaft to indicate the revolutions thereof, in combination with a support for the said devices provided with a horizontally-slotted bearing, a horizontal bar graduated to inches and fractions adjustable in said bearing, a bracket adjustable on the bar and provided with means for securing the other end of the yarn or thread thereto, and a hooked weight movable vertically in the bracket, whereby the yarn or thread tested may be subjected to a given initial strain by the weight after securing said yarn or thread to the nut and prior to securing the same to the clamp, substantially as described, for the purpose specified.

12. In a machine of the class described, the combination, with a winding-shaft, a screw-threaded shaft provided at one end with a thread-clamp, a support provided with bearings for said shafts, and an index-wheel operated from the screw-threaded shaft to indicate the revolutions thereof, of a graduated bar adjustable on the support relatively to said shafts, and a thread-retaining device adjustable on the bar, substantially as and for the purpose specified.

13. In a machine of the class described, the combination, with a revoluble shaft provided at one end with a thread-clamp for clamping one end of a thread thereto, and an index-wheel operated from and indicating the revolutions of said shaft, of a graduated bar adjustable in a plane at right angles to the shaft, and a spring-balance adjustably connected with the bar, the stem of said balance being provided with means for attaching the other end of the thread, whereby the tensile strength of a thread may be ascertained through the medium of the index-wheel, and the breaking strength in pounds and fractions through the medium of the spring-balance, substantially as described.

14. In a machine of the class described, the combination, with a revoluble shaft provided at one end with a thread-clamp for clamping one end of a thread thereto, and an index-wheel operated from and indicating the revolutions of said shaft, of a graduated bar adjustable in a plane at right angles to the shaft, a spring-balance adjustably connected with the bar, the stem of said balance being provided with means for attaching the other end of the thread, said stem being provided with toothed graduations, and a spring-pawl adapted to engage the teeth of said stem to hold it against the stress of its spring, substantially as and for the purpose specified.

15. In a machine of the class described, devices for ascertaining the breaking strength of a plurality of threads or a hank of such, comprising a pivoted lever provided with a stud for securing one end of the loop of threads, a weigh-beam secured to the lever, a weight movable on said lever, a carriage or slide provided with a stud or arm for securing the other end of the loop of threads, and a guide on which the carriage is adjustable toward and from the lever, substantially as and for the purpose specified.

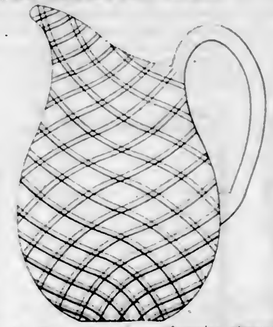
16. In a machine of the class described, devices for ascertaining the breaking strength of a plurality of threads or a hank of such, comprising a pivoted lever provided with a stud for securing one end of the loop of threads, a weigh-beam secured to the lever, a weight movable on said lever, a carriage or slide provided with a stud or arm for securing the other end of the loop of threads and with graduations on one of its lateral faces, a guide on which the carriage is adapted to move, and a stationary adjustable and graduated plate secured to the guide and having graduations corresponding with those on the carriage, substantially as and for the purpose specified.

17. The combination of the stationary guide N^3, the carriage N', movable thereon and provided with graduations n^3, and an arm, n', and the three-armed lever L, provided with the stud l^3, and weighted arm L^3, in combination with the bracket M', the bar B, and weight B', said devices being arranged and operating substantially as and for the purposes specified.

18. The combination, with the support A', having slotted bearings a a^2, the shafts S S^2, carrying each a worm, and the index-wheel D and its pointer p, of the bar B, having gradustions E T on two of its faces, substantially as and for the purpose specified.

19. The combination, with the support A', having slotted bearings a, a^2, a^4, and a^5, the shafts S S^2, geared together, each carrying a worm, the index-wheel D, its pointer D', bracket K, and lever L, of the bar B, having graduations E T P and adapted to co-operate with either shaft and the index, or with the lever L, substantially as and for the purpose specified.

379,089. GLASSWARE AND METHOD OF MANUFACTURING THE SAME. JOSEPH WEBB, Phillipsburg, Beaver County, Pa. Filed June 18, 1887. Serial No. 241,811. (No model.)



Claim.—1. The method of manufacturing glassware, consisting in blowing a core in a mold having vertical grooves and thereby forming ribs upon said core, then inclosing said core in a cup and welding the two together, leaving air-spaces between the core and cup, then twisting the core and cup, then blowing the two adherent shells in a mold having ribs, whereby they are brought into contact on lines intersecting the ribs on the core, substantially as described.

2. The method of manufacturing glassware, consisting in blowing a core in a mold having vertical grooves and thereby forming ribs upon said core, then inclosing said core in a cup and welding the two together, leaving air-spaces between the core and cup, then twisting the core and cup, then blowing the two adherent shells in a mold having ribs, whereby they are brought into contact on lines intersecting the ribs on the core, then forming the article to shape, and, finally, roughening or aciding the surface, substantially as described.

3. As a new manufacture, an article of glassware consisting of two adherent shells or films with air-spaces between them, formed by spiral or curved adherent lines intersected by vertical adherent lines, and said article having a roughened or lusterless surface, substantially as described.

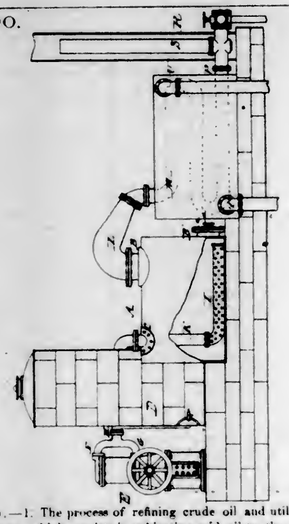
4. As a new article of manufacture, glassware consisting of two shells or films having interjacent air-spaces or cavities formed by spiral ribs upon the core, intersected by depressed vertical lines or grooves formed upon the outer film, substantially as described.

379,090. PROCESS OF REFINING OIL. ROBERT J. WILSON, Pittsburg, Pa. Filed Mar. 1, 1886. Serial No. 193,630. (No model.)

Claim.—1. In a closed sweat-room, the combination of the heat-

379,097. BOLSTER-SPRING. SAMUEL S. BYERS, Darwin, Kans. Filed Mar. 19, 1887. Serial No. 231,258. (No model.)

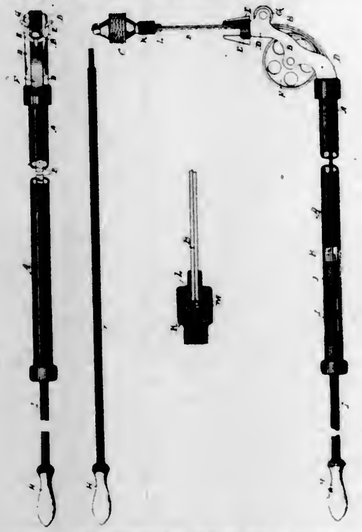
379,090.



Claim.—1. The process of refining crude oil and utilizing the waste products, which consists in subjecting said oil to the action of intensely-heated air admitted directly to the body of the oil, thereby volatilizing the latter, then separating the greater portion of the volatilized oil from the air, and finally conducting off the air and uncondensed gases to be utilized for heating or illuminating purposes.

2. In the process of refining crude oil, the method of volatilizing and disintegrating the same, which consist in forcing into and through the body of the oil intensely-heated air, substantially as described.

379,091. FLUE-CLEANER. WILLIAM F. ANNABLE, Salem, Mass. Filed Sept. 19, 1887. Serial No. 250,074. (No model.)

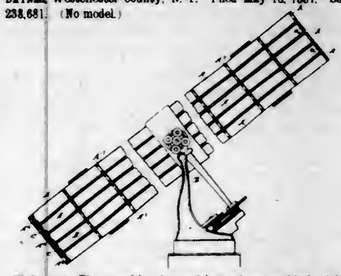


Claim.—1. The combination of straight tube A, bracket D, and deflecting-wheels F G with the reciprocating brush C and rod or ribbon B, substantially as set forth.

2. The tube A, bracket D, and wheels F G, in combination with the brush C, ribbon B, and removable reciprocating handle and rod H I, substantially as set forth.

3. The brush C, having threaded shank K and the slotted and perforated plug L therein, in combination with the ribbon B, having its ends in said slot and perforation, substantially as and for the purpose set forth.

379,092. APPARATUS FOR DECORATING METALS. JOHN BATHER, Westchester County, N. Y. Filed May 18, 1887. Serial No. 238,681. (No model.)



Claim.—1. The combination, with a tube provided with a holding device, of a flat negative and a curved or irregular sensitized surface, substantially as described.

2. The combination, with a tube provided with apertures at one end and a holding device at the other, of a flat negative and a curved or irregular sensitized surface out of contact with the negative, substantially as described.

3. A tube having a holder at one end and apertures at the other, in combination with mechanism for holding it to the light, a flat negative plate in the holder, and an irregular or curved sensitive coated article out of contact with the plate, substantially as described.

4. The combination, with a tube arranged to transmit parallel rays of light, of a flat plate having a foreshortened negative thereon, and a curved or irregular surface having a sensitized coating, substantially as described.

379,093. INKSTAND. ROBERT P. BEATTY, Norwalk, Conn. Filed Feb. 25, 1887. Serial No. 228,585. (No model.)



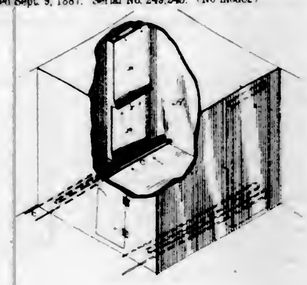
Claim.—1. In combination with an inkstand, a removable perforated lining, B, the exterior of which is smaller than the interior of the ink well or chamber, and flanges *b d* at the upper end of the lining, as and for the purpose set forth.

2. In combination with an ink stand or holder, as A, a perforated lining, as B, materially smaller than the ink well or chamber of the inkstand, and provided with flange *b*, extending to the walls of the ink well or chamber, substantially as shown and described.

3. In combination with an ink stand or holder, a removable lining provided with a passage (one or more) for ink, and a filtering-body placed in said passage to prevent the passage of sediment.

4. The herein-described inkstand, comprising body A, removable perforated lining B, provided with flanges *b d*, and a cover, C, all constructed substantially as shown and described.

379,094. DEVICE FOR CURING TOBACCO. EPHETUS A. BOUGHTON, Binghamton, N. Y., assignor of one-third to Stephen B. Drake, same place. Filed Sept. 9, 1887. Serial No. 249,245. (No model.)

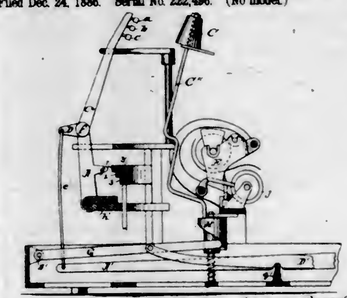


Claim.—1. In a closed sweat-room, the combination of the heating-pipes C, located in the bottom and preferably at the side of the room, with a circulating or equalizing pipe or pipes placed inside of the room, and which are open at both ends and placed in such relation to the heating-pipe that upward currents of air are caused to pass through the pipes, substantially as shown.

2. In a closed sweat-room, the combination of a circulating or equalizing pipe, B, open at both of its ends and having an opening, F, through its side at any suitable distance above the floor, with the steam-pipe C, which is located in the bottom of the room and in suitable relation to the pipe B, substantially as described.

3. The combination, in a closed sweat-room, of the heating-pipes C, located in the bottom of the room, and the circulating or equalizing pipes arranged in suitable relation thereto, the circulating-pipes being provided with overhanging openings F in their sides, and vertical partitions G, which extend a suitable distance above the openings F, substantially as set forth.

379,095. TYPE-WRITER. BYRON A. BROOKS, Brooklyn, N. Y. Filed Dec. 24, 1886. Serial No. 222,496. (No model.)

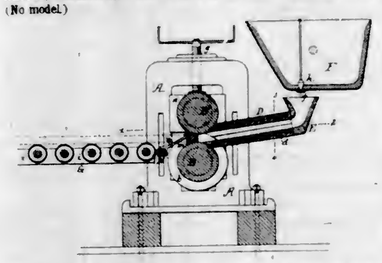


Claim.—1. In a type-writing machine, the types thereof combined with an inking-pad and a key-lever by which it is operated, substantially as described.

2. In a type-writing machine, the types thereof combined with an inking-pad connected to and operated by a vibrating bar, C', for the purpose of pressing said pad against the face of the type intermittently, substantially as described.

3. In a type-writing machine, an inking-pad, C, combined with a revolving cam, H, provided with a spring, connecting-rod C', and a key-lever, substantially as described.

379,096. MACHINE FOR ROLLING MELTED METAL. GEORGE BROOKE, Birdsborough, Pa. Filed Aug. 26, 1887. Serial No. 248,065. (No model.)



Claim.—1. The combination of the pair of rolls with an inclined molding-chamber situated at one side of the rolls, and mechanism for driving the rolls, substantially as described.

2. The combination of the rolls and a molding-chamber and the plug M, substantially as and for the purpose set forth.

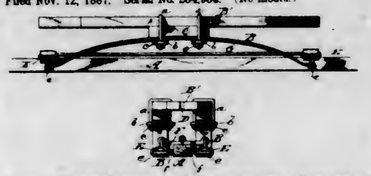
3. The combination of the pair of rolls, the molding-chamber, a water-jacket therefor, and a hopper connected therewith, substantially as described.

4. The combination of the pair of rolls, one of the rolls provided with flanges overlapping the other roll, with a molding-chamber of a diameter corresponding to the chamber formed by the upper and lower rolls, substantially as described.

5. The combination of the molding-chamber with the hopper detachably secured to the said chamber, substantially as described.

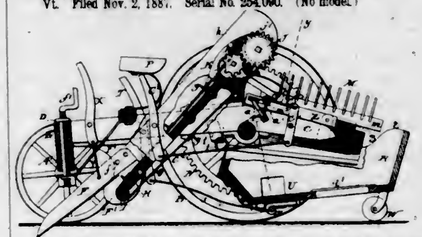
6. The molding-chamber made in two or more parts and clamped together and provided with a water-jacket, substantially as described.

379,097. BOLSTER-SPRING. SAMUEL S. BYERS, Darwin, Kans. Filed Nov. 12, 1887. Serial No. 254,958. (No model.)



Claim.—The combination, with the leaf-springs, of hangers pivotally secured to said leaf-springs, transverse plates pivoted to said hangers, and formed with lugs *f*, and the rod G, connecting said transverse plates, substantially as described.

379,098. MACHINE FOR DIGGING, CLEANING, AND ASSORTING POTATOES. EDWIN A. CAMERON and FRED CAMERON, Tinmouth, Vt. Filed Nov. 2, 1887. Serial No. 254,090. (No model.)

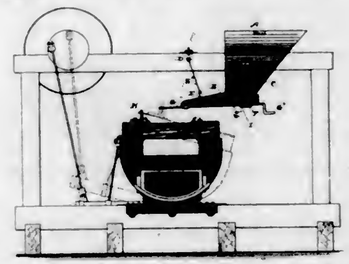


Claim.—1. The combination, with the riddle M, of the guide-frame Z, having grooves *z z* and slots *m² m³*, the shaft A³, having cranks *a a*, journaled in the frame C, and the arm *a'*, with an eye on its upper end, the lever C', connected by a pivoted bolt with said shaft-eye, the pivoted pitman C², and the hand-lever C³, whereby the pitch of riddle in going up and down hill may be regulated, as set forth.

2. In a potato-digger, the shaking riddle M, consisting of the frame *m* and the transverse wires *m'*, the latter passing through the opposite sides of the said frame and then bent back over the riddle at an acute angle, as and for the purpose set forth.

3. In a potato-digger, the combination, with a shaking riddle, M, of the gatherer R, having the opening *r*, and the roof-board Q, inclined laterally downward from its longitudinal middle, whereby the potatoes may be assorted, as described.

379,099. ORE-FEEDER. THOMAS G. CANTRELL, San Francisco, Cal., assignor to Leon C. Marshutz, same place. Filed Aug. 19, 1887. Serial No. 247,392. (No model.)



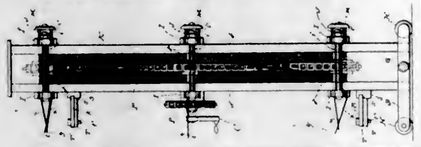
Claim.—1. A feeder for crushing-mills of the oscillating or rocking kind, consisting of a suitable hopper, the tray suspended beneath its mouth, and the bumper-rod projecting from the front of the tray and adapted to be struck by a fixed stop on the mill in the oscillations thereof.

2. The combination of the hopper A, swinging tray B, the bumper-rod G, having a crank and projecting in front of the tray, and a fixed stop on the mill.

3. In combination with a crushing-mill of oscillating or rocking kind, the hopper mounted on the mill-frame above the crushing-chamber, the swinging tray suspended under the hopper having the extensible bumper-rod G, and a stop, H, on the mill, substantially as described, for operation as set forth.

4. The combination of a crushing-mill of the oscillating or rocking kind and a feed-hopper mounted on a suitable frame, the swinging tray suspended between the hopper and the feed-opening of the crushing-chamber, and provided with a projecting bumper-rod, G, and a stop, H, on the mill, substantially as described, for operation as set forth.

379,100. **FENCE-WEAVING MACHINE.** GEORGE J. CLINE, Goshen, Ind. Filed Oct. 22, 1887. Serial No. 253,110. (No model.)

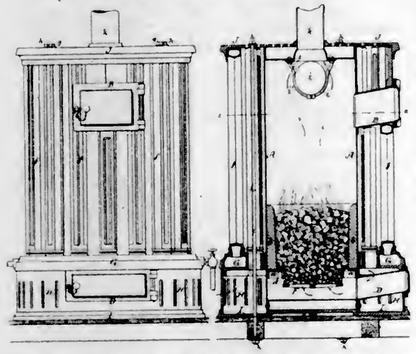


Claim.—1. In a fence-machine, the tension mechanism composed of a frame provided with an upright, and the tension devices secured to said upright, and each consisting of the rectangularly-bent bracket-plate, the reel-shaft journaled in the ends of the arms of said bracket-plate, and having one extended end squared to receive a crank-handle, the eyebolt with its eye surrounding the central part of the reel-shaft and passing centrally through the bracket-plate and upright, and the nuts engaging the tapped ends of the eyebolt respectively on the surface of the bracket-plate and on the outer edge of the upright, substantially as specified.

2. The combination, with the twister-frame, of the twisting devices vertically adjustable on said frame, and each provided centrally with a chain-wheel, *j*, the chain K, crossing between adjacent twisting devices the chain-wheel P, secured to the extended end of the hollow cylinders of one of the twisting devices, the chain-wheel O on the shaft N, journaled in the extended ends of the pieces I of the twisting device carrying the chain-wheel O, the chain *p*, and the crank-handle C, engaging the squared extended end of the shaft end, substantially as specified.

3. The combination, with the twister-frame, of the picket-adjusting devices, each composed of the bar S, having the bearings *s*, and slots *s'*, and the blades T, provided with the semi-cylindrical trunnions *t*, the adjusting-openings *t'*, and the pin *t²*, substantially as specified.

379,101. **CAR-HEATER.** DAVID CONNELL, Wilmington, Del. Filed Mar. 14, 1887. Serial No. 230,750. (No model.)



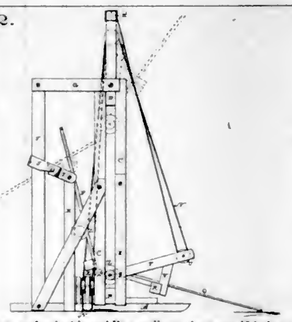
Claim.—1. The combination, in a railroad-car heater, of a stove having grate, fire-pot, and ash-pit, and a casing having air-inlets to said fire-pot and ash-pit and an outlet for the products of combustion, and a tube-radiator structure independent of the stove and having connections with an outside generator, said structure inclosing the casing of the stove, all substantially as specified.

2. In a car-heater, the combination, in one structure, of a stove having the ordinary fire-pot, grate, and ash-pit provided with air-inlets, a steam-radiator having a hollow base provided with circulating-pipes surrounding and protecting said stove, top and bottom plates, open lower casing between bottom plate and radiator-base, bolts securing said top plate and radiator-base together, and bolts securing the entire structure to the floor of the car.

379,102. **HAY-STACKER.** ARCHIBALD L. COURTRIGHT, Mount Hamill, Iowa. Filed June 18, 1887. Serial No. 241,780. (No model.)

Claim.—1. The combination of the two racks loosely connected together at their inner ends, the two ways or tracks C H, tracks I, the

379,102.

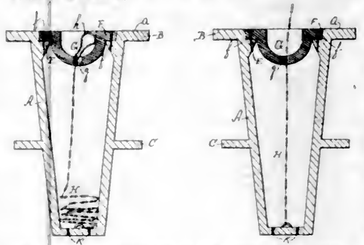


elevating-ropes, and suitable guiding-pulleys, the ways H being shorter than the ways C, so that the rear rack will drop and dump the load, substantially as described.

2. The combination of two racks loosely connected together at their inner ends, ways or tracks for each rack, adjustable tracks I, connected to the rear ways, and adjusting-supports therefor, and the elevating-ropes and guiding-pulleys, substantially as set forth.

3. The combination of the two ways or guides C H, the rack O, provided with the timbers T and pulleys U U', the friction-rollers Z, the rack P, loosely connected to the rack O, the adjustable tracks I, loops J, and elevating-ropes and guiding-pulleys, substantially as specified.

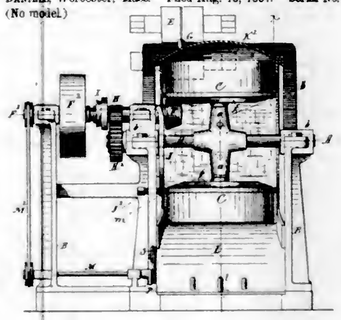
379,103. **DEVICE FOR HITCHING ANIMALS.** JAMES COYLE, Lancaster, Pa., assignor of two-thirds to Clarence W. Sadler and Joseph Henry Giles, both of Sutter Creek, Cal. Filed Oct. 26, 1886. Serial No. 217,222. (No model.)



Claim.—1. The combination of the hollow case A, chain H, permanently secured by one end to the bottom of the case and having the other end supplied with the snap-hook *h*, with the covering-bowl G, having the opening *g*, substantially as and for the purpose specified.

2. The combination of the hollow case A, having the bearing-flange E, the bowl G, having the flange F, constructed to fit over the said flange E, and the opening *g*, to permit the operation of the chain H, and the chain H, permanently fastened by one end to the bottom of the case and having the snap-hook *h* at the other end, substantially as and for the purpose specified.

379,104. **REELING APPARATUS FOR WIRE RODS.** FRED H. DANIELS, Worcester, Mass. Filed Aug. 13, 1887. Serial No. 246,867. (No model.)



Claim.—1. In apparatus for reeling wire rods and similar product, the combination, with a supporting-frame, of a reel or coil-receptacle hinged or jointed thereto, so that it may be tilted or inverted to facilitate the discharge of the coiled rod.

2. In apparatus for reeling hot wire rods and similar product, a reel or coil-receptacle, having an axis on which said reel can be tilted or inverted to facilitate the discharge of the coiled rod therefrom, in combination with actuating-gear, whereby tilting action of said reel is effected, for the purpose set forth.

3. In apparatus for reeling wire rods, a reel or coil-receptacle mounted upon a standard, in connection with an axis to swing about said axis for tilting or inverting the position of said receptacle to effect the discharge of the coiled rod therefrom, substantially as described.

4. The combination of a supporting-frame, a reel or coil-receptacle hinged or jointed thereto, so that it may be tilted or inverted to facilitate the discharge of the coiled rod, and a bed to receive the coil of rod as it is discharged from said receptacle and to conduct it away from the same, substantially as hereinbefore set forth.

5. In an apparatus for reeling wire rods, a plurality of reels or coil-receptacles supported in connection with a horizontally-disposed axis, about which said coil-receptacles or reels are revoluble, in combination with mechanism for revolving the same for tilting or inverting the receptacles to facilitate the discharge of the coiled rod therefrom, and a receiving-bed or inclined platform onto which the coils are deposited from the reel, substantially as set forth.

6. The combination of the rotatable coil-receptacles mounted upon supporting-standards that are revoluble about a horizontal axis, and an operating mechanism that engages and imparts rotary movement to said receptacles, respectively, as they are brought into position for receiving and coiling the rod, substantially as hereinbefore set forth.

7. The combination, substantially as described, of the main supporting-axle provided with radial standards, the revoluble reels or coil-receptacles carried by said standards, the driving mechanism for imparting rotative action to said receptacles, and a frictional brake or surface with which the receptacles make contact for stopping their rotation when tilted or inverted, as set forth.

8. The combination of the coil-receptacles, adapted to be revolved or inverted for discharging the coil of rod therefrom, and a guard adapted for confining the coiled rod therein while the receptacle is passing from one position to another, substantially as and for the purpose set forth.

9. The combination of a reel for automatically coiling wire rods as fast as they are delivered from the rolling-mill, provided with means for inverting or tilting the same for freeing the finished coil of rod from the reeling-receptacle, and a guard or hood that covers the reel while at the position where the coil is being formed, and is also adapted to protect and prevent the coil from dropping out of the receptacle while the reel is being inverted, substantially as set forth.

10. An apparatus for reeling hot wire rods, comprising mechanism for coiling the wire rods, means for discharging the finished coil of wire rod from the reel, and shearing devices for trimming off the ends preparatory to bundling the coil for its final delivery, substantially as set forth.

11. The combination, with reeling apparatus and the coil-receiving bed or platform, of the operated shears adjacent to said platform, and means for imparting motion thereto, substantially as and for the purpose set forth.

379,105. **ADVERTISING APPARATUS.** AUGUSTIN DUBOCK, San Francisco, Cal. Filed Oct. 1, 1887. Serial No. 251,262. (No model.)

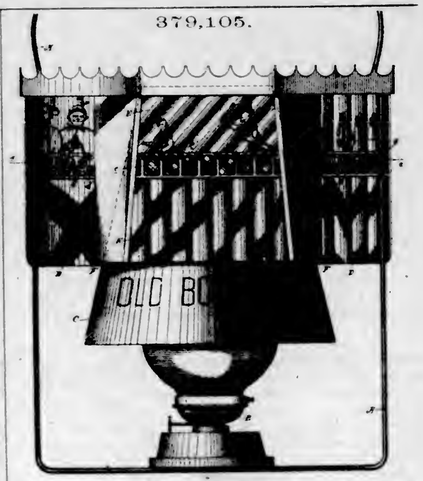
Claim.—1. In an advertising apparatus, the combination of a rotating frame having depicted upon its surface designs, letters, and characters of suitable description, a fixed frame, a magnifying-reflector mounted in said fixed frame and placed behind the rotating frame on one side, and a duplicating-reflector mounted in said fixed frame and placed behind the rotating frame on the other side, substantially as described.

2. In an advertising apparatus, a rotating cylinder or frame provided on its surface with designs, patterns, letters, characters, &c., in combination with a fixed frame having reflectors placed behind and located on each side of the rotating frame, and a corrugated or uneven-surfaced glass mounted in the fixed frame in front of the rotating cylinder or frame, substantially as described.

3. In an advertising apparatus, a rotating cylinder or frame having designs, figures, &c., depicted upon it, in combination with reflectors mounted in a fixed frame and encircling the rotating cylinder or frame, said reflectors having inequalities made in them, whereby a portion of the designs or figures is given the appearance of moving, substantially as described.

4. In an advertising apparatus, a rotating cylinder or frame having designs, figures, &c., depicted upon it, in combination with encircling reflectors mounted in a fixed frame and having inequalities made in them, and a railing representation on their surfaces, whereby a portion of the designs or figures is given the appearance of moving behind said railing, substantially as described.

379,105.



5. In an advertising apparatus, a rotating cylinder or frame having designs depicted upon its surface, in combination with a fixed frame having a magnifying-reflector placed behind and to one side of the rotating cylinder or frame, a duplicating-reflector mounted in said fixed frame on the opposite side of the rotating cylinder or frame, and a distorting-mirror at the front of the rotating cylinder or frame, substantially as described.

6. In an advertising apparatus, a fixed lamp or light and a shade rotating about it and having depicted upon its surface designs, patterns, and characters, and reflectors mounted in a fixed frame and placed about said shade on opposite sides, whereby its designs are seen directly and indirectly, substantially as described.

7. In an advertising apparatus, a fixed lamp and its shade having depicted upon its surface designs of suitable character, and a propeller at the top of the lamp, whereby the shade derives a rotary motion from the uprising heated current of air from the lamp, in combination with reflectors and glasses placed about the shade on opposite sides for the purpose of exhibiting its designs, substantially as described.

8. In an advertising apparatus, a cylinder or frame carrying the matter to be advertised, in combination with the propelling mechanism, whereby it is given a rotary motion, consisting of a wheel mounted in a draft and having a shaft, and a ring or hub carried by the cylinder or frame, and against which the wheel-shaft rolls in frictional contact, substantially as herein described.

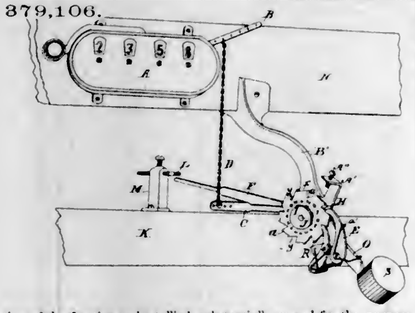
9. In an advertising apparatus, the lamp and the shade carrying the matter to be advertised, in combination with the means for rotating the shade, consisting of the wheel over the lamp, whereby it is given a rotary motion, the shaft on which the wheel is mounted, the hub or ring, against the surface of which the shaft rolls in frictional contact, and the wings or blades on said hub, substantially as herein described.

10. An advertising apparatus comprising the lamp and the shade surrounding the lamp and having designs depicted upon its surface, the propeller for rotating the shade, consisting of the wheel moved by the draft, the shaft on which the wheel is mounted, and the annular hub or ring in the top of the shade and on which the shaft rolls in frictional contact, the magnifying and duplicating reflecting surfaces or mirrors behind and on each side of the shade, and the distorting-glasses in its front, all arranged and adapted to operate substantially as herein described.

379,106. **PACKAGE-REGISTER.** WALTER N. DURANT, Milwaukee, Wis. Filed Feb. 15, 1887. Serial No. 227,666. (No model.)

Claim.—1. The device for tallying the sum of a number of fractions in whole numbers, consisting in the combination, with the operating mechanism of a tally adapted to register whole numbers, of a lever or arm adapted to be moved by contact with a packer or other machine, the operations of which are registered, an operating-pawl adapted to communicate the movements of said lever through intermediate mechanism to the tally, and a ratchet-wheel provided on its periphery with a series of deep and shallow notches, the relative number of deep and shallow notches varying according to the denomina-

379,106.

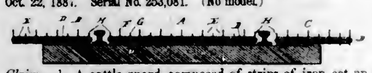


tion of the fraction to be tallied, substantially as and for the purpose specified.

2. In a device for registering the sum of a number of fractions in whole numbers, the combination of the radial arms F, O, and C, turning upon a common pivotal support, the operating-pawl E, pivoted to said lever O, a ratchet-wheel having shallow notches *x*, adapted to carry the end of said pawl E over said lever C without contact therewith as said wheel is moved forward by said pawl, and the deeper notches *y*, adapted to permit said pawl E to be brought into contact with and move said lever C with its forward movement, substantially as and for the purpose set forth.

3. In devices for tallying fractions, the combination, with the arm B′ or other suitable support, of the motion-communicating arm F, moved by contact with the arm L, the arm O, actuated in one direction by said arm F and in the opposite direction by the gravity of a weight, the arm C, having its free end connected with the actuating mechanism of the tally or register and its opposite end supported upon the same pivotal pins J, with levers O and F, a ratchet-wheel turning on said pin J, having notches *x* and *y*, of varying depths, adapted, respectively, one to prevent and the other to permit contact of the pawl E with the lever C, the pawl E, adapted to rotate the ratchet-wheels *a*, *b*, *c*, or *d*, and to communicate the movement from said lever O to the operating-lever C, the pawl R, adapted to prevent the ratchet-wheels from turning backward, and the pawl-retaining springs *a′*, all substantially as and for the purpose specified.

379,107. CATTLE-GUARD. JAS. T. HALL, St. Louis, Mich. Filed Oct. 22, 1887. Serial No. 253,081. (No model.)

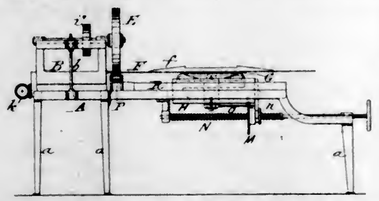


Claim.—1. A cattle-guard composed of strips of iron set up on edge, with the upper edges of the alternate strips upon different planes, substantially as described.

2. A cattle-guard composed of strips of iron of unequal width alternately set up on edge in the form of a grating, substantially as described.

3. In a cattle-guard consisting of a series of iron strips set up on edge, the combination of the iron strips G F, of different width, the angle-bars H, the transverse bolts D, and the thimbles E, all arranged to operate substantially as described.

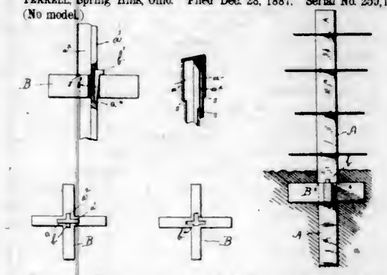
379,108. MACHINE FOR GRINDING SHINGLE-SAWS. WILLIAM H. HALL, Muskegon, Mich. Filed Jan. 11, 1887. Serial No. 224,031. (No model.)



Claim.—1. The combination of the main frame, the two-part cross-head H, the saw-carrying head G, journaled in the cross-head and provided on its lower end with a finger, *g*, the worm-wheel L, inclosed within the cross-head, the screw N, star-wheel M, carried thereby, and the forked plate *n*, secured to the cross-head and loosely connecting with the star-wheel, substantially as described.

2. The combination of the main frame, the adjustable frame carrying the grinding-wheel, the adjustable arm carrying the roller P or equivalent device, the sliding cross-head H, saw-carrying head journaled therein and having the finger *g*, the worm-wheel within the cross-head and loosely connected with the saw-carrying head, the screw-shaft N, star-wheel M, and plate *n*, all arranged as set forth.

379,109. FENCE-POST. STEPHEN D. HARMON and JEPHTHAH M. TERRELL, Spring Hills, Ohio. Filed Dec. 28, 1887. Serial No. 259,198. (No model.)



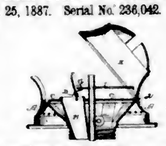
Claim.—1. The combination, with a T-shaped fence-post having a recessed key-seat in one side, of a four-limb flange, three of the limbs being mortised to fit over the respective wings of the post, and a key inserted between the other limb of the flange and the post and fitting in the key-seat, substantially as described.

2. The combination, with a T-shaped fence-post having a recessed key-seat in one side, of a four-limb flange, three of the limbs being mortised to fit over the respective wings of the post, and the other limb channeled, as shown, and a key fitted in the channel in the limb and the recessed seat in the post, substantially as described.

3. The combination, with a T-shaped fence-post having a shoulder on each wing, the said shoulders all lying in the same plane, of a flange having four limbs, three of which are mortised to fit over the post below the shoulders, and a key for insertion between the other limb and the post, substantially as described.

4. The combination, with a fence-post of T shape in cross-section, having a recessed key-seat in its front side and a shoulder on each wing, of a mortised flange having four limbs or projections, and a headed key fitting the key-seat, the shoulders on the wings and the under side of the head of the key all lying in the same plane, substantially as described.

379,110. LAMP-BURNER. CHARLES R. HARRIS, Williamsport, Pa. Filed Apr. 25, 1887. Serial No. 236,042. (No model.)

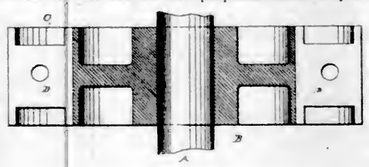


Claim.—The combination of the burner A, provided with a filling-tube, B, the cover E, pivotally connected to the upper end of said tube, and provided with an arm or projection which is turned upward at its outer end, a hinged deflector, and the rod I, the cover E and the deflector being connected together by the rod, so that the cover is raised and lowered with the deflector, substantially as set forth.

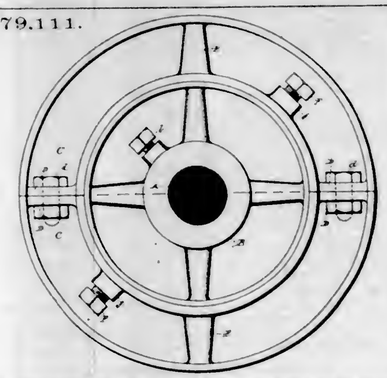
379,111. BELT-PULLEY. GEORGE F. HAVEN and SEYMOUR E. POST, Newark, N. J. Filed June 25, 1887. Serial No. 242,492. (No model.)

Claim.—1. A pulley constructed of a central wheel secured to the shaft, and detachable segmental pieces fitting thereon, secured together by bolts at their ends and on the central wheel by set-screws, substantially as specified.

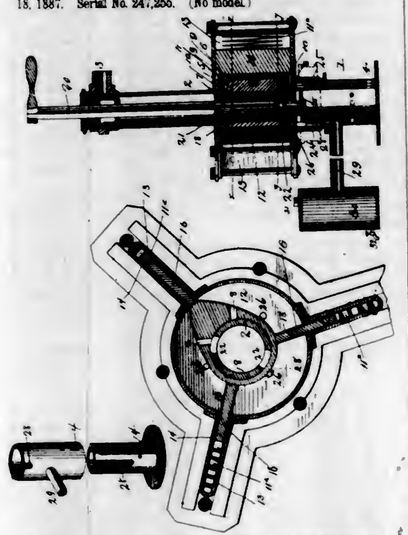
2. A pulley consisting of the central wheel or disk detachably secured on the shaft by a set-screw, the detachable segmental pieces C, provided with the outer and inner peripheries connected by the central longitudinal webs, E, the lugs D, bosses *f*, the bolts *d*, and set-screws F, substantially as specified.



379,111.



379,112. ROTARY ENGINE. AUGUSTUS HERBATH, Zebner, assignor of one-half to Andrew Jackson Ziegler, Hazleton, Pa. Filed Aug 18, 1887. Serial No. 247,255. (No model.)

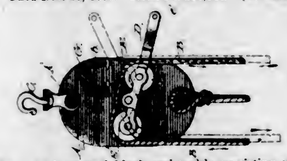


Claim.—1. In a rotary reversible engine, the combination of the tubular shaft having the inlet-port at its upper end and the exhaust-port at its lower end, and provided with the central radial tapering wing having the slightly-rounded outer end, and formed with the upper live-steam ports and the lower exhaust-openings on both sides of the said wing, the cylinder journaled with its heads upon the said shaft and having the equidistant radiating grooves in its heads and the corresponding radiating vertical chambers, the sliding spring-actuated plates, and the adjustable sleeve-valve formed with the central partition, the upper inlet and lower exhaust openings, and having the adjusting-rod projecting at its upper end through the top cap of the tubular main shaft, substantially as and for the purpose set forth.

2. The combination of the tubular shaft having the inlet-port at its upper end and the main exhaust-port at its lower end, having the vertical port or duct in its lower part, and provided with the central radial tapering wing having the slightly-rounded outer end and the transverse side grooves, and formed with the upper live-steam ports and the lower exhaust-openings on both sides of the said wing, the cylinder journaled with its heads upon the said shaft and having the equidistant radiating grooves in its heads and the intermediate inclined ports in its lower head between the said grooves, and having the corresponding radiating vertical chambers, the sliding spring-actuated plates, the adjustable valve-sleeve formed with the central partition, the upper inlet and the lower outlet or exhaust openings, and having the adjusting-rod projecting at its upper end through the top cap of the tubular main shaft, the pipe connecting the lower end of the vertical duct in the lower part of the tubular shaft with the reservoir, the said reservoir, and the pipe connecting the same with a suitable engine, substantially as described, for the purpose set forth.

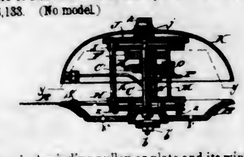
3. In a rotary reversible engine, the combination of the tubular shaft having the inlet-port at its upper end and the exhaust-port at its lower end, and provided with the central radial tapering wing having the slightly-rounded outer end and the transverse side grooves, and formed with the upper live-steam ports and the lower exhaust-openings on both sides of the said wing, the cylinder journaled with its heads upon the said shaft and having the equidistant radiating grooves in its heads and the corresponding radiating vertical chambers, the sliding spring-actuated plates, and the adjustable valve-sleeve formed with the central partition, the upper inlet and lower exhaust openings or ports, and having the adjusting-rod projecting at its upper end through the top cap of the tubular main shaft, substantially as and for the purpose herein set forth.

379,113. BLOCK AND TACKLE. CHARLES J. HIBBERD, Annapolis, Md. Filed Nov. 26, 1887. Serial No. 256,144. (No model.)



Claim.—An improved block and tackle consisting of the pulley-blocks A and B′, the cable B, the bifurcated lever D, pivoted within the block A and having the pulleys E E′, the bar A′, having the swivel mounted thereon, and a recessed block in the pulley-block A between said lever and bar and at one side of the vertical center of said pulley-block, said recessed block having two downwardly-extending arms adapted to pinch the cable at different points, whereby said cable may be securely held, as herein described.

379,114. BELL. ANTHONY IKER and ALBERT IKER, Lancaster, Pa., assignors to Israel L. Landis, same place. Filed Apr. 26, 1887. Serial No. 236,133. (No model.)



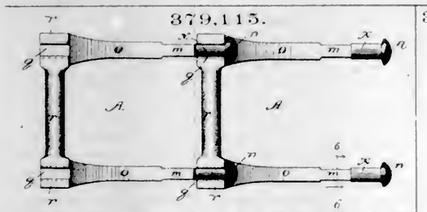
Claim.—1. A winding pulley or plate and its winding-cord, in combination with a shaft, C, around which said pulley turns, a coiled spring, F, attached to said shaft at one end, a series of pillars, G, supported on said pulley or plate and having the other end of said spring attached to one of them, the plates I J, supported on said pillars, the gong K, mounted on plate J, the shafts M and N, journaled in said pulley and plate I and carried around thereby, gear-wheels carried by these shafts, a wheel, E, meshing with one of these gear-wheels and loose on shaft C, a spring-pressed pawl carried by said wheel E, a ratchet-wheel fixed on said shaft and engaging said ratchet to allow the rotation of said wheel E in one direction only, the escapement-wheel P′ on shaft M, the pallets *n n′* on shaft N, engaging therewith, and the hammer Q, also carried by shaft N, all arranged and operating substantially as set forth.

2. A stationary shaft and a gear-wheel, E, thereon, in combination with a pulley turning on said shaft, a frame mounted on said pulley and turning therewith, shafts M N, journaled in said frame and pulley, a coiled spring attached at one end to said shaft and at the other to said frame, a bell, hammer, and pallets attached to shaft N, an escapement-wheel and gear-wheel on shaft M, the latter wheel meshing with wheel E, a gong carried by said frame, and a cord passing around said pulley for winding, substantially as set forth.

379,115. DRIVE-CHAIN. C. WILLIAM KRAUSE, Chicago, Ill. Filed Aug. 9, 1887. Serial No. 246,498. (No model.)

Claim.—1. A link belt formed of links A, all of similar construction, and comprising, each, arms *o* and *o′*, extending from opposite ends of a cross-head, *r*, and provided with heads *n* at their disconnected extremities and reduced portions *m*, recesses *q* in the cross-head, near opposite ends thereof, and sockets *p* in the cross-head of greater diameter than the recesses, and into which the recesses lead, whereby the links may be connected to form a chain and held against separation

379,115.

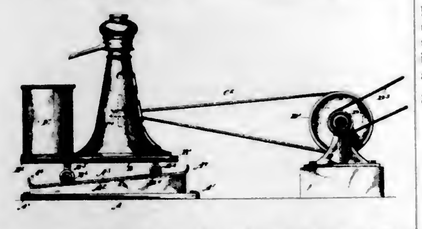


by introducing the reduced portions *m* of one link into the sockets *p* through the recesses *q* of another link, and drawing the parts of the arms in advance of the said reduced portions into the said sockets, substantially as described.

2. A link belt formed of links A, all of similar construction, and comprising, each, arms *o* and *o'*, extending from opposite ends of a cross-head, *r*, and provided with heads *n* at their disconnected extremities and laterally-flattened reduced portions *m*, recesses *q* in the cross-head, near opposite ends thereof, and flaring sockets *p* in the cross-head of greater diameter than the recesses, and into which the recesses lead, whereby the links may be connected to form a chain and held against separation by introducing the reduced portions *m* of one link into the sockets *p* through the recesses *q* of another link, and drawing the parts of the arms in advance of the said reduced portions into the said sockets, substantially as described.

3. A link belt formed of links A, all of similar construction, and comprising, each, arms *o* and *o'*, extending from opposite enlarged ends of a cross-head, *r*, and provided with rounded heads *n* at their disconnected extremities, laterally-flattened reduced portions *m*, and flanges *l*, recesses *q* in the enlarged ends of the cross-head, and flaring sockets *p* in the said enlarged ends, hollowed out at their inner extremities to afford seats *y*, and into which the said recesses lead, whereby the links may be connected to form a chain and held against separation by introducing the reduced portions *m* of one link into the sockets *p* through the recesses *q* of another link, and drawing the parts of the arms in advance of the said reduced portions into the said sockets, substantially as described.

379,116. BELT-TIGHTENER. FREDERIC LEININGER, New York, N. Y., assignor to Charles D. Shepard, same place. Filed May 16, 1887. Serial No. 238,401. (No model.)



Claim.—1. A belt-tightener for machines of the class described, comprising an inclined base provided with a track, and a truck mounted on said track and provided with front and rear axles differing in height in proportion with and in contradistinction to the inclination of the base, substantially as specified.

2. In a belt-tightener, the combination, with a base provided with vertical inclined flanges having tracks, of a truck having a horizontal platform mounted to travel on said tracks, substantially as specified.

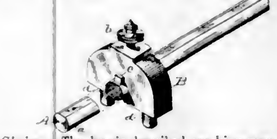
3. In a belt-tightener, the combination, with the base thereof, provided with inclined flanges having tracks, of a truck mounted to travel on said tracks and provided with axles mounted at different heights, whereby said truck is maintained in a horizontal plane, a centrifugal machine mounted on said truck, and intermediate power-conveying belt, substantially as specified.

4. The combination of the base A, having the vertical inclined flanges A^3, provided with tracks A^4, bent to form stops, as at A^5, with the truck B, comprising the platform or base B' B^3, the axles B^3 B^5, and the wheels B^6 B^6, substantially as specified.

5. The combination of the base A, having the flanges A^3 and tracks A^4 mounted thereon, and the truck B, mounted for travel on said tracks, with the machine C, having pulley C', the counter-shaft D, and the belts C^2 D^2, substantially as specified.

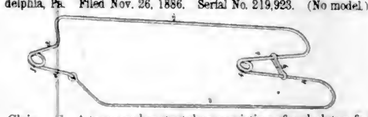
6. The apparatus comprising the truck B, the bed B', and forwardly-projection portion B^3, the machine C, belt C^2, receiving-can E, and base A, substantially as specified.

379,117. MARKING-GAGE. FREDERICK W. LYCETT, Hartford, assignor to the Stanley Rule and Level Company, New Britain, Conn. Filed Nov. 13, 1885. Serial No. 182,664. (No model.)



Claim.—The herein-described marking-gage, consisting of the bar A, having the marking-spur *a* at one end in the middle of the bar measuring transversely, and the gage-block B, made adjustable on said bar and having the rounded projections which form the bearing-surface of said block in gaging and marking, said projections being located at points equidistant from the marking-spur and transverse middle of the gage-bar, substantially as described, and for the purpose specified.

379,118. TROUSERS-STRETCHER. EDWARD MCLAUGHLIN, Philadelphia, Pa. Filed Nov. 26, 1886. Serial No. 219,923. (No model.)



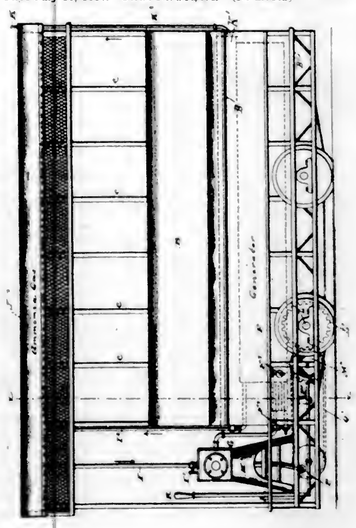
Claim.—1. A trousers-leg stretcher consisting of a skeleton frame free to expand and contract laterally, and comprising opposite side bars, and a longitudinally-projecting elastic tongue interposed between the inner ends of said side bars, said tongue being in the same plane as the bars and tending to expand the latter, and the whole being formed of a continuous piece of wire, all substantially as specified.

2. A trousers-leg stretcher consisting of a skeleton frame free to expand and contract laterally, and comprising opposite side bars with longitudinally-projecting elastic tongues connecting said side bars at each end of the frame, said tongues being in the same plane as the side bars and tending to expand the latter, and the whole being formed of a continuous piece of wire, all substantially as specified.

3. A trousers-leg stretcher consisting of a skeleton frame of wire having at the ends elastic tongues with coils at the tips, all substantially as specified.

4. A trousers-leg stretcher consisting of a skeleton frame of wire having at the inner end a tapering elastic tongue tending to expand the side bars of the frame, in combination with a link adapted to said tongue and serving, by adjustment longitudinally thereon, to retain the inner portion of the frame in a contracted condition, all substantially as specified.

379,119. MOTOR-CAR. PATRICK J. MCMAHON, New Orleans, La. Filed July 16, 1887. Serial No. 244,491. (No model.)



Claim.—1. A car of the class described, in combination with a motor mounted thereon and with a generator arranged beneath the seats and connected with the motor, substantially as specified.

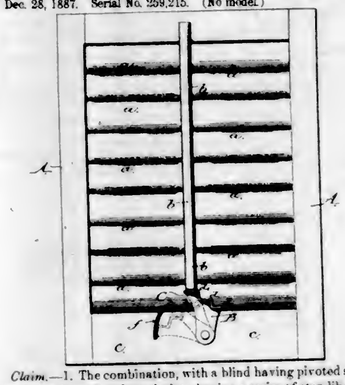
2. In a car of the class described, and in combination with a motor arranged thereon, a generator arranged beneath the seats, and a dry-gas chamber arranged overhead and connected with the motor, substantially as specified.

3. The combination, with the car, of the tank F, motor H, exhaust-pipe G, cylinder F', gas-trap K K' K^2, and chamber J, substantially as specified.

4. In a car of the class described, a generator, in combination with an overhead dry-gas chamber, substantially as specified.

5. In a car of the class described, a generator arranged longitudinally of the car, a gas-trap arranged above the generator, and an overhead gas-chamber, substantially as specified.

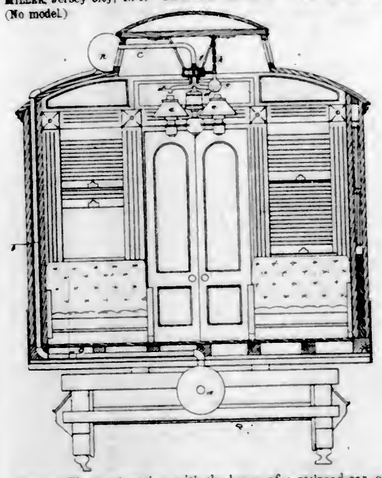
379,120. BLIND-STOP. PAUL M. MIESSNER, Alton, Ill. Filed Dec. 28, 1887. Serial No. 259,215. (No model.)



Claim.—1. The combination, with a blind having pivoted slats and a connecting-bar, of a pivoted plate having a series of step-like formations upon which said bar is supported, whereby the slats are adjusted, substantially as herein described.

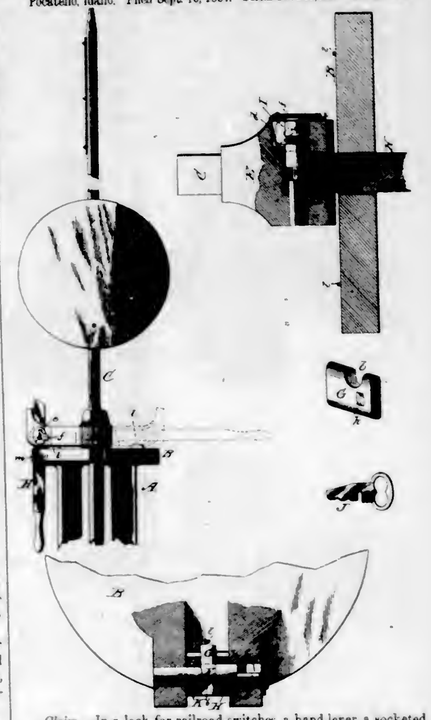
2. The blind having pivoted slats, a connecting-bar, and a lower rail having a curved groove or slot, in combination with a pivoted plate having step-like formations upon its upper end and a flange, *c*, adapted to engage the armed groove or slot in the lower rail, substantially as and for the purpose set forth.

379,121. LAMP-EXTINGUISHER FOR RAILROAD-CARS. THOS. MILLER, Jersey City, N. J. Filed Feb. 21, 1887. Serial No. 228,278. (No model.)



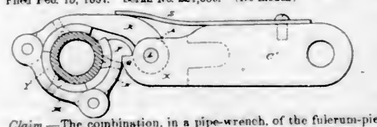
Claim.—The combination, with the lamps of a railroad-car, of a compressed-air holder, pipes for extinguishing the lamps extending from the holder to the lamp-burner, the oscillating and sliding cock *f*, and the pendulum-lever *g*, substantially as described.

379,122. RAILROAD-SWITCH-STAND LOCK. FRANK S. MITCHELL, Pocatello, Idaho. Filed Sept. 16, 1887. Serial No. 249,829. (No model.)



Claim.—In a lock for railroad-switches, a hand-lever, a socketed sliding bolt, and a pin for engaging therewith, in combination with a cam-shaft for operating the bolt, having a slot at one end, and a dog for engaging with the slot, substantially as and for the purpose set forth.

379,123. PIPE-WRENCH. HOMER PARMELEE, Baltimore, Md. Filed Feb. 15, 1887. Serial No. 227,689. (No model.)



Claim.—The combination, in a pipe-wrench, of the fulcrum-piece provided with the extensions B' C for attachment of a lever-handle, and the transverse shoulder Q, the three hinged sections K, M, and N, the outwardly-standing lip on free end of the section N, the pivoted spring S, and the detachable sectioned lining secured to the inner surfaces of said sections, substantially as specified.

379,124. FASTENER FOR MEETING-RAILS OF SASHES. GEO. D. PAUL, Newark, N. J., assignor of one-half to Egbert Alsdorf, same place. Filed May 28, 1887. Serial No. 239,689. (No model.)



Claim.—1. In a sash-fastener, the combination, with a shell having a cap-plate supported integral with it, and inclines that end in

square shoulders formed on this cap-plate, of a lever located and

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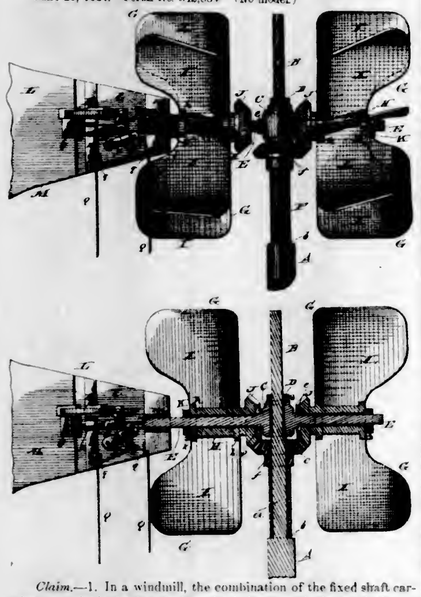
379,129. CAR-MOTOR. OLIVER P. SANDERS, Terre Haute, Ind., assignor of one-half to Adolphus G. Brandner, Kansas City, Mo. Filed

379,131.

square shoulders formed on this cap-plate, of a lever located and adapted to rock on the top of the cap-plate to engage the shoulders of the inclines, and a locking-bar located below the cap-plate operated by the lever, substantially as set forth.

2. In a sash-fastener, the combination, with a shell having a cap-plate, and a shaft passing vertically through the shell, of a lever connected to said shaft and adapted to rock in a vertical plane thereon, and a locking-bar seated in the shell and loosely connected to the shaft, the connection between the shaft and locking-bar being such as to permit of a limited rotary motion of the shaft independently of the locking-bar, substantially as set forth.

379,125. **WINDMILL.** ISAAC L. PFAFF, Dansville, N. Y. Filed June 29, 1887. Serial No. 242,884. (No model.)



Claim.—1. In a windmill, the combination of the fixed shaft carrying a revoluble driving-shaft, and a hub above the latter shaft provided with diametrically-opposite arms, with the oppositely-facing wheels mounted on said arms, respectively, and the gearing between the hubs of said wheels and the revoluble shaft, all substantially as and for the purpose described.

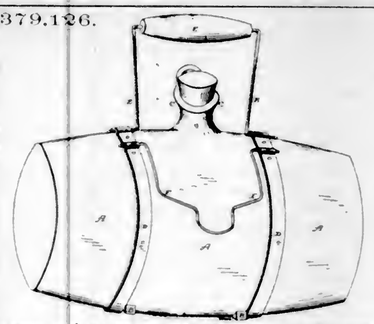
2. In a windmill, the combination of the fixed inner vertical shaft carrying the exterior driving-shaft provided with a bevel-gear at top, and a revoluble hub mounted on said inner shaft above the driving-shaft and having diametrically-opposite arms, with the oppositely-facing wheels loosely mounted on the arms of said hub and provided with bevel-gears on their inner ends for engaging the gear of the driving-shaft and rotating the same, and a vane on one of said arms outside its wheel, all substantially as specified.

3. The combination, with the main supporting-shaft A, the hollow shaft F, and its gear *f*, mounted thereon, of the hub C, having opposite arms E E, journaled on shaft A above shaft F, with the opposite wind-wheels G, loosely mounted on arms E E, and provided with gears for engaging the gear *f*, each of said wheels being longitudinally adjustable on its arm E, all constructed and arranged to operate substantially as described.

4. In a windmill, the combination, with the revoluble support for the wind-wheels, of the vane L, composed of an inner fixed portion, *l*, mounted upon the wheel-support outside the wheel, and an outer enlarged portion, M, hinged to part *l*, as described, and the devices for shifting part M, consisting of the hinge O on part M, the pivoted lever P on part *l*, the connecting-link between said lever and hinge, and the actuating-rope for said lever, and the controlling-spring R, for the parts of the vane, all constructed and arranged to operate substantially as set forth.

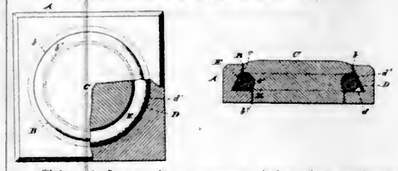
379,126. **JUG.** GEORGE M. PRICE, Rutland, Ohio. Filed Dec. 19, 1887. Serial No. 258,364. (No model.)

Claim.—1. The combination of the jug with the spring F, bent at its center, as shown, and adapted to be fastened to the pommel of a saddle or to the hames, substantially as shown.



2. The combination of a jug with the metallic bands applied thereto, a handle for carrying the jug, and the spring bent at its center for the attachment of the jug to a hame or saddle, substantially as specified.

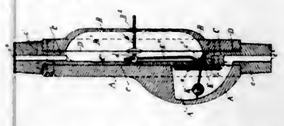
379,127. **PAVEMENT-LIGHT.** HORACE RESLEY, Cumberland, Md. Filed Apr. 6, 1887. Serial No. 233,910. (No model.)



Claim.—1. In a vault or pavement window, the combination of the frame provided with the openings or cells B, having the upper or outer orifices, *b*, larger than their inner or lower orifices, *b'*, and provided with the grooves D, having the floors *d*, and inclined sides *d'* of the glass blocks C, provided with the flanges *c*, substantially as specified.

2. The combination, with the cell having circumferential grooves formed with a wall upward and inward, and a cylindrical glass block having an upper circumferential flange and a swell portion below its neck portion, of a rubber ring cylindrical in cross-section laid in said groove and engaging said block below its flange, substantially as specified.

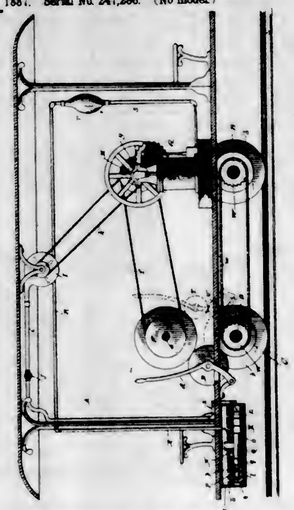
379,128. **AUTOMATIC SHUT-OFF VALVE FOR GAS-SERVICE PIPES.** JAMES S. ROBINSON, Jamestown, N. Y. Filed Mar. 24, 1887. Serial No. 232,308. (No model.)



Claim.—1. In a shut-off valve, the combination, substantially as set forth, of a valve-chamber having an inlet-passage, a second chamber having a flexible diaphragm and connected with the first chamber by a port, a valve automatically acting to positively close said port when the pressure is reduced and permit the diaphragm to assume a vertical position, a stem connecting said diaphragm and valve and having a weighted end projecting into the valve-chamber, whereby a deflection of said diaphragm will hold said valve open, a stem extending from said diaphragm outside of the valve-case in position to be operated upon to open said valve, and an exit-passage from said second chamber into the service-pipe.

2. In a shut-off valve, the combination, substantially as set forth, of the central plate, C, having nipples *c c'*, passages c^2 and c^4, and port c^3, and a depression or dish formation, C', a valve, E, closing said port c^3 and having a stem, E^2, passing through said port and lying within said dishing part C', a cap-plate, A, having a valve-chamber, A', covering said plate C and valve E, a cap-plate, B, having a dished chamber, B', covering the dished chamber C', a diaphragm, D, clamped between said plates B and C, and a stem, D', extending from said diaphragm through the plate B on one side of the diaphragm and connecting with the valve-stem E^2 on the other side of said diaphragm.

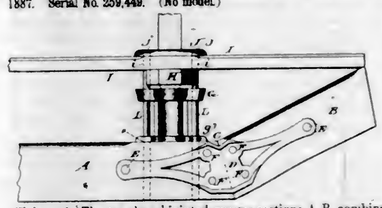
379,129. **CAR-MOTOR.** OLIVER P. SANDERS, Terre Haute, Ind., assignor of one-half to Adolphus G. Brandner, Kansas City, Mo. Filed Aug. 18, 1887. Serial No. 247,286. (No model.)



Claim.—1. The combination of the gas-engine mounted upon a car, the carburetor secured below and to the bottom of the car, and the blower driven from the engine, and the connecting-pipes between said blower and carburetor and between the latter and engine, with the transverse shaft *e*, driven from said engine, the friction-wheels and adjusting-levers for transmitting motion to one car-axle from shaft *e*, and the sprocket chain and wheels for transmitting motion from one axle to the other, all constructed and arranged substantially as specified.

2. The combination of the engine G, blower I, and shaft *e*, driven from said engine, and the carburetor K, secured below the car-floor, and the pipes *i*, R, and *s* and gas-governor *r*, with the friction-wheels on shaft *e* and one car-axle, the intermediate adjustable friction-wheels and their actuating-levers, and the sprocket-wheels on the car-axles, and connecting-chain, all substantially as specified.

379,130. **SLED.** JOHN T. SCOTT, Hamden, N. Y. Filed Dec. 31, 1887. Serial No. 259,449. (No model.)



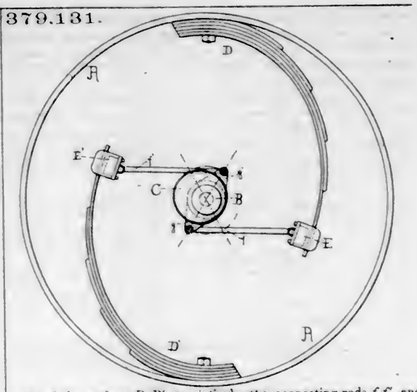
Claim.—1. The two bevel-jointed runner-sections A B, combined with the side straps, D D, the end bolts, E E, and the four median bolts, F, as shown and described.

2. The horizontal runner-section A, having the vertical holes *a a*, combined with the knee G, having perforated ears *g g' g²*, the cross-beam H, having the grooves *h h*, the side board, I, having the holes *i i*, the cap J, having the perforations *j j*, and the bolts I, I; the parts J I H G having the hole K, as shown and described.

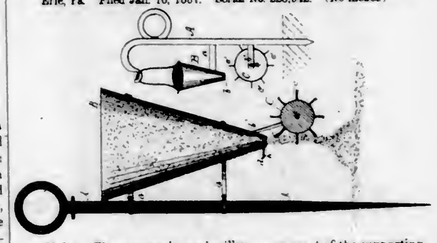
379,131. **GOVERNOR FOR STEAM-ENGINES.** JAMES A. SEYMOUR, Auburn, N. Y. Filed May 20, 1887. Serial No. 238,826. (No model.)

Claim.—1. The weights E E', provided with cavities for the reception of additional weights, in combination with the springs D D', to the ends of which they are respectively secured, the other ends of said springs being secured to the rim of the wheel A.

2. The combination of the wheel A, the two independent leaf-springs D D', secured at their ends, respectively, to opposite sides of the rim of said wheel, the weights E E', secured directly to the free ends of the springs D D', respectively, the connecting-rods *f f'*, and eccentric C.

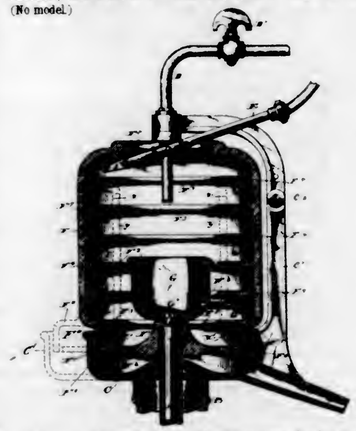


379,132. **AUTOMATIC SAND-MILL TOY.** PHILO B. SHELDON, Erie, Pa. Filed Jan. 10, 1887. Serial No. 223,942. (No model.)



Claim.—The automatic sand-mill toy composed of the supporting bar or rod A, adapted for insertion into the ground, hopper B, supported by said bar, and paddle-wheel C *c c'*, journaled beneath the discharge-orifice of the hopper, as herein described and shown, for the purposes specified.

379,133. **CENTRIFUGAL LIQUID-SEPARATOR.** CHARLES D. SHEPARD, New York, N. Y. Filed May 9, 1887. Serial No. 237,612. (No model.)



Claim.—1. A bowl for a centrifugal separator, having an annular shelf and a neck depending from the shelf outside of the inner edge thereof, the bottom of the bowl being provided with a cream-outlet, substantially as specified.

2. A bowl for a centrifugal separator, provided with a depending neck and with a series of annular shelves or partitions, and having its

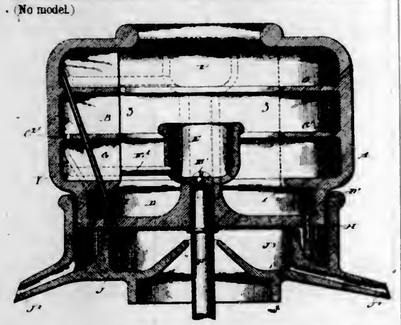
bottom shelf projecting inwardly beyond the vertical walls of the depending neck, said neck having an outlet, substantially as specified, whereby the delivery of the cream or lighter constituent is accomplished, first, by the action of gravity, then by centrifugal force, and, finally, by gravity.

2. A bowl for a centrifugal machine, with an outlet for a lighter constituent and having a series of shells or partitions and a depending neck located beyond the inner vertical line of the edges of the shelves, in combination with a discharge-conductor projected within the bowl and above the upper shelf thereof for discharging the heavier constituent, substantially as specified.

4. The combination, with the bowl F, provided with port F^6 and having the shelves F^2, the openings F^7 F^8, and the neck F', having walls F^9 outside of the edges of the shelves, of the spindle A, supply-vessel G, having the pipe G^2, the receiver C, supply-pipe D, and the discharge-conductor E, substantially as specified.

5. The bowl F, provided with ports F^6 and having the openings F^7 F^8, the shelves F^2, provided with the ports F^4, and the depending neck F', located beyond the inner vertical line of the edges of the shelves, substantially as specified.

379,134. CENTRIFUGAL LIQUID-SEPARATOR. CHARLES D. SHEPARD, New York, N. Y. Filed June 4, 1887. Serial No. 240,306. (No model.)



Claim.—1. The bowl provided with a series of shelves with a compartment below and extending laterally beyond the edge of one of the shelves, in combination with a discharge device for the heavier constituent, said device extending from near the wall of the bowl toward its center, and being located back of and below that part of the bowl in which the lighter constituent collects, as and for the purpose described.

2. A bowl for centrifugal liquid-separators, having an annular shelf and a neck depending from the shelf outside the inner edge thereof, the bottom of the bowl being provided with a cream-discharge at a distance inwardly from the wall of the extended neck, whereby cream collects outside of the discharge and acts to cushion the cream approaching the same, substantially as specified.

3. A bowl for centrifugal liquid-separators, provided with a lower compartment, a discharge-pipe for the heavier constituent, located outside of that portion of the bowl in which the cream collects and passing through said compartment, and with an outlet for the lighter constituent in such compartment, arranged to deliver the said constituent outside of the place of delivery for the heavier constituent as and for the purpose specified.

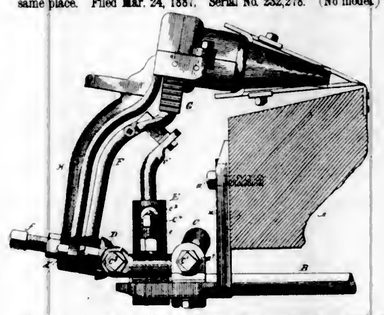
4. In a bowl for centrifugal liquid-separators, the combination of a lower shelf, a compartment located below and extending outwardly beyond the inner edge of said shelf, and a discharge-conductor extending from near the wall of the bowl above said shelf downwardly, through said shelf and the said compartment and the bottom of the bowl, whereby no impediment to the flow of or churning effect upon an annular body of a lighter constituent within the bowl is occasioned by said discharge-conductor, substantially as specified.

5. In a centrifugal liquid-separator, the combination, with a bowl having a neck extended beyond that portion of the bowl in which is formed the cream-line, a series of annular shelves or partitions, each having a port, a vertical blade, and a skimmed-milk-discharge conductor extending from near the wall of the bowl through the lower compartment and through the bottom of the neck, of a supply-pipe arranged at a side of the blade opposite that at which said discharge-conductor is arranged, substantially as specified.

6. A bowl for a centrifugal liquid-separator, having a lower shelf and a neck extending outwardly beyond the inner edge of said shelf, and having a cream discharge or outlet in the bottom of and a cream-receiving compartment in the said neck, and a skimmed-milk-discharge pipe passing through said shelf and compartment and through the bottom of said neck at a point nearer the axis of the bowl than said cream discharge or outlet, substantially as specified.

7. A bowl for a centrifugal liquid-separator, having a neck extended outwardly beyond the opening leading from the bowl into said neck, the neck forming a receiving-compartment for a lighter constituent, the bowl also being provided with a discharge-conductor for a heavier constituent, said conductor being arranged to pass from near the wall of the bowl downwardly back of and below that part of the bowl in which the lighter constituent collects and through said compartment, substantially as specified.

379,135. NAIL-PLATE FEEDER. SETH H. SHURTLEFF and LEWIS R. HAAG, Middleport, Ohio, assignors to the Ohio Machine Company, same place. Filed Mar. 24, 1887. Serial No. 232,278. (No model.)



Claim.—1. In a nail-plate feeder, the combination, with the brackets by which the feeder is connected with the nail-machine and with the rock-shaft of the feeder, of a transverse bar supported on said brackets, and a bearing for the rock-shaft supported by said transverse bar and capable of adjusting itself to a change in the angular direction of the rock-shaft, substantially as shown and described.

2. In a nail-plate feeder, the combination of the transverse bar or plate a^3, supported at the front end of the machine, the rock-shaft B, and a bearing-block for the rock-shaft seated in said transverse bar or plate a^3, and secured by a removable cap, a^5, and capable of adjusting itself to a change in the angular direction of the rock-shaft, substantially as shown and described.

3. In a nail-plate feeder, the combination, with the rock-shaft B, of the plate a^3, supported at the front of the machine and provided with a bearing for said shaft, the arm E, secured to the shaft at one side of said plate, and a collar on the opposite side, substantially as and for the purpose described.

4. In a nail-plate feeder, the combination, with the rock-shaft B, of the plate a^3, supported at the front of the machine and provided with a bearing for said shaft, the arm E, and collar b', adjustably secured to the shaft on opposite sides of said plate, substantially as and for the purpose described.

5. In a nail-plate feeder, the saddle C, pivotally mounted on the brackets a a and having forwardly-extending horizontal arms c^2, the shaft D, pivotally secured between said arms and carrying the barrel-stock and rack-standard, and means, substantially as described, for adjusting said saddle in its bearings, as and for the purpose set forth.

6. In a nail-plate feeder, the combination, with the rock-shaft B and with the rack-standard, of the operating-arm E, adjustably secured to said shaft and capable of being lengthened or shortened, substantially as and for the purpose set forth.

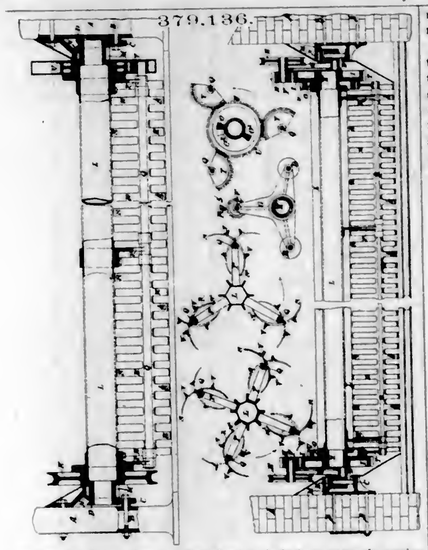
7. The operating-arm E of the rock-shaft, made in two main parts, e e', adjustably secured together, and the part e, provided with a clamp-socket, whereby it is clamped to the shaft, substantially as for the purposes set forth.

379,136. APPARATUS FOR EFFECTING THE TURNING OF MALT OR GRAIN. ROBERT C. SINCLAIR, London, and JOHN HODSON, Burton-on-Trent, County of Stafford, England. Filed Oct. 2, 1886. Serial No. 215,178. (No model.) Patented in England July 29, 1885, No. 9,098.

Claim.—1. The combination of the rotating shaft of a traversing grain-turning apparatus and reversible rakes or scoops carried by the said shaft with a wheel, U, controlling the said rakes or scoops, and corresponding projections on the wheel and the shaft to transmit motion from the latter to the wheel to reverse the rakes, all substantially as described.

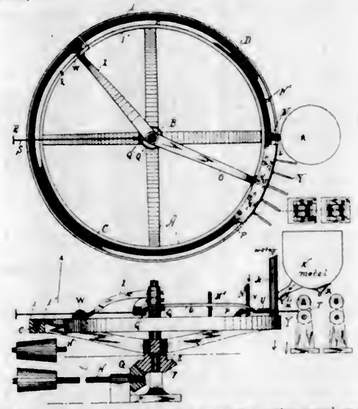
2. The combination of the rotating shaft of a grain-turning apparatus and traveling end frames in which it is mounted, with spindles carried by the shaft and having reversible rakes, a wheel geared to

379,136.



the spindles, projections on the wheel and shaft to transmit motion from the latter to the wheel to reverse the rakes, and mechanism, substantially as set forth, to turn the shaft in its traverse.

379,137. APPARATUS FOR CASTING METALS. DANIEL C. STOVER, Freeport, Ill., assignor to the Washburn & Moen Manufacturing Company, Worcester, Mass. Filed June 9, 1887. Serial No. 240,681. (No model.)



Claim.—1. The combination of a mold for casting metal, means for introducing molten metal into said mold, and means for keeping a rapidly-changing body of cooling-liquid in direct contact with said metal while it is solidifying.

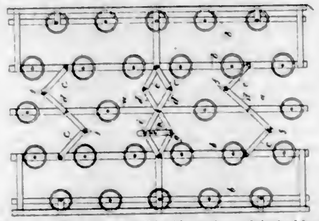
2. The combination of a mold for casting metal, means for introducing molten metal into said mold, means for keeping a rapidly-changing body of cooling-liquid in direct contact with said metal or parts thereof while in said mold, and means whereby any desired pressure may be exerted upon said changing body of liquid during the time it is in contact with said metal.

3. In apparatus for the purpose set forth, the combination of a suitable mold, a liquid covering and filling said mold, means for delivering molten metal to every part of said mold, and means whereby the metal may be removed from the mold when partially cooled.

4. The combination of a traveling mold submerged in a cooling-liquid, means for discharging molten metal into said mold while submerged, and means whereby said metal may be removed from said mold and liquid when solidified and cooled to any desired degree.

5. The combination of a receptacle for molten metal, a suitable traveling mold submerged in a cooling-liquid and adapted to receive the metal discharged from said receptacle, means for removing the solidified metal from said mold while still at a high heat, and rolls adapted to form said heated metal into rods or wires of any desired form and size, whereby metal entering the apparatus in the molten state may be continuously delivered in the form of a rod or wire.

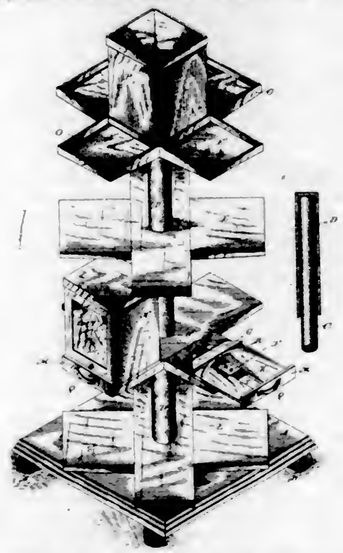
379,138. SPRING BED-BOTTOM. JAMES D. STUART, Brooklyn, N. Y. Filed Oct. 26, 1887. Serial No. 253,399. (No model.)



Claim.—1. The non-extensible side sections of the bed-bottom and the extensible strips successively connected by the extensibly-jointed links c d, having shoulders f, and by the duplicate lazy-tongs links c' d', said duplicate links having the latch g, pivoted to a link of one of the duplicate sets of links and having a series of notches connecting, respectively, with a stop-stud on a link of the other of said duplicate sets for locking them, substantially as described.

2. The non-extensible side sections of the bed-bottom and the extensible strips successively connected by the extensibly-jointed links c d and the duplicate lazy-tongs c' d', all having the stop-shoulders f, and said duplicate links having the stop-latch g, pivoted to a link of one of the duplicate sets of links and having a series of notches connecting, respectively, with a stop-stud on a link of the other of said duplicate sets for locking them, substantially as described.

379,139. SHOW STAND OR CASE. SULLIVAN C. SWETT, Washington, D. C. Filed Dec. 9, 1887. Serial No. 257,376. (No model.)



Claim.—1 In a revolving stand for boxes, the combination, with a series of shelf-supporting arms arranged in sets at suitable intervals upon a rotating vertical support, of a series of shelves mounted upon said arms, respectively, by means adapted to permit limited independent motion to each, and provided with means for grasping and retaining a box placed thereon.

2. A revolving box-stand, provided with sliding shelves adapted

379,143. CABINET BATH. THOMAS WALLIS, TRAITON W. WALLIS, and HARRY E. WALLIS, Janesville, Wis. Filed Apr. 23, 1887. Serial

switch-finger upon its pivot into direct contact toward its free end with the end of the said other contact, substantially as described.

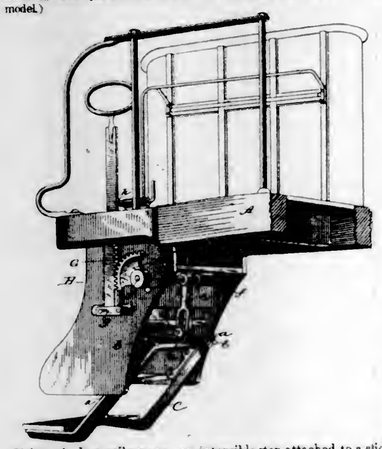
2. A revolving box-stand provided with sliding shelves adapted to be drawn out separately or at the same time, each of said shelves being provided with means for grasping and retaining with a firm pressure an ordinary box of proper size placed thereon.

3. A revolving box-stand provided with radially-sliding shelves arranged at suitable vertical intervals upon a vertical support, each shelf being in the vertical plane of the bisector of the angular interval between two shelves next above itself.

4. A revolving box-stand consisting of a suitable base, a standard centrally fixed therein, a sleeve inclosing said standard and suspended from the top thereof, a series of horizontal arms arranged in sets at suitable intervals upon said sleeve, a series of shelves sliding longitudinally along said arms, respectively, and a series of spring-clutches attached, respectively, to each of said shelves and adapted to retain any suitable box placed thereon.

5. The combination, with the revoluble vertical support of a box-stand, of the arms E, arranged thereon substantially as set forth, the slotted shelves H, engaging the beveled blocks F, fixed upon said arms, the bars M and springs R, fixed to each of said shelves and adapted to engage any suitable boxes placed thereon, and the shelves E', provided with flanges O, all combined and co-operating substantially as specified.

379,140. **RAILWAY-CAR STEP.** WILLIAM P. TRACY, Grand Rapids, Mich., assignor of two-thirds to William R. Shelby and Abe M. Amberg, same place. Filed Oct. 18, 1887. Serial No. 252,671. (No model.)



Claim.—1. In a railway-car, an extensible step attached to a sliding frame, positively-operating devices for lowering the step, and automatically-operating devices for raising it, substantially as described.

2. In a railway-car, a sliding frame having a step attached thereto, said frame and step being normally in a raised position under spring-tension, an operating-lever for positively lowering said step, a shaft for receiving the action of the operating-lever, and intermediate connections between said shaft and frame, substantially as described.

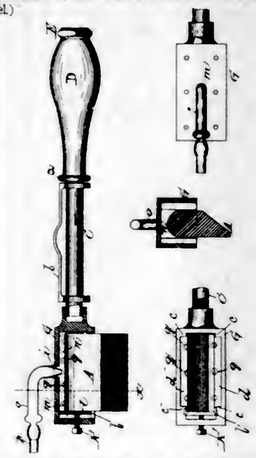
3. In combination with a car and with the steps thereof, an extensible step supported by a sliding frame, a rod under tension adapted to hold said frame normally in one position, a segment upon the end of said rod, and a rack-bar terminating in a handle for operating said bar against the tension of its spring or springs for changing the position of the step, substantially as described.

4. The combination, with the steps of a car, of an extensible step supported by a frame sliding in curved ways, a slotted arm connected to the upper part of the said arm and in connection with the rod held under spring-tension, a segment secured to said rod, and a rack-bar terminating in a handle for operating said segment to move the bar and frame against the tension of the spring, substantially as described.

5. The combination, with the steps of a railway-car, of a sliding frame moving in guides in line with the line of the steps, a step secured to the ends of said frame with spring devices for holding said step against the bottom of the lower of the fixed steps normally, and with positively-operating devices for extending the step beneath the plane and in advance of the fixed step of the series, substantially as described.

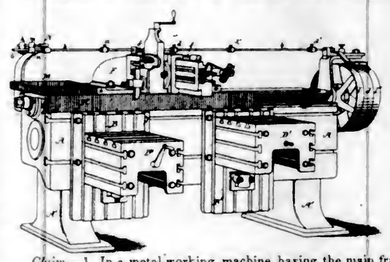
6. In a railway-car, a sliding frame, a step secured to the ends of said frame, a slotted arm in connection with the upper part of the frame for moving the same, a bar under spring-tension secured to said arm, a segment connected to said bar, a rack-bar terminating in a handle for operating said segment, and the spring-latch for holding said handle in an elevated position, substantially as described.

379,141. **SOLDERING-TOOL.** CHARLES L. WAGANDT and JOHN S. HULL, Baltimore, Md. Filed Feb. 16, 1887. Serial No. 227,823. (No model.)



Claim.—In a soldering-tool, the practically rectangular casing G, having its sides and crown perforated for the admission of air and gas, and corner-pieces, as described, combined with a soldering-block which is inserted in the said casing and fastened between the said corner-pieces, whereby spaces are left between the said soldering-block and the sides of the casing, substantially as and for the purpose specified.

379,142. **METAL-SHAPING MACHINE.** EDWARD A. WALKER, Philadelphia, Pa. Filed Nov. 1, 1887. Serial No. 253,976. (No model.)



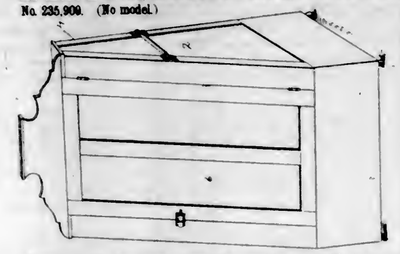
Claim.—1. In a metal-working machine having the main frame with top guideways, the tool-carriage adapted to said guideways, and the projecting work table or tables in front of the machine, the combination of said parts with a plate secured to the main frame and extending from the top of the same up to the carriage in front of the guideways, so as to protect said ways, all substantially as specified.

2. In a metal-working machine having the main frame with its top guideways, the tool-carriage adapted to said guideways, and the projecting work table or tables, the combination of said parts with the guard-plate extending from the top of the frame up to the carriage in front of the guideways, and an extension-piece projecting from the carriage, and likewise bearing upon the guard-plate, all substantially as specified.

3. In a metal-working machine having two or more projecting work-tables and a tool-carriage guided on said frame, the combination of said parts with a belt-shifter rod having a set of stops for each work-table, and a tappet-rod engaging with said stops and mounted on the carriage, so as to be movable into or out of range of the stops, all substantially as specified.

4. The combination of the belt-shifter rod, the shifting-handle therefor, and two pivoted studs receiving said handle, one of said studs being carried by the frame and the other by the shifter-rod, and the handle being free to slide in one of the studs, all substantially as specified.

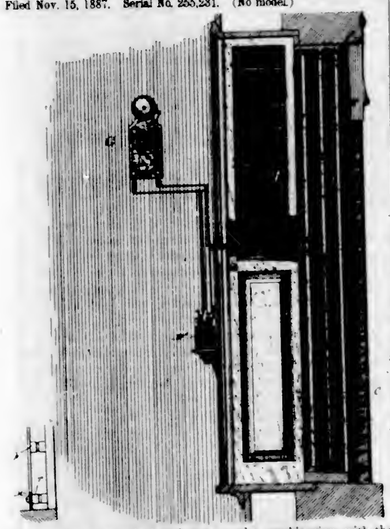
379,143. **CABINET BATH.** THOMAS WALLIS, TRAITON W. WALLIS, and HARRY E. WALLIS, Janesville, Wis. Filed Apr. 23, 1887. Serial No. 235,909. (No model.)



Claim.—1. In a bathing-cabinet, the combination, with an upper and lower chamber, the former having an aperture in its top, a water-tank located above the aperture and in close proximity thereto, a perforated spray-pipe leading from the tank around the aperture in the top of the cabinet, a flexible shampooing-pipe, also leading from the tank, and a towel-holder suspended in close proximity to the aperture in the top, of a heater located in the lower compartment, said heater provided with a pipe which passes through the floor of the upper chamber, the pipe having a cap or damper for shutting off the heat, a drip-pipe in the floor of the upper chamber, and a tank beneath said pipe, substantially as set forth.

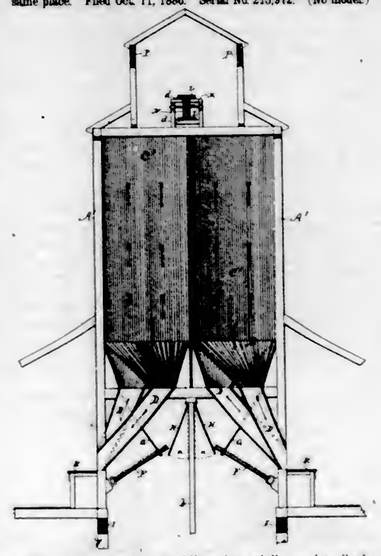
2. In a bathing-cabinet, the combination, with an upper and lower compartment, the upper compartment having an aperture in its top, of a water-tank located in close proximity to the said aperture, a spray-pipe leading from the tank around the aperture, a flexible shampooing-pipe, also leading from the tank, said pipe being provided with a spraying-nozzle and a valve, and a towel-holder suspended in the upper compartment in close proximity to the spray-pipe, substantially as set forth.

379,144. **BURGLAR-ALARM.** CHARLES H. WRIGHT, Chicago, Ill. Filed Nov. 15, 1887. Serial No. 255,231. (No model.)



Claim.—In an electric burglar-alarm, the combination, with the generator, alarm mechanism, and window, or the like, of two contacts, *r* and *p*, forming the terminals of the generator and located at one side of the window or the like, and beyond the actuating-edge thereof, when the latter is shut, and a switch-finger, H, pivotally connected with one of the said contacts and extending to close the circuit, with its free end against the projecting end of the other contact, whereby it may be turned at will past such other contact away from the path of the window or the like to render the burglar-alarm inoperative, and movable to extend lengthwise over the said actuating-edge of the shut window or the like, whereby opening of the latter moves the switch-finger upon its pivot into direct contact toward its free end with the end of the said other contact, substantially as described.

379,145. **WOOD-DRYING KILN.** JOSEPH A. R. WYMAN, South Gardiner, Me., assignor to the W. C. Huntley Kindling Wood Company, same place. Filed Oct. 11, 1886. Serial No. 215,972. (No model.)



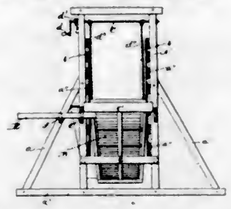
Claim.—1. A wood-drying kiln, substantially as described, consisting of a chamber having in its lower part two eduction-mouths provided with air-passages through the sides of each, and each extending entirely across the chamber, and both arranged side by side and so that one shall discharge toward the front and the other toward the rear of the lower part of such chamber, as set forth.

2. The combination of a wood-drying kiln, consisting of a chamber having in its lower part two eduction-mouths provided with air-passages through the sides of each, and each extending entirely across the chamber, and both arranged side by side, and so that one shall discharge toward the front and the other toward the rear of the lower part of such chamber, as set forth, with an inclined spout leading from each of them to and over a bench, as represented.

3. The distributer, essentially as described, consisting of the endless belt or carrier, its supports and lags, and the tapering platform or platforms, arranged with such belt or carrier as represented.

4. The combination of the distributer, essentially as described, composed of the endless belt or carrier, its supports and lags, and the tapering platform or platforms, arranged as set forth, with one or a series of kilns, each consisting of the chamber, its discharging-mouths, and spouts, as and arranged substantially as set forth.

379,146. **STOCK-CHUTE.** ISAAC T. YOAKUM, Barry, Ill. Filed Mar. 10, 1887. Serial No. 230,470. (No model.)



Claim.—In an adjustable stock-chute, the combination, with the frames having the side bars, of the gangway or bridge, the inclined side platform secured to said frames, the removable retaining-bar, and the operating-shaft connected by the chains to the upper end of said gangway or bridge, substantially as shown and described.

Claim.—As an improved article of manufacture, a hat and coat

379,154.

379,147. FRICTION-PRIMER FOR BLASTING. ALBERT F. ANDREWS, Avon, Conn. Filed Dec. 27, 1887. Serial No. 259,088. (No model.)



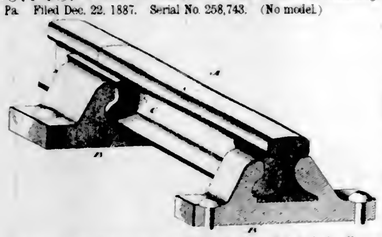
Claim.—1. An exploding device consisting of a staff having a chamber containing an igniting-paste in which a strip of wire is embedded, said wire being extended from the chamber and looped or knotted in a notch or channel formed around the staff, substantially as described.

2. An exploder consisting of a staff having a chamber at one end filled with friction-paste and a wire embedded within said paste and carried through a channel in the staff to a point near the other extremity, where it is looped or knotted in a notch or channel formed in the staff, substantially as described.

3. An exploder consisting of a rod or staff having a chamber in one end to contain friction-paste, and provided with a channel or bore leading from said chamber to the other end of said staff, and a primer having a shell within the end of which the chambered end of the shaft is inserted, the joint being rendered water-proof, the other end of the staff being weakened by a cut or notch in which the wire or cord is knotted, substantially as described.

4. An exploder consisting of a staff having a chamber at one end and a channel leading from said chamber to a notch in the other end of said staff, the chamber being filled with friction-paste, and a wire being embedded therein and carried through the channel to the notch, where it is looped or tied around the staff, substantially as described.

379,148. RAILWAY-CHAIR. SOLOMON ANTHONY, Conemaugh, Pa. Filed Dec. 22, 1887. Serial No. 258,743. (No model.)



Claim.—The combination, with the rails, of the chairs B, constructed with lugs on one side thereof having inner regular curved faces bearing against the web between the head and flange of the rails at the upper portion of the web and the under portion of the head only, and leaving a space between said lugs and the lower flange for the purpose of ready removal of the rail when desired, and oppositely-situated lugs with inner compound curved faces at some distance from the rail-web when in position, the inner faces of said lugs being cast smooth and the lugs of themselves integrally formed with a common base having a square cut therethrough and through the lugs, forming a snug bearing for the sides and under surface of the rail-flange, and metallic wedges C, having a configuration on one side thereof conforming to the contour of the web of the rail and bearing flush with the rail up under the head thereof, and their opposite faces having a compound curved construction conforming to and fitting within and against the inner compound curved faces of the lugs adjacent thereto, the said chairs being arranged as set forth, substantially as described.

379,149. BOTTLE-STOPPER. RUDOLPH BLOESER, Scranton, Pa. Filed Dec. 8, 1887. Serial No. 257,293. (No model.)



Claim.—1. In a bottle-stopper, the combination, with the bail passing over the top of the bottle, of a locking-lever having the upturned lugs or ears at each side engaging said bail, and the downwardly-projecting substantially V-shaped portion through which the eye on the stopper passes, substantially as described.

2. In a bottle-stopper, the combination, with the bail passing over the top of the bottle and a locking-lever struck up from a single piece of sheet metal and having the slotted upturned lugs or ears at the end engaging said bail, the downwardly-projecting substantially V-shaped portion at the center engaging the top of the stopper and the handle, of an eye on the stopper passing through said V-shaped portion, substantially as described.

3. In a bottle-stopper, the combination, with the bail passing over the top of the bottle, of a locking-lever engaging said bail and having the downwardly-projecting portion engaging the top of the stopper, and the eye on said stopper passing through said downwardly-projecting portion of the lever and located at one side of the center of the stopper, whereby when the stopper is closed the said first-mentioned bail will stand vertical with relation to the plane of the stopper, substantially as described.

4. In a bottle-stopper, the combination, with the bail passing over the top of the bottle and a locking-lever struck up from a single piece of sheet metal having upwardly-projecting slotted lugs surrounding said bail, the downwardly-projecting substantially V-shaped portion engaging the stopper at one side of the central line, of an eye on said stopper passing through the lever, and the handle of the lever resting on the edge of the stopper when in locked position, substantially as described.

5. In a bottle-stopper, the combination, with the bail passing over the bottle, a locking-lever pivoted thereto, and a handle for operating said lever, of an eye on the stopper of greater height than the distance between the bail and the stopper when in locked position, said eye being pivotally connected to the locking-lever, one of said connections between the locking-lever and bail and locking-lever and eye being loose, whereby when the bail is moved in a direction to unlock the stopper the pressure will be exerted in a direction to force the locking-lever down and its motion will be arrested by the eye, substantially as described.

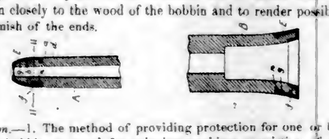
379,150. DYEING ANIMAL TEXTILE FABRICS WITH NAPHTHAZARIN. RENÉ BOHN, Ludwigshafen-on-the-Rhine, Bavaria, assignor to the Badische Anilin and Soda Fabrik, Mannheim, Germany. Filed Jan. 5, 1888. Serial No. 259,881. (No specimens.) Patented in Germany Apr. 3, 1887, No. 41,518; in France Apr. 19, 1887, No. 182,962, and in England May 28, 1887, No. 7,833.

Claim.—1. As a new article of manufacture, textile fiber, yarn, or cloth, whether knit or woven, having chrome-lakes of naphthazarin produced within or upon the same by exposing the same to the action of chromium mordants and naphthazarin, substantially as described.

2. The within-described process of producing chrome-lakes of naphthazarin within or upon textile fibers by exposing said fibers to the action of chromium mordants and naphthazarin in dyeing, substantially as set forth.

379,151. METHOD OF PROVIDING PROTECTION FOR THE ENDS OF BOBBINS, &c. GEORGE O. BOYNTON and FRANK C. JOHNSON, Boston, Mass. Filed May 4, 1887. Serial No. 237,110. (No model.)

Brief.—The objects of the invention are to secure the metal protection closely to the wood of the bobbin and to render possible a smooth finish of the ends.

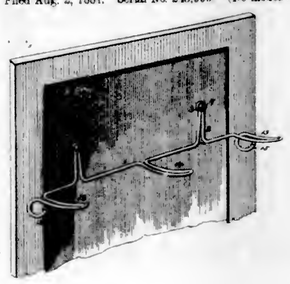


Claim.—1. The method of providing protection for one or both ends of a bobbin or spool for spinning-machines, consisting of electrically depositing any suitable metal thereon, for the purpose specified.

2. The method of providing protection for one or both ends of a bobbin or spool for spinning-machines, consisting of electrically depositing any suitable metal thereon and then finishing up the same, for the purpose specified.

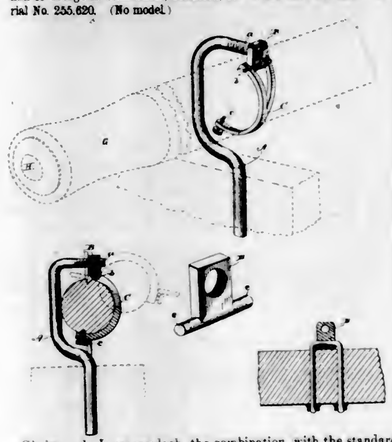
3. The method of providing protection for one or both ends of a bobbin or spool for spinning-machines, consisting of turning off or reducing the end of the bobbin and then electrically depositing thereon at such end any suitable metal, and then finishing up the same, substantially as and for the purpose specified.

379,152. HAT AND COAT RACK. FRANK CLEMENS, Lafayette, Ind. Filed Aug. 2, 1887. Serial No. 245,999. (No model.)



Claim.—As an improved article of manufacture, a hat and coat rack formed of a single wire bent outward at its center and ends to form the arms 13 14, and upwardly between its center and ends to form the attaching-arms 2 2, having eyes 3 3, the outer bends or sections of the arms 13 13 being formed at their inner ends, which are the extremities of the wire, with hooks 15 15 to bear against the wall or support and strengthen said arms and also allow of coats being suspended therefrom, substantially as set forth.

379,153. OAR-LOCK. LEWIS P. COOK, Hawley, assignor of one-half to George A. Clearwater, Scranton, Pa. Filed Nov. 19, 1887. Serial No. 255,620. (No model.)



Claim.—1. In an oar-lock, the combination, with the standard extending over the top of the oar, of a pivotal support for the oar connected to the standard, said connection being longitudinally adjustable on the overhanging portion of the standard, substantially as described.

2. In an oar-lock, the combination, with the standard extending over the top of the oar and an adjustable nut thereon, of a pivoted connection between said nut and oar, whereby the latter is permitted a swinging movement toward and from the standard and may be adjusted nearer to or farther from the end of the same, substantially as described.

3. In an oar-lock, the combination, with the standard extending over the top of the oar, screw-threaded at its end, of a nut screwing thereon, and a pivotal connection between said nut and oar, substantially as described.

4. In an oar-lock, the combination, with the standard extending over the top of the oar, screw-threaded at its end, and a nut co-operating with said screw-threaded portion, of a clamp removably secured to the oar, having the bifurcated upper portion, the arms of which extend on either side of the nut and are connected thereto by a pivotal connection, substantially as described.

5. In an oar-lock, the combination, with the standard extending over the top of the oar, screw-threaded at its end, and a nut co-operating with said screw-threaded portion, of a clamp extending partially around the oar, provided with holding projections and a set-screw, as described, and a pivotal connection between the clamp and nut, as set forth.

6. The combination, with an automatically-feathering oar-lock, of an oar having an independent rotatable handle thereon, substantially as described.

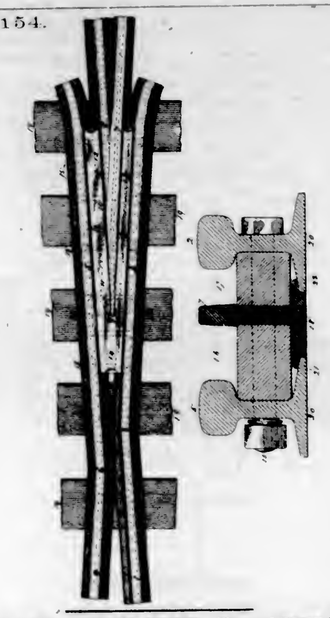
379,154. RAILWAY-FROG. HENRY ELLIOT, St. Louis, Mo. Filed Jan. 13, 1888. Serial No. 260,666. (No model.)

Claim.—1. A railway-frog having a wider and narrower wheel-flange opening between the frog proper and the guard-rails upon the sides, substantially as and for the purpose set forth.

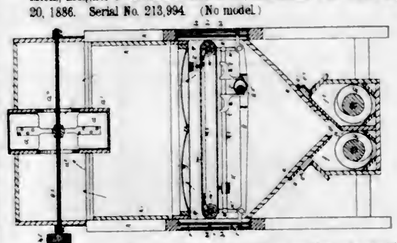
2. The combination, in a railway-frog, of the frog proper, having a point, 9, two rails, 1 and 4, ending in guard-rails with bends 3 and 6, varying in distance from the point 9, and flange-openings of diverse width from each other at the opposite sides between the frog-rails 7 8 and the guard-rails 2 and 5, substantially as and for the purpose set forth.

3. The combination, in a railway-frog, of the two guard-rails, the frog proper set nearer to one guard-rail than to the other, and having a base, 18, adapted to bear upon the ties and the rail-bases, substantially as shown and described, and for the purpose set forth.

379,154.



379,155. MIDDLINGS-PURIFIER. WILLIAM J. PENDER, Jackson, Mich., assignor to Edward P. Allis & Co., Milwaukee, Wis. Filed Sept. 20, 1886. Serial No. 213,994. (No model.)



Claim.—1. The combination, in a middlings-purifier, of a shaking sieve or screen, a brush movable in the direction of the length of its bristles toward and from the sieve, and means, substantially such as shown and described, for thus moving the brush.

2. The combination, with a sieve or screen, of a brush, a guide for said brush, a support bearing against said guide and movable toward and from the sieve, and actuating mechanism, substantially such as shown and described, adapted to advance and recede the support and guide, and thereby to advance and recede the brush toward and from the sieve.

3. The combination, with a sieve or screen, of a brush or brushes, an endless carrier therefor, a rotary shaft supporting the carrier, guides or ways to support the brush-stock, a lifting device beneath the guides or ways, a dog or pawl connected with said lifting device, and a ratchet-wheel secured upon the carrier-shaft and in the path of movement of the dog, said parts being combined and arranged to operate substantially as set forth, whereby the brush is caused to advance toward the sieve, then to move away therefrom, and while out of contact therewith to shift laterally.

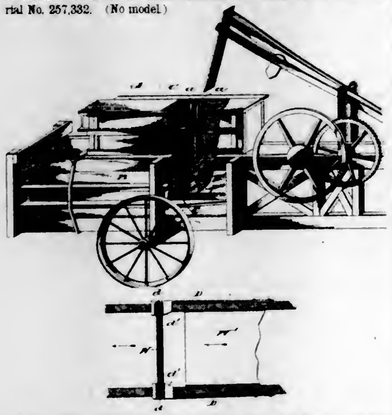
4. In combination with the screen of a middlings-purifier, a brush or brushes, mechanism for moving the brushes, guides or ways for said brushes, supports for said guides, and eccentrics connected with a moving part of the purifier and serving to raise and lower the supports and guides.

5. In combination with the screen of a middlings-purifier, a brush or brushes, chains connected therewith, shafts and sprockets for operating said chains, a ratchet-wheel carried by one of said shafts, and a pawl connected with a moving part of the machine and serving to

impart a step-by-step motion to the chains and brush or brushes always in the same direction, substantially as set forth, whereby the brush is caused to move from one boundary of the sieve to another by a series of steps with intermediate periods of rest.

6. In combination with a screen, a brush or brushes, chains for operating the same, sprockets and shafts therefor, toggle-joints supporting said shafts, cross-bars connecting opposite toggle-joints, tappets on said bars, eccentrics for operating said tappets, and a ratchet-and-pawl mechanism for turning said shafts, substantially as set forth.

379,156. BALING-PRESS. JOHN GARMAN, Ebensburg, assignor of one-half to David E. Evans, Cambria, Pa. Filed Dec. 8, 1887. Serial No. 257,332. (No model.)



Claim.—The combination, in a baling-press, of a baling-box having a feed-opening and follower-guides therein, with the springs D, bifurcated and beveled, as shown and described, said springs being located below said guides, with their bifurcated or free ends registering with the guides, whereby a follower may be directed into position and retained until carried forward by the plunger.

379,157. HOLDBACK FOR VEHICLES. HENRY W. GETMAN, Ilion, N. Y. Filed Oct. 4, 1887. Serial No. 251,416. (No model.)



Claim.—1. The herein-described holdback, consisting of the plate, the downwardly-projecting lug or ear formed at one end of said plate and curved on its outer surface, and the long curved hook secured at one end to said plate, substantially as shown and described.

2. The combination, with a wagon-thill, of the holdback secured to the under side thereof, comprising an apertured plate, a lug or ear formed at one end of said plate, and a curved hook secured to said plate at one side thereof and curved around said lug or ear, substantially as shown and described.

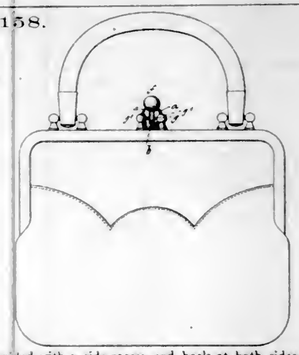
379,158. LOCK FOR BAG OR SATCHEL FRAMES. AUGUST GOERTZ, Newark, N. J. Filed Dec. 28, 1887. Serial No. 259,208. (No model.)

Claim.—1. The combination of a centrally-recessed stud attached to one jaw of the bag or satchel frame, a locking-hook pivoted to said stud, a spring set into a side recess of the hook and secured to the shank of the stud, and a fixed bar or projection attached to the second jaw of the frame and adapted to be engaged by the hook, substantially as set forth.

2. The combination of a centrally-recessed stud riveted to one jaw of the bag or satchel frame, a locking-hook pivoted to said stud

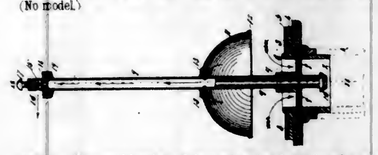


379,158.



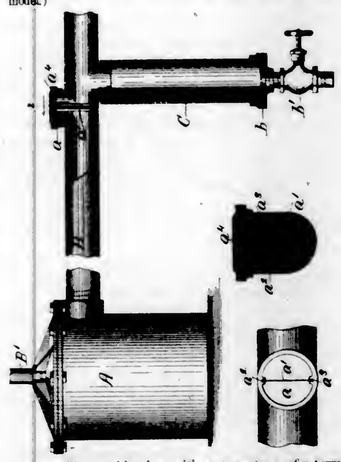
and provided with a side recess, and heels at both sides of said recess, a U-shaped spring located in said recess and applied to a socket in the base of the stud and to a recess of the locking-hook, and a transverse bar or projection attached to the second jaw of the frame, substantially as set forth.

379,159. AUTOMATIC VALVE FOR WATER-TANKS. CHARLES H. HARKINS, St. Louis, Mo. Filed Oct. 4, 1887. Serial No. 251,454. (No model.)



Claim.—The combination of the outlet-pipe 2, having the annular flange 4 and a screw-threaded mouth, a cushioning-ring, 5, resting upon said flange, exteriorly-screw-threaded ring 6, screwed into the outlet-pipe and having an overhanging flange resting upon ring *b*, the vertical tube 7, the arms 8, integral with ring 6 and tube 7, a hollow valve-stem having perforations 13 in said tube, a downwardly-flaring open bottom valve secured to said stem above said perforations, a valve and outlet in said stem above the water-level, a collar, 19, on said stem, and a lever engaging said collar for operating the valve, substantially as set forth.

379,160. STRAINING DEVICE FOR STEAM-TRAPS. WILLIAM HAYTHORN, Chicago, Ill. Filed July 26, 1887. Serial No. 245,317. (No model.)



Claim.—The combination, with a steam-trap, of a terminal pipe, B, having the capped opening *a* and provided with the rabbeted grooves a^2 a^3, a strainer inserted in said pipe and removably retained

therein by said grooves, the drop-tube or catch-basin C, connected to the under side of the pipe B, and the removable cap *b*, provided with the valve *b'*, whereby all sediment and foreign matter are deposited in the drop-tube and prevented from entering and obstructing the working of the trap, substantially as set forth.

379,161. OIL-CARRYING SHELL. GEORGE A. HEATH, Geneva, Fla. Filed Dec. 22, 1887. Serial No. 258,742. (No model.)



Claim.—1. The combination, with the outer shell or casing, the interior partition-plate having an interiorly-arranged cartridge resting thereagainst and supported thereby, which contains an explosive material, a fuse extending through said plate and projecting into the explosive of the interiorly-arranged cartridge, a charge of explosive material upon the opposite side of the partition-plate to propel the projectile entire, and an oil-reservoir surrounding the interiorly-arranged cartridge, the explosion of the said interior cartridge, caused by the ignition of the fuse transmitting fire from the propelling charge of explosive, spreading the oil upon the water, substantially as described.

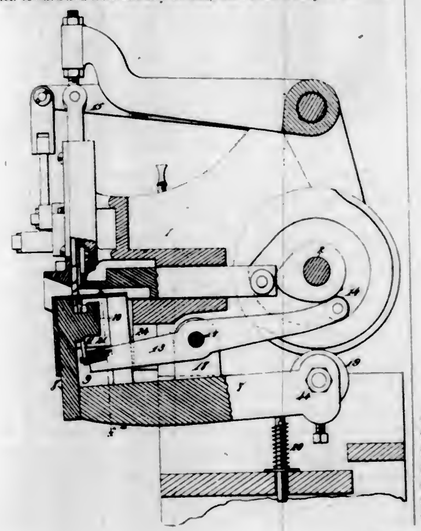
2. The combination of the outer main shell or casing, having an interior partition-plate dividing the shell into two parts for carrying oil and a propulsive explosive, respectively, and an interiorly-arranged cartridge within the oil-chamber containing an explosive material and connected to the propulsive explosive by a fuse, substantially as described.

3. A device for discharging oil upon the sea or waters when agitated, consisting of a shell or receptacle provided with an interior partition dividing the same into an explosive and oil chambers, and an explosive cartridge suspended in the oil-chamber independent of the main explosive chamber and connected with the latter chamber by a fuse, substantially as described.

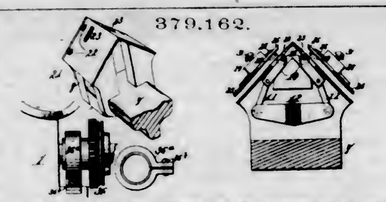
4. An oil-containing shell, for the purpose set forth, having a propelling explosive contained therein separate from the oil and cartridge within and surrounded by the oil and connected to the propelling-explosive by a fuse.

379,162. MACHINE FOR STAYING THE ANGLES OF PAPER BOXES. CLARENCE W. HOBBS, Lynn, Mass. Filed Apr. 26, 1887. Serial No. 236,488. (No model.) Patented in England Aug. 2, 1887, No. 10,638.

Claim.—1. The combination with the staple-forming and clinching mechanism, substantially as described, of an angular slotted shell upon which the box is supported, pronged wires having their pointed ends overhanging the slots in said shell, and means for vibrating said shell toward and from the stay-forming dies, substantially as described



379,162.



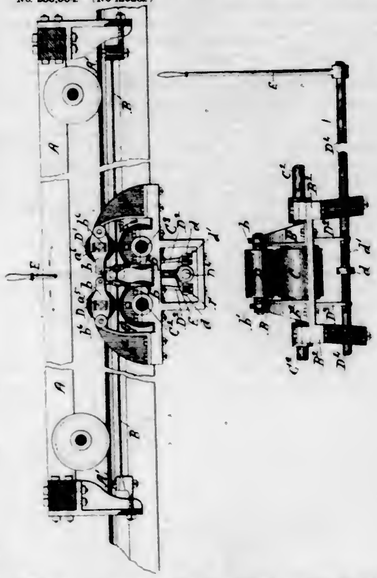
2. The combination, with the wire-feeding mechanism, substantially as described, and the dies, whereby the wire is formed into stays of a vibrating angular shell, whereby the box is supported, supporting-plates carried by the rigid parts of the machine-frame, and adjustable prongs mounted in said supporting-plates, whereby the apertures are formed in the stock and the ends of the stays guided, substantially as described.

3. The combination, with the vibrating shell-support and the cam operating its carrying-lever, of rigid supporting-plates having blocks, pronged wires mounted therein and having their pointed ends overhanging slots in the shell-support, and set-screws tapped through said blocks and fastening said wires in place, substantially as described.

4. The combination, with the power-shaft carrying the cams by which the operative parts are moved, of a vibrating lever fulcrumed upon the machine-frame, a cam actuating said lever, an angular shell-support carried by said lever, and clinching devices operating within said shell to upset the ends of the metallic stays, substantially as described.

5. The combination, with the vibrating shell-support, of rigid plates mounted upon angular shoulders on the machine-frame, steel wires adjustably mounted in blocks on said plates, set-screws tapped through said blocks and bearing upon said wires, and mechanism, substantially as described, for feeding the wire forming the stay and clinching the ends of the same, substantially as described.

379,163. FEED MECHANISM FOR SAW-MILL CARRIAGES. ANDREW E. HOFFMAN, Fort Wayne, Ind. Filed Nov. 19, 1887. Serial No. 255,584. (No model.)



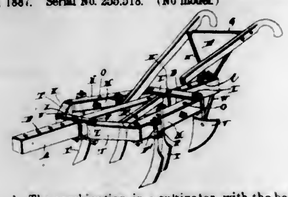
Claim.—1. As a means for transmitting a reciprocating movement to log-carriages, the combination, with the carriage, of a traction-ribbon secured underneath to the respective ends of said carriage, the friction gripping-rollers mounted on the shafts a^3 a^4, the rocker plates or arms *b b' b'' b'''*, in which said shafts are journaled, the standards b^2 b^3, supporting the other pivoted ends of said arms, the connecting-rods D^2 D^3, pivoted at their upper ends to the inner ends of said plates or arms, the rocker-arm *d*, the rods *d' d''*, the rock-shaft D^4,

upon which said arm *d* is mounted, and the operating-lever secured on the end of said rock-shaft, all substantially as and for the purpose set forth.

2. In a means for transmitting motion to log-carriages, the combination, with a traction-ribbon properly secured to said carriage, of the friction driving-drums, located underneath and in the pathway of said ribbon and rotating in opposite directions relative to each other, the friction gripping-rollers placed above said ribbon and in line with said drums, the rocker plates or arms *b b b' b'*, in which the shafts carrying the gripping-rollers are journaled, the connecting-rods D^3 D^4, constructed in two parts, the respective joining ends having a right and left screw-thread, the sleeve or sleeves b^4, correspondingly threaded and adjustably connecting said ends, the rocker-arm *d*, the rods *d' d'*, the rock-shaft D^4, and the operating-lever mounted on said shaft, substantially as and for the purpose set forth.

3. The combination, with the rocker-plates *b b b' b'* and the friction gripping-rollers journaled in the same, of the connecting-rods D^3 D^4, constructed in two parts and having the joining ends threaded, as described, the sleeve or sleeves b^4, correspondingly threaded and adjustably connecting said ends, the rocker-arm *d*, the rods *d' d'*, and the rock-shaft D^4, substantially as and for the purpose set forth.

379,164. COMBINED PLOW AND HARROW. JOHN C. HORTON Elkmont, Ala., assignor of one-half to W. W. Todd, same place. Filed Nov. 18, 1887. Serial No. 255,518. (No model.)

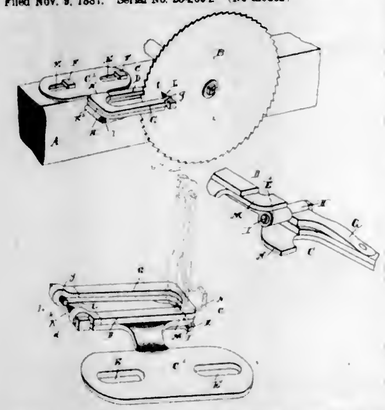


Claim.—1. The combination, in a cultivator, with the beam A and boxes I, of the arms M, having the vertical openings P R and the transverse openings S, communicating with and intersecting the same, the bull-tongues or teeth having their shanks secured in the vertical openings, and the eyebolts having their shanks inserted in the openings S and their eyes in engagement with the shanks of the shovels or teeth, substantially as described.

2. The combination of the beam, the boxes secured thereto and longitudinally adjustable thereon, the arms M, secured to one of the boxes, and the links T, connecting the opposite ends of the said arms to the remaining box, substantially as described.

3. The combination of the beam, the slide-boxes secured thereto and having the projecting ears, the arms M, the links T, and the bolts to connect the said links and arms together and to the ears of the slide-boxes, substantially as described.

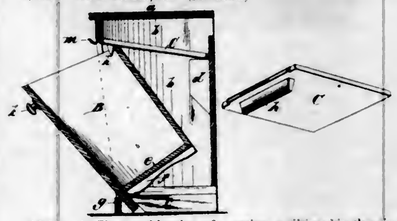
379,165. GUIDE FOR SAWS. ALLEN HOUSE, Paragould, Ark. Filed Nov. 9, 1887. Serial No. 254,694. (No model.)



Claim.—1. The herein-described saw-guide having the slotted plate C, the rigid arm D, secured to the said plate and having the depending horizontal eye E' on the rear end, the movable arm G, having the depending horizontal eye H on one end to align with the eye E', the pin I, passing through the said aligned eyes, and the lateral wing or stop N on the side of the movable arm to bear on the rigid arm when the said arms are parallel, substantially as and for the purpose specified.

2. In a guide for saws, the combination of the slotted plate C, the rigid arm secured thereto and having the recess M in the upper side thereof at the rear end, and the vertically-swinging arm G, hinged to the rear end of the rigid arm and having the lateral wing or stop N to fit in the recess M when the arms D and G are in the operative positions, substantially as described.

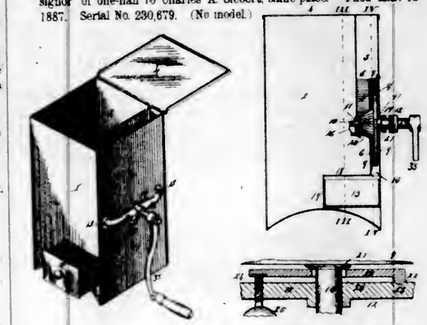
379,166. BIN. EDWARD T. HUNTER, McGregor, Tex. Filed Aug. 2, 1887. Serial No. 245,966. (No model.)



Claim.—1. The combination of a casing, a tilting bin therein, a bearing at the rear of the casing, and an automatic cover for the top of the bin adapted to rest loosely at its rear edge on the bearing, and having adjacent to its front edge a projecting stop for engaging the back of the bin to limit its forward tilting movement when opened, substantially as described.

2. The combination of a casing having bearing blocks or shoulders *d*, a tilting bin located in said casing and provided with a sloping top, and an automatic cover, C, placed loosely in the casing above the shoulders *d* and provided on the under side, near its front edge, with a cleat, *b*, fitting within the upper part of the bin, whereby said cover is adapted to close the upright bin and limit its forward movement when opened, substantially as described.

379,167. COFFEE-MILL. JAMES M. HUNTER, St. Louis, Mo., assignor of one-half to Charles A. Siebert, same place. Filed Mar. 12 1887. Serial No. 230,679. (No model.)

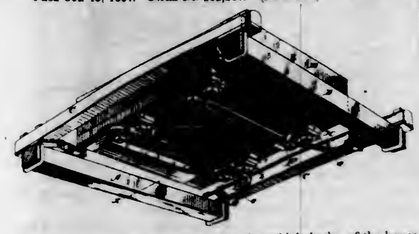


Claim.—1. In a grinding-mill, the combination of a suitable casing, the circular flanged plate 7, secured thereto and forming therewith a chamber, 8, the fixed grinding-disk 6, secured to the plate 7, the movable grinding-disk 9, shaft 10, to which the disk 9 is secured, the outlet 16 in the lower part of the said chamber 8, and the crank secured to said shaft, plate 7 and disk 6 being perforated for the passage of the shaft 10, substantially as and for the purposes set forth.

2. In a coffee-mill, the combination of the case 1, formed with the compartments 2 3, a plate, 7, secured to the casing and forming a chamber, 8, a fixed disk, 6, secured to said plate 7, a disk, 9, fitted in said chamber and having a conical projection, 14, a revoluble shaft, 10, to which said disk 9 is secured, having a projection, 21, a spring, 26, bearing against the inner end of the shaft, a bridge 12, through which the shaft passes, a lever, 19, perforated for the passage of the shaft, bearing against the bridge and also against the projection 21, a set-screw bearing against the lever, and a handle secured to the shaft 10, all constructed and arranged to operate substantially as and for the purpose set forth.

3. In a coffee-mill, the combination of the fixed and rotary disks, a casing in which said disks are located, a shaft to which the rotary disk is secured, having a crank for turning it and a projection, a bridge secured to the casing and through which the shaft passes, a lever bearing against said projection and having at one end a rounded projection fitting in a recess in said bridge, and a set-screw passing through said bridge and bearing against the free end of said lever, substantially as set forth.

379,168. VEHICLE-SPRING. EDWIN JARRELL, Harper, Kans. Filed Oct. 13, 1887. Serial No. 252,267. (No model.)

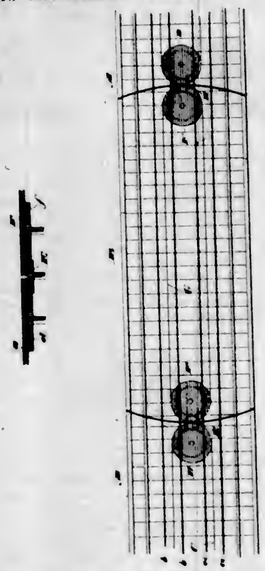


Claim.—1. The combination, with the vehicle-body, of the boxes or brackets attached to the under side thereof and having circular bearings and non-circular openings or sockets the torsion-springs secured at one end in said non-circular sockets, and the shafts journaled in the bearings of the boxes and connected with the torsion-springs, substantially as and for the purposes specified.

2. The improvement in springs herein described, consisting of the shaft having a radial arm or projection, a boxing in which said shaft is journaled, and a spring-bar fixed at one end to the boxing and at its other end to the lug or projection on the shaft.

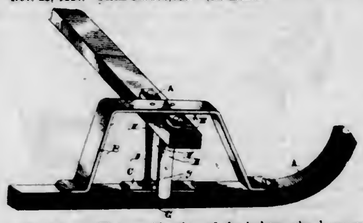
3. The combination of the vehicle-body, the brackets or boxes secured thereto and arranged in pairs, all the brackets having shaft-bearings, and one bracket of each pair having a non-circular socket, the shaft journaled in said brackets and having a lug or projection, and the torsion-spring bar held at one end in the non-circular socket and having its other end connected with the projection on the shaft, all substantially as and for the purposes specified.

379,169. CABLE RAILWAY. JOHN F. JUST, Robey, Dak. Filed Apr. 14, 1887. Serial No. 234,809. (No model.)



Claim.—In a cable-railway system, the combination, substantially as described, of the cable proper mounted on terminal pulleys, a bridge-draw or turn-table provided at each end with cable-pulleys, a cable mounted thereon, a gear-wheel secured to the pulley-shaft of the cable proper, a gear-wheel secured to the pulley-shaft at the draw ends, and a gear-wheel secured to constantly mesh with the first-named gear-wheel, but with the gear-wheel on the draw end only when the draw is closed.

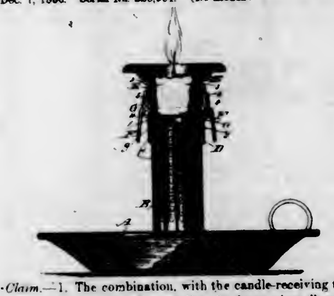
379,170. SLEIGH-KNEE. EDWARD KING, Butte City, Mont. Filed Nov. 23, 1887. Serial No. 256,013. (No model.)



Claim.—1. The combination of the bolster, the knee, and the braces B, secured to the sides of the knee and having the threaded upper ends passed through the bolster, and the nuts thereon for clamping the knee and the bolster together, substantially as described.

2. The combination of the runner, the brace B, and the vertical rods D, with the bolster having the openings to receive the rods and bearing under the brace, the knee, the plate G on the lower end thereof, having the recesses to receive the rods D, and the side braces, H, secured to the knee and having their upper ends extending through the bolster and provided with clamping-nuts, and having the lower depending ends on opposite sides of the runner to prevent lateral play of the latter, substantially as described.

379,171. CANDLESTICK. HIRAM R. LEWIS, Gold Hill, Nev. Filed Dec. 7, 1886. Serial No. 220,901. (No model.)



Claim.—1. The combination, with the candle-receiving tube having a spring for actuating the candle, of a lever pivotally connected with said tube, and having a projection movable laterally into and out of the path of the candle, said projection having its inner end pointed, whereby it may enter the candle, and means for operating the lever, substantially as set forth.

2. A candlestick-tube having a ring, E, fitted within it, and provided with openings 3, formed through said ring and tube, combined with the follower D, and spring arranged within the tube, and the pivoted spring-actuated levers having projections extended through openings 3 and movable into and out of the path of the candle, said projection having its inner end pointed, whereby it may enter the candle, substantially as set forth.

3. The combination of the candle-tube provided with an opening, 3, the follower, the spring therefor, and a spring-actuated lever or levers pivotally supported and having a projection adapted to enter opening 3 into the tube, and thereby to engage a candle, said projection having its inner end pointed, whereby it may enter the candle, substantially as set forth.

4. The combination of the candle-tube having an opening for the passage of the candle-securing projection, a spring formed of two side lengths or sections secured at one end to the tube coiled between their ends, and having their opposite or free ends extended, and the lever fulcrumed on the coiled portions of said springs, extended thence between and under the free ends of the side section, and having a portion extended through the candle-tube, all substantially as set forth.

5. The combination, with the candle-receiving tube having a spring for actuating the candle, of a projection connected with said tube and movable laterally into and out of the path of the candle at or near the mouth of the tube, said projection having its inner end pointed, whereby it may enter the candle, substantially as set forth.

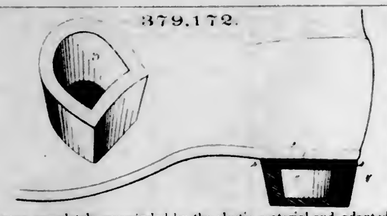
379,172. SHOE. JOHN LINDSTROM, Rockford, Ill. Filed Feb. 24, 1887. Serial No. 228,667. (No model.)

Claim.—1. The combination herein described, with the sole and the lift firmly attached to the sole, of a hollow heel consisting entirely of elastic material molded in one piece and provided with an opening

C, fixed to said shaft within the slot, the link D, securely mounted on

Claim.—1. The solid depolarizing compound herein described,

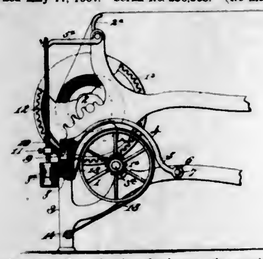
379,172.



in its top completely surrounded by the elastic material and adapted to snugly receive the said lift, the heel being secured in position on the lift by cement, substantially as set forth.

2. The combination, with the sole and the lift attached to the sole, of a hollow heel consisting entirely of elastic material molded in one piece and provided with an opening in its top adapted to snugly receive the said lift, the heel being secured in position by cement and further secured by a fastening extending through the side of the molded heel into the wall of the lift, substantially as set forth.

379,173. LET-OFF MECHANISM FOR LOOMS. HOMER LITCHFIELD, North Adams, Mass., assignor of one-half to Enoch H. Beer, same place. Filed May 17, 1887. Serial No. 238,503. (No model.)



Claim.—In a let-off mechanism for looms, the combination, with the loom-frame, a warp-beam, a pulley geared thereto, and the whip-roll, of a shoe or yoke overhanging the pulley and pivoted at one end to the loom-frame, and provided at its free end with a weight and a slot, a flexible friction-strap extending around the pulley under the shoe or yoke and fastened at one end to the loom-frame and at the other end to the weighted free end of the shoe or yoke, and a weight-rod having a finger engaging the slot of the shoe or yoke to loosen and tighten the strap, substantially as described.

379,174. GAME-BOARD. J. ALBERT MARTIN, Charlestown, Ind., assignor of two-thirds to Henry C. Sharp and James N. Teeple, same place. Filed May 3, 1887. Serial No. 236,963. (No model.)



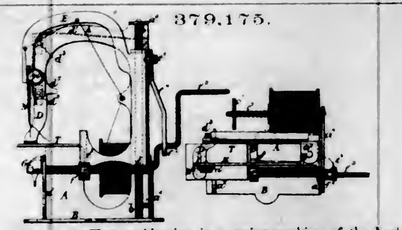
Claim.—1. The game-board A, provided with the center post, *d*, the circles *e i*, concentric with said post, and the pocket-holes *f*, provided with the ledges *h*, exterior to the circle *e*, substantially as set forth.

2. The game-board A, provided with the circles *e i*, pocket-holes *f*, provided with ledges *h*, and the pockets or drawers G, to receive the playing-pieces when driven into said holes.

3. A game board or device consisting of a circular field-board, A, provided with a marginal ledge, *b*, concentric circles *e i*, inscribed on the field, a central post, *d*, and holes *f*, provided with ledges *h*, combined with disks *k* for playing-pieces, as set forth.

379,175. SEWING-MACHINE. THOMAS H. MARTIN, London, England. Filed Apr. 13, 1887. Serial No. 234,727. (No model.) Patented in England Sept. 29, 1886, No. 12,369; in France Dec. 9, 1886, No. 180,208; in Germany Dec. 14, 1886, No. 40,797; in Norway Dec. 16, 1886, No. 290; in Belgium Dec. 21, 1886, No. 75,673; in Sweden Dec. 22, 1886 No. 1,009; in Spain Mar. 11, 1887, No. 6,623/10,514; in Victoria Apr. 27, 1887, No. 5,089; in Italy May 3, 1887, XLII, 306; in New South Wales July 30, 1887, No. 2,115, and in Austria-Hungary Sept. 15, 1887, No. 12,354 and No. 35,948.

379,175.



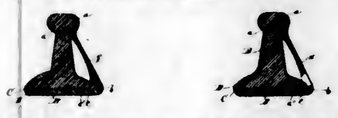
Claim.—1. The combination, in a sewing-machine, of the back plate, A, having end pieces, *a' a²*, and top lug, *a³*, the vertical rod *b*, the needle-arm E, adapted to rise and fall and swing axially on the said rod, a presser-foot, D, a looper, G, and means for operating the needle-arm and looper substantially as described.

2. The combination, in a sewing-machine, of a supporting-frame, the vertical rod *b*, the needle-arm E, adapted to slide vertically and swing axially on said rod, the shaft F, having the crank-handle f^3, the cam f' on the shaft to swing the needle-arm, the link f^4, connecting the crank-handle with the needle-arm, the looper, and the presser-foot, substantially as described.

3. The combination, in a sewing-machine, of a supporting-frame, a vertical rod, *b*, the needle-arm E, adapted to slide vertically and swing axially on the rod and having the arm e^3, the spring e^4, acting on the needle-arm, the shaft F, having the crank-handle f^3 and the cam f', acting on the arm e^3, the link f^4, connecting the crank-handle with the needle-arm, the looper, and the presser-foot, substantially as described.

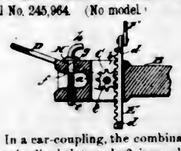
4. The combination, in a sewing-machine, of a supporting-frame, the vertical rod *b*, the needle-arm E, having the upper and lower lugs $e' e^2$ adapted to rise and fall and swing axially on the rod, the spring e^4, the shaft F, having a crank-handle, f^3, and a cam, f', acting on the needle-arm, a link, f^4, connecting the crank-handle with the needle-arm, the looper, and the presser-foot, substantially as described.

379,176. SPLICE-BAR. ALOYSIUS MCHUGH, Dubois, Pa. Filed June 17, 1887. Serial No. 241,658. (No model.)



Claim.—The combination, with the rails having notches therein, of the chair B, comprising the plate B', provided with perforations *h'* therein, beveled flange *b*, and the flange C, having the lip D on the edge thereof, bar E, having the notch *h* in the lower edge and resting at the lower edge on the said beveled flange, rib *c* on the inner side of the said bar, and the spikes G', to pass through openings in the bar E and chair B, and also through aligned openings in the rails, substantially as and for the purpose set forth.

379,177. CAR-COUPLING. FLETCHER J. MCGUKEN, Ocala, Fla., assignor of one-half to James N. Strobhar, same place. Filed Aug. 2, 1887. Serial No. 245,964. (No model.)

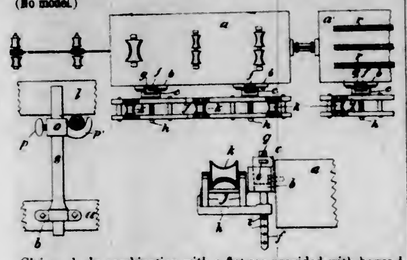


Claim.—1. In a car-coupling, the combination of a draw-bar having a vertical longitudinal slot, a shaft journaled transversely through said slot, a pinion secured to said shaft within the slot, a link fastened to the outer ends of the shaft, and a vertically-movable rack-bar located in the rear end of the slot and meshing with the pinion to operate the link and engage it with or disengage it from a hooked pin on the opposite draw-bar, substantially as described.

2. The combination of the open-mouthed draw-bar B, having a vertical longitudinal slot, *b*, the shaft *c*, carrying an oscillating link, D, the hooked pin H, having a squared portion, *g*, to prevent it from turning, the pinion C, secured to the shaft *c* within the slot *b*, and the vertically-movable rack-bar E, to operate the pinion C and link D, whereby the link can be engaged with or disengaged from the hooked pin of the opposite draw-bar, or the pins of said draw-bar be connected by an ordinary link, substantially as described.

3. The combination of a draw-bar having a vertical longitudinal slot, *b*, a shaft, *c*, journaled transversely through said slot, the pinion C, fixed to said shaft within the slot, the link D, securely mounted on the shaft *c*, the rack-bar E, located in the slot to engage the pinion, and the levers F G, connected with the rack-bar and adapted by their weight to throw the link down, substantially as described.

379,178. MACHINERY FOR LAYING RAILROAD-TRACK. DAILY S. MOORE, Chicago, Ill., assignor of two-thirds to Abner Price and Alexander Price, both of same place. Filed Jan. 14, 1888. Serial No. 260,756. (No model.)

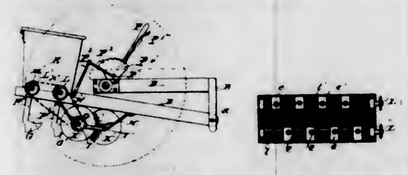


Claim.—1. In combination with a flat car provided with boxes *b* and carriers *j*, the block *c*, provided with rod *f*, having adjustable bracket *h*, substantially as specified.

2. In combination with a flat car provided with boxes *b*, stakes *s*, cross-bars *n*, and overhead carriers *l*, the adjustable sleeve *o*, having arm *p'*, substantially as specified.

3. In combination with a flat car, *a*, having a set of rollers upon its floor, the carriers *j*, hung on brackets *h*, adjustable on the rod *f*, pendent from the box *b*, substantially as specified.

379,179. GRAIN-DRILL. WILLIAM NIEMEWOESER, Peotone, Kans. Filed Jan. 26, 1887. Serial No. 225,557. (No model.)



Claim.—1. In a grain-drill, the upper frame supported upon the tongue and axle, the lower frame hinged to the forward end and adjusted upon the rear end of the upper frame, and a seed-box, combined with a series of colters, hoes, and seed-droppers supported upon the rear end of lower frame, substantially as described.

2. In a grain-drill, the combination of the wheel-frame, the cultivator-frame, and a double series of revolving colters alternating with a double series of hoes, and seed-droppers located each behind the colters of one series and between the colters of the other series, substantially as described.

3. In a grain-drill, the combination of the frame carrying a series of colters upon one shaft alternating between a series of co-operating colters upon a second shaft, and a series of hoes and seed-droppers located to follow the paths of said hoes and colters, substantially as described.

4. In a grain-drill, the combination, with the wheel-frame, of the cultivator-frame hinged at its forward end and adjusted at its rear end upon the wheel-frame, a seed-box having a feed device, and a series of colters geared to the said feed device supported upon the cultivator-frame, substantially as described.

5. The combination, with the seed-boxes, of a double series of seed-openings, force-feed conveyers arranged within the said seed-boxes, one in advance of the other, above their respective rows of seed-openings, which conduct the seed at the forward sides of the seed-box in one direction and seed at the rear sides of said seed-box in the opposite direction, substantially as described.

6. The combination, with the seed-box, of a double series of seed-openings arranged in parallel rows and alternately located, the screw feed-conveyers arranged one in advance of the other within the seed-box, above their respective rows of seed-openings, threaded in opposite directions, sprocket-wheels upon the ends of said shafts, and a chain driven by a shaft upon the frame and gearing with both of said sprocket-wheels, substantially as described.

379,180. DEPOLARIZING COMPOUND. AUGUST F. W. PARTS, Philadelphia, Pa. Filed Oct. 6, 1886. Serial No. 215,461. (No specimens.)

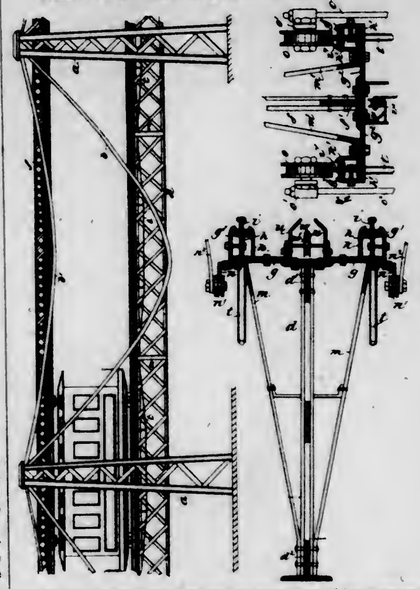
Claim.—1. The solid depolarizing compound herein described, consisting of chromic acid, sulphuric acid, and only so much acid sulphate of potash as is due to the action of sulphuric acid upon the bichromate of potash employed, said compound being practically free from chromic oxide.

2. The process of producing a solid depolarizing compound, which consists in decomposing bichromate of potash by sulphuric acid without the aid of water or an alkaline sulphate and without the application of heat.

3. The process of producing a solid depolarizing compound, consisting, first, in reducing the bichromate of potash to a powdery state by fusion and cooling, and then decomposing the powdered mass by sulphuric acid.

4. As a new product, the herein-described solid depolarizing compound resulting from the decomposition of bichromate of potash by sulphuric acid without the aid of water or an alkaline sulphate or applied heat.

379,181. ELEVATED RAILWAY. D. DEAN READ, Boston, Mass. Filed Dec. 24, 1887. Serial No. 258,891. (No model.)



Claim.—1. An elevated-railway structure comprising a supporting-truss centrally located below the cars and having its upper member provided with cross-pieces supporting longitudinal beams and T-rails thereon, combined with an upper truss provided with rails, the said upper and lower trusses co-operating with cars having trucks above and below co-operating with said rails on the upper and lower trusses, substantially as described.

2. An elevated-railway structure comprising a truss beneath the cars having on its upper member cross-bars and rails supported at the ends of said cross-bars, combined with a longitudinal trough supported on said truss between said rails, substantially as and for the purpose described.

3. In a railway structure, a truss centrally located with relation to the cars, having one of its chords provided with cross-pieces and rails supported at the ends of said cross-pieces, co-operating with trucks connected with the car-body, and a longitudinal trough or box supported on the said chord of the truss, substantially as and for the purpose described.

4. In an elevated-railway structure, a truss centrally located with relation to the cars, having its upper member provided with cross-pieces, combined with rails supported on said cross-pieces, and longitudinal strips of angle-iron having their horizontal portion or flange connected with the under sides of said cross-pieces and their vertical portion or flange projecting downward from said cross-pieces, substantially as and for the purpose described.

5. In an elevated-railway structure, a truss centrally located below the cars, having its upper member provided with cross-pieces, and rails supported on the ends of said cross-pieces, combined with braces

extending downward and inward from the ends of said cross-pieces to lower chord of the truss, substantially as described.

6. A truss and cross-pieces supported on the chord thereof, provided with upturned ends and rails supported on said cross-pieces and engaged by the upturned ends thereof, and clamps secured to the said cross-pieces between the rails and engaging the lower flanges of said rails, substantially as described.

7. The main truss, combined with cross-pieces supported on one of the chords thereof, rails supported on the ends of said cross-pieces, and secondary trussing for stiffening said rails, substantially as described.

8. In railway structure, a truss centrally located above the cars, having its lower chord provided with cross-pieces, and beams and rails supported at the ends of said cross-pieces, substantially as described.

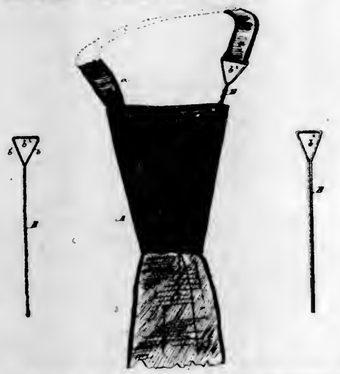
9. In an elevated-railway structure, a single truss centrally located beneath one line of track, having its upper member provided with cross-pieces and rails supported at the ends of said cross-pieces, and longitudinal strips projecting down from the end of said cross-pieces, combined with cars having trucks beneath them provided with wheels that run on said rails, and braces n^3, extending downward from the car-body and provided with guard-wheels running on said downwardly-projecting strips, substantially as and for the purpose described.

10. A truss provided with rails forming a track above the cars, combined with cars having hangers, each composed of a pair of double-flanged wheels journaled at the opposite ends of yokes o', and rods having a swivel-connection with the said yokes between said wheels and with the upper part of the car-body, substantially as described.

11. The combination of a series of supporting posts or uprights, with a truss supported on the said uprights and centrally located with relation to the line of track, the upper chord of said truss being provided with cross-pieces and rails supported at the ends of said cross pieces, constituting a single line of railway-track, and braces extending from the outer ends of said cross-pieces downwardly and inwardly to the lower chord of the truss, substantially as described.

12. A truss having one chord provided with cross-pieces, combined with braces extending from the ends of said cross-pieces to the other chord of said truss and rails supported on the ends of said cross-pieces, and tie-rods forming the secondary trusses beneath the said rails, substantially as described.

379,182. NECKSCARF. GUSTAVE SELOWSKY, New York, N. Y. Filed Dec. 12, 1887. Serial No. 257,699. (No model.)



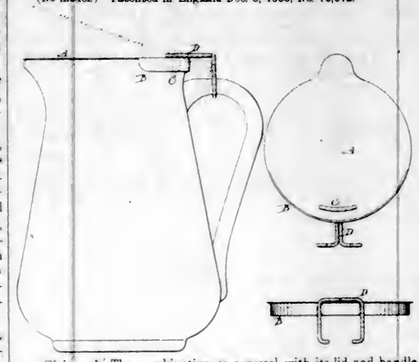
Claim.—1. A neck tie or scarf having a neckband provided with a leader or tip secured to the outer extremity thereof, the said leader or tip being of an external length approximately equal to the length of the neckband-passage, substantially as and for the purpose set forth.

2. The combination, with a scarf-band, of a tip or leader formed of a single piece of wire bent upon itself and twisted and provided with a loop or eye, the said tip or leader being secured to the outer extremity of the said band and of an external length approximately equal to the length of the neckband-passage, substantially as herein shown and described.

379,183. ANTIDOTE. JOSHUA T. SMITH, Coffee County, Ga. Filed Oct. 11, 1887. Serial No. 252,020. (No specimens.)

Claim.—The herein-described composition of matter to be used in the treatment of venomous bites and stings, consisting of alcohol, gall of the earth, mohawk, alum, and tincture of iodine, in about the proportions specified.

379,184. METAL LID FOR JUGS, TEA-POTS, &c. WILLIAM STORER, Nottingham, England. Filed Nov. 14, 1887. Serial No. 255,122. (No model.) Patented in England Dec. 8, 1886, No. 16,072.

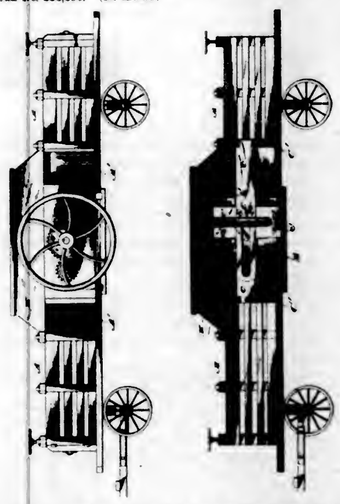


Claim.—1. The combination, in a vessel, with its lid and handle, of the hinge consisting of a wire secured to the lid, the ends being then bent at right angles to the length of the wire outward, then downward, and finally inward, forming two hooks to embrace the handle, substantially as shown and described.

2. The combination, with a vessel, of a lid loosely hinged to the handle thereof, said lid being provided upon its under side with two concentric flanges, B C, adapted to engage the edge of the vessel to prevent displacement of the lid, substantially as described.

3. The combination, with the lid A, of the flanges B C and the loop or double hook D, substantially as and for the purposes set forth.

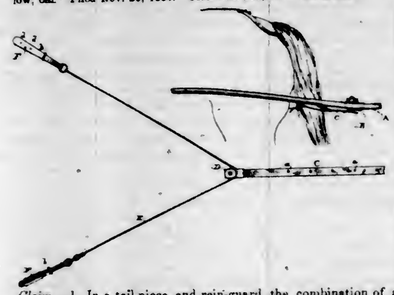
379,185. BALING-PRESS. JOHN M. TAYLOR, Watson, Ill., assignor of one-half to Alfred D. Wilson, same place. Filed Dec. 23, 1887. Serial No. 258,830. (No model.)



Claim.—1. The combination, in a double baling-press, of the double baling-boxes, the plungers connected by the frame-work set forth, which is formed with a central vertical slot therethrough, a crank-shaft operating in said vertical slot midway between the plungers, and the power-shaft for actuating the crank-shaft, also passing through a horizontal slot in the connecting-frame of the plungers to one side of the central vertical slot, substantially as described.

2. The combination, in a double baling-press, of the double baling-boxes having feed-openings on one side thereof, the double plungers provided with metallic plates and connected by the frame-work, constructed, as set forth, with a metallic-lined central vertical slot, the crank-shaft working in said vertical slot in the plunger-frame midway between the two plungers, the housing B, having vertical ends b, with apertures b', through which a part of the plunger-connecting frame passes, and the power-shaft S, passing through a horizontal slot in the plunger-connecting frame to one side of the central vertical slot, substantially as described.

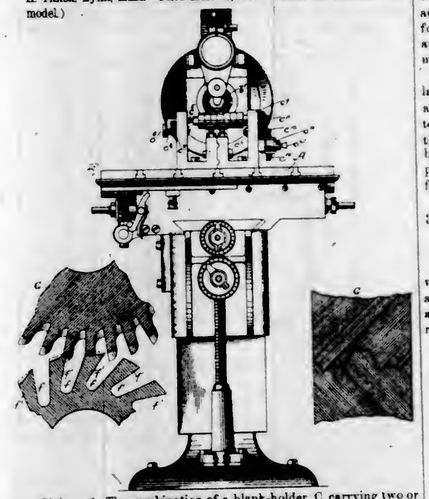
379,186. REIN-GUARD FOR HARNESS. LOGAN P. TOOLEY, Willow, Cal. Filed Nov. 29, 1887. Serial No. 256,477. (No model.)



Claim.—1. In a tail-piece and rein-guard, the combination of a strap connected to the vehicle and provided at its outer end with a pulley, a cord passing around said pulley, as shown, and clamps secured to the ends of said cord and adapted to grasp the hair of the tail, substantially in the manner and for the purposes set forth.

2. In a tail-piece and rein-guard, the combination of the adjustably-connected straps A and C, the former of which is attached to the vehicle, while the strap C is provided at its outer end with a pulley, D, the cord E, passing around said pulley, as shown, and the clamps F F, secured to the ends of said cord E, and consisting of jaws adapted to grasp the hair of the animal's tail, all substantially as described.

379,187. MACHINE FOR SHAPING MILLING-TOOLS. CHARLES H. TRASK, Lynn, Mass. Filed Mar. 28, 1887. Serial No. 232,795. (No model.)



Claim.—1. The combination of a blank-holder, C, carrying two or more arbors for supporting two or more gangs of tool-blanks, with two or more milling-tools and means for moving the blank-holder to present simultaneously two or more lines of tool-blanks to the milling-tools, substantially as described.

2. The combination of a blank-holder, C, two or more arbors, each of which is adapted to carry or support a gang or group of tool-blanks, and devices for rotating said arbors and locking them in any desired position, with two or more milling-tools arranged to operate simultaneously upon each gang or group of tool-blanks upon the movement of the blank-holder in relation thereto, substantially as described.

3. The blank-holder C, having two or more arbor-holders, made in two parts, c c', and horizontally adjustable in relation to each other, as and for the purposes described.

4. The blank-holder C, having two or more arbors, D, with the gears c^{11}, and the adjusting-wheel c^{15}, connected with the said gears to move them simultaneously, as described, substantially as specified.

5. The blank-holder C, having two or more arbor-holders, made in two parts, c c', and horizontally adjustable in relation to each other, a locking device for locking them in any desired position, and the adjusting-wheel c^{15}, having the holes c^{17}, and a locking-pin, c^{21}, substantially as described.

6. The blank-holder C, having two or more arbor-holders, made in two parts, c c', and horizontally adjustable in relation to each other, and a locking device for locking them in any desired position, with the adjusting-wheel c^{15}, the bracket or support c^{18}, having the slot c^{20}, and a block, c^{19}, to slide therein, carrying the stop-pin c^{21}, substantially as described.

7. The blank-holder having the arbors D and means for locking them in any desired position, as and for the purposes described.

8. The blank-holder having the arbors D, carried by the supports or brackets c^4 c^5, respectively, and one or more adjustable supports, c, substantially as described.

9. The combination of the blank-holder C, having the bolts c^4, the brackets c^4 c^5, supporting the arbors D, and the said arbors D, as and for the purposes specified.

10. A blank-holder, C, carrying an arbor adapted to be intermittingly rotated and to be moved horizontally, in combination with a shaft carrying a milling-tool upon an axis parallel with the axis of the arbor, as and for the purposes described.

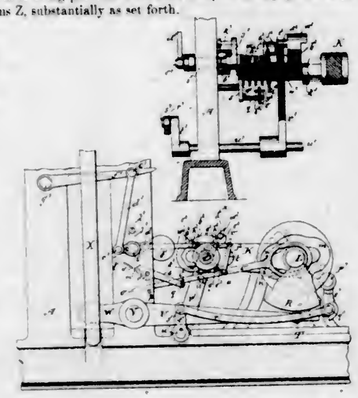
11. The combination of a blank-holder carrying one or more arbors, each of which is adapted to support a gang or group of tool-blanks, which arbors are adapted to be intermittingly rotated, which blank-holder has a horizontal movement, with a gang or group of teeth forming backing-off tools arranged upon a shaft parallel with the centers of the arbors, as and for the purposes described.

12. The combination, in a device for cutting tools, of a rotary shaft adapted to support a removable arbor carrying two or more milling or cutting tools, with a bed adapted to be reciprocated or moved horizontally, a blank-holder supporting one or more tool-blank-supporting arbors adapted to be intermittingly rotated or locked in any desired position supported by said bed and adapted to be turned thereon, whereby the tool-blank or tool-blanks are first adapted to be moved by the bed in one direction in relation to one form of milling cutter or cutters and are then turned to be moved in another direction in relation to the same milling tool or tools or other milling-tools rotated by said shaft, as and for the purposes specified.

13. The method of milling tools, embracing the forming of circular blanks, mounting the same in groups or gangs upon one or more arbors carried by a blank-holder, moving the blank-holder and blanks to one or more milling-tools arranged to cut on a line parallel with the arbors, then turning the blank-holder, and again presenting the blanks to one or more milling-tools mounted upon a shaft or arbor parallel with that of the arbor or arbors of the blank-holders, as and for the purposes specified.

379,188. CYLINDER PRINTING-MACHINE. MATTHEW VIEREN-GEL, Brooklyn, N. Y. Filed July 2, 1887. Serial No. 243,239. (No model.)

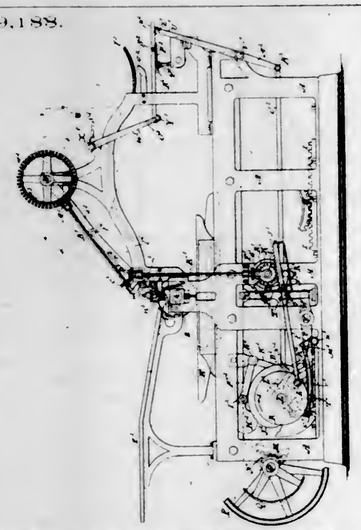
Claim.—1. The combination, with an impression-cylinder provided with supporting rims or wheels Z, of a cam-actuated lever, U W, and supporting-arms X, engaged by said lever U W, said supporting-arms X being provided with seats adapted to engage said supporting-rims Z, substantially as set forth.



having an opening at the bottom and forming with the retort and

379,191.

379,188.



2. The combination, with an impression-cylinder provided with supporting rims or wheels Z, of a cam-actuated lever, U W, and supporting-arms X, engaged by said lever U W, said supporting-arms X being provided with a detent or stop, *a*, adapted to arrest the motion of the cylinder, and with seats adapted to engage said supporting-rims Z, substantially as set forth.

3. The combination, with an impression-cylinder provided with supporting rims or wheels Z, of a toggle-joint, *i j*, adapted to act upon said cylinder, and provided with an actuating arm or lever *k*, a cam-actuated lever, U W, and supporting-arms X, engaged by said lever U W, said supporting-arms being provided with seats adapted to engage said supporting-rims Z, and with a lug or hook, *c*, adapted to engage the toggle-arm *k*, substantially as set forth.

4. The combination, with an impression-cylinder, a toggle-joint adapted to act upon said cylinder, and provided with an actuating arm or lever, *k*, and supporting-arms X, adapted to raise said cylinder, of a hook, *c*, movably secured to said supporting-arms X, and adapted to engage said toggle-actuating arm *k*, and a guide-pin, *e*, made to engage said hook *c*, substantially as set forth.

5. The combination, with an impression-cylinder, a cam-actuated lever, U W, adapted to impart an oscillating motion to said cylinder, and a detent, *o'*, adapted to engage said lever U W of a detent-actuator, *v'*, an oscillating finger, a^3, carried by said actuator *v'*, an arm or lever, *w*, adapted to actuate said finger a^3, and a crank, K, adapted to engage said finger to move the actuator *v'*, substantially as set forth.

6. The combination, with an impression-cylinder, a cam-actuated lever, U W, adapted to impart a vertical motion to said cylinder, and a detent, *o'*, adapted to engage said lever U W, of a detent-actuator, *v'*, an oscillating finger, a^3, carried by said actuator *v'*, a cam-actuated arm or lever, *o*, adapted to actuate said finger a^3, and a crank, K, adapted to engage said finger to move the actuator *v'*, substantially as set forth.

7. The combination, with an impression-cylinder, a cam-actuated lever, U W, adapted to impart an oscillating motion to said cylinder, and a detent, *o'*, adapted to engage said lever U W, of a detent-actuator, *v'*, an oscillating finger, a^3, carried by said actuator *v'*, an arm or lever, *w*, and a cam-actuated arm or lever, *o*, said arms *w o* being adapted to actuate said finger a^3, a crank, K, adapted to engage said finger to move the actuator *v'*, and mechanism, substantially as set forth, for alternately throwing said arms *w o* into and out of engagement with the finger a^3, substantially as set forth.

8. The combination, with an impression-cylinder, a sheet-delivering carriage or rollers, m^3, and suitable ways for said carriage, of a wheel, w^3, links s^3 r^3, made to connect the carriage m^3 and the wheel w^3, and an oscillating rack-bar, J', made through intermediate parts to impart an oscillating rotary motion to said wheel w^3, substantially as set forth.

9. The combination, with an impression-cylinder, a sheet-delivering carriage or rollers, m^3, suitable ways for said carriage, a gear-wheel, w^3, connected to said carriage, and an oscillating rack-bar, J', of oscillating arms M' l^w, made to support said rack-bar, and a recessed rotating disk, R', made to act upon said arms M' l^w to hold the rack-bar in gear with said wheel w^3, substantially as set forth.

10. The combination, with an impression-cylinder, lifting-arms X made to raise and lower said cylinder, a sheet-delivering carriage or rollers, m^3, suitable ways for said carriage, a gear-wheel, w^3, connected to said carriage, and an oscillating rack-bar, J', of oscillating arms M' l^w O', made to support said rack-bar, a lug, T, secured to one of the lifting-arms X, and a recessed rotating disk, R', said disk and lug being made to act upon said arms M' l^w O' to hold the rack-bar in gear with said wheel w^3, substantially as set forth.

11. The combination, with an impression-cylinder, a sheet-delivering mechanism, and a delivery or receiving table, p^3, of swinging arms adapted to support the table p^3, and a cam, J^3, adapted to oscillate said swinging arms, substantially as set forth.

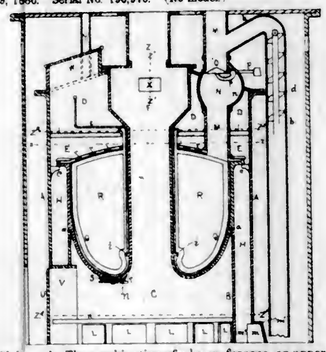
12. The combination, with an impression-cylinder, a cam-actuated lever, U W, made to oscillate said cylinder, a detent, *o'*, adapted to engage said lever U W, and detent-actuating mechanism for said detent *o'*, of an arm, M^3, actuated by said detent-actuating mechanism, an oscillating delivery-table, p^3, a cam-actuated lever, E^3 F^3, made to oscillate said table p^3, and a detent, K^3, adapted to engage said lever E^3 F^3 and to be actuated by said arm M^3, substantially as set forth.

13. The combination, with an impression-cylinder, a sheet-delivering carriage or rollers, m^3, and suitable ways for said carriage, of a gear-wheel, w^3, links s^3 r^3, made to connect the carriage m^3 and the wheel w^3, a spring, u^3, secured to said arms s^3 r^3, and an oscillating rack-bar, J', made, through intermediate parts, to impart an oscillating rotary motion to said wheel w^3, substantially as set forth.

14. In a printing-press, the combination, with the sheet-delivery carriage, and with suitable ways, upon which said carriage moves, a shaft, t^3, arms t^3 s^3, a shaft, f^3, to which the arms t^3 are keyed, said shaft turning in bearings in the arms s^3, and a spring, u^3, coiled on said shaft, substantially as described.

15. The combination, with an impression-cylinder, a cam-actuated lever, U W, made to raise and lower said cylinder, an oscillating delivery-table, p^3, and a cam-actuated lever, E^3 F^3, made to oscillate said table p^3, of detents *o'* K^3, adapted to engage said levers U W and E^3 F^3, and suitable mechanism, substantially as described, for actuating said detents, substantially as set forth.

379,189. APPARATUS FOR CREMATING FILTH AND SEWAGE. JOSEPH VLADYKA and WILLIS M. MITCHELL, Newton, Iowa. Filed Mar. 29, 1886. Serial No. 196,976. (No model.)



Claim.—1. The combination of a lower furnace, an upper furnace, a retort intermediate of the furnaces, and two shells surrounding the retort and furnaces, providing a downdraft-flue connecting the furnaces, substantially as described.

2. The combination of the outer shell, A, the inner shell, B, having openings at the bottom, forming with the shell A *a* flue H, the retort R, having a central flue and perforated lid, the grate K within the shell B beneath the retort, the grate J within the shell A over the retort, and a pipe leading into the retort, substantially as described.

3. The combination of two shells placed one within the other, a cremating-retort having a central flue and supported on the inner shell, the inner shell having an opening at the bottom and forming with the outer shell and retort lower furnace and combustion chambers, upper furnace and combustion chambers, and a flue around the retort connecting the upper combustion-chamber with the lower furnace-chamber, substantially as described.

4. The combination of two upright shells placed one within the other, a cremating-retort supported on the inner shell, having a perforated lid, supply-pipes connected with the retort, having suitable valves, draft-pipes entering the top of the outer shell, the inner shell having an opening at the bottom and forming with the retort and outer shell lower furnace and combustion chambers, upper furnace and combustion chambers, and a flue or combustion chamber around the retort connecting the upper combustion-chamber with the lower furnace-chamber, substantially as described.

5. In a filth and sewage cremator, the combination of the retort R, having central flue, I, and the scraper within the retort and adapted to revolve around the flue, substantially as described.

6. In a filth and sewage cremator, the combination of the retort R, formed with projections *i i*, the central flue, I, and the scraper supported around the flue on the projections, provided with wings Q Q, substantially as described.

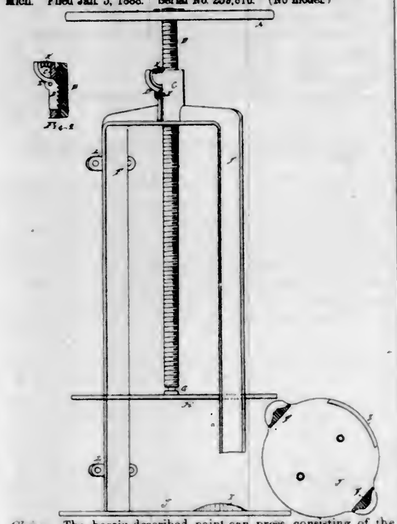
7. In a filth and sewage cremator, the combination of two upright cylinders or shells placed one within the other, forming two furnace-chambers, and combustion-chambers connecting the furnace-chambers, a retort, R, formed with a central flue, I, and a perforated lid to the retort, substantially as described.

8. In a filth and sewage cremator, the combination of a retort, R, formed with a central flue, I, and an opening at bottom, a stopper closing said opening, and a scraper within the retort, substantially as described.

9. In a filth and sewage cremator, the combination of the outer cylinder, A, the grate J, pipes Y Y, the inner cylinder, B, having openings L, the grate K, the retort R, having a lid, *r*, and the pipe M, having a bulb-shaped chamber, N, provided with a counterbalanced valve, substantially as described.

10. The combination of the outer shell, A, having the lugs *c*, the inner shell, B, formed with openings L at the bottom, the retort R, having supporting flange and shoulders *a*, and central flue, I, formed with chamber F, having opening X, the pipes Y, the upper grate, J, the lower grate, K, the pipe M, having a bulb-shaped chamber, N, provided with a valve, O, and a smoke-pipe, Z, substantially as described

379,190. PAINT-CAN PRESS. WILLIAM C. WILLIAMS, Detroit, Mich. Filed Jan. 5, 1888. Serial No. 259,816. (No model.)



Claim.—The herein-described paint-can press, consisting of the bed-plate J, provided with screw-holes for attachment to a bench or table, and having a curved rim, I, to center the can, the posts F, secured to said bed-plate and connected at top by a cross-head provided with vertical cylinder C, one of said posts being provided with perforated lugs L L, whereby it can be secured to a support, the screw B, passed through the cylinder C and provided with hand-wheel A and follower H, and the spring-nut D, pivoted in the cylinder to engage the screw, substantially as described.

379,191. THRASHING-MACHINE. ANDREW J. WISE, Cottonwood, Cal., assignor of five-sixths to Pleasant D. Logan, Reuben R. Wise, and Ebenezer J. Wise, all of same place. Filed Nov. 23, 1886. Serial No. 219,672. (No model.)

Claim.—1. In a traveling thrashing-machine, the combination of the rotary cylinder, the concave therefor, the vibrating screens arranged in pairs and operating simultaneously, one screen of each pair being arranged in an inclined position and the other screen of the pair being

379,191



disposed in a horizontal position, the said upper and lower screens being arranged parallel with each other, the shaft H, and the disks *h*, mounted on the said shaft and having arms connected to the said screens, substantially as described.

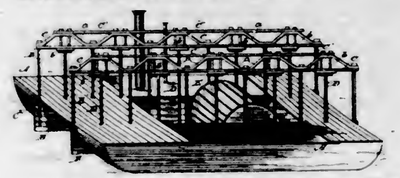
2. In a thrashing-machine, the combination, with the screens G' G^3 in the lower portion of the machine, of the rock-shaft H, the disks *h*, mounted on said shaft and formed with arms to which the screens are attached, the roller *e* in the upper front portion of the machine, disk e^3, mounted on said roller, and connecting-rod h^3, pivotally attached at its opposite ends to the disk e^3 and the arms of the disks *h*, substantially as described.

3. The combination of the frame, the parallel horizontal screens, the inclined screens arranged at one end of the horizontal screens and overlapping the same, the disks *h*, formed with arms, and the rock-shaft arranged between the contiguous ends of the said horizontal and inclined screens and connected therewith by the arms of the disks *h* to actuate the same simultaneously, substantially as described, and for the purposes specified.

4. The combination of the frame, the parallel upper and lower screens, each having the horizontal and inclined sections, the oscillating links or bars pivotally connected to the frame and to the outer ends of said screens, the rock-shaft pivoted to the frame intermediate of the meeting ends of the horizontal and inclined sections of the screens, and arms on each side of said pivots connected to the ends of the screens, substantially as described.

5. The combination of the frame, the upper and lower screens, each having the horizontal and inclined sections, one overlapping the other at their contiguous ends, the rock-shaft, the disks secured on said rock-shaft and provided with crank-arms, to which the contiguous ends of the screens are connected, and the pivoted bars or rods I, to which the outer ends of the screens are pivoted, substantially as described, and for the purposes specified.

379,192. CHANNEL-CUTTER. WILLIAM H. AVEY, Columbus, Ky. Filed Oct. 29, 1887. Serial No. 253,797. (No model.)



Claim.—1. The connected-together barges carrying parallel cutters applied to the inner opposite sides thereof, and a propeller carried by said barges between said cutters, substantially as and for the purpose set forth.

2. In a channel-cutting machine, the combination, with cutters applied to opposite inner sides of barges, of mechanism comprising uprights or arms connected to said cutters, and vertically-movable screws acting upon beams or timbers connected to said arms or uprights, substantially as set forth.

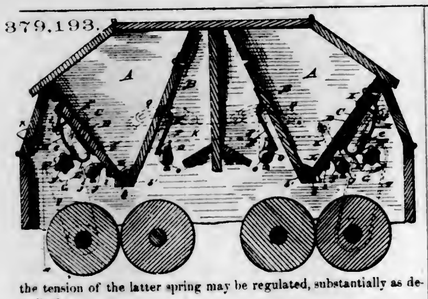
3. In a channel-cutting machine, the combination, with cutters, arms, or uprights connected to said cutters and having grooves in their sides, of keepers or guides applied to opposite inner sides of barges and engaging with said arms or uprights, and vertically-movable screws acting upon beams or timbers connecting with the upper ends of said uprights, substantially as set forth.

379,193. FEED-REGULATOR. HENAN A. BARNARD, Moline, Ill., assignor to the Barnard & Leas Manufacturing Company, same place. Filed Mar. 25, 1887. Serial No. 232,401. (No model.)

Claim.—1. The combination, with a hopper, a valve hinged thereto, a vibrator-wheel for vibrating said valve, and a spring on said valve for receiving the impact of said wheel, of an adjustable spring bearing against the impact spring and a screw bolt and nut whereby

plate for holding the pinions out of the planes of both pairs of

379,193.



the tension of the latter spring may be regulated, substantially as described.

2. In a feeding device, the combination of a hopper having oppositely-inclined hinged valves and a vibrator-wheel at one side thereof, with a spring interposed between one of said valves and the vibrating wheel, a slotted bracket fastened to said hopper, a cam mounted on a suitable rod, and a crank-arm mounted on said rod and having a thumb-screw operating in said slotted bracket, whereby the opening between the valves may be regulated, substantially as and for the purpose described.

3. In a feeding device, the combination, with a hopper, of a hinged valve, C, having a spring, E, a vibrator-wheel engaging said spring, a spring-arm, H, a nut and bolt controlling said arm and thereby regulating the tension of spring E, and a shaft, *f*, carrying the vibrator-wheel, all substantially as and for the purpose described.

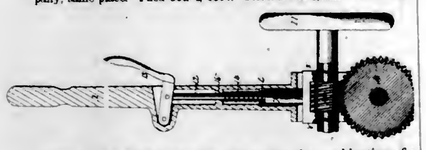
4. The combination, in a feeding device, of a hopper, a hinged valve therein, having a spring, E, secured to its lower surface, an adjustable plate, L, a spring-arm, H, a bolt and nut for controlling said spring and thereby regulating the tension of spring E, with a vibrating wheel, F, a shaft, *f*, carrying said wheel, and the pulley G and belt *g*, for imparting motion to said shaft, all substantially as and for the purpose described.

5. The combination, in a feeding device, of a valve, B, having lips *b b*, the valve C, having re-enforce D, U-shaped spring E, and spring-arm H, for regulating the tension of spring E, and the bolt I and nut *i*, for regulating the arm H, with the vibrator-wheel F, its shaft *f*, and actuating pulley and belt, substantially as described.

6. In a feeding device for roller-mills, a hopper provided with a hinged valve, C, having a curved spring, E, secured thereto, a spring-arm, H, and its adjusting bolt and nut for regulating the tension of spring E, also secured to said valve, in combination with a vibrating wheel, F, actuating valve C through spring E, its shaft *f*, and pulley G, and the belt *g*, actuating said shaft from a pulley on a roll-shaft, all substantially as and for the purpose described.

7. The combination of a hopper having a hinged valve, with a spring, K, on said valve, a cam, O, engaging said spring, a shaft, *o*, arm P, and bracket Q, all constructed and arranged and adapted to operate substantially in the manner and for the purpose described.

379,194. **FEED DEVICE FOR DRILLING-MACHINES.** BENJAMIN F. BARNES, Rockford, Ill., assignor to the W. F. & John Barnes Company, same place. Filed Oct. 4, 1887. Serial No. 251,412. (No model.)



Claim.—1. In a feed-operating mechanism, the combination of a gear-wheel, a screw mounted in a bearing slidable in a right line toward and away from the gear-wheel, and a spring for holding the screw in engagement with the gear-wheel, substantially as set forth.

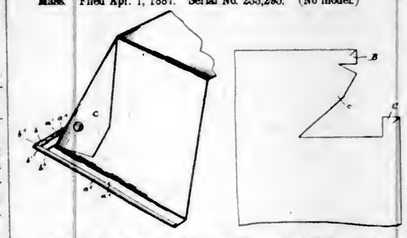
2. In a feed-operating mechanism, the combination of a hand-lever, a gear-wheel mounted in said lever, a bearing slidable in longitudinal parallel ways, a screw supported in said bearings, and means for sliding the bearings, and hence the screw, away from and toward the gear-wheel, substantially as set forth.

3. In a feed-operating mechanism, the combination of the hand-lever, a gear-wheel mounted in said lever, a bearing slidable in longitudinal parallel ways, a screw supported in said bearing, and a thumb-lever connected with the bearing for disengaging the screw from the gear-wheel, substantially as set forth.

4. In a feed-operating mechanism, the combination of a hand-lever, a gear-wheel mounted in said lever, a bearing slidable in longitudinal parallel ways, a screw supported in said bearings, a spring for holding said screw in engagement with said gear-wheel, and a rod connecting the slidable bearing with the thumb-lever for disengaging the screw from the gear-wheel, substantially as set forth.

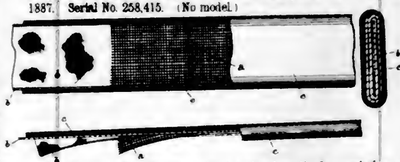
5. In a feed-operating mechanism, the combination of a pivotal hand-lever, a gear-wheel mounted in said lever, a screw-bearing slidable in longitudinal parallel ways, a screw mounted in the said bearing, means for sliding the bearing, and hence the screw, toward and away from the gear-wheel, and a hand-wheel to rotate the screw, substantially as set forth.

379,195. **ASH TRAY OR PAN.** WILLIAM M. BOWMAN, Taunton, Mass. Filed Apr. 1, 1887. Serial No. 233,295. (No model.)



Claim.—The sheet-metal ash-pan having the side flanges, *a a'*, and the end flanges, a^1 a^2, stiffened their entire length, folding their edges back and upon themselves, and the end sections of which are extended beyond the corners of the pan to overlap each other, the edges of the uppermost lapping section being bent about the sides and ends of the under section at each corner, as and for the purposes specified.

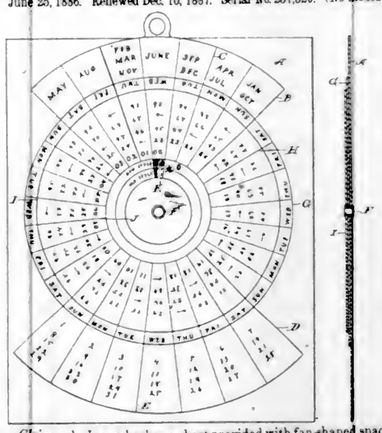
379,196. **HARNESS-STRAP.** RANSOM K. BURT, Haddam, Kans., assignor of one-half to Henry M. Ochiltree, same place. Filed Dec. 19, 1887. Serial No. 258,415. (No model.)



Claim.—1. The harness-strap herein described, consisting of woven wire and canvas rolled or folded together, said parts being inclosed by a sheathing of rubber, as shown and described.

2. The harness-strap herein described, consisting of strips *a* of woven wire and canvas strips *b*, said strips being rolled or folded together, and an exterior sheathing, *c*, of vulcanized rubber inclosing said folded or rolled strips *a* and *b*, substantially as described.

379,197. **CALENDAR.** WILLIAM K. DAVID, Chicago, Ill. Filed June 25, 1886. Renewed Dec. 10, 1887. Serial No. 257,529. (No model.)



Claim.—1. In a calendar, a chart provided with fan-shaped spaces having separate divisions for the names of the months and for the dates in the month, and centrally two rotatable disks, one of them having the names of the days of the week and the centurial years in two series, and the other being provided with figures from 00 to 99, so disposed as to be brought into proper conjunction with the inner disk, substantially as herein set forth.

2. In a calendar, a pair of disks pivoted centrally to card-board or metal, the upper one of them having numbers indicating the years of the century disposed spirally thereon in reverse order, and the under disk having the days of the week peripherally disposed, and inwardly the centurial years in two series, substantially as herein set forth.

379,198. **WOODEN SPLIT PULLEY.** WILLIAM R. FEE, Cincinnati, Ohio, assignor to Henry Maley, Henry C. Bailey, and Guilford E. Mayfield, Edinburg, Ind. Filed Sept. 6, 1887. Serial No. 248,953. (Model.)



Claim.—1. A wooden split pulley having a web centrally divided, on each half-web of which is built up on both sides a hub composed of semicircular pieces, each alternate piece being at right angles to the inner straight edge of the web, and so disposed that the projecting ends of the pieces of the opposite half-webs interlap, substantially as herein set forth.

2. In a pulley, a web centrally divided and having a separable interlapping hub, as shown, provided with a central bore flaring at each end, in combination with a tapering bush at each end of the hub, substantially as herein set forth.

3. In a pulley, a separable interlapping hub on a centrally-divided web, composed of semicircular pieces secured together alternately at right angles to each other on both sides of the web, and provided with a central flaring bore, in combination with a split tapering bush, substantially as set forth.

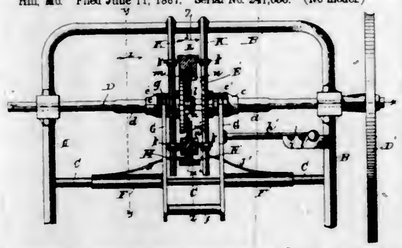
4. A wooden split pulley composed of a web centrally divided, and provided with a separable hub built up on both sides of each half of the web of semicircular pieces disposed at right angles to each other, as shown, in combination with the rim, formed of segments, the ends of which overlap beyond the central dividing-line of the web substantially as herein set forth.

5. In a wooden pulley, the divisible hub having a central bore flaring at each end, in combination with a double tapering split bush and a tightening band or strap on the outer tapering end of the bush, substantially as herein set forth.

6. In a pulley, a separable hub having a central bore flaring at each end, in combination with double tapering bushes and tightening bands or straps on the outer ends of the bushes, and a band or strap on the ends of the hub, substantially as herein set forth.

7. A split pulley having a separable hub and a central flaring bore, in combination with a tapering bush in each end of the hub and a tightening band or strap on each end of the hub, substantially as herein set forth.

379,199. **MECHANICAL MOVEMENT.** LEVI F. GOBIN, Spring Hill, Mo. Filed June 11, 1887. Serial No. 241,063. (No model.)



Claim.—1. The combination, with the shaft, of the two pinions movable thereon, the two pairs of rising-and-falling racks, and cam-guide for raising and lowering the racks into and out of engagement with the pinions, substantially as set forth.

2. The combination, with the shaft, of the pinions movable thereon, the two pairs of racks, and yielding guides for holding the racks into engagement with the pinions by pressure, substantially as set forth.

3. The combination, with the shaft, of the pinions movable thereon, the two pairs of rising-and-falling racks, and shifting-lever and locking-plate for holding the pinions out of the planes of both pairs of racks, substantially as set forth.

4. The combination of the shaft, the pinions movable thereon, and the racks provided with the cam projections adapted to engage with and be supported by the shaft, substantially as set forth.

5. The combination, with the shaft and the two laterally-movable pinions, of the single carrier having the racks arranged in two pairs, the racks of each pair having the points of the upper line of teeth far enough from the points of the lower line of teeth to permit one of the ratchet-wheels to engage with the teeth of one line, and in the same plane with the other line, but out of contact therewith, substantially as set forth.

6. The combination, with the shaft, of the pinions movable on the shaft longitudinally, the shipping devices connecting the pinions together, and the sleeves F F, substantially as set forth.

7. The combination, with the shaft and the pinion having ratchet-faced teeth, (in contradistinction to spur-cogs,) of the rising-and-falling racks lying on opposite sides of the shaft, and each having ratchet-teeth, the teeth of one projecting in directions opposite to those of the other, substantially as and for the purposes set forth.

8. The combination, with the shaft, of the two pinions on the shaft having ratchet-teeth, (in contradistinction to spur-cogs,) the teeth of one wheel projecting in directions opposite to those of the teeth of the other, and the reciprocating carrier having racks adapted to engage alternately with the said pinions, the said racks having teeth projecting in two directions opposite to each other to correspond to the ratchet-teeth of the pinions, substantially as set forth.

379,200. **SCREW.** JOSEPH P. A. HANLON, Somerville, assignor of one-seventh to Charles A. David, Lynn, Mass. Filed Nov. 18, 1887. Serial No. 255,458. (No model.)



Claim.—The screw *a*, having its head *b* provided with a serpentine or zigzag nick, *c*, substantially as and for the purpose set forth.

379,201. **TEMPERATURE-REGULATING SYSTEM.** WARREN S. JOHNSON, Milwaukee, Wis. Filed Apr. 26, 1887. Serial No. 236,196. (No model.)

Claim.—1. In a system for the automatic regulation of heat, the combination, substantially as described and shown, of the following

combination, with a reciprocating base provided with raised die por-

379,203.

elements: a series of pipes supplying heat to a series of apartments, valves directly controlling the delivery of heat through said pipes, fluid-pressure devices to operate said valves, the series of secondary electrically-controlled valves controlling the delivery of air to said fluid-pressure devices, an automatically-acting hydraulic pump to effect the compression of said air, and a source of liquid-pressure supply, as a city water-main, having constant communication with said pump, whereby the water is caused to maintain a constant and uniform air-pressure throughout the system, and the secondary valves caused, subject to thermostatic control, to apply the air-pressure for the operation of the main or heat-controlling valves.

2. In an automatic system for heat-regulation, the combination of a source of constant liquid-pressure supply, as a city water-main, an automatic air-compressor connected constantly therewith and actuated by the liquid, a heat-distributing system, valves operated by the compressed air to control the heat-delivery at different points, the secondary electric valves controlling the action of the air on the main valves, and thermostats connected with and controlling the secondary valves.

3. In a system of heat distribution and regulation, the combination of the following instrumentalities: first, a heating apparatus connected with and delivering heat to a series of apartments, and valves controlling the heat-delivery to the respective apartments, each valve provided with an expansion-chamber through which it may be actuated by air-pressure; second, a system of electric distribution embracing a series of thermostats, secondary valves controlled by the thermostats, and in turn controlling the delivery of air to the expansion-chambers of the heat-controlling valves; third, a system of air-distribution through the electric valves to the expansion-chambers; fourth, a means of constant water-supply under pressure, as a city water-main, fifth, a hydraulically-actuated air-compressing pump located between the air-distributers and the water-supply in constant communication therewith, and adapted to stop and start automatically as the air-pressure rises and falls in relation to the water-pressure.

4. In a system of heat distribution and regulation, the combination of a heater which delivers air to a series of apartments, a series of main valves controlling the heat-delivery to the respective apartments, expansion-chambers connected one to each of said valves, conductors for delivering air under pressure to said expansion-chambers, and an electric system controlling the air-delivery to the expansion chambers, said system comprising a generator, main conductors, cross-conductors arranged a pair in each apartment, each pair of cross-conductors having at one end a thermostat to connect them one at a time with the main line, and having at the other end a secondary electrically-actuated supply and waste valve directly controlling the compressed air-delivery to one of the expansion-chambers, whereby the series of apartments heated from a common source are individually controlled as to their temperature.

5. In combination with a series of main valves in a system of heating-pipes, said valves adapted to be operated by fluid-pressure, conductors through which fluid under pressure is delivered to actuate said main valves, electric secondary valves on the last-named conductors to control the fluid which actuates the main valves, and an electric-controlling system for said secondary valves, comprising a generator, main conductors, a series of pairs of cross-conductors located between the main conductors and connected with the secondary valves, and thermostatic circuit-controlling devices which close the circuits through the two cross-conductors alternately.

6. In a system of electric control for a series of main valves, and in combination with main valves having each an expansion-chamber to receive an actuating-fluid, conductors to deliver air or other fluid under pressure to said expansion-chambers, secondary valves on said conductor to control the delivery of fluid to and from the expansion-chambers, and an electric-controlling system for said secondary valves, comprising an electric generator and main conductors, cross-conductors each having two branches, said branches having at one end a thermostatic switch which connects with the branches alternately, and at the other end a second switch which automatically moves from the branch closed by the thermostat to the other, as described, whereby the main valves are automatically opened and closed, and during the electric circuits opened and left open with the exception of momentary periods of closure.

7. In a system of heat supply and control, the combination of a heating apparatus connecting with a series of apartments, an initial fluid-supply, an air-pump actuated thereby, air-distributers leading from the air-pump to a series of expansion-chambers, a series of valves connected to said expansion-chambers and controlling the delivery of heat to the respective apartments, electric valves applied to the air-distributing pipes, and thermostats located in the several apartments and arranged to control the corresponding electric valves, the whole constituting an automatic system under which an initial actuating-fluid is applied to cause a second fluid to actuate the heat-controlling valves.

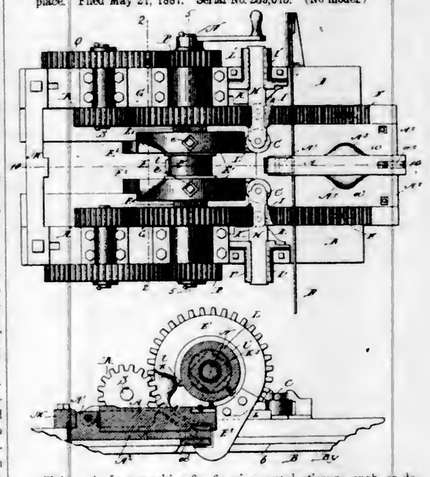
8. The combination, substantially as described, of a main valve, B, provided with an expansion-chamber to receive an actuating-fluid, a secondary valve controlling said fluid and itself actuated by the fluid which it controls, an electrically-actuated detent which governs the movement of the secondary valve, a circuit-breaking device, also actuated by the fluid-pressure, and a suitable circuit-closing device, whereby the electric action is rendered momentary only, but caused to control the secondary valve, so that it will in turn through the fluid medium control the main valve.

9. In an electrically-controlled supply and waste valve, the combination of the valve proper, an expansion-chamber which operates the valve by means of the fluid which has passed through the valve, an electrically-actuated detent controlling the movement of the valve, the electric circuit including a circuit-breaking device, also actuated by the pressure of the fluid which has passed the valve in harmony with the movement of the valve, and a suitable circuit-closing device to secure the disengagement of the detent.

10. The combination of a valve proper, an expansion-chamber for operating said valve by fluid-pressure, an electrically-actuated detent controlling the action of the valve, and a detent-controlling circuit containing a circuit-breaking device actuated by the fluid-pressure, and a thermostatic circuit-closing device.

379,202. MACHINE FOR MAKING METAL STIRRUPS.

FRED H. KIMBL, Chicago, Ill., assignor of one-half to Robert Bennett, same place. Filed May 21, 1887. Serial No. 239,015. (No model.)



Claim.—1. In a machine for forming metal stirrups such as described, male and female dies for forming the herein-described twists in the legs of the stirrups, substantially as set forth.

2. In a machine for forming metal stirrups substantially as described, the combination, with the die-faces A^3, raised upon a reciprocating base, of the rollers provided with corresponding depressed die-faces, E, for twisting the two sides or legs of the metal stirrup, substantially as described, and means for holding the work subject to the action of said die-faces during the movement of the reciprocating base.

3. In a machine for forming metal stirrups such as described, the jaws E^3, carried by oscillatory supports, combined with a former, whereon said jaws may bend the ends of a strap to form the reverse bends d^3 in the stirrup, substantially as described.

4. In a machine for forming metal stirrups such as described, a reciprocating former-block whereon the metal strap or blank can be bent into staple shape, rolls C, for bending the metal strap into staple shape upon said reciprocating former-block during the passage of the latter between the rolls, and dies for rolling the legs of the staple-shaped strap into twists while such bent strap is held upon the former-block, said members being combined and organized for operation, substantially as set forth.

5. In a machine for forming metal stirrups, the movable block A, combined with a reciprocating base provided with means for holding the strap against an end of the block, rollers C, for bending the strap thus held against opposite sides of the block, the raised die-faces A^3 at opposite sides of the block, and rollers provided with corresponding depressed die-faces, E, for twisting the portions of the strap brought by the rollers C alongside the block, substantially as described.

6. In a machine for forming metal stirrups such as described, the combination, with a reciprocating base provided with raised die portions A^3, of means for holding upon such base and between said die portions a strap or bar bent to form the two angular bends d^3, and the rollers provided with depressed die-faces E and with jaws E^3, said depressed die-faces in the rollers being adapted for co-operation with the die-faces on the reciprocating base, substantially as set forth.

7. In a machine for forming metal stirrups such as described, the block A, movably held upon a reciprocating base that is provided with raised die-faces A^3, for the purpose set forth, in combination with the rollers C, mounted in adjustable bearings, whereby the rollers may retreat when in opposition to the raised die-faces on the reciprocating base, substantially as described.

8. In a machine for forming metal stirrups such as described, a roller, C, mounted upon a sliding block or bearing, in combination with a cam-slide for shifting said bearing in one direction, and a driving-wheel provided with an arm engaging the cam-slide, substantially as described.

9. In a machine for forming metal stirrups such as described, the reciprocating base provided with raised die-faces A^3, removably held upon said base, substantially as and for the purpose described.

10. In a machine for forming metal stirrups such as described, the former-block A, hinged at one end and arranged with its hinged end opposite an abutment, A', set to provide an intervening space between the two, whereby after a strap or blank has been bent into staple shape upon the block A the latter can be swung up to clear the strap without detachment of the block from the support to which it is attached, substantially as described.

11. In a machine for forming metal stirrups such as described, the reciprocating base provided with a jaw or abutment, A', combined with a block, A, hinged at one end to said abutment, but leaving between the abutment and the hinged end of the jaw a space for receiving a metal strap or bar, substantially as for the purpose described.

12. In a machine for forming metal stirrups such as described, a reciprocating base provided with a former-block combined with rolls C, for bending a strap or blank into staple shape upon the former-block, means adapted for rolling the legs of the staple-shaped strap into twists, and comprising die-faces, respectively, on the reciprocating base, and a pair of rolls, between which said rolls the former-block passes during the reciprocation of said base, and gears G, engaging racks upon the reciprocating base, substantially as described.

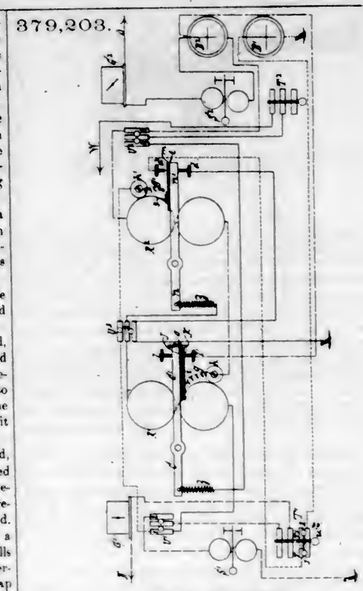
13. In a machine for forming metal stirrups such as described, the reciprocating former, substantially as described, provided with racks F, and in combination with the gears for engaging the racks, and the jaws E^3, mounted on rotary supports, said members being organized whereby the jaws shall act to bend the ends of a strap upon the former after the racks are clear of the gears, substantially as described.

14. In a machine for forming metal stirrups such as described, the reciprocating former, substantially as described, provided with racks F and a tooth, a^3, in combination with the gears G, for engaging the racks, and the tooth l, held upon a shaft, whereon said gears are mounted and arranged for engaging the tooth a^3, in order to move the reciprocating former from its extreme forward position back to an extent to bring the racks into engagement with the gears, substantially as described.

15. In a machine for forming metal stirrups such as described, the combination, with a reciprocating former, substantially as set forth, provided with racks, of the gears G, engaging said racks, a gear, P, on a power-driven shaft passing axially through a rotary shaft whereon the gears G are secured, and a set of gearing between the gears P and G, substantially as specified.

379,203. TELEGRAPHIC REPEATER.

JOSEPH KÖLZER, Duisburg, Prussia, Germany. Filed Aug. 14, 1884. Renewed Nov. 26, 1887. Serial No. 256,252. (No model.)



Claim.—1. In a telegraph apparatus for transmitting messages through a main line and branch line, and vice versa, the combination of a relay, R', having its armature-lever provided with an extension, C, a contact, k, an insulating-strip, o, spring-arm i, yielding conductor g, connected with said spring-wire i, and binding-post h, the stops $l\,l'$, the relay R^2, having its armature provided with an extension, n', a contact-plate, m, insulating layer c, yielding conductor g', connected with the contact-plate m, and binding-post h', the stops $d\,d'$, line connection with the relays R' R^2 for main and branch electrical circuits, suitable batteries for the latter, finger-keys T' T^2, and commutators U' U^2 U^3, all substantially as shown and described.

2. In a telegraph apparatus, the relay R^2, having its armature-lever provided with an extension, n', a contact-plate mounted on the extension and insulated from the armature-lever, a yielding electrical conductor, g', connected with the contact-plate, and a binding-post, h', on the base of the relay, with the main and branch electrical circuits, batteries B' B^2, finger-keys T' T^2, relay R', and commutators U' U^2 U^3, all arranged substantially as shown and described.

379,203.

REISSUES.

10,905. STUB-HOLDER.

JASPER M. BERRY, Jr., Baltimore, Md. Filed Jan. 25, 1888. Serial No. 261,537. Original No. 376,062, dated Jan. 10, 1888.



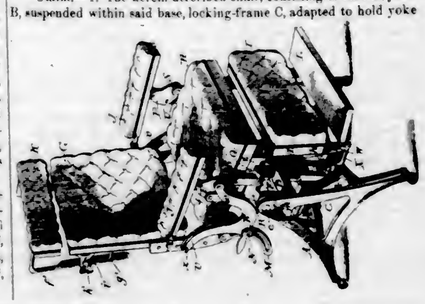
Claim.—1. The combination, with a book having a stub, of a clamp grasping the edge of said stub and provided with an extensible band or connection, the end of which is adapted to be secured or attached to the cover of the book adjacent to said stub.

2. The combination, with a book having a stub, of a clamp grasping the edge of said stub and provided with an elastic band, the end of which is adapted to be secured or attached to the cover of the book adjacent to said stub.

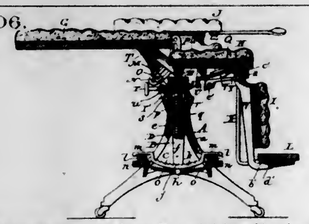
10,906. SURGICAL CHAIR.

FRANK E. CASE, Canton, Ohio. Filed Oct. 18, 1887. Serial No. 252,762. Original No. 360,279, dated Mar. 29, 1887.

Claim.—1. The herein-described chair, consisting of base A, yoke B, suspended within said base, locking-frame C, adapted to hold yoke



10,906.



B against swinging, rotary frame E, carried by said yoke, back G, pivoted in the rotary frame, blocks or levers P, pivoted to the front of the rotary frame, arms J, connecting said levers with the back, seat H, suspended from rotary frame E by swing-frame R, brace U, pivoted to the blocks or levers P, links T, supporting the rear edge of the seat, arms W, provided with leg-rest I, foot-rest L, pivoted to arms W, and rod or brace X, attached at its lower end to the foot-rest and at its upper end to the seat, all substantially as described and shown

2. In a chair, the combination of a base, A, a yoke, B, suspended therein, adapted to support the chair-body, and provided with a depending extension, *f*, having branches *g h i*, the branches *g* and *i* provided with teeth *j*, and locking-frame C, provided with toothed racks *k k*, adapted to engage the teeth *j* to hold the yoke at any desired inclination.

3. The combination, substantially as set forth, of base A, swinging yoke B, carrying the chair-body and provided with a downward extension having toothed branches *g* and *i* and intermediate branch, *h*, springs *o*, attached to the base and to the opposite sides of the branch *h*, locking-frame C, pivoted to base A and provided with reversed racks *k*, and springs *l*, serving to hold the racks in engagement with the teeth *j*.

4. In combination with a base and with a threaded tubular neck, *c*, a threaded stem, D, fitting said neck, a frame carried by said stem and adapted to support the body of the chair, and a clamp carried by said frame and adapted to clasp the tubular neck, whereby the frame and neck may be locked together and the former prevented from turning independently of the latter.

5. The combination of a base and a tubular threaded neck supported thereby, a threaded stem, D, a frame, E, carried by said stem, and a clamp, F, consisting of the parts *p q*, pivotally attached to said frame and adapted to bear against the opposite sides of the tubular neck, and the screw-stem *r*, passing through the part *p* and bearing against the loop *t* of part *q*, substantially as shown.

6. In a chair, the combination of a base, a yoke or frame suspended in said base, a stem free to rotate in said yoke and serving to support the body of the chair, a clamp adapted to lock said stem against rotation, and a locking device adapted to engage the swinging yoke and to hold it at any desired inclination, whereby the body of the chair may be tipped to any desired angle forward, backward, or to either side.

7. In combination with a supporting-frame, the back G, provided with slotted links M, nuts O, having lugs *y*, seated in the slots of the links, and threaded rod N, passing through the nuts, the slots, and the supporting-frame, and adapted to bind the parts together.

8. The combination, with a supporting-frame having arms *v* and *w*, of back G, pivoted to the arms *v*, blocks or levers P, pivoted to arms *w*, arms J, connecting back G and levers P, seat H, swing-frame R, pivotally attached to the seat, brace U, pivoted to the blocks or levers P and adapted to engage with swing-frame R, and links T, connecting the arms *v* and the rear side of seat H, whereby the seat is caused to rise as the back is depressed.

9. In combination with a supporting-frame, back G, pivoted therein, seat H, connected at its rear edge to the arms *v* by links T, swing-frame R, hung in bearings carried by the seat and suspended from the supporting-frame, levers or blocks P, pivoted to said frame, arms J, connecting the levers P and the back, bars W, pivotally attached to the seat and provided with hooks Y, to engage with studs *e'* on the swing-frame R, leg-rest I, secured to said bars, foot-rest L, pivoted to the bars W, brace-rod X, attached to the seat and to the foot-rest, and brace U, attached to blocks P and arranged to engage with the frame R.

10. The combination, with a base and a frame, E, of back G, pivoted in said frame, levers or blocks P, also pivotally attached thereto, arms J, connecting back G and levers P, seat H, swing-frame R, hung in bearings attached to the seat and suspended by links S from frame E, brace U, pivoted to levers P, and links T, connecting the seat and back, substantially as shown and described.

11. The combination, substantially as set forth, of a supporting-frame, a seat, bars W, hung from said seat and carrying a rest for the limbs, a swing-frame, R, hung in bearings carried by the seat and provided with studs *e'*, hooks Y, attached to the bars W and adapted to engage with said studs, and a swinging brace, U, adapted to engage with or disengage from frame R at will, whereby the rest may be held in a horizontal or vertical position, as required.

12. In combination with a surgical-chair body having guides *y'*, slotted brackets *i'*, and clamping-screws *h'*, head-rest *k*, provided with slotted bars *f'*, whereby the rest may be raised and lowered, brought forward, or thrown back, at will.

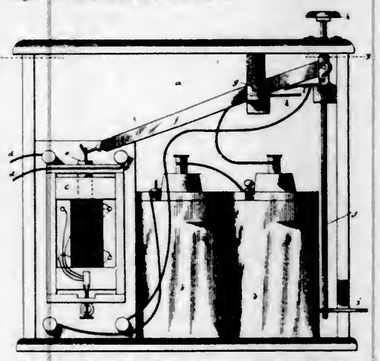
13. In a surgical chair, the combination of a base, a frame or yoke mounted therein and adapted to rock or tip laterally, a locking device adapted to engage with and to hold the frame or yoke at any desired angle of adjustment, and a vertical stem swiveled in said yoke and supporting the entire chair-body.

14. In a chair, the combination of a base, a yoke or frame suspended therein and adapted to tip or rock laterally, a locking device adapted to engage said yoke or frame and hold it in any desired inclination, and a chair-body supported by said yoke or frame and pivotally attached thereto, whereby the chair-body may be tipped to any desired angle forward and backward, the chair-body being connected with the yoke or frame by a swivel, whereby it is adapted to rotate independently of the yoke or frame.

15. The combination, substantially as set forth, of a supporting-frame, a seat, bars W, suspended from said seat and carrying a rest for the limbs, a swing-frame, R, suspended from the supporting-frame, constructed to carry the front end of the seat, and having studs *e'*, and hooks Y, pivotally attached to the bars W and constructed to engage with or be disengaged from said studs *e'* at will, whereby the leg-rest may be held in a vertical or horizontal position while the seat and back are in a common plane.

10,907. ELECTRICAL APPARATUS FOR DENTAL OPERATIONS.

CHAS. A. EHRENHART, York, Pa. Filed Jan. 24, 1888. Serial No. 261,802. Original No. 331,121, dated Nov. 24, 1885.



Claim.—1. In a dental electric apparatus, the combination of an induction-coil, a regulator for varying the induced current, a circuit-closer in the primary circuit, a controlling device for operating the circuit-closer and regulator coincidently, an electric generator in the primary circuit, and suitable dischargers at the secondary terminals.

2. In a dental electric apparatus, the combination of a case, an electric generator, an induction-coil, dischargers in the secondary circuit, a circuit-closer in the primary circuit, and hand and foot pieces operating in conjunction with the circuit-closer to make and break the circuit.

3. In an electric apparatus for dental use, the tubular discharger provided with holes and containing a moistened substance, substantially as described.

4. The combination, in a dental electric apparatus, of the case, an electric generator, induction-coil, dischargers in the secondary circuit, a circuit-closer in the primary circuit, and a foot-piece acting in conjunction with the circuit-closer to make and break the circuit, substantially as described.

5. In a dental electric apparatus, the combination of an induction-coil, a primary circuit, including a circuit-changer accessible to the operator during a dental operation, and a secondary circuit provided with dischargers adapted to be grasped by the patient to pass the induced current through his body contemporaneously with said operation.

6. In a dental electric apparatus, the combination of an induction-coil, a primary circuit, a circuit-closer in said circuit accessible to the operator during an operation, a secondary circuit provided with terminals to pass the induced current through the patient's body, and means to vary the strength of the induced current.

N. PETERS, Photo-Lithographer, Washington, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE BARNITZ.

Decided February 25, 1888.

1. The Commissioner's decision in *ex parte Barnitz* (41 O. G., 575) was not designed to apply to a second application filed after the right of applicant to renew his original and first application had lapsed by reason of the expiration of the two years, as provided by section 4897 Revised Statutes.

2. Under section 4897 a definite and well-recognized practice of the Office exists, and until Congress shall see proper to change the statute the practice of the Office should not be disturbed.

PETITION.

SLICING-MACHINES.

Application of Jacob F. Barnitz filed December 29, 1887, No. 259,332.

Mr. C. M. Alexander for the applicant.

HALL, *Commissioner:*

Subsequently to the decision of the Commissioner in *ex parte Barnitz* (41 O. G., 575) applicant filed a second application for the same invention claimed in his original application. The examiner rejected the application, relying upon the above decision as an adjudication binding upon the applicant. The application has been twice rejected, and applicant could, if he saw proper, appeal to the Examiners-in-Chief; but, acting upon the opinion that the action of the examiner had been controlled by the decision of the Commissioner, he has presented a petition requesting the Commissioner to advise the examiner that it was not intended that the decision in *ex parte Barnitz*, above cited, should apply to an original second application like the present. The former case was very different from the present one, and while the language employed in the decision was broad enough to apply to this, yet it must be held that so much of the opinion as went beyond the facts of that case is to be deemed *obiter dictum*. This unnecessary expression on the part of the Commissioner resulted from a failure to embrace in quotation-marks the syllabus quoted from *ex parte Hardy*, (1887, C. D., 110,)—

that an applicant who fails to renew his case within two years after its allowance is effectually barred from doing so, *nor can he make the invention the subject of a new application.*

The latter clause was unnecessary to the decision in that case. It is evident, therefore, that the decision cannot operate as *res adjudicata*.

Has the applicant the right to present a new original application under the circumstances, or has his invention been abandoned by operation of the statute, section 4897?

Were this a question of first impression I would perhaps have some hesitation before reaching a conclusion. (See *Thomson* v. *Waterhouse*, 1885, C. D., p. 2.) But repeated decisions have settled the question. (*Ex parte Golding*, 1885, C. D., p. 98; *ex parte Crompton*, 1876, C. D., p. 35; *ex parte Livingston*, 1881, C. D., p. 42.) A definite and well-recognized practice of the Office exists, and until Congress shall see proper to change the statute the practice should not be disturbed.

The examiner is therefore instructed that the former decision in *ex parte Barnitz* was not designed to apply to a second original application filed after the expiration of two years from the date of the allowance of the first original application, and so far as that decision seems to go in that direction it is overruled.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

MUNSON *v.* CITY OF NEW YORK.—No. 160.
CITY OF NEW YORK *v.* MUNSON.—No. 161.

Decided February 13, 1888.

1. MUNSON—BOND-REGISTER.
Letters Patent No. 63,419, granted to Francis Munson, April 2, 1867, for a bond and coupon register, adjudged invalid.

2. INVENTION—NONE SIMPLY IN A NEW ARRANGEMENT FOR GREATER CONVENIENCE.
The invention being a book spaced for each bond, and its coupons in proximity when paid, with appropriate descriptive matter, and an earlier invention being a book with no place for the bonds, and adapted for the arrangement of the coupons in the order of payment, instead of in groups, there was no invention in the special arrangement of the bonds and coupons together.

APPEALS from the Circuit Court of the United States for the Southern District of New York.

Mr. Royal S. Crane for the appellant in No. 160 and for the appellee in No. 161.

Mr. F. H. Betts and *Mr. J. E. Hindon Hyde* for the appellee in No. 160 and for the appellant in No. 161.

STATEMENT OF THE CASE.

This was a bill in equity by Francis Munson against the mayor, aldermen, and commonalty of the city of New York and the comptroller of the city for the infringement of letters patent granted to Munson on April 2, 1867, No. 63,419, for—

new and useful improvements in preserving, filing, and canceling bonds, coupons, certificates of stock, &c.,

consisting, as described in the specification—

in providing a book or other register with pages corresponding in size, style, and number with the bonds, coupons, certificates, &c., to be used, on which pages the said bonds, coupons, or other certificates, when paid, are pasted or otherwise attached, and thus preserved and canceled, as hereinafter more fully explained.

The specification then, after observing that bonds and coupons, when paid, are usually either filed away or destroyed, and that, before or after being paid, they are often lost or stolen, by which the community is constantly being defrauded more or less, proceeded as follows:

To prevent this, I have invented a system of preserving, filing, and canceling such documents, which system will not only prevent such fraudulent practices, but also present at all times a full and perfect history or record of all transactions in relation to each and all of said documents. To accomplish this, I provide a book or set of books having each page printed or ruled to correspond in size and style with the bond and its coupons or other document, whatever it may be, with a heading showing the number, date when issued, to whom issued, when and where payable, amount, what issued for, rate of interest and when and where payable, together with such other facts as may be necessary to form a perfect record of the document. The pages are numbered consecutively with the numbers corresponding to the numbers on the bonds or other documents. When any of the coupons are presented and paid, they are canceled and then pasted or otherwise secured in their proper place upon the page, each place for them being numbered. When the bond itself is paid, it is likewise attached in the place on the page provided for it. If the holder should by any means be dispossessed of one or more of the coupons or bonds, upon presentation of the proper evidence he would be paid; but not having the coupon or bond to surrender, there would be entered in its place upon the page a record of the facts in the case, so that if at any future time said coupon or bond should be presented for payment by a person not entitled to it, the record of all the facts relating to it would be ready at hand, and could be referred to at once by examining the proper page. By this method of arranging them, the number is always an index, so that if it is desired at any time to ascertain any fact in relation to any particular bond or its coupons, it is only necessary to turn to the page having the same number. In case a large series of bonds or certificates are used, several books would be required, and in that case the pages of each succeeding book would commence with the number next following that of the last page of the preceding volume, so as to make the numbers of the pages continuous from the beginning of the first book to the ending of the last. It will of course be understood that each separate set or series of bonds, certificates of stock, or other similar documents will require a set of books specially prepared for them to correspond with the peculiar character of the document, the system or general plan, however, being the same in all cases, the details only being varied to suit the circumstances of the case.

The patentee claimed as his invention:

1. The preserving, filing, and verifying of bonds, coupons, certificates, and all similar documents by the means and in the manner substantially as herein set forth.

2. The book or register constructed and used as and for the purposes set forth.

The defenses set up in the answer were that the plaintiff was not the first and original inventor of the alleged improvement; that long before his alleged invention it was known to and used by William E. Warren and three other persons named, all residing in the city of New York; that the defendants had made no profits from its use, and that it was not patentable. The plaintiff filed a general replication.

By the evidence taken in the case it appeared that from 1872 there had been used in the office of the comptroller of the city of New York books like those described in the plaintiff's patent, except that the coupons were pasted on each alternate page and the bond on the opposite page, and that as early as 1853 Warren devised and used books for preserving the coupons of a railroad company, in which all the coupons payable on the same date were pasted in succession in the order of the numbers of the bonds to which they belonged, in ruled spaces of the proper size, above which the number of the coupons and of the bonds had been previously written or printed, and with a description of the bonds and the date of payment of the coupons written at the beginning of each series of coupons payable at the same date; but the bonds themselves were not pasted in, except a single one at the beginning of each book.

Upon the pleadings and proofs the circuit court held that the plaintiff was the first and original inventor of the improvement, and that the patent was valid, and entered an interlocutory decree in his favor for an injunction and an account. (18 Blatchford, 237.) The case was then referred to a master, who reported that upon the evidence taken before him (which need not be stated) the plaintiff was entitled to recover the sum of $6,392.40 as profits. Exceptions taken by the defendant to his report were sustained. (21 Blatchford, 342.) A final decree was entered, awarding to the plaintiff the sum of six cents damages, and ordering that the costs before the interlocutory decree be paid by the defendant, and the costs since that decree by the plaintiff. Both parties appealed to this Court.

Mr. Justice GRAY delivered the opinion of the Court.

What the plaintiff in different parts of his specification calls his "improvement," his "system," and his "invention" consists in providing one or more blank-books, resembling common scrap-books, of which each page will hold a bond and its coupons, and has a heading describing the bond, and all the pages are numbered and ruled into spaces in which the bonds and the coupons, on being presented and paid, may be pasted in the order of their numbers—the bonds on the successive pages and the coupon of each bond on the same page with it—or when any bond or coupon is paid without being surrendered, memoranda concerning it may be made. The claim is for the so preserving, filing, and verifying of the bonds and coupons and for the book so constructed and used. If upon the face of the specification this could be considered as an "art, machine, manufacture, or composition of matter" within the meaning of the patent laws, (upon which we express no opinion,) it is quite clear that in the state of previous knowledge upon the subject there was no patentable novelty in the plaintiff's scheme, inasmuch as the only difference between it and the earlier scheme of Warren was that in Warren's books there was no place for the bonds, and the coupons were grouped according to their dates of payment, instead of being grouped together with the bonds to which they respectively belonged. The providing of spaces for the bonds and the change in the order of arrangement of the coupons cannot, upon the most liberal construction of the patent laws, be held to involve any invention.

Decree reversed, and case remanded to the circuit court, with directions to dismiss the bill, the original plaintiff to pay the costs in both courts.

U. S. Circuit Court—Western District of Michigan.

INGHAM *et al. v.* PIERCE *et al.*

Decided —, 1887.

KNAPP—PLATFORMS OR HANDLES FOR BASKETS—VOID—INVENTION DESCRIBED BUT NOT CLAIMED.

In a suit for an infringement by a patentee claiming under Letters Patent No. 121,054, for an improvement in platforms or handles for fruit-baskets, it appeared that the advantages claimed were that the patented top was removable, allowing baskets to be nested, and assisted in better securing a net-work over the fruit; but these features were not novel. It also appeared that the patented article possessed a novel feature in a wire bent over at the top and brought down through a hole in the standard to secure the standards of the cover to the basket which held the cover more rigidly in its place than other baskets in which such wire is brought down on the side, outside or inside, of the standard. *Held*, that the patent, being otherwise wanting in novelty, could not be supported for this feature, which was dormant in it and unclaimed.

INFRINGEMENT OF PATENT.

Mr. Ross Shinn and *Messrs. Dyrenforth & Dyrenforth* for the complainants.

Messrs. Taggart & Denison for the defendants.

SEVERENS, *J.:*

The bill in this cause was filed for the purpose of restraining an alleged infringement of the rights secured by letters patent to Joseph Knapp, September 21, 1871, for an improvement in platforms or handles for fruit-baskets, No. 121,054. The complainants are the assignees of Knapp, the patentee. Several defenses are set up: (1) Want of novelty; (2) that defendants have not infringed; (3) abandonment by the patentee. The case has been heard on pleadings and proofs.

The conclusions arrived at by the court from a consideration of the pleadings, proofs, and exhibits, and the argument are as follows:

First. The specifications and claims on which the Knapp patent issued indicate that the nature of the invention consisted in a removable platform or support so arranged that it may be conveniently fastened to an ordinary fruit-basket and in part hold the netting in place over the fruit, while at the same time it serves as a support to another basket on top for transportation, &c. The advantage claimed by the inventor for his improvement was that it supplied an independent top, which could be made anywhere, and could be attached for use at the same time the netting was put on, and afterward detached. Thus the baskets could be nested, and conveniently sent from the factory to the place of using, and after the contents were marketed the baskets could be returned nested, which could not be done in the ordinary way of constructing the basket with the cover attached. The alleged invention was in the construction of the cover of thin strips of stuff extending horizontally across the top of the basket, but elevated from it by short standards, which rested upon the rim of the basket. A wire bent over at the top descended through a hole in the standard, and, continuing through the basket-rim, was turned under and around it to secure the standards of the cover to the basket. The thin strips above mentioned were tacked onto the top of the erect standards at each end of the strips, thus preventing the wire which goes through the standard from getting loose. The inventor disclaimed the elevated platform as such, it having been in previous use. His claim was for a removable platform or handle consisting of the above arrangement, which would also allow the cover to be so attached as to in part hold the netting covering the fruit in place. From this claim, as illustrated by the specifications, it is apparent that the peculiar feature and resultant benefit designed by the inventor was, as stated, in the "advantage" of his improvement, which I have above set forth from his specifications—that is to say, the providing a removable cover, thus allowing the nesting of the baskets for transportation, and allowing also an added facility in securing the netting over the fruit.

Second. It is clear from the evidence and the exhibits that the elevated-platform top was in use some time before this alleged invention, and was to a very considerable extent so constructed as to be removable. Indeed, the only difference between the patented structure and one of these in quite extensive previous use consisted in this, that whereas in the former the wire was put *through* the standard, as above shown, and then was turned about the basket-rim to secure it in place, in the latter the wire, after being hooked into the top of the standard, was brought down on the *side*, outside or inside, of the standard, and then turned about the basket-rim. Some of the previous patterns had been patented; others not. There was therefore no novelty in any feature which the inventor had in contemplation in making claim for his patent, or which, by the most liberal construction of his specifications and claim, can be suspected to have occurred to him.

Third. It turns out, however, that the putting the wire through the standard, instead of down the side of it, has a tendency to hold the cover more rigidly to its place when attached than the other method, and in that respect has more of utility; but this feature was not claimed, or, so far as appears, thought of. It sometimes happens that an invention contains features of utility which may be adapted to other uses than those specifically contemplated by the inventor; but those uses are kindred uses, or are an extension of the features into use in the development of art. In these cases the feature of utility exists in the patent and is expressed by the claims; but the use is broadened. That principle would not support a patent claimed and granted for a feature which was not novel, as protecting it for another feature which was dormant in it, and afterward proving to be useful.

Fourth. There are other serious obstacles to the complainants; but, upon the view taken of the first ground, it is not necessary to discuss them.

The bill must be dismissed, with costs.

U. S. Circuit Court—District of New Jersey.

STEVENSON *v.* MAGOWAN *et al.*

Decided July 12, 1887.

1. HOTCHKISS AND ALLERTON—VALID ONLY IN PART—USE OF REMAINDER—VULCANIZING APPARATUS.

In the patent issued to Burritt M. Hotchkiss and George M. Allerton, complainant's assignors, May 23, 1871, No. 115,207, for an improvement in vulcanizing apparatus, consisting of the application of hydraulic pressure to the molds in a vulcanizing-chamber, the invention claimed was a cylinder and piston outside the vulcanizing-chamber, and pipes connecting with a supply of fluid or liquid under pressure, whereby the power exerted to hold the molds together with a yielding force is independent of the vulcanizing operation. The evidence showed that the patent granted to George E. Hayes, January 14, 1868, and the condition of the art of vulcanizing rubber prior to this time anticipated and invalidated all of complainant's patent except the vulcanizing-chamber. The defendants used machinery substantially covered by complainant's patent, except that they used no vulcanizing-chamber. *Held* no infringement.

2. SAME—SUIT FOR INFRINGEMENT—FAILURE TO PLEAD PRIOR USE—EFFECT.

Where notice is not given in the answer of a specified prior use of the invention described in the patent, it cannot be set up as an anticipation of such invention; but, as exhibiting the state of the art, the evidence is competent to aid the court in putting a proper construction on the patent.

Mr. Joshua Pusey for the complainant.

Mr. F. C. Lowthrop, Jr., for the defendants.

BRADLEY, *J.:*

The bill in this case is filed for an injunction, damages, &c., under a patent issued May 23, 1871, to Burritt M. Hotchkiss and George M. Allerton, for an improvement in vulcanizing apparatus, consisting of the application of hydraulic pressure to the molds in a vulcanizing-chamber, instead of pressure by screws and clamps, or by the steam generated in the chamber, the piston and cylinder producing the pressure being outside of the chamber and the pressure being regulated by safety-valves, so as not to be greater than necessary. This patent has been assigned to the complainant, and the defendants are charged with in-

fringing it, and set up prior discovery, want of invention, and non-infringement. Under the first head they refer to two patents of an earlier date than the plaintiff's—one granted to A. B. Woodward, January 16, 1866, reissued May 19, 1868, and the other granted to George E. Hayes, January 14, 1868. Woodward placed his flask and mold in a cylindrical boiler, in connection with a piston, and by producing steam in the boiler created a pressure by means of the piston, which compressed the two sections of the flask together at the same time that the steam vulcanized the rubber in the mold. This clearly does not anticipate the specific device described in the patent of the complainant. Hayes produced pressure by steam in a tank or cylindrical compressor, the top of which, by a telescopic connection with the body, (made steam-tight by packing,) could be pressed and driven upward, and on the top of this was placed the flask in such a manner as to receive the pressure by means of a ram connected with the flask by a clamp or otherwise and the same heat which generated steam in the compressor was communicated to the flask above and created steam from the water in the plaster of the molds, and also vulcanized the rubber. The patent describes the operation thus:

As the heat increases, the pressure of steam inside the compressor, through which the heat has first to pass, will constantly be greater than it will in the space above in which the flasks are placed, where steam can only form from water contained in the plaster molds. From this description it will be seen that the difference of pressure is brought to bear upon the flasks to close them and effectually fill the molds, and that an early powerful closing pressure is induced upon the flasks, while the rubber is at a temperature much below the vulcanizing-point and more plastic than when highly heated; also, that the steam escaping from the plaster molds, as well as any that may leak from the compressor at the higher temperature in the operation, will exert a counteracting effect upon the compressor to prevent undue strain on the molds as the temperature is raised to the vulcanizing-point.

The principle of this patent approaches very closely that of the one in suit. Here we have, in the language of the latter, a cylinder and ram or piston connected with the vulcanizing apparatus and supplied with an elastic fluid, so that the cylinder and ram or piston will apply to the molds the necessary pressure. The fluid employed is steam, it is true; but the patent claims any fluid. Also, it is not introduced into the cylinder by a pipe and pump, but is generated in the cylinder itself by the application of heat. Does that make any patentable difference? The operation and effect upon the ram or piston, and thence upon the flask and molds, are precisely the same as that produced by the fluid pumped into the cylinder in the complainant's machine, and the elasticity of the steam in the cylinder, with the counterbalancing effect of the steam generated in the vulcanizing-chamber as means of adjustment to the expansion and contraction of the article in the molds, are probably superior to those of the "escape or pressure safety-valves" in the apparatus of the complainant. Except that the steam is not pumped into the cylinder through a pipe and is not independent of the vulcanizing-heat, it is difficult to see any difference in principle between the two methods. These differences, however, may be sufficient to prevent the Hayes patent from being an anticipation of the complainant's.

But, besides this prior patent, the defendants have shown the state of the art to be such at the time when the plaintiff's patent was applied for (March, 1871) as to preclude any extension of it, by construction, beyond its precise terms. It is shown by the testimony of George C. Gill that as far back as 1863 R. Hoe & Co., of New York, constructed for Poppenhausen & Koenig, at College Point, Long Island, a hydraulic pump and press for pressing rubber combs, backs of brushes, and such hard-rubber goods. This apparatus was exactly the counterpart of the machine described in the plaintiff's patent, except that it had no inclosed vulcanizing-chamber and does not seem to have an accumulator. It is thus described by the witness:

The construction of the pump are two pumps placed on the cover of a cistern or tank, as you may term it. The plungers of the pumps are operated by a working-beam above the pumps, said beam connected to a crank-shaft on which are pulleys that operate the pump. The press consists of a top, a platen, cylinder with ram, and bottom. The top is elevated above the platen by four rods or columns of sufficient strength to resist the pressure of about two hundred and fifty tons. On the platen and on under side of top are two steam-heating tables. The press is operated by water pumped into the cylinder of the press, which raises the ram and platen, giving the pressure required. On the pump is a safety-valve, which would exhaust the water after the pressure had been given.

Again:

The safety-valve is placed midway between the two pumps, on the cover of the cistern or tank, and connected to both pumps, safety-valve having a valve-lever and ball-weight, which was registered at five tons per square inch pressure, to relieve the pressure of water and prevent damage to pump or pumps.

A photograph of this pumping apparatus and press was exhibited at the hearing. The whole fixture is substantially like that used by the defendants, except that the defendants use an accumulator. But if the rest was public property at the time of the issuing of the complainant's patent, the addition of an accumulator could not have been the subject of a patent. It is such a common appendage to a hydraulic pump, so frequently used in connection with it, that its adoption would have been no invention. As notice was not given in the answer of this structure at College Point as a prior use of the invention described in the patent, it cannot be set up as an anticipation of such invention; but, as exhibiting the state of the art, the evidence is competent to aid the court in putting a proper construction upon the patent. If any fair construction can be given to it which will not make it cover and include this College Point machinery, erected and used so many years before the patent was applied for, such construction ought to be adopted. An examination of the patent shows that this can be done. As before stated, the pump and press at College Point has no vulcanizing-chamber. The top and platen, between which the rubber is pressed in the molds and vulcanized, are entirely uninclosed. The patent speaks of a vulcanizing-chamber throughout the specification, and suggests no other arrangement. The claim keeps up the same idea, supposing the hydraulic press to be attached to a vulcanizing-chamber. It is as follows:

We claim as our invention—

A cylinder and piston outside the vulcanizing-chamber, and pipes connecting with a supply of fluid or liquid under pressure, substantially as specified, whereby the power exerted to hold the molds together with a yielding force is independent of the vulcanizing operation.

Thus it is seen that the vulcanizing-chamber is in terms made a part of the combination embraced in the claim, and the state of the art, to which we have referred, shows that it was a material part, and that without it—that is, unless the claim had been confined to cases in which a vulcanizing-chamber was used—it would not have been a valid one.

Giving to the patent this construction, the defendants do not infringe it, for, as before said, they do not use the vulcanizing-chamber, but vulcanize their belts between uninclosed platens.

The bill must therefore be dismissed, with costs.

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CONTENTS.

	Page.
THE OFFICIAL GAZETTE	1065
INDEXES TO FOREIGN PATENTS	1065
NOTICE	1065
ISSUE OF MARCH 13, 1888	1065
DESIGNS	1066
TRADE-MARKS	1066
LABELS	1067
PATENTS GRANTED	1163
REISSUES	
DECISIONS OF THE U. S. COURTS—	
Thornton v. Schreiber *et al*	1165
Burdsall v. Curran *et al*	1167
Ansonia Brass and Copper Company v. Electrical Supply Company	1168

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

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Notice.—Models in Rejected or Abandoned Cases.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 9, 1888.

Notice is hereby given to inventors and the public that a large number of models is in the custody of this Office, which were received between the years 1879 and 1885, many of which have never become a part of the records of this Office. All such models and all models belonging to rejected or abandoned applications will be sold or otherwise disposed of under the provisions of section 486 of the Revised Statutes unless removed in sixty days from the date hereof.

Institutions of learning in good standing may, after the expiration of the time above limited, on written application, make selection before the day of public sale of models remaining unclaimed. The expense of removal or transportation of these models must be borne by the applicants or institutions of learning.

BENTON J. HALL,
Commissioner.

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Issue of March 13, 1888.

Patents	349—No. 379,204 to No. 379,552,	inclusive.
Designs	11—No. 18,175 to No. 18,185,	inclusive.
Trade-Marks	13—No. 15,276 to No. 15,288,	inclusive.
Labels	17—No. 5,511 to No. 5,527,	inclusive.
Reissues	2—No. 10,908 to No. 10,909,	inclusive.
Total issue	392	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nebraska	1	
Arizona Territory			Nevada		
Arkansas	1		New Hampshire	4	
California	9		New Jersey	10	2
Colorado	2		New Mexico Terri'y		
Connecticut	9		New York	63	5
Dakota Territory	1		North Carolina	1	
Delaware			Ohio	29	1
District of Columbia	6		Oregon	2	
Florida	2		Pennsylvania	38	1
Georgia			Rhode Island	1	
Idaho Territory			South Carolina		
Illinois	35	10	Tennessee	1	
Indiana	17		Texas	2	1
Iowa	11		Utah Territory		
Kansas	3		Vermont	1	
Kentucky	3		Virginia	3	
Louisiana	2		Washington Terri'y		
Maine	4		West Virginia	1	
Maryland	3	1	Wisconsin	8	
Massachusetts	37	7	Wyoming Terri'y		
Michigan	11		U. S. Army	1	
Minnesota	3		U. S. Navy		
Mississippi					
Missouri	11		Total to citizens of the United States	338	28
Montana Territory	2				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary			Germany	5	
Barbadoes			Ireland		
Belgium			Mexico		
Bermuda			Netherlands		
Brazil			New South Wales		
Canada	6		Russia	1	
China			Scotland		
Colombia, U. S. of			Spain		
Cuba			Switzerland		
Denmark			Victoria		
Ecuador					
England	8	2	Total to citizens of foreign countries	22	2
France	2				

DESIGNS.

18,175.—TYPE.—*Warren Barnhart*, Chicago, Ill. Application filed January 11, 1888. Serial No. 260,456. Term of patent 14 years.

18,176.—CABINET-DESK.—*Francis A. Coffin*, Indianapolis, Ind. Application filed December 15, 1887. Serial No. 258,037. Term of patent 7 years.

18,177.—WRITING-DESK.—*Francis A. Coffin*, Indianapolis, Ind. Application filed December 15, 1887. Serial No. 258,035. Term of patent 7 years.

18,178.—CABINET-DESK.—*Francis A. Coffin*, Indianapolis, Ind. Application filed December 15, 1887. Serial No. 258,036. Term of patent 7 years.

18,179.—HEATING-STOVE.—*Charles T. Heisel*, Cleveland, Ohio. Application filed February 3, 1888. Serial No. 262,941. Term of patent 7 years.

18,180.—CAKE ORNAMENT.—*John August Kiesele*, New York, N. Y. Application filed October 17, 1887. Serial No. 252,646. Term of patent 7 years.

18,181.—SHRINE.—*James A. McGee*, New York, N. Y. Application filed January 10, 1888. Serial No. 260,360. Term of patent 7 years.

18,182.—BOX.—*Woldemar Schreyer*, Brooklyn, assignor to *McLaughlin Brothers*, New York, N. Y. Application filed December 27, 1887. Serial No. 259,136. Term of patent 7 years.

18,183.—GIMP.—*Charles Weinberg*, New York, N. Y., assignor to *C. Weinberg & Co.*, same place. Application filed January 16, 1888. Serial No. 260,952. Term of patent 7 years.

18,184.—BADGE.—*Fred H. C. Woolley*, Medford, assignor to *The United Society of Christian Endeavor*, Boston, Mass. Application filed February 7, 1888. Serial No. 263,319. Term of patent 14 years.

18,185.—ORNAMENTATION OF PAPER.—*William A. Pike*, Brooklyn, assignor to *Hard & Parsons*, New York, N. Y. Application filed February 13, 1888. Serial No. 263,906. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,276.—COAT-LININGS.—*Alburger, Stoer & Co.*, Philadelphia, Pa. Application filed February 8, 1888. Used since December 15, 1887.

"The words 'CLAYS' WEST OF ENGLAND LININGS' and two circles, one inclosing the monogram 'A S & Co' in the upper left-hand corner, and in the other the words 'BRADFORD, ENG., PHILADA., CHICAGO' in the upper right-hand corner."

15,277.—BANJOS.—*C. Edgar Dobson*, New York, N. Y. Application filed February 7, 1888. Used since November 1, 1887.

"The word 'ECHO.'"

15,278.—RADIATORS.—*A. A. Griffing Iron Company*, Jersey City, N. J., and Chicago, Ill. Application filed January 24, 1887. Used since December, 1886.

"The word 'CLIMAX.'"

15,279.—SELF-ADJUSTING LEATHER LINK BELTING.—*Charles L. Ireson*, Boston, Mass. Application filed February 6, 1888. Used since January 1, 1888.

"The words 'THE MISSING LINK' and the representation of a monkey inclosed in a self-adjusting link belt running over pulleys."

15,280.—CARBONATED BEVERAGES.—*Susan A. Ludin*, New York, N. Y. Application filed January 7, 1888. Used since March, 1880.

"The representation of a human figure in the foreground of a circular design reclining or partly reclining upon an inverted bottle from which a stream of water is flowing, with a siphon-bottle in elevation in the background, and an intermediate shield, the latter having a number of ornamental devices thereon."

15,281.—MAGNETO BLASTING-MACHINES, ELECTRIC BATTERIES, FUSES, BLASTING CAPS AND WIRES.—*James Macbeth*, New York, N. Y. Application filed February 8, 1888. Used since August 1, 1887.

"The word 'VICTOR.'"

15,282.—COLLARS AND CUFFS.—*Miller & Bingham*, Troy, N. Y. Application filed August 31, 1883. Used since November, 1882.

"The representation of a horseshoe with a scroll crossing it and embracing the sides of the shoe."

15,283.—WRITING AND COPYING FLUIDS AND INKS.—*Charles Edwin Ogden*, London, England. Application filed February 8, 1888. Used since 1863.

"The firm-name 'P. & J. ARNOLD.'"

15,284.—PIG-IRON AND BITUMINOUS COAL.—*The Ohio and Western Coal and Iron Company*, Boston, Mass., and Columbus, Ohio. Application filed February 1, 1888. Used since August 1, 1886.

"The expression 'O. & W.'"

15,285.—BOOTS AND SHOES.—*Parker, Holmes & Co.*, Boston, Mass. Application filed February 8, 1888. Used since January 2, 1888.

"The words 'LITTLE GIANT.'"

15,286.—COCOA PASTE.—*Henry L. Pierce*, Boston and Milton, Mass. Application filed December 16, 1887. Used since July 1, 1881.

"The representation of two medals, on one of which is a woman's figure and the words 'AMERICAN INSTITUTE, NEW YORK,' and on the other 'MEDAL OF SPECIAL AWARD, AWARDED TO JOSIAH WEBB & CO. FOR CHOCOLATE, COCOA, &C., 1873,' with the words 'WEBB'S DELICIOUS COCOA PASTE' above, and the shield with the letter 'W' in the broad horizontal band, with the word 'WEBB'S' above and the words 'COCOA PASTE' below."

15,287.—WOODEN FAUCETS FOR BARRELS, &c.—*John Sommer, Jr.*, Newark, N. J. Application filed July 22, 1887. Used since July, 1885.

"A rectangular figure having at one end representations of the obverse and reverse of a medal or medals overlapping each other and printed descriptive matter referring to the goods at the other end."

15,288.—BEDBUG-POISON.—*Henry Taylor, Sr.*, Woodberry, Md. Application filed June 8, 1887. Used since 1876.

"The words and numeral 'No. 1 DEAD SHOT.'"

LABELS.

5,511.—Title: "FRESH CUD DROPS." (FOR A MEDICAL COMPOUND.) *W. M. L. Fiske*, Brooklyn, N. Y. Application filed February 14, 1888.

5,512.—Title: "HEPATIC EXTRACT." (FOR A MEDICINAL PREPARATION.)—*The Hunt Kiddle Company*, Gloucester, Mass., and New York, N. Y. Application filed February 13, 1888.

5,513.—Title: "WASHBOARD SOAP."—*James S. Kirk & Co.*, Chicago, Ill. Application filed February 15, 1886. (Trade-Mark Registered.)

5,514.—Title: "CARBOLIC-CAMPHOR." (FOR LAUNDRY SOAP.)—*James S. Kirk & Co.*, Chicago, Ill. Application filed February 15, 1886. (Trade-Mark Registered.)

5,515.—Title: "WHITE RUSSIAN BATH." (FOR SOAP.)—*James S. Kirk & Co.*, Chicago, Ill. Application filed February 17, 1886. (Trade-Mark Registered.)

5,516.—Title: "PATCHOULY TOILET SOAP."—*James S. Kirk & Co.*, Chicago, Ill. Application filed February 19, 1886.

5,517.—Title: "PIMLICO TOILET SOAP."—*James S. Kirk & Co.*, Chicago, Ill. Application filed May 3, 1886. (Trade-Mark Registered.)

5,518.—Title: "BOSTON OAT MEAL" (FOR SOAP.)—*James S. Kirk & Co.*, Chicago, Ill. Application filed February 23, 1886.

5,519.—Title: "MUSK TOILET SOAP."—*James S. Kirk & Co.*, Chicago, Ill. Application filed February 23, 1886.

5,520.—Title: "PLANET." (FOR LAUNDRY SOAP.)—*James S. Kirk & Co.*, Chicago, Ill. Application filed February 24, 1886. (Trade-Mark Registered.)

5,521.—Title: "CAMBRIA." (FOR LAUNDRY SOAP.)—*James S. Kirk & Co.*, Chicago, Ill. Application filed February 26, 1886. (Trade-Mark Registered.)

5,522.—Title: "CERES." (FOR LAUNDRY SOAP.)—*James S. Kirk & Co.*, Chicago, Ill. Application filed February 26, 1886. (Trade-Mark Registered.)

5,523.—Title: "OUR SCHOOL SHOE."—*Chase, Merritt & Co.*, Boston, Marlborough, and Milford, Mass. Application filed February 13, 1888.

5,524.—Title: "OUR SCHOOL SHOE."—*Chase, Merritt & Co.*, Boston, Marlborough, and Milford, Mass. Application filed February 13, 1888.

5,525.—Title: "PATTON'S CHILL TONIC SYRUP."—*Ed. G. Patton* and *Texana Patton*, Sulphur Springs, Tex. Application filed February 10, 1888.

5,526.—Title: "RUSSELL'S NATURAL REMEDY." (FOR A MEDICINE FOR DISEASES OF THE LIVER, &c.)—*P. J. Russell*, Perrysville, Ohio. Application filed February 11, 1888.

5,527.—Title: "SPECIALLY PREPARED FOR ——" (FOR PRESERVES, CONFECTIONERY, &c.)—*Charles Southwell & Co.*, London, England. Application filed February 15, 1888.

PATENTS

GRANTED MARCH 13, 1888.

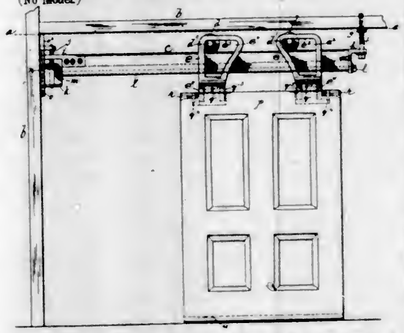
379,204. RIVET-HOLDING DEVICE. JAMES BARDSLEY, Terre Haute, Ind. Filed Sept. 19, 1887. Serial No. 250,090. (No model.)



Claim.—1. A rivet-holder comprising a cup, C, formed with a countersink in one end to receive and hold a rivet-head, and having the other end formed with a stud, a cup-holder, B, consisting of a metal bar formed with a seat having an aperture to take the stud on the cup, and a wedge-bar, A, adapted to set under the end of the cup-holder, all substantially as described, and for the purpose stated.

2. A rivet-holder comprising a cup, C, formed with a countersink in one end to receive and hold a rivet-head and having the other end formed with a stud, a cup-holder, B, consisting of a metal bar formed with a seat having an aperture to take the stud of the cup, a base-plate, 9, having holes to set over rivet-heads, and a wedge-bar, A, to enter between said base-plate and the cup-holder, substantially as described, and for the purpose stated.

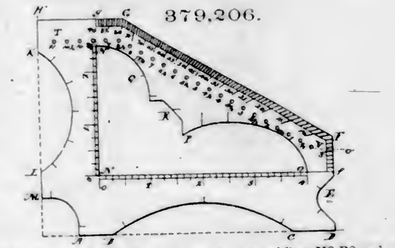
379,205. DOOR-HANGER. ALBERT A. BARKER and WHITFIELD BENNETT, Worcester, Mass. Filed Mar. 26, 1887. Serial No. 232,602. (No model.)



Claim.—1. The combination, with a sliding-door track, of a screw-bolt, as *f*, for vertically adjusting the inner end thereof, a permanent rotary rod or bolt extending lengthwise of the said track and having its operating part at the inner end of the latter, so as to be conveniently accessible, and devices operated from said rod or bolt for adjusting the outer end of the said track.

2. The combination, with the track *e*, provided with bearings or brackets *h* and *i*, of the screw bolts or spindles *f* and *j*, the frame *k*, the rod or bolt *l*, and the gears *m* and *n*, substantially as set forth.

379,206. DRAWING IMPLEMENT. WALTER F. BRACKETT, Melrose, Mass. Filed Dec. 12, 1887. Serial No. 257,725. (No model.)

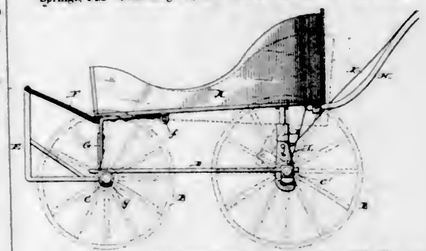


379,206.

Claim.—1. As a drawing implement, a plate constructed with line HK LM at right angles to the lines AB CD and with curves KL BC, also with curves and tangents M, A, and E, and having an edge FG, making an angle of one hundred and twenty degrees with the edge HG, also having a gradnation of angular degrees and a point to indicate the center of degree graduation, substantially as described, and for the purpose set forth.

2. In a drawing implement, a plate constructed with an interior opening bounded on two sides by straight lines at right angles to each other, and on the other side by compound curved lines NQ PO and an octagonal sector, R, substantially as described, and for the purpose set forth.

379,207. CHILD'S CARRIAGE. N. BAYARD CLINCH, Green Cove Springs, Fla. Filed Aug. 13, 1887. Serial No. 246,892. (No model.)



Claim.—1. In a child's carriage, the combination, with the running-gear and body, of standards journaled to the front axle and supporting the body, a standard carried by the running-gear and extending upward in front of the body, and a spring-connection between said upright standard and the body, substantially as described.

2. In a child's carriage, the combination, with the front and rear axles, and connecting-bars uniting them and the body, of standards G G, to which the body is secured, provided at their lower ends with bearings *g*, which encircle the front axle and turn freely thereon, an upward-projecting standard in front of the body, and a spring-connection between the body and said standard, substantially as described.

3. In a child's carriage, the combination, with a running-gear and a body supported thereon at its forward end to have a free rocking or swinging motion, of inflexible connections adapted to be interposed between the body and running-gear to make the connection of the body therewith rigid against both upward and downward rocking movement, substantially as described.

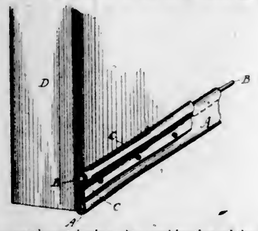
4. In a child's carriage, the combination, with a running-gear and a body supported thereon at its forward end to have a free rocking or swinging motion, of jointed rods connecting the rear portion of the body with the running-gear, said rods when straightened serving to make a rigid connection between the body and running-gear, substantially as described.

5. In a child's carriage, the combination, with a running-gear and a body supported thereon at the front end to have a free rocking or swinging motion, of jointed rods I I, flexibly connected with the body and with the rear axle and adapted to swing forward, and cords K, connected with said rods and extending within convenient reach of the person propelling the carriage, whereby on drawing on the cords

the rods may be straightened and the connection between the rear part of the body and the running-gear made rigid, substantially as described.

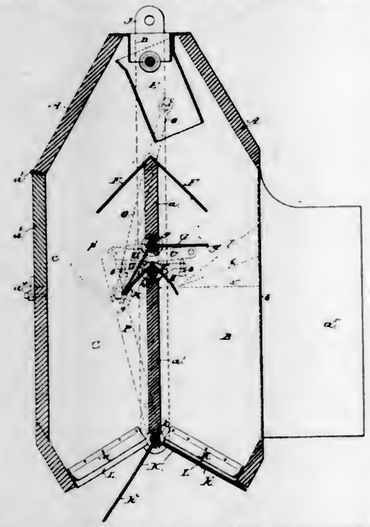
6. In a child's carriage, the combination, with a running-gear and the body supported to swing on the front axle, of a standard in front of the body, a spring-connection between the standard and body, and jointed rods between the rear portion of the body and the running-gear, adapted when straightened to make rigid the connection between the body and running-gear, substantially as described.

379,208. **WEATHER-STRIPPING.** WILLIAM H. COSPER, Chicago, Ill. Filed May 11, 1887. Serial No. 237,793. (No model.)



Claim.—In weather-stripping, the combination of the filament B, the flexible joint-closing strip A, looped or formed around said filament, and the metallic base or strip C, formed around said flexible strip, so as to securely embrace said flexible strip and filament, substantially as shown and described.

379,209. **AUTOMATIC GRAIN-MEASURE.** HARRY W. COWAN, Gros. Dak. Filed May 12, 1887. Serial No. 238,011. (No model.)



Claim.—1. A grain-measure constructed with a box in which the grain is measured, and a vibratory measuring-plate operating on the grain filling into the box for actuating tripping devices connected with the tilting bottom of the box, substantially as described, whereby the bottom of the box will be opened automatically by or through the pressure of the measuring-plate on the grain, as set forth.

2. A grain-measure constructed with a grain-box having two compartments and a tilting bottom adapted to close and open the compartments alternately, a vibratory measuring-plate operating on the grain filled into each compartment, and tripping devices connected with the measuring-plate and the tilting bottom of the box, substantially as described, whereby the bottom of the box will be tilted to automatically discharge the grain from each compartment by or through the pressure of the measuring-plate on the grain, as set forth.

3. A grain-measure constructed with a grain-box having two compartments and a tilting bottom adapted to close and open the compartments alternately, a tilting funnel adapted to discharge grain into either compartment, devices connecting the tilting bottom and funnel to operate both simultaneously for alternately filling and emptying the compartments, a vibratory measuring-plate operating on the grain filled into either compartment, and tripping devices connected with the measuring-plate and the tilting bottom of the box, substantially as described, for the purposes set forth.

4. In a grain-measure, the combination, with a grain-box and a vibratory measuring-plate fitted therein, of an apron or guard fitted above the measuring-plate, substantially as shown and described, whereby the measuring-plate will be protected from direct downflow of the grain, and the grain will be deflected to pile up at or against the farther wall of the box, as and for the purposes herein set forth.

5. In a grain-measure, the combination, with a grain-box having two compartments, of a vibratory measuring-plate extending into both compartments, and a double inclined apron or guard fitted above the measuring-plate to protect it from the downflowing grain and deflect the grain to the farther walls of both compartments of the box, substantially as herein shown and described.

6. In a grain-measure, the combination, with a grain-box and a vibratory measuring-plate fitted therein, of a trip-plate pivoted below the measuring-plate and adapted to be tilted by pressure of the measuring-plate, and trip devices connecting the trip-plate with the tilting bottom of the grain-box, substantially as shown and described, whereby the depression of the trip-plate by or from the measuring-plate will open the box for discharging the grain, as herein set forth.

7. In a grain-measure, the combination, with a grain-box having two compartments and a tilting bottom adapted to close the compartments alternately, and a vibratory measuring-plate fitted in the box and operating on the grain in both compartments, of a trip-plate pivoted below the measuring-plate and extended into both compartments, and devices connecting the trip-plate with the bottom of the grain-box, substantially as shown and described, whereby the box-bottom will be operated automatically to discharge the grain from each compartment by the depression of the trip-plate by or from the vibratory measuring-plate, as herein set forth.

8. In a grain-measure, the combination, with a grain-box having a tilting bottom and a lever connected to the bottom shaft or axis, of a vibratory measuring-plate operating on the grain filled into the box, a tilting trip-plate arranged below the measuring-plate, and a tripping and latch device consisting of a bar fixed to the trip-plate shaft, a pivoted bar or lever adapted to be lifted by the trip-shaft bar, and a latch adapted to be operated by the pivoted bar and to lock against shoulders at the swinging end of the bottom lever, substantially as described, for the purposes set forth.

9. In a grain-measure, the combination, with a grain-box, A, having two compartments, B C, and a tilting bottom, K, of a lever, P, connected to the bottom shaft, *k*, and provided with shoulders 8 9 at its swinging end, a vibratory measuring-plate, G, extending into both compartments B C, a tilting trip-plate, H, extending into both compartments, a cross-head, T, fixed to the shaft of plate H, pivoted trip-bars U U, and a latch, V, adapted to be lifted by either of the trip-bars and to lock at either shoulder 8 9 of the lever P, substantially as described, for the purposes set forth.

10. In a grain-measure, the combination, with the grain-box A, having a tilting bottom, K, measuring and trip-plates G H, pivoted in the box, a lever, P, fixed to the bottom shaft, *k*, and having shoulders 8 9, a latch, V, adapted to engage said shoulders, trip-bars U, pivoted to the box and adapted to lift the latch, and a cross-bar, T, on the trip-plate shaft, of screws *t* or adjustable pins fitted in bar T and adapted to operate the latch trip-bars U, substantially as described, for the purposes set forth.

11. In a grain-measure, the combination, with the box A, having two compartments, B C, and a tilting bottom, K, of a tilting funnel, E, a lever, P, fixed to the bottom shaft or axis and having shoulders 8 9, a lever, O, pivoted to the box and connected to the funnel and to the lever P, to simultaneously actuate the funnel and tilting bottom, a measuring-plate, G, pivoted below the funnel, a trip-plate, H, pivoted below the measuring-plate, a cross-bar, T, on the trip-plate shaft, trip-bars U U, pivoted to the box, and a latch, V, adapted to lock against either shoulder 8 9 of the bottom lever, P, substantially as described, for the purposes set forth.

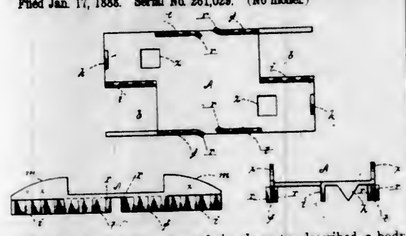
12. The combination, with the trip-plate cross-bar T, the trip-bars U, and the bottom lever, P, of a latch, V, provided with anti-friction rollers v' v^2, substantially as described, for the purposes set forth.

13. In a grain-measure, the combination, with the grain-box and a vibratory measuring-plate fitted therein for operation on the inflowing grain to actuate tripping devices for automatically opening the bottom of the box, substantially as specified, of driving mechanism connecting the measuring-plate with the mechanism of an elevator discharging grain into the measure, substantially as herein set forth.

14. A grain-measure constructed with a grain-box, A, held to the leg or shaft 1 of an elevator and receiving grain therefrom, a vibratory measuring-plate fitted in the box for operation on the inflowing grain to trip the bottom of the box to discharge its contents, a crank, R, on the measuring-plate shaft, and a rod, S, connecting said crank with a drive-wheel of the elevator, substantially as shown and described.

15. The combination, with the lever P, connected to the tilting bottom of the grain-box, of a registering device comprising a pawl, X, pivoted to the lever, a series of successively-smaller and peripherally-notched plates, 1 2 3, carrying numbered disks 1^a 2^a 3^a, engaged by the pawl, and a lever, Z, hung on the disk-plate shaft and connected at one end with the pawl and carrying a fraction-mark, ½, at its other end, substantially as described, for the purposes set forth.

379,210. **WEAR-PLATE.** JOHN W. CURRIER, North Troy, Vt. Filed Jan. 17, 1888. Serial No. 261,029. (No model.)



Claim.—1. In a wear-plate of the character described, a body having one or more flanges projecting from its lower side and adapted to be driven into the tie, said flanges being corrugated, substantially as and for the purpose set forth.

2. In a wear-plate, the body A, provided with the end flanges, i, substantially as shown and described.

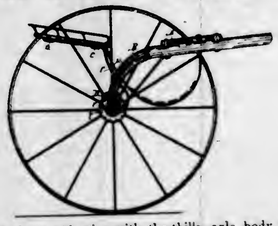
3. In a wear-plate, the flange *e*, having its end *r* curved or bent laterally inward, substantially as described.

4. In a wear-plate, the flange *f*, having its end *r* curved or bent laterally outward, substantially as set forth.

5. In a wear-plate, the flanges *f f*, having their adjacent ends *r* curved or bent laterally in opposite directions, whereby said flanges are adapted to take a firmer hold of the tie, and thereby offer greater resistance to the lateral movements of the rail, substantially as described.

6. The improved wear-plate hereinbefore described, the same consisting of the body A, having the upwardly-projecting flanges *y*, holes *z*, downwardly-projecting corrugated flanges *f f i*, and spurs *k*, all being constructed and arranged substantially as shown and specified.

379,211. **TWO-WHEELED VEHICLE.** CHARLES H. EGGLESTON, Marshall, Mich. Filed July 8, 1887. Serial No. 243,751. (No model.)



Claim.—1. In combination with the thills, axle, body, and seat of a two-wheeled vehicle, springs made from a single piece of spring metal bent upon itself, attached to the axle at one end, having the spiral portion around the axle and the rear upper straight portion attached to the seat, substantially as set forth.

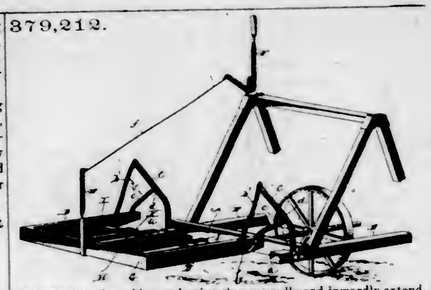
2. In combination, the axle, thills, seat, the spring-metal body-bars, and the springs made of elastic rods bent upon themselves and attached to the axle and seat, substantially as set forth.

3. In combination, the axle, thills, seat, and body of a two-wheeled vehicle, with the spring-metal rods bent upon themselves, the grooved clip-plates clamping the loop ends to the axle, the upper ends passed beneath the seat, and the plates having the grooved sides, attaching the upper ends to the seat, substantially as set forth.

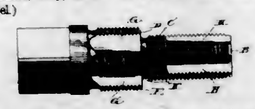
379,212. **SHEAF-CARRIER.** CHARLES H. ELLIOTT and GEORGE W. ELLIOTT, Rockford, Iowa. Filed Sept. 5, 1887. Serial No. 248,881. (No model.)

Claim.—The combination of the harvester-frame, having the upwardly and outwardly extending arms C at one side, with the sheaf-carrier having the irregular U-shaped arms *b* attached to its ends near its inner side, the said arms having the upwardly and inwardly extending legs *b'*, pivoted at their upper ends to the arms C, and the legs *c*, diverging from the legs *b'* and having their outer ends, *d*, bent at right angles to form stops to bear against the arms C when the carrier is in a horizontal position, the vertical arm E on the outer side of the carrier, the lever F on the harvester-frame, and the rod *f*, connecting the arm E and the lever F, substantially as described.

379,212.



379,213. **SCREW-TAP.** EDWIN FIRTH, ALBERT TOMPKINS, and IRA TOMPKINS, Troy, N. Y. Filed Dec. 1, 1887. Serial No. 256,686. (No model.)



Claim.—1. The double tap for cutting screw-threads, having the enlarged shoulder provided with the cutting-threads E, and the grooves G, extending across the said threads, and the projection or spindle B, extending from the front side of the shoulder and having the threads C, and the grooves H, extending longitudinally on the spindle, but only partially across the threads C, whereby the threads C beyond the inner ends of the grooves H are left intact, substantially as described.

2. A tap for cutting screw-threads, having grooves extending only partially across its threads, so as to leave a portion of the threads intact, substantially as described.

379,214. **CAPPING AXLE-NUTS.** EDWIN FIRTH, ALBERT TOMPKINS, and IRA TOMPKINS, Troy, N. Y. Filed Dec. 1, 1887. Serial No. 256,685. (No model.)



Claim.—1. An axle-nut having the cap formed separately from the nut and secured in its outer end, substantially as described.

2. A vehicle-axle nut having the chamber B in its outer end, the outer side of said chamber being formed by a cap, C, which is formed separately from the nut and is then secured thereto, substantially as described.

3. The vehicle-axle nut having the counterbore in its outer end and the annular flange E, the cap arranged in the counterbore, and secured therein by spinning or swaging the flange down upon the outer edge of the cap, substantially as described.

4. The method of securing a cap to an axle-nut, consisting, first, in forming a counterbore in the axle-nut and a flange around the same; secondly, in placing the cap in the counterbore; third, in swaging or spinning the edge of the flange down upon the outer edge of the cap, substantially as described.

5. The method of securing a cap in the outer end of the axle-nut, consisting in swaging or spinning the edge of the outer end of the nut down upon the cap, as set forth.

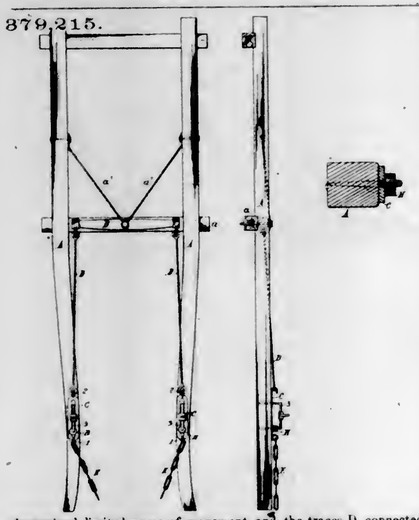
6. An axle-nut having the thin annular flange E at its outer end, and the cap held in place by spinning or swaging the flange down upon the cap, as set forth.

379,215. **DRAFT-EQUALIZER FOR VEHICLES.** WILLIAM A FRY, Washington, D. C. Filed June 21, 1886. Renewed July 21, 1887. Serial No. 244,945. (No model.)

Claim.—1. As an attachment for vehicles for equalizing the draft, the combination, with the staples on the shafts, of slotted slide-bars C C, fitting loosely around such staples, and rods or traces D D for connecting such slotted bars to the whiffletree.

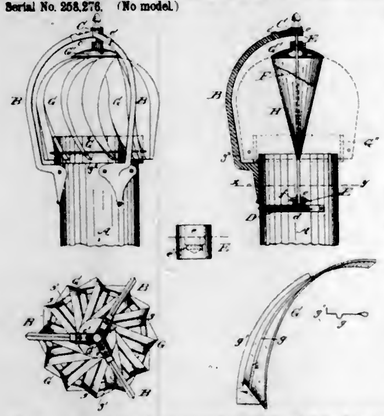
2. In combination with the shafts, the slide-bars having a pre-

379,215.



determined limited range of movement, and the traces D, connected thereto and to the whiffletree, the latter having also a limited range of movement on its axis determined by the movement of the slide-bars.

379,216. CHIMNEY-COWL. JOHN GORTTEL, Boston, assignor of three-fourths to Leslie Lucas Dixon, Somerville, George W. Squire, Cambridge, and James Thomas Lipsett, Boston, Mass. Filed Dec. 19, 1887. Serial No. 258,276. (No model.)



Claim.—1. A rotating chimney-cowl provided with a shaft having an inverted cone secured thereto, and a series of vanes attached at their upper ends to said cone and united at their lower ends to a ring which is not connected with the shaft, substantially as described.

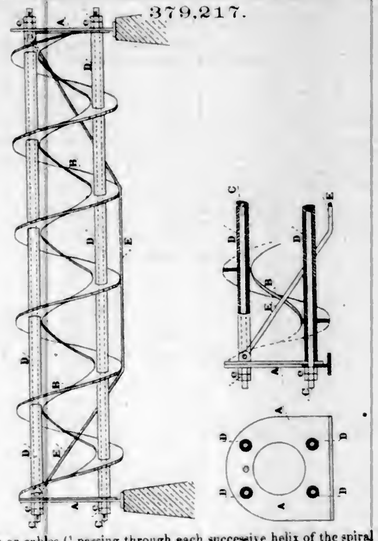
2. A chimney-cowl consisting of the standards B, the cap C, uniting the standards, the cross-bar D, the glass bearings E, inserted in said cap and cross-bar and having the two concentric sockets *e* and *e'*, the shaft F, having the flanged collar *f* and the inverted cone H, the vanes G, attached to the base of said cone, and the ring G', uniting the ends of the vanes and unconnected with the shaft F, substantially as described.

3. A rotating chimney-cowl having a series of curved vanes, G, each of which is provided with a gutter, *g*, and a flange, *g'*, substantially as described.

379,217. SPIRAL GIRDER. WILLIAM W. GREEN, Chicago, Ill. Filed Sept. 23, 1886. Renewed Aug. 11, 1887. Serial No. 246,682. (No model.)

Claim.—1. The combination, in a spiral girder, of the spiral B, extending from and connecting with the breast-plates A, the tension

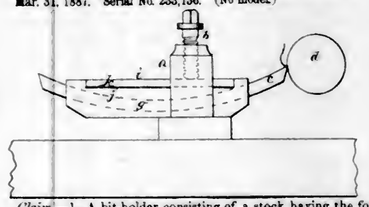
379,217.



rods or cables C, passing through each succesive helix of the spiral B and connecting with the breast-plates A, and the compression pipes or rods D, which reach from helix to helix of spiral B, substantially as shown and described.

2. The combination, in a spiral girder, with the guy rods or cables E, extending from breast-plate to breast-plate of the spiral B, and compression-pipes D, reaching from helix to helix of spiral, of the rods or cables C, secured to the breast-plates A by nuts *c*, substantially as shown and described.

379,218. LATHE-TOOL. JOHN D. HALL, Philadelphia, Pa. Filed Mar. 31, 1887. Serial No. 233,136. (No model.)



Claim.—1. A bit-holder consisting of a stock having the form of a trough open at its ends, and having an interior curved bottom extending from end to end, and a follower adapted to fit within the open stock, having its inner side curved corresponding to the bottom of the stock, in combination with a bit-strip of uniform cross-section and having a curvature corresponding to the stock and its follower, substantially as described.

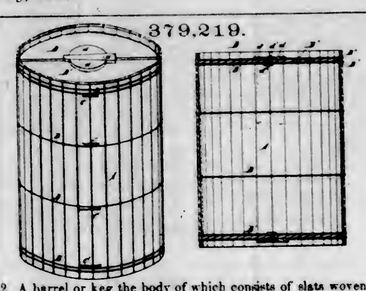
2. A bit-holder consisting of a stock having the form of an open-ended trough and a uniformly-curved bottom, and a follower having a corresponding curved form, in combination with a bit-strip of uniform cross-section and of curvature corresponding to the curved surfaces of the stock and follower, and means for fastening the parts together, substantially as described.

3. The stock open at top and ends, having an interior curved bottom, its sides recessed to form the top edge dovetail, and having the side opening, and a follower of T form in cross-section adapted to fit into said recessed sides and having an L-shaped arm adapted to fit into said side opening, in combination with a bit-strip of uniform cross-section and curvature, and a screw entering said stock against the follower to fasten the latter, as described.

379,219. WOVEN FABRIC AND PACKAGE MADE THEREFROM. MILTON A. HAMILTON, Detroit, Mich. Filed Mar. 7, 1887. Serial No. 230,023. (No model.)

Claim.—1. A barrel having a body comprising slats connected by interwoven wires provided with clips C, rigidly secured at one end upon one of the outer slats of the body, and also having expansible heads, substantially as described.

379,219.



2. A barrel or keg the body of which consists of slats woven together side by side with wire strands, crozes at their ends formed by two adjacent weavings of wire, and in connection therewith expansion-heads, substantially as and for the purposes described.

3. A barrel or keg made of slats woven together side by side with strands of wire, crozes at their ends, and expansion-heads, said crozes being formed by adjacent weavings of wire, said wires upon the interior of the barrel or keg being caused to protrude inwardly in loops opposite each or opposite several of the slats, substantially as and for the purposes described.

4. A barrel or keg composed of slats woven together side by side with wire strands, crozes formed at their extremities by adjacent weavings of wire, and expansion-heads, the cylinder of said barrel or keg lined with paper or other fabric, substantially as and for the purposes described.

5. A fabric designed for employment in the construction of packages, said fabric consisting of slats of wood woven together with a warp of wires, B, said wires projected in loops at desired points or intervals from the surface of the slats, substantially as and for the purposes described.

6. A fabric for the construction of packages, said fabric constructed of slats woven with a warp of wire and provided with clips or hooks to fasten the edges of said fabric when brought adjacent to each other in making up the package, said clips having a fixed engagement at one end upon one of the outer slats of said fabric, substantially as described.

7. A barrel having a body formed of a fabric of normally-straight slats woven with a warp of wires, the warp-wires intermediate of the ends of the body being loosely woven, and having means for expanding the center of the body to form the bilge, substantially as described.

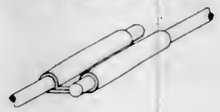
8. A barrel or keg consisting of a body constructed of slats woven together with a warp of wires provided with clips C, having a fixed engagement at one end upon one of the outer slats of which the body is constructed, and in combination therewith expansion-heads, said slats provided with a raised croze, said body and heads being held in place solely by the engagement of the clips and the expansion of the heads, substantially as described.

379,220. FELTED FOOT-WEAR. ALFRED A. HAWLEY, Kennebunk, Me. Filed Dec. 29, 1887. Serial No. 259,313. (No model.)



Claim.—An article of felt foot-wear impregnated with rubber, gutta-percha, or both, substantially as set forth.

379,221. COUPLING FOR JOINING ELECTRIC WIRES. CARL HERING, Philadelphia, Pa. Filed Dec. 5, 1887. Serial No. 257,006. (No model.)



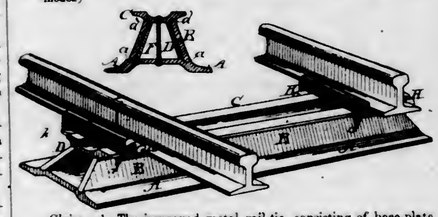
Claim.—1. A coupling for joining wires, consisting of a piece of metal bent so as to form two loops, with an intervening connection between the loops composed of two or more thicknesses of metal juxtaposed in the tangent of the tubes, or nearly so, adapted to receive two wires to be coupled, and by being bent to clamp them, substantially as described.

2. A coupling for joining wires, consisting of a piece of metal bent so as form two loops for the insertion of the two wires, with an intervening connection composed of two or more thicknesses of metal juxtaposed in the tangent of the tubes, or nearly so, and the two tubes bent together for the purpose of clamping the wires.

3. A metallic coupling for connecting wires, consisting of two parallel split tubes having two of their edges integrally connected and their other two edges abutted against each other by an intervening connection adapted to receive wires within the tubes, and, upon the tubes being bent together, to clamp them.

4. A coupling consisting of two split tubes, *a* and *b*, connected at two of their edges by the part *d*, and having their other two edges held apart by the part *c*, which parts *d* and *c*, on being bent, will partially close the tubes.

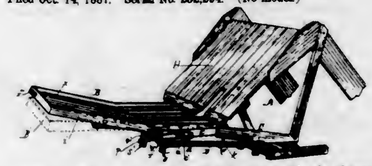
379,222. RAILROAD RAIL-TIE AND RAIL-CLAMP. JOHN F. HUDEC, Cleveland, Ohio. Filed Jan. 4, 1888. Serial No. 260,256. (No model.)



Claim.—1. The improved metal rail-tie, consisting of base-plate A, side plates, B B, top plate, C, and cone-blocks D, secured by rivets F, constructed and combined substantially as shown and described.

2. The combination, with a metal tie consisting of base-plate A, side plates, B B, top plate, C, and cone-blocks D, secured together with rivets F, of the clamp-plates G, having grooved flanges *g h*, and wedges H, all constructed and arranged substantially as shown and described.

379,223. SHEAF-CARRIER. AUGUSTUS JEWELL, Dowagiac, Mich. Filed Oct. 14, 1887. Serial No. 252,294. (No model.)



Claim.—1. The combination, with a harvester, of a sheaf-carrying table, B, standing in its receiving position, with its delivery end next to the harvester and vertically pivoted forward of its center on a supporting-arm, D, the axis on which the carrier is pivoted having its lower end forward of and nearer to the harvester than its upper end, whereby when the carrier is operated to discharge the sheaves its delivery end will swing downward and outward, substantially as set forth.

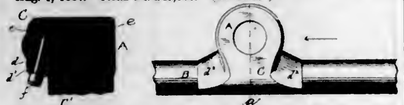
2. The combination, with a harvester, of a sheaf-carrying table, B, standing in its receiving position, with its delivery end next to the harvester and vertically pivoted forward of its center on a supporting-arm, D, on a pivot having its lower end forward of and nearer to the harvester than its upper end, whereby when the carrier is operated to discharge the sheaves its delivery end will swing downward and outward, and a slot, *z*, in a bearing, F, whereby when the carrier is in the discharging position its lower or delivery end may be swung up by and upon coming in contact with obstacles on the ground, substantially as and for the purpose set forth.

3. The combination, with a harvester having at its front end a beam, C, projecting toward the stubble and having on its sill next to the stubble a keeper, *n*, and support *b*, the beam C having a depending hook, *e*, at its outer end, of a supporting-arm, D, lying in the hook *e*, and having an elbow supported in the keeper *n* and on the support *b*, and a sheaf-carrier, B, the carrier standing in position to receive the sheaves, with its delivery end next to the harvester, and being vertically pivoted forward of its center in bearings in the supporting-arm on a pivot having its lower end forward of and nearer the

harvester than its upper end, whereby when the carrier is operated to discharge the sheaves its delivery end will swing downward and outward, and means for operating the carrier, substantially as and for the purpose set forth.

4. The combination, with a harvester, of a supporting-arm, D, having a stud-pin, d', on its upper side and near its outer end and bearings E F secured to its outer end, a carrier, B, having a vertical pivot, T, rigidly secured to its under side forward of its center to bear in said bearings, and having a spring-catch, a, to catch onto said stud-pin d', a crank-arm, s', a rod, v, between said spring-catch and crank-arm, and a treadle, r, and a connection between said rod v and the treadle, substantially as set forth.

379,224. VELOCIPEDE. IVER JOHNSON, Worcester, Mass. Filed Aug. 1, 1887. Serial No. 245,876. (No model.)

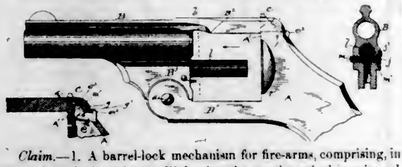


Claim.—1. The combination of the velocipede-head having a projection or bearing, C, made with a cylindrical-shaped longitudinal recess or hollow therein and a longitudinal opening in front considerably smaller at the center than the diameter of the handle-bar, with said handle-bar having a recess or depression therein, and the fastening-bolt f, substantially as and for the purpose set forth.

2. The combination of the velocipede-head having a projection or bearing, C, made with a cylindrical-shaped longitudinal recess or hollow therein and a longitudinal opening in front smaller at the center than the diameter of the handle-bar, with said handle-bar having a recess or depression therein, wedge g, adapted to fit in said depression, and fastening-bolt f, substantially as and for the purpose set forth.

3. The method of detachably fastening the velocipede handle-bar, having the recess in the side thereof, to the head, having a bearing made with a cylindrical longitudinal opening therein and a horizontal opening in front whose central portion is smaller than the diameter of said cylindrical opening, by inserting said handle-bar at its reduced part through the aforesaid narrow front opening into the cylindrical opening, then turning it so as to bring its recess upon the back side thereof next to the head, and there fastening it by passing a bolt through said bearing and handle-bar, substantially as shown and described.

379,225. BARREL-LOCK FOR REVOLVERS. IVER JOHNSON and ANDREW FYRBERG, Worcester, Mass.; said Fyrberg assignor to said Johnson. Filed Nov. 3, 1887. Serial No. 254,189. (No model.)



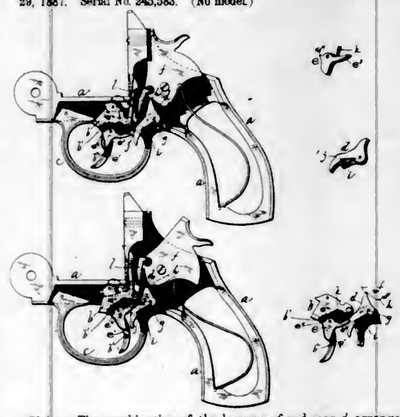
Claim.—1. A barrel-lock mechanism for fire-arms, comprising, in combination, the barrel-strap B^3, having the usual vertical opening, d, at its rear end and the horizontal shoulder g back of said vertical opening, the spring-dog e, hinged in a vertical longitudinal slot in the back of bridge A', having the lip e' upon the outer side of its upper end, adapted to engage with said shoulder g, also having means, substantially as described, whereby its upper end may be forced forward to disengage its lip from the shoulder g, and the said bridge A', having the post c, substantially as set forth.

2. The combination of the barrel-strap B^3, having the vertical opening d at its rear end and the horizontal shoulder or notch g back of said vertical opening, with the dog e, hinged in the longitudinal vertical slot f', formed in the bridge A' and its post c, and having the lip e' upon the outer side of its upper end, also having means, substantially as described, whereby the same may be operated at its lower end to force forward its upper end to disengage its lip from the shoulder g, spring h, interposed between said upper end of the dog and post c, and bridge A', having said post c, substantially as and for the purpose set forth.

3. In a fire-arm, the combination of the spring j, fitted in a horizontal recess in one side of the barrel-base B^3, fastened at its forward end and having the inwardly-turned flange j^3 at its opposite end, with the cylinder-hub k, having a peripheral groove therein, and the operating-pin m, fitted to slide transversely in said barrel-base, also adapted to engage with the free end of spring j, substantially as and for the purpose set forth.

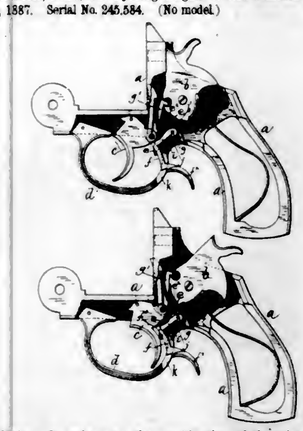
4. In a fire-arm, the combination of the spring j, fitted in a horizontal recess in one side of the barrel-base B^3, fastened at its forward end and having the inwardly-turned flange j^3 at its opposite end, with the cylinder-hub k, having a peripheral groove therein, operating-pin m, fitted to slide transversely in said barrel-base, also adapted to engage with the free end of spring j, and sleeve l, having a transverse slot or groove to receive said pin m, substantially as and for the purposes set forth.

379,226. REVOLVER. IVER JOHNSON and ANDREW FYRBERG, Worcester, Mass.; said Fyrberg assignor to said Johnson. Filed July 29, 1887. Serial No. 245,583. (No model.)



Claim.—The combination of the hammer f and sear d, arranged to operate substantially as described, said sear provided with a shoulder or notch, j, upon the front side thereof, near its lower end, with the lock-lever e, hinged at its upper end to the trigger b in b's a slot or recess, b', formed therein, said lock-lever being made to project a little in front of the trigger-finger when in its normal position, and also provided with a projection, e^3, extending back and up therefrom, and adapted to engage with the aforesaid shoulder or notch j on the sear when the trigger is pulled back, the spring k, interposed between said projection e^3 and the trigger, and said trigger, all constructed and arranged to operate substantially as and for the purpose set forth.

379,227. REVOLVER. IVER JOHNSON and ANDREW FYRBERG, Worcester, Mass.; said Fyrberg assignor to said Johnson. Filed July 29, 1887. Serial No. 245,584. (No model.)



Claim.—In a fire-arm, the combination of the trigger, sear, and hammer with a lock-lever hinged at its upper end and fitted to work in a longitudinal slot or recess in the sear, and having a projection upon its front side near its upper end adapted to engage with a shoulder or notch on the back side of the trigger, also having a projection extending down and back of the trigger-guard, preferably through a longitudinal slot in said trigger-guard, and provided with a suitable spring for exerting a forward pressure thereon, substantially as and for the purpose set forth.

379,228. VELOCIPEDE. IVER JOHNSON and REINHARD T. TORKELSON, Worcester, Mass.; said Torkelson assignor to said Johnson. Filed Aug. 1, 1887. Serial No. 245,824. (No model.)

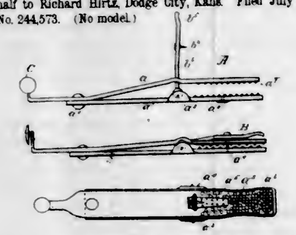


Claim.—1. The combination of the velocipede-head having the horizontal dovetail groove d in its front side, with the handle-bar having the longitudinal flange f', corresponding in shape to said groove d, and adapted to be slipped endwise therein, said handle-bar also having the longitudinal slot h formed therein, as described, and one or more bolts, g, passed transversely through suitable openings in said head and handle-bar, substantially as and for the purpose set forth.

2. The handle-bar B, consisting of a hollow or solid rod having the separate sleeve f secured thereon, provided with the longitudinal flange f', in combination with the head A, having a horizontal slot therein corresponding in shape to the flange on the aforesaid sleeve, also provided with lateral flanges or ears c c, and fastening-bolts g g, passed transversely through suitable openings in said flanges, the sleeve, and handle-bar rod, substantially as and for the purpose set forth.

3. The velocipede handle-bar having the sleeve f, centrally secured thereon, and said sleeve provided with a longitudinal flange or tenon, f', the handle-bar and sleeve also both having suitable openings therein for the insertion of fastening-bolts, and a longitudinal slot extending through said parts between the aforesaid openings, substantially as set forth.

379,229. CLASP. EDWARD C. JONES, Kansas City, Mo., assignor of one-half to Richard Hirtz, Dodge City, Kans. Filed July 18, 1887. Serial No. 244,573. (No model.)



Claim.—1. A clasp consisting of an upper spring-contracted bent plate and a lower plate suitably connected together at one end and having opposite parallel grip-jaws on their opposite ends, and a cam-lever pivoted to said lower plate, said lever adapted to throw the jaws apart when elevated and to clasp upon said upper plate and jaw when depressed, substantially as described.

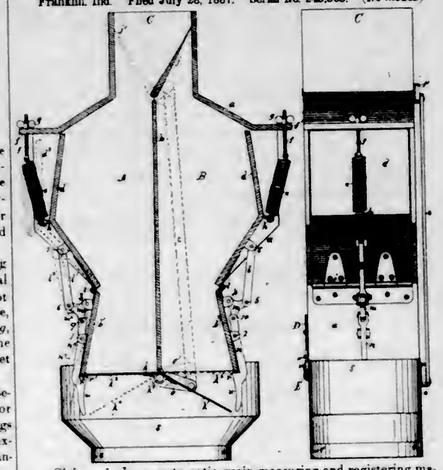
2. In a clasp, the combination of an upper spring-contracted bent plate provided with a longitudinal slot and a lower plate, said plates being suitably connected together at one end and provided with respective upper and lower grip-jaws upon their opposite ends, and a pin-receiving perforation in said upper jaw, a cam pivoted to said under plate beneath said slot and adapted to throw apart said jaws, and a lever attached at one end to said cam, extending through said slot, adapted to clasp upon said upper plate when depressed, and provided with a pin upon its opposite end for entering said perforation, as described.

379,230. MEANS FOR SECURING CORKS. JAMES W. KINCAID, Georgetown, Tex., assignor of one-half to Emzy Taylor, same place. Filed Dec. 23, 1887. Serial No. 258,850. (No model.)



Claim.—The herein-described means for securing corks in bottles, consisting of a wire strand passed through coincident apertures of the neck of the bottle and twisted on the top of the cork, as shown and described.

379,231. GRAIN-MEASURING MACHINE. JESSE M. LAMB, Franklin, Ind. Filed July 23, 1887. Serial No. 245,503. (No model.)



Claim.—1. In an automatic grain measuring and registering machine, the combination of a spring, c, and pressure-plate d, with levers l m, and keeper n and tilting plate k, all adapted to operate substantially as and for the purposes set forth.

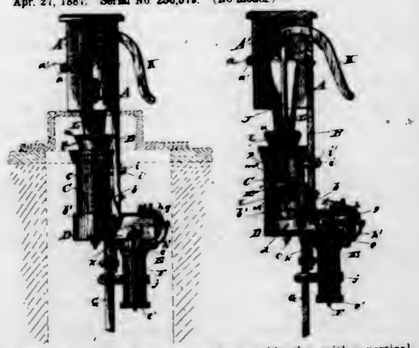
2. In an automatic grain measuring and registering machine, casing a, cut-off valve j, rod c, tilting plate k, pressure-plate d, spring c, adjusting-screws f, levers l and m, keeper n, dial D, pawls w and w', spring v, and disk E, all combined substantially as set forth.

379,232. DESK. CHRIS LARSON, Chicago, Ill., assignor to Hanna Larson, same place. Filed Apr. 27, 1887. Serial No. 236,355. (No model.)



Claim.—In a desk, the bottom having curved groove B and groove A A', part A of said groove A A' being concentric with groove B, and part A' thereof having for its center the end of said groove B, in combination with pigeon-hole case Y, provided with studs a b, fitting into said grooves, respectively, substantially as set forth.

379,233. PUMP. GEORGE H. LAUB, West Lebanon, Ind. Filed Apr. 27, 1887. Serial No. 236,379. (No model.)



Claim.—1. In a lifting-pump, the combination, with a vertical divided casing, of a vertical bar depending therefrom, a hollow conp-

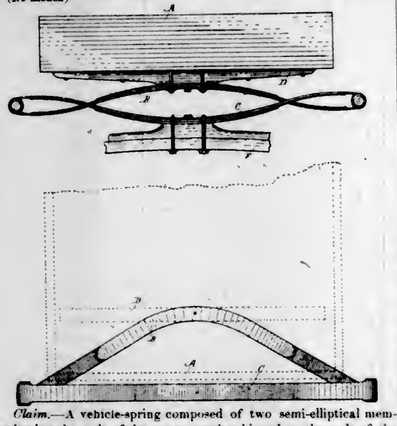
ling secured to this bar, a pump-cylinder secured to said coupling and having a valved bucket in it, a penstock also secured to said coupling, a flap-valve removably applied therein at the upper end of the penstock, and an upwardly-flaring conduit provided with a discharge-spout, all substantially as described.

2. The combination of a hollow coupling provided with sheaths *b k*, a flat valve-seat, a socket for the cylinder C, a socket for the penstock E, a removable cap, a valve linked to this cap, and a suitable fastening for the same, substantially as specified.

3. The combination of the hollow coupling D, the cylinder C, fitted into this coupling, the depending bar B, secured to the coupling and said cylinder, the penstock E, fitted into the coupling, the supporting-bar G, secured to the latter and also to the penstock, the removable cap *g*, and a valve linked to this cap, substantially as specified.

4. The combination of a pump-bucket having inclined flattened and perforated sides *l l*, an upwardly-flaring cup centrally arranged in said bucket, the hinged flap-valves, the packing and spider, and the bucket-rod, all substantially as specified.

379,234. VEHICLE-SPRING. CHARLES P. MAHER and E. JEROME PALMER, Kalamazoo, Mich. Filed Oct. 15, 1887. Serial No. 252,479. (No model.)

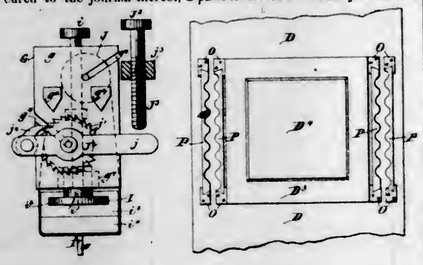


Claim.—A vehicle-spring composed of two semi-elliptical members having the ends of the upper member hinged to the ends of the lower member on the under side of the latter, said lower member being horizontally straight in plan view and for attachment to the axle, and the upper member being bowed edgewise from the lower member, forming a portion to sustain the vehicle-body, substantially as set forth.

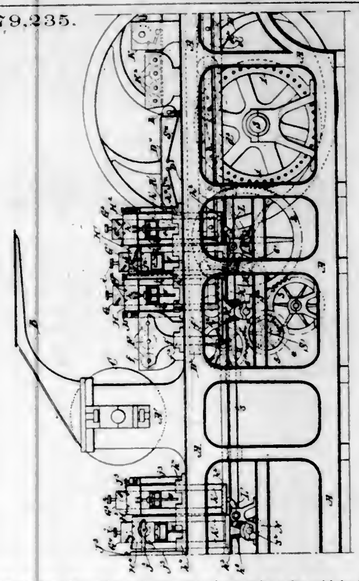
379,235. PLATE-PRINTING MACHINE. ALEXANDRE M. MARCILLY, Aîné, Paris, France. Filed Mar. 31, 1886. Serial No. 197,320. (No model.) Patented in France Jan. 23, 1885, No. 166,613; in Belgium Feb. 5, 1886, No. 71,898; in Germany Feb. 10, 1886, No. 36,925, and in England Feb. 27, 1886, No. 2,886.

Claim.—1. In a plate-printing press, the combination, with a reciprocating bed, of a wiper comprising a wiper-pad, a wiper-cloth, a cloth-carrier, a winding-roll operating to unwind the cloth from said carrier, and a frame in which said parts are mounted, arranged above the bed, and adapted to reciprocate vertically and horizontally, substantially as described.

2. In a plate-printing press, the combination, with the reciprocating bed and a stationary abutment, of a wiper comprising a wiper-pad, a wiper-cloth, a cloth-carrier, a winding-roll, a ratchet rigidly secured to the journal thereof, a pawl-lever loose on said journal and



379,235.



lying in the plane of the abutment, and a carriage for said devices arranged above the bed, having a horizontal and vertical movement, substantially as described.

3. In a plate-printing-press, the combination, with the reciprocating bed, of a plurality of wipers reciprocating intermittingly and successively in a plane at right angles to the plane of motion of the bed as said bed passes under the same, substantially as and for the purpose specified.

4. In a plate-printing press, the combination, with the reciprocating bed, of a plurality of wipers reciprocating intermittingly and successively and at a different speed in a plane at right angles to the plane of motion of the bed, substantially as and for the purpose specified.

5. In a plate-printing press, the combination, with the reciprocating bed, of a plurality of wiper-carriers having a reciprocating motion controlled by and at right angles to the motion of the bed, and having their initial of motion in reverse directions, whereby the wiping of the plate is first started in one direction by one or more of the wipers and in a reverse direction by the other wiper or wipers, substantially as and for the purpose specified.

6. In a plate-printing press, the combination, with the reciprocating bed, of a wiper adapted to reciprocate in a plane at right angles to the plane of motion of the bed, the motion of the wiper being controlled by the motion of the bed, substantially as described.

7. In a plate-printing press, the combination, with the reciprocating bed, of a plurality of wipers adapted to reciprocate in a plane at right angles to the plane of motion of the bed, the said motion of the wipers being controlled by the motion of the bed to reciprocate the wipers successively, substantially as described.

8. In a plate-printing press, the combination, with the reciprocating bed, of a plurality of wipers having a variable motion controlled by the motion of the bed in a plane at right angles to the plane of motion of said bed, substantially as and for the purpose specified.

9. In a plate-printing press, the combination, with the reciprocating bed, of a wiper-carrier reciprocating at right angles to the motion of the bed at a differential speed controlled by the bed, substantially as and for the purpose specified.

10. In a plate-printing press, the combination, with the reciprocating bed, of a plurality of wipers having a vertical and horizontal reciprocating motion in planes at right angles to the plane of motion of the bed, the horizontal reciprocation of the wipers being controlled by the reciprocation of the bed, substantially as described.

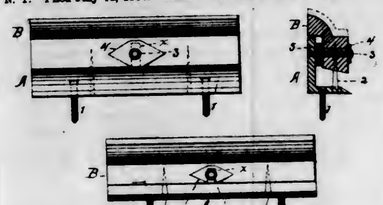
11. In a plate-printing press, the combination, with the reciprocating bed, of connected ink-roll and wiper-carriers having a synchronous vertical reciprocating motion above the bed, said wiper-carrier having an independent horizontal reciprocating motion, substantially as described.

12. In a plate-printing press, the combination, with the reciprocating bed and a wiper-carrier provided with a foot or bar, *o*, of strips P, secured to the bed and arranged to form between them a groove into which the bar *o* projects, said strips having their proximate faces of undulating form, substantially as for the purpose specified.

13. In a plate-printing press, the combination, with the reciprocating bed and a wiper-carrier provided with a foot or bar, *o*, of interchangeable strips P, secured to the bed and arranged to form between them a groove into which the bar *o* projects, said strips having their proximate faces of undulating form, the amplitude or degree of undulations varying in each pair of strips, substantially as and for the purpose specified.

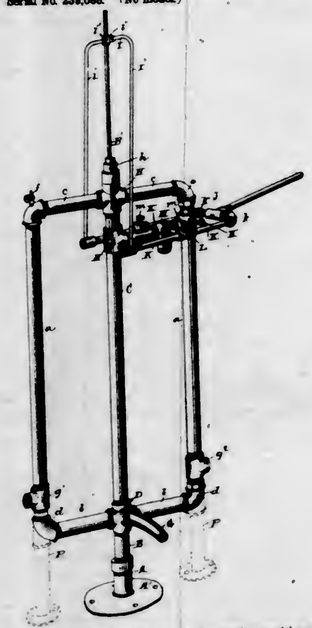
14. In a plate-printing press, the combination, with the reciprocating bed and a plurality of wiper-carriers provided with a foot or bar, *o*, at alternate opposite ends, of a pair of strips, P, secured to the bed on opposite sides of the block that supports the printing-plate, said strips having their proximate faces of undulating form and arranged to form a groove into which said bar *o* projects, substantially as and for the purpose specified.

379,236. CARPET-FASTENER. MELVIN E. MCCAMPLINE, Syracuse, N. Y. Filed July 19, 1887. Serial No. 244,690. (No model.)



Claim.—A carpet-fastener consisting of a base provided with projecting tacks, a cap fitting upon said tacks and provided with transverse slots, and securing-bolts passing through such slots and screwing into the base, and flexible packing interposed between the base and cap, substantially as described.

379,237. PUMP. WILLIAM B. MCGINNIS, Nevada, Mo. Filed May 23, 1887. Serial No. 239,063. (No model.)



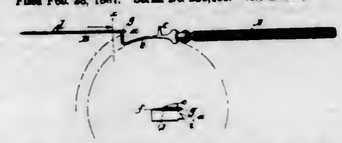
Claim.—1. In a pump, the combination, with the working-barrel, of the rectangular frame having a vertical tube, C, a vertical tube, *a*, and bottom and top horizontal tube-sections, *b c*, said tube-sections *a*, *b*, *c*, and C forming a substantially continuous chamber adapted to hold air in the parts *a c* C above the water-exit, and the piston-rod situated in the tube C, substantially as described.

2. The combination of the tubular frame having a vertical tube-section joined by the top and bottom horizontal tubes, the tube-sections C, joined air-tight to the top and bottom horizontal tubes by the couplings D H, and the piston-rod situated in the central tube, C, and passing through the said coupling D, substantially as set forth.

3. The combination, with the pump-tube C and the vertical tube *a*, parallel with and communicating with the said tube C, of the fulcrum M, the tabular supports N therefor, vertically adjustable on the tubes C *a*, the handle, the connecting-tubes K K, one on each side of the tubes C *a*, and both pivotally connected with the adjustable fulcrum M, substantially as set forth.

4. The combination, with the pump-tube C and the tube *a*, parallel with and connected to the pump-tube C, of the fulcrum M, the supports N N therefor, connected to the tubes *b c*, the handle, and the tubes K K, one on each side of the tubes C *a*, and both adjustably and pivotally connected to said fulcrum M, substantially as set forth.

379,238. FRUIT-KNIFE. LUTHER C. MCNEAL, Rochester, N. Y. Filed Feb. 28, 1887. Serial No. 229,135. (No model.)



Claim.—1. In combination with a handle, the blade of a fruit-knife formed with a separating part, *b*, the plane of which is substantially parallel with the axis of said handle, a cutter, *a*, joined to one end of said part *b*, the planes of said parts *b* and *a* forming an angle, and a guard for said cutter projecting at the end thereof and substantially at right angles therewith.

2. In combination with a handle, the blade of a fruit-knife formed with a separating part or separator, *b*, the plane of which is substantially parallel with the axis of said handle, a cutter joined to one end of said part *b*, the planes of said part *b* and said cutter forming an angle, and a gage for said cutter at the opposite end of said separator from said cutter, and projecting from the same side of said separator with said cutter and parallel therewith.

3. In combination with a handle, the blade of a fruit-knife formed with a separator, *b*, the plane of which is substantially parallel with the axis of said handle, and a cutter joined to one end of said part *b*, the planes of said part *b* and said cutter forming an angle, the end of the cutting-edge of said cutter adjacent to said part *b* being above the surface of said part *b* out of contact with the meat of the fruit, for the purpose set forth.

379,239. WHIFFLETREE ATTACHMENT. GIDEON MILER, St. Joseph, Mo. Filed Sept. 1, 1887. Serial No. 248,544. (No model.)



Claim.—1. In an attachment for connecting single and double trees, the combination of clevis C, top plate, D, with pin K, loop-bar E, and nuts G G, substantially as and for the purpose described.

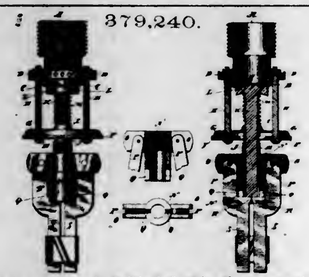
2. In an attachment for connecting single and double trees, the combination of clevis C, top plate, D, pin K, loop-bar E, male and female plates, and nuts G G, all substantially as and for the purpose specified.

3. In an attachment for connecting single and double trees, the combination of a top plate with pin, a clevis with hole at center of curve or top, in which pin works, and threaded at lower ends for nuts, a pair of ordinary male and female plates, a loop-bar, and all necessary nuts and screws, substantially as and for the purpose specified.

379,240. AUTOMATIC FIRE-EXTINGUISHER. RICHARD W. MILLER, New Haven, Conn., assignor to the New York and New Haven Automatic Sprinkler Company, New York, N. Y. Filed Jan. 17, 1887. Serial No. 224,520. (No model.)

Claim.—1. In an automatic sprinkler-head, the combination, with a valve having a spindle, of a frame for such valve, a threaded sleeve connected with the frame and having the valve-stem extend through it, a nut screwing upon the sleeve, two arms connected with such nut, and one arm being movable and adapted to engage with the project-

379,240.



ing end of the spindle, and a fusible tie for tying the two arms together, the said arms being independent of the frame and adapting the nut to be turned by hand to vary the external pressure upon the valve, substantially as set forth.

2. In an automatic sprinkler-head, the combination, with a frame, of a valve located therein and having a spindle projecting outward beyond the same, a slotted guard connected with the frame at a point within the projecting end of the spindle, a movable arm adapted to engage with the end of the spindle and to enter the slotted guard which is located between the end of the spindle and the pivot of the arm, an arm to which the movable arm is tied, and a fusible tie for tying the two arms together, substantially as set forth.

3. In an automatic sprinkler-head, the combination, with a valve having a spindle, of a frame for such valve, a sleeve through which the valve-spindle passes connected with such frame, a slotted nut screwed upon the sleeve, a movable arm connected with the nut and adapted to enter the slot therein and to be engaged with the end of the spindle, an arm constituting a tying-point for such movable arm, and a fusible tie connecting such arms, substantially as set forth.

4. In an automatic sprinkler-head, the combination, with a valve having a spindle, of a threaded sleeve through which the spindle projects, a rigid support for such sleeve, a nut screwing over the lower end of the sleeve and provided with two lugs located opposite each other, two arms respectively pivoted to the lugs of the nut and adapted to engage with the projecting end of the spindle, and a fusible tie for the lower ends of the arms, the said lugs and arms adapting the nut to be turned by hand to adjust the tension upon the spindle, substantially as set forth.

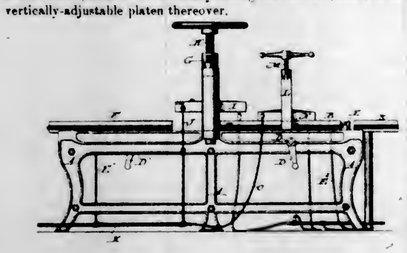
5. In an automatic sprinkler-head, the combination, with a valve having a spindle, of a threaded sleeve through which the spindle projects, a nut screwing upon the sleeve, two arms pivotally connected with the sleeve and adapted to fit around the lower end thereof and to engage with the projecting end of the spindle, and respectively provided with a straight tying-extension, such extensions coming close together when the arms are engaged with the spindle, and a fusible tie for such extensions, substantially as set forth.

6. In an automatic sprinkler-head, the combination, with a valve having a spindle, of an arm adapted to engage with such spindle, an arm to which the movable arm is tied, and a tie composed of two pieces of sheet metal provided with interlocking corrugations, forming a spring-lock parting under the pressure of the water, and normally united by solder, substantially as set forth.

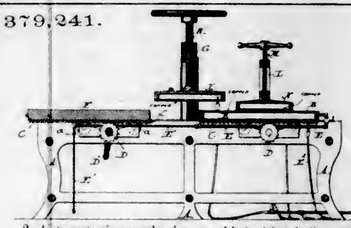
7. In an automatic sprinkler-head, a tie composed of two pieces of sheet metal provided with interlocking corrugations, forming a spring-lock parting under the pressure of the water, and normally united by solder, substantially as set forth.

379,241. STEREOTYPING-MACHINE. WILLIAM H. NELSON, Washington, D. C. Filed July 15, 1887. Serial No. 244,400. (No model.)

Claim.—1. In a stereotyping mechanism, the combination of a bed or frame, a hollow horizontally-sliding bed thereon, and a hollow vertically-adjustable platen thereover.



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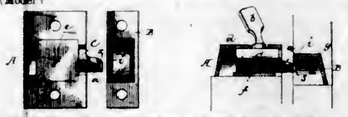


2. A stereotyping mechanism provided with a hollow sliding bed, a solid sliding bed, and a hollow vertically-adjustable platen, with conductors for delivering fluid into the hollow bed and platen, whereby the form and matrix may be subjected to pressure upon the solid or upon the hollow heated bed, as occasion may demand.

3. In a stereotyping mechanism, the frame, the hollow sliding bed thereon, the hollow vertically-adjustable platen thereover, and the telescopic pipes connecting with said bed and platen, respectively, as described.

4. In a stereotyping mechanism, the supplemental bed or table F and its hollow platen or drying-chamber N, in combination with the adjusting-screw and the screw-supporting yoke L, movable lengthwise of the bed or table, whereby the platen may be carried thereover from one end to the other.

379,242. FASTENER FOR MEETING-RAILS OF SASHES. RALPH H. NORTH, Philadelphia, Pa., assignor to the North Brothers Manufacturing Company, same place. Filed Dec. 9, 1887. Serial No. 257,442. (Model.)



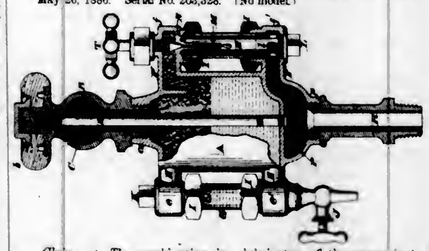
Claim.—1. The combination, in a sash-holder, of the case and bolt provided with an engaging-finger carried eccentrically at the end of the bolt and having an inclined face, *t*, and a keeper provided with an engaging-rib, *i*, extending laterally beyond the bolt in both directions and having an inclined face, *u*, substantially as set forth.

2. In a sash-holder, a case provided with a sliding and rotating bolt having an end finger for locking with the keeper, with a forward-projecting lip, *s*, on the terminal face of the finger, substantially as described.

3. The combination, in a sash-holder, of a keeper provided with an engaging-rib and a case supporting a rocking and sliding bolt having an eccentric engaging-finger, *a*, provided with an inclined face, *t*, a lip, *s*, on the terminal face of the finger, and a shoulder, *x*, substantially as set forth.

4. The combination, in a sash-holder, of the case supporting the rocking and sliding bolt having a finger with a lip, *s*, on the terminal face of the finger, forming a shoulder, *x*, shoulder *w*, and inclined face, *t*, and a lasp, B, having a transverse rib with an inclined inner face, *u*, substantially as set forth.

379,243. LUBRICATOR. JAMES POWELL, Cincinnati, Ohio. Filed May 26, 1886. Serial No. 203,328. (No model.)



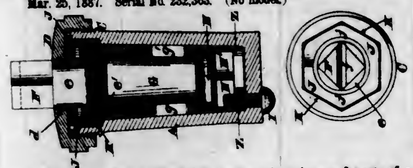
Claim.—1. The combination, in a lubricator, of the reservoir A having at its base an enlarged distributing-chamber, P, of practically the same diameter as said reservoir, the steam-inlet R, entering the center of said chamber, and a side passage, F', leading from the latter to the bottom of the sight-feed tube, as herein described.

2. A lubricator-reservoir having a lateral channel communicating with the top of the sight-feed tube, and a pendent flange opposite the entrance of said channel, for the purpose described.

3. A lubricator-reservoir having a socket that receives the top of the sight-feed tube, the upper end of said socket sloping from its center downwardly and outwardly, for the purpose described.

4. The combination, in a lubricator, of reservoir A *a*, chambered filling-cap B C, condensing-tube D, lateral channels E E' F F', sockets *e e' f f'*, index-glass G, sight-feed glass H, stuffing-boxes I I I I, drain-cock J, ported screw-plugs K L *l*, drop-feed nipple M, and distributing-chamber P, one of the upper channels, F, being provided with the depending flange O, as herein described.

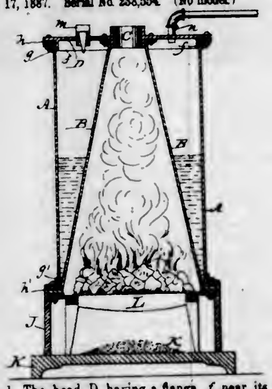
379,244. PLUG-COCK. JAMES POWELL, Cincinnati, Ohio. Filed Mar. 25, 1887. Serial No. 232,363. (No model.)



Claim.—1. The combination, in a cock, valve, or faucet, of a spring having a non-circular periphery and a central bore, a turning-plug having a spindle that passes freely through said bore, a non-circular chamber that retains said ring, and a cap that compresses the latter against said plug, for the purpose described.

2. The combination, in a cock, valve, or faucet, of a turning-plug, E *e*, having a convex bearing, *e'*, and suitable ports, as *g g'*, the spring J, having a non-circular periphery and a central bore, *j*, the non-circular chamber K in the neck of the valve, and an adjustable cap, D, for imparting the desired pressure to said spring, substantially as described.

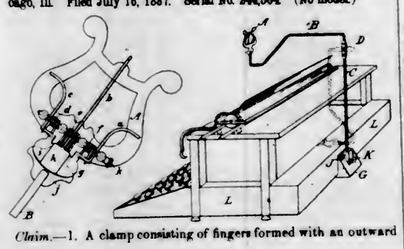
379,245. BOILER. JUDSON K. PURINTON, Dallas Centre, Iowa. Filed May 17, 1887. Serial No. 238,554. (No model.)



Claim.—1. The head D, having a flange, *f*, near its circumference, and a flanged central opening, the rim *g*, and packing-ring *h*, in combination with the outer shell, A, and inclined shell B, in the manner set forth, for the purposes stated.

2. An improved agricultural boiler and steam-generator, consisting of outer shell, A, an inclined inner shell, B, a cast-metal head, D, having a flange, *f*, and a central flanged opening, an open-bottomed base, J, rims *g* and *g'*, a grate, L, and a loose bottom, K.

379,246. ATTACHABLE COPY-HOLDER. ARTHUR B. REID, Chicago, Ill. Filed July 16, 1887. Serial No. 244,564. (No model.)



Claim.—1. A clamp consisting of fingers formed with an outward curve at their several extremities, so as to admit of a copy-book being pressed downward under them, in combination with springs, thumb-pieces, and a frame, as specified.

2. In a copy-holder for type-writing machines, the combination of part G, as specified, with a jointed or tubular shank.

3. The combination of clamp A, as specified, with a jointed shank, as specified.

4. The combination of clamp A, as specified, with a tubular or telescopic shank, as specified.

379,247. INKSTAND. JASPER S. ROSS, Geneva, Ohio. Filed Apr. 8, 1887. Serial No. 234,113. (No model.)



Claim.—In an inkstand, the combination of a reservoir, an independent ink-cup depending therein, and a collar adjusting the one to the other, said cup having a close bottom and orifices formed in its sides, and said collar having recesses formed in its lower edge, all substantially as and for the purposes set forth.

379,248. INKSTAND. JASPER S. ROSS, Geneva, Ohio. Filed July 11, 1887. Serial No. 243,963. (No model.) Patented in Canada Feb. 25, 1886, No. 23,492.



Claim.—1. In an inkstand, the combination of a reservoir, an independent ink-cup depending therein, and a collar adjusting the one to the other, said cup having a close bottom, orifices formed in its sides, and having its upper portion formed with its opposite sides parallel, substantially as and for the purposes set forth.

2. In an inkstand, the combination of a reservoir and independent ink-cup depending therein, and a collar adjusting the one to the other, said cup being formed with a close bottom and having orifices formed in its sides, and said reservoir having its mouth formed near the lateral boundary of the reservoir, substantially as and for the purposes set forth.

3. In an inkstand, the combination of a reservoir and an independent ink-cup depending therein, and a collar adjusting the one to the other, said cup having a close bottom and having orifices formed in its sides, and said reservoir being oblong in form and having its mouth formed in one end of said reservoir, substantially as and for the purposes set forth.

379,249. LAMP-EXTINGUISHER. EDWARD J. SHAW, Walsall, County of Stafford, England. Filed May 17, 1887. Serial No. 238,564. (No model.) Patented in England Dec. 1, 1886, No. 15,672.

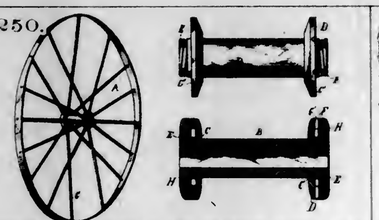


Claim.—In a lamp, the combination, with the wick-tube, of an automatic extinguisher comprising a metallic part arranged to cover the end of the wick-tube when the wick is lowered, and formed with points or serrations upon the edge which is toward the wick, depending portions or counter-weights, and pivotal supports therefor attached to the wick-tube, whereby the extinguisher is rendered laterally movable to allow the upward passage of the wick, substantially as described.

379,250. WHEEL. WILLIAM SHERIDON, North Toledo, Ohio, assignor of forty-five one-hundredths to William Leutz, same place. Filed Sept. 19, 1887. Serial No. 250,147. (No model.)

Claim.—1. In a metal wheel, a hub consisting of a single annular bearing portion having reduced ends, collars having tubular extensions at right angles thereto encircling the reduced ends of the hub,

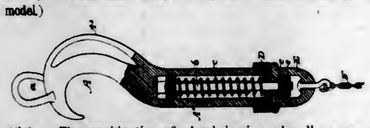
379,250.



the extensions being threaded at their peripheries, channels in the collars for the insertion of spokes, and a washer and nut upon each extension for holding the spokes within the channels, as and for the purpose set forth.

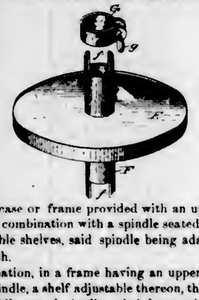
2. In a metal wheel, collars having tubular extensions, one for each side of the wheel, one extension having a right and one a left hand thread upon their peripheries, with nuts having corresponding threads, in combination with an annular bearing portion, having the periphery of each end reduced in diameter, and upon which the tubular extensions fit, as and for the purpose set forth.

379,251. DEVICE FOR SUSPENDING ANIMALS. ELMER A. STILES, St. Cloud, Minn. Filed Oct. 18, 1887. Serial No. 252,729. (No model.)



Claim.—The combination of a hook having a handle on one side and a hollow shank, a centrally-perforated nut closing said shank, a coiled spring within said shank, and a stem having its head resting upon said spring, and nuts on its lower end, with a swivel resting upon said nuts, substantially as and for the purpose described.

379,252. ADJUSTABLE SHELF-FASTENER. H. D. THATCHER, Potsdam, N. Y. Filed Dec. 24, 1887. Serial No. 258,875. (No model.)



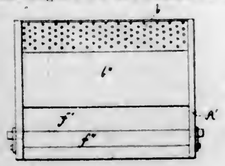
Claim.—1. A case or frame provided with an upper and a lower tubular bearing, in combination with a spindle seated therein and provided with adjustable shelves, said spindle being adapted for instant removal, as set forth.

2. The combination, in a frame having an upper and lower tubular bearing, of a spindle, a shelf adjustable thereon, the said shelf being provided with a rigidly-attached split-ended sleeve, with means for compressing the sleeve uniformly upon the spindle, as set forth.

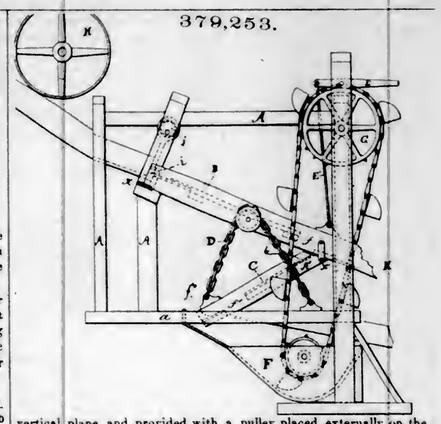
3. The combination of the revoluble shaft, suitable bearings therefor, the shelf-bearing spring-metal sleeve split at the end, with the screw-controlled clamping-band encircling the same, whereby the positive engagement of the sleeve with the spindle is secured by uniform pressure upon its entire surface, while admitting of ready adjustment upon the shaft without marring its surface, as set forth.

379,253. MECHANISM FOR SEPARATING COAL, &c. SEPTIMUS THOMAS, Scranton, Pa. Filed Aug. 28, 1886. Serial No. 212,132. (No model.)

Claim.—In a coal-separator, the combination of a supporting frame, an upper chute hinged to the said frame, so as to swing in a

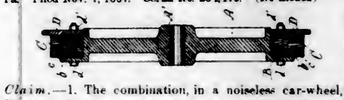


379,253.



vertical plane, and provided with a pulley placed externally on the side thereof, a lever and link adapted to raise or lower said chute, a lower chute situated under the upper chute and hinged thereto, and a chain passing over said pulley having one end secured to the lower part of the supporting-frame below the plane of the said pulley, and the other end attached to the free end of the said lower chute, substantially as described, and for the purpose specified.

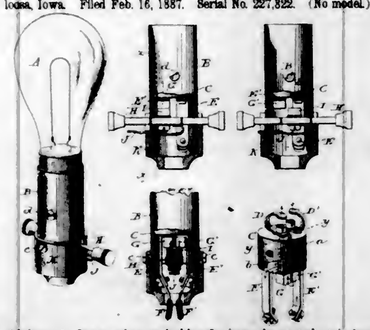
379,254. CAR-WHEEL. LA MARCUS A. THOMPSON, Philadelphia, Pa. Filed Nov. 7, 1887. Serial No. 254,476. (No model.)



Claim.—1. The combination, in a noiseless car-wheel, with a metallic frame having a series of openings in the surface thereof, a hub formed integral therewith and projecting laterally from the sides of said frame, and a flange with a turned-in rim formed integral with said metallic frame, of a wearing-ring composed of a series of segmental sections of wood having recesses in one of the sides thereof for engaging with the turned-in rim of said flange, and a detachable ring or tire, D, and bolts *d* and nuts *d'*, all arranged as shown and described, whereby said wearing-ring and said tire may be held solidly together against said flange and metallic frame, as and for the purposes specified.

2. The combination, with the frame A, with its flange B and rim *b*, of the wearing-rim C, composed of a series of sections of wood, the flange D, with its inner upper and lower rims, d^2 and d^3, and the bolts and nuts *d* and *d'*, all arranged as shown and described, and for the purposes set forth.

379,255. INCANDESCENT-LAMP SOCKET. FRANK THOUR, Oskaloosa, Iowa. Filed Feb. 16, 1887. Serial No. 227,822. (No model.)



Claim.—1. In a socket or holder for incandescent electric lamps, the combination of a shell or case, a non-conducting plug or block, as C, provided on its upper face with contact-arms D D' and on its under face with arms E E' and contact-blocks G G', and a slide, as H, provided with a block, I, all substantially as shown.

2. In combination with a lamp proper and the shell or case B, plug C, provided with arms D D', arranged to make contact with the terminals of the lamp-filament, conducting-arms E E', also secured to said plug C, a stem or bolt, *a*, connecting arms E and D', a contact-block, G, electrically connected with the arm D, and a switch-bar arranged, substantially as shown, to electrically connect the arm E' and the block G and thereby complete the circuit through the lamp.

3. In combination with the lamp and the case or shell B, a non-conducting plug, C, secured within the shell or case and provided on its upper face with contact-arms D D' and on its under face with conductor-arms E E', the arms D D' and E E' forming a normally-open circuit, and a switch bar or rod arranged to complete the circuit, substantially as shown.

4. In combination with the lamp and the case or shell B, a non-conducting plug, C, secured within the latter, arms D D' upon the upper face of said plug, arms E E', for attachment of the conductors, secured to the under side of the plug C, one of the arms, E, being connected with one of the contact-arms, D', a block, as G, upon the under side of plug C, connected with contact-arm D, and a switch-bar, H, arranged to electrically connect the block G with the arm E', all substantially as shown.

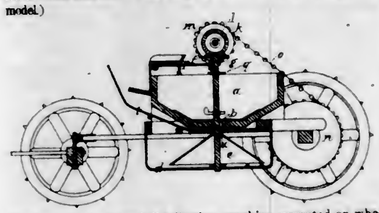
5. In an electric lamp, the combination, with the socket or holder provided with suitable conductors, of the sliding bar or slide H, provided with the insulated bridge or block I, arranged, substantially as shown, to make or break the circuit as said rod is moved back and forth through the socket.

6. In an electric lamp, the combination, with the socket or holder provided with suitable conductors, of the sliding bar or rod H, provided with the block I and spring J.

7. In an electric lamp, the combination, with the socket or holder provided with a non-conducting plug, C, of conductors D D' and E E', arranged at opposite ends of said plug and connected in pairs, a fixed contact-block, G, and a bar or slide arranged to bring said block G into the circuit.

8. A socket for incandescent lamps provided with electrical conductors for connection with the terminals of a lamp and with the line, and a slide movable longitudinally across the shell or case of the socket and provided with an insulated block to connect the conductors, substantially as shown and described.

379,256. SAND-DISTRIBUTING MACHINE. ROSCOE TITCOMB, North Yarmouth, Me. Filed July 16, 1887. Serial No. 244,539. (No model.)



Claim.—1. In a sand-distributing machine mounted on wheels and provided with a hopper, *a*, the combination of the pulley *n*, endless band *o*, pulley *m*, horizontal shaft *k*, beveled gears *l* and *f*, vertical shaft *c*, and drum *e*, affixed rigidly to and revolving with shaft *c*, all substantially as and for the purposes hereinbefore set forth.

2. The combination, with the pulley *n*, band *o*, pulley *m*, horizontal shaft *k*, beveled gear *l*, beveled gear *f*, having shoulder *g* and slot in said shoulder, vertical shaft *c*, drum *e*, and hopper *a*, of the plate or lever *p* and the bent rod *s*, having the handle *r*, all substantially as and for the purposes hereinbefore set forth.

3. The combination, with the pulley *n*, band *o*, pulley *m*, horizontal shaft *k*, beveled gears *l* and *f*, vertical shaft *c*, drum *e*, and hopper *a*, of the shut-off plates *t t*, having the semicircular holes *u u*, all substantially as and for the purposes hereinbefore set forth.

379,257. BREECH-LOADING FIRE-ARM. REINHARD T. TORKELSON and IVER JOHNSON, Worcester, Mass.; said Torkelson assignor to said Johnson. Filed Apr. 17, 1884. Serial No. 128,202. (No model.)

Claim.—1. The barrel B, pivoted at b^2, and its lug *b'*, in combination with the locking-bolt *a'*, catch *a*, and hammer A, the locking-bolt *a'* being pivoted and the hammer A bearing against the catch *a*, also pivoted, to trip the locking-bolt *a'*, substantially as and for the purpose specified.

2. The barrel B, pivoted at b^2, its lug *b'*, and extractor-slide G, in combination with lever g^4, fulcrumed at g^5, and spring-hook g^6, fulcrumed in the fore part of the frame, the lever g^4 acting upon slide G to force it rearward, and the spring-hook g^6 engaging the rear end of lever g^4, substantially as and for the purpose specified.

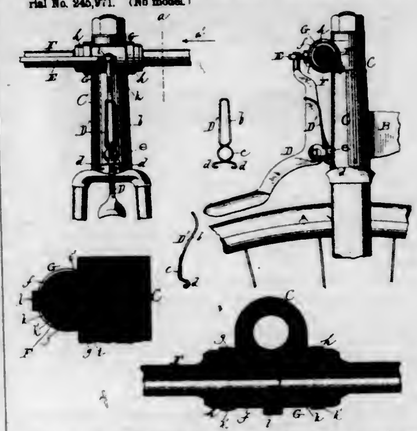
3. The barrel B, its lug *b'*, and extractor-slide G, in combination

379,257.



with lever g^4, fulcrumed at g^5, and spring-hook g^6, provided with tail-piece g^7, and fulcrumed in the fore part of the frame, the lever g^4 acting upon slide G to force it rearward, spring-hook g^6 engaging the rear end of lever g^4, and tail-piece g^7 extending outside the frame, substantially as and for the purpose specified.

379,258. VELOCIPEDE. REINHARD T. TORKELSON, Worcester Mass., assignor to Iver Johnson, same place. Filed Aug. 1, 1887. Serial No. 245,971. (No model.)



Claim.—1. The combination, with the head and brake of a velocipede, of a wire spring interposed between said head and brake whose upper end is provided with an oblong loop to receive the upright arm of the brake above its pivot, also having under said oblong loop a circular loop or eye adapted to encircle the brake-bearing and terminating at the bottom in two bearing ends adapted to bear against the surface of the head, whereby a back-draft is exerted upon the upper end of the brake to elevate its foot above the wheel, substantially as shown and described.

2. A brake-spring for velocipedes, made from a single piece of wire bent to form an oblong loop at one end, curved at its outer extremity, and a circular loop or eye next adjoining the inner end of said oblong loop, and whose end opposite from the oblong loop terminates in two ends projecting laterally in opposite directions, also rearward or in the opposite direction to the curve at the outer extremity of the oblong loop, substantially as shown and described.

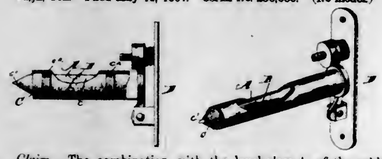
3. In a velocipede, the combination of the head thereof, having a horizontal recess to receive the handle-bar and lateral flanges *g g*, with said handle-bar, having a threaded sleeve, *f*, secured thereto, cap-piece *k*, made substantially as described and provided with the striker *l*, and nuts *h h*, having recesses upon their inner sides, all constructed, adjusted, and fastened together substantially as and for the purpose set forth.

4. In a velocipede, the combination of the head thereof, having the lateral beveled flanges *g g* and a horizontal recess to receive the handle-bar, with said handle-bar, provided with threads at each side of where it fits into the head, and threaded nuts *h h*, whose inner ends are recessed and beveled to fit over the bevels of the aforesaid lateral flanges when said nuts are turned up over the threaded parts on the handle-bar, substantially as and for the purpose set forth.

5. In a velocipede, the combination of the head thereof, having the lateral beveled flanges *g g* and a horizontal recess to receive the handle-bar, with said handle-bar, provided with threads at each side of where it fits into the head, the front cap, *k*, having end bevels corresponding to those on the flanges of the head, and threaded nuts *h h*, whose inner ends are recessed and beveled to fit over the bevels on

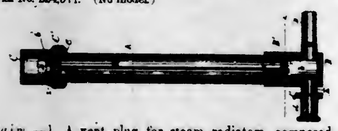
the aforesaid flanges and cap when said nuts are turned up over the threaded parts on the handle-bar, substantially as and for the purpose set forth.

379,259. SPIRIT-LEVEL SHEATH. JAMES S. TROTTI, Hillsborough, Tex. Filed May 18, 1887. Serial No. 238,686. (No model.)



Claim.—The combination, with the level-glass A, of the rubber sheathing C, the rubber rings c^2, surrounding the sheathing, and a metallic case, B, placed over the sheathing C and rings c^2 and resting against the rings c^2, substantially as described.

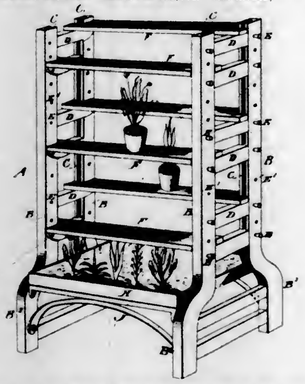
379,260. VENT-PLUG FOR STEAM-RADIATORS. EDWARD P. WAGGONER, Syracuse, N. Y., assignor of one-half to the Pierce, Butler & Pierce Manufacturing Company, same place. Filed Jan. 17, 1887. Serial No. 224,571. (No model.)



Claim.—1. A vent-plug for steam-radiators, composed of a screw-plug having a passage for the escape of steam and air extending through the same in open connection with the radiator and the air, a valve for closing the same, and an automatic expansion-tube mounted on the screw-plug and having openings connected with the passage in the screw-plug, substantially as and for the purpose set forth.

2. A vent-plug for steam-radiators, composed of the screw-plug B, having a passage for the escape of steam and air extending through the plug in open connection with the radiator and the air, a valve for closing the passage, the said passage enlarged at *b* and having openings *b'*, leading into the automatic expansion-tube A, and the automatic expansion-tube A, mounted on the screw-plug B over the enlargement *b*, substantially as and for the purpose set forth.

379,261. FLOWER-STAND. WILLIAM H. WRIGHT, Huntingdon, Pa. Filed Oct. 29, 1887. Serial No. 253,771. (No model.)

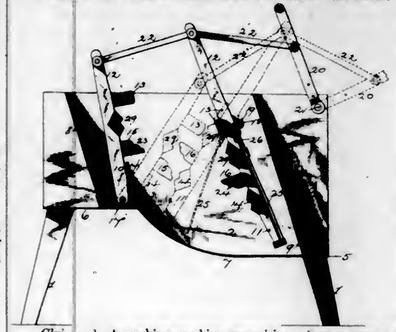


Claim.—The flower-stand described, consisting of the slotted uprights B, curved outwardly at their lower ends to form a base for the stand, the drip-pan H, resting upon suitable supports secured near the lower ends of the uprights, the shelf-supports D, adjustable within the slots in the uprights, and the shelves F, resting upon said supports and arranged alternately at the front and rear of the stand, substantially as and for the purpose specified.

379,262. COMPOSITION FOR PRESERVING EGGS, &c. FERDINAND ZEILER, New Market, Va. Filed May 25, 1887. Serial No. 239,304. (No specimens.)

Claim.—The herein-described composition of matter, to be used for the preservation of articles named, consisting of water, chloride of calcium, boracic acid, and helenin, in about the proportions specified.

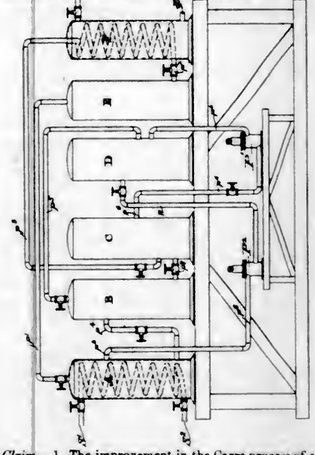
379,263. WASHING-MACHINE. CHARLES T. ANDERSON, Clarksburg, Md. Filed June 10, 1887. Serial No. 240,938. (No model.)



Claim.—1. A washing-machine comprising a box or case, a pair of vertical reciprocating rubbers pivotally journaled within said box and having rubbing-ribs provided with opposing corrugated faces, having also longitudinal slots or openings to permit of the passage of water through said rubbers, and upwardly-extending end pieces, an operating hand grasp or lever having pivotal bearing on the box-frame, links or arms pivotally connecting said rubbers together and to the hand-grasp, and a valve-plate hinged to the outer face of the front rubber, substantially as and for the purpose set forth.

2. In a washing-machine, a box having a metallic bottom having a concaved front portion, a pair of rubbers vertically supported within said box upon pivot-bearings and having alternating slatted and slotted lower portions and inwardly-extending rubbing-ribs having oppositely-corrugated rubbing-surfaces, a hand operating device, links or arms pivotally connecting said rubbers together and to the operating device, and a valve-plate hinged to the front face of the front rubber to automatically close the open lower portion thereof upon said rubber being reciprocated forwardly and force the water upwardly and over upon the clothes between the two rubbers, substantially as set forth.

379,264. ARTIFICIAL REFRIGERATION. WILLIAM ANDREW, Cincinnati, Ohio. Filed Oct. 14, 1886. Serial No. 216,220. (No model.)

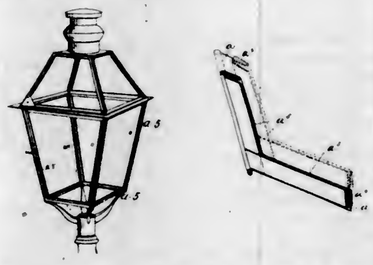


Claim.—1. The improvement in the Carre process of ammonia refrigeration, consisting, first, in subjecting the partially-spent liquor of the still (after separation of the gas utilized in refrigeration) to a second deprivation of gaseous ammonia; second, absorbing the gas first produced (after its utilization in refrigeration) into the doubly-weakened liquor thus obtained, and, third, then absorbing the gas last produced into the thus partially-strengthened liquor to restore the original strength of the liquor for another round of useful operation, substantially as set forth.

2. The improved process of producing artificial cold from ammoniated water, consisting, first, in separating (by heat applied to the mother-liquor) the gas required for refrigerating purposes; second, condensing said gas to a liquid by the pressure produced in the operation of separating it from the mother-liquor; third, refrigerating by re-expansion of the liquefied gas; fourth, separating an additional amount of gas from the partially-spent mother-liquor by reduction of pressure with or without additional heat; fifth, charging the thus doubly-weakened liquor with the gas first produced by natural absorption; sixth, recharging the thus partially-strengthened liquor by the gas last produced, under the pressure of the last separation, to restore its initial ammonia strength, substantially as set forth.

3. In a Carré refrigerating apparatus, the combination, with the still, condenser, refrigerator, and absorber, of a reducer with pipe connections for the transfer of the partially-spent mother-liquor from the still into the same, pipe connections from the reducer to the (primary) absorber for the transfer of the doubly-weakened liquor thereto, and pipe connections from the refrigerator to the primary absorber for the passage of the expanded gas into the latter, an additional (secondary) absorber with pipe connections to the primary absorber for the transfer of the partially-strengthened liquor from the latter to the former, and pipe connections from the reducer to the secondary absorber for the transfer of the additional gas to the partially-strengthened liquor, and pipe connections from the secondary absorber to the still to restore the fully-strengthened liquor thereto, and suitable pumps and connections to effect these transfers, substantially as set forth.

379,265. STREET-LAMP. MARTIN L. BEST, Canton, Ohio. Filed Feb. 19, 1887. Serial No. 228,268. (No model.)

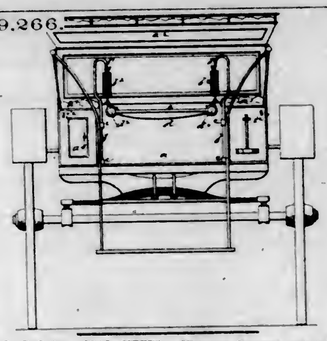


Claim.—1. The combination, with the frame of a street-lamp provided with a glass-receiving groove in one of its sides and an inwardly-projecting wing on the side opposite to the groove, of a removable glass-holding strip provided with oppositely-faced grooves, one to receive the said wing and one to receive the edge of the glass, whereby the glass may be secured by being slid into the groove in the frame and then slid into the groove in the removable holding-strip, substantially as set forth.

2. The combination, with a lamp-frame having a wing projecting inwardly therefrom, of the glass-holding strips, consisting of strips of sheet metal folded to form oppositely-facing grooves, one to receive the wing of the frame and the other to receive the edge of the glass, substantially as set forth.

3. The combination, with the frame of a street-lamp provided with an inwardly projecting wing, of the glass-holding removable strip B, having a groove, a^3, for receiving the edge of the glass, a groove between the side of the groove a^3 and the back a^3 for receiving the wing on the frame, and end projections, as d' d^3, as described, and for the purpose set forth.

379,266. POLICE PATROL-WAGON. JOHN BONFIELD, Chicago, Ill. Filed Dec. 29, 1886. Serial No. 222,906. (No model.)

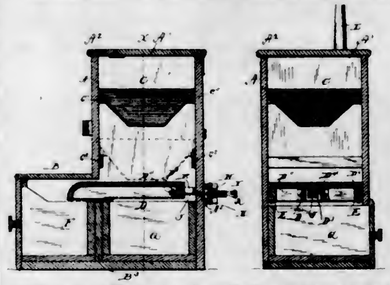


Claim.—1. The combination, with the canvas stretcher-body *d*, formed with wide hems or loops d', of the side bars, d^3, provided with shouldered spring e^3, and the spreaders *e*, having eyes e', substantially as and for the purpose set forth.

2. The combination, with a vehicle-body, of a flexible covering for the same provided with hooks or equivalent means for attaching its forward end to the vehicle, and having spring-connections at its rear end for preventing it from sagging, substantially as and for the purpose set forth.

3. A cover for vehicles, provided with the flaps g' g^3, the bar *l* at its front end, and the spring-connections *i* at its rear corners, substantially as shown and described.

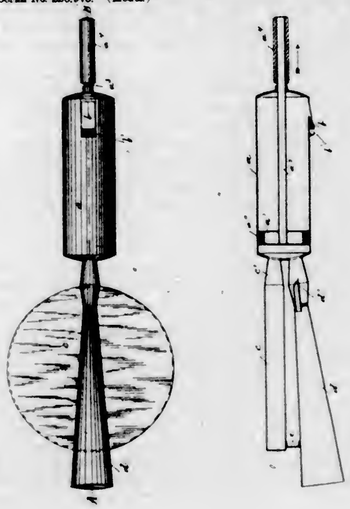
379,267. COAL-SIFTER. WILLIAM BUTCHER and CHARLES G. BAILEY, York, Pa. Filed Mar. 19, 1887. Serial No. 231,488. (No model.)



Claim.—1. The combination, with the outer casing having the cover and transverse vertical partition, of the movable hopper, the reciprocating screen, and the two drawers, substantially as and for the purpose set forth.

2. The combination, with the outer casing having the transverse vertical partition, of cleats upon the interior of the casing, a movable hopper having cleats upon its sides, the drawers, and the reciprocating screen, substantially as and for the purpose herein set forth.

379,268. WIND-INSTRUMENT. WALTER S. CANNEY, Groveland, Mass., assignor to Orlando S. Barr, same place. Filed Feb. 26, 1887. Serial No. 228,973. (Model.)

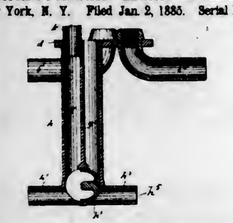


Claim.—1. The compound wind-instrument, as described, consisting of the air-pump *a*, piston *a'* and its rod a^3, and handle a^4, combined with the whistle *b b'* at one end of said air-pump, and the hollow alarm *c* and horn *d d'* at the other end of said air-pump, as set forth.

2. The compound wind-instrument, as described, consisting of the air-pump *a*, piston *a'* and its rod a^3, and handle a^4, combined with opening *b* in one end of said air-pump, and hollow alarm *c* and horn *d d'* at the other end of said air-pump, as set forth.

3. The air-pump *a*, having piston *a'*, rod a^3, and handle a^4, and whistle *b* at one end of the air-pump, combined with the hollow alarm *c*, arranged in communication with the front end of the air-pump *a*, as set forth.

379,269. **FITTING FOR WATER-HEATING APPARATUS.** ALLEN P. CRESUR, New York, N. Y. Filed Jan. 2, 1885. Serial No. 151,764. (No model.)



Claim.—1. The boiler or reservoir fitting composed of the pipe h, having independent passages *g g'* and two branches, h' h^2, substantially at a right angle to the pipe h, and of the cock h^2, located at the junction of the passages *g g'* with the branches h' h^2, substantially as described.

2. The combination, with a heater and a range boiler or reservoir, of a cover having an attached pipe provided with two independent passages, *g g'*, and having two branches, h' h^2, and the cock h^2, intersecting the passages *g g'* and the branches h' h^2, change of position of the cock h^2 permitting the discharge of sediment or water from the boiler or the withdrawal of the sediment or water from the heater, substantially as described.

3. The combination of a range-boiler or hot-water reservoir, heater, and circulating pipes or ducts connecting the same, with a fitting having a passage, *g*, and branch h', constituting a part of the circulating-duct, and a discharge or sediment branch, h^2, and the cock h^2, controlling the said passage and branches, whereby communication may be cut off between the lower portion of the reservoir and circulating-pipes, and the latter connected with the discharge branch for the withdrawal of the contents of the circulating-pipes and heater without emptying the reservoir, substantially as described.

379,270. **TRICYCLE.** STERLING ELLIOTT, Newton, Mass. Filed Apr. 26, 1887. Serial No. 236,150. (No model.) Patented in England Sept. 15, 1886, No. 11,727, Oct. 18, 1886, No. 13,273, Dec. 17, 1886, No. 16,584, and Apr. 30, 1887, No. 6,304; in France Oct. 22, 1886, No. 179,183; in Belgium Oct. 23, 1886, No. 74,946, and in Germany Jan. 4, 1887, No. 40,387.

Claim.—1. In a velocipede, the combination, substantially as described, of the driving mechanism and actuating devices therefor, with means operated by the rotation of the handle-bar for adjusting the actuating devices for the driving mechanism.

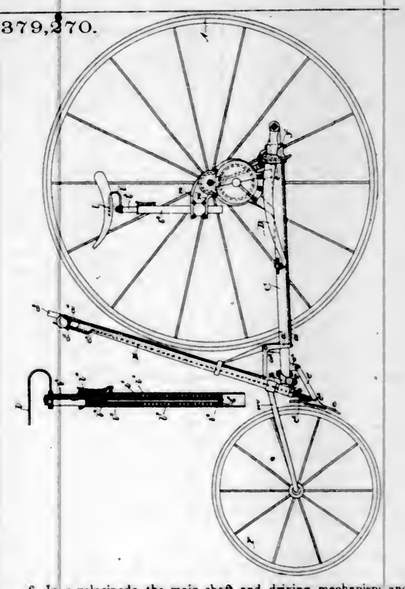
2. In a velocipede, the main axles and driving mechanism, and pedal-levers having slide-blocks for operating the driving mechanism, and the master-block, substantially as described, for moving the slide-blocks, combined with means, substantially as described, operated by the rotation of the handles H, for moving said master-block, as set forth.

3. In a velocipede, the main axle and driving mechanism, and pedal-levers having slide-blocks thereon for operating the driving mechanism, and master-block, substantially as described, for moving the slide-blocks, combined with the rod a^3, connected with the master-block, and means, substantially as described, for raising and lowering the said rod a^3, as set forth.

4. In a velocipede, the combination, substantially as described, of the driving mechanism and adjustable actuating devices for the same, with an indicator for the said adjustable actuating devices.

5. In a velocipede, the main axle and driving mechanism, and pedal-levers having slide-blocks thereon for operating the driving mechanism, and the master-block, substantially as described, for moving the slide-blocks, combined with a rod, a^3, having the indicating-point a^7, connected with the master-block, as described, and the graduated casing with which the said indicating-point co-operates, and means, substantially as described, for raising and lowering the said rod a^3, as set forth.

379,270.



6. In a velocipede, the main shaft and driving mechanism, and pedal-levers having slide-blocks thereon for operating the driving mechanism at different speeds, dependent upon the position of the slide-blocks, combined with means, substantially as described, for moving the slide-blocks, and the graduated casing and indicating-point for indicating the position of the slide-blocks, substantially as set forth.

7. In a velocipede, the main shaft and drive-wheels and steering-wheel and sleeve B, combined with a pivoted brake-shoe, and means, substantially as described, operated by the rotation of the said sleeve, for moving said brake-shoe on its pivot, as set forth.

8. In a velocipede, the main shaft and driving mechanism, and actuating devices for the driving mechanism, the steering-wheel, and steering-rod, combined with a centering device for the steering-rod, and the foot-rest, which serves as a guard or shield for the centering devices, substantially as described.

9. In a velocipede, the main shaft and drive-wheels, the steering-wheel and steering-rod, combined with a centering device composed of a short arm, *o*, and spring o^7 o^8, for normally retaining the said short arm in line parallel with the drive-wheels, and with means, substantially as described, for preventing either one of the said springs from distending beyond the normal position of the short arm *o*, as set forth.

10. In a velocipede, the steering-rod E, provided with bearings, a rotating handle-bar mounted in said bearings, and a rod, as a^3, and means to reciprocate it by the rotation of the handle-bar, the said rod a^3 being instrumental in actuating devices for varying at will the leverage used in actuating the machine.

11. In a velocipede, the tubular upright l^3 and spring within it, and saddle supported by the spring, combined with means operable by rotation of the saddle for varying the tension of the supporting-spring, substantially as described.

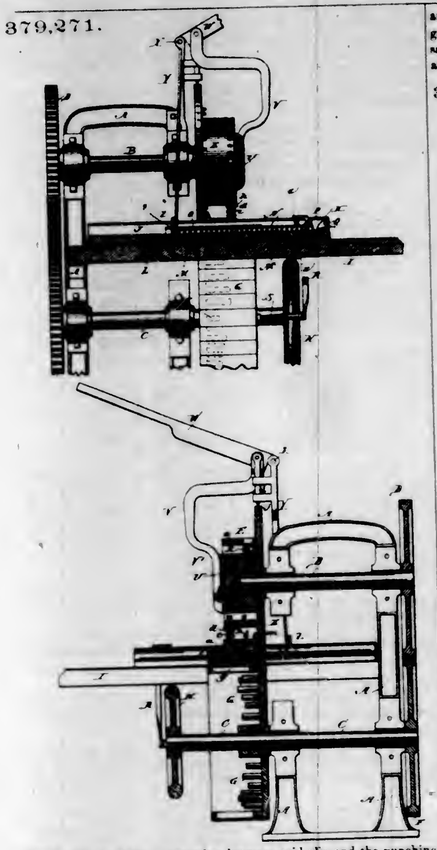
12. In a velocipede, the tubular upright l^3 and spring within it, and saddle supported by the spring, combined with means operable by rotation of the saddle for varying the tension of the supporting-spring, and a locking device for preventing rotation of the saddle, substantially as described.

379,271. **PERFORATING-STAMP.** NILS ENGLUND and OLOF OHLSON, Chicago, Ill. Filed Feb. 21, 1887. Serial No. 228,313. (No model.)

Claim.—1. The combination of disks connected to rotate together, one carrying punches, the other carrying dies, and having a series of graduated stops, a clip for holding the check, a rack and pawl for feeding the clip, a spring impelling the pawl in one direction to a fixed stop, an elastic connection to the punch-actuating device moving the pawl in the other direction, and a finger carried by the clip coacting with the graduated stops, substantially as and for the purpose described.

2. In a perforating-stamp, the combination of a clip, a projection or finger attached to the clip, graduated stops coacting with said

379,271.



finger, and an elastic connection between said clip and the punching mechanism, substantially as shown and described.

3. In a perforating-stamp, the device for giving an automatically-varied feed, consisting of graduated stops T, finger S, arm R, pawl P on tube N, inclosing spring M, and rack-bar L, attached to paper-clip J through plate K, and connected by spring-arm Y to hand-lever W, all combined substantially as described.

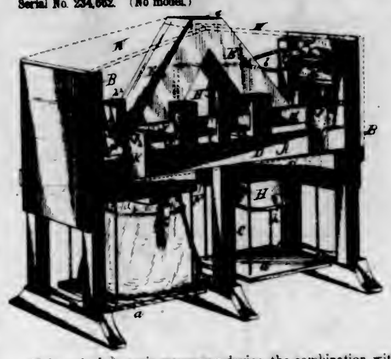
379,272. **PISTON-ROD PACKING.** WILLIAM R. FORD, Allegheny City, Pa., assignor to Charles Walker and James B. Walker, both of same place. Filed June 28, 1887. Serial No. 242,747. (No model.)



Claim.—1. A packing consisting of layers of fabric with a flexible strip secured within the packing between the various layers of the fabric and secured together by a lacing or cable of cord or wire, substantially as and for the purposes specified.

2. In a packing of the character described, the combination of the various layers of fabric having a central flexible strip in between and said strips secured together, the entire structure inclosed by a gauze wrapper overlapped at its outer edges and fastened down at said edges, all constructed and combined to operate substantially as and for the purposes specified.

379,273. **GRAIN WEIGHING, BAGGING, AND TALLYING MACHINE.** FREDERICK R. GRAVES, Rochester, Minn. Filed Apr. 13, 1887. Serial No. 234,662. (No model.)



Claim.—1. In a grain-measuring device, the combination, with a supporting-frame and a balancing-beam having hooks secured thereto, of a fulcrum-bar having a shoulder and a projection thereon, the former to receive the hook and the latter by its abutment to remove it, substantially as set forth.

2. In a grain-measuring device, the combination, with a supporting-frame and a balancing-beam having hooks secured thereto and depending platforms suspended therefrom, of a fulcrum-bar having a shoulder and a projection thereon, the former to receive the hook and the latter by its abutment to remove it, substantially as set forth.

3. In a grain-measuring device, the combination, with a supporting-frame and a balancing-beam having hooks secured thereto, scale-platforms depending therefrom, and bag-holders formed on the lower side of the balancing-beam, of a pair of fulcrum-bars, each having a shoulder and a projection thereon, the former to receive the hook and the latter by its abutment to remove it, substantially as set forth.

4. The combination, with a supporting-frame, a balancing-beam mounted thereon, and an upwardly-projecting hook secured on the ends of each beam, of a pair of graduated scale-beams and their fulcrum-bars, said scale fulcrum-bars having a shoulder and a projection, the former to receive the hook and the latter by its abutment to remove it, substantially as set forth.

5. A balancing-beam having enlarged ends and depending therefrom a flaring slotted collar, and a wedge or key adapted to enter said slot, for the purpose substantially as set forth.

6. A balancing-beam having enlarged ends, a flaring circular slotted collar depending from each end, and a slot located in the edge of said collar, a wedge or key adapted to enter the slot over a bag, and depending platforms secured to the ends of the balancing-beam, substantially as set forth.

7. The combination, with a supporting-frame, a pair of diverging grain-chutes, and a balancing-beam mounted in the frame, said beam having a rigid hook projecting upwardly from either end, of a pair of fulcrum-bars, graduated scale-beams secured thereto, weights loosely mounted on the beams, and shoulders projecting from the fulcrum bars, with which the hooks engage, substantially as set forth.

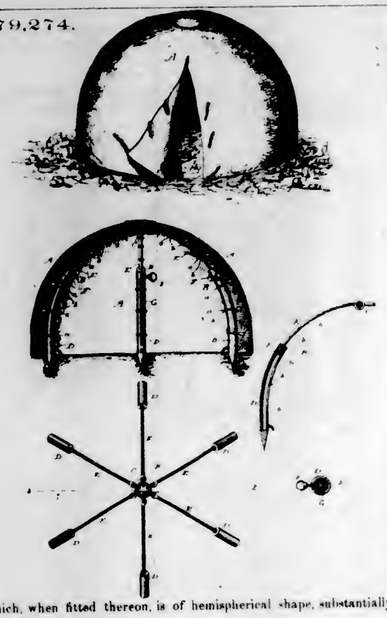
8. The combination, with a supporting-frame, balancing-beam, bag-holders, and platforms depending from the ends of said beams, and a hook projecting upwardly from each end of the beam, of the fulcrum-bars, a shoulder and projection thereon, the former to engage the detent and the latter to disengage said detent, and graduated scale-beams and movable weights thereon, substantially as set forth.

9. A tallying device consisting, essentially, of an axle, a polygonal wheel loosely mounted near either end of the axle, a ratchet-wheel secured to each of said wheels, one having a depending lug, and an intermediate toothed wheel located in a plane parallel with the axle and having a lug thereon, for the purpose set forth.

379,274. **TENT.** WILLIAM R. HAMILTON, U. S. Army. Filed Oct 25, 1887. Serial No. 253,349. (No model.)

Claim.—1. In a hemispherical tent, a frame composed of an apex-ring and a series of metallic bows pivotally connected thereto, each of said bows being substantially the quadrant of a circle, in combination with a canvas covering which fits over said bows, and

379,274.



which, when fitted thereon, is of hemispherical shape, substantially as set forth.

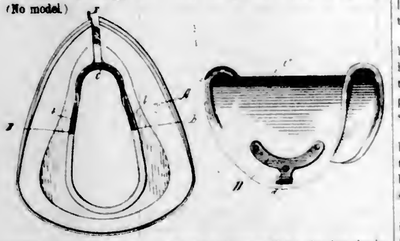
2. In a hemispherical tent, a frame-work composed of a series of metallic bows, each of said bows being substantially the quadrant of a circle, and each bow being made of at least two sections, whereby it may be packed in a small space, in combination with a canvas covering which fits over said bows, and which, when fitted thereon, is of hemispherical shape, substantially as set forth.

3. In a hemispherical tent, a frame-work composed of sectional quadrantal metallic bows, each bow being composed of a tubular curved section and a curved rod which slides in and out of said tubular section, in combination with the canvas covering of hemispherical shape when fitted on said bows, substantially as set forth

4. In a hemispherical tent, a frame-work composed of sectional quadrantal metallic bows, each bow being composed of a curved tube having a slit on one side, and a curved rod which slides in said tube, in combination with the canvas covering of hemispherical shape when fitted on said bows, substantially as set forth

5. In a hemispherical tent, the frame-work composed of an apex-ring and quadrantal bows pivotally connected therewith, each bow being composed of a tube and a rod sliding therein, and said bows being suitably notched, in combination with a canvas covering which fits over said frame-work, said covering being provided with tapes which are tied around the bows in their notches, substantially as set forth

379,275. **HORSE-COLLAR** ABRAHAM C. JACOBS and GEORGE W CHAPMAN, Hillsborough, Wis Filed Jan 12, 1888 Serial No 260,568 (No model.)

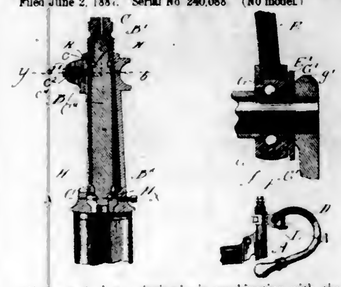


Claim.—1. As an improvement in horse-collars, the herein-described collar having the apertured plates secured thereto, and the pad having the lugs or projections, substantially as shown and described.

2 The combination, with the collar having the plates secured thereto upon the inner sides, of the pad having the lugs or projections designed to engage holes or apertures in said plates, substantially as shown and described.

3 The combination, with the collar provided with the plates having holes or apertures, of the pad having Y-shaped plates attached to its ends, and the approximately T-shaped lugs or projections, substantially as shown and described.

379,276. **VELOCIPEDE** THOMAS B. JEFFERY, Ravenswood Ill. Filed June 2, 1887. Serial No 240,088. (No model.)



Claim.—1. In a velocipede, in combination with the head and neck, the bearing-sleeve for the neck secured within the head, longitudinally split from one end toward the other, substantially as set forth

2. In a velocipede, in combination with the head and neck, the bearing-sleeve for the neck secured within the head and vertically split from one end toward the other in a plane transverse to the line of travel, substantially as and for the purpose set forth.

3. In a velocipede, in combination with the head and neck, the bearing-sleeve for the neck secured within the head, formed of two pieces, substantially as set forth.

4. In a velocipede, in combination with the head and neck, the bearing-sleeve for the neck, formed in two pieces by a longitudinal division in a plane transverse to the line of travel and secured within the head, substantially as and for the purpose set forth.

5. In a velocipede, in combination with the head and neck, the bearing-sleeve for the neck secured within the head, formed of two pieces and threaded into the head, substantially as set forth

6. In a velocipede, in combination with the head and neck, a bearing-sleeve formed of two pieces by being split vertically from the lower end upward and thence laterally to the surface, substantially as set forth.

7. In a velocipede, in combination with the head and neck, the bearing-sleeve for the neck-spindle, formed of two pieces by being split from the lower end upward in a plane transverse to the line of travel and thence to the surface in a plane transverse to the plane of the neck-spindle, substantially as set forth.

8. In a velocipede, in combination with the head, the bearing-sleeve secured therein and divided longitudinally into two pieces, the neck projecting into such sleeve, and the anti-friction balls forming the bearing within said sleeve for the neck, substantially as set forth.

9. In a velocipede, in combination with the head and neck, the bearing-sleeve for the neck, formed of two pieces, and a screw acting through the head tending to compress the two pieces of the sleeve substantially as set forth.

10. In a velocipede, in combination with the head and neck, the bearing-sleeve for the neck, longitudinally split transversely to the line of travel, and a screw acting through the head tending to compress the two pieces of the sleeve, substantially as set forth.

11. In a velocipede, in combination with the head and neck, the bearing-sleeve for the neck, formed of two pieces clamped by the head, and a screw acting through the head tending to compress the two pieces of the sleeve, the sleeve being clamped by the head in a plane transverse to that in which its two parts are compressed by the screw, substantially as set forth.

12. In a velocipede, in combination, the head, the neck, the bearing-sleeve for the neck, formed of two parts, a bolt which clamps the head about the bearing-sleeve, and a screw passing through the bolt and setting against the sleeve, substantially as and for the purpose set forth.

13. In a velocipede, in combination, the head, the neck, a bearing-sleeve formed of two pieces and serrated on its exterior surface, a bolt adapted to clamp the head about the sleeve, and a screw passing through the bolt and pressing against the sleeve by means of an intervening shoe having its surface serrated to fit against the sleeve, substantially as set forth

14. In combination with the head, the neck, and the bearing sleeve or box for the neck-spindle, said box being split longitudinally on one side, and two clamp-screws set through the head and impinging on the sleeve on opposite sides of the split in the box and less than one hundred and eighty degrees apart, whereby the box may be closed up by pressure along converging but not diametrically-opposite lines, substantially as set forth.

15. In combination with the neck, the head, and the bearing sleeve or box, said sleeve or box being longitudinally split on one side and inserted in the head, three clamp-screws set through the head against the sleeve or box at intervals of which each is less than one hundred and eighty degrees.

16. In a velocipede, in combination with the head, the neck therein, anti-friction balls forming the bearing for the lower end of the neck, a ball-case longitudinally split, and screws set through the head converging from three sides to compress and adjust the case, substantially as set forth.

17. In a velocipede, in combination with the head, a dust cover or shield having its inner surface, which is in contact with the head, of hard rubber, celluloid, or similar non-metallic substance, substantially as set forth.

18. In a velocipede, in combination with the axle, the fork having each of its lower ends provided with a yoke and the bearing-case clamped within the yoke by three points of contact approximately equidistant, substantially as set forth.

19. In combination with the axle, the fork divided at its lower end to form a half-yoke and expanded into ears at the ends of such half-yoke, having apertures to receive bolts, a mated half-yoke which terminates in bolt ends which enter said apertures, and clamping-nuts on such bolt ends to draw the two half-yokes together, and the bearing-case embraced between such half-yokes, one of said half-yokes having one interior bearing for the bearing-box and the other having two such bearings, substantially as set forth.

20. In a velocipede, in combination with the axle, the fork, a bearing-case having a projecting flange upon two or more edges, and three adjusting-screws in such flange adapted to stop against the surface of the fork, substantially as set forth.

21. In a velocipede, in combination with the axle, substantially as and for the purpose set forth, the fork and the bearing-case, one of said parts having two or more adjustable stops abutting against the other.

22. A velocipede handle-bar in the form of a spiral of varying pitch commencing at the head in a course almost directly outward and ending at the handle in a course pointing rearward, substantially as set forth.

23. A velocipede handle-bar in the form of a spiral of varying pitch whose axis is horizontal and transverse to the line of travel.

24. A velocipede handle-bar in the form of a spiral of varying pitch from the head to the handle and opposite pitch on opposite sides of the head, substantially as set forth.

25. A velocipede handle-bar which extends from the head in an ever-changing curve first upward and forward slightly and mainly outward, changing to a direction downward, forward, and outward, then changing to direction downward and rearward mainly and slightly outward, substantially as set forth.

26. In combination, substantially as set forth, the head having the cross-arm to receive the handle-bar, the clamping-block, the handle-bar, and the clamping-yoke, the handle-bar and the clamping-block having one a recess and the other a pin projecting into the recess, whereby the handle-bar is retained securely in position.

27. In combination, substantially as set forth, the head having the cross-arm to receive the handle-bar, the clamping-block, the clamping-yoke having apertured ears to receive a connecting-bolt, said bolt having a shank of uniform diameter and its head tapering out from the shank and adapted to enter the apertures in the clamp-ears, and a nut to draw the bolt, whereby the taper of the bolt-head causes it to force the clamping-block toward the cross-arm of the head to clamp the handle-bar between them.

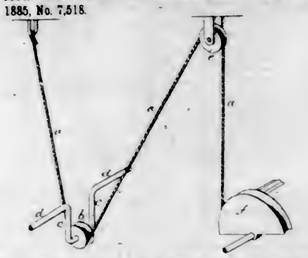
28. In combination, substantially as set forth, the head having the cross-arm to receive the handle-bar, the clamping-block, the clamping-yoke having apertured ears to receive a connecting-bolt, said bolt having a shank of uniform diameter and its head tapered out from the shank and adapted to enter the aperture in one clamp-ear, and a nut similarly tapered at the inner end and adapted to enter the aperture in the other clamp-ear to draw the bolt, whereby the taper of the bolt-head and nut forces the clamping-block toward the cross-arm of the head to clamp the handle-bar between them.

29. In combination, substantially as set forth, the head having the cross-arm to receive the handle-bar, the clamping-block, and the clamping-yoke having apertured ears to receive the connecting-bolt provided with a nut, which tapers at the inner end and enters the aperture in the clamp-ears as it is advanced onto the bolt, whereby it forces the clamping-block toward the cross-arm and causes it to clamp the handle-bar between them.

30. In a velocipede, in combination, substantially as set forth, the head having the cross-arm to receive the handle-bar, the clamping-yoke having apertured ears to receive a connecting-bolt, said bolt having a shank of uniform diameter and its head tapering out from the shank and adapted to enter the apertures in the clamp-ears, and a nut to draw the bolt, whereby the taper of the bolt-head forces the bolt toward the cross-arm of the head to clamp the handle-bar between them.

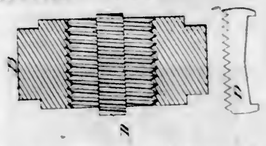
31. In a velocipede, in combination, substantially as set forth, the head having the cross-arm to receive the handle-bar, the clamping-yoke having apertured ears to receive a connecting-bolt, said bolt having a shank of uniform diameter and its head tapering out from the shank and adapted to enter the aperture in one clamp-ear, and a nut similarly tapered at the inner end, adapted to enter the aperture in the other clamp-ear to draw the bolt, whereby the taper of the bolt-head and nut forces the bolt toward the cross-arm of the head to clamp the handle-bar between them.

379,277. **MEANS FOR CONVERTING MOTION.** HORACE JAMES and GEORGE ROBINSON, Sheffield, County of York, England. Filed Aug. 17, 1886. Serial No. 211,174. (No model.) Patented in England June 20, 1885, No. 7,518.



Claim.—The cord or band *a*, fixed at one end and passing over pulleys *b* and *e*, pulley *b* being attached to the crank of the axle, and the other end of said cord secured to a cam or treadle, *f*, all combined substantially as described and shown.

379,278. **NUT-LOCK.** ROBERT M. KEATING, Springfield, Mass., assignor of one-half to William H. Murphy, same place. Filed Dec. 27, 1886. Serial No. 222,571. (No model.)



Claim.—1. The combination, with a screw-bolt having a solid cylindrical body, of a nut having a longitudinal groove through its threaded portion and a threaded segment in said groove, the end of the segment projecting beyond the face of the nut, so that the tightening of the nut against a plane surface will slide the segment in the groove, substantially as described.

2. The lock-nut described, having a groove extending longitudinally across its threads, the base of said groove being inclined relatively to the axis of the nut, combined with a movable segment in said groove, the segment having a wedge-bearing in the groove, as set forth.

379,279. **FENCE.** JACOB F. LEMEN, Bedington, W Va. Filed Sept. 15, 1887. Serial No. 249,781. (No model.)

Claim.—1. In a fence, the combination, with the posts, of the flexible metallic straps secured thereto and provided with a plurality of perforations and adapted to support the pickets, the plurality of perforations in the straps making provision for any size of pickets, as set forth.

2. In a fence, the combination of the posts, the straps secured thereto having a plurality of perforations, the pickets and the pins secured in the pickets and inserted through any one of the perforations in the straps, the plurality of perforations in the straps providing for any size of pickets, and the ends of the pins, after being inserted through the said perforations, being bent over laterally alternately in opposite directions, as set forth.

3. As an improvement in fences, the combination of the posts A A, the flexible metallic straps or bands B B, secured permanently to the posts and provided with longitudinal series of perforations, the pickets C, arranged all in the same plane and on the same side of the

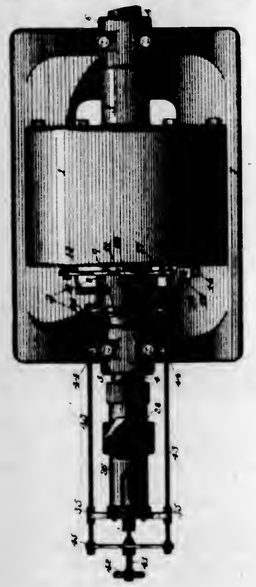
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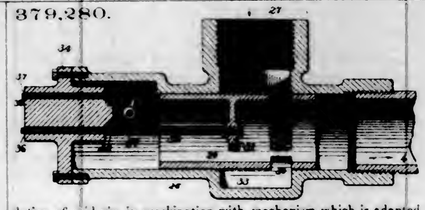
straps or bands as the posts, and the pins D, secured rigidly in the pickets and inserted through the perforations in the straps or bands the free ends of the pins being bent over on the opposite sides of the straps or bands from the pickets, so that the ends of adjacent pins extend alternately in opposite directions, thereby equalizing the strain upon the straps or bands, substantially as and for the purpose specified.

379,280. **THROTTLE AND GOVERNOR VALVE.** RICHARD H. MATHER, Windsor, Conn. Filed Sept. 4, 1886. Serial No. 212,687. (No model.)

Claim.—1. A steam-engine revolving upon a stationary shaft, and a sleeve upon the rotary hub of said engine, said hub being provided with a projecting pin and said sleeve having a slot for the accommo-



379,280.



dation of said pin, in combination with mechanism which is adapted to change the relative position of rotation of said hub and sleeve according to the speed of the engine, a piston-valve, and a yoke which receives the longitudinal motion of said sleeve and communicates the same to the stem of said valve without change of direction, substantially as and for the purpose specified.

2. A steam-engine revolving upon a hollow shaft, a rotary sleeve upon a hub of said engine, a pin and slot whereby said hub and sleeve engage each other, and a centrifugal governor which is mounted upon a head of said engine and is adapted to vary the relative positions of said sleeve and hub according to the varying speed of the engine, in combination with a piston-valve which is located in a prolongation of said hollow shaft, and mechanism which is adapted to communicate the resulting reciprocating motion of said sleeve to the stem of said valve, substantially as and for the purpose specified.

3. A rotary hub of a steam-engine and a rotary sleeve upon said hub, said hub and sleeve being provided with an engagement pin and slot, in combination with mechanism which is adapted to vary the relative position of said sleeve and hub according to the speed of the engine, a cradle engaging said sleeve and moving longitudinally therewith, and a valve which is provided with a valve-stem having an adjustable screw-connection with said cradle, substantially as and for the purpose specified.

4. A movable sleeve upon the hub of a steam-engine, a valve controlling said engine, and a cradle whereby the longitudinal motion of said sleeve is communicated to the valve-stem, in combination with a screw-connection between said stem and cradle, whereby said valve may be operated independently, substantially as and for the purpose specified.

5. A steam-engine having a valve-stem, a movable sleeve upon the hub of said engine, and an automatic governor actuating said sleeve, in combination with a cradle whereby motion may be transmitted from said sleeve to said valve-stem, and a screw-connection between said cradle and valve-stem, whereby said valve may be operated by hand independently of said governor, substantially as and for the purpose specified.

6. In combination with a movable sleeve upon the hub of a revolving steam-engine and with the stem of a piston-valve controlling said engine, an intermediate cradle consisting of two parallel rods which are movable lengthwise in suitable supports and are rigidly connected with each other by means of a yoke, to which said stem is attached, substantially as and for the purpose specified.

7. For the purpose of transmitting motion from a grooved sleeve upon the hub of a revolving steam-engine to the stem of a piston by which said engine is regulated, two parallel rods which are movable endwise in suitable bearings, are armed at one end with tongues or fingers for engagement with said sleeve, and are connected with each other at the other end by means of a yoke, to which said stem is attached, substantially as and for the purpose specified.

8. A balanced piston-valve provided with a valve-stem and a false valve-stem, which are balanced against each other by means of a lever, substantially as and for the purpose specified.

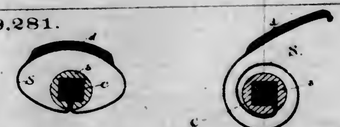
9. A valve-casing having a head which is provided with an interior chamber and an outlet therefrom to the external air, a balanced valve-piston within said casing, and a valve-stem which works through said head, in combination with a false valve-stem which works in said chamber, substantially as and for the purpose specified.

10. A centrifugal governor, a sleeve for transmitting motion from said governor, two parallel rods, and an intermediate yoke for transmitting motion from said sleeve, in combination with a balanced piston-valve whose stem terminates in a screw which passes through a bushing in said yoke and is armed with a hand-wheel, substantially as and for the purpose specified.

11. Two parallel rods adapted to move lengthwise in suitable supports and attached to each other by means of a rigid yoke, in combination with a valve-stem which is provided with a screw-thread working through said yoke and with a terminal hand-wheel, substantially as and for the purpose specified.

379,281. **TOP-PROP SPRING.** AUGUST C. OHLSEN, Cincinnati, Ohio. Filed Oct. 13, 1887. Serial No. 252,224. (No model.)

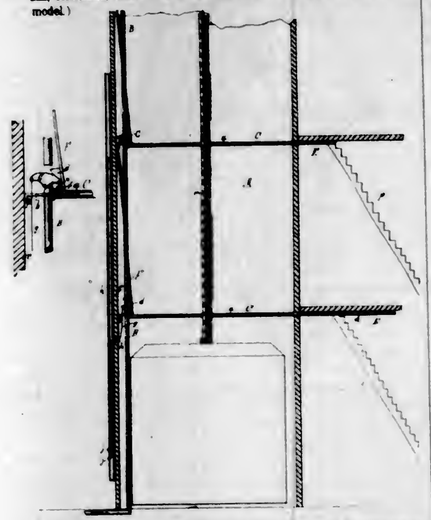
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Claim.—1. The combination, with the top-prop of a shifting-top buggy or other vehicle, of a flat spring fitted to the external contour of the prop, and an embracing sleeve or box clamping said spring in position, said spring projecting into the path of the bows of the top and forming a resilient support therefor, substantially as set forth.

2. In combination with the folding top and top-prop of a buggy or other vehicle, a spring-buffer arranged to receive the impact and form a resilient support for the bows of said top when thrown back, a cushion, of leather, felt, or other similar material, attached to the top of the spring, and an embracing sleeve or box clamping said spring to the top-prop, substantially as set forth.

379,282. **FIRE-EXTINGUISHING APPARATUS.** EDWARD PERRIN, Cleveland, Ohio. Filed Apr. 22, 1887. Serial No. 235,733. (No model.)



Claim.—1. In a fire-extinguishing apparatus, the combination of a hinged elevator-shaft trap-door, water-pipes for flooding the shaft, an operating-lever, and intermediate a valve controlling opening in said pipes and connected with said lever, said lever engaging with said door, whereby the operation of said lever simultaneously closes said trap and opens the water-connection to said pipes, substantially as set forth.

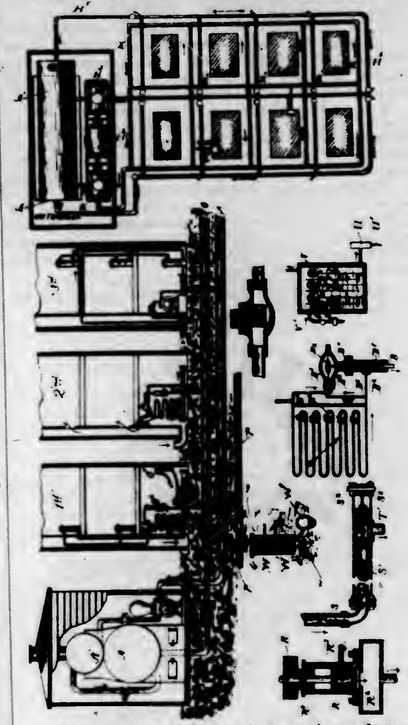
2. In a fire-extinguishing apparatus, the combination of the water-pipe C, encircling the interior of the elevator-shaft, the water-pipe D, passing outside the same, water-main connecting with the two, hinged elevator-shaft trap-door F, lever G, engaging with said door, and a valve controlling opening in said pipes and connected with said lever, substantially as set forth.

3. In a fire-extinguishing apparatus, the combination of the water-pipes C D E, water-main connecting with them, hinged elevator-shaft trap-door F, lever G, engaging with said door, and a valve controlling opening in said pipes and connected with said lever, substantially as set forth.

4. In a fire-extinguishing apparatus, the combination of elevator-shaft A, the trap-door F, hinged at its lower end and provided near its hinged end with lug *d*, the water-pipes B C D, the valve *f*, controlling the connection between pipe B and pipes C D, and lever G, engaging at one end with said lug and connecting with said valve, whereby simultaneously the trap is dropped and the valve opened when said lever is operated, substantially as set forth.

5. In a fire-extinguishing apparatus, the combination of elevator-shaft A, the trap F, hinged at its lower end and provided near its hinged end with lug *d*, the water-pipes B C D, the valve *f*, controlling the connection between pipe B and pipes C D, and lever G, said lever engaging at one end with said lug, and having wire *e*, connecting with said valve, and having at its opposite end wire *g*, whereby simultaneously the trap is dropped and the valve opened when said lever is operated, substantially as set forth.

379,283. **MEANS FOR SUPPLYING HEAT AND POWER.** WILLIAM R. PRALL, Washington, D. C., assignor, by mesne assignments, to the National Heating Company, New York, N. Y. Filed Dec. 30, 1887. Serial No. 258,665. (No model.) Patented in England July 23, 1879 No. 2,987, and in Germany Jan. 27, 1880, No. 13,595.



Claim.—1. In a system for supplying heat and power from a central station to large districts of buildings in which water is used as a heat-conveying medium, the combination of a heater, a supply-pipe leading from the heater to the building or buildings where heat or power is required and returning to the heater, a pressure-reducing valve, a radiator or other means by which the heat of the water is utilized, and a system of return-pipes by which the water is returned to the heater, substantially as shown and described.

2. In a hot-water and steam heat and power system, the combination of a heater, a supply-pipe leading from and returning to the heater, a pressure-reducing valve by which the hot water is converted into steam, a radiator or other means for utilizing the steam, a system of return-pipes by which the water of condensation is returned to the heater, and means for forcing a circulation in the supply-pipes substantially as shown and described.

3. In a hot-water heating system, the combination of a boiler, a supply-pipe leading from and returning to the heater, a force-pump or other means for causing a circulation in the supply-pipe, a circulating-coil or radiator or other means for utilizing the heat of the water, and a system of return-pipes by which the water, after being circulated for heating purposes, is returned to the boiler, substantially as shown and described.

4. The combination of a heater, a supply-pipe leading from and returning to the heater, a force-pump, a hot-water engine, pipes connecting the engine with the supply-pipe, a return-pipe, and pipes connecting the engine with the return-pipe, substantially as shown and described.

5. The combination of a heater, a supply-pipe leading from and returning to the heater, a force-pump, a return-pipe independent of

the supply-pipe, and a preheater, as A, substantially as shown and described.

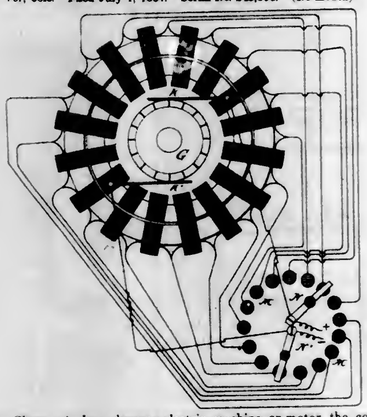
6. The combination of the water-heater, a supply-pipe leading from and returning to the heater, a radiator or other means for utilizing the hot water, a discharge-water trap, and a system of return-pipes communicating with the trap and heater and radiator for re-conveying the water to the heater.

7. The combination, with the separate supply and return pipes, of the tank V, provided with the partitions extending from the bottom upward to within a short distance of the top, and the trap U, constructed and operating substantially as shown and described.

8. The combination of the hot-water-supply pipe leading from and returning to the heater, the return-pipe, the radiators, and the differential discharge-water trap composed of the casings B^3, the diaphragm B^3, the stem B^4, the valve B^5, the barrel B^6, the pipes B, and the pipes B^8, B^9, B^{10}, and B^{11}, substantially as shown and described.

9. In a central-station heat and power system, whereby heat and power are furnished to large districts of buildings in cities and towns, the combination of a heater, a street supply-pipe leading from and returning to the heater, a force-pump, a street return-pipe communicating with the heater, branch pipes leading from the supply-pipe to the building where heat or power is required, branch return-pipes leading from the building and connecting with the street return-pipe, branch street supply and return pipes communicating with the main supply and return pipes, whereby the heating medium is circulated around the several blocks of the district, and means for controlling the flow in each and every section.

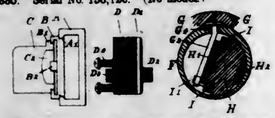
379,284. **DYNAMO-ELECTRIC MACHINE.** LEWIS C. RICK, Denver, Colo. Filed July 1, 1887. Serial No. 243,098. (No model.)



Claim.—1. In a dynamo-electric machine or motor, the combination of the concentric inner and outer rings having their cores composed of annular disks placed side by side with intervening air-spaces and in line radially, whereby the air-spaces may be in direct alignment.

2. In a dynamo-electric machine or motor, a field-magnet having the location of its two polar points independently adjustable relative to the armature, whereby the machine may be regulated and adjusted.

379,285. **CARD-GRINDER.** BOSIL S. ROY, Worcester, Mass. Filed Jan. 17, 1885. Serial No. 153,126. (No model.)



Claim.—The eccentric-shell driver, made thicker on its slotted side to preserve its true balance, substantially as set forth.

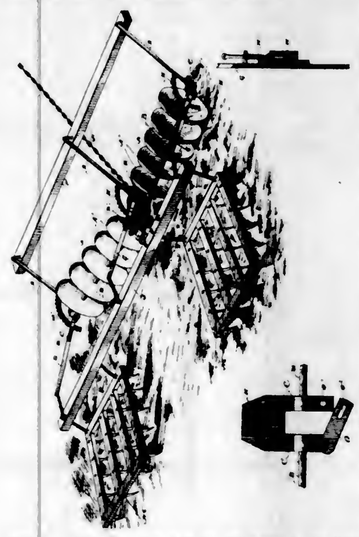
379,286. **HOG-TENDON CUTTER.** DARIUS A. RUNNELS, Liston, Ind. Filed Sept. 23, 1887. Serial No. 250,517. (No model.)



Claim.—1. A device for the purpose described, comprising a handle and two independent blades having one end secured to said handle and said blades extended in the same general direction side by side but diverging from the point of attachment with the handle to their free ends, with their cutting-edges extended in the same transverse direction, substantially as and for the purpose described.

2. In a device for the purpose described, the combination, with the handle A and two independent diverging hooked cutting-blades, C C', of the screw D for regulating the divergence of said blades, as set forth.

379,287. **DISK HARROW.** GEORGE H. SAWYER, Lamoille, Ill. Filed Dec. 1, 1887. Serial No. 256,716. (No model.)



Claim.—1. In combination with the disk-gangs A, the divergent bars D and G, having their inner ends seated at or near the axis of said disk-gangs, and adjustable connecting-bars H, substantially as shown, and for the purpose described.

2. In a disk harrow, the combination of the draft-bars D, projected forward from the axis of the disk-gangs, the rearward-extending bars G, pivoted at their forward ends at or near the axis of said disk-gangs, a harrow or other pulverizer attached to the rear end of the bars G, and intermediate mechanism, H, for varying the distance between the bars D and G, substantially as shown, and for the purpose described.

3. In a disk harrow, and as means of regulating the depth of cut thereof, forwardly-extending draft-arms D, pivotally seated at or near the axis of said disk-gangs, rearwardly-extending bars G, pivoted likewise at their forward ends, a harrow or other pulverizer attached to the rear ends of the bars G, and means, substantially as shown, for adjustably connecting bars D and G, for the purpose described.

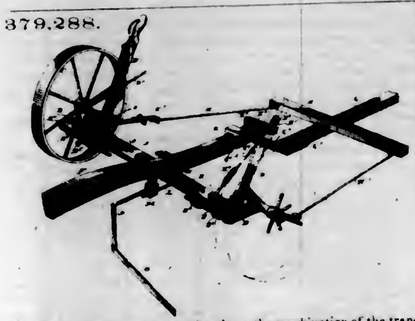
4. In combination with the disk-gangs A, the shoe E, interior boxes, C, pivotally seated, respectively, on the shoe E, and the connecting-arm O, pivotally seated upon one of said boxes and adjustably connected to the other thereof, substantially as shown, and for the purpose described.

5. In a disk harrow, and as a means of regulating the depth of cut thereof, upwardly and forwardly extending draft-arms D, seated at their rear ends at or near the axis of the disk-gangs, rearwardly and upwardly extending arms G, seated at their forward ends at or near said axis, (one or the other of said arms being pivotally seated at the point aforesaid,) means for varying the distance between said arms, and a weight or drag applied to the outer ends of the arms G, substantially as shown, and for the purpose described.

379,288. **SULKY ATTACHMENT FOR PLOWS.** GEORGE H. SAWYER, Lamoille, Ill. Filed Dec. 1, 1887. Serial No. 256,717. (No model.)

Claim.—1. In sulky attachments for plows, the combination of the axle A, beam F, carrying axles B and B', plate G, tongue G', pivoted horizontally to the plate, transverse bar H, and connecting-rods H', arranged and operating substantially as shown, and for the purpose described.

379,288.



2. In a sulky attachment for plows, the combination of the transverse axle A, the plow-beam F, pivotally seated thereon, the axles B and B', tongue G', pivoted laterally, and rods or chains H', connecting said axles to the tongue, whereby the lateral oscillation of the latter is utilized to govern the direction of the plow, substantially as shown, and for the purpose described.

3. In a sulky attachment for plows, a transverse axle, A, a plow-beam, F, plate E, pivotally seated on said axle, and means, substantially as shown, for oscillating or turning said plate in a horizontal plane, for the purpose described.

4. In a sulky attachment for plows, the combination of the axle A, the plate E, pivotally seated on axle A, the beam F, rigidly attached to plate E, and draft-rod E', substantially as shown, and for the purpose described.

5. In a sulky attachment for plows, the combination of the plow-beam F, pivoted vertically at its forward end, the axle A, the plate E, pivoted upon said axle A, having rigidly attached thereto the beam F, and the draft-rod E', pivoted at its rear end to the plate E, and adjustably attached to the beam F at the forward end of the latter, and provided with draft-eye E^3, substantially as shown, and for the purpose described.

6. In sulky attachments for plows, the transverse axle A, the beam F, the plate E, attached to the beam F and extended laterally therefrom, and a draft-rod, E', attached at its rear end to the plate E and at its forward end to the side of the beam F, whereby the draft of the team is applied outside of the longitudinal center of the beam F, and tends to hold the rear end of the latter against lateral movement toward the landside and to centralize the draft between the lines of said landside or outer cutting-edge of the plow, substantially as shown, and for the purpose described.

7. In sulky attachments for plows, the tongue G', pivoted horizontally at its rear end on the transverse plate G, the plow-beam F, pivoted vertically to said plate and seated rigidly on plate E, the axle A, suitably supported on carrying-wheels, the plate E, pivoted thereon, cross-beam H, rigidly attached to said tongue, the plate G, and rods H', all arranged substantially as shown, and for the purpose described.

8. The combination of the axle A, suitably supported upon crank-axles B and B', the plate E, parallel with axle A, plow-beam F, seated on plate E, interposed eccentric-wedge K, and means, substantially as shown, for adjusting the altitude of said carrying-axles, whereby the relation of said axles to said beam is varied, substantially as shown, and for the purpose described.

9. The combination of the beam F, axle A, spring-rod L, arm N, adjustably attached thereto, and scraper O, substantially as shown, and for the purpose described.

10. In combination with the axle A, the crank-axle B, suitably sleeved to said plate, lever D', diagonal rod B^2, and arm B^4, adjustably attached to the axle B, substantially as shown, whereby said axle B is adapted to be moved to or from the furrow, for the purpose described.

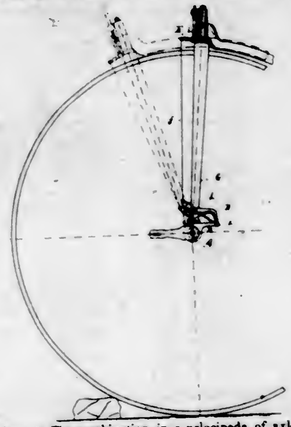
379,289. **IMITATION BUTTON.** JOHANN C. SCHMAHL, Barmen, Prussia, Germany. Filed Dec. 3, 1886. Serial No. 220,569. (No model.)



Claim.—1. The disk *a*, made of celluloid, horn, or gelatine having a design stamped thereon and painted, as and for the purpose set forth, in combination with the disk *g*, colored, polished, or left dim on one side and provided with a central opening, and the disk *d'*, colored or polished on one side, substantially as and for the purpose set forth.

2. As an improved article of manufacture, a button or other article composed of a disk or sheet of transparent celluloid, gelatine, &c., having raised configuration stamped or pressed thereon, and held within the frame of a button or other article, the brightened or colored disks or sheets arranged beneath said transparent disk, the whole provided with a suitable backing and properly inclosed within the frame of a button or other article, substantially as shown and described.

379,290. **VELOCIPEDE.** WALDEMAR SCHROETER, Delitzsch, Saxony, Germany. Filed June 15, 1887. Serial No. 241,355. (No model.)

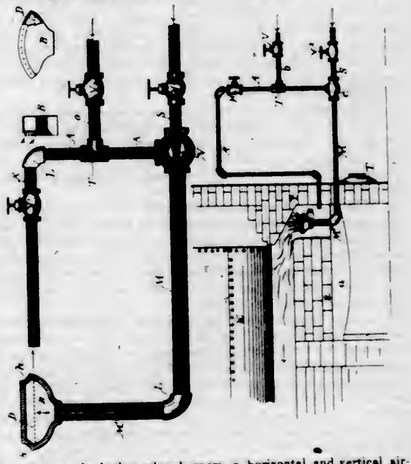


Claim.—1. The combination, in a velocipede, of axle A with the levers B D, rollers *d*, and with the chain *f*, lever E, and a hand-bar, which is retained in position by lever E, substantially as specified.

2. The combination of axle A with lever B, having inclined projection *b*, and with lever D, having slot *m*, and with rollers *d*, lever E, spring *i*, and hand-bar *l*, substantially as described.

3. The combination of hand-rod *l* with the tubular sleeve H, having cut-away portion, and with the spring *i*, substantially as specified.

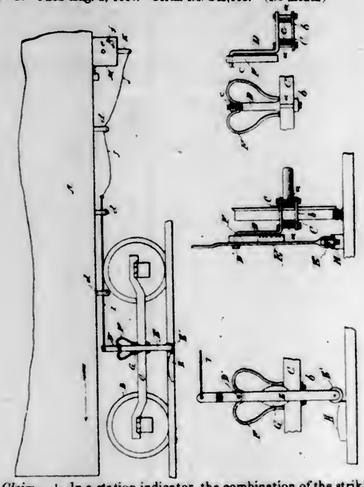
379,291. **HYDROCARBON-BURNER.** JAMES F. SHEAY, Brooklyn, N. Y., assignor to the Empire Hydrocarbon Company, of New York. Filed Apr. 5, 1886. Serial No. 197,817. (No model.)



Claim.—In hydrocarbon-burners, a horizontal and vertical air-supply pipe having its inlet at or near the center of the furnace and provided with a valve, an oil-supply pipe connecting with said air-pipe above the atomizing-chamber at a convenient point, in combination

with a steam-pipe, as S, and a mixing-chamber formed of horizontal and vertical pipes, as M and M', arranged at right angles with each other, the vertical one being surmounted at its end with a suitable burner, substantially as described and set forth.

379,292. STATION-INDICATOR. ROBERT SEMPTHER, Brooklyn, N. Y. Filed Aug. 2, 1887. Serial No. 245,993. (No model.)



Claim.—1. In a station-indicator, the combination of the striking-lever E, pendent from the truck of a car and independent of the body of the car, and an indicator-operating mechanism attached to the body of the car, the said striking-lever being connected with the indicator-operating mechanism by a connecting mechanism, a portion of which is rigid and a portion of which is flexible, substantially as described.

2. In a striking mechanism for a station-indicator, the combination of a pendent lever adapted to engage with a projection on the track, a hanger attached to the truck of the car and which supports the said lever, a spring fastened to said hanger, and a block affixed to the pendent lever and which is adapted to engage with the said spring, substantially as described.

3. In a striking mechanism for a station-indicator, the combination of the pendent lever E, adapted to engage with a projection on the track, means for supporting said lever, projection *p*, carried by said lever, spring *q*, carried by the said supporting means, said projection *p* being so placed as to compress said spring when the lever is operated, and stop *o'*, arranged to limit the throw of the said pendent lever, substantially as described.

4. In a device for supporting a pendent lever in a station-indicator the Z-shaped hanger D, attached to the truck of a car, carrying a pendent lever, said hanger D being provided with a bracket, D^2, having a spring-carrying extension, *o*, and stop *o'*, in combination with the semi-rigid connection I J and the indicator-operating mechanism, substantially as described.

5. In an indicator-operating mechanism for a station-indicator, the combination of a supporting-plate attached to the body of the car, an adjustably-pivoted lever pivoted to the said supporting-plate and connected with the indicator, a cam pivoted to the said supporting-plate and which vibrates the said lever, the said lever being pivoted within the periphery of the said cam, and means for operating the said cam, substantially as described.

6. In an indicator-operating mechanism for a station-indicator, the combination of a supporting-plate fastened to the body of a car, a lever adjustably pivoted to said supporting-plate and which is suitably connected to the indicator, a slot in said supporting-plate within which the said lever may be adjusted, a cam pivoted to said supporting-plate and which operates said lever, said cam and lever being provided with springs to return them to their normal position, a cushion or pad so placed on the supporting-plate as to receive the return blow of the cam, and means to operate the cam, substantially as described.

7. In a striking mechanism for a station-indicator, the Z-shaped hanger D, attached to the truck of a car, provided with a pivotal point, *c*, and spring F, fixed to said hanger, in combination with the pendent lever E, substantially as described.

8. In a station-indicator, the combination of the cam L and lever K, pivoted to the supporting-plate M, fastened to the body of the car, spring *h*, for returning the cam to its position of rest, adjustably-pivoted lever N, and cord *g*, for connecting said lever to the indicator, pad or cushion P, arranged to receive the return blow of the cam, pendent lever E, pivoted by suitable means to the truck, semi-rigid connection for connecting the pendent lever E and cam-lever K, composed of the rigid link I and chain J, and the supports *d d d*, in which the link and chain move, substantially as described.

9. In a station-indicator, the combination of the supporting-plate M, attached to the body of the car, cam L, provided with the lever K and pivoted to said plate, bell-crank lever N, wire *g*, connecting the lever N to the indicator, slot *f* in the plate M, in which the lever N is adjustably pivoted, roller O, journaled on the lever N within the periphery of the said cam, and the pad or cushion P, so arranged as to receive the return blow of the cam, substantially as described.

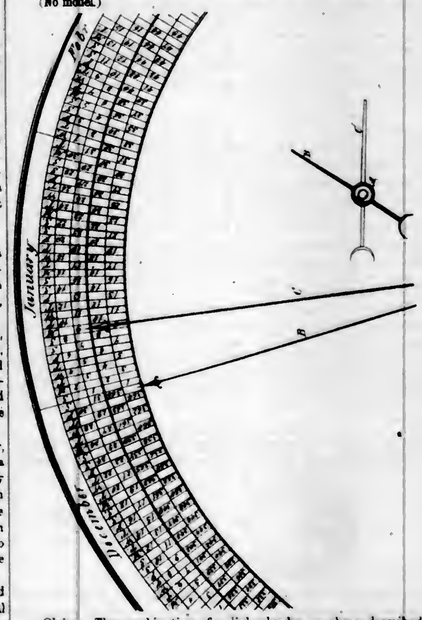
10. In a station-indicator, the combination, with the cam L, pivoted to the supporting-plate M, fixed to the body of the car, and means for operating said cam, of the adjustably-pivoted lever N, pivoted to said supporting-plate, roller O, journaled on said lever, spring *i*, for returning the lever N to its position of rest, and chain *g*, connecting the lever N with the indicator Q, substantially as described.

11. In a device for ringing a bell in connection with a station-indicator, the combination of the cords *g g'*, leading to the indicator Q, and means for supporting and operating the same, sliding blocks S S within the indicator and operated by the said cords, bell-crank levers *j j'*, located above the indicator and operated by the said sliding blocks, bell V, and wires *n n'*, connecting the said bell and levers, substantially as described.

12. In a striking mechanism for a station-indicator, the combination, with the means to support a pendent lever to the truck of a car, of the pendent lever E, roller E' at the end of said lever, and the elastic strips E^3, surrounding the said roller and end of said lever, substantially as described.

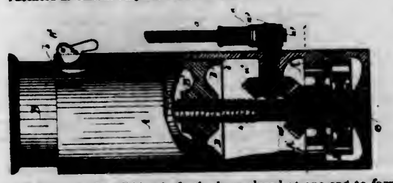
13. In a striking mechanism for a station-indicator, the combination, with a pendent lever provided with a roller or like device at its point of contact with a projection on the track and means for supporting said lever, of an elastic stroke-resisting medium fixed to the end of said lever and leading it in its travel over said projecting piece, substantially as described.

379,293. DIAL-CALENDAR WITH DAY-INDICATOR. CARL F. SIEN, Montreal, Quebec, Canada. Filed May 11, 1887. Serial No. 237,918. (No model.)



Claim.—The combination of a dial-calendar, as above described, consisting of a number of circles or continuous lines on one and the same surface, divided, numbered, and lettered to represent each day, each date, and each month in a year, with two adjustable hands or needles, A B C, pivoted but movable, and so arranged as to permit of being turned independently of each other or jointly when desired, for the purpose of indicating the number of days from a certain date to any other date in the year, all substantially as described and set forth.

379,294. LIFTING-JACK. FRANCIS H. SLEEPER, Coaticook, Quebec, Canada. Filed Feb. 16, 1887. Serial No. 228,133. (No model.) Patented in Canada July 30, 1886, No. 34,590.



Claim.—1. In a lifting-jack, the base closed at one end to form a seat, and a lifting-piece fitted to slide in the base and provided with a screw-threaded hub, combined with a lifting-screw having one of its ends resting in the said seat and its other end engaging the threaded hub of the lifting-piece to elevate or depress the said lifting-piece and gearing wholly within the base to actuate the lifting-screw, substantially as described.

2. In a lifting-jack, the base A, closed at one end to form a seat, *c*, and the internal gear, A', combined with the lifting-screw *b*, and gear a^7, fast upon the said lifting-screw, and with gearing to operate the same, substantially as described.

3. In a lifting-jack, a base closed at one end and provided with an internal gear, A', a lifting-piece, and a lifting-screw and its attached gear a^7, combined with the gear a^6, actuated by a pawl and ratchet, and the intermediate gears, a^5 and a^4, substantially as and for the purpose described.

4. In a lifting-jack, a base closed at one end and provided with an internal gear, A', a lifting-piece sliding therein and slotted, as at *b'*, and the locking device, consisting of the ear b^2, pivoted at b^3, the said ear being adapted to enter said slot and lock the lifting-piece, and a lifting-screw and its attached gear a^7, combined with the gear a^6, actuated by a pawl and ratchet, and the intermediate gears, a^5 and a^4, substantially as and for the purpose described.

379,295. DISK CULTIVATOR. R. K. SWIFT, Rock Falls, Ill., assignor of two-thirds to John J. A. Zeller and Lyman R. Phelps, both of same place. Filed Oct. 19, 1887. Serial No. 252,842. (No model.)



Claim.—1. In a disk cultivator, the combination, with the axle, of a flexible wheel-frame having the wheel-spindles rigidly attached thereto, a vertically-pivoted frame carrying the disk-gangs and suspended from said wheel-frame, and means, substantially as shown, for impartiag lateral oscillation coincidently to both of said frames, as and for the purpose specified.

2. The combination of the frames 5, adapted to support and control the gangs of disks 6 and pivoted above the axis of rotation of said disks, the plates 17, attached to said frames and provided with the slots 18, the beam 10, provided with the vertical bar 16, adapted to engage the slot 18, side beams, 11, suitably pivoted to oscillate laterally, and means, substantially as shown, for effecting said oscillation, for the purpose described.

3. The combination of the axle B, carrying-wheels A A, spindles 4, side beams, 11, attached to said spindles, cross-beam 10, provided with the vertical bar 16, frames 5, adapted to support and control, respectively, the gangs of disks 6 and provided with the plate 17 and slot 18 therein, beams 8, and suitable means for imparting lateral oscillation to the beams 11, substantially as shown, and for the purpose described.

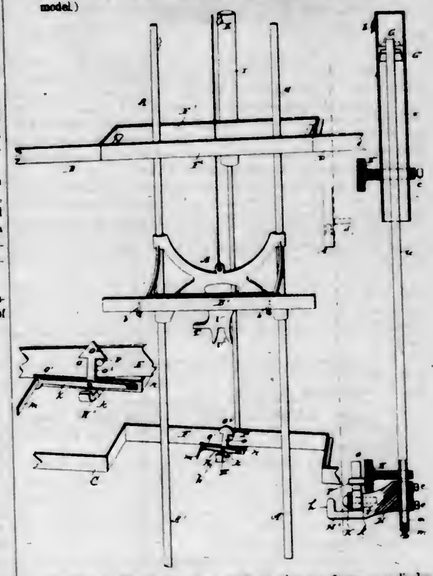
4. In combination with the wheel-frame and tongue and the frames 5 5, the bars 20, adjustably connected at their inner ends to said tongue and having their lower and horizontal portions, 22, bolted to the plow-beams and inserted in ways or slots 23, formed in a horizontal plane on the frames 5, substantially as shown, and for the purpose described.

5. In a disk cultivator, the combination of the frames 5 5, adapted to support and control, respectively, the gangs of disks 6 6 and pivoted in a horizontal plane, the superposed frame 10 11, attached laterally to the spindles 4, the axle B, spindles 4, pivotally attached thereto, the carrying-wheels A, interattachment of the frame 10 11, and frames 5, and means, substantially as shown, for imparting lateral oscillation to the frame 10 11, whereby, both the carrying-wheels and the gangs of disks are coincidently and in the same degree deflected laterally, as described, substantially as shown, and for the purpose specified.

6. In a disk cultivator, the combination of the axle B, horizontal bars 1, projected outwardly therefrom in pairs and provided with vertical holes 2, the flexible frame 10 11, the wheel-spindles 4, rigidly secured to the side bars of the flexible frame, and means, substantially as shown, for laterally oscillating said frame, for the purpose described.

7. The combination of the frames 5 5, suitably pivoted near their rear ends and provided with two or more slots, 23, and the laterally-adjustable bars 20, provided with the horizontal portions 22, seated within the slots 23, substantially as shown, and for the purpose described.

379,296. AIR-CUSHION FOR CASH-CARRIERS. HORATIO THOMAS, Chicago, Ill., assignor to The Bostedo Package and Cash Carrier Company, Atlantic, Iowa. Filed Oct. 4, 1887. Serial No. 251,439. (No model.)



Claim.—1. The combination, with an elevator-frame, a cylinder, and a piston-rod, of a latching-hook connected to the lower end of the piston-rod and adapted to engage the elevator-frame, and provided with a projection adapted to be engaged by the elevator-frame for tilting the hook in one direction and with a projection adapted to engage a stationary stop for tilting the hook in the opposite direction, substantially as set forth.

2. The combination, with a well-hole frame, an elevator-frame, a cylinder, a piston and piston-rod, a stop on the elevator-frame, and a stop on the well-hole frame, of a latching device attached to the piston-rod and adapted to engage the stop on the elevator-frame as the latter descends and engages the stop on the well-hole frame when the latching device and piston-rod are in their elevated positions, substantially as set forth.

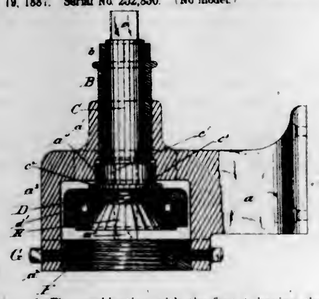
3. The combination, with two tracks and an elevator-frame having a projection thereon, of a cylinder, a piston and piston-rod, and a tilting latching device attached to the piston-rod and adapted to be tilted by the frame and engage the projection thereon, whereby the piston is elevated by the upward movement of the elevator-frame, substantially as set forth.

4. The combination, with an elevator-frame, of a piston, a piston-rod, and a latching-hook attached directly to the lower end of

the piston-rod and adapted to be engaged by the elevator-frame as the latter descends, substantially as set forth.

5. The combination, with an elevator-frame, of a cylinder, a piston and piston-rod, a projection attached to the latter for engaging the frame as the latter descends, and a tilting latch attached to said projection for engaging the elevator-frame, whereby the piston-rod is elevated by the upward movement of the elevator-frame, substantially as set forth.

379,297. **VALVE-FACING DEVICE.** CHARLES P. WEISS, Susquehanna, Pa., assignor of one-half to Charles M. Morse, Buffalo, N. Y. Filed Oct. 19, 1887. Serial No. 252,830. (No model.)



Claim.—1. The combination, with the foot A, having the arm *a* and the threaded neck *a'*, of the feed-screw B, the spindle C, having the collar *c'*, and the cutter-holder D, attached to the spindle and carrying the removable cutter E, substantially as and for the purpose set forth.

2. The combination, with the feed-screw B, of the spindle C, having the collar *c'*, the annular cutter-holder D, having the flange *d* and the pins *d'*, and the removable cutter E, seated in the holder D and locked by the pins *d'*, substantially as described.

3. In a globe-valve-refacing tool, the combination, with the body and the cutter supported thereby, of a removable threaded collar for receiving and holding the gland of the valve, substantially as described.

4. The combination, with the body having a ring, a^2, of the screws G and the threaded collar F, provided with the grooves *f f'*, substantially as described.

5. The combination, with the foot A, having the arm *a*, the threaded neck *a'*, the ring a^2, and the legs a^3, of the screw B, the spindle C, having collar *c'*, the cutter-holder D, and removable cutter E, and the threaded collar F, removably secured in the ring a^2, substantially as described.

6. In a globe-valve-refacing tool, the combination, with a spindle, of the cutter-holder D, consisting of a flat ring having a projecting flange, *d*, substantially as described.

379,298. **PREPARING HYDROCHLORATE OF QUINIA.** LORETTA B. WELD, Falmouth, Mass. Filed Jan. 14, 1887. Serial No. 224,362. (No specimens.)

Claim.—1. The within-described improvements in the manufacture of the hydrochlorate of quinine, consisting in dissolving the sulphate of quinine in boiling alcohol with chloride of sodium, precipitating the sulphate of soda and any excess of chloride of sodium, and then evaporating the alcohol, forming the hydrochlorate of quinine as crystals, substantially as described.

2. In the manufacture of hydrochlorate of quinine, dissolving sulphate of quinine and chloride of sodium in boiling alcohol, concentrating the solution until sulphate of soda is precipitated, then separating the precipitate and evaporating to deposit the hydrochlorate of quinine in a crystallized form, substantially as described.

379,299. **MEDICINAL PREPARATION.** LORETTA B. WELD, Falmouth, Mass. Filed Jan. 28, 1887. Serial No. 225,901. (No specimens.)

Claim.—A medicinal preparation consisting of a salt of quinine and chloride of sodium combined in a dry state for solution in a non-acid menstruum, substantially as described.

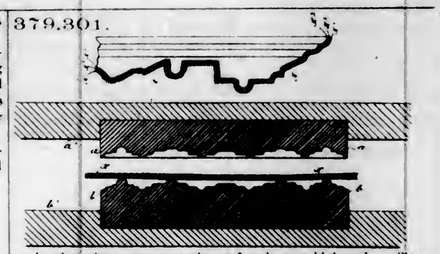
379,300. **SOLUTION OF QUININE.** LORETTA B. WELD, Falmouth, Mass. Filed Jan. 28, 1887. Serial No. 225,902. (No specimens.)

Claim.—A preparation of quinine consisting of a menstruum composed of alcohol and water, holding in solution a salt of quinine and chloride of sodium, or common salt, substantially as set forth.

379,301. **METHOD OF MANUFACTURING WOODEN RELIEF-PLATES.** CARL WITTKOWSKY, Charlottenburg, near Berlin, Germany. Filed Nov. 23, 1886. Serial No. 219,723. (No specimens.)

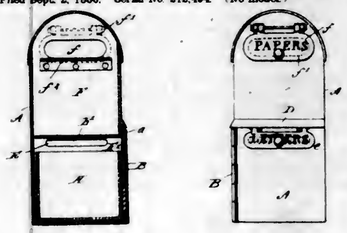
Claim.—1. A process of manufacturing wooden relief-plates, consisting in coating several veneering-plates with a cementing medium which only softens at a certain degree of warmth and that hardens again when the temperature rises a few degrees higher, then piling the plates thus prepared one above the other with the grain of each plate crosswise to the adjoining ones, then putting the pile between two heated molds of a press, of which the one has the design cut into it and the other the same projecting, and, lastly, subjecting the piles of plates to a strong pressure in this press, whereby the plates are thoroughly joined and receive the relief distinctly as it is in the molds, all substantially in the manner as shown and described.

379,301.



2. A process of manufacturing wooden relief-plates, consisting in coating several veneering-plates on both sides with a mixture of albumen and caseine as a cementing medium, then piling these plates one above the other with the grain of each plate crosswise to the adjoining ones, then putting this pile between two heated molds of a press, of which molds the one has the design cut into it and the other one the same projecting, and, lastly, subjecting the pile of plates to a strong pressure in this press, whereby the plates are thoroughly joined and receive the relief distinctly as it is in the molds, all substantially in the manner as shown and described.

379,302. **LETTER-BOX.** JOHN B. ARCHER, Washington, D. C. Filed Sept. 2, 1886. Serial No. 212,494. (No model.)



Claim.—1. A letter-box divided into an upper compartment for papers and a lower compartment for letters by a detachable horizontal plate, whereby the said compartments are united by the withdrawal of said plate, together with independent slotted openings for said compartments, substantially as and for the purpose described.

2. A letter-box divided into an upper compartment for papers and a lower compartment for letters, each provided with a separate slotted opening by a detachable horizontal plate made integral with the hinged door of said box, whereby the two compartments are united simultaneously upon opening the door, substantially as herein shown and described.

3. A letter-box divided into an upper compartment for papers and a lower compartment for letters, each provided with a separate slotted opening by a detachable horizontal plate integral with the door of said box, and provided with a detachable receptacle in the lower compartment thereof to receive letters, whereby upon opening the door the two compartments are united and the papers dropped in said receptacle with the letters, substantially as herein shown and described.

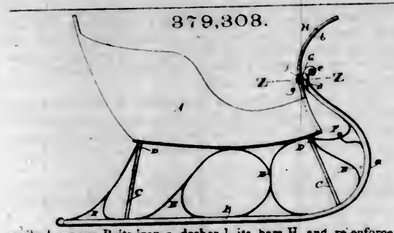
4. The combination, with a box adapted to receive letters and papers, having independent openings *f* and E in the ends thereof, and a central hood, D, of the hinged door B, provided with an integral horizontal plate, *b'*, having a cut-away portion, b^2, together with the removable letter-receptacle H, substantially as shown and described, and for the purpose herein set forth.

379,303. **SLEIGH.** SAMUEL R. BAILEY, Amesbury, Mass. Filed Oct. 15, 1887. Serial No. 252,436. (No model.)

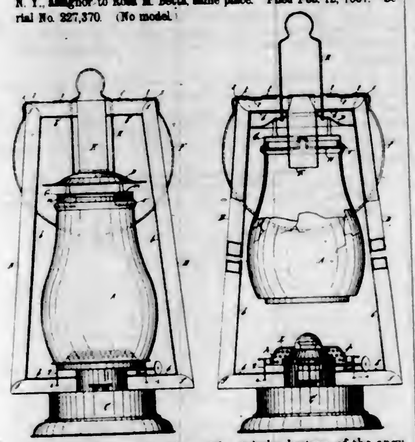
Claim.—1. The metallic coupling G, formed to receive the upper ends of the runner and its metallic shoe, and with a seat or suitable bearing for the re-enforce iron of the dasher, and with suitable passages for bolts or rivets whereby the respective parts are firmly secured together, all substantially as specified.

2. The combination of coupling G, formed substantially as described, runner B, its iron *a*, dasher I, its bars H, and re-enforce iron *b*, and the securing-bolt *g*, all as specified.

379,308.



379,304. **TUBULAR LANTERN.** LEWIS F. BETTS, New York, N. Y., assignor to Ross M. Betts, same place. Filed Feb. 12, 1887. Serial No. 227,370. (No model.)



Claim.—1. The combination, with a tubular lantern, of the angular air-tubes, each having substantially vertical and horizontal portions, the central air-pipe joined with said tubes, and the flat-topped oil-pot, the lower horizontal portions of the tubes bearing upon the oil-pot and secured thereon, and the seams being located on the inner faces of the tubes, substantially in the manner and for the purposes set forth.

2. The combination, with a tubular lantern, of the adjustable dome, the globe-ring secured thereto, and the globe-holding spring connecting the globe and ring, substantially as shown and described.

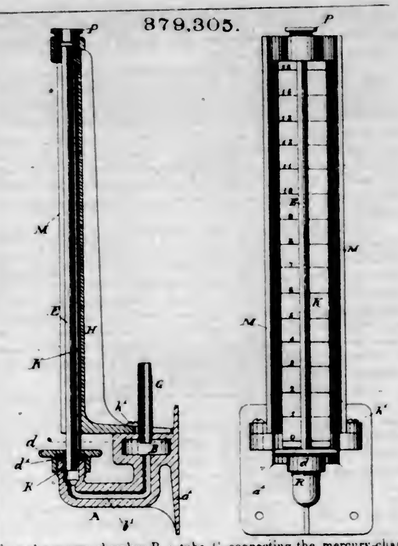
3. The combination, with a tubular lantern, of the air-tubes, the dome, the globe, and the spring lift-wire passing through the air-tubes and connected with the dome, said wire being bent and arranged to automatically lock the globe down by bearing upon the under surfaces of the upper faces of the air-tubes, through which the bent portions of the spring project, substantially as shown and described.

4. The combination, with a tubular lantern, of the perforated globe-bottom, burner-cone, depending wires or strips, and the perforated air-tubes, the globe-bottom resting upon the burner-cone and the wires or strips connected with said bottom and arranged to enter the perforations in the air-tubes for the purpose of locking the parts, substantially as shown and described.

5. In a tubular lantern, the combination, with the air-tubes provided with perforations and indentations, as shown, of the bail the ends of which enter said perforations in the tubes and rest in said indentations, substantially as shown and described.

379,305. **MERCURY PRESSURE-GAGE.** EDWARD BROWN, Philadelphia, Pa. Filed June 30, 1887. Serial No. 243,044. (No model.)

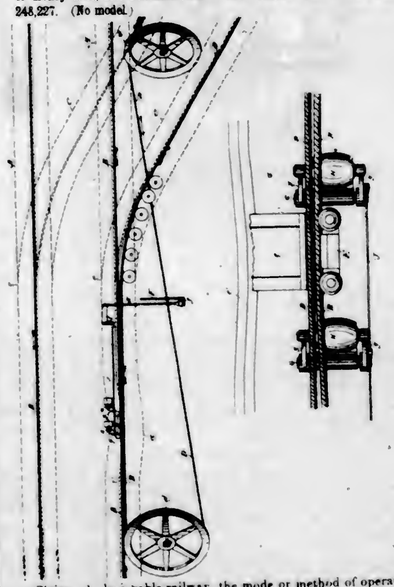
379,305.



Claim.—1. In an open-column mercury-gage, a steadying-arm, H, carrying an index-plate, an enlarged mercury-chamber, B, a tube, G, connecting the mercury-chamber with the apparatus to be tested, the indicating glass tube E, connected direct to the enlarged mercury-chamber B by the channel *b'*, the screwed packing-box R, packing *d'*, and gland *d*, the said packing-box and zero-point of the scale being below a horizontal plane which passes through the said mercury-chamber.

2. In an open-column mercury-gage, the combination of the scale-steadying arm H, with the protecting-flanges M, cast thereon, the enlarged mercury-chamber B, a tube, G, connecting the mercury-chamber with the apparatus to be tested, an indicating glass tube, E, connected direct to the enlarged mercury-chamber B by the channel *b'*, the screwed packing-box R, packing *d'*, and gland *d*, the said packing-box and zero-point of the index being below a horizontal plane which passes through the said mercury-chamber.

379,306. **OPERATING CABLE RAILWAYS AT SWITCHES.** LEWIS M. CLEMENT, Oakland, and GEORGE C. WATKINS, San Francisco, assignors to Henry Root, San Francisco, Cal. Filed Aug. 29, 1887. Serial No. 248,227. (No model.)



Claim.—1. In a cable-railway, the mode or method of operating at switches which consists in running the main and branch cables for a given distance in the same tube and in the same direction, moving the grip over into the line of travel of and into contact with the free cable, whereby said cable is forced from a straight draft, forcing the

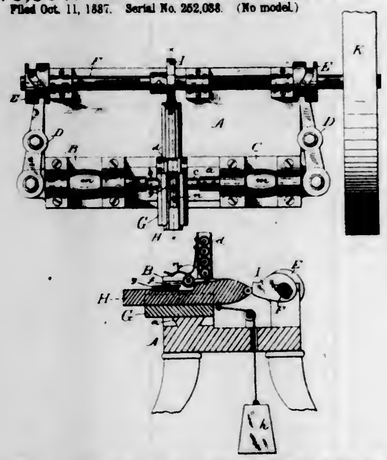
engaged cable from between and free of the grip-jaws, and receiving the free cable between said jaws as it springs back to the straight draft, substantially as described.

2. In a cable railway, the mode or method of operating at switches which consists in running the main and branch cables for a given distance in the same tube and in the same direction, but in different horizontal planes, moving the grip while still engaging one cable over into the line of travel of and in contact with the other or free cable, whereby both said cables are forced from the straight draft, forcing the first cable from between and free of the grip-jaws, whereby it drops down and back to its normal plane, and receiving the free cable between said jaws as it springs back to the straight draft, substantially as described.

3. In a cable railway, the mode or method of operating at switches which consists in running the main and branch cables for a given distance in the same tube and in the same direction, deflecting the grip-carrying car from its line of travel over toward the plane of the line of travel of the branch cable at some point within said distance, whereby the grip is brought into contact with and forces the branch cable from a straight draft, and then forcing the main cable from between and free of the jaws of the grip, whereby said jaws are vacant to receive the branch cable as it springs back to a straight draft, substantially as described.

4. In a cable railway, the mode or method of operating at switches which consists in running the main and branch cables for a given distance in the same tube and in the same direction, but in different horizontal planes, deflecting the grip-carrying car to one side at some point within said distance, whereby the main cable is deflected by the grip, and said grip is brought over into contact with and forces the branch cable from a straight draft, and then forcing the main cable out of the jaws of the grip, whereby it is permitted to return to its normal plane and the branch cable allowed to spring into the jaws so vacated, substantially as described.

379,307. TURNING-MACHINE. ROBERT B. CODLING, Bristol, Conn. Filed Oct. 11, 1887. Serial No. 252,088. (No model.)



Claim.—1. In a turning-machine, the combination of two lathe-centers adapted to move longitudinally, a carrier and turning-tool moving together between said centers at right angles to their axis, a chute fixed over the path of the carrier for feeding work thereto, and operating mechanism for imparting the relatively-timed movements to said centers, carrier, and turning-tool, substantially as described, and for the purpose specified.

2. In a turning-machine, the combination of lathe-centers and a chute respectively adapted to revolve the work and to hold blanks, the slide H, moving between the lathe-centers at right angles to their axes and provided with a carrier and turning-tool, and mechanism for reciprocating said slide, substantially as described, and for the purpose specified.

3. In a turning-machine, the combination of a chute for holding blanks, the slide having the yielding carrier *f*, adapted to move under the chute to receive a blank and then to move away and carry a blank therefrom, and mechanism for grasping the blank when on the carrier, whereby the yielding of the carrier *f* when the work is grasped permits the return movement of the carrier to receive another blank, substantially as described, and for the purpose specified.

4. In a turning-machine, the combination of mechanism for grasping the work, the reciprocating slide provided with a carrier, the chute *d*, for holding blanks, and the spring *n*, for holding the blank within the carrier during its advance movement, substantially as described, and for the purpose specified.

5. In a turning-machine, the combination of the lathe-centers mounted to move longitudinally, the slide bearing a turning-tool and carrier, the chute over the path of the carrier, the levers D D, cams E E, and the cam I, substantially as described, and for the purpose specified.

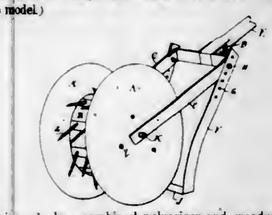
6. In a turning-machine, the combination of the driving-center and the spring-pressed follower at its outer end adapted to start the work from off said center, substantially as described.

7. In a turning-machine, the centers herein described for turning caster-rollers, said centers having axial openings to admit the hubs of said rollers and having their peripheries near their outer ends adapted to enter the rims and center the rollers thereby, substantially as described.

8. In a turning-machine, the combination of a driving-center and the companion center, and the spring-pressed follower *j*, having a central depression for temporarily centering the work, substantially as described.

9. In a turning-machine, the combination of the driving-center having a spring-pressed follower limited in its outward movement to a point inside the outer end of said center, and the companion center having the spring-pressed follower which projects beyond the outer end of said center, substantially as described, and for the purpose specified.

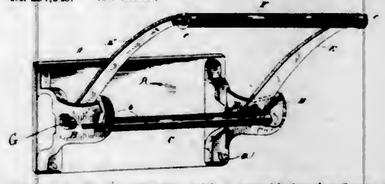
379,308. COMBINED PULVERIZER AND WEEDER. EDWARD C. ELWELL, Sandusky, Ohio. Filed June 6, 1887. Serial No. 240,437. (No model.)



Claim.—1. In a combined pulverizer and weeder, a toothed cylinder having disks with knife-edge peripheries, in combination with a cutting device in rear thereof, as and for the purpose set forth.

2. A combined pulverizer and weeder having a toothed cylinder provided with a disk at each end, the disks being sharpened at their peripheries, gudgeons passing through the axial center of the disks, a rectangular frame provided with a handle journaled upon the gudgeons, knife-supports adjustably attached to the frame, and a knife connected with the supports and extending the width of the frame, as and for the purpose set forth.

379,309. CURTAIN-ROLLER BRACKET AND POLE ATTACHMENT. JOHN W. GREENE, Oregon, Mo. Filed Dec. 14, 1887. Serial No. 257,845. (No model.)

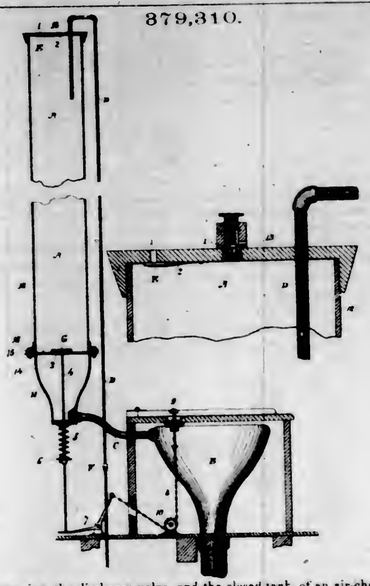


Claim.—1. The combination, with a portable bracket-frame, A, and brackets B, provided with roller-bearings, of the adjustable supporting-arms having hooks or rests at their upper ends and key-hole-shaped legs at their lower ends and fitted in key-hole-shaped slots in said brackets B, and a curtain-roller supported in the said roller-bearings, all substantially as described, and for the purpose specified.

2. The combination, with the portable bracket-frame A, having the key-hole or double key-hole slot K therein, and projections J^3, secured upon the inner side of the brackets, of the angular supporting-arms J, provided with the lugs I and rests, substantially as described.

379,310. RESERVOIR OR TANK APPARATUS FOR WATER CLOSETS. GEORGE W. HUBBARD, Brooklyn, N. Y. Filed June 30, 1887. Serial No. 241,900. (No model.)

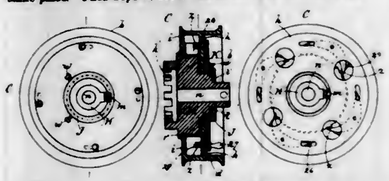
Claim.—1. The combination, with the bowl or hopper, the discharge-pipe, the discharge-valve, and the closed tank, of an air-check valve which permits the ingress of air into the upper part of said tank whenever the pressure therein falls slightly below that outside, but prevents the egress of air therefrom, and a separate water-inlet pipe which terminates in the upper part of said tank at a considerable distance below the top thereof, so that a tank nearly full of water with a substantial body of air above it will be insured, notwithstanding any withdrawal of air or water through said water-inlet pipe, substantially as described.



379,310.

2. The combination, with the closed tank or reservoir, its discharge-valve, the discharge-pipe, and the hopper or bowl, of the water-inlet pipe having its end below the top of said tank or reservoir, and a pressure-valve loaded to a little below the pressure of the water-service at the said end, so that said valve permits the escape from the tank of air compressed by the full head of the water, and consequently allows the water to enter until it rises above said end, but prevents egress of air when the water-service pressure is partially counterbalanced by the accumulation of water in the tank above said end, substantially as described.

379,311. LET-OFF MECHANISM FOR LOOMS. WILLIAM J. HULFORD, Lawrence, Mass., assignor to himself and Joshua Robinson, same place. Filed Sept. 8, 1887. Serial No. 249,111. (No model.)



Claim.—1. The sleeve H, provided with the clutch-teeth *k* and ratchet-teeth *l*, the body *b*, provided with the spring-actuated pawls *z*, the plate K, provided with the pins 29 and handle 27, and the ring J, provided with the screw *w*, in combination with the warp-beam B, provided with a clutch tooth or teeth, the shaft D, strap E, lever F, weight *g*, and screw *m*, substantially as described.

2. The pivoted pawls *z*, provided with springs 24 and having tail-pieces extended to the rear of their pivots, the body or shell *b*, having the diaphragm *h*, provided with the slots 26 opposite said tail-pieces, and the plate K, provided with the pins 29 and handle 27, in combination with the sleeve H, provided with the ratchet-teeth *l* and clutch-teeth *k*, and the ring J, provided with the screw *w*, substantially as described.

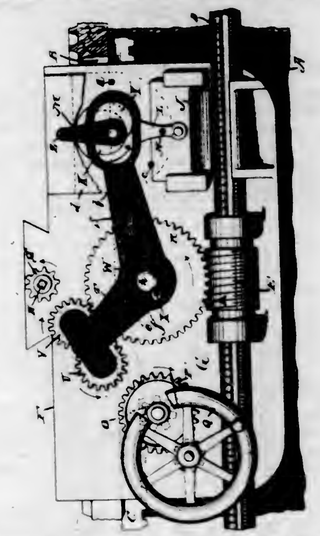
379,312. METALLIC RAILWAY-TIE. SAMUEL B. JEROME, New York, N. Y. Filed May 18, 1887. Serial No. 238,621. (No model.)



Claim.—1. A cross-tie having a shell and elastic packing with an interior strip of wood, as described, and for the purpose specified.

2. A cross-tie having a shell with elastic packing and with a strip of wood, also having the ends sealed, as described, and for the purpose specified.

379,313. LATHE. WILLIS C. JONES and WINFIELD S. ROGERS, Cincinnati, Ohio. Filed Oct. 14, 1887. Serial No. 252,302. (No model.)



Claim.—1. The combination, with gears P and *g*, to be alternatively rotated and alternatively in either of two directions, of the two tumblers S T and the three gears R V U, substantially as and for the purpose set forth.

2. In a lathe, the combination, substantially as set forth, with gear P, pinion *g*, and spur-gear R, of tumblers S and T and pinions U and V.

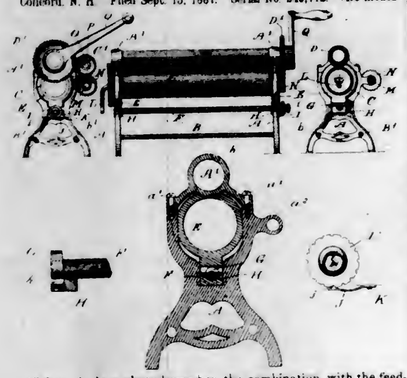
3. In a lathe, a lathe-carriage, a cross-feed screw, a clamp adapted to lock the carriage to the lathe-bed, mechanism for giving feeding motion to the cross-feed screw, a handle to serve in stopping and starting the cross-feeding motion, and means, substantially as set forth, connecting said clamp with the cross-feeding mechanism, combined substantially as set forth, whereby when the cross-feed is started the clamp is automatically applied and when the cross-feed is stopped the clamp is loosened.

4. In a lathe, the combination, with a tumbler for stopping and starting the feed, a lead-screw, an open-and-shut nut for the lead-screw, a pair of connected eccentrics arranged to actuate the tumbler and nut, respectively, a hand-lever arranged to rotate the two eccentrics simultaneously and provided with a detent, and notches to be engaged by the detent, substantially as and for the purpose set forth.

5. In a lathe, the combination of gear R, tumbler S, lead-screw D, nut J, eccentrics K and Y and handle M, pinions U V, and secondary tumbler T, bearing said pinions and pivoted to the first tumbler, and having a hand-lever with a detent engaging near the center of the first tumbler, substantially as and for the purpose set forth.

6. In a lathe, the combination, with tumbler S, of pin *f*, wedge-shaped clamp *e*, fitted to be pressed by said pin, and screw *j*, fitted for the endwise adjustment of the clamp, substantially as and for the purpose set forth.

379,314. PHOTOGRAPH-BURNISHER. WILLIS G. C. KIMBALL, Concord, N. H. Filed Sept. 15, 1887. Serial No. 249,772. (No model.)



Claim.—1. In a photo-burnisher, the combination, with the feed-roll, of a hollow adjustable internally-heated burnishing-roll of larger diameter than said feed-roll, the former located above the latter, gearing whereby their complete revolutions are made in unison, and suitable standards and bearings, arranged substantially as and for the purpose set forth.

2. In a photo-burnisher, a feed-roll mounted in stationary bearings, a burnishing-roll mounted in adjustable bearings, one of said rolls being of larger diameter than the other, gearing whereby their complete revolutions are made in unison, mechanism comprising a revolving shaft, and cams or eccentrics for adjusting said burnishing-roll in a plane parallel with the feed-roll, and suitable standards and bearings, all substantially for the purpose described.

3. In a photo-burnisher, the combination of a feed-roll, a hollow burnishing-roll of larger diameter than said feed-roll, gearing by which said rolls revolve equal one with the other, mechanism comprising a shaft and eccentrics for adjusting said burnishing-roll in a plane parallel with the feed-roll, an operating-crank, and suitable supporting-standards, all substantially for the purpose set forth.

4. The combination of a feed-roll, a hollow internally-heated vertically-adjustable burnishing-roll of larger diameter than said feed-roll, gears for revolving said rolls equal one with the other, mechanism for adjusting said burnishing-roll in a plane parallel with said feed-roll, an operating-crank, and suitable supporting-standards, all constructed and operating substantially for the purpose set forth.

379,315. WHEEL FOR VEHICLES. HENRY J. LAWRENCE, Valparaiso, Ind. Filed Oct. 13, 1886. Renewed Dec. 16, 1887. Serial No. 258,084. (No model.)

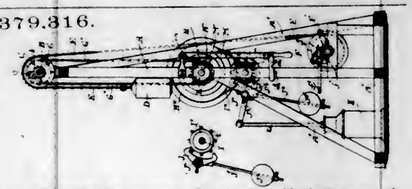


Claim.—The combination, in a vehicle-wheel, of the hub-section C, having the screw-thread C' on its outer side and provided with radial openings to receive the inner ends of the spokes, the hub-section D, having the annular projecting collar D' on its rear side, provided with the openings to receive the spokes, the sleeve attached to the section C and having the outer threaded end, the nut U, adapted to be screwed upon the said sleeve to force the section D rearwardly against the section C, so as to bear against the front sides of the spokes, and the annular collar S, adapted to be screwed onto the hub-section C and provided with the flange to bear against the rear side of the spokes, for the purpose set forth, substantially as described.

379,316. WEIGHT-MOTOR. DANIEL LINDAHL, Chesterton, Ind. Filed Feb. 21, 1887. Serial No. 228,300. (No model.)

Claim.—1. A weight-motor comprising a revolving shaft, two or more pulleys mounted upon the shaft, pawls and ratchets connecting the pulleys with the shaft, chains passing over the pulleys, weights attached to the chains, windlasses for the weights, means, consisting of a detent, for holding one of the windlasses from rotation, and means, comprising an arm extending into the path of a rotating part of an

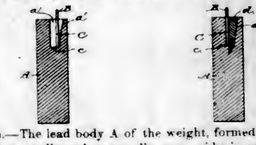
379,316.



adjacent windlass, for automatically releasing said windlass upon the descent of the weight belonging to an adjacent windlass, substantially as described.

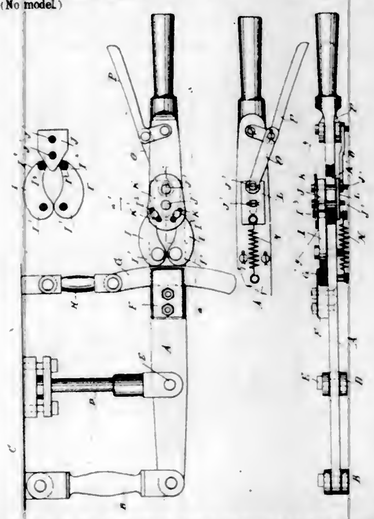
2. The combination, with the pulley-shaft and two sets of pulleys, chains, weights, and windlasses, of a ratchet and pawl holding one of said windlasses from rotation, and an arm attached to said pawl and extending into the path of the weight belonging to the other windlass, substantially as described.

379,317. SASH-WEIGHT. MILTON L. LIEBERGER, New York, N. Y., assignor to the New York Smelting and Refining Company, same place. Filed May 4, 1887. Serial No. 237,277. (No model.)



Claim.—The lead body A of the weight, formed with the recess *a*, beveled upwardly and outwardly at one side, in combination with shank C, formed with the lateral point c at its lower end, and the wedge *d*, made flat at one surface and beveled at the opposite surface and driven into the recess next to the shank, substantially as described.

379,318. DEVICE FOR OPERATING THROTTLE-VALVES. ROBERT C. MCARTHUR, Hamilton, Ontario, Canada, assignor of one-half to William D. Fitch, same place. Filed Nov. 22, 1887. Serial No. 255,840. (No model.)



Claim.—1. The combination, with a valve-rod, of a lever pivotally connected with said valve-rod, a segment extending across and guided on said lever, and cams or clutches pivoted on said lever and held in contact with said segment, substantially as shown and described.

2. The combination, with the valve-rod and a segment, of a lever pivotally connected with said valve-rod and guiding said segment, cams or clutches pivoted on said lever and held in contact with said segment, and a lever for moving said cams out of contact with said segment, substantially as shown and described.

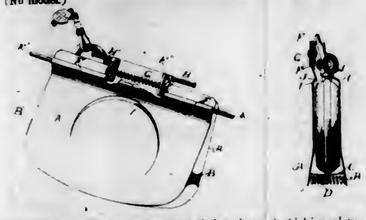
3. The combination, with the valve-rod and a segment, and a lever pivotally connected with said valve-rod and guiding said segment, of

cams pivoted on said lever and held in contact with said segment, a plate having inclined slots engaging said cams, and a lever for moving said slotted plate, substantially as shown and described.

4. The combination, with a valve-rod and a segment, and a lever pivotally connected with said valve-rod and guiding said segment, of cams pivoted on said lever and adapted to engage said segment, a plate provided with inclined slots engaging said cams, a spring exerting an inward pressure against said plate, and a lever for moving said plate outward, substantially as shown and described.

5. The combination, with a valve-rod and a segment, of a lever pivotally connected with said valve-rod and guiding said segment, cams pivoted on said lever and adapted to engage said segment, pins projecting from said cams, a plate guided on said lever and provided with inclined slots engaging said pins, a spring exerting an inward pressure against said top plate, and a second lever fulcrumed on said first-named lever and pivotally connected with said slotted plate, substantially as shown and described.

379,319. PICK-POCKET-PROOF POCKET-RECEPTACLE. SOLLO MENDELSON, Los Angeles, Cal. Filed Jan. 9, 1888. Serial No. 260,267. (No model.)



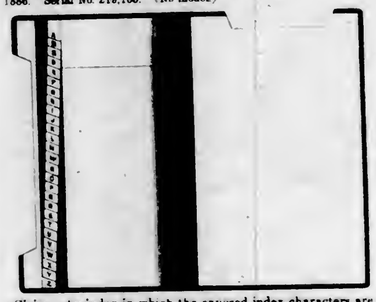
Claim.—1. The combination of the plates A A', hinged to each other near their lower sides, the springs D, mounted between the plates at their lower sides, and the bolts E E, mounted in suitable ways, F F, and extending beyond the edges of the receptacle.

2. The pocket-receptacle set forth, comprising the combination of two metal plates provided with inwardly-projecting shoulders at their upper sides, and hinged together near their lower sides, the spring D, and the laterally-projecting movable bolts E E.

3. The combination of the two metal plates A A', hinged together near their lower sides, the spring D, mounted between the plates at their lower edges, the bolts E E, mounted in the ways F F F, and the spring G.

4. The combination of the plates A A', hinged together near their lower sides, the spring D, flexible partition C, bolts E E, provided with the handles H H', mounted in the ways F F F, and the spring G.

379,320. INDEX. FRED L. MILLER, Chicago, Ill. Filed Nov. 17, 1886. Serial No. 219,163. (No model.)

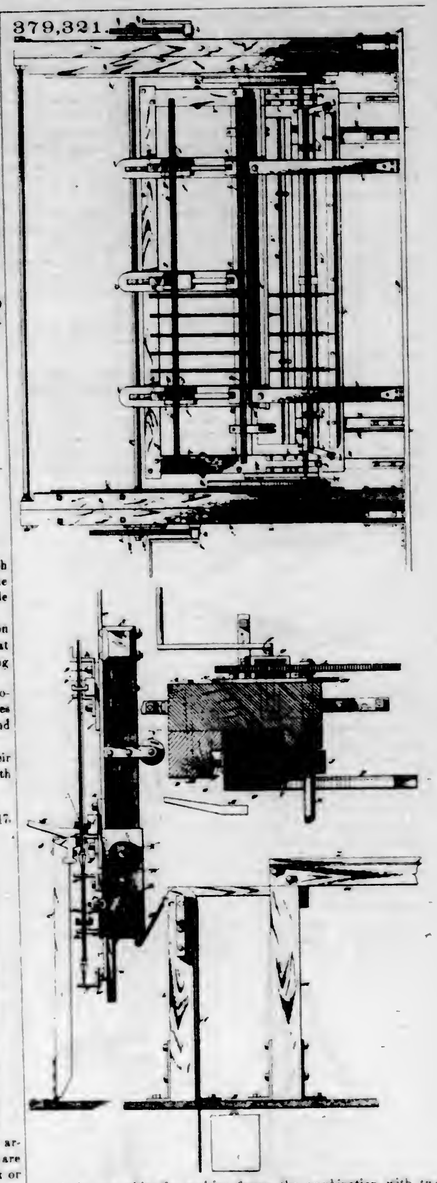


Claim.—An index in which the exposed index-characters are arranged to be visible from the right-hand side of the leaves and are placed along their outer edges, the cover inclosing the said index or book cut away, the left portion or leaf of the cover being cut away in its front or vertical margin and the right portion or leaf cut away at its top, substantially as shown and described.

379,321. MACHINE FOR SWAGING TOGETHER THE PARTS OF AN IRON PICKET FENCE. AARON J. MOYER, Springfield, Ohio. Filed Nov. 21, 1887. Serial No. 255,717. (No model.)

Claim.—1. In a machine for making fences, the combination, with two fixed curved tracks, of a frame mounted in said tracks and having rail-holders and picket-gages

379,321.



2. In a machine for making fences, the combination, with two fixed tracks, a portion of each of which is curved and another portion straight, of a frame having rollers which fit in said tracks and provided with rail-holders and picket-gages.

3. In a machine for making fences, the combination, with fixed columns, sliding beams fitted thereto, and mechanism to actuate the beams, and two tracks, one secured to each beam, and which tracks have a curved and a straight portion, of a frame having rollers mounted in said tracks and provided with rail-holders and picket-gages, and stationary tracks located in the rear of the curved tracks and adapted to

receive and sustain the frame when in a horizontal position, counterbalance-weights, ropes or chains connecting them to the frame, and sheaves for the ropes or chains, and an anvil located near the front of the machine and adapted to support the frame, substantially as described.

4. In a machine for making fences, the combination, with stationary tracks substantially horizontal and curved tracks a portion of which is vertically placed, of a frame having rollers adapted to travel in the latter tracks and supporting-wheels adapted to travel upon the former tracks, whereby the frame is held in a horizontal position, travels bodily through the arc of a circle, and is held in a vertical position in the vertical portion of the said tracks.

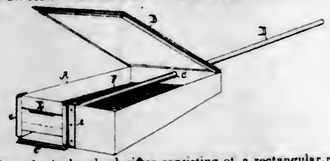
5. In a machine for making fences, the combination, with two tracks, each of which has a curved and a vertical portion, of a frame having rollers mounted in said tracks and provided with rail-holders and picket-gages, counterbalance-weights, ropes or chains securing them to said frame, and guide-sheaves for the ropes or chains, and a support located in the rear of said track and adapted to sustain the frame when in a horizontal position.

6. In a machine for making fences, the combination, with the frame, of slotted bars secured thereto, plates adjustably connected to said bars, and rail-holders connected to said plates.

7. In a machine for making fences, the combination, with two hinged posts, of a stout metallic bar connected thereto and forming an anvil which may be swung to and from the machine proper.

8. In a machine for making fences, the combination, with two tracks having curved and straight portions, of a frame having rollers mounted in said tracks and counterbalance-weights secured to said frame and arranged to assist in the upward manipulation thereof and to hold back any downward manipulation of said frame.

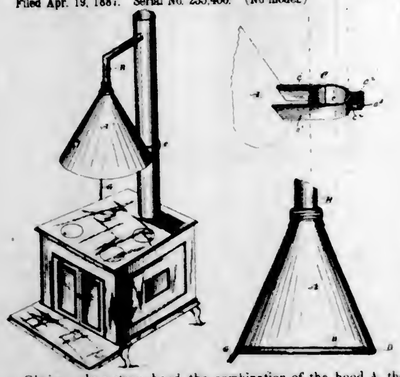
379,322. ASH-SIFTER. JAMES A. MURPHY, Holyoke, Mass. Filed June 27, 1887. Serial No. 242,588. (No model.)



Claim.—1. A closed ash-sifter consisting of a rectangular receptacle having a sloping bottom inclined downward from its front to its rear end, a hinged cover at the top of said receptacle, provided with cleats on its inner side to form a tight joint, a sliding door, E, movable vertically in ways *e* at one side or corner of the rear end of said receptacle, a cleat, *e'*, to close the joint below the said door, and a horizontal screen, F, between the top and bottom of the said receptacle, substantially as set forth.

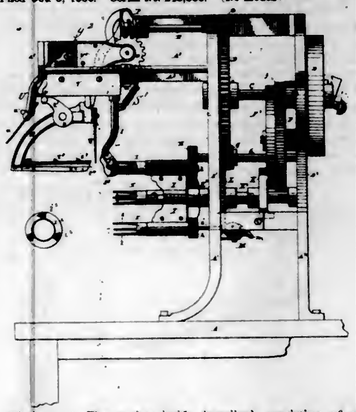
2. A fire-proof ash-sifter consisting of a rectangular metallic receptacle having a closed bottom and end and top doors, said receptacle having also a horizontal screen between its bottom and top to divide it into two compartments, and a metallic tube to receive the handle, extending centrally through the upper compartment and projecting through the front wall thereof, substantially as set forth.

379,323. STOVE-HOOD. ULRICH B. NEWMAN, Greenfield, Ohio. Filed Apr. 19, 1887. Serial No. 235,400. (No model.)



Claim.—In a stove-hood, the combination of the hood A, the pipe B, leading therefrom, the support C, to be attached to the stove-pipe, the groove D around the inner lower edge of the hood to collect the moisture condensed on the inner walls of the hood, and the tube G, communicating at the upper end with the said groove to convey away the accumulated moisture, substantially as specified.

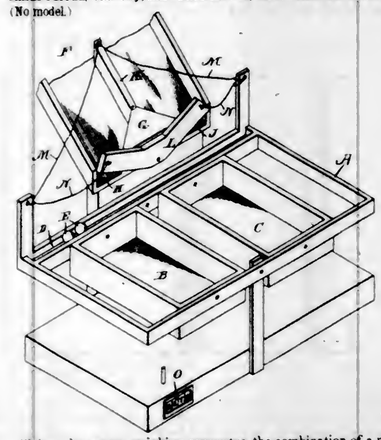
379,324. APPLE-PARER. WILLIAM A. C. OAKE Antrim, N. H. Filed Oct. 5, 1886. Serial No. 215,333. (No model.)



Claim.—1. The coring-knife described, consisting of a thin curved blade in the form of a half-hollow cylinder rounded at one end and provided with points or barbs on the convex surface, substantially as and for the purpose specified.

2. A carrying and dumping device for apple-parers, which consists of a curved lever pivoted to the knife-carriage, a curved blade provided with points or barbs attached to said lever, a tilting-pin carried at the end of a crank rigidly attached to said curved lever, mechanism for moving said curved lever and said carriage backward and forward during the operation of the machine, a fixed arm having a projecting lug which stands in the path of the crank-pin and tilts the curved lever at the proper time, and a rod attached to the fixed arm in the path of the curved blade for doffing the apple, substantially as shown and described.

379,325. GRAIN WEIGHING AND REGISTERING APPARATUS. JAMES PEPPER, Star City, Ind. Filed Nov. 30, 1887. Serial No. 256,498. (No model.)

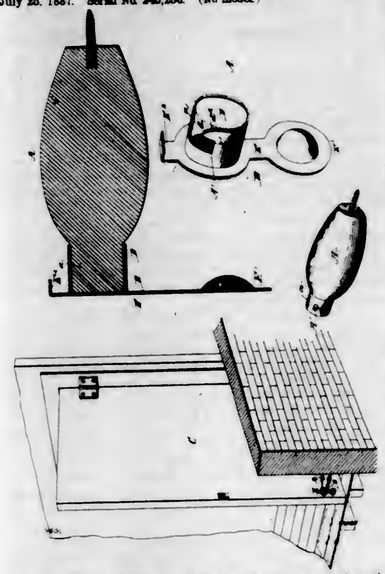


Claim.—In a grain-weighing apparatus, the combination of a pivoted scale-beam, a pair of scale-pans supported thereby and adapted to receive measuring-vessels, a trough upon the scale-beam adapted to receive one or more rolling scale-weights, a spout arranged to convey a stream of grain toward the apparatus and provided with two outlets adapted to discharge, respectively, over the scale-pans, a cut-off fitted to close alternately said two outlets, a valve in said spout arranged to direct the flow of grain in said spout alternately to either of said outlets, and cords or analogous connections attached to the scale-beam and to said valve and cut-off and arranged to operate the valve and cut-off as the scale-beam tips, substantially as and for the purpose set forth.

379,326. INSECTICIDE. HENRY M. POLLARD, Providence, R. I. Filed Feb. 3, 1887. Serial No. 226,427. (No specimens.)

Claim.—A compound for the purpose described, consisting of sulphate of lime, sulphate of copper, and burnt umber, giving porosity to the coating formed by the compound.

379,327. DOOR-CHECK. CLARK POLLEY, New Berlin, Fla. Filed July 25, 1887. Serial No. 245,236. (No model.)



Claim.—1. The combination of the door-stop A, provided on the side with the stud A', and the revolving cup or box D on the door, having the notch *d* in the edge to receive the stud A' when the cup embraces the end of the stop, and the slot *d'*, communicating with the said notch, substantially as and for the purpose specified.

2. The combination of the door-stop A, secured to the wall or base-board, having the projection *a* on the outer end, the small stud A' on the side of the projection, the catch B, pivoted to the door and having the cup D to receive the projection *a*, provided with the notch *d* and slot *d'*, communicating therewith, and the weighted arm E', all constructed and operated substantially as specified.

3. The combination, with the door-stop having the projection *a* on the outer end, provided on the side with the stud A', of the catch B, secured to the door and comprising the plate E, pivoted at the upper end to the door, cup D on the said plate, having the notch *d* and slot *d'* therein, the depending weighted arm E' on the lower end of the plate E, and the upwardly-projecting arm E^2, substantially as and for the purpose set forth.

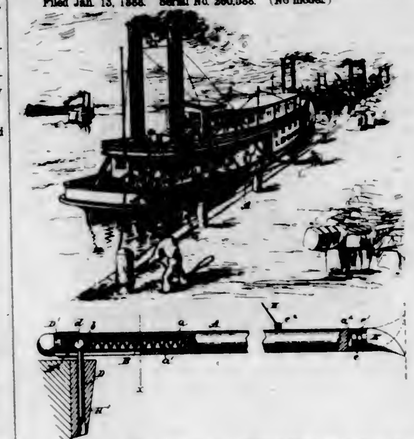
379,328. ORANGE-PEELER. CYRUS H. PORTER, Brockton, Mass. Filed Mar. 28, 1887. Serial No. 232,705. (No model.)



Claim.—1. A blade for an orange-peeling knife, comprising a shank and a rind-separating portion in different planes, the latter having a dull non-cutting edge, and a rind-cutting portion connecting the shank and rind-separating portion at angles thereto, substantially as described.

2. An implement for peeling oranges, provided with a blade having the shank *b* and section b^2, occupying different planes, and the section *b'*, connecting said shank and section b^2 and having a cutting-edge, the section b^2 having its end reduced to a thin but dull edge and the edge between said end and the section *b'* simply rounded, as set forth.

379,329. FENDER-SPAR. WILLIAM J. RANKIN, Augusta, Ky. Filed Jan. 13, 1888. Serial No. 260,588. (No model.)



Claim.—1. A spar provided at its inner end with a pivot having a sliding and yielding connection therewith, and at its outer end with a head-block, substantially as described.

2. A spar provided at its inner end with a pivot having a sliding and yielding connection therewith, and at its outer end with a reversible bifurcated head-block, substantially as described.

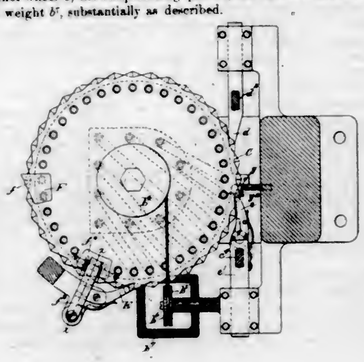
3. In a fender-spar, the combination, with a slotted tubular body, a spring held in one end thereof, and a reversible head-block supported in the opposing end, of a headed pin engaging the said spring and a bracket adapted as a socket for the pin, substantially as shown and described, and for the purpose set forth.

4. In a fender-spar, the combination, with a slotted tubular body, a spring held in the inner end thereof, a plate to the rear of said spring, and a reversible bifurcated head-block in the outer end, of a headed pin engaging the said plate and bearing upon the spring, a bracket adapted as a socket for said pin, and means, substantially as shown and described, for raising and lowering the spar, as and for the purpose herein set forth.

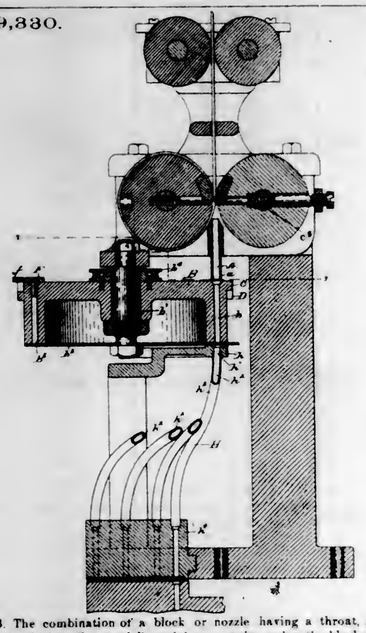
379,330. NAIL DISTRIBUTING AND FEEDING MACHINE. FREDERICK F. RAYMOND, 2d, Newton, Mass. Filed Oct. 27, 1887. Serial No. 253,485. (No model.)

Claim.—1. The combination of a nozzle or block having a throat, through which nails are delivered in consecutive order, with a block, B, having nail-receiving holes *b* arranged in circular order therein at a uniform distance apart, a feeding device providing the block with periods of rotation and rest in one direction, and a weight or other equivalent actuating device connected with the block and adapted to rotate the block in a reverse direction, substantially as described.

2. The combination of a block or nozzle having a throat, A, through which nails are delivered in successive order, the block B, having the circular line of holes *b* and a hole-covering plate, b^4, the ratchet-wheel C, the reciprocating pawl *c*, the drum b^4, the cord b^5, and weight b^7, substantially as described.



379,330.



3. The combination of a block or nozzle having a throat, A, through which nails are delivered in successive order, the block B, having the circular line of holes *b* and a hole-covering plate, b^3, the ratchet-wheel C, the reciprocating pawl *c*, the drum b^4, cord b^5, weight b^7, and detent E, substantially as described.

4. In a nail distributing and feeding machine, the block B, having the holes *b* and covering-plate b^3, adapted to be rotated with an intermittent movement in one direction and continuously in a reverse direction, its ratchet-wheel C, the detent-pawl E, and a tripping-block for releasing the detent-pawl, and a latch for engaging and holding the detent-pawl during the backward movement of rotation of the block, substantially as described.

5. The combination of the block B, the detent-pawl E, the tripping-block F, and the detent-latch f^3, substantially as described.

6. The combination of the block B, the detent E, its latch f^3, and latch-lifting lug f^4, substantially as described.

7. The combination of the rotary block B, having the holes *b* and hole-covering plate b^3, having perforations b^3, arm *g*, stop *g'*, and spring g^2, substantially as described.

8. The combination of the rotary block B, having the holes *b*, the ratchet-wheels C D, the registering-pawl *d*, and the feed-pawl *e*, as and for the purposes described.

9. The combination of the block or nozzle having the throat A, through which nails or fastenings are delivered in successive order, the rotary nail-receiving block B, having the holes *b* and hole-covering plate b^3, the intermittingly-operated feeding device for rotating the block in one direction, devices for returning the block to its original position upon the making of a given number of nails, and the nail-distributer H, substantially as described.

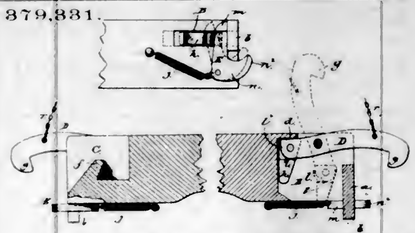
10. In a nail-distributing machine, a nail receiving and carrying block having a number of nail receiving and holding holes arranged in a circular or curved line therein and adapted to be rotated intermittingly in one direction to receive nails and to be rotated in a reverse direction to deliver the nails, substantially as described.

11. The combination of a rotary block having a circular line of holes, a reciprocating pawl for communicating an intermittent rotation to the block in one direction, devices for automatically rotating the block in a reverse direction, and a movable tripping-block for governing the time of operation of the devices for providing the reverse rotation, substantially as described.

379,331. CAR-COUPLING. WILLIAM M. REED, Shelton, Nebr. Filed Dec. 2, 1887. Serial No. 256,780. (No model.)

Claim.—1. The combination, with a draw-bar, of a coupling-bar pivotally hung therein intermediate of its length and a shouldered dog, as A, pivoted to said coupling-bar, substantially as described.

379,331.



2. The combination, with a draw-bar provided with a slot, as B, of a pivoted two-armed lever, as E, adjusted on the under side of the draw-head for a horizontal swing of its one arm across said slot and for a projection of its other arm beyond the front of the draw-head, substantially as and for the purpose described.

3. The combination, with a draw-bar having a slot, B, with a rear abutment, *d*, and the slot C, provided with forward abutment, *f*, of a hooked coupling-bar pivotally hung intermediate of its length in said slot B, substantially as described.

4. The combination, with a draw-bar having a slot, B, with a rear abutment, *d*, and a slot, C, provided with forward abutment, *f*, of a hooked coupling-bar pivotally hung intermediate of its length in said slot B, a rocking shaft, G, provided with arms *p p* and *q*, and a connection between said arm *q* and said coupling-bar, substantially as and for the purpose described.

5. The combination, with a draw-bar having a slot, B, with a rear abutment, *d*, and a slot, C, provided with a forward abutment, *f*, of a hooked coupling-bar pivotally hung intermediate of its length in said slot B, a pivoted two-armed lever, E, adjusted on the draw-head for a horizontal swing of its one arm across the slot B and a projection of its other arm beyond the front of the draw-head, and a spring applied to said lever, substantially as and for the purpose described.

6. The combination, with a draw-bar provided with a downward extension *b*, and having a slot, B, with a rear abutment, *d*, and the slot C, provided with a forward abutment, *f*, of a hooked coupling-bar pivotally hung intermediate of its length in said slot B, a pivoted two-armed lever, E, adjusted on the under side of the draw-head for a horizontal swing of its one arm across said slot B and a projection on its other arm beyond the front of the draw-head, and a spring applied to said lever, substantially as and for the purpose described.

7. The combination, with a draw-bar provided with a downward extension, *b*, and having a slot, B, with a rear abutment, *d*, and the slot C, provided with a forward abutment, *f*, of a hooked coupling-bar pivotally hung in said slot B, having a shouldered dog, *h*, pivoted thereto, a pivoted two-armed lever, E, adjusted on the under side of the draw-head for a horizontal swing of its one arm across said slot B and a projection of its other arm beyond the front of the draw-head, and a spring applied to said lever, substantially as and for the purpose described.

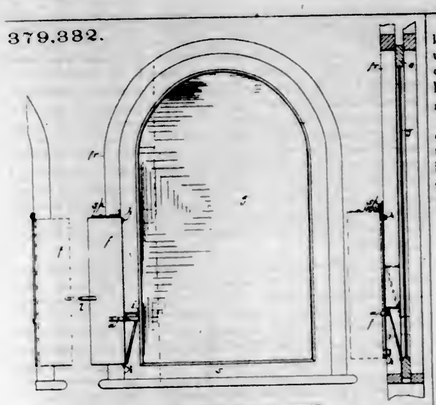
8. The combination, with a draw-bar provided with a downward extension, *b*, and having a slot, B, with a rear abutment, *d*, and the slot C, provided with a forward abutment, *f*, of a hooked coupling-bar pivotally hung in said slot B, having a shouldered dog, *h*, pivoted thereto, a pivoted two-armed lever, E, adjusted on the under side of the draw-head for a horizontal swing of its one arm across said slot B and a projection of its other arm beyond the front of the draw-head, a spring applied to said lever, a rocking shaft, G, provided with arms *p p* and *q*, a connection between said arm *q* and said coupling-bar, and a connection between said coupling-bar and the top of the car, all substantially as and for the purpose described.

379,332. WINDOW-GUARD. OBED C. RIFE, Indianapolis, Ind. Filed Jan. 22, 1887. Serial No. 225,062. (No model.)

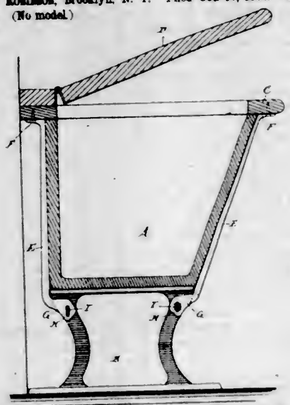
Claim.—1. The guard *f*, hinged to the side of the window-frame, the spring *sp*, fastened to such frame and having an extension which operates against a knob upon the top of the guard, so that the force of the spring will normally throw the guard out at right angles to the window-frame, the arm *a*, fastened to such guard near the bottom, and the incline *i*, secured to the sash and in contact with the arm *a* when the sash is closed, whereby the lifting of the sash will allow the spring to exert its force to throw the guard out in operative position, substantially as shown and described.

2. A dust-guard hinged to the window of a car and held in normal position at right angles to such frame by a spring mechanism, a projection fastened to such guard, and a window-sash provided with an incline in contact with such projection when the window is closed, whereby the lowering of the sash operates to fold the guard back parallel with the side of the car, substantially as described.

379,382.



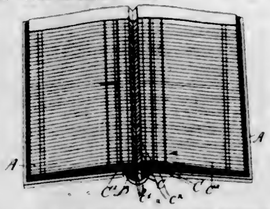
379,383. ADJUSTABLE SUPPORT FOR LAUNDRY-TUBS. ALBERT G. ROBINSON, Brooklyn, N. Y. Filed Oct. 17, 1887. Serial No. 252,582. (No model.)



Claim.—1. The combination, with the tub supported on base-brackets, of arms held adjustably on the said base-brackets, and a top frame secured to upper ends of the said arms, substantially as shown and described.

2. In a laundry-tub, the combination, with the base supporting the tub, of an arm having an end provided with a slot, a bolt carried by the said base and passing through the said slot, a nut screwing on the said bolt, and a top frame to which the upper footed ends of the said arms are secured, substantially as shown and described.

379,334. BOOK-BINDING. MICHAEL RYAN, Chicago, Ill. Filed June 6, 1887. Serial No. 240,428. (Model.)



Claim.—1. A book composed of sections or bunches of a small number of leaves, in which each section is secured to the back separately and thereby flexibly thereon independently of the others, and in which the leaves are rendered flexible at a line parallel to and at a sufficient distance from the back to allow each to lie flat upon the others when open, substantially as set forth.

2. A book composed of sections or bunches of a small number of leaves, in which the leaves comprising each half of each section are united by a row of short stitches, and thereby perforated and rendered flexible at a line parallel to and a sufficient distance from the back to allow each to lie flat upon the others when open, substantially as set forth.

3. A book composed of sections or bunches of leaves, in which each section is secured to the back separately and thereby flexibly thereon independently of the others, and in which the leaves comprising each half of each section are united by a row of short stitches, and thereby rendered flexible at a line parallel to and a sufficient distance from the back to allow each to lie flat upon the others when open, substantially as set forth.

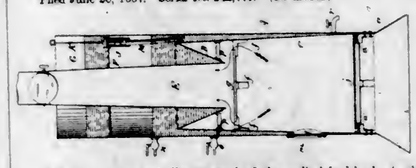
379,335. SHARPENER FOR REAPER AND MOWER BLADES. LOUIS P. SEPTON, Toronto, Ontario, Canada. Filed Oct. 5, 1887. Serial No. 251,818. (No model.) Patented in Canada July 22, 1887, No. 27,230.



Claim.—1. As a new article of manufacture, the improved sharpener for mower-knives, the same being composed of the body A, having an approximately diamond shape in cross-section, such body and the handle C being formed integrally from a composition whose chief ingredient is emery, and the link-stiffener D, embedded in the device longitudinally, as shown and described.

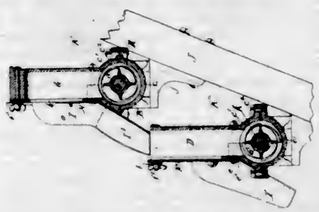
2. The mower-knife sharpener consisting of an internal metal stiffener, and the body A and handle C, both formed from an emery composition, the said body being approximately diamond-shaped in cross-section and having the opposite edges which are farthest apart curved, as shown, for the purpose specified.

379,336. STEAM-BOILER. GEORGE W. SHEALEY, Hiawatha, Kans. Filed June 28, 1887. Serial No. 242,779. (No model.)



Claim.—A steam-boiler formed of the cylindrical body A, the conical fire-box C, having the funnel-shaped crown-sheet D, and the tapering flue E, extending from the center thereof, substantially as described.

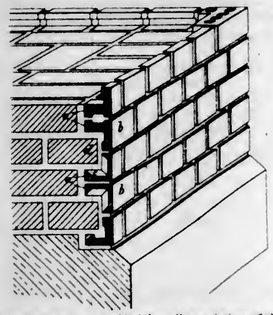
379,337. GRAIN-SCOURER. GEORGE L. SQUIER, Evans, N. Y., assignor to the George L. Squier Manufacturing Company, same place. Filed Dec. 6, 1886. Serial No. 220,770. (No model.)



Claim.—1. The combination, with the right and left scouring-screws and the inclosing-cylinder, of the vertical feed-spouts connected with the ends of the cylinder, an elevated central delivery-passage, a discharge-spout, l, connected with the delivery-passage and having diverging branches l', and a similar scourer having its feed-spouts arranged to receive the grain from the branches l', substantially as set forth.

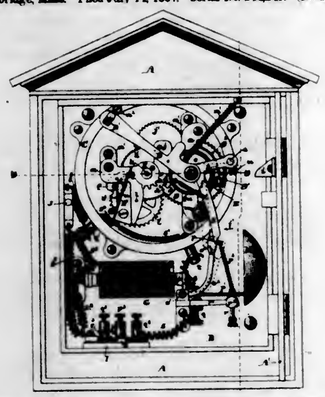
2. The combination, with a supporting-frame, of a series of scouring-machines mounted upon said frame, one below the other, and each provided with a right and left scouring-screw, an inclosing-cylinder, vertical end feed-spouts, and an elevated central delivery-passage and discharge-spouts, whereby the scoured grain is conducted from the delivery-passage of one machine to the feed-spouts of the machine next below, substantially as set forth.

379,338. BRICK, &c. RICHARD STEINAU and CHARLES STEINAU, Brunswick, Germany. Filed Feb. 28, 1887. Serial No. 229,111. (No model.)



Claim.—The herein-described brick wall, consisting of the angular facing-bricks in alternate reversed courses, the courses and the bedding-joints of the facing-bricks laid, respectively, opposite the middle of each bedding-joint and course of the brick wall, substantially as set forth.

379,339. FIRE-ALARM SIGNAL-BOX. GEORGE M. STEVENS, Cambridge, Mass. Filed July 14, 1887. Serial No. 244,249. (No model.)



Claim.—1. In a signal-box, the combination, with the break-circuit wheel and the break-wheel motor mechanism, of a detent disk or wheel secured upon the main driving or spring-operated shaft of said motor mechanism, a guard lever or shield constructed and arranged to alternately cover and uncover the detent-notch in said disk, a pull-lever mounted loosely on said main shaft, and a pawl mounted upon said pull-lever and arranged to engage with said detent-notch when uncovered.

2. The combination, with the break-wheel and motor mechanism of a signal-box, of a detent disk or wheel secured upon the main driving-shaft of said motor mechanism, a guard lever or shield constructed and arranged to alternately cover and uncover the detent in said disk, a pull-lever loosely mounted on said main shaft, a pawl carried by said pull-lever and arranged to engage with said detent when uncovered, and a stop-pin arranged to arrest the movement of said guard lever or shield caused by the reaction of the main spring of the motor before the motion of the detent disk or wheel in the same direction ceases.

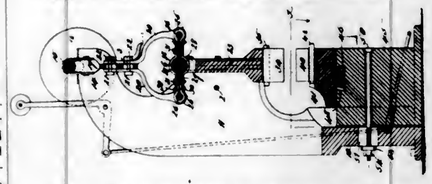
3. The combination, with the break-wheel and motor mechanism of a signal-box, of a detent disk or wheel secured upon the main shaft of said motor mechanism, a guard lever or shield constructed and arranged to alternately cover and uncover the detent-notch in said disk, a pull-lever mounted loosely upon said main shaft, a pawl carried by said lever and arranged to engage said detent when uncovered, an electro-magnet, and a pivoted armature provided with an insulated stop-pin arranged to arrest the movement of said guard-lever caused by the tension of the main spring of the motor mechanism when the armature is attracted by said magnet and to be removed from the path of said guard-lever when said armature is retracted, substantially as described.

4. The combination, with the break-wheel and motor mechanism of a signal-box, of a detent disk or wheel secured to the main driving-shaft of said motor mechanism, a guard lever or shield constructed and arranged to alternately cover and uncover the detent-notch in said disk, a pin projecting outward from said guard-lever, a pull-lever mounted loosely upon said main shaft, a pawl carried by said lever and arranged to engage said detent when uncovered, an electro-magnet, a pivoted armature provided with a stop-pin constructed and arranged to limit the movement of said guard-lever in one direction when the armature is attracted by the magnet and to be removed from the path of said guard-lever when the armature is retracted, and a lug secured to the outer door of said box and arranged to engage with the pin projecting from the guard-lever and move said lever about its axis of motion when said door is closed, substantially as described.

5. In a fire-alarm signal-box, the combination of a pull-lever loosely mounted upon the main driving-shaft of the break-wheel motor mechanism, a pawl mounted upon said lever, a detent-wheel mounted upon said shaft in position to be acted upon by said pawl, a detent shield or guard also mounted upon said shaft and constructed and arranged to cover the side of the notch in said detent-wheel and prevent the pawl engaging therewith and movable about said shaft to uncover said detent-notch, an electro-magnet, and an armature provided with a pin constructed and arranged to engage with an arm of said shield to limit its movement when said armature is attracted by its magnet and to be moved from the path of said shield-arm when the armature is retracted.

6. In a fire-alarm signal-box, the combination, with the break-wheel and the motor mechanism for rotating the same, of a pull-lever loosely mounted upon the main driving-shaft, a pawl mounted upon said lever, a detent-wheel mounted upon said shaft in position to be engaged by said pawl, a shield or guard also mounted upon said shaft and constructed and arranged to cover the notch in said detent-wheel and prevent the pawl engaging therewith and movable about said shaft to uncover said detent-notch, a lug upon the outer door of the box constructed and arranged to engage with a pin projecting laterally from an arm of said shield to move said shield in one direction when the door is being closed, a spring arranged to move said shield in the opposite direction when the door is opened, a magnet, an armature provided with a pin arranged to engage with an arm of the detent-covering shield and limit its movement when said armature is attracted and the door is opened, and a shunt or short circuit with a circuit-breaker therein operated by the door of the box, which co-operates with said circuit-breaker and shield, as described, whereby the circuit-breaker is opened and the armature attracted before the shield is released by the lug on the door, substantially as described.

379,340. POWER-HAMMER. HENRY ST. LAWRENCE, Northampton, Mass. Filed May 28, 1887. Serial No. 239,636. (No model.)



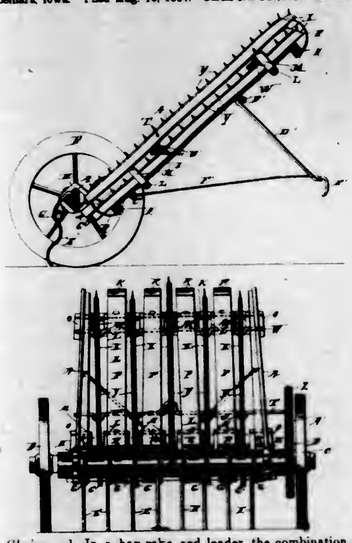
Claim.—1. In a power-hammer, the combination, with a hammer-stock, of a crank-shaft, a connecting-rod carried by the crank-shaft, arms connected to the connecting-rod, flexible strips connected to the arms and to the hammer-stock, and clips by which the last-named connection is established, substantially as described.

2. In a power-hammer, the combination, with a hammer-stock, of a crank-shaft, a connecting-rod carried by the crank-shaft, arms connected to the connecting-rod, flexible strips 25, clips 28, formed with serrated faces 29, and bolts 31, the strips 25 being connected to the arms and to the hammer-stock by means of the clips and bolts, substantially as described.

3. In a power-hammer, the combination, with a hammer-stock provided with a pin or bolt, 27, of a crank-shaft, a rod connected to said shaft, bifurcated arms adjustably connected to the rod, pins or bolts 26, carried by the arms, flexible strips 25, clips 28, formed with serrated faces 29 and outturned ends 30, and bolts 31, the clips and bolts being employed to connect the pins 26 of the bifurcated arms and the pin 27 of the hammer-stock, substantially as described.

4. In a power-hammer, the combination, with a hammer-stock base and frame, said base being formed with a vertical slot, 51, of an anvil-stock base, and a bolt which passes through an aperture in the anvil-stock base and through the vertical slot of the hammer-stock base, substantially as described.

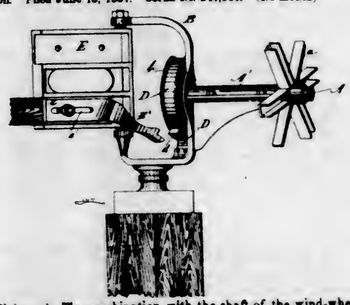
379,341. HAY-LOADER. FRANK STRUB and WILLIAM NEWDEL, Lemars, Iowa. Filed Aug. 16, 1887. Serial No. 247,091. (No model.)



Claim.—1. In a hay rake and loader, the combination of the axle, the rake-teeth secured thereto, the arms H, secured to the axle and projecting upward therefrom, the side bars I secured to said arms H, the guide-bars L, secured to the under sides of said side bars and having the open-ended slots M in their upper edges, the platform-slats secured upon the guide-bars between said slots, the crank-shafts arranged below the platform-slats with their cranked portions between the same, the tooth-bars mounted on the cranked portions of the said shafts, the cross-bars K, secured to the ends of the side bars I, and the guard-plates R at the upper and lower ends of the device, having their opposite ends secured, respectively, to the under sides of the cross-bars K and the upper sides of the platform-slats at the ends thereof, substantially as specified.

2. The combination of the axle, the teeth secured thereto, the arms H, secured thereto and projecting upward therefrom, the side bars I, secured to the arms H, the side bars N, arranged above the side bars I, and secured thereto by the standards O, the guide-bars L, secured to the under sides of the side bars I, and having open-ended slots M in their upper edges, the platform-slats secured upon said guide-bars between said slots, the bearing-blocks S V, secured upon the upper edges of the side bars I, the crank-shafts journaled in said bearing-blocks and arranged below the platform-slats, the tooth-bars mounted on the crank-shafts and working in the slots M of the guide-bars, and the guard-plates R, secured to the cross-bars K and the platform-slats, substantially as specified.

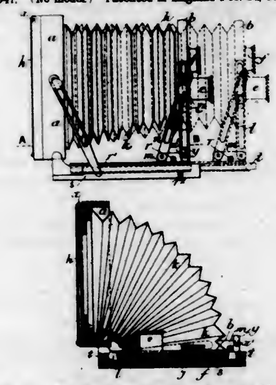
379,342. BRAKE FOR WINDMILLS. JOHN THOMPSON, Holland, Mich. Filed June 15, 1887. Serial No. 241,361. (No model.)



Claim.—1. The combination, with the shaft of the wind-wheel, a wheel carried upon the inner end of said shaft, and a band arranged in connection with said wheel, of a curved and outwardly projecting arm adjustably secured to the vane and adapted to engage said band, substantially as shown and described.

2. The combination, with the shaft A, having a wind-wheel secured at one end, a grooved wheel, *b*, secured upon the inner end of said shaft, and a spring, D, secured beneath said wheel, encircling the same within the groove, and a lug, *d*, integral with the free end of said spring, of the curved arm E, adjustably secured to the vane E and adapted to engage the free end of said spring, substantially as shown and described.

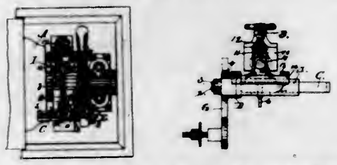
379,343. PHOTOGRAPHIC CAMERA. JOHN R. THORNTON, Manchester, County of Lancaster, England. Filed July 16, 1887. Serial No. 244,647. (No model.) Patented in England Feb. 24, 1886, No. 2,670.



Claim.—1. The combination, with a photographic camera, herein described, of the angular sliding plates *m*, fork *l*, and struts *n*, and flat springs *y*, substantially as shown and described.

2. In the extension-frame of a photographic camera, the rack or racks, with teeth formed on their upper and lower edges, and in combination therewith the bottom pinion, r^2, and the extension-pinion *r*, actuating the angular side sliding plates, carrying fork, stretchers, and front board, substantially as hereinbefore described.

379,344. APPARATUS FOR DRESSING OFF THE COMMUTATORS OF DYNAMO-ELECTRICAL MACHINES. DANIEL J. TITTLE, JR., Albany, N. Y., assignor to Edward P. Hackett, same place. Filed Dec. 15, 1887. Serial No. 257,946. (No model.)



Claim.—1. The combination of an arm fitted to be secured to a fixed part of a dynamo-machine and having an open hub provided with a locking device for holding a rocking arm in position, a rocking arm fitted into said hub and provided with a toothed flange in which said locking device engages, an adjustable block attached to said arm and provided with means for securing an adjustable bar thereto, and an adjustable bar provided with a head which carries an adjustable slide, the latter being fitted to move at right angles to the axis of the adjustable bar and having a clamping device at its lower end, as and for the purpose herein specified.

2. The combination, with the elements enumerated in the first claim, of an abrading-block detachably fixed in the clamping device of the adjustable slide, substantially as and for the purpose herein specified.

379,345. EARTH-AUGER. THOMAS TOW, Miles City, Mont. Filed Sept. 20, 1887. Serial No. 250,186. (No model.)

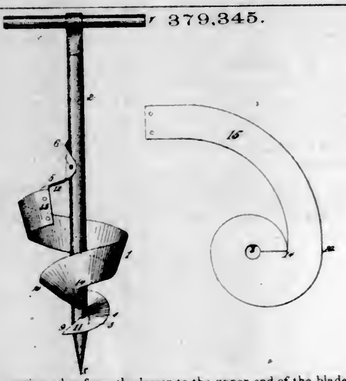
Claim.—1. An earth-auger having a spiral blade mounted on a rod, the angle of the blade gradually decreasing in an upward direction from the rod on radial lines with its axis, substantially as shown and described.

2. An earth-auger having a spiral blade with a gradually-con-

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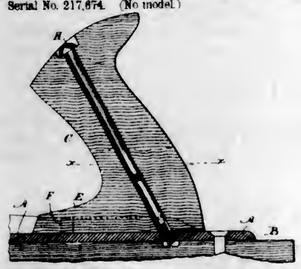
verging cutting-edge from the lower to the upper end of the blade on radial lines with the axis of the shaft, substantially as shown and described.

3. A blade for an earth-auger, cut from a sheet of metal, substantially as described, and consisting of a spiral blade the angle of which on radial lines with the axis of its shaft gradually decreases upwardly, substantially as shown and described.

4. An earth-auger having the cutting-edge of its blade arranged in a spiral, and said blade for one turn arranged at the same angle to its supporting-rod and for the rest of the length with a gradually-decreasing angle to said rod, substantially as described.

5. In an earth-auger, the combination, with rod 2, having handle 7 and point 8, of blade 1 and horizontally and vertically inclined brace 5, substantially as described.

379,346. PLANE. JOHN J. TOWER, Brooklyn, N. Y. Filed Nov. 1, 1886. Serial No. 217,674. (No model.)



Claim.—The combination, with the plane-handle and the screw passing through the same, of a metal plate into which the screw passes, and which plate has straight parallel flanges for receiving between them the lower part of the handle, and the lugs F, that come over the forward beveled end of the base of the handle, substantially as set forth.

379,347. SAFETY POCKET-SPRING. JAMES C. WAKEFIELD, Bayonne, N. J. Filed Aug. 19, 1887. Serial No. 247,396. (No model.)

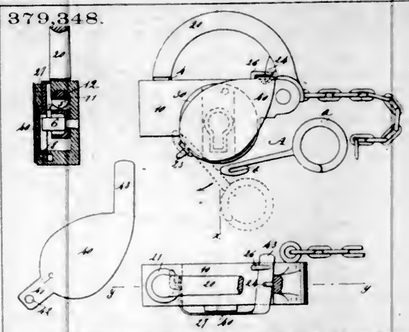


Claim.—The combination of the curved spring *a a* with the arms *c c*, in connection with the joints *b b* and *d*, capable of being shut and holding shut and being opened, as and for the purpose above described.

379,348. SEAL-LOCK. WARREN B. WALDRON and GEORGE C. BOLLER, Folsom City, Cal. Filed July 6, 1887. Serial No. 243,503. (Model.)

Claim.—1. The combination, with a lock-case formed with a horizontal groove and a vertical groove, of a bolt mounted in the horizontal groove, a spring arranged in connection with the bolt, a cap carrying a stop, a spring arranged beneath the cap, the cap and spring being mounted in the vertical groove, and a shackle having a hooked point adapted to enter the vertical groove, substantially as described.

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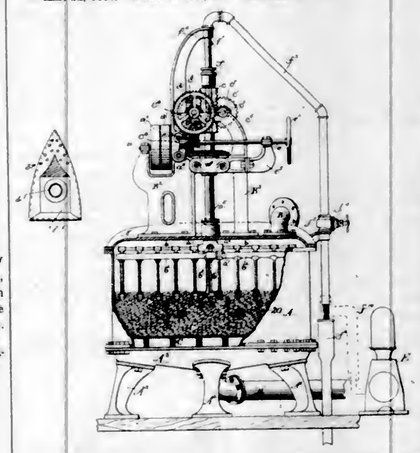
2. The combination, with a lock-case, of an escutcheon formed with a ridge, 8, and a key-hole plate formed with a recess adapted to receive said ridge, whereby the key-hole is closed against the entrance of rain, snow, &c., substantially as described.

3. A lock-case formed with a prong, 23, in combination with a shackle formed with a prong, 24, a recess being formed in the lock-case in position to receive the point of the prong 24, substantially as described.

4. A lock-case provided with a prong, 23, a recess, 25, and a keeper, 26, in combination with a shackle that is provided with a prong, 24, substantially as described.

5. A seal for locks of the character described, consisting, essentially, of a blank provided with tongues 41 and 43 at its opposite ends, the tongue 41 being provided with an aperture, 42, and the tongue 43 projecting from the body at an obtuse angle to the tongue 41, substantially as described.

379,349. FILTER. JOHN E. WARREN, Cumberland Mills, Me., assignor of one-half to S. D. Warren & Company, Boston, Mass. Filed Mar. 22, 1887. Serial No. 231,891. (No model.)



Claim.—That improvement in the art of filtration which consists in passing the liquid substance through a filtering-bed in one direction, and simultaneously taking from at or near the surface of the filtering-bed, but in a direction opposite the travel of the main body of liquid to be filtered, the slimy or sedimentary matter constantly accumulating at the surface of the said bed and discharging the said slimy or sedimentary matter separate from the filtered liquid, substantially as described.

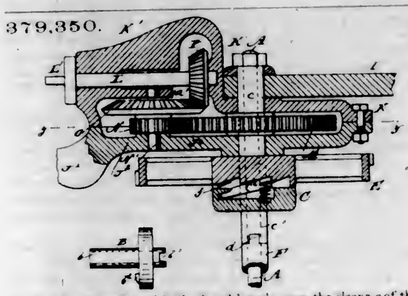
379,350. LAWN-MOWER. JOHN F. WATERHOUSE, Green Bay, Wis. Filed Mar. 23, 1887. Serial No. 232,092. (No model.)

Claim.—1. In a lawn-mower, the chambered plate K, formed with the hollow side extension, K′, forming the bearings for the shaft L, and formed with the partition *a*′, in which one end of the counter-shaft N′ takes a bearing, in combination with the chambered plate J³, secured to the plate K, and both placed loosely upon the sleeve *c* of the clutch-block C, substantially as described.

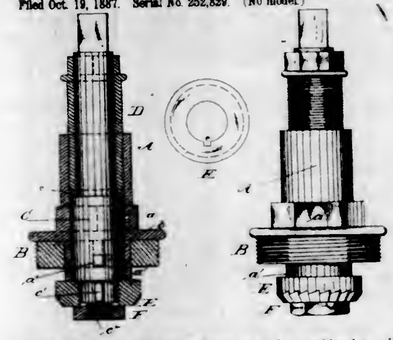
2. In a lawn-mower, the side piece J′, formed with the dished extension J³, and the housing K, formed with the extension K′ and partition *a*′, and secured to the dished extension, the said dished extension and housing being apertured for passage of the axle, and serving to support and inclose the driving-gearing, substantially as herein shown and described.

3. In a lawn-mower, the combination of the axle, a sleeve thereon provided with the gear M, the cutting mechanism, the counter-shaft geared with the axle, the crank-shaft geared with the counter-shaft, and the gearing-support formed of the sections rigidly united, one section being formed with the extension K′, having the partition *a*′ for one of the journals of the counter-shaft, the whole being loosely mounted on the sleeve of the axle and inclosing the gears M N O P, substantially as herein shown and described.

379,350.



379,351. DEVICE FOR RESEATING VALVES. CHARLES P. WEISS, Susquehanna, Pa., assignor of one-half to Charles M. Morse, Buffalo, N. Y. Filed Oct. 19, 1887. Serial No. 252,829. (No model.)

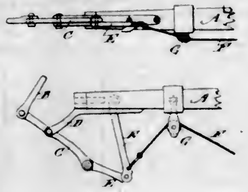


Claim.—1. In a valve-seat-refacing tool, the combination, with the body A, having the neck *a*′ and lugs *a*³, of the removable threaded ring B, having the L-shaped slots *b*, substantially as described.

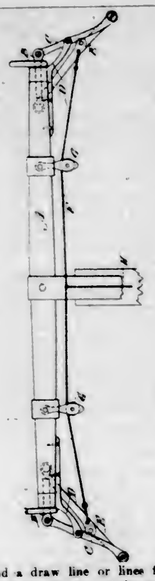
2. The combination, with the body A, of the spindle C, fitted into said body and having the shoulder *c* and spline *c*′, the threaded sleeve D, for supporting, guiding, and feeding the spindle, and the removable cutter E, having the groove *e*, substantially as described.

379,352. HORSE-DETACHER. THOMAS WHITE, Peekskill, N. Y. Filed Aug. 27, 1887. Serial No. 248,023. (No model.)

Claim.—The combination, with the whiffletree having end sockets, the pivotal levers, and the trace-bolts hinged thereto, of knuckle-jointed rods connecting the pivotal bolt-carrying levers with



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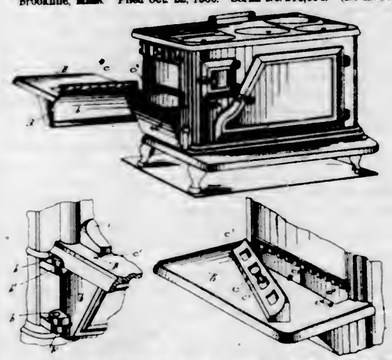
the whiffletree, and a draw line or lines for folding the knuckle-jointed rods and retracting the trace-bolts, substantially as described.

379,353. SHUTTLE FOR SEWING-MACHINES. CHARLES E. WILKINSON, Matteawan, N. Y. Filed May 11, 1886. Serial No. 201,808. (No model.)



Claim.—The combination, with a sewing-machine shuttle for containing and supplying the under thread of a two-thread machine, the shuttle having in it a substantially circular and unobstructed cavity open on one side and of a diameter greater than its depth, of a cop-holder consisting of a box or shell, also of a diameter greater than its depth, open at one end and closed at the other, and placed in said cavity with its closed outer end toward the open side thereof, the box or shell affording within it an unobstructed space for the reception of a cop from the center of which the thread may be unwound, substantially as herein described.

379,354. COOKING STOVE OR RANGE. EDGAR W. ANTHONY, Brookline, Mass. Filed Oct. 22, 1886. Serial No. 216,981. (No model.)



Claim.—1. In a cooking stove or range, the combination of the stove or range having a section of the ash-pit *a*² with the swinging hearth-plate B, the downward-extending plate *b*, also forming a section of the ash-pit chamber *a*², and the ash-pan *a*³, shaped to extend be-

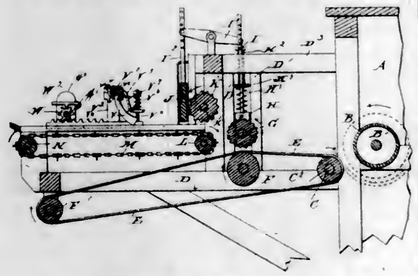
yond the front edge of the grate into the section of the ash-pit below the hearth-plate and its covering-plate c, as and for the purposes described.

2. The combination, with the fuel-grate and the ash-pit of a stove or range, of a pivoted front covering-section, which embraces an upwardly and outwardly flaring plate which projects beyond the plane of the vertical end plate of such stove or range, substantially triangular end plates, and a horizontal hearth-plate, the fuel-grate and the hearth-plate being in essentially the same horizontal plane, substantially as and for the purposes set forth.

3. The combination, with the ash-pit a^2 and grate a^4 of a stove or range, of the pivoted covering-section having projecting vertical portion flaring outwardly from the bottom toward the top, horizontal hearth-plate, which is cut away or recessed at the rear, and the swinging registered section c, pivoted to the horizontal hearth-plate, substantially as specified.

4. The combination, with the stove having the grate a^4, ash-pit a^2, and the end wall, a, having the vertical opening c^4 in a plane with the top of the grate, of the hearth-plate section B, having rear horizontal recess or opening, c^3, and the pivoted attachment c, which serves to cover both the vertical and the horizontal opening, whereby access to the fuel-chamber is afforded for the agitation of the contents thereof and for the discharge of refuse into the ash-pit or ash-pan at a point outside the outer edge of the grate, substantially as described.

379,355. BAND-CUTTER AND FEEDER. KARL G. BARELS, MacFarland, Wis. Filed Jan. 4, 1887. Serial No. 223,389. (No model.)



Claim.—1. The combination, with the carrier mechanism, consisting of endless slat belt M and endless belt E, of the vertically-movable feed-bar above the belt M, the vertically-movable feed-roller above the belt and in rear of the feed-bar, and connections between the said feed bar and roller, whereby when the feed-roller is raised the feed-bar will be depressed, substantially as set forth.

2. The combination, with the endless-carrier mechanism, consisting of the endless slat belt M and the endless belt E, of the vertically-movable feed-bar, a vertically-movable feed-roller, and a lever pivoted between its ends to the frame and in connection at its ends with the feed bar and roller, whereby upward movement of the roller will force the feed-bar downward into the path of the grain, substantially as set forth.

3. The combination, with the endless belt and an intermediate roller over which the upper part of the belt passes, of the grooved feed-roller mounted in vertically-movable bearings above said intermediate roller, the endless slat belt above the first-named belt in front of the feed-rollers and delivering thereto, the vertically-movable feed-bar above the forward end or the slat belt, and connections between said bar and grooved feed-roller for depressing the former when the latter is raised, substantially as set forth.

4. In a band-cutter and feeder for thrashing-machines, the endless belt E and the endless slat belt M, in combination with the grooved roller G, mounted in the bearings H, the springs H', operating on the said bearings, the links I, connected with the said bearings H, the levers I', connected with the said links, the links I^3, connected with the front end of the levers I', and the feed-bar J, hung on the said links I^3 above the said slat belt M, substantially as shown and described.

5. The combination, with the frame, the carrier mechanism comprising the two belts, their rollers, one of which has a pulley, the feed-roller and its pulley, and the feed-bar operated from said feed-roller, of the belt driving the feed-roller pulley, an adjustable arm connected to the frame, a second arm pivoted upon the first-named arm and having a pulley bearing against the driving-belt to take up slack when the feed-roller rises, and a spring forcing the two said arms apart and thereby holding the pulley against the belt, substantially as set forth.

6. The combination, in a feeder for thrashing-machines, with the vertically-adjustable feed-roller, the belt driving the same, and the frame D, of a plate, U^3, secured to said frame and having recesses, the arm U, having an inwardly-projecting lug, U'', engaging one of said recesses, and the outward-projecting pin, the arm T, the pulley secured thereon and bearing against the inner surface of the belt, and the spring T', bearing against the arm T, and the outward-projecting pin, substantially as set forth.

7. In a band-cutter and feeder for thrashing-machines, the grooved roller G, the bearings H, supporting the said roller G, the springs H', pressing on the said bearings H, the adjustable cross-plate H^2, pressing on the said springs H', the links I, supporting the said bearings H, and the levers I', pivotally connected with the said links I, in combination with the links I^3, pivoted on the said levers I', and the feed-bar J, held on the lower ends of the said links I^3, substantially as shown and described.

8. In a band-cutter and feeder for thrashing-machines, the grooved roller G, the bearings H, supporting the said roller G, the springs H', pressing on the said bearings, the cross-plate H^2, pressing on the said springs, the screws H^3, for adjusting the said plate H^2, the links I, supporting the said bearings H, and the levers I' pivotally connected with the said links, in combination with the links I^3, pivoted on the levers I', and the feed-bar J, held on the lower ends of the said links, substantially as shown and described.

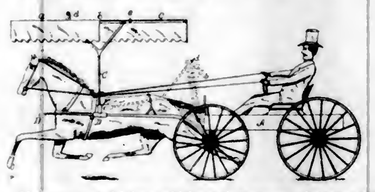
9. The combination, in a band-cutter and feeder, with the carrier, of the band-cutting knives above the carrier, and longitudinally-adjustable bearings for said knives, whereby the knives may be adjusted for bundles of different lengths, substantially as set forth.

10. In a band-cutter and feeder, a rock-shaft having a spring-tension, and knives secured adjustably to said shaft, whereby the knives may be set at any desired angle and also allowed to yield, substantially as set forth.

11. In a band-cutter, the combination, with the rock-shaft, bearings therefor, and the knives on the rock-shaft, of an arm secured to the shaft, a rod extending through the outer end of said arm, and a spiral spring surrounding the rod and bearing on said arm, substantially as set forth.

12. The combination, with the frame, of the slat belt M and its rollers L N, the lower belt, E, and its rollers F' F C^2, the feed-roller G, driven from the roller C^2, the feed-bar J, connected with and operated from the feed-roller, the intermediate roller, K, driven from the roller C^2, the gearing connecting the said roller K with the belt-roller M, and means for disconnecting the said gearing, substantially as set forth.

379,356. VEHICLE-AWNING. AUGUSTUS D. BEEDLE, Kansas City, Mo. Filed Jan. 19, 1888. Serial No. 261,212. (No model.)



Claim.—1. A folding vehicle-awning supported upon vertical standards, said standards being hinged at their lower ends to the shafts of the vehicle, and said awning being constructed to fold into smaller compass and be laid down in rear of the horse, substantially as described.

2. Frame B, in combination with standards C, which support it over the horse, the upper ends of said braces being rigidly attached to said frame, and their lower ends being hinged or loosely connected to the vehicle-shafts, whereby said frame may be laid down in rear of the horse, substantially as described.

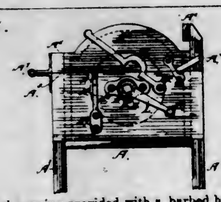
3. The combination, with the shafts of the vehicle, of thimbles D, having vertical lugs F, standards C, the lower ends of which are hinged to said lugs, thimbles E, loosely mounted on said standards so as to slide over said lugs, and frame B, having a canvas covering and mounted on the upper ends of the standards, substantially as described.

4. The combination, with the shafts of the vehicle, of thimbles D, having lugs F, standards C, having their lower ends hinged to said lugs, thimbles E, and frame B, said frame being composed of folding sections, substantially as described.

379,357. WASHING-MACHINE. FRANKLIN P. BRIEHL, Pottstown, Pa., assignor of one-half to George Knapp and Charles Saybold, both of same place. Filed Aug. 26, 1886. Serial No. 211,893. (No model.)

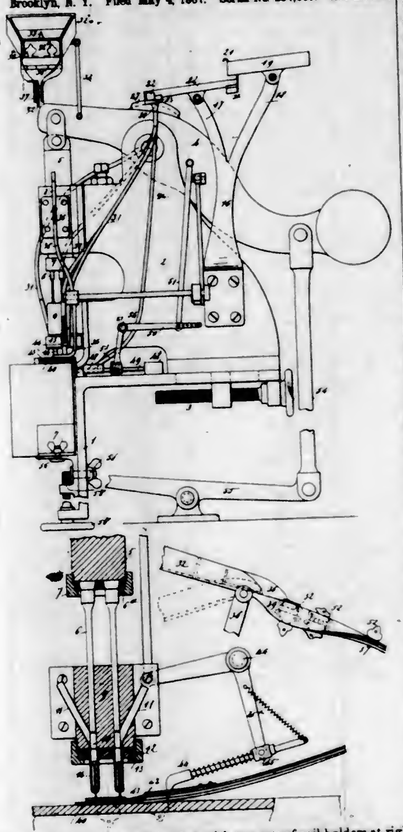
Claim.—The combination, with a box or casing and a rotary cylinder having a gudgeon projecting through said box and provided with a rectangular recess, a handle to engage said recess, said handle having a groove, a gab pivoted to the side of the box and engaging

379,357.



the groove, and a spring provided with a barbed head to engage the gab, substantially as shown and described.

379,358. MACHINE FOR HINGING BOXES. ANDREW C. BOLTON, Brooklyn, N. Y. Filed May 4, 1887. Serial No. 237,069. (No model.)



Claim.—1. The combination, with two sets of nail-holders at right angles to each other, and hammers or drivers for each set to drive the nails in two directions simultaneously, of a receptacle for hinges, a chute leading therefrom to a point adjacent to said hammers or drivers, and a feeding-finger forcing the hinges from the delivery end of the chute into position for action by said hammers, substantially as set forth.

2. The combination, with the hammer or driver and means for reciprocating it, of a block having an aperture to receive said hammer or driver, and an inclined aperture or tube leading inward through said block and communicating with its aperture, the flanged collar screwed on the end of the block, an apertured plate resting on the flange of said collar and provided with a spring-tube registering with the aperture in the block, and split and bent inward to form nail-holding jaws, and means for feeding the nails or screws into the inclined aperture or tube in the block, substantially as set forth.

3. In a nailing mechanism, the combination, with the reciprocating block threaded at its lower or outer end, of an internally-flanged collar screwing thereon, an apertured plate resting on said flange, and a nailing hammer or driver passed through said aperture and having a retaining-head fitting said aperture, whereby the head of the hammer may be held against the end of the reciprocating block, substantially as set forth.

4. The combination, with the nail-guide, of a reciprocating bar at right angles to the said guide, normally closing the delivery end of the guide, and having its side next to the guide recessed for the passage of the nail, and a finger on the bar extending over said recess beyond the inner face of the bar, formed with a flat outer edge and a sharp forward end, that part of the bar just in advance of the sharp end of the finger normally closing the nail-guide, substantially as set forth.

5. The combination, in a hinging-machine, with the frame having a laterally and vertically adjustable box-support on its front side, of a horizontally-adjustable standard on the upper face of the frame, means for adjusting the standard toward and from the said front side, and the nailing and hinge-feeding mechanisms mounted on said standard and its connected parts and delivering at points above the box-support, whereby the box and the standard and its parts may be brought into proper position for the application of the hinges to the desired parts of the box, substantially as set forth.

6. The combination, with the frame having a standard, the main operating-lever pivoted thereon, and means for rocking said lever, of the vertically-sliding block connected to the forward end of the said lever, the hammers or drivers secured to the lower end of the block, the fixed block having vertical apertures through which said hammers pass, and downward-inclined tubes communicating with said apertures, and the nail-holding jaws or fingers, the pivoted nail-chutes, flexible tubes for conducting the nails therefrom to the said inclined tubes, a regulating feed-bar between said tubes and chutes, a projection on said bar, a cam on the said lever acting on said projection, a hinge receptacle or box rocked from the main lever, a curved chute leading therefrom to a point below the nail-holders, an operating-finger for pushing the hinges into position at the delivery end of the chute, a rock-shaft to which said finger is connected, and a rod connecting said rock-shaft with the main lever, substantially as set forth.

7. The combination, with the main operating rocking lever and the nail-feeding and hammer devices operated therefrom, of the curved hinge-chute having a slotted spring at its delivery end below the hammers or drivers, the rock-shaft having a downward-extending arm provided with a sleeve, a finger sliding in said sleeve and extending into the slot, a spiral spring on said finger between its head and the sleeve, a spring connecting the rear end of the finger with the said arm, and a rod or pitman connecting the rock-shaft with the main lever, substantially as set forth.

8. The combination, with the frame, the main rocking lever mounted thereon, the two sets of hammers or drivers sliding in planes at right angles to each other and operated from said main lever, nail-receiving tubes through which said hammers pass, and feeding-tubes communicating therewith in advance of the hammers or drivers, of the hinged receptacle rocked from the main lever, the hinge-chute formed of the parallel plates curved outward and downward at their points of connection with said receptacle, and thence gradually curved to a point adjacent to the two sets of hammers or drivers, and the feeding-finger, also operated from the main lever, substantially as set forth.

9. The combination, with the spring-tubes 14 and 47, the hammers 6 and 49, adapted to reciprocate in said tubes, the adjustable nail-boxes 19 and guides 22, a slotted reciprocating bar, 24, provided with fingers 29, and means for connecting said bar and said spring-tubes, of a rocking hinge-box, 32, a semicircular inclined chute, 37, hinged to said box, adapted to carry hinges, and provided with an upper outwardly and downwardly inclined or twisted surface, 39, and a finger, 44, actuated from the driving mechanism of the hammers, adapted to convey the hinges in position upon a box, all operating substantially as herein shown and described.

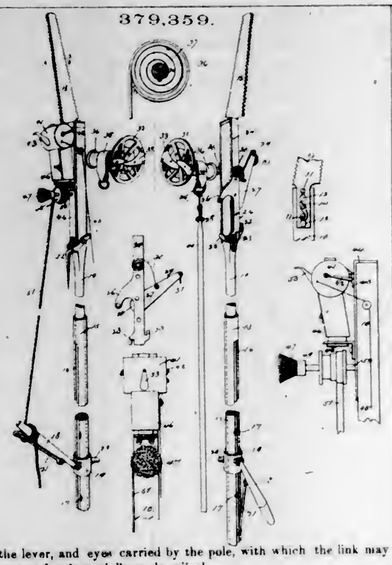
379,359. PRUNING IMPLEMENT. ANDREAS BOSCH, Prairie du Chien, Wis. Filed Aug. 16, 1887. Serial No. 247,128. (No model.)

Claim.—1. The combination, with a pole carrying a saw at its upper end, of a sleeve surrounding the pole, a pivoted lever connected to the said sleeve, and a link pivoted to the said lever and pole, substantially as described.

2. The combination, with a double-edged saw formed with an apertured shank, of a pole provided with buttons which pass through the apertures of the saw-shank, a catch arranged to engage with the buttons, a sleeve surrounding the pole, and a lever pivotally connected to the sleeve and arranged for connection with the pole, substantially as described.

3. The combination, with a saw, of a pole to which the saw is connected, a sleeve surrounding the pole and formed with a longitudinal slot, a lever pivotally connected to the sleeve, a link connected

379,359.



379,360.



to the lever, and eyes carried by the pole, with which the link may be engaged, substantially as described.

4. The combination, with a pole, of the cutter-carrying frame 24, provided with the notches 23 at its lower end, and the catches 22, for engaging the notches and locking the frame to the pole, substantially as herein shown and described.

5. The combination, with a pole, of the frame 24, provided with the notches 23 and with the downwardly-projecting and hooked arm 26, the catches 22, for locking the frame to the pole, and the pivoted and spring-actuated cutting-blade 27, substantially as herein shown and described.

6. The combination, with a wax-receptacle, provided with a spout, of a lamp mounted beneath the receptacle, a brush mounted beneath the lamp, a means for reversing the position of the wax-receptacle, and a means for imparting a rotary reciprocating motion to the brush, substantially as described.

7. In a pruning implement, the combination, with a pole, of a disk provided with cutting-blades on one of its faces, and pivoted on the upper end of said pole, and means for operating said disk, substantially as herein shown and described.

8. In a pruning implement, the combination, with a pole, of a spring-drum on the upper end of the pole, a cutting-disk carried by the drum, and a strap or cord attached to the drum, substantially as herein shown and described.

9. In a pruning implement, the combination, with a pole, of a can provided with a spout and eccentrically pivoted to a support at the upper end of the pole, and means for reversing the position of the can, substantially as described.

10. In a pruning implement, the combination, with a pole, of a can provided with a spout and eccentrically pivoted to a support on the pole, a cord or strap for reversing the position of the can, and a lamp below the can, substantially as herein shown and described.

11. In a pruning implement, the combination, with a pole provided with buttons, of a saw-blade having its shank provided with key-hole slots and a catch for engaging one of the buttons, substantially as described.

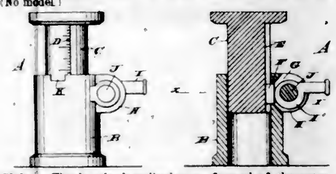
12. As an improved article of manufacture, a pruning implement comprising a saw, a cutting-blade, rotary cutting-blades, and a waxing apparatus, all mounted on a pole or rod, as set forth.

379,360. MAP. WILLIE M. BOURS, Stockton, Cal. Filed Dec. 1, 1887. Serial No. 256,722. (No model.)

Claim.—1. A map or chart consisting of the permanent general outline of the country, and a series of dots or points whereby the direction and termination of temporary lines showing the subdivisions are indicated, substantially as herein described.

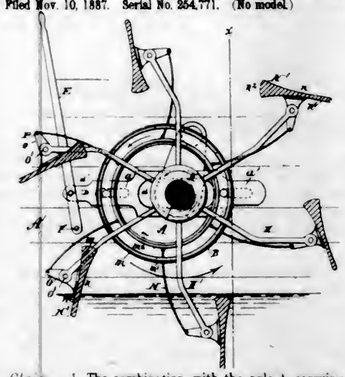
2. An outline map or chart showing the general boundary-lines of the country in permanent lines, and the permanent dots or points marked within said outlines in such position that lines drawn through them will subdivide the country into its smaller divisions, and from these lines the smaller irregularities of outline or contour may be traced more accurately, substantially as herein described.

379,361. EXTENSION-GAGE. FREDRICK J. BROWN and DANIEL H. JAMES, Meadow Brook, Pa. Filed Sept. 16, 1887. Serial No. 249,880. (No model.)



Claim.—The herein-described gage, formed of the outer section, B, formed with a broad flat outer end, and having a slot, K, in its inner end, the column C, sliding within the section B, formed with a broad flat outer end parallel with the outer end of the outer section and vertical graduations D, and the means for securing the column in its adjusted position.

379,362. PADDLE-WHEEL. WASHINGTON BRYANT, Franklin, Ark. Filed Nov. 10, 1887. Serial No. 254,771. (No model.)



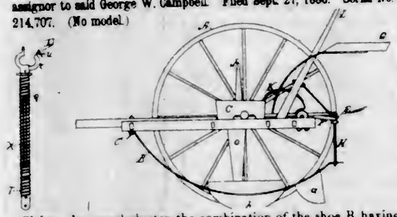
Claim.—1. The combination, with the axle A, carrying curved arms H', and paddles N', provided with a concaved front and rear surface and one weighted longitudinal edge pivoted to said arms, of eccentric rings B, collars M, supported by said rings, and curved bars N, radiating from said collar and pivoted to said paddles above said arms, substantially as shown and described, and for the purpose herein set forth.

2. The combination, with the axle A, carrying curved arms H', and paddles N', provided with a concaved front and rear surface and one weighted longitudinal edge pivoted to said arms, of the eccentric rings B, a collar, M, supported by each of said rings, provided with a recessed inner face, m^3, a series of peripheral recesses, m', and a series of curved rods, N, attached to said collar, passing through said recesses, and pivoted to the paddles above the arms H', substantially as shown and described.

3. The combination with the axle A, provided with integral hubs H, having attached thereto a series of curved carrying-arms, H', and paddles N', provided with concaved front and rear faces, a weighted longitudinal edge, and posts O, attached to the rear face, provided with a pin, O', and aperture P, of the eccentric rings B, a collar, M, supported by said rings, provided with a recessed inner face, m^3, a series of peripheral recesses, m', and a series of curved rods, N, attached to said collar, passing through said recesses, and pivoted to the paddles above the arms H', substantially as herein set forth.

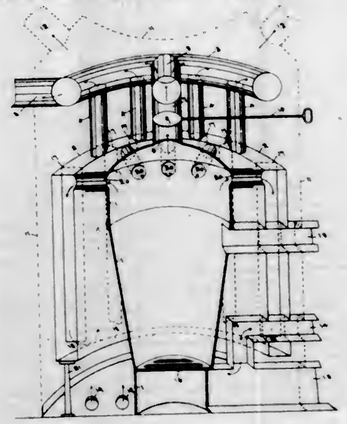
4. The combination, with the frame A', provided with aligning recesses a a', the axle A, carrying curved arms H', and paddles N', pivoted to said arms, of the eccentric rings B, provided with aligning pins b b', a collar, M, supported by said rings, curved bars N, radiating from said collars and pivoted to said paddles above said arms, the slotted horizontal bar D, and lever E, all arranged to operate substantially as herein set forth.

379,363. CORN-PLANTER. JEREMIAH W. CAMPBELL, St. John's, and GEORGE W. CAMPBELL, Harrod, Ohio; said Jeremiah W. Campbell assignor to said George W. Campbell. Filed Sept. 27, 1886. Serial No. 214,707. (No model.)



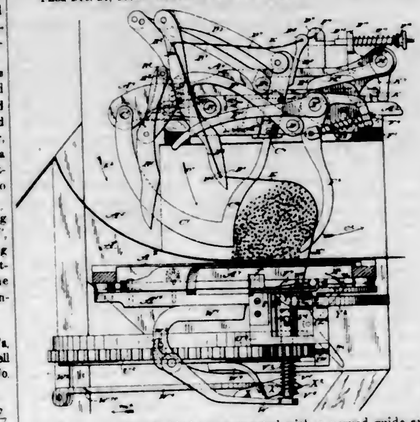
Claim.—In a seed-planter, the combination of the shoe B, having blades b and covering-shovels a, pivoted at the forward end of the carriage-frame, a swinging bar, F, at the rear end of the frame, and the herein-described improved means for connecting the rear end of the shoe to the bar F, consisting of a slotted split bar having the hinging device E and a bar provided with a pin projecting into the slot of the first-mentioned bar, whereby it is adapted to slide longitudinally in said bar, a coil-spring surrounding and secured upon said bar tending to force the shoe toward the ground, as set forth.

379,364. HEATING-FURNACE. JOHN W. CLARK, Utica, N. Y. Filed July 2, 1887. Serial No. 243,226. (No model.)



Claim.—The combination, with a furnace, of a radiator substantially encircling the fire-pot and combustion-dome of the furnace, having diaphragm-plates dividing the radiator into spaces connected at the bottom, a superposed drum, a series of flues connecting the furnace-dome with the alternate spaces of the radiator, and a series of flues connecting the remaining spaces of the radiator with the superposed drum, substantially as set forth.

379,365. GRAIN-BINDER. WILLIAM M. CLARK, Boonsboro, Wis. Filed Dec. 21, 1885. Serial No. 186,256. (Model.)



Claim.—1. A grain-binder constructed with a curved guide and with a shaft carrying a crank, a lever pivoted on one end of the crank, and tines pivoted midway of their length to the lever and projecting down at the sides of the guide, substantially as and for the purpose set forth.

2. A grain-binder provided with the pivoted curved guide having an upwardly-projecting arm on its free end, combined with a shaft carrying a crank, a lever pivoted on one end of the crank, and tines pivoted midway of their length to the lever and projecting down at the sides of the guide, substantially as and for the purpose set forth.

3. A grain-binder constructed with a curved guide, C, mounted on a rocking shaft, C, an arm on the shaft, a casing into which the arm projects, a spring pressing down on said arm, which guide C is combined with a pocket or guide for receiving the free end of the arm on the guide, and tines operated from a revolving shaft, the said tines being at the sides of the guide, substantially as herein shown and described.

4. In a grain-binder, the combination, with a curved guide, of a shaft carrying a crank, a lever pivoted on one end of the crank, tines pivoted midway of their length to the lever and projecting down at the sides of the guide, an arm pivoted to the upper end of the lever to which the tines are pivoted, and a piece provided with a slot, into which a pin on said arm passes for the purpose of guiding the arm, substantially as herein shown and described.

5. In a grain-binder, the combination, with a shaft, J, carrying the cog-wheel J^3, of the clutch-sleeve I^3, a cog-wheel, I', operated from the cog-wheel J^3 and mounted on the main shaft, a cam mechanism on the main shaft, a trip and compressor, twine-carrier, and knotting mechanism operated from the mechanism on the main shaft, the cam G on the trip-arm, the shaft H, the cam-arm H' on the same, the elbow-lever K, the arm K^3 on the shaft H, and the laterally-swinging lever I', connected with the clutch-sleeve I^3, said elbow-lever having a spring, K', acting upon the lever I', substantially as herein shown and described.

6. In a grain-binder, the combination, with a shaft, J, carrying the cog-wheel J^3, of the clutch-sleeve I^3, a cog-wheel operated from the cog-wheel J^3 and mounted on the main shaft, a cam mechanism on the main shaft, a trip-arm and compressor, twine-carrier, and knotting mechanism operated from the mechanism on main shaft, the cam G on the trip-arm, the shaft H, the cam-arm H' on the same, the elbow-lever K, the arm K^3 on the shaft H, the laterally-swinging lever I', connected with the clutch-sleeve I^3, the latch J^4, the lever H^3, having a pronged beveled end, and a spring acting on the short end of said lever H^3, which beveled pronged end of the lever H^3 is adjacent to and adapted to act on the laterally-swinging lever I', substantially as herein shown and described.

7. In a grain-binder, the combination, with a shaft, J, carrying the cog-wheel J^3, of the clutch-sleeve I^3, the cog-wheel I', operated

2. Polishing sheet-iron by the action of a hammer or hammers

from the cog-wheel J^3 and mounted on the main shaft, a cam mechanism on the main shaft, a trip-arm and compressor, twine-carrier, and knotting mechanism operated from the mechanism on main shaft, the cam G on the trip-arm, the shaft H, the cam-arm H′ on the same, the elbow-lever K, the arm K^3 on the shaft H, the laterally-swinging lever I′, connected with the sleeve I^3, the latch J^4, the angular lever H^3, mounted on the shaft H and having one end pronged and beveled, the said pronged and beveled end being adjacent to the lever I′, and the lever I^7, pivoted on the lever I′ and adapted to engage the end of the lever H^3, substantially as herein shown and described.

8. In a grain-binder, the combination, with a shaft, of an ejector on one end of the same, a cam on the other end, the short arm of which cam terminates in a segmental rack, a pivoted arm having a segmental rack on its edge engaged with the segmental rack of the cam on the shaft, a wheel having a recess, a projection in the plane of the wheel at one end of the recess, and a pin projecting from the plane of the wheel at the other end of the recess, engaging, respectively, with the cam and pivoted arm, substantially as herein shown and described.

9. In a grain-binder, the combination, with a shaft, of an arm on one end of the same, a needle pivoted on the said arm, the cam N on the other end of the shaft, which cam has a slot, N^3, the cam O, mounted on the main shaft and provided with a prong, O′, the lever O^4, the cam projection O^3, the cam O^6 on the main shaft and adjacent to the cam O, and the pin O^4, projecting from the lever O^4, substantially as herein shown and described.

10. In a grain-binder, the combination, with a knotting device, of levers pivoted to swing in horizontal planes and serving to operate said knotting devices, levers pivoted to swing in vertical planes and connected to said horizontal levers, cams on the main shaft, cam projections on vertical levers engaged by the said cams, one of said horizontal levers carrying a rack, a lever carrying the twine against that part of the twine carried by the needle operated by said rack-arm, a wheel revolved by said rack, which wheel in turn revolves the jaws of the knotter, the other of said horizontal levers moving in an opposite direction to that in which the aforesaid horizontal lever moves, and carrying a hooked rod which catches both strands of the twine, and a fixed block into which is pulled both of said strands of twine by the said hooked rod, substantially as set forth.

11. In a grain-binder, the combination, with the levers mounted to swing in horizontal planes and the knotting devices operated by said levers, of levers mounted to swing in vertical planes and connected with said horizontal levers, said vertical levers having apertures from the edges of which cam projections extend inwardly, two cams on the main shaft for each lever, so located, substantially as described, that they cannot act on the same parts of the cam projections on said levers, one of the horizontal levers carrying a rack, a lever acted upon by said rack to carry the twine against that part of the twine carried by the needle, a wheel revolved by said rack, which wheel in turn revolves the jaws of the knotter, the other of said horizontal levers moving in an opposite direction to that in which the aforesaid horizontal lever moves, and carrying a hooked rod, and a fixed block into which is pulled both strands of the twine by the said hooked rod, substantially as set forth.

12. In a grain-binder, the combination of the levers mounted to swing in horizontal planes, the concentric tubular spindles provided with knotting-jaws, a knife, horizontally-swinging levers, one having a segmental rack engaging a cog-wheel on the outer one of said spindles, an angle-lever provided with a hook for drawing the twine taut and with an arm having a prong or hook for pressing the twine against the knife and holding the cut end of the twine, levers pivoted to swing in vertical planes and connected with said horizontal levers, and cams on the main shaft, the rack acting upon said angle-lever and the vertical levers having recesses and cam projections acted upon by the cams on the main shaft, substantially as specified.

13. In a knotter for a twine grain-binder, the combination, with two concentric spindles, each having a knotting-jaw at the upper end, the inner spindle being adapted to slide and turn within the outer spindle, of a spring for pressing the inner spindle downward, a cog-wheel on the outer spindle, a segmental rack engaging said cog-wheel, and thereby operating the spindles, mechanism for pressing the inner spindle upward, and thereby separating the knotting-jaws at proper times, which mechanism is operated by a swinging lever carrying a rack, and an additional lever provided with a hook for drawing the twine taut, and with an arm having a hook for pressing the twine against the knife and holding the cut end of the twine, substantially as herein shown and described.

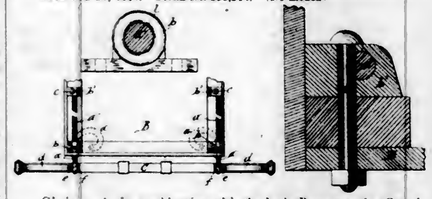
14. In a grain-binder, the combination, with the frame U^3, the lugs X' X^3, the knife Z above the lug X', and the block r, having a recess, of the revolving knotter, the swinging lever U, which operates the revolving knotter, the swinging lever Y, having a hook, Y^3, and the wire t, having a hook, o, substantially as and for the purpose set forth.

15. In a grain-binder, the combination, with the frame U^3, of a revolving knotter on the same, the block r, having a recess, which block is secured on the frame U^3, the swinging lever U, which operates the revolving knotter, the swinging lever Y, the wire t, having a hook, o, the hook Y^3 on the end of the lever Y, and the knife Z, substantially as herein shown and described.

16. In a grain-binder, the combination, with two concentric spindles, each provided at its upper end with a knotting-jaw, the inner spindle being adapted to slide in the exterior spindle, of a spring for pressing the inner spindle downward, the lever U, having a rack, U^3, engaging with a cog-wheel on the exterior spindle, the track-lever W^4, pivoted to the rack U^3, the lever W, on which the lower end of the interior spindle rests, and a cam-piece on said lever W, having a beveled lug, which beveled lug runs on the track-lever W^4, substantially as herein shown and described.

17. In a grain-binder, the combination, with two concentric spindles, each provided at its upper end with a knotting-jaw, the inner spindle being adapted to slide in the exterior spindle, of a spring for pressing the inner spindle downward, the lever U, having a rack, U^3, engaging with the cog-wheel on the exterior spindle, the track-lever W^4, pivoted to the rack U^3 and having a bevel, W^3, on the free end, and a beveled shoulder, W^{14}, at the pivoted end, the lever W, on which the lower end of the interior spindle rests, the cam X on said lever W, having a beveled lug, X^3, which beveled lug runs on the track-lever W^4, and the arm W′, having a laterally-projecting pin, W^6, for holding the track-plate and preventing it from dropping too far, substantially as herein shown and described.

379,366. **VEHICLE-SPRING.** EDWARD CLIFF, Rochester, N. Y. Filed Oct. 27, 1887. Serial No. 253,517. (No model.)



Claim.—1. In combination with the body B, cross-spring C, and crank-arms d d, coupled to the ends of said spring, the boxes b b b' b', secured to the body, the linings l in the boxes b b, the straight torsion spring-bars a a, journaled in the latter boxes, and the pins c c, passing transversely through the boxes b' b', and through the sides of the bars a a, substantially as described and shown.

2. In combination with the cross-spring C and torsion spring-bars a a, the crank-arms d d, detachably connected to the bars a a and coupled to the ends of the cross-spring, substantially as described and shown.

379,367. **FILE FOR LETTERS, &c.** WILLIAM A. COOKE, Jr., New York, N. Y. Filed Oct. 17, 1885. Serial No. 180,206. (No model.) Patented in England Nov. 10, 1885, No. 13,663, and in Canada Dec. 11, 1885, No. 22,948.



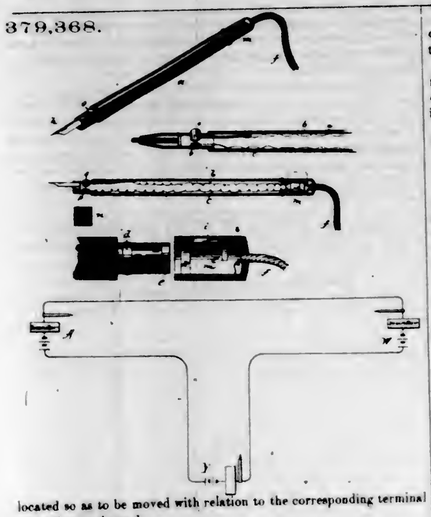
Claim.—In a file for letters, invoices, and the like, the combination of the case or box, plates D, leaves or partitions B, and hooks d, said hooks being attached to the leaves or partitions at the rear edge and corners thereof and projecting from the same backward and parallel to the said rear edge, so that the hooks at opposite ends open toward each other, substantially as specified.

379,368. **TELEGRAPHIC PEN.** HERSCHEL P. COPELAND, East Orange, N. J. Filed Dec. 29, 1887. Serial No. 259,284. (No model.)

Claim.—1. In an electric circuit, which includes a suitable receiving apparatus, a transmitting-pen provided with circuit-terminals, one of which is movable and located upon the pen, so as to be moved in the act of writing.

2. A telegraphic pen having terminals for connection with a circuit, and also having a pair of terminals, one of which is movable and

379,368.



located so as to be moved with relation to the corresponding terminal when the pen is used.

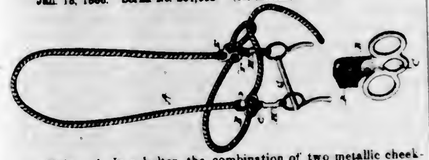
3. A telegraphic pen having two pairs of terminals, the members of each pair being connected with corresponding members of the other pair, and one of the members of one pair being movable, as and for the purpose set forth.

4. A telegraphic pen having two pairs of terminals, the members of one pair being relatively fixed and those of the other being relatively movable, in combination with a cap for the said pen, having terminals which correspond to those which form the pair whose members are relatively fixed, the cap-terminals being joined to the wires of an electric circuit, as set forth.

5. A telegraphic pen having a pair of relatively-movable terminals, one of the said terminals being located in position to be operated by the index-finger in writing.

6. A telegraphic pen having a pair of relatively-movable terminals, one of the said terminals being located in position to be operated by the index-finger in writing, in combination with a cap, band, or circuit-closer adapted to press the movable terminal into contact with the corresponding terminal.

379,369. **HALTER.** JAMES C. COVERT, West Troy, N. Y. Filed Jan. 13, 1888. Serial No. 261,095. (No model.)



Claim.—1. In a halter, the combination of two metallic cheek-plates, to one of which one end of the halter-rope is secured, and in which there are respectively two and three rope-holes in which the halter-rope is arranged, substantially as shown, and in each of which there is an eye for the attachment and detachment of a bit.

2. In a halter, a cheek-plate having an upper tubular portion to clamp the halter-rope, and three holes below said portion, two of which are in about the same longitudinal plane to receive the nose and chin pieces, and the third of which is between them and below the position of said nose and chin pieces, so as to readily receive a snap-hook for the attachment of a bit.

3. In a halter, a cheek-plate having one upper hole to receive the cheek-piece, two other holes to receive the nose and chin pieces, and a further hole or eye between them and below the said hole for the nose and chin pieces, to receive a snap-hook for the attachment of a bit.

379,370. **MANUFACTURE OF SHEET-IRON.** ISAAC E. CRAIG, Camden, Ohio. Filed Dec. 16, 1887. Serial No. 258,132. (No specimens.)

Claim.—1. As an improvement in the manufacture of polished sheet-iron, passing the sheets between hot or cold rolls artificially marked, as described, preliminary to polishing in packages under the hammer.

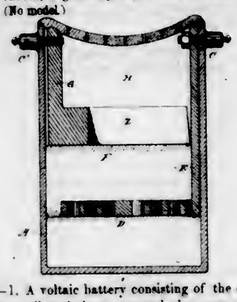
2. Polishing sheet-iron by the action of a hammer or hammers on packages of sheets, with the operating-faces of one or both dies of the hammer subdivided into parallel lines, as described.

3. A process of manufacture of polished sheet-iron, consisting, first, in marking the sheets with artificially-mottled rolls, and, secondly, irrespective of intermediate steps, polishing by hammers having their die-faces divided into parallel lines, as described.

379,371. **MANUFACTURE OF SHEET-IRON.** ISAAC E. CRAIG, Camden, Ohio. Filed Dec. 27, 1887. Serial No. 259,175. (No specimens.)

Claim.—An improvement in the manufacture of polished sheet-iron, consisting in a combination of the following steps: first, producing nodules or projections on the sheets by passing them between artificially-pitted rolls; second, exposing them in packs or piles without the interposition of other solid matter between them while hot to a circulation of heated deoxidizing-gas, and, third, polishing in the usual way.

379,372. **NON-POLARIZING CONSTANT-CURRENT BATTERY.** FRANK J. CROUCH, Eugene City, Oreg. Filed June 11, 1887. Serial No. 241,082. (No model.)

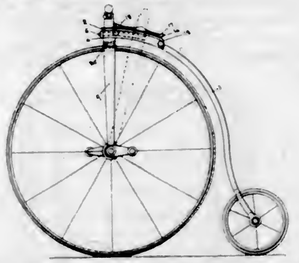


Claim.—1. A voltaic battery consisting of the outer containing-jar, the leaden coil, and the superposed zinc, connected with and secured by opposite binding-screws, in combination with a preliminary layer of sulphate of copper upon which the leaden coil rests and a filling of sand intermediate with and surrounding the lead and zinc, substantially as herein described.

2. A voltaic battery comprising an exterior containing-jar having a layer of sulphate of copper upon its bottom, a leaden coil resting upon this layer and connected with and secured to a binding-screw at the upper side of the jar, and a filling of fine sand upon which a zinc plate is placed and secured to the opposite binding-screw with a final filling of sand and salt, with a cap or covering of plaster-of-paris or tough clay, substantially as herein described.

3. The battery composed of an exterior jar having binding-screws passing through holes near the top, a leaden coil placed upon a bed of solid sulphate of copper, connected with one of the binding-screws, and a zinc plate or plates placed upon an intermediate bed of sand which is tamped upon and around the leaden coil, the zinc plate being connected with the opposite binding-screw, in combination with a final filling of sand and salt, forming a concave basin at the top, and a protecting cover or cap formed of plaster-of-paris or tough clay, perforated, substantially as herein described.

379,373. **BICYCLE.** HENRY A. DAVIS, Utica, N. Y. Filed Oct. 5, 1887. Serial No. 251,488. (No model.)



Claim.—1. The combination, in a bicycle, of the forked or slotted end of the backbone, the movable bearing fitted to move in the slotted end of the backbone, and the wheel-fork, the upper end of the fork passing through the movable bearing and the forked or slotted end of the backbone, substantially as set forth.

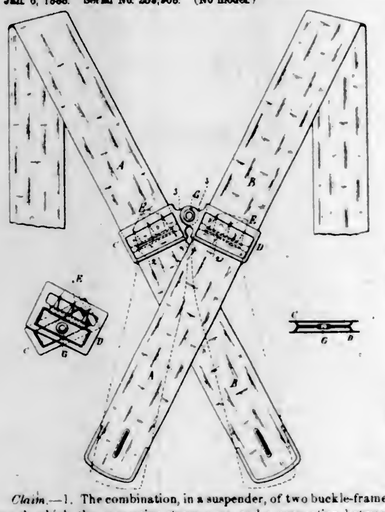
2. The combination, in a bicycle, of a backbone having a forked or slotted end, a movable bearing fitted to move in the forked or slotted end of the backbone, and the wheel-fork having its head or upper end passing through the movable bearing, substantially as set forth.

3. The combination, in a bicycle, of a backbone having a forked or slotted end, a movable bearing adapted to move in the forked or slotted end of the backbone, a wheel-fork having its head or upper end adapted to fit and rotate in the movable bearing, the head passing through the fork or slot in the backbone, and a brake-spindle passing through the head or upper end of the wheel-fork, operated by a lever, substantially as set forth.

4. The combination, in a bicycle, of a backbone having a forked or slotted end, a movable bearing fitted to move in the forked or slotted end of the backbone, a pin and perforations for securing the movable bearing in a fixed position when adjusted, and the wheel-fork having its head or upper end passing through the movable bearing, substantially as set forth.

5. The combination, with the adjustable fork-head, of the seat formed in two sections and so located as to allow the fork-head to move between the sections.

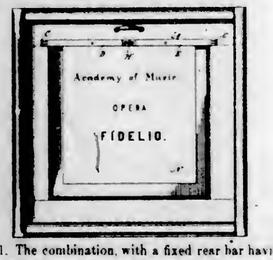
379,374. **SUSPENDERS.** THEODORE D. DAY, Elizabeth, N. J. Filed Jan. 6, 1888. Serial No. 259,968. (No model.)



Claim.—1. The combination, in a suspender, of two buckle-frames through which the respective straps pass, and a connection between said buckle-frames permanently uniting them together, and the prongs or tongues E, applied to one of such frames, substantially as specified.

2. The combination, with the suspender-straps A and B, of the buckle-frames C D, and the prongs or tongues E, applied to one of such frames, and an eyelet-hinge, G, passing through the sheet metal of the buckle-frames and uniting them together, but allowing one frame to be turned or swung upon the other, substantially as set forth.

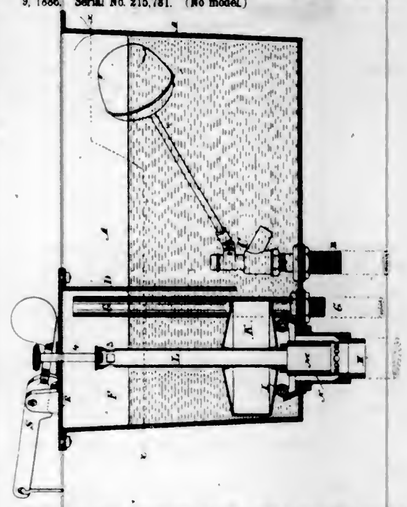
379,375. **HOLDER FOR ADVERTISING MEDIUMS.** PHILIP DELANO, Brooklyn, N. Y. Filed July 16, 1887. Serial No. 244,505. (No model.)



Claim.—1. The combination, with a fixed rear bar having an offset near each end to form a recessed front in said rear bar, of front clamping-bars pivoted to the ends of said rear bar and meeting in the mid-length and in front of said rear bar, said rear bar having a series of forwardly-projecting pins for supporting advertising medium, substantially as set forth.

2. The combination, with a fixed rear bar having an offset near each end, so as to form a recessed front in said fixed bar, of front clamping-bars pivoted to the ends of said rear bar and meeting in the middle of and in front of said rear bar, pins held on said rear bar and extending forward, said pins supporting the advertising medium, and a lock for securing the ends of the clamping-bars together, so as to hold the advertising medium in place on said pins, substantially as shown and described.

379,376. **WATER-CLOSET CISTERN.** JOHN DEMAREST, New York, N. Y., assignor to The J. L. Mott Iron Works, same place. Filed Oct. 9, 1886. Serial No. 215,781. (No model.)



Claim.—1. The combination, with a cistern into which water is admitted by a cock and float, of a minus-pressure chamber closed at the top and open at the bottom, a suction-pipe leading from the closet to the upper part of the chamber, a flushing-pipe opening through the bottom of the cistern and below the minus-pressure chamber, a valve at the upper end of the flushing-pipe, a valve-stem and lever for lifting the valve, and a float for sustaining the valve when lifted until air has been admitted into the minus-pressure chamber by the descent of the water in the cistern, substantially as set forth.

2. The combination, in a cistern for water-closets, of a flushing-pipe, a valve at the upper end of such flushing-pipe, a tubular stem to the valve open at the upper end and forming an overflow, a lever for lifting the valve and stem, an inclosure around and above the tubular valve-stem forming a minus-pressure chamber, and a pipe leading from the upper part of such chamber to the water-closet, substantially as and for the purposes set forth.

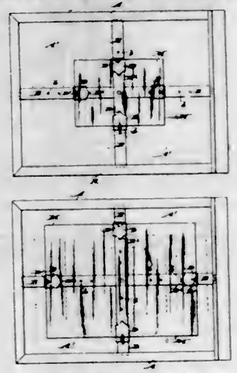
3. The combination, with a water-closet cistern having a supply water pipe and cock, of an inclosure forming a minus-pressure chamber that is open at the bottom, an exhausting-pipe leading from the upper part of the minus-pressure chamber to the closet, a flushing-pipe from the bottom of the cistern below the minus-pressure chamber and leading to the closet, a valve at the upper end of the flushing-pipe, a tubular stem to such valve and open at the upper end to form an overflow, a lever and rod passing through the top of the minus-pressure chamber and connected with the tubular valve-stem, and a float around the tubular valve-stem for sustaining the valve after it has been raised until air is admitted into the minus-pressure chamber substantially as set forth.

4. The combination, with the minus-pressure chamber in a water-closet cistern, of an exhausting-pipe leading to the closet from the upper part of the minus-pressure chamber, a flushing-pipe leading to the closet and opening through the bottom of the cistern beneath the minus-pressure chamber, a valve to the flushing-pipe, a tubular stem passing through the valve and open at both ends, whereby the water flowing through the flushing-pipe causes a suction through the tubular valve-stem to withdraw air from the minus-pressure chamber, substantially as set forth.

5. The combination, with a water-closet cistern having a supply pipe and cock, of an inclosure forming a minus-pressure chamber, with an opening between the minus-pressure chamber and the bottom of the cistern, a flushing-pipe through the bottom of the cistern below the minus-pressure chamber, a valve for such flushing-pipe, a tubular stem passing through the valve and open a both ends, the upper end being above the water-line, a float around the tubular valve-stem, a lever and a rod passing through the top of the minus-pressure chamber and connected to the tubular stem, and an exhausting-pipe leading from the minus-pressure chamber to the closet, whereby the valve is floated after being lifted, and the rush of water through the flushing-pipe draws air from the minus-pressure chamber, substantially as set forth.

6. The combination, with the flushing-pipe, of a valve-seat at the upper end, a stationary tubular guide, N, within the valve-seat, a valve to rest upon the seat, a float connected with the valve, a tube passing vertically through the float and having the tube M at its lower end and within the tubular guide N, to form an exhauster, and the chamber F, containing the float-valve and overflow-pipe, substantially as specified.

379,377. **PHOTOGRAPHER'S KIT.** WILLIAM J. M. DOBSON, Brooklyn, N. Y. Filed Feb. 15, 1887. Serial No. 227,652. (No model.)



Claim.—1. In a kit for photographers' use, the pair of central cross-bars, B, and a set of clamps, D D', adapted to serve in an ordinary plate-holder substantially as herein specified.

2. In a kit for use in the photographic dry-plate holder, a set of two or more adjustable clamps, as D D, each having a clutching arm or hook, as D', and adjusting-point, as D², in combination with cross-strips B, engaged with the plate-holder A, all arranged for joint operation substantially as and for the purposes described.

379,378. **CLOTHES-HORSE.** MARTIN F. DOLAN, Brooklyn, N. Y. Filed Apr. 21, 1887. Serial No. 235,609. (No model.)

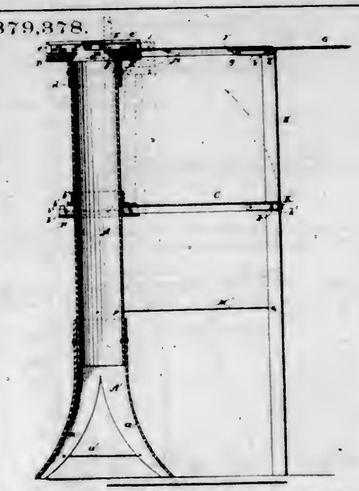
Claim.—1. In a clothes-horse, the combination, with the tubular standard having a slotted or open top, of the upper arms, F, said top and arms having locking parts which are adapted to engage when the arms are drawn out of the standard and lowered into horizontal position, but are disengaged by reversing this operation, substantially as set forth.

2. In a clothes-horse, the combination, with the tubular standard having the slotted or open top, of arms F, which lock with said top when in horizontal position, the swinging supports H, and devices which connect the said arms to the upper ends of said supports and also serve to suspend the arms in the standard when the parts are folded, as shown and described.

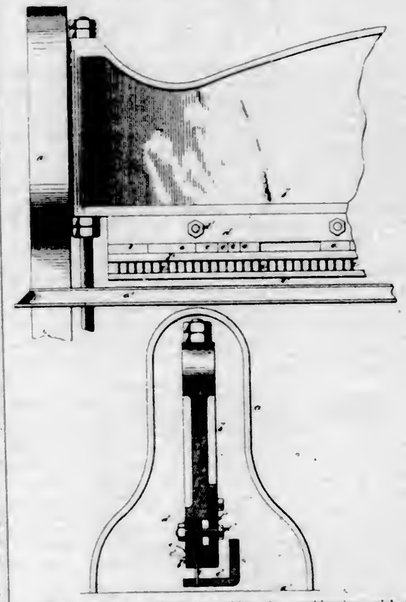
3. In a clothes-horse, the combination, with the tubular standard, of upper and lower carriers, the series of upper arms, F, detachably connected with the upper carrier, D, the lower series of arms, C, hinged to the lower carrier, B, a series of vertical supports, H, and hinges which loosely connect the latter to both series of arms, whereby the movable parts may be folded alongside and within the standard, as shown and described.

4. The combination, with a central tubular standard, A, provided with a tubular carrier, D, at the top, having exterior flanges, *e*, a series of intervening rectangular projections, *d'*, provided with lugs *d⁴*, and a circular apertured cap, E, covering said carrier, of the upper horizontal arms, F, provided with a slot, *f'*, the lower arms, C, and vertical supports H, pivoted to said arms, and means for retaining said arms in a horizontal and vertical position, substantially as shown and described.

379,378.



379,379. **PERFORATING-MACHINE.** EDWARD P. DOWELL, Chicago, Ill. Filed Jan. 7, 1887. Serial No. 223,677. (No model.)

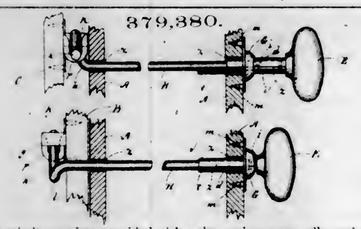


Claim.—In a perforating-machine, the combination, with the needle-bar having the lateral recess, of the beveled retaining-plate removably secured in the recess, and a beveled slug held by said retaining-plate upon the lower face of said recess and over the heads of the perforating-needles, substantially as and for the purpose set forth.

379,380. **SHUTTER-WORKER.** J. ALVIN BOSS, Lawrence, Mass. Filed Oct. 26, 1887. Serial No. 253,405. (Model.)

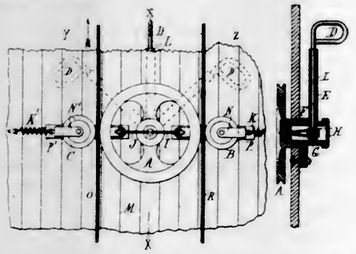
Claim.—A shutter-worker comprising a slotted link for attachment to a shutter, a rod adapted to pass through the window-casing, provided with a hook at its outer end for engaging said link, a socket or tube for the inner end of said rod, provided with a stud and with a knob or handle, and an escutcheon for attachment to the inner face

379,380.



of the window-casing, provided with a slot, and an outwardly-projecting bar in line with said slot for guiding said stud, substantially as described.

379,381. **DEVICE FOR OPERATING ELEVATOR HAND-ROPES.** QUIMBY N. EVANS, Brooklyn, N. Y. Filed Oct. 15, 1886. Serial No. 216,365. (No model.)



Claim.—1. In a gripping device for actuating the shifting-ropes of elevator-cars, in combination, a friction-sheave fitted in a bearing on the side of the car, gripping-pulleys arranged diametrically to the friction-sheave, between which and the friction-sheave the parts of the shifting-rope pass, and a handle located inside the car attached to the friction-sheave, so as to rotate it, but free to be turned on its own axis independently thereof, and connected to the gripping-pulleys, so as to cause them to separately move toward the friction-sheave and press the respective parts of the shifting-rope into contact with the friction-sheave, whereby the parts of the shifting-rope are moved when the friction-sheave is rotated by the handle.

2. In a gripping device for actuating the shifting-ropes of elevator-cars, in combination, a friction-sheave having a hollow hub fitted in a bearing on the side of the car, a handle attached thereto inside the car and provided with a drum in the hollow hub of the sheave, sliding frames fitted on the side of the car, gripping-pulleys fitted to rotate in the sliding frames, between which and the friction-sheave the parts of the shifting-rope pass, springs attached to the frames to draw the pulleys away from the sheave, and ropes connecting the drum on the handle to the frames.

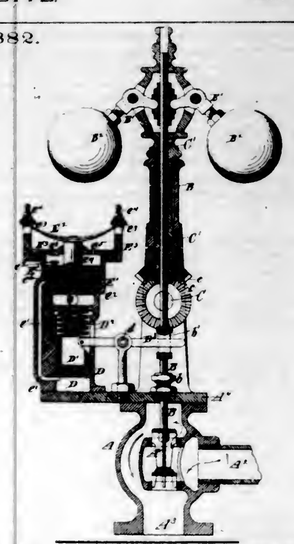
379,382. **FLUID-PRESSURE GOVERNOR.** ROBERT EVERITT, Brooklyn, N. Y. Filed May 12, 1887. Serial No. 237,964. (No model.)

Claim.—1. The combination with a speed-governor and its valve, of a motor-piston, D', connected by a lever with the valve-stem and not interfering with the ordinary action of the speed-governor, a valve cylinder or chamber, E, terminating in the valve-seat e^3 above the motor-cylinder, communicating with the motor-cylinder below the motor-piston and having an inlet for fluid under pressure below the valve-seat, and a loaded puppet-valve working within the cylinder and fitting said seat, whereby said valve serves to control the entrance of fluid under pressure to the motor-cylinder to operate the motor-piston, substantially as herein described.

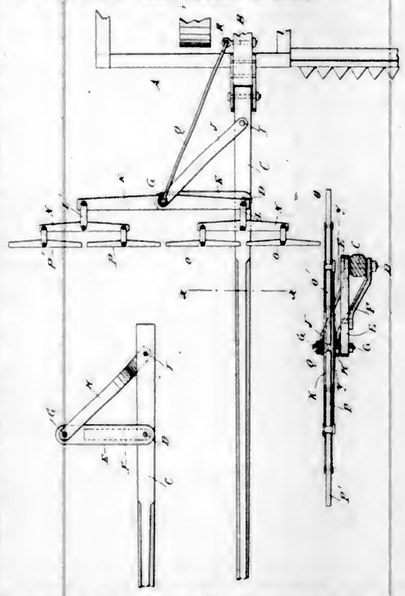
2. The combination, with the speed-governor and its valve, of a motor cylinder and piston, D D', and a connecting-lever, D^2, between the piston and the valve-stem, the cylinder E, having an inlet, e, and a passage, e', connecting it with the cylinder D, and the loaded valve E, also having a passage, e^4, which is in communication with the passage e' when said valve is seated, whereby the cylinder D is vented to the atmosphere when the motor-piston is inactive, substantially as herein described.

3. The combination, with a speed-governor and its valve, of the motor cylinder and piston D D', the connecting-lever D^2, the cylinder E, having an inlet, e, and the passage e', connecting it with the cylinder D, the loaded valve E, having the passage e^4 terminating at the top of the piston in a valve, and a seat against which the last said valve closes when the valve is raised, substantially as herein described.

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379,383. **DRAFT-EQUALIZER.** MICHAEL FELL, Everly, Iowa. Filed Oct. 28, 1887. Serial No. 253,620. (No model.)

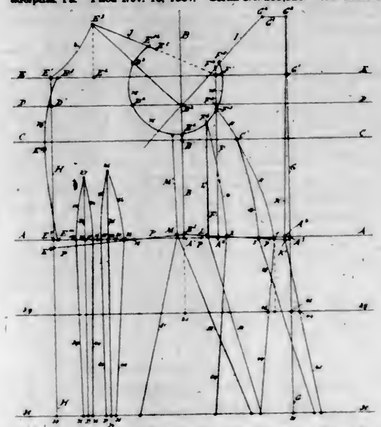


Claim.—1. In a draft-equalizer, the combination, with a long doubletree, of a bracket held on the pole and carrying said long doubletree, braces connected with the outer end of said bracket and with said pole, and a rod connected at one end with the free end of said bracket, and pivotally connected at its other end with the draft beam or frame of the machine, substantially as shown and described.

2. In a draft-equalizer, a long doubletree carrying at each end a doubletree supporting at each end a singletree, in combination with a bracket held on the pole or tongue and carrying said long doubletree, braces connected with the outer end of said bracket and with said pole, a rod connected at one end with the free end of said bracket, and a bolt or swivel secured to the draft beam or frame of the machine,

and on which said rod is pivotally connected, substantially as shown and described.

379,384. **DRESS-CHART.** FAJWEL FELS and DOROTA SIMON, Philadelphia, Pa. Filed Nov. 18, 1887. Serial No. 255,596. (No model.)

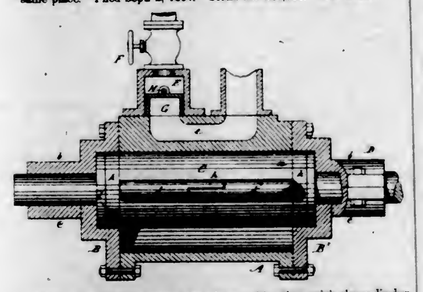


Claim.—1. A chart for making patterns for garments, having thereon horizontal line A, vertical bisecting line B, vertical front line, H, vertical back line, G, slanting line P, connecting points on lines H G below line A with point on vertical line B above line A, arm-hole curve 75, and curved lines 11 12, connecting said arm-hole curve with slanting line P, substantially as shown and described.

2. A chart for making patterns for garments, having thereon horizontal line A, front line, H, back line, G, slanting line P, connecting points of lines H G below line A with point on vertical line B above line A, and line K, connecting top of line G with point A^4, situated on line A half an inch from intersection of lines G A, substantially as shown and described.

3. A chart for making patterns for garments, having thereon horizontal line A, slanting line P, arm-hole curve 75, curved lines 11 13 12, and straight line L', connecting arm-hole curve with line P, base-line 30, intersecting straight lines 48 47 49 50, and horizontal line 29, said horizontal line being located the height of hip-measure from the highest point, B^4, on line P, the lines 48 47 49 sloping an inch on line 29, and the line 50 sloping one and three-fourths inch on line 29, substantially as shown and described.

379,385. **ROTARY ENGINE.** WILLIS J. FISK and HOMER L. PHELPS, Lockwood, N. Y., assignors of one-half to Thomas J. Simcoe, same place. Filed Sept. 2, 1887. Serial No. 248,660. (No model.)



Claim.—1. In a rotary engine, the combination, with the cylinder provided with the transverse valve-chest E, supply-ports d d', exhaust-port e, and reversing-valve G, of the piston-body a, provided with a transverse mortise, and the sliding abutment I, formed of the sections g h h', substantially as described.

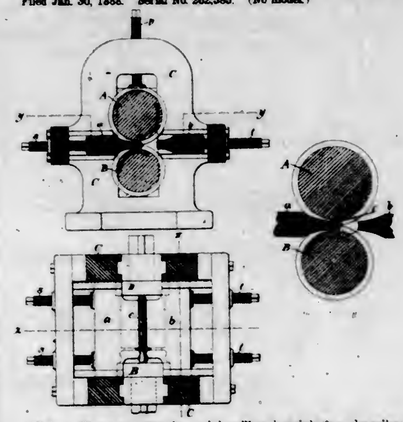
2. In a rotary engine, the sliding abutment I, formed of a central section, g, grooved in opposite edges, and lateral sections h h', fitted to the grooves of the central section, each divided into two parts, j j', overlapping each other, as shown, substantially as described.

3. In a rotary engine, a sliding abutment comprising a central section, outer sections at opposite sides thereof, and tongue-and-groove connections between adjacent sides of the said central and outer sections, substantially as set forth.

4. In a rotary engine, the combination, with the cylinder open at its ends, of the heads B B', formed with integral upper journal-box sections, b b, and separate lower sections, c c, bolted to said integral sections, substantially as set forth.

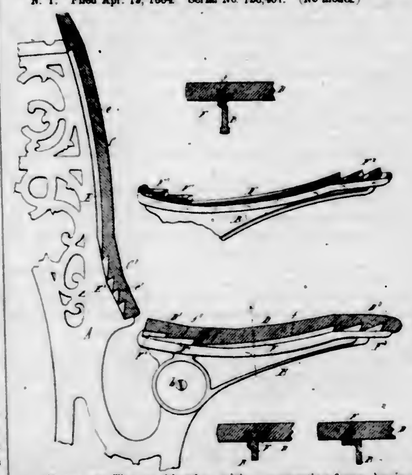
5. In a rotary engine, a cylinder-head, B, formed in a single piece with an upper journal-box section, b, and having an inner concentric recess, substantially as set forth.

379,386. **AXIAL ROLLING.** HENRY H. FORSYTH, Pittsburg, Pa. Filed Jan. 30, 1888. Serial No. 262,385. (No model.)



Claim.—The apparatus for axial rolling hereinbefore described, consisting of a pair of rolls cylindrical in cross-section, power-driven at different surface speed, in combination with an adjustable stationary guide-plate placed in the horizontal plane of the bite of the rolls, with its edge at a distance from the vertical plane of the axes of the rolls substantially equal to the semi-diameter of the finished article for the purpose of axial rolling of articles of cylindrical shape and irregular diameter, substantially as described.

379,387. **SCHOOL-FURNITURE.** OLIVER S. GARRETSON, Buffalo, N. Y. Filed Apr. 19, 1884. Serial No. 128,487. (No model.)

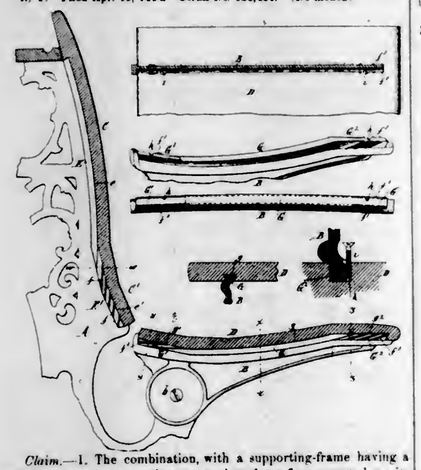


Claim.—1. The combination, with a supporting-frame having a curved main tongue and auxiliary tongues formed at the end of the main tongue and made concentric therewith, of a solid seat or back having a curved main groove or mortise for the reception of the main tongue of the frame and concentric auxiliary grooves or mortises formed at the end of the main groove and adapted to receive the auxiliary tongues of the frame, substantially as set forth.

2. The combination, with a supporting-frame having a curved main tongue and auxiliary tongues formed below the lower end of the main tongue, concentric therewith, and at increasing distances forwardly from the main tongue, of a solid back having a curved main groove and auxiliary grooves at the lower end of the main groove adapted to receive the tongues of the frame, substantially as set forth.

3. The combination, with the seat-arm B, having a curved main tongue, F, of auxiliary tongues F′, formed at the rear end of the main tongue, concentric therewith, and at increasing distances above the same, and auxiliary tongues F^3, formed at the front end of the main tongue, at increasing distances below the same, and adapted to enter corresponding grooves in the seat, substantially as set forth.

379,388. SCHOOL-FURNITURE. OLIVER S. GARRETSON, Buffalo, N. Y. Filed Apr. 19, 1884. Serial No. 128,488. (No model.)



Claim.—1. The combination, with a supporting-frame having a curved locking-tongue and an extension thereof constructed on its flat sides with sharp ribs which embed themselves in the wood, of a solid wooden seat or back provided with a locking-groove which receives the locking-tongue, and a flat-sided groove which receives the flat-sided ribbed extension of the tongue, substantially as set forth.

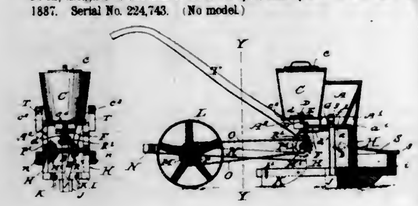
2. The combination, with a supporting-frame having a locking-tongue, E, and flat-sided extension E′, provided with sharp ribs f, of a back, C, having a locking-groove, e, and a flat-sided groove, e', which receive, respectively, the tongue E and extension E′, substantially as set forth.

3. The combination, with a seat-arm having a locking-tongue, G, and flat-sided extensions G′ G^3, provided with sharp ribs f', of the seat D, having a locking-groove, g, and flat-sided grooves g' g^3, which receive, respectively, the tongue G and extensions G′ G^3, substantially as set forth.

4. The combination, with a supporting-frame provided with a curved locking-tongue, of a back or seat having a straight groove which receives the locking-tongue of the frame, and in which the curved tongue is sprung in driving it into the straight groove of the seat or back, substantially as set forth.

5. The combination, with a grooved seat or back, of a supporting-frame provided with a tongue which projects into the groove of the seat or back and which is constructed in its side with a recess or depression adapted to receive a fastening-screw, substantially as set forth.

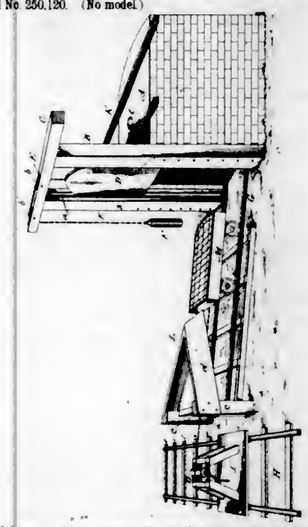
379,389. CORN-PLANTER. JOHN M. GETCHELL, North Haverhill, N. H., assignor of one-half to F. S. Sleeper, same place. Filed Jan. 19, 1887. Serial No. 224,743. (No model.)



Claim.—1. In a corn-planter and fertilizer-distributer, a rotary plate having radial projections for feeding the fertilizing material, a reciprocal plate provided with two apertures adapted to alternately carry the seed to an aperture in seed-hopper connecting with delivery-chute, and a crank-shaft carrying said rotary plate and reciprocal plate, all combined and arranged to be operated from a driving-wheel, substantially as and for the purpose set forth.

2. In a corn-planter, the combination, with the main frame, of bars N, hinged thereto and extending rearwardly therefrom, a ground-wheel mounted in said pivoted bars and having a chain pulley, a transverse shaft, M′, carrying a corresponding chain pulley and a beveled gear, a second beveled gear engaging the latter and having a vertical shaft, a distributing-plate mounted on and rotatable by the vertical shaft, a feeding-slide, and connections between the slide and said actuating devices for reciprocating the same, substantially as set forth.

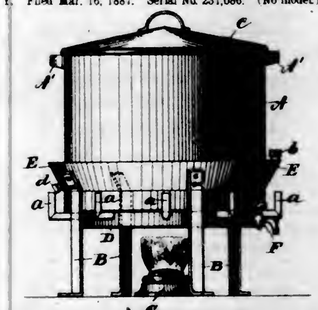
379,390. DEVICE FOR DISCHARGING COKE-OVENS. WILLIAM T. GILES and WILLIAM BOOTH, Shamokin, Pa. Filed Sept. 19, 1887. Serial No. 250,120. (No model.)



Claim.—1. An apparatus for discharging coke from ovens, comprising a truck adapted to receive and hold the coal while in the oven, and a plow arranged outside of the oven and under which the truck is to be drawn to discharge its load, substantially as described.

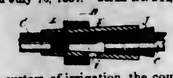
2. An apparatus for discharging coke from ovens, comprising tracks G, extending into the ovens, the track H, running parallel with the faces of the ovens, the truck I, provided with the windlass O, the plow L, supported above the end of the track G, and the truck M, adapted to run under the plow L, substantially as described.

379,391. TOBACCO-REFINING VAT. LEOPOLD GRATHWOL, Troy, N. Y. Filed Mar. 16, 1887. Serial No. 231,086. (No model.)



Claim.—In a tobacco-refining vat, the combination of a steam-tight tank, a subjacent open boiler, and a cold-water reservoir, the latter surrounding the tank near its lower end, substantially as shown and described.

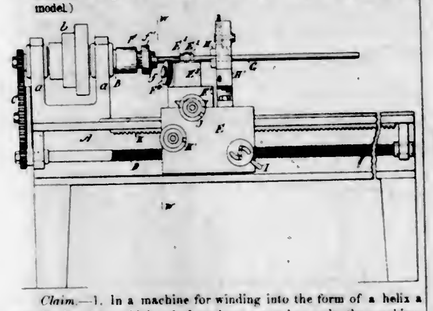
379,392. SYSTEM OF IRRIGATION. AUGUSTIN S. HAINES, Nashville, Iowa. Filed July 16, 1887. Serial No. 244,507. (No model.)



Claim.—1. In a system of irrigation, the combination, with pipes laid along the surface of the ground and connected to each other by couplings having water-outlet passages, of a separate and independent pipe or pipes, one of each three driven or set into the ground, and adapted to receive water from the outlets of the main distributing-pipes and to discharge it below the ground-surface, substantially as herein set forth.

2. In a system of irrigation, the combination, with water-delivery pipes screw-threaded at one end and provided with a packing, J, at the other end, of a coupling, I, screw-threaded at one end to receive the threaded end of one pipe, and having a tapering bore at the other end to receive the end of another pipe having a packing, J, and said coupling provided with an outlet-passage, i, substantially as described, for the purposes set forth.

379,393. MACHINE FOR MAKING WASHERS. HAYWARD A. HARVEY, Orange, N. J. Filed Jan. 13, 1888. Serial No. 260,627. (No model.)



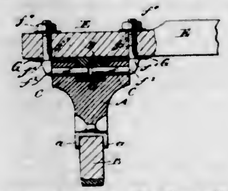
Claim.—1. In a machine for winding into the form of a helix a metallic bar from which spiral washers are to be made, the combination, as herein set forth, of a revolving chuck, a mandrel inserted therein, a clamping-jaw for clamping the end of a metallic bar thereto, a guide-roller mounted in suitable proximity to the mandrel upon a sliding support, and a movable tail-bearing for centralizing and supporting the portion of the mandrel projecting from the chuck, as and for the purposes set forth.

2. The chuck F, provided with a clamping-jaw and having its face spirally formed to present a continuous bearing for the side of the bar which is being wound into a helix during the operation of winding the first convolution of such helix.

3. The grooved guide-roller E^4, mounted upon the adjustable block E^3 and rotating upon an axis the vertical plane of which is diagonal with relation to the vertical plane of the axis of the mandrel, for the purpose of making the plane of motion of said guide-roller coincide with the direction in which the bar is fed to the mandrel while being wound into a helix of prescribed pitch.

4. The centrally-perforated chuck F, provided with the clamping-jaw f, in combination with the yoke f' and the set-screw f^3, as and for the purpose set forth.

379,394. SLEIGH-KNEE. JAMES F. KENNEDY, Winona, Minn., assignor to himself, Henry M. Kinney, and the Winona Wagon Company, all of same place. Filed Aug. 2, 1887. Serial No. 245,928. (No model.)

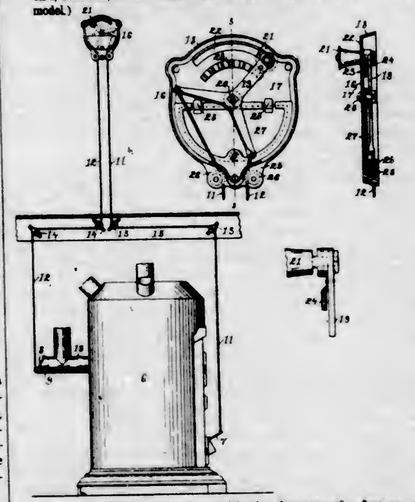


Claim.—1. The combination, in a sleigh-knee, of a knee proper, A, formed with lugs C C and a recess, c, between them, a cap, D, provided with recesses d d, adapted to receive the knee-lugs C C loosely, and formed also with a lug, d, adapted to the knee-recess c, and a pair of right-angular bolts entered into the lugs C C d from opposite sides of the knee and passing also through the cap and beam and receiving nuts above the beam, substantially as described, for the purposes set forth.

2. The combination, in a sleigh-knee, of a knee proper, A, formed with lugs C C and a recess, c, between them, a cap, D, provided with recesses d d, receiving the lugs C C loosely, and formed also with slots g and with a lug, d, adapted to the knee-recess c, and a pair of right-angular bolts, F F, having shoulders f^3 f^3 at their corners and passed through the lugs C C into the lug d from opposite sides of the knee, and passed also through the cap-slots g and the beam and receiving nuts f^4 above the beam, substantially as described, for the purposes set forth.

3. The sleigh-knee bolts F, formed with a part, f, and an angularly-disposed threaded part, f', receiving a nut, f^4, and connected to the part f by a corner-piece provided with shoulders f^3 f^3, substantially as described, for the purposes set forth.

379,395. FURNACE-DAMPER REGULATOR. WERTER C. HIGGINS, Norwich, Conn. Filed June 8, 1887. Serial No. 240,587. (No model.)



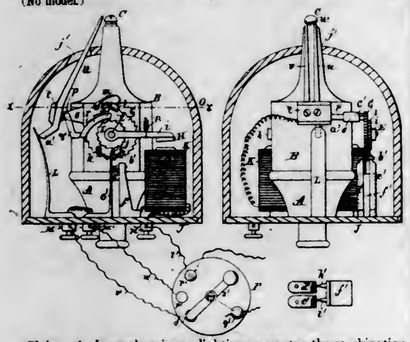
Claim.—1. The combination, with the dampers of a furnace, of the regulator comprising the bed-plate 17 and the three-armed rocker 19, pivoted at 20 to the said plate and provided with the spring 24, the set of stops 23, mounted on the said plate and engaged by the said spring, and the cordings 11 and 12, connecting the respective two arms of the rocker with the dampers, substantially as and for the purpose herein described.

2. The combination, with the flanged bed-plate 17, formed with the curved slot 22 and provided with the set of stops 23, of the three-armed rocker 19, pivoted at 20 to the said plate and provided with the spring 24, engaging the said set of stops, and having a handle, 21, projecting through the slot 22, substantially as and for the purpose herein described.

3. The combination, with the dampers of a furnace, of the regulator consisting in the bed-plate 17, formed with the slot 22 and provided with the stops 23, and the frame 25, having the guide-sheaves 26 mounted therein, the three-armed rocker 19, pivoted at 20 on the said plate and provided with the spring 24 for engaging the stops, the handle 21 on the rocker, projecting through the slot 22, and the cordings 11 and 12, passing over sheaves 26 and connected to the two respective arms of the rocker and to the dampers, substantially as and for the purpose herein described.

4. The combination, with the dampers of a furnace, of the regulator consisting in the flanged bed-plate 17, formed with the slot 22 and provided with the stops 23, the removable section 27, having lugs 28 and mounted on the plate 17, the bracket 25 on the plate, provided with the guide-sheaves 26, the three-armed rocker 19, pivoted at 20 to the said plate and provided with the spring 24, engaging the said stops, and having the handle 21, taking through slot 22, the cordings 11 and 12, passing over the said sheaves 26 and connected intermediate the two respective arms of the said rocker, and the dampers, substantially as and for the purpose herein described.

379,396. **ELECTRIC GAS LIGHTER AND EXTINGUISHER.** GEO. L. HOGAN, Olmstead, assignor to himself, and BERRY T. CONWAY and JAMES A. KELLY, both of Lebanon, Ky. Filed July 2, 1887. Serial No. 243,263. (No model.)



Claim.—1. In an electric gas-lighting apparatus, the combination, with a burner and a spring-pressed valve therein, of an electro-magnet, an armature supported in the field of the magnet, an eccentric for depressing the valve against the action of the spring, and intermediate mechanism for operating the eccentric from the armature, substantially as described.

2. The combination, with the valve D, adapted to close on the apertured plate c, of the spring *f*, connected with and adapted to close the valve D, the casing B, provided with the burner C, the shaft E, journaled in the casing B, and the eccentric F, mounted on the said shaft, substantially as specified.

3. In an electric gas lighting and extinguishing apparatus, the combination, with the valve-operating shaft E and eccentric F, of the ratchet-wheel G, secured to the said shaft, the ratchet-wheel I, placed loosely on the said shaft, the spring-pressed pawls *j l*, the armature-arm *i*, fulcrumed on the shaft E and attached to the ratchet-wheel I, the armature-arm *h*, fulcrumed on the shaft E, the armature H, attached to the arms *h i*, the spring *n*, and the electro-magnet K, arranged to act upon the armature H, substantially as specified.

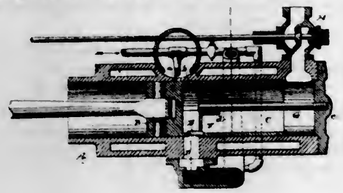
4. The combination, with the electro-magnet K, valve-operating shaft E, and wheel G, provided with pins *b' c'*, of the contact-springs *d' e'*, the contact-points *h' i'*, and the circuit-connections, whereby the circuit through the magnet is broken at each half-revolution of the valve-operating shaft, substantially as specified.

5. The combination, with the burner C and valve-operating mechanism connected therewith, of the swinging conductors *u v*, the platinum coil *w*, carried by the said swinging conductors, the arm *q*, connected with the conductors, the cam *r*, carried by the ratchet-wheel G, and the circuit-connections, substantially as specified.

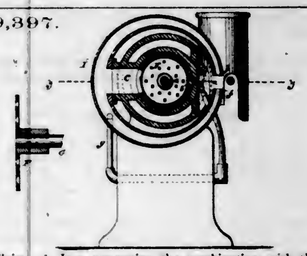
6. In an electric gas lighter and extinguisher, the combination of the burner C, valve D, eccentric F, shaft E, ratchet-wheel G, carrying the pins *b' c'* and cam *r*, the ratchet-wheel I, arms *h i*, armature H, electro-magnet K, the post *f'*, provided with points *h' i'*, the springs *d' e'*, spring l, conductors *u v*, platinum spiral *w*, carried by the said conductors, and the arm *q*, connected with the conductors *u v* and adapted to engage the cam *r*, and mechanism for opening gas-valve, substantially as specified.

7. In an electric gas-lighting apparatus, the combination, with an electro-magnet, K, of the igniting-wire *w*, intermediate connections between the said wire and magnet, and the binding-posts M, M', and N, the switch P, the battery Q, with which the switch is connected, the key R, arranged between the battery and switch, and the wires *t' u' v'*, leading from the switch to the binding-posts N M' M, respectively, substantially as described.

379,397. **GAS-ENGINE.** L. NEWTON HOPKINS, Brooklyn, N. Y. Filed Apr. 20, 1887. Serial No. 235,482. (No model.)



379,397.



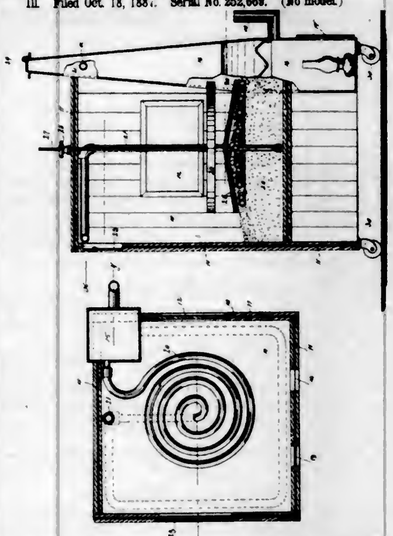
Claim.—1. In a gas-engine, the combination, with the cylinder, cylinder-head, and piston having a hollow prolongation at the inner end thereof, of a perforated plate mounted on a fixed support secured to said cylinder-head and held within the prolongation of the piston, substantially as specified.

2. The combination, with the cylinder A, having the head c, and piston B, having the hollow cylindrical prolongation C, of the rod G, projecting inwardly from the head *c*, and the perforated plate F, mounted adjustably on the said rod G, substantially as specified.

3. The combination, with the cylinder A, having the head *c*, and the piston B, having the hollow cylindrical prolongation C, of the plate F, provided with countersunk perforations, and supported in a fixed position within the prolongation of the piston, substantially as specified.

4. The combination, with the power-cylinder of a gas-engine, of a branched air-pipe having it ends arranged opposite each other, substantially as specified.

379,398. **CHICKEN-BROODER.** CHARLES HOUSER, East St. Louis, Ill. Filed Oct. 18, 1887. Serial No. 252,669. (No model.)



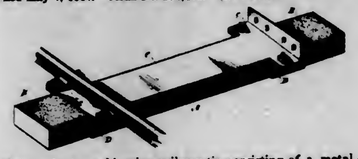
Claim.—1. In a brooder, the combination, with a case and a heating apparatus arranged in connection therewith, of a conical or convex faced brooding-board mounted therein.

2. In a brooder, the combination, with a case and a means for heating the same, of a conical brooding-board mounted within the case and a hiding-board mounted above the brooding-board.

3. In a brooder, the combination, with a case and a means for heating the same, of a conical brooding-board mounted within the case and a hiding-board adjustably mounted above the brooding-board.

4. In a chicken-brooder, the combination, with a rectangular case, of a spirally-bent pipe arranged therein, the central coils of the pipe being in planes that are higher than the outer coils, a boiler to which the spiral pipe is connected, a sand mound formed within the case so as to extend above the spiral coil, a brooding-board which rests upon the sand mound, and a hiding-board mounted above the brooding-board.

379,399. **RAILWAY-TIE.** JOSEPH JACOBS, San Francisco, Cal. Filed May 7, 1887. Serial No. 237,476. (No model.)

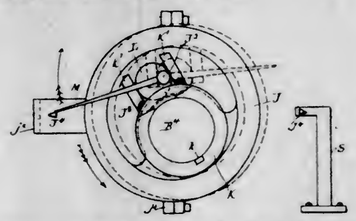


Claim.—1. A combination railway-tie consisting of a metal case formed of a single piece extending across the roadway and adapted to support both rails, having a closed bottom and an open top and provided with a coherent filling—such as concrete or asphalt—which will become solid and capable of sustaining the weight of the passing train, substantially as described.

2. A railway tie or sleeper composed of the sheet-metal case, frame, or flask, having a bottom, sides, and ends, and the filling to strengthen and stiffen it, in combination with rail-plates across the tie, and the clamps embracing the bottom and sides of the tie and bolted to the rail-plates, substantially as herein described.

3. A railway tie or sleeper composed of the sheet-metal case, frame, or flask and the strengthening and stiffening filling, in combination with the top plate having its ends serve as rail-plates, and the clamps embracing the bottom and sides of the tie and bolted to the rail-plate ends of the top plate, substantially as herein described.

379,400. **VALVE-GEAR.** KENNARD KNOTT, Chicago, Ill. Filed May 23, 1887. Serial No. 239,002. (No model.)



Claim.—1. A device for automatically adjusting the valve-lead in steam-engines consisting of a valve-eccentric loosely mounted upon the engine-shaft, a smaller eccentric loosely connected therewith and in turn with a rigid collar upon the crank-shaft, and provided with an arm extending from its axis and adjusted to engage upon its revolution with a rigid stud, whereby said small eccentric may be revolved and thus shift the valve-eccentric in its relation to the crank-shaft upon the reversal of the engine in either direction, substantially as described.

2. The combination, in a steam-engine, of a valve-eccentric loosely mounted upon the shaft, a smaller eccentric in operative connection therewith, and with a rigid collar upon the crank-shaft and an arm extending from its axis and adjusted to engage with a stud in the orbit of its revolution, whereby said smaller eccentric may be rotated upon the reversal of the engine and normally retained upon its dead-center in whichever direction the engine is propelled, substantially as described.

3. The combination, in a steam-engine, of a valve-eccentric loosely mounted upon the shaft, a smaller eccentric in operative connection therewith and with a rigid bearing arranged eccentrically to the crank-shaft, an arm extending from the axis of said smaller shaft and adjusted to engage with a stud in the orbit of its revolution, and means for permitting said arm to yield during such engagement while the shaft is rotated continuously in one direction and to resume its normal position when said stud is passed, substantially as and for the purposes specified.

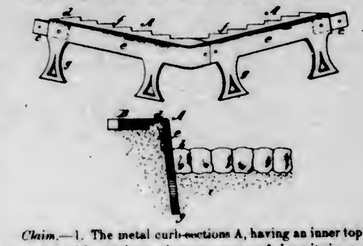
4. The combination, with a steam-engine and mechanism for reversing its movement, of the loose valve-eccentric J, rigid collar K, connected with each other by means of the pin J^3 and eccentric L, and means, as the arm M and stud J^4, for revolving said eccentric L upon the reversal of the engine, substantially as and for the purposes described.

5. An automatic lead-adjusting mechanism for reversible steam-engines, consisting of a valve-eccentric loosely mounted upon the engine-shaft, a secondary eccentric adjusted to rotate between parallel lugs or faces extending laterally from a collar rigidly attached to the shaft and in turn connected by means of a pin with said valve-eccentric, and a finger attached to said smaller eccentric and adjusted to engage with a stud projecting laterally from the eccentric-strap, said finger being arranged in the plane of the greatest eccentricity of said small eccentric, substantially as and for the purposes set forth.

6. The combination, with a steam-engine and means for reversing its action, of the loose valve-eccentric J, a collar rigidly mounted upon the shaft and provided with lugs K' K', an eccentric, L, loosely fitted between said lugs, pin J^3, connected with said valve-eccentric, stud J^4, finger M, and means, as the spring J^5, for permitting said arm to yield upon engagement with the stud J^4 and to thereafter resume its normal position, in which the dead-center of the eccentric L is in a plane at right angles to the active faces of said lugs, substantially as and for the purposes specified.

7. The combination, with a steam-engine, of a valve-eccentric loosely mounted upon the engine-shaft, means, substantially as specified, for changing its eccentricity with relation to a given radial line through said shaft, double steamways arranged in the steam-chest, a double slide-valve, and the two-way cocks F F', with means for rotating the same in opposite directions, substantially as and for the purposes described.

379,401. **STREET-CURB.** ABRAHAM B. KOPLIN, Hellertown, Pa., assignor to himself and Jeremiah S. Hess & Bro., same place. Filed June 29, 1887. Serial No. 242,875. (No model.)



Claim.—1. The metal curb-sections A, having an inner top flange, *d*, provided with angular pockets or recesses *f* along its inner margin and with an outer downwardly-projecting gutter-flange, *e*, essentially as described.

2. A metal curb-section, A, having an inner top flange, *d*, an outer downwardly-projecting gutter-flange, *e*, and legs or feet *g*, substantially as and for the purposes herein set forth.

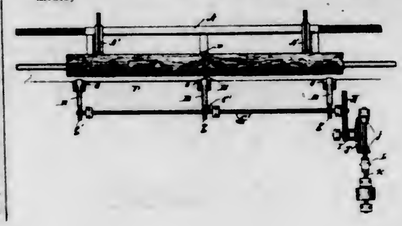
379,402. **LOOP-SURFACED FABRIC AND METHOD OF MAKING THE SAME.** THOMAS LAIRD and JOSEPH D. MORLEY, Philadelphia, Pa. Filed Mar. 15, 1886. Serial No. 195,215. (No model.)



Claim.—1. The method of forming a puffed surface on a fabric by means of projecting loops, said method consisting in first securing the thread of which the puffed surface is to be composed to the fabric, then forming a loop of the said thread, as set forth, then passing the unfastened end of the thread through the fabric, leaving the outer end of the loop free, and forming a binding-stitch on the fabric at the inner end of the loop, and then forming successively loops and binding-stitches, as before, in adjacent rows, the stitches and loops being of one continuous thread, substantially as described.

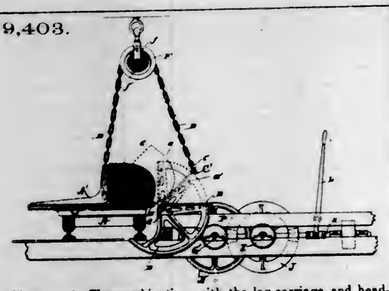
2. A fabric having a puffed surface consisting of rows of projecting loops, with free outer ends and rows of binding-stitches at the inner ends of said loops, said stitches and loops being adjacent and formed of a continuous thread, all substantially as described.

379,403. **LOG-CANTING DEVICE.** WILLIAM D. LEE, Cincinnati, Ohio, assignor of one-fourth to Benjamin F. McMillan and George W. Robinson, Stockton, Ala. Filed May 12, 1886. Serial No. 201,903. (No model.)



379,407.

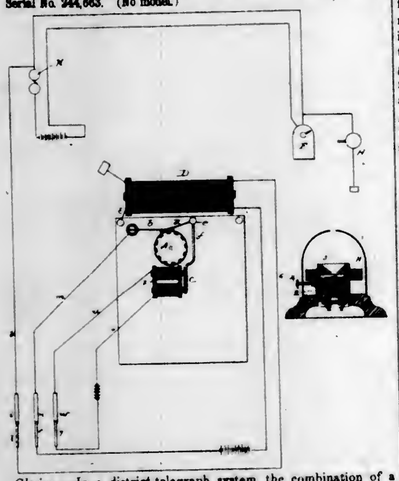
379,403.



Claim.—1. The combination, with the log-carriage and head-block, of the segmental arms B, provided with gear-teeth, the spur-gears *g*, counter-shaft G', the spur-gears H and I, and the friction-gear J and bevel-gears *j j*, engaging the same on opposite sides, substantially as described.

2. The combination, with the log-carriage, head-block, and pivoted segmental arms B, of the overhung pulley F, having ratchet *f'* and dog *f*, and the chain D, having one end attached to one of the segmental arms and its other end provided with a hook to engage the log, substantially as shown and described.

379,404. DEVICE FOR RETURNING SIGNALS IN DISTRICT-TELEGRAPH SYSTEMS. WILLIAM V. LOCKWOOD, Waterbury, Conn., assignor of one-half to G. S. Parsons, same place. Filed July 18, 1887. Serial No. 244,663. (No model.)

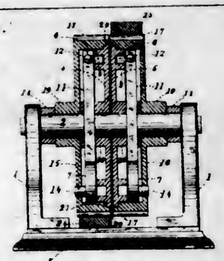


Claim.—In a district-telegraph system, the combination of a clock-work at the central station, the rotating circuit-breaker A, having in its periphery alternate series of metallic and non-conducting spaces, magnet B, armature C, stop in connection with said armature C, adapted to engage and disengage said clock-work to stop and start the same, finger *b*, bearing upon said periphery of said circuit-breaker, a receiver at the subscriber's station, three contacts at the central station, to wit, *a r*, in connection with the primary coil and finger, *b w y*, in connection with the battery and magnet B, and *i k*, in the main line, with secondary circuit and receiver both to ground, with contact 2 3 in the receiver, all substantially as described.

379,405. DEVICE FOR CONVERTING MOTION. WILLIAM H. MCANDREWS, Youngstown, Ohio, assignor of one-half to Albert M. Gerstle, same place. Filed Jan. 4, 1886. Serial No. 187,556. (Model.)



379,405.



Claim.—1. In a device for converting motion, a shaft mounted in bearings in a supporting-frame, two disks, 4 5, rigidly secured to the shaft and provided with annular grooves, in combination with two curved lever-clutches, each having a key, 8, adapted to fit the grooves and prevent the levers from touching the hubs 10 of the disks, springs for keeping them in position, and pins 14, by which they are given opposite oscillating movements, whereby a movement in one direction will cause one key to bind in its groove while the opposite key is slipping easily in the opposite groove, and a reverse movement will reverse the action of the clutches, thereby producing a continuous rotary motion of the shaft in one direction, substantially as described.

2. The combination of a shaft mounted in bearings in a supporting-frame, two disks rigidly secured to the shaft and provided with annular grooves, two curved arms or levers, each having a key at one end adapted to fit the grooves on the disks and hold the arms away from the shaft, and a pin at the opposite ends by which they are moved alternately back and forth, a spring on each for keeping them in position, covering-disks having teeth and mounted so as to turn on the shaft, for covering and operating the lever-clutches and their grooved disks by means of the pins connecting with them, and two rack-bars connected together and located parallel with and to one side of each other at opposite sides of the shaft, so that one rack will gear with each geared covering-disk, whereby a reciprocating movement of the double rack will impart a rotary movement to the shaft, substantially as and for the purposes described.

3. The racks 24 25, secured together and in gear with the geared covering-disks, in combination with grooved disks rigidly secured back to back to a shaft mounted in a supporting-frame, their curved lever-clutches provided with keys fitting the grooves in the disks, so as to prevent the curved levers from touching the shaft or hub, springs secured to the curved levers on the opposite side of and touching the shaft or hub, for keeping the levers and keys in their proper position, and pins rigidly secured to the curved levers and passing through holes in the geared covering-disks, for the purposes described.

4. In a device for coverting motion, a lever-clutch consisting of the curved arm 7, a key, 8, spring 11, and pin 14, in combination with a grooved disk mounted upon and rigidly secured to a shaft set in bearings in a supporting-frame, the key 8 fitting the groove so that the arm 7 cannot touch the shaft or hub of the disk, the spring 11 touching the shaft or hub, and thereby keeping the key in its proper position in the groove, whereby a movement of the pin 14 in a direction tending to draw the spring against the shaft will cause the key 8 to slip easily in the groove 6 without moving the disk, and a movement in the opposite direction will cause the key to bind rigidly in the groove and carry the disk around with it, substantially as described.

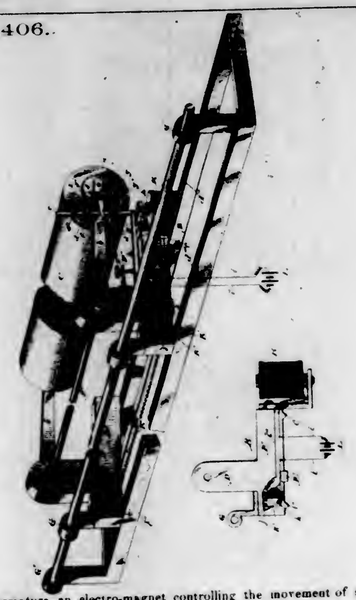
379,406. AUTOMATIC ELECTRIC SPACING MECHANISM FOR TYPE-WRITERS. JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed Oct. 27, 1886. Serial No. 217,338. (No model.)

Claim.—1. In a type-writer, the combination, with a traveling carriage and a rotatable platen carried thereby, of an electro-magnetic step-by-step paper-feeding device controlling the rotation of said platen, an electric circuit including the actuating-magnet of said step-by-step device, and a circuit-controller for said electric circuit operated by the traveling carriage when the latter arrives at a predetermined point in its line of travel, substantially as and for the purpose set forth.

2. In a type-writer, the combination, with a traveling carriage carrying a rotatable platen, of a step-by-step paper-feeding mechanism for said platen, comprising ratchet-disks, actuating and check-pawls for said ratchet-disks, and an armature for said pawl-and-ratchet mechanism, an electro-magnet controlling the movement of said armature and included in an electric circuit, an electric circuit, and a circuit-controller for said circuit operated by the traveling carriage when the latter arrives at a predetermined point in the line of its travel.

3. In a traveling carriage for a type-writer, the combination, with a rotatable platen, of a pawl-and-ratchet mechanism for actuating said platen in a step-by-step manner, an armature attached to the actuating-pawl of said pawl-and-ratchet mechanism, a retractile spring for

379,406.



said armature, an electro-magnet controlling the movement of said armature and included in an electric circuit, an electric circuit, and a circuit-controller for said circuit operated periodically by the movement of the traveling carriage.

4. In a traveling carriage of a type-writer, line-spacing mechanism for making required spaces between type-written lines, comprising a rotatable platen, an electro-magnetic step-by-step paper-feeding mechanism, substantially as described, for said platen included in an electric circuit, an electric circuit, and a spring circuit-controller for said circuit actuated periodically by the traveling carriage.

5. In a type-writer, the combination, with a traveling carriage carrying a rotatable platen provided with a step-by-step paper-feeding device and an electro-magnet and armature for operating said step-by-step device, of an electric circuit including said electro-magnet, a circuit-controller for said circuit also carried by the traveling carriage, and a stationary source of electricity feeding said circuit and normally in circuit with said traveling circuit-controller.

6. In a type-writer, the combination, with a traveling carriage of a motor for advancing same, a platen mounted on the said carriage, a step-by-step device for operating said platen, an electro-magnet controlling said step-by-step device, a spring circuit-closer in circuit with said magnet, and a fixed obstruction in the path of the circuit-closer, for the purpose of engaging and operating the same, substantially as specified.

7. In a type-writer, the combination, with a traveling carriage carrying a rotatable platen provided with an electro-magnetic step-by-step paper-feeding device, substantially as described, of an electric circuit including said electro-magnetic step-by-step device, a circuit-controller for said circuit also carried by said carriage, and a fixed contact arranged to operate said circuit-controller when the latter arrives at a predetermined position in its line of travel.

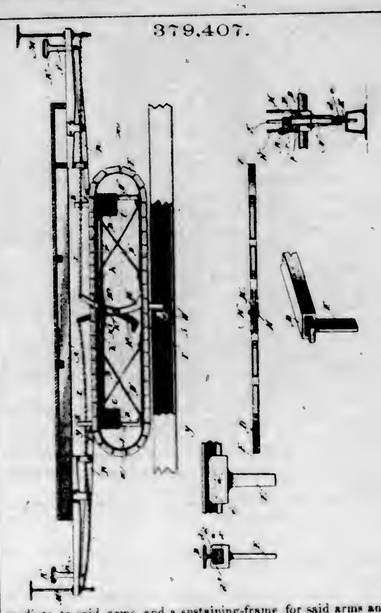
8. The combination, with the platen, of the ratchet-wheels J and J', having oppositely-inclined teeth, the spring-actuated pawl *f*, the check-pawl *g*, the reciprocating rod *c*, having the pin *d* thereon, the arm *h*, the armature *h'*, the electro-magnet K, for controlling said armature, and an electric circuit for energizing and de-energizing the said magnet, substantially as specified.

379,407. CABLE-RAILWAY CAR. HORACE W. MCNEIL, Oskaloosa, Iowa. Filed Jan. 27, 1888. Serial No. 262,106. (No model.)

Claim.—1. The combination, with a cable-railway car, of mechanism for connecting it with a moving cable, said mechanism comprising a series of space blocks or buttons intermediate to said arms, and a sustaining-frame for said arms and space-blocks, substantially as described.

2. The combination, with a cable-railway car, of mechanism for connecting said car with the moving cable, said mechanism comprising a series of movable arms, a series of space blocks or buttons intermediate to said arms, and a sustaining-frame for said arms and said space blocks or buttons, provided with flanges for holding said arms in proper position, substantially as described.

379,407.



3. The combination, with a cable-railway car, of mechanism for connecting it with a moving cable, said mechanism comprising a series of movable arms, a series of space blocks or buttons intermediate to said arms, and a suitable frame or support for sustaining said arms and space-blocks or buttons, and a brake for checking the movement of said arms, substantially as described.

4. The combination, with a cable-railway car, of mechanism for connecting it with a moving cable, said mechanism comprising a series of movable arms, a series of space blocks or buttons intermediate to said arms, a sustaining-frame for said arms and space blocks or buttons, a brake mechanism for arresting the movement of said arms, and a suitable connection leading from said brake mechanism to the platform of the car, substantially as described.

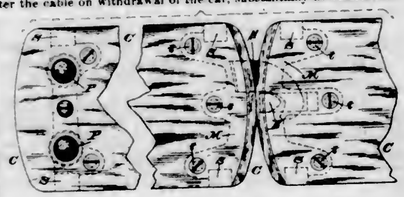
5. The combination, with a cable-railway car, of mechanism for connecting it with a moving cable, said mechanism comprising a vertically movable frame, and a series of horizontally-movable arms sustained by said frame, substantially as described.

6. The combination, with a cable-railway car, of mechanism for connecting it with a moving cable, said mechanism comprising a vertically-movable frame, a series of movable arms sustained by said frame, and suitable lifting mechanism extending from said frame to the platform of the car, substantially as described.

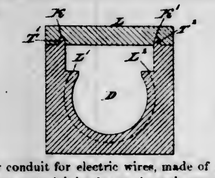
379,408. UNDERGROUND CONDUIT. M. RICHARDS MUCKLE, Jr., Philadelphia, Pa. Filed Nov. 25, 1887. Serial No. 256,104. (No model.)

Claim.—1. A car or carrier for laying cables in underground conduits, consisting of a block or frame, C, having bearings S S, adapted to rest upon the ledges L' L' of the conduit, with one or more cable-supporting pins, P, substantially as described.

2. A car or carrier for laying cables in closed conduits, consisting of a solid supporting-frame having a cable-support adapted to center the cable on withdrawal of the car, substantially as described.



379,408.



3. A duct or conduit for electric wires, made of a solid block of wood or analogous material, having a channel grooved throughout its entire length, with ledges or shelves for sustaining a cable-carrying car, and tongues at its upper side adapted to fit in corresponding grooves in the removable cover, substantially as described.

4. A cable-carrier for carrying a cable or conductor into a conduit, consisting of a car adapted to carry a developed or extended length of cable, in combination with means in the rear of the car for forcing said car and cable into the conduit from the outer or rear end of the conduit, substantially as described.

5. The within-described means for carrying a cable or conductor bodily into a conduit, consisting of a series of detachable cars, each having a frame and bearings adapted to rest or ride on side ledges of the conduit, substantially as described.

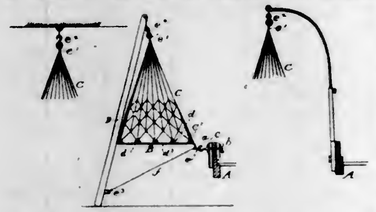
6. The within-described means for carrying a cable or conductor bodily into a conduit, consisting of a series of cars, each having bearings adapted to rest or ride on side ledges of the conduit, in combination with means, as described, for forcing said cars and cable into the conduit from the rear or outer end of the conduit, substantially as described.

7. In a carrier for inserting cables or conductors into a conduit, two or more cars or carriers with couplings for connecting said cars together, substantially as described.

8. A car or carrier for inserting cables or conductors into a conduit, having guide-pins for centering the cable, substantially as described.

9. In a carrier for inserting cables or conductors into a conduit by carrying it bodily, a series of cars having detachable couplers, the cars being adapted to abut one against another, thereby relieving any stress on the couplers, substantially as described.

379,409. **ATTACHMENT FOR BEDSTEADS.** HORACE W. MUNSET, Chester, Pa. Filed Sept. 5, 1887. Serial No. 248,849. (No model.)



Claim.—1. The combination, with a bedstead, of a slatted bottom attached to one side thereof, netting secured to the slatted bottom, and a suitable support to which certain cords from said netting, when drawn together to one point, are also attached, substantially as specified.

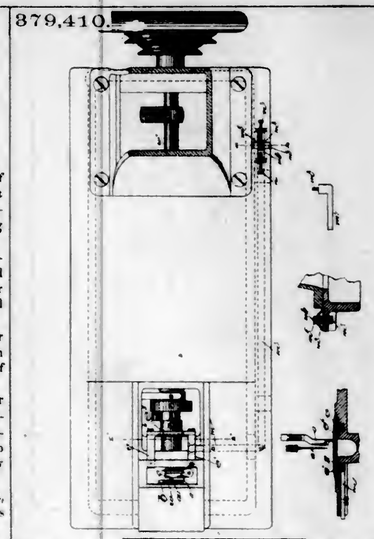
2. The combination, with a bedstead, of cross-bars attached to one side thereof, a series of slats pivoted to said cross-bars, netting secured to said slats, and a suitable support to which certain cords from the netting, when drawn together to one point, are also attached, whereby the slatted bottom is supported in a horizontal position, substantially as specified.

3. The combination, with a bedstead, of a slatted bottom, netting secured to the slatted bottom, a suitable support to which certain cords from said netting, when drawn together to one point, are also attached, and an independent section of netting attached to one side of the main netting and made removable to give access to the interior, substantially as specified.

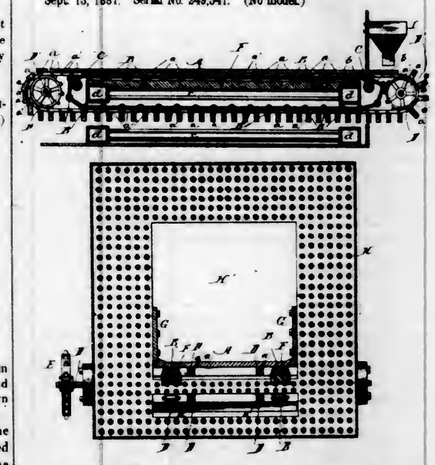
379,410. **TRIMMING MECHANISM FOR SEWING-MACHINES.** WILLIAM A. NEELY, Lynn, Mass., assignor to The Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Filed May 13, 1887. Serial No. 238,103. (No model.)

Claim.—In a sewing-machine, a trimming-blade, *c*, and a throat-plate having a feed-slot, a trimmer-slot, and a needle-hole, combined with an adjusting-lever suitably connected to the throat-plate, and means for giving the said lever a predetermined throw, substantially as described.

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379,411. **SLAG-FURNACE.** JESSE R. PECK, Chicago, Ill. Filed Sept. 13, 1887. Serial No. 249,541. (No model.)



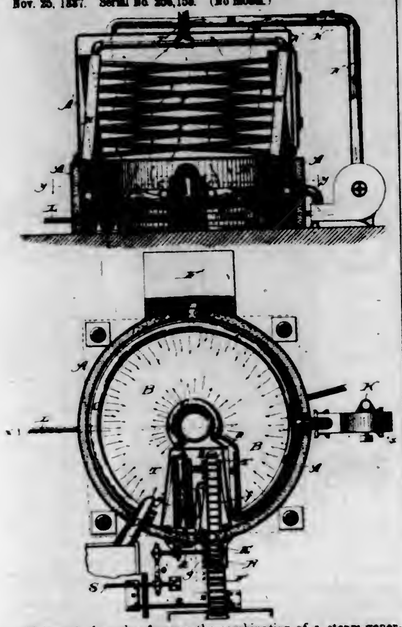
Claim.—1. The combination, with a stove or heater, of a traveling floor composed of a series of plates, as described, and means for operating the same, whereby the heated or molten slags may be carried to heat the said stove or heater and discharged therefrom, substantially as described.

2. The traveling floor A, consisting of a series of plates or bars, *a*, and connecting-links *a'*, in combination with a series of rollers, B, and connecting-links *b*, for giving the floor a traveling support, substantially as specified.

3. The traveling floor A, consisting of a series of plates or bars, *a*, and connecting-links *a'*, for giving the floor a traveling support, in combination with the rollers B, connecting-links *b*, and anti-friction rollers C, for giving the floor a traveling support and preventing stoppage of the rollers B, substantially as specified.

4. The traveling floor A, formed of a series of plates or bars, *a*, and connecting-links *a'*, rollers B and connecting-links *b*, and tracks F, in combination with the sprocket-wheel D, shaft D', and sprocket-wheel E, for supporting and moving the traveling floor, substantially as described.

379,412. **SLAG-FURNACE.** ORRIN B. PECK, Chicago, Ill. Filed Nov. 25, 1887. Serial No. 256,159. (No model.)



Claim.—1. In a slag-furnace, the combination of a steam-generating boiler, a slag-holding table adapted to rotate horizontally, and means for rotating the same, substantially as described.

2. In a slag-furnace, the combination of a steam-generating boiler, a slag-holding table underneath the same, and a slag-removing device whereby the table is cleared of the slag after imparting its heat, substantially as described.

3. In a slag-furnace, the combination of a slag-holding table, a pipe or spout discharging a wash thereon, and a mop or roller for spreading the same over the surface of the table, whereby the slag is prevented from injuring the table or adhering thereto, substantially as described.

4. In a slag-furnace, the combination of a slag-holding table, a slag-removing device, a wash-spreading mop or roller, and a boxing inclosing the carrier and mop, substantially as described.

5. In a slag-furnace, the combination, with a steam-generating boiler, of a slag-holding table and an air-blast pipe discharging a blast or current of air upon the slag while on the table, substantially as described.

6. The combination, in a slag-furnace, of a steam-boiler and slag-holding table and an auxiliary fire chamber or box to re-enforce and assist the heat of the slag, substantially as described.

379,413. **NAIL-FINISHING MACHINE.** ERASTUS B. PIERCE, New Brighton, Pa. Filed Nov. 15, 1887. Serial No. 255,255. (No model.)

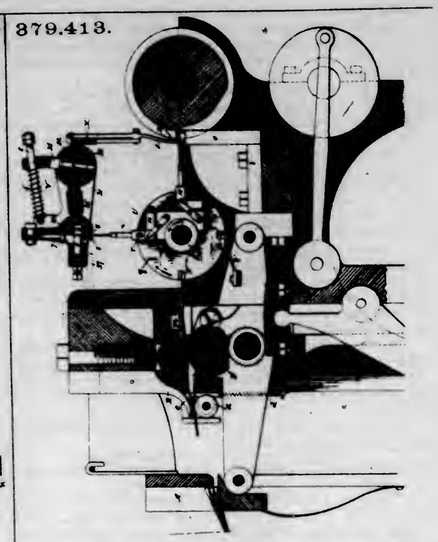
Claim.—1. The combination, with finishing-dies, of a transferring device provided with grasping-jaws and indenting-dies adapted to indent the nail-blank presented by the transferring device, substantially as described.

2. The combination, with finishing and indenting dies adapted to finish and indent the nail-blank, and a shearing device, of a transferring device provided with grasping-jaws for taking the nail after it has passed between the roller-dies and presenting it to the indenting-dies, and from thence taking and presenting it to the shearing device, substantially as described.

3. The combination, with a nail-indenting device and a transferring device to feed successive nail-blanks to said indenting device, of a second transfer device and jaws adapted to seize and remove the blank after it has been indented, substantially as described.

4. The combination, with a nail-indenting device and a transferring device provided with jaws adapted to feed successive nail-blanks to said indenting device, of a second set of jaws adapted to seize and remove the blank after it has been indented, substantially as described.

379,413.



5. The combination, with finishing-dies and a shearing device, of intermediate indenting-dies and a transfer device arranged and operating to carry the blank from the finishing to the indenting dies and then to the shearing device in a reversed position, substantially as described.

6. The combination, in a device for feeding successive blanks, of a rotating notched disk, *g*, a detent, and two sets of jaws mounted adjacent to said disk and means for rocking said jaws, one of said sets of jaws adapted to feed the blank part of the distance and the other set adapted to take said blank and feed it the remainder of the distance, substantially as described.

7. The combination, with finishing-dies and a shearing device, of a nail-blank-feeding device and an indenting device consisting of a pair of dies between which the blank is presented by the feeding device, substantially as described.

8. The combination, with a nail-blank-feeding device, of an indenting device consisting of a stationary die and a movable die or anvil, and means, substantially as described, for moving the latter against the stationary die.

9. The combination, with the blank-feeding device, of an arm carrying indenting-dies and adjustably supported to bring said dies to operate on the end of the blank after the latter is presented in position by the feeding device, substantially as described.

10. The combination, with a nail-blank-feeding device for feeding and holding the blanks to be indented, of a carrier movable to and from the end of the blank and an indenting device carried by said carrier, substantially as described.

11. The combination, with a nail-blank-feeding device for feeding blanks to be indented, of an indenting device carried by a vibrating carrier, whereby to first embrace the blank held by the feeding device and then to indent it, substantially as described.

12. The combination, with a movable carrier for a nail-blank, of indenting-dies and die-operating mechanism and a carrier for said dies, reciprocating to and from the blank-carrier to carry the dies into position to operate on the blank and then out of the path of the blank prior to its further movement by the blank-carrier, substantially as described.

13. The combination of a carrier, a supporting-shaft, indenting-dies supported by said carrier, a toggle-arm for operating one of the dies, and a rocking sleeve on said shaft, having a socket for said toggle-arm, substantially as described.

14. The combination of a rock-shaft, a carrier hung thereon and carrying a stationary and a movable indenting-die, a support for the movable die, and a toggle-arm connected therewith and seated in a socket in the shaft, and a connection having a limited play between the shaft and the carrier, substantially as described.

15. The combination, with an arm provided with an indenting-die, as 9, of a pivoted tongue carried by said arm, and having an anvil co-operating with said die and a device bringing the said anvil and the indenting-die together, substantially as described.

16. The combination, with a rocking arm carrying an indenting-die, as 9, of a tongue carried by said arm and having an anvil co-operating with said die, and a device for rocking said arm, substantially as described.

17. The combination, with an oscillating shaft and an arm mounted thereon, of a tongue carried by said arm, an anvil and die carried by the tongue and arm, and a toggle whereby to press the die and anvil toward each other, substantially as described.

18. The combination, with an arm carrying an indenting-die, as 9, of a tongue carried by said arm and having an anvil for co-operation with said die, and provided with a tapering mouth for centering the blank between the die and anvil, substantially as described.

19. The combination, with a disk rotating in one direction, of two pairs of jaws, the jaws of each pair mounted upon opposite sides of said disk, adapted to rotate both with and in an opposite direction to the disk, substantially as described.

20. The combination, with an anvil, of a revolving head carrying a guiding device and cutters for centering and shearing the blank upon the anvil, and adjustable arms, as *j*, for operating the guiding device, substantially as described.

21. The combination, in a shearing device, of an anvil, a revolving head carrying cutters arranged to shear against the edges of the anvil, a guiding device for centering the blanks upon the anvil, and adjustable arms, as *j*, for operating the guiding device, substantially as described.

22. The combination, with the arms *j* and anvil, of adjusting-screws 2, substantially as described.

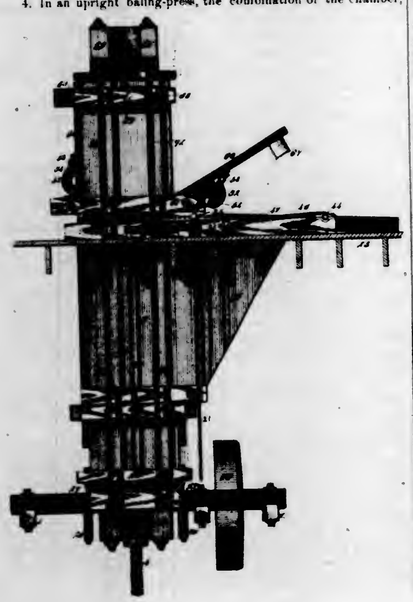
379,414. BALING-PRESS. WILLIAM S. REEDER, St. Louis, Mo. Filed Feb. 16, 1887. Serial No. 227,825. (No model.)

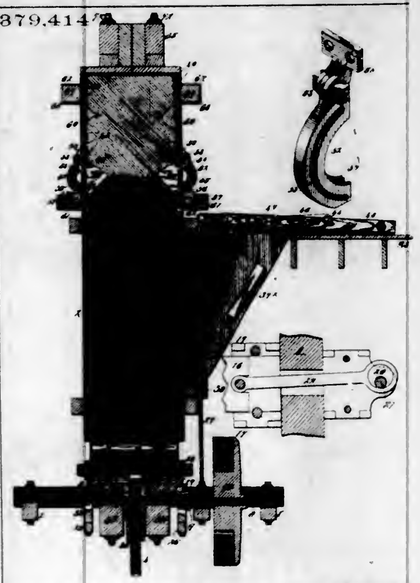
Claim.—1. A baling-press having a hinged door, as 37, forming one of its sides, and extensions 39, whereby when the door is opened a chute is formed for the material, a frame pivoted to said door, and a link pivotally connecting said frame to a fixed object, all arranged and combined substantially as set forth.

2. In an upright baling-press, the combination of the chamber, traverser for baling the material in the upper part of the chamber, hinged door, and mechanism for operating the door and holding it closed against the pressure of the traverser, said mechanism consisting of frame 43, with arms 47, pivoted to said door, and locking-links 46, substantially as and for the purpose set forth.

3. In a baling-press, the combination of a traverser, a finishing or compressing chamber, a receiving-chamber having a hinged door, and levers for opening and closing said door, which levers also hold said door locked when closed independently of other devices, substantially as described.

4. In an upright baling-press, the combination of the chamber,





traverser for baling the material in the upper portion of the chamber, hinged door, and mechanism for operating the door and holding it closed against the pressure of the traverser, consisting, essentially, of a hinged frame and connecting-links, said frame and links firmly locking the door in place when closed thereby, substantially as set forth.

5. In an upright baling-press, the combination of the chamber, traverser for baling the material in the upper part of the chamber, pivoted triangular stops 50, and pivoted weights 52, bearing against said stops, the two being swiveled together at their free ends, substantially as and for the purpose set forth.

6. In an upright baling-press, the combination of the chamber, traverser for baling the material in the upper part of the chamber, screw on the upper end of which a traverser is secured, cog-wheels 6, through which the screw passes, pinion 7, engaging the wheel, shaft 8, to which the pinion is secured, grooved wheel 10 on said shaft, friction-wheels 12 in said groove, and shafts 13 14, carrying, respectively, a small pulley, 18, and a large pulley, 19, either of which is adapted to be operated at will, whereby a differential speed and power can be obtained, substantially as and for the purpose set forth.

7. In an upright baling-press, the combination of the chamber, traverser, screw on the upper end of which the traverser is secured, cog-wheel 6, through which the screw passes, pinion 7, engaging the wheel 6, vertically-movable frame on which the traverser rests, lever 30, and connection between said lever and frame, whereby the cog-wheel may be thrown out of engagement with the pinion, substantially as and for the purpose set forth.

8. A baling-press having a grooved roller, as 10, with rollers 12 12 extending therein for actuating the pressing mechanism, in combination with sliding boxes, as 16 16, for the shafts carrying said rollers, eccentrics and connecting-rods for said boxes, and shafts or rods extending from said eccentrics to an accessible point for operating said boxes to throw one or the other roller in engagement with the grooved roller, to actuate the mechanism in one or the other direction to increase or decrease the speed and power, or both rollers out of engagement therewith, as desired, substantially as described.

9. The combination, in a baling-press, of power-supplying mechanism, sliding boxes journaling the shafts thereof and adapted, when actuated in one or the other direction, to change the action of the press, eccentrics and connecting-rods for said sliding boxes, rods extending from said eccentrics above the floor for operating the same, and means for locking said parts in any required position, substantially as specified.

10. A baling-press having a traverser actuated by a screw operated by a wheel, as 6, a driving-gear, as 7, for the latter, and rods extending from the support of said wheel to an accessible point for raising said traverser and screw and disengaging said wheel from said driving-gear to stop the traverser at any desired point.

11. A baling-press having a traverser actuated by a screw operated by a wheel, as 6, a driving-gear, as 7, engaging the same, rods for disengaging said wheel from said driving-gear, a grooved wheel, 10, constituting part of said driving mechanism, rollers 12 12, extending into the groove therein for supplying the power, and means for moving said rollers to engage the grooved wheel, so as to actuate the machine in either direction or to disengage said grooved rollers and take off the power, whereby the traverser may be stopped by either of the above mechanisms, substantially as described.

379,415. COMBINED PAPER-KNIFE AND STAMP-HOLDER. BERNARD RICE, New York, N. Y. Filed Jan. 16, 1888. Serial No. 260,854. (No model.)



Claim.—1. The combination, with the handle of a paper-knife, of a postage-stamp holder or receptacle three side walls of which are bent up from and made integral with said handle, a spring-actuated follower in said receptacle, a spring-actuated lid hinged to said receptacle, and means for locking the lid to the receptacle, substantially as set forth.

2. The combination, with the handle of a paper-knife, of a postage-stamp holder or receptacle three sides of which are bent up from and made integral with said handle, the fourth wall being soldered or otherwise attached to the handle and bent-up walls, a spring-actuated follower in said receptacle, a spring-actuated lid hinged to the receptacle and provided with side lugs for depressing the follower when closing the lid, and means for holding the lid in closed position, substantially as set forth.

379,416. DETACHABLE HANDLE FOR SAD-IRONS. JOHN SABOLD, Boyertown, Pa. Filed July 14, 1887. Serial No. 244,238. (No model.)



Claim.—1. In an improved sad or polishing iron, the combination of the iron having a top plate provided with a slot which has at two opposite sides a flange, *e*, inclined on the under side, a removable handle having a base-plate, *m*, provided on the bottom surface with two laterally-projecting inclined lugs, *f*, and a lever pivoted to the base-plate, and having a downward-pointing prong, *q*, which is provided with a curved face eccentric with the pivot, the said lugs *f* and prong *q* being so arranged relatively that they will interlock with the base-plate when inserted from either direction, thus rendering the handle reversible, as shown and described, and for the purpose set forth.

2. The improved sad or polishing iron comprising the combination of the iron having a top plate provided with a slot which is broadest at each end *d'*, and at its center has side flanges, *e*, which are thinnest adjacent to the said broad ends, and from thence incline both ways to the center, where the flange is thickest, a removable handle having a base-plate, *m*, provided on the bottom surface with two laterally-projecting inclined lugs, *f*, to take under the said inclined flanges, and means, substantially as described, to prevent the handle from accidental detachment.

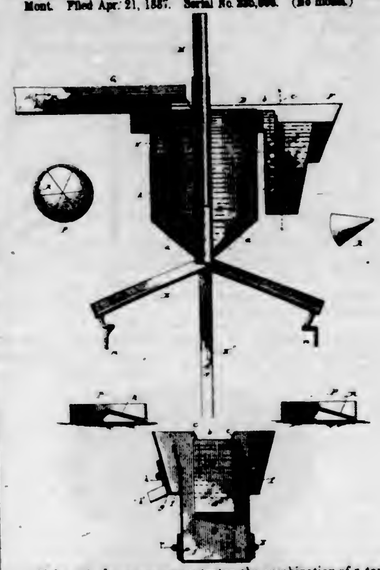
379,417. WAGON-GEAR. CHARLES W. SALADEE, Freeport, Ill., assignor to Cyrus W. Saladee, Cleveland, Ohio. Filed May 11, 1887. Serial No. 237,865. (No model.)



Claim.—1. In a road-wagon, the combination of an axle and springs parallel to and on opposite sides of the same, each rising at the center and connected at the ends to bearings arranged transversely to and on opposite sides of the axle, and a spring-reach consisting of two flexion members united at or about their center portion, thence extending the united parts to connect with the front axle, and the rear ends of said members being diagonally extended to unite with the hind axle at widely separated points, substantially as set forth.

2. The combination, with the front end of the reach H and the axle, of the yoke L, lock-nuts N O, intermediate spools, M, and the center bolt, 2, all constructed and arranged to operate substantially as and for the purpose set forth.

379,418. ORE-CONCENTRATOR. JOSEPH SANDOE, Virginia City, Mont. Filed Apr. 21, 1887. Serial No. 235,666. (No model.)



Claim.—1. In an ore-concentrator, the combination of a tank, an upright perforated tube rigidly secured to the bottom of said tank, a shaft telescoped within said tube, a trough surrounding said tank and provided with an opening in its side, a vertical sluice provided with riffles, a sluice-box having an outlet at its bottom, a supplemental trough surrounding said sluice-box, and means for regulating the discharge therefrom, substantially as described.

2. In a mineral-saving machine, the combination of a tank having a conical bottom, a perforated tube secured therein, a tubular shaft telescoping said tube, a trough surrounding said tank, a vertical sluice provided with riffles, a sluice-box flaring upward, having openings *f*, a supplemental trough flaring upward and surrounding said sluice-box, and a sliding gate to regulate the discharge, as described.

3. In an ore-concentrator, the combination of a tank, a feeding trough or flume, the horizontal partition secured therein, the vertical sluice, a perforated tube, a sliding shaft for opening and closing said perforations, a double-inclined sluice supported beneath said tube, discharge-pipes therein, and receptacles to catch the discharge, substantially as described.

4. A flume or sluice for the preliminary separation of tailings and the feeding of the same to concentrators, having a horizontal partition arranged longitudinally therein at its discharge end, as set forth.

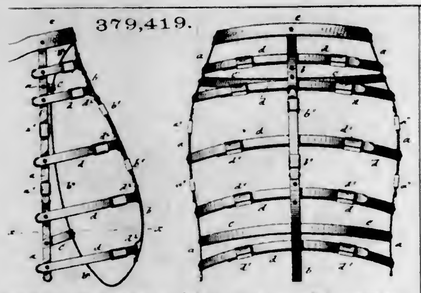
5. The hereinbefore-described concentrator, consisting of a tank having a conical bottom, a perforated tube rigidly secured in said bottom, a shaft for opening or closing the perforations in said tube, a trough surrounding said tank and having an opening in its side, a vertical sluice having riffles therein, a sluice-box having gates at its lower end and openings near its upper edge, a supplemental trough surrounding said sluice-box and provided with a gate to regulate its discharge, a feeding-flume having a horizontal and longitudinal partition therein, a vertical sluice having riffles in said tank, a double-inclined sluice pivotally supported beneath said tank, coiled discharge-pipe therefor, and the receiving or settling tanks, as set forth.

379,419. BUSTLE. GEORG SCHOEB, New York, N. Y. Filed Nov. 26, 1887. Serial No. 256,079. (No model.)

Claim.—1. A bustle composed of side stays, a center stay provided with a loop-shaped return-stay made in one piece therewith, transverse inner stays attached to the side stays and the return-stay, and transverse outer stays attached to the side stays and guided in loops of the center stay, the side stays, center stay, and outer stays being formed of overlapping sections and connecting friction-sleeves, substantially as set forth.

2. A bustle composed of a waistband, extensible side stays, an extensible center stay having fixed guide-loops, a loop-shaped return-stay made integral therewith, transverse inner stays riveted to the side stays and the return-stay, and extensible outer transverse stays

379,419.



riveted to the side stays and guided in the loops of the center stay, the extensible side stays, center stay, and outer stays being formed of overlapping sections and connecting friction-sleeves at the ends of said sections, substantially as set forth.

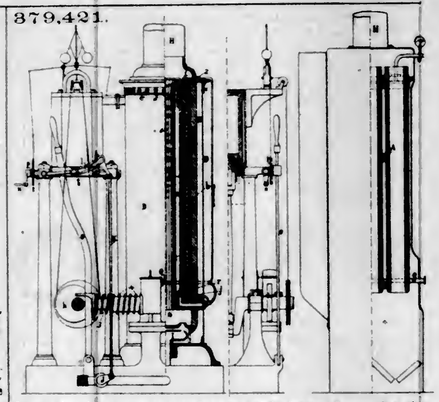
379,420. METHOD OF MAKING KNITTED CAPS. ROBERT W. SCOTT, Philadelphia, Pa., assignor of one-half to Joseph D. Morley, same place. Filed Oct. 28, 1887. Serial No. 253,632. (No model.)



Claim.—1. The mode herein described of making knitted caps, said mode consisting in first preparing upper and lower machine-knitted webs of proper shape, with central opening in the lower web, then laying one web upon the other, and then uniting or finishing the edges of the webs by overseam or crochet stitching, all substantially as specified.

2. The mode described of making a knitted cap, said mode consisting in first preparing the upper and lower machine-knitted webs of the proper shape and then uniting or finishing the edges of these webs, first by means of plain overseam or crochet stitching and then by ornamental crochet stitching, all substantially as specified.

379,421. STEAM-GENERATOR. LÉON SERPOLLET, Paris, France. Filed Nov. 29, 1887. Serial No. 256,413. (No model.)



Claim.—1. The vaporizing or steam-generating element formed by the exteriorly-ribbed tubes, placed one around the other and pressed together by a nut acting on a washer, so as to form close joints, and provided with inlet and outlet passages, said element being adapted for multiplication, substantially as described.

2. The combination, with the stop-cock for regulating the supply of fuel and the pump-plunger, of the mechanism composed of the threaded rod, the piece moved thereby, and the two levers moved by said piece, one connected with the said stop-cock and the other limiting the stroke of the said plunger, substantially as described.

3. The combination, with the steam-generator, of the means—namely, the perforated slide-ring—for varying the amount of air admitted to the combustion-chamber, the means—namely, the stop-cock—for varying the supply of fuel, and the means—namely, the lever—forming a stop to a spring-retracted plunger for varying the supply of water to be vaporized, the three means being connected so as to be simultaneously regulated, substantially as described.

4. The combination, with the steam generator or vaporizer and the pump, of the compressed-air regulator and its distributer interposed between the said pump and the said generator, substantially as described.

379,422. APPARATUS FOR REMOVING STAR-FISH FROM OYSTER-BEDS. ELWOOD H. SMITH, New Haven, Conn., assignor to J. Smith & Sons, same place. Filed Jan. 3, 1888. Serial No. 259,649. (No model.)



Claim.—1. In an apparatus for removing star-fish from oyster-beds, the combination of the two runners A B, distant from each other, with connections to form a frame-work for the support of the runners, and a flexible line, D, extending from one runner to the other, but of greater length than the distance between the runners, the said line provided with numerous drags *a*, substantially as and for the purpose described.

2. The combination of the two runners A B, distant from each other and forming the supports for the apparatus, a flexible line, D, between said two runners, of a length greater than the distance between the runners, and provided with drags *a*, a net, E, attached by its forward end to the frame-work and extending to the rear in the form of a bag, G, and a flexible line, H, extending between the runners, the lower side of the mouth of the said bag G attached to said line H, substantially as and for the purpose described.

379,423. DEPTH-GAGE. WILLIAM D. SPENCER, Middletown, Conn. Filed Dec. 27, 1887. Serial No. 259,086. (No model.)

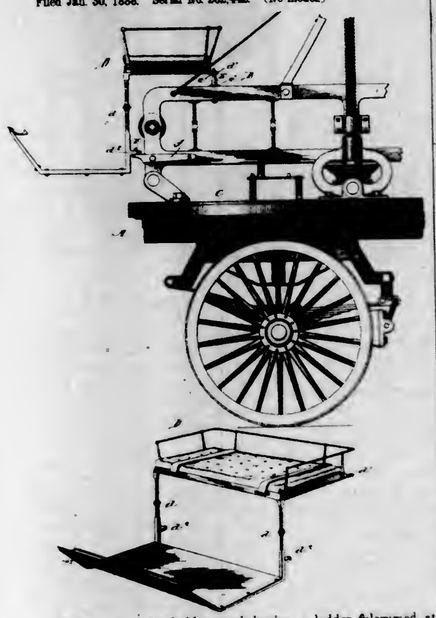


Claim.—1. In a depth-gage, the combination, with a base-plate having a slot or channel therein, of a tubular stem or handle, and a gage-stem composed of a cylindrical portion moving in the handle and a flat graduated portion lying in the channel in the base-plate, and a split tubular screw tapped into the end of the handle and having a beveled point engaging with a shoulder in the handle, substantially as described.

2. In a depth-gage, a base-plate having a central slot or channel and provided with a tubular handle, in combination with a stem having a flat graduated portion moving in the slot of the base-plate and a round portion moving in the tubular handle and clamped by a split tubular screw, substantially as described.

3. In a depth-gage, the combination, with the base-plate having a central channel and inclosed between plates having a tubular handle, of a stem having a round portion moving in said handle and a flat graduated portion moving in the slot of the base-plate, and a split tubular screw tapped into the end of the handle and having a beveled end engaging a shoulder in the handle, substantially as described.

379,424. FIRE-LADDER TRUCK. ERNST F. STRUCK, Chicago, Ill. Filed Jan. 30, 1888. Serial No. 262,442. (No model.)



Claim.—1. A fire-ladder truck having a ladder fulcrumed at its forward end and provided with a driver's seat, which said seat, when the ladder is in a recumbent position, stands supported from and over said fulcrumed end of the ladder, for the purpose set forth.

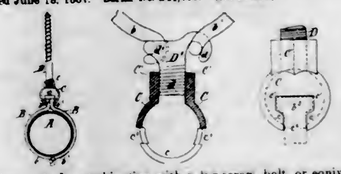
2. A fire-ladder truck having a ladder fulcrumed at its forward end and provided with a removable driver's seat, which said seat, when the ladder is in a recumbent position, stands detachably supported upon said fulcrumed end of the ladder, for the purpose set forth.

3. The combination, substantially as set forth, of the ladder fulcrumed at one end, and the driver's seat with short seat-supports for supporting the rear portion of the seat from the ladder when the latter is in a recumbent position, front-seat legs arranged to stand in front of the forward end of the recumbent ladder, and attaching devices for connecting the front-seat legs with the ladder, for the purpose set forth.

4. The combination, substantially as described, with the ladder, provided at its fulcrumed end with studs E and F, of the driver's seat, provided at the rear with eyes for engaging the studs E, and having front legs provided with eyes for engaging the studs F, said front-seat legs being arranged to stand opposite the forward end of the ladder when the ladder is in a recumbent position, for the purpose set forth.

5. The combination, with the ladder fulcrumed at one end, of the seat D, having front legs d^3, with a foot-board secured thereto, and attaching devices, substantially as set forth, for removably attaching the seat to the ladder.

379,425. HANGER FOR PIPES. HARRY TRASK, Brooklyn, N. Y. Filed June 18, 1887. Serial No. 241,709. (No model.)

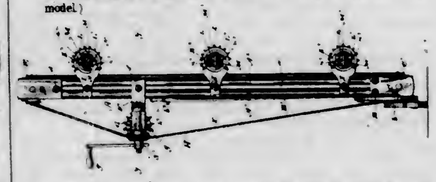


Claim.—1. In combination with a lag-screw, bolt, or equivalent support, a hollow slotted sphere attached thereto, and a pipe-yoke provided with an upper convex bearing-face, shaped and adapted to pass into the hollow slotted sphere from below without disturbing or removing it and to wear upon the inner bottom surface of said hollow slotted sphere, substantially as and for the purposes specified.

2. In combination with a lag-screw, bolt, or equivalent support, a hollow slotted sphere, C, attached thereto, and the divided yoke B, provided with the neck portions b^4 and bearing portions b^5 and adapted to pass within and wear upon the inner bottom surface of said sphere C, substantially as and for the purposes set forth.

3. In combination with a lag-screw, bolt, or equivalent support, hollow slotted spheres C, pipe-supporting yokes B, and an intermediate auxiliary support, D', connected to form a support for one or more lines of piping, substantially as set forth.

379,426. FENCE-MACHINE. FRANCIS VAN DOREN and LOYAL LOVEJOY, Adrian, Mich. Filed Sept. 6, 1887. Serial No. 248,939. (No model.)



Claim.—1. In a fence-making machine, a frame, A, provided with a pin, b^3, and carrying a series of twisters and means for rotating the same, in combination with a supporting-truck, B, provided with wheels *b b*, and pivotally secured to the lower part of the frame A, and a brace, B', pivotally secured at one end to the truck B, and provided on its other end with a series of notches, *b'*, adapted to engage with the pin b^3 on the frame A, all constructed and arranged substantially as shown and described, as and for the purpose set forth.

2. In a fence-making machine, the combination of a frame provided with sprocket-wheels on its upper and lower ends, a vertically-adjustable bracket secured to the frame, a driving sprocket-wheel mounted in said bracket, a series of twisting-wheels mounted in bearings secured to the frame and provided with spur-teeth, and an endless sprocket-chain passing around the frame, over the driving sprocket-wheel and sprocket-wheels at the top and bottom of the frame, and on the inside of all of the twisting-wheels, between the same and the frame, the spur-teeth of said twisting-wheels engaging with said sprocket-chain, all constructed, arranged, and operating substantially as shown and described.

3. In a fence-making machine, a twisting-wheel having a central opening and two diametrically-opposite slots extending from said opening to the periphery of the wheel, in combination with two roller-bearings mounted in the central opening and provided with annular grooves in their peripheries, the groove in one bearing being coincident and communicating with one slot, and the groove in the other bearing being coincident and communicating with the other slot, substantially as shown and described.

4. In a fence-making machine, a twisting-wheel, L, having a central opening, M, and two diametrically-opposite slots, n^2 n^2, extending from said opening to the periphery of the wheel, in combination with the frame M', secured in the opening M, and having the spindle *m*, and roller-bearings N N', mounted on said spindle and provided with annular grooves *n n'* in their peripheries, the groove *n* being coincident and communicating with the slot n^2, and the groove *n'* being coincident and communicating with the slot n^2, all constructed, arranged, and operating substantially as shown and described.

5. In a fence-making machine, a main frame, a sprocket-chain mounted on said frame, and means for operating the same, the circular bearings l, secured to the frame and composed of two similarly-formed circular parts, l' l^2, having an opening, *i*, between the same, and slots K^1 in the top of said bearing for the insertion of the wires, in combination with the twisting-wheels L, mounted in the bearings l, and having spur-teeth L', which project through the opening *i* and engage with the sprocket-chain, and provided with diametrically-opposite slots n^2 n^2, and roller-bearings N N', having annular grooves in their peripheries, the groove in the bearing N being coincident with the slot n^2, and the groove in bearing N' being coincident with the slot n^2, all constructed, arranged, and operating substantially as shown and described.

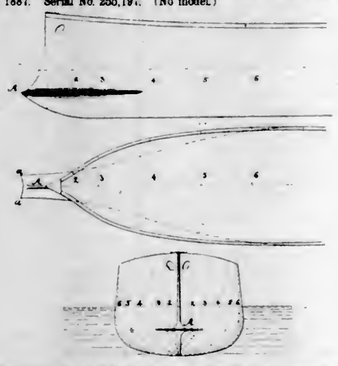
6. In a fence-making machine, a circular bearing secured to a suitable frame and provided with a peripheral slot for the insertion of the wires, in combination with a twisting-wheel mounted in said bearing and having a central opening, and two diametrically-opposite slots extending from the opening to the periphery of the wheel, and two roller-bearings mounted in the central opening and provided with annular grooves in their peripheries, the groove in one bearing being coincident and communicating with one slot and the groove in the other bearing being coincident and communicating with the other slot, all constructed, arranged, and operating substantially as shown and described.

7. In a fence-making machine, the combination of a main frame composed of two standards, A' A^2, and cross-pieces *a a*, having an opening, *a'*, between said standards, sprocket-wheels E C, mounted, respectively, on the top and bottom of the frame, a bracket, F, carrying a driving sprocket-wheel, G, bearings I, composed of two parts, I' I^2, having an opening, *i*, between the same, and provided with arms K K', engaging with and secured to the main frame, an endless sprocket-chain, H, passing around the frame, over the sprocket-wheels C, E, and G, and between the arms K K', and the twisting-wheels L, mounted in the bearings I and provided with spur-teeth L', projecting through the opening *i* and engaging with the sprocket-chain H, all constructed, arranged, and operating substantially as shown and described.

8. The combination, with the wire-twisting mechanism herein described, of the wire-stretcher having the uprights O^1 O^2, the rotatable shafts P, mounted in the uprights O^1 O^2 and having the ropes or chains secured thereto and provided with pulleys T, over which the wires are passed, the friction-wheels P', rigidly mounted on the shafts P, and the friction brake-levers R, having the weights S and engaging with the friction-wheels P', all constructed, arranged, and operating substantially as shown and described.

9. In a device for stretching the line-wires of a combined wire-and-picket fence, a frame having uprights O^1 O^2, rotatable shafts P, mounted in the uprights O^1 O^2 and having the ropes or chains T secured thereto, and provided with pulleys T', over which the wires are passed, and having the friction-wheels P', in combination with the friction brake-levers R, having the weights S and engaging with the friction-wheels P', all constructed, arranged, and operating substantially as shown and described.

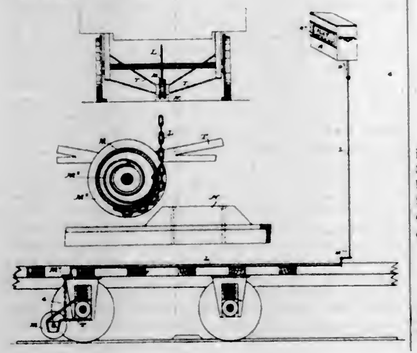
379,427. **RAM.** JOHN F. WARD, Jersey City, N. J. Filed Nov. 15, 1887. Serial No. 255,197. (No model.)



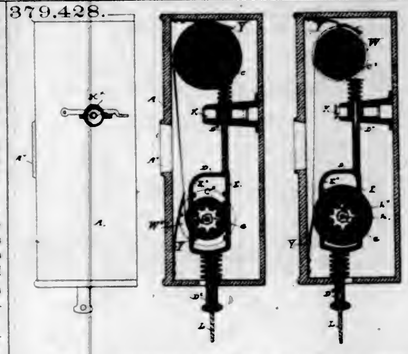
Claim.—1. A vessel having a ram extending transversely of the bow, substantially as described.

2. A vessel having a ram extending transversely of the bow and provided with two oppositely-located attacking edges or corners, substantially as described.

379,428. **STATION-INDICATOR FOR RAILWAY-CARS.** JOHN W. WARHURST, San Francisco, Cal. Filed June 11, 1887. Serial No. 241,072. (No model.)



379,428.



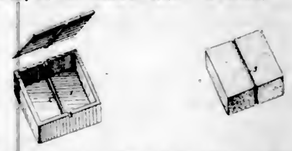
Claim.—1. In a station-indicator for railway-cars, the combination of the spring-roller C, the roller C^x, having loose pinions G G, the ratchet-wheels *h*, adapted to lock said pinions to their shaft in contrary directions of rotation, and the reciprocating rack-frame having racks E E^x set in line with said pinions on opposite sides of the shaft, the spring for producing movement in one direction, and means, substantially as described, for moving and setting the rack-frame to engage one or the other of its pinions.

2. In a station-indicator, the combination, with an apron-carrying drum or roller which requires to be rotated intermittently and also to have its direction of rotation reversed, of the loose pinions G, carried on the shaft of said roller, a pawl pivoted to the pinion, and ratchet-wheel fast to the roller-journal and engaged by said pawl to lock each pinion to the shaft in one direction and allow it to turn on the shaft in the opposite direction, the reciprocating frame having racks E E^x, adapted to engage the said pinions separately when thrown laterally into gear, and the shifting-bearing K, in which the upright bar D^x on the reciprocating frame has a free vertical movement, substantially as described.

3. In a station-indicator for railway-cars, the combination, with the apron-moving rollers in the indicator-box carrying a web or apron on which matter for display is arranged at suitable intervals of space, of the loose pinions locked to the shaft of the roller in contrary directions, the reciprocating and laterally-adjustable rack-frame D, the spring M^2 in the spring-drum M, the cords or connections L between the bar D^2 of the reciprocating rack-frame and the spring-drum M, and the spring-drum on the car-truck or running-gear of the car in close relation to the surface of the roadway to engage with and be partly rotated by a line of fixed stops thereon in its path.

4. In a station-indicator for railway-cars, the herein-described automatic mechanism, consisting of the spring drum or barrel on the car-truck, with elastic tire or rim, fixed stops or projections in the roadway, cord or chain L, connecting the automatic mechanism with the spring-drum M, bell-crank levers M^x on the car-body, and connecting-cord to the indicator-box.

379,429. **BUILDING-BLOCK.** JAMES R. WERTH, Richmond, Va. Filed May 23, 1887. Serial No. 239,107. (No model.)

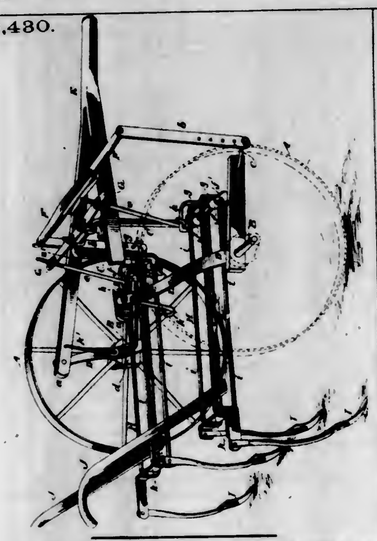


Claim.—An artificial building block or brick consisting of a cake in the form of a parallelopipedon, having rectangular dividing-grooves 3 around the body thereof, the block or brick being adapted to be broken between the walls of the grooves to form blocks or bricks having fractured projecting portions or fronts and rectangular building lines or edges completely surrounding the fractured projecting portions or fronts.

379,430. **CULTIVATOR.** CURTIS WHITEHALL, Mellott, Ind. Filed Aug. 22, 1887. Serial No. 247,555. (No model.)

Claim.—In a wheel-cultivator, the arch C and compound beams H, hinged thereto and capable of lateral adjustment, combined with the spring-hanger G and hooks *e A*, substantially as set forth.

379,430.

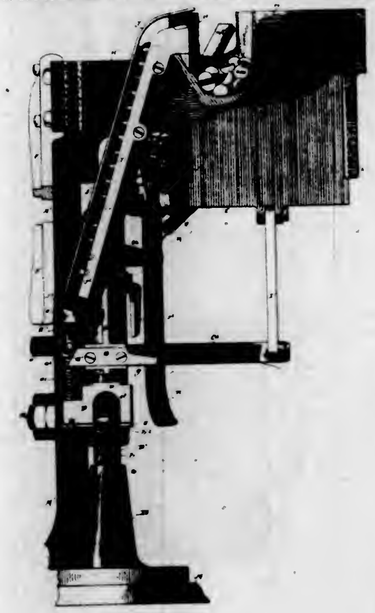


379,431. **BUTTON-ATTACHING MACHINE.** ALEXANDER G. WILKIN, Meadville, Pa., assignor to the Railway Speed Recorder Company, Kent, Ohio. Filed Aug. 15, 1887. Serial No. 246,967. (No model.)

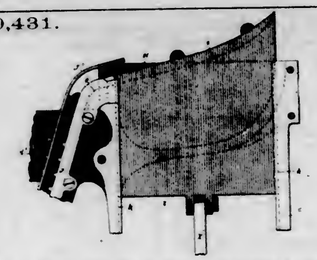
Claim.—1. In a machine for attaching buttons, the combination, with devices for feeding the fasteners, of a button-container and a reciprocating plate adapted to move within the container and provided with a groove in the upper end thereof to receive the button-eye.

2. The combination, with button-container having downwardly-converging walls and a slot in the bottom of the container, of a plate made to operate through such slot to elevate the buttons, said plate having an inclined upper end grooved to receive the button-eyes, substantially as set forth.

3. The combination, with button-container and reciprocating plate having a grooved upper end, of inclined bar located in position to receive the buttons from the reciprocating plate, said bar having a groove made to register with the groove of the reciprocating plate when the latter is in its elevated position, substantially as set forth.



379,431.



4. The combination, with button-container, reciprocating plate having a grooved upper end, and grooved bar, substantially as indicated, of mechanism, substantially as described, for reciprocating said plate, whereby the grooves of the plate and bar are made to register when the plate is in its elevated position, substantially as set forth.

5. The combination, with button-container, reciprocating plate having a grooved upper end, and grooved bar, substantially as indicated, of a guard-plate made to extend over the face of such grooved bar to hold the buttons in place on the bar, substantially as set forth.

6. The combination, with a grooved bar, of a guard-plate and button-carrier, the guard-plate having a curved end, which forms a stop for the button when the latter reaches its seat in the button-carrier, substantially as set forth.

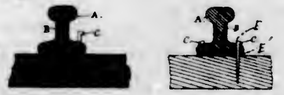
7. The combination, with grooved bar and guard-plate, substantially as indicated, of a crescent-shaped cut-out for buttons, such cut-out having an axial spindle journaled in a bearing secured to the grooved bar, and lever connected with the spindle for oscillating the cut-out, substantially as described, whereby one button at a time is discharged, substantially as set forth.

8. The combination, with tubes for discharging fasteners of the variety indicated, of spindle attached to the tube, disk journaled on the spindle, a lip connected with the disk for alternately opening and closing the mouth of the tube, and a pointed arm connected with the disk for cutting out the button-fasteners, substantially as set forth.

9. The combination, with tube *m*, spindle, disk mounted on the spindle, depending lip, and pointed arm connected with the disk, substantially as indicated, of a lever for operating the disk in one direction, and a spring for returning the disk to its normal position, the parts being arranged substantially as described, and for the purpose set forth.

10. The combination, with mechanism for discharging button-fasteners one at a time from supply-tubes, of a delivery-tube open at both ends and pivoted to the machine, and devices, substantially as described, for swinging said tube, whereby the upper end thereof is moved into a position to receive the fastener as the latter is discharged and the lower end moved to a position to drop the fastener into the sleeve, substantially as set forth.

379,432. **COMBINED CHAIR, FISH-PLATE, AND RAIL COUPLER.** WILLARD WILT, Eureka, Cal. Filed Mar. 18, 1887. Serial No. 231,356. (No model.)



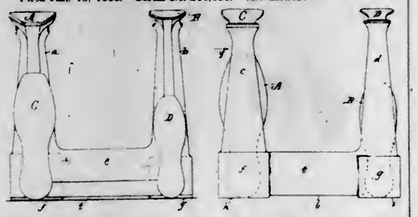
Claim.—The improved railway-chair and fish-plate described, consisting, essentially, of a single piece of metal having a base increased in thickness, as shown, and the vertical branches forming the fish-plates reduced, so as to allow them to yield laterally and embrace the web of rails of various thicknesses, substantially as specified.

379,433. **PEN.** JOHN W. WISE, Adrian, Mich. Filed Dec. 5, 1887. Serial No. 257,000. (No model.)



Claim.—The combination of the pen A, having lugs *a a* on its under side, with the detachable fountain or reservoir B, having the cup-shaped end C and flanges *b b*, engaging with the lugs *a a* of the pen, substantially as shown and described.

379,434. REPAIRER'S LAST. ALMINE WISEMAN, Rochester, N. Y. Filed Jan. 13, 1888. Serial No. 260,650. (No model.)

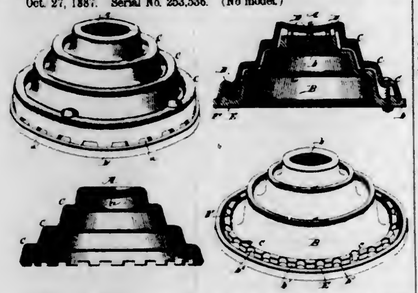


Claim.—1. A multiple last device consisting of a pair of arms, *a c*, in a plane, and a similar pair of arms, *b d*, in another parallel plane, said pairs of arms being joined by a rigid tie, *e*, and each of said arms terminating in a full-length last, substantially as shown.

2. A multiple last device consisting of a pair of arms, *a c*, in a plane, and a similar pair of arms, *b d*, in another parallel plane, said pairs of arms being joined by a rigid tie, *e*, and each of said arms terminating in a last, the arms *a* and *b* of said pairs occupying a plane and the arms *c* and *d* of said pairs occupying another plane at right angles to the plane of said arms *a* and *b*, substantially as shown and described.

3. A shoe-maker's repairing-last consisting of three radial arms at right angles with each other, each terminating in a full-length last, the part from which said arms radiate being formed with three faces corresponding to the three adjacent faces of a cube, the edges of the soles of two of said lasts being in the plane of one of said faces and the ends of the heels of two of said lasts being in the plane of another of said faces, substantially as shown and described.

379,435. GAS-BURNER. CHARLES W. YOUNG, Erie, Pa. Filed Oct. 27, 1887. Serial No. 253,536. (No model.)



Claim.—1. The combination of the two conical upper and under sections, A and B, having circumferential ribs or corrugations formed therewith, and eduction-openings at the lower rims thereof, the upper section having radial ribs formed with the inside thereof, preserving the configuration of the circumferential ribs to engage with circumferential ribs of the under section to form irregular chambers therewith, substantially as described.

2. The closed conical cap-section A, having circumferential ribs or configurations and inner radial ribs preserving the configuration of the said circumferential ribs, in combination with the under conical section, B, having a tapped top opening for the reception of a feeding-pipe, and also constructed with circumferential ribs or corrugations, the said conical sections having eduction-apertures formed at the outer lower portion thereof by registering openings in each, substantially as described.

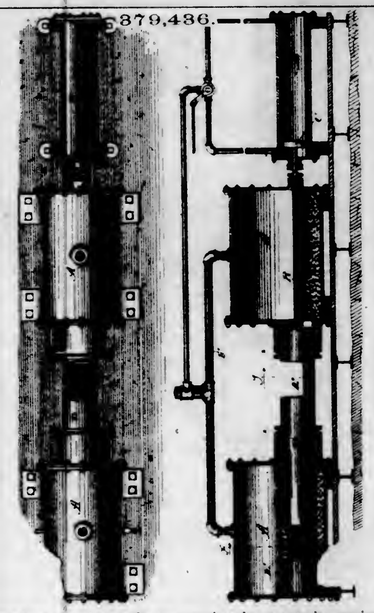
3. A gas-burner comprising two shells secured one within the other and both having a corresponding step-like formation, whereby a tortuous chamber is provided between the shells for the passage of the gas, substantially as set forth.

379,436. SLAG-FURNACE. ORSEMAS T. X. ADAMS, Chicago, Ill., assignor to Melinda Peck, same place. Filed Feb. 7, 1888. Serial No. 263,311. (No model.)

Claim.—1. In a slag steam-generator, the combination of a closed steam-generating chamber and a slag-holding receptacle, and means for moving the slag-receptacle in and out of the steam-generating chamber and the water contained therein, whereby steam is generated by direct contact of the slag with the water, substantially as described.

2. In a slag steam-generator, the combination of a closed steam-

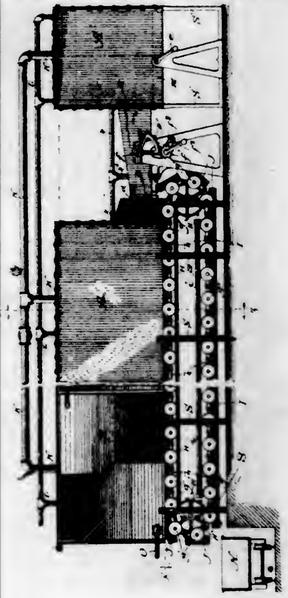
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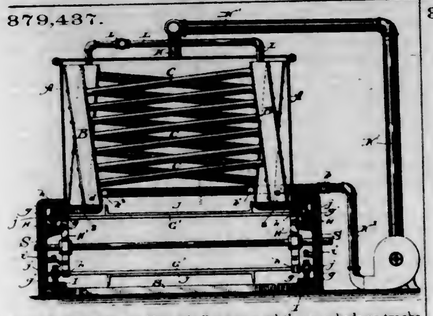
generating chamber, a plunger carrying slag-receptacles moving in and out of the steam-generating chamber, and means for moving the plunger in and out, substantially as described.

379,437. SLAG-FURNACE. PHINEAS H. ADAMS, Jr., Chicago, Ill. Filed Dec. 22, 1887. Serial No. 258,773. (No model.)

Claim.—1. In a slag-conveyer and steam-generating furnace, the combination of a boiler-supporting frame or structure provided with



379,437.



brackets on its inner sides, a boiler arranged thereon, beds or tracks supported on the brackets, and a slag-conveying apron provided with apron-wheels rolling on the beds or tracks, substantially as described.

2. In a slag-conveyer and steam-generating furnace, the combination of a boiler-supporting frame or structure overhanging at the top and provided with brackets on its inner sides, a boiler arranged thereon, beds or tracks supported on the brackets, and a conveying-apron provided with apron-wheels rolling on the beds or tracks, substantially as described.

3. In a slag-conveyer and steam-generating furnace, the combination of a boiler-supporting frame or structure, a boiler arranged thereon, and a slag-conveying apron provided with apron-wheels mounted on apron-axles projecting beyond the sides of the apron and rolling on beds or tracks, substantially as described.

4. In a slag-conveyer and steam-generating furnace, the combination of a boiler-supporting frame or structure, a boiler arranged thereon, a slag-conveying apron traveling beneath the water-heating tubes, and a plate to prevent the heat from the slag on the conveying-apron from escaping and cold air from entering between the apron and the boiler-heads, substantially as described.

5. In a slag-conveyer and steam-generating furnace, the combination of a boiler-supporting frame or structure, a boiler arranged thereon, a slag-conveying apron provided with apron-wheels, and trough-shaped beds or tracks adapted to contain water and in which the apron-wheels travel, whereby they are prevented from becoming overheated, substantially as described.

6. In a slag-conveyer and steam-generating furnace, the combination of a boiler-supporting frame or structure, a boiler arranged thereon, a slag-conveying apron provided with apron-wheels traveling on tracks or beds, and a perforated water-pipe arranged over the wheels and spraying water onto the same, substantially as described.

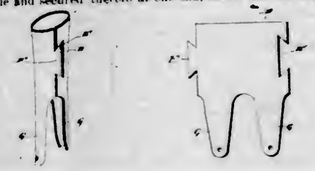
7. In a slag-conveyer and steam-generating furnace, a slag-conveying apron provided with apron-axles, sleeves or thimbles encircling the ends of the axles and fixed in their relation thereto, and apron-wheels mounted and revolving on the sleeves or thimbles, substantially as described.

379,438. TREATMENT OF METALS. WILLIAM A. BALDWIN, Chicago, Ill., assignor of one-fourth to Ammi A. Thomas, J. Clement Smith, and James J. Sheehy, all of Washington, D. C. Filed Apr. 14, 1887. Serial No. 234,821. (No specimens.)

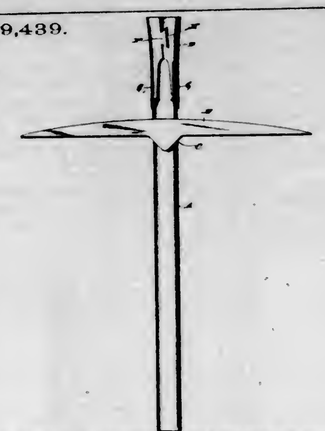
Claim.—The process of treating metals which consists in immersing such metals without fusion in a fused bath of clay or other like earthy substances bearing alumina, carbonaceous matter, and sodium chloride, the latter being in excess of either of the other substances, substantially as specified.

379,439. HANDLE FOR TOOLS. JACOB BELL, Parsons, assignor of one-half to Walter B. Posten, Wilkes-Barré, Pa. Filed Dec. 10, 1887. Serial No. 257,538. (No model.)

Claim.—The combination of the handle, the tool having an eye through which the handle is inserted, and the expansible sheath secured to the handle and bearing against the sides of the eye, the said sheath consisting of a single piece of metal wrapped around the end of the handle and secured thereto at one end, one of the meeting edges

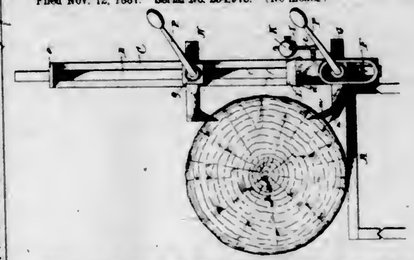


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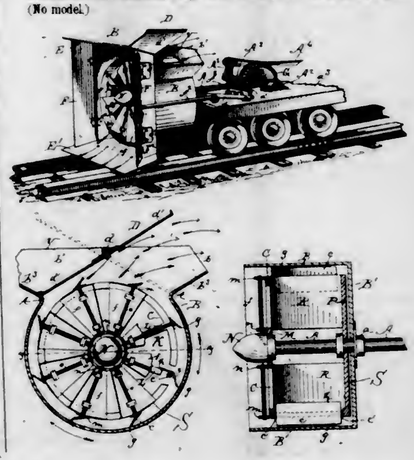
of the sheath having a dovetailed notch and the other having a dovetailed projection fitting in the notch and slightly smaller than the same, substantially as set forth.

379,440. SAW-MILL DOG. WILLIAM H. BENNETT, Peru, Ind. Filed Nov. 12, 1887. Serial No. 254,973. (No model.)



Claim.—As an improved article of manufacture, a saw-mill dog provided with two points upon different horizontal planes and of different lengths, with the outer face of the longer and upper point substantially vertical, substantially as and for the purpose described.

379,441. RAILWAY-TRACK CLEARER OR SNOW-PLOW. LEWIS J. BERGENDAHL, Pendleton, Oreg. Filed Nov. 3, 1887. Serial No. 254,140. (No model.)



Claim.—1. In a wheel-casing with an open-top delivery, the com-

3. In a cycling-iron, the combination of a hollow cycling-rod hav-

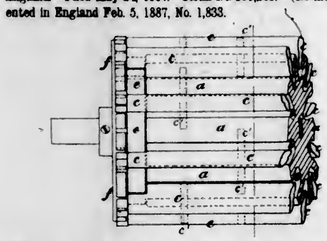
frame and tension-plate, through which the thumb of the operator

379,447.

Claim.—1. In a wheel-casing with an open-top delivery, the combination therewith of a double tilting shutter automatically moved to either side of said opening, as herein set forth.

2. A snow-plow consisting of a revolving drum provided with front automatic cutters mounted on a spider or open front end, and a solid rear end plate connected to said spider by radial plates, said radial plates surmounted by automatic scrapers, all mounted on a driving-shaft and inclosed in a casing provided with a front hopper-shaped mouth and an alternating top delivery-opening governed by an automatically-operating shutter, as herein set forth.

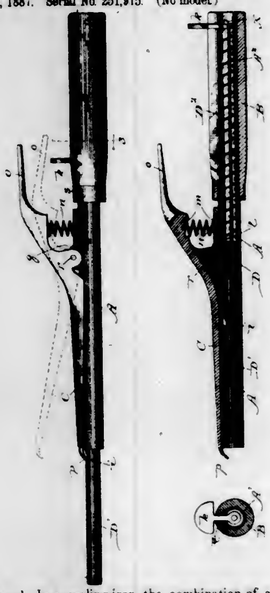
379,442. **ROLLER FOR WASHING OR DYEING MACHINES.** WILLIAM BIRCH, Lower Broughton, Manchester, County of Lancaster, England. Filed May 24, 1887. Serial No. 239,205. (No model.) Patented in England Feb. 5, 1887, No. 1,833.



Claim.—1. A roller for washing, soaping, dyeing, and other similar machines, said roller having recesses or cells in its surface and carrying bars adapted to be pressed into the said recesses or cells to force out the liquid through the fabric as the latter passes around the roller.

2. The combination of the roller having recesses or cells in its surface with longitudinal bars, a ring at each end connecting the bars, and guide-plates for the bars, substantially as described.

379,443. **CURLING-IRON.** CHARLES H. BISSELL, Chicago, Ill. Filed Oct. 10, 1887. Serial No. 251,915. (No model.)



Claim.—1. In a curling-iron, the combination of a hollow curling-rod and a heating-core permanently secured in the hollow rod, and movable therein to project it beyond the hollow rod and retract it into the same, substantially as and for the purpose set forth.

2. In a curling-iron, the combination of a hollow rod, A, provided with a handle, and a heating-core permanently secured within the hollow-rod and resistingly confined against movement therein, and movable in the said hollow rod to project it beyond the end thereof and retract it into the same, substantially as described.

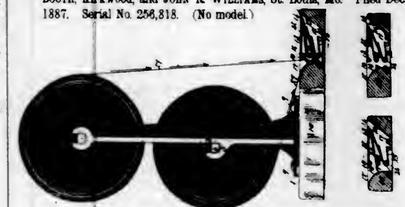
3. In a curling-iron, the combination of a hollow curling-rod having a handle portion provided with a longitudinal slot, *t*, and a heating-core provided with a finger-knob, *k*, extending through the slot and permanently secured within the hollow curling-bar and resistingly confined against movement therein, and movable in the said hollow curling-rod to project it beyond the end thereof and retract it into the tube, substantially as described.

4. In a curling-iron, the combination of a hollow curling-rod having a handle provided with a longitudinal slot, *t*, and a reciprocating heating-core permanently secured within the hollow curling-rod and provided with a spring, E, and carrying a finger-knob, *k*, extending through the slot *t*, substantially as and for the purpose set forth.

5. In a curling-iron, the combination of the hollow rod A, having a handle portion provided with a longitudinal slot, *t*, a core, D, permanently secured and adapted to reciprocate within the rod A, and provided with a spring, E, a finger-knob, *k*, and a notch, *i*, and a spring clamping-bar, C, having a lip, *p*, the whole being constructed and arranged to operate substantially as and for the purpose set forth.

6. A curling-iron comprising, in combination, a hollow rod, A, having a slotted handle portion and a socket, *m'*, a core, D, permanently secured within the hollow rod and adapted to be reciprocated therein, and comprising a notched portion, D', and a reduced portion, D^3, a helical spring surrounding the said reduced portion and confined in the said hollow rod, a finger-knob, *k*, on the core D, extending through the slot in the handle portion, a clamping-bar, C, having a lip, *p*, and thumb-piece *o*, and pivotally secured upon the hollow rod A, a socket, *m*, on the thumb-piece *o*, and a helical spring, *n*, inserted at opposite ends into the sockets *m* and *m'*, substantially as described.

379,444. **ROLL-PAPER HOLDER AND CUTTER.** EMMONS R. BOOTH, Kirkwood, and JOHN R. WILLIAMS, St. Louis, Mo. Filed Dec. 2, 1887. Serial No. 256,818. (No model.)



Claim.—1. In a roll-paper holder and cutter, the combination of the rolls and bobbin-spools with stationary axles on which the spools run, the bracket-frames that support them, and the disconnected knife-frame, spring-tension guide-plates, the pivot-rods that carry said plates, and knife, substantially as and for the purpose set forth.

2. In a roll-paper holder and cutter, the combination of the single and sectional rolls, the individual bobbin-spools for each roll, the stationary axles on which said bobbins run, and bracket-frame with angular seats that support said axles, the disconnected knife-frame, knife, and tension guide-plates, with the spiral springs that back them and the pivot-rods that carry said plates, substantially as and for the purpose set forth.

3. In a roll-paper holder and cutter, the combination of the single and sectional paper rolls, the single and sectional bobbin-spools, the stationary shafts provided with angular ends and seats in their supporting bracket-frames, said supporting bracket-frames, the disconnected knife-frame and tension guide-plates mounted therein, the springs that back up said tension-plates, the pivot-rods that carry said plates and springs, and the beads at rear of said plates and of the surface-plate of the knife-frame, the said beads arranged to turn and guide the paper on its way to the knife, substantially as and for the purpose set forth.

4. In a roll-paper holder and cutter, the combination of the single and sectional rolls, the single and sectional bobbin-spools, the stationary axles with angular ends, the bracket-supports provided with angular seats for the shafts to prevent them from turning, the disconnected knife-frame with the knife which is the sharpened front edge of the surface-plate of said frame, its beaded rear edge to guide the paper from the rolls and flanged ends, the tension guide-plates secured by beads at their rear edges, the pivot-rods around which said beads engage, which rods have bearings in the end flanges of the surface-plates of the knife-frame, the springs secured around said rods with one arm, which is held by a pin that projects from the end flanges aforesaid, and a second arm that enforces the pressure of the tension guide-plates, substantially as and for the purpose set forth.

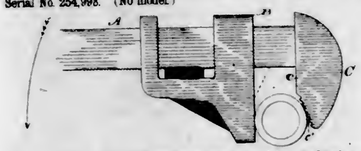
5. In a roll-paper holder and cutter, the combination of the single and sectional rolls, bobbin-spools, and stationary axles with supporting bracket-frames, the disconnected knife-frame, spring-tension guide-plates, pivot-rods that carry said plates and springs that enforce their tension, and the thumb-gates through the surface-plate of the knife-

frame and tension-plate, through which the thumb of the operator enters to slide and project the front edge of the paper, substantially as and for the purpose set forth.

6. In a roll-paper holder and cutter, the combination of the rolls, bobbin, stationary axles, the supporting bracket-frames, the disconnected knife-frame, the surface-plate of the same, with its sharpened knife-edge and end flanges, the rod 16, secured in said flanges, and the sleeve-roller 31 on said rod to turn and guide the paper toward the knife, the beaded tension guide-plates and their pivot-rods and tension-springs, and the roll tension-springs 30, and thumb-gates in the surface knife-plate and tension-plate arranged to pass the thumb through to slide and project the front edge of the paper for a catch-hold, substantially as and for the purpose set forth.

7. In a roll-paper holder and cutter, the combination of the sectional roll, bobbins, stationary axles, the supporting bracket-frame, the disconnected knife-frame, the surface-plate of same, with its sharpened knife-edge and end flanges, the beaded tension-plate and piroted rod on which it runs, the springs that enforce its tension against the paper, and the thumb-gates through the surface-plate of the knife-frame through which to pass the thumb to slide the paper for a catch-hold, substantially as and for the purpose set forth.

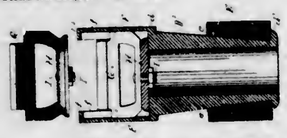
379,445. **WRENCH.** MATTHEW E. CAMPFIELD, Pittsburg, assignor to the Brown Specialty Company, Etna, Pa. Filed Nov. 12, 1887. Serial No. 254,998. (No model.)



Claim.—1. A nut and pipe wrench comprising a fixed and a movable jaw, one of said jaws being formed with two working-faces which stand at an angle to each other, and one of said faces provided with grasping-teeth, the other jaw having a single straight face which is parallel to one of the faces of the double-faced jaw and extends over both, substantially as shown and described.

2. A nut and pipe wrench comprising a fixed and a movable jaw, the fixed jaw being formed with two working-faces, *c c'*, the inner face, *c*, being plain and at right angles to the shank, and the outer face, *c'*, being outwardly inclined and provided with grasping-teeth, and the movable jaw having a plain straight face which is parallel to the face *c* of the fixed jaw and extends over the two faces *c c'*, substantially as shown and described.

379,446. **VALVE.** CHARLIE CART, Angola, Ind. Filed Nov. 16, 1887. Serial No. 255,340. (No model.)



Claim.—1. The combination, with the valve-frame and the guides F, having lateral flanges *f* at their upper ends and having the stops *f'*, of the valve, and the bail G, adapted to work between the flanges *f*, substantially as and for the purpose described.

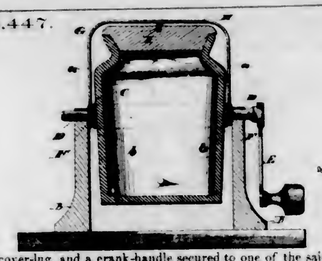
2. The combination, with the valve-frame having integral therewith the guides F, the flanges *f* at the upper ends of F, and the stops *f'*, of the valve and the bail G, having its ends embraced between the flanges *f*, and having the upper corners of the bail cut away, substantially as and for the purpose described.

3. The herein shown and described check-valve, composed of the valve-frame having a tapering tubular extension, D', provided with an upper and a lower annular shoulder, and having integral therewith the guides F, the flanges *f*, and the stops *f'*, the packing-ring fitted on the tapering extension D', the valve, the bail having its ends fitted between the flanges *f*, and the bolt 1, for holding the bail and valve together, substantially as set forth.

379,447. **CHURN.** CHARLES F. CHAMBERLAIN, Goshen, Ind. Filed Nov. 3, 1887. Serial No. 254,144. (No model.)

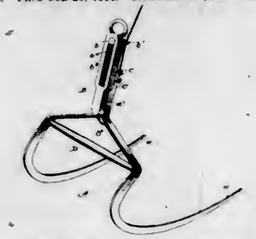
Claim.—The combination, with the base and standards, of the flaring band having fixed journals at diametrical points and grooved integral collars thereon, the tapering body placed in the said band, the cover having a notched lug, the wire fastening having the lower ends of its vertical branches hooked to engage the grooves of the collars on the journals and its cross portion adapted to engage the notch

379,447.



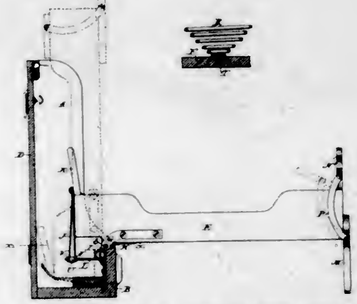
of the cover-lug, and a crank-handle secured to one of the said journals, substantially as specified.

379,448. **HORSE HAY-FORK.** JAMES W. COLLINS, Centre Montville, Me. Filed Oct. 23, 1886. Serial No. 217,042. (No model.)



Claim.—In a horse hay-fork, the combination of an upright bar, B, the lower end terminating in diverging arms b^3, which are pivoted to the prongs, said prongs converging above in a reduced weighted head, and a locking mechanism consisting of the latch C, the lever *c'*, and the arm c^2, the lever and arm being so joined as to form a straight brace from the point at which the lever is pivoted to the latch, substantially as described.

379,449. **FOLDING BED.** JOHN CONDELL, New York, N. Y. Filed July 30, 1887. Serial No. 245,698. (No model.)



Claim.—1. The combination, with the bed-bottom frame, of a foot-board hinged thereto at its top, a pair of connected legs hinged thereto at the bottom, and a link connecting the two in front of the axes of the hinges when the same are opened, substantially in the manner and for the purpose herein set forth.

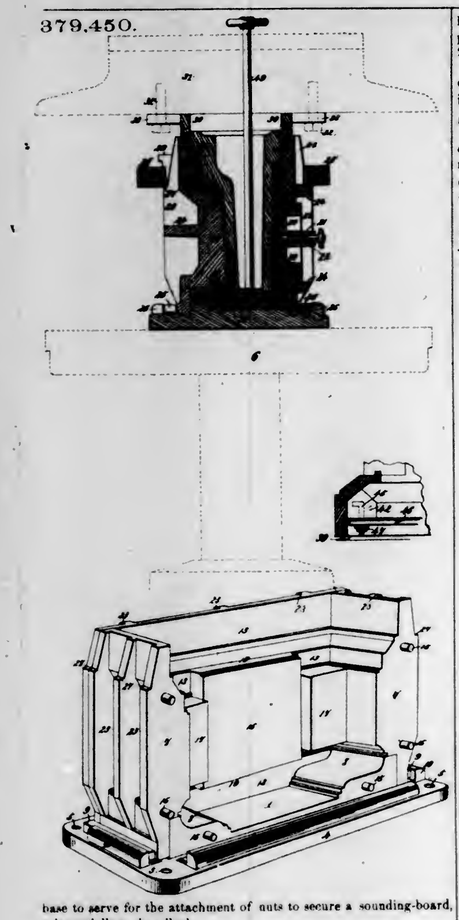
2. The combination, in a folding bedstead, with its head-case and the bottom frame hinged thereto, of a head-board hinged to the frame, a coiled spring fitted within the case, a radial arm projecting from said spring, and a strap connecting the arm with the folding head-board to actuate the latter, substantially in the manner and for the purpose herein set forth.

379,450. **MANUFACTURE OF CLOCK-CASES AND OTHER ARTICLES FROM PLASTIC MATERIAL.** REESE P. COUGHLIN, Winsted, Conn. Filed Mar. 16, 1887. Serial No. 231,125. (No model.)

Claim.—1. A clock-case having fastenings embedded in its base for attachment of a sounding-board, substantially as described.

2. A clock-case having threaded studs or bolts embedded in its

379,450.



base to serve for the attachment of nuts to secure a sounding-board, substantially as described.

3. A clock-case having interior ledges in each corner of its base and metallic fastenings embedded in said ledges for attachment of a sounding-board, substantially as described.

4. In a mold for clock-cases, the combination of a bottom plate shaped to mold the top of the case, end plates and front and back plates detachably secured to said bottom plates and to each other, guides or bearings formed on the base-flange of said bottom plate, intermediate keys for locking the lower ends of the end, back, and front plates, a ring or hand surrounding the upper ends of said plates, and keys for locking the same at the top, substantially as described.

5. In a mold for clock-cases, the combination, with the bottom plate and the end plates, of front and back plates detachably secured to said bottom and end plates and provided with thumb-screws having a bearing against said end plates, whereby the front and back plates or either can be gradually and evenly detached without injury to the casting, substantially as described.

6. In a mold for clock-cases, the combination, with the bottom and end plates, of a back plate having thumb-screws 53, a central circular opening, a screw-disk, 20, adapted to fit said opening, said disk being provided with a central perforation or vent, and a screw-plug, 22, for closing said vent, substantially as described.

7. In a mold for clock-cases, the combination, with the bottom and end plates, of a front plate, 13, having a central rectangular opening, 16, and a back plate having a central circular opening close by a disk, 20, provided with a plug-closed vent, substantially as described.

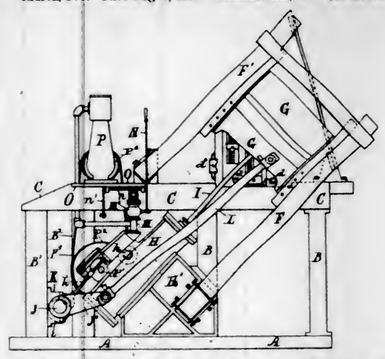
8. In a mold for clock-cases, the combination of the bottom plate having guideways 10 and 26, the end plates, 7, front plate, 13, and back plate, 14, provided with vertical ribs 23, the keys 9 and 25, the band 28, and the keys 29, substantially as described.

9. In a molding apparatus for clock-cases and like articles, the combination of a separable mold, a plunger having an air-opening in its lower end, and a rod passed vertically through the plunger to engage and control the air-opening, substantially as described.

10. In a molding apparatus for clock-cases and like articles, the combination, with a separable mold, of a plunger adapted to temporarily support and carry a set of fastenings to be embedded in the base of the plastic clock-case for attachment of a sounding-board, substantially as described.

11. In a molding apparatus for clock-cases, the combination, with a separable mold, of a plunger provided with depending studs or projections, as 38 and 52, to form mortises in the plastic clock-case for attachment of accessory parts, such as supports for the clock-case or fastenings for securing ornaments in place, substantially as described.

379,451. WOOD-CUTTING MACHINE. THOMAS S. CRANE, Brick Church, N. J. Filed Aug. 1, 1887. Serial No. 245,809. (No model.)



Claim.—1. In a veneer or wood slicing machine, the combination, with a reciprocating carrier provided with a knife projected from the side of the carrier, of a reciprocating steam piston-rod attached directly to such carrier, a rotary crank, and a connecting-rod pivoted directly to such carrier and crank to regulate the stroke of the piston-rod and carrier, and feeding mechanism actuated by the rotary crank-shaft to feed the side of the log toward the knife, substantially as and for the purpose set forth.

2. In a veneer or wood slicing machine, the combination, with a reciprocating knife-carrier provided with a knife projected from the side of the carrier, of a reciprocating steam piston-rod attached directly to such carrier, a rotary crank, and a connecting-rod pivoted directly to such carrier and crank, a movable stay-log presenting the side of the log toward the knife, feeding mechanism for intermittently actuating the stay-log, and an auxiliary motor for turning the crank at the dead-centers, as and for the purpose set forth.

3. In a veneer or wood slicing machine, the combination, with a reciprocating knife-carrier provided with a knife projected from the side of the carrier, of a reciprocating steam piston-rod attached directly to such carrier, a rotary crank, and a connecting-rod pivoted directly to such carrier and crank, a movable stay-log presenting the side of the log toward the knife, feeding mechanism for intermittently actuating the stay-log, and an auxiliary motor-engine connected with the said crank and rotated at a different rate from the said crank to maintain its motion at the dead-centers, as and for the purpose set forth.

4. In a veneer or wood slicing machine, the combination, with a reciprocating knife-carrier provided with a knife projected from the side of the carrier, of a reciprocating steam piston-rod attached directly to such carrier, a rotary crank, and a connecting-rod pivoted directly to such carrier, and crank to regulate the stroke of the piston-rod and carrier, a movable stay-log with feeding mechanism for feeding the stay-log intermittently toward the knife, and an auxiliary motor connected with the said crank by a clutch mechanism and operated to turn the said crank at the centers, and to reverse the feeding mechanism when desired, substantially as herein set forth.

5. In a veneer-cutting machine, the combination, with a reciprocating knife-carrier, of a steam piston-rod to reciprocate such carrier, a rotary crank connected with such carrier by a pivoted connecting-rod, a cog-wheel having shaft connected with said crank, an intermediate shaft provided with pinion and with clutch-pulley, and an auxiliary engine connected with such clutch-pulley, as and for the purpose set forth.

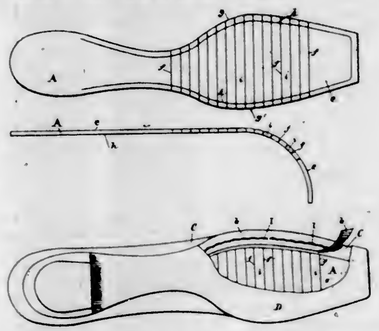
6. In a veneer-cutting machine, the combination, with a reciprocating knife-carrier, of a steam piston-rod to reciprocate such carrier, a rotary crank-shaft and crank connected with such carrier by a connecting-rod, a stay-log movable to and from the knife-carrier, screws journaled in bearings and fitted to nuts upon the stay-log, detachable feed mechanism applied to such screws, means for connecting the screws to rotate together, a friction-pulley upon one of said screws, and a rotating friction-wheel with means for pressing it against such friction-pulley to retract the stay-log when the feeding mechanism is detached.

7. In a veneer-cutting machine, the combination, with a reciprocating knife-carrier, of a steam piston-rod to reciprocate such carrier, a rotary crank-shaft and crank connected with such carrier by a connecting-rod, a stay-log movable to and from the knife-carrier, screws journaled in bearings and fitted to nuts upon the stay-log, detachable feed mechanism applied to such screws, means for connecting the screws to rotate together, a friction-pulley upon one of said screws, two friction-wheels rotated in opposite directions, and means for pressing either of them at pleasure upon the friction-pulley, as and for the purpose set forth.

8. In a veneer-cutting machine, the combination, with a reciprocating knife-carrier, of a steam piston-rod to reciprocate such carrier, a rotary crank-shaft and crank connected with such carrier by a connecting-rod, a stay-log movable to and from the knife-carrier, screws journaled in bearings and fitted to nuts upon the stay-log, detachable feed mechanism applied to such screws, means for connecting the screws to rotate together, a friction-pulley upon one of said screws, an auxiliary engine detachably connected with the crank-shaft, and two friction-wheels rotated in opposite directions by said auxiliary engine, and means for pressing either of them at pleasure upon the friction-pulley, as and for the purpose set forth.

9. In a veneer-cutting machine, the combination, with a reciprocating knife-carrier, of a steam piston-rod to reciprocate such carrier, a rotary crank-shaft and crank connected with such carrier by a connecting-rod, a stay-log movable to and from the knife-carrier, screws fitted to nuts upon the stay-log, sleeves threaded externally and mounted in threaded bearings, and having the screws journaled therein with shoulders to prevent longitudinal movement, feed mechanism applied to such screws, and means for actuating such feed mechanism and for oscillating the threaded sleeves at the opposite ends of the knife-carrier's stroke, as and for the purpose set forth.

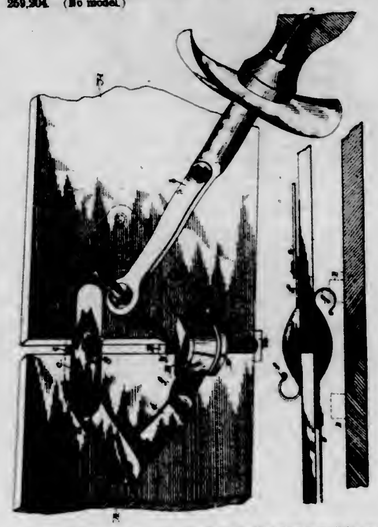
379,452. BOOT OR SHOE. SIMON DALSHEIMER, Baltimore, Md. Filed Jan. 17, 1888. Serial No. 261,032. (No model.)



Claim.—1. A shoe provided with an inner sole, A, having its upper surface, *h*, smooth, continuous, and uncut, and provided on its lower surface with incisions *f*, cut part way only through the sole, said incisions extending entirely across from edge to edge, and forming parallel spaces *i*, the material of which is integral with the said uncut upper surface, said parallel spaces extending entirely across from one edge of the sole to the other.

2. A shoe having an inner sole, the upper surface of which is smooth and uncut, and provided on its lower surface with incisions *f*, cut part way only through the sole, said incisions extending entirely across from edge to edge, and forming parallel spaces *i* of material which extend from one edge to the other, and said insole, shoe-upper, and welt united by a seam, each stitch *l* of which goes through the material of two adjoining spaces and crosses the incision between the said two spaces.

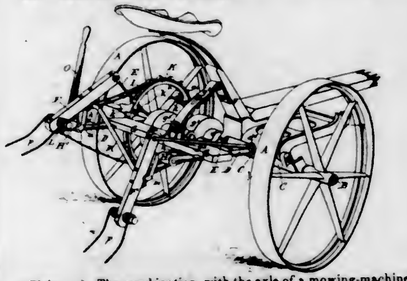
379,453. WORKING METALS BY ELECTRICITY. NICHOLAS DE BERNARDOS, St. Petersburg, Russia. Filed Dec. 28, 1887. Serial No. 259,204. (No model.)



Claim.—1. The improvement in the art of joining metals by means of the directly-applied electric current, which consists in forming a pocket between the edges of the pieces of metal to be joined together, placing metallic scraps or pieces therein, and then melting or fusing said scraps by means of the voltaic arc formed by a conductor approached thereto, which constitutes one pole, while the metal itself constitutes the other pole, as and for the purposes hereinbefore set forth.

2. In the hereinbefore-described process of joining metals by means of the directly-applied electric current, the method of confining the melted metal within bounds and also of obtaining a smooth and finished weld, which consists in applying to the sides or edges of the parts to be joined during the welding operation dams of conductive material having electrical connection with said parts, substantially as hereinbefore set forth.

379,454. TEDDER. JAMES A. EDDY, Troy, N. Y. Filed Oct. 24, 1887. Serial No. 253,276. (No model.)



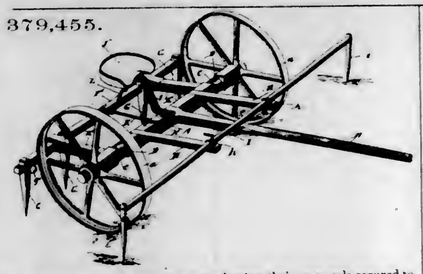
Claim.—1. The combination, with the axle of a mowing-machine, of the tedder-frame pivoted thereto at its forward end, and supported at its rear end by a dependent arm secured to the seat-standard and to the tedder-frame, whereby the tedder is rigidly supported at the required distance from the ground, substantially as and for the purpose specified.

2. The tedder-frame pivoted on the axle of the mowing-machine at its forward end, and adjustably supported at its rear end by a dependent arm secured to the seat-standard and to the tedder-frame, substantially as and for the purpose specified.

379,455. LAND-MARKER. AMOS C. FELL and BENJAMIN F. BLAIR, Newville, Ind. Filed Nov. 29, 1887. Serial No. 256,457. (No model.)

Claim.—1. In a land-marker, the combination, with the axle, of

379,455.



the transverse marker-bar, the arms having their rear ends secured to the marker-bar and their front ends loosely attached to the axle, so as to turn up and down thereon, the marker-fingers sliding on the marker-bar, and the screws by means of which said fingers are set on said bar after longitudinal adjustment thereon, substantially as specified.

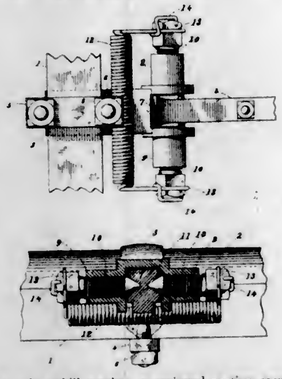
2. The combination, with the axle having the circumferentially-grooved and rounded portions C, of the marker-bar, the arms having their rear ends secured to the marker-bar, the looped straps D, secured to the front ends of said arms and surrounding the grooved and rounded portions of the axle, the marker-fingers G, sliding by means of openings on the marker-bar, the set-screws g', and the lever K, pivoted on a bracket or standard rising from the axle, having the end of its rear bar loosely attached to the marker-bar, and provided on the end of its front arm with a foot-rest within easy reach of the driver, substantially as specified.

3. The combination, with the axle, the marker-bar, and the arms having their rear ends secured to the marker-bar and their front ends loosely attached to the axle, so as to turn up and down thereon, of the arms fixed to and standing forward from the axle, the longitudinal guide and retaining loops secured to the said arms at corresponding points, the gage-bar adjustable laterally with reference to the vehicle, and the gage-fingers secured to and depending from the ends of said bar, substantially as specified.

4. The combination of the axle, the arms secured thereto and projecting forward therefrom, and the gage-bar mounted on the front ends of said arms and adjustable laterally thereon, substantially as set forth.

5. The combination of the axle, the arms mounted loosely thereon and extending rearwardly therefrom, the marker-bar carried by said arms, and the marking-fingers mounted on said marker-bar and longitudinally adjustable thereon, substantially as set forth.

379,456. THILL-COUPLING. GEORGE W. FORD, Elba, N. Y. Filed Sept. 14, 1887. Serial No. 249,646. (No model.)



Claim.—In a thill-coupling, a socketed portion secured to the clip and provided on opposite sides with two pointed set-screws, and a thill-iron adapted to fit the socketed portion and having a depression on each side to receive the points of the set-screws, in combination with a spring having a means for grasping the heads of the set-screws for the purpose of keeping them close up to their place, substantially as described.

379,457. SWINGING GATE. WILLIAM GEPFORD, West Salem, Ohio. Filed Dec. 23, 1887. Serial No. 258,835. (No model.)

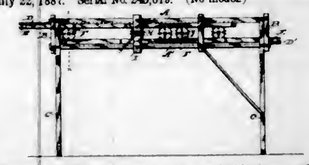


Claim.—1. The combination of the posts A, carrying the drop-catches a', in connection with the ropes R, the cross-head A' on said posts, having the central enlargement, a, stationarily-mounted pivot-post B, having springs S thereon provided with projecting arms, the gate C, mounted upon said pivot-post, spring-catch for said gate, the ropes connected to said spring-catch, and the two posts D on each side of the gate, having the terminal ends of said ropes in engagement therewith, for the purposes set forth, substantially as described.

2. In a gate, the combination of the gate-supporting frame comprising the two posts A and the cross-head A', the stationary pivot-post B, secured at its lower end in a base-block, a^3, and at its upper end in the cross-head A', the gate proper having two vertical strips, C', arranged therein, as set forth, to form a space on each side of the pivot-post B, which passes centrally therethrough, and the springs S, mounted upon the post B and having arms projecting in reverse directions, which engage with the vertical strips C', substantially as described.

3. The combination of the gate-supporting frame comprising the posts A and cross-head A', the stationarily-mounted pivot-post B, carrying springs having projecting arms, the gate mounted upon said post A, adapted to be closed by said spring-arms, spring-catch for said gate, the drop-catches a on the sides of the posts A, the ropes R, engaging with said catches, the rope R', secured to the spring-catch at its outer end and to a ring at the rear portion of the gate, and the two ropes R^3, secured to the ring to which the rear portion of the rope R' is secured, and passing through pulleys depending from arms secured to the posts D, substantially as described.

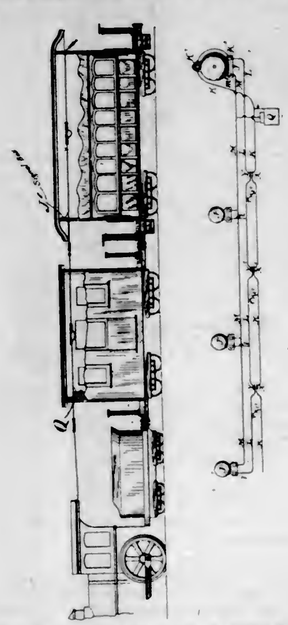
379,458. FENCE-MACHINE. WILLIAM C. GHOLSON, Cincinnati, Ohio, assignor of one-half to Charles L. Doughty, same place. Filed July 22, 1887. Serial No. 245,019. (No model.)



Claim.—1. The combination, in a suitable frame, of the racks adapted to move simultaneously in opposite directions and independently of the supporting-frame, and the twisting-wheels engaging with said racks and provided with holes through which the twisting material is carried, substantially as and for the purpose described.

2. In a wire-fence machine, the combination of the racks, the sliding bars in which said racks are secured, the stationary bars between which said sliding bars are moved, the axleless cog-wheels held between and engaging with said racks, and suitable mechanism for operating said racks and their supporting-bars simultaneously in opposite directions, substantially as described.

379,459. BELL-CORD FOR CARS. WILLIAM GLASGOW and SAMUEL S. STEVENS, Chicago, Ill., assignors to the Combined Electric and Trip Bell Cord Company. Filed May 18, 1886. Serial No. 202,588. (No model.)



Claim.—1. In a combined mechanical and electric signaling apparatus for trains, a continuous pull bell-cable comprising a number of insulated electric wires, and providing within itself and throughout its entire length multiple and continuous conductors, in combination with a mechanically-operated signal, an electric battery, an electric bell or bells, and means for closing the circuit from one to the other of said conductors, by which entire apparatus the engineer may be mechanically or electrically signaled, substantially as described.

2. In a combined mechanical and electric signaling apparatus for trains, a continuous pull bell-cable comprising a number of insulated electric wires, and providing within itself and throughout its entire length multiple and continuous conductors, in combination with a mechanically-operated signal, an electric battery, an electric bell or bells, and means whereby on drawing on the cable used in giving the mechanical signal the circuit from one to the other of said conductors may be closed and the engineer electrically signaled, substantially as described.

3. In a combined mechanical and electric signaling apparatus for trains, a pull bell-cable comprising a number of insulated electric wires, movable longitudinally in use, and providing within itself and throughout its entire length multiple and continuous conductors, in combination with a mechanically-operated signal, an electric battery, an electric bell or bells, and means for closing the circuit between said conductors and electrically signaling the engineer and conductor by the accidental breaking or separation of the cars, substantially as described.

4. In a combined mechanical and electric signaling apparatus for trains, a pull bell-cable comprising a number of insulated electric wires, movable longitudinally, and providing within itself and throughout its entire length multiple and continuous conductors, in combination with a signal manually operated through the medium of the cable, an electric battery, an electric bell or bells, and a device on the cable adapted by a pull thereon to complete the circuit between two of said conductors in the cable, such cable, battery, and bell or bells being removable, portable, forming no part of the cars or their fixtures, and transferable to and usable with other cars and trains, substantially as described.

5. In a combined mechanical and electric signaling apparatus for trains, a pull bell-cable comprising three or more insulated electric wires, movable longitudinally in use, and providing within itself and throughout its entire length multiple and continuous conductors, in combination with an electric battery, a signal manually operated through the medium of the cable, an electric bell or bells arranged in one or more cars of the train, and a circuit-closer admitting of the operation of the electric signal by the engineer, substantially as described.

6. In a combined mechanical and electrical signaling apparatus for trains, a mechanical alarm and an electrical alarm arranged in the forward part of the train, and a pull-cable extending through the train, comprising two or more conductors, between two of which circuit may be closed, and connecting with both the mechanical and electrical alarms, combined with circuit-closers placed at proper intervals on the cable, and an electric battery, substantially as set forth.

7. The sections of a train pull bell-cable comprising a number of insulated electric wires, and providing within itself and throughout its entire length multiple and continuous conductors, combined with mechanically and electrically operated alarms and a coupling normally in open circuit and placed in closed circuit by the separation of its parts, substantially as described.

8. The sections of a train pull bell-cable comprising a number of insulated electric wires, and providing within itself and throughout its entire length multiple and continuous conductors, combined with a coupling having two main parts, X and Y, with reciprocally-prepared and continuous surfaces provided with insulated contact-points d^3, and a switch, F, having a point or stud, f'', resting in a curved groove or cam, f^3, in the opposite surface, whereby the switch is held out of communication with the insulated contact-points when the coupling is in its normal position and brought into contact when the main parts are separated, substantially as described.

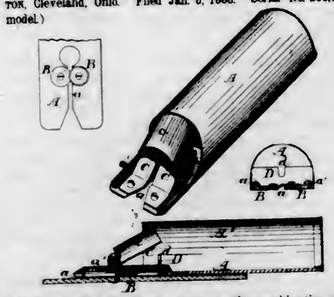
9. In a combined mechanical and electrical signaling apparatus for trains, a circuit-closer comprising a barrel having electric connection with the positive conductor of the bell-cable, a metallic piece or tongue attached to the barrel in an insulated condition and having connection with the negative wire of the bell-cable, and a sliding piece arranged in such barrel and adapted to be drawn forward to complete the circuit between the barrel and tongue by a pull on the bell-cable, combined with said bell-cable, comprising two or more electric conductors made continuous past said circuit-closer, and with a mechanical and an electrical alarm, both operated through the medium of the same cable, substantially as described.

10. A combined trip and electrical bell comprising electro-magnets, an armature, an electric hammer connected therewith, electric wires, a trip-hammer and rod, a lever resting against a shoulder on such rod, an inclined surface to gradually lift the lever out of contact with the shoulder as the same is drawn back, and so release the trip-hammer and rod, and means for impelling an electric current through the electric wires and electro-magnets in such bell and for drawing back the lever and trip-hammer and rod, substantially as described.

11. In an electric signaling apparatus, a bell-cable comprising a number of insulated electric wires and the whole covered with water-proof casing, movable longitudinally in use, in combination with an electric battery and electric bell or bells, a coiled spring, I, forming a loop in the bell-cord, and a smaller tension-spring and regulating-loops therein, whereby the sliding piece i in the barrel is drawn forward into contact with the tongue i^3, thus completing the circuit, substantially as described.

12. In a train-signaling apparatus, the mechanical and electrical alarms and a pull-cable extending through the train and connected with said mechanical and electrical alarms, and comprising within itself two or more conductors, combined with suitable circuit-closers between said conductors, and an electric battery, substantially as set forth.

379,460. TOOL FOR REMOVING BUTTONS. EDGAR R. HAMILTON, Cleveland, Ohio. Filed Jan. 6, 1888. Serial No. 260,017. (No model.)



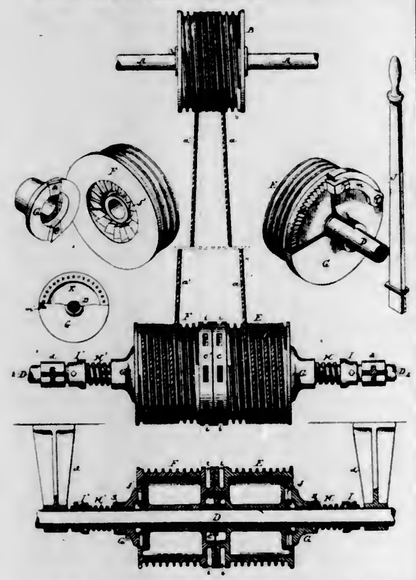
Claim.—1. In a shoe-button remover, the combination of a slotted plate, rotary cutters, and a slotted spring-plate, substantially as described.

2. In a shoe-button remover, the combination of a slotted cutter-plate provided with rotary cutters and a hood for catching the severed buttons, substantially as described.

3. In a shoe-button remover, the combination of a slotted cutter-plate provided with rotary cutters and a hood for catching the severed buttons, and a slotted spring-plate for holding the buttons up from the cutters and provided with a hood for arresting the severed buttons and preventing their flying away, substantially as described.

4. The combination of a slotted plate, A, having rotary cutters B B attached in connection with the slot *a* and provided with a hood, A', for catching the severed buttons, an inclined spring-plate, C, having a slot over the cutters and a hood, *c*, and a cross-wall, D, having notch *d*, constructed and operating substantially as described.

379,461. APPARATUS FOR TAKING UP THE SLACK IN STEERING-ROPES OF VESSELS. JOHN F. HANSCOM, Boston, Mass. Filed July 14, 1887. Serial No. 244,273. (No model.)



Claim.—1. The combination of the steering-rope of a steering apparatus, with a shaft and drums thereon, to which the end of the ropes are secured, either of said drums being adjustable circumferentially on the shaft to take up the slack of the rope, and means for securing the drum to the shaft after adjustment, all substantially as specified.

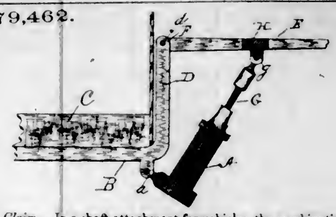
2. The combination, with the steering-rope, of a steering apparatus with a shaft and drums thereon, to which the ends of the rope are secured, either of said drums being adjustable circumferentially on the shaft, a segmental rack carried by the adjustable drums, and a clutch to engage with either of the teeth of the rack, all substantially as specified.

3. The combination of the drum B on one shaft of the steering-gear, and drums E and F, carried by a second shaft and connected to the said drum B by ropes or chains, with clutches free to slide on but turning with said second shaft and engaging with ratchet-faces on the drums E and F, all substantially as described.

4. The combination of a drum forming part of the steering-gear, but loose on its carrying-shaft and having an orifice to which an operating-lever can be applied, with a clutch turning with said shaft and engaging with teeth on the drum, substantially as described.

5. The combination of the shaft having two drums, E and F, loose thereon and separated by a sleeve, with clutches turning with but sliding on the shaft and having teeth which engage with ratchet-teeth on the ends of the drums, as and for the purpose set forth.

379,462. SHAFT ATTACHMENT FOR VEHICLES. ROBERT W. HARE and ROBERT SPROUL, Pittsburg, Pa., assignors to the Sproul Vehicle Manufacturing Company, (Limited,) same place. Filed Dec. 20, 1887. Serial No. 258,521. (No model.)



Claim.—In a shaft attachment for vehicles, the combination, with the iron B, having upwardly and outwardly extending arms D D, of the shafts E E, pivoted to said arms, and the spring-braces A G, pivoted to the iron B, and the cross-bar H, all substantially as described.

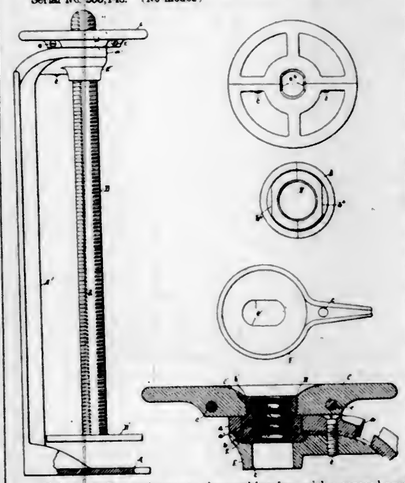
379,463. FOUNTAIN-BRUSH FOR MUCILAGE AND OTHER LIQUIDS. ALLAN C. HARRINGTON, Richmond, Va. Filed Mar. 18, 1887. Renewed Jan. 27, 1888. Serial No. 262,171. (No model.)



Claim.—1. In a fountain-brush for mucilage and other liquids, the combination, with a reservoir for containing the liquid, of a tube, through which the liquid passes to a brush, and a spring-valve located within said tube, which opens when pressure is applied to the reservoir and closes when the pressure is removed, substantially as described.

2. In a fountain-brush for mucilage and other liquids, the combination, with a reservoir, of a feeding-tube, a brush, a spring-valve, which is located within said tube, as shown and described, and a set-screw for regulating the movement of the valve, substantially as herein set forth.

379,464. PAINT-PRESS. RANDOLPH C. HOPKINS, HENRY COVENTRY, PERCY NEYMANN, and JAMES C. BEARDSLEE, Cleveland, Ohio, assignors to the Sherwin Williams Company, same place. Filed Nov. 14, 1887. Serial No. 255,148. (No model.)



Claim.—1. In a paint-press, the combination, with a screw having flatted sides and a nut for operating the screw, of a cap adapted to engage such flatted sides of the screw to prevent the screw from turning, substantially as set forth.

2. In a paint-press, the combination, with a screw having flatted sides and a cap adapted to engage such flatted sides to prevent the screw from turning on its axis, of a bisected nut for operating the screw and a hand-wheel made in halves and clamped on such nut for operating the latter, substantially as set forth.

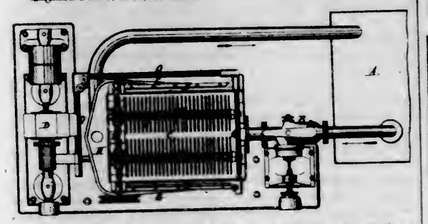
3. In a paint-press, the combination, with a screw, platen, and

cap, substantially as indicated, of a bisected nut for operating such screw, said nut having undercut sides, and a hand-wheel made in sections mounted on the nut, said hand-wheel having corresponding seats for engaging such undercut sides of the nut, substantially as set forth.

4. In a paint-press, the combination, with a screw and an engaging-cap, substantially as indicated, of a bisected nut for operating such screw, said nut having flatted sides, and a hand-wheel mounted on the nut and adapted to engage the flatted sides of the nut, said hand-wheel being made in sections and provided with screws or bolts for clamping such sections on the nut, substantially as set forth.

5. The combination, with the base and goose-neck standard integral with the base, the latter having a head provided with an annular opening located over the base, of a nut operating in such opening and having an external annular flange for engaging the under side of the standard-head, a hand-wheel mounted on the nut above the standard-head, a screw with flatted sides, and a cap adapted to hold such screw from turning, the parts being arranged substantially as and for the purpose set forth.

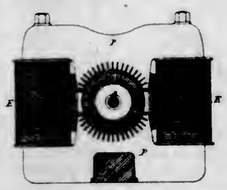
379,465. APPARATUS FOR ELECTRIC BLEACHING. EUGENE HERMITE and CHARLES F. COOPER, Dalston, County of Middlesex, England, assignors of one-third to Edward James Paterson, same place. Filed Aug. 24, 1887. Serial No. 247,753. (No model.) Patented in England Feb. 8, 1887, No. 1,993.



Claim.—1. In an apparatus for electrolyzing bleaching solutions, a cell in which are suspended a number of platina or platinized plates electrically connected to one terminal of a source of electricity, a series of zinc disks arranged to revolve between the platina plates and connected electrically to the other terminal, stationary inclined scrapers adapted to cleanse said disks, pipes by which the solution is caused to circulate through said cell, and a pump with which said pipes are connected, substantially as described.

2. In apparatus for electrolyzing bleaching solutions, a cell partly divided by a longitudinal vertical partition into two compartments, in each of which is journaled a horizontal shaft carrying a number of zinc disks, between which are suspended platinum or platinized plates, all these plates being connected to one terminal of an electric generator, while all the zinc disks are connected to the other terminal and have inclined scrapers bearing against their faces and bosses, substantially as and for the purpose set forth.

379,466. REGULATION OF ELECTRIC MOTORS. DANIEL HIGHAM, Philadelphia, Pa., assignor to the Higham Electric Motor Company, same place. Filed June 29, 1887. Serial No. 242,839. (No model.)

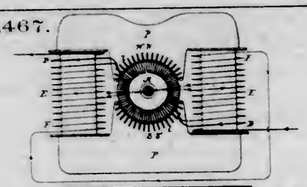


Claim.—An electric motor having its field-magnet pole-piece faces laminated transversely to the direction of rotation of the armature, and having main coils on the cores and distorting-coils applied to the pole-pieces, substantially as and for the purpose set forth.

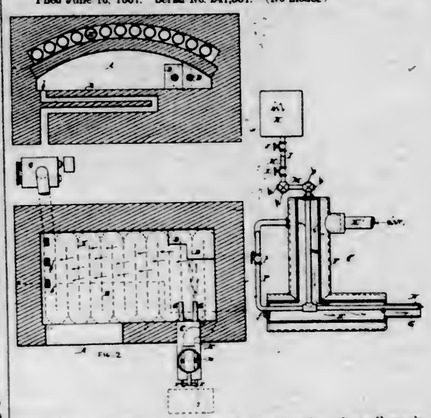
379,467. REGULATION OF ELECTRIC MOTORS. DANIEL HIGHAM, Philadelphia, Pa., assignor to the Higham Electric Motor Company, same place. Filed June 29, 1887. Serial No. 242,840. (No model.)

Claim.—An electric motor having a field-magnet with consequent poles and pole-piece faces laminated transversely to the direction of rotation of the armature, in combination with main coils and distorting-coils on the cores, substantially as and for the purpose set forth.

379,467.



379,468. OIL-BURNER. CLEMENT R. HOOPES, Philadelphia, Pa. Filed June 16, 1887. Serial No. 241,531. (No model.)



Claim.—1. In an oil-burner, the combination of an oil-supply pipe terminating in a nozzle, a valve to regulate the supply of oil to said pipe, an inclosing hot-air chamber through which the supply-pipe passes, means to force hot air through the chamber to heat the oil, and a heater to heat the air prior to its entering the chamber.

2. In an oil-burner, the combination of an oil-supply pipe terminating in a nozzle, a valve to regulate the supply of oil to said pipe, an inclosing hot-air chamber through which the supply-pipe passes, means to force hot air through the chamber to heat the oil, a blast-nozzle for hot air opening from the chamber close to the oil-nozzle, and a heater to heat the air prior to its entering the chamber.

3. The combination, of an oil-supply pipe, a hot-air chamber surrounding the said pipe, a heater for the air connecting with said hot-air chamber, a blast-nozzle opening from said chamber, and an oil-nozzle connecting with the oil-supply pipe and extending through the blast-nozzle and located in the upper part thereof.

4. The combination of an oil-supply pipe, a hot-air chamber surrounding the said pipe, a heater for the air connecting with said hot-air chamber, a pressure-blower to force the hot air through the hot-air chamber, a blast-nozzle opening from said chamber, and an oil-nozzle connecting with the oil-supply pipe and extending through the blast-nozzle and located in the upper part thereof.

5. In an oil-burner, the combination of an oil-supply pipe terminating in a nozzle, a valve to regulate the supply of oil to said pipe, an inclosing hot-air chamber through which the supply-pipe passes, means to force hot air through the chamber to heat the oil, a heater to heat the air prior to its entering the chamber, and a pressure-blower to force the hot air through the hot-air chamber and out of the nozzle.

6. The combination of an oil-supply tank or vessel, branching supply-pipes leading therefrom, a hot-air chamber surrounding said branching pipes, an oil-nozzle opening from the end of said branching oil-pipes, hot-blast nozzles opening from the hot-air chamber in close proximity to the oil-nozzles, independent valves to regulate the flow of the oil to each of the branch pipes, a heater to heat the air prior to passing through the heater, and a blower to cause a forced circulation of hot air.

7. In an oil-burner, the combination of an oil-supply pipe terminating in a nozzle, a valve to regulate the supply of oil to said pipe, an inclosing hot-air chamber through which the supply-pipe passes, means to force hot air through the chamber to heat the oil, a heater to heat the air prior to its entering the chamber, removable plugs or covers to the oil-supply pipe and hot-air chamber for cleaning purposes.

8. The combination of the hot-air chamber F F', having the nozzle

G at one end, oil-supply pipe M, having valve L, and nozzle N, opening through the air-nozzle G, and hot-blast supply-pipe E, opening into the hot-air chamber at the other end from nozzle G.

9. The combination of an oil-supply tank or vessel, branching supply-pipes leading therefrom, a hot-air chamber surrounding said branching pipes, an oil-nozzle opening from the end of said branching oil-pipes, hot-blast nozzles opening from the hot-air chamber in close proximity to the oil-nozzles, independent valves to regulate the flow of the oil to each of the branch pipes, a heater to heat the air prior to passing through the heater, a blower to cause a forced circulation of hot air, a furnace, A, having the blocks D D, against which the flame impinges, and acting as the support for the heater for the air.

10. In an oil-burner, the combination of an oil-supply pipe terminating in a nozzle, a valve to regulate the supply of oil to said pipe, an inclosing hot-air chamber through which the supply-pipe passes, means to force hot air through the chamber to heat the oil, a heater to heat the air prior to its entering the chamber, and a hot-air pipe to supply hot air to the oil prior to passing out of the nozzle.

11. In an oil-burner, the combination of an oil-supply pipe terminating in a nozzle, a valve to regulate the supply of oil to said pipe, an inclosing hot-air chamber through which the supply-pipe passes, means to force hot air through the chamber to heat the oil, and a heater to heat the air prior to its entering the chamber, a hot-air pipe to supply hot air to the oil prior to passing out of the nozzle, and a valve to regulate the supply of air to the oil.

12. In an oil-burner, the combination of an oil-supply pipe terminating in a nozzle, a valve to regulate the supply of oil to said pipe, an inclosing hot-air chamber through which the supply-pipe passes, means to force hot air through the chamber to heat the oil, a heater to heat the air prior to its entering the chamber, a pressure-blower to force the hot air through the hot-air chamber and out of the nozzle, a hot-air pipe to supply hot air to the oil prior to passing out of the nozzle, and a valve to regulate the supply of air to the oil.

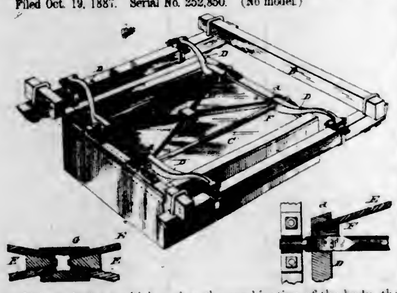
13. The combination of an oil-nozzle, a pipe to supply hot air under pressure to the oil before passing through the nozzle, and a hot-blast nozzle exterior to but arranged close to the oil-nozzle.

379,469. COMBINED BOOK AND SLATE. William T. Jamison, Washington, Pa. Filed Feb. 6, 1886. Serial No. 191,055. (No model.)



Claim.—The herein-described book-cover, composed of the lids *a a'*, having their interior surfaces slated, the back made of the two sheets or layers a^1 a^2, the edges of which embrace and are secured, respectively, to the outer and inner surfaces of the said lids, near the adjoining edges of the latter, and provided with the interior folded projections, c, and the extensions E, slated on their interior surfaces, connected to the corresponding lids by the webbing *e*, and provided at their edges with the guard-strips *f*, to rest on the projections *c*, turned outward, and prevent the slated surfaces of the extensions from coming into contact with those of the corresponding lids, substantially as specified.

379,470. VEHICLE-SPRING. Edwin Jarrell, Harper, Kans. Filed Oct. 19, 1887. Serial No. 252,850. (No model.)



Claim.—1. In a vehicle-spring, the combination of the body, the framing, the arms connected with the body and the framing, and the spring-bars arranged in approximately X shape, united centrally and connected at their outer ends with the arms, substantially as set forth.

2. A spring for vehicles, consisting of a box-tie or connection and the four spring-bars secured at their inner ends in said tie or connection and diverging therefrom, forming an approximately X shape, substantially as and for the purposes specified.

3. The combination, in a vehicle, of a support for one end of the spring-bar, a rotarily-movable connection to which the other end of said bar is secured, and the spring-bar flattened in cross-section, substantially as and for the purpose specified.

4. The combination of the framing, the body, the equalizing bars or shafts journaled to the body, the arms, the spring-bars, and the box-tie in which the inner ends of the spring-bars are secured, substantially as set forth.

5. In a vehicle-spring, the box-tie having sockets opening out of its opposite ends, the spring-bars arranged in pairs and having the inner ends of the bars of such pairs inserted in the box-tie, and the wedge-blocks driven between the inner ends of the bars of each pair and securing the said inner ends within the box-tie, substantially as and for the purposes specified.

6. The combination, with the shafts or equalizing-bars, and the arms connected with and extending past the equalizing-bars, and having such extensions slotted or socketed to receive the ends of the spring-bars, of the spring-bars inserted at their outer ends in the sockets of the arms, and having their inner ends united, and wedges or blocks for securing the outer ends of the bars in the sockets therefor, substantially as set forth.

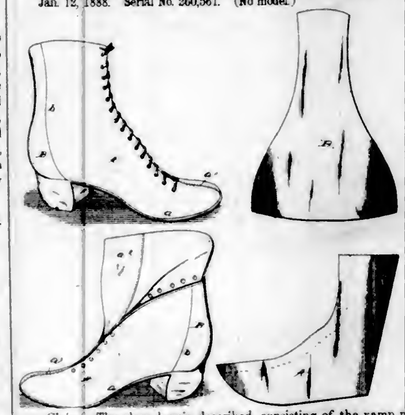
7. In a vehicle-spring, the combination of spring-bars converging centrally, and a box-tie having sockets or recesses in which the inner ends of said bars are secured, substantially as set forth.

8. The combination of the framing, the body, the equalizing-bars journaled to the body, the arms connected at their outer ends with the framing, and connected with and extended past the equalizing-bars, the spring-bars connected at their outer ends with the arms, and the box-tie for uniting the inner ends of said bars, substantially as set forth.

9. The combination, in a vehicle, of the body, rotarily-movable connections connected with said body, and a spring bar or bars extended diagonally between said connections, substantially as set forth.

10. The combination, with a vehicle-body, of shafts journaled to and near the side edges thereof, and provided with outwardly and inwardly extended arms, a connection arranged centrally between said inwardly-projected arms and suspended, substantially as described, and the spring-bars E, secured at their inner ends to the suspended connection diverging therefrom, and secured at their outer ends to the inwardly-projecting arms on the side shafts, substantially as and for the purposes specified.

379,471. BOOT OR SHOE. Selah Jeffers, Reading, Mich. Filed Jan. 12, 1888. Serial No. 260,561. (No model.)



Claim.—The shoe herein described, consisting of the vamp portions A A and a^2 and the heel or counter portion B, all united substantially as shown and set forth.

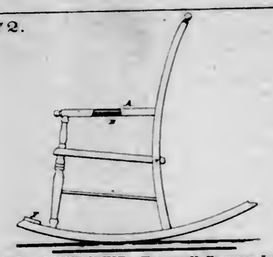
379,472. EQUILIBRIUM APPLIANCE FOR ROCKING-CHAIRS. George Kelly, Chicago, Ill. Filed Oct. 18, 1887. Serial No. 252,743. (No model.)

Claim.—1. The combination, with a rocking-chair, of an equalizing device consisting of a tube or track containing a shifting weight or body, essentially as herein described.

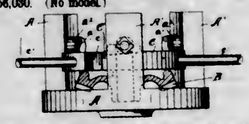
2. The combination, with a rocking-chair having a foot-rest, F, of an equalizing device consisting of a tube or track containing a shifting weight or body, essentially as herein described.

3. The combination, with a rocking-chair, of a platform, D', equalizing device A B, consisting of a tube or track containing a shifting body or weight, and a spring or springs arranged under the end or ends of the tube or track A, essentially as herein described.

379,472.



379,473. LATHE-CHUCK. Herman N. Kennedy, Lake View, Ill., assignor of one-half to John Sayers, same place. Filed Nov. 23, 1887. Serial No. 256,030. (No model.)



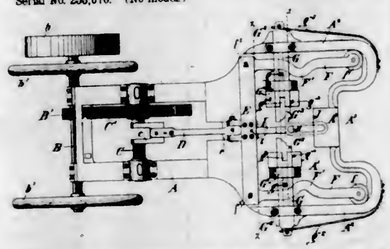
Claim.—1. The combination, with the base or face-plate provided with posts having inwardly-extending pins, of the clamping-disk provided with cam-inclines, upon which the said pins bear, substantially as and for the purposes specified.

2. The combination, with the face-plate provided with posts having inwardly-extending pins, of the clamping-disk provided with corresponding slots or notches, and with cam-inclines extending from the said slots or notches along the face of the disk adjacent to the margin thereof, substantially as and for the purposes specified.

3. The combination, with the face-plate provided with a suitable centering channel or recess, of the posts mounted thereon and provided with inwardly-projecting pins, and the clamping-disk provided with corresponding slots or notches and cam-inclines, substantially as and for the purposes specified.

4. The combination, with the base or face-plate A, having centering channel or recess *a*, of the posts A', having inwardly-projecting pins *a'*, with rollers a^3, and the disk C, provided with corresponding notches or slots *c* and cam-inclines C', substantially as and for the purposes specified.

379,474. MACHINE FOR BENDING AND FORGING COUPLING-LINKS, &c. Martin Kennedy, Hegewisch, Ill. Filed Oct. 28, 1887. Serial No. 253,670. (No model.)



Claim.—1. The combination, with the forging-table A', of the die-carrying slides mounted thereon to move laterally, and the reciprocating cross-head provided with cam-arms to actuate said slides, substantially as and for the purposes specified.

2. In a bending and forging machine, the combination, with the forging-table and the die-carrying slides mounted thereon, of the reciprocating cross-head provided with cam-arms to operate said slides and carrying a third die, substantially as and for the purposes specified.

3. The combination, with the forging-table A' and the die-carrying slides mounted thereon and forced normally outward by suitable springs, of the cross-head E, provided with cam-arms F, to operate the slides, substantially as and for the purposes specified.

4. The combination, with the die-carrying slides and the cam-arms for operating the same, of the table provided with guiding and supporting flanges, against which the cam-arms bear, substantially as and for the purposes specified.

5. The combination, with the slides G, having rollers *g'*, of the cross-head E, and the arms F, having cam-bends F', substantially as and for the purposes specified.

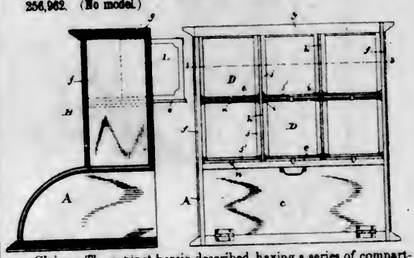
6. The combination, with the die-carrying slides G, each slotted at *g*, and provided with a roller, *g'*, arranged within the slot, of the reciprocating cross-head E, the cam-arms F, passing through the slots *g*, and provided with rollers *f*, and the flanges A^3, against which the rollers *f* bear, substantially as and for the purposes specified.

7. The combination, with the drive-shaft B, having pinion B', of the crank-shaft C, having gear C', to mesh therewith, the pitman D, the cross-head E, having cam-arms F, and the die-carrying slides G, substantially as and for the purposes specified.

8. In a bending and forging machine, the horizontal forging-table provided at its front with a depressed portion, A^4, substantially as and for the purposes specified.

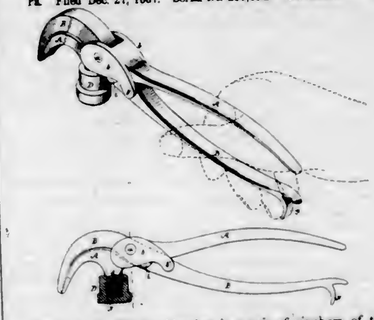
9. In a bending and forging machine, the combination, with the forging-table A', slotted at *e*, and provided with ways *e'*, of the cross-head E, having the downward projection E', and the plate E^2, secured to the bottom thereof, substantially as and for the purposes specified.

379,475. CABINET FOR DISPLAYING CAKES AND CONFECTIONS. Henry King, Baltimore, Md. Filed Dec. 5, 1887. Serial No. 256,962. (No model.)



Claim.—The cabinet herein described, having a series of compartments provided with sliding bottoms c_4 adapted to receive caddies and the like, and the contracting flanges *j j'*, secured to the front walls of each compartment and at the front of the cabinet, whereby the caddies on the sliding bottoms can only be removed from the rear of the cabinet, as shown and described.

379,476. SHOE-MAKER'S PINCHERS. John Knell, Philadelphia, Pa. Filed Dec. 27, 1887. Serial No. 259,064. (No model.)



Claim.—1. The combination, in a pair of pinchers, of the two levers and the pivot-pin therefor, one of said levers having side wings carrying the pivot-pin, whereby an opening of the full width of the other lever is formed for the reception of the latter, all substantially as specified.

2. The combination, in a pair of pinchers, of the two levers and a pivot-pin therefor, with side wings carried by one of the levers and having rearwardly-extending fingers bearing upon the sides of the other lever in the rear of the pivot to prevent twisting of the levers, all substantially as specified.

3. The combination, in a pair of pinchers, of a lever having projecting side wings, a pivot-pin carried thereby, and a second lever fitting between said side wings and having laterally-projecting lugs bearing upon the under sides of the same, to serve as stops, all substantially as specified.

4. The combination, in a pair of pinchers, of the pivoted levers, one of which has a projecting threaded stem with a hammer-head, having a threaded socket for the reception of said stem, all substantially as specified.

5. The combination, in a pair of pinchers, of the pivoted levers,

one of which has a projecting threaded stem, the hammer-head hav-

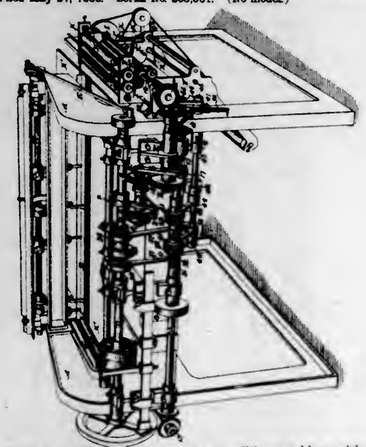
4. The combination, in a quilting-machine, with its master-shaft, two independent compound sewing-machines organized and actuated

Claim.—1. The combination, in a sewing-machine having two or more rows of needles, with its shuttle-carriers, reciprocating driving-

one of which has a projecting threaded stem, the hammer-head having a threaded socket for receiving said stem, and a washer interposed between the end of the stem and the base of the socket, all substantially as specified.

6. The combination, in a pair of pinchers, of two levers pivoted together, the long arm of one of said levers having on the outer side and some distance from its end a forwardly bent or curved projecting finger, *g*, serving as a stop for the hand, all substantially as specified.

379,477. QUILTING-MACHINE. WILLIAM KOCH, New York, N. Y. Filed May 27, 1886. Serial No. 203,381. (No model.)



Claim.—1. The combination, in a quilting-machine, with its needles, the rollers by which the fabric is stretched and fed forward under the needles, and mechanism, substantially as described, for imparting a rotating movement to the rollers and a reciprocating movement to the needles, of an endless cord or band driven with the rollers to move at a right angle with their axes at the same speed as the fabric and in the same plane, whereby a constant marginal guide and support is provided for one edge of the fabric, substantially in the manner and for the purpose herein set forth.

2. The combination, in a quilting-machine, with the carriage F F and feed-rollers G G and G' G', of the endless cord H, the guide and tension pulleys J, I, and G³, and adjusting-pulley M, all substantially in the manner and for the purpose herein set forth.

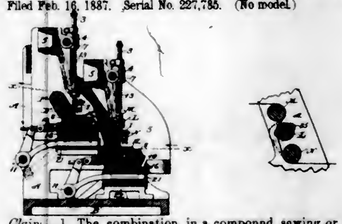
3. The combination, with an endless reversible driving-screw, a carriage actuated by the screw, a reversing-shaft geared to said screw, and a main driving-shaft rotating continuously in one direction, of two opposed ratchet-wheels secured upon the reversing-shaft, a controlling-disk fitted to rotate loosely upon said shaft against each ratchet-wheel, and whose diameter is in part equal thereto, an oscillating arm pivoted upon the same shaft adjacent to each ratchet-wheel, an eccentric or cam upon the main shaft actuating said oscillating arm, a pawl carried by the arm to engage the ratchet-wheel and made wide enough to overlap and rest upon the enlarged periphery of the adjacent disk and be thereby lifted clear of the ratchet, a reversing-rod mounted to slide longitudinally parallel with the endless driving-screw, stops fitted upon said rod against which the carriage actuated by the screw will strike as it reaches the limit of its movement in either direction, and thereby move the rod, and mechanism, substantially as described, whereby the longitudinal movement of said rod is made to partially rotate the disks, the two ratchet-wheels on the reversing-shaft being arranged with reference to the pawls actuating them, and the controlling-disks fixed upon the shaft with reference to each other and the pawls which they lift, in manner as described, whereby when one pawl is lifted in one direction the other pawl will be allowed to drop into engagement with its ratchet-wheel, and vice versa, all substantially in the manner and for the purpose herein set forth.

4. The combination, with an endless reversible driving-screw, 19, a carriage, F, actuated by the screw, a reversing-shaft, 25, geared to said screw, a main shaft, D, rotating continuously in the same direction, two opposed ratchet-wheels, 28 and 29, secured upon the reversing-shaft, a controlling-disk, 40, fitted to rotate loosely upon said shaft against each ratchet-wheel, and whose diameter is in part equal thereto, an oscillating arm, 32, pivoted upon the same shaft adjacent to each ratchet-wheel, an eccentric or cam, 39, upon the main shaft actuating said oscillating arm, a pawl carried by the arm to engage the ratchet-wheel and made wide enough to overlap and rest upon the enlarged periphery of the adjacent disk and be thereby lifted clear of the ratchet, and a toothed wheel, 41, secured to the disk to rotate with it loosely upon the shaft, of a rock-shaft, 45, mounted parallel with the reversing-shaft, radial arms 14 14, projecting from said rock-shaft, segmental racks 42 and 43 upon said arms gearing each with the toothed wheel 41 of one of the controlling-disks, a radial transversely-slotted arm, 47, projecting from the rock-shaft, a lever, 48, pivoted upon the shaft, a pin, 49, at one end of said lever engaging the slot in the radial arm, a reversing-rod, T, mounted parallel with the endless screw 19 to slide longitudinally in its bearings and pivoted to the opposite end of the lever 48, a tooth, *e*, projecting radially from the rock-shaft, a double-notched latch, 53, pivoted laterally to the sliding rod T near its pivoted end, an angular projection, 65, formed between the notches in the latch to engage the tooth, a spring, 54, secured to the latch and operating to force the same with a constant tension against the tooth, and stops 50 50, fitted upon said rod and against which the carriage actuated by the screw will strike as it reaches the limit of its movement in either direction and thereby move the rod, all substantially in the manner and for the purpose herein set forth.

5. The combination, in the reversing-gear of a quilting-machine, with the reciprocating reversing-rod actuated by the carriage, the connected racks actuated by said rod, the toothed disks engaged by said racks, and the reversing-pawls controlled by said disks, of an angular projection carried by the rod, an opposed angular tooth adapted to engage said angular projection and force it in the one direction or the other, a spring adapted to enforce the pressure of the tooth upon the projection, and a pin and slot by which the connected racks are coupled in the rod and a movement of the racks is permitted independently of rod under the pressure of the angular tooth upon the angular projection when apex of the one is carried over the apex of the other, substantially in the manner and for the purpose herein set forth.

6. The combination, with each other and with the needle-bar and needles in a quilting-machine, of two separate carriages, one at each end of the needle-bar, mechanism, substantially as described, for imparting a synchronous, uniform, reciprocating movement to said separate carriages in a direction transverse to the line of needles, guide and tension rollers mounted upon one of the carriages, parallel feed-rollers mounted upon the other carriage, and mechanism, substantially as described, for imparting an intermittent rotary movement to said feed-rollers, substantially in the manner and for the purpose herein set forth.

379,478. QUILTING-MACHINE. WILLIAM KOCH, New York, N. Y. Filed Feb. 16, 1887. Serial No. 227,785. (No model.)



Claim.—1. The combination, in a compound sewing or quilting machine, with its driving and feed mechanism and the shuttle mechanism appropriate to each row of needles therein, of the two separate needle-bars severally carrying one or more rows of needles and each mounted in a different horizontal plane one above the other, whereby all the shuttles are severally brought into position for easy access thereto, substantially in the manner and for the purpose herein set forth.

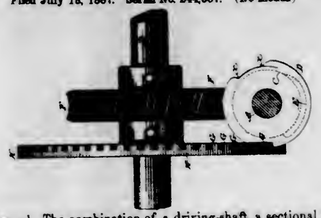
2. The combination, in a sewing or quilting machine, with two independent rows of needles and the shuttle and feed mechanism coacting therewith, of an adjustable idle-roller interposed between said rows of needles, and over which the fabric to be sewed is led in passing from the one to the other, substantially in the manner and for the purpose herein set forth.

3. The combination, in a quilting-machine, of two independent compound sewing-machines organized and actuated substantially as herein described, independent carriages moving in different horizontal planes one above the other and in parallel lines one in front of the other, and upon which said machines are mounted, a set of parallel feed-rollers apart therefrom, mechanism, substantially as described, for actuating synchronously the two machines, the parallel reciprocating carriages and the feed-rollers, and one or more adjustable idle-rollers interposed between the two machines, substantially in the manner and for the purpose herein set forth.

4. The combination, in a quilting-machine, with its master-shaft, two independent compound sewing-machines organized and actuated from said shaft, substantially as herein described, separate carriages upon which said machines are severally mounted to traverse the one in front of the other in parallel lines, and cam or pattern wheels geared mediately to said master-shaft, of adjustable coupling devices connecting each carriage with one of said pattern-wheels, whereby the relative position and movements of the two carriages may be varied at will, substantially in the manner and for the purpose herein set forth.

5. The combination, in a quilting-machine, of two independent compound sewing-machines organized and actuated substantially as herein described, separate carriages upon which said machines are severally mounted to traverse in parallel lines one in front of the other, a cam or pattern wheel for each carriage, a connecting-rod interposed between each pattern-wheel and its carriage, a worm-wheel upon the shaft of each cam or pattern wheel, a driving-shaft, and a worm upon said driving-shaft gearing simultaneously with both worm-wheels, whereby the rotation of the shaft is made to actuate both carriages, substantially in the manner and for the purpose herein set forth.

379,479. MECHANICAL MOVEMENT. WILLIAM KOCH, New York, N. Y. Filed July 18, 1887. Serial No. 244,607. (No model.)

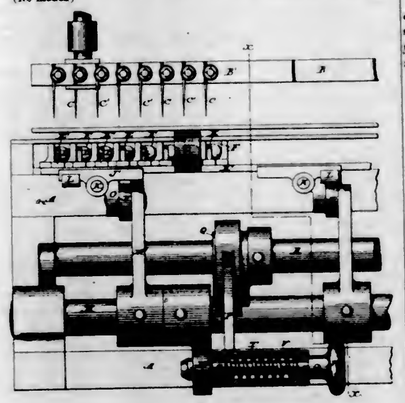


Claim.—1. The combination of a driving-shaft, a sectional worm upon a drum having a radial interrupted flange, both rotating with said shaft, a counter-shaft, a worm-wheel fixed thereon and engaged by said sectional worm, and a face-wheel fixed to the same counter-shaft to be engaged by said interrupted flange, substantially in the manner and for the purpose herein set forth.

2. In mechanism for producing an intermittent motion, the combination, with a worm-wheel and a face-wheel connected to revolve in unison therewith about a common axis, of a drum provided with a sectional worm geared to the worm-wheel, and having a radial interrupted flange formed to revolve with said drum about a second axis and to engage the face-wheel, substantially in the manner and for the purpose herein set forth.

3. The combination, with a sectional worm and a worm-wheel engaged thereby, of a wheel mounted upon the axis of the worm-wheel to revolve therewith, and having cogs formed upon its face each at an angle with a line extending radially from said axis, and an interrupted flange mounted upon the axis of the worm to revolve therewith at one side of the worm-wheel and engage said cogs, substantially in the manner and for the purpose herein set forth.

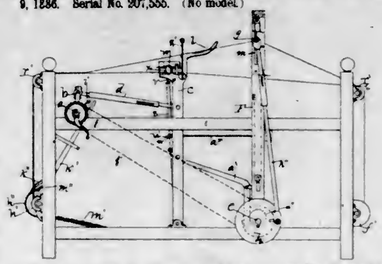
379,480. SHUTTLE-CARRIER FOR QUILTING-MACHINES. WILLIAM KOCH, New York, N. Y. Filed July 28, 1887. Serial No. 245,488. (No model.)



Claim.—1. The combination, in a sewing-machine having two or more rows of needles, with its shuttle-carriers, reciprocating driving-bars coupled to said carriers, a rock-shaft actuating said driving-bars, and a rotating shaft actuating said rock-shaft, substantially in manner as herein described, of a detachable coupling interposed between the rotating shaft and the rock-shaft, substantially in the manner and for the purpose herein set forth.

2. The combination, with two or more rows of shuttles and shuttle-carriers in a sewing-machine having two or more rows of needles, of a separate reciprocating driving-bar for each row of shuttles, an independent carriage for each driving-bar, a common guideway for both carriages, a detachable device for coupling the carriages to move in unison, and mechanism, substantially as described, for imparting a reciprocating movement to said carriages, all substantially in the manner and for the purpose herein set forth.

379,481. LOOM. JACOB A. MATTERN, Colfax, Iowa. Filed July 9, 1886. Serial No. 207,555. (No model.)



Claim.—1. The combination of the main shaft *a*, formed with cranks *b b*, with the compressible connecting-rods *d d*, the batten *c*, the shaft *e*, with crank-wheels *h h* and cams *a''* *a'''*, the rocker-arms *a' a'*, the machine-frame, the wheels *h'* and chains *b''*, the latches *y y*, arms *s s*, the spring *t* and cord for distending the same, the pulleys around which said cord passes, the bars *v v*, pickers *w w*, the heddles *g g*, and cords *n n'*, with pulleys *n''*, and compressible pitmen *k k* for operating the same, the crank *l'*, with lever *k'*, and the take-up roller, all substantially as shown and specified, for the purposes stated.

2. The combination of the spiral spring *t* with the pivoted arms *s s*, the adjustable collars *u*, the cord *a'''*, the pulleys *b''* and *b'''*, the bars *v*, the pickers *w*, and the latches *y*, the rocker-arms *a'* pins *z*, cams *a''*, and shaft *e*, to operate substantially as set forth, for the purposes stated.

3. The combination of the shaft *e*, the cams *a''*, the rock-arm *a'*, the spring *t*, the latches *y*, the arms *s*, and pins *z* on the arms *s*, substantially as set forth, for the purposes stated.

4. The combination of the shaft *e*, crank-wheels *h*, the pitmen *k*, with heads *n*, sleeves *o*, having slots *r'*, springs *p*, and pins *q*, with the heddles *g*, substantially as shown and described, for the purposes specified.

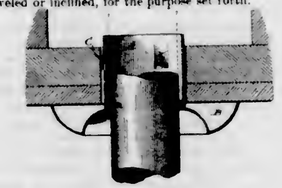
5. The combination of the roller *f''* with the plates *f'''* and *f''''*, the washer *g''*, and the set-screw *g'''*, to operate as specified, for the object stated.

6. The combination of the arms *s*, the latches *y*, the spring *t*, cord *a'''*, the pulleys *b''* and *b'''*, and the adjustable collars *b'*, for winding and shortening the cord, as required, in drawing the arms *s s* to the latches *y y*, and the batten and set-screws for fastening said collars *b'* to the arms *s*, substantially as specified, for the purposes stated.

379,482. PIPE-THIMBLE. AMBROSE T. MATTHEWS, Worcester, Mass., assignor to the Worcester Ferrule Company, same place. Filed Oct. 11, 1887. Serial No. 252,053. (No model.)

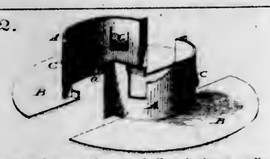
Claim.—1. A pipe-thimble comprising shell or body A, collar B, and a spring-arm, C, projecting downwardly and outwardly from the shell or body, all substantially as shown.

2. A pipe-thimble comprising shell or body A, collar B, and a spring-arm, C, projecting from the shell or body and having its lower edge beveled or inclined, for the purpose set forth.



sirable, passing a reducing-gas—such as producer-gas—over the real-

379,482.

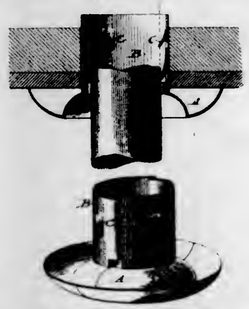


3. A pipe-thimble comprising a shell or body, A, collar B, and a spring-arm, C, formed integral with the shell or body and projecting outwardly and downwardly toward the collar.

4. A divided pipe-thimble provided with outwardly and downwardly projecting arms, substantially as shown.

5. In combination with divided collar B, divided shell A, the parts of the latter being each provided with an arm, as C, and with a flat bearing face or flange at the point of meeting.

379,483. **THIMBLE FOR PIPES.** AMBROSE T. MATTHEWS, Worcester, Mass., assignor to the Worcester Ferrule Company, same place. Filed Oct. 11, 1887. Serial No. 252,064. (No model.)



Claim.—1. As an improved article of manufacture, the pipe-thimble herein described and shown, comprising a collar, a shell or body, and an arm (one or more) projecting inwardly and downwardly within the shell or body toward the collar, and having its lower edge free to engage the exterior of the pipe.

2. The pipe-thimble herein described and shown, comprising a collar, a shell or body, and arms formed integral with the shell or body, projecting inwardly and downwardly within the latter, and having their lower edges arranged to bear or bite upon the pipe.

3. A pipe-thimble comprising a disk, a shell or body, and arms projecting inwardly and downwardly within the shell, the said thimble being divided longitudinally, as and for the purpose set forth.

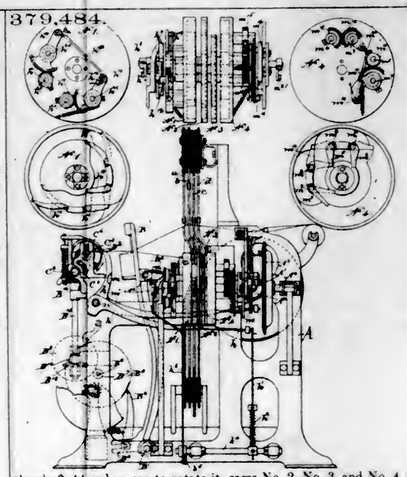
4. In a thimble for pipes, the divided collar A, in combination with the divided shell B, the portions of the shell being adapted to interlock with each other, and provided with inwardly-projecting arms.

379,484. **LOOM FOR WEAVING POCKETS, &c.** JOHN T. MEATS, Taunton, Mass., assignor to the Mason Machine Works, same place. Filed Mar. 16, 1887. Serial No. 231,097. (No model.)

Brief.—Four sets of harness are employed, the second and third of which are arranged to mock each other, each being up or down for three picks and down or up for one pick. The first and fourth harness sets are actuated by cams provided with switches which change the cam-paths, when, by means of connections and cam-points on the reverse of the cam, they are changed from one position to the other by the cam-points engaging one side or the other of a track fixed on a disk, the ends of which tracks are provided with switches which are themselves operated from a pattern mechanism through suitable connections. By proper arrangement of this pattern mechanism it becomes possible to weave the close, the tubular, and the open-sided tubular fabric necessary to constitute a pocket.

Claim.—1. A series of harness-frames, a series of shedding-levers, intermediate connections between the shedding-levers and harness-frames, the shaft A^4 and means to rotate it, cams No. 2 and No. 3, secured to the shaft A^4, and cams No. 1 and No. 4, each having two or more sets of switches adapted to be swung about their pivots, and with means to swing them about the said pivots to effect a change of position of the groove in the said cams, as described, with relation to the cams No. 2 and No. 3, but without changing the shape of the cams or their position on the shaft carrying them, substantially as described.

2. A series of harness-frames, a series of shedding-levers, intermediate connections between the shedding-levers and harness-frames,



the shaft A^4 and means to rotate it, cams No. 2, No. 3, and No. 4, secured to the shaft A^4, cam No. 4 having two or more sets of switches adapted to be swung about their pivots, and with means to swing the sets of switches about the said pivots, and cam No. 1, having four switches, A^{14} A^{15} A^{16} A^{17}, combined with means, substantially as described, to operate the said switches automatically.

3. A harness-frame, a shedding-lever, an intermediate connection between the shedding-lever and harness-frame, the shaft A^4 and means to rotate it, and cam No. 4, provided with four switches, m^2 m^4 m^5 m^6, combined with means, substantially as described, to automatically operate the said switches in sets simultaneously to effect change in the weaving, as set forth.

4. The shedding-cam shaft A^4, the cams No. 2 and No. 3, attached thereto, the cams No. 1 and No. 4, having each a series of switches, and means, substantially as described, to actuate the said switches, as set forth, combined with a series of harness-levers actuated by the said cams, and a series of harness-frames and connections between the said harness-frames and harness-levers, substantially as described.

5. The shaft A^4, the cam No. 1, attached to it, the sector-lever A^{13}, provided with a cam, lug, or projection, combined with a switch-point, as A^{10}, a raceway, as A^9, and with means to actuate the said switch-cam, substantially as described.

6. The raceway A^9, the switch-point A^{10}, the shaft A^8, its crank-arm A^7, and the pattern-wheel, combined with a lever actuated by the said pattern-wheel, and with intermediate devices between the said lever and the said crank-arm A^7, substantially as described.

7. The pattern-wheel, the cam No. 4, having a switch, m^3, a sector connected to said switch and provided with a cam, lug, or projection, as m^{16}, a switch-point, m^{17}, shaft m^{18}, the crank-arm m^{21}, and raceway m^{19}, combined with a lever, m, actuated by the said pattern-wheel, and with devices, substantially as described, intermediate the said lever and the said crank-arm m^{21} to operate the switch-point m^{17}, as and for the purpose set forth.

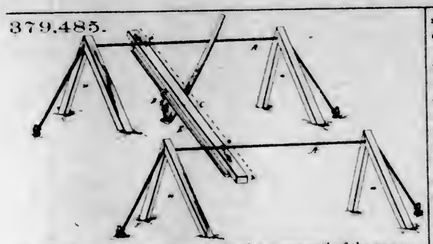
8. The take-up roll C^3, the pattern-wheel having portions of its periphery of different radii to determine the length of the tubular portion of the pocket and of the tubular portion open at one side and cut away to form the bottom of the pocket, gearing between the pattern-wheel and the take-up roll, combined with the levers m and h, the blocks m^{20} and h^{19}, the raceways m^{19} and h^9 on the said blocks, the switch-points m^{17} and h^{10}, pivoted at one end of the raceways m^{19} and h^9, respectively, and with intermediate mechanism, substantially as described, to automatically operate the said switch-points to cause the outer or inner side of the said raceways to be operative, substantially as set forth.

9. The pattern-wheel having radii of different length to leave portions 10 12, means to rotate the pattern-wheel, and a dog pivoted upon the pattern-wheel, combined with a cam and spring to operate the said dog as the pattern-wheel is rotated, substantially as described.

10. The pattern-wheel having radii of different length, as 10 12, a dog pivoted upon the pattern-wheel, and means to rotate the pattern-wheel, combined with a stationary cam, D, and a spring to operate the said dog as the wheel is rotated, substantially as described.

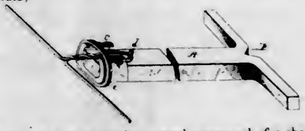
379,485. **TETHER.** BENJAMIN L. MITCHELL, Wilton, Wis. Filed Aug. 10, 1887. Serial No. 246,590. (No model.)

379,485.



Claim.—The herein-described tether, composed of the two parallel wires A, anchored at each end, the braces *a*, for holding the main portion of the wires above the ground, the cross-bar or yoke C, mounted at its ends upon the wires, the guide-rod E, attached to the yoke C, and the halter applied to the guide-rod, substantially as and for the purpose set forth.

379,486. **DEVICE FOR TIGHTENING BARB-WIRE.** BENJAMIN L. MITCHELL, Wilton, Wis. Filed Sept. 27, 1887. Serial No. 250,831. (No model.)

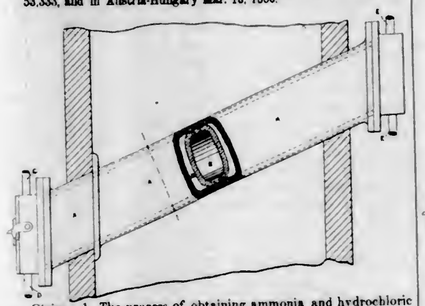


Claim.—1. A wire-tightening wrench composed of a shank having an anchoring-stud and retaining-lips, and a ring or band adapted to slide along on the shank and over the retaining-lips, substantially as and for the purpose specified.

2. A wire-tightening wrench composed of a shank, having a handle at one end and an anchoring-stud and retaining-lips at the other end, and a band or ring adapted to slide along on the stem and over the retaining-lips, substantially as set forth.

3. The combination, with the shank and the anchoring-stud, of the ring or band adapted to slide along on the shank for bending the wire about said stud, substantially as and for the purpose specified.

379,487. **OBTAINING AMMONIA AND HYDROCHLORIC ACID.** LUDWIG MOND, Northwich, County of Chester, England. Filed May 13, 1886. Serial No. 202,096. (No specimens.) Patented in England Jan. 2, 1886, No. 65, Jan. 23, 1886, No. 1,048, and Mar. 8, 1886, No. 3,238; in France Mar. 10, 1886, No. 161,994; in Belgium Mar. 10, 1886, No. 53,333, and in Austria-Hungary Mar. 15, 1886.



Claim.—1. The process of obtaining ammonia and hydrochloric acid from solid ammonium chloride and steam, which consists in vaporizing ammonium chloride, passing the vapor at an elevated temperature over one or more of the oxides or salts herein set forth, loosely piled in a closed chamber or retort made of or lined with materials refractory to the chemicals employed—such, for instance, as nickel or cobalt—collecting the ammonia thereby separated, passing a neutral gas (such as described) through the chamber or retort to drive out the residual ammonia, then forming a partial vacuum in the retort or chamber, then passing through the chamber or retort still containing the solid materials previously acted upon and maintained at a suitable temperature steam preferably heated to such a temperature as to supply the heat required for carrying on the reactions and for making up the loss by radiation and other causes, thereby obtaining a mixture of gas largely composed of hydrochloric acid; lastly, if the salt or oxide used has been oxidized by the action of the steam higher than is desirable, passing a reducing-gas—such as producer-gas—over the residues, and then beginning the cycle of operations afresh.

2. The process of obtaining ammonia and hydrochloric acid from ammonium chloride and steam, which consists in bringing the vapor of the ammonium chloride in contact with one or more oxides or salts, such as described, at an elevated temperature till the oxide or salt is sufficiently chloridized, and then passing in steam at a suitable temperature to obtain hydrochloric acid, substantially as described.

3. The process of obtaining ammonia and hydrochloric acid successively by means of ammonium chloride, which consists in passing successively vapor of ammonium chloride, a neutral gas, and (after exhaustion) hot steam through one and the same retort or chamber containing one or more of the salts or oxides herein described, loosely piled, and repeating the process continuously, so as to use the same solid material continuously without handling or moving them in any way.

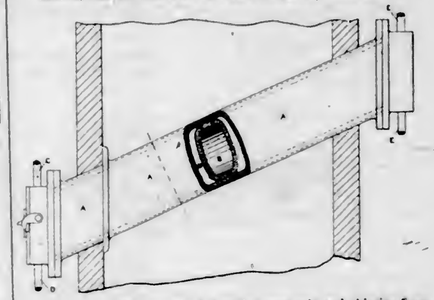
4. The improvement in the process of obtaining ammonia and hydrochloric acid successively by means of ammonium chloride, which consists in passing the vapor of ammonium chloride through a vessel or chamber containing one or more salts or oxides, such as described, and then driving out the residual ammonia by means of a neutral gas and collecting the same, whereby, before blowing in steam, all the ammonia is saved, instead of being partially wasted, as it would be if the steam were admitted instead of the neutral gas.

5. The improvement in the process of obtaining ammonia and hydrochloric acid by means of ammonium chloride, which consists in obtaining the ammonia in the manner described, thoroughly clearing the retort of the residual ammonia by successive passing through of neutral gas and exhausting, and then obtaining the hydrochloric acid, substantially as described.

6. The improvement in obtaining hydrochloric acid from the residue obtained by treating with ammonium chloride one or more of the oxides and salts herein described, which consists in passing over such residue steam heated to a degree sufficient to carry on the reaction and supply the loss from radiation and other causes.

7. The improvement in the process of obtaining ammonia and hydrochloric acid by means of ammonium chloride, which consists in passing a reducing-gas—such as producer-gas—over the residue from the second operation, if an oxide or salt has been employed which is oxidized higher than desirable—such as oxides or salts of iron or manganese—before using it again for the first operation.

379,488. **OBTAINING AMMONIA AND CHLORINE FROM AMMONIUM CHLORIDE.** LUDWIG MOND, Northwich, County of Chester, England. Filed May 13, 1886. Serial No. 202,097. (No specimens.) Patented in England Jan. 2, 1886, No. 66, Jan. 23, 1886, No. 1,049, and Mar. 8, 1886, No. 3,238; in France Mar. 10, 1886, No. 161,994; in Belgium Mar. 10, 1886, No. 53,333, and in Austria-Hungary Mar. 15, 1886.



Claim.—1. The process of obtaining ammonia and chlorine from solid ammonium chloride, which consists in vaporizing the ammonium chloride, passing the vapor at an elevated temperature over or through one or more of the oxides or salts herein set forth, loosely piled in a closed chamber or retort made of or lined with materials refractory to the chemicals employed—such, for instance, as nickel or cobalt—collecting the ammonia thereby separated, passing a neutral gas (such as described) through the chamber or retort to drive out the residual ammonia, then forming a partial vacuum in the retort or chamber, then passing through the chamber or retort still containing the solid materials previously acted upon, and maintained at a suitable temperature, air preferably dried and heated to such a temperature as to supply as far as possible the heat required for carrying on the reactions and for making up the loss by radiation and other causes, thereby obtaining a mixture of gas composed of chlorine, oxygen, and nitrogen which can be utilized in the manufacturing of bleaching-powder

or otherwise; lastly, if the salt or oxide used has by the passage of air been oxidized higher than is desirable, passing a reducing-gas—such as producer-gas—over the residues, and then beginning the cycle of operations afresh.

2. The process of obtaining ammonia and chlorine from ammonium chloride, which consists in bringing the vapor of the ammonium chloride in contact with one or more oxides or salts, such as described, at an elevated temperature till the oxide or salt is sufficiently chloridized, and then passing in air at a suitable temperature to obtain chlorine.

3. The improvement in the process of obtaining ammonia from ammonium chloride, which consists in passing the vapor of ammonium chloride at an elevated temperature over or through the residual oxides or salts from the oxidizing operation, so as to obtain ammonia.

4. The improvement in the process of obtaining ammonia from ammonium chloride, which consists in forming one or more of the oxides or salts above described into bricks or lumps, loosely piling them in a chamber, and bringing them in contact with the ammonium chloride at an elevated temperature, such as described.

5. The process of obtaining ammonia and chlorine successively from ammonium chloride, which consists in passing successively vapor of ammonium chloride, a neutral gas, and (after exhaustion) air, preferably previously dried and heated, through one and the same chamber containing one or more of the salts or oxides herein described loosely piled, and repeating the process continuously, so as to use the same materials continuously without handling or moving them in any way.

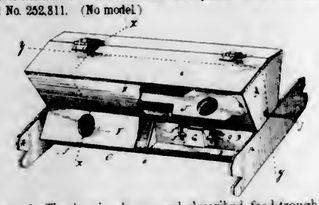
6. The improvement in the process of obtaining ammonia and chlorine successively from ammonium chloride, which consists in passing the vapor of ammonium chloride through a vessel or chamber containing one or more salts or oxides, such as described, and then driving out the residual ammonia by means of a neutral gas and collecting the same, whereby before blowing in air all the ammonia is saved instead of being partially wasted, as it would be if the air were admitted instead of the neutral gas.

7. The improvement in the process of obtaining ammonia and chlorine from ammonium chloride, which consists in obtaining the ammonia in the manner described, thoroughly clearing the retort of the residual ammonia by successive passing through of neutral gas and exhausting, and then obtaining the chlorine, substantially as described.

8. The improvement in obtaining chlorine from the residue obtained by treating with ammonium chloride one or more of the oxides or salts herein described, which consists in passing over such residue air deprived of its moisture and heated to a degree sufficient to carry on the reaction and supply the loss from radiation and other causes.

9. The improvement in the process of obtaining ammonia and chlorine from ammonium chloride, which consists in passing a reducing-gas—such as a producer-gas—over the residue from the second operation if an oxide or salt has been employed which is oxidized higher than desirable, such as oxides or salts of iron or manganese, before using it again for the first operation.

379,489. **FEED-TROUGH.** ELI P. NEWBANES, Beloit, Kans., assignor of one-half to John Mahaffa, same place. Filed Oct. 19, 1887. Serial No. 252,811. (No model.)



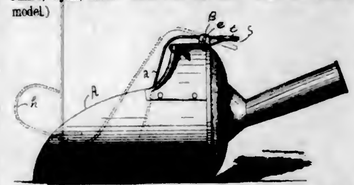
Claim.—1. The herein shown and described feed-trough, composed of the end pieces, A, bottom B, sides C, longitudinal partitions D, arranged at a distance apart and parallel with the edges of the bottom B, and having notches or openings in their lower edges, the hoods or guards placed over said openings, the inclined plates H, the oppositely-inclined blocks I, the hopper having openings in its bottom, and the slide or cut-off for regulating the size of the openings in the bottom of the hopper, substantially as shown and described.

2. The combination, with the trough and the partition having an opening, of the guard placed over the said opening, composed of a central portion and side wings, the central portion inclining from top to bottom and the wings having vertical slots, and the set-screws passing through the slots in the wings of the guard, substantially as and for the purpose specified.

379,490. **FUEL COMPOSITION.** JESSE N. OWEN, Butler, Mo. Filed Oct. 4, 1886. Serial No. 215,301. (No specimens.)

Claim.—The herein-described fuel composition, consisting of rosin and a solvent for the same, sulphur, carbonaceous matter, as corn stalks or cobs, and powdered limestone or ground shells, in compact form, substantially as set forth.

379,491. **BAG-OPENING ATTACHMENT FOR SCOOPS, &c.** FRANK PEASE, Lynn, Mass. Filed Feb. 14, 1887. Serial No. 227,614. (No model.)



Claim.—1. In combination with a scoop having a suitable handle, a lever or frame, as *a*, extending from about the front edge of the scoop backward to near the handle, substantially as described.

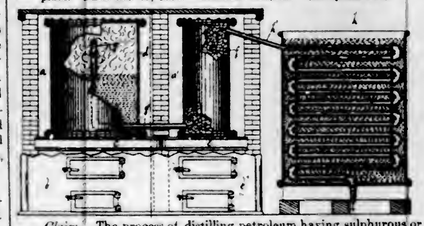
2. In combination with a scoop having a suitable handle, a lever pivotally supported upon said scoop and extending from about its front edge to within close proximity to the handle, substantially as described.

3. As an article of manufacture, a bag-opening device for use in combination with scoops, said device comprising a lever, *a*, formed with a thumb-piece, and a spring clamping-jaw pivotally connected with said lever and formed with a spring-arm bearing against the lever, all substantially as described.

4. A bag-opening device for use in combination with scoops, comprising a lever bent into substantially the form shown and extending from front to rear of the scoop, and a clamping-plate, as E, pivotally connected with said lever, substantially as described.

5. In combination, the scoop and the lever *a*, pivotally supported upon said scoop and arranged upon the upper side, substantially as described.

379,492. **PROCESS OF DISTILLING PETROLEUM.** WILLIAM H. PITT, Buffalo, N. Y., assignor of one-half to George H. Van Vleck, same place. Filed Oct. 15, 1887. Serial No. 252,462. (No specimens.)



Claim.—The process of distilling petroleum having sulphurous or other offensive odors, consisting, essentially, of vaporizing such liquid petroleum, then passing the vapors so formed through a receptacle heated at the same or a higher temperature than the vapors coming from the still, said receptacle being filled with a metal or metals—such as iron or metallic compounds—having an affinity for the sulphurous vapors and other objectionable compounds, whereby they are held and retained by such substance, and conducting away and condensing the balance of the vapors, substantially as shown and described.

379,493. **BUGGY-TOP.** JOHN D. REED, Julesburg, Colo. Filed May 14, 1887. Serial No. 238,270. (No model.)



Claim.—1. The combination, with buggy-top side braces, of the cranked rod or shaft adapted to be actuated by the application of the hand directly thereto, substantially as set forth.

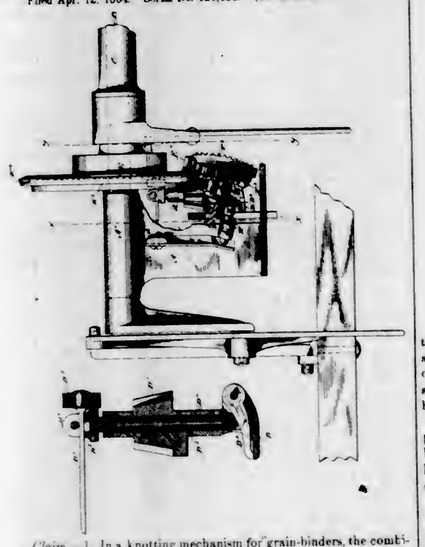
2. The combination, with the buggy-top side braces, of the shaft or rod connected to said braces and provided intermediately of its ends with a crank, which permits of the direct application of the hand of the operator thereto for its manipulation, substantially as set forth.

3. The combination, with the buggy-top side braces, of the rod or shaft having a crank intermediately of its ends, and a lever, substantially as and for the purposes set forth.

4. The combination, with the buggy-top side braces, of the cranked rod or shaft provided with sleeves or thimbles which are provided with studs or projections, between which are received the lower ends of the said braces, substantially as set forth.

5. The combination, with the buggy-top side braces, of the shaft or rod curved or bent upwardly and outwardly, which curved or bent portions are connected together, forming a crank, the outer ends of said shaft or rod connecting with said side braces, substantially as and for the purpose set forth.

379,494. **GRAIN-BINDER.** JOHN F. SEIBERLING, Akron, Ohio. Filed Apr. 12, 1884. Serial No. 127,686. (No model.)



Claim.—1. In a knotting mechanism for grain-binders, the combination, with the cam and gear wheel having gear-segments and delay-rims for operating the knotter and holder, of the rotary crown-disk cord-holder, the holder-shoe embracing the flange of the disk and pressed thereagainst by the spring 1, the knotter having the pivoted jaw, and the sliding rod connected therewith and with the spring D^4, the latter pivoted at one end to the frame, and the other end operated by the cam on the wheel E, substantially as described.

2. In a cord-holder for grain-binders, the combination, with the rotary cord-holder disk, of the pinion and cam-plate fast on the shaft of said disk, and the wheel actuating said disk, provided with a segment-rack serving to partially rotate the disk, and with a mutilated flange or rim permitting such partial rotation and acting on the cam-plate to hold the disk in the intervals between said partial rotations, substantially as described.

379,495. **LADDER-TRUCK.** ERNST F. STECK, Chicago, Ill. Filed Aug. 17, 1887. Serial No. 247,160. (No model.)

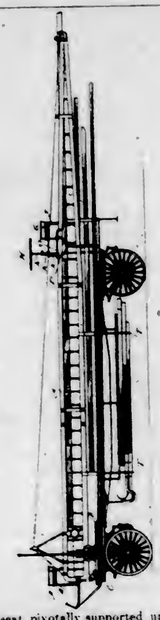
Claim.—1. A ladder-truck provided with a pivoted ladder and a pivoted seat, arranged to alternately occupy upright positions, the ladder being at one end fulcrumed to the forward end portion of the truck and the seat being pivotally supported to stand over the ladder when the latter is in a recumbent position, but having an extent of swing to permit it to clear the ladder and hang down out of the way when the ladder is raised, for the purpose set forth.

2. In a ladder-truck, the driver's seat pivotally supported from the ladder that is fulcrumed at one end upon the truck, substantially as described.

3. In a ladder-truck, the driver's seat pivotally supported in position to stand over the ladder when the latter is in a recumbent condition on the truck, and to be swung forward into position to clear the ladder and hang opposite the forward end of the truck, substantially as described.

4. In a ladder-truck, the ladder fulcrumed at one end upon a turntable and the driver's seat pivotally supported upon the ladder at or adjacent to the fulcrumed end of the latter, said seat being capable of being swung from over the ladder and brought into a hanging position opposite the forward end of the truck, said members being combined and organized substantially as described.

379,495.



5. In a ladder-truck, the driver's seat provided with forward legs pivotally supported opposite the fulcrumed end of the ladder and having shorter rear legs which are temporarily supported upon the ladder when the seat is in position over the same, substantially as described.

6. In a ladder-truck, the combination, with the driver's seat hung to be swung into position over the ladder, of a cross-bar connecting together the rear seat-legs, and bearings upon the ladder for receiving said bar when the seat is in its up position over the ladder, substantially as described.

7. In a ladder-truck, the combination, with the driver's seat having its front legs pivotally supported, of the locking-bar d^3, attached to the rear legs, and the bearings d^2, wherein the ends of said bar are received and locked when said seat is in its up position over the truck, substantially as described.

8. In a ladder-truck, the combination, with the driver's seat having its front legs pivotally supported, of the locking-bar d^3, attached to the rear legs of the seat and provided with a handle, d^4, for holding the bar in a locked condition and for operating the said bar, and a bearing wherein said bar is locked when the seat is in its up position, substantially as described.

9. In a ladder-truck, the foot-board pivotally supported in front of a hinged driver's seat and means for holding the foot-board extended forward from the truck when the driver's seat is in its up position, substantially as described.

10. In a ladder-truck, the combination, with the driver's seat having its front legs pivotally supported, of the pivoted foot-board E, provided with rear lugs, *e*, which are held by the weight of the foot-board against the said front legs of the seat, substantially as described.

11. In a ladder-truck, the removable foot brake-lever F, extended up in front of the pivoted foot-board, substantially as described.

12. The combination, with an extension ladder-truck provided with a ladder which is fulcrumed at the forward end portion of the truck, of the steerer's seat G, arranged in rear of the steering-wheel H, and at one end pivotally hung upon a support rising from one side of the ladder-truck, a support for the opposite free end of seat rising from the opposite side of the ladder-truck, and a locking device for temporarily locking the free end of the seat to its allotted support, said two supports being arranged in height to support the seat across the ladder when the latter is in a recumbent position, for the purpose set forth.

379,496. **MECHANICAL MOVEMENT.** BENJAMIN F. ANDREWS, Boston, Mass. Filed Dec. 19, 1887. Serial No. 258,135. (No model.)

Claim.—1. The combination, with the rock-shaft, of the arm thereon, the pawl pivoted to said arm, the ratchet-wheel, the spring, and the stop, substantially as described.

2. The combination, with the rock-shaft, of the arm thereon, the pawl pivoted to said arm, the ratchet-wheel, the spring, the stop, and the pawl-lifter, substantially as described.

3. The combination, with the rock-shaft, of the arm thereon, the pawl pivoted to said arm, the ratchet-wheel, the spring, the stop, and the pawl-lifter, the latter being pivoted to the frame, substantially as described.

4. The combination, with the rock-shaft, of the arm thereon, the pawl pivoted to said arm, the ratchet-wheel, the spring, the stop, and the pawl-lifter, the latter being pivoted to the frame and provided with a handle, substantially as described.

379,497. **ELECTRIC BATTERY.** ALEXANDER BRAUN, Jr., Cincinnati, Ohio. Filed Dec. 19, 1887. Serial No. 258,134. (No model.)

Claim.—1. In a battery, the combination, with the binding-posts, of the plates of carbon and zinc, the former having a series of perforations, and the latter a series of projections, and the connecting-wires, substantially as described.

2. In a battery, the combination, with the binding-posts, of the plates of carbon and zinc, the former having a series of perforations, and the latter a series of projections, and the connecting-wires, the latter being arranged in pairs, substantially as described.

3. In a battery, the combination, with the binding-posts, of the plates of carbon and zinc, the former having a series of perforations, and the latter a series of projections, and the connecting-wires, the latter being arranged in pairs, and the wires of each pair being connected to the binding-posts at different points, as I, M, connected with the other set of binding-posts by connecting-wires at different points, as J, L, substantially as described.

13. In a ladder-truck, the steerer's seat pivotally supported at one side of the truck and provided with a bearing for the hand steering-wheel rod, said wheel being supported from the seat when the latter is swung over to one side, substantially as described.

14. The combination, with a spring ladder-truck carrying a ladder fulcrumed thereon, of a clamping or spring-holding device for temporarily holding down the spring or springs in a depressed condition, substantially as and for the purpose described.

15. The combination, with a spring ladder-truck carrying a ladder fulcrumed thereon, of a spring-holding device, P, for temporarily holding down the spring or springs, substantially as and for the purpose described.

16. The combination, with a spring ladder-truck carrying a ladder fulcrumed thereon, of the spring-holding devices P, suspended upon the truck, substantially as described.

17. The combination, in a ladder-truck, of a spring-holding device, for the purpose described, with a locking device, R, for the purpose set forth.

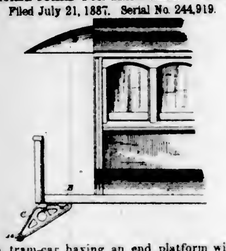
18. In a ladder-truck, the keeper U, arranged for holding in place the pompier-ladders, substantially as set forth.

19. In a ladder-truck, the combination, with the steerer's seat hinged at one of its ends upon the truck, of the rest R, for supporting such seat when the same has been thrown to one side of the truck, substantially as described.

20. In a ladder-truck, the combination, with the screws W, for raising and lowering the ladder, of the swiveled nuts or bearings serving as connections between the screws and the ladder and rigid with the outer ends of pivot-rods V', that are mounted to turn in bearings upon the ladder, substantially as described.

21. In a ladder-truck, the combination, with the screws, of the nuts constituting swiveled connections between the screws and the ladder and rigid upon the pivot-rods V', which are mounted upon bearings on the ladder and at their inner ends fitted to turn on a nut or sleeve, V², substantially as described.

379,496. **HORSE-GUARD FOR TRAM-CARS.** JOHN STEPHENSON, New York, N. Y. Filed July 21, 1887. Serial No. 244,919. (No model.)



Claim.—1. A tram-car having an end platform with a horse-guard or bunter below and in front of said platform, and consisting of a single curved bar or pipe of greater extent than that of the end platform, and connected at the ends to and braced by the steps, substantially as described.

2. A tram-car having at its end or ends a horse-guard or bunter below and in front of said platform, and consisting of a single curved bar or pipe of greater extent than that of the end platform, and held in place by trussed hangers secured to the under side of the platform, and provided with eyed ends to hold the bunter, substantially as described.

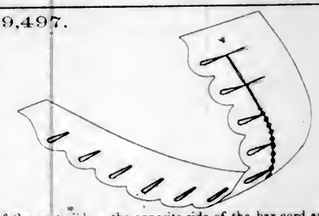
3. A tram-car having its platform-roof (bonnet) extending over and beyond the end platform-dash with a bunter horse-guard rail and hangers projecting beyond the extended roof, as and for the purpose described.

4. A tram-car having a horse-guard bunter consisting of a single rail supported by hangers at the front and with the ends secured to the side steps on lines with the outer edges thereof, the combination forming a continuous curved line similar to a ship's bow, as and for the purpose described.

379,497. **METHOD OF FINISHING BUTTON-HOLES.** ROBERT W. THOMSON and EUGENE M. PHELPS, Lynn, Mass., assignors to said Phelps and Calvin B. Tuttle, trustees, same place. Filed Sept. 1, 1887. Serial No. 248,435. (No model.)

Claim.—1. The method of finishing and staying the bar-cord and thrum ends of button-holes, which consists in passing a thread into the material on one side of the bar-cord and thrum-lines and bringing it

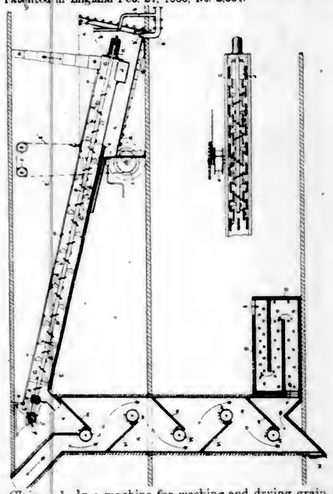




out of the material on the opposite side of the bar-cord and thrum-line without penetrating through to the face side of the material, there engaging it with a second thread and drawing it back through the material, then passing it over the bar-cord and thrum-lines and again engaging it with the second thread and drawing it back to the first position, and then moving the material forward and repeating the operation of engaging the two threads above and below the bar-cord and thrum-lines at each forward movement of the material until the whole of said bar-cord and thrum-lines is overlaid and tied down, substantially as described.

2. The method of finishing bar-cord and thrum ends of button-holes, consisting in stitching through the under surface of the material and over the said cord and ends by causing the needle to enter the material on one side of the said cord and ends and to come out on the other side of the same and then to pass over said cord and ends, thereby securing them without stitching through to the upper surface of the material, substantially as described.

379,498. **GRAIN WASHING AND DRYING MACHINE.** PIETER VAN GELDER, Sowerby Bridge, County of York, England. Filed Sept. 6, 1886. Renewed Feb. 13, 1888. Serial No. 263,791. (No model.) Patented in England Feb. 27, 1886, No. 2,851.



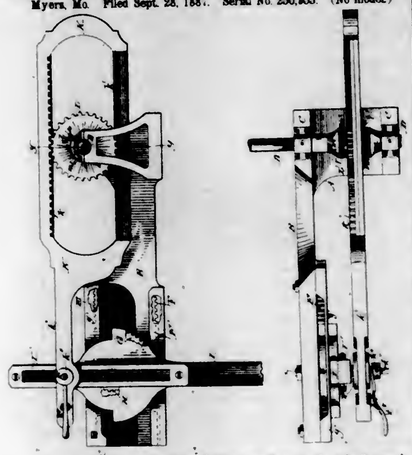
Claim.—1. In a machine for washing and drying grain, the combination, with a tank adapted to contain water, of a perforated trough extending at its lower end into the tank and independent thereof, an imperforate casing surrounding or partially surrounding the trough and connected therewith, a conveyer mounted within the trough, means for imparting motion to said conveyer, and mechanism, substantially such as shown and described, for raising and lowering the trough and its casing.

2. In combination with a tank and the inclined and adjustable trough, casing, and conveyer, the telescopic hopper G, arranged to feed the grain to the perforate trough.

3. In combination with a tank, a perforated trough, a conveyer mounted therein, a well at the head of the trough, and an elevator working within the well, as and for the purpose set forth.

4. In combination with an adjustable trough, a conveyer mounted therein, a shaft carried in fixed bearings and arranged to impart motion to the conveyer, a fixed water-supply pipe, and a distributing-pipe mounted upon the trough and connected with the supply-pipe by means of a flexible joint.

379,499. **MECHANICAL MOVEMENT.** BENJAMIN F. ANDREWS, Myers, Mo. Filed Sept. 28, 1887. Serial No. 250,955. (No model.)



Claim.—1. The combination, with the frame, of a shaft continually rotating in one direction, a slotted pitman having opposite racks, as specified, and an oscillating lever connected with said pitman and supported upon the frame to move at its axial center upon said frame as it is oscillated, substantially as described.

2. The combination, with a driving-shaft, of the ratchet-wheels M M' and gears L L', alternately acting, the pitman having racks k k', and a lever supported to oscillate upon the frame at its axial center, substantially as described.

3. The combination, with the frame, of the drive-shaft, the pitman having arm k^3 and connected therewith, an oscillating lever, a rack-gear upon the frame, and a toothed segment, G, upon the lever to engage with the rack of the frame for reciprocating the pitman, substantially as described.

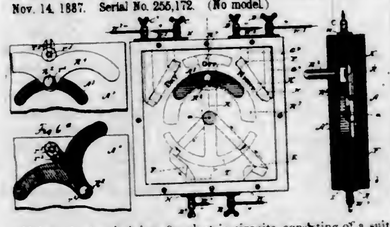
4. The combination, with the frame, of the drive-shaft, the pitman connected therewith, the hand-lever having a rolling-gear, a rack upon the frame to engage with said gear, a guide-plate upon the frame, and a rolling wheel upon the lever supported upon a track parallel with the rack, substantially as described.

5. The combination, with the frame, of the drive-shaft, the pitman having arm k^3, the gears L L', driven, while operating the shaft, in the same direction by said pitman, the oscillating lever supported upon the frame to move at its axial center, and an adjustable connection between the operative end of said lever and the pitman, substantially as described.

379,500. **SALVE.** MARTHA E. AUSTIN, New Orleans, La. Filed Dec. 9, 1887. Serial No. 257,451. (No specimens.)

Claim.—The herein-described composition of matter to be used as a salve, consisting of a rattlesnake's master, (*Agave Virginica*,) frog's oil, white rosin, hog's lard, and beeswax, in or about the proportions specified.

379,501. **SWITCH FOR ELECTRIC-LIGHT AND MOTOR CIRCUITS.** FREDERICK W. BRANN and G. IRVING KINNEY, San Francisco, Cal. Filed Nov. 14, 1887. Serial No. 255,172. (No model.)



Claim.—1. A switch-box for electric circuits, consisting of a suitable box or case having insulated binding-posts on the outside for connecting the wires of the main or service circuit and of the branch or line to be controlled, a switch-lever connected by conductors, as E F, on the inside with the binding-posts of one set of wires, and contact-points, as L M, connected with the other set of binding-posts by conductors, as G G^x, substantially as hereinbefore described.

2. In a switch-box for electric circuits, a switch-lever having separated conductors, as S and S^x, in combination with conductors, as E F, a circuit-closer, T, switch-points, as L M, that are the terminals of a service-circuit, or a circuit to be supplied, and a circuit-closer, as K, at such points, which is adapted to engage with and be held up by the lever when the end thereof is set to the points, substantially as herein described.

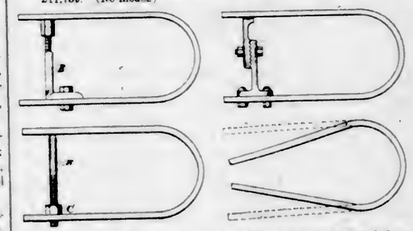
3. The combination of the switch-points L M, a circuit-closer, K, the conducting-strips E F, and the switch-lever R, having conducting-surfaces S S^x, in electric connection with the conducting-strips, the head R^x, at which said conductors S S^x terminate, a circuit-closer, T, at the tail end, and the block with an incline which is adapted to engage with and throw up the circuit-closing spring.

4. In a switch for electric circuits, the combination of the two conductors E F, and the swinging switch-lever R, having conducting-surfaces S S^x which are electrically insulated from each other and electrically connected at the pivot of the lever to the conductors E F, or are practically continuations thereof along the lever to the end, with the switch-points L M and N P and circuit-closers T and K, substantially as described, for operation as set forth.

5. In a switch for electric circuits, conductors E F, a swinging switch-lever having conducting-surfaces on opposite sides terminating at the head in points Y Y^x, which form the terminals of the two conductors E F, a circuit-closing plate, T, carried by the tail end of the lever, and conductors, as G G^x, having contact-points, as L M, substantially as described.

6. The combination, with the box having a curved slot, and the handle R^3, playing in said slot, of the oscillating slot-cover consisting of the plate formed of two segments, as described, having the forked piece r^3 to engage the guide-screw r^4, and the aperture r^5 for the handle, as described

379,502. **SPRING.** JOHN J. BRINKERHOFF, Auburn, N. Y., assignor to Jacob Brinkerhoff, same place. Filed Aug. 24, 1886. Serial No. 211,759. (No model.)



Claim.—1. The improved bow-spring herein described and shown, the limbs of which apply pressure to articles between them, the said spring being provided with a post or standard erected on one of the limbs and extending to and against the other, substantially as described.

2. The improved bow-spring herein described and shown, the limbs of which apply pressure to articles between them, the said spring being provided with an extensible post or standard erected on one of the limbs and extending to and against the other, substantially as described.

379,503. **PNEUMATIC CARRIER.** GEORGE D. BURTON, New Ipswich, N. H. Filed Apr. 6, 1886. Serial No. 197,837. (No model.)

Claim.—1. In a pneumatic carrier, the ball made in sections and secured together by pins and spring-clamps, as shown and described.

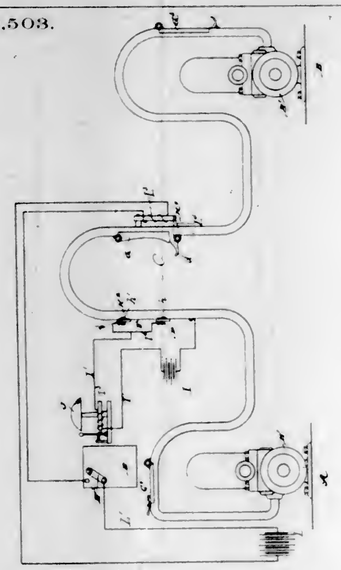
2. A ball for pneumatic carriers, constructed substantially as described, and provided with a spring-clamp which is set into the ball below the plane of the surface of the ball, and said clamp operated by a spring-button, substantially as described.

3. A ball for pneumatic carriers, made in sections, one of which is provided with a shoulder and a notch, the other having a projection, and pivoted clamps having hook ends adapted to engage the notch, as shown and described.

4. In a pneumatic carrier, a system of pipes having traps pivoted thereto, and a ball or carrier, in combination with a pivoted shoe beneath each of the said traps, a guide and an armature connected thereto, and an electro-magnet, all arranged to operate in the manner and for the purposes herein set forth.

5. A pneumatic carrier consisting of a series of pipes provided with traps pivotally secured to the pipes at their upper extremities, springs connecting the traps with the pipes, substantially as described, whereby the traps will be automatically closed when the ball or carrier has passed through them, and the said ball or carrier, in combi-

379,503.

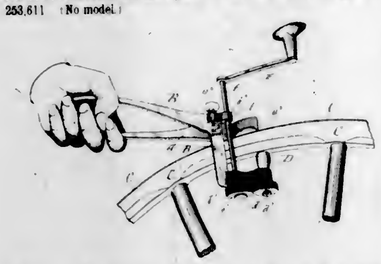


nation with pivoted shoe, armature connected thereto, and electro-magnet for attracting the said armature.

6. In a pneumatic carrier, the combination, with the system of pipes and their traps pivoted thereto and connected therewith by springs, substantially as shown, of a pivoted shoe beneath each of the said traps, a guide connected with the said shoe, and a ball or carrier adapted to be propelled through the said pipes, all arranged to operate in the manner and for the purposes herein set forth.

7. In a pneumatic carrier, the system of pipes and their pivoted trap or traps, the lowermost extremities of the said traps being heavier than their uppermost extremities, whereby they will be capable of being closed by the force of gravity when the ball or parcel has left the pipe, and the said ball or parcel, in combination with a pivoted shoe beneath each of the said traps and a guide connected with the said shoe and located within the pipe.

379,504. WRENCH. JOHN BYRNE, Sharon, Wis., assignor to himself and Charles R. Treat, same place. Filed Oct. 28, 1887. Serial No. 253,611. (No model.)



Claim.—1. The combination of a pair of clamp-arms or levers with a revolving wrench journaled on one of said clamp-arms, substantially as specified.

2. The combination of a pair of clamp-arms or levers with a revolving wrench journaled on one of said clamp-arms, a crank, and a crank-shaft, also journaled on one of said clamp-arms or levers, said crank-shaft having a gear, and the shaft of said wrench being provided with a gear meshing with the gear on said crank-shaft, substantially as specified.

3. The combination, with clamp-arm A, having holding-point or claw a', of clamp-arm B, pivoted thereto and provided with offset or vertical portion B', wrench D, journaled on said clamp-arm B and provided with gear d, crank F, and crank-shaft f, provided with gear f', substantially as specified.

4. The combination of a pair of clamp-arms or levers provided with an adjustable pivot, and one of said clamp-arms having an offset or middle portion, as B', with a revolving wrench journaled on one of said clamp-arms, substantially as specified.

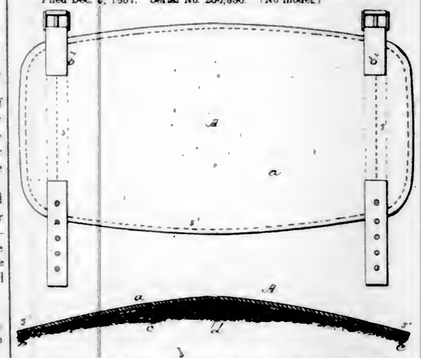
379,505. COMBINED GUTTER AND CONDUIT. HENRY L. CRANFORD, Washington, D. C. Filed July 22, 1887. Serial No. 244,988. (No model.)



Claim.—1. A combined curb and gutter composed of a concrete body of cement, clean sharp sand, and broken stone surfaced or covered with a stratum of cement and granulated granite in about the proportions set forth, and having a conduit or channel, D, and man-hole E, substantially as and for the purposes set forth.

2. A combined curb and gutter composed of a concrete body of cement, clean sharp sand, and broken stone B, surfaced or covered with a stratum of cement and granulated granite, C, said curb and gutter having conduit D and man-holes E, the whole supported upon a concrete foundation, A, one end of which extends upwardly, as shown, to form the boundary of the conduit D, substantially as hereinbefore set forth.

379,506. HORSE-COLLAR PAD. JAPHET S. CUSSON, De Kalb, Ill. Filed Dec. 2, 1887. Serial No. 256,850. (No model.)



Claim.—The within described and shown horse-collar pad as an improved article of manufacture, consisting of a lining of felt which is thickest at the center of the pad and gradually tapering from the center to the edge, in combination with a leather backing and transverse fastening-straps stitched to the said felt lining, as specified.

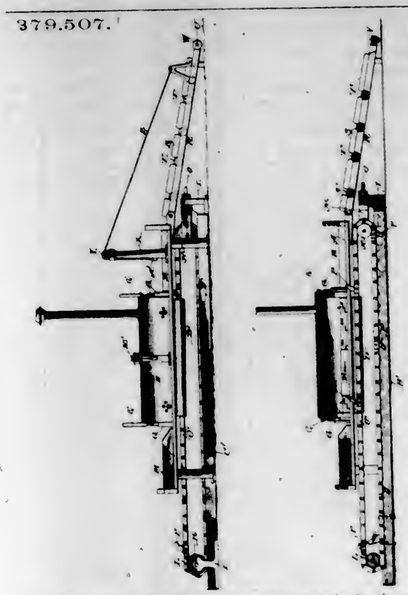
379,507. APPARATUS FOR TRANSFERRING BLOOMS. ROBERT P. DOLAN, Steelton, Pa., assignor, by mesne assignments, of one-half to Frederick E. Smith, same place. Filed Aug. 20, 1887. Serial No. 247,475. (No model.)

Claim.—1. The combination of the endless operating-chain having the lugs, the platform having the longitudinal opening arranged in line with the lugs and through which the latter pass, the heating-furnace arranged on the said platform and having the doors at its ends, and mechanism adapted to be automatically operated by the lugs to open and close the said doors, substantially as described.

2. The combination of the endless operating-chain having the projecting lugs, the platform having the longitudinal opening through which the lugs pass, the furnace on the upper side of the platform and with which the opening D communicates, and the holder D' on the lower side of the furnace to raise the upper side of the endless chain and support the same, for the purpose set forth, substantially as described.

3. The combination of the endless operating-chain having the lugs, the platform having the furnace thereon and provided with longitudinal opening extending through the platform and through the bottom of the furnace, and through which the lugs operate, for the purpose set forth, and the inclined chute at one end of the platform and provided with the rollers T, substantially as described.

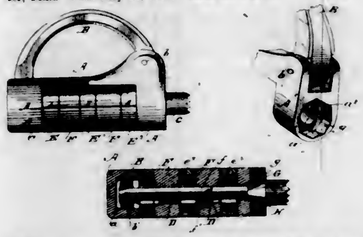
379,507.



4. The combination of the endless operating-chain having the projecting lugs, the platform having the longitudinal opening through which the lugs operate, the furnace on the upper side of the platform, and the water-trough B, arranged at a suitable distance under the platform, and through which the lugs travel in their reverse movement, substantially as described.

5. The combination of the platform having the guideway E, the chute R, hinged to one end of the platform, the guideway S, arranged in line with the guideway E, the rollers T, arranged transversely in the guideway S, and means to raise and lower the same, substantially as described.

379,508. COMBINATION-PADLOCK. EDWIN L. DRAKE, Winchester, Tenn. Filed July 22, 1887. Serial No. 245,030. (No model.)



Claim.—1. In a lock, the combination of the case, the bolt provided with a non-circular crown-piece, such case and crown-piece being provided with interlocking portions, and the tumblers and bits, substantially as set forth.

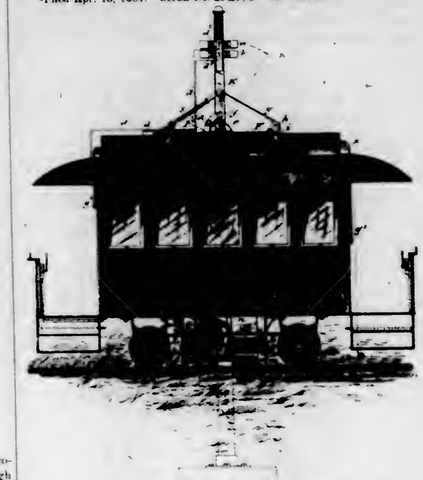
2. The combination of the bolt having bits and a crown-piece, such crown-piece and bolt being provided with interlocking portions, and the tumblers, substantially as set forth.

3. The combination of the case, the bolt having bits and provided with a non-circular portion, the crown-piece having a non-circular opening to fit the non-circular portion of the bolt, such crown-piece and case being provided with interlocking portions, and the tumblers, substantially as set forth.

4. The combination, in a lock, of the case having a non-circular recess, g, and provided with an opening, a', leading from said recess, and with a socket, a, for the point of the shackle, the shackle, the crown-piece G, fitted to recess g and having a non-circular opening, H, the bolt having a non-circular portion, H', the tumblers, and the washers interposed between the same, substantially as set forth.

5. A combination padlock comprising a case, a bolt having bits, the tumblers, and the washers fitted on the said bolt between the tumblers and made of a width exceeding the length of the bits, substantially as and for the purposes specified.

379,509. ELECTRIC SURFACE RAILWAY. JOHN A. ENOS, Boston, assignor to himself, William C. Otis, Nahant, E. Herbert Ingalls and Paul West, both of Brookline, and William E. Plummer, Newton, Mass. Filed Apr. 15, 1887. Serial No. 234,964. (No model.)



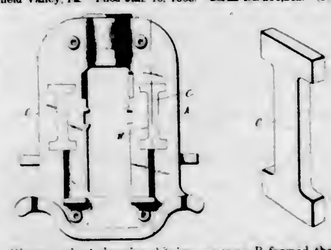
Claim.—1. An electric-railway car having a frame mounted upon a horizontal axis and carrying brushes or current-receivers, a spring for holding said frame upright, an abutment for stopping said frame in upright position, and a cord and pulley for turning the frame against the tension of the spring, substantially as shown and described.

2. In an electric-railway car, the combination of a hinged frame carrying the brushes or current-receivers and projecting above the car, a turn-plate for reversing the same, a cord for deflecting the frame, and independent pull-cords and pulleys arranged at opposite ends of the car for connection with the hinged frame when turned to either position, substantially as shown and described.

3. The combination, with the car-axles having chain-wheels thereon with chains, of a counter-shaft located between them and having chain-wheels and friction-shells at the ends, hangers forming journals for the counter-shaft, and the electric motors having friction-wheels on their armature-axes engaging with the inner periphery of the shells, substantially as shown and described.

4. The combination, with the car-axles having chain-wheels thereon with chains, of a counter-shaft located between them and having chain-wheels and friction-shells at the ends, swinging hangers forming journals for the counter-shaft, the motor-shaft with friction-wheels, and tension-rods for holding the shells engaged with the friction-wheels, substantially as and for the purpose described.

379,510. HOUSING FOR ROLLING-MILLS. JOSEPH EYDON, Mansfield Valley, Pa. Filed Jan. 10, 1888. Serial No. 260,282. (No model.)



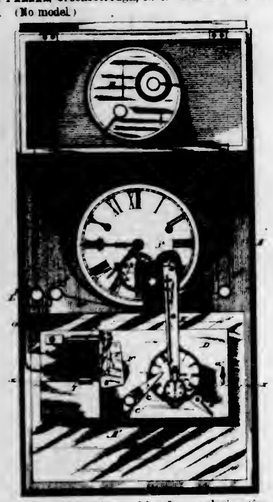
Claim.—1. A housing having recesses B formed therein, and straps or keys C, secured in the said recesses, for the purpose set forth, substantially as described.

2. As a new article of manufacture, a housing having the recesses B formed therein, and straps or keys of stronger metal than that of which the housing is composed, said straps or keys being placed in the recesses and secured therein by shrinking them, substantially as described.

3. The method of mending broken housings, consisting of making communicating recesses B in the broken parts of the housing and placing straps or keys C in the said recesses, substantially as described.

4. A housing having recesses B formed therein, and straps or keys C, secured in the said recesses by shrinking the said straps or keys, the latter being made substantially in the form of the letter I, as set forth.

379,511. MACHINE FOR REGULATING TIME-PIECES. WILLIAM B. FARRAR, Greensborough, N. C. Filed Nov. 2, 1887. Serial No. 254,051. (No model.)



Claim.—1. An automatic machine for regulating time-pieces, consisting of a regulating-clock having an arm supporting an adjustable needle, connecting mechanism for adjusting the needle by the revolution of one of the shafts of said clock, a tripping device operated by the said needle, and an actuating mechanism connected to the regulator of the watch and connected to and set in motion by the tripping mechanism, substantially as and for the purpose described.

2. An automatic machine for regulating time-pieces, consisting of a regulating-clock having an arm supporting an adjustable needle, connecting mechanism for adjusting the needle by the revolution of one of the shafts of the clock, an electric circuit and circuit-breaker operated by the needle, and an electro-magnet and actuating-gears connected to the regulator of the watch to adjust it, substantially as and for the purpose described.

3. In a regulating-machine for time-pieces, the combination of the stand or watch-holder and a supporting-base, having a mirror or reflecting-surface permanently attached thereto and forming a table for the watch-holder, the said reflecting-table being attached to and forming a part of the regulating mechanism, substantially as and for the purpose described.

4. In a regulating-machine for time-pieces, the combination of a regulating-clock with supporting-arm and an adjustable needle connected and operated by the clock, a base, a detached stand or watch-holder provided with actuating mechanism for adjusting the regulator of the watch, and one or more leveling-screws for adapting the stand to the regulating-clock, substantially as and for the purpose described.

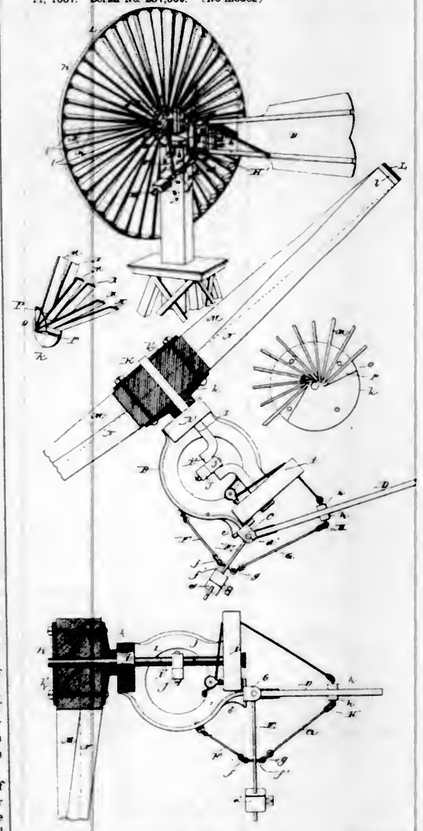
5. The combination, with the regulating-clock and its needle-arm, of the needle *n*, the elbow-lever *m*, the slide-rod *l*, the elbow-lever J, the spring *j*, and the wiper-cam *k*, substantially as and for the purpose described.

6. The combination, with the regulating-clock and its needle-arm, of the needle *n*, the elbow-lever *m*, the slide-rod *l*, elbow-lever J, the spring *j*, wiper-cam *k*, the circuit-breaker *p q*, operated by the needle, a battery, watch-holder, and electro-magnetic adjusting mechanism mounted upon the latter and adapted to move the regulator of the watch, substantially as and for the purpose described.

7. The stand or watch-holder having an opening with clamping devices for the watch, an electro-magnet, armature, and pawl, ratchet-wheel, gear-wheel with crank-pins, and adjusting-bar *d*, for moving the regulator of the watch, substantially as and for the purpose described.

8. The combination, with the watch-holder and actuating-gears for the regulator, of the adjusting-bar *d*, having teeth on one side fitting over the regulator, and a rack-shaft and guide-arm for the adjusting-bar for connecting and disconnecting the regulator and its adjusting devices, substantially as and for the purpose described.

379,512. WINDMILL. SAMUEL M. FULTON, Galt, Cal. Filed May 11, 1887. Serial No. 237,869. (No model.)

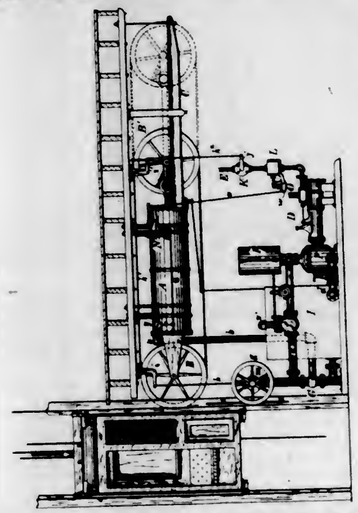


Claim.—1. A wind-wheel consisting of a hub, a rim, and two series of wings, the outer ends of the wings of one series alternating with those of the other, the members of one series extending straight from the rim to the hub, so that the side of the wheel formed by their outer edges is flat, while the members of the other series incline rearward from rim to hub, so that the rear side of the wheel formed by the outer edges thereof is convex, thus causing all parts of the wheel to brace and stiffen each other, substantially as specified.

2. A windmill-wheel composed of a hub, a rim, and two series of wings, the hub being double as long as the width of any one of the wings, and having wedge-shaped blocks, with their sides properly inclined to their ends, and the inner ends of the wings inserted between said blocks, a wing of each series entering between each two blocks, and the wings of each series running to and into the hub tangentially to the axis of the hub, substantially as and for the purpose specified.

3. In a windmill, the combination of the hub-segments P, the wings M and N, having their inner ends secured between the hub-segments, said wings N having their inner ends secured to the hub in rear of and in line with the inner ends of wings M, and then inclined forward and having their outer ends arranged midway between the outer ends of wings M and in line therewith, and the rim connecting the outer ends of the wings M and N, substantially as described.

379,513. HYDRAULIC ELEVATOR. LORENZO S. GRAVES and FRED. B. GRAVES, Rochester, N. Y. Filed Apr. 19, 1886. Serial No. 199,398. (No model.)



Claim.—1. In a hydraulic elevator, a hydraulic cylinder, a piston operating therein, to which the weight to be moved is connected, a steam pumping apparatus for forcing water into the hydraulic cylinder, a valve controlled by the operator in the car for controlling the admission of steam to the pumping apparatus, a governing device—such as a piston operated upon by the pressure in the main cylinder—connected to a valve located in the main steam-supply, whereby the operator may, by a manipulation of the first-mentioned valve, admit steam to or cut it off from the pump, while the piston-regulator is so arranged as to admit a greater quantity of steam to the pump when the pressure in the cylinder increases, and vice versa, substantially as described.

2. In a hydraulic elevator, the combination of the main cylinder, the piston operating therein connected to the weight to be moved, a steam pumping apparatus for forcing water into the cylinder, a tank with which the pump communicates and into which the main cylinder exhausts, a valve for controlling the passage between the main cylinder and the pumping apparatus, a valve for controlling the passage of steam to the pumping apparatus, and suitable connections between the said valves whereby they will be operated together, substantially as described.

3. In a hydraulic elevator, the combination of the main cylinder, a piston operating therein connected to the weight to be moved, a tank, a steam pumping apparatus for forcing water into the cylinder from the tank, a valve for controlling the passage between the pumping apparatus and the cylinder and between the cylinder and the tank, a valve for controlling the admission of steam to the pump, and connections between the two valves whereby they will be operated together, as set forth.

4. In a hydraulic elevator, the combination of the main cylinder, a piston operating therein connected to the weight to be moved, a tank, a steam pumping apparatus for forcing water into the cylinder from the tank, a valve controlling the passage between the pumping apparatus and the cylinder and between the cylinder and the tank, a valve located in the steam-supply to the pumping apparatus, and suitable connections between the two valves whereby the first-mentioned valve may be operated to regulate communication between the cylinder and tank, but when operated to open communication between the pumping apparatus and the cylinder the steam-valve will be opened, substantially as described.

5. In a hydraulic elevator, the combination of the main cylinder, the piston therein connected to the weight to be moved, a steam-pumping apparatus for forcing water into said cylinder, a tank, a valve controlling the passage between the pumping apparatus and the cylinder and between the cylinder and tank, devices for operating said valve directly from the car, a valve controlling the admission of steam to the pumping apparatus, connections between the two valves, and a device—such as a cam—interposed in said connection, whereby the operator in the car may operate the water-valve to regulate the exhaust from the cylinder to the tank, but operating when communication is established between the pumping apparatus and the cylinder to open the steam-valve, substantially as described.

6. In a hydraulic elevator, the combination of the main cylinder, the piston therein connected to the weight to be moved, a steam pumping apparatus for forcing water into said cylinder, a valve for controlling the passage between said pumping apparatus and cylinder and also the exhaust from said cylinder, a valve for controlling the admission of steam to the pumping apparatus, a shaft by the rotation of which the water-valve is operated, a cam connected thereto, having a way therein partly concentric and partly eccentric, a projection operating in said way connected to the steam-valve, whereby when the water-valve is operated to control the exhaust the projection is in the concentric portion, but when the valve is operated to connect the pumping apparatus with the cylinder the projection engages the eccentric portion and the steam-valve is opened, substantially as described.

7. In a hydraulic elevator, the combination of the main cylinder, a piston connected to the weight to be moved operating therein, a steam pumping apparatus for forcing water into the cylinder, a tank with which said pump connects, a valve controlling communication between the pump and cylinder and also the exhaust from the latter into the tank, a valve for controlling the supply of steam to the pump, connection between the two valves for causing them to operate together, and an automatic pressure-regulator communicating with the main cylinder and with a governing-valve located in the main steam-supply operating to admit a quantity of steam to the pump proportioned to the amount of pressure caused by the weight on the piston in the main cylinder, substantially as described.

8. In a hydraulic elevator, the combination of the main cylinder, the piston connected to the weight, the steam pumping apparatus for forcing water into the cylinder, a supplemental cylinder connected to the main cylinder, a piston therein, a spring operating on said piston against the movement caused by pressure in the main cylinder, means for adjusting the tension of the spring, a governor-valve in the main steam-supply to the pump, and a connection between said valves and the supplemental piston, whereby the amount of steam admitted to the pump is proportioned to the pressure in the main cylinder and this proportion can be regulated by adjusting the tension of the spring before mentioned, substantially as described.

9. The combination, with the cylinder A of a hydraulic elevator, of the steam-pump D, suitable water outlet and inlet passages, regulator N, connected to the hydraulic cylinder and arranged to operate the steam-valve I, the steam-inlet valve K, cam *m*, and suitable connecting mechanism, substantially as described.

379,514. TRUNK. JULIAN B. HUBBELL, Washington, D. C. Filed Sept. 19, 1887. Serial No. 250,076. (No model.)



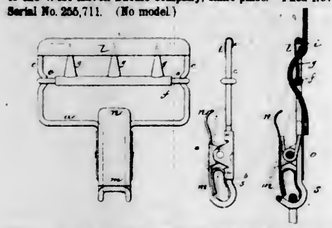
Claim.—1. In combination with a trunk, A, provided with the holes *b* in series, the cleats C, provided with pins *d* and slots *e*, and the slats F, adapted to enter said slots, as set forth.

2. The cleats C, provided with pins *d* and slots *e*, enlarged toward the back, combined with slats F, provided with shoulders *f*, adapted to enter said slots and hold the cleats in place by confinement by said shoulders, the whole constituting a trunk-diaphragm adjustable, entirely removable from the trunk, and entirely separable.

3. Combined with a trunk and a slatted removable diaphragm for the same, a loose bottom, H, constructed of fabric, stiffened by parallel ribs in one direction, and flexible to be rolled up in the other direction.

4. Combined with a trunk and a slatted diaphragm for the same, the bottom H, rigid in one direction and flexible in the other, and the roller *k*, mounted on the cleat C, for the purpose set forth.

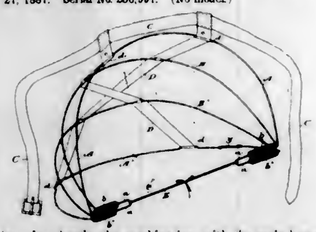
379,515. **BUCKLE.** JAMES C. HYDE, West Haven, Conn., assignor to the West Haven Buckle Company, same place. Filed Nov. 21, 1887. Serial No. 255,711. (No model.)



Claim.—1. In a buckle in which the engaging-tongues are pointed and hinged to swing toward and from the bearing-bar, the combination therein of a bearing-bar hinged in the frame upon an axis parallel with the axis upon which the tongues are hinged, the said bearing-bar being of J shape in transverse section, the shorter or narrower side of the bar forming the bearing for the tongues and the longer side a guard to cover the tongues, substantially as described.

2. In a buckle having a hook depending from the lower side of the frame, the hook made from wire doubled at the tip of the hook and so as to form two sides of the body of the hook, the combination therewith of a clip constructed with ears *l l*, closed upon the said two sides of the hook, with a tongue, *m*, constructed with ears *w w*, corresponding to the ears *l l* of the clip, a pivot extending through the ears of the clip and tongue as a pintle, upon which the tongue is hinged, and a spring between the tongue and clip, the said tongue extending from the pivot to the tip of the hook and constructed with an extension, *n*, in the opposite direction as a handle for operating the tongue, the tongue also constructed with an extension, *r*, from its end, the said extension turned upward beneath the end of the tongue and returned toward the tip of the hook to form a guard, *s*, substantially as described.

379,516. **BUSTLE.** FRANK M. JEFFERY, Jersey City, N. J. Filed Dec. 27, 1887. Serial No. 258,991. (No model.)

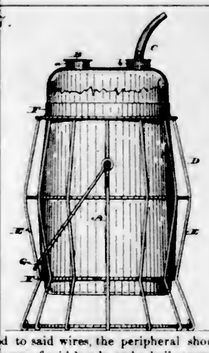


Claim.—In a bustle, the combination, with the main bows A and A^x of the frame, made of spring-wire, with inwardly-turned loops bent therein, forming the torsional springs *a a*, of the intermediate bows provided with hinging-coils on their ends, which embrace and turn on the said springs, and a flexible connector coupling said main and intermediate bows, substantially as set forth.

379,517. **OIL-CAN OR OTHER VESSEL.** AARON R. W. KNIGHT, Feasterville, Pa. Filed Dec. 12, 1887. Serial No. 257,631. (No model.)

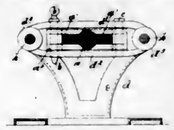
Claim.—An oil-can or other vessel consisting of a glass body having a peripheral shoulder on its lower portion and a supply-cap and nozzle on its upper end and provided with a guard formed of wires extending in the direction of the length of the body and below the same, the lower ends of said wires being connected to a wire ring, the

379,517.



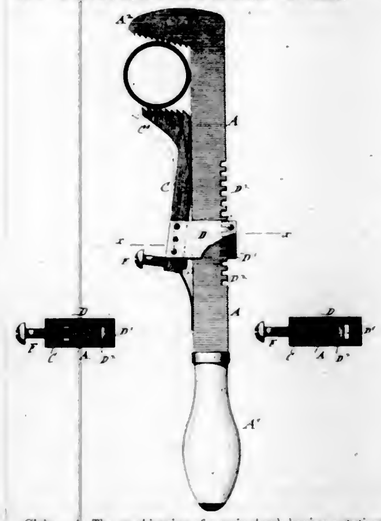
bands F, secured to said wires, the peripheral shoulder of the body resting on the lower of said bands, and a bail secured to the guard between the top and center of the sides thereof, said parts being combined substantially as and for the purpose set forth.

379,518. **APPLIANCE FOR LOCKING FILTER-PRESSES.** JOHANN KROOG, Halle-on-the-Saale, Prussia, Germany. Filed Mar. 16, 1887. Serial No. 231,150. (No model.) Patented in Germany Sept. 26, 1879, No. 9,641, and in Austria-Hungary July 15, 1880, No. 40,651 and No. 1,950.



Claim.—In a filtering-press, the combination of the standard *d*, provided at its top with the upper and lower fixed plates, d^1 d^2, joined at their ends, the horizontal non-rotating nut *a*, having the horizontal rigid arms *a'*, provided with perforated hubs a^3, arranged between and bearing against the upper and lower plates on the standard, the rotating screw *c*, arranged in the nut, and the bolts *b* and *c*, passing through the rigid arms of the nut and the said upper and lower plates, substantially as described.

379,519. **PIPE-WRENCH.** THEODORE F. KRUEGER, New York, N. Y. Filed June 16, 1887. Serial No. 241,469. (No model.)

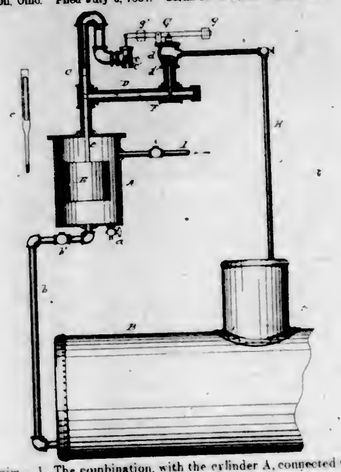


Claim.—1. The combination of a main shank having a stationary jaw at the outer end, a straight side and a rack at the opposite side, a

movable jaw having a shank with an obtuse-angled face next to the straight side of the main shank, a guide-box applied rigidly to the shank of the movable jaw and provided with a toothed end wall or section for engaging the rack of the main shank, and a spring that is attached to the lower end of the shank of the movable jaw and adapted to slide by its free end along the main shank, substantially as set forth.

2. The combination of a main shank having a stationary jaw at the outer end, a straight side and a rack at the opposite side, a movable jaw having a shank with an obtuse-angled face next to the straight side of the main shank, a guide-box attached rigidly to the lower end of the movable jaw, said guide-box having a toothed section meshing with the rack of the main shank, a spring secured to the lower end of the shank of the movable jaw, the free end of the spring sliding along the main shank, and a locking-screw passing through the lower end of the movable shank, substantially as set forth.

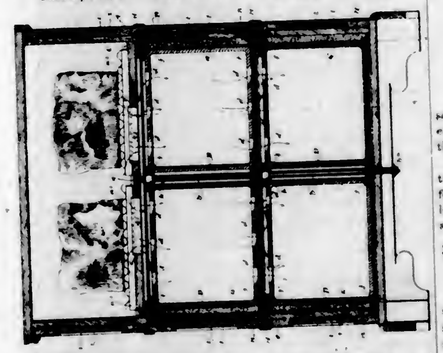
379,520. **BOILER-FEEDER.** J. HENRY KRUSE and LEWIS A. SMITH, Akron, Ohio. Filed July 6, 1887. Serial No. 243,509. (No model.)



Claim.—1. The combination, with the cylinder A, connected with the water-supply and boiler by pipes I and *b*, and having the case C, valve *c'*, arm D, and valve *d'*, of the float E, stem *e*, and levers F and G, all constructed and arranged substantially as shown, and for the purpose specified.

2. In a boiler-feeder constructed substantially as shown, the combination, with the lever G, arranged to simultaneously operate the valves *c' d'* in opposite directions, of the adjustable weight *g*, substantially as shown, and for the purpose specified.

379,521. **REFRIGERATOR.** CHARLES W. MONROE, Cleveland, Ohio. Filed Apr. 12, 1887. Serial No. 234,532. (No model.)



Claim.—1. A refrigerator formed of detachable sections, and consisting of an ice-box, series of suitably-supported and slightly-separated perforated cells located below the ice-box, and having communicating air-passages on two or more of their sides for allowing a continuous circulation of air from the ice-box, and drip-pipes leading from the ice-box through an air-space between the cells, and thence out of the refrigerator, substantially as set forth.

2. A refrigerator made in detachable sections, and consisting, essentially, of an ice-box, superimposed rows of perforated cells having air-passage ways on two or more sides thereof, and a drip-pipe located in one of the air-passage ways, said air-passage ways being in open communication with each other when the different sections are together, the drip-pipes being made with enlarged upper ends or catch-basins to receive the discharge of the drip-pipe of the next section above, substantially as set forth.

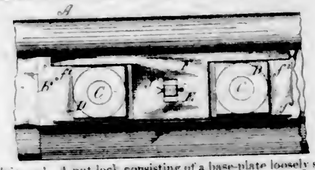
379,522. **PHOTOGRAPH-EXHIBITOR.** GEORGE M. PORTEOUS and FREDERICK S. MILLER, Chicago, Ill. Filed Jan. 23, 1888. Serial No. 261,687. (No model.)



Claim.—1. As an improvement in photographic exhibitors, the tilting case A, pivotally mounted upon a supporting-stand and provided with a hinged lid which can be opened and thrown back out of the way when the box is tilted to bring its top to a side position, and a set of photograph-holders, and mechanism, substantially as set forth, for supporting and operating the same, contained within the case and arranged, whereby when the top of the box is brought to one side and opened the photographs can be successively projected out from the box for inspection, substantially in the manner described, said members being all combined and organized substantially as and for the purpose specified.

2. The combination of the tilting case A, provided with a flat hinged lid, B, for opening and closing the top of the case, the set of photograph-holders, and mechanism, substantially as described, for operating the same, contained within the box, a locking device for temporarily holding the box at the required angle, and the stand C, having arms *c' c'*, whereon the box is pivotally supported to tilt about a horizontal axis, all constructed and arranged substantially as shown and described, and for the purpose specified.

379,523. **NUT-LOCK.** EDWIN C. ROLLS, Chatham, Ontario, Canada. Filed Nov. 9, 1887. Serial No. 254,942. (No model.)



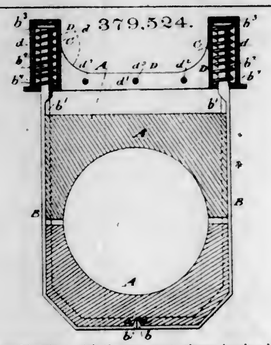
Claim.—1. A nut-lock consisting of a base-plate loosely supported so as to have limited vertical movement, and provided with lower arms extending beneath the nuts and arranged at an angle to the body of the base-plate, substantially as described.

2. A nut-lock consisting of a base-plate having an elongated central slot and loosely supported so as to have vertical movement, a post for supporting the same, upper bearing-surfaces for the nuts, and a lower bearing-flange therefor, bent at an angle to the body of the plate and on the line of the opening for the nut, substantially as described.

379,524. **DUST-GUARD FOR CAR-AXLE BOXES.** PETER SWENEY, New York, N. Y. Filed July 14, 1887. Serial No. 244,288. (No model.)

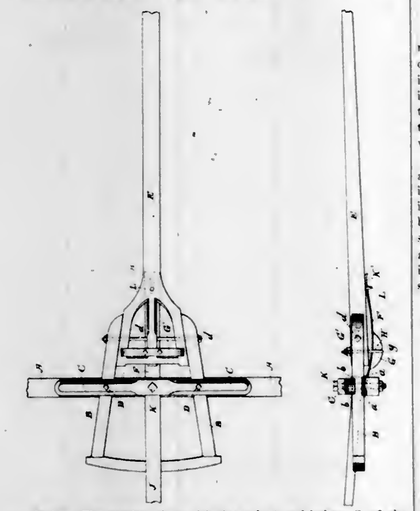
Claim.—1. A car-axle dust-guard having the upper and lower section hung in the same stirrup, the latter being pulled upward by a spring, and thus causing the lower section only to hug the axle-journal as described, and for the purpose specified.

2. The stirrup made in two parts, each having a bottom stud *b'* a rabbet, *b*, and a rounded top with head b^2 whereby it may be used as described.



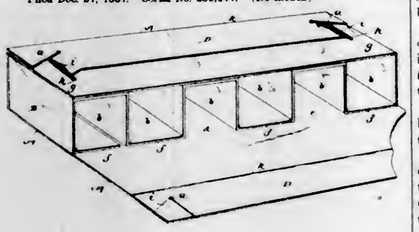
3. The combination, with the two-part stirrup having heads b^3 b^3 and the spiral springs C C, of the two-part cap D D', having the shelf b^4, whereby the springs may be readily inserted and protected, as specified.

379,525. TONGUE-SUPPORT. JOHN R. YOUNG, Osceola, Mo. Filed Dec. 3, 1887. Serial No. 256,875. (No model.)



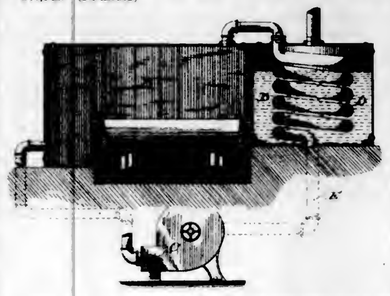
Claim.—The combination, with the axle A and bolster C, of the hounds B B, tongue E, yoke-supporting cross-bar G', yoke or stirrup H, curved block G, having the groove *g*, slotted spring F, bolt *d*, pin *f*, connecting-bar J, and pin K, all constructed, arranged, and operated as herein described, and for the purpose set forth.

379,526. EGG SAFETY SHIPPING-PACKAGE. JOSEPH ADAMS, New Orleans, La., assignor of one-half to John U. Adams, same place. Filed Dec. 27, 1887. Serial No. 259,077. (No model.)



Claim.—As an improved article of manufacture, an egg-holder consisting of a main sheet of pasteboard or the like, having its corners slitted diagonally to form dovetail locking-tongues, and a strip bent in rectangular form and secured to the main strip so as to form egg-cells, the two end cells having slots to receive the locking-tongues and the said slotted ends turned up against the cells, substantially as specified.

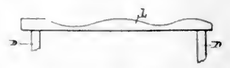
379,527. SLAG-FURNACE. ORSEMAS T. X. ADAMS, Chicago, Ill., assignor to Melinda Peck, same place. Filed Feb. 9, 1888. Serial No. 263,542. (No model.)



Claim.—1. In a slag steam-generator, the combination of a slag-receptacle, a closed air-space in proximity thereto, to which the heat of the slag is imparted, a steam-generating chamber, a closed air-space in proximity thereto imparting its heat to the water in the generating-chamber, and free communication between the slag air-space and the generating-chamber air-space, whereby the heated air passes from the slag air-space to the generating-chamber air-space and heats the water and generates the steam, substantially as described.

2. In a slag steam-generator, the combination of a slag-receptacle, a closed air-space in proximity thereto, to which the heat of the slag is imparted, a steam-generating chamber, a closed air-space in proximity thereto imparting its heat to the water in the generating-chamber, and means for driving a current or blast of air through the closed space in proximity to the slag-receptacle, whereby the same is heated, and then through the closed space in proximity to the steam-generating chamber, whereby the water is heated and steam generated, substantially as described.

379,528. SPRING CAR-BUMPER. GEORGE H. BENJAMIN, New York, N. Y., assignor to the Consolidated Coupling Company, of New Jersey. Filed Nov. 30, 1887. Serial No. 256,492. (No model.)



Claim.—1. In a spring car-bumper, the combination, with the bumper-stems, of a half-elliptic spring pivoted to the body-bolster of said car, substantially as described.

2. In a spring car-bumper, the combination, with the buffer-stems, of a half-elliptic spring, the leaves of which are divided into two or more portions, and said portions having a different set or arch and said spring pivoted to the body-bolster of said car, substantially as described.

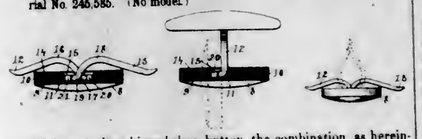
3. In a spring car-bumper, the combination, with the buffer-stems, of a half-elliptic spring composed of two or more sets of leaves, the set or arch of which differs, of a spring-band for said leaves, and said band pivoted to the body-bolster of said car, substantially as described.

4. In a spring car-bumper, the combination, with the buffer-stems, of a half-elliptic spring composed of two or more sets of leaves having a different set or arch, and one set of leaves connected to said buffer-stems, and said spring as a whole having a pivotal attachment to the car wherein it is placed.

5. In a spring car-bumper, the combination, with a continuous buffer-plate and the stems therefor, of a half-elliptic spring pivoted to the frame of the car, substantially as described.

6. In a spring car-bumper, the combination, with the buffer-stems, of a half-elliptic spring attached to said stems and a pivotal connection for said spring, whereby said spring serves the purpose of an equalizing-bar and follows the motion of the stems to which it is attached, substantially as described.

379,529. BUTTON. JOHN CONTELLO, Attleborough, Mass., assignor of one-half to James F. Simms, same place. Filed July 29, 1887. Serial No. 245,585. (No model.)

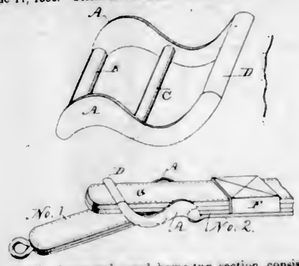


Claim.—1. In a hinged-shoe button, the combination, as hereinbefore set forth, with the cap-plate and the bottom plate set therein, and the arms of the button provided with hinging ends, of the hinge-plate suitably slotted to receive the hinging ends of the arms and formed with perforations, the top plate slotted to admit the arms and placed in contact with the hinge-plate, and provided with locking projections for entering the perforations of the said hinge-plate and locking the same fixedly thereto, substantially as and for the purpose herein described.

2. In a hinged-shoe button, the combination, with the hinge-plate 10, provided with the H-shaped slot and formed with perforations, of the top plate, 14, provided with the slot 15, and locking projections 23, constructed to permanently secure the plates against rotation and secure the T-shaped ends of the levers, as described.

3. The combination, as hereinbefore set forth, with the cap-plate 8 and the bottom plate, 9, seated therein, the hinge-plate 10, provided with the slot 11 and formed with the perforations 22^x, and the top plate, 14, provided with the slot 15, and having the locking projections 23, for entering the said perforation 22 of the hinged plate, which is intermediate the said top and bottom plates, of the arms provided with hinging ends which are hinged within the slot 11 of the hinge-plate, and which pass through the slot 15 of the top plate, 14, substantially as and for the purpose herein described.

379,530. BUCKLE AND HAME-TUG ATTACHMENT. WILLIAM DIPPERT, Des Moines, Iowa, assignor, by mesne assignments, of one-half to the Des Moines Saddlery Hardware and Manufacturing Company. Filed June 11, 1886. Serial No. 204,892. (No model.)



Claim.—1. The improved metal hame-tug section, consisting of two parallel side pieces, two cross-pieces, B and C, rounded for the attachment of the leather sections, and a cross-piece or loop, D, located in a higher plane relative to the said cross-pieces B and C and the complete device, for the purposes stated.

2. In a hame-tug, the combination of a metal section consisting of two parallel side pieces, two cross-bars, B and C, and a loop, D, with two leather sections, Nos. 1 and 2, for the purposes stated.

379,531. SELF-LUBRICATING JOURNAL-BOX. JAMES DOUGLAS, Jr., New York, N. Y., assignor to the North American Metalline Company, same place. Filed Mar. 12, 1887. Serial No. 230,664. (No model.)



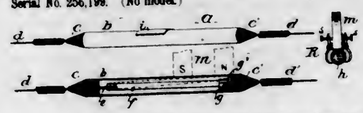
Claim.—1. The herein-described method of making a self-lubricating composition, which consists in, first, grinding in a mill a metal and sulphur in definite proportions, as specified, at a temperature less than the fusing-point of either, and, second, pressing the composition as it comes from the mill in a finely-divided state into desired shape for use, substantially as described.

2. The hereinbefore-described method of making an anti-friction composition, which consists in, first, grinding in a mill a metal and sulphur at a heat less than the fusing-point of either: second, adding an unctuous substance, as paraffine and graphite, to the pulverized sulphide to reduce its brittleness, substantially as set forth.

3. The herein-described method of making an anti-friction composition, which consists in, first, grinding in a mill a metal and sulphur at a less temperature than the fusing-point of either, then adding an unctuous substance, as paraffine and graphite, to the pulverized sulphide, second, supplying metal in a finely-divided state to the composition, and, third, pressing the composition into desired shape, substantially as described.

4. The herein-described anti-friction composition, composed of sulphides of lead and antimony, an unctuous substance, as paraffine, graphite, and finely-divided lead or antimony, in about the proportions specified.

379,532. TEST-CIRCUIT AND APPARATUS FOR ELECTRICAL CABLES. ISAIAH H. FARNHAM, Malden, assignor to the New England Telephone and Telegraph Company, Boston, Mass. Filed Nov. 26, 1887. Serial No. 256,199. (No model.)



Claim.—1. The hereinbefore-described means for breaking the circuit of an inaccessible conductor, which consists of a non-magnetic case or tube inclosing the two ends of said conductor, and a movable iron contact-piece normally connecting the said ends of the said conductor, and thereby maintaining continuity between them, but adjusted to respond to magnetic attraction applied at the exterior of said case and thereupon to disconnect the said conductor ends from one another.

2. An insulated cable-conductor protected externally by a non-magnetic sheath or envelope, and having included in its circuit a series of circuit-breakers placed at suitable and known distances apart, and consisting each of an iron armature normally maintaining continuity between the two severed ends of the circuit, and a diamagnetic inclosing-case for the said ends and the interposed armature, the said case being of sufficient internal capacity to admit of the free movement of the armature, and the said armatures being adapted to be operated and to break the circuit only when a magnet is applied to the exterior of the conductor-sheath, substantially as specified.

3. In an electric cable, the combination of a conductor thereof with a circuit-breaking device comprising a non-magnetic tube or case, a fixed contact-piece inclosed therein, but insulated therefrom and in permanent union with the cable-conductor leading from one direction, a movable contact-piece of magnetic metal in permanent union with the said conductor, leading from the opposite direction and normally maintaining the continuity of said conductor by resting under the force of a spring or its equivalent upon the said fixed contact-piece, and a magnet placed on or near the exterior of the said non-magnetic tube or case and acting thereupon to attract the said magnetic movable piece and to withdraw the same from the said fixed contact, thereby opening the circuit, substantially as described.

4. In a multiple-conductor telephone-cable, the combination, substantially as hereinbefore described, with the insulated conductors of the said cable, of a single testing-wire extending through the said cable, and a number of circuit-breakers included in the circuit of the said test-wire at regular and known distances apart, each circuit-closer being located at a cable joint or splice and placed immediately beneath the interior surface of the sleeve overlapping said splice, and each comprising a spring-armature connecting normally the two severed ends of the test-wire, and a non-magnetic case or tube inclosing the same, together with a magnet applied to the exterior of said joint-sleeve, as described, and adapted, when so applied, to act through the said non-magnetic case and joint-sleeve, and thereupon to attract the armature and to break the test-wire circuit at the point of application, and for testing purposes, as long as the said application is continued.

5. The combination, with a multiple-conductor electric cable and with a single-test wire therefor extending from end to end of said cable, of a series of circuit-closers, each located within a sleeve of non-magnetic material protecting the joint or splice of said cable, and each comprising a non-magnetic case, two line-contacts insulated therefrom, an independent contact connecting through said case to earth, and an iron armature normally connecting the said two line-contacts and held in position by spring-pressure, and a magnet to be applied to the exterior of said sleeve, and adapted thereupon to attract the said armature, causing the same to break the line-circuit and to connect one of the severed ends thereof to earth, as herein specified

6. The combination, with a multiple-conductor electric cable, and with a single test-wire therefor extending from end to end of said cable, of a series of circuit-breakers included in the circuit of said test-wire.

379,535. TELEGRAPH-WIRE. WILLIAM HEWITT, Chambersburg,

379,537.

each located within a sleeve of non-magnetic material protecting the joint or splice of said cable, and each comprising a non-magnetic case, two line-terminals insulated therefrom, a contact leading through said case to earth, and an iron armature hinged or hung to one of said line-contacts and normally at its free end resting with spring-pressure upon the other, thus maintaining continuity, but adapted to respond to magnetic attraction exercised by a magnet held upon the exterior of the cable, and thereupon to break the normal circuit and to ground one of the severed ends, leaving the other insulated or disconnected.

7. In a multiple-conductor electric cable and in combination therewith, a single test-wire extending from end to end of said cable and having a series of circuit-breakers included in its circuit at suitable distances apart, each circuit-breaker consisting of a diamagnetic case and an armature inclosed therein, normally maintaining continuity between the severed ends of the said test-wire.

8. In a multiple-conductor electric cable and in combination therewith, a single test-wire extending from end to end of said cable and having a series of circuit-breakers included in its circuit at regular and known distances apart, each circuit-breaker consisting of a diamagnetic case and an armature inclosed therein, and by spring-pressure or equivalent force normally maintaining continuity between the severed ends of the said test-wire, and a magnet externally applied to operate the said circuit-closer when desired by the attraction of the magnet.

9. The combination, with a multiple-conductor cable having splices or joints located within test-vaults or working-chambers and provided with non-magnetic splice-protecting sleeves, and having a test-wire extended throughout the cable, provided with a series of circuit-breakers, each circuit-breaker being placed at the outside of the grouped conductors and within a splice-sleeve close to the interior surface thereof, and each comprising the two severed ends of the test-wire inclosed within a non-magnetic shell, and an armature also inclosed within said shell and normally maintaining continuity between the said severed ends, of a magnet for actuating the said iron armature through the non-magnetic shell and the cable-sleeve, the same being externally applied to the said sleeve, and a clamping device whereby the said magnet may be temporarily attached to the said sleeve, as described.

10. The combination, in a telephone-cable, of magnetic circuit-breakers distributed at intervals throughout the length of the cable and included in the circuit of but one of the insulated conductors, the said circuit-breakers being located at the splices of said cable and immediately beneath the inner surface of the protecting non-magnetic sleeve thereof, and a magnet applied externally to said sleeve for the purpose of actuating the said magnetic circuit-breakers, whereby a single testing-wire may be utilized to test an entire cable, substantially as described.

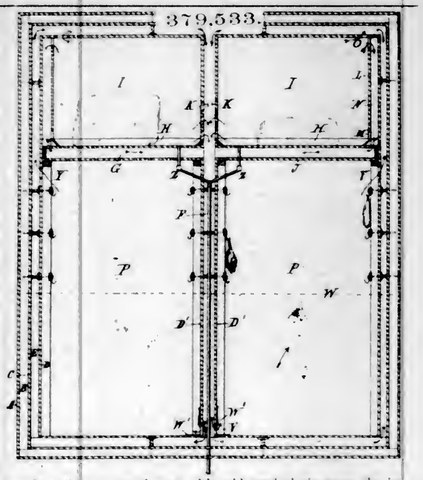
11. The combination, in a telephone-cable, of a single test-wire extending from end to end of said cable and a series of normally-closed circuit-breakers included in the circuit thereof, as described, at regular distances apart and within the splices or joint sleeves close to the internal surface of the said sleeves, each circuit-breaker being inclosed within a non-magnetic shell and comprising an electric contact controlled by an armature, whereby the said test-wire may be opened at successive points by the application of a magnet to the exterior of the rable-sleeve, and whereby a single wire may thus be utilized to test the insulation of the entire cable.

12. The hereinbefore-described device for opening the circuit of lead-inclosed cable-conductors at predetermined points, which comprises a spring-armature connecting the two ends of the said cable-conductor within a non-magnetic shell and a magnet to disconnect the said armature from the said cable ends, the armature and its inclosing-shell being located on the inside of the external leaden inclosing-sheath, and the magnet being applied to the exterior thereof.

13. In combination with the testing-wire of a lead-covered multiple-conductor cable, a series of circuit-breakers adapted to be operated by the application of a magnet to the exterior of the leaden sheath, each being constructed of a brass tube having both ends closed by a hard-rubber plug, insulated conductors passing through the said plugs and connecting with the testing-wire, a fixed contact-piece mounted in the brass tube upon one of the said plugs and connected with one of the said conductors, and an iron armature mounted by a spring upon the other plug connected with the other conductor and held by the said spring in normal contact with the fixed contact-piece, as specified

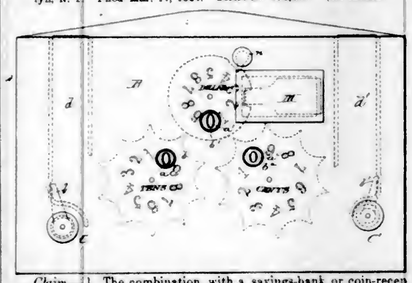
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379,533. **REFRIGERATOR.** JOSEPH FRENIER, Cincinnati, Ohio, assignor of one-half to Edwin W. Jewell, same place. Filed May 16, 1887. Serial No. 238,381. (No model.)



Claim.—In a refrigerator, the combination, with the outer casing, of provision-chambers and superimposed ice-chambers, the ice-chambers being separated from the provision-chambers by a horizontal air-space, the ice-chambers and the provision-chambers being separated by a vertical air-space in communication with the horizontal space, and all of said chambers being separated from the outer wall by a surrounding air-space continuous with said vertical air-space, the ice-chambers being provided with openings through which communication is established with said horizontal, vertical, and surrounding air-spaces, and each provision-chamber being provided with an opening near its floor, establishing communication with said vertical air-space, and an opening near the ceiling establishing communication with said surrounding air-space, for the purpose set forth.

379,534. **TOY REGISTERING SAVINGS-BANK.** ELWOOD HEADLEY, Jersey City, N. J., assignor of one-half to William G. Horton, Brooklyn, N. Y. Filed Mar. 17, 1887. Serial No. 231,297. (No model.)



Claim.—1. The combination, with a savings-bank or coin-receptacle having two or more openings for the passage of coin into the bank, of an indicating device composed of a series of dials having sockets or recesses in their peripheries for the reception of coin, said dials being controlled and operated by the passage of a coin through either of the openings into the bank, and designed and adapted to indicate the total monetary value of coins deposited, substantially as shown and described.

2. In a savings-bank or coin-receptacle having a chute for the passage of coin and a pivoted lever located at the lower end of said chute, the combination, with said chute and lever, of an indicating device operated by means of a coin while being forced from the chute by said lever into the bank or receptacle, substantially as shown and described.

3. The combination, with a money-receptacle provided with an indicating dial or dials and mechanism, substantially as described, for indicating the exact money value of deposited coins, of a door or locking mechanism and interlocking devices whereby entrance to the receptacle can only be had after a definite amount of money has been deposited, substantially as set forth.

4. In a savings-bank or receptacle for coin, having two or more openings for the passage of the coin into the body of the bank, the combination therewith of an indicating device consisting of a series of disks, two of which have sockets or recesses in their peripheries, one of said recessed disks operating the indicating devices during the passage of a coin through either of the openings, substantially as described.

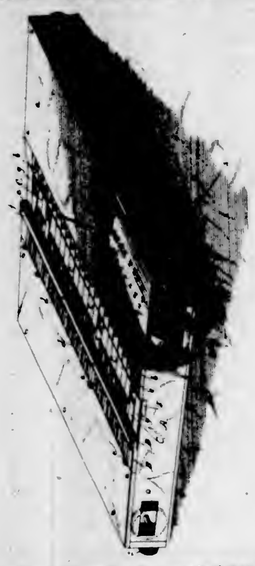
379,535. **TELEGRAPH-WIRE.** WILLIAM HEWITT, Chambersburg, N. J. Filed Sept. 10, 1887. Serial No. 249,313. (No model.)



Claim.—1. As an article of manufacture, a telegraph-wire composed of one or more galvanized copper wires laid or wrapped with or united to one or more steel wires, substantially as set forth.

2. As an article of manufacture, a telegraph-wire composed of one or more galvanized copper wires laid or wrapped with or united to one or more galvanized steel wires, substantially as set forth.

379,536. **INTEREST-CALCULATING DEVICE.** GEORGE D. HICKS, Sioux City, Iowa, assignor of one-half to Edward L. Hicks, same place. Filed Sept. 30, 1887. Serial No. 251,113. (No model.)



Claim.—1. The combination, with the case having a vertical opening and the sheets provided with figures denoting interest-calculations and passing horizontally one over the other in parallel planes, of transverse slides controlling said opening, as set forth.

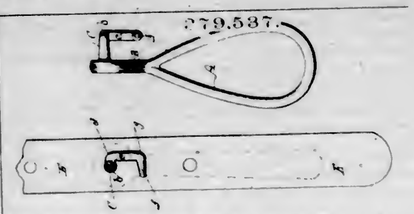
2. The combination, with the case having a central vertical opening and the transversely-moving sheets bearing figures indicating interest-calculations and passing horizontally one over the other in parallel planes, of independently-movable transverse slides controlling said opening, as set forth.

3. The combination, with a case having a central vertical opening and the belts bearing figures indicating interest-calculations and passing horizontally one over the other in parallel planes, of an elevating-strip arranged beneath said belts at said opening, as and for the purpose specified.

4. The combination, with the case having a vertical opening and a plurality of numbered divisions upon one side of said opening, of a plurality of transverse slides arranged one opposite each division and adapted to close or disclose a portion of said opening and the two belts each bearing interest-calculations and passing horizontally one over the other in parallel planes, as set forth

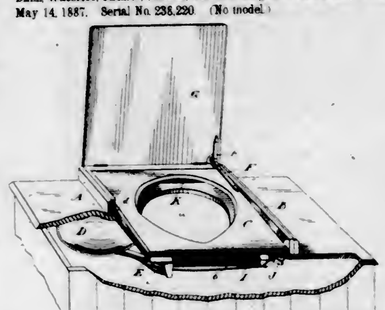
5. The combination, with a case having an opening in its cover, numbered divisions upon one side of said opening and beneath the cover, and transversely-moving sheets bearing figures indicating interest-calculations, of the part B, provided upon its face with transverse parallel grooves and cleat *f*, and the slides having shanks working in said grooves beneath said cleat, substantially as described.

379,537. **SWIVEL FOR BRIDLES.** HENRY JOHNSON, Newark, N. J., assignor to the Sargeant Manufacturing Co., same place. Filed Nov. 30, 1887. Serial No. 256,534. (No model.)



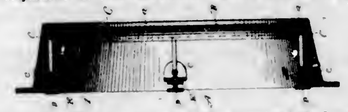
Claim.—The swivel composed of the loop A, swivel-plate B, and stud C, having the short extension *a*, connected with the stud by the abrupt bend *b*, the second extension, *e*, connected with the first extension by the abrupt bend *d*, and the third extension, *f*, connected with the second extension by the abrupt bend *g*, as herein specified.

379,538. **PRIVY-SEAT.** CHARLES KELLEY, Toronto, and JACOB BALL, Waterloo, Ontario, Canada; said Ball assignor to said Kelley. Filed May 14, 1887. Serial No. 238,220. (No model.)



Claim.—A seat, C, pivoted at or near its center and having a finger, F, connected to it, in combination with the hinged cover G, having a T-headed bracket, *h*, attached to it in the path of said finger, substantially as and for the purpose specified.

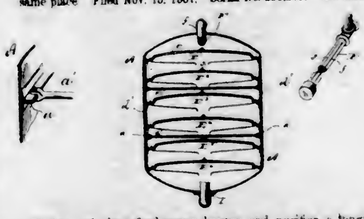
379,539. **LOCOMOTIVE HEAD-LIGHT.** LEANDER H. MCKEE, Frankfort, assignor of one-half to H. H. McKee, Rome, and W. A. Paige, Coeymans, N. Y. Filed June 30, 1887. Serial No. 242,997. (No model.)



Claim.—1. The combination, with the extension A of a locomotive head-light, and the inwardly-extended flat annular flange formed on said extension, of an annularly-grooved follower-ring, the glass and its packing between said follower and flange, and retaining set-screws arranged inside of the said extension, the rounded ends of the stems of which are adapted to fit in the groove in the follower, substantially as described.

2. The combination, with the flanged extension of a locomotive head-light, of the circular glass plate, its packing, the follower-ring annularly grooved, the set-screws and their brackets, and the binding-nuts, all arranged wholly within the said extension A, substantially as and for the purposes described.

379,540. **FEED-WATER HEATER AND PURIFIER.** JAMES S. PHARES, Springfield, Ohio, assignor of one-half to George B. Kendall, same place. Filed Nov. 15, 1887. Serial No. 255,275. (No model.)



Claim.—1. In a feed-water heater and purifier, a longitudinal shelf or pan of substantially uniform width throughout its length and

formed with an upper convex portion, over which the water is adapted to flow uniformly from the center to the outer edges, and a lower concave portion, over which the water is adapted to flow uniformly from the outer edges to the center, substantially as set forth.

2. The combination, with the outer casing having a curved top and bottom and straight sides, of the series of longitudinal shelves or pans of substantially uniform width, each provided with a convex upper portion adapted to convey water each way thereon in a uniform sheet from the center to the outer edges, and a lower concave surface adapted to convey water from the outer edges to a central longitudinal opening therein and discharge the same onto the next succeeding pan of the series, substantially as set forth.

3. In a heater, a pan consisting of an upper curved portion riveted or otherwise secured to the end pieces, having projecting ends adaped to rest on suitable guides or ways, and a lower curved portion having openings adapted to extend over said projecting end pieces, and means for connecting the inner edges of said lower portion together, so as to form a central opening or channel between the same, substantially as set forth.

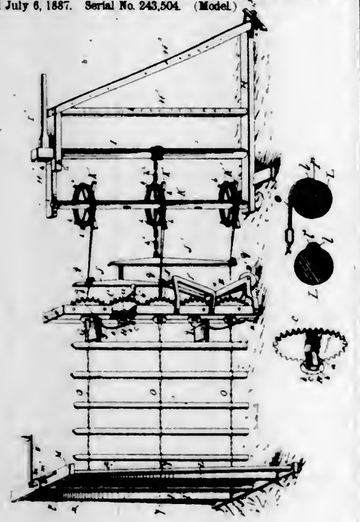
4. The pan or shelf for the heater, consisting of an upper convex portion, end pieces to which same is secured, the lower concave portion connected to said end pieces and provided with upturned outer edges extending beyond the outer edges of said upper portion, and with downwardly-turned inner edges connected together, so as to form a central opening or channel between same, and means for readily disconnecting the same, substantially as set forth.

5. The combination, with the outer casing, of the vertical supporting-strips having angle-iron ways secured thereto, and the pans or shelves having end pieces, to which a convex upper plate is attached, the said pans being provided with lower concave plates provided with openings adapted to pass over said end strips, having downwardly-turned inner edges connected together by angle-iron cleats and a removable pin, so as to form a central opening or channel therein, substantially as and for the purpose set forth.

6. The combination, with the outer casing, of the series of longitudinal shelves or pans, each consisting of an upper and lower portion of substantially uniform width, adapted, respectively, to carry the water in a uniform sheet from the center to the outer edges, and from the outer edges back to the center, and having a pipe provided at the top with openings therein adapted to distribute the water uniformly throughout its length to the upper pan of the series, substantially as set forth.

7. The combination, in a heater, of a series of pans or shelves of substantially uniform width, each having an upper convex surface adapted to carry the water from the center to the outer edges, and a lower concave portion adapted to carry the water from the outer edges to the center, and the longitudinal divider on the top surface for dividing the water which is discharged thereon, substantiallly as set forth.

379,541. FENCE-MACHINE. FRANKLIN A. RICKARD and FREDERICK T. WRIGHT, Batavia, Mich., assignors, by direct and mesne assignments, to Fred Wright and Benjamin F. Rolfe, both of same place. Filed July 6, 1887. Serial No. 243,504. (Model.)



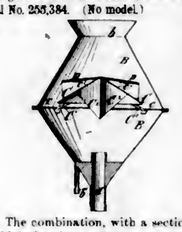
Claim.—1. The combination, with the standard supporting the twisting mechanism, of the combined spacer and guide extended transversely across the standard and pivoted at one end and free to move at its outer end, the stop for limiting the upward movement of said outer end, and the spring for holding the free end of said combined spacer and guide yieldingly in contact with the stop, substantially as and for the purpose specified.

2. The combination, with the standard supporting the twisting mechanism, of the roller-supports D and D', located in advance of one another and in the plane of the twisters, the bracket E, supporting the roller D', the bracket *f*, and the handle F, uniting the ends of the brackets, substantially as and for the purpose described.

3. The combination, with the twisting mechanism, of the reel composed of a shaft having a series of openings along its length, arms having a series of transverse openings fitted in said openings in the shaft, and a second set of arms fitted in the openings in the aforesaid arms, substantially as specified.

4. The combination, with the twisting mechanism, of the herein shown and described device for supporting the end of the fence and rolling the same up, composed of the frame, the shaft longitudinally grooved and having the rod fitted in said groove and held therein by keepers journaled in the frame, and having one end extended beyond the frame and fitted in a notch in the edge thereof, the ratchet-wheel, the pawl, and the crank or hand-lever, substantially as specified.

379,542. TRAP FOR EXHAUST-STEAM PIPES. ENOCH RUTZLER, Brooklyn, assignor to Rutzler & Blake, New York, N. Y. Filed Nov. 17, 1887. Serial No. 255,384. (No model.)



Claim.—1. The combination, with a section of exhaust-pipe, and a chamber in which the pipe-section terminates, and which is open at the top and has a drain-pipe leading from its bottom, of a deflector, C, arranged in the chamber above the exhaust-pipe, and having openings *c'*, for the upward escape of steam through it, and hoods D, secured to the top of the deflector, and into which said openings *c'* deliver, and which are open at their outer ends for the lateral discharge of steam against the wall of the chamber, substantially as herein described.

2. The combination, with the chamber B, of double-conical form, or largest in diameter between its ends and open at the top, of the exhaust-pipe section A, entering its bottom, the drain-pipe *b'*, leading from its bottom, and the canopy or deflector C, arranged in the largest part of the chamber and having openings *c'* for the passage of steam through it, and the hoods D, surmounting the canopy, and into which said openings *c'* deliver, and which are open at their outer ends, substantially as herein described.

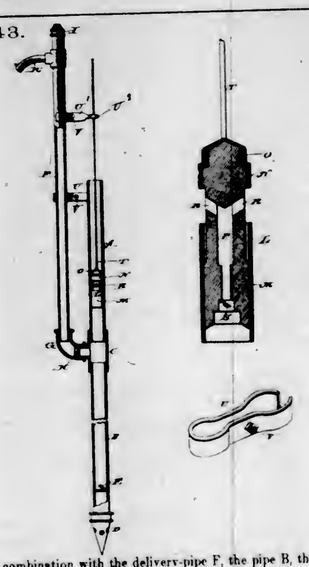
3. The combination, with a chamber open at the top and having an exhaust-pipe section entering its bottom, and a drain-pipe leading from its bottom, of the conical or downwardly-flaring deflector or canopy C above the exhaust-pipe, having downwardly-projecting radial wings or blades C', and openings *c'* between the wings or blades near its highest part, and surmounted by the laterally-extending hoods D above said openings, substantially as herein described.

379,543. AIR-JET. BENJAMINE F. SANBORN, Cunningham, Mo., assignor of one-half to Thomas Dobbins, same place. Filed June 13, 1887. Serial No. 241,209. (No model.)

Claim.—1. The combination of the pipe A, the pipe B, depending therefrom and having the valve E, the delivery-pipe F, communicating with the pipes A and B and having the check-valve H, and the plunger L, having the packing N at its upper end and adapted to reciprocate in the pipe A above the lower end of the delivery-pipe and provided with the downwardly-opening valve S and with openings leading from a point below packing N to said valve, whereby air is compressed in the lower portion of the pipe A at each downstroke of the plunger, substantially as described.

2. The combination of the valved inlet-pipe or pump-stock, the valved discharge-pipe communicating therewith, and the plunger adapted to reciprocate and fitting snugly in the inlet-pipe or stock above the juncture of the discharge-pipe, said plunger having the downwardly-opening valve S at its lower end, and the bore P, extending upward from said valve and communicating with openings R near the upper end of the plunger, substantially as described.

379,543.



3. In combination with the delivery-pipe F, the pipe B, the pipe A, the plunger L in the pipe A, the valve H in pipe F, the valve E, in pipe B, the valve S, carried by the plunger, the series of air-openings R in the top of the plunger, the vertical bore or opening P, extending from the valve S to the openings R, and the packing-collars M N around the outside of the plunger, the openings R being arranged between the two collars M N, as set forth.

379,544. MODE OF MAKING CAR-SPRING PLATES. CHARLES T. SCHOEN, Philadelphia, Pa., assignor to the Charles Scott Spring Company. Filed Jan. 10, 1888. Serial No. 260,336. (No model.)



Claim.—1. The manufacture of car-spring plates from wrought metal, consisting in cutting a piece of sheet metal into the desired outline and drawing by the use of dies a bolt-receiving cavity in said plate and integral therewith and of sufficient depth to allow of the free downward movement of the upper plate when the spring is in service, substantially as described.

2. The manufacture of car-spring plates from wrought metal, consisting in first cutting a piece of sheet or plate metal into the desired outline, next partially upsetting or drawing by dies a bolt-receiving cavity in said plate and integral therewith, and finally completing the said bolt-receiving cavity by another set of dies, substantially as described.

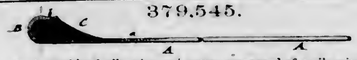
3. The process of making wrought-metal plates for car-springs of the class described, the same consisting in cutting the blank from cold sheet or plate metal, next heating the blank and die-drawing a bolt-receiving cavity therein, and again heating the thus-treated blank and contracting and elongating the said cavity, substantially as described.

4. The process of making wrought-metal plates for car-springs, consisting in cutting out the blank, next heating it and die-forming an exaggerated bolt-receiving cavity therein and also completely forming the timber projections thereon, then reheating the thus-treated blank and diametrically contracting and axially elongating and finishing the said cavity, and at the same time forming thereon groups of spring-receiving projections, substantially as described.

379,545. PILE-WIRE FOR WEAVING. GUSTAV SEESCHNEIDER, Yonkers, N. Y. Filed July 11, 1887. Serial No. 243,967. (No model.)

Claim.—1. A combined pile wire and cutter composed of a pile-wire having a spring-hook at the outer end and a detachable blade retained by said hook, substantially as set forth.

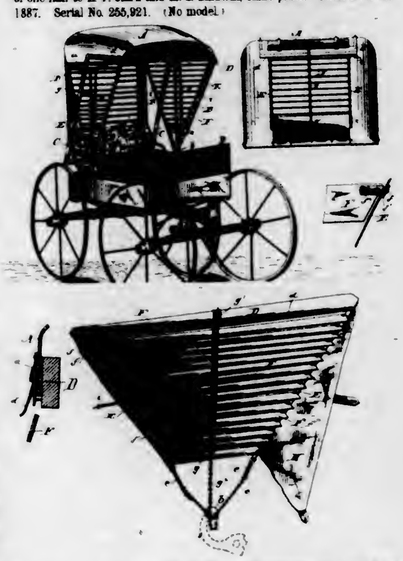
379,545.



2. A combined pile wire and cutter composed of a pile-wire having a spring-hook at the outer end, the hook and shank of the pile-wire being provided with a groove at its inner edge, and a detachable blade inserted in said groove and retained by the spring-hook, substantially as set forth.

3. A combined pile wire and cutter composed of a pile-wire having a bent hook at one end, said hook being provided with a groove at the inner edge and an inwardly-bent outer end, and a detachable blade that is fitted in the groove and retained by the spring action of the inwardly-bent end of the hook, substantially as set forth.

379,546. BUGGY-TOP. OLIVER SLAGLE, Monmouth, Ill., assignor of one-half to E. P. Clark and M. S. Baldwin, same place. Filed Nov. 22, 1887. Serial No. 255,921. (No model.)



Claim.—1. In a top-buggy shade, the combination, with a supporting-frame having a stiff top strip or slat, D, adapted to be held by the curtain-buttons of the ordinary buggy-top, of a series of slats loosely attached to said frame and adapted to turn, as described, and a means for securing said slats in either position.

2. In a top-buggy shade, the combination of a supporting-frame, a series of slats loosely attached thereto and adapted to turn, as described, and springs connected with said frame for securing the latter elastically to the buggy-top.

3. In a top-buggy shade, the combination of a supporting-frame adapted to be secured to the buggy-top, and having side strips of flexible material, and a series of slats loosely attached to said strips and adapted to be turned, substantially as described.

4. In a top-buggy shade, the combination of a supporting-frame adapted to be secured to the buggy-top, a series of slats loosely attached thereto and adapted to turn, a strip connected with the said slats for turning the same, a spring secured to one end of said strip for drawing the same in one direction, and a securing device for holding the strip when drawn in the other direction against the tension of the spring.

5. In combination with a buggy-top, a shade consisting of a supporting-frame, springs elastically connecting the frame to said top, and a series of slats mounted in said frame, substantially as and for the purpose set forth.

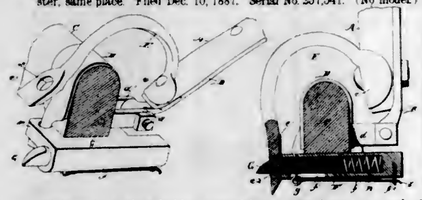
6. A top-buggy shade consisting of a series of slats, and a supporting-frame carrying said slats and provided with holes or loops adapted in their position for the ready attachment of the shade to the buttons of the buggy-top, substantially as set forth.

7. A top-buggy shade consisting of a supporting-frame adapted to be secured to the buggy-top, and a series of slats decreasing in length from top to bottom of the series to fit the side of a buggy-top and permit the latter to be partly lowered, substantially as set forth.

8. In a top-buggy shade, the combination, with a supporting-frame, and a series of slats carried thereby of decreasing length, as described, of a supplemental shade piece of flexible material, whereby the space at the rear of the slats at the side of the buggy-top may be closed and the partial lowering of said top also permitted.

9. In a top-buggy shade, the combination of a supporting-frame of substantially triangular shape adapted to be secured to the buggy-top, a tapering series of slats mounted in said frame, a spring secured to the lower end of one of the side strips of the frame, and a flexible loop secured to the lower end of said spring and connected at its other end immediately or mediately with the lower end of the other side strip, whereby the lower ends of said strips may be connected elastically with the buggy-frame.

379,547. **SHAFT-HOLDER.** GEORGE J. SPENNEBERG, Worthville, Ky., assignor of one-half to Eugene W. Burge and Zachariah T. Webster, same place. Filed Dec. 10, 1887. Serial No. 257,541. (No model.)



Claim.—1. A shaft-holder comprising a curved arm, one end of which being suitably connected to the shaft, thill, or tongue, the other end being wedge-shaped and having a depression, concavity, or hole, and a spring-latch secured to the axle or running-gear and adapted to be engaged by the curved arm, whereby when the shafts or thills are raised they will be held in an elevated position, substantially as described.

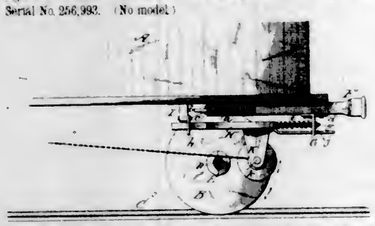
2. A shaft-holder comprising an arm, one end being suitably connected to the shaft or thill, the other end being provided with a depression, concavity, or hole, a latch fastened to the axle and adapted to be engaged by the arm, a guide located at the rear of the latch, and a cord, wire, or the like secured to the bolt of the latch and passing through the guide, whereby the bolt may be withdrawn from engagement with the arm by a pull on the cord, wire, or the like, substantially as and for the purpose described.

3. The combination, with the axle provided with a latch on its rear side, of the shaft, thill, or tongue having a curved arm adapted to pass over the axle and engage the latch when the shaft, thill, or tongue is in an elevated position, substantially as set forth.

4. In a shaft-holder, the combination, with the axle and the shaft or thill mounted thereon and having the curved arm E, provided with a hole, socket, or depression, of the plate secured to the axle and having a barrel or casing, *f*, the bolt mounted in the said barrel or casing and adapted to engage the hole, socket, or depression in the arm E, and the spring disposed in the barrel or casing in rear of the bolt and adapted to normally hold it extended, substantially as specified.

5. In a shaft-holder, the combination, with the axle and the shaft or thill mounted thereon and carrying a rigid arm provided with a hole, socket, or depression, of the plate F, attached to the axle, the spring-actuated bolt mounted thereon and adapted to engage the hole, socket, or depression in the said arm, and the cord, wire, or the like connected to the bolt, substantially as and for the purpose specified.

379,548. **CAR-BRAKE.** JOHN M. SWAIM, Bloomingdale, Ind., assignor of one-half to Horace B. Little, same place. Filed Dec. 5, 1887. Serial No. 256,993. (No model.)



Claim.—1. The combination, with the axle, the drum thereon, and the movable bumper, of an arm, G, pendent from the under side of the bumper a plate guided at one end by said arm and actuated by said bumper, a carriage on said plate, and a friction-wheel journaled in said carriage and arranged to contact with said drum when the bumper is compressed, as set forth.

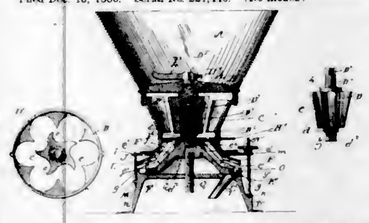
2. The combination, with the axle, the drum thereon, and the movable bumper, of the arm G, pendent from the bumper, a movable plate guided at one end by said arm and actuated by said bumper, the spring *i* between said arm and plate, a carriage on said plate, a shaft journaled in said carriage, a friction-wheel and a winding-drum on said shaft, and the brake-chain secured to said drum, substantially as described.

3. The combination, with the axle, the drum thereon, and the movable bumper, of a movable plate actuated by said bumper, a carriage on said plate, a shaft journaled in said carriage, a friction-wheel and a winding-drum on said shaft, and a clutch engagement between said shaft and friction-wheel, the cross-bar I, the guide *h*, secured thereto and receiving the bifurcated ends of the said plate, and the spring *i*, acting on said plate, substantially as described.

4. The combination, with the axle, the drum thereon, and the movable bumper, of a movable plate actuated by said bumper, a carriage on said plate, a shaft journaled in said carriage, a friction-wheel and a winding-drum on said shaft, a right-and-left clutch engagement between said shaft and friction-wheel, and a lever for shifting said friction-wheel on its shaft, the arm G, pendent from the forward end of the bumper and forming a guide for the forward end of the plate and formed with notches to engage said lever, substantially as and for the purpose specified.

5. The combination, with the axle, the drum thereon, and the movable spring-actuated bumper, of a plate actuated by said bumper, the yielding connection between said plate and bumper, a carriage on said plate, a shaft journaled in said carriage, a friction-wheel on said shaft, a right-and-left clutch engagement between said shaft and friction-wheel, a lever pivoted to said carriage for adjusting the friction-wheel, and means on the bumper for holding said lever in its adjusted position, as set forth.

379,549. **FEED-GRINDING MILL.** HENRY W. VIETMEYER, Freeport, Ill., assignor of one-half to The Union Foundry, Mansfield, Ohio. Filed Dec. 13, 1886. Serial No. 221,446. (No model.)



Claim.—1. The combination of the upper and lower grinding-shells oppositely flared and secured together, a cob-breaker situated within the upper shell, a grinding-cone within the lower shell, a shaft carrying said cone, and a spring supported by the shaft and carrying the upper and lower shells, said shaft, lower cone, and breaker being connected and rotating together, and said shells being vertically movable relative to the shaft.

2. The combination of a lower rotary grinding-cone, a spring, and an upper rotary cob-breaker, said breaker being mounted on the spring, an arm mounted on the breaker, a shell supported by said arm, a ring pivotally connected with the outer side of the said shell, and means for holding the ring in position, substantially as described.

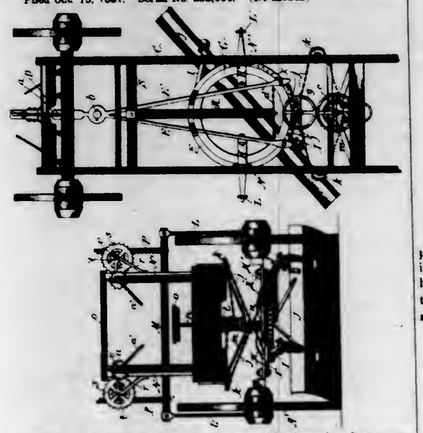
3. The combination, with the lower grinding-cone and the cob-breaker connected therewith and rotated thereby, of upper and lower shells surrounding said breaker and cone, a central spring supporting said shells, diametrically-opposite bearing-points carried by the shells on each side of said central spring, and adjusting devices bearing upon both of said points for pressing said shells evenly against the stress of the spring, substantially as set forth.

4. The combination of a spring and a grinding-shell with a rotary grinding-cone mounted within said shell, a ring pivotally connected with said shell, said ring being permanently fastened on one side and adjustably secured on the opposite side, and a threaded nut and bolt engaging with the adjustably-secured side of the ring, whereby the shell may be drawn toward the cone or released, substantially as described.

5. The combination of a spring, a grinding-shell, and an arm supporting said shell and supported by the spring, with a rotary grinding-cone mounted within said shell, a ring pivotally connected with the shell, said ring being permanently fastened on one side, a rod connected with the ring opposite the fastened side, and a frangible pin engaging the lower end of the rod, substantially as and for the purpose set forth.

6. The combination of an upper and a lower shell with a rotary grinding-cone mounted within the lower shell, the bottom of the upper shell being provided with openings, a rotary feed-regulator provided with openings which register with the said bottom openings, a spindle-block mounted on said cone and passing through said regulator, and a spring above the block and supporting the shells, substantially as set forth.

379,550. **ROAD-GRADER.** S. FRANK WELCH, Mount Pleasant, Iowa, assignor to the Western Wheel Scraper Company, same place. Filed Oct. 18, 1887. Serial No. 252,696. (No model.)



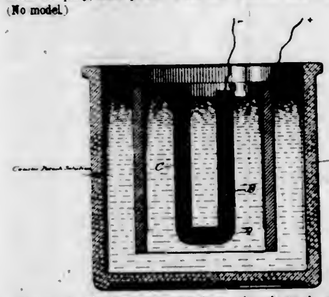
Claim.—1. In a road-grader, the combination of a frame supported by wheels, a draft-bar for the scraper, as E E', pivotally supported at its forward end, a ring, F, a ring, G, a rack, K, secured to said ring G, a scraper-blade supported by the ring G, and a pinion engaging with said rack, substantially as and for the purposes specified.

2. In a road-grader, the combination of a frame supported by wheels, a draft-bar for the scraper, as E E, rings F and G, a scraper-blade supported by the ring G, chains *j j*, and drum *l*, substantially as and for the purposes specified.

3. In a road-grader, the combination of a frame supported by wheels, a draft-bar for the scraper, as E E', rings F and G, a scraper-blade supported by the ring G, bars H H', bars L L', bar M, rack-bars P P, gear-wheels *s s*, and devices for rotating said gear-wheels, substantially as and for the purposes specified.

4. In a road-grader, the combination of a main frame, a draft-bar which supports a scraper, a spring-bar, S, secured at its ends to the main frame, and a spring-bar, R, pivoted at one end to the bar S and connected at the other end with a chain, *d'*, attached as described, substantially as and for the purpose specified.

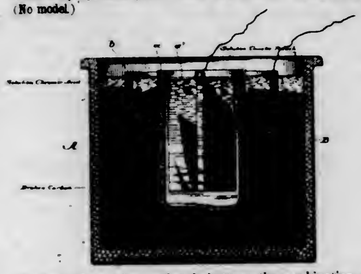
379,551. **PRIMARY ELECTRIC BATTERY.** HENRY WOODWARD, Detroit, Mich., assignor, by mesne assignments, to the Woodward Electrical Company, same place. Filed Oct. 7, 1887. Serial No. 251,696. (No model.)



Claim.—1. The herein-described negative electrode, consisting of a piece of iron placed in a perforated iron jacket and surrounded by oxide of copper and iron filings, parings, or turnings, substantially as described.

2. A negative electrode composed of a piece of iron placed in a perforated iron jacket and surrounded by oxide of copper and iron filings, parings, or turnings, in combination with a positive electrode composed, preferably, of sponge zinc, both electrodes being immersed in a solution of caustic potash, substantially as described.

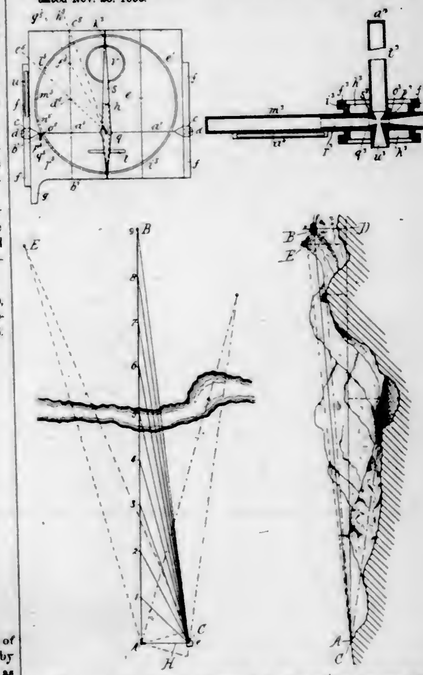
379,552. **PRIMARY ELECTRIC BATTERY.** HENRY WOODWARD, Detroit, Mich., assignor, by mesne assignments, to the Woodward Electrical Company, same place. Filed Oct. 7, 1887. Serial No. 251,696. (No model.)



Claim.—In a primary electric battery, the combination, with a porous cup provided with a series of connected zinc plates immersed in a solution of caustic potash, of an outer jar filled with broken carbon, the said jar having a carbon plate placed therein in contact with the broken carbon, the whole being covered with a solution of chromic acid, substantially as described.

REISSUES.

10,908. **INSTRUMENT FOR MEASURING THE DISTANCE AND HEIGHT OF OBJECTS.** WILLIAM FARQUHARSON, Montreal, Quebec, Canada. Filed Oct. 28, 1887. Serial No. 253,672. Original No. 353,127, dated Nov. 23, 1886.



Claim.—1. In surveying apparatus, a cross-staff having two sighting devices connected together with their lines of collimation intersecting, in combination with a distancer having a sighting device fitted to rotate on a table in a plane parallel thereto, a base or datum line

DECISIONS

marked upon the table over which the sighting device can be set, a rotating pointer, connecting-gears between the sighting device and pointer, and a divided circle graduated and marked to indicate the tangents of the angles between the sighting-lines and base-line.

2. In surveying apparatus, a cross-staff having two sighting devices connected together at right angles and supporting-frames in which they are held, whereby they may be rotated in planes at right angles to one another, the point of intersection of their lines of collimation being the common center upon which they rock, in combination with a distancer having an oscillating table, a sighting device fitted thereon to rotate in a plane parallel to the table, with its axis crossing the axial line of oscillation of the table, a pointer connected to and rotating with the sighting device, and a divided circle on the table graduated and marked to indicate the tangents of the angles through which the sighting device is moved.

3. In surveying apparatus, a cross-staff having two sighting devices connected together at right angles and supporting-frames in which they are held, whereby they may be rotated in planes at right angles to one another, the point of intersection of their lines of collimation being the common center upon which they rock, in combination with a distancer having an oscillating table, a sighting device fitted thereon to rotate in a plane parallel to the table, with its axis crossing the axial line of oscillation of the table, a pointer connected to and rotating with the sighting device, a divided circle on the table graduated and marked to indicate the tangents of the angles through which the sighting device is moved, and a fixed scale in proximity to the table graduated to indicate the vertical movement of the line of sight.

4. In surveying apparatus, in combination, a sighting device fitted to rotate on a table in a plane parallel thereto, a point or datum line marked on the table over which the sighting device can be set, a rotating pointer, connecting-gears between the sighting device and pointer, and a divided circle graduated and marked to indicate the tangents of the angles between the sighting-lines and base-lines.

5. In surveying apparatus, in combination, an oscillating table, a sighting device fitted thereon to rotate in a plane parallel to the table, with its axis crossing the axial line of oscillation of the table, a rotary pointer, multiple gearing connecting the pointer and the sighting device, a divided circle on the table graduated and marked to indicate the tangents of the angles through which the sighting device is moved and a fixed scale in proximity to the table graduated to indicate the vertical movement of the line of sight.

6. In surveying apparatus, in combination, two sighting devices connected together at right angles and supporting-frames in which they are held, whereby they may be rotated in planes at right angles to one another, the point of intersection of their lines of collimation being the common center upon which they rock.

7. In surveying apparatus, in combination, a frame fitted to rotate on a vertical axis, a short cylinder held therein and free to rotate in a vertical plane, a sighting device fitted transversely in the cylinder, with its line of collimation intersecting the axis of the cylinder, another sighting device connected to the first one, with its line of collimation at right angles to and intersecting the line of collimation of the first sighting device, and a scale to indicate the angular movement of the cylinder in the fixed frame.

8. In surveying apparatus, in combination, a base-plate provided with a divided circle, a frame fitted to rotate thereon, a short cylinder held in the frame and free to rotate in a vertical plane, two sighting devices connected together at right angles, one of which is fitted transversely in the cylinder, as described, and a scale to indicate the angular movement of the cylinder in its supporting-frame.

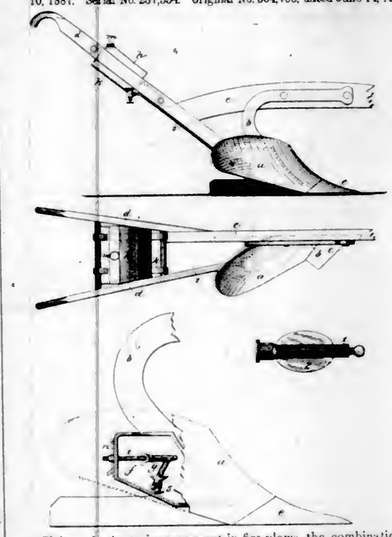
9. The cross-staff having cross-sights, as described, in combination with the distancer having the oscillating table e, provided with the datum-line a', the sighting device s, adapted to be set over the datum-line a', the pointer k, and the graduated circles c', substantially as described.

10. In combination with a cross-staff constructed and arranged substantially as described, the distancer having the oscillating table e, provided with the datum-line a', the graduated circles c', and level t, the sighting device s, adapted to be set over the datum-line a', cross-bar b, frame f, having graduated scales k', and level u, the whole constructed and arranged substantially as described.

11. In the instrument called the "distancer," the combination of cross-bar b, frame f, having level u, and scales k', table e, provided with the datum-line a', and having level t and graduated circles c' and trunnions d, sighting device s, adapted to be set over the datum-line a', and pointer k, with a mechanism, substantially as described, for actuating the said sighting device and pointer, and mechanism for adjusting the table either to the level or at an inclination, the whole constructed and arranged substantially as shown and described, for the purposes set forth.

12. The combination, in the cross-staff, of the plate c^2, having graduated scale of degrees d^2, foot e^2, frame f^2, cylinder h^2, plate k^2, sight m^2, having level a^4, and cross-sight l^2, the whole constructed and arranged substantially as described, for the purposes set forth.

10,909. FIRE-PLOW. JAMES B. OLIVER, Pittsburg, Pa. Filed Dec. 10, 1887. Serial No. 257,564. Original No. 364,768, dated June 14, 1887.



Claim.—1. As an improvement in fire-plows, the combination of the mold-board, a vapor-burner attached to the plow back of the mold-board, and a fluid-reservoir communicating with the vapor-burner, substantially as and for the purpose specified.

2. A plow provided with a vapor-burner arranged back of the mold-board, a holder for containing oil or other combustible fluid, supported on the frame of the plow, and a pipe connecting the holder with the burner, substantially as and for the purposes described.

3. A plow provided with a box or chamber arranged back of the mold-board, a vapor-burner arranged in said chamber, and an oil receptacle connected with the vapor-burner by suitable supply-pipes, substantially as and for the purposes described.

4. A plow provided with a heating-chamber back of the mold-board, said chamber having an upwardly-inclined bottom, substantially as and for the purposes described.

PHOTO-LITH. NORRIS PETERS WASHINGTON D.C.

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

THORNTON *v.* SCHREIBER *et al.*

Decided February 13, 1888.

1. CONSTRUCTION OF SECTION 4965 REVISED STATUTES.
The expression "found in his possession," in section 4965 of the Revised Statutes, means found in the possession of the defendant before the cause of action accrues, and does not refer to the finding of the jury.

2. SAME.
The "possession," under this statute, is not the possession of an employé, but of his principal.

3. SAME.
As to whether the forfeiture to the United States, in section 4965, applies to anything but "painting, statue, or statuary." *Quære.*

Mr. Justice MILLER delivered the opinion of the Court.

This is a *qui tum* action brought by the defendants in error, constituting a partnership in the name of Schreiber & Sons, against Thornton, the plaintiff in error, under section 4965 of the Revised Statutes. This is found in chapter 3, title LX, which has relation to copyrights. As we have heretofore decided in the case of *Burrow Giles Lithographic Co.* v. *Sarony*, (111 U. S., 53,) photographs are included, under certain circumstances, among the things which may be copyrighted.

The plaintiffs in this action allege themselves to be the owners of a valid copyright of a photograph entitled "The Mother Elephant 'Hebe' and her Baby 'Americus,'" and that the defendant, Thornton, was liable to them under the above section for an infringement of their exclusive right in such photograph. The declaration consisted originally of four counts; but the plaintiffs afterward obtained leave to amend it by striking out the third and fourth. Of the two counts which remained the first was for copying and printing said photograph, with the charge that fifteen thousand sheets of the same were found in the defendant's possession, printed and copied by him, and claiming the sum of $15,000 as forfeited to plaintiffs and to the United States under said section. The second count alleged that the defendant published said photograph, and that fifteen thousand sheets of the same were found in his possession.

Section 4965, on which this action is founded, reads as follows:

If any person, after the recording of the title of any map, chart, musical composition, print, cut, engraving, or photograph, or chromo, or of the description of any painting, drawing, statue, statuary, or model or design intended to be perfected and executed as a work of the fine arts, as provided by this chapter, shall, within the term limited, and without the consent of the proprietor of the copyright first obtained in writing, signed in presence of two or more witnesses, engrave, etch, work, copy, print, publish, or import, either in whole or in part, or by varying the main design with intent to evade the law, or, knowing the same to be so printed, published, or imported, shall sell or expose to sale any copy of such map or other article, as aforesaid, he shall forfeit to the proprietor all the plates on which the same shall be copied, and every sheet thereof, either copied or printed, and shall further forfeit one dollar for every sheet of the same found in his possession, either printing, printed, copied, published, imported, or exposed for sale; and in case of a painting, statue, or statuary, he shall forfeit ten dollars for every copy of the same in his possession, or by him sold or exposed to sale; one half thereof to the proprietor and the other half to the use of the United States.

It will be observed that this section gives no right of action to recover damages, merely as such, by the owner of the photograph, but limits the remedy to the forfeiture of the plates on which the infringing article is copied, "and every sheet thereof, either copied or printed," and to the further forfeiture of "one dollar for every sheet of the same found in his possession, either printing, printed, copied, published, imported, or exposed for sale." In case of "a painting, statue, or statuary," there is to be a forfeiture of ten dollars for every copy found in the defendant's possession or by him sold or exposed for sale.

In section 4964, immediately preceding the one under consideration, it is declared that every person who shall, without the consent of the proprietor of a copyrighted *book*, print, publish, import, sell, or expose for sale any copy of such book shall not only forfeit every copy thereof to such proprietor, but shall also forfeit and pay such damages as may be recovered in a civil action by such proprietor. And so in section 4966, which immediately follows the one under consideration, it is declared that—

any person publicly performing or representing any *dramatic composition* for which a copyright has been obtained, without the consent of the proprietor thereof, or his heirs or assigns, shall be liable for damages therefor, such damages in all cases to be assessed at such sum, not less than one hundred dollars for the first, and fifty dollars for every subsequent performance, as to the court shall appear to be just.

It will thus be seen that while this chapter provides a remedy by a civil action on behalf of the owner of the copyright of a book or dramatic composition which has been violated, it makes no such provision in favor of a copyright of "any map, chart, musical composition, print, cut, engraving, or photograph, or chromo, or of the description of any painting, drawing, statue, statuary, or model, etc.," except so far as it forfeits the plates on which they are copied, and the sheets, either copied or printed, and one dollar for every sheet found in the possession of the defendant. Section 4967 also allows an action for damages by the author or proprietor of any *manuscript* published without his consent.

As the action in the present case is brought by plaintiffs below, who sued as well for the United States as for themselves, under the idea that the Government was entitled to one moiety of the penalty recovered, an ex-

amination of the statute presents a question at the outset as to whether the United States has any interest in the only penalty sought to be recovered--namely, that of one dollar for each sheet of the photographs found in the possession of the defendant. Looking critically at the language of the statute, the question is suggested whether the one-half of the amount recovered which is to go to the United States extends beyond the case of "a painting, statue, or statuary."

It will be observed that in the beginning of the penalty denounced in this section it is said that the defendant—

shall forfeit to the proprietor [meaning the proprietor of the copyright] all the plates on which the same shall be copied, and every sheet thereof, either copied or printed, and shall further forfeit one dollar for every sheet of the same found in his possession, either printing, printed, copied, published, imported, or exposed for sale;

and recurring, after a semicolon, to another branch of the subject, it is said that—

in case of a painting, statue, or statuary, he shall forfeit ten dollars for every copy of the same in his possession, or by him sold or exposed for sale, one half thereof to the proprietor and the other half to the use of the United States.

With regard to the copyrighted articles mentioned in the section under consideration, it would seem that the first penalty is a forfeiture of them to the *proprietor*, and afterward, when other copyrighted articles enumerated as "a painting, statue, or statuary," where the amount forfeited is different, it provides that one half of the forfeiture shall be to the proprietor and the other half to the use of the United States. This point, however, was not raised by either counsel in the argument, and as we are of opinion that the copies for which judgment was recovered in this case against the defendant were not found in his possession, within the meaning of the statute, it is unnecessary to decide it here.

The suit was brought originally in the district court of the United States for the eastern district of Pennsylvania. It was there tried before a jury, and a verdict rendered in favor of the plaintiffs for a forfeiture of one dollar for each of the copies found in defendant's possession, amounting to $14.800, for which judgment was entered in that court. A bill of exceptions, taken at that trial, is found in the record. A writ of error took the case to the circuit court for that district, which, on the case as made in the district court, affirmed its decision. To this latter judgment the present writ of error is directed.

The assignment of errors questions the validity of the copyright, both as regards the subject-matter of the photograph and as regards the evidences of proper proceedings with the librarian to make the copyright effective. There are also other errors assigned which it might be interesting to examine, but which we do not think necessary to a decision of the case as it is now before us.

The judge in the trial in the court below charged the jury as follows:

The court instructs you that under the evidence if you believe it, and the court sees nothing that would justify disbelief, the plaintiff is entitled to recover and to have damages assessed at the rate of one dollar ($1.00) for every sheet of that copied photograph found in his [defendant's] possession, and every sheet under his control at the time must be treated as in his possession, notwithstanding the interest his employers may have had in it. * * * A large number of the copies, according to the testimony, were upon a shelf, * * * and he [the defendant] obtained these copies for the purpose of labels. They were found in the store where he was and under his charge. Now, I repeat what I have said, that every sheet under his control, (then under his control,) notwithstanding the interest that the firm of Sharpless & Sons may have had in them, every sheet thus subject to his control must be regarded, for the purposes of this suit, as in his possession, and for every sheet thus found in his possession, if you find for the plaintiff, and I see nothing that would justify you in not so finding—

This left nothing for the jury to consider but whether they would believe the testimony: if they did, it was a peremptory instruction to them to find a verdict against defendant of one dollar for every sheet found in the store of Sharpless & Sons. There is no contradiction in the testimony on the subject of the relation of the defendant, Thornton, to the possession of these fifteen thousand sheets of the photographs. Sharpless & Sons were a partnership in the city of Philadelphia, and large wholesale dealers in dry goods. Mr. Thornton was, according to his own testimony and that of Mr. Sharpless, employed by them somewhat in the character of a business manager; but his main business was, however, the purchasing of goods which were afterward sold by that firm. Their place of business was a three or four story building, in which they had large quantities of textile fabrics stowed away for sale, and it was in the second or third story of this building that the sheets were found which are the subject of this suit. They were among other goods, and were to be used by pasting them upon parcels of dry goods, which was also often done at the dyer's before the goods were brought to the business house for sale. That these copies were the property of Sharpless & Sons can admit of no doubt; that they were in their building, subject to their control and use, in the same manner as any of the other goods that they had there, is also clear, as well as the fact that the plaintiffs in this case so understood it.

It appears from the evidence of Francis Schreiber, who was not, however, a member of the plaintiffs' firm, that he went, in company with his brother Henry, to the place of business of Sharpless & Sons and sought an interview with Mr. Sharpless. In the course of the conversation which ensued he asked Mr. Sharpless where he got the pictures from, and he said "his man who had charge had got it at Queen's"—by his man evidently meaning Thornton, the defendant. Then, after some conversation about the injury done the proprietors of the picture, Mr. Sharpless said that he did not intend to do anything wrong, whereupon witness then asked him whether he had any of them, to which the reply was:

Yes; he had a great many of them upstairs.

The witness asked him whether they could have them, and Sharpless said:

Yes; they could have the copies.

This language is inconsistent with any other idea than that Mr. Sharpless considered the matter entirely under his control. This conversation with Mr. Sharpless occurred on the 8th day of May, in their place of business at the corner of Eighth and Chestnut streets; it was in the second story of the building, and Henry Schreiber, a brother of the witness, was also present. In regard to this same conversation the witness, Francis Schreiber, was asked:

How came you to ask Mr. Sharpless if he would surrender any of the pictures?

His answer was:

I wanted to know if he had any. * * * That was my object in going there.

Henry Schreiber, one of the plaintiffs, was also sworn, and stated that he was present upon the Saturday morning when the conversation occurred with Mr. Sharpless as to which his brother Francis testified: that he had been there a few days before, upon which occasion he saw Mr. Thornton, who was employed there to the best of his knowledge. He testified that Thornton showed him a picture; that he saw the place from which it was taken, a shelf, and that there were others, quite a package of them, on the shelf. He further testified that in the conversation on Saturday Mr. Sharpless said:

Mr. Thornton has the sole charge of that. He gets up the labels, and gets everything that he thinks will be appropriate.

or something to that effect, and that Mr. Sharpless also said that Thornton had shown him this picture before it was used, and he (Sharpless) told him to go ahead. He also states that Mr. Sharpless said that they had a lot upstairs, and that he (the witness) could have them all.

Mr. Thornton himself testified that he got up this plate and ordered fifteen thousand copies to be made; that these copies were delivered to Sharpless & Sons; that the tickets were often put on the goods at the dyeing establishment, received afterward by Sharpless & Sons, and sold to other parties. After some further testimony as to the details of this transaction, Mr. Thornton was asked:

Tell us what your business was then at that store of Sharpless & Sons.

He replied:

I was employed there as the superintendent of the wholesale domestic department. I have the purchasing of all the goods, the making of the price, and seeing that they are sold.

He testified in substance that these prints or copies were paid for by Sharpless & Sons; that he never paid out any money, but that they were paid for as other goods were by that firm in the course of business; that they were contracted for by him and paid for by Sharpless & Sons when the bill was sent to them.

The attempt was made to establish the fact that Thornton had the possession or control of these prints by showing that he was the man who first conceived the idea of getting up and using them in the business of Sharpless & Sons; that he did in effect order the photograph to be made, and only showed it to Mr. Sharpless after this was done. Thornton, however, states that before it was used, and a month before the time the prints were found at the store by the plaintiffs, Mr. Sharpless had known about the photograph and copy: that he approved it, and that the bills were paid by his firm.

We do not see how Mr. Thornton, merely as an employé, although he may have had a principal place in that establishment, could be said to have had the possession of these prints when they were found by the plaintiffs in the store of Sharpless & Sons. In any other light that it can be viewed that firm would be held to be in possession. An action of replevin could have been sustained against them for the possession of these goods, or an action of trover, if they had been the property of plaintiffs, on account of the possession of them by Sharpless & Sons. Sharpless & Sons could have done what they pleased with them; they could have ordered them thrown out and burned; they could have given them up, and they did offer to give them up, to plaintiffs. It was Sharpless himself who made this offer, and the plaintiffs obviously understood that Sharpless was the man with whom they were dealing all this time. Their first visits were to him; they talked the matter over with him; they recognized him as having control of the plates, of the prints, of the entire transaction, and it is impossible to conceive that Mr. Thornton had any other control over those sheets than he had over any piece of dry goods in the building. What he did during all the time in which this transaction occurred was as an employé of Sharpless & Sons, and any other clerk, porter, or salesman in that establishment who handled these articles or who had access to them and could use them upon packages of goods had as much possession of them as Mr. Thornton, and any such person could have been sued and a recovery had against him as lawfully as against Thornton, so far as the matter of possession is concerned. What right of action might have been maintained against Thornton for actively copying, printing, selling, or exposing these prints for sale is not now in question. The recovery here is based upon the fact of their being found in his possession.

Counsel for defendants in error, Schreiber & Sons, insist that the words "found in his possession" are to be construed as referring to the finding of the jury; that the expression means simply that where the sheets are ascertained by the finding of the jury to have been at any time in the possession of the person who committed the wrongful act, such person shall forfeit one dollar for each sheet so ascertained to have been in his possession. We, however, think that the word "found" means that there must be a time before the cause of action accrues at which they are found in the possession of the defendant. If, however, plaintiffs' view of the subject were tenable, the fact still remains that the only possession Mr. Thornton ever had of these prints was the possession of Sharpless & Sons, holding them merely as their employé, subject always to their order and control, and never with any claim of right in him to control them except in their service.

The instructions of the court to the jury therefore on this subject were erroneous, and the testimony did not justify the charge. For this reason the judgment of the circuit court is reversed, and the case remanded with instruction to set aside the verdict, and for further proceedings in accordance with this opinion.

U. S. Circuit Court—Northern District of Illinois.

BURDSALL *v.* CURRAN *et al.*

Decided July 25, 1887.

1. ASSIGNMENT—REISSUE—ESTOPPEL OF PATENTEE TO CLAIM INVALIDITY.
   Where a patentee has assigned his patent he is estopped, in an action brought against him for infringement by his assignee, from denying the validity of reissues of his patent, though such reissues were obtained since the assignee acquired an interest in the patent, and the latter might have known that they were void when he accepted them.
2. PRACTICE ON APPLICATION FOR REHEARING—NEW EVIDENCE.
   Upon an application for rehearing in a suit for infringement of a patent, the invalidity of the patent being reargued in the light of some additional evidence as to the state of the art, but no reason being assigned for failure to produce this evidence at the hearing, *Held*, that the evidence would not be considered.

APPLICATION FOR REHEARING.

Mr. Jesse Cox and *Mr. J. N. Jewett* for the defendant.

Messrs. West & Bond for the complainant.

BLODGETT, *J.*:

This is an application for a rehearing. The original decree was entered July 16, 1883, finding that defendants had infringed the first, second, third, fifth, sixth, and seventh claims of Reissued Patent No. 8,840, and the first, second, fifth, sixth, and seventh claims of Reissued Patent No. 8,846. The motion for rehearing is based mainly upon the ground that some of the claims in these reissued patents, which the court found were infringed by defendant, were not found in the original patent, and that these reissues having been applied for more than two years after the issue of the originals, the new and expanded claims were void under the rule in *Miller* v. *Bridgeport Brass Co.*, (104 U. S., 350,) and *James* v. *Campbell*, (Id. 356.) The original patents were issued to the defendant, John J. Curran, as the inventor of the devices shown in them respectively, and the complainant, Burdsall, has, by a series of mesne assignments, become the owner of these two patents for the State of Wisconsin, in which territory the infringements are charged and found to have been made by defendants. These reissues were applied for July 2, 1879, and both were granted on the 12th of August of the same year to Curran, and Carlos Wilcox as assignee of Curran. At the time these reissues were obtained complainant seems from the proof to have been the owner of a half interest in both original patents for the State of Wisconsin, and he acquired the remaining interest for that State in March, 1881.

No question was made at the former hearing as to the validity of either of the patents, and non-infringement was the only defense argued. Although the defense of want of novelty was set up in the pleadings, no proof was taken, and no stress laid upon it at the hearing. In passing upon the question of the validity of the patents at the former hearing, I stated that, the suit being brought by the assignee of Curran, even if the question of want of novelty or the validity of the patent had been set up, I should consider that Curran was estopped by his position as patentee from raising that question as against his assignee. The point is now made that, the reissues having been obtained since complainant acquired an interest in the patents, the estoppel does not apply as to the new or enlarged claims, because complainant was not compelled to accept the reissue, but could have stood upon the patents as originally issued, and if he accepted the reissue he did so with knowledge that the new and expanded claims were void. (*Potter* v. *Holland*, 1 Fish. Pat. Cas., 327.)

There can be no question, under the authorities, that Curran would be estopped from denying the validity of the original patent. (Walk. Pat., sec. 469; *Oldham* v. *Langmead*, 3 Term R., 439; *Thomas* v. *Quintard*, 5 Duer, 80.) And it seems to me that if he would be estopped from denying the patentability of the devices covered by the originals as against his assignee, he is equally so as to the reissues. He virtually, by his acts, has said to his assignees, as well as to the Patent Office:

By inadvertence and mistake I did not make my claims in the original patents as broad as my invention. I have therefore surrendered the originals and taken in their place these reissues, which inure to your benefit.

If he is estopped to deny the validity of the originals, the same rule should estop him as to the reissues. He cannot be allowed, as it seems to me, to surrender the original patents and take these reissues, and then say to his assignees:

I have been guilty of falsehood in obtaining both the original and reissue, and hence can deny your title to the property which you have acquired through me, and trespass with impunity upon property I have sold you for value.

And it also seems that the other defendants are equally estopped with Curran, as they are his partners, and can have no greater rights than he.

Having clothed this complainant with the exclusive rights granted by the reissued patents for the State of Wisconsin, Curran and his partners cannot now defeat those rights by setting up the invalidity of the patents assigned to him.

The application for rehearing also reargues the invalidity of the original patents in the light of some additional proof as to the state of the art: but as no reason is assigned for the failure to produce this proof at the hearing, I do not think it should now be considered. The question of infringement is also elaborately reargued in the briefs filed on this motion; but I am still of opinion that the infringement is clearly shown by the proof.

The motion for rehearing is therefore overruled, with the reservation that it is possible on the final hearing the court may be of the opinion that Curran's partners and co-defendants are not bound by the estoppel which binds him, and therefore may not be liable in damages for the infringement of the new and expanded claims of the reissue: and this question may be further discussed on the final hearing upon the master's report: and it is possible, also, that the third claim of Patent No. 8,846, which is new and is similar in effect but different in its verbiage from the second claim, which was one of the original claims of the patent, may cut some figure in the final adjustment of the damages: but, as I am at present advised, I do not think it will. The accounting must therefore go on before the master.

U. S. Circuit Court—District of Connecticut.

ANSONIA BRASS AND COPPER COMPANY *v.* ELECTRICAL SUPPLY COMPANY.

Decided September 3, 1887.

1. ELECTRIC INSULATOR—PRIOR STATE OF THE ART.

In Letters Patent No. 272,990, granted to Alfred A. Cowles, February 20, 1883, for an improvement in insulated electric conductors, the alleged invention was a fire-proof insulator. The wire, having been covered with a layer of fibrous material, was passed through a vessel of metallic paint, and a second layer of fibrous material was added while the paint was fresh, thus forcing the saturation of both layers. The non-combustibility is the result of filling the pores and interstices of the fibrous layers with the metallic paint. In previous English patents paint had been applied to insulators in connection with inflammable materials, and solely for the purpose of protecting the insulators. It was not shown that previous to the Cowles invention paint had been knowingly used, except experimentally, to make a non-combustible insulator. *Held*, that the defenses failed, so far as based upon the previous English patents and the known use of paint as a fire-proof covering for electric wires.

2. SAME—WANT OF INVENTION.

But it having been shown that for the purpose of procuring perfect insulation insulators had been previously composed of a double layer of fibrous material, each being separately painted, and the second layer being applied before the first was dry, *Held* that the Cowles patent was void for want of invention.

Mr. Joshua Pusey and *Mr. Charles E. Mitchell* for the complainant.

Mr. M. W. Seymour and *Mr. Benjamin F. Thurston* for the defendant.

SHIPMAN, *J.*:

This is a bill in equity based upon the admitted infringement of Letters Patent No. 272,660, granted to Alfred A. Cowles, February 20, 1883, for an improvement in insulated electric conductors. The patentee's view of the state of the art at the date of the invention and of the character and scope of the patented improvement is given in the specification of the patent, which I quote at length, as follows:

Before my invention copper wires had been covered with one or two braidings of cords, and paraffine, tar, asphalt, and various substances had been employed for rendering the covering water-proof and furnishing a proper insulation. With conductors of this character several accidents occurred in consequence of the conductor becoming heated and setting fire to the insulation. For this reason objections were made to insuring buildings against loss by fire where electric-lamp wires were introduced. To render the conductor fire-proof without interfering with the insulation led me to invent and manufacture the insulated electric conductors to which the present invention relates, which conductors have gone extensively into use during about a year and a half before the date of this specification.

I manufacture the said fire-proof insulation of the conductor in the following manner, reference being had to the annexed drawing, which illustrates the devices employed. The wire *a* is passed up through the head of a braiding-machine, and a layer of cotton or other threads is placed upon the wire in the ordinary manner. The braiding-head, with spools, is indicated at *b*. The covered wire now passes in at the bottom of the vessel *c*, through a suitable packing, *d*. This vessel *c* contains paint, preferably white lead or white zinc ground in oil and mixed with a suitable drier. The paint saturates the braided covering and the surplus runs down the same back into the vessel *c* as the braiding progresses. I next apply a second braiding directly upon the paint. For this purpose a second braiding-machine head is employed, the same being shown at *f*. The threads that are braided upon the paint force the paint into the first braided covering and at the same time the paint oozes through between the threads. Hence the paint is incorporated throughout the braided covering and fills up the pores. The braided covering is rendered even and consolidated by suitable means, such as one or two pairs of grooved rollers, *k k*.

In practical use it is found that the covering is of the most reliable character, it is compact and hard, the wire is perfectly insulated, and there is no possibility of inflaming the covering. With intense heat the threads may char, but they will not burn. For these reasons this insulated conductor is preferred to those before made.

I remark that in the manufacture of this conductor it is preferable to reel the covered wire as it passes from the braiding and painting machine and then remove the reel from the coil and hang up such coil in a heated room until it is thoroughly hardened.

More than two layers of braiding may be employed, the paint intervening between the layers. Winding with threads or cords may take the place of braiding.

If desired, a coat of paint may be applied outside the outer layer of fibrous material, and this may be colored, so as to be used in distinguishing the wires. It is always preferable to braid the second or subsequent coats upon the paint when fresh; but I do not limit myself in this particular, as the paint may be dried, or partially so, before the next layer of braiding is applied. Paint might be applied to the wire before the first braiding.

I am aware that wire has been covered with braided threads; also that india-rubber, asphaltum, and similar materials have been applied upon the covering either hot or cold; but one coating of such material was allowed to set or harden before the next layer of braided material was applied. Hence the asphaltum or similar material was not forced into the interstices, and besides this all these substances ignite by the wire becoming heated, or fire will follow along upon such covering.

I have discovered that ordinary paint composed of lead or zinc with linseed-oil is practically non-combustible, and it prevents the covering being ignited by the wire becoming hot if there is a resistance to the electric current; besides this, fire will not burn along the conductor, as is the case where the fibrous covering is saturated with asphaltum, india-rubber, or similar material.

The claims of the patent are as follows:

"1. The method herein specified of insulating electric conductors and rendering the coating substantially non-combustible, consisting in applying a layer of fibrous material, a layer of paint, and a second layer of fibrous material upon the paint before it dries or sets, substantially as set forth.

2. An insulated and non-combustible covering for electric conductors, composed of two or more layers of cotton or similar threads, with paint that intervenes between the layers and fills the interstices of the covering, substantially as set forth.

The patentee's statement that after one coating of heated material, like india-rubber or asphaltum, had been applied upon the first layer of braided covering of the wire such coating was allowed to set or harden before the next layer of braided material was applied is true; but it is not true that it was always so allowed to harden. The second layer of braided covering was often added to the wire while the first coating of water-proof material was in a wet or plastic condition.

Prior to th introduction of electric-lamp lights into buildings a principal object in the insulation of electric wires was their thorough protection against the effect of water or wet air, and therefore such substances as paraffine, gutta-percha, and india-rubber were abundantly used to saturate the fibrous covering of the wire. The expert of the plaintiff sums up the state of the art at this date by saying:

It was old to make use of a fibrous covering to the metallic wire, and it was old to saturate that covering with water-proof materials—such, for instance, as paraffine, pitch, tar, resin in a melted condition, and also gutta-percha and india-rubber in a solution, and in some instances even paint has been made use of. These substances had been used to insulate the conductor electrically, so that the current passing along the wire might not escape by contact of the covering with the support or with any conducting substances.

He further truly says, in relation to the numerous English patents which are in the record, that paint had been used—

in connection with electric conductors as a protection for an interior water-proofing-coating of combustible material, in which case the paint formed or became part of an armor for the electric insulating material. I do not find any instance where the electric conductor itself was insulated and the coating of fibrous material rendered substantially non-combustible by paint laid in between the two layers of fibrous material, so that the particles of oxides or carbonates are pressed and bound into the fibers so as to fill the interstices thereof, as set forth in complainant's patent, and secured by the claims thereof.

These patents were generally for land or submarine telegraph-cables. The wires which were generally introduced into dwellings or buildings were small wires for conducting an electric current of low tension, such as were necessary for annunciators or for burglar-alarms, and after the discovery of the useful properties of paraffine that article was almost universally used in this country to saturate the fibrous coverings of inside electric wires. When buildings began to be lighted by means of electric lamps, and it became necessary that wires for inside use should convey currents of high tension, the use of wires covered with inflammable non-conductors became dangerous. If, from any cause, the passage of the current was checked and the wires became overheated, the inflammable covering melted or took fire and endangered the safety of the building. The use of paraffine-covered wires inside buildings was forbidden by the Board of Fire Underwriters in the city of New York. To guard against this danger, the patentee produced his patented conductor. The covering was not merely an insulator, but was a non-combustible insulator. It is a success, has superseded the use of paraffine-covered wire, and is universally used for inside wiring for electric lamps.

The English patents, a large number of which were introduced, are not an anticipation. They are all simply for electrical insulation, and are expedients to guard against the dangers from water and not from fire. Where any of them use paint, such use is in

connection with inflammable materials, and is simply as a protection for the water-proof covering. Neither was it shown that before the date of the invention, which was in the spring of 1881, paint had been knowingly used, except experimentally, to make a non-combustible insulator. The defense based upon the English patents and upon the known use of paint as a non-combustible material for covering electric wires must fail.

The most important testimony which was offered by the defendant was that of Edwin Holmes, the president of the Holmes Burglar Alarm Telegraph Company, who had been engaged in that business for twenty-five years, and had thereby become familiar with the methods of the manufacture of electric wires. He testified as follows:

Interrogatory 2. In your business has it been necessary for you to use insulated electric conductors; and, if so, please describe the manner in which those conductors were insulated, beginning back as early as you can remember. Answer. It has. When I first commenced using them, the wire was insulated by winding a thread larger or smaller, as the case might be, around the wire, and that thread was covered with paint. All of my wire was insulated in that way until paraffine was substituted for the paint.

Int. 3. How was the paint applied? A. I think at first it was applied with a brush. I applied it by drawing it through a vessel containing paint, and then through a piece of thick rubber or gutta-percha, which removed the surplus paint and left a smooth surface on the thread which covered the wire. * * *

Int. 9. In your business did it ever become necessary to secure as perfect insulation of wire as possible; and, if so, what method did you take of accomplishing that result? In answering this question, please confine your answer to the use of fibrous material and paint. A. I did. I accomplished it sometimes by covering the wire with a thicker thread and two coats or more of paint; sometimes by a thread covering and a coat of paint on that.

Int. 10. Was that second fibrous covering and second coat of paint placed upon the first covering and paint while it, the first covering of paint, was in an "undry" or "unset" condition?

(Complainant's counsel objects because the question is leading and suggestive. Question withdrawn, and the following interrogatory substituted therefor:)

Int. 10. Please describe the condition of the first coating of paint when the second coating of fibrous material and paint was put upon it. A. The first coat was partially dried, so as to keep its place, but would admit of an impression from the next covering of thread.

Int. 11. Please state a date anterior to which you are willing to swear positively you placed, as you have described in answer to Int. No. 9, the second covering of thread and the second coat of paint upon the wire, in order to perfect the insulation. A. I did it as early as 1860, to the best of my remembrance.

I cannot doubt that Mr. Holmes used wire covered with a double coat of thread, each layer being painted and the second layer being applied before the first painted layer had become dry. It will be observed that the method of painting was not the method of the patent, and that the object was not to make the insulation fire-proof, because he abandoned the painted wire for paraffine wire. The object of the double coat was to produce perfect insulation.

In the spring of 1881, when the necessity had arrived for a non-combustible insulator, Mr. Cowles used first a double-coated outside-painted wire; but, finding that the insulation was not perfect, next employed the process of recoating a coated and painted wire while the paint was still fresh. The question is whether the process was patentable—whether, when it was old to cover an electric wire with a double layer of thread, each layer painted, the second layer being placed upon an undried first layer, for the purpose of thoroughly insulating the wire, it was patentable to braid or wind the second layer upon a freshly-painted layer, for the purpose of filling the interstices of the layers with a mass of paint, and thereby making the covering a non-combustible insulator.

At the date of the invention the public had had an electric wire insulated by means of a double covering of painted thread; but the public did not know that such a covering was also non-combustible. Although it did not know it, it had had a non-combustible insulator; for I cannot doubt that Holmes's double covering was non-combustible in the same sense in which Cowles used the term. The thread covering of the Holmes wire was loaded with paint. It may be said that two facts are assumed without adequate proof—one, that Holmes used the double-covered and painted wire at all, and, next, that it was non-combustible. In reply to such a suggestion, it is manifest that the Holmes wire, either single or double covered, was one that would naturally be used in a business which required single wires, and that, in the multiform methods of insulation, his method was an obvious and simple one, as shown by the manner in which covering composed of braided and saturated thread was subsequently made. A less amount of evidence is required to satisfy the mind of so probable a fact than would be required in regard to a fact in its nature quite improbable. It is also true that Mr. Holmes's means of knowledge in regard to the manner of constructing his wires were exceptionally good. In regard to the non-combustibility of the Holmes wire, I have no idea that the Cowles process is the only one which can make by means of paint a braided or wound thread covering non-combustible. The only requisite is to fill the interstices and pores of the thread with metallic paint. That the Holmes process upon the wires which he used was adequate for the purpose seems to me quite evident. If Cowles had made his insulated covering in precisely the same manner that Holmes did, it could not have been successfully claimed that the fact that Cowles had discovered what neither Holmes nor the public knew—viz., that the Holmes covering was non-combustible—made the Cowles covering patentable. The public already had the article in use as a covering of an electric wire for purposes of insulation, and also had in the article the additional benefit of non-combustibility. The case is not that of *Colgate* v. *Telegraph Co.*, (15 Blatchf., 365,) in which the patentee first applied to practical use his discovery that gutta-percha was a non-conductor of electricity. It was not shown that gutta-percha had ever been used to cover an electric wire, though metallic wires which were used for other purposes had been covered with it. The case rested upon the fact that the inventor first used gutta-percha as an insulator of electric wire. The question then arises, was the change in the method or process a patentable one? Holmes wound the wire, then painted, then wound again, and repainted. Cowles wound, subjected the wound wire to a bath of paint, then wound upon the freshly-painted coat. Any one of the various old methods by which the covering is compelled to absorb a quantity of paint could be selected. The one which Cowles adopted is one which had been known in the analogous process of insulating telegraphic cables and electric wires, and was familiar to the skilled mechanic in the art of manufacturing electric cables. I see in the adoption of this method only a skillful selection of one of a number of methods at the hand of the patentee, and neither the creation of a new method nor the exercise of any inventive genius in the selection.

The conclusion is that Mr. Cowles met the need of the public by furnishing to it a safe and economical non-combustible covering for electric wires, but that the history of the article is such that he cannot be called an inventor within the meaning of the statutes upon the subject of patents.

The bill is dismissed.

Messrs. West & Bond for the complainant.

BLODGETT, *J.*:

This is an application for a rehearing. The original decree was entered July 10, 1883, finding that defendants had infringed the first, second, third, fifth, sixth, and seventh claims of Reissued Patent No. 8,840, and the first, second, fifth, sixth, and seventh claims of Reissued Patent No. 8,846. The motion for rehearing is based mainly upon the ground that some of the claims in these reissued patents, which the court found were infringed by defendant, were not found in the original patent, and that these reissues having been applied for more than two years after the issue of the originals, the new and expanded claims were void under the rule in *Miller* v. *Bridgeport Brass Co.*, (104 U. S., 350,) and *James* v. *Campbell*, (Id. 356.) The original patents were issued to the defendant, John J. Curran, as the inventor of the devices shown in them respectively, and the complainant, Burdsall, has, by a series of mesne assignments, become the owner of these two patents for the State of Wisconsin, in which territory the infringements are charged and found to have been made by defendants. These reissues were applied for July 2, 1879, and both were granted on the 12th of August of the same year to Curran, and Carlos Wilcox as assignee of Curran. At the time these reissues were obtained complainant seems from the proof to have been the owner of a half interest in both original patents for the State of Wisconsin, and he acquired the remaining interest for that State in March, 1881.

No question was made at the former hearing as to the validity of either of the patents, and non-infringement was the only defense argued. Although the defense of want of novelty was set up in the pleadings, no proof was taken, and no stress laid upon it at the hearing. In passing upon the question of the validity of the patents at the former hearing, I stated that, the suit being brought by the assignee of Curran, even if the question of want of novelty or the validity of the patent had been set up, I should consider that Curran was estopped by his position as patentee from raising that question as against his assignee. The point is now made that, the reissues having been obtained since complainant acquired an interest in the patents, the estoppel does not apply as to the new or enlarged claims, because complainant was not compelled to accept the reissue, but could have stood upon the patents as originally issued, and if he accepted the reissue he did so with knowledge that the new and expanded claims were void. (*Potter* v. *Holland*, 1 Fish. Pat. Cas., 327.)

There can be no question, under the authorities, that Curran would be estopped from denying the validity of the original patent. (Walk. Pat., sec. 469; *Oldham* v. *Langmead*, 3 Term R., 439; *Thomas* v. *Quintard*, 5 Duer, 80.) And it seems to me that if he would be estopped from denying the patentability of the devices covered by the originals as against his assignee, he is equally so as to the reissues. He virtually [illegible] original patents as broad as my invention. I have surrendered the originals and taken in their place these reissues, which inure to your benefit.

If he is estopped to deny the validity of the originals, the same rule should estop him as to the reissues. He cannot be allowed, as it seems to me, to surrender the original patents and take these reissues, and then say to his assignees:

I have been guilty of falsehood in obtaining both the original and reissue, and hence can deny your title to the property which you have acquired through me, and trespass with impunity upon property I have sold you for value.

And it also seems that the other defendants are equally estopped with Curran, as they are his partners, and can have no greater rights than he.

Having clothed this complainant with the exclusive rights granted by the reissued patents for the State of Wisconsin, Curran and his partners cannot now defeat those rights by setting up the invalidity of the patents assigned to him.

The application for rehearing also reargues the invalidity of the original patents in the light of some additional proof as to the state of the art; but as no reason is assigned for the failure to produce this proof at the hearing, I do not think it should now be considered. The question of infringement is also elaborately reargued in the briefs filed on this motion; but I am still of opinion that the infringement is clearly shown by the proof.

The motion for rehearing is therefore overruled, with the reservation that it is possible on the final hearing the court may be of the opinion that Curran's partners and co-defendants are not bound by the estoppel which binds him, and therefore may not be liable in damages for the infringement of the new and expanded claims of the reissue; and this question may be further discussed on the final hearing upon the master's report; and it is possible, also, that the third claim of Patent No. 8,846, which is new and is similar in effect but different in its verbiage from the second claim, which was one of the original claims of the patent, may cut some figure in the final adjustment of the damages; but, as I am at present advised, I do not think it will. The accounting must therefore go on before the master.

U. S. Circuit Court—District of Connecticut.

ANSONIA BRASS AND COPPER COMPANY *v.* ELECTRICAL SUPPLY COMPANY.

Decided September 3, 1887.

1. ELECTRIC INSULATOR—PRIOR STATE OF THE ART.

In Letters Patent No. 272,660, granted to Alfred A. Cowles, February 20, 1883, for an improvement in insulated electric conductors, the alleged invention was a fire-proof insulator. The wire, having been covered with a layer of fibrous material, was passed through a vessel of metallic paint, and a second layer of fibrous material was added while the paint was fresh, thus forcing the saturation of both layers. The non-combustibility is the result of filling the pores and interstices of the fibrous layers with the metallic paint. In previous English patents paint had been applied to insulators in connection with inflammable materials, and solely for the purpose of protecting the insulators. It was not shown that previous to the Cowles invention paint had been knowingly used, except experimentally, to make a non-combustible insulator. *Held*, that the defenses failed, so far as based upon the previous English patents and the known use of paint as a fire-proof covering for electric wires, double layer of fibrous material, each being saturated with paint, and the second layer being applied before the first was dry. *Held* that the Cowles patent was void for want of invention.

Mr. Joshua Pusey and *Mr. Charles E. Mitchell* for the complainant.

Mr. M. W. Seymour and *Mr. Benjamin F. Thurston* for the defendant.

SHIPMAN, *J.*:

This is a bill in equity based upon the admitted infringement of Letters Patent No. 272,660, granted to Alfred A. Cowles, February 20, 1883, for an improvement in insulated electric conductors. The patentee's view of the state of the art at the date of the invention and of the character and scope of the patented improvement is given in the specification of the patent, which I quote at length, as follows:

Before my invention copper wires had been covered with one or two braidings of cords, and paraffine, tar, asphalt, and various substances had been employed for rendering the covering waterproof and furnishing a proper insulation. With conductors of this character several accidents occurred in consequence of the conductor becoming heated and setting fire to the insulation. For this reason objections were made to insuring buildings against loss by fire where electric-lamp wires were introduced. To render the conductor fire-proof without interfering with the insulation led me to invent and manufacture the insulated electric conductors to which the present invention relates, which conductors have gone extensively into use during about a year and a half before the date of this specification.

I manufacture the said fire-proof insulation of the conductor in the following manner, reference being had to the annexed drawing, which illustrates the devices employed. The wire *a* is passed up through the head of a braiding-machine, and a layer of cotton or other threads is placed upon the wire in the ordinary manner. The braiding-head, with spools, is indicated at *b*. The covered wire now passes in at the bottom of the vessel *c*, through a suitable packing, *d*. This vessel *c* contains paint, preferably white lead or white zinc ground in oil and mixed with a suitable drier. The paint saturates the braided covering and the surplus runs down the same back into the vessel *c* as the braiding progresses. I next apply a second braiding directly upon the paint. For this purpose a second braiding-machine head is employed, the same being shown at *f*. The threads that are braided upon the paint force the paint into the first braided covering and at the same time the paint oozes through between the threads. Hence the paint is incorporated throughout the braided covering and fills up the pores. The braided covering is rendered even and consolidated by suitable means, such as one or two pairs of grooved rollers, *k k*.

In practical use it is found that the covering is of the most reliable character, it is compact and hard, the wire is perfectly insulated, and there is no possibility of inflaming the covering. With intense heat the threads may char, but they will not burn. For these reasons this insulated conductor is preferred to those before made.

I remark that in the manufacture of this conductor it is preferable to reel the covered wire as it passes from the braiding and painting machine and then remove the reel from the coil and hang up such coil in a heated room until it is thoroughly hardened.

More than two layers of braiding may be employed, the paint intervening between the layers. Winding with threads or cords may take the place of braiding.

If desired, a coat of paint may be applied outside the outer layer of fibrous material, and this may be colored, so as to be used in distinguishing the wires. It is always preferable to braid the second or subsequent coats upon the paint when fresh; but I do not limit myself in this particular, as the paint may be dried, or partially so, before the next layer of braiding is applied. Paint might be applied to the wire before the first braiding.

I am aware that wire has been covered with braided threads: also that india-rubber, asphaltum, and similar materials have been applied upon the covering either hot or cold; but one coating of such material was allowed to set or harden before the next layer of braided material was applied. Hence the asphaltum or similar material was not forced into the interstices, and besides this all these substances ignite by the wire becoming heated, or fire will follow along upon such covering.

I have discovered that ordinary paint composed of lead or zinc with linseed-oil is practically non-combustible, and it prevents the covering being ignited by the wire becoming hot if there is a resistance to the electric current; besides this, fire will not burn along the conductor, as is the case where the fibrous covering is saturated with asphaltum, india-rubber, or similar material.

The claims of the patent are as follows:

1. The method herein specified of insulating electric conductors and rendering the coating substantially non-combustible, consisting in applying a layer of fibrous material, a layer of paint, and a second layer of fibrous material upon the paint before it dries or sets, substantially as set forth.

2. An insulated and non-combustible covering for electric conductors, consisting of a layer of fibrous material, a layer of paint, and a second layer of fibrous material upon the paint before it dries or sets, substantially as set forth.

3. An insulated and non-combustible covering for electric conductors, consisting of a layer of fibrous material, a layer of paint, and a second layer of fibrous material upon the paint before it dries or sets, substantially as set forth, and a fibrous covering saturated with paint.

4. An insulated and non-combustible covering for electric conductors, consisting of a layer of fibrous material, a layer of paint, and a second layer of fibrous material upon the paint before it dries or sets, substantially as set forth, and a fibrous covering saturated with paint, and a coating of paint upon the outer layer of fibrous material.

5. An insulated and non-combustible covering for electric conductors, consisting of a layer of fibrous material, a layer of paint, and a second layer of fibrous material upon the paint before it dries or sets, substantially as set forth, and a fibrous covering saturated with paint, and a coating of paint upon the outer layer of fibrous material, and a coating of paint upon the second or subsequent layer of fibrous material.

6. An insulated and non-combustible covering for electric conductors, consisting of a layer of fibrous material, a layer of paint, and a second layer of fibrous material upon the paint before it dries or sets, substantially as set forth, and a fibrous covering saturated with paint, and a coating of paint upon the outer layer of fibrous material, and a coating of paint upon the second or subsequent layer of fibrous material

connection with inflammable materials, and is simply as a protection for the water-proof covering. Neither was it shown that before the date of the invention, which was in the spring of 1881, paint had been knowingly used, except experimentally, to make a non-combustible insulator. The defense based upon the English patents and upon the known use of paint as a non-combustible material for covering electric wires must fail.

The most important testimony which was offered by the defendant was that of Edwin Holmes, the president of the Holmes Burglar Alarm Telegraph Company, who had been engaged in that business for twenty-five years, and had thereby become familiar with the methods of the manufacture of electric wires. He testified as follows:

Interrogatory 2. In your business has it been necessary for you to use insulated electric conductors; and, if so, please describe the manner in which those conductors were insulated, beginning back as early as you can remember. Answer. It has. When I first commenced using them, the wire was insulated by winding a thread larger or smaller, as the case might be, around the wire, and that thread was covered with paint. All of my wire was insulated in that way until paraffine was substituted for the paint.

Int. 3. How was the paint applied? A. I think at first it was applied with a brush. I applied it by drawing it through a vessel containing paint, and then through a piece of thick rubber or gutta-percha, which removed the surplus paint and left a smooth surface on the thread which covered the wire. * * *

Int. 9. In your business did it ever become necessary to secure as perfect insulation of wire as possible; and, if so, what method did you take of accomplishing that result? In answering this question, please confine your answer to the use of fibrous material and paint. A. I did. I accomplished it sometimes by covering the wire with a thicker thread and two coats or more of paint; sometimes by a thread covering and a coat of paint on that.

Int. 10. Was that second fibrous covering and second coat of paint placed upon the first covering and paint while it, the first covering of paint, was in an "undry" or "unset" condition?

(Complainant's counsel objects because the question is leading and suggestive. Question withdrawn, and the following interrogatory substituted therefor:)

Int. 10. Please describe the condition of the first coating of paint when the second coating of fibrous material and paint was put upon it. A. The first coat was partially dried, so as to keep its place, but would admit of an impression from the next covering of thread.

Int. 11. Please state a date anterior to which you are willing to swear positively you placed, as you have described in answer to Int. No. 9, the second covering of thread and the second coat of paint upon the wire, in order to perfect the insulation. A. I did it as early as 1860, to the best of my remembrance.

I cannot doubt that Mr. Holmes used wire covered with a double coat of thread, each layer being painted and the second layer being applied before the first painted layer had become dry. It will be observed that the method of painting was not the method of the patent, and that the object was not to make the insulation fire-proof, because he abandoned the painted wire for paraffine wire. The object of the double coat was to produce perfect insulation.

In the spring of 1881, when the necessity had arrived for a non-combustible insulator, Mr. Cowles used first a double-coated outside-painted wire, but, finding that the insulation was not perfect, next employed the process of recoating a coated and painted wire while the paint was still fresh. The question is whether the process was patentable—whether, when it was old to cover an electric wire with a double layer of thread, each layer painted, the second layer being placed upon an undried first layer, for the purpose of thoroughly insulating the wire, it was patentable to braid or wind the second layer upon a freshly-painted layer, for the purpose of filling the interstices of the layers with a mass of paint, and thereby making the covering a non-combustible insulator.

At the date of the invention the public had had an electric wire insulated by means of a double covering of painted thread; but the public did not know that such a covering was also non-combustible. Although it did not know it, it had had a non-combustible insulator; for I cannot doubt that Holmes's double covering was non-combustible in the same sense in which Cowles used the term. The thread covering of the Holmes wire was loaded with paint. It may be said that two facts are assumed without adequate proof—one, that Holmes used the double-covered and painted wire at all, and, next, that it was non-combustible. In reply to such a suggestion, it is manifest that the Holmes wire, either single or double covered, was one that would naturally be used in a business which required single wires, and that, in the multiform methods of insulation, his method was an obvious and simple one, as shown by the manner in which covering composed of braided and saturated thread was subsequently made. A less amount of evidence is required to satisfy the mind of so probable a fact than would be required in regard to a fact in its nature quite improbable. It is also true that Mr. Holmes's means of knowledge in regard to the manner of constructing his wires were exceptionally good. In regard to the non-combustibility of the Holmes wire, I have no idea that the Cowles process is the only one which can make by means of paint a braided or wound thread covering non-combustible. The only requisite is to fill the interstices and pores of the thread with metallic paint. That the Holmes process upon the wires which he used was adequate for the purpose seems to me quite evident. If Cowles had made his insulated covering in precisely the same manner that Holmes did, it could not have been successfully claimed that the fact that Cowles had discovered what neither Holmes nor the public knew—viz., that the Holmes covering was non-combustible—made the Cowles covering patentable. The public already had the article in use as a covering of an electric wire for purposes of insulation, and also had in the article the additional benefit of non-combustibility. The case is not that of *Colgate* v. *Telegraph Co.*, (15 Blatchf., 365,) in which the patentee first applied to practical use his discovery that gutta-percha was a non-conductor of electricity. It was not shown that gutta-percha had ever been used to cover an electric wire, though metallic wires which were used for other purposes had been covered with it. The case rested upon the fact that the inventor first used gutta-percha as an insulator of electric wire. The question then arises, was the change in the method or process a patentable one? Holmes wound the wire, then painted, then wound again, and repainted. Cowles wound, subjected the wound wire to a bath of paint, then wound upon the freshly-painted coat. Any one of the various old methods by which the covering is compelled to absorb a quantity of paint could be selected. The one which Cowles adopted is one which had been known in the analogous process of insulating telegraphic cables and electric wires, and was familiar to the skilled mechanic in the art of manufacturing electric cables. I see in the adoption of this method only a skillful selection of one of a number of methods at the hand of the patentee, and neither the creation of a new method nor the exercise of any inventive genius in the selection.

The conclusion is that Mr. Cowles met the need of the public by furnishing to it a safe and economical non-combustible covering for electric wires, but that the history of the article is such that he cannot be called an inventor within the meaning of the statutes upon the subject of patents.

The bill is dismissed.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

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CONTENTS.

	Page.
THE OFFICIAL GAZETTE	1171
INDEXES TO FOREIGN PATENTS	1171
NOTICE	1171
ISSUE OF MARCH 20, 1888	1171
DESIGNS	1172
TRADE-MARKS	1172
LABELS	1172
PATENTS GRANTED	1173
REISSUES	1293
DECISIONS OF THE U. S. COURTS—	
Andrews *et al. v.* Hovey	1295
Andrews *et al. v.* Cone	1292
Kraus *et al. v.* Fitzpatrick *et al.*	1292

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

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The following indexes to foreign patents have been translated, compiled, and published under the authority of the Commissioner of Patents, and may be obtained as a Patent Office publication at the prices given below:

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Bound half-turkey	2 50
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Notice.—Models in Rejected or Abandoned Cases.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 9, 1888.

Notice is hereby given to inventors and the public that a large number of models is in the custody of this Office, which were received between the years 1879 and 1885, many of which have never become a part of the records of this Office. All such models and all models belonging to rejected or abandoned applications will be sold or otherwise disposed of under the provisions of section 485 of the Revised Statutes unless removed in sixty days from the date hereof.

Institutions of learning in good standing may, after the expiration of the time above limited, on written application, make selection before the day of public sale of models remaining unclaimed. The expense of removal or transportation of these models must be borne by the applicants or institutions of learning.

BENTON J. HALL,
Commissioner.

4 8 0 6—12—i

Issue of March 20, 1888.

Patents	370—No.	379,553 to No. 379,922, inclusive.
Designs	14—No.	18,186 to No. 18,199, inclusive.
Trade-Marks	22—No.	15,289 to No. 15,310, inclusive.
Labels	2—No.	5,528 to No. 5,529, inclusive.
Reissues	3—No.	10,910 to No. 10,912, inclusive.
Total issue	411	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	....	Nebraska	4	....
Arizona Territory	....	....	Nevada	....	....
Arkansas	4	....	New Hampshire	5	....
California	6	....	New Jersey	21	....
Colorado	2	....	New Mexico Territ'y	....	....
Connecticut	17	1	New York	63	10
Dakota Territory	1	....	North Carolina	....	....
Delaware	....	....	Ohio	23	2
District of Columbia	4	....	Oregon	2	....
Florida	....	....	Pennsylvania	32	1
Georgia	2	....	Rhode Island	4	....
Idaho Territory	....	....	South Carolina	1	....
Illinois	35	....	Tennessee	7	....
Indian Territory	....	....	Texas	5	1
Indiana	12	....	Utah Territory	....	....
Iowa	4	....	Vermont	2	....
Kansas	9	....	Virginia	1	....
Kentucky	4	....	Washington Territ'y	....	....
Louisiana	4	....	West Virginia	....	....
Maine	5	....	Wisconsin	8	....
Maryland	5	1	Wyoming Territory	....	....
Massachusetts	28	1	United States Army	....	....
Michigan	17	1	United States Navy	1	....
Minnesota	8	2			
Mississippi	1	....	Total to citizens of the United States	358	20
Missouri	12	....			
Montana Territory	....	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	....	....	Germany	6	....
Australia	....	....	Italy	....	....
Austria-Hungary	1	....	Mexico	....	....
Belgium	....	....	New South Wales	....	....
Bermuda	....	....	New Zealand	....	....
Brazil	....	....	Norway	....	....
Canada	6	....	Russia	....	....
Chili	....	....	Scotland	....	....
Colombia, U. S. of	....	....	Sweden	....	....
Cuba	....	....	Switzerland	1	....
Denmark	....	....	Victoria	....	....
England	10	1			
Finland	....	....	Total to citizens of foreign countries	26	4
France	1	3			

DESIGNS.

18,186.—ORNAMENTATION OF MOCCASINS OR SHOES.—*John E. Booth*, Bangor, Me. Application filed October 27, 1887. Serial No. 253,565. Term of patent 7 years.

18,187.—SPUR.—*August Buermann*, Newark, N. J. Application filed February 14, 1888. Serial No. 264,049. Term of patent 7 years.

18,188.—ADVERTISING-STAFF.—*Gustav Fuchs*, Chicago, Ill. Application filed February 3, 1888. Serial No. 262,940. Term of patent 14 years.

18,189.—BRACELET.—*Louis P. Juvet*, Glens Falls, N. Y. Application filed January 19, 1888. Serial No. 261,333. Term of patent 7 years.

18,190 and 18,191.—HEATING-STOVE.—*William J. Keep* and *Charles Wipfler*, Detroit, Mich., assignors to *The Michigan Stove Company*, same place. Applications filed June 9, 1887. Serial Nos. 240,830 and 240,831. Term of patents 7 years.

18,192.—WATER-CLOSET BOWL.—*Owen J. McGann*, Pittsburg, Pa., assignor of one-half to *John C. Pennie*, Washington, D. C. Application filed November 16, 1887. Serial No. 255,369. Term of patent 7 years.

18,193.—BURIAL-CASKET.—*John Maxwell*, Oneida, N. Y. Application filed January 19, 1888. Serial No. 261,334. Term of patent 7 years.

18,194.—BADGE.—*John M. Murphy*, New York, N. Y., assignor of two-thirds to *Julius Martin*, same place, and *Frank H. Beecher*, Seymour, Conn. Application filed October 11, 1887. Serial No. 252,074. Term of patent 14 years.

18,195.—WATER-CLOSET.—*John Slater*, Burslem, county of Stafford, England. Application filed February 10, 1888. Serial No. 263,646. Term of patent 3½ years.

18,196 to 18,198, inclusive.—GRAVE-STONE.—*William R. Stearns*, Melrose, and *G. Wilton Lewis*, Malden, Mass., assignors to *The Highland Slate Manufacturing Company*, Portland, Me. Applications filed February 4, 1888. Serial Nos. 263,061 to 263,063, inclusive. Term of patents 14 years.

18,199.—GRAVE-STONE.—*William R. Stearns*, Melrose, and *G. Wilton Lewis*, Malden, Mass., assignors to *The Highland Slate Manufacturing Company*, Portland, Me. Application filed October 25, 1887. Serial No. 253,376. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,289.—BABBITT METAL.—*James Bostwick*, Detroit, Mich. Application filed February 13, 1888. Used since November 1, 1885.
"The word 'POLAR.'"

15,290.—WATCH-CASES.—*Brooklyn Watch Case Company*, Brooklyn, N. Y. Application filed February 9, 1888. Used since November 25, 1887.
"The representation of the head of a steer in conjunction with the word 'GRANGER.'"

15,291.—CORSETS.—*James H. Clark*, New York, N. Y. Application filed February 15, 1888. Used since November, 1887.
"The word 'HENRIETTA.'"

15,292.—POWDER, SOAP, AND COMPOUNDS FOR CLEANING AND POLISHING METALS.—*Coffin, Redington & Co.*, New York, N. Y. Application filed December 7, 1887. Used since May 2, 1887.
"The word 'SACOSA.'"

15,293.—HOLLOW GLASSWARE.—*La Compagnie des Cristalleries de Baccarat*, Baccarat, Meurthe, France. Application filed February 1, 1888. Used since December 29, 1860.
"The representation of a decanter with a goblet and tumbler at opposite sides thereof."

15,294.—SUPERPHOSPHATES OR FERTILIZING MATERIALS.—*Crocker Fertilizer and Chemical Company*. Buffalo, N. Y. Application filed December 20, 1887. Used since January, 1887.
"A cut of a double circle inclosing a charging buffalo."

15,295.—FOOD FOR INFANTS.—*Valentine Dietrich*, New York, N. Y. Application filed February 10, 1888. Used since April 1, 1887.
"The word 'WHEATINE.'"

15,296.—LADIES' SHOES.—*J. Faust & Son*, Baltimore, Md. Application filed October 15, 1887. Used since September 1, 1886.
"The word 'CLINTON' in red script letters."

15,297.—ROLLER-PROCESS FLOUR.—*Gilbert, Waugh & Co.*, Mansfield, Ohio. Application filed January 14, 1888. Used since April 1, 1877.
"The words 'MORNING GLORY.'"

15,298.—FLOUR AND MEAL CONTAINING LEAVENING PROPERTIES.—*Francis M. Holmes*, Boston, Mass. Application filed December 24, 1887. Used since December 20, 1887.
"The representation of a loaf of brown bread having on it the words 'HOME MILLS ORIGINAL BOSTON BROWN BREAD MIXTURE LEAVENED.'"

15,299.—[WITHDRAWN.]

15,300.—PERFUMERY, SACHET-POWDER, AND OTHER TOILET PREPARATIONS.—*Lazell, Dalley & Co.* New York, N. Y. Application filed February 18, 1888. Used since October 1, 1887.
"The word 'IRISINIA.'"

15,301.—PERFUMERY.—*Lazell, Dalley & Co.*, New York, N. Y. Application filed February 18, 1888. Used since October 15, 1887.
"The word 'ROSALIA.'"

15,302.—TOILET PERFUME.—*Phillip M. Lorenz*, Toledo, Ohio. Application filed December 15, 1887. Used since November 1, 1887.
"The words 'LADY CLAIRE.'"

15,303.—HAIR CLIPPERS OR CUTTERS.—*McCoy & Sanders*, New York, N. Y. Application filed September 27, 1887. Used since January, 1886.
"The words 'FRENCH TOILET.'"

15,304.—WATCHES, CLOCKS, JEWELRY, AND SILVERWARE.—*S. F. Myers & Co.*, New York, N. Y. Application filed January 23, 1888. Used since December 15, 1887.
"The words 'THE GLOBE.'"

15,305.—PREPARATION FOR CHAPPED HANDS AND LIPS.—*William Joseph Pechin*, Philadelphia, Pa. Application filed December 29, 1887. Used since February 1, 1887.
"The word 'KOSMO.'"

15,306.—COD-LIVER-OIL PILLS.—*Rigaud & Chapoteaut*, Paris, France. Application filed December 29, 1887. Used since April 20, 1885.
"The word 'MORRHUOL.'"

15,307.—EXTRACTS AND OTHER PERFUMES.—*William H. Riker*, New York, N. Y. Application filed February 8, 1888. Used since December, 1886.
"The words 'NILICA, THE BEES' DELIGHT.'"

15,308.—CONFECTIONERY, INCLUDING JAMS, JELLIES, MARMALADES, PRESERVED AND CANDIED FRUITS, AND SWEETS.—*Charles Southwell & Co.*, London, England. Application filed February 15, 1888. Used since January 1, 1885.
"The autograph signature 'CHAS. SOUTHWELL & CO.'"

15,309.—WHEAT-FLOUR.—*Winona Mill Company*, Winona, Minn. Application filed February 20, 1888. Used since June 1, 1880.
"The word 'LAUREL.'".

15,310.—WHEAT-FLOUR.—*Winona Mill Company*, Winona, Minn. Application filed February 20, 1888. Used since June 5, 1884.
"The words 'NORTHERN LIGHT.'"

LABELS.

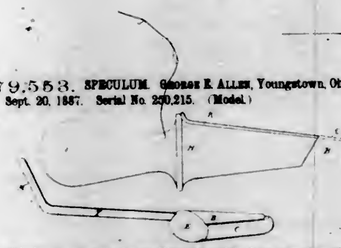
5,528.—Title: "TEMPORARY ENAMELING CREAM."—*Emma J. Daniels*, New Haven, Conn. Application filed February 20, 1888.

5,529.—Title: "MADDIN'S MOSQUITO MIXTURE."—*T. M. Maddin*, Waco, Tex. Application filed February 18, 1888.

PATENTS

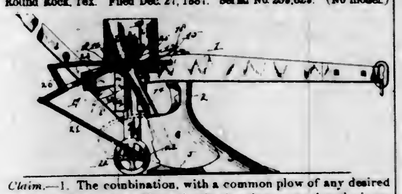
GRANTED MARCH 20, 1888.

379,553. SPECULUM. GEORGE E. ALLEN, Youngstown, Ohio. Filed Sept. 20, 1887. Serial No. 250,215. (Model.)



Claim.—A conical metallic tube with slot extending the entire length of tube, forming an open point, in connection with a point-plug filling small end of tube, having mirror and handle, as described, upon point-plug filling slot, and a breech-plug with flange accurately filling the large end of metallic tube up to and flush against point-plug and ridge filling slot from the end of ridge on point-plug to the large end of tube, also having a slot on the side of the breech-plug to enable it to pass over the handle F of the point-plug, an ordinary slide, N, being used interchangeably with the breech-plug, all substantially as and for the purposes set forth.

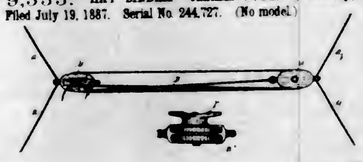
379,554. CORN-PLANTING ATTACHMENT. FRANK L. ATEN, Round Rock, Tex. Filed Dec. 27, 1887. Serial No. 259,029. (No model.)



Claim.—1. The combination, with a common plow of any desired construction, of a downwardly-projecting bracket secured to the inner side of the rear end of the beam and having a box or flanged way upon its side, and a seeding attachment consisting of a standard sliding adjustably in the box or way, a seed-box at the upper end of the standard provided with a downwardly and forwardly inclined seed-tube and with a reciprocating seed-slide, a wheel journaled upon a laterally-projecting stud or arm at the lower end of the standard, a bell-crank fulcrumed upon a rearwardly-projecting arm, a connecting-rod between a wrist-pin of the wheel and one arm of the bell-crank, and a connecting-rod between the seed-slide and the bell-crank, as shown and described.

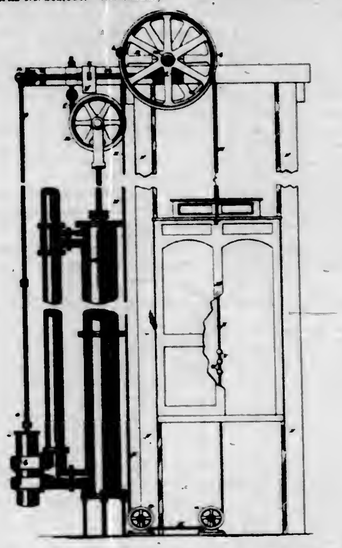
2. In a seeding attachment for plows, the combination of a standard having a seed-box at its upper end provided with a longitudinal groove in the upper side of the bottom, and with slots in the end walls registering with the groove and having an arm projecting laterally from the lower end, a wheel journaled upon the said arm, a seed-slide in the groove, a bell-crank fulcrumed upon a rearwardly-projecting bracket of the box, a connecting-rod pivoted to the wheel and to the rear arm of the bell-crank, and a connecting-rod pivoted to the upper arm of the bell-crank and to the rear end of the seed-slide, as shown and described

379,555. HAY-BINDER. CHARLES W. BAKER, Waverly, Mich. Filed July 19, 1887. Serial No. 244,727. (No model.)



Claim.—The rack having the eyes, the ropes provided with the eyes at the ends, the pulleys, one having a flanged head and the binding-rope attached to one pulley at one end and the other end detachably fastened to the said flanged head, substantially as set forth.

379,556. ELEVATOR. NORMAN C. RABBITT, Chicago, Ill., assignor to the Hydraulic Elevator Company, of Illinois. Filed Sept. 4, 1886. Serial No. 212,669. (No model.)



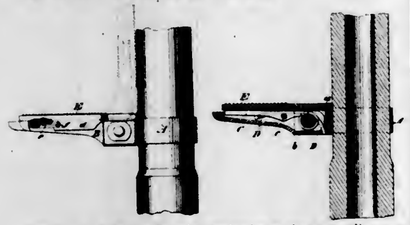
Claim.—1. The combination, with an elevator-car and its hoisting and stopping and starting mechanisms, of the threaded shaft *w*, driven by the lifting-cable, the pulley *b*, having the threaded hub or sleeve *f* and mounted to turn freely upon said threaded shaft, the operating-rope H, passing around the pulley *b* and traveling with the car and free to be moved around the pulley independent of the movement of the car, and connections for transmitting motion from the pulley *b* when it is turned about the shaft *w* to the stopping and starting mechanism, substantially as described.

2. The combination, with an elevator-car and its hoisting and stopping and starting mechanisms, of the pulley *b*, having the threaded hub or sleeve *f* and mounted to turn freely upon a threaded portion of the shaft *w*, carrying the pulley over which the lifting-cable passes at the top of the elevator-shaft, the operating-rope H, passing around the pulley *b* and traveling with the car and free to be moved independent of the car, operating devices carried by the car and connected to said rope, by which it can be moved, so as to turn the pulley *b* about the shaft *w*, and connections for transmitting motion from the pulley *b* when it is turned about the shaft *w* to the stopping and starting mechanism, substantially as described.

3. The combination, with an elevator-car, its hoisting mechanism, and stopping and starting valve, of the pulley *b*, having the threaded hub or sleeve *f* and mounted to turn freely upon a threaded portion of the shaft *w*, carrying the pulley over which the lifting-cable passes,

the operating-rope H, passing around the pulley *b*, the link *o*, connected to the valve, and the rock-shaft *m*, having arms connected to the link and to the sleeve *f*, substantially as described.

379,557. BICYCLE-STEP. THOMAS BENFIELD, Newark, N. J. Filed Dec. 16, 1887. Serial No. 258,089. (No model.)



Claim.—1. A folding bicycle-step having a plate extending over the top of the same, protecting the hinge of said step from the entrance of foreign substance, substantially as set forth.

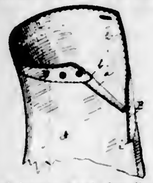
2. A folding bicycle-step having a plate indirectly hinged to the backbone of the bicycle and extending over the top of said step, for preventing the entrance of foreign substance to the hinge of said step, substantially as set forth.

3. An automatically-folding bicycle-step hinged to a collar encircling the backbone of a bicycle, the hinge of said step being protected by a hinged plate fitting over the same and over the step, substantially as set forth.

4. A folding bicycle-step hinged indirectly to the backbone of a bicycle, a plate fitting over and upon said step, and also hinged indirectly to said backbone, said plate being movably connected to said step, substantially as and for the purpose described.

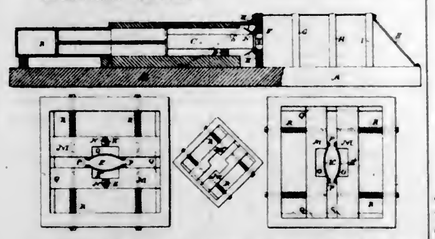
5. In a bicycle-step, the combination of the step B, plate E, lever C, spring D, and pintle *b*, the above parts being adapted to operate in the manner and for the purpose described.

379,558. DRAWERS. LOUIS L. BERTONNEAU, New Orleans, La. Filed June 30, 1887. Serial No. 243,018. (No model.)



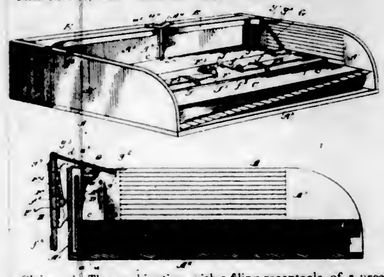
Claim.—The improved drawers herein described, having legs provided with slits re-enforced with integral flaps that are partially separated from the main part of the legs, the said flaps folded, as described, and the folded portions stitched to opposite edges of the legs, so as to re-enforce the slit, as set forth, in combination with the bands stitched around the bottom of the legs and along one edge of the slit to a point above the angle thereof, substantially as set forth.

379,559. MACHINE FOR SHAVING OFF THE BARK FROM LOGS. NORMAN H. BROKAW, Kankauna, Wis. Filed June 11, 1887. Serial No. 241,000. (No model.)



Claim.—In a log-barking machine, the combination of a series of automatically-adjustable curved knives, E E, and movable recessed knife-supports M M, curved and inclined guides K K, secured adjustably in front of the knives upon the knife-supports, and springs bearing against the knife-supports, all substantially as set forth.

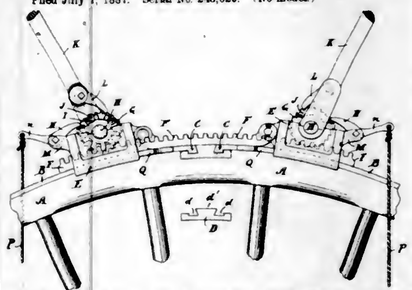
379,560. FILING-RECEPTACLE. AARON L. BROWN, Chicago, Ill. Filed Nov. 21, 1883. Serial No. 112,980. (No model.)



Claim.—1. The combination, with a filing-receptacle, of a presser constructed to engage the opposite sides of the receptacle and arms pivoted to the presser and to the receptacle, substantially as described.

2. The combination, with the filing-receptacle, of a presser and arms pivoted to the receptacle and to the presser at or near the rear edge of the latter, and constructed to allow the presser to fold outside and parallel with the back of the receptacle, substantially as described.

379,561. TIRE-TIGHTENER. MILTON CHASE, Haverhill, Mass. Filed July 7, 1887. Serial No. 243,629. (No model.)



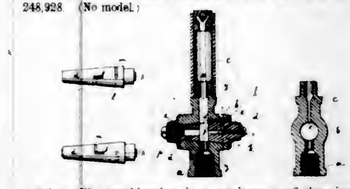
Claim.—1. A tire-tightener consisting of two frames connected together by racks, in combination with pinions and levers for operating the same, and clamping-jaws, substantially as set forth.

2. In a tire-tightener, the clamping-jaws Q Q Q Q, in combination with the frames E E and racks F F and suitable mechanism for drawing the frames toward each other, substantially as set forth.

3. In a tire-tightener, the combination of the frames E E, racks F F, pinions I I, ratchet-wheels J J, levers K K, pawls L L, and jaws for clamping the sides of the tire, substantially as shown and described.

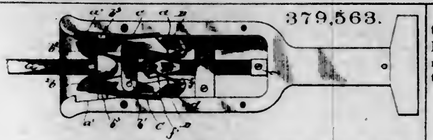
4. In a tire-tightener, the pawl N, provided with tail *n* and rope P, in combination with the frame E and ratchet-wheel J, substantially as and for the purpose set forth.

379,562. GAS-BURNER. GEORGE K. COOKE, New York, N. Y., assignor to D. Sackett Moore, same place. Filed Sept. 6, 1887. Serial No. 248,928. (No model.)



Claim.—The combination, in a gas-burner, of the pipe *a*, valve-seat *b*, and pipe *c*, having long and narrow-slitted mouth *c'*, with the valve *d*, having a direct gas-passage, *j*, with a long and narrow discharge end, and having an auxiliary gas-passage, and with an oscillating frame connected to the chimney-cap *h* and operating the valve, substantially as specified.

379,563. CAR-COUPLING. WILLIAM B. CROW and WILLIAM E. McMACKIN, Milburnton, Tenn. Filed Dec. 27, 1887. Serial No. 259,111. (No model.)



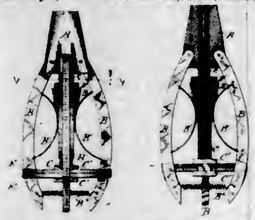
Claim.—1. The combination, with the levers or hooked bars, of the triggers pivoted to the rear ends thereof, and the trigger-trip connected to said triggers and sliding between the rear portions of said levers, substantially as shown and described.

2. The combination, with the levers or hooked bars, of the triggers connected thereto, having curved sides, the V-shaped trigger-trip, the links or connecting-rods, and the guide-bar connected to said trigger-trip, substantially as shown and described.

3. As an improvement in car-couplings having spring-held levers or hooked bars carrying triggers, the trigger-trip sliding between the rear portions of said levers and having a finger or bumper-head projected between forward portions of said levers, substantially as shown, and for the purpose stated.

4. The combination, with the draw-head and the spring-held levers or hooked bars, of the triggers secured to said levers or hooked bars, the V-shaped trigger-trip having links connected to said triggers, and the lever fulcrumed on the draw-head and connected to said trigger-trip, substantially as shown and described.

379,564. FLUE-CLEANER FOR STEAM-BOILERS. CHARLES G. DAVISON, Union City, Pa., assignor of one-half to D. W. Camp, same place. Filed May 3, 1887. Serial No. 236,946. (Model.)

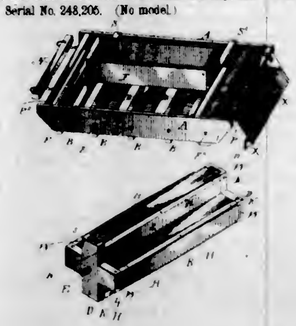


Claim.—1. In a flue-cleaner for steam-boilers, the combination, with the head A, and stem C, having screw-thread *c* thereon and the recessed head C' at its outer end, of the pivoted arms B, having semicircular scrapers E thereon, with notches *e*', which embrace the recessed part of the stem-head C', the bow-springs B', the expanding wedge D, adjusting-nut D', for moving said wedge, and springs for holding the arms B inwardly.

2. In a flue-cleaner for steam-boilers, the combination, with the head A, and stem C, having a screw-thread, *c*, thereon, of the pivoted arms B, carrying scrapers, the expanding springs B', the expanding wedge D, acting against the said expanding springs, the adjusting-nut D', and springs for holding the arms inwardly.

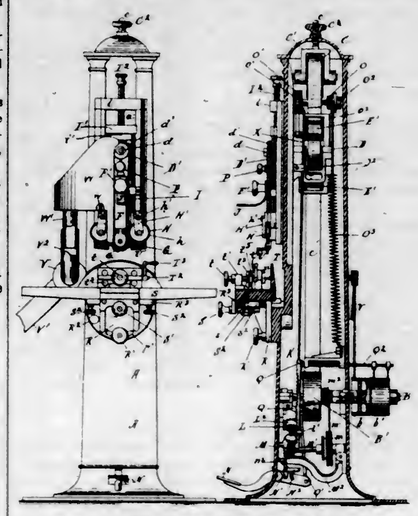
3. In a flue-cleaner for steam-boilers, the combination, with the head A, and stem C, having at its outer end the square head C', of the pivoted arms B, having scrapers thereon which overlap each other, substantially as described, and embrace the square head C' on the stem C, and the expanding springs B'.

379,565. CLOD-CRUSHER AND GROUND-LEVELER. MILTON DELANO and ORIN L. CUMMINS, near Columbia City, Ind. Filed Aug. 29, 1887. Serial No. 248,206. (No model.)



Claim.—In a clod-crusher and ground-roller, the combination of the sides A A, crushers B B, roller C, crusher-heads D D with journals E, bars or straps H H, flanges 1, 2, 3, and 4, roller-heads D² with journals E², levelers R and R³ with blades *o o*, and stone-box F, all substantially as and for the purposes set forth and specified.

379,566. ENDLESS-CHAIN MORTISING-MACHINE. CHARLES H. DOUGLAS, Chicago, Ill., assignor, by mesne assignments, to the Chicago Mortising Machine Company, same place. Filed Aug. 24, 1885. Serial No. 175,252. (No model.)



Claim.—1. In a mortising-machine, the work-holding table, in combination with the sliding frame mounted to move to and from the said table, a sprocket-wheel and supporting-wheel mounted on said frame, an endless-chain cutter passing over said wheels, a driving-pulley on the sprocket-wheel shaft, guide-pulleys mounted on said frame above and below the driving-pulley, and a suitably-actuated driving-belt passing over said guide-pulleys and around the driving-pulley, substantially as and for the purposes specified.

2. In a mortising-machine, the combination, with the upper and lower pulleys and the belt *c*, of the sliding frame D, the sprocket-shaft *d*, mounted in said frame and provided with sprocket-wheel D', the supporting-wheel G, the endless-chain cutter passing around the said wheels, the pulley E on the sprocket-shaft, and the idle-pulleys E', mounted in the sliding frame above and below the pulley E, substantially as and for the purposes specified.

3. In a mortising-machine, the work-holding table, in combination with the sliding frame mounted to move to and from said table, an adjustable tension-bar mounted on said frame and carrying a supporting-wheel, a sprocket-wheel mounted on a shaft in said frame, an endless-chain cutter passing over said wheels, a driving-pulley mounted on the sprocket-wheel shaft, guide-pulleys mounted on said frame above and below the driving-pulley, and a suitably-actuated driving-belt passing over said guide-pulleys and around the driving-pulley, substantially as and for the purposes specified.

4. In a mortising-machine, the combination, with the frame D, having vertical dovetailed ways *d*², of the piece *f*, mounted to move in said ways and correspondingly dovetailed, the screw-bolt *f*', secured to said piece and extending outward therefrom, the tension-bar F, resting against the face of the frame D and provided with an aperture through which the screw-bolt *f*' passes, and the external clamping-nut, F', mounted on said screw-bolt to clamp the piece *f* against its ways and the tension-bar F against the face of the frame D, substantially as and for the purposes specified.

5. In an endless-chain mortising-machine, the combination, with the tension-bar and the frame upon which it is mounted, of the block F², arranged immediately above the said bar in a suitable way or recess in the frame, said block being provided with a beveled under surface and with a suitable spring to thrust it normally outward, substantially as and for the purposes specified.

6. In an endless-chain mortising-machine, the combination, with

the endless-chain cutter and its driving and supporting wheels, of the tension-rollers having smooth peripheries and arranged one on each side of the chain in the plane of motion thereof and bearing against the sides of the cutter above the lower wheel to deflect said portions inward and hold them clear of the walls of the mortise, substantially as and for the purposes specified.

7. In an endless-chain mortising-machine, the combination, with the endless-chain cutter and its driving and supporting wheels, said cutter being provided with cutting-teeth on its outer periphery, of the tension-rollers provided with a peripheral covering, of soft rubber or the like, and arranged to bear against the toothed sides of the cutter to deflect the same inward, substantially as and for the purposes specified.

8. The combination, with the endless-chain cutter and its supporting and operating mechanism, of adjustable tension-rollers arranged to bear against the said cutter between its end supports, substantially as and for the purposes specified.

9. The combination, with the sprocket-wheel and tension-bar F and supporting-roller G, of greater diameter than said tension-bar, of the endless-chain cutter supported on said sprocket-wheel and supporting-roller, and the tension-rollers H, adjustable to deflect the said cutter inward toward the tension-bar above the supporting-roller, substantially as and for the purposes specified.

10. The combination, with the sliding frame D, which carries the endless-chain cutter, of the adjustable frame I, having cross-head I', to limit the upward motion of the sliding frame, the adjustable frame being vertically adjustable on the main frame, and the sliding frame working in the adjustable frame, substantially as and for the purposes specified.

11. The combination, with the sliding frame D, which carries the endless-chain cutter, of the adjustable frame I, having cross-head I', to limit the upward motion of the said frame, and a spring-cushion, i', arranged between the sliding frame and cross-head, the adjustable frame being vertically adjustable on the main frame, and the sliding frame working in the adjustable frame, substantially as and for the purposes specified.

12. The combination, with the sliding frame D and endless-chain cutter carried thereby, of the adjustable frame I, which limits the upward motion of the sliding frame, and the tension-rollers H, mounted on said adjustable frame, the adjustable frame being vertically adjustable on the main frame, and the sliding frame working in the adjustable frame, substantially as and for the purposes specified.

13. In an endless-chain mortising-machine, the combination, with the sliding frame, the endless-chain cutter provided with a driving-pulley and idle-pulleys, and the driving-belt, of springs arranged to lift said sliding frame and cutter when released after depression, substantially as and for the purposes specified.

14. In a mortising-machine, the combination, with the sliding frame, the endless-chain cutter mounted thereon and provided with a driving-pulley and idle-pulleys, and the driving-belt, of power-driven feed mechanism, substantially such as described, for depressing said frame and cutter, and springs for lifting the frame and cutter after depression, substantially as and for the purposes specified.

15. In a mortising-machine, the combination, with the main frame, the sliding frame, the endless-chain cutter mounted thereon, and means for driving said cutter, of a rack-bar secured to the sliding frame and extending downward therefrom to the base of the main frame, a pinion to mesh with the rack-bar, a worm-wheel arranged on the pinion-shaft, a screw mounted in a vibrating frame and capable of meshing with the worm-wheel, and a foot-lever to raise and lower the vibrating frame, said foot-lever being mounted in the base of the main frame and extending to the front thereof, substantially as and for the purposes specified.

16. In a mortising-machine, the combination, with the sliding frame, the rack-bar provided with a pin, k, the screw mounted in the vibrating frame, and the gearing connecting the two, of the lever N, having a spring-pawl, one arm of which engages a shoulder on the vibrating frame, while the other arm is arranged in the path of the pin k, substantially as and for the purposes specified.

17. In a mortising-machine, the combination, with the vibrating frame M^3, having guide-aperture n' and shoulder n^3, of the foot-lever N, having pivoted arm N', extending through the guide-aperture, and spring-pawl N^3, pivoted to the said arm and adapted to engage the said shoulder, substantially as and for the purposes specified.

18. In a mortising-machine, the combination, with the sliding frame, the endless-chain cutter mounted thereon, and means for driving the said cutter, of the rack-bar adjustably connected to the sliding frame, means for operating the rack-bar, and the trip mechanism controlling the same and operated by the rack-bar, substantially as and for the purposes specified.

19. In a mortising-machine, the combination, with the sliding frame, the endless-chain cutter mounted thereon, and means for operating the same, of springs to lift the said frame, the rack-bar adjustably connected to said frame, means for operating the rack-bar, and the trip mechanism controlling the same and operated by the rack-bar, substantially as and for the purposes specified.

20. The combination, with the trip mechanism, of the sliding frame and the rack-bar detachably clamped in the sliding frame and extending through the guide l, the said rack-bar being provided with a short pin, k, capable of passing through the guide to operate the trip mechanism, and a long pin, K, which rests upon the guide when the rack is detached, substantially as and for the purposes specified.

21. The combination, with the sliding frame D and the rack-bar K, extending through the same, of the conical-ended screw-bolt P and the locking-pin P', bearing against the conical end of the screw-bolt and against the rack-bar, substantially as and for the purposes specified.

22. In a mortising-machine, the combination, with the sliding frame and endless-chain cutter, of the main driving-belt and its fast and loose pulleys and belt-shifter, suitably connected to the cutter to drive the same, feed mechanism, substantially such as described, for operating the sliding frame, and a single foot-lever connected to and controlling both the belt-shifter and the feed mechanism, substantially as and for the purposes specified.

23. In a mortising-machine, the combination, with the sliding frame and endless-chain cutter, of the feed mechanism to operate the sliding frame, the main shaft provided with fast and loose pulleys and a belt-shifter and suitably connected to the cutter to drive the same, a vibrating shaft driven from the main shaft and gearing with the feed mechanism when raised, and a single foot-lever connected to the belt-shifter and vibrating shaft, whereby when said lever is depressed the belt-shifter is first moved to start the cutter-driving mechanism and the vibrating shaft then raised to gear with and start the feed mechanism, substantially as and for the purposes specified.

24. In a mortising-machine, the combination, with the sliding frame and endless-chain cutter mounted thereon, of the main shaft connected to the cutter by suitable belting and provided with fast and loose pulleys and a belt-shifter, a rack-bar attached to the sliding frame, a pinion to gear with the rack-bar, a worm-wheel on the pinion-shaft, a vibrating frame, a shaft mounted in said frame and having a screw to gear with the worm-wheel, and a foot-lever connected to the belt-shifter and having a spring-pawl to engage the vibrating frame, said pawl being arranged in the path of the rack-bar, substantially as and for the purposes specified.

25. In a mortising-machine, the combination, with the bed and the fixed jaw, of the adjusting-screw t, the movable jaw T, composed of two parts—the one t^4 swiveled on the adjusting-screw and the other, t^3, held normally in contact with the part t^4 by suitable springs—and a shaft, T^2, mounted in one of the two parts and having a portion of its surface flattened, substantially as and for the purposes specified.

26. In a mortising-machine, the combination, with the bed and the fixed jaw T, of the movable jaw T', composed of two parts, t^3 t^4, held normally in contact by suitable springs, and a shaft, T^2, mounted in the part t^3 and having a portion of its surface flattened, substantially as and for the purposes specified.

27. The combination, with the gage-wires U', arranged on each side of the cutter, of the gage-bar U, provided with the grooves u', to receive the gage-wires U', and hooks u, to secure the bar to the work, substantially as and for the purposes specified.

28. In a mortising-machine, the combination, with the endless-chain cutter and the wheels upon which it is mounted, of the exhaust-fan and the hood W, covering the ascending side of the cutter and extending over the top of the same where the cutter passes over the upper wheel, substantially as and for the purposes specified.

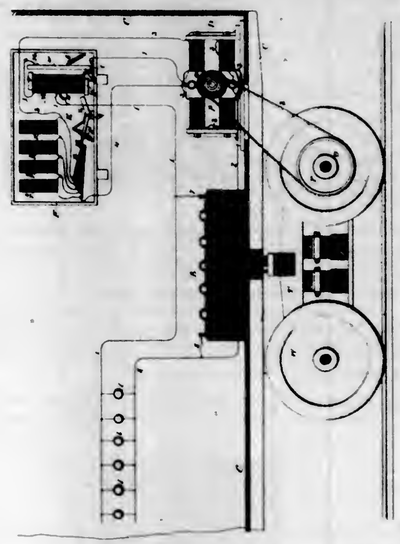
29. In a mortising-machine, the combination, with the endless-chain cutter and the adjustable frame I, of the hood W, mounted on said frame, the exhaust-fan, and the telescope-joint connecting the fan and hood, substantially as and for the purposes specified.

30. The combination, with the endless cutter and the adjustable frame, of the hood mounted thereon, covering the ascending side of the cutter and having a downwardly-extending pipe, W', and the exhaust-fan provided with the pipe V^3, surrounding the pipe W', substantially as and for the purposes specified.

31. In a mortising-machine, the combination, with the sliding frame carrying the endless-chain cutter and its driving and guide pulleys, of the lower pulley, B', belt c, and upper pulley, C, mounted in the vertically-adjustable yoke C', substantially as and for the purposes specified.

32. In a mortising-machine, the combination, with the sliding frame and the endless-chain cutter and its driving and guide pulleys mounted thereon, of the lower pulley, B', the belt c, the upper pulley, C, and the yoke C', supporting the upper pulley and provided with the screw-threaded extension c', passing through the crown of the casing and having the external nut, C^3, mounted thereon, substantially as and for the purposes specified.

379,567. APPLICATION OF ELECTRICITY TO CAR-LIGHTING. CAMILLE A. FAURE, New York, N. Y., assignor to The Electrical Accumulator Company, of New York. Filed Nov. 16, 1887. Serial No. 255,308. (No model.) Patented in France Nov. 9, 1881, No. 145,931.



Claim.—1. In a system of lighting by electricity, the combination of a dynamo-electric machine, main conductors connected thereto, a series of electric lamps, and a secondary battery in parallel circuit with the dynamo, and a polarized electro-magnet operating a circuit-breaker located in the main circuit between the dynamo and battery.

2. The combination of a car or vehicle, a dynamo-electric machine having its armature mechanically connected with an axle of said vehicle, a secondary battery carried by said vehicle and electrically connected with said dynamo, and means for varying the strength of the field-magnetism of said dynamo whereby the dynamo may be used to charge the battery, substantially as set forth.

3. The combination of a dynamo-electric machine having its armature mechanically connected with a wheel or axle of a moving car, a secondary battery in circuit therewith, a derived circuit containing the field-coils of the dynamo, and means for varying the resistance of said circuit.

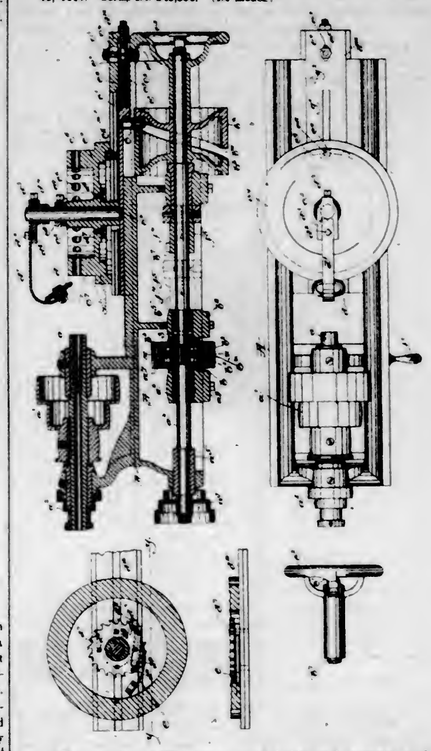
4. The combination of a dynamo-electric machine having its armature mechanically connected with an axle of a moving car, a secondary battery in circuit therewith, a derived circuit containing the field-coils of the dynamo, and an automatic switch for varying the resistance of the derived circuit controlled by an electro-magnet in the main circuit.

5. The combination of a dynamo-electric machine having its armature mechanically connected with an axle of a car or vehicle, a secondary battery in circuit therewith, a separate circuit containing the field-coils of the dynamo, a circuit-closer in the main circuit, a variable resistance in the derived circuit, and means for automatically controlling the operation of said circuit-closer and for introducing and withdrawing said resistance, substantially as described.

6. The combination of a dynamo-electric machine having its armature mechanically connected with a wheel or axle of a car or vehicle, a secondary battery in circuit therewith, a separate circuit containing the field-coils of the dynamo, a circuit-breaker in the main circuit, a variable resistance in said separate circuit, and an electro-magnet in the main circuit operating to make and break the main circuit and to introduce and withdraw said resistance with respect to the separate circuit.

7. The combination of a dynamo-electric machine, a secondary battery, an electric circuit uniting the dynamo and battery, a circuit-breaker in the main circuit, and a polarized electro-magnet having two coils, one of which is located in the main circuit and the other in a derived circuit, said coils co-operating to control the movements of said circuit-breaker.

379,568. LATHE. RUSSELL C. FAY, Hopedale, Mass. Filed Sept. 13, 1887. Serial No. 249,568. (No model.)



Claim.—1. In a drilling-lathe, a work-holder and a rotating tool-holder, a ratchet-wheel secured to the said work-holder internally and adjacent thereto, a sliding plate carrying a pawl to engage the said wheel and rotate it automatically for a predetermined distance, combined with a cam to automatically change the relative position of the said work-holder and tool-holder, substantially as described.

2. In a drilling-lathe, the reciprocating table c', a cam to operate it automatically, a work-holder and means, as a ratchet-wheel and pawl, to rotate it intermittingly, and a locking device to lock the said work-holder, combined with a rotating tool-holding spindle.

3. In a drilling-lathe, the reciprocating table c', a cam to operate it automatically, the shaft b^7, and differential gearing to actuate it, combined with a rotating tool-holding spindle.

4. In a lathe, the combination, with a work-holding turret, of a holder, substantially as described, co-operating therewith to retain the work in position, substantially as described.

5. In a drilling-lathe, the shafts a^4 and b^7 and the differential gearing a^7, b^3, b', and b^3, the gear a^7 having ratchet-teeth at its periphery, combined with means, substantially as described, to hold or release the gear a^7, to insure the operation or stopping of the shaft b^7, substantially as described.

379,569. COMBINED FEED-BOX AND END-GATE. HOWARD GAMBLE, Lansing, Kans. Filed Dec. 17, 1887. Serial No. 258,213. (No model.)

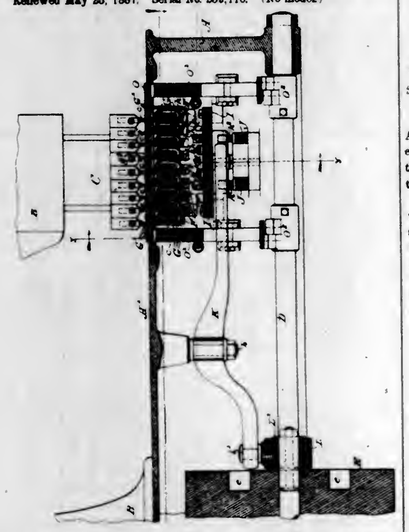


Claim.—1. The combination, with the dump end-gate having a hinge joint intermediate of its ends, of a feed-box permanently secured thereto, substantially as set forth.

2. The combination, with the dumping end-gate consisting of hinged sections, of a feed-box firmly secured to one of the sections and movably secured to the other section, substantially as set forth.

3. The herein-described combined end-gate and feed-box, consisting, essentially, of the end-gate formed of two sections hinged together, and the feed-box having its back permanently secured to one of the said hinged sections, and a locking device for securing the other hinged section to the back of the box, substantially as set forth.

379,570. **MULTIPLEX SEWING-MACHINE.** MARSHALL GARDNER, Aurora, Ill., assignor to James Stone and Thomas H. Ball, both of same place, and Simon Florsheim, Chicago, Ill. Filed Jan. 25, 1886. Renewed May 23, 1887. Serial No. 239,110. (No model.)



Claim.—1. The combination, with a needle-bar carrying two or more needles, of a series of shuttles passing between the needles, raceways for the shuttles comprising a series of vertical plates engaging opposite sides of the shuttles, and a single reciprocating shuttle-carrier for actuating the several shuttles, provided with two parts or plates arranged transversely beneath the shuttles, said parts or plates being movable vertically toward and from and constructed for engagement with the several shuttles, and means actuating said movable parts or plates of the carrier in alternation, to cause their engagement with and disengagement from the shuttles in the reciprocatory movement of the said carrier, substantially as described.

2. The combination, with a needle-bar carrying two or more needles, of a series of shuttles passing between the needles, raceways for the shuttles comprising a series of vertical parts or plates engaging opposite sides of the shuttles, and means for actuating the shuttles, comprising a shuttle-carrier provided with vertically-movable parts engaging the shuttles, and a stationary cam actuating the said movable parts of the carrier, substantially as described.

3. The combination, with a needle-bar carrying two or more needles, of a series of shuttles passing between the needles, and means for actuating the shuttles, comprising a shuttle-carrier provided with vertically-movable parts or plates engaging the shuttles, a stationary cam for actuating the plates, provided with a cam-surface engaging the lower portions of the plates, and spring-arms sustaining the said plates from the carrier and acting to hold said plates in contact with the cam, substantially as described.

4. The combination, with a needle bar carrying two or more needles and a series of shuttles passing between the needles and provided with recesses *g g*, of means for actuating the shuttles, comprising a reciprocating shuttle-carrier provided with vertically-movable plates provided with teeth or prongs *h h*, engaging said recesses *g g*, and a stationary cam actuating said vertically-movable plates, substantially as described.

5. The combination, with a needle-bar carrying two or more needles, of a series of reciprocating shuttles passing between the needles, means, substantially as described, for actuating the shuttles, and bobbins for the said shuttles of flat and tapered form provided with knobs or heads at their smaller ends and immovably attached within the shuttles, substantially as described.

6. The combination, with a needle-bar carrying two or more needles, of a series of reciprocating shuttles passing between the needles and pointed at both ends, and means for actuating the shuttles, comprising a shuttle-carrier provided with movable parts engaging the shuttles, and means actuating said movable parts to cause their engagement with and disengagement from the shuttles in the reciprocatory movement of the carrier, substantially as described.

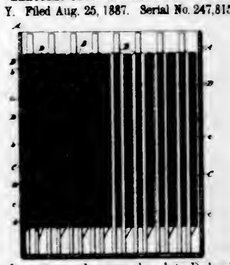
379,571. **FOLDED PAPER FOR CARPET-LINING, &c.** AUSTIN GIBB, Beloit, Wis. Filed Mar. 31, 1887. Serial No. 233,216. (No model.)



Claim.—1. A carpet-lining composed of a strip of paper-board, A, or other like material, bent or crimped, as described, to produce elastic folds, and one or more unattached and removable strips, B, of thinner paper, folded with the thick sheet A, but readily separable therefrom, substantially as and for the purposes specified.

2. In a carpet-lining, a strip of paper-board, A, or other like material, folded as described, in combination with one or more unattached sheets of thinner paper, B, folded therewith but readily detachable therefrom, and tying-strips C, secured to the back of the main strip A, substantially as and for the purposes specified.

379,572. **ELECTRIC STORAGE-BATTERY.** CHARLES D. P. GIBBON, New York, N. Y. Filed Aug. 25, 1887. Serial No. 247,815. (No model.)



Claim.—1. In a storage-battery, the plate D, having holes *d* at right angles to its faces, in combination with the two-part capsules C, each part having a perforation in its outer end for the purpose described, and a filling of peroxide of lead in said capsules, said capsules fitting loosely in said holes *d*, substantially as specified.

2. In a storage-battery, the plate D, having holes *d* at right angles to its faces, in combination with the capsules C, fitting said holes and clamped therein by pressure, said capsules being filled with peroxide of lead, substantially as specified.

3. In a storage-battery, the plates D, having holes *d* at right angles to the faces, in combination with the filling c and coverings C, separately formed and applied, substantially as herein specified.

4. In a storage-battery, the combination, with the vessel A, of the non-conducting strips B and suitable fastening means, *b*, and plates D, having holes *d*, filled with peroxide of lead and protected by a covering, C, on each face, substantially as herein specified.

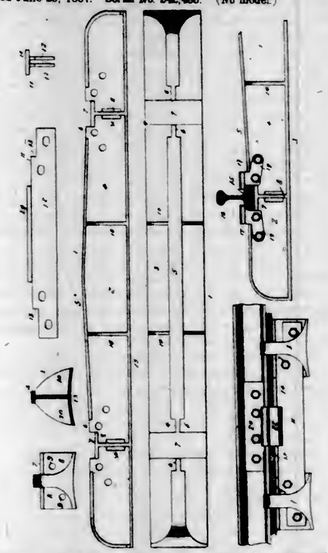
379,573. **METHOD OF TEMPERING BESSEMER-STEEL WIRE.** EDWARD W. GILLON, Brooklyn, N. Y. Filed Mar. 14, 1887. Serial No. 230,756. (No model.)



Claim.—1. That improvement in the art or method of treating and tempering Bessemer or open-hearth steel wire, which consists in first hard-drawing the wire, next bending or twisting it into the form of a spring, then immersing it in oil, then immersing the spring in a bath of molten metal, and finally cooling the spring by suddenly plunging it in a common tempering-bath, substantially as set forth.

2. That improvement in the art or method of making springs, which consists in hard-drawing wire of Bessemer or open-hearth steel, properly shaping the spring, and then successively subjecting it to baths of oil, molten metal, at a temperature of about 650° Fahrenheit, and a cooling-fluid, substantially as set forth.

379,574. **RAILROAD-TIE.** CHARLES P. HAWLEY, New York, N. Y. Filed June 25, 1887. Serial No. 242,485. (No model.)



Claim.—1. A metal railway-tie consisting of a substantially inverted-T-shaped body, a central longitudinal web having a flanged top provided with recesses to receive the rails, a transverse plate in said recesses, upon which the rails rest, central transverse braces integral with the web and base, and end braces integral with the web, base, and transverse plates, and means for securing the rails upon said plates, substantially as shown and described.

2. The combination, with metal railway-ties constructed substantially as shown and described, provided with recesses to receive the rails, transverse rail-plates in said recesses, and vertical transverse braces connected with said tie and plate, of a bridge adapted to connect the ties and carry the rails between said ties, and means for fastening the rails upon said transverse plates and joining said rails, substantially as herein shown and described.

3. The combination, with metal railway-ties constructed substantially as shown and described, provided with recesses to receive the rails, transverse rail-plates secured in said recesses, and vertical transverse braces integral with said ties and plates, of a bridge adapted to connect the ties and carry the rails between the ties, consisting of two parallel plates having reduced ends adapted to engage the said braces, and a rail-plate adapted to unite the aforesaid rail-plates of each tie, and means for securing the rails to said plates and joining the rails upon the bridge, substantially as herein shown and described.

4. The combination, with an inverted-T-shaped tie constructed substantially as herein shown and described, provided with recesses to receive the rails, transverse rail-carrying plates in said recesses, vertical transverse braces integral with the tie and plates, and a rail resting upon said plates, of clamps provided with a curved spring-head adapted to engage the rail, and a divided shank adapted to span the web of the tie and be secured thereto, substantially as shown and described, and for the purposes herein set forth.

379,575. **COMBINED WOOD AND METAL RAILROAD-TIE.** CHARLES P. HAWLEY, New York, N. Y. Filed Oct. 5, 1887. Serial No. 251,517. (No model.)

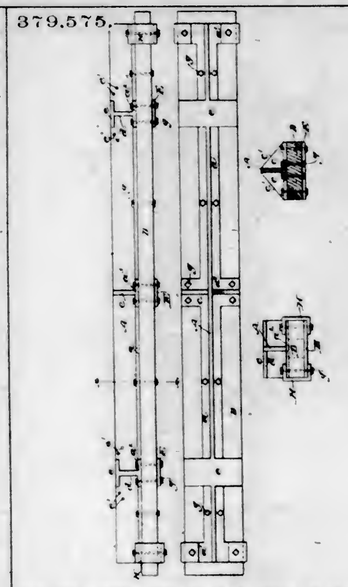
Claim.—1. The combination, with an inverted-T-shaped metal tie-beam, of a base-block secured thereto, of a non-metallic substance, substantially as shown and described.

2. The combination, with an inverted-T-shaped metal tie-beam, of a base-block of a non-metallic substance, and U-shaped clamps adapted to unite the said block and beam, substantially as shown and described.

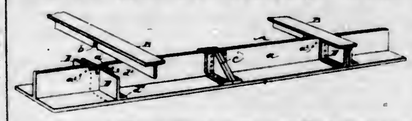
3. The combination, with an inverted-T-shaped metal tie-beam, of a non-metallic base-block, clamp-plates held transversely beneath the block, and U-shaped clamps uniting the base of the tie-beam and the transverse clamp-plates, substantially as shown and described.

4. The combination, with an inverted-T-shaped metal tie-beam provided with T-shaped transverse webs and transverse integral braces, of a non-metallic base-block, clamp-plates held transversely beneath the block, and U-shaped clamps uniting the base of the tie-beam and the ends of the clamp-plates, substantially as herein shown and described.

379,575.



379,576. **METALLIC RAILROAD-TIE.** CHARLES P. HAWLEY, New York, N. Y. Filed Nov. 10, 1887. Serial No. 254,756. (No model.)



Claim.—1. The combination, with a metallic tie having a vertical central web provided with a T-shaped notch, of a T-shaped rail-supporting plate adapted to rest upon said web, substantially as shown and described.

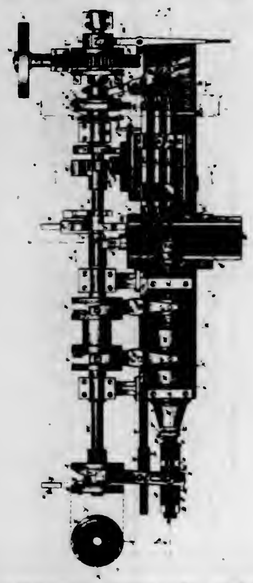
2. The combination, with a T-shaped metallic tie having its web provided near the ends with T-shaped notches, of T-shaped rail-supporting plates notched to interlock with the notches in the web, substantially as shown and described.

3. A T-shaped metallic railroad-tie having its vertical web provided with T-shaped notches near the ends, and spaced aligning braces opposite to said notches having their upper edges flush with the base of the horizontal portion of said notches, substantially as shown and described.

4. A T-shaped metallic railroad-tie having its vertical web provided near the end with T-shaped notches, and aligning braces opposite said notches, spaced to have their opposing sides flush with the vertical portion of the notches and their upper edges flush with the base of the horizontal portions of said notches, substantially as shown and described.

5. The combination, with a T-shaped metallic railroad-tie having its vertical web provided near the end with T-shaped notches, and aligning braces opposite said notches, spaced to have their opposing sides flush with the vertical portion of the notches and their upper edges flush with the base of the horizontal portion of said notches, of T-shaped rail-supporting plates notched to interlock with the notches in the web, the vertical member of said plates being clamped by the spaced braces, substantially in the manner and for the purpose herein set forth.

379,577. MACHINE FOR MAKING METAL SCREWS. EVERETT HORTON, Bristol, Conn. Filed July 30, 1886. Serial No. 209,509. (No model.)



Claim.—1. In an automatic turning-machine, a disk-spring having a central opening and radially slotted to form spring-arms for engagement with stock fed through such opening, substantially as set forth.

2. In an automatic turning-machine, a disk-spring having a central opening and radially slotted to form spring-arms for engagement with stock fed through such opening, a casing for such spring, and a cap for the casing, substantially as set forth.

3. In an automatic turning-machine, a disk-spring having a central opening and radial slots entering the same, a movable support for such spring, a spring for holding such support in place, and gaging mechanism for gaging the stock after it has been fed forward through the spring, substantially as set forth.

4. The combination, with a loose pulley having a beveled recess in one of its faces, of a beveled sectional ring located in such recess and means for adjusting such ring laterally in its recess for contracting it, substantially as set forth.

5. The combination, with a loose pulley having a recess in one of its faces, of two concentric rings located in such recess and means for expanding the inner ring into the outer ring, substantially as set forth.

6. The combination, with a loose pulley having a beveled recess in one of its faces, of a beveled sectional ring located in such recess, a sectional ring located within the said beveled ring, and a key for expanding the inner ring into the outer ring, substantially as set forth.

7. The combination, with a loose pulley having a recess in one of its faces, of a beveled sectional ring located in such recess, means for laterally adjusting such ring in the recess to contract it, a sectional ring located within the said beveled ring, and a key for expanding the inner ring into the outer ring, substantially as set forth.

8. The combination, with a loose pulley having a beveled recess in one of its faces, of a beveled sectional ring located in such recess, a sectional ring located within the beveled ring, an annular plate secured to the pulley over the recess therein and carrying screws for laterally adjusting the beveled ring for contracting it, and means for expanding the inner ring into the outer ring, substantially as set forth.

9. The combination, with a loose pulley having a recess in one of its faces, of a sectional ring located in such recess and a key having a straight-sided end and a wedge-shaped portion for expanding such ring, substantially as set forth.

10. In an automatic turning-machine, the combination, with a spindle, of jointed chuck-closing levers located in slots therein and having their rear ends supported upon an incline, a sleeve having its rear end grooved to receive the forward ends of the levers and its forward end threaded, a chuck having a split body internally threaded at its rear end to receive the threaded forward end of the sleeve, and means for straightening the levers to close the chuck, substantially as set forth.

11. In an automatic turning-machine, the combination, with a spindle and feeding mechanism, of a carriage located at the forward end of the spindle and reciprocating at a right angle thereto, two tools located in such carriage, adjustable cam-blocks carried by the carriage at one end thereof, and an adjustable operating and clearance cam for each tool located upon a rotary shaft and between the said cam-blocks, substantially as set forth.

12. In an automatic turning-machine, the combination, with a spindle and feeding mechanism, of a tool-carriage reciprocating at a right angle to the spindle, tool-slides mounted in said carriage, means for moving the carriage step by step to successively bring its different slides in position for operation, and a reciprocating slide for independently advancing each of the tool-slides, substantially as set forth.

13. In an automatic turning-machine, the combination, with a spindle and feeding mechanism, of a tool-carriage reciprocating at a right angle to the spindle, tool-slides mounted in said carriage, means for moving the carriage step by step to successively bring its different slides into position for operation, and a reciprocating arm and frame co-operating to independently advance and retire the tool-slides, substantially as set forth.

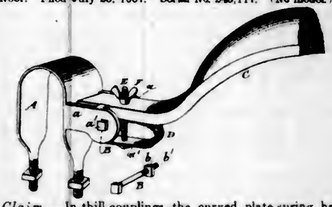
14. In an automatic turning-machine, the combination, with a spindle and feeding mechanism, of a tool-carriage, tool-slides mounted in said carriage, means for independently advancing and retiring them, and an adjustable cam for moving the carriage step by step, and consisting of two parts tongued or grooved together and adjustable through a segmented slot and bolt, substantially as set forth.

15. In an automatic turning-machine, the combination, with a spindle and feeding mechanism, of a tool-carriage, tool-slides mounted in such carriage, means for independently advancing and retiring them and for advancing the carriage step by step to bring them into position, and a locking-arm engaging with the carriage and operated by a tripper and a spring, substantially as set forth.

16. In an automatic turning-machine, the combination, with a spindle and feeding mechanism, of a tool-carriage, tool-slides mounted therein and provided with tools and depending arms, means for advancing the carriage step by step to bring the slides into position, a slide carrying a frame and an arm respectively located on opposite sides of the depending arms of the tool-slides, and means for advancing and retiring such slide for each of the tool-slides, substantially as set forth.

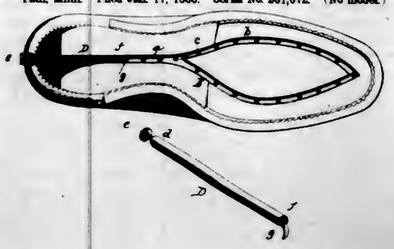
17. In an automatic turning-machine, the combination, with a spindle and feeding mechanism, of cutting-tools and means for operating them, driving-connections, and adjustable friction-disks coupling such connections with the machine and forming an automatic safety-stop therefor, substantially as set forth.

379,578. THILL-COUPLING. THOMAS O. INGHRAM, Central City, Nebr. Filed July 23, 1887. Serial No. 245,117. (No model.)



Claim.—In thill-couplings, the curved plate-spring having the unequal arms d d', with the bearing d^2 on the lower arm and adjustably clamped to the thill-iron, whereby the bearing d^2 may work in the thill-iron slot c, as and for the purpose described.

379,579. BOOT OR SHOE VENTILATOR. ANDREW JENSEN, St. Paul, Minn. Filed Jan. 17, 1888. Serial No. 261,072. (No model.)



Claim.—1. The combination, in a ventilator for boots or shoes, of a sole having a single duct or passage and two branches formed therein, and a metallic tube located at the heel portion of the shoe and forming a communication between said ducts and the atmosphere, substantially as set forth.

2. The combination, with the sole of a boot or shoe having ducts or passages formed therein and communicating with the interior of the same, of the metallic tube located in the heel, its front end leading into said ducts or passages between the sole, and its outer portion communicating with the atmosphere, and a device for closing said tube, substantially as set forth.

3. The combination, in a ventilator for boots or shoes, of a duct or passage formed in the sole and communicating with the interior thereof, and a metallic tube located at the heel portion, as described, and having a lip to engage the sole, substantially as set forth.

4. As an improved article of manufacture, the herein-described tube for boot or shoe ventilators, having a removable cap at one end and lip at the other, substantially as set forth.

379,580. SELF-HARDENING CEMENT. FRANZ JURECHKA, Vienna, Austria-Hungary, assignor of one-half to Franz Kammann, same place. Filed Nov. 4, 1887. Serial No. 254,303. (No specimens.) Patented in France Jan. 25, 1887, No. 181,121; in England Jan. 27, 1887, No. 1,330, and in Austria-Hungary Dec. 19, 1887, No. 29,838 and No. 57,381.

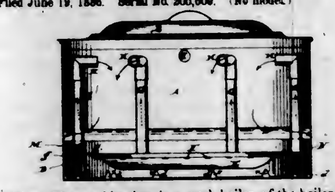
Claim.—The herein-described composition of matter, consisting of silica and water-glass—i. e., sodium or potassium silicate—to which my hydraulic cement may be added, substantially as and for the purpose specified.

379,581. ANT-TRAP. MATHEW KELL, Granbury, Tex. Filed Jan. 3, 1888. Serial No. 259,631. (No model.)



Claim.—The combination, with the annular vessel A, having the flat floor and the sides, of equal height and converging upward, and provided on its outer sides with the loops or staples d', of the conical cover D, of greater diameter than the mouth of said vessel and provided with the outstanding elastic legs d, substantially as specified.

379,582. WASH-BOILER. ADOLPH A. KLEIN, Philadelphia, Pa. Filed June 19, 1886. Serial No. 205,609. (No model.)



Claim.—The combination, in a wash-boiler, of the boiler-body A, having the lid B, the horizontal solid diaphragm C, having the depression E in the center, with the clothes-supporting grate F above it, a vertical bounding flange, D, above the perimeter of the diaphragm, having notches d in its lower edge, the area of the diaphragm being smaller than that of the body A, so as to form the annular passage-way N for cool water, a series of vertical hot-water-circulating pipes, G, opening through the diaphragm near its outer part, and terminating in horizontal nozzles H, to direct the hot water toward the center, substantially as and for the purpose specified.

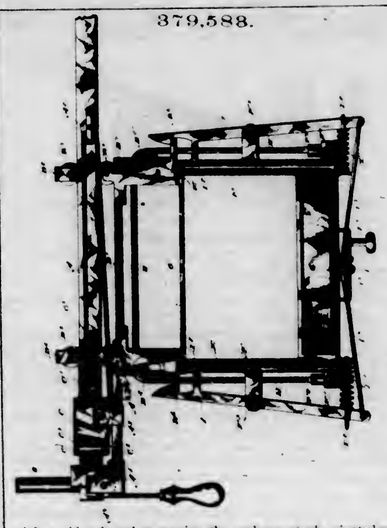
379,583. CASH-CARRIER. DAVID LIPPY, Mansfield, Ohio. Filed June 6, 1887. Serial No. 240,416. (No model.)

Claim.—1. A track for cash and parcel carriers, provided with oppositely-arranged wedge-shaped cleats, in combination with a starter having oppositely-arranged brake-rolls adapted to embrace said cleats, substantially as specified.

2. A track for cash and parcel carriers, formed of a metallic strip and having oppositely-arranged wedge-shaped cleats, in combination with a starter provided with oppositely-arranged brake-rolls adapted to embrace said cleats, substantially as specified.

3. In a cash-carrier carriage, the combination of end castings provided with rollers and having depending rods, with sleeves for receiving said rods and supporting the cash-receptacle, pivoted spring-pressed latches mounted on said sleeves and adapted to take over lugs on said castings, a lever for operating the latches, and an elastic belt passing over said rollers for maintaining the carriage in closed or raised position, substantially as specified.

379,588.



4. The track A, having cleats A′ and pulley A^3, in combination with the starter C, having the elastic rolls C^3 and the cord C^4, substantially as specified.

5. The casting A^2, having the pulley A^4, and gravity-latch A^6, having pulley A^5, in combination with the car having the lug D^2, and with a latch-lifting cord, substantially as specified.

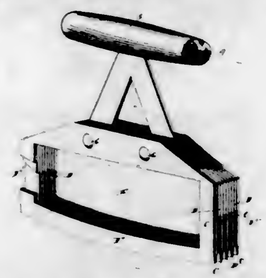
6. The combination of the starter C, cord C^4, pulley A^3, casting A^2, having pulley A^4, the pivoted latch A^6, having pulley A^5, with the carriage provided with the lug D^2, substantially as specified.

7. The car provided with castings D, having rods E, sleeves F, receptacle G, levers I, springs I′, rods I^2, and lever I^4, substantially as specified.

8. The combination, with the car provided with lugs D^4, of the latches I, rods I^4, lever I^6, and bail I^8, substantially as specified.

9. The combination of a car provided with the latches I, pivoted as at F^3, the spring I^7, and the limiting-bail I^9, substantially as specified.

379,584. CHOPPING-KNIFE. MARY LUDWIG, Bucyrus, Ohio. Filed Nov. 23, 1887. Serial No. 256,011. (No model.)



Claim.—The herein-described knife, comprising the central blade B, having the slot E and the apertures b b therein, the handle A, attached to the said blade, the blades C C, having the slots E E and the apertures c c therein, registering, respectively, with the slot E and the apertures b b in the blade B, the intermediate plates, D D, arranged between the blades and having apertures d d, registering with the apertures c and b, and the adjusting-bolts G G, engaging in the said registering apertures, substantially as and for the purpose hereinbefore specified.

379,585. TOBACCO-PIPE. JOHN F. MALLINCKRODT, Denver, Colo. Filed Sept. 3, 1887. Serial No. 248,722. (No model.)



Claim.—1. In a tobacco-pipe, the combination, with a bowl and an inner removable shell, of a stem passing through the bowl and attached to a nipple or projection on the shell.

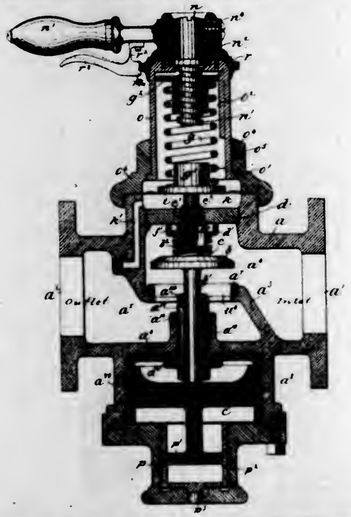
2. The combination, with a mouth-piece and a bowl provided with a shell, the latter having a perforated nipple, of a stem one end of which passes through the bowl and engages the nipple or projection on the shell, and a mouth-piece having a recess for the reception of the other end of the stem, substantially as set forth.

3. In a tobacco-pipe, the combination, with a bowl having a conical chamber, of a porous shell made to fit the conical chamber of the bowl, and provided with a cone-joint at one side of its lower end, which is perforated to furnish a smoke-passage from the cavity of the shell, substantially as set forth.

4. In a tobacco-pipe, the combination, with a tubular metallic stem and an internal porous lining, of a longitudinally-perforated mouth-piece having a conical projection made integral with the body of this mouth-piece, and adapted to enter said lining and lock the mouth-piece thereto and also lock the lining within the stem, substantially as set forth.

5. In a tobacco-pipe, the combination, with a pipe-bowl, a porous shell, and an integral perforated nipple that projects from one side of the shell, of a foraminated tubular stem having a porous lining, and a mouth-piece provided with a cone-seat, both cone-seats being adapted to engage the ends of the porous lining to render the pipe-stem air-tight at its points of connection with the shell and mouth-piece, substantially as set forth.

379,586. FLUID-PRESSURE REGULATOR. WILLIAM B. MASON, Boston, Mass., assignor to the Mason Regulator Company, same place. Filed July 1, 1887. Serial No. 243,078. (No model.)

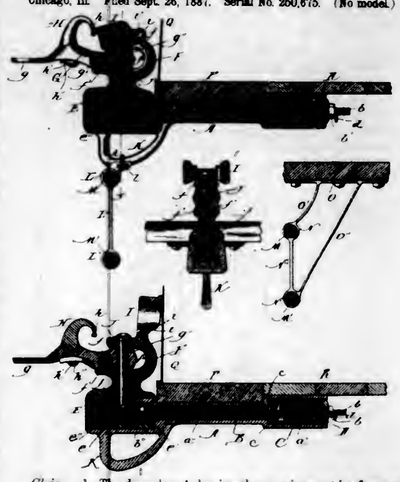


Claim.—1. The combination of the main shell having a cylindrical chamber with a cylindrical lining-piece and piston working therein the said lining-piece having an axial projection by which it is fastened to the main shell and having its external diameter smaller than the internal diameter of the cylindrical chamber in the main shell which it lines, substantially as described.

2. In a pressure-regulating device, a piston or diaphragm exposed at one side to the fluid the pressure of which is to be regulated, combined with a spring acting on said piston or diaphragm, an abutment or follower for said spring, having an internal screw-thread, and being restrained from rotary movement, an adjusting-plug provided with a screw-thread co-operating with said follower and restrained from longitudinal movement, and a lateral handle-lever connected with said plug, substantially as and for the purpose set forth.

3. In a pressure-regulating device, a piston or diaphragm exposed at one side to the fluid the pressure of which is to be regulated, combined with a spring acting on said piston or diaphragm in opposition to the pressure of the said fluid, an abutment or follower for said spring, an adjusting device therefor having a rotary movement, and a lateral handle-lever for said adjusting device, and a chamber inclosing the said spring, having a base-piece fastened to the shell of the valve and a portion capable of rotary movement thereon for the purpose of setting the said handle in any desired position, substantially as described.

379,587. DRAW-GEAR FOR STREET-CARS. BERNARD MCDEVITT, Chicago, Ill. Filed Sept. 26, 1887. Serial No. 250,675. (No model.)



Claim.—1. The draw-bar A, having the opening *a* at its front end and opening *a'* at its rear end, in combination with the sliding rod B, spring C, washer D, and sliding head E, carrying a hitch for the double-tree for relieving the strain in starting, substantially as specified.

2. The draw-bar A, constructed as described, sliding rod B, spring C, washer D, and sliding head E, in combination with the neck F, plate G, draw-hook H, and coupling-pin J, substantially as and for the purpose specified.

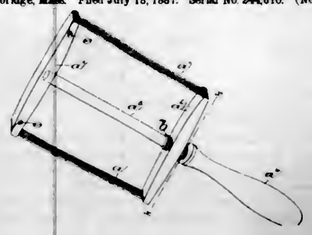
3. The draw-bar A, having the slot *j*, sliding head E, and a yielding connection between the head and bar, in combination with the neck F, carrying the plate G, and coupling-pin J, for holding the parts together in case of breaking, substantially as specified.

4. The draw-bar A, sliding rod B, spring C, washer D, and sliding head E, in combination with the neck F, supporting-plate G, draw-neck H, guard I, and coupling-pin J, substantially as and for the purpose specified.

5. A guard for the end of a street-car, consisting of a curved bar, M, and supporting-sockets L and N, substantially as specified.

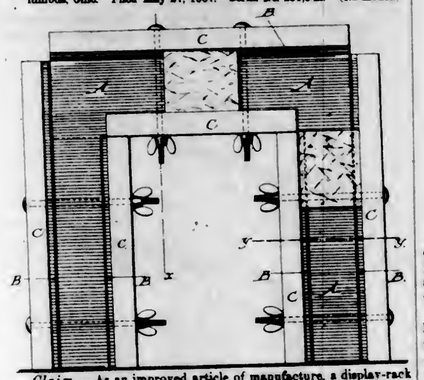
6. A guard for the end of a street-car, consisting of the bars M M' and sockets L, L' N N', constructed and applied substantially as specified.

379,588. COMB-CLEANING APPARATUS. GEORGE H. MCKEE, Cambridge, Mass. Filed July 18, 1887. Serial No. 244,610. (No model.)



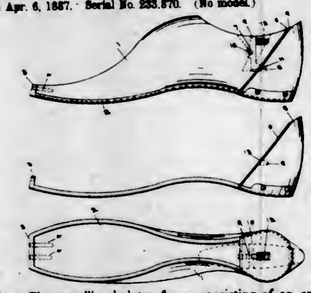
Claim.—A comb-cleaning apparatus comprising an adjustable frame composed of the parts a' a^2 and spindle a^3 and a series of strands secured to the parts a' a^2, the part a^2 being adjustable with relation to the part a' through the said spindle, substantially as specified.

379,589. DISPLAY-RACK FOR TILES. DAVID C. MEEHAN, Columbus, Ohio. Filed May 27, 1887. Serial No. 239,542. (No model.)



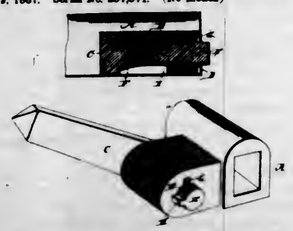
Claim.—As an improved article of manufacture, a display-rack consisting of the frame A, the independent adjustable strips B, having guides or channels for the reception of the tiles, and the bolts E, passing through the frame and strips, all constructed and arranged to operate substantially as herein described.

379,590. SHOE-MAKER'S LAST. LEONARD R. MILES, Utica, N. Y. Filed Apr. 6, 1887. Serial No. 233,870. (No model.)



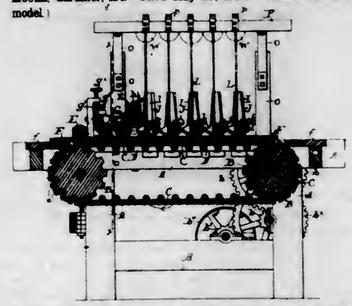
Claim.—The metallic skeleton frame consisting of an encircling strip of metal conforming to the lower outer edge of the last, having a section of the last rigidly secured thereto at the heel, in combination with the last-body.

379,591. THILL-COUPLING. THOMAS H. B. MILLSAP, Harper, Kans. Filed Dec. 9, 1887. Serial No. 257,371. (No model.)



Claim.—In a thill-coupling, the combination of the axle, the coupling-box projected therefrom and having a passage, D, the said passage having a flared inner end and a longitudinal groove, G, in its top, and the thill-iron having an integral laterally-projecting coupling-pin adapted to pass through the passage D, the said pin being of a conical formation at its inner end and provided with a lug, H, at its outer end, substantially as specified.

379,592. MACHINE FOR MAKING EXCELSIOR. WILLIAM H. MOORE, Gardiner, Me. Filed May 23, 1887. Serial No. 239,099. (No model.)



Claim.—1. In a machine for making excelsior, the combination of a horizontal traveling bed, a series of weighted shaving-knives suspended above said bed, said knives being fixed relatively to the bed and a set of scoring-knives in front of said shaving-knives, substantially as described.

2. In a machine for making excelsior, the combination of an endless traveling bed, above said bed a series of shaving-knives secured to weighted frames having curved bottoms, vertical guides secured to the machine, for holding said frames in position and allowing them a free vertical motion, and a set of scoring-knives in front of said shaving-knives, substantially as shown.

3. In a machine for making excelsior, the combination of an endless traveling bed, a series of weighted shaving-knives suspended above said bed, a set of scoring-knives in front of said shaving-knives, and a cylinder head or planer, and a compression-roll in front of said scoring-knives, substantially as shown.

4. In a machine for making excelsior, the combination of an endless traveling bed, a series of weighted shaving-knives suspended over said bed in position to engage the material to be operated upon, a scoring-roll in front of said knives, said roll having on its surface parallel annular cutters adapted to cutting parallel slits in the stock, and means for pressing said roll downward, substantially as described.

5. In a machine for making excelsior, the combination of an endless traveling bed, a series of knife-frames with their shaving-knives held by vertical guides above said bed, a vertical rod, the lower end of which rests on said frame, a fulcrumed rod or lever passing through an opening in the upper end of said vertical rod and having adjustably secured thereto a weight whereby the said vertical rod is pressed downward on said knife-frame, substantially as described.

6. In a machine for making excelsior, the combination of an endless traveling bed, above which are arranged successive sections of cutters and scorers, each of said sections being composed of a series of weighted shaving-knives, and in front of said series a set of scoring-knives, substantially as shown.

379,593. BOBBIN-WINDER FOR SEWING-MACHINES. JACOB E. NEAHR, Troy, N. Y. Filed July 8, 1887. Serial No. 243,727. (No model.)



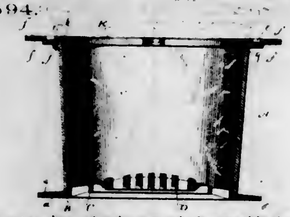
Claim.—1. The combination, with the bobbin and the revoluble support whereon the latter is mounted, of the notched guard, the edge whereof is arranged in close proximity to and parallel with the periphery of said bobbin, and the knife-edge located at the top of the notch, whereby the thread may be severed as it piles within the notch, substantially as set forth.

2. The combination, in a sewing-machine, with the main shaft, upon the end whereof a bobbin may be mounted, of a downwardly-extended guard whose edge is notched and extended into close proximity to the periphery of the bobbin, and a knife adjustably secured to the back of the guard and with its edge overlapping the notch, as described.

379,594. UPPER AND LOWER PLATE FOR FIRE-BOWLS. ALBERT S. NEWBY, Kansas City, Mo. Filed Mar. 28, 1887. Serial No. 232,806. (No model.)

Claim.—1. The herein-described fire-bowl plate, consisting, essentially, of an annular plate provided with breaking grooves near its

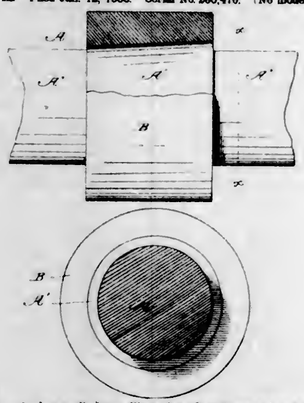
379,594.



inner and outer edges, whereby it may be increased in size interiorly and decreased in size exteriorly to suit stove-bodies of different sizes, substantially as set forth.

2. The herein-described fire-bowl plate, provided with seats for the end of the fire-bowl, arranged alternately on the under and upper sides of the plate, and having breaking grooves near its inner and outer edges, whereby the plates may be fitted to stoves of different sizes, substantially as set forth.

379,595. **ROLL FOR ROLLING-MILLS.** AUGUSTUS NEWELL, Chicago, Ill. Filed Jan. 12, 1888. Serial No. 260,470. (No model.)



Claim.—1. In a roll for rolling sheet metal, an arbor having at its middle a cylindro-conical core and a removable shell closely surrounding said core, concentric therewith, and whose exterior is cylindric, substantially as shown and described.

2. In a roll for rolling sheet metal, an arbor made of relatively inferior metal and having at its middle a cylindro-conical core, and a removable shell of superior steel closely surrounding said core, concentric therewith, and whose exterior is cylindric, substantially as shown and described.

379,596. **COTTON-STALK CUTTER.** MARSHA DUKE ONEAL, Aledo, Tex. Filed Dec. 30, 1887. Serial No. 259,432. (No model.)

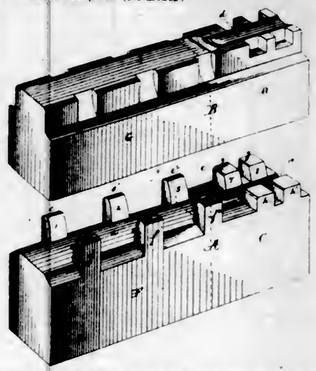


Claim. 1. A stalk-cutter comprising the frame or body having the cutting-blade projecting laterally therefrom, and the arm S, also projecting laterally from the frame or body and arranged at a distance above and in front of the cutting-blade, substantially as described.

2. The stalk-cutter having the frame or body adapted to be dragged on the ground, and provided near its front end with the laterally-projecting cutting-blade and the arm S, arranged above and in front of the blade, and the colter attached near the rear end of the frame or body and adapted to cut into the soil, for the purpose set forth, substantially as described.

3. The stalk-cutter comprising the beam A, the sole secured to the under side of the beam and projecting laterally from both sides thereof, the block E on the upper side of the sole, at the front end thereof, the cutting-blade having its inner end secured to the bottom of the sole, said cutting-blade projecting laterally beyond the machine, the arm S, having its inner end secured on the upper side of block E and arranged in advance of and above the cutting-blade, and the colter secured near the rear end of the machine, substantially as described.

379,597. **DIE FOR STRAIGHTENING THE STEEL HANDLES OF KNIVES AND FORKS.** ELIAS G. ORR, Shelburne, Mass. Filed June 3, 1886. Serial No. 203,976. (No model.)



Claim.—1. A set of dies having an impression-cavity into which the handle and bolster of a knife-blank are forced to correct their configuration, and one or more guides located in position to impinge against said handle when being placed into the die for impression and guide it into said impression-cavity, substantially as described.

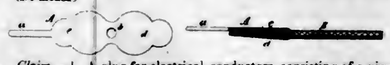
2. In a set of dies for correcting the configuration of a knife-blank, a stop located adjacent to the position in the die in which the blade of the blank rests while receiving the impression and in place to prevent said blade from moving on the die-face from said position in the direction of said stop.

3. A set of dies having impression-faces to press upon both the blade and handle of a knife-blank for correcting the configuration thereof, combined with two pairs of guides, one pair thereof having inclined faces arranged on opposite sides of the position in the die in which the blade of the blank rests to receive the impression, and the other pair having inclined faces arranged on opposite sides of the position in the die in which the handle of the blank rests to receive said impression, all said inclined faces being located, as described, to guide said blank, when placed between the four opposite faces, into the position required to receive the impression of the dies, and all said parts being arranged and constructed substantially as described.

4. The die A, combined with one or more of the guides $e\ e'\ e^2\ g\ g'$, and one or more of the guides $f\ f'\ f^2\ h\ h'$, and with the die B, the combined parts being arranged and operating substantially as described.

5. A set of dies for correcting the configuration of a knife-blank combined with a system of guides constructed and adapted, as described, to act upon said blank when being placed or forced into its position in the dies for receiving their impression, and arranged on opposite sides of said position in place to react against the blank when being placed or forced into its said position and assist in guiding said blank into said position.

379,598. **PLUG FOR MAKING ELECTRICAL CONNECTIONS.** GUSTAV OTTO, Jersey City, N. J. Filed Nov. 26, 1887. Serial No. 256,224. (No model.)

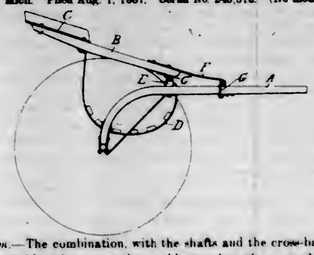


Claim.—1. A plug for electrical conductors, consisting of a piece of metal, A, having a projection, *a*, and an opening, *b*, for the reception of the conductor, said plate being adapted to be doubled over to hold a conductor, substantially as described.

2. The combination, with the conductor B, of the plug A, having the projection *a*, opening *b*, for the reception of the conductor, and clamping part *d*, adapted to be folded over upon the conductor, substantially as described.

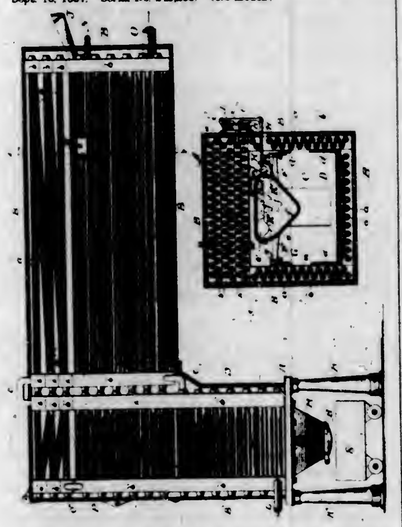
3. The pole end or plug A, having the prong *a* and the doubled parts *d* and *e*, which are folded over the conducting-wire on a line at right angles to the axis of the projecting prong *a*, substantially as herein shown and described.

379,599. **TWO-WHEELED VEHICLE.** WILLIAM A. PATERSON, Flint, Mich. Filed Aug. 1, 1887. Serial No. 245,816. (No model.)



Claim.—The combination, with the shafts and the cross-bar E, of the seat-bars hinged at one end to said cross-bar, the seat, the foot-rest secured at one end to said cross-bar and at the other to the seat-bars, the bails G, pivotally secured to the shafts, and the springs F, secured at one end to the seat-bars and at the other pivotally connected with said bails, substantially as and for the purpose specified.

379,600. **SLAG-FURNACE.** JESSE E. PECK, Chicago, Ill. Filed Sept. 10, 1887. Serial No. 249,295. (No model.)



Claim.—1. In a slag-furnace, the combination, with the circulating-pipes connected to the heads, as described, of a surrounding cover and receiver for molten material, substantially as described.

2. In a slag-furnace, the combination of circulating-pipes connected to heads, as described, a receiver for molten material, and a floor, substantially as described.

3. In a slag-furnace, the combination of the circulating-pipes connected to heads, as described, the receiver E, rod H, gage I, connected with rod H, and pipe *a*, for automatically operating the receiver.

4. In a slag-furnace, the combination of the circulating-pipes connected to heads, as described, the receiver, and spout for delivering the molten material into the receiver; substantially as described.

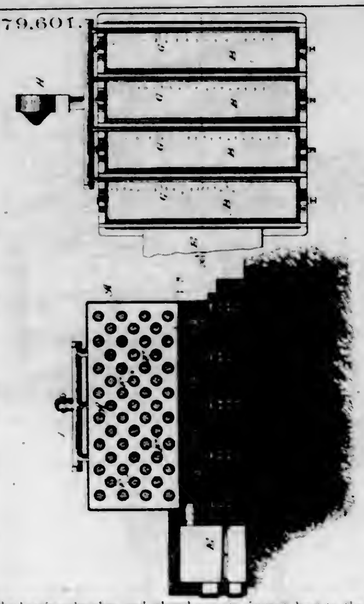
5. In a slag-furnace, the combination of the circulating-pipes connected to heads, as described, the floor, receiver, and supply-spout, discharge-chamber M, and discharge-pipe O, substantially as described.

379,601. **SLAG-FURNACE.** ORRIN B. PECK, Chicago, Ill. Filed Feb. 7, 1888. Serial No. 263,314. (No model.)

Claim.—1. In a slag-furnace for generating steam, the combination of a steam-boiler with two or more slag-supporting devices or surfaces and partitions, as described, extending upward above such slag-supporting surfaces, substantially as described.

2. In a slag-furnace for generating steam, the combination of a steam-boiler, a heating-chamber, and one or more dumping slag-supporting vessels constructed and arranged to dump the slag while within

379,601.

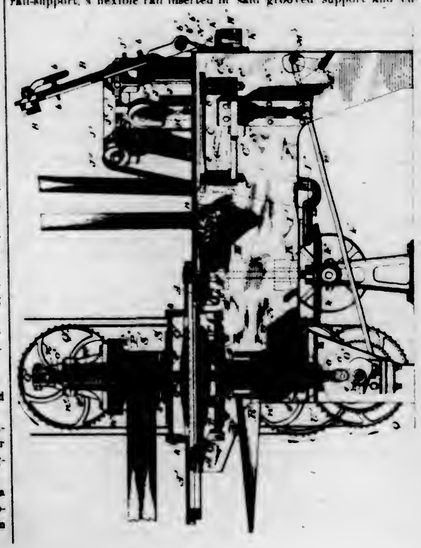


the heating-chamber and placed so as to impart heat to the boiler, substantially as described.

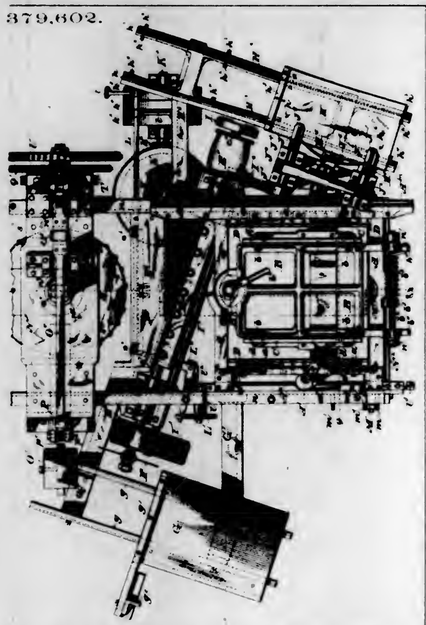
3. In a slag steam-generator, the combination of a closed steam-generating boiler and a series of chambers provided with dumping-bottoms arranged underneath the boiler and adapted to be successively filled with and emptied of heated or molten slag, substantially as described.

379,602. **BARREL-HEAD-MAKING MACHINE.** JONAH J. PHILBRICK, Omro, Wis., assignor of one-third to George Challoner's Sons, same place. Filed Mar. 10, 1887. Serial No. 230,363. (No model.)

Claim.—1. The combination, in a barrel-head-making machine, of a jointer, a reciprocating carriage movable past said jointer, a grooved rail-support, a flexible rail inserted in said grooved support and en-



379,602.



gaging with and guiding said carriage, and adjusting-screws bearing against the sides of said rail and arranged to bend the same laterally to the desired curvature, substantially as and for the purposes set forth.

2. The combination, in a barrel-head-making machine, of a jointer, a carriage movable past said jointer, and carriage-ways supporting and guiding said carriage, one of said ways being adjustable vertically and one adjustable laterally to the desired curvature, substantially as and for the purposes set forth.

3. The combination, in a barrel-head-making machine, with the supporting-frame, of rounding mechanism, a rotary planer and carriage-ways mounted upon said frame, and a reciprocating carriage movable upon said ways and arranged to convey a blank past and in contact with said planer to said rounding mechanism, substantially as and for the purposes set forth.

4. The combination, in a barrel-head-making machine, with the rounding mechanism, of a rotary planer, a reciprocating carriage arranged to carry a blank past said planer in position to be operated upon thereby and to deliver said blank to said rounding mechanism, a jointer mounted upon the planer-arbor, a carriage movable upon ways past said jointer, and doweling-bits supported in bearings adjacent to said jointer and connected with each other and to said planer-arbor by suitable driving mechanism, substantially as and for the purposes set forth.

5. In a barrel-head-making machine, the combination of a planer-cylinder, a jointer mounted upon one end of the planer-arbor, a saw mounted upon the other end of said arbor, a carriage movable past said jointer upon ways transverse to the planer-arbor and arranged to support the blank-sections in proper position to be operated upon by said jointer, a blank-carriage provided with a gage and movable on ways past and parallel with the plane of said saw, and a blank-carriage movable on ways oblique to the planer-cylinder and arranged to carry a blank past said cylinder in position to be planed thereby on one side, substantially as and for the purposes set forth.

6. The combination, in a barrel-head-making machine, of a rotary planer, a blank-carriage movable past the same on ways oblique thereto, a jointer mounted upon one end of the planer-arbor, a saw mounted upon the end of said arbor, a blank-section carriage movable past said jointer on ways transverse to said arbor, a blank-carriage provided with a laterally-adjustable gage and movable on ways past said saw parallel with the plane thereof, and doweling-bits located adjacent to said jointer and driven by suitable mechanism from said planer-arbor, substantially as and for the purposes set forth.

7. The combination, in a barrel-head-making machine, of the planer, a carriage for carrying the blanks over said planer, a trimming-saw mounted upon the planer-arbor, and a carriage provided with an adjustable gage and arranged to support a blank and carry the same past said saw in position to be trimmed to the proper size for the planer-carriage, substantially as and for the purposes set forth.

8. The combination, in a barrel-head-making machine, with the rounding mechanism, of a yielding bed or rest, a planer located between said rounding mechanism and said bed or rest, a reciprocating carriage movable past said planer and arranged to receive a blank from said bed or rest and carry the same past said planer in position to be operated upon thereby to said rounding mechanism, and a gage plate or frame arranged to fold over said bed or rest and bring the blank thereon to the required level in said carriage, substantially as and for the purposes set forth.

9. The combination, in a barrel-head-making machine, of a blank-carriage provided with dogs arranged to engage and hold a blank therein, a plate or frame hinged to the machine and arranged to fold over a blank in said carriage, and a clamp connected with said plate or frame and arranged to press and hold the sections of a blank together until it is dogged in said carriage, substantially as and for the purposes set forth.

10. The combination, in a barrel-head-making machine, of a blank-carriage, rest-bars supported on vertical stems resting in turn upon springs, a gage plate or frame hinged to the machine and provided with adjusting-bolts for straightening and holding the blank in the proper position to be secured in said carriage, a cam connected with the free end of said gage frame or plate and arranged to lock the same to said carriage and at the same time to force the joints of the blank together, and a spring arranged to throw said gage plate or frame back when released, substantially as and for the purposes set forth.

11. The combination, in a barrel-head-making machine, of rounding mechanism, a blank-carriage provided with dogs secured on one side of said carriage in a laterally-sliding bar, a cam provided with a handle arranged to move said dog-bar laterally, and a trip arranged to engage the handle of said cam and release the blank in position to be operated upon by said rounding mechanism, substantially as and for the purposes set forth.

12. The combination, in a barrel-head-making machine, of rounding mechanism, a carriage arranged to receive and convey a blank to said rounding mechanism, dogs for securing the blank in said carriage, and an arm arranged to operate one or more of said dogs and to be turned by a projection upon the machine-frame, and thereby release said blank when it has been carried by said carriage into position to be received by the rounding mechanism, substantially as and for the purposes set forth.

13. The combination, in a barrel-head-making machine, of rounding mechanism, a reciprocating carriage arranged to receive and convey a blank to said rounding mechanism, dogs located in the path of said carriage adjacent to said rounding mechanism and arranged to engage the rear edge of said blank as it is brought by said carriage into position to be operated upon by said rounding mechanism and to prevent its withdrawal therefrom by the return movement of said carriage, substantially as and for the purposes set forth.

14. The combination, in a barrel-head-making machine, of rounding mechanism, a rotary planer, a reciprocating carriage provided with dogs for holding a blank therein and arranged to convey the blank past said planer to said rounding mechanism, an arm arranged to operate one or more of said dogs and to be turned by a fixed stop and thereby release the blank in position to be operated upon by said rounding mechanism, and dogs located in the path of said carriage and arranged to engage the rear edge of said blank and prevent its withdrawal by the carriage from said rounding mechanism, substantially as and for the purposes set forth.

15. The combination, in a barrel-head-making machine, of rounding mechanism, a reciprocating carriage provided with a movable dog arranged to engage a blank therein, a stop located adjacent to the path of said carriage, and a jointed arm pivoted to said carriage and connected with said dog and arranged to be turned to engage said stop or to clear the same, as desired, substantially as and for the purposes set forth.

16. The combination, in a barrel-head-making machine, of rounding mechanism, a carriage arranged to convey the blanks thereto, dogs for holding the blanks in said carriage, a cam arranged to work a dog or dogs on one side of said carriage and provided with an arm, a stop located adjacent to the path of said carriage so as to engage said arm, and a spring working with and arranged to further turn said cam so as to permit the complete withdrawal of said dog or dogs from the blanks, substantially as and for the purposes set forth.

17. The combination, in a barrel-head-making machine, of rounding mechanism, a carriage arranged to convey the blanks thereto, dogs secured in one side of said carriage and in a laterally-sliding bar on the other side thereof, a cam or eccentric working with said sliding bar, and a spring or springs holding said sliding bar in contact with said cam or eccentric and withdrawing the dogs when released from said blank, substantially as and for the purposes set forth.

18. The combination, in a barrel-head-making machine, of rounding mechanism, a carriage arranged to convey the blanks thereto, dogs secured in one side of said carriage, a laterally-sliding bar provided with dogs on the other side of said carriage, and a spring-actuated plate arranged to force the blank off from said dogs when released, substantially as and for the purposes set forth.

19. The combination, in a barrel-head-making machine, of a pair of cutter-heads, a pair of clamping-heads set between and parallel with said cutter-heads and movable in the line of their axes toward and from each other, the heads of one of said pairs being laterally movable transversely to their axes, mechanism arranged to move said heads laterally, and mechanism connected with and arranged to rotate the heads of one of said pairs, substantially as and for the purposes set forth.

20. The combination, in a barrel-head-making machine, of a pair of rotary cutter-heads movable transversely to their axes, a pair of clamping-heads movable in the direction of their axes and located between said cutter-heads, mechanism arranged to move said clamping-heads axially and carry the blank into contact with the knives of the cutter-heads, and mechanism arranged to move said cutter-heads transversely to their axes, so as to cut the heading oval, substantially as and for the purposes set forth.

21. The combination, in a barrel-head-making machine, of rotary cutter-heads mounted upon slides movable transversely to their axes, a support for holding the blank in position to be operated upon by said cutter-heads, and a vertically-sliding bar provided with cam plates or faces engaging the slides of the cutter-heads and arranged to move said slides and cutter-heads laterally, so as to cut the heading oval, substantially as and for the purposes set forth.

22. The combination, in a barrel-head-making machine, of the rounding-heads, a support for holding a blank in position to be operated upon thereby, slides carrying said cutter-heads and movable transversely to their axes, draw-bars adjustably attached to said slides, and a sliding bar provided with inclined faces working with said draw-bars and arranged to move said rounding-heads laterally, substantially as and for the purposes set forth.

23. In a barrel-head-making machine, the combination of rounding-heads, clamping-heads supported upon the adjacent ends of vertically-sliding shafts, a cam working with the shaft of the lower clamping-head, a weighted lever connected with the shaft of the upper clamping-head, and a cam working with said lever, substantially as and for the purpose set forth.

24. In a barrel-head-making machine, the combination of the rotary rounding-heads, clamping-heads upon the adjacent ends of vertically-sliding shafts passing through said rounding-heads, a weighted lever connected with the shaft of the upper clamping-head, a cam supporting the lower clamping-head and arranged to move the blank into position to be operated upon by said rounding-heads, and a cam sustaining the weighted lever and upper clamping-head when the rounding mechanism is not in operation, substantially as and for the purposes set forth.

25. In a barrel-head-making machine, the combination of the rounding-heads, clamping-heads located between said rounding-heads and movable axially with reference thereto, a carriage arranged to deliver the blanks between said clamping-heads, a cam working with said clamping-heads and arranged to move the blank into position to be operated upon by said rounding-heads, cam-actuating gear, and a trip-lever arranged to set said cam in motion, substantially as and for the purposes set forth.

26. In a barrel-head-making machine, the combination of the rounding-heads, clamping-heads located between said rounding-heads and arranged to support the blanks in proper position to be operated upon by said rounding-heads, a carriage arranged to deliver a blank between said clamping-heads, a cam arranged to raise and lower said clamping-heads, a mutilated gear upon the cam-shaft working with a driving-gear and provided with a sliding tooth, and a cam connected with a tripping-lever and arranged to force said sliding tooth into engagement with a tooth on the driving-gear, and thereby turn the mutilated gear into engagement therewith, substantially as and for the purposes set forth.

27. The combination, in a barrel-head-making machine, of a blank-carriage, rotary rounding-heads, vertically-movable clamping-heads, a cam supporting the lower clamping-head and arranged to move the blank into contact with the cutters on the rounding-heads, a mutilated gear mounted upon the cam-shaft and provided with a sliding tooth, and a driving-gear working with said mutilated gear, a cam, V, arranged to force said sliding tooth into engagement with a spur on the driving-gear, and a lever connected with said cam V and arranged to be operated by projections on the blank-carriage, substantially as and for the purposes set forth.

379,603. CYLINDER FOR CORN-SHELLERS. HENRY POUCHER, Brooklyn, Mich. Filed July 25, 1887. Serial No. 245,254. (No model.)



Claim.—The corn-shelling cylinder described, consisting of the roller A and the segmental cylindrical metal plates having parallel longitudinal edges and carrying shelling-teeth and secured to said roller at regular intervals, leaving between their adjacent edges longitudinal grooves E approximating in width that of an ear of corn, substantially as and for the purpose specified.

379,604. DEVICE FOR DETACHING BUTTONS. BRITTON POULSON, Fort Wayne, Ind., assignor to William D. Schiefer, same place, and John C. Hunt, Concord, Mass. Filed Nov. 7, 1887. Serial No. 254,511. (No model.)



Claim.—1. The longitudinally-slotted case A, provided with the cutter crossing said slot and adapted to operate with either end of the case in advance, substantially as described.

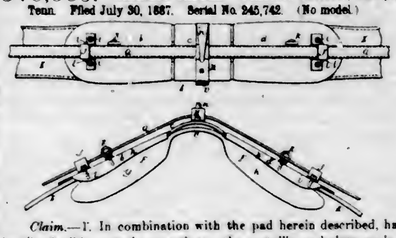
2. The combination, with the longitudinally-slotted case or holder A, of the double-acting or two-edged cutter, substantially as and for the purpose described.

3. The hollow case A, having end openings, *c*, the longitudinal slot *c'*, pendent ledges *d*, and knife or cutter B, substantially as described.

4. The case or holder A, provided with the end openings, *c*, the longitudinal slot *c'*, and the tapering ledges *d*, of the spring-plates *g*, substantially as described.

5. The case or holder A, provided with the openings *c c*, the slot *c'*, ledges *d*, springs *g*, cutter B, and hinged door b^3, all substantially as and for the purpose described.

379,605. HARNESS-SADDLE. FREDRICK REHKOPF, Memphis, Tenn. Filed July 30, 1887. Serial No. 245,742. (No model.)



Claim.—1. In combination with the pad herein described, having the flexible central connection, *c*, the metallic pad-plate made in three parts, hinged together, and provided with the loops and their friction-rollers, all substantially as set forth.

2. In combination with the central part, *c*, of the hinged pad-plate, the top loop, M, secured thereto and provided with its friction-roller, and having a hook at one extremity and an eye or loop at its other extremity, substantially as set forth.

3. In combination with the pad herein described, the metallic pad-plate made in three parts, hinged together, and provided with the loops and their friction-rollers, all substantially as set forth.

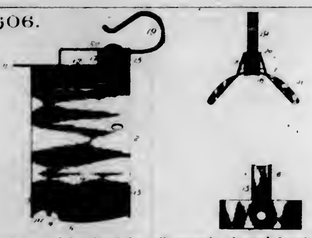
4. In combination, the described hinged plate with its loops and rollers, the pad and skirts secured thereto by the screws which fasten the loops, the back-strap playing loosely in the loops, and the terrets located at the side of such strap, all substantially as set forth.

379,606. PAD-PLATE FOR HARNESS-SADDLES. FREDRICK REHKOPF, Memphis, Tenn. Filed Oct. 22, 1887. Serial No. 253,136. (No model.)

Claim.—1. The combination herein described, with a metallic pad-plate for harness-saddles and with a loop thereon for a back-strap, of a friction-roller lodged in a slot made in the plate, and having its journal or axial rod held in place by the loop attached to the plate, all substantially as shown and described.

2. In combination with the side plates, slotted as described, and with their loops, half journal-bearings made both in the plate and in

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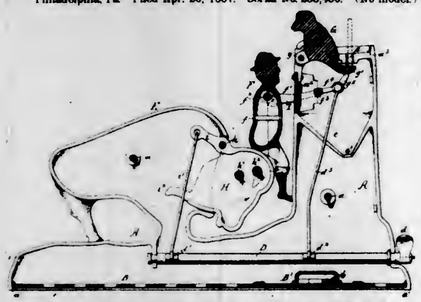


the loop, and the axial rods of the rollers resting in such bearings, all as shown and described.

3. In combination with the top piece, 1, of the pad-plate, the upwardly-projecting bent plate 15, the hook 19, bent plate 20, and friction-roller 21, all substantially as shown and described.

4. In combination with the piece 1, having the longitudinal slots 4, the side pieces, 2 3, connected therewith by their cylindrically-bent ends, all as shown and described.

379,607. MECHANICAL TOY SAVINGS-BANK. ALFRED C. REX, Philadelphia, Pa. Filed Apr. 20, 1887. Serial No. 235,436. (No model.)

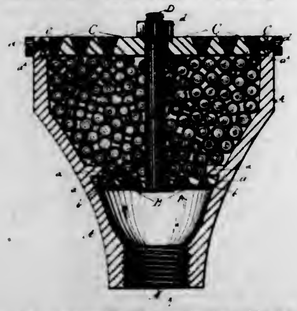


Claim.—1. The combination of the casing, the shaft D, having its bearings therein, and the representation of a boy, with a frame, I, pivoted to the boy and casing and provided with a lever connected to a crank on the shaft D, substantially as described.

2. The combination of the casing, shaft D, frame I, pivoted to the casing and connected to the shaft D, and the representation of a boy, F, pivoted to the frame I, with the representation of an animal, G, pivoted to the casing and moving with the said frame, substantially as described.

3. The combination, in a mechanical toy savings-bank, of the casing and a bottom plate having a door, with the representations of animals, E and G, and the representation of a boy, F, the parts F and G and the head of the animal E being pivoted to the casing, an operating-shaft, D, and connecting devices, substantially as described, to vibrate the said pivoted parts from the shaft, as set forth.

379,608. STEAM-MUFFLER. GEORGE F. ROYER, Wilkes-Barre, Pa. Filed Dec. 7, 1887. Serial No. 257,209. (No model.)



Claim.—In a steam-muffler, the combination, with the inverted-cone-shaped case A, formed with the seat a^3, beveled seat a, and lugs a', the circular grating B, with bevel edge b, fitting upon the seat a and beneath the lugs a', and formed with the slot b', circular grating C, of larger diameter than the one B, resting upon the seat a^3, and secured to said case by screws d, bolt D, passing centrally through the gratings B and C, and securing the same together, and interposed filling of pebbles, as described, for the purposes specified

379,609. DEVICE FOR DETACHING BUTTONS. WILLIAM D. SCHIEFER, Fort Wayne, Ind., assignor of one-half to John C. Hunt, Concord, Mass. Filed Dec. 14, 1887. Serial No. 257,837. (No model.)



Claim.—1. The combination, with the hollow casing A, provided with the slot B, of the stationary cutter-blade E, having a number of cutting-edges, and adapted to be adjusted as and for the purpose described.

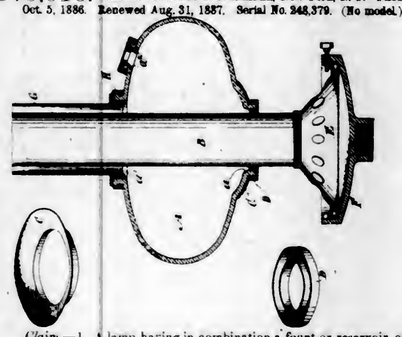
2. The combination, with the hollow casing A, provided with the slot B, and the curved or rounded flanges H, and cutter, of the spring-actuated traps G, substantially as and for the purpose described.

3. The combination, with the hollow casing A, provided with the slot B, cutter-blade, and aperture J, of the pivoted and sliding plate or door I, substantially as and for the purpose described.

4. The combination of the hollow casing provided with the longitudinal slot B and aperture J, the cutter-blade E, flanges H, spring-actuated traps G, and sliding plate or door I, all substantially as described.

5. The hollow case A, provided with the slot B and depression D, in combination with a stationary cutter-blade having a series of cutting-edges and adapted to be adjusted as and for the purpose described.

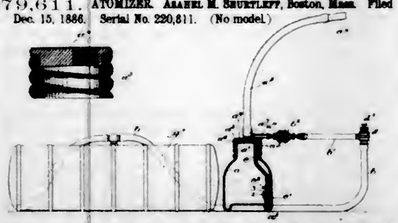
379,610. LAMP. BENNETT B. SCHNEIDER, New York, N. Y. Filed Oct. 5, 1886. Renewed Aug. 31, 1887. Serial No. 248,379. (No model.)



Claim.—1. A lamp having in combination a fount or reservoir, of glass or like material, a central draft-tube, of metal, extending through the fount or reservoir, a ring or shell secured to the exterior of the lower part of the reservoir, and a coupling-piece secured to said ring or shell and to the central draft-tube, substantially as specified.

2. A lamp having in combination a fount or reservoir, of glass or like material, a central draft-tube, of metal, extending through the fount or reservoir, a ring or shell secured by a vitreous enamel to the exterior of the lower part of the reservoir, and a coupling-piece secured to said ring or shell and to the central draft-tube, substantially as specified.

379,611. ATOMIZER. ASAHEL M. SHURTLEFF, Boston, Mass. Filed Dec. 15, 1886. Serial No. 220,811. (No model.)



Claim.—1. In an atomizer, the jar a and cap therefor, to which are attached the air-tube c and outlet-tube a^3, combined with a hard-rubber plate, a^4, having a screw-threaded hole to receive the upper

end of the air-tube c, and a soft-packing washer, a^4, resting against the rubber plate a^4, substantially as and for the purpose described.

2. In an atomizer, a jar, a, and cap or stopper therefor, combined with a tube having at its lower end the atomizing nozzles or orifices 2 3, and a guard, c^2, to protect the said atomizing-nozzles, substantially as described.

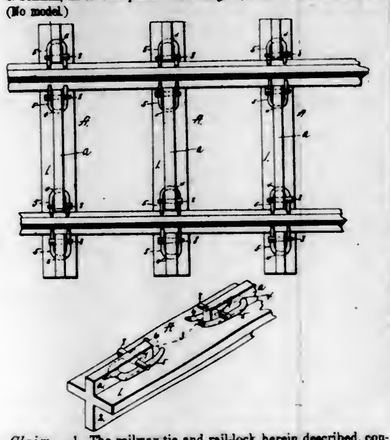
3. In an atomizer, the jar a and the cap or stopper therefor, to which the inlet and outlet tubes are attached, combined with the tube c, bent to conform to substantially the outline of the body of the jar and having the end portion c', constructed integrally with the nozzle 2, substantially as set forth.

4. In an atomizer, the jar a and cap or stopper, combined with the tubular coupling a^{10}, secured directly to the cap or stopper, and an air-tube located within the jar and attached to the tubular coupling, said air-tube having at its lower end the atomizing-nozzles.

5. The atomizing exit-orifices and an air-duct leading thereto, combined with an air-filter through which the air passes previous to passing through the atomizing exit-orifices, substantially as described.

6. The jar a, containing the atomizing-nozzles and the outlet and inlet tubes connected with the jar a, combined with an air-forcing apparatus and a cut-off or controlling valve controlling the passage of air to the jar a, said valve consisting of a valve case and seat, and a plunger movable in the direction of the length of the valve-case, substantially as described.

379,612. METALLIC RAILROAD TIE AND CHAIR. CHRISTIAN G. SIEGER, Lebanon, Pa., assignor to himself, Benster Boyer, and Abraham C. Seaman, all of same place. Filed Aug. 20, 1887. Serial No. 247,451. (No model.)

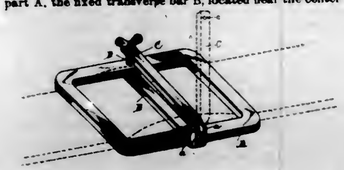


Claim.—1. The railway tie and rail-lock herein described, consisting of a metallic plate, A, formed with a vertical projecting flange, a, having rail-seats 3 formed therein, U-shaped rail-locks 5, pivotally seated in the flange a, with their free ends to project over and rest upon the rail-flanges, and locking-pins 8, passed through the vertical flange over the rail-locks to hold them on the rail-flange, substantially as described.

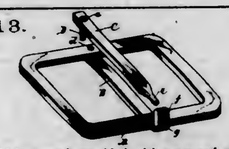
2. The rail-tie and rail-lock herein described, consisting of a metallic plate, A, formed with a vertical depending flange, 2, and a vertical projecting flange, a, the flange a having rail-seats formed therein, U-shaped rail-locks 5, pivotally seated in the flange a, with their free ends to project over and rest upon the rail-flanges, and locking-pins 8, passed through the flanges a over the rail-locks to hold them on the rail-flange, substantially as described.

379,613. HARNESS-BUCKLE. JOHN M. SMITH, Spottsylvania, Va. Filed Dec. 1, 1887. Serial No. 256,696. (No model.)

Claim.—The improved buckle herein described, consisting of the body part A, the fixed transverse bar B, located near the center of the

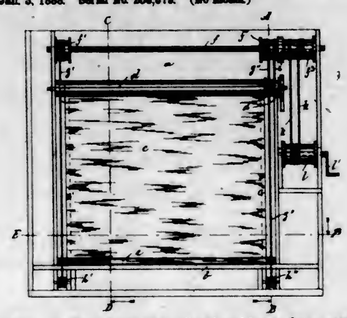


379,613.



length of said body and provided with upturned end forming ears a, the keeper pivoted at one end between said ears and formed at its opposite end with a hole, c, and the longitudinal bar of the body formed with a screw-threaded opening, d, coincident with the hole in the keeper, and a screw, D, passing through said hole and engaging the threads of said opening, substantially as described.

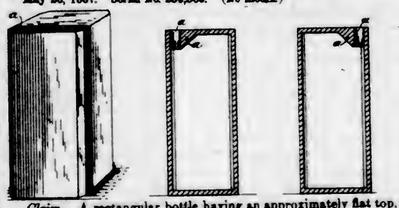
379,614. DROP-CURTAIN. JOHN P. SMITH, Exeter, N. H. Filed Jan. 3, 1888. Serial No. 259,679. (No model.)



Claim.—1. The curtain c, its roller d, and lower slat, e, combined with the shaft f and its drums f'' f''', having ropes or chains g' g'', leading, respectively, around guide-pulleys k' k'', and having their ends secured to the slat e, and the rope or chain i, leading from a drum or roller on the shaft f to a drum or roller, d, on the curtain-roller, and means for imparting a reciprocating rotary motion to said shaft f, substantially as and for the purpose set forth.

2. The curtain c, its roller d, and lower slat, e, the intermediate shaft, f, with its drums f', f'', and f^3, and the hoisting-drum l, combined with the rope or chain k, connecting the drums l f^3, the rope or chain i, connecting the drum f'' with the curtain-roller drum or pulley d, and ropes or chains g g'', connecting the drums f f'' with the slat e by the medium of the lower guide-pulleys, k' k'', substantially as and for the purpose set forth.

379,615. BOTTLE. EDWARD STORR, Poughkeepsie, N. Y. Filed May 26, 1887. Serial No. 239,389. (No model.)



Claim.—A rectangular bottle having an approximately flat top, a portion of the top at one corner thickened internally and being inclined toward the main portion of the top of the bottle, and having an aperture extending through it opening upon the top of the bottle, substantially as specified.

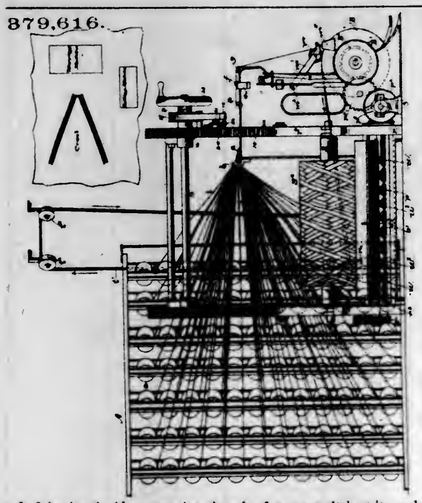
379,616. WINDING OR BALLING MACHINE. HERMAN F. STRAW, Manchester, N. H. Filed May 13, 1887. Serial No. 238,110. (No model.)

Brief.—The object of the invention is to prevent the winding of the material in such manner as to make the mass or ball of yarn of greatest diameter at its ends.

Claim.—1. The combination, with a carriage block or hub to be reciprocated, of a traverse-shaft having a double or crossing thread the pitch of which is longer at its ends than at the middle of its length to insure a quick reversal of the movement of the carriage block or hub moved by the traverse-shaft, substantially as described.

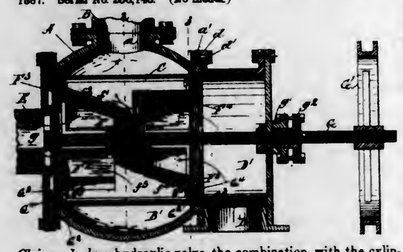
2. The cylinders r^3 r^4, means to rotate them, and the traverse-

379,616.



shaft having double or crossing threads of steepest pitch at its ends, combined with a carriage block or hub actuated by the said traverse-shaft, and a delivery-eye mounted on the said carriage block or hub, substantially as described.

379,617. HYDRAULIC VALVE. RALPH L. TEED, Chicago, Ill., assignor of one-half to Alexander McGuire, same place. Filed Sept. 19, 1887. Serial No. 250,140. (No model.)



Claim.—1. In a hydraulic valve, the combination, with the cylindrical inner casing, open at its ends, the outer casing of equal length surrounding the same and forming a water-space connected to the hydraulic cylinder, and ports formed through the inner casing and connecting its interior with said water-space, of a rotary valve arranged within the inner casing and provided with a space connected to the supply and with a space connected to the exhaust, said spaces opening at the respective ends of the valve and casing, said valve being adapted to either close the said ports or to place either of said spaces in communication therewith, substantially as and for the purposes specified.

2. In a hydraulic valve, the combination, with the cylindrical inner casing provided with a series of ports and open at its ends, of the outer casing surrounding the same and forming a water-space connected to the hydraulic cylinder, and the rotary cylindrical valve fitting within the inner casing, open at its ends, and provided with the central partition, f, having extended walls f^3 and longitudinal partitions F^4, whereby the said valve is provided with a space, F', at one end, having passages f', and connected to the supply, and a space, F^2, at the other end, having passages f^2, and connected to the exhaust, substantially as and for the purposes specified.

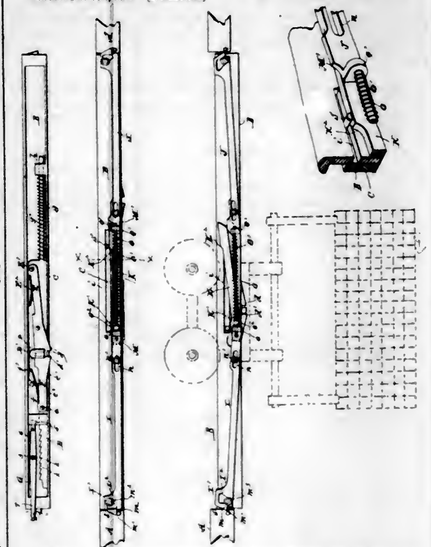
3. The combination, with the cylindrical inner casing and the rotary valve arranged therein, of a double packing at each end of the valve, constructed of leather or other suitable material, and having its free edges extending in opposite directions and held against the inner wall of the casing by the pressure of the water, substantially as and for the purposes specified.

4. The combination, with the valve F and casing C, of a packing-ring secured to each end of the valve, and consisting of the rings G^2 and G^3, having each a body portion, g^4, beveled at g^5, to bear against the casing, and a flange, g^4, the said flanges being clamped between rings G^4, substantially as and for the purposes specified.

5. The combination, with the cylindrical casing C, of the valve F, having central partition, f, and spaces F' and F^2, with passages f' and f^2, respectively, and the intermediate longitudinal partitions, F^4, each provided with a double packing, F^5, of leather or other suitable material, held against the inner wall of the casing by the pressure of the water, substantially as and for the purposes specified.

6. In a hydraulic valve, the combination, with the cylindrical casing C, of the valve F, having central partition, f, and spaces F' and F^2, with passages f' and f^2, respectively, the intermediate longitudinal partitions, F^4, having groove or seat f^6, the U-shaped packings F^5, having projecting beveled ends f^7, and the clamping-pieces F^6, for securing the packings in their seats, substantially as and for the purposes specified.

379,618. LOCKING AND RELEASING MECHANISM FOR CASH-CARRIERS. HORATIO THOMAS, Chicago, Ill., assignor to The Bostedo Package and Cash Carrier Company, Atlantic, Iowa. Filed Oct. 4, 1887. Serial No. 251,440. (No model.)



Claim.—1. The combination, with a track-section bar, of two locking-bolts adapted to slide endwise on the track-section bar, and a latch-bar adapted to fall between and engage the inner ends of the bolts when the latter are extended and lock them in position, substantially as set forth.

2. The combination, with a track-section bar, of two locking-bolts adapted to slide endwise, a latch-bar adapted to fall between and engage the inner ends of the bolts when the latter are extended and lock them in position, and a sliding ratchet-bar carrying a pin for holding the latch between the bolts.

3. The combination, with a track-section bar and car arresting and dispatching apparatus for stopping and starting a car, of sliding locking-bolts and a latch-bar adapted to fall between the inner ends of said bolts and lock them in their extended position, substantially as set forth.

4. The combination, with a track-section bar and a car arresting and dispatching apparatus thereon for stopping and starting a car, of two sliding locking-bolts, a latch-bar adapted to fall between the inner ends of the bolts and lock them in their extended position, and the ratchet-bar of said apparatus carrying a pin adapted to engage the latch-bar, whereby the position of the latter is regulated and controlled by the movements of the arresting and dispatching apparatus, substantially as set forth.

5. The combination, with a track-section bar having a slot therein, and a car arresting and dispatching apparatus for stopping and starting the car, the ratchet-bar of said apparatus carrying a pin, which latter passes through the slot in the track-section bar, of two sliding locking-bolts, a latch-bar adapted to fall between the inner ends of said bolts and lock them in their extended position, the said latch-bar being held in locked position between the bolt and pin, substantially as set forth.

6. The combination, with a track-section bar and a car arresting and dispatching apparatus for stopping and starting a car, the ratchet-bar of said apparatus having a pin or projection thereon, of two sliding locking-bolts, a spring for forcing the bolts apart, and a latch-bar adapted to fall between the inner ends of the bolts and lock them in their extended position, the said latch-bar being held in locked position between the bolts by the pin or projection on the car arresting and dispatching apparatus, substantially as set forth.

7. The combination, with the track-section bar, of sliding locking-bolts, and a latch-bar pivoted to one of said bolts and adapted to fall between the inner ends of said bolts when the latter are extended and lock them in position.

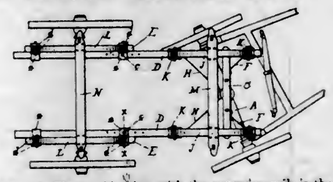
8. The combination, with a track-section bar, of two locking-bolts having a sliding connection with this bar and adapted to unlock by a simultaneous upward and inward movement of their outer ends, and a latch adapted to fall between the inner ends of said bolts and lock them in position, substantially as set forth.

9. The combination, with a track-section bar and two locking-bolts held to slide in opposite directions endwise on this bar, of a pivoted latch-bar that holds the bolts locked in extended adjustment, a spiral spring to force the bolts apart, and a car provided with a stud that is adapted to release the latch-bar from locked contact with the locking-bolts when a car runs onto the elevator track-section, substantially as set forth.

10. The combination, with a track-section bar, two sliding locking-bolts that are made to move toward each other when they unlock this bar, and a spiral spring supported on a rod, so as to bear on the inner ends of the locking-bolts, of a latch-bar pivoted to one end of one of the locking-bolts and adapted to lock both bolts when extended, when said latch-bar is held by a stud on the ratchet-bar, substantially as set forth.

11. The combination, with a track-section bar, two sliding locking-bolts that have their outer ends connected to the track-section bar to slide inwardly and raise upwardly a limited distance in the act of releasing the bar on which they are secured, and a spiral spring mounted on a rod, the spring bearing on the inner end of each locking-bolt, of a latch-bar pivoted by one end to a locking-bolt and engaging the other bolt, and a stud that projects through a slot in the track-section bar and is attached to a car-arresting device to move endwise and release the latch-bar and unlock the track-section bar when a car is arrested on this track-section bar in line with the lower track, substantially as set forth.

379,619. WAGON RUNNING-GEAR. MORRIS S. TYLER, Lansing, Mich. Filed July 1, 1887. Serial No. 243,126. (No model.)



Claim.—1. The combination, with the extension-rails in the front bolster and sliding on top of the rear axle, of two spring-rails secured lengthwise of the wagon upon the rear axle and provided with supporting and guiding plates for said rails, substantially as described.

2. In a running-gear for wagons, the combination, with the front gear and the extension reach-bars secured thereto, of a rear gear consisting of two parallel spring-bars secured to the axle lengthwise the wagon, and of laterally-projecting bearing-plates for said reach-bars secured to said spring-bars, substantially as described.

3. In a running-gear for wagons, the combination, with the front gear and the extension reach-bars secured thereto, of a rear gear consisting of two parallel spring-bars secured to the axle lengthwise the wagon and provided with laterally-projecting supports for said reach-bars, substantially as described.

4. In a running-gear for wagons, the combination, with the front gear and the extension reach-bars secured thereto, a rear gear consisting of two parallel spring-bars secured to the axle lengthwise the wagon, of laterally-projecting supports secured near the ends of said spring-bars to support and guide the rear ends of the reach-bars, and adjusting and holding pins in the forward supports, substantially as described.

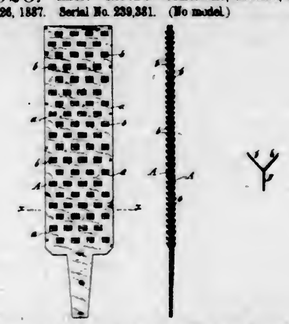
5. In a running-gear for wagons, the combination, with the parallel extension-reaches D, fixedly secured to the front gear, of the spring-bars E, secured to the axle of the rear gear lengthwise the wagon, the laterally-projecting guide and bearing plates a b, secured to the spring-bars, and the holding and adjusting pins c, all substantially as described.

6. In a running-gear for wagons, the combination of the head-block C, the parallel reaches D, fixedly secured thereto and projecting in front of the head-block, the braces F, extending from the front bolster to the projecting ends of the reaches, and the braces H, secured at one end at the pivotal point of the front axle and at the other end to the reaches, and trusses G, substantially as described.

7. In a running-gear for wagons, the combination, with a front gear having two parallel extension reach-bars fixedly secured thereto, of two front bolster-springs secured upon the reach-bars, a rear gear having two rear bolster-springs supported on spring-bars secured upon the rear axle lengthwise the wagon, and laterally-projecting supports for the reach-bars secured to said spring-bars, substantially as described.

8. In a running-gear for wagons, the combination, with two parallel extension reach-bars fixedly secured to the front axle and adjustably to the rear axle, of semi-elliptic front bolster-springs secured to the reach-bars lengthwise the wagon, two parallel spring-bars secured to the rear axle lengthwise the wagon, laterally-projecting supports for the reach-bars secured to said spring-bars, and two rear bolster-springs secured lengthwise the wagon in upwardly-projecting ears of said supports, substantially as described.

379,620. RASP. RUDOLPH VOLLKENWEIN, Hoboken, N. J. Filed May 26, 1887. Serial No. 239,351. (No model.)



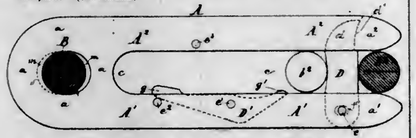
Claim.—1. As a new article of manufacture, a rasp comprising metal plates provided with rows of perforations, other plates provided with rows of teeth bent from the plates last named, the teeth of one row being bent in an opposite direction to the teeth of the other row, said last-named plates being arranged in such manner that the teeth thereof will extend through said perforations after the first-named plates have been secured together, substantially as specified.

2. As a new article of manufacture, a rasp comprising metal plates provided with rows of perforations extending at approximate right angles to the lengths of the plates, the perforations of one row being opposite the spaces between the perforations of the next adjacent row or rows, other plates provided with rows of teeth bent from the plates last named, the teeth of one row being bent in an opposite direction to the teeth of the other row, said last-named plates being arranged between the first-named plates in such manner that the teeth thereof will extend through said perforations after the first-named plates have been secured together, substantially as specified.

3. As a new article of manufacture, a rasp comprising metal plates provided with rows of perforations, other plates provided with rows of teeth bent from the plates last named, the teeth of one row being bent in an opposite direction to the teeth of the other row, said last-named plates being arranged between the first-named plates in such manner that the teeth thereof will extend through said perforations after the first-named plates have been secured together, said teeth being so bent that when thus placed they will extend at an incline toward the forward end of the rasp, substantially as specified.

4. As a new article of manufacture, a rasp comprising metal plates provided with rows of perforations, other plates provided with rows of teeth bent from the plates last named, the teeth of one row being bent in an opposite direction to the teeth of the other row, said last-named plates being arranged between the plates first named in such manner that the teeth thereof will extend through said perforations after the first-named plates have been secured together, the surfaces of the tops or outer ends of such teeth being approximately parallel with the surfaces of the plates first named, and said teeth being so bent that when thus placed they will extend at an incline toward the forward end of the rasp, substantially as specified.

379,621. **SELF-COUPLING CAR-LINK.** GEORGE J. WARDWELL and ALBERT LANDON, Rutland, Vt. Filed Dec. 12, 1887. Serial No. 257,622. (No model.)

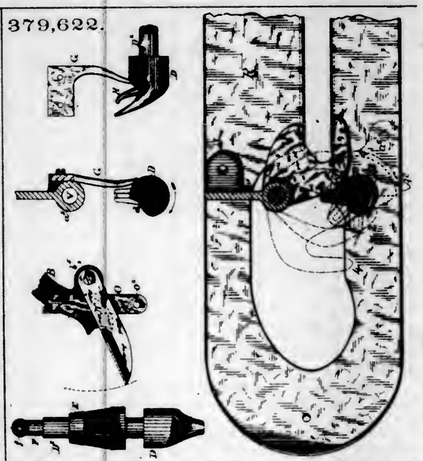


Claim.—1. The combination, with an open end slotted coupling-link, A, of the horizontal pivoted draft-latch D and the pivoted setting-latch D', substantially as and for the purpose described.

2. The coupling-link A, provided with a link-pin hole, B, having bevels in reverse relation to each other, substantially as and for the purpose described.

3. The draft-link D, provided with an elongated pivot-hole, *f*, in combination with limbs A' A^2, having horizontal slots *c'* and solid terminating ends *a' a^2*, substantially as and for the purpose described.

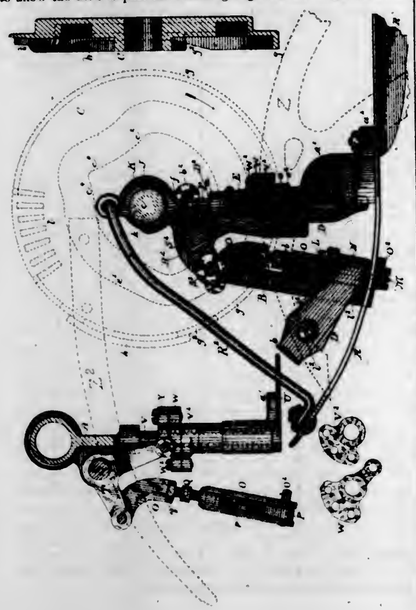
379,622. **KNOTTING DEVICE FOR GRAIN-BINDERS.** WILLIAM N. WHITELEY and SAMUEL DYER, Springfield, Ohio, assignors to said William N. Whiteley. Filed May 1, 1886. Serial No. 200,807. (No model.)



Claim.—1. In the knotting mechanism of a grain-binder, a stationary retaining-finger the point of which rests nearly against the body of the rotary knotting-hook, for the purpose of holding the binding-cord in place as it lies over said finger, in combination with a knotting-hook, a portion of the body of which is cut away to allow the cord to pass off from said finger at the proper time for forming the knot, substantially in the manner shown and described.

2. In the knotting mechanism of a grain-binder, a forked tucker-finger pivoted at one side of the breast-plate and adapted to receive the binding-cord, in combination with the breast-plate, one side of which opposes the fork in the finger and co-operates therewith to close the notch and positively control the cord, and suitable mechanism for rotating said finger forward about one-fourth of a revolution to place the cord in position to form the knot, then backward about one-eighth of a revolution to secure the cord in place as the knotting-hook rotates and enable the mechanism to bind more tightly, then forward about three-eighths of a revolution to assist in stripping the knot from the knotting-hook, substantially in the manner shown and described.

3. In the knotting mechanism of a grain-binder, the combination of a rotating knotting-hook having a portion of the body cut away to allow the cord to pass the retaining-finger, a retaining-finger fixed



to the knotter-frame, or some fixed part thereof, and whose point rests nearly or on the body of the rotary knotting-hook, a tucker-finger having a slot formed therein to receive the binding-cord, and a breast-plate provided with a slot of such shape as to receive the binding-cord and prevent its escape from the tucker-finger, substantially in the manner shown and described, and for the purpose of properly forming the knot in the binding-cord.

4. In the knotting mechanism of a grain-binder, in combination with the tucker-finger, cord-holder disk, and cord-severing knife, a transverse rock-shaft having an arm provided with a friction-roller, and arms connected respectively with the tucker-finger to actuate the same, and with said knife and disk, and an operating-wheel having a lateral cam connected with said rock-shaft by said first arm, substantially as and for the purposes described.

5. In the knotting mechanism of a grain-binder, in combination with the cord-holder disk, severing-knife, and tucker-finger, a tyer-wheel having formed thereon a lateral cam-track for operating the said parts, and a transverse rock-shaft connected with and operated by said cam, and connections between said parts and the rock-shaft, substantially as set forth.

6. In the knotting mechanism of a grain-binder, in combination with the cord-holder disk, severing-knife, and tucker-finger, a tyer-wheel having formed thereon a lateral cam-track for operating the said parts, and a gear for operating the knotting-hook, a transverse rock-shaft having an arm carrying a friction-roller which engages said cam-track, and connecting mechanism between said rock-shaft and the said disk, knife, and finger, substantially as shown and described, and for the purpose of assisting a rotating knotting-hook in tying the knot.

7. In the knotting mechanism of a grain-binder, a swinging frame carrrying the cord-holder, and a cord-severing knife pivoted to said swinging frame and operated by the parts which rotate the cord-holder disk.

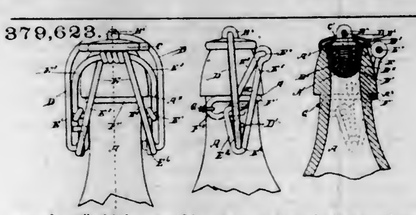
8. In the knotting mechanism of a grain-binder, the combination of a rotating knotting-hook, a swinging frame carrying the cord-holder, a pivoted vibrating tucker-finger provided with a slot for receiving the binding-cord, and a cord-severing knife pivoted to said swinging frame, substantially in the manner shown and described, and for the purpose of properly securing the band around the bundle of grain.

9. In the knotting mechanism of a grain-binder, a forked tucker-finger pivoted at one side of the breast-plate, the slot of which finger extends tangentially relative to its pivot, the inner end of the slot being in proximity to the opposing side of the breast-plate, and forming therewith an eye which is adapted to surround the cord and convey the same positively along said opposing side of the breast-plate, in combination with a knotting-hook situated at said opposing side of the breast-plate, and mechanism for operating the tucker-finger.

379,623. **BOTTLE STOPPER AND FASTENING.** S. LLOYD WIEGAND, Philadelphia, Pa., assignor to the Germania Bottle Stopper Company, Camden, N. J. Filed Sept. 13, 1887. Serial No. 249,601. (Model.)

Claim.—1. A stopper adapted to fit in the neck of a bottle, consisting of an elastic core secured upon a central shank, which is provided at its upper end with an eye and has a flange resting upon the elastic core, both the flange and the core being covered by an enve-

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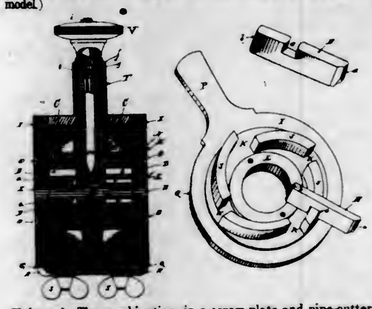


lope of textile fabric, secured by a ligature above the flange and saturated with paraffine, substantially as and for the purpose set forth.

2. The combination of a stopper secured by an eye-screw to the cap C, with the cap C, provided with lugs embracing the bail D, and a triangularly-braced lever, E, pivoted to a vertically-elastic fulcrum, F, substantially as set forth.

3. In combination with the triangularly-braced lever E and vertically-elastic fulcrum F, the bail D, having arms D', engaging with the lever E, substantially as and for the purpose set forth.

379,624. **DIE FOR THREADING AND CUTTING PIPES.** GEORGE WILLIAMS, Erie, Pa. Filed Nov. 16, 1887. Serial No. 255,356. (No model.)



Claim.—1. The combination, in a screw-plate and pipe-cutter, of like radial slots and cam-plates at each end of the body thereof, with like reversible dies and guides operated in said slots by cam-plates, substantially as and for the purpose set forth.

2. The combination, in a screw-plate and pipe-cutter, of like cam-plates and reversible radial dies and guides at each end thereof, with a pipe-cutting blade fixed to the body of the plate and operating centrally between the guides, substantially as and for the purpose set forth.

3. The combination, in a screw-plate and pipe-cutter, of guides at each end of the plate, with the pipe-cutting blade H, operating in the slot G midway between the guides at the ends of the plate, substantially as and for the purpose set forth.

4. The combination, in a screw-plate and pipe-cutter, of reversible radially-moving bars E and E', having screw-cutting dies *a* and *c* on one end thereof and rounded ends *b* at the other, substantially as and for the purpose set forth.

379,625. **SLAG-FURNACE.** PHINEAS H. ADAMS, Jr., Chicago, Ill. Filed Dec. 27, 1887. Serial No. 259,110. (No model.)

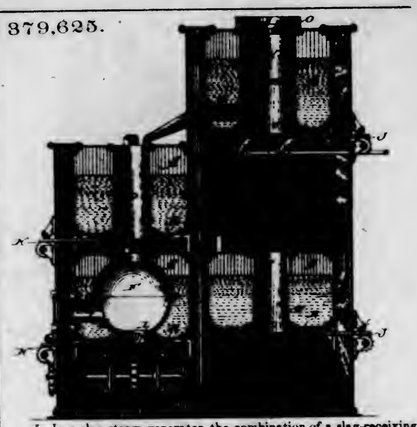
Claim.—1. In a slag steam-generator, the combination of a main slag-receiving receptacle having a removable bottom provided with a hole or opening, an auxiliary slag-receiving receptacle arranged thereunder to receive slag flowing from such hole or opening, and boilers containing water surrounding the main and the auxiliary slag-receiving receptacles, substantially as described.

2. In a slag steam-generator, a slag-receiving receptacle provided with a pipe or conduit to draw off slag and a removable bottom, in combination with a boiler containing water surrounding the slag-receiving receptacle, substantially as described.

3. In a slag steam-generator, the combination of a main slag-receiving receptacle, an assistant slag-receiving receptacle arranged at the side thereof to receive excess of slag from the main receptacle, and a pipe or conduit connecting the two and conveying the slag from the main to the auxiliary receptacle, and boilers containing water surrounding the main and the auxiliary slag-receiving receptacles, substantially as described.

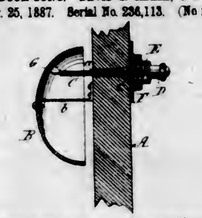
4. In a slag steam-generator, the combination of a slag-receiving receptacle having a removable bottom, cams to press up such bottom into close contact with the receiver, and a boiler containing water surrounding the slag-receiving receptacle, substantially as described.

379,625.



5. In a slag steam-generator, the combination of a slag-receiving receptacle having a removable bottom, a ring, R, encircling the lower end of the receptacle and affording a bearing for the removable bottom, and a boiler containing water surrounding the slag-receiving receptacle, substantially as described.

379,626. **DOOR-GONG.** DAVID S. ADAMS, Toronto, Ontario, Canada. Filed Apr. 25, 1887. Serial No. 236,113. (No model.)



Claim.—In a door-gong apparatus, the combination, with a door or other upright having the perforation *a*, of the spindle C, passing through said perforation and having shoulder *c*, push-button D on its outer end and striker G on its inner end, escutcheon F, containing spring E, encircling said spindle behind the push-button, bracket *b*, affixed to inner side of door or upright, and a gong carried by said bracket, substantially as and for the purpose specified.

379,627. **WRENCH.** GEORGE M. ALLEN, Cherryfield, Me. Filed Sept. 2, 1887. Serial No. 248,600. (Model.)

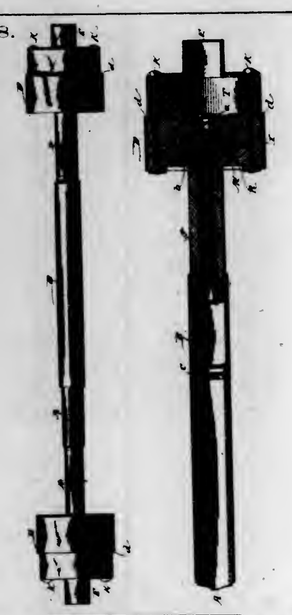


Claim.—In a wrench, the combination of the two ratchet-wheels A, having teeth extending in reverse directions and an opening through which passes the object which it is desired to turn, and the space or bearing B of the operating-lever C, having its inner end bifurcated and made semicircular, so as to correspond to the bearing B, and a spring-actuated dog, H, which engages with the teeth, substantially as shown.

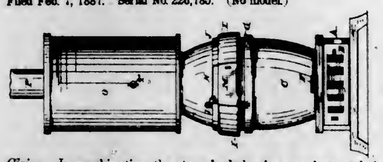
379,628. **FLEXIBLE PIPE-COUPLING.** PATTON M. ASHREN, Circleville, Kans. Filed Oct. 19, 1887. Serial No. 252,832. (No model.)

Claim.—The combination of the caps D, having the annular shoulders *d*, and provided with the pipes E, leading from their closed ends, the blocks F G, bolted together and secured rigidly in the caps and against the shoulders *d*, thereby leaving the unobstructed open spaces or chambers T within the caps between the blocks and the pipes E, the said blocks having the spherical sockets M and the recesses *a b*, the telescoping pipes A B, the pipes N, leading from the pipes A B, and having the balls O fitting in the sockets M, and the packing-rings R around the balls O, substantially as specified.

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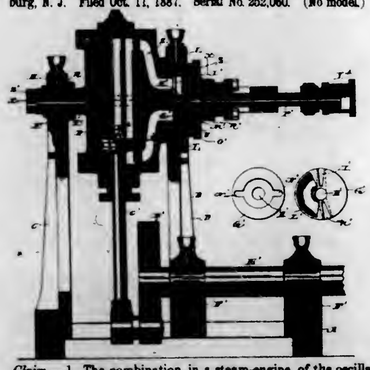


379,629. COAL-STOVE. WILLIAM F. BENCHER, Cleveland, Ohio. Filed Feb. 7, 1887. Serial No. 226,785. (No model.)



Claim.—In combination, the stove-body having openings, and the curtain secured at its upper edge closely to said body and depending therefrom at a slight distance from the body to form an air-chamber, said curtain having a door, M, substantially as described.

379,630. OSCILLATING STEAM-ENGINE. JOHN D. BOWER, Jamesburg, N. J. Filed Oct. 11, 1887. Serial No. 252,060. (No model.)

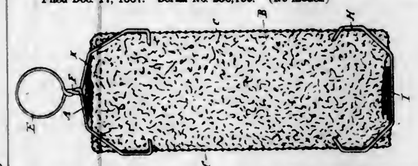


Claim.—1. The combination, in a steam-engine, of the oscillating cylinder having the steam-chest on one side thereof and oscillating therewith, the said steam-chest being provided with the inlet and exhaust ports communicating with the said cylinder, and the valve arranged in the steam-chest, adapted to remain stationary while the steam-chest operates with the cylinder, and provided with the openings adapted to register with the inlet-ports, and provided, further, with a recess, L', adapted to register with one of the exhaust-ports, substantially as described.

2. The combination, in a steam-engine, of the oscillating cylinder having a trunnion, S, projecting from its center to one side, said trunnion being bored cylindrically and constituting a steam-chest having ports Z and A', communicating with opposite ends of the cylinder, and exhaust-ports W and Y, arranged between the ports Z and A', and the cylindrical valve arranged in the steam-chest and secured against rotation therein, the said valve having the openings I' and K', adapted to alternately open and close the ports Z and A', respectively, and provided, further, on its inner side with the recess L', for the purpose set forth, substantially as described.

3. The combination, in a steam-engine, of the oscillating cylinder having the trunnion S on one side bored centrally and forming the steam-chest, the trunnion R on the side opposite the trunnion S, the channels formed in the sides of the cylinder, communicating with an opening in the trunnion R and with the ports arranged at diametrically-opposite points at the inner end of the steam-chest, and the ports Z and A', arranged at diametrically-opposite points in the inner end of the steam-chest and communicating with opposite ends of the steam-cylinder, with the cylindrical valve secured firmly in the steam-chest and stationary relatively thereto, the said steam-valve having the openings I' and K', adapted to alternately register with the openings A' and Z and the recess L', substantially as described.

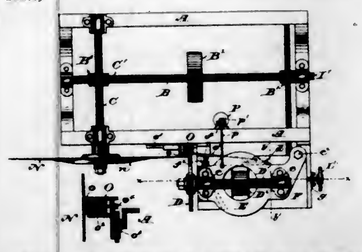
379,631. FIRE-KINDLER. EDWARD R. BREWSTER, Holly, Mich. Filed Dec. 17, 1887. Serial No. 258,189. (No model.)



Claim.—1. A fire-kindler consisting of a cylinder of indestructible absorbent material wrapped in wire-cloth, said wire-cloth being turned down at the ends of said cylinder and secured by a wire at each end of said cylinder, the two ends of each of said wires being passed through the folds of the wire-cloth at the ends of the cylinder and out at the side and being rebent and forced into the body of the cylinder, substantially as shown, and for the purpose described.

2. A fire-kindler consisting of a cylinder of indestructible absorbent material wrapped in wire-cloth, said wire-cloth being turned down at the ends of said cylinder and secured by a wire at each end of the cylinder, one or both of said wires being provided with a loop at its center, the two ends of each of said wires being passed through the folds of the wire-cloth at the ends of the cylinder out at the side and being rebent and forced into the body of the cylinder, substantially as shown, and for the purpose described.

379,632. SHINGLE-SAW-GRINDING MACHINE. FRANK CHALLONER, Omro, Wis. Filed Nov. 15, 1886. Serial No. 218,895. (No model.)



Claim.—1. The combination, in a shingle-saw-grinding machine, with a rotary saw-supporting shaft, of a carriage-way capable of angular adjustment with reference to said shaft, a carriage movable upon said way transversely to said shaft, a rotary grinder, and a horizontally-vibrating frame or plate pivoted to said carriage and provided with bearings for the grinder-shaft, substantially as and for the purposes set forth.

2. The combination, in a shingle-saw-grinding machine, with a rotary saw-supporting shaft, of a carriage-way capable of angular adjustment with reference to said shaft, a carriage movable upon said way transversely to said shaft, a rotary grinder, a vibratory grinder-support pivoted at or near one end to said carriage and provided with bearings for the grinder-shaft, a stop on said carriage limiting the vibration of said grinder-support, and a weight connected with said grinder-support and arranged to draw the grinder against the saw, substantially as and for the purposes set forth.

3. The combination, in a shingle-saw-grinding machine, of the saw-supporting shaft C, rotary grinder D, supported in suitable bearings upon the carriage F, adjustable carriage-support G, feeding-screw L, having a fixed bearing with reference to said carriage-support G and working in a nut, f^3, formed on or secured to said carriage F, and upright shaft k, provided at its upper end with a gear, k', working with a gear, l^4, on said screw, substantially as and for the purposes set forth.

4. The combination, in a shingle-saw-grinding machine, of the rotary grinder D, supported in bearings upon the plate E, pivoted to carriage F, adjustable carriage-support G, arranged to be swung about the upright shaft k, feeding-screw L, having a fixed bearing with said support G and working in a nut, f^3, on said carriage, and gears k' l^4, mounted one on said shaft k and the other on the screw L, substantially as and for the purposes set forth.

5. The combination, in a shingle-saw-grinding machine, of a rotary saw-supporting shaft, a carriage-way capable of angular adjustment with reference to said shaft, a carriage movable upon said way transversely to said shaft, a rotary grinder, a vibratory grinder-support provided with bearings for the grinder-shaft and pivoted at or near the end opposite said grinder to said carriage, and curved guide-bearings working together and attached, one to said carriage and the other to said support, one of said guide-bearings being laterally adjustable to take up wear, substantially as and for the purposes set forth.

6. The combination, in a shingle-saw-grinding machine, of the rotary grinder D, supported in suitable bearings upon carriage F, carriage-support G, provided on its under face with a hub, g^4, bearing in its supporting-frame or bracket H and arranged to be adjusted about the upright shaft k, feeding-screw L, having a fixed bearing with the carriage-support G and working in a nut applied to said carriage F and gears k' l^4, substantially as and for the purposes set forth.

7. The combination, in a shingle-saw-grinding machine, of the saw-supporting shaft C, provided with gear C', driving-shaft B, provided with worms b' b^3, working, respectively, with gear C', and a gear, I', on counter-shaft I, gear K, mounted on shaft I and working with gear K' on the upright shaft k, screw L, working with the grinder-carriage F and provided with a gear, l^4, working with a gear, k', on shaft k, carriage F, and rotary grinder D, supported in suitable bearings thereon, substantially as and for the purposes set forth.

8. The combination, in a shingle-saw-grinding machine, of a rotary saw-supporting shaft, a carriage-way capable of angular adjustment with reference to said shaft, a carriage movable upon said way transversely to said shaft and at the desired inclination to the plane of the saw, a laterally-yielding rotary grinder mounted upon said carriage, a way parallel with and adjacent to the face of the saw, a slide movable upon said way and connected with said carriage, and a yielding support carried by said slide and bearing against the face of the saw opposite said grinder, substantially as and for the purposes set forth.

9. The combination, in a shingle-saw-grinding machine, of the rotary grinder D, supported in suitable bearings upon the carriage F, carriage-support G, feeding-screw L, provided with a hand-wheel, L', and gear l^3, shaft I, having the gear K loosely mounted thereon, and the clutch J^3 and upright shaft k, provided with gears k' K', working, respectively, with said gears l^4 and K, substantially as and for the purposes set forth.

10. The combination, in a shingle-saw-grinding machine, of a saw-support, a carriage movable transversely thereto, a rotary grinder mounted upon said carriage, a carriage-supporting way adjustable with reference to the plane of the saw, a screw having a fixed bearing in said carriage way or support and working with a nut on said carriage, and a driving-shaft about which said carriage-way is arranged to swing, geared with said screw, substantially as and for the purposes set forth.

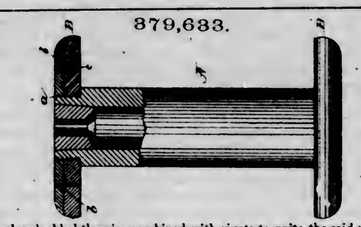
379,633. SPOOL. IRA CROSS, Nashua, N. H. Filed Sept. 26, 1887. Serial No. 250,726. (No model.)

Brief.—The object of the invention is to produce a spool having heads of increased strength.

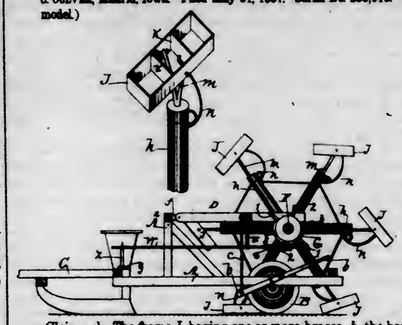
Claim.—1. A spool, substantially as herein described, it consisting of a barrel or body, A, heads B B, composed each of layers of material and shaped and put together to leave a groove between them, and a metallic strengthening-annulus of less diameter than the heads and entering the said groove between the said layers, for the purposes described.

2. The barrel or body A and the heads B, composed each of two parts or layers, a strengthening-annulus placed between the said halves and embedded therein, combined with rivets to unite the said parts or layers, all substantially as described.

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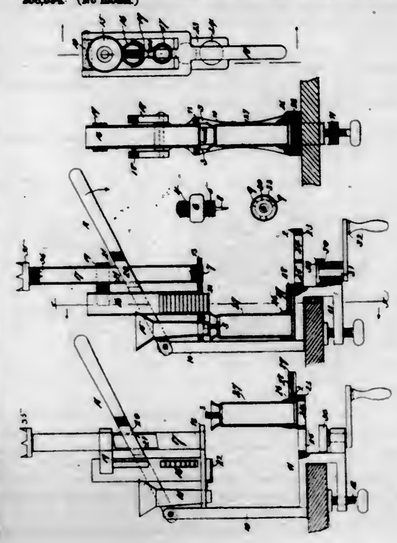
379,634. AUTOMATIC CHECK-ROW CORN-PLANTER. REUBEN C. CULVER, Madrid, Iowa. Filed May 31, 1887. Serial No. 239,910. (No model.)



Claim.—1. The frame J, having one or more braces, k, the bearer m, and the spring n, in combination with a spoke or leg, h, substantially as shown and described, for the purposes stated.

2. An improved planter comprising a tractable carriage and a runner-frame, an auxiliary frame, D, hinged to the planter-carriage, a rotating axle, F, having fixed hubs G, fixed legs h, carrying self-adjusting feet J, a hub, r, having pins 1 2 3 at its ends, a lever, w, carrying a wheel, s, and a lever, b, arranged and combined to operate in the manner set forth.

379,635. COMBINATION-TOOL FOR LOADING CARTRIDGES. FRANCIS P. DEVENS, Kansas City, Mo. Filed May 16, 1887. Serial No. 238,294. (No model.)



Claim.—1. In a cartridge-loader, the combination, with the wad-tube and a tongue just below its lower end, to support the wads and yet allow of their removal, of the movable shell-holder provided with attachment to engage the wad next to the said tongue and remove it therefrom, substantially as set forth.

2. In a cartridge-loader, the combination, with the wad-tube having a tongue, 22, just below its lower end, of the movable shell-holder 27 under said tube, and provided at opposite sides of its upper end with upward-projecting prongs, to engage the lower wad at opposite sides of the tongue and remove it therefrom, substantially as set forth.

3. In a cartridge-loader, the combination, with the wad-tube 16 and its tongue 22, of the sliding shell-holder 27 below said tube, the upward-projecting wad-receiving prongs 3 on the upper end of said holder, and the forwardly-extending projection 28, having a recess, 29, in its upper face, substantially as set forth.

4. A cartridge-loader comprising the standard 10, the clamp 11, the dovetail plate or extension 23, having a shell-aperture, 24, near its forward end, the vertical shell-tube 27, having a base, 26, provided with a dovetail groove receiving said plate, and prongs upon its upper end, the standard 10, the bracket 13, above the shell-tube and provided with the vertical filling-tube 15, the wad-tube in front thereof provided with the wad-supporting tongue 22, to hold the lower wad in the path of the said prongs, and a plunger-aperture at its outer end, the vertically-reciprocating plunger beneath, and in alignment with which said holder may be moved with the wad held in its prongs, substantially as set forth.

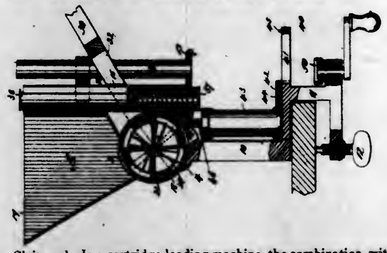
5. A cartridge loader and reamer comprising the clamp 11, standard 10, horizontal bracket 13, and plate 23, having shell-receiving apertures 24 25, the sliding shell-holder 27, the vertical filling-tube 15 on the inner end of the bracket, the wad-holding tube in front of the filler, the vertically-reciprocating plunger 17 on the outer end of the bracket in vertical alignment with the aperture 26, and provided with claws for holding the shell-flange, and the crimper 30, journaled below and in alignment with the aperture 25, substantially as set forth.

6. In a cartridge loader and crimper, the combination, with the frame having a laterally-projecting plate or arm formed or secured integrally therewith and apertured to receive a shell, of a vertically-reciprocating ramming-plunger in line with said aperture and having shell-holding claws, and the horizontally-revolubie reamer or crimper journaled permanently on the frame adjacent to the lower side of the shell-receiving aperture, whereby the open end of a shell may be inserted downward through said aperture upon the reamer or crimper, and held by claws on the ramming-plunger while the said reamer or crimper is being revolved, substantially as set forth.

7. In an implement for loading, reaming, capping, and decapping cartridges, a ramming-plunger provided with threaded sockets in its opposite ends, the claw 35, provided with the threaded shank 36, engaging one of said sockets, and the combined capping and decapping attachment, comprising the collar 6, threaded convex-faced projection 4, and threaded projection 5, provided with the pin 8, substantially as set forth.

8. The herein-described capping and decapping attachment, comprising the collar 6 and threaded projections 4 and 5 at opposite sides thereof, one of said projections having a convex capping-face and the other a decapping-pin, 8, substantially as set forth.

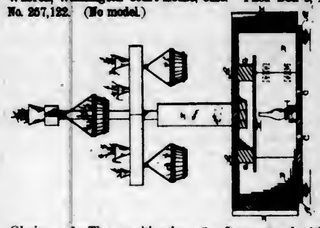
379,636. CARTRIDGE-LOADER. FRANCIS P. DEVENS, Kansas City, Mo. Filed Dec. 31, 1887. Serial No. 259,483. (No model.)



Claim.—1. In a cartridge-loading machine, the combination, with a hopper, of a cylinder formed with receiving and discharging openings, a ring mounted within the cylinder and formed with openings in its peripheral face, partitions arranged within the ring, a plate carrying wings which enter the spaces between the partitions, a means for adjusting the plate, and a means for turning the ring, substantially as described.

2. In a cartridge-loading machine, the combination, with a centrally-divided hopper, of a cylinder formed with receiving and discharging openings, a ring mounted within the cylinder and formed with a central partition and with alternately-arranged openings in its peripheral face, radial partitions arranged at either side of the central partition of the ring, plates provided with wings which rest between the radial partitions of the ring, facing-plates connected to the ring and to which the wing-carrying plates are adjustably connected, one of the facing-plates being formed with notches in its side face, a lever, and a spring-pressed pin carried by the lever and arranged to enter the notches of the facing-plate, substantially as described.

379,637. FLOWER-STAND. JAMES W. DUFFER and CHARLES WESTON, Washington Court-House, Ohio. Filed Dec. 6, 1887. Serial No. 257,122. (No model.)

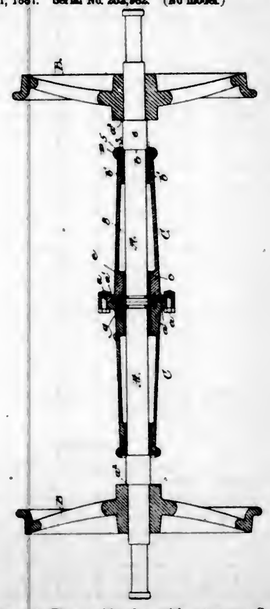


Claim.—1. The combination of a flower-stand with a box-like frame, which forms a support for the stand and has both its top and bottom perforated to allow a free passage of air through the chamber, a heating device to be placed in the chamber, the cross-timbers G, and the sheet-metal plate H, substantially as shown.

2. The combination of a flower-stand with a box-like frame, which forms a support for the stand and which is adapted to receive a heating device, and has both its top and bottom perforated to allow a free passage of air through the chamber, substantially as described.

3. The combination of a flower-stand, the box-like perforated frame upon which the flower-stand is placed, and which is adapted to receive a heating device, with sides which can be raised around the edges of the frame, so as to confine the currents of heated air around the plants, substantially as set forth.

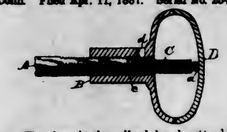
379,638. CAR-AXLE. JAMES H. EATON, Lawrence, Mass. Filed Oct. 21, 1887. Serial No. 252,982. (No model.)



Claim.—1. The combination, with a truss, as C, recessed at its outer ends, and a divided axle having shoulders, as *b*, of bearing-shells shrunk or secured water, oil, and dust tight to the axle and against the said shoulders, and serving as a surface about which rotates the inner bearing-surface of the truss, substantially as described.

2. The divided axle, the shouldered bearing-shell secured thereto and made to rotate in unison with the axle, combined with the truss taking its bearing upon and made movable with relation to the exterior of the said bearing-shell, combined with annular packing inserted between the shoulders of the said bearing-shell and the recessed end of the truss, to operate substantially as described.

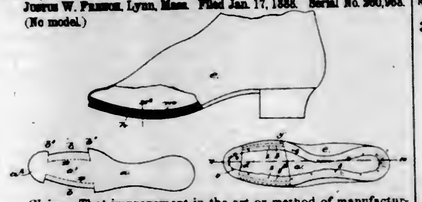
379,639. KNOB ATTACHMENT. WILLIAM H. FLINN, Nashua, N. H., assignor to the Russell & Erwin Manufacturing Company, New Britain, Conn. Filed Apr. 11, 1887. Serial No. 234,334. (No model.)



Claim.—1. The herein-described knob attachment, consisting of the angular spindle with threaded edges and the angularly-mortised knob-shank, with the side walls of the mortise threaded to correspond with the threaded edges of said spindle, in combination with the spring-actuated slide, said slide and spindle being provided, respectively, with engaging sockets and projection, with their engaging positions at one-eighth the way around from each flat side of the square spindle, whereby the parts are locked against independent rotation at each eighth of a revolution of the spindle after it is inserted in the knob-shank, all substantially as described, and for the purpose specified.

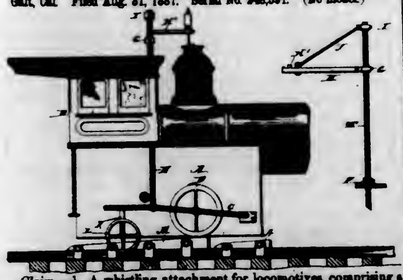
2. In a knob attachment, the combination of the threaded angular spindle and the angularly-mortised knob-shank with the square slide C, fitted in the axial hole of the shank, and the spring *a*, pressing upon said slide, the ends of said spindle and slide being provided, respectively, with an engaging projection and socket, substantially as described, and for the purpose specified.

379,640. METHOD OF MANUFACTURING BOOTS OR SHOES. JOSEPH W. FRENCH, Lynn, Mass. Filed Jan. 17, 1888. Serial No. 260,968. (No model.)



Claim.—That improvement in the art or method of manufacturing boots and shoes which includes cutting away the edges of the inner sole along the ball portion thereof, tacking the upper to the inner sole about its edge and along the edge left by cutting away the inner sole, as described, removing the lasted upper from the last, and, with an inner sole added, stitching the outer sole, upper, and inner sole together by through-and-through stitches, except along the ball portion of the inner sole, severing the upper between the line of stitching and the line of tacks in the inner sole near its cut-away portion, and removing from the shoe that portion of the upper and of the inner sole containing the tacks referred to, which were driven into the ball of the inner sole when lasting the upper, substantially as described.

379,641. AUTOMATIC WHISTLE ATTACHMENT. MARINE GAGE, Galt, Cal. Filed Aug. 31, 1887. Serial No. 248,391. (No model.)



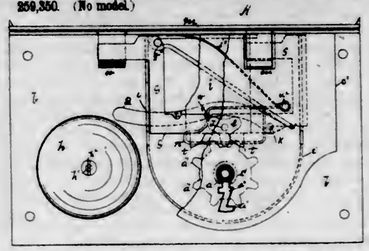
Claim.—1. A whistling attachment for locomotives, comprising a lifting-rod, an arm, as H, adjustably secured to said rod near its upper end, and means for automatically raising said rod, as set forth.

2. The combination, with the locomotive, of a lever pivoted to the fire-box thereof, the lifting-rod pivotally attached to said lever and extending vertically upward, and the arm H, adjustably secured to the lifting-rod near the upper end of the same, as set forth.

3. The combination of the operating-lever, the lifting-wheel journaled therein, the lifting-rod pivotally attached thereto, and the arm H, adjustably secured to the upper end of the lifting-rod, substantially as specified.

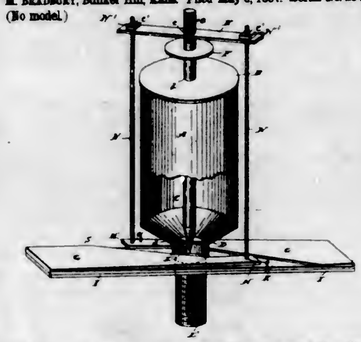
4. The combination of the operating-lever, the lifting-rod pivotally attached thereto, the arm H, secured to the lifting-rod, and the swinging arm K, arranged below the operating-lever and bearing against the under side of the same, substantially as described and shown.

379,642. ALARM-LOCK. GEORGE GIBBS, Paterson, N. J., assignor of one-half to Isaac Smith, same place. Filed Dec. 29, 1887. Serial No. 259,350. (No model.)



Claim.—The combination, with the revolving ward having lugs *d* thereon and a key for turning said ward, of the tumbler *n*, the bolt B, having notches *r r'* and lugs *t t'*, the cam *e*, the hammer *g*, engaged by the cam, the gong *h*, spring *g'*, plates *b* and *i*, rim *c*, lock-plate *m*, and pin *a*, arranged and operating so that no action can be had by the key on the locking mechanism without sounding the alarm, substantially as set forth

379,643. AUTOMATIC OILER. ALANSON R. GRISWOLD and JOHN M. BRADBURY, Bunker Hill, Kans. Filed May 6, 1887. Serial No. 237,344. (No model.)



Claim.—1. In an automatic oiler of the character described, an oil-cup having a perforation in its bottom and a neck projecting downwardly from the bottom of the oil-cup and screw-threaded for attachment to the journal-boxes, in combination with a valve adapted to open and close the said opening in the bottom of the said oil-cup, operated by an expansible bimetallic plate, and having a disk for the purpose, substantially as shown and described.

2. In an automatic oiler of the character described, an oil-cup having a central perforation at its bottom and the valve, in combination with bimetallic strips carrying supporting-rods and a cross-piece to which is secured the said valve, substantially as described, whereby the expansion and contraction of the metal raises and lowers the valve, opening and closing the exit in the oil-cup.

3. In an automatic oiler of the character described, the combination of the bimetallic strips carrying rods, a screw-threaded cross-piece, and a valve supported by the said cross-piece and adjustable therein, substantially as shown and described.

4. In an automatic oiler of the character described, the oil-cup having a perforation in its bottom, and the valve opening and closing the said perforation and having a disk, in combination with the vertical rods, the expansible strips, and a cross-bar supporting the valve, all arranged to operate substantially as and for the purposes specified.

5. In an automatic oiler, the combination of the bimetallic expansible plate consisting of the bimetallic strips I K and G G, secured together, the rods, the cross-bar supported thereby, having a screw-threaded perforation, a valve having a screw-threaded extremity for the purpose specified, and a disk on the said valve.

6. In an automatic oiler of the character described, the expansible plate consisting of the bimetallic strip I, to be situated directly upon the portion of machinery to be lubricated and having its ends bent over upon itself at *m m*, and the bimetallic strip K, arranged above the said strip I and kept from lateral displacement by the bent-over portion of the said strip I, and the strips G G, secured at one extremity to the said strip K and having their free ends perforated for the reception of rods, in combination with the said rods, supporting cross-piece, the valve, and an oil-cup having an opening in its bottom adapted to be opened and closed by the said valve, all constructed and arranged to operate substantially as shown and described.

7. In an automatic oiler of the character described, the oil-cup having a removable cover and an opening in its bottom and a downwardly-projecting neck, in combination with a valve to open and close the said opening, a cross-piece, upright rods, and bimetallic expansible plate having a perforation for the reception of the said neck.

8. In an automatic oiler of the character described, the combination of the oil-cup having a perforation in its bottom, a bimetallic expansible plate, upright rods, cross-piece, and valve, the lowermost extremity of the said valve being hollow and rigidly secured to the said bottom plate and the upper portion formed with a projection having a slot and situated within the said lowermost extremity, all arranged in such a manner that the expansion of the bimetallic plate will cause the upper portion of the valve to rise and permit the lubricant to flow out through the lowermost extremity.

9. In an automatic oiler of the character described, the oil-cup, valve, cross-piece, and supporting-rods, in combination with a bimetallic plate consisting of the strips I K and G G, connected as described, the inner free ends of the strips G G carrying the said supporting-rods.

10. In an automatic oiler, the oil-cup having a perforation in its bottom, a valve having one extremity tapered and the other screw-threaded, for the purpose specified, and a disk on the said valve, in combination with means for supporting and elevating the said valve, consisting of bimetallic expansible plate, upright rods, and a cross-piece, the said cross-piece having a screw-threaded perforation for the reception of the screw-threaded extremity of the valve.

379,644. INTERFERING DEVICE FOR HORSES. MICHAEL HAUGHEY, St. Louis, Mo. Filed Sept. 22, 1887. Serial No. 250,462. (No model.)

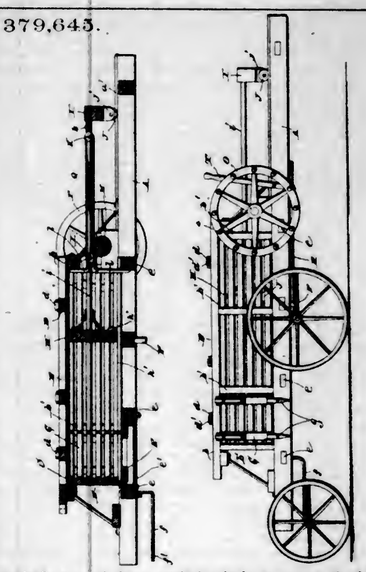


Claim.—The interfering device consisting of the pendant made of rubber, wood, or other suitable material, loosely jointed to the strap passing around the leg of a horse, substantially in the manner shown, and for the purposes set forth.

379,645. BALING-PRESS. JAMES D. HAUGHTON and WILLIAM J. ALEXANDER, Monroe County, (near Egypt, Chickasaw County,) Miss. Filed Dec. 7, 1887. Serial No. 257,239. (No model.)

Claim.—1. A baling-press comprising the main frame, the press-frame having the head provided with vertical grooves at its rear end, the hinged top door extending its entire length, the hinged bottom door adjoining said head, and the hinged side doors adjoining the head and narrower than the bottom door, and the flanged ways formed on the side rails of the main frame in front of the press-frame, of the

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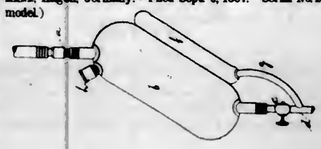
vertically-grooved platen, notched at its lower corners, the drive-bar, the longitudinal bars connecting the platen and the drive-bar, the anti-friction wheels connected to the drive-bar and the platen, the windlass journaled at the front of the press-frame, the central vertical metal bar secured in the front end of said frame, the double-sheaved block attached to the drive-bar, the single-sheaved blocks attached to the vertical metal rod, and the rope connecting the said rod and the windlass and running over the sheaves of said blocks, substantially as specified.

2. In a baling-press, the combination, with the main frame, the press-frame, the head at the rear end thereof, and the flanged ways in front of the press-frame, of the platen, the drive-bar connected thereto by longitudinal bars, the anti-friction wheels connected to the platen and the drive-bar, the sheaved blocks, the actuating-rope and the windlass consisting of the transverse shaft, and the wheels O and P thereon, each provided with a series of equidistant outstanding handles, *o*, the wheel O being smooth on its periphery to receive a belt from a motor, and the wheel P having a grooved periphery in which to attach and wind an actuating-rope, substantially as specified.

3. A baling-press comprising the main frame, press-frame, head, platen, and mechanism, substantially as described, whereby the platen is operated, of the metal loop secured to the bottom of the main frame in front of the bale-discharge opening of the press-frame to receive the reach of a wagon the tongue and reach of which have been separated from the front axle, and the metal arm secured to the bottom of the main frame in rear of said discharge-opening, and provided in its rear end with an opening to receive the king-bolt of said wagon and by means of said bolt attach the machine to the separated front axle of the wagon, substantially as specified.

4. In a baling-press, the combination, with the main frame, the press-frame having the head, and the ways formed on the side rails of the main frame in front of the press-frame, of the platen, the drive-bar, the longitudinal bars connecting the platen and the drive-bar, the anti-friction wheels connected to the drive-bar and the platen, the windlass journaled at the front of the press-frame, the double-sheaved block K, attached to the drive-bar, the single-sheaved blocks L, and the rope connecting the windlass and running over the sheaves of said blocks, substantially as specified.

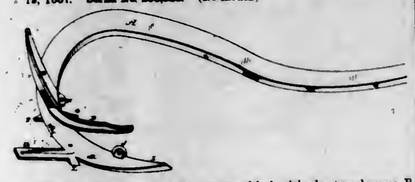
379,646. DEVICE FOR BATHING THE HEAD. ADOLPH HEINEMANN, Hagen, Germany. Filed Sept. 6, 1887. Serial No. 248,977. (No model.)



Claim.—1. The combination of cap *b* with the perforated flange *e* and channel *f*, substantially as specified.

2. The combination of cap *b* with perforated flange *e*, channel *f*, inlet-pipe *a*, discharge-pipes *g d*, and vent *h*, substantially as specified.

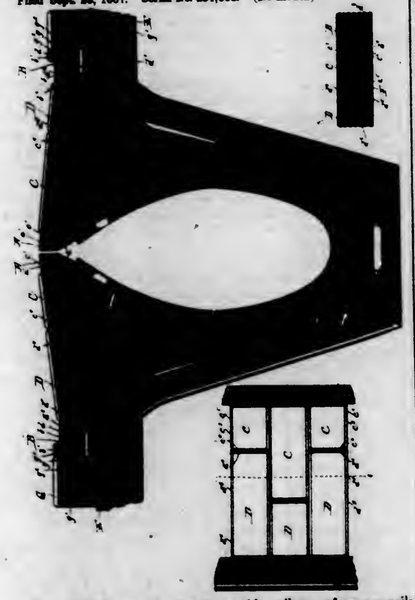
379,647. PLOW. EPHRAIM HIXSON, Trewhitt, Tenn. Filed Dec. 19, 1887. Serial No. 258,333. (No model.)



Claim.—1. A curved iron beam provided with the two braces B D, curved to conform to the shape of the mold-board and share, and having its point I extending under the share and provided with flanges to which the mold-board, share, and landside are to be bolted, substantially as shown.

2. The beam A, provided with the three braces or arms B D G and the flanges J L N, and the two flanges or projections O P, all of which are cast as a part of the beam itself, in combination with the mold-board, share, and landside, all bolted thereto, substantially as described.

379,648. CABLE RAILWAY. ERNEST V. JOHNSON, Chicago, Ill. Filed Sept. 20, 1887. Serial No. 251,068. (No model.)

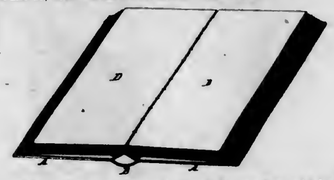


Claim.—1. The combination, in a cable railway, of groove-rails A, having flanges *a'*, with track-rails B, having flanges *b*, burnt-clay blocks C, having inclined ends *c*, to fit the inclined portion of said rail A, and channel *c'*, to fit the flange of said rail, and burnt-clay paving-block D, having end *d*, to fit the vertical web of said rail, channeled lower corner, *d'*, to fit the base-flange of said rail, and a channeled upper corner, d^3, to fit the upper flange, *b*, of said rail, substantially as specified.

2. The combination, in a cable railway, of groove-rails A, having flanges *a'*, with track-rails B, having flanges *b*, burnt-clay blocks C, having inclined ends *c*, to fit the inclined portion of said rail A, and channel *c'*, to fit the flange of said rail, and burnt-clay joining-block D, having end *d*, to fit the vertical web of said rail, channeled lower corner, *d'*, to fit the base-flange of said rail, and a channeled upper corner, d^3, to fit the upper flange, *b*, of said rail, and burnt-clay paving-block G, having molded end *g*, to fit the vertical web of said rail B, channeled lower corner, *g'*, to fit the base-flange of said rail, and channeled upper corner, g^3, to fit the upper flange, *b'*, of said rail, substantially as specified.

3. The combination, in a cable railway, of groove-rails A, with track-rails B, having flanges *b*, burnt-clay paving-blocks C, having inclined ends *c*, to fit the inclined portion of said groove-rail A, and burnt-clay paving-blocks D, having end *d*, to fit the vertical web of said track-rail, channeled lower corner, *d'*, to fit the base-flange of said rail, and a channeled upper corner, d^3, to fit the upper flange, *b*, of said rail, substantially as specified.

379,649. BOOK-BINDING. WILL M. KIENARD, Dayton, Ohio. Filed June 15, 1887. Serial No. 241,330. (No model.)



Claim.—1. The combination, with the sections of a book and its binding-cords, of binding-stubs interposed between said sections and binding-cords, and the stitching-thread passed through perforations in said binding-stubs and tied around the binding-cords, substantially as and for the purpose set forth.

2. The combination, with the sections of a book and its binding-cords, of binding-stubs interposed between said sections and binding-cords, and a continuous stitching-thread passed through perforations in said binding-stubs and tied around the binding-cords, substantially as and for the purpose set forth.

3. The combination, with the sections of a book, the binding-strap, and binding-cords, of the binding-stubs interposed between the sections and the strap and cords, the stubs being glued or otherwise firmly secured to the strap, and the sections secured to the stubs and cords by a stitching-thread passed through perforations in said stubs and tied around the binding-cords, substantially as described, and for the purpose set forth.

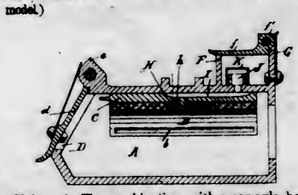
4. The binding-stubs E, each having interposed stripe *a*, arranged with spaces between their adjacent ends to form passages *b* for the stitching-thread, substantially as described.

379,650. CURLING-COMB. CHARLES S. LEVY, New York, N. Y. Filed Jan. 20, 1886. Serial No. 189,115. (No model.)



Claim.—The combination, with a curling-comb having an upper portion consisting of the solid metallic cylinder provided with teeth, of an adjustable clamping device for holding the hair on said cylinder, substantially as set forth.

379,651. CAR-AXLE BOX. EVAN LEWIS and FREDERICK ARMSTRONG, Kingston, Pa. Filed Sept. 9, 1887. Serial No. 249,243. (No model.)

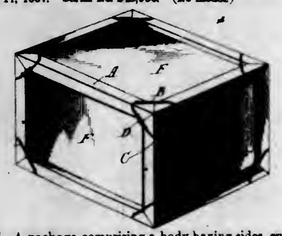


Claim.—1. The combination, with a car-axle box provided with ordinary means for lubrication, of the grease-chamber on top of the box and communicating with the top of the axle, separate openings and covers for supplying lubricant to the main box and to the said chamber, and the springs E and G, and the stops *e* and *f'*, secured to the covers and to the box, as set forth, for holding the said covers open or closed, substantially as set forth.

2. The combination, with the car-axle box A, of the grease-chamber on top of the box, the seat C within the box, provided with the boss H and groove I, the axle-brass connected with the said groove by the hole *h* and provided with a recess for the boss, and a short tube connecting the said groove with the interior of the grease-chamber, substantially as and for the purpose set forth.

3. The combination, with a car-axle box, A, of the grease-chamber on top of the box, the seat C within the box, provided with the boss H and groove I, the axle-brass connected with the said groove by the hole h, and provided with a recess for the boss, a short tube connecting the said groove with the interior of the grease-chamber, and the strainer covering the opening of the said tube within the grease-box, substantially as and for the purpose set forth.

379,652. **PACKING-BOX.** ALBERT T. LINDERMAN, Whitehall, Mich. Filed July 11, 1887. Serial No. 243,966. (No model.)



Claim.—1. A package comprising a body having sides, ends, top, and bottom, and a supporting-crate of angle-woods embracing all the corners of the body, mitered at the corner joints, and there fastened together by inclosing-bands, as set forth.

2. In combination with the veneers F, the angle-woods A A A, having mitered ends and slots or grooves, or both, to retain the wire B in place, and the wire fastener B, to hold the angle-woods together at the corner of the box, substantially as shown and described.

3. In combination with the box-body F, the angle-woods A A, formed at the ends with an irregular interfitting miter-joint to prevent slipping of the angle-woods at such joint, and means for holding the angle-woods together at such juncture to form a supporting-crate for the box-body, substantially as set forth.

4. The box-body veneers F, the outside supporting angle-woods, A A, the wire fastener B, which holds the several angle-woods, and thereby the box, together at the corners, in combination with the seal C, attached to the wire fastener B, for sealing the box, substantially as shown and described.

5. In combination with the veneers F and angle-woods A, the wire fastener B, joined by loops D and fastened by staples E E, whereby are formed fasteners for the box in shipment and afterward hinges to the cover of the box, substantially as shown and described.

6. An independent supporting crate-frame of angle-woods so joined at the cubical corners as to render the inside and outside surfaces of the joining-pieces of angle-woods smooth or even at the point of juncture, and means at or near the juncture for fastening the several pieces of angle-woods to each other in this position to form a crate, substantially as set forth.

379,653. **PLOW.** JOHN MCARTHUR, Wallace, Kans. Filed Dec. 9, 1887. Serial No. 257,462. (No model.)

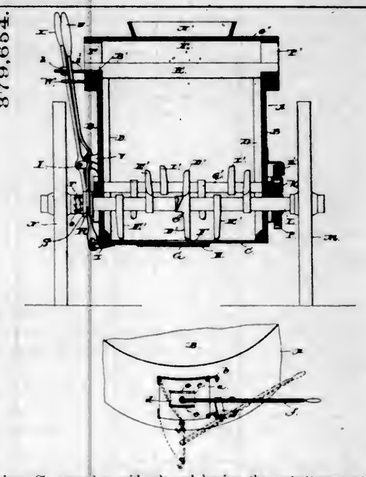


Claim.—1. The combination, with the rearwardly-extending bars D, the bolts J, and the tapering rolls F, loosely journaled on said bolts, of the scrapers N, having bent and slotted ends, and bolts c, connecting said scrapers adjustably to the bars D, substantially as and for the purposes set forth.

2. The combination, with the rearwardly-extending bars and the bolts connecting the same, of the tapering rolls composed of metallic exterior and wooden core mounted on said bolts, and the nuts securing the bolts to said bars and serving as washers, substantially as described.

379,654. **MANURE-DISTRIBUTER.** WILLIAM COPERS MCTYEIRE, Hatchechubbee, Ala. Filed Oct. 15, 1887. Serial No. 252,476. (No model.)

Claim.—1. In a manure-distributer, the combination of the hopper, the axle journaled in the hopper, having the driving-wheels, the

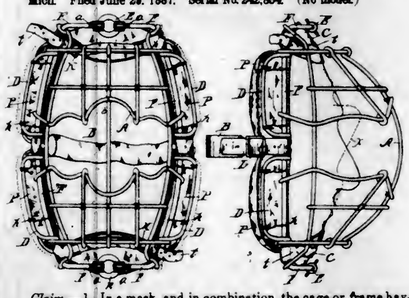


stirrer C, secured to said axle and having the radial arms or blades D, with their opposing faces beveled in opposite directions, the shafts G, journaled in the hopper and having the radial arms I, beveled in opposite directions on their opposing faces, the wheel K, secured to the axle, and the wheels H, secured to shafts G and engaging with the wheel K, as set forth.

2. In a manure-distributer, the combination of the hopper having the discharge-opening in its lower side at the center, the door to close the said opening and having the opening of reduced dimensions, the slide to open or close the said opening in the door, the axle journaled in the hopper, having the driving-wheels, the stirrer C, secured to said axle and having the radial arms or blades D, with their opposing faces beveled in opposite directions, the shafts G, journaled in the hopper and having the radial arms I, beveled in opposite directions on their opposing faces, the gear-wheel K, secured to the axle, and the gear-wheels H, secured to shafts G and meshing with wheel K, substantially as described.

3. In a manure-distributer, the hopper having the feed-opening in its lower side, the hinged door adapted to cover the said opening, said door having an opening of reduced dimensions, and the slide arranged on the door and adapted to open or close the opening therein, substantially as described.

379,655. **BASE-BALL MASK.** DENNIS J. O'SULLIVAN, Detroit, Mich. Filed June 29, 1887. Serial No. 242,354. (No model.)



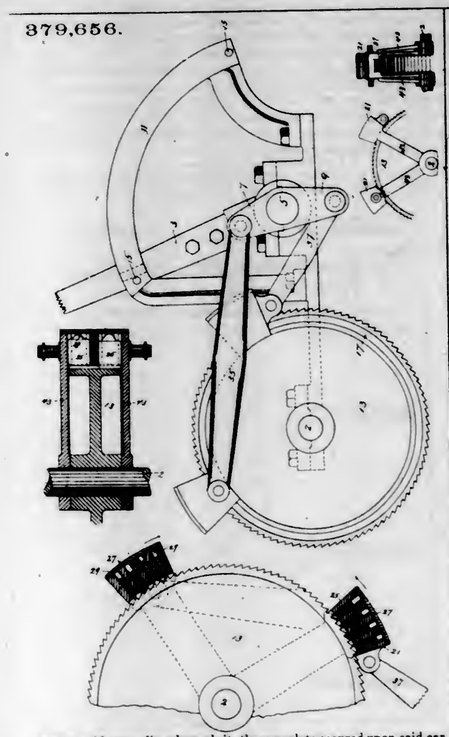
Claim.—1. In a mask, and in combination, the cage or frame having the main wires F F, with screw-threaded ends, and the thumb-nuts engaging therewith, as and for the purposes specified.

2. In combination with the cage having the frame-wires F D, the pads P, attached thereto, as specified, the thumb-nuts attached to the main wires, and the chin-straps C C, as and for the purposes set forth.

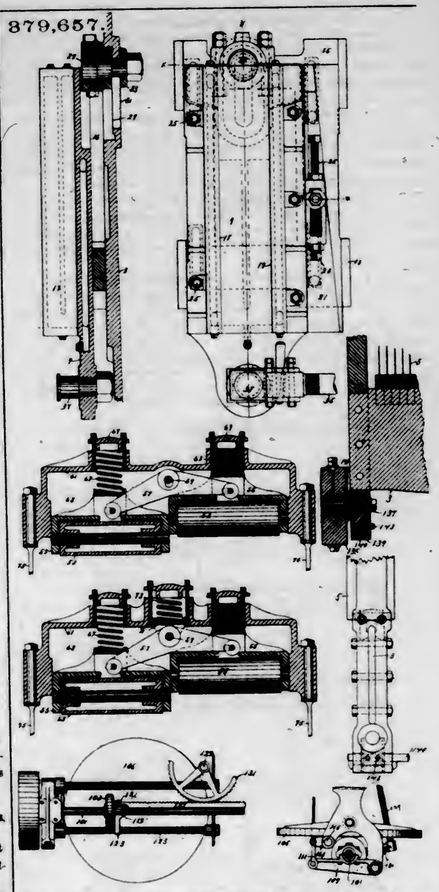
379,656. **RATCHET MECHANISM FOR SAW-MILL SET-WORKS.** WILLIAM F. PARISH, Minneapolis, Minn. Filed May 24, 1886. Serial No. 203,065. (No model.)

Claim.—The combination, with the ratchet-wheel, of the pawl-carrier arranged over the face of the wheel and having the series of

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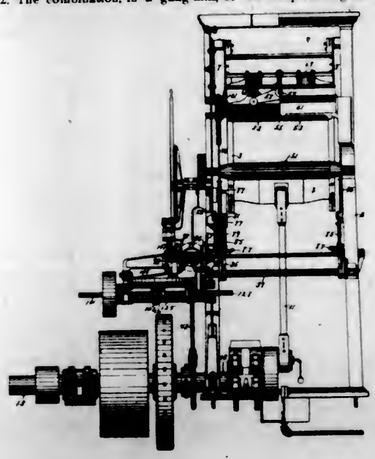


openings 23 extending through it, the cap-plate secured upon said carrier and covering all of said openings, the series of sliding dogs arranged in said openings, and the springs arranged in said openings between said dogs and said plate, all substantially as described.

379,657. **GANG-SAW MILL.** WILLIAM F. PARISH, Minneapolis, Minn. Filed Sept. 9, 1887. Serial No. 249,204. (No model.)

Claim.—1. The combination, in a gang-mill, of a pivot-pin adjustably supported upon the frame of the mill, and a guide-plate adjustably secured to said pin, for the purpose set forth.

2. The combination, in a gang-mill, of the reciprocating sash-



frame, a vertically-adjustable pivot-pin, and a guide-plate pivoted upon said pivot-pin and capable of a vertical adjustment thereon, for the purpose set forth.

3. The combination, in a gang-mill, of a guide-plate and an intermediate plate adjustably secured to said guide-plate and pivoted to the frame of the mill, substantially as described.

4. The combination, in a gang-mill, with the guide-plate 9, of the plate 15, adjustably secured to said plate 9 and secured to the frame of the mill by an adjustable pivot.

5. The combination, in a gang-mill, with the frame 2, provided with the vertical slots, of the plate 15, the pivot-bolt adjustably secured in said slot and supporting the plate 15, and the guide-plate 9, to which said plate 15 is adjustably secured.

6. The combination of the two presser-rolls, yokes in which said rolls are mounted, springs bearing upon said yokes, and an equalizing-lever pivoted directly to said yokes, substantially as described.

7. The combination of the presser-rolls, vertically-movable yokes in which said rolls are mounted, springs bearing upon said yokes, and a vertically-movable equalizing-lever pivoted directly to both of said yokes, substantially as described.

8. The combination of the presser-rolls, vertically-movable yokes in which said rolls are mounted, springs bearing upon said yokes, and an equalizing-lever pivoted directly to both of said yokes and mounted upon a spring-controlled pivot, substantially as described.

9. The combination, in a gang-mill, of the frame 61, carrying the presser-rolls, the rods secured to said frame and threaded at their lower ends, the hollow shaft 79, into which said rods project, the nut 77, located in the upper ends of said hollow shafts, bevel-gears 87 upon

the lower ends of the said hollow shafts, and the driving-shaft 91, extending across the machine beneath the said ends of said hollow shaft and provided with the pinions 89, engaging the bevel-gears on said hollow shafts, whereby the threaded ends of said rods are received in said hollow shafts and are prevented from coming in contact with said shaft 91, substantially as described.

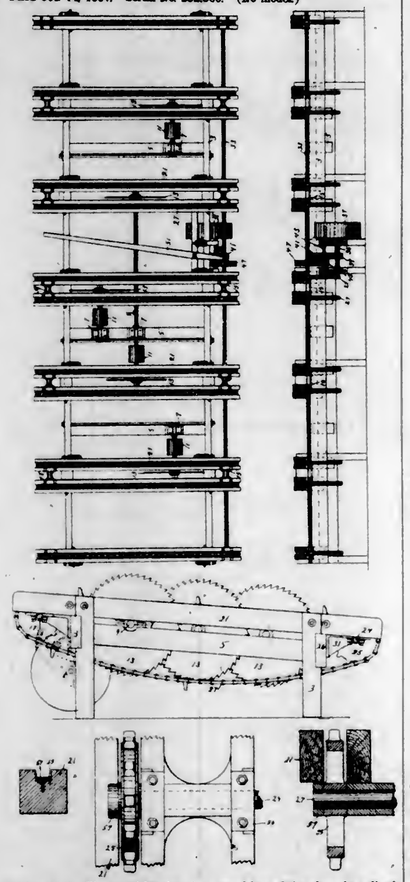
10. The combination, with the feed-rolls and the face-plate connected by suitable gearing with said rolls, of the shaft 101, provided with the friction-wheel 103, the arms 109, supporting said shaft, the rock-shaft 115, having crank-arms 113, and links 111, connecting said crank-arms with said arms 109, substantially as described.

11. The combination, with the sash-frame provided with a screw-threaded opening, of the sliding block 135, provided with a socket, and a pin, 137, engaging the sliding block and having a screw-threaded portion engaging the opening on the sash-frame, substantially as described.

12. The combination, with the sash-frame provided with the removable block 139 and a screw-threaded opening formed partly in the main portion of the frame and partly in said block, of the key securing said block in position, the sliding block 135, and the pin 137, engaging said sliding block and having a threaded portion engaging the threaded opening in the sash-frame, substantially as described.

379,658. GANG-EDGER. WILLIAM F. PARISH, Minneapolis, Minn.

Filed Oct. 14, 1887. Serial No. 252,300. (No model.)

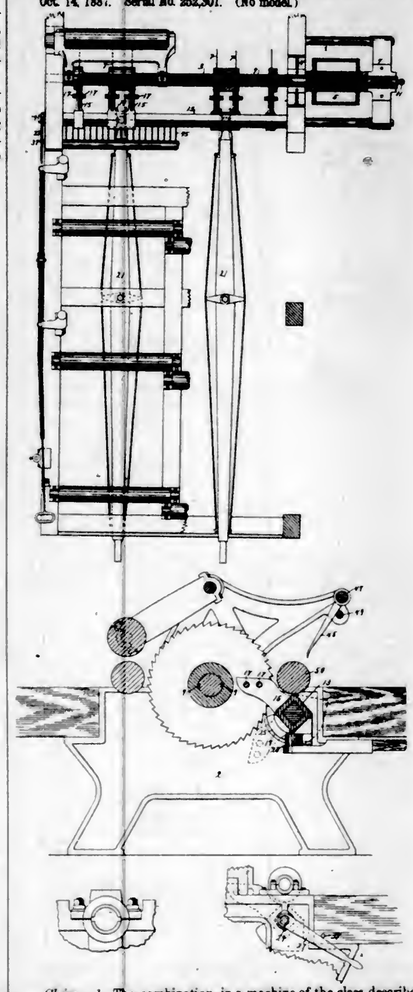


Claim.—1. The combination, in a machine of the class described, with the saws 13, of the shaft 33, provided with the sprocket-wheels 17, the grooved bars 21, secured together in pairs, with spaces between them for said saws, and pivoted at one end upon said shaft, short shafts 24, mounted in the opposite ends of said bars, provided with the sprocket-wheels 25, and the lumber-carriers passing over said sprocket-wheels, substantially as described.

2. The combination, in a machine of the class described, of the two supporting-bars 21, arranged with a narrow space between them, the shaft 33, in which the said bars are pivoted, the boxes secured to the free ends of both of said bars and forming a brace therefor, the shaft 24, secured in said boxes, and the sprocket-wheels 25, mounted loosely upon said shaft, substantially as described.

379,659. EDGER. WILLIAM F. PARISH, Minneapolis, Minn. Filed

Oct. 14, 1887. Serial No. 252,301. (No model.)



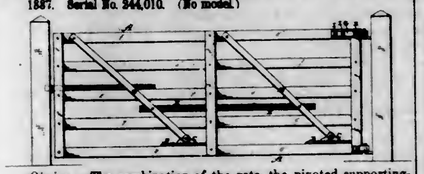
Claim.—1. The combination, in a machine of the class described, with the saw-arbor and saw, of the saw-guide 15, mounted upon the rock-shaft 13, but free to slide longitudinally thereon, and provided with the dependent flanges 19, forming a groove at right angles to the shaft 13, and the shifting device provided with the pin 23, projecting into the groove between said flanges 19, substantially as described, and for the purpose set forth.

2. The combination, in a machine of the class described, with the saw-arbor and the series of movable saws mounted thereon, of the shaft 13, the series of saw-guides mounted upon said shaft and free to move thereon and provided with the dependent flanges 19, and the shifting device having the pins 23 projecting into the grooves between said flanges 19, thereby permitting said shaft 13 to be rocked in its bearings to disengage said saw-guides from the saws without disengaging them from the shifting device, substantially as described.

3. The combination, in a machine of the class described, with the saw-arbor and saws, of the rocking shaft 13, the series of saw-guides mounted upon said shaft and adapted to be moved longitudinally thereon, the lug 37 on the frame of the machine, the handle 27 on the end of the shaft 13, and the clamping-nut 29, all substantially as described.

379,660. GATE. GEORGE P. PRICE, Carlisle, Ohio. Filed July 11,

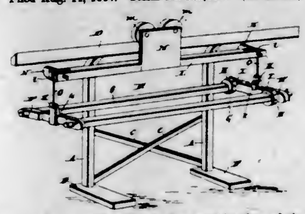
1887. Serial No. 244,010. (No model.)



Claim.—The combination of the gate, the pivoted supporting-strips B, having the dogs C secured to their lower ends, the ratchets D, the upper hinge, and plates G, secured in position by means of the hinge-bolt and the bolts which pass through their outer ends, substantially as described.

379,661. QUILTING-FRAME. BURRESS W. RAINES, Blossom Prairie,

Tex. Filed Aug. 11, 1887. Serial No. 246,697. (No model.)



Claim.—1. In a quilting-frame, the combination of the vertical standards A A, bent forward at their upper ends and provided with dovetailed projections *a a*, the track-bar D, beveled toward the upper edge and provided with dovetailed notches to receive the projections *a a*, whereby the said bar may be removed from the standards, the folding braces C C between the standards, the roller-bar L, having the rollers *m m* to run on the track-bar, and the frame E, connected to the roller-bar by the suspending-cords O O, substantially as and for the purpose specified.

2. In a quilting-frame, the combination, with the frame E, suspended from the roller-bar L, having the rollers on the rear side, of the support comprising the standards A A, having foot-pieces on the lower ends and bowed at the upper ends, dovetailed projections on the extremities of the bowed portions, track-bar D, having dovetailed notches in the rear side to receive the said projections, and the diagonal braces C C, pivoted at the lower ends of the standards, respectively, and having notches in the upper ends to engage over headed studs on the opposite standards, respectively, whereby the said braces may be detached to fold the support, all constructed and arranged substantially as specified.

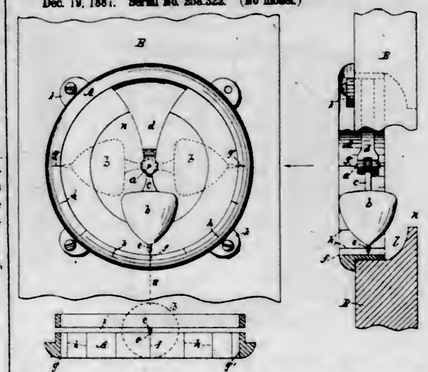
3. In a quilting-frame, the combination, with the frame E, having the suspending-cords O attached thereto, of the standards A A, bowed at the upper ends, track-bar D, secured to the extremities of the bowed portions and having the upper side reduced to an edge, the roller-bar L, having longitudinal slots *l l* in the ends, and the transverse bearings *l l*, communicating therewith, rollers journaled in the bearings and having the upper ends of the cords O attached thereto, and the plate M, secured to the center of the roller-bar and having grooved rollers *m m* on the rear side thereof, to operate on the track-bar, substantially as specified.

4. In a quilting-frame, the combination, with the supporting-frame having the track-bar D secured thereon, of the roller-bar L, having the longitudinal slots in the ends, and transverse bearings communicating with the slots, the roller N, journaled in the said bearings and having handles or thumb-holds on the ends, the plate M, secured to the center of the roller-bar and having the rollers on the rear side to operate on the track-bar, the quilting-frame E, having the end bars, F F, and the rollers G G, journaled between the ends thereof, the clips K K, having notches or recesses in the sides to receive the end bars, the latches or buttons pivoted on the clips to lock the end bars in said recesses, and the cords O, attached at the upper ends to the rollers N and at the lower ends to the said clips, substantially as specified.

5. In a quilting-frame, the combination, with the supporting-frame having the track-bar D, of the roller-bar L, operating on the track-bar, the pins N N at the ends of the roller-bar, the quilting-frame E, having the end bars, F F, the clips K K, adjustably attached to the end bars, and the connecting-cords O O, attached at the lower ends to the clips K and at the upper ends to the pins N N, upon which the said cords are wound to adjust the height of the frame E, substantially as and for the purpose specified.

379,662. PLUMB-LEVEL. CHARLES RITE, Rochester, N. Y. Filed

Dec. 19, 1887. Serial No. 258,522. (No model.)



Claim.—In combination with a bar or rule, a circular frame secured thereto, formed with a slit occupying a plane parallel with the plane of the frame, a supporting-arm rigid with the frame, and a plummet provided with an axial pointer suspended from said arm upon a pivot having its axis coinciding with the axis of the frame, the pointer of the plummet occupying said slit in the frame and formed with a laterally-projecting pointing-edge, said frame being formed with lines or marks to be referred to by said pointing-edge.

379,663. SHEET-METAL PIPE. JOHN B. ROOT, Port Chester, N. Y.;

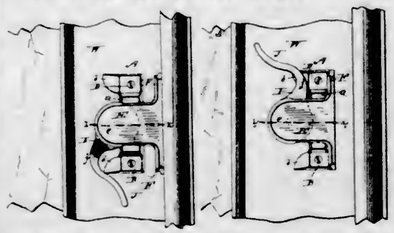
Hannah M. Root and William S. Church administrators of said John B. Root, deceased. Filed June 10, 1886. Serial No. 204,822. (No model.)



Claim.—A sheet-metal pipe consisting of plates riveted together along a continuous spiral lap-joint and lap-welded together along short or interrupted spiral seams, which are of substantially the thickness of the body of the plates and extend at right angles to the continuous spiral riveted lap-joint, as set forth.

379,664. SASH-HOLDER. FRANK L. ROSENTRETER, Cleveland,

Ohio, assignor to the Andrus Manufacturing Company, Rochester, N. Y. Filed June 6, 1887. Serial No. 240,356. (No model.)

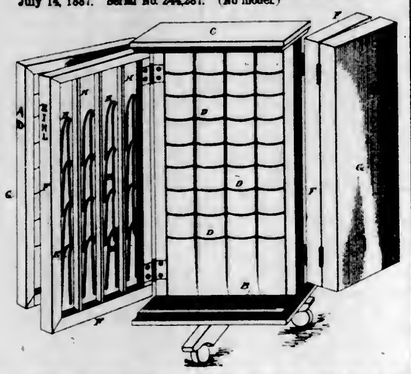


Claim.—1. In a sash-lock, the combination of a supporting fixed base-piece, A, secured to the window-sash and provided with extended guide-ribs on its outer surface and with a semicircular groove on its under surface, with a sliding engaging-plate, E, fitting over the fixed piece and provided with ribs engaging with the ribs thereof, and having pin G at its rear end and a binding-plate on its front end, and a cam-piece pivoted upon the pin G below the extensions of the ribs of

base-piece A, and having a cam, L, engaging in the groove of said base-piece, all constructed and arranged substantially in the manner and for the purpose described.

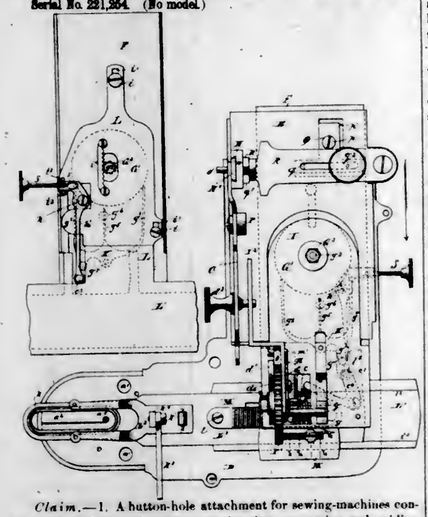
2. In a sash-lock, the combination of the base-piece A, having groove D, and lug *d*, and extended ribs C C, with the engaging-plate E, having ribs H *g* and pin G, and the cam-piece I, pivoted upon pin G and having the lugs K *k* adapted to engage lug *d*, and cam L, for engaging groove D, all constructed and arranged substantially as and for the purpose described.

379,665. **RECEPTACLE FOR CONTAINING CLASSIFIED BILLS, LETTERS, OR SAMPLES.** AMOS SAUNDERS, North Vernon, Ind. Filed July 14, 1887. Serial No. 244,287. (No model.)



Claim.—A sample, bill, or letter file receptacle consisting of the stand A B C, hollow and provided with holders on both sides, the thereto-hinged sections F F, also hollow and provided with holders on both sides, and the sections G G, having a cavity and holders only on the inside, the sections G being hinged to the inner edges of the sections F, whereby the sections may be folded in or out of the stand, as described.

379,666. **BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES.** WILLIAM SCHOTT, New York, N. Y., assignor to the Schott Button Hole Attachment Company, same place. Filed Dec. 11, 1885. Serial No. 221,264. (No model.)



Claim.—1. A button-hole attachment for sewing-machines containing the following elements: a carrier-plate supporting and guiding a reciprocating foot, a reciprocating foot supporting a single worm adapted for moving the cloth-clamp plate and its attachments to the right and left, means for reciprocating the reciprocating foot and regulating the bite of the stitches, means for regulating the throw of the feed-lever and thereby the distance between the stitches, devices for automatically controlling the length of a button-hole, devices for automatically controlling the length of a button-hole bar and thereby the width of the central opening of the button-hole, and devices for automatically changing the direction of movement of the cloth-clamp plate and cloth-clamp, all arranged and operating substantially as herein shown and described.

2. In a button-hole attachment for sewing-machines, substantially as herein specified, the combination, with the mechanism for transmitting the motion of the needle-bar to the cloth-clamp plate and with the cloth-clamp plate and a square-threaded rack fixed thereon, of a reversible pinion and square-threaded worm set on a shaft, the said worm and pinion receiving motion directly from the feed cog-wheel and transmitting it to the cloth-clamp plate through the medium of the rack, as herein set forth.

3. In a button-hole attachment for sewing-machines as a means for controlling the length of the button-hole bars and the consequent width of the central opening of the button-hole, the combination, with mechanisms, substantially as herein shown and described, for moving the cloth-clamp plate in and out in the direction of its width, of the lever *c*, the lever c^2, pin c^3, carried by the lever c^2, and the adjustable gage provided with a finger designed to engage said pin and intermediate connections, substantially as shown and described, for automatically arresting said inward and outward movement of the cloth-clamp plate as soon as a button-hole bar of the predetermined length has been made, as set forth.

4. In a button-hole attachment for sewing-machines, the combination, with an adjustable gage provided with a stop-finger adapted and arranged to be set on the attachment to fix or determine the length of a button-hole to be stitched, of suitable mechanisms comprising the stop-finger l^3, feed cog-wheel I', elbow-lever c^2, pin c^3, carried by said lever, the lever *c*, and the sliding plate and attached pawl, substantially as herein shown and described, whereby the lengthwise motions of the cloth-clamp plate may be automatically arrested when the button-hole has been stitched its predetermined length on one side and be held so arrested until the barring of an end of the button-hole is completed, as set forth.

5. In a button-hole attachment for sewing-machines, provided with a cloth-clamp plate arranged to be fed lengthwise by a worm and provided with suitable mechanisms for moving said plate transversely also, the combination, with the worm-actuating mechanism, of a lever adapted and arranged to throw the said worm-actuating mechanism in and out of gear, the said lever being operated intermittently through suitable mechanism, to throw the worm-actuating mechanism out of gear by the lengthwise movement of the said cloth-clamp plate and connections and to throw the said worm-actuating mechanism intermittently, through suitable mechanism, in gear by the lateral movement of said cloth-clamp plate and connections, substantially as herein described.

6. The combination, with the feed cog-wheel I' and feed-lever I^2, of a double pawl, *f*, provided with stud *f'*, secured on said lever, a movable pawl-carrying plate, H, a finger-lever, *c*, and an elbow-lever, c^2, all constructed and arranged to operate substantially as herein shown and described, whereby, through suitable mechanism, the rotation of said cog-wheel is intermittently reversed and arrested when the button-hole attachment is in operation, as set forth.

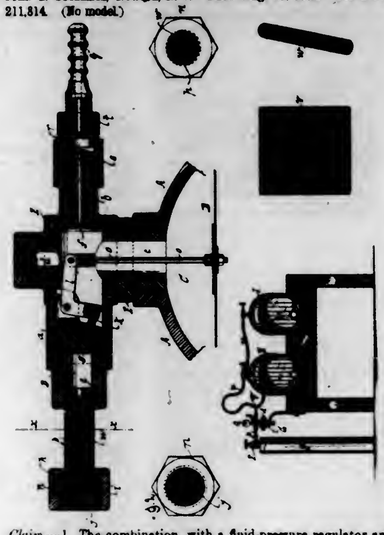
7. The combination, with a barring cog-wheel, G', pinion G^2, and rack i^4, fixed on angle-plate L, and clamp-carrying plate L^3, sliding on plate L, of a double pawl, K, and suitable mechanism, substantially as herein shown and described, for causing said pawl to rotate said cog-wheel and pinion, whereby the said plates L L^3 may be moved in and out, as and for the purposes set forth.

8. In a button-hole attachment for sewing-machines, the combination, with elbow-lever c^2, provided with pin c^3, yoke-pawl K, provided with jaw *g* and stud g^2, cog-wheel and pinion G' G^2, respectively, rack i^4, fixed on angle-plate L, and feed-lever I^2, provided with stud f^5, all constructed and arranged substantially as herein shown and described, of the clamp-carrying plate L^3, provided with stop-finger l^3, whereby when the said plate L^3 has moved the desired distance to the left the said combined devices are made to move the plates L L^3 out and in for the barring of the button-holes, as set forth.

9. In a button-hole attachment for sewing-machines, the combination, with elbow-lever c^2, provided with pin c^3, yoke-pawl K, provided with jaw *g* and stud g^2, cog-wheel and pinion G' G^2, respectively, rack i^4, fixed on angle-plate L, and feed-lever I^2, provided with stud f^5, all constructed and arranged substantially as herein shown and described, of the gage M', provided with stop-finger *m'*, whereby when the said plate L^3 has moved the desired distance to the right the said combined devices are made to move the plates L L^3 out and in for the barring of the button-hole, as set forth.

10. In a button-hole attachment for sewing-machines, the combination, with the clamp-carrying plate and the finger l^3, of an adjustable graduated gage fixed thereon and provided with a stop-finger, substantially as herein shown and described, said stop-fingered gage being parallel with the finger l^3 and adapted to determine the length of a button-hole, and operating to cause the stopping of the edge-stitching of the button-hole when desired, as set forth.

379,667. **APPARATUS FOR REGULATING FLUID-PRESSURE.** JOHN K. STOSARUS, Newark, N. J. Filed Aug. 25, 1886. Serial No. 211,314. (No model.)

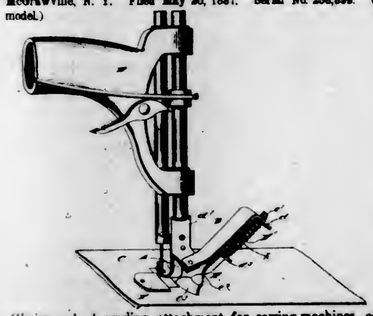


Claim.—1. The combination, with a fluid-pressure regulator and its supply and discharge pipes, of a coil of metal gauze placed within the supply-pipe and a check-valve consisting of a rubber band stretched across the discharge-channel, substantially as and for the purpose specified.

2. The combination of a receptacle for liquefied gas, an eduction-valve, a pressure-regulator, a pipe connecting the eduction-valve with the regulator, a coherent permeable mass placed within this connecting-pipe, and a check-valve in the discharge-pipe of the regulator, substantially as and for the purpose specified.

3. The combination of the receptacle P, for liquefied gas, the eduction-valve F, the pipe *p*, wire-gauze diaphragm *j*, wire-gauze coil *w*, placed within the pipe *p*, a fluid-pressure regulator, and a rubber check-valve, *r*, in the discharge-channel *f*, substantially as and for the purpose specified.

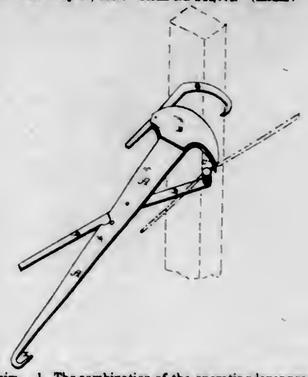
379,668. **GUIDE FOR SEWING-MACHINES.** CHARLES TORREY, McGrawville, N. Y. Filed May 20, 1887. Serial No. 238,899. (No model.)



Claim.—1. A cording attachment for sewing-machines, comprising the bar or plate D, having the projection *d* at its upper end, with an aperture formed therein, and the securing-arm *d'* at its lower end, provided with an upwardly-extending concavo-convex portion, the staple d^2 on the under side of the bar D, near the arm *d'*, the shouldered shank E', passing through the staple d^2 and extension *d* and carrying the foot E, and the spring S, coiled around said shank, substantially as specified.

2. The combination, with the presser-bar and the table of a sewing-machine, of the plate or bar D, having a securing-arm, *d'*, provided with a concavo-convex portion secured to the presser-bar, the shouldered shank E', having the foot E and carried by the bar D, the spring S, coiled around said shank, and the plate F, secured to the machine-table near the foot E, substantially as specified.

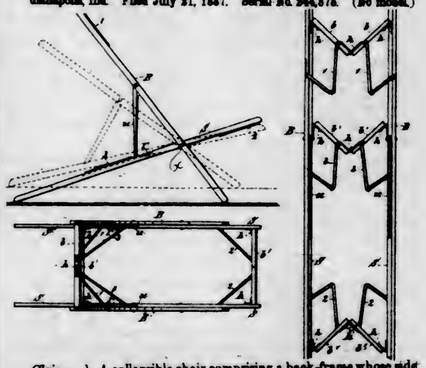
379,669. **WIRE-STRETCHER.** SETH K. WARREN, Lake Geneva, Wis. Filed July 19, 1887. Serial No. 244,771. (Model.)



Claim.—1. The combination of the operating-lever provided with a rounded head, which has a slot for receiving the wire made in one end, and the hand-lever, which is pivoted upon the operating-lever, and which is made to force the wire into the end of the slot, substantially as shown.

2. The combination of the operating-lever provided with a rounded head and a slot to receive the wire, a hand-lever which is pivoted upon the handle of the operating-lever and which holds the wire in the slot, and the grapple, which is pivoted to the lever, substantially as described.

379,670. **COLLAPSIBLE CHAIR.** HERBERT L. WHITEHEAD, Indianapolis, Ind. Filed July 21, 1887. Serial No. 244,878. (No model.)



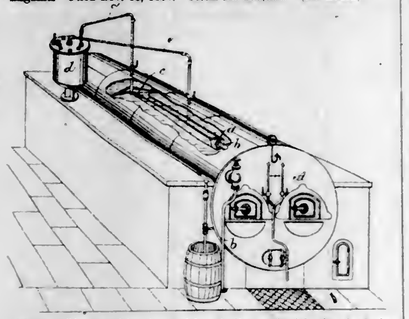
Claim.—1. A collapsible chair comprising a back-frame whose side bars are connected by jointed bars, such jointed bars braced from the side bars by jointed braces, a seat-frame likewise connected and pivoted to the back-frame, and uprights for holding the frames apart in position for a chair when open, substantially as shown and described.

2. A seat-frame, S, its sides connected by hinged bars *b'*, the latter braced out from the side bars by the braces 2 and 3, such side frame pivoted at *x* to the back-frame B, whose sides are connected by a jointed bar, *b*, the latter braced out from the side bars by the jointed braces 1, and the uprights *u*, pivoted to the back-frame, working in notches in the rack *r*, formed on the rear of the side frame, S, all combined substantially as described.

3. A collapsible chair comprising, in combination, a side frame, S, whose uprights are connected by hinged bars *b'*, such hinged bars braced out from the uprights by the jointed braces 2 and 3, the back-frame B, whose uprights are connected by the hinged bar *b*, the latter braced out from the side of such back-frame by the jointed brace 1, the back-

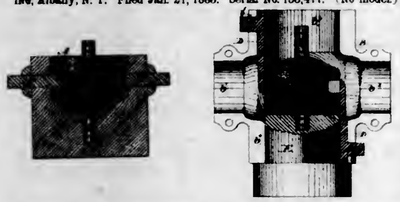
frame and the side-frame pivoted together at *x*, and upright braces *u*, pivoted to one and resting against the other to support the parts in position for the chair when open, substantially as shown and described.

379,671. **FEED-WATER PURIFIER.** GEORGE W. ALLEN, Manchester, County of Lancaster, and HENRY J. A. BOWERS, Acton, London, England. Filed Nov. 18, 1887. Serial No. 255,507. (No model.)



Claim.—The combination, with a boiler and with the feed-pipe thereof, of a scum-plate, a trough in communication with the feed-pipe and delivering into the scum-plate, and a separator or collector of impurities, and connections between the boiler and separator, substantially as shown and described.

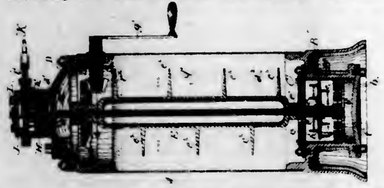
379,672. **ART OF MAKING DRY-SAND CORES.** JAMES H. BLESSING, Albany, N. Y. Filed Jan. 21, 1885. Serial No. 153,477. (No model.)



Claim.—1. That improvement in forming cores for valve-casing castings which consists in first forming and partially drying a preliminary core containing a circumferential groove for producing the circular flange which forms the valve-seat, and then, after placing the dried preliminary core in another core-box, forming thereon the several cylindrical stems, as herein described, so as to complete the casing-core as an entirety, in the manner herein specified.

2. A partially-dried preliminary core, A, provided with a circumferential groove, *a*, as a nucleus for and to be incorporated in the finished core, as herein specified.

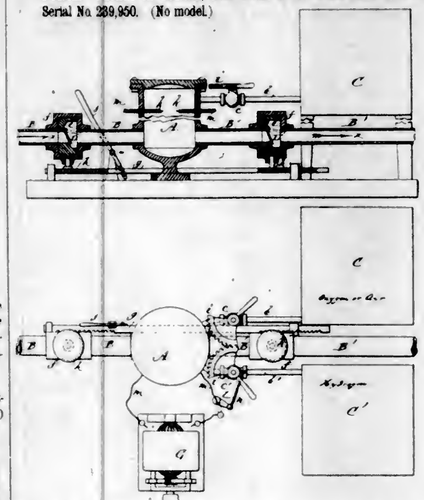
379,673. **WATER-PURIFYING APPARATUS.** JAMES H. BLESSING, Albany, N. Y. Filed Jan. 3, 1886. Serial No. 223,231. (No model.)



Claim.—1. In a filtering apparatus, the combination, with a sand-screen composed of gravel contained in a chamber that underlies the filtering-chamber, of a revoluble agitator arranged within the said sand-screen, to operate as and for the purpose herein specified.

2. In a filtering apparatus, the combination, with a filtering-chamber, A', which contains the filtering material whereby the suspended impurities are removed from the water, a sand-screen contained in the chamber *b'*, which separates the said filtering-chamber from the filtered-water chamber b^2, a valve-seat, H, having two oppositely-located induction-ports, one leading directly into the filtering-chamber A' and the other communicating through the central pipe, d^2, with the filtered-water chamber b^2, the said valve-seat also having two eduction-ports, one leading into the filtered-water discharge-pipe and the other leading into the waste-water outlet, and a slide-valve fitted to reciprocally open and close said ports, of a revoluble agitator fitted to rotate on the central pipe, d^2, and provided within the filtering-chamber A' and sand-screen chamber *b'* with radial arms c^2 and c^3, arranged to operate as and for the purpose herein specified.

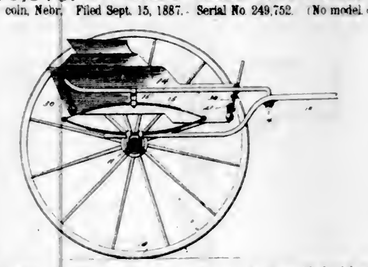
379,674. **UTILIZING GASEOUS EXPLOSIONS AS A MOTIVE FORCE.** THOMAS H. BOLMER, New York, N. Y. Filed June 1, 1887. Serial No. 239,950. (No model.)



Claim.—1. In apparatus for transmitting motive power by a current of liquid, the combination, with an explosion-chamber, one or more pipes and one or more valves controlling the same for introducing an explosive material or compound to said chamber at regular intervals, and igniting connections for exploding said material or compound within said chamber, of two tubes connected with said chamber, through which the liquid used for transmitting motive power is admitted and ejected, and reversely-acting valves capable of adjustment to act either as inlet or outlet valves of said liquid, essentially as herein set forth.

2. The combination, with the explosion-chamber A, of the tubes B B', connected therewith on reverse sides of said chamber, and the reversely-operating valves D D', capable of adjustment to act either as inlet or outlet valves, substantially as specified.

379,675. **TWO-WHEELED VEHICLE.** FRANK W. BOWNE, Lincoln, Nebr. Filed Sept. 15, 1887. Serial No. 249,752. (No model.)



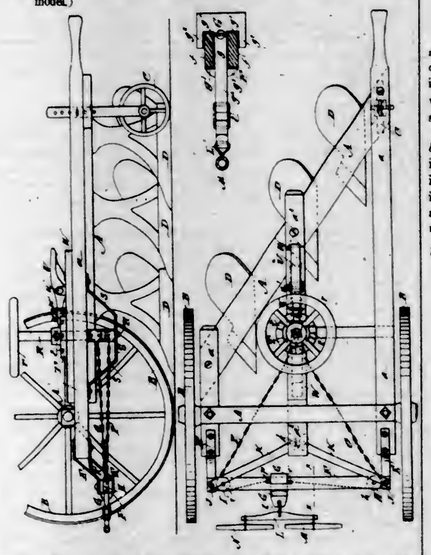
Claim.—1. The combination, with a side bar provided with studs having spherical heads, of sectional links arranged for connection with said heads, and other heads also held by the links and arranged for connection with a vehicle-body, substantially as described.

2. The combination, with a vehicle-body having opposite slots in its sides near the forward ends, studs adjustable vertically in said slots and studs at the rear ends of the sides, of the spring-supported side bars having inward-projecting studs at or near their front and rear ends, and links connecting said body and side-bar studs, substantially as set forth.

3. The combination, with a vehicle-body, of spring-suspended side bars, spherical-headed studs carried by the side bars, sectional links held upon the stud-heads, and other spherical-headed links connected to the side bars and engaged by the lower ends of the links, substantially as described.

4. The combination, with a vehicle-body, of side bars, spherical-headed studs carried thereby, sectional links engaging with the stud-heads, fixed spherical-headed studs secured at the rear of the vehicle-body and engaged by the rear links of the side bars, and other spherical-headed studs that are adjustably connected to the forward portion of the vehicle-body and engaged by the lower ends of the forward side-bar links, substantially as described.

379,676. **DRAFT ATTACHMENT FOR PLOWS.** HERBER R. BRADBURY, Banning, Cal. Filed Aug. 19, 1887. Serial No. 247,364. (No model.)



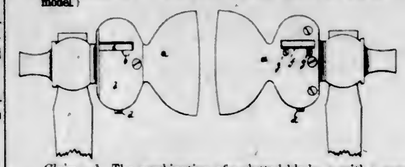
Claim.—1. A draft attachment comprising a transversely-ranging draft-bar fixed to the frame of a plow or other implement, machine, or vehicle, a draft-block fitted to slide along the draft-bar adapted to receive hitching devices, and a device for adjusting the draft-block along the draft-bar and comprising chains or ropes connected to opposite ends of the draft-block and extended to a shaft, around which they are wound in reverse directions, and a latch device for locking the shaft against rotation, substantially as described, for the purposes set forth.

2. A draft attachment comprising a transversely-ranging draft bar fixed to the frame of a plow or other implement, machine, or vehicle, a draft-block fitted to slide along the draft-bar adapted to receive hitching devices, a device for adjusting the draft-block along the draft-bar and comprising chains or ropes connected to opposite ends of the draft-block and extending to a shaft, around which they are wound in reverse directions, and a locking device comprising a notched plate fixed to the shaft, and a lever fulcrumed on the frame and engaging said plate, substantially as described, for the purposes set forth.

3. The combination, with the frame of a plow or other implement, machine, or vehicle, of a transversely-ranging draft-bar, F, fixed to the frame and formed with upper and lower parts, *f f*, a draft-block, G, fitted between said parts *f f*, and having shoulders at the edges thereof, pulleys H I, journaled on the draft-bar, a shaft, R, journaled on the frame, chains or ropes O P, connected at one end to opposite ends of the draft-block and at the other end to the shaft, around which they wind in reverse directions, and devices locking the shaft against rotation, substantially as described, for the purposes set forth.

4. The combination, with the frame of a plow or other implement, machine, or vehicle, of a transversely-ranging draft-bar, F, fixed thereto and formed with upper and lower parts, *f f*, a draft-block, G, fitted between the parts *f f*, and having shoulders at the edges thereof, pulleys H I, journaled on the draft-bar, a shaft, R, journaled on the frame, chains or ropes O P, connected at one end to opposite ends of draft-block and at the other end to the shaft, a plate, T, fixed to the shaft and notched at *t*, and a latch, U, fulcrumed on the frame and adapted to engage said notches, substantially as described, for the purposes set forth.

379,677. **COMBINED HATCHET AND PLANE.** JULIUS BRANDT, New Rochelle, N. Y. Filed Nov. 26, 1887. Serial No. 256,230. (No model.)



Claim.—1. The combination of a slotted blade, *a*, with a removable plate, *b*, adapted to be secured to the blade, and with a plane-bit, *c*, projecting with its cutting-edge into the slot of the blade and entering with its body a chamber back of plate *b*, and with a gage-plate, *f*, which is adapted to conduct the shavings to the exterior of blade *a*, substantially as specified.

2. The combination of a slotted blade, *a*, with the removable plate *b*, adapted to be secured to the blade, and with a plane-bit, *c*, projecting with its cutting-edge into the slot of the blade and entering with its body a chamber back of plate *b*, and with set-screw *d*, for increasing or diminishing the exposed portion of the cutting-edge of bit *c*, and with a gage-plate, *f*, adapted to conduct the shavings to the exterior of blade *a*, substantially as specified.

379,678. **FILE-RECEPTACLE.** AARON L. BROWN, Chicago, Ill. Filed Feb. 5, 1887. Serial No. 226,666. (No model.)



Claim.—1. The combination, with a filing-receptacle provided with a vertical groove in its rear wall, of a series of index-sheets, a post or rod for holding said index-sheets within the receptacle, and fastening devices for the post or rod, consisting of metal plates secured to the rear wall of the receptacle over the ends of the grooves therein, said plates being provided with central holes to receive the ends of the post, and with inwardly-bent parts or prongs engaging the side walls of the groove, substantially as described.

2. The combination, with the rabbeted body and cover fronts, overlapping as shown, of a fastening device having its two engaging parts located severally in the rabbets of the said body and cover fronts, substantially as and for the purpose set forth.

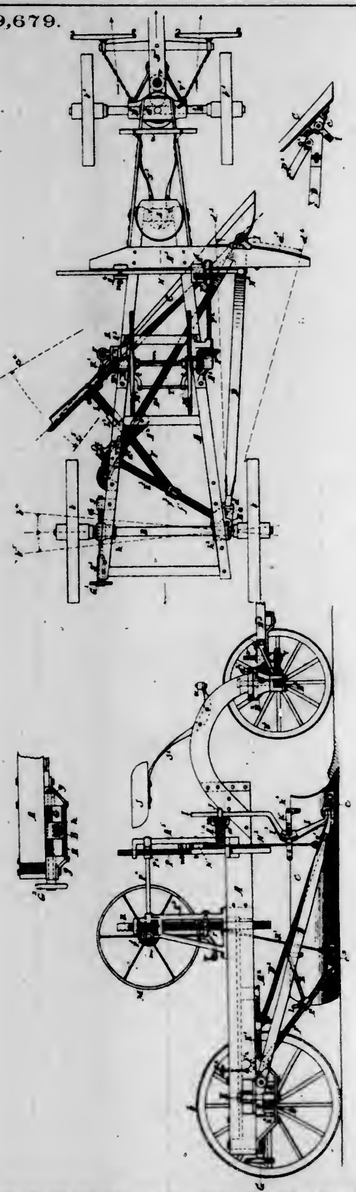
379,679. **MACHINE FOR MAKING, REPAIRING, AND CLEANING ROADS.** CHARLES H. BURLEIGH, Worcester, Mass. Filed Oct. 8, 1887. Serial No. 251,832. (No model.)

Claim.—1. In a road-machine having a diagonally-adjustable scraper bar or blade and a carrying-frame mounted on front and rear traveling wheels, the combination, with the scraper, of an adjustable push-frame hinged to and extending between the rear part of the carrying-frame and back of the scraper-bar for sustaining the working-thrust, said push-frame being laterally and vertically adjustable at its front part, together with the scraper, in relation to the longitudinal axis of the carrying-frame, and means for sustaining the parts at positions of adjustment, substantially as and for the purpose set forth.

2. In a road-machine having a carrying-frame mounted on front and rear wheels, the scraper-blade extending diagonally across the space beneath said frame and pivotally supported at its advance end, with its rear end backwardly and forwardly adjustable horizontally for varying the working-angle of said scraper in relation to the line of draft, in combination with a laterally and vertically swinging push-bar extending from the rear part the carrying-frame and supporting the scraper-pivot, and means for sustaining the parts in positions of adjustment, substantially as set forth.

3. In a road-machine, the combination of the carrying-frame

379,679.



mounted on front and rear traveling wheels, a diagonally-disposed adjustable scraper, a push-bar or thrust-frame pivoted at its rear to the carrying-frame and capable of lateral adjustment at its forward part, having the scraper-hinge connected thereto, and detachable locking devices that retain said thrust-frame at positions of adjustment.

4. In a road-machine, the combination of the carrying-frame mounted on wheels, the scraper suspended beneath said frame, the main push-bar having its rear end supported in connection with the frame and its front end hinged to the advance end of the scraper, and a diagonal push-bar disposed from the advance end of said main push-bar and scraper obliquely to the opposite rear part of the frame, with its rear end supported in connection therewith, for the purpose set forth.

5. In a road-machine, the combination of the carrying-frame mounted on wheels, the diagonally and vertically adjustable scraper, the push-bars for sustaining backward thrust on the scraper, a thrust-bearing seat or block, *c*, and the upright pivot E, connecting said push devices and frame, for the purposes set forth.

6. In a road-machine, the combination, with the scraper and the carrying-frame having a support-bar, E', attached thereto in lateral diagonal position, of the heel-brace having its forward end hinged to the rear part of said scraper and its end connected to said laterally-disposed support-bar by a locking-connection which is adjustable longitudinally along said support-bar, substantially as and for the purpose set forth.

7. In a road-machine, the adjustable support-bar E', extending across the machine, pivoted at one end, and engaging with and adjustable upon the guideway A^3 at the other end, in combination with the carrying-frame A, scraper C, and brace-bar F, and a locking device, *f*, that confines said support-bar at adjusted position on said guideway, for the purpose set forth.

8. The combination, with the carrying-frame and scraper, of the main thrust-brace and lateral support-bar connected with a bearing-block and pivoted at their rear ends to the carrying-frame, the diagonal thrust-brace from the opposite end of said support-bar to the advance end of the scraper and the rear-thrust brace from the scraper to a slide adjustably attached to said support-bar, and means for securing the parts at position of adjustment.

9. The combination, with the carrying-frame, scraper, and scraper-supporting push-braces D' and F, of the support-bar E', having on its head the hinge-block *d'*, to which the rear end of the push-bar D' is hinged, and carrying an adjustable slide, F^3, to which the bar F is hinged, the guideway A^3, and locking-dogs *f* and f^3, for the purposes set forth.

10. In a road-machine, the combination, with the carrying-frame and scraper-blade hinged to its supports for backward and forward pitch adjustment, of an upright standard for sustaining the pitch adjustment having its lower end hinged in connection with the scraper, while its upper end is movably confined by a guide connected with the carrying-frame, and an adjusting-bar connecting the upper part of the scraper with said upright standard, for the purpose set forth.

11. The standard I, backwardly offset, as at I', and having its lower end connected with the scraper and its upper end movably confined by a guide on the carrying-frame, in combination with the scraper hinged for backward and forward pitch adjustment, and the bar K, hinged to the scraper-blade and adjustably retained in connection with the offset portion of said standard, substantially as set forth.

12. The carrying-frame provided with a projecting arm or cross-bar having a guideway, a^3, thereon, and the adjustable guide J, movable along said guideway, in combination with the scraper and its push-frame, adapted for lateral adjustment, and the pitch-supporting standard I, for the purpose set forth.

13. The combination, with the scraper and a push-brace, F, hinged to the lower part of said scraper, of the adjusting-bar L, hinged at one end to the upper part of the scraper and having its opposite end adjustably attached to said push-brace by a detachable bearing or locking device, substantially as and for the purpose set forth.

14. In a road-machine having a diagonal scraper and a carrying-frame mounted on front and rear traveling wheels, the combination, substantially as described, of the rear axle attached at fixed position to one side of said frame by the vertical pivot E and at the opposite side forwardly and backwardly adjustable in a guideway, H, and the rotatable screw or holder G, for adjusting and retaining the movable end of said axle, for the purposes set forth.

15. In a road-machine, in combination with the carrying-frame A and rear axle, B, the movable axle-bearings $A A^3$, through which said axle extends longitudinally, one of said bearings pivotally connected to the frame and the other confined thereto by a guideway, as H, and a screw, G, engaging with said bearing and adapted for moving it back and forth, for the purpose specified.

16. In a road-machine, the combination, with the carrying-frame mounted on front and rear wheels, the diagonal scraper, and scraper-operating mechanism, of a longitudinally-adjustable rear axle supported in bearings or axle-holding guides which are movably connected with said carrying-frame, and means, substantially as described, for effecting adjustment of said axle longitudinally, and the axle-holding screw for swinging said axle laterally of its length.

17. In a road-machine, the combination, with the carrying-frame mounted on wheels, a diagonal scraper, and scraper-supports, of a horizontally-swinging rear axle pivoted to said carrying-frame, an adjuster in connection with the frame for shifting and holding said axle, and an endwise-adjustable front axle provided with means, substantially as described, for shifting and locking the same in position of adjustment, for the purposes set forth.

18. The combination of the carrying-frame mounted on wheels, the scraper C, the main thrust-bar D, diagonal thrust-bar D', and heel-brace, F, respectively hinged to the scraper and to an adjustable support, as *e* E', connected with the carrying-frame, the swinging rear axle, B, axle-supporting guide H, connecting-pivot E, and axle-adjusting screw G, for the purpose set forth.

19. In a road-machine, the combination, with a carrying-frame, the endwise-adjustable front axle, the swinging adjustable rear axle, a diagonal scraper, and a thrust-support or push-frame the forward end of which is adjustable laterally for carrying the scraper more or less to one side in relation to the carrying-frame, substantially as set forth.

20. The combination of the carrying-frame mounted on wheels, the scraper C, main thrust-bar D, diagonal thrust-bar D', and heel-brace F, respectively hinged to the carrying-frame and scraper, and the lifting-lever N, rod N', hand-wheel M, and connecting-gearing, substantially as and for the purpose set forth.

21. The combination, with the wheeled carrying-frame A, scraper C, and push-bar for sustaining said scraper, of the hinge *c*, standard I, arm A', guide J, a lifting arm or lever, and a connecting-link for raising and depressing said scraper.

22. The combination, with the carrying-frame, diagonal scraper, and laterally-adjustable push-bars, of the endwise-adjustable lever N, a lifting-rod connecting said lever and the scraper, the fulcrum *n*, vertically-moving rack P, gears P' P^2, shaft P^3, and hand-wheel M, for the purposes set forth.

23. The rack R, having the rigid outwardly-projecting arm *r*, supported in bearings on the frame A, in combination with rod R', its upper end confined to arm *r* of said rack and its lower end attached to the scraper and capable of swinging in all directions, the gear R and hand-wheel M', for the purposes set forth.

24. The combination, with the frame A and scraper C, of the thrust-brace F, support-bar E', and detachably-fastened joint F^2, substantially as and for the purposes set forth.

25. The combination of the carrying-frame A, mounted on wheels, the scraper C, main push-bar D, diagonal push-bar D', heel-brace F, adjustable support-bar E', guide A^3, locks $f f^3$, and hinge-joints at *c* c^2 *d* d^2, standard I, guide J, adjustable brace-bars K and L, and lifting-rods N' and R', substantially as and for the purpose set forth.

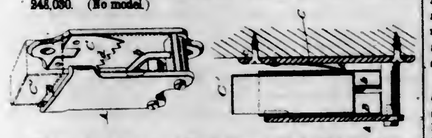
26. The combination, with the bolster B^2, pole B^3, and toothed axle B', of gears V, shaft *v*, and locking-dog V', substantially as set forth.

27. In a road-machine, the combination of the carrying-frame pivoted on the rear axle, a diagonal scraper supported in connection therewith and adapted for lateral adjustment in relation to said frame, and a lifting-connection connected with said scraper and laterally adjustable in relation to the carrying-frame.

28. In a road-machine, the combination of the carrying-frame mounted on front and rear wheels, a diagonal scraper supported in connection therewith and adapted for lateral adjustment in relation to the frame, a standard for supporting the blade in upright position a guide for the upper part of said standard, which is laterally adjustable in relation to the supporting-frame, and a laterally-adjustable lifting-connection for raising and depressing the blade.

29. In a road-machine, the combination, with the carrying-frame, rear axle, scraper, and scraper-supporting mechanism, of the pivot E, for the purpose set forth.

379,680. **MATCH-SAFE.** ALANSON CARY, New York, N. Y., assignor to A. Gontes Cary, same place. Filed Aug. 27, 1887. Serial No. 248,030. (No model.)



Claim.—1. A rigid match-box holder provided with internal penetrating-teeth extending into the path of the box to enter the material of the same and positively prevent its withdrawal, substantially as set forth.

2. A match-box holder provided with a rigid front and internal downward-projecting yielding teeth, whereby when a box is drawn slightly outward the teeth will enter the material thereof and retain it, substantially as described.

3. A rigid match-box holder open at its top and sides and a spring-plate secured at its upper end within the box, inclining downward and inward and serrated at its lower end, substantially as set forth.

4. As an improved article of manufacture, a rigid match-box holder open at its top and sides and provided with an upward-extending projection, *b*, in its bottom, and a spring-plate, C, secured at its upper end to one interior face of the box, projecting downwardly and inwardly and serrated at its lower end, substantially as set forth.

379,681. **ELEVATED RAILROAD AND CAR.** JOSEPH L. CHAPMAN, Haddonfield, N. J. Filed June 20, 1887. Serial No. 242,740. (No model.)



Claim.—1. The car D, having the strap H, in combination with the truck G, pivotally connected to said strap and carrying the vertical wheels E, substantially as described.

2. The car D, with strap H, in combination with the truck G, connected to said strap, the rail A, and the guard K, on opposite side of the rail from the car and secured to said strap, substantially as and for the purpose set forth.

3. The car D, having the horizontal wheel F, in combination with the track B, and having a suitable road-bed, and the guard-rail J on opposite side of the wheel F from said track B and secured to said road-bed, substantially as and for the purpose set forth.

379,682. **POTATO-DIGGER.** PETER A. CHIPPENDALE, Lewiston, Me., assignor to himself and Cornelius Chippendale, same place. Filed July 5, 1887. Serial No. 243,473. (No model.)

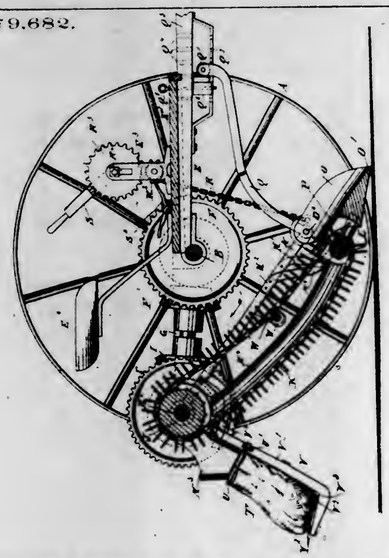
Claim.—1. In a potato-digger, the combination, with the supporting-frame and tongue, of forwardly-projecting and pivoted arms, a scoop-plow on the free ends of the said arms, a forwardly-projecting and forked arm pivoted to the plow and provided with a friction-roller on its end, a bracket on the under side of the tongue, and an adjusting-block in the bracket, substantially as herein shown and described.

2. In a potato-digger, the combination, with the frame and the drive-wheels, of a shaft journaled in the rear part of the frame, a sprocket-wheel on the said shaft, forwardly-projecting arms having branch arms, a scoop-plow on the free ends of the said arms, a roller journaled in the branch arms, a chain passing over the said sprocket-wheel and roller, and intermediate mechanism for operating the sprocket-wheel from the drive-wheels, substantially as herein shown and described.

3. In a potato-digger, the combination, with the frame, a shaft journaled in the rear part thereof, and a sprocket-wheel on said shaft, of forwardly-projecting arms having branch arms and pivoted on the said shaft, a scoop-plow carried by the said arms, a roller journaled in the branch arms, a downwardly-extending hopper supported from the rear ends of the forwardly-projecting arms carrying the plow, a bag-support suspended from the shaft carrying the sprocket-wheel, and means for operating the said shaft and raising and lowering the scoop-plow, substantially as herein shown and described.

4. In a potato-digger, the combination, with a scoop-plow and an

379,682.



endless chain connected at its lower end with the rear end of said scoop-plow, of side arms supporting the lower end of said chain and said scoop-plow, said side arms being fulcrumed on the axis of the endless-chain sprocket-wheel, and means, substantially as described, for imparting a swinging motion to said side arms and said scoop-plow, as set forth.

5. In a potato-digger, the combination, with a scoop-plow and an endless chain connected with the rear end of said scoop-plow, of side arms supporting the lower end of said endless chain and said scoop-plow, said side arms being fulcrumed on the axis of the endless-chain sprocket-wheel, an arm pivotally connected at its forked end with said scoop-plow and carrying on its other end a friction-wheel, a bracket on which said friction-wheel travels, and an adjustable block held on said bracket, substantially as shown and described.

6. In a potato-digger, the combination, with a scoop-plow and an endless chain connected with the rear end of the scoop-plow, of side arms supporting the lower end of said endless chain and said scoop-plow, said side arms being fulcrumed on the axis of the endless-chain sprocket-wheel, an arm pivotally connected at its forked end with said scoop-plow and carrying on its other end a friction-wheel, a bracket on which said friction-wheel travels, an adjustable block held on said bracket, and means, substantially as described, for adjusting said block in said bracket, as set forth.

7. In a potato-digger, the combination, with a scoop-plow and an endless chain connected at one end with the rear end of said scoop-plow, of side arms supporting the lower end of said chain and said scoop-plow and fulcrumed at their upper end on the axis of said endless-chain sprocket-wheel, chains connected with said scoop-plow, a drum on which said chains are wound, and means, substantially as described, for turning the said drum so as to wind up or unwind said chains, as set forth.

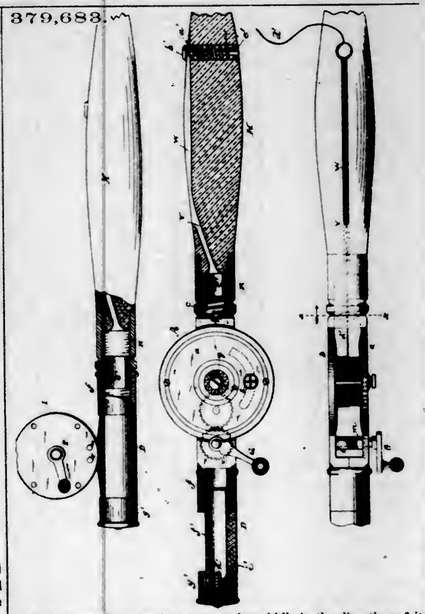
8. In a potato-digger, the combination, with a scoop-plow and an endless chain connected with the rear ends of said scoop-plow, of a hopper into which the upper end of said endless chain discharges, bag-holder rings adapted to be held at the lower end of said hopper, and a sidewise-sliding bar on which said rings are secured, so that said rings may be alternately brought directly below the lower end of said hopper, substantially as shown and described.

9. In a potato-digger, an endless chain made of the links K′ and K², each provided with prongs K³, extending transversely from the connecting-beams of said links, and the prongs K⁴, extending upward from the side beams of said links, substantially as shown and described.

379,683. COMBINED REEL-HANDLE AND FISHING-REEL. ABRAHAM COATES, Watertown, N. Y. Filed June 23, 1887. Serial No. 242,383. (No model.)

Claim.—1. The combination, with the reel A, of the spindle *u*, arranged in the tubular projection of the reel-case parallel with the

379,683.



axis of the reel and made convex at its middle in the direction of its length, substantially as described.

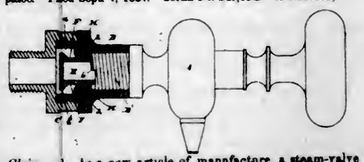
2. The combination, with the reel A, provided with the tubular internally-threaded shaft *h* and pinion *q*, of the cover-plates *a b*, the latter provided with the tubular studs *g l* and the former with the internally-threaded tubular shaft *m*, inserted in the tubular stud *l*, the spur-wheel *n*, attached to the tubular shaft *m*, the intermediate wheel, *o*, adapted to engage the spur-wheel *n* and pinion *q*, whose shaft receives the shaft *g*, and the crank G, provided with a screw-threaded shank adapted to fit into either of the tubular shafts *m h*, substantially as described.

3. The combination, with the reel A and its frame, formed of the plates *a b* and provided with the threaded projections *c c*, applied at the ends of the plates and forming tubular extensions thereof, of the handle H, provided with the groove *w* and passage *v*, the socket B, secured to the handle and adapted to receive the threaded projection *c*, and the handle end D, provided with the ferrule *f*, adapted to receive the threaded projection *c*, and having the longitudinal groove *f′*, serving as a reel-seat, and screw-cap *g′*, substantially as described.

4. The combination, with the handle H, provided with the groove *w*, of the spring-pressed transversely-apertured rod *a′*, receiving a retaining-stop, provided with the button *b′*, arranged in said groove, and beneath which passes the line, substantially as described.

5. The combination, with the handle H, provided with the socket B, of a handle end, D, provided with a longitudinal groove, *f′*, ferrule *f*, and the thimble *c′*, adapted to connect the socket B and ferrule *f*, substantially as described.

379,684. STEAM-VALVE. ERNEST W. COOKE, Chicago, Ill., assignor of one-half to W. D. Eaton and Chas. D. Hauk, both of same place. Filed Sept. 7, 1887. Serial No. 249,054. (No model.)



Claim.—1. As a new article of manufacture, a steam-valve consisting of the valve A, socket or notch *e*, the valve-plug B, chamber B′, collar H, valve-seat *a*, chamber G, the valve E, cap and beveled edge *g*, holes F, and the boiler-plug C, all substantially as and for the purpose set forth and described.

2. As a new article of manufacture, a steam-valve consisting of

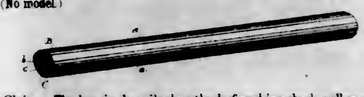
the valve A, bushing D, notch *e′*, valve-plug B, chamber B′, collar H, valve-seat *a*, chamber G, the valve E, cap and beveled edge *g*, holes F, and the boiler-plug C, all arranged and operating substantially as set forth and described.

3. In a steam or other valve, the combination of the valve A and notch *e*, combined with the valve E, holes F, and notch *b*, all substantially as set forth and described.

4. In a steam or other valve, the combination of the valve A, notch *e*, the valve E, holes F, and notch *b*, combined with the plug B, collar H, valve-seat *a*, chamber G, chamber B′, and the boiler-plug C, all operating and arranged substantially as set forth.

5. In a steam or other valve, the combination of the valve A, the bushing D, notch *e′*, the valve E, holes F, and notch *b*, combined with the plug B, collar H, valve-seat *a*, chamber G, cap *g*, chamber B′, and the boiler-plug C, all operating and arranged substantially as set forth.

379,685. PROCESS OR METHOD OF MAKING WOODEN SHADE ROLLERS OR POLES. ARTHUR M. COOLEY, Chicago, Ill., assignor to Augustus G. Burton, same place. Filed Apr. 15, 1887. Serial No. 234,904. (No model.)



Claim.—The herein-described method of making shade rollers and poles, which consists in severing a single piece of wood into two parts or strips, then applying a coating of glue or cement to the sides to be united, and then permanently uniting the said parts or strips together longitudinally in a relative position the reverse of that originally occupied by them, substantially as described.

379,686. NUT-LOCK. JOHN B. CROSSLEY, Clay Centre, Kans. Filed June 28, 1887. Serial No. 242,781. (No model.)



Claim.—1. In a nut-lock, the combination, with a railroad-rail and a fish-plate, of a second plate having its lower edge provided with a horizontal portion resting upon the rail-base, and the lock or tie bar interposed between the securing-bolt nuts and said horizontal portion of said second plate and detachably connected to said horizontal portion, substantially as and for the purpose set forth.

2. In a nut-lock, the combination, with a railroad-rail and the fish-plate, of an angle-plate having its vertical or main portion interposed between the rail and the fish-plate, and its horizontal portion or arm resting upon the rail-base, and the lock or tie bar interposed between said horizontal portion or arm of the angle-plate and the securing-bolt nuts and detachably connected to said horizontal arm, substantially as and for the purpose set forth.

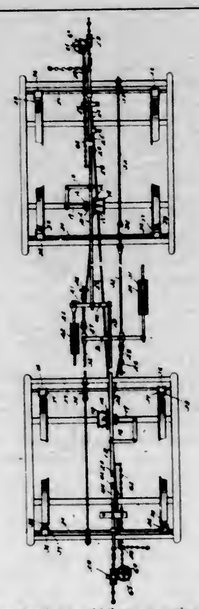
379,687. AUTOMATIC CAR-BRAKE. THOMAS DE COAR and WILLIAM KRAST, Russell Gulch, Colo. Filed Dec. 20, 1887. Serial No. 258,419. (No model.)

Claim.—1. In a car-brake, the combination, with a friction-clutch, of longitudinal bars, a central lever to which the bars are connected, connections between the bars and the friction-clutch, a spring to which the central lever is connected, chain-wheels, connections between the chain-wheels and a lever, 27, a spring arranged in connection with the lever 27, and connections between the lever 27 and the brake-bars, substantially as described.

2. In a car-brake, the combination, with a friction-clutch, of longitudinal bars, connections between said bars and one of the clutch-sections, a central lever to which the longitudinal bars are connected, a spring arranged in connection therewith, chain-wheels carried by one of the clutch-sections, connections between said wheels and the lever 27, a spring arranged in connection with said lever, brake-bars 34, carrying eccentrics 36, having side flanges, 37, brake-blocks, links by which said blocks are suspended, and springs arranged in connection with said links, substantially as described.

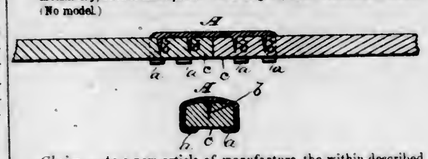
3. In a car-brake, the combination, with an inclined-faced wheel rigidly connected to one of the car-axles and formed with a sleeve, 11, of a chain-wheel formed with shoe-sockets and mounted to slide on the sleeve 11, longitudinal bars, connections between said bars and the wheel 12, a lever, 21, to which the longitudinal bars are connected, a spring, 22, arranged in connection therewith, a lever, 27, chains leading from the chain-wheels to said lever, a spring, 30, to which the lever 27 is connected, brake-bars, and connection between the brake-bars and the lever 27, all substantially as described.

379,687.



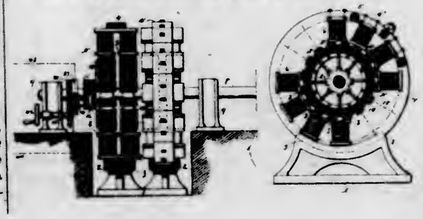
4. In a car-brake, the combination, with longitudinal bars formed with hooks 20, of bars 44, engaging with said hooks, a rod or chain, 50, levers 52, to which said rod or chain is connected, and fingers carried by said lever and arranged to bear against the under faces of the bars 44, substantially as described.

379,688. DEVICE FOR REPAIRING BROKEN SLATS. ANDREW J. DENNIS, Franklin, Tenn., assignor to Emmett G. Bennett and William McKinstry, both of same place. Filed Aug. 17, 1887. Serial No. 247,181. (No model.)



Claim.—As a new article of manufacture, the within-described device for connecting adjacent ends of broken slats, consisting of the plate A, constructed with the four sharpened pins *b*, in pairs, in opposite sides of the center of the plate and in a horizontal line with one another, and eight non-sharpened side lips, in pairs, on each side of the plate, each pair of lips arranged at the ends of the plate, as shown and described.

379,689. DYNAMO-ELECTRIC MACHINE. MARCEL DEPREZ, Paris, France. Filed Dec. 7, 1885. Serial No. 184,869. (No model.) Patented in France June 2, 1883, No. 157,832; in Belgium June 13, 1883, No. 61,690; in England June 21, 1883, No. 3,074; in Germany Nov. 27, 1883, No. 30,405, and in Italy Feb. 4, 1884, No. 6,546.



Claim.—1. A dynamo-electric machine consisting, essentially, of a pair of rotary armatures mounted upon the same shaft, and a series of horseshoe electro-magnets around the armatures, each having one of its poles in inductive proximity to one armature and the other pole in inductive proximity to the other armature, and magnetic keys connecting the like poles about each armature, substantially as described.

2. In a dynamo-electric machine, the combination of two rotary armatures mounted upon the same shaft with a series of horseshoe electro-magnets grouped radially about the armatures, each having one pole in inductive proximity to one armature and the other pole in inductive proximity to the other armature, and circuit-connections, as described, whereby the coils of the electro-magnets and of the two armatures form a series, substantially as described.

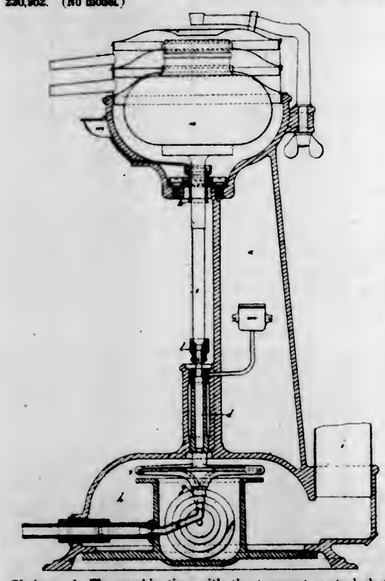
3. In a dynamo-electric machine, the combination of a series of electro-magnets mounted with their yokes upon a ring of magnetic material, with their legs extending toward the center of the ring and in planes at right angles to the plane of the same, so as to form two distinct but dependent parallel magnetic fields of force, with two rotary armatures mounted upon the same shaft, one for each field, and circuit-connections, as described, whereby the coils of the field-magnets and of the armatures are placed in series, substantially as described.

4. In a dynamo-electric machine, the combination of a series of horseshoe electro-magnets, each mounted upon a detachable segment of a ring of magnetic material in a plane at right angles to the plane of the ring, and with its legs extending radially therefrom, so as to form two distinct parallel magnetic fields of force, with two connected rotary armatures, each composed of separable segments corresponding to the segments of the ring, substantially as described.

5. In a dynamo-electric machine, the combination of a series of electro-magnets mounted upon detachable segments of a ring of magnetic material to form two distinct parallel magnetic fields of force, as described, with a rotary armature for each field, composed of detachable segments corresponding to the segments of the field-ring, and a commutator or commutators composed of detachable sectors corresponding to the segments of the armature, and each comprising a number of collecting-plates, substantially as described.

6. A dynamo-electric machine consisting of a series of dynamos, each composed of two armatures, each armature rotating within a distinct magnetic field of force parallel and opposed to but depending upon the field of force of the other, substantially as described.

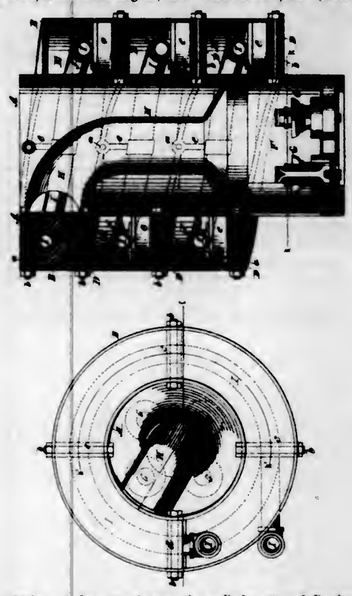
379,690. MOTOR FOR OPERATING CENTRIFUGAL SEPARATORS. GUSTAF DE LAVAL, Stockholm, Sweden. Filed Dec. 5, 1886. Serial No. 220,952. (No model.)

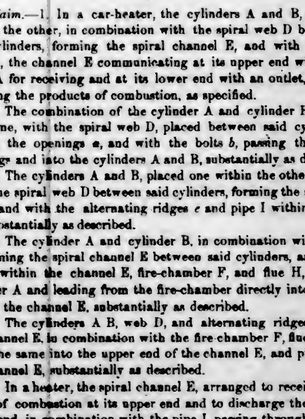


Claim.—1. The combination, with the two-part central shaft, united by a coupling and in line with each other, of a steam-wheel upon one part of the central shaft and a device to be driven upon the other part of the shaft, and a case inclosing the steam-wheel and connected with the support for the separator, whereby the rotary movement around a common axis of both the separator and the motor results from the direct application of the steam, substantially as set forth.

2. The combination, with the two-part central shaft, united by a coupling and in line with each other, of a steam-wheel upon one part of the central shaft and a device to be driven upon the other part of the shaft, a case inclosing the steam-wheel and connected with the support for the separator, a step-formed cone, and a step-formed conical wheel for supporting the steam-wheel and device to be driven, whereby the rotary movement around a common axis of both the separator and the motor results from the direct application of the steam, substantially as set forth.

379,691. HEATER FOR RAILWAY-CARS. ROBERT M. DIXON, East Orange, N. J., assignor to the Pintsch Lighting Company, New York, N. Y. Filed Aug. 26, 1887. Serial No. 247,906. (No model.)





Claim.—1. In a car-heater, the cylinders A and B, placed one within the other, in combination with the spiral web D between the two cylinders, forming the spiral channel E, and with the pipe I therein, the channel E communicating at its upper end with the cylinder A for receiving and at its lower end with an outlet, E', for discharging the products of combustion, as specified.

2. The combination of the cylinder A and cylinder B, surrounding same, with the spiral web D, placed between said cylinders and having the openings *a*, and with the bolts *b*, passing through said openings and into the cylinders A and B, substantially as described.

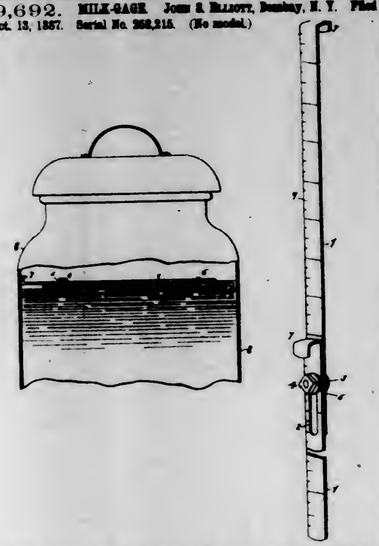
3. The cylinders A and B, placed one within the other, combined with the spiral web D between said cylinders, forming the spiral channel E, and with the alternating ridges *c* and pipe I within said channel, substantially as described.

4. The cylinder A and cylinder B, in combination with the web D, forming the spiral channel E between said cylinders, and with the pipe I within the channel E, fire-chamber F, and flue H, within the cylinder A and leading from the fire-chamber directly into the upper end of the channel E, substantially as described.

5. The cylinders A B, web D, and alternating ridges *c*, forming the channel E, in combination with the fire chamber F, flue H, leading from the same into the upper end of the channel E, and pipe I within the channel E, substantially as described.

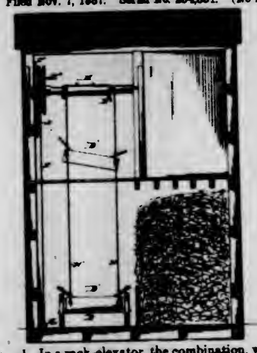
6. In a heater, the spiral channel E, arranged to receive the products of combustion at its upper end and to discharge the same at its lower end, in combination with the pipe I, passing through said channel, and with the ridges *c* within said channel for supporting the pipe I, as and for the purpose specified.

379,692. MILK-GAGE. JOHN S. ELLIOTT, Bombay, N. Y. Filed Oct. 13, 1887. Serial No. 252,215. (No model.)



Claim.—As a new article of manufacture, a milk-gage consisting of the two sections 1 1, overlapped at their inner ends, one of which is slotted and bent at right angles in opposite directions at their outer ends to form the flat bearing-surfaces 7 7, the clamping bolt and nut, the sliding link 6, and a scale, 9, on said sections to measure milk, substantially as set forth.

379,693. RACK-ELEVATOR. WILLIAM R. PITCHIT, Pinnebog, Mich. Filed Nov. 7, 1887. Serial No. 254,051. (No model.)



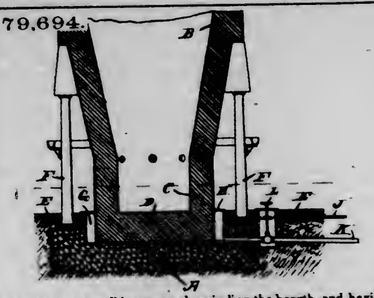
Claim.—1. In a rack-elevator, the combination, with the horizontal shafts provided with lifting-cables depending from said shafts and engaging with a wagon rack or body, of winding-drums whose frames consist of pieces crossing each other at right angles, the ends of which engage with pawls for preventing backward movement of the shafts, and cables extending from said drums for operating the same, substantially as described.

2. A rack-elevator provided with shafts and lifting-cables, said shafts each having a central section, *c*, and sections *c'* on each side of the central section, of smaller diameter, whereby the rack or wagon-body may be tilted to either side at will as it is elevated, substantially as described.

379,694. FURNACE-PROTECTING. FRED W. GORDON, Philadelphia, Pa., assignor to Gordon, Strobel & Laurean, (Limited,) same place. Filed Aug. 3, 1887. Serial No. 246,601. (No model.)

Claim.—1. In a blast-furnace, a furnace-foundation, A, mantel-columns F, resting thereon and supporting the furnace-stack, a hearth, C, having a bottom, D, resting on the foundation at a point below the surrounding working-level, and an annular trough, G, provided with a permeable inner-wall bottom and encircling the hearth, and having its bottom upon a level corresponding substantially with the lower surface of the hearth-bottom, combined substantially as and for the purpose set forth.

2. In a blast-furnace, a furnace-foundation, A, mantel-columns F, resting thereon and supporting the furnace-stack, a hearth, C, having a bottom, D, resting on the foundation at a point below the surrounding working-level, an annular trough, G, provided with a permeable inner-wall bottom and encircling the hearth, and having its bottom upon a level corresponding substantially with the lower surface of the hearth-bottom, open pipe J, communicating with the upper portion of the trough, pipe K, communicating with the lowest portion of the trough and adapted to discharge at a point below the lowest portion of the trough, and valve L, adapted to open and close such last-mentioned pipe, combined substantially as and for the purpose set forth.

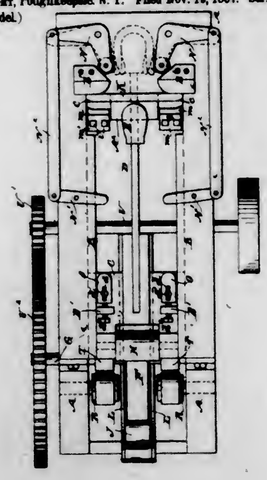


379,695. SHUTTER-FASTENER. PAUL O. GUERIN, New Orleans, La. Filed Nov. 19, 1887. Serial No. 255,606. (No model.)



Claim.—The combination, with a window-blind, of a slotted post or stud secured thereto, a cross-bar adapted to be placed across the opening of a window and having an aperture to receive the said stud, a key adapted to be placed in the slot of the stud, the rotating operating-shaft provided with exterior openings to receive a spanner, and the chain connecting the said key with the shaft, substantially as specified.

379,696. MACHINE FOR FORMING HORSESHOES. CHARLES L. HALSEY, Poughkeepsie, N. Y. Filed Nov. 19, 1887. Serial No. 255,565. (No model.)



Claim.—1. In a machine for forming horseshoes, the plate C, which supports and carries the forming-die E, in combination with the stationary abutments B and levers N, and means, substantially as described, for reciprocating the plate and die, and the said levers, substantially as described.

2. In a machine for forming horseshoes, the lever P, formed with a notch or shoulder, *f*, near its upper end, in combination with the die *n*, and holding-plate *n'*, held at the top of the lever by bolts or screws, substantially as described.

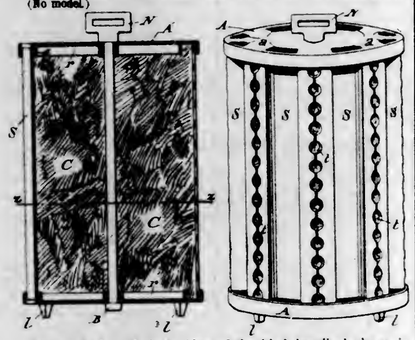
3. In a machine for forming horseshoes, the abutments B', levers P, arranged to act against the same, the reciprocating plate C, forming-die E, means for reciprocating the plate and die, and the levers P, in combination with the bell-crank levers N, levers N', and rods N^2, substantially as described.

4. In a machine for forming horseshoes, the bell-crank levers N, levers N', and connecting-rods N^2, in combination with the reciprocating plate C, substantially as described.

5. In a machine for forming horseshoes, the shaft G, provided with the large cam F, and provided also with the side cams, T, and the reciprocating plate C, in combination with the lever L', connecting-rods l_1, levers R, connecting-rods S, and the lever P, all arranged to operate substantially as and for the purposes described.

6. In a machine for forming horseshoes, the reciprocating plate C, provided with the adjustable blocks O, in combination with the levers N', connecting-rods N^2, and bell-crank levers N, substantially as described.

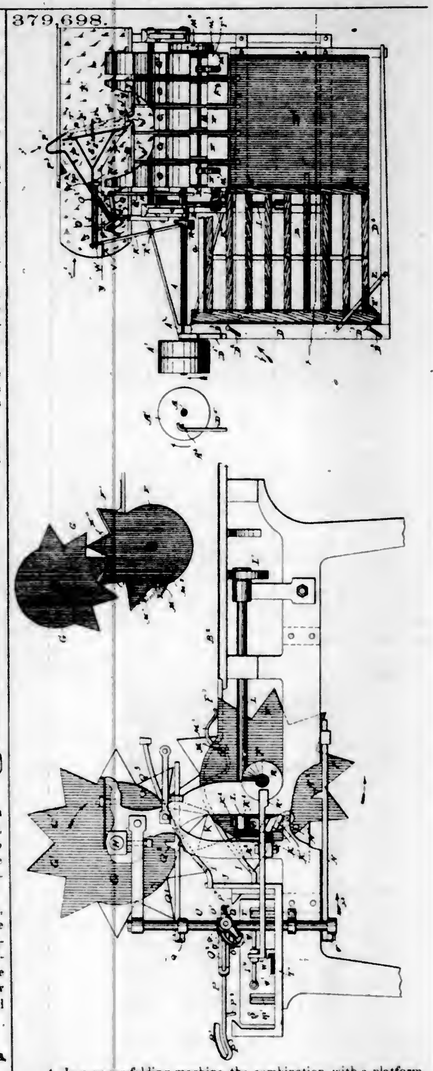
379,697. FUEL-CARTRIDGE. FRANCIS J. HERRON and EMIL M. HUGENTOBLER, New York, N. Y. Filed Oct. 19, 1887. Serial No. 252,565. (No model.)



Claim.—1. In a fuel-cartridge of the kind described above, in combination, the two heads provided with grooves on their inner faces, the staves having their edges serrated and their ends engaging into said grooves on the heads, and a central through-bolt to draw the heads together and secure the staves in position, as shown and described.

2. In a fuel-cartridge of the kind described above, in combination, the two heads provided with grooves on their inner faces and suitable perforations, the staves having their edges serrated, their ends engaging into said grooves on the heads and their centers depressed longitudinally and inwardly, the ends of said depressions matching the perforations on the heads, and, lastly, a central through-bolt to draw the heads together and secure the staves in position, as shown and described.

379,698. PAPER-FOLDING MACHINE. WARREN HILL, Towanda, Pa. Filed Nov. 30, 1886. Serial No. 220,238. (No model.)



Claim.—1. A paper-folding machine constructed with a platform, a flier pivoted at one side edge of the platform, and series of toothed roller-sections at the rear of the platform, substantially as shown and described.

2. A paper-folding machine constructed with a platform, a swinging flier at one edge of the platform, and two series of roller-sections, one series above the other, at the rear of the platform, said roller-sections having teeth on part of their circumference, and guide-rods between the sections, substantially as shown and described.

3. A paper-folding machine constructed with a table or platform, a hinged flier at one side of the platform, two series of roller-sections behind the platform, the roller-sections having teeth on part of their periphery, guide-rods between the roller-sections, plates at the rear ends of the guide-rods, between the inner ends of which plates a slot is formed, and a hook for drawing the creased paper through the slot and folding the same, substantially as shown and described.

4. In a paper-folding machine, the combination, with a platform, of a flier pivoted at one side, two series of toothed roller-sections behind the platform, a shaft pivoted in the lower series of roller-sections, spring-arms on the shaft, an arm on the end of the shaft, and a fixed cam acting on said arm, substantially as shown and described.

5. In a paper-folding machine, the combination, with a platform, of a flier pivoted at one side of the same, two series of toothed roller-sections behind the platform, guide-rods between the roller-sections, a shaft provided with an arm acting on the flier, a toothed collar on the shaft, and teeth on one of the roller-sections, substantially as shown and described.

6. In a paper-folding machine, the combination, with a platform, of a flier hinged at one side edge, two series of toothed roller-sections behind the flier, a vertical shaft, a rod held on said shaft and provided on its end with a hook, a reciprocating rod connected with the arm of said vertical shaft, a pin on one of the roller-sections for operating said reciprocating rod, and two plates placed edgewise behind and between the roller-sections, a slot being formed between the adjacent ends of the plates, between which slot the hook draws the papers creased by the roller-sections, substantially as shown and described.

7. In a machine for folding papers, the combination, with a platform, of a flier hinged at one side edge, two series of toothed roller-sections behind the platform, a vertical shaft having arms, rods connected with said arms, pins on the end sections of the two series of roller-sections for operating said rods, a rod provided with a hook mounted on arms of the vertical shaft, a lug on said hook-rod, bevel projections on the frame, which bevel projections act on said lug, and two plates behind and between the two series of roller-sections, a slot being formed between the adjacent ends of said plates, through which slot the papers are drawn by the hook-rod, substantially as shown and described.

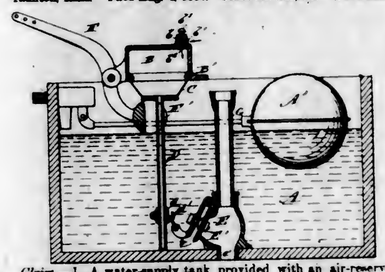
8. In a paper-folding machine, the combination, with two series of toothed roller-sections, of guide-rods between the roller-sections, plates fastened to the rear ends of the guides, a vertical shaft operated from the roller-sections, a hook-rod on said vertical shaft, a plate or table over which the hook-rod swings, a sliding cross-piece on said table, and pins projecting through apertures in the plate, substantially as shown and described.

9. In a paper-folding machine, the combination, with two series of toothed roller-sections, of guides between them, plates fastened to the rear ends of the guides, a vertical shaft operated by the rollers, a hook-rod on said shaft, a plate or table over which the hook-rod swings, a cross-piece on said table, a pivoted lever connected to said cross-piece, a cam on the shaft of the lower series of toothed roller-sections, which cam acts on the pivoted lever connected with the sliding cross-piece, a lever pivoted below the table on which the cross-piece is mounted to slide, and pins projecting from said lever through apertures in the table, substantially as shown and described.

10. In a paper-folding machine, the combination, with two series of toothed roller-sections, of guides between the roller-sections, plates fastened to the rear ends of the guides, a vertical shaft operated by the roller-sections, a swinging hook-rod on said shaft, a table over which the hook-rod swings, a sliding cross-piece on the table, the lever U', pivoted below the table, the pins T' on one end of the lever and passing through apertures in the table, the weight U^3 on the opposite end of the lever, the fixed bevel piece W^3, the reciprocating rod W, having the wedge-shaped piece W', the pivoted lever R', connected with the rod W and with the rod fastened to the sliding cross-piece, and the cam R on the shaft of the bottom series of roller-sections, substantially as shown and described.

11. In a paper-folding machine, the combination, with the platform B^3, of the flier B, the plate D', having diagonal slots D^2, the pins D^3, the hook D^4 on the plate D', the pulley A', having a projecting pin, A^2, the cross-piece E, fastened to the plate D' and the arm D^4 of the same, and the spring E', fastened to the frame of the machine, and the cross-piece E, substantially as shown and described.

379,699. SUPPLY-TANK FOR WATER-CLOSETS. JOHN HOLDEN, Taunton, Mass. Filed Aug. 4, 1887. Serial No. 246,125. (No model.)

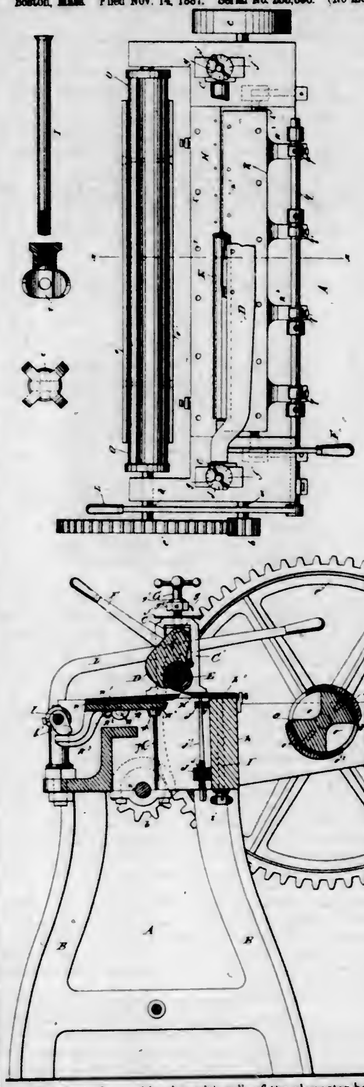


Claim.—1. A water-supply tank provided with an air-reservoir having an apertured flexible bottom, a tube attached to said bottom and an air-inlet at the top, a lever adapted to compress said flexible bottom, and a discharge-valve having its gate attached to and operated from said tube, substantially as shown and described, and for the purpose herein set forth.

2. The combination, with a water-tank, of an air-reservoir provided with a flexible apertured bottom, a tube attached to said bottom and an air-inlet at the top, a lever fulcrumed upon said reservoir, carrying a ball adapted to engage said flexible bottom, and a discharge-valve having the gate thereof attached to and operated from said tube, substantially as herein shown and described.

3. The combination, with a water-tank, of an air-reservoir, B, provided with a flexible apertured bottom, C, a tube, D, attached to said bottom, and air-inlets b' b^2 at the top controlled by a needle-valve, b^3, a lever, F, fulcrumed upon said reservoir, provided with a split ball, F', adapted to engage said bottom C and partially surround said tube D, a discharge-valve, E, provided with a gate, E', a lever, *e*, attached to said gate and to the tube D, and a stand-pipe secured in the upper end of said valve E and arranged to operate substantially in the manner and for the purpose herein set forth.

379,700. LEATHER-SPLITTING MACHINE. ALBERT HULL, New Boston, Mass. Filed Nov. 14, 1887. Serial No. 255,090. (No model.)



Claim.—1. In combination with rolls of the character herein described, adjusting-screws in connection with the journals of such rolls and carrying an index, and a graduated dial traversed by said index, whereby the adjustment of said screws and such rolls is uniformly effected, substantially as herein set forth.

2. In a leather-splitting machine, the combination, with its gage-

2. In a conveyer, the combination, with a drive-shaft and a driven | vator, the lateral frame, the screw-rods for raising and lowering the

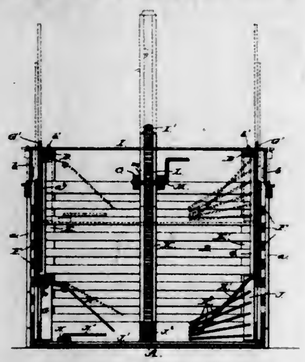
roll and its beam and dials having radial graduations thereon fixed above the journals of said beam, of gage-screws passing through said dials to a bearing on the journal-boxes of said beam and carrying a pointer adapted to travel over the graduations on said dials as the screw is revolved, substantially as shown and described, for the purpose herein set forth.

3. In a leather-splitting machine, the combination, with its knife, of an elongated metal frame fixed to the breast of the machine, and a series of threaded spindles adapted to be vertically adjusted in said frame against the under surface of said knife, substantially as shown and described, for the purpose herein set forth.

4. In a leather-splitting machine, the combination, with the tilting portion of its bed and its plates, of a series of elongated screw-bolts adapted to be vertically adjusted in said tilting portion against the under surface of said plates, substantially as shown and described, for the purpose herein set forth.

5. A winding-cylinder for leather-splitting machines, consisting of a main body longitudinally recessed throughout its length, and lags bolted thereto and extending partially over the recessed portion thereof, substantially as herein shown and described.

379,701. FISH-TRAP. ELIJAH W. JENKINS, Milford, Mo. Filed May 24, 1887. Serial No. 239,223. (No model.)



Claim.—1. The combination, in a fish-trap, with the main frame, of the false bottom fitted within said frame and carrying supplemental frames provided with the pivoted entrapping-wires hung in alignment with the fish-entrances, the rack-bar centrally disposed within the main frame and connected to the false bottom, and the shaft supported in the upper part of the main frame and provided with a pinion engaging with the rack-bar, substantially as and for the purpose set forth.

2. In a fish-trap, the combination, with the main frame and the sliding end walls, and means for raising and lowering the said end walls, of the false bottom fitted within the said main frame, and carrying supplemental frames provided with the pivoted entrapping-wires hung upon the inside of the trap in alignment with the fish-entrances, and means for raising and lowering said false bottom, substantially as and for the purpose set forth.

3. In a fish-trap, the combination, with the main frame, of the false bottom having the supplemental frames provided with the pivoted entrapping-wires or netting hung upon the inside of the trap in alignment with the fish-entrances, substantially as and for the purpose specified.

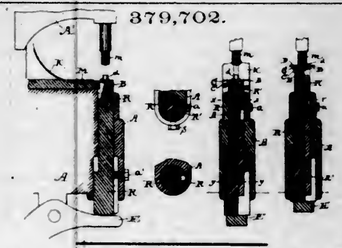
4. In a fish-trap, the combination, with the main frame, of the false bottom carrying supplemental frames provided at the fish-entrances, upon the inside of the trap, with a series of horizontal wires, and a series of hinged dropping wires arranged above the aforesaid wires and in alignment with the said fish-entrances, substantially as and for the purpose set forth.

379,702. MACHINE FOR SETTING LACING-STUDS. LOUIS JORCAS, Lewiston, Me. Filed Dec. 27, 1887. Serial No. 258,960. (No model.)

Claim.—1. In a machine for setting lacing hooks or studs, the combination herein described, with an anvil-cap for receiving the studs, of a catch for holding said stud in position on said cap, substantially as shown.

2. In a machine for setting lacing-studs, an anvil-cap, substantially as herein described, for receiving the studs, said cap being provided with a notch to admit said studs to said cap, a flat catch having a curved end projecting over the edge of said notch, and a spring for said catch, whereby the said stud is held in place on said anvil.

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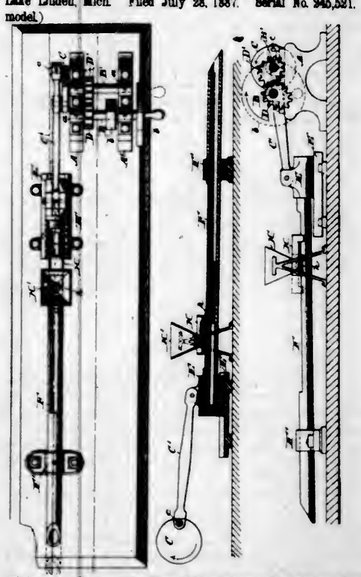


379,703. SHAFT-SUPPORT FOR VEHICLES. OWEN R. KELLY, Bristol, Conn., assignor of one-half to Henry A. Seymour, same place. Filed Sept. 8, 1887. Serial No. 249,070. (No model.)



Claim.—The combination, with the forward axle and a shaft of a vehicle, of a clip for such axle and shaft, having its retaining-bar extended at its rear end and centrally slotted to form a two-pronged hook, and a spring-bar secured at its upper end to the upper face of the shaft and provided at its lower end with a cross-bar, the opposite ends of which are respectively engaged with the under faces of the prongs of the hook, the slot of which receives the lower end of the spring-bar, substantially as set forth.

379,704. CONVEYER. HENRY C. KRAUSE and BENJAMIN HARRIS, Lake Linden, Mich. Filed July 28, 1887. Serial No. 245,521. (No model.)

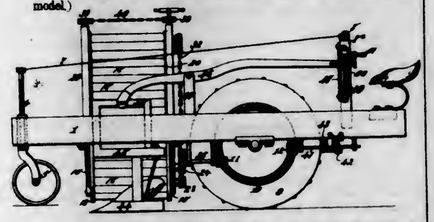


Claim.—1. The combination of the reciprocating pipe or launder, having a feed-pan secured to it, with the relatively-stationary hopper leading into the reciprocating pan, substantially as set forth.

2. In a conveyer, the combination, with a drive-shaft and a driven shaft and meshing eccentric gear upon said shafts, of a reciprocating pipe or launder and a pitman or eccentric connection between said pipe and driven shaft, substantially as shown and described, whereby the said pipe is given an accelerated movement at a portion of its travel, as herein set forth.

3. In a conveyer, the combination, with a drive-shaft and a driven shaft and eccentric gears secured to said shafts, so that the portion of one gear having the least eccentricity will mesh with that portion of the opposing gear having the most eccentricity, of a reciprocating pipe or launder, a pitman or eccentric connection between said pipe and driven shaft, and an apertured pan secured upon said pipe and a stationary hopper above said pan, substantially as shown and described.

379,705. DITCHING AND GRADING MACHINE. DAVID D. KUHLMAN, Oakland, Nebr. Filed July 19, 1887. Serial No. 244,767. (No model.)



Claim.—1. The combination, with the main frame, the ground-wheel, the elevator, and the elevator-operating chain, of the adjustable plate on the elevator-frame carrying two guide-pulleys, around which said chain passes, substantially as described.

2. The combination of the main frame, the plow, the elevator, the ground-wheel having a crown-wheel, the pinion engaging the latter, and having its shaft located at right angles to the axis of the ground-wheel and provided with a chain-wheel, the adjustable plate on the elevator-frame carrying two guide-pulleys, and the elevator-operating chain passing around said guide-pulleys, and thence around the chain-wheel on the pinion-shaft, substantially as described.

3. The combination, in a ditching and grading machine, of the plow, the elevator, the ground-wheel, and the brush operated by the ground-wheel for cleaning the latter, substantially as described.

4. The combination, in a ditching and grading machine, of the main frame, the plow, the elevator and its endless operating-chain, the ground-wheel having a crown-wheel, the brush, and the two pinions, one operating the elevator-chain and the other moving the brush, substantially as described.

5. The combination, in a ditching and grading machine, of the main frame, the lateral elevator, the plow-carrying frame movable vertically on the main frame, the pivoted lever connected with the plow-carrying frame, the rack, and the pinion connected with the lever and engaging rack, substantially as described.

6. The combination, in a grading and ditching machine, of the main frame, the plow, the ground-wheel, the pivoted elevator, and the vertically-adjustable lateral frame, on which the elevator is supported and can be raised or lowered independent of any movement of said lateral frame, substantially as described.

7. The combination, in a grading-machine, of the main frame, the plow, the pivoted elevator, the lateral frame supporting the elevator, and the screw-rods engaging the lateral frame to raise and lower the same with the elevator, substantially as described.

8. The combination, in a ditching and grading machine, of the main frame, the ground-wheel, the plow, the lateral frame supporting the elevator, the standards, and the screw-rods supported by the standards and engaging the lateral frame to raise and lower the latter with the elevator, substantially as described.

9. The combination, in a ditching and grading machine, of the main frame, the plow, the ground-wheel, the elevator, the lateral frame supporting the elevator, the standards, the screw-rods for raising and lowering the lateral frame with the elevator, and the braces connecting the lateral frame with the main frame, substantially as described.

10. The combination, with the main frame, of the pivoted elevator having lateral pins and the vertically-adjustable lateral frame having brackets or hooks, with which the lateral pins on the elevator engage, substantially as described.

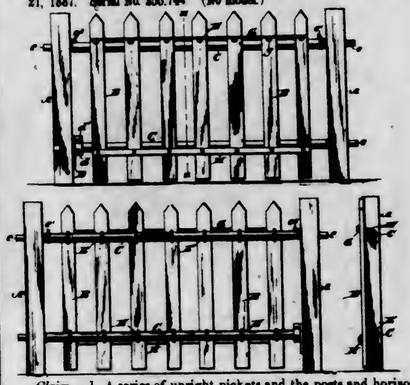
11. The combination, with the main frame, of the pivoted elevator having lateral pins, the lateral frame having brackets or hooks, with which said pins engage, and the screw-rods for raising and lowering the lateral frame, substantially as described.

12. The combination, with the main frame, of the pivoted elevator, the lateral frame, the screw-rods for raising and lowering the lateral frame, and the chain and chain-wheels connecting the screw-rods, substantially as described.

13. The elevator consisting of the links 16, in hooked engagement, the plates 18, overlapping at their adjacent edges, and the blocks 20, secured between the ends of said links and plates, substantially as described.

14. The combination, with the main frame, the vertically-movable frame, the elevator, and the screw-rods, of the horizontal shaft having right-and-left screw-rods, and the braces having sleeve-nuts engaging the said right and left screw-threads, substantially as described.

379,706. FENCE. ISRAEL L. LANDIS, Lancaster, Pa. Filed Nov. 21, 1887. Serial No. 255,744. (No model.)



Claim.—1. A series of upright pickets and the posts and horizontal bars which support them, in combination with fastenings which pass through said pickets and inclose said bars, and continuous metallic connections independent of said bars, which are separately attached to the individual picket-fastenings to keep said fastenings in their proper places, substantially as set forth.

2. A series of upright pickets, in combination with the horizontal bars on one side of said pickets, continuous metallic connections on the other side of said pickets, and staples which pass through said pickets, inclose said bars, and are held individually in place by said connections, substantially as set forth.

3. In combination with a bar or rod, C, tubular at one or both ends, a pair of fence-posts, a pin passing through one of the posts and entering the tubular bar, and a bracket or plate attached to the other post, with an open bearing in which the other end of said rod or bar rests, substantially as described.

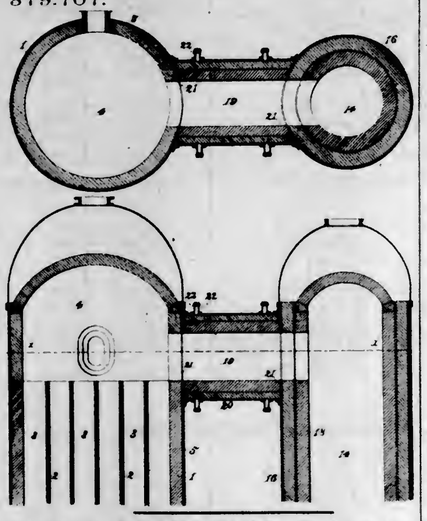
379,707. REGENERATIVE HOT-BLAST STOVE. HENRY A. LAUGHLIN, Pittsburg, Pa. Filed Mar. 16, 1887. Serial No. 231,106. (No model.)

Claim.—1. In a regenerative hot-blast stove, the combination of a shell or body having a series of vertical regenerative flues and an upper dome or chamber, an independent fire-brick combustion-chamber located exterior to the shell and having its wall lined, so as to exceed in thickness that of the shell or body, an iron casing inclosing the combustion-chamber, and a throat or passage-way connecting the combustion-chamber with the dome of the shell or body, substantially as set forth.

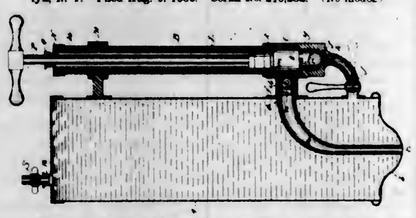
2. In a regenerative hot-blast stove, the combination of a shell or body having a series of vertical regenerative flues and an upper dome, an iron casing inclosing said shell, an independent vertical fire-brick combustion-chamber located exterior to the shell, an iron casing inclosing said combustion-chamber, a throat or passage-way of fire-brick connecting openings in the combustion-chamber and dome and separated at either or both of its ends therefrom, and an iron casing inclosing the throat and secured at its ends to the casings of the combustion-chamber and shell, substantially as set forth.

3. In a regenerative hot-blast stove, the combination of a shell or body having a series of vertical regenerative flues and an upper dome, an independent fire-brick combustion-chamber located exterior to the shell, a fire-brick throat or passage-way connecting an opening in the dome with an opening in the combustion-chamber, a separate packing or facing of fire-clay interposed between the end of the throat and the combustion-chamber, and an iron casing inclosing the throat and secured at its ends to similar casings inclosing the shell and combustion-chamber, substantially as set forth.

379,707.



379,708. HAND-FIRE-EXTINGUISHER. JOHN E. LONG, Brooklyn, N. Y. Filed Aug. 6, 1886. Serial No. 210,232. (No model.)



Claim.—1. In a hand fire-extinguisher, the combination of a portable reservoir, a force-pump attached thereto, a pipe leading from the reservoir to the pump, a stop-cock in said pipe, a check-valve between said stop-cock and the pump to prevent the return of the fluid from the pump, a pipe leading from the pump, and a check-valve in said pipe, all substantially as and for the purpose set forth.

2. In a hand fire-extinguisher, the combination of a portable reservoir, a force-pump attached thereto, a pipe leading from the reservoir to the pump and provided with a stop-cock and a check-valve opening toward the pump, a pipe leading from the pump and provided with a check-valve opening from the pump, and a vent-opening formed through the wall of the reservoir and provided with a stop-cock for closing the same, all as and for the purpose set forth.

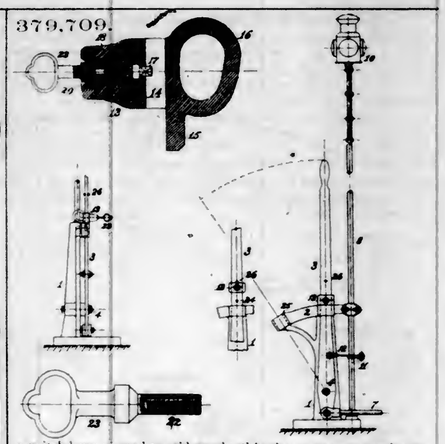
3. The combination, with the reservoir and pump, of a pipe or conduit leading from said reservoir to the pump, another pipe or conduit leading from the pump to and through the reservoir, and valves for checking any return of the fluid through said pipes or conduits, substantially as set forth.

379,709. RAILROAD-SWITCH LOCK. WILLIAM T. MANNING, Pittsburg, Pa., assignor of one-half to I. N. Kalbaugh, same place. Filed Oct. 6, 1887. Serial No. 251,601. (No model.)

Claim.—1. The combination of a switch-stand, a guide-plate fixed thereto and having a lateral recess to receive a switch-lever when thrown to set the switch-rails to one of the tracks, a switch-lever pivoted to the stand and having a recess or opening to receive a locking-bolt, a lock-case sliding longitudinally on the switch-lever and having a connected keeper adapted to bear against the switch-lever and prevent its lateral movement in the recess of the fixed guide, and a spring locking-bolt fitted to slide in the lock-case transversely to the plane of movement of the switch-lever and adapted to engage the recess thereof when the lever rests within and is held as against pivotal movement by the lateral recess of the fixed guide, substantially as set forth.

2. The combination of a switch-stand having recesses to receive a switch-lever when in main and in side track positions, respectively,

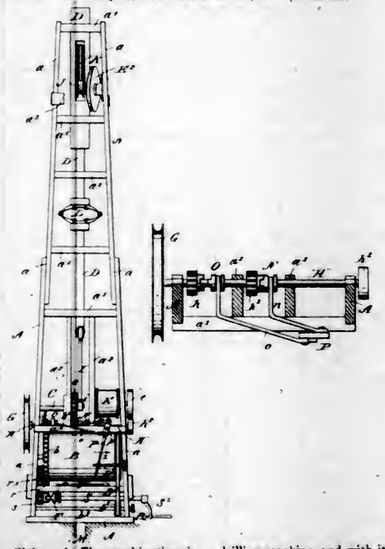
379,709.



a switch-lever pivoted to said stand and having a recess or opening to receive a locking-bolt, a spring locking-bolt fitting in a lock-case sliding on the lever, a keeper connected to the lock-case, and a stop to prevent the engagement of the locking bolt and lever when in side-track position, substantially as set forth.

3. The combination of a lock-case having a vertical slot or opening to inclose a switch-lever, a keeper fixed upon the case on one side of said slot, a locking-bolt having a threaded stem and fitting in an opening in the case located on the opposite side of said slot and communicating therewith, and a spring bearing against a collar or shoulder on the locking-bolt and against a fixed cap or stop on the lock-case, substantially as set forth.

379,710. WELL-DRILLING MACHINE. WILLIAM MASSON, Colton, Cal. Filed May 13, 1886. Serial No. 202,062. (No model.)



Claim.—1. The combination, in a drilling-machine and with its derrick, a crown-pulley, J, journaled to a bar, D, adapted to slide on the derrick, mechanism for raising the pulley and letting it fall, and a cable passed over the crown-pulley and connected to a retaining device at one end and at the other end to a gravitating drilling-tool, substantially as specified, of a spring, as at L, interposed in the sliding bar D, substantially as described, for the purposes set forth.

2. In a drilling-machine, the combination, with the derrick A, bar

D, crown-pulley J, and cable K, of a spring, as at L, interposed in bar D, substantially as herein set forth.

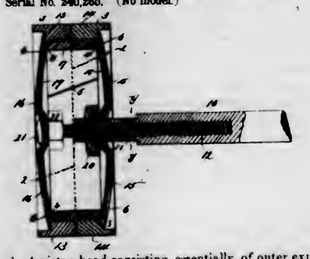
3. The combination, in a drilling-machine, of a derrick, A, shaft C, gear-wheel c, connecting-rod I, bar D, crown-pulley J, cable K, a drum, B, and a spring, L, interposed in bar D, substantially as herein set forth.

4. The combination, in a drilling-machine and with a derrick, A, drum B, having a gear, *b*, a shaft, C, gear-wheel *c*, connecting-rod I, bar D, crown-pulley J, and cable K, of a driving-shaft, H, pinions *h h'*, loose thereon, clutches N O, splined to shaft H and adapted to engage the pinions *h h'*, and mechanism for operating these clutches to throw the drilling-tool or hoisting-drum into and out of gear, substantially as herein set forth.

5. The combination, in a drilling-machine and with a derrick, A, drum B, having a gear, *b*, a shaft, C, gear-wheel *c*, connecting-rod I, bar D, crown-pulley J, and cable K, of a driving-shaft, H, pinions *h h'*, loose thereon, clutches O N, splined to shaft H and adapted to engage the pinions *h h'*, a lever, P, pivoted at *p* to the derrick, and rods *n o*, connecting the lever with the clutches N O, substantially as described for the purposes set forth.

6. In a well-drilling machine comprising a derrick, A, drum B, bar D, crown-pulley J, and mechanism for lifting the parts D J and letting them fall, substantially as specified, the combination, with said elements, of a cable, K, passed over the pulley J and attached to the drum B at one end and to the drilling-tool at the other end, substantially as herein set forth.

379,711. PISTON. AMOS M. MORRILL, Ravanna, Mo. Filed June 4, 1887. Serial No. 240,265. (No model.)



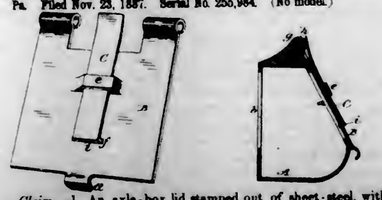
Claim.—1. A piston-head consisting, essentially, of outer expansible rings, spring-heads arranged in connection with the rings, and a means, substantially as described, for adjusting the spring-heads, as and for the purpose stated.

2. A piston-head consisting, essentially, of outer expansible rings, an inner expansible ring arranged in connection therewith, spring-heads mounted in connection with the expansible rings, and a bolt arranged for connection with a piston-rod, substantially as described.

3. In a piston-head, the combination, with outer expansible rings formed with shoulders 3 and an inner expansible ring formed with shoulders 4, of two sets of spring-heads arranged to rest upon said shoulders, and a bolt arranged in connection with one set of spring-heads and for connection with a piston-rod, the other set of spring-heads being arranged for connection with the piston-rod, substantially as described.

4. The combination, with a piston-rod formed with an external threaded section, 11, and a threaded socket, 12, of spring-heads 15 and 18, which engage with the section 11, a nut, 20, which also engages with the section 11, rings 14 and 17, formed, respectively, with shoulders 3 and 4, against which the spring-heads 15 and 18 bear, a bolt, 21, which engages the threaded socket 12, spring-heads 16 and 19, carried by said bolt, and a ring, 13, formed with a shoulder, 3, the spring-head 16 resting upon said shoulder, while the spring-head 19 rests upon the shoulder of the ring 17, substantially as described.

379,712. CAR-AXLE-BOX LID. GEORGE W. MORRIS, Pittsburg, Pa. Filed Nov. 23, 1887. Serial No. 255,984. (No model.)

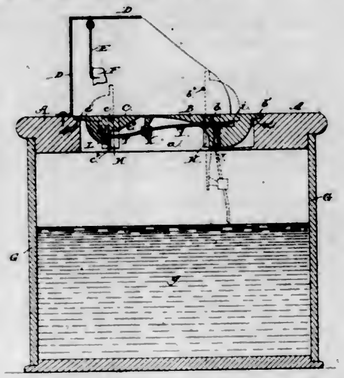


Claim.—1. An axle-box lid stamped out of sheet-steel, with a raised cross-loop and a cross-slot stamped therein, and a plate-spring having a right-angled end and fitted within said loop and within said slot, combined with an axle-box having a top bearing for said spring, substantially as set forth.

2. In combination with an axle-box, a lid having the loop and the slot, and a spring having a right-angled end, whereby the spring may be locked to the lid by an endwise-driven movement, substantially as set forth.

3. The combination, with an axle-box, a lid having the pintle-hinge eyes, the loop and the slot formed therein, as described, and a spring having a right-angled end adapted to be driven into the lid-slot, as and for the purpose stated.

379,713. ANIMAL-TRAP. JOHN T. MOXLEY, Owosso, Mich. Filed Aug. 25, 1887. Serial No. 247,870. (No model.)



Claim.—1. The combination, in an animal-trap, of a floor having an opening and stop-shoulders thereat, a tip-board pivoted in said opening and counterweighted at one end, a latch on the tip-board, a trip-block, also pivoted in the floor-opening and counterweighted at one end, and a catch in said block normally engaging the tip-board latch, substantially as herein set forth.

2. The combination, in an animal-trap, of a floor, A, open at *a* and provided with stop-shoulders *a' a²*, a tip-board, B, pivoted at *b* in the opening *a* and having a shoulder, *b'*, a trip-block, C, pivoted at *c* in the floor-opening and having a shoulder, *c'*, a latch, I, held to the board B, and a catch, L, fixed to the block C and normally engaging the latch I, substantially as described, for the purposes set forth.

3. In an animal-trap, the combination, with a floor, A, open at *a*, and a counterweighted tip-board, B, and trip-block C, pivoted therein, and provided, respectively, with a latch, I, and catch L, and adapted to stop level with the floor, substantially as specified, of a bait-holding device arranged above the trip-block C, substantially as herein set forth.

4. In an animal-trap, the combination, with the floor A, having an opening, *a*, the casing D, having one open side or end and provided with the bait-holder E, of the counterweighted tip-board B, having its free end projecting toward the closed end or side of the casing, and provided with the latch I on its under side, and the counter-weight trip-block C, arranged under the bait-holder and provided with the catch L, substantially as herein shown and described.

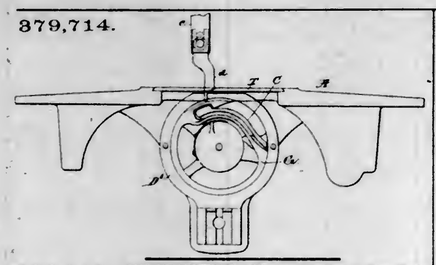
5. An animal-trap made with a floor, A, open at *a*, and a counterweighted tip-board, B, and trip-block C, pivoted therein, and having a latch, I, and catch L, respectively, and adapted to stop level with the floor, substantially as specified, and said latch held to the tip-board, so as to be adjustable relatively to the notch in the trip-block catch, substantially as herein set forth.

6. An animal-trap made with a floor, A, open at *a*, a tip-board, B, and trip-block C, pivoted therein, and provided, respectively, with a latch, I, and catch L, and adapted to stop level with the floor, substantially as specified, and said trip-block having an inclined bottom face, *c'*, against which the latch I may strike to assist the block to normal level position, substantially as herein set forth.

379,714. TRIMMING DEVICE FOR SEWING-MACHINES. WILLIAM A. NEELY and NORRIS G. ROWELL, Lynn, Mass., assignors to The Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Filed Oct. 7, 1887. Serial No. 251,686. (No model.)

Claim.—The combination, in a sewing-machine, of a cutter-bar and cutter with a shuttle having the periphery of its point grooved, as at *a*, to obviate the point of the shuttle striking the said cutter, substantially as described.

379,714.



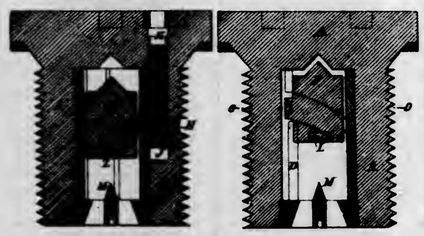
379,715. COFFIN-FASTENER. WILLIAM J. NOBLE, New York, N. Y. Filed July 25, 1887. Serial No. 245,268. (No model.)



Claim.—1. The combination of a casket-body, B, a socket, F, attached to said body and provided with a bridge, *f*, a lid, A, having a curved catch, D, and a locking-spring, H, having downwardly-projecting hook *h* and laterally-projecting finger-piece h^3, substantially as set forth.

2. The combination of a casket-body, B, the socket F, attached to said body, said socket being provided with a longitudinal groove, G, bridge *f*, and opening f^3, a lid, A, having the curved catch D, decreasing transversely in width, and the locking-spring H, secured into a recess of the top plate of the catch D, and provided with the hook *h* and the lateral finger-piece h^3, substantially as set forth.

379,716. SHELL-FUSE. THORSTEN NORDENFELT, Westminster, England. Filed July 12, 1887. Serial No. 244,065. (No model.) Patented in Belgium Mar. 19, 1887, No. 76,756, and in Italy Mar. 31, 1887, No. 21,486.

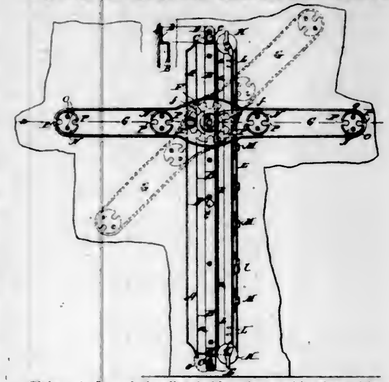


Claim.—1. The combination, substantially as set forth, of the body of the fuse having the central chamber and adapted to be fixed to the base of a projectile, the pellet secured within said chamber and adapted, when freed, to move lengthwise thereof to explode the fulminate, the endwise-movable bolt contained in a hole or small cavity in the fuse-body and exposed at the rear end of the body to the pressure of the powder-gases of the propelling-charge, and the pin projecting from the pellet laterally to the bolt and made fast thereto, whereby the pressure upon the bolt breaks the pin, and so frees the pellet from the bolt, for the purpose set forth.

2. The combination, substantially as set forth, of the body of the fuse having the central chamber and adapted to be fixed to the base of a projectile, the pellet secured within said chamber and adapted, when freed, to move lengthwise thereof to explode the fulminate, the endwise-movable bolt contained in a hole or small cavity in the fuse-body and exposed at the rear end of the body to the pressure of the powder-gases of the propelling-charge, the pin projecting from the pellet laterally to the bolt and made fast thereto, whereby movement of the pellet is prevented until pressure upon the bolt breaks the pin and frees the pellet, the ring or plug at the fore part of the chamber, by contact between which ring or plug and the pellet the fulminate is exploded when the flight of the projectile is retarded, and the slow-burning composition in the passages through the ring or plug, for the purpose set forth.

3. The combination, substantially as set forth, of the body of the fuse having the central chamber and adapted to be fixed to the base of a projectile, the slotted lining within the chamber, the pellet secured within the chamber and adapted, when freed, to move lengthwise thereof to explode the fulminate, the lug of the pellet for engagement with the slots of the lining, the endwise-movable bolt contained in a hole or small cavity in the fuse-body and exposed at the rear end of the body to the pressure of the powder-gases of the propelling-charge, and the pin projecting from the pellet laterally to the bolt and made fast thereto, upon the breaking of which pin by the pressure on the bolt the pellet is freed therefrom, for the purpose set forth.

379,717. CLOTHES-LINE HOLDER. ANDREW E. NORMAN, Ishpeming, Mich. Filed Apr. 23, 1887. Serial No. 235,859. (No model.)



Claim.—1. In a clothes-line holder, the combination, with wall-plate A, recessed at *a* and provided with the longitudinal dovetail strip B, extending beyond the ends of the plate A, and there slotted, as at *c*, of the cross-head slotted to receive the strip B, and the swinging bar G, having line-holding devices, and means for raising and lowering the cross-head, substantially as set forth.

2. The combination, with the wall-plate A, guide-bar B, secured thereon and having its projecting ends slotted, and the pulleys K, journaled at the upper and lower ends of the plate, of the cross-head F, mounted to slide on said guide-bar, the bar G, having line-holding devices and pivotally connected to the cross-head, the rope L, secured at both ends to the cross-head and extending around the said pulleys, the button *l* on the rope, and the vertical series of lugs M on the outer side of the plate A and provided with notches, through which the rope passes, substantially as set forth.

3. The combination, in a clothes-line holder, of a wall-plate, A, recessed at *a*, a guide-strip, B, in the recess, a head-block, F, fitted to the strip and provided with marginal notches *f*, a cross-bar, G, held by a bolt, H, and nut *h* to the block F, and provided with line-holding devices, a locking-pin, I, fitted in the cross-bar, and a device supporting the head-block and cross-bar in the wall-plate, substantially as herein set forth.

4. In a clothes-line holder, the combination, with the cross-head F, having a circular series of notches, *f*, and the guide on which the said cross-head slides, of the line-holding cross-bar G, pivoted to the cross-head at right angles to its line of movement, concentric with said notches, and having a catch for engaging said notches and locking the bar at any desired angle, substantially as set forth.

379,718. TURBINE. JOHN T. ORRINGAER, Logansport, Ind. Filed June 23, 1887. Serial No. 242,240. (No model.)

Claim.—1. In a turbine, the combination, substantially as set forth, of a water-tight casing provided with an inlet, an outlet, a wheel-seat and a valve-seat, a nose secured to said casing with its axis in line with the axis of said wheel-seat, a valve arranged for motion parallel to its axis and to coact with said valve-seat, a threaded tubular valve-stem engaging said nose and valve and projecting outwardly through said nose and arranged to serve in opening said valve from the outside of said casing, a gland engaging said nose and stem, a shaft passing axially through said valve and stem, and a water-wheel secured to said shaft within and below said valve, and chutes at the periphery of said wheel-seat.

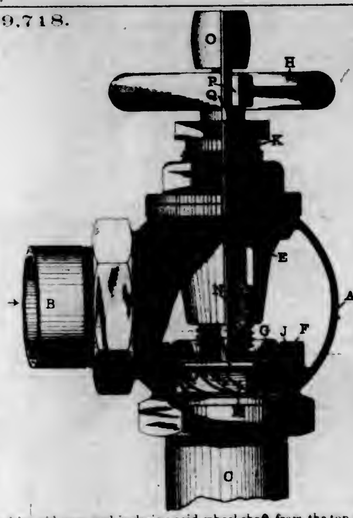
2. In a turbine, the combination, substantially as set forth, with a casing, a nose, a wheel-seat, a water-wheel, and chutes, of a valve, a valve-stem having a shaft-bearing at its axis, provided with a counterbore at its upper end, and a wheel-shaft journaled in said shaft-bearing and provided with a collar engaging over said valve-stem.

3. In a turbine, the combination of a casing provided with an inlet and with an outlet adapted for connection to a draft-tube, and with a wheel-seat, a nose secured thereto, a wheel-shaft projecting through said casing and provided with a collar outside said casing, a water-wheel secured to the lower end of said shaft and provided with aperture R, leading vertically through the wheel, and a tubular stem supported in said nose and inclosing said wheel-shaft from the top of the water-wheel L, shaft N, valve G and its stem disposed over said wheel and around said shaft, chute-roofs J, attached to said valve, and casing A, provided with connections B and C and with wheel-seat D and chutes F, said chutes being engaged by said chute-roofs.

8. In a turbine, the combination, substantially as set forth, of the wheel-seat D and the water-wheel L, having circumferential overlapping series of outwardly-open buckets M, whose roofs and inner walls curve inwardly and downwardly and become narrower from the circumference of the wheel.

9. In a turbine, the combination, substantially as set forth, of a casing provided with an inlet, an outlet, and a wheel-seat, a nose provided with a packing-gland, a valve having an axially-bored stem projecting through said nose and gland, chutes in the casing, a water-wheel, and a wheel-shaft journaled in said axially-bored valve-stem, said axial bore communicating with the atmosphere outside the casing-nose and with the outlet of the casing.

379,718.



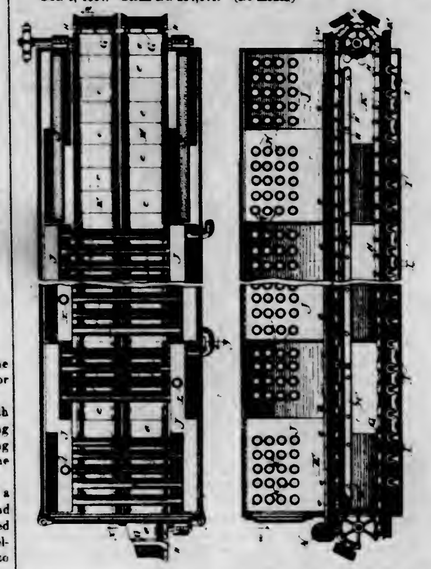
379,719. SAW. HEZEKIAH C. PALMER, Bingen, Ark., assignor of one-half to William G. Scoggin, same place. Filed Mar. 30, 1887. Renewed Jan. 16, 1888. Serial No. 260,956. (No model.)

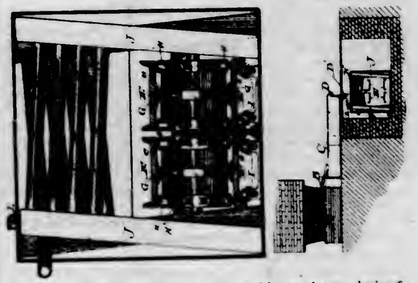


Claim.—1. A saw having a curved socket with the projecting rib *c* and the shoulders or ledges *d b'*, and a removable transversely-tapered planer having a curved neutral edge with a channel, *d'*, to engage the rib *c*, and provided with shoulders *c c'*, to engage the shoulders *b' d*, and a beveled cutting-edge, substantially as specified.

2. A saw having a curved socket between its teeth provided with the shoulders *b' d*, a planer fitted in said socket and provided with shoulders *c c'*, to engage the shoulders *b' d*, and the fastening-rivet E, passed through a recess, *f*, formed in the meeting edges of the socket and the planer, substantially as described and shown.

379,720. SLAG-FURNACE. ORRIN B. PECK, Chicago, Ill. Filed Dec. 6, 1887. Serial No. 257,071. (No model.)





Claim.—1. The combination of a smelting or slag-producing furnace, a steam-generating boiler, one or more traveling slag-carrying devices, as described, and means for conveying the slag from the slag-producing furnace to the said slag-carrying device, substantially as described.

2. The combination of a smelting or slag-producing furnace, a steam-generating boiler, one or more slag-carrying devices, as described, a trench or conduit in which said boiler is located, and means for conveying slag from the smelting-furnace to the slag-carrying vessels, substantially as described.

3. The combination of a smelting or slag-producing furnace, a steam-generating boiler, one or more slag-carrying vessels, a bridge over the same supported independently of such slag-carriers, and spouts or conduits for conveying slags from the smelting-furnace to the said carrying-vessels, substantially as described.

4. The combination of a slag-producing furnace, a traveling slag-carrying device located in a trench or conduit, a bridge or covering over the same supported independently of the slag-carrier, and spouts or conduits for conveying the slag from the slag-producing furnace to the slag-carrying device, substantially as described.

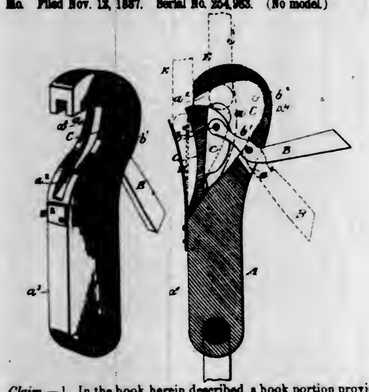
5. In a slag-furnace, the combination of a smelting or other fur-

nace to produce slag, a receiver into which the molten slag is conveyed, a steam-generating boiler, a traveling slag-carrying device, and means for operating the same, substantially as described.

6. In a slag-furnace, the combination of a smelting or other furnace to produce slag, a receiver into which the molten slag is conveyed, a steam-generating boiler, a traveling slag-carrying device, means for operating the same, and a trench or conduit containing the conveyer, substantially as described.

7. In a slag-furnace, the combination of a traveling slag-carrying apron, sprocket-wheels to move the apron forward, and a mud roller or mop arranged transverse to the line of motion of the apron and rotating on its surface to coat or cover the same, substantially as described.

379,721. CABLE-LEVER HOOK. MORTON E. PUGH, St. Joseph, Mo. Filed Nov. 12, 1887. Serial No. 254,963. (No model.)



Claim.—1. In the hook herein described, a hook portion provided with a holding-recess having its inner or engaging face provided with a longitudinal groove, in combination with a detaching-tongue adapted to extend across said holding-recess and slide in the same, guided by said groove, and a lever whereby said tongue is operated to or from its seat, substantially as described.

2. In the hook herein described, a hook portion provided with a holding-recess having its engaging-face provided with a longitudinal groove gradually increasing in depth to the innermost portion of the holding-recess to form a seat, in combination with a cam-shaped detaching-tongue adapted to normally rest in said seat, and a lever fulcrumed in the hook and pivoted to the tongue, whereby said tongue is moved to and from its seat across the holding-recess, guided in its movement by the groove, for the purpose substantially as described.

3. In the hook herein described, a hook portion provided with a holding-recess having its inner or engaging face provided with a longitudinal groove, forming a guide, and a seat at the inner portion of the recess, in combination with a cam-shaped detaching-tongue having its outer face concaved and its inner face rounded and tapering downward, said tongue sliding in the guide-groove through the holding-recess and normally resting in said seat, and an operating-lever, substantially as described.

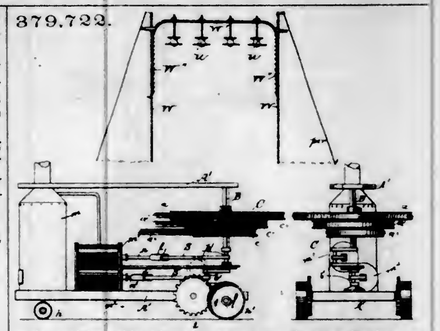
4. The hook herein described, provided with a longitudinal groove in the inner or engaging face of its hook portion, said groove increasing in depth to form a seat in the inner portion of the engaging-face, in combination with a cam-shaped detaching-tongue normally resting in said seat beneath the outer edges of the groove and having its inner face grooved, and a lever fulcrumed in the hook portion and having its inner end pivoted in the groove in the detaching-tongue and its opposite end extended to form a handle, substantially as described.

5. In the hook herein described, a hook portion provided with a holding-recess having a longitudinal groove in its inner or engaging face, and a guard-spring extending over said holding-recess, in combination with a cam-shaped detaching-tongue adapted to slide in said holding-recess, guided by said groove, and a lever pivoted in a slot extending through the rear of the hook portion and having its inner end pivoted to the inner face of the detaching-tongue and its opposite end extended to form a handle, substantially as described.

379,722. RAILROAD GRADING AND EXCAVATING MACHINE. MONROE R. PUGH, St. Joseph, Mo. Filed Nov. 17, 1887. Serial No. 255,456. (No model.)

Claim.—1. The combination, in a grading and excavating apparatus, with a suitable driving-power, of one or more endless continuously-revolving cables adapted to extend over the ground to be operated upon, one or more vertically-adjustable guide-pulleys carried by a suitable frame, and digging or removing implements connected with said cable and adapted to revolve continuously with the same, substantially as described.

379,722.



2. In a grading and excavating apparatus, the combination, with a suitable driving-power, of one or more endless cables continuously revolving in the same direction, and digging or removing implements operated by said cables, each implement being connected to a cable by means of a hook provided with a detaching-tongue and lever, whereby the implement can be disconnected without stopping the rotation of said cable, substantially as described.

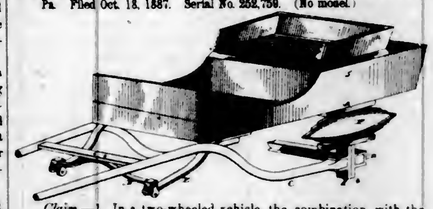
3. In a grading and excavating apparatus, the combination, with a suitable driving-power, of a vertical shaft carrying one or more horizontally-rotating driving-pulleys, one or more continuously-rotating endless cables driven by said pulleys, guide-pulleys carried by adjustable frames, whereby said cables are rendered vertically adjustable, and digging and removing implements detachably connected with said cables, substantially as described.

4. In a grading and excavating apparatus, the combination, with a suitable supporting-frame mounted upon wheels, a vertical crank-shaft journaled in one end of said frame and carrying one or more vertically-adjustable horizontally-rotating pulleys provided with grooved peripheries, and an engine carried by said frame and adapted to rotate said shaft, of one or more continuously-rotating endless cables driven by the pulleys upon the vertical shaft and extending over the ground to be operated upon, and digging or removing implements detachably connected with said cables, substantially as described.

5. In a grading and excavating apparatus, the combination, with a vertical shaft, a series of pulleys mounted upon said shaft in vertical adjustment, said pulleys being of different diameters, and a suitable power to drive the shaft and pulleys, of a series of endless cables continuously rotated by said pulleys, said cables being of different lengths and adapted to extend over the ground to be operated upon, and digging or removing implements detachably connected with said cables, substantially as described.

6. In a grading and excavating apparatus, the combination, with one or more cables revolving over the ground to be operated upon, suitable power to drive said cables, and digging or removing implements connected to said cables, of the herein-described guide-pulley frame, consisting of uprights provided with racks, a cross-piece vertically adjustable upon said racks, and spool-shaped pulleys carried by said cross-piece and adapted to guide said cables, substantially as described.

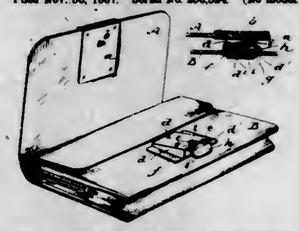
379,723. TWO-WHEELED VEHICLE. LEVI RABER, West Earl, Pa. Filed Oct. 13, 1887. Serial No. 252,759. (No model.)



Claim.—1. In a two-wheeled vehicle, the combination, with the bar A and bearings G, of three springs, as E, D, and E, the first and last being attached to the front of the body and the other to the cross-bar of the shafts, substantially as set forth, and for the purpose described.

2. In a two-wheeled vehicle having the bar A and bearings G and the three springs E D E, as described, the two bars *b* and *d*, one attached to the axle, the other to the ends of the shafts, having similar slots, and being held together by means of bolts through said slots, substantially as set forth, and for the purposes described.

379,724. POCKET-BOOK CLASP. DANIEL M. READ, New York, N. Y. Filed Nov. 30, 1887. Serial No. 256,594. (No model.)

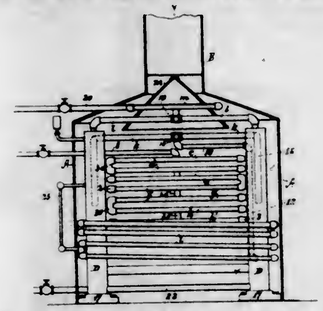


Claim.—1. A clasp for pocket-books, &c., comprising a plate, *d*, having an open slot, *c*, and a spring, *h*, held below the slot *c* and formed or provided with a shoulder, *i*, in combination with a stud, *b*, adapted to enter said slot and be retained by said spring, substantially as described.

2. The plate *d*, side pieces, *d'*, base *f*, and open slot *c* in the plate *d*, in combination with the retaining-spring *h*, held below the slot *c*, and a stud to enter the slot *c*, substantially as described.

3. The plate *d*, side pieces, *d'*, base *f*, and open slot *c* in the edge of the plate *d*, in combination with the retaining-spring *h* and the plate *a* and stud *b*, substantially as described.

379,725. SECTIONAL STEAM-BOILER. ANDREW L. RIKER, New York, N. Y. Filed Nov. 29, 1887. Serial No. 256,454. (No model.)



Claim.—1. A steam boiler or generator comprising a series of sections, each section composed of straight lengths of pipe and elbows assembled to form an angular coil, the convolutions of which all lie in the same horizontal plane, substantially as described.

2. A steam boiler or generator comprising a series of horizontal sections, one above the other, each section composed of straight lengths of pipe and elbows assembled to form a rectangular coil, the successive sections being connected together alternately at their centers and outer ends, substantially as described.

3. In a steam boiler or generator, the combination, with the series of horizontal sections placed above the fire-pot, and consisting each of a rectangular coil, of the coil surrounding said fire-pot and consisting of straight lengths of pipe connected by elbows at the corners, substantially as described.

4. The combination, with the boiler-sections, of two or more separators, a pipe leading from the boiler and branching to the several separators, and a steam-pipe also branching to the several separators, substantially as described.

5. The combination, with the boiler-sections, of the four separators, one at each corner of the boiler, the water-cross, and the steam-cross connected with said separators, substantially as described.

379,726. TANNED SKIN. VICTOR RIVIÈRE, Newark, N. J. Filed Feb. 11, 1888. Serial No. 263,684. (No specimens.)

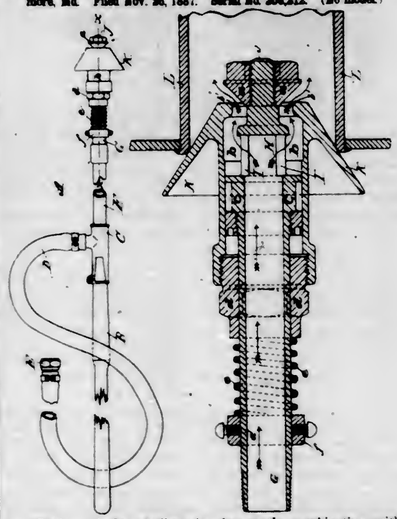
Claim.—1. As a new article of manufacture, a skin previously tanned with vegetable tanning-matter and impregnated with the oxide of chromium, as set forth.

2. As a new article of manufacture, a skin previously tanned with vegetable tanning-matter, having its pores impregnated with oxide of chromium and dyed with a color partly combined with the chromium oxide as a mordant, as set forth.

379,727. PREPARATION OF BREAD. JOHN ROBERTSON, Pottsville, Pa. Filed Mar. 19, 1887. Serial No. 231,604. (No specimens.)

Claim.—The process of extracting in solution the essences and nutritive properties of wheat, oat, rye, and barley grain in certain proportions by use of fresh skimmed milk heated to the boiling-point, and combining this solution with eggs, leaven, flour or meal, salt, &c., and working and forming the resultant mass into loaves and baking them, producing a bread having medicinal or curative properties for disordered digestion, as herein described and set forth.

379,728. BOILER-TUBE CLEANER. GEORGE M. ROBINSON, Baltimore, Md. Filed Nov. 26, 1887. Serial No. 256,212. (No model.)

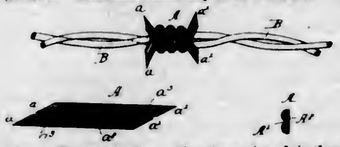


Claim.—1. In a boiler-tube cleaner, the combination, with a steam-inlet pipe carrying a fixed valve and a piston having a greater area than the valve, of a cylinder adapted to slide on said steam-piston and opening on said valve, substantially as shown and described.

2. In a boiler-tube cleaner, the combination, with a steam-inlet pipe, a fixed valve held on the outer end of said pipe, and a piston rigidly formed on the said inlet-pipe and having a greater area than the said valve, of a cylinder adapted to slide on the said piston and opening on the said valve, and a cone formed on the outer end of the said cylinder and adapted to fit into tubes of various sizes, substantially as shown and described.

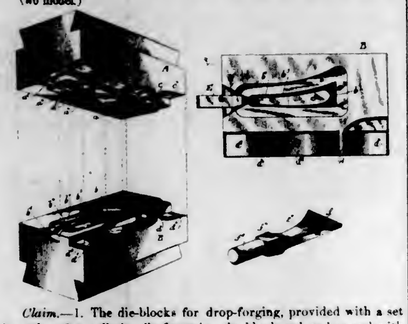
3. In a boiler-tube cleaner, a steam-inlet pipe provided on its outer end with a slotted offset, a fixed valve held on said offset, and a piston formed on the inner end of said steam-inlet pipe and being greater in area than the said valve, in combination with a cylinder adapted to slide on said piston, and into which opens said slotted offset, the said cylinder being adapted to seat itself on the said valve, substantially as shown and described.

379,729. BARB FOR WIRE FENCING. WILLIAM H. RODDEN, Toronto, Ontario, Canada. Filed Apr. 22, 1887. Serial No. 235,813. (No model.) Patented in Canada May 4, 1887. No. 26,586.



Claim.—The combination, with a fence-wire, of the four-pointed barb A, the same being formed from a blank rhomboidal in shape, flat upon one side and corrugated upon the other, and having a longitudinal incision, a^3, at each end in the thinnest portion of the metal, said barb having its central part coiled around the wire in such manner that the four points will project in different directions, substantially as set forth.

379,730. DIE FOR MAKING THRASHING-MACHINE TEETH. HENRY T. RUSSELL, Chicago, Ill. Filed Mar. 28, 1887. Serial No. 232,754. (No model.)



Claim.—1. The die-blocks for drop-forging, provided with a set of matrices for preliminarily flattening the blank rod or bar and with a set of matrices for shaping and finishing the article, the preliminary matrices being shallowest at the point d^3, corresponding to the thickened or rounded part of the article, and the finishing-matrices being deepest at their part b^3, corresponding with the shallowest part of the preliminary matrices, whereby when the flattened blank is set endwise between the finishing-matrices its widest portion will be in position to fill the deepest part thereof, substantially as described.

2. The die-blocks for making thrashing-machine teeth of that kind which comprise a rounded shank and a tooth having a broad and flat end portion, said die-blocks being provided with finishing-matrices and with matrices which are deepest in their parts corresponding with the shallowest parts of the finishing-matrices, or that part by which the flat part of the tooth is formed, and shallowest in their portions corresponding with the deeper part of the finishing-matrices, or those by which the shank of the tooth is given shape, substantially as described.

3. The die-blocks for forging thrashing-machine teeth of that kind having cylindric shanks and broad flat ends curved laterally from the axial line of the shanks at one side of the teeth, said dies being provided with finishing-matrices for giving shape to the teeth and with matrices having opposing convex and concave surfaces operating to bend the end of the blank to a curved form, the matrices being shallowest in their parts which correspond with the deeper portions of the finishing-matrices wherein the shank of the tooth is formed, substantially as described.

4. The die-blocks provided with finishing-matrices and with matrices for bending or flattening the blank rod or bar, and opposing cutters located at the ends of the matrices for bending or flattening the blank rod, said cutters being formed by separate bars fitted and secured within recesses formed in the side faces of the die-blocks, substantially as described.

379,731. PRODUCING LITHOGRAPHIC SURFACES. HERMANN SCHOSSER, Offenbach-on-the-Main, Germany. Filed Aug. 11, 1887. Serial No. 246,675. (No specimens.) Patented in France Feb. 10, 1887, No. 181,470.

Claim.—The herein-described process of producing lithographic printing-plates, consisting in subjecting the zinc plates to the action of a mixture of nitric and sulphuric acids and then subjecting said plates to the action of an ammonia salt, as set forth.

379,732. CIGAR-BUNCHING MACHINE. ADOLPH C. SCHUTZ, Brooklyn, assignor to the National Progress Bunching Machine Company, New York, N. Y. Filed Dec. 10, 1887. Serial No. 257,527. (No model.)

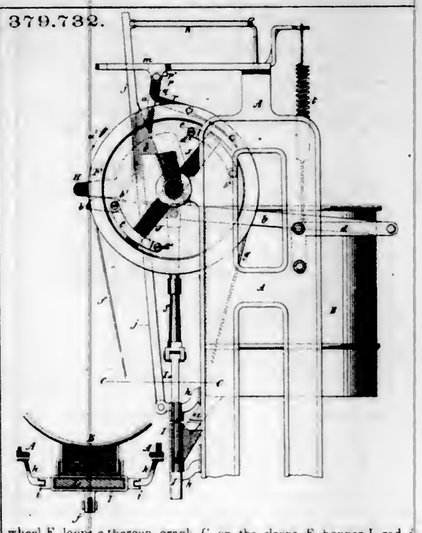
Claim.—1. In a cigar-bunching machine, the combination, with the hopper I, its rod j, and tooth l, of the sleeve E, crank G, carried by said sleeve and adapted to support and raise the tooth l, and means, substantially as described, for pushing the tooth l off the crank G and for turning said crank to raise the tooth l, and thereby the hopper I, substantially as specified.

2. The hopper I, rod j, and tooth l, in combination with the sleeve E, crank G, for engaging the tooth l, wheel F, oscillating crank o for tripping the rod j, and the projection r, carried by the wheel F, for actuating the crank o, substantially as described.

3. The combination of the shaft D, having arm H and crank J, lever b, plunger L, connected therewith, sleeve E, wheel F, carried thereby, and loops e, for permitting motion to the wheel F, to some extent independent from and to some extent together with the shaft D, substantially as described.

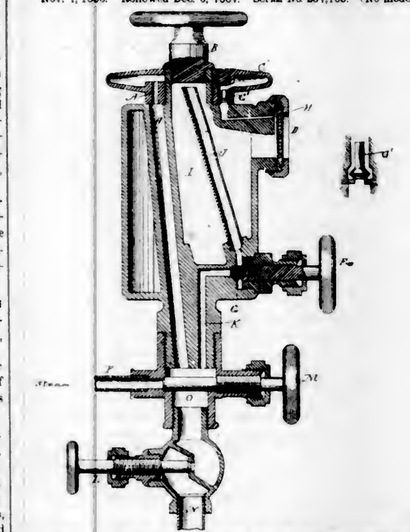
4. The shaft D, having arm H and crank J, lever b, and plunger L, connected therewith, in combination with the sleeve E, having

379,732.



wheel F, loops e thereon, crank G on the sleeve E, hopper I, rod j, and tooth l, all arranged for operation substantially as described.

379,733. OIL-FEEDER. NICHOLAS SEIBERT, Boston, Mass. Filed Nov. 1, 1886. Renewed Dec. 6, 1887. Serial No. 257,103. (No model.)



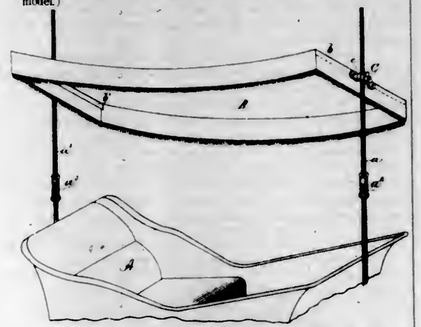
Claim.—1. The combination, with the oil-reservoir having an oil and water passage, respectively, and a condenser communicating with the water-passage, of an upwardly-moving check-valve within the water-passage and a horizontally-moving valve within the oil-passage for checking the feed of oil when the steam is shut off, substantially as herein described.

2. The oil-reservoir I, the steam-pipe A, passing through said reservoir, and the water-passage H, in combination with a condenser communicating with both the steam-pipe and water-passage, the oil-passage K, and a steam-pipe adjacent to the discharge of said oil-passage, substantially as herein described.

3. An improved oil-reservoir, comprising a steam-pipe, a water-passage, H, and an oil passage, K, formed therein, a condenser com-

municating with the steam-pipe and water-passage, check-valves within said water and oil passages, a steam-chamber, O, beneath the oil-passage, a steam-pipe and controlling-valve adjacent thereto, and a discharge-pipe and controlling-valve leading from said oil-chamber to the valves and pistons, substantially as herein described.

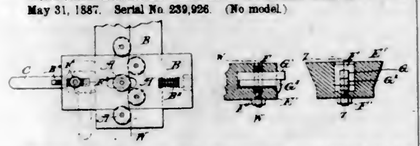
379,734. SUNSHADE FOR BABY-CARRIAGES. HERBERT S. SMITH, New York, N. Y. Filed Dec. 23, 1887. Serial No. 258,793. (No model.)



Claim.—1. The combination, with the carriage-body, of the rods a a', the sunshade or awning B, of flexible material, strips, one at each end of the awning, and adjustable clamps connected to the strips and passing around the rods a a', whereby the awning is clamped securely in place, substantially as specified.

2. The combination, with the carriage-body and the rods a a', connected, respectively, to the front and back portions of the body, of the flexible awning B, the strips b b' at the ends of the awning, the slotted holdfasts c, connected to the strips, eyes d, surrounding the rod and having screw-stems, and clamping-nuts g upon said stems, whereby the awning is secured to and supported by the rods a a' at two opposite points, substantially as set forth.

379,735. DIE-HOLDER AND STRAIGHTENING DEVICE FOR WIRE-NAIL MACHINES. MINARD M. SMITH, New York, N. Y. Filed May 31, 1887. Serial No. 239,926. (No model.)

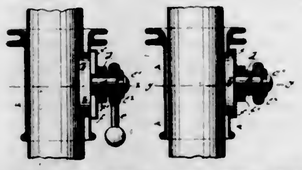


Claim.—1. In a wire-nail machine, the combination of the straightening-rolls A A', bed-plate B, and carriage B', with the adjustable cam-lever C and spring B^3, constructed and operated as and for the purposes herein shown and described.

2. In a wire-nail machine, the adjusting-screw B^4, in combination with the carriage B', the bolt B^5, and the plate B, cam-lever C, and slot B^2, substantially as and for the purposes herein shown and set forth.

3. In a wire-nail machine, the combination of the die-block E' and clamp-bolt F' with the die G' and gib G^3, constructed and operated substantially as and for the purposes herein shown and set forth.

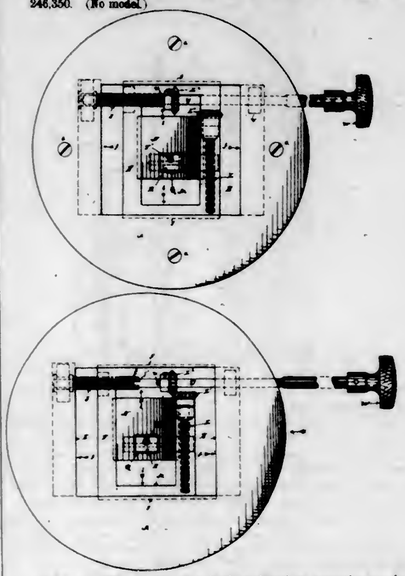
379,736. RUNNER FOR UMBRELLAS OR PARASOLS. FRANZ SPANNUTH, Berlin, Germany. Filed Aug. 4, 1887. Serial No. 246,101. (No model.)



Claim.—1. The combination of a runner having a raised casing provided with an interiorly-threaded socket or boss, a clamping-plate in said casing, said plate having a headed shank, an exteriorly-threaded sleeve turning loosely on said shank and engaging said socket or boss, and a lever attached to said sleeve, substantially as set forth.

2. The combination of a runner having an elongated casing provided with an interiorly-threaded socket or boss, a clamping-plate guided in said casing and provided with a concave face and a headed shank, an exteriorly-threaded sleeve turning loosely on said shank and engaging said socket or boss, and a lever attached to said sleeve, substantially as set forth.

379,737. POINT MECHANISM FOR BOOK-FOLDING MACHINES. JOHN H. STONEMETZ, Millbury, Mass., assignor to the Stonemetz Printer's Machinery Company, same place. Filed Aug. 6, 1887. Serial No. 246,350. (No model.)



Claim.—1. The combination, in the point-plate-actuating mechanism of a book-folding machine, of one screw having a miter-gear thereon and another hollow screw having a slot or groove in the end thereof, by means whereof each of said plates can be moved, with a single shaft having a miter-gear and stud-pins thereon and adapted to be moved longitudinally to engage with and actuate both of said screws one at a time, substantially as and for the purpose set forth.

2. The combination, in the point-plate mechanism of a book-folding machine, of two actuating-screws, one of which is adapted to move one of the plates to and fro in the table-top and the other to move another plate mounted in the first-named plate at right angles to the movement of the first-named plate, with a single screw-actuating shaft adapted to be moved so as to engage alternately with each of said screws, substantially as and for the purpose set forth.

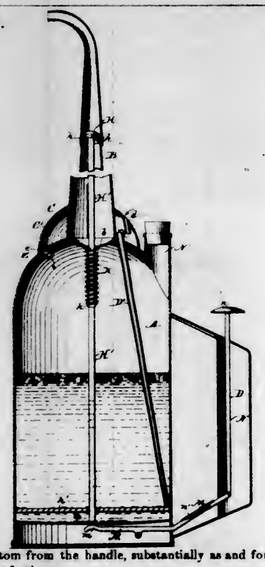
3. The combination, in the point mechanism of a book-folding machine, of the hollow screw J, mounted in the bearing K, and passing through the ear G on the plate F, and the screw L, and the miter-gear L' thereon mounted in the ear H on the plate F, and passing through the arm O on the point-plate N, and the rod U, having thereon the pin u, and the miter-gear L^2, substantially as and for the purpose set forth.

379,738. OIL-CAN. JOHN H. SUTPHEN, Huron, Dak. Filed Aug. 9, 1887. Serial No. 246,517. (No model.)

Claim.—1. The combination, with an oil-can provided with a false spring-bottom and a handle attached at one side, of a valve located in the spout, a spring-actuated rod attached to said valve having a bearing upon the spring-bottom, a lever fulcrumed beneath the said spring-bottom adapted to engage the same, and a connecting-rod pivotally attached to the said lever sliding in the said handle and provided with a thumb-plate at the upper end, substantially as shown and described.

2. The combination, with an oil-can provided with a false spring-bottom, a spout having a filter at the base, and a vent-tube projecting from the top of the can within the same at an inclination outward, said vent-tube being larger at the top than at the bottom, of a valve located in said spout, a spring-actuated rod attached to said valve having a bearing upon the spring-bottom, and means for flexing the

379,738.



said spring-bottom from the handle, substantially as and for the purposes herein set forth.

3. The combination, with an oil-can provided with a false spring-bottom, a spout having a filter at the base, a vent-tube larger at the top than at the bottom projecting from the top of the can within the same, a hemispherical casing attached to the upper surface of the can and surrounding the spout provided with a short vent-tube, and a ball-valve located in the can within said casing and opposite the vent-tube, of a valve located in the spout, a spring-actuated rod attached to said valve having a bearing upon the spring-bottom, and means for flexing said spring-bottom and raising the valve-rod from the handle, substantially as set forth.

379,739. BELT-FASTENER. WALTER O. TALCOTT, Providence, R. I. Filed May 18 1887. Serial No. 238,584. (No model.)



Claim.—1. A belt-hook having teeth provided with base portions and cylindrical pointed extensions or elongations adapted to pass through the belt and clinch in any direction on the inside of the belt, substantially as described, for the purpose specified.

2. The belt-hook herein described, provided with clinchable teeth upon one side of the central line and non-clinchable teeth upon the opposite side, said non-clinchable teeth being of uniform cross-sectional area throughout their body portion, substantially as described.

379,740. GRATE. HIRAM P. TALLMADGE, Boston, Mass. Filed Aug. 8, 1887. Serial No. 246,383. (No model.)



Claim.—1. The combination of the grate-bars, the rock-bar on which one end of each grate-bar rests being connected with said rock-bar alternately above and below its center of oscillation, the tilting pieces, one for each grate-bar, supporting the same at the end opposite the rock-bar, and the cross-bar on which said tilting pieces rest, substantially as described.

2. In a shaking-grate, the combination, with the supporting and oscillating device having bearing-edges on which the grate-bars loosely rest, and beads or swells below the same, of the grate-bars having notches into which said bearing-edges enter, said notches having concave sides, substantially as described.

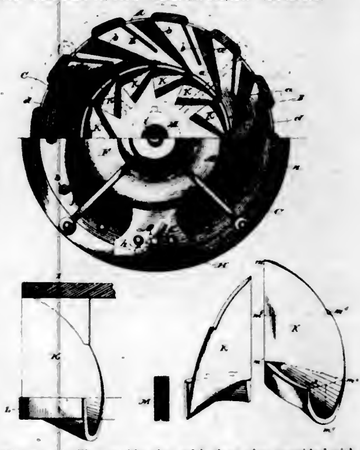
3. The combination, with the rock-bar, tilting pieces having edge-bearings and supports for said tilting pieces, of the grate-bars having notches for engaging the rock-bar and tilting pieces, the sides of said notches being curved outward from the center, forming swells or cam-faces, substantially as and for the purposes set forth.

4. The combination, in a shaking-grate, of a series of grate-bars all of the same pattern and of uniform width, a rock-bar having bearings on its upper edge for alternate bars and slots near its lower edge, and arms fastened to the intermediate bars and having notches at their lower ends for engaging the edges of the slots in said rock-bar, substantially as described.

5. The combination of the frame, the rock-bar pivoted in the side bars of said frame, the grate-bars connected with said rock-bar, and the series of tilting pieces or supports having at their upper ends bearings for said grate-bars and at their lower ends notches which engage edge-bearings on the rear bar of said frame, substantially as described.

6. In a grate, the combination, with the grate-bars, of the frame comprising the side bars, the legs provided with ribs or projections, the headers resting on said legs and having beads or ribs near the ends, and the clamps for locking the headers and legs by means of said projections and beads or ribs, substantially as described.

379,741. WATER-WHEEL. CHRISTOPHER C. TAYLOR, Appleton, Wis. Filed June 19, 1886. Serial No. 205,639. (No model.)

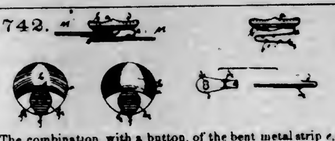


Claim.—1. The combination, with the casing provided with the removable wedge-shaped partitions arranged in a circular series and a rotary gate provided with a series of openings corresponding to the said partitions and having the inwardly-extending guide-plates rigidly secured thereto, one at one edge of each opening, of a water-wheel consisting of an upper disk and a series of depending blades secured thereto, said blades each having on its outer face an elongated seat curved in the arc of a circle concentric with the center of the disk and parallel with the side walls of the casing, and a band shrunk around the blades and resting on said curved seats and below the outer edge of the blades, substantially as set forth.

2. The combination, with the upper disk of the wheel, of a series of depending blades, each having on its outer face an elongated seat curved in the arc of a circle concentric with the center of the disk and parallel with the side wall of the casing, and a band shrunk around the blades and resting on said curved seats and below the outer edge of the blades, substantially as set forth.

3. A water-wheel blade having substantially the following proportions, viz: from m to m' equals one-half the diameter of the wheel; from m' to m^2 and from m' to m^3 equals one-third the diameter of the wheel; from m^2 to m^3, from m^3 to m^4, and from m^5 to m^6 equals one-fourth the diameter of the wheel; from a line joining m^3 and m^5 to m^4 equals one-sixth the diameter of the wheel.

379,742. BUTTON. FRIEDRICH H. THIER, Königstein, Saxony, Germany. Filed Dec. 20, 1887. Serial No. 258,449. (No model.)



Claim.—1. A button provided with an attaching device composed of an S-shaped metal strip having one end secured to the under side of the button and the other end adapted to be passed through a slot in the strip near that end of the strip secured to the button, substantially as set forth.

2. The combination, with a button, of the bent metal strip e, having the end prong, e^2, and the slot e^3, substantially as set forth.

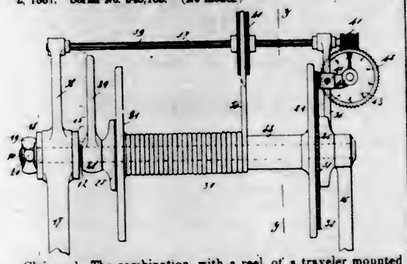
3. The combination, with a button having the recess f and two slots, f^2, in its under side, of the bent metal strip e, having the lugs or ears e^4, substantially as set forth.

4. The combination, with a button, of the metal strip e, secured to its under side and provided with the prongs e^2, and the slot e^3, and the bent end e^4, substantially as set forth.

5. The button herein described, provided on its under side with a projection having a slot in one edge, and an attaching-strip for attaching the button to the garment, one end of the attaching-strip being held in the above slot, substantially as set forth.

6. The combination, with a button provided on its under side with a projection having a slot in its inner edge, of an attaching-strip on the under side of the button for securing it to one edge of the garment, and a hook on the opposite edge of the garment, substantially as set forth.

379,743. MEASURING-REEL. ENOS M. THOMAS, Cherry Grove, Pa., assignor to himself and Charles G. Thomas, same place. Filed June 2, 1887. Serial No. 240,108. (No model.)



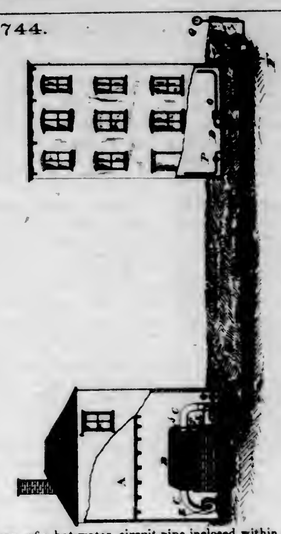
Claim.—1. The combination, with a reel, of a traveler mounted upon a feathered shaft relatively fixed to the reel, said traveler being arranged to receive the cord or cable from the reel, a worm formed upon the feathered shaft, an indicator-disk provided with teeth that are engaged by the worm, and a pointer arranged in connection with the disk, substantially as described.

2. The combination, with a fixed shaft, of a reel mounted to turn thereon, friction-washers arranged in connection with the reel, disks feathered upon said shaft, and a handled nut, substantially as described.

3. The combination, with a reel, of a shaft, 37, formed with a feather, 39, a traveler, 40, mounted upon said shaft and feather, a worm, 41, formed upon the shaft 37, a disk, 43, formed with teeth 42, that are engaged by the worm, a supporting-bracket, 44, and a pointer, 46, arranged in connection with the disk and carried by the bracket, substantially as described.

4. The combination, with a reel provided with a gear, 31, of a shaft, 10, upon which the reel is mounted, a gear, 32, which is provided with a crank-arm, 35, and arranged to engage the gear 31, a shaft, 37, formed with a feather, a traveler, 40, mounted upon said shaft and feather, a worm, 41, formed upon the shaft 37, a disk, 43, formed with teeth 42, engaged by said worm, and a pointer, 46, arranged in connection with the disk, substantially as described.

379,744. HEAT AND POWER SUPPLY SYSTEM. THEODORE R. TIRBY, Washington, D. C., assignor of one-half to Christian G. Schneider, same place. Filed May 3, 1887. Serial No. 236,967. (No model.)



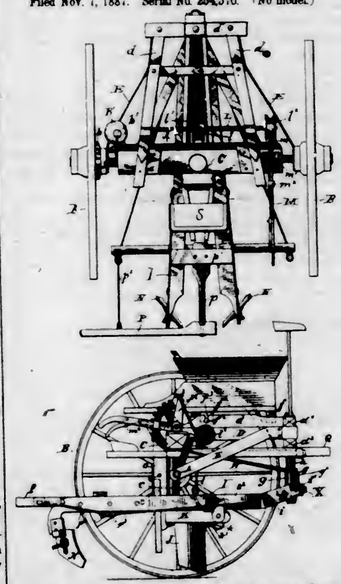
Claim.—1. The combination, with an air-supply main, of a heating-pipe extending longitudinally in the main and returning through the same main, thus doubling on itself, and having outflow and inflow sections, both inclosed in the same main, substantially as described.

2. The combination of an air-supply main and an air-propeller for forcing air therein, substantially as described, a hot-water circuit inclosed within the main, and a forcer for maintaining the circulation in the hot-water circuit, as set forth.

3. The combination, with an air-supplying apparatus and means for heating the air, a main, and service-pipes leading therefrom, of a circuit of hot-water pipe contained within the main, and a forcer connected to and maintaining circulation in this circuit.

4. The combination, with an air-main and service-pipes leading therefrom, of a hot-water circuit-pipe inclosed within said main, and a service-pipe leading from the hot-water circuit-pipe to a place of consumption, as set forth.

379,745. POTATO-DRILL. JOHN I. ULEN, South Wabash, Ind. Filed Nov. 7, 1887. Serial No. 254,570. (No model.)



Claim.—1. The combination, with a main frame, of a bolt depending from the forward central portion of the same, a collar embracing said bolt and provided with laterally-extending perforated ears or lugs, plow-beams connected at their forward ends, plates whereby the forward ends of said plow-beams are secured together, said plates passing forward upon opposite sides of the ears or lugs, a bolt pivotally securing the plates to the ears or lugs, a rock-shaft horizontally journaled in the main frame and connected with the plow-beams, and a lever pivoted upon the main frame and connected with the rock-

shaft, whereby the plow-beams can be vertically adjusted, substantially as described.

2. The combination, with a main frame and the plow-beams pivotally secured to the same, of a frame hinged at its forward portion to the plow-beams to have a limited vertical swing, an opening-shovel hinged at its upper rear end to the under side of said frame and removably secured at its front edge to the same by means of a hasp and staple, a horizontal rock-shaft journaled in the main frame and connected with said hinged frame by a chain or cord, and a lever pivoted to the main frame and connected with the rock-shaft, for the purpose set forth.

3. The combination, with a main frame and the plow-beams pivotally secured to the same at their forward portions, of a horizontal rock-shaft transversely journaled in the main frame above the plow-beams, a pulley centrally located upon the rock-shaft, a chain or cord secured to said pulley and connected with the plow-beams, an operating-lever pivoted to the main frame, an additional pulley upon the rock-shaft connected with said lever by a chain or cord, and a locking and holding device whereby the lever, and hence the plow-beams, can be held at the desired vertical position, substantially as described.

4. The combination, with the main frame and the opening and covering shovels, of a hopper mounted upon the main frame, a cross-piece secured to and extending across the bottom of the hopper, the opposite ends of said cross-piece loosely extending into the main frame upon each side of the hopper, whereby the same is allowed a vertically-tilting movement, an additional cross-piece secured to the hopper and engaging the main frame to prevent lateral movement of the hopper, a downwardly-extending tube carried by the hopper, and a tube carried by the main frame and extending from the lower end of the hopper-tube to the rear side of the opening-shovel, substantially as described.

5. In combination, the plow-beams, a shovel-frame hinged at its forward portion to swing downwardly below said plow-beams, an opening-shovel hinged at its rear end to said frame and removably secured to the frame at its forward edge, and a lever and chain, cord, or the like, whereby the hinged frame is operated, substantially as described.

6. In combination, plow-beams connected together and pivoted at their forward ends, a shovel-frame hinged to said plow-beams to swing below and between the same, and an opening-shovel hinged at its rear upper edge to said frame and secured removably to the same at its front edge, substantially as described.

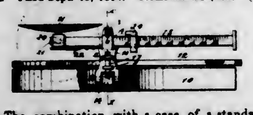
7. The combination, with the main frame, of a bolt depending from the same and provided with a collar, the plow-beams pivoted at their forward ends to said collar, and a guide-bar secured to the main frame at its upper portion and having its lower end extending downward and fitting between the plow-beams, whereby the plow-beams are allowed a vertical movement, but are prevented from swinging laterally, substantially as described.

8. The combination, with the main frame, of a bolt depending from the same, a collar embracing said bolt, the plow-beams connected at their forward ends and pivoted to said collar, and a guide-bar secured to the main frame at its upper portion and having its lower portion extending downward and fitting between the plow-beams, the said lower portion being formed in two sections hinged together to swing rearwardly, whereby the plow-beams are prevented from lateral swing, substantially as described.

9. In combination with the plow-beams, of a cross-bar connecting the rear portions of said plow-beams, a supporting-bar secured to said cross-bar and extending rearwardly from the same between the plow-beams, and a marker pivoted to the rear end of the supporting-bar and adapted to swing upwardly and over and engage the ground upon either side of the plow-beams, substantially as described.

10. The combination, with the plow-beams, of a cross-bar secured to the rear portions of the plow-beams, a supporting-bar secured to said cross-bar and extending rearwardly from the same between the plow-beams, a marker pivoted to the end of said supporting-bar and adapted to swing upwardly and over and engage the ground upon either side of the plow-beams, and a hook pivoted to the marker, whereby the marker can be held suspended out of engagement with the ground, substantially as described.

379,746. **POCKET WEIGHING-SCALE.** WILLIAM R. WATT, Somerville, Tenn. Filed Sept. 15, 1887. Serial No. 249,746. (No model.)

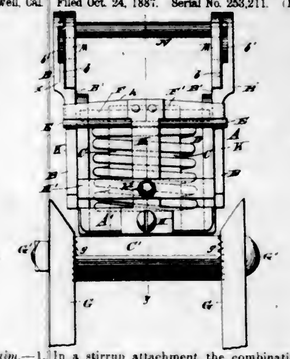


Claim.—1. The combination, with a case, of a standard pivoted in the case, a scale-beam supported by the standard, and a pan pivoted on the end of the scale-beam and adapted to be turned at right angles thereto when the standard carrying the scale-beam is folded in the case, substantially as described.

2. The combination, with a case, of a scale-standard pivotally connected thereto, a beam supported by the standard, a pan, a block to which the pan is connected, a pin or bolt which extends outward from the beam and passes through the block, and a spring carried by the beam and arranged to bear against the block, substantially as described.

3. The combination, with a case, of a post connected to the bottom thereof, a scale-standard pivotally connected to the post, a catch or bolt carried by the standard, a scale-beam also carried by the standard, a block, 20, mounted upon a pin or bolt, 21, which extends outward from the end of the standard, a spring, 22, secured to the beam and arranged to bear against the block, and a pan, 11, connected to the block 20, substantially as described.

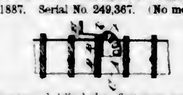
379,747. **STIRRUP ATTACHMENT.** JACOB C. WELCOME, Fort Bidwell, Cal. Filed Oct. 24, 1887. Serial No. 253,211. (No model.)



Claim.—1. In a stirrup attachment, the combination, with the frame A, provided with enlarged upper ends, B', having inner recesses, *b*, and auxiliary recesses *b'*, of the pivotal hooks M, all arranged substantially as shown and described.

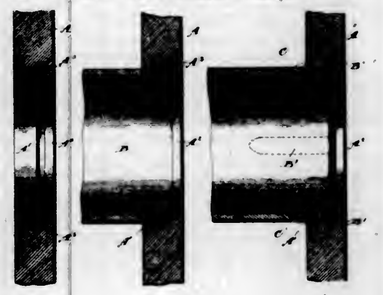
2. In a stirrup attachment, the combination, with the frame A, provided with enlarged upper ends, B', having inner recesses, *b*, and auxiliary recesses *b'*, of the stirrup-rod C, the integral shank C, main spring D, guide-plate E, the pivotal hooks M, and transverse detachable bolt N, all arranged substantially as specified.

379,748. **BLIND-STOP.** GEORGE W. WILLIAMS, Brooklyn, N. Y. Filed Sept. 10, 1887. Serial No. 249,367. (No model.)



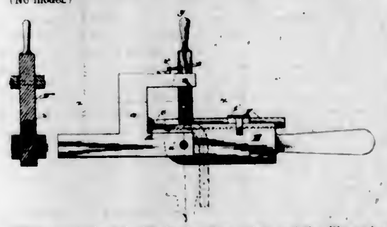
Claim.—An improved blind-slat fastener consisting of the segmental plate A, provided with a series of radially-arranged apertures, *b*, near the outer curved edge and having an apertured base, B, at right angles thereto for securing it to a blind-slat, and the angular gravity-lever E, apertured at its angle for pivoting it to the stile and provided with the upwardly-tapering lip *f*, extending from the end of the member *c*, and the finger-plate *f'*, projecting laterally from the member *c'*, substantially as herein shown and described.

379,749. **STEAM-BOILER.** GEORGE R. WILSON, Washington, D. C. Filed Nov. 17, 1887. Serial No. 255,424. (No model.)



Claim.—The combination, with a tube-sheet having within the tube-opening thereof an annular straight-walled groove of a width substantially agreeing with the thickness of the tube to be connected therewith, said tube-opening being at the water side of the tube-sheet of a diameter substantially agreeing with the outer diameter of the tube, and being at the fire side of the tube-sheet of a diameter substantially agreeing with the inner diameter of the tube, of a tube flanged and set into the annular groove of the said sheet, substantially as specified.

379,750. **TUBE-BENDING DEVICE.** WILLIAM C. WINFIELD, Warren, Ohio, assignor of two-thirds to Rollin A. Cobb and Orris R. Grimmessey, both of same place. Filed Dec. 2, 1887. Serial No. 256,754. (No model.)



Claim.—1. In a device for bending tubes and the like, a base having a mandrel fixed thereon, and a former pivoted on said base and having its curved portion beneath the mandrel, substantially as set forth.

2. In a device for bending tubes and the like, a stationary base and a mandrel having a portion of its length projecting beyond its support on said base, in combination with a former pivoted on the base and provided with a clamp for holding the article to be bent, substantially as set forth.

3. In a device for bending tubes and the like, a former pivoted to turn on a base, and a mandrel held stationary on said base, with its free end projecting over the former, substantially as set forth.

4. In a device for bending tubes and the like, a base and a former having a circular grooved end pivoted in said base, in combination with a stationary mandrel, substantially as set forth.

5. In a device for bending tubes and the like, a former grooved along its edge and end and having a handle and clamp, substantially as described, in combination with a base to which the former is pivoted, and a mandrel fixed over the end of said former, substantially as set forth.

6. In a device for bending tubes and the like, a base and a mandrel fixed on said base and extending over a projection thereof, in combination with a former pivoted on said projection and having a grooved portion which extends about the sides of the mandrel, substantially as set forth.

7. In a device for bending tubes and the like, a base and a mandrel firmly fixed thereon, in combination with a former pivoted in the base beneath one end of the mandrel and having a clamp and handle, substantially as set forth.

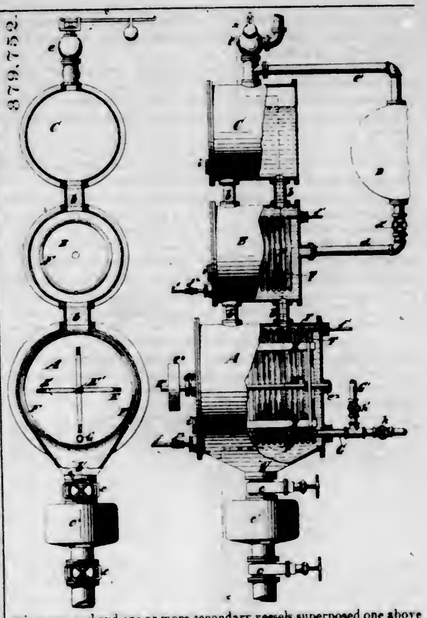
379,751. **SEINE.** SPENCER T. WILMOR, Duxbury, Mass. Filed Jan. 6, 1888. Serial No. 259,963. (No model.)



Claim.—1. A seine having the extension *a'* at one end, and the line *p*, secured at its ends to the upper and lower edges of the net, combined with the weight adapted to slide on said line, and the purse-line *d*, engaged, as described, with the weight and seine.

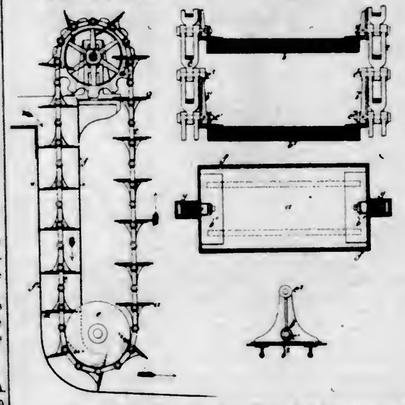
2. A seine having the line *p*, secured to the upper and lower edges of the net at one of its ends, combined with the weight having the eye *b*, adapted to slide on said line, and the purse-line *d*, engaged, as described, with the weight and seine.

379,752. **APPARATUS FOR THE MANUFACTURE OF SODA.** MILTON R. WOOD, Brooklyn, N. Y. Filed Sept. 15, 1886. Serial No. 213,549. (No model.)



Claim.—In an apparatus for the manufacture of monocarbonate and bicarbonate of soda or allied products, the combination of a lower primary vessel and one or more secondary vessels superposed one above another, and unobstructed and constantly-open throats or passages connecting the top of each vessel with the bottom of the vessel next above, thereby adapting the vessels for containing substantially specific and limited bodies of liquor which will fill all the vessels except the upper one, and which, through the throats or passages, form in effect a single hydrostatic column, an inlet-passage for liquor to one of the secondary vessels, and an agitator and a coil for the circulation of a refrigerant, arranged in one or more of the vessels, and a pipe for introducing gas into the primary vessel, whereby the gas is caused to ascend freely through the entire body of liquor in the vessels in succession and the entering liquor is free to rise with the gas, substantially as herein described.

379,753. **WATER-MOTOR.** SAMUEL S. ALLEN, Bedford Park, County of Middlesex, England. Filed Mar. 9, 1887. Serial No. 230,206. (No model.) Patented in France Feb. 20, 1885, No. 167,171, and in England Oct. 9, 1885, No. 11,994.



Claim.—1. In combination with a pair of endless chains and a set of floats, a set of rigid cradles to which said floats are attached, each cradle consisting of brackets *b' b'* and a connecting-brace, *b²*, ex-

tending across the space between the chains, said cradle being attached to each of said chains at two points corresponding to the joints of the links, for the purpose set forth.

2. In combination with a pair of endless chains and a set of floats, a set of cradles, each having one of said floats attached thereto and connected at each of its ends to two proximate links of said chains at two points corresponding to the joints of the links, for the purposes set forth.

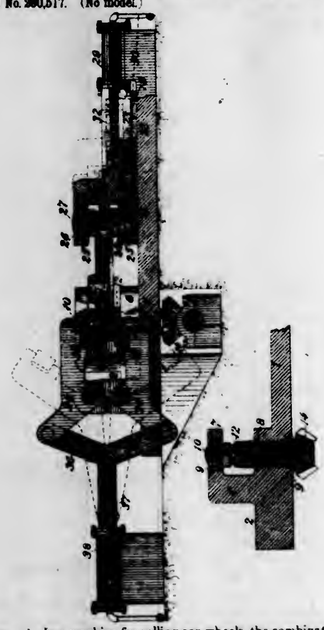
3. A pair of endless chains and a set of cradles attached thereto by pins d', in combination with the steadying-pins d^2 and the flat floats attached to said cradles, substantially as described.

4. The combination of the chains, cradles, and floats, each float being arranged in advance of a link, and each cradle being suspended from pins on the chains, substantially as described.

5. In combination with a pair of endless chains and a hollow trunk through which they pass, a set of floats carried by said chains, each of said floats being attached at each end to each of said chains at two points corresponding to the joints of the links, and arranged in advance of the links to which it belongs, for convenience in feathering, as set forth.

6. An endless carrier and a hollow trunk through which it passes, in combination with a series of floats, each float being attached to the said carrier at two points corresponding to the joints of the links thereof and in advance of a link of said carrier, to which it is attached, for convenience in feathering, as set forth.

379,754. **MACHINE FOR ROLLING CAR-WHEELS.** RALPH BAGALEY and WILLIAM HAINSWORTH, Pittsburg, Pa. Filed Jan. 12, 1888. Serial No. 260,517. (No model.)



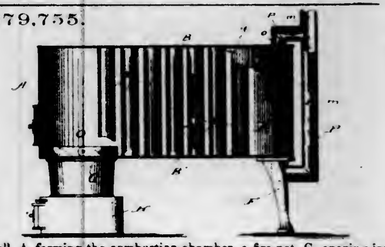
Claim.—1. In a machine for rolling car-wheels, the combination of two positively-driven vertical rolls and a vertical roll movable toward and from the other rolls and driven by frictional contact with the wheel operated on, substantially as set forth.

2. In a machine for rolling car-wheels, the combination of two positively-driven vertical rolls, a vertical roll movable toward and from the other rolls, and a pair of horizontal rolls movable toward and from each other, the movable rolls being driven by frictional contact with the wheel operated on, substantially as set forth.

3. In a machine for rolling car-wheels, the combination of a pair of angular levers, rolls horizontally mounted on the inner ends of said levers, an operating-rod, and a toggle-joint connection from said rod to the levers, substantially as set forth.

379,755. **AIR-HEATING DEVICE.** MYRON T. BALDWIN, La Grange, Ill. Filed May 13, 1887. Serial No. 238,026. (No model.)

379,755.



Claim.—1. In a heating device, the combination of a drum or shell, A, forming the combustion-chamber, a fire-pot, G, opening into the base of the combustion-chamber near its forward end in line with the fuel-door and flush with the said base, vertical flues E, arranged in parallel or substantially parallel rows longitudinally within the combustion-chamber in line with the fuel-door, whereby ready access may be had through the fuel-door to opposite sides of each row of flues for the purpose of cleaning, as described, an equalizing draft-chamber, K, of the full interior width and height of the shell A between the rearmost transverse row of flues and adjacent end of the combustion-chamber, and a flue-opening, *o*, in the base of the said equalizing draft-chamber, substantially as described.

2. In a heating device, the combination of a drum or shell, A, forming the combustion-chamber, a fire-pot, G, opening into the base of the combustion-chamber near its forward end in line with the fuel-door and flush with the said base, a removable ring, O, surrounding the mouth of the fire-pot, vertical flues E, arranged in parallel or substantially parallel rows longitudinally within the combustion-chamber in line with the fuel-door, whereby ready access may be had through the fuel-door to opposite sides of each row of flues for the purpose of cleaning, as described, an equalizing draft-chamber, K, between the rearmost transverse row of flues and adjacent end of the combustion-chamber, and a flue-opening, *o*, in the base of the said equalizing draft-chamber, substantially as described.

3. In a heating device, the combination of a drum or shell, A, forming the combustion-chamber, a fire-pot, G, opening into the base of the combustion-chamber near its forward end in line with the fuel-door and flush with the said base, a removable ring, O, surrounding the mouth of the fire-pot and formed in two parts, *q* and *q'*, hinged together, vertical flues E, arranged in parallel or substantially parallel rows longitudinally within the combustion-chamber in line with the fuel-door, whereby ready access may be had through the fuel-door to opposite sides of each row of flues for the purpose of cleaning, as described, an equalizing draft-chamber, K, between the rearmost transverse row of flues and adjacent end of the combustion-chamber, and a flue-opening, *o*, in the base of the said equalizing draft-chamber, substantially as described.

4. In a drum or shell, the combination of a drum or shell, A, forming the combustion-chamber, a removable fire-pot, G, supporting and opening into the base of the combustion-chamber near its forward end in line with the fuel-door and flush with the said base, vertical flues E, arranged in parallel or substantially parallel rows longitudinally within the combustion-chamber in line with the fuel-door, whereby ready access may be had through the fuel-door to opposite sides of each row of flues for the purpose of cleaning, as described, an equalizing draft-chamber, K, between the rearmost transverse row of flues and adjacent end of the combustion-chamber, a flue-opening, *o*, in the base of the said equalizing draft-chamber, and an outer shell, I, having a removable section, I', substantially as described.

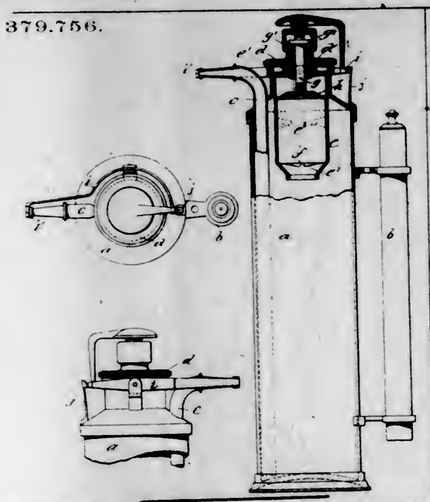
379,756. **FIRE-EXTINGUISHER.** JOSEPH O. BANNING, Plainville, Conn., assignor, by mesne assignments, to the Eddison Fire Extinguisher Company, Philadelphia, Pa. Serial No. 216,933. (No model.)

Claim.—1. In a chemical fire-extinguisher, the combination, with the receptacle, a cover, and a bottle-crusher sliding therein, of a bottle-supporting frame, *e*, having a rigid bottom and open at its sides to permit the inserting of a bottle, and the pliable arms *e*, extending laterally to embrace the sides of the bottle to prevent its lateral displacement in the frame, as set forth.

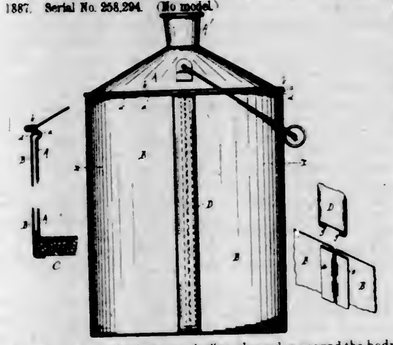
2. In a chemical fire-extinguisher, the receptacle having an outlet-tube, a bottle-supporting frame secured within the receptacle, a sliding crusher-spindle bearing a crusher, and a lever pivoted to the receptacle and bearing on one end a valve adapted to close the mouth of the outlet-tube, and having its other end in the path of movement of a projection on the sliding spindle, all substantially as described.

3. In combination with the receptacle having the outlet-tube, the within-described bottle supporting and crushing device, the tilting lever bearing the outlet-closing valve, and the spring-catch for holding the lever depressed, all substantially as described.

379,756.



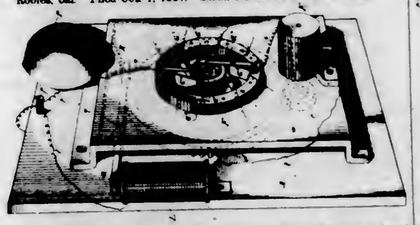
379,757. **JACKETED CAN.** OTTO G. BECK, St. Paul, Minn., assignor to the Northwestern Tin-Ware Manufacturing Company. Filed Dec. 19, 1887. Serial No. 258,294. (No model.)



Claim.—1. A can having an encircling channel, *a*, around the body thereof, in combination with a jacket, D, having a crimped upper edge fitting into said channel, substantially as and for the purpose set forth.

2. A can having an encircling channel around the body thereof, and a jacket having a crimped upper edge fitting into said channel, and with its adjacent edges folded backward in opposite directions, in combination with a locking-strip having its edges folded to correspond with and adapted to inclose the folded-over edges of said jacket, substantially as and for the purpose set forth.

379,758. **ELECTRIC ANNUNCIATOR.** BARNET N. BOTTS, Paso Robles, Cal. Filed Oct. 1, 1887. Serial No. 251,253. (No model.)



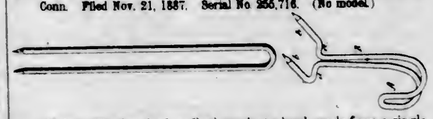
Claim.—1. In an electric annunciator, a fixed dial and a hand moving over it, an electric motor, and connections by which it operates the hand, in combination with a rotary disk on the hand-shaft, electrically connected with the motor, independent contact-springs against which the periphery of the disk operates, independent circuit-wires from the subscribing-stations which include the contact-springs and the motor, whereby the hand is arrested, and the means for diverting the current to cut the motor out of the circuit and arrest the hand, consisting of an insulated contact-piece in the periphery of the disk, an insulated ring in the face of the disk electrically connected with the contact-piece, a spring in contact with the ring, and a switch-circuit from said spring, substantially as herein described.

2. In an electric annunciator, a fixed dial and a hand moving over it, an electric motor, and connections by which it operates the hand, in combination with a rotary disk on the hand-shaft, electrically connected with the motor, independent contact-springs against which the periphery of the disk operates, independent circuit-wires from the subscribing-stations including said springs, and the motor whereby the hand is moved over the dial, and the switch for cutting the motor out of the circuit and arresting the hand, consisting of an insulated contact-piece in the periphery of the rotary disk, an insulated ring on the face of the disk and electrically connected with the contact-piece, a spring in contact with the ring and a switch-circuit from the spring, and an alarm apparatus in said circuit, whereby notice is given of the arrest of the hand, substantially as herein described.

3. In an electric annunciator, a fixed dial and a hand moving over it, an electric motor, and connections by which it operates the hand, in combination with a rotary disk on the hand-shaft, electrically connected with the motor, fixed springs against which the periphery of the disk moves, independent circuit-wires from the subscribing-stations to the springs, whereby the motor is operated and the hand moved, a switch for diverting the current from the motor, by which it is cut out of the circuit and the hand arrested, and a means for checking the momentum of the hand when the motor is cut out of the circuit, consisting of an electro-magnet in the motor-circuit and a pivoted armature bearing normally, when unaffected by the magnet, on the driving-connections and braking them, substantially as herein described.

4. In an electric annunciator, a fixed dial and a hand moving over it, an electric motor, and connections by which it operates the hand, in combination with a disk on the hand-shaft, electrically connected with the motor, fixed springs against which the periphery of the disk moves, and circuit-wires from the subscribing-stations to said springs, whereby the motor is driven and the hand moved over the dial, the switch by which the current is diverted to cut the motor out of the circuit and arrest the hand, consisting of the insulated contact-piece in the periphery of the disk, the insulated ring electrically connected therewith, and the switch-circuit from the ring, the call-bell in the said circuit for giving notice of the arrest of the hand, and the means for checking the momentum of the hand when the motor is cut out of the circuit, consisting of the electro-magnet in the motor-circuit, the pivoted armature, and the spring causing the armature to normally bear, when unaffected by the magnet, upon the driving-connections, thus braking them, substantially as herein described.

379,759. **WARDROBE-HOOK.** HENRY L. BRADLEY, New Haven, Conn. Filed Nov. 21, 1887. Serial No. 255,716. (No model.)



Claim.—The herein-described wardrobe-hook made from a single piece of wire doubled to form a rounded tip to the hook, the two branches near their ends turned from each other, the end portions turned backward at right angles to the body of the hook and substantially parallel with each other, substantially as described.

379,760. **COTTON-GIN.** GEORGE F. BROTT, Bladensburg, Md. Filed Oct. 7, 1887. Serial No. 251,675. (No model.)



Claim.—1. In a cotton-gin, the combination of a hopper, a feeding and carding cylinder, a stationary carding-surface arranged above the rear portion of said cylinder, a transversely ribbed and slotted plate partially surrounding said cylinder, and devices for removing the fiber from the seed, substantially as described.

2. In a cotton-gin, the combination of the hopper, the feeding and carding cylinder clothed or provided with fine yielding forwardly-inclined teeth, the stationary carding-surface provided with straight teeth and arranged above the rear portion of said cylinder, the transversely ribbed and slotted plate, and devices for removing the fiber from the seed, substantially as described.

3. In a cotton-gin, the combination of the hopper, the transversely ribbed and slotted plate, the feeding and carding cylinder clothed with fine yielding forwardly-inclined teeth, the cylindrical stationary carding-surface provided with straight teeth, the ribs, and the ginning-cylinder, substantially as described.

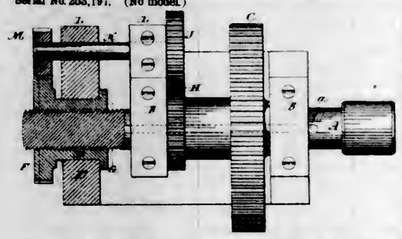
4. In a cotton-gin, the combination of the hopper, the transversely ribbed and slotted plate, the feeding and carding cylinder, the stationary carding-surface, the ribs provided with upwardly-projecting teeth and with furrows or channels between said teeth, and the ginning-cylinder, substantially as described.

5. A cotton-gin comprising a hopper, a ribbed and slotted plate, a feeding and carding cylinder, a cylindrical stationary carding-surface, a ginning-cylinder, ribs, and a fan-brush and its casing, substantially as described.

6. A cotton-gin rib provided with two rows of upwardly-projecting teeth and with a furrow or channel between said teeth, substantially as described.

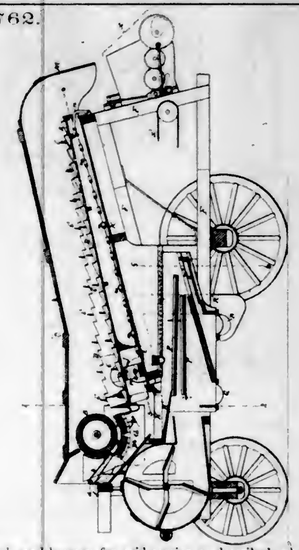
7. In a cotton-gin, the combination of ribs provided with rows of upwardly-projecting teeth and intermediate furrows or channels, with a ginning-cylinder provided with rings having round, sharp-pointed, and curved teeth, substantially as described.

379,761. MACHINE FOR TAPPING STEAM, GAS, OR WATER FITTINGS. ALBERT M. BURRITT, Waterbury, Conn. Filed Oct. 24, 1887. Serial No. 253,197. (No model.)



Claim.—In a tapping-machine, the combination of the revolving spindle A, supported in suitable bearings and externally screw-threaded for a portion of its length, a correspondingly-threaded revolving nut, D, upon said screw-threaded portion of the spindle and supported in a bearing concentric with said spindle, the length of the nut being greater than the length of the said bearing and the nut provided with a collar upon its ends, substantially as described, and whereby a limited amount of longitudinal movement is permitted to said nut, a gear on said spindle and revolving therewith, a second gear fixed to said nut through which said nut receives its revolving movement, and gears intermediate between said gear on the spindle and the said gear on the nut, whereby a differential revolution may be imparted from said spindle to said nut.

379,762. THRASHING-MACHINE. WILLIAM H. BUTTERWORTH and JOHN BUTTERWORTH, Jr., Trenton, N. J. Filed May 8, 1886. Serial No. 201,533. (No model.)



Claim.—1. The combination of the cylinder and concave bars of the machine, the feed-aprons, and the pivot-rod therefor, with concave carrying-plates having arms or projections which support said rod, all substantially as specified.

2. The combination of the cylinder and concave bars of the machine, and feed-aprons having lugs on their under sides, with the rod to which said aprons are pivoted, said rod having collars which engage with the lugs of the aprons, whereby lateral displacement of the latter is prevented, all substantially as specified.

3. The combination of the cylinder and concave bars of the machine, the feed-aprons, and the pivot-rod therefor, with the springs acting on said feed-aprons, and adjustable collars having set-screws forming bearings for said springs, all substantially as specified.

4. The combination, in a thrashing-machine, of the cylinder, a series of concave bars located side by side, opposite plates secured to the side frames of the machine, means for supporting the concave bars on said plates, and means for adjusting the plates so as to move the bars carried thereby from and toward the cylinder, said supporting-plates having such opening or openings that the lateral insertion and withdrawal of the concave bars are permitted, all substantially as specified.

5. The combination of a grain-separating straw-carrier, an operating-crank, and hangers for said carrier, as described, whereby one end of the carrier has a circular movement and the other a rising-and-falling and longitudinal movement, bars connected to the under side of the carrier and forming a grain-scraping surface thereon, and a grain-bottom forming a surface along which the grain is scraped, one of said surfaces being curved longitudinally, all substantially as specified.

6. The combination of the binder-table at the rear of the machine, a straw-carrier consisting of a series of toothed straw-supporting frames, means for reciprocating said frames in series, so that the series act alternately to carry the straw rearward, and a hood against which the straw is projected by the reciprocating frames and by which it is straightened prior to delivery to the binder-table, said hood being closed at the top, all substantially as specified.

7. The combination, in a long-straw thrasher, of the upper wide frame, the thrashing devices and straw-carrier contained therein, the lower contracted frame, the grain-cleaning devices therein, and an elevator extending from the tailing-spout to the upper sieve of the cleaner and located outside of the contracted lower frame, but within the lateral limits of the upper wide frame, all substantially as specified.

379,763. VEHICLE-SPRING. RICHARD CROCKER, Mazomanie, and JOHN DIEHL, Franksville, Wis. Filed Oct. 24, 1887. Serial No. 253,185. (No model.)

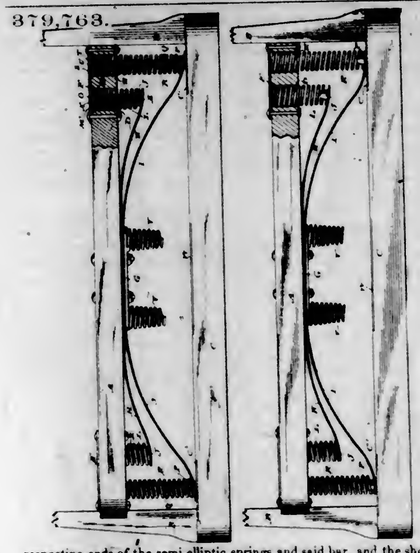
Claim.—1. A vehicle-spring comprising a bar, two semi-elliptic springs of different lengths arranged one upon the other and secured to the central portion of the bar, the upper one of these springs being the shorter and of such curve that an outwardly-increasing space is left between it and the lower one on each side of the center, and spiral springs interposed between the respective ends of the semi-elliptic springs and said bar, substantially as set forth.

2. A vehicle-spring comprising a bar provided at each end with two recesses, two semi-elliptic springs of different lengths arranged one upon the other and secured to the central portion of the bar, the upper one of these springs being the shorter and of such curve that an outwardly-increasing space is left between it and the lower one, and spiral springs arranged on the respective ends of the semi-elliptic springs to extend up into the recesses of said bar, substantially as set forth.

3. A vehicle-spring comprising a bar, a semi-elliptic spring secured to the bar, a spiral spring interposed between each end of the semi-elliptic spring and said bar, a spiral spring of less length inclosed by the one first named, a washer arranged on the upper end of the latter spring, and a spiral spring interposed between the washer and bar, substantially as set forth.

4. A vehicle-spring comprising a bar, two semi-elliptic springs of different lengths arranged one upon the other and secured to the central portion of the bar, the upper one of these springs being the shorter and of such curve that an outwardly-increasing space is left between it and the lower one, spiral springs interposed between the

379,763.



respective ends of the semi-elliptic springs and said bar, and the short spiral springs depending beneath said lower semi-elliptic spring, substantially as set forth.

5. A vehicle-spring comprising a recessed bar, two semi-elliptic springs of different lengths arranged one upon the other and secured to the central portion of the bar, the upper one of these springs being the shorter and of such curve that an outwardly-increasing space is left between it and the lower one, recessed lugs arranged on the respective ends of the semi-elliptic springs, a spiral spring seated in each lug and extended up into one of the recesses of said bar, a washer and similar spring of less power supported on said spiral spring, a flanged shell surrounding this latter spring, and another spiral spring arranged to have its lower end embrace the lug and its upper end bear against the flange of the shell, substantially as set forth.

6. A vehicle-spring comprising the bar A, semi-elliptic springs H I, spiral springs K, L, Q, R, O, U, and V V, substantially as set forth.

379,764. WET PROCESS OF EXTRACTING PURE ZINC FROM ITS ORES. CHARLES F. CROSSLEIGH, Newark, N. J. Filed Apr. 27, 1887. Serial No. 236,346. (No specimens.)

Claim.—1. That improvement in the art of obtaining pure zinc from zinciferous ores, which consists in pulverizing the ore, roasting the pulverized ore in a suitable furnace, and passing a blast through or over it, next immersing the roasted ore in dilute acid, passing a blast through the solution until the impurities are oxidized, and finally drawing off the zinc solution and depositing or precipitating the zinc, substantially as set forth.

2. The process which consists in immersing roasted zinc ore in dilute acid, passing an air-blast through the solution until the impurities are oxidized, and finally drawing off the zinc solution and depositing or precipitating the zinc, substantially as set forth.

379,765. SOLE FOR BOOTS OR SHOES. FRANCIS A. CUSHMAN, Plymouth, N. H. Filed Dec. 20, 1887. Serial No. 258,513. (No model.)

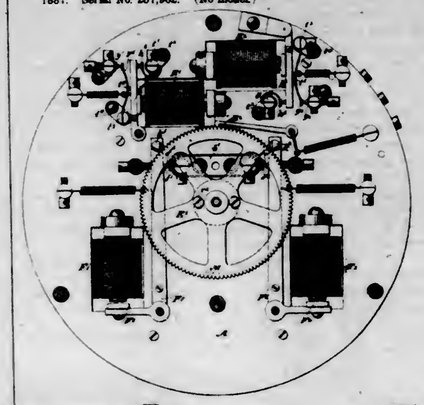


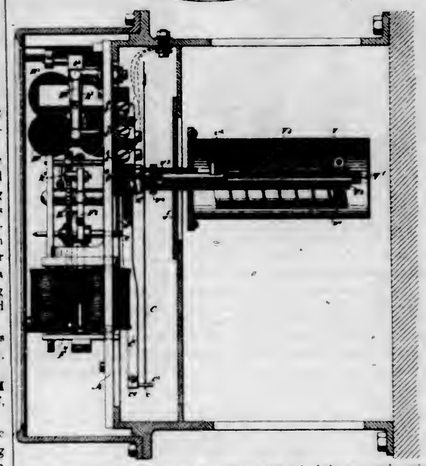
Claim.—1. A sole composed of two thin soles and a welt interposed between the edges of said thin soles, the whole united by pressure, as set forth.

2. An insole composed of two portions of pulp-sheet, A and C, and an interposed welt, B, as set forth.

3. An insole composed of two portions of water-proof pulp-sheet, A and C, and an interposed welt, B, as set forth.

379,766. TELE-THERMOMETER. FERNANDO J. DIEHL, New York, N. Y., assignor to the Telemeter Company of New York. Filed May 12, 1887. Serial No. 237,962. (No model.)





Claim.—1. A thermostat consisting of a spiral thermostatic strip, a rigid inclosing-case for the strip, to which one end of the strip is secured, said inclosing-case consisting of an outer shell and a tube integral therewith, extending within the supported end of the strip toward its free end, and closed at the inner end, substantially as described, whereby air or fluid may circulate about and within the spiral.

2. In a telemeter, the combination, with a thermostat and a circuit-closing arm moved thereby, of two contact-arms upon the respective sides of said circuit-closing arm, a support to which they are rigidly secured, a toothed segment of a wheel carried by said support, a toothed wheel and its arbor, a pinion upon said arbor gearing with said segment, and means for moving the contact-arms through the action of said wheel, substantially as described.

3. In a telemeter, the combination of a thermostat, a circuit-closing arm secured to the thermostat, two automatically-movable contact-arms applied to the circuit-closing arm upon opposite sides thereof, and a pivoted support to which the contact-arms are rigidly secured.

4. In a telemeter, the combination, with a circuit-closing arm, of two contact-arms, a support to which they are secured and from which they are insulated, and a mechanical connection coupling the outer ends of said arms together.

5. The combination, in a telemeter, of a circuit-closing arm, a thermostat to which it is rigidly secured, two contact-arms, a segment of a wheel for moving the contact-arms, and electro-magnets for moving said segment in one direction or the other, accordingly as the circuit is closed through one or the other of the contact-arms.

6. In a telemeter, the combination, with actuating electro-mag

nets and means for closing circuits through the same, of artificial resistances around the coils of the electro-magnets mechanically and rigidly secured to the electro-magnets.

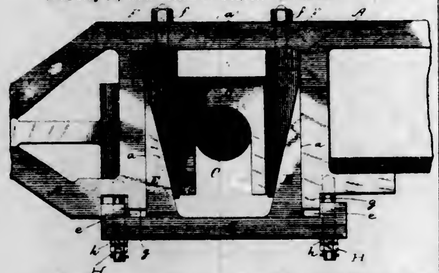
7. In an electrical instrument, a contact-point and a circuit-closing spring therefor formed approximately in the shape of a semicircle, having an inwardly-projecting extension by means of which it is supported, the supports of said point and spring being movable with reference to each other, substantially as described.

8. In a telemeter, the circuit-closing arm C, the two contact-arms C' and C², the insulating-plates a^3 and a^4, against which they are fastened, the conductor 1, passing through the plate a^4 and secured to the arm C', and the conductor 6, passing through the plate a^3 and secured to the arm C², whereby the wires are held apart, substantially as described.

9. In a telemeter, the combination, with a circuit-closing arm, of a contact-arm, a gear moving therewith, a pinion for operating the same, and an electro-magnet vitalized by the contact of the circuit-closing arm with the contact-arm operating said pinion.

10. In a telemeter, the wheel E', its shaft or arbor, the actuating-magnets for moving the wheel, and the adjustable mounting for the wheel E', consisting of the screws *e*, entering the shaft and their corresponding slots.

379,767. CAR-AXLE BOX. DELANO H. DUGAR, Cedartown, Ga. Filed July 14, 1887. Serial No. 244,313. (No model.)



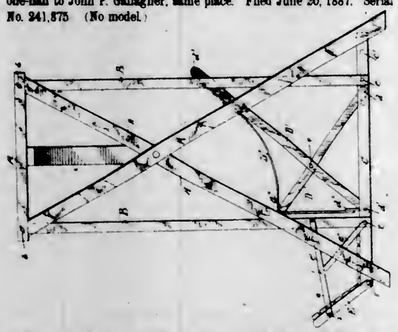
Claim.—1. The combination, with the hanger and the box, of the series of oppositely-disposed wedges located on each side of the box, substantially as and for the purpose specified.

2. The combination, with the hanger and the box, of wedges D, means, as bolts F, independently connecting them with the frame, wedges E, carried by a plate common to each, and means for adjusting said wedges E simultaneously, substantially as described.

3. The combination, with the frame and the box, of the wedges D, having an undercut recess, and the bolt having its head fitted in the recess and connecting the wedge with the frame.

4. The combination of the frame, the box, the wedges D, having undercut recesses, the bolts F, having their heads fitted in said recesses, the wedges E, the cap-plate G, carrying wedges E, and having transverse grooves near each end, the flanges *g*, projecting from the frame and fitting in said grooves, and the bolts H, substantially as and for the purpose set forth.

379,768. SWING. GUSTAVE A. DUMBECK, Erie, Pa., assignor of one-half to John P. Gallagher, same place. Filed June 20, 1887. Serial No. 241,875. (No model.)



Claim.—1. In a swing, the combination of the parallel pendants B, platform C, treadle E, and links *c*, connecting the treadle E with the bars B, said parts being combined and arranged substantially as and for the purposes set forth.

2. In a swing, the combination of the platform C, supported by four parallel pendants, a treadle, E, pivoted to said platform at one end and connected by a pivoted link, *c*, at the other end with the adjacent pendant above the pivot by which it is connected with said platform.

3. In a swing, the combination of a supporting-frame or horse, a rectangular frame supported by said horse, four parallel pendants, B, pivoted at the four upper corners of said frame, a platform, C, sustained by said pendants on pivots *c*, a treadle, E, pivoted to said platform, and links *c*, connecting the top of said treadle with the adjacent pendants at a point above the pivots *c* by pivots 1 and 2, substantially as set forth.

4. In a swing, the combination of a platform, C, supported so as to be vibrated, and a chair supported on said platform, which consists of the frames D and D', pivoted together in X form, and the back and seat formed of flexible material attached to the top of the frame D', passing over the top of the frame D, and connected at its lower end with the fixed part of the platform C, substantially as set forth.

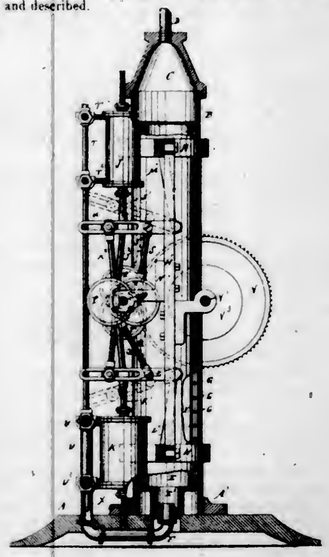
5. In a swing, the combination, with a platform which is supported so as to be vibrated, of a chair consisting of the frames D and D', pivoted together in X form, the lower end of the frame D' being pivotally connected with said platform, and the lower end of the frame D being adjustably variable on said platform, and a back and seat of flexible material connected at the top to the top of the frame D', passing over the top of the frame D, and connected at its lower end to a fixed part of said platform.

6. In a swing, the combination, with the platform C, supported so as to be vibrated, and having the cross-rod *d'*, the slots *c'*, and the pivoted catch-frame F, as shown, of a chair composed of the frames D and D', pivoted together in X form, with the lower end of the frame D' pivoted to the said cross-rod *d'*, and the lower end of the frame D secured in said slots *c'* and engaged by said catch-frame, and a back and seat of flexible material connected with the top of the frame D and secured at its lower end to the cross-rod *d'*

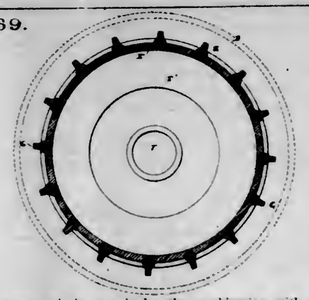
379,769. GAS AND AIR COMMINGLER. BALLARD S. DUNN, New York, N. Y. Filed Sept. 14, 1887. Serial No. 249,613. (No model.)

Claim.—1. In a gas and air commingler, the combination, with an exterior vessel provided with an outlet or burner pipe, of an interior vessel in the exterior vessel, which interior vessel is provided with numerous outlet apertures or tips, an inlet-pipe connected with the interior vessel, and an injector-tube in said inlet-pipe, substantially as herein shown and described.

2. In a gas and air commingler, the combination, with an exterior vessel having an outlet or burner pipe, of an interior vessel in the exterior vessel and provided with numerous small outlet apertures or tips, an inlet-pipe connected with the interior vessel, air-forcing pumps connected with said inlet-pipe, a gas-conducting pipe having a tapered end projecting into said inlet-pipe, and of gas-compressing pumps connecting with the said gas-conducting pipes, substantially as herein shown and described.



379,769.



3. In a gas and air commingler, the combination, with an exterior tube, of a tube in the same provided with numerous outlet-apertures, cross-bars secured on the exterior tube, and air and gas pumps, and mechanism for operating the same supported by the cross-bars, which pumps are connected with the mixing-tubes, substantially as herein shown and described.

4. In a gas and air commingler, the combination, with an exterior tube, of a tube in the same provided with numerous outlet apertures, cross-bars on the exterior tube, end bars connecting the ends of the cross-bars, gas and air pumps on the frame formed of the cross and end bars, which pumps are connected with the mixing-tube in the exterior tube, rocking levers on the frame and connected with the pump piston-rods, and eccentrics on a shaft on the frame for operating the rocking levers, substantially as herein shown and described.

5. In a gas and air commingler, the combination, with a vertical tube containing a tube provided with numerous outlet-apertures, of pumps and operating mechanism supported by said vertical tube, substantially as herein shown and described.

379,770. INCANDESCENT ELECTRIC LAMP. THOMAS A. EDISON, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Dec. 9, 1881. Serial No. 47,469. (No model.) Patented in England Oct. 23, 1878, No. 4,236; in Italy Nov. 21, 1878, No. 4,351/10,456; in Belgium Nov. 30, 1878, No. 46,567; in Spain Feb. 1, 1879, No. 128; in France Feb. 4, 1879, No. 127,341; in Sweden Feb. 8, 1879; in Victoria Mar. 27, 1879, No. 2,632; in Denmark May 5, 1879; in Norway May 20, 1879; in Canada May 23, 1879, No. 10,081; in Austria-Hungary June 30, 1879, No. 30/364; in Germany Mar. 10, 1880, No. 9,165, and in Russia Sept. 24, 1881.



Claim.—1. In an incandescing electric lamp, the combination of two carbons, placed one within the other, for reducing their effective radiating-surface and increasing the electrical resistance, substantially as set forth.

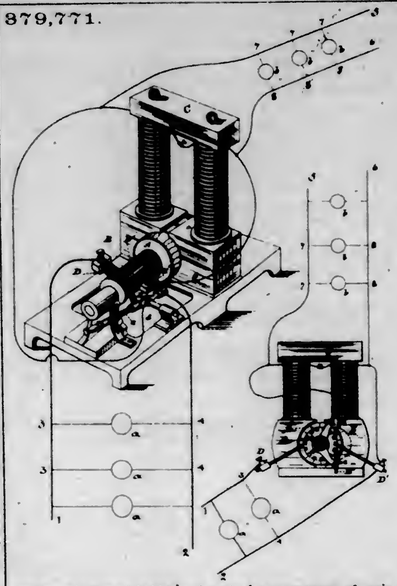
2. In an incandescing electric lamp, the combination of two or more spiral carbon conductors, connected in series, the coils of one covering and partially hiding those of the others, substantially as and for the purpose set forth.

379,771. REGULATOR FOR DYNAMO-ELECTRIC MACHINES. THOMAS A. EDISON, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Aug. 7, 1882. Serial No. 68,626. (No model.) Patented in England Aug. 5, 1882, No. 3,576; in Italy Nov. 29, 1882, No. 14,836; in Belgium Nov. 30, 1882, No. 58,593; in France Jan. 18, 1883, No. 151,736; in Spain Apr. 4, 1883, No. 3,736, and in Germany Dec. 21, 1883, No. 26,000.

Claim.—1. The combination, with a dynamo-electric machine having a continuously-wound bobbin and a single commutator, of two or more circuits having currents of different tension derived from said commutator, and means for independently regulating the tension of the currents in said circuits, substantially as set forth.

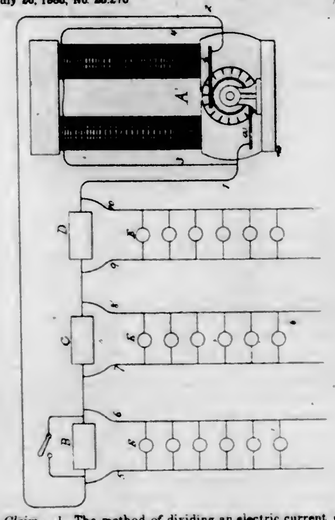
2. The combination, with a dynamo-electric machine having a continuously-wound bobbin and a single commutator, of main commutator-brushes and one or more auxiliary brushes bearing on said commutator, two or more circuits connected with said brushes, and the field-of-force magnet of the machine, having its coils in one of said circuits, substantially as set forth.

3. The combination, with a dynamo-electric machine having a



continuously-wound bobbin and a single commutator, of main commutator-brushes and one or more auxiliary brushes bearing on said commutator, two circuits connected with said brushes, the field-of-force magnet of the machine, having its coils in the circuit of the auxiliary brush or brushes, and means for adjusting said auxiliary brush or brushes independent of the main brushes for regulating the machine, substantially as set forth.

379,772. SYSTEM OF ELECTRICAL DISTRIBUTION. THOMAS A. EDISON, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Aug. 7, 1882. Serial No. 68,639. (No model.) Patented in England Aug. 5, 1882, No. 3,752; in Italy Nov. 14, 1882, No. 14,758; in Belgium Nov. 15, 1882, No. 59,457; in France Dec. 13, 1882, No. 151,279; in Spain Apr. 4, 1883, No. 3,737, and in Germany July 26, 1883, No. 23,270



Claim.—1. The method of dividing an electric current, consisting in throwing counter electro-motive force into a main circuit at two or

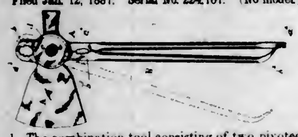
more points, and providing shunt-circuits around the sources of such counter electro-motive force, through which shunt-circuits currents of lower tension flow, substantially as set forth.

2. The combination of one or more dynamo or magneto electric machines supplying a current of high tension in a main circuit, with means for throwing counter electro-motive force into such main circuit at two or more points, shunt-circuits around the sources of such counter electro-motive force, and translating devices connected in multiple arc in such shunt-circuits, substantially as set forth.

3. The combination, with a main circuit having a current of high tension, of two or more secondary batteries arranged in series in such main circuit and shunts around such secondary batteries containing translating devices, such as electric lamps or motors, whereby a division of the current in the main circuit is secured, substantially as set forth.

4. The combination, with one or more dynamo or magneto electric machines supplying a current of high tension in a main circuit, of two or more secondary batteries arranged in series in such main circuit, shunt-circuits around such secondary batteries, and translating devices connected in multiple arc in such shunt-circuits, substantially as set forth.

379,773. **COMBINATION-TOOL.** FRIEDRICH W. EHLMANN, Covington, Ky. Filed Jan. 12, 1887. Serial No. 224,107. (No model.)



Claim.—1. The combination-tool consisting of two pivoted members, one member comprising a hatchet-head, hammer, screw-driver, and one of the jaws of a pinchers and pipe-tongs, the other member comprising a nail-puller and the opposite jaws of the pinchers and pipe-tongs, the said screw-driver having its narrow edge in the direction of the nail-puller and the said nail-puller being curved in the direction of the screw-driver, so that the screw-driver will enter the claw of the nail-puller when the jaws are closed, and thus furnish a firm handle for the hammer and hatchet, substantially as specified.

2. The combination of the two members A and B and the pivot-bolt uniting them, the said part A comprising a hatchet and hammer head and a screw-driver, which has its edge in the same plane as the edge of the hatchet, and the part B comprising a tack-puller having its bifurcated end curved in the direction of the screw-driver, so as to embrace it and with it furnish a firm handle for the combined tool, the said parts A and B having formed integral with each the opposite members of pinchers, substantially as shown and described.

379,774. **STOVE-PIPE VENTILATOR.** JOHN P. EKSTROM, Englewood, Ill., assignor to the Standard Ventilator Manufacturing Company, of Illinois. Filed Feb. 2, 1887. Serial No. 226,300. (No model.)



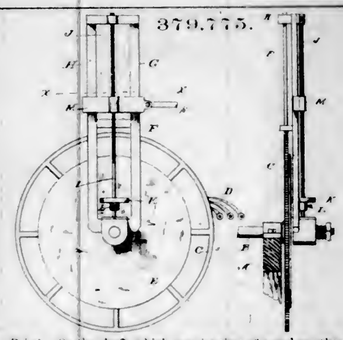
Claim.—1. The combination, with the section A, having a segmental chamber, F, inclosed by a wall, D, and the outer wall of the section, of the register B, opening and closing a ventilator-passage in the outer wall, the damper E, closing the top of chamber F, and the damper C, closing the passage through the section ontside said chamber, substantially as described.

2. The combination, with the section A, having a segmental chamber, F, inclosed by a wall, D, and the outer wall of the section, of the damper E, closing the top of said chamber, the register B, closing a ventilating-opening in the outer wall of chamber F, and a rod, *e*, connecting the said register with the damper E, substantially as described.

3. The combination, with the section A, having an interior segmental chamber, of the damper C, closing the passage through said section, the damper E, closing the top of the segmental chamber, the register B, closing an opening leading to said chamber, and a rod, *e*, connecting said damper E and the register B, substantially as described.

379,775. **MECHANICAL MOVEMENT.** ISAAC N. ELLIOTT and PETTIS A. REID, Richmond, Ind. Filed Aug. 30, 1886. Renewed Dec. 22, 1887. Serial No. 258,681. (No model.)

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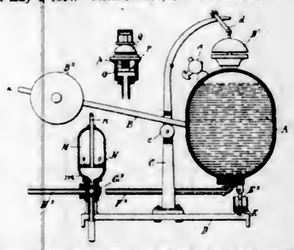
Brief.—On the shaft, which may be that of a reel or other winder, is a ratchet-wheel with a disk at its side. Journaled on the shaft is an arm, which is connected with the operating means by a rod. In the said arm is mounted a screw-threaded shaft, which has a friction-disk bearing on the disk at the side of the wheel. A block to which the actuating-rod is directly connected is caused to slide along the arm by means of the screw-threaded shaft which engages it. Thus as the reel or winder increases in diameter the screw-threaded shaft moves the point of application of the vibrating rod out from the main shaft, and so proportionately decreases the speed of rotation.

Claim.—1. In a mechanical movement, the combination of the main shaft B, an arm, F, journaled at its inner end on said main shaft and having a block, M, attached thereto, and a threaded shaft, I, movable in brackets thereon, a friction ratchet-wheel, K, means whereby the said wheel is adjustably secured on said shaft, the wheel C, and the disk E, substantially as described.

2. The combination, with the shaft B, having thereon the ratchet-faced wheel C and the disk E, of the arm F, having attached thereto the transverse piece M, the threaded shaft I, movable therein, the friction-wheel K on said shaft, and the pawl P, movable in brackets on said arm, substantially as described.

3. The combination of the ratchet-faced wheel C, the disk E, attached to the side of said wheel, the shaft B, the pawls D, the arm F, journaled on the shaft B, the shaft I, journaled in said frame, the friction-wheel K, adjustable by a set-screw on the shaft I, with the transverse piece M, and the connecting-rod S, and the pawl P, substantially as and for the purpose set forth.

379,776. **BOILER-FEEDER REGULATOR.** GUSTAV A. RIEDEL, Cedar, Tex., assignor of one-half to Francis B. Forster, New York, N. Y. Filed May 4, 1887. Serial No. 237,147. (No model.)



Claim.—1. In an automatic boiler-feeder, the combination of a rising-and-falling reservoir provided with a weighted differential lever, B, the steam and water pipes F F², the three-way steam and water valves G G², each constructed with an adjustable rotary plug, Y, provided with slots *y y* and held in position by a nut, Y, the steam and water pipes H H² and J J², and a steam-boiler, for the purpose of feeding water to the boiler and regulating the same, substantially as herein described.

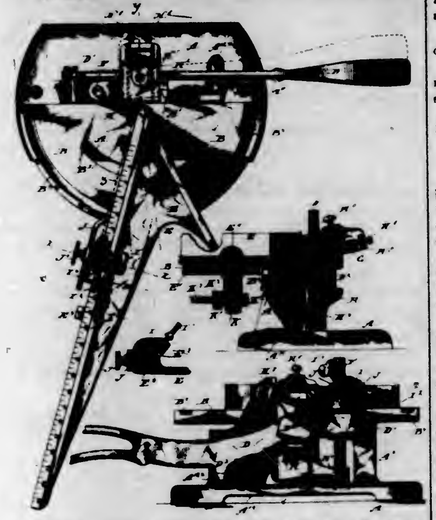
2. In an automatic discharging and regulating machine for taking water and discharging from the boiler, pipes, or tanks, the combination of the oscillating reservoir A, the lever B, counterbalance-weight B², and fulcrum-post C, and the three-way steam and water valves G G², each constructed with an adjustable rotary plug, Y, provided with slots *y y* and held in position by a nut, Y, substantially as herein described.

3. The reservoir A, carrying on its upper part a gong-bell, D', in combination with the fulcrum-post C, having its upper end curved to operate the gong-bell D', substantially as herein described

4. The combination, with the reservoir A and the water-pipe F² and valve G², of the air-chamber M and office-indicator, substantially as herein shown and described.

5. In a discharger and boiler regulator provided with the regulating-pipe J, which extends to the water-line of the boiler, and the perforated pipes K, in combination with the pipe J² and the cocks *i i*, arranged and operating substantially as and for the purpose herein described.

379,777. **MACHINE FOR CUTTING PRINTERS' RULES.** WILLIAM H. GOLDING, Boston, Mass. Filed Mar. 11, 1887. Serial No. 230,479. (No model.)



Claim.—1. In a machine of the class described, a foundation having a single guide and opposite apertured standard-bearings, in combination with a standard, F, a knife-carrier mounted thereon, and a lever for operating the carrier, whereby said foundation is adapted for the vertical and horizontal reciprocations of the knife-carrier, substantially as specified.

2. In a machine of the class described, a foundation provided with a single guide, opposite vertically-apertured standard-bearings, and a lever-support, in combination with a standard, a knife-carrier, and a carrier-operating lever loosely pivoted to the support and removably connected with the carrier, substantially as specified.

3. In a machine of the class described, a foundation provided with a single guide, opposite apertured bearings, a vertical standard, an upright for pivotal connection of a lever, and a bed, in combination with a knife-carrier pivoted to the standard, and a lever connected therewith pivoted to the upright and capable of lateral movement, substantially as specified.

4. A foundation for a machine of the class described, comprising a recessed bed, a single guide, opposite apertured lugs for a standard, an upright for a lever, and a base having an opening therein, the whole formed as a single casting, substantially as specified.

5. In a machine of the class described, a knife-carrier having at one side thereof a guiding-flange and at the opposite side perforated lugs for the bearing for one side of the carrier, in combination with a base having a standard for the perforated lugs and an oppositely-arranged guide, and a lever pivoted to the base and connected with the carrier, substantially as specified.

6. In a machine of the class described, a knife-carrier having a pivotal reciprocative bearing at one side thereof, in combination with a base having a standard for said bearing and a lever for operating the carrier, substantially as specified.

7. In a machine of the class described, a hollow knife-carrier provided with a chip-deflecting rib, lateral perforated lugs, an oppositely-located guiding-flange, a hollow knife-supporting bracket, and lever-embracing lugs, the whole formed as a single casting, substantially as specified.

8. In a machine of the class described, the combination, with the base or foundation having a single guide and a vertical parallel standard, of a knife-carrier pivotally mounted on the standard and provided with a guiding-flange, and a lever for reciprocating the knife-carrier vertically and horizontally, substantially as specified.

9. In a machine of the class described, the combination of a foundation having a guide and a vertical standard, a knife-carrier pivotally mounted on the standard and having a guiding-flange, a lever for operating the carrier, a rule-table, and a rule-guide, substantially as specified.

10. A rule-guide provided on its under surface with a V groove, a vertical face, a horizontal face having a scale thereon, and an adjacent inclined face, in combination with the gage adapted to embrace the vertical face, to pass over the horizontal face to fit the groove, and to present its binding-screw to the inclined face, substantially as specified.

11. The combination, with the rule-guide having a scale thereon, of a gage having an adjustable indicator, substantially as specified.

12. The combination, with a rule-guide, of a gage adjustably mounted thereon and of a rule-holder adjustably mounted on the gage, substantially as specified.

379,778. **MACHINE FOR MITERING PRINTERS' RULES.** WILLIAM H. GOLDING, Chelsea, Mass. Filed June 4, 1887. Serial No. 240,380. (No model.)

Claim.—1. In a machine for cutting printers' rules, a fixed bed provided with means for retaining the rule thereon, in combination with a reciprocating tool-carriage, a pivoted carrier mounted thereon, and means for gradually depressing the latter during the operation of cutting, substantially as specified.

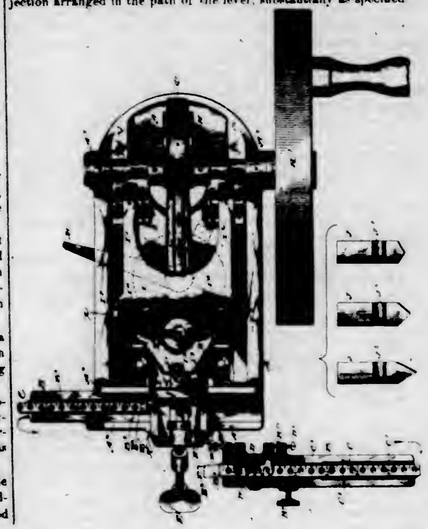
2. In a machine for cutting printers' rules, a fixed bed, in combination with a reciprocating carriage, a pivoted tool-carrier, and tool-holder depressing-cam mounted on the carriage and connected to the carrier, and means for rotating the cam, substantially as specified.

3. In a machine for cutting printers' rules, a fixed bed, in combination with a reciprocating tool-carrier pivotally mounted upon the reciprocating carriage, a cam rotatably mounted on said carriage and connected with the tool-carrier, and means for rotating the cam, substantially as specified.

4. In a machine for cutting printers' rules, a reciprocating carriage, a rod connected to the carriage and operated by an eccentric, means for rotating the eccentric, a tool-carrier pivoted at one end to the carriage, and means for depressing the tool-carrier arranged in front of its pivot and connected with the carriage, substantially as specified

5. In a machine for cutting printers' leads, a reciprocating pivotally-mounted tool-carrier, a rod depending therefrom, a cam having connection with the rod, and mechanism for rotating the cam, substantially as specified.

6. In a machine for cutting printers' rules, a tool-carrier pivoted to a reciprocating carriage and having between its pivoted and free ends a supporting-spring, and a rod having contact with a cam connected with the carriage and provided with a ratchet, and a ratchet-operating lever projecting outside of the carriage, and a stop or projection arranged in the path of the lever, substantially as specified



379,778.



7. In a machine for cutting printers' rules, a reciprocating carriage having lugs at one end and standards at the opposite end thereof, in combination with a tool-carrier having rearward bifurcations pivoted to the standards, a connecting-rod arranged between the bifurcations pivoted to the lugs, and means for reciprocating the connecting-rod, substantially as specified.

8. In a machine for cutting printers' rules, a carriage and a rotatable cam, in combination with a bifurcated pivoted tool-carrier, a connecting-rod, a carrier-supporting spring, and a rod extending from the carrier to the cam, substantially as specified.

9. The combination of a gage-bar provided with a scale and with apertures, a gage-bar support, and a gage-plate provided with apertures and means for connecting an aperture of the gage-plate with an aperture of the gage-bar, substantially as specified.

10. In combination with the bed and cutter of a machine for cutting printers' rules, and with the gage-rod thereof, a supplementary pivoted gage-plate, substantially as specified.

11. A clamp for a machine for cutting printers' rules, comprising a curved flat-faced recessed bifurcated fixed jaw, a movable jaw mounted in the bifurcations of the fixed jaw and provided with a binding-screw, substantially as specified.

12. The combination of a reciprocating carriage having lugs thereon, as described, and a pivoted tool-carrier having lateral flanges adapted to embrace said lugs, substantially as specified.

13. The combination, with a reciprocating carriage having lugs and standards, of a pivoted tool-carrier mounted in the standards and having depending lateral flanges, and adjustable wearing-plates arranged between the flanges and the lugs, substantially as specified.

14. In combination with the gage-rod, a supplementary gage-plate mounted upon threaded pivots, whereby the same may be adjusted longitudinally with relation to the gage-rod used in connection therewith, substantially as shown and described.

379,779. HORSESHOE-BLANK. PETER F. GREENWOOD, Philadelphia, Pa. Filed Jan. 16, 1888. Serial No. 260,873. (No model.)

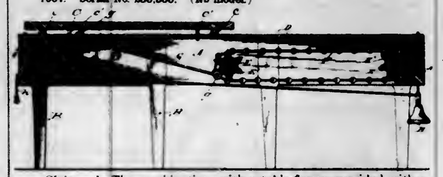


Claim.—1. A horseshoe-blank having ribs *d d* at the points where the nail-holes and creases are to be formed, whereby when the blank is forged into a shoe the metal of the ribs will be compressed into the body of the shoe, substantially as shown and described.

2. A horseshoe-blank having a low swell or projection in the middle to form the toe-calk and higher projections at the ends from which to form the heel-calks, all substantially as shown and described.

3. A horseshoe-blank having a central swell or projection from which the toe-calk is to be formed, and edge ribs extending from this projection in both directions, all substantially as and for the purpose set forth.

379,780. TABLE. OLIVER F. GROVER, Alda, Nebr. Filed Oct. 26, 1887. Serial No. 253,355. (No model.)

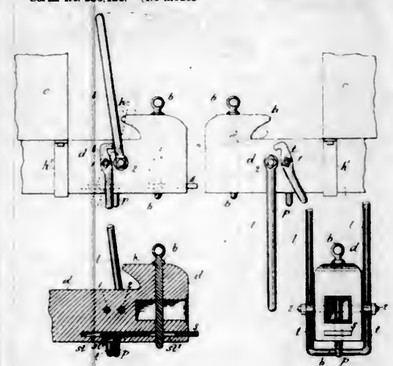


Claim.—1. The combination, with a table-frame provided with a guide-rod, D, of a top, C, provided with rollers resting on said frame, and eyes or staples encircling said guide-rod, and means, substantially as shown and described, for imparting reciprocating motion to said table-top, substantially as and for the purpose set forth.

2. The combination, with a table-frame and a table-top having a reciprocating motion thereon, of transverse shafts journaled in the frame, wheels mounted on said shafts respectively, a chain or belt encircling said wheels, and a pitman connecting a point on said chain with a point on said table-top, substantially as and for the purpose set forth.

3. The combination, with the sectional frame A A A A' A'', of the table-top C, provided with rollers c, resting on said frame, the guide-rod D, staples c', attached to the table-top and encircling said guide-rod, the shafts E E, journaled in the frame and provided with sprocket-wheels E', the sprocket-chain F, surrounding said sprocket-wheels, and the pitman G, pivoted at one end to the table-top and at the opposite end on a stud, *g'*, on the sprocket-chain, substantially as and for the purpose set forth.

379,781. CAR-COUPLING. THOMAS E. HALLS, Indianapolis, Ind., assignor of one-half to David R. Ennis, same place. Filed Dec. 16, 1887. Serial No. 258,128. (No model.)



Claim.—1. A car-coupler comprising a draw-head having a hook formed on the top thereof, a link swinging upon a bolt having bearings in the sides of the draw-head below such hook, a trip swinging upon bearings on a bolt journaled in the sides of the draw-head behind the pivotal bolt of the link, and a slide moving in a slot formed in the lower part of the draw-head and carrying a pin, such slide actuated by the movement of the trip against the pin, all combined substantially as described.

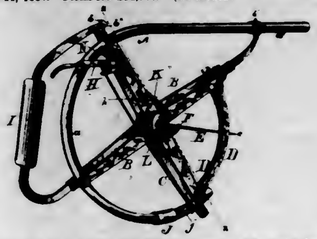
2. In a car-coupler, a draw-head having a hook formed upon the top thereof whose lip extends to the rear of the opening to receive an ordinary coupling-pin, and a link pivoted in such draw-head behind such hook and resting, when thrown up, against the forward-extending arms of a trip pivoted also in such draw-head behind such link, the lower end of the trip formed into a stirrup, swinging upon its pivotal bolt beneath the draw-head, and normally in contact with a pin connected to a slide moving in a slot formed in the lower part of the draw-head, such slide thrown out by the forward movement of the lower part of the trip and thrown inward by contact with the draw-head attached to the opposite car, whereby the link is thrown down in position over the hook of the draw-head of such car, substantially as shown and described.

3. A car-coupler comprising, in combination, a draw-head having a mouth to receive an ordinary link, an opening to receive an ordinary coupling-pin, a hook formed upon the top of such draw-head whose lip projects to the rear of such coupling-pin, and a link pivoted in such drawhead and actuated by means of a slide moving in a slot formed in the base of the draw-head, and having a projection which is adapted to strike against the lower part of a trip pivoted in the draw-head behind the link, substantially as shown and described.

4. A car-coupler comprising a draw-head having a hook formed on the top thereof, a link pivoted in its sides, a trip pivoted behind such link, and a slide moving in a slot formed in such draw-head and carrying a pin for operating the trip, whereby the link is thrown down in position for coupling with a similar draw-head, all combined substantially as described.

5. A car-coupler comprising a draw-head with a hook formed on its top, a link mounted on a bolt having bearings in the sides of the draw-head, and a trip carried in the draw-head behind such link and operated by a slide moving in a slot in the lower part of such draw-head, all combined substantially as described.

379,782. SPRING-GUN. THOMAS HARDING, Detroit, Mich. Filed Oct. 11, 1887. Serial No. 251,979. (No model.)



Claim.—1. In a spring-gun, the combination of a tube formed in an arc of a circle and having a peripheral slot, a frame secured thereto, a lever pivoted to the frame at the center of said arc and extending through the slot into the tube, and a spring mounted on the frame and adapted to engage and propel the lever.

2. In a spring-gun, the combination of a tube formed in an arc of a circle and having a peripheral slot, a frame secured to the tube, a central shaft mounted in the frame and provided with a ratchet-and-pawl connection with the frame to prevent backward rotation, a spring secured to said shaft, and a lever mounted at the center of said arc, adapted to be engaged and propelled by the spring and extending into the tube.

3. In a spring-gun, the combination of a tube formed in an arc of a circle and having a peripheral slot, a frame secured to the tube, a lever mounted pivotally at the center of said arc and extending into the tube, a spring connected with the frame and adapted to engage and propel said lever, and a friction device operating as a buffer or cushion to stop the lever after it has propelled the missile.

4. In a spring-gun, the combination of a tube formed in the arc of a circle, a frame secured thereto, a spring connected with the frame, and a lever mounted pivotally on the frame at the center of said arc, adapted to be engaged by the spring and extending into the tube for propelling a missile through and from the tube under the stress of the spring.

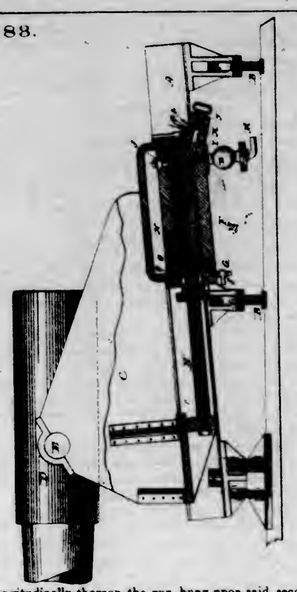
5. In a spring-gun, the combination of a tube formed in the arc of a circle, a frame secured to the tube, a lever pivoted upon the frame at the center of the said arc and extending into the tube, and a double spiral spring having its ends connected with the frame, situated upon both sides of said lever and engaging by its bight the said lever.

379,783. RECOIL-CUSHION FOR GUN-CARRIAGES. EBENEZER HILL, South Norwalk, Conn. Filed Jan. 16, 1888. Serial No. 260,891. (No model.)

Claim.—1. A gun-carriage consisting of two parts, one of which is hung upon a pivot to swing in a horizontal plane, and which supports the second part, the said second part arranged upon said first part free to slide longitudinally thereon, the gun hung upon said second part, an air-cylinder in the one part, with a piston in said cylinder in connection with the other part to form a recoil-cushion for the gun, and a chamber opening into said cylinder upon the recoil side of the piston, the said chamber adapted to be charged with an explosive material, and provided with means for firing said explosive, substantially as and for the purpose described.

2. A gun-carriage consisting of two parts, one of which is hung upon a pivot to swing in a horizontal plane, and which supports the second part, the said second part arranged upon said first part free

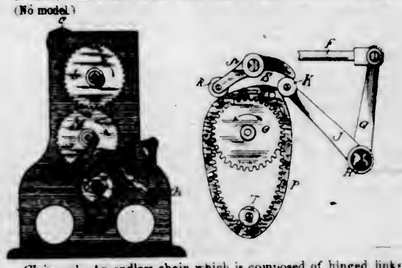
379,788.



to slide longitudinally thereon, the gun hung upon said second part, an air-cylinder in one part, with a piston in said cylinder in connection with the other part to form a recoil-cushion for the gun, and a chamber opening into said cylinder upon the recoil side of the piston, the said chamber adapted to be charged with an explosive material, and provided with means for firing said explosive, the said cylinder also constructed with an auxiliary chamber, with an opening from the recoil side of the piston into said chamber, and also with an aperture opening from said auxiliary chamber into the cylinder upon the reverse side of the piston, with a valve in the opening on the recoil side of the piston, the said valve adapted to open from the cylinder into said auxiliary chamber, substantially as described.

3. A gun-carriage consisting of two parts, one of which is hung upon a pivot to swing in a horizontal plane, and which supports the second part, the said second part arranged upon the said first part free to slide longitudinally thereon, the gun hung upon said second part, an air-cylinder in the one part, with a piston in said cylinder in connection with the other part to form a recoil-cushion for the gun, and a chamber opening into said cylinder upon the recoil side of the piston, the said chamber adapted to be charged with an explosive material, and provided with means for firing said explosive, an aperture or passage of small area from the cylinder on the recoil side of the piston to the cylinder forward of the piston, substantially as and for the purpose described.

379,784. MEANS FOR OPERATING PAPER-CUTTERS. WILBER F. HILL, Manchester, Conn. Filed July 5, 1887. Serial No. 243,324. (No model.)



Claim.—1. An endless chain which is composed of hinged links provided with interior teeth, and has a continuous external bearing-surface and a gradually-varying depth, substantially as and for the purpose specified.

2. An expansion-gear chain which is composed of a series of re-

movable hinged links, and has a gradually-increasing and gradually-decreasing depth and an unbroken periphery, substantially as and for the purpose specified.

3. A gear-chain having a gradually-varying depth and a continuous external bearing-surface, in combination with a gear-wheel engaging said chain, and an arm having a roller which runs upon said bearing-surface and receives from said chain an intermittent reciprocatory motion, substantially as and for the purpose specified.

4. A gear-chain having a gradually-varying depth and a continuous external bearing-surface, a gear-wheel which is adapted to drive said chain, and a roller which is adapted to take up the slack of said chain, in combination with a roller which runs upon said bearing-surface, substantially as and for the purpose specified.

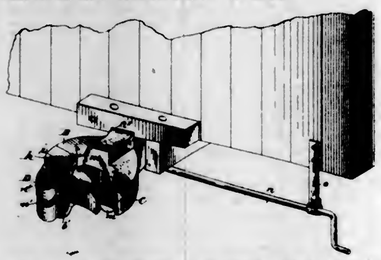
5. A gear-chain having a gradually-varying depth and a continuous external bearing-surface, a gear-wheel driving said chain, and an oscillating lever, S, which is impelled by said chain, in combination with mechanism which receives an intermittent reciprocating motion from said gear-chain and said oscillating lever, substantially as and for the purpose specified.

6. A gear-chain having a gradually-increasing and gradually-decreasing depth and a continuous external bearing-surface, a gear-wheel driving said chain, and an oscillating lever, S, which is provided with an anti-friction roller and is driven by said chain, in combination with a rock-shaft having an arm, J, which is provided with an anti-friction roller engaging said gear-chain and said lever, substantially as and for the purpose specified.

7. A gear-wheel and an expansion-gear chain running upon said wheel, in combination with an oscillating lever, S, having two arms, one of which engages said chain by means of an anti-friction roller, substantially as and for the purpose specified.

8. A gear-wheel, mechanism for driving said wheel, a gear-chain of gradually-variable depth running upon said wheel, and an oscillating lever having two arms impelled by said chain, in combination with a rock-shaft having an arm, J, which engages said chain and lever by means of an anti-friction roller, substantially as and for the purpose specified.

379,785. CAR-COUPLING. JAMES A. HINSON, Des Moines, Iowa, assignor to the Hinson Standard Car-Coupler Company, same place. Filed Oct. 28, 1887. Serial No. 253,660. (No model.)



Claim.—1. The combination, in a car-coupler, of the horizontally-movable draw-bar, a rotatable shaft having one end flexibly connected with said draw-bar, a pendent latch pivotally secured in the draw-head, and a chain connecting said latch and shaft, substantially as described.

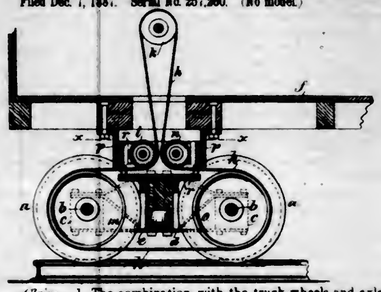
2. The combination, in a car-coupler, of the movable draw-bar, a draw-head having the horizontally-movable hinged jaw and a lateral branch, a latch pivoted in said head, a rotatable shaft flexibly secured at one end to said draw-bar, and a chain attached to said shaft and latch, substantially as described.

3. The combination, with the movable draw-bar and draw-head of a car-coupler, of a removable T-headed eyebolt, a rotatable shaft loosely connected to said eyebolt, a latch pivoted in the draw-head, and a chain connecting said latch and shaft, substantially as described.

4. The hereinbefore-described car-coupler, consisting of a movable draw-bar, a draw-head hollowed out at its center, and having an arm, B, and guard C, a jaw having a lateral branch projecting therefrom and journals *g* formed integral therewith, hinged to said arm B, a pendent latch pivoted in a recess in said draw-head and intersecting its hollowed-out portion, a detachable bearing-plate having a projection, *h'*, and a recess, *b²*, a shaft having one end flexibly connected to said draw-bar, and a chain connecting said latch and shaft, substantially as set forth.

5. The combination, with the draw-bar of a car coupler, having an arm, B, provided with a groove on its upper side and a recess in its lower portion, of the jaw D, having a lateral branch, *f*, and journals *g*, cast integral therewith, a bearing-plate, *h*, having a recess and a projection on its lower face, and a bolt, *i*, substantially as described.

379,786. RAILWAY-MOTOR TRUCK. CHARLES W. HUNT, West New Brighton, assignor to the C. W. Hunt Company, New York, N. Y. Filed Dec. 7, 1887. Serial No. 257,260. (No model.)

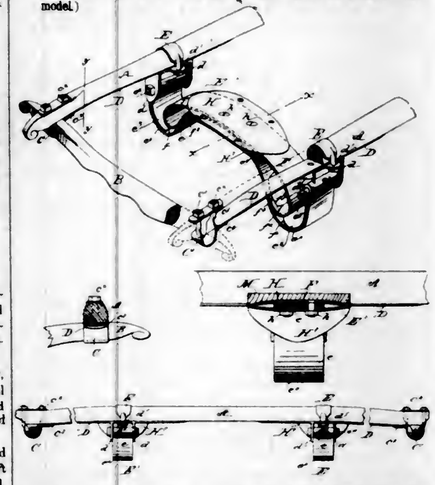


Claim.—1. The combination, with the truck-wheels and axles, of a tubular king-bolt, a belt passing through the same and guide-pulleys, and a pulley on one of the axles and driven by the belt, substantially as set forth.

2. The combination, with the two pairs of truck-wheels and axles, of pulleys on the axles, a tubular king-bolt and guide-pulleys, and a belt passing through the tubular king-bolt, between the guide-pulleys, and around the pulleys on the axles, substantially as set forth.

3. The combination, with truck-wheels and axles, of a pulley on one of the axles, guide-pulleys, and a belt passing nearly horizontally from the pulley on the axle to the guide-pulleys, so as not to be materially tightened or slackened by the motion of the car on the springs, and thence the belt passes vertically and close to the axis of motion of the truck on the king-bolt, so that the lead of the belt is but slightly varied by the swinging of the truck, substantially as set forth.

379,787. SPRING FOR SIDE-BAR VEHICLES. EDWARD HUTCHINSON, New York, N. Y. Filed Nov. 5, 1887. Serial No. 254,358. (No model.)



Claim.—1. The combination, with the side bars of a vehicle, of a clip attached thereto, provided with a lip integral with and extending outwardly from one member, having a concave upper surface, and a spring-bar held by said lip longitudinally in contact with the under side of the side bars, substantially as shown and described.

2. The combination, with the side bars of a vehicle, of transverse springs consisting of an under leaf centrally and upwardly bowed and having upwardly-curved ends pivoted to the side bars, an upper leaf similarly bowed having inwardly-bent extremities riding upon the lower leaf, plates fitted to the contour of the upper and lower leaves centrally the same, and bolts passing through said leaves and plates, substantially as shown and described, whereby the leaves work in opposite directions, one upon the other, at their ends only, as set forth.

3. The combination, with the side bars of a vehicle, of transverse springs consisting of an under leaf centrally and upwardly bowed

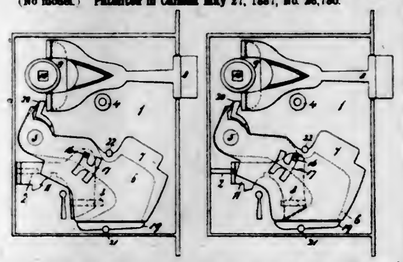
having its ends upwardly curved and bent upon themselves, its overlapping extremities being provided with aligning edge recesses, the said leaf being hinged at its ends to the side bars, an upper leaf similarly bowed having inwardly-bent extremities resting upon the overlapping ends of the lower leaf and provided with a transverse segmental recess in said extremities, oval plates fitted to the upper and lower contour of the leaves, and bolts passing through said leaves and plates, substantially as and for the purpose herein set forth.

4. The combination, with the side bars, A, and cross-bars B of a vehicle, of a clip attached to the side bars, the body of the clip adapted to receive the bar B and provided with a laterally-projecting lip integral with one member, and a spring-bar held by said lip in contact with the under surface of said side bars, substantially as shown and described.

5. The combination, with the side bars of a vehicle, of the spring-bars D, held in aligning contact with their under face, having downwardly-extending apertured lugs or ears *d*, and the horizontally-apertured lugs *d'*, extending transversely to the lugs *d*, said lugs *d d'* formed integral with the spring-bars D, substantially as and for the purposes specified.

6. The combination, with the side bars of a vehicle having their spring-bars D held in contact with their under face longitudinally the same, said bars extending from the outer ends and terminating at each side of the center of said side bars, and provided with transverse horizontal lugs *d'*, adapted to receive the arms of clip E, and having downwardly-extending apertured lugs *d*, of transverse springs having upwardly-curved ends pivoted in said lugs *d*, substantially as shown and described.

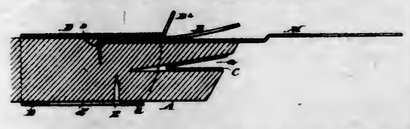
379,788. COMBINED LATCH AND LOCK. MOSES JOHNSON, Hamilton, Ontario, Canada, assignor to John H. Tilden, same place, and George R. Underwood, Toronto, Canada. Filed Jan. 7, 1888. Serial No. 260,054. (No model.) Patented in Canada May 27, 1887, No. 26,780.



Claim.—1. The lock-case 1, having ridges 2 3, in combination with slide 11, provided with grooves 12 13, and gravitating lever 6, having recess 15 for locking bolt 8, as set forth.

2. The combination, with the lock-case having bolt 8 and tappet 9, and provided with ridges 2 3, of the slide 11, provided with post 16, gravitating lever 6, locked by said slide, and gravitating weight 7, having slot 17, whereby the locking of the bolt 8 is effected by lifting the weight and reciprocating the slide independently of the lever, as set forth.

379,789. PEN-HOLDER. JOSEPH A. KIMBALL, New York, N. Y. Filed Aug. 26, 1887. Serial No. 247,808. (No model.)

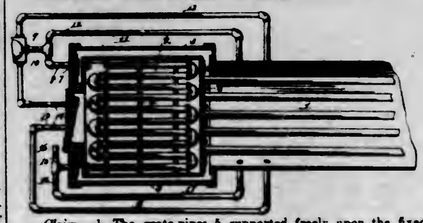


Claim.—1. In a pen-holder, the split body A *a* and inclosed spring C, in combination with the sliding tube D and intermediate split spring B *b*, for holding and releasing pens of different sizes and forms, as herein specified.

2. In a pen-holder, the sliding tube D, having a wing, D', adapted to serve the double functions of a rest or holding means and a guard against ink, in combination with the split spring B *b* and body A, adapted to serve relatively to each other and to a pen, M, as herein specified.

3. The split spring B, having locking means *b*, for engaging with the body, with liberty to yield, the body A, having a split, *a*, and the sliding tube D, roughened, as indicated by *d*, and provided with the wing D' and prongs or branches D^2 D^2, all combined and arranged to serve substantially as herein specified.

379,790. HOLLOW GRATE AND FEED-WATER HEATER. WILLIAM J. KIRK, Buchanan, Tenn., assignor of two-thirds to Carroll Lafayette Etheridge and Thomas Harden Whitlock, both of same place. Filed Dec. 23, 1887. Serial No. 258,783. (No model.)

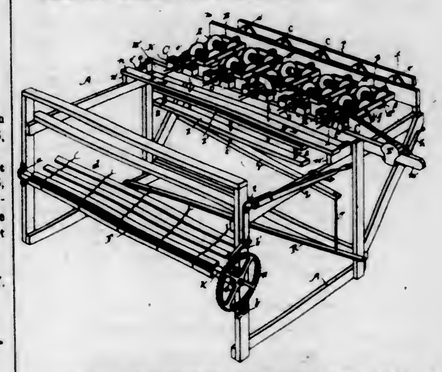


Claim.—1. The grate-pipes 5, supported freely upon the fixed cross-bars 4 within the furnace 2, the end branches of said pipes connecting with the boiler outside of the furnace by the pipes 11 and 17, and the middle grate-pipes connecting with the boiler outside of the furnace by the pipes 13, whereby the expansion and contraction of the grate-pipes are relieved from undue strain at their connection with the boiler, as herein set forth.

2. In a boiler-furnace, a water-grate and feed-water heater consisting of a flat grate of parallel pipes connected at their ends by suitable joints and having an inlet at one end and an outlet at the other end and provided with inlets at the middle coils, as shown and set forth.

3. In a boiler-furnace, the combination of the transverse supporting-bars in the bottom of the furnace, parallel longitudinal pipes supported upon the bars and connected at their ends to form a flat coil, a pump or inspirator having a stop-cock upon its pipe and communicating with a pipe extension at one end of the pipe-coil, having a stop-cock and with a pipe extending to the boiler and provided with a stop-cock, pipes having stop-cocks and extending from the boiler to the middle coils of the grate, and a pipe extending from the other end of the pipe-coil to the boiler, provided with a stop-cock and with a blow-off cock, as shown and described.

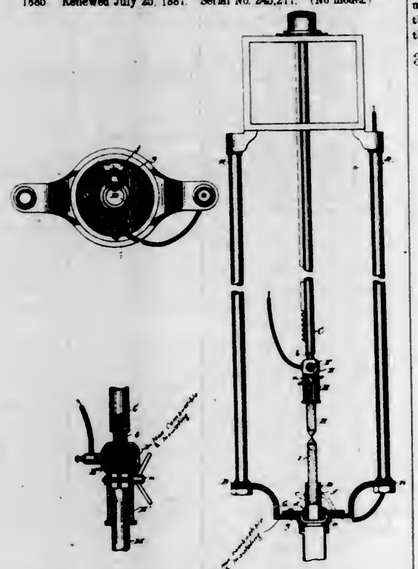
379,791. FENCE-MAKING MACHINE. SAMUEL L. KLINE, Canopolis, Mich., assignor of one-half to Elmer E. Stamp, same place. Filed Dec. 5, 1887. Serial No. 257,783. (No model.)



Claim.—1. In an organized fence-machine, the combination of the main frame, the series of frames B, each carrying twisting-heads at one end and a crank-wheel at the opposite end, the twisting-heads journaled in boxes *c'*, mounted on the rail *m'*, the outer ends of the frames B journaled in the rail *m*, the spools, the pitman P, the sprocket-wheel D, made fast to the central twisting-head, the head E, adjustably attached to the arm *m'*, the sprocket-wheel E', attached to said head, the crank-handle A, and chain *f*, as and for the purposes specified.

2. In a fence-making machine, the combination of the main frame, the series of twisting-heads journaled in the boxes *c'* of said frame, the frames B, having the twisting-heads on one end and crank-wheels on their opposite ends, the pitman coupled to said crank-wheels, the spools pivotally supported within the frames B, the rods and nuts for tightening said spools, the metal head E, mounted on the rail *m'* and having the sprocket-wheel and crank attached thereto, the sprocket-wheel D, and the chain belt coupling said sprocket-wheels, as and for the purposes specified.

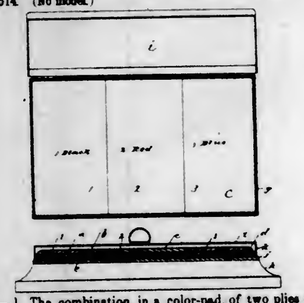
379,792. **ELECTRIC-ARC LAMP.** EDWARD R. KNOWLES, Brooklyn, N. Y., assignor to Albert M. Kalbfleisch, New York, N. Y., and the Mutual Electric Manufacturing Company, of New York. Filed Dec. 3, 1886. Renewed July 25, 1887. Serial No. 245,277. (No model.)



Claim.—1. The combination, in an electric lamp, of a non-combustible insulating-ball with the upper-carbon rod and holder, substantially as specified.

2. The combination, in an electric lamp, of a non-combustible insulating-ball and a non-combustible insulating-plate with the carbon-holders and lamp-frame, substantially as specified.

379,793. **COLOR OR INK PAD.** JOSEPH B. LAUGHTON, Brooklyn, assignor to John I. Holly, New York, N. Y. Filed May 9, 1887. Serial No. 237,514. (No model.)



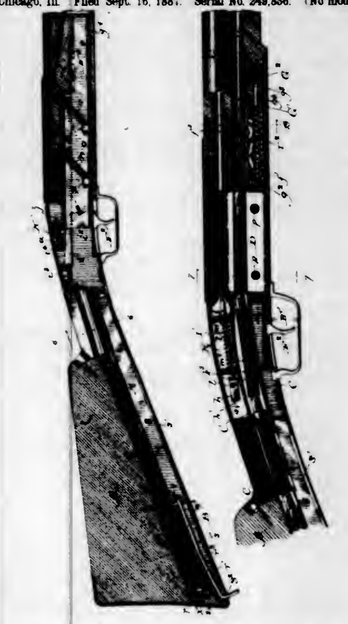
Claim.—1. The combination, in a color-pad, of two plies of felt placed one above another, of which the upper one is charged with ink and constitutes the ink-container, and the lower one is charged with solvent material and constitutes the holder and feeder of the same, substantially as described.

2. The combination, in a color-pad, of two plies of felt placed one above another, of which the upper one is charged with ink and constitutes the ink-container, and the lower one is charged with solvent material and constitutes the holder and feeder of the same, a textile fabric over the ink-container, and also a textile fabric between the container and feeder, substantially as described.

3. In an inking-pad for hand-stamps having the pad placed on and being higher than the surface of the base, the combination, with said pad and base and with the cover, of an absorbent top of said base interposed between it and the pad and having marginal extensions larger than the pad and receiving the edges of the cover, which rest on it when closed.

4. The combination, in an ink-pad, of two plies of felt placed one above another, of which the upper one is charged with ink and constitutes the ink-container, and the lower one is charged with solvent material and constitutes the feeder of the same, the backing-plate, and the textile fabric covering the felt and folded under and attached to the backing-plate, substantially as described.

379,794. **MAGAZINE FIRE-ARM.** HERMANN LEINEWEBER, South Chicago, Ill. Filed Sept. 16, 1887. Serial No. 249,836. (No model.)



Claim.—1. In a magazine fire-arm, in combination, the carrier for moving the cartridge into position for firing, the trigger which actuates the carrier through intermediate cam mechanism, and a firing mechanism engaged and then released by the carrier in its upward movement, whereby a single pressure on the trigger causes first the moving of the cartridge into position, then fires the same.

2. In a magazine fire-arm, the combination, with the carrier for moving the cartridge into position for firing and the trigger and its connected slide which actuates the carrier, of a firing mechanism successively engaged and then released by the rising of such carrier, whereby a single movement of the trigger loads and fires the fire-arm.

3. In a magazine fire-arm, the combination, with the barrel and stock, of a magazine, an elevator normally in position to receive the cartridges successively from the said magazine, and a trigger connected with the elevator and operated by a single pressure to actuate the elevator to carry a cartridge supported by it to the barrel and firing mechanism and subsequently actuate the said firing mechanism, substantially as described.

4. In a magazine fire-arm, the combination, with the barrel and stock, of a magazine for the cartridges, a magazine for the shells of exploded cartridges, an elevator between the said magazines in normal position to receive the cartridges successively from their magazine, and a trigger connected with the elevator and operated by a single pressure to actuate the elevator to carry a cartridge supported by it to the barrel and firing mechanism, and subsequently to actuate the said firing mechanism to explode the cartridge, and by its release to return the elevator to its normal position, with the shell in position to enter the magazine provided to receive it, substantially as described.

5. In a magazine fire-arm, the combination, with the barrel and stock, of a magazine provided with an automatic feed for the cartridges, an elevator normally in position to receive the cartridges successively from the said magazine, and a trigger connected with the elevator and operated by a single pressure to actuate the elevator to carry a cartridge supported by it to the barrel and firing mechanism, and subsequently actuate the said firing mechanism to explode the said cartridge, substantially as described.

6. In a magazine fire-arm, the combination, with the barrel and stock, of a magazine provided with an automatic feed for the cartridges, a magazine for the shells of the exploded cartridges, an elevator between the said magazines in normal position to receive the cartridges successively from the feeding-magazine, and a trigger connected with the elevator and operated by a single pressure to actuate the elevator to carry a cartridge supported by it to the barrel and firing mechanism, and subsequently to actuate the said firing mechanism to explode the cartridge, and by its release to return the elevator to its normal position, with the shell in position to enter the magazine provided to receive it, substantially as described.

7. In a magazine fire-arm, the combination, with the stock-magazine, firing mechanism, and barrel, of a chamber, E, an elevator in the chamber, and a trigger connected with the elevator and operating by a single pressure to raise the said elevator and carry a cartridge supported by it to the barrel and firing mechanism, and subsequently to actuate the said firing mechanism to explode the said cartridge, substantially as described.

8. In a magazine fire-arm, the combination, with the stock-magazine, firing mechanism, and barrel, of a chamber, E, an elevator in the chamber engaging and operating the firing mechanism, and a trigger and its connected slide, which actuates the elevator to carry a cartridge to the barrel and firing mechanism, and subsequently to actuate the firing mechanism, as described.

9. In a magazine fire-arm, the combination of a magazine, C, provided with an automatic feed for the cartridges, a magazine, C', for the shells of the exploded cartridges, a chamber, E, between the said magazines, an elevator, D, in the said chamber and adapted normally to support a cartridge in position in line with the magazine C and to enter the magazine C', a trigger connected with the elevator and operated by pressure to raise the elevator to carry the cartridge supported by it to the barrel and firing mechanism and to actuate the said firing mechanism to explode the cartridge, and a spring, I^3, connected with the trigger and operating, when the trigger is released, to return it and the elevator to their normal positions, substantially as described.

10. In a magazine fire-arm, the combination of a magazine, C, provided with an automatic feed for the cartridges, a chamber, E, into which the magazine C leads, a chamber, G', containing a laterally-elongated bore, L, partly closed at its forward end and communicating at its rear end with the chamber E, a magazine, C', communicating at its rear end with the open forward end of the bore L, an elevator, D, in the chamber E, provided with a bore normally communicating at opposite ends with the magazine C and bore L, a trigger connected with the elevator and operated by pressure to raise the elevator in the chamber E, to carry the cartridge contained in its bore to the barrel and firing mechanism, and to actuate the said firing mechanism to explode the cartridge, and a spring, I^3, connected with the trigger and operating, when the trigger is released, to return it and the elevator to their normal positions, substantially as described.

11. In a magazine fire-arm, the combination of a magazine, C, provided with an automatic feed for the cartridges, a chamber, E, into which the magazine C leads, a chamber, G', containing a laterally-elongated bore, L, partly closed at its forward end and communicating at its rear end with the chamber E, a yielding tongue, f^3, in the base of the bore L, a pivotal cam, N, in the side of the said bore, a magazine, C', communicating at its rear end with the open forward end of the bore L, an elevator, D, in the chamber E, provided with a bore normally communicating at opposite ends with the magazine C and bore L, a trigger connected with the elevator and operated by pressure to raise the elevator in the chamber E, to carry the cartridge contained in its bore to the barrel and firing mechanism, and to actuate the said firing mechanism to explode the cartridge, a spring, I^3, to return it and the elevator to their normal positions, and a lug, b, on the trigger to engage with the cam N, substantially as described.

12. In a magazine fire-arm, the combination of a magazine, C, provided with an automatic feed for the cartridges, a chamber, E, into which the magazine C leads, a chamber, G', containing a laterally-elongated bore, L, partly closed at its forward end and communicating at its rear end with the chamber E, a magazine, C', communicating at its rear end with the open forward end of the bore L, an elevator, D, provided with pins p in the chamber E and having a bore normally communicating at opposite ends with the magazine C and bore L, a trigger comprising connected sliding plates F, extending through the chamber E on opposite sides of the elevator and provided with inclined slots u, through which the pins p extend, and a finger-piece, F^3, a spring, I^3, in the chamber G', connected with the trigger, and firing mechanism actuated by pressure upon the trigger, the whole being constructed and arranged to operate substantially as described.

13. In a magazine fire-arm having an elevator, D, in a chamber, E, and a trigger operating by pressure to raise the elevator in its chamber, and adapted, when released, to lower the elevator to its normal position, the combination, with the barrel G and chamber E, of a needle, I, supported to be reciprocated in suitable bearings, a confined spring, I', engaging with the needle, a cam, K, having guides in its opposite sides, and fingers i' upon opposite sides of the needle and extending into the guides in the said cam and into the path of the trigger, whereby when the trigger is pressed it engages with the said fingers to force back the needle and compress the spring I' until released to drive the needle forward, substantially as and for the purpose set forth.

14. In a magazine fire-arm having an elevator, D, in a chamber, E, and a trigger operating by pressure to raise the elevator in its chamber, and adapted, when released, to lower the elevator to its normal position, the combination, with the barrel G and chamber E, of a needle, I, supported to be reciprocated in suitable bearings, a spiral spring, I', surrounding the needle, sliding collars k and k', confined upon the needle and confining the spring I' between them, a cam, K, having guides in its opposite sides, and fingers i' upon opposite sides of the needle and extending into the guides in the said cam and into the path of the trigger, whereby when the trigger is pressed it engages with the said fingers to force back the needle and compress the spring I' until released to drive the needle forward, substantially as and for the purpose set forth.

15. In a magazine fire-arm having an elevator, D, in a chamber, E, and a trigger operating by pressure to raise the elevator in its chamber, and adapted, when released, to lower the elevator to its normal position, the combination, with the barrel G and chamber E, of a needle, I, supported to be reciprocated in suitable bearings and provided with grooves y and y', a spiral spring, I', surrounding the needle, sliding collars k and k', having guides k^4 to enter the grooves y y' and confined upon the needle and confining the spring I' between them, a cam, K, having guides in its opposite sides, and fingers i' upon opposite sides of the needle and extending into the guides in the said cam and into the path of the trigger, whereby when the trigger is pressed it engages with the said fingers to force back the needle and compress the spring I' until released to drive the needle forward, substantially as and for the purpose set forth.

16. In a magazine fire-arm having an elevator, D, in a chamber, E, and a trigger operating by pressure to raise the elevator in its chamber, and adapted, when released, to lower the elevator to its normal position, the combination, with the barrel G and chamber E, of a reciprocating needle, I, having a recess near its rear end containing rubber, k', surmounted by a tongue, k, a cross-bar, i, extending transversely through the said recess and tongue, a spiral spring, I', surrounding the needle, sliding collars k and k', having guides k^4 to enter grooves y and y' in the sides of the needle, and confined upon the needle and confining the spring I' between them, a cam, K, having guides in its opposite sides, and fingers i' upon the projecting ends of the cross-bar i, extending into the guides in the said cam and into the path of the trigger, substantially as and for the purpose set forth.

17. In a magazine fire-arm, the combination, with the stock having a magazine, C, of an automatic feed for the cartridges, comprising a laterally-confined spiral spring, B, extending into a chamber formed in one side of the stock and communicating with the magazine C, and provided with a finger, q^3, extending through a slot, s, in the stock, substantially as described.

18. In a magazine fire-arm, the combination, with the stock having a magazine, C, of an automatic feed for the cartridges, comprising a spiral spring, B, extending into a pivotal housing, r^2, in a chamber, r, formed in one side of the stock and communicating with the said magazine, a spring, r^3, behind the housing r^2, a head, q, at the forward end of the spring B, and a finger, q^3, connected with the head q and extending through a slot, s, in the stock, substantially as described.

19. In a magazine fire-arm, the combination of a stock, A, containing a magazine, C, and provided with slots s and s^2, and a chamber, r, in one side communicating with the said magazine and provided with a recess, a', a spiral spring, B, extending into a pivotal housing, r^2, in the chamber r and hollowed out on its outer side, a spring, r^3, behind the housing r^2, a head, q, at the forward end of the spring B, and a finger, q^3, connected with the head q and extending normally through the slot s in the stock, substantially as described.

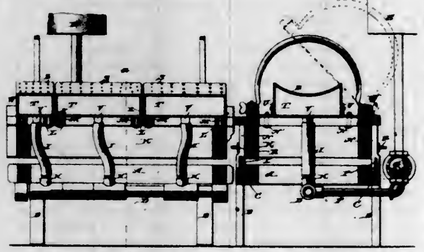
20. In a magazine fire-arm, the combination of a stock, A, containing a magazine, C, and provided with a slot, s, closed with rubber strips s', a slot, s^2, and a chamber, r, in one side communicating with the said magazine and provided with a recess, a', a spiral spring, B, extending into a pivotal housing, r^2, in the chamber r, a spring, r^3, behind the housing r^2, a head, q, at the forward end of the spring B and a finger, q^3, connected with the head q and extending normally through the slot s in the stock, substantially as described.

21. In a magazine fire-arm having a chamber, E, the combination, with the barrel G, of a magazine, C', communicating from its rear end with the forward end of the chamber E to receive the shells of cartridges after their explosion in the gun, and provided toward its forward end with an opening, e, and a beveled side, e', at the said opening, substantially as and for the purpose set forth.

abutted by the buckets when in their elevated position, whereby the

22. In a magazine fire-arm having a chamber, E, the combination, with the barrel G, of a magazine, C, communicating from its rear end with the forward end of the chamber E to receive the shells of cartridges after their explosion in the gun, and provided toward its forward end with an opening, *e*, having an adjustable cover, *d*, and a beveled side, *e'*, at the said opening, substantially as and for the purpose set forth.

379,795. LUBRICATING-CARRIAGE FOR TILE-MACHINES. GEO. LIVINGSTON and ADAM A. SPENNY, Oskaloosa, Iowa. Filed June 3, 1887. Serial No. 240,186. (No model.)



Claim.—1. In a carriage for tile and brick machines, the hollow slide-sections T, having the perforated upper sides, and the pipes to convey water under pressure to the interiors of the said slide-sections, whereby the water will pass through the perforations and lubricate the upper sides of the slide-sections, for the purpose set forth, substantially as described.

2. The combination of the frame A, having the track C and the water-pipe D, the carriage having wheels or rollers bearing on the track C, the slide-sections arranged on the said carriage, the said slide-sections being hollowed and having perforated upper sides, and the flexible tubes I, connecting the slide-sections with the water-pipe D, for the purpose set forth, substantially as described.

3. The combination of the carriage, the hollow slide-sections adjusted laterally thereon and having the perforated upper sides, and the flexible pipes connected to the said slide-sections, to convey water to the interiors thereof, substantially as described.

4. The combination of the frame A, having the track C, the carriage having the vertically-adjustable standards provided with the wheels or rollers bearing on the track, the hollow slide-sections supported on the carriage and having the perforated upper sides, the pipe D, attached to the frame and communicating with a reservoir or other source of water, and the flexible pipes I, connecting the said pipe D with the hollow slide-sections, to introduce water to the interiors thereof, substantially as described.

5. The combination of the carriage having the hollow slide-sections, arranged end to end and at a slight distance from each other, said slide-sections having the perforated upper sides, means to convey water to the interiors of the said sections, for the purpose set forth, and the rocking frame hinged to one side of the carriage, and having the cross-wires X, adapted to pass through the spaces between the opposing ends of the slide-sections, substantially as described.

6. In a lubricating-carriage for tile and brick machines, the individual hollow slide-sections T, having the perforated sides mounted on a longitudinally and vertically adjustable carriage, the flexible pipes I, to convey water to the said slide-sections, and the stationarily-mounted water-pipe D, to which the flexible pipes I are connected, for the purpose set forth, substantially as described.

7. In a tile and brick machine, the combination of the stationary frame A, having the track C, the longitudinal and vertically-adjustable carriage K, having the vertically-adjustable slotted standards N secured thereto, provided with wheels or rollers P to bear upon the track C, the hollow perforated slide-sections T, having depending nozzles V, the water-pipe D, having the nozzles H, and the flexible pipes I, connecting the water-pipe D with the hollow tile-sections T, substantially as described.

8. The longitudinal and vertically-adjustable carriage W, having the slotted cross-bars L, in combination with the individual hollow perforated slide-sections T, having the ears U bearing on the said cross-bars L, the clamping-bolts extending through the slots in the cross-bars L and through the threaded openings in the ears U, and the flexible water-pipes I, connected with each section T, substantially as described.

379,796. MANUFACTURE OF ROUND REINS, &c. ALONZO LOBDELL, Racine, Wis. Filed Oct. 13, 1887. Serial No. 252,905. (No model.)

Claim.—The process herein described of making filled round bridles, reins, &c., which consists in first shaping the outer leather into a

379,796.



double U form, then slipping the filling-strip into it, then sewing the outer strip and filling-strip together on lines on each side of the central opening, and finally splitting the two strips midway between the edges of the outside strip and finishing each strip so made in the usual way, substantially as set forth.

379,797. FASTENING FOR PAIL-COVERS. CHARLES F. LOOMIS, Winona, Minn., assignor to the Western Indurated Fibre Company, same place. Filed Dec. 24, 1887. Serial No. 258,934. (No model.)



Claim.—1. The combination, with a pail having ears upon its sides, of fastening-strips secured thereto, the lower ends of which are bent and engage with the ears of the pail.

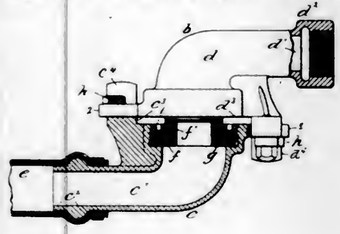
2. The combination, with a pail the ears of which are round upon their lower edges, of fastening-strips secured thereto, the lower ends of which are bent straight across and engage with the lower edges of the ears.

3. The combination, with a pail the ears of which are recessed, of fastening-strips secured thereto, the lower ends of which are bent and engage with the recessed portions of the ears.

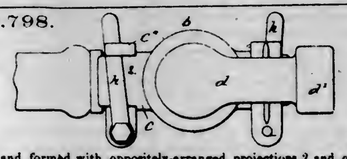
4. The combination, with a pail the ears of which are recessed in their bulged portions, of fastening-strips passed through said recessed portions and having their lower ends bent and engaging with the lower edges of said recessed portions.

379,798. PIPE-COUPLING. DANIEL W. MAGER, New York, N. Y. Filed Mar. 22, 1887. Serial No. 232,004. (No model.)

Claim.—1. In a pipe-coupling, the combination of coupling-sections constructed to draw apart on a plane parallel with their meeting



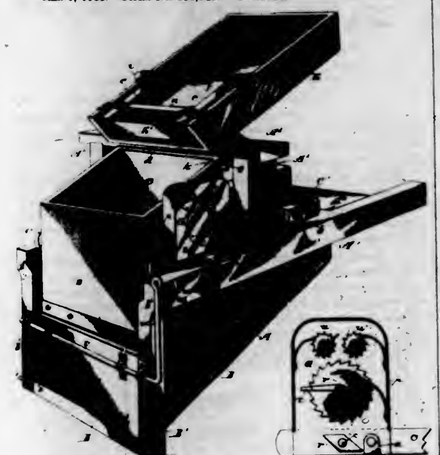
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faces, and formed with oppositely-arranged projections 2 and oppositely-arranged overhanging lugs c^4 and d^4, and latch-bars *k*, pivoted on opposite coupling-sections and arranged to set across the projections of the coupling-sections and engage under the opposite overhanging lug, to hold the coupling-sections against separation except in a direct line parallel with the plane of their meeting faces, substantially as described.

2. The combination, in a pipe-coupling composed of two similar half-couplings, of the metallic thimbles *f*, formed with an annular pipe-flange, *f'*, of less diameter than the necks of the couplings, the annular packing *g*, seated in the annular pipe-flange *f*, overhanging lugs on opposite coupling-sections, and pivoted latch-bars arranged to set across the ends of the opposite coupling-sections, to engage the overhanging lugs and hold the faces of the couplings and packings in contact, substantially as described.

379,799. GRAIN-METER. JACOB O. MAHER, Urbana, Ill. Filed Jan. 6, 1888. Serial No. 259,943. (No model.)



Claim.—1. In a grain-meter, the combination, with a rhomboidal vessel divided by a partition through its short diameter into a pair of equal-sized V-shaped vessels or buckets, of a cross-piece for limiting the rotation of the buckets while the latter are in their elevated positions, and a hook for locking the buckets to the cross-bar, substantially as set forth.

2. In a grain-meter, the combination, with a frame, a scale-beam fulcrumed therein, and buckets pivoted in the beam, of a cross-piece in position to be abutted by the buckets until depressed by the weight of their contents, and a hook for locking the buckets to the cross-piece until said buckets are depressed, substantially as set forth.

3. In a grain-meter, the combination, with a frame, a scale-beam fulcrumed therein, buckets pivoted in the beam, a cross-piece in position to be abutted by the buckets, and a hook for locking the buckets to the cross-piece until the buckets are depressed, of a feed-trough and a gate in said trough adapted to automatically open or close, according to the position of the buckets, substantially as set forth.

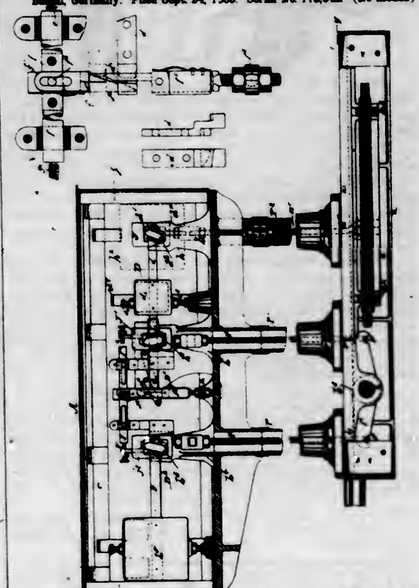
4. In a grain-meter, the combination, with a frame, a scale-beam fulcrumed therein, buckets pivoted in the beam, and a cross-beam in position to be abutted by the buckets when in an elevated position, of a feed-trough, a gate pivoted therein, and a slide-bar having connection with said gate, said bar projecting loosely through the cross-bar and adapted to receive the impact of the buckets, substantially as set forth.

5. In a grain-meter, the combination, with a frame, a scale-beam, and buckets pivoted in the latter, of a feed-trough, a crank-shaft pivoted therein, a gate secured to the shaft, a lever pivoted to the trough and connected at one end to the shaft, and a slide-bar in position to be abutted by the buckets when in their elevated position, whereby the gate in the trough is opened, substantially as set forth.

6. In a grain-meter, the combination, with a frame, a scale-beam, a pair of revolving buckets pivoted in the scale-beam, and a cross-piece against which the buckets abut, of a feed-trough, a gate therein, a slide in the cross-piece adapted to receive the impact of the turning buckets, and thereby open the gate in the trough, and a register connected with the trunnions of the buckets, whereby each turn of the buckets is registered, substantially as set forth.

7. The combination, with a feed-spout supported on a frame, of a cut-off gate attached by arms to a rock-shaft, a rock-shaft, a pendent lever pivoted to the rock-shaft and supported on a bracket to vibrate, and a slide-bar which is engaged loosely by one end with the lower end of the pendent lever, and with its opposite end adapted to receive the impact of a rotating bucket, substantially as set forth.

379,800. APPARATUS FOR AUTOMATICALLY COUNTING AND REGISTERING RAILROAD-TRUCKS. HERMANN MOSER, Mannheim, Baden, Germany. Filed Sept. 24, 1885. Serial No. 178,042. (No model.)



Claim.—1. The combination of the rail-section a^1, a frame supporting the same, a lever, as D, connected with said frame, locks, as d^3 d^4, for engaging the lever D, and a rail-section, b^2, connected with said locks for releasing the lever D, substantially as shown and described.

2. The combination of the hinged frame, a rail-section supported by the same, a lever, as D, connected with the frame, locks, as d^3 d^4, for engaging the lever D, and a pivoted rocking rail-section, b^2, connected with the locks, substantially as shown and described.

3. The combination of the detached rail-section a^2, the hinged frame supporting the same, a counter, A', the counter-lever D, connected with said frame and said counter, the rocking rail-section b^2, the arm *f'*, carrying latch-hooks engaging the lever D, and the connections between said arm and the said section b^2, substantially as shown and described.

4. The combination of the detached rail-section a^2, the hinged frame supporting the same, the weighted counter-lever D, having knife-edge bearings, the rod a^2, connecting the counter-lever D with the supporting-frame, the rocking rail-section b^2, centrally pivoted to a shaft, the rocking bar b^3 on said shaft, the unlocking-levers D' D^2, connected by rods b^5 b^6 with the ends of the rock-bar, the arm *f'*, the latch-hooks d^3 d^4 thereon, adapted to lock the lever D, and the bolt *f*, engaged by the levers D D' to vibrate the arm *f'* and release the lever D, substantially as and for the purpose set forth.

5. The combination of the detached rail-section a^2, the hinged supporting-frame for the same, a counter, A', the weighted counter-lever D, connected with the supporting-frame and said counter, means, as described, for adjusting its vibrations, the rocking rail-section b^2,

the rock-bar b^4, connected therewith, the unlocking-levers D' D^6, connected with the rock-bars, means for adjusting their vibrations, the arm f, carrying latch-hooks d^5 d^6, constructed to lock the lever D, and the bolt f, engaged by the levers D D' to vibrate the arm f^7, substantially as shown and described.

379,801. **FILTERING-FAUCET.** WILLIAM H. MCDONALD, Washington, D. C. Filed June 4, 1887. Serial No. 240,292. (No model.)



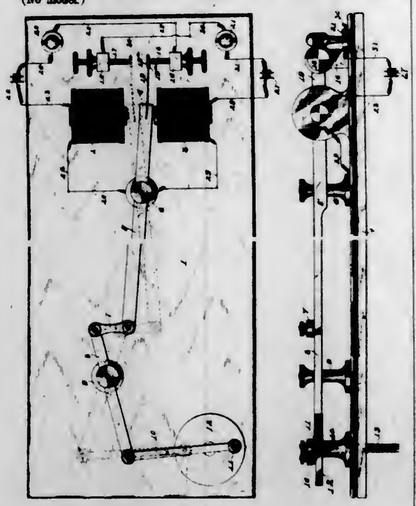
Claim.—1. As a new article of manufacture, a filtering-plug for faucets, having an upper screw-threaded portion, and a handle having an internally-screw-threaded recess of less depth than the threaded portion of the plug, substantially as shown, and for the purpose set forth.

2. In combination with a faucet, a turning plug therefor having a central chamber which is adapted to be filled with a filtering material, the upper portion of said plug having an exteriorly-screw-threaded portion which engages with an internal screw-threaded recess in the handle, the depth of said recess being less than the length of the screw-threaded portion on the plug, substantially as shown, and for the purpose set forth.

3. A filtering-faucet having a body portion of ordinary construction, a hollow plug having openings opposite to each other, with gauze coverings, an opening in the upper end of said plug for filling the same, and a stopper for said opening, the upper end of the plug being externally screw-threaded, in combination with a handle for turning the plug in one direction, said handle having a screw-threaded recess of less depth than the threaded portion of the plug, substantially as shown, and for the purpose set forth.

4. As a new article of manufacture, a hollow conical plug for faucets, having openings in its shell opposite each other, the upper portion of the plug having an opening for filling the same with filtering material, the upper end of the plug being screw-threaded, and a handle with an internally-screw-threaded recess, whereby the plug can be turned, when placed in the body portion of the faucet, in but one direction by the handle when the parts are organized for use.

379,802. **ELECTRO-MECHANICAL MOVEMENT.** JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed July 20, 1887. Serial No. 244,812. (No model.)



Claim.—1. The combination, with two poles of electro-magnets arranged opposite to each other, as shown, of a pivoted metallic lever having one end passing between said poles, contact-points arranged in the same plane as the faces of their respective poles, and the independent circuits respectively connected with the lever and with a contact-point, and plug cut-outs for electrically disconnecting the circuit to either or both contact-points, as specified.

2. The combination, with two independent electric circuits, each including a contact-point, an electro magnet or magnets, a source of electricity, and a terminal common to both circuits, of a conducting armature-lever, electrically connected with said common terminal, pivoted so as to vibrate between poles of opposite polarity of said electro-magnets, and so arranged as to make or break each circuit by engagement with said contact-points, and suitable mechanism connected with said armature-lever by a system of levers, and arranged to be operated by the vibratory movement of the said armature-lever.

3. The combination, with two independent electric circuits, each including a contact-point, an electro magnet or magnets, a separate source of electricity, and a terminal common to both circuits, of a conducting armature-lever electrically connected with said common terminal, pivoted so as to vibrate between poles of opposite polarity of said electro-magnets and so arranged as to make and break each circuit by engagement with said contact-points, respectively, at the extremities of its oscillations, substantially as described.

379,803. **CAR-COUPLING.** CHAS. E. MICHAUD, St. Michel d'Yamaska, Quebec, Canada. Filed July 25, 1887. Serial No. 245,290. (No model.) Patented in Canada May 14, 1886, No. 34,089, and Oct. 25, 1886, No. 25,213.

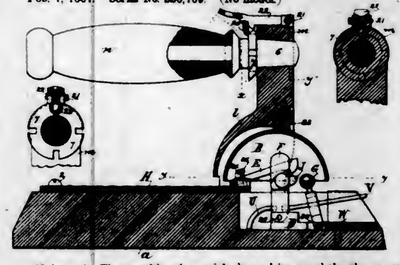


Claim.—1. In car-couplers, the draw-head having a step or shoulder, in combination with a link hinged or swinging on a supporting-rod, said rod having a stem or leg which rests on the step or lug of the draw-head, substantially as herein set forth.

2. In car-couplers, the combination of the draw-head having on the under side a sliding frame, the pivotal link-elevating arms within said sliding frame, the spring for actuating said arms, and the manipulating-lever attached to the draw-head and sliding frame, substantially as herein set forth.

3. In car-couplers, the draw-head having a step or shoulder, in combination with a rod hinged to the head of the pin and to the rear end of the draw-bar, and with the cross operating-rod having an arm connecting with the pin-rod, and a leg which operates in contact with the step of the draw-head, substantially as herein set forth.

379,804. **SAD-IRON.** GEORGE J. MURDOCK, New York, N. Y. Filed Feb. 7, 1887. Serial No. 226,769. (No model.)



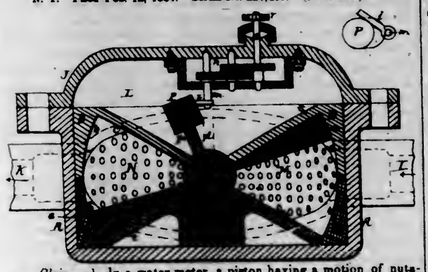
Claim.—1. The combination, with the sad-iron and the thermostat thereon, of a latch, a pivot to connect the latch to the thermostat, a screw to adjust the latch, a hammer held by the latch and liberated by the thermostat, and a bell to be rung by the hammer, substantially as set forth.

2. The combination, with the sad-iron and its stock, of a bell fastened at the upper part to the stock, a thermostat attached to the upper surface of the iron, a latch upon the thermostat, a pivoted hammer below and within the bell and held by the latch, and a visual-signal connected with the hammer and extending outside the bell, so as to indicate whether such hammer is held by the latch or not, substantially as set forth.

3. The combination, with the sad-iron, the thermostat, and the bell, of a latch connected with the thermostat, a pivoted hammer, and a pivoted clapper, against which the hammer acts to cause it to strike the bell, substantially as set forth.

4. The combination, with the sad-iron and its stock, of a bell suspended by its upper part from the stock, a thermostat upon the iron, and a hammer within and protected by the bell and liberated by the expansion of the thermostat, substantially as set forth.

379,805. **WATER-METER WITH NUTATING PISTON.** LEWIS H. NASH, Brooklyn, assignor to the National Meter Company, New York, N. Y. Filed Feb. 12, 1887. Serial No. 227,408. (No model.)



Claim.—1. In a water-meter, a piston having a motion of nutation, combined with a measuring-chamber adapted to be divided by said piston into enlarging and contracting measuring-spaces, said piston being unrestrained by any positive mechanical connections, either rigid or yielding, and free to lift from its seat to pass over obstructions, substantially as described.

2. In a water-meter, a piston having a motion of nutation, provided with a radial slot, and combined with a measuring-chamber provided with a radial projection, said piston being unrestrained by any positive mechanical connections, either rigid or yielding, and free to lift from its seat to pass over obstructions, substantially as described.

3. The combination, in a water-meter, of a piston having a motion of nutation, substantially as described, with a measuring-chamber adapted to be divided by said piston into enlarging and contracting spaces, and having inlet ports and passages formed by a gradually-enlarging section at the entrance to the measuring-space, adapted to convey the water in a quiet flowing volume to the measuring-spaces, for the purposes specified.

4. The combination, with a piston having a motion of nutation, substantially as described, and a measuring-chamber divided by said piston into enlarging and contracting spaces and having suitable ports and passages for said spaces, of one or more screens placed in said passages, substantially as described, for the purpose specified.

5. The combination, in a water-meter, of a piston having a motion of nutation, substantially as described, with a case adapted to be divided thereby into enlarging and contracting spaces having ports for supplying said chambers formed of a series of small openings, for the purpose specified.

6. In a water-meter, a piston having a motion of nutation, substantially as described, combined with a measuring-chamber adapted to be divided by said piston into enlarging and contracting spaces, an inlet-passage gradually increasing in size from the service-pipe as it approaches said chamber, and a screen, substantially as set forth.

7. In a water-meter, a piston having a motion of nutation, combined with a measuring-chamber and a divided abutment, and having inlet and discharge ports formed in the spherical side walls extending on each side of said abutment, said ports having their upper and lower edges determined by the edge of the piston in its position of greatest elevation and depression, and said piston being unrestrained by any positive mechanical connections, either rigid or yielding, and free to lift from its seat to pass over obstructions, substantially as described.

8. In a water-meter, a piston having a motion of nutation and an inclosing-chamber, said piston being unrestrained by any positive mechanical connections, either rigid or yielding, and free to lift from its seat to pass over obstructions, combined with a registering device, substantially as described.

9. The combination, in a water-meter, of a case inclosing a measuring-chamber formed with spherical joint-forming surfaces and a spherical concentric bearing, and a piston unrestrained by any positive mechanical connections, either rigid or yielding, and free to lift from its seat to pass over obstructions, said piston operating in its case with a motion of nutation and formed with a central ball-bearing upon the case and having a projecting pin or stud in said bearing, with a registering device loosely connected thereto and driven by said pin, substantially as described.

10. The combination, in a water-meter, of a piston having a motion of nutation, substantially as described, and having a central ball-bearing and a stud in said ball, and a measuring-chamber divided by said piston into enlarging and contracting measuring-spaces, with a crank-shaft having its bearing in the case and driven by loose contact of the pin in the piston ball-bearing, whereby the crank places no restriction upon the movement of said piston, substantially as described.

11. In a water-meter, a piston having a motion of nutation, provided with a radial slot, combined with a measuring-chamber provided with a radial abutment and one or more ports in the ends of said chamber near said radial abutment, and also ports in said piston at the sides of said abutment, said piston being unrestrained by any positive mechanical connections, either rigid or yielding, and free to lift from its seat to pass over obstructions, substantially as described.

12. The combination, in a water-meter, of a piston having a motion of nutation, substantially as described, with a measuring-chamber having spherical side wall and an end conical surface and an abutment, forming a chamber of a form adapted to be divided by said piston into enlarging and contracting measuring-chambers, and having ports or passages formed both in the end cone and in the spherical side walls on each side of said abutment for supplying said measuring-spaces, substantially as described.

13. In a water-meter, a piston having a motion of nutation, combined with an inclosing measuring-chamber, said piston being unrestrained by any positive mechanical connections, either rigid or yielding, and free to lift from its seat to pass over obstructions, and supported at or near its axis in a state of stable equilibrium for the purpose of establishing and preserving joint-forming contact with its case, substantially as described.

14. The combination, in a water-meter, of a piston having a motion of nutation and a weight attached thereto above its center of gravity, adapted to act by its weight and centrifugal force to preserve the joint forming function of the piston, with a measuring-chamber adapted to be divided by said piston into receiving and discharging spaces, said piston being unrestrained by any positive mechanical connections, either rigid or yielding, and free to lift from its seat to pass over obstructions, substantially as described.

15. In a water-meter, a piston formed of hard rubber and having a motion of nutation, substantially as described, combined with a skeleton of strengthening material—such as steel wire—substantially as set forth.

16. The combination, in a water-meter, of a piston having a motion of nutation, substantially as described, and registering mechanism driven by loose contact with said piston without mechanical connections, either rigid or yielding, with said registering mechanism.

17. In a water-meter, a piston formed of hard rubber, combined with a skeleton of strengthening material—such as metal—substantially as and for the purpose set forth.

18. In a water-meter, the combination of a hollow cone-shaped piston having a motion of nutation and an inclosing measuring-chamber, said piston being unrestrained by any positive mechanical connections, either rigid or yielding, and free to lift from its seat to pass over obstructions, substantially as described.

19. In a water-meter, a piston having a motion of nutation, combined with a driving-shaft of registering mechanism having a motion of nutation loosely connected to the hub of said piston, substantially as described.

20. The combination, in a water-meter, of a piston having a motion of nutation, substantially as described, and a measuring-chamber divided by said piston into enlarging and contracting measuring-spaces, with a crank-shaft driven by loose contact and without rigid or yielding mechanical connection with a projection from said piston, whereby said crank places no restriction upon the movements of said piston.

379,806. **CONNECTING-ROD.** LEWIS H. NASH, Brooklyn, assignor to the National Meter Company, New York, N. Y. Filed Oct. 6, 1886. Renewed June 21, 1887. Serial No. 242,063. (No model.)

Claim.—1. The combination, in a connecting-rod, of an abutment-rod and bearing-box parts with separate tie-rods having openings in each end and independent bearings upon the outer box parts, and means, substantially such as described, for taking up the wear of all the parts.

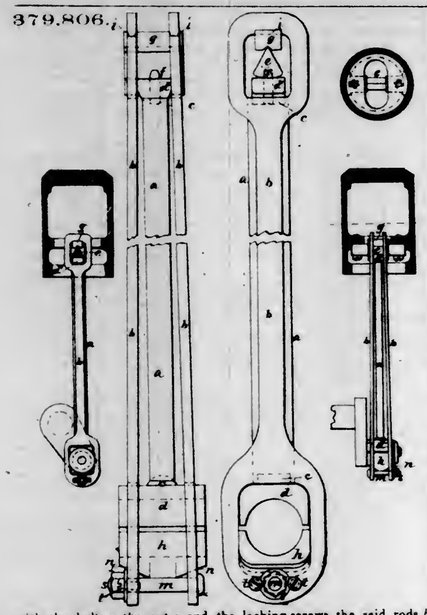
2. The combination of the abutment-rod and the bearing-box parts with separate tie-rods having openings in each end, independent convex bearings upon one of the outer box parts and inclined bearings upon the other outer box part, and means, substantially such as described, for taking up the wear of all the parts.

3. The combination of the abutment-rod, the inner box-sections having cylindrical seatings upon said rod, with separate tie-rods having independent bearings upon the outer bearing-box parts, and means, substantially such as described, for taking up the wear of all the parts.

4. The combination, with the abutment-rod having socketed ends, of curved bearings seated in said sockets, the inner bearing-box sections, and separate tie-rods having independent convex bearings upon one of the outer bearing-box sections and inclined bearings upon the other outer bearing-box section, and means, substantially such as described, for taking up the wear of all the parts.

5. The combination of the rods *a b b* and the bearing-box parts

379,806.



with the bolt *m*, the nut *s*, and the locking-screws, the said rods *b* being hung upon the outer box-sections and independent of the inner box-sections, substantially as herein set forth.

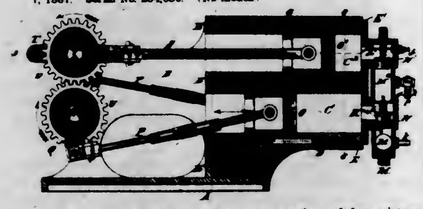
6. The combination, with a connecting-rod, of a bearing therefor consisting of a bearing-pin having a knife-edge and a cylindrical bearing and bearing-box parts, one of which forms a flat bearing-block and the other has a V-shaped groove, substantially as herein set forth.

7. The combination, with the abutment-rod and the separate tie-rods, of the bearing-box parts and a bearing-pin having both a knife-edge and rolling bearings upon said box parts, substantially as herein set forth.

8. The combination, with a bearing-pin having a knife-edge and a cylindrical bearing, of an abutment-rod and the bearing-box parts, one of which has the bearing for the knife-edge and the other a flat and a cylindrical bearing, substantially as herein set forth.

9. The connecting-rod herein described, consisting of the abutment-rod *a*, its cylindrical bearing-pieces *c*, the inner bearing-box parts, the tie-rods, and the outer bearing-box parts connected to the latter, in combination with a knife-edge and a cylindrical bearing-pin, the former having a rolling bearing upon the inner box part and the latter having a tooth-connection with the rolling bearing, and means, substantially such as described, for taking up the wear of all the parts.

379,807. **GAS-ENGINE.** JAY NOBLE, St. Louis, Mo. Filed Apr. 7, 1887. Serial No. 234,086. (No model.)



Claim.—1. The combination, in a gas-engine, of four pistons working in four cylinders connected together, substantially as and for the purpose set forth, two shafts, each having crank-connection with two of the pistons, and spur-wheels upon the crank-shafts, one of which is made adjustable, for the purpose set forth.

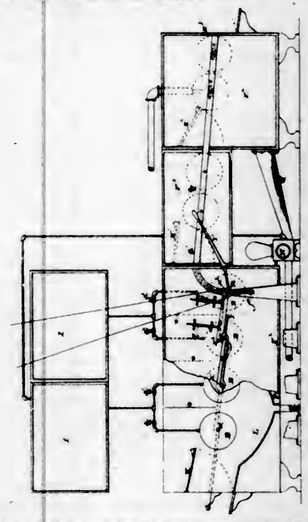
2. In a gas-engine, a pair of explosion-cylinders, a piston situated in each of said cylinders, a pitman connected to each of said pistons, a shaft, and cranks projecting in opposite directions therefrom, to which said pitmen are connected, in combination with a pair of compression-cylinders, a piston situated in each, a pitman connected to each of said pistons, a shaft, a pair of cranks projecting in opposite directions therefrom, to which said pitmen are connected, and intermeshing pinions secured to both of said crank-shafts, whereby they are caused to rotate in unison, the cranks on one of said shafts being placed at an angle to those on the other, so that the compression-piston shall lead the working-piston, substantially as set forth.

3. In a gas-engine, the combination, with the explosion-cylinder, a piston fitted therein, a pump, a passage connecting said pump with the explosive cylinder, and a pipe for supplying said pump with gas, of a pipe for placing the passage which forms communication between the pump and explosive cylinder in communication with the pipe which supplies the pump with gas, a valve in said pipe, and a speed-governor having connection with said valve, whereby it is lifted from its seat to permit more or less of the gas coming from the pump to return to the supply-pipe, substantially as set forth.

4. In a gas-engine, the combination of the explosion-cylinder C^2, a piston, O', situated therein, the compression-cylinder C, a piston, O, situated therein, the supply-pipe M, communicating with the port L of cylinder C, the passage M^3, communicating with the port L′ of cylinder C^2, the valve N′, situated between port L and passage M^3, the escape-pipe *k*, communicating with the passage M^3 and with the supply-pipe M, the valve *l*, for controlling the passage through said pipe *k*, and a speed-governor for controlling the position of said valve, substantially as and for the purposes set forth.

5. The combination, in a gas-engine, of a cylinder in which the gases are exploded, a pipe for conveying the gases thereto, a return passage communicating with said supply-pipe, a valve in the supply-pipe situated between the cylinder and the return-passage, a valve in said return-passage, a rod having a wedge-shaped portion upon which the stem of said valve bears, and a speed-governor having connection with said rod, substantially as set forth.

379,808. **MACHINE FOR EXTRACTING OILS FROM WOOL.** FRANK A. OWEN and JAMES A. HARVEY, Burlington, Vt. Filed Sept. 21, 1886. Serial No. 214,211. (No model.)



Claim.—1. In a wool-cleansing apparatus, a series of perforated metallic cylinders, B, to contain the wool to be cleansed, each having at one extremity a fixed head and a solid journal, b^2, and at the other a removable head, *b*′, provided with suitable devices to secure it to the cylinder, and having a central aperture for the insertion of the hollow shaft D, substantially as described.

2. In a wool-cleaning apparatus, the perforated hollow pipe D, one end of which is closed, and provided with a projecting pin, *d*′, to hold it in position in the solid journal of the cylinder B, the other end of which opens into the hollow journal of the removable head *b*′ of the cylinder, for the purpose of receiving and distributing the solvent through the contents of the cylinder, substantially as set forth.

3. In a wool-cleaning apparatus, in combination with the perforated hollow pipe D, the long plug E, which is designed to be placed in the pipe and extend beyond it for the purpose of preventing the entrance of wool and dirt into the pipe, and to act as a guide to the head *b*′ in the operation of pressing, substantially as described.

4. In a wool-cleaning apparatus, the cylinder B, in combination with the circular metallic extension-hoop C, the hollow shaft D, and plug E, substantially as and for the purpose set forth.

5. In a wool-cleaning apparatus, the adjustable pulley R, operated by the spring-clutch *f*, in combination with the journal on the fixed head of the cylinder for the purpose of rotating the cylinder B, substantially as set forth.

6. In a wool-cleaning apparatus, the extracting-box F, provided with a door, H, an inclined sectional ledge or slot, G, protected by spring-actuated covers K, journal-seats for the several cylinders B, a diaphragm, L, to catch and carry off the solvent from the first series of perforated pipes A, and the flexible aprons *o*, to separate the cylinders on their respective seats, substantially as and for the purpose described.

7. In a wool-cleansing apparatus, the slot G, provided with vertically-sliding covers K, having spring-adjustable rods *l*, for the purpose of keeping the slot G closed, except during the passage of the cylinder from one journal-seat to another, substantially as described.

8. In a wool-cleansing apparatus, the tanks 1 and 2, connected by suitable supply-pipes controlled by valves, with perforated drip-pipes A, in combination with the extracting-box F, substantially as and for the purpose set forth.

9. In a wool-cleansing apparatus, the tight discharge-box F^4, having the end opening H′, and the inclined ledge G′, to contain the several cylinders B until they are ready to charge the drying-chamber F^4, substantially as set forth.

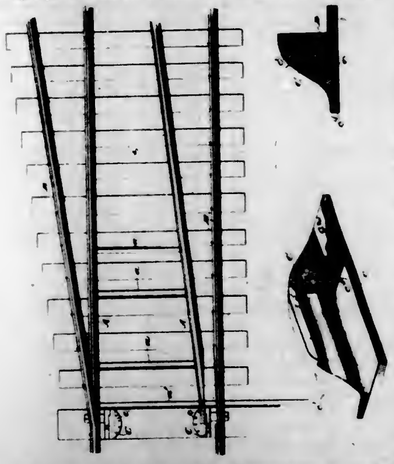
10. In a wool-cleansing apparatus, the drying-chamber F^4, having the end openings H^3 and H^4, and an inclined ledge, which is provided with suitable openings for the ends of the shafts D, and the cylinders B, which are protected by gates P, substantially as and for the purpose described.

11. In a wool-cleaning apparatus, the drying-chamber F^4, constructed as described, to contain the treated cylinders, while any solvent still adhering is removed by means of heat applied, either by a steam-jacket or a warm-air current, or both together, through the pipe Q, to the condenser, substantially as set forth.

12. In a wool-cleansing apparatus, the combination of suitable chambers, F, F^3, and F^4, for extracting the suint, holding the cylinders, and drying the wool, in combination with the cylinders B, tanks 1 and 2, provided with their several pipes for conveying the solvent to the cylinders, the adjustable pulleys R, and force-pump N, all constructed and arranged to operate substantially as set forth.

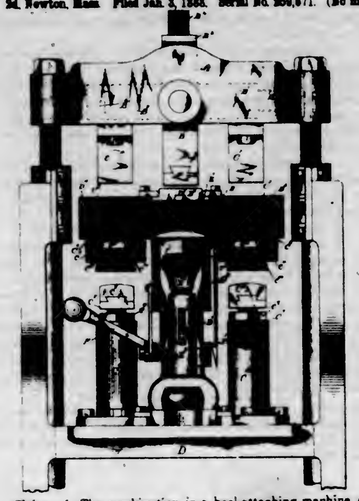
13. In a wool-cleaning apparatus, the combination of a receiving-box, F, with one or more perforated cylinders, B, which are provided with stationary and removable heads, and with solid and hollow bearings, the pipe *p*, which connects with the hollow bearings, and a tank for holding a solvent, substantially as shown.

379,809. **GUARD FOR SWITCH-POINTS.** PETER R. RANDALL, Agency, Mo. Filed Oct. 6, 1887. Serial No. 251,632. (No model.)



Claim.—As an improved article of manufacture, a guard for switch-points, consisting of a metallic cast block having an open end constructed by the formation of the recess D, which has a top overhanging shoulder, d^3, the metal in the rear being thickened and curving downward to a circular flange, d^4, the forward portion of said slot D being bounded by a straight wall and a flat straight securing-flange, d^5, the said opening D opening into one side of the block and conforming to the contour of the switch, the said block being secured on the tie upon which the switch-points move, with the open ends thereof adjacent to the switch-points and the open sides facing the rails of the main track, substantially as described.

379,810. **HEEL-NAILING MACHINE.** FREDERICK F. RAYMOND, 2d, Newton, Mass. Filed Jan. 3, 1888. Serial No. 259,671. (No model.)



Claim.—1. The combination, in a heel-attaching machine, of the last or work-support and heel-attaching devices with one or more independent heel-forming dies, C^4, and heel-formers C^5, arranged at the side of the heel-attaching devices and movable relatively to each other to compress one or more heel-blanks while a previously-compressed heel-blank is being attached to the soles of a boot or shoe, and a reciprocating cross-head, substantially as described.

2. The combination of the last or work-support, the cross-head A, a rotary head carried thereby, having a gang or group of awls, a gang or group of drivers, and a top-lift spanker, or any two of them, adapted to be brought successively into the same operative position and reciprocated, the die or dies C^4, the former or formers C^5, and the bunters C C′, or either of them, substantially as described.

3. The combination, in a heel-attaching machine, of the vertically-movable table D^3, its arms D^4 D^5, die-blocks C^4, carried thereby, the formers C^5, the templet D^7, also carried by said table, the last or work-support E^3, cross-head A, the nail-driving devices, and the bunters C C′, substantially as described.

4. The combination of the table D^3, the centering-die E', carried thereby, templet E^7, one or more dies, C^4, carried by said table, the formers C^5, the nail-driving devices, and the bunters C C′, substantially as described.

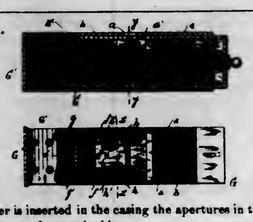
5. The combination of the die C^4, having the cavity C^6, the plate C^{14}, the spindle C^{13}, and lever C^{12}, substantially as described.

6. The combination, in a heel-attaching machine, of nail-driving devices, a heel-blank-compressing die, C^4, the heel-former C^5, and means for moving one in relation to the other, and the heel-blank-centering die E′, used in connection with the nail-driving devices, and having a cavity slightly larger than the cavity of the heel-forming die C^4, and the last or work-support E^3, substantially as described.

379,811. **LOCKING-RECEPTACLE FOR FARE-BOXES.** GEORGE REINAHL, Berlin, Germany, assignor to the Maschinenbau Fabrik, vormals Prister & Rasmann, Actien-Gesellschaft, same place. Filed May 24, 1887. Serial No. 238,199. (No model.) Patented in Germany Oct. 29, 1886, and in England Nov. 1, 1886, No. 14,087.

Claim.—1. In a fare box or receiver, the combination, with the outer casing, of the drawer G, provided with a coin-aperture, *a*′, in its cover, the spring-actuated slide *b*′, mounted in guides on the inner face of said cover and provided with a coin-aperture, a^x, said apertures being held normally out of coincidence, and means, consisting of fixed pushers and levers on the slide, substantially as described, whereby

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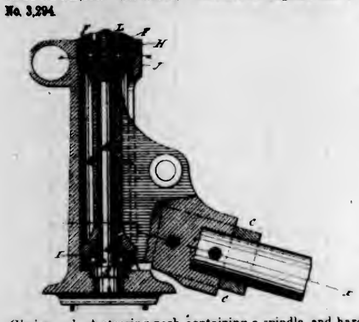
when the drawer is inserted in the casing the apertures in the slide and drawer-cover are made to coincide.

2. In a fare box or receiver, the combination, with the outer casing provided with internally-arranged pins or pushers, of the drawer provided with holes in its inserted end to receive said pushers, the spring-actuated slide on the inner face of the drawer-cover, the lever *e'*, pivoted to said slide, the levers *f f'*, pivoted to said lever *e'* and aligned with said pushers, and the brittle pins arranged behind the arms of lever *e'*, substantially as set forth.

3. As a means for detecting any tampering with the slide *b'*, the combination, with said slide and its actuating-spring, of a lever, *e'*, pivoted on said slide, and brittle pins *k' k'*, mounted in said slide behind the arms of said lever, whereby said lever cannot be turned on its pivot without breaking one of said brittle pins, as set forth.

4. The combination, with the outer casing, G', provided with internally-arranged pins or pushers *g g'*, of different lengths, of the drawer G, provided with holes in its inserted end to receive said pins, the apertured slide *b'*, mounted in guides on the inner face of the apertured cover of the drawer, the springs behind said slide, the lever *e'*, pivoted to said slide, the brittle pins *k' k'* in said slide behind the respective arms of lever *e'*, and the short levers *f f'*, pivoted, respectively, to the ends of lever *e'*, said short levers having their faces cut or formed substantially as shown, whereby all of the pins *g g'* will impinge thereon simultaneously, as set forth.

379,812. VELOCIPEDE. PHILIPP L. G. F. RENOUF and ISAAC W. BOOTHROYD, London, County of Middlesex, England. Filed Sept. 8, 1887. Serial No. 249,090. (No model.) Patented in England Mar. 9, 1886, No. 3,294.



Claim.—1. A steering-neck containing a spindle and hardened spherical balls or conical rollers, said neck with its contained spindle and balls or rollers being detachable from the head of the vehicle, and separately adjustable when so detached, substantially as described.

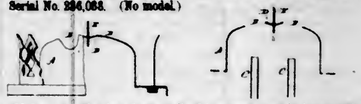
2. The combination of the hollow part or sleeve of a steering-neck, provided with recesses within said hollow part, with hardened bearing-cups fitted into said recesses, so as to be self-centering, substantially as described.

3. The combination of a steering-neck having a hollow part or sleeve, hardened bearing cups or bushes in said hollow part, a spindle having a fixed and an adjustable cone or collar, anti-friction balls or rollers interposed between the cups and cones, and means for adjusting the cones to the balls or rollers, substantially as described.

4. The combination, with the head of the vehicle, of a steering-neck having a hollow part, hardened cups seated in recesses of said part, a spindle having a fixed and an adjustable cone or collar, hardened balls or rollers interposed between said cups and cones, means for screwing up one or both cones, and a lock-nut for securing the steering-neck within the head of the fork, substantially as set forth.

5. A steering-neck for bicycles and similar vehicles, constructed with a flat portion or plate, and a boss or portion for attaching the neck to the backbone or frame of the vehicle, said boss being formed separate from the neck and recessed and united to the plate and to the backbone by pinning, brazing, or other suitable means, substantially as described.

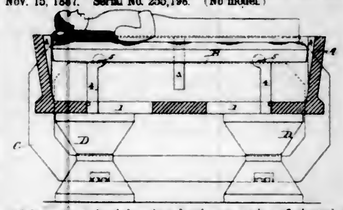
379,813. LAMP-BURNER. FRANK REED, Meriden, Conn., assignor to Edward Miller & Company, same place. Filed Apr. 26, 1887. Serial No. 236,088. (No model.)



Claim.—1. The herein-described improvement in burners having two or more wick-tubes, and in which the cone is constructed with independent flame-openings corresponding to said tubes, and so as to leave a bridge between said openings, a vertical partition supported by said bridge, and extending upward from the bridge between the flame-openings, substantially as described.

2. In a burner having two or more wick-tubes, and a cone constructed with independent flame-openings corresponding to the respective tubes, and so as to leave a bridge between said openings, the said bridge constructed with a vertical slot between said openings, combined with a partition adjustable vertically through said slot, substantially as described.

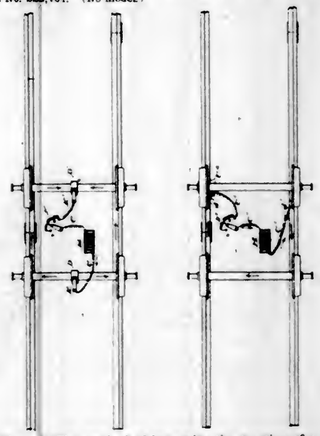
379,814. COFFIN. HENRY RICE, Castleton, N. Y., assignor of one-half to Frank P. Harder and James R. Downer, both of same place. Filed Nov. 15, 1887. Serial No. 255,198. (No model.)



Claim.—1. A burial-casket having a series of slotted openings formed in its bottom, and a movable bottom provided with adjustable supports which correspond in number and position to the said slotted openings, said supports being hinged to the movable bottom, so as to swing into and out of said slotted openings and therein fastened while in their raised position, as and for the purpose herein specified.

2. In a burial-casket, the combination of the body of the casket and its cover connected together by separable hinges, said cover having on its edge that is opposite to the one on which the hinges are secured hooks which are made independently of said hinges, but which are fitted to engage with the hinge-pins of the parts of said hinges that are secured to the body of the casket for the purpose of suspending said cover in a reversed position from the body of the casket, as herein specified.

379,815. APPARATUS FOR INCREASING THE TRACTION OF VEHICLES AND MOTORS. ELIAS E. RIES, Baltimore, Md., assignor of one-half to Albert H. Henderson, same place. Filed Jan. 8, 1887. Serial No. 223,761. (No model.)



Claim.—1. The method of increasing the traction of a wheeled vehicle moving upon a metallic track, which consists in establishing

and maintaining a traction-circuit which moves with the vehicle and includes two or more wheels and that portion of the rails which extends between the same, and charging said circuit with a low-tension current of electricity, substantially as described.

2. The method of increasing the traction of a wheeled vehicle moving upon a metallic track, which consists in establishing and maintaining a traction-circuit which is independent of the motive power, moves with the vehicle, and includes two or more wheels and the portion of the rails extending between the same, and charging said circuit with a low-tension current of electricity, substantially as described.

3. The method of increasing the traction of a wheeled vehicle moving upon a metallic track, which consists in establishing and maintaining a traction-circuit which moves with the vehicle and includes two or more wheels and the portion of the rails extending between the same, and variably charging said circuit with currents of low tension, substantially as described.

4. The method of increasing the traction of a wheeled vehicle moving upon a metallic track, which consists in establishing and maintaining a traction-circuit which moves with the vehicle and includes two or more wheels and the portion of the rails extending between the same in series, and charging said circuit with a low-tension current or currents of electricity, substantially as described.

5. The combination of a closed electrical circuit moving with a railway car or vehicle, including that portion of the track-rails lying immediately below the said vehicle, or between the driving-wheels thereof, with a source of low-tension electricity for charging said circuit, substantially as described.

6. The combination of an electrical circuit moving with a railway car or vehicle, including that portion of the track-rails lying immediately below the said vehicle, or between the driving-wheels thereof, with a circuit-controller for said circuit and a source of low-tension electricity for charging said circuit, substantially as described.

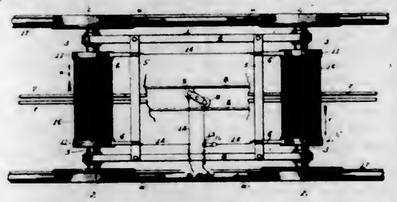
7. The combination of an electrical circuit moving with a railway car or vehicle, including that portion of the track-rails lying immediately below the said vehicle, with means for varying the resistance of said circuit, and a source of low-tension electricity for charging said circuit, substantially as described.

8. The combination, with a wheeled vehicle adapted to travel upon an electrical conducting surface or surfaces, of an electrical generator furnishing currents of low tension and great quantity mounted upon the vehicle, and a traction-circuit formed in part by two or more wheels of the vehicle, the rails extending between the same, and the generator, substantially as described.

9. The combination, with a wheeled vehicle adapted to travel upon an electrical conducting surface or surfaces, of an electrical generator furnishing currents of low tension and great quantity mounted upon the vehicle, and a traction-circuit formed in part by two or more wheels of the vehicle, the rails extending between the same, the generator, and an adjustable rheostat, substantially as described.

10. The combination, with metallic track-rails, of a motor-car mounted thereon, having two connected pairs of driving-wheels, an electrical generator of currents of low tension and great quantity mounted upon the motor-car, and an electrical circuit including said generator, each of the said pairs of driving-wheels, and the portion of the conducting-rails between the pairs of wheels, substantially as described

379,816. ELECTRO-MAGNETIC TRACTION-INCREASING APPARATUS. ELIAS E. RIES and ALBERT H. HENDERSON, Baltimore, Md. Filed Nov. 7, 1887. Serial No. 254,557. (No model.)



Claim.—1. Means for increasing the traction of a vehicle provided with magnetizable wheels traveling upon rails of magnetizable metal, comprising a closed magnetic system including four wheels of said vehicle, all of that portion of the axle between any two wheels, and the sections of rails extending from wheel to wheel, the said rails and wheels and the said axles and wheels, respectively, being magnetically in contact, in combination with magnetizing-coils having for their respective cores two or more axles, an inducing electric circuit for charging said coils, and a source of electricity for charging said circuit independently of the motive power of said vehicle.

2. Means for increasing the traction of a vehicle provided with magnetizable wheels traveling upon rails of magnetizable metal, comprising a closed magnetic system including four wheels of said vehicle, all of that portion of axle between any two wheels, and the sections of rails extending from wheel to wheel, the said rails and wheels and the said axles and wheels, respectively, being magnetically in contact, in combination with magnetizing-coils having for their respective cores two or more axles, an inducing electric circuit for charging said coils, means for varying the magnetic influence of said circuit, and a source of electricity for charging said circuit independently of the motive power of said vehicle.

3. Means for increasing the traction of a vehicle provided with magnetizable wheels traveling upon rails of magnetizable metal, comprising a closed magnetic system including four wheels of said vehicle and all of the axles and rails, respectively, between any two wheels, magnetizing-coils in inductive proximity to said magnetic system, having for their respective cores all of the axles of said vehicle, and a source of electricity independent of the motive power of said vehicle for charging said coils.

4. Means for increasing the traction of a vehicle provided with wheels of magnetizable metal traveling upon rails of magnetizable metal, comprising a closed magnetic system including four wheels of said vehicle and all of the axles and rails, respectively, between any two wheels, magnetizing-coils in inductive proximity to said magnetic system, having for their respective cores two or more axles, an electric circuit including said magnetizing-coils, means for varying the magnetic influence of said electric circuit, and a source of electricity feeding said circuit independently of the motive power of said vehicle.

5. In combination, two helices of wire located in inductive proximity to their respective cores and in circuit with each other and included in an independent electric circuit, two car-axles forming the magnetic cores of their respective helices, wheels entirely of magnetizable metal forming the respective poles of said cores, an independent electric circuit including said helices, and a source of electricity for charging said coils independently of the motive power of said vehicle.

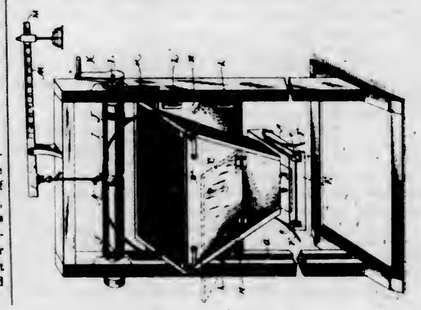
6. The combination, with two helices of wire wound around and insulated from their respective cores, two car-axles forming the magnetic cores of their respective helices, four car-wheels magnetically in circuit with their respective cores and formed entirely of magnetizable metal, sections of track-rails extending from wheel to wheel, and means for varying the magnetic saturation of the axles, wheels, and rails.

7. The combination, with car-axles and a motor mounted upon the car-truck and geared to the axles, of a divided helix of wire arranged on each side of the motor-gearing upon the axle, for the purpose set forth.

8. The combination, with a complete magnetic system including four wheels of a vehicle and the axles and rails, respectively, between any two wheels, of divided magnetizing-coils upon the axles, a motor geared to the axles, and electric circuit for charging said coils.

9. In a self-propelled vehicle, the combination, with means for increasing the traction of said vehicle traveling upon rails of magnetizable metal, comprising a closed magnetic system including four wheels of said vehicle and the axles and rails, respectively, extending between any two wheels, the said rails and wheels and the said axles and wheels being respectively magnetically in contact, and magnetizing-coils in inductive proximity to said magnetic system and having for their respective cores the axles of said vehicle, of an electric motor for propelling said vehicle and two circuits severally including the said magnetizing-coils and motor.

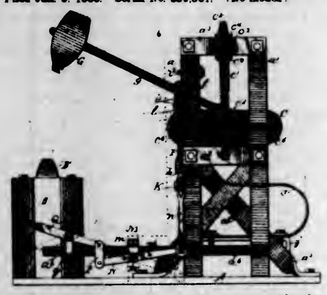
379,817. BAG-HOLDER. ALLISON M. ROSCOE and GEORGE E. GRIER, Dubois, Pa. Filed July 2, 1887. Serial No. 243,257. (No model.)



Claim. 1. The combination, with the hopper, of the spring clamp-arms, fastened at one end and extending along on opposite sides of the hopper, and having their free ends curving outward, and the plate E, notched in its upper edge near each end to form catches for the free ends of the spring-arms, substantially as described.

2. The combination, with the hopper having grooves in the edges of its bottom, of the spring clamp-arms adapted to enter said grooves, and the catches for holding them in the grooves, as and for the purpose set forth.

379,818. **FOOT-POWER HAMMER.** CHAR. J. RUNDQUIST, Opheim, Ill. Filed Jan. 3, 1888. Serial No. 259,581. (No model.)



Claim.—1. In a foot-power-hammer frame, in combination, base-bars A, upright frame-bars *a a'*, having connecting portions a^3 bolted to the base A, ties a^2 a^4, crossed braces a^5, bars a^4, and anvil-block B, substantially as and for the purpose specified.

2. In a power-hammer, in combination with frame-bars *a a'*, bars C, having a rock-shaft, D, journaled thereto, the hammer-handle mounted on the shaft D, the bar a^3, having an eye, c^3, screw-rod *c'*, and lugs c^4, projecting from the bars C, whereby the hammer-carriage may be adjusted vertically, substantially as described.

3. In a power-hammer, in combination with frame-bars *a a'*, bars C, having a rock-shaft, D, journaled thereto, clamps c^4, the hammer-handle mounted on the shaft D, the bar a^3, having an eye, c^3, screw-rod *c'*, and lugs c^4, projecting from the bars C, whereby the hammer-carriage may be adjusted and secured after adjustment vertically, substantially as described.

4. In a power-hammer, in combination with frame-bars *a a'*, bars C, having a rock-shaft, D, journaled thereto, the hammer-handle mounted on the shaft D, the bar a^3, having an eye, c^3, screw-rod *c'*, having collars c^4, and lugs c^4, projecting from the bars C, whereby the hammer-carriage may be adjusted vertically, substantially as described.

5. In combination with the rock-shaft D, carried by vertically-adjustable bars, a clamp-plate, E, and eyebolts F, the slotted and adjustable lever H', link I, having series of holes *i'*, and spring J, whereby the tension of the spring may be controlled to suit vertical adjustments of the hammer-carriage, substantially as described.

6. In combination with a rock-shaft, D, carried by vertically-adjustable bars, a clamp-plate, E, and eyebolts F, the slotted and adjustable lever H, and a link, L, having series of holes *l*, connecting it with suitable actuating mechanism, whereby the force of the hammer-blow may be regulated and hammer-carriage be adjusted vertically without disturbing the actuating mechanism, substantially as described.

7. In combination with a rock-shaft, D, clamps E and E', and eyebolts F, the hammer G, the handle of which is adjustable between the bolts E and E', substantially as described.

8. In combination, frame-bars *a a'*, adjustable plates C, rock-shaft D, clamp-plates E E', slotted levers H H', and a hammer and handle, G *g*, substantially as and for the purpose specified.

9. In combination, frame-bars *a a'*, adjustable plates C, rock-shaft D, clamp-plates E E', slotted levers H H', and a hammer and handle, G *g*, a spring, J, connected with the lever H', and suitable actuating mechanism connected with the lever H, substantially as and for the purpose specified.

10. In combination with a rock-shaft, D, and clamp-plates held thereto by eyebolts F, the adjustable levers H H', and hammer and handle G *g*, substantially as and for the purpose specified.

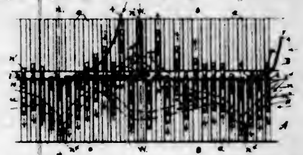
11. In combination with the rock-shaft D and hammer mounted thereon, the lever H, link L, levers K, N, and Q, and links P *n*, substantially as and for the purpose specified.

12. In a foot-power hammer, in combination with the levers K, N, Q, and H and their connecting-links, and the hammer and rock-shaft D, the adjustable fulcrum *m'* for the lever N, substantially as and for the purpose specified.

13. In combination with the adjustable bars C, the rock-shaft D, the hammer and its actuating mechanism, the bumper R, fixed to a bar, *r'*, and the hook-bolts r^3, for adjusting the bumper vertically on the bars *a* to suit vertical adjustments of the hammer-carriage, substantially as described.

379,819. **CIRCULAR-KNITTING MACHINE.** LEVI R. SALISBURY, Providence, R. I. Filed Feb. 26, 1887. Serial No. 228,923. (No model.)

Brief.—The improvements relate to mechanism for knitting plushing-threads over the front and back of the wales of a knitted fabric, and consists of two needle-carrying cylinders revolving together, a needle-shunting wheel to each cam-section, which guides the needles alternately to the upper and lower cylinders, peculiarly-shaped needles adapted to retain the loops of the fabric while passing one cam-section, and an improved yarn-guide and stopping device.



Claim.—1. A knitting-machine having upper and lower needle-carrying cylinders, mechanism for revolving the cylinders in unison, needles mounted in said cylinders adapted to retain the loops of the fabric in the lower ends thereof while the needles are in the upper cylinder, and means for separating the column of needles and guiding them from a common path into diverging paths leading to the upper and lower cylinders, respectively, from whence the paths converge and again unite in a common path, substantially as hereinbefore described, and for the purpose specified.

2. The improvement in knitting-machines, the same consisting in the combination of upper and lower cylinders, needles mounted to move vertically therein, and mechanism for revolving said cylinders in unison with a series of cams, each adapted to guide a portion of the needles from a common path wholly into the upper cylinder, and to retain the rest of the needles in the lower cylinder, the needle-guides subsequently uniting again in a common path, and a needle-shunting device mounted, arranged, and adapted to intermittently deflect said needles into the divergent cam-path, substantially as hereinbefore described, and for the purpose specified.

3. A knitting-machine having two grooved needle-carrying cylinders traveling in unison, needles mounted therein, cams having grooves therein formed to divert the needles from one cylinder to the other, and shunting-wheels mounted and arranged to intermittently engage the needles and guide them into said grooves of the cams, substantially as hereinbefore described

4. The needle-shunting wheel hereinbefore described, having a grooved flanged rim, spring-arms engaging the grooved rim, and nuts secured to the hub of the wheel adapted to retain said spring-arms in position.

5. The combination, with the grooved cylinders A B, mounted to revolve, shanked needles N, fitted to slide endwise in said grooves, and a series of stationary cams adapted to receive the shanks of the needles, of the loosely-mounted spring-arm carrying shunting-wheels W, engaging said shanks, and upper and lower adjustably-mounted stationary cams *d*, for deflecting the spring-arms of the shunting-wheels, substantially as shown and hereinbefore described.

6. The cam D, hereinbefore described, having a groove, *n*, adapted to receive the shanks of the needles, said cam-groove extending up from its lowest point, n^4, and formed with the enlargement *u*, thence branching therefrom at *u'* in two directions, (up and down,) thence meeting at a common point and continuing in a single groove down to the lowest point or beginning, n^4, of the next cam-section, substantially as shown, and for the purpose specified.

7. The combination of the upper and lower needle-carrying cylinders, B A, separated by a space, *k*, a cam, D, having a tube, T, mounted therein adapted to introduce a plushing-thread at the rear of the needles in front of the loops at that point, cams having cam-grooves formed, as described, to guide a portion of the needles up over the end of the tube T and at the same time to guide the other needles below the tube, a shunting-wheel, W, formed with a grooved rim and having spring-arms, as described, and oppositely-mounted cams adapted to engage the spring-arms mounted in the wheel, whereby the cylinders in revolving automatically actuate the shunting-wheel to deflect the needles into the respective cam-grooves, substantially as shown and hereinbefore described.

8. The yarn-guide and stopping device hereinbefore described, consisting of the base or holder *o'*, adapted to be pivoted to the framing of the machine, and having a lateral extension, the two-arm lever r^4, pivoted therein, adapted to engage a revolving needle-carrying cylinder, said lever also having the flattened lateral extension r^4, and the looped wires or guides *r*, pivoted to the sides of the holder, adapted

in falling to engage the flattened end of the lever r^4, substantially as shown, and for the purpose specified.

379,820. **NEW MERCURIC SALT FOR BATTERY-FLUIDS.** ALEXANDER SCHAIKOWSKY, Gipsy Hill, County of Surrey, assignor to the Schanschieff Electric Battery Syndicate, London, England. Filed May 28, 1887. Serial No. 239,651. (Specimens.) Patented in England Oct. 16, 1885, No. 12,273, and July 6, 1886, No. 8,833; in Germany Dec. 26, 1885, No. 36,415, and in India Oct. 16, 1886, No. 177.

Claim.—1. The herein-described novel salt, composed of yellow basic sulphate of mercury, combined with bisulphate of mercury, and having substantially the formula specified.

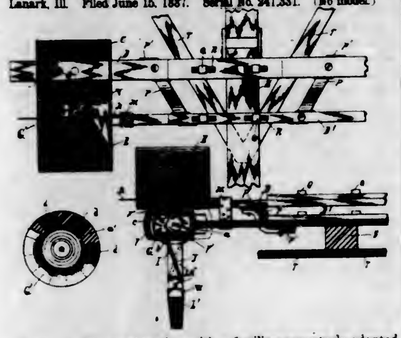
2. The herein-described novel saline solution, composed of a salt consisting of yellow basic sulphate of mercury, combined with bisulphate of mercury dissolved in water.

3. The process for the production of a saline preparation, consisting in dissolving mercury in sulphuric acid, evaporating the excess of acid, adding water to the resulting mass, and separating the precipitate, then treating this precipitate with acid and again with water, and so on, substantially as described, and either retaining the solution for use in the liquid form or evaporating the solution to obtain the solid salt.

4. The process for the production of a saline preparation, consisting in dissolving mercury in sulphuric acid, evaporating the excess of acid, adding water, then increasing the strength of the solution by the further addition of strong sulphuric acid, substantially as set forth.

5. The process for the production of a saline preparation, consisting in dissolving mercury in sulphuric acid, evaporating the excess of acid, adding water, then increasing the strength of the solution by adding sulphuric acid, and finally evaporating the liquid and producing the dry salt.

379,821. **ATTACHMENT FOR CORN-PLANTERS.** M. SCHNUCKER, Lanark, Ill. Filed June 15, 1887. Serial No. 241,331. (No model.)



Claim.—1. The combination, with a fertilizer-receptacle adapted for attachment to the seed-box of a corn-planter, of a peripherally-recessed vertical wheel whose upper side forms the bottom of said receptacle, a hand passing from said receptacle to the lower side of said wheel and closely fitting the recessed surface thereof, and a tube open at the top, extending downward from the lowest part of said wheel, whereby rotation of the wheel may deliver fixed quantities of fertilizer at intervals and through the lower end of said tube.

2. In combination with a fertilizer-receptacle adapted for attachment to the seed-box of a corn-planter, a peripherally-recessed vertical wheel the upper portion of whose circumference forms the bottom of said receptacle, a tube extending downward and forward from the lowest point of said wheel to a point between the wings of the planter-shoe, said tube being provided with a valve near its lower extremity, a ratchet-wheel connected rigidly to said vertical wheel, a slide-bar bearing pawls adapted to rotate said ratchet-wheel in one direction only, a pivoted lever connecting said slide-bar and said valve, and means for detachably connecting said slide-bar rigidly to the slide-bar of an ordinary planter, substantially as set forth.

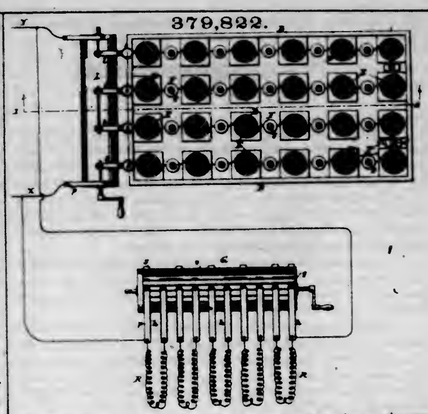
379,822. **ELECTRIC HEATER.** CARL SEILER, Philadelphia, Pa. Filed Dec. 22, 1887. Serial No. 258,672. (No model.)

Claim.—1. An electric heating device consisting of fire-proof insulating material having projections around and in contact with which heating-conductors are placed.

2. An electric heater consisting of a radiating-surface of fire-proof insulating material, having conical projections around and in contact with which heating-conductors are placed, and which are capable of being heated by the coils.

3. An electric heater consisting of a surface of fire-proof insulating material and detachable cones thereon and heating-conductors around the cones.

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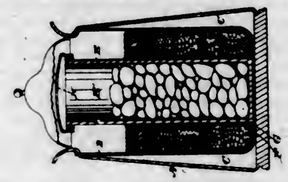


4. The combination of the surface of fire-proof insulating material, having detachable cones, with heating-conductors coiled on the latter, and metallic clamps for the terminals of the adjacent coils.

5. The combination of the electric heater, line-conductors, and a short circuit around the electric heater, with resistances and a commutator-switch in the said short circuit, as described.

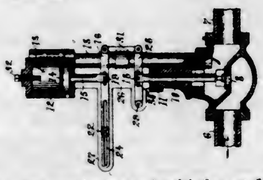
6. The combination of the rows of heating-coils and connected contact-fingers with a commutator or switch to include more or fewer of the rows of coils in circuit.

379,823. **WATER-PITCHER.** THOMAS SHAW, Newark, N. J. Filed Mar. 2, 1887. Serial No. 229,400. (No model.)



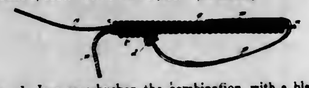
Claim.—A water-pitcher combining therein an outer vessel having a cover, an inner removable air-tight vessel, as E, for holding ice, provided with an independent cover, as H, at the top, and at the bottom with a screw-threaded flange adapted to be screwed into a correspondingly-threaded flange which projects from the bottom of the outer vessel, and an annular water-chamber formed between said outer and inner vessels, said parts being arranged with relation to one another and adapted to operate substantially as and for the purposes set forth.

379,824. **AUTOMATIC FLUID-PRESSURE REGULATOR.** WILLIAM D. SHELDON, Providence, R. I. Filed June 8, 1887. Serial No. 240,588. (No model.)



Claim.—The combination, as hereinbefore set forth, with the communicating high and low pressure pipes 6 and 7, respectively, and the valve 8, controlling the communication therebetween and provided with the stem 10, of the cylinder 12, provided with the piston 14, having the stem 15, the passage 13, connecting the said cylinder and low-pressure pipe, the lever-arm 16, hinged to the stem 15 and provided with the adjustable fulcrum, the pivoted arm 28, hinged to the valve-stem 10, and the pivoted link 31 intermediate the said arms 27 and 28, substantially as and for the purpose herein described.

379,825. CORN-HUSKER. LOUIS H. SMOLDER, Cleveland, Ohio. Filed June 8, 1887. Serial No. 240,651. (No model.)



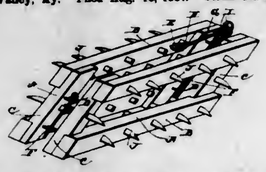
Claim.—1. In a corn-husker, the combination, with a blade and a guard, each having a perforation therein, of a wire covering extending through and coiled around the blade and guard to secure them together and form a handle for the implement, substantially as set forth.

2. In a corn-husker, the combination, with a blade and a guard, these parts being perforated and notched, of a wire covering extending through the perforations and around the blade and guard to form a handle for the implement, substantially as set forth.

3. In a husker, the combination, with a blade and guard, of a wire coiled around these parts and having a loop formed therein and a guard-strap secured to the loop and end of the handle, substantially as set forth.

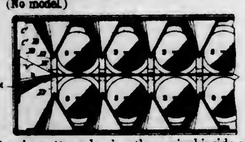
4. The combination, with a blade and a guard, these parts being notched and perforated, of a wire passing through the perforations and coiled around the parts and in the notches, a loop formed in said wire, and a guard-strap secured to the loop and provided with a series of perforations, whereby the strap may be rendered adjustable in length, substantially as set forth.

379,826. REVERSIBLE FOLDING HARROW. JESSE M. SHUBERT, Water Valley, Ky. Filed Aug. 18, 1887. Serial No. 247,261. (No model.)



Claim.—In a folding harrow, the harrow-sections having the shape of a parallelogram, the eyed rods D, projecting with their eyes some distance above and beyond the front and rear end pieces of the sections, the hinge-rod F, fitting in the eyes, and the stretcher rods and rings G I at the united sharp angles of the sections, all constructed and combined to have the sections folded together to slide on their rear edges and hold a sufficient distance apart by the eyed rods to form a sled capable of carrying a load, as shown, and for the purpose specified.

379,827. AIR-MATTRESS. GEORGE H. SHAVELY, Wrightsville, and B. FRANK SHAVELY, Harrisburg, Pa. Filed Aug. 13, 1887. Serial No. 246,877. (No model.)



Claim.—1. An air-mattress having the conical inside attachments, B, of suitable flexible material, and the stay-straps D, connecting opposite attachments, substantially as specified.

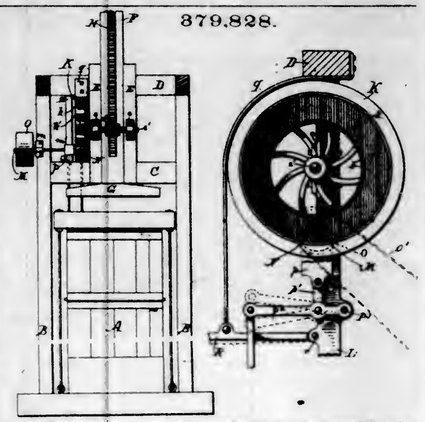
2. An air-mattress having the perforated cone-shaped attachments B, of suitable flexible material, to the walls of the mattress, and the stay-straps connecting opposite attachments, substantially as specified.

3. A rubber-lined air-mattress having flaring cone-shaped attachments B, of suitable flexible material, lapped at their base margins, stay-straps D, connecting opposite attachments, and exterior stay-rings, substantially as specified.

379,828. COTTON-PRESS ATTACHMENT. WILBER F. SOUTHARD, Charleston, Ark. Filed Sept. 15, 1887. Serial No. 249,736. (No model.)

Claim.—1. In combination with the press-box of a cotton or hay press, the uprights B B, extending above the press-box, the cross-beams C D, secured in the upper ends of said uprights, the uprights E E and L, secured to said cross-beams, the rammer F, adapted to slide up and down between the said uprights E E and bearing on its lower end the rammer-head G, adapted to fit into and work up and down in the box A, said rammer having secured to its face cog-bar H, journal c', journaled in suitable bearings on uprights E E and having rigidly secured on it cog-pinion c^2, meshing with the cog-bar H, situated and adapted to run the same up and down, the double-faced friction-pulley K, rigidly secured on the extended end of the journal c', the journal M, journaled on uprights B and L by suitable bearings, having on its outer end band-pulley O and on its inner end friction-

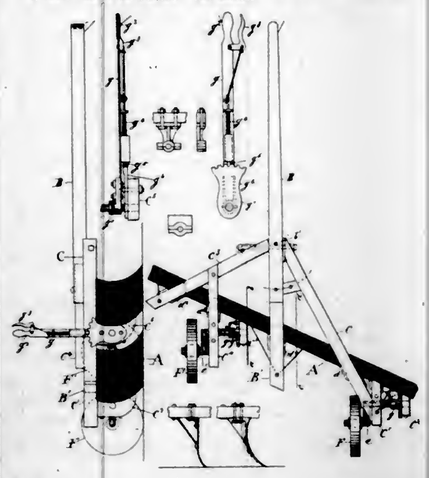
379,828.



pulley N, running between the friction-faces k k' of said wheel K, yoke p, its upper end working over the journal M, near the friction-wheel N, strap p', secured to the said yoke and the lever p^3, and the lever p^3, pivoted to said upright, all substantially as shown and described, and for the purposes set forth.

2. In combination with the press-box of a cotton or hay press, the uprights B B, extending above the press-box, the cross-beams C D, secured in the upper ends of said uprights, the uprights E E and L, secured to said cross-beams, the rammer F, adapted to slide up and down between the said uprights E E and bearing on its lower end the rammer-head G, adapted to fit into and work up and down in the box A, said rammer having secured to its face cog-bar H, journal c', journaled in suitable bearings on uprights E E and having rigidly secured on its cog-pinion c^2, meshing with the cog-bar H, situated and adapted to run the same up and down, the double-faced friction-pulley K, rigidly secured on the extended end of the journal c', the journal M, journaled to uprights B and L by suitable bearings, having on its outer end band-pulley O and on its inner end friction-pulley N, running between the friction-faces k k' of said wheel K, yoke p, its upper end working over the journal M, near the friction-wheel N, strap p', secured to the said yoke and the lever p^3, lever p^3, pivoted to said upright, brake-band q, its upper end bolted to the cross-beam D, its lower end pivoted to the lever R, and the lever R, pivoted to said upright L, all substantially as shown and described, and for the purposes set forth.

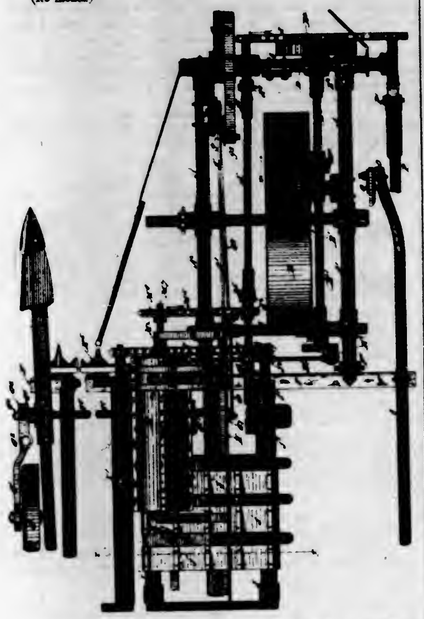
379,829. ROAD-PLANER. JOHN G. STEELE, Vaughan, assignor of one-half to Alexander H. Dixon, Eglinton, Ontario, Canada. Filed Sept. 8, 1887. Serial No. 249,098. (No model.)



Claim.—1. In a road-planer having a plane-iron, either wholly of metal or partly of metal and other suitable material, curved in the face and secured to suitable frame-work and placed at an angle therewith, and adjustable by a lateral movement of the tongue B at the point b', when so required, the combination of the vertically-adjustable wheels F F' and cranked axles e e', the lever g, handles with links g^3, springs g^4, latches g^5, and ratchets g^6, the whole constructed and arranged and operating substantially as set forth.

2. In a road-planer having a plane-iron, either wholly of metal or partly of metal and other suitable material, curved in the face and secured to suitable frame-work, the combination of the vertically-adjustable wheels F F' and cranked axles e e', the levers g, handles and links g^3, springs g^4, latches g^5, and ratchets g^6, the whole constructed and arranged and operating substantially as set forth.

379,830. LOW-DOWN GRAIN-BINDING HARVESTER. DANIEL STRUNK, Minneapolis, Minn., assignor of two-thirds to the Minneapolis Harvester Works, same place. Filed Feb. 27, 1886. Serial No. 193,406. (No model.)



Claim.—1. In a two-wheeled harvester and binder, a main frame inclosing the drive-wheel and pivotally connected at its rear end to the platform; a caster-wheel mounted in an arm pivotally connected with the platform, a low-down binder-table, binder mechanism, and its driving-gearing in the rear of the drive-wheel, a pole hinged to the front of the main frame, and a system of distributing-gearing mounted on the main frame in front of the drive-wheel, a counter-shaft transmitting motion forward from the main wheel to said system, and connections leading backward therefrom to the platform behind the main frame for transmitting power to actuate the sickle, the conveyers, and the binder-gearing, whereby the entire machine is balanced upon two wheels and has its center of gravity near the the drive-wheel and in a line between it and the caster-wheel.

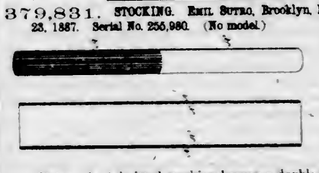
2. In a rear-cut grain-binding harvester, the combination of a main frame inclosing a drive-wheel upon the axle of which it is mounted, a system of distributing-gearing mounted on the main frame in front of the drive-wheel, a counter-shaft transmitting motion forward from the main wheel to said system and connections leading backward therefrom to the platform behind the main frame for transmitting power to all the operative parts of the machine except the reel, a pole hinged to said frame in front, a sway-bar or hand-lever mounted thereon near the forward part thereof and connected to the pole in a manner to flex the said hinge by a movement of the hand-lever, a grain-platform and cutting apparatus hinged to the main frame at the rear of the main frame, a binder mounted on the grain-platform on the outside of the plane of the drive-wheel, a rock-shaft mounted in suitable bearings in said platform and extending from the grain toward the stubble side thereof, a grain-wheel mounted upon a rearwardly-extending arm of said rock-shaft, and suitable connections between the stubble end of said rock-shaft and a hand-lever, whereby the entire grain platform and binder may be raised and lowered by the hand-lever.

3. In a rear-cut grain-binding harvester, the combination of a main frame inclosing a drive-wheel upon the axle of which it is mounted, a main driving gear-wheel mounted upon the same axle, a pinion driven by the main gear-wheel, a counter-shaft to which the pinion is attached, extending forward to a point on the main frame in advance of the drive-wheel, a system of gearing mounted upon the main frame in advance of the drive-wheel, actuated by said counter-shaft, and serving to distribute power to all the operative parts of the machine except the reel, a pole hinged to the main frame in front, a sway-bar or hand-lever mounted on the main frame near the forward part thereof and connected to the pole in a manner to flex the said hinge by a movement of the sway-bar, a grain-platform hinged to the main frame at the rear, formed and strengthened by having an inverted-U-shaped standard connecting the front and rear thereof, the sill or frame-piece forming the stubble side of the grain-platform, extending forward from the hinge-joint of said platform at the stubble side of the drive-wheel, a binder adjustably mounted upon said sill, a rock-shaft mounted in suitable bearings on said platform and extending from the grain toward the stubble side thereof, a grain-wheel mounted upon a rearwardly-extending arm of said rock-shaft at the grain end thereof, and suitable mechanism connecting the stubble end of said rock-shaft to the sway-bar, whereby the entire grain-platform, with cutting apparatus and binder, may be raised and lowered by the movement of the sway-bar.

4. In a rear-cut grain-binding harvester, the combination of a main frame inclosing a drive-wheel upon the axle of which it is mounted, a main driving gear-wheel mounted upon the same axle, a pinion driven by the main gear-wheel, a counter-shaft to which the pinion is attached, extending forward to a point on the main frame in advance of the drive-wheel, a system of gearing mounted upon the main frame in advance of the drive-wheel, actuated by the said counter-shaft, and serving to distribute power to all the operative parts of the machine except the reel, a pole hinged to the main frame in front, a hand-lever mounted on the main frame near the forward part thereof and connected to the pole in a manner to flex the said hinge by a movement of the sway-bar, a grain-platform hinged to the main frame at the rear, formed and strengthened by having an inverted-U-shaped standard connecting the front and rear thereof, a suitable connection between the U-shaped standard of the grain-platform and the sway-bar or hand-lever to maintain an approximately-horizontal position of the said grain-platform, the sill or frame-piece forming the stubble side of the grain-platform, extending forward from the hinge-joint of said platform at the stubble side of the drive-wheel, a binder adjustably mounted upon said sill, an adjusting-lever mounted also upon the forward end of said sill in advance of the binder, a rod or link connecting said lever with the binder, whereby the latter may be adjusted forward and backward upon said sill by said lever, a rock-shaft mounted in suitable bearings on said platform and extending from the grain toward the stubble side thereof, a grain-wheel mounted upon a rearwardly-extending arm of said rock-shaft at the grain end thereof, and suitable mechanism connecting the stubble end of said rock-shaft to the sway-bar, whereby the entire grain-platform, with cutting apparatus and binder, may be raised and lowered by the movement of the sway-bar.

5. In a rear-cut grain-binding harvester, the combination of the main frame A, supported by the drive-wheel B, the pole C, hinged to the main frame and having the extension C', the finger-bar F, forming a part of the grain-platform, hinged to the main frame in rear of the drive-wheel, the standard H, forming part of the platform-frame, the rock-shaft G^2, mounted on the platform and having the rearwardly-extending arm G', the grain-wheel G, mounted thereon, the crank-arm G^7 at the stubble end of the rock-shaft, the links G^8 and G^9, radius-bar G^{10}, sway-bar g, connecting-rod g', and pitman g^4, substantially as and for the purpose described.

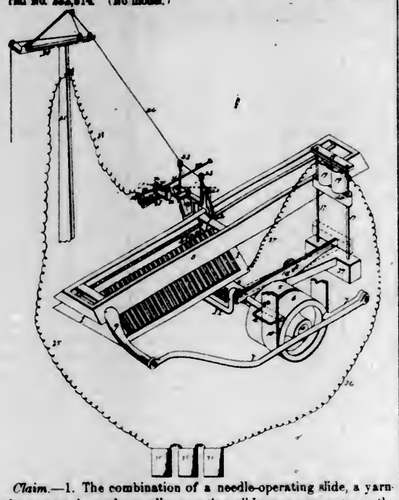
379,831. STOCKING. EMIL SUTRO, Brooklyn, N. Y. Filed Nov. 23, 1887. Serial No. 256,980. (No model.)



Claim.—1. A knitted stocking having a double leg, of which the interior fabric is of undyed yarn and the exterior fabric of dyed yarn.

2. A knitted stocking having the leg and upper part of the foot double, the interior fabric being of undyed yarn and the exterior fabric of dyed yarn.

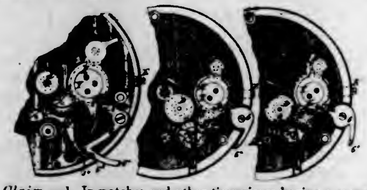
379,882. ELECTRICAL STOP-MOTION FOR KNITTING-MACHINES. WAIT TALCOTT, 2d, Rockford, Ill. Filed Mar. 26, 1887. Serial No. 232,614. (No model.)



Claim.—1. The combination of a needle-operating slide, a yarn-carrier mounted on the needle-operating slide, yarn-supports on the carrier, electric conductors on the carrier insulated from each other and connected with the opposite poles of a battery, and a circuit-breaking lever held in position to close the circuit between the said conductors by the yarn under tension, substantially as set forth.

2. The combination of the knitting mechanism, means for leading the yarn or thread to the machine under tension, a belt-shifter, a spring to actuate the shifter, a tilting stop to lock the shifter against the tension of the spring, an electro-magnet energized so long as the yarn is fed under tension, the armature of the magnet being held by the energized magnet above the operating-arm of the tilting stop, and a lever circuit-breaker held in position to close the circuit by the yarn under tension, substantially as set forth.

379,883. SECONDS-SETTING MECHANISM FOR TIME-PIECES. FRED TRESTSER, Elizabeth, N. J. Filed Apr. 26, 1887. Serial No. 236,263. (No model.)



Claim.—1. In watches and other time-pieces having a seconds-hand, the combination, with the seconds-hand, of a wheel connected with the staff of the seconds-hand pinion, a stem, and suitable gearing interposed between the said stem and the wheel on the staff of the seconds-hand pinion, said gearing adapted to be set in and out of connection with the wheel on the staff of the seconds-hand pinion, substantially as specified.

2. In watches and other time-pieces having a seconds-hand, the combination, with the seconds-hand, of a wheel connected with the staff of a seconds-hand pinion, a pinion journaled in the watch-plate, a stem for turning said pinion, and mechanism, consisting of one or more gear-wheels, interposed between the pinion and the wheel on the staff of the seconds-hand pinion, said interposed mechanism adapted to be thrown in and out of gear with the wheel on the staff of the seconds-hand pinion, substantially as specified.

3. The combination, with the seconds-hand of a time-piece, of a stem-driven train, a wheel placed on the seconds-hand pinion-staff, and mechanism, consisting of one or more wheels, interposed between the stem-driven train and the wheel on the staff of the seconds-hand pinion, said interposed mechanism being susceptible of adjustment by the yoke-adjusting mechanism in and out of gear with the said wheel, substantially as specified.

4. In a watch containing mechanism for marking time in hours, minutes, and seconds, the combination, with a stem-driven train and a seconds-hand, of a wheel placed on the seconds-hand pinion-staff, a shiftable wheel which is susceptible of being moved in and out of gear with the wheel on the seconds-hand pinion-staff, and gearing intermediate of said shiftable wheel and the stem-driven train, substantially as specified.

5. In a watch, the combination of a dial-wheel, a wheel on the staff of the seconds-hand pinion, a shiftable wheel that is movable in and out of gear with the wheel on the seconds-hand pinion-staff, a setting-wheel that may be moved in and out of gear with the dial-wheel, and a stem-driven train that is susceptible of separate adjustments to wind the watch, to set the minutes and hours, and to set the seconds independently of the minutes and hours through separate intermediate gearing, substantially as specified.

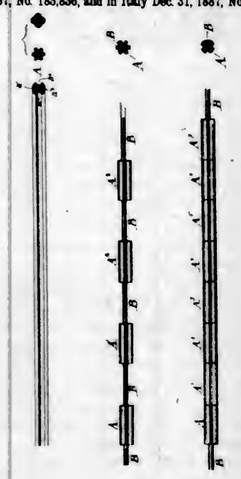
6. The combination, in a watch, of a stem-driven train which is shiftable by means outside of the watch-case, but in connection with the said train, into a winding, a minute and hour setting, and a seconds-setting position, the mechanism being adjusted to perform each operation separate and independent of the other operations, a system of gearing by which the said train is placed in gear with the dial-wheel to set the hour and minute hands after being disengaged from the winding arbor, and another system of gearing by which the said train is placed in gear with a wheel on the seconds-hand pinion-staff while disconnected from the dial-wheel and the winding-arbor, substantially as and for the purpose specified.

379,834. PLANTER. DANIEL R. N. TURNER, Earle's, Ky. Filed May 14, 1885. Serial No. 165,476. (No model.)



Claim.—The combination, with the forward portion of the frame carrying a partitioned seed-box, *D*, and an under apertured feed-block forming a space between the upper surface thereof and the under surface of the feed-box, of two strips, *g'*, in the rear of the feed-box, to form a depression or recess between the same, a slide-plate, G, having a series of apertures therein, and a hand-operated shaft mounted on the strips *g'*, and carrying a centrally-situated pinion, *g*, which is adapted to engage the apertures in the slide-plate G, to operate the same, substantially as described.

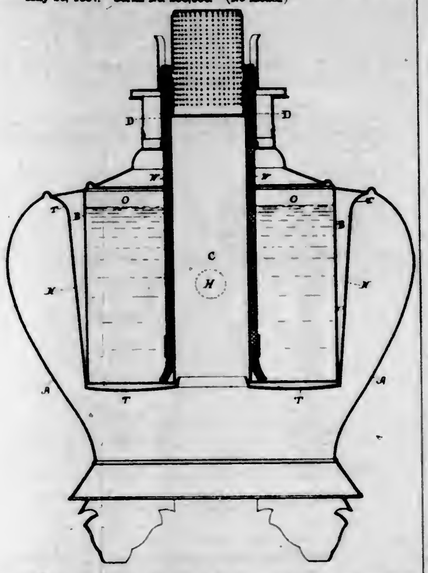
379,835. ENDLESS SAW FOR CUTTING STONE. FRANÇOIS TURRETTINI, Geneva, Switzerland. Filed July 1, 1887. Serial No. 243,061. (No model.) Patented in Belgium July 15, 1887, No. 77,959; in France Oct. 29, 1887, No. 183,836, and in Italy Dec. 31, 1887, No. 22, 576/383.



Claim.—1. An endless band-saw for cutting stones, formed of steel or iron wire having a number of peripheral grooves running parallel to the axis of the wire, substantially as and for the purposes set forth.

2. An endless band-saw for cutting stones, formed of tubular steel or iron wire having a number of peripheral grooves running parallel to the axis of the wire, and a wire core passing through the tubular sections and connecting them together, substantially as and for the purposes specified.

379,836. LAMP. CHARLES S. UPTON, New York, N. Y. Filed May 20, 1887. Serial No. 238,286. (No model.)

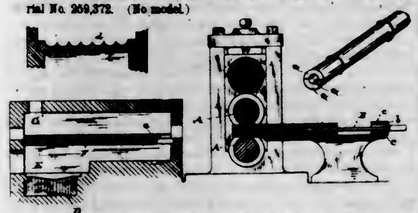


Claim.—1. The combination of a lamp-vase, a pan or receptacle suspended in the vase, formed with a central opening and an upturned flange surrounding the opening, and a reservoir suspended in the pan or receptacle, having a central draft-tube whose lower end surrounds the upturned flange, substantially as described.

2. The combination of a lamp-vase, A, lamp-reservoir B, suspended within the lamp-vase, having central draft-tube, C, and the pan or receptacle T, intermediate of the lamp-reservoir and lamp-vase, extending from the top of the lamp-vase around the sides of the lamp-reservoir and beneath the latter, having a central opening and a flange surrounding the opening and extending upwardly into the draft-tube, the lamp-reservoir being out of contact with the pan or receptacle, substantially as described.

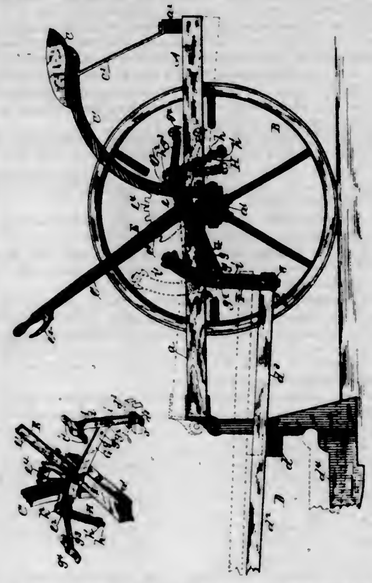
3. In combination with a fount having a central air-tube, a vase, a receiver adapted to receive and retain the fount, and having through its inner wall a number of holes for admitting air around the fount on its way to the central air-tube, substantially as set forth.

379,837. METHOD OF MAKING HOLLOW BARS FOR STAY-BOLTS. WILLIAM B. WEIL, Cleveland, Ohio. Filed Dec. 30, 1887. Serial No. 259,372. (No model.)



Claim.—In the art of making metallic hollow stay-bolts, first, rolling and welding the heated skelps *a a* into hollow bars of a given size, second, passing the said bars immediately from the first set of rolls into a reheating-furnace, and, third, from the said furnace directly to the second set of rolls for final reduction by the consecutive and conjoint operation of the two sets of three-high rolls and an intermediate furnace, arranged to co-operate as and for the purpose set forth.

379,838. CORN-PLANTER. CHARLES H. WHITE, Moline, Ill., assignor to the Deere & Mansur Company, same place. Filed Jan. 3, 1888. Serial No. 259,573. (No model.)



Claim.—1. In a corn-planter, and in combination, substantially as described, with the front and rear frames thereof hinged to each other, a hand-lever and a foot-lever both fulcrumed on the rear frame at points in line with each other transversely of the planter, the foot-lever suitably hinged at its forward end to the forward frame and its rear part resting or located partly beneath a rear extension from the hand-lever and having a mere contact-connection therewith, whereby the hand-lever may be used to operate the foot-lever to raise and lower the forward frame and to lock it in an elevated position, or the foot-lever may be used independently of the hand-lever for raising and lowering the forward frame.

2. In a corn-planter, and in combination, substantially as described, with the front and rear frames thereof hinged to each other, a hand-lever and a foot-lever both fulcrumed on the rear frame, the rear part of the foot-lever resting or located partly beneath a rear extension from the hand-lever, whereby the hand-lever may be used to operate the foot-lever or the foot-lever be used independently of the hand-lever, and a link hinged at one end to the forward frame, at its middle portion to the forward end of the foot-lever, and having an upper end extended above said foot-lever and provided with foot-plates, for the purpose specified.

3. In a corn-planter, and in combination, substantially as described, with the front and rear frames thereof hinged to each other, a foot-lever hinged or fulcrumed on the rear frame, and a link hinged at its lower end to the front frame, at its middle portion to the foot-lever, and having an upper end extended above its connection with the foot-lever and provided with foot-plates, for the purpose specified.

4. In a corn-planter, and in combination, substantially as described, with the front and rear frames thereof hinged to each other, a locking hand-lever and a foot-lever both fulcrumed on the rear frame, the forward end of the foot-lever connected by a hinge-connection with the forward frame and its part in rear of its fulcrum resting or located partly beneath a rear extension from the hand-lever, where the two levers are yieldingly connected by a spring, which forms an element in this combination and by means of which a yielding downwardly-acting force may be used on the forward frame and runners, for the purpose specified.

5. In a corn-planter, and in combination, substantially as described, with the front and rear frames thereof hinged to each other, a locking hand-lever and a foot-lever both fulcrumed on the rear frame, the for-

ward end of the foot-lever connected by a hinge-connection with the forward frame and its part in rear of its fulcrum resting or located partly beneath a rear extension from the hand-lever, where the two levers are yieldingly connected by a spring, and a rod with suitable nuts or heads on its ends, which spring, rod, and nuts or heads form elements in this combination, and by means of which a yielding downwardly-acting force may be used on the forward frame and runners, for the purpose specified.

6. In a corn-planter, and in combination with the front and rear frames thereof hinged to each other, a foot-lever and a hand-lever connected by a spring, substantially as and for the purpose specified.

7. In a corn-planter, and in combination with the front and rear frames thereof hinged to each other, a foot-lever and a hand-lever connected by a spring and a rod, substantially as described, and for the purpose specified.

8. In a corn-planter, and in combination with the front and rear frames thereof hinged to each other, a foot-lever and a hand lock-lever hinged to the rear frame and connected with each other by a spring, H, and rod *h*, with nuts or heads, substantially as and for the purpose specified.

9. In a corn-planter, and in combination with the front and rear frames thereof hinged to each other, a foot-lever and a hand lock-lever hinged to the rear frame and connected with each other by a spring, H, and a rod, *h*, having an adjustable nut on one or both of its ends, substantially as and for the purpose specified.

10. In a corn-planter, and in combination with the front and rear frames thereof hinged to each other, a foot-lever having foot-plates on its rear end and its forward end connected with the forward frame by a hinged link, I, having foot-plates on its upper extended end, and a locking hand-lever connected by a rod, *h*, and a yielding spring, H, substantially as and for the purpose specified.

11. In a corn-planter having a front and a rear frame hinged to each other and in combination therewith a foot-lever and a hand-lever fulcrumed coincidently but independently of each other on the rear frame, and connected, the forward end of the foot-lever with the forward frame and the rear ends of both levers by a rod and spring, in such manner that the hand-lever acts directly on the foot-lever when used to operate the foot-lever to raise the forward frame, and acts thereon by means of the spring when used to depress the forward frame and runners, and which permits the forward frame to be raised by the foot-lever while the hand-lever is locked, substantially as and for the purpose specified.

12. In a corn-planter having a front and a rear frame hinged to each other and in combination therewith a foot-lever and a locking bell-crank hand-lever fulcrumed coincidently on the rear frame, the foot-lever connected at its forward end with the forward frame and at its rear end, by means of a yielding connection, with the hand-lever, substantially as and for the purpose specified.

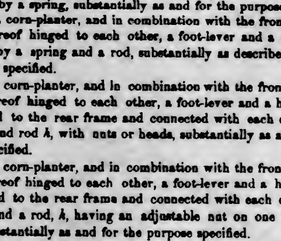
13. In a corn-planter having a front and a rear frame hinged to each other and in combination therewith a bell-crank hand-lever, E, rock-bar e', foot-lever G, connecting-link I, spring H, and rod *h*, with suitable nuts or heads, substantially as and for the purpose specified.

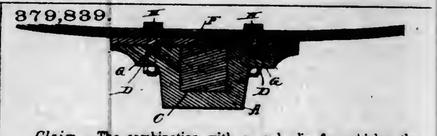
14. In combination with the front and rear frames of a corn-planter hinged to each other, a foot-lever, G, hinged to the rear frame, and a link, I, hinged to the forward frame and provided with foot-plates *i'* and a series of holes, *i*, for adjustably connecting it with the foot-lever, substantially as described.

15. In combination with the front and rear frames of a corn-planter hinged to each other, a foot-lever, G, hinged to the rear frame and provided with a series of holes, *g'*, by means of which it is adjustably connected with the link I, which is hinged to the forward frame, substantially as and for the purpose specified.

16. In a corn-planter having a forward and a rear frame hinged to each other, bell-crank lever E, and foot-lever G, connected by a rod, *h*, which passes through coincident holes in said levers, and by a spring, H, and a link connecting said foot-lever with the forward frame, substantially as and for the purpose described.

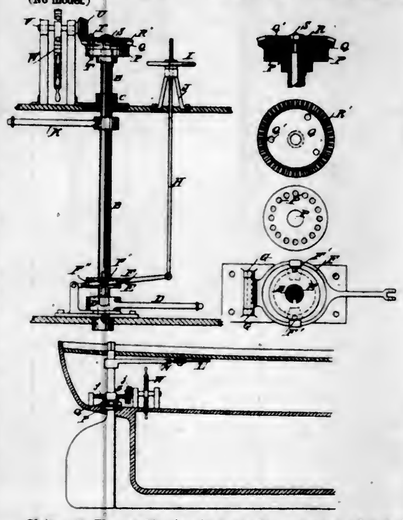
379,839. AXLE-CLIP. LE ROY S. WHITE, Union, N. Y. Filed Sept. 17, 1887. Serial No. 249,952. (No model.)





Claim.—The combination, with an axle-clip for vehicles, the socket of which is of the same depth as the axle, and the ends are each provided with ears upon its sides, the inner edges of which ears are in the same plane as the walls of the socket, whereby they are adapted to bear against the sides of the axle, of a tie-bar the ends of which are adapted to rest upon and engage with the ends of the clip, whereby the clip is prevented from spreading, said clip and tie-bar being adapted to be secured to the spring and axle of a vehicle by means of the ordinary bow-springs, the ends of which engage with the axle-clip.

379,840. STEERING MECHANISM FOR VESSELS. WILLIAM WHITEHEAD, New York, N. Y. Filed Sept. 5, 1887. Serial No. 248,777. (No model.)



Claim.—1. The combination, in a steering apparatus, of a shaft having suitable connection with the rudder, and hand and power steering mechanisms, separate and distinct from each other, adapted to be interchangeably connected with or disconnected from said shaft in such manner that either the said hand or power mechanism may be operated independently of the other to steer the vessel, substantially as set forth.

2. The combination, in a steering mechanism, of a shaft, B, provided with a laterally-extending arm or lever, K, to which the steering-chains are attached, another arm or lever, D, having independent rotary movement relative to the said shaft to which the power steering apparatus is attached, a clutch adapted to clutch the said arm or lever to the shaft, and hand steering mechanism provided with a plate, Q, set on the said shaft, but having independent rotary movement thereon, and provided with suitable devices whereby it may be rigidly attached to the shaft, substantially as set forth.

3. The combination of a shaft, B, having a laterally-extending lever, K, rigidly attached thereto, to which the tiller-chains are attached, and another laterally-extending lever, D, loosely collared to the shaft to which the power steering mechanism is attached, a clutch or its equivalent operated from the pilot-house, whereby the said last-named lever may be rigidly clamped to the shaft, and hand steering mechanism detachably attached to said shaft B, substantially as set forth.

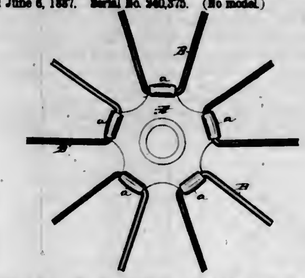
4. The combination of a hand steering-wheel mounted on an independent shaft provided with a fixed pinion which meshes into a gear-wheel on the steering-shaft and having free rotation thereon, a plate rigidly attached to the steering-shaft, pins constructed and arranged to enter holes in said gear-wheel and in said plate, whereby the said gear-wheel may be clamped to the plate on the steering-shaft, and rudder-chains connecting the said shaft with the rudder, substantially as set forth.

5. In a vessel steered by steam, pneumatic, or hydraulic power, supplemental hand steering mechanism consisting of a hand-wheel, the shaft of which carries a pinion which engages with teeth on a loosely-turning plate, Q, attached to the upper end of the steering-shaft, another plate, P, keyed fast to the steering-shaft, and pins T, adapted to enter holes in the plates Q and P, for uniting the said plates, substantially as set forth.

6. The combination of power steering mechanism and hand steering mechanism independently and detachably connected and disconnected from the tiller chains or rods, and supplemental hand steering mechanism detachably attached directly to the rudder-post, substantially as set forth.

7. The combination of a hand steering-wheel mounted on a shaft provided with a pinion which meshes into a gear-wheel on the rudder post and having free rotation thereon, a plate rigidly attached to the rudder-post, and pins which pass through holes made in said plate and in said gear-wheel, whereby the said gear-wheel may be detachably attached to the said plate, substantially as set forth.

379,841. WHEEL. GEORGE H. WHITMORE, New Haven, Conn. Filed June 6, 1887. Serial No. 240,375. (No model.)



Claim.—In a vehicle-wheel, in combination with the hub and spokes, a metallic plate, part, or section forming a part of the hub proper, and having a number of arms of equal length terminating in a shoulder or projection nearly at right angles, suited to and formed to receive the spokes proper in pairs, which are secured to the hub by being encompassed by and held within the said projections by having the same turned over upon them in such manner as to form a permanent rest or socket without other fastening, and in the operation of fastening straining the spokes to any required tension from the rim or periphery of the wheel inward toward the center, in the manner and for the purposes hereinbefore set forth.

379,842. SOCKET AND KEY FOR INCANDESCENT LAMPS. GILBERT WILKES, U. S. Navy, assignor of one-half to Louis Duncan, Baltimore, Md. Filed Mar. 23, 1887. Serial No. 232,161. (No model.)



Claim.—1. In a cut-out for electric circuits, the combination with a key or spindle, of a cam-shaped button having a limited movement thereon, a stop for said button, stationary terminals, and spring-circuit terminals, symmetrically arranged with respect to the cam-button, and having a bend in the path of movement thereof, whereby the angles or bends of the spring-terminals serve as partial stops to prevent the backward revolution of said button, and the points of contact between the springs and button are at all times symmetrical with respect to the stationary contacts, so that the button shall impart an equal movement to each spring-terminal in closing the circuits, substantially as described.

2. In a cut-out for electric circuits, the combination of spring-terminals bent twice in opposite directions, terminal contact-surfaces, a cam-shaped button, and a key, whereby when the circuit is closed the spring-terminals are given a slight reciprocating motion on the terminal-blocks, keeping the contacts bright and insuring reliable connections, substantially as described.

3. An incandescing electric lamp having leading-in wires whose extensions are of spring metal, as described, in combination with a block or core upon which they are secured preparatory to being placed in the base of the globe.

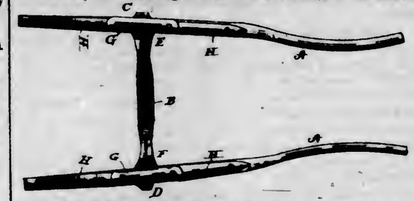
4. In an incandescing electric lamp, the combination of spring-terminals for the extensions of the leading-in wires, the block or core upon which they are placed, and a suitable packing around said core between it and the base of the globe.

5. An incandescing electric lamp having leading-in wires whose extensions are of spring metal, bent and corrugated as described, and the extremities of which are insulated, in combination with a suitable socket whereby the lamp can be readily removed or placed in position, substantially as shown and described.

6. An incandescing electric lamp, as above described, in which the corrugations in the spring-terminals are made in the form of screw-threads, substantially as described, and for the purposes set forth.

7. In an incandescing electric lamp of the kind described, the combination of the bent and corrugated spring-terminals M, the blocks L, extending below the base of the lamp, the ring U, and the projection U', substantially as shown, and for the purposes described.

379,843. SHAFTS FOR VEHICLES. SAMUEL ZIMMERMAN, Martinsburg, Pa. Filed Aug. 17, 1885. Serial No. 174,627. (No model.)



Claim.—The combination, with the thill A, the cross-bar B, and the extended thill-irons H, of the T-shaped coupling-irons E and F, having their tongues secured upon the cross-bar B by bolts or otherwise and their arms on each side of their tongues bolted to the under side of the thills on the outer surface of the thill-irons, substantially as specified.

379,844. RUBBER-TIP ATTACHMENT FOR PENCILS. LEVI S. BACON, Washington, D. C., assignor to the Eagle Pencil Company, New York, N. Y. Filed Jan. 19, 1888. Serial No. 261,282. (No model.)



Claim.—1. A pencil provided at one end with a block, stick, or tablet of rubber or erasing material rigidly secured in a position laterally inclined with respect to the pencil, as and for the purposes hereinbefore set forth.

2. A rubber-tip attachment for lead-pencils provided with a pencil-receiving socket and a laterally-inclined rubber-containing socket fixed to said pencil-receiving socket, so that the rubber contained in the attachment will be maintained in an inclined position with respect to the pencil-receiving socket, as and for the purposes hereinbefore set forth.

379,845. HOSE-COUPLING. CLARENCE W. BOLLES, Norwood, Ohio. Filed July 21, 1887. Serial No. 244,923. (No model.)



Claim.—1. The compressible clamping-jaws of curvilinear conical form, having external threads, and connected by the reduced portions supported on radial arms, and the bearing-tube formed with the said arms and having its ends extended and beveled to form guides for the hose, in combination with the internally-threaded conical compressing-rings, substantially as specified.

2. The bearing-tube having its ends beveled and formed with radial arms about midway of its length, and the compressible jaws connected by reduced parts supported on the said arms, substantially as specified.

379,846. PAPER-FILE HOLDER. LYMAN BAKER, Muscatine, Iowa. Filed Nov. 26, 1887. Serial No. 256,121. (No model.)

Claim.—1. In a paper-file holder, the combination of the hinged plates A A', the tubular holder B, having one end attached to the

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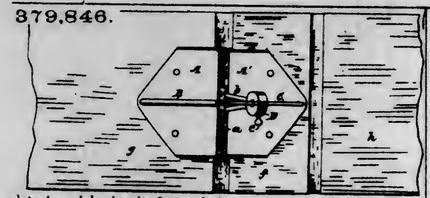
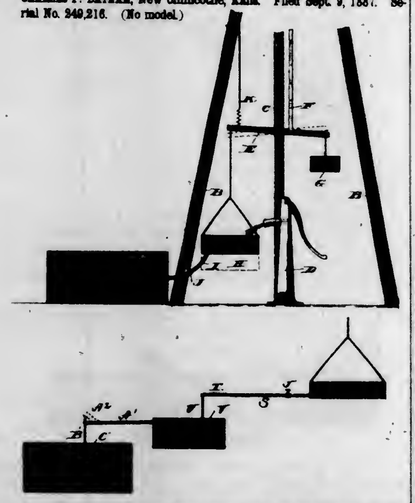


plate A, and having its free end sharpened in the form of a hollow punch, the needle-holder C, having one end fastened to the plate A′ and constructed to slide loosely into the tubular holder, the compress-plate D, having a central hole adapted to fit and slide loosely over the tubular holder and supported upon a plate or arms hinged concentrically with the hinged plates, substantially as and for the purposes described.

2. In a paper-file holder, the combination of the hinged plates A A′, the tubular holder B, having one end fastened to the plate A, and having its free end sharpened in the form of a hollow punch, the needle-holder C, constructed to slide loosely into the tubular holder and having one end fastened to plate A′, the compress-plate D, having a central hole adapted to fit and slide loosely over the tubular holder and supported upon a plate or arms hinged concentrically with the hinged plates, and the spring *d*, adapted to operate the compress automatically in puncturing and filing the papers, substantially as described, for the purposes set forth.

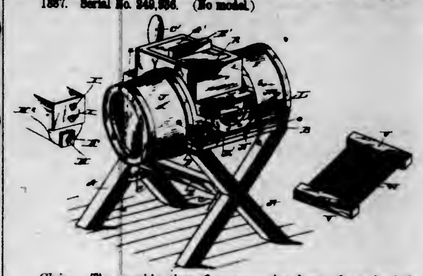
3. In a paper-file holder, the combination of the hinged plates A A′, the tubular holder B, having one end fastened to plate A, and having its free end sharpened in the form of a hollow punch, the needle-holder C, constructed to slide loosely into the tubular holder and having one end fastened to plate A′, the compress-plate D, having a central hole constructed to fit and slide loosely over the tubular holder, and supported upon a plate or arms hinged concentrically with the hinged plates, the spring *d*, adapted to operate the compress automatically in puncturing and filing the papers, and the set-screw *f*, adapted to hold the compress at any required position, substantially as set forth.

379,847. **AUTOMATIC REGULATING DEVICE FOR WINDMILLS.** CHARLES F. BATHAM, New Chillicothe, Kans. Filed Sept. 9, 1887. Serial No. 249,216. (No model.)



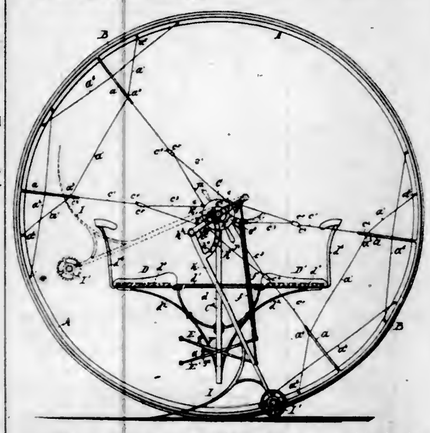
Claim.—In an apparatus for automatically regulating windmills, substantially as set forth, the combination, with the controlling wire or rod, of the windmill, the pump operated by said windmill, the weighted lever, the regulating-tank suspended from said lever, the reservoir, the metallic delivering-pipes for said reservoirs, flexible pipes upon the outer ends of said metallic pipes, floats in the reservoirs, and rods connected to said floats and to the flexible pipes, whereby the rising of the floats bends the flexible pipes and causes the flow of water to cease and the operating-tank to drop, thereby throwing the controlling-rod out of gear with the wind-wheel through the medium of the weighted lever, and vice versa, as set forth.

379,848. **CHURN.** ELI F. BEARD, Republic, Ohio. Filed Sept. 17, 1887. Serial No. 249,896. (No model.)



Claim.—The combination of a supporting-frame formed of the X-shaped end pieces, the track-bars secured upon the same and formed with longitudinal grooves, and the series of projections which are adapted to be engaged by the rockers of a churn, which rockers are provided with a downwardly-projecting flange and a series of notches, the slotted plates, the center bar formed with the longitudinal groove and having the end screws, and the strengthening-rod having the end retaining-nuts, substantially as set forth.

379,849. **MONOCYCLE.** HERMANN BEHR, Philadelphia, Pa., assignor of one-half to Frederick Friedgen, same place. Filed Nov. 7, 1887. Serial No. 254,464. (No model.)



Claim.—1. A monocycle provided with struts secured to the tire of the wheel, two hubs supported concentrically to the wheel by means of tie-rods attached to said struts, and wires or rods passing through eyes in the hubs and held by means of collars secured to said tie-rods, substantially as described.

2. A monocycle provided with struts secured to the tire of the wheel, two hubs supported concentrically to the wheel by means of tie-rods fastened to said struts and wire rods passing through eyes in said hubs and held in position by collars rigidly mounted on said tie-rods, a depending frame secured to sleeves on which said hubs are loosely mounted, a T-shaped bar and curved strut secured thereto and carried by said depending frame, and one or more seats mounted on said bar, substantially as described.

3. A monocycle provided with curved struts fitted to the web of the tire, two hubs supported vertically to said struts and concentrically to the wheel by means of tie-rods and wire stays or rods, a hanging frame rigidly secured to sleeves on which said hubs are mounted, a vertical post secured centrally to the bottom of said frame, a horizontal T-shaped bar supported thereby, and two seats adjustably attached to said bar, substantially as described.

4. A monocycle provided with struts fitted to the tire and curved outwardly from the center thereof, two hubs supported concentrically to the wheel by means of tie-rods and stays, substantially as described, a depending frame attached to sleeves on which the hubs are loosely mounted, a vertical post secured to the bottom of said frame and supporting a bar to which two seats are adjustably secured, and a pawl-and-ratchet mechanism connected by rods to pedals mounted on a shaft

passing through said vertical post and held in the sides of said frame, whereby said vehicle may be impelled, substantially as shown and described.

5. A monocycle provided with four struts fitted to the tire thereof and curved upwardly from the center, two hubs supported vertically to the extremities of said struts and concentrically to the wheel by means of tie-rods and stays or wires secured to the parts substantially in the manner described, a hanging frame attached to sleeves, one or more seats adjustably secured to a T-shaped horizontal bar mounted on a vertical bar supported in the bottom of said frame, and pawl-and-ratchet mechanism connected by rods with double pedals mounted on a shaft held in the sides of said frame, substantially as described.

6. The combination, with a tire having an elastic ring fitted snugly up against the bottom thereof, of the struts *a* and metallic tie-rods *a′* and a^4, substantially as and for the purposes set forth.

7. The combination, with the T-shaped tire having the bottom thereof grooved out for the reception of an elastic or rubber ring, of the struts *a*, fitted to the web of the tire and curved upwardly on both sides from the center thereof, and the tie-rods *a′* and a^4, passing through said struts and secured to the web of said tire, substantially as and for the purposes set forth.

8. The combination, with the rolling rim or tire A, rubber ring B, struts *a*, fitted to the web of said tire, and the tie-rods *a′* and a^4, inserted through apertures in said struts and secured to said tire, of the hubs C, having eyes *c*, the tie-rods *c′*, attached to said struts and supporting said hubs, and wires or stays c^3, inserted through eyes in said hub and held in position by collars c^3, rigidly secured to the tie-rods *c′*, substantially as and for the purposes set forth.

9. In a monocycle, the combination, with two hubs loosely mounted on sleeves and supported concentrically to the wheel by means of tie-rods attached to struts secured rigidly to the web of the tire, and stays or wires inserted through eyes in said hubs and supported by collars rigidly attached to said tie-rods, ratchets formed integral with said hubs, pawls pinned to two-part boxes, the upper sections of which are formed integral with arms, and depending rods pivoted to said arms, of a hanging frame secured to said sleeves and supporting adjustable seats and pedals mounted on a shaft held in the sides of said frame, substantially as and for the purposes set forth.

10. In a monocycle, the combination, with a shaft on each side of the wheel, with sleeves mounted thereon and carried by a hub supported concentrically to the wheel, substantially in the manner described, of an arm secured to said shaft, a depending bar hinged to the upper extremity thereof, having an arch or quadrant with a series of pins, a disk feathered to said sleeve, having an opening therein, said disk being revolved around said sleeve by an arm having an opening therein, into which a pin slides fastened to the arm secured to said shaft, a device provided with two handles pivoted to each other and one of which is rigidly secured to one extremity of said shaft and the other engaging in a groove formed in a hub mounted on said sleeve, and a spring secured to one of said handles, all arranged substantially as and for the purposes set forth.

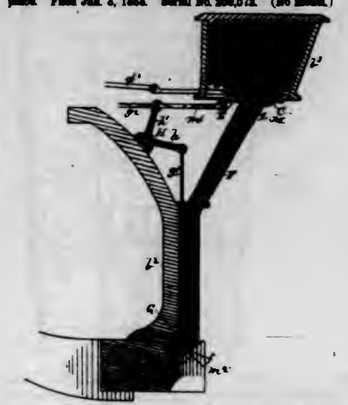
11. A monocycle having a hub on each side supported concentrically thereto by means of tie-rods attached to struts secured rigidly to the web of the tire and stays or wires inserted through eyes projecting from each hub and supported by collars on said tie-rods, and a shaft with a sleeve mounted thereon, in combination with an arm secured to said shaft, a depending bar hinged to said arm and having at its lower extremity a spring and roller, and a device for operating said shaft for raising and lowering said bar, substantially as described, and for the purposes set forth.

12. In a monocycle, the combination, with two hubs mounted on sleeves and supported concentrically to the wheel by means of tie-rods and struts, of ratchet-and-pawl mechanism operated by double pedals, a depending frame forming the axle for said vehicle, a vertical post secured to said frame and supporting a bar on which seats are adjustably secured, and a lever pivoted centrally to said vertical post, which serves to elevate one pedal while the other is being depressed, substantially as described.

13. In a monocycle, the combination, with a hub loosely mounted on a sleeve on each side of the wheel and supported concentrically thereto by means of tie-rods and struts, of a shaft to which an arm is attached, a depending bar pivoted thereto with a spring and roller on its lower extremity, an arch or quadrant formed integral with said depending bar with a series of pins projecting therefrom, a disk feathered to said sleeve with an opening therein, and devices, substantially as shown and described, whereby said vehicle may be readily steered or stopped.

14. In a monocycle, the combination, with two hubs mounted on sleeves and supported concentrically to the wheel by means of tie-rods and struts, of a hanging frame forming the axle for the vehicle, a vertical post secured centrally to the bottom of said frame, to the upper extremity of which a horizontal T-shaped bar is mounted, one or more seats with backs adjustably secured to said bar, a lever pivoted centrally to said vertical post for automatically elevating one pedal while the other is being depressed, and a pawl-and-ratchet mechanism connected by depending rods to double pedals journaled to a shaft secured in the sides of said depending frame, all arranged substantially as described, for impelling said vehicle.

379,850. **CHECK-ROW CORN-PLANTER.** JAMES E. BEELER, Decatur, Ill., assignor to the Chambers, Baring, Gustafan Company, same place. Filed Jan. 3, 1883. Serial No. 260,572. (No model.)



Claim.—1. In a check-row corn-planter, in combination, a seed measuring and discharging valve in the seed-box actuated periodically by a rock-shaft, D, a discharge-valve in the seed-tube, and an auxiliary valve beneath a seed-receiving opening in a plate beneath the seed-measuring valve, said auxiliary valve and lower discharge-valve actuated by the said rock-shaft, and mechanism connecting them therewith, substantially as described, and for the purpose specified.

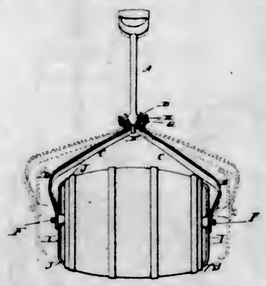
2. In a corn-planter, in combination with a seed-measuring valve in the seed-box and a discharge-valve at the bottom of the seed-tube, an auxiliary valve located beneath a seed-holding cup or opening beneath said seed-measuring valve, substantially as and for the purpose specified.

3. In combination, valve C, plate E, with opening *e*, valve M, with opening *m*, seed-tube b^2, and discharge-valve G, substantially as and for the purpose specified.

4. In combination, seed-cup valve C, actuated, as described, by rock-shaft D, opening *e*, valve M, with opening *m*, discharge-valve G, and bell-crank lever H, connected with the rock-shaft, with the valve M, and with the discharge-valve G, substantially as and for the purpose specified.

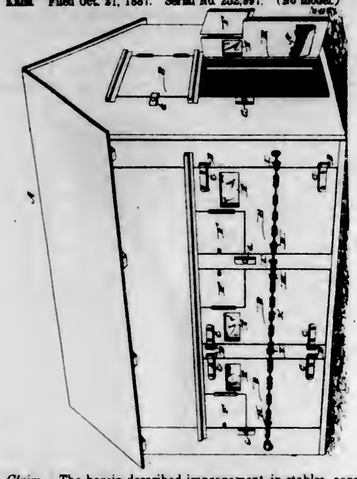
5. In combination with a seed measuring and discharging valve in the seed-box, a valve located closely beneath the seed-box and adapted to momentarily retain the seed and drop them in a mass to the lower discharging-valve, substantially as and for the purpose specified.

379,851. **BARREL-ROLLER.** JOHN BOLAND, Raymond, Ill., assignor of two-thirds to William R. Deck and James M. Deck, both of same place. Filed Oct. 10, 1887. Serial No. 251,933. (No model.)



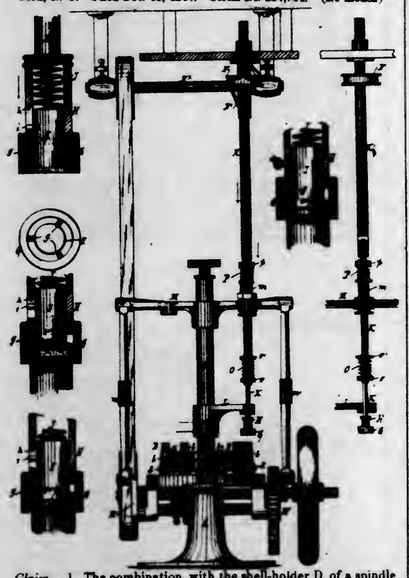
Claim.—In a barrel-roller, the combination of a handle, having its lower end beveled, with two spring clamping-arms, bolts and nuts adjustably securing said arms to the handle, and grapples journaled in the free ends of said clamping-arms.

379,852. **ANIMAL-RELEASING DEVICE.** BAKER BORTON, Clyde, Kans. Filed Oct. 21, 1887. Serial No. 252,997. (No model.)



Claim.—The herein-described improvement in stables, consisting in the combination, with the frame, of the doors B, hinged thereto and adapted to be lifted from their hinges, and provided in their upper portions with the windows E, the doors F, hinged to the doors B, and forming the upper outer corners of the same, the staple L on the inside of the frame at one end, the chain having one end fastened to the staple L, thence passed through the frame and along the same across the outside of the doors, and having its free end secured to the outside of the frame at the opposite end to the staple L, and the staples H I, secured, respectively, to the doors B and the frame, and supporting and guiding the chain, substantially as specified.

379,853. **CARTRIDGE-CRIMPER.** JOHN W. BRITTIN, Black Rock, Conn., assignor to the Atlantic Ammunition Company, (Limited,) New York, N. Y. Filed Dec. 15, 1887. Serial No. 257,991. (No model.)



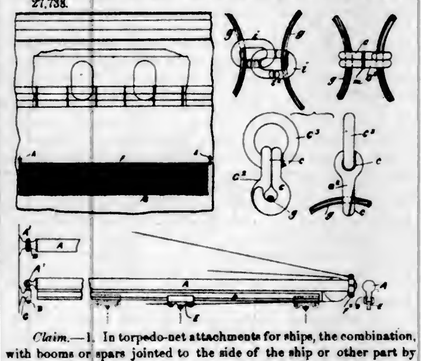
Claim.—1. The combination, with the shell-holder D, of a spindle K, means for raising, lowering, and rotating the spindle, a tube, H, attached at one end to the spindle, a hollow crimping-head, G, having internal crimping devices, and secured to the other end of the tube, and a lengthwise-movable follower, I, located in the tube and adapted to extend through the head, substantially as set forth.

2. The combination of the reciprocating and axially-rotating spindle K, a tube, H, secured at one end thereto, a hollow crimping-head, G, secured to the other end of the tube and having internal crimping devices, a lengthwise-movable follower, I, in the tube and head, and a set-screw, i^9, tapped through the tube to hold the follower in a fixed position, substantially as described.

3. The combination, with a shell-holder, D, of a spindle, C, a cross-head on the spindle, and means for reciprocating the cross-head, of the rising-and-falling and rotating spindle K, the tube H, connected with the spindle, the crimping-head G, connected with the tube, the lenghthwise-movable follower in the tube, the stop *o*, fixed on the spindle, the loose washer *o'* on the latter, and the spring O between the stop and the washer, substantially as described.

4. The combination, with the shell-holder D, of a spindle, K, means for rotating the spindle, a cross-head for raising and lowering the spindle, a crimping device secured to the spindle K, a spring, O, secured to the spindle between the cross-head and the crimping device, and a tubular screw, *m*, vertically adjustable in the cross-head, and through which the spindle passes, said screw, by adjustment toward and from the spring, adapting the spindle for cartridges of different lengths, substantially as described.

379,854. **MANUFACTURE OF TORPEDO-NETS AND MEANS FOR ATTACHING AND WORKING THEM.** WILLIAM M. BULLIVANT, 72 Mark Lane, London, England. Filed Jan. 25, 1888. Serial No. 261,911. (No model.) Patented in England Sept. 16, 1885, No. 10,980, and Nov. 19, 1885, No. 14,192; in Italy Feb. 2, 1886, No. 19,220; in Spain Sept. 1, 1886, No. 5,552, and Nov. 2, 1886, No. 6,249; in France Nov. 27, 1886, No. 179,932, and in Austria-Hungary June 17, 1887, No. 6,306 and No. 27,738.



Claim.—1. In torpedo-net attachments for ships, the combination, with booms or spars jointed to the side of the ship or other part by which they are supported, of runners mounted and movable on or in longitudinal guides formed on said spars, net-carrying ridge ropes or rods extending between the runners, and means for adjusting and holding in position the runners, substantially as and for the purposes hereinbefore set forth.

2. The booms or spars connected to the side of the ship by double joints, which permit said booms to be turned up or down or sidewise, and the ropes for adjusting and securing said spars, in combination with runners for supporting the net, mounted and longitudinally movable on said booms, and means for adjusting the runners and holding them in their adjusted position, substantially as and for the purposes hereinbefore set forth.

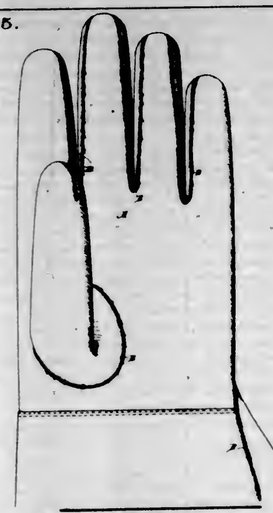
3. The combination, with two torpedo-nets or net-sections, of a torpedo-net fastening consisting of two links, each reduced and split at one place, one link being worked on the grommets of the net and the other being worked on or secured to the other net, to which the first-named net is to be secured, substantially as hereinbefore described, and illustrated in Figs. 8 and 9 of the accompanying drawings.

4. The combination, with two torpedo-nets or net-sections, of a torpedo-net fastening consisting of two rings or eyes, one worked on the grommets of the net and the other worked on or secured to the other net, to which the first net is to be secured, one of the said rings or eyes carrying a cross-bar, substantially as hereinbefore described, and illustrated in Figs. 13 and 14 of the accompanying drawings.

379,855. **GLOVE.** FRED H. BUSBY, San Francisco, Cal. Filed Nov. 22, 1887. Serial No. 255,945. (No model.)

Claim.—As an article of manufacture, a leather glove having incorporated between the edges of its seams a welt composed of felt, substantially as herein described.

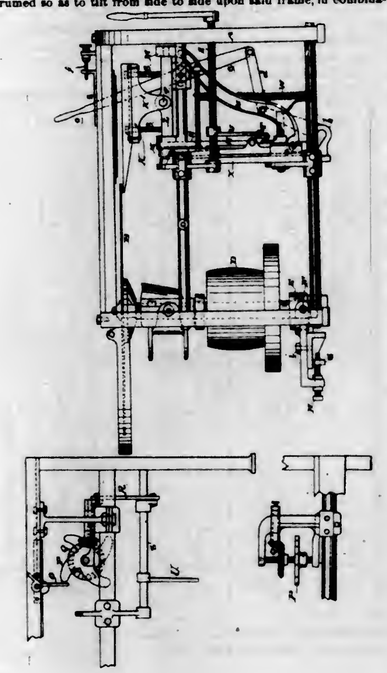
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379,856. **SHINGLE-SAWING MACHINE.** WILLIAM A. CAMPBELL, Portland, Oreg. Filed Aug. 16, 1887. Serial No. 247,104. (No model.)

Claim.—1. The tilting table K, having the lugs projecting downward from the center of its sides, the pin passing through the lugs, the vertically-moving frame, and the horizontal shaft or bar which has its ends journaled in said vertically-moving frame M, in combination with the stationary frame X, having the guides within which the frame M travels, the crank-shaft *b*, with its crank and connecting-rod *d*, and lever *c* and rack *e*, whereby the vertical adjustment of the table may be effected, substantially as herein described.

2. The vertically-moving adjustable frame M and the table K, fulcrumed so as to tilt from side to side upon said frame, in combination with a vertical frame, X, having guides in which the frame M slides, said frame being adjustable from side to side and having adjusting and holding screws Y, acting upon its opposite sides, substantially as herein described.

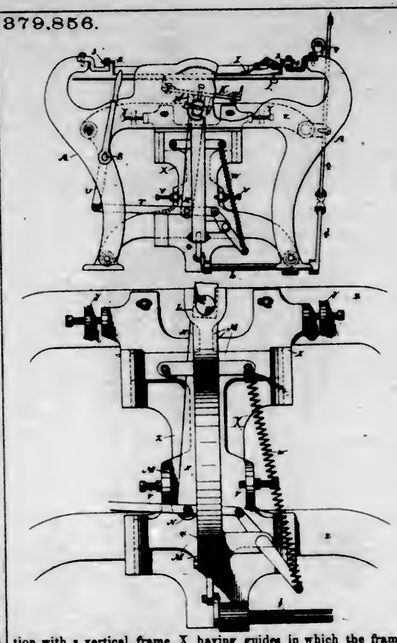


3. The vertical frame X, attached to the main frame, and the screws Y, by which it may be adjusted from side to side, the vertical sliding frame M, moving in guides upon the frame X, with the crank-lever, connecting-rods, and holding-rack, as shown, in combination with the tilting table pivoted to the horizontal oscillating bar, which is journaled to the frame M, said table having the bar N extending outwardly at right angles, and the adjusting and regulating screws V, between which the oscillating motion of the bar N is limited and adjusted, substantially as described.

4. The saw-arbor, the yoke or frame G, sliding upon guides upon the main frame of the machine, the screw H, by which it may be advanced or receded, and the locking or holding screw i, in combination with the step within which the lower end of the saw-arbor turns, the trunnion-screws passing through the sides of the yoke and fitting into recesses in the sides of the step, so that the whole may adjust itself with relation to the movements of the yoke G, substantially as herein described.

5. The combination of the tilting table K, having the lugs K' extending downward from the center of its sides, the pin 4, passing through said lugs, the horizontal bar or shaft L, having its ends journaled in the vertically-moving frame, and the bolts or screws for leveling the table in the direction of its travel, substantially as described.

379,856.



379,857. **LEATHER-CUTTING MACHINE.** JOHN CAVE, PAUL CAVE, ABOS CAVE, FREDERICK CAVE, and ARTHUR CAVE, Higham Ferrers, County of Northampton, England. Filed Nov. 11, 1887. Serial No. 254,886. (No model.)

Claim.—1. In a machine for cutting leather, the combination, with the plate w', of the sole-cutting knife having a single central blade-body provided at each end with diverging portions, substantially as described.

2. In a machine for cutting leather, a sole-cutter consisting of a pivoted plate having on one side a cutting-knife consisting of a central body-blade with diverging portions at each end for cutting the edges of different soles, and on another face of the said plate a cutter-blade of like character reversely disposed, substantially as described.

3. In a machine for cutting leather, the combination, with the plate w', of a sole-cutting knife pivoted to said plate, and clamps for holding the knife in the desired position, substantially as described.

4. In a leather-cutting machine, the combination, with the plate w', of a plate, v', having curved slots at its end, mounted thereon, and

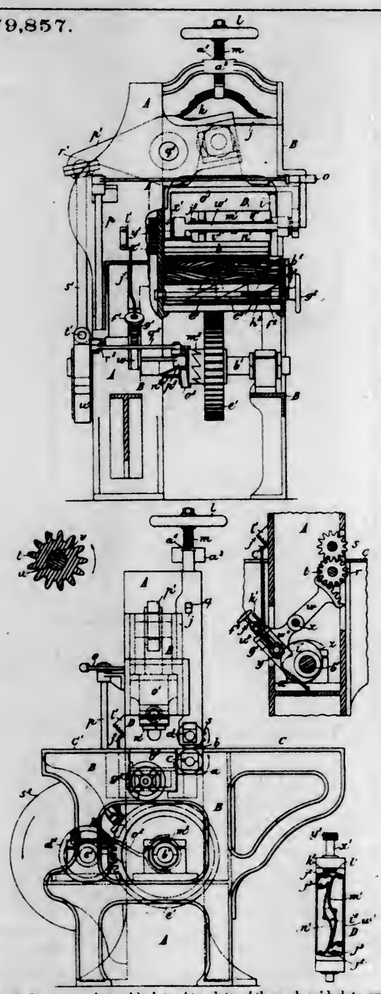
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8. In a machine for cutting leather, the combination, with a pair

of scale-weights, of the compensating levers connected with said scale-

for giving an impression by a horizontal movement, of a feeder for re-

379,857.



clamp-bolts connecting said plate r' to plate w' through said slots, and a sole-cutting knife mounted on said plate r', substantially as described.

5. In a machine for cutting leather, the combination, with a pair of feed-rolls in gear with each other, a pinion mounted on the shaft of one of said feed-rolls, and an automatic clutch connecting the pinion and shaft, of an oscillating segment engaging said pinion, whereby the movement of the segment in one direction feeds the material to the cutters, and its reverse movement permits the feeding-rolls to remain stationary, substantially as described.

6. In a machine for cutting leather, the combination, with a pair of feed-rolls in gear with each other, a pinion mounted on the shaft of one of said feed-rolls, an automatic clutch connecting the pinion and its shaft, and a lever provided with a segment engaging said pinion, of an index-plate mounted on said machine, and a pointer-arm connected with the segment-lever, whereby the amount of movement given the feeding mechanism is indicated upon the index-plate, substantially as described.

7. In a machine for cutting leather, the combination, with a pair of feed-rolls in gear with each other, a pinion mounted on the shaft of one of said feed-rolls, an automatic clutch connecting the pinion and its shaft, and a lever provided with a segment engaging said pinion, of a cam bearing against said lever, and a spring holding said lever in contact with said cam, substantially as described.

8. In a machine for cutting leather, the combination, with a pair of feed-rolls in gear with each other, a pinion mounted on the shaft of one of said feed-rolls, and an automatic clutch connecting the pinion and its shaft, of a lever having a slot therein and provided with a segment engaging said pinion, a block provided with a friction-roll adjustably mounted in said slot, a cam engaging the friction-roll, and a spring holding the friction-roll in engagement with the cam, substantially as described.

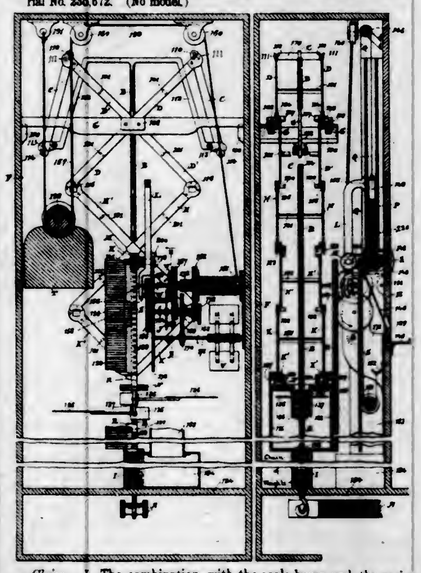
9. In a machine for cutting leather, the combination, with a pair of feed-rolls, one of said rolls being mounted in stationary bearings and the other in movable bearings, and toggle-levers supporting said movable bearings, of a lever, and connections with the central joints of the toggle-lever, whereby the said movable feed-roll is moved into and out of operative position, substantially as described.

10. In a machine for cutting leather, the combination, with a pair of feed-rolls, one of said rolls being mounted in stationary bearings and the other in movable bearings, and toggle-levers supporting said movable bearings, of a driving-shaft, a driving gear-wheel loosely mounted on said shaft, a clutch connecting said shaft and driving-gear, a rock-shaft mounted on the main frame, an arm on said rock-shaft connected with said clutch, a hand-lever rigidly mounted on said rock-shaft, and connections connecting said lever with the central joints of said toggle-levers, whereby the movement of said hand-lever operates said clutch and at the same time raises said movable feed-roll from its operative position, substantially as described.

11. In a machine for cutting leather, the combination, with a pair of feed-rolls, one of said rolls being mounted in stationary bearings and the other in movable bearings, of toggle-levers supporting said movable bearings, a movable support for said toggle-levers mounted in slots provided in the main frame, a pressure device for said movable support, a hand-lever pivoted on the main frame of the machine, and connections connecting the said lever with the central joints of the toggle-levers, whereby a movement of the hand-lever moves the movable roll into and out of position to receive the force of the pressure device, substantially as described.

12. In a machine for cutting leather, the combination, with a pair of feed-rolls, one of said rolls being mounted in stationary bearings and the other in movable bearings, of toggle-levers supporting said movable bearings, a movable support for said toggle-levers mounted in slots provided in the main frame, a spring bearing upon said movable support, the slots in said frame limiting the movement of the movable support, so that the pressure of the spring is not upon the rolls unless there is material between them, substantially as described.

379,858. **WEIGHING AND WEIGHT-PRINTING MACHINE.** CLEMENT C. CLAWSON, Newark, N. J., assignor to the United States Machine and Inventions Company, New York, N. Y. Filed Apr. 21, 1887. Serial No. 236,672. (No model.)



Claim.—1. The combination, with the scale-beam and the series

of scale-weights, of the compensating levers connected with said scale-weights and also with said beam for communicating the pressure from said beam to said weights, so as to lift them successively by rectilinear motion, substantially as described.

2. The combination of a system of crossed and connected levers or lazy-tongs with a scale-beam and a balance appliance or appliances connected with said levers or lazy-tongs, which communicate the pressure from said beam to said appliance or appliances, substantially as described.

3. The combination of the system of crossed and connected levers or lazy-tongs with the series of weights connected with said levers or lazy-tongs, substantially as described.

4. The system of crossed and connected levers or lazy-tongs provided with knife-edge joints, substantially as described.

5. The combination of the supporting cross-bars, the crossed levers supported by said bars, the crossed levers suspended from said first-named levers, the links suspended from the last-named levers, the hanger suspended from said links, and the knife-edges forming the joints of said system of levers, substantially as described.

6. The system of double levers, one of each pair being placed between the members of the other lever of said pair, in combination with the duplicate knife-edges forming hinge-joints between the said levers, substantially as described.

7. In combination with a weighing-scale having a balancing appliance or appliances whose balancing effect increases with the motion of the scale, a clutch or clutches tending to arrest or moderate the movement of said scale and provided with fans or wings moving with a portion of said scale and arranged to bring said clutches into action when moved rapidly, substantially as described.

8. An automatic clutch consisting of a pivoted clutch-sleeve, a fan or wing on one side of said sleeve, and a counter-balance for said wing or fan, substantially as described.

9. The combination, with the scale-rod, the system of levers, and the hanger, of one or more clutches provided with a counterbalanced fan or fans for bringing said clutch or clutches into action, the latter being carried by said hanger and arranged to clutch said rod, substantially as described.

10. The combination, with a balance appliance or appliances and a lever or levers provided with knife-edge bearings and connected with said appliance or appliances, so as to convey to the same the pressure of the object weighed, of a bar supported directly by said lever or levers and printing-type carried by said bar, substantially as described.

11. The combination, with the scale-beam and compensating levers or lazy-tongs, of a bar supported by said levers or lazy-tongs and printing-type carried by said bar, substantially as described.

12. The combination, with the scale-beam, the compensating levers or lazy-tongs, and the printing-finger, of a bar supported by said levers or lazy-tongs and yielding printing-type carried by said bar and adapted to be pushed out by said finger to give the impression, substantially as described.

13. The combination, with a weighing-scale and a type-carrier connected with and adjusted by said scale, of printing-type on said carrier, provided each with its individual yielding support, and a printing-finger for pushing out the type from which the impression is to be taken, substantially as described.

14. The combination of the carrying-bar, the separate type, the bowed springs each having a type at one end and fastened at the other to the said carrying-bar, and the printing-finger arranged in the space between the said bar and the said type, substantially as described.

15. In combination with a movable printing-finger, a type-carrier, and type on said carrier which can be pushed out independently of said carrier, type-holding teeth in front of said finger, which teeth project from their support toward said printing-finger in the direction of its motion and are formed by notches in contradistinction to slots, substantially as described.

16. The combination, with a weighing-scale, a type-carrier adjusted by said scale, type on said carrier which can be pushed out independently of said carrier, and a printing-finger behind said type, of type-holding teeth in front of said finger, which teeth project from their support toward said printing-finger in the direction of its motion and are formed by notches in contradistinction to slots, substantially as described.

17. In combination with a type-carrier and a printing-finger, printing-type which can be pushed out independently of said carrier, provided with holding-teeth movable with the type and printing-finger, substantially as described.

18. The type provided each with its individual yielding support and a holding-tooth on the type itself, in combination with the printing-finger, substantially as described.

19. The combination of the weighing-scale, the type-carrier, the printing-finger, the independently-yielding type on the said carrier, and the holding-teeth on said type themselves, so as to move with them in printing, substantially as described.

20. The combination, with a vertical card-box and printing-type for giving an impression by a horizontal movement, of a feeder for receiving the card horizontally and presenting it vertically to said type, substantially as described.

21. The many-sided feed roller and its case, in combination with the card-box and printing-type, the said feed-roller being constructed and arranged to receive the card from said box and present it to the said type, which are arranged opposite another portion of the roller's periphery, substantially as described.

22. The combination, with the weighing-scale, the type-carrying bar adjusted by said scale, the type on said bar, adapted to be pushed out for printing, and the printing-finger, of the card-box, the feed-roller, and its case, substantially as described.

23. The combination, with apparatus to be controlled by coins, of the coin-motor and supplemental coin-holder, both connected with said apparatus, so that each coin is exposed to view or examination until one or more additional coins have been introduced and are afterward automatically discharged, substantially as described.

24. The combination, with the clock-work or power-operated mechanism and a coin-motor escapement therefor, of the supplemental coin-holder connected with said clock-work, so as to be operated thereby to discharge the coin held therein, substantially as described.

25. The combination, with the printing-finger, the clock-work or power-operated mechanism, and a coin-motor escapement for said clock-work or power-driven mechanism, of the type-carrier, the printing-type, the compensating levers or lazy-tongs, and the scale-beam, substantially as described.

26. The combination of the card-box, the feeding-roller, and the case for said roller with the printing-type, the printing-finger, the clock-work or power-driven mechanism, and the connecting devices for operating said finger and said roller in due sequence, substantially as described.

27. The combination of the scale-beam, the compensating levers or lazy-tongs, the series of scale-weights, the type-carrier, the printing-type, which can be pushed out for printing, the printing-finger, and the type-holding teeth, substantially as described.

28. The combination of the scale-beam, the compensating levers or lazy-tongs, the type-carrier, the printing-type, the printing-finger, the card-box, the card-feeder, the clock-work or power-driven mechanism, the devices for conveying motion from said clock-work to said printing-finger and to said card-feeder, and the coin-motor escapement, substantially as described.

29. The herein-described weighing and weight-printing machine with coin-motor attachment, the weighing mechanism comprising a system of compensating levers or lazy-tongs and a series of weights connected therewith, the printing mechanism comprising a carrier-bar supported by said levers or lazy-tongs, the type carried by said bar, and the means for taking impressions from the type as they may be adjusted by the weighing-scale, and the coin-motor comprising a supplemental coin-holder in addition to the devices to be acted upon by the coin to release the weight-printing mechanism, the parts being combined and operating substantially as described.

379,859. **MACHINE FOR DETERMINING OR INDICATING THE HEIGHT AND THE WEIGHT OF PERSONS.** CLEMENT C. CLAWSON, Newark, N. J., assignor to the United States Machine and Inventions Company, New York, N. Y. Filed June 7, 1887. Serial No. 240,507. (No model.)

Claim.—1. The combination, with the vertically-movable device of a height-measurer, of movable printing-type, especially type which can be pushed out separately to print, adjusted or controlled by said device, and means for taking an impression from said type, substantially as described.

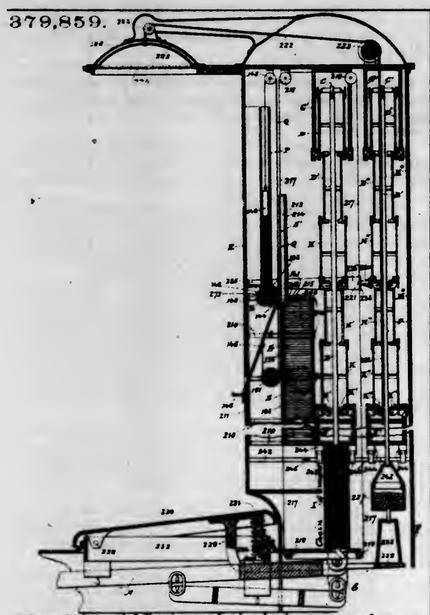
2. The combination, with the vertically-movable device of a height-measurer, of ticket printing and delivering mechanism comprising movable printing-type, especially type which can be pushed out separately to print, adjusted or controlled by said device, power-driven mechanism for operating said ticket printing and delivery mechanism, and a coin-motor which controls said power-driven mechanism, substantially as described.

3. The combination, with the vertically-movable device of a height-measurer, of vertically-movable printing-type, especially type which can be pushed out separately to print, adjusted or controlled by said device, a horizontally-moving printing-finger, an upright card-box, and a feeder which takes the cards from said box and presents them in front of said printing-finger, substantially as described.

4. The combination, with the balancing mechanism of a weighing-scale and the vertically-movable device of a height-measurer, of two sets of printing-type, especially type which can be pushed out separately to print, adjusted or controlled by the said balancing mechanism and the said vertically-movable device, respectively, and means whereby an impression may be taken from both sets of type on one card or ticket, substantially as described.

5. The combination, with the balancing mechanism of a weighing-scale and the vertically-movable device of a height-measurer, of

379,859.



ticket printing and delivering mechanism having two sets of type, especially type which can be pushed out to print, adjusted or controlled by the said balancing mechanism and the said movable device, respectively, a power-driven mechanism for operating said ticket printing and delivering mechanism, and a coin-motor which controls said power-driven mechanism, substantially as described.

6. The combination, with the two separately-adjustable sets of vertically-movable type, especially type which can be pushed out to print, the horizontally-movable printing-fingers, the upright card-box, and the feeder which takes the cards from said box and presents them in front of said printing-fingers, substantially as described.

7. The combination, with the vertically-movable device of a height-measurer and the balancing mechanism of a weighing-scale, of the two sets of vertically-movable type, especially type which can be pushed out separately to print, the printing-fingers, the card-box, and the feeder, substantially as described.

8. The combination, with the vertically-movable device of a height-measurer, of a height-indicator and the system of levers through which the movement of the said device is communicated to said indicator, substantially as described.

9. The combination, with the vertically-movable device of a height-measuring machine, of means, such as a counterpoise, whereby said device is kept in an elevated position, a movable platform under said device, and means connected with the platform for causing the said device to descend when the platform is depressed, substantially as described.

10. The combination, with the vertically-movable device of a height-measuring machine, of the counterpoise for keeping the said device elevated, the overbalancing-weight for causing the said device to descend, the movable platform under said device, and a support for said overbalancing-weight connected with said platform, so as to be removed when the platform is depressed, substantially as described.

11. The combination, with the vertically-movable device of a height-measuring machine, of means, such as a counterpoise, whereby said device is kept normally in an elevated position, a movable platform under said device, means connected with said platform for causing the said device to descend, and a coin-motor having a detent which prevents the descent thereof until said detent is released, substantially as described.

12. The combination, with the vertically-movable device of a height-measuring machine, of means, such as a counterpoise, for keeping the same elevated normally, and means for causing the same to descend when required, the printing-type adjusted by said device, and the means for taking an impression therefrom, substantially as described.

13. The combination, with the vertically-movable device of a height-measuring machine, the means, such as a counterpoise, for keeping the said device normally elevated, and the means for causing the same to descend, of ticket printing and delivery mechanism having the type adjusted by said device, substantially as described.

14. The weighing-scale having the platform movable independently of the weighing appliances, in combination with height-measuring appliances having a vertically-movable device which is kept normally in a raised position, and means connected with said platform for causing the said device to descend, substantially as described.

15. The combination, with yielding printing-type and a printing-finger for pushing out the same to give an impression, of type holding or adjusting teeth at the side or sides of said type, and a projection or projections at the side or sides of said finger for engaging said teeth, substantially as described.

16. The combination, with the clock-work, arranged in a case provided with a coin-slot, and the escapement for said clock-work, arranged at a distance from said slot and operating to release the said clock-work under the impact or pressure of a coin, of the supplemental coin-holder, in the form of a compartment-wheel mounted on a horizontal axis and geared to said clock-work, so as to be revolved thereby, substantially as described.

17. The combination, with the balancing mechanism and the height-measuring appliances, of detents which engage the balancing mechanism and the height-measuring appliances, and a coin-motor which controls both detents, substantially as described.

18. A machine for weighing, measuring, or weighing and measuring persons, comprising a platform, an upright glass case or standard, a mirror at the back of said case or standard, and coin-controlled machinery exposed to view in said case or standard and reflected in said mirror, substantially as described.

19. A weighing-machine having a movable platform, an upright glass case or standard, and a coin-controlled balancing mechanism connected with said platform and exposed to view behind the glass of said case or standard, so that the automatic adjustment of said balancing mechanism takes place in the sight of the person on the platform on the introduction of a coin, substantially as described.

20. A machine for weighing, measuring, or weighing and measuring persons, comprising a movable platform, an upright glass case, and coin-controlled machinery in part connected with said platform and in part operated by stored power exposed to view in said case, substantially as described.

21. A machine for weighing, measuring, or weighing and measuring persons, comprising one or more sets of adjustable type and coin-controlled machinery for automatically adjusting said type and for taking impressions therefrom, substantially as described.

22. A weighing and weight-printing machine comprising a movable platform, an upright glass case or standard, a balancing mechanism connected with said platform, a series of printing-type adjusted by said balancing mechanism, ticket printing and delivery mechanism, and a clock-work for operating said last-named mechanism, the said clock-work, as well as the balancing mechanism, being coin-controlled and exposed to view in said case or standard, substantially as described.

23. A machine for weighing, measuring, or weighing and measuring persons, comprising an upright glass case or standard, and coin-controlled ticket printing and delivery mechanism driven by a clock-work exposed to view behind the glass of said case or standard, substantially as described.

24. A coin-controlled weighing-machine comprising an upright glass case or standard, and in said case or standard a balancing mechanism, a ticket printing and delivery mechanism, a clock-work for operating said ticket printing and delivery mechanism, and a money-box, the said balancing mechanism and ticket printing and delivery mechanism being supported by the frame of the machine, and the said clock-work by the money-box, substantially as described.

25. The case having a solid strip up the middle of the front and glass on each side of said strip, in combination with the card-box, feeder, printing-lever, and coin-spout supported by said strip, a set or sets of lazy-tongs suspended from the top of said case, the money-box, and the clock-work with coin-operated escapement supported on the money-box, substantially as described.

26. The combination, with a counterpoise and the system of crossed and jointed levers for conveying pressure thereto, of the coin-motor having a detent at the lower end of said system of levers for locking the same until released by a coin, substantially as described.

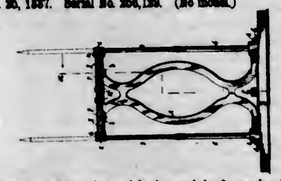
27. The combination, with the counterpoise of a weighing-scale, especially a counterpoise composed of a chain of weights, and the system of crossed and jointed levers for conveying to the said counterpoise the pressure to be balanced thereby, of a visual-indicator adjusted or controlled by said levers and counterpoise, substantially as described.

28. The combination, with the system of crossed and jointed levers, of the vertically-movable device of a height-measurer connected with said levers at the lower end, and an indicator connected with said levers nearer the principal fulcrum, so as to have the motion reduced, substantially as described.

29. The described coin-controlled weighing and height-measuring machine, comprising, in combination, the weighing-scale, the height-measuring appliances, the card printing and delivery mechanism having type adjusted by said scale and said appliances, respectively, and a coin-motor or coin-motors, substantially as set forth.

30. The combination, with a movable instrument for giving visual indication, a ticket printing and delivery mechanism having movable type, and mechanism for adjusting said instrument and said type, of two coin-motors, one controlling the adjusting mechanism and the other the operation of said ticket printing and delivery mechanism, substantially as described.

379,860. PAPER-FILE. THOMAS W. G. COOK, New York, N. Y. Filed Nov. 26, 1887. Serial No. 256,122. (No model.)



Claim.—1. The combination, with the upright frame having lugs *a*, of the fixed rectilinear filing-needle, and the rectilinear transfer-needle arranged in line with the filing-needle, and having its upper portion provided with a rock-shaft journaled and rotatable in the lugs on the upright frame, to permit the transfer-needle to swing outward from the upright frame, substantially as described.

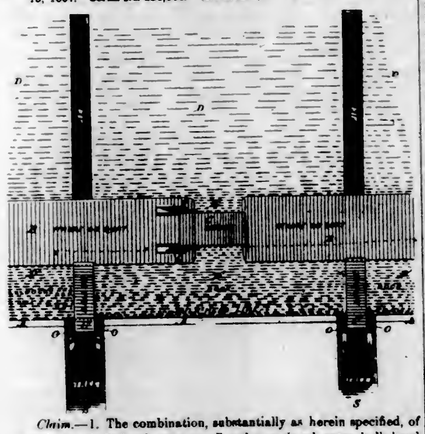
2. The combination, with the upright frame having lugs *a*, of the fixed rectilinear filing-needle, the rectilinear transfer-needle having at its upper portion a rock-shaft journaled in said lugs and provided with a crank, *b*, and a spring, F, connected with the crank and the frame, substantially as described.

3. The combination, with a suitable frame, of the rectilinear filing-needles C C, fixed in the frame, the rock-shafts E E, springs F, attached to the same, stops *c c*, and the rectilinear needles D D on said rock-shafts, arranged in line with the filing-needles.

4. The combination of the base, the swinging upright frame hinged to the base to swing down thereupon, the stationary filing-needle fixed to the foot of the upright frame, the overhanging transfer-needle on the upper part of the upright frame, and a fastening device for securing the hinged frame when swung to its upright position, substantially as described.

5. The combination, with a suitable frame, of the rectilinear vertical filing-needles *c c*, fixed in the frame, and the rectilinear swinging transfer-needles D D, arranged in line with the filing-needles, and having their hinges located directly above and in the same vertical plane with the filing-needles, substantially as shown and described.

379,861. DOCK. JOHN M. CORNELL, New York, N. Y. Filed Dec. 15, 1887. Serial No. 258,001. (No model.)

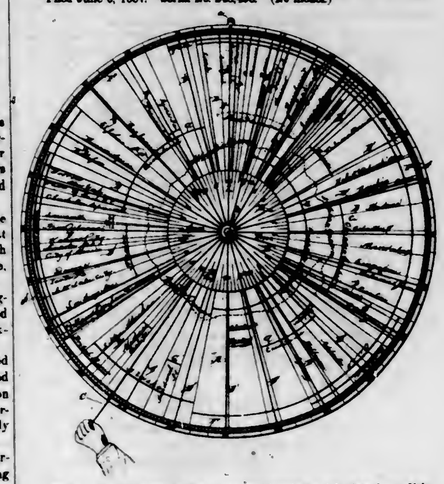


Claim.—1. The combination, substantially as herein specified, of a continuous bulk-head or sea-wall and a sectional outer bulk-head or sea-wall substantially parallel with the former, its respective sections constituting wharves or quays, the same forming a continuous dock or series of docks along said continuous bulk-head, with entrances thereto between said wharves or quays.

2. The combination, substantially as herein specified, of a continuous bulk-head or sea-wall, a sectional outer bulk-head or sea-wall substantially parallel with the former and separated therefrom by a continuous dock or series of docks, and piers projecting outward from the respective sections of said outer bulk-head or sea-wall at mid-length, for the purposes set forth.

3. The combination, substantially as herein specified, of a continuous bulk-head or sea-wall, a sectional outer bulk-head or sea-wall substantially parallel with the former and separated therefrom by a continuous dock or series of docks, piers projecting outward from the respective sections of said outer bulk-head or sea-wall, and draw-bridges provided with suitable operating mechanism and spanning the dock-entrances between said sections, and also spanning said continuous dock in line with the respective piers, for the purpose set forth.

379,862. TIME-CHART. DOMINIC F. CRANE, White Mills, Ky. Filed June 6, 1887. Serial No. 240,490. (No model.)



Claim.—1. In a time-chart, the combination, with the chart-disk A, provided with the radial lines D D, indicating circles of longitude on a polar projection of the earth, the scale F, representing degrees of longitude east and west from the "Greenwich" meridian, and the concentric lines G of bodies of land or water, the names of the corresponding places being marked adjacent to said radial and concentric lines, of the dial-disk B, pivoted centrally on the central arbor of the chart-disk and provided with the equidistant radial hour-lines and intervening lines and marked adjacent to its edge, and the corresponding lines from the "Noon" line to the right 1, 2, 3, and to the 12 line, which is also marked "Midnight," and thence to 11, which is the next line adjoining the noon-line on the left, the lines intervening between the proper hour-lines being also properly marked, substantially as specified.

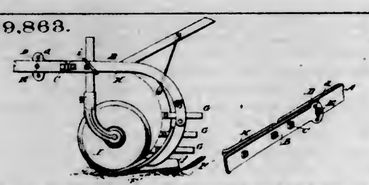
2. In a time-chart, the combination of the chart-disk provided with the properly-named radial meridian lines D, the concentric longitude-lines G, for bodies of land and water, and the graduated scale F adjacent to its edge, the dial-disk pivoted centrally on the chart-disk and provided with the numbered twenty-four radial hour-lines H, and intervening lines, and having the words "Noon" and "Midnight" inscribed at proper points thereon, and the cord C, having its inner end attached by a loop or ring to the arbor *b* between the chart-disk and dial-disk, substantially as specified.

379,863. LISTING PLOW OR CULTIVATOR. JOSEPH S. CRUM, Stockdale, Kans. Filed Dec. 27, 1887. Serial No. 259,152. (No model.)

Claim.—1. The combination of the drag-bars, the beams B B, connected adjustably to said drag-bars and provided at their lower ends with the shares, the cultivator-beams connected with beams B and provided with shovels, and the colters also connected with the beams B, substantially as set forth.

2. The combination, with the beam and the share supported thereon, of the slats connected at their forward ends to the beam above

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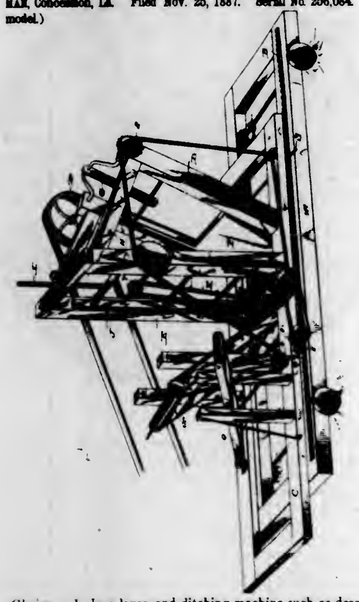


the share and projected rearwardly from said beam in series one above the other, substantially as set forth.

3. The combination of the beam B, the share thereon provided with auxiliary blade or cutter F', and the slats arranged in series one above the other and connected at their forward ends with the beam B above the share, substantially as set forth.

4. The combination of the beams B B, the shares supported on the lower rear ends of the beams B, the slats or bars G, arranged in series above the shares and secured to and projected rearwardly from the beams B, the cultivator-beams H, having shovels A, and the colters I, substantially as set forth.

379,864. LEVEE AND DITCHING MACHINE. EDWARD J. ENGMAN, Concession, La. Filed Nov. 25, 1887. Serial No. 256,064. (No model.)



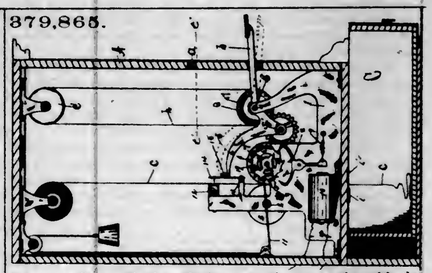
Claim.—1. In a levee and ditching machine such as described, the saws M, knives T, and blocks U, in combination with upright frame E, adjustable frame J, adjusting-screw I, and frames A and C, for the purpose set forth.

2. In a levee and ditching machine such as described, elevator K and wheels 7, in combination with saws M, knives T, and frames A and C, for the purpose set forth.

3. In a levee and ditching machine such as described, elevators N and O, in combination with saws M, blocks U, knives T, and spade F, for the purpose set forth.

379,865. DEVICE FOR REGISTERING AND RECORDING THE TIME WORKED BY EMPLOYÉS AND AUTOMATICALLY COMPUTING THEIR WAGES. FREDERICK L. FULLER, Norwich, Conn. Filed Jan. 3, 1887. Serial No. 223,813. (No model.)

379,865.



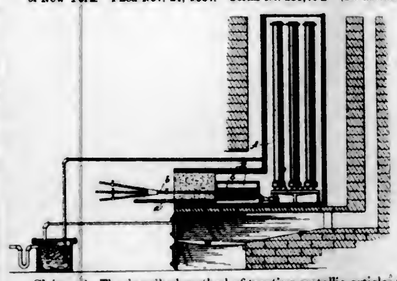
Claim.—1. In combination, an instrumentality adapted for progressive movement, upon which is notated a series of numbers in arithmetical progression, which will serve to represent the number of hours of labor performed by an employé from time to time or the amount of wages due for said labor, an escapement mechanism, an independent source of power for operating the controlling-lever of the escapement mechanism, a clock-movement for dispensing the said power to cause the proper movement of the said controlling-lever at specified intervals of time, and a clutch mechanism whereby the said notated instrumentality can be brought into operative connection with the said escapement mechanism or be disengaged therefrom by the employé when commencing or leaving off work, substantially as described.

2. In combination, an instrumentality adapted for progressive movement, upon which is notated a series of numbers in arithmetical progression, which will serve to represent the number of hours of labor performed by an employé from time to time or amount of wages due for said labor, an escapement mechanism, an electro-magnet for operating the escapement, a generative source of electricity from which connection is made with the coils of the electro-magnet, a clock-movement for closing the circuit from the electric generator through the coils of the magnet at specified intervals of time, and clutch mechanism whereby the operative connection of the said notated instrumentality with the said escapement mechanism and the disengagement of the same therefrom can be effected by the employé, substantially as described.

3. In combination, an instrumentality adapted for progressive movement, upon which is notated a series of numbers in arithmetical progression, which will serve to represent the number of hours of labor performed by an employé from time to time or amount of wages due for said labor, an escapement mechanism which is operated at specified intervals of time, a time-record strip permanently held in operative connection with the said escapement mechanism, a clutch mechanism by means of which the said notated instrumentality can be brought into operative connection with the said escapement mechanism or be disengaged therefrom by the employe, a device for making a record upon the time-record strip, and means for moving said recording device into contact with the said time-record strip to cause the proper record to be made upon the engagement or disengagement of the clutch mechanism, substantially as described.

4. In combination, a notated time-record strip for recording the clock-time of commencing and leaving off work by an employe, a shaft which is in operative connection with the said time-record strip and has an intermittent rotary movement, an escapement for controlling the movement of the shaft, an electro-magnet for operating the escapement, a generative source of electricity from which connection is made with the coils of the electro-magnet, a clock-movement for closing the circuit from the electric generator through the coils of the magnet at specified intervals of time, a device for making a record on the time-record strip, and means for moving said recording device into contact with the said time-record strip to cause the proper record to be made by the employé at the time of commencing or leaving off work, substantially as described.

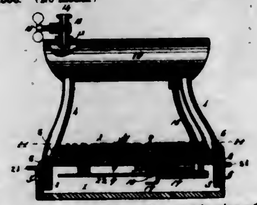
379,866. TREATMENT OF METALS. GEORGE W. GESNER, New York, N. Y., assignor to the Hydrogen Company of the United States of New York. Filed Nov. 21, 1887. Serial No. 255,754. (No model.)



Claim.—1. The described method of treating metallic articles for changing their surfaces to an alloy or compound homogeneous with the body metal of a practically non-corrodible nature, consisting in applying to said articles within a suitable retort from which atmospheric air is excluded, first, superheated steam; second, commingled superheated steam and hydrocarbon to form the alloy or compound, and, finally, a fixing agent whereby the alloyed surface previously formed is fixed, substantially as described.

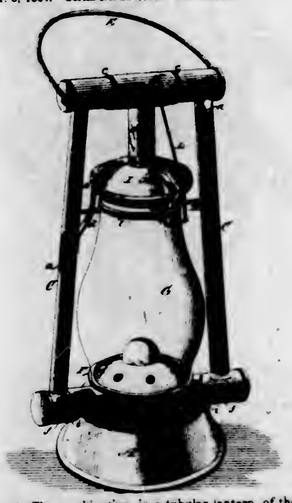
2. The described method of treating metallic articles to change the surface to an alloy or compound homogeneous with the body metal, consisting in the treatment of said articles in a retort from which atmospheric air is excluded by superheated steam of the same or a higher temperature as the retort; second, by commingled superheated steam and hydrocarbon, and, finally, by a fixing agent, whereby the alloyed or compound surface formed by the action of the first three agents is fixed by the action of the last, substantially as described.

379,867. SELF-HEATING SAD-IRON. GUSTAVUS HEIDEL, St. Louis, Mo., assignor, by direct and mesne assignments, to the National Self Heating Sad Iron Company, same place. Filed May 17, 1887. Serial No. 238,538. (No model.)



Claim.—In a self-heating sad-iron, the combination of the hollow handle forming a reservoir and provided with a valve, ends extending downward from the handle and provided with shouldered lugs, top plate having flanges extending upward and outward, lower plate having a vertical marginal flange forming a combustion-chamber and upon which the top plate fits and is held by screws passing through said marginal flange and into said lugs, an outturned projection, 23, on said vertical flange, intermediate plate located between said bottom and top plates to deflect heat from the latter, supply-pipe leading from said hollow handle through the top plate to the under side of said intermediate plate, and a burner on the lower end of said supply-pipe provided with a regulating-valve having an operating-lever located above said top plate, substantially as and for the purpose set forth.

379,868. TUBULAR LANTERN. ROBERT HERRANCK, Easton, N. Y. Filed Mar. 5, 1887. Serial No. 229,843. (No model.)



Claim.—1. The combination, in a tubular lantern, of the stationary tubes constituting the frame, and the globe, of a dome independent of the globe and pivoted to the stationary frame, substantially as described.

2. The combination, with the side tubes of a tubular lantern, of the tube D, connecting the upper ends of said side tubes, the sleeve K, loosely encircling said tube D, and the dome connected with said sleeve, substantially as and for the purpose specified

3. The combination, in a tubular lantern, with the side tubes, C, and tube D, connecting the same at their upper ends, of the sleeve K, loosely encircling said tube D, the dome, the short tube J, attached at its lower end to said dome and at its upper end to said sleeve, and the brace L, secured to said sleeve and dome, substantially as and for the purpose specified.

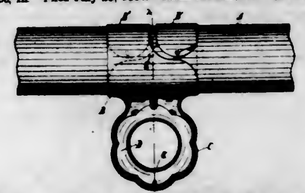
4. The combination, with the side tubes of a tubular lantern, of the central brace, e, extending up through said tubes, substantially as and for the purpose specified.

5. In a tubular lantern, the combination, with the reservoir thereof, of the horizontal tube B, cut away near its center and secured to the top and sides of the reservoir and to the neck g thereof, and having openings f, substantially as and for the purpose set forth.

6. The combination, in a tubular lantern, with a vertically-adjustable globe, G, provided with a bead, l, and the wire support H, arranged to rest under said bead upon one side of the globe, of the spring M, carried by the dome and constructed to hold the globe in two different positions, as set forth.

7. The combination, with the side tubes and tube D, connecting the upper ends thereof, of the dome pivoted to said tube D, and provided with a notch, c, and the spring d, secured to one of said side tubes and engaging said notch, substantially as and for the purpose specified.

379,869. WHIFFLETREE-CLIP. FREDERICK W. HOWES, Florence, Ill. Filed July 26, 1887. Serial No. 245,167. (No model.)

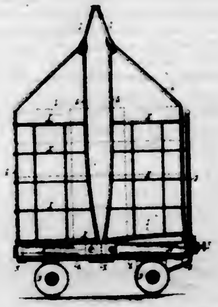


Claim.—1. The combination of the ring C, having an annular depression of regular but non-circular outline in one of its sides, the ring D, adapted to fit into said depression, and the lugs E, adapted to be bent over the ring D and retain it in position, substantially as and for the purpose set forth.

2. The combination, with the body of a whiffletree, of a ring adapted for attaching the whiffletree to a chain or clevis and having integrally-formed wings or hooks B, bent oppositely about said body, substantially as set forth.

3. The combination, with the body of a whiffletree, of the perforated hooks B' B", the ring C, formed integrally with said hooks, the ring D, adapted to fit a regular non-circular depression in the ring C, and the retaining-lugs E, substantially as shown and described, for the purpose set forth.

379,870. SLING AND TRUCK COMBINED. FREDERICK HOSSERT, Brooklyn, N. Y. Filed Nov. 10, 1887. Serial No. 254,823. (No model.)



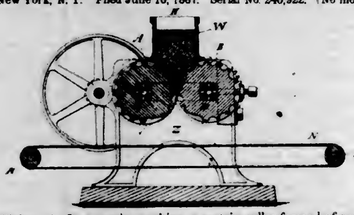
Claim.—1. A truck having suspending-cords G, passed beneath the truck-body and held in place by fastenings H, substantially as shown and described.

2. A truck having suspending-cords G, passed beneath the truck-body through fastenings H, secured thereto, whereby said suspending-cords are held in place, and having a netting, K, secured to and extending between the suspending-cords to retain goods on the truck, substantially as shown and described.

42 O. G.—79

3. A truck having suspending-cords G, passed beneath the truck-body, fastenings H to hold said cords in place, a netting, K, secured to the suspending-cords above the truck, and loops I, for connecting the suspending-cords to a lifting mechanism, substantially as shown and described.

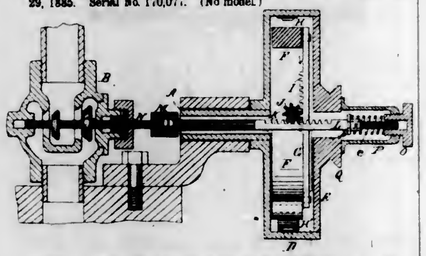
379,871. **MACHINE FOR MAKING CANDY.** HERMAN W. HOOPS, New York, N. Y. Filed June 10, 1887. Serial No. 240,922. (No model.)



Claim.—1. In a candy-machine, a matrix-roller formed of porous material mounted on a hollow radially-perforated shaft connected with a suitable liquid-supply, substantially as and for the purposes set forth.

2. In a candy-machine, the combination of two rollers consisting of matrix surfaces of porous material mounted on hollow radially-perforated shafts connected with a suitable liquid-supply, substantially as and for the purposes set forth.

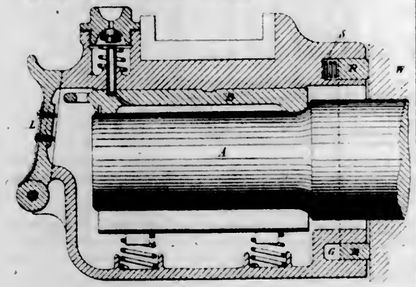
379,872. **ENGINE-GOVERNOR.** GEORGE M. HOPKINS, Brooklyn, assignor to the Economic Motor Company, New York, N. Y. Filed June 29, 1885. Serial No. 170,077. (No model.)



Claim.—1. The combination, in an engine-governor, of a cylindrical drum inclosing two pivoted weighted levers arranged to swing by centrifugal force in opposite directions, springs adapted to oppose the outward movement of the levers, a rack-bar jointed to the two pivoted weighted levers and arranged to be moved in one direction by the opposite movements of the two pivoted weighted levers, a pinion journaled in the drum and engaged by the rack-bar, and a valve-operating rod provided with a rack arranged to be engaged by the pinion, as herein specified.

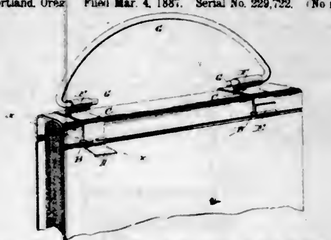
2. The combination, in a governor constructed substantially as herein described, of a valve-operating rod and a spring arranged to act thereon in unison with the weighted levers, and springs attached to the inner face of the governor-casing and arranged to press directly against the weighted levers to oppose the outward pressure of the weighted levers due to centrifugal action, substantially as herein specified.

379,873. **CAR-AXLE BOX.** DANIEL MACNER, No. 2 Westminster Chambers, Victoria Street, County of Middlesex, England. Filed Jan. 26, 1888. Serial No. 261,941. (No model.)



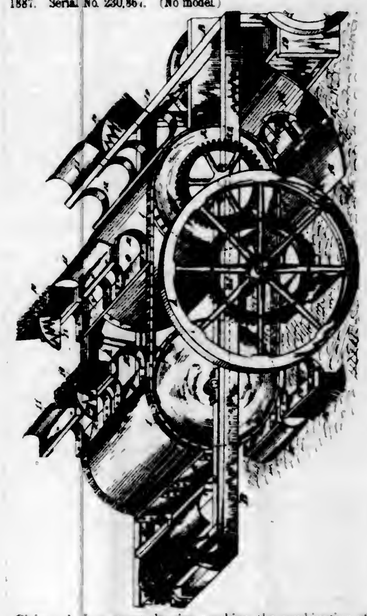
Claim.—In combination with an axle-box for railway rolling-stock, a packing-ring fitted in a groove formed in the inner side of the box and pressed against the boss of the running wheel by springs arranged in the groove behind the said ring, substantially as and for the purpose herein set forth.

379,874. **BINDING BOOKS.** JOHN J. MESTON and NATE S. DYGERT, Portland, Oreg. Filed Mar. 4, 1887. Serial No. 229,722. (No model.)



Claim.—The combination, with the book, of one or more strips, C, bent in the middle to form longitudinal sockets F, the handle G, having its ends seated in the sockets F, and staples B, securing the strip to the sides of the book, substantially as shown and described.

379,875. **STREET-CLEANER.** EDGAR P. NASH, Batavia, Ohio, assignor of one-fourth to R. W. C. Gregg, same place. Filed Mar. 14, 1887. Serial No. 230,867. (No model.)



Claim.—1. In a street-cleaning machine, the combination of the main frame B, the transverse drums 2 and 3, placed in the same horizontal plane, the elevating and depressing frame *a*, having its front end hinged on the shaft of the forward drum, 2, said forward drum being journaled in the main frame, and the rear drum being journaled in the elevating and depressing frame, and an endless carrier mounted on said drums and carrying a series of gleaners, substantially as described.

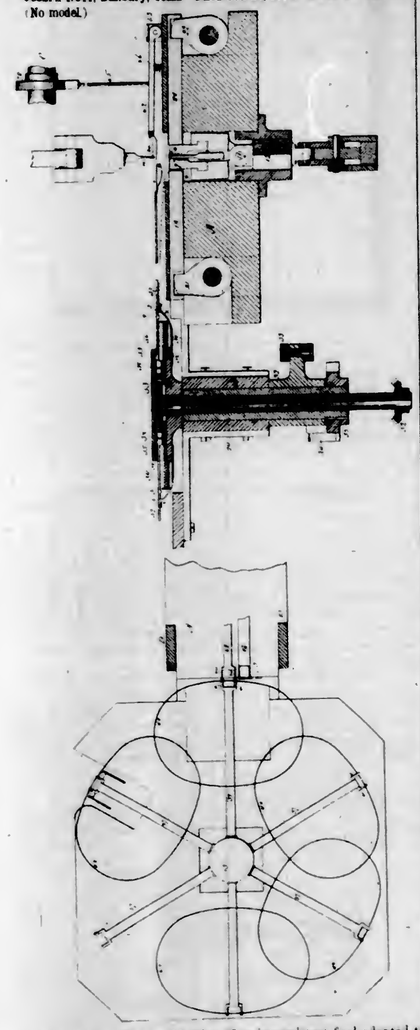
2. In a street-cleaning machine, the combination, with the concave incline 15, having movable sections 16, of an endless carrier provided with alternating series of brushes and scrapers, each corresponding with said movable sections in width, substantially as described.

3. In combination with the cleaners secured to the endless carrier by a yielding connection, the guide-shoes 13, attached thereto, substantially as specified.

4. In combination with an endless carrier, and cleaners secured thereto by yielding connections, a concave incline composed of a stationary upper portion, 15, hinged movable sections 16, each having a width corresponding with the cleaners, and springs 18, to hold said movable sections to their work, substantially as described.

5. In combination with a series of cleaners having the shoes 13, the concave incline having the movable sections 16, substantially as specified.

379,876. **MACHINE FOR APPLYING CLASPS TO HAT-WIRES.** JOSEPH NUTT, Danbury, Conn. Filed Oct. 24, 1887. Serial No. 253,174. (No model.)



Claim.—1. The combination of an intermittent feed adapted to carrying a strip of metal, a vertically-reciprocating slide above said feed, a stationary cutter in advance of said feed, a corresponding cutter applied to said slide, a stationary supporter, 8, a punch in said vertical slide over and corresponding to said supporter 8, benders 9 10, arranged on opposite sides of said supporter 8, mechanism substantially such as described, to impart a combined up-and-down and forward-and-back movement to said benders, with a reciprocating finger, *r*, arranged to work forward of said stationary cutter and in a plane parallel therewith, substantially as and for the purpose described.

2. The combination of an intermittent feed adapted to carry a strip of metal, a vertically-reciprocating slide, F, carrying a cutter, *d*, and punch *n*, stationary cutter *b*, corresponding to the cutter *d* of the slide, the stationary supporter 8, the benders 9 10, arranged upon opposite sides of said supporter 8, with mechanism for imparting a combined up-and-down and forward-and-back movement to said benders, a reciprocating finger, *r*, and the clamp *g*, substantially as and for the purpose described.

3. The combination of a stationary supporter, 8, corresponding reciprocating punch, *n*, benders 9 10, arranged upon opposite sides of said supporter, mechanism for imparting combined up-and-down and forward-and-back movement to said benders, rotating arms 37, terminating in fingers 41, distant from each other substantially the width of the supporter 8, the said fingers being adapted to receive and carry a hat-wire, with mechanism, substantially such as described, to impart a rotative forward-and-back and up-and-down movement to said fingers, substantially as described, and whereby the hat-wire carried by the fingers is presented between the said supporter 8 and the punch *n*.

4. The combination of an intermittent feed adapted to carry a strip of metal, a stationary cutter, *b*, stationary supporter 8, reciprocating cutter *d*, and reciprocating punch *n*, corresponding to the stationary supporter 8, benders 9 10, arranged upon opposite sides of said supporter 8, mechanism, substantially such as described, to impart a combined up-and-down and forward-and-back movement to said benders, rotating radial arms 37, carrying fingers 41, the said fingers distant from each other corresponding to the width of said supporter 8, the said fingers adapted to receive and carry a hat-wire, mechanism, substantially such as described, to impart a rotative forward-and-back and up-and-down movement to said fingers, vertical swinging arms 62, carrying fingers 64, corresponding to the said fingers 41, substantially as and for the purpose described.

5. The combination of an intermittent feed adapted to receive and carry a strip of metal, a stationary cutter, *b*, corresponding reciprocating cutter, *d*, stationary supporter 8, corresponding punch, *n*, benders 9 10, arranged upon opposite sides of said supporter 8, mechanism, substantially such as described, to impart a combined up-and-down and forward-and-back movement to said benders, reciprocating fingers *r*, intermittently-rotating radial arms 37, carrying fingers 41, distant from each other corresponding to the width of said supporter 8, mechanism, substantially such as described, to impart a rotative forward-and-back and up-and-down movement to said fingers, said fingers being adapted to receive and carry a hat-wire, with the plate 69, arranged upon the feed side of said benders and adapted for up-and-down movement, substantially as and for the purpose described.

6. The combination of a stationary supporter, 8, benders 9 10, arranged upon opposite sides of said supporter, mechanism to impart to said benders a combined up-and-down and forward-and-back movement, punch *n*, corresponding to said supporter 8, a turn-table, 28, radial slides 36, arranged thereon, radial arms 37, hung in said slides and adapted for an up-and-down swinging movement, the said arms carrying fingers 41, distant from each other corresponding to the width of the supporter 8, and the said fingers adapted to receive and carry a hat-wire, with a cam, 46, arranged to work against said slides, and whereby an outward movement is imparted to said arms when in line with said punch and supporter, substantially as described.

7. The combination of a stationary supporter, 8, benders 9 10, arranged upon opposite sides of said supporter, mechanism to impart to said benders a combined up-and-down and forward-and-back movement, punch *n*, corresponding to said supporter 8, a turn-table, 28, radial slides 36, arranged thereon, radial arms 37, hung in said slides and adapted for an up-and-down swinging movement, the said arms carrying fingers 41, distant from each other corresponding to the width of the supporter 8, and the said fingers adapted to receive and carry a hat-wire, with a cam, 46, arranged to work against said slides, and a cam, 54, on said turn-table, and corresponding cam, 55, on the adjacent surface of said arm 37, with a yielding spring arranged to support said arm against said cam 54, all substantially as described.

8. The combination of a stationary supporter, 8, benders 9 10, arranged upon opposite sides of said supporter, mechanism to impart to said benders a combined up-and-down and forward-and-back movement, punch *n*, corresponding to said supporter 8, a turn-table, 28, radial slides 36, arranged thereon, radial arms 37, hung in said slides and adapted for an up-and-down swinging movement, the said arms carrying fingers 41, distant from each other corresponding to the width of the supporter 8, and the said fingers adapted to receive and carry a hat-wire, with a cam, 46, arranged to work against said slides, and an ejecting-lever, 58, substantially as and for the purpose described.

9. The combination of a stationary supporter, 8, benders 9 10, arranged upon opposite sides of said supporter, mechanism to impart to said benders a combined up-and-down and forward-and-back movement, punch *n*, corresponding to said supporter 8, a turn-table, 28, radial slides 36, arranged thereon, radial arms 37, hung in said slides and adapted for an up-and-down swinging movement, the said arms

carrying fingers 41, distant from each other corresponding to the width of the supporter 8, and the said fingers adapted to receive and carry a hat-wire, with a cam, 46, arranged to work against said slides, and the vertically-swinging arm 62, terminating in fingers 64, said fingers corresponding to the said fingers 41 and adapted to bear thereon, substantially as and for the purpose described.

379,877. **TOOL-HANDLE.** OBED PECK, Rowe, Mass. Filed Oct. 3, 1887. Serial No. 251,297. (No model.)



Claim.—1. The handle A, formed with the slots *a a* and the central socket, *b*, between and communicating with said slots, the clamping-plates B B, each provided with a central bar, *y*, projecting inwardly to the said socket *b*, and the bolts *x x*, provided with nuts *x' x'*, and all combined and adapted substantially as and for the purposes described.

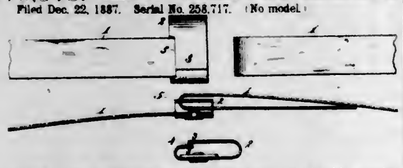
2. In a handle formed with a socket and side mortise, the side clamp, B, provided with a central bar, *y*, integral therewith, said bar formed at its inner end with the V-shaped notch *y'* and adapted to press against the bit-shank near the center of the socket when said shank is introduced therein, substantially as and for the purposes described.

3. In combination with the handle A, provided with the socket *b* and having suitable openings at right angles and into the said socket, the bars *y y*, formed to correspond to the size and shape of said openings and arranged to be adjustable therein, the ends of said bars adapted to conjointly press upon the opposite sides of a bit-shank placed in the handle-socket, all substantially as and for the purposes described.

4. In a handle formed with a wood socket made centrally in said handle, the opposite sides of said handle forming the sides of the socket and adjustable, a metal adjustable clamping-socket formed by the ends of bars *y* and extending inwardly and centrally and at right angles to said wood socket, and the parts forming both the wood and the metal sockets adapted to simultaneously grasp and hold bit-shanks of varying sizes placed therein, and all combined substantially as and for the purposes set forth.

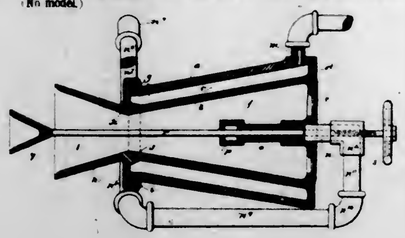
5. In a handle formed with a shank-socket, the combination of two clamping-plates, each provided with a bar integral therewith and extending inwardly from each side and at a right angle to the shank-socket, each centrally of the handle and of said shank-socket, the inner ends of said bars adapted to clamp the bit-shank upon opposite sides and to center said shank in the operation of clamping, and clamping-bolts, the said bar arranged to be forced inwardly by said clamping-bolts applied to the clamping-plates and extending through the handle, substantially as and for the purposes specified.

379,878. **BALE-TIE.** LAWRENCE C. RYAN, Hawkinsville, Ga. Filed Dec. 22, 1887. Serial No. 258,717. (No model.)



Claim.—The combination, with a bale-band, of a buckle consisting of a rectilinear strip of metal attached to the band, and having both ends curved around and extended toward each other transversely to the band, with the extremity of one end projecting over but separated from the extremity of the opposite end, said overlapping ends being adapted to be pressed into direct contact, substantially as and for the purpose described.

379,879. **HYDROCARBON SUPERHEATER AND BURNER.** CHAS. T. SCHOEN, Philadelphia, Pa. Filed Aug. 31, 1887. Serial No. 248,400. (No model.)



379,879.

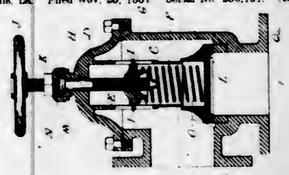


Claim.—1. In a hydrocarbon superheater and burner, two shells, each of the form of a truncated cone and arranged one within the other and forming an outer chamber between the two shells and an inner chamber within the inner shell, an inlet into the outer chamber for the hydrocarbon which is vaporized therein, and separate inlets into the inner chamber for the steam and air which mix therein, combined with a third chamber formed as a nozzle, and communicating ports with the before-named chambers at their exit ends for combining the vaporized hydrocarbon and mixed air and steam as they issue from their respective chambers, substantially as described.

2. In a hydrocarbon superheater and burner, a shell, *a*, of the form of a truncated cone, a second and smaller shell, *b*, of similar shape, arranged within the first-named shell and forming an outer annular chamber, *c*, between these two shells, which is coextensive with their length, and also forming an inner chamber, *f*, a hydrocarbon-inlet to said outer chamber, a steam-inlet into the inner chamber, an air-inlet valve arranged in the base of the inner shell and opening into the inner chamber, and a mixing-chamber constructed as a flaring nozzle and secured to the two shells at their truncated ends and provided with openings which form a communication with the outer chamber and also in open communication with the inner chamber, substantially as described.

3. The combination, with a furnace, of a hydrocarbon superheater and burner composed of an annular outer oil-chamber and an internal air and steam chamber, and a mixing-chamber formed as a nozzle and connected and communicating with the said two chambers, and the sinuous steam coil or pipe surrounding the said oil-chamber and having an inlet into the said steam and air chamber and affording the heat necessary to initially vaporize the oil, and thereafter subjecting the steam to the heat in the fire-chamber for superheating it for admixture with the air and vaporized oil, substantially as set forth.

379,880. **BACK-PRESSURE VALVE.** WALTER A. TAYLOR, New Orleans, La. Filed Nov. 26, 1887. Serial No. 256,131. (No model.)



Claim.—A back-pressure valve consisting of the casing, the bonnet D, having the tubular guide E, the valve L, the spring F, the nut G, the screw H, having the collar M swiveled in a seat in the bonnet and provided with an attached external handle, and the nut N, for holding the swiveled collar in its seat, substantially as described.

379,881. **CUTTING APPARATUS.** JOHN C. VOSS, Bedford, Ind. Filed Sept. 30, 1885. Renewed Aug. 24, 1887. Serial No. 247,742. (No model.)

379,881.



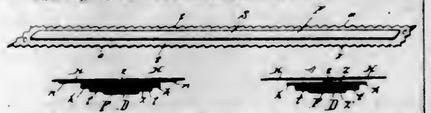
Claim.—1. The combination of the finger-bar, the cutter-bar having a beveled face or edge, *c*, and a stop arranged to engage said face, substantially as set forth.

2. The combination, with the finger-bar provided with a way for the cutter-bar, of a grooved overlapping portion projected forward above said way, the cutter-bar having a beveled rib on its upper side, and roller-bearings interposed between the said beveled rib and the overlapping portion of the finger-bar, substantially as set forth.

3. The improvement in cutting apparatus substantially as herein described and shown, consisting of the finger-bar having grooves in its upper side and provided with a way for the cutter-bar, and with a grooved overlapping portion projected forward above said way, the cutter-bar having a beveled rib on its upper side, and balls placed in the grooves in the upper side of the finger-bar and between the overlapping portion of the latter and the beveled rib of the cutter-bar, substantially as and for the purposes set forth.

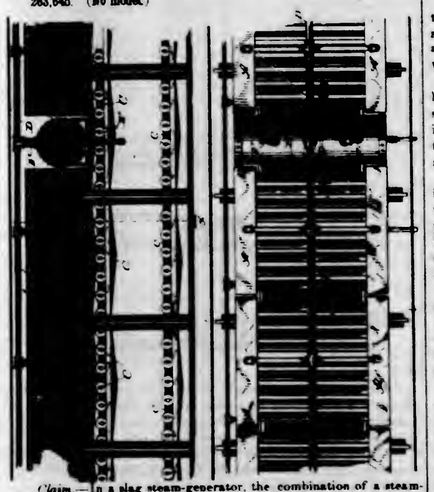
4. The combination of the finger-bar having an overlapping portion, the cutter-bar having a rib or bar on its upper side, the edge of said rib and the wall of said overlapping portions forming bearings, one of which is beveled, and balls interposed between said bearings, substantially as set forth.

379,882. **GARMENT-STAY.** ROSCOE B. WHEELER, Detroit, Mich. Filed Aug. 18, 1887. Serial No. 247,268. (No model.)



Claim.—A garment-stay consisting of a flexible blade having a textile covering on one side and a gutta-percha-tissue coating or covering on the opposite side, the said gutta-percha tissue being adherent to the blade and to the textile covering upon each edge thereof, whereby the blade is retained in place, and the stay is adapted to be attached to the open seam of a garment by the application of heat, substantially as described.

379,883. **SLAG-FURNACE.** ORSEMUS T. X. ADAMS, Chicago, Ill., assignor to Melinda Peck, same place. Filed Feb 10, 1888. Serial No. 263,645. (No model.)



Claim.—In a slag steam-generator, the combination of a steam-generating boiler, a carrier conveying heated or molten slag underneath the same, and a steam-drum arranged below the water-line of the water in the steam-generating boiler and over the heating-surface, substantially as described.

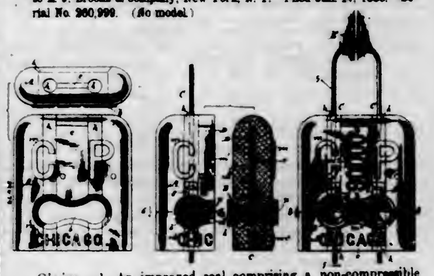
379,884. **PRINTING DEVICE.** STEPHEN G. ADAMS and JOHN B. SEYMOUR, Jr., St. Louis, Mo., assignors of one-third to Charles L. Leonori, same place. Filed June 25, 1887. Serial No. 242,462. (No model.)



Claim.—1. The combination of the bracket D, the arm G, and spring g^3, actuating said arm, with the bar *g*, secured to said arm, and type-printing device F, laterally adjustable on said bar, substantially as described.

2. The combination of the shaft C and roller B thereon, the bracket D, and arms *d*, in which said shaft is journaled, with the spring-actuated arm G, journaled at g^4 in the said bracket, and the printing device F, adjustably secured to said arm by projection f^5 and set-screw *g'*, substantially as described.

379,885. **SEAL.** EDWARD J. BROOKS, East Orange, N. J., assignor to E. J. Brooks & Company, New York, N. Y. Filed Jan. 17, 1888. Serial No. 260,999. (No model.)



Claim.—1. An improved seal comprising a non-compressible transparent shell having a threading-hole or threading-holes and a supplemental bore, a compressible seal part occupying said bore, and a flexible shackle having an end or ends fastened by said seal part within the transparent shell, substantially as hereinbefore specified.

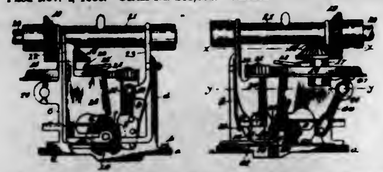
2. In combination with a transparent shell having a threading-hole or threading-holes and a supplemental bore, and a compressible seal part occupying said bore, a flexible shackle having each threading end provided with a transparent securer fast on the wire body of the shackle within the seal part and transparent shell, substantially as hereinbefore specified.

3. In a seal, a transparent shell having a threading-hole or threading-holes, a supplemental bore, and a card-chamber open only at bottom and crossed by said bore, in combination with a compressible seal part occupying said bore, a flexible shackle having an end or ends fastened within the transparent shell by said seal part, and a card occupying said chamber and held in place by the seal part, substantially as hereinbefore specified.

4. The combination, with a flexible shackle having two threading ends, of a compressible seal part having a pair of effective portions and a connecting portion, and a non-compressible shell having a cross-bore occupied by said seal part, a pair of threading-holes extending through said shell and said effective portions of the seal part to receive said shackle ends, substantially as hereinbefore specified.

5. The combination, with a flexible shackle having two threading ends, of a compressible seal part comprising a pair of effective portions having holes to receive said ends and a connecting portion which unites said effective portions, a transparent shell having a cross-bore to receive said seal part, longitudinal holes to receive said shackle ends, and a chamber open at bottom between said holes, and a card occupying said chamber above said seal part and held in place by the latter, substantially as hereinbefore specified.

379,886. **KNOTTING MECHANISM FOR HARVESTERS.** ROBERT BROWN, Miamisburg, Ohio, assignor to Hoover & Gamble, same place. Filed Nov. 4, 1886. Serial No. 218,002. (Model.)



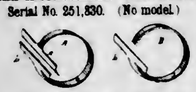
Claim.—1. In a knotting mechanism, the combination, with the knotter-driving wheel 16, journaled horizontally within the frame *c d* and having a pin, 29, a segment of gear-teeth, 33, and the cam-race 48, of the cord-carrying disk, the knotting-jaws, and the reciprocating knife-plate having the stripper 52, said knotter-driving wheel receiving motion from the main driving-shaft, substantially as described.

2. In combination with the frame *c d* and horizontal sleeve 21, inclosing the knotter mechanism, the knotter-driving wheel 16, journaled horizontally within the frame *c d*, having its shaft arranged in the sleeve, said wheel being provided with a segment of gear-teeth, a pin and a cam-race, the knotting-jaws, cord-disk mechanism, and reciprocating knife-plate, substantially as described.

3. In combination with the skeleton frame, the main driving-shaft 20, and the sleeve 21, within which said driving-shaft is arranged, the bevel-gears, the knotter-driving wheel 16, journaled horizontally within said frame *c d*, and having a segment of gear-teeth, 33, pin 29, and cam-race 48, and the knotting devices, substantially as described.

4. In combination with the skeleton frame having sleeve 21, within which frame the knotting mechanism is inclosed, the knotter-driving shaft 20, arranged in said sleeve, the knotter-driving wheel 16, journaled horizontally within the inclosing-frame, having segment of gear-teeth 33, pin 29, and cam-race 48, the bevel-gears, and the knotter-driving wheel, substantially as described.

379,887. **REPEATING-CHECK FOR MUSIC-SHEETS OF MECHANICAL MUSICAL INSTRUMENTS.** JESSE CRANNELL, Troy, N. Y. Filed Oct. 8, 1887. Serial No. 251,830. (No model.)

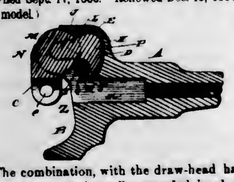


Claim.—1. The combination, with the music-sheet roller of a mechanical musical instrument and a music-sheet therefor, of an adjustable check applied to the roll to prevent the music-sheet from unwinding beyond a limit determined by the adjustment of the check.

2. A check consisting of a ring of elastic material, as *a*, having a clamping-bar, as *c*, for application to a mechanical music-sheet roll, substantially as and for the purpose specified.

3. A check consisting of a ring of elastic material, as *a*, and having two clamping-bars, as *c* and *b*, substantially as and for the purpose specified.

379,888. **CAR-COUPLING.** ROBERT H. DOWLING, Newark, Ohio, assignor of two-thirds to Charles H. Follett and Charles Follett, both of same place. Filed Sept. 17, 1886. Renewed Dec. 15, 1887. Serial No. 258,014. (No model.)



Claim.—1. The combination, with the draw-head having a horn or guide-arm at one side of its laterally-extended head and a recess between lugs at the other side, of the movable claw provided with a recessed hub having a rear hook and a ribbed locking-pin formed with a stop near its lower end, substantially as specified.

2. The combination, with a draw-head having a concave front face provided with a horn or guide-arm at one side and bearing-lugs having at the other side tapering bearings on their inner faces, of a movable claw having recesses in its hub portion to engage the tapering bearings, and having a rearwardly-extending hook and a locking-pin having a stop, substantially as specified.

3. The combination, with a recessed draw-head having the tapering bearings, of the movable claw having U-shaped recesses and a recessed hook, and the ribbed locking-pin provided with a stop and removable cross-pin, substantially as specified.

4. A draw-head having a detachable claw and reciprocating locking-pin engaging a recessed hook of said claw, substantially as specified.

379,889. **SELF-ACTING AIR-VALVE.** DAVID T. ELLIS, Bridgeport, Conn. Filed Oct. 17, 1887. Serial No. 252,555. (No model.)



Claim.—1. A self-acting valve consisting of a case having a seat, a detachable valve, a metallic coil supporting said valve, and a float having a rigid loop, which also engages the valve, whereby the entrance of either steam or water acts to raise the valve against the seat—the former by expansion of the coil and the latter by raising the float.

2. A self-acting valve consisting of a case having a seat, a valve adapted to engage the seat, a cup engaging the valve, and a metallic coil carrying the cup, whereby entrance of steam into the case raises the valve against the seat by expansion of the coil, but the direct action of steam upon the valve is prevented, substantially as described.

3. The combination, with the case having a seat, of a coil, a detachable valve carried thereby, and a float having a rigid loop engaging the valve, substantially as described.

4. The combination, with the case and an adjustable valve-seat, of a valve adapted to engage said seat, and a cup carried by a metallic coil, upon which the valve rests, so that expansion and contraction of the coil raises and lowers the valve.

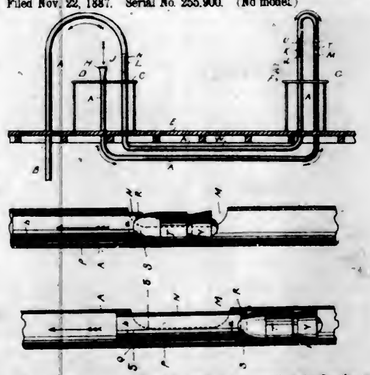
5. The combination, with the case and an adjustable valve-seat, of a valve adapted to engage said seat, a cup upon which the valve rests, a metallic coil carrying the cup, and a float having a rigid loop, also engaging the valve, so that the entrance of steam closes the valve by expansion of the coil and the entrance of water closes it by raising the float.

6. The valve-case having upper and lower caps, and a threaded tube passing through the upper cap and having a valve-seat at its lower end, in combination with a valve, a cup upon which the valve rests, and a metallic coil carrying the cup.

7. The case having upper and lower caps and a threaded tube passing through the upper cap and having a valve-seat at its lower end, in combination with a valve adapted to engage the seat and having a grooved stem passing into the tube, and a cup upon which the valve rests, and a metallic coil carrying the cup.

8. The combination, with the seat, of a valve having a cone with a slot, 15, a cup upon which the cone rests, a metallic coil carrying the cup, and a float having a rigid loop, which passes over the cup and lies in the slot, substantially as described.

379,890. **PNEUMATIC CASH-CARRIER APPARATUS.** JOHN L. GIVEN, Melrose, assignor to himself and George B. Kelly, Boston, Mass. Filed Nov. 22, 1887. Serial No. 255,900. (No model.)



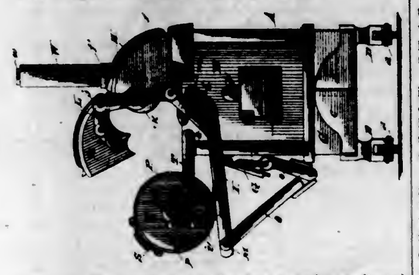
Claim.—1. The combination, with a pneumatic tube for the transmission of a carrier, &c., therethrough, provided with an opening or outlet for the delivery thereat of the carrier, &c., of a valve adapted to move back and forth in said tube to open and close said opening, of a construction to allow air to pass freely through it, and adapted to receive a carrier, &c., to close said valve to the passage of air through it, for the purpose specified.

2. The combination, with a pneumatic tube for the transmission of a carrier, &c., therethrough, provided with an opening or outlet for the delivery of a carrier thereat, of a valve adapted to move back and forth in said tube to open and close said opening, of a construction to allow air to pass freely through it, and provided with a seat at one end for the reception of a carrier, &c., to close the valve to the passage of air therethrough, for the purpose specified.

3. The combination, with a pneumatic tube for the transmission of a carrier, &c., therethrough, provided with an opening or outlet for the delivery of a carrier thereat, of a valve made of tube form adapted to move back and forth in said tube to open and close said opening, open from end to end for air to pass freely through it, and provided with a seat at one end for the reception of a carrier, &c., to close the valve to the passage of air therethrough, for the purpose specified.

4. The combination, with a pneumatic tube for the transmission of a carrier, &c., therethrough, provided with an opening or outlet for the delivery of a carrier thereat, of a valve made of tube form, open from end to end for air to pass freely through it, arranged to move back and forth in said tube to open and close said opening, having a longitudinal slot, P, to engage with a pin, Q, and provided with a seat at one end adapted to receive the end of the carrier and close the valve to the passage of air therethrough, for the purpose specified.

379,891. **APPARATUS FOR ROASTING COFFEE.** ISAAC C. GORDON, Charleston, S. C., assignor of one-half to Louis Seel, same place. Filed June 26, 1887. Serial No. 242,503. (No model.)



Claim.—1. The combination, with a furnace, and oven situated above the same, having a sectional hinged top and door, of a roasting-cylinder provided with journals at its ends, the pivoted levers I I, provided with bearings *i* for the journals of the cylinder when the oven is closed, and the levers and links J, K, and L, connecting levers I with the hinged top of the oven, whereby the same is opened upon the depression of said levers, all substantially as specified.

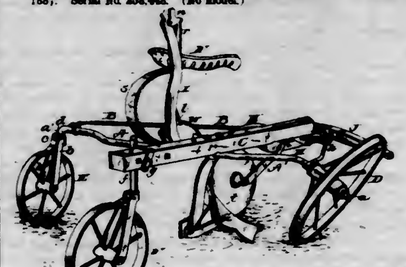
2. The combination, with the furnace A, constructed substantially as described, of the cover H, composed of the fixed portion *f* and hinged portion *h*, the levers I I, pivoted to the ends of furnace A below top H, the pivoted levers K on the ends of part *f*, and the links J and L *l*, connecting levers K with the part *h* and levers I I, respectively, whereby the depression of the said levers raises the part *h*, all constructed and arranged substantially as set forth.

3. The combination of the furnace A, having plate E, and hinged side or door G above said plate, and the top H, composed of the fixed portion *f* and hinged portion *h*, substantially as described, with the levers I I, pivoted on furnace A, the rod M, connecting the upper ends of said levers, the series of links and levers J, K, and L, connecting each lever I with the corresponding end of part *h*, and the bars O *o*, connecting the rod M with the door G, all substantially as and for the purpose described.

4. The combination, with the furnace A, having door G and hinged top portion, *h*, substantially as described, of the levers I I, pivoted to the furnace and connected at top by a rod, M, the levers and links J, K, and L, connecting rods I with the part *h*, and the bars O *o*, connecting rod M with door G, with the cylinder P, mounted by its journals on supporting-arms T T when the oven is open and adapted to be engaged by fingers *i'* on levers I and rolled thereby into the oven when the same is closed, all constructed and arranged substantially as and for the purpose described.

5. The combination of the portable furnace A, having an oven at top provided with a hinged portion, *h*, and door G, the levers I I, having rearwardly and upwardly curved arms for forming journal-bearings *i* near their pivots and upstanding fingers *i'* near their outer ends, the centrally-pivoted levers K, and the links J, L, and *l*, connecting levers K with the levers I and portion *h*, and the rod M and bars O *o*, connecting said levers I with the door G, with the arms T T and the cylinder P, having journals *r* and *q*, the latter being hollow, all constructed and arranged substantially in the manner and for the purpose described.

379,892. **SULKY-PLOW.** MILTON T. HANCOCK, Little Rock, Ark., assignor to the Hancock Plow Company, same place. Filed Dec. 30, 1887. Serial No. 258,443. (No model.)



Claim.—1. The combination, with the axle having its ends bent and provided with bearing-arms, as described, of a frame-brace part and a frame-beam part clipped to the axle and to its brace, with the right or furrow wheel and a left or land caster-wheel both fixed upon the axle-arms, and a caster-wheel fixed to and carried upon the frame-beam in rear of the axle and the plow, substantially as described.

2. The combination of the frame, the furrow-wheel, the land caster-wheel, and the rear furrow caster-wheel, arranged as described, with the plow having its beam pivoted to the axle-hanger *i* and suspended from the frame-brace by a link, *j*, and having the draft attachment, substantially as described.

3. The combination, with the axle having the right or furrow wheel in advance thereof, a caster-wheel on its left or land end, a frame, and a caster-wheel connected with the latter in rear of the plow, of the plow having its beam pivotally connected to the axle by the hanger *i* and to the front brace by the link *j*, and provided with the draft attachment, substantially as described.

4. The frame consisting of the axle, the front brace, and the longitudinal beam secured to the axle and to the front brace, in combination with the three carrying-wheels, two of which are casters, arranged as described, and the plow-beam pivoted to the frame at its front and rear ends and having the draft attachment, substantially as described.

379,893. **MACHINE FOR CUTTING BLANKS FROM TIN.** WILLIAM HIPPERLING, New York, N. Y., assignor to Stephen A. Ginna, Plainfield, N. J., and Richard A. Donaldson, Brooklyn, N. Y. Filed Dec. 5, 1887. Serial No. 256,991. (No model.)

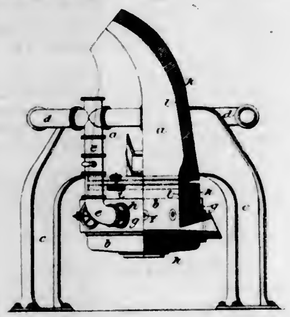
Claim.—1. The press and feed-table, combined with the chain having an intermittent motion, the clamps consisting of fingers T V, secured to said chain, and the pressure-bar for closing said clamps on the edge of the sheet of metal, substantially as and for the purposes described.

2. The press and feed-table, combined with the chain mounted on wheels at opposite sides of the press, the clamps consisting of fingers T V, secured to said chain, the pressure-bar for closing said clamps, a gage on the feed-table for the sheets of metal, and mechanism, substantially as described, between the power-shaft of the press and the shaft of one of the chain-wheels for imparting to the chain an intermittent motion, substantially as set forth.

3. The press and feed-table, combined with the chain having an intermittent motion, the clamps consisting of the fingers T V, secured to said chain, the fingers *w*, also secured to said chain, a gage on said feed-table, and the pressure-bar for closing said clamps, substantially as and for the purposes set forth.

4. The press and feed-table, combined with the endless chain having an intermittent motion, the angle-plates Q, having fingers T, secured to said chain, the pivoted spring-fingers V, the vertically-adjustable pressure-bar *a*, for closing the fingers V, and the gage H, applied upon said table, substantially as and for the purposes set forth.

379,894. **CONVERTER.** ROBERT W. HUNT, Troy, N. Y., assignor to the Clapp & Griffiths Steel Company, Pittsburg, Pa. Filed Feb. 26, 1886. Serial No. 193,302. (No model.)



Claim.—1. A sectional converter having a supported upper section and a removable lower section for containing the charge suspended on the upper section, and provided with tuyeres extending through its sides at intervals entirely around the converter, substantially as and for the purposes described.

2. A sectional converter having a supported upper section, in combination with a removable lower section for containing the charge, provided with tuyeres extending through its sides, substantially as and for the purposes described.

3. A sectional converter provided with tuyeres having a supported upper section, in combination with a removable lower section for containing the charge, substantially as and for the purposes described.

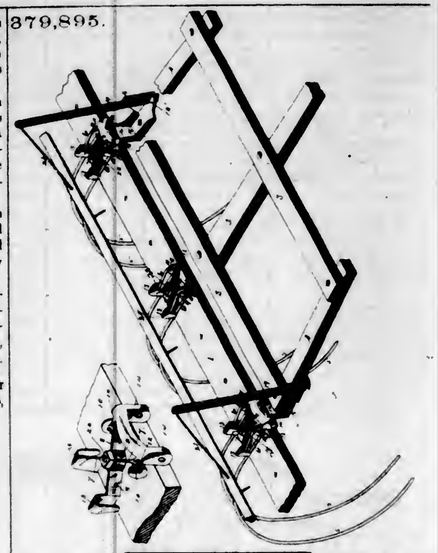
379,895. **HORSE HAY-RAKE.** JAMES H. JONES, Rockford, Ill., assignor to Emerson, Talcott & Company, same place. Filed July 7, 1887. Serial No. 243,644. (No model.)

Claim.—1. The combination, with the tooth-holding spider consisting, essentially, of a hub portion, arms radiating from the hub portion, the rearwardly-extending arms provided with loops, and the forwardly-extending arms with laterally-extending ears, of a rake-tooth having its forward end bent around the said lateral-extending ears and back upon the tooth, and, together with the backward-bent portion, projecting rearwardly within the said loop on the arm, substantially as set forth.

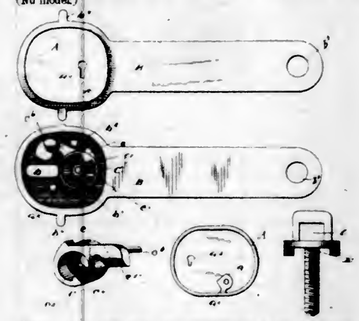
2. The herein-described tooth-holding spider, consisting, essentially, of a hub portion provided with a bolt-hole, arms radiating from the hub, the forwardly-extending arms being provided with laterally-extending ears on the ends and the rearwardly-projecting arms being provided with loops at their ends, and shoulders in front of the said laterally-extending ears, whereby a single spider is adapted to secure two adjacent teeth in position, substantially as set forth.

3. The combination, with a tooth-holding spider and with the tongue-frame, of a socket fixed to the tongue-frame and hinge-jointed to the tooth-holding spider, substantially as and for the purpose set forth.

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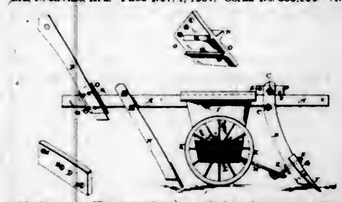


379,896. **HASP-LOCK.** DANIEL H. KING, Kendallville, Ind., and HENRY WILLIAMS, Toledo, Ohio. Filed Nov. 19, 1887. Serial No. 255,659. (No model.)



Claim.—In a hasp-lock, the combination of the face-plate A with the key-hole a^3, and the shoulder *a*, containing the screw-threaded hole a', the hasp-plate B, with the screw-hole a^8, the slot *b*, the hole b^3, projections b' and b^2, and the ears b^4, the rotary lock-bolt C, pivoted upon projection b' of plate B and containing the cavities or recesses c' c^2 and the shoulders c^3 c^4 and the end c^5, the spiral spring D, coiled upon the projection b', and the screw-eye E, or suitable staple, substantially as described and shown.

379,897. **COMBINED PLOW AND PLANTER.** WILLIAM F. LESLIE, Nashville, Ark. Filed Nov. 1, 1887. Serial No. 253,986. (No model.)



Claim.—1. The combination of the plow-beam with a plow-standard, the two bolts which are passed through the standard above and below the beam, and the wedge-block which is placed upon the top edge of the beam, substantially as shown.

2. The combination of the hopper, made of flexible material, the axle which passes through the hopper and is provided with a stirring device at its center and the wheels at its ends, and the bent rod or braces by which the ends of the axle are secured to the standard, substantially as set forth.

3. The combination of the hopper, made of any flexible material, the axle which passes through its lower end and is provided with the wheels K and the stirring device L, the bent rod or braces secured to the ends of the axle, the hook-bolt H, the upper portion of the shovel or furrow-opener, and the standard B, substantially as specified.

4. The combination of the beam, the plates or castings O, provided with the flanges Q upon their inner sides, the flanges R upon their outer sides, and the bolt-holes through their ends, with the handles and the clamping-bolts, substantially as shown.

379,898. **GUIDE FOR HEEL-PLATES.** RUSSELL H. LEWIS, Providence, R. I., assignor to Frederick Richardson, same place. Filed July 29, 1887. Serial No. 245,579. (No model.)

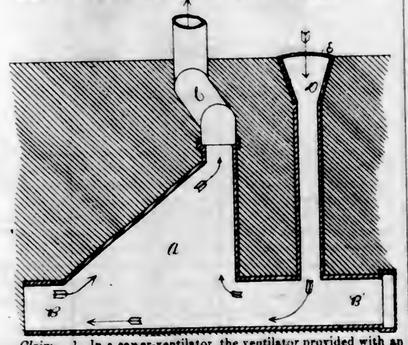


Claim.—1. The combination, as hereinbefore set forth, with the holder provided with an elevated table formed with guide notches or eyes for receiving the prongs of the heel-plate and holding the same in position, of the one or more depending guide projections gaged to abut against the outer face of the heel and to properly locate the position of the plate, substantially as and for the purpose herein described.

2. The combination, as hereinbefore set forth, with the holder 5, provided with the table 6, formed with the guide-notches 7, of the guide projections 9, depending from the holder, substantially as and for the purpose herein described.

3. A holder for heel-plates provided with supporting-guides for receiving the prongs of the heel-plate and holding the same in position, and having a guide device for gaging the location of the plate while being driven, as and for the purpose herein described.

379,899. **SEWER-VENTILATOR.** WILLIAM H. MCANDREWS, Youngstown, Ohio, assignor to the McAndrews Sanitary Company, same place. Filed Sept. 2, 1885. Serial No. 176,013. (No model.)



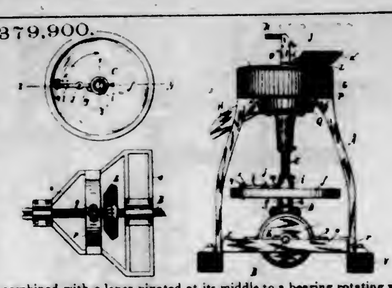
Claim.—1. In a sewer-ventilator, the ventilator provided with an expansion-chamber, A, which is wider at the bottom than at the top and has an abrupt front wall, the gas-exit C, connecting with the expansion-chamber, and the fresh-air inlet D, connecting with the ventilator in front of the abrupt wall of the expansion-chamber.

2. In a sewer-ventilator, the ventilator provided with an expansion-chamber, A, which is wider at the bottom than at the top and has an abrupt front wall, the gas-exit C, connecting with the expansion-chamber, and the fresh-air inlet D, connecting with the ventilator in front of the abrupt wall of the expansion-chamber and in close proximity thereto, as set forth.

379,900. **GRINDING-MILL.** GEORGE H. MCCULLOCH, Lena, Ill., assignor of one-half to John McCulloch, same place. Filed May 28, 1887. Serial No. 239,629. (No model.)

Claim.—1. In a grinding-mill, a driving-shaft having a gear rigidly fixed thereon and a burr-shaft bearing a rigidly-attached lug and a loosely-mounted gear meshing with the gear upon the driving-shaft,

379,900.



combined with a lever pivoted at its middle to a bearing rotating with said loosely-mounted gear and having one of its ends normally in engagement with said lug, and a breaking pin fixing the opposite end of said lever to said bearing, whereby the rotation of the power-shaft may be transmitted through said gears, lever, and lug to said burr-shaft, but only so long as the resistance of the burr-shaft is insufficient to break said pin.

2. In a grinding-mill, the combination of a rigid frame, a swinging shaft-support mounted in said frame, means for elevating the free end of said support, a driving-shaft mounted upon said support, a vertical shaft stepped in said support and having a sliding bearing in said frame, a gear fixed upon said driving-shaft, a gear with a connected balance-wheel loosely mounted upon said vertical shaft and meshing with the first-mentioned gear, a lug rigidly fixed upon said vertical shaft, a lever pivoted to said balance-wheel and normally engaging said lug, and a breaking pin adapted to retain said lever in its normal position, substantially as and for the purpose set forth.

379,901. **FRICTION-HINGE.** FRANK W. MIX, New Britain, Conn. Filed Sept. 10, 1887. Serial No. 249,337. (No model.)



Claim.—A friction-hinge consisting, essentially, of a pintle and a leaf, the latter having a concave bearing for one end of the pintle, and a friction-plate free at one end and secured at its other end to the leaf, the said friction-plate bearing on the pintle and preventing the latter by its frictional contact therewith from accidentally turning, substantially as set forth.

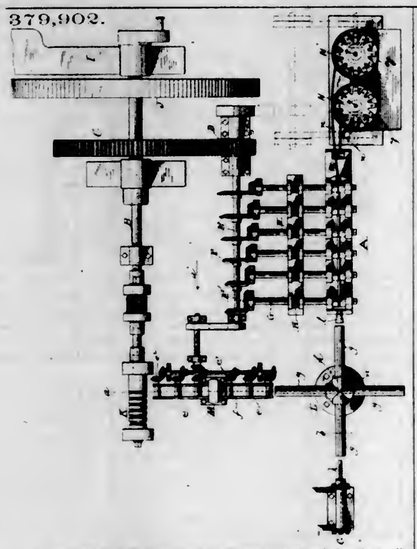
379,902. **ROLLING-MILL PLANT.** CHARLES H. MORGAN and KARL J. SUNSTROM, Worcester, Mass.; said Sunstrom assignor to said Morgan. Filed July 16, 1887. Serial No. 244,473. (No model.)

Claim.—1. A rolling-mill plant comprising a primary set of reducing-rolls for partially reducing the metal billet or bar, a series of supporting and carrying rolls arranged to turn in suitable stationary bearings, and having a device, substantially as described, for cutting or trimming the billets combined therewith, a rotary transferring device fitted to turn in a socketed support, or its equivalent, for conveying the billets from the aforesaid carrying-rolls to a position in line with a continuous train of reducing-rolls, means, substantially as described, for pushing the billet along said transferring device in between the first set of rolls of said train, the continuous train of rolls aforesaid, a reeling-machine for taking up the rods and coiling the same as fast as delivered from the finishing-rolls of said train, and means, substantially as shown and described, for supporting and operating the various parts composing the aforesaid plant.

2. In a rolling-mill plant, a series of horizontal carrying-rolls arranged and having means for turning the same, substantially as shown and described, and also provided with a cutter or trimmer device, and a rotary transferring device arranged to receive the billets from said carrying-rolls, both interposed between a set of primary reducing-rolls and a continuous train of rolls, the carrying-rolls being adapted to receive the billets from the set of primary rolls, and the transferring device to deliver them to the continuous train, substantially as shown and described.

3. In a rolling-mill plant, a rotary transferring device arranged between a primary set of reducing-rolls, K, and a continuous train of reducing-rolls, A, and having means, as described, for pushing the billet along said transferring device in between the first set of rolls of said train, substantially as and for the purpose set forth.

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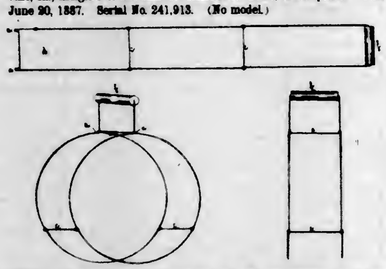
4. In a rolling-mill plant, a series of supporting and carrying rolls, and a rotary transferring device arranged between a primary set of reducing-rolls, K, and a continuous train of reducing-rolls, A, or their equivalent, said carrying-rolls being adapted to receive the billet from the primary set of rolls and deliver it to the transferring device, and the latter having means, as described, for pushing said billet along the interior thereof and in between the first set of rolls of said train, substantially as and for the purpose set forth.

5. The combination of the cutting-off or trimming device M with the series of supporting and carrying rolls *e*, fitted to turn in stationary bearings, and operated substantially as set forth.

6. The combination of the rotary or swivel device L with the socketed support *n*, substantially as and for the purpose set forth.

7. The receptacle or tube constructed, as set forth, for receiving the heated bar or rod and protecting it from the atmosphere while the same is being transferred from one series of rolls to another, substantially as shown and described.

379,903. **WATERMELON-HOLDER.** GEORGE H. MOSER, Belleville, Ill., assignor of one-half to Charles R. Dake, same place. Filed June 20, 1887. Serial No. 241,913. (No model.)



Claim.—A package-holder formed of one continuous wire bent into parallel lines held apart by braces or spacers and the ends held in opposite ends of a tubular handle, whereby the wire loop thus formed may be wrapped about the package and through its end passed the handle, so as to draw the wire tightly around the package, as described.

379,904. **ELEVATED RAILROAD AND CONDUIT FOR ELECTRIC WIRES, &c.** ALBERT C. OSBORN, Philadelphia, Pa., assignor to the American Pneumatic Railway Company, of Tennessee. Filed June 23, 1887. Serial No. 242,236. (No model.)

Claim.—1. In a combined elevated railroad and conduit, the columns A, having the extension C, in combination with the conduit B, substantially as and for the purpose set forth.

379,904.



2. The cross-ties of a railroad, in combination with a conduit for electric wires, &c., said ties being removably sustained on the conduit, substantially as described.

3. A railroad, in combination with a conduit, the cross-ties being interlocked with the walls of the conduit by means of joints, substantially as described.

4. In a combined elevated railroad and conduit, the column A, having the extensions C, rabbeted at *e*, in combination with the cross-ties F, substantially as described.

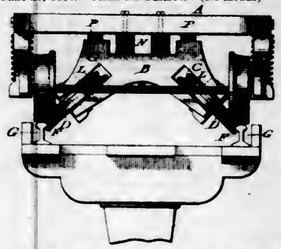
5. In a combined elevated railroad and conduit, the column A, having the extensions C, rabbeted at *e*, in combination with the conduit B and the cross-ties F, having recesses *d d*, substantially as and for the purpose set forth.

6. In a combined elevated railroad and conduit, the column A, having the extensions C C, in combination with the conduit B, the brackets F', the cross-ties F, and stringer E, with rails thereon, substantially as described.

7. The columns A, having extensions C, rabbeted at *e*, in combination with the conduit B, cross-tie F, recessed at *d d*, the brackets F', the stringers E, and rails D, substantially as described.

8. In a combined elevated railroad and conduit, columns having extensions thereon, a conduit located between said extensions, cross-ties resting on said conduit and extensions, stringers resting on packing between the same, and the cross-ties and rails on said stringers, said parts combined substantially as and for the purpose set forth.

379,905. **CAR-TRUCK.** ALBERT C. OSBORN, Philadelphia, Pa., assignor to the American Pneumatic Railway Company, of Tennessee. Filed June 23, 1887. Serial No. 242,237. (No model.)



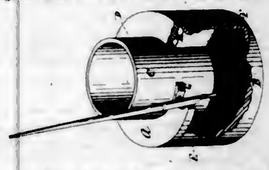
Claim.—1. A car-truck having the hanger B, with recesses C and E', the wheels D, having their journals in boxes E in said recesses E', and springs H, interposed between the said boxes E and the top walls of said recesses E', substantially as and for the purpose set forth.

2. A car-truck having the hanger B, with oblique wheels mounted thereon, and the springs N and buffers P, interposed between said truck and hanger, substantially as and for the purpose set forth.

3. A hanger having wheels and rollers mounted thereon at a right angle to each other, the wheels being oblique to the car-wheels, and the rollers on opposite sides of the wheels, said parts being combined and operating substantially as and for the purpose set forth.

4. In a truck having a hanger, B, and wheels D, substantially as described, the friction-rollers L, bearings J, journal-boxes K', and springs M, combined and operating substantially as described.

379,906. **INK OR OTHER FLUID STAND.** ASAHEL P. PICHERRAU, Galesburg, Ill. Filed Oct. 24, 1887. Serial No. 253,922. (No model.)



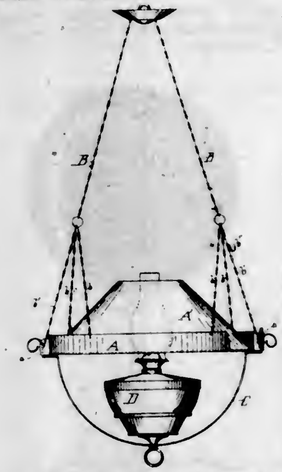
Claim.—An ink or fluid stand with an ink-reservoir nearly or quite encircling a central tube or cup, the bottom of said ink-reservoir extending around said central tube or cup in a spiral curve, so that said ink-reservoir gradually becomes deeper as measurements are taken around down said spiral curved bottom, provided with a sliding cover which has for its axis said central tube or cup, and through which cover is a pen or dipping hole, substantially as described.

379,907. **VELOCIPEDE.** HARRY M. POPE, Hartford, Conn., assignor to the Pope Manufacturing Company, Portland, Me. Filed Mar. 4, 1887. Serial No. 229,671. (No model.)



Claim.—Combined with the fork-arms, as C C, and axle, as B, of a velocipede, two brackets, as L L, one at each end of the axle, and each having a socket for a guide-rod, two springs, as K K, each having one end secured to a bracket and the other end secured to a fork-arm, and two guide-arms, as C' C', each secured at one end to the fork-arm and held with a free play at the other end in a socket in the bracket.

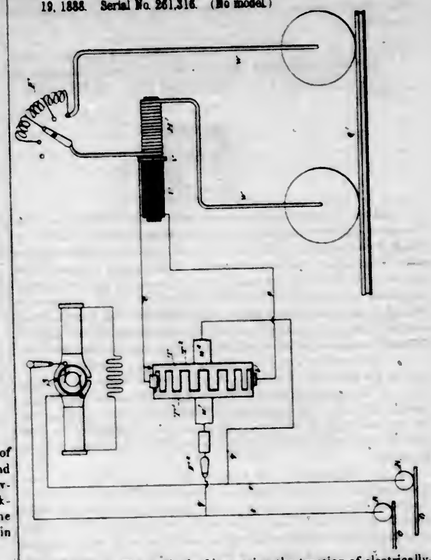
379,908. **HANGING LAMP.** FRANK RHIND, Meriden, Conn., assignor to Edward Miller & Company, same place. Filed June 27, 1887. Serial No. 242,570. (No model.)



Claim.—1. In a hanging lamp, the combination of sustaining-chains, a lamp-supporting frame depending from said chains, a shade-supporting band, also depending from said chains, said band being normally suspended in a horizontal plane, and a catch or fastening adapted to engage said band when tilted out of a horizontal plane, substantially as described.

2. In a hanging lamp, the combination of sustaining-chains, a lamp-supporting frame depending from said chains, a shade-supporting band depending from said chains, said band being normally suspended in a horizontal plane, guides on said band adapted to engage the ends of said frame, and a catch or fastening adapted to engage said band when tilted out of a horizontal plane, substantially as described.

379,909. **TRACTION-INCREASING SYSTEM FOR ELECTRIC RAILWAYS.** ELIAS E. RIDS, Baltimore, Md. Original application filed Jan. 8, 1887, Serial No. 223,761. Divided and this application filed Jan. 19, 1888. Serial No. 261,316. (No model.)



Claim.—1. The method of increasing the traction of electrically-propelled vehicles, which consists in establishing a traction-circuit including two or more wheels of the vehicle and the rails extending between the same, and charging said circuit with currents of low tension derived from the circuit supplying the motor, substantially as described.

2. The method of increasing the traction of a wheeled vehicle moving upon a metallic track, which consists in transforming currents of high tension passing upon the vehicle into currents of low tension, and then passing such low-tension currents through a traction-circuit including two or more wheels and the rails extending between the same, substantially as described.

3. The method of increasing the traction of a wheeled vehicle moving upon a metallic track, which consists in establishing and maintaining a traction-circuit moving with the vehicle and including two or more wheels and the portion of the rails extending between the same, and charging said circuit with alternating electrical currents of low tension, substantially as described.

4. The combination of a wheeled vehicle moving upon metallic rails and an electric motor mounted upon the vehicle for propelling the same, with a traction-circuit derived from the circuit supplying the motor, including two or more wheels of the vehicle and the rails extending between the same, substantially as described.

5. The combination of a wheeled vehicle moving upon metallic rails and an electric motor mounted upon the vehicle for propelling the same with a traction-circuit derived from the circuit supplying the motor, including two or more wheels of the vehicle and the rails extending between the same, and an adjustable resistance and switch in the traction-circuit, substantially as described.

6. The combination of a wheeled vehicle moving upon a metallic track and an electric motor actuated by currents of low tension and high quantity, mounted upon the vehicle for propelling the same, with a circuit derived from the motor-circuit charging inductively with currents of low tension and great quantity a traction-circuit including two or more wheels of the vehicle and the rails extending between said wheels, substantially as described.

7. The combination, with a track composed of conducting-rails, of a wheeled vehicle mounted thereon, an electric circuit traversed by a current of high tension for propelling said vehicle, a transformer or secondary generator having one of its coils included in said circuit, and a traction-circuit including the other coil of said transformer, two or more wheels of the vehicle, and the rails extending between the same, substantially as described.

8. In an apparatus for increasing the traction of railway-vehicles, the combination of a motor-circuit traversed by the current of high tension with a circuit derived from the motor-circuit, provided with

means for rendering said current alternating and intermittent, including the high-resistance coil of a transformer, and a traction-circuit including the low-resistance coil of the transformer, two or more wheels of the vehicle, and the rails extending between the same, substantially as described.

379,910. **FASTENER FOR MEETING-RAILS OF SASHES.** FRANK L. ROSENTHAL, Cleveland, Ohio, assignor to the Andrus Manufacturing Company, Rochester, N. Y. Filed June 6, 1887. Serial No. 240,355. (Model.)



Claim.—1. In a meeting-rail sash-fastener, the combination, with the upper and lower sashes, of an inclosing-shell secured to the top rail of the lower sash, a cam-block pivoted to the top of said shell and about centrally of the width thereof, a locking-plate pivoted to the interior of said shell at one inner corner thereof and underneath said cam-block and engaged by the latter, whereby it can be reciprocated laterally, said plate having on its outer end a double beveled head adapted to engage a beveled retainer secured to the upper sash, all constructed and arranged substantially as and for the purpose described.

2. The combination, with a proper shell and a cam-block, F, pivoted to the shell and provided on its lower face with the lugs H *h* and cam I, of the locking-plate J, pivoted to the shell underneath the cam-block, and having the projections K *k* and lug L, for engaging with the lugs and cam of the block F, whereby the locking-plate is operated, all constructed and arranged substantially as and for the purpose described.

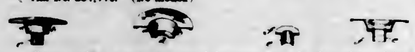
3. In a meeting-rail sash-fastener, the combination of the cam-block pivoted to a proper shell or support by its upper face and having on its lower face concentric with its pivot a pair of lugs and a partial convolute-bend cam, substantially as described, with a plate pivoted at one end underneath and to one side of said cam-block, and provided on its upper face below said cam-block with suitable projections for engaging the lugs of the block, and with a lug for engaging the cam thereof, substantially as described, whereby the plate is initially moved with a quick throw by the engagement of the lugs and projections before engagement of the lugs and cam, which are engaged simultaneously with the disengagement of the lugs and projections, the cam being so arranged as to lock the plate upon engagement therewith and prevent its retraction, and a suitable retainer for engaging the locking-plate, all constructed and arranged substantially as and for the purpose described.

379,911. **GALVANIC BATTERY.** ALEXANDER SCHANSCHIEFF, Gipsy Hill, County of Surrey, assignor to the Schanschieff Electric Battery Syndicate, London, England. Filed Aug. 9, 1886. Serial No. 210,455. (No model.) Patented in England Oct. 16, 1885, No. 12,378; in Germany Dec. 26, 1886, No. 36,415, and in India Oct. 15, 1886, No. 177.



Claim.—The combination, with a galvanic-battery cell and electrodes, of an exciting-fluid consisting of a compound of yellow basic sulphate of mercury and bisulphate of mercury, having substantially the formula specified, dissolved in water.

379,912. **BUTTON.** ALFRED J. SHIPLEY, HENRY T. SPERRY, and THEOPHILUS R. HYDE, Jr., Waterbury, Conn. Filed Dec. 13, 1887. Serial No. 257,770. (No model.)



Claim.—The herein-described improvement in that class of buttons which are provided with a tubular shank, consisting in the body of the button constructed with a central recess upon its face forming a corresponding projection on its rear side, the said recess having a concentric central opening through its bottom, combined with a tubular shank having a flange upon one end, the said flange of larger diameter than the bottom of the recess in the button, the tubular shank introduced from the face side of the button through the opening in the bottom of the recess, and the flanges of the shank forced to the bottom of the recess and by its larger diameter interlocked with the surrounding surface of the recess, substantially as described.

379,913. **TOY MARBLE-SHOOTER.** ROBERT M. STOCKTON, Philadelphia, Pa., assignor of one-half to William F. Cramer, same place. Filed Jan. 19, 1888. Serial No. 261,215. (No model.)



Claim.—1. A toy pistol or shooter consisting of a handle, two spring-jaws, each of which is connected at one end to said handle, and a trigger pivoted to said handle and having its upper end between said jaws, said parts being combined substantially as described.

2. The handle A, in combination with spring-jaws having concavities on their inner faces adapted to retain the projectile therein, and a trigger pivoted to the handle and having its upper end working between said jaws, substantially as and for the purpose set forth.

3. A marble or ball shooter consisting of a handle, a trigger, and spring-jaws, the latter projecting forwardly from the handle and having flaring lips on their ends and concavities on their inner faces near said ends, the parts being combined and operating substantially as described.

4. A toy pistol or shooter consisting of a handle, two spring-jaws connected to said handle, each of said jaws having a concavity on its inner face adapted to retain the projectile in said pistol, and an outer flaring lip, and a trigger pivoted to said handle having its upper end between said jaws and adapted to bear against the projectile, said parts being combined substantially as described.

5. A toy pistol consisting of a handle, spring-jaws directly attached to said handle and normally adapted to retain a projectile between the same, and mechanism, substantially as described, attached to the handle and adapted to bear on said projectile for removing the same from between the jaws, said parts being combined substantially as and for the purpose set forth.

379,914. **SPHERICAL BLACKBOARD.** WILLIAM R. STORY, Cincinnati, Ohio, assignor to Edwin S. Havens, same place. Filed Oct. 3, 1887. Serial No. 251,372. (No model.)

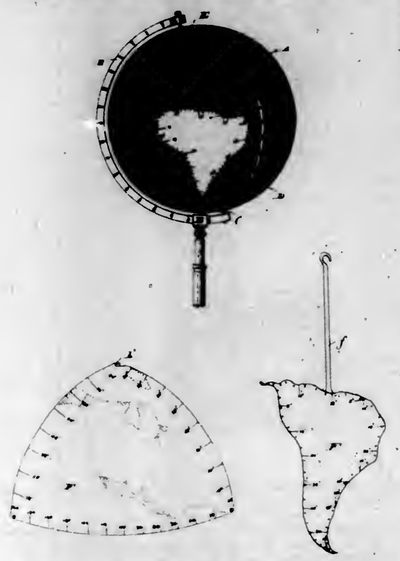


Claim.—1. A spherical blackboard having its outer surface covered with a coat of slating or other suitable marking-surface, in combination with divider G, having the holes H, corresponding to the degrees of latitude north and south, and means, substantially as set forth, for attaching said divider to the sphere.

2. A spherical blackboard having its outer surface covered with a coat of slating or other suitable marking-surface, divider G, having holes H, rod B, and dial F, having the degrees and hours marked thereon, and suitable support for said sphere, as and for the purposes set forth.

3. In combination with a spherical blackboard, the divider G, having holes H, rod B, arc C, bearing-block E, thumb-screw *e*, and stand D, substantially as set forth.

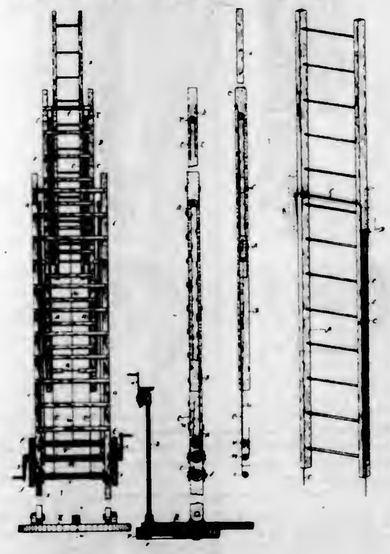
379,915. **ATTACHMENT FOR SPHERICAL BLACKBOARDS.** WILLIAM R. STORY, Cincinnati, Ohio, assignor to Edwin S. Havens, same place. Filed Oct. 31, 1887. Serial No. 253,816. (No model.)



Claim.—1. In combination with a spherical blackboard constructed substantially as described, a stencil slightly concave on its inner face to fit the configuration of the blackboard, and suitable means for connecting said stencil to the blackboard.

2. In combination with a spherical blackboard, a stencil having outlines of countries perforated therein and having the proper degrees marked thereon, and suitable mechanism for connecting said stencil to the blackboard, as and for the purposes specified.

379,916. **FIRE-LADDER.** ANDREW J. SUTHERLAND, Battle Creek, Mich. Filed July 5, 1887. Serial No. 243,414. (No model.)



Claim.—1. The combination of the ladder-sections, one sliding within the other, windlasses, one for each sliding section, mounted in the lower section, a rope or cable passed through the base of the first sliding section, looped over pulleys attached to the upper portion of the base section, and attached to its windlass, and a rope or cable passed across the upper end of the middle section, looped around pulleys attached to the lower end of the upper section and around pulleys attached to the upper end of the first sliding section, and attached to the windlass for said cable, substantially as set forth.

2. In combination, a base section, sliding sections, one within the other, the windlasses mounted in the lower section, one adapted to be rotated as fast again as the others, cables or ropes attached to the sections and looped over pulleys and attached to the windlasses designed for them, and a single cable or rope attached to the upper section and to the windlass which rotates the fastest, substantially as set forth.

3. The combination of the internal gear, the base-plate, a tube fixed to said plate and extending upward therefrom, a shaft in said tube, having a gear at the upper end and a pinion at the lower end meshing with the internal gear, a crank-gear mounted to the top of said tube, and a ladder supported by said base-plate, substantially as set forth.

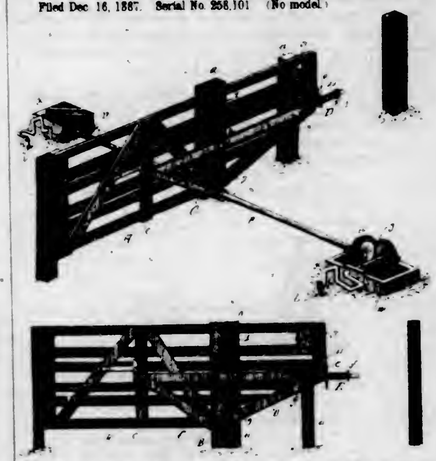
379,917. **LOOM-TEMPLE.** WILLIAM H. TAYLOR, Hampton, assignor of two-thirds to John Maynard and Harry Baskerville, both of Bowmanville, Ontario, Canada. Filed Nov. 30, 1887. Serial No. 256,519. (No model.)



Claim.—1. A loom-temple consisting of a plate and spring-tongue secured flatwise together at one end, the plate having a ridge lengthwise of the tongue, and the tongue having an inclined tooth laterally of the ridge and bearing against the plate, substantially as and for the purpose set forth.

2. The combination, with the plate A, having a ridge, *a*, along a recessed edge, and provided with slots A' and stud C, of the spring-tongue B, pivoted at one end to the plate, the other end crossing the ridge *a*, and provided with an inclined tooth, *b*, bearing against the plate laterally of the ridge, as set forth.

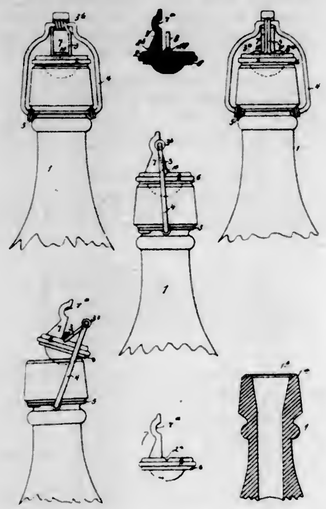
379,918. **SLIDING OR ROLLING GATE.** JOSEPH M. VANOVER, Terre Haute, Ind., assignor of one-half to Allen I. Abbott, same place. Filed Dec. 16, 1887. Serial No. 258,101. (No model.)



Claim.—1. In an automatic sliding or rolling gate, the combination, with the gate having at its end the loop or guide *c*, of the rock-shaft extending to opposite sides thereof and having at each end a gear wheel, the stirrups *k*, also having gear-wheels meshing with those of the shaft, the arm or lever keyed to the shaft, and the connecting-rod movably connected to said lever at one end, its other end passing through the loop and bearing a spring, substantially in the manner and for the purpose described.

2. In an automatic sliding or rolling gate, the combination therewith of the rock-shaft, the stirrups *k*, the lever keyed to the shaft, and the connecting-rod movably connected to the lever, the said connecting-rod passing through the loop *c* and having thereon a spring, and provided in its side with a small friction-roll, substantially as and for the purpose described.

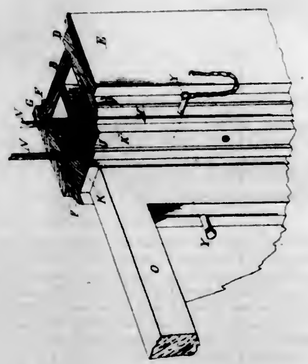
379,919. **BOTTLE-STOPPER.** GEORGE L. WATTT, Philadelphia, Pa., assignor, by mesne assignments, to the Germania Bottle Company, same place. Filed Mar. 29, 1887. Serial No. 232,909. (No model.)



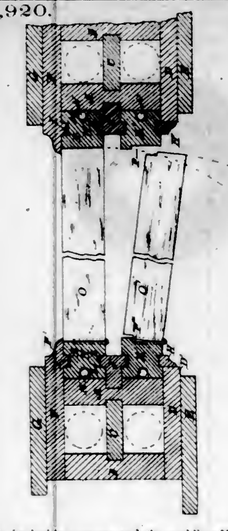
Claim.—The combination of the cap 2, having a rounded groove, 2, in its top and a slot through the latter, the back stop or post 7 the rocking lever seated and turning in the groove in the cap 2, and the clasp 10, passed through the slot in the cap and clinched on the under side of the latter, with the cork or stopper 6 and the swinging bail 4, mounted on the bottle-neck, substantially as herein set forth.

379,920. **WINDOW-FRAME.** AMOS WOEBER and JOHN LAMMERS, Cincinnati, Ohio, assignors of one-third to Henry Lammert, same place. Filed Apr. 15, 1887. Serial No. 234,921. (No model.)

Claim.—In a sash-frame, the hanging stile A, the rear stile, B, the dividing-strip C, the pieces D and F, extending beyond the hanging stile, the latter having the tongue I, the sash-bars K and K', grooved on opposite sides, and the tongue J between said bars and

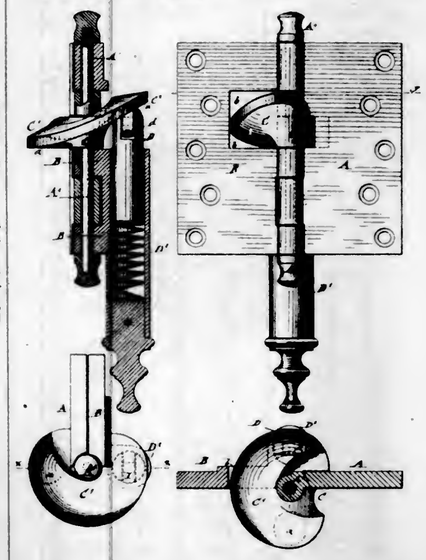


379,920.



fitting in its inside grooves and the molding H, and the sashes hinged to said bars, substantially as described.

379,921. **LOCK-HINGE.** JOSEF WOLF, Hoboken, N. J., assignor to the Universal Lock-Hinge Company, same place. Filed Aug. 2, 1887. Serial No. 245,920. (No model.)



Claim.—The combination, with the leaves of a hinge, of a knuckle attached to one leaf and having an inclined flange, said flange having depressions at diametrically-opposite points of said flange, and a spring-bolt attached to the other leaf sidewise of the connecting-pintle, substantially as set forth.

379,922. **CABLE-TRACTION-RAILWAY TRACK.** WILLIAM H. YOUNG, Chicago, Ill., assignor of one-half to William J. Morden, same place. Filed Aug. 9, 1887. Serial No. 246,492. (No model.)

379,922.



Claim.—1. In cable traction railways, chairs as interval bearings for the rails that are provided with channels or recesses adapted to receive and support the web of the rail, and that are also formed of two or more parts that meet with a joint in line with and adapting them to be clamped and secured to or upon the yoke of the substructure.

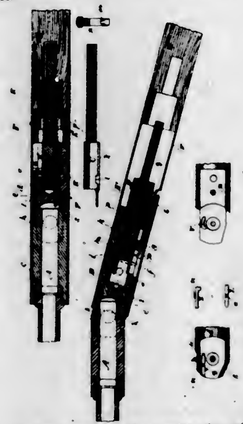
2. In cable traction railways, a chair consisting of two parts having flanges terminating beneath, adapted to grasp a metallic substructure, a channel in the upper portion adapted to receive and hold the web of the rail, and lateral flanges adapting the two portions of the chair to be bolted or secured together, substantially as set forth.

3. The combination, with yoke A and rails E, of cast-metal rail-chairs made in sections, with grooves in their bases for grasping the T-extensions of the yokes from opposite sides and for clamping the same by a single bolt, substantially as set forth.

4. The combination, with yoke A and rails E, of cast-metal chairs, each made in two sections, with grooves in their bases for grasping the T-extensions of the yoke from opposite sides and for securing the same by clamping with a single bolt, each such chair being provided with an upper groove for inserting and holding the track-rails, substantially as set forth.

REISSUES.

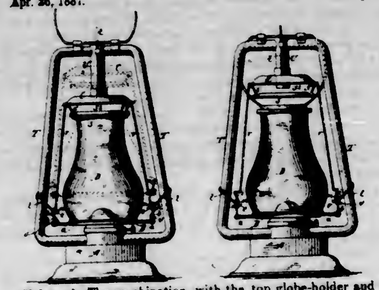
10,910. **CANE-GUN.** EDWARD D. BEAN, Boston, Mass., assignor to the Cyclist's and Sportsman's Gun and Rifle Company, Kittery, Me. Filed June 16, 1887. Serial No. 241,673. Original No. 329,430, dated Nov. 3, 1885.



Claim.—1. In a cane-gun, the combination of the barrel, the breech-piece hinged thereto and provided with the firing-pin arranged eccentrically therein, the stock having a sleeve which incloses and is adapted both to slide and rotate on the breech-piece, said sleeve serving when in its forward position to lock the barrel, breech-piece, and stock in line with each other, devices, substantially as described, whereby the sleeve may be engaged with the breech-piece, so that the backward movement of the sleeve on the breech-piece will retract the firing-pin, and a trigger in the breech-piece which engages the firing-pin, the eccentric arrangement of the firing-pin enabling it to act on the fulminate of a cartridge in the barrel only when the breech-piece and stock are dropped at an angle with the barrel, as set forth.

2. The combination of the gun-barrel, the hollow breech-piece jointed to the barrel and having the groove *e* and slot *f*, the firing-pin having the pin *g* and its operative spring arranged lengthwise within the breech, the trigger and its operative spring arranged transverse the firing-pin, the bolt I, having the pin *o* and arranged in the groove *e*, the sleeve having a slot with a notch at each end, and the stock or handle secured to such sleeve, as set forth.

10,911. **LANTERN.** CHARLES W. COLONY, Sandy Creek, assignor, by direct and mesne assignments, to the Steam Gauge and Lantern Company, Rochester, and The R. E. Dietz Company, New York, N. Y. Filed July 12, 1887. Serial No. 244,119. Original No. 361,983, dated Apr. 26, 1887.



Claim.—1. The combination, with the top globe-holder and the support upon which the bottom of the globe rests, of rods secured to the top holder, and vertically-sliding connections whereby said rods are attached to the globe-support, substantially as set forth.

2. The combination, with the cap provided with a holder bearing against the top of the globe, and the bottom support of the globe provided with coupling-links, of spring-rods secured to said cap and having their lower ends made vertically movable in the links of the bottom support, substantially as set forth.

3. The combination, with the top globe-holder and the support upon which the bottom of the globe rests, and which is provided with coupling-links, of rods attached to said top holder and provided with offsets and stops which engage with said links and form therewith a vertically-sliding connection, substantially as set forth.

4. The combination, with the tubular lantern-frame, of a vertically-movable top globe-holder and a bottom globe-support, spring-rods attached to the top holder, guide-links pivoted to the tubes, and coupling-links attached to the bottom support and connected with the spring-rods, whereby the spring-rods are deflected or strained as the globe-frame is raised or lowered, substantially as set forth.

5. In combination with the lantern-frame, globe-support, and movable cap, guide-links pivoted on said frame, coupling-links connecting the globe-support with the guide-links, and spring-rods secured to the cap and having their extremities sliding in the aforesaid coupling-links and provided with coupling-hooks adapted to interlock with the links for locking the globe between its support and the cap, and having also bearings adapted to engage the links and sustain the cap raised from the globe, substantially as set forth.

6. In combination with the lantern-frame, globe-support, and movable cap, guide-links hinged on said frame at opposite sides of the globe and arranged with their oscillatory ends toward each other, and pendent spring-rods attached to the cap at the sides directly over the guide-links and normally inclined outward, and suitable connections between the lower extremities of said rods and said links, whereby the links are confined in both their depressed and raised positions, substantially as set forth.

7. In combination with the base A, globe-support B, tubes T T, and movable cap C, the links *l l*, hinged on the tubes and formed with loops *c*, the couplings *a b*, connecting the support B with the links *l*, and the spring-rods *r r*, attached to the cap C and having their lower extremities extending through the loops *c c*, and formed with the hooks *h* and bearings *i*, substantially as described and shown.

8. In combination with the base A, globe-support B, tubes T T, and movable cap C, the links *l*, hinged to swing vertically on the said tubes and formed with the loops *c*, the coupling-links *b*, connected with the links *l*, and having a bar, *b'*, extending across the neck of the aforesaid loop, and the spring-rods *r*, attached to the cap and having their lower extremities extending through the loops *c*, and formed with the hooks *h* and bearings *i*, substantially as described and shown.

9. In combination with the base A, globe-support B, tubes T T, and movable cap C, the guide-links *l l*, hinged on said tubes to swing vertically thereon and embracing the same, and formed with loops *c*, and eyes *n n* back of said loops, the coupling-links *b*, connected at one end with the globe-support and having the opposite end extending through the eyes *n n*, and the spring-rods *r r*, attached to the cap and having their lower extremities normally inclined outward and extending through the loops *c c*, and formed with the offsets or hooks *h h* and bearings *i i*, said loops being of a size to allow the spring-rods *r r* to be moved laterally to throw the hooks thereof out of engagement with the coupling-links when in a depressed position, and to hold said hooks in their engagement with said links when in an elevated position, substantially as set forth and shown.

10,912. **REDUCTION OF ORES.** HENRY HIRSCHING, Salt Lake City, Utah, assignor of one-half interest to Alexander Niedringhaus and Franz Jungk, both of same place. Filed Feb. 13, 1888. Serial No. 263,907. Original No. 365,746, dated June 28, 1887.

Claim.—1. An improved apparatus for extracting metals from ores, consisting of a vertical vitreous-lined cylinder provided with a filter at its bottom and a sieve and removable cover at its top, a chlorine-gas generator, a purifier for this gas, a pipe forming a communication between the purifier and the said vessel A, an exhausting apparatus and its pipe communicating with said cylinder, and settling or decanting tanks, all substantially as described.

2. The upright cylinder A, for the purpose described, having a vitreous inner surface, in combination with the bottom filter and its perforated diaphragm, the sieve, the removable cover, and the interior braces, and a pipe provided with a regulating-cock leading to settlers, substantially as described.

3. The combination, with the vessel A, having a filtering-bottom, a screen, and a removable cover, of a discharge-chute provided with a cock or gate, a hot-water tank, and a chlorine-gas generator, substantially as described.

4. The process of converting the metallic bases contained in ores and metallurgical products into chloridized compounds, which consists, first, in charging a suitable vessel with calcined ore immediately after it is taken from a roasting-furnace; second, subjecting the ore in said vessel to the repeated action of purified chlorine gas forced through the ore, as described; third, passing hot water through the ore; fourth, washing the ore with about two per cent. of hyposulphite-of-sodium solution until no black precipitate appears upon adding sodium sulphide; fifth, washing the ore with chlorine-gas water, and, sixth, washing the ore with hot water, all substantially as described

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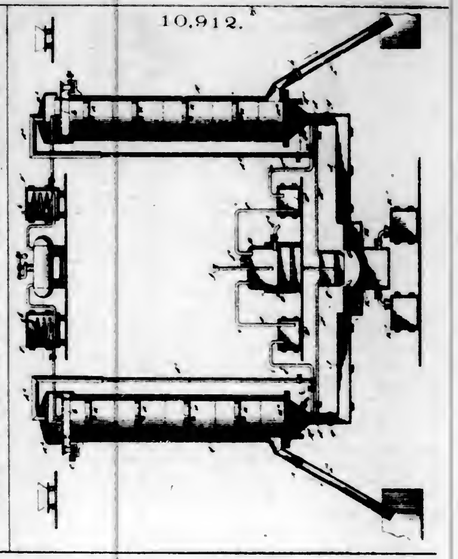


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DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

ANDREWS *et al. v.* HOVEY.

Decided February 20, 1888.

The Court considers the legal effect of section 7 of the act of 1839, in view of all the decisions of the courts in which this section appears to have been under examination, and concludes:

1. EFFECT OF A SALE OR USE IN FRAUD OF THE PATENTEE.

A fraudulent surreptitious purchase or construction or use of an invention prior to the application for a patent probably would not affect the rights of the patentee under this section of the act of 1839.

2. DECISIONS OF CIRCUIT COURTS NOT CONTROLLING IN THE SUPREME COURT.

The circuit courts having in several instances held that under the section in question a patent was not invalid by a public use and sale without the consent or allowance of the inventor, these decisions are not controlling in the Supreme Court of the United States where no direct adjudication has been made by that Court upon the particular point.

3. INTERFERENCE PROCEEDINGS NOT CONTROLLING IN THE SUPREME COURT.

The fact that in an interference in the Patent Office, where the question has been distinctly raised, a patent was issued to Green with the knowledge on the part of the Patent Office that there had been a public use of the invention more than two years before his application, is not controlling upon this Court.

4. RULES OF THE PATENT OFFICE NOT CONTROLLING IN THE SUPREME COURT.

The promulgation and enforcement of a rule of the Patent Office, that a patent would not be granted if the invention had been in public use or on sale, with the consent or allowance of the inventor, for more than two years before his application, cannot be regarded as having the effect of a judicial or authoritative adjudication of the question.

5. DEDUCTIONS FROM DEBATES IN CONGRESS NOT A BASIS FOR JUDICIAL ACTION.

The argument sought to be founded upon the various phases assumed by the provisions of the act of July 8, 1870, in its passage through the two Houses of Congress is very unsafe and unreliable as a basis of judicial action, particularly when the only inference to be drawn is one as to what view Congress took of the act of 1839 in enacting the act of 1870.

6. QUESTIONS OF PATENT LAW FINALLY SETTLED ONLY IN THE SUPREME COURT.

No question arising in a patent suit reviewable in this Court can be regarded as finally settled, so as to establish the law for like cases, until it has been determined in this Court.

7. DEPARTMENTAL CONSTRUCTIONS AS TO THE VALIDITY OF PATENTS—JUDICIAL QUESTIONS.

The practice adopted by an executive department of the Government does not apply to the validity of patents by reason of pre-existing acts or omissions of the inventor of the character involved in this suit, but is properly a judicial question.

8. THE GRANT OF PATENTS NOT CONCLUSIVE AS TO VALIDITY.

The determination of questions like those involved here by the Commissioner of Patents in the grant of a patent is not conclusive upon the courts as to the questions respecting the validity of such patents, and much less so as regards other patents.

9. A PROCESS IS INCLUDED BY THE TERMS OF THE SEVENTH SECTION OF THE ACT OF 1839.

The seventh section of the act of 1839 includes a process as well as "a machine, manufacture, or composition of matter."

10. SECTION 7, ACT OF 1839, DOES NOT INCLUDE "CONSENT OR ALLOWANCE."

Under sections 6, 7, and 15 of the act of 1836, in connection with section 7 of the act of 1839, purchase, sale, or use of the invention more than two years before the application, without regard to the consent or allowance of the inventor, renders the patent invalid.

PETITION for rehearing.

GREEN'S DRIVEN WELLS.

APPEAL from the Circuit Court of the United States for the Southern District of Iowa.

Mr. J. C. Clayton for the appellants.
Mr. Jed. Lake for the appellee.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a petition by the appellants in the case of *Andrews* v. *Hovey* (reported in 123 U. S., 267) for a rehearing of that case upon the points upon which the decision was based.

The suit was a suit in equity, brought by the appellants for the infringement of Reissued Letters Patent No. 4,372, granted to Nelson W. Green, one of the appellants, May 9, 1871, for an improvement in the method of constructing Artesian wells, the original patent, No. 73,425, having been granted to said Green, as inventor, January 14, 1868, on an application filed March 17, 1866. The circuit court had dismissed the bill on the ground of the invalidity of the patent. The plaintiffs appealed, and this Court affirmed the decree. In its opinion it was said:

The patent is familiarly known as the "driven-well" patent. The specifications and drawings of the original and reissued patents are set forth in the opinion of this Court in *Eames* v. *Andrews*, (122 U. S., 40.) Numerous defenses are set up in the answer in the present case, and voluminous proofs have been taken in respect to those defenses; but it is necessary to consider only one of them, which in our view is fatal to the validity of the patent, and that is that the invention was used in public at Cortland, in the State of New York, by others than Green more than two years before the application for the patent. The brief of the appellants concedes that it is shown in this case that other persons than Green put the invention into public use more than two years before his application was filed. It is contended for the appellants that this was done without his knowledge, consent, or allowance. The appellee contends that such knowledge, consent,

or allowance was not necessary in order to invalidate the patent, while the appellants contend that it was necessary. The whole question depends upon the proper construction of section 7 of the act of March 3, 1839, (5 Stat., 354,) interpreted in connection with sections 6, 7, and 15 of the act of July 4, 1836, (5 Stat., 119, 123.) (123 U. S., 209.)

Our decision was that the patent was invalid, because the invention covered by it had been in public use more than two years before Green applied for the patent, without reference to the question whether he consented to such use or not. The views which led to this conclusion were set forth at length in the opinion, and a further consideration of them, in the light of the arguments presented on this application for a rehearing, has only served to confirm us in the conviction that they were correct; but, as the briefs of counsel in support of the application proceed upon the ground that certain views and authorities, which they think bear upon the question involved, were not presented to us upon the original hearing, we deem it proper to state the reasons for our adherence to our conclusion.

The main proposition urged by the counsel for the appellants is that the question involved was adjudged by this Court in accordance with their views in the case of *Kendall* v. *Winsor*, (21 How., 322,) decided in 1858. In the same connection other authorities, which, it is alleged, were not cited by counsel on the former hearing, are presented. It is also urged that the Court omitted to give due weight to what is said to be the current of executive and judicial authority in favor of the construction upon which the appellants rely, and that the seventh section of the act of 1839 does not apply to the patent in question, because it is a patent for a process.

The question involved arises upon the second clause of section 7 of the act of 1839, which section was in these words:

> That every person or corporation who has, or shall have, purchased or constructed any newly-invented machine, manufacture, or composition of matter, prior to the application of the inventor or discoverer for a patent, shall be held to possess the right to use, and vend to others to be used, the specific machine, manufacture, or composition of matter so made or purchased, without liability therefor to the inventor, or any other person interested in such invention; and no patent shall be held to be invalid by reason of such purchase, sale, or use prior to the application for a patent as aforesaid, except on proof of abandonment of such invention to the public; or that such purchase, sale, or prior use has been for more than two years prior to such application for a patent.

This section contains two clauses, all that precedes the first semicolon being the first clause, and all that comes after the first semicolon being the second clause. The first clause relates to the right of a person, as against a suit by the patentee for infringement, to use and sell the specific machine, manufacture, or composition of matter purchased or constructed prior to the application for the patent, and the use of which would otherwise be a violation of the patent. The second clause relates to the effect upon the validity of the patent, of such purchase, sale, or use prior to the application. The questions involved in the two clauses are quite different. The first clause relates to the particular right of a particular defendant to use a particular machine, manufacture, or composition of matter after the grant of the patent, and notwithstanding its grant, and in no manner relates to the validity or invalidity of the patent. The second clause relates wholly to the validity of the patent. Most of the authorities laid before us and relied upon on the present application relate entirely to the first clause of the section.

The first case in which the seventh section of the act of 1839 appears to have come under consideration in this Court was that of *McClurg* v. *Kingsland*, (1 How., 202,) decided in 1843. But that was a case which involved only the first clause of the section. The patent was for an improvement in the mode of casting chilled rollers. It was therefore a patent for an improvement in a process. The patentee invented it while he was a workman in the employ of the defendants. They put it into use in their business. He left their employment, and then applied for and obtained his patent. His assignees sued the defendants in an action at law for continuing to use the improvement. There was a verdict for the defendants, upon the ground that, by reason of their unmolested, notorious use of the invention before the application for the patent, they had a right to continue to use it, under the provisions of the first clause of the seventh section. The judgment for the defendants was affirmed by this Court upon that ground. It held that the defendants were on the same footing as if they had had from the inventor a special license to use his invention, given before he applied for his patent, and that the first clause of the seventh section extended to the invention or thing patented in that case, although it consisted of a new mode of operating an old machine, as contradistinguished from a patent for a machine. The Court distinctly held that the words "newly-invented machine, manufacture, or composition of matter," and the words "such invention," in the first clause of the seventh section, meant the invention patented; and that the words "the specific machine, manufacture, or composition of matter" meant the thing invented, the right to which was secured by the patent. We see nothing in this case which sustains the position of the appellants.

The first reported case in a circuit court involving any part of the seventh section is that of *Pierson* v. *Eagle Screw Co.*, (3 Story, 402,) in 1844, in the Circuit Court for the District of Massachusetts, before Mr. Justice Story. That was a case which involved only the first clause of the section. The defendant had, prior to the patentee's application for his patent, purchased the right to use a certain number of machines embracing the patented improvement from the assignee of an independent inventor thereof, and claimed the right under the seventh section to use the machines which it had actually in operation, notwithstanding the fact that the patentee was the first inventor. The circuit court charged the jury that the first clause of the seventh section did not confer such right upon the defendant, because there was no license or consent by the patentee, as inventor, to the use of the machines by the defendant. In considering that question, the court observed, in regard to the second clause of the seventh section, that it limited the right to apply for a patent to the period of two years after the inventor had sold his invention or allowed it to be used by others. But the second clause was not directly in judgment in the case. This observation on the subject appears to have been the origin of much that has been said on the question in subsequent cases, for this case of *Pierson* v. *Eagle Screw Co.* is generally cited as

the leading authority in favor of the position taken by the appellants.

In *Hovey* v. *Stevens*, (1 Woodb. & Minot, 290,) in the Circuit Court for the District of Massachusetts, in 1846, before Mr. Justice Woodbury, a motion was made for a preliminary injunction on a patent granted to Hovey. The question arose whether Stevens did not himself, before Hovey obtained his patent, discover or construct the patented invention. The court considered the question whether Stevens had not obtained a knowledge of Hovey's invention through a workman in his employ, who had previously been in the employ of Hovey and had used the improvement, and whether Stevens did not copy the improvement from Hovey's, without Hovey's consent, and before Hovey made his machine public or sold it. The court observed that in such a case the use of the machine by Stevens, though begun before Hovey obtained his patent, would be a use by fraud, not contemplated and saved under the seventh section of the act of 1839. The question was solely as to the right of Stevens to continue to use the machine which he had so begun to use before Hovey obtained his patent. The court declined to determine the question of fact involved as an action at law to be tried by a jury, for a violation of the patent between the same parties was then pending, and refused to grant the injunction. As appears by the report of the case of *Hovey* v. *Stevens*, (3 Woodb. & Minot, 17, 32,) the bill in equity was dismissed and the jury case was tried, and the plaintiff was non-suited upon grounds not involving those considered on the motion for the preliminary injunction.

The next case cited is *Pitts* v. *Hall*, (2 Blatchford, 229,) in 1851, in the Circuit Court for the Northern District of New York, before Mr. Justice Nelson and Judge Conkling. In that case the only questions were, whether the patentee had forfeited his right to his invention by using it in public more than two years prior to his application, or whether such use by him was only experimental, with a view to further improvements, and also whether he had dedicated or abandoned his invention to the public use. The case in no manner involved the question before us.

In *McCormick* v. *Seymour*, (2 Blatchford, 240,) in 1851, in the Circuit Court for the Northern District of New York, before Mr. Justice Nelson, the points involved related wholly to the acts of the patentee himself more than two years prior to his application, in respect to his own use in public of the patented improvement, and to the question of his abandonment of the invention to the public within the two years. The jury having failed to agree upon a verdict, the case was again tried, and resulted in a verdict and judgment for the plaintiff, thus overruling the defenses set up. At December Term, 1853, this court reversed the judgment on the question of damages, but it approved the rulings below on the above points. (*Seymour* v. *McCormick*, 16 How., 480.)

The case of *Sargent* v. *Seagrave*, (2 Curtis, 553,) in 1855, in the Circuit Court for the District of Massachusetts, before Mr. Justice Curtis, involved only the questions, on a motion for a preliminary injunction, of the exclusive possession of the right by the patentee, and the acquiescence of the public therein, after the issue of the patent, for the period of about two years, and its acquiescence in the claim of the patentee to a right under a caveat for about two years before the date of the patent.

Then came the case of *Kendall* v. *Winsor*, (21 How., 322,) decided by this Court at December Term, 1858. It was a writ of error to the Circuit Court for the District of Rhode Island, where the case was tried before Mr. Justice Curtis and a jury. The suit was an action at law for damages for the infringement of a patent granted to Winsor, who had a verdict and a judgment. The particular question in the case arose wholly under the first clause of the seventh section of the act of 1839. The defendants claimed a right to use certain specific machines under that clause. The application for the patent was made in November, 1854. Prior to that time the defendants had constructed one machine containing the patented invention, and they constructed others in the autumn of 1854. In the course of that fall Winsor had knowledge that the defendants had built, or were building, one or more machines like his invention, and did not interpose to prevent them. Winsor had completed in 1849 four machines containing the patented improvements, and had made on them articles which he had sold. But he kept the machines from the view of the public, allowed none of the hands employed by him to introduce persons to view them, and the hands pledged themselves not to divulge the invention. Among those hands was one Aldridge, who left the plaintiff's employment in the autumn of 1852, and entered into an arrangement with the defendants to copy the plaintiff's machine for them, and did so, and the defendant's machines were built and put in operation by Aldridge and under his superintendence, and by means of the knowledge which he had gained while in the plaintiff's employment under a pledge of secrecy. On the basis of these facts the defendant's counsel prayed the court to instruct the jury that, under the seventh section of the act of 1839, if the jury were satisfied that the machines for the use of which the defendants were sued were constructed and put in operation before the plaintiff applied for his patent, then the defendants possessed the right to use, and vend to others to be used, the specific machines made or purchased by them, without liability therefor to the plaintiff. The court did not grant this prayer, but instructed the jury that if Aldridge, under a pledge of secrecy, obtained knowledge of the plaintiff's machine, and thereupon, at the instigation of the defendants and with a knowledge on their part of the surreptitiousness of his acts, constructed machines for the defendants, they would not have the right to continue to use the same after the date of the plaintiff's patent, but that, if the defendants had the machines constructed before the plaintiff applied for his patent, under the belief, authorized by him, that he consented and allowed them so to do, they might lawfully continue to use the same after the date of the patent, and the plaintiff could not recover. It was on this state of the case that the question came before this Court. The first clause of the seventh section was the only one involved in the instruction asked for and in that above recited as given. This Court affirmed the judgment and the propriety

of the action of the circuit court. In its opinion, it observed that inventors were—

entitled to protection against frauds or wrongs practiced to pirate from them the results of thought and labor;

that—

the shield of this protection has been constantly interposed between the inventor and fraudulent spoliator by the courts of England, and most signally and effectually has this been done by this Court, as is seen in the cases of *Pennock* v. *Dialogue*, (2 Pet., 1,) and of *Shaw* v. *Cooper*, (7 Pet., 292.)

The opinion of the Court treated the case as one in which the rights of Winsor could not be affected, because the knowledge of the invention had been surreptitiously obtained and communicated to the public; and went on to remark that the instruction to the jury at circuit was in strict conformity with that principle, and with the doctrines declared in *Pennock* v. *Dialogue* and *Shaw* v. *Cooper*. It closed the opinion by saying:

That instruction diminishes or excludes no proper ground upon which the conduct and intent of the plaintiff below, as evinced either by declarations or acts, or by omission to speak or act, and on which also the justice and integrity of the conduct of the defendants were to be examined and determined. It submitted the conduct and intentions of both plaintiff and defendants to the jury as questions of *fact* to be decided by them, guided simply by such rules of law as had been settled with reference to issues like the one before them; and upon those questions of fact the jury have responded in favor of the plaintiff below, the defendant in error. We think that the rejection by the court of the prayers offered by the defendants at the trial was warranted by the character of those prayers as having a tendency to narrow the inquiry by the jury to an imperfect and partial view of the case, and to divert their minds from a full comprehension of the merits of the controversy.

It is thus seen that this case not only turned upon a right claimed wholly under the first clause of the seventh section, but that it was held that a fraudulent, piratical, and surreptitious purchase or construction of a machine, like that shown in that case, was not such a purchase or construction as was covered by the first clause of the seventh section. The decision in that case does not affect the one now before the Court.

It may well be that a fraudulent, surreptitious, and piratical purchase or construction or use of an invention prior to the application for the patent would not affect the rights of the patentee under either clause of the seventh section; but the present is not such a case as that which existed in *Kendall* v. *Winsor*. In the use of driven wells in public at Cortland by others than Green more than two years before his application we see nothing in the evidence under which such use can properly be characterized as fraudulent, piratical, or surreptitious. Green's invention was made in 1861. The brief of the appellants at the former hearing contained this statement:

But it is not denied that in this case there is proof that after the invention by Green in 1861, and his public exhibition of it in Cortland, the rumor of it spread, and the value of it became apparent, and other persons, without Green's consent and allowance, did put the invention into public use without his knowledge.

The application for the patent was made March 17, 1866. It is true that the driven wells thus referred to were constructed some by Mudge and some by Suggett, who obtained knowledge of the invention from Green. It is admitted in the appellants' brief on the present application that, subsequently to Green's invention and more than two years prior to his application, Suggett put down four driven wells for persons named Copeland, Seaman, Foster, and Samson, respectively, and Mudge five wells for persons named Pomeroy, Bolles, Bates, Seaman, and Hicks, respectively; but there is nothing that indicates in regard to these wells fraud or piracy or surreptitiousness, in the sense of the decision in *Kendall* v. *Winsor*. The invention was made by Green and publicly exhibited. The rumor of it spread and its value became apparent, and the persons for whom the wells so put down were made had them constructed during the time when, for five years after the invention, Green failed to apply for a patent. Of course Green, from the moment of the invention, had an inchoate property therein, which he could complete by taking a patent. The first clause of the seventh section of the act of 1839 gave to the persons for whom those wells were constructed a right to use them without the consent of Green, and the second clause of that section had the effect to make Green's patent invalid because of the use of the invention by those persons more than two years before he applied for his patent.

In the case of *Sanders* v. *Logan*, (2 Fisher's Pat. Cas., 167,) in 1861, in the Circuit Court for the Western District of Pennsylvania, before Mr. Justice Grier and Judge McCandless, the bill was dismissed because the patentee had abandoned his invention and because it had been publicly used, with his knowledge, consent, and approbation, more than two years prior to the application for the patent.

In the case of *American Hide Co.* v. *American Tool Co.*, (4 Fisher's Pat. Cas., 284,) in 1870, in the Circuit Court for the District of Massachusetts, before Judge Shepley, the question tried was, whether the invention was in public use or on sale with the knowledge and consent of the inventor more than two years before he applied for his patent, and whether he had abandoned his invention to the public prior to his application. On these issues the jury found for the defendant.

In *M'Millin* v. *Barclay*, (5 Fisher's Pat. Cas., 189,) in 1871, in the Circuit Court for the Western District of Pennsylvania, before Judge McKennan, two patents were involved. In regard to one of them the defense was that the patentee had himself used the invention in public more than two years before he applied for his patent. It was held that when it was so used it was a complete invention, and the patent was held to be invalid. In regard to the other patent, the defense was that of abandonment by the patentee subsequently to the making of his application, the application having been made in 1855 and the patent having been granted in 1867, and the invention having gone into use subsequently to the application. The defense of the abandonment of the invention after the application was filed was overruled.

In *Russell & Erwin Co.* v. *Mallory*, (10 Blatchford, 140,) in 1872, in the Circuit Court for the District of Connecticut, before Judges Woodruff and Shipman, the question involved related entirely to an abandonment of the invention and to the effect of the acts of the patentee within two years prior to the application.

In *Jones* v. *Sewall*, (3 Clifford, 563,) in 1873, in the Circuit Court for the District of Massachusetts, before Mr. Justice Clifford, it was set up as a defense that the several improvements covered by the patent sued on were in public use and on sale more than two years before the patentee made his application for the patent. The court overruled the defense, holding that there was no evidence to show that the inventions, or

either of them, were in public use or on sale more than two years before the inventor applied for a patent, or for any shorter period, with his consent and allowance, or that he had any knowledge of any such sale or public use at the time it was made, and that, on the contrary, the evidence showed that he never gave his consent to any such sales, and that he constantly asserted that he intended to apply for a patent. The decision was placed upon the ground that such consent and allowance were necessary to the invalidity of the patent. This was a direct adjudication upon the point involved in the present case.

In *Klein* v. *Russell*, (19 Wall., 433,) at October Term, 1873, the defense was want of novelty. The plaintiff had a judgment, which was affirmed by this Court. At the trial the defendant requested the Court to charge the jury:

First. That the invention, as described in the patent of February, 1870, is the treatment of bark-tanned sheep and lamb skins by the employment of fat liquor, and if such treatment was known to others and more than two years before the plaintiff applied for his patent his patent is void.

He also requested the Court to instruct the jury—

Seventh. That if fat liquor had been used substantially in the manner specified in the plaintiff's patent, for the purpose of rendering any kind of leather soft and supple, more than two years before the plaintiff applied for a patent, the plaintiff cannot recover even though it had not been so used in dressing bark-tanned lamb or sheep skins.

These instructions were refused, and the failure to give them was alleged as error. The defendant in error contended in this Court that the first request did not correctly or fully describe the invention; that the employment of fat liquor merely was not the whole of the invention, but that it was the employment of fat liquor in the condition and manner described in the specification, and that the refusal to charge the seventh request was proper.

In regard to the first request, this Court said that the instruction was properly refused, and that it stated inaccurately the rule of law which it involved. The Court added:

A patent relates back where the question of novelty is in issue to the date of the invention, and not to the time of the application for its issue. The jury had already been sufficiently instructed upon the subject. The instruction assumes that the reissue was for the use of fat liquor, without reference to the point whether it were hot or cold.

The Court then proceeded to hold that the two claims of the patent sued on required that the fat liquor should be heated, and that therefore the first instruction asked was improper. It is quite apparent that the Court considered only the issue of novelty, and that it did not pass upon the question involved in the present case.

The seventh request, like the first, was inaccurate, because it referred to the time of the application, and not to the date of the invention; and in regard to the seventh request the Court merely said that it was satisfied with the rulings of the court below in regard to that request and four others, which, it stated, might be "grouped and disposed of together," and it added that neither of them required any special remark. We cannot regard the case of *Klein* v. *Russell* as adjudicating the question now presented.

In *Henry* v. *Francestown Co.*, (2 Bann. & Ard., 221,) in 1876, in the Circuit Court for the District of New Hampshire, before Judge Shepley, the defense was the public use and sale of the invention by the patentee more than two years before he applied for his patent. It was held that the use and sales by him were experimental.

In *Consolidated Fruit Jar Co.* v. *Wright*, (94 U. S., 92,) at October term, 1876, a patent granted in 1870, on an application made in January, 1868, the invention having been completed in June, 1859, was held void, because (1) there was a purchase, sale, and prior use of the invention more than two years before the application, and (2) at the time of the application the invention had been abandoned to the public. The sale and prior use were by the inventor himself. This case does not adjudge the point here involved.

In *Kelleher* v. *Darling*, (4 Clifford, 424,) in 1878, in the Circuit Court for the District of Massachusetts, before Mr. Justice Clifford, the original patent was issued in 1871, under the act of July 8, 1870, and was divided on its subsequent surrender into two reissued patents. No question arose in the case under the act of 1839. So, too, the case of *Henry* v. *Providence Tool Co.*, (3 Bann. & Ard., 501,) in 1878, in the Circuit Court for the District of Rhode Island, before Mr. Justice Clifford, arose under the act of 1870.

In *Draper* v. *Wattles*, (3 Bann. & Ard., 618,) in 1878, in the Circuit Court for the District of Massachusetts, before Judge Lowell, the original patent was issued in 1869, on an application made in June, 1868. The court held that, under the seventh section of the act of 1839, the sale or use more than two years prior to the application must have been with the consent or allowance of the inventor in order to invalidate the patent, and that the patent was not invalidated by the sale by the inventor more than two years before he applied for his patent of an article which did not embody the whole of his invention as subsequently patented. The point involved in the present case was thus directly adjudged.

In *Bates* v. *Coe*, (98 U. S., 31,) at October Term, 1878, the original patent was issued in 1863. Mr. Justice Clifford, in delivering the opinion of the Court, stated that the answer did not set up as a defense that the invention had been in public use or on sale in this country for more than two years before the application for the patent, and that there was nothing in the record to support that proposition, if it had been well pleaded. His observation, therefore, citing *Pierson* v. *Eagle Screw Co.*, (3 Story, 402,) that under the seventh section of the act of 1839 the public use or sale, in order to defeat the right of the inventor to the patent, must have been with his consent and allowance for more than two years prior to the application was an observation made in regard to a point not in issue or in judgment.

In *Henry* v. *Francestown Co.*, (5 Bann. & Ard., 108,) in the Circuit Court for the District of New Hampshire, in 1880, before Judge Lowell, the patent had been granted in 1859, on an application filed in 1857. On proof that the inventor had more than two years prior to his application sold articles containing his invention, not experimentally, the patent was held invalid.

In *Graham* v. *McCormick*, (10 Bissell, 39, and 5 Bann. & Ard., 247,) in the Circuit Court for the Northern District of Illinois, in 1880, before Judge Drummond, the patent having been granted in 1868, the question was as to a use or sale by the inventor more than two

years before his application, and it was held that, as a matter of fact, the sale and use by him were experimental.

In *Brickill* v. *The Mayor*, (18 Blatchford, 273,) in 1880, in the Circuit Court for the Southern District of New York, before Judge Wheeler, the patent had been granted in 1868, and the defendant, the City of New York, set up a right to use the invention, which was for the combination of a heating apparatus with a steam fire-engine, by reason of the fact that the patentee had made it while in the employ of the fire department of the city, and had attached it to two of the city fire-engines. The court held, notwithstanding the construction put upon the first clause of section 7 of the act of 1839 by this Court in *McClurg* v. *Kingsland*, (1 How., 202,) that the defendants had acquired no right beyond the right to use the specific machines constructed prior to the application for the patent.

In *Campbell* v. *The Mayor*, (20 Blatchford, 67,) in 1881, in the Circuit Court for the Southern District of New York, before Judge Wheeler, the patent having been granted in 1864, and the invention having been made, sold, and used by others than the patentee after he had invented it, and more than two years before he applied for his patent, but without his consent and allowance, it was held by the court that under the second clause of the seventh section of the act of 1839 the public use and sale having been without the consent or allowance of the inventor, the patent was not invalid. This was a direct adjudication upon the point involved in the present case.

In *Davis* v. *Fredericks*, (21 Blatchford, 556,) in 1884, in the Circuit Court for the Southern District of New York, before Judge Wheeler, the patent having been granted in 1868, the invention had got into public use and on sale more than two years prior to the application for the patent, but without the inventor's consent or allowance. The court held, following *Campbell* v. *The Mayor*, that the patent was not invalid, thus adjudging the point in question here.

Reference is also made in the brief for the appellants to twelve cases reported in 1 MacArthur's Patent Cases, running from 1841 to 1859, decided by the judges of the circuit and Supreme courts of the District of Columbia, on appeals from the Commissioner of Patents; but in none of them was the point here involved in judgment. In *Heath* v. *Hildreth* (p. 12) no question arose under the act of 1839. In *Arnold* v. *Bishop* (p. 27) consent by the applicant to the use of his invention for more than two years prior to his application was shown. In *Hunt* v. *Howe* (p. 366) the sale was made by the inventor. In *Rugg* v. *Haines* (p. 420) the use and sale were with the consent and allowance of the applicant. In *Mowry* v. *Barber* (p. 563) the making and selling were by the applicant. In *Carroll* v. *Gambrill* (p. 581) the applicant was defeated upon the ground of estoppel and of abandonment of the invention. In *Ellithorp* v. *Robertson* (p. 585) he was defeated upon the ground of laches on his part, amounting to abandonment. In *Blackinton* v. *Douglass* (p. 622) there was public use with the consent of the inventor. This was also the case in *Justice* v. *Jones*, (p. 635.) In *Wickersham* v. *Singer* (p. 645) there were abandonment by the inventor and consent and allowance by him. In *Savary* v. *Lauth* (p. 691) the applicants were defeated on the ground of laches by them and presumed acquiescence. In *Spear* v. *Belson* (p. 699) it was held that laches and delay on the part of the applicant had caused a forfeiture of his right.

The review we have given of the cases now cited on behalf of the appellants shows no adjudication by this Court on the question involved, and a direct adjudication as to the effect of the second clause of the seventh section of the act of 1839, in accordance with that contended for by the appellants, in only four cases in circuit courts, (not including *Andrews* v. *Carman*.) To the contrary effect is the case of *Egbert* v. *Lippmann*, (15 Blatchford, 295,) commented on in the former opinion, (123 U. S., 270, 271.)

It is alleged by the appellants that this Court was in error in stating, as it did in its former opinion, (123 U. S., 269,) that in *Andrews* v. *Carman* (13 Blatchford, 307, 324) the question of the use of Green's invention by others more than two years prior to his application does not appear to have been raised; that it was in fact raised, and that the inference to the contrary grows out of a clerical error in the published opinion in *Andrews* v. *Carman*. It may be accepted that this is so; but the question of law involved is the very question now under consideration. It is also alleged that the same question was distinctly raised in proof and argument in the interference case between Green and Suggett respecting this invention, and that Green's patent was thereafter granted, with the understanding in the Patent Office that the Cortland wells now in question had been constructed subsequently to Green's invention and more than two years before his application. But patents are often granted with a view to leaving open, to be decided by the courts, questions which the Patent Office does not deem it proper to adjudicate against the applicant by withholding the patent. It is also urged that in the rules of the Patent Office promulgated between the time of the passage of the act of March 3, 1839, and the enactment of the act of July 8, 1870, it was made known to applicants for patents that a patent would not be granted if the invention had been in public use or on sale with the consent and allowance of the inventor for more than two years before his application. It was undoubtedly true that such a state of facts was sufficient ground for withholding a patent; but the promulgation and enforcement of such a rule cannot be regarded as having the effect of a judicial or authoritative adjudication of the question under consideration.

The argument sought to be founded upon the various phases assumed by the provisions of the act of July 8, 1870, in its passage through the two Houses of Congress, is very unsafe and unreliable as a basis of judicial action, particularly when the only inference sought to be drawn is one as to what view Congress took of the act of 1839 in enacting the act of 1870. If any inference is to be drawn on the subject, it can only properly be drawn from the act of 1870 as it stands on the statute-book, and that inference is commented on in the former opinion of this Court at page 275 of 123 U. S.

The doctrine invoked by the appellants that where the meaning of a statute has been settled by judicial construction that construction becomes a part of the statute is not applicable to the present case. A question arising in regard to the construction of a statute of the United States concerning patents for inventions cannot be regarded as judicially settled when it has not been so settled by the highest judicial authority which can pass upon the question. The earliest decision of a circuit court directly adjudging the point here involved was in 1873. This Court has always had jurisdiction to review suits on patents to a specified extent, and that jurisdiction was extended by section 56 of the act of July 8, 1870, (16 Stat., 207,) to writs of error and appeals in such suits without regard to the sum or value in dispute. No question arising in in any such case, reviewable by this Court, can be regarded as finally settled, so as to establish the law for like cases, until it has been determined by this Court. This view of the matter has been applied by this Court in analogous cases. Thus, in *Wilson* v. *City Bank* (17 Wall., 473) a decision was made as to the construction of sections 35 and 39 of the bankruptcy act of March 2, 1867, which, this Court said in its opinion, was contrary to the view taken by—

> a large number of the district judges, to whom the administration of the bankrupt law is more immediately confided.

So, too, in *ex parte Wilson*, (114 U. S., 417,) as to the proper construction of the constitutional provision that—

> no person shall be held to answer for a capital, or otherwise infamous, crime unless on a presentment or indictment of a grand jury,

and as to what criminal prosecutions required an indictment, and in what an information was allowable, this Court said, (p. 425:)

> Within the last fifteen years prosecutions by information have greatly increased, and the general current of opinion in the circuit and district courts has been toward sustaining them for any crime, a conviction of which would not at common law have disqualified the convict to be a witness.

The Court cited seven cases in the courts of the United States besides the one before it which had adopted such a view; but that view was overruled and a contrary one established.

Nor is this a case for the application of the doctrine, that in cases of ambiguity the practice adopted by an executive department of the Government in interpreting and administering a statute is to be taken as some evidence of its proper construction. The question before us as to the validity of a patent by reason of pre-existing acts or omissions of the inventor of the character of those involved in the present case is not a question of executive administration, but is properly a judicial question. Although it may be a question which to some extent may come under the cognizance of the Commissioner of Patents in granting a patent, yet, like all the questions passed upon by him in granting a patent which are similar in character to the question here involved, his determination thereof in granting a particular patent has never been looked upon as concluding the determination of the courts in regard to those questions respecting such particular patent, and, *a fortiori*, respecting other patents.

It is contended for the appellants that the claim of the Green patent is for a process, being for—

> the process of constructing wells by driving or forcing an instrument into the ground until it is projected into the water, without removing the earth upward as it is in boring, substantially as herein described;

that the seventh section of the act of 1839 applies only to—

> a machine, manufacture, or composition of matter;

and that therefore that section does not apply to the present case. In addition to the view to the contrary taken by this court in *McClurg* v. *Kingsland*, (1 How., 202,) before commented on, it was held by this Court in *Beedle* v. *Bennett*, (122 U. S., 71,) a suit on this very patent, that the patent covers the process of drawing water from the earth by means of a well driven in the manner described in the patent, and that the use of a well so constructed was therefore a continuing infringement, because every time water was drawn from it the patented process was necessarily used.

The most plausible argument presented on the part of the appellants is that under sections 6, 7, and 15 of the act of July 4, 1836, a patent was invalid if the thing invented had been in public use or on sale with the consent and allowance of the inventor prior to his application for the patent; that section 7 of the act of 1839 was intended only to limit the effect on the validity of the patent of the acquisition of single specimens of the patented invention; that the interests of purchasers or constructers of such specific articles were the sole objects of that section; that the second clause of the section was intended only to provide that the patentee should hold his right against the general public unless there was proof of abandonment by him, or unless the purchase, sale, or prior use by or to individuals who had acquired such specific articles had been for more than two years prior to the application for the patent; that in this respect alone were the provisions of the act of 1836 intended to be modified, and that a defendant, in order to show the invalidity of a patent, under section 7 of the act of 1839, must show that he claims exemption from liability to the patentee because he purchased or constructed a specific article covered by the patent prior to the application therefor, and must show that the invention was abandoned or that the purchase, sale, or prior use or construction of the specific article occurred more than two years before the application for the patent, and with the consent and allowance of the inventor. But our views in regard to the proper construction of the seventh section do not admit the soundness of this contention, and were fully set forth in the former opinion.

It is proper to notice the suggestion that there is no declaration in the seventh section of the act of 1839 that either in the case of an abandonment of the invention or of the existence for more than two years prior to the application of the purchase, sale, or prior use referred to in the second clause of the section, the patent shall be held to be invalid, and the further suggestion that there is only a hypothetical implication that the patent shall be invalid in the excepted cases. But we cannot so interpret the statute. Under sections 6, 7, and 15 of the act of 1836 a patent was made invalid if at the time of the application therefor the invention had been in public use or on sale with the consent or allowance of the patentee, however short the time. The second clause of the seventh section seems to us to clearly intend that where the pur-

chase, sale, or prior use referred to in it has been for more than two years prior to the application the patent shall be held to be invalid without regard to the consent or allowance of the inventor. Otherwise the statute cannot be given its full effect and meaning.

The result of these views is that the application for a rehearing is denied.

Supreme Court of the United States.

ANDREWS *et al. v.* CONE.

Decided February 20, 1888.

APPEAL from the Circuit Court of the United States for the District of Minnesota.

Mr. J. C. Clayton for the appellants.
Mr. Thomas Wilson for the appellees.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is an appeal by the plaintiffs in a suit in equity in the Circuit Court of the United States for the District of Minnesota from a decree dismissing the bill.

The suit was brought for the infringement of the "driven-well" patent, which was the subject of the decision of this Court in *Andrews* v. *Hovey*, (123 U. S., 267,) and in which case an application for a rehearing has just been denied. (See above.) The decree below in *Andrews* v. *Hovey* dismissed the bill, and this Court affirmed it, holding the patent to have been invalid. In the present case there is a written stipulation, filed in this Court, signed by the counsel of record here, that this case shall abide the result of the case of *Andrews* v. *Hovey* in this Court, and that the decree and mandate herein shall be the same as the decree and mandate in that case, except that no costs shall be taxed or awarded, or disbursements or officers' fees allowed or awarded in this case in favor of or against either party hereto, and that each party shall pay his own costs and disbursements.

In accordance with such stipulation the decree of the circuit court is affirmed, subject to the above-recited provisions of the stipulation.

U. S. Circuit Court—Southern District of New York.

KRAUS *et al. v.* FITZPATRICK *et al.*

Decided February 24, 1888.

1. WELTON—CORSETS.
Design Patent No. 13,620, dated February 13, 1883, granted to Frank Welton, declared valid and to have been infringed.

2. USEFULNESS NOT DETRIMENTAL IN DESIGN PATENTS.
The fact that an article is useful does not make it less patentable as a design if it is new as a design.

3. ANTICIPATION OF DESIGN PATENTS—WHAT IS NOT.
It is no answer to the validity of a design patent that special features of it are found separately in prior things.

Mr. Robert H. Duncan for the orators.
Mr. Lawrence E. Sexton for the defendants.

WHEELER, *J.*:

This suit is brought upon Design Patent No. 13,620, dated February 13, 1883, and granted to Frank Welton, assignor to the orators, to run seven years, for a corset.

The principal features of the design, as specified in the claim, are a ribbed band at the lower edge extending from the extreme front up over the hip and down to the rear portion, and a series of ribs each side of the central hip-line, beginning at the top and extending downward and diverging onto the ribbed band. The shape given to the corset by extending the lower edge up over instead of around the hip appears to add to the utility of the corset as an article of manufacture as well as to its appearance. The patent is not, however, for an article of manufacture as such, which would have to be taken out under other provisions of the law than those relating to design patents, but is merely for the new appearance given to the article by constructing it according to the design; but the fact that a corset made according to the design would have that utility would not appear to make the design any the less patentable if in itself as a design it was sufficiently new. The test of infringement of a design patent appears to be the existence of such similarities as will lead ordinary persons to think the articles in question are the same. (*Gorham Co.* v. *White*, 14 Wall., 511; *Jennings* v. *Kibbe*, 20 Blatchf., 353; 10 Fed. Rep., 669.) The test of novelty would therefore appear to be the existence of such differences between articles embodying the patented design and those existing before as would be recognized by the same class of persons. (*Lehnbeuter* v. *Holthans*, 105 U. S., 94.) The nearest approach to the design of this patent shown by the evidence, and the one most relied upon by the defendants, is that shown in the patent to Paul T. Hertzog, No. 12,773, dated February 21, 1882. That has the ribbed band at the lower edge, but not extending up over the hip so far, and it does not have the series of ribs each side of the hip-line. Most of the special features of this design are to be found separately in prior things; but they are nowhere combined so as to make such an effect as a whole, and that is what is to be looked at. (*Perry* v. *Starrett*, 3 Ban. & Ard., 485.) As a matter of fact, in this view it clearly enough appears that corsets of this design would be readily distinguishable by ordinary persons from those of any prior design. The patent appears, therefore, to be valid. Infringement is not disputed and is clear—so clear that it shows the results of copying. The orators are therefore entitled to a decree.

Let a decree be entered that the patent is valid, that the defendants infringe, and for an injunction and an account, according to the prayer of the bill, with costs.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 42—No. 13. TUESDAY, MARCH 27, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
THE OFFICIAL GAZETTE	1293
INDEXES TO FOREIGN PATENTS	1293
NOTICE	1293
ISSUE OF MARCH 27, 1888	1293
DESIGNS	1294
TRADE-MARKS	1294
LABELS	1294
DISCLAIMERS	1294
PATENTS GRANTED	1295
REISSUES	1400
DECISIONS OF THE U. S. COURTS—	
The Enterprise Manufacturing Company of Pennsylvania v. Sargent & Company *et al*	1403
Nashua Lock Company v. Norwich Lock Manufacturing Company	1405

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

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Notice.—Models in Rejected or Abandoned Cases.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 9, 1888.

Notice is hereby given to inventors and the public that a large number of models is in the custody of this Office, which were received between the years 1870 and 1886, many of which have never become a part of the records of this Office. All such models and all models belonging to rejected or abandoned applications will be sold or otherwise disposed of under the provisions of section 485 of the Revised Statutes unless removed in sixty days from the date hereof.

Institutions of learning in good standing may, after the expiration of the time above limited, on written application, make selection before the day of public sale of models remaining unclaimed. The expense of removal or transportation of these models must be borne by the applicants or institutions of learning.

BENTON J. HALL,
Commissioner.

42 O G—13—i

Issue of March 27, 1888.

Patents	383—No. 379,923 to No. 380,305,	inclusive.
Designs	18—No. 18,200 to No. 18,217,	inclusive.
Trade-Marks	17—No. 15,311 to No. 15,327,	inclusive.
Labels	6—No. 5,530 to No. 5,535,	inclusive.
Reissues	5—No. 10,913 to No. 10,917,	inclusive.
Total issue	429	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	.....	Nebraska	3	.....
Arizona Territory	.....	.....	Nevada	.....	.....
Arkansas	1	.....	New Hampshire	1	.....
California	10	.....	New Jersey	16	.....
Colorado	3	.....	New Mexico Terri'y	1	.....
Connecticut	14	.....	New York	80	9
Dakota Territory	2	.....	North Carolina	.....	.....
Delaware	2	.....	Ohio	36	1
District of Columbia	2	.....	Oregon	2	.....
Florida	.....	.....	Pennsylvania	32	.....
Georgia	3	.....	Rhode Island	7	.....
Idaho Territory	.....	.....	South Carolina	1	.....
Illinois	31	2	Tennessee	2	1
Indiana	8	.....	Texas	7	.....
Iowa	8	.....	Utah Territory	1	.....
Kansas	8	.....	Vermont	.....	.....
Kentucky	6	.....	Virginia	3	.....
Louisiana	1	.....	Washington Terri'y	.....	.....
Maine	3	.....	West Virginia	.....	.....
Maryland	11	.....	Wisconsin	13	.....
Massachusetts	25	2	Wyoming Terri'y	.....	.....
Michigan	13	1	U. S. Army	.....	.....
Minnesota	6	.....	U. S. Navy	.....	.....
Mississippi	2	.....			
Missouri	11	.....	Total to citizens of		
Montana Territory	1	.....	the United States	379	16

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	.....	.....	Germany	7	1
Barbadoes	.....	.....	Mexico	.....	.....
Belgium	.....	.....	Netherlands	.....	.....
Bermuda	.....	.....	New South Wales	.....	.....
Brazil	.....	.....	Russia	1	.....
Canada	8	.....	Scotland	1	.....
China	.....	.....	Sweden	1	.....
Colombia, U. S. of	.....	.....	Switzerland	1	.....
Cuba	.....	.....	Victoria	.....	.....
Denmark	.....	.....	Wales	1	.....
Ecuador	.....	.....			
England	2	6	Total to citizens of		
France	.....	.....	foreign countries	22	7

DESIGNS.

18,200 and 18,201.—LAMP OR LANTERN BODY.—*Francis Billingham*, Brooklyn, N. Y. Applications filed February 3, 1888. Serial Nos. 262,938 and 262,939. Term of patents 14 years.

18,202.—LAMP-BURNER.—*Charles A. Evarts*, Meriden, Conn., assignor to *The Bradley & Hubbard Manufacturing Company*, same place. Application filed February 27, 1888. Serial No. 265,523. Term of patent 7 years.

18,203.—PIANO-COVER.—*La Martine French*, Chicago, Ill. Application filed January 20, 1888. Serial No. 261,412. Term of patent 7 years.

18,204.—MEDAL.—*John P. Kirk, Jr.*, Austin, Tex. Application filed December 15, 1887. Serial No. 258,031. Term of patent 3½ years.

18,205.—GARMENT-SUPPORTER.—*Abraham P. Rindskopf* and *Henry P. Rindskopf*, Brooklyn, N. Y. Application filed January 25, 1888. Serial No. 261,922. Term of patent 7 years.

18,206.—CONFECTIONERY.—*August Schwarzschild* and *Nelson Greenfield*, New York, N. Y. Application filed February 23, 1888. Serial No. 265,048. Term of patent 3½ years.

18,207.—LADY'S COSTUME.—*Jennie Sheils*, New York, N. Y., assignor to *The Butterick Publishing Company, (Limited,)* same place. Application filed January 11, 1888. Serial No. 260,447. Term of patent 3½ years.

18,208.—SHINGLE OR ROOFING-PLATE.—*Jacob S. Thorn*, Philadelphia, Pa. Application filed May 6, 1887. Serial No. 237,367. Term of patent 14 years.

18,209.—SHINGLE OR ROOFING-PLATE.—*Jacob S. Thorn*, Philadelphia, Pa. Application filed May 7, 1887. Serial No. 237,487. Term of patent 14 years.

18,210 to 18,212, inclusive.—SHINGLE OR ROOFING-PLATE.—*Jacob S. Thorn*, Philadelphia, Pa. Applications filed February 27, 1888. Serial Nos. 265,518 to 265,520, inclusive. Term of patents 14 years.

18,213.—CHECK OR COUNTER.—*William M. Welling*, New York, N. Y. Application filed December 16, 1887. Serial No. 258,140. Term of patent 7 years.

18,214.—COMB.—*Paul Witteck*, Butler, N. J., assignor to *The Butler Hard Rubber Company*, New York, N. Y. Application filed July 30, 1887. Serial No. 245,756. Term of patent 3½ years.

18,215.—HORSESHOE.—*Peter F. Greenwood*, Philadelphia, Pa. Application filed January 16, 1888. Serial No. 260,953. Term of patent 7 years.

18,216.—LADY'S COAT.—*Mary V. Kavanagh*, New York, N. Y., assignor to *The Butterick Publishing Company, (Limited,)* same place. Application filed February 23, 1888. Serial No. 265,051. Term of patent 3½ years.

18,217.—LADY'S WALKING-SKIRT.—*Jennie Sheils*, New York, N. Y., assignor to *The Butterick Publishing Company, (Limited,)* same place. Application filed February 23, 1888. Serial No. 265,055. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,311.—VARIOUS MEDICAL COMPOUNDS NAMED.—*Samuel Colcord*, New York, N. Y. Application filed February 7, 1888. Used since January 15, 1888.

"The representation of a flag and a bottle carrying a flag-staff."

15,312.—GILLING-THREAD.—*Demarest & Joralemon*, New York, N. Y. Application filed February 24, 1888. Used since July 1, 1870.

"The representation of a fish."

15,313.—PAINTS, VARNISHES, DRY COLORS, AND PAINT INGREDIENTS. *Farrand, Williams & Co.*, Detroit, Mich. Application filed November 14, 1887. Used since January 1, 1887.

"The word 'PENINSULAR.'"

15,314.—WHEAT-FLOUR.—*Farwell & Rhines*, Watertown, N. Y. Application filed February 18, 1888. Used since October, 1878.

"The word 'GLUTEN,' with the fac-simile signature 'FARWELL & RHINES' across it."

15,315.—WHEAT-FLOUR.—*Farwell & Rhines*, Watertown, N. Y. Application filed February 18, 1888. Used since October, 1878.

"The words 'DIABETIC FOOD,' with the fac-simile signature 'FARWELL & RHINES' across them."

15,316.—COTTON PRINTS.—*Freeman Manufacturing Company*, North Adams, Mass. Application filed August 26, 1887. Used since August 1, 1887.

"The title 'GOLD TICKET.'"

15,317.—FANCY WINTER-WHEAT PATENT FLOUR.—*Gilbert, Waugh & Co.*, Mansfield, Ohio. Application filed February 18, 1888. Used since November, 1881.

"The word 'PORCELAIN' and the representation of a porcelain vase."

15,318.—LADIES' TOWELS.—*J. Hothersall & Co.*, Manchester, county of Lancaster, England. Application filed January 5, 1888. Used since December 20, 1886.

"The word 'SANITAS.'"

15,319.—IMITATION-LEATHER CLOTH-DUSTERS.—*J. Hothersall & Co.*, Manchester, county of Lancaster, England. Application filed January 5, 1888. Used since December 20, 1886.

"The word 'CHAMOISINE.'"

15,320.—POCKET AND TABLE CUTLERY, SCISSORS, HUNTING AND BUTCHER KNIVES, AND RAZORS.—*Hubbell & Randall*, New York, N. Y. Application filed January 3, 1888. Used since December 10, 1887.

"A scroll having on it the words 'WELL KNOWN,' divided, and arranged one above the other."

15,321.—VALVES AND PACKING FOR VALVES, COCKS, AND SIMILAR DEVICES.—*Jenkins Bros.*, New York, N. Y., and Boston, Mass. Application filed February 4, 1888. Used since 1868.

"The word 'JENKINS.'"

15,322.—CORSETS.—*Jordan, Marsh & Co.*, Boston, Mass. Application filed February 15, 1888. Used since March, 1884.

"The words 'A LA FLEUR DE LIS.'"

15,323.—MEDICINE.—*David Kennedy*, Rondout, N. Y.—Application filed October 28, 1887. Used since January 1, 1884.

"The representation of a lady holding a child aloft in her arms, the words 'DR. DAVID KENNEDY'S' below the same, and the words 'CHERRY BALSAM,' and the representation of a building between the words 'KENNEDY'S' and 'CHERRY BALSAM.'"

15,324.—TEAS FROM CHINA.—*C. D. Lathrop & Co.*, Chicago, Ill. Application filed November 30, 1887. Used since June, 1887.

"The words 'DRAGON OF CHINA.'"

15,325.—HORSE AND CATTLE LINIMENT.—*Joseph G. Love*, Hanover, Ill. Application filed January 9, 1888. Used since September 1, 1887.

"The representation of two lengths of barbed wire arranged in the form of a letter X and having a medallion at the intersection of the two lengths."

15,326.—DRAFTSMEN'S AND ENGINEERS' SUPPLIES AND INSTRUMENTS. *Edward G. Soltmann*, New York, N. Y. Application filed February 4, 1888. Used since June, 1887.

"The word 'CORONET' inclosed in quotation-marks."

15,327.—BEER.—*Joseph Wagner*, Munich, Bavaria, Germany. Application filed December 30, 1887. Used since October 20, 1887.

"The representation of a crosier between the old German capital letters 'J.' and 'W.'"

LABELS.

5,530.—Title: "'CRANBERRY' HORSE SHOES."—*B. L. Dulaney*, Bristol, Tenn. Application filed January 7, 1888.

5,531.—Title: "GOLDEN-STEEL GAUGE PINS." (FOR PRINTERS' FEED GAGES.)—*Edward L. Megill*, Brooklyn, N. Y. Application filed March 1, 1887. (Trade-Mark Registered.)

5,532.—Title: "ARNOLD'S CHEMICAL WRITING FLUID."—*Charles Edwin Ogden*, London, county of Middlesex, England. Application filed January 16, 1888. (Trade-Mark Registered.)

5,533.—Title: "MACHINE COPYING INK."—*Charles Edwin Ogden*, London, county of Middlesex, England. Application filed January 16, 1888. (Trade-Mark Registered.)

5,534.—Title: "ARNOLD'S CHEMICAL BLUE BLACK COPYING FLUID."—*Charles Edwin Ogden*, London, county of Middlesex, England. Application filed January 16, 1888. (Trade-Mark Registered.)

5,535.—Title: "ARNOLD'S SCARLET WRITING INK."—*Charles Edwin Ogden*, London, county of Middlesex, England. Application filed January 16, 1888. (Trade-Mark Registered.)

DISCLAIMERS.

245,035.—*Dennis F. Van Liew*, Aurora, Ill. IMPROVEMENT IN CAR-DOOR HANGERS. Patent dated August 2, 1881. Disclaimer filed March 21, 1888.

Enters his disclaimer to the first claim of his said Letters Patent No. 245,035, which is in the following words:

"1. The combination, with a car and its door, of the ball or balls confined in sockets equal, or essentially equal, in length to the distance traveled by the balls in the operation of the door, substantially as specified."

Also, to that portion of the specification of said letters patent which is included between lines 17 and 31, page 1 thereof, and which is in the following words:

"The primary feature of my improved construction consists in housing each of the rollers or balls whereon the door rests in elongated sockets, substantially equal in length to the distance required to be traveled by the ball in the operation of the door.

"By this improvement I do away with the friction between the ball and the pushing side of its holding-socket, and the benefit of it is especially felt in starting the door.

"The other portions of my invention relate to certain details of construction, which are fully explained hereinafter."

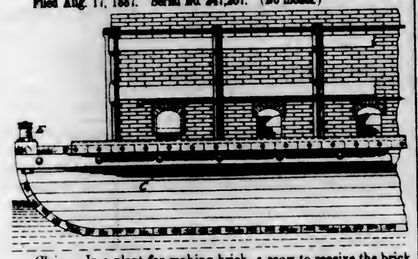
305,133.—*Frederick E. Porter*, Baltimore, Md. IMPROVEMENT IN PAPER-BAG MACHINES. Patent dated June 18, 1878. Disclaimer filed March 22, 1888, by the inventor and *Rodney B. Smith*, assignee of one-half interest.

Enter their disclaimer to so much or such part of the invention claimed in the first, second, and third claims of the said letters patent as may include a method or methods of forming duplex bag-blanks by simultaneously forming two unconnected tubes—the one within the other—and with parallel pasted seams extended spirally around the tube or blank; or, in other words, to any method of forming such duplex bag-blanks which does not include the simultaneous formation of parallel, straight, longitudinal seams in the inner and outer tubes, as is set forth in the specification and shown in the drawings forming part thereof.

PATENTS

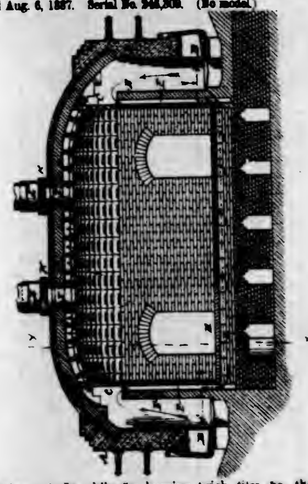
GRANTED MARCH 27, 1888.

379,923. BRICK-KILN. JAMES C. ANDERSON, Highland Park, Ill. Filed Aug. 17, 1887. Serial No. 247,207. (No model.)



Claim.—In a plant for making brick, a scow to receive the brick from the machine as they are made, said scow being provided with a permanent kiln or clamp, in which the bricks are burned and transported to market without further handlings, as set forth.

379,924. BRICK-KILN. JAMES C. ANDERSON, Highland Park, Ill. Filed Aug. 6, 1887. Serial No. 246,309. (No model.)



Claim.—1. In a kiln for burning brick, tiles, &c., the flues or spaces F, leading from the furnaces into the flues G below the floor of the kiln, said flues G being perforated at their rear ends, whereby the most violent or hottest portion of the flame, as it comes from the furnace, is transmitted to the articles to be burned through the walls of the flues, and the milder portion of the flame is precipitated into the articles in the middle of the kiln, as set forth.

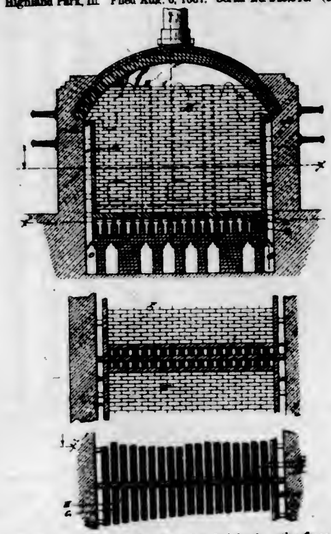
2. In a kiln for burning brick, tiles, &c., the flues or spaces F, leading from the furnaces into the flues G below the floor of the kiln, said flues being perforated, as described, in combination with the openings *a* in the arch of the kiln and chambers or spaces D in the sides of the kiln, as set forth.

3. In kilns for burning brick, tiles, &c., the inner arch or lining, which is provided with apertures *a*, said apertures being smaller at the base than at the crown of the arch, whereby the heat is drawn through the center of the kiln, as set forth.

4. In kilns for burning brick, &c., the bridge-walls E, separated from the walls C by the chamber or flue F, through which the products of combustion pass, in combination with the flues G and solid floor H, whereby the heat is transmitted to the brick to be burned in the ends and bottom of the kiln and finally projected among the articles in the center of the kiln, as set forth.

5. In kilns of the character described, the flues G, arranged beneath the floor of the kiln, each alternate flue being closed at the end, as described, whereby the flames or products of combustion from the furnace will not come in collision with each other.

379,925. KILN FOR BURNING BRICK, &c. JAMES C. ANDERSON, Highland Park, Ill. Filed Aug. 6, 1887. Serial No. 246,310. (No model.)



Claim.—1. In a kiln for burning brick, &c., the flues E, leading from the furnaces into the flues H in the bottom of the kiln, and the flues H, communicating with the flues I, in the center of the kiln, whereby the brick in the ends and bottom of the kiln are burned by the heat transmitted through the walls of the flues and the brick in the top of the kiln burned by direct contact with the products of combustion.

2. In a kiln for burning brick, tile, &c., the flues E, leading from the furnace into the flues H in the bottom of the kiln, and the flues H, communicating with the flues I, in the center of the kiln, in combination with the flues or spaces N in the sides of the kiln, whereby the brick in the ends, sides, and bottom of the kiln are burned by the heat transmitted through the walls of the flues and the brick in the top of the kiln are burned by direct contact with the products of combustion.

3. In kilns for burning brick, tiles, &c., the furnaces of which are located at each end of the same, the walls C K and floor F, forming the heat-conducting chambers E, H, and L and separating them from

the other portion of the kiln, whereby the heat from the furnaces is conveyed to the articles in the ends and bottom of the kiln by transmission, as set forth.

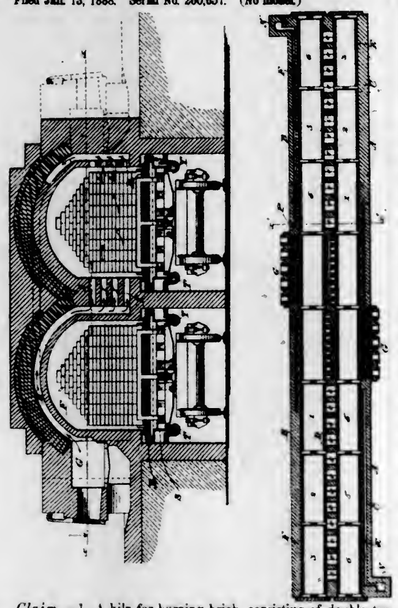
379,926. **CLAY BLOCK FOR PAVING, &c.** JAMES C. ANDERSON, Highland Park, Ill. Filed Aug. 6, 1887. Serial No. 246,311. (No model.)



Claim.—1. A block for paving and other purposes, composed of a series of clay slabs or blocks, such as described, joined together by a vitreous or vitrifiable material, as set forth.

2. A block for paving and other purposes, composed of a series of clay slabs or blocks joined together by a vitreous material, said slabs being beveled at their edges to form grooves or depressions, as set forth.

379,927. **BRICK-KILN.** JAMES C. ANDERSON, Highland Park, Ill. Filed Jan. 13, 1888. Serial No. 260,657. (No model.)



Claim.—1. A kiln for burning brick, consisting of double tunnels, each tunnel being provided with a furnace, which projects its flame over the tunnel nearest to it and into and through the brick on the car in the opposite tunnel, as set forth.

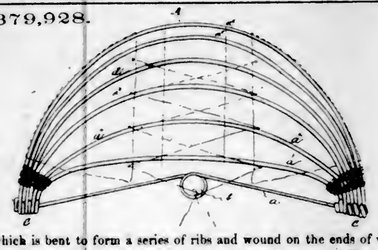
2. A double-tunneled kiln of the character described, the furnaces of which project their flames over their respective tunnels and into the adjacent tunnel and into flues, which conduct the waste heat back into chambers in the outer walls and arches of their respective tunnels and to the stacks, whereby the heat which would be otherwise wasted is utilized to heat the entrance or front end of the tunnel, as set forth.

3. In double-tunneled kilns in which trains of cars carrying brick to be burned travel in opposite directions, the partition-walls D, provided with the openings *o*, on a level with the bottoms of the cars and on each side of the furnaces, whereby the heat from the burned brick is utilized to water-smoke and raise the temperature of the brick on the cars nearest the furnace to a red heat, as set forth.

4. The combination of the flues H, leading from the furnaces, through the openings I, into the opposite tunnel, with the openings L, flues K, and spaces M, located in the outer wall and arch of the entrance end of the tunnel, whereby the portions of the tunnels most remote from the furnaces are heated, as set forth.

379,928. **BUSTLE.** FRANK E. BENNETT, Philadelphia, Pa. Filed Nov. 23, 1887. Serial No. 255,842. (No model.)

Claim.—In a bustle, the base-wire *a*, having a spring-loop, *b*, formed in it at its middle, in combination with the continuous wire A, which is bent to form a series of ribs and wound on the ends of wire *a* to form spring-loops *c* in passing from rib to rib, substantially as set forth.



379,929. **BUTTON.** WILLIAM BOURKE, Brooklyn, N. Y. Filed Oct. 15, 1887. Serial No. 252,424. (No model.)

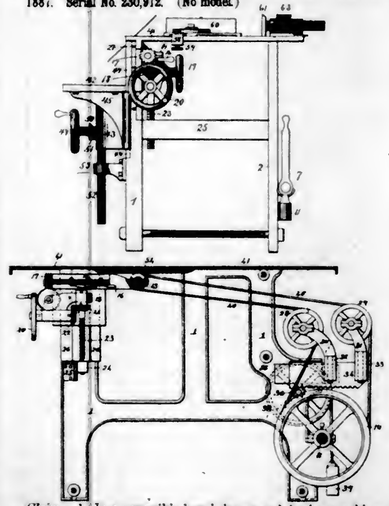


Claim.—1. The herein-described stop and bearing plate for button-heads, the same being provided with an expansible nipple or thimble on one side, combined with a recessed button-head, into which the nipple is forced and expanded, substantially as and for the purposes explained.

2. In a button, the combination, with the recessed head, of a nipple or thimble, a stop or bearing plate connected with said nipple, and a shank connected with the plate, the nipple being forced and expanded in the recess of the head, substantially as shown and described.

3. In a button, the combination of the recessed head, a nipple or thimble forced and expanded in said head, a stop or outer flange, which, when the nipple is in place, constitutes a bearing-plate, and a double or bracing shank connected with the plate, substantially as shown and described.

379,930. **REVERSIBLE BEVEL-SHAPER, SAW, AND BORING-MACHINE.** HENRY D. T. BRANTON, Fort Scott, Kans. Filed Mar. 14, 1887. Serial No. 230,912. (No model.)



Claim.—1. In a reversible bevel-shaper and boring-machine, the combination of shaft 8, carrying grooved reversible driving-pulley 10, reversible friction cone-pulleys 4, 5, and 9, with the grooved binder-pulleys 28 and 29, the pivoted arms 30 31 in their bearings 32 33 on sliding rack 34, moving on slide 35 on frame 1, the pinion 36 and rope-wheel 38 on shaft turning in bearing on frame 1, and weight 39, the round belts 40, and the arbor 13, with grooved pulley and saw or tool thereon, all substantially as and for the purpose set forth.

2. The combination of the grooved pulley 10, the sliding rack 34, slide 35 on frame 1, the pinion 36, rope-wheel 38, and weight 39, with

belts 40, apron 15, sliding on vertical slides 26 on frame 1, the split bearing 14 on apron 15, clamp-levers 16, the journaled yoke-bearing 12, the arbor 13, worm-gear 17, worm 18, hand-wheel 19, hand-wheel 20, miter-gears 21 22, screw-rod 23, and threaded lug 24, substantially as and for the purpose shown and described.

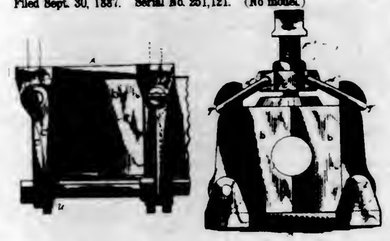
3. In a reversible bevel-shaper and boring-machine, an arbor, 13, provided with a grooved pulley, in combination with means for giving to the arbor four distinct motions, as rotary and reverse motions, consisting of round belts 40, operating on pulley on arbor 13, binder-pulleys 28 and 29, and the reversible grooved driving-pulley 10, and radial and vertical motions consisting of apron 15, split bearing 14, clamp-levers 16, yoke-bearing 12, worm-gear 17, worm 18, hand-wheels 19 20, miter-gears 21 22, screw-rod 23, and lug 24, as set forth, all mounted in frame 1, substantially as and for the purpose shown and described.

4. In a reversible bevel-shaper and boring-machine, the combination of the tables 41 and 42, the sliding pieces 54 55, and bolts and thumb-nuts 56, in conjunction with arbor 13, the yoke-bearing 12, split bearing 14, clamp-levers 16, apron 15, worm-gear 17, worm 18, hand-wheels 19 20, miter-gears 21 22, screw-rod 23, lug 24, and slides 26 on frame 1, for manipulating said arbor 13, all substantially as shown and specified.

5. The combination of the four-motion arbor 13, the apron 43, hand-wheel 49, miter-gears 50 51, screw-rod 52, threaded lug 53, and vertical ways 44 on frame 1, and the table 42, moving on bracket-slides 45 46, substantially as set forth.

6. In a reversible bevel-shaper and boring-machine, the combination of the guide 58, secured by thumb-screw 59 to tables 41 or 42, on which is moved slide 60, in connection with reversible arbor 13.

379,931. **STAMP-GUIDE.** JOHN J. BROUGHALL, Butte City, Mont. Filed Sept. 30, 1887. Serial No. 251,121. (No model.)



Claim.—1. A sectional stamp-guide composed of guide-blocks *b b*, combined with side arms hinged to the guide-rail at each side of said guide-blocks and adapted to abut against the sides of the latter, a screw-nut and clamp-screw opposite the front of said guide, and links pivotally connected with said screw-nut and side arms, substantially as and for the purpose set forth.

2. The combination of the side arms, each hinged at one end to a permanent support, with the screw-nut and its screw, and the links pivotally connected with the side arms and the nut and detachable at one end, substantially as set forth.

3. The combination of the hinged side arms, C, provided with notches *g*, with the screw-nut and clamp-screw, and the links pivoted at their outer ends to the side arms and having at their inner ends openings adapted to engage in said notches.

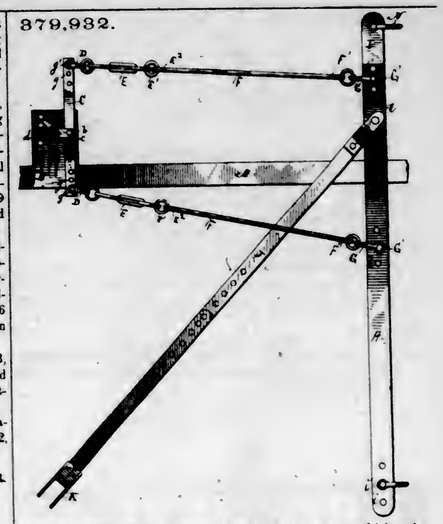
4. The combination of the side arms, C, adapted to be pivoted to a fixed support and provided with notches *g*, a coupling-bar, c^4, links pivoted to the coupling-bar and adapted to engage said notches, and a pressure device, substantially as described, for forcing the coupling-bar outward and drawing inward said side arms, substantially as set forth.

5. The combination, with the side arms adapted to be pivoted at their rear ends to a fixed support, links pivoted to the forward ends of said arms, an outwardly-movable part connected with the other ends of said links, and a pressure device, substantially as described, for forcing the latter outward and drawing inward the said side arms, substantially as set forth.

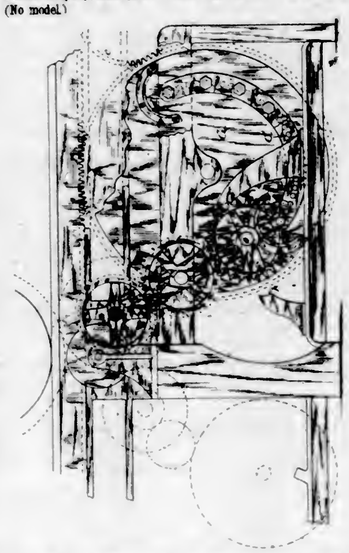
379,932. **EVENER FOR VEHICLES.** ALFRED G. BROWN, Egan, Dak. Filed Sept. 16, 1887. Serial No. 249,833. (No model.)

Claim.—In a draft-equalizer, a vehicle-pole having a draft-plate secured to its inner end, provided with a series of perforations and projecting outward at one side of said pole, an evener centrally pivoted thereto, one end of which is secured by rings, links, and a rod to a long evener that is horizontally pivoted to a short evener which is connected by rings, links, and a rod to the short evener on said plate, the outer ends of each evener being provided with draft-clevises, a flat connecting-rod connected to the pivot-bolt of the long and short levers and longitudinally adjustable by central perforations and bolts, and its opposite end connected in a diagonal line by clip-strap to a vehicle, substantially as shown and described.

379,932.



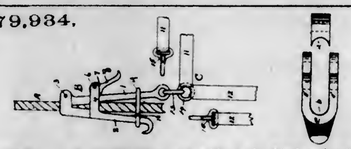
379,933. **BED-MOTION FOR CYLINDER PRINTING-MACHINES.** CHARLES H. CAMPBELL, Watertown, N. Y., assignor to the Bagley & Sewall Company, same place. Filed Aug. 19, 1887. Serial No. 247,350. (No model.)



Claim.—In combination with the reciprocating press-bed and mangle-wheel, the arm E, pivoted at one end and carrying on its free end a pinion or star-wheel engaging the mangle-wheel, a pinion secured to the shaft of the aforesaid pinion or star-wheel, a driving-pinion concentric with the pivot of said arm, intermediate gears pivoted to the arm and arranged to transmit motion to the pinion or star-wheel on the free end of the arm, and stops *h h* at opposite sides of the free end of the arm, substantially as described and shown.

379,934. **FIRE-ESCAPE.** JOEL CLARK, Minneapolis, Minn. Filed July 25, 1887. Serial No. 245,223. (No model.)

379,934.

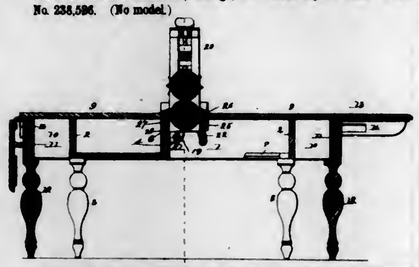


Claim.—1. In combination, the guide A, the friction-clutch 1 2 3 on said guide, loose locking-link 9, inclosing the jaw-arms and provided with the friction-spring 10, bearing against one of said jaws, whereby one of said links is adjustably held on said jaws.

2. In combination, guide A, the friction-clutch 1 2 3, grasping said guide, provided with the keeper 4, cam-lever 7 8, and the loose locking-link 9, provided with the spring 10, as set forth.

3. In combination, guide A, friction-clutch 1 2 3, grasping said guide, the keeper 4, the cam-lever 6 7 8, loose locking-link 9, provided with spring 10, the person-attaching straps 11 and 12, and the links 13 and 14, connecting said straps to said clutch, as and for the purpose set forth.
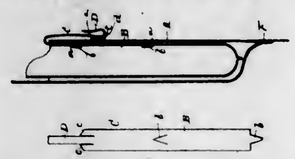
379,935. COMBINED MANGLING-MACHINE AND EXTENSION-TABLE. KNUD CLEMENTSEN, Chicago, Ill. Filed May 17, 1887. Serial No. 238,596. (No model.)



Claim.—1. In a combined extension-table and mangle, the combination of the frame having a cross-piece, a bottom between the cross-piece and one end, supporting-boards near the other end of the frame, movable top portions upon the ends of the table, having supporting-legs and extension-rails, a mangle pivotally secured upon the side of the cross-piece nearest the supporting-boards, and means, substantially as described, for securing the mangle in its upright or operative position.

2. In a combined extension-table and mangle, the combination of a frame having a cross-piece forming a box upon one side, a segmental groove in one of the side pieces of the frame, studs upon the top of the cross-piece, perforated ears upon the side, a removable cross-piece having sockets upon its under side, whereby it is secured upon the cross-piece of the frame, a mangle the bottom of which is provided with pintles pivotally secured upon the ears of the cross-piece of the frame; a cross-piece on one side of the lower end of the mangle, having a groove in its outer side, a handle movably secured upon one end of the shaft of one of the rollers of the mangle, and a top portion upon each end of the frame having a supporting-leg and extension-rails.

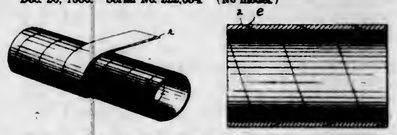
379,936. SPECTACLE-CASE. WILLIAM F. CLOUD, Topeka, Kans. Filed Aug. 2, 1887. Serial No. 245,967. (No model.)



Claim.—1. The combination, with the case A, of the clasp having the plate B, with prongs or teeth *b* inserted into the case, the spring-loop C, formed with the teeth *c c*, and the part *d*, projecting below the teeth, all of the said parts of the clasp being formed integrally, substantially as set forth.

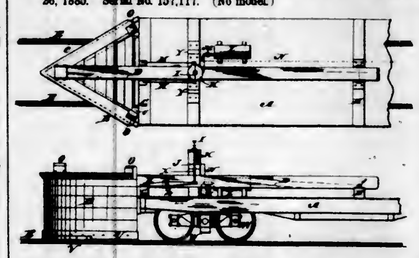
2. The combination, with the case A, of the clasp having the plate B, with the teeth or prongs *b* for securing it to the case, the spring-loop C, with the teeth *c c*, and the hook or eye D, projecting below the part C, all of said parts of the clasp being formed integrally from sheet metal, substantially as set forth.

379,937. SHEET-METAL TUBE. EDWARD K. COAS, Providence, R. I., assignor to the Providence Cylinder Company, Nashua, N. H. Filed Dec. 20, 1886. Serial No. 222,054. (No model.)



Claim.—The method hereinbefore described of making metal cylinders of two thicknesses, consisting in coiling the first thickness into cylindrical form, then coiling the second thickness about the first, so as to break joints, the edges of the outer thickness being beveled to overlap, and, finally, uniting the edge of the outer coil by solder, substantially as described.

379,938. RAILWAY SNOW-PLOW. ASA G. DAILEY, Detroit, Mich., assignor of one-half to James D. Hawks, same place. Filed Feb. 26, 1885. Serial No. 157,117. (No model.)



Claim.—1. The combination of a track-cleaner and pneumatic appliances for operating the same.

2. The combination of a snow-plow hung on a support pivoted to a car, the air-cylinder and its piston, and levers or bars connected with said piston and connections to the support of the plow.

3. In combination, with a snow-plow hung on a pivoted support, a cylinder and piston connected with said support and operated by power from any suitable source, substantially as and for the purposes set forth.

4. The combination of a snow-plow hung on a support pivoted to a car, a cylinder secured on said car and provided with a pipe whereby it can be connected directly or indirectly with an air-pump, a piston movable in said cylinder and having a piston-rod connected with one or more levers, which are also connected with said pivoted support, whereby an outward motion of said piston raises said plow and an inward motion lowers said plow, substantially as shown and described.

5. In a snow-plow pivoted to the front of a car, the combination of the posts O O, having pieces *o o* fastened thereto, with the beam P, whereby lateral motion of the plow is prevented, substantially as shown and described.

6. The combination of a snow-plow pivoted to the front of a car and adapted to be raised and lowered, knives U U, fastened to the lower edge of each side of the plow, and knives V V, fastened to the lower edge of the plow and extending below the level of the rails, substantially as described.

7. The combination of the car A, snow-plow B C, carried on the beam D, pivoted to the car at S, beams E' E, fastened across said car and supporting beam D, blocks Y, secured to beam E, and carrying-plate J, cylinder K, having a piston and piston-rod, Z, cross-head I, connecting-rods X, and levers H, pivotally secured to beam D and fulcrumed on beam G, substantially as shown and described.

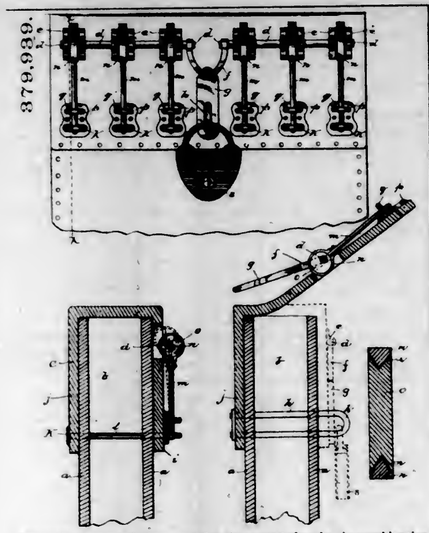
8. In combination with a snow-plow hung on a support pivoted to a car, whereby said plow can be raised or lowered, a cylinder and piston having the piston-rod thereof connected with said pivoted support, a reservoir for compressed air secured to said car and connected with said cylinder, and a valve adapted to admit compressed air from said reservoir to said cylinder, substantially as shown and described.

379,939. MAIL-BAG. EDWIN F. DAVIS, Seneca, Kans., assignor of one-half to Charles J. Nesbitt, Kansas City, Mo. Filed Jan. 10, 1888. Serial No. 260,302. (No model.)

Claim.—1. In a mail-bag fastening, a rock-shaft provided with one or more eccentrics having one or more locking-bolts connected thereto and reciprocated thereby, in combination with one or more staples secured to the bag and engaged by said bolt or bolts, substantially as described.

2. In a mail-bag fastening, a rock-shaft having one or more locking-bolts connected thereto and reciprocated thereby, in combination with one or more staples secured to the bag and engaged by said bolt or bolts, substantially as described.

379,939.



ing-bolts connected thereto and reciprocated thereby, in combination with one or more staples secured to the bag and engaged by said bolt or bolts, and a lever for operating said rock-shaft, substantially as described.

3. In a mail-bag fastening, a flap provided with a rock-shaft having eccentrics, and recesses to receive the same, in combination with locking-bolts connected to said eccentrics, and staples secured to the bag and engaged by said bolt or bolts, substantially as described.

4. In a mail-bag fastening, a rock-shaft provided with eccentrics and locking-bolts connected thereto, in combination with an operating-lever and staples extending through the bag, in the manner and for the purpose specified.

5. In a mail-bag fastening, the combination of a rock-shaft provided with eccentrics, locking-bolts connected with said eccentrics, staples with which said bolts engage, shields surrounding said staples, and the bolt-guides, all arranged and adapted to operate as described.

6. In combination with a mail-bag, rock-shafts provided with eccentrics having grooves in their peripheries, collars fitting within said grooves, bolts attached to said collars, staples with which said bolts engage, shields surrounding the staples, guides upon said shields, a bow-lever connecting said shafts, said lever being provided with a swiveled hasp, all arranged and adapted to operate as set forth.

379,940. BLOCK-RABBET PLANE. JOSEPH DORAY, Worcester, Mass. Filed Aug. 15, 1887. Serial No. 247,032. (No model.)



Claim.—1. The combination, with the metal shell or case B, of the wood filling or parts C, D, and E, knife G, and holding-wedge H, as shown and described, and for the purposes set forth.

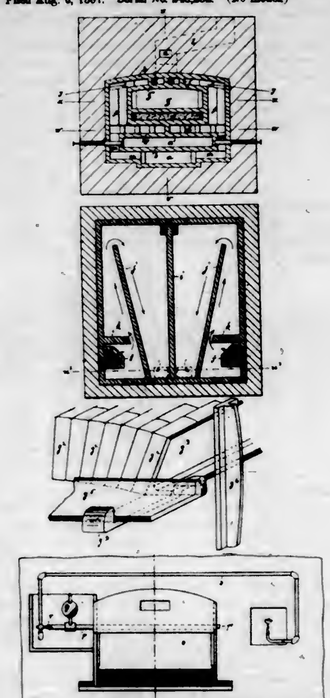
2. The combination, with shell or case B, provided with the projection *e*, of the wooden filling-piece E, having the notch *f*, to receive the projection *e*, as and for the purposes set forth.

3. The combination, with the metal shell or case B, made as described, of the wooden filling-pieces C, D, and E and wooden wedge-piece F, substantially as shown and described, and for the purposes set forth.

4. The knife or cutter G for a block-rabbet, having a thin flat end with a notch, *a*, and a thick cutting end with top beveled edges *b b* and *c*, as described and shown, and for the purposes stated.

5. A metal shell or case, B, for a block-rabbet, provided with lips or shoulders *h* and *i*, projection *e*, opening I, and narrow slit *d*, all as shown and described, and for the purposes stated.

379,941. BAKER'S OVEN. FRITZ DÜBBKOP, New York, N. Y. Filed Aug. 6, 1887. Serial No. 246,252. (No model.)



Claim.—1. The combination, in a baker's oven, of fire-place *a* and chamber *g*, with upright flues *f* and double roof *g' h*, having inclined partitions *j* and deflectors *k*, substantially as specified.

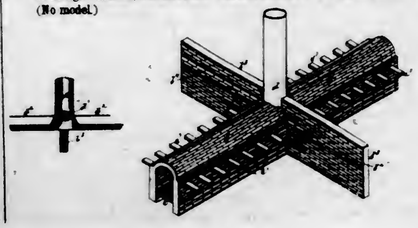
2. The combination, in a baker's oven, of fire-place *a*, with the parallel flues *d* and transverse flue *d'* beneath the baking-chamber *g*, and with the upright flues *f* at the sides thereof, and with a double roof having central partition, *i*, inclined partitions *j*, and deflectors *k*, substantially as specified.

3. The combination, in a baker's oven, of fire-place *a*, having fire-walls *b c*, with the flues *d*, transverse flue *d'*, upright flues *f m*, double roof *g' h*, partitions *i j*, deflectors *k*, vent *n*, and smoke-stack *l*, substantially as specified.

4. The combination of oven-door *o*, having pivot-pin *p*, which is extended at one end beyond its bearing and has a notched end, with balance-weight *q*, carried by such extended pivot, and with gas-pipe *s* and cock *r*, that is engaged by such notched end, substantially as specified.

5. The combination, in a baker's oven, of fire-bricks g^3, with the angle-irons g^4, having hook-shaped projections g^4, and with the plates g^3 g^3, the whole constituting the arched roof of the baking-chamber, substantially as specified.

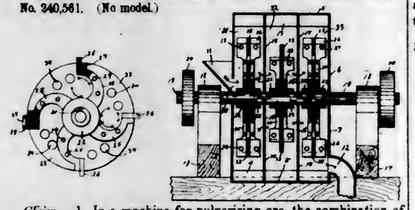
379,942. DRIER. HORACE L. DYE, Chicago, assignor of one-half to George Hinchliff, Evanston, Ill. Filed Dec. 9, 1886. Serial No. 221,109. (No model.)



Claim.—1. In a dry-house, the combination, with the house, formed with a heat-distributing room in its lower part divided by a transverse wall, and a drying-room above the same and separated from it only by the supports of the articles to be dried, of a pair of furnaces opening at opposite ends of the building and provided with lateral draft-openings into the heat-distributing room, and a stack or flue located at the junction of and communicating with both furnaces and provided with a damper, whereby either a direct or indirect draft is had from either or both furnaces at will, substantially as described.

2. The combination, with the building *a*, constructed substantially as described, and provided with the perforated wall *b*², of the furnaces *b*, having a perforated division-wall, *b'*, the stack *d*, and damper *d'*, having a rod, *d*², extended to each end of the house, and the lateral tubes *c'*, all constructed and arranged to operate substantially as and for the purpose set forth.

379,943. ORE-PULVERIZER. HENRY H. EAMES, Columbia, Va., assignor to John J. Kelly, Baltimore, Md. Filed June 7, 1887. Serial No. 240,561. (No model.)

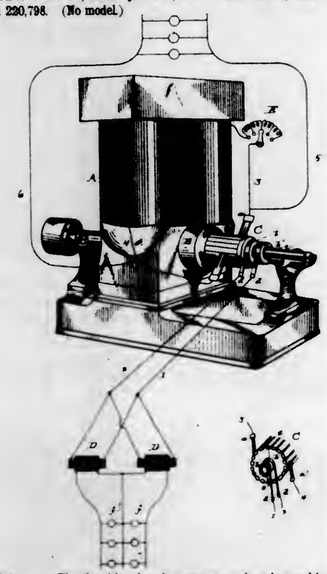


Claim.—1. In a machine for pulverizing ore, the combination of the casing 5, the shaft 19, the disk 23, the flanged hubs 22, by which the said disk is secured to the shaft, arms secured to the said disk, and beaters attached to the ends of said arms, for the purpose set forth.

2. In a machine for pulverizing ore, the combination of the casing 5, the shaft 19, the disk 23, the flanged hubs 22, by which said disk is secured to the shaft, the arms 25, constructed in a curved or bent form, the said arms placed on each side of said disk and secured thereto, the beater 26, attached to the end of said curved arms, and the division-plates 15, with the opening 16 therein, for the purpose set forth.

3. In a machine for pulverizing ore, the combination of a casing, 5, the shaft 19, the disk 23, having perforations 34, the flanged hubs 22, the arms 25, and the beaters 26, for the purpose set forth.

379,944. COMMUTATOR FOR DYNAMO-ELECTRIC MACHINES. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Dec. 6, 1886. Serial No. 220,798. (No model.)



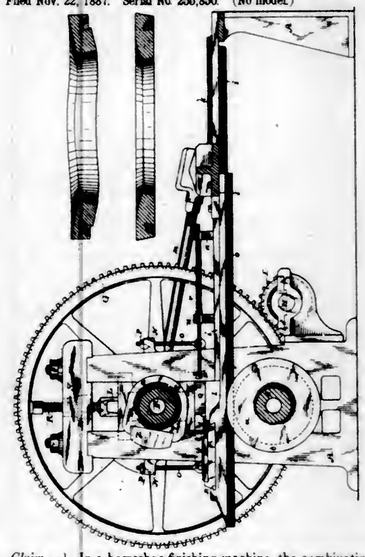
Claim.—1. The combination, in a dynamo-electric machine, of an armature having a continuously-wound coil with two commutators on the shaft of said armature, each of which is directly connected with said coil, from one of which is derived a continuous current and from the other an alternating current, current-collectors bearing on each of said commutators, and independent circuits extending therefrom, substantially as set forth.

2. The combination, in a dynamo-electric machine, of an armature having a continuously-wound coil connected at intervals to blocks of a commutator, two insulated rings on the armature-shaft, and connections from the armature-coil to said rings, substantially as set forth.

3. The combination, in a dynamo-electric machine, of an armature having a continuously-wound coil, a commutator composed of blocks, to all of which blocks said coil is connected at intervals, two insulated rings on the armature-shaft, and connections from the armature-coil to said rings, substantially as set forth.

4. The combination, in a dynamo-electric machine, of an armature having a continuously-wound coil, a commutator composed of blocks connected at intervals with said coil, two insulated rings on the armature-shaft, and connections from opposite blocks of the commutator to said rings, respectively, substantially as set forth.

379,945. MACHINE FOR FINISHING BENT AND CREASED HORSESHOE-BLANKS. WILLIAM EYNON and JOHN T. DAVIS, Wilmington, Del., assignors to the Diamond State Iron Company, same place. Filed Nov. 22, 1887. Serial No. 255,850. (No model.)



Claim.—1. In a horseshoe-finishing machine, the combination of a lower reciprocating die adjustable laterally and an upper rotary die adjustable laterally and vertically, substantially as set forth.

2. In a horseshoe-finishing machine, the combination, with the fixed table I, of the reciprocating lower die-carriage provided with the slide O, and the lower roller adjustable laterally by means of set-screws, and provided with an annular groove in its surface, into which the said slide fits, substantially as set forth.

3. The combination, with the main frame, of the boxes for the main driving-shaft, composed of the upper and lower laterally-adjustable parts, K and L, of the lugs N, the screw-bolts O, the nuts P, and the cross-pieces Q, to which the screw-bolts O are pivoted, whereby vertical adjustment of the boxes is secured, substantially as set forth.

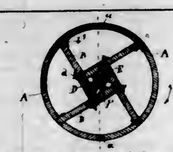
4. The combination, with the reciprocating die-carriage, of the die-bed, the lower die supported thereby, and the slotted adjustable heel-lugs *s*, secured by the set-screws *t*, substantially as set forth.

379,946. PULLEY. WILLIAM R. FEE, Cincinnati, Ohio, assignor to the Willingham Lumber Company, Chattanooga, Tenn. Filed Nov. 19, 1886. Serial No. 219,343. (No model.)

Claim.—1. A pulley provided with a series of arms arranged to form a polygonal figure at the center, and provided with a clamp surrounding the polygonal figure, substantially as and for the purposes specified.

2. A pulley provided with a series of arms arranged to form a polygonal figure at the center, and the polygonal figure formed being

379,946.



surrounded by the adjustable clamp, consisting of the straps D and the nuts *d*, substantially as and for the purposes specified.

3. The combination of the rim A, arms B, attached to the rim, and arranged to form a polygonal figure at the center of the pulley, straps D, surrounding the polygonal figure and provided with nuts *d*, and bushings E, fitting within the polygonal figure, substantially as and for the purposes specified.

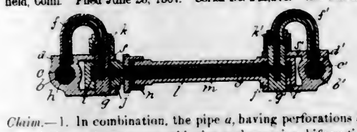
4. The combination, with a wheel-rim having arms surrounding a central polygonal space, of a split bushing having a polygonal surface inclosed by said arms, substantially as described.

5. The combination, with a wheel-rim having arms extending inwardly therefrom, said arms being movable at their inner ends, of a split bushing and a clamp engaging the arms to draw them to the bushing.

6. A split rim having arms attached to the separate portions thereof and extending generally toward the center, a clamp for retaining the inner ends of the arms, and mechanism for locking the parts of the rim together, all constructed, combined, and arranged substantially as described.

7. A pulley consisting of a rim in sections having interlocking ends, retaining-pins by which the ends are keyed together, arms extending inward obliquely to radial lines past the center of the wheel and a clamp for uniting the inner ends of the arms, all constructed, combined, and relatively arranged substantially as described.

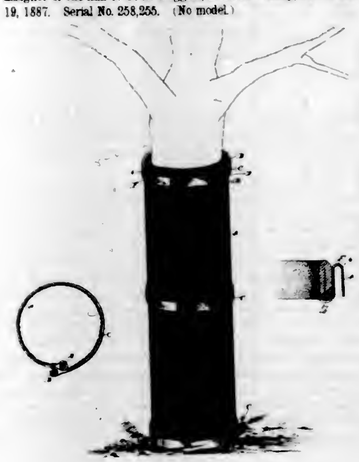
379,947. UNIVERSAL PIPE-JOINT. HORACE FENTON, Wethersfield, Conn. Filed June 23, 1887. Serial No. 242,218. (No model.)



Claim.—1. In combination, the pipe *a*, having perforations *b*, the chambered sleeve *d*, rotary on said pipe and carrying bifurcations *s*, and the chambered piece *j*, hung by trunnions in such bifurcations and having its chamber communicating with said duct, all substantially as described, and for the purpose set forth.

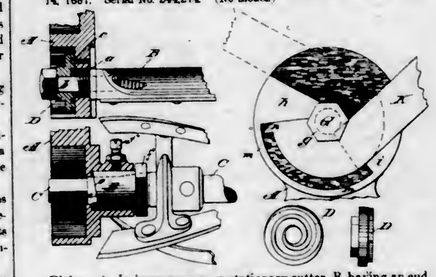
2. In combination, the two pipes *a a'*, the chambered sleeves *d d'*, respectively rotary on said pipes and carrying, respectively, the bifurcations *s s'*, the chambered pieces *j j'*, rotarily hung in the respective bifurcations, the male pipe *l*, appurtenant to the chambered piece *i'*, and the female pipe *m*, appurtenant to the chambered piece *j*, all substantially as described, and for the purpose set forth.

379,948. TREE-PROTECTOR. EUGENE L. FRANTZ, Sweet Valley, assignor of one-half to F. N. Ruggles, Luzerne County, Pa. Filed Dec 19, 1887. Serial No. 258,255. (No model.)



Claim.—In a tree-protector, the combination of the wire-netting, the longitudinal end rods, to which said netting is secured, the elastic steel bands secured to the ends and center of said netting, the pad, and the approximately S-shaped wire staples or hooks securing said pad in the upper end of said netting, said staples or hooks being bent to enclasp the upper steel band and support said pad, and said longitudinal rods being designed to overlap, substantially as shown and described.

379,949. LAWN-MOWER. WILLIAM L. FRISBIE, Syracuse, N. Y., assignor of one-half to James C. Kenyon, Springfield, Mass. Filed July 14, 1887. Serial No. 244,274. (No model.)



Claim.—1. In lawn-mowers, a stationary cutter, B, having an end guided to move in one direction in the side wall, A, wall A having opening *a* therethrough elongated in the direction of movement of cutter B, screw-pin *c*, projecting from wall A near the outer edge of opening *a*, spirally-grooved disk D, engaging with screw-pin *c*, and adapted to be rotated by a wrench, and bolt *b*, arranged to pass as an axis through spirally-grooved disk D, and through opening *a*, to screw into cutter B, and provided with a head adapted to come against and hold the spiral-groove disk to the screw-pin and bind it in the position in which it may be set, as and for the purpose set forth.

2. A lawn-mower cutter-shaft, C, having an end shoulder thereto, a sleeve, E, upon said shaft socketed within the side wall, A, and having a shoulder corresponding to that of the shaft and bearing against it, said sleeve provided with an angular head, adapting it to be rotated by a wrench, two pairs of corresponding cam-surfaces, *e e'*, upon the sleeve E and fixed wall A, respectively, adapted to cause the sleeve E an endwise movement upon being rotated, and a binding-screw, *f*, from the wall A, bearing upon sleeve E, to hold the same thereto, all combined and operating as and for the purpose set forth.

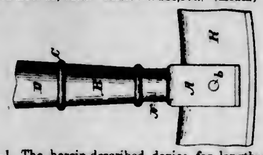
3. In lawn-mowers, a disk, H, prolonged from a side wall, A, a stud-bolt, G, projecting outward therefrom centrally, and having a head, *g*, a block, *h*, raised from the disk-face upon one side of stud-bolt G, a block, *i*, upon said disk-face upon the opposite side of stud-bolt G from the one *h*, having a space between it and the stud-bolt, a segmental rim, *m*, connecting blocks *i* and *h*, having the axis of stud-bolt G for its center, and bearing a radial shoulder to block *i*, and a fork, K, adapted to rest flat upon the disk-face, of width enabling it to pass under stud-bolt head *g*, provided with a hook end, *n*, adapted to bear upon the shoulder of block *i* and rest upon rim *m*, having an inner curved edge conforming to stud-bolt G, and an outer curved edge starting from hook *n*, and a shank whose parallel edges are tangential to its curved edges, and an end edge extending from the hook end *n* radially to the bolt, and presenting a surface coinciding with one side of the block *h* when the shank is resting upon block *i*, and having its shank coinciding with block *h* when its hook end is resting against the shoulder of block *i*, and adapted from said configuration to be rocked upon block *i*, to have its end released from block *i*, and from bolt G and its head *g*, substantially as shown and described.

4. A traction-wheel for lawn-mowers, consisting of the combination, with an axle, J, of a series of wheels, I, uniformly corrugated upon each lateral edge of their peripheral rims, and each provided with a journal-bearing in the form of a hub, having clutch-teeth upon each end, and adapting said wheel to be clutched with an adjacent one on axle J, to cause the corrugations of both to interlock, or have their projecting curves or salient angles in contact, as and for the purpose set forth.

5. The within-described truck-wheel and wheel-bearing for lawn-mowers, consisting of a stud, *d*, upon truck-arm L, a wheel-hub having a journal-bearing conically counterbored from its ends to the center of the hub, two cone-washers having their faces coinciding with the journal-bearing surfaces of the hub, and arranged upon the stud, their ends truncated and held to each other and to the arm L from rotation, spurs upon the washers, and a screw-bolt, *t*, passing from arm L through the stud, and held therein from rotation, and provided with a nut and washer upon its projecting end removed from contact with the end of the stud and bearing upon one conical washer, all arranged substan-

tially as shown, and operating to take up all wear of the journal-surfaces upon the tightening of the nut upon its bolt.

379,950. TIRE-TIGHTENER. GEORGE D. GADDIS, East Machias, Me. Filed Nov. 15, 1886. Serial No. 218,977. (Model.)



Claim.—1. The herein-described device for lengthening wheel-spokes, which consists of a clasp to inclose the inner edge of the felly, said clasp having formed on it an inward-projecting screw, a ferrule having formed at one end a nut adapted to engage said screw and at the other a socket, and a ferrule adapted to fit the end of the spoke and said socket, in combination, substantially as described.

2. The combination of the clasp having formed thereon a screw, and the sleeve having on one end a nut adapted to engage said screw and on the other end a socket adapted to receive the end of the tire, substantially as described.

379,951. PITCHFORK. ROBERT W. GLASGOW, Tranquility, Ohio. Filed Nov. 29, 1887. Serial No. 256,451. (No model.)



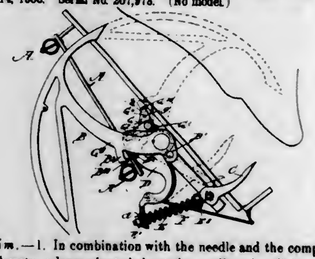
Claim.—The herein-described pitchfork, consisting of the recessed handle, the sleeve C, secured in the recess therein and bifurcated at *c*, the fork provided with the tang B, having the longitudinal slot *b* and collar or washer *d*, the coiled spring D, the metal sleeve G, surrounding the lower part of the handle, and the pins *g* and *h*, all constructed and arranged substantially as and for the purpose specified.

379,952. STEAM HEATER OR RADIATOR. EDWARD E. GOLD, New York, N. Y. Filed Sept. 15, 1886. Serial No. 213,592. (No model.)



Claim.—The combination of the tube *a*, having closed ends or heads *b*, and the confined mass of liquid *c*, with the inner corrugated heating-tube, *c*, and screw-bushings *d d*, securing the ends thereof in the heads *b*, arranged and operating substantially as shown and described

379,953. GRAIN-BINDER. PAUL HARMON, St. Paul, Minn. Filed July 14, 1886. Serial No. 207,973. (No model.)



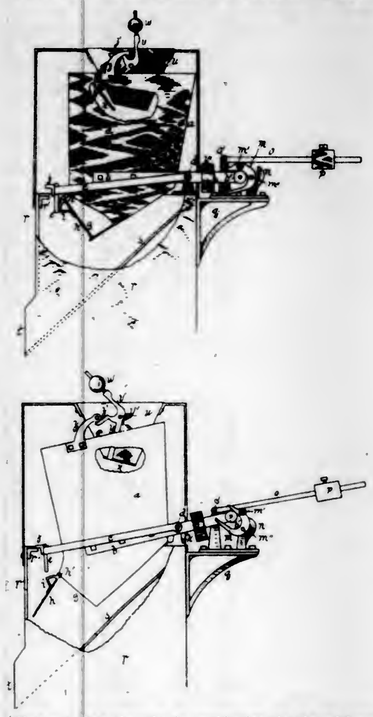
Claim.—1. In combination with the needle and the compressor pivoted thereto, a lever pivoted about the needle-axis, a link connecting it permanently to the compressor, a dog pivoted on the frame and engaging and forming a stop for the lever, and suitable projection on the needle, whereby, when receding, it engages the dog and disengages it from the lever to permit the compressor to fall, substantially as set forth.

2. In combination with the needle and the compressor pivoted thereto, a lever pivoted on the frame and connected to and upholding the compressor, a dog pivoted on the frame and forming a stop for the lever to cause it to uphold the compressor, the needle having a projection which engages the dog when the needle recedes and causes it to release the lever and allow the compressor to fall, and the lever having an abutment which the needle at the latter part of its recession engages and thereby restores the lever and compressor to their initial position, substantially as set forth.

3. In combination with the needle, the compressor pivoted thereto and actuated thereby, the lever D, pivoted about the needle-axis, the dog G, constituting a movable stop to arrest said lever, the link E, permanently connecting said lever to the compressor, and the spring F, reacting between the lever and the compressor lengthwise of said link to force the lever and compressor apart, substantially as set forth.

4. In combination with the needle and the compressor connected therewith, a lever pivoted on the needle rock-shaft, a spring between the compressor and the outer end of the lever, tending to force them apart, a dog pivoted on the frame and having the end g^s eccentric to its pivot and forming a stop for the inner end of the lever, and the needle having the tail B^3, engaging and rocking said dog as it advances, whereby the eccentric edge g^s causes the lever D to swing toward the compressor and compress the spring between them, substantially as set forth.

379,954. AUTOMATIC GRAIN-SCALE. CHARLES J. HARTLEY, Decatur, Ill. Filed Sept. 24, 1887. Serial No. 250,559. (No model.)



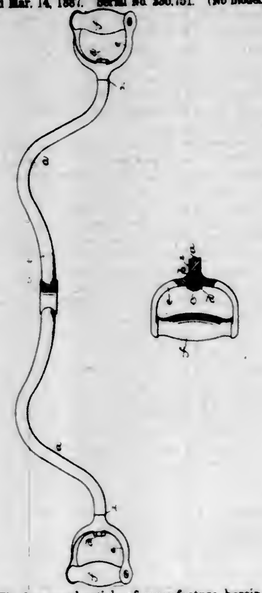
Claim.—1. In grain-scales, in combination, the pivoted frame *b*, carrying the weighing-receptacle and extending beyond its pivot, the yoke *m*, resting on the frame, and the scale-beam *o*, resting on the yoke, as and for the purpose set forth.

2. In grain-scales, in combination, the pivoted frame *b*, carrying the weighing-receptacle and extending beyond its pivot, the yoke *m*, resting on the frame, the scale-beam resting on the yoke, the hinged door *h*, provided with cam projection *i* and adapted to close the discharge-opening *g* of the weighing-receptacle, and the lock-frame *c*, having bar *e* and a trip projection, as and for the purpose set forth.

3. In grain-scales, in combination, the pivoting receptacle *a*, the hinged door *h*, provided with cam projection *i* and adapted to close the discharge-opening *g* of the receptacle *a*, and the lock-frame *c*, having bar *e* and a trip projection, as and for the purpose set forth.

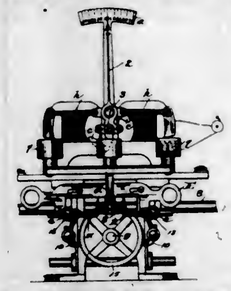
4. In grain-scales, in combination, the pivoting weighing-receptacle *a*, the hinged door *h*, provided with cam projection *i* and adapted to close the discharge-opening *g* of the weighing-receptacle, the lock-frame *c*, having bar *e* and a trip projection, the stationary hopper *u* over the receptacle, the yoke *v*, the arms *y*, carrying door *x*, the upwardly-poised weight *w*, and the trip-arm *z* on the receptacle, as and for the purpose set forth.

379,955. VELOCIPEDE-HANDLE. HARRY D. HEDGES, Boston, Mass. Filed Mar. 14, 1887. Serial No. 230,751. (No model.)



Claim.—The improved article of manufacture herein described, consisting of the velocipede handle-bar *a*, having its ends *b* of reduced diameter, and provided with the shoulders 2 and the terminal screw-threads *c*, combined with the spade-handles having the socketed shanks *e*, fitted to rotate upon said reduced ends of the handle-bar, and the nuts *d*, applied to the screw-threads on the bar-terminals and next to the inner surfaces of the socketed shanks, to admit of the securing of the handles to the handle-bar at various angles, substantially as set forth.

379,956. REGULATOR FOR DYNAMO-ELECTRIC MACHINES. CHARLES HEISLER, St. Louis, Mo. Filed Feb. 10, 1887. Serial No. 227,159. (No model.)



Claim.—1. In combination with the dynamo or current-generator, an electro-magnet, and an armature carrying an index-finger operated by the magnet, and means for moving the armature in opposition to the power of the magnet and a shoe carried on the extension of the index-finger, pawls controlled by this shoe, a constantly-operating shaft connected to and acting on the pawls, and a shaft operated by the pawls and connected with the brushes of the generator, whereby the said generator is regulated.

2. In combination with the shaft driven constantly by the motor, eccentrics on said shaft, and levers carrying pawls adapted to act alternately on ratchet-wheels on a shaft connected with the brushes, and a shoe acting on the extension of the index-finger acting to control the pawls, the ratchet-wheels and index-finger and their supporting-connections being also in the combination, whereby the said brushes are moved to regulate the current, substantially as described.

3. In combination with the shaft 8, carrying eccentrics, the levers *e e*, and springs for keeping them in contact with the eccentrics, pawls 10, the shaft 9, carrying ratchet-wheels, said shaft being connected to and combined with the brushes, arms 11 on the ends of the levers *e e*, and a device carried by and combined with the armature of the electro-magnet for controlling the said levers, substantially as described.

4. In combination with the levers *e e* and the shaft for operating the same, pawls carried upon said levers, a shaft connected to the brushes, mutilated ratchet-wheels on said shaft, and means operated by an electro-magnet for controlling the levers *e*, the brushes, the electro-magnet, and their supports and necessary connections being also in the combination, whereby the ratchet-wheel may be operated by the pawl to a limited movement extending in either direction to regulate the current, substantially as described.

5. A constantly-revolving shaft, a shaft connecting and combined with the brushes, and mechanism for intermittingly applying the force of the constantly-revolving shaft to the brushes, an index-plate and index-finger moved by an electro-magnet in the circuit, and a spring and shoe on an extension of the index-finger controlling the mechanism which moves the brushes, substantially as described.

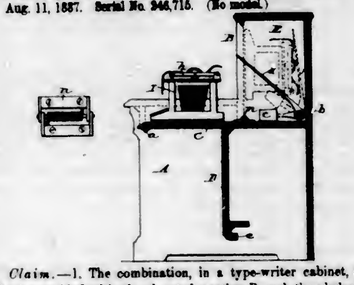
6. In combination with a dynamo-machine working on two or more circuits, a regulator for each circuit, having a shaft common to each with gearing combined with and driving it constantly, and a shaft for moving each of the brush-holders and the common shaft by one of the regulators, whereby each line has automatic regulation and all the circuits have control of each line, substantially as described.

7. In combination with the regulators for each line, the cams 1 on the shaft 9 of each regulator, the shaft 12, having arms whereby it is moved by the cams 1, levers 21, acting with the mechanism to move the brushes, and dogs carried by the shaft acting to control the levers 21, substantially as described.

8. The combination, with the levers *e e*, of the regulator, and the dog E, adapted to slide from said levers, substantially as described.

9. In combination with the index-finger of the regulator, the arms *h*, having extensions, and mercury-cups arranged beneath the extensions adapted to close local alarm-circuits, substantially as described.

379,957. CABINET FOR TYPE-WRITERS. WILLIAM HORROCKS, Ilion, assignor to Wyckoff, Seamans & Benedict, New York, N. Y. Filed Aug. 11, 1887. Serial No. 246,715. (No model.)



Claim.—1. The combination, in a type-writer cabinet, of the body A, provided with the elevated portion B, and the shelves C D, rigidly connected to each other at an angle corresponding to the angle at which the front of the part B stands to the top of the body A, said shelves being hinged to the body, substantially as and for the purpose set forth.

2. In combination with a cabinet having a chamber, E, for the reception of the type-writer when not in use, the pivoted lever or equivalent yielding device arranged to bear against the carriage A and prevent it from tipping over away from the machine, as set forth.

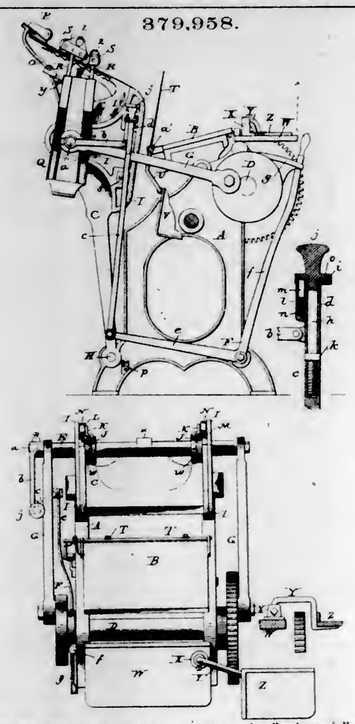
3. In combination with the body A, provided with the elevated portion B, the shelves C D, rigidly connected at substantially a right angle, hinged to the body, and the stop or stops *e*, all arranged to operate substantially as and for the purpose set forth.

4. In a cabinet, the combination of the body A, the raised portion B, and the hinged shelves C D, secured to each other at right angles, or nearly so, the former being provided with a bolt or fastening, *a*, arranged to lock the shelf C in either of the positions to which it may be turned, substantially as shown and described.

379,958. PRINTING-PRESS. JOHN M. JOHNS, Palmyra, N. Y. Filed Feb. 11, 1887. Serial No. 227,308. (No model.)

Claim.—1. In a printing-press, the combination, with a main frame, bed, and platen, of a shaft provided with eccentric end journals and mounted in the bed, a crank-shaft mounted in the frame, pitmen connecting the crank-shaft with the eccentric-journals of the bed-shaft, a hand-lever mounted upon the main frame, and adjustable connections

379,958.



between the hand-lever and the eccentric-journals, all substantially as shown, whereby the throw or rocking of the bed-shaft may be varied as desired.

2. In combination with frame A, platen B, and bed C, shafts D and E, mounted, respectively, in the frame and in the bed, pitmen G, connecting said shafts, an arm, *b*, secured to the end of shaft E, an elbow-lever, F, mounted upon the frame, and a rod, *c*, connecting the arm *b* and the elbow-lever, all substantially as shown, whereby when said lever F is rocked it rotates the shaft E in its bearings.

3. In combination with frame A, platen B, bed C, shafts D and E, and pitmen G, arranged and operating substantially as shown and described, a hand-lever, F, mounted upon the frame, an arm, *b*, secured to the end of shaft E, and an extensible rod, *c*, connecting the hand-lever F and arm *b*.

4. In combination with frame A, platen B, and shaft D, mounted in the frame, a bed, C, a shaft, H, mounted in the frame A, upon which the bed C rocks or oscillates, a shaft, E, mounted in the bed C, an arm, *b*, secured to said shaft E, a hand-lever, F, mounted upon the main frame, a rod, *c*, connecting the hand-lever with the arm *b*, and a bracket, *p*, secured to the main frame, substantially as shown, whereby when the lever *f* is thrown forward to throw the impression on, the arm *e* of said lever will rest upon the bracket *p*, as and for the purpose set forth.

5. In combination with frame A, platen B, bed C, and shaft E, mounted and arranged substantially as shown, hand-lever F, radial arm *b*, connecting-rod *c*, and an adjustable sleeve, *d*, mounted upon rod *c* and connected with arm *b*.

6. In combination with frame A, platen B, bed C, and shaft E, mounted and arranged to operate substantially as shown, hand-lever F, arm *b*, connecting-rod *c*, threaded at its upper end, a stem, *h*, screwing into rod *c*, and provided with a notched flange, *i*, a sleeve, *d*, connected with arm *b*, carried by the stem *h*, and provided with a spring locking device, *m n*, to engage with the screw-stem *h*, as and for the purpose set forth.

7. In a printing-press, the combination, with the bed C, of the rotatable shaft E, mounted in fixed bearings thereon, plates or bearers I, applied to the side faces of the bed, an arm near each end of the shaft engaging with the plates or bearers, and mechanism for rocking or rotating the shaft E, all substantially as shown.

8. In a printing-press, the combination, with the bed C, of the rotatable shaft E, mounted therein, bearers or guides I I, applied to the side faces of the bed, and provided with flanges M and N, arms K K, secured upon the shaft and working against the flanges M N, and devices for rocking or rotating the shaft.

9. In a printing-press, the combination, with bed C and rotatable shaft E, provided with arms K K, and mechanism for rocking the shaft, of plates I I, applied to the sides of the bed and provided with slots *r r*, and blocks *s s*, secured to the bed and projecting into the slots, all substantially as shown.

10. In combination with the bed and the shaft E and its arms K K, the plates I I, each provided with countersunk slots *r r* and flanges M and N, and blocks *s s*, secured to the bed and working in the slots *r r*, substantially as shown and described.

11. In a printing-press, the combination, with a frame, A, platen B, and bed C, of adjustable roller-bearers applied to the bed C, an ink-supplying device or fountain, a lever mounted upon the frame, and connections, substantially such as shown, between the said devices and the lever, for simultaneously actuating said mechanisms.

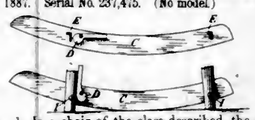
12. In a printing-press, the combination, with a frame, A, platen B, and bed C, of adjustable roller-bearers, an impression-throw-off mechanism, an ink-supplying device or fountain, and a lever connected with and serving to actuate all of said mechanisms, substantially in the manner shown.

13. In a printing-press, the combination, with the frame, platen, and bed, of the roller-bearers applied to the bed, a shaft journaled in fixed bearings in the bed, and a lever for rocking said shaft and moving the roller-bearers, substantially as and for the purpose set forth.

14. In a printing-press, the combination, with the inking disk or plate R, of an inking-fountain, P, pivoted at a point below the ink-disk and extending upward over the upper edge thereof, a rock-shaft provided with a lug or eccentric, *x*, a hand-lever, and connections, substantially as shown, between the hand-lever and the rock-shaft, whereby, as the shaft is rocked, the lug or eccentric *x* thereon will serve to rock or tip the pivoted ink-fountain.

15. The combination, with pivoted lever O and ink-fountain P, of the shaft E, provided with lug or eccentric *x*, a spring, *y*, and means for rocking the shaft E.

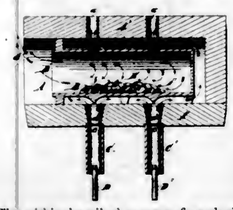
379,959. CHAIR. JULIUS L. KNIEPER, Grand Rapids, Mich. Filed May 7, 1887. Serial No. 237,475. (No model.)



Claim.—1. In a chair of the class described, the combination of the legs having vertical slots and pins I I, the rockers provided each with the openings E E, said rockers adapted to be vertically adjusted in the slots in the rockers, and the pins adapted to engage with the upper part of the openings E E in the rockers, substantially as described.

2. In a chair of the class described, the combination of the vertically-slotted legs, the pins I I, the rockers provided with openings E E, the eccentric-levers D D, for locking the rockers, substantially as described.

379,960. MANUFACTURE OF REFRACTORY CARBON. CHAS. H. LAND, Detroit, Mich. Filed Apr. 22, 1886. Serial No. 199,822. (Specimens.)

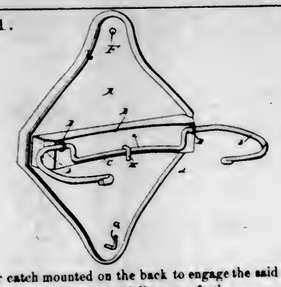


Claim.—The within-described process of producing a refractory carbon, consisting in subjecting carbonaceous matter in an open muffle located in a furnace to the products of combustion under pressure, whereby a counter-resistance is offered to expel oxygen from the muffle, prevent ignition of said matter, and drive off determined elements therefrom, substantially as described.

379,961. BROOM-HOLDER. CHESTER F. LARKINS, Fayette, Ohio. Filed Apr. 19, 1887. Serial No. 235,407. (No model.)

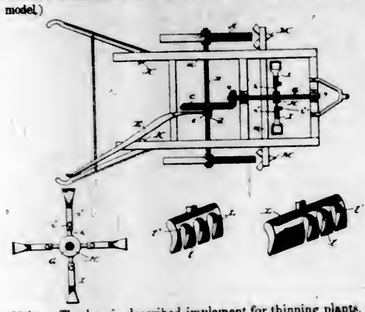
Claim.—A broom-holder consisting of a back, A, the wire support C, pivotally mounted thereon and having a bearing portion, *a*,

379,961.



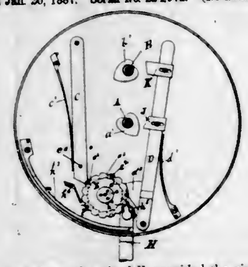
and a hook or catch mounted on the back to engage the said bearing portion *a* of the support C, substantially as set forth.

379,962. COTTON CHOPPER AND CULTIVATOR. THOMAS F. LAWSON, Athens, Ga. Filed May 20, 1887. Serial No. 238,879. (No model.)



Claim.—The herein-described implement for thinning plants, consisting of a hoe, L, having a broad blade, P, at one side and cutting-teeth *l* at the other side, substantially as described.

379,963. STOP-WATCH. HARRY A. LEONARD and GOVER KETTLEWELL, Baltimore, Md., assignors of one-third to Richard S. Culbreth, same place. Filed Jan. 20, 1887. Serial No. 224,972. (No model.)



Claim.—1. In a timer, the wheel E, provided the pins e^2, in combination with the lever C and bar c^2, attached thereto, and balance-wheel F, substantially as described.

2. In a timer, the heart-shaped cams *a' b'*, mounted upon the hand-spindles A and B, and the pivoted lever D, having stops J and K mounted thereon and arranged to be adjusted in line with a cross-section of the lever D, in combination with a push-rod, as H, and intermediate mechanism for operating said lever.

3. In a timer, the heart-shaped cams *a' b'*, mounted upon the hand-spindles A B, in combination with the lever D, having the stops J and K mounted thereon and arranged to be adjusted vertically and laterally.

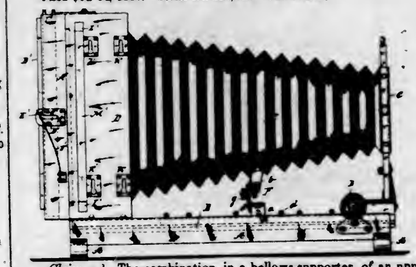
4. In a timer, the wheel E, provided with the pins e^2, in combination with the lever D, having the cam d^3 and the stops J and K mounted thereon adjustably in line with the lever D, and also in line with the cross-section thereof, substantially as described.

5. In a timer, the wheel E and pins e^2, in combination with the lever C, provided with the arm c^3, for stopping the train, and lever D, provided with cam d^3 and stops J and K, for recoiling the hands, substantially as described.

6. In a timer, the wheel E and pins e^2, in combination with the lever C, provided with the extension c^3, the lever D, provided with cam d^3 and stops J and K, and the time-train.

7. In a timer, the combination of the arbor A, provided with a shoulder or collar, *a*, and threaded on its upper end, with the cam *a'*, having the offset *a*, in the upper end of which a socket is sunk, and a spiral spring inserted in said socket, and a nut screwed onto the end of the arbor, so as to exert a varying pressure upon the spiral spring, substantially as described.

379,964. PHOTOGRAPHIC APPARATUS. WILLIAM H. LEWIS, Brooklyn, assignor to E. & H. T. Anthony & Company, New York, N. Y. Filed Oct. 14, 1887. Serial No. 252,342. (No model.)



Claim.—1. The combination, in a bellows-supporter, of an upper and a lower supporting-piece, united by extensible connecting devices, substantially as described.

2. The combination, in a bellows-supporter, of an upper and a lower supporting-piece, united by extensible pivoted strips, the ends whereby are geared into each other, as and for the purposes set forth.

3. The combination, in a bellows-supporter, of an upper and a lower supporting-piece, united by extensible connecting-strips, and a set-screw, whereby friction may be applied to the movable parts, as and for the purposes set forth.

4. The combination, in a bellows-supporter, of an upper and a lower supporting-piece, united by extensible connecting devices, and slotted plates on the under side of the lower supporting-piece, which engage with corresponding devices on the frame of the apparatus, whereby the supporter will be held firmly in place, as and for the purposes set forth.

5. The combination, in a photographic camera, of a spring-controlled ground-glass plate and double supports for the plate, against which it is held by spring action, whereby the plate will be supported and held in two positions, one of them coincident with the plate on which the picture is to be taken and the other sufficiently rearward thereof to allow of the insertion of the plate-holder, substantially as set forth.

6. The combination, in a photographic camera, of a spring-controlled ground-glass plate and double supports for the plate, against each of which it is supported and held by spring action, whereby the plate will be supported in two positions, one of them coincident with the plate on which the picture is to be taken and the other sufficiently rearward thereof to allow of the insertion of the plate-holder, the parts being constructed and arranged in such manner that upon the release of the ground-glass plate from its said rearward resting-place it will be pressed against the plate-holder by spring action, substantially as and for the purposes set forth.

7. The combination, in a photographic camera, of a plate-holder-supporting frame, A', ground-glass frame B', having pins E', plates C', having bayonet-jointed slots D', and springs F', substantially as and for the purposes set forth.

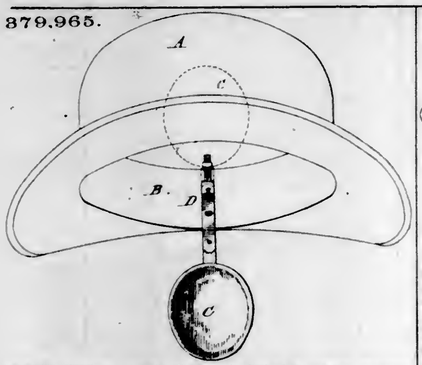
8. The combination, in a photographic camera, of a plate-holder-supporting frame, A', ground-glass frame B', having supporting-pins E', plates C', having guides for the pins E', and springs F', substantially as and for the purposes set forth.

379,965. EAR-MUFF. JOHN W. LIPPINCOTT, Westminster, Ohio. Filed Aug. 5, 1887. Serial No. 246,227. (Model.)

Claim.—The combination, with the ear-muff C, having means for attaching it to a hat, of the arm D, consisting of spring-metal pieces centrally pivoted together, one of said pieces having depressions on opposite sides of the pivot and the other having correspondingly-ar-

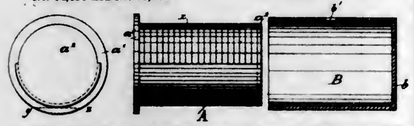


379,965.



ranged projections, whereby they may be locked in position vertically to each other, substantially as set forth.

379,966. **BOX FOR PACKING MONEY.** ERNST M. H. LOHTZ, Neuhaldensleben, Prussia, Germany. Filed May 4, 1887. Serial No. 237,160. (No model.) Patented in Belgium Mar. 1, 1887, No. 76,533; in England Mar. 1, 1887, No. 3,176; in France Mar. 1, 1887, No. 181,899; in Spain Mar. 15, 1887, No. 10,708, and in Austria-Hungary July 6, 1887, No. 14,150 and No. 11,716.



Claim.—1. In coin-packing boxes, the combination of the cylindrical cover B, having the closed end *b*, with a semi-cylinder, A, adapted to slide into said cover, and having an end plate, a^3, and a circular end plate, *a'*, substantially as set forth.

2. The combination of the cylindrical cover B, having the closed end *b*, with a semi-cylinder, A, having an inner end plate, a^3, and an outer circular end plate, *a'*, of larger diameter than the cylindrical cover, substantially as set forth.

3. The combination of the cylindrical cover B, having the closed end *b*, with the semi-cylinder A, having an inner end plate, a^3, and an outer end plate, *a'*, adapted to project beyond the cylindrical cover, said end plate *a'* having a straight face or edge, *y z*, substantially as and for the purpose set forth.

4. The combination of a cylindrical cover, B, having the head *b*, with a semi-cylinder, A, having heads adapted to slide therein, there being a hole in said cover through which the said semi-cylinder or the contents thereof can be viewed, substantially as set forth.

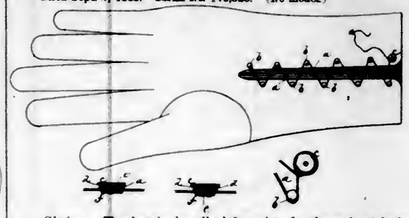
5. The combination, with a semi-cylinder, A, having the circular end *a'*, and a cylindrical cover, B, adapted to slide onto said semi-cylinder, and having the closed end *b*, of a capsule, C, adapted to be fixed over the end of semi-cylinder A and cover B, substantially as and for the purpose set forth.

379,967. **CORN AND FODDER COMPRESSOR.** JOHN F. MAUK, Indianapolis, Ind. Filed Mar. 2, 1887. Serial No. 229,448. (No model.)



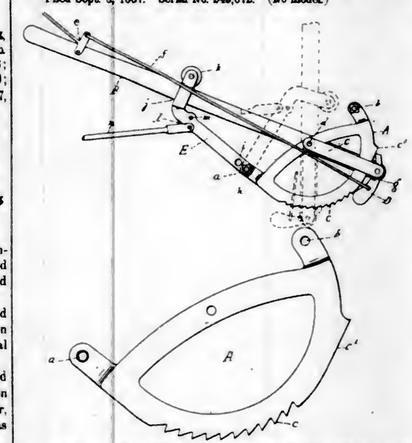
Claim.—In a corn and fodder compressor, the combination, with the frame, as *f*, provided with a curved handle, and a pulley journaled in the frame, of the lever, as *p*, pivoted to the frame and provided with a curved operating-handle adapted to conform to the curve of the frame-handle, and with an eye-arm, 2, and clamp-arm 1, and a rope attached to the eye-arm and passing over the side of the pulley toward the lever, all constructed and arranged substantially as set forth.

379,968. **LACE-FASTENER.** ABRAM S. MANN, Rochester, N. Y. Filed Sept. 7, 1885. Serial No. 176,323. (No model.)



Claim.—The herein-described fastening for the ends of lacing-cords, comprising a button having a plain upper surface, an inclined or frusto-conical under portion terminating in a reduced flat bearing-surface, in combination with suitable fastening devices, and a rigid washer or disk secured to the under surface of the material, said disk or washer being larger than the under bearing-surface of the button, substantially as described.

379,969. **BRAKE-LEVER.** JOHN W. MCPHERSON, Moline, Ill. Filed Sept. 8, 1887. Serial No. 249,072. (No model.)



Claim.—1. In a lever for manipulating the draw-rod of a wagon-brake, the combination of a plate having a serrated arc, a lever-arm and pawl adapted to co-operate therewith, together with a projection on the pawl adapted to bind against a parallel arm connected to the lever-arm when the front end of the pawl, moved by the lever-arm, comes in contact with the arc of the plate forward of its serration, substantially as described.

2. In a lever for manipulating the draw-rod of a wagon-brake, the combination of a plate having a serrated arc, a lever-arm and pawl attached, adapted to engage with said serration, and to be disengaged by an elbow-lever upon the lever-arm, connected with said pawl by a rod, together with a projection upon said pawl, adapted to limit the movement of said pawl, connecting-rod, and elbow-lever by coming in contact with a parallel arm connected to the lever-arm, substantially as described.

3. In a lever attached to the side of a wagon-box for manipulating the draw-rod in a wagon-brake, the combination of a pivoted or hinged lever-arm, the arm E, pivoted at one end to the side of the wagon-box or its equivalent, the other end encircling or partially encircling the lever-arm, and a draw-rod connected to said arm near its point of attachment with said lever-arm, whereby increased leverage is gained by the lever-arm to pull the draw-rod at a time when the shoe of the brake rests against the tire of the wheel, substantially as described.

379,970. **ROCKET.** WILHELM MEISSEL, Bremerhaven, Germany. Filed Nov. 23, 1887. Serial No. 255,961. (No model.) Patented in Germany July 16, 1887, No. 42,628.

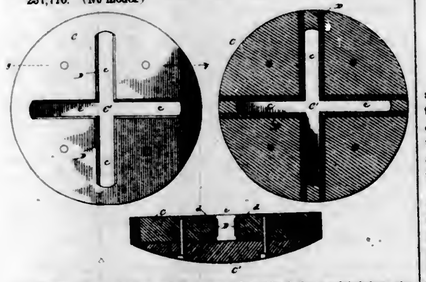
Claim.—The combination, with the bomb B, having the conical end *a*, the chamber *b*, filled with oil, and the chamber *d*, filled with explosive material, said body of oil, and said body of explosive material, of the body of the rocket, into the upper end of which said bomb is inserted, and which body is composed of two chambers, *f* and *l*,

379,970.



within the walls *g*, and separated by the perforated partition *l'*, a body of priming-powder in the chamber *l*, and a body of mealed powder in the chamber *f*, the fuse *i* at the lower end of said body, the sheath *K* on the side of said body, and the stick *k*, having one end placed in the said sheath *K*, all substantially as and for the purpose set forth.

379,971. **DEVICE FOR MULTIPLYING SPEED OF SHAFTS.** MARSHALL J. MILLER, Memphis, Tenn. Filed May 10, 1887. Serial No. 237,710. (No model.)



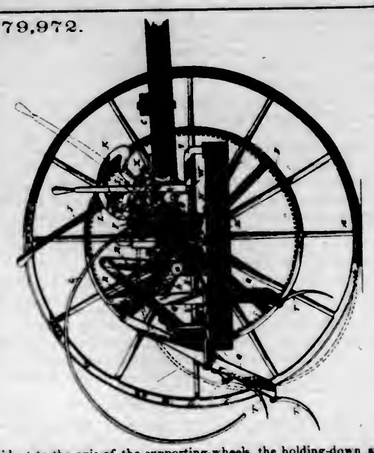
Claim.—In a device of the class described for multiplying the speed of shafts, the improved disk comprising the main portion provided with slots crossing each other at right angles and extending entirely through said portion, the corresponding supplementary portion or backing-plate bolted or otherwise secured upon the rear face of the main portion, and the bars or plates secured in the disk and having bearing-surfaces projecting from the inner opposite faces of the slots, substantially as set forth

379,972. **COMBINED TEDDER AND RAKE.** WILLIAM D. MILLER, Springfield, Ohio. Filed Oct. 26, 1886. Serial No. 217,264. (No model.)

Claim.—1. In a combined hay rake and tedder, the following features arranged substantially as described: the axle, the rake-head and its teeth, the lever, the pitman and the segment, the tedder-frame pivotally and detachably suspended below the axle and axially with the supporting-wheels, the tedder mechanism, the adjusting-lever therefor, adapted to bear upon the front end of the tedder-frame, the holding-down spring bearing upon the rear of said frame, and the operating-gears for operating the tedder mechanism.

2. In a combined hay rake and tedder, the combination, with the supporting-wheels, the thill-frame, the axle and lugs secured thereto and depending downward, of the tedder-frame having blocks, bolts connecting the blocks to the lugs, the center of the bolts being coincident to the axis of the supporting-wheels, the holding-down spring secured to the axle, extending rearwardly and bearing down upon the tedder-frame, the adjusting-lever pivoted to the thill-frame and bearing down upon the front of the tedder-frame, the tedding mechanism on the rear of the tedder-frame, the pinions on the tedder-shaft, and the gear-wheels meshing therewith and carried by the supporting-wheel.

379,972.



379,973. **BATH-TUB, SINK, OR WASH-BASIN.** CHAS. H. MOORE, Yonkers, N. Y. Filed Oct. 22, 1886. Serial No. 216,927. (No model.)



Claim.—1. The combination, with an earthenware basin, of an aperture, 6, made independent from the overflow-inlet and baked in the earthenware, the threaded bolt or bushing 3, secured in the aperture 6, the bolt 4, inserted in a hole in the strainer and screwed to the fitting 3 to hold the strainer in position, and the chain 8, having a link secured to the head of the bolt 4, all as and for the purpose set forth.

2. The combination, with an earthenware basin, of an aperture, 6, made in the earthenware independent from the overflow-inlet, a bolt, 3, extending through the aperture 6 and permanently secured at the back of the basin by the fitting 2, and a fitting, 4, made separate and independent from the bolt 3, that extends through the aperture 6, and is screwed to the said bolt 3, and having a head projecting out from the surface of the strainer for the purpose of holding the strainer 5 in position over the mouth of the overflow, and arranged so that it can be removed from the bolt 3 without removing the said bolt 3 from the aperture 6.

3. The combination, with an earthenware wash-basin having an overflow-pipe extending through the wall of the basin in one unbroken aperture, substantially as shown, and having an aperture, 6, made in the body of the basin, and a bolt, 4, extending through a hole made in one side of the strainer and secured in the aperture 6, of the flanged head of the bolt 4, secured against the surface of the strainer 5, to keep it in position over the lateral opening B of the overflow and projecting out from the surface of the strainer 5, and having a link of the chain 8 secured to it, as and for the purpose set forth.

4. The combination, with a basin, bath-tub, or sink, of a bolt or bushing, 3, made separate from and secured permanently to the body of the basin, and having the end inside of the basin prepared to receive a fitting to hold the strainer 5 in position over the mouth of the overflow, the fitting which holds the strainer 5 being arranged to admit of the said strainer 5 being removed from the mouth of the overflow without loosening or removing the fitting 3 from the body of the basin.

5. In an earthenware wash-basin having an overflow-pipe and an aperture, 6, made in the earthenware, the combination, with the fit-

ting 2 and bolt or bushing 3, secured permanently to the basin of the fitting 4, screwed to the bolt or bushing 3, and the strainer 5, held in position by the fitting 4, the said fitting 4 and strainer 5 being arranged to be removed from the basin without removing the fitting 2 or bolt or bushing 3.

6. In an earthenware wash-basin having an overflow-pipe and an aperture, 6, made in the earthenware, the combination, with the aperture 6, of the bolt 3, extending through it and prepared at each end to receive a fitting, the end outside of the basin being prepared to receive a fitting, 3, to fasten the bolt 3 permanently in the aperture 6, and having the said fitting 2 secured to it permanently and the end inside of the basin being prepared to receive a fitting, 4, to hold the strainer 5 in position over the mouth of the overflow, the said fitting 4 and strainer 5 being arranged to be removed from the bolt or bushing 3 without removing the said bolt or bushing 3 from the aperture 6, all as and for the purpose set forth.

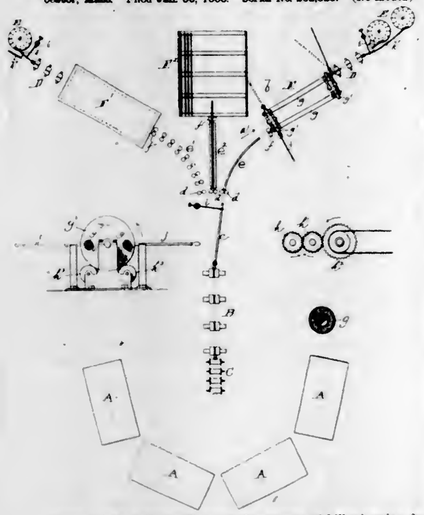
7. The combination, with a basin, bath-tub, or sink, of a bolt or bushing, 3, secured permanently to the body of the basin, and having the end inside of the basin prepared to receive the fitting 4, which holds the strainer 5 in position over the mouth of the overflow, the said fitting 4 having a head projecting out from the surface of the strainer, and a chain, 8, attached to it, and being arranged to be removed from the bolt or bushing 3 without removing the said bolt or bushing 3, as and for the purpose set forth.

8. To be used to pour a cleansing-liquid into the overflow-pipe of a wash-basin, bath-tub, or sink, a receptacle made separate and independent from the strainer or overflow-pipe, and having an open top, substantially as shown, to admit of a cleansing-liquid being poured into it and formed to fit around the strainer-holes and against the surface of the basin, and having a means provided for supporting it against the strainer or surface of the basin.

9. To be used over the strainer-holes and in connection with a basin, bath-tub, or sink overflow-pipe, a receptacle, 7, made separate and independent from the strainer and overflow-pipe, and formed to fit around the strainer-holes and against the surface of the basin, bath-tub, or sink, and having means provided for supporting it against the strainer or surface of the basin for the purpose of pouring water into the overflow-pipe.

379,974. ROLLING-MILL PLANT.

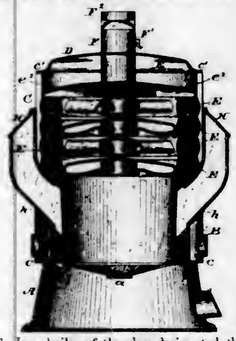
CHARLES H. MORGAN, Worcester, Mass. Filed Jan. 30, 1888. Serial No. 262,323. (No model.)



Claim.—In a rolling-mill plant, the system of billet-heating furnaces A, supporting and carrying rolls C, and primary train of rolls B, for partially reducing the billets and delivering the same in rapid succession therefrom, in combination with two or more systems or apparatuses for further reducing said partially-reduced billets to wire rods and forming the same into coils, consisting of the swivel guide-pipe *c*, feed-rolls *d*, conducting-pipes *e*, or their equivalents, feed-rolls *f*, storage receptacles or appliances F F' F², the trains of rolls D, reels E, and suitable guides interposed between said storage receptacles or appliances and the rolls D, and between said rolls and the reels, all arranged for operation substantially as shown and specified.

379,975. SECTIONAL STEAM-BOILER.

DOCTOR F. MORGAN, Akron, Ohio. Filed July 18, 1887. Serial No. 244,667. (No model.)



Claim.—1. In a boiler of the class designated, the combination, with a fire-pot section, as B, having side openings, as *h*, the lower faces of which incline down toward the center and project beyond the inner line of the section, of magazines, as H, which unite with said openings and extend upward outside the boiler, substantially as shown, and for the purpose specified.

2. The combination, in a boiler of the class designated, of the grate *a*, the water-section B, having side openings, *h*, with lower faces which project beyond the inner line of said section, the magazines H, united with said openings, and sections E, resting on said section B, all constructed and arranged substantially as shown, and for the purpose specified.

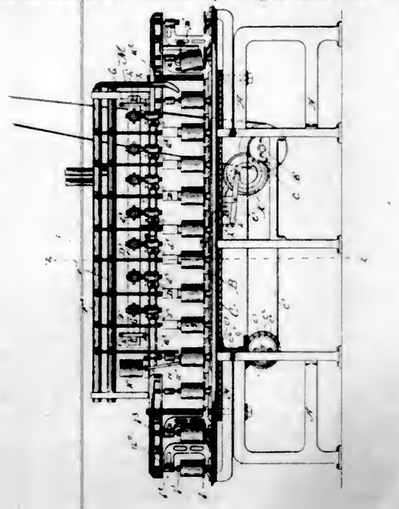
3. The combination, in a boiler of the kind designated, of a series of water-sections, each consisting of a hollow ring provided with water-ports and smoke-flues, and a hollow closed hub less in vertical depth than said ring and united therewith by hollow spokes, substantially as shown, and for the purpose specified.

4. In a boiler of the kind specified, the combination, with the sections E, having notches *g*, and the case C, having openings opposite said notches, of the tube G, door I, and plates *i i*, all constructed and arranged substantially as shown, and for the purpose specified.

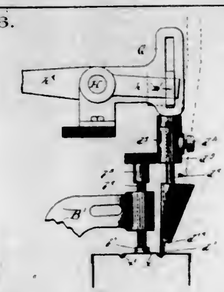
379,976. CAN-CAP-SOLDERING MACHINE.

EDWIN NORTON and JOHN G. HODGSON, Maywood, assignors to said Norton, and OLIVER W. NORTON, Chicago, Ill. Filed Dec. 27, 1887. Serial No. 258,939. (No model.)

Claim.—1. In a soldering-machine, the combination, with a can-carrier having a series of can-holders, of a series of movable heater-irons and mechanism for simultaneously moving said heater-irons into



379,976.



and out of contact with the cans on said holder, substantially as specified.

2. The combination, with an intermittently-moving can-carrier furnished with a series of revolving can-holders, of a series of intermittently-movable heater and soldering tools, D, and a common operating-bar, D', to which said tools are secured, substantially as specified.

3. The combination, with a can-carrier furnished with a series of can-holders, of a series of heater and soldering tools, D, and a series of gas burners or jets, F, for heating said tools, substantially as specified.

4. The combination, with a can-carrier having a series of can-holders, of a series of hollow heaters and soldering-tools, D, and a series of burners, F, for projecting flame into said tools, substantially as specified.

5. The combination, with a can-carrier having a series of can-holders, of a heater-operating bar, D', and a series of heater-tools, D, mounted upon and carried by said bar, said heater-tools having a free sliding connection with said operating-bar, so that the heater-tools will press against the cans by their own gravity, substantially as specified.

6. The combination, with an intermittently-moving can-carrier having a series of revolving can-holders, of a series of hollow heater and soldering tools, D, and common operating-bar, D', with which said tools have a limited sliding connection, and means for reciprocating said bar to move the tools into and out of contact with the cans, substantially as specified.

7. The combination, with an intermittently-moving can-carrier having a series of revolving can-holders, of a series of hollow heater and soldering tools, D, and common operating-bar, D', with which said tools have a limited sliding connection, and means for reciprocating said bar to move the tools into and out of contact with the cans, and gas burners or jets F, for heating said tools, substantially as specified.

8. The combination, with an intermittently-moving can-carrier having a series of revolving can-holders, of a series of hollow heater and soldering tools, D, and common operating-bar, D', with which said tools have a limited sliding connection, and means for reciprocating said bar to move the tools into and out of contact with the cans, and gas burners or jets F, for heating said tools, said tools D being hollow and said burners F projecting the flame into said tools, substantially as specified.

9. The combination, with a can-carrier having a series of can-holders, of a heater-tool-operating bar, D', and a series of heater-tools, D, adjustably connected to said bar, substantially as specified.

10. The combination, with bar D', of a series of heater-tools, D, having a vertically and horizontally sliding connection with said bar, and a can-carrier furnished with a series of revolving can-holders, substantially as specified.

11. The combination, with a can-carrier having a series of revolving can-holders, of a heating and soldering tool, D, having a slight rocking or radial movement in its support to adapt said tool to ride in or follow the seam of the revolving can when said can may be placed somewhat eccentrically in its revolving holder, substantially as specified.

12. The combination, with a revolving can-holder, of a pivotally-mounted heater or soldering tool having a limited free rocking or radial movement on its pivot to adapt the tool to follow the seam of the revolving can, the pivot of said tool being about parallel to the axis of the revolving can-holder, substantially as specified.

13. The combination, with a revolving can-holder, of a vertically-sliding horizontally-rocking heater or soldering tool, D, whereby the tool is adapted to press with the uniform pressure of its own weight upon the can and to ride upon and follow the can-cap seat or seam-groove when the can is placed eccentrically in its revolving holder, substantially as specified.

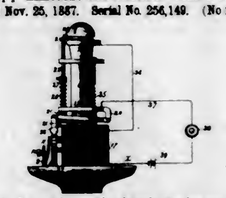
14. The combination, with bar D', of a series of heater-tools, D, having shanks d^3, sliding sleeves d^4, arms d^5, and brackets d^6, secured to said bar D, substantially as specified.

15. The combination, with bar D', of a series of heater-tools, D, having shanks d^3, sliding sleeves d^4, arms d^5, and brackets d^6, secured to said bar D', said bar D' having longitudinal slots for adjustably attaching said brackets d^6 thereto, substantially as specified.

16. The combination, with a can-carrier having a series of can-holders, of a series of heater-tools, D, having shanks d^3, heater-bar D', sliding sleeve d^4, arms d^5, adjustable brackets d^6, rock-shaft H, having arms *h h*, and means for operating the same, substantially as specified.

379,977. ELECTRIC GAS-BURNER.

JOHN Y. PARKE, Philadelphia, Pa. Filed Nov. 25, 1887. Serial No. 256,149. (No model.)



Claim.—1. In an automatic electric gas-burner, the combination of a magnet, an armature therefor, a valve operated by the armature to open and close the same, a spark device, also operated by the armature to break the circuit, and a single electric circuit including a push-button and spark device, the arrangement being such that the valve is automatically opened and closed by the same push-button and the circuit is broken only at the tip, substantially as described.

2. The combination of a magnet, an armature therefor, a valve operated by the armature, a spark device, a mechanical stop for the armature arranged to stop the movement thereof when the valve is fully opened or closed, and a single electric circuit including the magnet and spark device, substantially as described.

3. The combination of the magnet, armature therefor, a valve operated by the armature, a spark device, also operated by the armature, a stop on the armature to prevent the operation of the device, and a single electric circuit, substantially as described.

4. The combination of a magnet, an armature therefor, a valve operated by the armature, a mechanical stop for the armature operated in connection with the valve, a spark device, also operated by the armature, and a single electric circuit, substantially as described.

5. The combination, with the magnet, of an armature carrying a pawl, a ratchet-wheel connected to the valve and operated by the pawl, and mechanical stops carried by the ratchet-wheel and arranged to prevent the closure of the armature at certain predetermined points, substantially as described.

6. The combination of the magnet, an armature therefor carrying a pawl, a valve carrying a ratchet-wheel operated by the pawl, stops arranged on said ratchet-wheel, and an adjustable pin carried by the armature and arranged to impinge upon said stop at predetermined positions of the valve, substantially as described.

7. The combination of the magnet, an armature therefor, and a spark device having a spring-actuated rod extending through the armature and provided with a head arranged to be struck by the armature when vibrated to the full extent of its movement, substantially as described.

8. The combination of the magnet, the armature therefor carrying a pawl, a ratchet-wheel connected with the valve and operated by the pawl, stops on the ratchet-wheel, an adjustable pin on the armature, a spark device having a spring-actuated rod passing through the armature and having a head arranged to be struck by the armature, and a single electric circuit for operating said devices, substantially as described.

9. The combination, with a gas-burner, of a magnet embracing the burner, an armature for the magnet, also embracing the burner, a valve operated by the armature, and a spark device, also controlled by the armature, substantially as described.

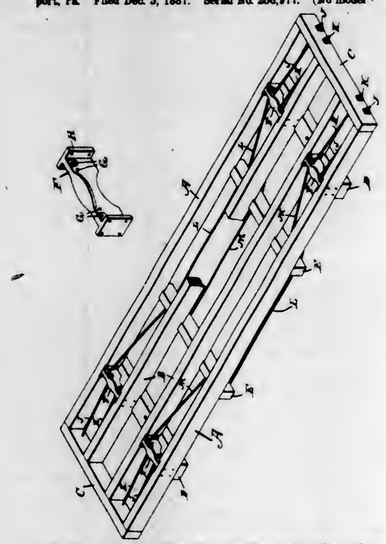
10. The combination, with a gas-burner having an extended base with projecting flange and recessed to receive the yoke, of an electro-magnet embracing the burner, an armature, also embracing the burner, a collar supporting the armature, and a valve operated by said armature, substantially as described.

11. The combination of a burner consisting, essentially, of a tube provided with a plug-valve, another tube connected therewith, a sleeve embracing said latter tube and supporting the burner-tip, a magnet embracing the burner, and an armature therefor pivoted in the collar supported on said burner, substantially as described.

12. The combination of a magnet, an armature therefor, a valve having a ratchet-wheel operated by the armature, stops carried by

the ratchet-wheel, pin carried by the armature, and a retracting-spring for the armature, the arrangement being such that the stops will operate to prevent the complete movement of the armature at predetermined points and the pawl will operate the ratchet-wheel to move the stops out of position on the next movement of the armature, substantially as described.

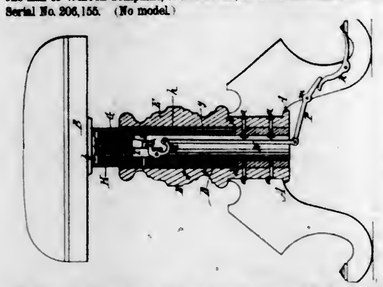
379,978. **CAR-FLOOR FRAME.** JOSEPH PLATTENBURG, McKeesport, Pa. Filed Dec. 5, 1887. Serial No. 256,977. (No model.)



Claim.—1. In a car-floor framing, the combination, substantially as set forth, with the sills, intermediate floor-timbers, end sills, body-bolsters, and cross-frame tie-timbers, of strain-blocks disposed over the body-bolsters and secured to the sills and intermediate floor-timbers, end rods engaging the strain-blocks and end sills, and body truss-rods engaging under the cross-frame tie-timbers and provided with end nuts engaging the strain-blocks.

2. In a car-floor frame, the combination, substantially as set forth, with the sills, intermediate floor-timbers, end sills, body-bolsters, cross-frame tie-timbers, end rods, J, and body truss-rods K, of strain-blocks F, provided with holes G and with flanges H.

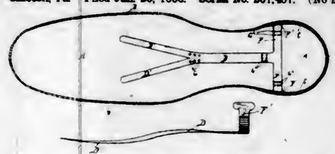
379,979. **PIANO-STOOL.** FRANK A. PORTER, Medina, assignor of one-half to Warren Tompkins, Knowlesville, N. Y. Filed June 24, 1886. Serial No. 206,155. (No model.)



Claim.—1. In a piano-stool, the combination, with the base A and seat B, of the tubes C D, forming a hollow standard inclosing the working parts, the cup G, screwed into the top of the inner tube, C, and supported by the same, and the spiral spring H, resting in the cup and bearing directly under the seat, as shown and described, and for the purpose specified.

2. In a piano-stool, the combination, with the tubes C D, forming a hollow standard, of the cup G, screwed into the top of the inner tube, C, the spiral spring H, located in said cup, the hanger I, the crank-shaped lever M, the catch K, entering the holes *f f* of the standard, the spring L, and the treadle-rod N, the whole arranged to operate in the manner and for the purpose specified.

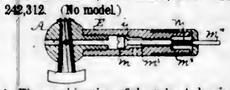
379,980. **SUPPORTER FOR BOOTS OR SHOES.** CHESTER PROUTY, Galeton, Pa. Filed Jan. 20, 1888. Serial No. 261,407. (No model.)



Claim.—1. As an improved article of manufacture, the bifurcated strip D, having prongs *D' D'* and an integral shank, F, provided with perpendicular uprights F', and having a series of perforations, G G' G'', constructed as herein described, and for the purpose set forth.

2. The sole A of an ordinary boot or shoe, having an upper, B, and a counter, C, in combination with the bifurcated strip D, having prongs *D' D'* and perforations G G' G'', whereby joinder is made to the inner side of the inner sole by sewing or otherwise, the shank F, integral therewith and similarly secured, having perpendicular uprights F', which, after passing between the counter and the upper, are clinched under the heel, the whole co-operating as and for the purpose herein set forth, and in the manner illustrated and specified.

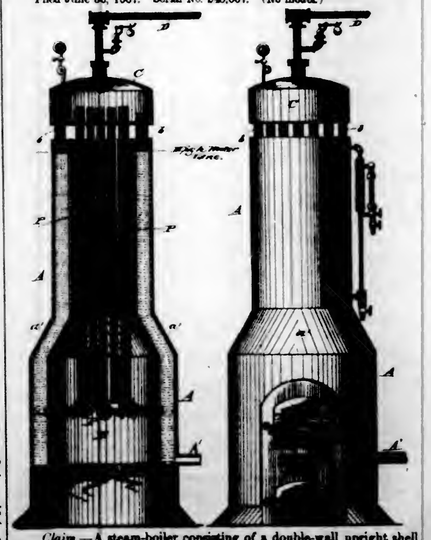
379,981. **AUTOMATIC VALVE FOR STEAM-RADIATORS.** HENRY A. RICE and SETH GRAHAM, Des Moines, Iowa. Filed June 23, 1887. Serial No. 242,312. (No model.)



Claim.—1. The combination of the tube A, having screw-threaded ends, the tube E, internally screw-threaded at one end and externally screw-threaded at the other end, having a longitudinal bore that is enlarged at its opposite ends and a valve-seat in said bore, a cap, *k*, a valve, *n*, having a stem, *n'*, a shoulder, *n''*, and an extension, *n'''*, and spring *n*, substantially as shown and described, for the purposes stated.

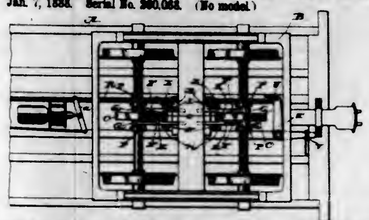
2. The combination of an elbow-shaped tube having a three-way cock, a tube internally screw-threaded at one end and externally screw-threaded at the other end, having a longitudinal bore that is enlarged at its central portion, a miter-valve that has a slot across its flat end face, a valve-stem that has a shoulder, a spring, and an internally screw-threaded cap, for the purposes stated.

379,982. **STEAM-BOILER.** WALTER C. RICE, Providence, R. I. Filed June 30, 1887. Serial No. 243,007. (No model.)



Claim.—A steam-boiler consisting of a double-wall upright shell enlarged at its lower part to form a fire-box, a concentric series of water-heating pipes leading into a steam-drum above the water-line therein, and having radial branches at their lower ends communicating with the water-jacket surrounding the fire-box and arranged inside of the heating-space, a drum, C, above the top of the boiler, leaving an intervening space, and a concentric series of short steam-pipes, *b*, extending from the top of the boiler above the steam-space therein, as specified.

379,983. **CAR-BRAKE.** ALBERT C. ROGERS, Alfred, N. Y. Filed Jan. 7, 1888. Serial No. 260,063. (No model.)



Claim.—1. In a car-brake apparatus, the combination of the friction-wheels C, secured to the car-axles, the shoes or plates F, journaled loosely on the axles and adapted to impinge against opposite sides of the friction-wheels, the levers L, adapted to operate the said shoes or plates, and the rod R, connected to the said levers, and the spring S, connected to said rod, for the purpose set forth, substantially as described.

2. The combination, in a car-brake apparatus, of the friction-wheels C, attached to the axle, the lateral movable plates or shoes F, adapted to engage the friction-wheels, the bolts connecting the said plates or shoes in pairs, the springs to normally force the said plates apart, and the levers L, pivoted on the said bolts and having cams to close the plates or shoes against the friction-wheels, substantially as described.

3. The combination, in a car-brake apparatus, of the friction-wheels C, made in sections, bolted together and secured rigidly to the car-axles, the friction shoes or plates F, loosely journaled on the axles on opposite sides of the friction-wheels and having the removable blocks G, said plates being secured to the truck and prevented from rotating with the axles, the springs normally forcing the shoes or plates from the friction-wheels, the levers adapted to apply the shoes or plates to the friction-wheels, the rod R, connected to the said levers, and means, substantially as set forth, to operate the said rods, substantially as described.

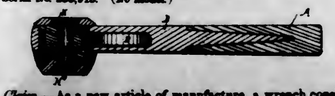
4. The combination, in a car-brake, of the friction-wheels C, secured to the axles, the friction-plates F, loosely journaled on the axles on opposite sides of wheels C, one of each pair of said plates having cam I, the bolts K, extending transversely through the friction-plates, and the levers L, pivoted on said bolts and having cams M, engaging cams I, substantially as described.

5. The combination, in a car-brake, of the friction-wheel C, secured to the car-axle, the friction-plates loosely journaled on the car-axle on opposite sides of the wheel C, one of said plates having cams I, the bolt K, connecting said plates, the spring O on said bolts to force the plates apart, the adjusting-nut N on said bolt, and the lever to press the plates against the wheel C against the tension of spring O, substantially as described.

6. In a car-brake, the combination of the friction-wheel C, secured to the car-axles, and the shoes or plates F, journaled loosely on the axle and adapted to impinge against the sides of the friction-wheel, and springs to keep the shoes off the wheels, said shoes being arranged on opposite sides of the said wheels.

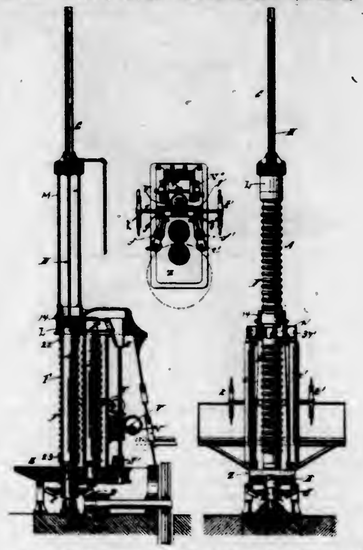
7. In a car-brake, the combination of the friction-wheels C, secured to the car-axles, the friction shoes or plates F, mounted loosely on the axles at one end and secured to the truck at the other end, so as to be prevented from rotating with the axles, the spring for holding the shoes or plates off the wheels, said shoes or plates being arranged on opposite sides of said wheels, the lever L, connecting with the shoes or plates, and connections for operating the lever L, as set forth.

379,984. **WRENCH.** ABRAHAM ROLAND, Westover's, assignor of one-half to James M. Dunn, New Washington, Pa. Filed Apr. 6, 1887. Serial No. 233,913. (No model.)



Claim.—As a new article of manufacture, a wrench consisting of the combination, with a bifurcated frame, D, secured to a handle, A, and provided with the spring-actuated pawls B B', and the cog-wheel F, having the depression H on one face and the perforated beveled block rigidly secured thereto on the other face, of the sliding block K, having a depression, H', a groove, L, and a catch, I, the whole co-operating as and for the purpose set forth.

379,985. **CORRUGATING-MACHINE.** THOMAS F. ROWLAND, New York, and WARREN E. HILL, Brooklyn, N. Y.; said HILL assignor to said Rowland. Filed Apr. 21, 1887. Serial No. 235,691. (No model.)



Claim.—1. A corrugating-mill which consists of two vertical rolls, one of which is adapted to be withdrawn vertically from the mill and the other of which is combined with mechanism by which its position may be adjusted with reference to the first roll, substantially as described.

2. The combination, in a corrugating-mill, of a roller provided with corrugating-spools and with divided cylindrical spools adapted to roll a cylindrical portion of the tube to be corrugated, and whereby said cylindrical spools may be withdrawn from the shaft without slipping them over the end of the shaft, substantially as described.

3. In a corrugating-mill, the combination of two rollers provided with corrugating-spools, and the double wedge mechanism shown for causing one of said rolls to approach and recede from the other, the said wedge being provided with lips which engage both with the sliding bearing in which the roll is pivoted and with the frame of the machine, whereby the said roll is forced by a positive motion to approach and recede from the fixed roll.

4. The combination, in a corrugating-mill, of a roller which passes through the supporting-platform, mechanism located beneath said platform for driving the roller, and mechanism for raising the driven roller vertically, so as to permit the introduction of the cylinder to be corrugated, substantially as described.

5. The combination, in a corrugating-mill, of an idle-roll and a driven roll carrying corrugating-spools, the said spools being provided with slots and the said roller-shaft with a feather for preventing the revolution of the spools, one or more of said spools being divided, so that they may be removed and replaced upon the roll, substantially as described.

6. The combination of the roller B, carried in the sliding bearings at its extremities, the wedges S S', right and left hand screw T, and mechanism for revolving the same, substantially as described.

7. The combination of the roller-shaft, the corrugating-spools F, and the divided cylindrical spools bolted together by bolts P, as shown, substantially as described.

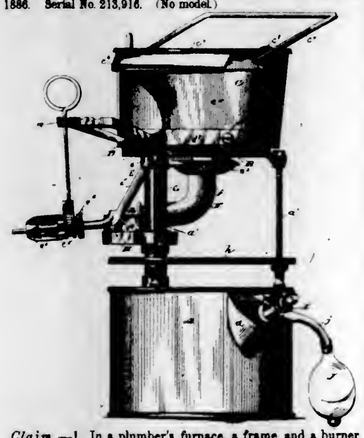
8. The combination, in a corrugating-mill, of the mechanism for causing the movement of one roll toward and away from the other, which consists of a wedge having lips at either side engaging with corresponding lips in a sliding bearing and fixed frame, substantially as described.

9. The combination of the roll A, lifter G H, and locking device E, means for driving said roll A, and the idle-roll B, substantially as described.

10. The combination of the lifter G, means for operating said

lifter G, lifting-rod H, mechanism for permitting the revolution of the roll A without revolving the rod H, a fixed roll, B, and mechanism for revolving the roll A, substantially as described.

379,986. **PLUMBER'S FURNACE.** HENRY RUPPEL, Cleveland, Ohio, assignor to Schneider & Trenkamp, same place. Filed Sept. 18, 1886. Serial No. 213,916. (No model.)



Claim.—1. In a plumber's furnace, a frame and a burner supported thereby, combined with a detachable oven, and lugs *b* on said frame forming a hold for said oven when in place and a rest for a vessel when the oven is removed, as set forth.

2. The combination, with the frame, burner, and disk B, provided with lugs *b* on its upper surface and having projecting ends *b'*, of the oven having inwardly-projecting base-flange *c*, provided with radial notches *c'*, substantially as and for the purposes specified.

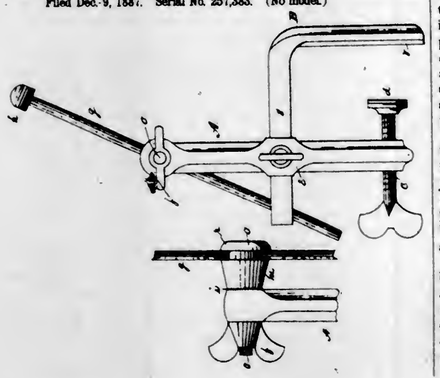
3. The combination, with the frame and disk B supported thereby, of the oven, the piece D, secured to the base-flange thereof and projecting upward to form a guide for the oven-door, and the inclined rest *d*, formed integral with the piece D, substantially as shown and described.

4. An oil-reservoir having an opening in its side, in combination with a plug for said opening, with its top below the top of the reservoir, having two air-passages and a single valve below the junction of the openings, substantially as set forth.

5. In an oil-reservoir, a device for compressing air therein, a plug in the reservoir having air-passages, a single valve-stem carried by said plug, and valves for retaining and relieving the pressure in the reservoir, substantially as set forth.

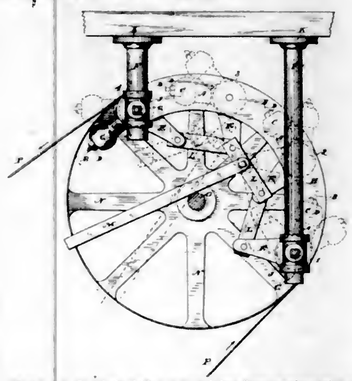
6. In a vapor-burner, an arm having a wrist with a quick screw and a packing-nut thereon, in combination with a needle-valve passing through the packing-nut and secured to a hand-nut engaging the quick screw, substantially as set forth.

379,987. **HEAD-REST.** EDWARD T. RYAN, New Bedford, Mass. Filed Dec. 9, 1887. Serial No. 257,383. (No model.)



Claim.—A head-rest consisting of the bar A, provided with a lateral opening through its body adapted to receive one arm of the angle-bar B, and provided with the thumb-screw *e*, for clamping said arm, one end of said bar A being provided with the thumb-screw *c*, working laterally through it, and the other end having a lateral opening for the reception of the bolt *o*, provided with the thumb-screw *f*, loose collar *m*, and a lateral perforation near its head, in which the rod *g*, provided with cushion *h*, is adapted to be adjusted in any desired position and clamped by means of the thumb-nut *f*, all as shown and described.

379,988. **BELT-SHIFTER.** UNICO H. W. SCHENCK, Brooklyn, assignor of four-tenths to Charles A. Willis, New York, N. Y. Filed Mar. 18, 1887. Serial No. 231,448. (No model.)



Claim.—1. In a belt-shifter, a sustaining-frame and a series of belt-supports arranged in a segmental line thereon in close proximity to an associated pulley, in combination with a series of movable arms mounted on the frame within the segmental line in which the supports are arranged, and connected with a suitable operating-lever, and having rollers on their outer ends capable of rotation toward the pulley and adapted to engage with the under side of a belt on the supports, lift the same, and shift it onto the pulley when the outer ends of the arms are moved beyond said supports, all constructed, arranged, and operating substantially as shown and described.

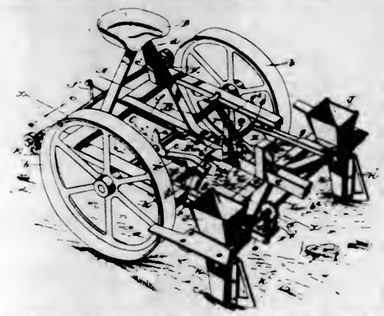
2. In a belt-shifter, a sustaining-frame and a series of belt-supports arranged in a segmental line thereon in close proximity to an associated pulley, in combination with a series of movable arms mounted on the frame within the segmental line in which the supports are arranged, and connected with a suitable operating-lever, and having rollers on their outer ends capable of rotation toward the pulley and so arranged that when the outer ends of the arms are moved beyond the supports the rollers will engage with the under side of a belt on the same at points beyond its running center line away from the pulley, all constructed, arranged, and operating substantially as shown and described, as and for the purpose specified.

3. In a belt-shifter, the combination of a suitable sustaining-plate, a series of laterally-projecting belt-supports mounted on bolts secured to said plate and arranged in a segmental line thereon in close proximity to an associated pulley, said belt-supports having shifting arms projecting at an angle therefrom and provided with rollers on their outer ends, and lever-arms connected with a suitable operating-lever, all constructed, arranged, and operating substantially as shown and described, whereby when the belt-supports are turned the rollers on the shifting arms will engage with the under side of the belt on said supports, lift the same, and shift it onto the pulley.

4. In a belt-shifter, the combination of the supporting-plate H, belt-supports 1 2 3 4, arranged in a segmental line thereon, and having lever-arms E connected with a suitable operating-lever, and projecting arms B, having rollers on their outer ends, said arms being so arranged that when their outer ends are moved beyond the supports the rollers will engage with the under side of the belt at points beyond its running center line away from the pulley, all constructed, arranged, and operating substantially as shown and described.

5. In a belt-shifter, the combination of the supporting-plate H, belt-supports 1 2 3 4, mounted on said plate and having projecting arms B, provided with rollers or sheaves C on their outer ends, and the lever-arms E, links L L L, and operating-lever M, and the shaft O, forming a fulcrum for the lever M, all constructed, arranged, and operating substantially as shown and described, as and for the purpose specified

379,989. **CORN-PLANTER.** A. L. AUGUST SCHIERMEYER, Daykin, Nebr. Filed Dec. 30, 1887. Serial No. 259,406. (No model.)



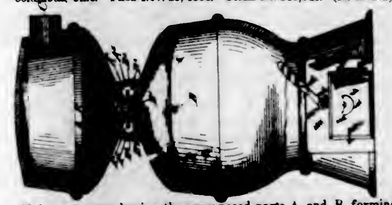
Claim.—1. The combination of the main frame, the axle, the tappet on the axle, the seed-frame, the shaft H, hinging said frame to the main frame, the shaft L, mounted in the seed-frame and carrying the planting-wheels, the ratchet-wheel on the shaft L, the angle-lever on the shaft H, engaged by the tappet, and the link connected to said angle-lever and carrying a pawl engaging the ratchet-wheel, as set forth.

2. In a planter, the combination, with the seed-boxes, dropping-tubes, furrow-openers, shaft L, journaled upon the seed-frame, planting-wheels M, having the equidistant seed-recesses *m*, and the ratchet-wheel fixed on said shaft, of the bifurcated arm N, turning loosely on the shaft L, the spring-pawl *n'*, the pivoted link-rod O, the double-armed angle-lever P, turning loosely on the shaft H, the coiled spring p^3, and the three equidistant armed tappet on the axle, substantially as specified.

3. In a planter, the combination, with the main frame, the shaft H, journaled in the side rails thereof, and the tongue, of the seed-frame having rearwardly-extending arms pivoted on said shaft, the loop i, secured to the seed-frame and extending over the tongue, and the double-armed lever Q, pivoted upon a bracket secured to the main frame and with the end of its front arm engaging in the loop i, substantially as specified.

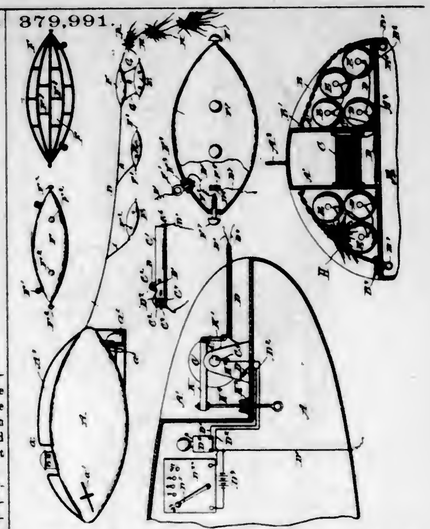
4. In a planter, the combination, with the main frame, the shaft H, journaled in the side rails thereof, and the tongue, of the seed-frame having rearwardly-extending arms pivoted on said shaft, the loop i, secured to the seed-frame and extending over the tongue, the double-armed lever Q, pivoted on a bracket secured to the main frame and having the detent-edge *r*, and the vertical rack R', secured to the main frame and engaged by the detent-edge *r* of the lever Q, substantially as specified.

379,990. **HEATING FURNACE AND STOVE.** GOTTLIEB SCHREYER, Columbus, Ohio. Filed Nov. 23, 1886. Serial No. 219,641. (No model.)



Claim.—A stove having the superposed parts A and B, forming a contracted oblong passage, B', at their junction, and having lateral air-flues A^2 and B^2, formed by grooved flanges on said parts fitting together and supporting the upper part, said flues communicating laterally with the contracted passage B' and being open at the ends, substantially as and for the purposes described.

379,991. **SUBMARINE TORPEDO-VESSEL.** CHARLES D. SHEPARD, New York, N. Y. Filed Jan. 7, 1887. Serial No. 223,673. (No model.)



Claim.—1. A vessel constructed for navigation at will upon and under the surface of the water by a crew within the same, and provided with an exterior cable and a series of torpedoes connected successively therewith, and cable and torpedo controlling devices accessible in the interior of the vessel, each torpedo having independent firing mechanism controlled from within the vessel, substantially as specified.

2. A vessel constructed for navigation at will upon and under the surface of the water by a crew within the same, and provided with an exterior cable and a series of torpedoes, and cable and torpedo controlling devices accessible in the interior of the vessel, one of the torpedoes being connected to and suspended below a float to which the cable is attached, the remaining torpedoes being suspended from the said cable, substantially as specified.

3. A vessel constructed for navigation at will upon and under the surface of the water by a crew within the same, and provided with an exterior cable, a series of torpedoes, and a series of fluffs connected to the cable, and cable and torpedo controlling and firing devices accessible in the interior of the vessel, substantially as specified.

4. A vessel of the class described provided with an electrical alarm and with a reel and a cable having electrical conductors therein, and a series of torpedoes having electrical conductors and devices for completing the circuit by contact of the torpedoes with extraneous objects, whereby notice is given to the crew within the vessel of such contact of the torpedo without exploding the same, substantially as specified.

5. A vessel of the class described provided with an electrical alarm and an electrical switch, a reel, and a cable, all having electrical conductors, in combination with a series of torpedoes having magazines, and electrical magazine-exploding devices, whereby an alarm is given to the crew within the vessel of the contact of the torpedo, and whereby said torpedo may be exploded at will by moving the switch, substantially as specified.

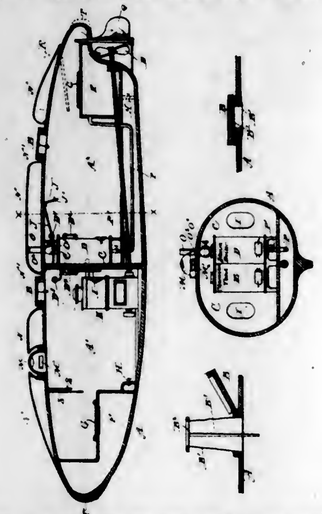
6. A vessel of the class described provided with an electrical switch, an electrical alarm, and electrical cable-connections with both, all arranged within the vessel and accessible to the crew thereof, in combination with an exterior portion of said cable having branches to separate torpedoes, each provided with separate electrical exploding devices and separate alarm devices, whereby any one or all of the torpedoes having contact with an object may be exploded, substantially as specified.

7. In a vessel of the class described, a reel for the electrical cable of a torpedo system, having at one end of its shaft a metallic disk and an interposed insulating-plate, in combination with springs arranged one at each end of the shaft to bear thereon and upon the disk, and connected with the electrical circuit to complete the same, substantially as specified.

8. In a vessel of the class described, an open exterior chamber for the reception of torpedoes, and a stay-chain for holding them therein removably secured at one end by a device extending through the wall of the vessel and accessible to the crew within the vessel, substantially as specified.

9. In a vessel of the class described, a reel mounted on the outside, a cable extending from the reel, a series of torpedoes arranged upon the outside of the vessel, and a detachable stay-chain passing over the torpedoes and secured by a device extending within the vessel and accessible to the crew therein, substantially as specified.

379,992. **SUBMARINE VESSEL.** CHARLES DE B. SHEPARD, Mamaroneck, N. Y. Filed Sept. 13, 1886. Serial No. 213,922. (No model.)



Claim.—1. A submarine vessel constructed for the accommodation of a crew and provided with a motor-operating-fluid generator, controlling devices for the same, a propelling mechanism operated by the motor, and with an air-tight partition separating the generator from its controlling devices and having a passage and a door for closing the same, whereby the deleterious effect of the generator upon the air within a portion of the vessel occupied by the crew is prevented, and whereby, also, direct access is had to the generator without the necessity of bringing the vessel to the surface, substantially as specified.

2. In a submarine vessel, a partition provided with a door, and located and arranged to divide the same into two principal compartments, one having therein the heat, steam, and gas producing apparatus, and the other having therein the controlling devices of said apparatus and the motor and vessel controlling mechanisms, whereby the latter compartment is separated from the air-contaminating effects of the apparatus in the former, substantially as specified.

3. In a submarine vessel, a partition provided with a door and forming two separate compartments, and having in one of said compartments the vessel-controlling appliances, the engine or motor controlling devices, steam and water gages connected with the boiler, and in the other of said compartments the boiler and its remaining appliances, substantially as specified.

4. In a submarine vessel, a liquid-fuel tank, a pipe for conducting said fuel to the boiler, and a pipe passing through the hull for admitting water into said fuel-tank, substantially as specified.

5. In a submarine vessel, a fuel-tank provided with a water-tight trap or door, and with a pipe passing through the hull for admitting water therein, whereby said tank is adapted to store either solid or liquid fuel, and to also serve as a water-ballast chamber, substantially as specified.

6. In a submarine vessel, a hatchway provided with a collapsible water-guard and a movable rigid device for maintaining the same in an elevated position, in combination with a hatch for inclosing the guard, substantially as specified.

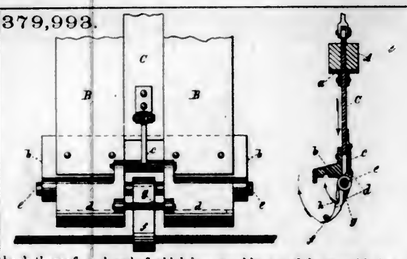
7. In a submarine vessel constructed for the accommodation of a crew therein, a motor-operating-fluid generator, a motor and propelling mechanism connected therewith, and an air-tight partition arranged between the generator and motor and provided with a breathing-pipe, whereby the better air of one compartment may be inhaled by an occupant of the other, substantially as specified.

8. In a submarine vessel, a smoke stack provided with a stop-cock and with a drain-vent, substantially as specified.

379,993. **GRIPPER FOR CABLE RAILWAYS.** ABRAHAM A. SHORR and WILLIAM EMBLEY, Jerseyville, Ill. Filed Apr. 23, 1887. Serial No. 236,841. (No model.)

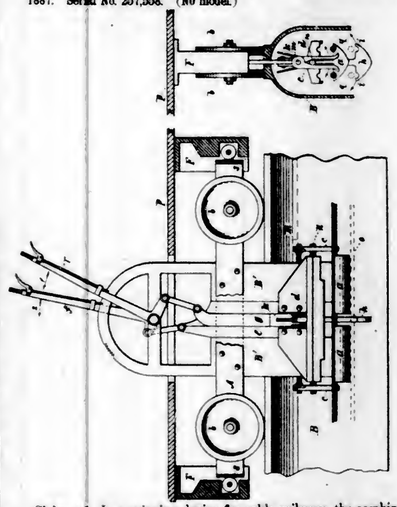
Claim.—In a gripping device for cable railways, the combination with a pair of movable grip-jaws adapted to vibrate upon an arbor, of an auxiliary arm or cable-lifter actuated by a bar located at the

379,993.



back thereof, each end of which is secured in one of the movable jaws, all constructed and adapted to operate substantially as and for the purpose set forth.

379,994. **GRIPPING DEVICE FOR CABLE RAILWAYS.** ABRAHAM A. SHORR and WILLIAM EMBLEY, Jerseyville, Ill. Filed Dec. 10, 1887. Serial No. 257,558. (No model.)



Claim.—1. In a gripping device for cable railways, the combination of a vertically-sliding bar actuated by a link and hand-lever, a grapnel hinged to the lower extremity of said vertically-sliding bar, and the inclined under side faces of the lower grip-jaw, all of said parts constructed and adapted for co-operative action, substantially as and for the purpose set forth.

2. In a gripping device for cable railways, the combination of the pendulous arms c, provided with inclined inner edges, s', and the studs s upon the ends of the movable jaw, all constructed and adapted to operate substantially as and for the purpose set forth.

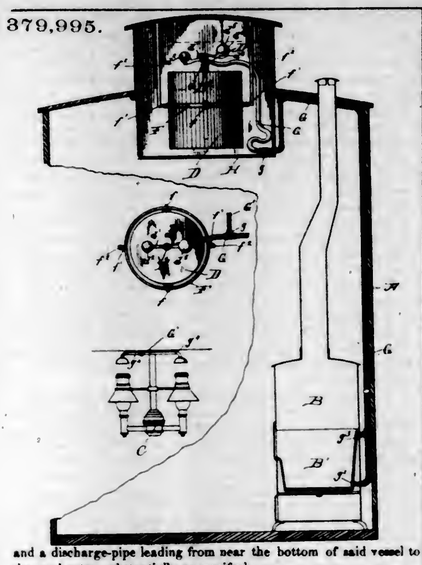
3. The guides F, secured to and depending from the floor of the car, said guides being provided with grooves for the reception and vertical play of the ends of the frame of the grip-truck, and anti-friction rollers located in said grooves, adapted to impinge upon the ends of the truck-frame, all combined, constructed, and adapted to operate substantially as and for the purpose set forth.

379,995. **CAR HEATER AND LAMP EXTINGUISHING APPARATUS.** ANDREW C. SMITH, ELMER R. WEIR, FRANKLIN R. CARSON, and FRED H. WEIR, Kingman, Kans., assignors to the Lindgren Extinguisher Company, same place. Filed Mar. 21, 1887. Serial No. 231,795. (No model.)

Claim.—1. The combination, with a car-heater and car-lamps, of a fire-extinguisher vessel, gimbals in which said vessel is mounted, a discharge-valve and weighted lever for operating said valve, a removable counterpoise for holding said valve closed, and a discharge-pipe connecting said extinguisher-vessel with said heater and said lamps, substantially as specified.

2. The combination, with a car-heater, of a fire-extinguisher vessel mounted in gimbals, so that it will preserve its upright position,

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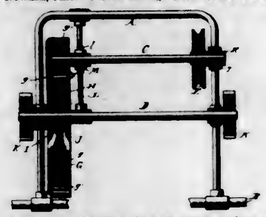
and a discharge-pipe leading from near the bottom of said vessel to the car-heater, substantially as specified.

3. The combination, with a car-heater, of a fire-extinguisher vessel mounted in gimbals, so that it will preserve its upright position, and a discharge-pipe leading from near the bottom of said vessel to the car-heater, said extinguisher-vessel being provided with a discharge-valve having an operating-lever furnished with a removable weight adapted to be displaced by any unusual movement of the car, substantially as specified.

4. The combination, with a car-heater, of a fire-extinguisher vessel, its discharge-valve and operating-lever, and a removable weight seated upon the end of said lever and provided with a suspension chain or cord attached directly above its seat and having but a slight amount of slack, so that it will serve to keep said weight in place during the ordinary movements of the car, substantially as specified.

5. The combination, with a car-heater, of a fire-extinguisher vessel, gimbals in which said vessel is mounted, a valve and weighted lever for operating said valve, provided with a cap furnished with a removable ball, and a pipe connecting said extinguisher-vessel with said heater, substantially as specified.

379,996. **TRACTION-ENGINE.** HENRY D. SMITH and FRANCIS M. WALKER, Newark, Ohio. Filed Jan. 14, 1888. Serial No. 260,731. (No model.)



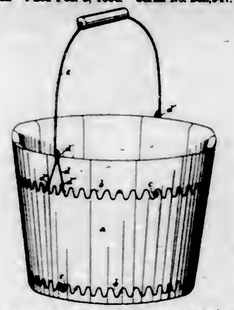
Claim.—1. The combination, in a traction-engine, of the bevel-wheels I J, the wheel G, carrying a bevel-pinion meshing with said wheels I J, and having two sets of teeth, with a pinion, F, constructed and adapted to mesh with either set of teeth, substantially as described.

2. The combination, in a traction-engine, of the bevel-wheels I J, the wheel G, carrying a bevel-pinion meshing with said wheels I J, and having two sets of teeth, with the pinion F, the shaft C, and the laterally-moving box O, carrying said shaft, substantially as described.

3. The combination, in a traction-engine, of the wheel G, having two sets of teeth and mounted on the shaft D, carrying the pinions K K, with the pinion F, the shaft C, the laterally-moving box O, the sleeve M, carrying said box, and the frame carrying said sleeve, substantially as described.

4. The combination, in a traction-engine, of the wheel G, having two sets of teeth, with the pinion F, the shaft C, carrying said pinion, the laterally-moving box O, the sleeve M, carrying said box, and the small truss-frame L, supporting said sleeve, all substantially as shown and described.

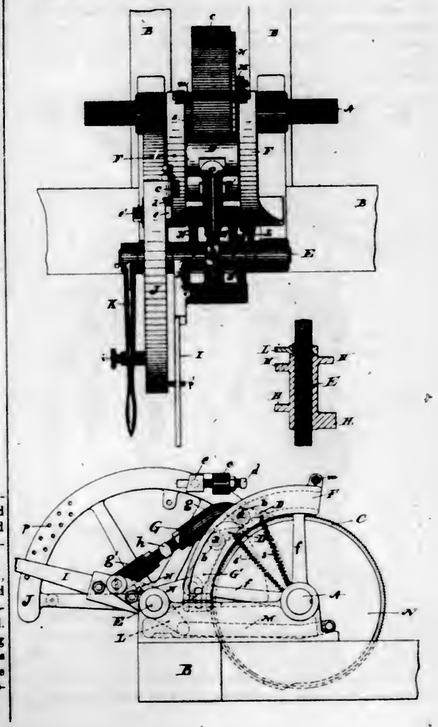
379,997. **HOOP FOR BARRELS, PAILS, OR TUBS.** GEO. SOUTHER, Boston, Mass. Filed Feb. 3, 1888. Serial No. 262,947. (No model.)



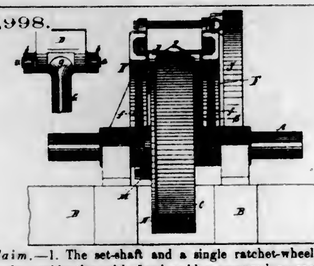
Claim.—1. In combination with the corrugated wire *b* and its inclined ends, the flattened tubes *c*, securing the ends of said corrugated wire hoop together, substantially as set forth.

2. The pail *a*, or other receptacle, and its corrugated wire hoop *b*, combined with the bail-hinge wire *d*, having an eye or loop, *d'*, in its upper end engaging the lower end of the bail-wire *e*, and having eyes or loops *d'' d''* in its lower end hinged to the corrugated hoop-wire *b*, substantially as and for the purpose set forth.

379,998. **SAW-MILL SET-WORKS.** JAMES R. STANWOOD and PHILANDER P. LANE, Cincinnati, Ohio. Filed Dec. 24, 1886. Serial No. 222,508. (No model.)



379,998.



Claim.—1. The set-shaft and a single ratchet-wheel secured thereon, in combination with fixed guides arranged on each side of said wheel wholly above the horizontal plane of its axis and concentric therewith, two pawl-carriers moving in said guides above the axial plane of the wheel, with pawls resting by gravity on its toothed periphery, and mechanism, substantially as described, for moving said pawls simultaneously in opposite directions, said pawls both actuating the ratchet by thrust engagement, substantially as set forth.

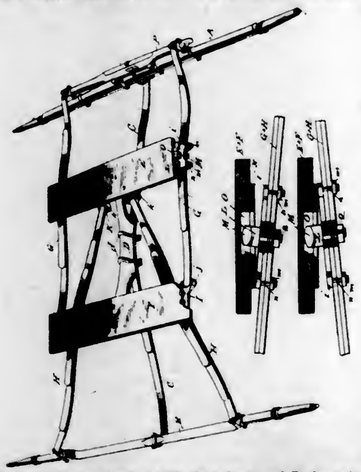
2. In saw-mill set-works of the character described, embodying the set-shaft, ratchet-wheel, and pawls carried in independent concentric guides, the guide-frame constructed with parallel grooves facing each other and constituting interior guiding-surfaces, in combination with pawl-moving links provided with lateral studs projecting into said guide-grooves and constituting the carriers, and pawls pivotally engaged upon said studs, substantially as set forth.

3. In saw-mill set-works, the combination, with the ratchet-wheel, its pawls, and their operating-lever and cranks, of the integral link G', extensible link G, and the adjustable stop *e*, substantially as set forth.

4. The combination and arrangement of the ratchet-wheel C, pawl-guides F, pawls D D', and links G G', the double crank H, loosely centered upon the shaft E, and the cam-disk N, its connecting-rod M, and its crank L, fixed upon the shaft E adjacent to the double crank H, substantially as set forth.

5. In saw-mill set-works of the character described, the combination, with the ratchet-wheel, of the concentric guide-frame having interior opposite guiding-grooves, the pawl-links having studs projecting laterally into said grooves, pawls hung upon said studs as pivots, and friction-rollers carried upon the studs and operating in the grooves, substantially as set forth.

379,999. SPRING-GEAR FOR VEHICLES. JAS. STEELE, Guelph, Ontario, Canada. Filed May 5, 1887. Serial No. 237,290. (No model.)



Claim.—1. In combination with the axles A and B, the spring-reach C, suitably attached to said axles and carrying the saddle D, rigidly attached to said reach, together with the front and rear supports, E and F, bolted on said saddle, substantially as described, and for the purpose specified.

2. The springs G, in combination with the head-block P and the rear support, F, the said springs being pierced to receive the bolt L, which is secured thereto, the strips *m*, placed under said springs and bolted to the upper plate, *i*, by the bolts *n*, and the slotted plate N, fixed to the lower side of the front support, E, which is recessed at O to allow for the movement of the beveled head of the bolt L, which has curved lips M, resting on the slotted plate N, substantially as described.

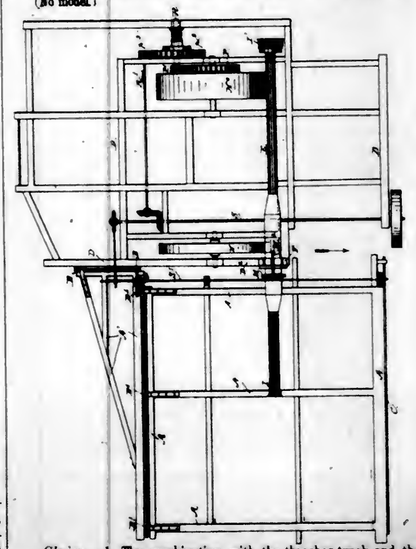
3. The springs H, in combination with the axle B and front support, E, the said springs being pierced to receive the bolt L, which is secured thereto, the strips *m*, placed under said springs and bolted to the upper plate, *i*, by the bolts *n*, and the slotted plate N, fixed to the lower side of the rear support, F, which is recessed at O to allow for the movement of the beveled head of the bolt L, which has curved lips M, resting on the slotted plate N, substantially as described.

4. The axles A and B and spring-reach C, carrying the saddle D, rigidly attached thereto, the rear support, F, bolted to the saddle and suitably attached to the springs G, which are also connected with the head-block P, the said springs G being pierced to receive the bolts L, secured thereto, the strips *m*, bolted to the upper plates, *i*, by the bolts *n*, and the slotted plates N, fixed to the lower side of the front support, E, which is recessed at O, and the bolts L, having lips M, which rest on the slotted plates N, in combination with the springs H, suitably attached to the rear axle, B, and front support, E, which is bolted to the saddle D, the rear support, F, being also carried by the springs H, substantially as specified.

5. The axles A and B and spring-reach C, carrying the saddle D, rigidly attached thereto, and the rear support, F, bolted to the saddle and suitably attached to the springs G, which are also connected with the head-block P, the said springs G carrying, as specified, the front support, E, which is bolted to the saddle, in combination with the springs H, which have bearings on the front support, E, and rear axle, B, and are pierced to receive the bolts L, secured thereto, the strips *m*, bolted to the upper plates, *i*, by the bolts *n*, and the slotted plates N, fixed to the lower side of the rear support, F, which is recessed at O, the bolts L having lips M, which rest on the slotted plates N, substantially as specified.

6. The combination of the axles A and B, the spring C, the saddle D, the front and rear supports, E and F, and the head-block P, affording bearings for the springs G, which are pivotally attached to the rear support, F, and so connected with the front support, E, as to permit of flexure, together with the springs H, pivotally attached to the rear axle, B, and the front support, E, and so connected with the rear support, F, as to permit of flexure, substantially as set forth.

380,000. COMBINED HARVESTER AND THRASHER. JAMES TRETHEWEY, Stockton, Cal. Filed Apr. 7, 1887. Serial No. 234,063. (No model.)



Claim.—1. The combination, with the thrasher-truck and the harvester-frame hinged to the side thereof on the line of draft, of the rack-bar L_1, pivoted at one end to the rear side of the harvester-frame and extended in an inclined position up to a standard on the truck, and a gear or pinion, L^2, secured upon the truck and engaging the rack-bar, and means, substantially as described, for operating the gear or pinion, as set forth.

2. The combination of the thrasher-truck, the supporting-frame A', hinged to the side thereof on the line of draft, and the main harvester-frame A, hinged at its rear side to the front side of the supporting-frame, the rotary drum mounted on the thrasher-truck, and having a chain or rope wound upon one end connecting it with the main harvester-frame, and a chain or rope and weight wound upon the other end to counterbalance the harvester-frame.

3. In a combined harvesting and thrashing machine, the combination, with the thrasher-truck, of a harvester-frame attached by a hinge-joint in the line of draft to the side of the thrasher-truck, and means for supporting it clear of the ground, consisting of a revolving drum mounted in bearings on the thrasher-truck and extending over the harvester-frame, and supporting the front section thereof by a rope or flexible connection, substantially as set forth.

4. The combination of the thrashing truck or frame, the harvester-frame attached to its side by a hinge-joint in the line of draft, and the supporting rotary drum mounted in bearings on the thrasher-frame, a rope connecting one end of the drum with the front section of the harvester-frame, and a counter-weight and rope at the opposite end to balance the weight of the said harvester-frame, substantially as set forth.

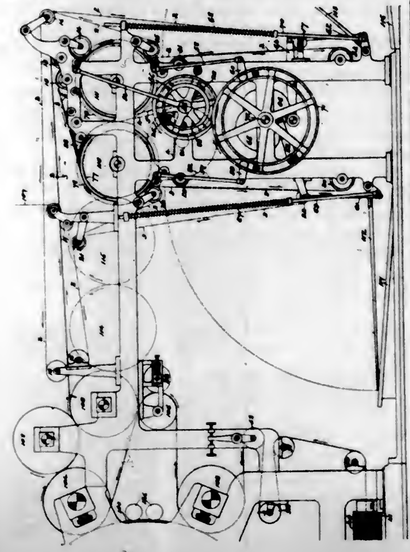
5. In a combined harvester and thrasher, the combination of the thrasher-truck with the harvester-frame, the latter composed of two sections, of which one is hinged to the side of the thrasher-frame and the other is hinged to the front side of the first named, and a means for raising and lowering the front section, consisting of a transverse rotary drum mounted in bearings on the thrasher-frame, so as to rotate thereon, and having the front section of the harvester-frame suspended by a rope wound upon one end of said drum and a counter-weight attached to the end of a rope wound upon the other end of the drum, and mechanism for turning the drum in its bearings to wind or unwind the ropes, substantially as set forth.

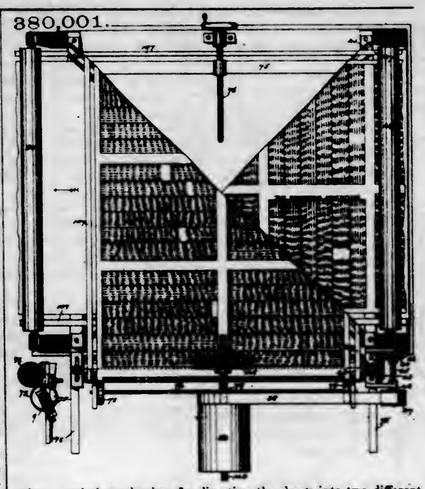
380,001. WEB PRINTING AND DELIVERY MECHANISM. STEPHEN D. TUCKER, New York, N. Y. Filed Mar. 8, 1884. Serial No. 123,482. (No model.)

Claim.—1. The combination, with the bars 40 41 and the driven roll 42, forming a web-turner, of the disks 73, co-operating with said roll to form a web-feeding mechanism, substantially as described.

2. The combination, with the bars 40 41 and the driven roll 42, forming a web-turner, said bars and roll being adjustable to different positions, of shifting connections by which said roll is driven from the same moving part in its different positions, substantially as described.

3. The combination, with a web-printing mechanism in which the same form makes a plurality of impressions upon the same side of the web at each revolution of the form-cylinder, of a web-severing mechanism, a switch mechanism for directing the sheets into two different pathways, according to the positions of their printed pages, two collecting or associating mechanisms—one located in each pathway—and two sheet-laying mechanisms, all substantially as described.





4. The combination, with a web-printing mechanism in which the same form makes a plurality of impressions upon the same side of the web at each revolution of the form-cylinder, of a web-severing mechanism, two collecting or associating mechanisms, and a switch mechanism for directing alternate pairs or series of sheets to each of said collecting mechanisms, all substantially as described.

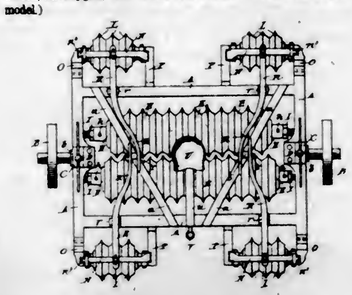
380,002. SAMPLE-HOLDER. JAMES C. TURNER, Sterling, Kans. Filed Jan. 20, 1887. Serial No. 224,912. (No model.)



Claim.—1. As a new article of manufacture, a sample-holder constructed of a single piece of wire bent to form a cross-bar, *a*, side pieces, *b b*, coiled springs *c c*, and terminals extending upward past the side pieces and outward therefrom, substantially as described.

2. The combination, with a box-lid or the like, of a sample-holder consisting of a single wire bent to form a cross-bar, *a*, side pieces, *b b*, coiled springs *c c*, and terminals which extend upward to clamp the box-lid between them and the side pieces and outward laterally to exert an outward pressure on the flanges of the box-lid, substantially as described.

380,003. LAND-ROLLER AND CLOD-CRUSHER. FRIEDRICH TWICK, Sheboygan, Wis. Filed June 24, 1887. Serial No. 242,387. (No model.)



Claim.—1. In a land-roller and clod-crusher, the combination, with the main frame A and shafts F, carrying disk colters, of journal-boxes G, held to the frame and in which the shafts are journaled, and said boxes made in two parts, *g g'*, the part *g* having a projection, g^3, entering a notch in the frame, and bolts J, holding the boxes to the frame and provided with nuts or collars *j*, entering recesses in the parts *g'* of the boxes, substantially as shown and described.

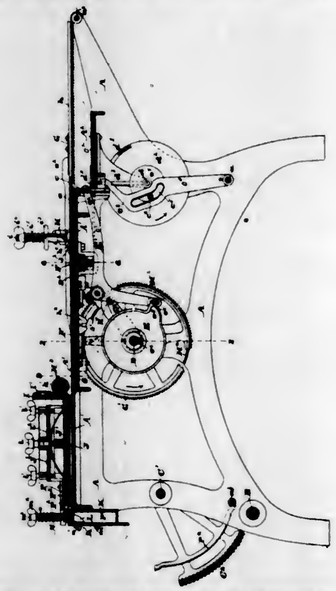
2. In a land-roller and clod-crusher, the combination, with the main frame carrying series of disk colters E, of auxiliary colters L, held to frames N, having opposite side parts fitted to slide in bearings O P on the main frame, substantially as shown and described.

3. In a land-roller and clod-crusher, the combination, with the main frame carrying series of disk colters E, of frames N, fitted thereto and carrying auxiliary colters L, and the shafts M of the colters L, fitted in bearings formed partly in the frames N and in removable half-boxes *m*, provided with projections *m'*, entering notches in the frames N and bolted to said frames, substantially as shown and described.

4. In a land-roller and clod-crusher, the combination of a main frame, A, series of disk colters E E, journaled thereto and held to their shafts by clamp-plates H H and jam-nuts I I, series of auxiliary disk colters L, held to frames N, vertically adjustable in bearings O P, held to the frame A, and levers R, fulcrumed on the frame A and connected to the frames N, for adjusting the auxiliary colters, substantially as described, for the purposes set forth.

380,004. MACHINE FOR DRESSING AND GROOVING TYPE.

WILLIAM H. WELSH, Somerville, Mass. Filed May 29, 1886. Serial No. 203,584. (No model.)



Claim.—1. In a machine for dressing type, the combination of a stationary feed-table located at a different level from the level of the main table, an elevator-platform arranged with its upper surface on a level with said feed-table, a reciprocating type-carrying bar, a gage for locating the type on said bar, a reciprocating plunger movable in a direction at right angles to the movement of said type-carrying bar, and mechanism, substantially as described, for moving said elevator-platform from the level of the feed-table to the level of the main table, all arranged and operating as set forth, whereby a row of type may be set up on said elevator and carried to a position where they can be fed upon said main table.

2. The combination of the feed-table A^3, the type-carrying bar *c'*, the slotted lever c^4, the crank-pin c^5, the cam d^3, the plunger d^4, the gage c^3, the elevator *e*, the lever E', and the cam E, all constructed, arranged, and adapted to operate substantially as described.

3. In a machine for dressing type, the combination of a reciprocating feed-plate constructed and arranged to feed a series of type arranged side by side in a line along a stationary bed, a rotary cutter-cylinder for removing the fins from the under sides of said type, a stationary abrading-surface for dressing the under sides of said type, a rotary cutter-cylinder for removing the fins from the upper sides of said type, and a stationary flat abrading-surface for dressing the upper sides of said type, all arranged to operate in the order named.

4. The combination of the presser-bar H, the toothed racks H' H', connected thereto and provided with the sockets j^3 j^3, the bolts j^3, the springs j^5, the oscillating toothed segments H^2 H^2, and the segmental side cam, H^4, all constructed, arranged, and adapted to operate substantially as and for the purposes described.

5. The combination of the table A', the cam-blocks j^3 j^3, secured thereto, the toothed rack-bars H' H', having set therein the studs *i i*, the presser-bar H, mounted and vertically movable upon said studs, the trucks *j' j'*, the springs i^2 i^2, and the oscillating toothed segment H^3, all constructed, arranged, and adapted to operate substantially as and for the purposes described.

6. The combination of the table A', the bars *k' k'*, fitted to grooves in said table, the forked lugs k^3 k^3, secured to the under sides of said bars, the plate *c*, secured to the upper sides of both of said bars, and the oscillating arms G^2 G^2, each provided with the tooth k^2, for engaging with the fork of one of the lugs k^3, substantially as described.

7. The combination of the plate *c*, the bars *k' k'*, the lugs k^3 k^3, each having formed in its side a notch or socket, g^4, the bolts g^1 g^2, the levers g^6 g^6, the segmental cams g^7, and the oscillating arms G^2 G^2, each provided with a tooth, k^2, to engage with one of the lugs k^3, substantially as described.

8. In a type-dressing machine, the combination of the table A', the plates *c* and G, the presser-bar H, and mechanisms, constructed and arranged as set forth, to move said plates and presser-bar along said table through different distances, but in unison when more than one is moving, substantially as described.

9. The combination of the cutter-cylinder F', the bearings *f f* and *f'*, the wedges *g g*, the adjusting-screw *g'*, and the clamping-bolts f^3 f^3, substantially as described.

10. The combination of the cutter-cylinder H^3, the fixed cross-head I, the boxes k^5 k^5, fitted to vertical guiding-grooves formed in said cross-head and provided with the trucks k^4 k^4, the horizontally-movable cam-plate I', the adjusting screw-stem k^1, and the nuts k^6, substantially as described.

11. The combination of the rack-bars *k k*, the plate G, secured to the upper sides of said bars, the vertically-movable presser-bar N, provided with the trucks o^3 o^3, the springs *o o*, the cam-bars o^5 o^5, and the oscillating gear-wheels G' G', all constructed, arranged, and operating substantially as described.

12. The box K, provided with the detatchable side K', having the vertical slots m^2 m^2 and the rubber strip m^3, the lining *p*, of soft metal, the brackets L, the springs *n' n'*, the bolts *n n*, and the plate *p'*, substantially as described.

13. The combination of the box K, the brackets L, the bolts *n n*, the springs *n' n'*, the plate *p'*, the gage-bar M, the presser-bar N, the springs *o o*, the rack-bars *k k*, the cam-bars o^5 o^5, and mechanism, substantially as set forth, for imparting to said rack and cam-bars a reciprocating motion, all constructed, arranged, and operating substantially as described.

14. The combination of the gage-bar M, the tool-clamping carrier *r*, fitted to and movable in a guideway formed in said bar, the rod P, the slotted lever P', the crank-pin r^5, the bevel-pinion P^2, and the revolving bevel segmental gear C^2, all constructed, arranged, and operating substantially as described.

15. In combination with the reciprocating tool-carrier *r*, the rod P, lever P', the crank-pin r^5, bevel-pinion P^2, and bevel-segment C^2, the bolt *s*, the socket *s'*, formed in the bevel-pinion, the spring s^2, and the segmental cam P^3, substantially as described.

16. In combination with the bars M and N and the reciprocating tool-carrier *r*, the detent-notch *w'*, formed in the side of the pendent plate N' of the bar N, the toothed bar w^2, the boxed bar *w'*, the stand *v*, and the spring *w*, all constructed, arranged, and operating substantially as described.

380,005. DRIP-CUP FOR WHITEWASH OR PAINT BRUSHES.

ALFRED WILLIAMS, Watapa, N. Y. Filed Apr. 15, 1887. Serial No. 234,903. (Model.)

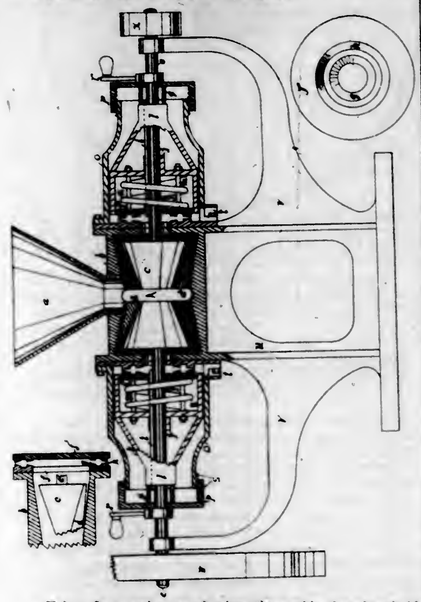


Claim.—1. In a drip-cup for whitewash or paint brushes, the combination, with the brush and its handle, of the metallic socket *a'*, provided with extensions *c c d d*, as and for the purpose specified.

2. The drip-cup C, having the upper edges of its sides inclined or bent inwardly and downwardly, forming the groove *b'*, its ends inclined outwardly, substantially as shown, in combination with the handle of a paint or whitewash brush, substantially as and for the purpose specified.

380,006. ORE CRUSHER AND PULVERIZER.

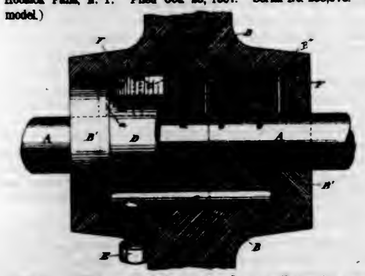
LOUIS WIEBKER, Elizabeth, N. J., assignor of one-half to Miss D. Smith, same place. Filed Jan. 27, 1887. Serial No. 225,739. (No model.)



Claim.—In a crusher or pulverizer, the combination of a suitable casing provided with a hopper, a crushing-wheel, and two independent pairs of pulverizing-disks, located at opposite ends of the casing and receiving the material therefrom, substantially as described.

380,007. SELF-LUBRICATING LOOSE PULLEY.

JOHN D. WIRTH, Hoosick Falls, N. Y. Filed Oct. 26, 1887. Serial No. 253,378. (No model.)



Claim.—1. The combination, with a loose pulley, of a separate tubular bushing fitting in the hub of the pulley, said bushing provided with end flanges forming with the hub an oil-chamber, and a projection having a series of perforations extending to the shaft, and pins working loosely in said perforations, substantially as and for the purpose specified.

2. In combination with a loose pulley having an oil-passage through its hub, a tubular bushing provided with end flanges, a projecting rib, perforations through said ribs, ducts leading to said perforations, and pins in the perforations, substantially as and for the purpose specified.

380,008. FEEDING DEVICE FOR SEWING-MACHINES.

ERASTUS WOODWARD, Boston, assignor to the Pawtucket Variable Stitch Sewing Machine Company, Haverhill, Mass. Filed June 3, 1886. Serial No. 204,001. (No model.)



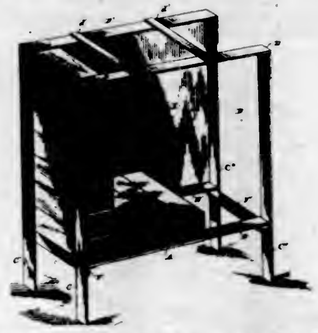
Claim.—1. The combination of the feeder, the support *c'*, and a universal or gimbal joint connection between the feeder and the support, whereby the feeder may be variously inclined with respect to the support to conform to the work under it, substantially as set forth.

2. The combination of the feeder, the yoke having a pivotal connection with the feeder, and the support *c'*, having a pivotal connection with the yoke at right angles to the pivotal connection of the yoke with the feeder, as set forth.

3. The combination, with the feeder *a*, provided with the ears *c*, of the yoke *y*, having the arms *c c*, pivot screws or pins *s*, stud *d*, and support *c'*, substantially as set forth.

380,009. RECEPTACLE FOR FILE-CASES.

CHARLES L. WUNDT, Burlington, Iowa. Filed Oct. 7, 1887. Serial No. 251,762. (No model.)



Claim.—1. In a receptacle for file-cases, an iron frame, F, consisting of the uprights C C' C'' C''', the cross-pieces D, D', E, and E', the pieces *d* and *d'*, and the braces F and F', substantially as and for the purpose herein set forth.

2. In a receptacle for file-cases, a case formed from one piece of material suitably bent, the front face of said case having one or more outwardly-turned flanges formed integrally therewith, substantially as described.

3. In a receptacle for file-cases, the combination, with the frame B, having cross-pieces D and E and uprights C and C'', of a case made of one piece of material, and having outwardly-turned flanges on its front face adapted to be bent around the cross-pieces and uprights, substantially as described.

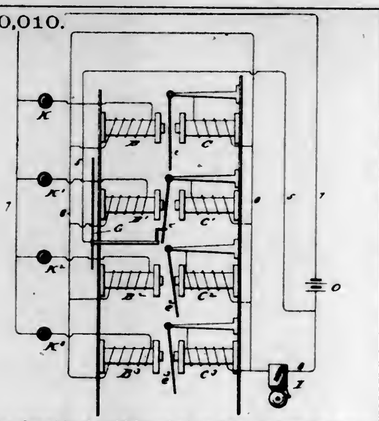
380,010. ELECTRIC ANNUNCIATOR.

CHARLES S. YOUNG and GWYNNE E. PAINTER, Baltimore, Md. Filed June 3, 1887. Serial No. 240,117. (No model.)

Claim.—1. In an electric annunciator, the combination, with a generator of electricity and a number of circuit-closers arranged in multiple arc between the poles thereof, of a hand or pointer forming a part of the return-circuit on one side, a series of conducting-detents for the said hand or pointer, the said detents being located, respectively, between pairs of electro-magnets, each detent being directly connected with one of its pair of magnets, and being also connected beyond the said magnet with all the magnets corresponding to the other magnet of the said pair, as and for the purpose set forth.

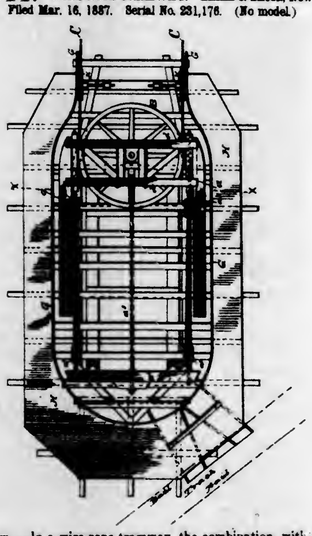
2. In an electric annunciator, the combination, with a series of magnets adapted to operate a series of detents and connected through different circuit-closers to one pole of an electric generator, of a series of magnets adapted to withdraw the said detents, the said magnets being electrically connected with the detents, and also through a bell to the other pole of the generator, and a hand or pointer likewise joined to the last-named pole and normally resting against one of the said detents, whereby, on the operation of a circuit-closer, the hand

380,010.



will be released by the withdrawal of the detent and another detent will be thrown out into its path, as set forth.

380,011. WIRE-ROPE TRAMWAY. EARLE G. BACON, New York, N. Y. Filed Mar. 16, 1887. Serial No. 231,176. (No model.)

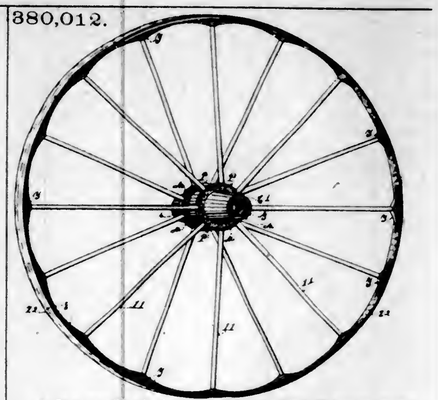


Claim.—In a wire-rope tramway, the combination, with a supporting-frame provided with the longitudinal timbers a' a', the rails a a, the upper and lower timbers, d d', of the carriage-frame, and the wheel B, located between the upper and lower cross-timbers and journaled in bearings secured to the carriage-frame, of the cross-timber a^2, the blocks and tackle located between the carriage-frame and the cross-timber a^3, and the chain a^2, connecting the carriage-frame and cross-timber a^3, whereby the apparatus may be adjusted to take up slack in the wire rope and compensate for expansion and contraction in the same under heat and cold, substantially as set forth.

380,012. VEHICLE-WHEEL. HOWARD S. BAILEY, Denver, Colo. Filed July 16, 1887. Serial No. 244,460. (No model.)

Claim.—1. In a metallic vehicle-wheel, an elastic cushion hub having a cylindrical hollow shell curving at the ends and receding into the cylinder, forming circular taper collars adapted to embrace the axle-box, having projections radiating from the circumference of the hub, provided with recesses in the sides of said projections adapted to receive, match the form of, and partially embrace the spokes, having clips adapted to match said recesses in sides of the projections and to partially embrace said spokes, as specified.

380,012.



2. In a metallic wheel, the cylindrical-shell hub H, having curved ends G and K, and collars I and L, the projections P', provided with the recesses, having clips 4, adapted to fit said recesses, having slots M through the surface of hub, as specified.

3. In a metallic wheel, a metallic felly in cross-section, a semicircular shell forming a continuous hollow felly having fins, lugs, or projections forming a part thereof, provided with recesses adapted to receive and match the form of and to partially embrace the ends of spokes having clips fitting said recesses, substantially as and for the purpose herein set forth.

4. A metallic felly having recesses in its sides and clips matching said recesses, adapted to receive and secure in said recesses the ends of spokes, as herein set forth.

5. In a metallic wheel, metallic spokes of any form of cross-section largest at the base and tapering smaller to the central portion of the spoke, smallest at the center and tapering larger to the end, and provided at the ends with enlarged portions, as round knobs or tapered extended heads, or any form adapted to fit recesses in the sides of fellies and in hubs, as set forth and described.

6. The combination, in a metallic wheel, of the semicircular hollow felly 8, having recesses V in the sides and having clips 6 fitting said recesses, with the hub H, having curved ends G and K receding into hub and forming taper collars I and L, having projections P' provided with recesses N, and clips 4, matching the same, as herein specified.

7. In combination, the elastic-cushion hub H, having projections provided with recesses and clips matching the same, and the metallic hollow felly 8, having recesses in its sides and clips matching the same, with the metallic spokes having ends formed to match the recesses in the hub and felly, all arranged as herein set forth.

8. In a metallic wheel, the cylindrical hub H, having the ends G and K curved or shaped to recede into the interior of the hub, forming collars I and L adapted to receive an axle-box, the surface of the hub having projecting lugs or collars provided with recesses and with clips fitting the same, adapted to receive and match the ends of spokes, the hub being also provided with slots M through its surface and having the interior filled with rubber or other substance elastic in itself and qualified to deaden the noise made by running wheels, as specified.

9. In a metallic vehicle-wheel, the metallic felly in cross-section, a semicircular shell provided with projections or lugs extending from the under side of felly, having recesses in the side of said projections and clips fitting the same, adapted to receive the ends of spokes, and provided with a rubber tire, U', adapted to fit the semicircular recess of the felly, as herein specified.

10. The combination, in a metallic wheel, of the metallic cylindrical hub H, having the ends G and K curved or formed to recede into the interior of the hub and form collars I and L, adapted to receive and match the form of axle-boxes, and provided with projections P' or collars P, with recesses N and N', and with clips 4 fitting the same and adapted to receive and match the forms of the spokes, having the interior of the hub filled with an elastic substance adapted to deaden the noise made by running wheels, with metallic spokes of any form of cross-section largest at the base and tapering smaller to the central portion of the spoke, smallest at the central portion of the spoke and tapering larger to the end, and with the metallic felly in cross-section, a semicircular shell provided with projections Y, containing recesses V and V', and with clips 6 fitting the same, adapted to receive and match the forms of the ends of the spokes, and provided with a rubber tire, all arranged as herein set forth and described.

380,013. WIRE CLOTHES-PIN. EDWARD M. BALL, North Conticook, Quebec, Canada. Filed May 10, 1887. Serial No. 237,784. (Model.)



Claim.—1. A clothes-pin formed of a single piece of wire so bent as to form two jaws, a^2 a^2, two locking-slides, a a, and the bows A A, substantially as and for the purpose described.

2. As a new article of manufacture, a clothes-pin formed of a single piece of wire, and consisting of an arch, two converging clamping-jaws, and locking-slides connected to the jaws and riding upon the arch, substantially as and for the purpose described.

3. As a new article of manufacture, a clothes-pin formed of a single piece of wire, and consisting of an arch, two locking-jaws converging from the terminals of the arch toward the center thereof, and formed with the curved portions, which meet to form a loop, b, and the locking-slides radiating from the inner curved terminals of the jaws and riding on the arch, substantially as and for the purpose described.

4. As a new article of manufacture, a clothes-pin formed of a single piece of wire, and consisting of an arch, two clamping-jaws converging from the terminals of the arch toward the center thereof, and the locking-slides radiating from the inner terminals of the jaws and bent upon themselves to ride upon the arch, said slides having loops for the insertion of the operator's fingers, substantially as and for the purpose described.

380,014. FOUNTAIN PEN AND HOLDER. FERDINAND S. BARTRAM, New York, N. Y. Filed Jan. 20, 1887. Serial No. 224,960. (No model.)



Claim.—1. In a fountain-pen, an ink-conductor consisting of a plug, of hard rubber or other suitable material, inserted or adjusted partially within the open end of a tube-case or reservoir and independent of the outer section thereof, said plug being provided with a longitudinal perforation communicating with the reservoir and pen, and having its lower or exposed end reduced, tapered, or pointed, and also bisected longitudinally from its pointed end backward to form two projecting lips or arms a portion of its length, between which lips or arms a pen may be inserted, said pen being partly within the case, but wholly without the reservoir, for the purpose of controlling the flow of ink to the pen by intersecting the perforation in said plug and dividing and conducting the flow simultaneously down both upper and under surfaces of the pen from its heel to or near the point.

2. In a fountain-pen, a regulator or stop consisting of a movable and adjustable horizontal bar arranged within a perforated feed plug or bar communicating with the reservoir and pen, having its backward end enlarged or convexed to form a stop, designed to open, graduate, or close said perforation, and thereby regulate or control the ingress of air to and the egress of ink from the reservoir or tube to the pen.

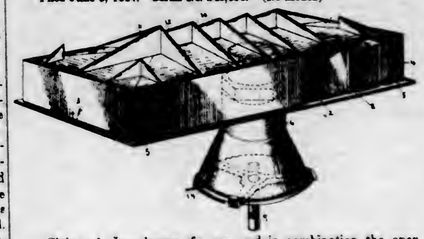
3. In a fountain-pen, a regulator or stop consisting of a movable and adjustable horizontal bar arranged within a cylindrical feed plug or tube fixed within the open end of the case or reservoir, and communicating with the reservoir and pen by means of one or more longitudinal perforations, said bar having one or more enlargements or convexed stops formed or affixed to its base, adjusted and fitted to enter a corresponding seat or seats within said perforations, and designed to equalize and control by proper adjustment the concurrent natural forces of the air and ink for the successful operation of the fountain and pen.

4. In a fountain-pen, one or more braces or rests upon a feeding tube or bar, consisting of one or more prongs formed by bifurcating the surface of said bar, or affixing them to said bar, and having their detached ends formed to rest within and against the inner surface of the tube or case, for the purpose of supporting the bar within the tube and strengthening the points of said bar or feeding device.

5. The fountain-pen herein described, consisting of the combination of the case a and pen d with the ink-conductor b, having the regulator c, all constructed and arranged for joint operation, substantially as and for the purposes specified.

6. For the reception, retention, and continuous or intermittent distribution of ink or other fluids, a fountain-holder or reservoir, in combination with a conductor inserted or adjusted within the open end of said reservoir, being perforated longitudinally from its backward end part way of its length, and having its forward end reduced by tapering or partially pointing the same, said pointed end being bisected longitudinally and centrally, or nearly equally, to form two lips, one being over, above, or opposite the other, and which inner surfaces face each other, the space between said lips communicating with the said perforation, and all constructed and arranged for joint operation, substantially as hereinbefore described.

380,015. GAS-BURNER. EDWARD BOURNE, Allegheny City, Pa. Filed June 3, 1887. Serial No. 240,150. (No model.)



Claim.—1. In a burner for gas, and in combination, the open-topped base having a vertical wall varying in height, a cover resting on the summit of the vertical wall, with distance-pieces separating the base and cover laterally, and a gas and air inlet, substantially as specified.

2. In a gas-burner, the base having an open top and side walls and provided with gas and air inlets, in combination with a cover supported on said walls, and made slightly larger horizontally than the base, and having walls terminating near the lower part of the base and separated from its vertical walls by a space substantially equal to the width of the burner-exit, whereby an expansion-chamber, a narrow circumferential space or passage, and burner-opening are formed, substantially as specified.

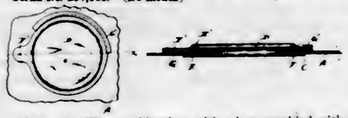
3. In a gas-burner, the base having an open top and side walls, and provided with valved gas and air inlets, in combination with a cover, closed except at its bottom, supported on said walls and made slightly larger horizontally than the base, and having walls terminating near the lower part of the base, and separated from its vertical walls by a space substantially equal to the width of the burner-exit, whereby an expansion-chamber, a narrow circumferential space or passage, and burner-opening are formed, substantially as specified.

4. In a gas-stove, the combination of an open-topped base provided with gas and air inlets, a cover, closed except at its bottom, supported on upward extensions from the base, the vertical walls of the cover terminating near those of the base and separated from its vertical walls by a space substantially equal to the width of the burner-exit, whereby a narrow opening for escaping gas is provided between them, and asbestus extending over the top of the burner and below the edge of the cover and overhanging the gas-exit, substantially as specified, whereby gas delivered at the lower margin of the cover may ascend the fibers of asbestus and the burner be enveloped in flames.

5. In combination, the open-topped base provided with valved gas and air-inlets, the cover closed, except at its bottom, and made slightly larger horizontally than the base and supported on its vertical walls, the walls of the cover extending down to near the bottom of the base, and separated from its vertical walls by a space substantially equal to the width of the burner-exit, whereby a narrow passage and burner-opening are formed, said cover having the form of a hip-roof for the better distribution of gas in the interior of the burner, substantially as specified.

6. In combination, the open-topped base, the cover closed, except at its bottom, and made larger than the base and supported on its vertical walls, the walls of the cover being separated from said vertical walls of the base by a distance approximately equal to the width of the burner-opening, and extending to near the bottom of the base and having the form of a hip-roof, and the gas-inlet pipe adjustable vertically in the base of the burner, substantially as specified, whereby the relative amount of air and gas can be regulated and then burned on the exterior at the bottom of the burner.

380,016. BAG. JOHN S. BOYD, Baltimore, Md. Filed Dec. 15, 1887. Serial No. 257,969. (No model.)



Claim.—1. The combination, with a bag provided with an aperture and a metallic tube fitting in the aperture, said tube having flanges

by means of which it is secured to the bag, the flanges being provided with ridges clamping the material of the bag, of a cover pivotally mounted on one of the flanges and provided with a groove or recess corresponding to the above-mentioned ridges, so that when the cover is closed the groove and ridge coincide and the cover is held in place.

2. The combination, with a bag provided with an aperture and a metallic tube fitting in the aperture, said tube having flanges by means of which it is secured to the bag, the flanges being provided with ridges clamping the material of the bag, and one of the flanges being provided with an offset or lug, of a cover having a projection pivotally mounted on the offset and provided with a groove or recess corresponding to the ridge above mentioned, so that when the cover is closed the groove and ridge coincide and the cover is held in place.

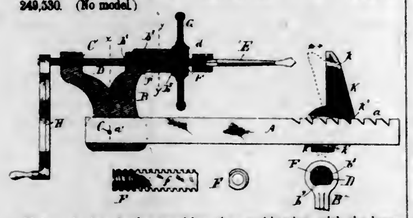
3. The combination, with a bag provided with an aperture and a metallic tube fitting in the aperture, said tube having flanges by means of which it is secured to the bag, and the flanges being provided with ridges clamping the material of the bag, and one of said flanges being provided with a pocket, of a cover pivotally mounted on one of the flanges and provided with a groove or recess corresponding to the ridges above mentioned, so that when the cover is closed the groove and ridge coincide and the edge of the cover fits within the pocket.

380,017. **CORSET-FASTENING.** JAMES A. BRENNAN, Worcester, Mass. Filed Oct. 26, 1887. Serial No. 253,451. (No model.)



Claim.—A fastening for corsets and other articles of wearing-apparel, comprising the combination, with an eye-piece provided with an opening for the entrance of the head of the stud and with a tapering aperture the neck or smaller end of which opens into the said opening, of a conical or tapering stud the neck or smaller end of which is of proper size to pass easily through the neck of the said tapering aperture, substantially as set forth.

380,018. **DRILLING-MACHINE.** WILLIAM R. CANEDY, Rochester, Minn. Filed Aug. 21, 1885. Renewed Sept. 12, 1887. Serial No. 249,530. (No model.)



Claim.—1. In a boring-machine, the combination, with the base-bar A, of the standard B, carrying the boring-bar and feed, said bar passing through a mortise in the standard and secured by a bolt passing through a hole in the bar and standard and held by a nut, the bolt-head and nut resting against the bar and standard, as set forth.

2. The combination, with the recessed standard, of the screw-threaded piece in said recess, the boring-bar passing through said piece and having a rest against the end thereof, and the hand-wheel screw-threaded to said piece and resting against the standard.

3. The standard B, having bearings b' b^2 and recess b^3, the flattened screw-threaded piece F, fitting said recess, the boring-bar D, having a head, *d*, resting against said piece, the hand-wheel G, screwed on piece F, and the crank H on the boring-bar, all combined, as stated.

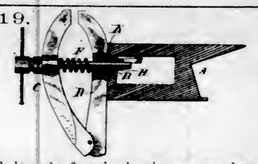
4. The combination, with the notched base-bar, of the standard, drill, and feed mechanism and the work-rest K, mortised for the passage of the base-bar and having a tooth, K^3, to enter a notch in the bar, substantially as described.

380,019. **COMBINED ANVIL AND VISE.** WILLIAM R. CANEDY, Rochester, Minn. Filed Sept. 7, 1885. Renewed Sept. 12, 1887. Serial No. 249,531. (No model.)

Claim.—1. The combination, with an anvil having a screw-threaded hole in one side, of a vise having an attached screw-threaded projection which enters said hole in the anvil, substantially as described.

2. The combination, with an anvil having a screw-threaded hole therein, of a vise having an attached screw-threaded projection which

380,019.



enters said hole, and a fastening-key in a passage between the anvil and vise, substantially as described.

3. In combination with a vise-jaw having projecting lugs *c c*, a vise-screw passing between said lugs, and a nut on the vise-screw resting between and against the lugs, as set forth.

380,020. **ELECTRO-DYNAMIC MACHINE.** GEORGE F. CARD, Covington, Ky., assignor to the George F. Card Manufacturing Company, same place. Filed June 8, 1887. Serial No. 240,644. (No model.)



Claim.—1. In an electro-dynamic or electro-magnetic machine, the combination of the following elements, to wit: the front and rear non-magnetic bearing-plates, 2 7, and the mechanically-attached but magnetically-insulated cores 3 6 of the respective exterior and interior field-magnets, as and for the purposes designated.

2. The combination of non-magnetic bearing-plates 2 7, having the attached magnetically-insulated magnet-cores 3 6, and affording journal-bearings 9 for armature-shaft 8, the web 10, the hard-rubber disk 14, the nut 12, gasket 13, series of commutator-sectors 17, the clips 18, the washers 19, and the terminals 20 21 of the armature-bobbins.

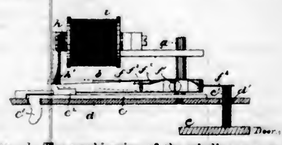
380,021. **PROCESS OF MAKING DENTAL PLATES AND BRIDGES.** CRAFT C. CARROLL, Meadville, Pa. Filed Feb. 4, 1887. Serial No. 226,504. (No model.)



Claim.—1. The herein-described process of forming or mending dental crowns, bridges, and plates from aluminum or the alloys of aluminum by casting, which consists in taking an impression with suitable material of the space or cavity to be supplied, making a model thereof, molding on said model a form of the denture with the necessary number of teeth attached, investing the said model and denture in a flask, removing the wax from the model, closing the flask and submitting the same to heat until the denture and model are dried, conveying molten aluminum or the alloys thereof into the matrix, and cooling and finishing the denture, substantially as described.

2. The herein-described process of attaching to and gumming plain teeth on a dental plate, which consists in forming a groove or open space for the teeth on the outer side of the plate by forming flanges in the denture around the alveolar and palatine borders, filling said groove or space with wax, mounting the teeth properly articulated therein, investing the denture in a two-part flask, and when the investing material is set removing the wax and filling the space occupied thereby with celluloid or gum-colored rubber, and then molding or vulcanizing and finishing the same, substantially as described.

380,022. **NON-INTERFERING SIGNAL-BOX.** FREDERICK W. COLE, Newton, Mass., assignor to the Gamewell Fire Alarm Telegraph Company, New York, N. Y. Filed Jan. 22, 1887. Serial No. 225,082. (No model.)



Claim.—1. The combination of the winding-arm and the pull or operating device of a signal-box, with a spring-pressed engaging device

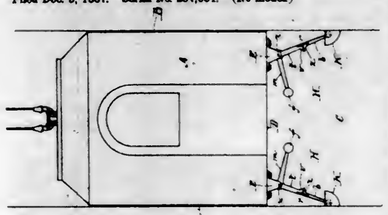
for said pull and arm, and an electro-magnet and its armature provided with a finger, A', having an inclined or beveled end that constitutes an obstruction by which the said engaging device is locked in operative position, substantially as described.

2. In a signal-box, the combination of the motor and its controlling device with a pull or operating device, and the spring-pressed engaging device co-operating with the said controlling device and pull, an electro-magnet and its armature provided with an obstruction that locks the said engaging device against the action of its spring in position to engage the pull and controlling device of the box, and the box-door having a portion that operates the said engaging device, substantially as described.

3. The combination of the motor and its controlling device with an engaging device connected with said controlling device and movable thereon, an electro-magnet and its armature provided with an obstruction that locks and releases the said engaging device, as described, and a contact-piece connected with said engaging device, and the door of the box co-operating therewith, whereby said engaging device is restored to and retained in its normal position when the box-door is closed, substantially as described.

4. The combination, with the motor and its winding arm, and engaging device connected with and movable on said arm, and the pull co-operating with said engaging device, of an electro-magnet and its armature provided with a cam-shaped projection co-operating with said engaging device, substantially as described.

380,023. **LUBRICATOR.** MICHAEL P. COLEMAN, Boston, Mass. Filed Dec. 5, 1887. Serial No. 257,001. (No model.)

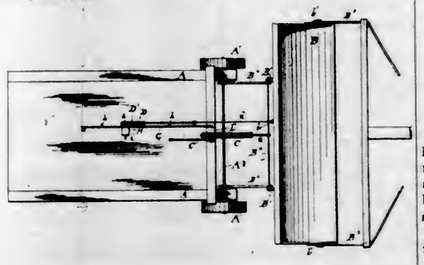


Claim.—1. In a device for lubricating the ways of elevator-carriages, the combination of the following instrumentalities, to wit: a carriage, a lever pivotally connected to the carriage and provided with a dabber, a counterbalancing-weight for forcing the dabber against the way of the carriage, and an oil cup or receptacle for containing the lubricant, said receptacle being disposed on or adjacent to the way in such position that the dabber will enter the same, take up a portion of the lubricant and apply it to the way as the carriage performs its journeys downward and upward over the same, substantially as described.

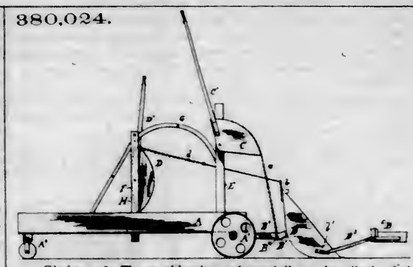
2. In a device for lubricating the ways of elevator-carriages, the combination of the following instrumentalities, to wit: the bell-crank lever H, pivotally connected to the carriage A and provided with the counterbalancing-weight *f*, the lever *b*, jointed to the arm *l* of said lever and provided with the wheel J, and the cup K, arranged to operate substantially as set forth.

3. In a device for lubricating the ways of elevator-carriages, the combination of the following instrumentalities, to wit: the pivoted lever H, having the arm *l*, provided with the curved end *v*, the lever *b*, provided with the curved end *z*, and wheel J, the curved ends of said lever and arm being jointed by the link *r*, substantially as described

380,024. **PLATFORM-SCRAPER.** DENIS M. DINNEEN and HERMAN W. CHILDS, Acampo, Cal. Filed Nov. 16, 1887. Serial No. 255,287. (No model.)



380,024.



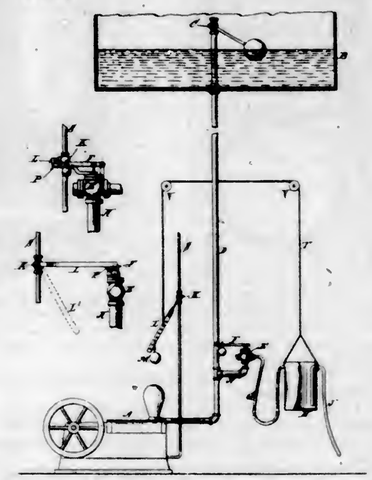
Claim.—1. The combination, substantially as described, of the vehicle A A' A^2 A^3 and lever devices consisting of the posts H and E, the half-circle G *h*, the levers D' D and C' C, the chain and rod *d*, and the chain *c*, with the scraper B, by means of the arms B^2, attached to the axle A^2 at their rear ends and to the scraper at their front ends by the ears B', and cross-rod B^4, the chain and rod *d* and chain *c* being suitably attached to the scraper, all as set forth.

2. The platform A, suitably mounted in the frame upon the wheels A' and axle A^2, and in the rear upon the trailing wheel A^3, in combination with the scraper B, by means of the forwardly-extending arms B^2, attached to the axle A^2 at their rear ends, and suitable levers for controlling and operating the scraper, all substantially as set forth and described.

3. The combination, with the platform A, suitably mounted and having attached to it the scraper B in front, of the posts H and E, and the half-circle G, provided with the lugs *h*, the center one of which is attached to post H and is provided with an outside hook end, *i*, engaging with the staff of the lever C C, such lever being suitably connected with the scraper B by the chain *c*, all as shown and described.

4. The platform A, suitably mounted and connected with the scraper B by the arms B^2, attached in the rear to the axle A^2 and in front to the ears B' of the scraper by means of the cross-rod B^4, in combination with the post E, the lever C C, attached to such post, and the chain *c*, attached at its upper end to lever-shaft C and at its rear end to cross-rod B^4, all as set forth.

380,025. **REGULATOR FOR PUMPING-ENGINES.** EDWARD H. DICKERSON, Jr., New York, N. Y. Filed May 21, 1887. Serial No. 238,965. (No model.)



Claim.—1. The combination of a pumping-engine and supply-pipe leading from the same, a valve in said pipe closing the same, and a relief-valve in said pipe between the pumping-engine and said first-named closing-valve, and mechanism whereby the operation of the relief-valve applies the power to stop the pump, substantially as described.

2. The combination of a pumping-engine and supply-pipe leading from the same, an automatic valve closing said pipe at a predeter-

mined point, a relief-valve in said supply-pipe between the pump and said first-named valve, a bucket controlling the power-supply of the engine, and mechanism whereby the escape of the water from the relief-valve fills the bucket and arrests the engine, substantially as described.

3. The combination of the pump A, pipe D, float-valve C, relief-valve E, bucket H, cord T, counterbalanced lever L, valve K, and supply-pipe S, substantially as described.

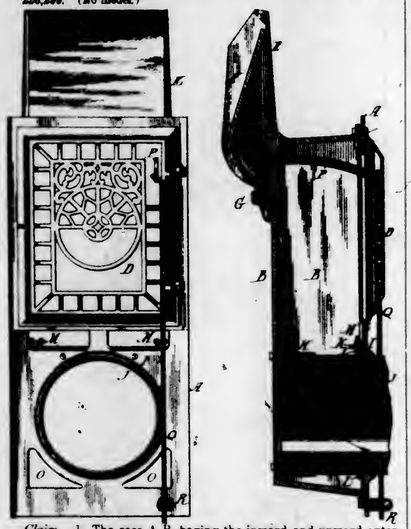
380,026. SIGN. EDWARD A. DUBEY, Brooklyn, N. Y., assignor of one-half to Thomas R. Rutan, same place. Filed June 21, 1887. Serial No. 241,961. (No model.)



Claim.—1. A flexible sign which consists of a piece of fabric, A, having letters or symbols produced thereon, and continuous sheets of mica or isinglass *a a*, placed on both sides of said fabric to completely cover the same, as set forth.

2. In a flexible sign, the combination of the translucent fabric A, having the letters or symbols produced upon it, and continuous sheets of mica *a a*, placed on both sides of same, so as to completely cover said fabric, with the frame B, as set forth.

380,027. WALL-VENTILATOR AND STOVE-PIPE THIMBLE. JOHN P. EMERSON, Englewood, Ill., assignor to the Standard Ventilator Manufacturing Company, of Illinois. Filed Feb. 2, 1887. Serial No. 226,399. (No model.)



Claim.—1. The case A B, having the inward and upward extension E and movable back or damper F, substantially as described.

2. The combination of the case A B, inward and upward extension E, damper or hinged back F, with the lever or arm P and rod Q, substantially as set forth.

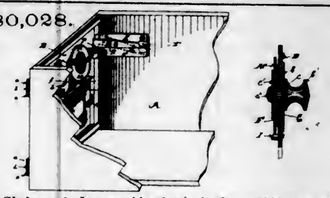
3. The case A B, having the extension E, thimble H, and opening I, substantially as specified.

4. The combination of the front plate, A, having opening I, the adjustable curved rod L, the ledge or support K, and the screws M, surrounding the opening I, substantially as and for the purpose described.

5. The combination of the case A B, having an opening, I, the thimble H, the ledge or bar K, and locking-rod L, substantially as set forth.

6. The combination and arrangement of the case A B, having the extension E, damper F, and air-openings O, with the pipe J, substantially as specified.

380,028. COMBINATION-LOCK. BENJAMIN FRY, Erie, Pa., assignor to the Art Novelty Company, (Limited,) same place. Filed Oct. 3, 1887. Serial No. 251,358. (Model.)

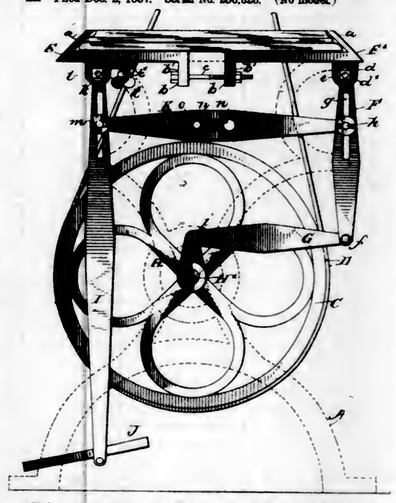


Claim.—1. In a combination-lock, the combination of a lever-bolt mounted and oscillating on a stud-pin in the lock-frame, a stationary dial mounted on a spindle operating in the lock-frame, and a movable dial mounted on a spindle operating in the lever-bolt, with a stud on the oscillating bolt adapted to engage a locking-disk secured to the spindle of the stationary dial, a stud on the lock-frame adapted to engage a locking-disk secured to the spindle of the movable dial, and a spring adapted to raise and support the outer end of the lever-bolt, substantially as and for the purpose set forth.

2. The combination, with the bolt of a combination-lock, of a supplementary sliding bolt and knob, substantially as and for the purpose set forth.

3. In a combination-lock, the combination of a lever-bolt, F, mounted and oscillating upon a stud-pin, *f*, in the door B, a spring, N, on the door B, adapted to raise and support the outer end, K L, of the bolt F, a stationary dial, D, mounted on a spindle, *d*, operating in the door B, a movable dial, C, mounted on a spindle, *c*, in the lever-bolt F, a stud-pin, *c'*, on the arm J of the lever-bolt F, and a stud-pin, I, on the door B, with a catch, O P, on the door-frame A, adapted to engage the end L of the bolt F, substantially as and for the purpose set forth.

380,029. SWINGING TREADLE. OLIVER H. GENTRY, Opelousas, La. Filed Dec. 2, 1887. Serial No. 256,823. (No model.)



Claim.—A swinging treadle consisting of a slotted lever pivoted to a horizontally-adjustable lug, a slotted swing-arm pivoted to a rigid lug, said lever and arm connected at their slotted portions by an adjustable rod, a connecting-rod pivoted at one end to the free end of said swing-arm and its opposite end to a crank-pin, and a foot-board on the free end of said lever, substantially as set forth.

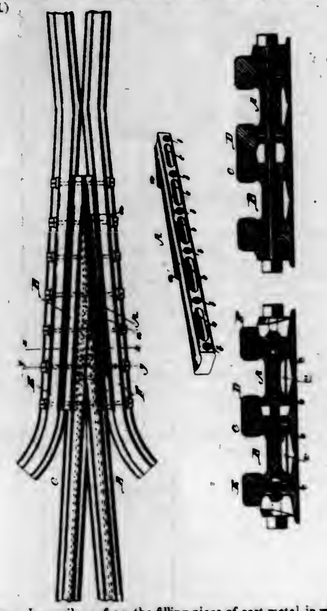
380,030. CORE FOR MAKING HOLLOW TILES. PATRICK R. GREENE, Brooklyn, N. Y., assignor of two-thirds to John Claffy, same place, and Peter Byrne, Jersey City, N. J. Filed Aug. 17, 1887. Serial No. 247,157. (No model.)



Claim.—1. The combination of central prop, *a*, with sectional shell *b c d*, of which the sections *b d* have each a slanting and inwardly-beveled edge, and the section *c* is made with converging edges and has both edges beveled outwardly, substantially as specified.

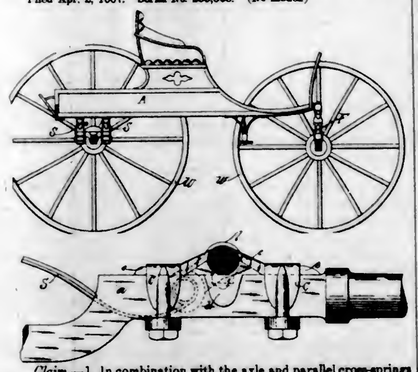
2. The combination of central prop, *a*, with slanting sections *b d*, and wedge-shaped section *c*, projecting beyond sections *b d*, substantially as specified.

380,031. FILLING-PIECE FOR RAILWAY-FROGS. THOMAS A. GRIFFIN, Chicago, Ill. Filed Nov. 23, 1887. Serial No. 256,304. (No model.)



Claim.—In a railway-frog, the filling-piece of cast metal, in which are formed the bolt-holes *b b*, and the hollows *c c'* between the bolt-holes for preserving a uniform section, as described.

380,032. SPRING-VEHICLE. CORNELIUS HARRIGAN, Rome, N. Y. Filed Apr. 2, 1887. Serial No. 233,363. (No model.)

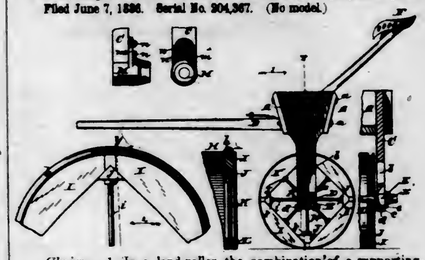


Claim.—1. In combination with the axle and parallel cross-springs at the opposite side thereof, a sectional saddle secured by clips to the top of the axle, and having through its center a shaft, upon both ends of which are secured links which support the ends of the oppositely-secured parallel cross-springs, substantially as and for the purpose set forth.

2. The within-described sectional saddle, the lower part thereof being provided with depending lugs embracing the sides of the axle, and a bearing or seat for the link-supporting shaft, the upper part or cap provided with a cap-bearing to secure the link-shaft, and with extensions on each side of the cap-bearing for clips to secure the saddle to the axle, in combination with a shaft, upon both ends of which are secured links supporting the ends of separate cross-springs, substantially as and for the purpose set forth.

3. The combination of the saddle mounted on the axle, the cap-bearing *c*, having extensions *c c*, the shaft-eye E, seated on the extension *c*, and the clip C, securing the saddle and shaft-eye to the axle, substantially as and for the purpose set forth.

380,033. LAND-ROLLER. SYLVESTER F. HARTLEY, Gouverneur, N. Y., assignor to the St. Lawrence Manufacturing Company, same place. Filed June 7, 1886. Serial No. 204,367. (No model.)



Claim.—1. In a land-roller, the combination of a supporting-frame, an axle mounted in the frame, a metal shell, felly-sections inside either end of the shell, hubs at either end of the shell, spokes projecting from the hubs, and adjustable wedges adapted to spread apart the adjacent ends of the fellies, substantially as set forth.

2. In a land-roller, the combination of a shaft, a series of hubs mounted upon the shaft, the spokes, outward-adjustable fellies supported upon said hubs, and a sheet-metal cylinder supported upon and connecting said series of fellies and hubs, substantially as set forth.

3. In a land-roller, the combination of the main frame, downward-projecting hangers, a shaft mounted at its ends in the hangers, hubs mounted on the shaft, spokes, fellies mounted on the ends of the spokes, a sheet-metal inclosing-cylinder surrounding the fellies, and means for adjusting the fellies outward upon the spokes, substantially as set forth.

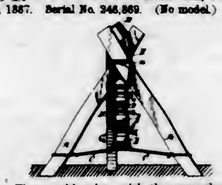
4. In a land-roller, the combination of the main frame, an axle mounted in the main frame, a series of hubs mounted loosely upon the axle, spokes projecting outward from the hubs, fellies at the outer ends of the spokes, and a sheet-metal drum supported upon the fellies and connecting the series of hubs, substantially as set forth.

5. In a land-roller, the combination of the main frame, an axle mounted on the main frame, a series of hubs mounted loosely upon the axle, spokes projecting outward from the hubs, adjustable fellies at the ends of the spokes, and the sheet-metal cylinder supported upon the fellies and connecting the series of hubs, substantially as set forth.

6. In a land-roller, a drum having a sheet-metal cylinder, in combination with fellies having outer convex faces which feed the inner face of the cylinder and inner substantially straight edges, an axle, hubs, and spokes, substantially as set forth.

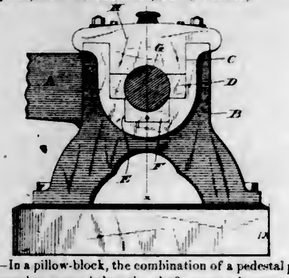
7. In a land-roller, the combination of a drum having a sheet-metal cylinder, fellies upon which said cylinder is supported, and interlocking projections between the cylinder and the fellies to prevent relative movement, substantially as set forth.

380,034. FENCE. DAVID S. HARTWELL, Marseilles, Ohio. Filed Aug. 13, 1887. Serial No. 246,869. (No model.)



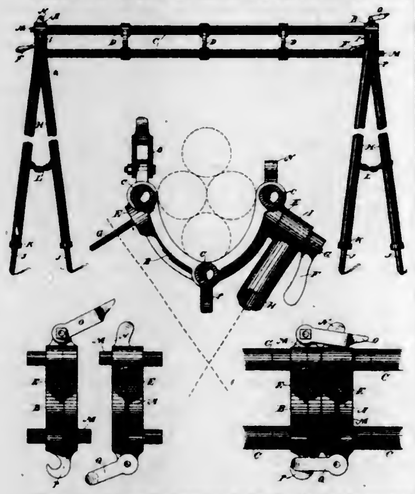
Claim.—The combination, with the crossed pieces A, having their lower ends sunk in the ground, of the upper rails, B, resting in the upper crotches of said pieces, the lower rails, D, the upper series of which have bearings in the lower crotches of the crossed pieces A, the wire E, embracing the upper rails, B, the cross-wires C, to which the lower ends of the wires E are secured, the wires *e*, embracing the parts of the wire E, and the wind-break G, extending into the ground and secured to the rails B and D, substantially as specified.

380,035. JOURNAL-BEARING. GEORGE H. HELVEY, Hamilton, Ohio, assignor to the Hooven, Owens & Rentschler Company, same place. Filed Sept. 27, 1887. Serial No. 250,864. (No model.)



Claim.—In a pillow-block, the combination of a pedestal provided with a rectangular recess below the shaft, quarter-boxes secured in the pedestal, a cap for the pedestal, a bed-box set in said rectangular recess and fitted for longitudinal withdrawal therefrom, a shaft supported by the pillow-block, and a collar secured to said shaft against the end of said bed-box and serving to prevent the endwise displacement of said bed-box, and fitted for removal therefrom to permit the endwise withdrawal of the bed-box, substantially as and for the purpose set forth.

380,036. BRIDGE FOR FIRE-HOSE. BERNHARDT E. HENRIKSEN, San Francisco, Cal. Filed Jan. 7, 1888. Serial No. 260,085. (No model.)



Claim.—1. A portable extension-bridge for fire-hose, composed of independent concave yokes having the ends constructed with lugs or connecting-latches, substantially as herein described.

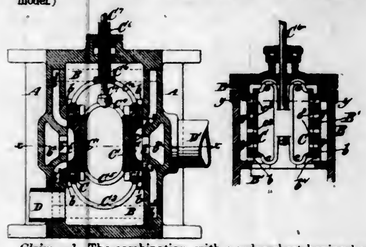
2. The bridge or cradle sections composed of semicircular yokes having rods or tubes extending through them, so as to form concave bridges, in combination with legs pivoted to opposite sides of the end sections, so as to cross each other, and having the bolts and locking or clamping nuts by which they are secured to the yokes, substantially as herein described.

3. The concave yokes with the uniting rods or tubes extending through them, so as to form cradle-sections, the legs having corrugated or roughened heads, which are secured upon corresponding inclined faces upon opposite sides of the end yokes of the sections, and the telescopic extensions of said legs, with the holding or clamping screws, substantially as herein described.

4. The concave yokes with the rods or tubes extending through them, so as to form bridge or cradle sections, and the adjustable supporting-legs with the clamping-nuts, in combination with the latches and the lugs or hooks upon adjacent meeting sections, whereby they may be united together to form an extension-bridge, substantially as herein described.

5. The concave yokes with the uniting rods or bars, the adjustable supporting-legs, and the lugs and latches by which adjacent meeting ends of the sections are united together, in combination with the projecting pins or bolts M, whereby the tubular bars are united and made continuous from one section to the other, substantially as herein described.

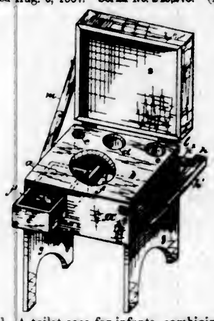
380,037. VALVE FOR STEAM-ENGINES. WILLIAM H. HOFFMAN, New York, N. Y. Filed Sept. 26, 1887. Serial No. 250,669. (No model.)



Claim.—1. The combination, with a valve-chest having bearings for the valve at points opposite each other, of a valve consisting of a skeleton structure formed in a single piece and having parallel members fitting said bearings, and arms connecting said parallel members, whereby they are, by the pressure of motive fluid within the valve, expanded against said bearings, substantially as herein described.

2. The combination, with a valve-chest having bearings for the valve at points opposite each other, of a valve consisting of a skeleton structure having parallel bars or members which work on said bearings and are supported by curved arms, as c, which are rigidly connected with said bars or members, but are capable of deflection to permit the bodily expansion of the valve by the pressure of motive fluid within it, substantially as herein described.

380,038. NURSE'S TOILET-CABINET. FRANCIS HOLT, Newark, N. J. Filed Aug. 6, 1887. Serial No. 246,273. (No model.)



Claim.—1. A toilet-case for infants, combining a body consisting of four sides and a top board, *b*, the latter having receptacles for wash-bowl, soap, &c., a drawer, i, and a supplemental case serving as a cover to conceal said wash-bowl, soap, &c., and having a receptacle for towels and a cover for said supplemental case, substantially as set forth.

2. A toilet-case for infants, combining a body composed of sides *a' a' a' a'* and a top, *b*, having perforations *c d e f*, said body being supported by suitable legs, a hinged cover consisting of a partition-board, *k'*, and side pieces, k^2, forming a chamber above and below said board *k'*, and a cover, *o*, for said chamber above said partition *k'*, all said parts being arranged and adapted to operate substantially as set forth.

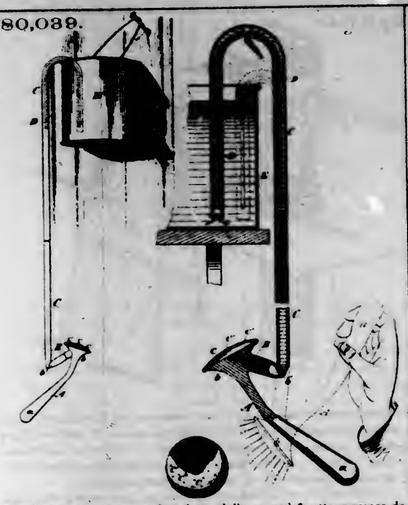
3. In a child's toilet-case, the combination, with the body thereof, of a rack forming a loop with said body, the said rack being adapted to be closed and the part *k'* to engage the body, substantially as and for the purposes set forth.

380,039. CLOTHES-SPRINKLER. FRANK G. JOHNSON, New York, N. Y. Filed Jan. 24, 1888. Serial No. 261,743. (No model.)

Claim.—1. In a clothes-sprinkler, the weighted handle A, having the hollow stem B and rosette-disk c, in combination with the flexible siphon-tube C, substantially in the manner and for the purpose set forth.

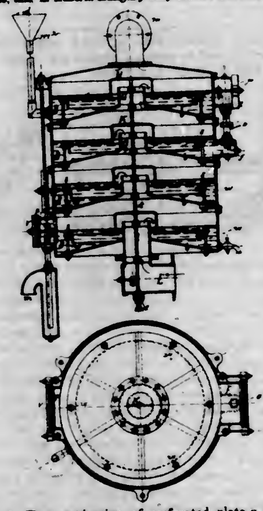
2. In a clothes-sprinkler, the weighted handle A, having the hollow stem B and rosette-disk c, in combination with the flexible siphon-

380,039.



tube C and stiffening-wire D, substantially as and for the purpose described.

380,040. GAS-WASHER. AUGUST KLÖNNE, Dortmund, Prussia, Germany. Filed Apr. 25, 1885. Serial No. 163,408. (No model.) Patented in Germany May 27, 1884, No. 31,056; in England Apr. 10, 1885, No. 4,464; in Belgium Apr. 14, 1885, No. 66,510; in France Apr. 14, 1885, No. 168,249, and in Austria-Hungary July 10, 1885, No. 13,385 and No. 35,258.

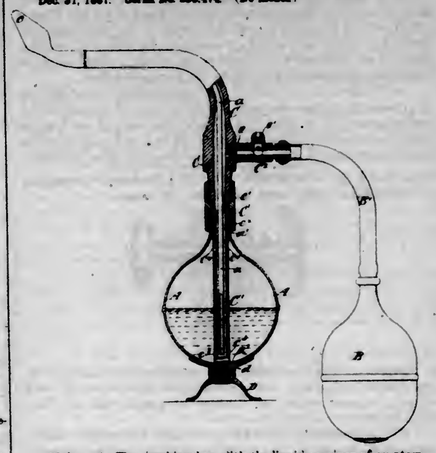


Claim.—1. The combination of perforated plate *a*, with projections *c* at its periphery, and with elevated plate *b*, beneath plate *a*, and having upwardly-extending tubular mouth G, and with cap H, placed on plate *a*, above tube G, and with the central vertical rod, *t*, extending through tube G and secured to cap H, and provided with regulating-nuts *s*, substantially as specified.

2. The combination of perforated plate *a*, having projections *c* at its periphery, with the adjustable cap H, placed on plate *a*, and with plate *b*, beneath plate *a*, and having upwardly-extending tubular mouth G, and with the adjusting-bolts *w*, connecting plates *a b*, and adapted to raise and lower plate *a* at its circumference, substantially as specified.

3. The combination of perforated plates *a*, having caps H, and of plates *b*, having tubular mouths G, with the adjustable overflow-pipe *o*, having threaded ends that engage chambers *f p*, located at the outside of the apparatus, the upper end of pipe *e* extending into the chamber *p*, the parts *p o f* constituting water-ways between the several tiers of plates *a b*, substantially as specified.

380,041. ATOMIZER. GEORGE KISSNER, New York, N. Y. Filed Dec. 31, 1887. Serial No. 259,474. (No model.)

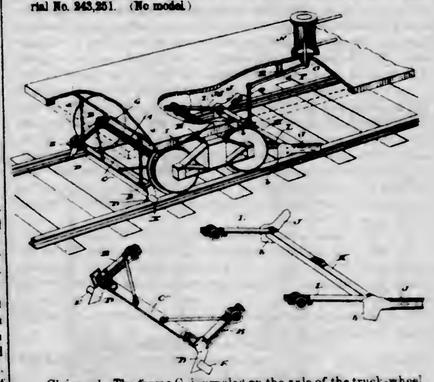


Claim.—1. The combination, with the liquid-receiver of an atomizer formed wholly of elastic and expansible material, of an air-tube extending downward through the receiver and forming a sustaining-post thereto and having near the bottom of the receiver a lateral inlet-opening and a liquid-tube extending downward in the air-tube and terminating near said lateral opening, substantially as herein described.

2. The combination, with the liquid-receiver of an atomizer formed wholly of an elastic and expansible bulb, of a structure of hard or rigid material surmounting the receiver and comprising the air and liquid tubes of the atomizer, and an inlet or suction valve for air also comprised in the said structure above the receiver, substantially as herein described.

3. The combination, with the liquid-receiver of an atomizer and a surmounting structure of hard or rigid material comprising within it the air and liquid tubes of the atomizer, and having a branch, C^3, wherein are the air-valve *e*, opening from said branch into said air-tube, and the air-valve *e'*, opening into the branch, of a compression-bulb, B, and a tube, B', whereby it is connected with said branch C^3, both said bulb and tube being destitute of any valves and the bulb being imperforate and closed to the atmosphere, save for the passage through the tube B', substantially as herein described.

380,042. ICE AND SNOW PLOW FOR RAILROAD-TRACKS. EDWARD LESLIE, Orangeville, Ontario, Canada. Filed July 2, 1887. Serial No. 243,251. (No model.)



Claim.—1. The frame C, journaled on the axle of the truck-wheel, and having plows D and scrapers E attached to it, in combination with mechanism to vertically adjust the said frame, as specified.

2. The frame C, provided with arms B, journaled on the axle A, and having plows D and scrapers E attached to it, in combination with the crank-shaft G, connected to the frame C, and having a lever, I, attached to it, substantially as and for the purpose specified.

3. A flanger connected to a frame or arm journaled on the truck-axle, and having a downward projection, *b*, formed on the said flanger, which extends outwardly beyond the outside of the truck-wheel, the frame K, provided with arms L, journaled on the axle M, in combination with the mechanism for imparting the vertical adjustment to the said flangers, substantially as and for the purpose specified.

4. The frame K, the beam P, the steam-cylinder N, and the link Q, arranged to connect the beam P with the frame K, so that the lateral adjustment of the latter will not affect the beam, in combination with the piston-rod O, connected to the beam P and working within the steam-cylinder N, substantially as and for the purpose specified.

380,043. ALARM-LOCK. WILLIAM C. MANNETT, Warrenton, Va. Filed Jan. 13, 1888. Serial No. 260,608. (No model.)

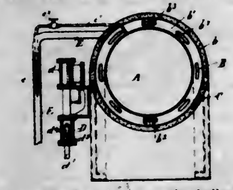


Claim.—1. The combination, with spring-actuated knobs, shank, and spindle adapted to be pushed inward from one direction, of a bell, a spring-actuated hammer, and trip-lugs for engaging with one arm of the hammer, substantially as set forth.

2. The combination, with spring-actuated knobs, knob-shanks, and spindle adapted to be pushed inward from one direction, of an escutcheon-disk and a slide adapted to engage with the disk to resist both the inward and outward movement of the spindle and knobs, substantially as set forth.

3. The combination, with a sliding knob-shank, of a bell, a spring-actuated hammer, a slotted escutcheon-disk, the trip-lugs adapted to engage the arm of the hammer, and the slide for engagement with the escutcheon-disk, all substantially as set forth.

380,044. CAR-HEATER. PATRICK F. MOSHER, Oregon City, Oreg. Filed Apr. 14, 1887. Serial No. 234,794. (No model.)



Claim.—1. The combination of a locomotive-boiler, an outer casing of plates, perforated girders supporting the plates, and thereby forming an air-chamber between the boiler and the said plates, a delivery-pipe connected to the said chamber, hot-air pipes extending through the cars and provided with valves for regulating the passage of air, flexible couplings connecting the said pipes, and an air-pump for supplying the air, substantially as and for the purpose set forth.

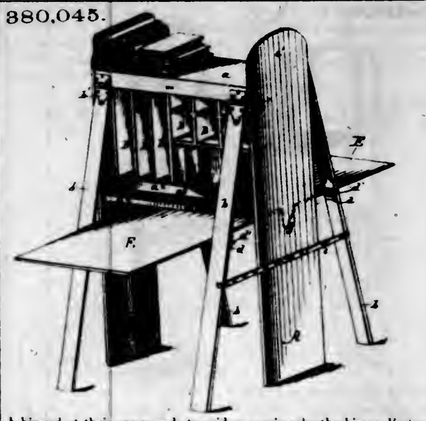
2. The combination of a locomotive-boiler, an outer casing of plates, perforated girders supporting the plates, and thereby forming an air-chamber between the boiler and the said plates, a delivery-pipe connected to the said chamber, hot-air pipes extending through the cars and provided with valves for regulating the passage of air, flexible couplings connecting the said pipes, a steam-jet in the said delivery-pipe for heating the air and forcing it through the pipes, and an air-pump for supplying the air to the pipes, substantially as and for the purpose set forth.

3. The combination of the heating-chamber B, surrounding the boiler and provided with semicircular girders *b'*, having lateral air-perforations b^2 and bolts b^3, the non-conducting covering C, the air-pump D, conducted to the lower front end of the said chamber by the air-delivery pipe d^4, and the pipe E, connected to the upper rear end of the said chamber for supplying the hot air to the cars, substantially as and for the purpose set forth.

380,045. DESK. ISHAM MELTON, Mount Holly, Ark. Filed Nov. 8, 1887. Serial No. 254,627. (No model.)

Claim.—1. The combination of the end pieces, A, having extensions *c'*, upper cross-piece, *a*, and trough a^3, secured between said end pieces, shelving B, set above said trough between said end pieces, legs

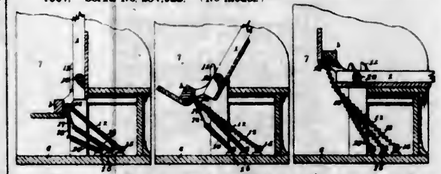
380,045.



b, hinged at their upper ends to said cross-piece by the hinges *b'*, stays *c*, secured to said end pieces and said legs, leaves E, pivoted in the sockets *d* on said legs by means of the rods *d'*, secured to said leaves, and the chains *g*, secured to the lower ends of said leaves, substantially as shown and described, and for the purposes set forth.

2. The combination of the end pieces, A, upper cross-piece, *a*, and trough a^3, secured between said end pieces, shelving B, set above said trough and between said end pieces, legs *b*, hinged at their upper ends to the said cross-piece *a*, stays *c*, secured to the said end pieces and said legs, leaves E, pivoted in the sockets *d* by means of the rods *d'*, secured to said leaves, said leaves E having extensions *e*, adapted to catch under the trough a^3 to hold said leaves in proper position for use, all substantially as shown and described, and for the purposes set forth.

380,046. TURN-UP BED. ARTHUR H. MERRILL, Hartford, Conn., assignor of one-half to Austin C. Dunham, same place. Filed Dec. 9, 1887. Serial No. 257,922. (No model.)



Claim.—1. In a turn-up bed, a bed-case and a mattress-frame which is pivoted in said case, in combination with a series of cumulative coiled springs which are attached to said case at points unequally distant from their common point of attachment to said mattress-frame, substantially as and for the purpose specified.

2. In a turn-up bed, a bed-case and a mattress-frame which is pivoted in said case, in combination with a series of coiled springs which are provided with cords for the purpose of operating said springs in a successive and cumulative manner and are attached to said case and frame, together with said cords, in states of unequal slackness and tension, substantially as and for the purpose specified.

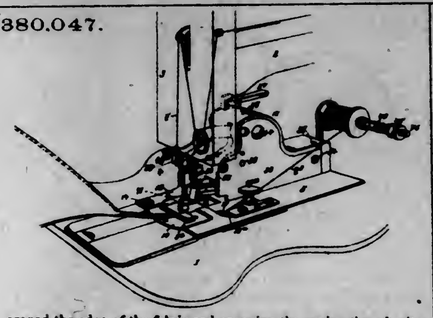
3. In a turn-up bed, a bed-case which is provided with an anterior chamber, in combination with a mattress-frame which is pivoted in said case, and a series of coiled springs which are provided with cords for the purpose of operating said springs in a successive and cumulative manner, and, together with said cords, are attached to said frame and to the interior of said chamber in states of unequal slackness and tension, substantially as and for the purpose specified.

4. In a turn-up bed, a bed-case and a mattress-frame which is pivoted in said case, in combination with a series of coiled springs which are attached to said case and frame in states of gradually-varying slackness and tension by means of cords which form loose attachments for a portion of said springs, substantially as and for the purpose specified.

380,047. OVERCASTING ATTACHMENT FOR SEWING-MACHINES. SCHAMU M. MOSCHCOWITZ, New York, N. Y., assignor to Louis Moschcowitz, same place. Filed Aug. 21, 1886. Serial No. 211,533. (Model.)

Brief.—This attachment is for interlocking a thread with the ordinary sewing-threads of a sewing-machine, the said thread passing

380,047.



around the edge of the fabric and engaging the sewing-threads alternately above and below the fabric, and in this manner binding the edge of the same.

Claim.—1. The combination, with the sewing mechanism of an ordinary sewing-machine, of an overcasting attachment employing a separate thread and operated by a lever moved by the reciprocation of the needle-bar, a looper carrying the overcasting-thread, a support within which the looper-bar has longitudinal movement, a rotating disk having studs connected with said support, and means to rotate the disk, whereby the support and looper-bar are raised and lowered alternately, substantially as described.

2. In an overcasting attachment for sewing-machines, the combination, with a looper carrying the separate overcasting-thread, of a support pivoted at one end, within which a bar carrying said looper has longitudinal movement, an open hook or curved finger mounted upon said support, a disk having studs which engage with the hook, and means for giving to said disk a fractional revolution at intervals, whereby the looper is alternately raised above and lowered below the bed-plate, substantially as described.

3. In an overcasting attachment for sewing-machines, the combination, with a pivoted support carrying the looper-bar, of a curved finger mounted on said support, a disk having studs engaging with the finger, a ratchet rigid upon the axis of the disk, a pawl-carrier having an angular slot and carrying a pawl by which said ratchet is given a fractional revolution, and a bell-crank lever having a stud moving in the angular slot of the pawl-carrier and engaging with a notch in the looper-bar, whereby the pivoted support is alternately raised and lowered and the looper-bar shot forward and retracted after each of said movements, substantially as described.

4. In an overcasting attachment for sewing-machines, the combination, with the sewing mechanism, of a support pivotally mounted at one end, a looper-bar having an open hook and rising and falling with said support and having longitudinal motion therein, a disk having studs revolving in said open hook, a bell-crank lever vibrated by the needle-arm to give longitudinal movement to the looper-bar, and a swinging pawl-carrier connected to said bell-crank by a stud on the latter playing in an angular slot in the former, the said open hook having a beveled or inclined end, substantially as described.

5. In an overcasting attachment for sewing-machines, the combination, with the sewing mechanism, a looper carrying a separate overcasting-thread, a lever operated by the needle-bar of the machine, a push-pawl and a looper-bar, both reciprocated by said lever, and a disk rotated by said push-pawl and having studs which at each fractional revolution of the disk raise and lower the looper-bar alternately prior to the longitudinal movement thereof, substantially as described.

6. In an overcasting attachment for sewing-machines, the combination, with a bell-crank lever having one arm connected with the needle-bar of the machine, of a pawl-carrier having an angular slot, a stud carried by the bell-crank and lying in said slot, and a looper-bar having a longitudinal opening intermediate its ends, in which the lower end of the actuating-arm of the bell-crank lies, said opening being of a length sufficient to permit limited movement of the end of the lever before actuating the looper-bar, whereby the movement of the pawl-carrier is effected before the thrust of the looper-bar takes place, substantially as described.

7. The combination, in an overcasting attachment for sewing-machines, of a looper-bar carrying a looper, means for reciprocating the looper-bar, a swinging support carrying said bar and provided with a curved finger having an inclined end and upper and lower angles, a disk having studs for engaging said finger, and means for rotating the disk and causing the studs to alternately raise and lower the support, substantially as described.

8. In an overcasting attachment for sewing-machines, the combination, with the sewing mechanism, of a looper, carrying a separate thread and consisting of a plate having a channeled edge, a thread-opening leading into said channel and an eye in its curved end, a bar carrying the looper, and a bell-crank lever having one arm engaged with the needle-bar and the other with the looper-bar, whereby the looper is shot outward at each upward stroke and drawn inward as the needle-bar descends, substantially as described.

9. In an overcasting attachment for sewing-machines, the combination, with the sewing mechanism, of a looper carrying a separate thread and consisting of a channeled plate having an eye in its curved end, a bar carrying the looper, a bell-crank lever having one arm engaged with the needle-bar and the other lying in a notch in the looper-bar, and lifting mechanism by which said bar is alternately raised and lowered, substantially as described.

10. The combination, in an overcasting attachment for sewing-machines, of a throat-plate and presser-foot forming part of said attachment and each having a needle-hole and a slot extending therefrom to its inner edge, with a looper for carrying the overcasting-thread, means for reciprocating the looper alternately above and below the work, said looper having means for carrying the overcasting-thread over the edges of the work and interlocking it above and below the work with the sewing-machine thread or threads, and a stitch-forming mechanism by which the interlocking sewing-machine stitches are made, substantially as described.

11. In an overcasting attachment for sewing-machines, the combination, with a slotted throat-plate, of a plate attached to the under surface of the bed-plate of the attachment and having a thread-notch which lies adjacent to the slot in the thread-plate, substantially as described.

12. In an overcasting attachment for sewing-machines, the combination, with the sewing mechanism, of a shell pivoted at one end and having a curved finger or open hook rigidly mounted thereon, a disk having studs which engage with said finger, a pawl engaging with a ratchet upon the axis of the disk, a pawl-carrier moved by the actuating-lever of the attachment, a looper-bar moving longitudinally in the shell and connected with the end of the actuating-lever, and a spring-pawl engaging with notches in the looper-bar, substantially as described.

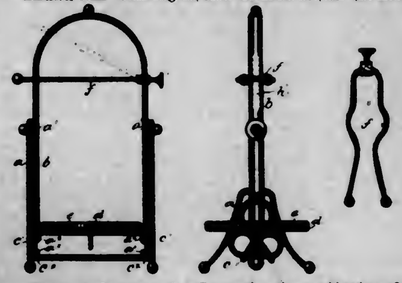
13. In an overcasting attachment for sewing-machines, the combination, with the reciprocating looper and the pivoted casing or shell within which it moves, of a disk having studs which engage with a curved finger or open hook upon the shell, a ratchet by which the disk is turned, and a spring-actuated holding-pawl having its end beveled or inclined upon the edge adjacent to the ratchet, substantially as described.

14. The combination, with an overcasting attachment for sewing-machines, having a casing, 18, of a pivoted bar, 20, carrying a presser-foot, 19, having a needle-hole, said bar being provided with a vertical arm, 24, rising through the casing, and a lift, 27, pivoted to the casing and engaging the upper end of said vertical arm to raise and lower the presser-foot, substantially as described.

15. An overcasting attachment for sewing-machines, consisting of the following parts: a cloth-plate and presser-foot having a slot leading from the needle-opening to the edge of the plate, a looper carrying the overcasting-thread and pivotally mounted in the end of a reciprocating bar, a shell having pivotal support at one end, within which the looper-bar is arranged, a lever connected with said bar and to the needle-bar of the sewing-machine, and mechanism for raising and lowering the shell, said mechanism being actuated by the lever reciprocating the needle-bar, substantially as described.

16. The combination, with the pivoted shell 52, having the curved finger 63, provided with the inclined end 64 and angles 65, of the disk 36, having sleeved studs 50, and means for giving a fractional rotation to said disk, substantially as described.

380,048. TEA OR COFFEE SERVICE. DANIEL H. MURPHY, Hartford, Conn. Filed Aug. 26, 1887. Serial No. 247,801. (No model.)



Claim.—1. In a tea and coffee service, the combination of the standards, the brace, the tilting frame supported by the standards,

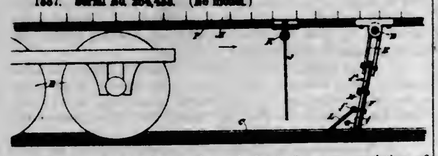
and the bail integral with the tilting frame, all substantially as described, and for the purpose specified.

2. In a tea and coffee service, the combination of the standards, a tilting frame supported by the standards, and a clamp attached to the frame above the level of the pivots that support the frame, substantially as described, and for the purpose specified.

3. In a tea and coffee service, the combination of the standards *a*, brace *c*, frame *b*, pivoted to the standards and having a base to support a receptacle, and a vertically-adjustable clamp to hold the receptacle down upon the base, all substantially as described, and for the purpose specified.

4. In combination with the tilting frame of a tea and coffee service, an adjustable clamp bearing spring-arms that project through a slot in the frame, said slot being serrated, all substantially as described, and for the purpose specified.

380,049. CAR-BRAKE. AUGUST F. NELL, San Francisco, Cal., assignor of one-half to Charles Osterberg, same place. Filed Nov. 5, 1887. Serial No. 254,623. (No model.)



Claim.—1. A safety brake and clutch for cars, consisting of swinging gravity-jaws normally carried up under the car for embracing and clamping, when dropped, the top of the rail, substantially as herein described.

2. Safety-clutches for embracing and clamping the top of the rails, and a pivot-connection for them under the car, in combination with a catch for holding them up when not in use, said catch comprising fixed staples under the car and engaging-rods, and a trip comprising a rock-shaft connected with the rods for withdrawing them when necessary, whereby the clutches drop to engagement with the rails, substantially as herein described.

3. Safety-clutches for embracing and clamping the top of the rails and a transverse rock-shaft under the car, and on which the clutches are mounted, in combination with fixed staples under the car, pins passing under the clutches and seated in the staples for supporting the clutches when not in use, and a longitudinal rock-shaft having cranks, to which the pins are connected, whereby said pins are withdrawn from under the clutches to drop them to engagement with the rails, substantially as herein described.

4. The swinging gravity-clutches under the car for embracing and clamping the top of the rails, consisting of the pivoted jaws and the pivoted links pivoted to the jaws, in combination with the jointed brace between the jaws for keeping them normally open, substantially as herein described.

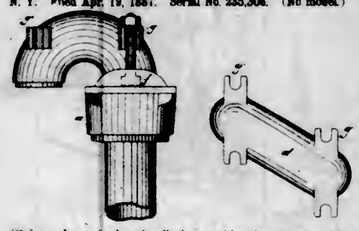
5. The swinging gravity-clutches under the car for embracing and clamping the top of the rails, consisting of the pivoted jaws and the pivoted links pivoted to the jaws, in combination with the jointed brace between the jaws for keeping them normally open and the spring for closing them when relieved of the brace, substantially as herein described.

6. The swinging gravity-clutches under the car for embracing and clamping the top of the rails, consisting of the pivoted jaws and the pivoted links pivoted to the jaws, in combination with the bail pivoted to the pivot-bolt of the jaws and having an indented portion for biting the top of the rail, whereby the grip of the jaws is relieved, substantially as herein described.

7. The transverse rock-shaft under the car, the brackets set thereon, the links pivoted in the ends of the brackets, and the pivoted jaws pivoted to the links, said links and jaws forming clutches for embracing and clamping the rails, the jointed brace for keeping the jaws open, and the spring for closing them, in combination with the staples and the sliding pins whereby the clutches are held up when not in use, and the longitudinal rock-shaft and cranks for withdrawing the pins and dropping the clutches to engagement with the rails, substantially as herein described.

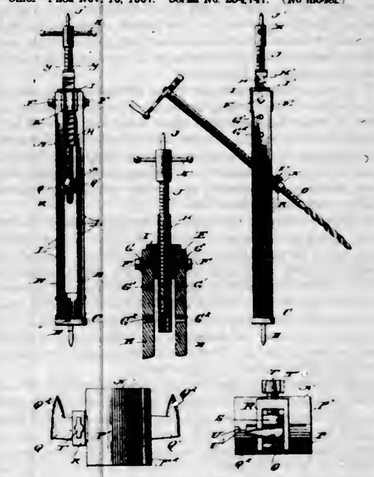
8. The transverse rock-shaft under the car, the brackets set thereon, and the clutches secured to the brackets and consisting of the pivoted jaws and the pivoted links pivoted to the jaws, the jointed brace for holding the jaws open, and the spring for closing them, in combination with the fixed staples and sliding pins for holding the clutches up, the longitudinal rock-shaft and cranks for withdrawing the pins and dropping the clutches to their engagement with the rails, and the swinging bail connected with the pivot-bolt of the jaws of the clutches and having an indented portion for biting the top of the rail, whereby the grip of the jaws is relieved, substantially as herein described.

380,050. EVAPORATING-COIL. WILLIAM H. ODELL, Yonkers, N. Y. Filed Apr. 19, 1887. Serial No. 235,308. (No model.)



Claim.—In an inclosed coil, the combination of separable sections composed of one or more tubes united to hollow headers, with removable return-bends connecting the said separable sections and establishing communication between the same, said return-bends having means for a ready attachment or detachment to said headers, (as by forked lugs and swiveled bolts,) for the purposes set forth.

380,051. HAND ROCK-DRILL. JAMES O. FATRIDGE, Wellston, Ohio. Filed Nov. 10, 1887. Serial No. 254,747. (No model.)



Claim.—1. In a hand-drill, the combination, with a post provided with two uprights having a series of apertures in their front edges, of a nut made in two parts hinged together and formed with integral right-angled projections and fitting into said apertures in the uprights, substantially as shown and described.

2. In a hand-drill, the combination, with a post provided with two uprights having a series of apertures in their front edges, of a nut made in two parts hinged together, right-angled projections formed on one of the hinged parts and fitting into said apertures in the uprights, a bail pivoted to one of said hinged parts and provided with a thumb-screw, and a lug, S, formed on the other hinged part, whereby the said hinged parts may be securely locked together, substantially as shown and described.

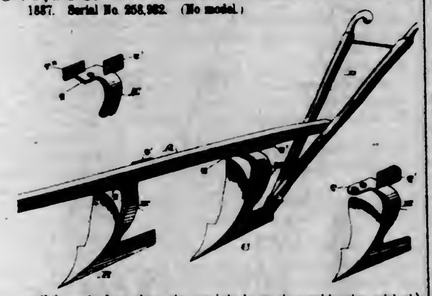
3. The nut N, formed of two hinged parts, one of said hinged parts having sidewise-extending lugs Q and Q′, each provided with a pointed projection, Q^2, extending in the direction of the axis of the nut, and means, substantially as described, for locking said hinged parts.

4. The nut N, formed of two hinged parts, P and P″, the part P being provided with the sidewise-extending lugs Q and Q′, each provided with a pointed projection, Q^2, extending in the direction of the axis of the nut, and the bail R, having the thumb-screw T, pivoted to the lug Q, and the part P″ being provided with a lug, S, against which the thumb-screw T bears, whereby the said hinged parts may be securely locked, substantially as shown and described.

5. In a hand-drill, a post provided with two uprights and cross-piece held on the top of said uprights, in combination with an internally-threaded toothed bar adapted to slide on said cross-piece, a screw-rod pointed at its upper end and screwing in the said bar, and a sliding supporting-plate engaging the teeth of said bar and held on top of said cross-piece, substantially as shown and described.

6. In a hand-drill, the combination, with a post provided with two uprights having apertures near their upper ends, a cross-piece held between the uprights near their upper ends, and bolts passing through said apertures in the uprights and into apertures formed in said cross-piece, of an internally-threaded toothed bar held to slide in said cross-piece, a screw-rod pointed at its upper end and screwing in said toothed bar, and a sliding supporting-plate engaging the teeth of said bar and held on top of said cross-piece, substantially as shown and described.

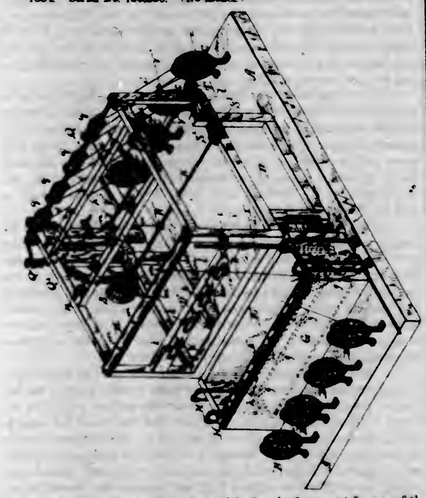
380,052. PLOW. JAMES PORTEOUS, Fresno, Cal. Filed Dec. 24, 1887. Serial No. 258,982. (No model.)



Claim.—1. In a plow, the straight beam, in combination with the plow-bottoms and the oppositely-bent standards having a horizontal flange bolted up under the beam and vertical flanges bolted on each side thereof, substantially as herein described.

2. In a plow, the straight beam, in combination with the plow-bottoms and the oppositely-bent standards having a horizontal flange bolted up under the beam and vertical flanges one in advance of the other and bolted on each side of the beam, substantially as herein described.

380,053. MACHINE FOR DRESSING COVERED ELECTRICAL CONDUCTORS. WILLIAM H. SAWYER, Providence, R. I. Filed June 27, 1884. Serial No. 136,200. (No model.)



Claim.—1. The combination, with the platform and frame, of the tank having a guide-roll mounted on its upper edge, and a shaft provided with guide-pulleys journaled in its lower inner portion, wipers secured to the side and comprising dies and guides secured in the top of the frame, a guide-roll journaled at one end of the frame, a shaft journaled at the opposite end, having conical drawing-pulleys thereon, the delivery and receiving reels, and means, substantially as described, for operating the several parts, as set forth.

2. The combination, with the platform, of the frame D, mounted thereon, a shaft journaled in the lower part of said frame and extending across the same, a short shaft secured to the side of the frame at right angles to the other shaft, said short shaft having a cam on one end and a beveled gear on the opposite end, which meshes with a corresponding gear on the first-named shaft, a weight-actuated finger-slide mounted on the side of said frame and engaging with said cam, a tank, a guide-roll and drawing-pulleys mounted on the top of the frame, the receiving and delivery reels, and means for operating the several parts, substantially as shown and described.

3. The combination, with the tank, of a shaft having pulleys thereon, double standards secured to the platform at each end of the tank, and extending upward and over the edge of and downward to a point near the bottom of the inside of the tank, said standards supporting said shaft, substantially as and for the purpose specified.

4. The combination, with the tank, delivery and receiving reels, and guiding devices, of the headed conical drawing-pulleys, and mechanism for operating said drawing-pulleys and receiving-reels, substantially as described.

5. The combination, with the tank having heating-pipes thereon, of a series of wipers secured in the notches of a side cross-bar of the frame, said wipers being held in place by adjustable strips, the wire guiding and compressing devices, the headed conical drawing-pulleys, the reciprocating guides, the reels, and the mechanism, substantially as described, for operating the several parts, as set forth.

6. The combination, with the tank and the wire-guiding devices, of a series of compressing-dies having conical openings therein, a series of headed conical drawing-pulleys, belts connecting the same with the receiving-reels, and the gearing for operating the pulleys, substantially as described.

7. The combination, with the frame of the machine, of a cross-bar having notches cut therein, and a pivoted bar extending across said notches, having one end adjustably secured, whereby the bars may be removed from over the notches, substantially as specified.

380,054. APPARATUS FOR THREADING WIRES OR CORDS THROUGH FLEXIBLE TUBES. WILLIAM H. SAWYER, Providence, R. I. Filed Feb. 19, 1886. Serial No. 192,402. (No model.)



Claim.—1. In an apparatus for threading wires through flexible tubes, an upper and lower guide arranged to give a vertical position to a traveling flexible tube, a weight for holding the wire stationary in said vertical portion of the tube, and a vertical guide surrounding said tube, substantially as described.

2. In an apparatus for threading wires through flexible tubes, an upper and lower revolving guide arranged to give a flexible tube a vertical and horizontal movement, and a weight adapted to have a wire attached thereto placed in the vertical portion of the tube, substantially as described.

3. In a pipe-threading apparatus, upper and lower guides for giving a portion of traveling flexible pipe a vertical direction, and a weight for holding a wire or thread stationary in the portion of pipe so guided, substantially as described.

4. In an apparatus for threading wires through a flexible tube, a helically-formed weight adapted to be attached to the wire and retain it in the vertical portion of the tube, substantially as described.

5. In an apparatus for threading wires through flexible tubes, the combination of an upper and lower grooved revolving guide, one placed below the other, a vertical guide arranged between said upper and lower guides, and a weighted end of a wire placed in the tube between said revolving guides, substantially as described.

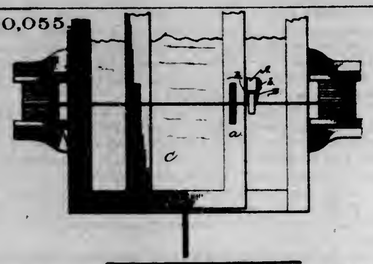
6. An apparatus for giving a vertical movement to a traveling flexible tube, in combination with a weighted wire or cord arranged in the vertical portion of the tube, substantially as described.

380,055. METHOD OF LUBRICATING WIRE. WILLIAM H. SAWYER, Providence, R. I. Filed Oct. 31, 1887. Serial No. 253,875. (No model.)

Claim.—1. The hereinbefore-described method of lubricating wire in wire-drawing machines, consisting in suspending a compressed cake or mass of lubricating material in such relation to the wire as to automatically lubricate the same, substantially as described.

2. The method herein described of automatically lubricating wire in wire-drawing machines, consisting in applying to the wire being drawn a cake or bar of lubricating material in such manner that by its own weight an adjustment of said cake or bar upon the wire is effected, substantially as and for the purpose described.

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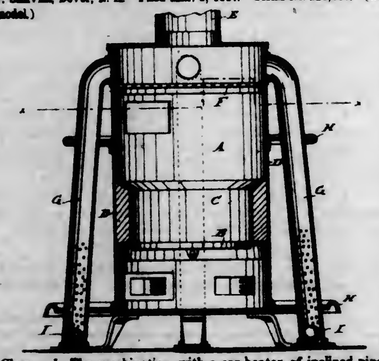
380,056. REMOVABLE CORSET-FASTENING. SELMA A. SCHOEVER, Brooklyn, N. Y. Filed Feb. 3, 1888. Serial No. 262,880. (No model.)



Claim.—1. The combination, with a corset-body, of flaps 11 and 12, connected thereto at a slight distance within the edges of the body, said flaps being apertured to provide for the passage of the eyes and studs of the corset-steels, and lacing cords or strips arranged to pass through apertures formed in the flaps and in the extending portions of the corset-body, substantially as described.

2. The combination, with a corset-body, 10, of flaps 11 and 12, connected thereto at some distance within the forward approaching edges of the body, the flap 11 being formed with apertures 13 and and the flap 12 with apertures 18, a corset-steel provided with eyes which pass through the apertures of the flap 11, a second steel provided with studs which pass through the apertures of the flap 12, and lacing-cords 17 and 17ª, that are passed through apertures formed in the flaps 11 and 12 and through other apertures formed in the flaps 2 and 3, substantially as described.

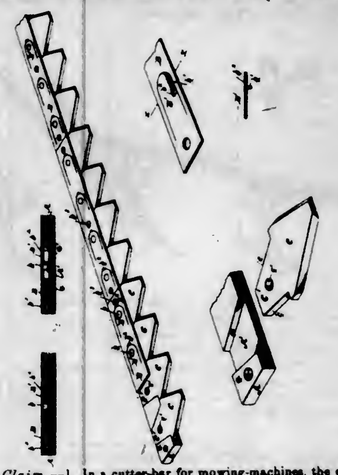
380,057. FIRE-EXTINGUISHER FOR CAR-HEATERS. GEORGE F. SEAVER, Dover, N. H. Filed Mar. 5, 1887. Serial No. 229,787. (No model.)



Claim.—1. The combination, with a car-heater, of inclined pipes secured to the said heater and leading into the upper end of the heater, a perforated plate held in the upper end of the said heater and upon the top of which open the said inclined pipes, and balls containing a fire-extinguishing compound and held in the said inclined pipes, substantially as shown and described.

2. The combination, with a car-heater, of inclined pipes leading into the upper end of the said heater and being perforated in their lower parts, a perforated grate held in the upper part of the said heater and upon which open the said inclined pipes, rims secured to the shell of the said heater to hold the said pipes in place, and balls containing a fire-extinguishing compound and held in the said inclined pipes, substantially as shown and described.

380,058. CUTTER-BAR FOR MOWERS AND REAPERS. PARKE R. SHEE, Chester, assignor to himself and Robert W. Martin, Philadelphia, Pa. Filed Nov. 1, 1887. Serial No. 253,961. (No model.)



Claim.—1. In a cutter-bar for mowing-machines, the combination of a bar having sockets cut therein for the reception of independently-removable cutters, a light bar secured to the first bar so as to cover and form the top of the sockets, springs formed over the sockets by cutting or punching out tongues of metal from the light bar, and detents on the inside of said spring-tongues, all substantially as and for the purpose specified.

2. In a cutter-bar for mowing-machines, the combination of a bar having sockets cut therein and tapered from front to back of the bar for the reception of independently-removable cutters having correspondingly-tapered shanks, a light bar secured to the first bar so as to cover and form the top of the sockets, springs formed over the sockets by cutting or punching out tongues of metal from the light bar, and detents on the inside of said spring-tongues, all substantially as and for the purpose specified.

3. In a cutter-bar for mowing-machines, the combination of a bar having sockets cut therein for the reception of independently-removable cutters, a light bar secured to the first bar so as to cover and form the top of the sockets, springs formed over the sockets by cutting or punching out tongues of metal from the light bar, detents on the inside of said spring-tongues, and cutters having shanks formed to fit into said sockets, and having holes formed to register with and engage the detents on the spring-tongues when the cutter is in place, all substantially as and for the purpose specified.

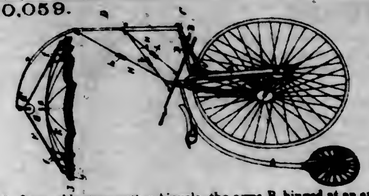
4. In a cutter-bar for mowing-machines, the combination of a bar having sockets cut therein and tapered from front to back of the bar for the reception of independently-removable cutters, a light bar secured to the first bar so as to cover and form the top of the sockets, springs formed over the sockets by cutting or punching out tongues of metal from the light bar, detents on the inside of said spring-tongues, and cutters having tapered shanks formed to fit into said sockets, and having holes formed to register with and engage the detents on the spring-tongues when the cutter is in place, all substantially as and for the purpose specified.

380,059. UMBRELLA ATTACHMENT FOR BICYCLES. CLARENCE SNOWDEN, Cincinnati, assignor of one-half to Thomas Jefferson Smith, Covington, Ohio. Filed Aug. 4, 1887. Serial No. 246,161. (No model.)

Claim.—1. In combination with a bicycle, a forwardly-projecting support, rod D, and umbrella suspended therefrom, substantially as and for the purposes specified.

2. In combination with a bicycle, arms B, attached to the yoke of the bicycle, rod D, and umbrella suspended therefrom, substantially as and for the purposes specified.

380,059.



3. In combination with a bicycle, the arms B, hinged at an angle to the yoke A, and clamp for holding them together, substantially as and for the purposes specified.

4. In combination with a bicycle the support B B, telescoped rod D, and umbrella E, substantially as and for the purposes specified.

5. In combination with a bicycle, the support B B, rod D, and umbrella E, provided with weighted fringe, substantially as and for the purposes specified.

6. In combination with a bicycle, the support B B, rod D, and umbrella E, provided with opening *c*, substantially as and for the purposes specified.

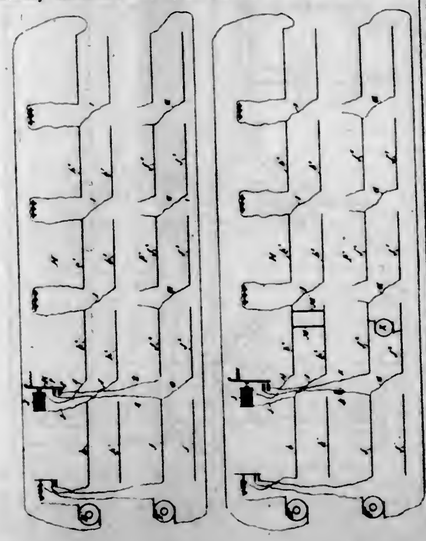
7. In combination with a bicycle, supports B B, rod D, provided with stay-rods H, and umbrella supported from rod D, substantially as and for the purposes specified.

8. In combination with a bicycle, an umbrella with its supporting-rod suitably upheld, said supporting-rod having three stay-rods, one attached to upper part of spindle, the other two attached to the guiding-bar, substantially as and for the purposes specified.

9. In combination with a bicycle, umbrella, supporting-rod therefor, said supporting-rod suitably upheld, and provided with stay-rods adjustable in length, substantially as and for the purposes specified.

380,060. ELECTRIC RAILWAY. FRANCIS M. SPEED, San Francisco, Cal., assignor to the Telpherage Electric Railway Company, same place. Filed Feb. 13, 1887. Serial No. 227,375. (No model.)

Claim.—1. The combination of a main conductor for the main current, divided into sections, switches which normally bridge from one section to the other, traveling vehicles having electric motors by which they are driven, a supplementary conductor for an independent current divided into sections corresponding to those of the main conductor, circuits containing electro-magnets normally bridging from one section of said supplementary conductor to the other and keeping the switches closed, a contact moved by the vehicle and establishing electrical connection between the main conductor and the motor on the vehicle, and a contact moved by the vehicle and in electrical connection with the supplementary conductor for shunting the electro-magnets successively of the supplementary or independent circuit, whereby the switches are opened and the main current diverted



380,060.



through the motors on the vehicles, and said motors connected in series, substantially as described.

2. The combination of a conductor divided into sections, switches which normally bridge from one section to the other, traveling vehicles having electric motors by which they are driven; a supplementary conductor divided into sections, circuits containing electro-magnets which normally bridge from one section to the other of the supplementary conductor and keep the switches closed, and a contact device moved by the vehicle and establishing electrical connection between the main conductor and the motor on the vehicle and moving in electrical contact with the supplementary conductor, whereby the supplementary current is shunted through the shuttle, the switches opened, and the main current diverted through the motors on the vehicles, so that said motors are connected in series, substantially as described.

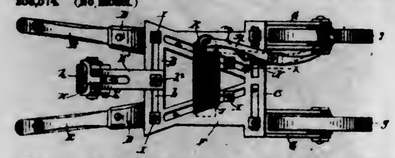
3. In an electric railway having a sectional main-current conductor, the sections of which are bridged by switches, and a sectional supplementary current-conductor having its sections connected by circuits containing electro-magnets, which hold the switches normally closed, a shuttle moved by the traveling vehicle, said shuttle having the double function of establishing a circuit from each successive section of the main conductor through the motor on the traveling vehicle, and of short-circuiting the supplementary current, whereby the magnets are cut out and the switches opened to divert the main current through the motors, substantially as described.

4. The combination of a longitudinally-divided conductor, the parts of which extend parallel along an electric railway, said parts being divided into sections of any desired length, each section on one given side being connected with the succeeding section on the opposite side, switches which normally bridge from one section on said given side to the succeeding section on the same side, a supplementary longitudinally-divided conductor, the parts of which extend parallel along the road, said parts being divided into sections corresponding in length to the sections of the main conductor, each section on one given side being connected with the succeeding section on the opposite side, circuits containing electro-magnets connecting successive sections on said given side and operating the switches, and a shuttle or other contact device moved by the vehicle, said shuttle establishing electric connection between the motor on the vehicle and the main conductor, and moving in electrical contact with the supplementary conductor, whereby the switches are operated successively and the main current diverted through the motors on the vehicles, substantially as described.

5. In an electric railway, the combination of the parallel insulated non-conducting shuttle-guides D, the divided and sectional main conductor under said guides, opposite successive sections being connected, as described, the electric switches connecting the sections on the same side, the divided and sectional supplementary conductor on top of the guides, opposite successive sections being connected, as described, the circuits containing electro-magnets bridging the sections of the supplementary conductor on the same side and keeping the switches closed, and the shuttle moved by the vehicle and traveling between and supported by the guides, said shuttle having electrical contact below with the main conductor and above with supplementary conductor, substantially as described.

6. In an electric railway, the combination of the parallel insulated non-conducting shuttle-guides D, the divided and sectional main conductor under said guides, opposite successive sections being connected, as described, the electric switches connecting the sections on the same side, the divided and sectional supplementary conductor on top of the guides, opposite successive sections being connected, as described, the circuits containing electro-magnets bridging the sections of the supplementary conductor on the same side and keeping the switches closed, and the shuttle moved by the vehicle and traveling between and supported by the guides, said shuttle having the contacts below moving in electrical connection with the main conductor, and the cross-contacts M M' above, one in advance of the other, and spanning the space between the sides of the supplementary conductor and moving thereon, substantially as described.

380,061. COMBINED SEED-DRILL AND CULTIVATOR. JOHN STOCKEBRENNER, Hike's Point, Ky. Filed Dec. 21, 1887. Serial No. 258,574. (No model.)



Claim.—1. The herein-described frame for combined cultivator and planter, composed of converging side bars, a front and rear bar, rear extensions, and filling-pieces between the front and side bars, formed of a single casting, the side and end bars being slotted, substantially as and for the purpose specified.

2. The combination, with the frame having its front bar slotted transversely, of the wheels *g* and the brackets G, supporting the wheels, held adjustably in the slot of the said front bar, whereby the wheels may be adjusted nearer to or farther from each other, substantially as and for the purpose described.

3. The combination, with the frame having a transverse slot, the hopper, and the wheel, of the seed-slide, the trip-lever, and the block N, supporting the said trip-lever and provided with a shank, *n*, which extends through the said slot, and is threaded on its lower end to receive a nut, whereby the said block can be adjusted laterally, substantially as and for the purpose specified.

4. The combination of the frame, the supporting-wheels, the roller A, the support H, the bracket H', pivotally connected with H and adjustably connected with the frame, the hopper, the seed-slide, the trip-lever, the adjustable block N, and the spring M, substantially as described, for the purpose specified.

380,062. HACK-TRUCK. PORTER L. SWORD and CHARLES D. SWORD, Cleveland, Ohio, assignors to Rachel A. Sword and Fanny D. Sword, same place. Filed June 22, 1887. Serial No. 242,089. (No model.)



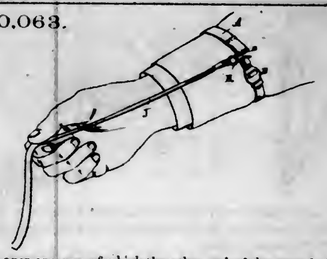
Claim.—1. In a truck for carrying bricks, a pair of carriers having hook-shaped shanks and straight carrying portions, substantially as shown, whereby the weight of the bricks is thrown centrally under the truck, in combination with crank-arms and links connected with the carriers, and means to operate the same and raise and lower the carriers, as set forth.

2. In a hack-truck, a pair of hook-shaped carriers separate from each other and suspended in the line of the axis of the wheels, in combination with wheel-spindles having crank-arms, links connecting the carriers and crank-arms, and a lever and rods for raising and lowering the carriers, substantially as set forth.

3. In a hack-truck, the combination of a main frame supported upon brackets on the wheel-spindles, with a pair of hack-carriers suspended between the ends of the spindles on links connecting them with the crank-arms on the spindles, a connecting-rod between the ends of the carriers, and a rod and operating mechanism for raising and lowering the carriers, substantially as set forth.

4. In a hack-truck, a pair of carriers having straight portions, as *c c'*, and bent portion, as *c²*, whereby the weight of the load may be thrown centrally beneath the point of suspension, in combination with rods connecting said carriers transversely, and supporting and lifting mechanism connecting the carriers with the short spindles of the carrying-wheels, substantially as set forth.

380,063. SLEEVE-STAY. ABBY M. TERRY, Brooklyn, N. Y. Filed Jan. 24, 1888. Serial No. 261,749. (No model.)

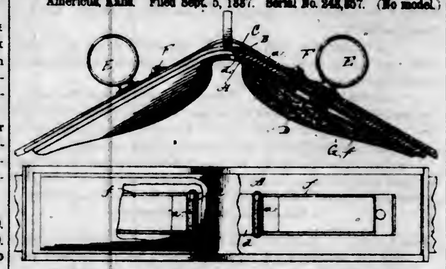


Claim.—1. The sleeve-stay herein described, consisting of a sleeve-strap having a laterally-opening eye on one end and a laterally-opening hook on the other end, and a hand-string adapted to draw the hook laterally from the eye, substantially as described.

2. In a sleeve-stay, the combination of a strap, a laterally-opening eye or loop on one end thereof, a U-shaped hook having one arm secured transversely to the other end of the strap, an eye on its closed end, and its other end free to engage the eye or loop on the strap, and a draw-string attached to the eye on the hook, substantially as described.

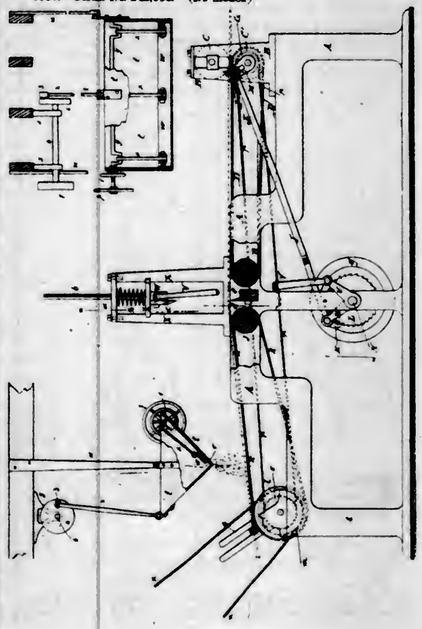
3. In a sleeve-stay, the combination of a strap, a laterally-opening eye or loop on one end thereof, a transversely-arranged U-shaped hook, over one arm of which the other end of the strap is folded and fastened, and having an eye on its closed end, a lateral tie passing through the eye on the hook and the strap, and a hand-spring for drawing the hook from the eye, substantially as described.

380,064. HARNESS BACK-PAD. LIMERICK W. VANDEBURG, Americus, Kans. Filed Sept. 5, 1887. Serial No. 248,857. (No model.)



Claim.—A harness back-pad formed of a metal body, A, composed of the central curved section, *d*, the side sections, *f*, hinged thereto, the pad-leather D, the outer leather, B, and the heavy leather C, the metal body being narrower than the pad and entirely inclosed by the leather of the pad, substantially as described.

380,065. MACHINE FOR CUTTING, SANDING, AND ROLLING ROOFING-FELT. BENJAMIN C. WATTS, Brooklyn, N. Y. Filed June 30, 1887. Serial No. 242,988. (No model.)



Claim.—1. A machine for cutting, sanding, and rolling felt, consisting of the following elements combined for operation substantially as set forth—viz., a feeding-belt, knives for severing the felt as it leaves said belt, delivery-belts moving at a quicker speed than the feeding-belt, a revolving mandrel receiving the felt from the delivery-belt, and a sanding-hopper.

2. In a felt-cutting machine, the combination, with a feeding-belt and a delivery-belt moving at a greater speed than the feeding-belt, and a fixed knife located between said belts, of a reciprocating knife having a slow upward movement and a quick downward movement, and an operating mechanism, substantially as shown and described.

3. In a felt-cutting machine, the combination, with a fixed knife, of a reciprocating knife, a crank-shaft carrying a fixed ratchet, a pawl engaging said ratchet, connections between said crank-shaft and the reciprocating knife, and connections, substantially as set forth, between said shaft and a moving part of the machine, whereby said shaft is advanced until the crank-pins are carried beyond their uppermost points of movement, as set forth.

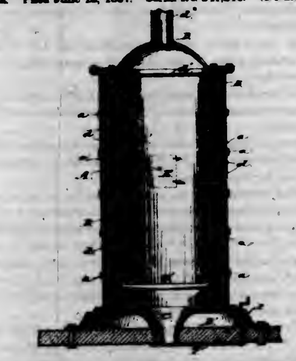
4. In a felt-cutting machine, the combination, with a fixed knife, of a reciprocating knife, a shaft carrying a fixed ratchet, a second ratchet loosely mounted on said shaft, a pawl engaging said loose ratchet, a reciprocating bar engaging said pawl, an arm fixed to said shaft, and an arm carried by said second ratchet and engaging said shaft-arm, and connections between said shaft and said reciprocating knife, substantially as set forth.

5. In a machine for cutting, sanding, and rolling roofing-felt, the combination, with the rolls C C' and belts D, the movable knife c and its cross-head W, of the springs Z, the connecting-bars J V, the ratchet-wheels L A and pawls K i, the cranks H S T U, and the fly-wheel *g*, substantially as herein shown and described.

6. In a machine for cutting, sanding, and rolling roofing-felt, the combination, with the sand-hopper *t*, of the jointed supporting-bars *w*, the hinged connecting-bar 2, and the crank-pulley 4, substantially as herein shown and described, whereby the said hopper will be shaken, as set forth.

7. In a machine for cutting, sanding, and rolling felt, the combination, with the hopper *t*, of the slide *w*, the hinged connecting-bars *x*, the crank-shaft *y*, the hand-wheel *z*, and the hand-nut 1, substantially as herein shown and described.

380,066. CAR-HEATER. JAMES WARDLE, Hope, British Columbia, Canada. Filed June 13, 1887. Serial No. 241,210. (No model.)

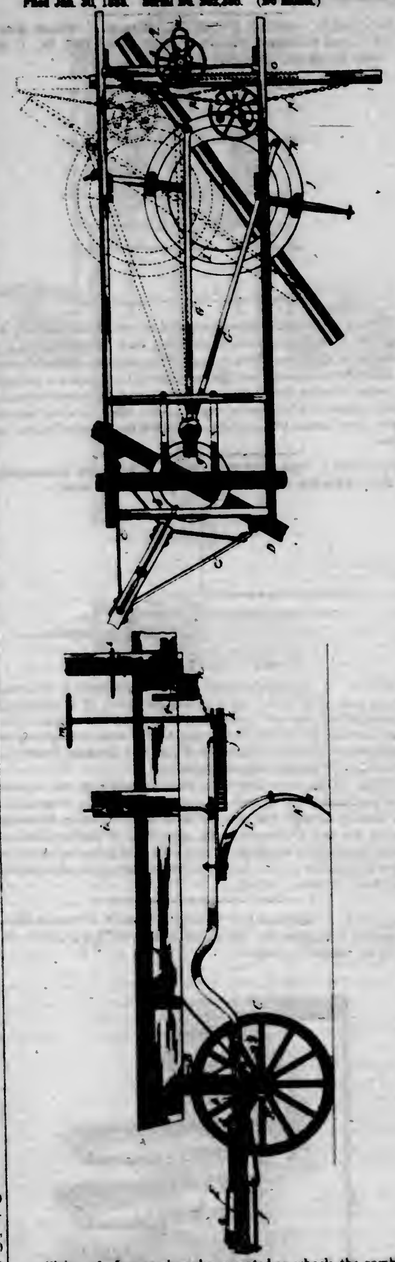


Claim.—An improved stove consisting of the apertured base B', the outer perforated cylinder, A, secured to the base, the inner cylinder, A', provided with a conical bottom projecting through the aperture of the base, the valve F for closing the conical bottom of the inner cylinder, the flanged dome D, covering the upper ends of the said cylinders, and the apertured cap *d'* over the upper end of the inner cylinder and secured between the flange of the dome and the upper end of the inner cylinder, substantially as herein shown and described.

380,067. PRODUCTION OF NEW DIAMIDO COMPOUNDS AND OF AZO COLORS PRODUCED THEREFROM. ARTHUR WEINBERG, Frankfort-on-the-Main, Prussia, Germany, assignor to Leopold Cassella & Co., same place. Filed Nov. 30, 1887. Serial No. 256,414. (No specimens.)

Claim.—The process of producing azo colors, which consists in combining the ethers of the tetrazo-oxy-diphenyl and of the tetrazo-oxy-phenyl-tolyl with two equal or different molecules of an amine or of a phenol, or of a sulphonic or carbonic acid of an amine or of a phenol.

380,068. ROAD-GRADER. S. FRANK WEBB, Mount Pleasant, Iowa, assignor to the Western Wheel Scraper Company, same place. Filed Jan. 30, 1888. Serial No. 262,395. (No model.)



Claim.—1. In a road-grader mounted on wheels, the combination of a bolster, B, axle D, tongue F, strap *d*, rings *a b*, loop *g*, and a draft-beam for the scraper, substantially as and for the purpose specified.

2. In a road-grader, the combination of a frame supported by wheels, a draft-beam for the scraper, rings H and I, a scraper-blade

connected by the rings I, a sliding rock-bar, M, pivots *e*, and chains

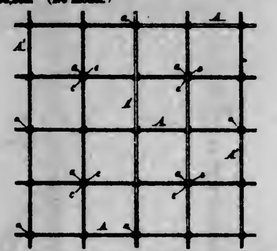
Claim.—1. The combination, in a road-gra

adapted to engage with the handle between the pivots, substantially

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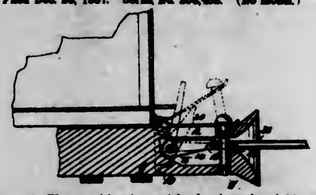
supported by the ring I, a sliding rack-bar, M, pinion *q*, and chains connecting the rack-bar M and ring H, substantially as and for the purpose specified.

380,069. GRATED STRUCTURE. MICHAEL H. WILSON, Nutley, N. J., and WILLIAM D. THOMAS, Brooklyn, N. Y. Filed Feb. 1, 1887. Serial No. 226,202. (No model.)



Claim.—A metal grating composed of two series of strips, the strips wide in proportion to their thickness, each having notches *a*, in the edges of which are offsets *b*, and having tongues *c* deflected from the sides of the strips beyond the bottoms of the notches *a*, the said two series of strips intersecting one another at their notched parts, and the tongues *c* of one series engaging the offsets *b* in the notches of the other series, substantially as and for the purpose herein described.

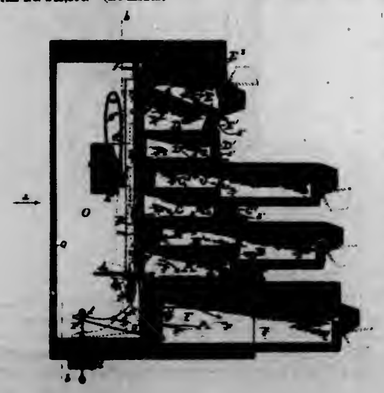
380,070. CAR-COUPLING. FRANK B. WHEELAND, Breckenridge, Colo. Filed Dec. 20, 1887. Serial No. 258,428. (No model.)



Claim.—1. The combination, with the draw-head 11, provided with the main recess 14 and the supplemental recess 12, of the tongue 15, mounted in the recess 14, the shaft 17, to which the tongue is connected, the arm 20, hinged to the upper face of the draw-head, the coupling-pin 21, carried by said arm 20, and the operating-levers carried by shaft 17, substantially as described.

2. The combination, with a draw-bar formed with the recesses 12 14, and having the tongue 15, mounted therein on a transverse shaft passing through the draw-bar, said shaft carrying operating-levers, of the arm 20, hinged to the upper face of the draw-bar and adapted to carry the coupling-pin at the front end thereof, as shown, and the stop-pin 22 at the lower rear of the coupling-pin, substantially as and for the purpose described.

380,071. REED-ORGAN. MORRIS S. WRIGHT, Worcester, Mass., assignor to Reginald Fry, Morristown, N. J. Filed July 27, 1887. Serial No. 245,366. (No model.)



Claim.—1. The combination, in a reed-pan of a reed-organ, of the separate tube or cell pieces A, A', C, D, and E, arranged horizontally one above the other, as shown, and extending from front to back and from end to end of the reed-pan, with a series of separate dividing-boards, B', C', and D', arranged horizontally above their respective air-chambers, as shown, and extending from front to back and from end to end of the reed-pan without a break or opening, and all securely fastened together in the relative positions described, and for the purposes stated.

2. The combination and arrangement, in a reed-organ, of a series of air-chambers, A, A', C, D, and E, one above the other in the order named, a series of qualifying-tubes, N, extending horizontally toward the front of the organ and securely fastened to the air-exit ends of the air-chamber pieces, and having communicating ports or openings with their respective air-chambers, but smaller than the qualifying-tubes, and a series of hinged stops, N^2, at the outer ends of the qualifying-tubes N at the front of the organ, all arranged relatively as described, and for the purposes set forth.

3. The combination, in a reed-organ, with three communicating air-chambers, and a single qualifying tube or pipe and three reeds and the air-chambers above the same, of a stationary cut-off interposed or arranged between air-chambers and reed-chambers above described, and the air-chambers next above the same, substantially as and for the purposes set forth.

4. The combination and relative arrangement, in a reed-organ, of a reed-pan having its induction air-ports and air-valves thereof and mechanism for operating the same located and arranged in the large wind chest or chamber O on the back of the organ or reed-pan, in combination with openings for the insertion and removal of the reeds with their respective plugs, located and arranged in the front of the reed-pan and between the horizontal qualifying-tubes, as shown and described, and for the purposes set forth.

5. The combination, in a reed-organ, of a series of reeds and induction air-passages leading from a single large air-chest, O, and arranged one above the other, of a single long perpendicular or pendulum air-valve, P, for the whole series, the lowest reed giving the lowest note and its induction air-port opened and closed by the part of the valve having the greatest swing or motion, while the ascending scale of notes is produced by reeds the air-ports of which are closed and opened by the parts of the valve having a gradually-decreasing motion, as and for the purposes set forth.

6. The combination, in a reed-organ, with the perpendicular air-valve P and series of air-induction ports *i*, of recessed seat 9, substantially as described.

7. The combination, with the pendulum-valve P, of pin *f*, guide-pins *h*, operating-spring O^3, and buffer *h'*, substantially as and for the purposes set forth.

8. The combination, with the lower end of valve P, of the adjustable screw-stemmed metal eye P^3, substantially as and for the purposes set forth.

9. The combination, with valve P, screw-stemmed metal eye P^3, padded bell or knee crank P', and rod P^4, arranged in relation to each other as and for the purposes set forth.

10. The combination, in a reed-organ, of a series of reeds, *d*, arranged one above the other and located in respect to their respective air-chambers as described, with a series of horizontal qualifying-tubes, N, extending from the ends of the air-chambers toward the front of the organ and arranged one above the other, with open spaces extending in between them from the front of the organ for the passage of the reeds, and with air exit-openings N' and hinged stops N^2, all relatively arranged as and for the purposes stated.

11. The combination, in a reed-organ, with a series of reed air-chambers, F G H I J K and L M, arranged one above the other, and a series of reeds, *d*, one reed to each set of air-chambers, and inserted therein from the front of the organ and supported in horizontal positions in grooves formed in the sides of the air-chamber pieces, of a series of plug-pieces, B, C', D', and E', arranged and securely fastened on the front side of the reed-pan, and a series of qualifying-tubes, N, secured to the front ends of the air-chambers and extending to the front of the organ, with horizontal open spaces between them for the insertion and removal of the reeds without opening the wind-chest or moving the air-valves or mechanism for operating the same, substantially as shown and described.

380,072. PIPE-WRENCH. ARMSTRAID R. WYBLE, Kingman, Kans. Filed July 26, 1887. Serial No. 245,524. (No model.)



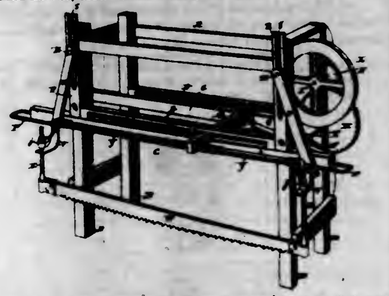
Claim.—1. In a wrench, the combination of a handle, outer jaws pivoted thereto, and an inner jaw pivoted between the outer jaws and adapted to engage with the handle between the pivots, substantially as shown.

2. In a wrench for the purpose set forth, the combination of a handle provided with a circular end, outer jaws pivoted to said handle, and a jaw pivoted to the outer jaw and provided with a recess, with which the handle engages, substantially as shown.

3. In a pipe-wrench, a handle provided at one end with a circular projecting portion, jaws B B, pivoted to said handle above the circular end, a jaw, F, provided at one end with a recess, with which the handle engages, and a bolt for pivotally securing the inner jaw to the outer jaws, the parts being organized and combined substantially as shown.

4. In a pipe-wrench, the combination of the parallel outer jaws, B B, an inner jaw pivotally secured to and between the outer jaws, said inner jaw having at its inner end a circular recess, a handle with a projecting portion, which engages with said recess, a bolt for securing the outer jaws to the handle, and perforations in the handle and outer jaws, which register with each other, and a pin for locking the parts together, substantially as shown, and for the purpose set forth.

380,073. SAWING-MACHINE. CHARLES M. YOUNG, Troy, Ind. Filed Nov. 30, 1887. Serial No. 256,532. (No model.)



Claim.—1. In a sawing-machine, the combination of the vertically-movable swinging links having the brackets pivoted to their lower ends and adapted for the attachment of the saw-handles, the reciprocating cross-head, and the rods Y, pivotally connected to the said cross-head, and adapted also for the attachment of the saw-handles, substantially as described.

2. The combination, in a sawing-machine, of the frame having the guideways P, the guideways N, and the vertical standards R, provided with the vertical slots S, the cross-head arranged in the guideways N, the crank-shaft journaled in the frame, the pitman connecting the same to the cross-head, the bolts T, movable vertically in the slots S, the swinging links U, having their upper ends pivoted to the said bolts and working in the guideways P, the brackets V, pivoted to the lower ends of the said swinging links and having the openings adapted to receive the vertical handles of the saw, and the rods Y, having their inner ends pivotally connected to the cross-head, and provided at their outer ends with the arms adapted to be attached to the saw-handles, substantially as described.

3. The combination of the frame, the guideways P, secured thereto, the slotted standards secured to the frame, the swinging links movable vertically in the slots of said standards and having their lower ends playing in the guideways P, the brackets pivoted to the lower ends of the links, the saw connected to the brackets, and gearing connected to the saw to reciprocate the same, as set forth.

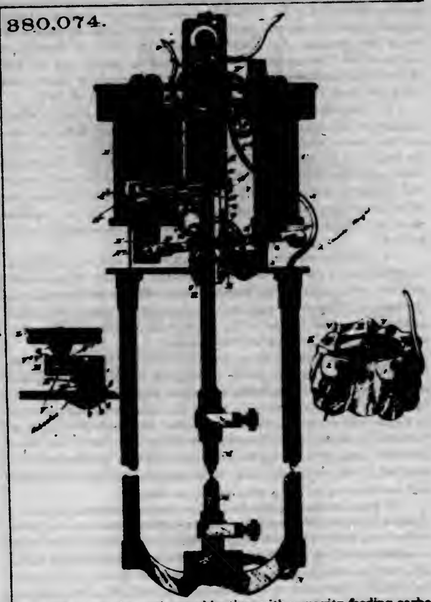
4. The combination of the frame having longitudinal guideways, the cross-head mounted in said ways, gearing to reciprocate the cross-head, the swinging links, the saw connected to said links, and the rods Y, connected to the cross-head and having the arms Z connected to the saw, substantially as set forth.

380,074. ARC LAMP. THOMAS B. ADAMS, Cleveland, Ohio. Filed July 11, 1887. Serial No. 243,991. (No model.)

Claim.—1. In an arc lamp, the combination, with a gravity-feeding carbon and a clutch adapted to normally clamp and support the same when no current traverses the lamp, of two electro-magnets or solenoids, one for actuating the clutch and releasing the carbon to the action of gravity and the other to actuate the clutch to clamp and raise the carbon and establish the arc, substantially as described.

2. In an arc lamp, the combination, with a gravity-feeding carbon and a clutch constructed to normally clamp and support the feeding carbon when no current traverses the lamp, of an electro-magnet for raising one side of the clutch and releasing its grip on the carbon, and an electro-magnet or solenoid for raising the opposite side of the clutch and clamping and raising the carbon, substantially as described.

380,074.



3. In an arc lamp, the combination, with a gravity-feeding carbon and a clutch adapted to normally clamp and support the same when no current traverses the lamp, of an electro-magnet or solenoid in the main circuit and a movable support connected therewith for supporting one side of the clutch while the carbon is normally clamped and for elevating the same side of the clutch to clamp and raise the carbon, and another electro-magnet and armature combined therewith for raising the opposite side of the clutch to release the carbon from the same and to allow it to feed, substantially as described.

4. In an arc lamp feeding by gravity, the combination, with the carbon-holder of the feeding carbon and a clutch constructed and adapted to normally clamp and support the same when no current traverses the lamp, of a solenoid or equivalent magnet in the main circuit, a cut-out operated by said solenoid, and an electro-magnet in the circuit of the arc and cut-out and adapted to lift the clutch and release the carbon when and effective current traverses the lamp, substantially as set forth.

5. In an arc lamp feeding by gravity, the combination, with the carbon-holder of the feeding carbon and a pivoted gravity-clutch constructed to normally clamp and support the same when no current traverses the lamp, of a solenoid or equivalent magnet in the main circuit, a cut-out operated by said solenoid, and an electro-magnet in the circuit of the arc and cut-out and adapted to lift the clutch and release the carbon when said magnet is energized, substantially as set forth.

6. In an arc lamp feeding by gravity, the combination of a gravity-clutch arranged to normally clamp the feeding carbon when no current traverses the lamp, with an electro-magnet in the circuit of the arc for disengaging the clutch from the carbon-holder and a solenoid for engaging the same for establishing the arc, substantially as described.

7. In an arc lamp, the combination, with a gravity-feeding carbon and an electro-magnet or solenoid in the main circuit, and an electro-magnet or solenoid in the shunt-circuit for establishing and regulating the arc, of a gravity-clutch for normally clamping and supporting the feeding carbon when no current traverses the lamp, and a supplemental electro-magnet in the main circuit having an armature connected with the clutch for actuating it to release the carbon to the action of gravity, substantially as described.

8. In an arc lamp feeding by gravity, the combination of a pivoted gravity-clutch which normally clamps the feeding-carbon holder with an electro-magnet in the circuit of the arc, an armature for said magnet, and a trip for the clutch engaging the latter in both directions, carried by the armature, whereby the clutch clamps the carbon-holder when no current traverses the carbons and tends to release it when current passes through the same, substantially as described.

9. In an arc lamp feeding by gravity, the combination, with the feeding carbon, a gravity-clutch constructed and adapted to normally clamp the feeding carbon and support it out of contact with the non-

feeding carbon when no current is passing through the lamp, and a cut-out adapted to divert a portion of the current from the main magnet of the regulator, of an electro-magnet in the circuit of the cut-out and provided with an armature constructed to engage the free end of the clutch and disengage it from the feeding-carbon holder and allow the latter to descend by gravity, substantially as set forth.

10. In an electric-arc lamp, the combination, with a gravity-feeding carbon and a gravity-clutch constructed to normally clamp and support the carbon-holder when no current traverses the lamp, of an electro-magnet in the main circuit for actuating one side of the clutch and releasing it from the carbon-holder, and a solenoid in the main circuit and a solenoid in the shunt-circuit for operating differentially upon the other side of the clutch and actuating it to establish the arc, regulate the length of the arc, and the feed of the carbon, substantially as described.

11. In an arc electric lamp, the combination, with a gravity-feeding carbon and a gravity-clutch constructed to normally clamp and support the carbon-holder of the feeding carbon when no current traverses the lamp, of differential magnets for actuating one side of the clutch and a supplemental magnet in the main circuit for actuating the other side of the clutch, substantially as described.

12. In an arc electric lamp, the combination, with a gravity-feeding carbon and a gravity-clutch constructed to normally clamp and support the carbon-holder when no current traverses the lamp, of the feeding carbon of two solenoids, one in the main circuit and the other in a shunt-circuit, and a support connected therewith and actuated thereby for supporting and moving one side of the clutch, and a supplemental magnet in the main circuit provided with an armature constructed to actuate the other side of the clutch and to limit its upward-and-downward movement, substantially as described.

13. In an arc lamp feeding by gravity, the combination of a gravity-clutch which normally clamps the feeding-carbon holder, two solenoids in the main and in a shunt circuit, respectively, for actuating the clutch to establish and regulate the arc, and a cut-out controlled by the solenoids, with an electro-magnet in the circuits of the arc and cut-out for actuating the clutch to clamp and release the carbon, substantially as described.

14. In an arc lamp feeding by gravity, the combination of a gravity-clutch overbalanced at one end and normally clamping the feeding-carbon holder, two solenoids in the main and in a shunt circuit, respectively, acting differentially upon the clutch to establish and regulate the arc, and a cut-out controlled by the solenoids, with an electro-magnet in the cut-out circuit acting upon the overbalancing end of the clutch to clamp and release the carbon, substantially as described.

15. In an arc lamp feeding by gravity, a gravity ring-clutch having a countersunk hole at one end, in combination with a hooked lifting-rod engaging the hole in the clutch with its hook and having a knife-edge formed upon its body to support the clutch, substantially as described.

16. In an arc lamp feeding by gravity, a lozenge-shaped ring-clutch having the ring formed nearer to one end than the other, in combination with a knife-edged lifting-rod supporting the clutch at the end nearer the ring, substantially as described.

17. In an electric lamp cut-out, the combination, with two stationary contact-blocks having practically vertical contact-surfaces, of a movable contact-block connected to a rocking bar or lever by a ball-and-socket joint, so that it may have both a lateral and an oscillating movement, and thereby engages an extended vertical and lateral surface on each of the stationary contact-blocks, substantially as described.

18. In a cut-out included in an electric circuit, the combination, with two stationary contact-blocks having practically vertical contact-surfaces, of a self-adjustable movable contact-block adapted to bridge and make contact with the vertical contact-surfaces of the two stationary contacts, the movable contact being constructed with an extended contact surface having openings at its opposite ends, and a spring secured behind the normal contact-surface and having its ends arranged to project forwardly through the openings at the opposite ends thereof, substantially as set forth.

19. In a solenoid, the combination of a core which loosely fits the bore of the solenoid, so as to leave an air-passage between the core and the sleeve, with a separate air-passage between the space of the bore above the core and the external atmosphere, substantially as described.

20. A solenoid having air-passages communicating with the external atmosphere at both ends of the bore, substantially as described.

21. In a solenoid, the combination of a sleeve over which the coils of the solenoid are wound, with a plug closing one end of the sleeve and having an air-passage connecting the interior of the sleeve with the external air and a loosely-fitting core entering the other end of the sleeve, substantially as described.

22. The combination, with a solenoid and a hollow core, of a bell or cylinder having a closed upper end pivotally or loosely connected at its upper end to the solenoid and a piston fitting into the bell or cylinder, the piston-rod being pivotally or loosely connected at its lower end to the core of the solenoid, substantially as set forth.

23. The combination, with a solenoid having a hollow core, of a plug for closing the upper end of the bore of the solenoid, a dash-pot bell suspended from said plug and extending within the core, a plug for closing the lower end of the core, and a piston for the bell connected with the core-plug, substantially as described.

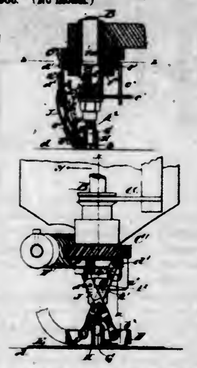
24. A combined solenoid and dash-pot consisting, essentially, of a sleeve for the coils of the solenoid, a plug closing one end of the sleeve, a hollow core loosely fitting into the sleeve and also plugged at one end, the operating parts of the dash-pot loosely connected with the plugs and extending within the core, and air-passages through the plugs, substantially as described.

25. The combination, with a solenoid and its core, of a magnetic balance for producing coincidence between the magnetic and mathematical axes of the solenoid and its core, substantially as described.

26. The combination, with a solenoid and its movable core, of a magnetic plate applied to the solenoid to neutralize the lateral bias of the core, substantially as described.

27. The combination, with a solenoid and its movable core, of an iron plate attached to the exterior of the coils to counterbalance the lateral bias of the core, substantially as described.

380,075. EMBROIDERING-MACHINE ATTACHMENT. EDWARD ALBON and HENRY K. SCHMITZ, Brooklyn, N. Y. Filed Mar. 20, 1886. Serial No. 195,966. (No model.)



Claim.—1. In universal feed-motion embroidering-machines, as described, the combination, with the oscillating and rotatable wheel C and the ring *g*, of the embroidery-laying vibrating arms or levers I J, pivotally connected with said ring, and the link K, connecting said levers on opposite sides of their pivots, substantially as and for the purpose specified.

2. In embroidering-machines having a universal feed-motion, as described, the combination, with the oppositely-vibrating embroidery-laying arms or levers I J and the nipple G, through which the sewing-needle works, of the spring-controlled loose sleeve H, essentially as and for the purpose herein shown and described.

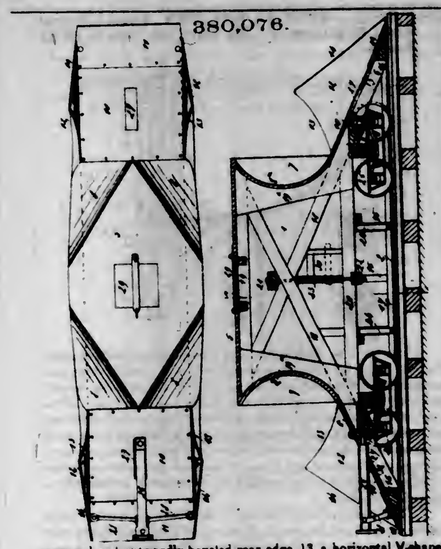
380,076. SNOW-PLOW. JOSEPH APPLEBY, Britton, Dak., assignor of two-thirds to William J. McMillen and William S. Martin, both of Breckenridge, Minn. Filed July 12, 1887. Serial No. 244,072. (No model.)

Claim.—1. A snow-plow provided with an upper deck, 5, mold-boards 8 at each side below said deck at front and rear, vertical cutters 7, separating said mold-boards, an inclined front and rear nose, and horizontal cutters attached to the outer ends of said noses, and a detachable draw-head, 26, all arranged as shown and described.

2. A snow-plow provided with an upper diamond-shaped deck, 5, mold-boards 8 at each side below said deck at front and rear, vertical cutters 7, separating said mold-boards, an inclined front and rear nose, vertical guide-plates 12 attached at each side, the nose having forward-inclined cutting-edges, a horizontal cutter, 11, attached to the forward edge of each nose, and a detachable draw-head passing through the said nose, all arranged to operate substantially as herein set forth.

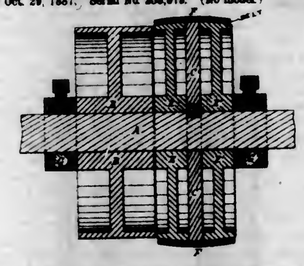
3. A snow-plow provided with an upper diamond-shaped deck, 5, mold-boards 8 at each side below said deck at front and rear, vertical cutters 7, separating said mold-boards, an inclined front and rear nose covered by a metallic plating, 10, vertical guide-plates 12, attached at each side the nose, having an inclined-forward cutting-edge, 14, and a

380,076.



concaved and outwardly-beveled rear edge, 13, a horizontal V-shaped cutter, 11, attached to the forward edge of each nose, and a detachable draw-head secured to the truck of the plow, substantially as and for the purpose herein set forth.

380,077. SAND-PULLEY. SAMUEL S. BARNES, Brooklyn, N. Y. Filed Oct. 29, 1887. Serial No. 253,673. (No model.)



Claim.—1. The combination, with a shaft to be rotated, of a band-pulley consisting of three independent sections arranged side by side, the central section being fast on the shaft and having a smooth crowning-face to favor the temporary slipping of a belt thereon while augmenting the speed of the machinery to be driven and the two outside belt-supporting sections free to revolve upon the shaft, and a belt approximately the width of the three sections, by means of which the speed of the shaft is accelerated as the resistance of the load is overcome, substantially as described.

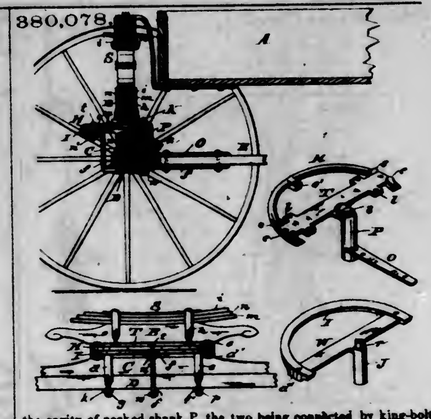
2. The combination, with the shaft A, the loose pulley B, the belt F, and the collars G G, of a band-pulley consisting of three sections C, E, and E', substantially as and for the purpose herein described.

380,078. RUNNING-GEAR FOR VEHICLES. CHARLES A. BESTLER, Cincinnati, Ohio. Filed Dec. 12, 1887. Serial No. 257,637. (No model.)

Claim.—1. In the running-gear for vehicles, a fifth-wheel composed of upper and lower semicircular plates, H I, the former being provided with a depending necked hollow shank, P, and attaching perch-plate O, while the latter has a tubular shank, J, to operate within the hollow of necked shank P, in combination with perch E, combined perch-plate and fifth-wheel stay *f*, the axle, axle-bed, head-block, and spring, the whole being fastened together, substantially as shown and described, for the purposes specified.

2. In the running-gear of vehicles, a fifth-wheel composed of upper and lower semicircular plates, H I, the former being provided with a depending necked hollow shank, P, having attaching perch-plate O, while the latter has a tubular shank, J, to fit and operate within

380,078.



the cavity of necked shank P, the two being connected by king-bolt K and nut *w*, in combination with perch E, combined perch-plate and fifth-wheel stay *f*, the axle, axle-bed, head-block, and spring, the whole being united, substantially as shown and described, and for the purposes specified.

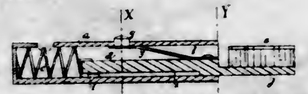
3. In the running-gear of vehicles, a fifth-wheel composed of upper and lower parts, H I, the former being provided with a depending necked hollow shank, P, and integral perch-plate O, while the latter has a tubular shank, J, to fit and operate in the cavity of necked shank P, in combination with the body A, perch E, combined perch-plate and fifth-wheel stay *f*, the axle-bed, axle, head-block, and spring, the whole being arranged and united as shown and described, and for the purposes noted.

380,079. GLOVE. MARY BROOKS, Bradway, County of Derby, England, assignor to Samuel Hope Morley, Howard Morley, Charles Morley, William Dunne, John Thomas, Frederick Sculyear, and Thomas Hill, all of London, England. Filed Nov. 2, 1887. Serial No. 254,062. (No model.)



Claim.—A textile glove having short kid or equivalent tips applied to the tips of the thumb and fingers as follows: to the front and back strips only of the middle and ring fingers, to the front, back, and outer portions of the index finger and little finger, and all around the thumb, as shown and described.

380,080. POCKET TOOTH-BRUSH. ADRIAN F. BOUTON and KENT K. STEARNS, Elizabeth, N. J. Filed Mar. 30, 1887. Serial No. 233,089. (No model.)



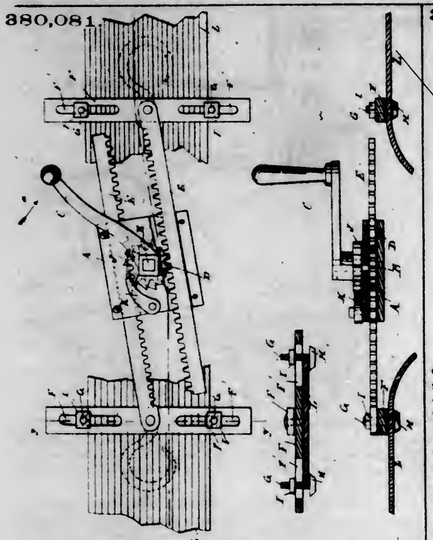
Claim.—1. In a tooth-brush, the combination of a tube closed at one end and open at the other and provided with apertures *k* and *k'*, a brush-support located in said tube, a spring between the closed end of the tube and the brush-support, and a second spring having one end fastened to said support, the other end carrying a projection which fits in one of the apertures, and the second spring being located in a groove in said brush-support, and suitable means for preventing the rotation of the brush-support in the tube.

2. In a tooth-brush, the combination of a tubular handle closed at one end, the sliding brush, and a rubber membrane mounted upon the stem of the brush and serving to close the open end of the tubular handle when the brush is in its extended or open position.

380,081. BELT-TIGHTENER. DOCK BOWMAN, Cynthiana, Ky. Filed July 14, 1887. Serial No. 244,207. (No model.)

Claim.—1. In a belt-tightener, the combination, with a casing open at both ends, of a shaft mounted to rotate in said casing, a gear-wheel secured to said shaft inside of said casing, racks meshing into said gear-wheel at opposite sides, cross-bars pivotally connected with said

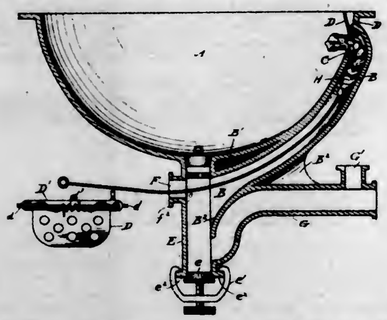
380,081.



racks and adapted to be secured to the belt to be tightened, a ratchet-wheel secured to said shaft, and a pawl pivoted on said casing and engaging said ratchet-wheel, so as to hold the latter in position when the belt is tightened, substantially as shown and described.

2. In a belt-tightener, the combination, with a casing open at both ends, of a shaft mounted to turn in said casing, a clamp-arm for turning said shaft, a gear-wheel secured to said shaft inside of said casing, racks meshing into said wheel at opposite sides, cross-bars pivotally connected with said racks, each cross-bar being provided with a slot, clamping-bolts held adjustably in the slots of said cross-bars for securing the latter to the belt to be tightened, a ratchet-wheel secured to said shaft, and a pawl pivoted to said casing and engaging said ratchet-wheel, substantially as shown and described.

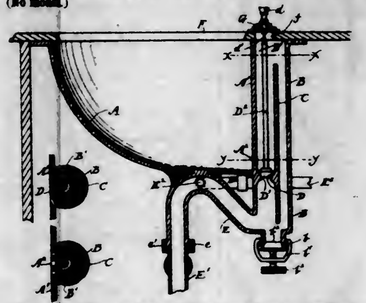
380,082. WASH-BOWL. THOMAS C. BOYD and JAMES J. WADE, Chicago, Ill. Filed Oct. 15, 1887. Serial No. 252,419. (No model.)



Claim.—1. The combination, with a wash-bowl, of the depending pipe E, having openings at the bottom and side, respectively, each closed by removable caps, upwardly-curved pipe G, communicating therewith at or near the bottom, overflow-duct B, extending from an opening communicating with the top of the bowl downwardly to a point opposite the opening in the top of the pipe E, and the depending part B^2, said bowl, pipes, and duct being integral with each other and constructed and arranged substantially as shown and described.

2. The combination of the bowl A, pipes E and G, and duct B, integral with each other, a capped opening upon the side of the pipe E opposite the mouth of the duct, a capped opening at the bottom of said pipe, vent G', part B^2, and hinged strainer D, substantially as shown and described.

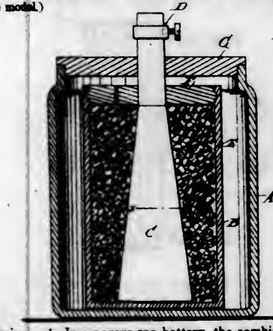
380,083. STATIONARY WASH-BOWL. THOMAS C. BOYD and JAMES J. WADE, Chicago, Ill. Filed Oct. 15, 1887. Serial No. 252,420. (No model.)



Claim.—1. The combination, with a wash-bowl or similar fixture, of a chamber, B, extending from the top to a point considerably below the bottom of the bowl, an opening, as A^2, communicating directly therewith, partition C, a valve-seat, D, between said partition and the body of the bowl, valve D', rod D^2, removable caps, as G b^2, at the top and bottom of said chamber, respectively, and curved pipe E, communicating with said chamber at a point near the bottom thereof, said bowl, chamber, partition, and trap being all made integral with each other, and all of said parts being arranged and constructed substantially as shown and described.

2. The combination of the bowl A, chamber B, partition C, valve-seat D, valve D', rod D^2, caps G b^2, bent pipe E, communicating with the lower part of said chamber, and vent E^2 at the top of the bend thereon, all arranged and constructed substantially as shown and described.

380,084. GALVANIC BATTERY. HORATIO J. BREWER, New York, N. Y. Filed Oct. 22, 1886. Renewed Sept. 27, 1887. Serial No. 250,844. (No model.)



Claim.—1. In a porous-cup battery, the combination, with the porous cup, of a carbon electrode having inclined sides and placed with its base downward, and the electro-negative material placed in the said porous cup and packed against the inclined sides of the carbon electrode, substantially as shown and described.

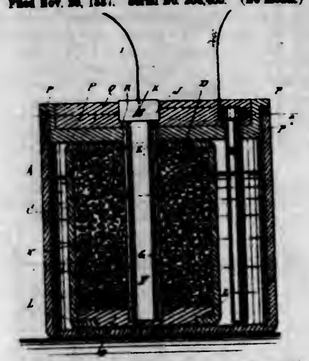
2. In a porous-cup battery, the combination, with a porous cup, of the electro-negative material placed in the said cup, an electrode having inclined sides and resting with its base on the bottom of said porous cup, and a cement cover held firmly on the mouth of the said porous cup by indentations in the latter which are filled by the cement, substantially as shown and described.

3. In a porous-cup battery, the jar A, the lid G, fitting on the mouth of the said jar, and the porous cup B, placed in the said jar and having indentations on the inside of its upper end, in combination with the electro-negative material E, placed in the said cup B, the electrode C, having inclined sides which are in contact with the material E, and the cement cover F on top of the said material E and held in place by the said indentations in the porous cup, substantially as shown and described.

4. In a porous-cup battery, a cover having apertures and formed of mortar or cement mixed with water and applied in a moistened state and left to dry and harden, substantially as set forth.

5. In a porous-cup battery, a porous cup, electro-negative material placed in the said cup, and the electrode C in the said cup, in combination with a cover having apertures and formed of mortar or cement mixed with water and applied in a moistened state and left to dry and harden on the mouth of the said cup and on top of the said negative material, substantially as set forth.

380,085. GALVANIC BATTERY. HORATIO J. BREWER, New York, N. Y. Filed Nov. 20, 1887. Serial No. 256,409. (No model.)



Claim.—1. In a galvanic battery, the combination, with a porous cup, of a negative electrode provided with longitudinal grooves for the escape of the gases forming in the said porous cup, substantially as shown and described.

2. In a galvanic battery, a cup of porous clay provided with a cover through which the negative conducting-electrode passes, said cover being part of the body of the cup and of the same material, substantially as shown and described.

3. In a galvanic battery, the combination, with a negative conducting-electrode provided on its outer end with a recess, of the conducting-wire extending at one end into the said recess, a clamp surrounding the outer end of the said electrode and provided with a screw screwing against said wire, so as to press it tightly in contact with the electrode, substantially as shown and described.

4. In a galvanic battery, a porous cup provided with a cover having a central aperture, and being part of the body of the cup and of the same material, in combination with the negative conducting-electrode held in said porous cup and extending through the aperture formed in said cover, the negative material packed in the said porous cup and around the said negative conducting-electrode, and a sealing material forming the bottom of the said porous cup, substantially as shown and described.

5. In a galvanic battery, the combination, with a jar and the positive and negative electrodes, of a sealing-cup provided with flanges held on the top edge of the said jar, the said cup being provided in its bottom with apertures for the passage of the said electrodes, and also provided on its outside with grooves for the escape of gases in the said jar, substantially as shown and described.

6. In a galvanic battery, the combination, with a jar and the positive and negative electrodes, of a sealing-cup provided with flanges held on the top edge of the said jar, the said cup being provided in its bottom with apertures for the passage of the said electrodes, and also provided on its outside with grooves for the escape of gases in the said jar, and a sealing material held in the said sealing-cup and covering the clamps of the said electrode, substantially as shown and described.

380,086. RAILROAD-SWITCH. ISAAC M. BROWN, Columbus, Ind. Filed May 7, 1887. Serial No. 237,507. (No model.)

Claim.—1. The railway-switch herein shown and described, the same consisting of the straight rails A B and the bent rails E F, in combination with the V-shaped center rests, C D, adapted to slide upon the V-shaped base-sections G H, substantially as described.

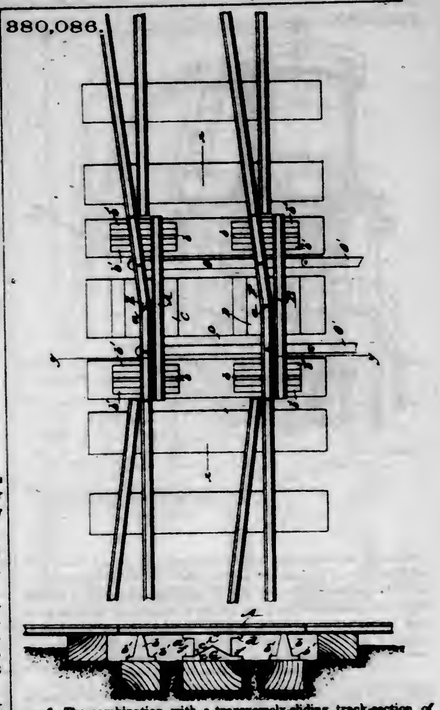
2. The stationary supports b b and the intermediate base-sections, G H, in combination with the sliding center rests, C D, and the rails A B and E F, secured thereon, substantially as described.

3. The base-sections G H, formed with tongues c, in combination with the center rests, C D, grooved to receive the tongues, in combination with the supports b and the rails secured upon the center rests, C D, substantially as described.

4. The lower sections, G H, provided with the stop-studs g, in combination with the center rests, C D, placed upon the said sections and formed with stop-recesses, substantially as described.

5. The combination, with the sliding center rests, of the bent rails pivoted to the said center rests and connected to the rods O, substantially as described.

380,086.



6. The combination, with a transversely-sliding track-section, of bent throw-rails pivoted alongside of the rails of said track-section, substantially as set forth.

380,087. ART OF TREATING COTTON-SEED. WILLIAM H. BURNET, JOSEPH SHARR, and OLIVER G. BURNHAM, Chicago, Ill. Filed Mar. 22, 1887. Serial No. 232,006. (No model.)



Claim.—1. The art or method of treating cotton-seed or cotton-seed hulls having the lint thereon, which consists in casting the seed or hulls forcibly against a rough or broken surface to disintegrate the seed or hulls and at the same time to detach the lint therefrom, and then removing the lint, substantially as described.

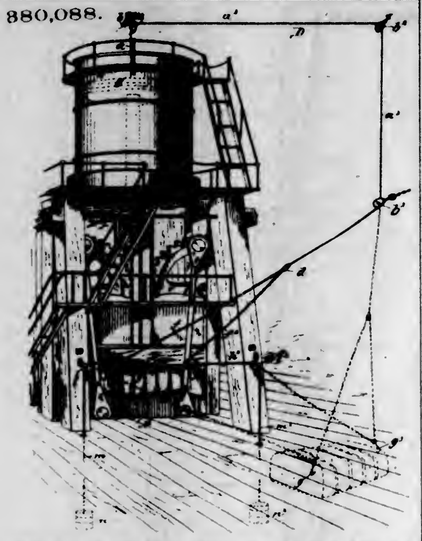
2. The art or method of treating cotton-seed or cotton-seed hulls having the lint thereon, which consists in casting the seed or hulls forcibly against a rough or broken surface to disintegrate the seed or hulls and at the same time detach the lint therefrom, and then removing the lint by an air-current, substantially as described.

380,088. BALE-EJECTING ATTACHMENT FOR PRESSES. GUS CALDER, Vicksburg, Miss. Filed Nov. 22, 1887. Serial No. 256,502. (No model.)

Claim.—1. The combination, with a baling-press, of a rope connected to the piston thereof, and provided with a bale-engaging device on its free end, guide-pulleys over which the rope passes, and ropes attached to the above-mentioned rope passed over pulleys on the press-frame and provided with weights on their ends, substantially as herein shown and described.

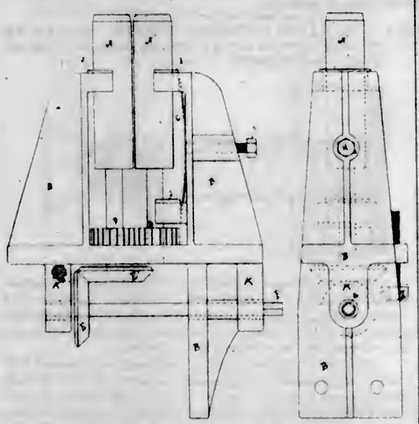
2. The combination, with a reciprocating piston of a cotton or other baling press, of a rope, D, by its one end attached thereto, pre-

380,088.



vided at its other end with branching ropes $f f^3$, having hooks $g g^3$, weighted ropes $A A^3$, attached to said ropes $f f^3$, and pulley blocks or rollers for guiding said ropes $D A A^3$, when all adjusted for a withdrawal of a bale from the press on the movement of its parts to release the bale from pressure, and for a disposition of said hooked ropes $A A^3$ near the compressing portions of the press when disengaged from a bale, all substantially as and for the purpose described.

380,089. SIDE DRESSER FOR SAWS. CHARLES R. CLEVELAND and JOSEPH HARSON, Fort Wayne, Ind.; said Cleveland assignor to said Harson. Filed Sept. 17, 1887. Serial No. 249,995. (No model.)

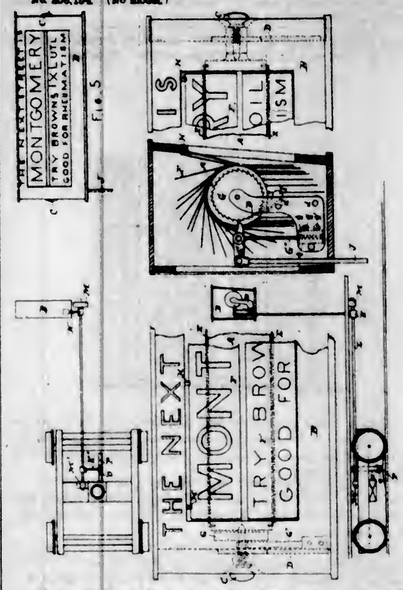


Claim.—1. In a side dresser for band and like saws, the combination of the rollers A A', having their upper ends beveled, the cog-wheels D D', the frame B, the hangers K, miter-gears E E', and the shaft F, substantially as and for the purpose specified.

2. In a side dresser for band and kindred saws, the combination of the rollers A A', the spring C, the screw H, the adjustable box J, the miter-gears E E', the hangers K, and the shaft F, substantially as and for the purpose specified.

3. The combination, in a side dresser for band and kindred saws, of the rollers A A', the frame B, the screw I, the cog-wheels D D', the spring C, and the screw H, substantially as and for the purpose specified.

380,090. STREET AND STATION INDICATOR FOR RAILWAY-CARS. JOHN B. CLOY, San Francisco, Cal. Filed Dec. 16, 1887. Serial No. 258,134. (No model.)



Claim.—1. The indicator herein described, consisting, essentially, of a barrel upon whose periphery a series of name-plates are set longitudinally and hinged thereto equidistant apart, a carrying-frame for same open in front to exhibit the names and inscriptions upon said plates, a ratchet-wheel secured to one end of the barrel or its supporting-pivot, a pawl engaging with said ratchet, and suitable mechanism actuated by an obstructing bar upon the track to automatically operate the indicator, substantially as herein described.

2. In station-indicators, the means of operating the same herein described, consisting, essentially, of a horizontal shaft, L, set beneath the floor of the car and held in the boxes M M', one secured to the car-body and rising and falling with the motion of the car upon its springs, and the other to the carrying-wheel's axle directly or indirectly, so as to be immovable vertically, a horizontally-projecting arm, K, and rod J, connecting with the indicator mechanism, arm K', rod N, having wheel O, and bar P, arranged substantially as described.

3. A street or station indicator consisting, essentially, of a revolving barrel carrying a series of inscribed plates or leaves longitudinally hinged thereto and supported on pivots at both ends, one or both of which pivots is screwed through its supporting-standard into position so as to permit the withdrawal of the barrel with facility, and suitable operating mechanism, substantially as herein described.

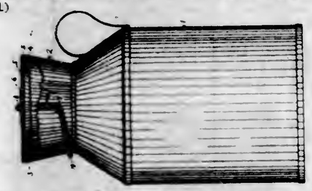
380,091. JAR OR BOTTLE FOR FRUIT, MILK, &c. GEORGE D. COREY, Lowell, Mass., assignor to Charles M. Hosmer, same place. Filed May 23, 1887. Serial No. 239,061. (No model.)



Claim.—1. The jar provided with a conical frustum having its larger base uppermost near its mouth and a sealing-band-supporting ledge between said larger base and said mouth, combined with a sealing-band resting on said ledge, a cover with a downwardly-extending sealing-rim resting on said sealing-band, and a cover-clamp resting on said cover and provided with downwardly and inwardly projecting arms pressing with an elastic pressure inwardly on the sides of said frustum, and a stop to hold said cover-clamp in its locking position, substantially as described, and for the purposes specified.

2. The jar provided with a conical frustum having its larger base uppermost near its mouth and a sealing-band-supporting ledge between said larger base and said mouth, combined with a sealing-band resting on said ledge, a cover with a downwardly-extending sealing-rim resting on said sealing-band, and an upwardly-extending rim upon which the structure securely rests when it is stored in an inverted position, said upwardly-extending rim being provided with diametrically-opposed deep grooves, the cover-clamp resting in said grooves and provided with the downwardly and inwardly projecting arms, pressing with an elastic pressure on the sides of said frustum, and the elastic curved stop-bar connecting said downwardly-extending arms, substantially as described, and for the purposes specified.

380,092. PACKING OR STORING VESSEL. GEORGE D. COREY, Lowell, Mass., assignor, by direct and mesne assignments, to Charles M. Hosmer, same place. Filed Sept. 5, 1887. Serial No. 248,841. (No model.)



Claim.—1. The combination, with a packing or storing vessel, of a mouth-piece, a portion of which is made up of a conical frustum with its smaller base next to the said vessel, a cover closely fitting the end of said mouth-piece, and a rocking bar across the said cover provided with inwardly-projecting spring-arms at its ends, which engage with said conical frustum, and thereby cause said bar to press said cover upon said mouth-piece with a continuous elastic pressure acting in a direction toward said mouth-piece, substantially as described, and for the purposes specified.

2. The combination, with a packing or storing vessel, of a mouth-piece, a portion of which is made up of a conical frustum with its smaller base next to the said vessel, a cover closely fitting the end of said mouth-piece, a rocking clamp provided with a cross-bar which rests upon said cover and is pressed against the same with a continuous elastic pressure by inwardly-projecting spring-arms, which depend from the ends of said cross-bar and engage with said conical frustum, and a stop to prevent the said clamp from rocking too far when the cover is forced into place thereby, substantially as described, and for the purposes specified.

3. The glue-can, which consists of the main glue-containing body having the mouth-piece, a portion of which is a conical frustum with its smaller base next to the said body, and has a seat for the cover, and is also provided with the inwardly-projecting brush-cleaning and liquid-retaining lip, a cover fitting upon said seat, a cross-bar resting upon said cover, inwardly-projecting and depending spring-arms at the end of said cross-bar, which engage with said conical frustum, and thereby press said cross-bar against said cover with a continuous elastic pressure, and the elastic stop-bar connecting the ends of said spring-arms, substantially as described, and for the purposes set forth.

380,093. HOOF-CLASP. DANIEL CRUICE and FRANZ HIMMEL, New York, N. Y. Filed July 2, 1887. Serial No. 243,256. (No model.)

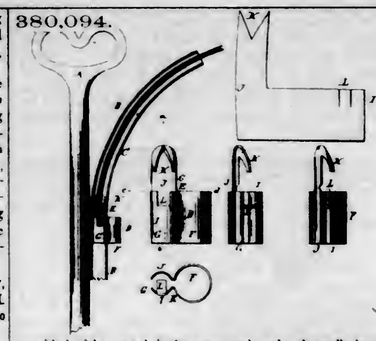


Claim.—A hoof-clasp consisting of the portions D and E, having the hooks or prongs F, one of said portions being also provided with a tongue bent to project into a stop-groove formed in the other, substantially as set forth.

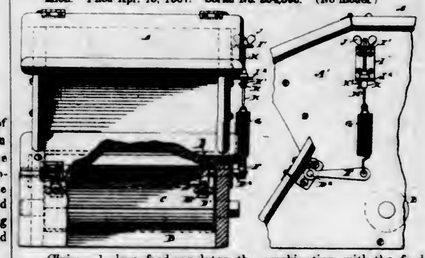
380,094. TAPER SLIDE OR HOLDER FOR GAS-LIGHTING TORCHES. JAMES F. CUNNINGHAM, New York, N. Y., assignor to the E. P. Gleason Manufacturing Company, same place. Filed Oct. 3, 1887. Serial No. 251,355. (No model.)

Claim.—The herein-described taper-holder for use in gas-lighting torches, consisting, essentially, of a handle portion, a taper-engaging portion connected with the handle portion by a neck or reduced portion, an arm extending upwardly from the taper-engaging portion and provided with a notch in its upper end, and a laterally inwardly-extending lip located below said notch, substantially as described.

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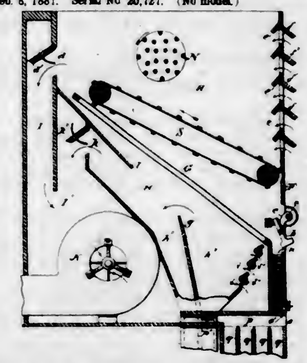
380,095. FEED-REGULATOR. GEORGE R. DAVIDSON, Brookway, Mich. Filed Apr. 13, 1887. Serial No. 234,568. (No model.)



Claim.—1. In a feed-regulator, the combination, with the feed-roller and feed-hopper, of a feed-gate held in said hopper and resting with its bottom against the said roller, slotted arms on which said feed-gate is held adjustably, and pivoted arms extending from said slotted arms to form a fulcrum, the said slotted arms having their bearings in the sides of said hopper, substantially as shown and described.

2. In a feed-regulator, the combination, with a feed-gate, of slotted arms on which said gate is held adjustably, pivot-arms extending from the said slotted arms and forming the fulcrum for said feed-gate, a lever-arm secured to one of the pivot-arms, a spring connected with said lever-arms, and means, substantially as described, for adjusting the tension of said spring, as set forth.

380,096. CHOP-GRADER. JOHN R. DAVIS, Jr., Neenah, Wis. Filed Feb. 6, 1881. Serial No. 26,727. (No model.)

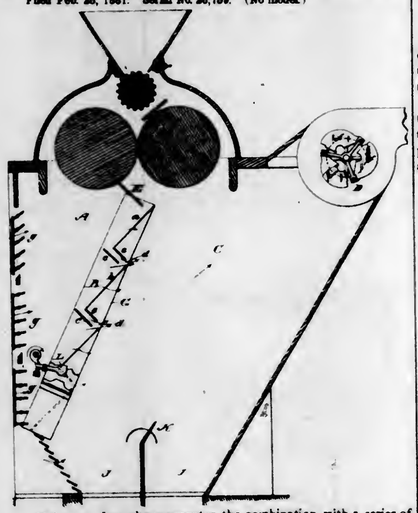


Claim.—1. The combination, with the screen and the converging chest and wind-trunk beneath, of the bifurcated spout, the tailings-chambers and their external air-ports, the series of sub-spouts, and the trunks laid under the converging sides of the chest and communicating with the suction-chamber.

2. The combination of the crushing-rollers, the inclined screen, the diaphragm above said screen, the chest and wind-trunk beneath the screen, the fan exhausting from said chest, and the bifurcated tailings-spout and its series of sub-spouts, also exhausted by said fan.

3. The combination of the crushing-rollers, the rotary beater, the inclined apron beneath said beater, the inclined screen beneath the apron, the chest and wind-trunk beneath the screen, the suction-fan, and the tailings-spout.

380,097. CHOP-SEPARATOR. JOHN R. DAVIS, Jr., Neenah, Wis. Filed Feb. 23, 1881. Serial No. 26,739. (No model.)



Claim.—1. In a chop-separator, the combination, with a series of inclined screens arranged with intervals between the tail of each and the head of the next succeeding, of a suction-chamber on the lower side thereof, a fan or fans whereby air-currents are drawn through the interstices of said screens and through the intervals between them, and valves or gates whereby the currents may be moderated or shut off over any area of the series.

2. In a chop-separator, the combination, with a series of sharply-inclined screens arranged with intervals between the tail of each and the head of the next succeeding, of boards arranged to intercept the tailings of the successive screens and direct them to the head of the next, fenders which deflect the material passing through each screen into the suction-chamber beneath, and a fan or fans arranged in or connecting with such suction-chamber, whereby air-currents are drawn through the interstices of the screens and through the streams descending upon their heads.

3. In a chop-separator, the combination, with an inclined frame holding a series of louverwise screens with intersecting returning-boards, of a knocker or knockers arranged to jar said frame as the material is being fed.

4. In a chop-separator, the combination, with an inclined frame holding a series of louverwise screens with intersecting returning-boards, of a knocker or knockers arranged to jar said frame as the material is being fed, and a fan or fans arranged to draw air-currents through said frame and downward through the interstices of the screens held therein.

5. In combination with a screen or screens, a fan or fans arranged to draw air through the same in the direction in which the screenings pass, boards or partitions dividing the air-currents into separate currents to act upon different portions of the screen or screens, and valves for independently regulating the separate air-currents.

6. In combination with a vertical series of inclined screens and a vertical series of intersecting boards, a suction-chamber located at one side of the series on the under side of the screens, a partition or partitions intersecting the screen surface and forming independent draft-areas, a fan communicating with the suction-chamber and serving to draw air through the screens, and valves for independently regulating the draft of the different areas.

7. The combination with a series of screens arranged with intervals between the tail of each and the head of the next succeeding, a suction-chamber beneath the screens, a fan or fans communicating with the chamber and drawing air through the openings between the screens, and boards or slats placed at said openings and adapted to control the air-currents through them.

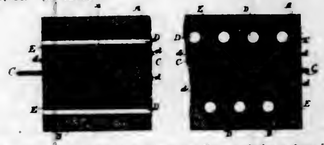
8. In combination with a series of screens arranged louverwise, a series of adjustable intersecting boards adapted to direct the material from the tail of one screen to the head of the next, substantially as described.

380,098. COLORING-MATTER FROM THE SULPHO-ACIDS OF ETHYL OR DIPHENYLAMINE COMBINED WITH TETRAZODIPHENYL OR TETRAZODITOLYL. THEODOR DIEHL, Mannheim, Baden, Germany, assignor to Georg Carl Zimmer, same place. Filed Nov. 29, 1887. Serial No. 256,422. (No specimens.)

Claim.—1. The production of coloring-matters that dye unmordanted cotton directly by the action of one molecule of tetrazo salt upon two molecules of the sulpho-acids of monoethylanilin or diphenylamine.

2. The production of coloring-matters that dye unmordanted cotton directly by the action of one molecule of the sulpho-acids referred to in the preceding claim, and the subsequent combination with phenols, salicylic acids, phenolsulpho-acids, the sulpho-acids of alpha and beta naphthol or of alpha and beta naphthylamine.

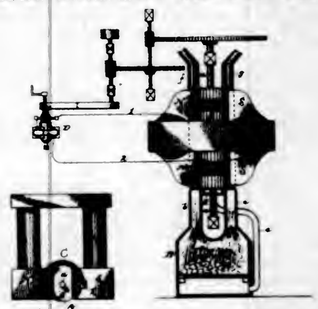
380,099. EMBOSSING-DIE. WILLIAM DUNCAN, Hinsdale, assignor to Duncan & Johnson, Chicago, Ill. Filed Apr. 5, 1887. Serial No. 233,711. (No model.)



Claim.—1. An embossing plate or die consisting of an integral casting and provided with a working-face or matrix at one side and a flat bearing-surface for engagement with the platen or bearing-surface of the press at its opposite side, with a series of passages formed in said block or casting between the working-face or matrix and the flat bearing-face and opening at their ends through the sides or edges of the die, and with holes or perforations extending through the metal of the die from the said working-face or matrix thereof into said passages, substantially as described.

2. An embossing plate or die consisting of an integral casting provided with a working-face or matrix at one side and a flat bearing-surface at its other side, said casting having open-ended tubes E E cast therein between its matrix or working-face and its rear or bearing face, said tubes extending to the side edges of the plate or die, so as to form passages opening at the side face or edges of the plate or die, said plate or die being provided also with holes or perforations extending from the working-face or matrix through and into the said tubes E E, substantially as described.

380,100. PYROMAGNETIC MOTOR. THOMAS A. EDISON, Llewellyn Park, N. J. Filed June 13, 1887. Serial No. 241,098. (No model.)



Claim.—1. A prime motor having, in combination, an interstitial magnetic body, a magnetic field in which said body is located, and means for heating said body to produce an unbalanced magnetic condition of the same, substantially as set forth.

2. A prime motor having, in combination, an interstitial magnetic body, a magnetic field in which said body is located, means for heating said body to produce an unbalanced magnetic condition of the same, and means for cooling the other parts of said body, substantially as set forth.

3. A prime motor having, in combination, a revolving interstitial magnetic body, a magnetic field in which said body is located, and means for heating said body to produce an unbalanced magnetic condition of the same, substantially as set forth.

4. A prime motor having, in combination, a revolving interstitial magnetic body, a magnetic field in which said body is located, and means for heating opposite parts of said revolving magnetic body to produce an unbalanced condition of the same, substantially as set forth.

5. A prime motor having, in combination, a revolving interstitial magnetic body, a magnetic field in which said body is located, means for heating opposite parts of said revolving magnetic body to produce an unbalanced condition of the same, and means for cooling the intermediate parts of said body, substantially as set forth.

6. A prime motor having, in combination, a magnetic interstitial body, a magnetic field in which said body is located, and means for passing a heating medium through the interstices of such body to produce an unbalanced condition of the body, substantially as set forth.

7. A prime motor having, in combination, a magnetic interstitial body, a magnetic field in which said body is located, and a furnace with exit-flues communicating with a part of the interstices of said body, substantially as set forth.

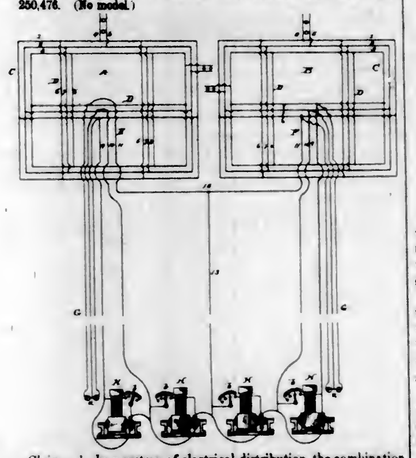
8. A prime motor having, in combination, a magnetic interstitial body, a magnetic field in which said body is located, a furnace with exit-flues communicating with a part of the interstices of said body, and a fresh-air supply for said furnace, drawing fresh air through other interstices, substantially as set forth.

9. A prime motor having, in combination, a magnetic body, a magnetic field in which said body is located, means for heating said body to produce an unbalanced condition thereof, and a coil for magnetizing or polarizing said body, substantially as set forth.

10. A prime motor having, in combination, a revolving magnetic body, a magnetic field in which said body is located, means for heating said body to produce an unbalanced condition thereof, and a fixed coil for magnetizing or polarizing said body, substantially as set forth.

11. A prime motor having, in combination, a magnetic body, a magnetic field produced by an electro-magnet, means for heating said body to produce an unbalanced condition thereof, and a dynamo-electric machine driven by the movement of said magnetic body and supplying current for energizing said field-magnet, substantially as set forth.

380,101. SYSTEM OF ELECTRICAL DISTRIBUTION. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Sept. 23, 1887. Serial No. 250,476. (No model.)



Claim.—1. In a system of electrical distribution, the combination of main conductors and consumption-circuits therefrom, with sub-feeding conductors having no translating devices connected therewith and constructed to have a low resistance or small drop in potential, so as to equalize the pressure between various points on the mains without adjustable resistances or equivalent devices, and a main feeder connected with the sub-feeders and extending to the point of electrical supply, the drop in potential upon such main feeder being greater than upon the sub-feeders, substantially as set forth.

2. In a system of electrical distribution, the combination of main conductors and consumption-circuits therefrom, with a connected network of conductors connected with said mains and forming sub-feeders having a low resistance or small drop in potential, and a main feeder extending from the sub-feeder net-work back to the point of electrical supply, substantially as set forth.

3. In a system of electrical distribution, the combination of two or more sections of main conductors, sub-feeders of low resistance for each section, a main feeder from each set of sub-feeders back to the station, and a conductor connecting such sections in series, substantially as set forth.

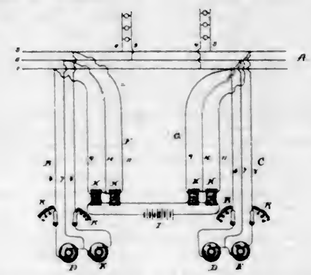
4. In a system of electrical distribution, the combination of two or more sections of main conductors, sub-feeders of low resistance for each section, a main feeder from each set of sub-feeders back to the station, a conductor connecting such sections in series, and a compensating conductor extending from a point electrically between the sections back to the station, substantially as set forth.

5. In a system of electrical distribution, the combination of two or more sections of mains, each formed of three conductors, a set of three-wire sub-feeders for each section of low resistance, a three-wire main feeder from the sub-feeders of each section, and a connection between the adjoining conductors of the feeders, substantially as set forth.

6. In a system of electrical distribution, the combination, with mains and consumption-circuits, of a set of low-resistance sub-feeders, a main feeder from the sub-feeders to the station, and pressure-indicators at the station showing the pressure at the outer end of the main feeder, substantially as set forth.

7. In a system of electrical distribution, the combination of two or more sections of main conductors, each of one or more divisions, sub-feeders of low resistance for each section, a main feeder for each section extending from the sub-feeders back to the station, a conductor connecting the sections in series, compensating conductors for the divisions of the system, pressure-indicators showing the pressure at the outer end of each main feeder, and a dynamo-electric machine for each division of the system provided with means for its independent regulation, substantially as set forth.

380,102. SYSTEM OF ELECTRICAL DISTRIBUTION. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Sept. 23, 1887. Serial No. 250,477. (No model.)



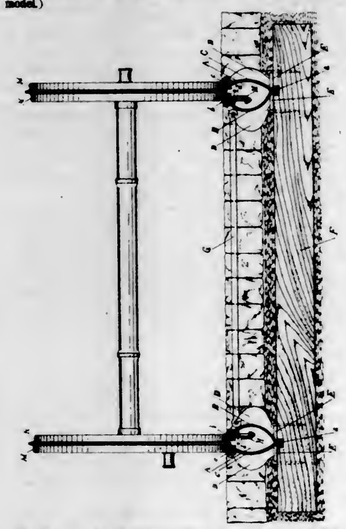
Claim.—1. In a system of electrical distribution, the combination, with a set of pressure-wires, of an electrically-moved indicator connected with such pressure-wires, and a standard battery, also connected with such indicator and opposing the effect of the system pressure at such indicator, substantially as set forth.

2. In a system of electrical distribution, the combination, with two or more sets of pressure-wires, of a double-wound electrically-moved indicator for each set of pressure-wires and connected by one winding with such pressure-wires, and a standard battery connected with the other windings of the two or more indicators and opposing at such indicators the energy of the system, substantially as set forth.

3. In a system of electrical distribution, the combination, with a feeder having means for varying the pressure at its outer end, and a set of pressure-wires extending from the outer end of the feeder back to the station, of an electrically-moved indicator connected with such pressure-wires, and a standard battery, also connected with such indicator and opposing the effect of the system pressure at such indicator, substantially as set forth.

4. In a system of electrical distribution, the combination, with two or more feeders having means for varying the pressure at their outer ends, and a set of pressure-wires extending from the outer end of each feeder back to the station, of a double-wound electrically-moved indicator for each set of pressure-wires and connected by one winding with such pressure-wires, and a standard battery connected with the other windings of the two or more indicators and opposing at such indicators the energy of the system, substantially as set forth.

380,103. **CONDUIT FOR ELECTRIC RAILWAYS.** STEPHEN D. FIELD, Yonkers, N. Y. Filed Mar. 17, 1887. Serial No. 231,264. (No model.)



Claim.—1. An electrical railway having two conduits, one directly under each rail, with a slot in the same for each conduit, and a conductor in each of said conduits, for the purpose described.

2. An electrical railway having two conduits, one directly beneath each rail and within the interior of the supporting-walls of the same, with a slot in said rail for the conduit, the same forming a combined rail and conduit, for the purpose described.

3. A railway having a combined rail and conduit composed of two sections, substantially as B C, one of less curve than the other, substantially as and for the purpose described.

4. A railway having a conduit constructed in two curved sections, substantially as B C, fastened together at their bottom and ribbed at intervals, for the purpose described, and facings for the exposed portions of said conduit, forming a rail of the track with a slot between the same for the conduit.

5. A railway having a rail and conduit constructed in two sections, substantially as B and C, one of less curve than the other and ribbed at intervals, substantially as and for the purpose described.

6. A conduit constructed in curved sections or halves B C, suitably fastened together, the said sections being ribbed at intervals, and provided with a flange for supporting said conduit upon a tie beneath the same, and facings for the two sections of the conduit forming the rail of a track with a slot between the same, subserving the functions set forth.

7. A combined conduit and rail consisting of two continuous metallic sections, substantially as B C, suitably fastened together and ribbed at intervals, the exposed portion of said conduit forming one rail of a track, another similar conduit forming the other rail, and a connecting-bar bracing said conduits together.

8. A conduit for electrical railway purposes made of two curved sections, substantially as B C, joined together at their bottom, the exposed portions of which conduit forms one of the rails of a track with a slot between the same for the conduit, and an insulated conductor supported therein, for the purpose described.

9. The combination, as hereinbefore set forth, of a conductor, a conduit or other object from which said conductor is supported, rods for sustaining said conductor, having projecting pieces over which a hard-rubber covering is cast, and a screw-threaded cylinder of hard rubber adapted to be fastened to said conduit or other object, having a soft-rubber lining which is vulcanized to secure the covering cast upon the end of said rod to the aforesaid cylinder, and thereby support and insulate said conductor.

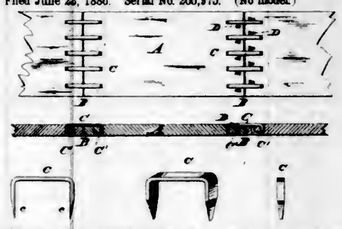
10. An L-shaped copper conductor, braces at the back thereof around the joints in the same, a conduit, and rods for supporting the said conductor from the conduit, substantially as and for the purpose set forth.

11. A reversible L-shaped conductor, as H, and braces *c'* around the joints of the same, rods, as *d*, for supporting the conductor at intervals from the wall of the conduit B, and insulating screw-threaded cylinders for securing the latter to the conduit.

12. The combination of the L-shaped conductor H, cut away and extended at *f*, as shown and described, braces, as *c'*, for the same, and rods, as *d*, passing through the ribbed or horizontal part for supporting the same, substantially as described.

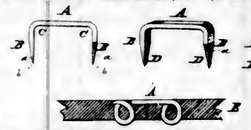
13. An L-shaped conductor, as H, cut away and extended, as shown at *f*, a rod, as *d*, which passes through the rib or horizontal part thereof, a nut, *g*, or other means for fastening the same to the rod *d* and keeping the parts of the conductor in intimate contact at a joint, a brace, as *c'*, around said rod at the back of the conductor, serving as an additional means for keeping the continuity of the circuit of the conductor intact where the same is joined, and a screw-threaded plug, as *e*, of insulating material, for sustaining the supporting-rod *d* and insulating the same from the wall of the conduit B.

380,104. **BELT-FASTENER.** TIMOTHY GINGRAS, Buffalo, N. Y. Filed June 28, 1886. Serial No. 206,975. (No model.)



Claim.—In combination with the contiguous sections of a belt, the staples C, having their points passed through contiguous parts of said sections and then bent back into or through the same on opposite sides of the body of each staple, substantially as set forth.

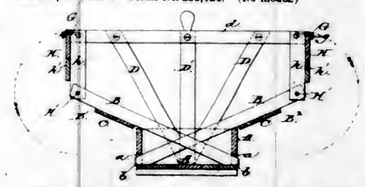
380,105. **BELT-FASTENER.** TIMOTHY GINGRAS, Buffalo, N. Y. Filed June 28, 1886. Serial No. 206,976. (No model.)



Claim.—1. A belt-fastening consisting of a staple having its ends beveled inward from the outside, but their inner faces left vertical, and having the right edge of one end and the left edge of the other end also beveled, the other edges of said ends being left vertical in order that the points of the staple may be on opposite sides of its middle longitudinal line, substantially as set forth.

2. A staple having its ends beveled on the outside and the right edge of one end and left edge of the other beveled also, and further provided with the additional slants *b*, forming blunt points, substantially as set forth.

380,106. **HAY-RACK.** CALVIN R. HAGERMAN, Ainsworth, Nebr. Filed Apr. 5, 1887. Serial No. 233,720. (No model.)



Claim.—1. In a hay-rack, the combination, with the inclined side bars, B' B², and end bars, D D' *d*, of the longitudinally-arranged hinged gates H, substantially as and for the purpose described.

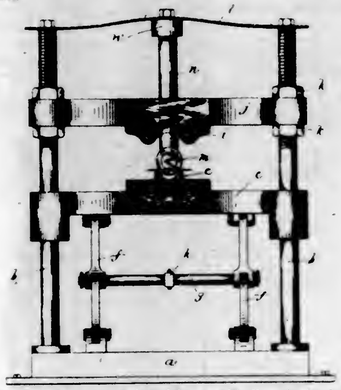
2. The combination, with the box-body A, having apertures *a*, of detachable inclined side bars, B' B², engaging with said apertures, and detachable end bars, D D' *d*, and longitudinally-arranged hinged gates H, hung to said side bars, substantially as and for the purpose described.

3. The combination, with the box-body A, having apertures *a*, of detachable inclined side bars B' B², engaging with said apertures, and detachable inclined end bars, D D, perpendicular bar D', and horizontal stay-bar *d*, said side bars being provided with longitudinally-arranged hinged gates H, having means for locking them when closed, all substantially as and for the purposes described.

4. The combination, with the base-board having apertures *a*, of detachable inclined side bars, B' B², engaging with said apertures, detachable end bars, D D' *d*, and longitudinally-arranged hinged gates H, hung to said side bars, the gates being provided with eyes *g*, and the end portions with pivoted hooks G, adapted for engagement with said eyes, substantially as and for the purposes described.

5. The combination, with the base-board having apertures *a*, of detachable inclined side bars, B' B², engaging with said apertures, and detachable end bars, D D' *d*, said bars *d* being provided with angular pivoted hooks G, and said inclined side bars being provided with longitudinally-arranged hinged gates H, having eyes *g* on their outer sides, the said angular hooks G being adapted to engage said eyes, all substantially as shown and described, for the purposes described.

380,107. **MACHINE FOR BENDING BLANKS INTO TUBULAR FORM.** DAVID S. HALL, Stoughton, Mass., assignor of one-half to George F. Walker, same place. Filed Sept. 10, 1887. Serial No. 249,323. (No model.)



Claim.—1. The combination of the movable die *e*, the fixed die i, and the yielding mandrel *m*, as set forth.

2. The combination of the platen adapted to slide vertically, the die *e* thereon, means, substantially as described, for raising and depressing said platen, the fixed die i, the movable mandrel *m*, and a spring whereby said mandrel is supported with a yielding pressure, as set forth.

3. The combination of the platen adapted to slide vertically, the die *e* thereon, the yielding mandrel, the die i, and devices, substantially as described, whereby said die may be vertically adjusted and positively held at any position to which it may be adjusted, as set forth.

380,108. **CANDY-DROPPING MACHINE.** ZACHARY T. HARTMAN, Philadelphia, Pa., assignor of one-half to Philip Wunderle, same place. Filed Sept. 14, 1887. Serial No. 249,620. (No model.)

Claim.—1. A candy-dropping machine consisting of a frame, with the box B, having the openings *g* in one end thereof, the driving-pulley C, the sliding plunger A' in said box B, the screw-shaft Z, swiveled to said plunger, the internally-threaded wheel Y, located on said shaft, mechanism, substantially as described, intermediate said wheel Y and said driving-pulley C, for imparting rotary motion to said shaft Z, a movable apron, a cutter, and mechanism, substantially as described, for operating said cutter, said parts being combined substantially as and for the purpose set forth.

2. A candy-dropping machine having a cutter, a rising-and-falling shaft, arms secured to said shaft and provided with studs, vibrating arms and brackets with sliding boxes, the said rising-and-falling shaft being journaled in said vibrating arms and boxes, and inclined guides, said parts being combined substantially as and for the purpose set forth.

3. The cutter C', in combination with the arms D', shaft E', sliding boxes F', obliquely-arranged brackets G', oscillating arms J, and pins J', substantially as described.

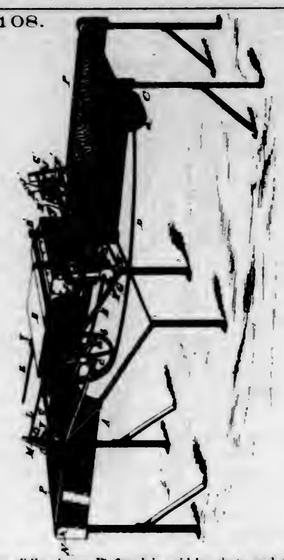
4. The arms D', having the studs D³ and rollers D⁴, and carrying the cutter C', the levers H' H³, the shaft E', carrying said arms and levers, the inclined guides H³, and mechanism, substantially as described, connected to said shaft E', for imparting a rising-and-falling motion to the same, said parts being combined substantially as and for the purpose set forth.

5. The shaft F, carrying the eccentrics G, in combination with the oscillating arms J, fitted on said eccentrics, the pins J', secured to said arms, the shaft E', the arms D', supported on said shaft E', the brackets G', the sliding boxes F', fitted in said brackets, and the cutter E', connected with said arms, the shaft E' being mounted in said sliding boxes, and oscillating arms, substantially as described.

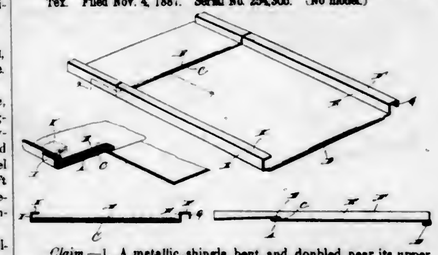
6. In a candy-dropping machine, the rotary shaft F, in combination with the arms J, the eccentrics G and pins J', the brackets G', with sliding boxes F', the shaft E', journaled in said sliding boxes, the levers H' H³, the arms D' with studs, the guides with inclined faces H³, the arms D', and the cutter C', secured to said arms D', substantially as and for the purpose set forth.

7. In a candy-dropping machine, the arms D', with cutter C' mounted on the shaft E', in combination with mechanism for imparting a rising-and-falling motion to said shaft, the cross-bar Q', the arm P', the spring M', and a movable apron, substantially as and for the purpose set forth.

380,108.



380,109. **METALLIC SHINGLE.** HUGH W. HARRY, Fort Worth, Tex. Filed Nov. 4, 1887. Serial No. 254,305. (No model.)



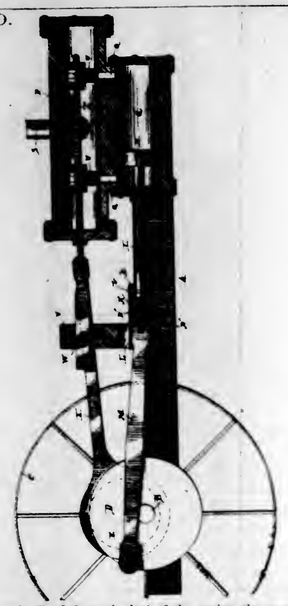
Claim.—1. A metallic shingle bent and doubled near its upper end to form the turned-over edges A B and the transverse recess C, said shingle having the vertical flange I at one side, the horizontal inwardly-extending flange K at the upper edge of flange I, and the vertical flange E at its opposite side, having the outwardly-extending flanged portion F at its upper edge and the depending flange G at its outer edge of the flanged portion F, substantially as described.

2. A roof made up of a series of metallic shingles bent and doubled at the ends, as at A B, and the joint at the sides of the shingle, the doubled ends A B being bent at the sides to correspond with the joint at the sides of the shingle, whereby a double thickness is provided at the sides of the end joints and notching is obviated, as set forth.

380,110. **STEAM-ENGINE.** FRANKLIN P. HAWKINS, Pisgo, Ala. Filed Oct. 24, 1887. Serial No. 253,231. (No model.)

Claim.—1. The combination, with the cylinder, and the piston-rod having the piston-head attached thereto within the cylinder, of

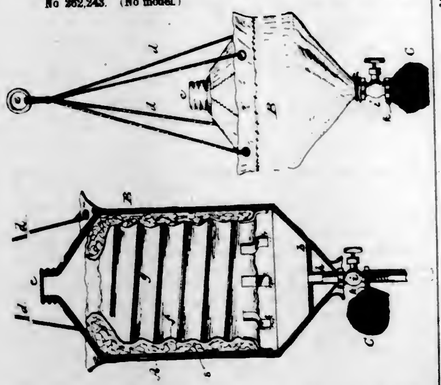
380,110.



the parallel guide-ribs O O on the bed of the engine, the cross-head attached to the end of the piston-rod and having the lateral wings or projections N N, engaging the said guide-ribs, and the forward-extending ears L L, and the connecting-rod mounted between the said ears and connected to the driving-shaft of the engine, substantially as and for the purpose specified.

2. The combination of the guide-ribs O O, on the bed of the engine, the cross-head having the recess *k* in its rear end, the wings or projections on the sides of the cross-head engaging and sliding on the said guide-ribs, the connecting-rod connected at one end to the cross-head, the piston-rod arranged in the recess *k*, and the removable pin *i*, passing through the cross-head and the piston-rod, substantially as and for the purpose specified.

380,111. OIL-DISTRIBUTING DEVICE FOR SEA-GOING VESSELS. JONATHAN I. HAZARD, Georgetown, S. C. Filed Jan. 28, 1888. Serial No. 262,243. (No model.)



Claim.—1. In a device for distributing oil on water for sea-going vessels, the can A, provided with a flexible protecting and suspension clothing or covering, B, in combination with the lining *f*, absorbent filling *s*, and discharge pipe or nozzle *h*, fitted with a hand-valve, *i*, substantially as specified.

2. The combination, with the can A, having a lower diaphragm, *b*, of the discharge pipe or nozzle *h*, having a hand-valve, *i*, and the screen or sieve C, laterally hinged to said nozzle below said valve, essentially as and for the purposes herein set forth.

3. The combination, with the can A, having a lower discharge pipe or nozzle, *h*, and hand-valve *i*, of the absorbent filling *s* upon the interior of said can, the flexible lining *f* upon the inner side of the absorbent filling, and the coiled wire *g*, arranged to internally support said lining throughout its length, substantially as shown and described.

380,112. BUTTON-FASTENER. WILLIAM M. HASKI, New York, N. Y. Filed Apr. 11, 1883. Serial No. 91,328. (No model.)



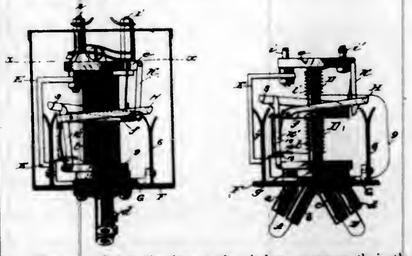
Claim.—An improved button-fastener, consisting of the loop B and the prongs A A, of greater width than the said loop, each of equal width throughout and concavo-convex in cross-section, the ends of said prongs being each beveled on their edges to a single point, substantially as set forth.

380,113. LACE-FASTENING. HERBERT C. HEARD, Bute Villa, Roath, Cardiff, Wales. Filed Mar. 14, 1887. Serial No. 230,851. (No model.) Patented in England June 16, 1886, No. 8,096.



Claim.—A serpentine plate, with the central part of which are combined two fangs adapted to fasten the plate to the material, and having formed in it two arches adjoining said central part, one on each side of it, and forming, when the plate is attached to the material, wedge-shaped spaces adapted to receive the lace to be fastened, and two depressions next to the arches, substantially as and for the purpose hereinbefore described and illustrated.

380,114. INCANDESCENT-ELECTRIC-LAMP HOLDER AND CUT-OUT. CHARLES HEISLER, St. Louis, Mo. Filed Jan. 13, 1887. Serial No. 224,709. (No model.)



Claim.—1. In combination, an electric lamp permanently in the main circuit through the core of an electro-magnet having two spools on one core, a second lamp, one terminal of which is connected with the main line by a shunt through the core of the electro-magnet, which is normally open while the first lamp is operating, connection between the coil of one spool and one terminal of the second lamp, an armature operated by the electro-magnet to close the circuit of said lamp through the core, a second switch arranged to short-circuit the lamps through the core, a switch between the second coil on the electro-magnet and the line, normally open and closed by the first switch of the electro-magnet to form connection with the main line, and a second armature to operate the switch which short-circuits the lamp, all substantially as described.

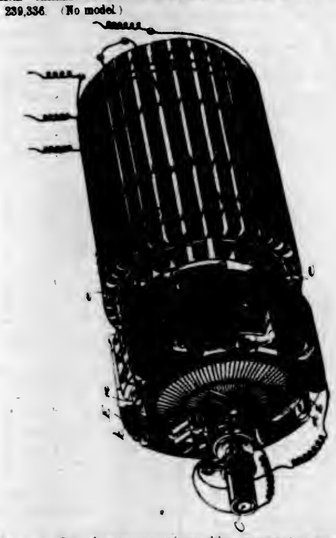
2. In combination, the core D, having the pole-flanges *f g* and its armatures and coils, an electric lamp having one terminal directly connected to the lower flange and to the line through the upper flange, and its other terminal connected to the line through a conducting-piece supported upon a flange of the core, but insulated therefrom, whereby the circuit of the lamp is through the core of the electro-magnet, a second lamp having one terminal connected to the same conducting-piece with the second terminal of the first lamp and its other terminal connected to the line through a switch released by an armature, K, when the first lamp ceases to work by means of the coil *l'*, whereby the second lamp is placed in circuit, a second switch arranged to short-circuit both lamps and released by an armature, K', controlled by the coil *l*, in circuit with the main line through a switch, as 13 14, all substantially as described.

3. In combination with two spools having a common iron core, flanges upon the ends of said core and an intermediate flange forming one common pole-piece combined with two armatures, substantially as described.

4. In combination, the core D, having the pole-pieces *e* and *f*, the armature K, and the switch-lever H, said armature and switch-lever being supported by the said flanges *e* and *f*, substantially as described.

5. In combination, the core D, common to two spools, and having flanges *e* and *g* and intermediate flange, *f*, the armatures, and switch-levers, all of said parts being supported by the flanges, substantially as described.

380,115. ALTERNATING-CURRENT DYNAMO-ELECTRIC MACHINE. CHARLES HEISLER, St. Louis, Mo. Filed May 26, 1887. Serial No. 239,336. (No model.)



Claim.—1. In a dynamo-electric machine, an armature composed of insulated sections and wound with coils forming a circuit, of which coils a pair is placed on each section, and the coils of the circuit alternate in direction of winding, substantially as described.

2. In a dynamo-electric machine, an armature composed of insulated sections and wound with coils forming a circuit, of which coils a pair is placed on each section, and the coils of the circuit alternate in direction of winding, in combination with another similar circuit, the coils of which alternate in position with those of the first circuit, substantially as described.

3. In a dynamo-machine, a stationary sectional armature, the sections being insulated from each other and provided with coils, the said coils being arranged in independent series, each series comprising alternate coils, substantially as described.

4. In a dynamo-electric machine, a stationary armature made up of core-segments and insulated rods between the segments, said rods being fixed in the ring-standards and supporting the armature, substantially as described.

5. In a dynamo-electric machine, a stationary armature made up of core-segments, each segment consisting of curved pieces of sheet metal with coils wound thereon, the coils being divided by angular pieces *r*, set into the segments, but insulated from the metal thereof, the said angular pieces projecting above and below the segments, substantially as described.

6. In a dynamo-electric machine, a stationary armature made of curved core-segments grooved upon their sides adapted to insulating supporting-rods, in combination with flanged blocks curved to conform to the supporting-rods and adapted to support the wires of the outer coils, substantially as described.

7. In a dynamo-machine, a stationary armature composed of curved core-segments grooved upon their sides adapted to insulating supporting-rods, combined with end lugs having a curved portion adapted to the rods and an angular portion in connection with the sections of the armature-core, substantially as described.

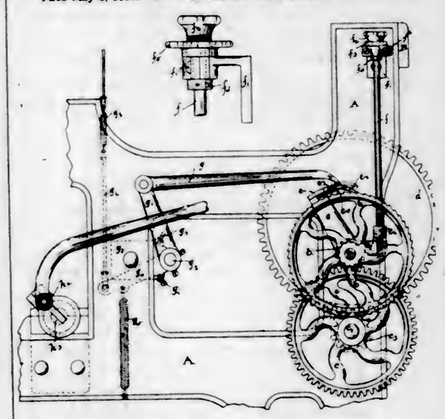
8. In a dynamo-machine, in combination, an exciting-generator having a stationary field-magnet, the said magnet being provided with projecting bearing and holding lugs on its periphery adapted to corresponding lugs on the frame, whereby the said field-magnet is held rigidly in place, substantially as described.

380,116. GUARD FOR PIE-PLATES AND SIMILAR PANS. FREDERICK P. HUFF, Boothbay, Me. Filed Mar. 7, 1887. Serial No. 229,954. (No model.)



Claim.—The detachable guard for pie-plates and similar articles, formed as a continuous annular ring, A, the sides *a* whereof are tapered from top to bottom, which guard is adapted to surround and project above and below the edge of the plate to which it is applied, and to be fitted upon it from above only, substantially as described.

380,117. TAKE-UP MECHANISM FOR LOOMS. GEORGE F. HUTCHINS, Worcester, Mass., assignor to the Knowles Loom Works, same place. Filed July 8, 1887. Serial No. 243,736. (No model.)



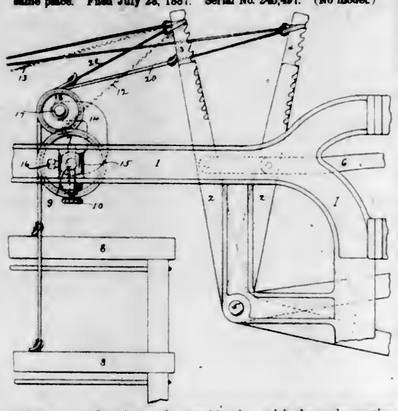
Claim.—1. In a take-up mechanism, the combination, with a ratchet-wheel and a push or pull pawl for operating the same and means for operating said pawl, of a jointed or hinged shield or guard, the outer end of which acts as a holdfast-pawl, substantially as described.

2. In a take-up mechanism, the combination, with a ratchet-wheel and a push or pull pawl for operating the same and means for operating said pawl, of the movable jointed shield or guard, the shield-support, a jointed nut attached to said support, a screw-rod connected with said nut for adjusting said shield or guard, and means for supporting said rod, substantially as set forth.

3. In a loom, the combination, with a ratchet-wheel for driving the take-up roll and an adjustable jointed or hinged shield, the outer end of which acts as a holdfast-pawl, and means for adjusting said shield, of a push or pull pawl and connections intervening between said pawl and the Jacquard or harness motion for actuating the same, substantially as shown and described.

4. A jointed or hinged shield or guard for an actuating push or pull pawl, the outer end of which shield acts as a holdfast-pawl, substantially as and for the purpose stated.

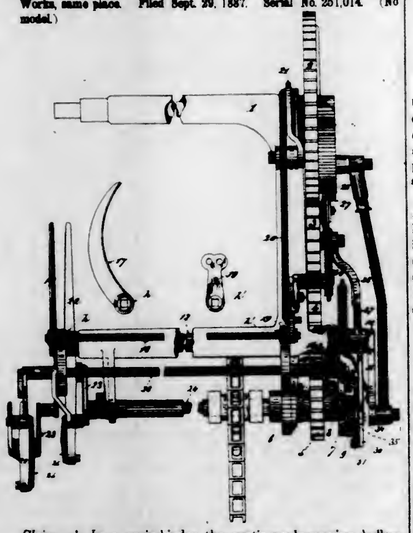
380,118. SHEDDING MECHANISM FOR LOOMS. GEORGE F. HUTCHINS, Worcester, Mass., assignor to the Knowles Loom Works, same place. Filed July 28, 1887. Serial No. 245,497. (No model.)



Claim.—1. In a loom, the combination, with the reciprocating jacks of a loom harness motion, cords passing over guide-sheaves, said guide-sheaves, and the sheave-shaft upon which they are supported, of an extension sheave-stand attached to said sheave-shaft, and supplementary sheaves supported on said stand, substantially as shown and described.

2. In a loom, the combination, with the sheave-shaft 9 and the sheaves 7, supported on said shaft 9, of the extension sheave-stand 14, provided with the hub 15 at its lower end, to be secured upon the sheave-shaft 9, and a stud, 17, at its upper end, upon which are supported the supplementary sheaves 18, and said sheaves 18, all constructed and combined together substantially as shown and described.

380,119. GRAIN-BINDER. SAMUEL V. KENNEDY and CHARLES A. ANDERSON, Minneapolis, Minn., assignors to the Minneapolis Harvester Works, same place. Filed Sept. 29, 1887. Serial No. 251,014. (No model.)



Claim.—1. In a grain-binder, the continuously-running hollow shaft 6, the drive-head 7, the rollers 8 and 9 on opposite sides thereof, the stop-dog 11 and the locking-dog 10, a driving sprocket-wheel adjustably mounted upon a square part of the shaft 6 to drive the same, the packer-shaft 24, mounted within the hollow shaft 6, the driving-head 29 and driving-dog 31 thereon, the stop-dog 34, the arms 37 and 38, locking-dog 27, the spring 39, and cam 28, whereby the binder when stopped is locked in position and the packers started, and whereby the packers are stopped and locked in position by the starting of the binder, in the manner set forth.

2. In a grain-binder, a clutching and locking device for the packers thereof, consisting of a packer-shaft, a driving-head thereon provided with quadrantal flanges, a driving-dog pivoted to the driving-head, and a stop-dog coacting therewith, combined and operating in the manner set forth, whereby when the driving-dog by collision with the stop-dog is rocked upon its pivot and disengaged from its driving member the stop-dog will enter the space opened between the driving-dog and the quadrantal flange to still further rock the driving-dog upon the pivot and securely lock the packer-shaft in position, as described.

3. In a grain-binder in which the binder proper and the packers work and rest alternately, the packer-shaft 24, quadrantal flanges 30, the driving-head 29, and the double driving-dog 31, having the cam-faces 36, in combination with the packer stop-dog 34, as and for the purposes described.

4. In a grain-binder in which the binder proper and the packers work and rest alternately, the packer-shaft 24, the driving-head 29, quadrantal flanges 30, and the double driving-dog 31, having the cam-faces 36, in combination with the packer stop-dog 34, having the upwardly-extending arm 37, the locking dog 27, having the downwardly-extending arm 38, and the cam 28 on the main gear, as described.

5. In a grain-binder wherein the binder proper and the packers thereof act and rest alternately, a double-crank packer-shaft, with packers thereon, a driving-head upon the packer-shaft, a double driving-dog pivoted to the driving-head, and suitable stopping mechanism coacting with the double dog, whereby either one of the two packers may be stopped in position to hold the accumulated gavel in advance of the path of the needles, substantially as described.

6. In a grain-binder, a torsionally-elastic compressor-shaft, in combination with a compressor at one end and a crank-arm at the other end, said compressor and crank-arm having hubs provided with angular openings adapted to fit on the ends of the compressor-shaft, and the said hubs being themselves seated in circular bearings formed in the binder-frame, substantially as described.

380,120. PAINT-BRUSH BRIDLE. AARON B. KIEFLER, Aquashicola, Pa. Filed June 16, 1887. Serial No. 241,526. (No model.)



Claim.—1. In clamps for paint and other like brushes, the combination, with the stationary section D, adapted to fit close down on and over the butt-end of the brush, and composed of an apertured head, *b*, side arms or posts, *c c*, and engaging band-strips *d d'*, of the adjustable sections E E, adapted to slide on or along the arms *c c*, and composed of arms or posts *k* and engaging band-stripe *l l'*, substantially as specified.

2. The sheet-metal section D of the brush-clamp, constructed with a central apertured head, *b*, having lips or projections *g*, side arms, *c c*, having side lips, *h*, and clip lips or guides *i i*, and band-strips *d d'*, having apertures *f* and engaging lips or hooks *e*, integral with the band-strips, in combination with the sliding sheet-metal sections E E, having side arms, *k*, provided with clip lips or guides *m* and band-strips *l l'*, having apertures *o* and engaging lips or hooks *n*, integral with the strips *l l'*, essentially as shown and described.

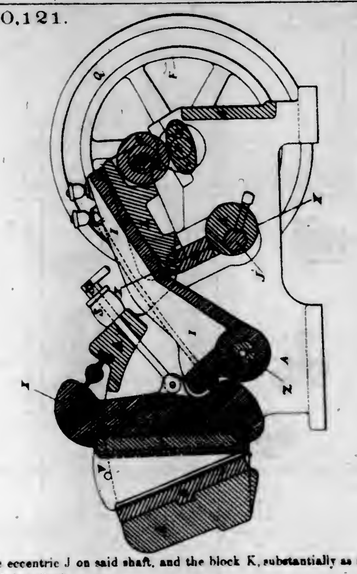
380,121. ROCK-BREAKER OR ORE-CRUSHER. JAMES H. LANCASTER, New York, N. Y. Filed Dec. 3, 1886. Serial No. 220,552. (No model.)

Claim.—1. In a rock-breaker or ore-crusher, the combination of the frame of the machine, the vibrating jaw, the toggle H, fastened to the main frame supporting said jaw, the thrust-piece X, the rocking lever I, operating said jaw, the cam-shaft P, the dog L, having a convex upper surface, and the cam R, substantially as described.

2. In a rock-breaker or ore-crusher, the combination of the frame of the machine, the connecting-rods passing through a portion of the main frame, having rubber blocks or springs mounted on one end thereof, the vibrating jaw, the toggle H, fastened to the main frame supporting said jaw, the thrust-piece X, the rocking lever I, operating said jaw, the cam-shaft P, the dog L, having a convex upper surface, and the cam R, substantially as described.

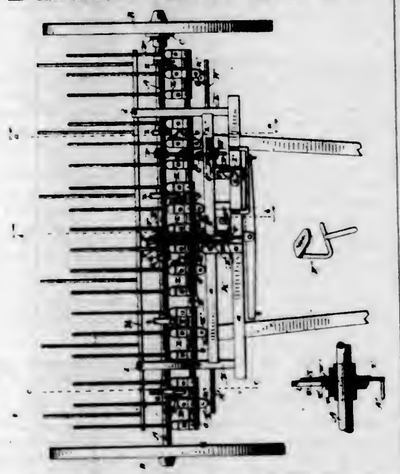
3. In a rock-breaker or ore-crusher, the combination, with the frame of the machine, the dog L, lever I, thrust-piece X, and vibrating jaw D, of means for limiting the throw of said jaw, consisting of the rod journaled in the side of the frame and provided with the hand-wheel E and worm *e*, the worm-wheel G, shaft J', carrying said wheel,

380,121.



the eccentric J on said shaft, and the block K, substantially as shown and described

380,122. COMBINED HAY RAKE AND TEDDER. ISRAEL L. LANDIS and ALBERT ISER, Lancaster, Pa.; said Iser assignor to said Landis. Filed Oct. 27, 1887. Serial No. 253,529. (No model.)



Claim.—1. The combination, with the axle provided with a ratchet-wheel, of the ground-wheel journaled upon the axle and having secured to it the plate C, the latter being provided with the extension D and perforated ear E, the spring-actuated pawl pivoted to the plate C and engaging the ratchet-wheel on the axle and provided with the outwardly-extending arm H and curved pin I, which latter passes through the perforated ear E, the spring for actuating the pawl, and the pivoted hook J, all arranged substantially as and for the purpose set forth.

2. The combination of the rake-shaft, the rake-heads composed of clamping-plates bolted together so as to embrace the rake-shaft and be held thereon, said clamping-plates being provided with recesses V in their contiguous faces, perforated yielding bearing-blocks inserted in the recesses in the contiguous faces of the clamping-plates, and rake-teeth passing through the perforations in the bearing-blocks and held between the clamping-plates, whereby a limited yielding movement of the rake-teeth is permitted, substantially as described.

3. The combination of the clamping-plates provided with enlarged grooves T in their contiguous faces for the reception of the rake-teeth, these plates being also provided with recesses V, located near their rear ends and intersecting the grooves T, the perforated elastic bearing-blocks W, inserted in the recesses V, and the rake-teeth passing through the perforations in the said bearing-blocks and resting in the enlarged grooves T, whereby the rake-teeth are allowed a limited yielding movement, substantially as described.

4. The combination of the clamping-plates provided on their contiguous faces with enlarged grooves T, terminating at their forward ends in circular depressions U, the said plates being also provided with recesses V, located near their rear ends and intersecting the grooves T, perforated elastic bearing-blocks inserted in the recesses V and held between the clamping-plates, the rake-teeth resting in the enlarged grooves T and passing through the perforated elastic bearing-block and having their rear ends bent so as to fit the depressions U at the termination of the grooves T, and the bolts *c*, passing through the center of the depressions U and serving to secure the clamping-plates together and hold the rake-teeth in place, substantially as and for the purpose described.

5. The combination of the axle mounted upon wheels and provided with tappets, the frame mounted on the axle and endwise movable thereon, the grooved collar D', secured upon the axle, the horizontal lever B', pivoted to the frame and engaging the grooved collar upon the axle, the upright hand-lever E', pivoted to the frame and engaging with the said horizontal lever, the gravitating locking-hook F', pivoted to the said upright lever E' and provided with the extension G', and the rake-shaft and the rake-heads, substantially as described.

6. The combination of the frame suitably mounted, the rake-shaft N, journaled in the frame, the independent rake-sections, each one of which is provided with a forward extension, R, the rake-shaft H', journaled in the frame of the machine in front of the rake-shaft and running parallel therewith, the said shaft H' being provided with the rearwardly-extending arms K', which are adapted to impinge upon the under side of the forward extensions R of the rake-sections, and the foot-lever I', pivoted to the frame and connected to the rock-shaft H', whereby the same is operated, substantially as described.

7. The combination of the frame mounted upon suitable wheels, the rake-shaft journaled in the frame and provided with the arm O', the lever M', connected to the arm O', the rake-sections upon the said rake-shaft, the standard mounted upon the frame and provided with a pin, Q', and the plate P', connected to the said arm O' and provided with a longitudinal slot terminating at its rear end in short downwardly-directed slot R', the said pin Q' being adapted to work in the slots in this plate, substantially as described.

8. The combination of the axle, the loose disk mounted thereon and provided with an arm, U', the pawl pivoted to this arm and provided with the downwardly-extending arm, which in turn is provided with a lateral pin, A'', the ratchet-wheel upon the axle adjacent to the said loose disk, the rake-shaft provided with the upwardly-extending arm O' and the depending arm B'', the former being connected to the arm U' and the latter being adapted to strike the downwardly-extending arm of the pawl Y', the rake-sections upon the shaft, the spring-actuated sliding bar C'', for engaging the pin A'', and the foot-lever for operating the said bar C'', all substantially as described.

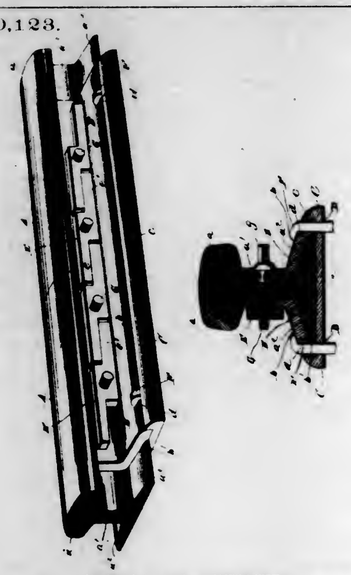
9. The combination of the axle, the ratchet-wheel secured thereon, the pawl Y', pivoted on an arm, U', loosely supported upon the axle, means for throwing said pawl into engagement with the ratchet-wheel, the rake-shaft provided with an upwardly-extending arm, O', and a depending arm, B'', the latter being adapted to strike the pawl Y' and disengage it from the ratchet-wheel, and the links X', connecting the said arms U' and O' together, substantially as described.

380,123. NUT-LOCK. WILLIAM A. LEECH and GEORGE W. FOGLE, New Comerstown, Ohio. Filed Dec. 21, 1887. Serial No. 258,617. (No model.)

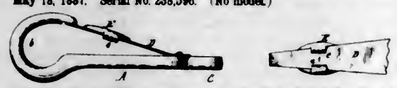
Claim.—1. In a nut-lock, the combination, with the rails, fish-plates, and bolts, of the rectangular nuts on each side of the meeting ends of the rails and provided with the extensions *e e*, respectively, at their upper and lower opposite corners, which extensions have half of the width of the nuts and are sufficiently long to prevent the nuts from turning out of line to any appreciable degree without impinging either on the rail-head or the flange of the fish-plate, substantially as specified.

2. In a nut-lock, the combination, with the rails and fish-plate, of the bolts having their untapped ends squared, and collars adjoining said ends to rest on the adjacent fish-plate, and the rectangular nuts E, having the rectangular extensions *e e*, which prevent the nuts from turning out of line to any appreciable extent, substantially as specified.

380,123.

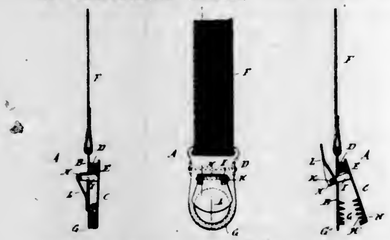


380,124. SNAP-HOOK. JOSIAH LETCHWORTH, Buffalo, N. Y. Filed May 18, 1887. Serial No. 238,596. (No model.)



Claim.—The combination, with the hook and the flat spring which closes the mouth of the hook, of an independent thumb-piece, E, applied to the outer side of the spring and provided with lateral ears *e e*, which are closed against the under side of the spring, substantially as set forth.

380,125. CLASP. ANNIE LEWIN, Galveston, Tex. Filed Aug. 17, 1887. Serial No. 247,178. (No model.)

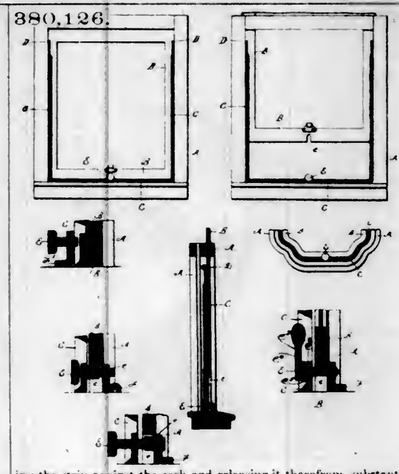


Claim.—As an improved article of manufacture, a clasp consisting of the front plate, B, formed with the integral strap loop or slot at its upper end, the side ears, B' B', near its upper end, the teeth G' at its lower end, and the opening G^2 above said teeth, the rear plate, C, formed with integral teeth G' at its lower end, side ears, C' C', at its upper end, and the lugs I I below said ears and projecting beyond the outer face of the plate B, the spindle D, passing through the ears B' C' and provided with a spring throwing the plates apart, and the locking-plate L, pivoted at its upper end to the lugs I and having a lug, N, projecting inward from said upper end and bearing on the outer face of the front plate, B, the lower edge of the locking-plate extending across the opening G^2 and serving as a finger-piece, substantially as set forth.

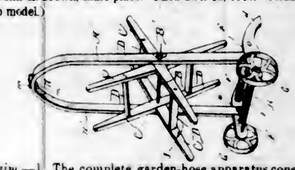
380,126. ATTACHMENT FOR WINDOWS. CHARLES C. MACKUBIN, Baltimore, Md. Filed Dec. 22, 1887. Serial No. 258,651. (No model.)

Claim.—A window-sash, in combination with a swinging strip passing around the sides and bottom of the sash, and means for pressing the strip against the sash and releasing it therefrom, substantially as described.

380,126.



380,127. HOSE-REEL. IVES W. MCGAFFEY, Chicago, Ill., assignor to John H. Brown, same place. Filed Dec. 12, 1887. Serial No. 257,680. (No model.)



Claim.—1. The complete garden-hose apparatus consisting of the reel made of four cross-bars halved together and having the four parallel bars D, mounted at the through-rod axle B in a bent frame consisting of the arch A and uprights A', and having the thumb-nut B', said upright being mounted in foot-pieces E, framed together by rods F, and through-axle H, upon which are the loose wheels G, all substantially as specified.

2. In combination with the garden-hose-reel apparatus perforated at its upper part for the passage of a bolt, the nozzle-holder cast in two pieces, *n n'*, each consisting of an arm and enlargement or head, the two heads being coincidently perforated for the passage of the bolt, the two surfaces of these heads where they come in contact being curved, as shown and described, and the bolt *m* and thumb-nut *m'*, substantially as specified.

3. The garden-hose-reel apparatus consisting of the bent upright frame carrying the reel on a through-axle rod and halved into the bottom frame, consisting of the curved foot-pieces E E *e e*, rods F, through-axle H, and wheels G, substantially as specified.

380,128. DITCHING-MACHINE. JOHN C. MCLAUGHLAN, Chicago, Ill., assignor to Arnold Hoenigsberger, same place. Filed Mar. 14, 1887. Serial No. 230,891. (No model.)

Claim.—1. In a ditching-machine, the combination, with an excavating drum or roller in the form of a conic frustum and set on an incline, of a series of excavating-buckets arranged in rows encircling the periphery of said drum, said rows being disposed at intervals, substantially as described.

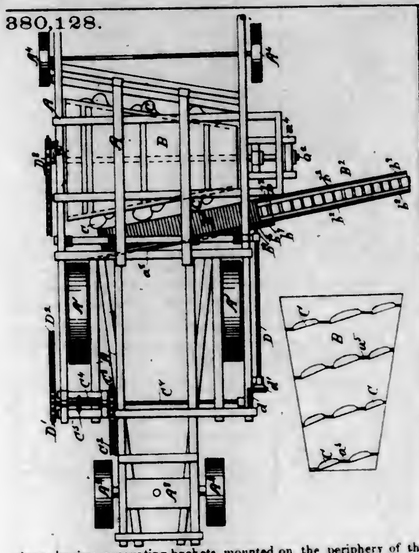
2. In a ditching-machine, the combination, with a conical-shaped excavating-drum, as described, of a series of excavating-buckets arranged upon the periphery of said drum in a number of continuous rows, said buckets having curved cutting-edges and being placed endwise relative to each other and at right angles, or nearly so, to the axis of the excavating-drum, substantially as set forth.

3. In a ditching-machine, the combination, with the excavating-drum, of the series of buckets C and the connecting-plates a^5, substantially as and for the purpose set forth.

4. In a ditching-machine, the combination, with the excavating-drum, of a series of excavating-buckets arranged end to end and encircling said drum in rows, and the bracket or brackets a^4, substantially as set forth.

5. In a ditching-machine, the combination, with the excavating-

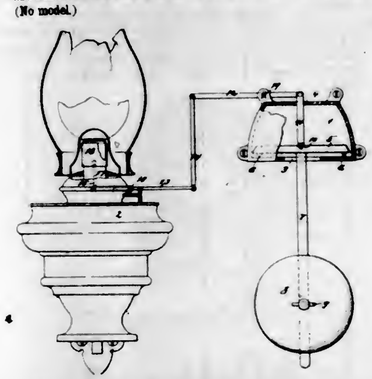
380,128.



drum having excavating-buckets mounted on the periphery of the same, of the endless conveyer B' and the grading-leg B^3, the traveling scrapers a^7, and the means described for transmitting motion to said conveyer and the grading mechanism, all substantially as and for the purpose set forth.

6. In a ditching-machine, the combination, with a conical excavating-drum, of a series of excavating-buckets arranged spirally upon the circumference of said drum, and with their cutting-edges at right angles to the same, and the scraper E, located back of said drum, substantially as set forth.

380,129. LAMP-EXTINGUISHING APPARATUS. JOSEPH MILLER and FRANK R. PAGE, Olean, N. Y. Filed Apr. 7, 1887. Serial No. 234,012. (No model.)



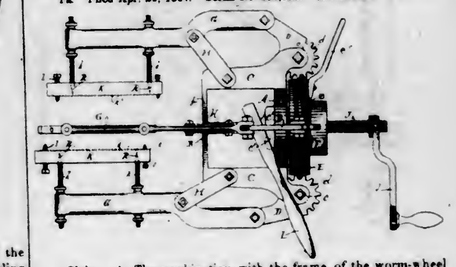
Claim.—1. A device for extinguishing lamps, the same consisting of an apertured casing, a cross-head mounted upon pivots within said casing, having a pendent stem and a weight adjustably secured upon said stem, a vertical rod extending above the casing at one end and bearing upon the cross-head at the other intermediately of its said pivots, and a lever-connection between said vertical rod and a sleeve adapted to slide over a wick-tube, substantially as shown and described.

2. In a device for extinguishing lamps, the combination, with a casing and a sleeve, the latter adapted to slide over a wick-tube, of the cross-head provided with pendent pivots near its outer edges and arranged within said casing, a central weighted pendant, the vertical rod having a pointed lower end bearing in a groove arranged intermediately of said pivots of the cross-head, and the lever-connection between said vertical rod and wick-tube sleeve, substantially as and for the purpose set forth.

3. The combination, with a lamp and the wick-tube thereof, of the casing 1, the cross-head 5, provided with pendent pivots near its outer edges, and having an attached pendant, weighted stem 7, a vertical bar, 11, pivoted in said cross-head intermediately of said pivots, a sleeve, 16, adapted to slide upon the wick-tube, and a pivotal connection between said bar and sleeve, substantially as shown and described.

4. The combination, with a lamp and the wick-tube thereof, of the casing 1, having apertures 3 and 4, and the cross-head 5, provided with pivot-rests 6, an upper central groove, 10, and an integral pendent stem, 7, carrying an adjustable weight, 8, a vertical bar, 11, pivoted in said groove 10 intermediately of said pivot-rests, and a lever-connection between said bar and sleeve, substantially as shown and described.

380,130. CENTERING DEVICE. SIMON R. MUNICH, Landisville, Pa. Filed Apr. 29, 1887. Serial No. 236,535. (No model.)



Claim.—1. The combination, with the frame, of the worm-wheel E, levers D, engaging said worm-wheel and arms G, arms G, supporting clamps K and links H, and said clamps K, constructed and operated substantially as specified.

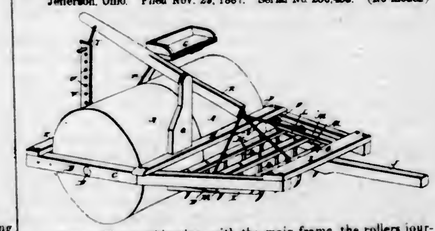
2. The combination, with the arms G, pivoted to the frame by the links H and levers D, said levers being actuated by the worm-wheel E, and the worm-wheel E, of the clamps K, each secured to the arm G at two points, substantially as and for the purpose specified.

3. The combination, with the plate A and spider B of the frame and the bit working through the same, of the feed-lever L, connected with said bit to feed it forward, substantially as specified.

4. The combination, with the frame, of the worm-wheel E, levers D, engaging said worm-wheel and arms G, arms G, carrying clamping devices for holding articles to be centered, and links H, substantially as and for the purpose specified.

5. The combination, with the bit-holding frame, of forwardly-projecting arms, each pivoted to the said frame at two points and carrying clamping devices, and mechanism attached to the bit-holding frame for adjusting said arms simultaneously, substantially as and for the purpose specified.

380,131. LAND-ROLLER AND HARROW. LUCIUS B. PHELPS, Jefferson, Ohio. Filed Nov. 29, 1887. Serial No. 256,453. (No model.)

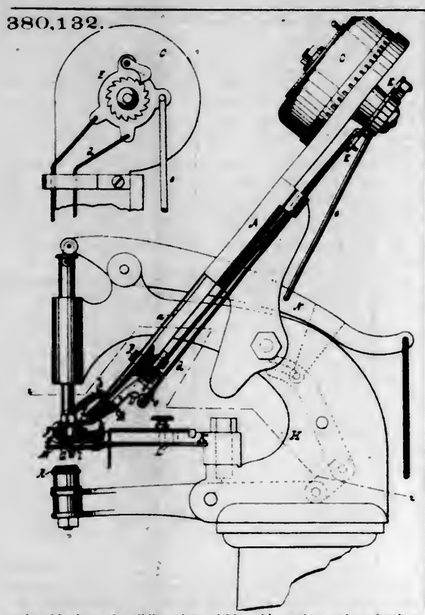


Claim.—The combination, with the main frame, the rollers journaled in the rear portion thereof, the seat with its standard rising from the rear portion of the main frame and standing over the rollers, and the harrow swung in the front part of the main frame by the chain O and links P, of the upright *a*, the lever R, pivoted on said standard, the link-rods S, the standard U, provided with the perforations V, and the hook T, substantially as specified.

380,132. RIVET-SETTING MACHINE. CLARK M. PLATT and FRANK R. WHITE, Waterbury, Conn., assignors to the Patent Button Company, same place. Filed Oct. 26, 1887. Serial No. 253,444. (No model.)

Claim.—1. In a rivet-setting machine provided with a chute for feeding the rivets to the plunger, which chute has an opening in the

380,132.



under side thereof, a sliding plate within said opening, and mechanism, substantially as described, for causing the edge of said plate to alternately lie flush with and project somewhat above the bottom of the raceway, as and for the purpose set forth.

2. In a rivet-setting machine, the combination of the chute A, having the slot *a*, the end C, having the channel *f*, whose bottom at the upper extremity of the end C is higher than the bottom of the slot *a* at its lower extremity, and the sliding plate B, having a perforation, *b*, that is made to register alternately with the slot *a* and the channel *f*, said parts being constructed to operate in the manner described.

3. In a rivet-setting machine provided with a chute for feeding the rivets to the plunger, the combination of the perforated and sliding plate B, arranged crosswise to the chute near its mouth, the bell-crank lever D, the rod *d*, extending from said lever to the pawl-plate E, and the spring *e*, as and for the purpose described.

4. In a rivet-setting machine, the combination of the receiver F, having a central orifice, and the pivoted guide-plates G and G', having an opening, *g*, with beveled sides *h*, which guide-plates extend under said receiver and prevent the free passage of the rivet through said orifice, substantially as and for the purpose described.

5. In a rivet-setting machine, the combination of the receiver F, having a central orifice, and the pivoted guide-plates G and G', having an opening, *g*, with beveled sides *h*, which guide-plates extend under said receiver and prevent the free passage of the rivet through said orifice, and are connected by the spring *k*, as and for the purpose described.

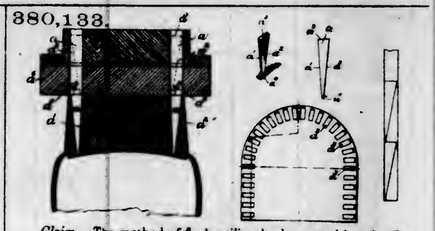
6. In a rivet-setting machine, a receiver provided with pivoted guide-plates G and G', constructed to operate as described, and having wings i i, for the purpose set forth.

7. In a rivet-setting machine, the combination of the spring L, having the fork *l*, and the plate M, having the opening *m* and supported in the fork *l* by trunnions, between which plate and the anvil of the machine the goods are clamped during the process of setting the rivet, as and for the purpose described.

8. In a rivet-setting machine, an anvil consisting of the combination of a die having a face, *r*, a shoulder, *s*, and a stem, *t*, a coil-spring, *w*, surrounding said die and bearing upward against the under side of the face portion, and a part, Z, provided with a recess, *v*, and a channel, *u*, which recess has rigid walls and contains the face *r*, shoulder *s*, and upper part of the stem *t* of the die, and the spring *w*, as and for the purpose described.

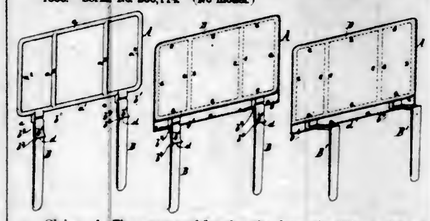
380,133. METHOD OF FLUSH-NAILING THE HEELS OF BOOTS OR SHOES. FREDERIC F. RAYMOND, 2d, Newton, Mass. Filed Jan. 19, 1888. Serial No. 261,236. (No model.)

380,133.



Claim.—The method of flush-nailing heels, comprising the forming of attaching-nails with a straight edge, *a'*, and an inclined edge, *a*³, and arranging said nails in guiding-holes of the templet or pressure-plate with the inclined edges outermost, and driving said nails from said guiding-holes into the heel-blank, substantially as described.

380,134. PROCESS OF MANUFACTURING VEHICLE-DASHERS. WILLIAM C. REYNOLDS and JOHN SMITH, Columbus, Ohio. Filed Jan. 7, 1888. Serial No. 260,114. (No model.)

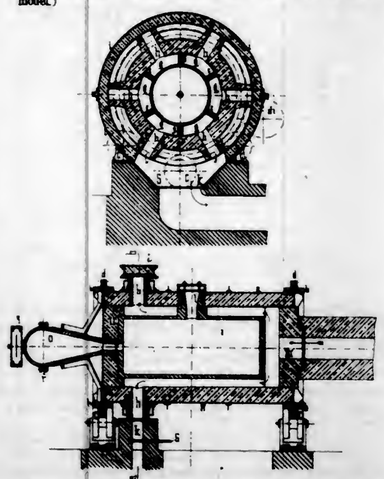


Claim.—1. The process of forming the determined lines of bend in the feet of vehicle-dashers.

2. The process of forming the determined lines of bend in the feet of vehicle-dashers and of sewing the leather covering upon the vehicle-dashers before the feet are bent to the form or condition suitable for their application to vehicle-bodies.

3. The process of first forming the determined lines of bend in the feet of vehicle-dashers, then sewing the leather covering upon the dash-frame before the feet are bent, and, lastly, bending the metal to form the feet after sewing the covering upon the dash-frame, substantially as described.

380,135. ROTARY AND OSCILLATING APPARATUS FOR DISTILLING METALLIC ORES. WILHELM RICHTER, Eintrachthütte, near Schwientochlowitz, and RUDOLF LORENZ, Radzionkau, near Beuthen, Prussia, Germany. Filed Nov. 24, 1886. Serial No. 183,838. (No model.)

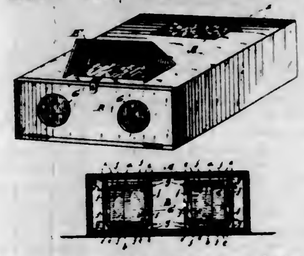


Claim.—1. The described apparatus, consisting of the cylindrical shell having an opening in one end to admit the heating-blast and an opening in the other end for the exit of the vapors from the retort, said shell being supported on rollers and provided with cog-rings and pinions for turning it and having radially-arranged channels leading from its interior outward, and an opening for the admission of the charge, in combination with a retort, *c*, supported within the shell, with a space about it connected with the inlet-passage for the blast, a fixed collecting-canal arranged over the canals *h* and communicating therewith as the cylinder is turned, and a suitable discharge-passage from the collecting-canal, substantially as described.

2. The described apparatus, consisting of the cylindrical shell having an opening in one end to admit the heating-blast and an opening in the other end for the exit of the vapors from the retort, said shell being supported on rollers and provided with cog-rings and pinions for turning it and having radially-arranged channels leading from its interior outward, and an opening for the admission of the charge, in combination with a retort, *c*, supported within the shell, with a space about it connected with the inlet-passage for the blast, a fixed collecting-canal arranged over the canals *h* and communicating therewith as the cylinder is turned, and a suitable discharge-passage from the collecting-canal and also combined with a condensing-chamber, substantially as described.

3. The described apparatus, consisting of the cylindrical shell, having an opening in one end to admit the heating-blast and an opening in the other end for the exit of the vapors from the retort, said shell being supported on rollers and provided with cog-rings and pinions for turning it and having radially-arranged channels leading from its interior outward, and an opening for the admission of the charge, in combination with a retort, *c*, supported within the shell, with a space about it connected with the inlet-passage for the blast, a fixed collecting-canal arranged over the canals *h* and communicating therewith as the cylinder is turned, and a suitable discharge-passage from the collecting-canal and also combined with a condensing-chamber, and a zinc-dust collector, substantially as described.

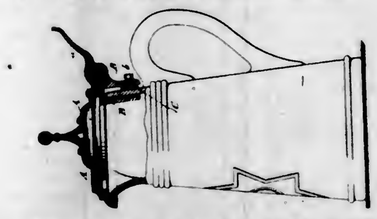
380,136. PHOTOGRAPHIC DARK-CHAMBER. EMIL H. RIEDEL, New York, N. Y. Filed Dec. 15, 1887. Serial No. 257,906. (No model.)



Claim.—1. The combination, with the box A, having a door, B panes C D of non-actinic colored glass, and armholes G G, of the elastically-supported flaps *a b c d*, substantially as described.

2. The box A, having a red-colored glass pane, C, an orange-colored glass pane, D, a screen, E, protecting the orange-colored pane, armholes G G, and elastically-supported flaps for closing said armholes, substantially as described.

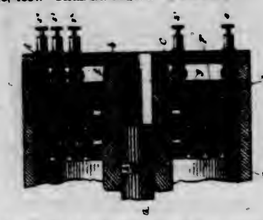
380,137. COVER FOR VESSELS. JOHN P. RIEPPEL, New York, N. Y. Filed Dec. 18, 1885. Serial No. 186,089. (No model.)



Claim.—1. A cover for vessels, consisting of a lid having a handle, a U-shaped clasp hinged to the handle, the prongs of said clasp being adapted to straddle the rim of the vessel, and a clamping-screw which engages a threaded hole in one prong of said clasp and binds on said vessel so as to hold the cover in place, substantially as set forth.

2. The combination of a vessel having a fixed washer-plate below the rim of the same, a lid having a handle, a U-shaped clasp hinged to said handle and adapted to straddle the rim of the vessel and its washer-plate, and a clamping screw or screws engaging a threaded hole or holes of one prong of said clasp and binding on the washer-plate so as to hold the lid in place, substantially as set forth.

380,138. INDUCTION-COIL. ELIAS E. RIES, Baltimore, Md. Filed July 15, 1887. Serial No. 244,367. (No model.)



Claim.—1. In an induction apparatus, a compound conductor, one member inclosing but insulated from the other, the inclosing member being formed of a single piece of conducting material, the axis of the compound conductor extending circumferentially about a central line of the apparatus.

2. In an induction apparatus, a compound primary and secondary conductor, one member inclosing but insulated from the other, the inclosing member being formed of a single piece of conducting material, said compound conductor forming a helix about a central line of the apparatus.

3. In an induction apparatus, a compound primary and secondary conductor, one member inclosing but insulated from the other, the inclosing member being formed of a single piece of conducting material, the axis of the compound conductor extending circumferentially about a central line of the apparatus, said compound conductor being inclosed in an insulating-sheath.

4. In an induction apparatus, a compound primary and secondary conductor, one member inclosing but insulated from the other, the inclosing member being formed of a single piece of conducting material, the axes of the two being coincident and extending circumferentially about a central line of the apparatus.

5. In an induction apparatus, the combination of an iron core and a compound primary and secondary conductor surrounding said core, one member of the compound conductor inclosing but insulated from the other, the inclosing member being formed of a single piece of conducting material.

6. An induction-coil provided with a tubular iron core and a supplemental iron core sliding within the tube, whereby the limit of saturation of the magnetic system may be varied.

7. In an induction-coil, the combination of an iron core, iron flanges on the ends of the core, and an inclosing iron tube surrounding the coil in magnetic circuit with the flanges, the tube connecting with the flanges by a screw-joint.

8. In an induction-coil, the combination of an iron core, iron flanges on the ends of said core, and an iron casing engaging the flanges, one of said flanges being provided with detents for an unlocking-key.

9. A coil of insulated wire having one or more terminal turns of its layers bent out of its plane of curvature, whereby contact may be readily made with the layer of the coil containing said exposed portion.

10. The combination, with an iron core and its coiled exciting-conductor, of a radial projection secured to the core, a series of end turns of the coil being carried around the projection, whereby the layers of the coil may be connected in circuit as desired.

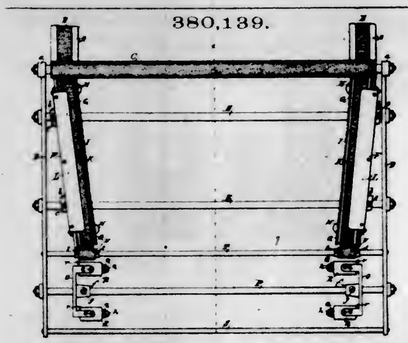
11. The combination, with an iron core and its coiled exciting-conductor, of an end disk secured to the core, said disk being provided with radial slots, and a series of end turns of the coil being carried around the web between the slots.

12. In an induction-coil, the combination of the primary and secondary windings, a central iron core, flanges on said core, an iron inclosing-cylinder detachably secured to the flanges, a slotted disk located between one flange and the coils, through which the end turns of the layers project, and binding-posts secured on said flange, engaging the projecting end turns when the flange is adjusted into position.

380,139. FEEDING MECHANISM FOR CLOTH-FINISHING MACHINES. JOSEPH J. SCHOLFIELD, Providence, R. I. Filed Nov. 27, 1886. Serial No. 220,092. (No model.)

Brief.—The mechanism consists of a pair of obliquely-set spur-belts, with or without superimposed spur-rollers for pressing the fabric upon the spurs of the belts. Said belts are preceded by temple-rollers held in pivoted frames, which are swung by the traction of the cloth whenever the same runs to one side or the other, whereby the cloth is caused to travel in an approximately true line to the finishing-machine. The temple-roller may be operated by regulating mechanism and power dispensed by the machine instead of by the traction force of the cloth.

380,139.



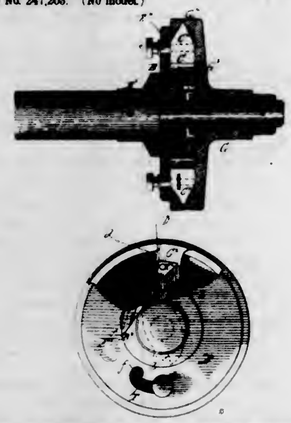
Claim.—1. The combination, with the obliquely-set spur-belt adapted to stretch the web widthwise, of the pivoted temple-roller adapted to deliver the edge of the web to the spurs of the belt in an approximately true line, substantially as described.

2. The combination, with the obliquely-set spur-belt, of the supplemental spur-rollers arranged at right angles to the axis of the spur-belt for holding the edge of the web upon the spurs of the belt, substantially as described.

3. The combination, with the obliquely-set spur-belt, of the pivotally-held temple-roller adapted to deliver the edge of the web to the spurs of the belt in an approximately true line and the intermediate roller for pressing the edge portion of the web against the spurs of the belt, substantially as described.

4. The combination, with the pivoted temple-roller frame provided with the wedge-shaped groove for applying friction to the edge of the web to cause the proper guidance of the same, of the temple-roller for guiding the edge of the web, substantially as described.

380,140. **FRICTION-CLUTCH.** SYLVANDER C. SHEPARD, Akron, Ohio, assignor of one-half to R. D. Carr, same place. Filed Aug. 17, 1887. Serial No. 247,208. (No model.)



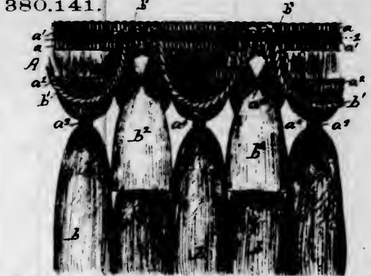
Claim.—1. The slotted carrying-disk, the pawls supported in semi-circular recesses therein to move in the arc of a circle of which their pivots are the center, and with their outer faces made V-shaped, said faces being on a circle substantially concentric with the main shaft when in clutching or operating position, and the pins projecting from the pawls to engage the slots in the disk, in combination with the inclosing-case provided with V-shaped grooves, substantially as described.

2. The combination of the carrying-disk provided with slots having offset ends, the pawls supported by said disks, the springs for connecting the pawls with the disk, the studs or pins, and the inclosing-case, substantially as described.

380,141. **FRINGE.** JOSEPH SIEGEL, Chicago, Ill. Filed Mar. 29, 1887. Serial No. 232,633. (No model.)

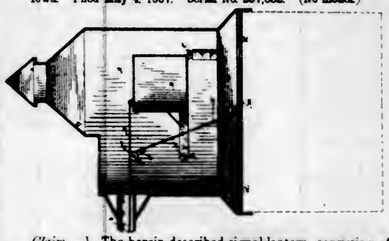
Claim.—A fringe consisting of an underskirt or web terminating in the tassels or pendants *b*, the festooned cord *b'*, woven into the web by the warp-threads *a'*, and the over tassels or pendants b^2, looped over

380,141.



the cord *b'* and woven to the underskirt by the warp-threads a^2, whereby the parts are retained in their proper relative position, substantially as set forth.

380,142. **SIGNAL-LANTERN.** WILLIAM H. SMITH, Tama City, Iowa. Filed May 4, 1887. Serial No. 237,032. (No model.)

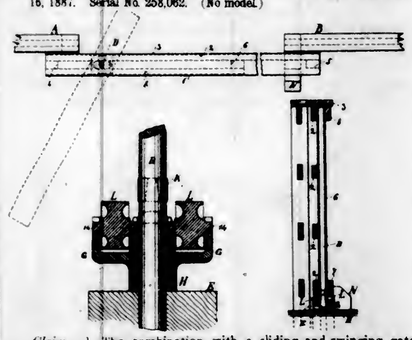


Claim.—1. The herein-described signal-lantern, consisting of the box or casing having a rearward tubular extension, the signal-glass frame having a detachable pivoted arm, the cord or wire connected to said frame, and the signaling-board hinged to one side of said box or casing, and the cord or wire connected to said board, substantially as shown and described.

2. The combination, with the lantern having the ordinary bull's-eye, of the signaling-glass having a frame provided with a detachable slotted extension-arm, the pivotal cross-rod, and the operating cord or wire arranged to operate substantially as shown and described.

3. The combination, with the lantern and the pivotal cross-rod, of the signaling-glass, the frame having a slotted arm, the rubber stops, and the operating cord or wire, all arranged substantially as shown and described.

380,143. **FARM-GATE.** SAMUEL SMYTH, Pittston, Pa. Filed Dec. 16, 1887. Serial No. 258,062. (No model.)



Claim.—1. The combination, with a sliding and swinging gate having a sill-piece, 7, and rail 2 at its lower edge, of a round vertical pivot-bar passing through the slot between said sill-piece and rail, a post passing down into the ground for supporting the pivot-bar, and a base-piece around the pivot upon which the sill-piece and rail of the gate rest, and upon which the gate can be slid endwise, substantially as set forth.

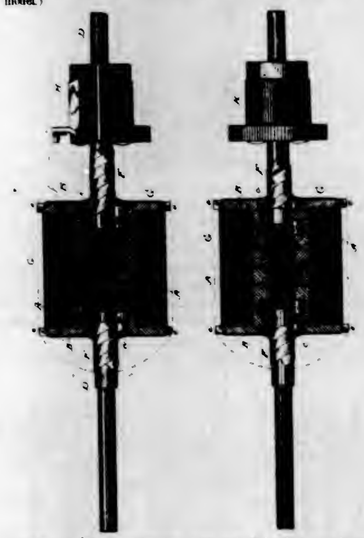
2. The combination, with the gate having the rails 2, the sill-piece 7 at the bottom, and the auxiliary rail 8 at or near the top, of the vertical pivot D, passing into the slots between the respective rails

and sill-piece of the gate, and upon which the gate can be slid endwise, the post buried in the ground and supporting the pivot, the base-piece around the pivot and upon which the gate rests, and rollers upon the base-piece for supporting the weight of the gate, substantially as set forth.

3. The combination, with a swinging and sliding gate, of a round vertical pivot-bar passing through the slots between the rails of the gate, the base-piece around the pivot-bar, rollers for supporting the gate, and rollers passing into the slot at the bottom of the gate, so that the base-piece is swung with the gate in opening and closing the same, and supports the gate when slid endwise, substantially as set forth.

4. The combination, with the gate and the pivot-bar D, of a base-piece surrounding such pivot-bar, and having bearings and pivots, and the two rollers L at opposite sides of the pivot-bar, having horizontal axes for supporting the gate, and two rollers, K, having vertical axes for guiding the gate as it is moved endwise, substantially as specified.

380,144. **DYNAMO-ELECTRIC MACHINERY.** FRANK J. SPRAGUE, New York, N. Y., assignor to the Sprague Electric Railway and Motor Company, same place. Filed Apr. 8, 1887. Serial No. 234,116. (No model.)



Claim.—1. The combination, with a shaft having upon it two opposite screw-threads, of an armature-core thereon composed of thin metal plates, and clamping end plates having screw-threads corresponding, respectively, with those on the shaft, between which the thin plates are compressed and held closely together, substantially as set forth.

2. The combination, with a shaft having upon it two opposite screw-threads meeting at the middle point of the shaft, of an armature-core thereon composed of thin metal plates, and clamping end plates provided with hubs having internal screw-threads corresponding, respectively, to those on the shaft, said end plates being screwed upon the shaft so that said thin plates are compressed and held closely together between them, substantially as set forth.

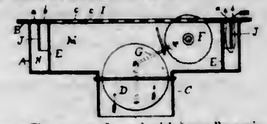
3. The combination of a shaft, an armature-core thereon having recesses in its ends around the shaft, and insulating-wrappings on the shaft entering said recesses, substantially as set forth.

4. The combination of a shaft, an armature-core having recesses in its ends around the shaft, insulating-wrappings on the shaft entering said recesses, and an insulating-covering upon the core meeting said wrappings at the ends thereof, substantially as set forth.

5. The combination, with the shaft having opposite screw-threads, of the core composed of thin metal disks, the end plates having screw-threads corresponding, respectively, to those on the shaft, said end plates being screwed upon the shaft so that said thin plates are compressed and held closely together between them, and the locking-nuts, substantially as set forth.

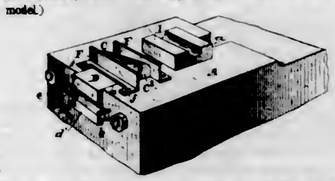
6. The combination, in an armature-core, of the thin plates massed together, clamping devices therefor, and the loose stay-bolt, substantially as set forth.

380,145. **HOT-AIR REGISTER.** JOHN SPRINGER, Clinton, assignor of one-half to Martin C. Moore, Prairie du Sac, Wis. Filed June 3, 1887. Serial No. 240,153. (No model.)



Claim.—The case A, formed with laterally-projecting flange B, collar C, and partition E, forming an inner chamber, N, and an outer chamber, M, combined with the perforated top provided with large perforations over the inner chamber and smaller perforations over the outer chamber, and with a pendent flange, J, extended vertically between the partition E and the outer wall of the case A, substantially as and for the purpose specified.

380,146. **DIE FOR MAKING TWIST-DRILLS.** ALBERT W. TABER, New Bedford, Mass. Filed May 4, 1887. Serial No. 237,112. (No model.)

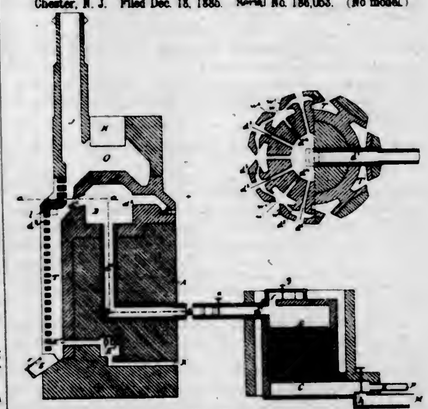


Claim.—1. In a machine for making twist-drills, an anvil-block having a recess in its upper front edge angular at the rear of its larger part, the fuller C, made as described, the angular metallic block D, the strap E, and the bolts *e*, substantially as and for the purpose set forth.

2. In combination with an anvil-block having the recess *a*, made angular, as described, the fuller C, confined in position, as set forth, and the adjustable guides F on each side of the fuller.

3. An anvil-block having a recess made angular at the rear, as described, and a fuller adapted to fit in said recess, the angular block D, and strap and bolts securing the same upon the fuller to hold it in place, combined with a hammer-head fitted in like manner with a fuller, substantially as and for the purposes set forth.

380,147. **METALLURGICAL FURNACE.** WILLIAM J. TAYLOR, Chester, N. J. Filed Dec. 18, 1885. Serial No. 186,053. (No model.)

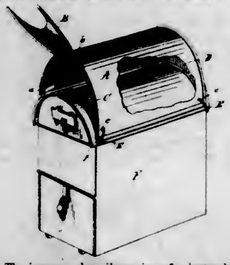


Claim.—1. The combination, with a hot-air ore-roasting kiln having an ore-receiving chamber in the upper part of the kiln, an ore-cylinder extending downward into said chamber, a central hot-air receiving and distributing chamber and a conduit or flue communicating therewith, and ore-chambers arranged around the outer periphery of the kiln, with their working openings and flues, of one or more producers and regenerators and a flue communicating with radial discharging-conduits in said kiln for admitting and discharging successively and continuously currents of cold air into said ore-chambers, for the purposes set forth.

2. The combination, in a hot-air ore roasting and calcining kiln, of ore-chambers having working-openings, a central receiving and

distributing chamber and conduit communicating therewith, an offset, *l*, in the kiln for discharging the hot air circumferentially into the ore in the space formed by said offset and the slope of the ore, a flue communicating with radial conduits, whereby currents of cold air are admitted and discharged continuously into the ore-chambers, with one or more gas producers and regenerators, substantially as and for the purposes set forth.

380,148. LETTER-BOX. SMITH THOMPSON, Washington, D. C. Filed May 5, 1887. Serial No. 237,236. (No model.)



Claim.—1. The improved mail-receiver for letter-boxes, composed of the supplemental box A, open at one end and adapted to be placed against the outside of and secured to a letter-box, and having that portion of the letter-box adjacent to and opposite the supplemental box form a wall for said supplemental box, and the hinged door closing the open end of the supplemental box and adapted to close automatically when released, substantially as described, and for the purpose specified.

2. The herein-described attachment for letter-boxes, composed of the cover closed at one end and open at its opposite end, the brace extended between and uniting the lower ends or corners of the sides of said cover, and the door hinged at its upper end to the top of the cover and adapted to close automatically against the brace, substantially as set forth.

3. The herein shown and described attachment for letter-boxes, composed of the cover made of sheet material bent to form sides closed at one end and open at the opposite end, the curved brace extended between and uniting the lower ends or corners of the sides, the stops projected inward from the sides, and the door hinged at its upper end to the cover and adapted to close automatically, and having its lower edge curved to correspond with the brace, substantially as described.

4. The combination, with the letter-box having a flanged top, of the herein-described attachment, composed of the cover closed in at one end and having openings at its corners, the brace, the stops, and the hinged cover, and the wires passed through said openings and under the flanges of the letter-box top, substantially as and for the purpose described.

380,149. FILTER. JOHN TIBBOTS, Newark, N. J. Filed Oct. 8, 1887. Serial No. 251,796. (No model.)

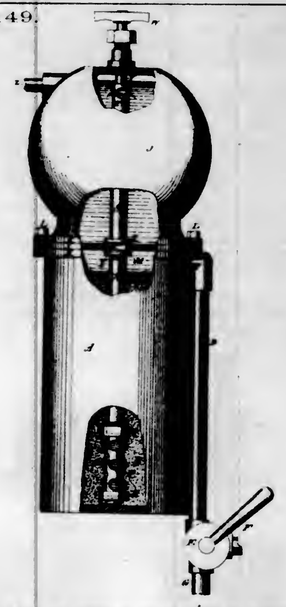
Claim.—1. In a filter, the main receptacle for the bed of filtering media, provided with an inlet for the water to be purified, combined with a reservoir for pure water, a pipe extending from the lower portion of the bed to said reservoir and having a screen on its lower end, and an additional pipe in communication with the aforesaid pipe and having an outlet in the upper part of the reservoir, the latter pipe being adapted to be disconnected from communication with the pipe first referred to when it is desired to cleanse the bed, substantially as set forth.

2. In a filter, the receptacle containing the filtering media and having an inlet-pipe, combined with the delivery-pipe located within said bed, the end of the delivery-pipe consisting of the section O, containing apertures, the coil of wire P, inclosed within said section, and means, substantially as described, for regulating the degree of compression in said coil of wire, substantially as and for the purposes set forth.

3. In a filter, the main receptacle having an inlet, the pure-water reservoir having an outlet, and a plate between said receptacle and reservoir and containing an opening, combined with the delivery-pipe extending downward into the filter-bed from said opening, the pipe within the reservoir adapted to be elevated from said opening, and a delivery from the reservoir, substantially as set forth.

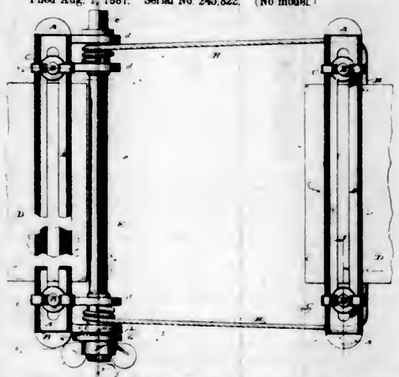
4. In a filter, the main receptacle having the inlet and the flange H, the plate I, having an opening and supported on the said flange, and the pure-water reservoir having flange K and secured in position by bolts, combined with the pipe N, vertically-movable pipe S, and a discharge-pipe from the reservoir, substantially as set forth.

380,149.



5. In a filter, the receptacle containing the bed of filtering media and having an inlet-pipe, combined with the delivery-pipe located within said bed, the end of the delivery-pipe consisting of an apertured section, O, screw-cap R, and inclosed coiled wire P, substantially as set forth.

380,150. BELT-CLAMP. WILLIAM D. VANDEGAR, Merrill, Wis. Filed Aug. 1, 1887. Serial No. 245,822. (No model.)



Claim.—1. In a belt-clamp, the combination of two sections, each comprising two longitudinally-slotted jaws the opposing faces of which are respectively concave and convex, set-bolts for holding the jaws upon a belt, and a windlass mechanism for drawing the clamp-sections toward each other, substantially as set forth.

2. In a belt-clamp, the combination of two sections, each comprising two longitudinally-slotted jaws, the lower jaw in each section having its slot laterally enlarged, bolts passed through both jaws in each section and having square-shouldered heads that engage the enlarged portions of the slot in said lower jaw, set-nuts arranged on the bolts, and a windlass mechanism for drawing the clamps toward each other, substantially as set forth.

3. In a belt-clamp, the combination of two sections, each comprising two longitudinally-slotted jaws, set-bolts for holding the jaws upon a belt, the lower jaw in one of the sections provided with ears, a spindle journaled in the ears, a wire cable or other flexible connection uniting the spindle and opposite clamp-section, and a clutch for holding said spindle against reverse movement, substantially as set forth.

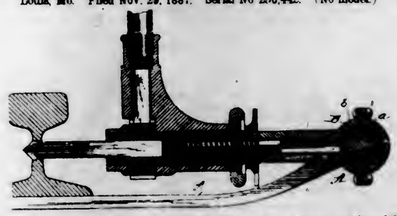
4. In a belt-clamp, the combination of two sections, each comprising an upper and lower jaw, set-bolts for holding the jaws upon a belt, the lower jaw of one section provided with perforated ears, one of which has a series of radial depressions in its outer face, a spindle journaled in said ears and having one of its ends provided with longitudinal grooves, a disk arranged on said spindle and having lugs that fit the spindle-grooves, a series of radial projections to engage the depressions in said ear, a set-nut arranged on said spindle to adjust the disk, and a wire cable or other flexible connection uniting the spindle and opposite clamp-section, substantially as set forth.

380,151. SHEET-METAL PAIL. FRANCIS A. WALSH, Milwaukee, Wis. Filed Feb. 18, 1884. Serial No. 121,072. (No model.)



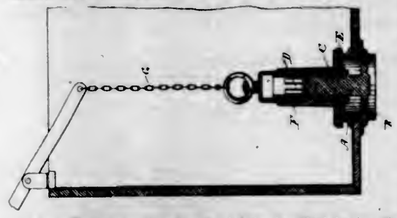
Claim.—A pail or other sheet-metal vessel, consisting of the circular body A, with bottom plate, D, united to the base of the body by the beaded seam *d*, formed of continuous folds of the bottom edge of the said body and the flange of the said bottom plate free from any extraneous internal support, and with the under surface of said bottom plate horizontal and on a plane substantially that of the lowest surface of the beaded seam *d*, substantially as set forth.

380,152. RAILWAY RATCHET-DRILL. ANDREW WARREN, St. Louis, Mo. Filed Nov. 29, 1887. Serial No. 256,442. (No model.)



Claim.—In combination with the frame of a railway ratchet-drill formed of bar of angular section, the sleeve B fitting said bar and the ratchet-holder journaled thereon, all substantially as described.

380,153. TANK-VALVE. HENRY C. WEEDEN, Boston, Mass., assignor to the Weeden Sanitary Manufacturing Company, of Rhode Island. Filed Nov. 10, 1887. Serial No. 254,791. (No model.)



Claim.—The improved tank-valve herein described, having the seat and outlet portion A of ordinary construction, a cross-bar, B, extending across said outlet, a slotted plunger, C, supported upon the cross-bar and provided at its upper portion with vertical guide-pieces D D and intermediate water-ways, and a circular valve, E, adapted to open and close the outlet and provided with a vertical cylindrical retarding-chamber, F, the said chamber being made liquid-tight at the top and encircling and working loosely upon the plunger, all substantially as set forth.

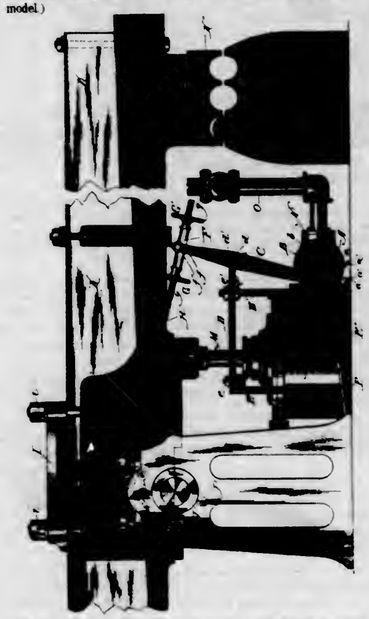
380,154. SPRING-CLASP. CHARLES J. WHITE, New Britain, Conn. Filed Sept. 15, 1887. Serial No. 249,807. (No model.)



Claim.—1. The herein-described clasp, having holding-jaws, and immediately above said jaws the bend *c*, for receiving surplus portions of the article held by said clasp, and above said bend straight portions with the slide *c* fitted thereto, substantially as described.

2. The herein-described clasp, consisting of spring-arms formed of a single flat strip of sheet metal doubled upon itself and having at the termination of the longer arm the U-shaped bend, and the angular jaw *f* on the companion arm just above said bend, and the slide *c* on the body of said arms, substantially as described, and for the purpose specified.

380,155. VALVE-GEAR FOR STEAM-HAMMERS. CHARLES W. WILLARD, Chicago, Ill. Filed May 10, 1887. Serial No. 237,767. (No model.)



Claim.—1. The rod H, approximately parallel with the hammer-helve K and connected at one end with the frame or support of the hammer-helve at a point within a vertical line passing through the journal of the hammer-helve and at the other end with a valve-shifting lever, substantially as shown and described.

2. The rod H, approximately parallel with the hammer-helve K and connected at one end with the frame or support of the hammer-helve at a point within a vertical line passing through the journal of the hammer-helve and at the other end with a lever, C, in combination with a tappet, A, connected with a balanced valve for shifting the valve, substantially as specified.

3. The rod H, approximately parallel with the hammer-helve K and connected at one end with the frame or support of the hammer-helve at a point within a vertical line passing through the journal of the hammer-helve, and the nuts G G', in combination with the lever C and sleeve F, for actuating the shifting devices of a balance-valve of a power-hammer, substantially as shown and described.

4. The tappet A, having the arms *a*, in combination with the lever C and operating-rod H, connected with the frame or support of a hammer-helve for shifting the valve in a steam-power hammer, substantially as described.

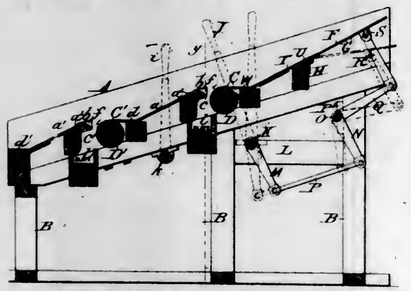
5. The lever C, adjustable rod D, and a support for the bar, in combination with the tappet A, having the arms *a*, for properly entering the end of the lever between the arms *a*, substantially as specified.

6. The tappet A, having arms *a*, with turned ends *a'*, in combination with an oscillating lever, C, and rod H, operated from a point

near the center of motion of a hammer-helve for shifting the balance-valve of a steam-hammer, substantially as described.

7. The tappet A, valve-stem B, lever C, and bar D, in combination with the sleeve F, adjusting-nuts G G', rod H, pivot k, and support I, having the journals J, for operating the valve in a steam-power hammer, substantially as described.

380,156. COAL-SEPARATOR. CHARLES W. ZIEGLER, Scranton, Pa. Filed Dec. 7, 1887. Serial No. 257,211. (No model.)



Claim.—1. In a separator, the combination, with an adjustable chute, of inclines having curved upper ends, gage-plates registering with the said inclines, and means for adjusting the said plates, substantially as shown and described.

2. In a separator, the combination, with an adjustable perforated chute, of inclines having curved upper ends, gage-plates adapted to engage the curved upper ends of the inclines, and a lever connected with the gage-plates for oscillating the same, substantially as shown and described.

3. In a separator, the combination, with an adjustable chute, of inclines having curved upper ends, cylinders above said inclines, and curved gage-plates adapted to engage the upper ends of the inclines, and a lever connected with said plates for oscillating them and regulating the size of openings, substantially as shown and described.

4. The combination, with the curved gage-plates and the sliding bars e, pivotally secured thereto, of the rod k and the arms j, secured to said rod, and the lever i, for actuating the same, substantially as shown and described.

380,157. ELECTRIC CONDUCTOR. EDWARD G. ACHESON, Pittsburg, Pa. Filed July 7, 1887. Serial No. 243,669. (No model.)



Claim.—1. An electric conductor consisting of a line-wire, an insulating-covering for the same, and a metallic shield or covering consisting of a strip extending spirally around the same, and having a spiral space or recess between the adjacent edges, substantially as described.

2. An electric conductor consisting of a line-wire, an insulating-covering for the same, a metallic shield or covering consisting of a strip extending spirally around the same, and having a spiral space or recess and a protective covering, substantially as described.

3. An electric conductor consisting of a line-wire, an insulating-covering, and an electro-deposited shield or covering having a spiral space or recess, substantially as described.

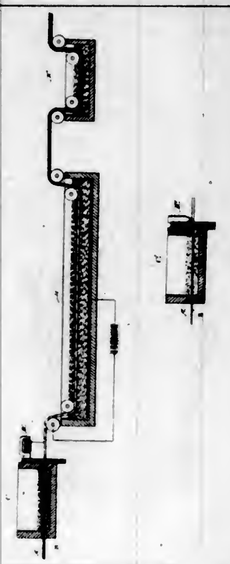
380,158. MANUFACTURE OF ELECTRIC CONDUCTORS. EDWARD G. ACHESON and BENJAMIN F. ANDERSON, Pittsburg, Pa. Filed July 21, 1887. Serial No. 244,911. (No model.)

Claim.—1. In the manufacture of electrical conductors, the method, substantially as herein set forth, of forming a covering with spiral grooves therein, which consists in applying a resist of non-conducting material upon the conductor and subjecting the conductor to the action of an electrolytic bath.

2. In the manufacture of electrical conductors, the method, substantially as herein set forth, of forming a covering with spiral grooves therein, consisting in winding a thread spirally around the insulated conductor and electrolytically depositing a covering on the conductor.

3. In the manufacture of electrical conductors, the method, substantially as herein set forth, of forming a covering with spiral grooves therein, consisting in applying a spiral of waxed thread to the conductor and subjecting it to an electrolytic bath.

380,158.



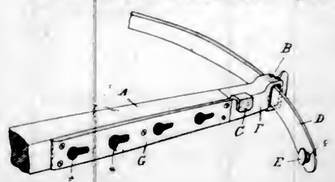
380,159. COMBINED STEP-LADDER AND IRONING-BOARD. WEALTHY J. ALLEN, Arkansas City, and BELLE WEST, Winfield, Kans. Filed Mar. 14, 1887. Serial No. 230,915. (No model.)



Claim.—1. An ironing-board having a clamp at one end, a step-ladder hinged to its opposite end, and a bosom-board hinged to the ironing-board above the ladder, to be folded over upon the ladder or ironing-board, substantially as set forth.

2. The ironing-board A, having a cross-piece, A', at one end, the clamp A^2, having the screw a and nut a', the ladder E, hinged to the under side of the opposite end of the ironing-board, and the bosom and sleeve board B, hinged to the end of the ironing-board above the ladder, said hinges projecting beyond the end of the ironing-board, as at b, substantially as set forth.

380,160. TRACE-FASTENING. WILBER N. BAILEY, Bay City, Mich. Filed Sept. 16, 1887. Serial No. 249,865. (No model.)

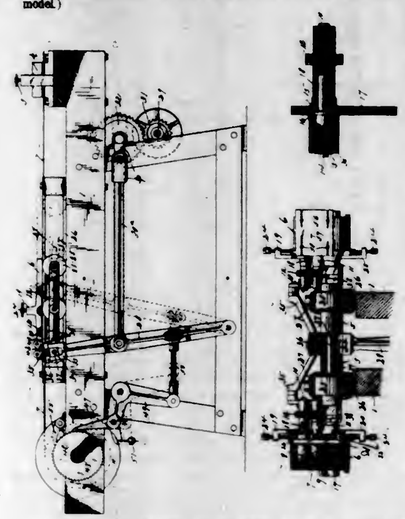


Claim.—As an improved article of manufacture, the metallic strap G, comprising in a single element the strap part or plate, a socket, F, having rounded corner, a guide-loop, B, and an overhanging guide-flange, C, and the whole adapted to serve as set forth.

380,161. BATH FOR EXTRACTING ALUMINUM AND ALLOYING IT WITH OTHER METALS. WILLIAM A. BALDWIN, Chicago, Ill., assignor of one-fourth to J. Clement Smith, James J. Sheehy, and Ansel A. Thomas, all of Washington, D. C. Filed Jan. 31, 1888. Serial No. 262,540. (No specimens.)

Claim.—The composition of matter herein described, consisting of sodium chloride, clay, or other earth bearing alumina, and charcoal, the sodium chloride being in excess of the other ingredients, and the whole adapted to be fused, and thereby serve as a bath for the purpose specified.

380,162. MACHINE FOR POLISHING WIRE. LEOPOLD RAUMEISTER, Bridgeport, Conn. Filed June 28, 1887. Serial No. 242,760. (No model.)



Claim.—1. The carriage having emery-boxes, in combination with a set of rolls journaled in said boxes, another set of rolls journaled in slides in said boxes, supporting-pieces 19 and 20, connected to said slides, and screws at top and bottom, whereby said rolls may be adjusted.

2. The carriage having emery-boxes, in combination with a set of rolls whose shafts are journaled in said boxes, another set of rolls whose shafts are journaled in slides in said boxes, gears 12 on said shafts, and endless chains connecting all the gears belonging to each emery-box, whereby motion imparted to one of the shafts is transmitted to all of the others.

3. The combination, with the reciprocating carriage, emery-boxes, polishing-rolls, shafts 10, and gears 12, of endless chains connecting all the gears belonging to each box, and mechanism—for example, a pawl and ratchet—for imparting rotary movement to the rolls.

4. The combination, with the reciprocating carriage, polishing-rolls, and gears 12, of an endless chain passing over and under alternate gears, whereby the movement of one of said gears is imparted to the others.

5. The emery-boxes having stumps 11, slides 17 in said boxes having stumps 18, shafts 10, and detachable gears 12, in combination with polishing-rolls carried by said shafts, an endless chain engaging the series of gears, and a pawl and ratchet and connecting mechanism for imparting rotary movement to one of said shafts.

6. The emery-boxes, a set of rolls journaled therein, slides 17 in said boxes, and another set of rolls journaled thereon, in combination with detachable gears 12, supporting-pieces 19 and 20, connected to the slides, and set-screws at top and bottom, whereby the rolls carried by the slides may be adjusted to give any desired pressure.

7. The combination, with shafts 10, carrying polishing-rolls and having collars 15, of the emery-boxes having recesses to receive said collars, and washers covering the collars and resting against the side of the box, whereby the emery in the boxes is prevented from entering the bearings.

8. Shafts 10, having collars 15, the emery-boxes having recesses to receive said collars, and washers 16, covering said collars and resting against the side of the box, in combination with polishing-rolls and gears 12, carried by said shafts.

9. The reciprocating carriage, emery-boxes on said carriage, and polishing-rolls in said boxes, in combination with tension and winding mechanism, and an adjustable guide through which the wire passes, as and for the purpose set forth.

10. The reciprocating carriage having emery-boxes and polishing-rolls, in combination with oscillating lever 28, connected to the carriage, and ratchet mechanism operated thereby, whereby a forward movement is imparted to the rolls at each reciprocation of the carriage.

11. The reciprocating carriage having emery-boxes and polishing-rolls, in combination with oscillating lever 28, connected to the carriage, a cross-piece upon said lever having arms 35, and ratchet mechanism operated by said arms, whereby a forward movement is imparted to the rolls at each reciprocation of the carriage.

12. The reciprocating carriage having emery-boxes and polishing-rolls, an oscillating lever, and a sliding block at the end of said lever, in combination with a cross-bolt, 37, passing through the carriage and sliding block, and ratchet mechanism, whereby a forward movement is imparted to the rolls at each reciprocation of the carriage.

13. A reciprocating carriage having emery-boxes and polishing-rolls, and an oscillating lever pivotally secured to the carriage, in combination with gears upon the roll-shafts, a ratchet secured to one of said shafts, a lever carrying a pawl journaled on said shaft, a link connecting said lever with the oscillating lever, and an endless chain connecting the gears.

380,163. METHOD OF MAKING COMBINED KNIT AND CLOTH BOOTS. DEMPSTER BEATTY, Mishawaka, Ind., assignor to the Beatty Felting Company, same place. Filed June 4, 1887. Serial No. 240,237. (No model.)



Claim.—1. The herein-described method of making a combined knit and cloth boot, consisting in making a knit boot and a cloth boot and placing them one within the other, the cloth boot being formed by being cut from the cloth, then sewed up by the long back and front seams, and then fulling them to the required size.

2. The herein-described method of making a combined knit and cloth boot, consisting in making a knit boot and a cloth boot and placing the one within the other and securing them together with rows of stitches and partly fulling them, then turning them with the knit boot outside, and then fulling them to the required size, and finally in treeing them.

380,164. WHIP-SOCKET. CHARLES S. BEEBE, Racine, Wis. Filed Nov. 29, 1887. Serial No. 256,390. (No model.)



Claim.—1. A semi-cylindrical casting entirely open at the back and provided with lateral ears having openings therein, substantially as set forth.

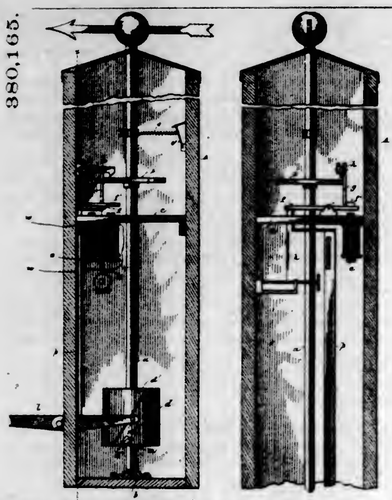
2. A semi-cylindrical casting entirely open at its back and having a tapering inwardly-curved lower portion terminating in a horizontal stop, and suitable means for attaching said casting to a seat-bar, shaft, or other portion of a vehicle, substantially as set forth.

3. A semi-cylindrical casting in one piece, with lateral ears having openings therein, said casting being entirely open at its back and having its lower portion downwardly tapered and inwardly curved, in combination with a seat-bar, shaft, or other portion of a vehicle, and screws or bolts passed through the latter and said ears, substantially as set forth.

380,165. RAILWAY-SIGNAL. ARTHUR W. BENNETT and JOHN M. MILLER, Fontanelle, Iowa. Filed May 11, 1887. Serial No. 237,843. (No model.)

Claim.—1. In a railway-signal, the box or frame A, a rotatable indicator-shaft supported in said box or frame, the said shaft being

380,165.



provided with a cylindrical portion having a projecting edge on its surface extending in a direction inclined to the axis of rotation of the shaft, combined with a pivoted lever arranged and adapted to engage the projecting edge on the cylinder and to be operated by a passing train to cause the shaft to turn, substantially as and for the purpose described.

2. In a railway-signal, the box or frame A, a rotatable indicator-shaft supported in said box or frame, the said shaft being provided with a cylindrical portion having a projecting edge on its surface extending in a direction inclined to the axis of rotation of the shaft, combined with a lever arranged and adapted to engage the projecting edge on the cylinder and to be operated by a passing train, a pivoted lever, *f*, actuated by the aforesaid lever and provided with an armature, an electro-magnet in position adjacent to said armature and provided with connections forming a normally-closed electric circuit, a notched disk on the indicator-shaft, and a pawl in position to engage with said disk, substantially as and for the purposes described.

3. In combination with a rotative indicator-shaft and mechanism, substantially as described, for turning the shaft from its normal position, a notched disk secured to the shaft, a pivoted lever, *f*, provided with an armature and a retaining-spring, a pawl adapted to engage with said disk and to be disengaged by means of said lever, an electro-magnet adjacent to said armature and having connections with an electric circuit, substantially as set forth and described.

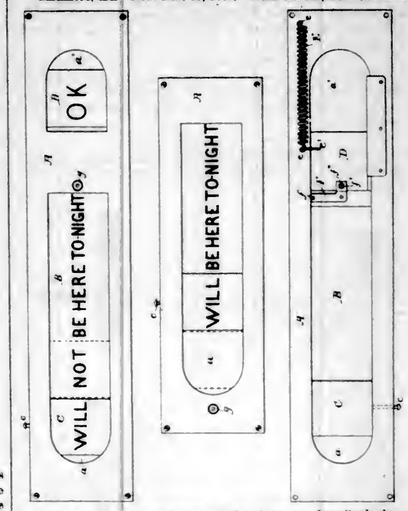
4. A rotative indicator-shaft provided with cylinder *d*, having an inclined edge, *d'*, pivoted angular block *n*, and stop-pin d^2, in combination with a pivoted lever adapted to engage with said inclined edge and to be operated by a passing train of cars, substantially as set forth and described.

5. In a railway-signal of the class described, employing a normally-closed electric circuit, a circuit-breaker provided with separable insulated contacts *r r'*, one of which is carried by a pivoted lever and both being connected with electric conductors, a shaft, *u*, having cranks *u'* and u^3 at its extremities, one of which is heavier than the other, the said shaft being journaled in a frame located near the railway-track, so that one of the crank portions may be operated to cause the other to separate the contacts and thus break the electric circuit, substantially as set forth, for the purpose described.

6. In a railway-signal of the class described, employing a normally-closed electric circuit, the herein-described circuit-breaker, consisting of separable insulated contacts *r r'*, with which the electric conductors are connected, the shaft *u*, having cranks *u'* and u^3, one of which is heavier than the other, the shaft *u* being journaled and arranged in a frame located near the railway-track, so that one of the crank portions may be operated to cause the other to separate the contacts and break the electric circuit, substantially as and for the purpose described.

7. A railway car or truck provided with an auxiliary wheel, C, supported in position to move on an inclined yielding bar adjacent to a railway-track, said wheel being carried by a movable bar pivoted in one arm of a bracket, a curved bracket-arm provided with two slots—one through which this rod extends and one to receive a retaining-pin in the wheel-rod—and a spring connecting the said rod with the car, substantially as described.

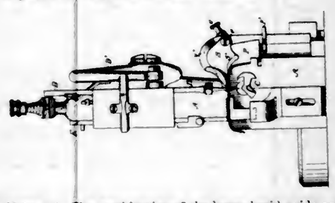
380,166. INDICATOR FOR HOTELS. CHAUNCEY M. BENNINGHAM, Baltimore, Md. Filed Nov. 19, 1887. Serial No. 255,566. (No model.)



Claim.—1. In an indicator of the character described, the combination of a frame having an intermediate fixed part bearing a desired inscription and horizontally sliding parts moving in ways at the ends of said frame, one of the same being normally concealed, said sliding parts having such other inscription as will, when one or both of such sliding parts are brought to view and in conjunction with the intermediate part, respectively, complete a sentence and thereby convey a message, substantially as shown and described.

2. In an indicator, the combination, with the frame A, having openings *a a'*, the said opening *a* being provided with a stationary and movable sign, B C, the one movable over the other to screen a portion of the inscription thereon, of the sign D, movable in ways of the frame to connect with the opening *a'* by means of a spring, E, attached to the sign D and frame A, and a fastening device, F *f'' f'''*, for retaining said sign D from before said opening *a'*, as shown and described.

380,167. STRAW-BRAID-SEWING MACHINE. FREDERICK BLACKBURN, Palmyra, N. J., assignor, by mesne assignments, to himself, Franklin S. Hovey, Beverly, N. J., and Timothy Merrick, Holyoke, Mass. Filed Aug. 20, 1885. Serial No. 174,858. (No model.)



Claim.—1. The combination of the lower braid-guide and its adjusting-screw, a nut receiving said screw and having a projecting stem, a supporting-bracket having an elongated slot through which said stem projects, and a retaining-nut on said stem, all substantially as specified.

2. The combination of the needle and work-plate of a sewing-machine with a plate bearing on the lower layer of braid and located at the inner side of the needle, so as to guide the upper layer of braid thereto, and means for pivoting said plate at its outer end, so that it can be thrown back out of the way, all substantially as specified.

3. The combination of the needle and work-plate of a sewing-machine, a laterally-movable edge-guide for the lower layer of braid, an upper edge-guide bearing on the said lower layer and located at the inner side of the needle, and means for pivoting said plate at its outer end, so that it can be thrown back out of the way, all substantially as specified.

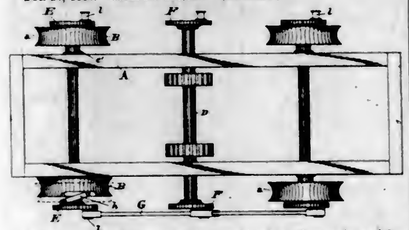
4. The combination of the work-plate and needle of the machine, an upper edge-guide having a laterally-projecting stem, and means to enable said stem both to turn and to slide laterally in a bracket on the frame, whereby the guide can be adjusted laterally for different laps of braid, or can be thrown back, so as to permit the brim of a hat to pass beneath it, all substantially as specified.

5. The combination of the bracket T and a spring contained therein with a guide for the inner edge of a strip of braid, said guide being provided with a pivot-stem fitted to a bearing in the bracket and having a flattened portion forming a bearing for the end of the spring, all substantially as specified.

6. The combination of the bracket T, a braid-guide having a threaded stem fitted to an opening in the bracket and free to turn and to slide therein, and a nut adapted to said threaded stem and free to turn with the same, but confined longitudinally to the bracket, all substantially as specified.

7. The combination of the braid-guide having a pivot-stem with the braid-presser having an arm secured to but adjustable circumferentially on said stem, all substantially as specified.

380,168. LOCOMOTIVE. JOHN BLASDALE, Baltimore, Md., assignor to the Richmond Locomotive and Machine Works, Richmond, Va. Filed Dec. 27, 1887. Serial No. 259,181. (No model.)

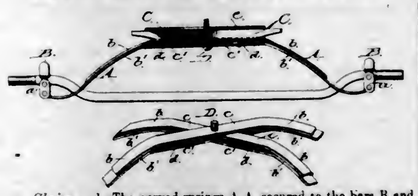


Claim.—1. In a locomotive, the combination of an axle, *e*, driving-wheels B, which have movement endwise of the axle, a driving-disk, E, on the axle immovable in a direction endwise of the axle, and a flexible connection between the said driving-wheel and driving-disk, whereby rotary motion imparted to the driving-disk will revolve the driving-wheel and allow the latter to move endwise of the axle.

2. In a locomotive, the combination of an axle, *e*, driving-wheels B, which have movement endwise of the axle, a driving-disk, E, on the axle immovable in a direction endwise of the axle, and one or more links, *k*, connecting the said driving-wheel and driving-disk, said links having one end jointed to the driving-wheel and the other end jointed to the driving-disk.

3. In a locomotive, the combination of a master-shaft, D, provided with a driving-crank, F, an axle, *e*, driving-wheels B, which have movement endwise of the axle, a driving-disk, E, on the axle outside of the driving-wheel, immovable in a direction endwise of the axle, and provided with a crank-wrist, *l*, a flexible connection between said driving-wheel and driving-disk, and a connecting-rod, G, between the said driving-crank F and crank-wrist.

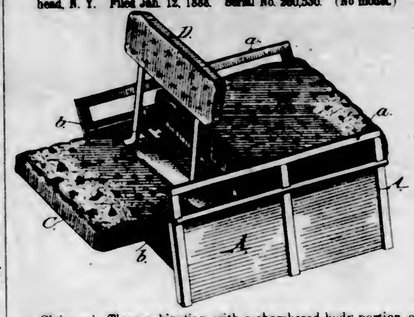
380,169. VEHICLE-SPRING. CHARLES M. BLYDENBURGH, Riverhead, N. Y. Filed Dec. 2, 1887. Serial No. 256,749. (No model.)



Claim.—1. The curved springs A A, secured to the bars B and extending along the axle diagonally from one bar to another, said springs comprising a plural number of leaves or plates having flat central portions of unequal lengths, forming a space between said leaves, whereby the leaves or plates of each spring pass between and cross the leaves or plates of the contiguous spring, substantially as described.

2. The springs having lower leaves or plates, *b'*, with flat central portions, and the upper leaves or plates, *b*, fitted to the lower leaves, having flat central portions shorter than the flat portions of the lower leaves, whereby a space is left between the central portion of each contiguous leaf, in combination with the bars B, to which the ends of the springs are secured, and the pillar plates or washers in said spaces upon each side of the central pivot-bolt, substantially as described.

380,170. VEHICLE-SEAT. CHARLES M. BLYDENBURGH, Riverhead, N. Y. Filed Jan. 12, 1888. Serial No. 260,530. (No model.)



Claim.—1. The combination, with a chambered body portion, of a front seat portion hinged to the front of said body and a rear seat portion hinged to the rear of the body and provided with a lazy-back adapted to enter the chambered body beneath the front seat, whereby the rear seat serves as a back for the front seat, substantially as described.

2. The chambered body A, having front, rear, and side walls, in combination with a rear seat hinged or jointed to the rear walls at points between its sides, whereby said seat may be folded forward, and a lazy-back connected to and movable with said rear seat, substantially as described.

3. The body A, having front, rear, and side walls, in combination with a rear seat hinged or jointed to said rear wall at points within or between the side walls, whereby said rear seat may be folded forward, and a front seat hinged or jointed to the front wall of the body, substantially as described.

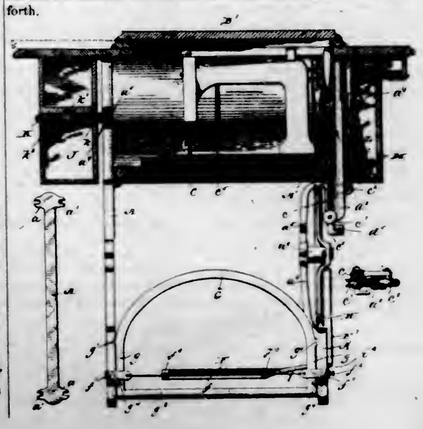
4. The chambered body A, having the inner portions of its sides provided with shoulders or cleats, and a hinged front seat supported thereon, in combination with a rear seat hinged or jointed to the body within or between its sides, and a lazy-back movable with the rear seat and adapted to enter the chambered body beneath the front seat, whereby said rear seat is sustained when serving as a back for the front seat, substantially as described.

5. The body A and a rear seat hinged between its side walls, in combination with a folding or hinged support for said seat, substantially as described.

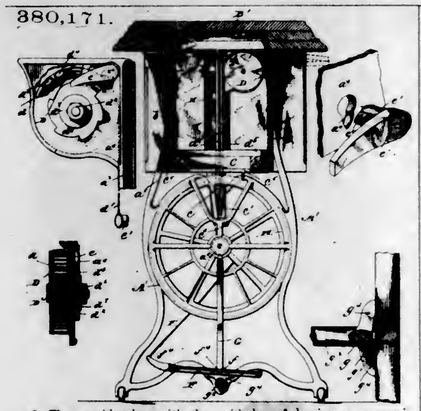
380,171. SEWING-MACHINE STAND. JAMES BOLTON, Glen Spey, N. Y. Filed July 1, 1887. Serial No. 243,060. (No model.)

Claim.—1. The combination, with a sewing-machine stand having a vertical supporting-bar, as a^2, of a vertically-movable support for the sewing-machine, having a bracket provided with guide-rollers arranged on opposite sides of the said bar, substantially as set forth.

2. The combination, with a sewing-machine stand having a vertical supporting-bar, a^2, of a vertically-movable support for the machine, provided with a bracket having guide-rollers arranged on opposite sides of the said bar and one above the other, substantially as set forth.



380,171.



3. The combination, with the guide-bar a^2, having a groove in one side and a rib on the other side, of the machine-support having a bracket provided with two guide-rollers, one of which is rounded to fit in said groove and the other of which is grooved to embrace said rib, substantially as set forth.

4. The combination, with the vertically-movable machine-support C, having the bracket c, of the rotary box D, having the laterally-projecting lugs d' and d^3, a stationary hub within the said box, a volute spring attached to the said hub and having a loop to surround the said lug d', and the strap d^5, attached to the said bracket and having a loop to surround the said lug d^4, substantially as set forth.

5. The combination, with the side frames or legs, A and A′, of the braced cross-bar g^2 at the base of the stand, having uprights g, each having two bearings, as lugs or projections g', against the said side frames, and connections between said bearings to hold the said uprights and side frames together, substantially as set forth.

6. The combination, with the side frames or legs, A and A′, of the cross-bar g^2 at the base of the stand, having the uprights g, each having two projections, g', the arched brace G, and connections between said projections to hold the said uprights to the side frames to brace the latter, substantially as set forth.

7. The combination, with the side frames, A and A′, of the braced cross-bar g^2 at the base of the stand, having the uprights g, provided with the projections g', extending into recesses in the said frames, and the horizontal bracing projections g^4, substantially as set forth.

8. The combination, with a leg or side frame of a sewing-machine table, of a drawer-supporting shelf having a longitudinal guiding-rib on its upper side and two recessed or undercut guiding-ribs on its under side, whereby the said shelf is adapted to support and guide either one or two drawers, as desired, substantially as set forth.

9. The combination, with the leg or side frame of a sewing-machine table having perforated ears, as a^3, of a drawer-supporting shelf attached to the said ears and having a longitudinal guiding-rib on its upper side and two undercut guiding-ribs on its under side, and two drawers, one of which has a longitudinal guiding-groove in its bottom and the other of which has at its upper side two longitudinal overhanging lips to engage said undercut ribs, substantially as set forth.

10. The combination, with the vertically-movable platform or machine-support C, of the rotary box D, having a circumference equal to or greater than the distance which the said support is to be raised and lowered, a stationary hub within the said box, a volute spring, also within the said box and attached to the latter and to the said hub, and a strap running on the periphery of the said box and connected thereto and with the said movable support, whereby only a single revolution (or less) of the said box will be required in raising or lowering the machine, substantially as set forth

380,172. SLEIGH-KNEE. ALONZO BOSTICK, Millington, Mich. Filed July 16, 1887. Serial No. 244,495. (No model.)

Claim.—1. The combination of the hollow lower casting adapted to be secured upon a sleigh-runner and formed with the convex top and the longitudinal slot, the yielding cushion, the upper casting adapted to be secured to the sleigh-beam and formed with the concave

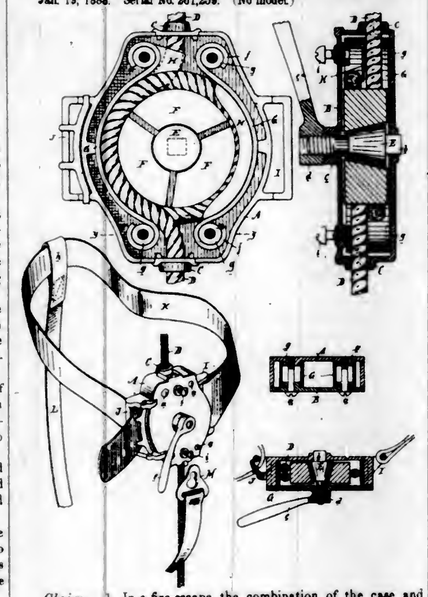


lower side and the vertical aperture, and the screw-bolt with its nut, substantially as set forth.

2. The combination of the hollow lower casting adapted to be secured upon a sleigh-runner and formed with a convex top having the parallel ribs and the longitudinal slot, the upper casting adapted to be secured to the sleigh-beam and formed with the concave lower side having the parallel grooves and the vertical aperture, and the screw-bolt with its nut, substantially as set forth.

3. The combination of the hollow lower casting adapted to be secured upon a sleigh-runner and formed with the convex top having the parallel ribs and the longitudinal slot, the yielding cushion, the upper casting adapted to be secured to the sleigh-beam and formed with the concave lower side having the parallel grooves and the vertical aperture, and the screw-bolt with its nut, substantially as set forth.

380,173. FIRE-ESCAPE. ERNST BOVENSIEP, Detroit, Mich. Filed Jan. 19, 1888. Serial No. 261,259. (No model.)



Claim.—1. In a fire-escape, the combination of the case and securing-straps, the conical plug slidingly secured in the case, the segmentally-divided rope-pulley sleeved thereon, the stationary abutments concentric with the rope-pulley, the rope passing through the case and around the rope-pulley, and the lever having a screw-thread engagement with the conical plug, all arranged to operate substantially as described.

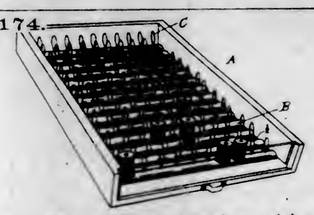
2. In a fire-escape, the combination, with the case, the rope passing through the case, the rope friction device, consisting, essentially, of an expansible pulley and an expander, substantially as described, the controlling-handle thereof, the loop provided on one side of the case, the buckle provided on the opposite side, the waist-strap, the hook on the crotch-strap, and the buttons on the case for engaging therewith, all substantially as described.

3. In a fire-escape, the combination, with the case, of the conical plug E, slidingly secured therein, the handle e, screw-threaded thereon, the segmentally-divided pulley F, sleeved thereon, the abutments G, concentrically secured to the rope-pulley, the loop I and buckle J, secured to the case, the waist-strap K, crotch-strap L, and the rope D, all combined substantially as described.

380,174. DRAWER FOR SPOOL-THREAD CASES. FRANK I. BOWLES, Detroit, Mich. Filed Dec. 2, 1887. Serial No. 256,773. (No model.)



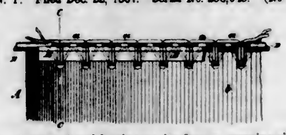
380,174.



Claim.—1. The combination, with the drawer, of the rods B, forming the bottom of said drawer, and a series of spring-loops projecting upward from said rods, substantially as described.

2. In combination with the drawer A, rods B, forming the bottom of said drawer and being movably secured therein, and a series of spring-loops, C, projecting upward, either vertically or inclined, from said rods, substantially as and for the purpose described.

380,175. SWEAT-BAND FOR HATS. THOMAS W. BRACHER, New York, N. Y. Filed Dec. 22, 1887. Serial No. 258,643. (No model.)



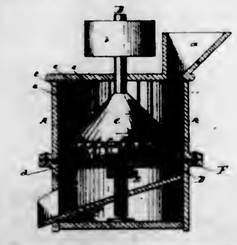
Claim.—A sweat-band having on its face or wearing side b, near its edge, a flexible flat strip, B, held in place by stitches a, that pass through the band and over the edges and face of the strip B, as described.

380,176. FIRE-KINDLER. EDWARD R. BREWSTER, Holly, Mich. Filed July 25, 1887. Serial No. 245,201. (No model.)



Claim.—The combination of the reservoir A, having the wick and filling tubes and the socket F, with the handle D, pivoted in such socket and having the shoulders d^4, as and for the purpose set forth.

380,177. OATMEAL-MACHINE. DAVID BROWN, Cuyahoga Falls, Ohio, assignor of one-half to James A. Vaughn, same place. Filed Apr. 24, 1886. Serial No. 199,992. (No model.)



Claim.—In an oatmeal-machine, the combination, with a cylindrical vertical case and a vertical shaft journaled centrally therein, of a conical wheel mounted on said shaft, having an outer vertical face close to the inside of said case and provided with vertical grooves, a disk mounted on said shaft beneath said wheel and provided with radial arms which register beneath said grooves, and a series of fixed blades between said wheel and disk, all constructed and arranged substantially as shown, and for the purpose specified.

380,178. VISE. PERRY BROWN and WILLIAM TRABUE, Louisville, Ky.; said Trabue assignor to Daniel R. Doherty, same place. Filed Apr. 4, 1887. Serial No. 233,547. (Model.)



Claim.—1. The combination of the fixed jaw of a vise and the screw thereof with a movable jaw having a bifurcated or recessed slide, an intermediate slide independently connected with said movable and fixed jaws, and a nut for the screw, connected to the intermediate slide and entering the recess in the fixed jaw, substantially as described.

2. The combination, with the fixed jaw A and the movable jaw E, having a bifurcated slide, F, of the screw G, turning in said jaw E, the slide B, receiving the slide F of the movable jaw, the nut D, fixed in the slide B and entering the recess in the slide F, and the dog H, catching in a rack on the slide B, substantially as described.

3. The combination, with the fixed jaw A and the movable jaw E, having a bifurcated slide, F, of the screw G, turning in said jaw E, the slide B, provided with a rack on its under side and constructed to receive the slide F of the movable jaw, the nut D, fixed in a slot in the slide B and adapted to pass into the bifurcation of the slide F, the dog H, catching on the rack on the slide B, and the spring I, acting on the dog, substantially as described.

380,179. FIRE-ESCAPE. WILLIAM REDDE, Wellsville, N. Y. Filed Nov. 21, 1887. Serial No. 255,761. (No model.)



Claim.—1. In a fire-escape, the combination of the window-pulleys having the end hooks, the eyes secured at the window, the lower pulley-frame having the grooved end pulleys and the end brakes or drags, and adapted to be secured to a suitable support, and the endless rope having two baskets secured to it on opposite sides, substantially as set forth.

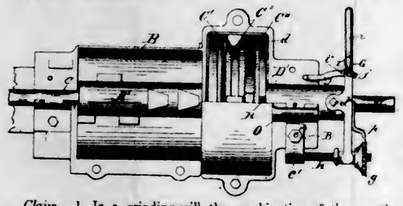
2. In a fire-escape, the combination of the window-pulleys having the end hooks, the eyes secured at the window, the lower pulley-

frame having the grooved end pulleys, the hooks at the rear ends of its end blocks, and end brakes or drags, the stationary frame having the curved rack, the movable frame hinged at its lower end upon the stationary frame and having the front eyes near its upper ends, the lever, the connecting-rods, and the endless rope having two baskets secured to it on opposite sides, substantially as set forth.

3. In a fire-escape, the combination of the window-pulleys having the end hooks, the iron bar having the eyes, the lower pulley-frame having the grooved end pulleys, the hooks at the rear end of its end blocks, and the end brakes or drags having the small grooved wheels journaled in their inner ends, the stationary frame having the curved rack, the movable frame hinged upon the stationary frame and having the front eyes near its upper end, the lever, the connecting-rods hinged at their ends, and the endless rope having the two baskets secured to it on opposite sides, substantially as set forth.

4. In a fire-escape, the combination of the window-pulleys, the endless rope having the two baskets secured upon it on opposite sides, the lower pulley-frame having the grooved end pulleys and the hooks at the rear ends of its end blocks, the stationary frame having the curved rack, the hinged frame having the front eyes, and a ratchet-lever and connecting-rods, substantially as set forth.

380,180. **FEED-MILL.** THOMAS C. CADWGAN, Springfield, Ohio, assignor, by direct and mesne assignments, to the Springfield Engine and Thresher Company, same place. Filed Aug. 28, 1886. Serial No. 212,125. (No model.)

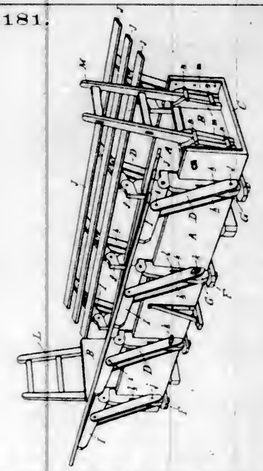


Claim.—1. In a grinding-mill, the combination of the rotating shaft, a grinding-wheel mounted thereon and turning therewith, a movable non-rotating grinding-ring adjustable longitudinally upon the shaft, an adjusting-lever connected with the non-rotating ring, and an adjustable fulcrum for the end of the lever.

2. In a grinding-mill, the combination of the rotating shaft, a grinding-wheel mounted thereon and turning therewith, a movable non-rotating grinding-ring, the latter having a sleeve and being adjustable on the line of the shaft, a transverse lever pivotally attached to said sleeve, the adjustable toothed nut, to which said lever is fulcrumed, and the adjusting devices for retaining said lever in a fixed position when adjusted, substantially as set forth.

3. In a grinding-mill, the combination of the rotating shaft of a fixed grinding disk or ring, C', a movable non-rotating grinding-ring adjustable longitudinally upon the shaft, a movable self-adjusting grinding-wheel situated between said grinding-rings longitudinally movable upon the shaft and rotating therewith, an adjusting-lever connected with the second non-rotating grinding-ring, and a fulcrum for said lever adjustable toward or from the ring, substantially as set forth.

380,181. **WAGON-RACK.** RICHARD CALDWELL, Tipton, Mich. Filed Nov. 7, 1887. Serial No. 254,501. (No model.)



Claim.—1. In a wagon-rack, the combination, with the wagon-body, of the side racks, D, consisting of the stakes G, constructed in two parts hinged together, the upper part having the longitudinal strips J secured to it and the lower part engaging into keepers on the wagon-box, and provided with the elongated slot *t* and the projection *e* and the overhanging flange *f*, and the parallel braces *h*, pivotally secured at their upper ends and connected at their lower ends with a pin or bolt engaging into the slot in the lower part of the stake, all substantially as described.

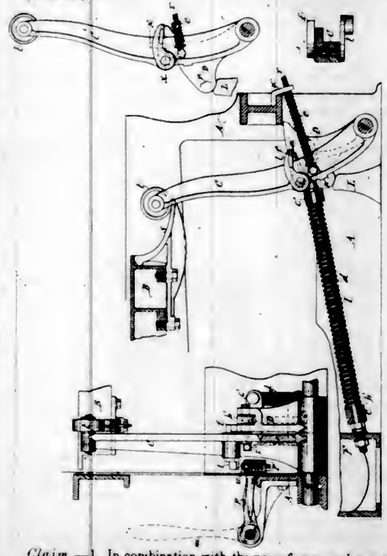
2. In a wagon-rack, the combination, with the wagon-body, of the side racks, D, consisting of the stakes G, constructed in two parts rule-jointed together, the upper part having the longitudinal strips J secured to it and the lower part engaging into keepers on the wagon-box, and provided with the projection *e* and the metallic cap *k*, covering the top of the stake and forming a part of the hinge, and having the overhanging flange *f*, and the braces *h*, pivotally secured at their upper ends and connected at their lower ends by a pin or bolt engaging into a slot in the lower part of the stake, all substantially as described.

3. In a wagon-rack, the wagon-body, the side racks, D, the end racks, L M, supported upon the end-gates of the wagon and engaging therewith against vertical displacement, the wedge-shaped cleats *m*, the straps *n*, the locking-bolt *o*, passed through the strap into the end rack, and the locking-bolts *s*, all combined to operate substantially as described.

4. In a wagon-rack, the wagon-body, the side racks, D, removably secured to the wagon-body, the end racks, L M, supported upon the end-gates of the wagon, and having the pins *t*, engaging into said end-gates, and the locking-bolts *s*, passing through the side racks and end racks, substantially as described.

5. The combination, with the end-board B of the wagon-body, the wedge-shaped cleats *m*, secured to the outside of the end-board and provided with stops *n*, of the ladder M, provided with wedge-shaped lower ends, and the locking-bolts *o*, all arranged substantially as described.

380,182. **CUSHIONING DEVICE FOR TYPE-BEDS.** CHARLES H. CAMPBELL, Watertown, N. Y. Filed June 15, 1887. Serial No. 241,336. (No model.)



Claim.—1. In combination with the press-frame, reciprocating type-bed, and the movable cushioning-arm arranged to receive the impact of the type-bed at the end of its stroke, a repelling-spring connected with the said cushioning-arm by a coupling adapted to release the arm from the force of said spring, substantially as and for the purpose set forth.

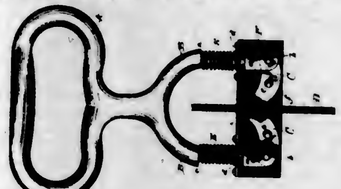
2. In combination with the press-frame, reciprocating type-bed, and the movable cushioning-arm arranged to receive the impact of the type-bed at the end of its stroke, a type-bed repelling-spring, a lever connected to said spring, and a coupling adapted to connect and disconnect the cushioning-arm to and from the said lever, substantially as and for the purpose specified.

3. In combination with the press-frame A, reciprocating type-bed B, and repelling-arm C, the lever D, provided with the shoulder *a*, the spring-coupling I, connecting the lever with the press-frame, the spring *e*, opposed to the rearward movement of the arm C, and the dog *f*, connected to said arm and adapted to engage the shoulder *a*, substantially as described and shown.

4. In combination with the press-frame A and type-bed B, the shaft *g*, journaled on said frame, the arm C, rigidly secured to said shaft, the lever D, pivoted on the same shaft and provided with the shoulder *a* and abutment *s*, the stud-pin *i*, journaled in the arm C, the dog *f* and latch *l*, rigidly secured to opposite ends of the said stud-pin, the spring-coupling I, connecting the lever D with the press-frame, and the spring *e*, opposed to the rearward movement of the arm C, substantially as described and shown.

5. In combination with the press-frame A, type-bed B, arm C, lever D, and dog *f*, detachably connecting said arm and lever and provided with the latch *l*, the shaft O, arm P, projecting from said shaft and reaching under the aforesaid latch, and the spring-supported pin *v*, carried on the free end of the arm P, substantially as and for the purpose set forth.

380,183. **WIRE-HOLDER.** BRADISH J. CARROLL, New Brighton, N. Y. Filed Dec. 28, 1887. Serial No. 259,231. (No model.)

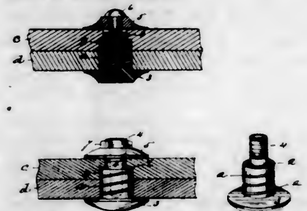


Claim.—1. In a wire-holding tool, the combination of a handle, a plate sliding on the handle, gripping-jaws pivoted on said plate, and connections between the handle and said gripping-jaws, substantially as set forth.

2. In a wire-holding tool, the combination of the handle terminating in branching stems, the plate sliding on said stems, and the gripping-jaws pivoted on said plate and separately connected with said stems, substantially as set forth.

3. In a wire-holding tool, the combination of the handle terminating in branching stems, the plate sliding on said stems, the springs pressing said plate forward, and the gripping-jaws pivoted on said plate and separately connected with said stems, substantially as set forth.

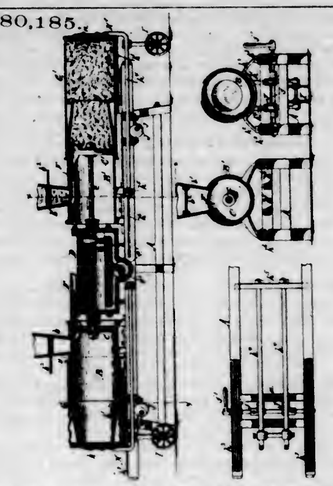
380,184. **BOLT.** FREDERICK CHLOE, Holyoke, Mass. Filed Dec. 5, 1887. Serial No. 256,974. (No model.)



Claim.—A bolt having a tubular body and a spiral groove through the walls thereof, whereby a volute spring is formed between the head and the opposite end of said bolt, substantially as set forth.

380,185. **MACHINE FOR PACKING SHAVINGS.** GEORGE W. CRANE, Tonawanda, N. Y. Filed July 25, 1887. Serial No. 245,186. (No model.)

Claim.—1. The combination, with the supporting-frame A, of a packing-tube secured thereto and provided with a tapering discharge end, a feed-hopper whereby the material is fed into the packing-tube, a follower arranged in the packing-tube and provided with a curved plate or shield, whereby the feed-hopper is closed and the material in the feed-hopper is prevented from entering the packing-tube in rear of the follower, and a horizontal movable frame attached to the main frame and closing the discharge end of the packing-tube, and adapted to support a bag placed around the packing-tube as it receives the material from the latter, substantially as set forth.

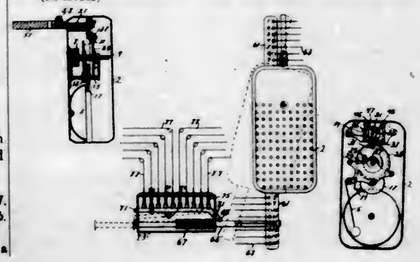


2. The combination, with the supporting-frame A and the packing-tubes B B', secured to said frame and having their outer open ends made tapering, of a steam-cylinder, D, arranged between said packing-tubes and provided with a piston, *d*, and a piston-rod, *c*, extending through opposite ends of said cylinder and into the packing-tubes B B', followers C C, arranged in said packing-tubes and secured to the ends of the rod *c*, feed-hoppers *b b'*, arranged near the inner ends of the packing-tubes, whereby the material is fed into the packing-tubes, and shields F, secured to the followers C C and adapted to close the feed-hoppers by the movement of the followers, substantially as set forth.

3. The combination, with the supporting-frame and a packing-tube provided with a tapering discharge end and a feed-hopper, of a follower arranged in said packing-tube, movable bag-supporting frame H, composed of a horizontal concave plate, *h'*, and an upright plate, *h*, against which the bottom of the bag rests, horizontal rods or bars *h⁴*, sliding on the frame of the machine and attached to the bag-supporting frame, and a cam bearing against said horizontal bars, and whereby the receding movement of the bag-supporting frame is retarded, substantially as set forth.

4. The combination, with the supporting-frame and a packing-tube, of the movable bag-supporting frame H, provided with rods *h⁴*, sliding on the supporting-frame, cams *j*, bearing against the rods *h⁴*, and a truck, I, supporting the outer end of said bag-supporting frame, substantially as set forth.

380,186. **FIRE-SIGNAL AND BURGLAR-ALARM.** JAMES R. CHURCH, Minneapolis, Minn. Filed Nov. 8, 1887. Serial No. 254,584. (No model.)



Claim.—1. The combination, in a device of the class described, of an alarm mechanism, a casing inclosing the same, a shaft mounted in bearings in said casing and forming a pivotal support therefor, arms projecting in opposite directions from said shaft, a stop engaging said alarm mechanism, a spring adapted to hold said stop in engagement with said alarm mechanism, and a slide connected with the arms on said shaft and engaging said stop, substantially as and for the purpose set forth.

2. The combination, in a device of the class described, of the alarm mechanism, the casing inclosing the same, a notched disk, 23, the slide 33, provided with the detent adapted to engage the notch in said disk, the shaft 21, permanently mounted in bearings in said casing and forming a pivotal support therefor, and provided with the arms 47, engaging said slide, whereby said alarm mechanism is released as said casing is turned in either direction upon its pivot or as the shaft is turned in either direction in said casing, substantially as described.

3. The combination, with the casing 2, of the alarm mechanism inclosed therein, the shaft 21, forming a pivotal support for said casing, the releasing device connected with said shaft, the bar 61, secured to said casing, and a series of wires, 63, connected with said bar and adapted to be connected with the doors and windows, for the purpose set forth.

4. The combination, with the casing 2, of the alarm mechanism inclosed therein, the shaft 21, forming a pivotal support for said casing, the releasing device connected with said shaft, the bar 61, projecting from the top and bottom of said casing, and the series of operating-wires 63, connected with said bars, any one of which wires is adapted to be operated independently of the others to turn said casing upon its axis.

5. The combination, with the alarm mounted upon a pivotal support and provided with the projecting bar 61, of the bar 65, adapted to engage with said bar 61, the spring 67, surrounding said bar 65 and adapted to retract the same, the stop-lever 71, adapted to engage said bar 65, and the series of levers 73, bearing upon said lever 71, and each provided with the spring 75 and cord 77, all substantially as described.

6. The combination, with the tilting alarm provided with the projecting bar 61, and the spring-lever 65, adapted to engage therewith, of the stop-lever 71, engaging said lever 65 and holding it against the tension of its spring, the independent spring-levers 73, bearing upon said lever, the cords 77, connected with said levers 73, and the pivoted plates 81, provided with numbers and connected with said cords, all substantially as and for the purpose set forth.

7. The combination, in a fire-signal apparatus, of an alarm mechanism, a casing mounted upon a pivotal support and inclosing said alarm, a spring-actuated bar adapted to engage with said casing and to turn it upon its pivotal support, a stop holding said bar normally out of engagement with said alarm, a series of releasing devices, any one of which is adapted to release said stop and permit it to tilt the alarm-casing, and a series of cords connected with said releasing devices, whereby when any one of said cords is burned off one of the releasing devices will be operated and the alarm will be sounded.

8. The combination, in a fire-signal apparatus, of an alarm, a casing mounted upon a pivotal support and inclosing said alarm, an operating-bar connected with said casing and adapted to turn it upon its pivotal support, a series of cords connected with said operating-bar, and a series of index-plates connected with said cords, whereby when any one of said cords is burned off the alarm mechanism is operated, and the corresponding index device is also operated, substantially as described.

380,187. MACHINE FOR OPENING AND PREPARING FIBROUS SUBSTANCES. ALFRED CLARKE and HAVEN C. PERHAM, Lowell, Mass. Filed Apr. 13, 1885. Serial No. 162,062. (No model.)

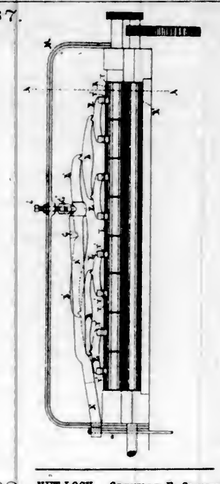
Brief.—The invention consists in an improvement upon the machine described in Letters Patent No. 245,609, dated August 16, 1881, and relates particularly to the system of levers of the evening devices.

Claim.—1. In combination with the lower feed-rolls, R′ R′, and the feed-roll R, the series of levers E D B′ and the bifurcated lever A′, pressing against its fulcrum at one end and having the fulcrum of lever B′ in its bifurcation, and adapted to allow the levers B′ D to pass through such bifurcation, substantially as described.

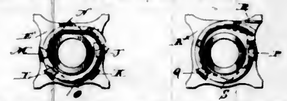
2. In combination with the divided feed-roll R, the series of levers E D B′, the adjustable fulcrum C′, the lever A′, the cone-pulleys J J′ and their belt j^3, and a series of intermediate actuating rods and levers connecting said lever A′ and said belt and pulleys, substantially as described.

3. In combination with the divided feed-roll R, the series of levers E D B′, the adjustable fulcrum C′, its adjusting-screw c', the lever A′, and the cone-pulleys J J′ and their belt j^3, and a series of intermediate actuating rods and levers connecting said lever A′ and said belt and pulleys, substantially as described.

380,187.



380,188. NUT-LOCK. GRENVILLE E. CLARKE, Racine, Wis. Filed Sept. 12, 1887. Serial No. 249,453. (No model.)



Claim.—In a nut-lock, the combination, with the locking-plate formed with a central outwardly-projecting collar, the retaining ears or lugs arranged around said collar upon said plate, and also a protecting-lug, and a coiled locking-spring adapted to be secured between the collar and the ears or lugs, having its free end bulged outwardly and slantingly, and adapted to overlap the nut when screwed home and to be retained in place by the protecting-lug, substantially as and for the purpose shown and set forth.

380,189. METHOD OF DESTROYING INSECTS. ADOLPH CLEMM, Mannheim, Baden, Germany. Filed Mar. 30, 1886. Serial No. 197,106. (No specimens.) Patented in Germany Feb. 19, 1886, No. 37,586; in England Mar. 11, 1886, No. 4,367; in Italy Mar. 23, 1886, No. 19,575; in Belgium Mar. 31, 1886, No. 72,278; in France June 15, 1886, No. 174,441; in Spain Aug. 21, 1886, No. 2,203, and in Austria-Hungary Oct. 4, 1886, XXXVI, 2,030.

Claim.—The method herein described of destroying insects and animals injurious to plants and vegetables, which consists in impregnating the ground with a solution of a sulphide of an alkali and carbonate of an alkali, and subsequently impregnating the ground with a diluted acid solution, whereby simultaneously free gases poisonous to insects and animals and salts that act as fertilizing agents are formed, substantially as set forth.

380,190. COAL-SCREENING MECHANISM. ECKLEY B. COXE and SAMUEL SALMON, Drifton, Pa.; said Salmon assignor to said Coxe. Filed Apr. 25, 1887. Serial No. 236,011. (No model.)

Claim.—1. As an improvement in mechanism for the screening of coal, the combination of a screen-holding frame, a horizontal supporting-base, and two or more double cones which are placed between and have rolling contact with said frame and base, substantially as and for the purpose shown.

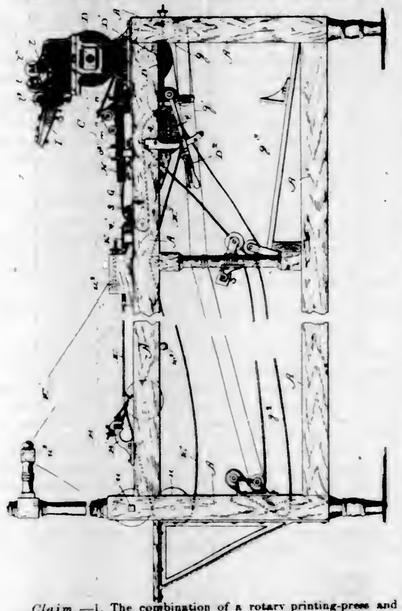
2. As an improvement in mechanism for the screening of coal, the combination of a screen-holding frame, a horizontal supporting-base, two or more double cones which are placed between and have rolling contact with said parts, and a crank that is journaled within said frame and base and is adapted to give to the former a gyratory motion upon or with relation to the latter, substantially as and for the purpose set forth.

3. As an improvement in mechanism for the screening of coal, an organization in which is combined a screen-holding frame, a horizontal supporting-base, double cone-rollers which are placed between said parts and furnish a rolling support for the screen-frame, and means, substantially as shown, whereby said screen-frame may be given a gyratory motion with relation to said base, substantially as and for the purpose shown and described.

380,190.



380,191. COMBINED PRINTING-PRESS AND RULING-MACHINE. JAMES DALE, Chicago, Ill., assignor of one-fourth to John B. Miller, same place. Filed June 10, 1887. Serial No. 240,871. (No model.)



Claim.—1. The combination of a rotary printing-press and a ruling-machine operated by and constituting the feed for the printing-press and having its sheet-conveying mechanism disconnected from the printing-cylinders, substantially as described.

2. The combination of a rotary printing-press, C, and a ruling-machine, B, geared to the driving mechanism of the printing-press, to constitute it the feed for the said press, and having its sheet-conveying mechanism disconnected from the printing-cylinders, substantially as described.

3. The combination of a rotary printing-press, C, a ruling-machine, B, geared to the driving mechanism of the printing-press, to constitute it the feed for the said press, and having its sheet-conveying mechanism disconnected from the printing-cylinders, and a clutch for disengaging the gear-connection between the ruling and printing portions of the device, substantially as described.

4. In a printing-press, C, having a feed, the combination, with the cylinders, of a lateral guide, H, and traveling tapes G, twisted to convey the sheets toward the lateral guide, substantially as and for the purpose set forth.

5. In a printing-press, C, having a feed, B, the combination, with the cylinders, of a laterally-adjustable guide, H, and traveling tapes G, twisted to convey the sheets toward the said guide, substantially as and for the purpose set forth.

6. In a printing-press, C, having a feed, B, the combination, with the cylinders, of a lateral guide, H, comprising an adjustable rod, o^3, and a strip, o, adjustably connected with the rod, and traveling tapes G, twisted toward the said strip, substantially as and for the purpose set forth.

7. The combination of a printing-press, C, a ruling-machine, B, geared to the driving mechanism of the printing-press, to constitute it the feed for the said press, and having its sheet-conveying endless cloth and strings disconnected from the printing-cylinders, a lateral guide, H, and rotary rollers s and s', carrying twisted endless tapes G, substantially as and for the purpose set forth.

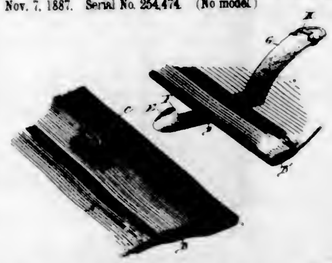
8. In a rotary printing-press, the combination of a form-cylinder, D, an impression-cylinder, D′, carrying oscillatory nippers F′, a guide, H, a conveyer having tapes G, twisted to convey the sheets toward the said guide, a bearer, c, a gate, n', and sheet-holding device m', bearing against the bearer c, substantially as and for the purpose set forth.

9. In a rotary printing-press, the combination of a form-cylinder, D, having dovetailed grooves in its surface and clamps for securing the forms in place, each comprising the parts g, g', g^3, and f, and a set-screw, f', substantially as described.

10. In a printing-press, the combination, with the cylinders D and D′ and fountain I, of a slowly-rotating roller, l^3, an oscillating roller, l, and a slotted link, k^4, and lever k^3, having a socket, k^2, for respectively connecting and for separately disconnecting the rollers l and l^3 from their actuating mechanism, substantially as and for the purpose set forth.

11. In a printing-press, the combination, with the cylinders D and D′ and fountain I, of a rock-shaft, i, carrying bearings i', supporting an ink-roller, l, a link, k^4, secured at one end to the rock-shaft i, a bell-crank lever, k, pivotally supported at its angle, a lever, k^3, secured at one end to the link k^4 and having a socket, k^2, to fit upon one end of the bell-crank lever, a rotary cam, y^4, having a cam-slot, y^5, receiving the opposite end of the bell-crank lever and connected with the driving mechanism of the cylinders, a roller, l^3, carrying on one end a spur-wheel, h, a link, k^3, carrying a spring-dog, h', held in engagement with the spur-wheel, and a link, k^2, removably connected at one end with the link k^3, and eccentrically connected at its opposite end with the cam y^4, substantially as and for the purpose set forth.

380,192. CORSET-FASTENER. BENJAMIN R. DAVENPORT, Chicago, Ill., assignor to the Calumet Fastener Company, same place. Filed Nov. 7, 1887. Serial No. 254,474. (No model.)



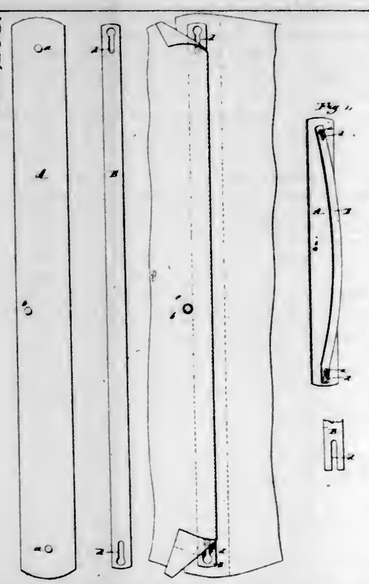
Claim.—1. In the corset-fastening herein described, a catch-loop and a catch, in combination with a locking-loop the bar of which wedges between the corset-steel and the catch, whereby said catch is locked in engagement with the catch-loop, substantially as described.

2. In the corset-fastening herein described, a catch-loop and a catch adapted to engage therewith, in combination with an elastic strap and a loop thereon adapted to engage and lock the catch and catch-loop together, substantially as described.

380,193. CORSET-CLASP. JOSEPH DAY, New Haven, Conn., assignor to Joseph Kohn, same place. Filed Jan. 16, 1888. Serial No. 260,868. (No model.)

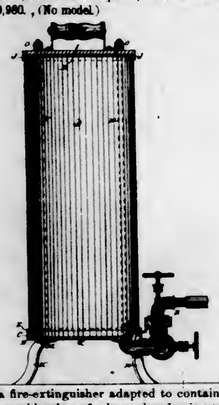
Claim.—The herein-described corset-clasp, consisting of the steel B, constructed with a longitudinal slot at each end formed directly in

380,193.



the steel itself, combined with the busk A, provided with studs corresponding to said slots and with which said slots may engage, and the said busk provided with one or more intermediate studs, substantially as described.

380,194. **FIRE-EXTINGUISHER.** CYRUS S. DEAN, Fort Erie, Ontario, Canada, assignor to George W. Dean, same place, and Cyrus H. Woodruff, Buffalo, N. Y. Filed Apr. 10, 1886. Renewed Sept. 17, 1887. Serial No. 249,980. (No model.)

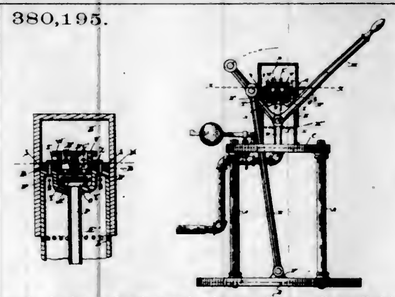


Claim.—In a fire-extinguisher adapted to contain compressed air and a liquid, the combination of a base-plate having two flanges upon its upper face, the outer one of which is higher than the inner one, an elastic packing between said flanges, a cylindrical can having a closed end and an inwardly-projecting flat bead upon the open end, whereby the pressure of the water is adapted to force the flange against the packing and the side of the can against the outer flange, a flanged cup upon the opposite end of the can, and means, substantially as described, for securing the parts together.

380,195. **AIR-COMPRESSOR.** CYRUS S. DEAN, Fort Erie, Ontario, Canada, assignor to George W. Dean, same place, and Cyrus H. Woodruff, Buffalo, N. Y. Filed Apr. 19, 1886. Renewed Sept. 17, 1887. Serial No. 249,981. (No model.)

Claim.—1. In an air-compressor, the combination of an inner cylinder having air-inlets and having its top formed with an annular

380,195.



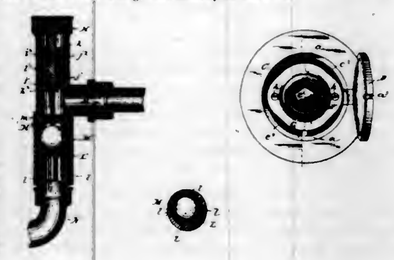
portion having perforations and a downwardly-extending cylindrical chamber having the outlet-pipe secured in its bottom, a packing-ring having its edge bent upward and fitting upon the annular portion of the top having registering perforations, a cap having an annular flange fitting upon the packing-ring and secured to the top by screws and formed with registering perforations, and having an upwardly-extending portion formed with an outwardly-bent flange at its upper edge and a downwardly-projecting portion fitting in the upper portion of the chamber, and having a central perforation and an annular series of perforations, an annular valve playing between the flanges of the cap upon the perforated flange, a circular valve-disk playing upon the under side of the bottom of the cap, having a stem sliding in the central perforation and provided with a coiled spring bearing against the bottom and a head upon the stem, and an outer cylinder having a closed head and sliding tightly upon the inner cylinder, having means for reciprocating it, as and for the purpose shown and set forth.

2. In an air-compressor, the combination of a support consisting of legs connecting a base-plate and a table, a pair of arms pivoted with the lower ends to two ears upon the base and rocking with the upper portions in slots in the table, a hand-lever bifurcated to form rectangularly-bent arms fulcrumed at the middles of the outer portions upon the upper ends of the rocking arms, a handle connecting the outer ends of the lever-arms, a cylinder secured to the table and having upwardly and downwardly opening valves and outlet-pipe, and a cylinder sliding upon the inner cylinder and having a closed top and two laterally-projecting trunnions pivoted in the bends of the lever-arms, as and for the purpose shown and set forth.

3. In an air-compressor, the combination of an inner cylinder having a row of inlets or apertures just below the lower edge of the outer cylinder when at its highest point and having an interior pipe opening in a chamber having a downwardly-opening valve, and an outer cylinder having a closed head and a lever for reciprocating it upon the inner cylinder, as and for the purpose shown and set forth.

380,196. **STOP BOX AND COCK.** CHARLES G. ETTE, St. Louis, Mo. Filed Aug. 9, 1887. Serial No. 246,509. (No model.)

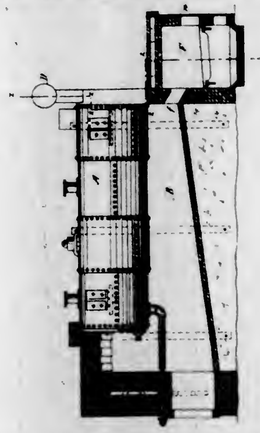
Claim.—The combination, with the upper casing and adjustable shell, A, provided with grooves *a a* and the cover B, of the inner stationary shell, C, provided on its outer upper edge with projections *a'*, having internal grooves, *c*, the vertically-sliding thimble D, provided with an internal female quick-screw, D^3, the stem E, provided with a quick-screw, *e*, and a pentagon nut, e^3, protected by the flange or guard F, the valves and washers on the lower portion, H, of the stem E, the shell L, provided with the internal ribs, *l*, the shouldered inlet-pipe N, outlet-pipe O, and the ball-valve M, located in the shell L below the projecting rod H^3, whereby a clear and uninterrupted waterway is always provided through the hydrant when the valve is open, and whereby the flow of water is automatically cut off as soon as the valve-stem is removed or raised up below the lower line of the valve-seat in the lower casing, substantially as described.



380,196.



380,197. **STEAM-BOILER SETTING.** WILLIAM U. FAIRBAIRN, Hyde Park, Mass. Filed Mar. 14, 1887. Serial No. 230,818. (No model.)



Claim.—1. The combination, with the main flue B of a boiler-setting, of the fire-box F, by means of the upwardly-directed converging channels *f* through the bridge-wall, substantially as described.

2. The combination of the main flue B of a boiler-setting with a fire-box placed in front thereof, with the upwardly-directed and converging flues *f*, and the air-channels *g*, substantially as described.

3. The combination, in a boiler-setting, of a fire-box, F, placed in front of and below the body of the boiler A, and provided with a bridge-wall, G, separating the main flue B of the boiler-setting from the fire-box F, which bridge-wall G is perforated by the upwardly-directed and converging flues *f*, substantially as described.

4. The combination of the boiler A with the fire-box F, located below the body of the boiler and in front of the flue-sheet thereof, and the main flue B of the setting, which said fire-box F is separated from the flue B by a bridge-wall, G, through which bridge-wall G the upwardly-inclined and converging passages *f* are made, substantially as described.

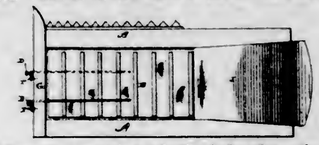
5. The combination of the boiler A with its setting, which setting contains the flue B, and the fire-box F, situated in front of and below the body of the boiler and in front of the flue B, and connected with said flue B by upwardly-inclined and converging passages *f*, and the air-channels *g* in the roof or walls of said fire-box, substantially as described.

6. In a boiler-setting, the combination of a fire-box, F, the bridge-wall G, separating the main flue B of the boiler-setting from the fire-box F, the upwardly-directed converging flues *f*, the air-channels *g*, the bevel-ended thermostatic rod *i*, the register *h*, and the system of levers and links *k l m*, substantially as described.

7. The combination of the converging air-channels *g* with the converging and upwardly-directed gas-channels *f* and the fire-box F and main flue B, all being contained in and surrounded by the boiler-setting, substantially as described.

8. The boiler-setting containing the main flue B, the fire-box F, the upwardly-directed and converging flues *f* and the converging air-channels *g*, all substantially as and for the purposes described.

380,198. **GRAIN-ADJUSTER.** HORATIO B. FRENCH, Will's Point, Tex. Filed Aug. 15, 1887. Serial No. 246,974. (No model.)



Claim.—1. An attachment for the platform-frame of a harvester, consisting of an elastic corrugated rod or wire fastened at its outer end to the outer side of the grain-board and resting upon the carrier-belt, whereby it is given a vibrating movement by the slats on the belt striking the corrugations in the rod, substantially as described.

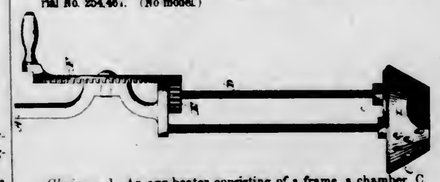
2. The combination of the platform-frame of a harvester and the endless carrier with a corrugated rod or wire, C, adjustably fastened at its outer end to the grain-board, and which rests upon the carrier-belt and is provided with the coil D at its outer end, the rod being made adjustable back and forth in relation to the cutter according to the length of grain being cut, substantially as described.

380,199. **SHIPPING APPLIANCE.** GEORGE A. GENOUDEN and ALBERT F. GARTNER, Savannah, Ga. Filed June 1, 1887. Serial No. 240,007. (No model.)



Claim.—The herein-described shipping appliance, consisting of a thimble, A, adapted to be let or embedded in a barrel, box, or other packing-vessel and secured thereto, and having a pocket, B, and groove *b*, combined with a cap, C, adapted to be driven and spread into the groove, substantially as set forth.

380,200. **EGG-BEATER.** JOHN GERARD, New Britain, Conn., assignor to Landers, Frary & Clark, same place. Filed Nov. 7, 1887. Serial No. 254,467. (No model.)

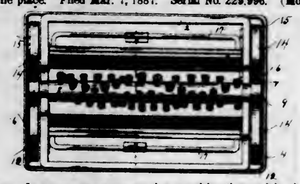


Claim.—1. An egg-beater consisting of a frame, a chamber, C, made fast to said frame, the chamber constructed with an inlet-opening at one side and its side wall perforated to form numerous outlets, a revolving shaft extending into said chamber, a head within said chamber fixed upon said shaft and so as to revolve therewith, the said head located at one side of the chamber and near the inlet-opening, the head constructed with a diametrical slot, and the blade arranged in said slot free to work diametrically therein, the said blade extending substantially to the inner side walls of said chamber, substantially as described.

2. An egg-beater consisting of a frame, A, provided with a handle at its upper end and constructed with a chamber, C, at its lower end, the said chamber constructed with an inlet-opening, I, at one side, the walls of the chamber perforated to form numerous outlets, a ver-

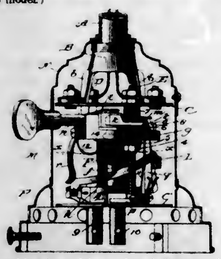
tical shaft, D, substantially parallel with the axis of said chamber, extending into said chamber, the said shaft provided with a head, G, within said chamber and which revolves therewith, the said head constructed with a diametrical slot, a blade within said slot on the head free for radial movement, the said blade extending substantially into contact with the walls of the chamber upon opposite sides, a crank-gear, F, on said frame, and a corresponding pinion, E, on said shaft, all substantially as described.

380,201. **CARPET-SWEEPER.** HENRY A. GORE, Goshen, Ind., assignor of two-thirds to Edward W. Walker and Hiram W. Ruton, both of same place. Filed Mar. 7, 1887. Serial No. 229,996. (Model.)



Claim.—In a carpet-sweeper, the combination, with the casing, of horizontal strips of spring metal secured to the sides thereof and having their free ends extended to the middle of the end pieces, the brush journaled upon the free ends of said springs, and drive-wheels for operating said brush.

380,202. **INCANDESCENT-ELECTRIC-LAMP HOLDER AND CUT-OUT.** CHARLES HEISLER, St. Louis, Mo. Filed Jan. 18, 1887. Serial No. 224,708. (No model.)



Claim.—1. In combination with an electric lamp and an electro-magnetic shunting mechanism, the core of which is directly connected to one of the lamp-terminals and forms a part of the circuit between that terminal and one of the line-wires, and having its coil in a circuit around the lamp, a switch operated by the electro-magnet and arranged to short-circuit the lamp, all substantially as described.

2. In combination with an electric lamp, a magnet-core the coils of which are in shunt with the lamp-circuit, and having flanges on its ends acting as pole-pieces, the flange at one end being connected permanently to one of the lamp-terminals, the flange at the other end connected to binding-posts, one insulated and the other uninsulated thereon, connections between the insulated post and the other lamp-terminal, whereby the lamp-circuit is formed through the core, and a magnetic shunt operated by the armature of the electro-magnet when the lamp fails to work, all substantially as described.

3. An electro-magnet having a core formed with flanged or extended pole-pieces attached on one end to one of the terminals of a lamp, binding-posts upon the flange of the other end, with bracket-connections and with binding-posts, one insulated from the flange and connected to the other lamp-terminal, and the other uninsulated on the same flange, a coil about the core in shunt with the lamp-circuit, an armature hinged upon the flange of one end of the core and extending in front of the edge of the flange on the other end, a conducting-lever arranged when down to short-circuit the lamp and normally held up by a shoulder on the armature, but arranged to be released when the armature is attracted to the core, all substantially as described.

4. In combination with an electric lamp and an electro-magnet, a switch, one end of the core of the electro-magnet being rigidly connected to the bracket, as A, and the other end rigidly connected to the lamp, the core with its extensions forming the sole connection between one of the lamp-terminals and bracket, all substantially as described.

5. In combination with the upper and lower flanges of the core of the magneto-electric switch, a socket for the lamp-terminal connected directly to the lower flange and electrically connected to a binding-post on the upper flange, an extension of a second socket for the lamp-terminal electrically connected to the other binding-post, also supported on the upper flange, an insulating-disk at each end of the electro-magnet, and supported thereon, substantially as described.

6. In combination with an electric lamp, an electro-magnet the core of which forms a part of the permanent circuit of the lamp, the armature of which controls a shunting-lever for short-circuiting the lamp, a flange on one end of the electro-magnetic core, a manual switch and bearing for the switch-key on said flange, all substantially as described.

7. In combination with an incandescent lamp, an electro-magnet having its coil in shunt with the lamp-circuit, a flange on one end of the core of the magnet supporting a manual and a thermal switch, an electro-magnetic switch controlled by the armature of the electro-magnet, and a fusible block interposed between the surface of the flange and the thermal switch, whereby under the influence of the alternating currents the block may be melted and the switch operated, all substantially as described.

8. In combination with the lamp, the electro-magnet and its armature hinged on one flange of the core and extending before the other, a conducting-lever pivoted one side of the flange and extending around to a point opposite the free end of the armature and contact-piece in circuit, all substantially as described.

9. In combination with the lamp and the electro-magnetic switch therefor, the core of the magnet being in the lamp-circuit, a flange forming one pole of the electro-magnet, a binding-post fixed and insulated on the flange, and an extension of said binding-post to complete the lamp-circuit, an insulating-disk supported on the posts, and a shank having legs attached to the disk, whereby the disk is connected to the bracket, all substantially as described.

10. In combination with the lamp, the electro-magnetic switch therefor, the core of the magnet being in the lamp-circuit by means of a binding-post on a flange on one end of the core, and a raised portion on a flange at the other end of the core, to which the lamp-socket is fixed, and a binding-post and connections to complete the lamp-circuit, all substantially as described.

11. In combination with the pole-piece of the core of the electro-magnetic switch of an electric lamp, a fusible block resting on the pole-piece and normally sustaining a spring-switch out of contact with a piece, *k*, which is in connection with the lamp-circuit and underneath the spring-switch, the fusible block being located near, but separated electrically from, the piece *k*, all as and for the purpose set forth.

12. A spring for the manual switch and a spring for the thermal switch, both combined with a single screw and with sleeves thereon, substantially as described.

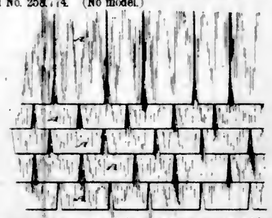
13. In combination, the electro-magnet with its core and flanges, the automatic short-circuiting lever pivoted upon the lower flange of the core and bent around the core of the described cut-out, substantially as described.

14. In combination, the electro-magnet with its core and flanges, the automatic short-circuiting lever arranged around the core, as described, and having its pivot upon the lower flange, and the spring r, fixed to the upper flange and bearing upon the lever above its pivot, substantially as described.

15. The combination, with the upper disk, of the cut-out mechanism, the bridge having a hollow boss, said bridge holding the disk and the cut-out mechanism to the pipe-fastening, and the wires passing through the hollow boss of the bridge and carried outwardly through the opening in the bridge to the binding-posts, substantially as described.

16. In combination with the lower flange of the iron core of the cut-out, a lamp-socket attached directly to said flange, as described.

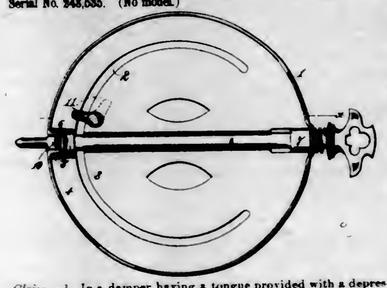
380,203. **SHINGLE.** HUGH C. HENDERSON, San Francisco, Cal., assignor of one-half to Newton M. Bell, same place. Filed Dec. 22, 1887. Serial No. 258,774. (No model.)



Claim.—1. As a new article of manufacture, a shingle having approximately-parallel edges for about two-thirds of the length from the thin end, and converging slightly the remaining distance, substantially as herein described.

2. The shingle having the edges at the thicker end made slightly diverging to a point about one-third of the length from the thicker end and approximately parallel from that point to the thinner end, substantially as herein described.

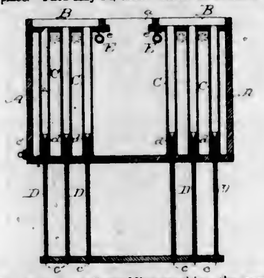
380,204. **STOVE-PIPE DAMPER.** JOHN C. INGALLS, Marquette, Mich., assignor to Charles Miller & Son, Utica, N. Y. Filed Sept. 1, 1887. Serial No. 248,535. (No model.)



Claim.—1. In a damper having a tongue provided with a depression or bearing for the spindle, and having sockets for the ends of the latter, a turn-button mounted on the tongue and spanning the slot 2 to engage the damper-plate to prevent the warping of the parts, substantially as described.

2. In a stove-damper, the combination, with the tongue of the damper-plate separated from said plate by a semi-annular slot, of a spindle lying in a central depression and having a latch-bearing on one end engaging with a shoulder on the damper, and a button pivoted on the tongue and engaging with the adjacent part annulus, substantially as described.

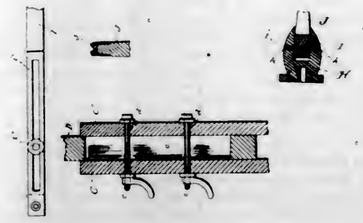
380,205. **APPARATUS FOR COOLING CANDLE-MOLDS.** GUSTAVE JAMSEN, Chicago, Ill., assignor of one-half to John P. Fitzgerald, same place. Filed May 24, 1887. Serial No. 239,176. (No model.)

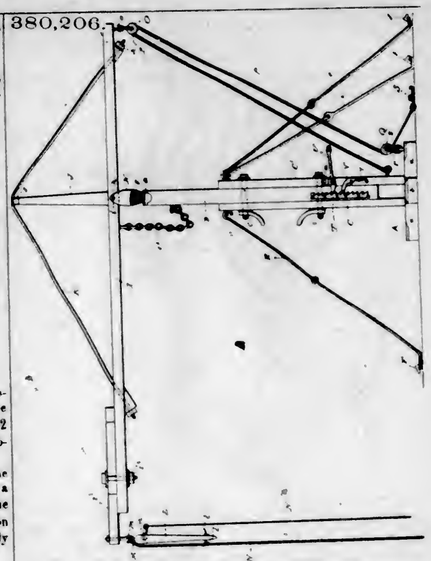


Claim.—1. In a candle-molding machine, the combination, with the candle-stock troughs B, molds depending therefrom, and cooling-box, of the pipes E, adapted to project water against the bottom of said trough, as set forth.

2. In a candle-molding machine, the combination, with the candle-stock troughs B, molds depending therefrom, and cooling-box A, of the pipes E, having perforations therein and adapted to project jets of water against the bottoms of said troughs, as and for the purpose set forth.

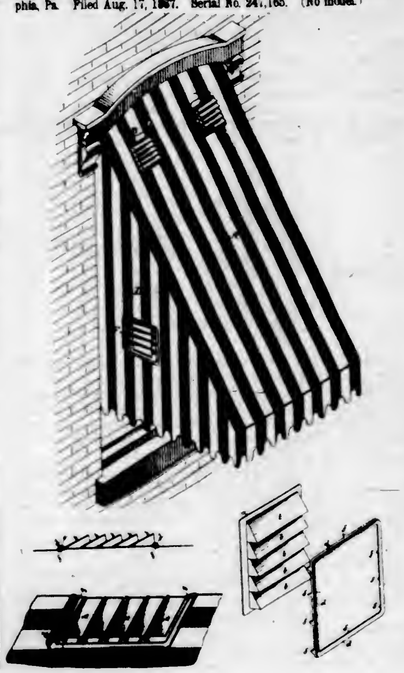
380,206. **HAY-DERRICK.** ABRAHAM L. KANE, Middle Fork, Ohio. Filed Oct. 5, 1887. Serial No. 251,547. (No model.)





Claim.—In a derrick, the combination of the base, the standards C C, the longitudinally-slotted beam D, the set bolts and nuts provided with handles, the rack T, the pivoted lever U, the link *u*, the detent V, and spring *v*, substantially as specified.

380,207. **AWNING-VENTILATOR.** JOHN P. KNOBLOCK, Philadelphia, Pa. Filed Aug. 17, 1887. Serial No. 247,165. (No model.)



upon its lower end, the sliding collar formed with the annular groove,

380,207.



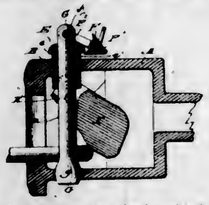
Claim.—1. The combination of a folding awning with a ventilator applied to that portion of the fabric of the awning which is above the folds when the awning is raised, all substantially as specified.

2. The combination of a folding awning with ventilators applied to the side wings of the same and to that portion of the body of the awning which is above the folds when the awning is raised, all substantially as specified.

3. The combination of an awning or like structure with a ventilator applied to the body of the same so as to assume an inclined position when the awning is down, said ventilator consisting of a frame having fixed hoods projecting at an angle and overlapping each other, all substantially as specified.

4. The combination of an awning or like structure with a ventilator consisting of a frame, and a series of flaps hung thereto and located one above another, the pendent portion of each flap being free from contact with the frame or adjacent flap, whereby it is free to swing in both directions, all substantially as specified.

380,208. CAR-COUPLING. BURR F. LAIRD, Ocean Springs, Miss. Filed Nov. 23, 1887. Serial No. 256,017. (No model.)



Claim.—1. In a car-coupling, the draw-head having a pin-opening and bearings adjacent to and on the opposite sides of same, combined with the pin fitted to said opening, and a pin-anchor connected at one end to the pin and movable to one or the other side thereof and provided at the opposite sides of its movable end with hooks or shoulders whereby to engage the bearings on either side of the pin-opening, substantially as set forth.

2. In a car-coupling, a draw-head having a pin-opening and a bearing surrounding the same, combined with an anchor pivoted at one end to the coupling-pin and having an arrow-like head at its opposite end forming shoulders or hooks on its opposite sides, substantially as and for the purposes specified.

3. The combination of the draw-head having a bearing, the coupling-pin, the pin-anchor constructed with an arrow-like head and having an arm or arms extended therefrom and pivoted to the pin, and the pin-lifting connection secured to said head, substantially as set forth.

4. In a car-coupling, a pin-anchor constructed with an arrow-like head and having an arm or arms whereby such head may be connected with the coupling-pin, substantially as set forth.

5. In a car-coupling, the combination of the draw-head, the pivoted swing-rest or pin-support, and the supplemental pin-support pivoted and adapted to operate substantially as set forth.

6. In a car-coupling, the combination of the draw-head, the pivoted swing-rest or pin-support, and the supplemental pin-support pivoted concentrically with said pin-support, substantially as set forth.

7. A car-coupling having a pin-seat movable into and out of the path of the coupling-pin and provided with a supplemental pin-support movable normally into the path of the pin when the pin-support proper is pushed rearwardly out of normal position, whereby the coupling-pin may be held out of coupled position when a train of cars is jammed together, substantially as described, and for the purposes specified.

8. The combination, in a car-coupling, of the draw-head, the pin-support having a seat or shoulder, i^2, and the supplemental pin-support having a cross-bar arranged to rest on said seat, substantially as set forth.

9. In a car-coupling, the combination of the draw-head, the swing-rest or pin-support having a cut-away portion or mortise, i', and a seat, i^2, and the supplemental pin-support having a cross-bar arranged to rest on said seat, substantially as set forth.

380,209. BUCKLE. TOBIAS A. LEE, Sidney, Ohio. Filed July 30, 1887. Serial No. 245,754. (No model.)



Claim.—1. The improved buckle herein described, comprising a support provided with the tongue and the pivoted loop having an opening fitted and arranged to receive the point of said tongue and movable down thereover, substantially a sand for the purposes specified.

2. The tongue-support and tongue, combined with the pivoted loop movable down over the tongue and a spring for actuating the loop, substantially as set forth.

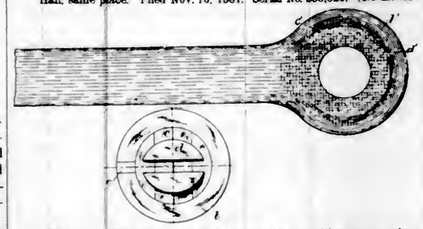
3. In a buckle, substantially as herein described, a tongue and a support therefor, combined with a loop having a shaft provided with a crank and a spring engaging said crank, substantially as set forth.

4. In a buckle, substantially as herein described, the combination of the tongue and its support, the loop having a shaft provided with a crank and journaled to the support, and the spring formed out of the tongue and engaging the crank of the shaft, substantially as set forth.

5. The tongue and its support, combined with the pivoted loop having an opening, f, formed with a wing or extension, f', substantially as set forth.

6. The improved buckle herein described, consisting of the support having a tongue, the spring formed from such tongue, and the loop having a shaft journaled to the support and provided with a crank, said loop having an opening, f, and formed with a wing or extension, f', substantially as set forth.

380,210. MANUFACTURE OF BRIDGE-BARS. SOLOMON W. LERCH, Canton, Ohio, assignor to himself, Edward J. Landor, and William P. Hall, same place. Filed Nov. 16, 1887. Serial No. 255,329. (No model.)



Claim.—1. The herein-described method for making an eye-piece for bridge-bars and other similar articles, it consisting in first forming an annular holder, then filling the interior of the said holder with a pile of metallic parts, some transverse to others, then welding the aforesaid parts together, and subsequently forming an apertnre at the center, substantially as described.

2. The herein-described method for making the eye-piece of a bridge-bar or similar article, it consisting in first forming an annular holder or receptacle, then placing therein a pile of metallic pieces of metal, arranged substantially as described, then welding the aforesaid parts together, and while welding crowding a portion of the said interior material outward to form a radial projection with its fibers, arranged substantially as described, and for the purposes set forth.

3. The herein-described method for making bridge-bars and other similar articles, it consisting in providing a metallic holder, placing in the interior of said holder a pile of metallic pieces adapted to be welded, then welding the aforesaid materials together, and while welding crowding a portion of the metal outward to form a radial projection, and subsequently welding the aforesaid parts to the shank or stem of the bridge-bar or other article, as described.

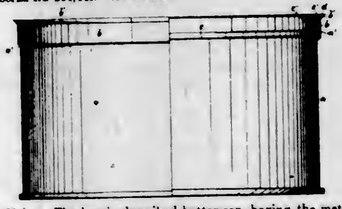
4. The herein-described eye-pieces for bridge-bars or similar articles, consisting of the part a, the annular part b, and the interior mass of metal, c d, all united by welding, the fibers of the parts c d being substantially rectilinear, as set forth.

5. The herein-described eye-pieces for bridge-bars or similar articles, having an annular part, b, with its fibers extending around the eye, and the interior part, c d, having rectilineal fibers, substantially as described.

6. The herein-described eye-pieces for bridge-bars or similar articles, having a base portion, a, the annular part b, the fibers of which extend part way around the eye-piece, but are terminated to leave a space between them at the ends, and the interior portion, c d, having straight fibers, a portion of which is crowded between the terminals of the part b, substantially as described.

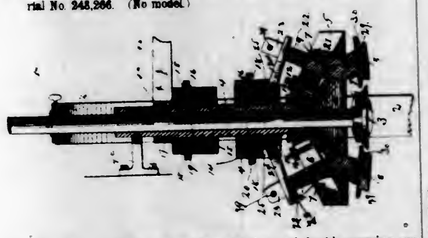
7. The herein-described eye-bars for bridges or similar structures, having the eye-piece formed of single metallic parts welded together, with more or less of the fibers thereof projecting radially from the eye-piece, and the stem or shank welded to the said eye-piece, substantially as set forth.

380,211. BUTTER-CAN. JOHN R. LEVAMBURE, Monticello, Iowa, assignor to Greenlief W. Simpson, Somerville, Mass. Filed Jan. 21, 1888. Serial No. 261,446. (No model.)



Claim.—The herein-described butter-can, having the metal band b soldered to its upper portion, said band having an outwardly-flaring edge, b', in its upper end, combined with the sink-cover c, adapted to fit the interior of the band b, and having an offset, c'', adapted to rest on the top edge of the can, a reduced lower portion, c^2, adapted to fit the interior upper portion of the can, and an upper flaring edge, c', adapted to be united to the band b and its flaring edge by means of solder or alloy d, as and for the purpose set forth.

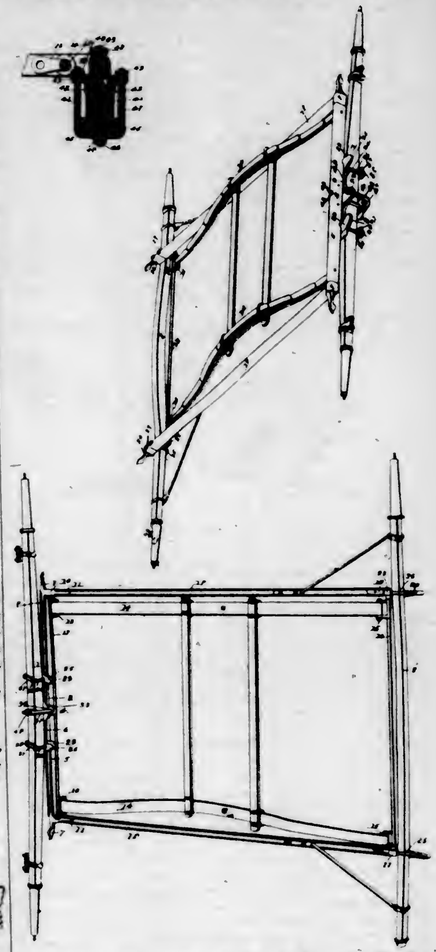
380,212. CAN-SEAMING MACHINE. GEORGE W. LORE, Dexter, assignor of four-fifths to George S. Sill, Charles T. Sill, Louis W. Briggs and James S. Spencer, all of Detroit, Mich. Filed Aug. 30, 1887. Serial No. 248,266. (No model.)



Claim.—1. In a machine for crimping and double-seaming can ends, the combination of the vertically-adjustable and non-rotatable rod having the centering-plate secured upon its lower end, the revolving sleeve having the radially-slotted head secured upon its lower end, the pivoted levers adjustable in said slots, a roll removably journaled upon the lower end of each of said levers, the sliding collar formed with the annular groove, the pivoted arms, and pivoted adjustable yoke, and a lever engaging the said groove for operating the collar.

2. In a machine for crimping and double-seaming can ends, the combination of the vertically-adjustable and non-rotatable rod having the centering-plate secured upon its lower end, the revolving sleeve having the radially-slotted head secured upon its lower end, the bifurcated adjustable plates, levers, each having a roll removably journaled upon its lower end, the sliding collar formed with the annular groove, the pivoted arms, and pivoted adjustable yokes, and a lever for engaging said groove for operating the collar.

380,213. RUNNING-GEAR FOR VEHICLES. TABOR G. MANDT, Stoughton, Wis. Filed June 30, 1887. Serial No. 243,000. (No model.)



Claim.—1. In a running-gear for vehicles, the combination of a head-block formed by a longitudinally-doubled flat metallic bar or strip U-shaped in cross-section, end tips having their reduced inner ends secured in the ends of the head-block and formed with rearwardly-extending blocks or bars having transverse eyes at the inner ends, side bars formed by longitudinally-doubled flat metallic bars or strips U-shaped in cross-section and secured with their forward ends to the rearwardly-extending bars or blocks of the end tips, end tips fitting in the rear ends of the side bars and having transverse downwardly-projecting eyes and transverse recesses, a rear axle resting in the recesses and secured to the blocks by means of clips and shackles passing through perforations in the blocks at both ends of the recesses, transverse rods secured with the ends in the eyes of the end tips of the head-block and of the side bars and having inwardly-projecting perforated ears, and semi-elliptical springs having their ends secured between the perforated ears, as and for the purpose shown and set forth.

2. In a running-gear for vehicles, the combination of an upper fifth-wheel block formed with segmental bars at its ends and with a

concentrically-recessed circular disk at its middle, a lower block having segmental bars at the ends registering with and bearing against the bars of the upper block and formed with a central circular disk having a circular flange fitting in the recess of the upper block, and a king-bolt passing through the lower block and turning in a central perforation of the upper block, as and for the purpose shown and set forth.

3. In a running-gear for vehicles, the combination of an upper fifth-wheel block having a central disk formed with a circular recess and with a central king-bolt perforation and with forwardly and rearwardly extending perforated ears and having transverse segmental bars at the ends concentric with the disk and perforation, a lower fifth-wheel block provided at the ends with transverse segmental bars registering with the similar bars upon the upper block and bearing against them and formed with a central disk formed with a circular flange projecting and turning in the recess of the upper block and formed with two diametrically-opposite perforations, a bifurcated king-bolt having its upper nutted end secured pivotally in the king-bolt perforation and having its lower ends inserted through the perforations in the lower block, a shackle secured by nuts upon the ends of the lower legs of the king-bolt and having a central nutted bolt, and a bail-shaped yoke or stirrup pivoted with its middle upon the bolt of the shackle and having its upper nutted ends secured in the perforated ears of the upper block, as and for the purpose shown and set forth.

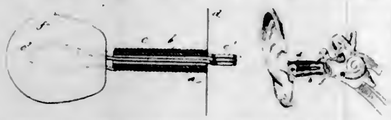
380,214. **DOUBLE-SET PLOW.** WILLIAM T. MAYNARD, Forsyth, Ga. Filed July 1, 1887. Serial No. 243,125. (No model.)



Claim.—1. A plowshare formed of a single piece of flat metal, the shank provided with a bolt-hole, and the lower portion pointed and provided with a double set, the first set curved forwardly from the shank and the second set inclined diagonally downward toward the point, the space between the two sets made straight and horizontal, substantially as and for the purpose set forth.

2. The combination, with the main and supporting beams of a plow, of the double set or bent plowshare or shovel formed in one piece, with a horizontal body having a downwardly-inclined point and an upwardly-inclined rear portion or shank, the space between the two sets horizontal, and the shank adapted to be secured to the supporting-beam of the plow, as and for the purpose set forth.

380,215. **EAR-BATTERY FOR THE DEAF.** MARY E. MOORE, New York, N. Y. Filed June 15, 1887. Serial No. 241,363. (No model.)



Claim.—1. The electric ear-battery herein shown and described, the same consisting of a tube of zinc and a copper wire coiled around the same, and connected to the zinc tube by a wire shaped to enter the ear, in combination with the diaphragm *d*, held at the outer end of the device, substantially as described.

2. The electric ear-battery herein shown and described, composed of a tube of zinc and copper coil connected by the wire *c*, in combination with diaphragms at the outer and inner ends of the device, substantially as described.

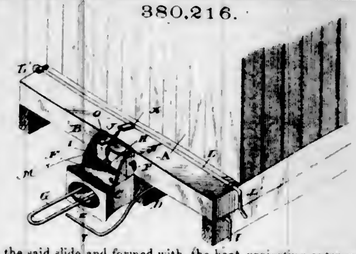
380,216. **CAR-COUPLING.** LEWIS A. NEFF, Middletown, Ind. Filed Aug. 18, 1887. Serial No. 247,254. (No model.)

Claim.—1. The combination, with the draw-head, of the adjusting-shaft formed with the projecting bent outer end and the inner forward extension having the bent forward end, the loose outer bearing for the said shaft, and the spring-actuated eye-rod, substantially as and for the purpose set forth.

2. The combination, with the draw-head, the coupling-pin, and its chain, of the frame or casing secured upon the draw-head, slide-block, and the set-screw for securing the same in its adjusted position, substantially as set forth.

3. The combination, with the spring-actuated movable draw head and bar, of the slide secured to the same, and the crank-shaft mounted

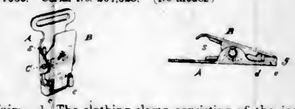
380,216.



on the said slide and formed with the bent projecting outer end and the inner forward projection having the bent forward end, substantially as set forth.

4. The combination, with the spring-actuated movable draw head and bar, of the slide secured to the same, and the crank-shaft loosely journaled thereon at its outer end, having the projecting stop journaled at its inner portion in the spring-bearing, and formed with the inner forward extension having the bent forward end, substantially as and for the purpose set forth.

380,217. **CLASP.** JOHN V. PILCHER, Louisville, Ky. Filed Jan. 19, 1888. Serial No. 261,323. (No model.)

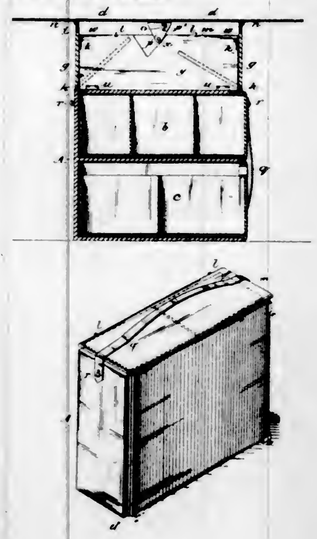


Claim.—1. The clothing-clamp consisting of the jaws A B, pivoted together, and having, respectively, the inwardly-bent offset-lips *c* on each side of the jaw A and the bent extension-lip of the jaw B at its closing end, adapted to pass between said offset-lips, and the spring S, substantially as specified.

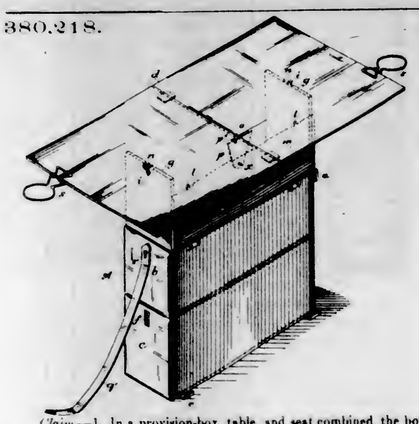
2. The clothing-clamp consisting of the jaws having the opposite inwardly-bent offset-lips *c*, the jaw B, having the reversely and inwardly bent extension-lip *e*, and the pivot-pin and spring, substantially as specified.

3. The combination, with the clamp-jaw A, the jaw B, and the flattened head of the pivot connecting the same, of the cuff-link having its branches provided with spring-tongues *v v*, substantially as specified.

380,218. **COMBINED PROVISION-BOX AND TABLE.** CALVIN B. RICE, East Oakland, Cal. Filed June 4, 1886. Renewed Dec. 27, 1887. Serial No. 259,070. (No model.)



380,218.



Claim.—1. In a provision-box, table, and seat combined, the box A, having locked drawers *b c*, each drawer having compartments for food and table-utensils, folding vertical supports *g* for the table-leaves *d*, provided with hooks *i k* for attaching to eye-screws *n w*, a lid, *m*, attached by hinges *u* and having an adjustable support, *p*, pivoted on pin *x*, and a hook, *p'*, for attaching to eye-screw *o*, and eye-screws *t* for attaching hooks *v*, the said table-leaves *d*, supports *g*, and lid *m* forming a recess, *y*, as a receptacle for food and utensils, flanged supports *e* for holding the folded table-leaves, and suspending-strap *q*, attached on buttons *r*, as described, and for the purpose set forth.

2. The combination of the leaves *d*, joined by hinges and folding together and adjustable on the box as a table, provided with adjustable holders *s* for drinking-vessels, and having eye-screws *n* for attaching hooks *i*, and eye-screw *o* for attaching hook *p'* of adjustable support *p*, and the box A, having drawers *b c*, vertical supports *g*, lid *m*, flanged supports *e*, and suspending-strap *q*, substantially as and for the purpose described.

380,219. **BUTTER-PACKAGE.** WILLIAM H. ROBERTS, Davenport Centre, N. Y. Filed Dec. 27, 1887. Serial No. 259,079. (No model.)

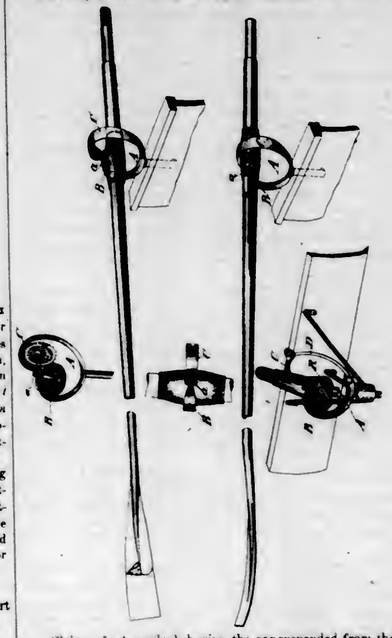


Claim.—1. In a butter-package, an outer casing having dovetailed recesses arranged in an upper and a lower series upon the inner side of the casing, and having stepped and dovetailed blocks or cushions secured in the lower recesses and inclined and dovetailed blocks or cushions secured in the upper recesses, and having a central block or cushion in the bottom and coil-springs upon the inner side of the cover or lid of the casing, as shown and set forth.

2. In a butter-package, the combination of a jar, a cover having an annular groove in its under side provided with an elastic gasket and fitting over the rim of the jar and provided with wearing-strips inlaid in the upper side of the cover, two bails crossing each other, with their lower doubled ends under the bottom of the jar, and having their upper portions connected by a ring, and having key-hole-shaped slots in their upper ends, and cam-rods having their headed ends secured in the slots in the bails, and having flat downward bulges bearing against the wearing-strips of the lid, and having upward central bulges crossing one above the other, as shown and described.

3. In a butter-package, the combination of a pail-shaped outer casing having a bail and a suitable hinged cover and formed with dovetailed recesses in the inner side near the upper and lower edges of the side, stepped and dovetailed elastic blocks secured in the lower recesses, inclined and dovetailed elastic blocks secured by nails in the upper recesses, a central block in the bottom of the casing, coil-springs in the under side of the cover, a frame or cage formed by bails having eyed upper ends, a jar resting in the frame or cage and having a removable cover, and cam-rods having their ends inserted in the eyed upper ends of the bails, fastening the cover of the jar, as shown and set forth.

380,220. **ROWLOCK.** JOHN F. ROBLIN, Belleville, Ontario, Canada. Filed July 7, 1887. Serial No. 243,607. (No model.)

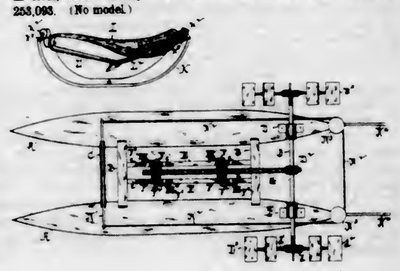


Claim.—1. A rowlock having the oar suspended from the top of the lock and provided with the curve B on one side of the point of suspension adapted to guide and hold the oar in rowing, and with the curve C above and on the other side of the point of suspension adapted to guide and hold the oar in feathering, substantially as set forth.

2. In a rowlock, the combination, with the lock provided with the curves B and C, constructed and adapted to guide and hold the oar in the position of rowing and feathering, of the oar suspended from the lock between the curves B and C and arranged to move in the lock so as to fit in and rest against the curves in rowing and feathering, substantially as set forth.

3. In a rowlock, the combination, with the lock provided with the curves B and C, constructed and adapted to guide and hold the oar in the position of rowing and feathering, of the oar provided with the ferrule H, for the purpose described, and suspended from the lock between the curves B and C, and arranged to move in the lock so as to fit in and rest against the curves in rowing and feathering, substantially as set forth.

380,221. **VELOCIPEDE-BOAT.** FREDERICK J. ROSS and WILLIAM H. ROSS, South Hadley Falls, Mass. Filed Oct. 22, 1887. Serial No. 253,093. (No model.)



Claim.—1. A velocipede-boat consisting of the hulls A A, a frame connecting one of said hulls with the other, a plurality of pedal-crank shafts mounted in bearings upon said frame, seats secured upon said frame adjacent to said shafts, a shaft having a paddle-wheel secured to each of its ends mounted in bearings upon said hulls, belt-connections between each of said crank-shafts and said wheel-shaft, rudders secured to said hulls, a steering-lever located in front of the first crank-shaft, and intermediate connections between said lever and both of said rudders, substantially as described, whereby said rudders can be operated in unison from the lever, substantially as set forth.

2. In a velocipede-boat, the combination, with hulls A A, having paddle-wheel shaft D, mounted in bearings thereon, of cross-bars B B, rails E E, extending between said bars, two or more pedal-crank shafts mounted in bearings upon said rails, standards H, adjustably secured to said rails, bar I, connected at each end to one of said standards, saddles L, mounted upon said bar I, sprocket-wheels secured to each of the crank-shafts and to the wheel-shaft, and belt G, connecting all of said sprocket-wheels together, substantially as set forth.

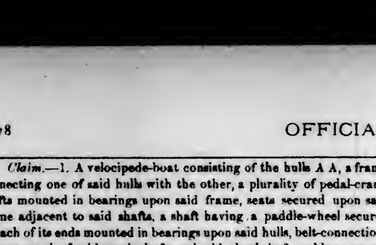
3. In the velocipede-boat herein described, the combination, with seat-bar I, supported substantially in the manner set forth, of the bow-shaped hangers K, secured to said bar, said hangers having the loops k^2 at their ends, and saddles L, having the straps l^1 l^2, whereby they are adapted to be suspended between the loops on said hangers, substantially as described.

4. The combination, with the hulls A A, of bar N', pivoted centrally between said hulls, rod N, secured at one end to said bar, rudders N^4, having grooved pulleys N^5, secured to their tiller-posts, and cord or rope N^3, secured at each end to opposite ends of bar N^4 and passing around each of said pulleys, substantially as and for the purpose described.

5. In the velocipede-boat herein described, the combination, with hulls A A, having the intermediate connecting-frame composed of bars B and rails E, of uprights F, secured to said rails, each of said uprights containing a bore of greater diameter at one end than at the other, and screw-threaded throughout the portion of lesser diameter, shafts F, having hubs *f* thereon, the surface of one side of which is curved, as shown, bushings f^*, screwed into the bore of said uprights and having their inner ends concaved, and balls f^2, located between the ends of said bushings and the curved surfaces of the hubs on the shafts, arranged and operating substantially as and for the purpose set forth.

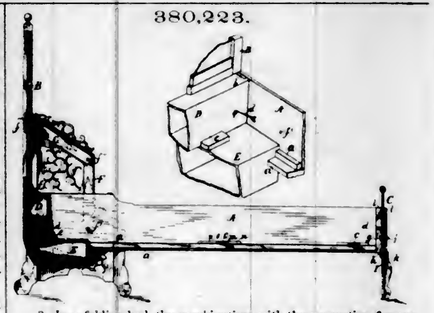
6. The combination, with hulls A A, cross-bars B B, and rails E E, having slots *e* therein, of standards H, composed of two members, one of which is vertically adjustable within the other, and having the curved arms H', secured to rails E by bolts passing through the slots in the latter, and seat-bar I, secured to the upper members of said standards, substantially as described, whereby provision is made for adjusting said seat-bar both vertically and longitudinally, for the purpose set forth.

380,222. **MACHINE-BELTING.** CHARLES A. SCHIEREN, Brooklyn, N. Y. Filed Jan. 23, 1888. Serial No. 262,245. (No model.)



Claim.—The machine-belt herein described, composed of edge-laid strips or links and having a longitudinal joint therein which admits of lateral flexure, in combination with a series of pins uniting the belt and longitudinal joint, said pins being countersunk along the outer edges of the belt and their projecting ends secured within the belt along the longitudinal joint, substantially as described.

380,223.

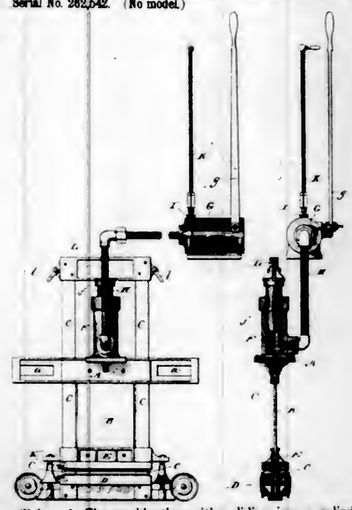


3. In a folding bed, the combination, with the supporting-frames, of a swinging frame pivoted thereto and having at one side of the pivot of the swinging frame a compartment for a gravitating weight, and a weight in said compartment composed of a finely-divided material in bulk less than the capacity of the compartment, whereby said weight may change position relative to the pivot to determine the backward tendency of the bed when upright.

4. In a folding bed, the combination, with the supporting side frames and the swinging bed-frame pivoted thereto, of a head-board hinged to the swinging frame and rigid arms G, pivoted to the head-board, extending directly to the supporting-frames, and pivoted to the latter, substantially as described.

5. In a folding bed, the combination, with the supporting side frames, of a swinging frame pivoted thereto and having two compartments differently situated with respect to the pivot of the swinging frame, and weights composed of loose sand in said compartments adapted to automatically shift as the bed is raised or lowered, substantially as set forth.

380,224. **GRIPPER ACTUATED BY HYDRAULIC PRESSURE FOR CABLE-RAILWAY CARS.** CHARLES L. SNYDER, Kansas City, Mo., assignor of one-half to Isaac M. Ridge, same place. Filed Jan. 31, 1888. Serial No. 262,542. (No model.)



Claim.—1. The combination, with a sliding jaw, a cylinder, and a plunger adapted to work within the cylinder and supporting the sliding jaw, of a force-pump, a pipe connecting the force-pump directly with the cylinder at a point below the plunger, and a vent to the cylinder, substantially as set forth.

2. The combination, with a sliding jaw, a cylinder, and a plunger adapted to work within the cylinder and supporting a sliding jaw, of a force-pump, a pipe connecting the force-pump directly with the cylinder at a point below the plunger, and a vent to the cylinder located at the pump end of the pipe leading to the cylinder, substantially as set forth.

380,228. **FOLDING BED.** ISRAEL C. SMITH and EDWARD H. HERRINTON, Grand Rapids, Mich. Filed May 2, 1887. Serial No. 236,877. (No model.)

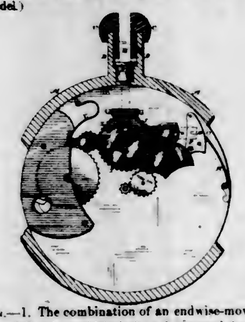
Claim.—1. In a folding bed, the combination of the rails A, having strips *a*, *a'*, and *b*, boxes D and E, having grooves engaging with the strips *a* and *b*, and a strip, *c*, and hooks connecting said rails and boxes, substantially as described.

2. In a folding bed, the combination of the rails A A, having strips *a*, *a'*, *b*, and *l l*, boxes D and E, having grooves engaging with strips *a* and *b* and a strip, *c*, a foot-board, C, having blocks *g*, and hook *d*, substantially as described.

3. The combination, with the upper stationary gripping-jaw and the lower movable gripping-jaw, of standards or bars extending from the lower jaw upwardly through sockets in the upper jaw and rigidly connected at the upper ends by a cross-head, a cylinder located centrally between the vertical standards or bars, a plunger located centrally beneath the said cross-head and adapted to work in the cylinder, a force-pump for forcing liquid into the cylinder beneath the plunger, and a vent for permitting the escape of the liquid from the cylinder, substantially as set forth.

4. The combination, with the stationary upper jaw and the movable lower jaw having supporting-standards exteoding upwardly from it through the ends of the stationary jaw, of vertical bolts secured to the ends of the stationary jaw and extending downwardly through the sockets in the lower movable jaw, and spools having flaring faces secured on the bolts, whereby the cable is guided out of and into position between the gripping-jaws as the lower jaw is lowered or raised, substantially as set forth.

380,225. **STEM WINDING AND SETTING WATCH.** OSCAR F. STEDMAN, Cuyahoga Falls, Ohio. Filed Dec. 2, 1887. Serial No. 256,800. (No model.)



Claim.—1. The combination of an endwise-moving winding-stem, an endwise-sliding bar which is forced outward by the winding-stem when the winding-stem is forced inward, a swinging spring-actuated plate which is moved by the endwise-moving bar in one direction, the vibrating yoke carrying the intermediate winding and setting wheels, and a spring which is applied to one end of the vibrating yoke, substantially as shown.

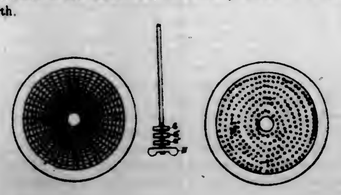
2. The combination of the endwise-moving winding-stem, the endwise-sliding bar provided with a pin or projection, the swinging plate, a spring for operating the plate in one direction, the vibrating yoke, and the spring which is applied to one end of the yoke, the yoke being locked in position by means of a cam for setting the hands, substantially as described.

3. The combination of the endwise-moving winding-stem provided with a groove, L, in its inner end, the endwise-moving bar N, which has its inner end so shaped as to be moved by the winding-stem and to engage therewith, a stud or projection formed upon the outer end of the bar and extending through the slot in the pillar-plate, the pivoted swinging plate provided with a stud or projection near its free end, the spring R, the vibrating yoke carrying the setting and winding wheels and having a cam formed upon one end, and a spring, U, substantially as set forth.

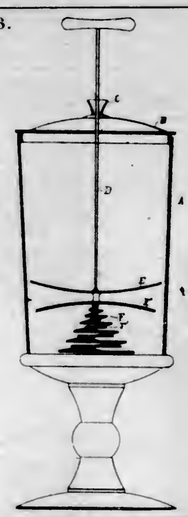
4. The combination of the pendant D of the case and the sleeve E which is secured therein, with the endwise-moving winding-stem provided with a stop, substantially as specified.

380,226. **CHURN-DASHER.** THERON S. STEWART and ANNA M. R. STEWART, Toledo, Ohio. Filed Apr. 25, 1887. Serial No. 236,124. (No model.)

Claim.—In a dasher, a handle or dasher-rod having helical springs attached thereto, in combination with perforated convex disks attached thereon in inverse order, the disks and springs being removably attached to the dasher-rod, substantially as and for the purpose set forth.



380,226.

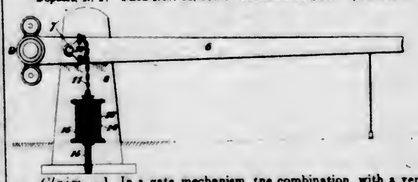


380,227. **CARPENTER'S HATCHET.** JOHN J. STOPPLE, Bellville, Tex. Filed Dec. 14, 1887. Serial No. 257,884. (No model.)



Claim.—A hatchet the back of which is provided with two recesses, one upon each of its sides and directly opposite each other, leaving a thin wall between them which is adapted to be used as a screw-driver.

380,228. **GATE FOR RAILWAY-CROSSINGS.** SAMUEL T. STREET, Deposit, N. Y. Filed Nov. 11, 1887. Serial No. 254,880. (No model.)



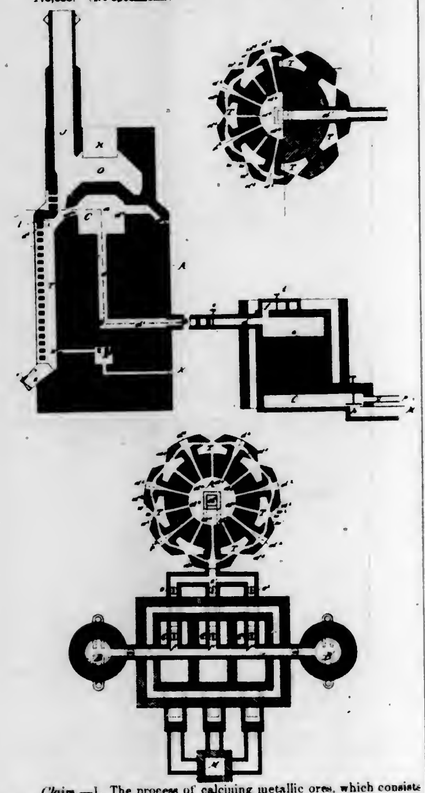
Claim.—1. In a gate mechanism, the combination, with a vertically-moving gate, of a spring or weight which tends to draw the gate downward into a horizontal position, and a piston which works in the opposite direction to effect the rise of the gate, substantially as and for the purposes described.

2. In a gate mechanism, the combination, with the gate, of a spring or weight which tends to draw the gate into a horizontal position, and which is connected with the gate by a segment of a wheel and a chain, and a pneumatic piston which bears against the spring or weight, the gate being counterbalanced, whereby when the force of the weight or spring is relieved by means of the pneumatic piston the gate will open, substantially as and for the purposes described.

3. In a gate mechanism, the combination, with the gate, of a spring or weight which tends to draw the gate into a horizontal position, a single-acting pneumatic piston which bears against the spring or weight, a compressed-air reservoir communicating therewith, a valve for opening and closing connection between the reservoir and the cylinder, and an exhaust-valve, said gate being counterbalanced, whereby when the force of the weight or spring is relieved by means of the pneumatic

piston the gate will open, and when the piston is cut off from the compressed-air supply and the exhaust-valve opened the gate will close, substantially as and for the purposes described.

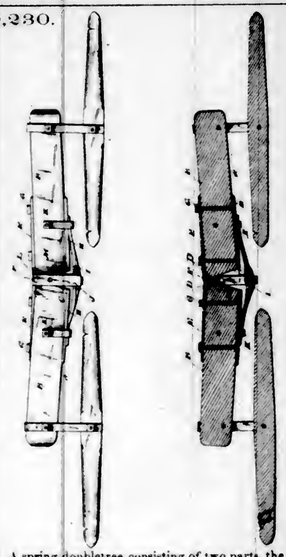
380,229. ART OF TREATING AND CALCINING IRON ORES. WILLIAM J. TAYLOR, Chester, N. J. Filed Aug. 31, 1885. Serial No. 175,835. (No specimens.)



Claim.—1. The process of calcining metallic ores, which consists in subjecting the ores to the action of highly-heated air and admitting successively and continuously currents of cold air thereto, substantially as and for the purposes set forth.

2. The process of roasting metallic ores by means of heated air, which consists in subjecting the mass of ore to the action of highly-heated air and coincidently subjecting the mass to the action of an upward current of cold air admitted at the bottom of the mass, substantially as and for the purposes set forth.

380,230. DOUBLETREE. EDWARD A. THIEM, Sandusky, Ohio. Filed Nov. 21, 1887. Serial No. 255,764. (No model.)



Claim.—1. A spring-doubletree constructed of two parts, the rear inner ends of which are formed with curved recesses and the forward inner ends beveled, a rule-jointed hinge, and a pivotal bolt, in combination with a spring and a stirrup, the ends thereof being connected to the projecting ends of a pivotal bolt, substantially as set forth.

2. A spring-doubletree constructed of two parts, the rear inner ends of which are formed with curved recesses and the forward inner ends beveled, a rule-jointed hinge, and a pivotal bolt, in combination with a spring, a stirrup secured at its ends to the projecting ends of the pivotal bolt, and bails or keepers for retaining the ends of said spring against vertical displacement, substantially as set forth.

3. A spring-doubletree consisting of two parts, the rear inner ends of which are formed with curved recesses and the forward inner ends beveled, a rule-jointed hinge, and a pivotal bolt, in combination with a spring, a stirrup secured at its ends to the projecting ends of the said pivotal bolt, and bearing-plates, substantially as set forth.

4. A spring-doubletree consisting of two parts, the rear inner ends of which are formed with curved recesses and the forward inner ends beveled, a rule-jointed hinge, and a pivotal bolt, in combination with a spring, a stirrup secured at its ends to the projecting ends of the said pivotal bolt, bails or keepers, and bearing-plates, substantially as set forth.

380,231. COAL-SCUTTLE. DAVID F. TOBIN, Newark, N. J. Filed Feb. 12, 1887. Serial No. 227,371. (No model.)



Claim.—1. A combined coal-scuttle and ash-sifter having the body portion *a*, an ash-pocket therein formed by a plate, *c*, rigidly secured to and within said body portion, and a sieve arranged above and independently of said pocket and pivoted to one of the sides of said body portion away from the discharging-spout, substantially as and for the purposes set forth.

2. A combined coal-scuttle and ash-sifter having the body portion *a*, an ash-pocket therein formed by a plate, *c*, a sieve arranged above said pocket and pivoted to one of the sides of said body portion away from the discharging-spout, and a hook constructed and arranged to engage automatically by the dropping of the handle with said sieve when raised, substantially as and for the purposes set forth.

380,232. GATE. HARLAN P. WALKER, Boulder, Colo., assignor of one-half to Heman H. Phillips, same place. Filed Jan. 13, 1888. Serial No. 260,655. (No model.)

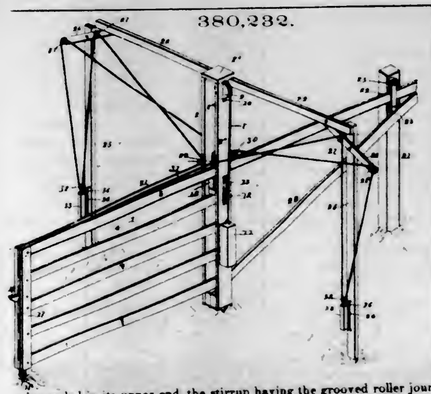
Claim.—1. The combination, with the sliding gate, of a counterbalanced stirrup, arranged substantially as set forth.

2. The combination, with the sliding gate, of the double post having the grooved roller journaled in its upper end, a stirrup through which the top rail of the said gate slides, and the rope secured at one end to the said stirrup, passing over the grooved roller, and having the weight at its other end, substantially as set forth.

3. The combination, with the sliding gate, of the double post formed with the opposite side slots and having the grooved roller journaled in its upper end, the stirrup having the roller journaled in its lower portion and the guide-bar secured to its lower end, the weight-cord, and the weight, substantially as set forth.

4. The combination, with the sliding gate having the metal shoe or rod secured along the lower edge of its top rail, of the double post formed with the opposite side slots and having the grooved roller

380,232.

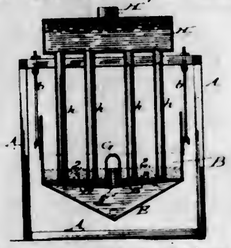


journaled in its upper end, the stirrup having the grooved roller journaled in its lower portion and the guide-bar secured to its lower end, the weight-cord, and the weight, substantially as set forth.

5. The combination, with the sliding gate formed with the rearwardly-extended top rail and the rear inclined brace and having the metal shoe secured along the lower edge of the said top bar, of the guide-post, the bracket secured to the same and having the rollers journaled within it, the double post formed with the opposite side slots and having the grooved roller journaled in its upper end, the stirrup having the grooved roller journaled in its lower portion and the guide-bar secured to its lower end, the weight-cord, and the weight, substantially as set forth.

6. The combination, with the sliding gate, of the operating-ropes, the pulleys for the same attached to the double post and to the inclined braces 26 26, the weights having the pulleys at their upper ends and the side eyes, and the guide-rods, all arranged substantially as and for the purpose set forth.

380,233. ORE-CONCENTRATOR. ENOS A. WALL, Salt Lake City, Utah. Filed Apr. 12, 1887. Serial No. 234,520. (No model.)



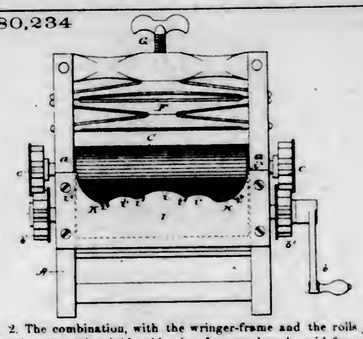
Claim.—1. The combination, with the main frame, the vibrating pan or receptacle suspended therein having a bottom inclining from the sides toward the center, of the underlying chamber E, communicating with said pan and having an inclined bottom and rear portion, a water-tank having tubes depending into the body of ore in said pan, a valve, *c*, and a flushing-pipe leading into the chamber E through its front wall, substantially as herein described.

2. The combination of the main frame, the suspended vibrating pan having an inlet at one end and an overflow at the opposite end, a water-tank having tubes entering the ore in said pan, a chamber beneath the pan and communicating with the same through an opening in the latter and provided with a discharge-valve, a curved guard inclosing said opening, and a flushing-pipe entering the front wall of the chamber, substantially as herein described

380,234. WRINGER. ALDAMAR F. WHITE and MICHAEL M. FLYNN, Woonsocket, R. I. Filed June 19, 1886. Serial No. 205,702. (No model.)

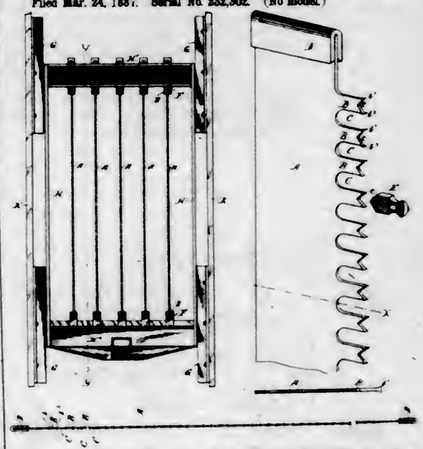
Claim.—1. The herein-described wringer, composed of the frame A, having the side rails, *a a*, the rolls B C, rotating against each other, journaled in said side rails, the bearing-blocks E, frame F, adjusting-screw G, guide-bar H in rear of the rolls, and guide-plate I, having its upper edge curved upward in the middle, then curved downwardly equal on both sides therefrom, and then curved upward at both ends to points slightly to the inner sides of the ends of the rolls, substantially as shown and described.

380,234



2. The combination, with the wringer-frame and the rolls journaled therein, of the rigid guide-plate I, secured to the said frame and having the guide-edge formed with the central curved elevation, *i*, arranged on a plane with the meeting edges of the rolls, the downward curves i^2 i^2 at the base of the central upward curve, the upper curves, i^3 i^3, of less elevation than the central curve and the upwardly-sweeping curves i^4 at opposite ends, terminating within the plane of the ends of the said rolls, whereby clothes may be spread evenly as they pass between the rolls and also keep free from the journals thereof, substantially as shown and described.

380,235. GANG-SAW MILL. WILLIAM M. WILKIN, Erie, Pa. Filed Mar. 24, 1887. Serial No. 232,302. (No model.)



Claim.—1. In a gang-saw mill, the combination, with a reciprocating saw-frame, of a series of rip-saws having a series of main teeth, B, separated by spaces C, and having at their ends oppositely-cutting chisel-pointed teeth b' and b^2, the points of which are swaged outwardly in opposite directions into the adjoining spaces C in the operation of dressing the saw, substantially as set forth.

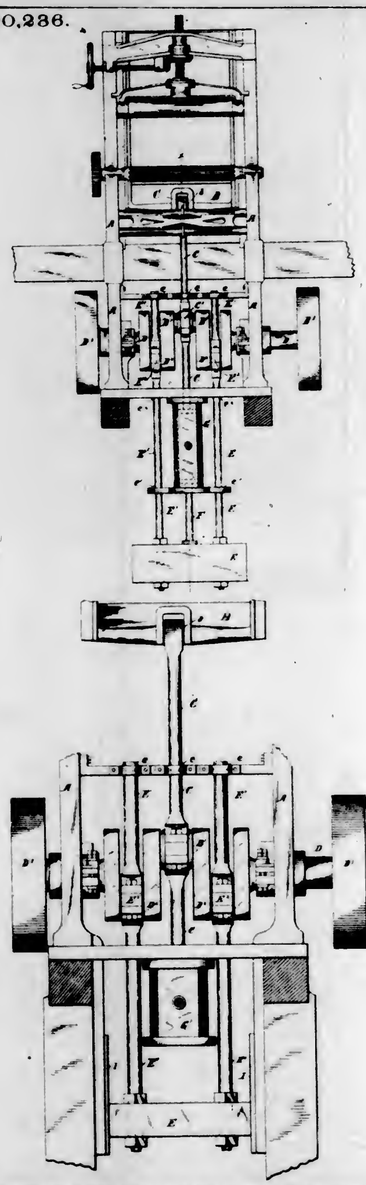
2. In a rip-saw for use in gang-saw mills, the combination of two sets of chisel-pointed cutting-teeth, b' and b^2, one of which is dressed to cut as the saw moves up and the other as the saw moves down, the teeth of one set being placed between the teeth of the other set, the points of all the teeth being arranged in a common vertical plane, substantially as set forth.

380,236. GANG-SAW MILL. WILLIAM M. WILKIN, Erie, Pa. Filed Oct. 13, 1887. Serial No. 252,194. (No model.)

Claim.—1. In a gang-saw mill, the combination, substantially as set forth, of a reciprocating saw-frame, a steam-engine cylinder having a reciprocating piston, a stem or rod connecting said piston directly with said frame, a horizontal slot or yoke in said rod or stem, a journal-box sliding in said yoke or frame, and a crank-shaft having one of its crank-pins embraced by said sliding box.

2. In a gang-saw mill, the combination, substantially as set forth, of a reciprocating saw-frame and a reciprocating counter-balance, a steam-engine cylinder having a reciprocating piston, a rod or stem

380,236.



connecting said piston directly with said saw-frame, a horizontal slot or yoke in said rod or stem, which receives the journal-box of a crank-pin, and a crank-shaft having three cranks, the middle one of which stands opposite the other two and has its pin journaled in said journal-box, and rods connecting the other two cranks with the said counter-weight.

3. In a gang-saw mill, the combination, substantially as set forth, of a reciprocating saw-frame, a reciprocating counter-weight, a steam-engine cylinder having a reciprocating piston, a crank-shaft having three cranks, as shown, a rod or stem connecting said piston directly with said frame, a horizontal yoke or slot in said rod or stem, which receives the journal-box of the middle crank of said crank-shaft, and two vertically-guided rods which connect with said counter-weight and are provided with yokes or slots, the same as said piston-stem, which receive the journal-boxes of the outer cranks of said crank-shaft.

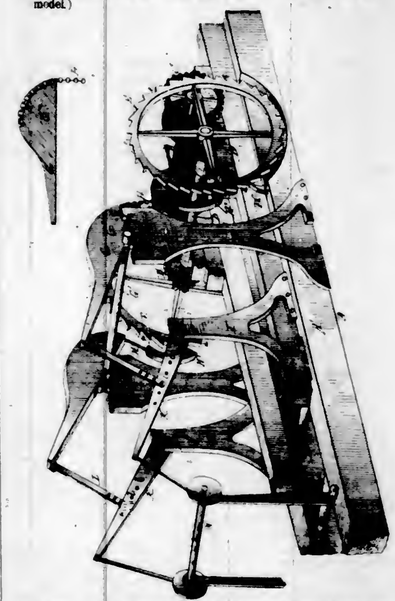
4. In a gang-saw mill, the combination, substantially as set forth, of a reciprocating saw-frame, a reciprocating counter-weight, a steam-engine cylinder having two pistons which reciprocate in opposite directions, a rod or stem connecting one of said pistons with the said counter-weight, and a rod or stem which connects the other of said pistons with the said saw-frame, a crank-shaft having three cranks, the middle one of which is opposite the other two, a slot or yoke in the piston-stem, which connects with the saw-frame and embraces the journal-box of the middle crank, and two vertically-guided rods which connect with said counter-weight and are provided with yokes or slots, the same as in the said piston-stem, which receive the journal-boxes of the outer cranks of said crank-shaft.

380,237. SASH-FASTENER. HARRY I. WILLIAMS, Decatur, Tex. Filed Nov. 26, 1887. Serial No. 256,263. (No model.)



Claim.—The combination of the ratchet-bar D, the hollow bar E, with opening *b*, the spring-pawl F, pivoted in said opening, and the locking-wedge G, substantially as shown and described.

380,238. CRANK-AND-LEVER MECHANISM. ROBERT H. WILLIAMS, Newton, Iowa. Filed Aug. 17, 1887. Serial No. 247,202. (No model.)



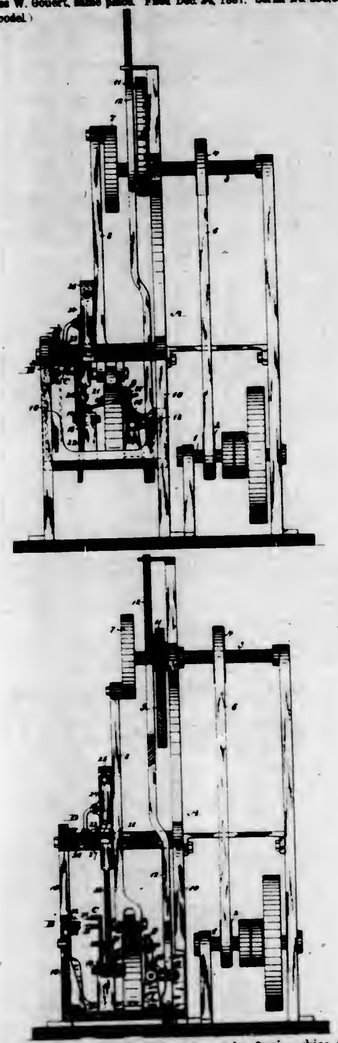
Claim.—1. The combination of the ratchet-faced drum-actuating wheel, the flexibly-suspended actuating-dog, and the lever provided with the eccentric-cam end from which the dog is suspended, substantially as set forth.

2. In a machine for raising or moving large bodies, the combination of the ratchet-faced drum-actuating wheels, the levers having the dogs suspended therefrom by a flexible connection to engage the wheels, and the second set of levers connected to the power end of the first-named or dog-operating levers through links at a point between their power end and fulcrum, substantially as set forth.

3. The combination of the ratchet-faced drum-actuating wheels, the dog-actuating levers, the dogs suspended therefrom by a flexible connection, the second set of levers connected to the dog-operating levers, and the revolving shaft connected to the last-named levers through the link-connections, and from which shaft movement is communicated to the various parts, substantially as set forth:

4. The combination of the ratchet-faced drum-actuating wheels, the dogs suspended from their actuating-levers by the flexible connections, levers of the first order for operating the same, and levers of the second order acting on the dog-operating levers, substantially as set forth.

380,239. MACHINE FOR STAKING AND SOFTENING SKINS. GEORGE V. ANDERSON, Wilmington, Del., assignor of seven-eighteenths to Charles W. Govert, same place. Filed Dec. 24, 1887. Serial No. 258,892. (No model.)



Claim.—1. In a machine for staking and softening skins, the stationary knife B and movable knife C, adapted to engage with the inserted skin, and constructed substantially as described.

2. In a machine for staking and softening skins, the knife B, constructed with a blade and pad, and the knife C, constructed of two blades and provided with mechanism, substantially as described, for operating the same, said parts being combined substantially as and for the purpose set forth.

3. In a machine for staking and softening skins, the clamp herein described, consisting of a movable bar, a bed, a movable frame carrying said bar, and a slide-operating mechanism whereby said frame receives forward and backward motions, substantially as described.

4. In a machine for staking and softening skins, the opening and closing knives, in combination with a slide connected with one of the knives, an elbow-lever attached to said slide, and a bar connected with said lever and an operating-cam, substantially as described.

5. In a machine for staking and softening skins, the clamp and knives and a slide connected therewith for opening the same, substantially as described.

6. In a machine for staking and softening skins, the clamp having a stationary bed and a movable bar, a frame carrying said bar, and a rock-shaft connected with said slide and engaged by said frame, substantially as described.

7. In a machine for staking and softening skins, the clamp consisting of a movable bar and stationary bed, said parts being tongued and grooved, substantially as described.

8. In a machine for staking and softening skins, the clamp herein described, having a movable bar connected with its support by rods or bolts, and springs whereby said bar is held to its work and may yield, substantially as described.

9. In a machine for staking and softening skins, the movable knife connected with a slide and elbow-lever by means of a rod which is passed through a rock-shaft mounted on said lever, said rod having nuts on opposite sides of the rock-shaft, whereby the working-pressure on the skin may be adjusted, substantially as described.

10. In a machine for staking and softening skins, a carriage with mechanism, substantially as described, for imparting a rising-and-falling motion to the same, a horizontal slide operating in supports on said carriage, a stationary knife attached to standards connected with the carriage, and a movable knife secured to standards connected to the slide, said parts being combined substantially as described.

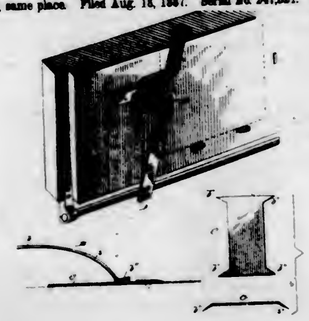
11. A frame with a rising-and-falling carriage therein, a horizontal slide operating in supports on said carriage, a stationary knife secured to standards on said carriage, a movable knife secured to standards on the slide, a rod pivoted to said slide, a bell-lever operating said rod, a mechanism, substantially as described, intermediate of said bell-lever, and a driving-shaft for oscillating said bell-lever, said parts being combined substantially as and for the purpose set forth.

12. In a machine for staking and softening skins, a frame with a rising-and-falling carriage, a horizontal slide operating in supports on said carriage, mechanism, substantially as described, for operating said carriage and slide, a stationary knife connected to a support on said slide, the bed 26, secured to said carriage, and a bar secured to the swinging frame, the latter connected to said sliding frame and operated thereby, said parts being combined substantially as described.

13. In a machine for staking and softening skins, the frame A, with the bed 26 secured thereto, and the frame 24, having the bar 23 adjustably secured thereto, said parts being combined substantially as and for the purpose set forth.

14. In a machine for staking and softening skins, the frame A, with a rising-and-falling carriage, a horizontal slide working in supports on said carriage, a stationary knife secured to said carriage and a movable knife secured to said slide, a bed secured to uprights of the carriage, a pivoted frame having a bar coinciding with said bed, the said pivoted frame being connected to and operated by the movement of the slide, mechanism connected to said slide and intermediate of the same, and a cam on a rotary shaft for operating said slide, and mechanism connected to said carriage and said rotary shaft for operating said carriage, said parts being combined substantially as and for the purpose set forth.

380,240. FEED-GAGE FOR PLATEN PRINTING-MACHINES. FRANK A. BAGLEY, Cherokee, Iowa, assignor to himself and Thomas McCulla, same place. Filed Aug. 18, 1887. Serial No. 247,231. (Model.)



Claim.—1. As an improvement in feed-gages for printing-presses, the adjustable spring-arm having a flanged end designed to strike the edge of the paper to be printed upon, substantially as shown and described.

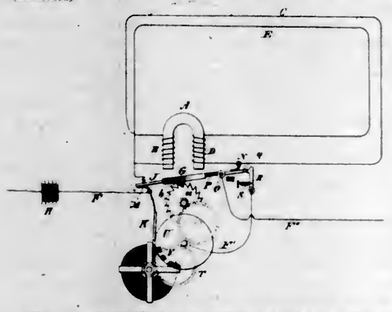
2. The spring-arm adjustably secured at one end to a gripper-arm of a printing-press, and having a flanged end, as shown and described.

3. The combination, with a gripper-arm of a printing-press, of the spring-arm adjustably secured to said gripper-arm, and having an outwardly-curved and flanged portion, substantially as set forth.

4. The combination, with the gripper-arm having a bend or side projection, of the spring-arm adjustably secured to said gripper-arm between the sides of said bend, substantially as shown and described.

5. As an improvement in feed-gages for printing-presses, the combination, with the gripper-arm, of the adjustable spring-arm having a curved and flanged portion, and the metallic plate secured to the platen-sheet, substantially as shown and described.

380,241. FIRE AND BURGLAR ALARM SYSTEM. WILLIAM A. BARNES, Bridgeport, Conn. Filed Sept. 26, 1887. Serial No. 250,645. (No model.)

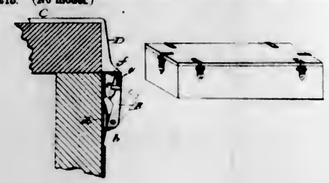


Claim.—1. The combination of a source of electricity, a main line having two branch circuits, a differential electro-magnet having its coils interposed in said branch circuits, an armature in the field of said magnet, an alarm-signaling mechanism included in main line and controlled by said armature, and a circuit-closer interposed between said two magnet-circuits and said main line, the aforesaid parts being so constructed and arranged that when the armature is attracted by said magnet it shall open said circuit-closer, and so break connection between said magnet-circuits and main line.

2. The combination, in a fire or burglar alarm system, of a source of electricity, a main line having two branch circuits, a differential electro-magnet having its coils included in said branch circuits, an armature for said electro-magnet, and, controlled by said armature and included in said main line, an automatically-operated circuit-breaking wheel, and a circuit-closer interposed between said magnet-circuits and said main line, the aforesaid parts being so constructed and arranged that when the armature is attracted by said magnet it shall release the said circuit-wheel and open the said circuit-closer to break connection between said magnet-circuits and main line.

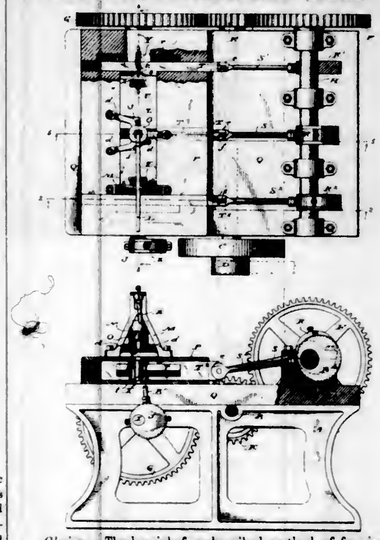
3. The combination, in a fire or burglar alarm system, of a source of electricity, a main line, a shunt-circuit including two branch conductors in multiple arc connected at both terminals to said main line, an electro-magnet having two oppositely-wound coils in the respective circuits of said branch conductors, an armature in the field of said magnet, and three circuit-closers controlled by said armature when actuated by said magnet, one of said circuit-closers making and breaking circuit through main line between the shunt-terminals, and the other two circuit-closers respectively making and breaking circuit at each point of connection of said shunt-terminals with main line, substantially as described.

380,242. COFFIN-FASTENER. TRUMAN B. BUDDINGTON and J. RUSSEL BRIDGET, Birmingham, Conn. Filed Jan. 9, 1888. Serial No. 260,213. (No model.)



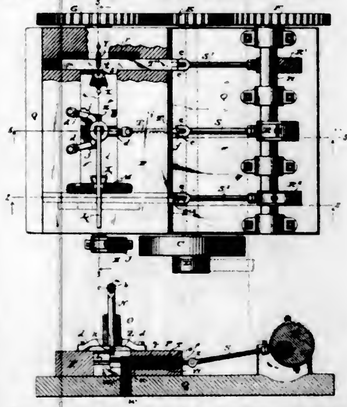
Claim.—The herein-described clasp for casket-boxes, consisting of the plate A, adapted to be secured to the side of the box and constructed with the loop *a*, a spring-latch, B, pivoted to said plate, its upper end arranged to bear against the lower edge of the loop, and the strap C, adapted to be secured to the cover, constructed with a projection, D, which terminates in a hooked nose, *c*, said hooked nose adapted to be engaged by said latch when the cover is in position, substantially as described.

380,243. METHOD OF MAKING NUTS. JUSTIN H. BURDICK, Utica, Wis. Filed May 31, 1887. Serial No. 239,816. (No model.)



Claim.—The hereinbefore-described method of forming a nut from a strip of metal, consisting of bending said strip between the opposing faces of a pair of die-blocks, inserting a mandrel between the doubled sides of the strip and forcing the dies together, thereby compressing the metal of the strip into the required shape around the mandrel, substantially as set forth.

380,244. NUT-MAKING MACHINE. JUSTIN H. BURDICK, Utica, Wis. Filed Dec. 5, 1887. Serial No. 256,966. (No model.)



Claim.—1. In a nut-making machine, the combination of a bender, a pair of die-blocks, and a mandrel, and mechanism for successively moving these parts in the order named toward a common center, substantially as set forth.

2. In a nut-making machine, the combination of a bender, a pair of die-blocks, a mandrel, and a plunger, and mechanism for succes-

sively moving these parts in the order named toward a common center, substantially as set forth.

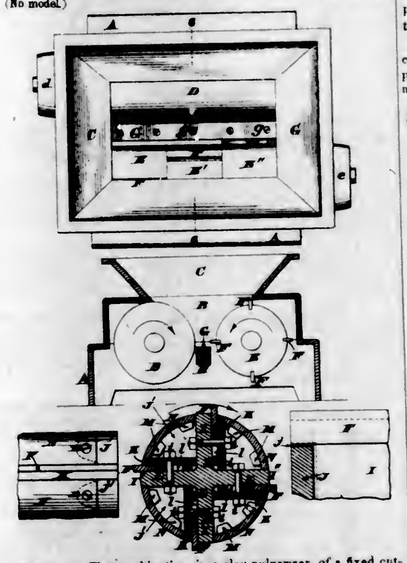
3. In a nut-making machine, the combination of a bender, a pair of die-blocks, a mandrel, and a plunger carrying a crowner, and mechanism for successively moving these parts in the order named toward a common center, substantially as set forth.

4. In a nut-making machine, the combination of a frame, a pair of die-blocks adapted to move within the same, skeleton safety-pieces inserted in the outer ends of the die-blocks and bearing anti-friction rollers, a shaft carrying eccentrics, connecting-rods, thrust-bars jointed to the said rods and bearing inclines adapted for engagement with said rollers, and retracting-springs connecting the said die-blocks with the frame, substantially as set forth.

5. In a nut-making machine, the combination of a frame, a pair of die-blocks adapted to move with the same, a shaft carrying three eccentrics, thrust-bars adapted for engagement with the die-blocks and connected to the outer eccentrics, a mandrel connected to the intermediate eccentric and bearing a plunger, and a bender located above and adapted to reach the common center to which the dies and mandrel are successively moved by the action of the said eccentrics and connections, substantially as set forth.

6. In a nut-making machine, the combination of a frame, a pair of die-blocks adapted to move within the same, a shaft carrying eccentrics at each end, and an intermediate eccentric set out of line with the end eccentrics, connecting-rods and thrust-bars connected to the end eccentrics, a connecting-rod and mandrel connected to the intermediate eccentric, a plunger and crowner carried by a mandrel, and a bender located above and adapted to reach the common center to which the dies and mandrel are successively moved, a shaft having a gear at one end forming a part of a train of gears in mesh with the gear of the described eccentric-shaft and bearing an eccentric on its opposite end, a walking-beam connected to the bender at one end, and a connecting-rod jointed to the other end of the walking-beam and to the last-named eccentric, substantially as set forth.

380,245. CLAY-PULVERIZER. JONATHAN CREAGER and HARRY M. CREAGER, Cincinnati, Ohio. Filed Aug. 30, 1887. Serial No. 248,299. (No model.)



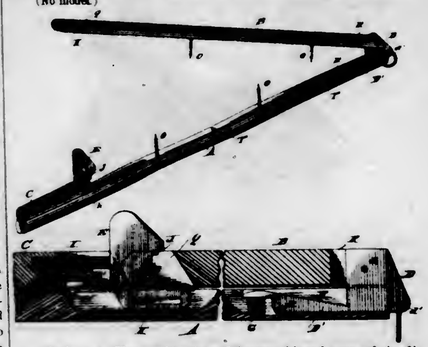
Claim.—1. The combination, in a clay-pulverizer, of a fixed cutting-bar located between and in close proximity to a smooth-faced feed-roller and a cylinder armed with projecting blades, which roller and cylinder revolve in opposite directions, and thereby draw the clay down upon said bar, as herein described.

2. The combination, in a pulverizing-cylinder, of a series of arms, as I, bolts *i*, clamp-plates K, blades F, detachable caps N, and washers L, having slots *l*, for the purpose described.

3. A pulverizing-cylinder composed of a series of sections, as E E' E", placed end to end and armed with projecting blades F F F, arranged longitudinally of said sections, but in different planes, for the purpose described.

4. The combination, in a clay-pulverizer, of a fixed cutting-bar and a cylinder armed with blades, which cylinder revolves in such a direction as to cause its blades to draw the clay down upon said bar, as herein described.

380,246. NEWSPAPER-FILE. WARREN K. CROFFORD, New York, N. Y. Filed Apr. 14, 1885. Renewed Aug. 26, 1887. Serial No. 247,948. (No model.)

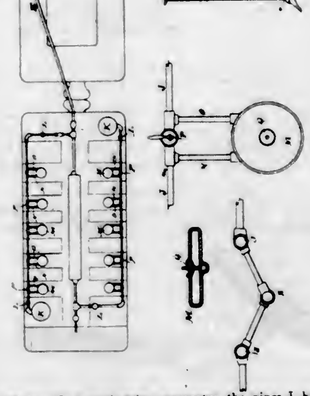


Claim.—1. The combination of the two hinged parts of the file, the adjustable spring-actuated hinge connecting said parts at one end, and the spring-actuated catch or lock having a beveled nose and a series of steps or notches receding gradually from the projecting nose and adapted to engage and interlock with a pin or rivet in the free end of the movable part of the file, substantially as and for the purpose shown and set forth.

2. The combination, in a newspaper-file, of the slotted and recessed part A, spring G, and hinge D, constructed with the projecting part D', having a lip or finger, D", bearing against the spring, substantially as and for the purpose shown and set forth.

3. The combination, in a newspaper-file, of the slotted and recessed part A, spring I, and sliding catch or lock E, having slot H, and provided with a beveled or inclined front side and a series of steps or notches, J, substantially as and for the purpose shown and set forth.

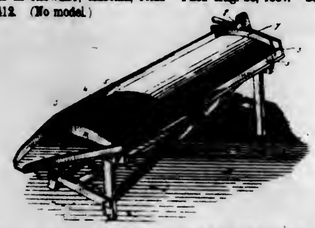
380,247. APPARATUS FOR HEATING CARS. FRANK J. CROUCH, Oakland, Oreg. Filed Apr. 2, 1887. Serial No. 233,464. (No model.)



Claim.—In a car-heating apparatus, the pipes J, having branch pipes N and O connecting therewith, and the foot-pan or distributer, into which said pipes lead, in combination with valves or cocks in

pipe J between the branch pipes, and the valves Q in the top of the distributers, having a projecting stem, whereby said valves may be opened to allow air to escape around the feet, substantially as described.

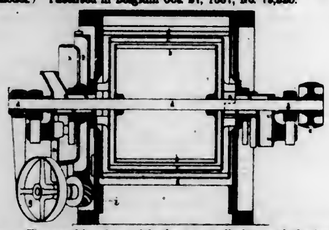
380,248. TABLE FOR TINNING ZINC AND OTHER METALS. JAMES K. CROWLEY, Ansonia, Conn. Filed Aug. 30, 1887. Serial No. 247,412. (No model.)



Claim.—1. A table for tinning sheet metal, consisting of suitable frame-work, cross-pieces convexed from end to end, and a bed consisting of a series of rounded slats separated from each other to permit free circulation of air under the sheet being tinned.

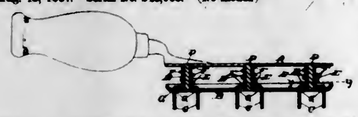
2. In a table for tinning sheet metal, the combination, with a bed made of slats and inclined from end to end and convexed from side to side, of troughs at the sides of the bed and a spout at the lower end thereof, whereby waste metal is carried away.

380,249. DRIVING-GEAR FOR FLOUR-SIFTERS. GUSTAV DAVERIO, Zurich, Switzerland. Filed Feb. 7, 1888. Serial No. 263,237. (No model.) Patented in Belgium Oct. 27, 1887, No. 79,326.



Claim.—The combination, with the two cylinders c d, the beaters b, and the shaft a, of the pulleys f and h, the guide-pulleys g and m, the strap r, the worm-wheel k, and the worm i, fixed to the axle of one of the guide-pulleys, substantially as and for the purpose described.

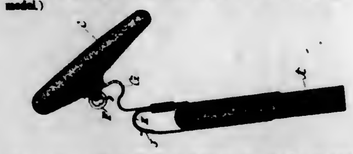
380,250. CURRY-COMB. GEORGE F. DUFFY, Los Angeles, Cal. Filed Aug. 15, 1887. Serial No. 246,963. (No model.)



Claim.—1. A curry-comb consisting of the back plate, A, slotted face-plate B, rivets D, ferrules E, springs F, and tooth-plates C, substantially as described.

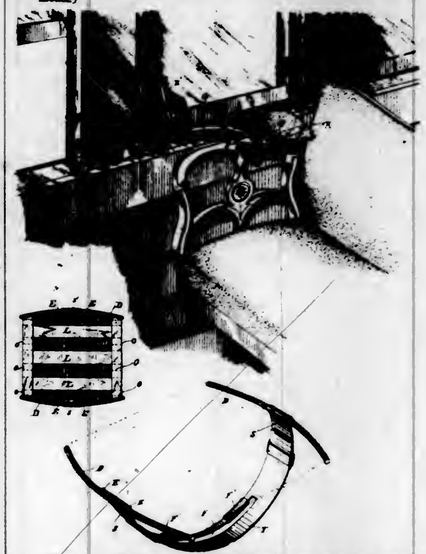
2. A curry-comb comprising the combination of the back plate, A, the slotted face-plate B, secured thereto by the rivets D, movable tooth-plates C, mounted between the face and back plates, and the springs F, mounted between and engaging with the toothed plates and back plate.

380,251. HEAD-REST. GEORGE M. DILLON and JAMES H. REVINGTON, Bellevue, Ohio. Filed Apr. 11, 1887. Serial No. 234,455. (No model.)



Claim.—In a head-rest, the combination of metallic clasping-arms formed from a single piece and adapted to engage the back and front of the seat, which constitutes the entire support therefor, a receptacle in front of the forward arm, a forwardly-bent arm formed intermediately of its extremities in a compound curve and received by said receptacle, and an adjustable head-rest at the upper end of said arm, said head-rest being shaped somewhat after the manner of a horse-shoe, provided with a cut-away portion at the bottom, substantially as shown and described, and for the purpose set forth.

380,252. HEAD-REST. GEORGE M. DILLON and JAMES H. REVINGTON, Bellevue, Ohio. Filed Oct. 22, 1887. Serial No. 253,115. (No model.)



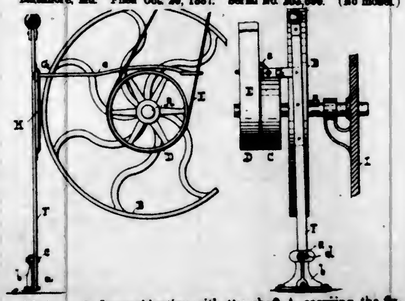
Claim.—1. The combination, with the cover and the bars secured at two sides thereof, of the steel springs S S', attached to said bars, and the spring T, provided with a slot and being adjustably secured to said springs S S', substantially as set forth.

2. The combination, with the head-rest, substantially as described, of a book-rest consisting of a clamp for holding the book, having an adjustable arm, and a clamp securing said arm to the head-rest, substantially as described.

3. The combination of the head-rest, constructed substantially as shown and described, and the book-holder made removable therefrom and adapted to be attached to the head-rest, as and for the purpose set forth.

4. The combined head-rest dining or card table provided with a plush or other cover and having means for attachment to the seat-back arm, and provided with wooden strengthening-pieces extending from side to side, and which are adapted to be rolled up with the cover when desired.

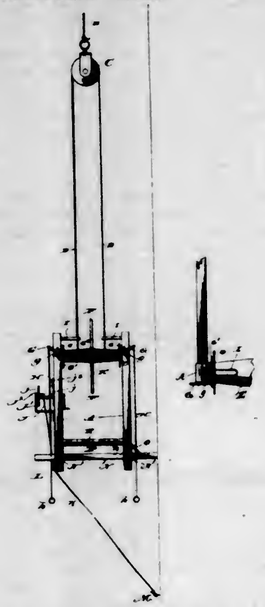
380,253. BRAKE AND BELT-SHIFTER. JOHN F. W. DORMAN, Baltimore, Md. Filed Oct. 20, 1887. Serial No. 253,090. (No model.)



Claim.—1. In combination with the shaft A, carrying the fly-wheel B and the tight and loose pulleys C and D, the pivoted spring-lever F, carrying a brake and also a belt-shifting rod, substantially as and for the purpose specified.

2. In combination with the shaft A, carrying the fly-wheel B and the tight and loose pulleys C and D, the pivoted spring-lever F, arm G, shifting-rod c, and the brake H, substantially as and for the purpose specified.

380,254. SCAFFOLDING. DANIEL S. FISHER, Eureka, Ill. Filed Nov. 3, 1887. Serial No. 254,179. (No model.)



Claim.—1. The combination of the standards, the cross-bar at the lower portion thereof for supporting the flooring, the adjustable ratchet-bar for adjusting the scaffold to and from the building, the upper windlass, E, the latch-pawls G, the guide-loops I, the rope D, and the sheave C, substantially as described.

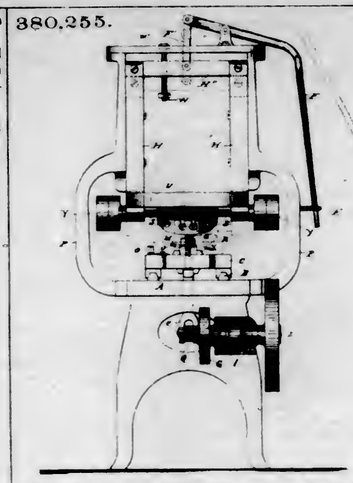
2. The combination, with the vertical supporting-standards having the lower cross-bar supporting the flooring, of the lower guide-plates, N', the rack-bar N, moving therein, and the pawl O, engaging with said rack-bar, substantially as described.

3. The combination, with the standards A, supporting the scaffold-flooring R, of the bracket J', supporting the windlass J, having a ratchet-wheel, j', at the inner end thereof engaged by a pawl, j^3, the rope K, and the staple L, substantially as described.

4. The combination of the standards supporting the flooring at their lower portion, the adjustable rack-bar engaged by a pawl at the lower portion of said standards, the upper windlass having ratchet-wheels and operating hand-bars, the latch-pawls operated by depending cords, the top guide-loops, the suspending rope, the sheave or pulley through which the suspending rope passes, the windlass J and the rope K, and the staple or loop L, substantially as described.

5. In a scaffold, the combination, with the standards, of the upper windlass controlling the vertical adjustment, the lower adjustable rack-bar, and the outer windlass having a rope secured thereto and to the building and in engagement with the lower portion of the scaffold, substantially as described.

380,255. MACHINE FOR MAKING WOODEN TRAYS, &c. WILLIAM C. FREEMAN, Louisiana, Mo. Filed Oct. 6, 1887. Serial No. 251,618. (No model.)



Claim.—1. The combination, with an automatically-reciprocating carriage having clamping-dogs, of a pair of rotary cutters revolving in opposite directions and arranged to cut in the same path, and with their cutting-edges at equal distances from said carriage, substantially as set forth.

2. The combination, with a carriage and an eccentric, with which said carriage is connected and whereby it is continually reciprocated, of a pair of rotary cutters arranged to cut in opposite directions and in the same path and revolving in a plane perpendicular to that of the carriage.

3. The combination, with the carriage C, of a revolving shaft, an eccentric on said shaft having connection with said carriage for reciprocating it, and a pair of rotary cutters arranged to cut toward each other and toward the table and in the same path, substantially as set forth.

4. The combination, with the reciprocating carriage, of the rotary cutters having their cutting-edges at equal distances from said carriage and adapted to cut in opposite directions in the same path and at right angles to the plane of the carriage, substantially as set forth.

5. The combination, with the carriage having suitable clamping-dogs for carrying the block and a track on which said carriage is mounted, of a vertically-sliding frame, rotary cutter-heads mounted in said frame, and a foot, Z, secured adjustably to said frame and adapted to rest upon the cut surface of the block, for the purpose set forth.

6. The combination, with the frame U, of the shafts S S, journaled in said frame, rotary cutter-heads and driving-pulleys on said shafts, a vertical track for guiding said frame, a carriage having suitable clamping-dogs for carrying the material, a track on which said carriage is mounted, and a foot, Z, adjustably secured to said frame and adapted to rest upon the material and thereby limit the bite of the cutters, as set forth.

7. The combination, with a reciprocating carriage for carrying the block of material and the frame U, capable of vertical movement, of two shafts journaled to said frame in a plane parallel with said carriage, but transverse to the line of reciprocation, rotary cutter-heads on said shafts adapted to cut toward each other, a foot, Z, adjustably secured to said frame and adapted to rest upon the material when the cutters enter to a certain depth, and the lever F, for holding the frame aloof, substantially as set forth.

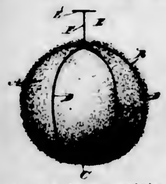
8. The combination, with the frame U, in which the rotary cutters are journaled, of the uprights P, having ways by which said frame is guided, a cross-bar, w, connecting the uprights P, a projection from said frame, a downwardly-projecting bolt secured to the cross-bar w and passing loosely through said projection, an adjustable nut on said bolt adapted to come in contact with said projection and limit the downward motion of said frame, and the lever F, connected with said frame, substantially as and for the purposes set forth.

9. The combination, with the frame U and the uprights P, of the rotary cutters mounted in said frame, the inner beads, I, on said uprights, upwardly-projecting arms H, secured to said frame, the cross-bar H", secured to the arms H, a cross-bar, w, secured to the uprights P, a downwardly-projecting bolt, W, passing through the cross-bar H" and carrying a nut, for the purpose described, and the lever F, fulcrumed to the cross-bar w and connected with the cross-bar H", substantially as and for the purposes set forth.

10. The combination, with the carriage C, having the dog M at one end thereof, of the dog N, located at the other end of said carriage, ways m m for guiding said dogs, the bell-crank lever f, pivoted to said carriage, a link, f', having a number of perforations secured to said dog N and to one arm of the bell-crank, the bolt H', projecting through dog N and the carriage, a nut having a handle on said bolt, the guide-

bar O, having slotted feet O', and screws projecting through said slots and into the carriage.

380,256. **DEVICE FOR SECURING CUT TOBACCO.** FREDERICK GRILL, Philadelphia, Pa. Filed Oct. 10, 1887. Serial No. 251,896. (No model.)

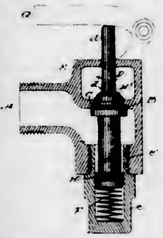


Claim.—1. A fastener for tobacco, consisting of a two-part loop with a neck joining the parts thereof, and a device for securing the opposing ends of said parts, substantially as described.

2. A fastener for tobacco, consisting of a double loop with a connecting link or neck and a locking-tag, substantially as described.

3. A fastener for tobacco of skeleton form, consisting of a loop with a link or neck integral therewith, and a device for locking the ends of said loop, substantially as described.

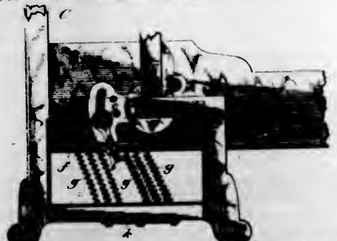
380,257. **WATER-CLOSET VALVE.** CHARLES H. HARKINS, St. Louis, Mo. Filed Oct. 7, 1886. Serial No. 215,580. (No model.)



Claim.—1. The combination, with the ingress and egress ports, of a valve-seat interposed between said ports, a chamber below said valve-seat, a valve-stem, a valve on said stem between said seat and chamber and adapted to open toward the ingress, an extension projecting from said valve into said chamber, and a piston on said extension, said extension and valve-stem having a duct leading from below said piston to a point above the valve, whereby said duct will be out of communication with the ingress-port and in communication with the egress-port when the valve is closed.

2. The combination, with the ingress and egress ports, of a valve and its seat interposed between said ingress and egress, said valve being adapted to open toward the former, a valve-stem, an extension projecting axially from said stem on the opposite side of the valve and having a longitudinal duct, d^2, and the valve-stem having an opening into said duct, whereby the latter empties into the egress-port when the valve is seated, a valve-chamber communicating with the ingress, a hollow plug secured in said chamber below the valve-seat, a piston, H, on said valve-stem extension fitting in said hollow plug, and a spring below said extension, essentially as set forth.

380,258. **FOLDING BED.** EDWARD E. HERRINTON, Grand Rapids, Mich., assignor of one-half to Israel C. Smith, same place. Filed June 23, 1887. Serial No. 242,336. (No model.)



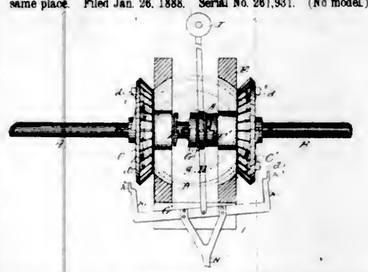
Claim.—1. In a folding bed, the combination, with the folding section, of the loose and independent side portions, B, of the stationary section, having their inner faces in close contact with the outer sides of the folding section, and plates *a*, and hooks *l*, having beveled inner faces for engaging said plates, the plates and hooks being respectively secured to the stationary and folding sections, as described, whereby said sections are drawn together and kept in close contact by the gravity of the folding section acting through said hooks, substantially as described.

2. In a folding bed, the combination, with the stationary section and the folding section pivoted thereon, of a series of springs arranged side by side in a plane parallel with the side of the bed, secured to the stationary section, a cross-bar connected with the free ends of the springs, and a rod or equivalent connection pivotally secured to said bar and to the folding section, whereby said rod may oscillate relative to the bar and springs and equalize the strain upon the latter when the folding section is moved, substantially as set forth.

3. In a folding bed, the stationary section and the folding section, pivoted thereto at *l*, in combination with a plate attached to the side frame, having a slot, *c*, a stud adjustable in said slot relative to the pivot of the section, a screw hung on said stud, a bar carried by the screw, and springs connected with the bar and with the stationary section, substantially as described.

4. In a folding bed, the combination, with the folding section, of the independent side portions, B, of the stationary section, having their inner faces in close contact with the outer sides of the folding section, the plates *a*, and hooks *l*, having beveled inner faces for engaging said plates, the plates and hooks being secured to the stationary and folding sections, and the series of parallel springs *g* and their cross-bar *f*, connected with said sections for drawing down the end of the folding section.

380,259. **REVERSING MECHANISM FOR ROLLING-MILLS.** DANIEL B. HICKS, Pittsburg, Pa., assignor of one-half to Edmund J. Evans, same place. Filed Jan. 26, 1888. Serial No. 261,931. (No model.)



Claim.—1. In reversing mechanism for rolling-mills, the combination, with the gears of the reversing-train and the shifting and stationary clutch members, of mechanism connected with the clutch-lever and engaging with the vertical gear-wheels, whereby the shifting of the clutch and reversal of the roll-shaft are produced automatically, substantially as described.

2. In reversing mechanism for rolling-mills, comprising a train of gearing and shifting and stationary clutch members, the combination, with the vertical gear-wheels provided with cams or beveled projections on one of their faces, and with the shifting clutch member and clutch-lever, of a dog or frame pivotally attached to said clutch-lever and constructed and adapted to engage with said cams alternately, substantially as described.

380,260. **CAR-STARTER.** HENRY H. HOLMES, Jersey City, N. J. Filed Dec. 5, 1887. Serial No. 256,986. (No model.)

Claim.—1. In a car-starter, the combination, with a ratchet-wheel, a gravitating ratchet-lever, and a draft rod or chain to each axle, of a sheave for each draft-chain, both, mounted on one shaft located midway between each axle, the said draft-chains being respectively connected with the levers, and passing thence backward over a sheave and forward to the respective ends of the car and the draft-hooks thereat, substantially as described.

2. In a car-starter, the combination, with the draft-hook, which in the operation of the starter shifts forward from the ordinary support at the end of the platform and backward thereto, of a suspending rod or chain having support at or about the top of the dash-board, and connected at its lower end with the hook and adapted to shift forward and backward therewith, substantially as described.

3. In a car-starter, the combination, with the draft-hook, which in the operations of the car-starter shifts forward from the ordinary support at the end of the platform and backward thereto, of an extension suspending rod or chain having support at or about the top of the dash-board, and connected at its lower end with the hook and adapted to shift with the hook, and also to extend under the strain

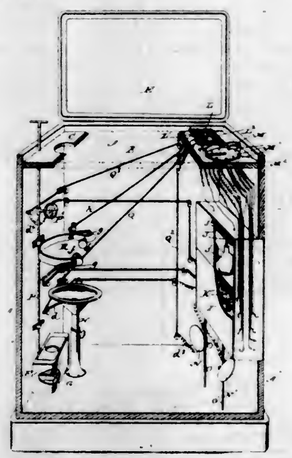
380,260.



of the draft when the platform rises abnormally, substantially as described.

4. The combination of the evener-rest with the draft-hook, substantially as described.

380,261. **ELECTRIC VAPOR-BATH.** ROBERT F. JACKSON and WILLIAM R. POPE, Baltimore, Md. Filed Oct. 13, 1887. Serial No. 252,276. (No model.)



Claim.—1. In an electric vapor-bath, the combination, with a Faradic coil and a galvanic battery or batteries, of a switch or switches for conveying a current from either or both to the patient being treated, substantially as herein shown and described.

2. In an electric vapor-bath, the combination, with a Faradic coil and a galvanic battery or batteries, of the switch L, connected to the Faradic coil, and the switch M, connected with the galvanic battery or batteries and to the switch L, substantially as herein shown and described.

3. In a vapor electric bath, the combination, with a cabinet, A, of the closet I, projecting into the cabinet, divided into two compartments, and provided with a door, substantially as shown and described.

4. In an electric vapor-bath, the combination, with the cabinet A, provided with the inwardly-projecting closet I, of the rods O O', secured to the closet and to the bottom of the cabinet, and the foot-rests N N', adjustably secured to the said rods, substantially as herein shown and described.

5. In an electric vapor-bath, the seat or stool H, having its upper surface dished or made concave, substantially as herein shown and described.

6. A body-electrode consisting of an approximately U-shaped spring carrying an electrode and a binding-post at each end, substantially as herein shown and described.

380,262. **CURRENT-METER.** PAUL KOTLAREWSKY, St. Petersburg, Russia. Filed Dec. 7, 1887. Serial No. 257,233. (No model.)



Claim.—1. In apparatus for measuring or ascertaining the velocity of currents of water or air or other liquids or fluids, the combination, with the propelling or driving mechanism which is operated by the force of the current to be measured, of a tube or receptacle connected to and operated by said mechanism to revolve end over end, and a weight contained in said receptacle or tube and arranged and adapted to slide freely back and forth therein during said revolving movement, as and for the purposes hereinbefore set forth.

2. The combination, with the supporting-frame, the propeller-wheel, and its shaft or axle, of the shaft *f*, geared to the propeller-shaft in the manner described, so that it shall make but one revolution for a number of revolutions of the propeller-shaft, the tube D, secured to and carried by said shaft *f*, and the freely-sliding weight E, contained in said tube, under the arrangement and for operation substantially as hereinbefore set forth.

380,263. **PAPER BAG.** WILLIAM A. LORENZ, Hartford, Conn. Filed Dec. 5, 1887. Serial No. 257,045. (Model.)

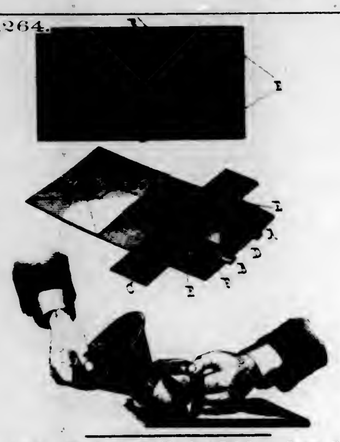


Claim.—A paper bag the sides of which are inwardly tucked and the mouth of which is provided with the inwardly-pointing triangular folds E and the downwardly-directed cross-fold F, all substantially as described.

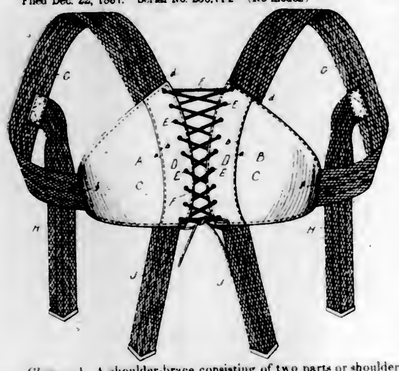
380,264. **PAPER BAG.** WILLIAM A. LORENZ, Hartford, Conn. Filed Dec. 5, 1887. Serial No. 257,046. (Model.)

Claim.—A paper bag the mouth of which is provided with the outwardly-pointing triangular folds E and the downwardly-directed cross-fold F, all substantially as described.

380,264.



380,265. SHOULDER-BRACE. LEON T. J. LUBIN, Boston, Mass. Filed Dec. 22, 1887. Serial No. 258,714. (No model.)



Claim.—1. A shoulder-brace consisting of two parts or shoulder-blade pieces, A B, connected by a yielding or elastic fastening, and each having a depending strap, J, and a loop or shoulder-strap, G, which loop or shoulder-strap has a depending strap, H, substantially as and for the purpose specified.

2. A shoulder-brace consisting of two parts or shoulder-blade pieces, A B, connected together by a lacing-cord, F, elastic or non-elastic, and each having a depending strap, J, and a loop or shoulder-strap, G, which loop or shoulder-strap has a depending strap, H, substantially as and for the purpose specified.

380,266. LOCK-STRIKE. JOHN H. MORRIS and THOMAS D. MORRIS, Seward, Nebr. Filed Oct. 17, 1887. Serial No. 252,516. (No model.)

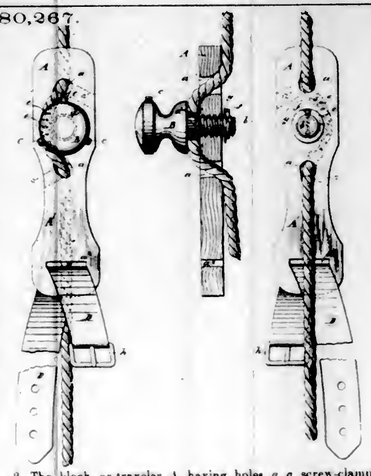


Claim.—The combination, with a lock having a sliding bolt, of a spring-plate on the door-casing engaging the forward end of said bolt, and a screw or bolt for adjusting said plate, substantially as described.

380,267. ROPE-TRAVELER. HENRY G. POWELL, Finsbury, London, England. Filed Jan. 19, 1888. Serial No. 261,300. (No model.)

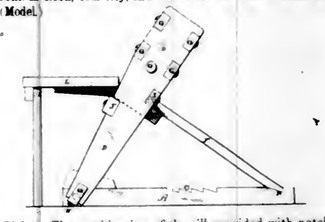
Claim.—1. The block or traveler A, having the openings *a a* in line with each other, the clamping-handle B, placed centrally between the holes and provided with a clamping-face, and an anti-friction roller or collar surrounding the shank of the clamp B, and the rope being adapted to bear against said collar, being diverted from a straight line and passing beneath the clamping-face of the part B, substantially as described.

380,267.



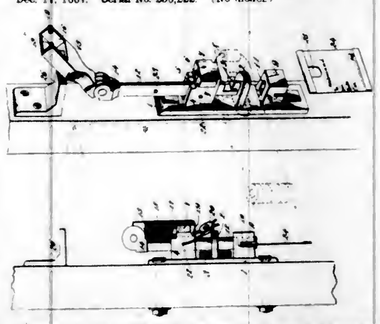
2. The block or traveler A, having holes *a a*, screw-clamping handle B, provided with projections *e*, collar *d*, pin *f*, and washer *g*, in combination with a suitable belt, substantially as described, and for the purposes set forth.

380,268. COMBINED IRONING-BOARD AND WASH-BENCH. JOHN E. ROTH, Coal City, Ind. Filed Oct. 24, 1887. Serial No. 253,237. (Model.)



Claim.—The combination of the sill provided with notches in its top, the pivoted frame-work D, provided with the cross-bars G' I and projections J, and the pivoted brace, the frame D being adapted to be adjusted into one position to receive the wash-bench and into another position to receive an ironing-board, substantially as shown and described.

380,269. SEAL-LOCK. ROBERT M. SULLY, Petersburg, Va. Filed Dec. 17, 1887. Serial No. 258,222. (No model.)



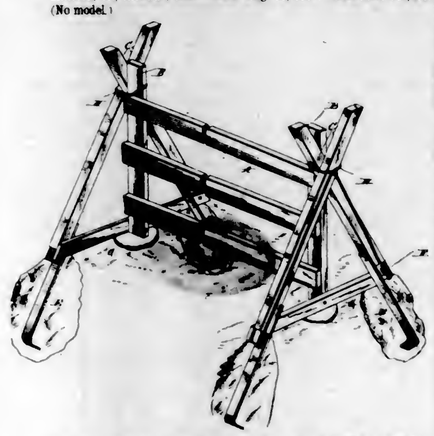
Claim.—1. In a seal-lock for cars, the combination of a perforated lug, a locking-bolt passed through said lug, and a fastening-cap hinged to the upper end of the bolt to have locking engagement with the lug when the bolt is in locking engagement with a connected seal, and flanged to cover the whole of said lug in front of the bolt, substantially as described.

2. In a seal-lock for cars, the combination of a perforated and mortised lug having lateral shoulders rabbeted at their lower ends, a staple, a perforated and slitted lug, a locking-bolt passed through said lugs and staple and having a hook at one end, a seal adapted to engage said hook and slitted lug, and a fastening-cap hinged to the other end of the bolt and adapted to engage the mortised and shouldered lug and completely cover said lug in front of the bolt, substantially as described.

3. In a seal-lock for cars, the combination of the lug 4, having perforation 5, mortise 6, shoulders 7, and rabbets 8, the bolt, and the fastening-cap 15, hinged to the head of said bolt and provided with a recess, 16, formed by flanges adapted to cover the whole of the lug in front of the bolt, studs 19 to engage the shoulders 7, and a catch, 17, to engage the mortise 6, substantially as described.

4. In a seal-lock for cars, the combination of the staple 2, the perforated and mortised lug 4, having shoulders 7 and rabbets 8, the perforated lug 9, having side slits, 10, the locking-bolt 12, having hook 13 and perforation 23, and the fastening-cap 15, hinged to the head of said bolt and provided with catch 17 and studs 19, said cap being adapted to cover the whole of the lug 4 in front of the bolt, substantially as described.

380,270. COMBINED FENCE POST AND BRACE. SILAS WILLIAMSON, Sr., Amanda, Ohio. Filed Aug. 18, 1887. Serial No. 247,253. (No model.)



Claim.—The combination, with a fence-panel, of the inclined braces secured thereto at their upper ends, the lower metallic part for each brace having a sleeve near its upper end and having its lower end bent or inclined inward, a wire secured at its middle to the upper ends of the inclined braces and having hooks at its ends, said hooks engaging with the sleeves upon the lower metallic portions of the braces, and a horizontal brace secured to the inclined braces and to the fence-panels, substantially as and for the purpose set forth.

380,271. ELECTRIC-ARC LAMP. CHARLES W. ADAMS, Chelsea, assignor of three-fourths to Arthur B. Browne and Edgar Harding, both of Cambridge, Mass. Filed Oct. 6, 1887. Serial No. 251,646. (No model.)

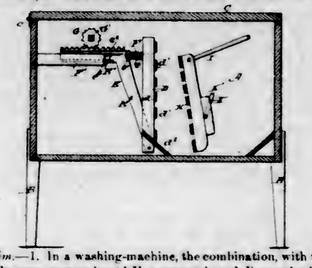


Claim.—1. In an electric-arc lamp, a perforated and slotted clutch, B, at one end permanently connected by a slotted joint and pivot with and tilting upon a stationary piece, as K, and again, at its opposite end, pivoted to a clamping-lever, F, the same to be used in connection with a feed-rod, A, substantially as shown and described.

2. In an electric-arc lamp, a tilting clutch consisting of a piece of metal or other suitable material, B, having an opening, C, and at one end a clamping-lever, F, of same material as above, pivoting at G in slot E, and again at its connection with link L, and at its opposite end being connected to the stationary piece K by links I I, the said clutch resting on adjustable stop Y, substantially as shown and described.

3. In an electric-arc lamp, the combination of a tilting clutch consisting of a slotted piece, B, the opening C, the clamping-lever F, the connecting-link L, the armature M, the small links I I, the stationary piece K, and the adjustable stop Y, with the feed-rod A, substantially as shown and described.

380,272. WASHING-MACHINE. WILLIAM L. G. APPLEBY, Germantown, Md. Filed June 17, 1887. Serial No. 241,664. (No model.)



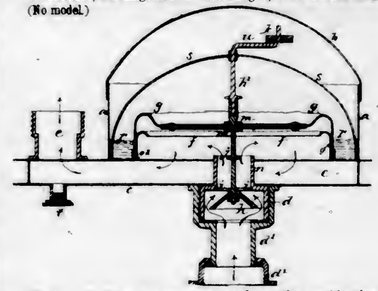
Claim.—1. In a washing-machine, the combination, with the box, of the vibratory presser-board H, a presser-board, D, angular brackets E, pivoted at its lower ends to the lower end of the presser-board D, and spring F and pin *e*, interposed between the upper end of said presser-board and the upper end of the bracket, substantially as described.

2. The combination, with the box and vibratory presser-board, of opposing presser-board supported upon brackets E, held in guide-plates F', and provided with a toothed rack, and a gear-pinion for adjusting said brackets and presser-board, substantially as described.

3. In a washing-machine, the combination, with the tub or clothes-receptacle, of the presser-board supported upon brackets held in guide-plates, and provided with adjusting-racks and a gear-pinion, substantially as and for the purpose set forth.

4. In a washing-machine, the combination, with the tub or clothes-receptacle, of the presser-board pivoted to the lower ends of brackets, and the spring-encircled pins interposed between the upper ends of the presser-board and the bracket, substantially as and for the purpose set forth.

380,273. PRESSURE-REGULATOR FOR GAS-MACHINES. ORSON W. BENNETT, Washington, D. C. Filed Aug. 4, 1887. Serial No. 246,149. (No model.)

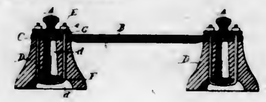


Claim.—1. In a gas-pressure regulator, the combination of a flexible diaphragm, a sealing-fluid, and a cover for the latter, covering also the diaphragm sealed by said fluid, as set forth.

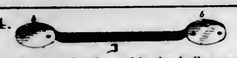
2. In a pressure-regulator, the chamber forming case *a b*, containing a sealing-fluid, a flexible diaphragm forming the pressure-chamber, and a sealing-cover placed around and independent of the diaphragm, substantially as described, for the purpose specified.

3. A pressure-regulator for gas, consisting of a flexible diaphragm forming a pressure-chamber, a sealing-fluid, a valve connected with and controlled by said diaphragm, a protecting-covering for said diaphragm, and an inclosing-case having the valve-controlled inlet, and an outlet having a tar and moisture collecting trap, all arranged as shown and described.

380,274. RAILROAD CROSS-TIE AND SLEEPER. GEORGE E. BLAINE, Dayton, Ohio, and EDWARD HILL, Cambridge City, Ind., assignors to Millington Kemper, trustee, Dayton, Ohio. Filed Oct. 29, 1887. Serial No. 253,751. (No model.)



380,274.



Claim.—1. The combination, with the hollow anchor-blocks, of the rails, the tie-rods, the wooden blocks, the clips, and the U-shaped bolts, substantially as described.

2. The tie-rod B, having the enlarged flattened ends *b* and having its central portion bent to form an inverted-U shape in cross-section, combined with the rails, the anchor-block, the interposed wooden blocks, and securing devices, substantially as specified.

3. As an improved article of manufacture, an anchor-block formed of earthenware, terra-cotta, or the like, being hollow and having its bottom dished, substantially as described.

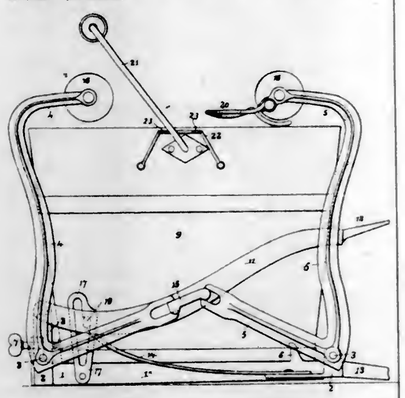
4. As an improved article of manufacture, a tie-rod stamped out of a single piece of sheet metal, having its central portion U-shaped in cross-section and its opposite ends flattened, enlarged, and having a plane upper surface to pass beneath and support the rails, substantially as described.

5. The combination, with the rails and tie-rods, of anchor-blocks, securing devices to clamp the rails, tie-rods, and anchor-blocks together and in position, cushioning-blocks interposed between the rails and anchor-blocks, and cushioning-blocks interposed between the securing devices and lower surfaces of the anchor-blocks, substantially as described.

6. The combination, with the rails and tie-rods, of anchor-blocks to support the same, U-shaped bolts passing through the anchor-blocks and clamping the rails, tie-rods, and anchor-blocks together and in position, cushioning-blocks interposed between the ends of the tie-rods and upper surfaces of the anchor-blocks, and cushioning-blocks interposed between the lower portions of the U-shaped bolts and the under surfaces of the anchor-blocks, substantially as described.

7. The combination, with the rails and anchor-blocks, of tie-rods connecting the rails, said rods having their central portions U-shaped in cross-section and their ends flattened and enlarged, the enlarged ends supported by the anchor-blocks beneath the rails, and securing devices passing through the ends of the tie-rods and clamping the rails, tie-rods, and anchor-blocks together, substantially as described.

380,275. MOP-WRINGER. ARTHUR M. BURNHAM, Gardiner, Me., assignor, by mesne assignments, to the Excelsior Wringer Company, same place. Filed Mar. 13, 1886. Renewed Dec. 6, 1887. Serial No. 257,143. (No model.)

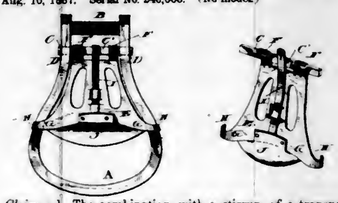


Claim.—1. In combination with a base-frame, paired bell-crank levers journaled thereon, a treadle for operating said levers, and a link engaging with a stud on said treadle to limit its movement, substantially as set forth.

2. In a mop-wringer, in combination with a base-frame, paired bell-crank levers journaled thereon, carrying the wringer-rollers, and having the forked horizontal arms, and a treadle also journaled on the base-frame and having a lug engaging in the forks of said arms, substantially as and for the purpose set forth.

3. In combination with the rolls of a mop-wringer, guards fixed to the supports at each end of one of said rollers, projecting outwardly and then inwardly under the latter roller, and adapted to fall under the other roller when the rolls are brought together, substantially as set forth.

380,276. STIRRUP. STEPHEN T. BUTLER, Socorro, N. Mex. Filed Aug. 10, 1887. Serial No. 246,600. (No model.)

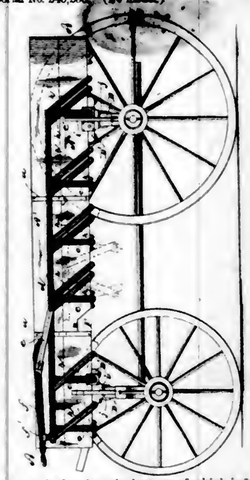


Claim.—1. The combination, with a stirrup, of a transverse bar arranged in the upper end of the same, a gate hinged at its upper end on the said bar and formed with the side hooks or projections at its lower end, the leather flap or cushion secured to the lower edge of the said gate, and a spring normally pressing the lower end of the gate forward.

2. The combination, with the bar adapted to be secured in the upper part of a stirrup, having the reduced ends, the rounded middle portion, and the flat rear side, of the gate formed with the hooks at its upper end and the side hooks or projections at its lower end, and the spring secured at its lower end in the said gate and bearing with its upper free end against the flat rear side of the said bar, substantially as set forth.

3. The combination, with the bar adapted to be secured in the upper part of a stirrup, having the reduced ends, the rounded middle portion, and the flat rear side, of the gate formed with the hooks at its upper end and the side hooks or projections at its lower end, the leather flap riveted to the lower edge of the said gate, and the spring secured at its lower end in the said gate and bearing with it free upper end against the flat rear side of the said bar, substantially as set forth.

380,277. DUMPING-WAGON. JOSEPH CAMERON, Cynthiana, and JOHN S. JUDSON and WILLARD S. JUDSON, Springfield, Ohio, assignors to the Cameron Harrow and Wa[illegible] Company, Chicago, Ill. Filed June 4, 1887. Serial No. 240,235. (No model.)



Claim.—1. A bed or box the bottom of which is formed of hinged slats each provided with a supporting-trunnion, a main bar extending longitudinally along the side of said box and connected at intervals to parallel bars journaled at one end concentric with the journals of the said slats, and a supporting-bar extending from said main bar to the trunnions on the said slats, substantially as set forth.

2. A bed or box the bottom of which is provided with a series of slats arranged in pairs, each slat of the respective pairs being hinged to a common journal provided with a projecting trunnion adapted to project from the side of the said box, supporting-bars connected to said trunnion, and a series of side bars and a hand-lever connected thereto, whereby the said slats are adapted to be opened and closed by said hand-lever, substantially as set forth.

3. A bed or box the bottom of which is formed of a series of hinged slats arranged in pairs, each of said slats being provided with a projecting trunnion, a series of parallel bars hinged to the journals of said slats, a main bar connecting the said parallel bars and pivoted thereto, and supporting-bars extending from the said main bar to each of the said slats, and means for moving said main bar longitudinally, substantially as and for the purpose set forth.

4. In a dumping box or bed, a series of slats arranged in pairs in the bottom thereof, each of the said slats of the respective pairs being hinged to a common journal, and a main longitudinal bar pivoted to a series of parallel bars and connected by suitable means to each of the said slats, the said parallel bars being each hinged on the same journal which forms the bearing for the said slats, substantially as and for the purpose set forth.

5. In a dumping box or bed, the hinged slats and the supporting-bars connected to said slats and the main bar, the pivoted hand-lever, and a connecting-bar adapted to connect said hand-lever and main bar in such a manner that as the slats are drawn to their normal position the connecting-bar is adapted to pass the point at which the hand-lever is pivoted, and thus form an automatic lock for said slats, substantially as set forth.

6. In a dumping bed or box, the hinged slats connected by a series of side bars to a main bar, a hand-lever connected to said main bar by a connecting-rod adapted to pass centers, as described, and means for adjusting the length of said connecting-rod, substantially as set forth.

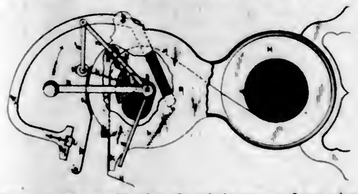
7. In a dumping bed or box the bottom of which is formed of a series of slats, an opening between the said slats into which the wheels of the running-gear of said bed are adapted to turn, and a hood or cone over said opening, substantially as set forth.

8. In a dumping box or bed the bottom of which is provided with a series of hinged slats, a hinged cone adapted to form a hood above the space between the respective slats, the sides of said cone being hinged together in such a manner that one side thereof may be removed and the other side dropped down and hinged to the respective slats, and thereby close the space between the said slats, substantially as set forth.

9. A dumping bed or box the bottom of which is formed of a series of hinged slats, means for raising and lowering said slats, as described, a false bolster secured at either end of said bed or box, slats pivoted on either side of said bolster, and a hood or covering above said bolster, substantially as set forth.

10. A dumping bed or box the bottom of which is formed of a series of hinged slats, a false bolster secured at either end of said bed, brackets between said bolsters and bed, said brackets being adapted to form a bearing for the slats on either side of said bolster, and a hood or covering above the said bolster and slats, substantially as set forth.

380,278. TICKET-PRINTING MACHINE. WILLIAM H. CURTIS, La Due, Mo. Filed Sept. 9, 1887. Serial No. 249,344. (No model.)



Claim.—1. The combination of a suitable case or frame adapted to carry a roll of paper to be formed into tickets, a printing-frame pivoted to the upper portion of said frame, having a stamp or die attached to its upper forward end and its opposite end provided with operating-arms, rollers journaled in the frame, between which the paper to be printed is passed, and a shaft passing through the upper portion of the frame, having two cams, one for operating the printing-frame and the other for projecting the paper to be printed upon, substantially as described.

2. The combination of the case or frame, a spindle placed in the frame carrying two rolls of paper to be printed into tickets and stube, a printing-frame pivoted to the upper portion of the frame, carrying a die or stamp in its upper forward end and its opposite end formed into operating-arms, two pairs of rollers journaled in the frame, between which pass the two strips of paper, and a shaft journaled in the upper portion of the frame, having two cams, O K, for operating the printing-frame, the cam K having two arcs of unequal length, for the purpose described.

3. The combination of the frame B, printing-frame A, shaft D, carrying mechanism, substantially as described, for operating frame A, rollers H H', a mechanism, substantially as described, for operating them and projecting the paper to be printed upon, the levers S, loosely journaled upon the shaft D, the arms S", carrying inking-roller R, pad P, and springs W, substantially as set forth.

4. The combination of the frames A B, rollers H H', for projecting the paper being printed upon, a mechanism for operating frame A and rollers H H', levers S, arms S", roller R, pad P, springs W, having the outer ends bent upward, so as to form a stop for the roller R, and spring V, for keeping the roller in contact with the pad, substantially as specified.

5. In a machine for printing upon a strip of paper, the combination of the main frame having a recess formed therein at the rear of the supporting-plate, the supporting-plate upon which the ticket-strip to be printed rests, and an endwise-moving slide carrying a rotary cutter placed in the said recess, whereby the ticket to be severed is in front of the cutter when printed, for the purpose substantially as described.

6. The combination of the frame B, frame A, having plate A', arms G, and spring U, for returning them to position, shaft D, cams O K, rollers H H', levers S, and spring I, for pressing them against the outside of the main frame, arms S", roller R, pad P, springs W, and plate N, substantially as shown and described.

7. In a machine for printing tickets and stubs upon strips of paper, the combination, with the main frame carrying a stamping-frame having operating-arms and the rollers for operating the two strips of paper, of a shaft passing through the main frame and provided with cams for operating alternately upon the rollers and operating-arms of the printing-frame, for the purpose described.

8. The combination, with the plate A', having the stationary loop *b* and a vertical spring-catch, Z, secured to the outside of the frame A, of the die C', having a straight portion for engaging the loop and its opposite end L-shaped, the vertical portion of which rests against the outer side of the plate A', and its horizontal portion having a slot, with which the catch engages, substantially as shown.

380,279. SAFETY WATCH-POCKET. ANNA DORNITZER, New York, N. Y. Filed Dec. 23, 1887. Serial No. 258,808. (No model.)

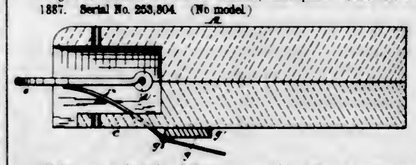


Claim.—1. In combination with the supporting-plate of a watch-pocket, a series of parallel retaining-pins projecting from a transverse bar attached to the under side of the plate at one end thereof, and a spiral pin projecting on the same side and at the opposite end of the plate from a rotating stem passing transversely through the plate, substantially in the manner and for the purpose herein set forth.

2. The combination, with the supporting-plate of a watch-pocket, and with a spiral pin projecting on one side of said plate from a rotating stem passing transversely through the plate, of an extended elastic guard-plate made fast at one end to said supporting-plate, to rest at its opposite end upon the point of the pin, and slotted to permit of the passage of the pin-point through it, substantially in the manner and for the purpose herein set forth.

3. The combination, in a detachable watch-pocket, of a supporting-plate, devices, substantially as described, for securing the plate to the dress of the wearer, a pocket secured to the front face of the plate, and a hinged clasp closing the upper end or mouth of the pocket, substantially in the manner and for the purpose herein set forth.

380,280. CAR-COUPLING. GEORGE W. EDWARDS, Chatham, N. J., assignor of one-half to John M. Baldwin, same place. Filed Oct. 31, 1887. Serial No. 253,804. (No model.)

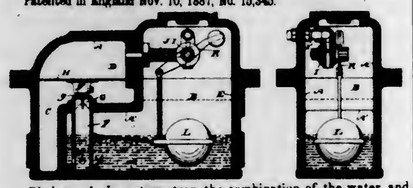


Claim.—1. A draw-head for cars, combining therein a chamber in the front end, which is open at the bottom, as at A', having a tongue, c, projecting from the bottom toward the draw-head, and having an aperture therethrough to admit of the passage of the pin, and having a cross-bar, as *d*, to serve as a journal for a coupling-link, substantially as and for the purposes set forth.

2. The combination, with a draw-head provided with a chamber at the front end, having an open bottom and a perforated tongue, as

described, of a cross-bar, as *d*, a coupling-link journaled upon said cross-bar, and a lever fulcrumed beneath the bottom of the car, having an arm extended to the outside of said car, and adapted to raise said coupling-link in a position to engage with the draw-head of the adjacent car, substantially as and for the purposes set forth.

380,281. **STEAM-TRAP.** PETER FYFE, Glasgow, County of Lanark, Scotland. Filed Dec. 6, 1887. Serial No. 257,142. (No model.) Patented in England Nov. 10, 1887, No. 15,345.

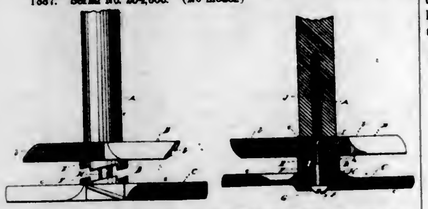


Claim.—1. In a steam-trap, the combination of the water and pressure chambers B D, the former provided with a discharge-valve, and having in it a float operating a cock or valve in a pipe communicating with the pressure-chamber, and the said chamber D having a disk or diaphragm bearing on the discharge-valve and acted on by variations of pressure produced by the operation of said cock, substantially as described.

2. In a steam-trap, the combination, with the discharge-valve, of the pressure-chamber D, provided with a disk or diaphragm bearing on said valve, and a three-way cock, I, controlled by a float in the trap for operating the said valve, substantially as hereinbefore described.

3. The combination, with a casing having ports and a web with openings therethrough, dividing said casing into compartments, a flexible diaphragm dividing one of said compartments between said openings, a float, and valves in said openings adapted to be operated alternately by said diaphragm and float, for the purpose set forth.

380,282. **CHURN-DASHER.** JAMES E. GIBBS, Jonesborough, Tenn., assignor of one-half to William G. Mathes, same place. Filed Nov. 10, 1887. Serial No. 254,906. (No model.)



Claim.—1. The combination, with the dasher-staff and the screw provided with the head, the two unequal-sized unthreaded portions forming the circumferential shoulder, and the threaded end, of the beaters having blades inclined laterally at equal angles, those of one beater being inclined in opposite directions to those of the other beater, and the ratchet-faced clutch-sections engaged, respectively, to the lower surface of the upper beater and to the upper surface of the lower beater, and engaging when the blades of said beaters make angles of forty-five degrees with each other, substantially as specified.

2. The herein-described churn-dasher, composed of the staff A, the beaters B C, having, respectively, the four equidistant blades *b c*, the ratchet-faced clutch-sections E F, secured, respectively, to the upper and lower beaters, and the screw-pin G, provided with the head *g* and the unthreaded portions H I, substantially as specified.

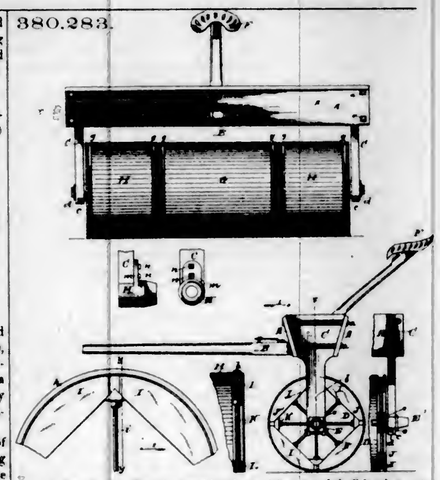
380,283. **LAND-ROLLER.** SYLVESTER F. HARTLEY, Gouverneur, N. Y., assignor to the Gouverneur Machine Company, same place. Original application filed June 7, 1886, Serial No. 204,367. Divided and this application filed Sept. 2, 1886. Serial No. 212,509. (No model.)

Claim.—1. In a land-roller, the combination, with the axle, of wooden hangers having their lower ends provided with throats whereby the hangers are rendered elastic, substantially as set forth

2. In a land-roller, the combination, with a grooved metal shell, of felly-sections engaging with the grooved shell, substantially as set forth.

3. In a land-roller, the combination, with a metal shell having at its ends outward-projecting grooves, of a central hub, spokes projecting from the hubs, and fellies mounted on the spokes and having the outer edges seated in the outward-projecting grooves, substantially as set forth.

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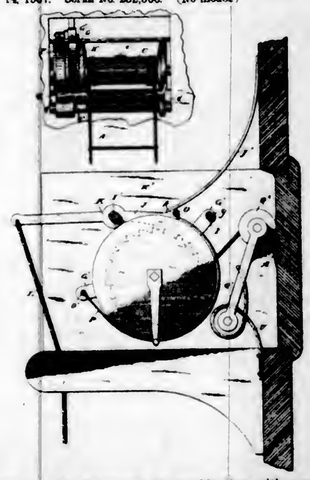


4. In a land-roller, the combination, with a metal shell having outward-projecting grooves near its ends, of a central hub, spokes projecting from the hub, fellies mounted on the spokes and having their outer edges seated in the outward-projecting grooves, and means for thrusting the fellies into the grooves of the shell, substantially as set forth.

5. In a land-roller, the combination, with a metal shell, of a central axle, a series of extensible spokes projecting from the axle and engaging at their outer ends with the fellies, substantially as described.

6. In a land-roller, the combination, with a metal shell, of a central axle, a hub on the axle, a series of telescopic spokes mounted on the hub with their outer ends engaging with the fellies, and means for lengthening the spokes to thrust the fellies against the shell, substantially as set forth.

380,284. **FIRE-ESCAPE.** JAMES HORNBY, San Antonio, Tex. Filed Oct. 14, 1887. Serial No. 252,380. (No model.)



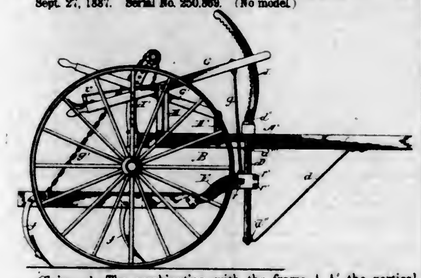
Claim.—1. In a fire-escape, the combination, with a supporting-frame, a drum, a shaft having its bearings in the said supporting-frame, and a ratchet, of a ladder, a metallic foot-board, a pawl for engagement with said ratchet, having a projection, a spring having its free end pressing against the said projection, and a cable at the outer end of the said pawl for operating the same.

2. In a fire-escape, the combination, with a supporting-frame, a shaft journaled therein, a drum, ratchet, and friction-pulley mounted on the same shaft, of a ladder, its foot-board, a pivoted pawl, and a brake-shoe secured to and carried by the said pawl, substantially as described, whereby the ladder will be permitted to descend and its speed regulated by the same cable.

3. In a device of the character described, a supporting-frame, a shaft journaled therein, a drum, ratchet, and friction-pulley mounted on the said shaft, and a plate having a perforated lug or projection carrying a pin, in combination with a ladder, a foot-board, a pivoted pawl having a perforated lug or projection and a pin situated therein, a brake-shoe having its extremities secured to the pins of the pawl and the plate, and a cable for operating the said pawl.

4. In a fire-escape, the combination of a ladder and its metallic foot-board having a perforation, a ring secured to the building, a pin adapted to pass through the said ring and the perforation in the foot-board and serving to keep the said ladder in position for use, substantially as shown and described.

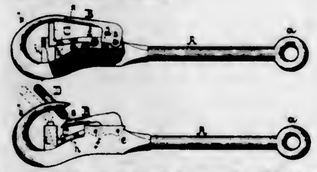
380,285. **CULTIVATOR.** EUGENE A. HOYT, Madison, Wis. Filed Sept. 27, 1887. Serial No. 250,869. (No model.)



Claim.—1. The combination, with the frame A A', the vertical standard D, dependent therefrom, and the bracket E, vertically adjustable on said standard, of the pivoted lever G, supported by the frame of the machine, the guard *i*, fastened to said lever, the latch *i'*, operating-rod *i''*, and spring *s*, the toothed segment I, pivoted to the frame of the machine and passing through the guard *i*, and the rod *g*, connecting said lever G with the bracket E, substantially as shown and described, and for the purpose set forth.

2. The cultivator-frame with the levers G G', the hollow standards or hangers D, secured to the frame by the bolt *d''*, and the pivoted rack I, in combination with the sliding bracket E, having rollers *r r'*, the plow-beam pivoted thereto, and the lever-connections *g g'*, substantially as shown and described.

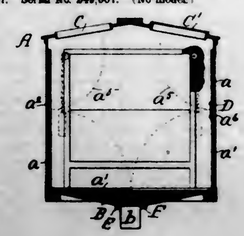
380,286. **SNAP-HOOK.** THOMAS H. HUMPHREYS, Baltimore, Md., assignor of one-half to Charles T. Holloway, same place. Filed Nov. 11, 1887. Serial No. 254,899. (No model.)



Claim.—1. In combination with the stem A and the fixed and movable jaws *b* and B, the spring-arm C, substantially as specified.

2. In combination with stem A and the fixed and movable jaws *b* and B, the spring-arm C and the projection *i*, substantially as specified.

380,287. **HOPPER-BOTTOM FREIGHT-CAR.** FRANK L. JOY, Chicago, Ill., assignor of one-half to William S. Hay, Huron, Dak. Filed Sept. 14, 1887. Serial No. 249,607. (No model.)

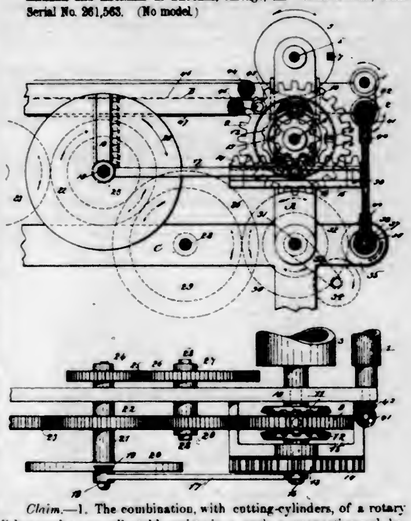


Claim.—1. In a freight-car, the combination, with a hopper located in the bottom, of the auxiliary inside doors, D D', consisting of the upper half, *a*, and the lower half, *a'*, said lower half being adapted to be turned down to a horizontal position to cover the hopper and form a level floor, while the upper half may be turned upward or slid down to take the place of the lower half when the latter is turned down, substantially as set forth.

2. In a freight-car, the combination, with the inside auxiliary doors, D D', consisting of the two parts *a a'*, divided in a horizontal plane, of the cords a^3, the sheaves a^3, and the counter-weights a^4, whereby the upper half of said door is adapted to be turned upward or slid downward, as may be required, substantially as and for the purpose set forth.

3. In a freight-car the roof structure whereof is provided with a number of openings, said openings having suitable covers, in combination with a hopper-bottom, as described, a central discharge-spout, the frame E, the slide F, and the means set forth for operating said slide, whereby merchandise—such as grain—may be loaded into the car in bulk through the top and discharged from the hopper-bottom in the same manner, as set forth.

380,288. **PAPER FEEDING AND CUTTING DEVICE.** CONRAD KAHLER and LEONARD B. BROOKES, Chicago, Ill. Filed Jan. 23, 1888. Serial No. 261,563. (No model.)



Claim.—1. The combination, with cutting-cylinders, of a rotary disk carrying an adjustable wrist-pin, a rack, a connecting-rod between the wrist-pin and the rack, and a driving-gear for the cylinders operated by the rack, substantially as and for the purposes described.

2. The combination, with the cutting-cylinders, of the rotary disk 20, adjustable wrist-pin 18, connecting-rod 17, a driving-rack, 14, pinion 13, gear 9, and beveled pinions 10, 11, and 12, substantially as and for the purposes described.

3. The combination, with the feeding-cylinders 1 2 and cutting-cylinders 3 4, of a rotary disk, 20, adjustable wrist-pin 18, rack 14, connecting-rod 17, pinion 13, gear 9, beveled pinions 10, 11, and 12, and a train of gearing for operating the parts, substantially as described.

4. The combination, with two rotary cutting-cylinders, of gearing for rotating the cylinders and a rack having a variable range of movement, substantially as described.

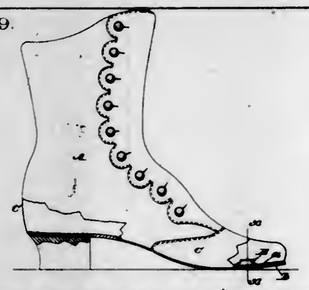
380,289. **SHOE OR GAITER.** JOHN A. KELLY, Philadelphia, Pa., assignor of one-half to M. J. McCormack, same place. Filed Apr. 14, 1887. Serial No. 234,797. (No model.)

Claim.—1. The improved method of fastening the shank-stiffener in shoes, which consists in forming a longitudinal recess within the body of the sole and inserting the shank-stiffener in said recess, substantially as described.

2. The improved method of inserting the shank-stiffener in a shoe, consisting in splitting the heel of the shoe laterally, then forming a



380,289.



longitudinal recess in the body of the sole, and then placing said shank-stiffener in said recess, substantially as described.

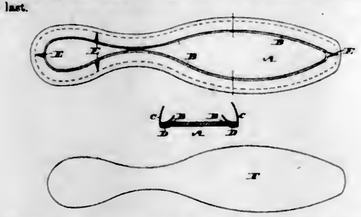
3. A shoe having a sole split or recessed longitudinally from the heel to a point beneath the forward end of the arch of the shoe, and a shank-stiffener inserted in said recess, substantially as described.

4. As an article of manufactnre, a shoe-sole having a longitudinal recess extending from the rear end to a point beneath the forward end of the arch, and a shank-stiffener located in said recess, substantially as described.

5. As an improved article of manufacture, a shoe having an opening in its sole commencing at a point a little behind the breast of the heel and extending forward into the body thereof, and provided with a shank-stiffener extending the length of and occupying said opening, substantially as described.

380,290. **BOOT OR SHOE.** JOHN A. KELLY, Philadelphia, Pa., assignor of one-half to M. J. McCormack, same place. Filed July 26, 1887. Serial No. 245,315. (No model.)

Brief.—The inwardly-projecting channel-flap is slitted to permit the introduction of a metal plate corresponding in outline to the sole, but smaller, and the upper may thus be secured to both the inner and outer soles by clinch-nails without removing the unfinished shoe from the last.



Claim.—The improvement in making shoes, consisting in cutting a channel on the inner sole concentric with the edges thereof and extending toward and near the outer edge, cutting slits in the flaps of said channel, inserting a clinching-plate extending from the heel to the toe of said sole in said channel, then placing said sole with its channeled face next to the last, and then securing the outer sole and upper to said inner sole by nails or pegs without removing the same from the last, substantially as described.

380,291. **TRUNK-TOP.** FREDERICK KUKKUCK, St. Louis, Mo. Filed Feb. 2, 1888. Serial No. 262,807. (No model.)

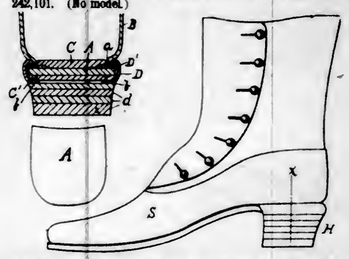


Claim.—1. As a new article of manufacture, a trunk-top composed of outer and inner layers of veneer, the inner layer being provided with a longitudinal slit or cut, and transverse or diagonal slits or cuts, substantially as shown and described, for the purpose set forth.

2. As a new article of manufacture, a trunk-top formed of outer and inner layers of veneer, the inner layer having diagonal slits or cuts G extending inward from the outer edges of the layer, substantially as shown and described, for the purpose set forth.

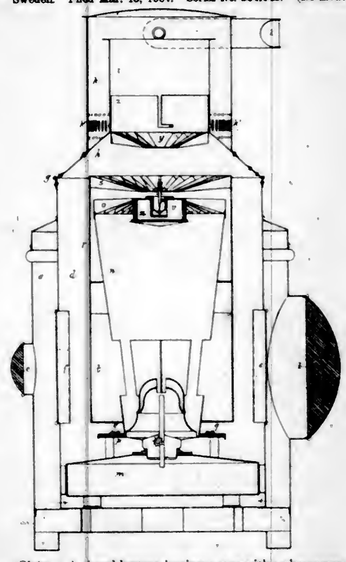
3. As a new article of manufacture, a trunk-top formed of outer and inner layers of veneer, the inner layer having a longitudinal cut or slit and diagonal cuts or slits extending inward from the respective edges of the layer, and the outer layers having transverse cuts C, substantially as and for the purpose set forth.

380,292. **BOOT-HEEL.** PETER LINDEN, Troy, N. Y., assignor of one-half to Dennis Peters, same place. Filed June 22, 1887. Serial No. 242,101. (No model.)



Claim.—The combination, with the in and out soles and a cushion extending beyond the insole, of the upper B and welts D D', secured to the upper and insole and resting on the top of said cushion, the lower ends of said welts being fastened under the outsole, as shown and described.

380,293. **SIGNAL-LANTERN.** GEORG WILHELM LYTH, Stockholm, Sweden. Filed Mar. 15, 1887. Serial No. 231,043. (No model.)

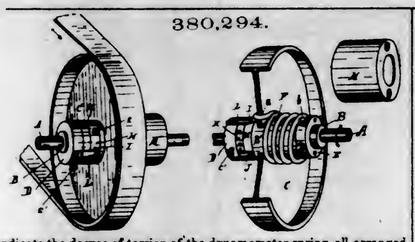


Claim.—A signal-lantern having a case with a glass-covered opening and a lamp, and provided with a rotary turbine carrying a screen over the lamp, a chimney, and fixed guide-blades or deflectors in the chimney above the said turbine and inclined in the same direction as the blades of the latter, substantially as and for the purposes specified.

380,294. **DYNAMOMETER.** CHARLES F. MURDOCK, Detroit, Mich., assignor of one-half to Jonathan K. Webster, same place. Filed Sept. 10, 1885. Renewed Nov. 12, 1887. Serial No. 254,981. (No model.)

Claim.—1. In a dynamometer, the combination of a loose pulley provided with a hub, of a dynamometer coil-spring placed concentric to the shaft and forming the medium for transmitting by its torsional tension the power from the shaft to the pulley, of an annular scale on the hub of the pulley, and of a pointer carried by the shaft, so as to

380,294.



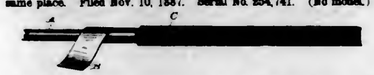
indicate the degree of torsion of the dynamometer-spring, all arranged substantially as described.

2. In a dynamometer, the combination, with a loose pulley, a shaft, and a coil-spring, which forms the means of transmitting the power from the shaft to the pulley, of an indicator consisting of the arm L, a collar on the shaft, a hub on the pulley, the loose ring H, the pin I, pointer J, and the annular scale K on the hub of the pulley, all arranged and operating substantially as described.

3. In a dynamometer, the combination of the loose pulley C, the collars D E, fast upon the shaft, the coil-spring F, secured at one end to the collar E and at the other to the pulley, the arm L, secured to the collar D, and the loose ring H, having pointer J and pin I, and the annular scale on the hub of the pulley, all arranged substantially as described.

4. The combination, with the shaft A, the hollow shaft B, loose pulley C, having a hub, collar E on said hub, and the coil-spring F, placed around the hub of the said pulley, of the cap M, inclosing said spring and collar, substantially as described.

380,295. **INSULATED ELECTRICAL CONDUCTOR.** WILLIAM A. PHILLIPS, Schenectady, N. Y., assignor to the Edison Machine Works, same place. Filed Nov. 10, 1887. Serial No. 254,741. (No model.)

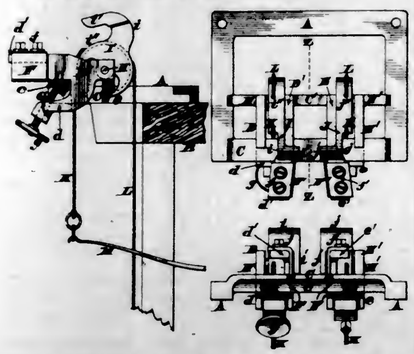


Claim.—1. The combination, with an electrical conductor, of an insulating covering consisting of a sheet or strip of rubber impregnated with paraffine or similar moisture-proof substance wrapped on said conductor, substantially as set forth.

2. The combination, with an electrical conductor, of an insulating covering consisting of a sheet or strip of rubber impregnated with paraffine or similar moisture-proof substance wrapped on said conductor, and an external fabric covering, substantially as set forth.

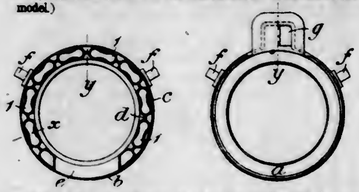
3. As an insulating material for electrical conductors, sheets or strips of vulcanized rubber impregnated with paraffine or similar moisture-proof material, substantially as set forth.

380,296. **LEATHER-TRIMMING MACHINE.** SILAS H. RANDALL, Wyoming, Ohio, assignor of one-half to James D. Randall, same place. Filed Feb. 6, 1888. Serial No. 263,116. (No model.)



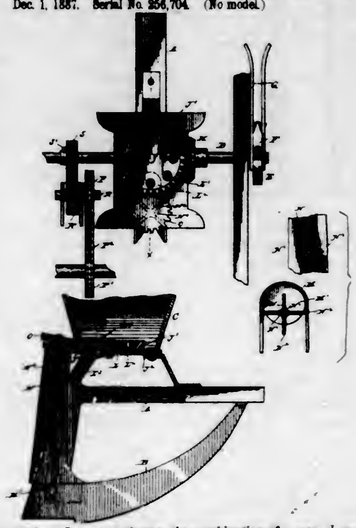
Claim.—An improved strap-trimmer, consisting of the frame or bed-plate A, guides C C, and slides D D' *d d'* E E' *e e'*, carrying the knives F F, and swinging levers I *i i'' i'* J *j j' j''*, said slides being secured in place by set-screws G G', all combined as herein described.

380,297. **FURNACE FOR WATER-HEATERS.** ARCHIBALD SPENCE, Montreal, Quebec, Canada, assignor to the National Hot Water Heater Company, Boston, Mass. Filed Jan. 31, 1888. Serial No. 262,539. (No model.)



Claim.—The combination, in a fire-box casing, of the upper and lower rings of hollow form and having inlet and outlet, with the central tubular portion composed of the double tubular form and bridge-pieces, the whole substantially as described.

380,298. **CORN-PLANTER.** MARK A. STAFFORD, Rock Falls, assignor to the Keystone Manufacturing Company, Sterling, Ill. Filed Dec. 1, 1887. Serial No. 256,704. (No model.)



Claim.—In a corn-planter, the combination of a gear, J, provided with peripheral cogs J' and bevel-cogs J², and adapted to support and carry the seed-plate L, the shaft D, and means, substantially as shown, for imparting intermittent rotation to said shaft, pinion H, seated on shaft D, runner B, provided with recess M, and shelf M' therein, and shaft N, provided with the pinion O, adapted to be engaged and intermittently rotated by the peripheral cogs J', substantially as shown, and for the purpose described.

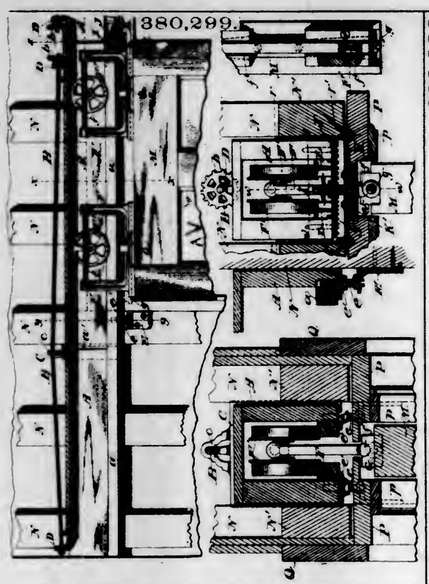
380,299. **SLIDING-DOOR TRACK AND HANGER.** HENRY SOULES, Milwaukee, Wis., assignor to the William Luitink & Sons Manufacturing Company, same place. Filed July 11, 1887. Serial No. 243,927. (No model.)

Claim.—1. The combination, with a sliding door and its hangers, of a track and truss-rod attached to the ends of said track and provided at one end with an adjusting-nut, substantially as and for the purposes set forth.

2. The combination, with a sliding door and its hangers, of a vertically-adjustable track supported at the middle and at one end, a truss-rod attached to the ends of said track and passing over a bridge at an intermediate point thereof, and an adjusting-nut applied to one end of said truss-rod, substantially as and for the purposes set forth.

3. The combination, with a sliding door and its hangers, of a track-box provided with rails for the hanger-wheels, and transversely cut through the top and sides at an intermediate point, a truss-rod secured at the ends to the ends of said box and passing over a bridge attached thereto adjacent to its transverse cut, and an adjusting-nut applied to one end of said truss-rod, substantially as and for the purposes set forth.

380,299.



4. The combination, with a pair of sliding doors and their hangers, of a pair of track boxes or sections provided with rails for the hanger-wheels and each supported at the side of the door-opening, a yoke connecting said boxes above the center of the door-opening and provided with a nut, an adjusting-screw having a fixed bearing and working with said nut, and truss-rods attached at their ends to the ends of said track-boxes, and provided with adjusting-nuts for raising and lowering the outer ends of said track-boxes, substantially as and for the purposes set forth.

5. The combination, with a sliding door and its hangers, of a track-rail having a break or opening for the insertion of the hanger-wheels and formed at the ends adjacent to said break or opening with T-shaped grooves or recesses, and a removable pocket-piece formed at the ends with similarly-shaped tongues or flanges adapted to enter said grooves from above and retain said pocket-piece in place to bridge said break or opening and form an unbroken way for said hanger-wheels, substantially as and for the purposes set forth.

6. The combination, with sliding doors and their hangers, of a track-box provided on the inside with rails for the hanger-wheels and composed of two sections, a yoke or plate connecting said sections above the center of the door-opening and formed with a nut, a fixed cross-support secured underneath said yoke, and an adjusting-bolt journaled in said cross-support and working with the nut in said yoke, substantially as and for the purposes set forth.

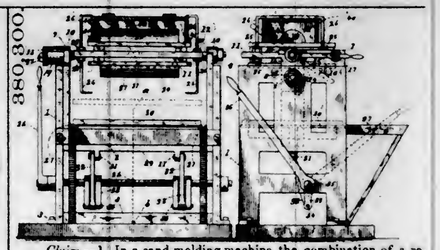
7. The combination, with a sliding door and its track, of hanger-wheels adapted to run on said track, a hanger-yoke formed with a tenon rounded in cross-section, and a door-plate attached to the upper edge of the door and formed with a corresponding groove for the reception of said tenon, substantially as and for the purposes set forth.

8. The combination with a pair of sliding doors and their hangers, of a track-box composed of two sections connected above the center of the door-opening, and each supported at the sides of the door-opening upon vertical adjusting-bolts, and each provided with a truss-rod attached thereto at the ends and furnished with an adjusting-nut, and a vertical adjusting-bolt working above the center of the door-opening with said box and the fixed support, substantially as and for the purposes set forth.

9. The combination, with sliding doors, of a track above the door-opening, a stop located at or near the center of the upper side of said opening and provided on the opposite sides with elastic cushions, and hangers attached to the upper edges of the doors and formed with shoulders or offsets, which are arranged to pass closely under said stop before the movement of the doors is arrested by said stop, substantially as and for the purposes set forth.

380,300. SAND-MOLDING MACHINE. WILLIAM SYKES and SQUIRE SYKES, Buffalo, N. Y. Filed Feb. 10, 1888. Serial No. 263,622. (No model.)

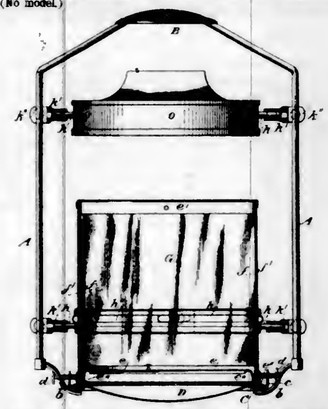
380,300



Claim.—1. In a sand-molding machine, the combination of a reversible molding-table provided with clamping-irons on each side and mounted in bearings at the top of the machine, two spring-bolts, one at each side of the molding-table, for keeping it in position, a hand-lever pivoted to the machine for releasing one of the bolts when reversing the table, and a vertically-movable table below the reversing table, mounted in slideways in the frame, and connected by connecting-rods and cranks to a crank-shaft provided with a hand-lever, substantially as and for the purposes described.

2. In a sand-molding machine, the combination of a reversible molding-table mounted in vertically-adjustable bearings, spring-bolts secured to the vertically-adjustable bearing-supports for holding the table in position when reversed, a hand-lever pivoted to the machine for releasing one of the spring-bolts preparatory to reversing the table, and a vertically-movable table below the reversing table, mounted in slideways in the frame, and connected by connecting-rods and cranks to a crank-shaft mounted in bearings in the frame and provided with a hand-lever for operating it, substantially as and for the purposes described.

380,301. ELECTRIC LIGHT AND GLOBE PROTECTOR. WILLIAM M. TOMPKINS, Batavia, N. Y. Filed Mar. 16, 1887. Serial No. 231,171. (No model.)



Claim.—1. The combination with the upright posts or guides, of a globe and globe-frame, a frame for supporting the same, a bracing-band adjustable in diameter and adapted to slide on said posts, and a canopy vertically adjustable on said posts or guides to and from the globe, substantially as specified.

2. The combination, with the upright posts or guides, the globe and globe-frame, and a supporting-frame for said globe, of the bracing-band formed of two pieces and provided with rods and sliding sleeves adjustable on said rods, the said sleeves being forked at their outer ends and adapted to have a vertical movement on the posts or guides, and set-screws, substantially as specified.

3. In a lantern-body for electric lights, the combination, with the upright posts or guides and the globe-supporting frame, of a removable bottom, a globe and globe-frame, a bracing-band, and a canopy, substantially as specified.

4. In a lantern-body for electric lights, the combination, with the upright posts or guides and the globe and globe-frame, of a band consisting of two semicircular pieces having their edges bent over in opposite directions, the bent-over part at the upper edge being cut away at one end and serving to form a groove at the other end, and each piece being provided with a slot at one end and a set-screw and a nut at the other end, whereby the band may be adjusted as to diameter, substantially as specified.

5. In a lantern-body for electric lights, the combination, with the upright posts or guides and a supporting-frame provided with set-screws, of a globe-frame consisting of upper and lower rims and vertical inner and outer strips, the lower rim being provided with a flange with which the set-screws are adapted to engage, and a globe secured in said frame, substantially as and for the purpose specified.

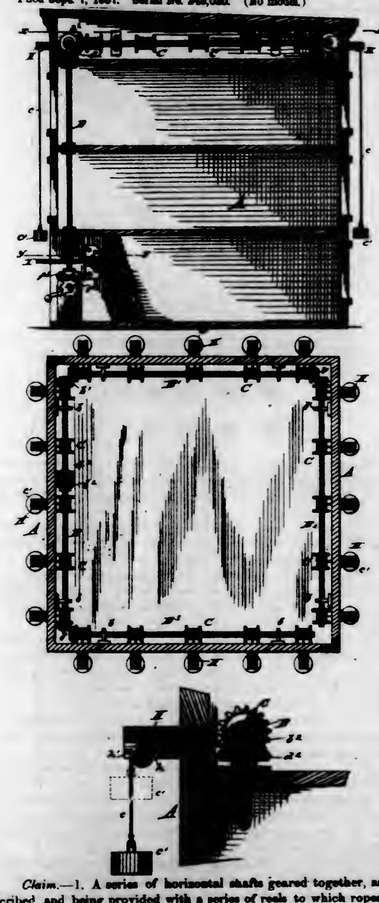
380,302. GRIP FOR FIRE-ESCAPE. WILLIAM M. TOMPKINS, Batavia, N. Y. Filed Sept. 7, 1887. Serial No. 249,094. (No model.)



Claim.—1. In a grip, the combination of the two semi-cylindrical jaws A A with the springs B B and brace C, substantially as specified.

2. The semi-cylindrical jaws A, consisting of hollow shells having the semicircular pieces of metal, *a*, riveted to each end, the said pieces of metal having a groove, *a'*, the surface of which is roughened, combined with the springs B, brace C, and lips *b*, substantially as specified.

380,303. FIRE-ESCAPE. WILLIAM M. TOMPKINS, Batavia, N. Y. Filed Sept. 7, 1887. Serial No. 249,095. (No model.)



Claim.—1. A series of horizontal shafts geared together, as described, and being provided with a series of reels to which ropes are secured, combined with a building having a series of tubes extending through the walls of the building, said tubes being provided with pulleys over which said ropes pass, substantially as described.

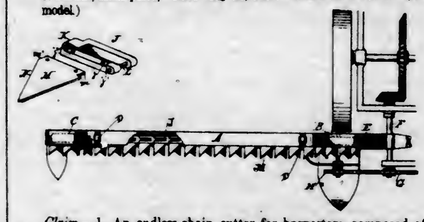
2. A series of horizontal shafts geared together, as described, and a series of reels to which ropes are secured mounted upon the shafts, combined with a building, a series of tubes extending through the walls of the building and provided with longitudinal slots in the lower portion of the peripheries of their outer ends, and pulleys journaled at the slots in said tubes and over which the ropes pass, substantially as described.

3. In combination with a building, a series of horizontal shafts having bevel-gears on their ends adapted to engage with each other, a series of reels on said shafts, ropes wound on said reels, tubes located opposite each reel and extending through the wall of the building, said ropes passing through the tubes, and a vertical shaft having a beveled gear on its upper end adapted to engage with a bevel-gear on one of the horizontal shafts, substantially as described.

4. In combination with a building, a series of horizontal shafts journaled in the upper portion of said building, a series of ropes secured to said shafts and to be wound thereon, and a series of tubes extending through the walls of the building opposite each rope, for the purpose specified.

5. The herein-described fire-escape, consisting, essentially, in the combination of a building, a series of horizontal shafts, bevel-gears upon the ends of said shafts to mesh with each other, a series of reels mounted upon said shafts, tubes extending through the walls of the building opposite each reel, pulleys journaled in the outer ends of said tubes, weighted ropes wound upon said reels and passing through the tubes and operating over the pulleys, a vertical shaft provided with a bevel-gear upon its upper end to mesh with a bevel-gear upon one of the horizontal shafts, a bevel-gear upon the lower portion of the vertical shaft, a horizontal shaft provided with a crank at one end and a bevel-gear to mesh with the lower bevel-gear upon the vertical shaft, a ratchet-and-pawl mechanism, and a friction-brake, as specified.

380,304. CUTTER-SUPPORTING BAR AND CUTTER. CHARLES D. WELLS, Maysville, Ky., assignor of one-third to P. P. Parker and John T. Parker, same place. Filed May 21, 1887. Serial No. 238,978. (No model.)



Claim.—1. An endless-chain cutter for harvesters, composed of links made of the U-shaped blanks J, each having an ear, K, at one end, and having one side, *j*, rabbeted to form the shoulders j' and j^2, and the bolt L, combined with the cutter M, triangular in shape, and notched on one side at *m* and the other plain side abutting against the ear K, substantially as described.

2. An endless-chain cutter for harvesters, made of U-shaped blanks J, each rabbeted on one side, *j*, to form the shoulders j' and j^2, and having ear K at one end, whereby, by means of bolt L, one link is united to the next, and the triangular cutter M, notched at one side and plain on the other and abutting against the ear K and secured to the link, combined with the bar A, pulleys B and C at the respective ends of said bar, and friction-pulleys D near the other pulleys B and C, under which the said chain passes, the extension E of said bar, and the shaft F, substantially as described.

380,305. SHOE-CLASP. JOHN ZIMMERMANN, Syracuse, N. Y. Filed Jan. 16, 1888. Serial No. 260,943. (No model.)

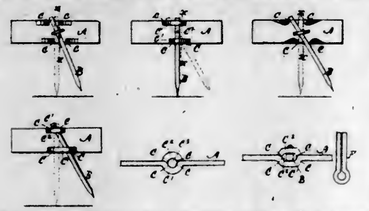


Claim.—1. The plate A, formed with the central tongue, *t*, side arms, *a a*, terminating with segmental recesses *b*, and intermediate openings, *o o*, extending through the end of the plate, in combination with the clasp C, formed with the trunnions *c c*, and with the central aperture, *d*, and broad bearing *e* between the said aperture and hinged end of the clasp, substantially as described and shown.

2. In combination with the plate A, provided with pivot-bearings *b b*, the clasp C, formed with trunnions *c c*, and with the notch *n* adjacent to the trunnion, substantially as and for the purpose set forth.

REISSUES.

10,913. HARROW. JAMES H. BARLEY, Sedalia, Mo. Filed Sept. 12, 1887. Serial No. 249,501. Original No. 326,704, dated Sept. 22, 1885.



Claim.—1. In a harrow, the metal tooth bars or rails forming the sections thereof having depressions bent in their side surface, whereby integral tooth-supporting shoulders or stops are formed having space between them longitudinally with said bars or rails, and adapted to limit the horizontal movement of the self-adjusting tooth to stand either in a vertical or inclined position with respect to the direction in which the harrow is drawn, substantially as described.

2. A wrought-metal harrow-tooth bar or rail having a series of depressed open-sided tooth-seats formed in the side surface thereof by rolling, punching, stamping, pressing, or bending, whereby integral tooth-supports are formed at requisite distances apart longitudinally with said bar or rail, allowing the teeth a horizontal movement in adjusting themselves to stand in a vertical position when the harrow is drawn in one direction and an inclined position when the motion of the harrow is reversed to the opposite direction, substantially as described.

3. In a harrow, the metal tooth-rail A, constructed substantially in the manner specified, having integral tooth-supporting stops C formed on the side thereof projecting horizontally from the edges of said rail, adapted to support and limit the angle at which the tooth shall stand, substantially as shown and described.

4. A metal harrow-tooth rail having depressions in the side surface of one or both of its edge portions, forming laterally-projecting loop or loops having integral shoulders or stops adapted to receive and support the harrow-teeth, which are secured in place between said loop or loops and the side of said rail, substantially as described.

5. The metal harrow-tooth rail A, having the integral tooth-supporting shoulders or stops C formed on the side thereof, in the manner specified, with the edge portion or portions, C', of said rail projecting horizontally from the side thereof a sufficient distance to admit the tooth passing between said projecting portion or portions C' and the side C^3 of said rail A, in combination with a harrow-tooth pivotally attached therein, substantially as shown and described.

6. The metal harrow-tooth rail A, having the integral tooth-supporting shoulders or stops C formed thereon, with the two edge portions, C', of said rail projecting horizontally from one side thereof and the intervening central portion, C^2, of rail A projecting from the opposite side thereof, thereby forming an opening between said projections in a vertical direction through said rail, in which opening the harrow-tooth is inserted and supported therein, substantially as shown and described.

7. A metal harrow-tooth rail having depressed tooth-seats formed in the side surface of the central portion thereof, and corresponding depressions in the opposite side surface of the edge portions of said rail, forming side projecting loops or bridges which extend over or across the ends of said central depressions, said loops or bridges having each of their ends formed integral with said rail, whereby tooth-supporting shoulders or stops are formed, and a harrow-tooth pivotally attached between said loops and rail and supported at different angles, substantially as specified.

8. In a harrow, the combination of the rail A, produced from an ordinary wrought-metal bar of iron or steel, having the integral tooth-supporting shoulders or stops C formed thereon or within a central line with said rail by rolling, punching, stamping, pressing, or bending, whereby said shoulders or stops C are formed at requisite distances apart longitudinally with said rail to allow the teeth to automatically adjust themselves and to stand either in a vertical or an inclined position, and a pivotal bolt or pin adapted to hold said teeth in place, substantially as shown and described.

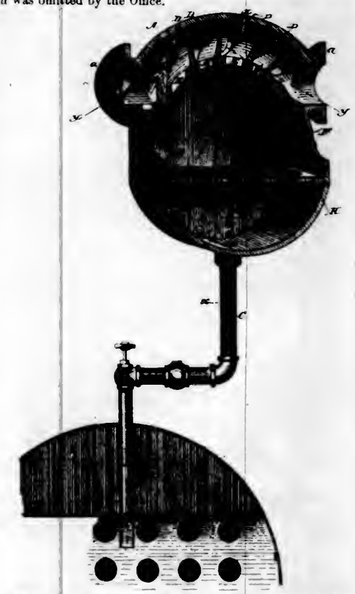
9. The within-described metal tooth-rail A, constructed substantially in the manner specified, having the integral tooth-supporting stops C, formed on the edges thereof, projecting horizontally from the side of said rail, adapted to support and limit the movement of the angular adjustable tooth, in combination with a pivotal bolt or pin which passes through perforations formed through both tooth and rail.

10. In combination with a harrow-tooth rail provided with stops for supporting a swinging tooth thereon at different angles, the pivotal bolt D, provided with the elevated or arch portion D' and D^2, the tooth and rail having perforations through them in which the bolt D is passed, with the two arms D^2 D^3, which straddle over the tooth and extend down to the side of the rail, allowing the tooth a free pivotal movement thereon, substantially as shown and described.

11. In a harrow, the within-described pivotal bolt D, having the arch portion provided with arms projecting therefrom and straddling over the harrow-tooth and extending down to the rail on opposite sides of said tooth, in combination with a perforated tooth and a harrow-rail having perforations, and stops for supporting an angular adjustable tooth thereon, substantially as specified.

10,914. STEAM-SEPARATOR. ALEXANDER DAVIDSON, Chicago, Ill. Filed Feb. 29, 1888. Serial No. 265,772. Original No. 377,992, dated Feb. 14, 1888.

Brief.—Reissued by order of the Commissioner to insert claim 12, which was omitted by the Office.



Claim.—1. In a steam purifier or separator, a steam pipe or section provided with spiral ribs arranged in series, the ribs or sections of such series following each other, substantially as described, and for the purposes specified.

2. In a steam purifier or separator, a steam pipe or section provided with a series of spirally-arranged ribs, the ends of the adjacent ribs being extended past each other, substantially as set forth.

3. In a steam purifier or separator, a steam pipe or section provided with a series of spirally-arranged ribs following each other, which ribs are made wider at one end or portion than at others, substantially as set forth.

4. In a steam purifier or separator, a steam pipe or section arranged or deflected out of a straight line and having within it a spiral rib or ribs, which spiral rib or ribs are made of an extreme width in excess of the semi-internal diameter of the pipe or section, all being substantially as and for the purposes specified.

5. In a steam purifier or separator, a steam pipe or section arranged or deflected out of a straight line, combined with a spiral rib or ribs therein, substantially as set forth.

6. In a steam purifier or separator, substantially as herein described and shown, a steam pipe or section arranged or deflected out of a straight line and provided with a series of spirally-arranged ribs, the ends of the adjacent ribs being extended past each other, and such ribs being made wider at one end or portion than at others, substantially as set forth.

7. In a steam purifier or separator, a steam pipe or section having within it a spiral rib or ribs made of an extreme width in excess of the semi-internal diameter of the pipe or section, whereby the steam cannot blow straight through said pipe or section, substantially as set forth.

8. In a steam purifier or separator, the combination of a steam pipe or section, an obstruction or obstructions therein, a collector-chamber, an opening or openings being provided leading from the steam-pipe into the collector-chamber, and an opening being provided leading from the collector into the steam pipe or section, and a deflector-plate arranged in advance of the latter opening, substantially as set forth.

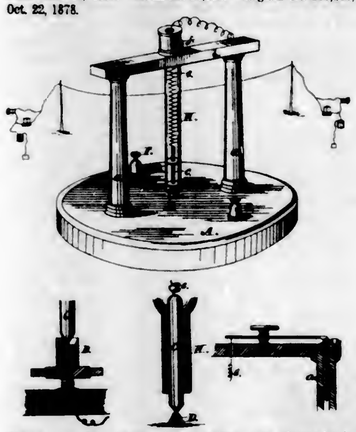
9. In a steam purifier or separator, the combination, with the collector-chamber and a steam pipe or section communicating therewith and provided with an obstruction or obstructions to the free passage of the steam, of an inwardly-projected stop-flange extended around the walls of said collector-chamber, substantially as set forth.

10. In a steam purifier or separator, the combination of the steam pipe or section having an obstruction or obstructions to the free passage of the steam and having its under side or plate perforated, and the collector-chamber located below such pipe or section and having at its rear end an opening leading thereinto, the bottom plate of said pipe or section being extended down in advance of the said opening, forming a deflector, substantially as set forth.

11. The improved steam purifier or separator herein described, consisting of the steam pipe or section having an opening or openings in its under side and provided with an obstruction or obstructions to the free passage of the steam, a collector-chamber arranged below the steam pipe or section and having an opening leading into the steam pipe or section, a deflector-plate extended down in advance of said opening, and a stop-flange extended around the wall of said collector-chamber, substantially as set forth.

12. In a steam purifier or separator, a steam pipe or section provided with a spiral rib or ribs secured to the inner side of such pipe or section and projected thereinto a sufficient distance to give a whirling motion to the steam passed through said pipe, as set forth.

10,915. TELEPHONE-TRANSMITTER. JOHN H. IRWIN, Morton, Pa. Filed Mar. 11, 1882. Serial No. 54,916. Original No. 309,366, dated Oct. 22, 1878.



Claim.—1. In a telephonic transmitter, two electrodes in loose electric contact produced by means of gravity and a spring acting in opposition to each other, substantially as described.

2. In a telephonic transmitter, two electrodes maintained in electric contact by gravity and a spring as counteracting forces acting on one of the electrodes, the force operating in the direction of contact slightly preponderating, substantially as described.

3. In a telephonic transmitter, an electrode elastically suspended in loose electric contact with another electrode, substantially as described.

4. In a telephonic transmitter, an electrode elastically supported in loose electric contact with another electrode and provided with means for regulating the initial contact, substantially as described.

5. In a telephonic transmitter, the combination of a pointed metallic electrode resting in contact with a blunt piece of carbon, one of the electrodes being held in loose electric contact with the other electrode, substantially as described.

6. In a telephonic transmitter, the combination of a practically rigid sonorous body, an elastically-suspended electrode, and another electrode interposed between said body and the first-named electrode, substantially as described.

7. In a telephonic transmitter, the combination at the point of variable resistance of a pointed needle of platinum suspended by an elastic support and an adjustable pencil of carbon in contact therewith.

8. In a telephonic transmitter, an attenuated point in the battery-circuit produced by the combination of two electrodes, one of which is suspended with its contact-point resting upon the blunt point of the other electrode with a loose adjustable pressure, substantially as described.

9. In a telephonic transmitter, the pointed electrode C, supported by a spring from an adjustable key, *f*, or its equivalent, combined with the blunt electrode D, fixed at its base, and both interposed in a battery-circuit, substantially as described.

10. In a telephonic transmitter, the pointed electrode C, suspended by a coiled spring, *e*, and adjusted by a key, *f*, in combination with the fixed electrode D and the supporting-frame, substantially as described.

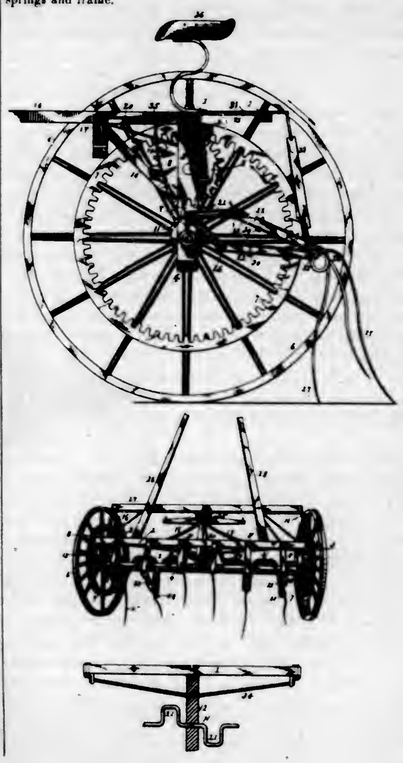
11. In a telephonic transmitter, the electrode C, its supporting-spring, adjusting-key, and fixed electrode D, with the supporting-frame and a protection-case, H, substantially as described.

12. In a telephonic transmitter, the combination of the electrode C, spring *e*, electrode D, and case H, provided with internal guides for the electrode C, substantially as described.

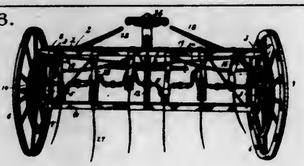
13. In a telephonic transmitter, an electrode with its end in contact with the end of an opposite electrode with an adjustable pressure, combined with guides whereby the first-named electrode is prevented from lateral oscillations, substantially as described.

10,916. HAY-TEDDER. ANTOINE DE R. LOVETT and EMMETT L. GOFF, Geneva, N. Y. Filed Jan. 19, 1888. Serial No. 261,167. Original No. 367,007, dated July 19, 1887.

Claim.—1. In a hay-tedder, the combination of a frame, a fork-operating shaft journaled therein, a movable pinion upon each end of said shaft, springs secured at their front ends to said frame and engaging by their rear ends with and holding said pinions in or out of engagement with the operating mechanism, and chains secured to said springs and frame.



10,916.



2. In a hay-tedder, the combination of a frame, a fork-operating shaft journaled therein, a bar, 20, the rear end of which is secured to the top bar of the frame, a hook upon said bar 20, springs secured at their front ends to the sides of said frame and holding the operating mechanism in or out of engagement with their rear ends, and chains secured to said first-mentioned bar and to said springs, the intermediate portions of said chains being adapted to be secured upon said hook.

3. In a hay-tedder, the combination of a frame, a fork-operating shaft journaled therein, and means, substantially as described, for operating it, a supporting-bar secured to and parallel with the top bar of the frame, a series of springs secured at their forward ends to said top bar and extending rearward over and resting loosely upon said supporting-bar, tedder-arms secured to the operating-shaft, and links for securing said arms to said springs.

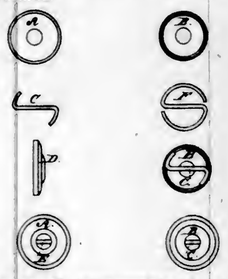
4. In a hay-tedder, the combination of a frame, a fork-operating shaft journaled therein substantially in the vertical plane of the axles of the driving-wheels, pendulum-links suspended from the frame above and in rear of the fork-operating shaft, and tedder-arms having their forward ends pivoted directly to the cranks of the fork-operating shaft and their rear ends pivoted to the lower ends of the links, as and for the purpose set forth.

5. In a hay-tedder, the combination of a frame, a fork-operating shaft journaled therein substantially in the vertical plane of the axles of the driving-wheels, flat springs connected at their front ends with the frame above the fork-operating shaft and extending rearwardly therefrom, pendulum-links pivoted at their upper ends to the rear ends of the springs above and in rear of the fork-operating shaft, and tedder-arms having their forward ends pivoted to the cranks of the fork-operating shaft and their rear ends pivoted to the lower ends of the links, as and for the purpose set forth.

6. In a hay-tedder, the combination of the frame, the driving-wheels, the interior gear-wheels on the driving-wheels, the cog-wheels driven thereby, the cranked fork-operating shaft, its pinions meshing with the cog-wheels, all substantially in the same vertical plane, tedder-arms pivoted at their front ends on the crank-shaft, flat springs connected at their front ends with the frame above the fork-operating shaft, and links connecting the rear ends of the tedder-arms with the springs, all combined and operating as set forth.

10,917. METALLIC BUTTON. CHARLES RADCLIFFE, Newark, N. J., assignor to the New Jersey Manufacturing Company, same place. Filed Feb. 16, 1888. Serial No. 264,541. Original No. 216,973, dated July 1, 1879.

Brief.—Reissued for the purpose of eliminating a claim invalidated by court decision.



Claim.—In a metallic button consisting of two disks joined together, a transverse bar of round wire with the ends bent, as at C, so as to substantially conform to the inner circumference of the disk in which it is placed, substantially as and for the purpose described.

PHOTO LITH. NORRIS PETERS WASHINGTON D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—District of Connecticut.

THE ENTERPRISE MANUFACTURING COMPANY OF PENNSYLVANIA *v.* SARGENT & COMPANY *et al.*

Decided March 1, 1888.

1. BAKER—MEAT CUTTER.

The first, second, sixth, and tenth claims of letters patent of John G. Baker, No. 271,398, dated January 30, 1883, for improvements in mechanism for cutting of plastic or yielding substances, adjudged valid, and the first, second, and sixth claims to have been infringed.

2. PRIOR PATENT WHEN CHANGED IN CONSTRUCTION NOT AFFECTING THE PRIOR ART.

A prior patent will not deprive a later patent of patentable novelty if by discarding some of its mechanism so as to make it a failure in the way intended it will resemble the later patent.

3. INFRINGEMENT—NO EQUIVALENTS.

A stationary plate with radial slots and a perforated disk rotating in close proximity to the same in a prior patent is not the equivalent of complainant's stationary perforated plate and knives rotating in close proximity thereto.

4. EVIDENCE—THE EFFECT OF SILENCE IN PATENT.

Where in the patent in suit the only cutting claimed was by a revolving knife in close proximity to a stationary perforated plate, and the contention of the defendants was that in their machine there was a preliminary cutting before the material reached the perforated plate, the silence of defendants' patent in this respect is persuasive evidence to the contrary.

Mr. Charles Howson and *Mr. Charles E. Mitchell* for the plaintiff.

Mr. John K. Beach and *Mr. Benjamin F. Thurston* for the defendants.

SHIPMAN, *J.*:

This is a bill in equity to restrain the defendants from the alleged infringement of the first, second, sixth, tenth, and thirteenth claims of Letters Patent No. 271,398, dated January 30, 1883, to John G. Baker, for improvements in mechanism for cutting up plastic or yielding substances.

Upon a motion for a preliminary injunction in this case the first and second claims of the patent, the history of the art so far as was then disclosed, and the patentability of the invention were examined. (*Enterprise Manufacturing Company* v. *Sargent & Company*, 28 Fed. Rep., 185.)

It is not necessary to repeat the facts or the conclusions which were stated in the opinion upon the motion. The case has now been prepared with great care and has been argued with equal ability.

The only important prior patent which was not used upon the motion and which is now in the case is the Miles patent of 1861. In the fact that the principal reliance for the cutting of the meat is placed upon the stationary and moving cutters in the body of the machine before the meat is delivered to the perforated plate the device does not differ from the Miles patent of 1864. The manner in which the cutting is performed in the earlier machine differs from the operation of the cutting-knives of the later patent. The case is smaller at the delivery end than at the hopper end, and has inside of it at the hopper end spiral grooves which occupy about half the length of the case, the other half toward the delivery end having longitudinal grooves. The rotating shaft has spiral blades, the edges of which and the edges of the longitudinal ribs slide past each other like the edges of a pair of shears, and the two edges constantly cut or shear the meat as it passes from one rib to the next.

At the extreme end of the machine is a perforated plate, against which the ends of the spirals move, the openings in the plate being sharpened on one side, and some cutting is accomplished by the blunt ends of the spirals against these sharpened edges; but the principal part is done, as in the Miles patent of 1864, by the revolving blades or knives in the body of the machine. There is no difference in the principle upon which the two Miles machines operate—that of a cutting action upon the meat before it reaches the perforated plate.

As will be more fully stated hereinafter, the Baker machine abandoned cutting action by the aid of cutters around the shaft and relied upon a rotating knife on the inside of the perforated plate, and while it is true that the blunt ends of the Miles spirals of the patent of 1861 moving against the sharpened edges of its perforated plate accomplished some cutting there is no analogy between that sort of cutting action and that produced by a revolving knife-blade passing over the edges of the perforated plate. The Baker machine is not so palpable an improvement over the Miles patent of 1861 as it is over the Miles machine of 1864; but it is an improvement of the same kind, which introduced a new operating principle into the machine and evinced invention.

As much more time was spent upon this hearing in the discussion of the Dollman English patent than was given to it upon the hearing of the motion, the device of the patent requires especial mention.

The case has a smooth interior and a series of horizontal knives at the hopper end, which extend about half the length of the case. At the hopper end of the hollow shaft, within the case, is a series of oblique or screw-like blades, which on the rotation of the shaft pass between the fixed knives. The other part of the shaft carries an Archimedean screw having nearly the same diameter as the interior of the cylinder.

That end of the case in which the Archimedean screw is situated is closed by a plate of hardened and tempered steel having in it a series of either circular or oblong holes the sides of which are inclined to one another, the smaller diameter of the holes being on the external side of the plate. The end of the solid internal axis (within the hollow shaft) projects through the center

of this plate and carries one, two, or more radial or nearly radial cutting-blades working closely upon the perforated steel plate closing the case.

The meat is carried by the rotating blades against the fixed knives, and is cut into small pieces, which are carried by the screw to the end of the case. The intent of the inventor was that these pieces should be forced through the holes in the plate, and that, as they were forced through, the rotating blades, passing rapidly over the plate, should form cutters with the sharp edges of the holes and mince the material.

The patent also says:

The perforated plate and cutters working against it may be used alone for effecting the mincing, instead of in combination with the rotating blades and fixed horizontal knives, as described.

The patentee mounts his rotary knife, which is outside the perforated plate, upon a shaft independent of the feeding-screw, in order that the knife may be enabled, by suitable gearing, to rotate at a higher rate of speed than that at which the feed-screw operates. This characteristic is not deviated from in the different forms of machine which he suggests.

The defendant seeks to maintain, that if, discarding the independent gearings, the machine is constructed in accordance with the alternative method which is suggested in the patent—viz., by the use of the perforated plate and cutters alone—it will, although the cutter is on the outside of the plate, be such an approximation to the Baker device that the latter possesses no patentable novelty. If, having discarded the independent gearing and the cutting mechanism inside the casing, the machine is constructed in other respects in accordance with the specification, it is admitted that it would a failure. It requires the presence of ribs upon the inside of the case, and of a screw which is adapted to coact with the case, and is therefore a forcing-screw, to enable the Dollman machine to operate with alleged success. Upon its success as thus modified there is a clear divergence of opinion; but I leave the question undecided, for I have no doubt that the gap between Dollman's patent and success was so great that it could not be bridged except by the aid of invention.

The patent contains another alternative suggestion, as follows:

A plate with a series of radial slits may be substituted for the perforated plate h represented in the drawings, and in place of the rotating knife or knives *n n* a perforated rotating disk may be used.

The defendants construe this suggestion to mean that a sharp stationary four-bladed knife may be substituted in place of the perforated plate, and that a revolving perforated plate takes the place of the rotating knife, so that the meat is cut by the knife against the inner face of a perforated plate, and one of the defects in Dollman's first alternative suggestion—that of forcing meat which is uncut through a series of small holes—is thus avoided. The suggestion which the patentee makes is not clearly enough given to enable anybody to determine with accuracy how he meant that the cutting should be effected, and one can only admire the ingenuity which evolved the cutter of the exhibit out of "the series of radial slits" of the patent. To make this modification work successfully it is also necessary to use a screw which shall co-operate with the case and force the meat along in its path.

From this more careful examination of the Dollman patent I do not perceive any reason to change my former opinion—that it neither anticipated the Baker patent nor deprived the Baker device of its right to be styled an invention.

The sixth claim of the Baker patent, which, with the first and second claims, describes the device as a whole, is as follows:

6. The combination of a casing, E, having internal longitudinal grooves, each of which is inclined on one side and presents an abrupt retaining-shoulder on the other, with a perforated plate, knife, and feeding-screw, as set forth.

The main object of the patentee was to construct a machine which should get rid of the supposed necessity of preliminary cutting or chopping knives, and rely for its cutting character entirely upon the plate and knife at the end of the casing. Thus the patentee said in his specification:

A perforated plate and a knife have been used in a cutting-machine, but in combination with preliminary cutting or chopping knives, moving and stationary, acting independently of the plate, for mincing meat before it reaches the said plate in a minced condition, the plate and knife in this case being for the purpose of preventing the escape of large lumps which may have escaped the action of the preliminary chopping-knives.

In my invention reliance for cutting up the substance is placed entirely on the plate and knife and a device for imparting direct pressure to a crude uncut substance against the plate without any action on the substance during its passage to the plate, excepting that for effecting the desired pressure, the aim being to cut up the substance to uniform or nearly uniform sizes—a result which cannot be attained when there are intervening choppers to cut the substance up to different sizes, large and small.

But it does not follow that the patentee meant, or that his patent is to be fairly construed as meaning, that the meat was to come to the plate in a condition in which no rubbing or no abrasion or no disintegration had taken place. He simply meant that in contrast with the Miles machine there was no cutting action in his device; that no reliance was placed for cutting the meat upon anything else than the plate and the knife, and that the mass was forced to the plate without any other disturbance of its integrity than was incident to the forcing process. The screw must coact with the case in order to force the meat along, and therefore there is necessarily a rubbing, an abrasion, and a consequent disintegration of the meat. As was said in the former decision—

The language of the patentee was used with reference to the cutting qualities of the Miles knives as compared with the non-cutting qualities of the screw.

And there was no intention either to provide against or to inform the public that he had provided against abrasion of the meat.

The preliminary non-cutting characteristic of the invention is specifically mentioned in the first claim, and is to be recognized as existing in the construction of the second and sixth claims. The first claim includes a non-cutting forcing device, whether piston or screw is immaterial. The second claim confines the non-cutting forcing device to a forcing-screw irrespective of the particular shape of the ribs or of the device which enables the screw to co-operate with the case. The sixth claim compels the casing to have the described internal longitudinal grooves.

The question, and the important one in the case, in regard to infringement of the first, second, and sixth claims remains to be considered.

The defendants' machine is made in accordance with Reissued Letters Patent No. 10,717, dated April 27, 1886, the original having been dated March 9, 1886, to John H. Shaw, assignor to the defendant corporation. The patented portion of the machine was its adjustment of the cutters with relation to the perforated plate. With reference to the first, second, and sixth claims, it is substantially a copy of the Baker cutter, except that while the internal grooves of the Baker casing are straight, the internal grooves or ribs of the defendants' device, though longitudinal, describe a long spiral in a direction contrary to that of the feed-screw.

Upon the hearing of the motion the defendants claimed that their machine was adapted to cut, and did cut, the meat before it reached the perforated plate in consequence of the action upon it of the spiral ribs in conjunction with the blades of the screw; and without committing myself definitely to a conclusion, it seemed to me that there was a shearing action upon the meat between the edges of the spiral ribs and the revolving screw-blade like that of a powerful, dull pair of shears. Considerable oral testimony has been taken upon this question. The silent evidence which the Shaw patent furnishes against its owners in this contention is noticeable.

The invention was made as an improvement upon the Baker cutter. The patentee substantially so said in his specification, and he says also therein that the principal object of the invention was to make a ready and easy adjustment of the cutter with relation to the perforated plate. Although he describes the construction of the spiral ribs and says that they run toward the perforated plate, the inclination of thread being by preference about forty-five degrees, or considerably greater than the inclination of the spiral rib of the screw, he says nothing in the description or in the claims about the cutting action of the ribs, but leaves it to be inferred that the cutting is done entirely by the cutters at the plate. The patent was drawn by one of the most accomplished patent solicitors in the country, and it is impossible that he should have received any instructions from the patentee in regard to the cutting feature of the spiral ribs and screw. It is almost impossible that the inventor should have supposed that his device possessed this important difference from the Baker device and not have communicated his opinion to his solicitor. The Shaw patent signifies that if the device has an intermediate cutting action such action was discovered by the inventor after date of the application for the patent. Contrary to my former leaning, I now think that the shearing action does not exist in the defendants' machine, certainly not when it is treated in the usual and natural way.

There is a shearing action in the Miles machine of 1861, which has longitudinal ribs upon the case and rotating blades of very long spiral, and in which the edge of one blade passes the edge of the other, the two blades forming an acute angle with each other. In the defendants' and in the Baker machines the longitudinal ribs are about at right angles to the circumferential spirals of the screw, and when the screw turns the meat is wiped across the shoulders of the grooves, the faces of the blades of the screw sliding upon the faces of the ribs, and the object of the shoulders not being to cut, but to prevent the meat from merely turning around in the screw and to assist it in its forward movement. There is the same kind of grinding or disintegrating action in the two machines when the plastic meat is rubbed against the shoulders of the corrugations; but there is no shearing or cutting action as the meat pursues its path to the cutter.

The tenth and thirteenth claims are as follows:

10. The combination of the casing and a perforated plate, adjustable therein, with a feed-screw and with a knife constructed to turn with the screw, but otherwise free thereon to accommodate itself to the face of the perforated plate, substantially as set forth.

13. The combination of the casing E, closed at one end and having a detachable perforated plate at the opposite end, with a feed-screw and a knife constructed to turn with the said screw, but removable therefrom after detaching the plate, as set forth.

These are a portion of the claims of small value, which seem to have been inserted for the purpose of covering every possible patentable feature of the invention.

The tenth claim is for the purpose of covering the rocking motion of the screw against the perforated plate, by which it adapts itself to the face of the plate. In the defendants' machine this rocking motion exists, but their plate is not adjustable. Their knife is adjustable and the plate is stationary. I think that this claim, which is merely for the purpose of protecting one of the minor details of the Baker machine, is to be strictly construed, and, as it requires that the plate should be adjustable, and as the defendants' machine has no adjustable plate, the claim is not infringed.

I cannot perceive any patentable invention in the thirteenth claim. It is said by the plaintiff to relate to the mounting of the knife upon the end of the screw in such a manner as to be radially movable and detachable for the purposes of repair upon the removal of the perforated plate. I suppose that the plaintiff's theory of the nature of the claim is a correct one; but I can see nothing which is akin to invention in the manner in which the knife is mounted upon the screw.

Let there be a decree for an accounting and an injunction against the infringement of the first, second, and sixth claims.

U. S. Circuit Court—District of Connecticut.

NASHUA LOCK COMPANY *v.* NORWICH LOCK MANUFACTURING COMPANY.

Decided September 2, 1887.

INFRINGEMENT.

In Letters Patent No. 237,820, issued to Emery Parker, October 6, 1885, for an improved door-knob attachment, each knob had an independent shaft. One shaft at its free end had a shoulder, and was inserted in a hollow shank on the other shaft, conforming in shape to the spindle, except that on one side was an enlargement to allow the insertion of the spindle obliquely past a pin projecting inwardly from the side of the shank opposite the enlargement. The pin interlocked with the shoulder on elevating the knob. In Letters Patent No. 318,684, granted to Charles H. Beebe, May 26, 1885, the spindle, which at one or both ends was provided with a locking-hook, was inserted in the knob-neck, one side of which was enlarged, so as to allow the spindle to pass a locking-hook on the enlarged side of the neck. Elevation of the knob interlocked the hooks. *Held*, in view of the state of the art, that the Parker patent is limited to a device in which the enlargement is opposite the pin, and that the Beebe patent is no infringement.

Mr. William Edgar Simonds for the complainant.
Mr. Charles E. Mitchell for the defendant.

SHIPMAN, *J.:*

This is a bill in equity based upon the alleged infringement of the first, second, third, and fifth claims

of Letters Patent No. 327,820, issued to Emery Parker, October 6, 1885, for an improved door-knob attachment.

The defendant manufactures door-knobs under Letters Patent No. 318,684, granted to Charles H. Beebe, May 26, 1885. The old form of connecting door-knobs to each other was by fastening the two knob-shanks to the connecting-spindle by side screws. Letters Patent were issued December 12, 1882, to Milton C. Niles for door-knob shanks which were connected together upon a new principle. The shaft upon which the two knobs were mounted was divided into two parts. An aperture was made in the side of one of the shanks, which was a tubular one. The inner end of the opposite shank was made a little smaller than its fellow, so that it would enter the latter, and was provided with a short pin adapted to enter the aperture. Preferably the end of the shank which contained the lug was oval-shaped, so that it could be inserted, when held at an angle, into the other shank far enough to permit the pin to enter the aperture, and then could be brought into line with its fellow. The specification also says, and a drawing shows, that that side of the shank which is opposite the pin could also be cut down slightly, so as to present the appearance of a rabbet, leaving enough of the shank to enter and hold in the end of the opposite shank when the pin engages in the aperture. This was the better method of uniting the two shanks. The specification also shows that, for additional security, another lug could be made on the outside of one shank, which would enter into a corresponding notch on the edge of the inner end of the other shank. The principle of the device was that each knob had an independent shaft or spindle, and that the two shafts were fastened together by means of a lug upon one end of one shaft interlocking with an aperture or shoulder upon the end of the other shaft, the smaller shaft entering the larger one when inserted angularly.

The specification of the Parker patent describes the construction of so much of his device as is involved in the present controversy, as follows:

> The knob *b* is fast to one end of the spindle, and may be made integral with it, if desired, and the opposite end of the spindle preferably has on one edge a bevel, a', and also near this end one or more openings, a^2, that may be holes drilled through the spindle, as shown, or mere indentations made in any convenient way, so long as each affords a shoulder that serves as a means of engaging a lug on the shank of the other knob. This latter knob *c* has a hollow shank, *d*, the central opening, d', in which conforms to the spindle in outline and size in cross-section, except at the end of the shank, where the opening has an enlargement, d^2, on one side. On the side of the opening within the shank, and opposite the enlargement d^2, an inward-projecting pin, d^3, is secured or formed on the wall of the opening.
>
> In Figs. 1 and 2 the relative position of these parts is illustrated, and the method of attaching the knob *c* to the shank is as follows: The spindle having been thrust through the hub of a lock or latch from one side, the removable knob *c* is held in the oblique position indicated by the dotted outline and placed upon the end of the spindle, the enlargement d^2 affording the spindle room to enter past the pin d^3 until opposite an opening, a^2, in the spindle, and into which the pin is slipped by moving the knob *c* until its axis is in line with that of the spindle. * * *
>
> In order to make a close fit between the parts the inner end of the shank on the side opposite to that bearing the lug has a rounded surface, d^4, and the lug d^3 is also slightly beveled on the back side, to enable the parts to more readily pass each other and come to a firm bearing.

The claims which are said to be infringed are as follows:

> 1. A knob with a connected spindle, the latter having near its free end an engaging shoulder or opening, in combination with a removable knob having a shank with a spindle-socket, and an inward-projecting lug or pin within the socket, the latter having an enlargement opposite the lug, all substantially as described.
>
> 2. In combination with a knob and connected spindle having the engaging shoulder or opening, a removable knob having a shank with a spindle-socket, a rounded end on the shank, an engaging lug within the socket, and an enlargement opposite the lug, all substantially as described.
>
> 3. In combination with a knob and connected spindle having the engaging shoulder or opening and a beveled end, a removable knob having a shank with a spindle-socket, an engaging lug within the socket, and an enlargement of the socket, all substantially as described.
>
> 5. In combination with a lock-hub having a spindle-hole, a spindle adapted to fit loosely within said hole and bearing near its free end an engaging shoulder or opening, and a removable knob having a shank with a spindle-socket, and an engaging shoulder within the socket, whereby the said spindle and knob may be removably connected to each other, and the rose or like means for holding said knob and spindle in alignment with each other, all substantially as described.

The Parker device adopts the principle of the Niles attachment, and unites the two shafts by inserting the end of the spindle into the hollow shaft of the spindle-socket, one being held in an oblique position until the entrance is effected, and locks them together by the slipping of a pin in the spindle-socket into a corresponding opening in the spindle. If any inventive genius was called into exercise in a modification of the mechanical means which employ the simple principle which Niles introduced, the patent for such modification must be strictly confined to those details of construction which were the result of invention. The Parker device was a more simple and economical one than the Niles attachment; but the only thing which could make it patentable was the method of construction of the hollow shank, by which the full-sized spindle was permitted easily to enter the shank and pass beyond the pin in its side, and which consisted in the enlargement or cut-away portion at the end of the hollow shank opposite the pin. If the pin was to be in the hollow shank, there must naturally be an enlargement at the end of the opening, the only question being as to the place of the enlargement, so that it cannot be that the claims include any enlargement of the spindle. The Parker device required that the full-sized spindle should pass beyond the pin, and then be made to engage with it, and a cut-away portion of the shank opposite the pin was a convenient way of effecting the desired method of construction. The patent is limited to a device in which the enlargement is opposite the pin. The Beebe device is a simple one. Its spindle is provided at one or both ends with a locking-hook, and its knob-necks have at their free ends a locking-hook which, by elevating the knob end of said neck or necks, is slipped over the spindle-hook. The knob-neck on the side containing its locking-hook is enlarged, which enlargement permits the entrance of the spindle-hook.

There is no infringement, and the bill is dismissed.

INDEX TO DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS

IN THE MATTER OF

PATENTS, TRADE-MARKS, &c.

OFFICIAL GAZETTE—January–March, 1888.

VOL. 42 O. G.—2

INDEX TO DECISIONS.

[Decisions of United States courts designated by an asterisk (*).]

	Page.
*Albany Stove Company. Halles *et al.* v	95
*American Artificial Stone Pavement Company. Vulcanite Paving Company v	828
*American Zylonite Company *et al.* Celluloid Manufacturing Company v	961
*Andrews *et al.* v. Cone	1292
*Andrews *et al.* v. Hovey	1285
*Ansonia Brass and Copper Company v. Electrical Supply Company	1168
*Arlington Manufacturing Company. Celluloid Manufacturing Company v	828
Barnitz, *ex parte*	1061
*Beggs. Wright v	829
*Bliss *et al.* v. Merrill *et al.*	97
*Burdsall v. Curran *et al*	1167
*Celluloid Manufacturing Company v. American Zylonite Company *et al.*	961
*Celluloid Manufacturing Company v. Arlington Manufacturing Company	828
*City of New York. Munson v	1061
*Cone. Andrews *et al.* v	1292
*Crawford v. Heysinger *et al*	197
*Curran *et al.* Burdsall v	1167
De la Sala, Pastor Perez, *ex parte*	95
*Dreyfus *et al.* v. Searle	491
*Dryfoos v. Wiese	490
*Du Bois. Kirk v	297
*Electrical Supply Company. Ansonia Brass and Copper Company v	1168
*Emerson, Smith & Company, (Limited,) v. Lippert	964
*Enterprise Manufacturing Company of Pennsylvania v. Sargent & Company *et al*	1403
*Fitzpatrick *et al.* Kraus *et al.* v	1292
*Halles *et al.* v. Albany Stove Company	95
*Hamilton *et al.* Lawther v	487
*Heysinger *et al.* Crawford v	197
*Hovey. Andrews *et al.* v	1285
*Ingham *et al.* v. Pierce *et al*	1062
*Iron Clad Manufacturing Company. Matthews *et al.* v	382
*Iron Clad Manufacturing Company. Matthews v	827
*Kirk v. Du Bois	297
*Kraus *et al.* v. Fitzpatrick *et al*	1292
*Lawther v. Hamilton *et al*	487
*Lippert. Emerson, Smith & Company, (Limited,) v	964
*Magowan *et al.* Stevenson v	1063
*Matthews *et al.* v. Iron Clad Manufacturing Company	382
*Matthews v. Iron Clad Manufacturing Company	827
*McClain v. A. Ortmayer & Son *et al*	724
*Merrill *et al.* Bliss *et al.* v	97
*Munson v. City of New York	1061
*Nashua Lock Company v. Norwich Lock Manufacturing Company	1405
Norton, *ex parte*	296
*Norwich Lock Manufacturing Company. Nashua Lock Company v	1405
*Ortmayer & Son, A., *et al.* McClain v	724
*Pierce *et al.* Ingham *et al.* v	1062
*Railway Register Manufacturing Company v. Third Avenue Railway Company *et al*	379
*Rapid Service Store Railway Company v. Taylor *et al*	721
*Sargent & Company *et al.* Enterprise Manufacturing Company of Pennsylvania v	1403
Sartell, *ex parte*	295
*Schreiber *et al.* Thornton v	1165
Schulze-Berge, *ex parte*	293
*Searle. Dreyfus *et al.* v	491
*Stevenson v. Magowan *et al*	1063
*Taylor *et al.* Rapid Service Store Railway Company v	721
*Third Avenue Railway Company *et al.* Railway Register Manufacturing Company v	379
*Thornton v. Schreiber *et al*	1165
*Vulcanite Paving Company v. American Artificial Stone Pavement Company	828
*Wiese. Dryfoos v	490
*Wright v. Beggs	829
*Wright v. Yuengling	829
*Yuengling. Wright v	829

SUBJECT-MATTER.

[Decisions of United States courts designated by an asterisk (*).]

Page.

Abandoned application, *ex parte* Norton 296
*Anticipation, Hailes *et al.* v. Albany Stove Company 95
*Vulcanite Paving Company v. American Artificial Stone Pavement Company 828
*Artesian wells, method of constructing, Andrews *et al.* v. Hovey 1285
*Andrews *et al.* v. Cone 1292
*Assignment, Burdsall v. Curran *et al* 1167
Car-heater, *ex parte* Sartell 295
*Cash and parcel carrier, Rapid Service Store Railway Company v. Taylor *et al* 721
*Celluloid and other plastic compositions, manufacture of sheets of, Celluloid Manufacturing Company v. American Zylonite Company *et al* 961
*Claims, construction of, McClain v. A. Ortmayer & Son *et al* 724
*Claims, limitation of, Railway Register Manufacturing Company v. Third Avenue Railway Company *et al* 379
Classification of inventions, *ex parte* Sartell 295
*Coal-stoves, Hailes *et al.* v. Albany Stove Company 95
*Combination, McClain v. A. Ortmayer & Son *et al* 724
*Railway Register Manufacturing Company v. Third Avenue Railway Company *et al* 379
Ex parte Sartell 295
*Combination claims, Rapid Service Store Railway Company v. Taylor *et al* 721
*Complete specification, English patent, Emerson, Smith & Company, (Limited,) v. Lippert 964
*Construction of patent, Celluloid Manufacturing Company v. American Zylonite Company *et al* 961
*Crawford v. Heysinger *et al* 197
*Enterprise Manufacturing Company of Pennsylvania v. Sargent & Company *et al* 1403
*Lawther v. Hamilton *et al* 487
*Matthews *et al.* v. Iron Clad Manufacturing Company 382
*McClain v. A. Ortmayer & Son *et al* 724
*Railway Register Manufacturing Company v. Third Avenue Railway Company *et al* 379
*Rapid Service Store Railway Company v. Taylor *et al* 721
*Stevenson v. Magowan *et al* 1063
*Construction of statutes, Andrews *et al.* v. Hovey 1285
Ex parte Norton 296
Ex parte Schulze-Berge 293
*Hailes *et al.* v. Albany Stove Company 95
*Thornton v. Schreiber *et al* 1165
*Copyright, Thornton v. Schreiber *et al* 1165
*Corset, Kraus *et al.* v. Fitzpatrick *et al* 1292
Delay in prosecuting an application, *ex parte* Norton 296
Design, *ex parte* Schulze Berge 293
*Kraus *et al.* v. Fitzpatrick *et al* 1292
*Disclaimer, office of, Hailes *et al.* v. Albany Stove Company 95
Division of application, *ex parte* De la Sala 95
Ex parte Sartell 295
*English patent, effective only from date of sealing as an anticipatory publication, Bliss *et al.* v. Merrill *et al* 97
*Equivalent, what is not, Dryfoos v. Wiese 490

Page.

*Equivalents, Enterprise Manufacturing Company of Pennsylvania v. Sargent & Company *et al* 1403
*Estoppel, Burdsall v. Curran *et al* 1167
*Fare-register, Railway Register Manufacturing Company v. Third Avenue Railway Company *et al* 379
*Filing and recording bonds, &c., Munson v. City of New York 1061
*Foreign patents, Emerson, Smith & Company, (Limited,) v. Lippert 964
*Former decision affirmed, Andrews *et al.* v. Cone 1292
*Dryfoos v. Wiese 490
*Matthews v. Iron Clad Manufacturing Company 827
Former decision construed, *ex parte* Barnitz 1061
*Former decision reversed, Crawford v. Heysinger *et al* 197
*Dreyfus *et al.* v. Searle 491
*Lawther v. Hamilton *et al* 487
*Munson v. City of New York 1061
*Thornton v. Schreiber *et al* 1165
*Frame for horizontal engines, Wright v. Yuengling 829
*Imparting age to wines, process of, Dreyfus *et al.* v. Searle 491
*Infringement, Bliss *et al.* v. Merrill *et al* 97
*Celluloid Manufacturing Company v. American Zylonite Company *et al* 961
*Ingham *et al.* v. Pierce *et al* 1062
*Kirk v. Du Bois 297,
*Kraus *et al.* v. Fitzpatrick *et al* 1292
*Lawther v. Hamilton *et al* 487
*Matthews v. Iron Clad Manufacturing Company 827
*Nashua Lock Company v. Norwich Lock Manufacturing Company 1405
*Railway Register Manufacturing Company v. Third Avenue Railway Company *et al* 379
*Rapid Service Store Railway Company v. Taylor *et al* 721
*Vulcanite Paving Company v. American Artificial Stone Pavement Company 828
*Wright v. Yuengling 829
*Infringement, what is not, Dryfoos v. Wiese 490
*Injunction, Celluloid Manufacturing Company v. Arlington Manufacturing Company 828
*Insulated electric conductor, Ansonia Brass and Copper Company v. Electrical Supply Company 1168
*Interference, effect of decision in, Kirk v. Du Bois 297
*Andrews *et al. v* Hovey 1285
*Invalid claim, Wright v Yuengling 829
*Invalid patent, Dreyfus *et al.* v Searle 491
*Matthews *et al.* v. Iron Clad Manufacturing Company 382
*Munson v. City of New York 1061
*Invention, McClain v. A. Ortmayer & Son *et al* 724
*Invention described but not claimed, Ingham *et al.* v. Pierce *et al* 1062
*Invention, want of, Ansonia Brass and Copper Company v. Electrical Supply Company 1168
*Dreyfus *et al.* v. Searle 491
*Matthews *et al.* v. Iron Clad Manufacturing Company 382
*Munson v. City of New York 1061
*Wright v. Yuengling 829

	Page.
*Knob attachment, Nashua Lock Company v. Norwich Lock Manufacturing Company	1405
*Limitation of United States patents by foreign patents previously granted, Emerson, Smith & Company, (limited,) v. Lippert	964
*Limited patent, Nashua Lock Company v. Norwich Lock Manufacturing Company	1405
*Lumber-driers, Burdsall v. Curran *et al*	1167
*Metallic staples, device for inserting, Crawford v. Heysinger *et al*	197
*Movable dam, Kirk v. Du Bois	297
*New evidence, Burdsall v. Curran *et al*	1167
*Old elements, Hailes *et al.* v. Albany Stove Company	95
*Matthews *et al.* v. Iron Clad Manufacturing Company	382
*Pad-fastening for horse-collars, McClain v. A. Ortmayer & Son *et al*	724
*Pad for horse-collars, McClain v. A. Ortmayer & Son *et al*	724
*Patentable novelty, Celluloid Manufacturing Company v. American Zylonite Company *et al*	961
*Pavement, composite, Vulcanite Paving Company v. American Artificial Stone Pavement Company	828
*Plastic or yielding substances, mechanism for cutting up, Enterprise Manufacturing Company of Pennsylvania v. Sargent & Company *et al*	1403
Plate-glass, *ex parte* Schulze-Berge	293
*Platform or handle for fruit-baskets, Ingham *et al.* v. Pierce *et al*	1062
*Practice in the patent office, Crawford v. Heysinger *et al.*	197
Ex parte Barnitz	1061
Ex parte Schultz-Berge	293
*Practice in the Supreme Court of the United States, Andrews *et al.* v. Hovey	1285
*Prior patent, Enterprise Manufacturing Company of Pennsylvania v. Sargent & Company *et al*	1403
*Prior use, Andrews *et al.* v. Hovey	1285
*Prior use, failure to plead, Stevenson v. Magowan *et al*	1063
*Process, Andrews *et al.* v. Hovey	1285
Process and product, *ex parte* De la Sala	95
*Process, when sufficiently described in a patent, Lawther v. Hamilton *et al*	487
*Provisional specification, Emerson, Smith & Company, (Limited,) v. Lippert	964
*Public use and sale, Andrews *et al.* v. Hovey	1285
*Quilting-machine, Dryfoos v. Wiese	490
Rejection of application, *ex parte* Schulz-Berge	293
*Registering ship's log, Bliss *et al.* v. Merrill *et al*	97
*Reissue, Andrews *et al.* v. Hovey	1285
*Bliss *et al.* v. Merrill *et al*	97
*Burdsall v. Curran *et al*	1167
*Crawford v. Heysinger *et al*	197
*Dryfoos v. Wiese	490
*Matthews v. Iron Clad Manufacturing Company	827
Saccharine compound, *ex parte* Norton	296
*Saw, Emerson, Smith & Company, (Limited,) v. Lippert	964
*Silence in patent, effect of, Enterprise Manufacturing Company of Pennsylvania v. Sargent & Company *et al*	1403
Slicing-machine, *ex parte* Barnitz	1061
*Soda-fountain, Matthews *et al.* v. Iron Clad Manufacturing Company	382
*Soda-water apparatus, Matthews v. Iron Clad Manufacturing Company	827
*Store-service apparatus, Rapid Service Store Railway Company v. Taylor *et al*	721
Technical terms, *ex parte* Schulz-Berge	293
*Thornton v. Schreiber *et al*	1167
*Testimony of witnesses as overcoming presumption, Bliss *et al.* v. Merrill *et al*	97
*Treating oleaginous seeds, process of, Lawther v. Hamilton *et al*	487
Treatment and application of wood to the coverings of surfaces, *ex parte* De la Sala	95
*Valid claims, Crawford v. Heysinger *et al*	197
*Dryfoos v. Wiese	490
*Kirk v. Du Bois	297
*Rapid Service Store Railway Company v. Taylor *et al*	721
*Valid only in part, Stevenson v. Magowan *et al*	1063
*Valid patent, Enterprise Manufacturing Company of Pennsylvania v. Sargent & Company *et al*	1403
*Kraus *et al.* v. Fitzpatrick *et al*	1292
*Lawther v. Hamilton *et al*	487
*Validity of patents, Andrews *et al.* v. Hovey	1285
*Railway Register Manufacturing Company v. Third Avenue Railway Company *et al*	379
*Vulcanite Paving Company v. American Artificial Stone Pavement Company	828
*Void patent, Ansonia Brass and Copper Company v. Electrical Supply Company	1168
*Ingham *et al.* v. Pierce *et al*	1062
*McClain v. A. Ortmayer & Son *et al*	724
*Vulcanizing apparatus, Stevenson v. Magowan *et al*	1063

DIGEST OF DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS

IN THE MATTER OF

PATENTS, TRADE-MARKS, &c.

OFFICIAL GAZETTE—January–March, 1888.

DIGEST OF DECISIONS.

[Decisions of the United States courts designated by an asterisk (*).]

ABANDONED APPLICATIONS.

(See Renewal of Abandoned Applications.)

1. SUSPENSION OF APPLICATIONS—NOT PERMITTED.
The assignee requested postponement of official action until the application should be called up by him: *Held* that the application must be considered as abandoned under the statute, the period of such suspension extending beyond two years.
[*Ex parte* Norton, 296.

2. SAME—SAME.
It is against public policy to permit an application for patent to lie dormant and suspended upon request of applicant or his assignee for a long term of years, and the practice of suspending action on applications for indefinite periods upon the request of the parties in interest is not sanctioned. There is no authority of law for such procedure, and a case cannot be suspended as a matter of right on the part of the applicant.
[Id.

3. SAME—SAME.
A request by the parties in interest that further action should not be taken waived action by the Office, and put the case in the same condition as though the Office had acted and was awaiting further action on the part of the applicant or his assignee.
[Id.

ABANDONMENT.

(See Invention Described but not Claimed, 2.)

ACQUIESCENCE.

(See Reissues, 1, 2.)

ANALOGOUS DEVICES.

(See Anticipation; Construction of Specifications and Patents, 2; Equivalents; Infringement.)

ANSWER TO BILL.

(See Defense.)

ANTICIPATION.

(See Construction of Specifications and Patents, 3, 4; Designs, 4; Foreign Patents; Invention Described but not Claimed, 1; Particular Patents, 4, 5, 8.)

RATHBONE AND HAILES—COAL-STOVES—ANTICIPATED.
A claim for a "circular stove" having a perforated fire-pot with a grate-bottom having provision for the admission of air below the point of suspension of said fire-pot *Held* to be met by prior patents showing all the elements of the claim save the circular cylinder, that element being old *per se*, on the ground that no invention was required to combine these features.
[*Hailes *et al. v.* The Albany Stove Company, 95.

APPEALS.

(See Rejected Cases.)

APPLICATIONS.

(See Abandoned Applications, 2; Construction of Claims, 2.)

ASSIGNEE.

(See Abandoned Applications; Estoppel.)

ATTORNEYS.

See Reissues, 1, 2.)

CHANGE OF PROCESS.

(See Evidence; Infringement, 3, 5, 10.)

CHANGE OF STRUCTURE.

(See Combinations; Construction of Specifications and Patents, 1, 2, 4; Equivalents; Infringement, 2, 4, 5, 6, 8; Invention, 5, 6.)

CIRCUIT COURTS.

(See Public Use, 2; United States Supreme Court.)

CLAIMS.

(See Construction of Claims.)

CLASSIFICATION OF INVENTIONS.

(See Division of Application, 4.)

COMBINATIONS.

(See Construction of Claims, 1, 3; Division of Application, 3, 4, 5; Invention, 5, 6.)

COMBINATION AFFECTED BY DIFFERENT ARRANGEMENT OF ELEMENTS.
Where one patentee has invented a combination for a particular purpose, the field is open to another to invent a combination of the same parts differently arranged and effecting the same result by a different mode of operation.
[*Railway Register Manufacturing Company *v.* Third Avenue Railway Company *et al.*, 379.

COMMISSIONER OF PATENTS.

(See Validity of Patents.)

CONGRESS, DEBATES IN.

(See Construction of Statutes, 1.)

CONSTRUCTION OF CLAIMS.

(See Process, 4.)

1. LIMITATIONS OF CLAIMS.
Where certain of the claims of a patent give to an element in a combination a particular mechanical construction, the same element without such description of mechanical construction occurring in combination in other claims must be limited to the particular mechanical construction where no other mechanical construction is described in the patent.
[*Railway Register Manufacturing Company *v.* Third Avenue Railway Company *et al.*, 379.

2. CONSTRUCTION OF CLAIMS.
Claims must be construed according to their terms, and where the import is plain resort cannot be had to the specification for the purpose of enlarging their scope. [*Id.

3. COMBINATION CLAIMS—THE ESSENTIALS OF.
In claims for combinations it is unnecessary to include any element except such as are essential to the peculiar combination and affected by the invention.
[*Rapid Service Store Railway Company *v.* Taylor *et al.*, 721.

4. CONSTRUCTION OF CLAIMS.
Where a claim calls for a device "as an attachment" to something, it may be subject to the construction that it is a claim for the device baldly, and the words descriptive of its use rejected as surplusage, on the theory of *Roberts* v. *Ryer*, (91 U. S., 157,) that a patent covers a device in all the uses to which it may be applied.
[*McClain *v.* A. Ortmayer & Son *et al.*, 724.

CONSTRUCTION OF SPECIFICATIONS AND PATENTS.

(See Combinations; Construction of Claims; Designs; Disclaimer; Equivalents; Evidence; First or Original Inventor; Infringement, 2, 4, 5, 6, 10; Invention; Invention Described but not Claimed; Limitation of United States Patents by Foreign Patents Previously Granted; Particular Patents; Process; Public Use.)

1. SUBSTITUTION OF DEVICE.
Where a patentee says that he expects in practical operation to use a device—as, for example, a rivet—to accomplish a certain thing, but does not confine himself specifically to it, any other device which secured the result intended would be allowable and open to him.
[*McClain *v.* A. Ortmayer & Son *et al.*, 724.

2. CLAIM LIMITED BY SPECIFICATION AND TESTIMONY OF PATENTEE.
Where the specification described joining the end caps to the outer shell without flanges or projections by tin joints made by soldering with pure tin, and the patentee testified that he adopted a solder of pure tin and dispensed with rivets, the claim to the fountain as a new article of manufacture "in the manner substantially as described" limited the patent to a fountain in which the caps were connected with the outer cylinder by pure tin solder without rivets or flanges.
[*Matthews *v.* Iron Clad Manufacturing Company, 827.

3. ANTICIPATION—PROOF.
To overthrow the presumption arising from the patent the evidence should be satisfactory, convincing.
[*Vulcanite Paving Company *v.* American Artificial Stone Pavement Company, 828.

4. PRIOR PATENT WHEN CHANGED IN CONSTRUCTION NOT AFFECTING THE PRIOR ART.
A prior patent will not deprive a later patent of patentable novelty if by discarding some of its mechanism so as to make it a failure in the way intended it will resemble the later patent.
[*Enterprise Manufacturing Company of Pennsylvania *v.* Sargent & Company *et al.*, 1403.

CONSTRUCTION OF STATUTES.

(See Disclaimer, 2; Foreign Patents; Limitation of United States Patents by Foreign Patents Previously Granted; Public Use, 1, 5; Renewal of Abandoned Applications; Technical Terms; United States Supreme Court; Validity of Patents, 2.)

1. DEDUCTIONS FROM DEBATES IN CONGRESS NOT A BASIS FOR JUDICIAL ACTION.
The argument sought to be founded upon the various phases assumed by the provisions of the act of July 8, 1870, in its passage through the two Houses of Congress is very unsafe and unreliable as a basis of judicial action, particularly when the only inference to be drawn is one as to what view Congress took of the act of 1839 in enacting the act of 1870.
[*Andrews *et al. v.* Hovey, 1285.

2. A PROCESS IS INCLUDED BY THE TERMS OF THE SEVENTH SECTION OF THE ACT OF 1839.
The seventh section of the act of 1839 includes a process as well as "a machine, manufacture, or composition of matter."
[*Id.

DECISIONS OF OTHER COURTS REVIEWABLE BY UNITED STATES SUPREME COURT.

(See United States Supreme Court.)

DEDICATION TO THE PUBLIC.

(See Infringement, 7; Invention Described but not Claimed.)

DEFENSE.

SUIT FOR INFRINGEMENT — FAILURE TO PLEAD PRIOR USE — EFFECT.
Where notice is not given in the answer of a specified prior use of the invention described in the patent, it cannot be set up as an anticipation of such invention; but, as exhibiting the state of the art, the evidence is competent to aid the court in putting a proper construction on the patent.
[*Stevenson *v.* Magowan *et al.*, 1003.

DESCRIPTION.

(See Construction of Claims, 4; Construction of Specifications and Patents, 1, 2; Infringement, 6; Process, 3, 4.)

DESIGNS.

(See Rejected Cases.)

1. The word "useful," employed by Congress in legislation upon the subject of mechanical and design applications, defined and distinguished, and *Held* when applied to designs to relate to matters of decoration and æsthetic art which reach the senses through the eye, and so used in an entirely different sense from that in which it is applied to the subject of mechanical invention, where the *usefulness* contemplated by the statute relates to the employment of dynamic force, its modification or operation. [*Ex parte* Schulze-Berge, 293.

2. Such inventor may also receive a design patent for the configuration, ornamentation, or decoration which the mechanical invention is capable of receiving. [Id.

3. USEFULNESS NOT DETRIMENTAL IN DESIGN PATENTS.
The fact that an article is useful does not make it less patentable as a design if it is new as a design.
[*Kraus *et al. v.* Fitzpatrick *et al.*, 1292.

4. ANTICIPATION OF DESIGN PATENTS—WHAT IS NOT.
It is no answer to the validity of a design patent that special features of it are found separately in prior things. [*Id.

DISCLAIMER.

1. DISCLAIMER—OFFICE OF.
A disclaimer is properly employed for the surrender of a separate claim, or some other distinct and separable matter, which can be excinded without mutilating or changing what is left standing. Perhaps it may be used to limit a claim to a particular class of objects, or to change the form of a claim which is too broad; but certainly it cannot be used to change the character of the invention.
[*Hailes *et al. v.* The Albany Stove Company, 95.

2. SAME—SAME.
Sections 4917 and 4922 Revised Statutes have reference to the same sets of circumstances as grounds for disclaimer, the former authorizing the filing of a disclaimer and the other legalizing suits brought on such patents as have been amended under the first-mentioned section. [*Id.

DIVISION OF APPLICATION.

1. APPLICATION FOR PROCESS AND ITS PRODUCT.
The examiner required division, and advised applicant that the product could be produced by other processes, but refused to state to applicant what those processes were. *Held* that the examiner should furnish applicant with all the information upon which he bases his opinion that the product is not new, in order that applicant may act intelligently as to the requirement of division; that the examiner ought not when he has information which would bar the issue of patent require an applicant to go to the trouble and expense of filing an application which must necessarily fail of success.
[*Ex parte* Pastor Perez de la Sala, 93.

2. While a patent would not be declared void, but would be supported in the courts, even though it might cover two independent inventions, the Commissioner in the proper administration of the Office is vested with the discretionary power to require division in certain cases.
[*Ex parte* Sartell, 295.

3. Among the rules and principles announced in *ex parte Herr* for determining when division should be required was one applicable to combinations, and the proposition is there stated that in the case of a combination applicant may claim such combination and also any element therein which in itself is new and possesses individual utility separate from the combination, provided that element has not already obtained a distinct location in the arts as an independent subject of invention and possesses utility in various other relations than that in which it is used in the particular combination claimed. [Id.

4. The classification referred to in *ex parte Herr* was not a mere classification to be found in the different examining divisions of the Office, and it was not intended that division of an application should be required because one examining division had one subject and another division another subject, both of which might be sometimes found in a combination; but the principle therein announced was based upon the determination of the fact as to whether the particular device sought to be made a part of a combination had become a separate and distinct subject of invention and classification, made so by the inventors and manufacturers themselves. [Id.

5. In the case under consideration the inventors and manufacturing interests of the public have made the coupler a distinct subject of invention and manufacture, and applicant, therefore, ought not to be allowed to claim this particular invention in the present application, because as an individual coupler it is a distinct and separate invention from the combination, which it is claimed has for its object the heating of cars. [Id.

DRAWINGS.

(See Invention, 1.)

ENLARGEMENT OF CLAIMS.

(See Reissues, 3.)

EQUIVALENTS.

(See Infringements, 4.)

INFRINGEMENT—NO EQUIVALENTS.
A stationary plate with radial slots and a perforated disk rotating in close proximity to the same in a prior patent is not the equivalent of complainant's stationary perforated plate and knives rotating in close proximity thereto.
[*Enterprise Manufacturing Company of Pennsylvania *v.* Sargent & Company *et al.*, 1403.

ESTOPPEL.

ASSIGNMENT—REISSUE—ESTOPPEL OF PATENTEE TO CLAIM INVALIDITY.
Where a patentee has assigned his patent he is estopped in an action brought against him for infringement by his assignee from denying the validity of reissues of his patent, though such reissues were obtained since the assignee acquired an interest in the patent, and the latter might have known that they were void when he accepted them.
[*Burdsall *v.* Curran *et al.*, 1167.

EVIDENCE.

(See Construction of Specifications and Patents, 3; Rehearing.)

EVIDENCE—THE EFFECT OF SILENCE IN PATENT.
Where in the patent in suit the only cutting claimed was by a revolving knife in close proximity to a stationary perforated plate, and the contention of the defendants was that in their machine there was a preliminary cutting before the material reached the perforated plate, the silence of defendants' patent in this respect is persuasive evidence to the contrary.
(*Enterprise Manufacturing Company of Pennsylvania *v.* Sargent & Company *et al.*, 1403.

EXAMINATION OF APPLICATIONS.

(See Division of Applications; Rejected Cases.)

EXAMINERS-IN-CHIEF.

(See Rejected Cases.)

FIRST OR ORIGINAL INVENTOR.

1. CLAIM—CONSTRUCTION OF.
Where it does not appear in evidence that the object desired and claimed has been accomplished by any analogous method before the patentee conceived and described the means of effectuating it, he is fairly entitled to all the benefits his patent was intended to confer upon him.
[*Kirk *v.* Du Bois, 297.

2. INTERFERENCE—EFFECT OF DECISION IS.
While a decision of the Patent Office awarding priority of invention in an interference proceeding not appealed from is not conclusive in a suit between the same parties on the same subject-matter, yet it is strongly persuasive that it was right.
[*Id.

FOREIGN PATENTS.

(See Limitation of United States Patents by Foreign Patents Previously Granted; Particular Patents, 4.)

ENGLISH PATENT—DATE OF AS ANTICIPATION.
An English patent is only effective from the date of its sealing as an anticipatory publication.
[*Bliss *et al. v.* Merrill *et al.*, 97.

FORMER DECISIONS.

(See United States Supreme Court; Validity of Patents, 2.)

FORMER DECISIONS AFFIRMED.

(See Division of Application, 3, 4, 5; Invention Described but not Claimed, 1; Renewal of Abandoned Applications, 1, 2.)

FRAUD.

(See Public Use, 1.)

FUNCTION.

(See Infringement, 2; Invention, 5, 6.)

IMPROVEMENTS.

(See Construction of Specifications and Patents, 4.)

INFRINGEMENT.

(See Equivalent; Evidence; Injunction; Invention Described but not Claimed, 2; Particular Patents, 1, 3, 8, 9, 10, 11, 12, 13, 15, 16, 18, 21, 22, 23.)

1. NO INFRINGEMENT BY THE SALE OF AN ARTICLE NOT NECESSARILY USED WITH A PATENTED DEVICE.
The mere fact that a person sells an article to which a patented device may be attached does not make him an infringer, provided the article is not so constructed that the patented device and no other can be used with it.
[*Bliss *et al. v.* Merrill *et al.*, 97.

2. INFRINGEMENT AS AFFECTED BY CHANGE OF LOCATION OF OPERATIVE PARTS.
A difference in location is immaterial where the function performed, the result attained, and the mode of operation are the same so far as the essential purpose of the invention is concerned.
[*Kirk *v.* Du Bois, 297.

3. INFRINGEMENT—WHAT IS NOT.
Where the supposed infringing machine was for the same purpose as complainant's patented machine and produced the same result in operation but by different means from those claimed in the patent in suit there was no infringement.
[*Dryfoos *v.* Wiese, 400.

4. EQUIVALENT—WHAT IS NOT.
Where complainant's patent claimed "conical feed-rolls" and the defendant's machine had short cylindrical feed-rolls feeding in a circular direction these latter rolls were not the equivalent of complainant's conical feed-rolls. [*Id.

5. INFRINGEMENT—WHEN IT OCCURS.
The complainant's patent is held to claim a spring-impelled cash-carrier and to have been infringed by a cash-carrier impelled by the expansion of compressed air.
[*Rapid Service Store Railway Company *v.* Taylor *et al.* 721.

6. SAME—WHERE IT DOES NOT TAKE PLACE.
Where defendant united the same parts with a solder of half tin and half lead, as well as by rivets and flanges, there was no infringement of complainant's claim.
[*Matthews *v.* Iron Clad Manufacturing Company, 827.

7. SAME—NONE WHERE FORMS OF PARTS NOT CLAIMED HAVE BEEN COPIED.
When the forms of the several parts of the apparatus of the patent in suit have been copied by the defendant, but the forms have not been claimed, there is no infringement.
[*Wright *v.* Yuengling, 829.

8. SAME—PATENTABLE NOVELTY.
The plate in the apparatus for retaining the plastic composition in place, provided on its upper surface with grooves, apertures, or indentations, upon which the material in shrinking can exert tension, *Held* infringed by defendants' device employing an iron plate perforated by holes with screw-threads, with plugs of zylonite screwed in, and depressions left around the heads of the plugs, into which portions of the celluloid are pressed and welded to the zylonite plugs, and pressed into the apertures around the heads of the plugs.
[*Celluloid Manufacturing Company *v.* American Zylonite Company *et al.*, 961.

9. SAME—SAME.
The process consisting of subjecting the slab of celluloid to pressure, then heating the mass from below, then applying the heat above, *Held* infringed by defendants' process, in which the heat is first applied from above and afterward from below.
[*Id.

10. ANALOGOUS DEVICES.
In Letters Patent No. 237,820, issued to Emery Parker October 6, 1885, for an improved door-knob attachment, each knob had an independent shaft. One shaft at its free end had a shoulder, and was inserted in a hollow shank on the other shaft, conforming in shape to the spindle, except that on one side was an enlargement to allow the insertion of the spindle obliquely past a pin projecting inwardly from the side of the shank opposite the enlargement. The pin interlocked with the shoulder on elevating the knob. In Letters Patent No. 318,684, granted to Charles H. Beebe May 26, 1885, the spindle, which at one or both ends was provided with a locking-hook, was inserted in the knob-neck, one side of which was enlarged, so as to allow the spindle to pass a locking-hook on the enlarged side of the neck. Elevation of the knob interlocked the hooks. *Held*, in view of the state of the art, that the Parker patent is limited to a device in which the enlargement is opposite the pin, and that the Beebe patent is no infringement.
[*Nashua Lock Company *v.* Norwich Lock Manufacturing Company, 1405.

INJUNCTION.

PRELIMINARY INJUNCTION—WHEN WILL BE GRANTED.
The mere fact that a defendant has ceased to infringe a patent is not a sufficient reason to withhold the issuance of preliminary injunction.
[*Celluloid Manufacturing Company *v.* Arlington Manufacturing Company, 828.

INTERFERENCE.

(See Public Use, 3, 4.)

INVALID PATENTS.

(See Void Patents.)

INVENTION.

(See Combinations; Designs, 2, 3, 4; Process, 1, 2.)

1. An inventor of a mechanical invention is entitled to give to it such enhancement by way of ornamentation and decoration as it is capable of receiving, and this without in any way modifying or detracting from his right to a patent.
[*Ex parte* Schulz-Berge, 293.

2. PATENTABLE INVENTION—WHAT IS NOT.
It being old to put a flanged bottom into an iron shell, or into an iron shell washed with tin, or into an iron shell with a lining of sheet-tin adhering thereto, and old also to provide a soda-fountain with a separable sheet-tin lining, it did not require the exercise of the inventive faculty to place a flanged bottom covered with a separable sheet-tin lining into a shell lined in a similar manner.
[*Matthews *et al.* *v.* Iron Clad Manufacturing Company, 382.

3. PATENTABLE INVENTION—WHAT IS NOT.
The application of artificial heat to ripen wine being old and the application of artificial heat to the outside of casks to ripen wine contained therein being old, it did not require invention to apply artificial heat to the inside of the casks to ripen the wine in the same.
[*Dreyfus *et al.* *v.* Searle, 491.

4. SAME.
There was no invention in applying steam-pipes to the interior of a cask for the purpose of heating the wine contained therein, steam-pipes having been previously applied to the interior of a closed tub for the purpose of heating water in the same.
[*Id.

5. COMBINATION—INVENTION.
A reconstruction of a machine so that a less number of parts will perform all the functions of the greater may be invention of a high order; but the omission of a part with a corresponding omission in function, so that the retained parts do just what they did before in the combination, cannot be other than a mere matter of judgment, depending upon whether it is desirable to have the machine do all or less than it did before.
[*McClain *v.* A. Ortmayer & Son *et al.*, 724.

6. SAME—NON-INVENTION.
Hence, where a device is made double and experience shows that one-half of it is superfluous, no invention is required to dispense with such superfluous portion, and a patent for the part retained will be held void.
[*Id.

7. INVENTION—NONE SIMPLY IN A NEW ARRANGEMENT FOR GREATER CONVENIENCE.
The invention being a book spaced for each bond, and its coupons in proximity when paid, with appropriate descriptive matter, and an earlier invention being a book with no place for the bonds, and adapted for the arrangement of the coupons in the order of payment, instead of in groups, there was no invention in the special arrangement of the bonds and coupons together.
[*Munson *v.* City of New York, 1061.

INVENTION DESCRIBED BUT NOT CLAIMED.

(See Infringement, 7; Particular Patents, 11.)

1. ANTICIPATION—PRIOR PATENT TO SAME PATENTEE—DEDICATION TO THE PUBLIC.
The respondent contended that a certain contrivance, for which Letters Patent No. 269,480 were granted, was shown in a prior patent to the same patentee. *Held* it was not clear that this contrivance was shown in the prior patent. *Held*, following *McMillan* *v.* *Rees*, (17 O. G., 1222; 1 Fed. Rep., 732,) even if this contrivance were shown in the prior patent, that this did not constitute a dedication to the public.
[*Vulcanite Paving Company *v.* American Artificial Stone Pavement Company, 828.

2. KNAPP—PLATFORMS OR HANDLES FOR BASKETS—VOID—INVENTION DESCRIBED BUT NOT CLAIMED.
In a suit for an infringement by a patentee claiming under Letters Patent No. 121,054, for an improvement in platforms or handles for fruit-baskets, it appeared that the advantages claimed were that the patented top was removable, allowing baskets to be nested, and assisted in better securing a net-work over the fruit; but these features were not novel. It also appeared that the patented article possessed a novel feature in a wire bent over at the top and brought down through a hole in the standard to secure the standards of the cover to the basket which held the cover more rigidly in its place than other baskets in which such wire is brought down on the side, outside or inside, of the standard. *Held* that the patent, being otherwise wanting in novelty, could not be supported for this feature, which was dormant in it and unclaimed.
[*Ingham *et al.* *v.* Pierce *et al.*, 1062.

JUDICIAL QUESTIONS.

(See Validity of Patents, 1, 2.)

LIMITATION OF UNITED STATES PATENTS BY FOREIGN PATENTS PREVIOUSLY GRANTED.

1. LIMITATION OF UNITED STATES PATENTS BY FOREIGN PATENTS PREVIOUSLY GRANTED—EFFECT OF PROVISIONAL PROTECTION.
Upon application made May 31, 1871, Letters Patent of the United States for an invention were granted on February 6, 1872. On October 12, 1871, the inventor caused application to be made in England for Letters Patent for the same invention, and a provisional specification was then filed. Pursuant to this application Letters Patent of Great Britain for said invention were sealed April 3, 1872, and dated October 12, 1871. The complete specification for the English patent was filed April 12, 1872, the same having been subscribed March 22, 1872. *Held* that the invention was not "first patented, or caused to be patented," in England within the meaning of the twenty-fifth section of the act of July 8, 1870, (sec. 4887 R. S.,) and that the life of the United States patent was not abridged by the antedating of the foreign patent.
[*Emerson, Smith & Company, (Limited,) *v.* Lippert, 964.

2. SAME—COMPLETE SPECIFICATION.
No opinion expressed as to the effect on the life of a United States patent of the filing in a foreign country of a complete specification.
[*Id.

3. ENGLISH PATENTS—PROVISIONAL SPECIFICATION.
The filing of a "provisional specification" in the English Patent Office secures to the applicant for the term of six months "provisional protection"—i. e., during this period the invention may be used and published without prejudice to any Letters Patent to be granted for the same, but does not invest the applicant with any of the powers, rights, or privileges of a patentee.
[*Id.

4. SAME—COMPLETE SPECIFICATION.
The filing of a complete specification not only protects the invention for six months, but during that period the applicant is clothed with the like powers, rights, and privileges as if Letters Patent had already issued.
[*Id.

MECHANICAL SKILL.

(See Invention, 2, 7; Particular Patents, 11; Process, 2.)

MODE OF OPERATION.

(See Combinations; Construction of Specifications and Patents, 1; Infringement, 2, 3.)

NEW EVIDENCE.

(See Rehearing.)

OLD DEVICES.

(See Invention, 3, 4.)

OLD ELEMENTS.

(See Anticipation; Combinations; Designs, 4; Invention, 2.)

OMISSION OF PARTS.

(See Construction of Specifications and Patents, 4; Invention, 5; Process, 1.)

OMISSION OF WORDS IN REISSUE CLAIMS.

(See Reissues, 3.)

PARTICULAR PATENTS.

(See Anticipation; Infringement, 10.)

1. BAKER—MEAT-CUTTER.
The first, second, sixth, and tenth claims of Letters Patent of John G. Baker, No. 271,398, dated January 30, 1883, for improvements in mechanism for cutting of plastic or yielding substances, adjudged valid, and the first, second, and sixth claims to have been infringed.
[*Enterprise Manufacturing Company of Pennsylvania *v.* Sargent & Company *et al.*, 1468.

2. BECK—QUILTING-MACHINES.
The second claim of Reissued Letters Patent No. 9,097, granted to Louis Dryfoos, assignee of August Beck, February 24, 1880, for an improvement in quilting-machines, adjudged to be valid.
[*Dryfoos *v.* Wiese, 490.

3. BLISS AND BLISS—REGISTERING LOGS FOR SHIPS.
The second claim of Reissued Letters Patent No. 10,625, granted to John Bliss and G. H. Bliss July 21, 1885, for improvements in registering ships' logs, declared to be valid and to have been infringed.
[*Bliss *et al.* *v.* Merrill *et al.*, 97.

4. COWLES—ELECTRIC INSULATOR—PRIOR STATE OF THE ART.
In Letters Patent No. 272,090, granted to Alfred A. Cowles February 20, 1883, for an improvement in insulated electric conductors, the alleged invention was a fire-proof insulator. The wire, having been covered with a layer of fibrous material, was passed through a vessel of metallic paint, and a second layer of fibrous material was added while the paint was fresh, thus forcing the saturation of both layers. The non-combustibility is the result of filling the pores and interstices of the fibrous layers with the metallic paint. In previous English patents paint had been applied to insulators in connection with inflammable materials, and solely for the purpose of protecting the insulators. It was not shown that previous to the Cowles invention paint had been knowingly used, except experimentally, to make a non-combustible insulator. *Held* that the defenses failed so far as based upon the previous English patents and the known use of paint as a fire-proof covering for electric wires.
[*Ansonia Brass and Copper Company *v.* Electrical Supply Company, 1108.

5. SAME—WANT OF INVENTION.
But it having been shown that for the purpose of procuring perfect insulation insulators had been previously composed of a double layer of fibrous material, each being separately painted, and the second layer being applied before the first was dry, *Held* that the Cowles patent was void for want of invention.
[*Id.

6. HARRIS—FARE-REGISTERS.
The first, second, fourth, and fifth claims of Letters Patent No. 206,565, granted to Charles B. Harris July 30, 1878, for an improvement in fare-registers, adjudged to be valid as limited by the specification and the prior state of the art.
[*Railway Register Manufacturing Company *v.* Third Avenue Railway Company *et al.*, 879.

7. HEYL—PAPER-FASTENER.
The first and second claims of Reissued Letters Patent No. 9,903, granted July 12, 1881, to George W. Heyl, assignee of Henry R. Heyl, for improvement in paper-fasteners, regarded as valid in the consideration of their meaning and as affecting the question of infringement.
[*Crawford *v.* Heysinger *et al.*, 197.

8. HOTCHKISS AND ALLERTON—VALID ONLY IN PART—USE OF REMAINDER—VULCANIZING APPARATUS.
In the patent issued to Burritt M. Hotchkiss and George M. Allerton, complainant's assignors, May 23, 1871, No. 115,267, for an improvement in vulcanizing apparatus, consisting of the application of hydraulic pressure to the molds in a vulcanizing-chamber, the invention claimed was a cylinder and piston outside the vulcanizing-chamber, and pipes connecting with a supply of fluid or liquid under pressure, whereby the power exerted to hold the molds together with a yielding force is independent of the vulcanizing operation. The evidence showed that the patent granted to George E. Hayes January 14, 1868, and the condition of the art of vulcanizing rubber prior to this time anticipated and invalidated all of complainant's patent except the vulcanizing-chamber. The defendants used machinery substantially covered by complainant's patent, except that they used no vulcanizing-chamber. *Held* no infringement.
[*Stevenson *v.* Magowan *et al.*, 1063.

9. HYATT—MANUFACTURE OF SHEETS OF CELLULOID AND OTHER PLASTIC COMPOSITIONS—PATENTABLE NOVELTY.
In an action for the infringement of Letters Patent No. 109,908, issued to John W. Hyatt February 5, 1878, for an improvement in the manufacture of sheets of celluloid and other plastic compositions, the specifications and claims describing the invention as relating to an apparatus and process consisting in piling a number of rough sheets of celluloid upon a grooved plate in a chase or mold; subjecting the celluloid to heat and great pressure, by which it is solidified into a single compact rectangular slab, and portions of it are forced into the grooves; then cooling it so that it shrinks, and those portions operate as clutches to hold the slab firmly in place; then planing the slab into sheets, and finally stretching these sheets upon a frame to prevent their wrinkling or warping while drying: *Held* that the process and apparatus was a patentable novelty.
[*Celluloid Manufacturing Company *v.* American Zylonite Company *et al.*, 961.

10. KIRK—MOVABLE DAMS.
The tenth claim of Letters Patent No. 268,411, dated December 5, 1882, granted to Arthur Kirk for an improvement in movable dams, declared valid and to have been infringed.
[*Kirk *v.* Du Bois, 297.

11. KNAPP—PLATFORMS OR HANDLES FOR BASKETS—VOID—INVENTION DESCRIBED BUT NOT CLAIMED.
In a suit for an infringement by a patentee claiming under Letters Patent No. 121,054, for an improvement in platforms or handles for fruit-baskets, it appeared that the advantages claimed were that the patented top was removable, allowing baskets to be nested, and assisted in better securing a net-work over the fruit; but these features were not novel. It also appeared that the patented article possessed a novel feature in a wire bent over at the top and brought down through a hole in the standard to secure the standards of the cover to the basket which held the cover more rigidly in its place than other baskets in which such wire is brought down on the side, outside or inside, of the standard. *Held* that the patent, being otherwise wanting in novelty, could not be supported for this feature, which was dormant in it and unclaimed.
[*Ingham *et al.* *v.* Pierce *et al.*, 1062.

12. LAWTHER—TREATING OLEAGINOUS SEEDS.
Letters Patent No. 168,164, granted to Alfred B. Lawther September 28, 1875, for improvements in processes for treating oleaginous seeds, declared valid and to have been infringed.
[*Lawther *v.* Hamilton *et al.*, 487.

13. MATTHEWS—SODA-WATER FOUNTAIN.
The second claim of Reissued Letters Patent No. 8,837, granted to John Matthews August 5, 1879, for soda-water apparatus, if limited by the terms of the patent and the state of the art, *Held* not to have been infringed, and if not so limited to be invalid.
[*Matthews *v.* The Iron Clad Manufacturing Company, 827.

14. MUNSON—BOND-REGISTER.
Letters Patent No. 63,419, granted to Francis Munson April 2, 1867, for a bond and coupon register, adjudged invalid.
[*Munson *v.* City of New York, 1061.

15. McCarty—Cash-Carriers.
The third, fourth, and seventh claims of Patent No. 325,125, granted to Robert A. McCarty September 1, 1885, for a cash and parcel carrier, adjudged valid and to have been infringed.
[*Rapid Service Store Railway Company v. Taylor *et al.*, 721.

16. McClain—Pad for Horse-Collars—259,700.
The first claim of Patent No. 259,700, issued June 20, 1882, to Edward L. McClain, for a pad for horse-collars, *Held* to be for the use of elastic double springs *s s*, and not infringed by the use of a single non-elastic hook.
[*McClain *v.* A. Ortmayer & Son *et al.*, 724.

17. Same—Same—267,011—Invalid.
Patent No. 267,011, issued November 7, 1882, to Edward L. McClain, for a pad for horse-collars, *Held* to be for the elastic single spring S and void for want of novelty, as being merely for one-half of the spring shown in the first patent. [*Id.

18. Scherling—Pad-Fastening for Horse-Collars—Invalid.
The claim of Letters Patent No. 298,626, issued May 13, 1884, to John Scherling, for a pad-fastening for horse-collars, is in substance for a hook formed of wire with a safety-pin integral with the hook for attaching the hook to the pad, *Held* void for want of novelty, or, if valid, not infringed by the defendants.
[*Id.

19. Schultz—Soda-Fountain.
Letters Patent No. 149,251, granted March 31, 1874, to Carl H. Schultz, for an improvement in soda-fountains, declared invalid for lack of patentable invention.
[*Matthews *et al. v.* Iron Clad Manufacturing Company, 382.

20. Searle—Ripening Wines.
Letters Patent No. 48,728, granted to John Searle July 11, 1865, for a process for imparting age to wines, declared invalid for lack of patentable invention.
[*Dreyfus *et al. v.* Searle, 491.

21. Stuart—Composite Pavement.
Letters Patent No. 259,480, granted to Peter Stuart, for a composite pavement, do not appear from the evidence to be anticipated or to lack patentable novelty, and they are infringed by respondent's pavement.
[*Vulcanite Paving Company *v.* American Artificial Stone Pavement Company, 828.

22. Welton—Corsets.
Design Patent No. 13,620, dated February 13, 1883, granted to Frank Welton, declared valid and to have been infringed.
[*Andrews *et al. v.* Cone, 1292.

23. Wright—Engine-Frames.
The second claim of Letters Patent No. 144,828, granted November 18, 1873, to William Wright, for an improvement in frames for horizontal engines, *Held* to be invalid for lack of invention, and the first and third claims adjudged not to have been infringed.
[*Wright *v.* Yuengling, 820.

PATENTABILITY.

(See Designs, 1, 2; Invention; Process, 1, 2.)

PATENT OFFICE.

(See Public Use, 3, 4.)

PLEA.

(See Construction of Statutes, 1.)

PRACTICE IN THE COURTS.

(See Construction of Claims; Defense; Estoppel; Injunction; Public Use, 2, 3, 4; Rehearing; Technical Terms; United States Supreme Court; Validity of Patents.)

PRACTICE IN THE PATENT OFFICE.

(See Abandoned Applications; Designs; Division of Application; First or Original Inventor; Invention, 1; Rejected Cases; Renewal of Abandoned Application, 1, 2; Validity of Patents, 1.)

PRIORITY OF INVENTION.

(See Construction of Specifications and Patents, 3, 4; First or Original Inventor.)

Testimony of Witnesses as Overcoming Presumption.
A court would not be warranted in rejecting the positive testimony of two respectable and unimpeached witnesses as to the fact of invention at a certain date upon the presumption that the same idea, alike even in mutual details, could not have occurred to two persons in different continents without one of the persons had known of the other device.
[*Bliss *et al. v.* Merrill *et al.*, 97.

PRIOR PATENTS.

(See Construction of Specifications and Patents, 4.)

PRIOR USE.

(See Defense.)

PROCESS.

(See Construction of Statutes, 2; Infringement, 3, 8, 9; Invention, 3, 4.)

1. New Process may Result from the Omission of a Step in an Old Process.
The omission of one step of an old process with an improved result constitutes a new process.
[*Lawther *v.* Hamilton *et al.*, 487.

2. Patentability of New Process not Affected by Greater Care or Skill in Using it.
Where the new process requires greater care, or even greater skill, on the part of the workmen than formerly, it does not change its character as a process or materially affect its utility.
[*Id.

3. Process—When Sufficiently Described in a Patent.
A patent sufficiently describes a process when by the aid of the knowledge derived from the state of the art the same may be carried out from the description in the patent by those skilled in the particular manufacture. [*Id.

4. Process Claims—How Limited.
A claim for a process consisting of several steps may be limited by the state of the art and the description in the patent to the instrumentalities or their equivalents as thus described, which are essential in the carrying out of the process claimed.
[*Id.

PROCESS AND PRODUCT.

(See Division of Application, 1.)

PROVISIONAL SPECIFICATION.

(See Limitation of United States Patent by Foreign Patent Previously Granted, 4.)

PUBLICATION.

(See Foreign Patents.)

PUBLIC USE.

1. Effect of a Sale or Use in Fraud of the Patentee.
A fraudulent surreptitious purchase or construction or use of an invention prior to the application for a patent probably would not affect the rights of the patentee under this section of the act of 1839.
[*Andrews *et al. v.* Hovey, 1285.

2. Decisions of Circuit Courts not Controlling in the Supreme Court.
The circuit courts having in several instances held that under the section in question a patent was not invalid by a public use and sale without the consent or allowance of the inventor, these decisions are not controlling in the Supreme Court of the United States where no direct adjudication has been made by that Court upon the particular point. [*Id.

3. Interference Proceedings not Controlling in the Supreme Court.
The fact that in an interference in the Patent Office, where the question has been distinctly raised, a patent was issued to Green with the knowledge on the part of the Patent Office that there had been a public use of the invention more than two years before his application, is not controlling upon this Court.
[*Id.

4. Rules of the Patent Office not Controlling in the Supreme Court.
The promulgation and enforcement of a rule of the Patent Office, that a patent would not be granted if the invention had been in public use or on sale, with the consent or allowance of the inventor, for more than two years before his application, cannot be regarded as having the effect of a judicial or authoritative adjudication of the question. [*Id.

5. Section 7, Act of 1839, does not Include "Consent or Allowance."
Under sections 6, 7, and 15 of the act of 1836, in connection with section 7 of the act of 1839, purchase, sale, or use of the invention more than two years before the application, without regard to the consent or allowance of the inventor, renders the patent invalid. [*Id.

REHEARING.

Practice on Application for Rehearing—New Evidence.
Upon an application for rehearing in a suit for infringement of a patent, the invalidity of the patent being reargued in the light of some additional evidence as to the state of the art, but no reason being assigned for failure to produce this evidence at the hearing, *Held* that the evidence would not be considered.
[*Burdsall *v.* Curran *et al.*, 1167.

REISSUES.

1. Construction of Claims Limited by Act of Inventor.
Where the applicant in soliciting a reissue limits his claims in view of the objections of the Patent Office, he is bound by such limitation in subsequent suits upon that reissue.
[*Crawford *v.* Heysinger *et al.*, 197.

2. Such Limitations Confine Claims to the Precise Combinations Described.
As thus limited, the first and second claims of the Heyl reissue cover only the precise combinations set forth in them, as described in the specifications and illustrated in the drawings of such reissue. [*Id.

3. Claim in Reissue Rendered Invalid by Omission of Words of the Original Claim.
Where the claim in the reissue omitted certain words in the corresponding original claim, if the same effected an enlargement of the invention, the reissue is invalid.
[*Matthews *v.* Iron Clad Manufacturing Company, 827.

REJECTED CASES.

Designs—Rejection—Appeal.
Objections by the examiner that the alleged invention shown in an application for a mechanical patent should be made the subject of a design application *Held* to be a *rejection* of the application, the appeal from which must go to the Examiners-in-Chief.
[*Ex parte* Schulze-Berge, 293.

RENEWAL OF ABANDONED APPLICATION.

1. Former Decision Construed.
The Commissioner's decision in *ex parte Barnitz* (41 O. G., 575) was not designed to apply to a second application filed after the right of applicant to *renew* his original and first application had lapsed by reason of the expiration of the two years, as provided by section 4897 Revised Statutes.
[*Ex parte* Barnitz, 1061.

2. Construction of Statutes.
Under section 4897 a definite and well-recognized practice of the Office exists, and until Congress shall see proper to change the statute the practice of the Office should not be disturbed.
[Id.

RESULT.

(See Infringement, 2, 3; Process, 1.)

SALE OF PATENTED ARTICLES.

(See Infringement, 1.)

SCOPE OF A PATENT.

(See Construction of Specifications and Patents, 1.)

SIMILAR DEVICES.

(See Analogous Devices.)

SPECIFICATIONS.

(See Construction of Claims, 2, 4; Construction of Specifications and Patents, 2; Invention, 1; Process, 4.)

STATE OF ART.

(See Defense; Particular Patents, 4, 6, 8; Process, 3, 4.)

SUBSEQUENT PATENTS.

(See Construction of Specifications and Patents, 4; Invention Described but not Claimed, 1.)

SUITS FOR INFRINGEMENT.

(See Rehearing.)

TECHNICAL TERMS.

(See Construction of Claims, 4; Construction of Statutes, 2; Designs, 1.)

1. Construction of Section 4965 Revised Statutes.
The expression "found in his possession," in section 4965 of the Revised Statutes, means found in the possession of the defendant before the cause of action accrues, and does not refer to the finding of the jury.
[*Thornton *v.* Schreiber *et al.*, 1165.

2. Same.
The "possession," under this statute, is not the possession of an employé, but of his principal. [*Id.

3. Same.
As to whether the forfeiture to the United States, in section 4965, applies to anything but "painting, statue, or statuary." *Quære.* [*Id.

TERM OF PATENT.

(See Limitation of United States Patents by Foreign Patents Previously Granted.)

TESTIMONY.

(See Construction of Specifications and Patents, 2, 3; Evidence; Priority of Invention.)

UNITED STATES SUPREME COURT.

(See Construction of Statutes, 1; Public Use, 2, 3, 4.)

Questions of Patent Law Finally Settled only in the Supreme Court.
No question arising in a patent suit reviewable in this Court can be regarded as finally settled, so as to establish the law for like cases, until it has been determined in this Court.
[*Andrews *et al. v.* Hovey, 1285.

VALID PATENTS.

(See Particular Patents, 1, 2, 3, 6, 7, 8, 9, 10, 12, 15, 16, 21, 22.)

VALIDITY OF PATENTS.

(See Construction of Specifications and Patents, 3; Division of Application, 2; Estoppel; Public Use, 5.)

1. Departmental Constructions as to the Validity of Patents—Judicial Questions.
The practice adopted by an executive department of the Government does not apply to the validity of patents by reason of pre-existing acts or omissions of the inventor of the character involved in this suit, but is properly a judicial question.
[*Andrews *et al. v.* Hovey, 1285.

2. The Grant of Patents not Conclusive as to Validity.
The determination of questions like those involved here by the Commissioner of Patents in the grant of a patent is not conclusive upon the courts as to the questions respecting the validity of such patents, and much less so as regards other patents. [*Id.

VOID PATENTS.

(See Anticipation; Invention, 6, 7; Particular Patents, 4, 5, 8, 11, 13, 14, 17, 18, 19, 20; Reissues, 3.)

WITNESSES.

(See Priority of Invention.)

ALPHABETICAL LIST OF PATENTEES

FOR

THE QUARTER ENDING MARCH 31, 1888.

[Claims and drawings of Designs do not appear in the Monthly Volumes or the Gazette. Separate indexes for Designs, Trade-Marks, Labels, and Disclaimers follow this.]

Name, residence, and invention.	No.	Date.	Monthly volume.		Official Gazette.	
			Specification.	Drawing.	Volume.	Page.
Ab-Intra Boot Making Process Company. (See Lion and Cutlan, assignors.)						
Abbott, Allen I. (See Vanover, Joseph M., assignor.)						
Abbott, Jonathan P., Cleveland, Ohio. Eaves-trough hanger	377,366	Feb. 7	1	1	42	495
Abbott, Joseph, Rumney, N. H. Fire-escape	376,622	Jan. 17	1287	339	42	261
Abbott, Richard C., East Bluehill, Me. Convertible ice-creeper and skate	377,131	Jan. 31	2044	535	42	421
Abendroth & Root Manufacturing Company. (See Worthington, Amasa, assignor.)						
Aber, Edgar, Troup, Tex. Apparatus for handling brick	375,911	Jan. 3	244	66	42	51
Abrahams, Isaac B., New York, N. Y. Manufacture of wall-covering	377,283	Jan. 31	2259	597	42	463
Acheson, Edward G., Pittsburg, Pa. Electric conductor	380,157	Mar. 27	1931	515	42	1360
Acheson, Edward G., and B. F. Anderson, Pittsburg, Pa. Manufacture of electric conductors	380,158	Mar. 27	1932	515	42	1360
Adams, Casilly, Cincinnati, Ohio. Divisible bullet-proof shield	377,732	Feb. 14	577	149	42	619
Adams, Charles W., Chelsea, assignor of three-fourths to A. B. Browne and E. Harding, Cambridge, Mass. Electric-arc lamp	380,271	Mar. 27	2082	557	42	1391
Adams, David S., Toronto, Ontario, Canada. Door-gong	379,626	Mar. 20	1127	298	42	1193
Adams, Fitch D., Boston, Mass. Car-axle box	377,418	Feb. 7	113	23	42	516
Adams, George B., assignor to Adams Manufacturing Company, Newark, N. J. Cuff-button	376,500	Jan. 17	1099	288, 289	42	226
Adams, John, Clay Centre, Kans. Combined latch and lock	377,733	Feb. 14	578	149	42	619
Adams, John U. (See Adams, Joseph, assignor.)						
Adams, Joseph, assignor of one-half to J. U. Adams, New Orleans, La. Egg safety shipping-package	379,526	Mar. 13	966	261	42	1156
Adams, Louis, Terre Haute, Ind. Balanced slide-valve	378,751	Feb. 28	2088	550	42	926
Adams Manufacturing Company. (See Adams, George B., assignor.)						
Adams, Milton F., assignor to Rapid Service Store Railway Company, New York, N. Y. Carrier for store-service apparatus	378,537	Feb. 28	1786	471	42	869
Adams, Orsemas T. X., assignor to M. Peck, Chicago, Ill. Slag-furnace	379,436	Mar. 13	929	224	42	1130
Adams, Orsemas T. X., assignor to M. Peck, Chicago, Ill. Slag-furnace	379,527	Mar. 13	967	261	42	1156
Adams, Orsemas T. X., assignor to M. Peck, Chicago, Ill. Slag-furnace	379,863	Mar. 20	1533	404	42	1273
Adams, Phineas H., Jr., Chicago, Ill. Slag-furnace	379,437	Mar. 13	930	224, 225	42	1130
Adams, Phineas H., Jr., Chicago, Ill. Slag-furnace	379,625	Mar. 20	1125	298	42	1193
Adams, S. Jarvis, Pittsburg, Pa. Apparatus for withdrawing patterns from sand molds	377,004	Jan. 31	1857	491	42	387
Adams, S. Jarvis, Pittsburg, Pa. Sand-molding apparatus	377,005	Jan. 31	1859	491	42	387
Adams, S. Jarvis, Pittsburg, Pa. Sand-molding apparatus	377,006	Jan. 31	1862	491	42	387
Adams, S. Jarvis, Pittsburg, Pa. Sand-molding apparatus	377,007	Jan. 31	1864	492	42	387
Adams, S. Jarvis, Pittsburg, Pa. Sand-molding apparatus	377,008	Jan. 31	1867	492	42	388
Adams, S. Jarvis, Pittsburg, Pa. Sand mold	377,009	Jan. 31	1868	492	42	388
Adams, S. Jarvis, Pittsburg, Pa. Withdrawing patterns from sand molds	377,010	Jan. 31	1870	492	42	388
Adams, Stephen G., and J. B. Seymour, Jr., assignors of one-third to C. L. Leonori, St. Louis, Mo. Printing device	379,884	Mar. 20	1534	405	42	1273
Adams, Thomas E., Cleveland, Ohio. Arc lamp	380,074	Mar. 27	1815	484, 485	42	1337
Adams & Westlake Manufacturing Company. (See Hubbard, Frederick J., assignor.)						
Adams, William E., Lynn, Mass. Leather-splitting machine	378,157	Feb. 21	1223	319, 320, 321	42	751
Adams, William E., Lynn, Mass. Leather-splitting machine	378,158	Feb. 21	1226	321, 322, 323	42	752
Adamson, James H., Melbourne, Victoria, assignor of one-half to J. F. and B. F. Mellor, Adelaide, South Australia. Machine-belting	376,174	Jan. 10	641	171	42	134
Addax Basting Machine Company. (See Angell, Edwin E., assignor.)						
Ader, Clement, Paris, France. Telegraphy	377,879	Feb. 14	816	208, 209	42	665
Ader, Henry, Somerset, Ind. Bottle	378,752	Feb. 28	2089	550	42	926
Adie, Patrick, deceased, London, county of Middlesex, England; W. G. Henderson, Washington, D. C., administrator. Driving-belt and wheel	376,975	Jan. 24	1813	477	42	369
Adler, Abraham S., Baltimore, Md. Last	379,039	Mar. 6	261	73	42	1015
Adt, Leo F., Waterbury, Conn. Photographic-tray holder	375,912	Jan. 3	246	67	42	51
Adt, Leo F., Waterbury, Conn. Photographic-printing frame	376,840	Jan. 24	1638	428	42	345

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Ahrends, John, Monmouth, Kans. Churn	378,733	Feb. 28	2099	551	42	926
Akins, Abraham L., Larimer's Station, Pa. Mechanical movement	377,509	Feb. 7	248	60	42	542
Akron Iron Company. (See Allderdice, Winslow, assignor.)						
Akron Iron Company. (See Baldwin and Sedgwick, assignors.)						
Albaugh, George W., State Line, Pa. Combined harrow, clod-crusher, and land-roller	376,841	Jan. 24	1639	429	42	335
Alden, Charles S., Rochester, N. Y. Pocket-box for cigarettes, &c	376,056	Jan. 10	465	125	42	101
Alden, John E., Lake George, N. Y. Combined table and sofa	378,995	Mar. 6	200	54, 55	42	1004
Alden, John E., Lake George, N. Y. Combined sofa and table	378,996	Mar. 6	202	55	42	1005
Alden Type Machine Company. (See Low, A. Augustus, assignor.)						
Aldom, Edward, and H. E. Schmitz, Brooklyn, N. Y. Embroidering-machine attachment	380,075	Mar. 27	1822	485	42	1338
Alexander, James G., Ilia, Mo. Horse hay-rake	376,175	Jan. 10	642	171	42	194
Alexander-Katz, Richard, Berlin, Germany. Automatic apparatus for the sale of newspapers, &c	378,945	Mar. 6	119	34, 35	42	990
Alexander, Thomas J., Westerville, Ohio. Windmill	378,073	Feb. 21	1063	287	42	729
Alexander, William J. (See Haughton and Alexander.)						
Allbee, Alexander C., Wakefield, assignor to Smith & Anthony Stove Company, Boston, Mass. Adjustable flask-clamp	378,640	Feb. 28	1931	513	42	898
Allderdice, Winslow, assignor to Akron Iron Company, Akron, Ohio. Die and die-holder for drawing	376,222	Jan. 10	707	188	42	145
Allen, Albert A. (See Millard, Augustus C., assignor.)						
Allen, Augustus V., Joplin, Mo. Grooving-machine	376,057	Jan. 10	466	125	42	101
Allen, David B., and E. K. Warren, Three Oaks, Mich. Whip	375,974	Jan. 3	341	92	42	69
Allen, Edward B., assignor to J. W. Brooks, trustee, Portland, Me. Heel-loading machine	375,913	Jan. 3	247	67	42	52
Allen, Edward B., Portland, Me., assignor to J. W. Brooks, trustee, Cambridge, Mass. Heel-trimming machine	377,284	Jan. 31	2261	598	42	463
Allen, Edward B., Portland, Me., assignor to J. W. Brooks, trustee, Cambridge, Mass. Heel-nailing and breasting machine	377,285	Jan. 31	2265	598, 599	42	463
Allen, Edward B., Portland, Me., assignor to J. W. Brooks, trustee, Cambridge, Mass. Machine for making flexible nail-strips	378,859	Mar. 6	1	1	42	967
Allen, Edward M., assignor to S. E. Allen, Stafford, Md. Wagon	376,934	Jan. 24	1760	463	42	358
Allen, Frank H., Port Allen, La. End-gate	376,842	Jan. 24	1640	429	42	335
Allen, George E., Youngstown, Ohio. Speculum	379,553	Mar. 20	1011	271	42	1173
Allen, George M., Cherryfield, Me. Wrench	379,627	Mar. 20	1127	298	42	1193
Allen, George W., Manchester, county of Lancaster, and H. J. A. Bowers, Acton, London, England. Feed-water purifier	379,671	Mar. 20	1188	314, 315	42	1206
Allen, John F., New York, N. Y. Casting ordnance	375,791	Jan. 3	94	28	42	23
Allen, John F., New York, N. Y. Press	377,152	Jan. 31	2045	535	42	421
Allen, Sallie E. (See Allen, Edward M., assignor.)						
Allen, Wealthy J., Arkansas City, and B. West, Winfield, Kans. Combined step-ladder and ironing-board	380,159	Mar. 27	1933	515	42	1360
Allen, William H. (See Jennings and Allen.)						
Allin, Samuel S., Bedford Park, county of Middlesex, England. Water-motor	379,753	Mar. 20	1306	348	42	1229
Allis & Co., Edward P. (See Fender, William J., assignor.)						
Allis & Co., W. P. (See Hinkley, George M., assignor.)						
Allsopp, William. (See Walker and Allsopp.)						
Almond, Thomas R., New York, N. Y. Reamer	376,501	Jan. 17	1103	289	42	226
Alpress, Edward A., New Britain, Conn. Taper attachment for lathes	376,843	Jan. 24	1641	429, 430	42	335
Alsdorf, Egbert. (See Paul, George D., assignor.)						
Alvord, Jabez, assignor of one-half to R. H. Cooke, Winsted, Conn. Barrel-head	376,221	Jan. 10	708	188	42	145
Aluminium Product Company. (See Howard and Hill, assignors.)						
Amberg, Abe M., *et al.* (See Tracy, William P., assignor.)						
American Acetic Acid Company. (See Wilson, John, assignor.)						
American Bell Telephone Company. (See Berthold, V. Maximilian, assignor.)						
American Bell Telephone Company. (See Hibbard, Augus S., assignor.)						
American Elevator Company. (See Gibson, William P., assignor.)						
American Magnetic Electric Company. (See Emmans, William, assignor.)						
American Manufacturing Company. (See Leopold, Charles F., assignor.)						
American Pneumatic Railway Company. (See Goebel, Christian H., assignor.)						
American Pneumatic Railway Company. (See Oehrle, Albert C., assignor.)						
American Press Association. (See Cummings, John R., assignor.)						
American Ring Company. (See Andrews, Clayton C., assignor.)						
American Screw Company. (See Rogers, Charles D., assignor.)						
Ameabury, George W., deceased, Philadelphia, Pa.; G. M. Brill, administrator. Device for sharpening saws	378,277	Feb. 21	1410	369	42	786
Amick, Myron J., Portland, Oreg. Automatic gas-regulator. (Reissue)	10,901	Feb. 14	1088	286	42	720
Amies, Joseph H., Reading, Pa. Gas-enriching apparatus	378,418	Feb. 28	1613	425	42	933
Ammons, John B., Atlanta, Ga., assignor of two-thirds to G. W. Reardon, Sumter, S. C., and D. P. Morris, Atlanta, Ga. Cotton-chopper	376,274	Jan. 10	775	206	42	159
Amos, George W., Chicago, Ill. Lubricator	377,593	Feb. 7	358	92	42	564
Anable, Henry N. (See Lyman and Johnson, assignors.)						
Andersch, Wilhelm, assignor of one-half to W. Reisert, Brooklyn, N. Y. Lubricator	376,809	Jan. 24	1588	416	42	326
Anderson, Alexander, London, Ontario, assignor of one-half to S. C. Walker, Chatham, Canada. Cooking-stove	378,074	Feb. 21	1096	287	42	729
Anderson, Benjamin F. (See Acheson and Anderson.)						
Anderson, Charles A. (See Kennedy and Anderson.)						
Anderson, Charles J., New Haven, Conn. Sash-fastener	375,975	Jan. 3	342	92	42	70
Anderson, Charles T., Clarksburg, Md. Washing-machine	379,263	Mar. 13	575	159	42	1080
Anderson, David S., McGrawville, N. Y. Sleigh	378,821	Feb. 28	2207	588	42	949
Anderson, George V., Wilmington, Del. Leather-dressing machine	377,473	Feb. 7	187	45, 45	42	532
Anderson, George V., assignor of seven-sixteenths to C. W. Gouert, Wilmington, Del. Machine for staking and softening skins	380,239	Mar. 27	2043	546	42	1383
Anderson, James C., Highland Park, Ill. Brick-machine	378,538	Feb. 28	1787	472	42	880
Anderson, James C., Highland Park, Ill. Brick-kiln	379,040	Mar. 6	202	74, 75	42	1015
Anderson, James C., Highland Park, Ill. Burning brick	379,041	Mar. 6	204	75, 76, 77	42	1015
Anderson, James C., Highland Park, Ill. Brick-kiln	379,923	Mar. 27	1595	421, 422	42	1295
Anderson, James C., Highland Park, Ill. Brick-kiln	379,924	Mar. 27	1597	422, 423	42	1295
Anderson, James C., Highland Park, Ill. Kiln for burning brick, &c	379,925	Mar. 27	1599	423	42	1295
Anderson, James C., Highland Park, Ill. Clay block for paving, &c	379,926	Mar. 27	1600	423	42	1296

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Anderson, James C., Highland Park, Ill. Brick-kiln	379,927	Mar. 27	1601	424, 425	42	1296
Anderson, James J., assignor of one-half to J. E. Waugh, Chicago, Ill. Display-stand	378,035	Feb. 14	1039	271	42	710
Anderson, James M., Kansas City, Mo. Water-cock	376,129	Jan. 10	576	154	42	121
Anderson, Lee, assignor of one-third to P. M. Speairs, Paris, France. Nut-lock	377,185	Jan. 31	2109	556	42	436
Anderson, Oliver, Fort Totten, Dak. Ter. Band-cutter and feeder	377,975	Feb. 14	959	250	42	695
Anderson, Oliver, assignor of one-half to F. C. Standish, Fort Totten, Dak. Ter. Bag-fastener	375,976	Jan. 3	343	92	42	70
Andrew, William, Cincinnati, Ohio. Artificial refrigeration	379,264	Mar. 13	577	160	42	1080
Andrews, Albert F., Avon, Conn. Friction-primer for blasting	379,147	Mar. 6	411	116	42	1044
Andrews, Arthur. (See Kitchingman, Edwin L., assignor.)						
Andrews, Benjamin F., Myers, Mo. Mechanical movement	379,499	Mar. 13	931	250, 251	42	1149
Andrews, Clayton C., assignor to American Ring Company, Waterbury, Conn. Manufacture of sheet-metal knobs	376,502	Jan. 17	1104	289	42	226
Andrus Manufacturing Company. (See Rosentreter, Frank L., assignor.)						
Angell, Charles E., Salt Lake City, Utah Ter. Gate-latch	377,543	Feb. 7	293	74	42	551
Angell, Edwin E., Boston, Mass., assignor to Addax Basting Machine Company, Portland, Me. Sewing-machine	378,075	Feb. 21	1097	287, 288	42	729
Angus, Albirtis, St. Johnsville, N. Y. Thill-support	377,922	Feb. 14	880	225	42	678
Angus, James, St. Catharines, Ontario, Canada. Combination-tool	376,058	Jan. 10	466	125	42	101
Aniello, John A., assignor of one-half to C. Olivan, Biloxi, Miss. Life-boat	376,935	Jan. 24	1763	463	42	359
Annable, William F., Salem, Mass. Fine-cleaner	379,091	Mar. 6	341	98	42	1030
Ansonia Brass and Copper Company *et al.* (See Lyman, Charles H., assignor.)						
Anspach, Frederick J. (See Meister, Charles, assignor.)						
Anthony & Company, E. & H. T. (See Lewis, William H., assignor.)						
Anthony, Edgar W., Brookline, Mass. Cooking stove or range	379,354	Mar. 13	706	192	42	1105
Anthony, Edwyn, London, county of Middlesex, England. Newspaper-selling apparatus	376,021	Jan. 3	410	108, 109	42	82
Anthony, John H., Garland, Tenn. Beading-cutter	378,159	Feb. 21	1029	323	42	752
Anthony, Solomon, Conemaugh, Pa. Railway-chair	379,148	Mar. 6	412	117	42	1044
Appel, Daniel, Cleveland, Ohio, assignor to Union Paper Bag Machine Company, Philadelphia, Pa. Paper bag	378,487	Feb. 28	1717	453, 454	42	855
Appert, Adrien. (See Appert, Léon and A.)						
Appert, Léon and A., Paris, France. Perforated glass	376,844	Jan. 24	1643	430	42	335
Appleby, Joseph, Britton, Dak. Ter., assignor of two-thirds to W. J. McMillen and W. S. Martin, Breckenridge, Minn. Snow-plow	380,076	Mar. 27	1824	485, 486	42	1338
Appleby, William L. G., Germantown, Md. Washing-machine	380,372	Mar. 27	2092	557	42	1391
Apsley, L. Dewart, *et al.* (See Harkins, Daniel, assignor.)						
Arbogast, James, Catawba, Ohio. Quilting-frame	376,914	Mar. 6	75	21	42	981
Archer, John B., Washington, D. C. Letter-box	379,302	Mar. 13	639	173, 174	42	1092
Armington, Pardon, Providence, R. I. Cut-off piston-valve	378,642	Feb. 28	1934	513	42	898
Armington, Pardon, Providence, R. I. Steam-engine	378,643	Feb. 28	1935	514	42	898
Armitage, David M., assignor of one-tenth to D. F. Griswold, Deerfield, Mich. Expansion-joint and rail-coupling	376,845	Jan. 24	1644	430, 431	42	336
Armstrong, Edwin J., assignor to Weston Engine Company, Painted Post, N. Y. Balanced slide-valve	377,221	Jan. 31	2168	572	42	446
Armstrong, Frederick. (See Lewis and Armstrong.)						
Armstrong, James, Bridgewater, N. Y. Pipe-coupling	376,130	Jan. 10	578	154	42	121
Armstrong, Mitchell & Co., W. G. (See Brankston, Ralph T., assignor.)						
Armstrong, Mitchell & Co., W. G. (See Murray, Charles H., assignor.)						
Armstrong, Mitchell & Co., W. G. (See Noble, Andrew, assignor.)						
Arnett, William D., Denver, Colo. Seeding-machine	377,222	Jan. 31	2169	572	42	447
Arnett, William D., Denver, Colo. Seeding-machine	377,923	Feb. 14	880	225	42	678
Arnold, Anna M. (See Arnold, Satterlee, assignor.)						
Arnold, Benjamin, East Greenwich, R. I. Oil-distributing bomb or case	376,503	Jan. 17	1105	289, 290	42	226
Arnold, Craig R., Brooklyn, N. Y. Car-lighting	376,423	Jan. 17	989	259	42	205
Arnold, Henry F., Manchester, Iowa. Blotter-bath	378,641	Feb. 28	1932	513	42	898
Arnold, Henry L., Denver, Colo. Car-coupling	378,228	Feb. 21	1340	354	42	774
Arnold, Horace L., Brooklyn, assignor of one-half to R. W. Smith, New York, N. Y. Means for converting motion	377,133	Jan. 31	2045	535, 536	42	422
Arnold, Satterlee, New York, N. Y. Apparatus for guiding, straightening, and evening fabrics	378,922	Feb. 28	2208	588, 589	42	949
Arnold, Satterlee, New York, N. Y. Device for transmitting and evening fabrics for sewing-machines	378,923	Feb. 28	2212	589	42	950
Arnold, Satterlee, assignor to A. M. Arnold, New York, N. Y. Uniting fabrics by sewing	378,644	Feb. 28	1937	514	42	899
Arnold, Satterlee, assignor to A. M. Arnold, New York, N. Y. Sewing-machine	378,645	Feb. 28	1938	514, 515, 516	42	899
Arntz, Adolph. (See Panyard, Joseph, assignor.)						
Art Novelty Company. (See Fry, Benjamin, assignor.)						
Asbury, Thomas P., Tingley, Iowa. Weather-strip	376,846	Jan. 24	1646	431	42	336
Ashcraft, Hugh E. (See Staples and Ashcraft.)						
Ashley, Lucius E., assignor of one-half to A. Clark, Stockton, Cal. Ditching and grading scraper	376,022	Jan. 3	414	109, 110	42	82
Askren, Patten M., Circleville, Kans. Flexible pipe-coupling	379,028	Mar. 20	1128	299	42	1193
Atchison, Garret P., Chicago, Ill. Combined harrow and pulverizer	377,223	Jan. 31	2170	573	42	447
Aten, Aaron P. (See King, Aten, and Floyd.)						
Aten, Frank L., Round Rock, Tex. Corn-planting attachment	379,554	Mar. 20	1012	271	42	1173
Atherton, Frank, and M. T. Bentley, Paterson, N. J. Hose coupling	378,566	Feb. 28	1832	483	42	877
Athlophoros Company. (See Searles, Robert N., assignor.)						
Atkins, Sullivan H., Lynn, Mass. Thill-coupling	378,860	Mar. 6	2	1	42	967
Atkinson, Andrew J., Aster, assignor of two-thirds to H. W. Fairbanks and J. T. Stocks, Atlanta, Ga. Railway-switch	376,465	Jan. 17	1050	275	42	216
Atlantic Ammunition Company. (See Brittin, John W., assignor.)						
Atterbury, T. B. (See Thomas, William D., assignor.)						
Atwater, Charles. (See Stiner and Darling, assignors.)						
Atwater, Henry W., East Orange, N. J. Wrench	376,504	Jan. 17	1106	290	42	227
Atwood, Benjamin S., South Abington, Mass. Hinge	378,861	Mar. 6	3	1	42	967
Atwood, Eugene, *et al.* (See Bradley, Edward E., assignor.)						
Atwood, John E., *et al.* (See Bradley, Edward E., assignor.)						
Atwood, John E., Stonington, Conn. Stop mechanism for reeling-machines	376,571	Jan. 17	1191	315, 316	42	243

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Atwood, John H., *et al.* (See Winnek, Frederick G., assignor.)						
August, Anthony J. (See Vannatter and August.)						
Ankamp, Henry A., Jr. (See Beard and Ankamp.)						
Austen, Joseph H., *et al.* (See Leahy, Edward C., assignor.)						
Austin, Daniel W., *et al.* (See Beedy, Seth E., assignor.)						
Austin, Martha E., New Orleans, La. Salve	379,500	Mar. 13	932	.....	42	1149
Austin, Robert A., Sandusky, Ohio, assignor to W. P. Miller Company, Brooklyn, N. Y. Loose-pulley lubricator	376,466	Jan. 17	1051	275	42	216
Auth, Conrad. (See Auth, John V., assignor.)						
Auth, John V., assignor of one-half to C. Auth, Pittsburg, Pa. Window-glass setting	377,474	Feb. 7	191	45	42	532
Avey, William H., Columbus, Ky. Channel-cutter	379,192	Mar. 6	467	132	42	1055
Axtell, Joseph D., Santa Barbara, Cal. Sash fastener and holder combined	378,351	Feb. 21	1518	397	42	897
Ayer, Frank H. (See Mills, Guy C., assignor.)						
Aylworth, George H., Brighton, Ill. Sash-fastener	376,359	Jan. 10	894	234	42	180
Ayrton, William, *et al.* (See Wallwork, Roughsedge, assignor.)						
Babbitt, Benjamin T. (See Hermann, Henry, assignor.)						
Babbitt, Seward S., Uniontown, Pa., assignor, by mesne assignments, to J. B. Skinner, Chicago, Ill. Method of and machine for making nut-blanks	376,224	Jan. 10	708	188 / 189	42	146
Babcock, Charles, assignor of one-fourth to J. M. Foster, Troy, N. Y. Potato-digger	378,646	Feb. 28	1942	516	42	900
Babcock, E. Stillman, assignor of one-half to P. M. Green, Milton, Wis. Compound metal-working machine	377,976	Feb. 14	960	250	42	695
Babcock, Sylvester P., Adrian, Mich., Cuff-holder	378,862	Mar. 6	4	1	42	967
Bache, R. Meade, Philadelphia, Pa. Safety self-extinguishing car-stove	376,275	Jan. 10	777	206	42	159
Bacon, Earle C., New York, N. Y. Wire-rope tramway	380,011	Mar. 27	1727	463	42	1320
Bacon, John H., Homer, N. Y. Hose-reel	376,572	Jan. 17	1195	316	42	244
Bacon, Levi S., Washington, D. C., assignor to Eagle Pencil Company, New York, N. Y. Rubber-tip attachment for pencils	379,844	Mar. 20	1464	387	42	1259
Badger, Frank O., Brooklyn, N. Y. Spring bed-bottom	377,419	Feb. 7	113	24	42	516
Badische Anilin and Soda Fabrik. (See Bohn, René, assignor.)						
Badische Anilin and Soda Fabrik. (See Ceresole, Maurice, assignor.)						
Bagaley, Ralph, Pittsburg, Pa. Machine for truing car-wheels	377,224	Jan. 31	2172	573	42	447
Bagaley, Ralph, and W. Hainsworth, Pittsburg, Pa. Machine for rolling car-wheels	379,754	Mar. 20	1307	349	42	1230
Bagley, Frank A., assignor to himself and T. McCulla, Cherokee, Iowa. Feed-gage for platen printing-machines	380,240	Mar. 27	2045	546	42	1383
Bagley & Sewall Company. (See Campbell, Charles H., assignor.)						
Bahr, John F., Jersey City, N. J. Telephone-transmitter	377,475	Feb. 7	191	45	42	532
Baier, Adolph G. (See Schuman and Baier.)						
Bailey, Charles G. (See Butcher and Bailey.)						
Bailey, Chester, Janesville, Wis. Tension device for the warp-beam of looms	378,567	Feb. 28	1833	483	42	857
Bailey, Francis P., Indianapolis, Ind. Hinge	375,792	Jan. 3	95	28	42	23
Bailey, Fred. C., Rib Lake, Wis. Car-coupling	376,131	Jan. 10	578	154 / 155	42	121
Bailey, Henry C., *et al.* (See Fee, William R., assignor.)						
Bailey, Howard S. (See Valentine and Bailey.)						
Bailey, Howard S., Denver, Colo. Vehicle-wheel	380,012	Mar. 27	1728	464	42	1320
Bailey, Joseph R., Brooklyn, N. Y. Chisel	376,276	Jan. 10	779	207	42	159
Bailey, Joseph R., Brooklyn, N. Y. Drawing-knife	376,277	Jan. 10	780	207	42	160
Bailey, Leonard, Hartford, Conn. Printing-ink	375,720	Jan. 3	1	.....	42	3
Bailey, Samuel R., Amesbury, Mass. Sleigh	379,303	Mar. 13	610	174	42	1032
Bailey, Theodore P., *et al.* (See Martin, John F., assignor.)						
Bailey, Wilber N., Bay City, Mich. Trace-fastening	380,160	Mar. 27	1934	516	42	1360
Bain, Robert E. M., assignor of one-half to G. Stannton, St. Louis, Mo. Vise	376,623	Jan. 17	1288	330	42	261
Baird, William J., assignor of one-half to C. H. Kay, Springfield, Ohio. Coasting-sled	375,914	Jan. 3	249	68	42	52
Baker, Charles W., Waverley, Mich. Hay-binder	379,555	Mar. 20	1013	271	42	1173
Baker, D. A., *et al.* (See Russell, Horace, assignor.)						
Baker, David, Freeport, Pa. Car-coupling	376,700	Jan. 17	1408	370	42	283
Baker, Edward E., Morgantown, W. Va., assignor to Globe Company, Cincinnati, Ohio. File-box	378,062	Feb. 14	1075	292	42	717
Baker, George C., Des Moines, Iowa. Railway-track	376,132	Jan. 10	580	155	42	122
Baker, John H., Anrellus, N. Y. Nail-holding attachment for hammers	378,946	Mar. 6	121	35	42	900
Baker, Stewart E., Binghamton, N. Y. Paper box or pail	377,977	Feb. 14	962	251	42	695
Baldrige, George W., St. Louis, Mo. Type-writing machine	376,624	Jan. 17	1289	339	42	262
Baldwin, Aaron P., and T. L. Sedgwick, assignors to Akron Iron Company, Akron, Ohio. Machine for straightening and polishing metallic shafting	378,063	Feb. 14	1076	282 / 283	42	717
Baldwin, John M. (See Edwards, George W., assignor.)						
Baldwin, Joseph F., Cambridge, Mass. Caterer's vehicle	377,594	Feb. 7	360	92, 93	42	564
Baldwin, Judson A., Winooski, assignor to Queen Ann Screen Company, Burlington, Vt. Window-screen	378,997	Mar. 6	204	55	42	1005
Baldwin, M. S., *et al.* (See Slagle, Oliver, assignor.)						
Baldwin, Myron T., La Grange, Ill. Air-heating device	379,755	Mar. 20	1309	349	42	1230
Baldwin, William A., Chicago, Ill., assignor of one-fourth to A. A. Thomas, J. C. Smith, and J. J. Sheehy, Washington, D. C. Combining metals with aluminum	378,978	Feb. 21	1413	.....	42	786
Baldwin, William A., Chicago, Ill., assignor of one-fourth to A. A. Thomas, J. C. Smith, and J. J. Sheehy, Washington, D. C. Treatment of metals	379,438	Mar. 13	833	.....	42	1131
Baldwin, William A., Chicago, Ill., assignor of one-fourth to J. C. Smith, J. J. Sheehy, and A. A. Thomas, Washington, D. C. Bath for extracting aluminum and alloying it with other metals	380,161	Mar. 27	1935	.....	42	1361
Bales, Alanson H., Washington, Kans. Draft-equalizer	377,958	Feb. 14	963	251	42	696
Ball, Calvin S., Syracuse, N. Y. Eyeglass-holder	376,847	Jan. 24	1647	431	42	376
Ball, Edward M., North Coaticook, Quebec, Canada. Wire clothes-pin	380,013	Mar. 27	1731	465	42	1321
Ball, Jacob. (See Kelley and Ball.)						
Ball, Thomas H., *et al.* (See Gardner, Marshall, assignor.)						
Ballard, Henry C., Red Oak, Iowa. Steam cooking apparatus	378,947	Mar. 6	122	35	42	900
Ballew, Richard J., assignor of one-third to S. Stevens and J. W. Hall, Magalia, Cal. Pawl-and-ratchet mechanism	376,467	Jan. 17	1052	275	42	216
Ballman, William, assignor of one-half to J. T. Kiehner, Philadelphia, Pa. Car-ventilator	375,721	Jan. 3	1	1	42	3
Balston, Oscar F., Brooklyn, N. Y. Draw-bridge	376,225	Jan. 10	713	189 / 190	42	146
Baltzley, Edwin, Philadelphia, Pa. Combined ruler, blotter, and paper-cutter	375,722	Jan. 3	2	1	42	3
Baltzley, Edwin, Philadelphia, Pa. Grater	378,127	Feb. 21	1171	305	42	743
Baltzley, Edwin, Philadelphia, Pa. Culinary beater	378,863	Mar. 6	4	2	42	968
Bancroft, Frederick L., St. Paul, Minn. Calculating-machine	377,823	Feb. 14	740	187	42	650
Bancroft, William, assignor of one-half to Hopedale Machine Company, Hopedale, Mass. Warping-machine	377,659	Feb. 7	468	119	42	583
Bangs, Elmer, Cortland, N. Y. Coffin	378,076	Feb. 21	1100	288	42	730

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Banks, Ann E., Bland Court-House, Va. Liniment	377,979	Feb. 14	964	.....	42	696
Banks, Daniel B., and G. K. Hutchins, Baltimore, Md. Supporting-arm for electric lights	375,977	Jan. 3	344	92	42	70
Banks, Lyman, Muscatine, Iowa. Paper-file holder	379,846	Mar. 20	1466	387	42	1250
Banning, Joseph O., Plainville, Conn., assignor, by mesne assignments, to Eddison Fire Extinguisher Company, Philadelphia, Pa. Fire-extinguisher	379,756	Mar. 20	1311	350	42	1230
Barber, Amos P., assignor of one-half to W. G. Rathbun, Rahway, N. J. Throw-off mechanism for job-printing presses	376,059	Jan. 10	467	125	42	101
Barcus, William W. (See Braund, John T., assignor.)						
Bardonner, Philipp. (See Riser and Bardonner.)						
Bardsley, Adam. (See McNaughton and Bardsley.)						
Bardsley, James, Terre Haute, Ind. Rivet-holding device	379,204	Mar. 13	501	141	42	1067
Bardsley, William. (See Crofford, Warren K., assignor.)						
Bareis, Karl G., McFarland, Wis. Band cutter and feeder	379,355	Mar. 13	707	192	42	1106
Barfield, Columbus R., Valdosta, Ga. Adjustable plow-bar	376,226	Jan. 10	714	190	42	147
Barger, William H., Barger's Springs, W. Va. Device for feeding salt to live stock	376,360	Jan. 10	895	235	42	180
Barker, Albert A., and W. Bennett, Worcester, Mass. Door-hanger	379,205	Mar. 13	502	141 / 142	42	1067
Barker, Amos, Spencer, Ind. Seed-planter	378,077	Feb. 21	1101	288	42	730
Barker, William C., Watkins, N. Y. Fire-escape	376,505	Jan. 17	1107	290	42	227
Barley, James H., Sedalia, Mo. Harrow. (Reissue)	10,913	Mar. 27	2126	569	42	1400
Barlow, Joseph C., Quincy, Ill. Corn-planter	378,279	Feb. 21	1414	369 / 370	42	786
Barnard, George, assignor to A. G. Spalding & Brothers, Chicago, Ill. Base-ball mask	376,278	Jan. 10	781	207	42	160
Barnard, Heman A., assignor to Barnard & Leas Manufacturing Company, Moline, Ill. Roller-mill	376,023	Jan. 3	415	110	42	83
Barnard, Heman A., assignor to Barnard & Leas Manufacturing Company, Moline, Ill. Feed-regulator	379,193	Mar. 6	468	132 / 133	42	1055
Barnard & Leas Manufacturing Company. (See Barnard, Heman A., assignor.)						
Barnes, Benjamin F., assignor to W. F. & John Barnes Company, Rockford, Ill. Feed device for drilling-machines	379,194	Mar. 6	470	133	42	1056
Barnes Company, W. F. & John. (See Barnes, Benjamin F., assignor.)						
Barnes, Nelson C., Mullinville, Kans. Sulky attachment for plows	376,176	Jan. 10	643	172	42	134
Barnes, William A., Bridgeport, Conn. Conductor for electrical fire-alarm systems	378,078	Feb. 21	1101	288	42	730
Barnes, William A., Bridgeport, Conn. Fire and burglar alarm system	380,241	Mar. 27	2046	547	42	1384
Barnesley, Nelson, Ezron, Mo. Churn	376,625	Jan. 17	1291	340	42	262
Barnett, William. (See Frisbie, Henry R., assignor.)						
Barney, Everett H., Springfield, Mass. Skate-fastening	377,734	Feb. 14	579	149	42	619
Barney, Everett H., Springfield, Mass. Skate	378,424	Feb. 28	1621	426	42	834
Barney, Everett H., Springfield, Mass. Skate-runner blank	378,488	Feb. 28	1718	454	42	855
Barney, R. Lester. (See Barney, Valentine G. and R. L.)						
Barney, Valentine G., Charles City, Iowa. Stone-sawing machine	377,660	Feb. 7	469	120	42	583
Barney, Valentine G., Charles City, Iowa, and R. L. Barney, Swanton, Vt. Stone-sawing machine	377,595	Feb. 7	362	93	42	564
Barns, Hosea, Kenosha, Wis. Extension-ladder	376,794	Jan. 24	1563	410	42	322
Barnum, Ashbell, Green Island, N. Y. Folding center-board	377,134	Jan. 31	2047	536	42	422
Barr, Orlando S. (See Canney, Walter S., assignor.)						
Barr, Samuel, McCausland, Iowa. Pump-rod attachment	377,225	Jan. 31	2173	573	42	447
Barr, Samuel, McCausland, Iowa. Plow	377,226	Jan. 31	2174	574	42	448
Barraclough, Robert W. S., Herne Hill, county of Surrey, England. Suspension-hook	375,978	Jan. 3	346	93	42	70
Barrath, Edward, assignor to V. E. Knecht, Cincinnati, Ohio. Manufacturing coal-hods	377,705	Feb. 7	533	136 / 137	42	595
Barrath, Edward, assignor to V. E. Knecht, Cincinnati, Ohio. Die-press for forming coal-hods	378,754	Feb. 28	2091	551 / 552	42	926
Barrath, Edward, assignor to V. E. Knecht, Cincinnati, Ohio. Die for coal-hods	378,755	Feb. 28	2095	552	42	927
Barrett, Charles L., Allegan, Mich. Road-cart	375,979	Jan. 3	347	93	42	70
Barrett, John P., Chicago, Ill. Fire-alarm circuit	376,133	Jan. 10	580	155	42	122
Barrett, John P., and J. F. Mehren, Chicago, Ill. Electrical heater	375,915	Jan. 3	251	68	42	53
Barrie, Samuel S., Brooklyn, N. Y. Washing-machine	376,279	Jan. 10	782	207	42	160
Barrie, Samuel S., Brooklyn, N. Y. Band-pulley	380,077	Mar. 27	1926	486	42	1339
Barron, Walter J., New York, N. Y., assignor to A. Densmore, Meadville, Pa., and C. G. Patterson, New York, N. Y. Type-writing machine	376,701	Jan. 17	1409	370	42	283
Barrows, Frank L., Milwaukee, Wis. Metallic railway-tie and fastening therefor	378,280	Feb. 21	1417	370	42	787
Barrows, Frederick B., assignor to himself and D. B. Smith, Jr., Duluth, Minn. Coal-scoop	376,424	Jan. 17	991	250	42	205
Barth, Henry, and E. Lietze, said Lietze assignor to Cincinnati Type Foundry, Cincinnati, Ohio. Type casting and finishing machine	376,765	Jan. 24	1507	397 / 398 / 399	42	311
Barthel, Friedrich G., Niederpoyritz, near Dresden, assignor to P. A. Kühne, Dresden, Saxony, Germany. Self-acting motor and pump	378,998	Mar. 6	205	56	42	1005
Bartholomew, Thomas, Newark, Ohio. Combination printing-stamp	377,227	Jan. 31	2175	574	42	448
Bartlett, Fredrick M., Woodstock, Me. Steam-generator	377,228	Jan. 31	2177	574	42	448
Bartlett, William H. (See Marshall, Charles A., assignor.)						
Barton, Lafayette, Sherwood, Mich. Mold for earth fences	376,936	Jan. 24	1764	464	42	359
Bartram, Ferdinand S. (See Rutherford and Bartram.)						
Bartram, Ferdinand S., New York, N. Y. Fountain pen and holder	380,014	Mar. 27	1732	465	42	1321
Bartzen, Peter, Huron, Ohio. End-gate	378,352	Feb. 21	1519	397	42	808
Bascome, James W. (See Marshall, Charles G., assignor.)						
Baskerville, Harry, *et al.* (See Taylor, William H., assignor.)						
Bassett, Gershom C., *et al.* (See Hallowell, Albert, assignor.)						
Bassett, Norman C., Chicago, Ill., assignor to Hydraulic Elevator Company. Operating mechanism for hydraulic elevators	377,346	Jan. 31	2358	682	42	480
Bassett, Norman C., Chicago, Ill., assignor to Hydraulic Elevator Company, of Illinois. Elevator	379,556	Mar. 20	1014	271 / 272	42	1173
Bassini, Charles, Newark, N. J. Stove for railway-cars	377,057	Jan. 31	1902	507	42	389
Bate, Henry A., Ottawa, Ontario, Canada. Combination order-book	376,506	Jan. 17	1108	290	42	227
Bateman, Commodore P., Exira, Iowa. Wagon-brake block	376,404	Jan. 10	949	249	42	190
Bateman, E. S., *et al.* (See Bateman, Frank, assignor.)						
Bateman, Frank, assignor to E. S. Bateman and E. C. Nilson, Spring Mills, N. J. Combined harrow and cultivator	377,980	Feb. 14	964	251	42	696
Bates, T. C. (See Laflin, Perley, assignor.)						
Bates, Theodore C. (See Laflin, Perley, assignor.)						
Batham, Charles F., New Chillicothe, Kans. Antomatic regulating device for windmills	379,847	Mar. 20	1467	387 / 388	42	1260
Batt, John B., Williamsville, assignor of two-thirds to L. Gebhard, Buffalo, N. Y. Safety-switch	376,177	Jan. 10	645	172	42	135
Batten, John, Pittsburg, Pa. Fire-escape	377,058	Jan. 31	1934	508	42	400

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Battershall, Joseph W., Attleborough, Mass. Inhaler for chloroform, &c	379,042	Mar. 6	266	77	42	1016
Batty, Lindley M., Canton, Ohio. Means for securing pulleys to shafts	377,061	Feb. 7	471	120	42	584
Bauder, Silas E., Sandusky, Ohio. Device for grooming animals	377,420	Feb. 7	115	24	42	516
Bauer, Alexander H., Boston, Mass. Apparatus for the propulsion of cars by electrical energy	378,864	Mar. 6	6	2	42	968
Bauer, Fredrick C., Philadelphia, Pa. Soap compound	377,135	Jan. 31	2049	.....	42	422
Baum, Charles, Washington, D. C. Cabinet show-case	375,980	Jan. 3	348	90	42	71
Baumann, Robert, St. Louis, Mo. Combination-lock and alarm	378,568	Feb. 28	1834	484	42	577
Baumeister, Leopold, Bridgeport, Conn. Machine for polishing wire	380,162	Mar. 27	1935	516	42	1361
Baville, Edmond P., Brussels, Belgium, assignor, by mesne assignments, to S. Nicholson and S. Waterman, Providence, R. I. Lathe-chuck	377,596	Feb. 7	364	93	42	565
Bayer, George, New York, N. Y. Manufacture of hinges	376,702	Jan. 17	1410	370	42	284
Bayley, William. (See Whiteley and Bayley.)						
Baynes, John, Westchester County, N. Y. Printing-transfer process	378,419	Feb. 28	1614	425	42	833
Baynes, John, Westchester County, N. Y. Decorating metal	378,420	Feb. 28	1616	425	42	833
Baynes, John, Westchester County, N. Y. Ornamenting metal	378,421	Feb. 28	1617	425	42	833
Baynes, John, Westchester County, N. Y. Decorating metallic surfaces	378,422	Feb. 28	1618	426	42	833
Baynes, John, Westchester County, N. Y. Etching on one or both sides	378,423	Feb. 28	1619	426	42	834
Baynes, John, Westchester County, N. Y. Apparatus for decorating metals	379,062	Mar. 6	342	98	42	1030
Bazill, Joseph F., St. Paris, Ohio. Fence	378,425	Feb. 28	1622	426 / 427	42	834
Beach, George I. (See Benedict, Heman A., assignor.)						
Beale, Alfred G., assignor of one-half to W. Mackenzie, Dublin, county of Dublin, Ireland. Corn-planter	377,059	Jan. 31	1936	508 / 509	42	400
Beale, Joseph H. (See Murdock, Adna C., assignor.)						
Beall, Sylvester W., Columbus, Ohio. Vaginal syringe	376,727	Jan. 24	1449	381	42	301
Beals, Augustus, North Weymouth, Mass. Hammock-spreader	375,793	Jan. 3	96	28	42	23
Beals, Ebenezer, assignor to J. M. Guernsey, Norwich, N. Y. Locomotive-brake. (Reissue)	10,894	Jan. 17	1445	380	42	292
Bean, Edward D., Boston, Mass., assignor to Cyclist's and Sportsman's Gun and Rifle Company, Kittery, Me. Cane-gun. (Reissue)	10,910	Mar. 20	1587	418	42	1283
Beard, Eli F., Republic, Ohio. Churn	379,848	Mar. 20	1470	388	42	1260
Beard, Francis L., Pleasant Ridge, Kans. Bob-sled	376,227	Jan. 10	715	190	42	147
Beard, Sylvanus W. (See Booth and Beard.)						
Beard, William K., Lancaster, and J. M. Raymond, Florin, Pa. Signal-lantern	376,573	Jan. 17	1196	316	42	244
Beard, William K., and H. A. Ankamp, Jr., Lancaster, Pa. Compensator	377,476	Feb. 7	193	46	42	533
Beardslee, James C. (See Hopkins, Coventry, Neymann, and Beardslee.)						
Beardsley, Charles M., Cleveland, Ohio. Blotter-bath	375,794	Jan. 3	97	29	42	23
Beardsley, Melvin W. (See Pearce and Beardsley.)						
Beardsley, William L., *et al.* (See Hughes, Thomas, assignor.)						
Beasley, William F., Oxford, N. C. Sheet-metal seal	377,662	Feb. 7	472	120	42	584
Beatley, Henry G., Ithaca, N. Y. Apparatus for treating pipes and similar materials	377,597	Feb. 7	365	94	42	565
Beatley, Henry G., Ithaca, N. Y. Apparatus for treating metal pipes	378,756	Feb. 28	2096	552 / 553	42	927
Beattie Battery Zinc and Electrical Company. (See Beattie, John, Jr., assignor.)						
Beattie, John, Jr., assignor to Beattie Battery Zinc and Electrical Company, Fall River, Mass. Battery-zinc	376,228	Jan. 10	716	191	42	147
Beatty, Dempster, assignor to Beatty Felting Company, Mishawaka, Ind. Making combined knit and cloth boots	380,163	Mar. 27	1938	517	42	1361
Beatty Felting Company. (See Beatty, Dempster, assignor.)						
Beatty, Robert P., Norwalk, Conn. Inkstand	379,093	Mar. 6	344	98	42	1030
Beauchamp, William A. J., Orange, Tex. Automatic damper	377,136	Jan. 31	2049	536 / 537	42	422
Beaumont, William W., Herne Hill, county of Surrey, England. Apparatus for varying the velocities of rotating mechanism	377,598	Feb. 7	368	95	42	566
Beavers, Jeremiah V., Mount Summit, Ind. Line-holder	377,367	Feb. 7	2	1	42	495
Becher, James A., Mishawaka, Ind. Bolt-threading machine	377,981	Feb. 14	965	251	42	696
Bechman, Henry F., assignor to Schniedwend & Lee Company, Chicago, Ill. Gripper for platen printing-machines	378,160	Feb. 21	1229	323	42	758
Beck, August, Chicago, Ill. Shuttle-driver for quilting-machines	376,280	Jan. 10	783	208	42	160
Beck, August, Chicago, Ill. Quilting-machine	378,915	Mar. 6	76	22, 23	42	981
Becker, William, Brooklyn, N. Y. Snapper attachment for whips	377,137	Jan. 31	2050	537	42	422
Beckett, Albert W., St. Catharines, Ontario, Canada. Basket-bottom	378,757	Feb. 28	2099	553	42	927
Beckett, Thomas, Jersey City, N. J. Binding blank-books	377,880	Feb. 14	820	209	42	665
Beckwith, Capitola P. (See Beckwith, Nelson, Jr., assignor.)						
Beckwith, Nelson, Jr., assignor, by mesne assignments, to C. P. Beckwith, Cambridge, Mass. Packing-case fastening	377,477	Feb. 7	194	46	42	533
Bedell, William H., Sayville, N. Y. Traction-truck	376,703	Jan. 17	1411	370	42	284
Bedient, J. Russell. (See Buddington and Bedient.)						
Beebe, Charles S., Racine, Wis. Whip-socket	380,164	Mar. 27	1939	517	42	1361
Beecher, Edwin N., assignor of one-half to H. H. Newell, Marion, Conn. Nut-tapping machine	377,286	Jan. 31	2267	599 / 600	42	464
Beecher, Harry W., *et al.* (See Hunter, Arvine P., assignor.)						
Beecher, William F., Cleveland, Ohio. Coal-stove	379,629	Mar. 20	1729	399	42	1104
Beedle, Augustus D., Kansas City, Mo. Vehicle-awning	379,356	Mar. 13	710	193	42	1106
Beedy, Seth E., assignor of one-fourth to D. W. Austin and J. J. Linscott, Farmington, Me. Telephonic transmitter	376,060	Jan. 10	469	126	42	101
Beer, Enoch H. (See Litchfield, Homer, assignor.)						
Beers, James M., Brooklyn, N. Y. Manufacturing books	376,848	Jan. 24	1648	431	42	337
Beers, Philo M., Bridgeport, Conn. Needle-grooving machine	378,489	Feb. 28	1719	454 / 455	42	855
Beeson, William, Dillon, Mont. Ter. Flying-machine	376,937	Jan. 24	1765	464	42	360
Behlen, Charles A. (See Behlen, Jacob J. and C. A.)						
Behlen, Charles A., Cincinnati, Ohio. Buggy-top	375,861	Jan. 3	175	49	42	39
Behlen, Charles A., Cincinnati, Ohio. Running-gear for vehicles	380,078	Mar. 27	1827	486	42	1339
Behlen, Jacob J. and C. A., Cincinnati, Ohio. Buggy-boot	379,043	Mar. 6	268	77	42	1016
Behr, Hermann, assignor of one-half to F. Friedgen, Philadelphia, Pa. Monocycle	379,849	Mar. 20	1471	388 / 389	42	1260
Beisel, Franklin P., assignor of one-half to G. Knapp and C. Saybold, Pottstown, Pa. Washing-machine	379,357	Mar. 13	711	193	42	1106
Belcher, John B., Charlotte, Mich. Land-roller	378,916	Mar. 6	80	23	42	982
Belfield, Henry, *et al.* (See Goedring, John R., assignor.)						
Belfield, T. Broom, *et al.* (See Goehring, John R., assignor.)						
Belknap, Ethelbert. (See Hogel and Browne, assignors.)						
Bell, Carl, Cincinnati, Ohio. Automatic bobbin-winder	377,421	Feb. 7	116	24	42	516

Alphabetical list of inventions, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Bell, Jacob, Parsons, assignor of one-half to W. B. Posten, Wilkes-Barré, Pa. Handle for tools	379,439	Mar. 13	833	225	42	1131
Bell, Newton, M. (See Henderson, Hugh C., assignor.)						
Bell, William. (See Hersey and Conley, assignors.)						
Belton, John D., assignor of one-half to G. A. Lanaux, New Orleans, La. Rice-hulling machine	376,626	Jan. 17	1292	340	42	262
Bement, William O., Worcester, Mass. Metallic mat or floor-covering	377,478	Feb. 7	195	46	42	533
Bement, William O., assignor to Wire Goods Company, Worcester, Mass. Curtain-pole bracket	375,981	Jan. 3	349	94	42	71
Bender, Jacob F., Columbia, assignor of one-half to Potts & Weber, Lancaster, Pa. Intermittent grip for fan-blowers or other machines	376,361	Jan. 10	896	235	42	180
Benedict, Heman A., assignor of one-fourth to G. I. Beach, Syracuse, N. Y. Inside blind	375,992	Jan. 3	351	94	42	71
Benfield, Thomas, Newark, N. J. Bicycle-step	379,557	Mar. 20	1017	272	42	1174
Benjamin, George H. (See Wilder and Benjamin.)						
Benjamin, George H., New York, N. Y. Pipe-coupling	376,061	Jan. 10	470	126	42	101
Benjamin, George H., New York, N. Y., assignor to Consolidated Coupling Company, of New Jersey. Spring car-bumper	379,528	Mar. 13	968	261	42	1156
Benjamin, George W. (See Ware and Benjamin.)						
Bennett, Andrew J. (See Westaway, Walter C., assignor.)						
Bennett, Arthur W., and J. M. Millen, Fontanelle, Iowa. Railway-signal	380,165	Mar. 27	1940	517 / 518	42	1361
Bennett, Emmett G., *et al.* (See Dennis, Andrew J., assignor.)						
Bennett, Frank E., Philadelphia, Pa. Bustle	379,928	Mar. 27	1604	425	42	1296
Bennett, Martin, Eureka, Cal. Handle for crosscut-saws	375,916	Jan. 3	252	69	42	53
Bennett, Orson W., Washington, D. C. Pressure-regulator for gas-machines	380,273	Mar. 27	2083	558	42	1391
Bennett, Orson W., assignor, by mesne assignments, to Standard Gas Machine and Portable Gas Lamp Company, Washington, D. C. Carbureting-lamp	378,647	Feb. 28	1943	516 / 517	42	900
Bennett, Robert. (See Kindl, Fred H., assignor.)						
Bennett, Whitfield. (See Barker and Bennett.)						
Bennett, William H., Peru, Ind. Saw-mill dog	379,440	Mar. 13	834	225	42	1131
Benninghaus, Chauncey M. (See Robbins, Henry R., Jr., assignor.)						
Benninghaus, Chauncey M., Baltimore, Md. Indicator for hotels	380,166	Mar. 27	1942	518	42	1362
Bensinger, Moses, *et al.* (See Carney, Thomas, assignor.)						
Bent & Brothers, S. (See Pierce, William B., assignor.)						
Bentley, Edward M., New York, N. Y. Electric locomotive	377,229	Jan. 31	2179	575	42	448
Bentley, Edward M., New York, N. Y. Electric motor	377,230	Jan. 31	2179	575	42	449
Bentley, Manton T. (See Atherton and Bentley.)						
Bentley, William, Bishop's Crossing, Quebec, Canada. Derrick	377,544	Feb. 7	294	74, 75	42	551
Bergendahl, Lewis J., Pendleton, Oreg. Railway-track clearer or snow-plow	379,441	Mar. 13	835	225	42	1131
Bergener, Charles, assignor to C. T. Ham Manufacturing Company, Rochester, N. Y. Tubular lantern	378,648	Feb. 28	1946	517	42	900
Berger, Lewis, Bay City, Mich. Adjustable reclining-chair	377,011	Jan. 31	1872	493	42	388
Berger Manufacturing Company. (See Berger, Wilson C., assignor.)						
Berger, Wilson C., assignor to Berger Manufacturing Company, Canton, Ohio. Eaves-trough	376,574	Jan. 17	1197	316	42	244
Berghausen, August, Elberfeld, Germany, assignor to E. Imhauser, Brooklyn, N. Y. Pole-indicator for electric conductors	376,281	Jan. 10	785	208	42	160
Berglin, Halver, Minneapolis, Minn. Composition of metals	375,917	Jan. 3	254	.....	42	53
Bergmann & Company. (See Bergmann and Dempster, assignors.)						
Bergmann, Franz J., Neheim-on-the-Ruhr, Westphalia, Germany. Machine for making upholsterers' nails	378,894	Feb. 28	2214	589 / 590	42	950
Bergmann, Frederick H. D., St. Louis, Mo. Cable-grip	376,627	Jan. 17	1293	340	42	262
Bergmann, Sigmund, New York, N. Y., and J. T. Dempster, Summit, N. J., assignors to Bergmann & Company, New York, N. Y. Electrical switch	376,976	Jan. 24	1814	477	42	369
Bering, James E., assignor to Chambers, Bering, Quinlan Company, Decatur, Ill. Check-row corn-planter	379,850	Mar. 20	1475	389	42	1261
Berkey, Arista W. (See Pates, William S., assignor.)						
Berkey, Julius, and W. R. Fox, assignors to Furniture Caster Association, Grand Rapids, Mich. Furniture-caster	378,649	Feb. 28	1948	518	42	901
Bernauer, Albert. (See Heberling and Bernauer.)						
Berry, Jasper M., Jr., Baltimore, Md. Stub-holder	376,002	Jan. 10	472	126	42	102
Berry, Jasper M., Jr., Baltimore, Md. Stub-holder. (Reissue)	10,905	Mar. 6	493	138	42	1059
Berry, John H., Montreal, Quebec, Canada. Check-valve	378,917	Mar. 6	81	23	42	982
Berry, Louis M., Reading, Pa. Steam-injector	378,281	Feb. 21	1417	370	42	787
Berthold, V. Maximilian, Cambridge, assignor to American Bell Telephone Company, Boston, Mass. Telephone	375,862	Jan. 3	177	49, 50	42	39
Bertonneau, Louis L., New Orleans, La. Drawers	379,558	Mar. 20	1018	272	42	1174
Best, Martin L., Canton, Ohio. Street-lamp	378,965	Mar. 13	579	160	42	1061
Bestgen, John, Boston, Mass. Hair-clipper	377,138	Jan. 31	2051	537	42	423
Bettes, Sephora L., Washington, D. C. Ruling attachment for blackboards	377,663	Feb. 7	473	120	42	584
Betts, Charles L., Brooklyn, N. Y., assignor of one-half to Climax Manufacturing Company, Chicago, Ill. Car-lamp	378,865	Mar. 6	7	3	42	968
Betts, Lewis F., assignor to R. M. Betts, New York, N. Y. Tubular lantern	379,304	Mar. 13	641	174	42	1093
Betts, Lewis F., assignor, by mesne assignments, of one-half to R. E. Dietz Company, New York, N. Y. Reflector attachment for tubular lanterns	377,267	Jan. 31	2272	600	42	465
Betts, Robert J., Milton, Del., assignor of one-half to T. A. Connolly, Washington, D. C. Window-shade fixture	378,079	Feb. 21	1103	289	42	730
Betts, Rosa M. (See Betts, Lewis F., assignor.)						
Bevington, James H. (See Dillon and Bevington.)						
Beyerle, Joseph, Vallejo, assignor of one-half to W. F. Fountain, Oakland, Cal. Device for obtaining vertical lines	375,795	Jan. 3	98	29	42	23
Bichel, Christian E., Berlin, Germany. Manufacture of explosives	376,849	Jan. 24	1649	.....	42	337
Bick, Otto G., St. Paul, Minn., assignor to Northwestern Tin-Ware Manufacturing Company. Jacketed can	379,757	Mar. 20	1312	350	42	1231
Biddison, Jeremiah, Moscow, Idaho Ter. Washing-machine	377,510	Feb. 7	249	60	42	542
Bidelman, Robert M., assignor to Petroleum Light and Heat Company, Adrian, Mich. Carbureting air	377,735	Feb. 14	580	149	42	619
Bieber, Jacob, assignor of two-thirds to A. B. Bolton and C. W. Kast, Jackson, Mich. Hub-boring machine	376,063	Jan. 10	473	127 / 128	42	102
Bierbach, Albert G., Milwaukee, Wis. Cable-railway system for street-cars	378,918	Mar. 6	81	24	42	982
Biering, Edward J. (See Peetz and Biering.)						
Bigelow, David P., Earlville, Iowa. Nail-hammer	378,650	Feb. 28	1948	518	42	901
Bigeon, Charles, Cincinnati, Ohio. Bed-bottom	377,368	Feb. 7	2	1	42	495
Biggin, Mary, Bradway, county of Derby, assignor to S. H., H., and C. Morley, W. Donne, J. Thomas, F. Goodyear, and T. Hill, London, England. Glove	380,079	Mar. 27	1928	486 / 487	42	1339

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume.		Official Gazette.	
			Spec.	Dr'g.	Vol.	Page.
Billingham, Jethro. (See Covert and Billingham.)						
Billings, George W. W., Oshawa, Ontario, Canada. Seeding-machine	378,758	Feb. 28	2100	554	42	928
Billson, John T., North Shields, county of Northumberland, assignor to himself and W. Cooper, Newcastle-upon-Tyne, England. Device for carrying chipping-hammers or other tools	377,664	Feb. 7	474	121	42	584
Billups, Samuel R., assignor of one-half to C. H. White, Baltimore, Md. Can for molasses, &c.	376,064	Jan. 10	474	128	42	102
Bindeman, Herman A., Chicago, Ill., assignor to Union Wire Mattress Company, of Illinois. Wire-unwinding apparatus	377,422	Feb. 7	117	24, 25	42	517
Binder, John W. (See Wilson and Binder.)						
Bink, Anthony, Stockton, Cal. Spring-vehicle	376,425	Jan. 17	993	260	42	205
Binkley, Hiram D., Dundas, Ontario, Canada. Potato-digger	376,229	Jan. 10	717	191	42	147
Bioren, Frederick F., Newark, N. J. Cuff-button	376,292	Jan. 10	786	208	42	149
Birch, James T. (See Stambaugh, David F., assignor.)						
Birch, William, Lower Broughton, Manchester, county of Lancaster, England. Roller for washing and dyeing machines	379,442	Mar. 13	836	226	42	1132
Birge, George K., G. W. Shamp, Buffalo, and C. F. W. Lehmann, New York, N. Y.; said Shamp and Lehmann assignors to said Birge. Ronting-machine	376,134	Jan. 10	582	155, 156	42	122
Birkholz, Richard. (See Gray, Birkholz, and Reynolds.)						
Birmingham Iron Foundry. (See Corey, James L., assignor.)						
Bishop, George W., Minneapolis, Minn. Balance-spring for window or other slides	377,736	Feb. 14	581	150	42	630
Bishop, Joseph, Meriden, Conn. Steam-trap	376,850	Jan. 24	1650	432	42	337
Bishop, William, Brooklyn, N. Y. Pump water-closet	378,353	Feb. 21	1519	398	42	869
Bissell Carpet Sweeper Company. (See Drew, Walter J., assignor.)						
Bissell, Charles H., Chicago, Ill. Curling-iron	379,443	Mar. 13	837	226	42	1132
Bissell, Thomas A., Buffalo, N. Y. Head-rest for sleeping-cars	378,948	Mar. 6	123	36	42	990
Blugstad, Frederick O., Watson, Minn. Wire-stretcher	378,036	Feb. 14	1040	272	42	710
Black, Joseph P., assignor to Hapgood Plow Company, Alton, Ill. Cultivator	378,651	Feb. 28	1949	518	42	901
Blackburn, Albert B., assignor of one-half to J. E. Ehrenhart, Springfield, Ohio. Railway-signal	376,362	Jan. 10	898	235	42	141
Blackburn, Frederick, Palmyra, assignor, by mesne assignments, to himself, F. S. Hovey, Beverly, N. J., and T. Merrick, Holyoke, Mass. Straw-braid-sewing machine	380,167	Mar. 27	1943	518	42	1362
Blackwelder, Manly L., assignor of one-half to D. R. Hoover, Concord, N. C. Washing-machine	378,919	Mar. 6	83	24	42	982
Blaine, George E., Dayton, Ohio, and E. Hill, Cambridge City, Ind., assignors to M. Kemper, trustee, Dayton, Ohio. Railway cross-tie and sleeper	380,274	Mar. 27	2085	558	42	1391
Blair, Benjamin F. (See Fell and Blair.)						
Blair, George W., Pittsburg, Pa. Manufacture of lamp-chimneys	375,796	Jan. 3	99	29	42	23
Blake, Henry, Worcester, Mass. Mop-wringer	378,949	Mar. 6	124	36	42	991
Blake, Hiram, Keene, N. H. Book-holder	375,723	Jan. 3	3	1	42	3
Blakeman, John D., Smith's Grove, Ky. Trace-detacher	377,982	Feb. 14	967	252	42	690
Blakeney, George, assignor of one-half to C. H. Krippendorf, Cincinnati, Ohio. Moistening attachment for shoe-sewing machines	378,759	Feb. 28	2101	554	42	928
Blancard, Christian, New York, N. Y. Die for making cluster settings	376,507	Jan. 17	1109	291	42	227
Blancard, Christian, New York, N. Y. Die for making diamond-settings	376,508	Jan. 17	1110	291	42	227
Blasdale, John, Baltimore, Md., assignor to Richmond Locomotive and Machine Works, Richmond, Va. Locomotive	380,168	Mar. 27	1944	519	42	1363
Bleas, James F., Newark, N. J. Sad-iron with removable handle	379,044	Mar. 6	268	78	42	1016
Blessing, James H., Albany, N. Y. Making dry-sand cores	379,672	Mar. 20	1189	315	42	1206
Blessing, James H., Albany, N. Y. Water-purifying apparatus	379,673	Mar. 20	1190	315	42	1206
Bliss, Abel H., Chicago, Ill. Pulverizer	377,388	Jan. 31	2273	600, 601	42	465
Bliss, Edward N., and J. F. Middleton, Newark, N. J. Automatic electric photographing apparatus	378,496	Feb. 28	1624	427	42	834
Blits, Harry L., Philadelphia, Pa. Preserving fruits, &c.	378,999	Mar. 6	206	.....	42	1005
Bloeser, Rudolph, Scranton, Pa. Bottle-stopper	379,149	Mar. 6	413	117	42	1044
Bloomingdale, Joseph B., New York, N. Y. Gas key and lighter	375,918	Jan. 3	254	69	42	53
Blossom, George D., Fulton, N. Y. Stove or furnace	378,161	Feb. 21	1231	324	42	733
Blum, Gumby S., Jr., and J. A. Phillips, Baltimore, Md. Button	377,446	Feb. 7	148	33	42	521
Blume, William, Scranton, Pa. Fifth-wheel for vehicles	376,178	Jan. 10	845	172	42	135
Blumenkrohn, Adolph, New York, N. Y. Button	379,000	Mar. 6	207	56	42	1005
Blydenburgh, Charles M., Riverhead, N. Y. Vehicle-spring	380,169	Mar. 27	1946	519	42	1363
Blydenburgh, Charles M., Riverhead, N. Y. Vehicle-seat	380,170	Mar. 27	1947	519, 520	42	1363
Boehning, Andrew C. and W. F., Minneapolis, Minn. Dust and shavings collector	375,983	Jan. 3	352	94, 95	42	72
Boehning, William F. (See Boehning, Andrew C. and W. F.)						
Boeklen, Reinhold, Brooklyn, N. Y. Manufacturing water-gas	378,490	Feb. 28	1726	455	42	857
Boger, William P. (See Lightham, Joseph, assignor.)						
Boggs, Joseph O., assignor of one-fourth to W. A. Middleton and W. T. Cornman, Harrisburg, Pa. Measuring-vessel	377,369	Feb. 7	3	1	42	495
Bohannan, Wilson, Brooklyn, N. Y. Night-latch	377,963	Feb. 14	968	252	42	690
Bohler, John J., Westfield, Mass. Whip-lash attachment	375,964	Jan. 3	354	95	42	72
Bohn, René, Ludwigshafen-on-the-Rhine, Bavaria, assignor to Badische Anilin and Soda Fabrik, Mannheim, Germany. Dyeing animal textile fabrics with naphthazaria	379,150	Mar. 6	414	.....	42	1044
Bokenkotter, John S., Norwood, Ohio. Track-brake for cars	376,363	Jan. 10	899	236	42	141
Boland, John, assignor of two-thirds to W. B. and J. M. Deck, Raymond, Ill. Barrel-roller	379,851	Mar. 20	1477	390	42	1261
Boldt, Friedrich W. A., assignor to Boldt & Vogel, Hamburg, Germany. Machine for branding corks, &c.	377,665	Feb. 7	475	121, 122	42	585
Boldt & Vogel. (See Boldt, Friedrich W. A., assignor.)						
Boles, Warren H., Syracuse, N. Y. Burnisher	378,760	Feb. 28	2102	554, 555	42	928
Bolick, Jerome, Conover, N. C. Wheel	376,938	Jan. 24	1766	464	42	360
Boller, George C. (See Waldron and Boller.)						
Bolmer, Thomas H., New York, N. Y. Utilizing gaseous explosions as a motive force	379,674	Mar. 20	1192	316	42	1206
Bolt, Joseph, assignor to himself and J. T. Delbert, Schuylkill Haven, Pa. Railway-gate	378,761	Feb. 28	2103	555	42	929
Bolton, Alfred B., *et al.* (See Bieber, Jacob, assignor.)						
Bolton, Andrew C., Brooklyn, N. Y. Machine for hinging boxes	379,358	Mar. 13	712	194	42	1107
Bolton, James, Glen Spey, N. Y. Feeding mechanism for sewing-machines	376,283	Jan. 10	787	208, 209	42	161
Bolton, James, Glen Spey, N. Y. Oscillating shuttle-driver for sewing-machines	376,284	Jan. 10	789	209	42	161
Bolton, James, Glen Spey, N. Y. Sewing-machine stand	380,171	Mar. 27	1948	520	42	1363
Bolton, James, New York, N. Y. Sewing-machine	376,285	Jan. 10	791	210	42	161
Bolton, James, New York, N. Y. Shuttle-operating mechanism for sewing-machines	376,364	Jan. 10	900	236	42	141
Bolton, Lucy C., Peoria, Ill. Varnish for finishing wood	377,797	Feb. 14	711	.....	42	646

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume.		Official Gazette.	
			Spec.	Dr'g.	Vol.	Page.
Bolusa, Clarence W., Norwood, Ohio. Hose-coupling	379,845	Mar. 20	1465	387	42	1250
Bond, Joseph, Buffalo, N. Y. Radiator	376,766	Jan. 24	1519	400	42	313
Bonfield, John, Chicago, Ill. Police patrol-wagon	379,266	Mar. 13	580	160	42	1081
Bonsack, James A., Bonsacks, assignor to Bonsack Machine Company, Lynchburg, Va. Printing attachment for cigarette-machines	377,447	Feb. 7	149	33, 34, 35	42	523
Bonsack Machine Company. (See Bonsack, James A., assignor.)						
Bonwill, William G. A., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Dental plugger	377,984	Feb. 14	969	252, 253	42	697
Bonwill, William G. A., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Dental plugger	378,920	Mar. 6	84	24	42	982
Bookman, Morris, *et al.* (See Querol y Delgado, Emilio, assignor.)						
Boomer, George B., Mount Pleasant, N. Y. Screw-bearing for presses	378,950	Mar. 6	125	36	42	991
Boone, Ladson L. (See Corder, Luther R., assignor.)						
Boore, Lewis, assignor to T. H. Meyer, Jr., J. F. Diehl, C. P. Fenchter, and J. E. Hass, Buffalo, N. Y. Device for raising or lowering pipe	375,985	Jan. 3	355	95	42	72
Booth, Ebenezer H., Kirkwood, N. Y. Running-gear for vehicles	377,666	Feb. 7	476	123	42	585
Booth, Ebenezer H., Kirkwood, N. Y. Lug-bar for spring-vehicles	377,985	Feb. 14	971	253	42	697
Booth, Emmons R., Kirkwood, and J. R. Williams, St. Louis, Mo. Roll-paper holder and cutter	379,444	Mar. 13	839	227	42	1132
Booth, John H., and S. W. Beard, Providence, Ky. Device for preventing animals from jumping fences	376,065	Jan. 10	476	128	42	102
Booth, William. (See Giles and Booth.)						
Boothroyd, Isaac W. (See Renouf and Boothroyd.)						
Boreham, Robert G., assignor of one-third to H. Kaltenbach, St. Louis, Mo. Ornamental metal frame	377,231	Jan. 31	2180	575	42	449
Borton, Baker, Clyde, Kans. Animal-releasing device	379,852	Mar. 20	1478	390	42	1262
Bosca, Mitchell E., Lansingburg, N. Y. Outrigger for boats	377,986	Feb. 14	972	253	42	697
Bosch, Andreas, Prairie du Chien, Wis. Pruning implement	379,359	Mar. 13	716	195	42	1107
Bosmann, Nicolas, Lake, Ill. Refrigerator-car	376,024	Jan. 3	417	110, 111	42	83
Bostedo, Louis G. (See Thomas, Horatio, assignor.)						
Bostedo, Louis G., Atlantic, Iowa. Air-cushioned counter-balance for cash-carriers	376,286	Jan. 10	792	210	42	162
Bostedo Package and Cash Carrier Company. (See Thomas, Horatio, assignor.)						
Bostedo Package and Cash Carrier Company. (See Thomas and Bostedo, assignors.)						
Bostick, Alonzo, Millington, Mich. Sleigh-knee	380,172	Mar. 27	1951	521	42	1364
Boston Cash Indicator and Recorder Company. (See Webster, Jerome J., assignor.)						
Boston Tag and Printing Company. (See Kidder, Wellington P., assignor.)						
Botsford, James E., Auburn, and T. L. Church, Syracuse, N. Y. Draft-shackle for vehicles	378,539	Feb. 28	1789	472	42	869
Bottomes, James, Sandy Run, Pa. Rod-coupling	377,186	Jan. 31	2110	556	42	436
Botts, Barnet N., Paso Robles, Cal. Electric annunciator	379,758	Mar. 20	1313	350	42	1211
Boughton, Epnetus A., assignor of one-third to S. B. Drake, Binghamton, N. Y. Device for curing tobacco	379,094	Mar. 6	345	98	42	1030
Boughton, John W., Philadelphia, Pa. Insect-screen for windows or doors	375,863	Jan. 3	189	50	42	40
Boughton, John W., Philadelphia, Pa. Insect-screen	377,987	Feb. 14	973	253	42	697
Bourke, John T., *et al.* (See Bourke, Thomas H., assignor.)						
Bourke, Thomas H., Cleveland, Ohio. Balanced slide-valve	375,724	Jan. 3	5	1	42	3
Bourke, Thomas H., assignor of one-half to W. H. and T. R. Teare and J. T. Bourke, Cleveland, Ohio. Piston-valve	377,599	Feb. 7	372	95	42	566
Bourke, William, Brooklyn, N. Y. Button	379,929	Mar. 27	1604	426	42	1296
Bourne, Edward, Allegheny City, Pa. Gas-burner	380,015	Mar. 27	1734	465	42	1321
Bourne, Stephen N. (See Getchell, Charles E., assignor.)						
Bours, Willie M., Stockton, Cal. Map	379,360	Mar. 13	718	195	42	1108
Bouton, Adrian F., and K. K. Stearns, Elizabeth, N. J. Pocket tooth-brush	380,080	Mar. 27	1829	487	42	1339
Bouton, Arthur A., Brooklyn, assignor to J. Kayser, New York, N. Y. Sewing-machine	378,653	Feb. 28	1952	519	42	901
Bountwell, George S. (See Chadwick and Bountwell.)						
Bovensiep, Ernst, Detroit, Mich. Fire-escape	380,173	Mar. 27	1953	521	42	1364
Bowen, Columbus L. (See Cobb and Bowen.)						
Bowen, Henry C., Lamar, Mo. Nut-lock	376,179	Jan. 10	646	172	42	135
Bowen, James H., Philadelphia, Pa. Toy money-box	376,628	Jan. 17	1295	341	42	363
Bower, Joseph P., Des Moines, Iowa. Driving mechanism for elevators	377,139	Jan. 31	2052	547	42	423
Bowers, Alfred. (See Pettit and Bowers.)						
Bowers, Edward L. (See Gront and Bowers.)						
Bowers, Henry J. A. (See Allen and Bowers.)						
Bowers, Moses C., McKeesport, assignor to E. C. Converse, Allegheny City, Pa. Pipe-joint	377,988	Feb. 14	974	254	42	698
Bowers, Rodolph C., Carlyle, Ill. Folding bed	376,851	Jan. 24	1652	432	42	337
Bowles, Frank I., Detroit, Mich. Drawer for spool-thread cases	380,174	Mar. 27	1954	521	42	1364
Bowling, Enoch C., assignor of one-half to H. P. Glover, Ypsilanti, Mich. Garment-stay	378,060	Feb. 21	1104	299	42	760
Bowman, Dock, Cynthiana, Ky. Belt-tightener	380,081	Mar. 27	1830	487	42	1339
Bowman, William H., assignor of one-half to A. B. Lukens, South Solon, Ohio. Attachment for corn-planters	378,569	Feb. 28	1837	484	42	878
Bowman, William M., Taunton, Mass. Ash tray or pan	379,195	Mar. 6	472	133	42	1056
Bowne, Frank W., Lincoln, Nebr. Two-wheeled vehicle	379,675	Mar. 20	1194	316	42	1206
Bowne, John D., Jamesburg, N. J. Oscillating steam-engine	379,630	Mar. 20	1130	299	42	1194
Boyd, James W. (See Lyon, Henry A., assignor.)						
Boyd, John S., Baltimore, Md. Bag	380,016	Mar. 27	1737	465	42	1321
Boyd, Joseph M. (See Harper, Boyd, and Shelton.)						
Boyd, Thomas C., and J. J. Wade, Chicago, Ill. Wash-bowl	380,082	Mar. 27	1831	487	42	1340
Boyd, Thomas C., and J. J. Wade, Chicago, Ill. Stationary wash-bowl	380,083	Mar. 27	1832	488	42	1340
Boyer, Allen P., Jones, Mich. Hay or grain unloader	377,012	Jan. 31	1873	493	42	388
Boyer, Bassler, *et al.* (See Singer, Christian G., assignor.)						
Boyle, James W., assignor to himself and J. E. Davison, Negley, Pa. Ceiling-brush	375,919	Jan. 3	255	69	42	53
Boyle, Nicholas, Norristown, Pa. Warp-beaming machine	379,045	Mar. 6	270	78	42	1016
Boynton, Frederick H., assignor of one-half to A. Fowle, Milwaukee, Wis. Printer's galley	378,654	Feb. 28	1953	519	42	901
Boynton, George O., and F. C. Johnson, Boston, Mass. Providing protection for the ends of bobbins, &c.	379,151	Mar. 6	415	117	42	1044
Bracher, Thomas W., New York, N. Y. Sweat-band for hats	380,175	Mar. 27	1955	521	42	1365
Brackett, Walter F., Melrose, Mass. Drawing implement	379,206	Mar. 13	500	142	42	1067
Bradbury, Heber E., Banning, Cal. Draft attachment for plows	379,676	Mar. 20	1194	316	42	1207
Bradbury, John M. (See Griswold and Bradbury.)						
Bradford, Charles K., Lynnfield, assignor to G. H. P. Flagg and G. A. Fullerton, Boston, Mass. Lasting-awl	376,939	Jan. 24	1768	465	42	360

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Bradford, Thomas, Allegheny, Pa. Combined fire-place fender and air-moistener	376,575	Jan. 17	1198	317	42	244
Bradley, Benjamin L., Baltimore, Md. Molding-machine	376,704	Jan. 17	1412	371	42	284
Bradley, Edward E., assignor to J. E. and E. Atwood, Stonington, Conn. Reeling-machine	376,509	Jan. 17	1111	291, 292	42	228
Bradley, Gilbert W., Sunderland, Vt. Riveting-machine	375,725	Jan. 3	6	2	42	3
Bradley, Henry A., assignor of one-half to J. J. Gorman, New York, N. Y. Kiln for drying cement	375,920	Jan. 3	256	69, 70	42	54
Bradley, Henry L., New Haven, Conn. Wardrobe-hook	379,759	Mar. 20	1315	351	42	1231
Bradley & Sons, William. (See McIntyre, Neil, assignor.)						
Brady, Peter L. and W., Hearne, Tex. Cotton-press	378,570	Feb. 28	1839	485, 486	42	879
Brady, William. (See Brady, Peter L. and W.)						
Brahadi, Abraham, Montreal, Quebec, Canada. Hat or cap	376,705	Jan. 17	1414	372	42	285
Brainard, Amos H., Hyde Park, Mass. Milling-machine	378,427	Feb. 28	1630	428	42	835
Brainard, Charles E., Moodna, Conn. Machine for making cord or rope	378,491	Feb. 28	1728	456	42	857
Brainard, Julius D., assignor to himself and J. H. Lynch, Highmore, Dak. Ter. Earth-scraper	378,571	Feb. 28	1841	486	42	879
Brainard, Morris F., Brooklyn, N. Y. Dredging-machine	377,060	Jan. 31	1939	510	42	401
Brake, Archibald, assignor of one-half to J. T. Dodwell, Toronto, Ont., Canada. Hot-water radiator	375,864	Jan. 3	182	50	42	40
Branaman, Addison P. (See Gilmore and Branaman.)						
Branch, John E., Sioux City, Iowa. Road-grader	375,797	Jan. 3	101	29	42	24
Brand, Arnold, Fünfhaus, near Vienna, Austria-Hungary. Machine for making covered buttons	375,726	Jan. 3	6	2	42	4
Brand, George F. (See King and Brand.)						
Brandner, Adolphus G. (See Sanders, Oliver P., assignor.)						
Brandt, Julius, New Rochelle, N. Y. Combined hatchet and plane	379,677	Mar. 20	1196	316, 317	42	1207
Brankston, Ralph T., assignor to W. G. Armstrong, Mitchell & Co., (limited,) Newcastle-upon-Tyne, England. Hydraulic loading and operating mechanism for ordnance	377,924	Feb. 14	882	225, 226, 227, 228	42	678
Brankston, Ralph T., assignor to W. G. Armstrong, Mitchell & Co., (limited,) Elswick Works, Newcastle-upon-Tyne, England. Trunnion-bearing for ordnance, &c.	378,282	Feb. 21	1419	371	42	787
Brann, Frederick W., and G. I. Kinney, San Francisco, Cal. Switch for electric light and motor circuits	379,501	Mar. 13	933	251	42	1149
Brannigan, Felix, New York, N. Y., assignor of one-half to J. M. Ewing, Wheeling, W. Va. Paving-tile	378,825	Feb. 28	2217	590	42	951
Branton, Henry D. T., Fort Scott, Kans. Reversible bevel-shaper, saw, and boring-machine	379,930	Mar. 27	1606	426, 427	42	1296
Braun, William F., Columbus, Ohio. Car-coupling	377,289	Jan. 31	2275	601	42	466
Braund, John T., assignor of one-half to W. W. Barcus, Muskegon, Mich. Burial process	376,629	Jan. 17	1297	341	42	263
Bray, Morris P., assignor to Mayer, Strouse & Co., New Haven, Conn. Corset-clasp	377,232	Jan. 31	2121	576	42	449
Breen, Howard M. (See Robinson, O'Brien, and Breen.)						
Breese, Henry J. (See Martin and Breese.)						
Brennan, James A., Worcester, Mass. Corset-fastening	380,017	Mar. 27	1738	466	42	1322
Breuer, Hynek, New Prague, Minn. Window-sill	376,940	Jan. 24	1768	465	42	360
Brewer, Horatio J., New York, N. Y. Galvanic battery	380,084	Mar. 27	1833	488	42	1340
Brewer, Horatio J., New York, N. Y. Galvanic battery	380,085	Mar. 27	1834	488	42	1341
Brewer, William J., London, county of Middlesex, England. Wheel-hub	377,187	Jan. 31	2111	557	42	436
Brewster & Company, J. B. (See Fest, William P., assignor.)						
Brewster, Edward E., Holly, Mich. Fire-kindler	379,631	Mar. 20	1132	300	42	1194
Brewster, Edward E., Holly, Mich. Fire-kindler	380,176	Mar. 27	1955	522	42	1365
Brick, Samuel R., Stapleton, N. Y. Means for detecting leakage from gas-mains	378,283	Feb. 21	1420	371, 372	42	787
Bridger, Henry C., New York, N. Y., assignor to J. Quincy and A. L. Parcelle, Boston, Mass. Electrical synchronous movement	375,727	Jan. 3	8	2	42	4
Briggs, Fernando C., St. Johnsville, N. Y. Advertising device	377,925	Feb. 14	884	228	42	679
Briggs, George S. (See Weyburn and Briggs.)						
Briggs, George T. (See Locke, Edward C., assignor.)						
Briggs, George T., Cambridgeport, Mass. Spring shade-roller	375,986	Jan. 3	356	95	42	72
Briggs, Louis W., *et al.* (See Lore, George W., assignor.)						
Brill, George M., administrator. (See Amesbury, George W.)						
Brill, John A., Philadelphia, Pa. Tug-hook	376,810	Jan. 24	1588	416	42	326
Brill, John A., Philadelphia, Pa. Hame-fastener	376,811	Jan. 24	1589	416	42	326
Brill, John A., Philadelphia, Pa. Railway-car	378,498	Feb. 28	1632	428, 429	42	836
Brinkerhoff Company. (See Harlow, John R., assignor.)						
Brinkerhoff, Jacob. (See Brinkerhoff, John J., assignor.)						
Brinkerhoff, Jacob. (See Brinkerhoff, Warren M., assignor.)						
Brinkerhoff, John J., assignor to J. Brinkerhoff, Auburn, N. Y. Clothes-wringer	378,951	Mar. 6	126	37	42	991
Brinkerhoff, John J., assignor to J. Brinkerhoff, Auburn, N. Y. Spring	379,502	Mar. 13	935	251	42	1149
Brinkerhoff, Warren M., assignor, by mesne assignments, to J. Brinkerhoff, Auburn, N. Y. Clothes-wringer	377,545	Feb. 7	295	76	42	552
Briscoe, John, Custer City, Pa. Coupling and cut-off for steam and air pipes for car heaters, brakes, &c.	378,284	Feb. 21	1423	372	42	788
Brissaant, Eugène, Paris, France. Machine for cutting into strips and reeling paper	375,728	Jan. 3	10	2, 3	42	5
Bristol, Edmund R., and E. C. Gran, Jordan, Minn. Can cover and clamp	376,941	Jan. 24	1769	465	42	360
Bristol, Jackson P. (See Knapp, William H., assignor.)						
Bristow, Ralph E., Rockford, Ill. Lemon-juice extractor	377,140	Jan. 31	2053	538	42	423
Brittin, John W., Black Rock, Conn., assignor to Atlantic Ammunition Company, (limited,) New York, N. Y. Cartridge-crimper	379,853	Mar. 20	1478	390	42	1262
Broadbent, Henry T., Philadelphia, Pa. Stop-motion mechanism for doubling and twisting machines	377,881	Feb. 14	920	209	42	665
Brochocki, Thomas D., Paris, France. Bridge	377,887	Feb. 14	827	211, 212	42	667
Brock, Fenelon B., Washington, D. C., assignor to C. A. Schieren, Brooklyn, N. Y. Driving-belt	378,229	Feb. 21	1341	354	42	774
Brockman, Herman, Cincinnati, Ohio. Safety-brake	376,365	Jan. 10	902	236	42	182
Brockway, N. J. (See Palmer, Levi H., assignor.)						
Brodie, James R., San Francisco, Cal. Inking attachment for printing-presses	376,426	Jan. 17	994	260	42	206
Brodrick John, New York, N. Y. Prepared sheet for stencils	377,706	Feb. 7	534	.....	42	595
Brognard, Henry A., Philadelphia, Pa. Gas-burner	379,046	Mar. 6	271	78, 79	42	1017
Brokaw, Norman H., Kaukauna, Wis. Machine for shaving off the bark from logs	379,559	Mar. 20	1018	272	42	1174

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Brokhahne, Alfred V., New York, and C. Langbein, Brooklyn, N. Y.; said Brokhahne assignor to said Langbein. Attachable and detachable back for razor-blades	377,926	Feb. 14	885	228	42	679
Brook, James W., Lynchburg, Va. Automatic device for shutting water-cocks, &c.	376,287	Jan. 10	703	210	42	162
Brooke, George, Birdsbrough, Pa. Machine for rolling melted metal	379,096	Mar. 6	347	99	42	1031
Brooker, Norton. (See Rose and Brooker.)						
Brookes, Leonard E. (See Kahler and Brookes.)						
Brookes, Leonard E., assignor to Goss Printing Press Company, Chicago, Ill. Accumulating sheets for printing-machines	376,288	Jan. 10	795	210, 211	42	162
Brooks, Benjamin P., Manchester, N. H. Outside window and means for securing the same	377,013	Jan. 31	1874	493	42	389
Brooks, Byron A., Brooklyn, N. Y. Type-writer	379,095	Mar. 6	347	99	42	1031
Brooks & Company, E. J. (See Brooks, Edward J., assignor.)						
Brooks, Edward J., East Orange, N. J., assignor to E. J. Brooks & Company, New York, N. Y. Seal	379,885	Mar. 20	1535	405	42	1273
Brooks, James W., trustee. (See Allen, Edward B., assignor.)						
Brooks, James W., trustee. (See Glidden, Charles W., assignor.)						
Brooks, Levi, Black Diamond, Wash. Ter. Device for tightening fence-posts	376,468	Jan. 17	1053	276	42	217
Brooks, Reuben, assignor to Russia Cement Company, Gloucester, Mass. Liquid-glue packing-can	377,014	Jan. 31	1876	493	42	389
Brott, George F., Bladensburg, Md. Cotton-gin	379,760	Mar. 20	1315	351	42	1231
Brough, Frank, Indianapolis, Ind. Handle attachment	378,540	Feb. 28	1789	472	42	869
Broughall, John J., Butte City, Mont. Ter. Stamp-guide	379,931	Mar. 27	1608	427	42	1297
Brouse, Joseph, New Berlin, Pa. Combination-tool	377,142	Jan. 31	2055	538	42	424
Broussier, Gustave, Paris, France. Paper-cutting machine	376,925	Jan. 3	420	111, 112	42	84
Brown, Aaron L., Chicago, Ill. Filing-receptacle	379,560	Mar. 20	1019	273	42	1174
Brown, Aaron L., Chicago, Ill. File-receptacle	379,678	Mar. 20	1197	317	42	1207
Brown, Alexander T., Syracuse, N. Y. Type-writing machine	376,180	Jan. 10	647	173	42	135
Brown, Alfred G., Egan, Dak. Ter. Evener for vehicles	379,932	Mar. 27	1609	427, 428	42	1297
Brown, Alonzo W., Evanston, Wyo. Ter. Telephone-receiver	378,385	Feb. 21	1560	408	42	815
Brown, Cary, Fort Atkinson, Wis. Windmill	375,729	Jan. 3	10	3	42	5
Brown, David, assignor of one-half to J. A. Vaughn, Cuyahoga Falls, Ohio. Oatmeal-machine	380,177	Mar. 27	1956	522	42	1365
Brown, Edward, Philadelphia, Pa. Mercury pressure-gage	379,305	Mar. 13	643	175	42	1093
Brown Folding Machine Co. (See Downing, Wellington, assignor.)						
Brown, Fred. H., New York, N. Y., assignor to Magneto Telegraph Company, of New York. Magneto-telephone	376,706	Jan. 17	1415	372	42	285
Brown, Fred. H., New York, N. Y., assignor to Magneto Telegraph Company, of New York. Magneto-telephone	376,707	Jan. 17	1415	372	42	285
Brown, Frederick J., and D. H. James, Meadow Brook, Pa. Extension-gage	379,361	Mar. 13	718	195	42	1108
Brown, George F., Constable Hook, N. J. Car-coupling	377,882	Feb. 14	821	209	42	666
Brown, George W., McNairy, Tenn. Chicken-coop	376,230	Jan. 10	718	191	42	147
Brown, Harrison H., Ladoga, Wis. Safety-snap for carriage-thills	376,469	Jan. 17	1053	276	42	217
Brown, Isaac M., Columbus, Ind. Railway-switch	380,086	Mar. 27	1836	489	42	1341
Brown, James O., assignor of one-half to J. S. Newell, Boston, Mass. Tree-protector	377,448	Feb. 7	152	35	42	524
Brown, John H. (See McGaffey, Ives W., assignor.)						
Brown, Lewis A., St. Louis, Mo. Basket	378,492	Feb. 28	1729	456	42	857
Brown, Lewis A., and V. S. Ketchum, assignors of one-third to J. B. Ulrich, St. Louis, Mo. Car-seal	378,655	Feb. 28	1955	519	42	902
Brown, Perry, Louisville, Ky. Car-coupling	378,037	Feb. 14	1041	272	42	709
Brown, Perry, Louisville, Ky. Car-coupling	378,038	Feb. 14	1042	272	42	711
Brown, Perry and W. Trabue; said Trabue assignor to D. E. Doherty, Louisville, Ky. Vise	380,178	Mar. 27	1957	522	42	1365
Brown, Perry J., Albuquerque, N. Mex. Ter. Locomotive ash-pan	377,600	Feb. 7	376	95	42	567
Brown, Perry J., Winslow, Ariz. Ter. Locomotive smoke-stack	378,762	Feb. 28	2105	556	42	929
Brown, Robert. (See Whiteley and Brown.)						
Brown, Robert, assignor to Hoover & Gamble, Miamisburg, Ohio. Knotting mechanism for harvesters	379,886	Mar. 20	1537	405, 406	42	1274
Brown, Robert M. G., U. S. Navy. Boat-detaching apparatus	378,763	Feb. 28	2106	556	42	929
Brown, Sidney F. (See Morton and Brown.)						
Brown Specialty Company. (See Campfield, Matthew E., assignor.)						
Brown, Thomas H., Chicago, Ill. Hay-hook attachment	375,865	Jan. 3	182	50, 51	42	40
Brown, Walter F., Providence, R. I. Steam-engine indicator	377,601	Feb. 7	377	96	42	567
Brown, Walter M., Albany, N. Y. Device for heating coils and pipes by gas	377,015	Jan. 31	1877	494	42	389
Brown, William H., New York, N. Y., assignor to Brown's Seamless Metal Company, Jersey City, N. J. Shaft for steamships	376,135	Jan. 10	584	156	42	123
Brown, William H., assignor to Brown's Seamless Metal Company, Jersey City, N. J. Projectile	376,728	Jan. 24	1450	381	42	301
Brown, William H., Jersey City, N. J., assignor to Brown's Seamless Metal Company, of New Jersey. Making seamless tubes	377,347	Jan. 31	2360	632	42	480
Brown, William H., Jersey City, N. J., assignor to Brown's Seamless Metal Company, of New Jersey. Making seamless tubes	377,348	Jan. 31	2362	633	42	481
Browne, Arthur B., *et al.* (See Adams, Charles W., assignor.)						
Browne, George J., New York, N. Y., assignor to Dana, Tucker & Co., Boston, Mass. Forming trade-marks and attaching them to fabrics	377,141	Jan. 31	2054	536	42	424
Browne, Oliver L. F. (See Hogel and Browne.)						
Browne, Walker G., Atlanta, Ga., assignor to United States Automatic Water Cut-Off Company, of Georgia. Fire-extinguisher	378,285	Feb. 21	1424	372	42	788
Browning, John M., and M. S. Ogden, Utah Ter., assignor to Winchester Repeating Arms Company, New Haven, Conn. Magazine fire-arm	376,576	Jan. 17	1199	317, 318	42	245
Browning, Matthew S. (See Browning, John M. and M. S.)						
Brown's Seamless Metal Company. (See Brown, William H., assignor.)						
Brown's Seamless Metal Company. (See Seymour, Frederick J., assignor.)						
Bruce, William, Wellsville, N. Y. Fire-escape	380,179	Mar. 27	1958	522, 523	42	1365
Bruckerman, Frederick. (See Bruckerman, Herman, assignor.)						
Bruckerman, Herman, Table Rock, assignor of one-half to F. Bruckerman, Poker Flat, Cal. Can-opener	376,577	Jan. 17	1204	318	42	246
Bruhn, Frederick, and J. Ranm, Fort Shaw, Mont. Ter. Spark-arrester	378,188	Feb. 21	1266	335	42	769
Brünjes, Ferdinand, Leopoldhalle, Prussia, Germany. Obtaining potassium carbonate	376,366	Jan. 10	903	.....	42	182
Brush, Charles F., Cleveland, Ohio. Electro-magnetic device	376,630	Jan. 17	1299	341, 342	42	263
Bryan, William N., assignor of one-half to H. E. Neff, Ada, Ohio. Two-wheeled vehicle	378,493	Feb. 28	1730	456, 457	42	856

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Bryant, Forrester, Haverhill, Mass., assignor to Bryant Nail Company, Portland, Me. Nail-making machine	378,656	Feb. 28	1956	519, 520	42	902
Bryant, Fred L., Chicago, Ill. Woven-wire mat	375,666	Jan. 3	183	51	42	40
Bryant Nail Company. (See Bryant, Forrester, assignor.)						
Bryant & Stratton Mechanical Appliance Company. (See Moore, Homer J., assignor.)						
Bryant, Washington, Franklin, Ark. Paddle-wheel	379,362	Mar. 13	719	195, 196	42	1108
Buchhorn, Frederick, Chicago, Ill. Water-filter	375,798	Jan. 3	102	30	42	24
Buck, C. M. (See Pratt, Charles H., assignor.)						
Buckingham, Reuben D., assignor of one-half to E. F. Cragin, Chicago, Ill. Road-cart	377,061	Jan. 31	1842	510	42	402
Buckland, Harry W., Waterbury, Conn. Clasp	376,578	Jan. 17	1205	318	42	246
Buddington, Truman B., and J. R. Bedient, Birmingham, Conn. Coffin-fastener	380,242	Mar. 27	2048	547	42	1364
Bughee, James L., Providence, R. I. Machine for winding spools	375,921	Jan. 3	257	70, 71	42	64
Bughman, Jeremiah J., Justus, Ohio. Farm-gate	377,844	Feb. 14	769	196	42	656
Bühler, Jacob, Constance, Baden, Germany, assignor of one-half to F. B., H. J., and B. F. Van de Velde, Cleveland, Ohio. Brick-kiln	377,511	Feb. 7	250	60, 61, 62, 63	42	542
Buie, Alfred J., St. Louis, Mo. Alarm for flouring-mills	377,370	Feb. 7	5	2	42	496
Bulger, Benjamin. (See Warmington and Bulger.)						
Bulkley, Henry W., East Orange, N. J. Steam-actuated valve	377,423	Feb. 7	118	25	42	517
Bulkley, William A., Philadelphia, Pa. Easel	376,852	Jan. 24	1653	432	42	337
Bullivant, William M., 72 Mark Lane, London, England. Manufacture of torpedo-nets and means for attaching and working them	379,854	Mar. 20	1481	390, 391	42	1262
Bullock, Alanson B., Canton, Mass. Rotary steam-engine	377,143	Jan. 31	2055	539, 540	42	424
Bullock, William F. (See Hauson and Bullock.)						
Bunn, Annie, Birdsborough, Pa. Chair	377,512	Feb. 7	254	63	42	543
Bunn, James M. (See Roland, Abraham, assignor.)						
Buntrock, Louis, Allegheny City, Pa. Sham-pillow	378,952	Mar. 6	128	37	42	991
Burcaw, Franklin P., Hazleton, Pa. Weather-strip	378,064	Feb. 14	1077	283	42	717
Burcey, Charles J. T., Syracuse, N. Y. Preventive of incrustation of steam-boilers	376,579	Jan. 17	1206	319	42	247
Burdick, Justin H., Utica, Wis. Making nuts	380,243	Mar. 27	2049	547, 548	42	1364
Burdick, Justin H., Utica, Wis. Nut-making machine	380,244	Mar. 27	2051	548	42	1364
Burdick, Justin H., Utica, assignor to Elastic Nut Company, Milwaukee, Wis. Nut-lock	377,188	Jan. 31	2112	557	42	496
Burdon, George R., Providence, R. I. Toilet-fan	376,231	Jan. 10	719	191	42	148
Burdsall, Stephen, and C. Thompson, assignors to Herbrand Co., Fremont, Ohio. Running-gear	376,795	Jan. 24	1564	410	42	322
Burg, Lewis, Farmington, Iowa. Road-cart	376,470	Jan. 17	1054	276	42	217
Burge, Eugene W., *et al.* (See Spenneberg, George J., assignor.)						
Burgess, Richard O., Providence, R. I. Bridle-bit	377,845	Feb. 14	770	197	42	656
Burgess, Samuel F., West Morris, Conn. Clothes-frame	376,580	Jan. 17	1207	319	42	247
Burkhardt, Howard F., Philadelphia, Pa. Combined saw and plane	375,730	Jan. 3	14	4	42	6
Burkhardt, John, New York, N. Y. Wire screen, &c.	378,416	Feb. 21	1607	422	42	825
Burkhardt, John, New York, N. Y. Mechanism for forming ornamental spheroidal and analogous bodies	378,417	Feb. 21	1608	422	42	825
Burkhardt, John, assignor of one-half to W. H. Jackson & Co., New York, N. Y. Forming hollow spheroidal bodies from sheet-metal tubes	378,412	Feb. 21	1603	421	42	824
Burkhardt, John, assignor of one-half to W. H. Jackson & Co., New York, N. Y. Die for forming hollow ornamental metallic bodies	378,413	Feb. 21	1605	421	42	824
Burkhardt, John, assignor of one-half to W. H. Jackson & Co., New York, N. Y. Forming ornamental studs or pillars	378,414	Feb. 21	1605	421	42	824
Burkhardt, John, assignor of one-half to W. H. Jackson & Co., New York, N. Y. Construction of screens, grates, and panels	378,415	Feb. 21	1606	422	42	825
Burkholder, Isaac, Farmersville, Pa. Farm-gate	377,479	Feb. 7	1 6	46	42	531
Burleigh, Charles H., Worcester, Mass. Machine for making, repairing, and cleaning roads	379,679	Mar. 20	1199	317, 318	42	1267
Burling, William S. (See Millspaugh, William, assignor.)						
Burnet, William H., J. Sears, and O. G. Burnham, Chicago, Ill. Treating cotton-seed	380,087	Mar. 27	1837	489	42	1341
Burnett, Hiram, East Portland, Oreg. Paint	378,826	Feb. 28	2218	.....	42	951
Burnham, Arthur M., assignor, by mesne assignments, to Excelsior Wringer Company, Gardiner, Me. Mop-wringer	380,275	Mar. 27	2086	558	42	1392
Burnham, Oliver G. (See Burnet, Sears, and Burnham.)						
Burritt, Albert M., Waterbury, Conn. Machine for tapping steam, gas, or water fittings	379,761	Mar. 20	1318	351	42	1282
Burrowes, Albert, Toronto, Ontario, Canada. Punch	376,136	Jan. 10	587	157	42	123
Burrows, William, Littleton, Ill. Windmill	378,429	Feb. 28	1634	430	42	836
Burt, Charles A., Rochester, N. Y. Machine for capping cans	377,449	Feb. 7	154	35	42	524
Burt, Ransom K., assignor of one-half to H. M. Ochiltree, Haddam, Kans. Harness-strap	379,196	Mar. 6	472	133	42	1056
Burton, Augustus G. (See Cooley, Arthur M., assignor.)						
Burton, George D., New Ipswich, N. H. Stock-car	376,729	Jan. 24	1451	381	42	301
Burton, George D., New Ipswich, N. H. Pneumatic carrier	379,503	Mar. 13	936	252	42	1149
Burtscher, Hugo. (See Schlatter, Schmid, and Burtscher.)						
Bury, Theodore, Cleveland, Ohio. Window-ventilator	377,798	Feb. 14	712	180	42	646
Busby, Fred H., San Francisco, Cal. Glove	379,855	Mar. 20	1483	391	42	1282
Busell, James H., Boston, Mass. Heel-burnishing machine	376,066	Jan. 10	476	128, 129	42	103
Busenbarrick, James E., and G. F. Mitchell, Robinson, Kans. Rotary grain measure	376,367	Jan. 10	903	237	42	182
Bush, M. M. (See Herrington, Ephraim, assignor.)						
Bush, Robert T. (See Vandercook and Bush.)						
Bush, Zachriah T., Stanton, Mich. Road-cart	378,354	Feb. 21	1521	398	42	808
Bushfield, Samuel B., Denver, Colo. Therapeutic electric belt	376,730	Jan. 24	1452	382	42	301
Bussard, Jonas. (See Null and Bussard.)						
Busse, Heinrich, Linden, vor Hanover, Prussia, Germany. Making artificial or elastic bitumen for paving	376,289	Jan. 10	797	.....	42	163
Busse, Heinrich, Linden, vor Hanover, Prussia, Germany. Composition of matter for paving	376,290	Jan. 10	797	.....	42	163
Bussey, Anderson, Columbia County, Ark. Corn-planter	378,189	Feb. 21	1266	335	42	760
Butcher, Edward G., Camanche, Iowa. Equestrian gymnasium	377,233	Jan. 31	2182	576	42	449
Butcher, William, and C. G. Bailey, York, Pa. Coal-sifter	379,267	Mar. 13	581	161	42	1081
Butler, Edward F., assignor of one-half to J. G. Kestol, Whitewater, Wis. Hame-fastener	378,128	Feb. 21	1173	306	42	764
Butler, Paul, Lowell, Mass. Machine for trimming cartridge-shells	378,953	Mar. 6	128	37, 38	42	992
Butler, Stephen T., Socorro, N. Mex. Ter. Stirrup	380,276	Mar. 27	2087	559	42	1392

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Butler, Theodore, assignor to J. L. Mott Iron Works, New York, N. Y. Flushing-pipe for water-closets	376,137	Jan. 10	587	157	42	123
Butler, Thomas H., Harrisburg, Pa. Absorber for ice-machines	377,189	Jan. 31	2112	558	42	496
Butman, Fred P., Holbrook, assignor to himself and E. H. Fennessy, Newton, Mass. Stocking-supporter	377,480	Feb. 7	197	47	42	533
Butterfield, Finley R. (See Thurston and Butterfield.)						
Butterworth, John, Jr. (See Butterworth, William H. and J., Jr.)						
Butterworth, William H. and J., Jr., Trenton, N. J. Thrashing-machine	379,762	Mar. 20	1319	351, 352	42	1232
Buxton, John E., Owatonna, Minn. Grain-binder	377,062	Jan. 31	1944	511	42	402
Buzzell, Frank P., Malden, Mass. Tool for inking the sole-edges of boots or shoes	377,846	Feb. 14	771	197	42	656
Bye, Martin, assignor to S. Forehand, Worcester, Mass. Breech-loading fire-arm	375,799	Jan. 3	103	30	42	24
Bye, Martin, assignor to S. Forehand, Worcester, Mass. Breech-loading fire-arm	378,355	Feb. 21	1522	398	42	808
Byers, John G. (See Geatty, Hamilton C., assignor.)						
Byers, Samuel S., Darwin, Kans. Bolster-spring	379,097	Mar. 6	349	99	42	1031
Byers, William H. (See Stocker, William F., assignor.)						
Byrne, John, assignor to himself and C. R. Treat, Sharon, Wis. Wrench	379,504	Mar. 13	938	252	42	1150
Byrne, Peter, *et al.* (See Greene, Patrick R., assignor.)						
Byrnes, Benjah S., Memphis, Tenn. Dental plugger	376,581	Jan. 17	1207	319	42	247
Cable, John, Cable, Minn. Excavator and self-loading conveyer	376,708	Jan. 17	1417	372, 373	42	285
Cadmus, Frederick, Philadelphia, Pa. Garment-stretcher	378,764	Feb. 28	2107	556	42	929
Cadwgan, Thomas C., assignor to Duplex Manufacturing Company, Springfield, Ohio. Feed-mill	376,232	Jan. 10	720	192	42	148
Cadwgan, Thomas C., assignor to Springfield Engine and Thresher Company, Springfield, Ohio. Feed-mill	380,180	Mar. 27	1960	523	42	1366
Cady, Benjamin J., Washington, D. C. Milk-receiver	376,291	Jan. 10	798	211	42	163
Cairns, Charles L. (See Cairns, William and C. L.)						
Cairns, William and C. L., Jersey City, N. J. Confectioner's kettle	377,144	Jan. 31	2057	540	42	424
Calder, George, Vicksburg, Miss. Bale-ejecting attachment for presses	380,088	Mar. 27	1839	490	42	1341
Caldwell, Richard, Tipton, Mich. Wagon-rack	380,181	Mar. 27	1961	523, 524	42	1366
Caldwell, William L., Canton, Ohio. Hat and coat rack	377,737	Feb. 14	583	150	42	620
Callam, John, *et al.* (See Carroll and Hill, assignors.)						
Caller, Annie, Albany, N. Y. Surgical splint	377,145	Jan. 31	2059	540, 541	42	425
Calumet Fastener Company. (See Davenport, Benjamin R., assignor.)						
Cambria Iron Company. (See Coffin, John, assignor.)						
Cameron, Donald, Detroit, assignor of one-half to W. C. Mooney, Indian Lake, Mich. Sheep-shears	376,233	Jan. 10	722	192	42	148
Cameron, Edwin A. and F., Tinmouth, Vt. Machine for digging, cleaning, and assorting potatoes	379,098	Mar. 6	349	99, 100	42	1031
Cameron, Fred. (See Cameron, Edwin A. and F.)						
Cameron Harrow and Wagon Company. (See Cameron and Judson, assignors.)						
Cameron, Joseph, Cynthiana, and J. S. and W. S. Judson, Springfield, Ohio, assignors to Cameron Harrow and Wagon Company, Chicago, Ill. Dumping-wagon	380,277	Mar. 27	2088	559, 560	42	1392
Camp, D. W. (See Davison, Charles G., assignor.)						
Camp, Daniel A., Barre, Vt. Holdback	376,796	Jan. 24	1565	411	42	323
Campbell, Angus, Puwassan, assignor of one-half to G. McEachern, Toronto, Ontario, Canada. Store-pipe coupling	376,026	Jan. 3	423	112	42	84
Campbell Burner Company. (See Todd, Cornelius B., assignor.)						
Campbell, Charles H., Watertown, N. Y. Cushioning device for type-beds	382,192	Mar. 27	1963	524	42	1366
Campbell, Charles H., assignor to Bagley & Sewall Company, Watertown, N. Y. Bed-motion for cylinder printing-machines	379,933	Mar. 27	1610	428, 429	42	1097
Campbell, George W. (See Campbell, Jeremiah W. and G. W.)						
Campbell, Howard, Brooklyn, N. Y. Atomizer	377,371	Feb. 7	6	2	42	496
Campbell, James W., *et al.* (See Marsden, Mark W., assignor.)						
Campbell, Jeremiah W., St. Johns, and G. W. Campbell, Harrod, Ohio; said Jeremiah W. Campbell assignor to said G. W. Campbell. Corn-planter	379,363	Mar. 13	721	196, 197	42	1109
Campbell, Orin, and W. Peet, Lawrence, Kans. Ore-concentrator	376,853	Jan. 24	1655	432, 433	42	338
Campbell, Samuel R., assignor of one-half to E. Michael, Buffalo, N. Y. Door-securer	377,927	Feb. 14	886	228	42	679
Campbell, Solon O., Goshen, Iowa. Window-shade attachment	378,039	Feb. 14	1044	273	42	711
Campbell, William A., Portland, Oreg. Saw-mill set-works	375,800	Jan. 3	104	30	42	24
Campbell, William A., Portland, Oreg. Saw-mill stock-roller	375,801	Jan. 3	106	31	42	25
Campbell, William A., Portland, Oreg. Shingle-sawing machine	379,856	Mar. 20	1483	391, 392	42	1263
Campbell, William H. (See Steele, Elbert L., assignor.)						
Campfield, Matthew E., Pittsburg, assignor to Brown Specialty Company, Etna, Pa. Wrench	379,445	Mar. 13	842	227	42	1133
Canedy, William E., Rochester, Minn. Drilling-machine	380,018	Mar. 27	1739	466	42	1322
Canedy, William E., Rochester, Minn. Combined anvil and vise	380,019	Mar. 27	1740	466	42	1322
Caner, Christopher C., Pataskala, Ohio. Vehicle running-gear	376,510	Jan. 17	1116	292	42	228
Canfield, Henry O., assignor to Canfield Rubber Company, Bridgeport, Conn. Bustle	375,922	Jan. 3	263	71	42	55
Canfield, Henry O., assignor to Canfield Rubber Company, Bridgeport, Conn. Bustle	375,923	Jan. 3	264	72	42	55
Canfield, Henry O., assignor to Canfield Rubber Company, Bridgeport, Conn. Bustle	375,924	Jan. 3	265	72	42	56
Canfield Rubber Company. (See Canfield, Henry O., assignor.)						
Canney, Walter S., assignor to O. S. Barr, Groveland, Mass. Wind-instrument	379,268	Mar. 13	583	161	42	1081
Canning, William P., Lowell, Mass. Machine to be driven by fluid-pressure	378,541	Feb. 28	1780	473, 474	42	870
Cannon, Corodon S., Ligonier, Ind. Barrel-hoop	377,739	Feb. 14	712	180	42	646
Cantrell, Thomas G., assignor to L. C. Marshutz, San Francisco, Cal. Ore-feeder	379,099	Mar. 6	350	100	42	1031
Card, George F., assignor to G. F. Card Manufacturing Company, Covington, Ky. Electro-dynamic machine	380,020	Mar. 27	1741	466	42	1322
Card Manufacturing Company, George F. (See Card, George F., assignor.)						
Cardon, Thomas B., and G. Lundberg, Logan, Utah Ter. Cylinder	377,234	Jan. 31	2184	576, 577	42	449
Carette, Georges, Nuremburg, Germany. Picture-holding disk for magic lanterns	376,631	Jan. 17	1301	342	42	264
Cargemel, Jules. (See Stiegler and Cargemel.)						
Carley, John W., Thornton, Tex. Combined corn and cotton planter, cultivator, and cotton-chopper	378,286	Feb. 21	1425	372, 373	42	788
Carlough, Daniel. (See Cooke and Carlough.)						
Carmichael, Henry, Malden, Mass. Treating fibrous ware	377,928	Feb. 14	887	.....	42	682

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Carney, Harry G., *et al.* (See Carney, Thomas, assignor.)						
Carney, Thomas, assignor to M. Bensinger and H. G. Carney, Chicago, Ill. Cash register and indicator	377,728	Feb. 7	560	144, 145	42	600
Carpenter, Charles C. (See Whitmarsh, Henry C., assignor.)						
Carpenter, Charles C., New York, N. Y. Bustle	379,001	Mar. 6	207	56	42	1006
Carpenter, Daniel H., Orlando, Fla. Gage-wheel	377,890	Feb. 14	713	181	42	646
Carpenter, J. Fairfield, Berlin, Germany. Valve for air-brakes	377,989	Feb. 14	975	254	42	696
Carpenter, J. Fairfield, Berlin, Germany. Automatic electric air-brake	378,657	Feb. 28	1959	520, 521	42	903
Carpenter, J. Fairfield, Berlin, Germany. Valve for electro-pneumatic railway-brakes	378,658	Feb. 28	1962	521	42	903
Carpenter, William H., Cadillac, Mich. Camera-tripod	378,430	Feb. 28	1636	430	42	837
Carr, E. D. (See Shepard, Sylvander C., assignor.)						
Carr, Joseph, Philadelphia, Pa. Power-fan	378,659	Feb. 28	1965	522	42	904
Carr, Joseph J., assignor of one-half to D. F. Sweeney, Wilkes-Barré, Pa. Sand-sifting machine	378,129	Feb. 21	1174	306	42	744
Carrico, Thomas W., San Antonio, Tex. Box for washing gravel, &c.	378,765	Feb. 28	2108	556, 557	42	930
Carroll, Bradish J., New Brighton, N. Y. Wire-holder	380,183	Mar. 27	1964	524	42	1367
Carroll, Craft C., Meadville, Pa. Crucible-furnace	376,632	Jan. 17	1302	342	42	264
Carroll, Craft C., Meadville, Pa. Making dental plates and bridges	380,021	Mar. 27	1742	467	42	1322
Carroll, William, and C. A. Hill, assignors to said Carroll, A. C. Oldham, Columbus, and J. Callam, Kenton, Ohio. Stove-block	378,572	Feb. 28	1842	486, 487	42	880
Carroll, William T., Worcester, Mass. Self-lubricating pulley	376,633	Jan. 17	1304	343	42	264
Carroll, William T., Worcester, assignor to G. Draper & Sons, Hopedale, Mass. Support for spinning-spindles	376,234	Jan. 10	722	192	42	148
Carson, Franklin R. (See Smith, Weir, Carson, and Weir.)						
Carter, C. E. (See Davis, John R., assignor.)						
Carter, James C., Decatur, Ill. Pump	378,766	Feb. 28	2110	557	42	930
Carter, James D., East Dulwich, county of Surrey, England, assignor to G. W. Mabie, Brooklyn, N. Y. Cigar-piercer	376,511	Jan. 17	1117	292	42	229
Carter, John, Emporia, Kans., assignor of one-half to T. Lewis, Kansas City, Mo. Carpet-stretcher	377,847	Feb. 14	772	197	42	657
Carter, Robert A., assignor of one-half to Phillips, Nimick & Co., Pittsburg, Pa. Pile for the manufacture of sheets of iron	377,729	Feb. 7	563	145	42	601
Cary, A. Coates. (See Cary, Alanson, assignor.)						
Cary, Alanson, assignor to A. C. Cary, New York, N. Y. Match-safe	379,680	Mar. 20	1204	318	42	1209
Cary, Charlie, Angola, Ind. Valve	379,446	Mar. 13	843	227	42	1133
Casamajor, Louise J., executrix. (See Casamajor, Paul.)						
Casamajor, Paul, deceased, Brooklyn, N. Y.; L. J. Casamajor, executrix. Treating liquids in vacuum-pans	378,230	Feb. 21	1342	355	42	775
Casamajor, Paul, deceased, Brooklyn, N. Y.; L. J. Casamajor, executrix. Treating cinchona-bark	378,231	Feb. 21	1342	.....	42	775
Casamajor, Paul, deceased, Brooklyn, N. Y.; L. J. Casamajor, executrix. Treating saccharine solutions	378,232	Feb. 21	1344	.....	42	775
Casamajor, Paul, deceased, Brooklyn, N. Y.; L. J. Casamajor, executrix. Treatment of cinchona-bark	378,233	Feb. 21	1345	.....	42	775
Case, Frank E., Canton, Ohio. Surgical chair. (Reissue)	10,906	Mar. 6	494	138, 139	42	1050
Case, John K. (See Purcell and Case.)						
Cassella & Co., Leopold. (See Weinberg, Arthur, assignor.)						
Cassella & Co., Leopold. (See Weinberg and Siebert, assignors.)						
Cassells, Wilfred E., Boston, Mass. Speaking-tube for fire-engines	376,067	Jan. 10	479	129	42	103
Casselman, Montgomery, and T. F. McGann, Minneapolis, Minn. Apparatus for heating cars with hot air	376,138	Jan. 10	588	157	42	124
Cassidy, Hugh, Brooklyn, N. Y. Expansible reamer	376,427	Jan. 17	995	261	42	206
Castle, James, Toronto, Ontario, Canada. Advertising device for cars	375,987	Jan. 3	357	96	42	73
Caswell, Charles H. (See Green and Caswell.)						
Catchpole, Alfred, Geneva, N. Y. Steam or hot-water radiator	379,047	Mar. 6	272	79	42	1017
Catchpole, Alfred, Geneva, N. Y. Boiler	379,048	Mar. 6	273	79, 80	42	1017
Catlin, Abel D., Bay City, Mich. Stave-jointing machine	376,139	Jan. 10	589	157	42	124
Catlin, Abel D., Bay City, Mich., assignor to Chattanooga Machinery Company, Chattanooga, Tenn. Milling-machine for scarfing the ends of band-saws	377,707	Feb. 7	535	137	42	595
Catlin, Abel D., Bay City, Mich., assignor to Chattanooga Machinery Company, Chattanooga, Tenn. Circular sawing machine	377,708	Feb. 7	538	137	42	595
Cattell, Thomas R., Wootton Wawen, and A. H. Summers, Tanworth, county of Warwick, assignors of one-half to C. Walker, Wolverhampton, England. Animal-trap	378,767	Feb. 28	2111	557	42	930
Cautner, George. (See Stevens and Cautner.)						
Cave, Amos. (See Cave, John, P., A., F., and A.)						
Cave, Arthur. (See Cave, John, P., A., F., and A.)						
Cave, Frederick. (See Cave, John, P., A., F., and A.)						
Cave, John, P., A., F., and A., Higham Ferrers, county of Northampton, England. Leather-cutting machine	379,857	Mar. 20	1485	392, 393	42	1263
Cave, Paul. (See Cave, John, P., A., F., and A.)						
Cavert, William, Sterling, Ill. Emery-wheel	376,854	Jan. 24	1656	433	42	338
Celce, Frederick, Holyoke, Mass. Bolt	380,184	Mar. 27	1965	525	42	1367
Ceresole, Maurice, Ludwigshafen-on-the-Rhine, Bavaria, Germany, assignor to Badische Anilin and Soda Fabrik. Production of new red coloring-matter	377,349	Jan. 31	2364	.....	42	481
Ceresole, Maurice, Ludwigshafen-on-the-Rhine, Bavaria, Germany, assignor to Badische Anilin and Soda Fabrik. Production of new red coloring-matter	377,350	Jan. 31	2365	.....	42	481
Chable, August F., assignor of one-half to J. C. Price, Evansville, Ind. Sad-iron	377,351	Jan. 31	2367	683	42	481
Chadwick, Hale, Penacook, N. H. Machine for cleaning and separating cranberries	377,667	Feb. 7	477	123	42	585
Chadwick, Richard and G. S. Boutwell, Providence, R. I. Machine for making hollow metallic knife-handles	378,287	Feb. 21	1428	373	42	789
Chainay, Auguste, New Orleans, La. Device for closing the lids of water-closets	378,162	Feb. 21	1232	324	42	751
Challoner, Frank, Omro, Wis. Shingle-saw-grinding machine	379,692	Mar. 20	1133	300	42	1191
Challoner's Sons, George. (See Philbrick, Josiah J., assignor.)						
Chambard, Peter F., Fayette, Ohio. Hay-elevator	377,063	Jan. 31	1946	511, 512	42	402
Chamberlain, Charles C., Passaic, N. J. Bill-file	376,140	Jan. 10	592	158	42	124
Chamberlain, Charles F., Goshen, Ind. Churn	379,447	Mar. 13	844	227	42	1133
Chamberlain, William C., Cedar Bluff, Va. Car-coupling	376,797	Jan. 24	1566	411	42	323
Chamberlin, Frank P., Middletown, Ohio. Fence-building apparatus	376,512	Jan. 17	1118	292	42	229

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Chamberlin, George, assignor of one-half to J. Chamberlin and J. G. Corcoran, Pittsburg, Pa. Air-compressor	376,141	Jan. 10	593	158	42	124
Chamberlin, James, *et al.* (See Chamberlin, George, assignor.)						
Chamberlin, Louis E. (See Slaght, Charles P., assignor.)						
Chamberlin, Willis B., Worcester, Mass. Attachment for supply-tanks	376,292	Jan. 10	799	211	42	163
Chambers, Bering, Quinlan Company. (See Bering, James E., assignor.)						
Champion Trimmer Company. (See Coy and Fullerton, assignors.)						
Chandler, Willie N., Norwood, N. Y. Propeller	378,660	Feb. 28	1967	522	42	904
Chapel, Deodatus, assignor of one-half to C. Nutting, Jr., San Francisco, Cal. Hand-car	377,352	Jan. 31	2368	684	42	481
Chaplin, William, St. Catharines, Ontario, Canada. Lathe	375,988	Jan. 3	358	96	42	73
Chapman & Armstrong Manufacturing Company. (See Dalton, Daniel F., assignor.)						
Chapman, George T., White Plains, N. Y. Boot or shoe	378,040	Feb. 14	1045	273	42	711
Chapman, George W. (See Jacobs and Chapman.)						
Chapman, Joseph L., Haddonfield, N. J. Elevated railway and car	379,681	Mar. 20	1205	319	42	1209
Chapman, Mark C. (See Chapman, Matthew T. and M. C.)						
Chapman, Matthew T., Aurora, Ill. Pipe-well coupling	378,234	Feb. 21	1346	355	42	775
Chapman, Matthew T. and M. C., Aurora, Ill. Windmill	378,235	Feb. 21	1347	355, 356	42	776
Chapon, Maximin, Cours, Rhône, France. Spinning-machine	378,388	Feb. 21	1430	373	42	789
Chappell, Chase, Maxwell & Co. (See Duell and Lasse, assignors.)						
Chappell, Francis W., Baltimore, Md. Sulphuric-acid-distributing apparatus	378,289	Feb. 21	1432	373, 374	42	787
Chappell, George F., assignor to L. Lawrence, New York, N. Y. Letter-file	379,049	Mar. 6	274	80	42	1017
Chase, Albert B., Pueblo, Colo. Pencil or pen case	378,768	Feb. 28	2112	558	42	931
Chase, Frank, assignor to Chase Lasting Machine Company, Boston, Mass. Lasting-machine	376,368	Jan. 10	905	237	42	189
Chase Lasting Machine Company. (See Chase, Frank, assignor.)						
Chase, George W., Tonawanda, N. Y. Machine for packing shavings	380,185	Mar. 27	1966	525	42	1367
Chase, Milton, Haverhill, Mass. Tire-tightener	379,561	Mar. 20	1023	273	42	1174
Chase, Oliver R., Boston, Mass. Lozenge-machine	376,008	Jan. 10	480	130	42	103
Chattanooga Machinery Company. (See Catlin, Abel D., assignor.)						
Cheesbrough, Robert A., New York, N. Y. Hot-air furnace	376,812	Jan. 24	1590	417	42	327
Chicago Mortising Machine Company. (See Douglas, Charles H., assignor.)						
Chidester, David D., Hackettstown, N. J., assignor of part to G. E. Knowles, New York, N. Y., and E. M. Osmun, Hackettstown, N. J. Car-brake	376,592	Jan. 17	1208	319	42	247
Child, Stephen L., Providence, R. I. Button or stud	377,235	Jan. 31	2185	577	42	456
Childa & Co., J. M. (See Childs, J. Morris, assignor.) (Reissue.)						
Childs, Heman W. (See Denehy and Childs.)						
Childs, J. Morris, Utica, N. Y. Harrow	378,081	Feb. 21	1105	289	42	731
Childs, J. Morris, assignor to J. M. Childs & Co., Utica, N. Y. Harrow. (Reissue)	10,893	Jan. 10	986	257	42	196
Chippendale, Cornelius. (See Chippendale, Peter A., assignor.)						
Chippendale, Peter A., assignor to himself and C. Chippendale, Lewiston, Me. Potato-digger	379,682	Mar. 20	1206	319	42	1209
Choate, Ira, Somerville, and C. O. Norcross, Lynn, Mass. Artificial leather	376,955	Jan. 24	1657	.....	42	338
Christenson, Charles L., Vailaburg, N. J. Milk-measure	376,293	Jan. 10	800	212	42	163
Christin, Arthur, Chicago, Ill. Soda-water fountain	376,471	Jan. 17	1057	276	42	217
Church, Duane F., Newton, Mass. Stem winding and setting mechanism for watches	379,030	Mar. 6	275	80, 81	42	1017
Church, James E., Minneapolis, Minn. Fire-signal and burglar-alarm	380,186	Mar. 27	1968	526	42	1367
Church, Melvin B., Grand Rapids, Mich. Sample-card	376,634	Jan. 17	1305	343	42	264
Church, Melvin B., Grand Rapids, Mich. Advertising-circular	376,856	Jan. 24	1658	433	42	338
Church, Thomas L. (See Botsford and Church.)						
Church, Walter C., assignor of one-half to H. Smith, Brixton, county of Surrey, England. Bottle-stopper	376,977	Jan. 24	1816	477	42	369
Church, William S., administrator, *et al.* (See Root, John B.)						
Cincinnati Type Foundry. (See Barth and Lietze, assignors.)						
Cladek, Frank T., Rahway, N. J. Door-securer	379,002	Mar. 6	209	56	42	1006
Claffy, John, *et al.* (See Greene, Patrick R., assignor.)						
Clapp & Griffiths Steel Company. (See Hunt, Robert W., assignor.)						
Clapp, Mortimer A., assignor to D. M. Osborne & Company, Auburn, N. Y. Harvester-reel	377,372	Feb. 7	7	2	42	496
Clark, Aaron T., Newburg, N. Y., assignor to himself and G. J. Ferry, Orange, N. J. Felting-roll for hat-sizing machines	378,573	Feb. 28	1844	487	42	880
Clark, Asa. (See Ashley, Lucius E., assignor.)						
Clark, Burnam R., Union Grove, Wis. Vise	378,082	Feb. 21	1105	289	42	731
Clark & Company, George M. (See Wallace, J. Bennett, assignor.)						
Clark, David P., and M. U. Lorce, Miamisburg, Ohio. Device for securing the ends of carpet in rolls	378,290	Feb. 21	1434	374	42	790
Clark, David Y., Bristol, Conn. Stanchion	376,069	Jan. 10	484	131	42	104
Clark, E. P., *et al.* (See Slagle, Oliver, assignor.)						
Clark, Elisha, Felton, Cal. Side-hill plow and road-grader	375,802	Jan. 3	107	31	42	25
Clark, Ellwood. (See Clark, Lindley and E.)						
Clark, Embury P. and D. L. Wren, Holyoke, Mass. Abacus	378,866	Mar. 6	10	3	42	969
Clark, Franklin E., Detroit, Mich. Pillow-sham holder	378,867	Mar. 6	11	3	42	969
Clark, Henry M., assignor to Stanley Rule and Level Company, New Britain, Conn. Bench-plane	378,494	Feb. 28	1731	457	42	858
Clark, Hiram, Augusta, Me. Vehicle-gear	377,190	Jan. 31	2414	558	42	437
Clark, Joel, Minneapolis, Minn. Fire-escape	379,934	Mar. 27	1612	429	42	1297
Clark, John, assignor to himself and M. Gilmartin, Green Point, N. Y. Pipe-wrench	377,668	Feb. 7	479	123	42	585
Clark, John W., Utica, N. Y. Heating-furnace	379,364	Mar. 13	722	197	42	1109
Clark, Lindley and E., Cuba, Ohio. Hay-carrier	378,190	Feb. 21	1267	335	42	760
Clark, Samuel E., Philadelphia, Pa. Mechanical toy frog	375,867	Jan. 3	185	51	42	40
Clark, Sarah M., Milwaukee, Wis. Dough-mixing machine	377,064	Jan. 31	1949	512	42	403
Clark & Sons, N. (See Palmer, Frank L., assignor.)						
Clark, William M., Boscobel, Wis. Grain-binder	379,365	Mar. 13	723	197, 198, 199	42	1109
Clark, William P., Elberton, Ga. Cotton-chopper	376,294	Jan. 10	801	212	42	163
Clark, William R. (See Gilmore and Clark.)						
Clarke, Alfred, and H. C. Perham, Lowell, Mass. Machine for opening and preparing fibrous substances	380,187	Mar. 27	1971	527	42	1368
Clarke, Greville E., Racine, Wis. Nut-lock	380,188	Mar. 27	1972	527	42	1368
Clarke, Joseph J., Brooklyn, N. Y. Lever foot and fulcrum of scale-beams	376,513	Jan. 17	1121	293	42	229
Clarke, Thomas, and J. E. Conroy, Jersey City, N. J. Filter	378,431	Feb. 28	1637	430	42	837
Clarke, William H., Cleveland, Ohio. Jar-fastening	376,369	Jan. 10	907	237	42	189

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Clarkson, William S., Glendive, Mont. Ter. Fluid-pressure regulator	378,291	Feb. 21	1434	374	42	790
Class, William F., assignor to F. F. Temple and W. A. Johnson, Chicago, Ill. Vent-plug for kegs and casks	376,635	Jan. 17	1305	343	42	265
Clawson, Clement C., Newark, N. J., assignor to United States Machine and Inventions Company, New York, N. Y. Weighing and weight-printing machine	379,858	Mar. 20	1488	393, 394	42	1264
Clawson, Clement C., Newark, N. J., assignor to United States Machine and Inventions Company, New York, N. Y. Machine for determining or indicating the height and weight of persons	379,859	Mar. 20	1496	394, 395	42	1265
Claypool, Albert, Toledo, Ohio. Hinge	376,027	Jan. 3	423	112	42	85
Clayton, John, Wadena, Minn. End-gate	376,405	Jan. 10	950	249	42	190
Clearwater, G. A., *et al.* (See Howe, Thomas B., assignor.)						
Clearwater, George A. (See Cook, Lewis P., assignor.)						
Cleaver, Abner M., Petty, Ark. Animal-trap	376,142	Jan. 10	595	158	42	125
Clemens, Frank, Lafayette, Ind. Hat and coat rack	379,152	Mar. 6	416	117	42	1044
Clement, Lewis M., Oakland, and G. C. Watriss, assignors to H. Root, San Francisco, Cal. Operating cable railways at switches	379,306	Mar. 13	644	175	42	1093
Clementsen, Knud, Chicago, Ill. Combined mangling-machine and extension-table	379,935	Mar. 27	1613	429	42	1286
Clemm, Adolph, Mannheim, Baden, Germany. Destroying insects	380,189	Mar. 27	1974	.....	42	1368
Cleveland, Charles E., and J. Hanson, Fort Wayne, Ind.; said Cleveland assignor to said Hanson. Side-dresser for saws	380,089	Mar. 27	1840	490	42	1342
Cleveland, Clement, New York, N. Y. Door-check	376,813	Jan. 24	1592	417	42	327
Cleveland Target Company. (See Damm, Fredrick C., assignor.)						
Cliff, Edward, Oswego, N. Y. Bolster-spring for vehicles	376,857	Jan. 24	1659	433	42	338
Cliff, Edward, Rochester, N. Y. Vehicle-spring	379,366	Mar. 13	731	200	42	1110
Climax Manufacturing Company. (See Betts, Charles L., assignor.)						
Clinch, N. Bayard, Green Cove Springs, Fla. Child's carriage	379,207	Mar. 13	505	142	42	1067
Cline, George J., Goshen, Ind. Sash-fastener	377,990	Feb. 14	976	254	42	686
Cline, George J., Goshen, Ind. Fence-weaving machine	379,100	Mar. 6	351	100	42	1032
Clot, John B., San Francisco, Cal. Street and station indicator for railway-cars	380,090	Mar. 27	1841	490	42	1342
Cloud, William F., Topeka, Kans. Spectacle-case	379,936	Mar. 27	1614	430	42	1286
Clough, Theodore, Dobb's Ferry, N. Y. Gate-spring	378,191	Feb. 21	1268	335	42	760
Clouse, Joseph N., Toledo, Ohio. Adjustable cuff-holder	375,731	Jan. 3	14	4	42	6
Cloyes, James H., assignor to Des Moines Buggy Company, Des Moines, Iowa. Two-wheeled vehicle	377,849	Feb. 14	773	198	42	657
Cloyes, James H., and E. B. Gray, Kalamazoo, Mich., assignors to Des Moines Buggy Company, Des Moines, Iowa. Two-wheeled vehicle	377,848	Feb. 14	773	197	42	657
Clute, Nicholas J., Schenectady, N. Y. Electro-magnetic brake	376,709	Jan. 17	1419	373	42	286
Cluxton, James R., Xenia, Ohio. Wash-board-making machine	377,236	Jan. 31	2186	577, 578	42	450
Clyne, James B., assignor to White Sewing Machine Company, Cleveland, Ohio. Metal-screw machine	376,942	Jan. 24	1771	465	42	961
Coas, Edward K., Providence, R. I., assignor to Providence Cylinder Company, Nashua, N. H. Manufacture of sheet-metal tubes	378,769	Feb. 28	2113	558	42	931
Coas, Edward K., Providence, R. I., assignor to Providence Cylinder Company, Nashua, N. H. Sheet-metal tube	379,937	Mar. 27	1615	430	42	1286
Coates, Abraham, Watertown, N. Y. Combined reel-handle and fishing-reel	379,663	Mar. 20	1300	320	42	1210
Coates, Benjamin J., Erie, Pa. Machine for turning cross-head pins	376,235	Jan. 10	724	193	42	148
Cobb, Rollin A., *et al.* (See Winfield, William C., assignor.)						
Cobb, Thomas H., and C. L. Bowen, Wolf Creek, Ark. Mercantile boot and shoe box fixture	376,070	Jan. 10	485	131	42	104
Cobb, Willard B., Decatur, Mich. Sulky attachment for plows	375,868	Jan. 3	185	51	42	40
Cochran, Samuel H., Everett, Mass. Separating metals from their ores	378,868	Mar. 6	11	4	42	969
Cochrane, William N., assignor of one-half to W. E. Stronach, Charlestown, Mass. Washbench	378,921	Mar. 6	85	24	42	983
Codling, Robert B., Bristol, Conn. Turning-machine	379,307	Mar. 13	646	175, 176	42	1094
Coffin, Edward W., Ashland, N. J. Apparatus for aerating and cooling milk	379,051	Mar. 6	278	81	42	1018
Coffin, John, assignor to Cambria Iron Company, Johnstown, Pa. Apparatus for toughening steel rails	378,083	Feb. 21	1107	290	42	731
Coffin, Judson H., *et al.* (See Harkins, Daniel, assignor.)						
Coffman, George, assignor to himself, P. J. Upp, and W. A. Reid, Spearville, Kans. Harrow	379,003	Mar. 6	209	57	42	1006
Cohen, Solomon L., New York, N. Y. Door-mat	378,356	Feb. 21	1524	398	42	809
Cohnen, Frank, Detroit, Mich. Machine for picking husks, &c	377,095	Jan. 31	2001	524	42	412
Coker, Edward R., *et al.* (See Waterman, Henry, assignor.)						
Colby, Edward A., New Haven, Conn. Combined incandescent-electric-lamp socket and electrical converter	376,583	Jan. 17	1209	320	42	248
Cole, Albert F. (See Cole, Henry W. and A. F.)						
Cole, Charles E., Somerville, N. J. Device for weighing and sacking grain	377,513	Feb. 7	255	63	42	543
Cole, Frederick W. (See Smith, Alson A., assignor.)						
Cole, Frederick W., Newton, Mass., assignor to Gamewell Fire Alarm Telegraph Company, New York, N. Y. Non-interfering signal-box	380,022	Mar. 27	1745	467	42	1322
Cole, George H., Atlanta, Ga. Plug-switch for telephone and telegraph circuits	377,237	Jan. 31	2193	578	42	451
Cole, Henry W. and A. F., Stourport, county of Worcester, England. Gas and other fluid pressure controlling apparatus	376,636	Jan. 17	1309	344	42	265
Cole, William E., Montgomery, Ala. Brick-drier	378,236	Feb. 21	1351	356	42	776
Cole, William E., Montgomery, Ala. Brick-drier	378,237	Feb. 21	1351	356	42	776
Cole, William R., assignor to Parrish Bros. and Peck Electrical Company, Detroit, Mich. Electric-circuit breaker	376,071	Jan. 10	486	131	42	104
Cole, William R., assignor to Parrish Bros. and Peck Electrical Company, Detroit, Mich. Electrical circuit-breaker	376,072	Jan. 10	488	132	42	105
Coleman, John A., Providence, R. I. Grinding-machine	376,814	Jan. 24	1593	417, 418	42	327
Coleman, John A., Providence, R. I. Grinding-machine	376,815	Jan. 24	1597	418, 419	42	327
Coleman, Michael P., Boston, Mass. Lubricator	380,023	Mar. 27	1748	467	42	1323
Colladay, Stephen B., *et al.* (See Forrest, William W., assignor.)						
Collier, Isaac H., Poughkeepsie, N. Y. Weight-motor	377,929	Feb. 14	888	220	42	680
Colles, Edward G. T., Chicago, Ill. Feed-water purifier	378,495	Feb. 28	1732	457	42	956
Collier, Charles L., Howell, Mich. Railway-velocipede	376,073	Jan. 10	488	132	42	105
Collingwood, Daniel F. and J. A., Pretty Prairie, Kans. Device for watering hogs and other animals	377,016	Jan. 31	1879	494	42	389
Collingwood, James A. (See Collingwood, Daniel F. and J. A.)						
Collins, James, Crawfordsville, Ind. Wood-joint	376,236	Jan. 10	725	193	42	149

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Collins, James W., Centre Montville, Me. Horse hay-fork	379,448	Mar. 13	845	228	42	1133
Collins, Robert F., Manchester, Ohio. Churn	378,770	Feb. 28	2114	558	42	931
Colony, Charles W., Sandy Creek, N. Y., assignor to Steam Gauge and Lantern Company, Rochester, and R. E. Dietz Company, New York, N. Y. Lantern. (Reissue)	10,911	Mar. 20	1589	419	42	1283
Colt's Patent Fire Arms Manufacturing Company. (See Thomson, John, assignor.)						
Colvin, Benoni, and J. Waldey, Freeport, Ill.; said Waldey assignor to Lne Adjustable Spring Hinge Company, Port Washington, Wis. Spring-hinge	375,903	Jan. 3	108	31	42	25
Colvin, Oscar, Buchanan, Mich. Windmill-regulator	379,052	Mar. 6	279	81	42	1018
Combined Electric and Trip Bell Cord Company. (See Glasgow and Stevens, assignors.)						
Comer, E. T. (See Guilmartin, John F., assignor.)						
Commander, Miles, assignor to himself and C. Jones, Greensborough, Ala. Hame-tug	377,709	Feb. 7	540	138	42	596
Commercial Overseaming Sewing Machine and Manufacturing Company. (See Lachman, Morris, assignor.)						
Comstock, John B., New Orleans, La. Grinding-machine	377,883	Feb. 14	823	210	42	666
Conant, Thomas P., Brooklyn, N. Y., and Z. Latshaw, McKeesport, Pa., assignors to Electrical Accumulator Company, of New York. System of electrical distribution	378,432	Feb. 28	1638	431	42	837
Condell, John, New York, N. Y. Folding bed	379,449	Mar. 13	846	228	42	1133
Cone, Ernest G., East Hampton, Conn. Thread-holder for spools	376,858	Jan. 24	1660	433	42	339
Cone, Henry D., Stockbridge, Mass. Wrench	376,584	Jan. 17	1212	3 0	42	248
Cone, Henry D., Stockbridge, Mass. Device for fastening railway-rails to their ties	377,191	Jan. 31	2116	559	42	437
Cone, John, Marquette, Mich. Hydraulic elevator	376,859	Jan 24	1661	434	42	339
Conley, Joseph F., Rockford, Ill. Bicycle-support	378,496	Feb. 28	1734	457, 458	42	858
Conley, Michael R. (See Hersey and Conley.)						
Conmee, John. (See Lloyd, Marshall B., assignor.)						
Conn, Charles G. (See Gronert and Conn.)						
Conn, Charles G., Elkhart, Ind. Wind-instrument	378,771	Feb. 28	2115	558	42	931
Conn, John H., assignor of one-half to O. C. Pugh, Englewood, Ill. Awning for car-platforms	375,732	Jan. 3	15	4	42	6
Connell, David, Wilmington, Del. Car-heater	379,101	Mar. 6	353	100	42	1032
Connell, William J., Charleston, W. Va. Window-screen	377,991	Feb. 14	977	255	42	686
Connett, Elma E., assignor to J. F. Myers, Peoria, Ill. Fabric-turfing implement	377,192	Jan. 31	2117	559	42	437
Connett, Matthew F., Jr., Peoria, Ill. Hand fence-machine	376,514	Jan. 17	1122	293	42	229
Connolly, Thomas A. (See Betts, Robert J., assignor.)						
Conroy, John E. (See Clarke and Conroy.)						
Consolidated Coupling Company. (See Benjamin, George H., assignor.)						
Consolidated Coupling Company. (See Harrington, Samuel H., assignor.)						
Consolidated Coupling Company. (See Harrington and Hannan, assignors.)						
Constant, John S., White Pigeon, Mich. Fanning-mill	378,772	Feb. 28	2116	559	42	931
Continental Cash Car Company. (See Elliott, Gilbert R., assignor.)						
Converse, Edmund C. (See Bowers, Moses C., assignor.)						
Conway, Berry T., *et al.* (See Hogan, George L., assignor.)						
Cook, Henry, Philadelphia, Pa. Amalgamator	375,733	Jan. 3	17	4	42	6
Cook, Hiram D., Dry Brook, N. Y. Reversible road scraper and grader	378,922	Mar. 6	86	25	42	983
Cook, John M., Baltimore, Md. Flour-bolt	376,943	Jan. 24	1772	466	42	361
Cook, Lewis L., Knapp's Creek, Wis. Cant-hook	378,386	Feb. 21	1561	408	42	816
Cook, Lewis P., Hawley, assignor of one-half to G. A. Clearwater, Scranton, Pa. Oar-lock	379,153	Mar. 6	417	118	42	1045
Cook, Roswell F., Ilion, N. Y. Magazine-gun	378,661	Feb. 28	1967	522	42	904
Cook, Thomas W. G., New York, N. Y. Paper-file	379,860	Mar. 20	1502	395	42	1267
Cooke, Charles E. (See Flynt, Henry, assignor.)						
Cooke, Charles S. (See Cooke, William A., Jr., and C. S.)						
Cooke, Ernest W., assignor of one-half to W. D. Eaton and C. D. Hauk, Chicago, Ill. Steam-valve	379,684	Mar. 20	1211	320	42	1210
Cooke, George K., assignor to D. S. Moore, New York, N. Y. Gas-burner	379,562	Mar. 20	1024	274	42	1174
Cooke, Rollin H. (See Alvord, Jabes, assignor.)						
Cooke, Watts, and D. Carlough, Paterson, N. J. Upsetting-machine	376,295	Jan. 10	892	242	42	163
Cooke, William A., Jr., New York, N. Y. File for letters, &c	379,367	Mar. 13	732	200	42	1110
Cooke, William A., Jr., and C. S., Brooklyn, N. Y. File for letters, bills, papers, &c	378,869	Mar. 6	15	4	42	970
Cooley, Arthur M., assignor to A. G. Burton, Chicago, Ill. Making wooden shade rollers or poles	379,685	Mar. 20	1212	321	42	1211
Cooley, Chauncey E., and E. G. Nason, Fort Jones, Cal. Motor	379,004	Mar. 6	211	57	42	1006
Cooper, Albert, Brooklyn, N. Y. Folding stand for camp-stools	378,574	Feb. 28	1845	487	42	840
Cooper, Charles F. (See Hermite and Cooper.)						
Cooper, John W., Boston, Mass., assignor of one-half to R. A. Holliday, Atlanta, Ga. Dental chair	378,433	Feb. 28	1639	431, 432	42	838
Cooper, Leonard A., Atchison, Kans. Windmill	377,602	Feb. 7	380	96	42	567
Cooper, William. (See Billson, John T., assignor.)						
Copeland, Herschel P., East Orange, N. J. Telegraphic pen	379,368	Mar. 13	734	200	42	1110
Copp, Richard. (See Lipphard, John F., assignor.)						
Coppin, Henry, 58 St. German's Road, Forest Hill, county of Kent, England. Photographic-plate holder	376,181	Jan. 10	648	173	42	135
Corbett, James R., assignor to Stein Manufacturing Company, Rochester, N. Y. Fastener for coffins	377,290	Jan. 31	2276	601	42	466
Corbett, Philip F., Boston, Mass. Clamp	376,637	Jan. 17	1312	344	42	265
Corbus, John. (See Ramsey, John W., assignor.)						
Corcoran, James G., *et al.* (See Chamberlin, George, assignor.)						
Corder, Luther R., Jacksonville, assignor of one-half to L. L. Boone, Little Rock, Ark. Cotton-chopper	377,450	Feb. 7	156	36	42	524
Corderman, Solomon, Waveland, Iowa. Hog-trough	378,434	Feb. 28	1642	432	42	838
Corey, George D., assignor to C. M. Hosmer, Lowell, Mass. Jar or bottle for fruit, milk, &c	380,091	Mar. 27	1842	490	42	1342
Corey, George D., assignor to C. M. Hosmer, Lowell, Mass. Packing or storing vessel	380,092	Mar. 27	1843	491	42	1343
Corey, James L., Taunton, Mass., assignor to Birmingham Iron Foundry, Birmingham, Conn. Wire-nail machine	377,238	Jan. 31	2194	578, 579	42	451
Corey, James W., Newark, N. J. Mourning-band for hats	376,428	Jan. 17	996	261	42	206
Corey, Rufus H., assignor of one-half to D. M. Osborne, Auburn, N. Y. Cord-tying mechanism for grain-binders	376,515	Jan. 17	1124	293, 294	42	230
Corman, Charles A., Cochituate, Mass. Temperature-regulator for incubators	378,435	Feb. 28	1643	432	42	839
Cornell, John M., New York, N. Y. Dock	379,861	Mar. 20	1503	395	42	1267
Cornely, Emil, Washington, D. C. Machine for fixing cords to textile fabrics	376,860	Jan. 24	1662	434	42	339
Cornish, Harry B., Blue Earth City, Minn. Coffee-pot	377,514	Feb. 7	256	63	42	543
Cornman, Wilson T., *et al.* (See Boggs, Joseph O., assignor.)						
Corscaden, Thomas. (See Hart and Corscaden.)						
Cory, John H., Allen, Mich. Trace-fastening	377,738	Feb. 14	584	150	42	620
Cosby, Anderson B., Richmond, Va. Churn-cover	377,710	Feb. 7	541	138	42	596

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Cosper, William H., Chicago, Ill. Weather-stripping	379,208	Mar. 13	506	142	42	1068
Cossette, Henry, Champlain, Quebec, Canada, assignor to Diamond Prospecting Company, Chicago, Ill. Core-lifter for annular rock-drills	377,239	Jan. 31	2106	579	42	451
Costello, John, assignor of one-half to J. F. Simms, Attleborough, Mass. Button	379,529	Mar. 13	969	262	42	1157
Cote, Fred, Minneapolis, Minn. Dumping-car	377,424	Feb. 7	120	25	42	517
Cottle, Shubael, New York, N. Y. Button	378,923	Mar. 6	88	25	42	964
Cottrell, George, San Francisco, Cal. Power mechanism	378,192	Feb. 21	1269	336	42	761
Cottrell, Samuel H., Ramsey, Ala. Fertilizer-distributer	376,731	Jan. 24	1453	{382 383}	42	301
Conch, Franklin, White Plains, N. Y. Playing-card	378,497	Feb. 28	1737	458	42	859
Coughlin, Reese P., Winsted, Conn. Manufacture of clock-cases and other articles from plastic material	379,450	Mar. 13	847	{228 229}	42	1131
Counter, William E., Three Rivers, Mich. Clock striking mechanism	376,074	Jan. 10	489	132	42	105
Courtright, Archibald L., Mount Hamill, Iowa. Hay-stacker	379,102	Mar. 6	354	101	42	1032
Covel, Milo, Chicago, Ill. Automatic feed-water apparatus for boilers	376,472	Jan. 17	1058	277	42	217
Coventry, Henry. (See Hopkins, Coventry, Neymann, and Beardslee.)						
Covert, James C., West Troy, N. Y. Halter	379,369	Mar. 13	735	200	42	1111
Covert, James C., and J. Billingham, West Troy, N. Y., said Billingham assignor to said Covert. Machine for welding chain-links	377,193	Jan. 31	2119	559	42	438
Cowan, Harry W., Gros, Dak. Ter. Automatic grain-measure	379,209	Mar. 13	507	143	42	1068
Cowans, Robert, *et al.* (See Pearson, George D., assignor.)						
Cowher, Daniel M., and J. L. Numer, Mapleton Depot, Pa. Car-coupling	378,163	Feb. 21	1233	324	42	753
Cowley, James T., New York, N. Y., assignor to Lamson Store Service Company, Boston, Mass. Store-service apparatus	378,542	Feb. 28	1795	474	42	870
Cox, Henry F., Philadelphia, Pa. Rail-splice or fish-plate	378,543	Feb. 28	1797	475	42	871
Cox, Henry F., Philadelphia, Pa. Rail-joint	378,575	Feb. 28	1846	487	42	881
Coxe, Eckley B., and S. Salmon, Drifton, Pa., said Salmon assignor to said Coxe. Coal-screening mechanism	380,190	Mar. 27	1975	528	42	1368
Coy, Frederick W. (See Saxe, Seelye, and Coy.)						
Coy, Frederick W., Boston, Mass. Sole-laying machine	376,406	Jan. 10	951	{240 250}	42	190
Coy, Frederick W., and G. A. Fullerton, Boston, Mass., assignors to Champion Trimmer Company, of New Hampshire. Machine for trimming sole-edges	378,870	Mar. 6	17	4, 5, 6	42	970
Coyle, James, Lancaster, Pa., assignor of two-thirds to C. W. Sadler and J. H. Giles, Sutter Creek, Cal. Device for hitching animals	379,103	Mar. 6	355	101	42	1032
Craft, James B., New York, N. Y. Apparatus for ice-making and refrigerating	376,732	Jan. 24	1455	{383 384}	42	302
Crafts, John L., Somerville, Mass. Truck and ladder	379,053	Mar. 6	281	81, 82	42	1018
Cragin, Edward F. (See Buckingham, Reuben D., assignor.)						
Cragin, George P., Ada, assignor to W. R. Smith, Fergus Falls, and I. L. Cragin, Ada, Minn. Blacking-box holder	378,954	Mar. 6	131	38	42	992
Cragin, Ida L., *et al.* (See Cragin, George P., assignor.)						
Cragin Manufacturing Company. (See Kimllen, John H., assignor.)						
Craig, Isaac E., Camden, Ohio. Manufacture of sheet-iron	379,370	Mar. 13	736	.....	42	1111
Craig, Isaac E., Camden, Ohio. Manufacture of sheet-iron	379,371	Mar. 13	737	.....	42	1111
Craig, James W., Coyville, Kans. Corn-planter	376,370	Jan. 10	908	248	42	183
Craig, Lewis B., assignor of one-half to H. C. Long, Salem, Mo. Truss	376,861	Jan. 24	1663	434	42	339
Crain, William O., assignor of two-thirds to Wise Brothers, Baltimore, Md. Sewing-machine	376,978	Jan. 24	1817	478	42	370
Cramer, William F. (See Stockton, Robert N., assignor.)						
Crampton, James, San Francisco, Cal. Rubber hose	377,801	Feb. 14	715	181	42	646
Crandall, Jesse A., Brooklyn, N. Y. Sled	376,585	Jan. 17	1213	320	42	248
Crandall, Nathan W. (See Jopson and Crandall.)						
Crane Bros. Manufacturing Company. (See Hayden, James T., assignor.)						
Crane Bros. Manufacturing Company. (See Switzer, Byron B., assignor.)						
Crane, Dominic F., White Mills, Ky. Time-chart	379,662	Mar. 20	1504	396	42	1267
Crane, Thomas R., Heathsville, Va. Fertilizer-feed for drills	377,546	Feb. 7	296	76	42	552
Crane, Thomas S., Brick Church, N. J. Wood-cutting machine	379,451	Mar. 13	851	{230 231}	42	1134
Cranford, Henry L., Washington, D. C. Combined gutter and conduit	379,505	Mar. 13	939	253	42	1150
Crannell, Jesse, Troy, N. Y. Repeating-check for music-sheets of mechanical musical instruments	379,887	Mar. 20	1540	406	42	1274
Crawford, John, Reading, and J. B. Ker, Harrisburg, Pa. Telephone system	375,925	Jan. 3	267	72	42	56
Crawford, John M., Philadelphia, Pa. Checkrein-holder	376,816	Jan. 24	1599	419	42	333
Crawford, John M., Philadelphia, Pa. Combined clock and lamp	377,240	Jan. 31	2197	580	42	452
Creager, Harry M. (See Creager, Jonathan and H. M.)						
Creager, Jonathan and H. M., Cincinnati, Ohio. Clay-pulverizer	380,245	Mar. 27	2053	549	42	1385
Creamer, Henry, New York, N. Y. Steam-trap	376,586	Jan. 17	1215	321	42	249
Crego, Fred B. (See Jewett, Charles W. and G. H., assignors.)						
Creighton, William G., Norwood Park, Ill. Tube-motor street-railway	376,429	Jan. 17	999	261	42	207
Cremer, James, Philadelphia, Pa. Curtain-fixture	376,143	Jan. 10	596	159	42	125
Creque, Allen P., New York, N. Y. Boiler-pedestal	375,734	Jan. 3	18	5	42	7
Creque, Allen P., New York, N. Y. Pedestal for range-boilers	376,767	Jan. 24	1520	400	42	313
Creque, Allen P., New York, N. Y. Apparatus for heating water	377,096	Jan. 31	2092	524	42	412
Creque, Allen P., New York, N. Y. Fitting for water-heating apparatus	379,269	Mar. 13	584	161	42	1082
Creaswell, Francis A., Strongstown, Pa. Steam-engine	378,041	Feb. 14	1045	273	42	711
Crim, Noah, Galton, Ill. Horse-detacher	378,193	Feb. 21	1271	336	42	761
Crippen, Edwin, and W. King, New Orleans, La. Bridle	379,005	Mar. 6	212	57	42	1007
Crippen, Edwin, and W. King, New Orleans, La. Buckle	379,006	Mar. 6	212	57	42	1007
Crocker, Richard, Mazomanie, and J. Diehl, Franksville, Wis. Vehicle-spring	379,760	Mar. 20	1392	353	42	1232
Crofford, Warren K., New York, N. Y. Newspaper-file	380,246	Mar. 27	2054	549	42	1385
Crofford, Warren K., assignor of one-half to W. Bardsley, New York, N.Y. Lemon-squeezer	377,291	Jan. 31	2278	602	42	466
Croft, John F. (See Pitner, Henry B., assignor.)						
Cromer, Lawrence W. (See Gavin and Cromer.)						
Cromer, Lawrence W. (See Gavin, Cromer, and Gilmor.)						
Cronin, Matthew, Westmoreland, N. Y. Coupler for bob-sleds	377,739	Feb. 14	585	151	42	620
Cronin, William D., assignor of one-half to F. W. Detwiler, Philadelphia, Pa. Grate-bar	377,740	Feb. 14	586	151	42	621
Cronk, Charles W., Newark, N. J. Telescopic cut-off-valve gear	376,516	Jan. 17	1126	294	42	230
Croselmire, Charles F., Newark, N. J. Wet process of extracting pure zinc from its ores	379,764	Mar. 20	1393	.....	42	1233
Cross, Ira, Nashua, N. H. Spool	379,633	Mar. 20	1135	301	42	1195
Crosse, Charles G., Sun Prairie, Wis. Car-coupling	376,237	Jan. 10	726	193	42	149
Crossley, John B., Clay Centre, Kans. Nut-lock	379,686	Mar. 20	1214	321	42	1211
Crouch, Frank J., Eugene City, Oreg. Non-polarizing constant-current battery	379,372	Mar. 13	739	201	42	1111
Crouch, Frank J., Oakland, Oreg. Apparatus for heating cars	380,247	Mar. 27	2055	549	42	1385
Crow, William B., and W. E. McMackin, Milburnton, Tenn. Car-coupling	379,563	Mar. 20	1025	274	42	1174

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Crowdus, Walter A., and H. M. Sutton, Dallas, Tex. Current-regulator for dynamo-electric machines	377,884	Feb. 14	824	210	42	666
Crowell, J. Foster, and F. C. Weir, Cincinnati, Ohio. Railway-crossing	378,827	Feb. 28	2218	590	42	951
Crowley, James K., Ansonia, Conn. Table for tinning zinc and other metals	380,248	Mar. 27	2056	550	42	1386
Crozier, William C., Knoxville, Tenn. Distributing-case	375,735	Jan. 3	19	5	42	7
Cruice, Daniel, and F. Himmel, New York, N. Y. Hoof-clasp	380,093	Mar. 27	1845	491	42	1343
Crum, Joseph S., Stockdale, Kans. Listing plow or cultivator	379,883	Mar. 20	1506	396	42	1267
Cruson, John N., Elizabethtown, Ill. Rafter-gage	378,397	Feb. 21	1562	408	42	816
Culbreth, Richard S. (See Leonard and Kettlewell, assignors.)						
Cullabine, Henry, Sheffield, county of York, England. Tobacco-pipe	377,241	Jan. 31	2200	580	42	452
Cullingworth, George R., New York, N. Y. Regulator for air-compressors	377,481	Feb. 7	199	47	42	534
Culver, Ebenezer C., Madrid, Iowa. Automatic check-row corn-planter	379,634	Mar. 20	1136	301	42	1195
Cummer, James W., Cadillac, Mich. Heating-stove	378,871	Mar. 6	23	6	42	971
Cummings, George K., New York, N. Y. Device for burning hydrocarbon oil	377,146	Jan. 31	2060	541	42	425
Cummings, Henry H. (See Hopkins and Cummings.)						
Cummings, John R., assignor to American Press Association, Chicago, Ill. Backing electrotype-shells	375,869	Jan. 3	187	.....	42	41
Cummings, Urish, Buffalo, N. Y. Stone-dressing machine	376,296	Jan. 10	805	{212 213}	42	164
Cummins, Orin L. (See Delano and Cummins.)						
Cunning, James, and G. A. Lowry; said Lowry assignor to F. P. Woollen, Indianapolis, Ind. Hog-scraping machine	377,353	Jan. 31	2370	{684 685}	42	481
Cunningham, David H., Elizabeth, N. J. Button-hole cutter	379,007	Mar. 6	213	58	42	1007
Cunningham, James F., assignor to E. P. Gleason Manufacturing Company, New York, N. Y. Taper slide or holder for gas-lighting torches	380,094	Mar. 27	1846	491	42	1343
Cunningham, Thomas O., Holyoke, Mass. Automatic roll-cleaner for spinning-machines	378,872	Mar. 6	24	7	42	971
Current, Bourbon, Paris, Ky. Hand fence-machine	378,873	Mar. 6	26	7	42	971
Currier, John W., North Troy, Vt. Wear plate	379,210	Mar. 13	512	144	42	1069
Currier, William M. (See Patch, Benjamin F., assignor.)						
Curtis, Amasa, Freeport, Ill. Whiffletree-hook	376,733	Jan. 24	1457	384	42	302
Curtis, Dexter. (See Lynch, Matthew W., assignor.)						
Curtis, Herbert, New York, N. Y. Hod-elevator	377,741	Feb. 14	587	151	42	621
Curtis, Nelson, Boston, Mass. Pipe-coupling for railway-trains	376,075	Jan. 10	491	{132 133}	42	105
Curtis, William H., La Due, Mo. Ticket-printing machine	380,278	Mar. 27	2091	560	42	1393
Curtiss, Robert M., Brooklyn, N. Y. Means for automatically operating the gates of pneumatic tubes and similar ways	376,802	Jan. 24	1664	{434 435}	42	339
Cushing, Ellen, San Francisco, Cal. Corset-steel protector	378,576	Feb. 28	1847	488	42	881
Cushing, Nichols B., Jersey City, N. J. Unwinding safety device for hoisting machinery	377,017	Jan. 31	1879	495	42	389
Cushman, Francis A., Plymouth, N. H. Sole for boots or shoes	379,765	Mar. 20	1324	333	42	1233
Cushman, Henry S., Milford, Mass. Whip-stock core	378,662	Feb. 28	1970	522	42	904
Cusson, Japhet S., De Kalb, Ill. Horse-collar pad	379,506	Mar. 13	940	253	42	1150
Cuthbertson, John, Lowell, Mass. Can or measure	376,768	Jan. 24	1521	400	42	314
Cutlan, Frederick. (See Lion and Cutlan.)						
Cutting, Willard H., St. Louis, Mo. Electric call	376,863	Jan. 24	1668	435	42	340
Cyclist's and Sportaman's Gun and Rifle Company. (See Bean, Edward D., assignor.) (Reissue.)						
Dable, John, Chicago, Ill. Scale for weighing grain	377,292	Jan. 31	2278	{602 603}	42	466
Dabney, William H. H., Oakland, Iowa. Attachment for windmill pump-rods	376,710	Jan. 17	1420	373	42	286
Daboll, William V. (See Hope, John, Jr., assignor.)						
Dalley, Asa G., assignor of one-half to J. D. Hawks, Detroit, Mich. Railway snow-plow	379,938	Mar. 27	1616	430	42	1298
Daimler, Gottlieb, Cannstadt, Würtemberg, Germany. Engine-driven vehicle	376,638	Jan. 17	1314	{344 345}	42	265
Dake, Charles R. (See Moser, George H., assignor.)						
Dale, James. (See Miller and Dale.)						
Dale, James, assignor of one-fourth to J. B. Miller, Chicago, Ill. Combined printing-press and ruling-machine	380,191	Mar. 27	1976	{529 530}	42	1369
Dally, Charles M. (See Lee, James P., assignor.)						
Dalsheimer, Simon, Baltimore, Md. Boot or shoe	379,452	Mar. 13	856	231	42	1135
Dalton, Daniel F., assignor to Chapman & Armstrong Manufacturing Company, Waterbury, Conn. Clasp	378,238	Feb. 21	1352	356	42	776
Daly, Oliver P., Smith Centre, Kans. Heating-stove	376,076	Jan. 10	492	133	42	106
Damm, Fredrick C., Decatur, Ill., assignor to Cleveland Target Company, Cleveland, Ohio. Means for packing flying targets	377,603	Feb. 7	381	97	42	568
Dana, Tucker & Co. (See Browne, George J., assignor.)						
Dancyger, Simon, Dayton, Ohio. Marking-tag	379,054	Mar. 6	283	83	42	1019
Dancyger, Simon, Dayton, Ohio. Display-frame	379,055	Mar. 6	284	83	42	1019
Dangler, David E., and H. Ruppel, Cleveland, Ohio. Valve mechanism for vapor-stove burners	376,518	Jan. 17	1128	295	42	230
Daniels, Eugene O., Springfield, Ohio. Lightning-rod attachment for windmills	377,742	Feb. 14	588	{151 152}	42	621
Daniels, Fred H., Worcester, Mass. Reeling apparatus for wire rods	379,104	Mar. 6	356	{101 102}	42	1032
Daniels, Samuel, assignor of one-half to M. E. Dayton, Chicago, Ill. Burner for gas or vapor stoves	377,547	Feb. 7	297	76	42	552
Daniels, Samuel, assignor of one-half to M. E. Dayton, Chicago, Ill. Vapor-burner	377,548	Feb. 7	299	76, 77	42	552
Daniels, William H., Southsea, England. Construction of ships, &c	376,517	Jan. 17	1127	295	42	230
Darling, Erik R. (See Stiner and Darling.)						
Darling, Samuel, Providence, R. I. Protractor	376,430	Jan. 17	1090	282	42	207
Darr, Emory Q., Shelbyville, Ind. Sweat-pad fastener	378,239	Feb. 21	1353	357	42	776
Darrach, Francis L., Philadelphia, Pa. Hatchway	376,864	Jan. 24	1669	436	42	340
Dashiell, William W., Bergen Point, N. J. Manufacture of gas	376,944	Jan. 24	1774	{466 467}	42	362
Davenport, Benjamin R., assignor to Calumet Fastener Company, Chicago, Ill. Corset-fastener	380,192	Mar. 27	1980	530	42	1369
Daverio, Gustav, Zurich, Switzerland. Driving-gear for flour-sifters	380,249	Mar. 27	2058	550	42	1386
David, Charles A. (See Haulon, Joseph P. A., assignor.)						
David, William K., Chicago, Ill. Calendar	375,736	Jan. 3	20	5, 6, 7	42	7
David, William K., Chicago, Ill. Calendar	379,197	Mar. 6	473	134	42	1056
Davids, Charles H., Brooklyn, N. Y. Registering and numbering device	375,804	Jan. 3	109	31	42	25
Davidson, Alexander, Chicago, Ill. Steam-separator	377,992	Feb. 14	978	255	42	698
Davidson, Alexander, Chicago, Ill. Steam-separator. (Reissue)	10,914	Mar. 27	2129	569	42	1400
Davidson, Francis P., South Chicago, Ill. Car-wheel	376,865	Jan. 24	1670	436	42	341

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Davidson, George R., Brockway, Mich. Feed-regulator	380,095	Mar. 27	1847	491	42	1343
Davidson, Marshall T., Brooklyn, N. Y. Triple-expansion engine	376,639	Jan. 17	1316	346	42	266
Davidson, Otis E., Nashville, Tenn. Steam-motor	378,663	Feb. 28	1970	523	42	905
Davidson, William E. (See Porter, Daniel R., assignor.)						
Davies, Thomas A., New York, N. Y. Central rail-fastening	376,945	Jan. 24	1776	467	42	362
Davies, Thomas A., New York, N. Y. Fish-plate	377,885	Feb. 14	825	210	42	667
Davies, William, Liverpool, county of Lancaster, England, assignor of one-half to J. E. Hannah, Winnipeg, Canada. Apparatus for regulating the supply of liquids for water-closets	377,293	Jan. 31	2280	{602 / 603}	42	467
Davis, Calvin R., assignor to Kimberlin Manufacturing Company, Indianapolis, Ind. Lifting-spring for cultivators	377,993	Feb. 14	979	256	42	699
Davis, Charles A., Washington, D. C. Railway-car	375,989	Jan. 3	360	96, 97	42	74
Davis, Edwin F., Seneca, Kans., assignor of one-half to C. J. Nesbitt, Kansas City, Mo. Mail-bag	379,939	Mar. 27	1617	430	42	1298
Davis, Franklin T., Mount Vernon, N. Y. Checkrein-holder	376,640	Jan. 17	1317	346	42	266
Davis, Frederick E., Gladbrook, Iowa. Draft-equalizer	377,018	Jan. 31	1881	495	42	390
Davis & Furber Machine Company. (See Stone, Joseph M., assignor.)						
Davis, George W., Hot Springs, Ark. Track-scraper for street-railways	378,292	Feb. 21	1436	374	42	730
Davis, Henry A., Utica, N. Y. Bicycle	379,373	Mar. 13	740	201	42	1111
Davis, Henry T., New York, N. Y. Quilting attachment for sewing-machines	377,242	Jan. 31	2201	580	42	452
Davis, John R., Jr., Neenah, Wis. Chop-grader	380,096	Mar. 27	1848	492	42	1343
Davis, John R., Jr., Neenah, Wis. Chop-separator	380,097	Mar. 27	1850	{492 / 493}	42	1344
Davis, John R., Wakefield Station, assignor of one-half to C. E. Carter, Appomattox County, Va. Bale-tie	378,874	Mar. 6	27	7	42	972
Davis, John T. (See Eynon and Davis.)						
Davis, Josephine G., New York, N. Y. Portable vapor and hot-air bath apparatus	377,886	Feb. 14	826	211	42	667
Davis, Martin V., Harrison, Ark. Device for raising and lowering weights	378,293	Feb. 21	1437	375	42	791
Davis, Nathan H., Philadelphia, Pa. Die for making car-spring plates	378,773	Feb. 28	2118	{559 / 560}	42	932
Davis, Samuel, Montreal, Quebec, Canada. Car-truck	376,977	Jan. 10	403	133	42	106
Davis, Samuel, Las Vegas, N. Mex. Ter. Wool-washing machine	376,866	Jan. 24	1671	436	42	341
Davis, Van R., Temple, Ga., Car-coupling	376,734	Jan. 24	1458	384	42	302
Davis, William, Montreal, Quebec, Canada. Buggy-top	377,604	Feb. 7	382	97	42	568
Davis, William T., Battle Creek, Mich. Sash-fastener	376,431	Jan. 17	1001	262	42	207
Davison, Charles G., assignor of one-half to D. W. Camp, Union City, Pa. Flue-cleaner for steam-boilers	379,564	Mar. 20	1026	274	42	1175
Davison, James E. (See Boyle, James W., assignor.)						
Davison, Joseph A., Polo, Ill. Combined photographic camera and plate-holder	376,798	Jan. 24	1568	412	42	323
Davy, Joseph, Oakland, Cal. Packing-case	376,519	Jan. 17	1130	295	42	231
Dawson, William H., Harlan, Iowa. Car-coupling	378,194	Feb. 21	1272	337	42	761
Day, Joseph, assignor to J. Koon, New Haven, Conn. Corset-clasp	380,193	Mar. 27	1981	531	42	1369
Day, Theodore D., Elizabeth, N. J. Suspenders	379,374	Mar. 13	742	201	42	1112
Dayton, Melville Z. (See Daniels, Samuel, assignor.)						
Dayton, William H., assignor to Excelsior Needle Company, Torrington, Conn. Machine for swaging needle-blanks	376,144	Jan. 10	597	159	42	125
De Benardos, Nicholas, St. Petersburg, Russia. Working metals by electricity	379,453	Mar. 13	857	232	42	1135
De Butts, John, Centreville, Md. Corn-planter	378,164	Feb. 21	1233	324	42	753
De Coar, Thomas, and W. Keast, Russell Gulch, Colo. Automatic car-brake	379,687	Mar. 20	1215	{321 / 322}	42	1211
De Coppet, Francis V., New Orleans, La. Automatic can-filler for ice-machines	375,926	Jan. 3	268	72	42	56
De Freest, George E., and G. W. Wynkoop, Troy, N. Y. Packet-folding machine	377,669	Feb. 7	479	{123 / 124 / 125}	42	586
De Grousilliers, Hector, Potsdam, Prussia, Germany. Treating sludge acid	378,774	Feb. 28	2120		42	932
De Jonge, Maria P., Brussels, Belgium. Corset	375,990	Jan. 3	363	97	42	74
De la Sauce, Ernst, assignor to E. De la Sauce & Kloss, Berlin, Germany. U-shaped metal plate for metal structures	376,979	Jan. 24	1818	478	42	370
De la Sauce & Kloss, E. (See De la Sauce, Ernst, assignor.)						
De Laval, Gustaf, Stockholm, Sweden. Motor for operating centrifugal separators	379,690	Mar. 20	1221	{323 / 324}	42	1212
De Lisle, Frank R., North Attleborough, Mass. Key-fastener	377,020	Jan. 31	1883	496	42	390
De Meyer, Costi, Budweis, Bohemia, Austria-Hungary. Pencil-holder	377,194	Jan. 31	2121	559	42	438
De Rycke, J. Joseph, New York, N. Y. Crank-pump	378,665	Feb. 28	1973	{523 / 524}	42	905
De Rycke, J. Joseph, New York, N. Y. Separator	379,009	Mar. 6	218	59	42	1007
De Vilbiss, Allen, Toledo, Ohio. Atomizer	378,357	Feb. 21	1525	399	42	809
De Vilmorin, Charles H. P. L., Paris, France. Means for hermetically closing jars, &c.	378,498	Feb. 28	1738	458	42	859
De Vry, Bernhard I. H., and J. Schreiber, Chicago, Ill. Device for simultaneously moving double doors	376,946	Jan. 24	1777	467	42	362
De Vry, Bernhard I. H., and J. Schreiber, Chicago, Ill. Device for simultaneous movement of double doors	376,947	Jan. 24	1777	467	42	362
Dean, Cyrus S., assignor to G. W. Dean, Fort Erie, Ontario, Canada, and C. H. Woodruff, Buffalo, N. Y. Fire-extinguisher	380,194	Mar. 27	1982	531	42	1370
Dean, Cyrus S., assignor to G. W. Dean, Fort Erie, Ontario, Canada, and C. H. Woodruff, Buffalo, N. Y. Air-compressor	380,195	Mar. 27	1983	531	42	1370
Dean, George W., *et al.* (See Dean, Cyrus S., assignor.)						
Deck, James M., *et al.* (See Boland, John, assignor.)						
Deck, William B., *et al.* (See Boland, John, assignor.)						
Decker, Edwin S. (See Hagarty, George L., assignor.)						
Deeds, John B., assignor to F. Lee, Terre Haute, Ind. Hydrocarbon generator and burner	377,019	Jan. 31	1882	495	42	390
Deers & Mausur Company. (See White, Charles E., assignor.)						
Deering, William. (See Olin, William F., assignor.)						
Defiance Machine Works. (See Kettenring, Peter, assignor.)						
Defiance Machine Works. (See Seymour, Charles, assignor.)						
Delbert, John T. (See Bolt, Joseph, assignor.)						
Delamater, Almond, Meadville, Pa. Combined anti-rattler and shaft support	377,605	Feb. 7	383	97	42	568
Delaney, Charles W., Hammond, Ind. Head-rest for barbers' chairs	377,147	Jan. 31	2062	541	42	425
Delano, Milton, and O. L. Cummins, near Columbia City, Ind. Clod-crusher and ground-leveler	379,565	Mar. 20	1027	275	42	1174
Delano, Philip, Brooklyn, N. Y. Holder for advertising mediums	379,375	Mar. 13	743	201	42	1112
Delany, Patrick B., New York, N. Y. Printing-telegraphy	378,436	Feb. 28	1645	{432 / 433}	42	839
Delany, Patrick B., New York, N. Y. Printing-telegraph	378,437	Feb. 28	1649	433	42	840

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Delbridge, Arthur H. (See Ford and Delbridge.)						
Demarest, John, assignor to J. L. Mott Iron Works, New York, N. Y. Seat-connection for water-closet cisterns	376,807	Jan. 24	1672	436	42	341
Demarest, John, assignor to J. L. Mott Iron Works, New York, N. Y. Water-closet cistern	378,294	Feb. 21	1436	375	42	791
Demarest, John, assignor to J. L. Mott Iron Works, New York, N. Y. Water-closet cistern	378,664	Feb. 28	1972	523	42	905
Demarest, John, assignor to J. L. Mott Iron Works, New York, N. Y. Water-closet cistern	379,376	Mar. 13	744	202	42	1112
Deming, William L. (See Harris, William R., assignor.)						
Dempster, John T. (See Bergmann and Dempster.)						
Denehy, Denis M., and H. W. Childs, Acampo, Cal. Sectional weed-cutter	376,735	Jan. 24	1459	385	42	303
Denehy, Denis M., and H. W. Childs, Acampo, Cal. Platform-scraper	380,024	Mar. 27	1749	467	42	1323
Dennett, Fred A. (See Gale, Herbert N., assignor.)						
Dennis, Andrew J., assignor to E. G. Bennett and W. H. McKinstry, Franklin, Tenn. Device for repairing broken slats	379,688	Mar. 20	1216	322	42	1211
Dennis, John E., Jr., Glenbeulah, Wis. Mail-bag	375,805	Jan. 3	111	32	42	26
Dennis, William F., London, England. Machine for making wire-netting	379,008	Mar. 6	214	58	42	1007
Densmore, Amos, *et al.* (See Barron, Walter J., assignor.)						
Denton, Daniel T., Tower Mines, Minn. Grip for tram-cars	376,587	Jan. 17	1217	321	42	249
Deprez, Marcel Paris, France. Dynamo-electric machine	379,689	Mar. 20	1217	{322 / 323}	42	1211
Derby, Willis M., Minneapolis, Minn. Lubricator	376,432	Jan. 17	1002	262	42	207
Déri, Maximilian. (See Zipernowski and Déri.)						
Des Moines Buggy Company. (See Cloyes, James H., assignor.)						
Des Moines Buggy Company. (See Cloyes and Gray, assignors.)						
Des Moines Saddlery Hardware and Manufacturing Company. (See Dippert, William, assignor.)						
Detroit Patent Brush Company. (See Frisbie, Henry R., assignor.)						
Dettra, Benjamin F., and J. C. Shields, Rushville, Ill. Bullet-proof case for railway-cars	376,736	Jan. 24	1459	385	42	303
Detwiler, F. W. (See Cronin, William D., assignor.)						
Detwiler, Jacob J., Jersey City, N. J. Fire-works	377,730	Feb. 7	564	145	42	601
Devens, Francis P., Kansas City, Mo. Combination-tool for loading cartridges	379,635	Mar. 20	1137	301	42	1195
Devens, Francis P., Kansas City, Mo. Cartridge-loader	379,636	Mar. 20	1139	{301 / 302}	42	1196
Devereux, Walter B., *et al.* (See Thomson, John L., assignor.)						
Devereux, Walter B., Aspen, Colo. Apparatus for separating lead or base bullion in smelting from slag, &c	377,802	Feb. 14	716	181	42	646
Diamond Prospecting Company. (See Cossette, Henry, assignor.)						
Diamond State Iron Company. (See Eynon and Davis, assignors.)						
Dibble, Fernando J., New York, N. Y., assignor to Telemeter Company of New York, Telethermometer	379,766	Mar. 20	1325	{353 / 354}	42	1233
Dick, Robert. (See Kennedy, Rankin, assignor.)						
Dick, William. (See Hyatt and Dick.)						
Dickerson, Edward N., Jr., New York, N. Y. System of electrical conversion	377,994	Feb. 14	981	256	42	699
Dickerson, Edward N., Jr., New York, N. Y. Regulator for pumping-engines	380,025	Mar. 27	1750	468	42	1323
Dickinson, Isaac N., assignor to Pennsylvania Iron Works, Reading, Pa. Grate-bar	378,195	Feb. 21	1273	337	42	762
Diehl, John. (See Crecker and Diehl.)						
Diehl, John F., *et al.* (See Boore, Lewis, assignor.)						
Diehl, Theodor, assignor to G. C. Zimmer, Mannheim, Baden, Germany. Coloring-matter from the sulpho-acids of ethyl or diphenylamine combined with tetrazodiphenyl or terrazoditolyl	380,008	Mar. 27	1852	.....	42	1344
Dietz, Christoph F., assignor of one-half to P. Lestelle, New Orleans, La. Fishing-hook	377,294	Jan. 31	2280	603	42	467
Dietz Company, R. E. (See Betts, Lewis F., assignor.)						
Dietz Company, R. E., *et al.* (See Colony, Charles W., assignor.) (Reissue.)						
Dietz, George F., Los Angeles, Cal. Curry-comb	380,250	Mar. 27	2058	550	42	1386
Dille, Henry H., and E. W. McGuire, assignors to Dille & McGuire Manufacturing Company, Richmond, Ind. Machine for measuring and cutting fabrics	376,641	Jan. 17	1318	{346 / 347}	42	266
Dille, Henry H., and E. W. McGuire, assignors to Dille & McGuire Manufacturing Company, Richmond, Ind. Apparatus for measuring and cutting fabrics	376,642	Jan. 17	1322	347	42	267
Dille & McGuire Manufacturing Company. (See Dille and McGuire, assignors.)						
Dillingham, Edgar R. (See Stevens, Arthur D., assignor.)						
Dillon, Ellis E., Normal, Ill. Horse-blanket fastener	377,097	Jan. 31	2004	525	42	413
Dillon, George M., and J. H. Bevington, Bellevue, Ohio. Head-rest	380,251	Mar. 27	2059	550	42	1386
Dillon, George M., and J. H. Bevington, Bellevue, Ohio. Head-rest	380,252	Mar. 27	2060	551	42	1386
Dimmick, Albert M., and E. Z. Smith, Wilkes-Barré, Pa. Sectional steam-boiler	376,371	Jan. 10	969	238	42	183
Dippert, William, Des Moines, Iowa, assignor, by mesne assignments, of one-half to Des Moines Saddlery Hardware and Manufacturing Company. Buckle and hame-tug attachment	379,630	Mar. 13	970	262	42	1157
Disbrow, Andrew J., Old Bridge, N. J. Device for picking cranberries	378,775	Feb. 28	2121	560	42	932
Dittenhoefer, Myer, New York, N. Y. Lining hollow articles with hard rubber	378,776	Feb. 28	2122	560	42	932
Dixon, Alexander H. (See Steele, John C., assignor.)						
Dixon, Leslie L., *et al.* (See Goettel, John, assignor.)						
Dixon, Robert M., East Orange, N. J., assignor to Pintsch Lighting Company, New York, N. Y. Heater for railway-cars	379,691	Mar. 20	1222	324	42	1212
Dixon, William, Clay Centre, Kans. Wire-and-picket-fence machine	378,777	Feb. 28	2123	561	42	933
Doane, Stephen W., Hornellsville, N. Y. Railway torpedo-placer	376,078	Jan. 10	494	134	42	106
Dobbins, Thomas. (See Sammons, Benjamine F., assignor.)						
Dobson, James, Philadelphia, Pa. Woven pile fabric	378,577	Feb. 28	1848	488	42	881
Dobson, William J. M., Brooklyn, N. Y. Photographer's kit	379,377	Mar. 13	745	202	42	1113
Docken, Ole G., Mount Horeb, Wis. Adjustable school desk and seat	378,875	Mar. 6	28	7, 8	42	972
Doctor, L. M. (See Ellis, James E., assignor.)						
Dodd, James F., Delaware, Ohio. Pencil	378,084	Feb. 21	1109	290	42	731
Dodd, Peter, and J. H. Thomas; said Thomas assignor to J. Thomas, Newark, N. J. Automatic horse-feeder	378,909	Mar. 6	67	20	42	980
Dodge, George P., Great Neck, N. Y. Weather-strip	378,778	Feb. 28	2125	561	42	933
Dodge, Wallace H., and R. D. O. Smith, Mishawaka, Ind. Manufacture of woolen boots	376,372	Jan. 10	910	{238 / 239}	42	183
Dodge, Wallace H., and R. D. O. Smith, Mishawaka, Ind. Woolen boot	376,373	Jan. 10	911	239	42	183
Dodwell, John T. (See Brake, Archibald, assignor.)						
Doering, Herman, Reedsburg, Wis. Stitching-horse	378,295	Feb. 21	1439	375	42	791
Doering, William, Kansas City, Mo. Vegetable-cutter	375,806	Jan. 3	112	32	42	26
Doerr, Henry J., Newark, N. J. Air-pump	378,666	Feb. 28	1976	524	42	906
Doersom, Philip, Lancaster, Pa. Fifth-wheel for vehicles	378,240	Feb. 21	1354	357	42	776
Doherty, Daniel E. (See Brown and Trabue, assignors.)						
Dolan, Edward J., assignor to W. Hacker, trustee, Philadelphia, Pa. Seam for sheet metal	376,817	Jan. 24	1660	419	42	338
Dolan, Martin F., Brooklyn, N. Y. Clothes-horse	379,378	Mar. 13	747	{202 / 203}	42	1113

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page
Dolan, Robert P., assignor, by mesne assignments, of one-half to F. E. Smith, Steelton, Pa. Apparatus for transferring blooms	379,507	Mar. 13	941	253, 254	42	1150
Dolloff, Orville C., Chelsea, and R. M. Eastman, Boston, Mass. Sewing-machine	377,888	Feb 14	829	212	42	667
Don, Alfred, 21 Cooper Street, Redfern, Sydney, New South Wales, Australia. Smoke-consuming apparatus for steam-boilers	376,948	Jan. 24	1778	468	42	363
Donaldson, Richard A., *et al.* (See Hipperling, William, assignor.)						
Doney, Asa. (See Zeck, Michael, assignor.)						
Donne, William, *et al.* (See Biggin, Mary, assignor.)						
Donnell, Edward P., Chicago, Ill Perforating-machine	379,379	Mar. 13	748	203	42	1113
Dooley, John W., Wyoming, Ill. Electric ship-signal	378,876	Mar. 6	30	8	42	972
Doolittle, Marcus S., North Haven, and W. A. Doolittle, Hamden, Conn. Sulky-harrow	378,578	Feb. 28	1849	488, 489	42	881
Doolittle, Wilson A. (See Doolittle, Marcus S. and W. A.)						
Doray, Joseph, Worcester, Mass. Block-rabbet plane	379,940	Mar. 27	1618	431	42	1299
Doremus, William T., Flatbush, N. Y. Draft, check, or other money order or instrument	376,949	Jan. 24	1780	468	42	363
Dorman, John F W, Baltimore, Md. Brake and belt shifter	380,253	Mar. 27	2061	551	42	1386
Dormitzer, Anna, New York, N. Y. Safety watch-pocket	380,279	Mar. 27	2094	560	42	1393
Dosch, Leo A. and O. L., Miamisburg, Ohio; said O. L. Dosch assignor to said Leo A. Dosch. Shutter-worker	378,388	Feb. 21	1563	409	42	816
Dosch, Oliver L. (See Dosch, Leo A. and O. L.)						
Doubleday, Harry M., Columbus, Ohio. Incandescent-electric-lamp fixture	378,358	Feb. 21	1526	399	42	809
Dougherty, Clarence E., Newark, N. J. Pneumatic holder for mirrors and other articles	377,995	Feb. 14	982	256	42	700
Doughty, Charles L. (See Gholson, William C., assignor.)						
Douglas, Charles H., assignor, by mesne assignments, to Chicago Mortising Machine Company, Chicago, Ill. Endless-chain mortising-machine	379,566	Mar. 20	1028	275, 276	42	1175
Douglas, George W., San Francisco, Cal. Depression-pulley for cable railways	377,743	Feb. 14	590	152	42	621
Douglas, James, Jr., assignor to North American Metalline Company, New York, N. Y. Self-lubricating journal box	379,531	Mar. 13	971	262	42	1157
Dow, Josiah, Lowell, Mass. Duplex pump or blower	378,042	Feb. 14	1047	273, 274	42	712
Dowlin, Marshall R., North Adams, Mass. Halter	379,056	Mar. 6	285	83	42	1020
Dowling, Robert H., assignor of two-thirds to C. H. and C. Follett, Newark, Ohio. Car-coupling	379,888	Mar. 20	1540	406	42	1274
Downer, James R., *et al.* (See Rice, Henry, assignor.)						
Downing, Burton J., Seely, Kans. Railway-switch	377,889	Feb. 14	831	213	42	668
Downing, Wellington, assignor to Brown Folding Machine Co., Erie, Pa. Paper-folding machine	377,354	Jan. 31	2374	686	42	492
Downing, Wiley W. (See Seale and Downing.)						
Drake, Edwin L., Winchester, Tenn. Combination-padlock	379,508	Mar. 13	943	254	42	1151
Drake, Lucian E. (See Freeman, Josiah, assignor.)						
Draper, George A. (See Draper, William F. and G. A.)						
Draper & Sons, George. (See Carroll, William T., assignor.)						
Draper & Sons, George. (See Draper, William F. and G. A., assignors.)						
Draper & Sons, George. (See Roper, Charles F., assignor.)						
Draper, William F. and G. A., assignors to G. Draper & Sons, Hopedale, Mass. Support for spinning-spindles	378,877	Mar. 6	31	8	42	972
Drass, Stephen B. (See Boughton, Ephetus, assignor.)						
Dresback, Clifford R. (See Grove, William H., assignor.)						
Drew, Walter J., assignor to Bissell Carpet Sweeper Company, Grand Rapids, Mich. Carpet-sweeper	376,028	Jan. 3	424	113	42	85
Driggs, William H., and S. Schroeder, Washington, D. C. Breech-loading ordnance	378,828	Feb. 28	2219	591	42	951
Drodzewski, Julius R., assignor of two-thirds to J. McCarter and J. M. Ormsbee, Erie, Pa. Steam-pipe connection between railway-cars	377,065	Jan. 31	1950	512	42	403
Drude, Louis, and E. St. Arnauld, Meriden, Conn Card-table attachment	378,241	Feb. 21	1355	357	42	777
Drude, Louis, and E. St. Arnauld, Meriden, Conn. Card-table attachment	378,242	Feb. 21	1356	357	42	777
Drummond, George E., trustee, *et al.* (See Pearson, George D., assignor.)						
Dubey, Edward A., assignor of one-fourth to J. Langan, Brooklyn, N. Y. Letter-box	378,955	Mar. 6	132	38	42	992
Dubey, Edward A., assignor of one-half to T. B. Rutan, Brooklyn, N. Y. Sign	380,026	Mar. 27	1751	468	42	1324
Dubocc, Augustin, San Francisco, Cal. Advertising apparatus	379,105	Mar. 6	359	102	42	1033
Dubinski, Benjamin. (See Ehrlich, Dubinski, and Rein.)						
Duell, Charles H. (See Peckham and Laass, assignors.)						
Duell, Charles H., and E. Laass, Syracuse, assignors to Chappell, Chase, Maxwell & Co., Oneida, N. Y. Coffin-fastener	377,355	Jan. 31	2374	686	42	492
Duffee, James W., and C. Weston, Washington Court-House, Ohio. Flower-stand	379,637	Mar. 20	1140	302	42	1196
Duffy, Arthur, Ivanhoe, and C. J. Reling; said Reling assignor, by mesne assignments, to M. Outcalt, Cincinnati, Ohio. Cradle	378,389	Feb. 21	1564	409	42	816
Duffy, William, Bermondsey, county of Surrey, England. Wood-block flooring	377,098	Jan. 31	2004	525	42	413
Dugar, Delano H., Cedartown, Ga. Car-axle box	379,767	Mar. 20	1328	354	42	1234
Dührkop, Fritz, New York, N. Y. Baker's oven	379,941	Mar. 27	1620	431	42	1299
Dullére, Henry, assignor of two-thirds to J. Masson, Meadville, Pa. Glass-melting furnace	376,029	Jan. 3	425	113	42	85
Dumbeck, Gustave A., assignor of one-half to J. P. Gallagher, Erie, Pa. Swing	379,768	Mar. 20	1329	355	42	1234
Duncan, Jack B. (See Durnil, Cecil M., assignor.)						
Duncan & Johnson. (See Duncan, William, assignor.)						
Duncan, Louis. (See Wilkes, Gilbert, assignor.)						
Duncan, William, Hinsdale, assignor to Duncan & Johnson, Chicago, Ill. Embossing-die	380,099	Mar. 27	1853	493	42	1344
Dunham, Austin C. (See Merrill, Arthur H., assignor.)						
Dunham, Charles H., Boston, Mass. Sliding door for freight-cars	378,579	Feb. 28	1851	489	42	882
Dunham, George, Unionville, Conn. Mechanical movement	376,769	Jan. 24	1522	400	42	314
Dunham, George H., *et al.* (See Smith, Roswell T., assignor.)						
Dunkel, Elias. (See Underwood, Thomas J., assignor.)						
Dunn, Ballard S., New York, N. Y. Gas and air commingler	379,769	Mar. 20	1331	355, 356	42	1234
Dunn, Daniel F., assignor of one-half to J. S. Ellis, Columbus, Ohio. Machine for truing valve plugs, seats, &c.	378,196	Feb. 21	1274	337	42	702
Dunn, Dennis, Mahanoy City, Pa. Beer-pump and aerating device	377,711	Feb. 7	542	138	42	596
Dunning, George F., Deep Water, Mo. Washing-machine	376,238	Jan. 10	727	193	42	149
Duplex Manufacturing Company. (See Cadwgan, Thomas C., assignor.)						
Durant, Walter N., Milwaukee, Wis. Package-register	379,106	Mar. 6	361	103	42	1033
Durant, William H., Concord, N. H. Fire extinguisher	376,239	Jan. 10	728	194	42	149
Durfee, Bradford K., *et al.* (See Hartley, Charles J., assignor.)						
Durisch, Elias, *et al.* (See Querol y Delgado, Emilio, assignor.)						
Durnil, Cecil M., assignor to J. B. Duncan, Fayette, Mo. Fastener or holder for paper or other materials	377,824	Feb. 14	742	188	42	650
Duryea, Edgar E., and P. H. Grimm, Glen Cove, N. Y. Apparatus for drying starch or other solid matter	375,737	Jan. 3	22	7, 8	42	8

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page
Duryea, John. (See Grimm, Paul H., assignor.)						
Dutton, Elmer E., assignor to J. P. Gage, Vineland, N. J. Sun-shade attachment for vehicles	378,829	Feb. 28	2225	591, 592	42	953
Dvorak, Francis. (See Skrivan and Dvorak.)						
Dwyer, John, Ruston, assignor of one-half to J. W. Holbert, Homer, La. Lining for fireplaces	379,057	Mar. 6	286	83	42	1020
Dye, Horace L., Chicago, assignor of one-half to G. Hinchliff, Evanston, Ill. Drier	379,942	Mar. 27	1621	431	42	1299
Dyer, Samuel. (See Whiteley and Dyer.)						
Dygert, Nate S. (See Weston and Dygert.)						
Eagle Pencil Company. (See Bacon, Levi S., assignor.)						
Eagle Pencil Company. (See Hanower, Morris, assignor.)						
Eagle Pencil Company. (See McIntyre, Frank, assignor.)						
Eagle Tube Company. (See Ritchie, Matthew L., assignor.)						
Eames, Henry H., Columbia, Va., assignor to J. J. Kelly, Baltimore, Md. Ore-pulverizer	379,943	Mar. 27	1622	432	42	1300
Eastman, Appleton B., *et al.* (See Marshall, Moses J. S., assignor.)						
Eastman, Rufus M. (See Dolloff and Eastman.)						
Easton, Lucien F., La Crosse, Wis. Electric temperature-regulator	377,021	Jan. 31	1884	496	42	390
Easton, Maxwell, assignor to P. Everitt, London, England. Coin-operated lock	376,182	Jan. 10	649	173	42	135
Eastwood, Henry, Paterson, N. J. Loom	377,425	Feb. 7	121	26	42	517
Eaton & Co., J. C. (See Pierce, Abel A., assignor.)						
Eaton, James H., Lawrence, Mass. Car-axle	379,638	Mar. 20	1141	302	42	1196
Eaton, W. D., *et al.* (See Cooke, Ernest W., assignor.)						
Ebert, John S., Brooklyn, N. Y. Elastic band for pocket-books, &c	377,373	Feb. 7	8	3	42	496
Eccles, William M., St. Louis, Mo. Street-car road	377,930	Feb. 14	889	229	42	680
Eckstine, Jacob C., Chewsville, Md. Straw-stacker	377,243	Jan. 31	2202	580, 581	42	452
Economic Motor Company. (See Hopkins, George M., assignor.)						
Eddison Fire Extinguisher Company. (See Banning, Joseph O., assignor.)						
Eddy, James A., Troy, N. Y. Tedder	379,454	Mar. 13	859	232	42	1135
Eddy, Robert H., Chicago, Ill. Carpet-sweeper	375,991	Jan. 3	363	97	42	74
Edes, J. Alvin, Lawrence, Mass. Shutter-worker	379,380	Mar. 13	749	203	42	1113
Edgar, John, Rochester, Minn. Neck-yoke	376,868	Jan. 24	1673	437	42	341
Edgar, John, Rochester, Minn. Nut-lock	378,779	Feb. 28	2125	561	42	933
Edge, William C., Newark, N. J. Setting for ornaments	378,043	Feb. 14	1050	274	42	712
Edison Electric Light Company. (See Edison, Thomas A., assignor.)						
Edison Machine Works. (See Phillips, William A., assignor.)						
Edison, Thomas A., Llewellyn Park, N. J. Magnetic separator	377,518	Feb. 7	261	66	42	544
Edison, Thomas A., Llewellyn Park, N. J. Commutator for dynamo-electric machines	379,944	Mar. 27	1624	432	42	1300
Edison, Thomas A., Llewellyn Park, N. J. Pyromagnetic motor	380,100	Mar. 27	1855	493	42	1344
Edison, Thomas A., Llewellyn Park, N. J. System of electrical distribution	380,101	Mar. 27	1857	493, 494	42	1345
Edison, Thomas A., Llewellyn Park, N. J. System of electrical distribution	380,102	Mar. 27	1859	494	42	1345
Edison, Thomas A., Menlo Park, N. J. Telephone-transmitter	378,044	Feb. 14	1051	274, 275	42	712
Edison, Thomas A., Menlo Park, N. J., assignor to Western Union Telegraph Company, of New York. Telegraphy	377,374	Feb. 7	9	3	42	496
Edison, Thomas A., Menlo Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. Incandescent electric lamp	379,770	Mar. 20	1333	356	42	1235
Edison, Thomas A., Menlo Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. Regulator for dynamo-electric machines	379,771	Mar. 20	1333	356	42	1235
Edison, Thomas A., Menlo Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. System of electrical distribution	379,772	Mar. 20	1335	357	42	1235
Edison, Jacob, Boston, Mass. Ship-steering apparatus	377,375	Feb. 7	9	3	42	497
Edwards, Charles S., Forkland, assignor of one-half to J. McGee, Eutaw, Ala. Car-coupling	377,670	Feb. 7	484	125	42	586
Edwards, George W., assignor of one-half to J. M. Baldwin, Chatham, N. J. Car-coupling	380,280	Mar. 27	2096	560	42	1393
Edwards, Henry. (See Murphy, Hugh J., assignor.)						
Edwards, Lewis R., Charlemont, Mass. Scythe-fastener	377,022	Jan. 31	1887	496	42	391
Edwards, William C., Winsted, Conn. Washing-machine	378,243	Feb. 21	1356	358	42	777
Edwards, William C., and O. R. Sackett, Suspension Bridge, N. Y. Apparatus for extinguishing fires in railway-cars	379,058	Mar. 6	287	84	42	1020
Effandt, Heinrich, Ottensen, Germany. Boot or shoe	376,183	Jan. 10	650	173, 174	42	136
Egge, Alexander H., Mechanicsburg, Pa. Rail-joint support	376,869	Jan. 24	1674	437	42	341
Eggo, Frederick, assignor to Smith & Egge Manufacturing Company, Bridgeport, Conn. Button-hole attachment for sewing-machines	376,297	Jan. 10	806	213	42	164
Egge, Frederick, assignor to Smith & Egge Manufacturing Company, Bridgeport, Conn. Manufacture of sheet-metal chains	376,737	Jan. 24	1460	385, 386, 387	42	303
Eggleston, Charles H., Marshall, Mich. Two-wheeled vehicle	379,211	Mar. 13	513	144	42	1069
Egleston, Thomas, New York, N. Y., assignor to Plume & Atwood Manufacturing Company, Waterbury, Conn. Electrical conductor	376,818	Jan. 24	1601	419	42	328
Ehlmann, Friedrich W., Covington, Ky. Combination-tool	379,773	Mar. 20	1336	357	42	1236
Ehrenhart, John E. (See Blackburn, Albert B., assignor.)						
Ehrlich, Leo, St. Louis, Mo. Coffee-pot	378,296	Feb. 21	1440	375	42	791
Ehrlich, Leo, B. Dubinski, and G. Rein, St. Louis, Mo.; said Dubinski and Rein assignors to said Ehrlich. Telephone	378,780	Feb. 28	2126	562	42	933
Eickemeyer, Rudolf, Yonkers, N. Y. Dynamo-electric machine	377,996	Feb. 14	983	256, 257, 258	42	700
Eickemeyer, Rudolf, Yonkers, N. Y. Frame for winding armature-coils	377,997	Feb. 14	988	258, 259	42	700
Eisenberg, Fredrick W., Ann Arbor, Mich. Tailor's charcoal-iron	378,297	Feb. 21	1441	376	42	791
Eisenhart, Charles H., York, Pa. Electrical apparatus for dental operations. (Reissue)	10,907	Mar. 6	498	139	42	1060
Ekstrom, John P., Englewood, Ill., assignor to Standard Ventilator Manufacturing Company, of Illinois. Stove-pipe ventilator	379,774	Mar. 20	1337	357	42	1236
Ekstrom, John P., Englewood, Ill., assignor to Standard Ventilator Manufacturing Company, of Illinois. Wall-ventilator and stove-pipe thimble	380,027	Mar. 27	1752	468, 469	42	1324
Elastic Nut Company. (See Burdick, Justin H., assignor.)						
Electric Gas Lighting Company. (See Tirrell, Jacob P., assignor.)						
Electrical Accumulator Company. (See Conant and Latshaw, assignors.)						
Electrical Accumulator Company. (See Faure, Camille A., assignor.)						
Electrical Accumulator Company. (See Sellon, John S., assignor.)						
Electrical Appliance Manufacturing Company. (See White, Le Roy S., assignor.)						
Elliot, Henry, St. Louis, Mo. Railway-frog	379,154	Mar. 6	418	118	42	1045

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Elliot, William H., Brooklyn, N. Y. Magazine fire-arm	377,549	Feb. 7	301	77	42	552
Elliott, Charles H. and G. W., Rockford, Iowa. Sheaf-carrier	379,212	Mar. 13	513	144	42	1066
Elliott, George S., Mobile, Ala. Vehicle-hub	377,295	Jan. 31	2281	603	42	467
Elliott, George W. (See Elliott, Charles H. and G. W.)						
Elliott, Gilbert R., Boston, Mass., assignor to Continental Cash Car Company, Baltimore, Md. Store-service apparatus	378,499	Feb. 28	1739	458 / 459	42	859
Elliott, Isaac N., and P. A. Reid, Richmond, Ind. Fence-machine	376,184	Jan. 10	651	174 / 175	42	136
Elliott, Isaac N., and P. A. Reid, Richmond, Ind. Mechanical movement	379,775	Mar. 20	1338	357	42	1236
Elliott, John S., Bombay, N. Y. Milk-gage	379,692	Mar. 20	1223	325	42	1213
Elliott, Sterling, Newton, Mass. Tricycle	379,270	Mar. 13	585	161 / 162	42	1068
Ellis, Albert C. (See Harvey, George H., assignor.)						
Ellis, David T., Bridgeport, Conn. Self-acting air-valve	379,889	Mar. 20	1542	406	42	1274
Ellis, George W., Lynn, assignor to P. Green, Stoneham, Mass. Sole for boots or shoes	377,244	Jan. 31	2204	581	42	453
Ellis, James E., assignor of one-half to L. M. Doctor, Red Oak, Iowa. Cigar-tuck cutter	376,030	Jan. 3	426	113	42	85
Ellis, John S. (See Dunn, Daniel F., assignor.)						
Ellis, William H. G., Louisville, Ky. Combined umbrella and cane	376,870	Jan. 24	1676	437	42	342
Ellithorpe, Albert C., Chicago, Ill. Safety device for elevators	376,374	Jan. 10	912	239 / 240	42	183
Ells, Josiah W., assignor to G. Westinghouse, Jr., Pittsburg, Pa. Means for carrying off escaping gas from gas-mains	378,544	Feb. 28	1797	475	42	871
Elser, Peter C. (See Jones and Elser.)						
Elterich, Otto P., Newark, N. J. Combined cigar-tip cutter and match-box	377,550	Feb. 7	303	77	42	553
Elwell, Austin D., Philadelphia, Pa. Combined wash-stand and water-closet	376,871	Jan. 24	1677	438	42	342
Elwell, Edward C., Sandusky, Ohio. Combined pulverizer and weeder	379,308	Mar. 13	649	176	42	1064
Ely, Edward O., *et al.* (See Vinton, John H., assignor.)						
Ely, Seth, Trenton, N. J. Bill-file	376,185	Jan. 10	654	175	42	136
Els, Peter, *et al.* (See Gross, Hermann C., assignor.)						
Embley, William. (See Shobe and Embley.)						
Emerson, Richard, assignor of one-half to H. H. Mason, Sycamore, Ill. Grain-binder	377,744	Feb. 14	591	152 / 153	42	691
Emerson, Rufus H., Jackson, Mich. Apparatus for recovering soda	377,551	Feb. 7	304	77	42	553
Emerson, Talcott & Company. (See Jones, James H., assignor.)						
Emery, Paul, Owego, N. Y. Running-gear for vehicles	376,079	Jan. 10	495	134	42	107
Emmens, Stephen H., London, county of Middlesex, England. Explosive derived from phenol	376,145	Jan. 10	598	.....	42	126
Empire Hydrocarbon Company. (See Seery, James F., assignor.)						
Engels, Eduard, Remscheid, and B. Wesselmann, Hamburg, Prussia, Germany. Screw-stock	378,230	Feb. 28	2225	592	42	953
England, James, White Lake, Mich. Vehicle-spring	378,244	Feb. 21	1358	358	42	777
England, James, New York, N. Y. Buckle	378,667	Feb. 28	1978	524	42	906
Englund, Nils, and O. Ohlson, Chicago, Ill. Perforating-stamp	379,271	Mar. 13	588	162	42	1068
Engman, Edward J., Concession, La. Levee and ditching machine	379,864	Mar. 20	1507	396 / 397	42	1268
Engström, Axel H., Philadelphia, Pa., assignor to S. G. Flagg & Co. Automatic air-valve	376,799	Jan. 24	1569	412	42	323
Ennis, David R. (See Halls, Thomas E., assignor.)						
Enos, John A., Boston, assignor to himself, W. C. Otis, Nahant, E. H. Ingalls, P. West, Brookline, and W. E. Plummer, Newton, Mass. Electric surface railway	379,509	Mar. 13	944	254 / 255	42	1151
Enos, Levi S., Andover, N. Y. Door	378,359	Feb. 21	1526	399	42	809
Ensign, Frank H., Toledo, Ohio. Hub-casting apparatus	376,146	Jan. 10	599	159 / 160	42	126
Erpelding, Lambert, Leonardville, Kans., assignor to McCormick Harvesting Machine Company, Chicago, Ill. Mower	378,390	Feb. 21	1565	409 / 410	42	816
Erskine, John. (See Miller, Erskine, and Wright.)						
Ertel, George, Quincy, Ill. Hay-press	378,197	Feb. 21	1275	337 / 338	42	702
Essington Button-Hole Finishing Machine Company. (See Essington, Harry M., assignor.)						
Essington, Harry M., Camden, N. J., assignor to Essington Button-Hole Finishing Machine Company. Tension-releasing device for sewing-machines	377,890	Feb. 14	832	213	42	668
Essington, Harry M., Camden, N. J., assignor to Essington Button-Hole Finishing Machine Company. Clamp centering device for sewing-machines	377,891	Feb. 14	833	213	42	668
Essington, Harry M., Camden, N. J., assignor to Essington Button-Hole Finishing Machine Company. Button-hole-barring machine	377,931	Feb. 14	892	230	42	681
Essington, Harry M., Camden, N. J., assignor to Essington Button-Hole Finishing Machine Company. Clamp-centering device for button hole sewing-machines	377,932	Feb. 14	896	230	42	682
Essington, Harry M., Camden, N. J., assignor to Essington Button-Hole Finishing Machine Company. Clamp-centering device for button-hole sewing-machines	377,933	Feb. 14	897	231	42	682
Estep, Simeon R., Lady Lake, Fla. Cultivator-foot	377,998	Feb. 14	993	250	42	700
Estey, W. Shepard. (See Oliver, Ebenezer, assignor.)						
Ethridge, Carroll L., *et al.* (See King, William J., assignor.)						
Ethridge, Frank N., assignor of one-half to J. M. Taylor, Lynn, Mass. Heel-trimming machine	376,433	Jan. 17	1004	263 / 264	42	308
Ethridge, Martin V. B., Boston, Mass. Machine for marking mail matter	378,391	Feb. 21	1567	410 / 411	42	817
Ette, Charles G., St. Louis, Mo. Stop box and cock	380,196	Mar. 27	1984	531	42	1370
Eubank, Reuben B., Jr., Maryville, Mo. Fence	377,672	Feb. 7	485	125	42	587
Eunson, Robert G., New York, N. Y. Return-bend	378,878	Mar. 6	32	8, 9	42	972
Evans, David E. (See Garman, John, assignor.)						
Evans, Edmund J. (See Hicks, Daniel B., assignor.)						
Evans, G. Frank, Portland, Me. Case-hardening and cementation compound	376,186	Jan. 10	655	.....	42	136
Evans, Joseph W., Newburyport, Mass. Draw-gear for street-cars	377,825	Feb. 14	743	188	42	650
Evans, Lewis, Belswains, Hemel-Hempstead, county of Herts, England. Seat convertible into a table	377,356	Jan. 31	2376	626	42	482
Evans, Quimby N., Brooklyn, N. Y. Device for operating elevator hand-ropes	379,381	Mar. 13	750	203	42	1114
Evans, Quimby N., and W. Schwanhausser, Brooklyn, N. Y. Elevator-controlling device	378,045	Feb. 14	1052	275	42	712
Evans, Warren C. (See Smith and Evans.)						
Evans, William H., Baltimore, Md. Vertical-shaft bearing	377,148	Jan. 31	2063	542	42	425
Evenson, George A., and F. Yocum, Pinchford, Iowa. Stock-waterer	376,631	Jan. 3	427	110	42	86
Everett, Charles J., Tenafly, N. J. Adjustable frame for laundry-tubs	378,580	Feb. 28	1853	489	42	882
Everett, John H. D., St. Ignace, Mich. Hame-fastener	377,671	Feb. 7	484	125	42	586
Everitt, Percival. (See Easton, Maxwell, assignor.)						
Everitt, Robert, Brooklyn, N. Y. Fluid-pressure governor	379,382	Mar. 13	751	204	42	1114

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Ewart Manufacturing Company. (See Ewart, William D., assignor.)						
Ewart, William D., assignor to Ewart Manufacturing Company, Chicago, Ill. Drive-chain	377,552	Feb. 7	305	78	42	553
Ewing, James M. (See Brannigan, Felix, assignor.)						
Ewing, William T., Chicago, Ill. Injector	376,187	Jan. 10	656	175	42	136
Ewing, William T., Chicago, Ill. Injector	376,188	Jan. 10	657	176	42	137
Excelsior Needle Company. (See Dayton, William H., assignor.)						
Excelsior Wringer Company. (See Burnham, Arthur M., assignor.)						
Exley, Robert, Philadelphia, Pa. Electrical stop-motion for steam-engines	378,668	Feb. 28	1959	525	42	906
Exum, Andrew G., *et al.* (See Sutton, Columbus P., assignor.)						
Eymer, George H., Red Oak, Iowa. Cooking utensil	377,712	Feb. 7	543	138	42	597
Eynon, Joseph, Mansfield Valley, Pa. Housing for rolling-mills	379,510	Mar. 13	946	255	42	1151
Eynon, William, and J. T. Davis, assignors to Diamond State Iron Company, Wilmington, Del. Machine for finishing bent and creased horseshoe-blanks	379,945	Mar. 27	1625	432 / 433	42	1300
Faber, Eberhard. (See Osborn, Frederick G., assignor.)						
Fairbairn, William U., Hyde Park, Mass. Steam-boiler setting	380,197	Mar. 27	1986	532	42	1374
Fairbanks & Company, E. & T. (See Paddock, Hamlin, assignor.)						
Fairbanks, Horatio W., *et al.* (See Atkinson, Andrew J., assignor.)						
Fairbanks, Webster A., Charles City, Iowa. Plow	377,296	Jan. 31	2282	603	42	467
Falkenberg, Jacob, New York, N. Y. Shirt	377,149	Jan. 31	2064	542	42	426
Fallis, George T., St. Joseph, Mo. Walking toy	376,588	Jan. 17	1218	321	42	249
Falls, Hugh A. (See Faris and Falls.)						
Faris, Moses P., and H. A. Falls, Bethany, S. C. Manure-distributer	375,807	Jan. 3	114	33	42	27
Farley, Alvin, Pittsburg, Pa. Device for constructing arches or centers for furnaces	376,520	Jan. 17	1131	296	42	231
Farley, James, administrator. (See Kennedy, Thomas.)						
Farmer, James A., South New Market, N. H. Spinning-spindle and support therefor	377,426	Feb. 7	522	96	42	512
Farmer, Moses G., Eliot, Me. Telephonic transmitter	378,296	Feb. 21	1442	376	42	792
Farmer, Theodore P., assignor to Lamson Cash Railway Company, Boston, Mass. Store-service apparatus	378,545	Feb. 28	1799	475	42	871
Farner, Conrad. (See Linder and Farner.)						
Farnham, Isaiah H., Malden, assignor to New England Telephone and Telegraph Company, Boston, Mass. Test-circuit and apparatus for electrical cables	379,532	Mar. 13	972	262	42	1157
Farnham, Moses P., Germantown, Cal. Combined harvester and thrasher	378,581	Feb. 28	1854	490	42	892
Farquharson, William, Montreal, Quebec, Canada. Instrument for measuring the distance and height of objects. (Reissue)	10,908	Mar. 13	1004	269	42	1163
Farra, Lorenzo D., assignor of one-half to H. F. McCann, Philadelphia, Pa. Heat-regulator for furnaces	376,644	Jan. 17	1324	348	42	267
Farrar, William B., Greensborough, N. C. Machine for regulating time-pieces	379,511	Mar. 13	946	255 / 256	42	1152
Farren Bros. Company. (See Homan, Robert W., assignor.)						
Farwell, Frederic E., Fitchburg, Mass. Gage for saw-benches	378,924	Mar. 6	89	26	42	984
Fassett, Nelson B., Moline, Ill. Machine for coupling chain-links	377,376	Feb. 7	11	4	42	497
Fauber, W. H. Harry, Marshfield, Ind. Attachment for fence-machines	376,645	Jan. 17	1325	348	42	268
Faucet Bottle Company. (See Hoyt, Lewis S., assignor.)						
Faure, Camille A., New York, N. Y., assignor to Electrical Accumulator Company, of New York. Application of electricity to car-lighting	379,567	Mar. 20	1036	276	42	1177
Fay, Henry R., Boston, Mass. Valve-gear	375,925	Jan. 3	270	73	42	56
Fay, Rimmon C., Hopedale, Mass. Lathe	379,568	Mar. 20	1038	276 / 277	42	1177
Fee, William R., Cincinnati, Ohio, assignor to H. Maley, H. C. Bailey, and G. E. Mayfield, Edinburg, Ind. Wooden split pulley	379,198	Mar. 6	474	134 / 135	42	1057
Fee, William R., Cincinnati, Ohio, assignor to Willingham Lumber Company, Chattanooga, Tenn. Pulley	379,946	Mar. 27	1627	433	42	1300
Fell, Amos C., and B. F. Blair, Newville, Ind. Land marker	379,455	Mar. 13	860	232	42	1135
Fell, Michael, Everly, Iowa. Draft equalizer	379,383	Mar. 13	753	204	42	1114
Fels, Fajwel, and D. Simon, Philadelphia, Pa. Dress-chart	379,384	Mar. 13	754	204	42	1115
Felts, Andrew W., *et al.* (See Neff, Elijah, assignor.)						
Fender, William J., Jackson, Mich., assignor to E. P. Allis & Co., Milwaukee, Wis. Middings-purifier	379,155	Mar. 6	419	118 / 119	42	1045
Fenner, Lawrence A., Virginia City, Mont. Ter. Rock-separating apparatus for mining-sluices	375,808	Jan. 3	115	33	42	27
Fenlon, Thomas P., Jr., *et al.* (See Winnek, Frederick G., assignor.)						
Fennessy, Edward H. (See Butman, Fred P., assignor.)						
Fenton, Horace, Wethersfield, Conn. Universal pipe-joint	379,947	Mar. 27	1628	433	42	1301
Ferguson, Jared C., Hanover, Ohio. Stock-loading chute	377,519	Feb. 7	262	66	42	545
Ferris, Sherwood B., Lakewood, N. J. Stocking-supporter	376,298	Jan. 10	807	213	42	164
Ferry, Carlostin C., Hillsborough, assignor of one-half to R. O. Wood, Manchester, N. H. Spring-bed	377,377	Feb. 7	15	5	42	498
Ferry, George J. (See Clark, Aaron T., assignor.)						
Fest, William P., Brooklyn, assignor to J. B. Brewster & Company, New York, N. Y. Carriage-door lock	378,582	Feb. 28	1859	491	42	883
Feuchter, Charles P., *et al.* (See Boore, Lewis, assignor.)						
Feustell, Friedrich, Altona, assignor to H. Fuchs, Offenbach-on-the-Main, Germany. Insecticide	378,583	Feb. 28	1859	.....	42	883
Fickett, Albert, assignor of one-half to T. W. Hulett, Rochester, N. Y. Clamp for wire-and-picket fences	376,299	Jan. 10	808	213	42	164
Fiege, Philip, Lancaville, Va. Road-cart	377,673	Feb. 7	487	126	42	587
Field, Albert D., New York, N. Y. Curtain-pole covering	378,085	Feb. 21	1111	290	42	732
Field, Albert D., New York, N. Y. Upholstered curtain-pole	378,086	Feb. 21	1111	291	42	732
Field, Albert D., New York, N. Y. Adjustable or extension curtain-pole	378,087	Feb. 21	1112	291	42	732
Field, Stephen D., Yonkers, N. Y. Conduit for electric railways	380,103	Mar. 27	1860	494 / 495	42	1346
Field, Thomas C., Forest City, Mo. Buckle	376,240	Jan. 10	729	194	42	150
Filley, Giles F., St. Louis, Mo. Stove-oven	377,378	Feb. 7	16	5	42	498
Filliez, Peter F., and A. C. Mounin, Canton, Ohio. Bicycle	376,241	Jan. 10	730	194	42	150
Finch, James B., Newark, N. J. Horseshoe	378,046	Feb. 14	1056	276	42	713
Finch, John L., Warwick, N. Y. Wrench	378,299	Feb. 21	1443	376	42	792
Finck, Julius, San Francisco, Cal. Electric gas-lighter	377,553	Feb. 7	307	78	42	553
Finke, John J., South Pueblo, Colo. Hand-stamp	378,065	Feb. 14	1078	283	42	718
Finks, Alberto, New Berlin, N. Y. Road-machine	378,781	Feb. 28	2128	563	42	963
Finks, Alberto, New Berlin, N. Y. Road digger and grader	378,782	Feb. 28	2130	563 / 564	42	964
Firth, Edwin, A. and I. Tompkins, Troy, N. Y. Screw-tap	379,213	Mar. 13	514	144	42	1069
Firth, Edwin, A. and I. Tompkins, Troy, N. Y. Capping axle-nuts	379,214	Mar. 13	515	145	42	1069
Fischer, Jacob, Pittsburg, Pa. Iron-holder	377,297	Jan. 31	2283	604	42	467

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Fish, Abner C., assignor to M. L. Fish, Racine, Wis. Vehicle-spring	378,300	Feb. 21	1444	376	42	792
Fish, John R., Grand Rapids, assignor to H. C. and C. C. Hodges, Detroit, Mich. Car-truck	378,925	Mar. 6	90	26	42	984
Fish, John R., Grand Rapids, assignor to H. C. and C. C. Hodges, Detroit, Mich. Car-truck	378,926	Mar. 6	91	26	42	984
Fish, Marion L. (See Fish, Abner C., assignor.)						
Fisher, Daniel S., Eureka, Ill. Scaffolding	380,254	Mar. 27	2061	551	42	1387
Fisher, Lucius G. (See Schmidt, Carl F., assignor.)						
Fisk, Asa S., Binghamton, N. Y. Stove-hood ventilator	378,669	Feb. 28	1980	525	42	907
Fisk, Willis J., and H. L. Phelps, assignors of one-half to T. J. Simcoe, Lockwood, N. Y. Rotary engine	379,385	Mar. 13	755	204	42	1115
Fitch, William D. (See McArthur, Robert C., assignor.)						
Fitchit, William R., Pinnebog, Mich. Rack-elevator	379,693	Mar. 20	1224	325	42	1213
Fitzgerald, John P. (See Jansaen, Gustave, assignor.)						
Fitzgerald, Thomas, Revere, Mass. Kerosene-lamp burner	377,195	Jan. 31	2122	560	42	438
Fitzpatrick, John T., Worcester, Mass. Roof cast-iron soil-pipe connection	378,360	Feb. 21	1527	399	42	869
Flagg & Co., Stanley G. (See Engström, Axel H., assignor.)						
Flagg, George H., *et al.* (See Bradford, Charles K., assignor.)						
Flammang, Mathias, Newark, N. J., assignor to Scovill Manufacturing Company, New York, N. Y. Shutter mechanism for photographic cameras	377,554	Feb. 7	308	79	42	534
Flanagan, Joel A., Air Mount, Miss. Fence	376,646	Jan. 17	1326	348	42	268
Flanagan, William, Chicago, Ill. Apparatus for heating railway-cars	375,738	Jan. 3	25	8	42	8
Fletcher, Andrew M., Winchester, Mass. Hide lifter and carrier for tanneries	378,670	Feb. 28	1982	525	42	907
Fletcher, Charles J. (See Gorman and Fletcher.)						
Fletcher, Edward, Portland, Me., assignor to H. Loud, Everett, Mass. Machine for forming tackle-block straps and hooks	375,928	Jan. 3	271	73, 74, 75	42	57
Fletcher, John N., San Francisco, Cal., assignor to Unexcelled Fire-Works Company, New York, N. Y. Line-throwing projectile	376,375	Jan. 10	914	240	42	184
Flickwir, David W., *et al.* (See Pritchard and Templon, assignors.)						
Flinn, William H., Nashua, N. H., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Knob attachment	379,639	Mar. 20	1142	302	42	1197
Flohr, Otto, Newark, N. J. Friction-clutch	375,739	Jan. 3	26	9	42	9
Florsheim, Simon, *et al.* (See Gardner, Marshall, assignor.)						
Floyd, William B. (See King, Aten, and Floyd.)						
Flynn, James W., *et al.* (See Haws, William H., assignor.)						
Flynn, Michael M. (See White and Flynn.)						
Flynn, William, New York, N. Y. Box for furs	377,482	Feb. 7	200	47	42	534
Flynt, Henry, assignor of one-half to C. E. Cooke, Kansas City, Mo. Vapor or gas stove	377,850	Feb. 14	774	198	42	657
Flynt, Henry, assignor of one-half to C. E. Cooke, Kansas City, Mo. Oven for vapor-stoves	378,301	Feb. 21	1445	377	42	792
Foana, Andrew F., New York, N. Y. Sign	378,198	Feb. 21	1281	338	42	763
Fodrea, Levi P., Westfield, Ind. Slate-pencil holder	378,783	Feb. 28	2133	564	42	935
Foelimer, Fritz, assignor of one-third to J. Ruesing, West Point, Nebr. Room-ventilator	376,770	Jan. 24	1523	401	42	314
Fogle, George W. (See Leech and Fogle.)						
Follett, Charles, *et al.* (See Dowling, Robert H., assignor.)						
Follett, Charles H., *et al.* (See Dowling, Robert H., assignor.)						
Follett, Edward P. (See Kelly and Follett.)						
Foose, George C., Dalton, N. Y. Land-roller	377,066	Jan. 31	1951	512	42	403
Foote, James H., Cincinnati, Ohio. Spring-whiffletree	377,025	Jan. 31	1891	497	42	391
Foote, James H., Cincinnati, Ohio. Spring-whiffletree	377,026	Jan. 31	1892	497	42	391
Foote, Theodore M., assignor of fifty-one one-hundredths to S. T. Holmes, Boston, Mass. Galvanic battery	377,745	Feb. 14	598	154	42	622
Foote, Theodore M., assignor to W. Lamb, trustee, Boston, Mass. Clutch	378,088	Feb. 21	1115	291, 292	42	732
Forbes, Edwin, Flatbush, N. Y. Rubber overshoe	378,245	Feb. 21	1359	358	42	777
Forbes, Samuel D., Wilmington, Del. Carriage-wheel	378,302	Feb. 21	1447	377	42	792
Forbes, Walter T. (See Hatfield, George W., assignor.)						
Ford, Frederick A., New York, N. Y. Mold for measuring and partially shaping cigar-fillers	376,147	Jan. 10	601	160	42	126
Ford, Frederick A., New York, N. Y. Box for cigars	377,245	Jan. 31	2205	581	42	453
Ford, George A., and C. R. Hussey, Cleveland, Ohio; said Hussey assignor to said Ford. Flanging-machine	377,999	Feb. 14	994	259, 260	42	701
Ford, George W., Elba, N. Y. Thill-coupling	379,456	Mar. 13	861	232	42	1136
Ford, Joseph, and A. H. Delbridge, Flint, Mich. Egg-preserver	378,303	Feb. 21	1448	377	42	793
Ford, William R., assignor to C. and J. B. Walker, Allegheny City, Pa. Piston-rod packing	379,272	Mar. 13	589	163	42	1063
Ford, William W., Longview, Tex. Voting-machine	376,980	Jan. 24	1820	478	42	370
Forehand, Sullivan. (See Bye, Martin, assignor.)						
Forrest, William W., assignor of one-half to S. B. Colladay and G. S. Hensel, Philadelphia, Pa. Grate-bar	375,870	Jan. 3	187	52	42	41
Forster, Francis B. (See Riedel, Gustav A., assignor.)						
Forster, William T., Kansas City, Mo. Air-compressor	375,929	Jan. 3	276	75	42	58
Forster, William T., Kansas City, Mo. Air-compressor	376,589	Jan. 17	1219	322	42	250
Forsyth, Henry H., Pittsburg, Pa. Axial rolling	379,386	Mar. 13	756	205	42	1115
Forsyth, Robert, and J. A. Potter, Chicago, Ill. Valve mechanism for blowing engines, pumps, and similar apparatus	378,438	Feb. 28	1652	433, 434	42	841
Fortin, Charles L., assignor of two-thirds to F. H. Gaylord and W. D. Travis, Whitehall, N. Y. Wringing attachment for mops	376,711	Jan. 17	1421	374	42	286
Forward, Chauncy B., Cleveland, Ohio, assignor to J. T. Noye Manufacturing Company, Buffalo, N. Y. Automatic grain-scale	377,606	Feb. 7	384	97, 98	42	568
Foster, Charles S., Pawtucket, R. I. Yarn-reel	376,590	Jan. 17	1224	322	42	250
Foster, Isaac N., Pembroke, Mass. Transplanting-pot	378,047	Feb. 14	1057	276	42	713
Foster, J. Marshall. (See Babcock, Charles, assignor.)						
Foster, Michael A., St. Louis, Mo. Carburetor	377,607	Feb. 7	386	98	42	569
Foster, Robert, and B. J. Kennedy, Troy, N. Y. Brush	378,784	Feb. 28	2133	564	42	935
Fountain, W. F. (See Beyerle, Joseph, assignor.)						
Fowle, Alonzo. (See Boynton, Frederick H., assignor.)						
Fowler, Alfred B., Exeter, N. H., assignor to Rockingham Machine Company. Burnishing-machine	377,826	Feb. 14	743	188, 189	42	651
Fowler, Frank G., Bridgeport, Conn. Steam-boiler	377,099	Jan. 31	2005	525	42	413
Fox, Clarence W., Sangus, Mass. Glass-holder	378,361	Feb. 21	1528	400	42	809
Fox, Ivan, Philadelphia, Pa. Adjusting attachment for opera and other glasses	376,434	Jan. 17	1006	264	42	208
Fox, John, Brooklyn, N. Y. Can	375,992	Jan. 3	365	98	42	74
Fox, Washington I. (See Houghton and Fox.)						
Fox, William R. (See Berkey and Fox.)						
Fraenkel, Louis. (See Weiss, Emil, assignor.)						
Frank, Adolph, Charlottenburg, Prussia, Germany. Production of sulphite solutions	376,189	Jan. 10	658	.....	42	137
Frank, Adolph, Charlottenburg, Prussia, Germany. Production of sulphite solutions	376,190	Jan. 10	659	.....	42	137

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Frank, Bertha. (See Vermeulen, John, assignor.)						
Franklin, Thomas W., Providence, R. I. Steak-perforator	376,080	Jan. 10	496	134	42	107
Franzen, Petter J., assignor of one-fourth to C. H. Gersch, Chicago, Ill. Railway traction-cable	377,023	Jan. 31	1882	497	42	391
Frantz, Eugene L., Sweet Valley, assignor of one-half to F. N. Ruggles, Luzerne County, Pa. Tree-protector	379,948	Mar. 27	1629	434	42	1301
Frasch, Herman, London, Ontario, Canada. Refining Canadian and similar petroleum oils	378,246	Feb. 21	1360	.....	42	778
Frazier, George C., assignor to Hamilton, Lemmon, Arnold & Co., Allegheny City, Pa. Coffin-handle	376,407	Jan. 10	955	250	42	191
Freeland, John T. (See Trimble, William D., assignor.)						
Freeman, Joseph K., Seney, Ga. Car-coupling	377,746	Feb. 14	599	154	42	622
Freeman, Josiah, assignor to L. E. Drake, Goodlettsville, Tenn. Hopple	376,872	Jan. 24	1678	438	42	342
Freeman, William, Leicester, county of Leicester, England. Leather-cutting machine	377,298	Jan. 31	2284	604	42	467
Freeman, William C., Louisiana, Mo. Machine for making wooden trays, &c	380,255	Mar. 27	2062	552	42	1387
Fremaux, Edward C., Mermentau, La. Ammunition-case	377,150	Jan. 31	2065	542, 543	42	426
French, Horatio S., Wills Point, Tex. Grain-adjuster	380,198	Mar. 27	1988	532	42	1371
French, James. (See Uhrig, John W. M., assignor.)						
French, Justus W., Lynn, Mass. Manufacturing boots or shoes	379,640	Mar. 20	1144	303	42	1197
Frenier, Joseph, assignor of one-half to E. W. Jewell, Cincinnati, Ohio. Refrigerator	379,533	Mar. 13	977	263	42	1158
Frenot, Louis D., Newark, N. J. Sleeve-button	378,956	Mar. 6	133	38	42	992
Frey, Franklin, and H. W. Schwarzburg, Quincy, Ill. Baling-press	378,831	Feb. 28	2226	592, 593	42	953
Friedgen, Frederick. (See Behr, Hermann, assignor.)						
Friedlaender, Paul, and B. Priebs, assignors to K. Oehler, Offenbach-on-the-Main, Germany. Production of orange azo dye-stuffs	375,930	Jan. 3	270	.....	42	58
Friend, R. W. (See Haskins, William B., assignor.)						
Friend, William, New York, N. Y. Rubber eraser	376,081	Jan. 10	497	135	42	107
Frink, William B., *et al.* (See Shaw, Edwin H., assignor.)						
Frisbee, Gideon, New York, N. Y. Mill for crushing or grinding quartz	378,879	Mar. 6	33	9	42	973
Frisbie, Henry R., assignor of one-half to Detroit Patent Brush Company, Detroit, Mich. Scratch-brush	376,800	Jan. 24	1570	412	42	323
Frisbie, Henry R., Detroit, Mich., assignor to W. Barnett, Mansfield, Ohio. Spindle-connection for valves	376,981	Jan. 24	1822	479	42	370
Frisbie, William L., Syracuse, N. Y., assignor of one-half to J. C. Kenyon, Springfield, Mass. Lawn-mower	379,949	Mar. 27	1630	434	42	1301
Fritch, Sylvester, Beatrice, Nebr. Refrigerator	377,246	Jan. 31	2206	582	42	453
Fritts, William H., Plano, Ill. Draft-equalizer	377,024	Jan. 31	1889	497	42	391
Frost, George, *et al.* (See Preston, Charles A., assignor.)						
Frost, George, *et al.* (See Warren, Andrew, assignor.) (Reissue.)						
Frost, George A., *et al.* (See Preston, Charles A., assignor.)						
Frost, George A., *et al.* (See Warren, Andrew, assignor.) (Reissue.)						
Frushour, William A., Urbana, Ind. Fence	378,892	Feb. 28	2229	593	42	954
Fry, Benjamin, assignor to Art Novelty Company, (limited,) Erie, Pa. Combination-lock	380,028	Mar. 27	1753	469	42	1324
Fry, Reginald. (See Wright, Morris S., assignor.)						
Fry, William A., Washington, D. C. Draft-equalizer for vehicles	379,215	Mar. 13	516	145	42	1069
Fryer, Richard, assignor to A. G. Jennings & Sons, Brooklyn, N. Y. Looper for sewing-machines	378,165	Feb. 21	1235	325	42	754
Fuchs, Henry. (See Fenstell, Friedrich, assignor.)						
Fuel Gas and Electric Engineering Company. (See Wellman and Goetz, assignors.)						
Fuller, Frederick L., Norwich, Conn. Device for registering and recording the time worked by employés and automatically computing their wages	379,865	Mar. 20	1507	397	42	1268
Fuller, George P., Minneapolis, Minn. Nut-lock	376,771	Jan. 24	1525	401	42	315
Fuller, James B. (See Gurney, Charles H., assignor.)						
Fuller & Warren Company. (See Wolfe, Gurdon G., assignor.)						
Fuller, Willard H., Passaic, N. J., assignor to Scovill Manufacturing Company, New York, N. Y. Photographic-plate holder	376,983	Jan. 24	1824	479	42	371
Fuller, William F., assignor of one-half to B. S. Snyder, Port Elmsley, Ontario, Canada. Bobbin-holder for spinning-spindles, &c	376,982	Jan. 24	1823	479	42	370
Fullerton, George A. (See Coy and Fullerton.)						
Fullerton, George A., *et al.* (See Bradford, Charles K., assignor.)						
Fulton, Samuel M., Galt, Cal. Windmill	379,512	Mar. 13	949	256	42	1152
Funk, Wilson R., Cleves, Ohio. Automatic uncoupler	378,392	Feb. 21	1570	411	42	817
Furniture Caster Association. (See Berkey and Fox, assignors.)						
Furst, August, Corning, Kans. Straw-stacker	376,873	Jan. 24	1679	438, 439	42	342
Fürstenwärther, Johann B. v., Brooklyn, N. Y. Medicine cup and stopper	377,483	Feb. 7	201	48	42	534
Fyfe, Peter, Glasgow, county of Lanark, Scotland. Steam-trap	380,281	Mar. 27	2096	561	42	1394
Fyrberg, Andrew. (See Johnson and Fyrberg.)						
Fyah, Oswald B., Moose Jaw, Northwest Territory, Canada. Two-wheeled vehicle	379,050	Mar. 6	289	84	42	1020
Gaddis, George D., East Machias, Me. Tire-tightener	379,950	Mar. 27	1632	435	42	1302
Gage, John P. (See Dutton, Elmer E., assignor.)						
Gage, Marine, Galt, Cal. Automatic whistle attachment	379,641	Mar. 20	1145	303	42	1197
Gale, Herbert N., Bristol, Conn., assignor of one-half to F. A. Dennett, Sheboygan, Wis. Steam-engine	377,247	Jan. 31	2207	582, 583	42	453
Gallagher, Darius F., Brooklyn, N. Y. Valve-gear	376,082	Jan. 10	498	135	42	107
Gallagher, John P. (See Dunbeck, Gustave A., assignor.)						
Galland, Bonham, New York, N. Y. Suspensory	378,304	Feb. 21	1449	378	42	793
Galloway, Henry E., Chicago, Ill. Trousers-stretcher	376,083	Jan. 10	503	135	42	108
Gallup, Egbert H., assignor to E. H. and W. L. Mott, Oneida, N. Y. Barrel truck and stand	375,740	Jan. 3	31	9	42	9
Gallup, Oscar L., Holton, Mich. Stump-extractor	378,500	Feb. 28	1740	459	42	859
Galvano-Faradic Manufacturing Company. (See Ten Broeck, Theodore R., assignor.)						
Galvin, James, assignor to T. P. Taylor, Bridgeport, Conn. Bustle	378,439	Feb. 28	1654	434	42	841
Gamble, Howard, Lansing, Kans. Combined feed-box and end-gate	379,569	Mar. 20	1040	277	42	1177
Gamewell Auxiliary Fire Alarm Company. (See Milliken and Lytle, assignors.)						
Gamewell Fire Alarm Telegraph Company. (See Cole, Frederick W., assignor.)						
Gandy, Maurice, Liverpool, England. Chain or rope belting for driving machinery	377,484	Feb. 7	202	48	42	534
Gane, Jean V., Paris, France, assignor to F. J. and C. F. Page, Norwich, England. Apparatus for inserting and fixing the bristles of brushes, &c	378,130	Feb. 21	1175	307, 308, 309	42	744
Gane, Jean V., Paris, France, assignor to F. J. and C. F. Page, Norwich, England. Machine for boring brush-bodies	378,131	Feb. 21	1183	309	42	745
Gane, Jean V., Paris, France, assignor to F. J. and C. F. Page, Norwich, England. Machine for making brushes	378,132	Feb. 21	1185	310	42	745

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Ganss, William H., Toledo, Ohio. Hemmer for sewing-machines	378,048	Feb. 14	1059	277	42	714
Ganter, Daniel C., Indianapolis, Ind. Device for steaming and cooking purposes	376,084	Jan. 10	504	136	42	108
Gardiner, Benjamin F., Cobleskill, N. Y. Miter-box	377,299	Jan. 31	2284	604	42	467
Gardiner, Howell E., Battle Creek, Mich. Opera or school seat	376,738	Jan. 24	1465	387	42	304
Gardner, Marshall, assignor to J. Stone, T. H. Ball, Aurora, and S. Florsheim, Chicago, Ill. Multiplex sewing-machine	379,570	Mar. 20	1041	277 / 278	42	1178
Gardner, Perry G., North Adams, Mass., assignor of one-half to R. S. Penniman, Dover, N. J. Electric fuse	377,851	Feb. 14	776	198	42	657
Garfield, Albert G., Chicago, Ill. Halter, &c	375,809	Jan. 3	116	34	42	25
Garman, John, Ebensburg, assignor of one-half to D. E. Evans, Cambria, Pa. Baling-press	379,156	Mar. 6	422	119	42	1046
Garretson, Oliver S., Buffalo, N. Y. School-furniture	379,387	Mar. 13	758	205	42	1115
Garretson, Oliver S., Buffalo, N. Y. School-furniture	379,388	Mar. 13	759	205	42	1116
Garrett, Frank A., Syracuse, N. Y. Adjusting device for dampers	378,671	Feb. 28	1984	536	42	907
Garrett, Samuel R., Mansfield, Ohio. Fence-machine	376,521	Jan. 17	1132	286	42	231
Gärtner, Albert F. (See Gemünden and Gärtner.)						
Gaskell, Frank N., Juda, Wis. Can	376,085	Jan. 10	505	136	42	108
Gates, George S., Athol, Mass. Fishing-reel	377,100	Jan. 31	2006	525	42	413
Gathmann, Louis, Chicago, Ill. Machine for splitting grain	376,712	Jan. 17	1422	374	42	286
Gathright, John R., Louisville, Ky. Railway street-sprinkler	378,672	Feb. 28	1985	526	42	908
Gavin, George, L. W. Cromer, and F. Gilmor, Eureka, Nev. Portable fire-escape	378,833	Feb. 28	2230	593	42	954
Gavin, George, and L. W. Cromer, assignors to themselves and F. M. Heitman, Eureka, Nev. Wrench	378,584	Feb. 28	1860	491	42	883
Gay, Ware B., *et al.*, trustees. (See Wheeler, Elbridge, assignor.)						
Gaylord, Frederick H., *et al.* (See Fortin, Charles L., assignor.)						
Geatty, Hamilton C., assignor of one-half to J. G. Byers, Kingsdale, Pa. Railway-switch	376,772	Jan. 24	1526	401 / 402	42	315
Gebhard, Lorenz. (See Batt, John B., assignor.)						
Geigy, Jean R. (See Mylius, Adelbert, assignor.)						
Geissel, Friedrich, Chicago, Ill. Type-rubbing machine	378,880	Mar. 6	35	9, 10	42	973
Gemmill, John B., Red Bluff, Cal. Harvester	377,067	Jan. 31	1951	513	42	403
Gemünden, George A., and A. F. Gärtner, Savannah, Ga. Shipping appliance	380,199	Mar. 27	1969	533	42	1371
Gendron, Peter, Toledo, Ohio. Canopy-holder for children's carriages	377,608	Feb. 7	388	99	42	569
Genese, David, Baltimore, Md. Artificial tooth	377,248	Jan. 31	2210	583	42	454
Gentry, Oliver H., Opelousas, La. Swinging treadle	380,029	Mar. 27	1754	470	42	1324
George, Adam H., Passaic, N. J. Hand vise or clamp	376,191	Jan. 10	660	176	42	137
Gepford, William, West Salem, Ohio. Swinging gate	379,457	Mar. 13	862	233	42	1136
Gérard, John, assignor to Landers, Frary & Clark, New Britain, Conn. Egg-beater	380,200	Mar. 27	1990	533	42	1371
Gérard, John, and R. L. Webb, assignors to Landers, Frary & Clark, New Britain, Conn. Molasses-gate	377,555	Feb. 7	309	79	42	554
Gerbracht, Eugene A., New York, N. Y. Child's carriage	376,591	Jan. 17	1225	322	42	250
Gerke, William, Providence, R. I. Tail-piece for stringed instruments	377,068	Jan. 31	1953	513	42	403
Germania Bottle Company. (See Waitt, George L., assignor.)						
Germania Bottle Stopper Company. (See Wiegand, S. Lloyd, assignor.)						
Gersch, Charles H. (See Franzoz, Peter J., assignor.)						
Gerstle, Albert M. (See McAndrews, William H., assignor.)						
Gesner, George W., New York, N. Y., assignor to Hydrogen Company of the United States. Apparatus for oxidizing the surface of metals	376,874	Jan. 24	1680	439	42	343
Gesner, George W., New York, N. Y., assignor to Hydrogen Company of the United States, of New York. Treatment of metals	379,866	Mar. 20	1511	398	42	1208
Getchell, Charles E., Waltham, Mass., assignor of one-half to S. N. Bourne, Manchester, N. H. Apparatus for making sulphurous acid	378,673	Feb. 28	1987	526	42	908
Getchell, John M., assignor of one-half to F. S. Sleeper, North Haverhill, N. H. Corn-planter	379,389	Mar. 13	761	205	42	1116
Getman, Henry W., Ilion, N. Y. Harness-hook	375,994	Jan. 3	367	98	42	75
Getman, Henry W., Ilion, N. Y. Holdback for vehicles	379,157	Mar. 6	423	119	42	1046
Gholson, William C., assignor of one-half to C. L. Donghty, Cincinnati, Ohio. Fence-machine	379,458	Mar. 13	863	233	42	1136
Gibb, Austin, Beloit, Wis. Folded paper for carpet-lining, &c	379,571	Mar. 20	1045	278	42	1178
Gibbes, W. Hampton, Jr., Columbia, S. C. Saw-mill-feed device	376,592	Jan. 17	1226	323	42	250
Gibbs, Eugene S., and E. Harper, Lyons, Iowa. Churn	378,501	Feb. 28	1741	459	42	860
Gibbs, Frank J. (See Woodin and Gibbs.)						
Gibbs, Frederick H., Syracuse, N. Y. Apparatus for the manufacture of wheels	377,196	Jan. 31	2123	560	42	438
Gibbs, George, assignor of one-half to I. Smith, Paterson, N. J. Alarm-lock	379,642	Mar. 20	1146	303	42	1197
Gibbs, James E., assignor of one-half to W. G. Mathes, Jonesborough, Tenn. Churn-dasher	380,282	Mar. 27	2097	561	42	1394
Gibbs, John M., Park Hill, Ontario, Canada. Draft-regulator for smoke-passages	376,473	Jan. 17	1060	277	42	218
Giberson, James M., Elsah, Ill. Railway-tie	378,133	Feb. 21	1190	311	42	746
Gibford, Frank F., Englewood, Ill. Artificial-stone pavement	378,000	Feb. 14	996	260	42	701
Gibson, Andrew K., Kimbolton, Ohio. Traction-engine	378,502	Feb. 28	1742	460	42	860
Gibson, Charles D. P., New York, N. Y. Electric storage-battery	379,572	Mar. 20	1046	278	42	1178
Gibson, Edward T., Minneapolis, Minn. Police, fire, and district telegraph	378,927	Mar. 6	92	27	42	984
Gibson, Walter L., assignor to himself and J. H. Lee, Oviedo, Fla. Wrench	378,585	Feb. 28	1861	491	42	883
Gibson, William P., assignor to American Elevator Company, London, England. Hydraulic or other elevator	378,674	Feb. 28	1989	526	42	908
Gielow, John, Chicago, Ill. Boring and tapping machine	376,032	Jan. 3	429	114	42	86
Gielow, John, Chicago, Ill. Machine for counterboring and tapping nuts	376,408	Jan. 10	956	250 / 251	42	191
Gieay, S. Herbert, Washington, D. C. Door-check	377,852	Feb. 14	778	199	42	658
Gifford, Lord B., Toledo, Ohio. Adjustable vehicle-jack	378,001	Feb. 14	997	260	42	701
Gift, Jonathan, Star, Wis. Wagon-brake	377,101	Jan. 31	2008	526	42	414
Gilbert, Benjamin F., Jr., Fair Haven, Vt. Mop-holder	378,586	Feb. 28	1862	491	42	884
Gilbert, Leander G., and M. W. Long, assignors to said Gilbert and T. Witmer, Jr., Buffalo, N. Y. Car-heater	377,934	Feb. 14	898	231	42	683
Gilchrist, James, *et al.* (See Neff, Elijah, assignor.)						
Gilchrist, Percy C., Westminster, county of Middlesex, England. Manufacture of steel and ingot-iron	377,609	Feb. 7	389	.....	42	569
Giles, Joseph H., *et al.* (See Coyle, James, assignor.)						
Giles, William T., and W. Booth, Shamokin, Pa. Device for discharging coke-ovens	379,390	Mar. 13	762	206	42	1116
Gilfillan, William. (See Shaw and Gilfillan.)						
Gilford, Frederick E., Lake Village, N. H. Piston water-meter	377,674	Feb. 7	487	126	42	587
Gillbee, Mannel A. T. (See Padmore and Gillbee.)						
Gilleland, Washington, Land, Ga. Flour-bolting reel	378,785	Feb. 28	2134	564	42	935
Gillem, Eugene C., assignor of one-half to W. L. Ramey, Madison, Nebr. Barrel-holder	376,376	Jan. 10	916	240	42	184
Gilles, William, assignor of two-thirds to W. O'Herin and C. W. Weller, Parsons, Kans. Spark-arrester	377,485	Feb. 7	204	49	42	535
Gillespie, Alfred J., Atlantic, Iowa. Cord-fastener and label-holder for mail-bags	375,871	Jan. 3	188	52	42	41
Gillon, Edward W., Brooklyn, N. Y. Tempering Bessemer-steel wire	379,573	Mar. 20	1048	278	42	1178

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Gilmartin, Michael. (See Clark, John, assignor.)						
Gilmor, Frank. (See Gavin, Cromer, and Gilmor.)						
Gilmore, Ira F., and A. P. Branaman; said Branaman assignor of one-half to J. T. Kelly, Leroy, Ill. Seeder and cultivator	375,741	Jan. 3	32	10	42	10
Gilmore, John, and W. R. Clark, London, England. Car-starter	376,875	Jan. 24	1692	439	42	343
Gingras, Timothy, Buffalo, N. Y. Belt-fastener	380,104	Mar. 27	1862	495	42	1346
Gingras, Timothy, Buffalo, N. Y. Belt-fastener	380,105	Mar. 27	1863	495	42	1346
Ginna, Stephen A., *et al.* (See Hipperling, William, assignor.)						
Girard, Ferdinand E., and A. Rigault, Paris, France. Machine for making metallic clasps	377,379	Feb. 7	17	5, 6	42	498
Girtanner, Fred, Big Stone City, Dak. Ter. Straw-burning stove	378,786	Feb. 28	2135	565	42	935
Girvan, George F., Little Falls, N. Y. Alarm letter-box	378,166	Feb. 21	1236	325	42	754
Given, John L., Melrose, assignor to himself and G. B. Kelly, Boston, Mass. Pneumatic cash-carrier apparatus	379,890	Mar. 20	1543	407	42	1274
Gladney, Robert D., Keownville, assignor of one-half to R. B. Stephens, New Albany, Miss. Apparatus for distilling water and other liquids	378,881	Mar. 6	36	10	42	973
Glaister, Thomas S. (See Lyon, Robert B., assignor.)						
Glasgow, Robert W., Tranquility, Ohio. Pitch-fork	379,951	Mar. 27	1633	435	42	1302
Glasgow, William, and S. S. Stevens, Chicago, Ill., assignors to the Combined Electric and Trip Bell Cord Company. Bell-cord for cars	379,459	Mar. 13	864	233 / 234	42	1137
Glascock, James H., Sherman, Tex. Fire-escape	378,882	Mar. 6	38	10	42	973
Gleason, Homer A., Hampshire, Ill. Water-tank	377,427	Feb. 7	123	26	42	518
Gleason Manufacturing Company, E. P. (See Cunningham, James F., assignor.)						
Gleason Manufacturing Company, E. P. (See Lindner, Ernst, assignor.)						
Gleason, Oscar R., New York, N. Y. Bridle-bit	378,365	Feb. 21	1450	378	42	793
Gleason, Patrick, assignor of one-fourth to G. Manson, Wausau, Wis. Rule for measuring lumber	375,742	Jan. 3	34	10	42	10
Glen Cove Machine Company. (See Gray, William H., assignor.)						
Glen Cove Machine Company. (See Welch, James F., assignor.)						
Glew, Frederick H., assignor to T. Greenish, 30 Conduit Street, Bond Street, county of Middlesex, England. Apparatus for inhaling medicinal vapors, &c	376,819	Jan. 24	1601	420	42	328
Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Cambridge, Mass. Heeling-machine	377,300	Jan. 31	2256	604	42	468
Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Cambridge, Mass. Heeling-machine	377,301	Jan. 31	2288	605	42	468
Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Cambridge, Mass. Heel-trimming machine	377,302	Jan. 31	2290	605	42	469
Glidden, Joseph F., and P. W. Vaughan, De Kalb, Ill. Cultivator	378,089	Feb. 21	1115	292	42	734
Globe Button-Hole Machine Company. (See Reed, James H., assignor.)						
Globe Company. (See Baker, Edward E., assignor.)						
Globe Company. (See Yeiser, Henry C., assignor.)						
Glover, Henry P. (See Bowling, Enoch C., assignor.)	379,199	Mar. 6	476	135	42	1057
Goben, Levi F., Spring Hill, Mo. Mechanical movement	376,773	Jan. 24	1527	402	42	315
Goddard, Ezra G., East Saginaw, Mich. Attachment for plows						
Goddard, Nate W., *et al.* (See Smith, Roswell T., assignor.)						
Goddard, Rodney W., trustee. (See Holt, Albert, assignor.)						
Goddard, William L., Brooklyn, assignor to P. Schneider Sons & Co., New York, N. Y. Coiled-spring compressor	377,803	Feb. 14	718	181 / 182	42	646
Godfrey, Philip J., Taunton, Mass. Hot-corn holder	378,503	Feb. 28	1743	466	42	860
Godfrey, Robinson M. (See Stewart, William H., assignor.)						
Goebel, Christian H., Philadelphia, Pa., assignor, by mesne assignments, to American Pneumatic Railway Company, of Tennessee. Pneumatic propeller for cars	376,984	Jan. 24	1825	479	42	371
Goebel, Herman A., assignor of one-half to L. Hirsch, Houston, Tex. Swing	377,380	Feb. 7	19	7	42	498
Goehring, Charles L., Allegheny, Pa. Machine for turning and molding wood	378,587	Feb. 28	2136	565	42	935
Goehring, John R., assignor to H. and T. B. Belfield, Philadelphia, Pa. Injector	375,810	Jan. 3	117	34	42	28
Goehring, John R., assignor to H. and T. B. Belfield, Philadelphia, Pa. Injector	379,156	Mar. 6	423	119	42	1046
Goertz, August, Newark, N. J. Lock for bag or satchel frames						
Goettel, John, Boston, assignor of three-fourths to L. L. Dixon, Somerville, G. W. Squire, Cambridge, and J. T. Lipsett, Boston, Mass. Chimney-cowl	379,216	Mar. 13	517	145	42	1070
Goetz, George W. (See Wellman and Goetz.)	376,242	Jan. 10	731	194	42	150
Goetz, Henry A., New Albany, Ind. Seed-tester						
Goff, Emmett S. (See Lovett and Goff.) (Reissue.)						
Gogin, George W., *et al.*, trustees. (See Wheeler, Elbridge, assignor.)	379,952	Mar. 27	1634	435	42	1302
Gold, Edward E., New York, N. Y. Steam heater or radiator	379,777	Mar. 20	1341	358	42	1237
Golding, William H., Boston, Mass. Machine for cutting printers' rules	379,778	Mar. 20	1344	358 / 359	42	1237
Golding, William H., Chelsea, Mass. Machine for mitering printers' rules						
Goldrath, David. (See Green, William M., assignor.)						
Goldsmith, Gustavus A. (See Hoffman, Joseph, assignor.)						
Goldsmith, Herman, Brooklyn, N. Y. Combination-ruler	378,928	Mar. 6	95	28	42	985
Goldsmith, Nathaniel O. (See Weir, Partington, Goldsmith, and Harden.)						
Goldstein, David, assignor to H. Goldstein, San Francisco, Cal. Sample-tray	376,339	Jan. 24	1466	387	42	304
Goldstein, Henry. (See Goldstein, David, assignor.)						
Gomber, Joseph C., Milwaukee, Wis. Photographic accessory	377,556	Feb. 7	310	79	42	554
Goodenough, George A., Green Point, N. Y. Damper-regulator	377,557	Feb. 7	311	79	42	555
Goodhue, George J., Stevens Point, Wis. Timber structure for mines	377,197	Jan. 31	2125	560	42	439
Goodhue, James E., St. Charles, Ill. Automatic gate	375,993	Jan. 3	365	98	42	76
Goodrich, Joseph, Henry, assignor to M. A. Hawkes, Evanston, Ill., and J. C. McKee, Allegheny City, Pa. Foot-power bench-vise	378,362	Feb. 21	1529	400	42	870
Goodrich, William C., Newburg, N. Y. Horse	376,876	Jan. 24	1683	440	42	348
Goodsell, Charles H., Poughkeepsie, N. Y. Velocipede	377,610	Feb. 7	396	99	42	569
Goodspeed, George N. (See Parks, Levi N., assignor.)						
Goodwin, George A., and W. F. How, London, England. Foundry-ladle	377,747	Feb. 14	599	154	42	622
Goodwin, M. A., *et al.* (See Howe, Thomas B., assignor.)						
Goodwin, William T., Jr., Philadelphia, Pa. Machine for making pop-corn balls	377,303	Jan. 31	2293	605 / 606	42	469
Goodyear, Frederick, *et al.* (See Biggin, Mary, assignor.)						
Googins, James G., assignor of one-half to C. Rowell, Fairfield, Me. Mitering-machine	376,192	Jan. 10	662	176	42	137
Goossen, Henry. (See Wilson, Curtis, assignor.)						
Gordon, Alexander, Detroit, Mich. Cigar-bunching machine	377,748	Feb. 14	601	155	42	623
Gordon, Edwin, Hyde Park, Mass. Railway-switch	377,713	Feb. 7	544	139	42	597
Gordon, Fred W., assignor to Gordon, Strobel & Laureau, (limited,) Philadelphia, Pa. Furnace-protecting	379,694	Mar. 20	1225	325	42	1213
Gordon, Isaac C., assignor of one-half to L. Seel, Charleston, S. C. Apparatus for roasting coffee	379,891	Mar. 20	1546	407	42	1275

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Gordon, Lorenzo D., assignor of one-half to G. M. Lassetter and E. S. Hicks, Tenaha, Tex. Press	376,300	Jan. 10	809	214	42	164
Gordon, Strobel & Laureau. (See Gordon, Fred W., assignor.)						
Gore, Henry A., assignor of two-thirds to E. W. Walker and H. W. Ruton, Goshen, Ind. Carpet-sweeper	380,201	Mar. 27	1991	533	42	1372
Gorman, Charles R., and C. J. Fletcher, Birmingham, county of Warwick, England. Steering device for perambulators	377,102	Jan. 31	2010	526, 527	42	414
Gorman, John J. (See Bradley, Henry A., assignor.)						
Goss Printing Press Company. (See Brookes, Leonard E., assignor.)						
Gott, Erastus, Newton, Mass. Skiving-machine	375,811	Jan. 3	118	34	42	92
Gottfried, Mathens, Chicago, Ill. Mashing-machine	377,451	Feb. 7	156	36	42	525
Gouert, Charles W. (See Anderson, George V., assignor.)						
Gouert, Charles W. (See Robinson and Gouert.)						
Gould, George H., West Lebanon, Me. Window screen and fixture	378,587	Feb. 28	1863	492	42	884
Gould, Lucius D., Newark, N. J. Bevel	376,301	Jan. 10	810	214	42	165
Gouverneur Machine Company. (See Hartley, Sylvester F., assignor.)						
Grace, Edward. (See Parshall, Charles H., assignor.)						
Graetz, Ernst, Nensellerhausen, and E. F. Reinhold, Neustadt, near Leipsic, Saxony, Germany. Truck	377,486	Feb. 7	205	49, 50	42	335
Graetz, Frederick R., Rochester, Minn. Grain weighing, bagging, and tallying machine	379,273	Mar. 13	590	163	42	1083
Graham, James, Detroit, Mich. Ear-rack for pens, pencils, &c	375,743	Jan. 3	35	10	42	10
Graham, Seth. (See Rice and Graham.)						
Gran, Edward C. (See Bristol and Gran.)						
Granger, Alvan P., Denver, Colo. Machine for crushing or disintegrating ores, &c	376,877	Jan. 24	1685	440	42	343
Granger, Alvan P., Denver, Colo. Ore-crusher	376,878	Jan. 24	1686	440, 441	42	344
Grant, David S., Lawrence, Mass. Shoe-nail strip	377,804	Feb. 14	721	182	42	647
Grant, David S., Lawrence, Mass. Shoe-nail	377,805	Feb. 14	721	182	42	647
Grassman, John A., Florid, Ill. Drill	377,249	Jan. 31	2211	583	42	454
Grathwol, Leopold, Troy, N. Y. Tobacco-refining vat	379,391	Mar. 13	763	206	42	1116
Graves, Fred. B. (See Graves, Lorenzo S. and F. B.)						
Graves, Fred E., Rockford, Ill. Combination office-chair and operating-table	377,806	Feb. 14	732	182, 183	42	647
Graves, Lorenzo S. and F. B., Rochester, N. Y. Hydraulic elevator	379,513	Mar. 13	951	257	42	1153
Gray, Edgar B. (See Cloyes and Gray.)						
Gray, Frank M., Milwaukee, Wis. Combined pile-driving and well-drilling machine	376,474	Jan. 17	1061	278	42	218
Gray, William D., R. Birkholz, and E. Reynolds, Milwaukee, Wis. Wooden gear-tooth	376,522	Jan. 17	1133	296	42	232
Gray, William H., assignor to Glen Cove Machine Company, (limited,) Brooklyn, N. Y. Wood-planing machine	377,250	Jan. 31	2213	584	42	454
Greely, Benjamin J., Boston, Mass. Stopper-extractor	379,010	Mar. 6	220	59	42	1008
Green, Joseph W., Jr., and C. H. Caswell, Easthampton, Mass. Elastic cord	377,027	Jan. 31	1893	498	42	392
Green, Paul M. (See Babcock, E. Stillman, assignor.)						
Green, Perley. (See Ellis, George W., assignor.)						
Green, William M., Muskegon, assignor of one-half to D. Goldrath, Muskegon County, Mich. Device for dressing and jointing the teeth of saws	376,647	Jan. 17	1327	348, 349	42	268
Green, William W., Chicago, Ill. Spiral girder	379,217	Mar. 13	519	145	42	1070
Greenawalt, Henry B., Millersville, and J. B. Urban, Conestoga, Pa. Reading-desk or book-holder	376,593	Jan. 17	1227	323	42	251
Greene, James G., Elizabeth, N. J., assignor to Singer Manufacturing Company of New Jersey. Cutting mechanism for button-hole sewing-machines	376,475	Jan. 17	1063	278	42	218
Greene, John W., Oregon, Mo. Curtain-roller bracket and pole attachment	379,309	Mar. 13	650	176	42	1094
Greene, Patrick R., assignor of two-thirds to J. Claffy, Brooklyn, N. Y., and P. Byrne, Jersey City, N. J. Core for making hollow tiles	380,030	Mar. 27	1755	470	42	1324
Greene, Robert W., Savannah, assignor of one-half to S. P. Hamilton, Chatham County, Ga. Combined tag-holder and hasp-lock	378,393	Feb. 21	1570	412	42	818
Greene, Thomas S., Walnut Grove, Ala. Catarrh remedy	378,504	Feb. 28	1744	.....	42	860
Greene, Thomas W., Lansing, Mich. Horse hay-rake	377,103	Jan. 31	2011	527	42	414
Greengard, Moses D., and F. Harris, St. Louis, Mo. Advertising-stand	377,251	Jan. 31	2214	585	42	455
Greenhoot, David, Cincinnati, Ohio. Draw-bridge gate	377,807	Feb. 14	723	183	42	647
Greenish, Thomas. (See Glew, Frederick H., assignor.)						
Greenlee, Ralph S., Chicago, Ill. Mortising-machine	377,749	Feb. 14	604	155, 156	42	623
Greenman, Harvey H., Cortland, N. Y. Window-screen	378,090	Feb. 21	1116	292	42	733
Greenough, George G., Fort Warren, Mass. Loading apparatus for cartridge-shells	376,148	Jan. 10	602	160	42	126
Greenwood, Marstin D., Hoosick Falls, N. Y. Oven for annealing metals	376,740	Jan. 24	1467	387	42	304
Greenwood, Peter F., Philadelphia, Pa. Horseshoe-blank	379,779	Mar. 20	1348	359	42	1238
Gregg, Myron E., Washington, D. C. Projectile	376,302	Jan. 10	810	214	42	165
Gregg, R. W. C. (See Nash, Edgar P., assignor.)						
Greiner, Charles, and J. Grupp, Philadelphia, Pa. Automatic gas-light governor	378,050	Feb. 14	1060	277	42	714
Greth, Augnst, San Francisco, Cal. Revolver	378,091	Feb. 21	1117	292	42	733
Grier, George E. (See Roscoe and Grier.)						
Griffin, G. W., *et al.* (See Russell, Horace, assignor.)						
Griffin, Patrick H., Brooklyn, N. Y. Lamp-shade holder	378,883	Mar. 6	39	11	42	974
Griffin, Thomas A., Chicago, Ill. Brake head and shoe	376,523	Jan. 17	1134	296	42	232
Griffin, Thomas A., Chicago, Ill. Filling-piece for railway-frogs	380,031	Mar. 27	1756	470	42	1325
Grill, Frederick, Philadelphia, Pa. Device for securing cut tobacco	380,256	Mar. 27	2064	552	42	1388
Grimm, Paul H. (See Duryea and Grimm.)						
Grimm, Paul H., assignor of one-half to J. Duryea, Glen Cove, N. Y. Steam boiler-tube cleaner	376,820	Jan. 24	1602	420	42	328
Grimmesey, Orris R., *et al.* (See Winfield, William C., assignor.)						
Griswold, Alanson B., and J. M. Bradbury, Bunker Hill, Kans. Automatic oiler	379,643	Mar. 20	1147	303, 304	42	1197
Griswold, Daniel F. (See Armitage, David M., assignor.)						
Griswold, J. Wool, Troy, N. Y. Barbed wire	377,252	Jan. 31	2215	585	42	455
Griswold, J. Wool, Troy, N. Y. Fence-post	378,051	Feb. 14	1061	278	42	714
Gronert, William J., and C. G. Conn, Elkhart, Ind. Music-folio	376,648	Jan. 17	1329	349	42	268
Gross, Hermann C., assignor of two-thirds to C. Stuppe and P. Elz, Milwaukee, Wis. Railway-car	378,675	Feb. 28	1990	527	42	908
Grosselin, Henry N., Fils, Sedan, France. Machine for napping cloth	377,151	Jan. 31	2068	543	42	427
Grout, William L., and E. L. Bowers, Orange, Mass. Drill or reamer holder	376,476	Jan. 17	1064	278	42	219
Groux, Emile, assignor of one-third to S. Hirsch, Wilkes-Barré, Pa. Striking mechanism for clocks	377,935	Feb. 14	900	231	42	683
Grove, Alfred H. (See Wilhelm, Jacob, assignor.)						
Grove, William H., assignor of one-half to C. R. Dresback, Circleville, Ohio. Grain weighing, bagging, and registering device	377,428	Feb. 7	124	27	42	518

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Groves, Oliver F., Alda, Nebr. Table	379,780	Mar. 20	1349	359, 360	42	1238
Grummon, John W., East Orange, N. J., assignor to India Rubber Comb Company, New York, N. Y. Rosette for harness	377,750	Feb. 14	606	156	42	623
Grupp, Jacob. (See Greiner and Grupp.)						
Grunow, Hermann, Buckaw, Prussia, Germany. Armor-turret	376,985	Jan. 24	1926	480	42	371
Gubbins, Robert J. (See Stuart and Gubbins.)						
Guerber, Frederick S., Allentown, Pa. Automatic block-signal system for railways	378,306	Feb. 21	1450	378, 379	42	793
Guérin, Paul O., New Orleans, La. Shuttler-fastener	379,695	Mar. 20	1226	326	42	1213
Guernsey, Jane M. (See Beals, Ebenezer, assignor.) (Reissue.)						
Guidinger, Joseph, Hika, Wis. Automatic grain-scale	378,363	Feb. 21	1531	400, 401	42	810
Guilmartin, John F., Troy, Ala., assignor to E. T. Comer, Savannah, Ga. Seed-planter	376,243	Jan. 10	733	195	42	150
Gunckel, Winfield O., Terre Haute, Ind. Conveyer	375,931	Jan. 3	280	76	42	58
Gunn, Daniel B., Red Oak, Iowa. Glove	378,834	Feb. 28	2231	594	42	954
Gunn, Daniel B., Red Oak, Iowa. Glove	378,440	Feb. 28	1655	434, 435	42	841
Guntz, George, Wilkes-Barré, Pa. Electric railway-station indicator	376,033	Jan. 3	432	115	42	87
Gurney, Charles H., Waltham, assignor to J. B. Fuller, Boston, Mass. Tag						
Gurney Company, E. & C. (See Gurney and Peniston, assignors.)						
Gurney, Edward, and C. W. Peniston, assignors to E. & C. Gurney Company, (limited,) Toronto, Ontario, Canada. Temperature-regulator	378,835	Feb. 28	2232	594	42	954
Gustafson, Axel R., Marinette, Wis. Blacking-brush	376,879	Jan. 24	1680	441	42	345
Gustafson, Wald, London, England. Aerial navigation	378,364	Feb. 21	1533	401	42	810
Gustavson, Victor, Chicago, Ill. Vehicle-transporter	377,152	Jan. 31	2070	543	42	427
Gustavsson, Charles J., Salt Lake City, Utah Ter. Sweat-pad hook	379,011	Mar. 6	220	59	42	1008
Guyer, Nelson, Lima, Ohio. Lamp-supporting attachment	376,950	Jan. 24	1782	468	42	363
Haag, Lewis R. (See Shurtleff and Haag.)						
Haak, Jerry. (See Loeb and Haak.)						
Haas, Christian, Chicago, Ill. Elevator-carriage	377,751	Feb. 14	607	156	42	624
Haas, John E., *et al.* (See Boors, Lewis, assignor.)						
Haas, William, New York, N. Y. Creating draft in chimneys	375,995	Jan. 3	367	98	42	75
Haas, William, San Francisco, Cal. Street-sweeping machine	378,002	Feb. 14	998	260, 261	42	702
Hachfield, Albert E., *et al.* (See Heimann, Salomon, assignor.)						
Hackaley, John. Fall River, Mass. Spinning-mule	375,932	Jan. 3	280	76	42	58
Hacker, William, trustee. (See Dolan, Edward J., assignor.)						
Hackett, Edward F. (See Tittle, Daniel J., Jr., assignor.)						
Hackett, James, Taunton, Mass. Ink-distributing device for printing-machines	378,441	Feb. 28	1657	435	42	842
Hackley, Henry W., Kokomo, Ind. Wrench	377,827	Feb. 14	747	189	42	651
Hadley, Charles W., Owatonna, Minn. Automatic grain-measure	377,936	Feb. 14	902	231, 232	42	683
Hafely, Alfred C., New York, N. Y. Embossed metallic plate	378,442	Feb. 28	1657	.....	42	842
Haff & Walbridge. (See Stepp, John P., assignor.)						
Hagarty, George L., assignor of one-third to E. S. Decker, St. Thomas, Ontario, Canada. Feed-water heater	377,752	Feb. 14	608	156	42	624
Hageman, Randolph F., New Madison, Ohio. Railway-signal	377,892	Feb. 14	834	213, 214	42	669
Hagenbuchle, John B., *et al.* (See Zallud, Karl, assignor.)						
Hagerman, Calvin E., Ainsworth, Nebr. Hay-rack	380,106	Mar. 27	1864	495	42	1346
Haight, Charles L., Poughkeepsie, N. Y. Machine for forming horseshoes	379,696	Mar. 20	1227	326	42	1213
Haight, Henry J., New York, N. Y. Receiving, transmitting, and distributing instrument for electro-magnetic thermoscopes	376,149	Jan. 10	603	161, 162, 163	42	126
Haight, Henry J., New York, N. Y. Circuit-closer and regulator for electro-magnetic thermoscopes	376,880	Jan. 24	1691	441, 442, 468, 469	42	345
Hain, Frank K., New York, N. Y. Railway structure	376,951	Jan. 24	1783		42	363
Haines, Augustin S., Nashville, Iowa. System of irrigation	379,392	Mar. 13	764	207	42	1117
Haines, John W., Fort Fairfield, Me. Snow-scraper	378,307	Feb. 21	1453	379	42	794
Hainsworth, Frederick, Chicago, Ill. Wire fabric for mattresses	379,012	Mar. 6	222	60	42	1008
Hainsworth, Frederick, Chicago, Ill. Machine for manufacturing wire fabrics	379,013	Mar. 6	223	60	42	1008
Hainsworth, William. (See Bagaley and Hainsworth.)						
Haischer, Victor, *et al.* (See Staach, Emil R., assignor.)						
Haish, Jacob, De Kalb, Ill. Screen for windows, doors, &c	376,881	Jan. 24	1692	443	42	345
Haish, Jacob, De Kalb, Ill. Spark-arrester	378,092	Feb. 21	1119	293	42	733
Haish, Jacob, De Kalb, Ill. Car-coupling	378,676	Feb. 28	1991	527	42	909
Haitz, Fredrick, Towanda, Ill. Umbrella	377,455	Feb. 7	161	37	42	525
Haitz, Frederick, Towanda, Ill. Umbrella-support	377,456	Feb. 7	162	37	42	526
Haldeman, John C., Philadelphia, Pa. Vault-light	376,649	Jan. 17	1330	349	42	269
Hale, George C., Kansas City, Mo. Automatic horse-cover	377,381	Feb. 7	22	7	42	499
Hall, Annie L., Chestertown, N. Y. Rug-making device	378,884	Mar. 6	40	11	42	974
Hall, David S., assignor of one-half to G. F. Walker, Stoughton, Mass. Machine for bending blanks into tubular form	380,107	Mar. 27	1865	496	42	1347
Hall, James T., St. Louis, Mich. Cattle-guard	379,107	Mar. 6	362	103	42	1034
Hall, John D., Philadelphia, Pa. Cuff-holder	377,753	Feb. 14	609	157	42	624
Hall, John D., Philadelphia, Pa. Lathe-tool	379,218	Mar. 13	519	146	42	1070
Hall, John E. (See Harcourt, Stillwell, assignor.)						
Hall, John S., New York, N. Y. Lubricant-cup	376,952	Jan. 24	1785	469	42	364
Hall, John W., *et al.* (See Ballew, Richard J., assignor.)						
Hall, O. Clifford, assignor to Sheldon Axle Company, Wilkes-Barré, Pa. Chuck	376,650	Jan. 17	1331	349	42	269
Hall, William H., Muskegon, Mich. Machine for grinding shingle-saws	379,108	Mar. 6	363	103, 104	42	1034
Hall, William P., *et al.* (See Lerch, Solomon W., assignor.)						
Hall, William P., Piqua, Ohio. Railway-tie	375,996	Jan. 3	368	99	42	75
Hall, Willis E., Altoona, Pa. Reversing-lever for engines	376,882	Jan. 24	1694	442	42	345
Hallett, Amos, Pittsburg, Pa. Plaiting attachment for sewing-machines	375,744	Jan. 3	36	11	42	10
Hallock, Daniel Y., Southold, N. Y. Potato-digger	376,086	Jan. 10	507	136	42	109
Hallowell, Albert, assignor of two-thirds to J. C. Hoyt, W. E. Potter, and G. C. Bassett, Lowell, Mass. Hose-nozzle	376,308	Feb. 21	1454	380	42	794
Halls, Thomas E., assignor of one-half to D. R. Ennis, Indianapolis, Ind. Car-coupling	379,781	Mar. 20	1350	360	42	1238
Halpin, Joseph P., Wyandotte, Mich. Shear-blade for power-shears	376,087	Jan. 10	509	136	42	109
Halvorsen, Halvor. (See Halvorsen, Lars, assignor.)						
Halvorsen, Lars, Laurvig, Norway, assignor to H. Halvorsen, Paris, France. Clock striking mechanism	377,558	Feb. 7	313	80	42	555

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Ham Manufacturing Company, C. T. (See Bergener, Charles, assignor.)						
Hamilton, Benjamin F., Lawrence, Mass. Elevated railway structure	376,986	Jan. 24	1828	481	42	371
Hamilton, Edgar B., Cleveland, Ohio. Tool for removing buttons	379,460	Mar. 13	870	235	42	1137
Hamilton, Emery M., New York, N. Y. Telegraph-instrument	379,060	Mar. 6	290	84	42	1021
Hamilton, Emery M., New York, N. Y. Telegraph-sounder	379,061	Mar. 6	292	84	42	1021
Hamilton, Emery M., New York, N. Y. Pole-changer	379,062	Mar. 6	292	85	42	1021
Hamilton, Emery M., New York, N. Y. Telegraph-key	379,063	Mar. 6	294	85	42	1021
Hamilton, Emery M., New York, N. Y. Telegraph-sounder	379,064	Mar. 6	294	85	42	1021
Hamilton, Isaac, Denning, N. Y. Machine for making ladles	376,377	Jan. 10	917	240	42	185
Hamilton, Lemmon, Arnold & Co. (See Frazier, George C., assignor.)						
Hamilton, Milton A., Detroit, Mich. Woven fabric and package made therefrom	379,219	Mar. 13	521	146	42	1070
Hamilton, Samuel P. (See Greene, Robert W., assignor.)						
Hamilton, William R., U. S. Army. Tent	379,274	Mar. 13	593	163	42	1083
Hammond, M., Burdette, Bridgeport, assignor to I. Newman & Sons, New Haven, Conn. Bustle	378,134	Feb. 21	1191	311	42	746
Hancock Inspirator Company. (See Randall, Charles E., assignor.)						
Hancock, Milton T., assignor to Hancock Plow Company, Little Rock, Ark. Sulky-plow	379,892	Mar. 20	1548	408	42	1275
Hancock Plow Company. (See Hancock, Milton T., assignor.)						
Hand, Ekins, assignor of two-thirds to P. E. Rivard and G. A. Sabey, Rochester, N. Y. Hydrant	377,357	Jan. 31	2376	686	42	483
Hänisch, Emil, and M. Schroeder, Hamborn, Prussia, Germany. Obtaining sulphurous acid	376,883	Jan. 24	1695	443	42	345
Hanley, James F., Charleston, S. C. Mechanical movement	376,303	Jan. 10	812	214 / 215	42	165
Hanley, William, Chicago, Ill. Overshoe	376,378	Jan. 10	918	241	42	185
Hanlon, Joseph P. A., Somerville, assignor of one-seventh to C. A. David, Lynn, Mass. Screw	379,200	Mar. 6	479	135	42	1057
Hannah, Joseph E. (See Davies, William, assignor.)						
Hannaha, James M., Chicago, Ill. Elevated railway	377,153	Jan. 31	2071	544	42	427
Hannan, James. (See Harrington and Hannan.)						
Hanower, Morris, Fort Lee, N. J., assignor to Eagle Pencil Company, New York, N. Y. Compass attachment for pencils	376,379	Jan. 10	919	241	42	185
Hansberger, Henry, Millersport, Ohio. Holdback	378,505	Feb. 28	1744	460	42	860
Hanscom, Albert H., Winterport, Me. Bridle-bit	376,088	Jan. 10	510	137	42	109
Hanscom, John F., Boston, Mass. Apparatus for taking up the slack in steering-ropes of vessels	379,461	Mar. 13	871	235	42	1138
Hanson Elevator Safety Lock Company. (See Hanson and Bullock, assignors.)						
Hanson, Joseph. (See Cleveland and Hanson.)						
Hanson, Paul, St. Paul, Minn. Grain-binder	377,069	Jan. 31	1954	513	42	404
Hanson, Paul, St. Paul, Minn. Cord-tyer for grain-binders	377,898	Feb. 14	747	189 / 190	42	652
Hanson, Paul, St. Paul, Minn. Grain-binder	379,953	Mar. 27	1635	435 / 436	42	1302
Hanson, William F., and W. F. Bullock, Lynn, Mass., assignors to Hanson Elevator Safety Lock Company, Portland, Me. Automatic stop for elevators	375,745	Jan. 3	37	11	42	10
Hapgood Plow Company. (See Black, Joseph P., assignor.)						
Harcourt, Stillwell, assignor to himself and J. E. Hall, Chicago, Ill. Piano-action	376,477	Jan. 17	1065	279	42	219
Hardeman, Samuel. (See Page and Hardeman.)						
Harden, Edward W. (See Weir, Partington, Goldsmith, and Harden.)						
Harder, Frank P., *et al.* (See Rice, Henry, assignor.)						
Hardie, James G., Jr., Canton, N. Y. Mailing-machine	378,309	Feb. 21	1456	380	42	794
Hardie, Robert, Rome, N. Y. Steam-brake	375,933	Jan. 3	283	76	42	59
Hardin, William E., Monterey, Ky. Spoke-socket	377,893	Feb. 14	837	214	42	669
Harding, August, Oakland, Cal. Speed-changer	376,150	Jan. 10	607	163	42	127
Harding, Edgar, *et al.* (See Adams, Charles W., assignor.)						
Harding, Thomas, Detroit, Mich. Spring-gun	379,782	Mar. 20	1352	360	42	1239
Hardy, Charles M. (See Sculthorp, Walter J., assignor.)						
Hare, Robert W., and R. Sproul, assignors to Sproul Vehicle Manufacturing Company, (limited,) Pittsburg, Pa. Shaft attachment for vehicles	379,402	Mar. 13	872	235	42	1138
Hargrave, Samuel, Sr., Pomona, Ill. Saw-set	377,853	Feb. 14	778	199	42	658
Hargreaves, Laycock, Accrington, county of Lancaster, England. Yielding grate for cotton-openers	379,065	Mar. 6	295	85, 86	42	1022
Harkins, Charles H., St. Louis, Mo. Automatic valve for water-tanks	379,159	Mar. 6	424	120	42	1046
Harkins, Charles H., St. Louis, Mo. Water-closet valve	380,257	Mar. 27	2065	553	42	1388
Harkins, Daniel, assignor of one-half to L. D. Apsley and J. H. Coffin, Hudson, Mass. Machine for making figured gossamer rubber goods	378,247	Feb. 21	1363	358	42	778
Harley, Cornelius O., Leeds, Mass. Reversible screw-eyes	377,611	Feb. 7	391	99	42	570
Harlow, Charles F., Boston, Mass. Wax-thread sewing-machine	378,929	Mar. 6	96	28	42	985
Harlow, John R., assignor to Brinkerhoff Company, Auburn, N. Y. Trolling-spoon hook	378,678	Feb. 28	1895	527	42	909
Harmon, Stephen D., and J. M. Terrell, Spring Hills, Ohio. Fence-post	379,109	Mar. 6	365	104	42	1034
Harper, Edward H. (See Gibbs and Harper.)						
Harper, William H., J. M. Boyd, and A. C. Shelton, Pine Log, Ga. Cotton-chopper	378,443	Feb. 28	1658	435 / 436	42	842
Harrigan, Cornelius, Rome, N. Y. Spring-vehicle	380,032	Mar. 27	1756	471	42	1325
Harrington, Allan C., Richmond, Va. Fountain-brush for mucilage and other liquids	379,463	Mar. 13	873	235	42	1138
Harrington, Samuel H., assignor, by mesne assignments, to Consolidated Coupling Company, Columbus, Ohio. Car-coupling	376,713	Jan. 17	1425	374	42	287
Harrington, Samuel H., and J. Hannan, assignors, by mesne assignments, to Consolidated Coupling Company, Columbus, Ohio. Car-coupling	376,714	Jan. 17	1426	375	42	287
Harris, Benjamin. (See Krause and Harris.)						
Harris, Bradner L., Detroit, Mich., assignor of one-half to J. D. Lehmer, Cincinnati, Ohio. Grip for cable-railway cars	375,997	Jan. 3	370	99	42	75
Harris, Charles R. (See Stillman, Thomas B., assignor.)						
Harris, Charles R., Williamsport, Pa. Buckle	376,193	Jan. 10	663	177	42	137
Harris, Charles R., Williamsport, Pa. Lamp-burner	379,110	Mar. 6	306	104	42	1034
Harris, Ernest A., Mechanic Falls, Me. Machine for cutting tooth-picks	375,812	Jan. 3	121	35	42	28
Harris, Fradelshon. (See Greengard and Harris.)						
Harris, Henry, Reading, Pa. Machine for making nuts	375,746	Jan. 3	39	11, 12	42	11
Harris, Oliver H. (See Tracy, Dwight, assignor.)						
Harris, Orrin C., Newport, N. Y. Convertible chair	375,934	Jan. 3	284	76	42	59
Harris, William R., Greenville, assignor to W. L. Deming, Salem, Ohio. Fluid-pressure motor	376,821	Jan. 24	1604	420	42	328
Harrison, James P., Danville, Va. Door-spring	376,435	Jan. 17	1007	264	42	209
Harrison, James P., Danville, Va. Screen	376,436	Jan. 17	1008	264	42	209
Harrison, Joseph, Milwaukee, Wis. Molder's flask	375,935	Jan. 3	285	77	42	59
Harrison, William G., Weston, Va. Pilot for locomotives	375,747	Jan. 3	41	12	42	11

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Harry, Hugh W., Fort Worth, Tex. Metallic shingle	380,109	Mar. 27	1868	497	42	1347
Harström, Carl G., Peekskill, N. Y. Watch-case spring	376,524	Jan. 17	1135	297	42	232
Hart, Alfred A., New York, N. Y., assignor to himself, A. P. Rowe, Orange, N. J., and G. C. Leavenworth, Louisville, Ky. Making photographic pictures	376,802	Jan. 24	1573	.....	42	324
Hart, Arthur H. (See Hart, Hubert C., assignor.)						
Hart, Hubert C., Unionville, Conn., assignor, by mesne assignments, to A. H. Hart, New York, N. Y. Boot or shoe heel	376,987	Jan. 24	1829	481	42	372
Hart, Hubert C., Unionville, Conn., assignor, by mesne assignments, to A. H. Hart, New York, N. Y. Boot or shoe heel fastening	376,988	Jan. 24	1830	481	42	372
Hart, Maurice J., New Orleans, La. Support for electric conductors	377,894	Feb. 14	838	214 / 215	42	669
Hart, William H., and T. Corscaden, assignors to Stanley Works, New Britain, Conn. Sheet-metal hinge	377,104	Jan. 31	2012	527	42	414
Harter, Frederick A., Chicago, Ill. Table-leaf support	376,594	Jan. 17	1229	323	42	251
Harter, Joseph V., Denver, Ill. Seed-planter	376,069	Jan. 10	511	137	42	109
Hartley, Charles J., Decatur, Ill. Automatic grain-scale	379,954	Mar. 27	1637	436	42	1302
Hartley, Charles J., assignor to J. K. Warren and B. K. Dunfee, Decatur, Ill. Elevator and weighing attachment for thrashers	377,358	Jan. 31	2377	687	42	483
Hartley, Marcellus. (See Savage, Arthur W., assignor.)						
Hartley, Sylvester F., assignor to St. Lawrence Manufacturing Company, Gouverneur, N. Y. Land-roller	380,033	Mar. 27	1758	471	42	1325
Hartley, Sylvester F., assignor to Gouverneur Machine Company, Gouverneur, N. Y. Land-roller	380,283	Mar. 27	2099	561	42	1394
Hartman, Zachary T., assignor of one-half to P. Wunderle, Philadelphia, Pa. Candy-dropping machine	380,108	Mar. 27	1866	496 / 497	42	1347
Hartness, James, assignor to Union Hardware Company, Torrington, Conn. Clutch for wheels and axles	378,957	Mar. 6	134	39	42	992
Hartwell, David S., Marseilles, Ohio. Fence	380,034	Mar. 27	1760	471	42	1325
Harvey, George H., assignor to A. C. Ellis, Pittsburg, Pa. Preserve jar fastening	376,953	Jan. 24	1786	469	42	364
Harvey, Hayward A., Orange, N. J. Wire screw-nail	377,452	Feb. 7	158	36	42	525
Harvey, Hayward A., Orange, N. J. Rolled-headed wood screw and making the same	377,453	Feb. 7	158	37	42	525
Harvey, Hayward A., Orange, N. J. Machine for making washers	379,393	Mar. 13	705	207	42	1117
Harvey, Hayward A., Orange, N. J., assignor to Harvey Steel Company, of New Jersey. Treating low steel	376,194	Jan. 10	664	.....	42	138
Harvey, Isaac, Sr., Dagus Mines, Pa. Air-brake	378,365	Feb. 21	1536	401	42	811
Harvey, James A. (See Owen and Harvey.)						
Harvey, Patrick, Chicago, Ill. Siphon-closet flushing and regulating device	376,090	Jan. 10	512	137	42	109
Harvey Steel Company. (See Harvey, Hayward A., assignor.)						
Harvey, Wirt B., Memphis, Tenn. Secondary electric clock	377,895	Feb. 14	839	215	42	670
Harwood, Henry L., and L. B. White, assignors to S. R. White & Bro., Norfolk, Va. Harrow-tooth	377,359	Jan. 31	2379	688	42	483
Harwood, Herbert J., Littleton, Mass. Projectile for fire-arms	375,836	Jan. 3	287	77	42	59
Harwood, Herbert J., Littleton, assignor to Harwood Manufacturing Company, Boston, Mass. Folding chair or settee	379,066	Mar. 6	296	86	42	1022
Harwood Manufacturing Company. (See Harwood, Herbert J., assignor.)						
Hasbronck, Oscar, Jr., Modena, N. Y. Horse-tail tie	376,151	Jan. 10	609	164	42	138
Haskins, Charles H., Milwaukee, Wis., assignor to Western Electric Company, Chicago, Ill. Lock-out box and shunt-circuit for telephone exchanges	378,679	Feb. 28	1907	528	42	909
Haskins, William B., Osceola, assignor of one-half to R. W. Friend, Pecan Point, Ark. Shoulder-pad	378,394	Feb. 21	1571	412	42	818
Hatch, Horace N., Boston, Mass. Stove	377,454	Feb. 7	160	37	42	525
Hatch, James H., San Francisco, Cal. Rubber-dam clamp	376,437	Jan. 17	1009	265	42	209
Hatch, Jesse W., Rochester, N. Y. Lasting boots and shoes	378,444	Feb. 28	1660	436	42	842
Hatch, Jesse W., Rochester, N. Y. Manufacturing boots and shoes	378,445	Feb. 28	1660	436	42	842
Hatch, Jesse W., Rochester, N. Y. Lasting-machine	378,446	Feb. 28	1662	436 / 437	42	843
Hatch, Jesse W., and J. Pitcher, Rochester, N. Y. Lasting-machine	378,506	Feb. 28	1745	460	42	860
Hatch, Stephen D., New York, N. Y. Construction and decoration of buildings	376,380	Jan. 10	920	241	42	185
Hatch, Stephen D., New York, N. Y. Fire-proof structure	376,381	Jan. 10	921	242	42	185
Hatfield, George W., Texarkana, Ark., assignor to W. T. Forbes, Atlanta, Ga. Oil-press box	376,438	Jan. 17	1010	265	42	209
Hatt, Samuel, Montreal, Quebec, Canada. Car-axle lubricator	377,754	Feb. 14	609	157	42	624
Hatten, William T. (See Rodgers and Hatten.)						
Haugh, Henry T., and W. S. Zickefoose, Wayne, Iowa. Nut-lock	375,813	Jan. 3	122	35	42	29
Haughey, Michael, St. Louis, Mo. Interfering device for horses	379,644	Mar. 20	1150	304	42	1198
Haughton, James D., and W. J. Alexander, Monroe Co., near Egypt, Miss. Baling-press	379,645	Mar. 20	1151	304	42	1198
Hauk, Charles D., *et al.* (See Cooke, Ernest W., assignor.)						
Haven, George F., and S. H. Post, Newark, N. J. Belt-pulley	379,111	Mar. 6	367	104	42	1034
Havens, Edwin S. (See Story, William R., assignor.)						
Hawkes, Moses A., *et al.* (See Goodrich, Joseph, assignor.)						
Hawkes, Obed C., Birmingham, county of Warwick, England. Machinery for beveling the edges of plates of glass	378,680	Feb. 28	1099	528 / 529	42	909
Hawkey, John V., Greensburg, Pa. Self-lubricating vehicle-hub	376,152	Jan. 10	610	164	42	138
Hawkins, Franklin P., Piano, Ala. Steam-engine	380,110	Mar. 27	1909	497	42	1347
Hawkins, John T., Taunton, Mass. Automatic temperature-regulator	378,248	Feb. 21	1364	350	42	778
Hawkins, Nehemiah, Brooklyn, N. Y. Binder. (Reissue)	10,903	Feb. 21	1609	422	42	825
Hawks, James D. (See Dailey, Asa G., assignor.)						
Hawley, Alfred A., Kennebunk, Me. Felted foot-wear	379,220	Mar. 13	523	147	42	1071
Hawley, Charles P., New York, N. Y. Portable cleat	376,595	Jan. 17	1230	324	42	251
Hawley, Charles P., New York, N. Y. Combined scissors and file	376,596	Jan. 17	1231	324	42	251
Hawley, Charles P., New York, N. Y. Railway-tie	379,574	Mar. 20	1049	279	42	1179
Hawley, Charles P., New York, N. Y. Combined wood and metal railway-tie	379,575	Mar. 20	1051	279	42	1179
Hawley, Charles P., New York, N. Y. Metallic railway-tie	379,576	Mar. 20	1052	279	42	1179
Hawley, Oscar M., Church's Corners, Mich. Gate-hinge	379,199	Feb. 21	1281	339	42	764
Hawley, William D., Syracuse, N. Y. Clamp	376,304	Jan. 10	813	215	42	165
Hawa, Andrew J., *et al.* (See Hawa, William H., assignor.)						
Hawa, James M., *et al.* (See Hawa, William H., assignor.)						
Hawa, William H., assignor of three-fourths to J. M. Hawa, J. W. Flynn, Washington, and A. J. Hawa, Johnstown, Pa. Nut-lock	377,714	Feb. 7	545	139	42	597
Hay, Frank, Brooklyn, Mich. Post-anchor	377,070	Jan. 31	1956	514	42	404
Hay, William S. (See Joy, Frank L., assignor.)						
Hayden, Edward S., Waterbury, Conn. Electrolyzing copper	377,487	Feb. 7	396	50	42	535
Hayden, James T., assignor to Crane Bros. Manufacturing Company, Chicago, Ill. Collapsing tap	378,310	Feb. 21	1458	380	42	795

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Hayes, Andrew W., *et al.* (See Shaw, Edwin H., assignor.)						
Hayes, Hammond V., Cambridge, Mass. Telephone-transmitter	377,612	Feb. 7	393	99	42	570
Haynes, Cornelius E., assignor to A. L. Wood, trustee, Boston, Mass. Machine for making paper leather-board	377,071	Jan. 31	1957	514	42	404
Haynes, Cornelius E., assignor to A. L. Wood, trustee, Boston, Mass. Compound for making paper leather-board, &c	377,072	Jan. 31	1958	.....	42	404
Haythorn, William, Chicago, Ill. Straining device for steam-traps	379,160	Mar. 6	425	120	42	1046
Hays, James T. and T. C., Emmitsburg, Md. Milk-cooler	377,675	Feb. 7	488	126	42	587
Hays, Thomas C. (See Hays, James T. and T. C.)						
Hazard, G. S., *et al.* (See Hughes, Thomas, assignor.)						
Hazard, Jonathan I., Georgetown, S. C. Oil-distributing device for sea-going vessels	380,111	Mar. 27	1870	498	42	1348
Hazel, William M., New York, N. Y. Button-fastener	380,112	Mar. 27	1871	498	42	1348
Hazelton, Fred S., and C. Leach, Norton, Kans. Wrench	377,755	Feb. 14	610	157	42	624
Hazelton, Ivory, Boston, assignor of one-half to L. Saltonstall, Newton, Mass. Car-coupling	378,311	Feb. 21	1460	381	42	795
Headley, Elwood, Jersey City, N. J., assignor of one-half to W. G. Horton, Brooklyn, N. Y. Toy registering savings-bank	379,534	Mar. 13	978	263	42	1158
Healy, Byron J., Kalamazoo, Mich. Two-wheeled vehicle	378,447	Feb. 28	1665	437	42	843
Heard, Herbert C., Bute Villa, Roath, Cardiff, Wales. Lace-fastening	380,113	Mar. 27	1872	498	42	1349
Hearn, Orin D., Lebanon, Tenn. Fence	378,312	Feb. 21	1461	381	42	795
Hearn, William J., New York, N. Y. Pump	376,382	Jan. 10	923	242	42	185
Heath, Alfred R. (See Rariden, Francis M., assignor.)						
Heath, George A., Geneva, Fla. Oil-carrying shell	379,161	Mar. 6	426	120	42	1047
Heath, George S., Hartford, Conn. Speed-indicator	378,836	Feb. 28	2234	594, 595, 596	42	955
Heath, James S., and E. C. Waters, Brantford, Ontario, Canada. Compound structural bar	378,003	Feb. 14	999	261	42	702
Heaton, Benton, and P. Hohmann, Humansville, Mo. Rope-cutter	378,004	Feb. 14	999	261	42	702
Heberling, Thomas H., Springfield, and A. Bernauer, Chicago, Ill. Fence-making machine	377,756	Feb. 14	611	157, 158, 159	42	624
Hedger, Harry D., Boston, Mass. Velocipede-handle	379,955	Mar. 27	1638	436	42	1303
Heeson, William H., Baltimore, Md. Furnace-grate	378,005	Feb. 14	1000	261	42	702
Heeson, William H., Baltimore, Md. Smoke-consuming furnace	378,006	Feb. 14	1001	262	42	702
Heffner, George, Louisville, Ky. Nut-lock	377,613	Feb. 7	395	100	42	570
Heidel, Gustavos, assignor to National Self Heating Sad Iron Company, St. Louis, Mo. Self-heating sad-iron	379,867	Mar. 20	1513	398	42	1269
Heimann, Salomon, New York, assignor of two-thirds to F. L. Pommer, Stapleton, and A. E. Hachfeld, Brooklyn, N. Y. Treating peat	378,395	Feb. 21	1572	.....	42	818
Heinemann, Adolph, Hagen, Germany. Device for bathing the head	379,646	Mar. 20	1152	305	42	1198
Heinig, Frederick E., and S. Leidigh, Louisville, Ky. Cork-retainer	378,007	Feb. 14	1001	262	42	703
Heinke, Horst, New York, N. Y. Ink-blotter	379,067	Mar. 6	297	86	42	1022
Heinzelman, Otto, assignor of one-third to J. E. Thomas, Belleville, Ill. Side-bar vehicle	377,392	Feb. 7	25	8	42	499
Heise, John L., Union, Ohio. Weather-protector for carriages	377,105	Jan. 31	2013	528	42	414
Heisler, Charles, St. Louis, Mo. Regulator for dynamo-electric machines	379,956	Mar. 27	1639	437	42	1303
Heisler, Charles, St. Louis, Mo. Incandescent-electric-lamp holder and cut-out	380,114	Mar. 27	1874	498	42	1348
Heisler, Charles, St. Louis, Mo. Alternating-current dynamo-electric machine	380,115	Mar. 27	1876	499	42	1349
Heisler, Charles, St. Louis, Mo. Incandescent-electric-lamp holder and cut-out	380,262	Mar. 27	1962	533	42	1372
Heitman, Fred M. (See Gavin and Cromer, assignors.)						
Heller, Frederick, and I. G. Hooper, Newark, N. J.; said Hooper assignor to said Heller. Machine for forming balls, &c., from plastic material	379,068	Mar. 6	298	87, 88	42	1022
Heller, Louis, Warrenton, Tex. Cotton chopper and cultivator	378,958	Mar. 6	135	39, 40	42	993
Helm, Albert J., Winnsborough, Tex. Back-band	376,091	Jan. 10	514	137	42	110
Helvey, George H., assignor to Hooven, Owens & Rentschler Company, Hamilton, Ohio. Journal-bearing	380,035	Mar. 27	1761	472	42	1326
Hemmenway Company, E. S. (See Hemmenway and Stratton, assignors.)						
Hemmenway, Eugene S., Boston, and G. F. Stratton, Malden, Mass., assignors to E. S. Hemmenway Company, Portland, Me. Pillow-sham holder	378,396	Feb. 21	1573	412	42	818
Hemming, Benjamin, New Haven, Conn. Fire-arm	377,854	Feb. 14	780	199	42	658
Hemsath, Augustus, Zehner, assignor of one-half to A. J. Ziegler, Hazleton, Pa. Rotary engine	379,112	Mar. 6	367	105	42	1035
Hendershot, Jonathan, Evelyn, W. Va. Car-coupling	376,244	Jan. 10	736	196	42	151
Henderson, Albert H. (See Ries, Elias E., assignor.)						
Henderson, Albert H. (See Ries and Henderson.)						
Henderson, Andrew M., and J. W. Martin, Fort Collins, Colo. Spark-arrester	378,507	Feb. 28	1746	461	42	893
Henderson, Hugh C., assignor of one-half to N. M. Bell, San Francisco, Cal. Shingle	380,203	Mar. 27	1995	534	42	1372
Henderson, William G. (See Patrick, Adie.)						
Hendrick, William L. (See Ufford and Hendrick.)						
Henley, Micajah C., Richmond, Ind. Machine for boring, drilling, driving, and withdrawing screws, &c. (Reisane)	10,892	Jan. 3	461	124	42	93
Henn, Eduard, Jersey City, N. J. Fuel composition	378,249	Feb. 21	1366	.....	42	778
Hennefer Maschinenfabrik, C. Renthel & Reisert. (See Reisert, Michael E., assignor.)						
Hennessy, James F., Winona, Minn. Axle-setting machine	375,937	Jan. 3	287	77	42	50
Hennessy, James F., assignor to himself, H. M. Kinney, and Winona Wagon Company, Winona, Minn. Sleigh-knee	379,394	Mar. 13	767	207	42	1117
Henning, William B., Waterloo, Ind. Railway-tie	376,884	Jan. 24	1696	443	42	346
Henriksen, Bernhardt E., San Francisco, Cal. Bridge for fire-hose	380,036	Mar. 27	1762	472	42	1326
Henry, Fred H., Wakefield, Mass., assignor to Wakefield Rattan Company, of Massachusetts. Car-seat	378,546	Feb. 28	1801	476	42	872
Henry, Peter, New York, N. Y. Watch-case pendant	378,959	Mar. 6	137	40	42	993
Hensel, George S., *et al.* (See Forrest, William W., assignor.)						
Hentzell, Benjamin F., San Francisco, Cal. Chimney	376,478	Jan. 17	1066	279	42	219
Heppard, Elwood P., Jr., Woodbury, N. J. Cable-grip	376,885	Jan. 24	1697	443	42	346
Herbrand Co. (See Burlsall and Thompson, assignors.)						
Haring, Carl, Philadelphia, Pa. Coupling for joining electric wires	379,221	Mar. 13	523	143	42	1073
Herman, Emile J., St. Louis, Mo. Screw-cutting die	377,614	Feb. 7	396	100	42	570
Hermance, Robert, Easton, N. Y. Tubular lantern	379,868	Mar. 20	1514	398	42	1269
Hermann, Henry, assignor to B. T. Babbitt, Jersey City, N. J. Apparatus for filling cans	376,195	Jan. 10	667	177	42	138
Hermans, John, Chicago, Ill. Boat propelling and steering apparatus	379,014	Mar. 6	223	60	42	1009
Hermite, Eugene, and C. F. Cooper, assignors of one-third to E. J. Paterson, Pownall Road, Dalston, county of Middlesex, England. Apparatus for bleaching by electrolysis	378,681	Feb. 28	2001	529	42	910
Hermite, Eugene, and C. F. Cooper, assignors of one-third to E. J. Paterson, Dalston, county of Middlesex, England. Apparatus for electric bleaching	379,465	Mar. 13	875	236	42	1139
Herren, William W., Conroe, Tex. Ox-yoke	375,814	Jan. 3	123	35	42	29

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Herrick, Frank J., New Britain, assignor of one-half to W. E. Simonds, Hartford, Conn. Statuette	378,682	Feb. 28	2002	529	42	910
Herrinton, Edward E. (See Smith and Herrinton.)						
Herrinton, Edward E., assignor of one-half to I. C. Smith, Grand Rapids, Mich. Folding bed	380,258	Mar. 27	2066	553	42	1388
Herrington, Ephraim, Mount Vernon, Ga. Horse-breaking vehicle	378,837	Feb. 28	2237	596	42	955
Herrington, Ephraim, Mount Vernon, assignor of one-half to M. M. Bush, Towns, Ga. Insect-trap	378,788	Feb. 28	2140	565	42	936
Herrington, Ephraim, Mount Vernon, assignor of one-half to M. M. Bush, Towns, Ga. Animal-trap	378,789	Feb. 28	2140	566	42	936
Herrington, Ephraim, Mount Vernon, assignor of one-half to M. M. Bush, Towns, Ga. Live-bait animal-trap	378,790	Feb. 28	2141	566	42	936
Herron, Francis J., and E. M. Hugentobler, New York, N. Y. Fuel-cartridge	379,897	Mar. 20	1928	325	42	1214
Hersey, Ira, New York, and M. R. Conley, Brooklyn, assignors to W. Bell, New York, N. Y. Treatment of ore	378,586	Feb. 28	1864	492	42	884
Hershey, Martin E., Harrisburg, Pa. Traction-engine	375,815	Jan. 3	123	36	42	29
Hertz, Jacob, London, England. Papeterie	376,954	Jan. 24	1787	469, 470	42	364
Hess & Bro., Jeremiah S. (See Koplin, Abraham B., assignor.)						
Hess, Gustavus, Monroeville, Ohio. Stove-truck	378,135	Feb. 21	1192	311	42	746
Heston, William, Mount Union, Ohio. Jar-fastener	377,676	Feb. 7	490	126	42	588
Heuer, Edouard, Bienne, Switzerland. Stop-watch	377,896	Feb. 14	841	215	42	670
Heuer, Edouard, Bienne, Switzerland. Stop-watch	377,897	Feb. 14	843	215	42	670
Hevner, Samuel, deceased; P. B. Johnson, Baltimore, Md., administrator. Straightening walls	377,940	Feb. 14	909	234	42	685
Hewett, Reginald W., Birmingham, county of Warwick, England. Smoke-consuming furnace	376,922	Jan. 24	1605	420, 421	42	329
Hewitt, Charles and W. W., Swanscombe, county of Kent, England. Machine for making casks	377,304	Jan. 31	2294	606, 607	42	469
Hewitt, John, *et al.* (See Pomnay, Richard, assignor.)						
Hewitt, William, Chambersburg, N. J. Telegraph-wire	379,535	Mar. 13	980	264	42	1159
Hewitt, William W. (See Hewitt, Charles and W. W.)						
Hewlett, Henry N., Oscoda, Mich. Lubricator	377,253	Jan. 31	2215	585	42	455
Hewlett, Henry N., Oscoda, Mich. Lubricator	377,254	Jan. 31	2216	586	42	455
Hexamer, Charles J., Philadelphia, Pa. Automatic electric valve	376,651	Jan. 17	1331	350	42	269
Heywood, John J., Fall River, Mass. Driving band for spindles	377,937	Feb. 14	904	232	42	684
Hiatt, Elwood E., assignor of one-half to R. E. Vanzant, Noblesville, Ind. Building walls	378,838	Feb. 28	2238	596	42	955
Hibbard, Angus S., New York, N. Y., assignor to American Bell Telephone Company, Boston, Mass. Protecting device for electrical appliance	377,073	Jan. 31	1958	514	42	404
Hibberd, Charles J., Annapolis, Md. Block and tackle	379,113	Mar. 6	370	105	42	1035
Hicks, Daniel B., assignor of one-half to E. J. Evans, Pittsburg, Pa. Reversing mechanism for rolling-mills	380,259	Mar. 27	2067	553	42	1388
Hicks, Edward L. (See Hicks, George D., assignor.)						
Hicks, Edward S., *et al.* (See Gordon, Lorenzo D., assignor.)						
Hicks, George D., assignor of one-half to E. L. Hicks, Sioux City, Iowa. Interest-calculating device	379,536	Mar. 13	981	264	42	1159
Hickson, James, Bangor, Me. Moccasin slipper	377,757	Feb. 14	615	159	42	625
Higgins, Edward E., and J. James, assignors to Standard Electric Company of Vermont, St. Johnsbury, Vt. Electric-arc lamp	377,615	Feb. 7	397	100	42	571
Higgins, Milton P., Worcester, Mass. Stone-dressing tool	378,313	Feb. 21	1461	381	42	795
Higgins, Werter C., Norwich, Conn. Furnace-damper regulator	379,395	Mar. 13	769	206	42	1117
Higginson, Andrew, Liverpool, county of Lancaster, England. Transmitting power	376,383	Jan. 10	924	242	42	186
Higham, Daniel, assignor to Higham Electric Motor Company, Philadelphia, Pa. Regulation of electric motors	377,255	Jan. 31	2217	586	42	455
Higham, Daniel, assignor to Higham Electric Motor Company, Philadelphia, Pa. Regulation of electric motors	379,466	Mar. 13	876	236	42	1139
Higham, Daniel, assignor to Higham Electric Motor Company, Philadelphia, Pa. Regulation of electric motors	379,467	Mar. 13	878	237	42	1139
Higham Electric Motor Company. (See Higham, Daniel, assignor.)						
Hild, Michael, Philadelphia, Pa. Rounding-jack for hat-brims	377,154	Jan. 31	2072	544	42	427
Hill, Charles A. (See Carroll and Hill.)						
Hill, Donald, Storm Lake, Iowa. Hame-tug coupling	376,305	Jan. 10	814	215	42	165
Hill, Ebenezer, South Norwalk, Conn. Recoil-cushion for gun-carriages	378,314	Feb. 21	1462	382	42	796
Hill, Ebenezer, South Norwalk, Conn. Recoil-cushion for gun-carriages	379,783	Mar. 20	1353	360	42	1239
Hill, Edward. (See Blaine and Hill.)						
Hill, Frederick M. (See Howard and Hill.)						
Hill, George S., Lynn, assignor to J. Reece, Boston, Mass. Machine for finishing buttonholes	376,245	Jan. 10	737	196	42	151
Hill, James, Melbourne, Victoria. Apparatus for tilting casks	376,652	Jan. 17	1333	350	42	269
Hill, James, Arkansas City, Kans. Railway tie and joint	378,939	Mar. 6	100	29	42	986
Hill, James, Wilkes-Barré, Pa., assignor to I-X L. Pump Company, Goshen, Ind. Step-ladder	377,616	Feb. 7	398	100, 101	42	571
Hill, James W., St. Louis, Mo. Water-service apparatus	375,748	Jan. 3	41	12	42	12
Hill, Lyman L., Bridgeport, Conn. Wood-turning lathe	377,617	Feb. 7	399	101	42	571
Hill, Sylvester L., Boston, Mass. Transom-lifter	376,955	Jan. 24	1788	470	42	364
Hill, Thomas, *et al.* (See Biggin, Mary, assignor.)						
Hill, Thomas, assignor to Smith, Hill & Co., Quincy, Ill. Steam-pump	377,938	Feb. 14	906	233, 234	42	684
Hill, Warren, Towanda, Pa. Paper-folding machine	379,698	Mar. 20	1225	327	42	1214
Hill, Warren E. (See Rowland and Hill.)						
Hill, Warren S., Boston, Mass. Regulator for electric generators	378,547	Feb. 28	1801	476	42	872
Hill, Wilber F., Manchester, Conn. Means for operating paper-cutters	379,784	Mar. 20	1353	361	42	1239
Himmel, Franz. (See Cruice and Himmel.)						
Hinchliff, George. (See Dye, Horace L., assignor.)						
Hine, L. G. (See Maltby, Philo, assignor.)						
Hine, William, Bethlehem, Conn. Thill-coupling	378,052	Feb. 14	1062	278	42	714
Hinkley, George M., assignor of one-half to E. P. Allis & Co., Milwaukee, Wis. Saw-mill carriage	378,683	Feb. 28	2003	529, 530	42	910
Hinson, James A., assignor to Hinson Standard Car Coupler Company, Des Moines, Iowa. Car-coupling	379,785	Mar. 20	1357	361	42	1340
Hinson Standard Car Coupler Company. (See Hinson, James A., assignor.)						
Hinton, Joseph R. H., Baltimore, Md. Telephone-switch	378,250	Feb. 21	1366	359	42	778
Hipperling, William, New York, N. Y., assignor to S. A. Ginna, Plainfield, N. J., and R. A. Donaldson, Brooklyn, N. Y. Machine for cutting blanks from tin	379,893	Mar. 20	1550	408	42	1275

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Hirsch, Louis. (See Goebel, Herman A., assignor.)						
Hirsch, Samuel. (See Groux, Emile, assignor.)						
Hirsching, Henry, assignor of one-half to A. Niedringhaus and F. Jungk, Salt Lake City, Utah Ter. Reduction of ores. (Reissue)	10,912	Mar. 20	1592	419	42	1284
Hirtz, Richard. (See Jones, Edward C., assignor.)						
Hitchcock, Lowell B., *et al.* (See Marshall, Moses J. S., assignor.)						
Hiser, Daniel B., assignor to Thomas Manufacturing Company, Springfield, Ohio. Lawn-mower reel	375,816	Jan. 3	124	36	42	29
Hitchcock, Albert L., Pawtucket, R. I. Snap-hook	377,559	Feb. 7	315	80	42	535
Hixson, Ephraim, Trewhitt, Tenn. Plow	379,647	Mar. 20	1153	305	42	1199
Hladky, Frank J., Topeka, Kans. Steam-trap	377,305	Jan. 31	2296	607	42	470
Hobbs, Clarence W., Lynn, Mass. Machine for staying the angles of paper boxes	379,162	Mar. 6	427	{130 131}	42	1047
Hobson, William H., La Monte, Mo. Harrow-tooth and harrow attachment	376,801	Jan. 24	1571	412	42	324
Hoht, Albert, assignor to R. W. Goddard, trustee, Wellston, Ohio. Sweat-pad fastener	377,715	Feb. 7	546	140	42	597
Hodges, Charles C., *et al.* (See Fish, John R., assignor.)						
Hodges, Henry C., *et al.* (See Fish, John R., assignor.)						
Hodges, Henry C., Detroit, Mich. Construction of cars, &c.	375,998	Jan. 3	372	{99 100}	42	76
Hodgson, Alexander, Cochranville, Pa. Combined coupling and brake	378,315	Feb. 21	1463	{382 383}	42	796
Hodgson, John G. (See Norton and Hodgson.)						
Hodson, John. (See Sinclair and Hodson.)						
Hoefer, Frederick W., Florence, Ill. Whiffletree-clip	379,869	Mar. 20	1516	399	42	1269
Hoenigsberger, Arnold. (See McLachlan, John C., assignor.)						
Hoerder Bergwerks und Hüttenverein. (See Märklin, Adolf, assignor.)						
Hoey, John, San Francisco, Cal. Bed-lounge	375,817	Jan. 3	125	37	42	29
Hoffman, Andrew E., Fort Wayne, Ind. Feed mechanism for saw-mill carriages	379,163	Mar. 6	428	121	42	1047
Hoffman, Henry, Jr., assignor to Norwalk Lock Company, South Norwalk, Conn. Manufacture of butt-hinges	376,597	Jan. 17	1232	324	42	252
Hoffman, John W., Pullman, Ill. Electric annunciator	377,256	Jan. 31	2219	{586 587}	42	455
Hoffman, Joseph, Hoboken, N. J., assignor to G. A. Goldsmith, New York, N. Y. Rubber-holder for pencils	376,196	Jan. 10	668	177	42	138
Hoffman Machine Company. (See Hoffman, William M., assignor.)						
Hoffman, William H., New York, N. Y. Valve for steam-engines	380,037	Mar. 27	1763	472	42	1326
Hoffman, William M., Detroit, Mich., assignor to Hoffman Machine Company, of Michigan. Machine for staking, stretching, and softening leather	378,066	Feb. 14	1079	284	42	718
Hoffmann, Gustavus, Lebanon, Ill. Screw-key fastening for tool-handles	377,257	Jan. 31	2221	587	42	456
Hofstatter, Adolph G., New York, N. Y. Piano-stool	377,856	Feb. 14	782	200	42	650
Hogan, George L., Olmstead, assignor to himself, B. T. Conway, and J. A. Kelly, Lebanon, Ky. Electric gas lighter and extinguisher	379,396	Mar. 13	770	208	42	1118
Hogel, Hascal A., and O. L. F. Browne, Syracuse, assignors to themselves and E. Belknap, Yonkers, N. Y. Apparatus for manufacturing salt	378,684	Feb. 28	2004	530	42	911
Hohmann, Philip. (See Heaton and Hohmann.)						
Hohorst, Frederick, Brooklyn, N. Y. Sling and truck combined	379,870	Mar. 20	1516	399	42	1269
Holsholt, Gustav, Watsonville, Cal. Advertising-clock	378,589	Feb. 28	1865	492	42	884
Holt, Jacob R., Forest Home, Iowa. Sled-brake	376,197	Jan. 10	670	177	42	138
Holbert, J. W. (See Dwyer, John, assignor.)						
Holbrook, Charles W., Windsor Locks, Conn. Tellurian	378,895	Mar. 6	41	11, 12	42	974
Holbrook, Charles W. F., Newark, N. J. Dental mandrel	376,653	Jan. 17	1334	350	42	269
Holcomb, Samuel C. (See Stubblefield and Holcomb.)						
Holden, Edward S., San Francisco, Cal. Cable-railway crossing	376,153	Jan. 10	611	164	42	128
Holden, John, Taunton, Mass. Supply-tank for water-closets	379,669	Mar. 20	1232	328	42	1215
Holden, Joseph B., Catskill, N. Y. Return-spring for chairs	376,886	Jan. 24	1499	443	42	346
Holdsworth, Nathan B., Spencerville, Ohio. Device for attaching overshoes	375,818	Jan. 3	126	37	42	30
Holleman, Frederik A., Oisterwyk, Netherlands. Railway-brake	377,198	Jan. 31	2126	560	42	439
Holley, William A., and U. Malin, Holland, Mich. Electro-magnetic grain-weighing scale	377,383	Feb. 7	26	8	42	500
Holliday, Thomas, assignor to himself and T. M. Murphy, Sanborn, Dak. Ter. Car-replacer and portable switch	377,155	Jan. 31	2072	544	42	428
Holliday, Robert A. (See Cooper, John W., assignor.)						
Hollinger, James, New York, N. Y. Pipe-coupling for boilers	377,156	Jan. 31	2073	545	42	428
Hollingsworth, Alfred, Union Valley, Kans. Corn-harvester	376,384	Jan. 10	996	{242 243}	42	196
Holloway, Charles T. (See Humphreys, Thomas H., assignor.)						
Hollweg, Louis. (See Karrmann, Julius, assignor.)						
Holly, John I. (See Laughton, Joseph B., assignor.)						
Holmes, Booth & Haydens. (See Jenkins, Nicholas, assignor.)						
Holmes, Charles E., Haverhill, Mass. Floor-clamp	376,439	Jan. 17	1011	265	42	209
Holmes, Henry H., Jersey City, N. J. Car-starter	380,260	Mar. 27	2069	553	42	1383
Holmes & Ide. (See Whited, Alvinze, assignor.)						
Holmes, Samuel T. (See Foote, Theodore M., assignor.)						
Holt, Francis, Newark, N. J. Nurse's toilet-cabinet	380,038	Mar. 27	1765	473	42	1326
Holt, James W., and A. McQuillan, Skowhegan, Me. Machine for burring and specking cloth	376,440	Jan. 17	1012	266	42	210
Holt, Thomas P., assignor to G. W. & F. Smith Iron Company, Boston, Mass. Fire-escape	378,316	Feb. 21	1465	383	42	796
Holtzer, Charles W., Brookline, Mass. Electric gas-lighting apparatus	378,677	Feb. 28	1903	527	42	909
Homan, Robert W., Brooklyn, N. Y., assignor to Farren Bros. Company, of Connecticut. Bed-bottom	378,397	Feb. 21	1575	413	42	818
Honlas, William H. (See Loreuz and Honisa.)						
Hood, Harrison P., Indianapolis, Ind. Straight-way valve	375,872	Jan. 3	189	52	42	41
Hooper, Irvin G. (See Heller and Hooper.)						
Hoopes, Clement R., Philadelphia, Pa. Oil-burner	379,468	Mar. 13	878	237	42	1139
Hoops, Herman W., New York, N. Y. Machine for making candy	379,871	Mar. 20	1517	399	42	1270
Hooven, Owens & Rentschler Company. (See Helvey, George H., assignor.)						
Hoover, Daniel R. (See Blackwelder, Manly L., assignor.)						
Hoover & Gamble. (See Brown, Robert, assignor.)						
Hope, John, Jr., assignor of one-half to W. V. Daboll, Providence, R. I. Street-railway switch-frog	376,479	Jan. 17	1067	279	42	220
Hopedale Machine Company. (See Bancroft, William, assignor.)						
Hopkins, George M., Brooklyn, assignor to Economic Motor Company, New York, N. Y. Engine-governor	379,872	Mar. 20	1518	399	42	1270
Hopkins, I. Newton, Brooklyn, N. Y. Gas-engine	379,396	Mar. 13	772	208	42	1118
Hopkins, Ira G. W., and H. H. Cummings, Malden, Mass. Buckle or clasp	376,055	Jan. 3	461	124	42	93

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Hopkins, Lewis C., Brooklyn, assignor to Jaeger's Sanitary Woolen System Company, New York, N. Y. Seamless under-garment	378,033	Feb. 14	1061	278	42	714
Hopkins, Randolph C., H. Coventry, P. Neymann, and J. C. Beardslee, assignors to Sherwin Williams Company, Cleveland, Ohio. Paint-press	379,464	Mar. 13	874	236	42	1138
Hopkins, William W., assignor of one-half to I. McGowan, St. Louis, Mo. Electric railway	379,069	Mar. 6	300	88, 89	42	1023
Hopkins, William W., assignor of one-half to I. McGowan, St. Louis, Mo. Electric railway	379,070	Mar. 6	302	89	42	1023
	378,093	Feb. 21	1120	293	42	734
Hopson, John, Jr., New London, Conn. Radiator	380,284	Mar. 27	2100	{561 562}	42	1394
Hornby, James, San Antonio, Tex. Fire-escape	377,457	Feb. 7	164	38	42	526
Horne, William E., Decatur, Ill., assignor to R. Schenck, New York, N. Y. Device for raising or lowering windows	375,819	Jan. 3	126	37	42	30
Horrocks, William, Ilion, assignor to Wyckoff, Seamans & Benedict, New York, N. Y. Cabinet for type-writers	376,092	Jan. 10	515	138	42	110
Horrocks, William, Ilion, assignor to Wyckoff, Seamans & Benedict, New York, N. Y. Cabinet for type-writers	379,957	Mar. 27	1642	{437 438}	42	1303
Horrocks, William, Ilion, assignor to Wyckoff, Seamans & Benedict, New York, N. Y. Cabinet for type-writers	378,694	Feb. 21	1122	293	42	734
Horton, Ervin R., Medford, Mass. Cuff-holder	379,577	Mar. 20	1053	{280 281}	42	1180
Horton, Everett, Bristol, Conn. Machine for making metal screws	377,028	Jan. 31	1894	498	42	392
Horton, James A., Reading, Mass. Steam-engine governor	379,164	Mar. 6	430	{121 122}	42	1048
Horton, John C., assignor of one-half to W. W. Todd, Elkmont, Ala. Combined plow and harrow						
Horton, William G. (See Headley, Elwood, assignor.)						
Hosea, Lewis M., assignor to Lane & Bodley Company, Cincinnati, Ohio. Friction-brake for cable-railway cars	379,015	Mar. 6	225	60	42	1000
Hosley, George, Buffalo, N. Y. Checkrein attachment	376,306	Jan. 10	514	215	42	165
Hosmer, Charles M. (See Corey, George D., assignor.)						
Hotchkiss, Elisha, Cincinnati, Ohio. Weather-boarding gage	378,548	Feb. 28	1803	476	42	872
Hotchkiss, Henry L., South Ryegate, Vt. Mop-wringer	377,157	Jan. 31	2074	545	42	428
Houd, Emile, Grafton, Mass. Boot-crimping frame	377,898	Feb. 14	845	216	42	671
Houghton, Charles L., New Haven, Conn., and W. I. Fox, assignors to themselves and G. W. Weymouth, Fitchburg, Mass. Whistle-recorder for locomotive-engines	376,925	Jan. 17	1135	297	42	232
House, Allen, Paragould, Ark. Guide for saws	379,165	Mar. 6	431	122	42	1048
Houser, Charles, East St. Louis, Ill. Chicken-brooder	379,398	Mar. 13	774	209	42	1118
Houston, George W. (See Mason, Mulkey, and Houston.)						
Houze, Luc. (See Huidekoper and Houze.)						
Hovey, Franklin S., *et al.* (See Blackburn, Frederick, assignor.)						
How, William F. (See Goodwin and How.)	376,741	Jan. 24	1468	388	42	304
Howard, Alfred H., Boston, Mass. Exercising apparatus	378,136	Feb. 21	1193	.....	42	746
Howard, George H. (See Hyde, John, assignor.)						
Howard, James S., Springfield, Mass., and F. M. Hill, Brooklyn, N. Y., assignors, by mesne assignments, to Aluminium Product Company, of New York. Producing aluminum	376,956	Jan. 24	1789	{470 471}	42	364
Howard & Morse *et al.* (See Solano, Renaldo, assignor.)						
Howe, Charles F., Greenleaf, Kans. Platen printing-machine	377,074	Jan. 31	1961	515	42	405
Howe, Henry, Moss Springs, Kans. Fender	378,685	Feb. 28	2006	530	42	911
Howe, Thomas B., assignor of two-thirds to G. A. Clearwater and M. A. Goodwin, Scranton, Pa. Jar-fastener	377,488	Feb. 7	210	50	42	535
Howell, John W., New Brunswick, N. J. System of electrical distribution	377,158	Jan. 31	2075	{545 546}	42	428
Howell, Robert R., Minneapolis, Minn. Grain-tally	375,820	Jan. 3	128	37	42	30
Howland, Charles S., Campville, Conn. Rubbing-down device for mounting photographs	378,590	Feb. 28	1866	{492 493}	42	885
Howse, Henry L., San Francisco, Cal. Hydrocarbon-burner	378,886	Mar. 6	44	12	42	975
Hoy, John S., Albany, N. Y. Oil-can	380,285	Mar. 27	2102	562	42	1395
Hoyt, Eugene A., Madison, Wis. Cultivator	376,385	Jan. 10	927	243	42	186
Hoyt, James P., Newtown, Conn. Rubber brush	376,742	Jan. 24	1469	388	42	305
Hoyt, John C., *et al.* (See Hallowell, Albert, assignor.)	378,366	Feb. 21	1537	402	42	811
Hoyt, Lewis S., Boston, Mass. Molded bridle-winker	378,290	Feb. 21	1292	339	42	764
Hoyt, Lewis S., Boston, Mass., assignor to Faucet Bottle Company, Nashua, N. H. Faucet bottle-stopper						
Hoyt, Ovando, Ovando, Mont. Ter. Hay unloader and stacker						
Hub Carbon Company. (See Wilder, Charles H., assignor.)						
Hubbard, Frederick J., assignor to Adams & Westlake Manufacturing Company, Chicago, Ill. Device for regulating the flames of vapor-stoves	377,560	Feb. 7	316	81	42	556
Hubbard, George W., Brooklyn, N. Y. Reservoir or tank apparatus for water-closets	378,367	Feb. 21	1538	402	42	811
Hubbard, George W., Brooklyn, N. Y. Reservoir or tank apparatus for water-closets	379,310	Mar. 13	651	177	42	1094
Hubbard, Horace L., Centre Lisle, N. Y. Hoof-pad	378,887	Mar. 6	45	12	42	975
Hubbell, Julian B., Washington, D. C. Trunk	379,514	Mar. 13	954	257	42	1153
Huber, Edward. (See Richards and Huber.)						
Huber, Edward, Marion, Ohio. Car-coupling	376,093	Jan. 10	517	138	42	111
Hudec, John F., Cleveland, Ohio. Railway rail tie and rail-clamp	379,222	Mar. 13	525	147	42	1071
Hudson, Charles E., Leominster, Mass. Slicing and coring knife for apple-parers	377,106	Jan. 31	2015	528	42	414
Huelm, Conrad, assignor of one-half to R. Y. McConnell, Rochester, N. Y. Thill-coupling	377,716	Feb. 7	547	140	42	598
Huff, Frederick P., Booth Bay, Me. Guard for pie-plates and similar pans	380,116	Mar. 27	1878	500	42	1349
Huff, Jonathan G. and L. H., East Bend, N. C. Spring-vehicle	376,957	Jan. 24	1792	471	42	365
Huff, Lemuel H. (See Huff, Jonathan G. and L. H.)						
Hugentobler, Emil M. (See Herron and Hugentobler.)						
Huggins, Robert T., Darlington, S. C. Cotton chopper and cultivator	378,960	Mar. 6	138	40	42	993
Hughes, George M., Auburndale, Ohio. Vehicle-wheel	378,961	Mar. 6	139	40	42	993
Hughes, James M., Ashland, and J. D. Williams, Denton, Ky. Dumping-car	378,368	Feb. 21	1540	{402 403}	42	812
Hughes, Kate D., Washington, D. C. Sash-fastener	376,654	Jan. 17	1335	350	42	270
Hughes, Oliver, Callao, Mo. Fire-escape	376,034	Jan. 3	431	115	42	87
Hughes, Oliver, Callao, Mo. Car-coupling	376,386	Jan. 10	928	243	42	186
Hughes, Richard, Wooster, A. E. and J. C. Lake, Big Prairie, assignors to Square Hole Anger Company, Wooster, Ohio. Square-hole anger	377,199	Jan. 31	2129	{561 562}	42	440
Hughes, Thomas, assignor of two-thirds to W. L. Beardsley and G. S. Hazard, Detroit, Mich. Clamp for cracked hoofs	376,441	Jan. 17	1015	266	42	210
Huidekoper, Arthur C., and L. Houze, Meadville, Pa. Furnace	378,839	Feb. 28	2238	{596 597}	42	955

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Hulett, George H., Cleveland, Ohio. Hoisting apparatus	376,655	Jan. 17	1336	351	42	270
Hulett, John S., Napanee, Ontario, Canada. Road-cart	378,888	Mar. 6	46	13	42	975
Hulett, Thaddeus W. (See Fickett, Albert, assignor.)						
Hulford, William J., assignor to himself and J. Robinson, Lawrence, Mass. Let-off mechanism for looms	379,311	Mar. 13	652	177	42	1095
Hull, Albert, New Boston, Mass. Leather-splitting machine	379,700	Mar. 20	1233	328	42	1215
Hull, John S. (See Wagandt and Hull.)						
Hull, Martin L., Cleveland, Ohio. Vapor-stove	377,159	Jan. 31	2076	546	42	428
Hull, Wolcott A., *et al.* (See Lyman, Charles H., assignor.)						
Humans, William, Cambridge, Mass., assignor to American Magnetic Electric Company, Jersey City, N. J. Permanent magnet for electrical apparatus	375,749	Jan. 3	43	12, 13	42	12
Humans, William, Cambridge, Mass., assignor to American Magnetic Electric Company, Jersey City, N. J. Armature for magneto-electric machines	375,750	Jan. 3	44	13	42	12
Humans, William, Cambridge, Mass., assignor to American Magnetic Electric Company, Jersey City, N. J. Magneto-electric machine	375,751	Jan. 3	45	13, 14	42	12
Humphrey, William. (See Knapp, McKenzie, and Humphrey.)						
Humphreys, Alexander C., Philadelphia, Pa., assignor to United Gas Improvement Company. Apparatus for the manufacture of gas	378,095	Feb. 21	1123	293, 294	42	734
Humphreys, Thomas H., assignor of one-half to C. T. Holloway, Baltimore, Md. Snap-hook	380,286	Mar. 27	2103	562	42	1395
Hunt, Charles W., West New Brighton, assignor to C. W. Hunt Company, New York, N. Y. Chain belt	378,686	Feb. 28	2007	530	42	911
Hunt, Charles W., West New Brighton, assignor to C. W. Hunt Company, New York, N. Y. Railway-motor truck	379,786	Mar. 20	1358	362	42	1240
Hunt Company, C. W. (See Hunt, Charles W., assignor.)						
Hunt, John C. (See Schiefer, William D., assignor.)						
Hunt, John C., *et al.* (See Poulson, Britton, assignor.)						
Hunt, Robert W., Troy, N. Y., assignor to Clapp & Griffiths Steel Company, Pittsburg, Pa. Converter	379,894	Mar. 20	1552	409	42	1276
Hunter, Arvine P., Lowell, assignor of two-thirds to H. W. Beecher and J. L. Kymer, Grand Rapids, Mich. Displaying-rack	376,656	Jan. 17	1338	351	42	270
Hunter, Edward T., McGregor, Tex. Bin	379,166	Mar. 6	433	122	42	1048
Hunter, James M., assignor of one-half to C. A. Siebert, St. Louis, Mo. Coffee-mill	379,167	Mar. 6	434	122	42	1048
Hunter, Oliver H., Warren, Pa. Tag hook or needle	377,160	Jan. 31	2078	546	42	429
Hunter, Rudolph M., Philadelphia, Pa. Electric railway	377,107	Jan. 31	2016	528	42	415
Huntley Kindling Wood Company, W. C. (See Wyman, Joseph A. R., assignor.)						
Hurlburt, Samuel W., Creston, Iowa. Ventilator	376,094	Jan. 10	518	138	42	111
Hurlbut, Cornelius S., Springfield, Mass. Artificial tooth-crown	377,855	Feb. 14	781	200	42	659
Hurlbut, Ira D., Prairie du Chien, Wis. Stereotyping casting-box	376,743	Jan. 24	1471	388	42	305
Hussey, Charles R. (See Ford and Hussey.)						
Hussey, John W., Brooklyn, N. Y. Polishing and varnishing machine	376,198	Jan. 10	670	178	42	132
Hutchins, George F., assignor to Knowles Loom Works, Worcester, Mass. Take-up mechanism for looms	380,117	Mar. 27	1879	500	42	1349
Hutchins, George F., assignor to Knowles Loom Works, Worcester, Mass. Shedding mechanism for looms	380,118	Mar. 27	1881	500	42	1350
Hutchins, George K. (See Banks and Hutchins.)						
Hutchins, Wilbur W., Newport, Vt. Gasoline can	377,520	Feb. 7	264	66	42	545
Hutchinson, Edward, New York, N. Y. Spring for side-bar vehicles	379,787	Mar. 20	1359	362	42	1240
Hvass, Charles. (See O'Neill, John, assignor.)						
Hyatt, George W., and W. Dick, Three Mile Bay, N. Y. Thill-coupling	378,840	Feb. 28	2240	597	42	956
Hyatt, John W., Newark, N. J., assignor to Hyatt Pure Water Company. Rotating or oscillating filter	376,095	Jan. 10	518	138	42	111
Hyatt Pure Water Company. (See Hyatt, John W., assignor.)						
Hyatt, William F., Brooklyn, N. Y. Safety-pin	375,873	Jan. 3	190	53	42	41
Hyde, Elwin R., Springfield, Mass. Belt-shifting device	375,762	Jan. 3	46	14	42	13
Hyde, Elwin R., and A. Vallentine, assignors to Springfield Glue and Emery Wheel Company, Springfield, Mass. Grinding-machine	375,821	Jan. 3	129	38	42	30
Hyde, James C., assignor to West Haven Buckle Company, West Haven, Conn. Buckle	379,515	Mar. 13	955	257	42	1153
Hyde, John, Acton, near London, county of Middlesex, England, assignor of one-half to G. H. Howard, Niagara Falls, Canada. Game of draughts to be played by three persons, and apparatus therefor	378,931	Mar. 6	102	29	42	986
Hyde, Theophilus R., Jr. (See Shipley, Sperry, and Hyde.)						
Hyde, Theophilus R., Jr., assignor to Scovill Manufacturing Company, Waterbury, Conn. Button	376,958	Jan. 24	1792	471	42	365
Hydraulic Elevator Company. (See Bassett, Norman C., assignor.)						
Hydrogen Company of the United States. (See Gesner, George W., assignor.)						
Hyer, Charles S., Washington, D. C. Rubber mat for store cases and counters	378,369	Feb. 21	1541	403	42	812
Hymers, Robert, London, Ontario, Canada. Automatic horse-tie	376,803	Jan. 24	1577	413	42	324
Hyneman, David J. and I. W., Corinth, Miss. Hay-press	377,458	Feb. 7	164	38	42	526
Hyneman, Irven W. (See Hyneman, David J. and I. W.)						
Ide, Albert L., Springfield, Ill. Steam-engine indicator	375,874	Jan. 3	191	53	42	41
Iglesias, José, Havana, Cuba. Station-indicator	377,258	Jan. 31	2223	587, 588	42	456
Illoway, Nettie, Cincinnati, Ohio. Paint-cup	377,306	Jan. 31	2297	608	42	470
Imbrie, Charles F. (See Prichard, Henry, assignor.)						
Imhauser, E. (See Berghausen, August, assignor.)						
India Rubber Comb Company. (See Grummon, John W., assignor.)						
Ingalls, E. Herbert, *et al.* (See Enos, John A., assignor.)						
Ingalls, John C., Marquette, Mich., assignor to C. Miller & Son, Utica, N. Y. Stove-pipe damper	380,204	Mar. 27	1996	534	42	1373
Ingham, William P., Middlesbrough, county of York, England. Coin-released height-measuring apparatus	379,071	Mar. 6	303	89	42	1023
Ingram, Thomas G., Central City, Nebr. Thill-coupling	379,578	Mar. 20	1058	282	42	1180
Inman, Horace, Amsterdam, N. Y. Cut-off attachment for paper-box-covering machines	376,096	Jan. 10	520	139	42	111
Iowa Road Grader and Ditcher Manufacturing Company. (See Martin, Wellington J., assignor.)						
Iredell, George S., Philadelphia, Pa. Toy savings-bank	377,259	Jan. 31	2224	588	42	456
Irvin, Edwin S., Berkeley, assignor to Pacific Indicator Company, San Francisco, Cal. Station-indicator	377,384	Feb. 7	28	8, 9	42	500
Irwin Auger Bit Company. (See Irwin, Charles H., assignor.)						
Irwin, Charles H. (See Thomas and Irwin.)						
Irwin, Charles H., assignor to Irwin Auger Bit Company, Wilmington, Del. Die for making auger-bits	378,251	Feb. 21	1367	359	42	778
Irwin, John H., Morton, Pa. Telephone-transmitter. (Reissue)	10,946	Mar. 27	2131	570	42	1401

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Irwin, Samuel B., West Hebron, N. Y. Seat for vehicles	376,887	Jan. 24	1699	444	42	347
Isbell Machine Company. (See Isbell, Robert H., assignor.)						
Isbell, Robert H., New York, N. Y., assignor, by mesne assignments, to Isbell Machine Company. Railway-switch	379,072	Mar. 6	305	90	42	1023
Iske, Albert. (See Iske, Anthony and A.)						
Iske, Albert. (See Landis and Iske.)						
Iske, Anthony, assignor to I. L. Landis, Lancaster, Pa. Door-bell	378,317	Feb. 21	1466	383	42	796
Iske, Anthony, assignor to I. L. Landis, Lancaster, Pa. Door-mat bell	378,962	Mar. 6	*140	41	42	994
Iske, Anthony, assignor to I. L. Landis, Lancaster, Pa. Bell	379,114	Mar. 6	371	105	42	1025
Iske, Anthony and A., assignors to I. L. Landis, Lancaster, Pa. Bell	378,963	Mar. 6	141	41	42	994
Ison, Edmund Q., Long Island City, N. Y. Umbrella						
Ives, Blakeslee & Co. (See Ives, Edward R., assignor.)						
Ives & Co., H. B. (See Ives, Hobart B., assignor.)						
Ives, Edward R., assignor to Ives, Blakeslee & Co., Bridgeport, Conn. Toy pistol	377,808	Feb. 14	724	183	42	648
Ives, Hobart B., assignor to H. B. Ives & Co., New Haven, Conn. Bolt	378,067	Feb. 14	1081	284	42	718
I-X-L Pump Company. (See Hill, James, assignor.)						
Jackson & Co., W. H. (See Burkhardt, John, assignor.)						
Jackson, Jobiel, Fort Atkinson, Wis. Running-gear for vehicles	377,260	Jan. 31	2226	589	42	456
Jackson, Peter H., San Francisco, Cal. Construction of artificial stone or concrete pavements	375,999	Jan. 3	374	100, 101	42	76
Jackson, Robert F., and W. R. Pope, Baltimore, Md. Electric vapor-bath	380,261	Mar. 27	2070	554	42	1389
Jacob, Frank A., assignor of one-half to W. Strong, Indianapolis, Ind. Hose-coupling	377,075	Jan. 31	1902	515	42	405
Jacobs, Abraham C., and G. W. Chapman, Hillsborough, Wis. Horse-collar	379,275	Mar. 13	594	164	42	1084
Jacobs, Jacob, New York, N. Y. Illuminating-tile	377,939	Feb. 14	909	234	42	684
Jacobs, Joseph, San Francisco, Cal. Railway-tie	379,389	Mar. 13	775	209	42	1119
Jacobns, Edward. (See Johnson and Jacobns.)						
Jacobus, Pierson, Varick, N. Y. Crescent-saw	377,521	Feb. 7	266	67	42	545
Jacoby, William H., Minneapolis, Minn. Coat-hook	378,201	Feb. 21	1294	339	42	764
Jaeger, Julius, Rutherford, N. J. Insect-powder gun	378,687	Feb. 28	2008	531	42	912
Jaeger's Sanitary Woolen System Company. (See Hopkins, Lewis C., assignor.)						
James, Daniel H. (See Brown and James.)						
James, Horace, and G. Robinson, Sheffield, county of York, England. Means for converting motion	379,277	Mar. 13	599	165	42	1085
James, John. (See Higgins and James.)	379,469	Mar. 13	881	237	42	1140
Jamison, William T., Washington, Pa. Combined book and slate	378,591	Feb. 28	1867	493	42	885
Janson, Louis, Brooklyn, assignor, by mesne assignments, to M. Salomon, New York, N. Y. Gage-attachment for cane-shaving machines	380,205	Mar. 27	1996	534	42	1373
Janssen, Gustave, assignor of one-half to J. P. Fitzgerald, Chicago, Ill. Apparatus for cooling candle-molds	379,168	Mar. 6	435	123	42	1049
Jarrell, Edwin, Harper, Kans. Vehicle-spring	379,470	Mar. 13	882	237	42	1140
Jarrell, Edwin, Harper, Kans. Vehicle-spring	378,592	Feb. 28	1869	494	42	885
Jeannot, Victor, Geneva, Switzerland. Stop-watch	378,593	Feb. 28	1871	495	42	886
Jeannot, Victor, Geneva, Switzerland. Lock	377,161	Jan. 31	2079	547	42	429
Jebb, John G., London, county of Middlesex, England. Pulley-cover						
Jebb, William T. (See Schulman, John C., assignor.)	379,471	Mar. 13	883	238	42	1140
Jeffers, Selah, Reading, Mich. Boot or shoe	378,964	Mar. 6	142	41, 42	42	994
Jeffery, Frank M., Jersey City, N. J. Bustle	379,516	Mar. 13	957	258	42	1154
Jeffery, Frank M., Jersey City, N. J. Bustle	379,276	Mar. 13	595	164	42	1084
Jeffery, Thomas B., Ravenswood, Ill. Velocipede						
Jeffrey, Joseph A. (See Legg, Benjamin A., assignor.)						
Jeffrey, Joseph A. (See Oborn, Benjamin, assignor.)	379,073	Mar. 6	307	90	42	1023
Jehl, Francis, Paris, France. Continuous and alternating transformer						
Jehl, Francis, assignor to Société Anonyme Compagnie Continentale Edison, Paris, France. Dynamo-electric machine	376,307	Jan. 10	815	216	42	166
Jenkins, Elijah W., Milford, Mo. Fish-trap	379,701	Mar. 20	1235	329	42	1216
Jenkins, Joel, Montclair, N. J. Safety-pin	377,108	Jan. 31	2018	528	42	415
Jenkins, Joel, Montclair, N. J. Safety-pin	378,318	Feb. 21	1467	383	42	797
Jenkins, Nicholas, Waterbury, Conn., assignor to Holmes, Booth & Haydens, New York, N. Y. Suspension device	376,657	Jan. 17	1339	352	42	270
Jenkinson, James, Brooklyn, N. Y. Clasp	377,429	Feb. 7	127	27	42	518
Jennings, Abraham G., Brooklyn, N. Y. Cotton-gin	378,167	Feb. 21	1237	325	42	754
Jennings, Daniel H., and W. H. Allen, Denver, Colo. Stirrup-pad	376,526	Jan. 17	1138	298	42	232
Jennings & Sons, A. G. (See Fryer, Richard, assignor.)	379,579	Mar. 20	1058	282	42	1180
Jensen, Andrew, St. Paul, Minn. Boot or shoe ventilator						
Jensen Can Filling Machine Company. (See Jensen, Mathias, assignor.)						
Jensen, Hans P. F., B. W. Webb, and J. Jensen, London, county of Middlesex, England. Electric time, temperature, and burglar alarm and call-bell	378,202	Feb. 21	1285	340	42	765
Jensen, Jens. (See Jensen, Webb, and Jensen.)	377,385	Feb. 7	31	9	42	501
Jensen, Jens, Racine, Wis. Grain-car door	375,875	Jan. 3	195	53, 54	42	42
Jensen, Jens H., Minden, Nebr. Check-row planter	377,029	Jan. 31	1895	498	42	392
Jensen, John C., Chicago, Ill. Paper-fastener	377,030	Jan. 31	1896	498	42	392
Jensen, John C., Chicago, Ill. Inserter or needle for paper-fasteners	377,031	Jan. 31	1897	499	42	392
Jensen, John C., Chicago, Ill. Combined paper clip and punch	377,032	Jan. 31	1898	499	42	392
Jensen, John C., Chicago, Ill. Paper-fastener	376,804	Jan. 24	1578	413, 414	42	325
Jensen, Mathias, assignor of one-half to Jensen Can Filling Machine Company, Astoria, Oreg. Can crimper and capper	378,688	Feb. 28	2009		42	912
Jensen, Paul C., Chicago, Ill. Fertilizer	379,312	Mar. 13	654	177	42	1095
Jerome, Samuel B., New York, N. Y. Metallic railway-tie	379,223	Mar. 13	526	147, 148	42	1071
Jewell, Augustus, Dowagiac, Mich. Sheaf-carrier						
Jewell, Edwin W. (See Frenier, Joseph, assignor.)	377,386	Feb. 7	32	9	42	501
Jewell, Omar H., Chicago, Ill. Feed-water purifier	377,387	Feb. 7	33	10	42	501
Jewell, Omar H., Chicago, Ill. Water-filter and purifier	377,388	Feb. 7	34	10	42	502
Jewell, Omar H., Chicago, Ill. Water filter and purifier	377,389	Feb. 7	35	10, 11	42	502
Jewell, Omar H., Chicago, Ill. Water purifier and filter	377,390	Feb. 7	37	11	42	502
Jewell, Omar H., Chicago, Ill. Feed-water purifier	377,758	Feb. 14	616	159	42	625
Jewell, Omar H., Chicago, Ill. Apparatus for feeding chemicals to filters	378,791	Feb. 28	2142	566	42	937
Jewett, Charles W. and G. H., assignors of one-half to F. B. Crego, Jackson, Mich. Two-wheeled vehicle	377,076	Jan. 31	1963	515	42	405
Jewett, George H. (See Jewett, Charles W. and G. H.)						
Jewett, George M., Bridgeport, Conn. Sheet-metal chain	377,200	Jan. 31	2131	562	42	440
Jobborn, Moses, assignor to J. H. Tilden, Hamilton, Ontario, and G. B. Underwood, Toronto, Canada. Combined latch and lock	379,788	Mar. 20	1361	362	42	1241
Jobborn, Moses, assignor to J. H. Tilden, Hamilton, Ontario, and G. B. Underwood, Toronto, Canada. Combined latch and lock						

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page
Johnson, Andrew J. (See Lyman and Johnson.)						
Johnson, Charles R., Allegheny, and H. Johnson, Pittsburg, Pa. Detector-rail	377,430	Feb. 7	128	27	42	519
Johnson, David, South Hampstead, county of Middlesex, England. Preparing explosives	376,000	Jan. 3	377	.....	42	77
Johnson, Edwin T., assignor of one-half to Saxton & Phillips, Minneapolis, Minn. Water-closet	376,744	Jan. 24	1471	388	42	305
Johnson, Edwin T., assignor of one-half to Saxton & Phillips, Minneapolis, Minn. Heating and ventilating apparatus	376,745	Jan. 24	1473	389	42	305
Johnson, Edwin T., assignor of one-half to Saxton & Phillips, Minneapolis, Minn. Heating and ventilating apparatus	376,746	Jan. 24	1475	389	42	306
Johnson, Ernest V., Chicago, Ill. Cable railway	379,648	Mar. 20	1154	305	42	1199
Johnson, Frank C. (See Boynton and Johnson.)						
Johnson, Frank G., New York, N. Y. Clothes-sprinkler	380,039	Mar. 27	1767	473	42	1326
Johnson, Garey W. (See Johnson, William and G. W.)						
Johnson, George F., Philadelphia, Pa. Press for butter and other plastic material	376,097	Jan. 10	522	139	42	112
Johnson, Henry. (See Johnson, Charles R. and H.)						
Johnson, Henry assignor to Sargeant Manufacturing Co., Newark, N. J. Swivel for bridles	379,537	Mar. 13	982	264 / 265	42	1159
Johnson, Henry, and E. Jacobus, assignors to Sargeant Manufacturing Company, Newark, N. J. Overcheck crown-loop	377,308	Jan. 31	2300	608	42	470
Johnson, Isaac L., Washington, D. C. Conduit for electric conductors and power-cables	375,876	Jan. 3	198	54, 55	42	42
Johnson, Iver. (See Torkelson, Reinhard T., assignor.)						
Johnson, Iver. (See Torkelson and Johnson.)						
Johnson, Iver, Worcester, Mass. Velocipede	379,224	Mar. 13	528	148	42	1072
Johnson, Iver, and A. Fyrberg, Worcester, Mass.; said Fyrberg assignor to said Johnson. Barrel-lock for revolvers	379,225	Mar. 13	529	148	42	1072
Johnson, Iver, and A. Fyrberg, Worcester, Mass.; said Fyrberg assignor to said Johnson. Revolver	379,226	Mar. 13	531	148	42	1072
Johnson, Iver, and A. Fyrberg, Worcester, Mass.; said Fyrberg assignor to said Johnson. Revolver	379,227	Mar. 13	532	149	42	1072
Johnson, Iver, and R. T. Torkelson, Worcester, Mass.; said Torkelson assignor to said Johnson. Velocipede	379,228	Mar. 13	533	149	42	1073
Johnson, John, Baton Rouge, La. Safety-catch for breast-pins	378,054	Feb. 14	1083	278	42	714
Johnson, John S., Waukon, Iowa. Compensating clutch for corn-planters	376,308	Jan. 10	820	217	42	166
Johnson, Nathan S., Portland, Oreg. Washing-machine	377,829	Feb. 14	751	190	42	652
Johnson, Nelson, Knoxville, Pa. Ink-bottle	376,001	Jan. 3	380	101	42	77
Johnson, Philip B., administrator. (See Hevner, Samuel.)						
Johnson, Robert H., Chattanooga, Tenn. Cutting-nippers	377,759	Feb. 14	617	160	42	626
Johnson, Robert M., Mount Holly, N. J. Nut-lock	377,307	Jan. 31	2299	608	42	470
Johnson, Samuel M., assignor of one-half to York Manufacturing Company, Saco, Me. Chained yarn doubling and splitting machine	378,398	Feb. 21	1576	413 / 414	42	819
Johnson, Sarah C. (See Winter, Caroline H., assignor.)						
Johnson, Theodore. (See Webb and Johnson.)						
Johnson, Warren S., Milwaukee, Wis. Automatic temperature-regulator	378,137	Feb. 21	1195	311 / 312	42	747
Johnson, Warren S., Milwaukee, Wis. Temperature-regulating system	379,201	Mar. 6	479	136 / 137	42	1057
Johnson, William and G. W., Portland, Oreg. Amalgamator	377,760	Feb. 14	618	160	42	626
Johnson, Willie A., *et al.* (See Class, William F., assignor.)						
Johnston, Allen, Ottumwa, Iowa. Cutlery-grinding machine	377,201	Jan. 31	2132	563	42	410
Johnston, Allen, Ottumwa, Iowa. Grinding cutlery	377,202	Jan. 31	2136	564	42	441
Johnston, Gustaf, Denver, Colo. Baling-press	376,527	Jan. 17	1138	298	42	233
Jolly, Bertie P., Soledad, Cal. Animal-trap	375,822	Jan. 3	131	38	42	30
Joncas, Louis, Lewiston, Me. Machine for setting lacing-studs	379,702	Mar. 20	1236	329	42	1216
Jones, Albert F., assignor of one-half to J. H. Poor, Salem, Mass. Tannery-hoist	375,938	Jan. 3	289	78	42	60
Jones, Cad. (See Commander, Miles, assignor.)						
Jones, Charles H. (See Jones, Robert, assignor.)						
Jones, Edward C., Kansas City, Mo., assignor of one-half to R. Hirtz, Dodge City, Kans. Clasp	379,229	Mar. 13	535	149	42	1074
Jones, Edward J., Richmond, county of Surrey, England. Corset-stay	376,035	Jan. 3	433	115	42	87
Jones, George S., Laconia, Ind. Combined saw tiler, gage, and gummer	377,677	Feb. 7	401	127	42	588
Jones, Gilbert E., New York, N. Y. Quoin	377,618	Feb. 7	403	101	42	572
Jones, Gilbert E., New York, N. Y. Quoin	377,619	Feb. 7	404	102	42	573
Jones, Gilbert E., New York, N. Y. Quoin	377,620	Feb. 7	405	102	42	573
Jones, Harry H., Lancaster, N. H. Compressor	376,598	Jan. 17	1233	324 / 325	42	253
Jones, Isaac N., and P. C. Elser, Dupont, Ohio. Adjustable chimney	377,899	Feb. 14	846	216	42	671
Jones, James H., assignor to Emerson, Talcott & Company, Rockford, Ill. Corn-planter	376,823	Jan. 24	1606	421	42	329
Jones, James H., assignor to Emerson, Talcott & Company, Rockford, Ill. Horse hay-rake	379,895	Mar. 20	1553	409	42	1276
Jones, John E., New York, N. Y. Window frame and sash	376,959	Jan. 24	1794	471 / 472	42	365
Jones, John M., Palmyra, N. Y. Printing-press	379,958	Mar. 27	1644	438	42	1301
Jones, Robert, assignor of one-half to C. H. Jones, Waynesburg, Ohio. Mold-board	378,841	Feb. 28	2241	597	42	956
Jones, Wesley C., Waxahachie, Tex. Spring-punch	378,549	Feb. 28	1805	477	42	873
Jones, Wiley, Norfolk, Va. Boot or shoe stretcher	375,939	Jan. 3	291	78	42	60
Jones, Willis C., and W. S. Rogers, Cincinnati, Ohio. Feed for lathes	377,761	Feb. 14	619	160	42	626
Jones, Willis C., and W. S. Rogers, Cincinnati, Ohio. Friction-clutch	378,448	Feb. 28	1666	417	42	843
Jones, Willis C., and W. S. Rogers, Cincinnati, Ohio. Lathe	379,313	Mar. 13	655	177 / 178	42	1095
Jopson, George W., and N. W. Crandall, Meriden, Conn. Blacking-box holder	375,823	Jan. 3	132	38	42	31
Jordan, William A., New Orleans, La. Nut-lock	378,008	Feb. 14	1004	262	42	703
Joslyn, Margaret M., Grand Meadow, Minn. Soot-collector for gasoline-stoves	378,508	Feb. 28	1747	461	42	861
Joy, Frank L., Chicago, Ill., assignor of one half to W. S. Hay, Huron, Dak. Ter. Hopper-bottom freight-car	380,287	Mar. 27	2104	563	42	1393
Judson, John S. (See Cameron and Judson.)						
Judson, Thomas S., Matteawan, assignor to New York Rubber Company, New York, N. Y. Rubber hose	375,877	Jan. 3	201	55	42	43
Judson, Willard S. (See Cameron and Judson.)						
Julian, George W. (See McMullin, Joseph, assignor.)						
Jungk, Franz, *et al.* (See Hirsching, Henry, assignor.) (Reissue.)						
Jurschina, Franz, assignor of one-half to F. Kammann, Vienna, Austria-Hungary. Self-hardening cement	379,580	Mar. 20	1059	.....	42	1181
Jury, Theodore. (See Schermerhorn and Jury.)						
Just, John F., Robey, Dak. Ter. Cable railway	379,169	Mar. 6	436	123	42	1049
Kaestner, Charles, Chicago Ill. Ore-crusher	377,459	Feb. 7	166	38, 39	42	527
Kahler, Conrad, and L. E. Brookes, Chicago Ill. Paper feeding and cutting device	380,288	Mar. 27	2105	563	42	1393

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page
Kalbaugh, I. N. (See Manning, William T., assignor.)						
Kalbfleisch, Albert M., *et al.* (See Knowles, Edward R., assignor.)						
Kaltenbach, Henry. (See Boreham, Robert G., assignor.)						
Kammann, Franz. (See Jurschina, Franz, assignor.)						
Kanaley, Edward, Syracuse, N. Y. Hot-air furnace	377,561	Feb. 7	317	81	42	556
Kane, Abraham L., Middle Fork, Ohio. Hay-derrick	380,206	Mar. 27	1998	534	42	1373
Kane, Daniel P., St. Louis, Mo. Reversing device for engines	376,658	Jan. 17	1342	352	42	271
Kane, Louis E., Cincinnati, Ohio. Millstone-feeder	377,762	Feb. 14	621	160	42	626
Karrmann, Julius, assignor of one-half to L. Hollweg, Indianapolis, Ind. Cover-fastening for vessels	376,036	Jan. 3	434	116	42	87
Kast, Christian W., *et al.* (See Bieber, Jacob, assignor.)						
Kay, Clarence H. (See Baird, William J., assignor.)						
Kayser, Adolf, assignor of two-thirds to H. Williams and A. B. Young, Buffalo, N. Y. Making alkaline silicates and carbonates	376,409	Jan. 10	959	251	42	192
Kayser, Adolf, assignor of two-thirds to H. Williams and A. B. Young, Buffalo, N. Y. Making alkaline silicates	376,410	Jan. 10	961	251	42	192
Kayser, John, Kaiserslautern, Bavaria, Germany. Sewing-machine	377,830	Feb. 14	752	190 / 191	42	652
Kayser, Julius. (See Bouton, Arthur A., assignor.)						
Keane, John, San Francisco, Cal. Smoke-consuming furnace	378,026	Feb. 21	1125	294	42	735
Kearsing, Edward G., Spring Valley, N. Y. Dental gold-pellet package	376,889	Jan. 24	1700	444	42	347
Keast, William. (See De Coar and Keast.)						
Keating, Robert M., assignor of one-half to W. H. Murphy, Springfield, Mass. Nut-lock	379,278	Mar. 13	600	165	42	1085
Keck, George A., Cerro Gordo, Ill. Brick for chimneys	375,753	Jan. 3	47	14	42	13
Keeler, Horatio, *et al.* (See Martin, John F., assignor.)						
Keenan, George J. (See Selleck and Keenan.)						
Keenan, Hiram T., Chicago, Ill., assignor of one-half to O. Newell, Denver, Colo. Stock-gangway	378,319	Feb. 21	1468	384	42	797
Keene, George C. (See Sagendorph and Keene.)						
Keene Manufacturing Company. (See Whelpley, James A., assignor.)						
Keeports, Aaron, Lancaster, Pa. Car-coupling	376,309	Jan. 10	822	217	42	167
Keith, Charles A., Danvers, Mass. Boot or shoe upper and preparing it for lasting	377,391	Feb. 7	38	11	42	503
Keith, David S., Toronto, Ontario, Canada. Water-supply apparatus for water-closets, &c.	377,261	Jan. 31	2229	589	42	457
Keith, Myron L., Campello, Mass. Machine for making welts for boots or shoes	376,310	Jan. 10	824	217	42	167
Keil, Mathew, Granbury, Tex. Ant-trap	379,581	Mar. 20	1060	282	42	1181
Keller, Joseph M., Philadelphia, Pa. Jar-fastening	377,831	Feb. 14	755	191	42	653
Kelley, Charles, Toronto, and J. Ball, Waterloo, Ontario, Canada; said Ball assignor to said Kelley. Privy-seat	379,538	Mar. 13	983	264 / 265	42	1159
Kelley, William G. (See Stowe, Samuel F., assignor.)						
Kellogg, Timothy, Underwood, Minn. Chair-seat	375,754	Jan. 3	48	14	42	13
Kelly, Ernst, St. Louis, Mo. Lawn-mower	377,562	Feb. 7	318	81	42	556
Kelly, George, Chicago, Ill. Equilibrium appliance for rocking-chairs	379,472	Mar. 13	884	218	42	1140
Kelly, George B. (See Given, John L., assignor.)						
Kelly, George B., Boston, Mass. Pneumatic cash-carrier apparatus	378,792	Feb. 28	2143	566 / 567	42	937
Kelly, James A., *et al.* (See Hogan, George L., assignor.)						
Kelly, James H., and E. P. Follett, Rochester, N. Y.; said Follett assignor to said Kelly. Lantern	378,889	Mar. 6	47	13	42	975
Kelly, James J., Albany, N. Y. Show-case	378,564	Feb. 28	1873	495	42	886
Kelly, John A., assignor of one-half to M. J. McCormack, Philadelphia, Pa. Shoe or gaiter	380,289	Mar. 27	2108	564	42	1395
Kelly, John A., assignor of one-half to M. J. McCormack, Philadelphia, Pa. Boot or shoe	380,290	Mar. 27	2109	564	42	1396
Kelly, John J. (See Eames, Henry H., assignor.)						
Kelly, John T. (See Gilmore and Branaman, assignors.)						
Kelly, Owen E., assignor of one-half to H. A. Seymour, Bristol, Conn. Shaft-support for vehicles	379,703	Mar. 20	1237	329	42	1216
Kelly, Patrick, Poughkeepsie, assignor to A. C. Rand, New York, N. Y. Drift column or support for rock-drills	376,659	Jan. 17	1343	353	42	271
Kelly, William, Saranac, Mich. Fence	378,793	Feb. 28	2145	567	42	937
Kelsey, Frank N., and W. A. Stevenson, New Haven, Conn. Automatic railway-switch	377,941	Feb. 14	911	225	42	685
Kelsey, George R., West Haven, Conn. Buckle-frame	376,599	Jan. 17	1235	325	42	252
Kelton, George, near Kiowa, Colo. Railway-tie	377,162	Jan. 31	2079	547	42	429
Kemper, Millington, trustee. (See Blaine and Hill, assignors.)						
Kempshall, Eleazer, New Britain, Conn. Heel for boots or shoes	376,824	Jan. 24	1608	421	42	329
Kempson, Alfred, Tunbridge Wells, county of Kent, England. Ink pot or holder	378,595	Feb. 28	1874	495	42	886
Kendall, A. Leslie, Brooklyn, assignor to W. Stanley, New York, N. Y. Stove	378,449	Feb. 28	1668	437	42	844
Kendall, George B. (See Phares, James S., assignor.)						
Kendall, Stephen, San Francisco, Cal. Ore-crusher	378,450	Feb. 28	1669	438	42	844
Kendrick, George R., Bryant, Ind. Grain weighing, registering, and bagging machine	377,163	Jan. 31	2080	547 / 548	42	429
Kengla, William S. (See Waer, Phillips, and Kengla.)						
Kennedy, Bernard J. (See Foster and Kennedy.)						
Kennedy, George Y. (See Mason, Frank H., assignor.)						
Kennedy, Herman N., assignor of one-half to J. Sayers, Lake View, Ill. Lathe-chuck	379,473	Mar. 13	885	218	42	1141
Kennedy, J. Herbert. (See Koen, Joseph, assignor.)						
Kennedy, Julian, Pittsburg, Pa. Bosh-plate for blast-furnaces	378,550	Feb. 28	1806	477	42	873
Kennedy, Martin, Hogewisch, Ill. Machine for bending and forging coupling-links, &c.	379,474	Mar. 13	886	238 / 239	42	1141
Kennedy, Rankin, assignor of one-half to R. Dick, Glasgow, county of Lanark, Scotland. Alternating-current transformer	378,320	Feb. 21	1469	384	42	797
Kennedy, Rankin, assignor of one-half to R. Dick, Glasgow, county of Lanark, Scotland. Transformation and distribution of electric energy	378,321	Feb. 21	1470	384	42	797
Kennedy, Samuel V., assignor to Minneapolis Harvester Works, Minneapolis, Minn. Grain-binding harvester	376,129	Jan. 10	672	178 / 179	42	139
Kennedy, Samuel V., assignor to Minneapolis Harvester Works, Minneapolis, Minn. Harvester	377,077	Jan. 31	1964	515 / 516	42	405
Kennedy, Samuel V., and C. A. Anderson, assignors to Minneapolis Harvester Works, Minneapolis, Minn. Grain-binder	380,119	Mar. 27	1882	500 / 501	42	1350
Kennedy, Thomas, deceased, Philadelphia, Pa.; J. Farley administrator. Siphon water-closet	376,002	Jan. 3	381	101	42	77
Kennedy, Thomas, deceased, Philadelphia, Pa.; J. Farley administrator. Water-closet	376,311	Jan. 10	825	218	42	167
Kensington Chair Company. (See Parks, Dana, assignor.)						
Kent, Lee, Hot Springs, Ark. Painter's combination pot-hook	376,825	Jan. 24	1609	421	42	329
Kenway, Percy N., Lowell, Mass. Pipe-hanger	376,489	Jan. 17	1069	280	42	230

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Pages.
Kenyon, James C. (See Frisbie, William L., assignor.)						
Ker, John B. (See Crawford and Ker.)						
Kerr, Robert. (See Winterfield, Henry L., assignor.)						
Kerrison, Charles, Jr., Charleston, S. C. Fish-hook	377,033	Jan. 31	1899	499	42	392
Kerrivan, John, assignor to Pettee Machine Works, Newton Upper Falls, Mass. Spindle-tube bearing for roving-frames	377,678	Feb. 7	493	127	42	588
Kesselring, Friedrich, Paterson, N. J., assignor to R. S. McCreery, New York, N. Y. Loom	376,312	Jan. 10	826	{218 219}	42	168
Kester, Jerome B., Clarksburg, W. Va. Sash-fastener	377,522	Feb. 7	266	67	42	545
Kestol, James G. (See Butler, Edward F., assignor.)						
Ketchum, Volney S. (See Brown and Ketchum.)						
Ketring, Orlando C., Montezuma, Ohio. Sash-fastener	378,794	Feb. 28	2146	567	42	937
Kettenring, Peter, assignor to Defiance Machine Works, Defiance, Ohio. Lathe for turning irregular forms	378,322	Feb. 21	1472	385	42	797
Kettlewell, Gover. (See Leonard and Kettlewell.)						
Kettlewood, John M., New Brighton, Pa. Pole-socket and neck-yoke	377,679	Feb. 7	494	127	42	589
Keystone Manufacturing Company. (See Spafford, Mark A., assignor.)						
Kibler, John B., Minneapolis, Minn. Device for poisoning flies	378,509	Feb. 28	1747	461	42	861
Kidder, Moses W., Lincoln, assignor to P. Noyes, Lowell, Mass. Gas-pressure regulator	376,313	Jan. 10	831	219	42	168
Kidder, Wellington P., Maplewood, Mass. Velocipede	375,755	Jan. 3	49	15	42	13
Kidder, Wellington P., Malden, assignor to Boston Tag and Printing Company, Boston, Mass. Tag and manufacture of the same	377,109	Jan. 31	2018	529	42	415
Kiddle, Thomas, New Brighton, N. Y., assignor to Orford Copper Company, of New Jersey. Separating precious metals and impurities from solutions of copper, salts, ores, mattes, &c., in acids	377,809	Feb. 14	725	.....	42	648
Kiehner, John T. (See Ballman, William, assignor.)						
Kienardt, John A., assignor of one-half to P. T. South, Dayton, Ohio. Carpet-stretcher	377,309	Jan. 31	2300	608	42	470
Kilborn, Wilber E., Sidney, Ohio. Earth-scraper	377,523	Feb. 7	267	67	42	546
Kiley, George A., Rochester, N. Y. Radiator-connection	376,481	Jan. 17	1071	280	42	220
Kimball, Freddie C., Jackson, Mich. Check-hook	378,795	Feb. 28	2147	567	42	938
Kimball, Joseph A., New York, N. Y. Pen-holder	379,789	Mar. 20	1362	363	42	1241
Kimball, Samuel S., Bangor, Me. Domino	377,832	Feb. 14	756	192	42	653
Kimball, Willis G. C., Concord, N. H. Photograph-burnisher	379,314	Mar. 13	658	178	42	1096
Kimberlin Manufacturing Company. (See Davis, Calvin R., assignor.)						
Kime, Daniel H., Kendallville, Ind., and H. Williams, Toledo, Ohio. Hasp-lock	379,896	Mar. 20	1554	409	42	1276
Kincaid, James W., assignor of one-half to E. Taylor, Georgetown, Tex. Means for securing corks	379,230	Mar. 13	536	149	42	1073
Kinder, Claude W., Tien-Tsin, Chihli, China. Force-pump	377,833	Feb. 14	757	{192 193}	42	653
Kinder, Julius, Brooklyn, N. Y., assignor to Solid Link Chain Manufacturing Company, of New York. Machine for making chain	378,252	Feb. 21	1369	360	42	772
Kindl, Fred H., assignor of one-half to R. Bennett, Chicago, Ill. Machine for making metal stirrups	379,202	Mar. 6	486	137	42	1058
Kindlen, John H., assignor to Cragin Manufacturing Company, Chicago, Ill. Sprinkling or other can	375,878	Jan. 3	202	56	42	43
King, Charles J., Woodstown, N. J. Clip for trace attachments	378,689	Feb. 28	2011	531	42	912
King, Charles R., A. P. Aten, and W. B. Floyd, Lampasas, Tex. Car-coupling	378,370	Feb. 21	1542	403	42	812
King, Edward, Butte City, Mont. Ter. Sleigh-knee	379,170	Mar. 6	436	123	42	1049
King, Francis A., and G. F. Brand, York, Pa. Non-slipping shoe	377,431	Feb. 7	128	27	42	519
King, Harvey B., Hartford, Conn. Show-case	377,857	Feb. 14	783	200	42	659
King, Henry, Baltimore, Md. Cabinet for displaying cakes and confections	379,475	Mar. 13	888	239	42	1141
King, James, Sandusky, Ind. Wire fence	377,524	Feb. 7	268	67, 68	42	546
King, James M., Benedict, Kans. End-gate	377,680	Feb. 7	495	128	42	589
King, Jefferson B., Baldwyn, Miss. Cotton-chopper	377,392	Feb. 7	39	12	42	705
King, John P., Philadelphia, Pa. Culinary vessel	378,690	Feb. 28	2012	531	42	912
King, John T., assignor to Walker & Co., Madison, Wis. Cylinder printing-machine	377,432	Feb. 7	129	28	42	519
King, William. (See Crippen and King.)						
King, William J., assignor of two-thirds to C. L. Ethridge and T. H. Whitlock, Buchanan, Tenn. Hollow grate and feed-water heater	379,790	Mar. 20	1364	363	42	1241
Kingsley, David W., Liverpool, N. Y. Apparatus for towing canal-boats	378,009	Feb. 14	1066	282	42	703
Kinnard, Owen B., Minneapolis, Minn. Baling-press	377,942	Feb. 14	913	235	42	666
Kinnard, Will M., Dayton, Ohio. Book-binding	379,649	Mar. 20	1455	305	42	1199
Kinney, Charles A., Raymilton, assignor of one-third to B. H. Osborn, Franklin, Pa. Wheel-hub	378,842	Feb. 28	2242	598	42	956
Kinney, G. Irving. (See Braun and Kinney.)						
Kinney, Henry M., *et al.* (See Hennessy, James F., assignor.)						
Kinsley, Myron H., Niagara Falls, assignor to Oneida Community, (limited,) Community, N. Y. Sash-cord fastener	376,314	Jan. 10	833	219	42	168
Kirkpatrick, Helen M. (See Martin, Andrew J., assignor.)						
Kirkpatrick, John W., Newburyport, assignor to Russia Cement Company, Gloucester, Mass. Package for liquid glue, mucilage, &c	377,034	Jan. 31	1900	499	42	393
Kistler, Aaron B., Aquashicola, Pa. Paint-brush bridle	380,120	Mar. 27	1884	501	42	1350
Kitchingman, Edwin L., Collingwood, Victoria, assignor of one-half to A. Andrews, Albury, New South Wales. Paint for coating ships	377,810	Feb. 14	725	.....	42	648
Kite, Edward, Pittsburg, Ind. Differential gear for traction-engines	376,528	Jan. 17	1140	298	42	233
Kitson Machine Company. (See Rice, David H., assignor.)						
Kitson, William H., Kirkstall, near Leeds, county of York, England. Railway-wheel	375,879	Jan. 3	203	56	42	43
Kittinger, Levi, Akron, Ohio. Match-machine	377,943	Feb. 14	914	{236 237}	42	686
Kittinger, Levi, Akron, Ohio. Match-machine tray	378,010	Feb. 14	1007	263	42	703
Klauder, Charles L., Philadelphia, Pa. Dyeing or scouring machine	377,393	Feb. 7	40	12	42	503
Klein, Adolph A., Philadelphia, Pa. Wash-boiler	379,582	Mar. 20	1060	282	42	1181
Klein, Samuel, and A. Schattels, Lugos, Austria-Hungary. Composition for filling up cracks in barrels and other vessels	378,506	Feb. 28	1875	.....	42	886
Kline, David, Highville, Pa. Hay-manger	376,529	Jan. 17	1140	299	42	233
Kline, Henry H. (See Kline, William D., assignor.)						
Kline, Lewis T., Bay City, Mich. Log-rolling device	377,717	Feb. 7	549	140	42	598
Kline, Samuel L., assignor of one-half to E. E. Stamp, Cassopolis, Mich. Fence-making machine	379,791	Mar. 20	1365	363	42	1241
Kline, William D., assignor of one-half to H. H. Kline, Mollitown, Pa. Boot or shoe	376,154	Jan. 10	612	165	42	128
Kling, John, Jr., Philadelphia, Pa. Sectional steam-generator	376,098	Jan. 10	523	140	42	112
Klönne, August, Dortmund, Prussia, Germany. Apparatus for heating retorts and muffles	378,097	Feb. 21	1127	295	42	735
Klönne, August, Dortmund, Prussia, Germany. Gas-washer	380,040	Mar. 27	1768	473	42	1327
Knaak, Frank C. F., New York, N. Y. Apparatus for bathing purposes	377,394	Feb. 7	42	12	42	503

Alphabetical list of inventions, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Pages.
Knapp, Edmund B., San Jacinto, Cal. Bridle winker attachment	377,563	Feb. 7	319	82	42	556
Knapp, George, *et al.* (See Beisel, Franklin P., assignor.)						
Knapp, John L., J. C. McKenzie, and W. Humphrey, Adrian, Mich. Brick-sanding machine	376,316	Jan. 10	836	220	42	169
Knapp, William H., assignor of one-half to J. P. Bristol, Galesburg, Mich. Two-wheeled vehicle	377,718	Feb. 7	551	140	42	598
Knaub, George. (See Knaub, Henry and G.).						
Knaub, Henry, York, and G. Knaub, Spring Garden, Pa. Coupling for steam-pipes	378,032	Mar. 6	103	{29 30}	42	986
Kneass, Strickland L., assignor to W. Sellers & Company, Philadelphia, Pa. Injector	376,315	Jan. 10	833	220	42	169
Knecht, Victor E. (See Barrath, Edward, assignor.)						
Knell, John, Philadelphia, Pa. Shoe-maker's pinchers	379,476	Mar. 13	889	{239 240}	42	1141
Knerr, Henry E., New Orleans, La. Machine for cleaning cotton-seed	377,621	Feb. 7	405	102	42	573
Kneuper, George, New York, N. Y. Atomizer	380,041	Mar. 27	1769	473	42	1327
Knickerbocker Company. (See Morse, Orville M., assignor.)						
Knieper, Julius L., Grand Rapids, Mich. Chair	379,959	Mar. 27	1647	438	42	1304
Kniese, Frederick C., Baltimore, Md. Manufacturing water-gas	377,564	Feb. 7	319	82	42	556
Knight, Aaron R. W., Feasterville, Pa. Oil-can or other vessel	379,517	Mar. 13	958	258	42	1154
Knight, Frank H., Washington, D. C. Hinge	377,310	Jan. 31	2301	609	42	470
Knight, Walter, San Andreas, Cal. Vehicle-wheel	375,940	Jan. 3	292	78	42	60
Knight, Walter H., New York, N. Y. Electric-motor car	377,622	Feb. 7	406	102	42	573
Kniphals, Hinrich, Davenport, Iowa. Neck-yoke guard	376,099	Jan. 10	525	140	42	112
Knobeloch, John P., Philadelphia, Pa. Awning-ventilator	380,207	Mar. 27	1999	537	42	1373
Knott, Kennard, Chicago, Ill. Valve-gear	379,400	Mar. 13	776	{209 210}	42	1119
Knowles, Edward R., Brooklyn, assignor to A. M. Kalbfleisch, New York, N. Y., and Mutual Electric Manufacturing Company, of New York. Electric-arc lamp	379,792	Mar. 20	1366	364	42	1242
Knowles, Francis B., *et al.*, executors. (See Knowles, Lucius J.)						
Knowles, George E., *et al.* (See Chidester, David D., assignor.)						
Knowles Loom Works. (See Hutchins, George F., assignor.)						
Knowles, Lucius J., deceased, Worcester, Mass.; F. B. Knowles and H. A. Marsh executors. Weft stop-motion for looms	376,774	Jan. 24	1528	402	42	315
Knowles, Lucius J., deceased, Worcester, Mass.; F. B. Knowles and H. A. Marsh executors. Weft stop-motion for looms	376,775	Jan. 24	1530	403	42	316
Knowles, Lucius J., deceased, Worcester, Mass.; F. B. Knowles and H. A. Marsh executors. Weft stop-motion for looms	376,776	Jan. 24	1532	403	42	316
Knowles, Lucius J., deceased, Worcester, Mass.; F. B. Knowles and H. A. Marsh executors. Weft stop-motion for looms	376,777	Jan. 24	1534	401	42	316
Koch, William, New York, N. Y. Quilting-machine	379,477	Mar. 13	890	{239 240 241}	42	1142
Koch, William, New York, N. Y. Quilting-machine	379,478	Mar. 13	895	{241 242}	42	1142
Koch, William, New York, N. Y. Mechanical movement	379,479	Mar. 13	898	242	42	1143
Koch, William, New York, N. Y. Shuttle-carrier for quilting-machines	379,480	Mar. 13	899	{242 243}	42	1143
Kochsmeier, Henry P., and G. M. Waldorf, Freeport, Ill. Spring-hinge. (Reissue)	10,896	Jan. 31	2290	696	42	486
Koen, Joseph, assignor of one-half to J. H. Kennedy, Oneida, N. Y. Machine for cutting scrolls on ends of bars	378,168	Feb. 21	1238	326	42	754
Kolbe, Carl, assignor to F. Von Heyden, Nachfolger, Radebeul, Saxony, Germany. Manufacture of salicylic acid ester	377,311	Jan. 31	2303	.....	42	471
Kölzer, Joseph, Duisburg, Prussia, Germany. Telegraph-repeater	376,661	Jan. 17	1346	{353 354}	42	272
Kölzer, Joseph, Duisburg, Prussia, Germany. Telegraphic repeater	379,203	Mar. 6	401	138	42	1059
Koon, Joseph. (See Day, Joseph, assignor.)						
Koplin, Abraham B., assignor to himself and J. S. Hess & Bro., Hellertown, Pa. Street-curb	379,401	Mar. 13	778	210	42	1119
Körting, Ernst, Hanover, Prussia, Germany. Gas-engine	377,623	Feb. 7	407	103	42	573
Kosakoff, Jacob. (See List and Kosakoff.)						
Kotlarewsky Paul, St. Petersburg, Russia. Current-meter	380,202	Mar. 27	2072	554	42	1389
Kramer, Samuel, and J. Levy, New York, N. Y. Jersey-stay	378,597	Feb. 28	1875	496	42	886
Kramer, Samuel R., Gahanna, Ohio. Berry or fruit crate	378,098	Feb. 21	1129	295	42	735
Krause, Bernard, O'Fallon Depot, Ill. Combination-spectacles	376,965	Mar. 6	145	42	42	994
Krause, C. William, Chicago, Ill. Drive-chain	379,115	Mar. 6	372	106	42	1035
Krause, Frederick W., Sand Creek, Wis. Horse-collar pad	378,055	Feb. 14	1064	279	42	715
Krause, Henry C., and B. Harris, Lake Linden, Mich. Conveyer	379,704	Mar. 20	1238	329	42	1216
Krauser, John L., Leeper, Pa. Head-rest for coffins	377,164	Jan. 31	2085	548	42	430
Kretsinger, Frederick S., Fort Madison, Iowa. Grain-cradle	376,317	Jan. 10	837	221	42	169
Krippendorf, Charles H. (See Blakeney, George, assignor.)						
Kroegher, William C., Allegheny, Pa. Die for welding links	377,395	Feb. 7	43	12	42	504
Krog, Johann, Halle-on-the-Saale, Prussia, Germany. Appliance for locking filter-presses	379,518	Mar. 13	958	258	42	1154
Krueger, Theodore F., New York, N. Y. Pipe-wrench	379,519	Mar. 13	959	258	42	1154
Kuenzel, Karl, Kensington, Ill. Window-bar	377,624	Feb. 7	408	103	42	573
Kruse, J. Henry, and L. A. Smith, Akron, Ohio. Boiler-feeder	379,520	Mar. 13	960	259	42	1155
Kruse, Mary M. (See Smith, Henry J., assignor.)						
Kuehn, Michael. (See Snitjer and Kuehn.)						
Kugler, George H. (See Trayer and Kugler.)						
Kuhlman, David D., Oakland, Nebr. Ditching and grading machine	379,705	Mar. 20	1239	330	42	1217
Kuhlman, Joseph F., Anamosa, Iowa. Washing-machine	378,138	Feb. 21	1200	312	42	747
Kühne, Paul A. (See Barthel, Friedrich G., assignor.)						
Kuhns, George F., *et al.* (See Miller, Allen T., assignor.)						
Kuhns, Henry B., *et al.* (See Miller, Allen T., assignor.)						
Kuhns, William N., *et al.* (See Miller, Allen T., assignor.)						
Kukkuck, Frederick, St. Louis, Mo. Trunk-top	380,291	Mar. 27	2109	564	42	1396
Kunderd, Amos E., Corunna, Ind. Animal-trap	376,246	Jan. 10	739	196	42	151
Kunhardt, David, Aachen, Prussia, Germany. Electric telegraph	379,016	Mar. 6	227	{61 62 63 64 65 66}	42	1009
Kupferschmid, Leo, Cincinnati, Ohio. Car-brake	376,100	Jan. 10	526	140	42	112

Alphabetical list of patentees, January to March, inclusive—Continued.

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Kursheedt, Alexander E. (See Taylor, George and J. H., assignors.)						
Kymer, James L., *et al.* (See Hunter, Arvine P., assignor.)						
L'Epée, Auguste, Sainte Suzanne, Doubs, France. Music-box	378,399	Feb. 21	1578	414	42	819
La Point, Stephen, Derrick City, Pa. Pump	376,960	Jan. 24	1704	472	42	363
La Rue, Robert J., Mexico, Mo. Fire and burglar alarm	378,323	Feb. 21	1474	365	42	798
Laass, Emil. (See Duell and Laass.)						
Laass, Emil. (See Peckham and Laass.)						
Laberie, Pierre, Paris, France. Evaporating apparatus	378,598	Feb. 28	1876	496	42	886
Lachman, Morris, assignor to Commercial Overseaming Sewing Machine and Manufacturing Company, San Francisco, Cal. Sewing-machine	377,525	Feb. 7	270	68	42	546
Ladd, Daniel A., assignor to Newark Collar Button Company, Newark, N. J. Button	376,890	Jan. 24	1701	444	42	347
Ladd, Dennis O., Chicago Ill. Slide-valve	377,078	Jan. 31	1966	517	42	406
Laflin, Perley, Warren, assignor to T. C. Bates, North Brookfield, Mass. Bobbin-holder for spooling machines	375,880	Jan. 3	204	56	42	44
Laflin, Perley, Warren, assignor to T. C. Bates, North Brookfield, Mass. Scavenger-roll for spinning-machines, &c	375,881	Jan. 3	206	57	42	44
Laflin, Perley, Warren, assigner to T. C. Bates, North Brookfield, Mass. Corset-clasp	378,691	Feb. 28	2013	531	42	912
Laird, Bush F., Ocean Springs, Miss. Car-coupling	380,208	Mar. 27	2000	535	42	1374
Lake, Abraham E. (See Hughes and Lake.)						
Lake, John C. (See Hughes and Lake.)						
Lamb, Jesse M., Franklin, Ind. Grain-measuring machine	379,231	Mar. 13	537	150	42	1073
Lamb, Thomas, and J. D. Morley, Philadelphia, Pa. Loop-surfaced fabric and making the same	379,402	Mar. 13	779	210	42	1119
Lambdin, Carvosso, Barranquilla, United States of Colombia, assignor to S. B. Lambdin, New York, N. Y. Electrical contact maker and breaker	379,074	Mar. 6	310	90	42	1024
Lambdin, Samuel B. (See Lambdin, Carvosso, assignor.)						
Lammers, John. (See Woeber and Lammers.)						
Laumert, Henry. (See Woeber and Lammers, assignors.)						
Lamont, Jesse L., Atkinson, Ill. Corn-harvester	378,551	Feb. 28	1809	477, 478	42	873
Lamson Cash Railway Company. (See Farmer, Theodore P., assignor.)						
Lamson Cash Railway Company. (See Lovejoy, Henry L., assignor.)						
Lamson Store Service Company. (See Cowley, James T., assignor.)						
Lamson, William E., Sarnia, Ontario, Canada. Trotting-sulky	377,035	Jan. 31	1901	500	42	393
Lanaux, George A. (See Belton, John D., assignor.)						
Lancaster, Bradford F., Angusta, Me. Wrench	376,891	Jan. 24	1702	445	42	347
Lancaster, Bradford F., Norridgewock, Me. Oiling attachment for carriage-jacks	377,262	Jan. 31	2230	589	42	457
Lancaster, James H., New York, N. Y. Rock-breaker or ore-crusher	380,121	Mar. 27	1885	501, 502	42	1350
Land, Charles H., Detroit, Mich. Hydrocarbon-furnace	376,003	Jan. 3	382	101, 102	42	77
Land, Charles H., Detroit, Mich. Manufacture of refractory carbon	379,960	Mar. 27	1647	439	42	1304
Landers, Frary & Clark. (See Gérard, John, assignor.)						
Landers, Frary & Clark. (See Gérard and Webb, assignors.)						
Landis, Israel L. (See Iske, Anthony, assignor.)						
Landis, Israel L. (See Iske, Anthony and A., assignors.)						
Landis, Israel L., Lancaster, Pa. Fence	379,706	Mar. 20	1241	330	42	1217
Landis, Israel L., and A. Iske, Lancaster, Pa.; said Iske assignor to said Landis. Combined hay rake and tedder	380,122	Mar. 27	1887	502, 503	42	1351
Landon, Albert. (See Wardwell and Landon.)						
Landor, Edward J., *et al.* (See Lerch, Solomon W., assignor.)						
Landru, Edouard G., *et al.* (See Tachon, Claude, assignor.)						
Landstrom, Albert, assignor of one-half to A. B. Walker, Council Bluffs, Iowa. Transom-lifter	377,312	Jan. 31	2103	609	42	471
Lane, Alfred J., Glenville, Ohio. Coffee-pot	376,319	Jan. 10	839	221	42	170
Lane & Bodley Company. (See Hosea, Lewis M., assignor.)						
Lane, Charles A., *et al.* (See Lane, George W., assignor.)						
Lane, George W., assignor to C. A. Lane, Bristol, and E. A. Powell, Plainville, Conn. Nail-extractor	377,565	Feb. 7	321	82	42	556
Lane, Philander P. (See Stanwood and Lane.)						
Lanfair, Herbert D., Miller's Falls, Mass. Miter-box	376,200	Jan. 10	676	179	42	139
Langan, James. (See Dubey, Edward A., assignor.)						
Langbein, Charles. (See Brokhahne and Langbein.)						
Langbein, Charles, Brooklyn, N. Y. Corn-removing knife	376,320	Jan. 10	840	221	42	170
Langen, Mathias, Milwaukee, Wis. Foot-gear	377,203	Jan. 31	2139	565	42	441
Langlot, Adam G., assignor of one-third to L. Schneider, La Grange, Mo. Wood-saw	378,510	Feb. 28	1748	462	42	861
Lankford, Tilghman W., Sharptown, Md. Crate	376,321	Jan. 10	841	222	42	170
Lansing, Chester F., Fayette, Ohio. Broom-holder	379,961	Mar. 27	1649	439	42	1304
Lanston, Tolbert, Washington, D. C. Child's carriage	376,201	Jan. 10	678	180	42	140
Lapham, Daniel W., assignor to J. M. Lapham, Brooklyn, N. Y. Fountain-pen	376,778	Jan. 24	1535	404	42	317
Lapham, Josephine M. (See Lapham, Daniel W., assignor.)						
Larson, Chris, assignor to H. Larson, Chicago, Ill. Desk	379,232	Mar. 13	538	150	42	1073
Larson, Frederic, Royalton, Minn. Bench-dog	378,890	Mar. 6	49	14	42	975
Larson, Hanna. (See Larson, Chris, assignor.)						
Lasch, Carl L., Reudnitz, Leipsic, Saxony, Germany. Box-stapling machine	378,324	Feb. 21	1476	385, 386	42	798
Lassetter, George M., *et al.* (See Gordon, Lorenzo D., assignor.)						
Latham, Cyrus B., assignor to Woods, Sherwood & Co., Lowell, Mass. Dish-holder	378,692	Feb. 28	2014	532	42	913
Latham, Ephraim, Washington, D. C., assignor of two-thirds to T. J. Powell, New York, N. Y., E. A. Sawyers, Brownsville, Oreg., and L. W. Perkins, New Orleans, La. Automatic car-coupling	378,068	Feb. 14	1083	284	42	719
Latshaw, Zach. (See Conant and Latshaw.)						
Latta, Emmit G., Friendship, N. Y., assignor to Pope Manufacturing Company, Portland, Me. Velocipede-saddle	376,322	Jan. 10	842	222	42	170
Latta, Emmit G., Friendship, N. Y., assignor to Pope Manufacturing Company, Portland, Me. Velocipede-saddle	376,692	Jan. 17	1348	354	42	272
Latta, Emmit G., Friendship, N. Y., assignor to Pope Manufacturing Company, Portland, Me. Velocipede-saddle	376,892	Jan. 24	1703	445	42	347
Latta, Emmit G., Friendship, N. Y., assignor to Pope Manufacturing Company, Portland, Me. Velocipede	377,566	Feb. 7	322	82, 83	42	557
Latta, Emmit G., Friendship, N. Y., assignor to Pope Manufacturing Company, Portland, Me. Velocipede	377,900	Feb. 14	847	216	42	671
Latta, Emmit G., Friendship, N. Y., assignor to Pope Manufacturing Company, Portland, Me. Velocipede	378,253	Feb. 21	1375	360, 361	42	779

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Latta, Emmit G., Friendship, N. Y., assignor to Pope Manufacturing Company, Portland, Me. Velocipede	378,693	Feb. 28	2015	532	42	913
Latta, Emmit G., Friendship, N. Y., assignor to Pope Manufacturing Company, Portland, Me. Velocipede	379,017	Mar. 6	232	66	42	1010
Latta, Emmit G., Friendship, N. Y., assignor, by mesne assignments, to Pope Manufacturing Company, Portland, Me. Velocipede	377,204	Jan. 31	2140	565, 566	42	441
Lamb, George H., West Lebanon, Ind. Pump	379,233	Mar. 13	539	150	42	1073
Laubach & Iddings. (See Schmidt, Theodore F. W., assignor.)						
Laudick, John M., Delphos, Ohio. Display-rack	376,318	Jan. 10	838	221	42	170
Laudon, C. A. Herman, Sherman, assignor to L. Laudon, Sr., Dover, Minn. Draft-equalizer for harvesters	376,663	Jan. 17	1350	354	42	273
Laudon, Louis, Sr. (See Laudon, C. A. Herman, assignor.)						
Laughlin, Henry A., Pittsburg, Pa. Regenerative hot-blast stove	379,707	Mar. 20	1243	331	42	1217
Laughton, Joseph B., Brooklyn, assignor to J. J. Holly, New York, N. Y. Color or ink pad	379,793	Mar. 20	1367	364	42	1242
Laumann, John H., Newburyport, Mass. Auxiliary boiler attachment	377,313	Jan. 31	2304	609	42	471
Lavoie, Joseph I. (See Ring and Lavoie.)						
Lawler, John J. (See Lawler, Thomas and J. J.)						
Lawler, Thomas and J. J., Clifton, N. Y. Excavating-bucket	378,099	Feb. 21	1130	295	42	735
Lawrence, Henry J., Valparaiso, Ind. Wheel for vehicles	379,315	Mar. 13	659	178	42	1096
Lawrence, Louis P., Passaic, N. J., assignor to Lawrence Railway Brake Company. Tool-operating mechanism	377,858	Feb. 14	785	200	42	650
Lawrence, Louisa. (See Chappell, George F., assignor.)						
Lawrence Railway Brake Company. (See Lawrence, Louis P., assignor.)						
Lawrence, Washington H., Cleveland, Ohio. Carbon-amalgamator	377,901	Feb. 14	849	217	42	671
Lawrence, William S., Kalamazoo, Mich. Harrow-tooth holder	379,018	Mar. 6	234	66	42	1010
Lawrie, Charles W., Erie, Pa. Cut-off regulator	376,826	Jan. 24	1610	422	42	320
Lawshe, Spencer R., Chicago, Ill. Lightning-rod	375,756	Jan. 3	50	15	42	13
Lawson, Thomas F., Athens, Ga. Cotton chopper and cultivator	379,962	Mar. 27	1649	439	42	1305
Le Blond, Napoleon B., Minneapolis, Minn. Overdraw check-loop for bridles	377,944	Feb. 14	918	237	42	687
Le Grande Signal and Electrical Company. (See Le Grande, William W., assignor.)						
Le Grande, William W., assignor to Le Grande Signal and Electrical Company, Louisville, Ky. Electro-mechanical signal apparatus	377,626	Feb. 7	410	104, 105	42	574
Le Marquand, Adrien, Paris, France. Sewerage or drainage of houses, towns, or districts, and apparatus therefor	377,681	Feb. 7	496	128	42	589
Le Prince, Augustin, New York, N. Y. Method of and apparatus for producing animated pictures of natural scenery and life	376,247	Jan. 10	740	196, 197	42	152
Leach, Charles. (See Hazelton and Leach.)						
Leach, Joseph, Indianapolis, assignor of one-half to C. G. Udell, North Indianapolis, Ind. Hoop for coopers' ware	376,530	Jan. 17	1141	299	42	233
Leahy, Edward C., assignor to himself, J. H. Austen, J. White, and F. Roberts, Halifax, Nova Scotia, Canada. Lubricant	376,961	Jan. 24	1795	.....	42	366
Leake, Frank, Philadelphia, Pa. Terry fabric	376,664	Jan. 17	1351	354	42	273
Leathers, Bowling S., New Orleans, La. Insect-poison distributer	376,665	Jan. 17	1352	355	42	273
Leavenworth, George C., *et al.* (See Hart, Alfred A., assignor.)						
Leber, Jacob G. (See Leber, Luther H., assignor.)						
Leber, Luther H., assignor to J. G. Leber, York, Pa. Electric lamp	376,323	Jan. 10	845	222	42	171
Lechner Manufacturing Company. (See Legg, Benjamin A., assignor.)						
Leckie, William J., Jr., Boston, Mass. Button	377,625	Feb. 7	409	104	42	573
Lee, Edward G., Brooklyn, Pa. Wagon-spring	375,941	Jan. 3	293	79	42	61
Lee, Emmitt. (See Rogers, Seth, assignor.)						
Lee, Frederick. (See Deeds, John B., assignor.)						
Lee, Gilbert M., Jefferson, Kans. Refrigerator	378,254	Feb. 21	1377	361	42	780
Lee, J. Ellwood, Conshohocken, Pa. Manufacture of sheet-metal splints	376,666	Jan. 17	1353	355	42	273
Lee, James H. (See Gibson, Walter L., assignor.)						
Lee, James P., Ilion, N. Y., assignor to C. M. Dally, Montclair, N. J. Cartridge for fire-arms	378,255	Feb. 21	1378	361	42	780
Lee, Tobias A., Sidney, Ohio. Buckle	380,209	Mar. 27	2002	535	42	1374
Lee, Thomas, Cincinnati, Ohio. Strainer of water under pressure	376,324	Jan. 10	846	223	42	171
Lee, Thomas, Cincinnati, Ohio. Peanut-roaster	378,256	Feb. 21	1379	361	42	780
Leech, William A., and G. W. Fogle. New Comerstown, Ohio. Nut-lock	380,123	Mar. 27	1891	503	42	1351
Legg, Benjamin A., assignor to J. A. Jeffrey, Columbus, Ohio. Drive-chain	376,325	Jan. 10	848	223	42	171
Legg, Benjamin A., assignor, by mesne assignments, to himself and W. D. Park, Columbus, Ohio. Drive-chain. (Reissue)	10,904	Feb. 21	1610	433	42	825
Legg, Benjamin A., assignor to Lechner Manufacturing Company, Columbus, Ohio. Chain for conveyers	378,139	Feb. 21	1201	313	42	747
Legg, Benjamin A., assignor to Lechner Manufacturing Company, Columbus, Ohio. Drive-chain	378,590	Feb. 28	1877	496	42	887
Leggett, Clinton H., New York, N. Y. Insect-powder distributer	376,600	Jan. 17	1236	325	42	252
Lehmann, Carl F. W. (See Birge, Shamp, and Lehmann.)						
Lehmer, James D. (See Harris, Bradner L., assignor.)						
Leidigh, Samuel. (See Helnig and Leidigh.)						
Leighton, James T., New Haven, Conn. Harrow and clod-crusher	378,011	Feb. 14	1008	263	42	703
Leighton, James T., New Haven, Conn. Harrow and clod-crusher	378,012	Feb. 14	1010	263	42	704
Leinbach, Felix W., *et al.* (See Lorenz and Honiss, assignors.)						
Leineweber, Hermann, South Chicago, Ill. Magazine fire-arm	379,794	Mar. 20	1369	364, 365	42	1242
Leininger, Frederick, assignor to C. D. Shepard, New York, N. Y. Step for spindles	377,902	Feb. 14	850	217	42	672
Leininger, Frederic, assignor to C. D. Shepard, New York, N. Y. Belt-tightener	379,116	Mar. 6	374	106	42	1046
Leiter, Josef, Vienna, Austria-Hungary. Laryngoscope	376,601	Jan. 17	1238	325	42	253
Leman, Frank, Elgin, Ill. Pinion-cutting machine	377,945	Feb. 14	919	237, 238	42	687
Lemen, Jacob F., Bedington, W. Va. Fence	379,279	Mar. 13	601	165	42	1085
Lemp, Hermann, Hartford, assignor to Schuyler Electric Company, Middletown, Conn. Armature for dynamo-electric machines	376,326	Jan. 10	850	223	42	171
Lenhart, Philip F., Brooklyn, N. Y. Sewer-valve	378,600	Feb. 28	1878	496	42	887
Lennox, Walter C. (See Van Horn, William, assignor.)						
Lentz, August, assignor to Stettiner Chamotte Fabrik Actien-Gesellschaft, formerly Didier, Prussia, Germany. Device for charging retorts	376,531	Jan. 17	1142	299	42	234
Leonard, Charles L., Grafton, Mass. Polishing compound for the soles of shoes	378,325	Feb. 21	1480	387	42	799
Leonard, Harry A., and G. Kettlewell, assignors of one-third to R. S. Culbreth, Baltimore, Md. Mechanism for timing horses	376,602	Jan. 17	1240	326	42	253
Leonard, Harry A., and G. Kettlewell, assignors of one-third to R. S. Culbreth, Baltimore, Md. Stop-watch	379,963	Mar. 27	1650	439, 440	42	1305
Leonori, Charles L. (See Adams and Seymour, assignors.)						
Leopold, Charles F., assignor to American Manufacturing Company, Philadelphia, Pa. Saw-clamp	377,946	Feb. 14	920	238	42	687

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Lerch, Solomon W., assignor to himself, E. J. Landor, and W. P. Hall, Canton, Ohio. Manufacture of bridge-bars	380,210	Mar. 27	2003	536	42	1374
Lerch, William M., Baltimore, Md. Harness-saddle	375,942	Jan. 3	291	79	42	61
Lerch, William M., Baltimore, Md. Harness-saddle tree	375,943	Jan. 3	291	79	42	61
Leschorn, Alexander J., Phœnixville, Pa. Instrument for trigonometrical computations	378,257	Feb. 21	1380	302	42	780
Leslie, Edward, Orangeville, Ontario, Canada. Ice and snow-plow for railway-tracks	380,042	Mar. 27	1770	474	42	1327
Leslie, William F., Nashville, Ark. Combined plow and planter	379,897	Mar. 20	1555	409	42	1276
Lestelle, Pascal. (See Dietz, Christoph F., assignor.)						
Letchworth, Josiah, Buffalo, N. Y. Snap-hook	380,124	Mar. 27	1892	504	42	1352
Leutz, William. (See Sheridon, William, assignor.)						
Levasseur, John E., Monticello, Iowa, assignor to G. W. Simpson, Somerville, Mass. Butter-can	380,211	Mar. 27	2004	536	42	1375
Levy, Charles S., New York, N. Y. Curling-comb	379,650	Mar. 20	1156	306	42	1199
Levy, Jacob. (See Kramer and Levy.)						
Levy, Max, Newport, R. I. Holder for yard-sticks	377,526	Feb. 7	271	68	42	547
Lewellen, Andrew M., Rosendale, Mo. Coffin-depositor	377,834	Feb. 14	758	193	42	654
Lewis, Albert C., Brooklyn, N. Y. Apparatus for mingling and combining gases	378,326	Feb. 21	1481	387	42	799
Lewis, Annie, Galveston, Tex. Clasp	380,125	Mar. 27	1892	504	42	1352
Lewis, Evan, and F. Armstrong, Kingston, Pa. Car-axle box	379,651	Mar. 20	1157	306	42	1199
Lewis, Hiram E., Gold Hill, Nev. Candlestick	379,171	Mar. 6	437	123	42	1049
Lewis, Russell H., assignor to F. Richardson, Providence, R. I. Guide for heel plates	379,898	Mar. 20	1557	410	42	1277
Lewis, Thomas. (See Carter, John, assignor.)						
Lewis, Truman C., Delaware, Ohio. Railway-signal	378,451	Feb. 28	1670	438	42	844
Lewis, William H., Brooklyn, assignor to E. & H. T. Anthony & Company, New York, N. Y. Photographic apparatus	379,964	Mar. 27	1633	440 / 441	42	1305
Lichtentag, Isaac, New Orleans, La. Composition for the manufacture of artificial stone or cement	377,036	Jan. 31	1062	.....	42	393
Lieb, Charles A., New York, N. Y. Automatic grain-scale	377,433	Feb. 7	130	29, 30	42	519
Lietze, Ernst. (See Barth and Lietze.)						
Light, George W., Gallatin, Mo. Hay-rack	375,824	Jan. 3	133	39	42	31
Lightham, Joseph, assignor of one-half to W. P. Boger, Lebanon, Pa. Derrick	376,017	Jan. 3	436	116	42	87
Lillie, S. Morris, Philadelphia, Pa. Vacuum apparatus for evaporating liquids	378,843	Feb. 28	2213	598	42	956
Lindahl, Daniel, Chesterton, Ind. Weight-motor	379,116	Mar. 13	660	178	42	1096
Lindemann, Albert J. and C., Milwaukee, Wis. Sheet-metal pipe	378,694	Feb. 28	2017	533	42	913
Lindemann, Charles. (See Lindemann, Albert J. and C.)						
Lindemann, Ernest C., Baltimore, Md. Underground conduit for electric wires	376,893	Jan. 24	1705	445	42	348
Linden, Peter, assignor of one-half to D. Peters, Troy, N. Y. Boot-heel	380,292	Mar. 27	2110	564	42	1396
Lindenthal, Gustav, Pittsburg, Pa. Squeezer	378,695	Feb. 28	2018	533	42	913
Lindenthal, Gustav, Pittsburg, Pa. Cable for suspension-bridges	378,696	Feb. 28	2019	537	42	914
Lindenthal, Gustav, Pittsburg, Pa. Suspender-connection for bridge-cables	378,697	Feb. 28	2020	534	42	914
Linder, George, and C. Farner, Milwaukee, Wis. Box-fastener	376,805	Jan. 24	1582	414	42	325
Linderman, Albert T., Whitehall, Mich. Box	378,601	Feb. 28	1879	497	42	887
Linderman, Albert T., Whitehall, Mich. Packing-box	379,652	Mar. 20	1158	306	42	1200
Linderman, Albert T., assignor to E. A. Linderman, Whitehall, Mich. Lumber trimming and assorting machine	378,796	Feb. 28	2148	568	42	938
Linderman, Ella A. (See Linderman, Albert T., assignor.)						
Lindgren, August, assignor to Moline Plow Company, Moline, Ill. Sulky-plow	376,532	Jan. 17	1143	299 / 300	42	233
Lindgren, August, assignor to Moline Plow Company, Moline, Ill. Draft-equalizer	376,533	Jan. 17	1144	300	42	234
Lindgren Extinguisher Company. (See Smith, Weir, Carson, and Weir, assignors.)						
Lindner, Ernst, assignor of one-half to E. P. Gleason Manufacturing Company, New York, N. Y. Attachment for turning-lathes	377,079	Jan. 31	1968	517	42	406
Lindner, Ernst, assignor of one-half to E. P. Gleason Manufacturing Company, New York, N. Y. Turning-lathe	377,080	Jan. 31	1969	517	42	406
Lindstrom, John, Rockford, Ill. Shoe	379,172	Mar. 6	438	124	42	1049
Link, William D., Cincinnati, Ohio, assignor of one-fourth to B. F. McMillan and G. W. Robinson, Stockton, Ala. Log-canting device	379,403	Mar. 13	780	210	42	1119
Linscott, John J., *et al.* (See Beedy, Seth E., assignor.)						
Linton, Charles B., Brooklyn, N. Y., assignor to Unexcelled Fire-Works Company, New York, N. Y. Machine for charging fire-works	376,604	Jan. 3	386	102	42	78
Linville, Jacob H., Philadelphia, Pa. Printing-telegraph	377,761	Feb. 14	922	161 / 162 / 163	42	626
Lion, Michel L., London, and F. Cutlan, Castle Hill, Wellingborough, assignors to Ab-Intra Boot Making Process Company, (limited,) London, England. Manufacture of boots or shoes	376,411	Jan. 10	963	251	42	193
Lipphard, John F., Washington, D. C., assignor of one-half to R. Copp, New York, N. Y. Hoop for trundling	378,327	Feb. 21	1482	387	42	799
Lippincott, John W., Westminster, Ohio. Ear-muff	379,965	Mar. 27	1655	441	42	1305
Lippy, David, Mansfield, Ohio. Cash-carrier	379,583	Mar. 20	1061	283	42	1181
Lipsett, James T., *et al.* (See Goettel, John, assignor.)						
Lissberger, Milton L., assignor to New York Smelting and Refining Company, New York, N. Y. Sash-weight	379,247	Mar. 13	662	179	42	1096
List, George A. (See List and Kosakoff, assignors.)						
List, Victor, and J. Kosakoff, assignors of one-third to G. A. List, Moscow, Russia. Petroleum-motor	378,328	Feb. 21	1483	387 / 388	42	800
Litchard, George F., Paw Paw, Mich. Vehicle-tongue support	376,667	Jan. 17	1354	355	42	273
Litchfield, Homer, assignor of one-half to E. H. Beer, North Adams, Mass. Let-off mechanism for looms	379,173	Mar. 6	439	124	42	1050
Littell, Hardin H. (See Littell, Harvey M., assignor.) (Reissue.)						
Littell, Harvey M., St. Paul, Minn. Track-scraper for railways	376,668	Jan. 17	1355	356	42	273
Littell, Harvey M., St. Paul, Minn., assignor of one-half to H. H. Littell, Louisville, Ky. Track-scraper for railways. (Reissue)	10,895	Jan. 24	1654	439	42	377
Little, Horace B. (See Swaim, John M., assignor.)						
Littlefield, Richmond H., Somerville, Mass. Car-brake	376,660	Jan. 17	1344	353	42	271
Livingston, George, and A. A. Spenny, Oskaloosa, Iowa. Lubricating carriage for life-machines	379,795	Mar. 20	1375	365	42	1244
Lloyd, E. Starr. (See Sagendorph, Frank E., assignor.)						
Lloyd, Harlan P. (See Sagendorph, Longley L., assignor.)						
Lloyd, Harlan P. (See Sagendorph and Keene, assignors.)						
Lloyd, Marshall B., Cavalier, assignor of one-fourth to J. Conmee, Walsh County, Dak. Ter. Weighing-scale	378,698	Feb. 28	2021	534	42	914
Loads, Herbert W., Norwich, county of Norwich, England. Horse-collar	376,669	Jan. 17	1357	356	42	274
Lobdell, Alonzo, Racine, Wis. Manufacture of round reins, &c	379,796	Mar. 20	1376	365	42	1244
Lobdell, George G., Wilmington, Del. Car-wheel	378,844	Feb. 28	2248	598	42	957

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Locke, Edward C., New York, N. Y., assignor, by mesne assignments, to G. T. Briggs, Cambridge, Mass. Type-writing machine	376,715	Jan. 17	1428	375	42	287
Locke, Joseph R., Amesbury, Mass. Vehicle-spring	376,442	Jan. 17	1016	267	42	210
Locke, Milo W., Wilmington, Del. Hoisting and conveying machine	377,947	Feb. 14	922	238 / 239	42	687
Locke, Sylvanus D., Hoosick Falls, N. Y. Car-coupling	376,387	Jan. 10	929	243	42	186
Locke, Sylvanus D., Hoosick Falls, N. Y. Drive-chain	377,811	Feb. 14	727	184	42	648
Locke, Sylvanus D., Hoosick Falls, N. Y. Car-coupling	378,013	Feb. 14	1012	264	42	704
Locke, Warren E. (See Prescott and Locke.)						
Lockwood, William Y., assignor of one-half to G. S. Parsons, Waterbury, Conn. Device for returning signals in district-telegraph systems	379,404	Mar. 13	781	211	42	1120
Loeb, William, and J. Haak, Dubois, Pa. Suspender-buckle	377,627	Feb. 7	415	105	42	574
Löffelhardt, Wilhelm F., Hamburg, Germany. Alarm apparatus	376,989	Jan. 24	1631	482	42	372
Loffer, Solomon, Maitland, Mo. Hog-trap	376,388	Jan. 10	931	244	42	187
Loftie, Henry, Syracuse, N. Y. Window and picture hook	378,891	Mar. 6	49	14	42	976
Loftus, Edward C., Oakland, Cal. Ore-feeder	378,371	Feb. 21	1543	403	42	812
Logan, John, Waltham, Mass. Making watch-springs	377,489	Feb. 7	212	51	42	536
Logan, Pleasant D., *et al.* (See Wise, Andrew J., assignor.)						
Logan, William H. (See Shelnutt, Alfred D., assignor.)						
Logue, William S., Baltimore, Md. Telegraph-instrument	377,110	Jan. 31	2020	529	42	415
Lohman, Louis, Jacksonville, Fla. Saw	378,208	Feb. 21	1287	340	42	765
Lombard, Robert T., Racine, Wis. Horse-collar fastening	376,894	Jan. 24	1705	446	42	348
Long, Henry C. (See Craig, Lewis B., assignor.)						
Long, John E., Brooklyn, N. Y. Hand fire-extinguisher	379,708	Mar. 20	1244	331	42	1218
Long, Martin W. (See Gilbert and Long.)						
Lonitz, Ernst M. H., Neu Haldensleben, Prussia, Germany. Box for packing money	379,966	Mar. 27	1656	441	42	1306
Looker, William C., and J. Newlove, Union Mills, Ind. Plumb-level	377,396	Feb. 7	44	13	42	504
Loomis, Benjamin T., Baltimore, Md. Locomotive smoke-conduit	378,014	Feb. 14	1013	264	42	705
Loomis, Charles F., assignor to Western Indurated Fibre Company, Winona, Minn. Fastening for pail-covers	379,797	Mar. 20	1377	366	42	1244
Loomis Electric Manufacturing Company. (See Loomis, Osborn P., assignor.)						
Loomis, Osborn P., Somerville, Mass., assignor to Loomis Electric Manufacturing Company, New York, N. Y. Magneto-electric machine	378,892	Mar. 6	50	14	42	976
Lorch, Ernest P., New York, N. Y. Tide-water elevator or system of utilizing the rise and fall of the tides	378,452	Feb. 28	1671	438	42	844
Lore, George W., Dexter, assignor of four-fifths to G. S. and C. T. Sill, L. W. Briggs, and J. S. Spencer, Detroit, Mich. Can-seaming machine	380,212	Mar. 27	2005	536 / 537	42	1375
Loree, Manfred, Miamisburg, Ohio. Truck	376,389	Jan. 10	932	244	42	187
Loree, Manfred U. (See Clark and Loree.)						
Lorenz, Rudolf. (See Richter and Lorenz.)						
Lorenz, Wilhelm, Carlsruhe, Baden, Germany. Extractor mechanism for breech-loading guns	378,169	Feb. 21	1240	326	42	755
Lorenz, William A., Hartford, Conn. Paper bag	380,263	Mar. 27	2073	554 / 555	42	1389
Lorenz, William A., Hartford, Conn. Paper bag	380,264	Mar. 27	2074	555	42	1389
Lorenz, William A., and W. H. Honiss, Hartford, Conn., assignors to F. W. Leinbach and C. H. Wolle, Bethlehem, Pa. Paper-bag machine	377,314	Jan. 31	2305	670	42	471
Lothammer, François J., Paris, France. Carburetor	376,248	Jan. 10	744	197	42	152
Lothrop, Llewellyn D., Gloucester, Mass. Combined roller and bell for fishing-boats	375,882	Jan. 3	208	57	42	44
Lott, Arthur, Riddleville, Tex. Fence	377,682	Feb. 7	503	129	42	590
Lond, Herbert. (See Fletcher, Edward, assignor.)						
Lougee, Amanda M. (See Morrison, Caroline W., assignor.)						
Louis, Michael A. W., and C. T. Murray, Washington, D. C. Ventilator	376,827	Jan. 24	1619	422	42	330
Lourie, Herbert M., Keokuk, Iowa. Hoop-lug	375,825	Jan. 3	134	39	42	31
Love, Samuel Y., Meadville, Pa. Creaming-can	375,823	Jan. 3	208	57	42	44
Lovejoy, Henry L., assignor to Lamson Cash Railway Company, Lowell, Mass. Switch for store-service apparatus	378,511	Feb. 28	1749	462	42	861
Lovejoy, Loyal. (See Van Doren and Lovejoy.)						
Lovett, Antoine D., and E. S. Goff, Geneva, N. Y. Hay-tedder. (Reissue)	10,916	Mar. 27	2133	570	42	1401
Low, A. Augustus, Brooklyn, assignor to Alden Type Machine Company, New York, N. Y. Type-line support	375,757	Jan. 3	51	15	42	14
Low, A. Augustus, Brooklyn, assignor to Alden Type Machine Company, New York, N. Y. Type-line support	375,758	Jan. 3	52	16	42	14
Low, James E., Chicago, Ill. Artificial tooth-crown	376,603	Jan. 17	1341	326	42	253
Lowe, Frank W., Boston, Mass. Picture-frame	377,567	Feb. 7	324	83	42	557
Lowe, James A., North Branch, N. J. Making lead traps	376,203	Jan. 10	683	180	42	140
Lowell, Charles A., assignor to W. H. Newton, Cortland, N. Y. Wagon-brake	375,884	Jan. 3	209	57	42	45
Lowmiller, Alpheus, Jewett, Ohio. Musical instrument	376,443	Jan. 17	1017	267 / 268	42	210
Lowry, George A. (See Canning and Lowry.)						
Lozon, Charles, Detroit, Mich. Throttle-valve	378,140	Feb. 21	1202	313	42	748
Lubin, Leon T. J., Boston, Mass. Shoulder-brace	380,265	Mar. 27	2076	555	42	1390
Luc Adjustable Spring Hinge Company. (See Colvin and Wolfley, assignors.)						
Lucas, Henry V., assignor to L. Lucas, St. Paul, Minn. Freight-car	378,602	Feb. 28	1880	497	42	887
Lucas, Louise. (See Lucas, Henry V., assignor.)						
Luce, Charles J., Niantic, Conn. Coin-holder	377,568	Feb. 7	325	83	42	557
Lucé, William B., Brookline, Mass. Reversible car-seat	377,205	Jan. 31	2145	566 / 567	42	442
Ludlow, Washington I., Cleveland, Ohio. Electric railway	377,397	Feb. 7	45	13	42	504
Ludwig, Mary, Bucyrus, Ohio. Chopping-knife	379,584	Mar. 20	1063	283	42	1181
Lugrin, Henry A., Brooklyn, N. Y. Stop-watch	379,075	Mar. 6	311	91	42	1024
Luitink & Sons Manufacturing Company, William. (See Soulen, Henry, assignor.)						
Lukens, Alexander B. (See Bowman, William H., assignor.)						
Lukens, Jawood, *et al.* (See Murphy, Albert L., assignor.)						
Lukins, Richard, Randolph, Nebr. Car-pushing machine	376,670	Jan. 17	1358	356	42	274
Lumb, William, trustee. (See Foote, Theodore M., assignor.)						
Lundberg, Gustave. (See Cardon and Lundberg.)						
Lundington, Frank J., Waterbury, Conn. Machine for making button-backs	376,895	Jan. 24	1706	446 / 447 / 448	42	348
Lyall, James, New York, N. Y. Twine	377,263	Jan. 31	2231	.....	42	457
Lycett, Frederick W., Hartford, assignor to Stanley Rule and Level Company, New Britain, Conn. Marking-gage	379,117	Mar. 6	373	106	42	1036
Lyman, Austin E., Warren, Ohio. Grubber	378,965	Mar. 6	146	42	42	995

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Lyman, Charles H., Ansonia, Conn., assignor to Ansonia Brass & Copper Company and W. A. Hull, New York, N. Y. Lamp	376,716	Jan. 17	1430	376	42	288
Lyman, Frank H., and A. J. Johnson, assignors to themselves and H. N. Anable, Chicago, Ill. Hoodwink	377,835	Feb. 14	760	194	42	654
Lynch, Edward P., Davenport, Iowa. Combined corn and cotton planter	376,534	Jan. 17	1144	300 / 301	42	234
Lynch, Edward P., Davenport, Iowa. Wheel-plow	376,535	Jan. 17	1147	301	42	234
Lynch, Edward P., Davenport, Iowa. Wheel-plow	376,536	Jan. 17	1149	301	42	235
Lynch, Edward P., Davenport, Iowa. Cultivator	378,144	Feb. 21	1203	313	42	748
Lynch, James H. (See Brainard, Julius D., assignor.)						
Lynch, Matthew W., assignor to D. Curtis, Madison, Wis. Horse-boot	376,038	Jan. 3	437	116	42	88
Lynn, Elmore P. (See Lynn, Mirabeau N. and E. P.)						
Lynn Engine Company. (See Lynn, Mirabeau N., assignor.)						
Lynn Engine Company. (See Lynn, Mirabeau N. and E. P., assignors.)						
Lynn, Mirabeau N., Rising Sun, Ind., assignor to Lynn Engine Company, Dayton, Ohio. Steam-boiler	377,460	Feb. 7	168	39, 40	42	527
Lynn, Mirabeau N. and E. P., Rising Sun, Ind., assignors to Lynn Engine Company, Dayton, Ohio. Pitman-connection	377,461	Feb. 7	170	40	42	528
Lynn, Mirabeau N. and E. P., Rising Sun, Ind., assignors to Lynn Engine Company, Dayton, Ohio. Steam-engine	377,462	Feb. 7	172	40, 41	42	528
Lynn, Mirabeau N. and E. P., Rising Sun, Ind., assignors to Lynn Engine Company, Dayton, Ohio. Steam-engine	377,463	Feb. 7	174	41	42	529
Lyon, Henry A., Sioux City, Iowa, assignor of one-half to J. W. Boyd, Chardon, Nebr. Cartridge implement	378,400	Feb. 21	1579	415	42	819
Lyon, Robert B., assignor of one-half to T. S. Glnister, Sonoma, Cal. Gate	378,056	Feb. 14	1065	279	42	715
Lyth, Georg W., Stockholm, Sweden. Signal-lantern	380,293	Mar. 27	2111	565	42	1396
Lyle, Henry B. (See Milliken and Lytle.)						
Maas, Louis, Neuilly-sur-Seine, France. Leaf-turner	377,569	Feb. 7	326	83, 84	42	558
Mabie, George W. (See Carter, James D., assignor.)						
MacKubin, Charles C., Baltimore, Md. Attachment for windows	380,126	Mar. 27	1893	504	42	1352
Macbeth, Norman, Bolton, county of Lancaster, England. Apparatus for recording the variations of speed in motive-power engines	377,111	Jan. 31	2020	529	42	416
Mace, Harvey A., assignor of one-half to J. H. Poulter, Mount Zion, Ill. Flood-fence	377,037	Jan. 31	1992	500	42	391
Mace, Theodore, New York, N. Y. Manufacture of incandescent electric lights	378,258	Feb. 21	1381	.....	42	780
Macgowan, Robert W., Brooklyn, N. Y. Envelope for newspapers and other merchandise	376,249	Jan. 10	745	197 / 198	42	152
Macke, J. Henry, Jr., Baltimore, Md. Folding music-stand	377,629	Feb. 7	418	106	42	555
Mackenzie, William. (See Beale, Alfred G., assignor.)						
Mackey, David S., San Francisco, Cal. Cable-railway grip	377,597	Feb. 7	272	69	42	547
Macnee, Daniel, No. 2 Westminster Chambers, Victoria Street, county of Middlesex, England. Car-axle box	379,873	Mar. 20	1519	400	42	1270
Macphail, James, and F. M. Needham, Rockford, Ill. Cultivator	376,747	Jan. 24	1476	389	42	306
Macphail, James, and F. M. Needham, Rockford, Ill. Hook for singletrees	376,806	Jan. 24	1584	415	42	326
Mactear, James, Westminster, county of Middlesex, England. Incandescent gas-burner	378,699	Feb. 28	2023	534	42	914
Magee, Daniel W., New York, N. Y. Pipe-coupling	379,798	Mar. 20	1378	366	42	1244
Magneto Telegraph Company. (See Brown, Fred. H., assignor.)						
Mahaffa, John. (See Newbanks, Eli P., assignor.)						
Main, Alvin N., Pittsfield, Ill. Feed-trough	378,603	Feb. 28	1881	497	42	887
Main, Thomas, Jersey City, N. J. Furnace for steam-generators	375,967	Mar. 6	147	43	42	995
Mains, John F., Indianapolis, Ind. Corn and fodder compressor	379,967	Mar. 27	1657	442	42	1306
Mains, John F., assignor of one-half to W. N. Short, Indianapolis, Ind. Machine for agitating liquids	377,315	Jan. 31	2306	670	42	471
Maley, Henry, *et al.* (See Fee, William R., assignor.)						
Malin, Ulrik. (See Holley and Malin.)						
Mallinckrodt, John F., Denver, Colo. Tobacco-pipe	379,585	Mar. 20	1064	283	42	1182
Maltby, Philo, Cleveland, Ohio, assignor of one-half to L. G. Hine, Washington, D. C. Reversing-valve	378,604	Feb. 28	1882	498	42	888
Manahan, Thomas, New York, N. Y. Moth-proof bag	376,005	Jan. 3	388	103	42	78
Mandt, Targe G., Stoughton, Wis. Running-gear for vehicles	380,213	Mar. 27	2008	537	42	1375
Manee, Charles P., and E. J. Palmer, Kalamazoo, Mich. Vehicle-spring	379,234	Mar. 13	540	150	42	1074
Manker, Cary A., Louisville, Nebr. Holder for kegs, barrels, &c	378,968	Mar. 6	149	43	42	995
Mann, Abram S., Rochester, N. Y. Lace-fastener	379,968	Mar. 27	1658	442	42	1306
Mann, Louis T., Chicago, Ill. Railway danger-signal	376,444	Jan. 17	1023	268	42	211
Mann, William B., Baltimore, Md. Dental engine	378,204	Feb. 21	1288	340 / 341	42	765
Mann, William D., assignor to Mann's Boudoir Car Company, New York, N. Y. Passenger-car	377,628	Feb. 7	416	106	42	554
Manning, Henry A., New York, N. Y. Culinary vessel	378,700	Feb. 28	2024	534	42	915
Manning, Thomas J., Grafton, Mass. Slate-pencil sharpener	378,329	Feb. 21	1486	388	42	800
Manning, William T., assignor of one-half to I. N. Kalbaugh, Pittsburg, Pa. Railway-switch lock	379,709	Mar. 20	1246	331 / 332	42	1218
Mann's Boudoir Car Company. (See Mann, William D., assignor.)						
Mansharger, Caleb, East Greenbush, N. Y. Mop attachment	378,605	Feb. 28	1885	499	42	888
Mansfield, Albert K., Chicago, Ill. Hand-car	376,601	Jan. 17	1244	326	42	254
Mansfield, Edward, Orono, Me. Making ferrules for cant-hooks	377,638	Jan. 31	1903	500	42	393
Mansfield, Henry H. (See Smith and Mansfield.)						
Mansfield, James W., Boston, Mass. Hollow mast	377,490	Feb. 7	213	51	42	536
Manson, George. (See Gleason, Patrick, assignor.)						
Manson, William, Colton, Cal. Welt-drilling machine	379,710	Mar. 20	1248	332	42	1218
Manton, Joseph, assignor of one-half to C. C. Newton, Montreal, Quebec, Canada. Sight for fire-arms	378,205	Feb. 21	1291	341	42	765
Manville, Charles B., Milwaukee, Wis. Boiler-covering	378,372	Feb. 21	1544	404	42	812
Manyett, William C., Warrenton, Va. Alarm-lock	380,043	Mar. 27	1771	474	42	1328
Marcilly, Alexandre M., Aîné, Paris, France. Plate-printing machine	379,235	Mar. 13	541	151 / 152	42	1074
Marcy, James W., Cincinnati, Ohio. Seat-corner fastening	378,606	Feb. 28	1886	499	42	889
Markgraf, Franz, New York, N. Y. Pressure-regulating valve	376,101	Jan. 10	597	141	42	113
Markham, George D., *et al.* (See West, James, assignor.)						
Märklin, Adolf, assignor to Hoerder Bergwerks und Hüttenverein, Hoerde, Prussia, Germany. Finishing-rolls for the manufacture of iron railway-sleepers	377,948	Feb. 14	924	239	42	688
Marks, Jacob O., Urbana, Ill. Grain-meter	379,799	Mar. 20	1379	366	42	1245
Marks, Nicholas M., Gainesville, Tex. Combined railway-rail chair and tie	376,250	Jan. 10	746	198	42	153
Marsden, Mark W., Connellsville, assignor to J. W. Campbell and A. Matchett, Pittsburg, Pa. Adhesive paste	376,445	Jan. 17	1025	.....	42	212

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Marsh, Edward W., Hartford, Conn. Safety-plate for steam-pipes	375,885	Jan. 3	211	58	42	45
Marsh, Henry A., *et al.*, executors. (See Knowles, Lucius J.)						
Marsh, William E. H. (See Walter and Marsh.)						
Marshall, Calvin, St. Joseph, Mo. Plumb-level	377,434	Feb. 7	135	28	42	520
Marshall, Charles A., Lowell, assignor of one-half to W. H. Bartlett, New Bedford, Mass. Seal-lock	375,886	Jan. 3	211	58	42	45
Marshall, Charles A., Johnstown, Pa. Iron or steel ingot	377,316	Jan. 31	2307	670	42	472
Marshall, Charles A., Johnstown, Pa. Tube-blank and making the same	377,317	Jan. 31	2309	670	42	472
Marshall, Charles A., Johnstown, Pa. Seamless tube and making the same	377,318	Jan. 31	2311	671	42	472
Marshall, Charles G., Langdon, assignor, by mesne assignments, to himself and J. W. Bascome, Alstead, N. H. Water or liquid heater	378,512	Feb. 28	1750	462	42	862
Marshall, John S., Imlay City, Mich. Governor for steam-engines	378,170	Feb. 21	1241	357	42	755
Marshall, John S., Imlay City, Mich. Guide for circular saws	378,513	Feb. 28	1751	463	42	862
Marshall, Moses J. S., assignor of three-fourths to L. B. Hiscock, W. F. Miller, and A. B. Eastman, Boston, Mass. Trunk or chest	377,039	Jan. 31	1904	501	42	393
Marshall, Samuel S., Slatington, Pa. Slate grinding or dressing machine	376,537	Jan. 17	1150	302	42	235
Marshutz, Leon C. (See Cantrell, Thomas G., assignor.)						
Martin, Andrew J., assignor to H. M. Kirkpatrick, Macedon, N. Y. Grain-drill	376,538	Jan. 17	1151	302	42	235
Martin, Andrew J., Muncy, Pa., and H. J. Breese, Macedon, N. Y. Stock-loading device	376,896	Jan. 24	1710	448	42	340
Martin, J. Albert, assignor of two-thirds to H. C. Sharp and J. N. Teeple, Charlestown, Ind. Game-board	379,174	Mar. 6	440	124	42	1050
Martin, John F., assignor of one-half to H. Keeler and T. P. Bailey, Chicago, Ill. Compound for coating iron, wood, canvas, &c	377,081	Jan. 31	1971	.....	42	407
Martin, John W. (See Henderson and Martin.)						
Martin, Robert W. (See Shee, Parke E., assignor.)						
Martin, Thomas H., London, England. Sewing-machine	379,175	Mar. 6	441	124	42	1050
Martin, Wellington J., Mount Pleasant, assignor to Iowa Road Grader and Ditcher Manufacturing Company, Burlington, Iowa. Road scraper and grader	377,082	Jan. 31	1973	518	42	407
Martin, William S., *et al.* (See Appleby, Joseph, assignor.)						
Martinson, Ole, Meridian, Wis. Measuring-faucet	377,165	Jan. 31	2086	549	42	431
Martzloff, John, Easton, Pa. Spool-holding spindle for winding silk, &c	377,206	Jan. 31	2146	567	42	443
Maryland Electric Motor Manufacturing Company. (See Mason, Charles T., assignor.)						
Maryland Electric Motor Manufacturing Company of Baltimore City. (See Mason, Charles T., Sr., assignor.)						
Mason, Charles T., Sumter, S. C., assignor to Maryland Electric Motor Manufacturing Company, Baltimore, Md. Electric railway	378,259	Feb. 21	1363	362	42	781
Mason, Charles T., Sr., Sumter, S. C., assignor to Maryland Electric Motor Manufacturing Company of Baltimore City. Electric motor	377,319	Jan. 31	2313	671	42	472
Mason Cotton Harvester Company. (See Richards, Francis H., assignor.)						
Mason, Frank H., assignor of one-half to G. V. Kennedy, Sausalito, Cal. Wagon-spring brace	375,896	Jan. 3	135	39	42	31
Mason, Frank S., Cambridge, Mass. Feed-regulator for oil-stoves	376,446	Jan. 17	1026	269	42	212
Mason, Frank S., Cambridge, Mass. Indicator for oil-tanks	378,330	Feb. 21	1486	388	42	800
Mason, Frank S., Cambridge, Mass. Indicator for oil-tanks	378,701	Feb. 28	2025	535	42	915
Mason, George W., Sharon, Pa. Hydraulic motor						
Mason, Horatio H. (See Emerson, Richard, assignor.)						
Mason, James A., E. F. Mulkey, and G. W. Houston, Savoy, Tex. Power-fan	376,327	Jan. 10	851	224	42	172
Mason Machine Works. (See Meats, John T., assignor.)						
Mason Regulator Company. (See Mason, William B., assignor.)						
Mason, William B., assignor to Mason Regulator Company, Boston, Mass. Fluid-pressure regulator	379,586	Mar. 20	1065	284	42	1182
Massey, Thomas C. (See Shorrock, James L., assignor.)						
Masson, Engène, Philadelphia, Pa. Reeling-frame	378,033	Mar. 6	104	30	42	987
Masson, Joseph. (See Dulière, Henry, assignor.)						
Masten, James, Boswell, Ohio. Boom-grip	375,759	Jan. 3	53	16	42	14
Matchett, Alexander, *et al.* (See Marsden, Mark W., assignor.)						
Mather, Richard H., Windsor, Conn. Armature for dynamo-electric machines	377,683	Feb. 7	504	129	42	590
Mather, Richard H., Windsor, Conn. Electro-mechanical movement	377,684	Feb. 7	505	129 / 130	42	590
Mather, Richard H., Windsor, Conn. Throttle and governor valve	379,280	Mar. 13	602	165 / 166	42	1086
Mathes, William G. (See Gibbs, James E., assignor.)						
Mathews, James M., assignor of one-half to R. P. Mathews, Minneapolis, Minn. Hinge-mortiser	379,076	Mar. 6	313	91	42	1024
Mathews, Rufus P. (See Mathews, James M., assignor.)						
Mathias, Henry R., Athens, Ohio. Slideway	376,671	Jan. 17	1358	357	42	274
Mattern, Jacob A., Colfax, Iowa. Loom	379,481	Mar. 13	900	243	42	1143
Matthews, Ambrose T., assignor to Worcester Ferrule Company, Worcester, Mass. Pipe-thimble	379,482	Mar. 13	902	244	42	1143
Matthews, Ambrose T., assignor to Worcester Ferrule Company, Worcester, Mass. Thimble for pipes	379,483	Mar. 13	903	244	42	1144
Matthews, George, assignor to J. Matthews, New York, N. Y. Ornamenting metal	376,605	Jan. 17	1245	326	42	254
Matthews, James H. (See Rees and Matthews.)						
Matthews, John. (See Matthews, George, assignor.)						
Mattison, Lucius H. (See Rockwell, Dwight, assignor.)						
Maurer, Lucas, Boston, Mass. Cake-cutter	379,019	Mar. 6	234	67	42	1010
Mauser, Alfred, Sing Sing, and G. G. Richmond, Peekskill, N. Y. Core-machine	376,155	Jan. 10	613	165	42	128
Maw, John, Dundas, Ontario, Canada. Positive shuttle-motion for looms	377,207	Jan. 31	2147	567	42	443
Maxim, Hiram S., London, England. Manufacture of guns	376,990	Jan. 24	1632	.....	42	372
Maxson, Ralph H., Richburg, N. Y. Stand for displaying goods	378,206	Feb. 21	1292	341	42	766
Mayer, Stronse & Co. (See Bray, Morris P., assignor.)						
Mayfield, Guilford E., *et al.* (See Fee, William R., assignor.)						
Mayhew, Francis H., *et al.* (See Wilkins, George H., assignor.)						
Maynard, John, *et al.* (See Taylor, William H., assignor.)						
Maynard, William T., Forsyth, Ga. Double-set plow	380,214	Mar. 27	2010	538	42	1376
McAdams, John, Brooklyn, N. Y. Paging-machine	378,607	Feb. 28	1886	499 / 500	42	889
McAndrews Sanitary Company. (See McAndrews, William H., assignor.)						
McAndrews, William H., assignor of one-half to A. M. Gerstle, Youngstown, Ohio. Device for converting motion	379,405	Mar. 13	782	211	42	1120
McAndrews, William H., assignor to McAndrews Sanitary Company, Youngstown, Ohio. Sewer-ventilator	379,899	Mar. 20	1558	410	42	1277
McArthur, John, Wallace, Kans. Plow	379,653	Mar. 20	1160	306	42	1200
McArthur, Robert C., assignor of one-half to W. D. Fitch, Hamilton, Ontario, Canada. Device for operating throttle-valves	379,318	Mar. 13	663	179	42	1096
McCaffrey, John, Lawrence, Mass. Mold for casting loose pulleys	377,859	Feb. 14	786	201	42	659

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
McCahey, John, assignor to New England Butt Company, Providence, R. I. Braid	377,320	Jan. 31	2314	671	42	473
McCall, Hugh W. (See Morton, Samuel S., assignor.)						
McCann, Benjamin F., Ewing, Ind. Well	377,903	Feb. 14	852	217	42	672
McCann, Horace F. (See Farra, Lorenzo D., assignor.)						
McCann, Michael, Johnstown, Pa. Railway-switch	376,006	Jan. 3	389	103	42	78
McCarter, Joseph, *et al.* (See Drodzewski, Julius R., assignor.)						
McCarthey, Michael, Middletown, Conn. Floating anchor and oiler	378,171	Feb. 21	1243	337	42	755
McCartney, James H., Frankfort, N. Y. Label-case	377,764	Feb. 14	653	164	42	635
McCarty, Robert A., assignor to Rapid Service Store Railway Company, Detroit, Mich. Track for store-service railways	378,514	Feb. 28	1753	463	42	862
McCastline, Minnie B., Syracuse, N. Y. Carpet-fastener	379,236	Mar. 13	545	152	42	1075
McCausland, William I., Temple, Tex. Washing-machine	377,765	Feb. 14	654	164	42	635
McCleary, William W., assignor of one-half to G. N. Riley, Braddock, Pa. Mail-crane	376,781	Jan. 24	1539	405	42	317
McClelland, John A., Louisville, Ky. Dental pencil	375,927	Jan. 3	136	40	42	92
McClung, James S., Pueblo, Colo. Cleaner for blackboard-erasers	378,608	Feb. 28	1888	500	42	869
McConnell, John. (See Thurber and McConnell.)						
McConnell, Robert Y. (See Huehn, Conrad, assignor.)						
McCord, James R., Jackson, Ga. Machine for distributing fertilizers	377,166	Jan. 31	2088	549	42	431
McCormack, M. J. (See Kelly, John A., assignor.)						
McCormick, Charles W., Emporia, Kans. Store-service apparatus	376,897	Jan. 24	1711	{448 {449	42	349
McCormick, Cyrus H., Jr., and H. E. Pridmore, assignors to McCormick Harvesting Machine Company, Chicago, Ill. Grain-binder	378,401	Feb. 21	1581	{415 {416	42	829
McCormick Harvesting Machine Company. (See Erpelding, Lambert, assignor.)						
McCormick Harvesting Machine Company. (See McCormick and Pridmore, assignors.)						
McCormick, Moses, Calverton, Md. Sulky	377,045	Jan. 31	1911	502	42	395
McCormick, Thomas J., Whiting, Kans. Listing-cultivator	375,944	Jan. 3	295	79, 80	42	61
McCoy, Hamilton, Indianapolis, Ind. Draft-equalizer	377,812	Feb. 14	728	184	42	648
McCray, John B., and D. E. Shade, Corbin, Kans. Car-coupling	378,702	Feb. 28	2026	535	42	915
McCreery, Robert S. (See Kesselring, Friedrich, assignor.)						
McCulla, Thomas. (See Bagley, Frank A., assignor.)						
McCulloch, George H., assignor of one-half to J. McCulloch, Lena, Ill. Grinding-mill	379,900	Mar. 20	1559	410	42	1277
McCulloch, John. (See McCulloch, George H., assignor.)						
McCulloch, John A. (See Shaw and McCulloch.)						
McDermott, Patrick, assignor to Milburn Gin and Machine Company, Memphis, Tenn. Key for pulleys	378,260	Feb. 21	1385	362	42	781
McDermott, William J., Grubbville, Mo. Vehicle-shaft	376,751	Jan. 24	1482	{390 {391	42	307
McDevitt, Bernard, Chicago, Ill. Draw-gear for street-cars	379,587	Mar. 20	1068	284	42	1182
McDevitt, Walter J., assignor of one-half to H. A. Truitt, Philadelphia, Pa. Circular-knitting machine	376,328	Jan. 10	852	224	42	172
McDonald, Frank, Boise City, Idaho Ter. Shackle	375,945	Jan. 3	296	80	42	62
McDonald, Gilbert, Denver, Colo. Machine for punching and shearing metal	377,264	Jan. 31	2232	590	42	457
McDonald, James S., Chicago, Ill. Manifold order-book	377,360	Jan. 31	2381	688	42	484
McDonald, Joseph R., McKenzie, Tenn. Harness attachment	377,112	Jan. 31	2023	530	42	416
McDonald, Michael C., Boston, Mass. Neckscarf	377,570	Feb. 7	327	84	42	556
McDonald, William H., Washington, D. C. Filtering-faucet	379,801	Mar. 20	1584	368	42	1216
McEachern, Gilbert. (See Campbell, Angus, assignor.)						
McEvilla, Henry, Muskegon, Mich. Saw-mill	377,630	Feb. 7	419	{106 {107	42	575
McEwen, Addison C., Jersey City, N. J. Dumping-wagon	376,902	Jan. 24	1718	{450 {451	42	351
McFarland, Samuel G., New York, N. Y. Flushing apparatus for water-closets	378,100	Feb. 21	1131	296	42	736
McFarland, Thomas W., Chicago, Ill. Sad-iron heater	376,782	Jan. 24	1540	405	42	318
McGaffey, Ives W., assignor to J. H. Brown, Chicago, Ill. Hose-reel	380,127	Mar. 27	1894	504	42	1372
McGann, Thomas F. (See Casselman and McGann.)						
McGeary, James, Boston, Mass. Inhaler	377,571	Feb. 7	327	84	42	558
McGee, James. (See Edwards, Charles S., assignor.)						
McGee, Patrick F., Oregon City, Oreg. Car-heater	380,041	Mar. 27	1773	474	42	1338
McGehee, Abner J., Jackson, Tenn. Car-coupling	376,482	Jan. 17	1071	280	42	230
McGinnis, William B., Nevada, Mo. Pump	379,237	Mar. 13	545	152	42	1075
McGonigle, Ira M., Shanesville, Ohio. Wagon-lock	376,329	Jan. 10	854	224	42	172
McGowan, Irving. (See Hopkins, William W., assignor.)						
McGrath, John, New York, N. Y. Head-rest for coffins	378,207	Feb. 21	1293	342	42	766
McGuire, Alexander. (See Teed, Ralph L., assignor.)						
McGuire, Elwood W. (See Dille and McGuire.)						
McGukin, James K., Newark, N. J. Shutter-worker	376,539	Jan. 17	1152	302	42	245
McGwin, James, Fulton, Mo. Gage-cock	377,331	Jan. 31	2345	672	42	479
McHarg, Don P., Rome, N. Y. Toasting or broiling implement	377,398	Feb. 7	46	13	42	504
McHarg, John B., Rome, N. Y. Toy cartridge-exploder	377,399	Feb. 7	47	13	42	505
McHugh, Aloysius, Dubois, Pa. Splice-bar	379,176	Mar. 6	442	125	42	1050
McIndoe, George F. and J. W., Boston, Mass. Impressing letters and marks on cigars	379,020	Mar. 6	235	67	42	1010
McIndoe, James W. (See McIndoe, George F. and J. W.)						
McIntyre, Frank, assignor to Eagle Pencil Company, New York, N. Y. Combination instrument	378,264	Feb. 21	1385	363	42	781
McIntyre, James, Boston, Mass. Clapboard-machine	377,887	Jan. 3	292	58	42	45
McIntyre, John W., Philadelphia, Pa. Vise	378,893	Mar. 6	52	15	42	976
McIntyre, Neil, Brooklyn, N. Y. Feed for stone-saws	376,251	Jan. 10	748	{198 {199	42	153
McIntyre, Neil, assignor of one-half to W. Bradley & Sons, Brooklyn, N. Y. Sash-fastener	376,252	Jan. 10	749	199	42	154
McKee, George H., Cambridge, Mass. Comb-cleaning apparatus	379,588	Mar. 20	1070	284	42	1182
McKee, H. H., *et al.* (See McKee, Leander H., assignor.)						
McKee, John C., *et al.* (See Goodrich, Joseph, assignor.)						
McKee, Leander H., Frankfort, assignor of one-half to H. H. McKee, Rome, and W. A. Paige, Coeymans, N. Y. Locomotive head-light	379,539	Mar. 13	984	265	42	1159
McKee, Thomas W., Towanda, Pa. Car-coupling	376,412	Jan. 10	964	252	42	193
McKenzie, George W., Van Port, Pa. Automatic valve or shut-off for gas-mains	375,760	Jan. 3	55	16	42	14
McKenzie, Joseph C. (See Knapp, McKenzie, and Humphrey.)						
McKim, David F., Cable City, Mont. Ter. Automatic regulator for the receivers of air-compressors	375,761	Jan. 3	56	16	42	15
McKinstry, William H., *et al.* (See Dennis, Andrew J., assignor.)						
McKitrick, David L., Baton Rouge, La. Lubricating composition	378,331	Feb. 21	1487	.....	42	800
McLachlan, John C., assignor to A. Hoenigsberger, Chicago, Ill. Ditching-machine	380,128	Mar. 27	1895	{505 {506	42	1352

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
McLaughlin, Charles A. (See McLaughlin, Henry and C. A.)						
McLaughlin, Edward, Philadelphia, Pa. Trousers-stretcher	379,118	Mar. 6	376	106	42	1036
McLaughlin, Henry and C. A., Lebanon, Pa. Boiler for steam-heating	377,322	Jan. 31	2316	672	42	473
McLaughlin, James F., Philadelphia, Pa. Automatic electric spacing mechanism for type-writers	379,406	Mar. 13	785	212	42	1120
McLaughlin, James F., Philadelphia, Pa. Electro-mechanical movement	379,802	Mar. 20	1386	368	42	1246
McLean, Joseph, Rockville, Conn. Pocket-rule	378,894	Mar. 6	53	15	42	976
McLean, William, Goulburn, New South Wales. Ore-pulverizer	377,167	Jan. 31	2089	550	42	432
McMackin, William E. (See Crow and McMackin.)						
McMahon, Francis, Somerville, Mass. Steam-engine governor	377,168	Jan. 31	2090	{550 {551	42	432
McMahon, Patrick J., New Orleans, La. Motor-car	379,119	Mar. 6	377	107	42	1036
McMaster, John W., Sparta, Ill. Wagon-rack	378,703	Feb. 28	2027	{535 {536	42	915
McMillan, Benjamin F., *et al.* (See Link, William D., assignor.)						
McMillen, William J., *et al.* (See Appleby, Joseph, assignor.)						
McMullin, Joseph, assignor of one-half to G. W. Julian, Casey, Iowa. Car-coupling	377,631	Feb. 7	421	107	42	575
McNairy, Brandon. (See Wilmouth and McNairy.)						
McNaughton, James, and A. Bardsley, Brainerd, Minn. Oil-cup	377,435	Feb. 7	136	30	42	520
McNeal, Luther C., Rochester, N. Y. Fruit-knife	379,238	Mar. 13	546	153	42	1075
McNeill, Hobart W., Oskaloosa, Iowa. Cable-railway car	379,407	Mar. 13	787	212	42	1121
McNitt, Archibald E., Hartford, Mich. Windmill	377,491	Feb. 7	214	51	42	536
McNutt, Lindsay B., Ashtabula, Ohio, assignor to Muncie Skewer Company, Muncie, Ind. Machine for pointing skewers	378,934	Mar. 6	106	30, 31	42	987
McPherson, John W., Moline, Ill. Brake-lever	379,969	Mar. 27	1658	442	42	1306
McQueen, Fletcher J., assignor of one-half to J. N. Strobhar, Ocala, Fla. Car-coupling	379,177	Mar. 6	443	125	42	1050
McQuide, James, Lansingburg, N. Y. Paint-brush	376,540	Jan. 17	1153	303	42	236
McQuillan, Arthur. (See Holt and McQuillan.)						
McTyeire, William C., Hatchechubbee, Ala. Manure-distributer	379,654	Mar. 20	1161	307	42	1200
Mead, Charles L., New York, N. Y., and J. A. Trant, New Britain, Conn. Bench-plane	378,704	Feb. 28	2029	536	42	915
Mead, Edwin D., Shartsville, N. Y. Hay or grain elevator	377,492	Feb. 7	215	52	42	536
Mead Regenerative Gas Burner Company. (See Mead, William S., assignor.) (Reissue.)						
Mead, William S., Philadelphia, Pa., assignor to Mead Regenerative Gas Burner Company, New York, N. Y. Regenerative gas-burner. (Reissue)	10,899	Feb. 7	570	147	42	603
Meats, John T., assignor to Mason Machine Works, Taunton, Mass. Loom for weaving pockets, &c	379,484	Mar. 13	904	244	42	1141
Medden, Edwin, assignor to Silsby Manufacturing Company, Seneca Falls, N. Y. Heater for steam fire-engines	376,330	Jan. 10	866	225	42	173
Medrick, Henry D., Port Jervis, N. Y. Water-cock	376,253	Jan. 10	750	199	42	154
Meehan, David C., Columbus, Ohio. Display-rack for tiles	379,589	Mar. 20	1071	285	42	1183
Meehan, Michael, Boston, Mass. Manufacturing conduits and machine therefor	376,748	Jan. 24	1479	{389 {390	42	306
Meek, Adam W., assignor of one-half to D. E. Meek, Hudson, Ind. Sliding gate	376,717	Jan. 17	1431	376	42	238
Meek, Donald E. (See Meek, Adam W., assignor.)						
Megill, Edward L., Brooklyn, N. Y. Gage-pin for printing-presses	377,949	Feb. 14	924	239	42	688
Megill, Edward L., Brooklyn, N. Y. Gage-pin for printing-presses	377,950	Feb. 14	925	239	42	688
Megill, Edward L., Brooklyn, N. Y. Gage-pin for printing-presses	377,951	Feb. 14	926	240	42	688
Mehren, Jacob F. (See Barrett and Mehren.)						
Meissel, Wilhelm, Bremerhaven, Germany. Rocket	379,970	Mar. 27	1660	{442 {443	42	1306
Meister, Charles, assignor to F. J. Anspech, Philadelphia, Pa. Tremolo for cornets	377,493	Feb. 7	219	53	42	537
Melbourne, William A., Swanwick, Ill. Telegraph key and instrument	378,332	Feb. 21	1488	389	42	800
Mellor, Benjamin F., *et al.* (See Adamson, James H., assignor.)						
Mellor, James F., *et al.* (See Adamson, James H., assignor.)						
Melloy, James B., Philadelphia, Pa. Body wire and bundle for dish-pans	377,632	Feb. 7	422	107	42	575
Melone, Thomas L., Chillicothe, Ohio. Ruffling attachment for sewing-machines	378,705	Feb. 28	2030	536	42	916
Melone, Thomas L., Chillicothe, Ohio. Hemstitching attachment for sewing-machines	378,706	Feb. 28	2032	537	42	916
Melton, Isham, Mount Holly, Ark. Desk	380,045	Mar. 27	1774	474	42	1338
Mendelson, Sollo, Los Angeles, Cal. Pickpocket-proof pocket-receptacle	379,319	Mar. 13	664	179	42	1097
Menges, Philipp, New York, N. Y. Gas-burner	377,494	Feb. 7	221	53	42	538
Menzenhauer, Friedrich, Jersey City, N. J. Tremolo attachment for cornets	377,860	Feb. 14	787	201	42	650
Mercer, Andrew, Brooklyn, N. Y. Sectional steam-boiler	377,265	Jan. 31	2233	590	42	457
Mergenthaler, Ottmar, Baltimore, Md. Mechanism for electrically controlling stamping-machines, &c	376,541	Jan. 17	1154	{303 {304 {572 {573 {574 {575 {576 {568 {569 {570 {571 {572	42	236
Mergenthaler, Ottmar, Baltimore, Md. Machine for producing type-bars	378,798	Feb. 28	2157	{574	42	940
Mergenthaler, Ottmar, Baltimore, Md., assignor to National Typographic Company, of West Virginia. Machine for forming type-bars	378,797	Feb. 28	2149	{570 {571 {572	42	938
Merideth, John R., Aurora, Ill. Wire-stretcher	377,169	Jan. 31	2091	551	42	432
Merrick, Timothy, *et al.* (See Blackburn, Frederick, assignor.)						
Merrill, Arthur H., assignor of one-half to A. C. Dunham, Hartford, Conn. Turn-up bed	380,046	Mar. 27	1775	475	42	1338
Merrill, George. (See Smith, Thomas J., assignor.)						
Merwin, Frank A., assignor to A. H. and G. B. Noble, New Milford, Conn. Button-lathe	376,447	Jan. 17	1028	269	42	212
Mesick, Oliver E., Potter County, Dak. Ter. Hay and straw burner	377,208	Jan. 31	2148	568	42	443
Mesner, Leonard J., Buffalo, N. Y. Fire-escape	377,766	Feb. 14	656	{164 {165	42	635
Meston, John J., and N. S. Dygert, Portland, Oreg. Binding books	379,874	Mar. 20	1520	400	42	1270
Metcalf, John G. F., *et al.* (See Waterman, Henry, assignor.)						
Mey, Fredrick H. C., Buffalo, N. Y. Drive-chain	377,572	Feb. 7	329	84	42	558
Meyer, Theodore H., Jr., *et al.* (See Boore, Lewis, assignor.)						
Meyer, William C., Boston, Mass. Parallel-ruler and section-liner	378,142	Feb. 21	1204	313	42	748
Michael, Edward. (See Campbell, Samuel R., assignor.)						
Michaud, Charles E., St. Michel d'Yamaska, Quebec, Canada. Car-coupling	379,803	Mar. 20	1387	368	42	1246
Middleton, James F. (See Bliss and Middleton.)						
Middleton, William A., *et al.* (See Boggs, Joseph O., assignor.)						
Miesner, Paul M., Alton, Ill. Blind-stop	379,120	Mar. 6	378	107	42	1037
Milburn Gin and Machine Company. (See McDermott, Patrick, assignor.)						
Miles, Dudley W., Glen Elder, Kans. Plastering-machine	378,453	Feb. 28	1673	439	42	845

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Miles, Gideon, St. Joseph, Mo. Whiffletree attachment	379,239	Mar. 13	547	153	42	1075
Miles, Leonard E., Utica, N. Y. Shoe-maker's last	379,590	Mar. 20	1071	285	42	1183
Miles, Nelson A. (See Mills, Anson, assignor.)						
Mill, Edward, assignor of one-third to W. H. Patterson, Cleveland, Ohio. Paper-testing machine	377,361	Jan. 31	2384	688 / 689	42	484
Millard, Augustus C., assignor to A. A. Allen, Condersport, Pa. Combined clothes-rack and ironing-board	376,039	Jan. 3	438	117	42	88
Millen, John M. (See Bennett and Millen.)						
Miller, Alexander, New York, N. Y. Discharging apparatus for closed evaporating-pans	375,946	Jan. 3	297	80	42	92
Miller, Allen T., Greenville, Ohio, assignor to G. F., W. N., and H. B. Kuhns. Tapping-machine	377,400	Feb. 7	49	14	42	505
Miller, Basil, West Lafayette, Ohio. Fence	375,928	Jan. 3	137	40	42	92
Miller & Company, Edward. (See Rhind, Frank, assignor.)						
Miller Company, William P. (See Austin, Robert A., assignor.)						
Miller, Emory E., Louisville, Ky. Combined skirt and bustle	377,401	Feb. 7	52	14	42	506
Miller, Fred L., Chicago, Ill. Index	379,320	Mar. 13	665	179	42	1097
Miller, Frederick S. (See Porteous and Miller.)						
Miller, George W., Watkins, N. Y. Combined ventilator and damper	377,633	Feb. 7	423	108	42	576
Miller, Henry A., Ogallala, Nebr. Horn-tip	379,077	Mar. 6	314	91	42	1027
Miller, Herman, New York, N. Y. Sheet-metal can	377,495	Feb. 7	222	53	42	538
Miller, John B. (See Dale, James, assignor.)						
Miller, John B., and J. Dale, Chicago, Ill.; said Miller assignor of one-half his right to said Dale. Bending electrotype-plates	378,707	Feb. 28	2033	537	42	916
Miller, John T., Chicago, Ill. Step-ladder	376,102	Jan. 10	528	141	42	113
Miller, Joseph, and F. R. Page, Olean, N. Y. Lamp-extinguishing apparatus	380,129	Mar. 27	1897	506	42	1353
Miller, Joseph P., Philadelphia, Pa. Reciprocating brick-machine	377,767	Feb. 14	658	165	42	636
Miller, Joseph P., Boston, Mass. Couchabed	378,708	Feb. 28	2035	537	42	916
Miller, Lawrence D., Jacksonville, Ala. Metallic fence-post	377,323	Jan. 31	2317	672	42	473
Miller, Lewis, and M. L. Wright, Mexico, N. Y. Thill-coupling	376,606	Jan. 17	1246	327	42	254
Miller, Lewis, J. Erskine, and M. L. Wright, Mexico, N. Y. Means for repairing vehicle-wheels	377,952	Feb. 14	926	240	42	688
Miller, Louis L. (See Perkins and Miller.)						
Miller, Marshall C., Ennis, Tex. Ant-trap	378,709	Feb. 28	2036	537	42	916
Miller, Marshall J., Memphis, Tenn. Device for multiplying speed of shafts	379,971	Mar. 27	1661	443	42	1307
Miller, Richard W., New Haven, Conn., assignor to New York and New Haven Automatic Sprinkler Company, New York, N. Y. Automatic fire-extinguisher	379,240	Mar. 13	548	153	42	1075
Miller, Riley E., *et al.* (See Shepherd, Lewis T., assignor.)						
Miller & Son, Charles. (See Ingalls, John C., assignor.)						
Miller, Thomas, Jersey City, N. J. Lamp-extinguisher for railway-cars	379,121	Mar. 6	379	107 / 108	42	1037
Miller, William, Grand Rapids, Mich. Hot-air furnace	378,101	Feb. 21	1132	296	42	736
Miller, William D., Springfield, Ohio. Combined tedder and rake	379,972	Mar. 27	1662	443 / 444	42	1307
Miller, William F., *et al.* (See Marshall, Moses J. S., assignor.)						
Miller, William H., New York, N. Y. Electric-arc lamp	376,007	Jan. 3	390	103 / 104	42	78
Millhauser, Benedict, Scranton, Pa. Apparatus for extinguishing fires in railway-cars	376,749	Jan. 24	1480	380	42	306
Milligan, Thomas P., South Orange, N. J. Preparing glue-stock	379,021	Mar. 6	236	.....	42	1010
Milligan, William T., Boston, Mass., assignor, by mesne assignments, to Ocean Steamship Berth Company, Portland, Me. Self-leveling ship's berth	376,542	Jan. 17	1158	304	42	236
Milliken, George F., Boston, Mass., and H. B. Lytle, Providence, R. I., assignors to Gamewell Auxiliary Fire Alarm Company, Boston, Mass. Electrical auxiliary signaling system	377,083	Jan. 31	1977	519	42	408
Mills, Anson, assignor of one-half to N. A. Miles, U. S. Army. Tubular metallic pole for telegraphic and other uses	377,953	Feb. 14	928	240	42	688
Mills, Frank P., Chicago, Ill. Hoisting apparatus	376,672	Jan. 17	1359	357 / 358	42	274
Mills, Frank W. (See Mills, Mortimer B. and F. W.)						
Mills, Guy C., assignor to F. H. Ayer, Nashua, N. H. Shuttle for looms	378,895	Mar. 6	57	15	42	977
Mills, Mortimer B. and F. W., Chicago, Ill. Car-brake	376,898	Jan. 24	1713	449	42	350
Mills, William O., Zionsville, Ind. Throat-protector for horses	378,373	Feb. 21	1545	404	42	813
Millsap, Thomas H. B., Harper, Kans. Thill-coupling	379,591	Mar. 20	1073	285	42	1183
Millspaugh, Andreas P., Darien, Conn. Bench-hook	376,331	Jan. 10	859	225	42	174
Millspaugh, William, assignor of one-half to W. S. Burling, Middletown, N. Y. Tool handle	376,413	Jan. 10	966	252	42	193
Minard, Joseph T., Highland, N. Y. Plow attachment	375,762	Jan. 3	57	17	42	15
Mingle, William J., Lancaster, Pa. Rotary fan	378,710	Feb. 28	2037	538	42	917
Minneapolis Harvester Works. (See Kennedy, Samuel V., assignor.)						
Minneapolis Harvester Works. (See Kennedy and Anderson, assignors.)						
Minneapolis Harvester Works. (See Strunk, Daniel, assignor.)						
Minnich, Simon B., Landisville, Pa. Centering device	380,130	Mar. 27	1898	506	42	1353
Mitchell, Benjamin L., Wilton, Wis. Tether	379,485	Mar. 13	908	245	42	1144
Mitchell, Benjamin L., Wilton, Wis. Device for tightening barb-wire	379,486	Mar. 13	909	245	42	1145
Mitchell, Daniel L., Taunton, Mass. Indicator-dial	376,103	Jan. 10	530	141	42	113
Mitchell, Frank S., Pocatello, Idaho Ter. Railway-switch-stand lock	379,122	Mar. 6	380	108	42	1037
Mitchell, Frederick, Brooklyn, N. Y. Inkstand	378,208	Feb. 21	1294	342	42	766
Mitchell, George F. (See Bisenbarrick and Mitchell.)						
Mitchell, Jonas L., Logan, Ohio. Landing-catch for mining-cages	377,402	Feb. 7	53	15	42	506
Mitchell, William J., Princeton, Ky. Plotter and protractor	376,382	Jan. 10	869	226	42	174
Mitchell, Willis M. (See Vladyka and Mitchell.)						
Mix, Frank W., New Britain, Conn. Friction-hinge	379,601	Mar. 20	1060	411	42	1277
Moats, Ortus E., Decatur, Ill. Road-grader	376,156	Jan. 10	614	165	42	128
Model Sewing Machine Company. (See Post, John W., assignor.)						
Moffitt, John W., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Artificial tooth	378,015	Feb. 14	1014	264	42	705
Moger, John J., Green Bay, Wis., assignor of one-half to P. B. Warner, Minneapolis, Minn. Hoop-dressing machine	378,454	Feb. 28	1675	439	42	845
Mohr, Gustav, Philadelphia, Pa. Apparatus for fitting up matrices	378,709	Feb. 28	2169	576	42	942
Mohr, Hermann, Mannheim, Baden, Germany. Apparatus for automatically counting and registering railway-trucks	379,800	Mar. 20	1382	367	42	1245
Moline Plow Company. (See Lindgren, August, assignor.)						
Momberg, Christian, Copenhagen, Denmark. Inlaid floor	377,685	Feb. 7	507	130	42	591
Mond, Ludwig, Northwich, county of Chester, England. Obtaining ammonia and hydrochloric acid	379,487	Mar. 13	910	245	42	1145

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Mond, Ludwig, Northwich, county of Chester, England. Obtaining ammonia and chlorine from ammonium chloride	379,488	Mar. 13	912	245	42	1145
Monnin, Alpheus C. (See Fillies and Monnin.)						
Monroe, Charles W., Cleveland, Ohio. Refrigerator	379,521	Mar. 13	961	259	42	1155
Moody, Charles D., *et al.* (See Stephens, Lawrance, assignor.)						
Mooney, John, Syracuse, N. Y. Screw-clamp	378,896	Mar. 6	54	15	42	977
Mooney, William C. (See Cameron, Donald, assignor.)						
Moore, Andrew R., Charlotte, Mich. Fire-escape	376,807	Jan. 24	1585	415	42	306
Moore, Charles H., Yonkers, N. Y. Bath-tub, sink, or wash-basin	379,973	Mar. 27	1664	441	42	1307
Moore, Clifton M., Revere, Mass. Blotting-pad	377,040	Jan. 31	1905	501	42	394
Moore, D. Sackett. (See Cooke, George K., assignor.)						
Moore, Daily S., assignor of two-thirds to A. and A. Price, Chicago, Ill. Machinery for laying railway-tracks	379,178	Mar. 6	444	125	42	1051
Moore, Edward G., Wilmington, Del. Air-pump governor	378,609	Feb. 28	1899	560	42	989
Moore, Edward J., Philadelphia, Pa. Sectional water-tube boiler	376,423	Jan. 17	1072	281	42	221
Moore, Henry C., Tama City, Iowa. Reversible road and ditching machine	377,041	Jan. 31	1906	501	42	394
Moore, Homer J., assignor to Bryant & Stratton Mechanical Appliance Company, Chicago, Ill. Machine for sealing and stamping envelopes	376,333	Jan. 10	862	226	42	174
Moore, Homer J., assignor to Bryant & Stratton Mechanical Appliance Company, Chicago, Ill. Envelope sealer and stamper	377,170	Jan. 31	2092	551	42	432
Moore, John F., Centralia, Wis. Spring for wagon-seats	376,718	Jan. 17	1433	376	42	288
Moore, Martin C. (See Springer, John, assignor.)						
Moore, Mary E., New York, N. Y. Ear-battery for the deaf	380,215	Mar. 27	2010	538	42	1376
Moore, Thomas B., Philadelphia, Pa. Railway tie and fastening	375,763	Jan. 3	57	17	42	15
Moore, William, Mooney, Ind. Saw-file-adjusting weight	377,526	Feb. 7	273	69	42	547
Moore, William E., Chillicothe, Ohio. Checkrein-hook	376,899	Jan. 24	1715	449	42	350
Moore, William H., Gardiner, Me. Machine for making excelsior	379,592	Mar. 20	1074	286	42	1183
Moore, William R., Unionville, Pa. Check-hook	376,334	Jan. 10	862	226	42	174
Moose, John W., Mount Pleasant, N. C. Base-ball bat	377,686	Feb. 7	509	130	42	591
Moran, John, Adair, Mo. Poultry-car	375,764	Jan. 3	58	17	42	15
Morden, William J. (See Young, William H., assignor.)						
Moreau, Eugène, assignor to R. B. Westbrook, Philadelphia, Pa. Mining-machine	376,719	Jan. 17	1433	377 / 378	42	288
Morell, James F., assignor of one-half to J. E. Roberts, Camden, N. J. Repairing vehicle-axles	376,900	Jan. 24	1716	450	42	350
Morgan, Benjamin B., Ann Arbor, Mich. Car-coupling	376,335	Jan. 10	863	226	42	174
Morgan, Charles H., Buffalo, N. Y. Gear-wheel	379,022	Mar. 6	238	67	42	1011
Morgan, Charles H., Worcester, Mass. Rolling-mill plant	379,974	Mar. 27	1666	444	42	1308
Morgan, Charles H., and K. J. Sunstrom, Worcester, Mass.; said Sunstrom assignor to said Morgan. Rolling-mill plant	379,902	Mar. 20	1561	411 / 412 / 444 / 445	42	1277 / 1308
Morgan, Doctor F., Akron, Ohio. Sectional steam-boiler	379,975	Mar. 27	1667			
Morgan, John H. (See Runyon, Archibald S., assignor.)						
Morgan, Joseph B. (See Morgan, Robert D. and J. B.)						
Morgan, Robert D. and J. B., Macon City, Mo. Fifth-wheel	376,779	Jan. 24	1537	404	42	317
Morhous, Frederick P., assignor to H. W. Putnam, Bennington, Vt. Bottle-stopper	377,042	Jan. 31	1908	502	42	394
Morhous, Frederick P., assignor to H. W. Putnam, Bennington, Vt. Bottle-stopper	377,043	Jan. 31	1908	502	42	395
Morhous, Frederick P., assignor to H. W. Putnam, Bennington, Vt. Bottle-stopper	378,800	Feb. 28	2170	577	42	942
Morley, Charles, *et al.* (See Biggin, Mary, assignor.)						
Morley, Howard, *et al.* (See Biggin, Mary, assignor.)						
Morley, Joseph D. (See Lamb and Morley.)						
Morley, Joseph D. (See Scott, Robert W., assignor.)						
Morley, Samuel H., *et al.* (See Biggin, Mary, assignor.)						
Morrill, Amos M., Ravanna, Mo. Piston	379,711	Mar. 20	1250	332	42	1219
Morrin, Thomas F., Jersey City, N. J. Steam-generator	377,324	Jan. 31	2318	672 / 673	42	473
Morris, David P., *et al.* (See Ammons, John B., assignor.)						
Morris, George W., Pittsburg, Pa. Car-axle-box lid	379,712	Mar. 20	1251	334	42	1219
Morris, John H. and T. D., Seward, Nebr. Lock-strike	380,266	Mar. 27	2077	556	42	1390
Morris, Joseph C., Azalia, Ind. Automatic grain-weighing machine	378,969	Mar. 6	150	44	42	996
Morris, Richard, Blackheath, county of Kent, England. Magazine fire-arm	376,901	Jan. 24	1716	450	42	350
Morris, Thomas D. (See Morris, John H. and T. D.)						
Morris, Wade B. (See Warfield, Dunbar G., assignor.)						
Morrison, Caroline W., assignor of one-half to A. M. Lougee, Boston, Mass. Water-proof garment	376,720	Jan. 17	1436	378	42	289
Morrison, Gilbert B., Kansas City, Mo. System of warming and ventilating buildings	377,496	Feb. 7	222	53, 54	42	538
Morrison, William, Toronto, Ontario, Canada. Hot-air furnace	376,390	Jan. 10	933	244 / 245	42	187
Morrissey, James, West Islip, N. Y. Bridle-bit	378,970	Mar. 6	152	44	42	996
Morrow, Henry W., Wilmington, Del. Fastening for traveling-bags or valises	378,016	Feb. 14	1015	265	42	705
Morse, Carrie, San Francisco, Cal. Adjustable crib-bedstead	378,455	Feb. 28	1676	439	42	845
Morse, Charles M. (See Weiss, Charles P., assignor.)						
Morse, David R., *et al.* (See Solano Reinaldo, assignor.)						
Morse, Orville M., assignor to Knickerbocker Company, Jackson, Mich. Dust-collector	377,719	Feb. 7	551	141	42	598
Morton, Charles E., and S. F. Brown, Madisonville, Ky. Cutter and cutter-bar for mowers and reapers	377,464	Feb. 7	177	42	42	529
Morton, Samuel S., Lower Chanceford, assignor of one-half to H. W. McCall, York, Pa. Shingle-sawing machine	376,204	Jan. 10	684	181 / 182	42	140
Moschowitz, Louis. (See Moschowitz, Schamn M., assignor.)						
Moschowitz, Schamn M., assignor to L. Moschowitz, New York, N. Y. Overcasting attachment for sewing-machines	380,047	Mar. 27	1776	475	42	1328
Moser, George H., assignor of one-half to C. R. Dake, Belleville, Ill. Watermelon-holder	379,903	Mar. 20	1564	412	42	1278
Mosea, Otto A., New York, N. Y., assignor to Westinghouse Electric Company, Pittsburg, Pa. Self-exciting alternate-current electric generator	378,456	Feb. 28	1677	440	42	845
Mosher, Benjamin F. (See Stewart, George W., assignor.)						
Mosher, George D., Birmingham, Conn. Snap-hook	376,040	Jan. 3	439	117	42	88
Moss, Edmund S., Chicago, Ill. Builder's scaffold	378,102	Feb. 21	1133	296 / 297	42	736
Mott, E. Hicks, *et al.* (See Gallup, Egbert H., assignor.)						
Mott Iron Works, J. L. (See Butler, Theodore, assignor.)						
Mott Iron Works, J. L. (See Demarest, John, assignor.)						
Mott, Walter L., *et al.* (See Gallup, Egbert H., assignor.)						
Moulton, Frank W., Washington, D. C. Calendar	376,391	Jan. 10	934	245	42	188
Mower, Jacob K. (See Normand, Joseph M., assignor.)						
Moxham, Arthur J., Johnstown, Pa. Rolls for rolling girder-rails	378,209	Feb. 21	1295	343 / 344	42	766

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Pages.
Moxham, Arthur J., Johnstown, Pa. Rolls for rolling girder-rails	378,210	Feb. 21	1296	343 344	42	766
Moxham, Arthur J., Johnstown, Pa. Rolls for rolling flangeless center-bearing rails	378,211	Feb. 21	1297	344	42	767
Moxley, John T., Owosso, Mich. Animal-trap	379,713	Mar. 20	1252	334	42	1219
Moyer, Aaron J., Springfield, Ohio. Machine for swaging together the parts of an iron picket fence	379,321	Mar. 13	666	180 181	42	1097
Moyer, Harvey A., Syracuse, N. Y. Two-wheeled vehicle	378,057	Feb. 14	1066	279	42	715
Moyer, Henry L., and G. W. Youtls, Shicksshinney, Pa. Roller-journal for car-axles	377,836	Feb. 14	761	194	42	654
Muckle, M. Richards, Jr., Philadelphia, Pa. Underground conduit for electrical conductors	378,801	Feb. 28	2171	577	42	942
Muckle, M. Richards, Jr., Philadelphia, Pa. Man-hole chamber for underground electrical conduits	378,802	Feb. 28	2173	578	42	943
Muckle, M. Richards, Jr., Philadelphia, Pa. Underground conduit	379,408	Mar. 13	789	212 213	42	1121
Mulholland, Richard, Dunkirk, N. Y. Vehicle gear-iron	375,765	Jan. 3	59	18	42	16
Mulkey, Elijah F. (See Mason, Mulkey, and Houston.)						
Muncie Skewer Company. (See McNutt, Lindsay B., assignor.)						
Mundy, Lebbeus, Morgan, Kans. Fender for horse-rakes	378,103	Feb. 21	1136	297	42	737
Munroe, Frederick W., Salem, Mass. Sole for boots or shoes	379,023	Mar. 6	239	67	42	1011
Munsey, Horace W., Chester, Pa. Attachment for bedsteads	379,409	Mar. 13	791	213	42	1122
Munson, Harvey S., New Haven, Conn. Knockdown box	377,813	Feb. 14	730	184	42	646
Muraine, Edward, Huron, Dak. Ter. Plow	376,543	Jan. 17	1160	305	42	237
Murdock, Adna C., Dedham, assignor of one-half to J. H. Beale, Boston, Mass. Shoe-lace fastener	376,041	Jan. 3	440	117	42	88
Murdock, Charles F., assignor of one-half to J. K. Webster, Detroit, Mich. Dynamometer	380,294	Mar. 27	2112	565	42	1336
Murdock, Fredrick A., Auburn, assignor to D. M. Osborne & Company, New York, N. Y. Grain-binder	378,845	Feb. 28	2249	598 599	42	957
Murdock, George J., New York, N. Y. Sad iron	379,804	Mar. 20	1388	369	42	1246
Murphy, Albert L., Philadelphia, Pa. Uniting pipe-sections	376,750	Jan. 24	1481	390	42	307
Murphy, Albert L., assignor of one-half to J. Lukens, Conshohocken, Pa., and J. Waldron, New Brunswick, N. J. Preparing tube-skelps for handling	376,780	Jan. 24	1538	405	42	317
Murphy, Daniel H., Hartford, Conn. Cuspidor	378,610	Feb. 28	1890	500	42	889
Murphy, Daniel H., Hartford, Conn. Tea or coffee service	380,048	Mar. 27	1781	476	42	1349
Murphy, Hugh A., Elk City, Kans. Harrow for listed crops	378,611	Feb. 28	1891	501	42	890
Murphy, Hugh J., assignor of one-half to H. Edwards, Lowell, Mass. Sash-fastener	378,515	Feb. 28	1753	463	42	873
Murphy, James A., Holyoke, Mass. Ash-sifter	379,322	Mar. 13	668	181	42	1098
Murphy, Michael W., Whitehall, N. Y. Pump-valve	378,846	Feb. 28	2250	599	42	957
Murphy, Thomas M. (See Holliday, Thomas, assignor.)						
Murphy, William H. (See Keating, Robert M., assignor.)						
Murray, Charles H., assignor to W. G. Armstrong, Mitchell & Co., (limited,) Newcastle-upon-Tyne, England. Hydraulic operating mechanism for breech-loading ordnance	377,904	Feb. 14	853	218 219	42	672
Murray, Charles H., assignor to W. G. Armstrong, Mitchell & Co., (limited,) Newcastle-upon-Tyne, England. Hydraulic operating mechanism for ordnance	377,905	Feb. 14	856	219 220	42	673
Murray, Charles T. (See Louis and Murray.)						
Murray, Daniel, Salem, Mass. Thill-coupling	377,861	Feb. 14	789	201	42	660
Murray, Daniel B., Youngstown, Ohio. Buggy-seat	375,888	Jan. 3	214	59	42	46
Murray, George H., Chicago, Ill. Fertilizing composition	377,084	Jan. 31	1982	.....	42	409
Murray, Peter, Jr., Newark, N. J. Rotary fan	377,573	Feb. 7	329	85	42	558
Murrell, Henry G., New York, N. Y. Overhead track	377,044	Jan. 31	1909	502	42	395
Mutersbaugh, Andrew R., Shepherd, Mich. Horseshoe-nail	378,935	Mar. 6	108	31	42	987
Mutimer, Frederick, assignor of one-half to Rockford Bolt Works, Rockford, Ill. Manufacturing bolts	376,673	Jan. 17	1364	358	42	275
Mutimer, Frederick, assignor of one-half to Rockford Bolt Works, Rockford, Ill. Bolt-heading die	378,936	Mar. 6	109	31	42	987
Mutual Electric Manufacturing Company *et al.* (See Knowles, Edward R., assignor.)						
Myers, Adolph, Birmingham, county of Warwick, England. Holder for pencils	378,897	Mar. 6	55	16	42	977
Myers, Harry A., Franklin, Pa. Vehicle-spring	376,104	Jan. 10	531	141	42	113
Myers, Julius F. (See Connett, Elma E., assignor.)						
Mylius, Adelbert, assignor to J. R. Geigy, Basle, Switzerland. Production of a new red azo color	376,392	Jan. 10	935	.....	42	188
Nachmaschinen Fabrik, vormals Frister & Rossmann, Actien-Gesellschaft. (See Reimann, George, assignor.)						
Nally, Thomas, assignor of one-half to J. Phelan, Lynn, Mass. Boot or shoe upper	378,898	Mar. 6	56	16, 17	42	977
Nash, Edgar P., assignor of one-fourth to R. W. C. Gregg, Batavia, Ohio. Street-cleaner	379,875	Mar. 20	1520	400	42	1270
Nash, Lewis H., Brooklyn, assignor to National Meter Company, New York, N. Y. Mechanical movement	378,847	Feb. 28	2251	599 600	42	957
Nash, Lewis H., Brooklyn, assignor to National Meter Company, New York, N. Y. Water-meter with nutating piston	379,805	Mar. 20	1390	369 370 371	42	1247
Nash, Lewis H., Brooklyn, assignor to National Meter Company, New York, N. Y. Connecting-rod	379,806	Mar. 20	1396	371	42	1247
Nason, Edward G. (See Cooley and Nason.)						
National Electric Company. (See O'Beirne, Edward J., assignor.)						
National Galvanic Battery Company. (See Walter, Hugo, assignor.)						
National Galvanic Battery Company. (See Walter and Marsh, assignors.)						
National Heating Company. (See Prall, William E., assignor.)						
National Hot Water Heater Company. (See Spence, Archibald, assignor.)						
National Meter Company. (See Nash, Lewis H., assignor.)						
National Progress Bunching Machine Company. (See Schutz, Adolph C., assignor.)						
National Self Heating Sad Iron Company. (See Heidel, Gustavus, assignor.)						
National Tube Works Company. (See Patterson, Peter, assignor.)						
National Typographic Company. (See Mergenthaler, Ottmar, assignor.)						
Nave, Wesley, South Haven, Kans. Attachment for cultivators	376,336	Jan. 10	864	227	42	175
Naylor, Michael, Cleveland, Ohio. Fire-escape	377,266	Jan. 31	2235	591	42	452
Nazmith, Robert, assignor to himself and W. H. Roberts, Pittsburg, Pa. Bloom-manipulator for rolling-mills	378,612	Feb. 28	1893	501	42	890
Neahr, Jacob E., Troy, N. Y. Bobbin-winder for sewing-machines	379,593	Mar. 20	1076	286	42	1183
Neal, Lewis M., North Middletown, Ky. Insulator	378,971	Mar. 6	153	44	42	988
Needham, Franklin M. (See Macphail and Needham.)						
Neely, William A., Lynn, Mass., assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Trimming mechanism for sewing-machines	379,410	Mar. 13	792	213	42	1122
Neely, William A., and N. G. Rowell, Lynn, Mass., assignors to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Trimming device for sewing-machines	379,714	Mar. 20	1253	334	42	1219
Neff, Elijah, Rochester, Ind., assignor of three-fourths to J. Gilchrist, Lima, Ohio, and A. W. Felts, Fulton County, Ind. Pump	378,402	Feb. 21	1585	416	42	820

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Pages.
Neff, H. E. (See Bryan, William N., assignor.)						
Neff, Lewis A., Middletown, Ind. Car-coupling	380,216	Mar. 27	2011	538	42	1376
Nell, August F., assignor of one-half to C. Osterberg, San Francisco, Cal. Car-brake	380,049	Mar. 27	1783	476	42	1330
Nellis, Aaron J., Pittsburg, Pa. Plow-standard	376,448	Jan. 17	1630	260	42	212
Nelson, Milford A., Windsor, Mo. Clothes-pounder	378,711	Feb. 28	2038	538	42	917
Nelson, William H., Washington, D. C. Saw-set	378,017	Feb. 14	1016	265	42	705
Nelson, William H., Washington, D. C. Stereotyping-machine	379,241	Mar. 13	550	153 154	42	1076
Nemacheck, Frank., Appleton, assignor of one-half to F. C. Peslin, Van Dyne, Wis. Frogless switch	377,529	Feb. 7	274	69	42	547
Nendel, William. (See Strub and Nendel.)						
Nerenheimer, Louis. (See Willigerod and Nerenheimer.)						
Nesbitt, Charles J. (See Davis, Edwin F., assignor.)						
Nesbitt, John D., New York, N. Y. Umbrella	375,947	Jan. 3	299	80	42	69
Neuburger, Albert, Kansas City, Mo. Safety attachment for elevators	378,899	Mar. 6	57	17	42	977
Neumann & Co., R. (See Schmidt, Ferdinand C., assignor.)						
New England Butt Company. (See McCahey, John, assignor.)						
New England Telephone and Telegraph Company. (See Farnham, Isaiah H., assignor.)						
New Haven Clock Company. (See Noyes, Joseph G., assignor.)						
New Haven Clock Company. (See Oehmen, Bartholomew, assignor.)						
New Jersey Manufacturing Company. (See Radcliffe, Charles, assignor.) (Reissue.)						
New Portable Electric Lamp and Power Syndicate Company. (See Urquhart and Nicholson, assignors.)						
New York and New Haven Automatic Sprinkler Company. (See Miller, Richard W., assignor.)						
New York Rubber Company. (See Judson, Thomas S., assignor.)						
New York Smelting and Refining Company. (See Lissberger, Milton L., assignor.)						
Newark Collar Button Company. (See Ladd, Daniel A., assignor.)						
Newbanks, Eli P., assignor of one-half to J. Mahaffa, Beloit, Kans. Feed-trough	379,489	Mar. 13	914	245	42	1146
Newby, Albert S., Kansas City, Mo. Upper and lower plate for fire-bowls	379,594	Mar. 20	1077	286	42	1183
Newby, Presley, Mill Shoals, Ill. Portable fence	376,337	Jan. 10	865	227	42	175
Newell, Augustus, Chicago, Ill. Roll for rolling-mills	379,595	Mar. 20	1078	287	42	1184
Newell, Henry H. (See Beecher, Edwin N., assignor.)						
Newell, James S. (See Brown, James O., assignor.)						
Newell, Olney. (See Keenan, Hiram T., assignor.)						
Newlove, John. (See Looker and Newlove.)						
Newman, Rudolph, San Francisco, Cal. Pistol-holder	375,929	Jan. 3	138	40	42	32
Newman & Sons, I. (See Hammond, M. Burdette, assignor.)						
Newman, Ulrich B., Greenfield, Ohio. Stove-hood	379,323	Mar. 13	669	181	42	1098
Newton, Charles C. (See Manton, Joseph, assignor.)						
Newton, Marvin, Girard, Pa. Washing-machine	377,530	Feb. 7	275	69	42	548
Newton, W. H. (See Lowell, Charles A., assignor.)						
Neymann, Percy. (See Hopkins, Coventry, Neymann, and Beardslee.)						
Nicely, Jacob, Enon Valley, Pa. Lock for fire-arms	377,531	Feb. 7	276	70	42	548
Nicholson, Benjamin. (See Urquhart and Nicholson.)						
Nicholson, Stephen, *et al.* (See Baville, Edmond P., assignor.)						
Nicholson, Thomas S., Mount Washington, Ohio. Railway-signal	377,634	Feb. 7	424	108	42	576
Niedringhaus, Alexander, *et al.* (See Hirsching, Henry, assignor.) (Reissue.)	379,139	Mar. 6	445	125	42	1051
Nighswonger, William, Peotone, Kans. Grain-drill	376,607	Jan. 17	1247	327	42	254
Nightingale, James, New York, N. Y. Quiller						
Nilson, Edgar C., *et al.* (See Bateman, Frank, assignor.)						
Nilson, Nils, Minneapolis, Minn. Grain-separator	376,157	Jan. 10	615	166	42	129
Noble, Alfred H., *et al.* (See Merwin, Frank A., assignor.)						
Noble, Andrew, Newcastle-upon-Tyne, England. Recoil-mounting for ordnance	377,326	Jan. 31	2322	673 674	42	474
Noble, Andrew, assignor to W. G. Armstrong, Mitchell & Co., (limited,) Newcastle-upon-Tyne, England. Breech-loading ordnance	377,906	Feb. 14	857	220	42	674
Noble, Andrew, assignor to W. G. Armstrong, Mitchell & Co., (limited,) Newcastle-upon-Tyne, England. Operating ordnance	377,954	Feb. 14	929	241	42	689
Noble, Andrew, assignor to W. G. Armstrong, Mitchell & Co., (limited,) Newcastle-upon-Tyne, England. Operating ordnance	378,172	Feb. 21	1244	327 328	42	756
Noble, Andrew, assignor to W. G. Armstrong, Mitchell & Co., (limited,) Newcastle-upon-Tyne, England. Gun-carriage	378,333	Feb. 21	1490	389 390	42	801
Noble, George B., *et al.* (See Merwin, Frank A., assignor.)						
Noble, Jay. (See Wilson and Noble.)						
Noble, Jay, St. Louis, Mo. Gas-engine	379,807	Mar. 20	1397	372	42	1248
Noble, John H., London, Ontario, Canada. Cigar-holder	378,104	Feb. 21	1137	297	42	737
Noble, William J., New York, N. Y. Coffin-fastener	377,325	Jan. 31	2321	673	42	474
Noble, William J., New York, N. Y. Coffin-fastener	379,715	Mar. 20	1254	334	42	1220
Norcross, Castelly O. (See Choate and Norcross.)						
Nordenfelt Guns and Ammunition Company. (See Nordenfelt, Thorsten, assignor.)						
Nordenfelt, Thoraten, Westminster, England. Shell-fuse	379,716	Mar. 20	1255	335	42	1220
Nordenfelt, Thorsten, assignor to Nordenfelt Guns and Ammunition Company, (limited,) Westminster, England. Breech-loading ordnance	379,024	Mar. 6	240	68	42	1011
Nordenfelt, Thorsten, assignor to Nordenfelt Guns and Ammunition Company, (limited,) Westminster, England. Shell-fuse	379,025	Mar. 6	242	68	42	1011
Norman, Andrew E., Ishpeming, Mich. Clothes-line holder	379,717	Mar. 20	1257	336	42	1220
Normand, Joseph M., assignor of one-half to J. K. Mower, Springfield, Ohio. Combined pump-piston and check-valve	378,848	Feb. 28	2254	600	42	958
North American Metalline Company. (See Douglas, James, Jr., assignor.)						
North Brothers Manufacturing Company. (See North, Ralph H., assignor.)						
North, Ralph H., assignor to North Brothers Manufacturing Company, Philadelphia, Pa. Sash-fastener	379,242	Mar. 13	552	154	42	1076
Northrop, Cecilia R. (See Wright, Parvin, assignor.)						
Northrup, James R., Rocky Brook, R. I. Carriage-spring	376,158	Jan. 10	617	166	42	129
Northwestern Tin-Ware Manufacturing Company. (See Bick, Otto G., assignor.)						
Norton, Edwin, *et al.* (See Norton and Hodgson, assignors.)						
Norton, Edwin, and J. G. Hodgson, Maywood, assignors to said E. Norton and O. W. Norton, Chicago, Ill. Double-seaming machine	378,143	Feb. 21	1206	314	42	748
Norton, Edwin, and J. G. Hodgson, Maywood, assignors to said Norton and O. W. Norton, Chicago, Ill. Can-cap-soldering machine	379,976	Mar. 27	1669	445	42	1308
Norton, Oliver W. (See Norton and Hodgson, assignors.)						
Norwalk Lock Company. (See Hoffman, Henry, Jr., assignor.)						
Nowell, Thomas, and G. H. Wilson, Vilonia, Ark. Mole-plow	376,674	Jan. 17	1366	358	42	275

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Noye Manufacturing Company, John T. (See Forward, Chauncy B., assignor.)						
Noyes & Co., Joseph P. (See Noyes, Joseph P., assignor.)						
Noyes, Joseph G., assignor to New Haven Clock Company, New York, N. Y. Telegraph-register	375,766	Jan. 3	61	18	42	16
Noyes, Joseph P., assignor to J. P. Noyes & Co., Binghamton, N. Y. Button	377,768	Feb. 14	660	165	42	630
Noyes, Joseph P., assignor to J. P. Noyes & Co., Binghamton, N. Y. Comb	377,769	Feb. 14	661	166	42	630
Noyes, Person. (See Kidder, Moses W., assignor.)						
Null, Hugh S., and J. Bussard, Huntington, Ind. Plow attachment	376,393	Jan. 10	935	245	42	188
Nunner, John L. (See Cowher and Nunner.)						
Nute, John C. (See Weston, Charles H., assignor.) (Reissue.)						
Nutt, Joseph, Danbury, Conn. Machine for bending hat-wires	376,608	Jan. 17	1951	328, 329	42	255
Nutt, Joseph, Danbury, Conn. Machine for applying clasps to hat-wires	379,876	Mar. 20	1522	401, 402	42	1271
Nutting, Calvin, Jr. (See Chapel, Deodatus, assignor.)						
Nye, Herman M., Corydon, Ind. Liquid-measuring faucet	376,254	Jan. 10	751	199	42	154
O'Beirne, Edward J., assignor to National Electric Company, Elgin, Ill. Armature for dynamo-electric machines	377,046	Jan. 31	1912	503	42	395
O Blenus, Anthony W., River Edge, N. J. Combined mop and brush	377,955	Feb. 14	931	242	42	689
O'Brien, Charles H. (See Robinson, O'Brien, and Breen.)						
O'Connor, John F. K., Yonkers, N. Y. Railway time-signal	377,497	Feb. 7	225	54	42	539
O'Herin, William, *et al.* (See Gilles, William, assignor.)						
O'Neill, John, assignor of one-third to C. Hvass, New York, N. Y. Car-starter	377,113	Jan. 31	2024	530	42	416
O'Sullivan, Dennis J., Detroit, Mich. Base-ball mask	379,655	Mar. 20	1162	307	42	1200
Oakes, Cummins C., Newport, Me. Adjustable form for setting and building carriage-tops	378,457	Feb. 28	1079	440	42	846
Oakley, Arthur, Brockton, Mass. Elevator-alarm	377,403	Feb. 7	54	15	42	500
Oaks, William A. C., Antrim, N. H. Apple-parer	379,324	Mar. 13	670	181, 182	42	1098
Obenchain, John T., Logansport, Ind. Turbine	379,718	Mar. 20	1258	336	42	1220
Oborn, Benjamin, Marion, assignor to J. A. Jeffrey, Columbus, Ohio. Drive-chain	378,173	Feb. 21	1246	328	42	756
Ocean Steamship Berth Company. (See Milligan, William T., assignor.)						
Ochiltree, Henry M. (See Burt, Ransom K., assignor.)						
Oehmen, Bartholomew, assignor to New Haven Clock Company, New York, N. Y. Combined telegraph key and sounder	377,802	Feb. 14	789	202	42	660
Odell, William H., Yonkers, N. Y. Steam-boiler	376,205	Jan. 10	687	182	42	141
Odell, William H., Yonkers, N. Y. Evaporating coil	380,050	Mar. 27	1784	476	42	1330
Oehler, K. (See Friedlaender and Priebs, assignors.)						
Oehrle, Albert C., Philadelphia, Pa., assignor to American Pneumatic Railway Company, of Tennessee. Elevated railway and conduit for electric wires, &c	379,904	Mar. 20	1505	412, 413	42	1278
Oehrle, Albert C., Philadelphia, Pa., assignor to American Pneumatic Railway Company, of Tennessee. Car-truck	379,905	Mar. 20	1506	413	42	1278
Oesterlein, Louise. (See Oesterlein, Wilhelm, assignor.)						
Oesterlein, Wilhelm, assignor to L. Oesterlein, Cincinnati, Ohio. Friction-clutch	378,803	Feb. 28	2175	579	42	943
Ohio Machine Company. (See Shurtleff and Haag, assignors.)						
Ohlsen, August C., Cincinnati, Ohio. Top-prop spring	379,281	Mar. 13	605	166	42	1086
Ohlson, Olof. (See Englund and Ohlson.)						
Oldham, Amelia C., *et al.* (See Carroll and Hill, assignors.)						
Olds, Wilson A. (See Smith and Olds.)						
Olin, William F., assignor to W. Deering, Chicago, Ill. Grain-binder	375,830	Jan. 3	139	40, 41	42	32
Olivan, Constantine. (See Aniello, John A., assignor.)						
Oliver, Ebenezer, New York, N. Y., assignor to W. S. Estey, Jersey City, N. J. Riddle or sieve	378,458	Feb. 28	1681	440	42	846
Oliver, George W., Chattanooga, Tenn. Adjustable pitch-board	378,069	Feb. 14	1084	285	42	719
Oliver, James B., Pittsburg, Pa. Fire-plow. (Reissue)	10,909	Mar. 13	1008	270	42	1164
Oliver, Paul A., Oliver's Mills, Pa. Gunpowder-mill roll	375,889	Jan. 3	215	59	42	40
Oliver, Paul A., Oliver's Mills, Pa. Gunpowder press and grainer	378,516	Feb. 28	1755	464	42	863
Oliver, William W. (See Svensson, Claes A., assignor.)						
Olmstead, Edward A., Buffalo, N. Y. Car-coupling	377,532	Feb. 7	277	70	42	548
Olmsted, Henry K., Victoria, Ill. Two-wheeled vehicle	376,902	Jan. 24	1796	472	42	360
Olsen, Andreas, Ephraim, Utah Ter. Construction of boats	378,613	Feb. 28	1895	501	42	890
Olson, Adolph, Butler, Mo. Plow	378,900	Mar. 6	58	17	42	978
Olson, John L., Warren, Minn. Ditching-plow	377,837	Feb. 14	762	194	42	654
Oneal, Marma D., Aledo, Tex. Cotton-stalk cutter	379,596	Mar. 20	1079	287	42	1184
Oneida Community. (See Kinsley, Myron H., assignor.)						
Opperman, Conrad, Louisville, Ky. Jar-fastener	375,890	Jan. 3	216	59	42	40
Orcutt, Edward L., Somerville, Mass. Rail-connection for electric railways	378,517	Feb. 28	1756	464	42	863
Orcutt, Edward L., Somerville, Mass. Relay-magnet	378,552	Feb. 28	1812	478	42	874
Orford Copper Company. (See Kiddie, Thomas, assignor.)						
Orford Copper Company *et al.* (See Thomson, John L., assignor.)						
Ormsbee, John M., *et al.* (See Drodzewski, Julius R., assignor.)						
Osborn, Alexander, Saybrook, Ohio. Instrument for measuring distances	376,338	Jan. 10	866	227	42	175
Osborn, Bryan H. (See Kinney, Charles A., assignor.)						
Osborn, Frederick G., Newark, N. J., assignor to E. Faber, New York, N. Y. Eraser-holder	377,209	Jan. 31	2149	568	42	443
Osborne & Company, D. M. (See Clapp, Mortimer A., assignor.)						
Osborne & Company, D. M. (See Murdock, Fredrick A., assignor.)						
Osborne, David M. (See Corey, Rufus H., assignor.)						
Osborne, Wilbur F., Ansonia, Conn. Bustle	376,394	Jan. 10	936	245	42	188
Osmun, Elisha M., *et al.* (See Chidester, David D., assignor.)						
Ost, Elias G., Shelburne, Mass. Die for straightening knives and forks	379,597	Mar. 20	1080	287, 288	42	1184
Osterberg, Charles. (See Nell, August F., assignor.)						
Otis, Charles G., Brooklyn, N. Y. Elevator	377,635	Feb. 7	426	108, 109	42	576
Otis, Charles G., Brooklyn, N. Y. Hydraulic motor	377,636	Feb. 7	429	109	42	576
Otis, William C., *et al.* (See Enos, John A., assignor.)						
Otterson, Thomas G., Woodbury, N. J. Preserve-jar fastening	377,687	Feb. 7	509	130	42	591
Otto, Fred H., Galva, Iowa. Truck	378,937	Mar. 6	110	32	42	988
Otto, Gustav, Jersey City, N. J. Plug for making electrical connections	379,598	Mar. 20	1083	288	42	1184
Outcalt, Miller. (See Diffy and Reling, assignors.)						
Owen, David A., Hinsdale, N. H. Bench-dog	376,206	Jan. 10	689	182	42	141
Owen, Frank A., and J. A. Harvey, Burlington, Vt. Machine for extracting oils from wool	379,808	Mar. 20	1399	372, 373	42	1249
Owen, Jesse N., Butler, Mo. Fuel composition	379,420	Mar. 13	115	.....	42	1146
Oyler, William R., Topeka, Kans. Post-extractor	376,903	Jan. 24	1719	451	42	351

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Paar, Charles L. (See Pentz, Levi, assignor.)						
Pacific Indicator Company. (See Irvin, Edwin S., assignor.)						
Packard, Joseph. (See Stevens and Packard.)						
Packer, George W., Rock Falls, Ill. Slat-and-wire-fence machine	377,325	Jan. 31	2323	674, 675	42	474
Paddock, Hamlin, assignor to E. & T. Fairbanks & Company, St. Johnsbury, Vt. Platform weighing-scale	376,012	Jan. 3	441	117	42	89
Padmore, Casper, and M. A. T. Gillbee, Philadelphia, Pa. Card-gilding machine	378,018	Feb. 14	1017	265, 266	42	706
Page, Charles F., *et al.* (See Gane, Jean V., assignor.)						
Page, Frank R. (See Miller and Page.)						
Page, Frederick J., *et al.* (See Gane, Jean V., assignor.)						
Page, La Fayette W., and S. Hardeman, Franklin, Tenn. Animal-trap	378,972	Mar. 6	154	44	42	996
Pague, Samuel S., U. S. Army. Gun-rack for tents	377,114	Jan. 31	2026	530	42	417
Paige, W. A., *et al.* (See McKee, Leander H., assignor.)						
Pain, Willard S., Cambridge, and W. A. Webber, Medford, Mass. Pneumatic cash-carrier apparatus	376,159	Jan. 10	617	166, 167	42	130
Painter, Gwynne E. (See Young and Painter.)						
Palm, John Z., Bowmansville, assignor to T. Schweitzer, Spring Grove, Pa. Car-coupling	375,891	Jan. 3	217	59, 60	42	46
Palmer, Albertus E., Hillsdale, Mich. Reclining-chair	376,105	Jan. 10	533	142	42	114
Palmer, E. Jerome. (See Mance and Palmer.)						
Palmer, Frank H., Long Island City, N. Y. Indicator for non-transparent receptacles containing liquids	377,533	Feb. 7	278	71	42	548
Palmer, Frank L., Berkeley, assignor of one-half to N. Clark & Sons, San Francisco, Cal. Belt-shifter and tramer	376,339	Jan. 10	867	227	42	175
Palmer, Frank L., Berkeley, assignor of one-half to N. Clark & Sons, San Francisco, Cal. Elevator	376,340	Jan. 10	868	228	42	176
Palmer, Hezekiah C., assignor of one-half to W. G. Scoggin, Bingen, Ark. Saw	379,719	Mar. 20	1261	326	42	1221
Palmer, Isaac E., Middletown, Conn. Folding mosquito-net, tarlatan, and other piece goods	378,212	Feb. 21	1297	344	42	767
Palmer, Levi H., assignor of one-half to N. J. Brockway, Gloversville, N. Y. Screw	378,614	Feb. 28	1896	502	42	891
Palmer, Samuel D., Rockford, Ill. Churn	378,144	Feb. 21	1208	314	42	749
Palmer, Stephen, Lansingburg, N. Y. Manufacture of sash-balances	378,712	Feb. 28	2039	538	42	917
Panyard, Joseph, assignor of one-half to A. Arntz, Muskegon, Mich. Device for plumbing wall-paper, window-shades, &c	376,341	Jan. 10	870	228	42	176
Paraffine Paint Company. (See Pearce and Beardsley, assignors.)						
Paragon Noiseless School Slate Company. (See Scrymgeour, David, assignor.)						
Parcelle, A. L., *et al.* (See Bridger, Henry C., assignor.)						
Parcelle, Andrew M., Denver, Colo. Embroidery-stand	378,901	Mar. 6	59	18	42	978
Parish, Francis M., *et al.* (See Sutton, Columbus P., assignor.)						
Parish, William F., Minneapolis, Minn. Ratchet mechanism for saw-mill set-works	379,656	Mar. 20	1163	307, 308	42	1200
Parish, William F., Minneapolis, Minn. Gang-saw mill	379,657	Mar. 20	1165	308, 309	42	1201
Parish, William F., Minneapolis, Minn. Gang-edger	379,658	Mar. 20	1166	309, 310	42	1202
Parish, William F., Minneapolis, Minn. Edger	379,659	Mar. 20	1169	310, 311	42	1202
Park, William D. (See Legg, Benjamin A., assignor.) (Reissue.)						
Park, William R., Philadelphia, Pa. Vapor-burner	378,713	Feb. 28	2041	539	42	917
Parke, John Y., Philadelphia, Pa. Electric gas-burner	379,977	Mar. 27	1671	446	42	1369
Parker, Charles M., Lincoln, Nebr. Coupling for vehicles	378,714	Feb. 28	2042	539	42	917
Parker, Charles W., Genesee Fork, Pa. Preserving posts, &c	378,459	Feb. 28	1691	441	42	846
Parker, Erastus N., Springfield, Mass. Buckle	379,078	Mar. 6	315	92	42	1025
Parker, George E., *et al.* (See Vinton, John H., assignor.)						
Parker, John E., Hamilton, Ontario, Canada. Bolt	376,544	Jan. 17	1161	305	42	237
Parker, John T., *et al.* (See Wells, Charles D., assignor.)						
Parker, Joseph N., Vineland, N. J. Pruning implement	377,956	Feb. 14	931	242	42	690
Parker, Julia A. (See Parker, Melvin O., assignor.)						
Parker, Marshall, Barneaville, and J. E. Tupper, Rothsay, Minn. Water-gage	376,255	Jan. 10	753	200	42	155
Parker, Melvin O., assignor to J. A. Parker, Rochester, N. Y. Apparatus for extinguishing fires and lights in railway-cars	378,938	Mar. 6	111	32	42	988
Parker, P. P., *et al.* (See Wells, Charles D., assignor.)						
Parkerton, Le Grand, Guilford, Conn. Screw-tap	376,342	Jan. 10	871	229	42	176
Parkhurst, Emily R. (See Tindell, Henry, assignor.)						
Parkis, Charles, Buffalo, N. Y. Sleigh	375,767	Jan. 3	63	18	42	16
Parks, Dana, Revere, Mass., assignor to Kensington Chair Company, Portland, Me. Chair	376,256	Jan. 10	754	200	42	155
Parks, Levi N., assignor, by mesne assignments, to himself and G. N. Goodspeed, Winchendon, Mass. Jack-spool	378,174	Feb. 21	1246	328	42	756
Parmelee, Edwin S. (See Treat and Parmelee.)						
Parmelee, Homer, Baltimore, Md. Pipe-wrench	379,123	Mar. 6	381	108	42	1037
Parmenter, Pheba, assignor of one-half to A. M. Stearns, Lamar, Mo. Combined corset and bustle	378,518	Feb. 28	1756	464, 465	42	863
Parrish Bros. and Peck Electrical Company. (See Cole, William R., assignor.)						
Parshall, Charles H., assignor of one-half to E. Grace, Detroit, Mich. Lubricator	376,676	Jan. 17	1307	359	42	275
Parsons, G. S. (See Lockwood, William V., assignor.)						
Parsons, Seneca B., Chicago, Ill. Manufacture of wagon-skeins	379,026	Mar. 6	244	69	42	1012
Partington, Charles. (See Weir, Partington, Goldsmith, and Harden.)						
Partz, August F. W., Philadelphia, Pa. Depolarizing compound	379,180	Mar. 6	446	.....	42	1051
Pascoe, William F. D., and J. W. Raub, South Easton, Pa. Three-way safety-switch	378,519	Feb. 28	1760	465	42	863
Patch, Benjamin F., assignor to W. M. Currier, Danvers, Mass. Burnishing-machine	377,574	Feb. 7	330	85	42	559
Patent Button Company. (See Platt and White, assignors.)						
Paterson, Andrew, McKeesport, Pa. Method of and means for reducing the diameter of tubes	376,106	Jan. 10	534	142	42	114
Paterson, Edward J. (See Hermite and Cooper, assignors.)						
Paterson, John, San Francisco, Cal. Instrument for testing the fairness of steam-engine crank-shafts	377,115	Jan. 31	2026	530	42	417
Paterson, William A., Flint, Mich. Two-wheeled vehicle	379,589	Mar. 20	1084	288	42	1185
Pates, William S., Kingman, Kans., assignor of one-third to A. W. Berkey, Kansas City, Mo. Claw-bar	377,957	Feb. 14	932	242	42	690
Patridge, James O., Wellston, Ohio. Hand rock-drill	380,051	Mar. 27	1785	477	42	1330
Patten, William H., Canastota, N. Y. Horse-rake tooth	375,892	Jan. 3	219	60	42	47
Patterson, C. Godfrey, *et al.* (See Barron, Walter J., assignor.)						
Patterson, Francis H., Norristown, Pa. Photographic camera	378,973	Mar. 6	155	45	42	997
Patterson, Peter, assignor to National Tube Works Company, McKeesport, Pa. Apparatus for charging plates and bars into furnaces	376,828	Jan. 24	1613	422, 423	42	330

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Patterson, William G., Claysville, Pa. Operating mechanism for churns	376,752	Jan. 24	1484	391	42	307
Patterson, William H. (See Mill, Edward, assignor.)						
Patterson, William R., assignor to Western Electric Company, Chicago, Ill. Telegraph-cable	378,175	Feb. 21	1248	328 329	42	756
Paul, George D., assignor of one-half to E. Alsdorf, Newark, N. J. Sash-fastener	379,124	Mar. 6	381	109	42	1035
Pauls, August, Brooklyn, N. Y. Pocket-scissors	377,637	Feb. 7	430	110	42	577
Pavlik, George, Boston, Mass. Garment or coat hanger	376,207	Jan. 10	689	183	42	141
Paxson, Charles H., assignor to Thomas Manufacturing Company, Springfield, Ohio. Tedder-fork	377,047	Jan. 31	1913	503	42	395
Peabody, Henry O., Boston, Mass. Fertilizer-distributer	375,768	Jan. 3	64	19,20	42	16
Pearce, John H., New Haven, Conn. Machine for coating fabric with india-rubber upon one or both sides	376,343	Jan. 10	873	229	42	177
Pearce, John H., New Haven, Conn. Apparatus for coating fabric with rubber	376,344	Jan. 10	875	229 230	42	177
Pearce, Truman J., and M. W. Beardsley, Oakland, assignors to Paraffine Paint Company, San Francisco, Cal. Manufacture of paper	378,520	Feb. 28	1761	.....	42	864
Pearson, George D., assignor of one-half to G. E. Drummond, trustee, and R. Cowans, Montreal, Quebec, Canada. Car-coupling	377,770	Feb. 14	661	166	42	636
Pease, Frank, Lynn, Mass. Bag-opening attachment for scoops, &c.	379,491	Mar. 13	915	246	42	1146
Peck, Edmund E., New York, N. Y. Chair-rocker-spring attachment	376,675	Jan. 17	1366	359	42	275
Peck, Jesse E., Chicago, Ill. Slag-furnace	379,411	Mar. 13	793	213	42	1122
Peck, Jesse E., Chicago, Ill. Slag-furnace	379,600	Mar. 20	1084	288 289	42	1185
Peck, Melinda. (See Adams, Orsemas T. X., assignor.)						
Peck, Obed, Rowe, Mass. Tool-handle	379,877	Mar. 20	1527	403	42	1272
Peck, Orrin B., Chicago, Ill. Slag-furnace	379,412	Mar. 13	795	214	42	1123
Peck, Orrin B., Chicago, Ill. Slag-furnace	379,601	Mar. 20	1086	289	42	1185
Peck, Orrin B., Chicago, Ill. Slag-furnace	379,720	Mar. 20	1262	337	42	1221
Peck, Stow & Wilcox Company. (See Shepard, Amos, assignor.)						
Peckham Car Wheel Company. (See Peckham, Edgar, assignor.)						
Peckham, Edgar, Syracuse, N. Y., assignor to Peckham Car Wheel Company, of New York. Car-wheel	376,721	Jan. 17	1437	378	42	290
Peckham, Edgar, Syracuse, N. Y., assignor to Peckham Car Wheel Company, of New York. Car-wheel	376,722	Jan. 17	1438	378	42	290
Peckham, Edgar, Syracuse, N. Y., assignor to Peckham Car Wheel Company, of New York. Car-wheel	376,723	Jan. 17	1440	379	42	290
Peckham, Edgar, Syracuse, N. Y., assignor to Peckham Car Wheel Company, of New York. Car-wheel	376,724	Jan. 17	1441	379	42	291
Peckham, Edgar, and E. Laass; said Laass assignor to himself and C. H. Duell, Syracuse, N. Y. Vehicle-axle	378,058	Feb. 14	1067	280	42	715
Peet, William. (See Campbell and Peet.)						
Peetz, John J., assignor to himself and E. J. Biering, Galveston, Tex. Railway-switch	378,213	Feb. 21	1299	344	42	767
Peirce, James S., Minneapolis, Minn. Manufacture of artificial-stone blocks	378,715	Feb. 28	2043	539	42	918
Peirce, James S., Savannah, Ga. Means for molding artificial-stone blocks or tiles for paving and other purposes	378,716	Feb. 28	2044	539	42	918
Pell, Henry W., Rome, N. Y. Spring-vehicle	378,145	Feb. 21	1209	314 315	42	749
Pell, Lyman P., Woburn, Mass. Lamp-bracket	377,907	Feb. 14	859	221	42	674
Pemberton, John H., Los Angeles, Cal. Device for converting motion	378,334	Feb. 21	1401	390	42	801
Pembroke, Daniel S., Kalamazoo, Mich. Two-wheeled vehicle	378,335	Feb. 21	1403	390	42	801
Pence, Robert S. (See Thomasson and Pence.)						
Pendleton, John W., Greenville, Cal. Adjustable thill-coupling	378,202	Feb. 21	1387	363	42	781
Peniston, Charles W. (See Gurney and Peniston.)						
Penney, Fred M., Waterville, N. Y. Playing-card board	376,484	Jan. 17	1073	281	42	221
Penniman, Russell S. (See Gardner, Perry G., assignor.)						
Pennock, George B., Brooklyn, N. Y. Electrolyte compound	377,210	Jan. 31	2150	.....	42	443
Pennsylvania Iron Works. (See Dickinson, Isaac N., assignor.)						
Pentucket Variable Stitch Sewing Machine Company. (See Woodward, Erastus, assignor.)						
Pentz, Levi, assignor of one-half to C. L. Paar, Canton, Ohio. Vehicle-spring	375,831	Jan. 3	140	41	42	33
Peper, Christian, and C. O. Sobinski, St. Louis, Mo.; said Sobinski assignor of one-half to said Peper. Track-cleaning attachment for street-cars	378,374	Feb. 21	1546	404	42	813
Pepper, James, Star City, Ind. Grain weighing and registering apparatus	379,325	Mar. 13	672	182	42	1098
Pepper, John, Jr., Rome, N. Y. Shaping-machine	375,893	Jan. 3	220	60	42	47
Pereles, Edward, Cleveland, Ohio. Fire-extinguishing apparatus	379,282	Mar. 13	606	166 167	42	1087
Perham, Haven C. (See Clarke and Perham.)						
Perin, Charles A., Beetown, Wis. Harrow	379,079	Mar. 6	317	92	42	1025
Perkins, Frank H., Covington, and L. L. Miller, Newport, Ky. Die for finishing box-loops	377,267	Jan. 31	2236	591	42	458
Perkins, Louis W., *et al.* (See Latham, Ephraim, assignor.)						
Perkins, William A., Clifton, Kans. Draft-equalizer	376,395	Jan. 10	938	246	42	188
Perret, David, Neufchâtel, Switzerland. Stem-winding watch	378,974	Mar. 6	156	45	42	997
Perry, Edmund. (See Plant and Perry.)						
Peslin, Fred C. (See Nemacheck, Frank, assignor.)						
Peters, Dennis. (See Linden, Peter, assignor.)						
Peters, Richard G., Manistee, Mich. Salt-making apparatus	377,268	Jan. 31	2237	591	42	458
Petersen, Carl W., Brooklyn, N. Y. Swimming apparatus	377,638	Feb. 7	431	110	42	577
Peterson, Charles G., and C. Y. Rundblad, Chicago, Ill. Earth-scraper	376,753	Jan. 24	1485	391	42	307
Peterson, Jacob, Niagara, Dak. Ter. Drawer for furniture, &c.	377,269	Jan. 31	2238	591	42	458
Peterson, James, Burlington, Iowa. Rein-guard for harness	376,677	Jan. 17	1369	360	42	276
Peterson, John P., Phillips, Wis. Pocket lumber-gage	375,949	Jan. 3	302	81	42	62
Petroleum Light and Heat Company. (See Bildeman, Robert M., assignor.)						
Pettee Machine Works. (See Kerrivan, John, assignor.)	377,534	Feb. 7	279	71	42	549
Pettit, George, Jr., and A. Bowers, Brooklyn, N. Y. Covering for walls, ceilings, &c.						
Pew, Charles H., Jamestown, N. Y. Reclining-chair	378,902	Mar. 6	59	18	42	978
Peyton, Raymond O., Terre Haute, Ind. Stove for burning light fuel	378,615	Feb. 28	1897	502	42	891
Pfaff, Isaac L., Dansville, N. Y. Windmill	379,125	Mar. 6	383	109	42	1035
Pfenning, Carl A., Barmen, Prussia, Germany. Machine for manufacturing buttons	376,783	Jan. 24	1543	406	42	318
Phares, James S., assignor of one-half to G. B. Kendall, Springfield, Ohio. Feed-water heater and purifier	379,540	Mar. 13	985	265	42	1159
Phelan, James. (See Nally, Thomas, assignor.)						
Phelps, Eugene M. (See Thomson and Phelps.)						
Phelps, George H., *et al.* (See Preston, Charles A., assignor.)						
Phelps, George H., *et al.* (See Warren, Andrew, assignor.) (Reissue.)						
Phelps, Homer L. (See Fisk and Phelps.)						
Phelps, Lucius B., Jefferson, Ohio. Land-roller and harrow	380,131	Mar. 27	1899	507	42	1353

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Phelps, Lyman E., *et al.* (See Swift, R. K., assignor.)	378,863	Mar. 6	61	18	42	978
Phelps, William S., San Francisco, Cal. Cable railway	379,602	Mar. 20	1087	289 290 291	42	1185
Philbrick, Josiah J., assignor of one-third to G. Challoner's Sons, Omro, Wis. Barrel-head-making machine						
Phillips Corn Harvester Company. (See Phillips, Darius T., assignor.)						
Phillips, Darius T., assignor to Phillips Corn Harvester Company, Chicago, Ill. Corn-harvester	378,521	Feb. 28	1762	406 407	42	864
Phillips, F. T. (See Ragsdale, Martin S., assignor.)	378,105	Feb. 21	1138	297	42	737
Phillips, Franklin, Newark, N. J. Dash-pot for steam-engines	378,106	Feb. 21	1140	298	42	737
Phillips, Franklin, Newark, N. J. Friction-feed mechanism for iron-planers						
Phillips, Heman H. (See Walker, Harlan P., assignor.)						
Phillips, John H. (See Waer, Phillips, and Kengla.)	377,908	Feb. 14	859	221	42	674
Phillips, John T., New Castle, Pa. Railway-signal						
Phillips, Joseph A. (See Blum and Phillips.)	377,771	Feb. 14	663	166	42	637
Phillips, Joseph E., West Ashford, Conn. Window-shutter						
Phillips, Nimick & Co. (See Carter, Robert A., assignor.)						
Phillips, William A., assignor to Edison Machine Works, Schenectady, N. Y. Insulated electrical conductor	380,295	Mar. 27	2113	505	42	1397
Phillips, William R., Milford, Del. Machine for assorting fruit	376,904	Jan. 24	1520	451	42	351
Piatt, William M., assignor of one-third to B. P. Runkle, Mac-o-Chee, Ohio. Grain-binder	377,731	Feb. 7	565	145 146	42	601
Pichereau, Asahel P., Galesburg, Ill. Ink or other fluid stand	379,906	Mar. 20	1567	413	42	1278
Pickering, Frank M., Cincinnati, Ohio. Block for paving, &c.	379,027	Mar. 6	247	70	42	1012
Pierce, Abel A., St. Johnsbury, assignor of one-half to J. C. Eaton & Co., Lyndonville, Vt. Water-heater	376,545	Jan. 17	1161	305	42	237
Pierce, Butler & Pierce Manufacturing Company. (See Waggoner, Edward P., assignor.)						
Pierce, Christopher C., Herkimer, N. Y. Hook	377,772	Feb. 14	664	166	42	637
Pierce, Christopher C., Herkimer, N. Y. Coat-hook	377,773	Feb. 14	666	167	42	637
Pierce, Erastus E., New Brighton, Pa. Nail-finishing machine	379,413	Mar. 13	797	214 215	42	1123
Pierce, Nathaniel G., *et al.* (See West, James, assignor.)						
Pierce, William B., Ashburnham, assignor of one-half to S. Bent & Brothers, Gardner, Mass. Tray-chair	377,720	Feb. 7	552	141	42	509
Pike, Daniel E., assignor to Western Union Telegraph Company, New York, N. Y. Printing-telegraph	378,107	Feb. 21	1143	298	42	738
Pilcher, John V., Louisville, Ky. Clasp	380,217	Mar. 27	2013	508	42	1376
Pintsch Lighting Company. (See Dixon, Robert M., assignor.)						
Pirnie, George, Nyack, N. Y. Whip	375,950	Jan. 3	302	81	42	63
Pitcher, Joseph. (See Hatch and Pitcher.)						
Pitner, Henry B., assignor of one-half to J. F. Croft, La Porte, Ind. Carriage-top	376,414	Jan. 10	966	252	42	103
Pitney, Albert L., Washington, D. C. Device for fastening cords or ropes	375,832	Jan. 3	141	41	42	33
Pitt, William H., assignor of one-half to G. H. Van Vleck, Buffalo, N. Y. Distilling petroleum	379,492	Mar. 13	916	246	42	1146
Pitt, William R., Brooklyn, N. Y. Wire mat	378,214	Feb. 21	1301	345	42	768
Plant, Richmond, and E. Perry, Birmingham, county of Warwick, England. Resonator for harmonicons	375,833	Jan. 3	143	41, 42	42	33
Platt, Clark M., and F. R. White, assignors to Patent Button Company, Waterbury, Conn. Rivet-setting machine	380,132	Mar. 27	1900	507	42	1353
Plattenburg, Joseph, McKeesport, Pa. Car-floor frame	379,978	Mar. 27	1674	446	42	1310
Plume & Atwood Manufacturing Company. (See Egleston, Thomas, assignor.)						
Plume & Atwood Manufacturing Company. (See Wilder, Elihu, assignor.)						
Plummer, William E., *et al.* (See Enos, John A., assignor.)	375,948	Jan. 3	301	81	42	62
Pocknell, James, Jersey City, N. J. Automatic cut-off for water-tanks	377,398	Jan. 31	2329	576	42	474
Poindexter, Robert E., Indianapolis, Ind. Saw-jointer	378,616	Feb. 28	1899	502	42	891
Poland, Lawrence N. P., Cincinnati, Ohio. Arc light	379,326	Mar. 13	674	.....	42	1099
Pollard, Henry M., Providence, R. I. Insecticide	379,327	Mar. 13	675	182	42	1099
Polley, Clark, New Berlin, Fla. Door-check	378,102	Feb. 21	1145	299	42	738
Pomeroy, Isaac, Newark, N. J. Bottle-top						
Pommer, Frank L., *et al.* (See Heimann, Salomon, assignor.)	377,909	Feb. 14	861	221	42	675
Ponath, Henry J., St. Louis, Mo. Vegetable-slicer	376,546	Jan. 17	1163	305 306	42	237
Pond, Edwin J., Franklin, Mass. Drying apparatus	378,176	Feb. 21	1249	329	42	757
Pond, Orlando M., and J. Provan, Independence, Iowa. Wire-joining machine	376,257	Jan. 10	756	200 201	42	155
Ponnay, Richard, assignor of two-thirds to C. H. Smith and J. Hewitt, Chicago, Ill. Sectional steam-boiler						
Poor, Joseph H. (See Jones, Albert F., assignor.)						
Pope, Harry M., Hartford, Conn., assignor to Pope Manufacturing Company, Portland, Me. Velocipede	379,907	Mar. 20	1568	413	42	1279
Pope Manufacturing Company. (See Latta, Emmit G., assignor.)						
Pope Manufacturing Company. (See Pope, Harry M., assignor.)						
Pope, William R. (See Jackson and Pope.)						
Popp, Victor, Paris, France. Rotary motor operated by fluid-pressure	378,146	Feb. 21	1210	315	42	749
Porteous, George M., and F. S. Miller, Chicago, Ill. Photograph-exhibitor	379,522	Mar. 13	902	260	42	1155
Porteous, James, Fresno, Cal. Plow	380,052	Mar. 27	1787	477	42	1331
Porter, Cyrus H., Brockton, Mass. Orange-peeler	379,328	Mar. 13	676	183	42	1099
Porter, Daniel R., Chelsea, assignor to W. E. Davidson, Boston, Mass. Pipe-wrench	376,396	Jan. 10	939	246	42	188
Porter, Frank A., Medina, assignor of one-half to W. Tompkins, Knowlesville, N. Y. Piano-stool	379,979	Mar. 27	1675	446	42	1310
Porter, Thomas B., Kansas City, Mo. Ironing-table	378,553	Feb. 28	1813	478	42	874
Portmann, Henry G., assignor of one-third to W. W. Portmann, St. Louis, Mo. Combined carriage, cradle, and chair	377,270	Jan. 31	2239	592	42	459
Portmann, William W. (See Portmann, Henry G., assignor.)						
Portner, William, Red Lion, Pa. Cigar-press	376,963	Jan. 24	1797	472	42	366
Poschinger, Mathias, assignor to Sulzer & Vogt, Louisville, Ky. Ammonia-gas generator	376,905	Jan. 24	1721	452	42	351
Posson, George A., Angwin, Cal. Brake-block	378,215	Feb. 21	1302	345	42	768
Post, Andrew D., Keyport, N. J. Sheet-ring detacher for vessels	378,554	Feb. 28	1814	479	42	874
Post, John W., New York, N. Y. Express-car	377,774	Feb. 14	666	167 168	42	637
Post, John W., New York, N. Y., assignor to Model Sewing Machine Company. Sewing-machine	378,804	Feb. 28	2176	579	42	943
Post, Seymour H. (See Haven and Post.)						
Posten, Walter B. (See Bell, Jacob, assignor.)						
Potter, Elmer L., and G. B. Upham, Columbus, Ohio. Envelope	378,849	Feb. 28	2256	600	42	958

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Potter, James C., Lowell, Mass. Evening mechanism for cotton-openers	377,329	Jan. 31	2330	676	42	475
Potter, John A. (See Forsyth and Potter.)						
Potter, Jonas, assignor to himself and J. J. Straver, Morrellville, Pa. Bolt	376,258	Jan. 10	758	201	42	155
Potter, Mark, Syracuse, N. Y. Continuous-heating branding implement	377,575	Feb. 7	331	85	42	559
Potter, William E., *et al.* (See Hallowell, Albert, assignor.)						
Potts, James W., assignor of one-half to J. P. Strong, St. Joseph, Mo. Device for automatically operating hatchways for elevators	375,894	Jan. 3	221	60, 61	42	47
Potts & Weber. (See Bender, Jacob F., assignor.)						
Poucher, Henry, Brooklyn, Mich. Cylinder for corn-shellers	379,603	Mar. 20	1095	291	42	1187
Poulson, Britton, assignor to W. D. Schiefer, Fort Wayne, Ind., and J. C. Hunt, Concord, Mass. Device for detaching buttons	379,604	Mar. 20	1095	291	42	1187
Poulter, John H. (See Mace, Harvey A., assignor.)						
Powell, Emma A., *et al.* (See Lane, George W., assignor.)						
Powell, Henry G., Finsbury, London, England. Rope-traveler	380,267	Mar. 27	2077	556	42	1300
Powell, James, Cincinnati, Ohio. Lubricator	379,243	Mar. 13	553	154	42	1076
Powell, James, Cincinnati, Ohio. Plug-cock	379,244	Mar. 13	554	154	42	1077
Powell, Thomas J., *et al.* (See Latham, Ephraim, assignor.)						
Powers, Charles M., Dubois, Pa. Tool-handle	377,688	Feb. 7	510	131	42	591
Powers, James J. (See Van Buren and Powers.)						
Prahar, Louis B., Brooklyn, N. Y. Safety-inkstand	376,259	Jan. 10	759	201	42	156
Prahar, Louis B., Brooklyn, N. Y. Safety-inkstand	376,964	Jan. 24	1798	473	42	366
Prall Union Heating Company. (See Prall, William E., assignor.)						
Prall, William E., Washington, D. C., assignor to Prall Union Heating Company, New York, N. Y. Supplying heat and power	376,830	Jan. 24	1615	423	42	331
Prall, William E., Washington, D. C., assignor, by mesne assignments, to National Heating Company, New York, N. Y. Means for supplying heat and power	379,283	Mar. 13	607	167	42	1087
Pratt, A. Felix, Montpelier, Vt. Hair-tonic	376,698	Jan. 24	1587	.....	42	326
Pratt, Charles H., Butte City, assignor of one-half to C. M. Buck, Silver Bow County, Mont. Ter. Fastening device	378,460	Feb. 28	1682	441	42	846
Pratt, Lewis M., Belleville, Kans. Weather-strip	377,838	Feb. 14	763	195	42	655
Pratt, Robert L., Tigerville, La. Adjustable cuff-retainer	376,547	Jan. 17	1164	306	42	238
Pratt & Whitney Company. (See Whitney, Amos, assignor.)						
Prendergast, Daniel, New York, assignor to H. Wellington, Brooklyn, N. Y. Spout for sheet-metal vessels	377,048	Jan. 31	1915	503	42	396
Prentice, George W., Providence, R. I. Button-fastener	379,028	Mar. 6	248	70	42	1012
Prescott, De Witt C., Marinette, Wis. Saw-mill carriage	376,678	Jan. 17	1370	360	42	276
Prescott, De Witt C., Marinette, Wis. Offset mechanism for saw-mill carriages	378,717	Feb. 28	2045	540	42	918
Prescott, Edwin, Arlington, and W. E. Locke, West Somerville, Mass.; said Locke assignor to said Prescott. Butt-hinge	378,718	Feb. 28	2047	540	42	919
Preston, Charles A., Cambridgeport, assignor to G. Frost, G. H. Phelps, and G. A. Frost, Newton, Mass. Garment-supporter	378,147	Feb. 21	1212	316	42	750
Preston, Charles A., Cambridgeport, assignor to G. Frost, G. H. Phelps, and G. A. Frost, Newton, Mass. Garment-supporter	378,148	Feb. 21	1213	316	42	750
Prevost, Thomas L., Racine, Wis. Holder for sand-paper	378,522	Feb. 28	1765	467	42	865
Price, Abner, *et al.* (See Moore, Daily S., assignor.)						
Price, Alexander, *et al.* (See Moore, Daily S., assignor.)						
Price, George M., Rutland, Ohio. Jug	379,126	Mar. 6	384	109	42	1038
Price, George P., Carlisle, Ohio. Gate	379,660	Mar. 20	1171	311	42	1203
Price, Joseph C. (See Chable, August F., assignor.)						
Prichard, Henry, assignor to C. F. Imbrie, New York, N. Y. Wedge-ferrule for fishing reels and rods	376,260	Jan. 10	760	202	42	156
Pridmore, Henry E. (See McCormick and Pridmore.)						
Priebe, Bernhard. (See Friedlaender and Priebe.)						
Pritchard, Nathaniel J., and J. S. Templon, Milnes, assignor of one-half to J. H. Sands and D. W. Flickwir, Roanoke, Va. Device for applying pressure to railway-brakes	377,775	Feb. 14	670	169	42	638
Pritchett, Basil B., Chrisman, Ill. Cotton-seed planter	378,109	Feb. 21	1147	299	42	738
Pritchett, George, Binghamton, N. Y. Fire-escape	376,160	Jan. 10	623	167	42	130
Promis, Eugene, Philadelphia, Pa. Combined blotter and pen-wiper	378,719	Feb. 28	2048	541	42	919
Prouty, Chester, Galeton, Pa. Supporter for boots or shoes	379,980	Mar. 27	1676	446	42	1310
Prouty, George W., Boston, Mass. Inking apparatus for printing-presses	378,110	Feb. 21	1148	299	42	738
Provan, John. (See Pond and Provan.)						
Providence Cylinder Company. (See Coas, Edward K., assignor.)						
Prowse, George R., Montreal, Quebec, Canada. Stove	378,149	Feb. 21	1214	316	42	750
Pruden, Frank I. (See Wood, George E., assignor.)						
Prym, August, Stolberg, near Aachen, Prussia, Germany. Buckle	378,555	Feb. 28	1815	479	42	874
Pugh, Jesse B., Indianapolis, Ind. Gate-hinge	377,910	Feb. 14	862	222	42	675
Pugh, Morton E., St. Joseph, Mo. Cable-lever hook	379,721	Mar. 20	1264	317	42	1222
Pugh, Morton E., St. Joseph, Mo. Railway grading and excavating machine	379,722	Mar. 20	1266	338	42	1222
Pugh, O. C. (See Conn, John H., assignor.)						
Pugh, Simeon A., Dadeville, Ala. Horse-detacher	376,107	Jan. 10	535	142	42	114
Purcell, Frank A., and J. K. Case, Vincennes, Ind. Spool-holder	377,436	Feb. 7	137	30	42	520
Purdy, Zachariah V., Birmingham, Ala. Horseshoe-machine	378,111	Feb. 21	1149	300	42	739
Purefoy, Addison F., New Haven, Conn. Sifter	376,449	Jan. 17	1031	270	42	212
Purefoy, Addison F., New Haven, Conn. Box-sieve	376,450	Jan. 17	1031	270	42	213
Purinton, Judson K., Dallas Centre, Iowa. Boiler	379,245	Mar. 13	556	135	42	1077
Putnam, Henry W. (See Morhous, Frederick P., assignor.)						
Putnam, J. Pickering, Boston, Mass. Coupling for water-closets	377,776	Feb. 14	672	169	42	638
Pynchon, Edwin, Chicago, Ill. Car-axle lubricator	377,271	Jan. 31	2240	592	42	450
Quass, Max, Philadelphia, Pa. Boring-tool	376,906	Jan. 24	1722	452	42	332
Queen Ann Screen Company. (See Baldwin, Judson A., assignor.)						
Querol y Delgado, Emilio, assignor to himself, J. Wright, E. Durlach, and M. Bookman, Brooklyn, N. Y. Sewing-machine	377,515	Feb.		257	64	42	543
Querol y Delgado, Emilio, assignor to himself, J. Wright, E. Durlach, and M. Bookman, Brooklyn, N. Y. Take-up for sewing-machines	377,516	Feb. 7	259	65	42	544
Querol y Delgado, Emilio, assignor to himself, J. Wright, E. Durlach, and M. Bookman, Brooklyn, N. Y. Tension for sewing-machines	377,517	Feb. 7	260	65	42	544
Quincy, Josiah, *et al.* (See Bridger, Henry C., assignor.)						
Rabbitt, Peter, Jacksonville, Ill. Portable derrick	377,576	Feb. 7	333	85	42	559
Raber, Nathan L., Corvalis, Oreg. Amalgamator	377,272	Jan. 31	2242	592	42	460
Radcliffe, Charles, assignor to New Jersey Manufacturing Company, Newark, N. J. Metallic button. (Reissue.)	10,917	Mar. 27	2135	570	42	1402
Raezer, Levi, West Earl, Pa. Two-wheeled vehicle	379,723	Mar. 20	1268	338	42	1222
Ragsdale, Martin S., Freelandville, Ind, assignor of one-half to F. T. Phillips, Olney, Ill. Hoisting apparatus	377,465	Feb. 7	178	42	42	530

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Railway Speed Recorder Company. (See Wilkins, Alexander G., assignor.)						
Raines, Burress W., Blossom Prairie, Tex. Quilting-frame	379,661	Mar. 20	1171	311	42	1203
Ramey, William L. (See Gillem, Eugene C., assignor.)						
Ramsey, John W., assignor of one-half to J. Corbus, Beaver Falls, Pa. Jar-fastener	376,043	Jan. 3	443	118	42	89
Rand, Addison C. (See Kelly, Patrick, assignor.)						
Randall, Charles E., assignor to Hancock Inspirator Company, Boston, Mass. Injector	378,403	Feb. 21	1586	417	42	820
Randall, Henry, Brooklyn, N. Y. Boiler-tube cleaner	377,171	Jan. 31	2093	552	42	432
Randall, James D. (See Randall, Silas H., assignor.)						
Randall, Peter R., Agency, Mo. Guard for switch-points	379,809	Mar. 20	1403	373	42	1249
Randall, Silas H., assignor of one-half to J. D. Randall, Wyoming, Ohio. Leather-trimming machine	380,296	Mar. 27	2113	566	42	1397
Randolph, George W., Memphis, Tenn. Cultivator	376,008	Jan. 3	394	104	42	79
Randolph, Mahlon, New York, N. Y. Journal-bearing	377,049	Jan. 31	1916	504	42	396
Rankin, Andrew N., Jamaica, N. Y. Tool for forming cold-packed pipe-joints	376,609	Jan. 17	1256	{329 330	{42	255
Rankin, Samuel A., Mulberry, Mo. Weather-strip	375,951	Jan. 3	304	81	42	63
Rankin, William H., Lawrence, Mass. Card-grinding mechanism	377,116	Jan. 31	2028	531	42	417
Rankins, William J., Augusta, Ky. Fender-spar	379,329	Mar. 13	677	183	42	1099
Ranks, Elbridge F., Lewiston, Me. Water-motor	376,610	Jan. 17	1259	330	42	256
Ransom, Albert F., Burlington, Wis. Horse-collar fastening	377,050	Jan. 31	1917	504	42	396
Rapid Service Store Railway Company. (See Adams, Milton F., assignor.)						
Rapid Service Store Railway Company. (See McCarty, Robert A., assignor.)						
Rariden, Francis M., Waynetown, assignor of one-half to A. R. Heath, Covington, Ind. Car-coupling	377,689	Feb. 7	542	131	42	591
Rasmussen, Elmar. (See Wightman and Rasmussen.)						
Rathbun, Willett G. (See Barber, Amos P., assignor.)	376,345	Jan. 10	877	.....	42	177
Rau, Henry M., Hanover, Pa. Manufacture of tannin extracts						
Raub, James W. (See Pascoe and Raub.)						
Ranm, Jerome. (See Brahn and Ranm.)	377,777	Feb. 14	673	169	42	638
Rawlins, Joseph W. V., Hancock, Mich. Friction-clutch	376,907	Jan. 24	1723	{452 453	{42	352
Raymond, Albert, assignor of one-half to G. Raymond, Chicago, Ill. Car-connection	377,498	Feb. 7	226	55	42	539
Raymond, Clande, Paris, France. Photographic printing in fatty inks						
Raymond, Franklin L. (See Raymond, Silas H., assignor.)						
Raymond, Freeborn F., 2d. (See Small, Chester C., assignor.)	376,908	Jan. 10	690	183	42	141
Raymond, Freeborn F., 2d, Newton, Mass. Nail-making machine	376,754	Jan. 24	1487	392	42	308
Raymond, Freeborn F., 2d, Newton, Mass. Heel-compressing machine	376,908	Jan. 24	1725	{453 454	{42	352
Raymond, Freeborn F., 2d, Newton, Mass. Heel-compressing machine	377,172	Jan. 31	2094	552	42	433
Raymond, Freeborn F., 2d, Newton, Mass. Heel-nailing machine	377,577	Feb. 7	334	86	42	559
Raymond, Freeborn F., 2d, Newton, Mass. Heel nailing and trimming machine	377,958	Feb. 14	933	{242 243	{42	690
Raymond, Freeborn F., 2d, Newton, Mass. Heel-attaching machine	378,216	Feb. 21	1303	{345 346	{42	768
Raymond, Freeborn F., 2d, Newton, Mass. Heel forming and attaching machine	378,617	Feb. 28	1900	{502 503	{42	891
Raymond, Freeborn F., 2d, Newton, Mass. Heel-nailing machine	379,029	Mar. 6	249	70, 71	42	1012
Raymond, Freeborn F., 2d, Newton, Mass. Forming and attaching heels	379,330	Mar. 13	678	{183 184	{42	1099
Raymond, Freeborn F., 2d, Newton, Mass. Nail distributing and feeding machine	379,810	Mar. 20	1404	374	42	1249
Raymond, Freeborn F., 2d, Newton, Mass. Heel-nailing machine	380,133	Mar. 27	1962	508	42	1354
Raymond, Freeborn F., 2d, Newton, Mass. Flush-nailing the heels of boots or shoes						
Raymond, George. (See Raymond, Albert, assignor.)						
Raymond, John M. (See Beard and Raymond.)						
Raymond, Silas H., Grand Rapids, Mich., assignor of one-half to F. L. Raymond, Cleveland, Ohio. Vehicle-spring	376,161	Jan. 10	624	167	42	130
Raynal, Alfred H., Hoboken, N. J. Punch	376,009	Jan. 3	396	105	42	79
Read, D. Dean, Boston, Mass. Elevated railway	379,181	Mar. 6	447	126	42	1051
Read, Daniel M., New York, N. Y. Pocket-book clasp	379,724	Mar. 20	1269	338	42	1223
Reade, Charles A., Chicago, Ill. Carriage-body	376,162	Jan. 10	624	{167 168	{42	131
Reardon, George W., *et al.* (See Ammons, John B., assignor.)						
Rechniewski, Winceslas C., Paris, France. Core for dynamo-electric machines	378,375	Feb. 21	1547	405	42	843
Redfield, Edward E., Linkville, Oreg. Magazine-gun	378,556	Feb. 28	1816	{479 480	{42	875
Redline, Joseph S., Derrs, Pa. Cover for wells or cisterns	376,010	Jan. 3	397	105	42	79
Reece, John. (See Hill, George S., assignor.)						
Reed, Benjamin K., Buena Vista, Colo. Excavator	378,720	Feb. 28	2049	541	42	919
Reed, Jacob P., assignor of one-half to B. B. Wolf, New York, N. Y. Caster	377,721	Feb. 7	553	{141 142	{42	599
Reed, James H., Lynn, Mass. Button-hole stitching and barring machine	378,404	Feb. 21	1588	{417 418	{42	821
Reed, James H., Lynn, Mass., assignor, by mesne assignments, to Globe Button-Hole Machine Company, Kittery, Me. Button-hole stitching and barring machine	378,217	Feb. 21	1305	{346 347 348	{42	768
Reed, James H., Lynn, Mass., assignor to Globe Button-Hole Machine Company, Kittery, Me. Barring button-holes	378,218	Feb. 21	1310	348	42	769
Reed, James H., and J. E. Wheeler, Lynn, Mass., said Reed assignor to said Wheeler. Machine for making wire fasteners for bottle-stoppers	378,177	Feb. 21	1250	329	42	757
Reed, John D., Boston, Mass. Preserving meat	377,404	Feb. 7	53	15	42	506
Reed, John D., Julesburg, Colo. Buggy-top	379,493	Mar. 13	918	246	42	1146
Reed, John H., Lancaster, Wis., assignor of one-half to C. S. Smith, Chicago, Ill. Dental matrix	376,548	Jan. 17	1165	306	42	228
Reed, Nathan F., Hyde Park, Vt. Whiffletree-hook	376,011	Jan. 3	398	105	42	80
Reed, William M., Shelton, Nebr. Car-coupling	379,331	Mar. 13	680	184	42	1100
Reeder, William S., St. Louis, Mo. Saw-mill dog	377,911	Feb. 14	863	222	42	675
Reeder, William S., St. Louis, Mo. Baling-press	379,414	Mar. 13	800	{215 216	{42	1124
Ress, William H., and J. H. Matthews, Trading Post, Kans. Buggy-top	376,012	Jan. 3	398	105	42	80
Reese, Abram, assignor to Reese Safety Brake Company, (limited,) Pittsburg, Pa. Car-brake	377,437	Feb. 7	138	31	42	521
Reese, Abram, assignor to Reese Safety Brake Company, Pittsburg, Pa. Car-brake	377,438	Feb. 7	140	31	42	521
Reese Safety Brake Company. (See Reese, Abram, assignor.)						
Register, Henry C., Philadelphia, Pa. Dental engine	375,834	Jan. 3	145	42	42	33

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Rehkopf, Fredrick, Memphis, Tenn. Harness-saddle	379,605	Mar. 20	1096	291	42	1187
Rehkopf, Fredrick, Memphis, Tenn. Pad-plate for harness-saddles	379,606	Mar. 20	1097	292	42	1187
Reichart, Emanuel and J. P., Neola, Iowa. Cultivator	377,273	Jan. 31	2244	593	42	460
Reichart, Jacob P. (See Reichart, Emanuel and J. P.)						
Reid, Arthur B., Chicago, Ill. Attachable copy-holder	379,246	Mar. 13	556	155	42	1077
Reid, Pettis A. (See Elliott and Reid.)						
Reid, William A., *et al.* (See Coffman, George, assignor.)						
Reiff, William H., Philadelphia, Pa. Burglar-alarm	376,909	Jan. 24	1727	454	42	353
Reilly, James J., Spokane Falls, Wash. Ter., assignor of one-fourth to C. W. Tozer, San Francisco, Cal. Means for preventing the creeping of rails and rail-joints	378,721	Feb. 28	2051	541	42	919
Reimann, George, assignor to Naehmaschinen-Fabrik, vormals Frister & Rossmann, Actien-Gesellschaft, Berlin, Germany. Coin-released weighing-machine	376,910	Jan. 24	1728	454 / 455	42	353
Reimann, George, assignor to Naehmaschinen Fabrik, vormals Frister & Rossman, Actien-Gesellschaft, Berlin, Germany. Locking-receptacle for fare-boxes	379,811	Mar. 20	1406	375	42	1249
Rein, Gustavus. (See Ehrlich, Dubinski, and Rein.)						
Reinert, Frank, deceased, Newark, N. J.: M. A. Reinert, executrix. Pool-ball box	376,549	Jan. 17	1166	306	42	218
Reinert, Maria A., executrix. (See Reinert, Frank.)						
Reinhold, E. Ferd. (See Graetz and Reinhold.)						
Reisert, Michael E., Hennef, Prussia, Germany. Grain-weighing apparatus	376,965	Jan. 24	1729	473 / 474	42	366
Reisert, Michael E., assignor to Hennefer Maschinenfabrik C. Reuther & Reisert, Hennef, Germany. Automatic grain-scale	376,679	Jan. 17	1373	360 / 361 / 362	42	277
Reisert, Wilhelm. (See Andersch, Wilhelm, assignor.)						
Reising, Caspar, Plantsville, Conn. Machine for folding sheet metal	377,863	Feb. 14	791	202	42	660
Reling, Charles J. (See Duffy and Reling.)						
Remington, De La Fayette, Woodburn, Oreg. Traction-engine	377,274	Jan. 31	2245	593 / 594	42	460
Renne, Horace L., assignor of one-half to W. H. Verrill, Hammond, Ind. Safety car-door	377,330	Jan. 31	2332	617	42	475
Rennie, Frank and J., Dayton, Ohio. Nut-lock	378,618	Feb. 28	1903	504	42	892
Rennie, John. (See Rennie, Frank and J.)						
Reno, Peter A., St. Louis, Mo. Heating-stove	376,013	Jan. 3	399	106	42	80
Renouf, Philipp L. C. F., and I. W. Boothroyd, London, county of Middlesex, England. Velocipede	379,812	Mar. 20	1407	375	42	1250
Regna, Leonard F., New York, N. Y., assignor, by mesne assignments, to Safety Insulated Wire and Cable Company. Covered or insulated wire or conductor	375,952	Jan. 3	305	82	42	63
Resley, Horace, Cumberland, Md. Pavement-light	379,127	Mar. 6	385	110	42	1038
Rex, Alfred C., Philadelphia, Pa. Making lock-spindles	376,014	Jan. 3	401	106	42	80
Rex, Alfred C., Philadelphia, Pa. Mechanical toy savings-bank	379,607	Mar. 20	1098	292	42	1188
Reynolds, Edwin. (See Gray, Birkholz, and Reynolds.)						
Reynolds, Edwin, Milwaukee, Wis. Valve-gear for ore-stamps	377,578	Feb. 7	338	87	42	559
Reynolds, Edwin, Milwaukee, Wis. Valve mechanism for air-compressors	378,336	Feb. 21	1403	391	42	802
Reynolds, Henry S., Brooklyn, N. Y. Last-block fastener	377,439	Feb. 7	141	31	42	521
Reynolds, John R., assignor to Smyth Manufacturing Company, Hartford, Conn. Book-sewing machine	378,461	Feb. 28	1683	441 / 442	42	847
Reynolds, John R., assignor to Smyth Manufacturing Company, Hartford, Conn. Clamp for loopers for sewing-machines	378,462	Feb. 28	1686	442	42	847
Reynolds, Lester, assignor of one-half to F. Riley, Yreka, Cal. Grain scale and register	376,044	Jan. 3	444	118	42	89
Reynolds, William C., and J. Smith, Columbus, Ohio. Manufacturing vehicle-dashers	380,134	Mar. 27	1903	508	42	1354
Rhind, Frank, assignor to E. Miller & Company, Meriden, Conn. Lamp-burner	379,813	Mar. 20	1409	375	42	1250
Rhind, Frank, assignor to E. Miller & Company, Meriden, Conn. Hanging lamp	379,908	Mar. 20	1569	414	42	1279
Rhodes, Solomon C., Bradford, Pa. System of baiting wells	378,619	Feb. 28	1903	504	42	892
Rice, Bernard, New York, N. Y. Combined paper-knife and stamp-holder	379,415	Mar. 13	893	216	42	1125
Rice, Calvin B., East Oakland, Cal. Combined provision box and table	380,218	Mar. 27	2014	539	42	1376
Rice, David H., Brookline, assignor to Kitson Machine Company, Lowell, Mass. Machine for opening and cleaning cotton, &c	376,346	Jan. 10	878	230	42	177
Rice, Henry, assignor of one-half to F. P. Harder and J. R. Downer, Castleton, N. Y. Coffin	379,814	Mar. 20	1410	375 / 376	42	1250
Rice, Henry A., and S. Graham, Des Moines, Iowa. Automatic valve for steam-radiators	379,981	Mar. 27	1676	447	42	1310
Rice, Lewis C., Denver, Colo. Dynamo-electric machine	379,284	Mar. 13	613	167 / 168	42	1088
Rice, Walter C., Providence, R. I. Steam-boiler	379,982	Mar. 27	1677	447	42	1310
Rice, William H., Addison, N. Y. Oar-lock	378,722	Feb. 28	2053	542	42	920
Rice, William H., Addison, N. Y. Fish-hook	379,080	Mar. 6	318	92	42	1025
Richards, Francis H., Springfield, Mass., assignor to Mason Cotton Harvester Company, of South Carolina. Feeding mechanism for punching-presses	378,805	Feb. 28	2078	579 / 580 / 581	42	943
Richards, James H., and E. Huber, Marion, Ohio. Tube-expander	376,485	Jan. 17	1074	284	42	221
Richardson, Arthur S., Reading, Mass. Wax-thread sewing-machine	377,466	Feb. 7	179	42	42	530
Richardson, Frederick. (See Lewis, Russell H., assignor.)						
Richardson, George W., assignor of one-half to J. H. Shepard, Chicago, Ill. Dump-wagon	377,331	Jan. 31	2334	617	42	476
Richardson, John, St. Mary's, Ga. Propeller-shaft bearing	377,975	Mar. 6	157	45	42	997
Richmond, George G. (See Mauser and Richmond.)						
Richmond Locomotive and Machine Works. (See Blasdale, John, assignor.)						
Richter, Carl T. H., East Dedham, Mass. Combined seat, easel, and sunshade	375,953	Jan. 3	306	82	42	63
Richter, Wilhelm, Eintrachthütte, near Schwientochlowitz, and R. Lorenz, Radzionkau, near Beuthen, Prussia, Germany. Rotary and oscillating apparatus for distilling metallic ores	380,135	Mar. 27	1904	508	42	1354
Rickard, Franklin A., and F. T. Wright, assignors to F. Wright and B. F. Rolfe, Batavia, Mich. Fence-machine	379,541	Mar. 13	987	265	42	1160
Rickard, George S., Columbus, Ohio. Lifting-jack	375,769	Jan. 3	66	20	42	17
Rider, Ebenezer W., Racine, Wis. Oil-can	377,639	Feb. 7	432	110	42	577
Rider, Ebenezer W., Racine, Wis. Feed-cutter	378,112	Feb. 21	1151	300 / 301	42	739
Ridge, Isaac M. (See Snyder, Charles L., assignor.)						
Riedel, Emil H., New York, N. Y. Photographic dark-chamber	380,136	Mar. 27	1905	508	42	1355
Riedel, Gustav A., Cedar, Tex., assignor of one-half to F. B. Forster, New York, N. Y. Boiler-feeder regulator	379,776	Mar. 20	1339	358	42	1236
Rieffel, John P., New York, N. Y. Cover for vessels	380,137	Mar. 27	1906	509	42	1355
Ries, Elias E., Baltimore, Md. Traction-increasing system for electric railways	379,909	Mar. 20	1570	414	42	1279
Ries, Elias E., Baltimore, Md. Induction-coil	380,138	Mar. 27	1907	509	42	1355
Ries, Elias E., assignor of one-half to A. H. Henderson, Baltimore, Md. Apparatus for increasing the traction of vehicles and motors	379,815	Mar. 20	1412	376	42	1250

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Ries, Elias E., and A. H. Henderson, Baltimore, Md. Electro-magnetic traction-increasing apparatus	379,816	Mar. 20	1415	376	42	1251
Rife, Obed C., Indianapolis, Ind. Window-guard	379,332	Mar. 13	681	184	42	1100
Riffle, Stephen R., Foley, Mo. Combined wagon bed and brake	378,337	Feb. 21	1497	391	42	802
Rigault, Alexandre. (See Girard and Rigault.)						
Rilker, Andrew L., New York, N. Y. Sectional steam-boiler	379,725	Mar. 20	1269	339	42	1223
Riley, Francis. (See Reynolds, Lester, assignor.)						
Riley, George N. (See McCleary, William W., assignor.)						
Ring, Michael B., Norwich, and J. I. Lavoie, Taftville, Conn. Vehicle-gear	377,211	Jan. 31	2151	568	42	443
Ringen, John, St. Louis, Mo. Stopper for vessels	377,275	Jan. 31	2249	594	42	461
Rinker, Robert S., Rinkerton, Va. Hoe	378,723	Feb. 28	2054	542	42	920
Rinninsland, Ludwig, Maysville, Ky. Thill-coupling	377,814	Feb. 14	733	185	42	649
Ripley, Royal H., Minneapolis, Minn. Stock-car	377,959	Feb. 14	934	243	42	690
Riser, Karl, and P. Bardonner, Cleveland, Ohio; said Riser assignor to said Bardonner. Combination-table	376,415	Jan. 10	967	252 / 253	42	193
Risley, E. Eugene. (See Risley, William S. and E. E.)						
Risley, William S. and E. E., Richfield Springs, N. Y. Hay-carrier	376,109	Jan. 10	535	143	42	114
Risley, William S. and E. E., Richfield Springs, N. Y. Tube	378,976	Mar. 6	158	46	42	997
Ritchie, Matthew L., assignor to Eagle Tube Company, New York, N. Y. Tube	377,213	Jan. 31	2155	569	42	444
Ritty, Sebastian, Dayton, Ohio. Harrow	379,662	Mar. 20	1173	311	42	1203
Ritz, Charles, Rochester, N. Y. Plumb-level	379,726	Mar. 20	1271	.....	42	1223
Rivard, Peter E., *et al.* (See Hand, Ekins, assignor.)						
Rivère, Victor, Newark, N. J. Tanned skin	376,784	Jan. 24	1544	406	42	319
Rives, John T., Wharton, Tex. Insect-destroyer	375,770	Jan. 3	67	20	42	17
Rivett, Edward, Boston, Mass. Counter-shaft bracket for watch-makers' lathes	375,771	Jan. 3	68	21	42	17
Rivett, Edward, Boston, Mass. Clamping-jaw for watch-makers' lathes	376,486	Jan. 17	1075	282	42	221
Rix, Benjamin F., assignor to R. A. Stone, Kalamazoo, Mich. Two-wheeled vehicle	375,954	Jan. 3	308	82	42	64
Robb, Charles L., Bellefontaine, Ohio. Foot-rest and stool for shoe-merchants	376,550	Jan. 17	1167	307	42	238
Robb, Lucian B., Cincinnati, Ohio. Dry closet	378,806	Feb. 28	2180	581	42	944
Robbins, Henry E., assignor of one-half to C. M. Benningbaus, Baltimore, Md. Apparatus for treating cereals	376,451	Jan. 17	1032	270	42	213
Roberts, Charles E., Chicago, Ill. Emery grinding-machine	377,212	Jan. 31	2152	568 / 569	42	444
Roberts, Charles E., Chicago, Ill. Emery-belt grinding-machine						
Roberts, Frank, *et al.* (See Leahy, Edward C., assignor.)	376,452	Jan. 17	1034	271	42	213
Roberts, George S., Meredith, N. H. Lamp-supporting device for upright pianos	376,991	Jan. 24	1894	483	42	373
Roberts, Henry P., Jamestown, N. Y. Wrench	375,772	Jan. 3	69	21	42	18
Roberts, Humphrey O., Minneapolis, Minn. Riveting-machine						
Roberts, Joseph E. (See Morell, James F., assignor.)						
Roberts, Martin F., Kilburn, county of Middlesex, England. Wire-drawing machine	377,864	Feb. 14	793	202 / 203	42	660
Roberts, William H. (See Naysmith, Robert, assignor.)						
Roberts, William H., Davenport Centre, N. Y. Butter-package	380,219	Mar. 27	2015	539	42	1377
Robertson, John, Pottsville, Pa. Preparation of bread	379,727	Mar. 20	1271	.....	42	1223
Robertson, John H., New York, N. Y. Cable-railway grip	377,409	Feb. 7	220	55, 56	42	530
Robertson, John H., New York, N. Y. Cable-railway grip	375,895	Jan. 3	222	61	42	47
Robertson, Samuel L., Cleveland, Ohio. Sand distributer and packer	379,030	Mar. 6	251	71	42	1013
Robes, Andrew, Somerville, Mass. Universal shaft-coupling	376,966	Jan. 24	1800	474	42	367
Robinson, Aaron J., Fremont, N. H. Lubricating device	379,333	Mar. 13	682	185	42	1101
Robinson, Albert G., Brooklyn, N. Y. Adjustable support for laundry-tubs	375,835	Jan. 3	148	42	42	34
Robinson, Edward W., C. H. O'Brien, and H. M. Breen, Portland, Me. Electric exercising-machine						
Robinson, Elizabeth. (See Robinson, William B. and E.)						
Robinson, George. (See James and Robinson.)	379,728	Mar. 20	1272	339	42	1223
Robinson, George M., Baltimore, Md. Boiler-tube cleaner	379,128	Mar. 6	386	110	42	1038
Robinson, George W., *et al.* (See Link, William D., assignor.)	376,911	Jan. 24	1730	455	42	353
Robinson, James S., Jamestown, N. Y. Automatic shut-off valve for gas service pipes	377,117	Jan. 31	2029	531	42	418
Robinson, John F., and C. W. Gonert, Newcastle, Del. Curtain-support	377,332	Jan. 31	2335	617	42	476
Robinson, Joshua. (See Hulford, William J., assignor.)						
Robinson, Rowley, Wymore, Nebr. Apparatus for transferring cars	378,004	Mar. 6	62	18	42	979
Robinson, Stillman W., Columbus, Ohio. Metal piling and substructure	378,005	Mar. 6	63	19	42	979
Robinson, Thomas C., Boston, assignor of one-half to E. B. Welch, Cambridge, Mass. Binder-guide for sewing-machines	378,724	Feb. 28	2055	542	42	920
Robinson, Thomas C., Boston, assignor to E. B. Welch, Cambridge, Mass. Basting-machine						
Robinson, Weller M., Montpelier, Iowa. Regulating attachment for corn-planters	378,178	Feb. 21	1252	330	42	757
Robinson, William B. and E., Brampton, county of Derby, England; said E. Robinson assignor to said William B. Robinson. Making surgical bandages	380,220	Mar. 27	2016	539	42	1377
Roblin, John F., Belleville, Ontario, Canada. Rowlock	377,690	Feb. 7	513	131	42	592
Roche, John J., New York, N. Y. Neckscarf	379,031	Mar. 6	252	71	42	1013
Rocker Spring Company. (See Seng, Wendelin, assignor.)	375,773	Jan. 3	70	21	42	18
Rockford Bolt Works. (See Mutimer, Frederick, assignor.)	379,729	Mar. 20	1273	340	42	1223
Rockingham Machine Company. (See Fowler, Alfred B., assignor.)	376,551	Jan. 17	1169	307 / 308	42	238
Rockwell, Dwight, South Windsor, Conn., assignor of one-half to L. H. Mattison, New York, N. Y. Illuminated wind-vane	378,807	Feb. 28	2181	581	42	944
Rockwell, William M., Woonsocket, R. I. Handle	377,830	Feb. 14	764	195	42	695
Rodeck, Paul T. A., Amsterdam, Netherlands. Chronometer escapement	375,955	Jan. 3	309	83	42	64
Roder, Adolphe, Philadelphia, Pa. Preserving goblet, tumbler, &c	378,923	Feb. 28	1766	467	42	805
Rodgers, Alexander, and W. T. Hatten, Roseland, Nebr. Dumping-wagon	378,850	Feb. 28	2257	601	42	958
Rodgers, Toppan P., Taunton, Mass. Railway signaling device	378,263	Feb. 21	1388	363 / 364	42	782
Roemer, William, Newark, N. J. Bag or satchel frame	378,620	Feb. 28	1906	504 / 505	42	893
Roemer, William, Newark, N. J. Frame for traveling-bags	379,983	Mar. 27	1678	447	42	1311
Rogers, Albert C., Alfred, N. Y. Car-brake	376,611	Jan. 17	1260	330	42	256
Rogers, Charles D., Providence, R. I. Musical toy	376,416	Jan. 10	969	253 / 254	42	194
Rogers, Charles D., assignor to American Screw Company, Providence, R. I. Machine for finishing heads of screw-bolts	376,417	Jan. 10	973	254 / 255	42	194
Rogers, Charles D., assignor to American Screw Company, Providence, R. I. Barb-wire machine	376,418	Jan. 10	979	256	42	195
Rogers, Charles D., assignor to American Screw Company, Providence, R. I. Barb-wire	376,209	Jan. 10	691	183	42	142
Rogers, Seth, assignor to E. Lee, Ballston Spa, N. Y. Hand-truck						

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Rogers, Winfield S. (See Jones and Rogers.)						
Roggy, Nicholas, Walnut, Ill. Cultivator	378,463	Feb. 28	1686	442	42	847
Roht, Antone. (See Snyder and Roht.)						
Roland, Abraham, Westover's, assignor of one-half to J. M. Bunn, New Washington, Pa. Wrench	379,984	Mar. 27	1679	448	42	1311
Rolfe, Benjamin F., *et al.* (See Rickard and Wright, assignors.)						
Rolls, Edwin C., Chatham, Ontario, Canada. Nut-lock	379,523	Mar. 13	964	260	42	1155
Rooney, Henry F., Randolph, Mass. Burnishing-machine	376,045	Jan. 3	446	119	42	89
Rooney, Patrick, assignor to C. F. Sylvester & Co., Fall River, Mass. Weaver's comb	378,376	Feb. 21	1548	405	42	814
Root, Hannah M., *et al.*, administratora. (See Root, John B.)						
Root, Henry. (See Clement and Watriss, assignors.)						
Root, John B., deceased, Port Chester, N. Y.; H. M. Root and W. S. Church, administrators. Spirally-welded tube	376,680	Jan. 17	1375	362	42	277
Root, John B., deceased, Port Chester, N. Y.; H. M. Root and W. S. Church, administrators. Making spirally-welded tubing	376,681	Jan. 17	1376	362	42	277
Root, John B., deceased; H. M. Root and W. S. Church, Port Chester, N. Y., administrators. Blow-pipe apparatus	377,467	Feb. 7	181	43	42	530
Root, John B., deceased, Port Chester, N.Y.; H. M. Root and W.S. Church administrators. Sheet-metal pipe	379,663	Mar. 20	1174	312	42	1203
Roper, Charles P., assignor to G. Draper & Sons, Hopedale, Mass. Support for spinning-spindles	378,906	Mar. 6	65	19	42	979
Roscoe, Allison M., and G. E. Grier, Dubois, Pa. Bag-holder	379,817	Mar. 20	1417	377	42	1251
Rose, Reuben M., Norwalk, Conn. Fare register and recorder	377,960	Feb. 14	936	244	42	690
Rosenthal, Charles T., Batesville, Ark. Box for the sale of goods	376,361	Jan. 10	761	202	42	156
Rosentreter, Frank L., Cleveland, Ohio, assignor to Andrus Manufacturing Company, Rochester, N. Y. Sash holder	379,664	Mar. 20	1175	312	42	1203
Rosentreter, Frank L., Cleveland, Ohio, assignor to Andrus Manufacturing Company, Rochester, N. Y. Sash-fastener	379,910	Mar. 20	1573	415	42	1260
Ross, Donald, and N. Brooker, St. Joseph, Mo. Fire-extinguishing attachment for car-stoves	376,163	Jan. 10	626	168	42	131
Ross, Frederick J. and W. H., South Hadley Falls, Mass. Velocipede-boat	380,231	Mar. 27	2018	540	42	1377
Ross, Jasper S., Geneva, Ohio. Inkstand	379,247	Mar. 13	558	155	42	1057
Ross, Jasper S., Geneva, Ohio. Inkstand	379,248	Mar. 13	559	155	42	1057
Ross, Robert N., St. Louis, Mo. Brick-machine	377,778	Feb. 14	675	{169 / 170}	{42}	639
Ross, Simon, Jr., Newport, Ky. Leather-splitting machine	378,179	Feb. 21	1253	{330 / 331}	{4}	757
Ross, William H. (See Ross, Frederick J. and W. H.)						
Rossler, Ludwig, Aibling, Bavaria, Germany. Screw-conveyer	376,552	Jan. 17	1171	308	42	239
Roth, John E., Coal City, Ind. Combined ironing-board and wash-bench	380,268	Mar. 27	2078	556	42	1390
Rothlisberger, Ernest. (See Schickner and Rothlisberger.)						
Rouse, Jasper A., East Berkshire, Vt. Thrashing-machine	377,214	Jan. 31	2156	569	42	444
Rowand, Archibald H., Allegheny, Pa. Pipe-coupling	378,150	Feb. 21	1245	316	42	756
Rowe, Arthur C., *et al.* (See Hart, Alfred A., assignor.)						
Rowe, L. Leroy, Boston, Mass. Heating stove or furnace	378,019	Feb. 14	1018	266	42	706
Rowe, L. Leroy, Boston, Mass. Tumbler or bottle washer	378,021	Feb. 28	1908	505	42	893
Rowell, Charles. (See Googins, James G., assignor.)						
Rowell, Norris G. (See Neely and Rowell.)						
Rowland, Charles, Quincy, Ill. Handle for mucilage-brushes	376,397	Jan. 10	940	246	42	188
Rowland, Frederick C., New Haven, Conn. Digester	376,612	Jan. 17	1262	{330 / 331}	{42}	256
Rowland, Thomas F., New York, N. Y. Welding-machine	375,836	Jan. 3	150	43	42	34
Rowland, Thomas F., New York, and W. E. Hill, Brooklyn, N. Y.; said Hill assignor to said Rowland. Corrugating-machine	379,985	Mar. 27	1680	{448 / 449}	{42}	1311
Roy, Bozil S., Worcester, Mass. Card-grinder	379,285	Mar. 13	614	168	42	1088
Royer, George F., Wilkes-Barré, Pa. Steam-muffler	379,608	Mar. 20	1100	292	42	1188
Rubin, Max, New York, N. Y. Glove-fastener	376,942	Jan. 24	1731	455	42	354
Rudisill, Louis A., Charlotte, N. C. Car-coupler	376,967	Jan. 24	1801	474	42	367
Ruesing, Joseph. (See Foellmer, Fritz, assignor.)						
Ruggles, F. N. (See Frantz, Eugene L., assignor.)						
Rumble, A. Carson, J. Symington, and N. Strong, Santa Fé, N. Mex. Ter. Automatic fire-extinguisher for railway-coaches	376,046	Jan. 3	446	119	42	89
Rumsey, Charles B., assignor to Wire Fabric Company, Homer, N. Y. Wire-reel	376,943	Jan. 24	1732	455	42	354
Rundblad, Carl V. (See Peterson and Rundblad.)						
Rundquist, Charles J., Opheim, Ill. Foot-power hammer	379,818	Mar. 20	1420	377	42	1252
Runkel, John P., Milwaukee, Wis. Car-coupling	376,164	Jan. 10	627	168	42	131
Runkle, Benjamin P. (See Piatt, William M., assignor.)						
Runnels, Darius A., Lizton, Ind. Hog-tendon cutter	379,286	Mar. 13	616	168	42	1088
Runyon, Archibald S., assignor of one-half to J. H. Morgan, St. John, Mo. Wire-stretcher	375,956	Jan. 3	311	83	42	64
Ruppel, Henry. (See Dangler and Ruppel.)						
Ruppel, Henry, assignor to Schneider & Trenkamp, Cleveland, Ohio. Vapor-burner	375,957	Jan. 3	312	83	42	64
Ruppel, Henry, assignor to Schneider & Trenkamp, Cleveland, Ohio. Plumber's furnace	379,986	Mar. 27	1682	449	42	1312
Russell Counter Company. (See Russell, Lewis B., assignor.)						
Russell & Erwin Manufacturing Company. (See Flinn, William H., assignor.)						
Russell & Erwin Manufacturing Company. (See Russell, Henry E., Jr., assignor.)						
Russell, Henry, Peoria, Ill. Eaves-trough hanger	377,405	Feb. 7	56	15	42	506
Russell, Henry E., Jr., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Transom-lifter	377,362	Jan. 31	2385	639	42	484
Russell, Henry T., Chicago, Ill. Die for making thrashing-machine teeth	379,730	Mar. 20	1274	340	42	1234
Russell, Horace, assignor of one-half to G. W. Griffin and D. A. Baker, Fayette, Ohio. Siding-gage	377,085	Jan. 31	1983	519	42	402
Russell, Howard H., Oberlin, Ohio. Reference book-mark	376,110	Jan. 10	538	143	42	114
Russell, James C., Beaver Falls, Pa. Manufacture of shovels, spades, &c	376,398	Jan. 10	941	246	42	189
Russell, James C., Beaver Falls, Pa. Machine for dividing or splitting metal	376,914	Jan. 24	1734	456	42	354
Russell, Lewis B., Lynn, Mass., assignor to Russell Counter Company, Saco, Me. Counter-stiffener machine	377,468	Feb. 7	183	43	42	530
Russell, Louis, Cherokee, Kans. Telegraph-repeater	378,464	Feb. 28	1688	442	42	847
Russia Cement Company. (See Brooks, Reuben, assignor.)						
Russia Cement Company. (See Kirkpatrick, John W., assignor.)						
Russom, Charles H., Springfield, Ill. Lathe	377,779	Feb. 14	678	{170 / 171}	{42}	639
Rutan, Thomas B. (See Dubey, Edward A., assignor.)						
Rutherford, Reuben C., and F. S. Bartram, New York, N. Y. Filling device for fountain pens or tubes	378,524	Feb. 28	1768	468	42	865

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Ruton, Hiram W., *et al.* (See Gore, Henry A., assignor.)						
Rutzler & Blake. (See Rutzler, Enoch, assignor.)						
Rutzler, Enoch, Brooklyn, assignor to Rutzler & Blake, New York, N. Y. Trap for exhaust-steam pipes	379,542	Mar. 13	980	266	42	1160
Ryan, Andrew, New York, N. Y. Folding rule	376,185	Jan. 10	629	168	42	132
Ryan, Edward T., New Bedford, Mass. Head-rest	379,987	Mar. 27	1684	450	42	1312
Ryan, Laurence F., New York, N. Y. Folding tent	378,977	Mar. 6	159	46	42	997
Ryan, Matthew, Washington, D. C. Anti-friction axle	379,878	Mar. 20	1528	401	42	1272
Ryan, Michael, Chicago, Ill. Book-binding	378,978	Mar. 6	160	46 47	42	998
Ryland, Alston L., *et al.* (See Stephens, Lawrence, assignor.)	379,334	Mar. 13	683	185	42	1101
Rylands, Dan, Stairfoot, near Barnsley, county of York, England. Forming indents, &c., in internally-stoppered bottles	376,915	Jan. 24	1735	456	42	354
Rylands, Dan, Stairfoot, near Barnsley, county of York, England. Internally-stoppered bottle	376,916	Jan. 24	1736	456	42	354
Sabey, George A., *et al.* (See Hand, Ekins, assignor.)	379,416	Mar. 13	804	216	42	1125
Sabold, John, Boyertown, Pa. Detachable handle for sad-irons						
Sackett, Orville L. (See Edwards and Sackett.)						
Sadler, Clarence W., *et al.* (See Coyle, James, assignor.)						
Safety Insulated Wire and Cable Company. (See Requa, Leonard F., assignor.)	378,406	Feb. 21	1595	419	42	822
Sage, John C., Atlanta, Ga. Grading and ditching machine	377,440	Feb. 7	142	32	42	521
Sage, William, Boston, Mass. Ice-creeper	378,725	Feb. 28	2056	542	42	920
Sagendorph, Frank E., assignor of one-half to E. S. Lloyd, Chicago, Ill. Sheet-metal roof						
Sagendorph, Longley L., and G. C. Keene, assignors of one-third to H. P. Lloyd, Cincinnati, Ohio. Power shearing-machine	377,500	Feb. 7	233	56, 57	42	540
Sagendorph, Longley L., assignor of one-half to H. P. Lloyd, Cincinnati, Ohio. Machine for shearing or punching sheet metal	377,780	Feb. 14	680	171	42	640
Saladee, Charles W., Freeport, Ill., assignor to C. W. Saladee, Cleveland, Ohio. Wagon-gear	379,417	Mar. 13	805	217	42	1125
Saladee, Cyrus W. (See Saladee, Charles W., assignor.)						
Saladee, Cyrus W., Cleveland, Ohio. Spring for vehicles	376,755	Jan. 24	1488	392	42	308
Salisbury, Levi E., Providence, R. I. Circular-knitting machine	379,819	Mar. 20	1420	{377 / 378}	{42}	1252
Salmon, Samuel. (See Coxe and Salmon.)						
Salomon, Mathilda. (See Janson, Louis, assignor.)						
Salomon, Siegmund L., New York, N. Y. Garment-protector	376,210	Jan. 10	692	184	42	142
Saltonstall, Leverett. (See Hazelton, Ivory, assignor.)						
Sammons, Benjamine F., assignor of one-half to T. Dobbins, Cunningham, Mo. Air-jet	379,543	Mar. 13	980	266	42	1160
Sandage, Joshua, South Bend, Ind. Drop-hammer	376,111	Jan. 10	539	{143 / 144}	{42}	115
Sanders, Amos, North Vernon, Ind. Receptacle for containing classified bills, letters, or samples	379,665	Mar. 20	1176	312	42	1204
Sanders, John C. (See Spencer and Sanders.)						
Sanders, Oliver P., Terre Haute, Ind., assignor of one-half to A. G. Brandner, Kansas City, Mo. Car-motor	379,129	Mar. 6	387	110	42	1039
Sanderson, Herbert H., *et al.* (See Wilkins, George H., assignor.)						
Sandford, George T., Kinston, N. C. Case for transporting fish-eggs	376,553	Jan. 17	1171	308	42	239
Sandon, Joseph, Virginia City, Mont. Ter. Ore-concentrator	379,418	Mar. 13	806	217	42	1125
Sands, Joseph H., *et al.* (See Pritchard and Templon, assignors.)						
Sanford, William C., Amsterdam, N. Y. Spinning-machine, &c	376,831	Jan. 24	1621	424	42	331
Sargeant Manufacturing Co. (See Johnson, Henry, assignor.)						
Sargeant Manufacturing Company. (See Johnson and Jacobus, assignors.)						
Sargent & Company. (See Shaw, John H., assignor.)						
Sargent & Company. (See Shaw and Gilfillan, assignors.)	378,219	Feb. 21	1341	348	42	770
Sauder, John M., Bloomsburg, Pa. Seat or back fastening for furniture	376,347	Jan. 10	880	230	42	178
Saunders, John A., Warrenton, Va. Nut-lock	378,525	Feb. 28	1771	468	42	866
Savage, Arthur W., assignor to M. Hartley, New York, N. Y. Magazine fire-arm	377,579	Feb. 7	340	88	42	561
Savene, John W., Toledo, Ohio. Metallic wheel	379,287	Mar. 13	616	169	42	1088
Sawyer, George H., Lemoille, Ill. Disk harrow	379,288	Mar. 13	618	169	42	1088
Sawyer, George H., Lemoille, Ill. Sulky attachment for plows						
Sawyer Spindle Company. (See Wood, Aurin, assignor.) (Reissue.)	380,053	Mar. 27	1787	{477 / 478}	{42}	1331
Sawyer, William H., Providence, R. I. Machine for dressing covered electrical conductors	380,054	Mar. 27	1789	478	42	1331
Sawyer, William H., Providence, R. I. Apparatus for threading wires or cords through flexible tubes	380,055	Mar. 27	1791	478	42	1331
Sawyer, William H., Providence, R. I. Lubricating wire						
Sawyers, Ethan A., *et al.* (See Latham, Ephraim, assignor.)						
Saxe, John L., Waterbury, Conn., N. M. Seelye, Cambridge, and F. W. Coy, Boston, Mass.; said Seelye and Coy assignors to said Saxe. Riveting-machine	377,051	Jan. 31	1918	{504 / 505}	{42}	396
Saxton, Charles S. (See Young, Christie L., assignor.)						
Saxton & Phillips. (See Johnson, Edwin T., assignor.)						
Saybold, Charles, *et al.* (See Beisel, Franklin P., assignor.)						
Sayers, John. (See Kennedy, Herman N., assignor.)	375,896	Jan. 3	224	61	42	48
Sayre, Marcus, Montrose, N. J. Limekiln	375,897	Jan. 3	225	61, 62	42	48
Sayre, Marcus, Newark, N. J. Limekiln	378,622	Feb. 28	1909	505	42	893
Sayre, Theodore J., Newark, N. J. Fur-blower	376,785	Jan. 24	1546	{406 / 407}	{42}	319
Scates, George R., Knoxville, Tenn. Furnace	376,968	Jan. 24	1802	474	42	367
Schaffer, Ludwig, Vienna, Austria-Hungary. Appliance for self-massage						
Schanschieff, Alexander, Gipsy Hill, county of Surrey, assignor to Schanschieff Electric Battery Syndicate, London, England. New mercuric salt for battery-fluids	379,820	Mar. 20	1425	.....	42	1253
Schanschieff, Alexander, Gipsy Hill, county of Surrey, assignor to Schanschieff Electric Battery Syndicate, London, England. Galvanic battery	379,911	Mar. 20	1576	415	42	1260
Schanschieff Electric Battery Syndicate. (See Schanschieff, Alexander, assignor.)						
Schattels, Alexander. (See Klein and Schattels.)						
Schefbauer, Rupert, assignor to Weber & Schefbauer, Dresden, Saxony, Germany. Insulating electric conductors	377,118	Jan. 31	2030	531	42	418
Schenck, Remsen. (See Horne, William E., assignor.)						
Schenck, Unico H. W., Brooklyn, assignor of four-tenths to C. A. Willis, New York, N. Y. Belt-shifter	379,988	Mar. 27	1685	450	42	1312
Schermerhorn, Joshua, and T. Jury, Terra Cotta, Kans. Cultivator	378,377	Feb. 21	1549	405	42	814
Schickner, William G., and E. Rothlisberger, Cincinnati, Ohio; said Rothlisberger assignor to said Schickner. Cash indicator and register	376,262	Jan. 10	762	202	42	156

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Schiefer, William D., *et al.* (See Poulson, Britton, assignor.)						
Schiefer, William D., Fort Wayne, Ind., assignor of one-half to J. C. Hunt, Concord, Mass. Device for detaching buttons	379,609	Mar. 20	1100	292	42	1188
Schieren, Charles A. (See Brock, Fenelon B., assignor.)						
Schieren, Charles A., Brooklyn, N. Y. Manufacture of leather-link belting	377,333	Jan. 31	2337	678	42	476
Schieren, Charles A., Brooklyn, N. Y. Machine-belting	380,222	Mar. 27	2020	540	42	1378
Schierenbeck, Richard, Brooklyn, N. Y. Refrigerator	376,263	Jan. 10	765	203	42	157
Schiermeyer, A. L. August, Daykin, Nebr. Corn-planter	379,989	Mar. 27	1686	450	42	1313
Schinnellier, Jacob, Pittsburg, Pa. Joint for gas-conduits	376,917	Jan. 24	1737	456	42	354
Schlapp, Charles H. L., Davenport, Iowa. Heating-stove	378,979	Mar. 6	162	47	42	998
Schlatter, Otto, A. Schmid, and H. Burtscher, Berne, Switzerland. Surgeon's appliance	376,364	Jan. 10	766	203	42	157
Schlesinger, William M., Philadelphia, Pa. Traveling current-collector for electric-railway motor-cars	377,215	Jan. 31	2157	569 / 570	42	445
Schleainger, William M., Philadelphia, Pa. Electric-railway car-brake	378,980	Mar. 6	164	47	42	998
Schloss, Michael, Baltimore, Md. Coat	379,032	Mar. 6	253	72	42	1013
Schmahl, Johann C., Barmen, Prussia, Germany. Imitation button	379,289	Mar. 13	620	169	42	1089
Schmid, Adolf. (See Schlatter, Schmid, and Burtscher.)						
Schmidt, Carl F., Elberfeld, Germany. Machine for the manufacture of paper bags	378,851	Feb. 28	2259	601	42	958
Schmidt, Carl F., Elberfeld, Germany, assignor, by mesne assignments, to L. G. Fisher, Chicago, Ill. Manufacture of paper bags	378,526	Feb. 28	1773	468	42	866
Schmidt, Christian A., Hoboken, N. J. Chenille fringe	379,033	Mar. 6	254	72	42	1014
Schmidt, Ferdinand C., assignor to R. Neumann & Co., Newark, N. J. Frame for traveling-bags	378,623	Feb. 28	1910	506	42	893
Schmidt, Theodore F. W., assignor of one-half to Lanbach & Iddings, Dayton, Ohio. Paper box	377,640	Feb. 7	432	110	42	577
Schmiel, Ernst O., Gohlis, near Leipsic, Germany. Preparing lithographic surfaces	376,554	Jan. 17	1172	.....	42	239
Schmitz, Henry E. (See Aldom and Schmitz.)						
Schmucker, Morris, Lanark, Ill. Attachment for corn-planters	379,821	Mar. 20	1426	378	42	1253
Schneider, Bennett B., New York, N. Y. Lamp	379,610	Mar. 20	1102	293	42	1188
Schneider, Christian C. (See Timby, Theodore R., assignor.)						
Schneider, Georg, Cologne, Germany. Fabric for driving-belts	378,151	Feb. 21	1216	317	42	750
Schneider, Louis. (See Langlot, Adam G., assignor.)						
Schneider, Max, Doos, near Nuremberg, Bavaria, Germany. Parlor-stove	377,119	Jan. 31	2031	532	42	418
Schneider Sons & Co., Peter. (See Goddard, William L., assignor.)						
Schneider & Trenkamp. (See Ruppel, Henry, assignor.)						
Schneidewind, G. L., Hermann, Altona, Prussia, Germany, assignor of one-half to F. O. H. Wechsung, New York, N. Y. Vehicle-wheel	376,969	Jan. 24	1803	475	42	367
Schniedwend & Lee Company. (See Beckman, Henry F., assignor.)						
Schnier, Anthony, and S. R. Smith, assignors to Smith, Myers & Schnier, Cincinnati, Ohio. Feed mechanism for saw-mill carriages	377,469	Feb. 7	184	43	42	531
Schoefer, Selma A., Brooklyn, N. Y. Removable corset-fastening	380,056	Mar. 27	1792	479	42	1332
Schoembs, Hermann, Offenbach-on-the-Main, Germany. Producing lithographic surfaces	379,731	Mar. 20	1277	.....	42	1224
Schoen, Charles T., Philadelphia, Pa. Hydrocarbon superheater and burner	379,859	Mar. 20	1529	403	42	1272
Schoen, Charles T., assignor to C. Scott Spring Company, Philadelphia, Pa. Car-spring	378,264	Feb. 21	1390	364	42	782
Schoen, Charles T., Philadelphia, Pa., assignor to C. Scott Spring Company. Making car-spring plates	379,544	Mar. 13	991	266	42	1161
Schoen, Georg, New York, N. Y. Bustle	379,419	Mar. 13	808	217	42	1125
Schofield, Albert B., Jersey City, N. J. Seal-press	378,624	Feb. 28	1911	506	42	894
Schofield, Daniel, Camden, N. J. Car-coupling	378,265	Feb. 21	1391	364 / 365	42	782
Schofield, Fredrick F., Oscoda, Mich. Drive-chain	377,120	Jan. 31	2032	532	42	419
Scholfield, Joseph J., Providence, R. I. Feeding mechanism for cloth-finishing machines	380,139	Mar. 27	1909	509 / 510	42	1355
Scholl, Frederick, Newark, N. J. Lady's belt	377,276	Jan. 31	2250	594	42	461
Schönheyder, William A. G., Shepherd's Bush, county of Middlesex, England. Water meter	377,641	Feb. 7	433	111	42	578
Schooley, Joseph E., Kyle, Ind. Band-cutter	376,166	Jan. 10	630	169	42	132
Schott, Arnold. (See Schreiner and Schott.)						
Schott Button Hole Attachment Company. (See Schott, William, assignor.)						
Schott, William, assignor to Schott Button Hole Attachment Company, New York, N. Y. Button-hole attachment for sewing-machines	379,666	Mar. 20	1177	312 / 313	42	1204
Schrade, George, assignor to M. E. and D. Thayer, New York, N. Y. Pin for neck-wear	376,047	Jan. 3	448	119	42	90
Schreiber, John. (See De Vry and Schreiber.)						
Schreiner, Friedrich, and A. Schott, Philadelphia, Pa. Matrix for stereotyping	376,348	Jan. 10	880	231	42	178
Schreyer, Gottlieb, Columbus, Ohio. Heating furnace and stove	379,990	Mar. 27	1688	451	42	1313
Schroeder, Frederick C., Boston, Mass. Color chart or scale	377,086	Jan. 31	1984	519	42	410
Schroeder, Max. (See Hänisch and Schroeder.)						
Schroeder, Seaton. (See Driggs and Schroeder.)						
Schroeter, Eduard R., Jersey City, N. J. Artificial stone	377,173	Jan. 31	2096	.....	42	433
Schroeter, Waldemar, Delitzsch, Saxony, Germany. Velocipede	379,290	Mar. 13	621	169 / 170	42	1089
Schubert, August, Oneida, N. Y. Spring-vehicle	378,180	Feb. 21	1255	331	42	758
Schuetz, Max, New York, N. Y. Vent-plug	377,087	Jan. 31	1986	519	42	410
Schuff, Philipp, New York, N. Y. Pressure-regulator for pumps	378,726	Feb. 28	2057	543	42	920
Schulhof, Max. (See Sonnenschein, Adolf, assignor.)						
Schulhoff, Henry, New York, N. Y. Roofing	376,918	Jan. 24	1738	457	42	355
Schultz, Louis, *et al.* (See Zallud, Karl, assignor.)						
Schuman, John, and A. G. Baier, Detroit, Mich. Spelling-board	375,774	Jan. 3	71	21	42	18
Schuman, John C., Akron, assignor to W. T. Jebb, New York, N. Y. Preparing and treating starch	379,034	Mar. 6	255	72	42	1014
Schummel, Carl, Hoboken, N. J. Ice-creeper	376,832	Jan. 24	1629	424	42	332
Schutte, Louis, Philadelphia, Pa. Injector	377,912	Feb. 14	864	222	42	676
Schutz, Adolph C., Brooklyn, assignor to National Progress Bunching Machine Company, New York, N. Y. Cigar-bunching machine	379,732	Mar. 20	1278	340 / 341	42	1224
Schuyler Electric Company. (See Lemp, Hermann, assignor.)						
Schuyler Electric Company. (See Urban and Wightman, assignors.)						
Schwahn, Rudolph, Eau Claire, Wis. Collar-pad	377,088	Jan. 31	1987	520	42	410
Schwanhausser, William. (See Evans and Schwanhausser.)						
Schwarzburg, Henry W. (See Frey and Schwarzburg.)						
Schwebel, August X. (See Wiedmann, John, assignor.)						
Schweitzer, Thomas. (See Palm, John Z., assignor.)						
Schweizer, Maximilian, Nanbuc, Conn. Knife	377,334	Jan. 31	2338	678	42	476

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Scoggin, William G. (See Palmer, Hezekiah C., assignor.)						
Scollay, George W., New York, N. Y. Refining vegetable oils	377,406	Feb. 7	57	.....	42	506
Scollay, George W., New York, N. Y. Refining cotton-seed oil	378,113	Feb. 21	1152	.....	42	740
Scollay, George W., New York, N. Y. Refining cotton-seed oil	378,114	Feb. 21	1154	.....	42	740
Scott, Elizabeth A., executrix. (See Scott, Ethan A.)						
Scott, Ethan A., deceased, San Francisco, Cal.: E. A. Scott executrix. Pressure regulator for carbonic-acid gas	375,837	Jan. 3	151	43	42	34
Scott, John T., Hamden, N. Y. Sled	379,130	Mar. 6	389	110	42	1039
Scott, Robert W., assignor of one-half to J. D. Morley, Philadelphia, Pa. Making knitted caps	379,420	Mar. 13	809	218	42	1126
Scott Spring Company, Charles. (See Schoen, Charles T., assignor.)						
Scott, Walter, Waterbury, Conn. Register key-ring	376,453	Jan. 17	1036	271	42	213
Scovill Manufacturing Company. (See Flammang, Mathias, assignor.)						
Scovill Manufacturing Company. (See Fuller, Willard H., assignor.)						
Scovill Manufacturing Company. (See Hyde, Theophilus R., Jr., assignor.)						
Scovill Manufacturing Company. (See Sperry, Henry T., assignor.)						
Scoville, Elijah U., Manlius, N. Y. Faucet	378,020	Feb. 14	1020	266 / 267	42	706
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Transfer switch and circuit for telephone-exchanges	377,441	Feb. 7	143	32	42	502
Scriven, Jeremiah A., New York, N. Y. Knitted under-garment	378,465	Feb. 28	1089	443	42	848
Scroggs, James A., near Randolph, assignor of one-half to G. W. Stevenson, Sherman Township, Kans. Cultivator and scraper combined	377,781	Feb. 14	681	172	42	640
Scrymgeour, David, assignor to Paragon Noiseless School Slate Company, Monson, Me. Frame for school-slates	376,786	Jan. 24	1551	407	42	320
Sculthorp, Walter J., Columbian Grove, assignor of one-half to C. M. Hardy, Wattsborough, Va. Tobacco-hanger	378,727	Feb. 28	2058	543	42	921
Seale, Elias A., and W. W. Downing, Brewton, Ala. Vehicle-wheel	375,775	Jan. 3	72	22	42	18
Seaman, Abraham C., *et al.* (See Singer, Christian G., assignor.)						
Seaman, John A., Chicago, Ill. Machine for trussing barrels	376,487	Jan. 17	1076	282	42	221
Searles, Robert N., New Haven, Conn., assignor to Athlophoros Company, New York, N. Y. Advertising-frame	376,265	Jan. 10	766	203	42	157
Searls, Austin D., Sr., Seward, A. D. Searls, Jr., Channahon, and D. C. Searls, Troy, Ill. Pulverizing-machine	376,112	Jan. 10	541	144	42	115
Searls, Dewitt C. (See Searls, Austin D., Sr. and Jr., and D. C.)						
Sears, Joseph. (See Burnet, Sears, and Burnham.)						
Seaver, George F., Dover, N. H. Fire-extinguisher for car-heaters	380,057	Mar. 27	1792	479	42	1332
Sedgwick, Thomas L. (See Baldwin and Sedgwick.)						
See, James W., Hamilton, Ohio. Fire-alarm	377,501	Feb. 7	236	57, 58	42	540
Seel, Louis. (See Gordon, Isaac C., assignor.)						
Seelye, Norman M. (See Saxe, Seelye, and Coy.)						
Seery, James F., Brooklyn, N. Y., assignor to Empire Hydrocarbon Company, of New York. Hydrocarbon-burner	379,291	Mar. 13	622	170	42	1089
Sefton, Louis P., Toronto, Ontario, Canada. Sharpener for reaper and mower blades	379,335	Mar. 13	684	185	42	1101
Seger, Eberhard, Stockholm, Sweden. Capsule-machine	375,776	Jan. 3	74	22, 23	42	19
Segschneider, Gustav, Yonkers, N. Y. Pile-wire for weaving	379,545	Mar. 13	993	267	42	1161
Seib, Frederick G. (See Seib, Simon H. M. and F. G.)						
Seib, Simon H. M. and F. G., Newark, N. J. Pulley-block	378,625	Feb. 28	1914	506	42	894
Seib, Valentine, Albany, N. Y. Manufacture of polishing-powder	376,211	Jan. 10	692	.....	42	142
Seiberling, John F., Akron, Ohio. Grain-binder	379,494	Mar. 13	919	247	42	1147
Seibert, Nicholas, Boston, Mass. Oil-feeder	379,733	Mar. 20	1280	341	42	1224
Seiler, Carl, Philadelphia, Pa Electric heater	379,882	Mar. 20	1427	378	42	1253
Seiter, Otto C., New Ulm, Minn. Sash-cord fastener	376,349	Jan. 10	881	231	42	178
Selden, Charles, Baltimore, Md. Duplex telegraphy	375,898	Jan. 3	226	62	42	48
Selden, Charles, Baltimore, Md. Multiple telegraphy	378,181	Feb. 21	1256	331	42	758
Selleck, Lloyd A., and G. J. Keenan, Brooklyn, Mich. Knob-lock	377,815	Feb. 14	732	185	42	649
Selleck, William E., Chicago, Ill. Recording weighing-scale	378,557	Feb. 28	1820	480	42	875
Sellers & Company, William. (See Kneass, Strickland L., assignor.)						
Sellon, John S., Hatton Gardens, county of Middlesex, England. Incandescent gas-burner	377,502	Feb. 7	239	58	42	541
Sellon, John S., Hatton Gardens, county of Middlesex, England, assignor to Electrical Accumulator Company, of New York. Secondary battery	377,642	Feb. 7	434	111	42	578
Sellon, John S., Hatton Gardens, county of Middlesex, England, assignor to Electrical Accumulator Company, of New York. System of electrical distribution by secondary batteries	378,115	Feb. 21	1155	301	42	740
Sellon, John S., Hatton Gardens, county of Middlesex, England, assignor to Electrical Accumulator Company, of New York. Automatic switch for secondary batteries	378,527	Feb. 28	1774	469	42	866
Selowsky, Gustave, New York, N. Y. Neckscarf	379,182	Mar. 6	449	126	42	1052
Selvage, Howard, Brooklyn, N. Y. Can-stopper	378,981	Mar. 6	167	46	42	999
Senftner, Robert, Brooklyn, N. Y. Station-indicator	379,292	Mar. 13	170	171	42	1090
Seng, Wendelin, assignor to Rocker Spring Company, Chicago, Ill. Rocking-chair attachment	376,266	Jan. 10	767	203 / 204	42	157
Sentman, Robert A., Philadelphia, Pa. Machine for making paper tubes	377,643	Feb. 7	435	111 / 112	42	578
Serpollet, Léon, Paris, France. Steam-generator	379,421	Mar. 13	809	218	42	1126
Seymour, Charles, assignor to Defiance Machine Works, Defiance, Ohio. Fence for saws	378,939	Mar. 6	112	32	42	988
Seymour, Frederick J., Cleveland, Ohio, assignor to Brown's Seamless Metal Company, Jersey City, N. J. Machine for shaping wrought-metal cylinders	376,167	Jan. 10	631	169	42	132
Seymour, Frederick J., Cleveland, Ohio, assignor to Brown's Seamless Metal Company, Jersey City, N. J. Making guns and ordnance	376,168	Jan. 10	634	169	42	132
Seymour, Henry A. (See Kelly, Owen E., assignor.)						
Seymour, James A., Auburn, N. Y. Governor for steam-engines	379,131	Mar. 6	389	111	42	1039
Seymour, John B., Jr. (See Adams and Seymour.)						
Shade, David E. (See McCray and Shade.)						
Shaffer, Edward P., Rochester, N. Y. Oil-cup	377,782	Feb. 14	682	172	42	640
Shake, William L., Paxton, Ind. Grain-adjuster	377,216	Jan. 31	2163	571	42	445
Shamp, George W. (See Birge, Shamp, and Lehmann.)						
Shanck, Henry K., Columbus, Ohio. Gas-engine	376,212	Jan. 10	693	184	42	142
Shannon, Robert T. (See Shannon, William H. and R. T.)						
Shannon, William H. and R. T., Stockton, Cal. Railway-crossing	376,756	Jan. 24	1489	393	42	308
Sharp, Henry C., *et al.* (See Martin, J. Albert, assignor.)						
Sharp, Thomas, Nashville, Tenn. Ore-washer	378,626	Feb. 28	1914	506 / 507	42	894
Sharts, Theodore, New York, N. Y. Illuminating-tile	378,558	Feb. 28	1822	480	42	875

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Sharts, Theodore, New York, N. Y. Illuminating-tile	378,559	Feb. 28	1823	421	42	875
Shaver Corporation. (See Shaver, George F., assignor.)						
Shaver, George F., assignor to Shaver Corporation, New York, N. Y. Rotary tool-driver	377,783	Feb. 14	683	172	42	641
Shaw, Edward J., Walsall, county of Stafford, England. Lamp-extinguisher	379,249	Mar. 13	560	156	42	1077
Shaw, Edwin H., Boston, assignor of nine-tenths to W. B. Frink and A. W. Hayes, Revere, Mass. Apparatus for manufacturing gaseous fuel or illuminating-gas	378,940	Mar. 6	113	32, 33	42	988
Shaw, Henry, New Orleans, La., and J. A. McCulloch, Glencoe, Md., assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Package comprising fragile articles	377,644	Feb. 7	478	119	42	578
Shaw, John H., assignor to Sargent & Company, New Haven, Conn. Bench-plane	377,645	Feb. 7	439	112	42	579
Shaw, John H., and W. Gilfillan, assignors to Sargent & Company, New Haven, Conn. Door-check	378,728	Feb. 28	2059	543	42	921
Shaw, Thomas, Newark, N. J. Water-pitcher	379,923	Mar. 20	1428	379	42	1253
Shealey, George W., Hiawatha, Kans. Steam-boiler	379,336	Mar. 13	685	185	42	1101
Shee, Parke E., Chester, assignor to himself and R. W. Martin, Philadelphia, Pa. Cutter-bar for mowers and reapers	380,058	Mar. 27	1793	479	42	1332
Sheehy, James J., *et al.* (See Baldwin, William A., assignor.)						
Shelbourne, Robinson W., and J. H. Sublett, Blandville, Ky. Plow	377,646	Feb. 7	440	113	42	579
Shelby, William R., *et al.* (See Tracy, William P., assignor.)						
Sheldon Axle Company. (See Hall, O. Clifford, assignor.)						
Sheldon, Philo B., Erie, Pa. Automatic sand-mill toy	379,132	Mar. 6	390	111	42	1039
Sheldon, William D., Providence, R. I. Automatic fluid-pressure regulator	379,824	Mar. 20	1429	379	42	1253
Sheldrick, David J., Columbus, Ohio. Drive-chain	377,121	Jan. 31	2033	532	42	419
Shelnutt, Alfred D., assignor of one-third to W. H. Logan, Louisville, Ky. Force-pump	378,338	Feb. 21	1499	392	42	803
Shelton, Albert C. (See Harper, Boyd, and Shelton.)						
Shenfield, Abraham. (See Voorhis, Calvin, assignor.)						
Shepard, Amos, Plantsville, assignor to Peck, Stow & Wilcox Company, Southington, Conn. Tinsmith's beading-machine	377,470	Feb. 7	185	43	42	531
Shepard, Charles D. (See Leininger, Frederic, assignor.)						
Shepard, Charles D., New York, N. Y. Centrifugal liquid-separator	379,133	Mar. 6	391	111	42	1039
Shepard, Charles D., New York, N. Y. Centrifugal liquid-separator	379,134	Mar. 6	393	111	42	1040
Shepard, Charles D., New York, N. Y. Submarine torpedo-vessel	379,991	Mar. 27	1689	451	42	1303
Shepard, Charles D., Mamaroneck, N. Y. Submarine vessel	379,992	Mar. 27	1693	452	42	1314
Shepard, Jason H. (See Richardson, George W., assignor.)						
Shepard, Sylvander C., assignor of one-half to E. D. Carr, Akron, Ohio. Friction-clutch	380,140	Mar. 27	1911	510	42	1356
Shephard, John A., Cleveland, Ohio. Wall-covering	376,350	Jan. 10	882	.....	42	178
Shepherd, James W., *et al.* (See Wallwork, Roughsedge, assignor.)						
Shepherd, Lewis T., assignor of three-fourths to R. E. Miller, W. M. Taylor, H. L. Young, and W. H. Shepherd, College Corner, Ohio. Door	376,048	Jan. 3	449	119	42	90
Shepherd, William H., *et al.* (See Shepherd, Lewis T., assignor.)						
Sherburne, Charles K., Minneapolis, Minn. Sewer-shoe	376,113	Jan. 10	542	144	42	115
Sherburne, Charles W., and F. A. Taber, Somerville, assignors to Star Brass Manufacturing Company, Boston, Mass. Car-lamp	377,961	Feb. 14	938	245	42	691
Sheridan, Thomas F., Springfield, Ill. Stem winding and setting watch	376,015	Jan. 3	401	106	42	80
Sheridon, William, assignor of forty-five one-hundredths to W. Lentz, North Toledo, Ohio. Wheel	379,250	Mar. 13	561	156	42	1077
Sherman, Andrew T. (See Talbott, Ezra W., assignor.)						
Sherwin Williams Company. (See Hopkins, Coventry, Neymann, and Beardslee, assignors.)						
Shields, Julius C. (See Dettra and Shields.)						
Shill, John, Omaha, Nebr. Washing-machine	377,277	Jan. 31	2250	595	42	461
Shipley, Alfred J., H. T. Sperry, and T. R. Hyde, Jr., Waterbury, Conn. Button	379,979	Mar. 20	1577	415	42	1300
Shlaudeman, Frank, Decatur, Ill. Oiling apparatus for gas-compressors	378,941	Mar. 6	114	33	42	989
Shobe, Abraham A., and W. Embley, Jerseyville, Ill. Gripper for cable railways	379,993	Mar. 27	1695	452	42	1314
Shobe, Abraham A., and W. Embley, Jerseyville, Ill. Gripping device for cable railways	379,994	Mar. 27	1696	452 / 453	42	1314
Sholder, Louis H., Cleveland, Ohio. Corn-husker	379,825	Mar. 20	1429	379	42	1254
Shonk, Charles W., Chicago, Ill. Sign	376,919	Jan. 24	1739	457	42	353
Shook, Edward, Erie, Ill. Wheel-plow	375,777	Jan. 3	77	23	42	19
Shorrock, James L., Accrington, county of Lancaster, England, assignor to T. C. Massey, Chicago, Ill. Drill-brace	376,757	Jan. 24	1491	393	42	309
Short, Sidney H., assignor to United States Electric Company, Denver, Colo. Spring-jack for electric railways	379,081	Mar. 6	319	92	42	1026
Short, Sidney H., assignor to United States Electric Company, Denver, Colo. Slot-switch for electrical and cable railways	379,082	Mar. 6	320	93	42	1026
Short, Willard N. (See Mains, John F., assignor.)						
Shubert, Jesse M., Water Valley, Ky. Reversible folding harrow	379,826	Mar. 20	1430	380	42	1254
Shuck, Jacob, Blue Springs, Nebr. Cultivator	377,174	Jan. 31	2097	552 / 553	42	433
Shuffleton, Samuel L., Eureka, Cal. Rotary water-meter	375,899	Jan. 3	228	62	42	48
Shultz, Charles H., St. Joseph, Mo. Vapor-burner for gas-stoves	377,407	Feb. 7	58	16	42	506
Shuman, Grant W., Lake Station, Ind. Harvester	377,647	Feb. 7	442	113 / 114	42	579
Shupe, Clinton M., Amanda, Ohio. Car-coupling	376,213	Jan. 10	695	184	42	143
Shurtleff, Asahel M., Boston, Mass. Atomizer	379,611	Mar. 20	1102	293	42	1188
Shurtleff, Seth H., and L. R. Haag, assignors to Ohio Machine Company, Middleport, Ohio. Nail-plate feeder	379,135	Mar. 6	395	112	42	1040
Sidway, Gilbert D., Jackson, Miss. Banana-carrier	376,555	Jan. 17	1173	308	42	239
Siebert, Charles A. (See Hunter, James M., assignor.)						
Siebert, Hans. (See Weinberg and Siebert.)						
Sielaff, Max, Berlin, Germany. Vending apparatus	378,982	Mar. 6	168	48	42	999
Sill, Charles T., *et al.* (See Lore, George W., assignor.)						
Sill, George S., *et al.* (See Lore, George W., assignor.)						
Silliman, Robert F., Troy, N. Y. Underground electrical conduit	378,021	Feb. 14	1021	267	42	707
Silsby Manufacturing Company. (See Medden, Edwin, assignor.)						
Silvers, Walter B., Indianapolis, Ind. Spring trace-holder	377,915	Feb. 14	869	223	42	677
Simcoe, Thomas J. (See Fisk and Phelps, assignors.)						
Simmons, Charles H., Brooklyn, N. Y. Device for tapping mains	378,116	Feb. 21	1157	301	42	741
Simmons, David, Northville, Mich. Carriage-lifting jack	377,784	Feb. 14	684	173	42	641
Simms, James F. (See Costello, John, assignor.)						
Simon, Dorsta. (See Feis and Simon.)						
Simonds, Alvan A., Dayton, Ohio. Paper-drying machine	378,266	Feb. 21	1392	365	42	783
Simonds, William E. (See Herrick, Frank J., assignor.)						
Simpkin, William, Richmond, Va. Apparatus for making ammonium sulphate	376,351	Jan. 10	893	231	42	178
Simpson, Andrew J., Morrow, Ohio. Grain-measuring apparatus	377,278	Jan. 31	2252	595	42	461

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Simpson, Greenlief W. (See Levasseur, John E., assignor.)						
Simpson, James T., Washington, D. C. Attachment for pockets	378,729	Feb. 28	2060	543	42	921
Sinclair, Robert C., London, and J. Hodson, Burton-on-Trent, county of Stafford, England. Apparatus for effecting the turning of malt or grain	379,136	Mar. 6	397	112	42	1040
Singer, Christian G., assignor to himself, B. Boyer, and A. C. Seaman, Lebanon, Pa. Metallic railway tie and chair	379,612	Mar. 20	1404	293	42	1189
Singer, Joseph, Chicago, Ill. Fringe	380,141	Mar. 27	1912	510	42	1356
Singer Manufacturing Company of New Jersey. (See Greene, James G., assignor.)						
Singer Manufacturing Company of New Jersey. (See Snitjer and Kuehn.)						
Sinn, Carl F., Montreal, Quebec, Canada. Dial-calendar with day-indicator	379,293	Mar. 13	627	171	42	1090
Sinning, Emile, St. Louis, Mo. Coffin-fastener	377,648	Feb. 7	451	114	42	580
Sirieix, Léon, San Francisco, Cal., assignor to Sirieix Mariners Compass Company, of California. Correcting device for ships' compasses	378,528	Feb. 28	1775	469	42	867
Sirieix Mariners Compass Company. (See Sirieix, Léon, assignor.)						
Skeffington, James, St. Paul, Minn. Plasterer's jacket	375,958	Jan. 3	314	84	42	65
Skinner, Halcyon, Yonkers, N. Y. Motor-truck for cars	377,122	Jan. 31	2034	532	42	419
Skinner, John B. (See Babbitt, Seward S., assignor.)						
Skinner, William, Wyman, Iowa. Tile-ditching machine	376,352	Jan. 10	885	232	42	179
Skrivan, Ottokar, and F. Dvorak, Vinohrady, Prague, Bohemia, Austria-Hungary. Watchman's electric controlling apparatus	376,920	Jan. 24	1740	457 / 458	42	355
Slack, Clarence M. (See Snyder and Rohl, assignors.)						
Slack, Fred, Sugar Branch, Ind. Fence	376,556	Jan. 17	1173	309	42	239
Slaght, Charles P., Iowa City, assignor of one-third to L. E. Chamberlin, Tiffin, Iowa. Hay rake and loader	378,466	Feb. 28	1690	443 / 444	42	848
Slagle, Oliver, assignor of one-half to E. P. Clark and M. S. Baldwin, Monmouth, Ill. Buggy-top	379,546	Mar. 13	994	267	42	1161
Sleeper, F. S. (See Getchell, John M., assignor.)						
Sleeper, Francis H., Coaticook, Quebec, Canada. Lifting-jack	379,294	Mar. 13	627	171	42	1091
Small, Chester C., Malden, assignor to F. F. Raymond, 2d, Newton, Mass. Attaching heels to boots or shoes	376,040	Jan. 3	450	120	42	90
Smiley, Henry, Boston, Mass. Bit-holder for bit-stocks	376,557	Jan. 17	1174	309	42	239
Smith, Aaron F., Lynn, Mass., assignor to Woodbury Heel Company, Nashua, N. H. Inner sole, stiffener, &c	376,419	Jan. 10	980	256	42	195
Smith, Addison, New York, N. Y. Construction of buildings	378,627	Feb. 28	1916	507	42	894
Smith, Alfred C., New York, N. Y. Display-stand for non-magnetic watches	378,339	Feb. 21	1500	392	42	803
Smith, Alfred E., Bronxville, N. Y. Air-heating furnace	376,682	Jan. 17	1378	363	42	277
Smith, Alson A., assignor of one-half to F. W. Cole, Newton, Mass. Fire-alarm signal-box	378,963	Mar. 6	172	49	42	1000
Smith, Amroy B., Augusta, Ark. Boat-propelling mechanism	377,123	Jan. 31	2035	533	42	419
Smith, Andrew C., E. E. Weir, F. R. Carson, and F. H. Weir, assignors to Lindgren Extinguisher Company, Kingman, Kans. Car-heater and lamp-extinguishing apparatus	379,995	Mar. 27	1697	453	42	1314
Smith & Anthony Stove Company. (See Allbee, Alexander C., assignor.)						
Smith, C. Stoddard. (See Reed, John H., assignor.)						
Smith, Charles F., Hutchinson, Kans. Corn harvester and husker	377,649	Feb. 7	451	115 / 116	42	580
Smith, Charles H., *et al.* (See Ponnay, Richard, assignor.)						
Smith, Dennison B., Jr. (See Barrows, Frederick B., assignor.)						
Smith, Dwight L., assignor of one-half to E. A. Smith, Waterbury, Conn. Buckle	378,730	Feb. 28	2061	544	42	921
Smith, Dwight L., assignor of one-half to E. A. Smith, Waterbury, Conn. Buckle	378,731	Feb. 28	2062	544	42	921
Smith, Dwight L., assignor of one-half to E. A. Smith, Waterbury, Conn. Buckle	378,732	Feb. 28	2063	544	42	921
Smith, Dwight L., assignor of one-half to E. A. Smith, Waterbury, Conn. Buckle	378,733	Feb. 28	2064	544	42	922
Smith, Dwight L., assignor of one-half to E. A. Smith, Waterbury, Conn. Buckle	378,734	Feb. 28	2065	545	42	922
Smith, Earl A. (See Smith, Dwight L., assignor.)						
Smith, Earl A., Waterbury, Conn. Buckle	376,267	Jan. 10	768	204	42	157
Smith, Earl A., Waterbury, Conn. Buckle	376,921	Jan. 24	1742	458	42	355
Smith, Edward C., Brooklyn, N. Y. Rail-sawing machine	375,959	Jan. 3	315	84	42	65
Smith, Edwin F., Brooklyn, assignor to H. S. Smith Manufacturing Company, (limited,) Geneva, N. Y. Cushioning device for steam-pistons	377,840	Feb. 14	765	195	42	655
Smith & Egge Manufacturing Company. (See Egge, Frederick, assignor.)						
Smith, Eli E., Steubenville, Ohio. Water-gate	377,089	Jan. 31	1987	520	42	410
Smith, Elias D. (See Wimmer, Louis, assignor.)						
Smith, Elmer Z. (See Dimmick and Smith.)						
Smith, Elwood H., assignor to J. Smith & Sons, New Haven, Conn. Apparatus for removing star-fish from oyster-beds	379,422	Mar. 13	811	218	42	1126
Smith, Frank E., Toledo, Iowa. Office-tickler	377,335	Jan. 31	2339	678	42	476
Smith, Frederick E. (See Dolan, Robert P., assignor.)						
Smith, Henry. (See Church, Walter C., assignor.)						
Smith, Henry D., and F. M. Walker, Newark, Ohio. Traction-engine	379,996	Mar. 27	1699	453	42	1315
Smith, Henry H., Kalamazoo, assignor of one-half to M. M. Kruse, Portage, Mich. Two-wheeled vehicle	376,992	Jan. 24	1835	483	42	375
Smith, Herbert S., New York, N. Y. Sunshade for baby-carriages	379,734	Mar. 20	1281	342	42	1225
Smith, Hill & Co. (See Hill, Thomas, assignor.)						
Smith Iron Company, G. W. & F. (See Holt, Thomas P., assignor.)						
Smith, Isaac. (See Gibbs, George, assignor.)						
Smith, Israel C. (See Herrinton, Edward E., assignor.)						
Smith, Israel C., and E. E. Herrinton, Grand Rapids, Mich. Folding bed	380,227	Mar. 27	2021	540	42	1378
Smith, J. Clement, *et al.* (See Baldwin, William A., assignor.)						
Smith, John. (See Reynolds and Smith.)						
Smith, John M., Spottsylvania, Va. Harness-buckle	379,613	Mar. 20	1105	293	42	1189
Smith, John P., Exeter, N. H. Drop-curtain	379,614	Mar. 20	1105	294	42	1189
Smith, John P., and W. C. Evans, Exeter, N. H. Nailing-machine	376,114	Jan. 10	543	145	42	115
Smith, John T., Rockfall, Conn. Revolver	376,922	Jan. 24	1743	458 / 459	42	355
Smith, John Y., Doylestown, Pa. Exhaust apparatus for locomotives	378,340	Feb. 21	1501	392	42	804
Smith, Joseph W., Mount Carmel, Pa. Railway-tie	376,214	Jan. 10	696	185	42	142
Smith, Joshua T., Coffee County, Ga. Antidote	379,183	Mar. 6	450	.....	42	1052
Smith, Lenioua D., and W. A. Olds, Helix, Oreg. Friction fire-escape	376,787	Jan. 24	1592	408	42	330
Smith, Lewis A. (See Kruse and Smith.)						
Smith Manufacturing Company, H. S. (See Smith, Edwin F., assignor.)						
Smith, Minard M., New York, N. Y. Die-holder and straightening device for wire-nail machines	379,735	Mar. 20	1282	342	42	1225
Smith, Myers & Schnier. (See Schnier and Smith, assignors.)						
Smith, Myers & Schnier. (See Smith, Samuel R., assignor.)						
Smith, Peter, New York, N. Y. Fire-proof partition	377,175	Jan. 31	2098	553	42	433
Smith, Reuben F., Pleasant Hill, Ala. Gas-engine	377,962	Feb. 14	940	245	42	691

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr.	Official Gazette. Vol.	Official Gazette. Page.
Smith, Robert D. O. (See Dodge and Smith.)						
Smith, Robert W. (See Arnold, Horace L., assignor.)						
Smith, Roswell T., Nashua, N. H. Automatic stitch-adjusting mechanism for embroidering-machines	377,410	Feb. 7	89	20	42	511
Smith, Roswell T., Nashua, N. H. Embroidering-machine	377,411	Feb. 7	97	20, 24	42	513
Smith, Roswell T., Nashua, N. H. Embroidering-machine	377,412	Feb. 7	102	21	42	514
Smith, Roswell T., Nashua, N. H. Electrical apparatus for effecting mechanical movements	377,413	Feb. 7	105	21	42	514
Smith, Roswell T., assignor to himself, N. W. Goddard, Nashua, N. H., and G. H. Dunham, New York, N. Y. Embroidering-machine	377,408	Feb. 7	60	16, 17, 18	42	507
Smith, Roswell T., assignor to himself, N. W. Goddard, Nashua, N. H., and G. H. Dunham, New York, N. Y. Embroidering-machine	377,409	Feb. 7	81	18, 19	42	509
Smith, Rufus, and H. H. Mansfield, Oakland, Cal. Fire-truck and extension-ladder	375,779	Jan. 3	80	24	42	20
Smith, Samuel R. (See Schnier and Smith.)						
Smith, Samuel R., assignor to Smith, Myers & Schnier, Cincinnati, Ohio. Saw-mill carriage	376,050	Jan. 3	451	120	42	90
Smith, Sidney, Cambridge, Mass. Check-valve	377,963	Feb. 14	942	246	42	691
Smith & Sons, J. (See Smith, Elwood H., assignor.)						
Smith, Thomas J. (See Snowden, Clarence, assignor.)						
Smith, Thomas J., assignor of one-half to G. Merrill, Jackson, Mich. Fence-machine	378,378	Feb. 21	1550	405	42	844
Smith, W. R., *et al.* (See Cragin, George P., assignor.)						
Smith, Walter J., Philadelphia, Pa. Wood-molding machine	376,268	Jan. 10	769	204	42	137
Smith, Walter J., Philadelphia, Pa. Wood molding machine	376,269	Jan. 10	770	205	42	138
Smith, William B., assignor of one-half to M. Spalding, Chicago, Ill. Hydrocarbon-furnace	378,852	Feb. 28	2290	601	42	930
Smith, William H., Tama City, Iowa. Signal-lantern	380,142	Mar. 27	1913	510	42	1356
Smith, Winfield. (See Strout, Edward E., assignor.)						
Smyser, Henry E., Philadelphia, Pa. Weighing apparatus for granular and powdered substances	376,681	Jan. 17	1379	363	42	277
Smyth, David M., assignor to Smyth Manufacturing Company, Hartford, Conn. Book-sewing machine	378,467	Feb. 28	1695	445	42	848
Smyth, David M., assignor to Smyth Manufacturing Company, Hartford, Conn. Book-sewing machine	378,984	Mar. 6	175	49	42	1000
Smyth, David M., assignor to Smyth Manufacturing Company, Hartford, Conn. Book-sewing machine	378,985	Mar. 6	177	50	42	1000
Smyth Manufacturing Company. (See Reynolds, John R., assignor.)						
Smyth Manufacturing Company. (See Smyth, David M., assignor.)						
Smyth, Samuel, Pittston, Pa. Farm-gate	380,143	Mar. 27	1914	511	42	1356
Snavely, B. Frank. (See Snavely, George R. and B. F.)						
Snavely, George R., Wrightsville, and B. F. Snavely, Harrisburg, Pa. Air-mattress	379,827	Mar. 20	1442	380	42	1254
Snedigar, Edward B., Maynard, Iowa. Ink-bottle	378,022	Feb. 14	1023	267	42	707
Snee, William, Pittsburg, Pa. Metal-punch	378,341	Feb. 21	1504	393	42	804
Snitjer, Drikus, and M. Kuehn, St. Louis, Mo., assignors to Singer Manufacturing Company of New Jersey. Sewing-machine shuttle	377,052	Jan. 31	1924	506	42	398
Snow, Fred W., Ramapo, N. Y. Switch-stand	375,900	Jan. 3	229	62	42	48
Snowden, Clarence, Cincinnati, assignor of one-half to T. J. Smith, Covington, Ohio. Umbrella attachment for bicycles	380,059	Mar. 27	1794	479	42	1352
Snyder, Benson S. (See Fuller, William F., assignor.)						
Snyder, Charles L., assignor of one-half to I. M. Ridge, Kansas City, Mo. Gripper actuated by hydraulic pressure for cable-railway cars	380,224	Mar. 27	2022	541	42	1378
Snyder, Lewis P., and G. Waigle, Linden, Mich. Tea-kettle	377,124	Jan. 31	2037	583	42	420
Snyder, Martin, and A. Robt, assignors to themselves and C. M. Slack, New Brunswick, N. J. Method of and apparatus for cutting rubber soles	378,405	Feb. 21	1593	418	42	822
Sobinski, Charles D. (See Pepper and Sobinski.)						
Société Anonyme Compagnie Continentale Edison. (See Jehl, Francis, assignor.)						
Solano, Renaldo, Brooklyn, assignor to Howard & Morse, New York, and D. R. Morse, Brooklyn, N. Y. Automatic air-brake	376,970	Jan. 24	1805	475	42	367
Solano, Renaldo, Brooklyn, assignor to Howard & Morse, New York, and D. R. Morse, Brooklyn, N. Y. Automatic air-brake	378,028	Feb. 28	1916	507, 508	42	895
Solid Link Chain Manufacturing Company. (See Kinder, Julius, assignor.)						
Sonnenschein, Adolf, assignor to himself and M. Schulhof, New York, N. Y. Fan attachment for children's carriages	376,684	Jan. 17	1380	363	42	278
Sorrels, Richard P., Hartford, Ky. Cane-stripper	378,735	Feb. 28	2066	545	42	922
Soulen, Henry, assignor to W. Luitink & Sons Manufacturing Company, Milwaukee, Wis., Sliding-door track and hanger	380,299	Mar. 27	2117	566, 567	42	1397
South, Philip T. (See Kienardt, John A., assignor.)						
Southard, Wilber F., Charleston, Ark. Cotton-press attachment	379,828	Mar. 20	1433	380	42	1254
Souther, George, Boston, Mass. Hoop for barrels, pails, or tubs	379,997	Mar. 27	1700	454	42	1315
Southgate, Frederick, Paris, France. Machine for forming seamless rubber goods	375,778	Jan. 3	79	23, 24	42	19
Spafford, Mark A., Rock Falls, assignor to Keystone Manufacturing Company, Sterling, Ill. Corn-planter	380,208	Mar. 27	2115	566	42	1397
Spahn, Herman, *et al.* (See Tachon, Claude, assignor.)						
Spalding & Brothers, A. G. (See Barnard, George, assignor.)						
Spalding, Merrill. (See Smith, William B., assignor.)						
Spannuth, Franz, Berlin, Germany. Runner for umbrellas or parasols	379,736	Mar. 20	1293	342	42	1225
Spaulding, Charles, Malden, Mass. Dividing mechanism for gear-cutting machines	376,893	Jan. 24	1623	424	42	332
Spaulding, William H. H., Peru, Ind. Adjustable-grate for stoves	376,758	Jan. 24	1402	393	42	309
Spealrs, Phillip M. (See Anderson, Lee, assignor.)						
Spears, Emanuel, Lafayette, Ind. Spike-extractor	377,865	Feb. 14	795	203	42	661
Speed, Francis M., assignor to Telpherage Electric Railway Company, San Francisco, Cal. Electric railway	380,060	Mar. 27	1795	480	42	1353
Spelman, William C., New York, N. Y. Metal-bar mat	377,580	Feb. 7	341	88	42	561
Spence, Archibald, Montreal, Quebec, Canada, assignor to National Hot Water Heater Company, Boston, Mass. Furnace for water-heaters	380,297	Mar. 27	2114	566	42	1397
Spencer, James S., *et al.* (See Lore, George W., assignor.)						
Spencer, Joseph E., and J. C. Sanders, Level, Md. Combination-padlock	378,736	Feb. 28	2067	545	42	922
Spencer, Thomas, Westbrook, Conn. System of electric distribution	378,737	Feb. 28	2069	545, 546	42	922
Spencer, Thomas, Westbrook, Conn. System of electric distribution	378,738	Feb. 28	2071	546	42	923
Spencer, William D., Middletown, Conn. Depth-gage	379,423	Mar. 13	812	218	42	1126
Spenneberg, George J., assignor of one-half to E. W. Burge and Z. T. Webster, Worthville, Ky. Shaft-holder	379,547	Mar. 13	996	267	42	1162
Spenny, Adam A. (See Livingston and Spenny.)						
Sperry, Henry T. (See Shipley, Sperry, and Hyde.)						
Sperry, Henry T., assignor to Scovill Manufacturing Company, Waterbury, Conn. Button	377,581	Feb. 7	342	88	42	561

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr.	Official Gazette. Vol.	Official Gazette. Page.
Spicher, Daniel L., Wabash, Ind. Feed-trough	378,942	Mar. 6	115	33	42	989
Spiel, Adolf, Berlin, Germany. Petroleum-engine	377,866	Feb. 14	795	203, 204	42	661
Sprague Electric Railway and Motor Company. (See Sprague, Frank J., assignor.)						
Sprague, Frank J., assignor to Sprague Electric Railway and Motor Company, New York, N. Y. Dynamo-electric machinery	380,144	Mar. 27	1915	511	42	1357
Spring, Charles A., *et al.* (See Steel, Robert, assignor.)						
Spring, Henry T., *et al.* (See Steel, Robert, assignor.)						
Spring, Joseph, New Haven, Conn. Lasting-tool	379,035	Mar. 6	256	72	42	1014
Springer, Job, Augusta, Me. Lettering-block	377,090	Jan. 31	1988	520	42	410
Springer, John, Clinton, assignor of one-half to M. C. Moore, Prairie du Sac, Wis. Hot-air register	380,145	Mar. 27	1916	511	42	1357
Springfield Engine and Thresher Company. (See Cadwgan, Thomas C., assignor.)						
Springfield Glue and Emery Wheel Company. (See Hyde and Vallentine, assignors.)						
Sproul, Robert. (See Hare and Sproul.)						
Sproul Vehicle Manufacturing Company. (See Hare and Sproul, assignors.)						
Square Hole Auger Company. (See Hughes and Lake, assignors.)						
Squier, George L., assignor to G. L. Squier Manufacturing Company, Evans, N. Y. Grain-scourer	379,337	Mar. 13	685	186	42	1101
Squier Manufacturing Company, George L. (See Squier, George L., assignor.)						
Squire, George W., *et al.* (See Goettel, John, assignor.)						
St. Arnauld, Edmond. (See Drude and St. Arnauld.)	377,442	Feb. 7	144	32	42	522
St. James, Henry L., Marshall, Tex. Piston-packing	377,870	Feb. 14	801	205	42	662
St. John, Enos F., Highland Station, Mich. Spirit-level and inclinometer	379,340	Mar. 13	690	187	42	1102
St. Lawrence, Henry, Northampton, Mass. Power-hammer						
St. Lawrence Manufacturing Company. (See Hartley, Sylvester F., assignor.)	376,169	Jan. 10	636	170	42	133
St. Louis, John B., Minneapolis, Minn. Steam-feed for saw-mill carriages	377,785	Feb. 14	685	153	42	641
St. Mary, Joseph, assignor of one-half to P. St. Mary, San Francisco, Cal. Damper-regulator	378,117	Feb. 21	1158	301	42	741
St. Mary, Peter. (See St. Mary, Joseph, assignor.)						
Stafford, Thomas H., Concord, N. H. Lead-pencil sharpener	375,780	Jan. 3	81	25	42	20
Stagg, John L., Chicago, Ill., assignor to United States Rolling Stock Company. Gondola-car	376,558	Jan. 17	1176	309	42	210
Stahl, Edward, Prescott, Ariz. Ter. Method of and device for fitting garments	375,838	Jan. 3	153	43	42	34
Stair, Edmund, Harrisonville, Mo. Brick-kiln	376,695	Jan. 17	1381	363, 364	42	278
Stambaugh, David F., assignor of one-half to J. T. Birch, St. Louis, Mo. Wire-coiling machine	375,960	Jan. 3	316	84, 85	42	65
Stamp, Elmer E. (See Kline, Samuel L., assignor.)						
Stanbon, Charles P., Lynn, Mass. Rounding-out and channel-flap-turning machine						
Standard Electric Company of Vermont. (See Higgins and Jaues, assignors.)						
Standard Electric Company of Vermont. (See Whitney, Edwin R., assignor.)						
Standard Gas Machine and Portable Gas Lamp Company. (See Bennett, Orson W., assignor.)						
Standard Ventilator Manufacturing Company. (See Ekstrom, John P., assignor.)						
Standish, Fred. C. (See Anderson, Oliver, assignor.)						
Stanley Rule and Level Company. (See Clark, Henry M., assignor.)						
Stanley Rule and Level Company. (See Lycett, Frederick W., assignor.)						
Stanley Rule and Level Company. (See Trant, Justus A., assignor.)						
Stanley, William. (See Kendall, A. Leslie, assignor.)						
Stanley Works. (See Hart and Corscaden, assignors.)	379,998	Mar. 27	1701	454	42	1315
Stanwood, James B., and P. P. Lane, Cincinnati, Ohio. Saw-mill set-works	376,215	Jan. 10	697	185, 186	42	143
Stanynought, Harry, Brooklyn, N. Y. Safe-lock	378,220	Feb. 21	1313	348	42	770
Staples, Elizabeth D., West New Brighton, and H. E. Asheraft, Goshen, N. Y., assignors to E. D. Staples. Hospital transfer-bed	376,270	Jan. 10	771	205	42	158
Star Brass Manufacturing Company. (See Sherburne and Taber, assignors.)						
Starke, Fred. C., Milwaukee, Wis. Sea-cock	377,691	Feb. 7	513	131, 132	42	592
Starr, Eben T., assignor to eight-fifteenths to M. Stone, New York, N. Y. Anchor	377,692	Feb. 7	515	132	42	592
Starr, Eben T., assignor to eight-fifteenths to M. Stone, New York, N. Y. Anchor						
Stasch, Bertha, *et al.* (See Stasch, Emil R., assignor.)						
Stasch, Emil R., assignor to V. Haischer and B. Stasch, Corning, N. Y. Machine for bending sheet-metal	377,336	Jan. 31	2340	678	42	477
Staunton, Gray. (See Bain, Robert E. M., assignor.)						
Steam Gauge and Lantern Company *et al.* (See Colony, Charles W., assignor.) (Reissue.)						
Stearns, A. M. (See Parmenter, Pheba, assignor.)	377,535	Feb. 7	280	71, 72	42	549
Stearns, John N., New York, N. Y. Needle-loom	377,536	Feb. 7	284	72	42	549
Stearns, John N., New York, N. Y. Needle-loom						
Stearns, Kent K. (See Bouton and Stearns.)	378,629	Feb. 28	1918	508	42	895
Stecher, Max, assignor of one-half to C. Wiegmann, Philadelphia, Pa. Secondary battery	379,424	Mar. 13	813	219	42	1127
Steck, Ernst F., Chicago, Ill. Fire-ladder truck	379,495	Mar. 13	921	248, 249	42	1147
Steck, Ernst F., Chicago, Ill. Ladder-truck	380,925	Mar. 27	2024	541	42	1379
Stedman, Oscar F., Cuyahoga Falls, Ohio. Stem winding and setting watch	375,901	Jan. 3	230	63	42	49
Steinan, William H., Norwich, Conn. Surface and scratch gage						
Steel, Robert, assignor of three-fourths to H. T. Spring, A. B. Swartz, and C. A. Spring, Philadelphia, Pa. Velocipede	376,051	Jan. 3	452	120	42	90
Steele, Elbert L., assignor to himself and W. H. Campbell, Nashua, N. H. Register for paper-box machines, &c	375,781	Jan. 3	82	25	42	20
Steele, Frederick M., administrator. (See Wilkinson, Lewis.)	379,999	Mar. 27	1702	455	42	1316
Steele, James, Guelph, Ontario, Canada. Spring-gear for vehicles						
Steele, John C., Vaughan, assignor of one-half to A. H. Dixon, Eglinton, Ontario, Canada. Road-planer	379,829	Mar. 20	1434	380	42	1254
Steffa, James F., Rockvale, Ill. Velocipede	375,961	Jan. 3	319	85, 86	42	66
Stein Manufacturing Company. (See Corbett, James R., assignor.)						
Steinau, Charles. (See Steinau, Richard and C.)	379,338	Mar. 13	687	186	42	1102
Steinau, Richard and C., Brunswick, Germany. Brick, &c	377,964	Feb. 14	944	246	42	692
Steiner, Moses, Bluffton, Ohio. Windmill	377,091	Jan. 31	1989	520, 521	42	411
Steiner, William R., Frederick, Md. Harvester						
Stephens, Lawrance, assignor of two-thirds to A. L. Ryland, St. Louis, and C. D. Moody, Webster Groves, Mo. Shoe-nail	377,503	Feb. 7	241	58	42	541
Stephens, R. B. (See Gladney, Robert D., assignor.)	376,399	Jan. 10	941	247	42	189
Stephenson, Edwin N., Waco, Tex. Mattress-stuffing machine	376,115	Jan. 10	546	146	42	116
Stephenson, George, Windsor, Ontario, Canada. Stove-drum						

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Stephenson, John, New York, N. Y. Tram-car lamp-house	378,469	Feb. 28	1698	446	42	849
Stephenson, John, New York, N. Y. Tram-car roof	378,470	Feb. 28	1699	446	42	850
Stephenson, John, New York, N. Y. Tram-car sash-rail	378,471	Feb. 28	1701	447	42	850
Stephenson, John, New York, N. Y. Tram-car-door hanging	378,472	Feb. 28	1702	447	42	850
Stephenson, John, New York, N. Y. Tram-car window	378,473	Feb. 28	1702	447, 448	42	851
Stephenson, John, New York, N. Y. Tram-car-door hanger	378,474	Feb. 28	1703	448	42	851
Stephenson, John, New York, N. Y. Tram-car-door operator	378,475	Feb. 28	1704	448, 449	42	851
Stephenson, John, New York, N. Y. Tram-car dash-cap	378,476	Feb. 28	1705	449	42	852
Stephenson, John, New York, N. Y. Car-axle box	378,477	Feb. 28	1706	449	42	852
Stephenson, John, New York, N. Y. Draw-head hook for tram-cars	378,478	Feb. 28	1707	450	42	852
Stephenson, John, New York, N. Y. Draw-bar for tram-cars	378,479	Feb. 28	1708	450	42	853
Stephenson, John, New York, N. Y. Aisle-car	378,480	Feb. 28	1708	450, 451	42	853
Stephenson, John, New York, N. Y. Horse-guard for tram-cars	379,496	Mar. 13	927	249	42	1148
Stephenson, William, Morris, Manitoba, Canada. Stove	376,454	Jan. 17	1037	271, 272	42	213
Stepp, John P., Brooklyn, assignor to Haff & Walbridge, New York, N. Y. Cork-extractor	378,907	Mar. 6	66	20	42	979
Sterne, Louis, London, England. Pin and attachment for jewelry	378,908	Mar. 6	66	20	42	979
Stettiner Chamotte Fabrik Actien-Gesellschaft, formerly Didier. (See Lentz, August, assignor.)						
Stevens Arms and Tool Company, J. (See Stevens, Joshua, assignor.)						
Stevens, Arthur D., assignor of one-half to E. B. Dillingham, Minneapolis, Minn. Lighting cars by electricity	376,116	Jan. 10	547	146	42	116
Stevens, Edwin F., and J. Packard, Greene, Iowa. Draft-equalizer	376,559	Jan. 17	1157	310	42	240
Stevens, George M., Cambridge, Mass. Fire-alarm signal-box	379,339	Mar. 13	688	186, 187	42	1102
Stevens, James S., and G. Canuter, Cleveland, Ohio. Dish-washer	378,152	Feb. 21	1217	317	42	730
Stevens, Joshua, assignor to J. Stevens Arms and Tool Company, Chicopee Falls, Mass. Draftsman's compasses	377,867	Feb. 14	798	204	42	602
Stevens, Joshua, assignor to J. Stevens Arms and Tool Company, Chicopee Falls, Mass. Calipers or dividers	377,868	Feb. 14	799	204	42	602
Stevens, Samuel, *et al.* (See Ballew, Richard J., assignor.)						
Stevens, Samuel S. (See Glasgow and Stevens.)						
Stevens, William H., Abbott, Miss. Door-check	376,117	Jan. 10	551	146	42	117
Stevens, William P., Deering, Me. Machine for forming pulp-cylinders	375,839	Jan. 3	154	43	42	35
Stevenson, George W. (See Scroggs, James A., assignor.)						
Stevenson, William A. (See Kelsey and Stevenson.)						
Steward, George H. (See Steward, John F. and G. H.)						
Steward, John F., Chicago, and G. H. Steward, Plano, Ill. Low-level grain-binder	376,488	Jan. 17	1079	283, 284, 285	42	222
Stewart, Anna M. E. (See Stewart, Theron S. and A. M. E.)						
Stewart, Charles, Philadelphia, Pa. Reel-oven	377,965	Feb. 14	945	246	42	692
Stewart, George W., assignor to B. F. Mosher, New York, N. Y. Steam-engine	376,271	Jan. 10	772	205	42	158
Stewart, John, New York, and G. W. Weiss, Brooklyn, N. Y. Sewing-machine	378,630	Feb. 28	1919	508	42	895
Stewart, Josephine, St. Louis, Mo. Dusting-brush	377,582	Feb. 7	343	88	42	501
Stewart, Theron S. and A. M. E., Toledo, Ohio. Churn-dasher	380,226	Mar. 27	2025	541	42	1379
Stewart, William H., assignor of three-fourths to R. M Godfrey, Kansas City, Mo. Brick-machine	376,759	Jan. 24	1493	394	42	309
Stewart, William W., Brooklyn, N. Y. Fountain-pen	376,760	Jan. 24	1495	394, 395	42	309
Stewart, William W., Brooklyn, N. Y. Fountain-pen	378,986	Mar. 6	180	51	42	1001
Stewart, William W., Brooklyn, N. Y. Fountain-pen	378,987	Mar. 6	183	51	42	1002
Stickler, William C., Belle Plaine, Kans. Clamp	377,693	Feb. 7	516	132	42	502
Stickney, William A., St. Louis, Mo. Blind-stop	376,686	Jan. 17	1385	365	42	278
Stiegler, Xavier, Jr., and J. Cargemel, Bar le Duc, Meuse, France. Making corsets	378,023	Feb. 14	1023	267	42	707
Stiggleman, James H., assignor to A. W. Stranghn, Lincolnville, Ind. Automatic corn-dropper	378,808	Feb. 28	2182	581	42	944
Stigler, Angusto, Milan, Italy. Safety appliance for elevators	377,537	Feb. 7	286	72	42	570
Stiles, Elmer A., St. Cloud, Minn. Device for suspending animals	379,251	Mar. 13	562	156	42	1078
Stiles, Norman C., Middletown, Conn. Copying letters and documents	377,583	Feb. 7	344	89	42	501
Stillman, Charles F., New York, N. Y. Velocipede	377,869	Feb. 14	800	204	42	602
Stillman, Ira B., Wellsville, N. Y. Folding fire-escape	376,216	Jan. 10	700	186	42	144
Stillman, Thomas B., Hoboken, N. J., assignor of three-fourths to C. B. Harris, New York, N. Y. Apparatus for the manufactnre of gas	377,694	Feb. 7	517	132	42	502
Stillman, Thomas B., Hoboken, N. J., assignor of three-fourths to C. B. Harris, New York, N. Y. Manufacture of water-gas	377,695	Feb. 7	518	133	42	503
Stimpson, Edwin B., Brooklyn, N. Y. Machine for ornamenting leather and other materials	376,613	Jan. 17	1266	331, 332	42	237
	379,083	Mar. 6	321	93	42	1026
Stine, William H., Marietta, Ind. Tension for self-binders	377,816	Feb. 14	733	185	42	649
Stiner, Frank, and E. R. Darling, North Monson, assignors of one-third to C. Atwater, Pittsfield, Mass. Cartridge-shell	379,667	Mar. 20	1183	313	42	1205
Stobaeus, John B., Newark, N. J. Apparatus for regulating fluid-pressure	377,558	Feb. 7	287	73	42	550
Stocker, William F., assignor to W. H. Byers, Eureka, Kans. Electric circuit closer	377,539	Feb. 7	288	73	42	550
Stocker, William F., assignor to W. H. Byers, Eureka, Kans. Electric bell	378,379	Feb. 21	1551	406	42	814
Stockheim, Heinrich, Mannheim, Baden, Germany, assignor to S. and F. Uhlmann, New York, N. Y. Filtering process for beer	375,840	Jan. 3	155	44	42	35
Stocks, John T., *et al.* (See Atkinson, Andrew J., assignor.)						
Stockton, James I., Hartsells, Ala. Reclining attachment for chairs	379,913	Mar. 20	1578	415	42	1280
Stockton, Robert N., assignor of one-half to W. F. Cramer, Philadelphia, Pa. Toy marble-shooter						
Stokes, George W. (See Stokes, James and G. W.)						
Stokes, James and G. W., Atlanta, Ga. Rasp-cutting machine	376,400	Jan. 10	943	247, 248	42	189
Stone, Harley A., Worcester, Mass. Die for cutting and pointing wire nails	377,782	Feb. 7	554	142	42	509
Stone, Heman W., Jr., Morris, Minn. Middlings-purifier	375,782	Jan. 3	83	25	42	20
Stone, Hosea. (See Webb, Edward E., assignor.)						
Stone, Isaac B., Seffner, Fla. Advertising-cabinet	377,414	Feb. 7	107	22	42	515
Stone, James, *et al.* (See Gardner, Marshall, assignor.)						
Stone, Joseph M., assignor to Davis & Furber Machine Company, North Andover, Mass. Spooling-machine	376,834	Jan. 24	1625	425	42	382

Alphabetical list of inventions, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Stone, Madge. (See Starr, Eben T., assignor.)						
Stone, Marvin C., Washington, D. C. Artificial straw	375,962	Jan. 3	324	86	42	67
Stone, R. Arthur. (See Rix, Benjamin F., assignor.)						
Stonemetz, John H., Erie, Pa., assignor to Stonemetz Printer's Machinery Company, Millbury, Mass. Combined paper cutting and folding machine	376,052	Jan. 3	453	120, 121, 122	42	91
Stonemetz, John H., Erie, Pa., assignor to Stonemetz Printer's Machinery Company, Millbury, Mass. Web-printing machine	376,053	Jan. 3	456	122, 123	42	91
Stonemetz, John H., assignor to Stonemetz Printer's Machinery Company, Millbury, Mass. Point mechanism for book-folding machines	379,737	Mar. 20	1284	342, 343	42	1225
Stonemetz Printer's Machinery Company. (See Stonemetz, John H., assignor.)						
Stoner, Allen M., Topeka, Kans. Velocipede	378,631	Feb. 28	1921	509	42	895
Stoner, Allen M., Topeka, Kans. Velocipede	380,227	Mar. 27	2026	541	42	1379
Stopple, John J., Bellville, Tex. Carpenter's hatchet	378,182	Feb. 21	1258	332	42	758
Storck, Anna, Cincinnati, Ohio. Button and fastener	379,184	Mar. 6	450	126, 127	42	1052
Storer, William, Nottingham, England. Metal lid for jugs, tea-pots, &c	375,902	Jan. 3	231	63	42	49
Storm, Edward, Poughkeepsie, N. Y. Spring for vehicles	377,584	Feb. 7	345	89	42	502
Storm, Edward, Poughkeepsie, N. Y. Vehicle-spring	379,615	Mar. 20	1107	294	42	1189
Storm, Edward, Poughkeepsie, N. Y. Bottle	377,841	Feb. 14	767	195	42	655
Story, Alexander, Washington, Iowa. Car-coupling	379,914	Mar. 20	1578	416	42	1280
Story, William R., assignor to E. S. Havens, Cincinnati, Ohio. Spherical blackboard	379,915	Mar. 20	1580	416	42	1281
Story, William R., assignor to E. S. Havens, Cincinnati, Ohio. Attachment for spherical blackboards	379,137	Mar. 6	399	113	42	1041
Stover, Daniel C., Freeport, Ill., assignor to Washburn & Moen Manufacturing Company, Worcester, Mass. Apparatus for casting metals	376,560	Jan. 17	1178	310, 311	42	240
Stover, Daniel C., and O. E. Winger, Freeport, Ill. Machine for forming fabrics from wire	377,842	Feb. 14	768	196	42	656
Stowe, Charles W., Salina, Kans. Tonic compound	377,786	Feb. 14	686	173, 174	42	641
Stowe, Leroy S., Newry, Me. Mat for horse-stalls						
Stowe, Samuel F., assignor of one-half to W. G. Kelley, Providence, R. I. Cake or bread beater	376,420	Jan. 10	981	256	42	195
Stowell, William H., Eureka, Nev. Automatic railway-switch	378,809	Feb. 28	2183	582	42	945
Strait, William, Elmira, N. Y. Sulky-plow	376,788	Jan. 24	1534	408	42	320
Stratton, George F. (See Hemmenway and Stratton.)						
Straughn, A. W. (See Stiggleman, James H., assignor.)						
Straughn, Alanson W., Lincolnville, Ind. Straw-stacker	377,723	Feb. 7	555	142	42	509
Straus, Moses H., Columbus, Ohio. Ticket-holder	377,176	Jan. 31	2098	553	42	434
Strauss & Co. (See Strauss, Leopold, assignor.)						
Strauss, Leopold, assignor to Strauss & Co., Norwich, Conn. Display-frame	378,407	Feb. 21	1598	419	42	823
Strauss, Leopold, assignor to Strauss & Co., Norwich, Conn. Display frame	376,118	Jan. 10	551	147	42	117
Straw, Herman F., Manchester, N. H. Flier-frame	379,616	Mar. 20	1107	294	42	1189
Straw, Herman F., Manchester, N. H. Winding or balling machine	380,228	Mar. 27	2027	542	42	1379
Strayer, Jacob J. (See Potter, Jonas, assignor.)						
Street, Samuel T., Depoait, N. Y. Gate for railway-crossings	378,024	Feb. 14	1024	268	42	707
Strobhar, James N. (See McQueen, Fletcher J., assignor.)						
Strom, Axel A., Austin, Ill. Switch-stand	378,221	Feb. 21	1314	349	42	770
Stronach, William E. (See Cochrane, William N., assignor.)						
Strong, John P. (See Potts, James W., assignor.)						
Strong, Norton. (See Rumble, Symington, and Strong.)						
Strong, Walter L., San Francisco, Cal. Propeller-wheel	378,810	Feb. 28	2185	582	42	945
Strong, William. (See Jacob, Frank A., assignor.)						
Stront, Edward E., assignor of one-half to W. Smith, Lynn, Mass. Staging	379,341	Mar. 13	692	187	42	1103
Strub, Frank, and W. Nendel, Lenars, Iowa. Hay-loader	379,830	Mar. 20	1436	381, 382	42	1255
Strunk, Daniel, assignor of two-thirds to Minneapolis Harvester Works, Minneapolis, Minn. Low down grain-binding harvester	378,059	Feb. 14	1068	240	42	715
Stuart, Ithamer W., and R. J. Gubbins, Cedar City, Mo. Churn-motor	379,138	Mar. 6	400	113	42	1041
Stuart, James D., Brooklyn, N. Y. Spring bed-bottom	378,183	Feb. 21	1259	332	42	758
Stubblefield, Nathan B., and S. C. Holcomb, Murray, Ky. Mechanical telephone	376,016	Jan. 3	403	106	42	80
Stuck, Dewell, Big Rapids, Mich. Dental chair	378,853	Feb. 28	2203	602	42	959
Stuckwisch, Rudolph, Cory, Ind. Egg-tester	380,061	Mar. 27	1798	480	42	1334
Stuppe, Charles, *et al.* (See Gross, Hermann C., assignor.)						
Stutzenberger, John, Hike's Point, Ky. Combined seed-drill and cultivator	376,789	Jan. 24	1557	409	42	321
Sublett, James H. (See Shelbourne and Sublett.)						
Sullivan, Charles T., Lowell, Mass. Circular-knitting machine	376,614	Jan. 17	1268	332	42	257
Sullivan, John W., East Brighton, N. Y. Vehicle-spring	380,269	Mar. 27	2059	537	42	1390
Sully, Robert M., Petersburg, Va. Seal-lock						
Sulzer & Vogt. (See Poschinger, Mathias, assignor.)						
Summers, Alfred H. (See Cattell and Summers.)						
Sunderland, John P., Brooklyn, N. Y. Mechanical telephone	376,923	Jan. 24	1746	459	42	356
Sunstrom, Karl J. (See Morgan and Sunstrom.)						
Sutherland, Andrew J., Battle Creek, Mich. Fire-ladder	379,916	Mar. 20	1581	416	42	1281
Sutliff, Warren, Minneapolis, Minn. Heating-furnace	377,279	Jan. 31	2255	596	42	462
Sutphen, John H., Huron, Dak. Ter. Oil-can	379,738	Mar. 20	1285	343	42	1225
Sutro, Emil, Brooklyn, N. Y. Stocking	379,831	Mar. 20	1440	382	42	1255
Sutton, Columbus P., assignor of one-half to A. G. Exum and F. M. Parish, Sharon, Tenn. Plow	376,790	Jan. 24	1559	409	42	321
Sutton, Henry M. (See Crowdus and Sutton.)						
Svensson, Claes A., assignor of one-half to W. W. Oliver, Buffalo, N. Y. Mallet	378,632	Feb. 28	1922	509	42	896
Swainson, John M., assignor of one-half to H. B. Little, Bloomingdale, Ind. Car-brake	379,548	Mar. 13	997	267	42	1162
Swain, John M., assignor of one-half to H. B. Little, Bloomingdale, Ind. Car-brake	377,817	Feb. 14	733	185	42	649
Swan, Henry C., Oshkosh, Wis. Vehicle-spring	377,818	Feb. 14	734	186	42	649
Swan, Henry C., Oshkosh, Wis. Vehicle-spring	376,489	Jan. 17	1087	285	42	223
Swan, Thomas B., Atlantic, Iowa. Device for feeding and watering hogs	377,053	Jan. 31	1925	506	42	398
Swart, Lester D., Auburn, N. Y. Spring-tooth harrow						
Swartz, Augustus B., *et al.* (See Steel, Robert, assignor.)						
Swartz, Clinton T., El Paso, Ill. Hedge-trimmer	376,054	Jan. 3	459	123, 124	42	93
Sweeney, David H., Fitchburg, Mass. Fire-escape	378,529	Feb. 28	1777	469	42	867
Sweeney, Dominic F. (See Carr, Joseph J. assignor.)						
Sweeney, Peter, New York, N. Y. Dust-guard for car-axle boxes	379,524	Mar. 13	965	260	42	1155
Sweet, William A., Syracuse, N. Y. Wire nail	376,791	Jan. 24	1560	409	42	321
Sweet, Sullivan C., Washington, D. C. Show stand or case	379,139	Mar. 6	401	113	42	1041
Swift, R. K., assignor of two-thirds to J. J. A. Zeller and L. E. Phelps, Rock Falls, Ill. Disk cultivator	379,295	Mar. 13	628	172	42	1091
Switzer, Byron B., assignor to Crane Bros. Manufacturing Company, Chicago, Ill. Collapsing tap	378,380	Feb. 21	1554	406	42	814

Alphabetical list of patentees, January to March, inclusive—Continued.

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Stephenson, John, New York, N. Y. Tram-car window	378,473	Feb. 28	1702	447, 448	42	851
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Stewart, Anna M. E. (See Stewart, Theron S. and A. M. E.)						
Stewart, Charles, Philadelphia, Pa. Reel-oven	377,965	Feb. 14	945	246	42	682
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Stiggleman, James H., assignor to A. W. Straughn, Lincolnville, Ind. Automatic corn-dropper	378,808	Feb. 28	2182	581	42	944
Stigler, Augusto, Milan, Italy. Safety appliance for elevators	377,537	Feb. 7	286	72	42	550
Stiles, Elmer A., St. Cloud, Minn. Device for suspending animals	379,251	Mar. 13	562	156	42	1078
Stiles, Norman C., Middletown, Conn. Copying letters and documents	377,563	Feb. 7	344	89	42	561
Stillman, Charles F., New York, N. Y. Velocipede	377,869	Feb. 14	800	204	42	662
Stillman, Ira B., Wellsville, N. Y. Folding fire-escape	376,216	Jan. 10	700	186	42	144
Stillman, Thomas B., Hoboken, N. J., assignor of three-fourths to C. B. Harris, New York, N. Y. Apparatus for the manufacture of gas	377,694	Feb. 7	517	132	42	592
Stillman, Thomas B., Hoboken, N. J., assignor of three-fourths to C. B. Harris, New York, N. Y. Manufacture of water-gas	377,695	Feb. 7	518	133	42	593
Stimpson, Edwin B., Brooklyn, N. Y. Machine for ornamenting leather and other materials	376,613	Jan. 17	1266	331, 332	42	237
Stine, William H., Marietta, Ind. Tension for self-binders	379,083	Mar. 6	321	93	42	1026
Stiner, Frank, and E. R. Darling, North Monson, assignors of one-third to C. Atwater, Pittsfield, Mass. Cartridge-shell	377,816	Feb. 14	733	185	42	649
Stobaeus, John B., Newark, N. J. Apparatus for regulating fluid-pressure	379,667	Mar. 20	1183	313	42	1245
Stocker, William F., assignor to W. H. Byers, Eureka, Kans. Electric circuit closer	377,538	Feb. 7	287	73	42	550
Stocker, William F., assignor to W. H. Byers, Eureka, Kans. Electric bell	377,539	Feb. 7	288	73	42	550
Stockheim, Heinrich, Mannheim, Baden, Germany, assignor to S. and F. Uhlmann, New York, N. Y. Filtering process for beer	378,379	Feb. 21	1551	406	42	814
Stocks, John T., *et al.* (See Atkinson, Andrew J., assignor.)						
Stockton, James L., Hartsells, Ala. Reclining attachment for chairs	375,840	Jan. 3	155	44	42	35
Stockton, Robert N., assignor of one-half to W. F. Cramer, Philadelphia, Pa. Toy marble-shooter	379,913	Mar. 20	1578	415	42	1280
Stokes, George W. (See Stokes, James and G. W.)						
Stokes, James and G. W., Atlanta, Ga. Rasp-cutting machine	376,400	Jan. 10	943	247, 248	42	189
Stone, Harley A., Worcester, Mass. Die for cutting and pointing wire nails	377,722	Feb. 7	554	142	42	589
Stone, Hemau W., Jr., Morris, Minn. Middlings-purifier	375,782	Jan. 3	13	25	42	20
Stone, Hosea. (See Webb, Edward E., assignor.)						
Stone, Isaac B., Seffner, Fla. Advertising-cabinet	377,414	Feb. 7	107	22	42	515
Stone, James, *et al.* (See Gardner, Marshall, assignor.)						
Stone, Joseph M., assignor to Davis & Furber Machine Company, North Andover, Mass. Spooling-machine	376,834	Jan. 24	1625	425	42	332

Alphabetical list of inventions, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Stone, Madge. (See Starr, Eben T., assignor.)						
Stone, Marvin C., Washington, D. C. Artificial straw	375,962	Jan. 3	324	86	42	67
Stone, R. Arthur. (See Rix, Benjamin F., assignor.)						
Stonemetz, John H., Erie, Pa., assignor to Stonemetz Printer's Machinery Company, Millbury, Mass. Combined paper cutting and folding machine	376,052	Jan. 3	453	120, 121, 122	42	91
Stonemetz, John H., Erie, Pa., assignor to Stonemetz Printer's Machinery Company, Millbury, Mass. Web-printing machine	376,053	Jan. 3	456	122, 123	42	91
Stonemetz, John H., assignor to Stonemetz Printer's Machinery Company, Millbury, Mass. Point mechanism for book-folding machines	379,737	Mar. 20	1284	342, 343	42	1225
Stonemetz Printer's Machinery Company. (See Stonemetz, John H., assignor.)						
Stoner, Allen M., Topeka, Kans. Velocipede	378,631	Feb. 28	1921	599	42	895
Stoner, Allen M., Topeka, Kans. Velocipede	380,227	Mar. 27	2026	541	42	1379
Stopple, John J., Bellville, Tex. Carpenter's hatchet	378,182	Feb. 21	1258	332	42	758
Storck, Anna, Cincinnati, Ohio. Button and fastener	379,184	Mar. 6	450	126, 127	42	1052
Storer, William, Nottingham, England. Metal lid for jugs, tea-pots, &c	375,902	Jan. 3	231	63	42	49
Storm, Edward, Poughkeepsie, N. Y. Spring for vehicles	377,584	Feb. 7	345	89	42	562
Storm, Edward, Poughkeepsie, N. Y. Vehicle-spring	379,615	Mar. 20	1107	294	42	1189
Storm, Edward, Poughkeepsie, N. Y. Bottle	377,841	Feb. 14	767	195	42	655
Story, Alexander, Washington, Iowa. Car-coupling	379,914	Mar. 20	1578	416	42	1280
Story, William R., assignor to E. S. Havens, Cincinnati, Ohio. Spherical blackboard	379,915	Mar. 20	1580	416	42	1281
Story, William R., assignor to E. S. Havens, Cincinnati, Ohio. Attachment for spherical blackboards	379,137	Mar. 6	399	113	42	1041
Stover, Daniel C., Freeport, Ill., assignor to Washburn & Moen Manufacturing Company, Worcester, Mass. Apparatus for casting metals	376,560	Jan. 17	1178	310, 311	42	240
Stover, Daniel C., and O. E. Winger, Freeport, Ill. Machine for forming fabrics from wire	377,842	Feb. 14	768	.....	42	656
Stowe, Charles W., Salina, Kans. Tonic compound	377,786	Feb. 14	686	173, 174	42	641
Stowe, Leroy S., Newry, Me. Mat for horse-stalls	376,420	Jan. 10	981	256	42	195
Stowe, Samuel F., assignor of one-half to W. G. Kelley, Providence, R. I. Cake or bread beater	378,809	Feb. 28	2183	582	42	945
Stowell, William H., Eureka, Nev. Automatic railway-switch	376,788	Jan. 24	1554	408	42	320
Strait, William, Elmira, N. Y. Sulky-plow						
Stratton, George F. (See Hemmenway and Stratton.)						
Straughn, A. W. (See Stiggleman, James H., assignor.)						
Straughn, Alanson W., Lincolnville, Ind. Straw-stacker	377,723	Feb. 7	555	142	42	589
Straus, Moses H., Columbus, Ohio. Ticket-holder	377,176	Jan. 31	2098	553	42	434
Strauss & Co. (See Strauss, Leopold, assignor.)						
Strauss, Leopold, assignor to Strauss & Co., Norwich, Conn. Display-frame	378,407	Feb. 21	1508	419	42	823
Straw, Herman F., Manchester, N. H. Flier-frame	376,118	Jan. 10	551	147	42	117
Straw, Herman F., Manchester, N. H. Winding or balling machine	379,616	Mar. 20	1107	294	42	1189
Strayer, Jacob J. (See Potter, Jonas, assignor.)						
Street, Samuel T., Deposit, N. Y. Gate for railway-crossings	380,228	Mar. 27	2027	542	42	1379
Strobhar, James N. (See McQueen, Fletcher J., assignor.)						
Strom, Axel A., Austin, Ill. Switch-stand	378,024	Feb. 14	1024	268	42	707
Stronach, William E. (See Cochrane, William N., assignor.)						
Strong, John P. (See Potts, James W., assignor.)						
Strong, Norton. (See Rumble, Symington, and Strong.)						
Strong, Walter L., San Francisco, Cal. Propeller-wheel	378,241	Feb. 21	1314	349	42	770
Strong, William. (See Jacob, Frank A., assignor.)						
Strout, Edward E., assignor of one-half to W. Smith, Lynn, Mass. Staging	378,810	Feb. 28	2185	582	42	945
Strub, Frank, and W. Nendel, Lemars, Iowa. Hay-loader	379,341	Mar. 13	692	187	42	1103
Strunk, Daniel, assignor of two-thirds to Minneapolis Harvester Works, Minneapolis, Minn. Low down grain-binding harvester	379,930	Mar. 20	1436	381, 382	42	1255
Stuart, Ithamer W., and R. J. Gubbins, Cedar City, Mo. Churn-motor	378,050	Feb. 14	1068	280	42	715
Stuart, James D., Brooklyn, N. Y. Spring bed-bottom	379,138	Mar. 6	400	113	42	1041
Stubblefield, Nathan B., and S. C. Holcomb, Murray, Ky. Mechanical telephone	378,183	Feb. 21	1259	332	42	758
Stuck, Dewell, Big Rapids, Mich. Dental chair	376,016	Jan. 3	403	106	42	80
Stuckwisch, Rudolph, Cory, Ind. Egg-tester	378,853	Feb. 28	2263	602	42	959
Stuppo, Charles, *et al.* (See Gross, Hermann C., assignor.)						
Stutzenberger, John, Hike's Point, Ky. Combined seed-drill and cultivator	380,061	Mar. 27	1798	480	42	1334
Sublett, James H. (See Shelbourne and Sublett.)						
Sullivan, Charles T., Lowell, Mass. Circular-knitting machine	376,789	Jan. 24	1557	409	42	321
Sullivan, John W., East Brighton, N. Y. Vehicle-spring	376,614	Jan. 17	1408	332	42	257
Sully, Robert M., Petersburg, Va. Seal-lock	380,269	Mar. 27	2059	557	42	1390
Sulzer & Vogt. (See Poschinger, Mathias, assignor.)						
Summers, Alfred H. (See Cattell and Summers.)						
Sunderland, John P., Brooklyn, N. Y. Mechanical telephone	376,923	Jan. 24	1746	459	42	356
Sunstrom, Karl J. (See Morgan and Sunstrom.)						
Sutherland, Andrew J., Battle Creek, Mich. Fire-ladder	379,916	Mar. 20	1581	416	42	1281
Sutliff, Warren, Minneapolis, Minn. Heating-furnace	377,279	Jan. 31	2255	596	42	462
Sutphen, John H., Huron, Dak. Ter. Oil-can	379,738	Mar. 20	1285	343	42	1225
Sutro, Emil, Brooklyn, N. Y. Stocking	379,831	Mar. 20	1440	382	42	1255
Sutton, Columbus P., assignor of one-half to A. G. Exum and F. M. Parish, Sharon, Tenn. Plow	376,790	Jan. 24	1559	409	42	321
Sutton, Henry M. (See Crowdus and Sutton.)						
Svensson, Claes A., assignor of one-half to W. W. Oliver, Buffalo, N. Y. Mallet	378,632	Feb. 28	1922	599	42	896
Svenson, John M., assignor of one-half to H. B. Little, Bloomingdale, Ind. Car-brake	379,548	Mar. 13	997	267	42	1162
Swan, Henry C., Oshkosh, Wis. Vehicle-spring	377,817	Feb. 14	733	185	42	649
Swan, Henry C., Oshkosh, Wis. Vehicle-spring	377,818	Feb. 14	734	186	42	649
Swan, Thomas B., Atlantic, Iowa. Device for feeding and watering hogs	376,489	Jan. 17	1087	295	42	223
Swart, Lester D., Auburn, N. Y. Spring-tooth harrow	377,053	Jan. 31	1925	506	42	398
Swartz, Augustus B., *et al.* (See Steel, Robert, assignor.)						
Swartz, Clinton T., El Paso, Ill. Hedge-trimmer	376,054	Jan. 3	459	123, 124	42	93
Sweeney, David H., Fitchburg, Mass. Fire-escape	378,529	Feb. 28	1777	469	42	867
Sweeney, Dominic F. (See Carr, Joseph J. assignor.)						
Sweeney, Peter, New York, N. Y. Dust-guard for car-axle boxes	379,524	Mar. 13	965	260	42	1155
Sweet, William A., Syracuse, N. Y. Wire nail	376,791	Jan. 24	1560	409	42	321
Swett, Sullivan C., Washington, D. C. Show stand or case	379,139	Mar. 6	401	113	42	1041
Swift, R. K., assignor of two-thirds to J. J. A. Zeller and L. E. Phelps, Rock Falls, Ill. Disk cultivator	379,295	Mar. 13	628	172	42	1091
Switzer, Byron B., assignor to Crane Bros. Manufacturing Company, Chicago, Ill. Collapsing tap	378,380	Feb. 21	1554	406	42	814

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Sword, Charles D. (See Sword, Porter L. and C. D.)						
Sword, Fanny D., *et al.* (See Sword, Porter L. and C. D., assignors.)						
Sword, Porter L. and C. D., assignors to R. A. and F. D. Sword, Cleveland, Ohio. Hack-truck	380,062	Mar. 27	1709	480 481	42	1334
Sword, Rachel A., *et al.* (See Sword, Porter L. and C. D., assignors.)						
Sykes, Squire. (See Sykes, William and S.)						
Sykes, William and S., Buffalo, N. Y. Sand-molding machine	380,300	Mar. 27	2120	567	42	1398
Sylvester & Co., C. F. (See Rooney, Patrick, assignor.)						
Symington, John. (See Rumble, Symington, and Strong.)						
Taber, Albert W., New Bedford, Mass. Die for making twist-drills	380,146	Mar 27	1917	511	42	1337
Taber, Freeman A. (See Sherburne and Taber.)						
Tachon, Claude, Charlieu, Loire, France, assignor to H. Spahn, New York, N. Y., and E. G. Landru, Union, N. J. Machine for finishing and polishing textile fabrics	376,993	Jan. 24	1835	483 484	42	351
Tachon, Claude, Charlieu, Loire, France, assignor to H. Spahn, New York, N. Y., and E. G. Landru, Union, N. J. Machine for finishing and polishing textile fabrics	376,994	Jan. 24	1838	484 485	42	354
Talbott, Ezra W., assignor of one-half to A. T. Sherman, Napoleon, Ohio. Rubber dental plate	377,177	Jan. 31	2099	553	42	434
Talcott, Walt. 2d, Rockford, Ill. Electrical stop-motion for knitting-machines	379,832	Mar. 20	1440	383	42	1226
Talcott, Walter O., Providence, R. I. Belt-fastener	379,739	Mar. 20	1286	343	42	1226
Talley, Allen W., Lynchburg, Va. Nut-lock	379,036	Mar. 6	257	73	42	1014
Tallmadge, Hiram P., Boston, Mass. Grate	376,170	Jan. 10	637	170	42	193
Tallmadge, Hiram P., Boston, Mass. Grate	379,740	Mar. 20	1288	343 344	42	1226
Tasker, Stephen P. M. (See Wendell, Isaac P., assignor.)						
Tate, William E., Weatherford, Tex. Folding coop	377,650	Feb. 7	454	116	42	581
Tatham, John, Rochdale, county of Lancaster, England. Ring and traveler for spinning-machines, &c	377,871	Feb. 14	802	205	42	663
Tatman, John C., Mount Vernon, Dak. Ter. Guard-rail for vehicle-wheels	375,961	Jan. 3	324	87	42	87
Taylor, Alfred, Bridgeport, Conn. Bustle	377,724	Feb. 7	557	142	42	699
Taylor, Christopher C., Appleton, Wis. Water-wheel	379,741	Mar. 20	1289	344	42	1226
Taylor, Emzy. (See Kincaid, James K., assignor.)						
Taylor, George and J. H., Nottingham, county of Nottingham, England, assignors to A. E. Kursheedt, New York, N. Y. Machine for ornamenting strips of fabric	376,995	Jan. 24	1840	485 486 487	42	354
Taylor, James H. (See Taylor, George and J. H.)						
Taylor, John M., assignor of one-half to A. D. Wilson, Watson, Ill. Baling-press	379,185	Mar. 6	451	127	42	1052
Taylor, Joseph M. (See Ethridge, Frank N., assignor.)						
Taylor, Thomas P. (See Galvin, James, assignor.)						
Taylor, Thomas P. (See Williamson, Samuel S., assignor.)						
Taylor, Thomas P., Bridgeport, Conn. Bustle	376,972	Jan. 10	773	205	42	159
Taylor, Walter A., New Orleans, La. Back-pressure valve	379,580	Mar. 20	1531	404	42	1352
Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Lock	378,267	Feb. 21	1393	365	42	783
Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Lock	378,268	Feb. 21	1394	366	42	783
Taylor, William H., Hampton, assignor of two-thirds to J. Maynard and H. Baskerville, Bowmanville, Ontario, Canada. Loom-temple	379,917	Mar. 20	1582	416	42	1281
Taylor, William J., Chester, N. J. Metallurgical furnace	380,147	Mar. 27	1918	512	42	1357
Taylor, William J., Chester, N. J. Treating and calcining iron ores	380,229	Mar. 27	2029	542	42	1380
Taylor, William M., *et al.* (See Shepherd, Lewis T., assignor.)						
Teare, Thomas R., *et al.* (See Bourke, Thomas H., assignor.)						
Teare, William H., *et al.* (See Bourke, Thomas H., assignor.)						
Tebbetts, Charles F., Fitchburg, Mass. Device for rolling metallic bodies to spheroidal forms	375,783	Jan. 3	85	26	42	21
Teed, Edgar G., Brooklyn, N. Y. Grate for refuse-burners	377,651	Feb. 7	456	117	42	581
Teed, Ralph L., assignor of one-half to A. McGuire, Chicago, Ill. Hydraulic valve	379,617	Mar. 20	1109	295	42	1190
Teeple, James N., *et al.* (See Martin, J. Albert, assignor.)						
Telemeter Company of New York. (See Dibble, Fernando J., assignor.)						
Telpherage Electric Railway Company. (See Speed, Francis M., assignor.)						
Temple, Ansel F., Muskegon, Mich. Egg-preserver	377,585	Feb. 7	346	89,90	42	502
Temple, Fred F., *et al.* (See Class, William F., assignor.)						
Templon, James S. (See Pritchard and Templon.)						
Ten Broeck, Theodore R., assignor to Galvano-Faradic Manufacturing Company, New York, N. Y. Electro-medical appliance	377,872	Feb. 14	803	205	42	663
Tener, Commodore P., Hillsborough, Ohio. Shaft-support	376,017	Jan. 3	405	107	42	81
Terrell, George E., Ansoni Conn. Carbon battery	378,943	Mar. 6	117	34	42	989
Terrell, Jephthae M. (See Larmon and Terrell.)						
Terry, Abby M., Brooklyn, N. Y. Sleeve-stay	380,063	Mar. 27	1899	481	42	1334
Terstegen, Fred, Elizabeth, N. J. Seconds-setting mechanism for time-pieces	379,833	Mar. 20	1442	383	42	1226
Thatcher, Hervey D., Potsdam, N. Y. Adjustable shelf-fastener	379,252	Mar. 13	502	156	42	1078
Thayer, Corwin M. and L. N., Worcester, Mass. Lunch-pail	376,119	Jan. 10	552	147	42	117
Thayer, Dela, *et al.* (See Schrade, George, assignor.)						
Thayer, James M., Randolph, Mass. Hot-water heater	378,633	Feb. 28	1021	509	42	896
Thayer, Leonard N. (See Thayer, Corwin M. and L. N.)						
Thayer, M. E., *et al.* (See Schrade, George, assignor.)						
Theisen, Eduard, Cologne, Prussia, Germany. Apparatus for condensing and cooling purposes	377,504	Feb. 7	241	59	42	541
Thiem, Edward A., Sandusky, Ohio. Doubletree	380,230	Mar. 27	2032	542	42	1380
Thier, Friedrich H., Königstein, Saxony, Germany. Button	379,742	Mar. 20	1291	344	42	1226
Thomas, Abner D., Little Rock, assignor to D. H. Thomas, Pulaski, Ark. Cotton-press. (Reissue)	10,902	Feb. 14	1019	286	42	720
Thomas, Ammi A., *et al.* (See Baldwin, William A., assignor.)						
Thomas, Amos W., Philadelphia, Pa. Bustle	377,652	Feb. 7	457	117	42	581
Thomas, Annie A., *et al.* (See Baldwin, William A., assignor.)						
Thomas, Charles G. (See Thomas, Enos M., assignor.)						
Thomas, Daniel H. (See Thomas, Abner D., assignor.) (Reissue.)						
Thomas, Eli L. (See Thomas, William J. and E. L.)						
Thomas, Enos M., assignor to himself and C. G. Thomas, Cherry Grove, Pa. Measuring-reel	379,743	Mar. 20	1292	345	42	1227
Thomas, Francis, Cincinnati, and C. H. Irwin, Martinsville, Ohio; said Thomas assignor to said Irwin. Dies for making auger-bits	378,408	Feb. 21	1599	420	42	823
Thomas, Horatio, Chicago, Ill., assignor to Bostedo Package and Cash Carrier Company, Atlantic, Iowa. Cash-car arrester	379,085	Mar. 6	326	94	42	1027
Thomas, Horatio, Chicago, Ill., assignor to Bostedo Package and Cash Carrier Company, Atlantic, Iowa. Air-cushion for cash-carriers	379,296	Mar. 13	630	172	42	1091
Thomas, Horatio, Chicago, Ill., assignor to Bostedo Package and Cash Carrier Company, Atlantic, Iowa. Locking and releasing mechanism for cash-carriers	379,618	Mar. 20	1111	295	42	1190

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Thomas, Horatio, Chicago, Ill., and L. G. Bostedo, assignors to Bostedo Package and Cash Carrier Company, Atlantic, Iowa. Cash and package carrier	379,084	Mar. 6	322	93, 94	42	1026
Thomas, J. E. (See Heinzelman, Otto, assignor.)						
Thomas, James H. (See Dodd and Thomas.)						
Thomas, John, *et al.* (See Biggin, Mary, assignor.)						
Thomas, John H., Springfield Ohio. Lawn-mower	375,842	Jan. 3	157	44	42	35
Thomas, Josephine. (See Dodd and Thomas, assignors.)						
Thomas Manufacturing Company. (See Hiser, Daniel B., assignor.)						
Thomas Manufacturing Company. (See Paxson, Charles H., assignor.)						
Thomas, Merton, Savona, N. Y. Handcuff	375,843	Jan. 3	158	44	42	35
Thomas, Samuel, Catasauqua, Pa. Apparatus for filling blast-furnaces	377,873	Feb. 14	805	206	42	663
Thomas, Septimus, Scranton, Pa. Mechanism for separating coal, &c	379,253	Mar. 13	564	157	42	1078
Thomas, William D. (See Wilson and Thomas.)						
Thomas, William D., assignor of one-half to T. B. Atterbury, Pittsburg, Pa. Pressure regulator and cut-off	378,342	Feb. 21	1205	393	42	805
Thomas, William J. and E. L., Malvern, Pa. Fluid-motor	377,586	Feb. 7	348	90	42	502
Thomas, William J. and E. L., Malvern, Pa. Fluid-motor	378,184	Feb. 21	1259	332	42	758
Thomasson, Augustus W., and R. S. Pence, Kearney, Mo. Clover-harvester						
Thompson, Charles. (See Burdsall and Thompson.)						
Thompson, Charles M., Lexington, N. C. Plow	377,653	Feb. 7	458	118	42	581
Thompson, Emma, Brooklyn, N. Y. Corset	376,924	Jan. 24	1747	459	42	356
Thompson, Gilbert G., Des Moines, Iowa. Pipe-cutter	377,725	Feb. 7	557	143	42	690
Thompson, John, Holland, Mich. Brake for windmills	379,342	Mar. 13	693	188	42	1103
Thompson, John A. (See Thompson, Stacy C., assignor.)						
Thompson, John F., Newcastle, Ind. Spittoon and securing the same	376,761	Jan. 24	1498	395	42	310
Thompson, John P., Fall River, Mass. Let-off mechanism for looms	376,353	Jan. 10	886	232	42	179
Thompson, La Marcus A., Philadelphia, Pa. Car-wheel	379,254	Mar. 13	565	157	42	1078
Thompson, Smith, Washington, D. C. Letter-box	380,148	Mar. 27	1921	512	42	1358
Thompson, Stacy C., assignor of one-fourth to J. A. Thompson, Manistee, Mich. Addressing-machine	376,762	Jan. 24	1500	395 396	42	310
Thompson, William A. J., Ottumwa, Iowa. Drill for mining coal	378,481	Feb. 28	1710	451	42	853
Thomson, Elihu, Lynn, Mass. Apparatus for electric welding	375,784	Jan. 3	86	26	42	21
Thomson, Elihu, Lynn, Mass. Dynamo-electric machine or motor	376,120	Jan. 10	554	147 148	42	117
Thomson, Elihu, Lynn, Mass. Alternating-current motive and regulating device	377,217	Jan. 31	2164	571	42	446
Thomson, John, Brooklyn, N. Y., assignor to Colt's Patent Fire Arms Manufacturing Company, Hartford, Conn. Dwell-cam	378,343	Feb. 21	1507	393	42	805
Thomson, John, Brooklyn, N. Y., assignor to Colt's Patent Fire Arms Manufacturing Company, Hartford, Conn. Device for imparting combined rotary and reciprocating movement	378,344	Feb. 21	1508	394	42	805
Thomson, John L., Bergen Point, N. J., assignor to W. B. Devereux, Aspen, Colo., and Orford Copper Company, of New Jersey. Apparatus for heating blast for shaft-furnaces	377,819	Feb. 14	735	186	42	649
Thomson, Robert W., and E. M. Phelps, assignors to said Phelps and C. B. Tuttle, trustees, Lynn, Mass. Finishing button-holes	379,497	Mar. 13	928	245 250	42	1148
Thomson, Waddy C., Camden, S. C. Weighing-scale	376,925	Jan. 24	1748	460	42	376
Thomson, William, Glasgow, county of Lancaster, Scotland. Navigational sounding apparatus	377,696	Feb. 7	520	133 134	42	593
Thone, Frank, Oskaloosa, Iowa. Incandescent lamp socket	379,255	Mar. 13	566	155	42	1078
Thornton, James F., Nicholas Court-House, W. Va. Car-coupling	378,409	Feb. 21	1600	420	42	823
Thornton, John E., Manchester, county of Lancaster, England. Photographic camera	379,343	Mar. 13	694	188	42	1103
Thresher, Clarence P., Winona, Minn. Feathering paddle-wheel	376,667	Jan. 17	1386	365	42	279
Thuemer, Charles, St. Louis, Mo. Metallic ceiling	376,926	Jan. 24	1749	460	42	357
Thurber, William E., and J. McConnell, Cleveland, Ohio. Support for telephone receivers	376,615	Jan. 17	1269	332	42	258
Thurston, Harrison F., Bartlett, assignor to C. W. White, Ossipee Valley, N. H. Evaporating-pan	376,490	Jan. 17	1088	286	42	223
Thurston, James B., and F. R. Butterfield, Concord, N. H.; said Butterfield assignor to said Thurston. Car-coupling	378,269	Feb. 21	1395	366	42	783
Tiede, August F., Deep Creek, Iowa. Check-row planter	378,222	Feb. 21	1314	349	42	770
Tiffany, Lansing C., Jacksonville, Ill. Harness for veterinary purposes	378,153	Feb. 21	1219	318	42	750
Tilden, Henry, Minneapolis, Minn. Heating-tube for furnaces	378,910	Mar. 6	68	20	42	980
Tilden, John H., *et al.* (See Jubborn, Moses, assignor.)						
Tilley, John S., West Troy, N. Y. Ladder	377,066	Feb. 14	946	247	42	692
Timby, Theodore R., assignor of one-half to C. G. Schneider, Washington, D. C. Heat and power supply system	379,744	Mar. 20	1294	345	42	1227
Timmons, James K. P., Timmons, Tenn. Car-brake	375,841	Jan. 3	156	44	42	35
Timmons, John, Newark, N. J. Filter	380,149	Mar. 27	1922	512	42	1358
Tindell, Henry, Harrison, assignor to E. R. Parkhurst, Montclair, N. J. Mechanism for cleaning toothed feed-rolls	378,739	Feb. 28	2071	546	42	923
Tirrell, Jacob P., Somerville, Mass., assignor to Electric Gas Lighting Company, Portland, Me. Annunciator	376,171	Jan. 10	638	170	42	133
Tirrell, Jacob P., Somerville, Mass., assignor to Electric Gas Lighting Company, Portland, Me. Electric bell	377,916	Feb. 14	870	224	42	677
Titcomb, Roscoe, North Yarmouth, Me. Sand-distributing machine	379,256	Mar. 13	568	158	42	1079
Tittle, Cyrus P., Johnstown, Pa. Rail-loading machine	376,561	Jan. 17	1181	311	42	241
Tittle, Daniel J., Jr., assignor to E. F. Hackett, Albany, N. Y. Apparatus for dressing off the commutators of dynamo-electrical machines	379,344	Mar. 13	695	189	42	1103
Tobin, David F., Newark, N. J. Coal-scuttle	380,231	Mar. 27	2033	543	42	1380
Todd, Cornelius B., assignor to Campbell Burner Company, (limited,) Pittsburg, Pa. Gas-burner	377,787	Feb. 14	687	174	42	641
Todd, Henry B., Meriden, Conn. Eaves-trough hanger	378,530	Feb. 28	1778	469	42	867
Todd, W. W. (See Horton, John C., assignor.)						
Tomlinson, Stephen D., Gladesville, Ga. Tire-tightener	376,491	Jan. 17	1088	286	42	224
Tompkins, Albert. (See Firth and Tompkins.)						
Tompkins, Ira. (See Firth and Tompkins.)						
Tompkins, Warren. (See Porter, Frank A., assignor.)						
Tompkins, William M., Batavia, N. Y. Electric light and globe protector	380,301	Mar. 27	2121	567	42	1398
Tompkins, William M., Batavia, N. Y. Grip for fire-escapes	380,302	Mar. 27	2122	568	42	1399
Tompkins, William M., Batavia, N. Y. Fire-escape	380,303	Mar. 27	2123	568	42	1399
Tone, Harrison, Denison, Tex. Button-attaching machine	376,971	Jan. 24	1806	476	42	368
Tonkin, John J., Oswego, N. Y. Cut-off for engines	376,616	Jan. 17	1271	333	42	258
Toof, Edwin J., New Haven, Conn. Ruffling attachment for sewing-machines	377,363	Jan. 31	2386	629	42	485
Toohey, Cornelius, San Francisco, Cal. Show-stand	375,844	Jan. 3	159	45	42	36
Tooley, Logan P., Willow, Cal. Rein-guard for harness	379,186	Mar. 6	453	127	42	1053
Torkelson, Reinhard T. (See Johnson and Torkelson.)						
Torkelson, Reinhard T., assignor to I. Johnson, Worcester, Mass. Velocipede	379,258	Mar. 13	570	158	42	1079

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Torkelson, Reinhard T., and I. Johnson, Worcester, Mass.; said Torkelson assignor to said Johnson. Breech-loading fire-arm	379,257	Mar. 13	569	158	42	1079
Toronto Reaper and Mower Company. (See Whiteley and Bayley, assignors.)						
Torrent, John, Muskegon, Mich. Steam log-turner	379,086	Mar. 6	329	95	42	1027
Torrey, Charlie, McGrawville, N. Y. Guide for sewing-machines	379,068	Mar. 20	1185	314	42	1205
Totman, George W. and P. C., Cassadaga, N. Y. Electric belt	377,218	Jan. 31	2166	571	42	446
Totman, Perry C. (See Totman, George W. and P. C.)						
Tourgée, Albion W., assignor to E. K. Tourgée, Mayville, N. Y. Post	377,337	Jan. 31	2341	679	42	477
Tourgée, E. K. (See Tourgée, Albion W., assignor.)						
Tow, Thomas, Miles City, Mont. Ter. Earth-anger	379,345	Mar. 13	696	189	42	1103
Towar, George W., Jr., Detroit, Mich. Emmialfier	378,381	Feb. 21	1556	406	42	815
Tower, John J., Brooklyn, N. Y. Plane	379,346	Mar. 13	697	189	42	1104
Tower, Levi L., Boston, Mass. Pen-holder	378,223	Feb. 21	1316	349	42	771
Towl, Forrest M., Brooklyn, N. Y. Gas-meter	377,967	Feb. 14	947	247	42	693
Towler, Maximilian J. L., Detroit, Mich. Construction of draw-bridges	376,972	Jan. 24	1807	476	42	368
Townsend, Charles H., New Haven, Conn. Double reflecting-circle	377,280	Jan. 31	2256	{596 / 597}	42	462
Tozer, C. W. (See Reilly, James J., assignor.)						
Trabue, Sarah W., Girard, Ill. Baling-press	376,688	Jan. 17	1387	{365 / 366}	42	279
Trabue, William. (See Brown and Trabue.)						
Tracy, Dwight, New York, N. Y., assignor to O. H. Harris, Worcester, Mass. Switch-stand	378,025	Feb. 14	1025	268	42	708
Tracy, William P., Grand Rapids, Mich. Caster-socket	378,740	Feb. 28	2072	547	42	923
Tracy, William P., assignor of two-thirds to W. R. Shelby and A. M. Amberg, Grand Rapids, Mich. Railway-car step	379,140	Mar. 6	403	114	42	1042
Trask, Charles H., Lynn, Mass. Machine for shaping milling-tools	379,187	Mar. 6	453	{128 / 129}	42	1053
Trask, Harry, Brooklyn, N. Y. Hanger for pipes	379,425	Mar. 13	815	219	42	1127
Trant, Justus A. (See Mead and Trant.)						
Trant, Justus A., assignor to Stanley Rule and Level Company, New Britain, Conn. Bench-plane	376,455	Jan. 17	1038	272	42	314
Trant, Justus A., assignor to Stanley Rule and Level Company, New Britain, Conn. Clap-board-bracket	377,178	Jan. 31	2101	554	42	434
Trant, Justus A., assignor to Stanley Rule and Level Company, New Britain, Conn. Grooving and boxing tool for carriage-makers	378,854	Feb. 28	2264	602	42	959
Traver, Adelbert J. (See Wentworth and Traver.)						
Travis, Charles L., Minneapolis, Minn. Nozzle	378,531	Feb. 28	1779	470	42	868
Travis, Walter D., *et al.* (See Fortin, Charles L., assignor.)						
Trayer, Edward P., and G. H. Kugler, New York, N. Y. Telephone system	377,788	Feb. 14	689	174	42	642
Treat, Bryant A., and E. S. Parmelee, Wallingford, Conn. Carriage-wheel	377,587	Feb. 7	349	90	42	562
Treat, Charles R. (See Byrne, John, assignor.)						
Tremaine, William B., New York, N. Y. Mechanical musical instrument	376,725	Jan. 17	1442	379	42	291
Trent, Joseph, Jersey City, N. J. Spring	377,125	Jan. 31	2037	533	42	420
Trenton Iron Company. (See Withington, James, assignor.)						
Trethewey, James, Stockton, Cal. Combined harvester and thrasher	380,000	Mar. 27	1704	455	42	1316
Trimble, William D., assignor of one-half to J. T. Freeland, Hampden, Md. Decoy-duck	378,410	Feb. 21	1601	420	42	823
Tripp, Albert H., Rago, Kans. Pulverizer and harrow	376,927	Jan. 24	1751	{460 / 461}	42	357
Tripp, Seth D., Lynn, Mass. Lasting-jack	378,118	Feb. 21	1159	302	42	741
Tripp, Thomas, Stoughton, Mass. Anti-friction journal-box	377,697	Feb. 7	522	134	42	593
Trout, John W., Cherry Vale, Kans. Veneer-machine	378,741	Feb. 28	2073	547	42	923
Trowbridge, William P., New Haven, Conn. Stamp-protector	378,119	Feb. 21	1160	302	42	741
Truitt, Henry A. (See McDevitt, Walter J., assignor.)						
Truitt, James S., Hillsborough, Tex. Spirit-level sheath	379,259	Mar. 13	572	159	42	1080
Tryner, James P., Denver, Colo. Spectacles	375,964	Jan. 3	325	87	42	67
Tuck, Nelson L., Philadelphia, Pa. Machine for printing oil-cloth	377,789	Feb. 14	690	{175 / 176}	42	642
Tucker, Charles A., Islip, N. Y., assignor to Tucker Electrical Manufacturing Company, of New York. Electric lock	376,121	Jan. 10	560	148	42	118
Tucker Electrical Manufacturing Company. (See Tucker, Charles A., assignor.)						
Tucker, Sidney D., Troy, N. Y. Feeding attachment for sewing-machines	376,122	Jan. 10	562	149	42	118
Tucker, Stephen D., New York, N. Y. Web printing and delivery mechanism	380,001	Mar. 27	1706	{456 / 457}	42	1317
Tufts, James W. (See White, James E., assignor.)						
Tuller, George L., Norwalk, Conn. Combined paper-weight and pen, pencil, or cigar holder	377,726	Feb. 7	558	143	42	600
Tupper, Judson E. (See Parker and Tupper.)						
Turnbull, Andrew, New Britain, Conn. Weighing-scale	378,382	Feb. 21	1556	407	42	815
Turner-Beard Automatic Brake Company. (See Turner, William B., assignor.)						
Turner, Daniel B. N., Earles, Ky. Planter	379,834	Mar. 20	1449	383	42	1256
Turner, James C., Sterling, Kans. Sample-holder	380,002	Mar. 27	1711	458	42	1317
Turner, William B., New York, N. Y., assignor to Turner-Beard Automatic Brake Company, of New York. Automatic car-brake	377,874	Feb. 14	806	{206 / 207}	42	663
Turrettini, François, Geneva, Switzerland. Endless saw for cutting stone	379,835	Mar. 20	1451	384	42	1256
Tuttle, Calvin B., trustee. (See Thomson and Phelps, assignors.)						
Twick, Friedrich, Sheboygan, Wis. Land-roller and clod-crusher	380,003	Mar. 27	1712	458	42	1317
Twiss, James G., New York, N. Y. Folding bedstead	377,179	Jan. 31	2101	554	42	434
Tyden, Emil, Chicago, Ill. Saw-filing machine	378,060	Feb. 14	1069	{280 / 281}	42	715
Tyers, William, Sharon, Pa. Attachment for plows	377,126	Jan. 31	2039	533	42	420
Tyler, Charles N., Buffalo, N. Y. Siphon	378,811	Feb. 28	2187	582	42	946
Tyler, Charles N., Buffalo, N. Y. Fluid-discharge device	378,812	Feb. 28	2188	583	42	946
Tyler, George L., Lynn, Mass. Leather-splitting machine	378,185	Feb. 21	1261	{333 / 334}	42	759
Tyler, George L., Lynn, Mass. Leather-splitting machine	378,186	Feb. 21	1263	334	42	759
Tyler, Morris S., Lansing, Mich. Bob-sled	376,492	Jan. 17	1089	286	42	224
Tyler, Morris S., Lansing, Mich. Wagon running-gear	379,619	Mar. 20	1115	{295 / 296}	42	1191
Udell, Calvin G. (See Leach, Joseph, assignor.)						
Ufford, Charles A., and W. L. Hendrick, Boston, Mass.; said Hendrick assignor to said Ufford. Dress-form	377,338	Jan. 31	2344	679	42	477
Uhlmann, Frederick, *et al.* (See Stockheim, Heinrich, assignor.)						
Uhlmann, Simon, *et al.* (See Stockheim, Heinrich, assignor.)						
Uhrig, John W. M., assignor to J. French, New York, N. Y. Display-box for neckties	378,224	Feb. 21	1317	350	42	771

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Ulke, Veronica, Washington, D. C. Waist-garment	377,339	Jan. 31	2345	679	42	478
Ulrich, Jacob B. (See Brown and Ketchum, assignors.)						
Ulsh, John L., South Wabash, Ind. Potato-drill	379,745	Mar. 20	1295	346	42	1227
Underwood, George B., *et al.* (See Jobborn, Moses, assignor.)						
Underwood, Thomas J., Decatur, assignor of one-half to E. Dunkel, Emery, Ill. Grain-elevator	377,917	Feb. 14	871	224	42	677
Underwood, Walter H., Denver, Colo. Distributing-tip for liquid-receptacles	378,742	Feb. 28	2074	547	42	924
Underwood, Walter H., Denver, Colo. Bottle-stopper	378,743	Feb. 28	2075	547	42	924
Underwood, Walter H., Denver, Colo. Combined spreader and stopper for mucilage and other bottles	378,744	Feb. 28	2076	548	42	924
Unexcelled Fireworks Company. (See Fletcher, John N., assignor.)						
Unexcelled Fireworks Company. (See Linton, Charles B., assignor.)						
Unexcelled Fireworks Company. (See Wadsworth, Claudius, assignor.)						
Unfried, Peter, Chicago, Ill. Gate	375,903	Jan. 3	232	63	42	49
Unger, Wilhelm, Wooster, Ohio. Brush	377,180	Jan. 31	2103	554	42	434
Union Foundry. (See Vietmeyer, Henry W., assignor.)						
Union Hardware Company. (See Hartness, James, assignor.)						
Union Paper Bag Machine Company. (See Appel, Daniel, assignor.)						
Union Wire Mattress Company. (See Bimleman, Herman A., assignor.)						
United Gas Improvement Company. (See Humphreys, Alexander C., assignor.)						
United States Automatic Water Cut-Off Company. (See Browne, Walker G., assignor.)						
United States Electric Company. (See Short, Sidney H., assignor.)						
United States Machine and Inventions Company. (See Clawson, Clement C., assignor.)						
United States Rolling Stock Company. (See Stagg, John L., assignor.)						
Universal Lock-Hinge Company. (See Wolf, Josef, assignor.)						
Upham, George B. (See Potter and Upham.)						
Upp, Philip J., *et al.* (See Coffman, George, assignor.)						
Upson Nut Company. (See Woodford, Wesley W., assignor.)						
Upton, Charles S., New York, N. Y. Lamp	379,836	Mar. 20	1451	384	42	1257
Urban, Jacob B. (See Greenawalt and Urban.)						
Urban, Oscar, and M. J. Wightman, Hartford; said Urban assignor to Schuyler Electric Company, Middletown, Conn. Dynamo-electric machine	379,037	Mar. 6	258	73	42	1014
Uren, Richard, Houghton, Mich. Ore-crusher	376,928	Jan. 24	1752	461	42	357
Urquhart, David, Westminster, and B. Nicholson, South Norwood Park, county of Surrey, assignors to New Portable Electric Lamp and Power Syndicate Company, (limited,) London, England. Galvanic battery	377,340	Jan. 31	2347	680	42	478
Valentine, Walter D., San Francisco, Cal. Card-exhibitor	378,345	Feb. 21	1510	394	42	806
Valentine, Walter D., San Francisco, Cal., and H. S. Bailey, Denver, Colo.; said Bailey assignor to said Valentine. Card-exhibitor	378,270	Feb. 21	1397	{366 / 367}	42	783
Vallena, Eugene, Chicago, Ill. Cigar-box	376,689	Jan. 17	1391	366	42	280
Vallentine, Arthur. (See Hyde and Vallentine.)						
Van Buren, Robert, and J. J. Powers, Brooklyn, N. Y. Electric conduit	376,562	Jan. 17	1182	311	42	241
Van de Velde, Bernard F., *et al.* (See Bührer, Jacob, assignor.)						
Van de Velde, Frank B., *et al.* (See Bührer, Jacob, assignor.)						
Van de Velde, Henry J., *et al.* (See Bührer, Jacob, assignor.)						
Van Doren, Francis, and L. Lovejoy, Adrian, Mich. Fence-machine	379,426	Mar. 13	816	{219 / 220}	42	1127
Van Dorn, William T., Lincoln, Nebr. Car-coupling	378,813	Feb. 28	2190	583	42	946
Van Dorston, Alvin W., South Bend, Ind. Car-bumper	378,532	Feb. 28	1780	470	42	868
Van Duzer, Edward M., Newark, N. J. Mason's float-handle	376,217	Jan. 10	701	187	42	144
Van Everen, Philip F., Brooklyn, N. Y. Book-protector	377,968	Feb. 14	949	{247 / 248}	42	693
Van Gelder, Pieter, Sowerby Bridge, county of York, England. Grain washing and drying machine	379,498	Mar. 13	929	250	42	1148
Van Gilder, Somers, Knoxville, Tenn. Harness-pad	376,563	Jan. 17	1183	312	42	241
Van Horn, Charles, Bethlehem, Pa. Wagon-seat	377,540	Feb. 7	929	73	42	550
Van Horn, Vandiver J., Goffs, Kans. Wrench	376,564	Jan. 17	1183	312	42	241
Van Horn, William, assignor of one-half to W. C. Lennox, Piqua, Ohio. Fence	376,218	Jan. 10	702	187	42	144
Van Vleck, George H. (See Pitt, William H., assignor.)						
Van Voorhis, Charles E., Chicago, Ill. Employé's time-recorder	377,341	Jan. 31	2349	680	42	478
Van Zandt, Jacob, Syracuse, N. Y. Cable coaster, carrier, and ferrier	378,154	Feb. 21	1221	{318 / 319}	42	751
Vance, Samuel B. H., New York, N. Y. Combined gas and electric-light fixture	376,617	Jan. 17	1273	333	42	258
Vandecar, William D., Merrill, Wis. Belt-clamp	380,150	Mar. 27	1925	513	42	1358
Vandenburg, Limbrick W., Americus, Kans. Harness back-pad	380,064	Mar. 27	1801	481	42	1334
Vandenburg, Origen, New York, N. Y. Buoyant propeller	377,181	Jan. 31	2104	555	42	435
Vandercook, Mark, and R. T. Bush, Gallatin, Tenn. Strap-clasp	376,996	Jan. 24	1844	487	42	375
Vanduzen, Benjamin C., Winton Place, Ohio. Force-pump	377,054	Jan. 31	1927	506	42	389
Vannatter, Albert, and A. J. August, Lawson, Colo. Fuse-cutter and cap-crimper	376,493	Jan. 17	1090	286	42	224
Vanover, Joseph M., assignor of one-half to A. I. Abbott, Terre Haute, Ind. Sliding or rolling gate	379,918	Mar. 20	1583	417	42	1281
Vanzant, Ralph E. (See Hiatt, Elwood E., assignor.)						
Vaughan, Phineas W. (See Glidden and Vaughan.)						
Vaughn, James A. (See Brown, David, assignor.)						
Vermeulen, John, assignor to B. Frank, New York, N. Y. Making open-twist wire strands	377,415	Feb. 7	109	22	42	515
Verrill, William H. (See Renne, Horace L., assignor.)						
Versen, Bruno, Dortmund, Westphalia, Germany. Apparatus for lining converters and converter-bottoms	375,965	Jan. 3	326	87	42	67
Vicken, George P., Cincinnati, Ohio. Machine for cutting moldings	375,904	Jan. 3	234	63, 64	42	49
Vierengel, Matthew, Brooklyn, N. Y. Cylinder printing-machine	379,188	Mar. 6	456	{129 / 130}	42	1053
Vietmeyer, Henry W., Freeport, Ill., assignor of one-half to Union Foundry, Mansfield, Ohio. Feed-grinding mill	379,549	Mar. 13	909	268	42	1162
Vinton, John H., assignor of two-thirds to E. O. Ely, Boston, and G. E. Parker, Chelsea, Mass. Friction-drill	378,944	Mar. 6	118	34	42	989
Vladyka, Joseph, and W. M. Mitchell, Newton, Iowa. Apparatus for cremating filth and sewage	379,189	Mar. 6	461	{130 / 131}	42	1054
Voak, James D., Watkins, N. Y. Ventilating apparatus for railway-cars, factories, &c.	376,494	Jan. 17	1091	287	42	224
Vogt, Charles, Harlem, Mo. Flour and meal bin	375,866	Jan. 3	328	88	42	68
Volkerts, Oluf, Sac City, Iowa. Combination-lock	378,027	Feb. 14	1028	269	42	708
Vollschwitz, Rudolph, Hoboken, N. J. Rasp	379,630	Mar. 20	1116	296	42	1191
Von Heyden, F. (See Kolbe, Carl, assignor.)						
Von Pittler, Julius W., Gohlis, Leipsic, Saxony, Germany. Embroidering attachment for sewing-machines	378,383	Feb. 21	1558	407	42	815

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Von Pittler, Julius W., Gohlis, Leipsic, Saxony, Germany. Embroidering attachment for sewing-machines	378,384	Feb. 21	1559	407, 408	42	815
Von Roden Manufacturing Company. (See Von Roden, Otto, assignor.)						
Von Roden, Otto, New York, N. Y., assignor to Von Roden Manufacturing Company, of New York. Condensing and preserving milk	376,495	Jan. 17	1092	287	42	224
Von Roden, Otto, New York, N. Y., assignor to Von Roden Manufacturing Company, of New York. Apparatus for condensing and carbonating milk	376,496	Jan. 17	1095	287	42	225
Von Roden, Otto, New York, N. Y., assignor to Von Roden Manufacturing Company, of New York. Means for closing milk-cans	376,690	Jan. 17	1393	366	42	280
Von Schade, Adolph, Newport, R. I. Bottle-washer	377,875	Feb. 14	811	207	42	664
Von Welsbach, Carl A., Vienna, Austria-Hungary, assignor to Welsbach Incandescent Gas Light Company. Compound for making incandescent devices	377,698	Feb. 7	524	135	42	504
Von Welsbach, Carl A., Vienna, Austria-Hungary, assignor to Welsbach Incandescent Gas Light Company. Compound for making incandescent devices	377,699	Feb. 7	526	135	42	504
Von Welsbach, Carl A., Vienna, Austria-Hungary, assignor to Welsbach Incandescent Gas Light Company. Compound for making incandescent devices	377,700	Feb. 7	527	135	42	504
Von Welsbach, Carl A., Vienna, Austria-Hungary, assignor to Welsbach Incandescent Gas Light Company. Obtaining salts of cerium, &c.	377,701	Feb. 7	528	.....	42	504
Voorhis, Calvin, assignor to himself and A. Shenfield, New York, N. Y. Display-card for suspenders	376,997	Jan. 24	1845	487	42	375
Voss, John C., Bedford, Ind. Cutting apparatus	379,881	Mar. 20	1531	404	42	1272
Wachsler, Joseph, Cleveland, Ohio. Match for molding with gated patterns	378,634	Feb. 28	1924	510	42	896
Waddell, Alexander P., Union City, Tenn. Buckle	377,656	Feb. 7	464	118	42	582
Wade, James J. (See Boyd and Wade.)						
Wade, James R., St. Louis, Mo. Steam-trap	378,482	Feb. 28	1711	451	42	854
Wadsworth, Claudius, Brooklyn, assignor to Unexcelled Fireworks Company, New York, N. Y. Apparatus for charging fire-works	376,691	Jan. 17	1394	367	42	280
Waer, Lois M., J. H. Phillips, and W. S. Kengla, Tucson, Ariz. Ter. Tanning	375,845	Jan. 3	160	.....	42	36
Wagandt, Charles L., and J. S. Hull, Baltimore, Md. Soldering-tool	379,141	Mar. 6	404	114	42	1042
Waggoner, Edward P., assignor of one-half to Pierce, Butler & Pierce Manufacturing Company, Syracuse, N. Y. Vent-plug for steam-radiators	379,260	Mar. 13	573	159	42	1080
Waigle, George. (See Snyder and Waigle.)						
Waite, Benjamin C., Brooklyn, N. Y. Machine for cutting, sanding, and rolling roofing-felt	380,065	Mar. 27	1802	481, 482	42	1334
Waitt, George L., assignor, by mesne assignments, to Germania Bottle Company, Philadelphia, Pa. Bottle-stopper	379,910	Mar. 20	1584	417	42	1282
Wakefield, James C., Bayonne, N. J. Safety pocket-spring	379,347	Mar. 13	698	189	42	1104
Wakefield Rattan Company. (See Henry, Fred H., assignor.)						
Wald, Max, New York, N. Y. Neckscarf	375,967	Jan. 3	330	88	42	68
Walden, Otto, Wheeling, W. Va. Coffee-roaster	377,443	Feb. 7	145	32	42	532
Waldorf, George M. (See Kochsmeier and Waldorf.) (Reissue.)						
Waldron, John, *et al.* (See Murphy, Albert L., assignor.)						
Waldron, Warren B., and G. C. Boller, Folsom City, Cal. Tamping-tool	376,565	Jan. 17	1184	312	42	224
Waldron, Warren B., and G. C. Boller, Folsom City, Cal. Seal-lock	379,348	Mar. 13	698	190	42	1104
Walker, A. B. (See Langstrom, Albert, assignor.)						
Walker, Charles, *et al.* (See Ford, William R., assignor.)						
Walker & Co. (See King, John T., assignor.)						
Walker, Cyril. (See Cattell and Summers, assignors.)						
Walker, Cyril, and W. Allsopp, Wolverhampton, county of Stafford, England; said Allsopp assignor to said Walker. Animal-trap	379,087	Mar. 6	331	95	42	1028
Walker, Edward A., Philadelphia, Pa. Metal-shaping machine	379,142	Mar. 6	405	114	42	1042
Walker, Edward W., *et al.* (See Gore, Henry A., assignor.)						
Walker, Edwin, assignor to E. Walker Tool Company, Erie, Pa. Cork-extractor	377,790	Feb. 14	709	176	42	644
Walker, Francis M. (See Smith and Walker.)						
Walker, George F. (See Hall, David S., assignor.)						
Walker, George W., Malden, Mass. Cooking-stove	377,471	Feb. 7	186	44	42	531
Walker, Harlan P., assignor of one-half to H. H. Phillips, Boulder, Colo. Gate	380,232	Mar. 27	2034	543	42	1360
Walker, James B., *et al.* (See Ford, William R., assignor.)						
Walker, Sarah C. (See Anderson, Alexander, assignor.)						
Walker Tool Company, E. (See Walker, Edwin, assignor.)						
Walker, William H., Milford, Conn. Die for welding draft-eyes to hames	376,998	Jan. 24	1845	488	42	375
Wall, Enos A., Salt Lake City, Utah Ter. Ore-concentrator	380,233	Mar. 27	2036	543	42	1361
Wallace, J. Bennett, assignor to G. M. Clark & Company, Chicago, Ill. Generating vapor-burner	378,120	Feb. 21	1162	302, 303	42	742
Wallis, Harry E. (See Wallis, Thomas, T. W., and H. E.)						
Wallis, James W., Memphis, Ala. Cotton-picker	378,635	Feb. 28	1924	510, 511	42	896
Wallis, Thomas, T. W., and H. E., Janesville, Wis. Cabinet-bath	379,143	Mar. 6	406	114, 115	42	1043
Wallis, Traiton W. (See Wallis, Thomas, T. W., and H. E.)						
Wallwork, Roughsedge, assignor to J. W. Shepherd and W. Ayrton, Manchester, county of Lancaster, England. Mechanism for testing yarns or threads	379,088	Mar. 6	332	95, 96, 97	42	1028
Walmsley, Robinson. (See Watson, Samuel, assignor.)						
Walpuski, Charles, Brooklyn, N. Y. Copying-pencil	376,456	Jan. 17	1038	.....	42	214
Walrath, Austin, Nevada City, Cal. Paving and roofing compound	376,172	Jan. 10	639	.....	42	134
Walsh, Edward, Jr., St. Louis, Mo. Glass shingle	377,588	Feb. 7	350	90, 91	42	562
Walsh, Francis A., Milwaukee, Wis. Sheet-metal pail	380,151	Mar. 27	1924	513	42	1352
Walter, Hugo, Cincinnati, Ohio, assignor to National Galvanic Battery Company, of New York. Galvanic battery	378,121	Feb. 21	1164	303	42	742
Walter, Hugo, and W. E. H. Marsh, Cincinnati, Ohio, assignors to National Galvanic Battery Company, of New York. Galvanic battery	378,122	Feb. 21	1165	303	42	742
Walters, William J., Prospect, N. Y. Cuff-holder	376,457	Jan. 17	1039	272	42	214
Wanzer Lamp Company. (See Wanzer, Richard M., assignor.)						
Wanzer, Richard M., Hamilton, Ontario, Canada, assignor to Wanzer Lamp Company, (limited,) Philadelphia, Pa. Adjustable reflector and hood-shade for lamps	376,692	Jan. 17	1396	367	42	281
Ward, Daniel, Chadron, Nebr. Tongue-support	376,999	Jan. 24	1847	488	42	376
Ward, John F., Jersey City, N. J. Ram	379,427	Mar. 13	819	220	42	1128
Ward, Thomas H., Tipton, county of Stafford, England. Drilling machine	376,354	Jan. 10	887	232, 233	42	179
Warden, Henry, Philadelphia, Pa. Apparatus for making boiler-heads	377,791	Feb. 14	701	176, 177	42	644
Warden, Henry, Philadelphia, Pa. Boiler	377,792	Feb. 14	703	177	42	644
Wardle, James, Hope, British Columbia, Canada. Car-heater	380,066	Mar. 27	1804	482	42	1335

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Wardwell, Claison S., Stamford, Conn. Foot-holder for treadles	376,566	Jan. 17	1185	312	42	242
Wardwell, George J., and A. Landon, Rutland, Vt. Self-coupling car-link	379,021	Mar. 20	1117	296	42	1192
Wardwell, George J., and A. Landon, North Bend, Ohio. Seal-lock	376,355	Jan. 10	889	233	42	179
Ware, Francis M., and G. W. Benjamin, North Bend, Ohio. Seal-lock	375,846	Jan. 3	160	45	42	36
Ware, Walter F., Camden, N. J. Suspensory bandage	378,028	Feb. 14	1031	270	42	709
Warfield, Dunbar G., Brownwood, assignor to W. B. Morris, Sidney, Tex. Brace for bedsteads	379,428	Mar. 13	819	220, 221	42	1128
Warhurst, John W., San Francisco, Cal. Station-indicator for railway-cars	378,560	Feb. 28	1824	481	42	876
Waring, Richard S., Pittsburg, Pa. Test-box for underground electric wires or cables	378,561	Feb. 28	1826	481	42	876
Waring, Richard S., Pittsburg, Pa. Conduit for electric wires or cables	376,219	Jan. 10	703	187	42	145
Warmington, Henry, and B. Bulger, Virginia City, Mont. Ter. Running-gear for vehicles	377,589	Feb. 7	351	91	42	563
Warner, Charles, Watertown, Conn. Animal-trap						
Warner, Ernest P., assignor to Western Electric Company, Chicago, Ill. Electric-current indicator	378,029	Feb. 14	1032	270	42	709
Warner, Ernest P., assignor to Western Electric Company, Chicago, Ill. Telephone-exchange central-office connection	378,030	Feb. 14	1033	270	42	709
Warner, Peter B. (See Moger, John J., assignor.)						
Warren, Andrew, St. Louis, Mo. Railway ratchet-drill	380,152	Mar. 27	1925	513	42	1350
Warren, Andrew, deceased, assignor to G. Frost, G. H. Phelps, G. A. Frost, Newton, and G. A. Warren, Waltham, Mass. Stocking and skirt holder. (Reissue)	10,898	Feb. 7	509	147	42	603
Warren, Andrew M., Reidsville, N. C. Boot	378,988	Mar. 6	187	51	42	1092
Warren, Carlos J., Jamestown, Dak. Ter. Car-coupling	377,541	Feb. 7	290	73	42	551
Warren & Company, S. D. (See Warren, John E., assignor.)						
Warren, Edward K. (See Allen and Warren.)						
Warren, Edward K., Three Oaks, Mich. Whip-core	376,273	Jan. 10	774	206	42	159
Warren, Georgia A., *et al.* (See Warren, Andrew, assignor.) (Reissue.)						
Warren, John C., Menallen, Pa. Umbrella	376,693	Jan. 17	1397	367	42	281
Warren, John E., Cumberland Mills, Me., assignor of one-half to S. D. Warren & Company, Boston, Mass. Filter	379,349	Mar. 13	700	190	42	1104
Warren, John K., *et al.* (See Hartley, Charles J., assignor.)						
Warren, Seth K., Lake Geneva, Wis. Wire-stretcher	379,669	Mar. 20	1186	314	42	1205
Warren, William H., Worcester, Mass. Shaping-machine	377,969	Feb. 14	950	248	42	693
Warrington, James N., Chicago, Ill. Steam pile-driving hammer	378,745	Feb. 28	2078	548	42	924
Washburn & Moen Manufacturing Company. (See Stover, Daniel C., assignor.)						
Wassell, Ann I. (See Wassell, Edwin D., assignor.)						
Wassell, Edwin D., assignor to A. I. Wassell, Pittsburg, Pa. Treating iron or steel	376,421	Jan. 10	983	256	42	195
Waterman, Henry, assignor to himself, J. G. F. Metcalf, and E. R. Coker, Brooklyn, N. Y. Stove	377,876	Feb. 14	812	207	42	664
Waterman, Sarah, Milwaukee, Wis. Adjustable stove-cover	378,271	Feb. 21	1401	367	42	784
Waterman, Stephen, *et al.* (See Baville, Edmond P., assignor.)						
Watermolen, John F., Green Bay, Wis. Lawn-mower	379,350	Mar. 13	701	190, 191	42	1104
Waters, Edwin C. (See Heath and Waters.)						
Waters, Thomas S., Baltimore, Md. Artificial tooth	377,970	Feb. 14	951	248	42	693
Waters, Thomas S., Baltimore, Md. Artificial tooth	377,182	Jan. 31	2105	555	42	435
Watkins, Uriah B., Barclay, Kans. Corn-shock tyer						
Watriss, George C. (See Clement and Watriss.)						
Watrous, Emma D., Freetown, N. Y. Trellis-support	377,444	Feb. 7	146	33	42	532
Watson, David S., Stratford, N. Y. Dumping-wagon	378,572	Feb. 21	1402	367	42	784
Watson, Edwin J., Worcester, Mass. Apparatus for tempering wire	378,746	Feb. 28	2080	548	42	924
Watson, Samuel, assignor of one-half to R. Walmsley, Fall River, Mass. Let-off mechanism for looms	377,654	Feb. 7	459	118	42	582
Watt, William R., Somerville, Tenn. Pocket weighing-scale	379,746	Mar. 20	1297	346	42	1228
Wattie, William, Worcester, Mass. Drilling-machine	378,747	Feb. 28	2082	549	42	925
Waugh, John E. (See Anderson, James J., assignor.)						
Wayman, Henry P., Trenton, N. J. Car-starter	376,356	Jan. 10	890	233	42	179
Wear, John W., Walker, Mo. Wire-tightener	376,694	Jan. 17	1398	368	42	281
Wear, John W., Eldorado Springs, Mo. Wire-tightener	376,695	Jan. 17	1399	368	42	281
Weart, Spencer. (See Whitney, Daniel D., assignor.)						
Webb, Browne W. (See Jensen, Webb, and Jensen.)						
Webb, Edward E., assignor of one-half to H. Stone, Fitchburg, Mass. Driving mechanism for forges	378,273	Feb. 21	1404	368	42	785
Webb, Joseph, Phillipsburg, Pa. Glassware and manufacturing the same	379,089	Mar. 6	339	97	42	1029
Webb, Leonidas E., and T. Johnson, Indianapolis, Ind. Barrel-carrier	375,785	Jan. 3	87	26	42	21
Webb, Rodolphus L. (See Gérard and Webb.)						
Webb, Thomas H., Bay View, Tex. Insect-destroyer	377,127	Jan. 31	2040	534	42	420
Webber, Charles C., Springfield, Mass. Specking, burling, and knobbing table	377,655	Feb. 7	461	118	42	582
Webber, William A. (See Pain and Webber.)						
Webber, William A., Medford, Mass. Pneumatic cash-carrier apparatus	378,533	Feb. 28	1781	470	42	868
Weber, Philip J., Neu-Oetting, assignor of one-half to L. Zechmeister, Munich, Bavaria, Germany. Rotary engine	377,364	Jan. 31	2387	690	42	485
Weber & Schefbauer. (See Schefbauer, Rupert, assignor.)						
Webster, Albert B., Manchester, N. H. Shaft-iron	377,128	Jan. 31	2041	534	42	420
Webster, Daniel, Brooklyn, Wis. Double-acting pump	376,696	Jan. 17	1399	368	42	281
Webster, Edward B., Clay Centre, Kans. Tag	375,968	Jan. 3	330	88	42	68
Webster, Horace T., Moore's Mill, N. Y. Ladder	377,219	Jan. 31	2107	572	42	446
Webster, James, Birmingham, county of Warwick, England. Metallic alloy	377,918	Feb. 14	872	.....	42	677
Webster, Jerome J., Somerville, Mass., assignor to Boston Cash Indicator and Recorder Company. Cash register and indicator	377,342	Jan. 31	2350	681	42	478
Webster, Jonathan K. (See Murdock, Charles F., assignor.)						
Webster, Zachariah T., *et al.* (See Spennerberg, George J., assignor.)						
Wechsung, Ferdinand O. H. (See Schneidewind, G. L. Herrmann, assignor.)						
Weed, Clinton A., Racine, Wis. Band-coupling	377,971	Feb. 14	952	249	42	693
Weeden, Henry C., assignor to Weeden Sanitary Manufacturing Company, Boston, Mass. House-boiler stand	375,847	Jan. 3	161	45	42	36
Weeden, Henry C., Boston, Mass., assignor to Weeden Sanitary Manufacturing Company, of Rhode Island. Tank-valve	380,153	Mar. 27	1926	513	42	1359
Weeden Sanitary Manufacturing Company. (See Weeden, Henry C., assignor.)						
Weeks, James N., Warren, N. Y. Water-wheel	376,357	Jan. 10	892	233, 234	42	180
Weems, David G., Baltimore, Md. Electric-railway system	376,567	Jan. 17	1185	313, 314	42	242
Weidig, Henry P., Philadelphia, Pa. Absorption-tower	376,929	Jan. 24	1754	461	42	357
Weil, William B., Cleveland, Ohio. Making hollow bars for stay-bolts	379,837	Mar. 20	1432	384	42	1227

Alphabetical list of patentees, January to March, inclusive—Continued.

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Weinberg, Arthur, assignor to L. Cassella & Co., Frankfort-on-the-Main, Prussia, Germany. Production of new diamido compounds and of azo colors produced therefrom	380,067	Mar. 27	1805	.....	42	1335
Weinberg, Arthur, and H. Siebert, Mainkur, near Frankfort-on-the-Main, assignors to L. Cassella & Co., Frankfort-on-the-Main, Prussia, Germany. Manufacture of dye-stuffs	375,848	Jan. 3	102	.....	42	36
Weir, Elmer E. (See Smith, Weir, Carson, and Weir.)						
Weir, Fred H. (See Smith, Weir, Carson, and Weir.)						
Weir, Fredric C. (See Crowell and Weir.)						
Weir, Fredric C., Cincinnati, Ohio. Rail-brace	377,220	Jan. 31	2168	572	42	446
Weir, Fredric C., C. Partington, N. O. Goldsmith, and E. W. Harden, assignors to Weir Frog Company, Cincinnati, Ohio. Multiple drill	378,748	Feb. 28	2084	540	42	925
Weir Frog Company. (See Weir, Partington, Goldsmith, and Harden, assignors.)						
Weirich, Jules, Béziers, Hérault, France. Amalgamator	377,590	Feb. 7	352	91	42	563
Weiss, Charles P., Susquehanna, Pa., assignor of one-half to C. M. Morse, Buffalo, N. Y. Valve-facing device	379,297	Mar. 13	634	173	42	1092
Weiss, Charles P., Susquehanna, Pa., assignor of one-half to C. M. Morse, Buffalo, N. Y. Device for reseating valves	379,351	Mar. 13	702	191	42	1105
Weiss, Emil, assignor of one-half to L. Fraenkel, Berlin, Germany. Separating-machine for cleaning groats	378,562	Feb. 28	1828	{481 482}	42	876
Weiss, George W. (See Stewart and Weiss.)						
Weitmyer, John H., Harrisburg, Pa. Damper-regulator	377,657	Feb. 7	465	119	42	583
Weitzman, Emil, Detroit, Mich. Belt-fastener	377,129	Jan. 31	2042	534	42	421
Welch, E. B. (See Robinson, Thomas C., assignor.)						
Welch, James F., Brooklyn, assignor to Glen Cove Machine Company, (limited,) Green Point, N. Y. Pulley for variable speed	377,281	Jan. 31	2257	597	42	462
Welch, Rosia W., Baltimore, Md., assignor to Welsh Wheat Cleaning and Manufacturing Company of Baltimore City. Grain-scouring machine	377,919	Feb. 14	875	224	42	677
Welch, Rosia W., Baltimore, Md., assignor to Welsh Wheat Cleaning and Manufacturing Company of Baltimore City. Wheat-scouring machine	377,920	Feb. 14	876	224	42	678
Welch, S. Frank, assignor to Western Wheel Scraper Company, Mount Pleasant, Iowa. Road-grader	379,550	Mar. 13	1001	268	42	1163
Welch, S. Frank, assignor to Western Wheel Scraper Company, Mount Pleasant, Iowa. Road-grader	380,068	Mar. 27	1806	482	42	1335
Welcome, Jacob C., Fort Bidwell, Cal. Stirrup attachment	379,747	Mar. 20	1298	346	42	1228
Weld, George A., Winchester, Mass. Bale-tie	377,092	Jan. 31	1991	521	42	411
Weld, Loretta B., Falmouth, Mass. Preparing hydrochlorate of quinia	379,298	Mar. 13	635	.....	42	1092
Weld, Loretta B., Falmouth, Mass. Medicinal preparation	379,299	Mar. 13	635	.....	42	1092
Weld, Loretta B., Falmouth, Mass. Solution of quinine	379,300	Mar. 13	636	.....	42	1092
Weller, Charles W., *et al.* (See Gillis, William, assignor.)						
Wellington, Charles A., Lexington, Mass. Cover for fire-place ash-chutes	375,969	Jan. 3	331	88	42	68
Wellington, Henry. (See Prendergast, Daniel, assignor.)						
Wellman, Samuel T., and G. W. Goetz, Cleveland, Ohio, assignors to Fuel Gas and Electric Engineering Company, (limited,) Pittsburg, Pa. Apparatus for the manufacture of gas	376,835	Jan. 24	1627	425	42	333
Wellman, Samuel T., and G. W. Goetz, Cleveland, Ohio, assignors to Fuel Gas and Electric Engineering Company, (limited,) Pittsburg, Pa. Apparatus for the manufacture of gas	376,836	Jan. 24	1629	426	42	333
Wells, Arthur C., Manchester, county of Lancaster, England. Tool-handle	375,786	Jan. 3	88	26	42	22
Wells, Charles D., assignor of one-third to P. P. and J. T. Parker, Maysville, Ky. Cutter-supporting bar and cutter	380,304	Mar. 27	2124	568	42	1329
Wells, John W., Manchester, N. H. Bag turning, folding, and printing machine	377,972	Feb. 14	953	249	42	694
Welsbach Incandescent Gas Light Company. (See Shaw and McCulloch, assignors.)						
Welsbach Incandescent Gas Light Company. (See Von Welsbach, Carl A., assignor.)						
Welsh Wheat Cleaning and Manufacturing Company of Baltimore City. (See Welch, Rosia W., assignor.)						
Welsh, William H., Somerville, Mass. Machine for dressing and grooving type	380,004	Mar. 27	1714	{458 459 460}	42	1318
Wendell, Isaac P., assignor of one-half to S. P. M. Tasker, Philadelphia, Pa. Compound for safe-linings, &c	377,343	Jan. 31	2354	.....	42	479
Wentworth, Edwin A., and A. J. Traver, Atchison, Kans. Plumb-level	377,658	Feb. 7	467	119	42	583
Werner, Frederick C., Watertown, Wis. Ventilator	378,989	Mar. 6	188	52	42	1002
Werth, James R., Richmond, Va. Building-block	379,429	Mar. 13	821	221	42	1128
Wertheim, Joseph, Frankfort-on-the-Main, Germany. Sewing-machine table	378,636	Feb. 28	1926	511	42	897
Wesselmann, Bruno. (See Engels and Wesselmann.)						
Wesson, Daniel B., Springfield, Mass. Barrel-catch device for revolvers	377,877	Feb. 14	814	208	42	665
Wesson, Daniel B., Springfield, Mass. Revolver	377,878	Feb. 14	815	208	42	665
West, Belle. (See Allen and West.)						
West Haven Buckle Company. (See Hyde, James C., assignor.)						
West, James, assignor to himself, N. G. Pierce, and G. D. Markham, St. Louis, Mo. Fire-alarm	378,990	Mar. 6	189	52	42	1002
West, John F., Staunton, Va. Cable-grip	377,702	Feb. 7	529	{135 136}	42	594
West, Owen, Lynchburg, Ohio. Swinging gate	376,358	Jan. 10	893	234	42	140
West, Paul, *et al.* (See Enos, John A., assignor.)						
Westaway, Walter C., assignor of one-half to A. J. Bennett, Decorah, Iowa. Windmill	377,973	Feb. 14	956	249	42	694
Westbrook, Richard B. (See Moreau, Eugène, assignor.)						
Westbrook, Walter A., Kingman, Kans. Wagon-brake lever	378,123	Feb. 21	1167	304	42	742
Western Electric Company. (See Haskins, Charles H., assignor.)						
Western Electric Company. (See Patterson, William R., assignor.)						
Western Electric Company. (See Warner, Ernest P., assignor.)						
Western Indurated Fibre Company. (See Loomis, Charles F., assignor.)						
Western Union Telegraph Company. (See Edison, Thomas A., assignor.)						
Western Union Telegraph Company. (See Pike, Daniel E., assignor.)						
Western Wheel Scraper Company. (See Welch, S. Frank, assignor.)						
Westinghouse Electric Company. (See Moses, Otto A., assignor.)						
Westinghouse, George, Jr. (See Ells, Josiah W., assignor.)						
Westinghouse, George, Jr., Pittsburg, Pa. Fluid-pressure automatic brake mechanism	376,837	Jan. 24	1631	426	42	353
Weston, Charles. (See Duffee and Weston.)						
Weston, Charles H., Medford, assignor of one-half to J. C. Nute, East Boston, Mass. Lock for lathe-head stocks. (Reissue)	10,900	Feb. 7	573	147	42	604
Weston Engine Company. (See Armstrong, Edwin J., assignor.)						
Wetmore, William W., assignor to Winchester Repeating Arms Company, New Haven, Conn. Cartridge-reloading implement	376,930	Jan. 24	1755	462	42	358
Wetzler, Joseph and S., Hoboken, N. J. Electro-magnetic bell	378,124	Feb. 21	1168	304	42	743

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Wetzler, Sigmund. (See Wetzler, Joseph and S.)						
Weyburn, Lewis A., and G. S. Briggs, Rockford, Ill. Clevis for plows	376,792	Jan. 24	1561	409	42	321
Weyer, August, Atlanta, Ga. Gas-generator	377,793	Feb. 14	704	177	42	644
Weymouth, George W. (See Houghton and Fox, assignors.)						
Wharton, John C., Nashville, Tenn. Ice-shaver	377,365	Jan. 31	2388	600	42	485
Wheeler, Earl A., Sharon, Pa. Blast-furnace	376,749	Feb. 28	2085	550	42	945
Wheeler, Elbridge, assignor to himself, W. B. Gay, and G. W. Gogin, trustees, Boston, Mass. Manufacture of wire	378,031	Feb. 14	1034	270	42	799
Wheeler, Frank, Meriden, Conn. Device for setting up rigging	377,055	Jan. 31	1929	507	42	399
Wheeler, John E. (See Reed and Wheeler.)						
Wheeler, Roscoe B., Detroit, Mich. Garment-stay	379,882	Mar. 20	1533	404	42	1273
Wheeler, William H., Spiva, Mo. Animal-weaner	377,794	Feb. 14	706	177	42	645
Wheeler, William W., Meriden, Conn. Amalgamating gold and silver	378,750	Feb. 28	2087	.....	42	926
Wheeler & Wilson Manufacturing Company. (See Neely, William A., assignor.)						
Wheeler & Wilson Manufacturing Company. (See Neely and Rowell, assignors.)						
Wheelock, Arnold A., Washington, D. C. Shutter hower	378,346	Feb. 21	1512	395	42	806
Wheelock, Edward T., Oakdale, Cal. Lever-power engine	378,155	Feb. 21	1222	319	42	751
Wheet, Edward T., Oakdale, Cal. Lever-power engine	375,905	Jan. 3	237	64	42	49
Whelan, Robert, assignor of one-half to R. A. Whelan, Chicago, Ill. Steam-boiler furnace	377,974	Feb. 14	958	250	42	695
Whelan, Robert A. (See Whelan, Robert, assignor.)						
Wheless, Wesley N., Augusta, Ga. Pencil-sharpener	377,503	Feb. 7	531	136	42	594
Whelpley, James A., assignor to Keene Manufacturing Company, Keene, N. H. Skate	377,504	Feb. 7	533	137	42	595
Whelpley, James A., assignor to Keene Manufacturing Company, Keene, N. H. Skate	377,727	Feb. 7	559	144	42	600
Whitaker, John H., Davenport, Iowa. Trotting-harness						
Whitaker, Thomas, Horsforth, near Leeds, county of York, England. Excavating and machinery therefor	376,793	Jan. 24	1502	410	42	322
Whitaker, Thomas H., Youngsville, N. C. Side-hill reversible plow	376,931	Jan. 24	1756	462	42	358
Whitcomb, Joseph S., Minneapolis, Minn. Excavator	378,125	Feb. 21	1168	{304 305}	42	743
White, Aldamar F., and M. M. Flynn, Woonsocket, R. I. Wringer	380,234	Mar. 27	2037	544	42	1381
White, Ansley D., Buffalo, N. Y. Bit-brace	378,274	Feb. 21	1406	368	42	785
White & Bro., S. R. (See Harwood and White, assignors.)						
White, Charles E., assignor to Deere & Mansur Company, Moline, Ill. Corn-planter	379,838	Mar. 20	1453	{384 385}	42	1257
White, Charles H. (See Billups, Samuel R., assignor.)						
White, Charles J., New Britain, Conn. Spring-clasp	380,154	Mar. 27	1927	514	42	1359
White, Charles W. (See Thurston, Harrison F., assignor.)						
White, David S., Minneapolis, Minn. Hoisting and loading machine	377,183	Jan. 31	2106	{555 556}	42	435
White Dental Manufacturing Company, S. S. (See Bonwill, William G. A., assignor.)						
White Dental Manufacturing Company, S. S. (See Moffitt, John W., assignor.)						
White Dental Manufacturing Company, S. S. (See Wilkerson, Basil M., assignor.)						
White, Eli, Mount Morris, N. Y. Fruit-evaporator	378,483	Feb. 28	1712	452	42	854
White, Frank A., deceased, Candor, N. Y.; L. F. and M. A. White, administrators. Folding table	376,726	Jan. 17	1445	379	42	291
White, Frank R. (See Platt and White.)						
White, James E., Malden, assignor to J. W. Tufts, Medford, Mass. Ice-pitcher	377,820	Feb. 14	736	196	42	649
White, John, *et al.* (See Leahy, Edward C., assignor.)						
White, Le Roy S., Union, N. Y. Axle-clip	379,839	Mar. 20	1456	385	42	1258
White, Le Roy S., assignor to Electrical Appliance Manufacturing Company, Waterbury, Conn. Electric gas-lighting burner	377,565	Feb. 7	242	59	42	541
White, Lewis R. (See Harwood and White.)						
White, Louisa F., administratrix, *et al.* (See White, Frank A.)						
White, Lyman T., Eaton Rapids, Mich. Pipe-coupling	377,130	Jan. 31	2043	535	42	421
White, Morgan A., administrator, *et al.* (See White, Frank A.)						
White, Reynolds T., Boston, Mass. Track for street-railways	375,849	Jan. 3	163	45	42	36
White, Reynolds T., Boston, Mass. Street-railway construction	375,850	Jan. 3	164	46	42	36
White, Reynolds T., Boston, Mass. Construction of street-railways	375,851	Jan. 3	165	46	42	37
White, Reynolds T., Boston, Mass. Street-railway construction	375,852	Jan. 3	166	46	42	37
White, Reynolds T., Boston, Mass. Street-railway construction	375,853	Jan. 3	166	46	42	37
White, Reynolds T., Boston, Mass. Street-railway construction	375,854	Jan. 3	167	47	42	37
White, Reynolds T., Boston, Mass. Street-railway construction	375,855	Jan. 3	168	47	42	38
White, Reynolds T., Boston, Mass. Combined sleeper and chair for street-railways	375,856	Jan. 3	169	47	42	38
White Sewing Machine Company. (See Clyne, James B., assignor.)						
White Sewing Machine Company. (See Williams, Le Roy, assignor.)						
White, Thomas, Peekskill, N. Y. Horse-detacher	379,352	Mar. 13	703	191	42	1105
White, William J., Cleveland, Ohio. Machine for manufacturing chewing-gum	378,637	Feb. 28	1927	{511 512}	42	897
White, William R., Washington, Iowa. Gate-latch	376,568	Jan. 17	1188	315	42	242
White, William R., Neoga, Ill. Gate	378,275	Feb. 21	1407	368	42	785
Whited, Alvinze, assignor to Holmes & Ide, Troy, N. Y. Making cuffs	378,032	Feb. 14	1035	271	42	709
Whitehall, Curtis, Mellott, Ind. Cultivator	379,430	Mar. 13	822	221	42	1128
Whitehead, Herbert L., Indianapolis, Ind. Collapsible chair	379,670	Mar. 20	1187	314	42	1205
Whitehead, Samuel B., San Francisco, Cal. Telegraphic apparatus	376,569	Jan. 17	1188	315	42	243
Whitehead, William, New York, N. Y. Steering mechanism for vessels	379,840	Mar. 20	1457	385	42	1258
Whiteley, Alfred M., Brooklyn, N. Y. Step-ladder	378,638	Feb. 28	1929	512	42	897
Whiteley, Fassler & Kelly. (See Whiteley and Bayley, assignors.)						
Whiteley, Fassler & Kelly. (See Whiteley and Brown, assignors.)						
Whiteley, William N., Springfield, Ohio. Grain-binder	376,123	Jan. 10	564	{149 150}	42	119
Whiteley, William N., Springfield, Ohio. Harvester and binder	376,763	Jan. 24	1503	{306 307}	42	311
Whiteley, William N., Springfield, Ohio. Knotting device for grain-binders	378,815	Feb. 28	2195	584	42	947
Whiteley, William N., Springfield, Ohio. Grain-binding harvester	378,817	Feb. 28	2200	586	42	948
Whiteley, William N., and W. Bayley, Springfield, Ohio. Combined harvester and binder	378,814	Feb. 28	2193	{583 584}	42	946
Whiteley, William N., and W. Bayley, assignors to Toronto Reaper and Mower Company, Springfield, Ohio. Mowing-machine	378,816	Feb. 28	2197	{585 586}	42	947
Whiteley, William N., and W. Bayley, assignors to Whiteley, Fassler & Kelly, Springfield, Ohio. Harvester and binder	375,971	Jan. 3	332	{89 90 91}	42	69
Whiteley, William N., and R. Brown, assignors to Whiteley, Fassler & Kelly, Springfield, Ohio. Grain-binder	377,093	Jan. 31	1992	{521 522 523}	42	411

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g	Official Gazette. Vol.	Official Gazette. Page.
Whiteley, William N., and S. Dyer, Springfield, Ohio, assignors to said Whiteley, Knot-ting device for grain-binders	379,622	Mar. 20	1119	296, 297	42	1192
Whiter, James J., Brooklyn, N. Y. Coupling for boilers, tanks, &c	377,506	Feb. 7	245	59	42	541
Whitlock, Thomas H., *et al.* (See King, William J., assignor.)						
Whitmarsh, Henry C., Brooklyn, assignor to himself and C. C. Carpenter, New York, N. Y. Buckle	378,991	Mar. 6	190	52	42	1003
Whitmore, Charles M., Meriden, Conn. Frame	375,906	Jan. 3	239	65	42	50
Whitmore, Charles M., Meriden, Conn. Wood-screw	375,907	Jan. 3	240	65	42	50
Whitmore, George E., New Haven, Conn. Wheel	379,841	Mar. 20	1400	286	42	1259
Whitney, Amos, assignor to Pratt & Whitney Company, Hartford, Conn. Drilling-machine	376,838	Jan. 24	1634	426, 427	42	334
Whitney, Benjamin F., Portland, Me. Boot or shoe	377,416	Feb. 7	110	23	42	515
Whitney, Daniel D., Cornwall, N. Y., assignor of one-half to S. Weart, Jersey City, N. J. King-bolt for vehicles	376,618	Jan. 17	1275	333	42	259
Whitney, Edwin R., assignor to Standard Electric Company of Vermont, St. Johnsbury, Vt. Electric therapeutic device	376,016	Jan. 3	405	107	42	81
Whitney, Edwin R., assignor to Standard Electric Company of Vermont, St. Johnsbury, Vt. Automatic grain-weighing apparatus	377,591	Feb. 7	354	92	42	563
Whitney, Isaac, Lynnville, Iowa. Washing-machine	376,932	Jan. 24	1758	462	42	358
Whitney, William, Gouverneur, N. Y. Alterative tonic	378,156	Feb. 21	1223		42	754
Whittle, James H., Worcester, Mass. Conductor for ashes	377,921	Feb. 14	878	225	42	678
Whittlesey, George P., assignor of one-half to L. C. Whittlesey, Washington, D. C. Bottle attachment	378,276	Feb. 21	1408	368	42	786
Whittlesey, Lillian C. (See Whittlesey, George P., assignor.)						
Whitty, Lewis, Pollocksville, N. C. Agricultural implement	378,347	Feb. 21	1513	395	42	806
Whyman, Horatio O., Norfolk, Nebr. Nut-lock	378,563	Feb. 28	1829	482	42	876
Wiederer, Leonhard, New York, N. Y. Hand-mirror	377,282	Jan. 31	2259	597	42	462
Wiedling, Hermann, assignor to Wiedling Motor Company, New York, N. Y. Automatic car-brake	378,992	Mar. 6	191	52, 53	42	1003
Wiedling Motor Company. (See Wiedling, Hermann, assignor.)						
Wiedmann, John, assignor to A. X. Schwebel, Cincinnati, Ohio. Catch-basin	377,056	Jan. 31	1931	507	42	399
Wiegand, S. Lloyd, Philadelphia, Pa., assignor to Germania Bottle Stopper Company, Camden, N. J. Bottle stopper and fastening	379,623	Mar. 20	1122	297	42	1192
Wiegmann, Charles. (See Stecher, Max, assignor.)						
Wiest, John, York, Pa. Battery-vessel	378,484	Feb. 28	1714	452	42	854
Wiggins, George, Cleveland, Tenn. Buggy-top	378,485	Feb. 28	1715	453	42	854
Wightman, Merle J. (See Urban and Wightman.)						
Wightman, Merle J., and E. Rasmussen, Hartford, Conn. Double-arc lamp	378,818	Feb. 28	2201	587	42	948
Wilbur, Alfred, Allegheny City, Pa. Pipe-coupling	376,458	Jan. 17	1040	272	42	214
Wilcomb, Frank, San Francisco, Cal. Stocking	378,819	Feb. 28	2205	588	42	949
Wilcox, Edgar A., Monterey, Mich. Plow-beam	377,472	Feb. 7	187	44	42	531
Wilcox, Edward G., Chicago, Ill. Stove-pipe-grooving machine	376,173	Jan. 10	640	171	42	134
Wilder, Charles H., Natick, Mass., assignor to Hub Carbon Company, Kennebunk, Me. Mold for forming pieces of carbon for electric purposes	376,019	Jan. 3	407	107, 108	42	81
Wilder, Elihu, Newton, Mass., assignor to Plume & Atwood Manufacturing Company, Waterbury, Conn. Nailing-machine	376,619	Jan. 17	1277	335, 336	42	259
Wilder, Elihu, Newton, Mass., assignor to Plume & Atwood Manufacturing Company, Waterbury, Conn. Nail	376,620	Jan. 17	1281	336	42	260
Wilder, Francis M., and G. H. Benjamin, New York, N. Y. Flexible piping	376,401	Jan. 10	946	248	42	189
Wiley, Edgar C., Independence, Va. Automatic grain-weigher	377,417	Feb. 7	115	23	42	515
Wilhelm, Jacob, assignor of part to A. H. Grove, New Freedom, Pa. Torpedo-placer	376,020	Jan. 3	409	108	42	81
Wilkerson, Basil M., Baltimore, Md., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Inhaler	378,033	Feb. 14	1036	271	42	709
Wilkes, Gilbert, U. S. Navy, assignor of one-half to L. Duncan, Baltimore, Md. Socket and key for incandescent lamps	379,842	Mar. 20	1461	386	42	1260
Wilkin, George, Dundee, N. Y. Berry or seed gatherer and cleaner	375,787	Jan. 3	89	27	42	22
Wilkin, William M., Erie, Pa. Gang-saw mill	380,235	Mar. 27	2038	544	42	1384
Wilkin, William M., Erie, Pa. Gang-saw mill	380,236	Mar. 27	2039	544, 545	42	1384
Wilkins, Alexander G., Meadville, Pa., assignor to Railway Speed Recorder Company, Kent, Ohio. Button-attaching machine	379,431	Mar. 13	822	221, 222	42	1129
Wilkins, George H., Shelburne Falls, Mass., assignor of twelve twenty-fifths to H. H. Sanderson, New York, N. Y., and F. H. Mayhew, Shelburne Falls, Mass. Machine for winding spools	376,124	Jan. 10	566	150, 151, 152	42	119
Wilkins, Joseph, Baltimore, Md. Amalgamator	378,348	Feb. 21	1514	395	42	807
Wilkinson, Charles E., Matteawan, N. Y. Shuttle for sewing-machines	379,353	Mar. 13	704	192	42	1165
Wilkinson, Dan, Peru, Ind. Multiple cylinder steam-engine	376,459	Jan. 17	1041	273	42	214
Wilkinson, Lewis, deceased; F. M. Steele, Chicago, Ill., administrator. Machine for taping nuts	378,468	Feb. 28	1697	446	42	849
Willard, Charles W., Chicago, Ill. Valve-gear for steam-hammers	380,155	Mar. 27	1925	514	42	1329
Willey, George H., Abington, Mass. Machine for winding bobbins for sewing-machines	377,542	Feb. 7	292	74	42	553
Williams, Alfred, Watson, N. Y. Drip-cup for white-wash or paint brushes	380,065	Mar. 27	1720	460	42	1319
Williams, Charles H., Cleveland, Ohio. Turn-buckle	378,534	Feb. 28	1783	470	42	863
Williams, Charles W., Cave City, Ky. Railway-telegraph	377,344	Jan. 31	2355	681	42	479
Williams, Emry N., Bonita, Kans. Check-row corn-planter	376,125	Jan. 10	570	152	42	120
Williams, Fitzallan B., Chicago, Ill. Wardrobe-bedstead	376,126	Jan. 10	571	152, 153	42	120
Williams, Fitzallan B., Chicago, Ill. Folding or wardrobe bedstead	376,127	Jan. 10	572	153	42	120
Williams, George, Erie, Pa. Die for threading and cutting pipes	379,624	Mar. 20	1123	297	42	1192
Williams, George H., Nashville, Tenn. Rail-joint	376,402	Jan. 10	946	248	42	189
Williams, George H. A., Concord, N. H. Salve	377,592	Feb. 7	357		42	564
Williams, George W., Brooklyn, N. Y. Blind-stop	379,748	Mar. 20	1209	347	42	1228
Williams, Hamilton W., Nashville, Tenn. Saw-swage	376,128	Jan. 10	574	153, 154	42	121
Williams, Harry C. (See Williams, John C. and H. C.)						
Williams, Harry I., Decatur, Tex. Sash-fastener	380,237	Mar. 27	2041	545	42	1382
Williams, Henry. (See Kime and Williams.)						
Williams, Herbert H., Thomaston, Me. Life-float	378,993	Mar. 6	193	53	42	1003
Williams, Horace, *et al.* (See Kayser, Adolf, assignor.)						
Williams, James H., Brooklyn, N. Y. Chain-wrench	377,795	Feb. 14	706	178	42	645
Williams, John D. (See Hughes and Williams.)						
Williams, John C. and H. C., Hooper, Nebr. Device for sharpening toe-calks	376,697	Jan. 17	1401	369	42	282

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g	Official Gazette. Vol.	Official Gazette. Page.
Williams, John N., Newark, N. J. Car brake and starter	377,094	Jan. 31	1996	523, 524	42	411
Williams, John R. (See Booth and Williams.)						
Williams, Le Roy, Lansing, Mich., assignor to White Sewing Machine Company, Cleveland, Ohio. Shuttle for sewing-machines	378,855	Feb. 28	2206	602	42	959
Williams, Oscar J., Lawton, Mich. Wagon-axle truss	378,535	Feb. 28	1784	471	42	868
Williams, Robert H., Newton, Iowa. Crank and lever mechanism	380,238	Mar. 27	2044	545	42	1382
Williams, William C., Detroit, Mich. Paint-can press	379,190	Mar. 6	463	131	42	1055
Williamson, David, New York, N. Y. Rotary engine	375,788	Jan. 3	94	27	42	22
Williamson, George H. (See Williamson, William B. and G. H.)						
Williamson, Samuel S., assignor to T. P. Taylor, Bridgeport, Conn. Bustle	378,187	Feb. 21	1265	334	42	760
Williamson, Silas, Sr., Amanda, Ohio. Combined fence post and brace	380,270	Mar. 27	2084	557	42	1391
Williamson, William B. and G. H., Worcester, England. Can-opener	378,349	Feb. 21	1515	396	42	807
Willigerod, Edward, and L. Nereshelmer, New York, N. Y. Feed-bag	376,570	Jan. 17	1190	315	42	243
Willingham Lumber Company. (See Fee, William L., assignor.)						
Willis, Charles A. (See Schenck, Unico H. W., assignor.)						
Willson, Freeman R., Sr., Columbus, Ohio. Whiffletree	376,462	Jan. 17	1046	274	42	215
Willson, Henry, Chicago, Ill. Box for holding gummed letters, &c	378,911	Mar. 6	70	21	42	980
Wilmoth, Corydon H., Terre Haute, Ind. Ratchet-drill stock	378,639	Feb. 28	1930	513	42	897
Wilmouth, James H., and B. McNairy, Aberdeen, Miss. Churn	375,857	Jan. 3	171	48	42	38
Wilson, Alfred D. (See Taylor, John M., assignor.)						
Wilson, Benjamin J., Atlanta, Ga. Baling-press	376,461	Jan. 17	1045	274	42	215
Wilson, Benjamin J., and A. A. Wood, Atlanta, Ga.; said Wood assignor to said Wilson. Brick-machine	376,460	Jan. 17	1042	273	42	214
Wilson Car Warming and Ventilating Company. (See Wilson and Noble, assignors.)						
Wilson, Curtis, assignor of one-half to H. Goossen, Cordelia, Cal. Gate	378,564	Feb. 28	1830	482	42	876
Wilson, Edgar, and J. W. Binder, Philadelphia, Pa.; said Binder assignor to said Wilson. Ironing-machine	378,994	Mar. 6	194	53, 54	42	1003
Wilson, George H. (See Nowell and Wilson.)						
Wilson, George R., Washington, D. C. Steam-boiler	379,749	Mar. 20	1300	347	42	1228
Wilson, Hiram G., and J. Noble, St. Louis, Mo., assignors to Wilson Car Warming and Ventilating Company, East St. Louis, Ill. Car-heating furnace	376,463	Jan. 17	1048	274	42	215
Wilson, John, New York, N. Y., assignor to American Acetic Acid Company, Jersey City, N. J. Apparatus for distilling wood	375,908	Jan. 3	240	65	42	51
Wilson, John, New York, N. Y., assignor to American Acetic Acid Company, Jersey City, N. J. Clamp for wood-sawing machines	375,909	Jan. 3	241	66	42	51
Wilson, Josephine S., San José, Cal. Dress-chart	375,972	Jan. 3	338	91	42	69
Wilson, Michael H., Nutley, N. J., and W. D. Thomas, Brooklyn, N. Y. Metal mat	378,912	Mar. 6	71	21	42	980
Wilson, Michael H., Nutley, N. J., and W. D. Thomas, Brooklyn, N. Y. Grated structure	380,069	Mar. 27	1807	483	42	1336
Wilson, Robert J., Pittsburg, Pa. Refining oil	379,090	Mar. 6	340	97	42	1029
Wilson, Thomas, North Tarrytown, N. Y. Protector for vessels against rats	376,839	Jan. 24	1637	428	42	334
Wilt, Willard, Eureka, Cal. Combined chair, fish-plate, and rail-coupler	379,432	Mar. 13	826	223	42	1129
Wimmer, Louis, assignor of one-half to E. D. Smith, Elizabeth, N. J. Ore crusher and pulverizer	380,006	Mar. 27	1721	461	42	1319
Winchester Repeating Arms Company. (See Browning, John M. and M. S., assignors.)						
Winchester Repeating Arms Company. (See Wetmore, William W., assignor.)						
Winder, Alfred, Washington, D. C. Blasting-plug	378,820	Feb. 28	2206	588	42	949
Wineland, Frank B., Breckenridge, Colo. Car-coupling	380,070	Mar. 27	1808	483	42	1336
Winfield, William C., assignor of two-thirds to R. A. Cobb and O. R. Grimmesey, Warren, Ohio. Tube-bending device	379,750	Mar. 20	1301	347	42	1229
Wing, Leander J., Lexington, Mass. Supporting-crane for electric lamps	378,913	Mar. 6	73	21	42	981
Winger, Oswald E. (See Stover and Winger.)						
Winn, Ada L., Hillsborough, Ark. Button-fastener	376,497	Jan. 17	1097	288	42	225
Winnek, Frederick G., assignor of two-thirds to J. H. Atwood and T. P. Fenlon, Jr., Leavenworth, Kans. Tongue-support	378,070	Feb. 14	1085	285	42	719
Winnek, Frederick G., assignor of one-half to J. H. Atwood and T. P. Fenlon, Jr., Leavenworth, Kans. Reach-slide for wagons	378,071	Feb. 14	1086	285	42	719
Winona Wagon Company *et al.* (See Hennessy, James F., assignor.)						
Winsor, Spencer T., Duxbury, Mass. Seine	379,751	Mar. 20	1302	347, 348	42	1229
Winston, Alexander, Fayette, Iowa. Corn-planter	376,422	Jan. 10	934	257	42	196
Winter, Caroline H., assignor of one-half to S. C. Johnson, Philadelphia, Pa. Boot or shoe	378,034	Feb. 14	1038	271	42	710
Winterfield, Henry L., assignor of one-half to R. Kerr, Danbury, Conn. Hat-rack for hat-manufacturers	376,933	Jan. 24	1759	463	42	358
Wire Fabric Company. (See Ramsey, Charles B., assignor.)						
Wire Goods Company. (See Bement, William O., assignor.)						
Wirth, John D., Hoosick Falls, N. Y. Self-lubricating loose pulley	380,007	Mar. 27	1723	461	42	1319
Wise, Andrew J., assignor of five-sixths to P. D. Logan, R. R. and E. J. Wise, Cottonwood, Cal. Thrashing-machine	379,191	Mar. 6	464	131	42	1055
Wise Brothers. (See Crain, William O., assignor.)						
Wise, Ebenezer J., *et al.* (See Wise, Andrew J., assignor.)						
Wise, John W., Adrian, Mich. Pen	379,433	Mar. 13	826	223	42	1129
Wise, Reuben R., *et al.* (See Wise, Andrew J., assignor.)						
Wiseman, Albine, Rochester, N. Y. Repairer's last	379,434	Mar. 13	827	223	42	1130
Wissler, Aaron, Brunnersville, Pa. Conveyer	377,821	Feb. 14	737	186, 187	42	650
Withington, Charles B., Janesville, Wis. Grain-binder	378,225	Feb. 21	1318	350, 351, 352	42	771
Withington, Charles B., Janesville, Wis. Grain-binder	378,226	Feb. 21	1330	352, 353	42	773
Withington, Charles B., Janesville, Wis. Grain-binder	378,227	Feb. 21	1334	353, 354	42	773
Withington, James, Chambersburg, assignor to Trenton Iron Company, Trenton, N. J. Reducing and finishing wire	377,000	Jan. 24	1847		42	376
Witmer, Tobias, Jr. (See Gilbert and Long, assignors.)						
Witkowsky, Carl, Charlottenburg, near Berlin, Germany. Manufacturing wooden relief-plates	379,301	Mar. 13	637	173	42	1032
Woeber, Amos, and J. Lammers, assignors of one-third to H. Lammert, Cincinnati, Ohio. Window-frame	379,920	Mar. 20	1585	417	42	1292
Wojan, Herrmann, Brooklyn, N. Y. Pipe-expander	377,507	Feb. 7	246	59	42	542
Wolf, Bertrand B. (See Reed, Jacob P., assignor.)						
Wolf, Josef, assignor to Universal Lock-Hinge Company, Hoboken, N. J. Lock-hinge	379,921	Mar. 20	1586	418	42	1292

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Wolfe, Gurdon G., assignor to Fuller & Warren Company, Troy, N. Y. Hot-air furnace	378,061	Feb. 14	1073	281, 282	42	717
Wolfe, Israel, Goshen, Ind. Rail-chair	378,856	Feb. 28	2267	603	42	936
Wolfe, J. Gregory, Melville, Iowa. Automatic grain meter and register	377,843	Feb. 14	768	196	42	656
Wolfley, John. (See Colvin and Wolfley.)						
Wolle, Clarence A., *et al.* (See Lorenz and Honiss, assignors.)						
Wood, Albert A. (See Wilson and Wood.)						
Wood, Amos L., trustee. (See Haynes, Cornelius E., assignor.)						
Wood, Andrew, Washington, Ky. Nail-tongs	376,220	Jan. 10	705	187	42	145
Wood, Aurin, Worcester, assignor to Sawyer Spindle Company, Boston, Mass. Spindle-support for spinning-machines. (Reissue)	10,897	Jan. 31	2392	691	42	486
Wood, Edwin A., Utica, N. Y. Combined cock and siphon for steam-pressure gages	379,098	Mar. 6	260	73	42	1015
Wood, George E., assignor of one-half to F. I. Pruden, Del Norte, Colo. Washing-machine	375,858	Jan. 3	172	48	42	39
Wood, John B. (See Wood, Peter W. and J. B.)						
Wood, Julia B., Manchester, N. H. Draft-hook for vehicles	375,859	Jan. 3	173	49	42	39
Wood, Milton R., Chicago, Ill. Anti-friction bearing	378,350	Feb. 21	1516	397	42	907
Wood, Milton R., Brooklyn, N. Y. Apparatus for the manufacture of soda	379,752	Mar. 20	1303	348	42	1229
Wood, Peter W. and J. B., Montreal, Quebec, Canada. Mechanism for electrical connections	376,973	Jan. 24	1808	476	42	368
Wood, Rosto O. (See Ferry, Carlostin C., assignor.)						
Wood, William P., Clayton, Ga. Elevated railway	376,829	Jan. 24	1615	423	42	331
Woodbury Heel Company. (See Smith, Aaron F., assignor.)						
Woolford, Wesley W., Unionville, assignor to Upson Nut Company, Farmington, Conn. Bolt	378,857	Feb. 28	2268	603	42	960
Woodin, Emory M., and F. J. Gibbs, Tyrone, Pa. Railway-rail bender and straightener	377,184	Jan. 31	2108	556	42	435
Woodruff, Cyrus H., *et al.* (See Dean, Cyrus S., assignor.)						
Woodruff, Edwin O., Knoxville, Iowa. Flue-top or spark-catcher	376,408	Jan. 17	1097	288	42	225
Woods, John T., Superior, Nebr. Feeding bin and trough	378,536	Feb. 28	1785	471	42	869
Woods, Sherwood & Co. (See Latham, Cyrus H., assignor.)						
Woodward Electrical Company. (See Woodward, Henry, assignor.)						
Woodward, Erastus, Boston, assignor to Pentucket Variable Stitch Sewing Machine Company, Haverhill, Mass. Feeding device for sewing-machines	380,008	Mar. 27	1723	461, 462	42	1319
Woodward, Henry, assignor, by mesne assignments, to Woodward Electrical Company, Detroit, Mich. Primary electric battery	379,551	Mar. 13	1002	268	42	1163
Woodward, Henry, assignor, by mesne assignments, to Woodward Electrical Company, Detroit, Mich. Primary electric battery	379,552	Mar. 13	1003	269	42	1163
Woollen, Frank P. (See Cunning and Lowry, assignors.)						
Woolley, Joseph, Rutland, Vt. Railway snow-plow and car combined	376,698	Jan. 17	1402	369	42	282
Worcester Ferrule Company. (See Matthews, Ambrose T., assignor.)						
Worthington, Albert L., St. Clair, Mich. Hair-tonic	375,860	Jan. 3	175	.....	42	39
Worthington, Amasa, Brooklyn, N. Y., assignor to Abendroth & Root Manufacturing Company, of New York. Boiler	377,001	Jan. 24	1852	488	42	376
Worthington, Amasa, Brooklyn, N. Y., assignor to Abendroth & Root Manufacturing Company, of New York. Boiler	377,002	Jan. 24	1853	488, 489	42	376
Worthington, Charles C., Irvington, N. Y. Shade for candles or tapers	377,345	Jan. 31	2357	682	42	480
Wortman, Jacob L., Philadelphia, Pa. Manifold sheet	376,764	Jan. 24	1505	.....	42	311
Wren, David L. (See Clark and Wren.)						
Wright, Charles H., Chicago, Ill. Burglar-alarm	379,144	Mar. 6	408	115	42	1043
Wright, Fred, *et al.* (See Rickard and Wright, assignors.)						
Wright, Frederick T. (See Rickard and Wright.)						
Wright, James, *et al.* (See Querol y Delgado, Emilio, assignor.)						
Wright, Maurice L. (See Miller, Erskine, and Wright.)						
Wright, Maurice L. (See Miller and Wright.)						
Wright, Morris S., Worcester, Mass., assignor to R. Fry, Morristown, N. J. Reed organ	380,071	Mar. 27	1809	483	42	1336
Wright, Parvin, assignor of one-half to C. R. Northrop, Denver, Colo. Aquascope	378,126	Feb. 21	1170	305	42	743
Wright, William H., San José, Cal. Can-filling machine	376,403	Jan. 10	948	248	42	190
Wright, William H., Huntingdon, Pa. Flower-stand	379,261	Mar. 13	574	159	42	1080
Wright, William W., Willink, N. Y. Chimney-top	377,508	Feb. 7	247	60	42	542
Wrigley, Thomas, Oak Park, Ill. Combined printer and index-cutter	377,796	Feb. 14	708	178, 179, 180	42	645
Wrigley, William H., New Orleans, La. Car-coupling	375,973	Jan. 3	340	91	42	69
Wunderle, Philip. (See Hartman Zachary T., assignor.)						
Wunderlich, Charles, Washington, Mo. Washer-cutter	376,974	Jan. 24	1812	477	42	369
Wundt, Charles L., Burlington, Iowa. Receptacle for file-cases	380,009	Mar. 27	1724	462	42	1319
Wyckoff, Seamans & Benedict. (See Horrocks, William, assignor.)						
Wygle, Archibald R., Kingman, Kans. Pipe-wrench	380,072	Mar. 27	1812	484	42	1336
Wyman, Joseph A. R., assignor to W. C. Huntley Kindling Wood Company, South Gardiner, Me. Wood-drying kiln	379,145	Mar. 6	409	115, 116	42	1043
Wynkoop, George W. (See De Freest and Wynkoop.)						
Wyttenbach, Edward, Carlisle, Ky. Machine for honing razors	376,221	Jan. 10	705	188	42	145
Yale & Towne Manufacturing Company. (See Taylor, Warren H., assignor.)						
Yanman Phillip H., Rochester, N. Y. Fishing-reel	378,565	Feb. 28	1831	483	42	877
Yeiser, Henry C., assignor to Globe Company, Cincinnati, Ohio. File-holder	378,072	Feb. 14	1067	286	42	720
Yoakum, Isaac T., Barry, Ill. Stock-chute	379,146	Mar. 6	410	116	42	1043
Yocum, Frank. (See Evenson and Yocum.)						
York Manufacturing Company. (See Johnson, Samuel M., assignor.)						
Youlls, George W. (See Moyer and Youlls.)						
Young, Albert R., *et al.* (See Kayser, Adolf, assignor.)						
Young, Charles M., Eby, Ind. Sawing-machine	380,073	Mar. 27	1813	484	42	1337
Young, Charles S., and G. E. Painter, Baltimore, Md. Electric annunciator	380,010	Mar. 27	1725	462, 463	42	1319
Young, Charles W., Erie, Pa. Gas-burner	379,435	Mar. 13	928	223	42	1130
Young, Christie L., assignor to C. S. Saxton, Springfield, Mass. Tool-handle	377,003	Jan. 24	1854	489	42	377
Young, Henry M., Minneapolis, Minn. Apparatus for preventing fires and extinguishing lights in railway-cars	376,699	Jan. 17	1403	369	42	282
Young, Henry M., Minneapolis, Minn., assignor, by mesne assignments, to Young Safety Heating and Lighting Company. Apparatus for extinguishing the lights of car-lamps	377,445	Feb. 7	147	33	42	523
Young, Howard L., *et al.* (See Shepherd, Lewis T., assignor.)						
Young, John R., Osceola, Mo. Tongue-support	379,525	Mar. 13	966	260	42	1156
Young, Joseph M., Moline, Ill. Plow-wheel	375,789	Jan. 3	93	27	42	22
Young Safety Heating and Lighting Company. (See Young, Henry M., assignor.)						
Young, William H., assignor of one-half to W. J. Morden, Chicago, Ill. Cable-traction-railway track	379,922	Mar. 20	1586	418	42	1282

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Zallud, Karl, assignor to L. Schultz and J. B. Hagenbuchlé, New York, N. Y. Quilting-machine	376,021	Jan. 17	1282	337, 338, 339	42	260
Zechmeister, Ludwig. (See Weber, Philip J., assignor.)						
Zeck, Michael, assignor to himself and A. Doney, Chicago, Ill. Device for generating and burning gas or vapor	378,411	Feb. 21	1602	421	42	924
Zefferti, Harry, New York, N. Y. Horse-head protector	378,858	Feb. 28	2268	603	42	960
Zeiler, Ferdinand, New Market, Va. Composition for preserving eggs, &c	379,262	Mar. 13	575	.....	42	1080
Zeller, John J. A., *et al.* (See Swift, R. K., assignor.)						
Zickefoose, Western S. (See Haugh and Zickefoose.)						
Ziegler, Alfred M., Boston, Mass. Stocking-supporter	376,464	Jan. 17	1049	275	42	216
Ziegler, Andrew J. (See Hemsath and Ziegler.)						
Ziegler, Charles W., Scranton, Pa. Coal-separator	380,156	Mar. 27	1930	514, 515	42	1360
Ziegler, Frank P., Abdera, Pa. Spark-arrester	376,489	Jan. 17	1098	288	42	225
Ziegler, Henry, New York, N. Y. Music-rack attachment for upright pianos	378,486	Feb. 28	1716	453	42	855
Zimmer, Georg C. (See Diehl, Theodor, assignor.)						
Zimmerman, Albert, Chicago, Ill. Shoe or slipper	377,822	Feb. 14	739	187	42	650
Zimmerman, Samuel, Martinsburg, Pa. Shafts for vehicles	379,843	Mar. 20	1464	366	42	1259
Zimmermann, John, Syracuse, N. Y. Shoe-clasp	380,305	Mar. 27	2125	569	42	1539
Zipernowsky, Karl, Buda-Pesth, and M. Déri, Vienna, Austria-Hungary. Regulating alternate-current electric generators	375,910	Jan. 3	242	66	42	51
Zubler, Alfred, Buffalo, N. Y. Stove-leg caster	375,790	Jan. 3	94	23	42	22

ALPHABETICAL LIST OF PATENTEES OF DESIGNS.

Name, residence, and design.	No.	Date.	Official Gazette. Volume.	Page.
Atwater, Richard M., Millville, N. J., assignor to J. Whitall, J. Mickle, C. A. Tatum, J. M. Whitall, J. W. Nicholson, and F. M. Underhill, Philadelphia, Pa. Bottle	18,021	Jan. 24	42	300
Ball, Dayton, Albany, N. Y. Paper-weight	18,064	Feb. 21	42	727
Barnhart, Alson E., *et al.* (See Guildenstine, Julius, assignor.)				
Barnhart, Alson E., *et al.* (See Heyer, Charles E., assignor.)				
Barnhart, Arthur M., *et al.* (See Guildenstine, Julius, assignor.)				
Barnhart, Arthur M., *et al.* (See Heyer, Charles E., assignor.)				
Barnhart, Arthur M., assignor to Barnhart Bros. & Spindler, Chicago, Ill. Type	16,035	Feb. 7	42	494
Barnhart Bros. & Spindler. (See Barnhart, Arthur M., assignor.)				
Barnhart Bros. & Spindler. (See Heyer, Charles E., assignor.)				
Barnhart, Warren, Chicago, Ill. Type	18,175	Mar. 13	42	1066
Bartlett, Charles L., Utica, N. Y. Holder for tooth-powder	18,018	Jan. 17	42	204
Bawo, Francis H., *et al.* (See Breuil, Eugène, assignor.)				
Beck, Robert M., Chambersburg, Pa. Engine-frame	17,995	Jan. 3	42	2
Beecher, Frank B., *et al.* (See Murphy, John M., assignor.)				
Benedict, George H., New York, N. Y. Package-holder	18,036	Feb. 7	42	494
Billingham, Francis, Brooklyn, N. Y. Lamp or lantern body	18,200 18,201	Mar. 27	42	1294
Booth, John E., Bangor, Me. Ornamentation of moccasins or shoes	18,186	Mar. 20	42	1172
Brackett, Frederick, Washington, D. C. Calendar	18,065	Feb. 21	42	727
Bradley & Hubbard Manufacturing Company. (See Evarts, Charles A., assignor.)				
Breuil, Eugène, Limoges, France, assignor to F. H. Bawo and C. T. Dotter, Brooklyn, N. Y. Handle for dishes	18,006	Jan. 10	42	100
Bromley & Sons, John. (See Fox, George B., assignor.)				
Bromley & Sons, John. (See Pegel, Julius, assignor.)				
Buckwalter & Co. (See McLaughlin, John K., assignor.)				
Buermann, August, Newark, N. J. Spur	18,187	Mar. 20	42	1172
Butler Hard Rubber Company. (See Witteck, Paul, assignor.)				
Butterick Publishing Company. (See Duke, Henrietta F., assignor.)				
Butterick Publishing Company. (See Kavanagh, Mary V., assignor.)				
Butterick Publishing Company. (See Kent, Minnie B., assignor.)				
Butterick Publishing Company. (See Moran, Ellen, assignor.)				
Butterick Publishing Company. (See Sheils, Catherine, assignor.)				
Butterick Publishing Company. (See Sheils, Jennie, assignor.)				
Butterick Publishing Company. (See Turner, Mary, assignor.)				
Chappell, Chase, Maxwell & Co. (See Einsfield, John, assignor.)				
Cheney Brothers. (See Fenner, Elizabeth A., assignor.)				
Coffin, Francis A., Indianapolis, Ind. Writing-desk	18,111	Feb. 28	42	832
Coffin, Francis A., Indianapolis, Ind. Cabinet-desk	18,112	Feb. 28	42	832
Coffin, Francis A., Indianapolis, Ind. Cabinet-desk	18,153	Mar. 6	42	965
Coffin, Francis A., Indianapolis, Ind. Cabinet-desk	18,176	Mar. 13	42	1066
Coffin, Francis A., Indianapolis, Ind. Writing-desk	18,177	Mar. 13	42	1066
Coffin, Francis A., Indianapolis, Ind. Cabinet-desk	18,178	Mar. 13	42	1066
Collins, Timothy J., assignor of two-thirds to J. R. B. Ransom and T. F. Randolph, Toledo, Ohio. Barber's dressing-case	18,022	Jan. 24	42	300
Dobson, J. & J. (See Fawcett, Henry, assignor.)				
Dornan Brothers. (See Righter, Oscar, assignor.)				
Dotter, Charles T., *et al.* (See Breuil, Eugène, assignor.)				
Doty, Albert J., assignor to Goodwin Gas Stove and Meter Company, Philadelphia, Pa. Gas-stove	18,007	Jan. 10	42	100
Dryfoos & Co., L. (See Hildt, August, assignor.)				
Duke, Henrietta F., assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's coat	18,008	Jan. 10	42	100
Duke, Henrietta F., assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's costume	18,023	Jan. 24	42	300
Eberhard, George F., Cleveland, Ohio. Buckle	18,066 18,067	Feb. 21	42	727
Einsfield, John, assignor to Chappell, Chase, Maxwell & Co., Oneida, N. Y. Burial-casket	18,009	Jan. 10	42	100
Evarts, Charles A., assignor to Bradley & Hubbard Manufacturing Company, Meriden, Conn. Lamp-burner	18,202	Mar. 27	42	1294
Faber, Eberhard. (See Osborn, Frederick G., assignor.)				
Fawcett, Henry, Kidderminster, England, assignor to J. & J. Dobson, Philadelphia, Pa. Carpet	17,996 to 17,999	Jan. 3	42	2
Fawcett, Henry, Kidderminster, England, assignor to J. & J. Dobson, Philadelphia, Pa. Carpet	18,010	Jan. 10	42	100
Fenner, Elizabeth A., South Orange, assignor to Cheney Brothers, South Manchester, N. J. Textile fabric	18,000 18,001	Jan. 3	42	2
Folsom, James L., Brooklyn, N. Y., assignor to Hartford Carpet Company, Hartford, Conn. Carpet	18,048 to 18,058	Feb. 14	42	618
Folsom, James L., Brooklyn, N. Y., assignor to Hartford Carpet Company, Hartford, Conn. Carpet	18,068 to 18,097	Feb. 21	42	727
Folsom, James L., Brooklyn, N. Y., assignor to Hartford Carpet Company, Hartford, Conn. Carpet	18,124 to 18,152	Mar. 6	42	965
Foster Stove Company. (See Gobeille, Joseph L., assignor.)				
Fox, George B., assignor to J. Bromley & Sons, Philadelphia, Pa. Rug	18,011	Jan. 10	42	100
French, La Mattine, Chicago, Ill. Piano-cover	18,203	Mar. 27	42	1294
Fuchs, Gustav, Chicago, Ill. Advertising-staff	18,188	Mar. 20	42	1172
Gobeille, Joseph L., Cleveland, assignor to Foster Stove Company, Ironton, Ohio. Cooking stove or range	18,012	Jan. 10	42	100

Alphabetical list of patentees of designs, January to March, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Goodman, Isaac, assignor to himself, A. Kaufman, B. Strouse, W. Kaufman, and S. C. Klopfer, Philadelphia, Pa. Trimming	18,033	Jan. 31	42	386
Goodwin Gas Stove and Meter Company. (See Doty, Albert J., assignor.)				
Green, Freman A., Hamilton, Ontario, Canada. Memorial tablet	18,019	Jan. 17	42	204
Greenfield, Nelson. (See Schwarzschild and Greenfield.)				
Greenwood, Peter F., Philadelphia, Pa. Horseshoe	18,215	Mar. 27	42	1294
Guildenstine, Julius, New York, N. Y., assignor to A. M. and A. E. Barnhart, Chicago, Ill. Type	18,013	Jan. 10	42	100
Hall, Zachary T., Philadelphia, Pa. Fine-stopper and collar	18,059	Feb. 14	42	618
Hard & Parsons. (See Pike, William A., assignor.)				
Hartford Carpet Company. (See Folsom, James L., assignor.)				
Hartford Carpet Company. (See Heinigke, Otto, assignor.)				
Hartford Carpet Company. (See Hunt, Henry, assignor.)				
Hartford Carpet Company. (See Sayers, William E., assignor.)				
Hanss, David J., Cincinnati, Ohio. Incandescent lamp	18,098	Feb. 21	42	727
Hanss, David J., Cincinnati, Ohio. Frame for dynamos	18,099	Feb. 21	42	727
Heinigke, Otto, New Utrecht, N. Y., assignor to Hartford Carpet Company, Hartford, Conn. Carpet	18,154 to 18,155	Mar. 6	42	965
Heisel, Charles T., Cleveland, Ohio. Heating-stove	18,179	Mar. 13	42	1066
Heyer, Charles E., Chicago, Ill. Font of printing-type	18,024	Jan. 24	42	300
Heyer, Charles E., assignor to A. M. and A. E. Barnhart, Chicago, Ill. Type	18,037	Feb. 7	42	494
Heyer, Charles E., assignor to Barnhart Bros. & Spindler, Chicago, Ill. Font of printing-type	18,156	Mar. 6	42	965
Highland Slate Manufacturing Company. (See Stearns and Lewis, assignors.)				
Hildt, August, assignor to L. Dryfoos & Co., New York, N. Y. Ornamentation of skirts	18,100	Feb. 21	42	727
Hill, Eugene H., assignor to Schofield, Mason & Co., Philadelphia, Pa. Carpet	18,038 to 18,039	Feb. 7	42	494
Hill, Eugene H., assignor to Schofield, Mason & Co., Philadelphia, Pa. Carpet	18,113	Feb. 28	42	832
Hunt, Henry, Greenville, N. J., assignor to Hartford Carpet Company, Hartford, Conn. Carpet	18,157 to 18,162	Mar. 6	42	965
Ihlenburg, Herman, assignor to MacKellar, Smiths & Jordan Company, Philadelphia, Pa. Font of printing-type	18,163	Mar. 6	42	965
Jackson, William W., assignor to MacKellar, Smiths & Jordan Company, Philadelphia, Pa. Font of printing-type	18,164	Mar. 6	42	965
Juvet, Louis P., Glens Falls, N. Y. Bracelet	18,189	Mar. 20	42	1172
Kavanagh, Mary V., assignor to Butterick Publishing Company, (limited,) New York, N. Y. Miss's coat	18,165	Mar. 6	42	965
Kavanagh, Mary V., assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's coat	18,216	Mar. 27	42	1294
Kaufman, Abraham, *et al.* (See Goodman, Isaac, assignor.)				
Kaufman, William, *et al.* (See Goodman, Isaac, assignor.)				
Keep, William J., and C. Wipfler, assignors to Michigan Stove Company, Detroit, Mich. Cooking-stoves	18,101	Feb. 21	42	727
Keep, William J., and C. Wipfler, assignors to Michigan Stove Company, Detroit, Mich. Heating-stove	18,114	Feb. 28	42	832
Keep, William J., and C. Wipfler, assignors to Michigan Stove Company, Detroit, Mich. Heating-stove	18,190 to 18,191	Mar. 20	42	1172
Kelsey, William A., Meriden, Conn. Card	18,025	Jan. 24	42	300
Kent, Minnie B., assignor to Butterick Publishing Company, (limited,) New York, N. Y. Miss's costume	18,060	Feb. 14	42	618
Kiesele, John A., New York, N. Y. Cake ornament	18,180	Mar. 13	42	1066
Kirk, John P., Jr., Austin, Tex. Medal	18,201	Mar. 27	42	1294
Klopfer, Sylvester C., *et al.* (See Goodman, Isaac, assignor.)				
Kraemer, Felix, New York, N. Y. Front of piano-cover	18,061	Feb. 14	42	618
Lees, Arthur, Kidderminster, county of Worcester, England, assignor to Schofield, Mason & Co., Philadelphia, Pa. Carpet	18,040	Feb. 7	42	494
Lewis, G. Wilton. (See Stearns and Lewis.)				
MacKellar, Smiths & Jordan Company. (See Ihlenburg, Herman, assignor.)				
MacKellar, Smiths & Jordan Company. (See Jackson, William W., assignor.)				
Martin, Julius, *et al.* (See Murphy, John M., assignor.)				
Maxwell, John, Oneida, N. Y. Burial-casket	18,193	Mar. 20	42	1172
McGann, Owen J., Pittsburg, Pa., assignor of one-half to J. C. Pennie, Washington, D. C. Water-closet bowl	18,192	Mar. 20	42	1172
McGee, James A., New York, N. Y. Shrine	18,181	Mar. 13	42	1066
McLaughlin Brothers. (See Schreyer, Woldemar, assignor.)				
McLaughlin, John K., Philadelphia, assignor to Buckwalter & Co., Royer's Ford, Pa. Heating-stove	18,014	Jan. 10	42	100
McMath, Jesse H., Cleveland, Ohio. Badge	18,015	Jan. 10	42	100
Meagher, Thomas E., assignor to Schofield, Mason & Co., Philadelphia, Pa. Carpet	18,041 to 18,046	Feb. 7	42	494
Meagher, Thomas E., assignor to Schofield, Mason & Co., Philadelphia, Pa. Carpet	18,102 to 18,104	Feb. 21	42	727
Meagher, Thomas E., assignor to Schofield, Mason & Co., Philadelphia, Pa. Carpet	18,115	Feb. 28	42	832
Mehl, Henry, Hoboken, N. J. Material for hand-bags, &c.	18,002	Jan. 3	42	2
Meyer, Charles T. and V. E., Bergen, N. J., assignors to E. C. Sampson, New York, N. Y. Oil-cloth	18,026 to 18,029	Jan. 24	42	300
Meyer, Victor E. (See Meyer, Charles T. and V. E.)				
Michigan Stove Company. (See Keep and Wipfler, assignors.)				
Mickle, John, *et al.* (See Atwater, Richard M., assignor.)				
Moran, Ellen, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's costume	18,062	Feb. 14	42	618
Muntz, Oliver H., Greenville, Pa. Hame-clip	18,047	Feb. 7	42	494
Murphy, John M., assignor of two-thirds to J. Martin, New York, N. Y., and F. H. Beecher, Seymour, Conn. Badge	18,194	Mar. 20	42	1172
Newton, Stephen S., Brooklyn, N. Y. Bottle-stopper	18,105	Feb. 21	42	727
Nicholson, J. Whitall, *et al.* (See Atwater, Richard M., assignor.)				
Noble, William J., New York, N. Y. Burial-casket top	18,030	Jan. 24	42	300
Osborn, Frederick G., Newark, N. J., assignor to E. Faber, New York, N. Y. Eraser-holder	18,003	Jan. 3	42	2
Pegel, Julius, Camden, N. J., assignor to J. Bromley & Sons, Philadelphia, Pa. Rug	18,004	Jan. 3	42	2
Pennie, John C. (See McGann, Owen J., assignor.)				
Pike, William A., Brooklyn, assignor to Hard & Parsons, New York, N. Y. Ornamentation of paper	18,185	Mar. 13	42	1066

Alphabetical list of patentees of designs, January to March, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Randolph, Thaddeus F., *et al.* (See Collins, Timothy J., assignor.)				
Ransom, John R. B., *et al.* (See Collins, Timothy J., assignor.)				
Righter, Oscar, assignor to Dornan Brothers, Philadelphia, Pa. Carpet	18,106 to 18,109	Feb. 21	42	727
Righter, Oscar, assignor to Dornan Brothers, Philadelphia, Pa. Carpet	18,116 to 18,121	Feb. 28	42	832
Rindskopf, Abraham P. and H. P., Brooklyn, N. Y. Garment-supporter	18,205	Mar. 27	42	1294
Rindskopf, Henry P. (See Rindskopf, Abraham P. and H. P.)				
Rogers & Hamilton Company. (See Schoonmaker, Edward T., assignor.)				
Rosenbluth, Edward S., Hartford, Conn. Corset	18,031	Jan. 24	42	300
Rutzler & Blake. (See Williams, Francis A., assignor.)				
Sampson, Edward C. (See Meyer, Charles T. and V. E., assignors.)				
Sayers, William E., New York, N. Y., assignor to Hartford Carpet Company, Hartford, Conn. Carpet	18,166 to 18,168	Mar. 6	42	965
Schmidt, Christian A. (See Steinecke, Samuel, assignor.)				
Schofield, Mason & Co. (See Hill, Eugene H., assignor.)				
Schofield, Mason & Co. (See Lees, Arthur, assignor.)				
Schofield, Mason & Co. (See Meagher, Thomas E., assignor.)				
Schoonmaker, Edward T., New York, N. Y., assignor to Rogers & Hamilton Company, Waterbury, Conn. Ornamentation of spoon-handles	18,169 to 18,170	Mar. 6	42	965
Schreyer, Woldemar, Brooklyn, assignor to McLaughlin Brothers, New York, N. Y. Box	18,182	Mar. 13	42	1066
Schwarzschild, August, and N. Greenfield, New York, N. Y. Confectionery	18,206	Mar. 27	42	1294
Sheils, Catherine, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Girl's costume	18,063	Feb. 14	42	618
Sheils, Jenuie, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's costume	18,016	Jan. 10	42	100
Sheils, Jennie, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's costume	18,171	Mar. 6	42	966
Sheils, Jennie, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's costume	18,207	Mar. 27	42	1294
Sheils, Jennie, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's walking-skirt	18,217	Mar. 27	42	1294
Slater, John, Burslem, England. Dish	18,020	Jan. 17	42	204
Slater, John, Burslem, county of Stafford, England. Water-closet	18,195	Mar. 20	42	1172
Smith, William D., Denver, Colo. Medallion, &c	18,034	Jan. 31	42	386
Sparks, William A., Rochester, N. Y. Burial-casket	18,172	Mar. 6	42	966
Stearns, William R., Melrose, and G. W. Lewis, Malden, Mass., assignors to Highland Slate Manufacturing Company, Portland, Me. Grave-stone	18,196 to 18,199	Mar. 20	42	1172
Stienecke, Samuel, Brooklyn, N. Y., assignor to C. A. Schmidt, Hoboken, N. J. Gimp	18,173	Mar. 6	42	966
Strouse, Bernhard, *et al.* (See Goodman, Isaac, assignor.)				
Tatum, C. Albert, *et al.* (See Atwater, Richard M., assignor.)				
Tatum, Charles A., assignor to Whitall, Tatum & Co., New York, N. Y. Bottle or jar cover	18,005	Jan. 3	42	2
Thorn, Jacob S., Philadelphia, Pa. Shingle or roofing-plate	18,208 to 18,212	Mar. 27	42	1294
Turner, Mary, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's polonaise	18,017	Jan. 10	42	100
Turner, Mary, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's costume	18,174	Mar. 6	42	966
Underhill, Francis M., *et al.* (See Atwater, Richard M., assignor.)				
United Society of Christian Endeavor. (See Woolley, Fred H. C., assignor.)				
Walrath, Alphonso, Fort Plain, N. Y. Broom-ferrule	18,110	Feb. 21	42	727
Weinberg, Charles, assignor to C. Weinberg & Co., New York, N. Y. Gimp	18,183	Mar. 13	42	1066
Weinberg & Co., C. (See Weinberg, Charles, assignor.)				
Welling, William M., New York, N. Y. Check or counter	18,122	Feb. 28	42	832
Welling, William M., New York, N. Y. Check or counter	18,213	Mar. 27	42	1294
Whitall, James, *et al.* (See Atwater, Richard M., assignor.)				
Whitall, John M., *et al.* (See Atwater, Richard M., assignor.)				
Whitall, Tatum & Co. (See Tatum, Charles A., assignor.)				
Williams, Francis A., Brooklyn, assignor to Rutzler & Blake, New York, N. Y. Furnace-front	18,123	Feb. 28	42	832
Wipfler, Charles. (See Keep and Wipfler.)				
Witteck, Paul, Butler, N. J., assignor to Butler Hard Rubber Company, New York, N. Y. Comb	18,214	Mar. 27	42	1294
Woolley, Fred H. C., Medford, assignor to United Society of Christian Endeavor, Boston, Mass. Badge	18,184	Mar. 13	42	1066
Zeckendorf, Louis, New York, N. Y. Lead-pencil	18,032	Jan. 24	42	300

ALPHABETICAL LIST OF REGISTRANTS OF TRADE-MARKS.

Name, residence, and title.	No.	Date.	Official Gazette. Volume.	Page.
Abelé, Henri, Rheims, France. Champagne and other wines	15,173	Feb. 14	42	618
Adams & Sons, Brooklyn, N. Y. Chewing-gum	15,189	Feb. 21	42	728
Adler & Co., B. W., Philadelphia, Pa. Under-clothing and outside suits for men and boys	15,159	Feb. 7	42	494
Alburger, Stoer & Co., Philadelphia, Pa. Coat-linings	15,276	Mar. 13	42	1066
Aldrich, Don H., Concord, N. H. Corn-cure	15,115	Jan. 24	42	300
Alpine Safe Co., Cincinnati, Ohio. Safe	15,190	Feb. 21	42	728
Ammonia Soap and Chemical Company, Chicago, Ill. Soap	15,116	Jan. 24	42	300
Apollinaris Company, (limited,) London, England. Natural mineral water	15,132	Jan. 31	42	386
Arnold & Co., F. R., New York, N. Y. Soaps and perfumeries	15,072	Jan. 3	42	2
Aschermann & Co., Ed, Milwaukee, Wis. Cigars	15,133	Jan. 31	42	386
Ayres & Sons, William, Philadelphia, Pa. Horse blankets, covers, and nets, saddle-housings, lap-robes, and lap-dusters	15,100	Jan. 17	42	204
Ayres & Sons, William, Philadelphia, Pa. Horse-blankets	15,101	Jan. 17	42	204
Ayres & Sons, William, Philadelphia, Pa. Horse-blankets	15,117	Jan. 24	42	300
Ayres & Sons, William, Philadelphia, Pa. Horse-blankets	15,134	Jan. 31	42	386
Barbour & Hamilton, Washington, D. C. Flour	15 081	Jan. 10	42	100
Bennett & Co., Lincoln, London, England. Hats, caps, and helmets	15,137	Jan. 31	42	386
Bennett & Co., Lincoln, London, England. Hats, caps, and helmets	15,153	Jan. 31	42	386
Bennett & Co., Lincoln, London, England. Hats, caps, and helmets	15,154	Jan. 31	42	386
Best Brewing Company, Phillip, Milwaukee, Wis. Tonic beverage	15,213	Feb. 21	42	728
Birge, George K., Buffalo, N. Y. Wall-paper	15,082	Jan. 10	42	100
Bitting & Hay, Winston, N. C. Manufactured plug chewing-tobacco	15,160	Feb. 7	42	494
Black Flag Stove Polish Company, Detroit, Mich. Blacking or polish for stoves	15,135	Jan. 31	42	386
Blodgett, Frank M., New York, N. Y. Medicine to be applied to the nostrils and throat	15,136	Jan. 31	42	386
Bloomingdale Brothers, New York, N. Y. Dress-cloths, cashmeres, velvets, socks, stockings, and gloves	15,102	Jan. 17	42	204
Boone, Joseph P., Galveston, Tex. Mixed teas	15,083	Jan. 10	42	100
Boote, T. & R., Burslem, England. Printed, white granite, general earthenware, and glazed tiles	15,191	Feb. 21	42	728
Boss & Son, C. D., New London, Conn. Crackers, biscuits, and kindred articles	15,227	Feb. 28	42	832
Bostwick, James, Detroit, Mich. Babbitt metal	15,289	Mar. 20	42	1172
Bowker Fertilizer Company, Boston, Mass. Fertilizers	15,103	Jan. 17	42	204
Brigham, L. Stanton, Boston, Mass. Lotion for the skin	15,252	Mar. 6	42	966
Brinkerhoff Company, Auburn, N. Y. Certain picture supports or hangers	15,073	Jan. 3	42	2
Briscoe & Son, William, London, county of Middlesex, England. Kerosene oil	15,192	Feb. 21	42	728
Brooklyn Watch Case Company, Brooklyn, N. Y. Watch-cases	15,290	Mar. 20	42	1172
Brown, George M., and J. M. Hunnicutt, Atlanta, Ga. Medicine for the cure of all throat and lung diseases	15,178	Feb. 14	42	618
Buchanan, Bromley & Co., Philadelphia, Pa. Albumenized paper for photographic use	15,193	Feb. 21	42	728
Burrell & Co., D. H., Little Falls, N. Y. Ensilage corn	15,194	Feb. 21	42	728
Cameron & Co., A. J., Philadelphia, Pa., Chicago, Ill., and New York, N. Y. Worsted and woolen yarns	15,228	Feb. 28	42	832
Canterbury, Ludie A., Brownwood, Tex. Salve	15,195	Feb. 21	42	728
Carpenter & Co., E. F., Jamestown, N. Y. Axes	15,074	Jan. 3	42	2
Carret, T. (See Rivoire and Carret.)				
Carroll, Benjamin F. (See Carroll, Robert R. and B. F.)				
Carroll, Robert R. and B. F., Chicago, Ill. Corn brooms	15,158	Jan. 31	42	386
Canchois, Frederic A., New York, N. Y. Tea	15,085	Jan. 10	42	100
Chicago Sawed Salt-Block Company, Chicago, Ill. Blocks of natural salt	15,174	Feb. 14	42	618
Clark, James H., New York, N. Y. Corsets	15,291	Mar. 20	42	1172
Coffin, Redington & Co., New York, N. Y. Powder, soap, and compounds for cleaning and polishing metals	15,292	Mar. 20	42	1172
Cohen, Benjamin M. (See Stiefel and Cohen.)				
Colcord, Samuel, New York, N. Y. Various medical compounds named	15,311	Mar. 27	42	1294
Colgate & Co., New York, N. Y. Soap	15,086	Jan. 10	42	100
Colwell Lead Company, New York, N. Y. Plumbers' earthenware	15,087	Jan. 10	42	100
Crocker Fertilizer and Chemical Company, Buffalo, N. Y. Superphosphates or fertilizing materials	15,293	Mar. 20	42	1172
Dalman, Esteva & Co., San Feliu de Guixols, Spain, and New Orleans, La. Corks	15,075	Jan. 3	42	2
Davenport, J. A. & D. F., Americus, Ga. Medicinal lotion for the skin	15,244	Feb. 28	42	832
Davenport, J. T., London, England. Medicinal preparation for use in certain named diseases	15,104	Jan. 17	42	204
Davis & Son, James C., Boston, Mass. Soap	15,253	Mar. 6	42	966
Demarest & Joralemon, New York, N. Y. Gilling-thread	15,312	Mar. 27	42	1294
Dietrich, Valentine, New York, N. Y. Food for infants	15,205	Mar. 20	42	1172
Dobson, C. Edgar, New York, N. Y. Banjos	15,277	Mar. 13	42	1066
Dodge Manufacturing Company, Mishawaka, Ind. Rope for transmission of power over pulleys and for hoisting purposes	15,105	Jan. 17	42	204
Dodge Manufacturing Company, Mishawaka, Ind. Rope for transmitting power over pulleys and for hoisting purposes	15,118	Jan. 24	42	300
Dublin Whisky Distillery Company, (limited,) Dublin, Ireland. Whisky	15,229	Feb. 28	42	832
Edwards & Co., H. D., Detroit, Mich. Rubber belting	15,155	Jan. 31	42	386
Edwards & Co., H. D., Detroit, Mich. Rubber belting	15,156	Jan. 31	42	386
Eisner & Mendelson Company, Philadelphia, Pa. Natural mineral water and salt	15,175	Feb. 14	42	618
Fairbank & Company, N. K., Chicago, Ill.; St. Louis, Mo.; New York, N. Y., and Omaha, Nebr. Detergent or cleansing powders	15,161	Feb. 7	42	494
Farrand, Williams & Co., Detroit, Mich. Paints, varnishes, dry colors, and paint ingredients	15,313	Mar. 27	42	1294
Farwell & Rhines, Watertown, N. Y. Wheat-flour	15,314	Mar. 27	42	1294
Farwell & Rhines, Watertown, N. Y. Wheat-flour	15,315	Mar. 27	42	1294
Faust & Son, J., Baltimore, Md. Ladies' shoes	15,296	Mar. 20	42	1172
Feeney, William P., New York, N. Y. Lubricating oil	15,254	Mar. 6	42	966
Fenno, Robert F., New Orleans, La. Base-ball goods and outfits	15,196	Feb. 21	42	728
Fischer & Heinrichs, New York, N. Y. Wines, whiskies, brandies, and other distilled spirits	15,197	Feb. 21	42	728
Fisher, Lew, Crawfordsville, Ind. Liniment for internal and external use	15,106	Jan. 17	42	204

Alphabetical list of registrants of trade-marks, January to March, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Fleming, Howard, New York, N. Y. Cement	15,230	Feb. 28	42	832
Fraser, George, Worcester, Mass. Cattle-food	15,255	Mar. 6	42	966
Freeman Manufacturing Company, North Adams, Mass. Cotton prints	15,316	Mar. 27	42	1294
Friedlander & Koch, New York, N. Y., and San Francisco, Cal. Hats and caps	15,091	Jan. 10	42	100
Frost & Co., George, Boston, Mass. Garters	15,198	Feb. 21	42	728
Gault & Branch, Port Byron and New York, N. Y. Shirts, coats, jackets, and overalls	15,199	Feb. 21	42	728
Godney, James W., New York, N. Y. Capsules containing medicine	15,176	Feb. 14	42	618
Gentleman, John R., Brooklyn, N. Y. Soap-powder	15,162	Feb. 7	42	494
Gilbert, Waugh & Co., Mansfield, Ohio. Roller-process flour	15,297	Mar. 20	42	1172
Gilbert, Wangh & Co., Mansfield, Ohio. Fancy winter-wheat patent flour	15,317	Mar. 27	42	1294
Griffing Iron Company, A. A., Jersey City, N. J., and Chicago, Ill. Radiators	15,278	Mar. 13	42	1066
Griffith's Pyrodene Fireproofing Company, (limited,) London, England. Compound for fireproofing	15,119	Jan. 24	42	300
Hammel & Co., L., New York, N. Y. Mainsprings for time-pieces	15,200	Feb. 21	42	728
Hammitt & Co., Chas. K., New York, N. Y. Tea	15,120	Jan. 24	42	300
Hartmann, Paul, Heidenheim, Würtemberg, Germany. Wood-wool and wood-wool wadding	15,256	Mar. 6	42	966
Hawley & Hoops, New York, N. Y. Plain chocolate for use in cooking and as a confection	15,163	Feb. 7	42	494
Hawley & Hoops, New York, N. Y. Candy	15,201	Feb. 21	42	728
Heath, Robert F. S., Camden, N. J. Laundry-blue	15,202	Feb. 21	42	728
Heath, Robert F. S., Camden, N. J. Solid polishing compound for laundry purposes	15,088	Jan. 10	42	100
Heisel, Charles T., Cleveland, Ohio. Chewing-gum	15,121	Jan. 24	42	300
Henderson, Adams & Co., Weedsport, N. Y. Mince-meat for pies	15,107	Jan. 17	42	204
Higgins, George, Omaha, Nebr. Pills	15,231	Feb. 28	42	832
Hiller, F., Jr., San Francisco, Cal. Cough cure and certain proprietary medicines in the form of tablets	15,245	Feb. 28	42	832
Hoehl Gebrüder, Geisenheim, Prussia, Germany. Sparkling wines	15,177	Feb. 14	42	618
Hoff, Johann, Berlin, Germany. Malt extract	15,164	Feb. 7	42	494
Holmes & Coutts, New York, N. Y. Biscuits, crackers, wafers, and similar articles	15,203	Feb. 21	42	728
Holmes & Coutts, New York, N. Y. Biscuits, crackers, wafers, and similar articles	15,204	Feb. 21	42	728
Holmes, Francis M., Boston, Mass. Flour and meal containing leavening properties	15,298	Mar. 20	42	1172
Holyoke Envelope Company, Holyoke, Mass. Envelope-paper and envelopes	15,122	Jan. 24	42	300
Holyoke Envelope Company, Holyoke, Mass. Envelope-paper and envelopes	15,123	Jan. 24	42	300
Holyoke Envelope Company, Holyoke, Mass. Envelope-paper and envelopes	15,124	Jan. 24	42	300
Horner, A. F. & J. Wm., Baltimore, Md. Oil grain-leather boots and shoes	15,089	Jan. 10	42	100
Hothersall & Co., J., Manchester, county of Lancaster, England. Ladies' towels	15,318	Mar. 27	42	1294
Hothersall & Co., J., Manchester, county of Lancaster, England. Imitation-leather cloth-dusters	15,319	Mar. 27	42	1294
Housewife Publishing Co., Greenfield, Mass. Newspapers	15,165	Feb. 7	42	494
Hubbell & Randall, New York, N. Y. Pocket and table cutlery, scissors, hunting and butcher knives, and razors	15,320	Mar. 27	42	1294
Hunnicutt, Joseph M. (See Brown and Hunnicutt.)				
India Rubber Comb Company, College Point and New York, N. Y. Soft-rubber goods	15,166	Feb. 7	42	494
Ireson, Charles L., Boston, Mass. Self-adjusting leather link belting	15,279	Mar. 13	42	1066
Isaacs, Alexander W., Chicago, Ill. Wash for cleaning and polishing jewelry	15,167	Feb. 7	42	494
Isbell, James R., and H. P. Sauls, Lot, Ala. Proprietary medicines in the form of liquids, pills, and powders	15,138	Jan. 31	42	386
Jenkins Bros., New York, N. Y., and Boston, Mass. Valves and packing for valves, cocks, and similar devices	15,321	Mar. 27	42	1294
Jordan, Marsh & Co., Boston, Mass. Corset	15,322	Mar. 27	42	1294
Kennedy, David, Rondout, N. Y. Medicine	15,323	Mar. 27	42	1294
King & Co., Alex., New York, N. Y. Spool-cotton	15,076	Jan. 3	42	2
King & Co., Alex., New York, N. Y. Spool-cotton	15,077	Jan. 3	42	2
King & Co., Alex., New York, N. Y. Spool-cotton	15,090	Jan. 10	42	100
King & Co., Alex., New York, N. Y. Spool-cotton	15,108	Jan. 17	42	204
King & Co., Alex., New York, N. Y. Spool-cotton	15,109	Jan. 17	42	204
King Manufacturing Co., Bridgton, Me. Remedy for blood impurities	15,080	Jan. 3	42	2
Kingsford, Thomson, Oswego, N. Y. Starch for laundry and culinary purposes	15,078	Jan. 3	42	2
Kirk & Co., James S., Chicago, Ill. Laundry soap	15,257	Mar. 6	42	966
Kneuper, George, New York, N. Y. Medicine for the cure of coughs and colds	15,125	Jan. 24	42	300
La Compagnie des Cristalleries de Baccarat, Baccarat, Meurthe, France. Hollow glassware	15,293	Mar. 20	42	1172
La Société de la Vieille Montagne, Chênée, Belgium. Oxide of zinc, dry and in oil, spelter, and sheet-zinc	15,275	Mar. 6	42	966
Ladd & Coffin, New York, N. Y. Perfumery	15,205	Feb. 21	42	728
Lathrop & Co., C. D., Chicago, Ill. Tea	15,179	Feb. 14	42	618
Lathrop & Co., C. D., Chicago, Ill. Teas from China	15,324	Mar. 27	42	1294
Lazell, Dalley & Co., New York, N. Y. Perfumery, sachet-powder, and other toilet preparations	15,300	Mar. 20	42	1172
Lazell, Dalley & Co., New York, N. Y. Perfumery	15,301	Mar. 20	42	1172
Lévy & Bros., Léon, New York, N. Y. Hamburg embroideries	15,206	Feb. 21	42	728
Lighthill, August P., Boston, Mass. Atomizers	15,232	Feb. 28	42	832
Lorenz, Phillip M., Toledo, Ohio. Toilet perfume	15,302	Mar. 20	42	1172
Love, Joseph G., Hanover, Ill. Horse and cattle liniment	15,325	Mar. 27	42	1294
Ludin, Stisan A., New York, N. Y. Carbonated beverages	15,280	Mar. 13	42	1066
Lyon & Healy, Chicago, Ill. Stringed musical instruments	15,180	Feb. 14	42	618
Macbeth, James, New York, N. Y. Magneto blasting-machines, electric batteries, fuses, blasting caps and wires	15,281	Mar. 13	42	1066
Marburg Brothers, Baltimore, Md. Smoking-tobacco	15,084	Jan. 10	42	100
Marshall, Kennedy & Co., (limited,) Pittsburg, Pa. Flour	15,258	Mar. 6	42	966
Marx & Haas, St. Louis, Mo. Pantaloons, coats, and vests	15,233	Feb. 28	42	832
McCoy & Sanders, New York, N. Y. Hair clippers or cutters	15,303	Mar. 20	42	1172
Megill, Edward L., New York, N. Y. Gage-pins, feed-guides, and other registering apparatus, tools, and machinery used in printing	15,234	Feb. 28	42	832
Merchant & Co., Philadelphia, Pa. Tin and terne plates	15,207	Feb. 21	42	728
Merchant & Co., Philadelphia, Pa. Tin plates	15,208	Feb. 21	42	728
Miles' Sons, T., Philadelphia, Pa. Boots and shoes	15,210	Feb. 21	42	728
Miller & Bingham, Troy, N. Y. Collars and cuffs	15,282	Mar. 13	42	1066
Miller & Co., H. S., Newark, N. J. Phosphates for fertilizers	15,181	Feb. 14	42	618
Miller & Co., H. S., Newark, N. J. Ammoniated dissolved-bone phosphate	15,182	Feb. 14	42	618
Miller & Co., H. S., Newark, N. J. Phosphates for fertilizers	15,183	Feb. 14	42	618
Miller & Co., H. S., Newark, N. J. Ground-bone fertilizers	15,209	Feb. 21	42	728
Mix & Co., G. I., Yalesville, Conn. Table-ware constructed of silver or of other metals and then plated or tinned	15,211	Feb. 21	42	729
Montague & Co., F. T., Crawfordsville and Indianapolis, Ind., and Chicago, Ill. Remedy for catarrh and kindred diseases	15,168	Feb. 7	42	494
Montgomery, Alexander, Boston, Mass. Packings for machinery	15,169	Feb. 7	42	494
Moore Manufacturing Company, Seattle, Wash. Ter. Blood purifying medicine	15,212	Feb. 21	42	728
Mottet & Cie., P., Grasse, Alpes Maritimes, France. Olive-oil	15,126	Jan. 24	42	300

Alphabetical list of registrants of trade-marks, January to March, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Murphy, Grant & Co., San Francisco, Cal., and New York, N. Y. Ribbons and piece silks	15,170	Feb. 7	42	494
Murphy, Owen J., Baltimore, Md. Hoof-stimulant	15,139	Jan. 31	42	386
Murray, Samuel B., San Francisco, Cal. Proprietary invigorant medicine	15,259	Mar. 6	42	966
Myers & Co., S. F., New York, N. Y. Watches, clocks, jewelry, and silver ware	15,304	Mar. 20	42	1172
Neal, William W., and H. W. Todd, Akron, Ohio. Medicine for the cure of certain named diseases	15,092	Jan. 10	42	100
Newbery & Sons, F., London, England. Medicine for the cure of headache, sea-sickness, epilepsy, and nervous debility	15,246	Feb. 28	42	832
Newcomb, Albert S., New York, N. Y. Drugs capable of trituration and of being formed into pills or pellets	15,110	Jan. 17	42	204
Newell Bros., Cleveland, Ohio. Flour, oatmeal, cornmeal, hominy, and grits	15,184	Feb. 14	42	618
Norddeutsche Kartoffelmehl Fabrik, Küstrin, Germany. Potato-flour and potato-starch and all potato-starch products, including dextrine	15,260	Mar. 6	42	966
Oakley, L. & J., Newburg, N. Y. Soap for laundry and toilet purposes	15,140	Jan. 31	42	386
Ogden, Charles E., London, England. Writing and copying fluids and inks	15,283	Mar. 13	42	1066
Ohio and Western Coal and Iron Company, Boston, Mass., and Columbus, Ohio. Pig-iron and bituminous coal	15,284	Mar. 13	42	1066
Palmer, Ambrose S., Elkhart, Ind. Herb compound for certain diseases, a liniment, and a worm medicine	15,247	Feb. 28	42	832
Palmer, Charles W., New Haven, Conn. Pills	15,235	Feb. 28	42	832
Parker, Holmes & Co., Boston, Mass. Boots and shoes	15,285	Mar. 13	42	1066
Pechin, William J., Philadelphia, Pa. Preparation for chapped hands and lips	15,305	Mar. 20	42	1172
Pemberton & Hill Tobacco Manufacturing Company, Richmond, Va. Cigars, cigarettes, and chewing and smoking tobacco	15,111	Jan. 17	42	204
Phosphor Bronze Smelting Company, (limited,) Philadelphia, Pa. Metallic alloys and articles made therefrom	15,225	Feb. 21	42	728
Phosphor Bronze Smelting Company, (limited,) Philadelphia, Pa. Alloys and articles made therefrom	15,226	Feb. 21	42	728
Pierce, Henry L., Boston and Milton, Mass. Webb's cocoa shells	15,261	Mar. 6	42	966
Pierce, Henry L., Boston and Milton, Mass. Webb's double vanilla chocolate	15,262	Mar. 6	42	966
Pierce, Henry L., Boston and Milton, Mass. Cracked cocoa	15,263	Mar. 6	42	966
Pierce, Henry L., Boston and Milton, Mass. Cracked cocoa	15,264	Mar. 6	42	966
Pierce, Henry L., Boston and Milton, Mass. Broma	15,265	Mar. 6	42	966
Pierce, Henry L., Boston and Milton, Mass. Manufactured chocolate	15,266	Mar. 6	42	966
Pierce, Henry L., Boston and Milton, Mass. French sweet chocolate	15,267	Mar. 6	42	966
Pierce, Henry L., Boston and Milton, Mass. Webb's pure cocoa	15,268	Mar. 6	42	966
Pierce, Henry L., Boston and Milton, Mass. Sweet chocolate	15,269	Mar. 6	42	966
Pierce, Henry L., Boston and Milton, Mass. Chocolate	15,270	Mar. 6	42	966
Pierce, Henry L., Boston and Milton, Mass. Josiah Webb & Co.'s premium chocolate	15,271	Mar. 6	42	966
Pierce, Henry L., Boston and Milton, Mass. French sweet chocolate	15,272	Mar. 6	42	966
Pierce, Henry L., Boston and Milton, Mass. Sweet vanilla chocolate	15,273	Mar. 6	42	966
Pierce, Henry L., Boston and Milton, Mass. Cocoa paste	15,286	Mar. 13	42	1066
Pike Manufacturing Company, A. F., Pike Station, N. H. Whetstones	15,127	Jan. 24	42	300
Pollard, James H., Springfield, Ill. Concentrated stock-food	15,141	Jan. 31	42	386
Preservaline Manufacturing Company, New York, N. Y. Saltpeter	15,185	Feb. 14	42	618
Reid Tobacco Company, Sam., St. Joseph, Mo. Plug-tobacco	15,142	Jan. 31	42	386
Revere Rubber Company, Boston, Mass. Rubber valves	15,214	Feb. 21	42	729
Richmond Nervine Company, S. A., St. Joseph, Mo. Medicine for relieving epileptic fits and other nervous diseases	15,274	Mar. 6	42	966
Richter, Friedrich A., Nuremberg and Rudolstadt, Germany; Vienna, Austria-Hungary; Rotterdam, Holland; Olten, Switzerland; London, England, and New York, N. Y. Certain named medical remedies	15,143	Jan. 31	42	386
Riessner & Company, C., New York, N. Y. Oil-stoves	15,128	Jan. 24	42	300
Rigaud & Chapoteaut, Paris, France. Cod-liver-oil pills	15,306	Mar. 20	42	1172
Riker, William H., New York, N. Y. Extracts and other perfumes	15,307	Mar. 20	42	1172
Rivoire, C., and T. Carret, Lyons, France. Macaroni	15,144	Jan. 31	42	386
Rocke, Tompsitt & Co., London, England, and Melbourne, Australia. Articles of pharmacy, soap, dentifrice, and toilet vinegar which contain a certain odoriferous extract	15,079	Jan. 3	42	2
Ross, Charles E., Lincoln, Ill. Washing-machine	15,236	Feb. 28	42	832
Rowland & Sons, A., London, England. Preparation for the human hair	15,093	Jan. 10	42	100
Rowland & Sons, A., London, England. Dentifrices	15,094	Jan. 10	42	100
Rowland & Sons, A., London, England. Preparation for the skin	15,095	Jan. 10	42	100
Roy Drug Co., Boston, Mass. Injection of milkweed	15,248	Feb. 28	42	832
Ruth & Co., B. F., Reading, Pa. Powder to be mixed with linseed-oil, &c., for coating walls	15,096	Jan. 10	42	100
Sackett & Neat, New Albany, Ind. Cure for and preventive of venereal diseases	15,249	Feb. 28	42	832
Sagar, Charles H., Auburn, N. Y. Non-alcoholic beverage	15,215	Feb. 21	42	728
Sauls, Henry P. (See Isbell and Sauls.)				
Schaaf, Justus H., Gallipolis, Ohio. Medicines for female diseases	15,250	Feb. 28	42	832
Schade & Buysing, Schiedam, Netherlands. Gin	15,186	Feb. 14	42	618
Schmachtenberg Bros., New York, N. Y. Pocket-cutlery, scissors, razors, and table-cutlery	15,145	Jan. 31	42	386
Schoenhut & Co., A., Philadelphia, Pa. Toy musical instruments	15,216	Feb. 21	42	728
Scott, Walter W., New York, N. Y. Emollient	15,217	Feb. 21	42	728
Seggermann, F., New York, N. Y. Chicory, prunes, and raisins	15,097	Jan. 10	42	100
Sherriff, William J., Pittsburg, Pa. Steam water-ejectors	15,146	Jan. 31	42	386
Siegel, Cooper & Co., Chicago, Ill. Cloaks	15,112	Jan. 24	42	204
Slayton, Emile, New York, N. Y. Ladies' ruchings	15,218	Feb. 21	42	728
Slazenger, Ralph, London, England. Bats for tennis, racket, cricket, and other games	15,098	Jan. 10	42	100
Slazenger, Ralph, London, England. Certain wooden wearing-apparel	15,113	Jan. 17	42	204
Slazenger, Ralph, London, England. Certain wooden wearing-apparel	15,219	Feb. 21	42	728
Smith Brothers, Boston, Mass. Hair-cleanser	15,220	Feb. 21	42	728
Soltmann, E. G., New York, N. Y. Certain supplies and instruments for draftsmen and engineers	15,326	Mar. 27	42	1294
Soltmann, Edward G., New York, N. Y. Draftsmen's and engineers' supplies and instruments	15,287	Mar. 13	42	1066
Sommer, John, Jr., Newark, N. J. Wooden faucets for barrels, &c	15,237	Feb. 28	42	832
Soter, George F., Washington, D. C. Bleaching-bluing	15,308	Mar. 20	42	1172
Southwell & Co., Charles, London, England. Confectionery, including jams, jellies, marmalades, preserved and canned fruits, and sweets	15,147	Jan. 31	42	386
Sparks Medicine Company, Camden, N. J. Medicine for diseases of the liver and kidneys	15,171	Feb. 7	42	494
Spiral Weld Tube Company, East Orange, N. J. Metallic pipe and couplings for the same	15,251	Feb. 28	42	832
Standard Medicine Company, New York, N. Y. Certain named medical remedies	15,099	Jan. 10	42	100
Star Brass Manufacturing Company, Boston, Mass. Steam-gages	15,238	Feb. 28	42	832
Steinbrügge, Edward, New York, N. Y. Flour	15,129	Jan. 24	42	300
Stiefel, Julius, and B. M. Cohen, Baltimore, Md., and New York, N. Y. Men's drawers	15,221	Feb. 21	42	728
Sudbury, Edward B., New York, N. Y. Hosiery	15,222	Feb. 21	42	728
Sudbury, Edward B., New York, N. Y. Hosiery and gloves	15,130	Jan. 24	42	300
Taniere & Co., E., San Francisco, Cal. Whisky	15,288	Mar. 13	42	1066
Taylor, Henry, Sr., Woodberry, Md. Bedbug-poison	15,131	Jan. 24	42	300
Thompson, Louise G., New York, N. Y. Ladies' hats and bonnets and millinery materials				

Alphabetical list of registrants of trade-marks, January to March, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Thompson, Margaret D., Philadelphia, Pa. Compound washing and cleaning fluid	15,148	Jan. 31	42	386
Todd, Herbert W. (See Neal and Todd.)				
Townsend, Richard E., New York, N. Y. Liver-pills and baby-syrup	15,149	Jan. 31	42	386
Universal Plow Company, Canton, Ohio. Furrow-plows	15,223	Feb. 21	42	728
Universal Remedy Company, Lafayette, Ind. Medicine for the cure of the tobacco habit	15,187	Feb. 14	42	618
Van Bibber, Andrew, Cincinnati, Ohio. Composition for printers' inking-rollers	15,172	Feb. 7	42	494
Wagner, Joseph, Munich, Bavaria, Germany. Beer	15,327	Mar. 27	42	1294
Waldauer & Baer, Kansas City, Mo. Cigars and cigarettes	15,150	Jan. 31	42	386
Warren Hose Supporter Co., Boston, Mass. Hose-supporters	15,188	Feb. 14	42	618
Weidler, Samuel W., Cincinnati, Ohio. Flour	15,224	Feb. 21	42	728
Western Knitting Company, Detroit, Mich. Socks	15,220	Feb. 28	42	832
Whicher & Co., T. A., Boston, Mass. Boots and shoes	15,157	Jan. 31	42	386
Williams Manufacturing Company, Plattsburg, N. Y. Sewing-machines	15,114	Jan. 17	42	204
Wilson & Co., Alexander, Philadelphia, Pa. Medicine for certain named diseases	15,151	Jan. 31	42	386
Winona Mill Company, Winona, Minn. Wheat-flour	15,309	Mar. 20	42	1172
Winona Mill Company, Winona, Minn. Wheat-flour	15,310	Mar. 20	42	1172
Winterbottom & Sons, Archibald, Manchester, county of Lancaster, England. Tracing-cloth	15,240	Feb. 28	42	832
Winterbottom & Sons, Archibald, Manchester, county of Lancaster, England. Tracing-cloth	15,241	Feb. 28	42	832
Winterbottom & Sons, Archibald, Manchester, county of Lancaster, England. Tracing-cloth	15,242	Feb. 28	42	832
Winterbottom & Sons, Archibald, Manchester, county of Lancaster, England. Tracing-cloth	15,243	Feb. 28	42	832
Woolley & Co., B. M., Atlanta, Ga. Medicine for certain named diseases	15,152	Jan. 31	42	386

ALPHABETICAL LIST OF REGISTRANTS OF LABELS.

Name, residence, and title.	No.	Date.	Official Gazette. Volume.	Page.
Baker, Nathan H., Providence, R. I. "Yards in Detail." (For Bleached Goods)	5,505	Mar. 6	42	966
Best Brewing Company, Phillip, Milwaukee, Wis. "The Best Tonic"	5,495	Feb. 21	42	728
Boot and Shoe Sole Laying Company, Portland, Me. "No Nails in this Shoe to Hurt the Feet, Soles Attached by Process of Boot and Shoe Sole Laying Co. Boston"	5,477	Jan. 31	42	386
Boss & Son, C. D., New London, Conn. "The Famous Lunch Milk Biscuit"	5,498	Feb. 28	42	832
Brown, Irving H., New York, N. Y. "The Howard Album Interchangeable Cards"	5,491	Feb. 21	42	728
Cameron & Co., A. J., Philadelphia, Pa., New York, N. Y., and Chicago, Ill. "German Knitting Worsted"	5,499	Feb. 28	42	832
Cameron & Co., A. J., Philadelphia, Pa., New, York, N. Y., and Chicago, Ill. "German Knitting Worsted"	5,500	Feb. 28	42	832
Cameron & Co., A. J., Philadelphia, Pa., New York, N. Y., and Chicago, Ill. "German Knitting Worsted"	5,501	Feb. 28	42	832
Chase, Merritt & Co., Boston, Marlborough, and Milford, Mass. "Our School Shoe"	5,523	Mar. 13	42	1066
Chase, Merritt & Co., Boston, Marlborough, and Milford, Mass. "Our School Shoe"	5,524	Mar. 13	42	1066
Carbon, George, Jr., Philadelphia, Pa. "Fire Extinguisher"	5,480	Feb. 7	42	494
Crompton Company, Crompton and Providence, R. I. "Crompton Velveteen"	5,453	Jan. 3	42	2
Daniels, Emma J., New Haven, Conn. "Temporary Enameling Cream"	5,528	Mar. 20	42	1172
Day, Walter L., New York, N. Y. "Day's Specific"	5,475	Jan. 24	42	300
Douglas, Harold, New York, N. Y. "Hinton's Hygienic Pulmonary Preserver," (For a Remedy for Coughs, &c)	5,486	Feb. 14	42	618
Dulaney, B. L., Bristol, Tenn. "Cranberry" Horse Shoes"	5,530	Mar. 27	42	1294
Fairbank & Company, N. K., Chicago, Ill.; St. Louis, Mo.; New York, N. Y., and Omaha, Nebr. "Gold Dust." (For Washing Powder)	5,481	Feb. 7	42	494
Fiske, W. M. L., Brooklyn, N. Y. "Fresh Cold Drops." (For a Medical Compound)	5,511	Mar. 13	42	1066
Goff & Sons, D., Pawtucket, R. I. "Goff's Box-Plaited Braid"	5,470	Jan. 17	42	204
Greene, Tweed & Co., New York, N. Y. "Belt Stud." (For Studs for Leather and Rubber Belts)	5,492	Feb. 21	42	728
Haberle Brewing Company, Syracuse, N. Y. "Premium Stock Lager"	5,482	Feb. 7	42	494
Healy & Bigelow, New Haven, Conn. "Kickapoo Cough Cure"	5,478	Jan. 31	42	386
Hiller, Frederick, Jr., San Francisco, Cal. "Hiller's Hydrastine Restorative"	5,454	Jan. 3	42	2
Howarth, John H., Jr. (See Welch and Howarth.)				
Hunt Kiddie Company, Gloucester, Mass., and New York, N. Y. "Hepatic Extract." (For a Medicinal Preparation)	5,512	Mar. 13	42	1066
Isaacs, Alexander W., Chicago, Ill. "Jewelry Wash"	5,455	Jan. 3	42	2
Jones, D. H., Stamford, Conn. "D. H. Jones' Anti-Bilious Cathartic Pills"	5,483	Feb. 7	42	494
Kaskine Company, New York, N. Y. "Kaskine." (For Proprietary Medicine)	5,461	Jan. 10	42	100
King & Co., Alex., New York, N. Y. "Alexr. King & Co. Machine Sewing Spool Cotton"	5,471	Jan. 17	42	204
King & Co., Alex., New York, N. Y. "Alexr. King & Co. Machine Sewing Spool Cotton"	5,472	Jan. 17	42	204
Kirk & Co., James S., Chicago, Ill. "Zenithia Soap"	5,506	Mar. 6	42	966
Kirk & Co., James S., Chicago, Ill. "Washtub Soap." (For Laundry Soap)	5,507	Mar. 6	42	966
Kirk & Co., James S., Chicago, Ill. "Commonwealth." (For Toilet Soap)	5,508	Mar. 6	42	966
Kirk & Co., James S., Chicago, Ill. "White Lavolite." (For a Washing Compound)	5,509	Mar. 6	42	966
Kirk & Co., James S., Chicago, Ill. "Washboard Soap"	5,513	Mar. 13	42	1066
Kirk & Co., James S., Chicago, Ill. "Carbolic-Camphor." (For Laundry Soap)	5,514	Mar. 13	42	1066
Kirk & Co., James S., Chicago, Ill. "White Russian Bath." (For Soap)	5,515	Mar. 13	42	1066
Kirk & Co., James S., Chicago, Ill. "Patchouly Toilet Soap"	5,516	Mar. 13	42	1066
Kirk & Co., James S., Chicago, Ill. "Pimlico Toilet Soap"	5,517	Mar. 13	42	1066
Kirk & Co., James S., Chicago, Ill. "Boston Oat Meal" (For Soap)	5,518	Mar. 13	42	1066
Kirk & Co., James S., Chicago, Ill. "Musk Toilet Soap"	5,519	Mar. 13	42	1066
Kirk & Co., James S., Chicago, Ill. "Planet." (For Laundry Soap)	5,520	Mar. 13	42	1066
Kirk & Co., James S., Chicago, Ill. "Cambria." (For Laundry Soap)	5,521	Mar. 13	42	1066
Kirk & Co., James S., Chicago, Ill. "Ceres." (For Laundry Soap)	5,522	Mar. 13	42	1066
Locke, William H., Jr., Brooklyn, N. Y. "Union Print Works." (For Textiles)	5,476	Jan. 24	42	300
Maddin, T. M., Waco, Tex. "Maddin's Mosquito Mixture"	5,529	Mar. 20	42	1172
Marshall, Ernest C., Boston, Mass. "Mrs Hunting's Baby Cordial"	5,456	Jan. 3	42	2
McAllister, Heyward H. (See Tiers and McAllister.)				
McAllister, John, Albany, N. Y. "Dr McAllister's Compound Spirits of Juniper and Extract of Buchu, A Sure and Positive Cure for all Kidney and Genito-Urinary Diseases"	5,462	Jan. 10	42	100
Megill, Edward L., Brooklyn, N. Y. "Golden-Steel Gauge Pins." (For Printers' Feed Gages)	5,531	Mar. 27	42	1294
Newby, Frank S., and G. E. Rockwell, Indianapolis, Ind. "Mexican Cereus Pollen"	5,484	Feb. 7	42	494
Ogden, Charles E., London, county of Middlesex, England. "Arnold's Office & Steel Pen Writing Ink"	5,479	Jan. 31	42	386
Ogden, Charles E., London, county of Middlesex, England. "Arnold's Chemical Writing Fluid"	5,532	Mar. 27	42	1294
Ogden, Charles E., London, county of Middlesex, England. "Machine Copying Ink"	5,533	Mar. 27	42	1294
Ogden, Charles E., London, county of Middlesex, England. "Arnold's Chemical Blue Black Copying Fluid"	5,534	Mar. 27	42	1294
Ogden, Charles E., London, county of Middlesex, England. "Arnold's Scarlet Writing Ink"	5,535	Mar. 27	42	1294
Paradis, Adrian, Brooklyn, N. Y. "Dr. White's Sarsaparilla"	5,487	Feb. 14	42	618
Paradis, Adrian, Brooklyn, N. Y. "Dr. White's Sarsaparilla"	5,488	Feb. 14	42	618
Paradis, Adrian, Brooklyn, N. Y. "Dr. White's Pulmonic Balsam"	5,493	Feb. 21	42	728
Paradis, Adrian, Brooklyn, N. Y. "Dr. White's Pulmonic Balsam"	5,494	Feb. 21	42	728
Patton, Ed. G. and T., Sulphur Springs, Tex. "Patton's Chill Tonic Syrup"	5,525	Mar. 13	42	1066
Patton, Texana. (See Patton, Ed. G. and T.)				
Radam, William, Austin, Tex. "Wm. Radam's Microbe Killer"	5,463	Jan. 10	42	100
Rockwell, George E. (See Newby and Rockwell.)				
Roy Drug Co., Boston, Mass. "Dr. Roy's White Injection of Milk-Weed"	5,502	Feb. 28	42	832
Russell, P. J., Perrysville, Ohio. "Russell's Natural Remedy," (For a Medicine for Diseases of the Liver, &c)	5,526	Mar. 13	42	1066
Schwab & Bros., G., New York, N. Y. "Novelty Glove Fitting Jersey"	5,457	Jan. 3	42	2
Shaw, Charles A., Boston, Mass. "Russian Oil Stove Blacking"	5,464	Jan. 10	42	100
Shaw, Charles A., Boston, Mass. "Directions for Use," (For Stove Polish)	5,465	Jan. 10	42	100
Shively, Samuel A., Rock Rapids, Iowa. "Shively's Celebrated Catarrh Remedy"	5,473	Jan. 17	42	204

Alphabetical list of registrants of labels, January to March, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Smith Brothers, Boston, Mass. "Leroy's Mexican Egg Shampoo Cream"	5,503	Feb. 28	42	852
Southwell & Co., Charles, London, England. "Specially Prepared for ——" (For Preserves, Confectionery, &c.)	5,527	Mar. 13	42	1066
Spencer, Thomas D., Rochester, N. Y. "Spencer's Fumigating Diphtheritic Pastilles. A Fumar Antiseptique for the Prophylactic and Specific Treatment of Diphtheria"	5,466	Jan. 10	42	100
Standard Medicine Company, New York, N. Y. "Peptic," (For a Remedy for Indigestion)	5,504	Feb. 28	42	852
Stein, Bloch & Co., Rochester, N. Y. "Stein, Bloch & Co., Wholesale Tailors"	5,458	Jan. 3	42	2
Thompson, Margaret D., Philadelphia, Pa. "Mrs Thompson's Washing and Cleaning Compound"	5,489	Feb. 14	42	618
Tiers, Alexander H. and C., and H. H. McAllister, New York, N. Y. "Germ Exterminating Medicine"	5,490	Feb. 14	42	618
Tiers, Cornelius. (See Tiers and McAllister.)				
Tobin, John J., Austin, Tex. "Microbe Destroyer"	5,474	Jan. 17	42	294
Tyree, William R., Staunton, Va. "Tyree's Southern Carminative"	5,485	Feb. 7	42	494
Underwood & Co., John, New York, N. Y. "Underwood's Copying Ink Ribbon"	5,467	Jan. 10	42	100
Underwood & Co., John, New York, N. Y. "Underwood's Indelible Copyable Ribbon"	5,468	Jan. 10	42	100
Underwood & Co., John, New York, N. Y. "Underwood's Record Ink Ribbon"	5,469	Jan. 10	42	100
Union Indurated Fibre Company, New York, N. Y. "Indurated Fibre." (For Ware Made of Indurated Wood Fibre)	5,496	Feb. 21	42	728
Welch, Willard C., Jr., Oakland, Cal., and J. H. Howarth, Jr., New Haven, Conn. "Welch's Ægopodium, A Positive Cure for Rheumatism and Gout"	5,459	Jan. 3	42	2
Whitney, William, Gouverneur, N. Y. "Whitney's Spring Tonic and Alterative Compound"	5,497	Feb. 21	42	728
Woodhull, J. Truesdale, Jersey City, N. J. "Truesdale's Healing Salve, 'Boro' Thymol Compound"	5,510	Mar. 6	42	906
Worcester Corset Co., Worcester, Mass. "Lock Clasp." (For Corsets)	5,460	Jan. 3	42	2

DISCLAIMERS.

Name, residence, and invention.	No.	Filed.	Official Gazette. Vol.	Page.
Harding, John H., Milwaukee, Wis.; disclaimer filed by the patentee. Embossing upon plastered walls and other surfaces	278,238	Jan. 19, 1888	42	386
Osgood, James W., New York, N.Y.; disclaimer filed by the assignee, Walter C. Kodman. Hoisting apparatus and safety-batches	124,614	Feb. 8, 1888	42	618
Porter, Frederick E., Baltimore, Md.; disclaimer filed by himself and assignee, Rodney B. Smith. Paper-bag machine	205,133	Mar. 22, 1888	42	1294
Van Llew, Dennis F., Aurora, Ill.; disclaimer filed by the patentee. Car-door hanger	245,035	Mar. 21, 1888	42	1294

ALPHABETICAL LIST OF INVENTIONS.

Invention.	Name.	No.	Date.	Monthly volume. Specification.	Monthly volume. Drawing.	Official Gazette. Vol.	Official Gazette. Page.
Abacus	E. P. Clark and D. L. Wren	378,806	Mar. 6	10	3	42	969
Absorption-tower	H. P. Weldig	376,929	Jan. 24	1754	461	42	357
Acid. Apparatus for making sulphurous	C. E. Getchell	378,673	Feb. 28	1967	598	42	908
Acid-distributing apparatus. Sulphuric	F. W. Chappell	378,989	Feb. 21	1432	373 374	42	789
Acid ester. Manufacture of salicylic	C. Kolbe	377,311	Jan. 31	2303	.....	42	471
Acid. Obtaining sulphurous	E. Hänisch and M. Schroeder	376,883	Jan. 24	1695	443	42	345
Acid. Treating sludge	H. De Grousilliers	378,774	Feb. 28	2120	.....	42	932
Addressing-machine	S. C. Thompson	376,762	Jan. 24	1560	395 396	42	310
Advertising apparatus	A. Duboce	379,105	Mar. 6	319	102	42	1033
Advertising-cabinet	I. B. Stone	377,414	Feb. 7	107	32	42	515
Advertising-circular	M. B. Church	376,856	Jan. 24	1658	433	42	338
Advertising device	F. C. Briggs	377,925	Feb. 14	884	226	42	679
Advertising device for cars	J. Castle	375,987	Jan. 3	357	96	42	73
Advertising-frame	R. N. Searles	376,265	Jan. 10	766	203	42	157
Advertising mediums. Holder for	P. Delano	379,375	Mar. 13	743	201	42	1112
Advertising-stand	M. D. Greengard and F. Harris	377,251	Jan. 31	2214	585	42	455
Aerial navigation	W. Gustafson	378,364	Feb. 21	1533	401	42	810
Agricultural implement	L. Whitty	378,347	Feb. 21	1513	395	42	806
Air-brake	I. Harvey, Sr	378,365	Feb. 21	1536	401	42	811
Air-brake. Automatic	R. Solano	376,970	Jan. 24	1805	475	42	367
Air-brake. Automatic	R. Solano	378,628	Feb. 28	1916	507 508	42	895
Air-brake. Automatic electric	J. F. Carpenter	378,657	Feb. 28	1959	520 521	42	903
Air. Carbureting	R. M. Bidelman	377,735	Feb. 14	580	149	42	619
Air-compressor	G. Chamberlin	376,141	Jan. 10	593	158	42	124
Air-compressor	C. S. Dean	380,195	Mar. 27	1983	531	42	1370
Air-compressor	W. T. Forster	375,929	Jan. 3	276	75	42	58
Air-compressor	W. T. Forster	376,589	Jan. 17	1219	322	42	250
Air-compressor regulator	G. R. Cullingworth	377,481	Feb. 7	199	47	42	534
Air-compressors. Automatic regulator for the receivers of	D. F. McKim	375,761	Jan. 3	56	16	42	15
Air-compressors. Valve mechanism for	E. Reynolds	378,336	Feb. 21	1493	391	42	802
Air-heating device	M. T. Baldwin	379,755	Mar. 20	1309	349	42	1230
Air-jet	B. F. Sammons	379,543	Mar. 13	990	266	42	1160
Alarm: *See* Burglar-alarm. Flouring-mill alarm. Elevator-alarm. Time, temperature, and burglar alarm. Fire-alarm. Fire and burglar alarm.							
Alarm apparatus	W. F. Loffelhardt	376,989	Jan. 24	1831	482	42	372
Alarm-lock	G. Gibbs	379,642	Mar. 20	1146	303	42	1197
Alarm-lock	W. C. Manyett	380,043	Mar. 27	1771	474	42	1328
Alloy. Metallic	J. Webster	377,918	Feb. 14	872	.....	42	677
Aluminum and alloying it with other metals. Bath for extracting	W. A. Baldwin	380,161	Mar. 27	1935	.....	42	1361
Aluminum. Producing	J. S. Howard and F. M. Hill	376,136	Feb. 21	1103	.....	42	746
Amalgamating gold and silver	W. W. Wheeler	378,750	Feb. 28	2087	.....	42	926
Amalgamator	H. Cook	375,733	Jan. 3	17	4	42	6
Amalgamator	W. and G. W. Johnson	377,760	Feb. 14	618	160	42	626
Amalgamator	N. L. Raber	377,272	Jan. 31	2242	592	42	460
Amalgamator	J. Weirich	377,590	Feb. 7	352	91	42	563
Amalgamator	J. Wilkins	378,348	Feb. 21	1514	395	42	807
Amalgamator. Carbon	W. H. Lawrence	377,501	Feb. 14	849	217	42	671
Ammonia and chlorine from ammonium chloride. Obtaining	L. Mond	379,488	Mar. 13	942	245	42	1145
Ammonia and hydrochloric acid. Obtaining	L. Mond	379,487	Mar. 13	910	245	42	1145
Ammonia-gas generator	M. Poschinger	376,905	Jan. 24	1721	452	42	351
Ammonium sulphate. Apparatus for making	W. Simpkin	376,351	Jan. 10	883	231	42	178
Ammunition-case	E. C. Fremaux	377,150	Jan. 31	2065	542 543 131 132	42	426
Anchor	E. T. Starr	377,691	Feb. 7	513	132	42	592
Anchor	E. T. Starr	377,692	Feb. 7	515	132	42	592
Anchor and oiler. Floating	M. McCarthy	378,171	Feb. 21	1243	327	42	735
Animal-hitching device	J. Coyle	379,103	Mar. 6	355	101	42	1032
Animal-releasing device	B. Borton	379,692	Mar. 20	1478	390	42	1202
Animal-suspending device	E. A. Stiles	379,251	Mar. 13	562	156	42	1074
Animal-trap	T. R. Cattell and A. H. Summers	378,767	Feb. 28	2111	557	42	930
Animal-trap	A. M. Cleaver	376,142	Jan. 10	595	158	42	125
Animal-trap	E. Herrington	378,789	Feb. 28	2140	566	42	936
Animal-trap	B. P. Jolly	375,822	Jan. 3	131	38	42	30
Animal-trap	A. E. Kunderd	376,246	Jan. 10	739	196	42	151
Animal-trap	J. T. Moxley	379,713	Mar. 20	1252	334	42	1219

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Animal-trap	L. W. Page and S. Hardeman	378,972	Mar. 6	154	44	42	996
Animal-trap	C. Walker and W. Allsopp	379,087	Mar. 6	331	95	42	1028
Animal-trap	C. Warner	377,589	Feb. 7	351	91	42	563
Animal-trap. Live-bait	E. Herrington	378,790	Feb. 28	2141	566	42	936
Animals. Device for grooming	S. E. Bander	377,420	Feb. 7	115	24	42	516
Animals from jumping fences. Device for preventing	J. H. Booth and S. W. Beard	376,065	Jan. 10	476	128	42	102
Annealing metals. Oven for	M. D. Greenwood	376,740	Jan. 24	1467	387	42	364
Annunciator	J. P. Tirrell	376,171	Jan. 10	638	170	42	133
Annunciator. Electric	B. N. Botts	379,758	Mar. 20	1313	350	42	1231
Annunciator. Electric	J. W. Hoffman	377,256	Jan. 31	2219	586, 587	42	455
Annunciator. Electric	C. S. Young and G. E. Painter	380,010	Mar. 27	1725	462, 463	42	1319
Ant-trap	M. Kell	379,581	Mar. 20	1060	282	42	1181
Ant-trap	M. C. Miller	378,709	Feb. 28	2036	537	42	916
Antidote	J. T. Smith	379,159	Mar. 6	450	.....	42	1052
Anti-rattler and shaft-support. Combined	A. Delamater	377,605	Feb. 7	383	97	42	568
Anvil and vise. Combined	W. E. Canedy	380,019	Mar. 27	1740	466	42	1322
Aquascope	P. Wright	378,126	Feb. 21	1170	305	42	743
Arc light	L. N. P. Poland	378,616	Feb. 28	1899	502	42	891
Armature-coils. Frame for winding	R. Eickemeyer	377,997	Feb. 14	988	258, 259	42	700
Ash-conductor	J. H. Whittle	377,921	Feb. 14	878	225	42	678
Atomizer	H. Campbell	377,371	Feb. 7	6	2	42	495
Atomizer	A. De Villiss	378,357	Feb. 21	1525	399	42	809
Atomizer	G. Kuemper	380,041	Mar. 27	1769	453	42	1327
Atomizer	A. M. Shurtleff	379,611	Mar. 20	1102	293	42	1188
Auger-bits. Die for making	C. H. Irwin	378,251	Feb. 21	1367	359	42	778
Auger-bits. Die for making	F. Thomas and C. H. Irwin	378,408	Feb. 21	1599	420	42	821
Auger. Earth-	T. Tow	379,345	Mar. 13	696	189	42	1103
Auger. Square-hole	R. Hughes, A. E. and J. C. Lake	377,199	Jan. 31	2129	561, 562	42	440
Automatic gate	J. E. Goodhue	375,993	Jan. 3	365	98	42	75
Awning for car-platforms	J. H. Conn	375,732	Jan. 3	15	4	42	6
Awning. Vehicle-	A. D. Beedle	379,356	Mar. 13	710	193	42	1106
Awning-ventilator	J. P. Knobeloch	380,207	Mar. 27	1999	535	42	1373
Axial rolling	H. H. Forsyth	379,386	Mar. 13	756	205	42	1115
Axle. Anti-friction	M. Ryan	378,978	Mar. 6	160	46, 47	42	998
Axle box. Car-	F. D. Adams	377,418	Feb. 7	113	23	42	516
Axle box. Car-	D. H. Dugar	379,767	Mar. 20	1328	354	42	1234
Axle box. Car-	E. Lewis and F. Armstrong	379,651	Mar. 20	1157	306	42	1199
Axle box. Car-	D. Macnee	379,873	Mar. 20	1519	400	42	1270
Axle box. Car-	J. Stephenson	378,477	Feb. 28	1706	449	42	852
Axle-box lid. Car-	G. W. Morris	379,712	Mar. 20	1251	334	42	1210
Axle boxes. Dust-guard for car-	P. Sweeney	379,524	Mar. 13	965	260	42	1155
Axle. Car-	J. H. Eaton	379,638	Mar. 20	1141	302	42	1196
Axle-clip	L. S. White	379,839	Mar. 20	1456	385	42	1258
Axle lubricator. Car-	S. Hatt	377,754	Feb. 14	609	157	42	624
Axle lubricator. Car-	E. Pynchon	377,251	Jan. 31	2240	592	42	459
Axle-nuts. Capping	E. Firth, A. and I. Tompkins	379,214	Mar. 13	515	145	42	1069
Axle-setting machine	J. F. Hennessy	375,967	Jan. 3	287	77	42	59
Axle truss. Wagon-	O. J. Williams	378,535	Feb. 28	1784	471	42	868
Axle. Vehicle-	E. Peckham and E. Luass	378,058	Feb. 14	1067	280	42	715
Axles. Repairing vehicle-	J. F. Morell	376,900	Jan. 24	1716	450	42	350
Axles. Roller-journal for car-	H. L. Moyer and G. W. Youlls	377,836	Feb. 14	761	194	42	654
Back-band	A. J. Helm	376,091	Jan. 10	514	137	42	110
Bag: *See* Feed-bag. Mail-bag. Moth-proof bag. Paper bag.							
Bag	J. S. Boyd	380,016	Mar. 27	1737	465	42	1321
Bag-fastener	O. Anderson	375,976	Jan. 3	343	92	42	70
Bag-holder	A. M. Roscoe and G. E. Grier	379,817	Mar. 20	1417	377	42	1251
Bag or satchel frame	W. Roemer	378,263	Feb. 21	1388	363, 364	42	782
Bag or satchel frame lock	A. Goertz	379,158	Mar. 6	423	119	42	1046
Bag turning, folding, and printing machine	J. W. Wells	377,972	Feb. 14	953	249	42	694
Bags. Frame for traveling-	W. Roemer	378,620	Feb. 28	1906	504, 505	42	893
Bags. Frame for traveling-	F. C. Schmidt	378,621	Feb. 28	1910	506	42	893
Bags or valises. Fastening for traveling-	H. W. Morrow	378,016	Feb. 14	1015	265	42	705
Balance-spring for window or other slides	G. W. Bishop	377,736	Feb. 14	581	150	42	620
Bale-tie	J. R. Davis	378,574	Mar. 6	27	7	42	972
Bale-tie	L. C. Ryan	379,878	Mar. 20	1528	403	42	1272
Bale-tie	G. A. Weld	377,092	Jan. 31	1991	521	42	411
Baling-press	F. Frey and H. W. Schwarzburg	378,831	Feb. 28	2226	592, 593	42	953
Baling-press	J. Garman	379,156	Mar. 6	422	119	42	1046
Baling-press	J. D. Haughton and W. J. Alexander.	379,645	Mar. 20	1151	304	42	1198
Baling-press	G. Johnson	376,527	Jan. 17	1138	298	42	233
Baling-press	O. B. Kinnard	377,942	Feb. 14	913	235	42	686
Baling-press	W. S. Reeder	379,414	Mar. 13	800	215, 216	42	1124
Baling-press	J. M. Taylor	379,185	Mar. 6	451	127	42	1052
Baling-press	S. W. Trahue	376,688	Jan. 17	1387	365, 366	42	979
Baling-press	B. J. Wilson	376,461	Jan. 17	1045	274	42	215
Ball bat. Base-	J. W. Moose	377,686	Feb. 7	509	130	42	591
Banana-carrier	G. D. Sidway	376,555	Jan. 17	1173	308	42	239
Band-coupling	C. A. Weed	377,971	Feb. 14	952	249	42	693
Band-cutter	J. E. Schooley	376,166	Jan. 10	630	169	42	132
Band-cutter and feeder	O. Anderson	377,975	Feb. 14	959	250	42	695

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Band-cutter and feeder	K. G. Barcis	379,355	Mar. 13	707	192	42	1106
Bandage. Suspensory	W. F. Ware	375,846	Jan. 3	160	45	42	36
Bar: *See* Claw-bar. Cutter-supporting bar. Grate-bar. Plow-bar. Splice-bar. Structural bar. Window-bar.							
Bars. Machine for cutting scrolls on ends of	J. Koen	378,168	Feb. 21	1238	326	42	754
Barbers' chairs. Head-rest for	C. W. Delaney	377,147	Jan. 31	2002	541	42	425
Bark. Treating cinchona-	P. Casamajor	378,231	Feb. 21	1342	.....	42	775
Bark. Treatment of cinchona-	P. Casamajor	378,233	Feb. 21	1345	.....	42	775
Barrel-carrier	L. E. Webb and T. Johnson	375,785	Jan. 3	87	26	42	21
Barrel-head	J. Alvord	376,223	Jan. 10	708	188	42	145
Barrel-head-making machine	J. J. Philbrick	379,602	Mar. 20	1087	289, 290, 291	42	1185
Barrel-holder	E. C. Gillem	376,376	Jan. 10	916	240	42	184
Barrel-hoop	C. S. Cannon	377,709	Feb. 14	712	180	42	646
Barrel-roller	J. Boland	379,851	Mar. 20	1477	390	42	1261
Barrel-trussing machine	J. A. Seaman	376,487	Jan. 17	1076	282	42	221
Barrels and other vessels. Composition for filling up cracks in	S. Klein and A. Schattels	378,596	Feb. 28	1875	.....	42	886
Basin. Catch-	J. Wiedmann	377,056	Jan. 31	1931	507	42	399
Basket	L. A. Brown	378,492	Feb. 28	1729	456	42	857
Basket-bottom	A. W. Beckett	378,757	Feb. 28	2069	553	42	927
Basting-machine	T. C. Robinson	378,905	Mar. 6	63	19	42	979
Bath: *See* Blotter-bath. Cabinet-bath. Vapor-bath.							
Bath apparatus. Portable vapor and hot-air	J. G. Davis	377,886	Feb. 14	826	211	42	667
Bath-tub, sink, or wash-basin	C. H. Moore	379,973	Mar. 27	1664	444	42	1307
Bathing purposes. Apparatus for	F. C. F. Knaak	377,304	Feb. 7	42	12	42	503
Bathing the head. Device for	A. Heinemann	379,646	Mar. 20	1152	305	42	1198
Batteries. Automatic switch for secondary	J. S. Sellon	378,527	Feb. 28	1774	469	42	866
Battery: *See* Carbon battery. Ear-battery. Electric battery. Electric storage-battery. Galvanic battery. Non-polarizing constant-current battery. Secondary battery.							
Battery-fluids. New mercuric salt for	A. Schanschieff	379,820	Mar. 20	1425	.....	42	1253
Battery-vessel	J. Wiest	378,484	Feb. 28	1714	452	42	854
Battery-zinc	J. Beattie, Jr	376,228	Jan. 10	716	191	42	147
Beading-cutter	J. H. Anthony	378,159	Feb. 21	1229	323	42	752
Bearing. Anti-friction	M. R. Wood	378,350	Feb. 21	1516	397	42	807
Bearing. Propeller-shaft	J. Richarlson	378,975	Mar. 6	157	45	42	997
Bed-bottom	C. Bigeon	377,368	Feb. 7	2	1	42	495
Bed-bottom	R. W. Homan	378,397	Feb. 21	1575	413	42	818
Bed-bottom. Spring	F. O. Badger	377,419	Feb. 7	113	24	42	516
Bed-bottom. Spring	J. D. Stuart	379,138	Mar. 6	400	113	42	1041
Bed. Couch-	J. P. Miller	378,708	Feb. 28	2035	537	42	916
Bed. Folding	R. C. Bowers	376,851	Jan. 24	1652	432	42	337
Bed. Folding	J. Condell	379,449	Mar. 13	846	228	42	1133
Bed. Folding	F. E. Herrinton	380,258	Mar. 27	2066	553	42	1368
Bed. Folding	I. C. Smith and E. E. Herrinton	380,923	Mar. 27	2021	540	42	1378
Bed. Folding	E. D. Staples and H. E. Ashcraft	378,220	Feb. 21	1313	348	42	770
Bed. Hospital transfer-	J. Hoey	375,817	Jan. 3	125	37	42	29
Bed-lounge	C. C. Ferry	377,377	Feb. 7	15	5	42	498
Bed. Spring-	A. H. Merrill	380,046	Mar. 27	1775	475	42	1328
Bed. Turn-up	C. Morse	378,455	Feb. 28	1676	439	42	845
Bedstead. Adjustable crib-	H. W. Munsey	379,409	Mar. 13	791	213	42	1122
Bedstead attachment	D. G. Warfield	378,028	Feb. 14	1031	270	42	708
Bedstead-brace	J. G. Twiss	377,179	Jan. 31	2101	554	42	434
Bedstead. Folding	F. B. Williams	376,127	Jan. 10	572	153	42	120
Bedstead. Folding or wardrobe	F. B. Williams	376,126	Jan. 10	571	152, 153	42	120
Bell	A. and A. Iske	379,114	Mar. 6	371	105	42	1035
Bell. Door-	A. Iske	378,317	Feb. 21	1466	383	42	796
Bell. Door-mat	A. Iske	378,962	Mar. 6	140	41	42	994
Bell. Electric	W. F. Stocker	377,530	Feb. 7	288	73	42	570
Bell. Electric	J. P. Tirrell	377,916	Feb. 14	870	224	42	677
Bell. Electro-magnetic	J. and S. Wetzler	378,124	Feb. 21	1168	304	42	743
Belt and wheel. Driving	P. Adie	376,975	Jan. 24	1813	477	42	369
Belt. Chain	C. W. Hunt	378,686	Feb. 28	2007	530	42	911
Belt-clamp	W. D. Vandecar	380,150	Mar. 27	1923	513	42	1358
Belt. Driving-	F. B. Brock	378,229	Feb. 21	1341	354	42	774
Belt. Electric	G. W. and P. C. Totman	377,218	Jan. 31	2166	571	42	446
Belt-fastener	T. Gingras	380,104	Mar. 27	1862	495	42	1346
Belt-fastener	T. Gingras	380,105	Mar. 27	1863	495	42	1346
Belt-fastener	W. O. Talcott	379,739	Mar. 20	1296	343	42	1226
Belt-fastener	E. Weitzman	377,129	Jan. 31	2042	534	42	421
Belt. Lady's	F. Scholl	377,276	Jan. 31	2250	594	42	461
Belt-shifter	U. H. W. Schenck	379,988	Mar. 27	1685	450	42	1312
Belt shifter and trainer	F. L. Palmer	376,339	Jan. 10	867	227	42	175
Belt-shifting device	E. R. Hyde	375,752	Jan. 3	46	14	42	13
Belt. Therapeutic electric	S. B. Bushfield	376,730	Jan. 24	1452	382	42	301
Belt-tightener	D. Bowman	380,081	Mar. 27	1830	487	42	1339
Belt-tightener	F. Leininger	379,116	Mar. 6	374	106	42	1036
Belts. Fabric for driving	G. Schaeider	378,151	Feb. 21	1216	317	42	750
Belting for driving machinery. Chain or rope	M. Gandy	377,484	Feb. 7	202	48	42	534
Belting-machine	J. H. Adamson	376,174	Jan. 10	641	171	42	134
Belting. Machine-	C. A. Schieren	380,222	Mar. 27	2020	540	42	1378
Belting. Manufacture of leather-link	C. A. Schieren	377,333	Jan. 31	2337	678	42	476

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Bench: *See* Wash-bench.							
Bench-dog	F. Larson	378,890	Mar. 6	49	14	42	975
Bench-dog	D. A. Owen	376,396	Jan. 10	689	182	42	141
Bench-hook	A. P. Millspaugh	376,331	Jan. 10	859	225	42	174
Berry or seed gatherer and cleaner	G. Wilkin	375,787	Jan. 3	89	27	42	122
Berth. Self-leveling ship's	W. T. Milligan	376,542	Jan. 17	1158	304	42	236
Bevel	L. D. Gould	376,301	Jan. 10	810	214	42	165
Bevel-shaper, saw, and boring-machine. Reversible	H. D. T. Branton	379,930	Mar. 27	1606	{426 427}	42	1226
Bicycle	H. A. Davis	379,373	Mar. 13	740	201	42	1141
Bicycle	P. F. Filliez and A. C. Monnin	376,241	Jan. 10	730	194	42	150
Bicycle-step	T. Benfield	379,557	Mar. 20	1017	272	42	1174
Bicycle-support	J. F. Conley	378,496	Feb. 28	1734	{457 458}	42	858
Bicycles. Umbrella attachment for	C. Snowden	380,059	Mar. 27	1794	479	42	1332
Bills, letters, or samples. Receptacle for containing classified	A. Sanders	379,665	Mar. 20	1176	312	42	1204
Bin: *See* Feeding-bin. Flour and meal bin.							
Bin	E. T. Hunter	379,166	Mar. 6	433	122	42	1048
Binder	N. Hawkins. (Reissue)	10,903	Feb. 21	1609	422	42	825
Binders. Tension for self	W. H. Stine	379,083	Mar. 6	321	93	42	1026
Bit: *See* Bridle-bit.							
Bit-brace	A. D. White	378,274	Feb. 21	1406	368	42	785
Bit-holder for bit-stocks	H. Smiley	376,557	Jan. 17	1174	309	42	239
Blackboard. Spherical	W. R. Story	379,914	Mar. 20	1578	416	42	1280
Blackboards. Attachment for spherical	W. R. Story	379,915	Mar. 20	1580	416	42	1281
Blacking-box holder	G. P. Cragin	378,954	Mar. 6	131	38	42	992
Blacking-box holder	G. W. Jopson and N. W. Crandall	375,923	Jan. 3	132	38	42	131
Blast-furnace	E. A. Wheeler	378,749	Feb. 28	2065	550	42	925
Blast-furnace bosh-plate	J. Kennedy	378,550	Feb. 28	1806	477	42	873
Blast-furnaces. Apparatus for filling	S. Thomas	377,873	Feb. 14	805	206	42	663
Blasting. Friction-primer for	A. F. Andrews	379,147	Mar. 6	411	116	42	1044
Blasting-plug	A. Winder	378,820	Feb. 28	2206	588	42	949
Bleaching Apparatus for electric	E. Hermite and C. F. Cooper	379,465	Mar. 13	875	236	42	1130
Bleaching by electrolysis. Apparatus for	E. Hermite and C. F. Cooper	378,681	Feb. 28	2001	529	42	910
Blind. Inside	H. A. Benedict	375,982	Jan. 3	351	94	42	71
Blind-stop	P. M. Miessner	379,120	Mar. 6	378	107	42	1037
Blind-stop	W. A. Stickney	376,686	Jan. 17	1385	365	42	273
Blind-stop	G. W. Williams	379,748	Mar. 20	1209	347	42	1228
Block: *See* Brake-block. Pulley-block. Building-block. Stove-block. Lettering-block. Wagon-brake block.							
Block and tackle	C. J. Hibberd	379,113	Mar. 6	370	105	42	1035
Blooms. Apparatus for transferring	R. P. Dolan	379,507	Mar. 13	941	{253 254}	42	1150
Blotter and pen-wiper. Combined	E. Promis	378,719	Feb. 28	2048	541	42	919
Blotter-bath	H. F. Arnold	378,641	Feb. 28	1932	513	42	898
Blotter-bath	C. M. Beardsley	375,794	Jan. 3	97	29	42	93
Blotter. Ink	H. Heinke	379,067	Mar. 6	297	86	42	1022
Blotting-pad	C. M. Moore	377,040	Jan. 31	1905	501	42	394
Blow-pipe apparatus	J. B. Root	377,467	Feb. 7	181	43	42	530
Blowers or other machines. Intermittent grip for fan-	J. F. Bender	376,361	Jan. 10	896	235	42	180
Board: *See* Card-board. Mold-board. Center-board. Pitch-board. Game-board. Spelling-board. Ironing-board.							
Boat: *See* Life-boat. Velocipede-boat.							
Boat-detaching apparatus	R. M. G. Brown	378,763	Feb. 28	2106	556	42	929
Boats. Construction of	A. Olsen	378,613	Feb. 28	1895	501	42	890
Boats. Outrigger for	M. E. Bosca	377,986	Feb. 14	972	253	42	697
Bobbin-winder. Automatic	C. Bell	377,421	Feb. 7	116	24	42	516
Bobbins, &c. Providing protection for the ends of	G. O. Boynton and F. C. Johnson	379,151	Mar. 6	415	117	42	1044
Boiler: *See* Steam-boiler. Water-tube boiler. Wash-boiler.							
Boiler	A. Catchpole	379,048	Mar. 6	273	79, 80	42	1017
Boiler	J. K. Purinton	379,245	Mar. 13	556	155	42	1077
Boiler	H. Warden	377,792	Feb. 14	703	177	42	644
Boiler	A. Worthington	377,001	Jan. 24	1852	488	42	376
Boiler	A. Worthington	377,002	Jan. 24	1853	{488 489}	42	376
Boiler attachment. Auxiliary	J. H. Laumann	377,313	Jan. 31	2304	609	42	471
Boiler-covering	C. R. Manville	378,372	Feb. 21	1544	404	42	812
Boiler-feeder	J. H Kruse and L. A. Smith	379,520	Mar. 13	960	259	42	1155
Boiler-feeder regulator	G. A. Riedel	379,776	Mar. 20	1330	358	42	1236
Boiler flue-cleaner. Steam-	C. G. Davison	379,564	Mar. 20	1026	274	42	1175
Boiler for steam-heating	H. and C. A. McLaughlin	377,392	Jan. 31	2316	672	42	473
Boiler furnace. Steam-	R. Whelan	375,905	Jan. 3	237	64	42	49
Boiler-heads. Apparatus for making	H. Warden	377,791	Feb. 14	701	{176 177}	42	644
Boiler-pedestal	A. P. Croque	375,734	Jan. 3	18	5	42	7
Boiler pipe coupling	J. Hollinger	377,156	Jan. 31	2073	545	42	428
Boiler setting. Steam-	W. U. Fairbairn	380,197	Mar. 27	1986	532	42	1371
Boiler stand. House-	H. C. Weeden	375,847	Jan. 3	161	45	42	36
Boiler-tube cleaner	H. Randall	377,171	Jan. 31	2093	552	42	432
Boiler-tube cleaner	G. M. Robinson	379,728	Mar. 20	1272	339	42	1223
Boiler-tube cleaner. Steam-	P. H. Grimm	376,820	Jan. 24	1602	420	42	328

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Boilers. Preventive of incrustation of steam-	C. J. T. Burcey	376,579	Jan. 17	1206	319	42	247
Boilers. Smoke-consuming apparatus for steam-	A. Don	376,948	Jan. 24	1778	468	42	393
Boilers, tanks, &c. Coupling for	J. J. Whiter	377,506	Feb. 7	245	59	42	541
Bolster-spring	S. S. Byers	379,097	Mar. 6	349	99	42	1031
Bolt: *See* Flour-bolt. King-bolt.							
Bolt	F. Celec	380,184	Mar. 27	1965	525	42	1367
Bolt	H. B. Ives	378,067	Feb. 14	1081	284	42	718
Bolt	J. E. Parker	376,544	Jan. 17	1161	305	42	237
Bolt	J. Potter	376,258	Jan. 10	758	201	42	155
Bolt	W. W. Woodford	378,857	Feb. 28	2208	603	42	960
Bolt	F. Mutimer	378,936	Mar. 6	105	31	42	987
Bolt-heading die	J. A. Becher	377,981	Feb. 14	965	251	42	696
Bolt-threading machine	W. B. Weil	379,837	Mar. 20	1452	384	42	1257
Bolts. Making hollow bars for stay-	F. Mutimer	376,673	Jan. 17	1364	358	42	275
Bolts. Manufacturing	F. Mutimer	379,469	Mar. 13	881	237	42	1140
Book and slate. Combined	W. T. Jamison	379,640	Mar. 20	1155	305	42	1199
Book-binding	W. M. Kinnard	379,334	Mar. 13	683	185	42	1101
Book-binding	M. Ryan	376,506	Jan. 17	1108	290	42	227
Book. Combination order-	H. A. Bate	379,737	Mar. 20	1284	{342 343}	42	1225
Book-folding machines. Point mechanism for	J. H. Stonemetz	375,723	Jan. 3	3	1	42	3
Book-holder	H. Blake	377,360	Jan. 31	2281	688	42	484
Book. Manifold order-	J. S. McDonald	376,110	Jan. 10	538	143	42	114
Book-mark. Reference	H. H. Russell	377,908	Feb. 14	949	{247 248}	42	693
Book-protector	P. F. Van Everen	379,874	Mar. 20	1580	400	42	1270
Books. Binding	J. J. Meston and N. S. Dygert	377,880	Feb. 14	820	200	42	665
Books. Binding blank-	T. Beckett	376,848	Jan. 24	1648	431	42	337
Books. Manufacturing	J. M. Beers	375,759	Jan. 3	53	16	42	14
Boom-grip	J. Masten	378,988	Mar. 6	187	51	42	1002
Boot	A. M. Warren	376,070	Jan. 10	485	131	42	104
Boot and shoe box fixture. Mercantile	T. H. Cobb and C. L. Bowen	377,898	Feb. 14	845	216	42	671
Boot-crimping frame	E. Hond	380,292	Mar. 27	2110	564	42	1396
Boot-heel	P. Linden	378,040	Feb. 14	1045	273	42	711
Boot or shoe	G. T. Chapman	379,452	Mar. 13	896	231	42	1135
Boot or shoe	S. Dalsheimer	376,183	Jan. 10	650	{173 174}	42	136
Boot or shoe	H. Effandt	379,471	Mar. 13	883	228	42	1140
Boot or shoe	S. Jeffers	380,290	Mar. 27	2109	564	42	1396
Boot or shoe	J. A. Kelly	376,154	Jan. 10	612	165	42	128
Boot or shoe	W. D. Kline	377,416	Feb. 7	110	23	42	515
Boot or shoe	B. F. Whitney	378,034	Feb. 14	1038	271	42	710
Boot or shoe	C. H. Winter	376,987	Jan. 24	1820	481	42	372
Boot or shoe heel	H. C. Hart	376,824	Jan. 24	1608	421	42	320
Boot or shoe heel	E. Kempshall	376,988	Jan. 24	1830	481	42	372
Boot or shoe heel fastening	H. C. Hart	379,765	Mar. 20	1394	353	42	1233
Boot or shoe sole	F. A. Cushman	377,244	Jan. 31	2304	561	42	451
Boot or shoe sole	G. W. Ellis	379,023	Mar. 6	269	67	42	1011
Boot or shoe sole	F. W. Munroe	375,939	Jan. 3	204	58	42	60
Boot or shoe stretcher	W. Jones	379,980	Mar. 27	1676	446	42	1310
Boot or shoe supporter	C. Prouty	378,898	Mar. 6	56	16, 17	42	977
Boot or shoe upper	T. Nally	377,391	Feb. 7	38	11	42	504
Boot or shoe upper and preparing it for lasting	C. A. Keith	379,579	Mar. 20	1058	282	42	1180
Boot or shoe ventilator	A. Jensen	376,373	Jan. 10	911	239	42	183
Boot. Woolen	W. H. Dodge and R. D. O. Smith	378,444	Feb. 28	1660	436	42	842
Boots and shoes. Lasting	J. W. Hatch	378,445	Feb. 28	1660	436	42	842
Boots and shoes. Manufacturing	J. W. Hatch	380,163	Mar. 27	1938	517	42	1361
Boots. Making combined knit and cloth	D. Beatty	376,372	Jan. 10	910	{238 239}	42	183
Boots. Manufacture of woolen	W. H. Dodge and R. D. O. Smith	376,049	Jan. 3	450	120	42	90
Boots or shoes. Attaching heels to	C. C. Small	380,133	Mar. 27	1902	508	42	1354
Boots or shoes. Flush-nailing the heels of	F. F. Raymond, 2d	376,310	Jan. 10	824	217	42	167
Boots or shoes. Machine for making welts for	M. L. Keith	376,411	Jan. 10	951	251	42	193
Boots or shoes. Manufacture of	M. L. Lion and F. Cutlan	379,640	Mar. 20	1144	303	42	1197
Boots or shoes. Manufacturing	J. W. French	377,846	Feb. 14	771	197	42	656
Boots or shoes. Tool for inking the sole-edges of	F. P. Buzzell	376,092	Jan. 3	429	114	42	86
Boring and tapping machine	J. Giclow	10,892	Jan. 3	461	124	42	93
Boring, drilling, driving, and withdrawing screws, &c. Machine for	M. C. Henley. (Reissue)	376,906	Jan. 24	1722	452	42	352
Boring-tool	M. Quass	378,752	Feb. 28	2089	550	42	926
Bottle	H. Ader	379,615	Mar. 20	1107	294	42	1189
Bottle	E. Storm	378,276	Feb. 21	1408	368	42	786
Bottle attachment	G. P. Whittlesey	376,001	Jan. 3	380	101	42	77
Bottle. Ink-	N. Johnson	378,022	Feb. 14	1023	267	42	707
Bottle. Ink-	K. B. Snedigar	376,916	Jan. 24	1536	456	42	354
Bottle. Internally-stoppered	D. Rylands	379,149	Mar. 6	413	117	42	1044
Bottle-stopper	R. Blosser	376,977	Jan. 24	1816	477	42	369
Bottle-stopper	W. C. Church	377,042	Jan. 31	1909	502	42	394
Bottle-stopper	F. P. Morhous	377,043	Jan. 31	1908	502	42	395
Bottle-stopper	F. P. Morhous	378,800	Feb. 28	2170	577	42	942
Bottle-stopper	F. P. Morhous	378,743	Feb. 28	2075	547	42	924
Bottle-stopper	W. H. Underwood	379,919	Mar. 20	1584	417	42	1282
Bottle-stopper	G. L. Waitt	379,623	Mar. 20	1122	297	42	1192
Bottle stopper and fastening	S. L. Wiegand	378,306	Feb. 21	1537	402	42	811
Bottle-stopper. Faucet	L. S. Hoyt	378,177	Feb. 21	1250	329	42	737
Bottle-stoppers. Machine for making wire fasteners for	J. H. Reed and J. E. Wheeler	378,108	Feb. 21	1145	299	42	738
Bottle-top	I. Pomeroy	377,875	Feb. 14	811	207	42	664
Bottle-washer	A. Von Schade	378,744	Feb. 28	2076	548	42	924
Bottles. Combined spreader and stopper for mucilage and other	W. H. Underwood	376,915	Jan. 24	1735	456	42	354
Bottles. Forming indents, &c., in internally-stoppered	D. Rylands						

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Box:							
See Axle-box. Music-box.							
Cigar-box. Oil-press box.							
Feed-box. Packing-box.							
File-box. Paper box.							
Fire-alarm signal-box. Pool-ball box.							
Journal-box. Provision-box.							
Knockdown box. Signal-box.							
Letter-box. Stereotyping casting-box.							
Miter-box. Stop-box.							
Toy money-box.							
Box	A. T. Linderman	378,601	Feb. 28	1879	497	42	887
Box-fastener	G. Linder and C. Farner	376,805	Jan. 24	1582	414	42	335
Box for furs	W. Flynn	377,482	Feb. 7	200	47	42	534
Box for holding gummed letters, &c	H. Willson	378,911	Mar. 6	70	21	42	940
Box for the sale of goods	C. T. Rosenthal	376,261	Jan. 10	761	202	42	156
Box-hinging machine	A. C. Bolton	379,358	Mar. 13	712	194	42	1107
Box-hoops. Die for finishing	F. H. Perkins and L. L. Miller	377,267	Jan. 31	2236	591	42	458
Box-stapling machine	C. L. Lasch	378,324	Feb. 21	1476	385, 386	42	798
Brace:							
See Bedstead-brace. Rail-brace.							
Bit-brace. Shoulder-brace.							
Drill-brace. Wagon-spring brace.							
Bracket:							
See Clapboard-bracket. Curtain-roller bracket.							
Curtain-pole bracket. Lamp-bracket.							
Braid	J. McCahey	377,320	Jan 31	2314	671	42	473
Brake:							
See Air-brake. Safety-brake.							
Car-brake. Sled-brake.							
Electro-magnetic brake. Steam-brake.							
Wagon-brake.							
Locomotive-brake. Windmill brake.							
Railway-brake.							
Brake and belt shifter	J. F. W. Dorman	380,253	Mar. 27	2061	551	42	1386
Brake-block	G. A. Posson	378,215	Feb. 21	1302	345	42	768
Brake head and shoe	T. A. Griffin	376,563	Jan. 17	1134	296	42	232
Brake-lever	J. W. McPherson	379,969	Mar. 27	1658	442	42	1306
Branding corks, &c. Machine for	F. W. A. Boldt	377,665	Feb. 7	475	121, 122	42	585
Branding implement. Continuous-heating	M. Potter	377,575	Feb. 7	331	85	42	559
Bread. Preparation of	J. Robertson	379,737	Mar. 20	1371	.....	42	1221
Breastpin safety-catch	J. Johnson	378,054	Feb. 14	1063	278	42	744
Brick, &c	R. and C. Steinan	379,338	Mar. 13	987	186	42	1102
Brick. Apparatus for handling	E. Aber	375,911	Jan. 3	244	66	42	51
Brick. Burning	J. C Anderson	379,041	Mar. 6	264	75, 76, 77	42	1015
Brick-drier	W. E. Cole	378,236	Feb. 21	1351	356	42	776
Brick-drier	W. E. Cole	378,237	Feb. 21	1351	356	42	776
Brick for chimneys	G. A. Keck	373,253	Jan. 3	47	14	42	53
Brick-kiln	J. C. Anderson	379,040	Mar. 6	262	74, 75	42	1015
Brick-kiln	J. C. Anderson	379,923	Mar. 27	1595	421, 422	42	1295
Brick-kiln	J. C. Anderson	379,924	Mar. 27	1597	422, 423	42	1295
Brick-kiln	J. C. Anderson	379,927	Mar. 27	1601	424, 425	42	1296
Brick-kiln	J. Bührer	377,511	Feb. 7	250	60, 61, 62, 63	42	542
Brick-kiln	E. Stair	375,838	Jan. 3	153	43	42	34
Brick, &c. Kiln for burning	J. C. Anderson	379,925	Mar. 27	1599	423	42	1295
Brick-machine	J. C. Anderson	378,508	Feb. 28	1787	472	42	869
Brick-machine	R. N. Ross	377,778	Feb. 14	675	169, 170	42	639
Brick-machine	W. H. Stewart	376,759	Jan. 24	1493	394	42	309
Brick-machine	B. J. Wilson and A. A. Wood	376,460	Jan. 17	1042	273	42	214
Brick-machine. Reciprocating	J. P. Miller	377,767	Feb. 14	658	165	42	636
Brick-sanding machine	J. I. Knapp, J. C. McKenzie, and W. Humphrey.	376,316	Jan. 10	836	220	42	109
Bridge	T. D. Brochocki	377,887	Feb. 14	827	211, 212	42	667
Bridge-bars. Manufacture of	S. W. Lerch	380,210	Mar. 27	2003	536	42	1374
Bridge-cables. Suspender-connection for	G. Lindenthal	378,697	Feb. 28	2020	534	42	914
Bridge. Draw	O. F. Balston	376,225	Jan. 10	713	189, 190	42	146
Bridge gate. Draw	D. Greenhoot	377,807	Feb. 14	723	183	42	647
Bridges. Cable for suspension	G. Lindenthal	378,696	Feb. 28	2019	533	42	914
Bridges. Construction of draw	M. J. L. Towler	376,972	Jan. 24	1807	476	42	368
Bridle	E. Crippen and W. King	379,005	Mar. 6	212	57	42	1007
Bridle-bit	R. O. Burgess	377,845	Feb. 14	770	197	42	656
Bridle-bit	O. R. Gleason	378,305	Feb. 21	1450	378	42	793
Bridle-bit	A. H. Hanscom	376,088	Jan. 10	510	137	42	109
Bridle-bit	J. Morrissey	378,970	Mar. 6	152	44	42	996
Bridle-swivel	H. Johnson	379,537	Mar. 13	982	264	42	1139
Bridle-winker attachment	E. B. Knapp	377,563	Feb. 7	319	82	42	556
Bridle-winker. Molded	L. S. Hoyt	376,742	Jan. 24	1469	388	42	305
Bridles. Overdraw check-loop for	N. B. Le Blond	377,944	Feb. 14	918	237	42	687
Broom-holder	C. F. Lansing	379,961	Mar. 27	1649	439	42	1301
Brush	R. Foster and B. J. Kennedy	378,784	Feb. 28	2133	564	42	995

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Brush	W. Unger	377,180	Jan. 31	2103	554	42	434
Brush. Blacking	A. R. Gustafson	376,879	Jan. 24	1690	441	42	345
Brush-bodies. Machine for boring	J. V. Gane	378,131	Feb. 21	1183	309	42	745
Brush bridle. Paint	A. B. Kistler	380,120	Mar. 27	1884	501	42	1350
Brush. Ceiling	J. W. Boyle	375,919	Jan. 3	255	69	42	53
Brush. Dusting	J. Stewart	377,592	Feb. 7	343	88	42	561
Brush for mucilage and other liquids. Fountain	A. C. Harrington	379,463	Mar. 13	873	235	42	1138
Brush-making machine	J. V. Gane	378,132	Feb. 21	1185	310	42	745
Brush. Paint	J. McQuide	376,540	Jan. 17	1153	303	42	236
Brush. Pocket tooth	A. F. Bouton and K. K. Stearns	380,080	Mar. 27	1889	487	42	1339
Brush. Rubber	J. P. Hoyt	376,385	Jan. 10	927	243	42	186
Brush. Scratch	H. R. Frisbie	376,800	Jan. 24	1570	412	42	323
Brushes, &c. Apparatus for inserting and fixing the bristles of	J. V. Gane	378,130	Feb. 21	1175	307, 308, 309	42	744
Brushes. Drip-cup for whitewash or paint	A. Williams	380,005	Mar. 27	1720	460	42	1318
Brushes. Handle for mucilage	C. Rowland	376,397	Jan. 10	940	246	42	188
Buckle	E. Crippen and W. King	379,006	Mar. 6	212	57	42	1007
Buckle	J. England	378,667	Feb. 28	1978	524	42	906
Buckle	T. C. Field	376,240	Jan. 10	729	194	42	150
Buckle	C. R. Harris	376,193	Jan. 10	663	177	42	137
Buckle	J. C. Hyde	379,515	Mar. 13	955	257	42	1154
Buckle	T. A. Lee	380,209	Mar. 27	2002	535	42	1374
Buckle	E. N. Parker	379,078	Mar. 6	315	92	42	1025
Buckle	A. Prym	378,535	Feb. 28	1815	479	42	874
Buckle	D. L. Smith	378,730	Feb. 28	2061	544	42	921
Buckle	D. L. Smith	378,731	Feb. 28	2062	544	42	921
Buckle	D. L. Smith	378,732	Feb. 28	2063	544	42	921
Buckle	D. L. Smith	378,733	Feb. 28	2064	544	42	922
Buckle	D. L. Smith	378,734	Feb. 28	2065	545	42	922
Buckle	D. L. Smith	376,267	Jan. 10	768	204	42	157
Buckle	E. A. Smith	376,921	Jan. 24	1742	458	42	355
Buckle	E. A. Smith	377,656	Feb. 7	464	118	42	582
Buckle	A. P. Waddell	378,991	Mar. 6	190	52	42	1003
Buckle	H. C. Whitmarsh	379,530	Mar. 13	970	262	42	1157
Buckle and hame tug attachment	W. Dippert	376,599	Jan. 17	1235	325	42	252
Buckle-frame	G. R. Kelsey	379,613	Mar. 20	1105	293	42	1189
Buckle. Harness	J. M. Smith	376,055	Jan. 3	461	124	42	93
Buckle or clasp	I. G. W. Hopkins and H. H. Cummings.	377,627	Feb. 7	415	105	42	574
Buckle. Suspender	W. Loeb and J. Haak	378,534	Feb. 28	1783	470	42	868
Buckle. Turn	C. H. Williams	379,043	Mar. 6	268	77	42	1016
Buggy-boot	J. J. and C. A. Behlen	375,888	Jan. 3	214	59	42	46
Buggy-seat	D. B. Murray	375,861	Jan. 3	175	49	42	39
Buggy-top	C. A. Behlen	377,604	Feb. 7	392	97	42	568
Buggy-top	W. Davis	379,493	Mar. 13	918	246	42	1146
Buggy-top	J. D. Reed	376,012	Jan. 3	398	105	42	80
Buggy-top	W. H. Rees and J. H. Matthews	379,546	Mar. 13	994	267	42	1161
Buggy-top	O. Slagle	378,485	Feb. 28	1715	453	42	854
Buggy-top	G. Wiggins	379,420	Mar. 13	921	221	42	1128
Building-block	J. E. Werth	376,380	Jan. 10	920	241	42	185
Buildings. Construction and decoration of	S. D. Hatch	378,627	Feb. 28	1916	507	42	894
Buildings. Construction of	A. Smith	377,496	Feb. 7	282	53, 54	42	538
Buildings. System of warming and ventilating	G. B. Morrison	376,909	Jan. 24	1727	454	42	353
Burglar-alarm	W. H. Reiff	379,144	Mar. 6	408	115	42	1043
Burglar-alarm	C. H. Wright	376,629	Jan. 17	1297	341	42	263
Burial process	J. T. Brandt						
Burner:							
See Gas-burner. Hydrocarbon-burner.							
Gas-lighting burner. Lamp-burner.							
Hay and straw burner. Oil-burner.							
Vapor-burner.							
Burnisher	W. H. Boles	378,760	Feb. 28	2102	554, 555	42	928
Burnishing-machine	A. B. Fowler	377,926	Feb. 14	743	188, 189	42	651
Burnishing-machine	B. F. Patch	377,574	Feb. 7	330	85	42	559
Burnishing-machine	H. F. Rooney	376,045	Jan. 3	446	119	42	89
Bustle	F. E. Bennett	379,928	Mar. 27	1604	425	42	1296
Bustle	H. O. Canfield	375,922	Jan. 3	263	71	42	55
Bustle	H. O. Canfield	375,923	Jan. 3	264	72	42	55
Bustle	H. O. Canfield	375,924	Jan. 3	265	72	42	56
Bustle	C. C. Carpenter	379,001	Mar. 6	207	56	42	1006
Bustle	J. Galvin	378,439	Feb. 28	1654	434	42	841
Bustle	M. B. Hammond	378,134	Feb. 21	1191	311	42	746
Bustle	F. M. Jeffery	378,964	Mar. 6	142	41, 42	42	994
Bustle	F. M. Jeffery	379,516	Mar. 13	957	258	42	1154
Bustle	W. F. Osborne	376,394	Jan. 10	936	245	42	188
Bustle	G. Schoen	379,419	Mar. 13	898	217	42	1125
Bustle	A. Taylor	377,724	Feb. 7	557	142	42	599
Bustle	T. P. Taylor	376,272	Jan. 10	773	205	42	159
Bustle	A. W. Thomas	377,652	Feb. 7	457	117	42	581
Bustle	S. S. Williamson	378,187	Feb. 21	1265	334	42	760
Bustle	J. E. Levassecur	380,211	Mar. 27	2004	536	42	1375
Butter-can	W. H. Roberts	380,219	Mar. 27	2015	539	42	1377
Butter-package	G. S. Blum, Jr., and J. A. Phillips	377,446	Feb. 7	148	33	42	523
Button	A. Blumenkrohn	379,000	Mar. 6	207	56	42	1005
Button	W. Bourke	379,939	Mar. 27	1604	426	42	1296
Button	J. Costello	379,529	Mar. 13	969	262	42	1157
Button	S. Cottle	378,923	Mar. 6	88	25	42	984
Button	T. R. Hyde, Jr	376,958	Jan. 24	1792	471	42	365
Button	D. A. Ladd	376,890	Jan. 24	1701	444	42	347
Button	W. J. Leckie, Jr	377,625	Feb. 7	409	104	42	573
Button	J. P. Noyes	377,768	Feb. 14	660	165	42	636
Button	A. J. Shipley, H. T. Sperry, and T. R. Hyde, Jr.	379,912	Mar. 20	1577	415	42	1240

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Button	H. T. Sperry	377,581	Feb. 7	342	88	42	561
Button	F. H. Thier	379,742	Mar. 20	1291	344	42	1226
Button and fastener	A. Storck	378,182	Feb. 21	1258	332	42	758
Button-attaching machine	H. Tone	376,971	Jan. 24	1806	476	42	368
Button-attaching machine	A. G. Wilkins	379,431	Mar. 13	892	221, 222	42	1129
Button-backs. Machine for making	F. J. Ludington	376,895	Jan. 24	1706	446, 447, 448	42	348
Button. Cuff-	G. B. Adams	376,500	Jan. 17	1099	288, 289	42	226
Button. Cuff-	F. F. Bioren	376,282	Jan. 10	786	208	42	160
Button-detaching device	B. Poulson	379,604	Mar. 20	1095	291	42	1157
Button-detaching device	W. D. Schiefer	379,609	Mar. 20	1100	292	42	1158
Button-fastener	W. M. Hazel	380,112	Mar. 27	1671	498	42	1348
Button-fastener	G. W. Prentice	379,028	Mar. 6	248	70	42	1012
Button-fastener	A. L. Winn	376,497	Jan. 17	1097	288	42	225
Button-hole-barring machine	H. M. Essington	377,931	Feb. 14	892	230	42	681
Button-hole cutter	D. H. Cunningham	379,007	Mar. 6	213	58	42	1007
Button-hole-finishing machine	G. S. Hill	376,245	Jan. 10	737	196	42	151
Button-hole stitching and barring machine	J. H. Reed	378,217	Feb. 21	1305	346, 347, 348	42	768
Button-hole stitching and barring machine	J. H. Reed	378,404	Feb. 21	1588	417, 418	42	821
Button-holes. Barring	J. H. Reed	378,218	Feb. 21	1310	348	42	769
Button-holes. Finishing	R. W. Thomson and E. M. Phelps	379,497	Mar. 13	928	249, 250	42	1148
Button. Imitation	J. C. Schmahl	379,289	Mar. 13	620	169	42	1089
Button. Metallic	C. Radcliffe. (Reissue)	10,917	Mar. 27	2135	550	42	1402
Button or stud	S. L. Child	377,235	Jan. 31	2185	577	42	450
Button. Sleeve-	L. D. Frenot	378,956	Mar. 6	131	38	42	902
Buttons. Machine for making covered	A. Brand	375,726	Jan. 3	6	2	42	4
Buttons. Machine for manufacturing	C. A. Pfeuning	376,783	Jan. 24	1543	406	42	318
Buttons. Tool for removing	E. B. Hamilton	379,460	Mar. 13	870	235	42	1137
Cabinet-bath	T., T. W., and H. E. Wallis	379,143	Mar. 6	406	114, 115	42	1041
Cabinet for displaying cakes and confections	H. King	379,475	Mar. 13	888	239	42	1141
Cable-grip	F. H. D. Bergmann	376,627	Jan. 17	1293	340	42	262
Cable-grip	E. P. Heppard, Jr	376,885	Jan. 24	1697	443	42	346
Cable-grip	J. F. West	377,702	Feb. 7	529	135, 136	42	594
Cake-cutter	L. Maurer	379,019	Mar. 6	234	67	42	1010
Cake or bread beater	S. F. Stowe	376,420	Jan. 10	981	256	42	195
Calculating device. Interest-	G. D. Hicks	379,536	Mar. 13	981	264	42	1159
Calculating-machine	F. L. Bancroft	377,823	Feb. 14	740	187	42	650
Calendar	W. K. David	375,736	Jan. 3	20	5, 6, 7	42	7
Calendar	W. K. David	379,197	Mar. 6	473	134	42	1056
Calendar	F. W. Moulton	376,391	Jan. 10	934	245	42	188
Calendar with day-indicator. Dial-	C. F. Sinn	379,293	Mar. 13	627	171	42	1090
Calipers or dividers	J. Stevens	377,868	Feb. 14	709	204	42	662
Calks. Device for sharpening toe-	J. C. and H. C. Williams	376,697	Jan. 17	1401	369	42	282
Cam. Dwell-	J. Thomson	378,343	Feb. 21	1507	393	42	805
Camera. *See* Photographic camera.							
Camera-tripod	W. H. Carpenter	378,430	Feb. 28	1636	430	42	837
Can: *See* Butter-can. Jacketed can. Creaming-can. Oil-can. Gasoline-can. Sheet-metal can. Glue-packing can. Sprinkling or other can.							
Can	J. Fox	375,992	Jan. 3	365	98	42	74
Can	F. N. Gaskell	376,085	Jan. 10	505	136	42	108
Can-capping machine	C. A. Burt	377,449	Feb. 7	154	35	42	524
Can cover and clamp	E. R. Bristol and E. C. Gran	376,941	Jan. 24	1769	465	42	360
Can crimper and capper	M. Jensen	376,804	Jan. 24	1578	413, 414	42	325
Can-filling apparatus	H. Hermann	376,195	Jan. 10	667	177	42	138
Can-filling machine	W. H. Wright	376,403	Jan. 10	948	248	42	190
Can for molasses, &c	S. R. Billups	376,064	Jan. 10	474	128	42	102
Can-opener	H. Bruckerman	376,577	Jan. 17	1294	318	42	246
Can opener	W. B. and G. H. Williamson	378,349	Feb. 21	1515	396	42	807
Can or measure	J. Cuthbertson	376,768	Jan. 24	1521	400	42	314
Can-stopper	H. Selvage	378,981	Mar. 6	167	48	42	999
Cans. Means for closing milk-	O. Von Roden	376,690	Jan. 17	1393	366	42	280
Candle-molds. Apparatus for cooling	G. Janssen	380,205	Mar. 27	1996	534	42	1373
Candles or tapers. Shade for	C. C. Worthington	377,345	Jan. 31	2357	682	42	480
Candlestick	H. E. Lewis	379,171	Mar. 6	437	123	42	1049
Candy-dropping machine	Z. T. Hartman	380,108	Mar. 27	1866	496, 497	42	1347
Candy. Machine for making	H. W. Hoops	379,871	Mar. 20	1517	399	42	1270
Cane-shaving machines. Gage attachment for	L. Janson	378,591	Feb. 28	1867	493	42	885
Cane-stripper	R. P. Sorrels	378,735	Feb. 28	2066	545	42	922
Cant-hook	L. L. Cook	378,386	Feb. 21	1561	408	42	816
Capsule-machine	E. Seger	375,776	Jan. 3	74	22, 23	42	19
Car. Aisle-	J. Stephenson	378,480	Feb. 28	1708	450, 451	42	853
Car-brake	D. D. Chidester	376,582	Jan. 17	1208	319	42	247
Car-brake	L. Kupferschmid	376,100	Jan. 10	526	140	42	112
Car-brake	R. H. Littlefield	376,660	Jan. 17	1344	353	42	271
Car-brake	M. B. and F. W. Mills	376,898	Jan. 24	1713	429	42	350
Car-brake	A. F. Nell	380,049	Mar. 27	1783	476	42	1320
Car-brake	A. Reese	377,437	Feb. 7	138	31	42	521
Car-brake	A. Reese	377,438	Feb. 7	140	31	42	521

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Car-brake	A. C. Rogers	379,983	Mar. 27	1678	447	42	1411
Car-brake	J. M. Swaim	379,548	Mar. 13	997	267	42	1102
Car-brake	J. K. P. Timmons	375,841	Jan. 3	156	44	42	35
Car brake and starter	J. N. Williams	377,094	Jan. 31	1996	523, 524	42	411
Car-brake. Automatic	T. De Coar and W. Keast	379,687	Mar. 20	1215	321, 322	42	1211
Car-brake. Automatic	W. B. Turner	377,874	Feb. 14	806	206, 207	42	663
Car-brake. Automatic	H. Wiedling	378,992	Mar. 6	191	52, 53	42	1003
Car brake. Electric-railway	W. M. Schlesinger	379,980	Mar. 6	164	47	42	998
Car-bumper	A. W. Van Dorston	378,532	Feb. 28	1780	470	42	868
Car-bumper. Spring	G. H. Benjamin	379,528	Mar. 13	968	261	42	1156
Car. Cable-railway	H. W. McNeill	379,407	Mar. 13	787	212	42	1121
Car-connection	A. Raymond	376,907	Jan. 24	1723	432, 433	42	352
Car-coupler	L. A. Rudisill	376,967	Jan. 24	1801	474	42	367
Car-coupling	H. L. Arnold	378,288	Feb. 21	1340	354	42	774
Car-coupling	F. C. Bailey	376,131	Jan. 10	578	154, 155	42	121
Car-coupling	D. Baker	376,700	Jan. 17	1408	370	42	283
Car-coupling	W. F. Braun	377,289	Jan. 31	2275	601	42	466
Car-coupling	G. F. Brown	377,882	Feb. 14	821	209	42	666
Car-coupling	P. Brown	378,037	Feb. 14	1041	272	42	710
Car-coupling	P. Brown	378,038	Feb. 14	1042	272	42	711
Car-coupling	W. C. Chamberlain	376,797	Jan. 24	1566	411	42	323
Car-coupling	D. M. Cowher and J. L. Numer	378,163	Feb. 21	1233	324	42	753
Car-coupling	C. G. Crosse	376,237	Jan. 10	726	193	42	149
Car-coupling	W. B. Crow and W. E. McMackin	379,563	Mar. 20	1025	274	42	1174
Car-coupling	V. R. Davis	376,734	Jan. 24	1458	384	42	302
Car-coupling	W. H. Dawson	378,194	Feb. 21	1272	337	42	761
Car-coupling	R. H. Dowling	379,888	Mar. 20	1540	406	42	1274
Car-coupling	C. S. Edwards	377,670	Feb. 7	484	125	42	586
Car-coupling	G. W. Edwards	380,280	Mar. 27	2096	560	42	1393
Car-coupling	J. K. Freeman	377,746	Feb. 14	589	154	42	622
Car-coupling	J. Haish	378,676	Feb. 28	1901	507	42	909
Car-coupling	T. E. Halls	379,781	Mar. 20	1350	360	42	1238
Car-coupling	S. H. Harrington	376,713	Jan. 17	1425	374	42	287
Car-coupling	S. H. Harrington and J. Hannan	376,714	Jan. 17	1426	375	42	287
Car-coupling	I. Hazelton	378,311	Feb. 21	1460	381	42	795
Car-coupling	J. Hendershot	376,244	Jan. 10	736	196	42	151
Car-coupling	J. A. Hinson	379,795	Mar. 20	1357	361	42	1240
Car-coupling	E. Huber	376,093	Jan. 10	517	138	42	111
Car-coupling	O. Hughes	376,346	Jan. 10	928	243	42	186
Car-coupling	A. Keeports	376,309	Jan. 10	822	217	42	167
Car-coupling	C. R. King, A. P. Aten, and W. B. Floyd	378,370	Feb. 21	1542	403	42	812
Car-coupling	B. F. Laird	380,208	Mar. 27	2000	535	42	1374
Car-coupling	S. D. Locke	376,387	Jan. 10	929	243	42	186
Car-coupling	S. D. Locke	378,013	Feb. 14	1012	264	42	704
Car-coupling	J. B. McCray and D. E. Shade	378,702	Feb. 28	2026	535	42	915
Car-coupling	A. J. McGehee	376,482	Jan. 17	1071	280	42	220
Car-coupling	T. W. McKee	376,412	Jan. 10	964	252	42	193
Car-coupling	J. McMullen	377,631	Feb. 7	421	107	42	575
Car-coupling	F. J. McQueen	379,177	Mar. 6	443	125	42	1050
Car-coupling	C. E. Michaud	379,803	Mar. 20	1383	368	42	1246
Car-coupling	B. B. Morgan	376,335	Jan. 10	863	226	42	174
Car-coupling	L. A. Neff	380,216	Mar. 27	2011	538	42	1376
Car-coupling	E. A. Olmstead	377,532	Feb. 7	277	70	42	548
Car-coupling	J. Z. Palm	375,891	Jan. 3	217	59, 60	42	46
Car-coupling	G. D. Pearson	377,770	Feb. 14	661	166	42	636
Car-coupling	F. M. Rariden	377,689	Feb. 7	512	131	42	591
Car-coupling	W. M. Reed	379,331	Mar. 13	680	184	42	1100
Car-coupling	J. P. Runkel	376,164	Jan. 10	627	168	42	131
Car-coupling	D. Schofield	378,265	Feb. 21	1391	364, 365	42	782
Car-coupling	C. M. Shupe	376,213	Jan. 10	695	184	42	143
Car-coupling	A. Story	377,841	Feb. 14	767	195	42	655
Car-coupling	J. F. Thornton	378,409	Feb. 21	1600	420	42	823
Car-coupling	J. B. Thurston and F. R. Butterfield	378,269	Feb. 21	1395	366	42	783
Car-coupling	W. T. Van Doru	378,813	Feb. 28	2110	583	42	946
Car-coupling	C. J. Warren	377,541	Feb. 7	280	73	42	551
Car-coupling	F. B. Wineland	380,070	Mar. 27	1808	483	42	1396
Car-coupling	W. H. Wrigley	375,973	Jan. 3	340	91	42	69
Car-coupling. Automatic	E. Latham	378,068	Feb. 14	1083	284	42	719
Car dash-cap. Tram-	J. Stephenson	378,476	Feb. 28	1705	449	42	852
Car-door hanger. Tram-	J. Stephenson	378,474	Feb. 28	1703	448	42	851
Car-door hanging. Tram-	J. Stephenson	378,472	Feb. 28	1702	447	42	850
Car-door operator. Tram-	J. Stephenson	378,475	Feb. 28	1704	448, 449	42	851
Car-door. Safety	H. L. Renne	377,330	Jan. 31	2332	677	42	475
Car doors. Grain-	J. Jensen	377,385	Feb. 7	31	9	42	501
Car. Dumping-	F. Cote	377,424	Feb. 7	120	25	42	517
Car. Dumping-	J. M. Hughes and J. D. Williams	378,368	Feb. 21	1540	402, 403	42	812
Car. Electric-motor	W. H. Knight	377,622	Feb. 7	406	102	42	573
Car. Express-	J. W. Post	377,774	Feb. 14	666	167, 168	42	637
Car-floor frame	J. Plattenburg	379,978	Mar. 27	1674	446	42	310
Car. Freight-	H. V. Lucas	378,602	Feb. 28	1880	497	42	887
Car. Gondola-	J. L. Stagg	375,780	Jan. 3	81	25	42	20
Car. Hand-	D. Chapel	377,352	Jan. 31	2308	684	42	481
Car. Hand-	A. K. Mansfield	376,604	Jan. 17	1244	326	42	254
Car-heater	D. Connell	379,101	Mar. 6	333	100	42	1032

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Car-heater	L. G. Gilbert and M. W. Long	377,934	Feb. 14	898	231	42	683
Car-heater	P. F. McGee	380,044	Mar. 27	1773	474	42	1328
Car-heater	J. Wardle	380,066	Mar. 27	1804	482	42	1335
Car-heater and lamp-extinguishing apparatus	A. C. Smith, E. E. Weir, F. R. Carson, and F. H. Weir.	379,995	Mar. 27	1697	453	42	1314
Car-heaters, brakes, &c. Coupling and cut-off for steam and air pipes for	J. Briscoe	378,284	Feb. 21	1423	372	42	788
Car-heating apparatus	F. J. Crouch	380,247	Mar. 27	2055	549	42	1365
Car-heating furnace	H. G. Wilson and J. Noble	376,463	Jan. 17	1048	274	42	215
Car. Hopper-bottom freight	F. L. Joy	380,287	Mar. 27	2104	563	42	1395
Car lamp-house. Tram	J. Stephenson	378,469	Feb. 28	1698	446	42	849
Car-lighting	C. R. Arnold	376,423	Jan. 17	989	259	42	205
Car-lighting. Application of electricity to	C. A. Fanre	379,567	Mar. 20	1036	276	42	1157
Car-link. Self-coupling	G. J. Wardwell and A. Landon	379,621	Mar. 20	1117	296	42	1192
Car. Motor	P. J. McMahon	379,119	Mar. 6	377	107	42	1036
Car-motor	O. P. Sanders	379,129	Mar. 6	387	110	42	1039
Car. Passenger	W. D. Mann	377,628	Feb. 7	416	106	42	574
Car. Poultry	J. Moran	375,764	Jan. 3	58	17	42	75
Car-pushing machine	R. Lukins	376,670	Jan. 17	1358	356	42	374
Car. Railway	J. A. Brill	378,428	Feb. 28	1632	{428 / 429}	42	836
Car. Railway	C. A. Davis	375,989	Jan. 3	360	96, 97	42	74
Car. Railway	H. C. Gross	378,675	Feb. 28	1990	527	42	908
Car-replacer and portable switch	T. Holliday	377,155	Jan. 31	2072	544	42	428
Car road. Street	W. M. Eccles	377,930	Feb. 14	889	229	42	680
Car roof. Tram	J. Stephenson	378,470	Feb. 28	1699	446	42	850
Car sash-rail. Tram	J. Stephenson	378,471	Feb. 28	1701	447	42	850
Car-seal	L. A. Brown and V. S. Ketcham	378,655	Feb. 28	1955	519	42	902
Car-seat	F. H. Henry	378,546	Feb 28	1801	476	42	872
Car-seat. Reversible	W. B. Luce	377,205	Jan. 31	2145	{566 / 567}	42	442
Car-spring	C. T. Schoen	378,264	Feb. 21	1390	364	42	782
Car-spring plates. Die for making	N. H. Davis	378,773	Feb. 28	2118	{559 / 560}	42	932
Car-spring plates. Making	C. T. Schoen	379,544	Mar. 13	991	266	42	1161
Car-starter	J. Gilmore and W. R. Clark	376,875	Jan. 24	1682	439	42	343
Car-starter	H. H. Holmes	380,260	Mar. 27	2069	553	42	1388
Car-starter	J. O'Neill	377,113	Jan. 31	2024	530	42	416
Car-starter	H. P. Wayman	376,356	Jan. 10	890	233	42	179
Car step. Railway	W. P. Tracy	379,140	Mar. 6	403	114	42	1042
Car. Stock	G. D. Burton	376,729	Jan. 24	1451	381	42	301
Car. Stock	R. H. Ripley	377,959	Feb. 14	934	243	42	690
Car-transferring apparatus	R. Robinson	377,117	Jan. 31	2029	531	42	418
Car-ventilator	W. Ballman	375,721	Jan. 3	1	1	42	3
Car-wheel	F. P. Davidson	376,865	Jan. 24	1670	436	42	341
Car-wheel	G. G. Lobdell	378,844	Feb. 28	2248	598	42	957
Car-wheel	E. Peckham	376,721	Jan. 17	1437	378	42	290
Car-wheel	E. Peckham	376,722	Jan. 17	1438	378	42	290
Car-wheel	E. Peckham	376,723	Jan. 17	1440	379	42	290
Car-wheel	E. Peckham	376,724	Jan. 17	1441	379	42	291
Car-wheel	L. A. Thompson	379,254	Mar. 13	565	157	42	1078
Car-wheels. Machine for truing	R. Bagaley	377,224	Jan. 31	2172	573	42	447
Car window. Tram	J. Stephenson	378,473	Feb. 28	1702	{447 / 448}	42	851
Cars. Apparatus for heating railway	W. Flanagan	375,738	Jan. 3	25	8	42	8
Cars. Apparatus for preventing fires and extinguishing lights in railway	H. M. Young	376,699	Jan. 17	1403	369	42	282
Cars. Bell-cord for	W. Glasgow and S. S. Stevens	379,459	Mar. 13	864	{233 / 234}	42	1137
Cars. Bullet-proof case for railway	B. F. Dettra and J. C. Shields	376,736	Jan. 24	1459	385	42	303
Cars by electrical energy. Apparatus for the propulsion of	A. H. Bauer	378,864	Mar. 6	6	2	42	968
Cars by electricity. Lighting	A. D. Stevens	376,116	Jan. 10	547	146	42	116
Cars. Cable-railway system for street	A. G. Bierbach	378,918	Mar. 6	81	24	42	982
Cars, &c. Construction of	H. C. Hodges	375,998	Jan. 3	372	{99 / 100}	42	76
Cars. Draw-bar for tram	J. Stephenson	378,479	Feb. 28	1708	450	42	853
Cars. Draw-gear for street	J. W. Evans	377,825	Feb. 14	743	188	42	650
Cars. Draw-gear for street	B. McDevitt	379,587	Mar. 20	1062	284	42	1132
Cars. Draw-head hook for tram	J. Stephenson	378,478	Feb. 28	1707	450	42	852
Cars. Friction-brake for cable-railway	L. M. Hosea	379,015	Mar. 6	225	60	42	1009
Cars. Grip for cable-railway	R. L. Harris	375,997	Jan. 3	370	99	42	75
Cars. Grip for tram	D. T. Denton	376,587	Jan. 17	1217	321	42	249
Cars. Gripper actuated by hydraulic pressure for cable-railways	C. L. Snyder	380,234	Mar. 27	2022	541	42	1378
Cars. Head-rest for sleeping	T. A. Bissell	378,948	Mar. 6	123	36	42	990
Cars. Heater for railway	R. M. Dixon	379,691	Mar. 20	1222	324	42	1212
Cars. Horse-guard for tram	J. Stephenson	379,496	Mar. 13	927	249	42	1148
Cars. Pneumatic propeller for	C. H. Goebel	376,984	Jan. 24	1825	479	42	371
Cars. Sliding door for freight	C. H. Dunham	378,579	Feb. 28	1851	489	42	882
Cars. Steam-pipe connection between railway	J. R. Drodzewski	377,065	Jan. 31	1950	512	42	403
Cars. Station-indicator for railway	J. W. Warhurst	379,428	Mar. 13	819	{220 / 221}	42	1128
Cars. Street and station indicator for railway	J. B. Clot	380,090	Mar. 27	1841	490	42	1342
Cars. Track-brake for	J. S. Bokenkotter	376,363	Jan. 10	899	236	42	181
Cars. Track-cleaning attachment for street	C. Peper and C. O. Sobinski	378,374	Feb. 21	1546	404	42	813
Cars. Traveling current-collector for electric-railway motor	W. M. Schlesinger	377,215	Jan. 31	2157	{569 / 570}	42	445
Cars with hot air. Apparatus for heating	M. Casselman and T. F. McGann	376,138	Jan. 10	588	157	42	124
Carbon battery	G. E. Terrell	378,943	Mar. 6	117	34	42	989
Carbon. Manufacture of refractory	C. H. Land	379,960	Mar. 27	1647	439	42	1304
Carburetor	M. A. Foster	377,607	Feb. 7	386	98	42	569
Carburetor	F. J. Lothammer	376,248	Jan. 10	744	197	42	152
Card board. Playing	F. M. Penney	376,484	Jan. 17	1073	281	42	221

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Card-exhibitor	W. D. Valentine	378,345	Feb. 21	1510	394	42	866
Card-exhibitor	W. D. Valentine and H. S. Bailey	378,270	Feb. 21	1397	{366 / 367}	42	783
Card-gilding machine	C. Padmore and M. A. T. Gillbee	378,018	Feb. 14	1017	{265 / 266}	42	706
Card-grinder	B. S. Roy	379,985	Mar. 13	614	168	42	1088
Card-grinding mechanism	W. H. Rankin	377,116	Jan. 31	2028	531	42	417
Card. Sample	M. B. Church	376,634	Jan. 17	1305	343	42	264
Cards. Playing	F. Couch	378,497	Feb. 28	1737	458	42	859
Carpet-fastener	M. B. McCastline	379,236	Mar. 13	545	152	42	1075
Carpet in rolls. Device for securing the ends of	D. P. Clark and M. U. Loree	378,290	Feb. 21	1434	374	42	790
Carpet-stretcher	J. Carter	377,747	Feb. 14	772	197	42	657
Carpet-stretcher	J. A. Kienzardt	377,309	Jan. 31	2300	608	42	470
Carpet-sweeper	W. J. Drew	376,028	Jan. 3	424	113	42	85
Carpet-sweeper	R. H. Eddy	375,991	Jan. 3	363	97	42	74
Carpet-sweeper	H. A. Gore	380,201	Mar. 27	1991	533	42	1372
Carriage-body	C. A. Reade	376,162	Jan. 10	624	{167 / 168}	42	131
Carriage. Child's	N. B. Clinch	379,207	Mar. 13	505	142	42	1067
Carriage. Child's	E. A. Gerbracht	376,591	Jan. 17	1225	322	42	250
Carriage. Child's	T. Lanston	376,201	Jan. 10	678	180	42	140
Carriage, cradle, and chair. Combined	H. G. Portmann	377,270	Jan. 31	2239	592	42	459
Carriage-door lock	W. P. Fest	378,582	Feb. 28	1859	491	42	883
Carriage-jacks. Oiling attachment for	B. F. Lancaster	377,262	Jan. 31	2230	589	42	457
Carriage-maker's grooving and boxing tool	J. A. Trant	378,854	Feb. 28	2264	602	42	959
Carriage-spring	J. R. Northrup	376,158	Jan. 10	617	166	42	129
Carriage-top	H. B. Pitner	376,414	Jan. 10	966	252	42	193
Carriage-tops. Adjustable form for setting and building	C. C. Oakes	378,457	Feb. 28	1679	440	42	846
Carriage-wheel	S. D. Forbes	378,302	Feb. 21	1447	377	42	792
Carriage-wheel	B. A. Treat and E. S. Parmelee	377,587	Feb. 7	349	90	42	562
Carriages. Canopy-holder for children's	P. Gendron	377,608	Feb. 7	388	99	42	569
Carriages. Fan attachment for children's	A. Sonnenschein	376,684	Jan. 17	1380	363	42	278
Carriages. Sunshade for baby	H. S. Smith	379,734	Mar. 20	1281	342	42	1225
Carriages. Weather-protector for	J. L. Heise	377,105	Jan. 31	2013	528	42	414
Carrier: *See* Banana-carrier. Barrel-carrier. Cash-carrier. Cash and package carrier. Hay-carrier. Pneumatic carrier. Quilting-machine shuttle-carrier. Sheaf-carrier. Store-service-apparatus carrier.							
Cart. Road	C. L. Barrett	375,979	Jan. 3	347	93	42	70
Cart. Road	R. D. Buckingham	377,061	Jan. 31	1942	510	42	402
Cart. Road	L. Burg	376,470	Jan. 17	1054	276	42	217
Cart. Road	Z. T. Bush	378,354	Feb. 21	1521	398	42	808
Cart. Road	P. Fiege	377,673	Feb. 7	487	126	42	587
Cart. Road	J. S. Hulett	378,888	Mar. 6	46	13	42	975
Cartridge-crimper	J. W. Brittin	379,253	Mar. 20	1478	390	42	1262
Cartridge for fire-arms	J. P. Lee	378,255	Feb. 21	1378	361	42	780
Cartridge implement	H. A. Lyon	378,400	Feb. 21	1579	415	42	819
Cartridge-loader	F. P. Devens	379,636	Mar. 20	1139	{301 / 302}	42	1196
Cartridge-reloading implement	W. W. Wetmore	376,930	Jan. 24	1755	462	42	358
Cartridge-shell	F. Stiner and E. R. Darling	377,816	Feb. 14	793	185	42	649
Cartridge-shells. Loading apparatus for	G. G. Greenough	376,148	Jan. 10	602	160	42	126
Cartridge-shells. Machine for trimming	P. Butler	378,953	Mar. 6	198	37, 38	42	992
Cartridges. Combination-tool for loading	F. P. Devens	379,635	Mar. 20	1137	301	42	1195
Case: *See* Ammunition-case. Distributing-case. Label-case. Packing-case. Pencil or pin case. Show-case. Spectacle-case.							
Case-hardening and cementation compound	G. F. Evans	376,186	Jan. 10	655	.....	42	126
Cash and package carrier	H. Thomas and L. G. Bostedo	379,084	Mar. 6	322	93, 94	42	1026
Cash-car arrester	H. Thomas	379,085	Mar. 6	326	94	42	1027
Cash-carrier	D. Lippy	379,583	Mar. 20	1061	283	42	1181
Cash-carrier apparatus. Pneumatic	J. L. Given	379,890	Mar. 20	1543	407	42	1274
Cash-carrier apparatus. Pneumatic	G. B. Kelly	376,792	Feb. 28	2143	{566 / 567}	42	937
Cash-carrier apparatus. Pneumatic	W. S. Pain and W. A. Webber	376,159	Jan. 10	617	{166 / 167}	42	130
Cash-carrier apparatus. Pneumatic	W. A. Webber	378,593	Feb. 28	1781	470	42	868
Cash-carriers. Air-cushion for	H. Thomas	379,296	Mar. 13	630	172	42	1091
Cash-carriers. Air-cushioned counter-balance for	L. G. Bostedo	376,2?6	Jan. 10	792	210	42	162
Cash-carriers. Locking and releasing mechanism for	H. Thomas	379,618	Mar. 20	1111	295	42	1190
Cash indicator and register	W. G. Schickner and E. Rothlisberger.	376,262	Jan. 10	702	202	42	156
Cash register and indicator	T. Carney	377,728	Feb. 7	560	{144 / 145}	42	600
Cash register and indicator	J. J. Webster	377,342	Jan. 31	2350	681	42	478
Casks. Apparatus for tilting	J. Hill	376,652	Jan. 17	1333	350	42	269
Casks. Machine for making	C. and W. W. Hewitt	377,304	Jan. 31	2294	{606 / 607}	42	469
Caster	J. P. Reed	377,721	Feb. 7	553	{141 / 142}	42	599
Caster. Furniture	J. Berkey and W. R. Fox	378,649	Feb. 28	1948	518	42	901
Caster-socket	W. P. Tracy	378,740	Feb. 28	2072	547	42	923
Caster. Stove-leg	A. Zubler	375,790	Jan. 3	94	28	42	22
Casting and finishing machine. Type	H. Barth and E. Lietze	376,765	Jan. 24	1507	{397 / 398 / 399}	42	311
Casting apparatus. Hub	F. H. Ensign	376,146	Jan. 10	599	{159 / 160}	42	126

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Casting loose pulleys. Mold for	J. McCaffrey	377,559	Feb. 14	786	201	42	639
Casting metals. Apparatus for	D. C. Stover	379,137	Mar. 6	399	113	42	1041
Casting ordnance	J. F. Allen	375,791	Jan. 3	94	28	42	321
Catarrh remedy	T. S. Greene	378,504	Feb. 28	1744	.....	42	860
Cattle-guard	J. T. Hall	379,107	Mar. 6	362	103	42	1034
Ceiling. Metallic	C. Thuener	376,926	Jan. 24	1749	460	42	357
Cement-drying kiln	H. A. Bradley	375,920	Jan. 3	256	69, 70	42	54
Cement. Self-hardening	F. Jurschina	379,580	Mar. 20	1059	.....	42	1181
Center-board. Folding	A. Barnum	377,134	Jan. 31	2047	536	42	422
Centering device	S. B. Minnich	380,130	Mar. 27	1898	506	42	1353
Centrifugal separators. Motor for operating	G. de Laval	379,690	Mar. 20	1221	323; 324	42	1212
Cereals. Apparatus for treating	H. R. Robbins, Jr	378,806	Feb. 28	2180	581	42	944
Chain. Drive-	W. D. Ewart	377,552	Feb. 7	305	78	42	553
Chain. Drive-	C. W. Krause	379,115	Mar. 6	372	106	42	1035
Chain. Drive-	B. A. Legg. (Reissue)	10,904	Feb. 21	1610	423	42	525
Chain. Drive-	B. A. Legg	376,325	Jan. 10	848	223	42	171
Chain. Drive-	B. A. Legg	378,599	Feb. 28	1877	496	42	887
Chain. Drive-	S. D. Locke	377,811	Feb. 14	727	184	42	648
Chain. Drive-	F. H. C. Mey	377,572	Feb. 7	329	84	42	558
Chain. Drive-	B. Oborn	378,173	Feb. 21	1246	328	42	756
Chain. Drive-	F. F. Schofield	377,120	Jan. 31	2032	532	42	419
Chain. Drive-	D. J. Sheldrick	377,121	Jan. 31	2033	532	42	419
Chain for conveyers	B. A. Legg	378,139	Feb. 21	1201	313	42	747
Chain-links. Machine for coupling	N. B. Fassett	377,376	Feb. 7	11	4	42	497
Chain-making machine	J. Kinder	378,252	Feb. 21	1369	360	42	778
Chain. Sheet-metal	G. M. Jewett	377,076	Jan. 31	1963	515	42	405
Chain-wrench	J. H. Williams	377,795	Feb. 14	706	178	42	645
Chains. Manufacture of sheet-metal	F. Egge	376,737	Jan. 24	1460	385; 386; 387	42	303
Chair: *See* Collapsible chair. Railway-chair. Convertible chair. Railway-rail chair. Dental chair. Reclining-chair. Folding chair. Surgical chair. Office-chair. Tray-chair. Rail-chair.							
Chair	A. Bunn	377,512	Feb. 7	254	63	42	543
Chair	J. L. Knieper	379,030	Mar. 27	1647	438	42	1004
Chair	D. Parks	376,256	Jan. 10	754	200	42	155
Chair attachment. Rocking	W. Seng	376,266	Jan. 10	767	203; 204	42	157
Chair, fish-plate, and rail-coupler. Combined	W. Wilt	379,402	Mar. 13	826	223	42	1129
Chair-rocker-spring attachment	E. E. Peck	376,675	Jan. 17	1306	350	42	275
Chair-seat	T. Kellogg	375,754	Jan. 3	48	14	42	13
Chairs. Equilibrium appliance for rocking	G. Kelly	379,472	Mar. 13	884	238	42	1140
Chairs. Reclining attachment for	J. I. Stockton	375,840	Jan. 3	155	44	42	35
Chairs. Return-spring for	J. B. Holden	376,886	Jan. 24	1699	443	42	346
Channel-cutter	W. H. Avey	379,192	Mar. 6	467	132	42	1055
Chart. Dress-	F. Fels and D. Simon	379,384	Mar. 13	754	204	42	1115
Chart. Dress-	J. S. Wilson	375,972	Jan. 3	338	91	42	69
Chart. Time-	D. F. Crane	379,862	Mar. 20	1504	396	42	1267
Check-hook	F. C. Kimball	378,795	Feb. 28	2147	567	42	938
Check-hook	W. R. Moore	376,334	Jan. 10	802	226	42	174
Checkrein attachment	G. Hosley	376,306	Jan. 10	814	215	42	165
Checkrein-holder	J. M. Crawford	376,816	Jan. 24	1599	419	42	328
Checkrein-holder	F. T. Davis	376,640	Jan. 17	1317	346	42	266
Checkrein-hook	W. E. Moore	376,899	Jan. 24	1715	449	42	350
Chicken-brooder	C. Houser	379,398	Mar. 13	774	209	42	1118
Chimney	B. F. Hentzell	376,478	Jan. 17	1066	279	42	219
Chimney. Adjustable	I. N. Jones and P. C. Elser	377,899	Feb. 14	846	216	42	671
Chimney-cowl	J. Goettel	379,216	Mar. 13	517	145	42	1050
Chimney-top	W. W. Wright	377,508	Feb. 7	247	60	42	542
Chimneys. Creating draft in	W. Haas	375,995	Jan. 3	367	98	42	75
Chisel	J. R. Bailey	376,276	Jan. 10	779	207	42	159
Chop-grader	J. R. Davis, Jr	380,096	Mar. 27	1848	492	42	1343
Chop-separator	J. R. Davis, Jr	380,097	Mar. 27	1850	492; 493	42	1344
Chopper: *See* Cotton-chopper.							
Chopping-knife	M. Ludwig	379,584	Mar. 20	1063	283	42	1181
Chronometer-escapement	P. T. A. Rodeck	377,839	Feb. 14	764	195	42	655
Chuck	O. C. Hall	376,650	Jan. 17	1331	349	42	269
Chuck. Lathe-	E. P. Baville	377,596	Feb. 7	364	93	42	565
Chuck. Lathe-	H. N. Kennedy	379,473	Mar. 13	885	238	42	1141
Churn	J. Ahrenda	378,753	Feb. 28	2090	551	42	926
Churn	N. Barnesley	376,625	Jan. 17	1291	340	42	262
Churn	E. F. Beard	379,848	Mar. 20	1470	388	42	1260
Churn	C. F. Chamberlain	379,447	Mar. 13	841	227	42	1133
Churn	R. F. Collins	378,770	Feb. 28	2114	558	42	931
Churn	E. S. Gibbs and E. Harper	378,501	Feb. 28	1741	459	42	860
Churn	S. D. Palmer	378,144	Feb. 21	1208	314	42	749
Churn	J. H. Wilmouth and B. McNairy	375,857	Jan. 3	171	48	42	38
Churn-cover	A. B. Cosby	377,710	Feb. 7	541	138	42	596
Churn-dasher	J. E. Gibbs	380,282	Mar. 27	2097	561	42	1394
Churn-dasher	T. S. and A. M. E. Stewart	380,226	Mar. 27	2025	541	42	1379
Churn-motor	I. W. Stuart and R. J. Gubbins	378,039	Feb. 14	1068	280	42	715
Churn-operating mechanism	W. G. Patterson	376,592	Jan. 24	1484	391	42	307
Chute. Stock-	I. T. Yoakum	379,146	Mar. 6	410	116	42	1043
Chute. Stock-loading	J. C. Ferguson	377,519	Feb. 7	292	66	42	545
Cigar-box	F. A. Ford	377,345	Jan. 31	2205	581	42	453
Cigar-box	E. Vallens	376,689	Jan. 17	1391	366	42	280
Cigar-bunching machine	A. Gordon	377,748	Feb. 14	601	155	42	623

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Cigar-bunching machine	A. C. Schutz	379,732	Mar. 20	1278	340; 341	42	1224
Cigar-fillers. Mold for measuring and partially shaping	F. A. Ford	376,147	Jan. 10	601	160	42	126
Cigar-holder	J. H. Noble	378,104	Feb. 21	1137	297	42	737
Cigar-piercer	J. D. Carter	376,511	Jan. 17	1117	292	42	229
Cigar-press	W. Portner	376,963	Jan. 24	1797	472	42	366
Cigar-tip cutter and match-box. Combined	O. P. Elterich	377,550	Feb. 7	303	77	42	533
Cigar-tuck cutter	J. E. Ellis	376,030	Jan. 3	426	113	42	85
Cigars. Impressing letters and marks on	G. F. and J. W. McIndoe	379,020	Mar. 6	235	67	42	1010
Cigarette-machines. Printing attachment for	J. A. Bonsack	377,447	Feb. 7	149	33; 34; 35	42	523
Cigarettes, &c. Pocket-box for	C. S. Alden	376,056	Jan. 10	465	125	42	101
Circle. Double reflecting	C. H. Townsend	377,280	Jan. 31	2256	506; 507	42	462
Clamp: *See* Belt-clamp. Rubber-dam clamp. Flask-clamp. Saw-clamp. Floor-clamp. Screw-clamp.							
Clamp	P. F. Corbett	376,637	Jan. 17	1312	344	42	265
Clamp	W. D. Hawley	376,504	Jan. 10	813	215	42	165
Clamp	W. C. Stickler	377,693	Feb. 7	516	132	42	592
Clamp for cracked hoofs	T. Hughes	376,441	Jan. 17	1015	266	42	210
Clapboard-bracket	J. A. Trautt	377,178	Jan. 31	2101	554	42	434
Clapboard-machine	J. McIntyre	375,887	Jan. 3	212	58	42	45
Clasp: *See* Corset-clasp. Shoe-clasp. Hoof-clasp. Spring-clasp. Pocket-book clasp. Strap-clasp.							
Clasp	H. W. Buckland	376,578	Jan. 17	1205	318	42	246
Clasp	D. F. Dalton	378,238	Feb. 21	1332	336	42	776
Clasp	J. Jenkinson	377,429	Feb. 7	127	27	42	518
Clasp	E. C. Jones	379,229	Mar. 13	535	149	42	1073
Clasp	A. Lewis	380,125	Mar. 27	1892	504	42	1352
Clasp	J. V. Pilcher	380,217	Mar. 27	2013	538	42	1376
Clasps. Machine for making metallic	F. E. Girard and A. Rigault	377,379	Feb. 7	17	5, 6	42	498
Claw-bar	W. S. Pates	377,957	Feb. 14	992	242	42	690
Clay-pulverizer	J. and H. M. Creager	380,245	Mar. 27	2053	549	42	1385
Cleaner: *See* Boiler-flue cleaner. Flue cleaner. Boiler-tube cleaner. Street-cleaner.							
Cleat. Portable	C. P. Hawley	376,595	Jan. 17	1290	324	42	251
Clevis. Plow-	L. A. Weyburn and G. S. Briggs	376,792	Jan. 24	1561	409	42	321
Clip: *See* Axle-clip. Trace-attachment clip. Paper-clip. Whiffletree-clip.							
Clipper. Hair-	J. Bostgen	377,138	Jan. 31	2051	537	42	423
Clock. Advertising-	G. Hoisholt	378,589	Feb. 28	1805	492	42	884
Clock and lamp. Combined	J. M. Crawford	377,240	Jan. 31	2197	580	42	452
Clock-cases and other articles from plastic material. Manufacture of	R. P. Conghlin	379,450	Mar. 13	847	228; 229	42	1133
Clock. Secondary electric	W. B. Harvey	377,895	Feb. 14	839	215	42	670
Clock striking mechanism	W. E. Counter	376,074	Jan. 10	489	132	42	105
Clock striking mechanism	E. Groux	377,935	Feb. 14	900	231	42	683
Clock striking mechanism	L. Halvorsen	377,558	Feb. 7	313	80	42	535
Clod-crusher and ground-leveler	M. Delano and O. L. Cummins	379,565	Mar. 20	1027	275	42	1175
Closet: *See* Dry closet. Water-closet.							
Closet flushing and regulating device. Siphon-	P. Harvey	376,000	Jan. 10	512	137	42	109
Cloth-finishing machines. Feeding mechanism for	J. J. Scholfield	380,139	Mar. 27	1909	509; 510	42	1355
Cloth. Machine for burring and specking	J. W. Holt and A. McQuillan	376,440	Jan. 17	1012	266	42	210
Cloth-napping machine	H. N. Grosselin, Fils	377,151	Jan. 31	2068	543	42	427
Clothes-frame	S. F. Burgess	376,580	Jan. 17	1207	319	42	247
Clothes-horse	M. F. Dolan	379,378	Mar. 13	747	202; 203	42	1113
Clothes-line holder	A. E. Norman	379,717	Mar. 20	1257	336	42	1220
Clothes-pin. Wire	E. M. Ball	380,013	Mar. 27	1731	465	42	1321
Clothes-pounder	M. A. Nelson	378,711	Feb. 28	2038	538	42	917
Clothes-rack and ironing-board. Combined	A. C. Millard	376,039	Jan. 3	438	117	42	88
Clothes-sprinkler	F. G. Johnson	380,039	Mar. 27	1767	473	42	1326
Clothes-wringer	J. J. Brinkerhoff	378,951	Mar. 6	126	37	42	991
Clothes-wringer	W. M. Brinkerhoff	377,545	Feb. 7	293	76	42	552
Clutch	T. M. Foote	378,088	Feb. 21	1115	291; 292	42	732
Clutch for wheels and axles	J. Hartness	378,957	Mar. 6	134	39	42	992
Clutch. Friction-	O. Flohr	375,739	Jan. 3	26	9	42	9
Clutch. Friction-	W. C. Jones and W. S. Rogers	378,448	Feb. 28	1666	437	42	843
Clutch. Friction-	W. Oesterlein	378,803	Feb. 28	2155	579	42	943
Clutch. Friction-	J. W. V. Rawlins	377,777	Feb. 14	673	169	42	638
Clutch. Friction-	S. C. Shepard	380,140	Mar. 27	1911	510	42	1356
Coal-hod die	E. Barrath	378,755	Feb. 28	2095	552	42	927
Coal-hods. Die-press for forming	E. Barrath	378,754	Feb. 28	2091	551; 552	42	926
Coal-hods. Manufacturing	E. Barrath	377,705	Feb. 7	533	136; 137	42	595
Coal, &c. Mechanism for separating	S. Thomas	379,253	Mar. 13	564	157	42	1078
Coal-screening mechanism	E. B. Cove and S. Salmon	380,190	Mar. 27	1975	528	42	1368
Coal-scuttle	D. F. Tobin	380,231	Mar. 27	2033	543	42	1380
Coal-separator	C. W. Ziegler	380,156	Mar. 27	1930	514; 515	42	1360
Coaster, carrier, and ferrier. Cable	J. Van Zandt	378,154	Feb. 21	1221	318; 319	42	751

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Coat	M. Schloss	379,032	Mar. 6	253	72	42	1013
Coat-hook	W. H. Jacoby	378,201	Feb. 21	1284	339	42	761
Coat-hook	C. C. Pierce	377,773	Feb. 14	666	167	42	637
Coating iron, wood, canvas, &c. Compound for	J. F. Martin	377,081	Jan. 31	1971	.....	42	407
Cock. Gage-	J. McGwin	377,321	Jan. 31	2315	672	42	473
Cock. Plug-	J. Powell	379,244	Mar. 13	554	154	42	1057
Cock. Sea-	F. C. Starke	376,270	Jan. 10	771	205	42	158
Cock. Water-	J. M. Anderson	376,129	Jan. 10	576	154	42	121
Cock. Water-	H. D. Medrick	376,253	Jan. 10	750	199	42	154
Cocks, &c. Automatic device for shutting water-	J. W. Brook	376,287	Jan. 10	793	210	42	162
Coffee-mill	J. M. Hunter	379,167	Mar. 6	434	122	42	1008
Coffee-pot	H. B. Cornish	377,514	Feb. 7	256	63	42	563
Coffee-pot	L. Ehrlich	378,296	Feb. 21	1440	375	42	791
Coffee-pot	A. J. Lane	376,319	Jan. 10	839	221	42	170
Coffee-roaster	O. Walden	377,443	Feb. 7	145	32	42	562
Coffee-roasting apparatus	I. C. Gordon	379,091	Mar. 20	1546	407	42	1275
Coffin	E. Baugs	378,076	Feb. 21	1100	288	42	730
Coffin	H. Rice	379,814	Mar. 20	1410	{375 / 376}	42	1250
Coffin-depositor	A. M. Lowellen	377,834	Feb. 14	758	193	42	654
Coffin-fastener	T. B. Buddington and J. R. Bedient	380,242	Mar. 27	2048	547	42	1384
Coffin-fastener	J. R. Corbett	377,200	Jan. 31	2276	601	42	466
Coffin-fastener	C. H. Duell and E. Laass	377,355	Jan. 31	2374	686	42	482
Coffin-fastener	W. J. Noble	377,325	Jan. 31	2321	673	42	474
Coffin-fastener	W. J. Noble	379,715	Mar. 20	1254	334	42	1220
Coffin-fastener	E. Sinning	377,648	Feb. 7	451	114	42	580
Coffin-handle	G. C. Frazier	376,407	Jan. 10	955	250	42	191
Coffins. Head-rest for	J. L. Kranser	377,164	Jan. 31	2085	548	42	430
Coffins. Head-rest for	J McGrath	378,207	Feb. 21	1293	342	42	766
Coin-holder	C. J. Luce	377,568	Feb. 7	325	83	42	557
Coin-operated lock	M. Easton	376,182	Jan. 10	649	173	42	135
Coke-ovens. Device for discharging	W. T. Giles and W. Booth	379,390	Mar. 13	762	206	42	1116
Collapsible chair	H. S. Whitehead	379,670	Mar. 20	1157	314	42	1205
Collar fastening. Horse-	E. T. Lombard	376,894	Jan. 24	1705	446	42	348
Collar fastening. Horse-	A. F. Ransom	377,050	Jan. 31	1917	504	42	396
Collar. Horse-	A. C. Jacobs and G. W. Chapman	379,275	Mar. 13	594	164	42	1084
Collar. Horse-	H. W. Loads	376,669	Jan. 17	1359	356	42	274
Collar-pad	R. Schwahn	377,088	Jan. 31	1987	520	42	410
Collar pad. Horse-	J. S. Cusson	379,506	Mar. 13	940	253	42	1150
Collar pad. Horse-	F. W. Krause	378,035	Feb. 14	1064	279	42	715
Color chart or scale	F. C. Schroeder	377,086	Jan. 31	1984	519	42	410
Color or ink pad	J. B. Laughton	379,793	Mar. 20	1367	364	42	1242
Color. Production of a new red azo	A. Mylius	376,392	Jan. 10	935	.....	42	188
Coloring-matter from the sulpho-acids of ethyl or diphenylamine combined with tetrazodiphenyl or tetrazoditolyl.	T. Diehl	380,098	Mar. 27	1852	.....	42	1344
Coloring-matter. Production of new red	M. Ceresole	377,349	Jan. 31	2364	.....	42	481
Coloring-matter. Production of new red	M. Ceresole	377,350	Jan. 31	2365	.....	42	481
Comb: *See* Curling-comb. Weaver's comb. Curry-comb.							
Comb	J. P. Noyes	377,769	Feb. 14	661	166	42	636
Comb-cleaning apparatus	G. H. McKee	379,588	Mar. 20	1070	284	42	1182
Combination-lock	B. Fry	380,028	Mar. 27	1753	460	42	1324
Combination-lock	O. Volkerts	378,027	Feb. 14	1028	269	42	708
Combination-lock and alarm	R. Baumann	378,568	Feb. 28	1834	484	42	877
Combination-table	K. Riser and P. Bardonner	376,415	Jan. 10	907	{252 / 253}	42	193
Compasses. Correcting device for ships'	L. Siricix	378,528	Feb. 28	1775	469	42	867
Compasses. Draftsman's	J. Stevens	377,867	Feb. 14	798	204	42	662
Compensator	W. K. Beard and H. A. Aukamp, Jr.	377,476	Feb. 7	193	46	42	533
Compressor	H. H. Jones	376,598	Jan. 17	1233	{324 / 325}	42	252
Condensing and cooling purposes. Apparatus for	E. Theisen	377,504	Feb. 7	241	59	42	541
Conduit. Underground	M. R. Muckle, Jr.	379,408	Mar. 13	789	{212 / 213}	42	1121
Conduits and machine therefor. Manufacturing	M. Meehan	376,748	Jan. 24	1479	{389 / 390}	42	306
Connecting-rod	L. H. Nash	379,806	Mar. 20	1396	371	42	1247
Converter	R. W. Hunt	379,894	Mar. 20	1552	409	42	1276
Converters and converter-bottoms. Apparatus for lining	B. Versen	375,965	Jan. 3	326	87	42	67
Convertible chair	O. C. Harris	375,934	Jan. 3	284	76	42	59
Conveyer	W. O. Gunckel	375,931	Jan. 3	280	76	42	58
Conveyer	H. C. Krause and B. Harris	379,704	Mar. 20	1238	329	42	1216
Conveyer	A. Wissler	377,821	Feb. 14	737	{186 / 187}	42	650
Cooking apparatus. Steam	H. C. Ballard	378,947	Mar. 6	122	35	42	990
Cooking utensil	G. H. Eymer	377,712	Feb. 7	543	138	42	597
Cooler: *See* Milk-cooler.							
Coop. Chicken-	G. W. Brown	376,230	Jan. 10	718	191	42	147
Coop. Folding	W. E. Tate	377,650	Feb. 7	454	116	42	581
Copper. Electrolyzing	E. S. Hayden	377,487	Feb. 7	206	50	42	535
Copper, salts, ores, mattes, &c., in acids. Separating precious metals and impurities from solutions of	T. Kiddie	377,809	Feb. 14	725	.....	42	648
Copy-holder. Attachable	A. B. Reid	379,246	Mar. 13	556	155	42	1077
Copying letters and documents	N. C. Stiles	377,583	Feb. 7	344	89	42	561
Cord or rope. Machine for making	C. E. Brainard	378,491	Feb. 28	1728	456	42	857
Cords or ropes. Device for fastening	A. L. Pitney	375,892	Jan. 3	141	41	42	33
Core-machine	A. Manser and G. G. Richmond	376,155	Jan. 10	613	165	42	128
Cores. Making dry-sand	J. H. Blessing	379,672	Mar. 20	1159	315	42	1206
Cork-extractor	J. P. Stepp	378,907	Mar. 6	66	20	42	979
Cork-extractor	E. Walker	377,790	Feb. 14	700	176	42	644

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Cork-retainer	F. E. Heinig and S. Leidigh	378,307	Feb. 14	1003	262	42	703
Corks. Means for securing	J. W. Kincaid	379,250	Mar. 13	536	149	42	1063
Corn and fodder compressor	J. F. Maina	379,067	Mar. 27	1657	442	42	1306
Corn-dropper. Automatic	J. H. Stiggleman	378,808	Feb. 28	2182	581	42	944
Corn holder. Hot-	P. J. Godfrey	378,503	Feb. 28	1743	460	42	860
Corn-husker	L. H. Sholder	379,825	Mar. 20	1429	379	42	1254
Corn-removing knife	C. Langbein	376,320	Jan. 10	840	221	42	170
Corn-shellers. Cylinder for	H. Poucher	379,603	Mar. 20	1095	291	42	1187
Corn-shock tyer	U. B. Watkins	377,182	Jan. 31	2105	555	42	435
Cornet-tremolo	C. Meister	377,493	Feb. 7	219	53	42	537
Cornet tremolo attachment	F. Menzenhauer	377,860	Feb. 14	787	201	42	659
Corrugating-machine	T. F. Rowland and W. E. Hill	379,985	Mar. 27	1680	{448 / 449}	42	1311
Corset	M. P. De Jonge	375,990	Jan. 3	363	97	42	74
Corset	E. Thompson	376,924	Jan. 24	1747	459	42	356
Corset and bustle. Combined	P. Parmenter	378,518	Feb. 28	1756	{464 / 465}	42	863
Corset-clasp	M. P. Bray	377,232	Jan. 31	2181	576	42	449
Corset-clasp	J. Day	380,193	Mar. 27	1981	531	42	1369
Corset-clasp	P. Lallin	378,691	Feb. 28	2013	531	42	902
Corset-fastener	B. R. Davenport	380,192	Mar. 27	1980	530	42	1369
Corset-fastening	J. A. Brennan	380,017	Mar. 27	1738	466	42	1322
Corset-fastening. Removable	S. A. Schoefer	380,056	Mar. 27	1792	479	42	1332
Corset-stay	E. J. Jones	376,035	Jan. 3	433	115	42	87
Corset-steel protector	E. Cushing	378,576	Feb. 28	1847	488	42	881
Corsets. Making	X. Stiegler, Jr., and J. Cargemel	378,023	Feb. 14	1021	267	42	707
Cotton-chopper	J. B. Ammons	376,274	Jan. 10	775	206	42	150
Cotton-chopper	W. P. Clark	376,294	Jan. 10	801	212	42	163
Cotton-chopper	L. R. Corder	377,450	Feb. 7	156	36	42	524
Cotton-chopper	W. H. Harper, J. M. Boyd, and A. C. Shelton.	378,443	Feb. 28	1658	{435 / 436}	42	842
Cotton-chopper	J. B. King	377,392	Feb. 7	39	12	42	503
Cotton chopper and cultivator	L. Heller	378,958	Mar. 6	135	39, 40	42	993
Cotton chopper and cultivator	R. T. Huggins	378,960	Mar. 6	138	40	42	993
Cotton chopper and cultivator	T. F. Lawson	379,962	Mar. 27	1649	439	42	1305
Cotton-gin	G. F. Brott	379,760	Mar. 20	1315	351	42	1231
Cotton-gin	A. G. Jennings	378,167	Feb. 21	1237	325	42	754
Cotton, &c. Machine for opening and cleaning	D. H. Rice	376,346	Jan. 10	878	230	42	177
Cotton-openers. Evening mechanism for	J. C. Potter	377,329	Jan. 31	2330	676	42	475
Cotton-openers. Yielding grate for	L. Hargreaves	379,065	Mar. 6	295	85, 86	42	1022
Cotton-picker	J. W. Wallis	378,635	Feb. 28	1924	{510 / 511}	42	896
Cotton-press	P. L. and W. Brady	378,570	Feb. 28	1839	{485 / 486}	42	879
Cotton-press	A. D. Thomas. (Reissue)	10,902	Feb. 14	1089	286	42	720
Cotton-press attachment	W. F. Southard	379,828	Mar. 20	1483	380	42	1254
Cotton-stalk cutter	M. D. Oneal	379,596	Mar. 20	1079	287	42	1184
Counter-stiffener machine	L. B. Russell	377,468	Feb. 7	188	43	42	530
Coupling: *See* Band-coupling. Shaft-coupling. Boiler pipe-coupling. Stove-pipe coupling Car-coupling. Thill-coupling. Hose-coupling. Tug-coupling. Pipe-coupling. Vehicle-coupling. Pipe-well coupling. Water-closet coupling. Rod-coupling.							
Coupling and brake. Combined	A. Hodgson	378,315	Feb. 21	1463	{382 / 383}	42	796
Coupling-links, &c. Machine for bending and forging	M. Kennedy	379,474	Mar. 13	886	{238 / 239}	42	1141
Cover for vessels	J. P. Rieffel	380,137	Mar. 27	1906	509	42	1355
Cradle	A. Duffy and C. J. Reling	378,389	Feb. 21	1564	409	42	816
Cranberries. Device for picking	A. J. Disbrow	378,775	Feb. 28	2121	560	42	932
Cranberry cleaning and separating machine	H. Chadwick	377,667	Feb. 7	477	123	42	585
Crank and lever mechanism	R. H. Williams	380,238	Mar. 27	2041	545	42	1382
Crate	T. W. Lankford	376,321	Jan. 10	841	222	42	170
Crate. Berry or fruit	S. R. Kramer	378,098	Feb. 21	1129	295	42	735
Creaming-can	S. Y. Love	375,883	Jan. 3	208	57	42	44
Cremating filth and sewage. Apparatus for	J. Vladyka and W. M. Mitchell	379,189	Mar. 6	461	{130 / 131}	42	1054
Crucible-furnace	C. C. Carroll	376,632	Jan. 17	1302	342	42	264
Crusher: *See* Clod-crusher. Ore-crusher. Harrow and clod-crusher.							
Cuff-holder	S. P. Babcock	378,862	Mar. 6	4	1	42	967
Cuff-holder	J. D. Hall	377,753	Feb. 14	609	157	42	624
Cuff-holder	E. R. Horton	378,694	Feb. 21	1139	293	42	734
Cuff-holder	W. J. Walters	376,457	Jan. 17	1039	272	42	214
Cuff-holder. Adjustable	J. N. Clouse	375,731	Jan. 3	14	4	42	6
Cuff-retainer. Adjustable	R. L. Pratt	376,547	Jan. 17	1164	306	42	238
Cuffs. Making	A. Whited	378,032	Feb. 14	1035	271	42	709
Culinary beater	E. Baltzley	378,863	Mar. 6	4	2	42	968
Culinary vessel	J. P. King	378,690	Feb. 28	2012	531	42	912
Culinary vessel	H. A. Manning	378,700	Feb. 28	2024	534	42	915
Cultivator	J. P. Black	378,651	Feb. 28	1949	518	42	901
Cultivator	J. F. Glidden and P. W. Vaughan	378,089	Feb. 21	1115	292	42	733
Cultivator	E. A. Hoyt	380,285	Mar. 27	2102	562	42	1395
Cultivator	E. P. Lynch	378,141	Feb. 21	1203	313	42	748
Cultivator	J. Macphail and F. M. Needham	376,747	Jan. 24	1476	389	42	306
Cultivator	G. W. Randolph	376,008	Jan. 3	394	104	42	79
Cultivator	E. and J. P. Reichart	377,273	Jan. 31	2244	593	42	460
Cultivator	N. Roggy	378,463	Feb. 28	1696	442	42	847
Cultivator	J. Schermerhorn and T. Jury	378,377	Feb. 21	1549	405	42	814

110 INDEX OF PATENTS ISSUED FROM THE

UNITED STATES PATENT OFFICE, 1888. 111

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Coat	M. Schloss	379,032	Mar. 6	253	72	42	1013
Coat-hook	W. H. Jacoby	378,201	Feb. 21	1284	339	42	761
Coat-hook	C. C. Pierce	377,773	Feb. 14	666	167	42	637
Coating iron, wood, canvas, &c. Compound for	J. F. Martin	377,081	Jan. 31	1971	.....	42	407
Cock. Gage-	J. McGwin	377,321	Jan. 31	2315	672	42	473
Cock. Plug-	J. Powell	379,244	Mar. 13	354	154	42	1077
Cock. Sea-	F. C. Starke	376,270	Jan. 10	771	205	42	158
Cock. Water-	J. M. Anderson	376,120	Jan. 10	576	154	42	121
Cock. Water-	H. D. Medrick	376,253	Jan. 10	750	199	42	154
Cocks, &c. Automatic device for shutting water-	J. W. Brock	376,287	Jan. 10	793	210	42	162
Coffee-mill	J. M. Hunter	379,167	Mar. 6	434	122	42	1008
Coffee-pot	H. B. Cornish	377,514	Feb. 7	256	63	42	563
Coffee-pot	L. Ehrlich	378,296	Feb. 21	1440	375	42	791
Coffee-pot	A. J. Lane	376,319	Jan. 10	839	221	42	170
Coffee-roaster	O. Walden	377,443	Feb. 7	145	32	42	522
Coffee-roasting apparatus	I. C. Gordon	379,891	Mar. 20	1546	407	42	1255
Coffin	E. Bangs	378,076	Feb. 21	1100	288	42	730
Coffin	H. Rice	379,814	Mar. 20	1410	{375 / 376}	42	1250
Coffin-depositor	A. M. Lewellen	377,834	Feb. 14	758	193	42	654
Coffin-fastener	T. B. Buddington and J. R. Bedient	380,242	Mar. 27	2048	547	42	1384
Coffin-fastener	J. R. Corbett	377,200	Jan. 31	2276	601	42	406
Coffin-fastener	C. H. Duell and E. Laass	377,355	Jan. 31	2374	626	42	482
Coffin-fastener	W. J. Noble	377,325	Jan. 31	2321	673	42	454
Coffin-fastener	W. J. Noble	379,715	Mar. 20	1254	334	42	1220
Coffin-fastener	E. Sinning	377,642	Feb. 7	451	114	42	590
Coffin-handle	G. C. Frazier	376,407	Jan. 10	955	250	42	191
Coffins. Head-rest for	J. L. Kramser	377,164	Jan. 31	2085	548	42	430
Coffins. Head-rest for	J. McGrath	378,207	Feb. 21	1293	342	42	766
Coin-holder	C. J. Luce	377,568	Feb. 7	325	83	42	557
Coin-operated lock	M. Easton	376,182	Jan. 10	649	173	42	135
Coke-ovens. Device for discharging	W. T. Giles and W. Booth	379,390	Mar. 13	762	206	42	1116
Collapsible chair	H. S. Whitehead	379,670	Mar. 20	1187	314	42	1205
Collar fastening. Horse-	R. T. Lombard	376,894	Jan. 24	1705	446	42	348
Collar fastening. Horse-	A. F. Ransom	377,050	Jan. 31	1917	504	42	396
Collar. Horse-	A. C. Jacobs and G. W. Chapman	379,275	Mar. 13	594	164	42	1084
Collar. Horse-	H. W. Loads	376,669	Jan. 17	1359	356	42	274
Collar-pad	R. Schwahn	377,088	Jan. 31	1987	520	42	410
Collar pad. Horse-	J. S. Cusson	379,506	Mar. 13	940	253	42	1150
Collar pad. Horse-	F. W. Krause	378,055	Feb. 14	1064	279	42	715
Color chart or scale	F. C. Schroeder	377,086	Jan. 31	1984	519	42	410
Color or ink pad	J. B. Laughton	379,703	Mar. 20	1307	364	42	1242
Color. Production of a new red azo	A. Mylius	376,392	Jan. 10	935	.....	42	188
Coloring-matter from the sulpho-acids of ethyl or diphenylamine combined with tetrazodiphenyl or tetrazoditolyl	T. Diehl	380,098	Mar. 27	1852	.....	42	1344
Coloring-matter. Production of new red	M. Ceresole	377,349	Jan. 31	2364	.....	42	481
Coloring-matter. Production of new red	M. Ceresole	377,350	Jan. 31	2365	.....	42	481
Comb: *See* Curling-comb. Weaver's comb. Curry-comb.							
Comb	J. P. Noyes	377,769	Feb. 14	661	166	42	636
Comb-cleaning apparatus	G. H. McKee	379,588	Mar. 20	1050	284	42	1192
Combination-lock	B. Fry	380,028	Mar. 27	1753	469	42	1324
Combination-lock	O. Volkerts	378,027	Feb. 14	1028	269	42	708
Combination-lock and alarm	R. Baumann	378,568	Feb. 28	1834	484	42	877
Combination-table	K. Riser and P. Bardonner	376,415	Jan. 10	967	{252 / 253}	42	193
Compasses. Correcting device for ships'	L. Sirieix	378,528	Feb. 28	1775	469	42	867
Compasses. Draftsman's	J. Stevens	377,867	Feb. 14	798	204	42	662
Compensator	W. K. Beard and H. A. Aukamp, Jr.	377,476	Feb. 7	193	46	42	533
Compressor	H. H. Jones	376,598	Jan. 17	1233	{324 / 325}	42	252
Condensing and cooling purposes. Apparatus for	E. Thelsen	377,504	Feb. 7	241	59	42	541
Conduit. Underground	M. R. Muckle, Jr.	379,408	Mar. 13	789	{212 / 213}	42	1121
Conduits and machine therefor. Manufacturing	M. Meehan	376,748	Jan. 24	1479	{389 / 390}	42	306
Connecting-rod	L. H. Nash	379,806	Mar. 20	1396	351	42	1247
Converter	R. W. Hunt	379,294	Mar. 20	1352	409	42	1276
Converters and converter-bottoms. Apparatus for lining	B. Versen	375,965	Jan. 3	326	87	42	67
Convertible chair	O. C. Harris	375,934	Jan. 3	284	76	42	59
Conveyer	W. O. Gunckel	375,931	Jan. 3	280	76	42	58
Conveyer	H. C. Krause and B. Harris	379,704	Mar. 20	1238	329	42	1216
Conveyer	A. Wissler	377,821	Feb. 14	737	{186 / 187}	42	650
Cooking apparatus. Steam	H. C. Ballard	378,947	Mar. 6	122	35	42	990
Cooking utensil	G. H. Eymer	377,712	Feb. 7	543	138	42	597
Cooler: *See* Milk-cooler.							
Coop. Chicken-	G. W. Brown	376,230	Jan. 10	718	191	42	147
Coop. Folding	W. E. Tate	377,650	Feb. 7	454	116	42	561
Copper. Electrolyzing	E. S. Hayden	377,487	Feb. 7	206	50	42	535
Copper, salts, ores, mattes, &c., in acids. Separating precious metals and impurities from solutions of	T. Kiddie	377,809	Feb. 14	725	.....	42	648
Copy-holder. Attachable	A. B. Reid	379,246	Mar. 13	556	155	42	1077
Copying letters and documents	N. C. Stiles	377,583	Feb. 7	344	89	42	561
Cord or rope. Machine for making	C. E. Brainard	378,491	Feb. 28	1728	456	42	857
Cords or ropes. Device for fastening	A. L. Pitney	375,832	Jan. 3	141	41	42	33
Core-machine	A. Manser and G. G. Richmond	376,155	Jan. 10	613	165	42	128
Cores. Making dry-sand	J. H. Blessing	379,672	Mar. 20	1189	315	42	1206
Cork-extractor	J. P. Stepp	378,907	Mar. 6	66	20	42	979
Cork-extractor	E. Walker	377,790	Feb. 14	700	176	42	644

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Cork-retainer	F. E. Heinig and S. Leidigh	378,307	Feb. 14	1003	262	42	703
Corks. Means for securing	J. W. Kincaid	379,230	Mar. 13	536	149	42	1053
Corn and fodder compressor	J. F. Mains	379,967	Mar. 27	1657	442	42	1306
Corn-dropper. Automatic	J. H. Stiggleman	378,808	Feb. 28	2182	581	42	944
Corn holder. Hot-	P. J. Godfrey	378,503	Feb. 28	1743	460	42	860
Corn-husker	L. H. Sholder	379,825	Mar. 20	1429	379	42	1254
Corn-removing knife	C. Langbein	376,320	Jan. 10	840	221	42	170
Corn-shellers. Cylinder for	H. Poucher	379,603	Mar. 20	1095	291	42	1187
Corn-shock tyer	U. B. Watkins	377,182	Jan. 31	2105	555	42	435
Cornet-tremolo	C. Meister	377,493	Feb. 7	219	53	42	537
Cornet tremolo attachment	F. Menzenhauer	377,860	Feb. 14	787	201	42	659
Corrugating-machine	T. F. Rowland and W. E. Hill	379,985	Mar. 27	1680	{448 / 449}	42	1311
Corset	M. P. De Jonge	375,990	Jan. 3	303	97	42	74
Corset	E. Thompson	376,924	Jan. 24	1747	459	42	356
Corset and bustle. Combined	P. Parmenter	378,518	Feb. 28	1756	{464 / 465}	42	863
Corset-clasp	M. P. Bray	377,232	Jan. 31	2181	576	42	449
Corset-clasp	J. Day	380,193	Mar. 27	1981	531	42	1369
Corset-clasp	P. Laffin	378,691	Feb. 28	2013	531	42	892
Corset-fastener	B. R. Davenport	380,192	Mar. 27	1980	530	42	1369
Corset-fastening	J. A. Brennan	380,017	Mar. 27	1758	466	42	1322
Corset-fastening. Removable	S. A. Schoefer	380,056	Mar. 27	1792	479	42	1332
Corset-stay	E. J. Jones	376,035	Jan. 3	433	115	42	87
Corset-steel protector	E. Cushing	378,576	Feb. 28	1847	488	42	881
Corsets. Making	X. Stiegler, Jr., and J. Cargemel	378,023	Feb. 14	1021	267	42	707
Cotton-chopper	J. B. Ammons	376,274	Jan. 10	775	206	42	159
Cotton-chopper	W. P. Clark	376,294	Jan. 10	801	212	42	163
Cotton-chopper	L. R. Corder	377,450	Feb. 7	156	36	42	524
Cotton-chopper	W. H. Harper, J. M. Boyd, and A. C. Shelton	378,443	Feb. 28	1658	{435 / 436}	42	842
Cotton-chopper	J. B. King	377,392	Feb. 7	39	12	42	503
Cotton chopper and cultivator	L. Heller	378,958	Mar. 6	135	39, 40	42	993
Cotton chopper and cultivator	R. T. Huggins	378,960	Mar. 6	138	40	42	993
Cotton chopper and cultivator	T. F. Lawson	379,962	Mar. 27	1649	439	42	1305
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Cultivator	J. Shuck	377,174	Jan. 31	2097	552, 553	42	433
Cultivator	C. Whitehall	379,430	Mar. 13	899	221	42	1128
Cultivator and scraper combined	J. A. Scroggs	377,781	Feb. 14	681	172	42	640
Cultivator attachment	W. Nave	376,336	Jan. 10	864	227	42	275
Cultivator. Disk	R. K. Swift	379,295	Mar. 13	628	172	42	1091
Cultivator-foot	S. R. Estep	377,998	Feb. 14	993	259	42	700
Cultivator. Listing	T. J. McCormick	375,944	Jan. 3	295	79, 80	42	61
Cultivators. Lifting-spring for	C. R. Davis	377,993	Feb. 14	979	256	42	699
Cup: *See* Lubricant-cup. Oil-cup. Medicine-cup. Paint-cup.							
Curling-comb	C. S. Levy	379,650	Mar. 20	1156	306	42	1199
Curling-iron	G. H. Bissell	379,443	Mar. 13	837	226	42	1132
Current-meter	P. Kotlarewsky	380,262	Mar. 27	2072	554	42	1389
Current motive and regulating device. Alternating-	E. Thomson	377,217	Jan. 31	2164	571	42	446
Current transformer. Alternating-	R. Kennedy	378,390	Feb. 21	1469	384	42	797
Curry-comb	G. F. Dietz	380,250	Mar. 27	2058	550	42	1386
Curtain. Drop	J. P. Smith	379,614	Mar. 20	1105	294	42	1189
Curtain-fixture	J. Cremer	376,143	Jan. 10	596	159	42	125
Curtain-pole. Adjustable or extension	A. D. Field	378,087	Feb. 21	1112	291	42	732
Curtain-pole bracket	W. O. Bement	375,981	Jan. 3	340	94	42	71
Curtain-pole covering	A. D. Field	378,085	Feb. 21	1111	290	42	732
Curtain-pole. Upholstered	A. D. Field	378,086	Feb. 21	1111	291	42	732
Curtain-roller bracket and pole attachment	J. W. Greene	379,309	Mar. 13	650	176	42	1094
Curtain-support	J. F. Robinson and C. W. Gonert	376,911	Jan. 24	1730	455	42	353
Cuspidor	D. H. Murphy	378,610	Feb. 28	1890	500	42	869
Cut-off for engines	J. J. Tonkin	376,616	Jan. 17	1271	333	42	258
Cut-off for water-tanks. Automatic	J. Pocknell	375,948	Jan. 3	301	81	42	162
Cut-off regulator	C. W. Lawrie	376,826	Jan. 24	1610	422	42	330
Cut-off-valve gear. Telescopic	C. W. Cronk	376,516	Jan. 17	1126	294	42	230
Cutter: *See* Band-cutter. Feed-cutter. Reading-cutter. Fuse-cutter. Button-hole cutter. Hog-tendon cutter. Cake-cutter. Pipe-cutter. Channel-cutter. Rope-cutter. Cigar-tip cutter. Vegetable-cutter. Cigar-tuck cutter. Washer-cutter. Cotton-stalk cutter. Weed-cutter.							
Cutter-supporting bar and cutter	C. D. Wells	380,304	Mar. 27	2124	568	42	1399
Cutting apparatus	J. C. Voss	379,881	Mar. 20	1531	404	42	1272
Cylinder	T. B. Cardon and G. Lundberg	377,234	Jan. 31	2184	576, 577	42	449
Damper. Automatic	W. A. J. Beauchamp	377,136	Jan. 31	2049	536, 537	42	422
Damper-regulator	G. A. Goodenough	377,557	Feb. 7	311	79	42	555
Damper-regulator	J. St. Mary	377,785	Feb. 14	685	173	42	641
Damper-regulator	J. H. Weitmyer	377,657	Feb. 7	465	119	42	583
Damper regulator. Furnace-	W. C. Higgins	379,395	Mar. 13	769	208	42	1117
Damper. Stove-pipe	J. C. Ingalls	380,204	Mar. 27	1996	534	42	1375
Dampers. Adjusting device for	F. A. Garrett	378,671	Feb. 28	1984	526	42	907
Decoy-duck	W. D. Trimble	378,410	Feb. 21	1601	420	42	823
Dental chair	J. W. Cooper	378,433	Feb. 28	1639	431, 432	42	838
Dental chair	D. Stuck	376,016	Jan. 3	403	106	42	80
Dental engine	W. B. Mann	378,204	Feb. 21	1288	340, 341	42	765
Dental engine	H. C. Register	375,834	Jan. 3	145	42	42	33
Dental gold-pellet package	E. G. Kearsing	376,889	Jan. 24	1700	444	42	347
Dental mandrel	C. W. F. Holbrook	376,653	Jan. 17	1334	350	42	269
Dental matrix	J. H. Reed	376,546	Jan. 17	1165	306	42	238
Dental operations. Electrical apparatus for	C. A. Eisenhart. (Reissue)	10,907	Mar. 6	408	139	42	1060
Dental pencil	J. A. McClelland	375,827	Jan. 3	136	40	42	32
Dental plate. Rubber	E. W. Talbott	377,177	Jan. 31	2069	553	42	434
Dental plates and bridges. Making	C. C. Carroll	380,021	Mar. 27	1742	467	42	1322
Dental plugger	W. G. A. Bonwill	377,984	Feb. 14	969	252, 253	42	697
Dental plugger	W. G. A. Bonwill	378,920	Mar. 6	84	24	42	992
Dental plugger	B. S. Byrnes	376,581	Jan. 17	1207	319	42	247
Depolarizing compound	A. F. W. Partz	379,180	Mar. 6	446	.....	42	1051
Depth-gage	W. D. Spencer	379,423	Mar. 13	812	218	42	1126
Derrick	W. Bentley	377,544	Feb. 7	294	74, 75	42	551
Derrick	J. Lightham	376,037	Jan. 3	436	116	42	87
Derrick. Hay	A. L. Kane	380,206	Mar. 27	1998	534	42	1373
Derrick. Portable	P. Rahbitt	377,576	Feb. 7	333	85	42	559
Desk	C. Larson	379,232	Mar. 13	538	150	42	1073
Desk	I. Melton	380,045	Mar. 27	1774	474	42	1328
Desk and seat. Adjustable school	O. G. Docken	378,875	Mar. 6	28	7, 8	42	972
Desk or book-holder. Reading-	H. B. Greenawalt and J. B. Urban	376,593	Jan. 17	1227	323	42	250
Dial. Indicator-	D. L. Mitchell	376,103	Jan. 10	530	141	42	113
Diamido compounds and of azo colors produced therefrom. Production of new	A. Weinberg	380,067	Mar. 27	1805	.....	42	1335
Die: *See* Bolt-heading die. Embossing-die. Coal-hod die. Screw-cutting die.							
Die and die-holder for drawing	W. Allderdice	378,222	Jan. 10	707	188	42	145
Die for making cluster settings	C. Blancard	376,507	Jan. 17	1109	291	42	227
Die for making diamond-settings	C. Blancard	376,508	Jan. 17	1110	291	42	227
Digester	F. C. Rowland	376,612	Jan. 17	1262	330, 331	42	256
Digger: *See* Potato-digger. Road-digger.							
Dish-holder	C. H. Latham	378,692	Feb. 28	2014	532	42	913

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Dish-washer	J. S. Stevens and G. Caunter	378,152	Feb. 21	1217	317	42	750
Display-frame	S. Dancyger	379,055	Mar. 6	284	83	42	1019
Display-frame	L. Strauss	378,407	Feb. 21	1598	419	42	823
Display-rack	J. M. Landick	376,318	Jan. 10	838	221	42	170
Display-stand	J. J. Anderson	378,035	Feb. 14	1039	271	42	710
Displaying-rack	A. P. Hunter	376,656	Jan. 17	1338	351	42	270
Distilling petroleum	W. H. Pitt	379,492	Mar. 13	916	246	42	1146
Distilling water and other liquids. Apparatus for	R. D. Gladney	378,881	Mar. 6	36	10	42	973
Distilling wood. Apparatus for	J. Wilson	375,908	Jan. 3	240	65	42	51
Distributing-case	W. C. Crozier	375,735	Jan. 3	19	5	42	7
Ditching and grading machine	D. D. Kuhlman	379,705	Mar. 20	1239	330	42	1217
Ditching-machine	J. C. McLachlan	380,128	Mar. 27	1895	505, 506	42	1352
Ditching machine. Tile-	W. Skinner	376,352	Jan. 10	885	232	42	179
Dock	J. M. Cornell	379,861	Mar. 20	1503	395	42	1267
Domino	S. S. Kimball	377,832	Feb. 14	756	192	42	653
Door	L. S. Enos	378,350	Feb. 21	1526	399	42	809
Door	L. T. Shepherd	376,048	Jan. 3	449	119	42	90
Door-check	C. Cleveland	376,813	Jan. 24	1592	417	42	327
Door-check	S. H. Giesy	377,852	Feb. 14	778	199	42	656
Door-check	C. Polley	379,327	Mar. 13	675	182	42	1090
Door-check	J. H. Shaw and W. Gilfillan	378,728	Feb. 28	2050	543	42	921
Door-check	W. H. Stevens	376,117	Jan. 10	551	146	42	117
Door-closer	G. W. Rodecap	378,807	Feb. 28	2181	581	42	944
Door-hanger	A. A. Parker and W. Bennett	379,205	Mar. 13	502	141, 142	42	1067
Door-mat	S. L. Cohen	378,356	Feb. 21	1524	398	42	809
Door-securer	S. R. Campbell	377,927	Feb. 14	846	228	42	679
Door-securer	F. T. Cladek	379,002	Mar. 6	209	56	42	1006
Door-spring	J. P. Harrison	376,435	Jan. 17	1067	264	42	200
Door track and hanger. Sliding-	H. Soulen	380,209	Mar. 27	2117	566, 567	42	1397
Doors. Device for simultaneous movement of double	B. I. H. de Vry and J. Schreiber	376,947	Jan. 24	1777	467	42	362
Doors. Device for simultaneously moving double	B. I. H. de Vry and J. Schreiber	376,946	Jan. 24	1777	467	42	362
Doubletree	E. A. Thiem	380,230	Mar. 27	2092	542	42	1380
Doubling and splitting machine. Chained yarn	S. M. Johnson	378,398	Feb. 21	1576	413, 414	42	819
Doubling and twisting machines. Stop-motion mechanism for	H. T. Broadbent	377,881	Feb. 14	820	209	42	665
Dough-mixing machine	S. M. Clark	377,064	Jan. 31	1949	512	42	403
Draft attachment for plows	H. E. Bradbury	379,076	Mar. 20	1194	316	42	1207
Draft, check, or other money order or instrument	W. T. Doremus	376,949	Jan. 24	1780	468	42	363
Draft-equalizer	A. H. Bales	377,978	Feb. 14	963	251	42	696
Draft-equalizer	F. E. Davis	377,018	Jan. 31	1881	495	42	390
Draft-equalizer	M. Fell	379,389	Mar. 13	753	204	42	1114
Draft-equalizer	W. H. Fritts	377,024	Jan. 31	1889	497	42	391
Draft-equalizer	A. Lindgren	376,532	Jan. 17	1141	300	42	234
Draft-equalizer	H. McCoy	377,812	Feb. 14	728	184	42	648
Draft-equalizer	W. A. Perkins	376,595	Jan. 10	938	246	42	188
Draft-equalizer	E. F. Stevens ar I J. Packard	376,559	Jan. 17	1177	310	42	240
Draft-equalizer. Vehicle	W. A. Fry	379,215	Mar. 13	516	145	42	1069
Draft-hook for vehicles	J. B. Wood	375,859	Jan. 3	173	49	42	39
Draft-regulator for smoke-passages	J. M. Gibbs	376,473	Jan. 17	1060	277	42	218
Draft-shackle. Vehicle	J. E. Botsford and T. L. Church	378,539	Feb. 28	1789	472	42	869
Drawer for furniture, &c	J. Peterson	377,269	Jan. 31	2238	591	42	458
Drawers	L. L. Bertonneau	379,558	Mar. 20	1018	272	42	1174
Drawing implement	W. F. Brackett	379,206	Mar. 13	504	142	42	1067
Drawing-knife	J. R. Bailey	376,277	Jan. 10	780	207	42	160
Dredging-machine	M. F. Brainard	377,060	Jan. 31	1939	510	42	401
Dress-form	C. A. Utford and W. L. Hendrick	377,338	Jan. 31	2344	679	42	477
Drier: *See* Brick-drier.							
Drier	H. L. Dye	379,942	Mar. 27	1621	431	42	1299
Drill. *See* Friction-drill. Potato-drill. Grain-drill. Ratchet-drill. Mining-drill. Rock drill. Multiple drill. Seed-drill.							
Drill	J. A. Grassman	377,249	Jan. 31	2211	583	42	454
Drill-brace	J. L. Shorrock	376,757	Jan. 24	1491	393	42	309
Drill or reamer holder	W. L. Grout and E. L. Bowers	376,476	Jan. 17	1064	278	42	219
Drills. Fertilizer-feed for	T. R. Crane	377,546	Feb. 7	296	76	42	552
Drilling-machine	W. E. Canedy	380,018	Mar. 27	1739	466	42	1322
Drilling-machine	T. H. Ward	376,354	Jan. 10	887	232, 233	42	179
Drilling-machine	W. Wattie	378,747	Feb. 28	2082	549	42	925
Drilling-machine	A. Whitney	376,838	Jan. 24	1634	427, 428	42	334
Drilling-machines. Feed device for	B. F. Barnes	379,194	Mar. 6	470	133	42	1056
Dropper: *See* Corn-dropper.							
Dry closet	L. B. Robb	376,550	Jan. 17	1167	307	42	238
Drying apparatus	E. J. Pond	376,546	Jan. 17	1163	305, 306	42	237
Dust and shavings collector	A. C. and W. F. Bochnig	375,983	Jan. 3	352	94, 95	42	72
Dust-collector	O. M. Morse	377,719	Feb. 7	551	141	42	598
Dye-stuffs. Manufacture of	A. Weinberg and H. Siebert	375,848	Jan. 3	162	.....	42	36
Dye-stuffs. Production of orange azo	P. Friedlaender and B. Priebs	375,930	Jan. 3	279	.....	42	58
Dyeing animal textile fabrics with naphthazarine	R. Bohn	379,150	Mar. 6	414	.....	42	1044
Dyeing or scouring machine	C. L. Klander	377,393	Feb. 7	40	12	42	563
Dynamometer	C. F. Murdock	380,264	Mar. 27	2112	565	42	1396
Ear-battery for the deaf	M. E. Moore	380,215	Mar. 27	2010	538	42	1376
Ear-muff	J. W. Lippincott	379,965	Mar. 27	1655	441	42	1305
Easel	W. A. Bulkley	376,252	Jan. 24	1653	432	42	337

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Eaves-trough	W. C. Berger	376,574	Jan. 17	1197	316	42	244
Eaves-trough hanger	J. P. Abbott	377,366	Feb. 7	1	1	42	495
Eaves-trough hanger	H. Russell	377,405	Feb. 7	56	15	42	506
Eaves-trough hanger	H. B. Todd	378,530	Feb. 28	1778	469	42	897
Edger	W. F. Parish	379,659	Mar. 20	1169	310, 311	42	1202
Edger. Gang-	W. F. Parish	379,658	Mar. 20	1168	309, 310	42	1202
Egg-beater	J. Gérard	380,200	Mar. 27	1990	533	42	1371
Egg-preserver	J. Ford and A. H. Delbridge	378,393	Feb. 21	1448	377	42	793
Egg-preserver	A. F. Temple	377,585	Feb. 7	346	89, 90	42	562
Egg safety shipping-package	J. Adams	379,526	Mar. 13	966	261	42	1156
Egg-tester	R. Stuckwisch	378,853	Feb. 28	2203	602	42	959
Eggs, &c. Composition for preserving	F. Zeller	379,202	Mar. 13	575	.....	42	1080
Elastic cord	J. W. Green and C. H. Caswell	377,027	Jan. 31	1893	498	42	392
Electric battery. Primary	H. Woodward	379,551	Mar. 13	1002	268	42	1163
Electric battery. Primary	H. Woodward	379,552	Mar. 13	1003	269	42	1163
Electric call	W. H. Cutting	376,863	Jan. 24	1668	435	42	340
Electric-circuit breaker	W. R. Cole	376,071	Jan. 10	486	131	42	104
Electric-circuit closer	W. F. Stocker	377,538	Feb. 7	987	73	42	556
Electric conductor	E. G. Acheson	380,157	Mar. 27	1931	515	42	1360
Electric conductors and power-cables. Conduit for	L. L. Johnson	375,876	Jan. 3	198	54, 55	42	42
Electric conductors. Manufacture of	E. G. Acheson and B. F. Anderson	380,158	Mar. 27	1932	515	42	1360
Electric conductors. Pole-indicator for	A. Berghausen	376,281	Jan. 10	785	208	42	160
Electric conductors. Support for	M. J. Hart	377,894	Feb. 14	838	214, 215	42	665
Electric conduit	R. Van Buren and J. J. Powers	376,502	Jan. 17	1182	311	42	241
Electric-current indicator	E. P. Warner	378,029	Feb. 14	1032	270	42	709
Electric distribution. System of	T. Spencer	378,737	Feb. 28	2069	545, 546	42	922
Electric distribution. System of	T. Spencer	378,738	Feb. 28	2071	546	42	923
Electric energy. Transformation and distribution of	R. Kennedy	378,321	Feb. 21	1470	384	42	797
Electric-generator regulator	W. S. Hill	378,547	Feb. 28	1801	476	42	872
Electric generator. Self-exciting alternate-current	O. A. Moses	378,456	Feb. 28	1677	440	42	845
Electric generators. Regulating alternate-current	K. Zipernowsky and M. Déri	375,910	Jan. 3	242	66	42	51
Electric heater	C. Seiler	379,822	Mar. 20	1427	378	42	1253
Electric light and globe protector	W. M. Tompkins	380,301	Mar. 27	2121	567	42	1398
Electric-light and motor circuits. Switch for	F. W. Brann and G. I. Kinney	379,501	Mar. 13	933	251	42	1149
Electric lights. Manufacture of incandescent	T. Mace	378,258	Feb. 21	1381	.....	42	780
Electric lights. Supporting-arm for	D. B. Banks and G. K. Hutchins	375,977	Jan. 3	344	92	42	70
Electric lock	C. A. Tucker	376,121	Jan. 10	560	148	42	118
Electric machine. Alternating-current dynamo-	C. Heisler	380,115	Mar. 27	1876	499	42	1349
Electric machine. Dynamo-	M. Deprez	379,689	Mar. 20	1217	322, 323	42	1211
Electric machine. Dynamo-	R. Eickemeyer	377,996	Feb. 14	983	256, 257, 258	42	700
Electric machine. Dynamo-	F. Jehl	376,307	Jan. 10	815	216	42	166
Electric machine. Dynamo-	L. C. Rice	379,284	Mar. 13	613	167, 168	42	1088
Electric machine. Dynamo-	O. Urban and M. J. Wightman	379,037	Mar. 6	258	73	42	1014
Electric machine. Magneto-	O. P. Loomis	378,892	Mar. 6	50	14	42	976
Electric machine or motor. Dynamo-	E. Thomson	376,120	Jan. 10	554	147, 148	42	117
Electric-machine regulator. Dynamo-	T. A. Edison	379,771	Mar. 20	1333	356	42	1235
Electric-machine regulator. Dynamo-	C. Heisler	379,956	Mar. 27	1639	437	42	1303
Electric machines. Armature for dynamo-	H. Lemp	376,326	Jan. 10	850	223	42	171
Electric machines. Armature for dynamo-	R. H. Mather	377,695	Feb. 7	504	129	42	560
Electric machines. Armature for dynamo-	E. J. O'Beirne	377,046	Jan. 31	1912	563	42	395
Electric machines. Commutator for dynamo-	T. A. Edison	379,944	Mar. 27	1624	432	42	1300
Electric machines. Core for dynamo-	W. C. Rechniewski	378,375	Feb. 21	1547	405	42	813
Electric machines. Current-regulator for dynamo-	W. A. Crowdus and H. M. Sutton	377,884	Feb. 14	824	210	42	666
Electric machinery. Dynamo-	F. J. Sprague	380,144	Mar. 27	1915	511	42	1357
Electric motor	E. M. Bentley	377,230	Jan. 31	2179	575	42	449
Electric motor	C. T. Mason, Sr.	377,319	Jan. 31	2313	671	42	472
Electric-motor regulation	D. Higham	377,253	Jan. 31	2217	586	42	455
Electric motors. Regulation of	D. Higham	379,466	Mar. 13	876	236	42	1139
Electric motors. Regulation of	D. Higham	379,467	Mar. 13	878	237	42	1139
Electric purposes. Mold for forming pieces of carbon for	C. H. Wilder	376,019	Jan. 3	407	107, 108	42	81
Electric storage-battery	C. D. P. Gibson	379,572	Mar. 20	1046	278	42	1178
Electric therapeutic device	E. R. Whitney	376,018	Jan. 3	405	107	42	81
Electric wires. Coupling for joining	C. Hering	379,221	Mar. 13	521	147	42	1071
Electric wires or cables. Conduit for	R. S. Waring	378,561	Feb. 28	1826	481	42	876
Electric wires or cables. Test-box for underground	R. S. Waring	378,560	Feb. 28	1824	481	42	876
Electric wires. Underground conduit for	E. C. Lindemann	376,893	Jan. 24	1705	445	42	348
Electrical apparatus. Protecting device for	A. S. Hibbard	377,073	Jan. 31	1958	514	42	404
Electrical cables. Test-circuit and apparatus for	I. H. Farnham	379,532	Mar. 13	972	262	42	1157
Electrical circuit-breaker	W. R. Cole	376,072	Jan. 10	488	132	42	105
Electrical conductor	T. Egleston	376,818	Jan. 24	1601	419	42	328
Electrical conductors. Machine for dressing covered	W. H. Sawyer	380,053	Mar. 27	1787	477, 478	42	1331
Electrical conductors. Underground conduit for	M. R. Muckle, Jr.	378,801	Feb. 28	2171	577	42	942
Electrical conduit. Underground	R. F. Sillman	378,021	Feb. 14	1021	267	42	707
Electrical conduits. Man-hole chamber for underground	M. R. Muckle, Jr.	378,802	Feb. 28	2173	578	42	943
Electrical connections. Mechanism for	P. W. and J. B. Wood	376,973	Jan. 24	1808	476	42	368
Electrical connections. Plug for making	G. Otto	379,508	Mar. 20	1083	288	42	1184
Electrical contact maker and breaker	C. Lambdin	379,074	Mar. 6	310	90	42	1024
Electrical conversion. System of	E. N. Dickerson, Jr.	377,994	Feb. 14	981	256	42	699
Electrical distribution. System of	T. P. Conant and Z. Latshaw	378,432	Feb. 28	1638	431	42	837
Electrical distribution. System of	T. A. Edison	379,772	Mar. 20	1335	357	42	1235
Electrical distribution. System of	T. A. Edison	380,101	Mar. 27	1857	493, 494	42	1345

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Electrical distribution. System of	T. A. Edison	380,102	Mar. 27	1859	494	42	1345
Electrical distribution. System of	J. W. Howell	377,488	Feb. 7	210	50	42	535
Electrical heater	J. P. Barrett and J. F. Mehren	375,915	Jan. 3	251	68	42	53
Electrical machines. Apparatus for dressing off the commutators of dynamo-	D. J. Tittle, Jr.	379,344	Mar. 13	695	189	42	1103
Electrical switch	S. Bergmann and J. T. Dempster	376,976	Jan. 24	1814	477	42	369
Electrical synchronous movement	H. C. Bridger	375,727	Jan. 3	8	2	42	4
Electro-dynamic machine	G. F. Card	380,020	Mar. 27	1741	466	42	1322
Electro-magnetic brake	N. J. Clute	376,709	Jan. 17	1419	373	42	286
Electro-magnetic device	C. F. Brush	376,630	Jan. 17	1299	341, 342	42	263
Electrolyte compound	G. B. Pennock	377,210	Jan. 31	2150	.....	42	443
Electrotype-plates. Bending	J. B. Miller and J. Dale	378,707	Feb. 28	2033	537	42	916
Electrotype-shells. Backing	J. R. Cummings	375,869	Jan. 3	187	.....	42	41
Elevator:							
See Grain-elevator.	Hydraulic elevator.						
Hay-elevator.	Hydraulic or other elevator.						
Hay or grain elevator.	Rack-elevator.						
Hod-elevator.	Tide-water elevator.						
Elevator	N. C. Bassett	379,556	Mar. 20	1014	271, 272	42	1173
Elevator	C. G. Otis	377,635	Feb. 7	426	108, 109	42	576
Elevator	F. L. Palmer	376,340	Jan. 10	868	228	42	176
Elevator-alarm	A. Oakley	377,403	Feb. 7	54	15	42	506
Elevator-carriage	C. Haas	377,751	Feb. 14	607	156	42	624
Elevator-controlling device	Q. N. Evans and W. Schwanhausser	378,045	Feb. 14	1052	275, 276	42	712
Elevator hand-ropes. Device for operating	Q. N. Evans	379,381	Mar. 13	750	203	42	1114
Elevator safety appliance	A. Stigler	377,537	Feb. 7	986	72	42	550
Elevator safety attachment	A. Neuburger	378,899	Mar. 6	57	17	42	977
Elevator safety device	A. C. Ellithorpe	376,374	Jan. 10	912	239, 240	42	183
Elevators. Automatic stop for	W. F. Hanson and W. F. Bullock	375,745	Jan. 3	37	11	42	10
Elevators. Driving mechanism for	J. P. Bower	377,139	Jan. 31	2052	537	42	423
Elevators. Operating mechanism for hydraulic	N. C. Bassett	377,346	Jan. 31	2358	682	42	480
Embossing-die	W. Duncan	380,099	Mar. 27	1853	493	42	1344
Embroidering-machine	R. T. Smith	377,408	Feb. 7	60	16, 17, 18	42	507
Embroidering-machine	R. T. Smith	377,409	Feb. 7	81	18, 19	42	509
Embroidering-machine	R. T. Smith	377,411	Feb. 7	97	20, 21	42	513
Embroidering-machine	R. T. Smith	377,412	Feb. 7	102	21	42	514
Embroidering-machine attachment	E. Aldom and H. E. Schmitz	380,075	Mar. 27	1892	485	42	1338
Embroidering-machines. Automatic stitch-adjusting mechanism for	R. T. Smith	377,410	Feb. 7	89	20	42	511
Embroidery-stand	A. M. Parcelle	378,901	Mar. 6	59	18	42	978
Emery grinding-machine	C. E. Roberts	376,451	Jan. 17	1032	270	42	213
Emery-wheel	W. Cavert	376,854	Jan. 24	1656	433	42	338
Emulsifier	G. W. Towar, Jr.	378,381	Feb. 21	1556	406	42	815
End-gate	F. H. Allen	376,842	Jan. 24	1640	429	42	335
End-gate	P. Bartzen	378,352	Feb. 21	1519	397	42	806
End-gate	J. Clayton	376,405	Jan. 10	950	249	42	190
End-gate	J. M. King	377,680	Feb. 7	495	128	42	589
Engine:							
See Dental engine.	Rotary steam-engine.						
Gas-engine.	Steam-engine.						
Petroleum-engine.	Traction-engine.						
Power-engine.	Triple-expansion engine.						
Rotary engine.							
Engine crank-shafts. Instrument for testing the fairness of steam-	J. Paterson	377,115	Jan. 31	2026	530	42	417
Engine dash-pot. Steam-	F. Phillips	378,105	Feb. 21	1138	297	42	737
Engines. Apparatus for recording the variations of speed in motive-power	N. Macbeth	377,111	Jan. 31	2020	529	42	416
Engines. Electrical stop-motion for steam-	R. Exley	378,668	Feb. 28	1979	525	42	906
Engines. Reversing device for	D. P. Kane	376,658	Jan. 17	1342	352	42	271
Engines. Reversing-lever for	W. E. Hall	376,882	Jan. 24	1694	442	42	345
Envelope	E. L. Potter and G. B. Upham	378,849	Feb. 28	2256	600	42	958
Envelope for newspapers and other merchandise	R. W. Macgowan	376,249	Jan. 10	745	197, 198	42	152
Envelope sealer and stamper	H. J. Moore	377,170	Jan. 31	2092	551	42	432
Envelopes. Machine for sealing and stamping	H. J. Moore	376,333	Jan. 10	862	226	42	174
Eraser-holder	F. G. Osborn	377,209	Jan. 31	2149	568	42	443
Eraser. Rubber	W. Friend	376,081	Jan. 10	497	135	42	107
Erasers. Cleaner for blackboard	J. S. McClung	378,608	Feb. 28	1868	500	42	889
Etching on one or both sides	J. Baynes	378,423	Feb. 28	1619	426	42	834
Evaporating apparatus	P. Laberie	378,598	Feb. 28	1876	496	42	896
Evaporating-coil	W. H. Odell	380,050	Mar. 27	1784	476	42	1330
Evaporating liquids. Vacuum apparatus for	S. M. Lillie	378,843	Feb. 28	2243	598	42	956
Evaporating-pan	H. F. Thurston	376,490	Jan. 17	1088	286	42	223
Evaporating-pans. Discharging apparatus for closed	A. Miller	375,946	Jan. 3	297	80	42	62
Evaporator:							
See Fruit-evaporator.							
Excavating and machinery therefor	T. Whitaker	376,793	Jan. 24	1562	410	42	322
Excavating-bucket	T. and J. J. Lawler	378,069	Feb. 21	1130	295	42	735
Excavator	B. K. Reed	378,720	Feb. 28	2049	541	42	919
Excavator	J. S. Whitcomb	378,125	Feb. 21	1168	304, 305	42	743
Excavator and self-loading conveyer	J. Cable	376,708	Jan. 17	1417	372, 373	42	285
Excelsior. Machine for making	W. H. Moore	379,592	Mar. 20	1074	286	42	1183
Exercising apparatus	A. H. Howard	376,741	Jan. 24	1462	388	42	304

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Exhaust-pipe. Steam-	J. Hall	378,104	Feb. 21	1187	309	42	739
Explosive compound	A. Nobel	380,193	Mar. 27	1988	532	42	1370
Explosive compound	A. Nobel	380,194	Mar. 27	1989	532	42	1370
Explosive compound	A. Nobel	380,195	Mar. 27	1989	532	42	1370
Explosive compound	A. Nobel	380,196	Mar. 27	1989	532	42	1370
Explosive compound	A. Nobel	380,197	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,198	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,199	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,200	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,201	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,202	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,203	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,204	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,205	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,206	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,207	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,208	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,209	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,210	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,211	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,212	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,213	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,214	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,215	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,216	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,217	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,218	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,219	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,220	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,221	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,222	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,223	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,224	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,225	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,226	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,227	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,228	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,229	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,230	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,231	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,232	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,233	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,234	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,235	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,236	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,237	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,238	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,239	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,240	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,241	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,242	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,243	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,244	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,245	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,246	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,247	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,248	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,249	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,250	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,251	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,252	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,253	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,254	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,255	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,256	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,257	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,258	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,259	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,260	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,261	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,262	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,263	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,264	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,265	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,266	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,267	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,268	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,269	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,270	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,271	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,272	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,273	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,274	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,275	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,276	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,277	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,278	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,279	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,280	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,281	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,282	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,283	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,284	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,285	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,286	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,287	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,288	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,289	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,290	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,291	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,292	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,293	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,294	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,295	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,296	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,297	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,298	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,299	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,300	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,301	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,302	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,303	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,304	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,305	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,306	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,307	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,308	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,309	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,310	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,311	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,312	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,313	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,314	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,315	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,316	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,317	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,318	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,319	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,320	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,321	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,322	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,323	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,324	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,325	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,326	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,327	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,328	Mar. 27	1990	533	42	1371
Explosive compound	A. Nobel	380,329

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g	Official Gazette. Vol.	Official Gazette. Page.
Exercising-machine. Electric	E. W. Robinson, C. H. O'Brien, and H. M. Breen.	375,835	Jan. 3	148	42	42	34
Expansion-joint and rail-coupling	D. M. Armitage	376,845	Jan. 24	1644	430, 431	42	336
Explosive derived from phênol	S. H. Emmens	376,145	Jan. 10	598	.....	42	126
Explosives. Manufacture of	C. E. Bichel	376,849	Jan. 24	1649	.....	42	337
Explosives. Preparing	D. Johnson	376,000	Jan. 3	377	.....	42	77
Extension-gage	F. J. Brown and D. H. James	379,361	Mar. 13	718	195	42	1106
Extractor: *See* Cork-extractor. Lemon-juice extractor. Nail-extractor. Post-extractor. Spike-extractor. Stopper-extractor. Stump-extractor.							
Eyeglass-holder	C. S. Ball	376,847	Jan. 24	1647	431	42	336
Fabric: *See* Loop-surfaced fabric. Terry fabric. Woven fabric. Woven pile fabric.							
Fabric. Machine for ornamenting strips of	G. and J. H. Taylor	376,995	Jan. 24	1840	485, 486, 487	42	374
Fabric-turfing implement	E. E. Connett	377,192	Jan. 31	2117	559	42	437
Fabrics. Apparatus for guiding, straightening, and evening	S. Arnold	378,822	Feb. 28	2208	588, 589	42	949
Fan. Power	J. Carr	378,659	Feb. 28	1965	522	42	904
Fan. Power	J. A. Mason, E. F. Mulkey, and G. W. Houston.	376,327	Jan. 10	851	224	42	172
Fan. Rotary	W. J. Mingle	378,710	Feb. 28	2037	538	42	917
Fan. Rotary	P. Murray, Jr	377,573	Feb. 7	329	85	42	558
Fan. Toilet	G. R. Burdon	376,231	Jan. 10	719	191	42	148
Fanning-mill	J. S. Constant	378,772	Feb. 28	2116	559	42	931
Fare-boxes. Locking-receptacle for	G. Reimann	379,811	Mar. 20	1406	375	42	1249
Fare register and recorder	R. M. Rose	377,960	Feb. 14	936	244	42	690
Farm-gate	J. J. Bughman	377,844	Feb. 14	769	196	42	656
Farm-gate	I. Burkholder	377,479	Feb. 7	196	46	42	531
Farm-gate	S. Smyth	380,143	Mar. 27	1914	511	42	1356
Farm-gate	C. H. Pratt	378,460	Feb. 28	1682	441	42	846
Fastening device	E. U. Scoville	378,020	Feb. 14	1020	266, 267	42	706
Faucet	W. H. McDonald	379,801	Mar. 20	1384	368	42	1246
Faucet. Filtering	H. M. Nye	376,254	Jan. 10	751	199	42	154
Faucet. Liquid-measuring	O. Martinson	377,165	Jan. 31	2086	549	42	431
Faucet. Measuring	E. Willigerod and L. Neresheimer	376,570	Jan. 17	1190	315	42	243
Feed-bag	H. Gamble	379,569	Mar. 20	1040	277	42	1177
Feed-box and end-gate. Combined	E. W. Rider	378,112	Feb. 21	1151	300, 301	42	739
Feed-cutter	T. C. Cadwgan	376,232	Jan. 10	720	192	42	148
Feed-mill	T. C. Cadwgan	380,180	Mar. 27	1960	523	42	1366
Feed-regulator	H. A. Barnard	379,193	Mar. 6	468	132, 133	42	1055
Feed-regulator	G. R. Davidson	380,095	Mar. 27	1847	491	42	1343
Feed-trough	A. N. Main	378,603	Feb. 28	1881	497	42	887
Feed-trough	E. P. Newbanks	379,489	Mar. 13	914	246	42	1146
Feed-trough	D. L. Spicher	378,942	Mar. 6	115	31	42	999
Feed-water apparatus for boilers. Automatic	M. Covel	376,472	Jan. 17	1058	277	42	217
Feed-water heater	G. L. Hagarty	377,752	Feb. 14	602	156	42	624
Feed-water heater and purifier	J. S. Phares	379,540	Mar. 13	985	265	42	1159
Feed-water purifier	G. W. Allen and H. J. A. Bowers	379,671	Mar. 20	1188	314, 315	42	1206
Feed-water purifier	E. G. T. Colles	378,495	Feb. 28	1732	457	42	858
Feed-water purifier	O. H. Jewell	377,386	Feb. 7	32	9	42	501
Feed-water purifier	O. H. Jewell	377,390	Feb. 7	37	11	42	502
Feeder. Automatic horse-	P. Dodd and J. H. Thomas	378,909	Mar. 6	67	20	42	980
Feeding and watering hogs. Device for	T. B. Swan	376,489	Jan. 17	1087	285	42	223
Feeding bin and trough	J. T. Woods	378,536	Feb. 28	1785	471	42	869
Feeding salt to live stock. Device for	W. H. Barger	376,360	Jan. 10	895	235	42	180
Felted foot-wear	A. A. Hawley	379,220	Mar. 13	523	147	42	1071
Fence	J. F. Bazill	378,425	Feb. 28	1622	426, 427	42	834
Fence	R. B. Eubank, Jr	377,672	Feb. 7	425	125	42	587
Fence	J. A. Flanagan	376,646	Jan. 17	1326	348	42	268
Fence	W. A. Frushour	378,782	Feb. 28	2229	593	42	954
Fence	D. S. Hartwell	380,034	Mar. 27	1760	471	42	1325
Fence	O. D. Hearn	378,312	Feb. 21	1461	381	42	795
Fence	W. Kelly	378,793	Feb. 28	2145	567	42	937
Fence	I. L. Landis	379,706	Mar. 20	1241	330	42	1217
Fence	J. F. Lemen	379,279	Mar. 13	601	165	42	1085
Fence	A. Lott	377,682	Feb. 7	503	129	42	590
Fence	B. Miller	375,828	Jan. 3	137	40	42	32
Fence	F. Slack	376,556	Jan. 17	1173	309	42	239
Fence	W. Van Horn	376,218	Jan. 10	702	187	42	144
Fence	F. P. Chamberlin	376,512	Jan. 17	1118	292	42	229
Fence-building apparatus	H. A. Mace	377,037	Jan. 31	1902	500	42	393
Fence. Flood	I. N. Elliott and P. A. Reid	376,184	Jan. 10	651	174, 175	42	136
Fence-machine	S. H. Garrett	376,521	Jan. 17	1132	296	42	231
Fence-machine	W. C. Ghulson	379,458	Mar. 13	863	233	42	1136
Fence-machine	F. A. Rickard and F. T. Wright	379,541	Mar. 13	987	265	42	1160
Fence-machine	T. J. Smith	378,378	Feb. 21	1550	405	42	814
Fence-machine	F. Van Doren and L. Lovejoy	379,426	Mar. 13	816	219, 220	42	1127
Fence. Machine for swaging together the parts of an iron picket	A. J. Moyer	379,321	Mar. 13	666	180, 181	42	1097
Fence-machine. Hand	M. F. Connett, Jr	376,514	Jan. 17	1122	293	42	229
Fence-machine. Hand	B. Current	378,873	Mar. 6	26	7	42	971

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g	Official Gazette. Vol.	Official Gazette. Page.
Fence machine. Slat-and-wire	G. W. Packer	377,327	Jan. 31	2223	674, 675	42	474
Fence machine. Wire-and-picket	W. Dixon	378,777	Feb. 28	2123	561	42	933
Fence-machines. Attachment for	W. H. H. Fauber	376,645	Jan. 17	1325	348	42	268
Fence-making machine	T. H. Heberling and A. Bernauer	377,756	Feb. 14	611	157, 158, 159	42	624
Fence-making machine	S. L. Kline	379,791	Mar. 20	1365	363	42	1241
Fence. Portable	P. Newby	376,337	Jan. 10	805	227	42	175
Fence-post	J. W. Griswold	378,051	Feb. 14	1061	278	42	714
Fence-post	S. D. Harmon and J. M. Terrell	379,109	Mar. 6	265	101	42	1034
Fence post and brace. Combined	S. Williamson, Sr	380,270	Mar. 27	2061	557	42	1391
Fence-post. Metallic	L. D. Miller	377,323	Jan. 31	2217	672	42	473
Fence-posts. Device for tightening	L. Brooks	376,468	Jan. 17	1053	276	42	217
Fence-weaving machine	G. J. Cline	379,140	Mar. 6	351	100	42	1032
Fence. Wire	J. King	377,524	Feb. 7	268	67, 68	42	546
Fences. Clamp for wire-and-picket	A. Fickett	376,299	Jan. 10	808	213	42	164
Fences. Mold for earth	L. Barton	376,936	Jan 24	1764	464	42	356
Fencing. Barb for wire	W. H. Rodden	379,729	Mar. 20	1273	340	42	1223
Fender: *See* Fire-place fender. Horse-rake fender.							
Fender	H. Howe	377,074	Jan. 31	1961	515	42	405
Ferrules for cant-hooks. Making	E. Mansfield	377,038	Jan. 31	1903	500	42	393
Fertilizer	P. C. Jensen	378,688	Feb. 28	2009	.....	42	912
Fertilizer-distributer	S. H. Cottrell	376,731	Jan. 24	1453	382, 383	42	301
Fertilizer-distributer	H. O. Peabody	375,768	Jan. 3	64	19, 20	42	16
Fertilizers. Machine for distributing	J. R. McCord	377,166	Jan. 31	2088	549	42	431
Fertilizing composition	G. H. Murray	377,084	Jan. 31	1982	.....	42	409
Fibrous substances. Machine for opening and preparing	A. Clarke and H. C. Perham	380,187	Mar. 27	1971	527	42	1368
Fibrous ware. Treating	H. Carmichael	377,928	Feb. 14	887	.....	42	680
Fifth-wheel	R. D. and J. B. Morgan	376,778	Jan. 24	1537	404	42	317
Fifth-wheel for vehicles	W. Blume	376,178	Jan. 10	645	172	42	135
Fifth-wheel. Vehicle	P. Doersom	378,240	Feb. 21	1354	357	42	776
File. Bill	C. C. Chamberlain	376,140	Jan. 10	592	158	42	124
File. Bill	S. Ely	376,185	Jan. 10	654	175	42	136
File-box	E. E. Baker	378,002	Feb. 14	1075	282	42	717
File-cases. Receptacle for	C. L. Wundt	380,099	Mar. 27	1724	462	42	1319
File for letters, &c	W. A. Cooke, Jr	379,367	Mar. 13	732	200	42	1110
File for letters, bills, papers, &c	W. A., Jr., and C. S. Cooke	378,869	Mar. 6	15	4	42	979
File-holder	H. C. Yeiser	378,072	Feb. 14	1087	286	42	720
File holder. Paper	L. Banks	379,846	Mar. 20	1406	387	42	1259
File. Letter	G. F. Chappell	379,049	Mar. 6	274	80	42	1017
File. Newspaper	W. K. Crofford	380,246	Mar. 27	2054	549	42	1385
File. Paper	T. W. G. Cook	379,860	Mar. 20	1502	395	42	1267
File-receptacle	A. L. Brown	379,678	Mar. 20	1197	317	42	1207
Filing-receptacle	A. L. Brown	379,560	Mar. 20	1019	273	42	1174
Filter	T. Clarke and J. E. Conroy	378,431	Feb. 28	1637	430	42	837
Filter	J. Timmons	380,149	Mar. 27	1922	512	42	1358
Filter	J. E. Warren	379,349	Mar. 13	700	190	42	1104
Filter and purifier. Water	O. H. Jewell	377,387	Feb. 7	33	10	42	501
Filter and purifier. Water	O. H. Jewell	377,388	Feb. 7	34	10	42	502
Filter-presses. Appliance for locking	J. Kroog	379,518	Mar. 13	958	258	42	1154
Filter. Rotary or oscillating	J. W. Hyatt	376,695	Jan. 10	518	138	42	111
Filter. Water	F. Buchhorn	375,798	Jan. 3	102	30	42	24
Filters. Apparatus for feeding chemicals to	O. H. Jewell	377,758	Feb. 14	616	159	42	625
Filtering beer	H. Stockheim	378,359	Feb. 21	1551	406	42	814
Fire-alarm	J. W. See	377,501	Feb. 7	236	57, 58	42	540
Fire-alarm	J. West	378,900	Mar. 6	189	52	42	1002
Fire-alarm circuit	J. P. Barrett	376,133	Jan. 10	580	155	42	122
Fire-alarm signal-box	A. A. Smith	378,983	Mar. 6	172	49	42	1000
Fire-alarm signal-box	G. M. Stevens	379,339	Mar. 13	688	186, 187	42	1102
Fire-alarm systems. Conductor for electrical	W. A. Barnes	378,078	Feb. 21	1101	288	42	730
Fire and burglar alarm	R. J. La Rue	378,320	Feb. 21	1474	385	42	798
Fire and burglar alarm system	W. A. Barnes	380,241	Mar. 27	2046	547	42	1384
Fire-arm	M. Bye	375,799	Jan. 3	103	30	42	24
Fire-arm	B. Henming	377,854	Feb. 14	780	199	42	658
Fire-arm. Breech-loading	M. Bye	378,355	Feb. 21	1522	398	42	808
Fire-arm. Breech-loading	R. T. Torkelson and I. Johnson	379,257	Mar. 13	569	158	42	1079
Fire-arm lock	J. Nicely	377,531	Feb. 7	276	70	42	548
Fire-arm. Magazine	J. M. and M. S. Browning	376,576	Jan. 17	1199	317, 318	42	245
Fire-arm. Magazine	W. H. Elliot	377,549	Feb. 7	301	77	42	552
Fire-arm. Magazine	H. Leineweber	379,794	Mar. 20	1369	364, 365	42	1242
Fire-arm. Magazine	R. Morris	376,901	Jan. 24	1716	450	42	350
Fire-arm. Magazine	A. W. Savage	378,595	Feb. 28	1771	468	42	866
Fire-arm sight	J. Manton	378,205	Feb. 21	1201	341	42	765
Fire-arms. Projectile for	H. J. Harwood	375,936	Jan. 3	287	77	42	59
Fire-bowls. Upper and lower plate for	A. S. Newby	379,594	Mar. 20	1077	286	42	1183
Fire-engines. Heater for steam	E. Medden	376,330	Jan. 10	856	225	42	173
Fire-engines. Speaking-tube for	W. E. Cassells	376,067	Jan. 10	479	129	42	103
Fire-escape	J. Abbott	376,622	Jan. 17	1287	339	42	261
Fire-escape	W. C. Barker	376,505	Jan. 17	1107	290	42	227
Fire-escape	J. Batten	377,058	Jan. 31	1934	508	42	400
Fire-escape	E. Bovensiep	380,173	Mar. 27	1953	521	42	1364
Fire-escape	W. Bruce	380,179	Mar. 27	1958	522, 523	42	1365
Fire-escape	J. Clark	379,934	Mar. 27	1619	429	42	1297
Fire-escape	J. H. Glasscock	378,992	Mar. 6	38	10	42	973
Fire-escape	T. P. Holt	378,316	Feb. 21	1465	383	42	796
Fire-escape	J. Hornby	380,284	Mar. 27	2100	561, 562	42	1364

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Fire-escape	O. Hughes	376,034	Jan. 3	433	115	42	87
Fire-escape	L. J. Mesner	377,766	Feb. 14	656	164 / 165	42	635
Fire-escape	A. R. Moore	376,807	Jan. 24	1585	415	42	326
Fire-escape	M. Naylor	377,207	Jan. 31	2235	591	42	458
Fire-escape	G. Pritchett	376,160	Jan. 10	623	167	42	130
Fire-escape	D. H. Sweeney	378,529	Feb. 28	1777	469	42	867
Fire-escape	W. M. Tompkins	380,303	Mar. 27	2123	568	42	1399
Fire-escape. Folding	I. B. Stillman	376,216	Jan. 10	700	186	42	144
Fire-escape. Friction	L. D. Smith and W. A. Olds	376,787	Jan. 24	1552	408	42	320
Fire-escape grip	W. M. Tompkins	380,302	Mar. 27	2122	568	42	1399
Fire-escape. Portable	G. Gavin, L. W. Cromer, and F. Gilmor.	378,833	Feb. 28	2230	593	42	954
Fire-extinguisher	J. O. Banning	379,756	Mar. 20	1311	350	42	1230
Fire-extinguisher	W. G. Browne	378,285	Feb. 21	1424	372	42	788
Fire-extinguisher	C. S. Dean	380,194	Mar. 27	1982	531	42	1370
Fire-extinguisher	W. H. Durant	376,239	Jan. 10	728	194	42	149
Fire-extinguisher. Automatic	R. W. Miller	379,240	Mar. 13	548	153	42	1075
Fire-extinguisher for car-heaters	G. F. Seaver	380,057	Mar. 27	1792	479	42	1332
Fire-extinguisher for railway-coaches. Automatic	A. C. Rumble, J. Symington, and N. Strong.	376,046	Jan. 3	446	119	42	89
Fire-extinguisher. Hand	J. E. Long	379,708	Mar. 20	1244	331	42	1218
Fire-extinguishing apparatus	E. Pereles	379,282	Mar. 13	606	166 / 167	42	1087
Fire-extinguishing attachment for car-stoves	D. Ross and N. Brooker	376,163	Jan. 10	626	168	42	131
Fire-kindler	E. E. Brewster	379,631	Mar. 20	1132	300	42	1194
Fire-kindler	E. E. Brewster	380,176	Mar. 27	1955	522	42	1365
Fire-place ash-chutes. Cover for	C. A. Wellington	375,969	Jan. 3	331	88	42	68
Fire-place fender and air-moistener. Combined	T. Bradford	376,575	Jan. 17	1198	317	42	244
Fire-place lining	J. Dwyer	379,057	Mar. 6	286	83	42	1020
Fire-proof partition	P. Smith	377,175	Jan. 31	2008	533	42	433
Fire-proof structure	S. D. Hatch	376,381	Jan. 10	921	242	42	185
Fire-signal and burglar-alarm	J. E. Church	380,176	Mar. 27	1968	526	42	1367
Fire-work	J. J. Detwiller	377,730	Feb. 7	564	145	42	601
Fire-works. Apparatus for charging	C. Wadsworth	376,691	Jan. 17	1394	367	42	280
Fire-works. Machine for charging	C. B. Linton	376,004	Jan. 3	386	102	42	78
Fires and lights in railway-cars. Apparatus for extinguishing	M. O. Parker	378,938	Mar. 6	111	32	42	968
Fires in railway-cars. Apparatus for extinguishing	W. C. Edwards and O. R. Sackett	379,058	Mar. 6	287	84	42	1020
Fires in railway-cars. Apparatus for extinguishing	B. Millhauser	376,749	Jan. 24	1480	390	42	306
Fish-eggs. Case for transporting	G. T. Sandford	376,553	Jan. 17	1171	308	42	239
Fish-hook	C. Kerrison, Jr	377,033	Jan. 31	1899	499	42	392
Fish-hook	W. H. Rice	379,080	Mar. 6	318	92	42	1025
Fish-plate	T. A. Davies	377,885	Feb. 14	825	210	42	667
Fish-trap	E. W. Jenkins	379,701	Mar. 20	1235	329	42	1216
Fishing-boats. Combined roller and bell for	L. D. Lothrop	375,882	Jan. 3	208	57	42	44
Fishing-hook	C. F. Dietz	377,294	Jan. 31	2240	603	42	467
Fishing-reel	G. S. Gates	377,100	Jan. 31	2006	525	42	413
Fishing-reel	P. H. Vauman	378,565	Feb. 28	1831	483	42	877
Fishing reels and rods. Wedge-ferrule for	H. Prichard	376,260	Jan. 10	760	202	42	156
Flanging-machine	G. A. Ford and C. R. Hussey	377,999	Feb. 14	994	259 / 260	42	701
Flask-clamp. Adjustable	A. C. Allbee	378,640	Feb. 28	1931	513	42	898
Flier-frame	H. F. Straw	376,118	Jan. 10	551	147	42	117
Flies. Device for poisoning	J. B. Kibler	378,509	Feb. 28	1747	461	42	861
Floor-clamp	C. E. Holmes	376,439	Jan. 17	1011	265	42	209
Floor. Inlaid	C. Momberg	377,685	Feb. 7	507	130	42	591
Flooring. Wood-block	W. Duffy	377,008	Jan. 31	2004	525	42	413
Flour and meal bin	C. Vogt	375,966	Jan. 3	328	88	42	68
Flour-bolt	J. M. Cook	376,943	Jan. 24	1772	466	42	361
Flour-bolting reel	W. Gilleland	378,785	Feb. 28	2134	564	42	935
Flouring-mill alarm	A. J. Buie	377,370	Feb. 7	5	2	42	496
Flower-stand	J. W. Duffie and C. Weston	379,637	Mar. 20	1140	302	42	1196
Flower-stand	W. H. Wright	379,261	Mar. 13	574	159	42	1080
Flue-cleaner	W. F. Annable	379,091	Mar. 6	341	98	42	1030
Flue-top or spark-catcher	E. O. Woodruff	376,498	Jan. 17	1097	288	42	225
Fluid-discharge device	C. N. Tyler	378,512	Feb. 28	2188	583	42	946
Fluid-motor	W. J. and E. L. Thomas	377,586	Feb. 7	348	90	42	502
Fluid-pressure automatic brake mechanism	G. Westinghouse, Jr	376,837	Jan. 24	1631	426 / 427	42	333
Fluid-pressure. Machine to be driven by	W. P. Canning	378,541	Feb. 28	1790	473 / 474	42	870
Flying-machine	W. Beeson	376,937	Jan. 24	1765	464	42	360
Folding chair or settee	H. J. Harwood	379,066	Mar. 6	296	86	42	1022
Folding mosquito-net, tarlatan, and other piece goods	I. E. Palmer	378,212	Feb. 21	1297	344	42	767
Folding table	F. A. White	376,726	Jan. 17	1445	379	42	291
Foot-gear	M. Langen	377,293	Jan. 31	2139	565	42	411
Foot-rest and stool for shoe-merchants	C. L. Robb	375,954	Jan. 3	308	82	42	64
Forges. Driving mechanism for	E. E. Webb	378,273	Feb. 21	1404	368	42	785
Fork: *See* Hay-fork. Tedder-fork. Pitch-fork.							
Fountain: *See* Soda-water fountain.							
Frame: *See* Advertising-frame. Flier-frame. Bag and satchel frame. Photographic-printing frame. Boot-crimping frame. Picture-frame. Buckle-frame. Quilting-frame. Car-floor frame. Reeling-frame. Clothes-frame. Window-frame. Display-frame.							
Frame	C. M. Whitmore	375,986	Jan. 3	239	65	42	50

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Friction-drill	J. H. Vinton	378,944	Mar. 6	118	34	42	989
Fringe	J. Singer	380,141	Mar. 27	1912	510	42	1356
Fringe. Chenille	C. A. Schmidt	379,033	Mar. 6	254	72	42	1014
Frogless switch	F. Nemacheck	377,529	Feb. 7	274	69	42	547
Fruit-assorting machine	W. R. Phillips	376,904	Jan. 24	1739	451	42	351
Fruit-evaporator	E. White	378,483	Feb. 28	1712	452	42	854
Fruit-knife	L. C. McNeal	379,238	Mar. 13	546	153	42	1075
Fuel-cartridge	F. J. Herron and E. M. Hugentobler	379,697	Mar. 20	1228	327	42	1214
Fuel composition	E. Henn	378,249	Feb. 21	1366	.....	42	778
Fuel composition	J. N. Owen	379,490	Mar. 13	915	.....	42	1146
Fur-blower	T. J. Sayre	378,622	Feb. 28	1909	505	42	893
Furnace: *See* Blast-furnace. Hydrocarbon-furnace. Boiler-furnace. Metallurgical furnace. Car-heating furnace. Plumber's furnace. Crucible-furnace. Slag-furnace. Glass-melting furnace. Smoke-consuming furnace. Heating-furnace. Steam-generator furnace. Hot-air furnace. Water-heater furnace.							
Furnace	A. C. Huidekoper and L. Honze	378,839	Feb. 28	2238	596 / 597	42	955
Furnace	G. R. Scates	376,785	Jan. 24	1546	406 / 407	42	319
Furnace-grate	W. H. Heeson	378,005	Feb. 14	1060	261	42	702
Furnace-protecting	F. W. Gordon	379,694	Mar. 20	1225	325	42	1213
Furnaces. Apparatus for charging plates and bars into	P. Patterson	376,828	Jan. 24	1613	422 / 423	42	330
Furnaces. Apparatus for heating blast for shaft	J. L. Thomson	377,819	Feb. 14	735	186	42	649
Furnaces. Device for constructing arches or centers for	A. Farley	376,520	Jan. 17	1131	296	42	231
Furnaces. Heat-regulator for	L. D. Farra	376,644	Jan. 17	1324	348	42	267
Furnaces. Heating-tube for	H. Tilden	378,910	Mar. 6	68	20	42	980
Furniture. School	O. S. Garretson	379,387	Mar. 13	758	205	42	1115
Furniture. School	O. S. Garretson	379,388	Mar. 13	759	205	42	1116
Furniture. Seat or back fastening for	J. M. Sauder	378,219	Feb. 21	1311	348	42	770
Fuse-cutter and cap-crimper	A. Vaunatter and A. J. August	376,493	Jan. 17	1090	286	42	224
Fuse. Electric	P. G. Gardner	377,851	Feb. 14	776	198	42	657
Fuse. Shell	T. Nordenfelt	379,025	Mar. 6	242	68	42	1011
Fuse. Shell	T. Nordenfelt	379,716	Mar. 20	1255	335	42	1220
Gage: *See* Depth-gage. Rafter-gage. Extension-gage. Saw-bench gage. Lumber-gage. Siding-gage. Marking-gage. Surface and scratch gage. Milk-gage. Water-gage. Pressure-gage. Weather-boarding gage.							
Gage-wheel	D. H. Carpenter	377,800	Feb. 14	743	181	42	646
Galvanic battery	H. J. Brewer	380,084	Mar. 27	1833	488	42	1340
Galvanic battery	H. J. Brewer	380,085	Mar. 27	1834	488	42	1341
Galvanic battery	T. M. Foote	377,745	Feb. 14	598	154	42	622
Galvanic battery	A. Schanschieff	379,911	Mar. 20	1576	415	42	1280
Galvanic battery	D. Urquhart and B. Nicholson	377,340	Jan. 31	2347	620	42	478
Galvanic battery	H. Walter	378,121	Feb. 21	1164	303	42	742
Galvanic battery	H. Walter and W. E. H. Marsh	378,122	Feb. 21	1165	303	42	742
Game-board	J. A. Martin	379,174	Mar. 6	440	124	42	1050
Game of draughts to be played by three persons, and apparatus therefor.	J. Hyde	378,931	Mar. 6	102	29	42	986
Gangway. Stock	H. T. Keenan	378,319	Feb. 21	1468	384	42	797
Garment or coat hanger	G. Pavlik	376,207	Jan. 10	649	183	42	141
Garment-protector	S. L. Salomon	376,210	Jan. 10	692	184	42	142
Garment-stay	E. C. Bowling	378,080	Feb. 21	1104	289	42	730
Garment-stretcher	F. Cadmus	378,764	Feb. 28	2107	556	42	920
Garment-supporter	C. A. Preston	378,147	Feb. 21	1212	316	42	750
Garment-supporter	C. A. Preston	378,148	Feb. 21	1213	316	42	750
Garment. Waist	V. Ulke	377,330	Jan. 31	2345	679	42	478
Garments. Method of and device for fitting	E. Stahl	376,558	Jan. 17	1176	309	42	240
Gas and air commingler	B. S. Dunn	379,769	Mar. 20	1331	355 / 356	42	1234
Gas and electric-light fixture. Combined	S. B. H. Vance	376,617	Jan. 17	1273	333	42	258
Gas and other fluid pressure controlling apparatus	H. W. and A. F. Cole	376,636	Jan. 17	1309	344	42	265
Gas. Apparatus for the manufacture of	A. C. Humphreys	378,095	Feb. 21	1123	293 / 294	42	734
Gas. Apparatus for the manufacture of	T. B. Stillman	377,694	Feb. 7	517	132	42	592
Gas. Apparatus for the manufacture of	S. T. Wellman and G. W. Goetz	376,835	Jan. 24	1627	425	42	333
Gas. Apparatus for the manufacture of	S. T. Wellman and G. W. Goetz	376,836	Jan. 24	1628	426	42	333
Gas-burner	E. Bourne	380,015	Mar. 27	1734	465	42	1321
Gas-burner	H. A. Brognard	379,046	Mar. 6	271	78, 79	42	1017
Gas-burner	G. K. Cooke	379,562	Mar. 20	1024	274	42	1174
Gas-burner	P. Menges	377,494	Feb. 7	221	53	42	538
Gas-burner	C. B. Todd	377,787	Feb. 14	687	174	42	641
Gas-burner	C. W. Young	379,435	Mar. 13	828	223	42	1130
Gas-burner. Electric	J. Y. Parke	379,977	Mar. 27	1671	446	42	1309
Gas-burner. Incandescent	J. Macfear	378,699	Feb. 28	2023	534	42	914
Gas-burner. Incandescent	J. S. Sellon	377,502	Feb. 7	230	58	42	541
Gas-burner. Regenerative	W. S. Mead. (Reissue)	10,809	Feb. 7	570	147	42	603
Gas-compressors. Oiling apparatus for	F. Shlaudeman	378,941	Mar. 6	114	33	42	989
Gas-conduit joint	J. Schinneller	376,917	Jan. 24	1737	456	42	354
Gas. Device for heating coils and pipes by	W. M. Brown	377,015	Jan. 31	1877	494	42	389
Gas-engine	I. N. Hopkins	379,397	Mar. 13	772	208	42	1118
Gas-engine	E. Körting	377,623	Feb. 7	407	103	42	573
Gas-engine	J. Noble	379,607	Mar. 20	1397	372	42	1248
Gas-engine	H. K. Shanck	376,212	Jan. 10	693	184	42	142
Gas-engine	R. F. Smith	377,962	Feb. 14	940	245	42	691

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Gas-enriching apparatus	J. H. Amies	378,418	Feb. 28	1613	425	42	833
Gas from gas-mains. Means for carrying off escaping	J. W. Ells	378,544	Feb. 28	1797	475	42	871
Gas-generator	A. Weyer	377,793	Feb. 14	704	177	42	644
Gas key and lighter	J. B. Bloomingdale	375,918	Jan. 3	254	69	42	53
Gas-light governor. Automatic	C. Greiner and J. Grupp	378,050	Feb. 14	1060	277	42	714
Gas lighter and extinguisher. Electric	G. L. Hogan	379,396	Mar. 13	770	208	42	1118
Gas-lighter. Electric	J. Finck	377,553	Feb. 7	307	78	42	533
Gas-lighting apparatus. Electric	C. W. Holtzer	378,677	Feb. 28	1993	527	42	909
Gas-lighting burner. Electric	L. S. White	377,505	Feb. 7	242	59	42	541
Gas-lighting torches. Taper slide or holder for	J. F. Cunningham	380,094	Mar. 27	1846	491	42	1343
Gas-machines. Pressure-regulator for	O. W. Bennett	380,273	Mar. 27	2083	558	42	1391
Gas-mains. Automatic valve or shut-off for	G. W. McKenzie	375,560	Jan. 3	55	16	42	14
Gas-mains. Means for detecting leakage from	S. R. Brick	378,283	Feb. 21	1420	371, 372	42	787
Gas. Manufacture of	W. W. Dashiell	376,944	Jan. 24	1774	466, 467	42	362
Gas. Manufacturing water	R. Boeklen	378,490	Feb. 28	1796	455	42	857
Gas. Manufacturing water	F. C. Kniese	377,564	Feb. 7	319	82	42	536
Gas. Manufacturing water	T. B. Stillman	377,695	Feb. 7	518	133	42	593
Gas-meter	F. M. Towl	377,967	Feb. 14	947	247	42	693
Gas or vapor. Device for generating and burning	M. Zeck	378,411	Feb. 21	1602	421	42	824
Gas-pressure regulator	M. W. Kidder	376,313	Jan. 10	831	219	42	168
Gas. Pressure-regulator for carbonic acid	E. A. Scott	375,837	Jan. 3	151	43	42	34
Gas-regulator. Automatic	M. J. Amick. (Reissue)	10,901	Feb. 14	1088	286	42	720
Gas-service pipes. Automatic shut-off valve for	J. S. Robinson	379,128	Mar. 6	386	110	42	1038
Gas-washer	A. Klönne	380,040	Mar. 27	1768	473	42	1327
Gaseous explosions as a motive force. Utilizing	T. H. Bolmer	379,674	Mar. 20	1192	316	42	1206
Gaseous fuel or illuminating-gas. Apparatus for manufacturing	E. H. Shaw	378,940	Mar. 6	113	32, 33	42	968
Gases. Apparatus for mingling and combining	A. C. Lewis	378,326	Feb. 21	1481	387	42	799
Gasoline-can	W. W. Hutchins	377 520	Feb. 7	264	66	42	545
Gate: *See* Automatic gate. Bridge-gate. End-gate. Farm-gate. Molasses-gate. Railway-gate. Railway-crossing gate. Sliding gate. Sliding or rolling gate. Swinging gate.							
Gate	R. B. Lyon	378,056	Feb. 14	1065	279	42	715
Gate	G. P. Pric	379,660	Mar. 20	1174	311	42	1203
Gate	P. Unfried	375,903	Jan. 3	232	63	42	49
Gate	H. P. Walker	380,282	Mar. 27	2034	543	42	1380
Gate	W. R. White	378,275	Feb. 21	1407	368	42	785
Gate	C. Wilson	378,564	Feb. 28	1830	482	42	856
Gate-spring	T. Clough	378,191	Feb. 21	1268	335	42	760
Gear-cutting machines. Dividing mechanism for	C. Spaulding	376,833	Jan. 24	1623	424	42	392
Gear-tooth. Wooden	W. D. Gray, R. Birkholz, and E. Reynolds.	376,522	Jan. 17	1133	296	42	252
Gear-wheel	C. H. Morgan	379,022	Mar. 6	238	67	42	1011
Generator: *See* Ammonia-gas generator. Electric generator. Hydrocarbon generator. Steam-generator.							
Girder. Spiral	W. W. Green	379,217	Mar. 13	519	145	42	1070
Glass: *See* Perforated glass.							
Glass-holder	C. W. Fox	378,361	Feb. 21	1528	400	42	809
Glass. Machinery for beveling the edges of plates of	O. C. Hawkes	378,680	Feb. 28	1999	528, 529	42	909
Glass-melting furnace	H. Dulière	376,029	Jan. 3	425	113	42	85
Glass shingle	E. Walsh, Jr	377,588	Feb. 7	350	90, 91	42	562
Glasses. Adjusting attachment for opera and other	I. Fox	376,434	Jan. 17	1006	264	42	808
Glassware and manufacturing the same	J. Webb	379,089	Mar. 6	339	97	42	1020
Glove	M. Biggin	380,079	Mar. 27	1828	486, 487	42	1339
Glove	F. H. Busby	379,855	Mar. 20	1483	391	42	1302
Glove	D. B. Gunn	378,834	Feb. 28	2231	594	42	964
Glove-fastener	M. Rubin	376,912	Jan. 24	1731	455	42	354
Glue, mucilage, &c. Package for liquid	J. W. Kirkpatrick	377,034	Jan. 31	1900	499	42	393
Glue packing-can. Liquid	R. Brooks	377,014	Jan. 31	1856	493	42	389
Glue-stock. Preparing	T. P. Milligan	379,021	Mar. 6	236	.....	42	1010
Gong. Door	D. S. Adams	379,626	Mar. 20	1127	298	42	1193
Goods. Stand for displaying	R. H. Maxson	378,206	Feb. 21	1292	341	42	766
Governor. Engine	G. M. Hopkins	379,872	Mar. 20	1518	399	42	1270
Governor. Steam-engine	J. A. Horton	377,028	Jan. 31	1894	498	42	392
Governor. Steam-engine	J. S. Marshall	378,170	Feb. 21	1241	327	42	755
Governor. Steam-engine	F. McMahon	377,168	Jan. 31	2090	550, 551	42	432
Governor. Steam-engine	J. A. Seymour	379,131	Mar. 6	389	111	42	1039
Grader. Road	J. E. Branch	375,797	Jan. 3	101	29	42	24
Grader. Road	O. E. Moats	376,156	Jan. 10	614	165	42	128
Grader. Road	S. F. Welch	379,550	Mar. 13	1001	268	42	1163
Grader. Road	S. F. Welch	380,068	Mar. 27	1806	482	42	1335
Grading and ditching machine	J. C. Sage	378,406	Feb. 21	1595	419	42	822
Grain-adjuster	H. B. French	380,198	Mar. 27	1988	532	42	1371
Grain-adjuster	W. L. Shake	377,216	Jan. 31	2163	571	42	445
Grain-binder	J. E. Buxton	377,062	Jan. 31	1944	511	42	402
Grain-binder	W. M. Clark	379,365	Mar. 13	723	197, 198	42	1109
Grain-binder	R. Emerson	377,744	Feb. 14	591	152, 153	42	621
Grain-binder	P. Hanson	377,069	Jan. 31	1954	513	42	404
Grain-binder	P. Hanson	379,253	Mar. 27	1635	435, 436	42	1202

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Grain-binder	S. V. Kennedy and C. A. Anderson	380,119	Mar. 27	1882	500, 501	42	1350
Grain-binder	C. H. McCormick, Jr., and H. E. Pridmore.	378,401	Feb. 21	1581	415, 416	42	820
Grain-binder	F. A. Murdock	378,845	Feb. 28	2249	598, 599	42	957
Grain-binder	W. F. Olin	375,830	Jan. 3	139	40, 41	42	32
Grain-binder	W. M. Piatt	377,731	Feb. 7	565	145, 146	42	601
Grain-binder	J. F. Seiberling	379,494	Mar. 13	919	247	42	1147
Grain-binder	W. N. Whiteley	376,123	Jan. 10	564	149, 150	42	119
Grain-binder	W. N. Whiteley and R. Brown	377,093	Jan. 31	1992	521, 522, 523	42	411
Grain-binder	C. B. Withington	378,225	Feb. 21	1318	350, 351, 352	42	771
Grain-binder	C. B. Withington	378,226	Feb. 21	1330	352, 353	42	773
Grain-binder	C. B. Withington	378,227	Feb. 21	1334	353, 354	42	773
Grain-binder knotting device	W. N. Whiteley and S. Dyer	379,622	Mar. 20	1119	296, 297	42	1192
Grain-binder. Low-level	J. F. and G. H. Steward	376,488	Jan. 17	1079	283, 284, 285	42	222
Grain-binders. Cord-tyer for	P. Hanson	377,828	Feb. 14	747	189, 190	42	652
Grain-binders. Cord-tying mechanism for	R. H. Corey	376,515	Jan. 17	1124	293, 294	42	230
Grain-binders. Knotting device for	W. N. Whiteley	378,815	Feb. 28	2195	584	42	947
Grain-cradle	F. S. Kretsinger	376,317	Jan. 10	837	221	42	169
Grain-drill	A. J. Martin	376,538	Jan. 17	1151	302	42	235
Grain-drill	W. Nighswonger	379,179	Mar. 6	415	125	42	1051
Grain-elevator	T. J. Underwood	377,917	Feb. 14	871	224	42	677
Grain. Machine for splitting	L. Gathmann	376,712	Jan. 17	1422	374	42	296
Grain-meter	J. O. Marks	379,799	Mar. 20	1379	366	42	1245
Grain meter and register. Automatic	J. G. Wolfe	377,843	Feb. 14	768	196	42	656
Grain-scourer	G. L. Squier	379,337	Mar. 13	685	186	42	1101
Grain-scouring machine	R. W. Welch	377,919	Feb. 14	875	224	42	677
Grain-separator	N. Nilson	376,157	Jan. 10	615	166	42	129
Grain washing and drying machine	P. Van Gelder	379,498	Mar. 13	929	250	42	1148
Grate	H. P. Tallmadge	376,170	Jan. 20	637	170	42	133
Grate	H. P. Tallmadge	379,740	Mar. 20	1288	343, 344	42	1226
Grate and feed-water heater. Hollow	W. J. King	379,790	Mar. 20	1364	363	42	1241
Grate-bar	W. D. Cronin	377,740	Feb. 14	586	151	42	621
Grate-bar	I. N. Dickinson	378,195	Feb. 21	1273	337	42	762
Grate-bar	W. W. Forrest	375,870	Jan. 3	187	52	42	41
Grated structure	M. H. Wilson and W. D. Thomas	380,069	Mar. 27	1807	483	42	1335
Grater	E. Baltzley	378,127	Feb. 21	1171	305	42	745
Gravel, &c. Box for washing	T. W. Carrico	378,765	Feb. 28	2108	556, 557	42	930
Grinding cutlery	A. Johnston	377,202	Jan. 31	2136	561	42	441
Grinding-machine	J. A. Coleman	376,814	Jan. 24	1593	417, 418	42	327
Grinding-machine	J. A. Coleman	376,815	Jan. 24	1597	418, 419	42	327
Grinding-machine	J. B. Comstock	377,887	Feb. 14	823	210	42	666
Grinding-machine	E. R. Hyde and A. Vallentine	375,821	Jan. 3	129	38	42	30
Grinding machine. Cutlery	A. Johnston	377,201	Jan. 31	2132	563	42	440
Grinding-machine. Emery-belt	C. E. Roberts	377,212	Jan. 31	2152	568, 569	42	444
Grinding-mill	G. H. McCulloch	379,900	Mar. 20	1559	410	42	1277
Grinding mill. Feed	H. W. Vietmeyer	379,549	Mar. 13	999	268	42	1162
Groats. Separating-machine for cleaning	E. Weiss	378,562	Feb. 28	1898	481, 482	42	876
Grooving-machine	A. V. Allen	376,057	Jan. 10	466	125	42	101
Grubber	A. E. Lyman	378,966	Mar. 6	146	42	42	995
Guard: *See* Cattle-guard. Yoke-guard.							
Gun. Machine for manufacturing chewing	W. J. White	378,637	Feb. 28	1927	511, 512	42	897
Gun. Cane	E. D. Bean. (Reissue.)	10,910	Mar. 20	1587	418	42	1283
Gun-carriage	A. Noble	378,333	Feb. 21	1490	389, 390	42	801
Gun-carriages. Recoil-cushion for	E. Hill	378,314	Feb. 21	1462	382	42	796
Gun-carriages. Recoil-cushion for	E. Hill	379,783	Mar. 20	1353	360	42	1239
Gun. Magazine	R. F. Cook	378,661	Feb. 28	1907	502	42	904
Gun. Magazine	E. E. Redfield	378,556	Feb. 28	1816	479, 480	42	875
Gun-rack for tents	S. S. Pague	377,114	Jan. 31	2026	530	42	417
Gun. Spring	T. Harding	379,782	Mar. 20	1352	360	42	1239
Guns and ordnance. Making	F. J. Seymour	376,168	Jan. 10	634	169	42	132
Guns. Extractor mechanism for breech-loading	W. Lorenz	378,169	Feb. 21	1240	326	42	755
Guns. Manufacture of	H. S. Maxim	376,930	Jan. 24	1832	.....	42	372
Gunpowder-mill roll	P. A. Oliver	375,889	Jan. 3	215	59	42	46
Gunpowder press and grainer	P. A. Oliver	378,516	Feb. 28	1755	464	42	863
Gutter and conduit. Combined	H. L. Cranford	379,505	Mar. 13	930	253	42	1150
Gymnasium. Equestrian	E. G. Butcher	377,233	Jan. 31	2182	576	42	449
Hair-tonic	A. F. Pratt	376,868	Jan. 24	1587	.....	42	396
Hair-tonic	A. I. Worthington	375,860	Jan. 3	175	.....	42	39
Halter	J. C. Covert	379,369	Mar. 13	735	200	42	1111

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Halter	M. R. Dowlin	379,056	Mar. 6	285	83	42	1020
Halter, &c	A. G. Garfield	375,809	Jan. 3	116	34	42	27
Hame-fastener	J. A. Brill	376,811	Jan. 24	1589	416	42	326
Hame-fastener	E. F. Butler	378,128	Feb. 21	1173	306	42	744
Hame-fastener	J. H. D. Everett	377,671	Feb. 7	484	125	42	586
Hames. Die for welding draft-eyes to	W. H. Walker	376,998	Jan. 24	1845	488	42	375
Hammer. Drop	J. Sandage	376,111	Jan. 10	539	143 / 144	42	115
Hammer. Foot-power	C. J. Rnudquist	379,818	Mar. 20	1418	377	42	1252
Hammer. Nail-	D. P. Bigelow	378,650	Feb. 28	1948	518	42	901
Hammer. Power-	H. St. Lawrence	379,340	Mar. 13	600	187	42	1102
Hammer. Steam pile-driving	J. N. Warrington	378,745	Feb. 28	2078	548	42	924
Hammers. Nail-holding attachment for	J. H. Baker	378,946	Mar. 6	121	35	42	990
Hammers or other tools. Device for carrying chipping-	J. T. Billson	377,664	Feb. 7	474	121	42	584
Hammers. Valve-gear for steam-	C. W. Willard	380,155	Mar. 27	1927	514	42	1359
Hammock-spreader	A. Beals	375,793	Jan. 3	96	28	42	23
Handcuff	M. Thomas	375,843	Jan. 3	158	44	42	35
Handle: *See* Coffin-handle. Tool-handle. Mason's float-handle. Velocipede-handle. Reel-handle.							
Handle	W. M. Rockwell	375,773	Jan. 3	70	21	42	18
Handle attachment	F. Brough	378,540	Feb. 28	1789	472	42	889
Hanger: *See* Car-door hanger. Garment or coat hanger. Door-hanger. Pipe-hanger. Eaves-trough hanger. Tobacco-hanger.							
Harmonicons. Resonator for	R. Plant and E. Perry	375,833	Jan. 3	143	41, 42	42	33
Harness attachment	J. R. McDonald	377,112	Jan. 31	2023	530	42	416
Harness back-pad	L. W. Vandenburg	380,064	Mar. 27	1801	481	42	1334
Harness-hook	H. W. Getman	375,994	Jan. 3	367	98	42	75
Harness-pad	S. Van Gilder	376,563	Jan. 17	1183	312	42	241
Harness. Rein-guard for	J. Peterson	376,677	Jan. 17	1369	360	42	276
Harness-rosette	J. W. Grummon	377,750	Feb. 14	606	156	42	623
Harness-strap	R. K. Bort	379,106	Mar. 6	472	133	42	1056
Harness. Trotting-	J. H. Whitaker	377,727	Feb. 7	559	144	42	600
Harrow	J. H. Barley. (Reissue)	10,913	Mar. 27	2126	569	42	1400
Harrow	J. M. Childs. (Reissue)	10,993	Jan. 10	986	257	42	196
Harrow	J. M. Childs	378,081	Feb. 21	1105	289	42	731
Harrow	G. Coffman	379,003	Mar. 6	209	57	42	1006
Harrow	C. A. Perin	379,079	Mar. 6	317	92	42	1025
Harrow	S. Ritty	377,213	Jan. 31	2155	569	42	444
Harrow and clod crusher	J. T. Leighton	378,011	Feb. 14	1008	263	42	703
Harrow and clod-crusher	J. T. Leighton	378,012	Feb. 14	1010	263	42	704
Harrow and cultivator. Combined	F. Bateman	377,980	Feb. 14	964	251	42	696
Harrow and pulverizer. Combined	G. P. Atchison	377,223	Jan. 31	2170	573	42	447
Harrow, clod-crusher, and land-roller. Combined	G. W. Albaugh	376,741	Jan. 24	1639	429	42	335
Harrow. Disk	G. H. Sawyer	379,287	Mar. 13	616	169	42	1088
Harrow for listed crops	H. A. Murphy	378,611	Feb. 28	1891	501	42	890
Harrow. Reversible folding	J. M. Shubert	379,626	Mar. 20	1430	380	42	1254
Harrow. Spring-tooth	L. D. Swart	377,053	Jan. 31	1925	506	42	398
Harrow. Sulky	M. S. and W. A. Doolittle	378,578	Feb. 28	1849	488 / 489	42	881
Harrow-tooth	H. L. Harwood and L. B. White	377,359	Jan. 31	2379	688	42	483
Harrow-tooth and harrow attachment	W. H. Hobson	376,601	Jan. 24	1571	412	42	321
Harrow-tooth holder	W. S. Lawrence	379,018	Mar. 6	234	66	42	1010
Harvester	J. B. Gemmill	377,067	Jan. 31	1951	513	42	403
Harvester	S. V. Kennedy	377,077	Jan. 31	1964	515 / 516	42	405
Harvester	G. W. Shuman	377,647	Feb. 7	442	113 / 114	42	579
Harvester	W. R. Steiner	377,091	Jan. 31	1989	520 / 521	42	411
Harvester and binder	W. N. Whiteley	376,763	Jan. 24	1503	396 / 397	42	311
Harvester and binder	W. N. Whiteley and W. Bayley	375,971	Jan. 3	332	89 / 90 / 91	42	69
Harvester and binder. Combined	W. N. Whiteley and W. Bayley	378,814	Feb. 28	2103	583 / 584 / 115 / 116	42	946
Harvester and husker. Corn	C. F. Smith	377,649	Feb. 7	451	115 / 116	42	580
Harvester and thrasher. Combined	M. P. Farnham	378,581	Feb. 28	1854	490	42	882
Harvester and thrasher. Combined	J. Trethewey	380,000	Mar. 27	1704	455	42	1316
Harvester. Clover-	A. W. Thomasson and R. S. Pence	378,184	Feb. 21	1259	332	42	758
Harvester. Corn-	A. Hollingsworth	376,384	Jan. 10	926	242 / 243	42	186
Harvester. Corn-	J. L. Lamont	378,551	Feb. 28	1809	477 / 478	42	873
Harvester. Corn-	D. T. Phillips	378,524	Feb. 28	1762	466 / 467	42	864
Harvester. Grain-binding	S. V. Kennedy	376,199	Jan. 10	672	178 / 179	42	139
Harvester. Grain-binding	W. N. Whiteley	378,817	Feb. 28	2200	586	42	943
Harvester. Low-down grain-binding	D. Strunk	379,830	Mar. 20	1436	381 / 382	42	1255
Harvester-reel	M. A. Clapp	377,372	Feb. 7	7	2	42	496
Harvesters. Draft-equalizer for	C. A. H. Landon	376,663	Jan. 17	1350	354	42	273
Harvesters. Knotting mechanism for	R. Brown	379,886	Mar. 20	1537	405 / 406	42	1274
Hasp-lock	D. H. Kline and H. Williams	379,896	Mar. 20	1554	409	42	1276
Hat and coat rack	W. L. Caldwell	377,737	Feb. 14	583	150	42	620
Hat and coat rack	F. Clemens	379,152	Mar. 6	416	117	42	1044

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Hat-brims. Rounding-jack for	M. Hild	377,154	Jan. 31	2072	544	42	427
Hat or cap	A. Brabadi	376,705	Jan. 17	1414	372	42	285
Hat-rack for hat-manufacturers	H. I. Winterfield	376,933	Jan. 24	1759	463	42	358
Hat-sizing machines. Felting-roll for	A. T. Clark	378,573	Feb. 28	1844	487	42	880
Hat sweat-band	T. W. Bracher	380,175	Mar. 27	1955	521	42	1365
Hat-wires. Machine for applying clasps to	J. Nutt	379,876	Mar. 20	1522	401 / 402 / 409	42	1271
Hat-wires. Machine for bending	J. Nutt	376,608	Jan. 17	1251	328 / 329	42	255
Hats. Mourning-band for	J. W. Corey	376,428	Jan. 17	996	261	42	206
Hatchet and plane. Combined	J. Brandt	379,677	Mar. 20	1196	316 / 317	42	1207
Hatchet. Carpenter's	J. J. Stopple	380,227	Mar. 27	2026	541	42	1379
Hatchway	F. L. Darrach	376,864	Jan. 24	1669	436	42	340
Hatchways for elevators. Device for automatically operating	J. W. Potts	375,894	Jan. 3	221	60, 61	42	47
Hay and straw burner	O. E. Mesick	377,208	Jan. 31	2148	568	42	443
Hay-binder	C. W. Baker	379,555	Mar. 20	1013	271	42	1173
Hay-carrier	L. and E. Clark	378,190	Feb. 21	1267	335	42	760
Hay-carrier	W. S. and E. J. Risley	376,109	Jan. 10	535	143	42	114
Hay-elevator	P. F. Chambard	377,063	Jan. 31	1946	511 / 512	42	402
Hay-fork. Horse	J. W. Collins	379,448	Mar. 13	845	228	42	1133
Hay-hook attachment	T. H. Brown	375,865	Jan. 3	183	50, 51	42	40
Hay-loader	P. Strub and W. Nendel	379,341	Mar. 13	692	187	42	1103
Hay-manger	D. Kline	376,529	Jan. 17	1140	299	42	233
Hay or grain elevator	E. D. Mead	377,492	Feb. 7	215	52	42	536
Hay or grain unloader	A. P. Boyer	377,012	Jan. 31	1873	493	42	388
Hay-press	G. Ertel	378,197	Feb. 21	1275	337 / 338	42	762
Hay-press	D. J. and I. W. Hyneman	377,458	Feb. 7	164	38	42	526
Hay-rack	C. E. Hagerman	380,106	Mar. 27	1864	495	42	1346
Hay-rack	G. W. Light	375,824	Jan. 3	133	39	42	31
Hay rake and loader	C. P. Slaght	378,466	Feb. 28	1690	443 / 444 / 502 / 503	42	848
Hay rake and tedder. Combined	I. L. Landis and A. Iske	380,122	Mar. 27	1867	563	42	1351
Hay-rake. Horse	J. G. Alexander	376,175	Jan. 10	642	171	42	134
Hay-rake. Horse	T. W. Greene	377,103	Jan. 31	2011	527	42	414
Hay-rake. Horse	J. H. Jones	379,895	Mar. 20	1553	409	42	1276
Hay-stacker	A. L. Courtright	379,102	Mar. 6	354	101	42	1039
Hay-tedder	A. D. Lovett and E. S. Goff. (Reissue.)	10,916	Mar. 27	2133	570	42	1401
Hay unloader and stacker	O. Hoyt	376,200	Feb. 21	1282	339	42	764
Head-rest	G. M. Dillon and J. H. Bevington	380,251	Mar. 27	2059	550	42	1386
Head-rest	G. M. Dillon and J. H. Bevington	380,252	Mar. 27	2060	551	42	1386
Head-rest	E. T. Ryan	379,987	Mar. 27	1684	450	42	1312
Headlight. Locomotive	L. H. McKee	379,539	Mar. 13	984	265	42	1159
Heat and power. Means for supplying	W. E. Prall	379,283	Mar. 13	607	167	42	1087
Heat and power supply system	T. R. Timby	379,744	Mar. 20	1294	345	42	1227
Heat and power. Supplying	W. E. Prall	376,830	Jan. 24	1615	423	42	331
Heater: *See* Car-heater. Sad-iron heater. Electric heater. Steam-heater. Electrical heater. Water-heater. Feed-water heater. Water or liquid heater. Hot-water heater.							
Heating and ventilating apparatus	E. T. Johnson	376,745	Jan. 24	1473	389	42	305
Heating and ventilating apparatus	E. T. Johnson	376,746	Jan. 24	1475	389	42	306
Heating-furnace	J. W. Clark	379,364	Mar. 13	722	197	42	1109
Heating-furnace	W. Sutliff	377,279	Jan. 31	2325	596	42	462
Heating furnace. Air-	A. E. Smith	376,662	Jan. 17	1378	363	42	277
Heating furnace and stove	G. Schreyer	379,930	Mar. 27	1688	451	42	1313
Heating retorts and muffles. Apparatus for	A. Klönne	378,097	Feb. 21	1127	295	42	735
Hedge-trimmer	C. T. Swartz	376,054	Jan. 3	459	123 / 124	42	93
Heel-attaching machine	F. F. Raymond, 2d	377,955	Feb. 14	933	242 / 243	42	688
Heel-burnishing machine	J. H. Buell	376,066	Jan. 10	476	128 / 129	42	103
Heel-compressing machine	F. F. Raymond, 2d	376,754	Jan. 24	1487	392	42	308
Heel-compressing machine	F. F. Raymond, 2d	376,908	Jan. 24	1725	453 / 454	42	352
Heel forming and attaching machine	F. F. Raymond, 2d	378,246	Feb. 21	1303	345 / 346	42	768
Heel-loading machine	E. B. Allen	375,913	Jan. 3	247	67	42	52
Heel nailing and breasting machine	E. B. Allen	377,285	Jan. 31	2265	598 / 599	42	463
Heel nailing and trimming machine	F. F. Raymond, 2d	377,577	Feb. 7	334	66	42	560
Heel-nailing machine	F. F. Raymond, 2d	377,172	Jan. 31	2094	552	42	433
Heel-nailing machine	F. F. Raymond, 2d	378,617	Feb. 28	1900	502 / 503	42	891
Heel-nailing machine	F. F. Raymond, 2d	379,810	Mar. 20	1404	374	42	1249
Heel-plate guide	R. H. Lewis	379,898	Mar. 20	1557	410	42	1277
Heel-trimming machine	E. B. Allen	377,284	Jan. 31	2261	598	42	463
Heel-trimming machine	F. N. Ethridge	376,433	Jan. 17	1004	263 / 264	42	208
Heel-trimming machine	C. W. Glidden	377,302	Jan. 31	2290	605	42	469
Heels. Forming and attaching	F. F. Raymond, 2d	379,020	Mar. 6	249	70, 71	42	1012
Heeling-machine	C. W. Glidden	377,300	Jan. 31	2286	604	42	468
Heeling-machine	C. W. Glidden	377,301	Jan. 31	2288	605	42	468
Height and the weight of persons. Machine for determining or indicating the	C. C. Clawson	379,859	Mar. 20	1496	394 / 395	42	1265
Hide lifter and carrier for tanneries	A. M. Fletcher	378,670	Feb. 28	1982	525	42	907
Hinge	B. S. Atwood	378,861	Mar. 6	3	1	42	967

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hinge	F. P. Bailey	375,792	Jan. 3	95	28	42	23
Hinge	A. Claypool	376,027	Jan. 3	423	112	42	85
Hinge	F. H. Knight	377,310	Jan. 31	2301	609	42	470
Hinge. Butt	E. Prescott and W. E. Locke	378,718	Feb. 28	2047	540	42	949
Hinge. Friction	F. W. Mix	379,901	Mar. 20	1560	411	42	1277
Hinge. Gate	O. M. Hawley	378,199	Feb. 21	1261	330	42	764
Hinge. Gate	J. B. Pugh	377,910	Feb. 14	862	222	42	675
Hinge. Lock	J. Wolf	379,921	Mar. 20	1566	418	42	1282
Hinge-mortiser	J. M. Mathews	379,076	Mar. 6	313	91	42	1024
Hinge. Sheet-metal	W. H. Hart and T. Corscaden	377,104	Jan. 31	2012	527	42	414
Hinge. Spring	B. Colvin and J. Wolfley	375,803	Jan. 3	108	31	42	25
Hinge. Spring	H. P. Kochsmeier and G. M. Waldorf. (Reissue.)	10,896	Jan. 31	2390	690	42	486
Hinges. Manufacture of	G. Bayer	376,702	Jan. 17	1410	370	42	284
Hinges. Manufacture of butt	H. Hoffman, Jr	376,597	Jan. 17	1232	321	42	252
Hod-elevator	H. Curtis	377,741	Feb. 14	587	151	42	621
Hoe	R. S. Rinker	378,723	Feb. 28	2054	542	42	930
Hog-scraping machine	J. Cunning and G. A. Lowry	377,353	Jan. 31	2370	{684 685}	42	481
Hog-tendon cutter	D. A. Rnnnels	379,286	Mar. 13	616	168	42	1088
Hog-trap	S. Loffer	376,398	Jan. 10	931	244	42	187
Hog-trough	S. Corderman	378,434	Feb. 28	1642	432	42	858
Hoisting and conveying machine	M. W. Locke	377,947	Feb. 14	922	{238 239}	42	687
Hoisting and loading machine	D. S. White	377,183	Jan. 31	2106	{555 556}	42	435
Hoisting apparatus	G. H. Hulett	376,655	Jan. 17	1336	351	42	270
Hoisting apparatus	F. P. Mills	376,672	Jan. 17	1359	{357 358}	42	274
Hoisting apparatus	M. S. Ragsdale	377,465	Feb. 7	178	42	42	530
Hoisting machinery. Unwinding safety device for	N. B. Cushing	377,017	Jan. 31	1879	495	42	389
Holdback	D. A. Camp	376,796	Jan. 24	1565	411	42	323
Holdback	H. Hausberger	378,505	Feb. 28	1744	460	42	860
Holdback. Vehicle	H. W. Getman	379,157	Mar. 6	423	119	42	1046
Holder:							
See Bag-holder.	Pen-holder.						
Barrel-holder.	Pencil-holder.						
Bit-holder.	Pencil rubber-holder.						
Blacking-box holder.	Photographic-plate holder.						
Book-holder.	Photographic-tray holder.						
Broom-holder.	Pillow-sham holder.						
Check rein-holder.	Pistol-holder.						
Cigar-holder.	Sample-holder.						
Clothes-line holder.	Sand-paper holder.						
Coin-holder.	Sash-holder.						
Copy-holder.	Shaft-holder.						
Corn-holder.	Slate-pencil holder.						
Cuff-holder.	Spool-holder.						
Dish-holder.	Stocking and skirt holder.						
Eraser-holder.	Stub-holder.						
Eyeglass-holder.	Tag-holder.						
File-holder.	Thread-holder.						
Glass-holder.	Ticket-holder.						
Harrow-tooth holder.	Trace-holder.						
Iron-holder.	Water-melon holder.						
Lamp-shade holder.	Wire-holder.						
Line-holder.	Yard-stick holder.						
Mop-holder.							
Paper-holder.							
Hoodwink	F. H. Lyman and A. J. Johnson	377,835	Feb. 14	760	194	42	654
Hoof-clasp	D. Cruice and F. Himmel	3-0,093	Mar. 27	1845	491	42	1343
Hoof-pad	H. L. Hubbard	378,887	Mar. 6	45	12	42	975
Hook:							
See Bench-hook.	Singletree-hook.						
Cant-hook.	Snap-hook.						
Check-hook.	Suspension-hook.						
Checkrein-hook.	Sweat-pad hook.						
Coat-hook.	Tag-hook.						
Draft-hook.	Trolling-spoon hook.						
Fish-hook.	Tug-hook.						
Fishing-hook.	Wardrobe-hook.						
Harness-hook.	Whiffletree-hook.						
Lever-hook.	Window and picture hook						
Painter's combination pot-hook.							
Hook	C. C. Pierce	377,772	Feb. 14	664	166	42	637
Hoop:							
See Barrel-hoop.							
Hoop-dressing machine	J. J. Moger	378,454	Feb. 28	1675	439	42	845
Hoop for barrels, pails, or tubs	G. Souther	379,997	Mar. 27	1700	454	42	1315
Hoop for coopers' ware	J. Leach	376,530	Jan. 17	1141	299	42	233
Hoop for trundling	J. F. Lippbard	378,327	Feb. 21	1482	387	42	799
Hoop-lug	H. M. Lourie	375,825	Jan. 3	134	39	42	31
Hopple	J. Freeman	376,872	Jan. 24	1678	438	42	342
Horn-tip	H. A. Miller	379,077	Mar. 6	314	91	42	1025
Horse	W. C. Goodrich	376,876	Jan. 24	1683	440	42	343
Horse-blanket fastener	E. E. Dillon	377,097	Jan. 31	2004	525	42	413
Horse-boot	M. W. Lynch	376,033	Jan. 3	437	116	42	88
Horse-cover. Automatic	G. C. Hale	377,380	Feb. 7	22	7	42	499
Horse-detacher	N. Crim	378,193	Feb. 21	1271	336	42	761
Horse-detacher	S. A. Pugh	376,107	Jan. 10	535	142	42	114
Horse-detacher	T. White	379,352	Mar. 13	703	191	42	1105
Horse-head protector	H. Zefferth	378,858	Feb. 28	2368	603	43	960
Horses. Interfering device for	M. Haughey	379,911	Mar. 20	1150	304	42	1198

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Horse-rake fender	L. Mundy	378,103	Feb. 21	1136	297	42	737
Horse-tail tie	O. Hasbrouck, Jr	376,151	Jan. 10	609	164	42	128
Horse-tie. Automatic	R. Hymers	376,803	Jan. 24	1577	413	42	324
Horses. Throat-protector for	W. O. Mills	378,373	Feb. 21	1545	404	42	813
Horseshoe	J. B. Finch	378,046	Feb. 14	1056	276	42	713
Horseshoe-blank	P. F. Greenwood	379,779	Mar. 20	1348	359	42	1238
Horseshoe-blanks. Machine for finishing bent and creased	W. Eynon and J. T. Davis	379,945	Mar. 27	1625	{432 433}	42	1300
Horseshoe-machine	Z. V. Purdy	378,111	Feb. 21	1149	300	42	739
Horseshoe-nail	A. R. Muterspaugh	378,535	Mar. 6	108	31	42	967
Horseshoes. Machine for forming	C. L. Haight	379,696	Mar. 20	1227	320	42	1213
Hose bridge. Fire	B. E. Henriksen	380,036	Mar. 27	1702	472	42	1326
Hose-coupling	F. Atherton and M. T. Bentley	378,566	Feb. 28	1832	483	42	877
Hose-coupling	C. W. Bolusa	379,845	Mar. 20	1463	387	42	1250
Hose-coupling	F. A. Jacob	377,075	Jan. 31	1962	515	42	405
Hose-coupling	A. Hellowell	378,308	Feb. 21	1454	380	42	794
Hose-nozzle	J. H. Bacon	376,572	Jan. 17	1195	316	42	244
Hose-reel	I. W. McGaffey	380,127	Mar. 27	1894	504	42	1372
Hose-reel	J. Crampton	377,801	Feb. 14	715	181	42	646
Hose. Rubber	T. S. Judson	375,877	Jan. 3	203	55	42	43
Hose. Rubber	R. A. Chesebrough	376,812	Jan. 24	1590	417	42	327
Hot-air furnace	E. Kanaley	377,561	Feb. 7	317	81	42	556
Hot-air furnace	W. Miller	378,101	Feb. 21	1132	296	42	736
Hot-air furnace	W. Morrison	376,390	Jan. 10	933	{244 245}	42	187
Hot-air furnace	G. G. Wolfe	378,061	Feb. 14	1073	{281 282}	42	717
Hot-air register	J. Springer	380,145	Mar. 27	1916	511	42	1357
Hot-water heater	J. M. Thayer	378,633	Feb. 28	1923	509	42	896
Hotel-indicator	C. M. Benninghaus	380,166	Mar. 27	1942	518	42	1362
Hub-boring machine	J. Bieber	376,063	Jan. 10	473	{127 128}	42	102
Hub. Self-lubricating vehicle	J. V. Hawkey	376,152	Jan. 10	610	164	42	128
Hub. Vehicle	G. S. Elliott	377,295	Jan. 31	2281	603	42	467
Hub. Wheel	W. J. Brewer	377,187	Jan. 31	2111	557	42	436
Hub. Wheel	C. A. Kinney	378,842	Feb. 28	2242	598	42	956
Husks, &c. Machine for picking	F. Cohnen	377,095	Jan. 31	2001	524	42	412
Hydrant	E. Hand	377,357	Jan. 31	2376	686	42	483
Hydraulic elevator	J. Cone	376,859	Jan. 24	1661	434	42	330
Hydraulic elevator	L. S. and F. B. Graves	379,513	Mar. 13	951	257	42	1153
Hydraulic motor	G. W. Mason	378,701	Feb. 28	2025	535	42	915
Hydraulic motor	C. G. Otis	377,636	Feb. 7	429	109	42	575
Hydraulic or other elevator	W. P. Gibson	378,674	Feb. 28	1989	526	42	908
Hydrocarbon-burner	H. L. Howse	378,590	Feb. 28	1866	{472 493}	42	885
Hydrocarbon-burner	J. F. Seery	379,291	Mar. 13	622	170	42	1089
Hydrocarbon-furnace	C. H. Land	376,003	Jan. 3	382	{101 102}	42	77
Hydrocarbon-furnace	W. B. Smith	378,859	Feb. 28	2260	601	42	959
Hydrocarbon generator and burner	J. B. Deeds	377,019	Jan. 31	1892	495	42	390
Ice-creeper	W. Sage	377,440	Feb. 7	142	32	42	521
Ice-creeper	C. Schimmel	376,832	Jan. 24	1622	424	42	342
Ice-creeper and skate. Convertible	R. C. Abbott	377,131	Jan. 31	2044	535	42	421
Ice-machines. Absorber for	T. H. Butler	377,189	Jan. 31	2112	558	42	436
Ice-machines. Automatic can-filler for	F. V. De Coppet	375,926	Jan. 3	268	72	42	56
Ice-making and refrigerating. Apparatus for	J. B. Craft	376,732	Jan. 24	1455	{383 384}	42	302
Ice shaver	J. C. Wharton	377,365	Jan. 31	2388	690	42	485
Incandescent devices. Compound for making	C. A. Von Welsbach	377,698	Feb. 7	524	135	42	594
Incandescent devices. Compound for making	C. A. Von Welsbach	377,699	Feb. 7	526	135	42	594
Incandescent devices. Compound for making	C. A. Von Welsbach	377,700	Feb. 7	527	135	42	594
Incubators. Temperature-regulator for	C. A. Corman	378,435	Feb. 28	1643	432	42	839
Index	F. L. Miller	379,930	Mar. 13	665	179	42	1097
Indicator:							
See Cash-indicator.	Railway-station indicator						
Electric-current indicator.	Speed-indicator.						
Hotel-indicator.	Station-indicator.						
Oil-tank indicator.	Steam-engine indicator.						
Induction-coil	E. E. Ries	380,138	Mar. 27	1907	509	42	1355
Ingot. Iron or steel	C. A. Marshall	377,316	Jan. 31	2307	670	42	472
Inhaler	J. McGeary	377,571	Feb. 7	327	84	42	558
Inhaler	B. M. Wilkerson	376,033	Feb. 14	1036	271	42	709
Inhaler	J. W. Battershall	379,042	Mar. 6	266	77	42	1016
Inhaling medicinal vapors, &c. Apparatus for	F. H. Glew	376,810	Jan. 24	1601	420	42	328
Injector	W. T. Ewing	376,187	Jan. 10	656	175	42	136
Injector	W. T. Ewing	376,188	Jan. 10	657	176	42	137
Injector	J. R. Goehring	375,810	Jan. 3	117	34	42	28
Injector	S. L. Kneass	376,315	Jan. 10	833	220	42	103
Injector	C. E. Randall	378,403	Feb. 21	1566	417	42	820
Injector	L. Schutte	377,912	Feb. 14	864	232	42	676
Injector. Steam	L. M. Berry	378,281	Feb. 21	1417	370	42	787
Ink or other fluid stand	A. P. Pichereau	379,906	Mar. 20	1567	413	42	1278
Ink pot or holder	A. Kempson	378,505	Feb. 28	1874	495	42	886
Ink. Printing	L. Bailey	375,720	Jan. 3	1	.....	42	3
Inkstand	R. P. Beatty	379,093	Mar. 6	344	98	42	1030
Inkstand	F. Mitchell	378,208	Feb. 21	1294	342	42	766
Inkstand	J. S. Ross	379,247	Mar. 13	558	155	42	1077
Inkstand	J. S. Ross	379,248	Mar. 13	559	155	42	1077
Inkstand. Safety	L. B. Prahar	376,259	Jan. 10	759	201	42	156
Inkstand. Safety	L. B. Prahar	376,964	Jan. 24	1798	473	42	366
Insect-destroyer	J. T. Rives	376,784	Jan. 24	1544	406	42	319
Insect-destroyer	T. H. Webb	377,127	Jan. 31	2040	534	42	420
Insect-poison distributer	B. S. Leathers	376,665	Jan. 17	1352	355	42	273

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Insect-powder distributer	C. H. Leggett	376,600	Jan. 17	1236	325	42	252
Insect-powder gun	J. Jaeger	378,687	Feb. 28	2004	531	42	912
Insect-screen	J. W. Boughton	377,987	Feb. 14	973	253	42	697
Insect-screen for windows or doors	J. W. Boughton	375,863	Jan. 3	181	50	42	40
Insect-trap	E. Herrington	378,788	Feb. 28	2140	565	42	936
Insecticide	F. Feustel	378,583	Feb. 28	1859	.....	42	883
Insecticide	H. M. Pollard	379,326	Mar. 13	674	.....	42	1099
Insects. Destroying	A. Clemm	380,189	Mar. 27	1974	.....	42	1368
Instrument. Combination	F. McIntyre	378,261	Feb. 21	1395	363	42	781
Insulated electrical conductor	W. A. Phillips	380,295	Mar. 27	2113	565	42	1397
Insulating electric conductors	R. Schethauer	377,118	Jan. 31	2030	531	42	418
Insulator	L. M. Neal	378,971	Mar. 6	153	44	42	996
Iron:							
See Curling-iron. Tailor's charcoal-iron. Sad-iron. Vehicle gear-iron. Shaft-iron.							
Iron-holder	J. Fischer	377,297	Jan. 31	2283	604	42	407
Iron. Manufacture of sheet	I. E. Craig	379,370	Mar. 13	736	.....	42	1111
Iron. Manufacture of sheet	I. E. Craig	379,371	Mar. 13	737	.....	42	1111
Iron or steel. Treating	E. D. Wassell	376,421	Jan. 10	983	256	42	195
Iron ores. Treating and calcining	W. J. Taylor	380,229	Mar. 27	2029	542	42	1380
Iron. Pile for the manufacture of sheets of	R. A. Carter	377,729	Feb. 7	563	145	42	601
Ironing-board and wash-bench. Combined	J. E. Roth	380,268	Mar. 27	2078	556	42	1390
Ironing-machine	E. Wilson and J. W. Binder	378,994	Mar. 6	194	53, 54	42	1003
Ironing-table	T. B. Porter	378,553	Feb. 28	1813	478	42	874
Irrigation. System of	A. S. Haines	379,392	Mar. 13	764	207	42	1117
Jack:							
See Lifting-jack. Vehicle-jack.							
Jack-spool	L. N. Parks	378,174	Feb. 21	1246	328	42	756
Jacketed can	O. G. Bick	379,757	Mar. 20	1312	350	42	1231
Jar-fastener	W. Heston	377,676	Feb. 7	490	126	42	588
Jar-fastener	T. B. Howe	378,685	Feb. 28	2006	530	42	911
Jar-fastener	C. Opperman	375,890	Jan. 3	216	59	42	40
Jar-fastener	J. W. Ramsey	376,043	Jan. 3	443	118	42	89
Jar-fastening	W. H. Clarke	376,369	Jan. 10	907	237	42	182
Jar-fastening	J. M. Keller	377,831	Feb. 14	755	191	42	651
Jar fastening. Preserve	G. H. Harvey	376,953	Jan. 24	1786	469	42	364
Jar fastening. Preserve	T. G. Otterson	377,687	Feb. 7	509	130	42	591
Jar or bottle for fruit, milk, &c	G. D. Corey	380,091	Mar. 27	1842	490	42	1342
Jars, &c. Means for hermetically closing	C. H. P. L. De Vilmorin	378,498	Feb. 28	1738	458	42	859
Jersey-stay	S. Kramer and J. Levy	378,597	Feb. 28	1875	496	42	886
Jewelry. Pin and attachment for	L. Sterne	378,908	Mar. 6	66	20	42	979
Joint:							
See Expansion-joint. Rail-joint. Gas-conduit joint. Wood-joint. Pipe-joint.							
Journal-bearing	G. H. Helvey	380,035	Mar. 27	1761	472	42	1326
Journal-bearing	M. Randolph	377,040	Jan. 31	1916	504	42	396
Journal-box. Anti-friction	T. Tripp	377,697	Feb. 7	522	134	42	593
Journal-box. Self-lubricating	J. Douglas, Jr	379,531	Mar. 13	971	262	42	1157
Jug	G. M. Price	379,126	Mar. 6	384	109	42	1038
Jugs, tea-pots, &c. Metal lid for	W. Storer	379,184	Mar. 6	450	{126 127}	42	1052
Kegs, barrels, &c. Holder for	C. A. Manker	378,968	Mar. 6	149	43	42	995
Kettle. Confectioner's	W. and C. L. Cairns	377,144	Jan. 31	2057	540	42	424
Key:							
See Gas-key. Telegraph-key. Pulley-key.							
Key-fastener	F. R. De Lisle	377,020	Jan. 31	1883	496	42	390
Key-ring. Register	W. Scott	376,453	Jan. 17	1036	271	42	213
Kiln:							
See Brick-kiln. Limekiln. Cement-drying kiln. Wood-drying kiln.							
King-bolt for vehicles	D. D. Whitney	376,618	Jan. 17	1275	333	42	250
Knife:							
See Chopping-knife. Fruit-knife. Corn-removing knife. Paper-knife. Drawing-knife.							
Knife	M. Schweizer	377,334	Jan. 31	2238	578	42	476
Knife-handles. Machine for making hollow metallic	R. Chadwick and G. S. Boutwell	378,287	Feb. 21	1428	373	42	789
Knitted caps. Making	R. W. Scott	379,420	Mar. 13	809	218	42	1126
Knitted under-garment	J. A. Scriven	378,465	Feb. 28	1689	443	42	848
Knitting machine. Circular	W. J. McDevitt	376,328	Jan. 10	852	224	42	172
Knitting machine. Circular	L. E. Salisbury	379,819	Mar. 20	1420	{377 378}	42	1252
Knitting machine. Circular	C. T. Sullivan	376,789	Jan. 24	1557	409	42	321
Knitting-machines. Electrical stop-motion for	W. Talcott, 2d	379,832	Mar. 20	1440	383	42	1256
Knives and forks. Die for straightening	E. G. Ost	379,597	Mar. 20	1080	{287 288}	42	1184
Knob attachment	W. H. Flinn	379,639	Mar. 20	1142	302	42	1197
Knob-lock	L. A. Selleck and G. J. Keenan	377,815	Feb. 14	732	185	42	640
Knockdown box	H. S. Munson	377,813	Feb. 14	730	184	42	648
Label-case	J. H. McCartney	377,764	Feb. 14	653	164	42	635
Lace-fastener	A. S. Mann	379,068	Mar. 27	1658	442	42	1306
Lace-fastener. Shoe	A. C. Murdock	376,641	Jan. 3	440	117	42	88
Lace-fastening	H. C. Heard	380,113	Mar. 27	1872	498	42	1348
Ladder	J. S. Tilley	377,066	Feb. 14	946	247	42	692
Ladder	H. T. Webster	377,219	Jan. 31	2167	572	42	446
Ladder and ironing-board. Combined step	W. J. Allen and B. West	380,159	Mar. 27	1933	515	42	1360
Ladder. Extension	H. Barnes	376,794	Jan. 24	1563	410	42	322
Ladder. Fire	A. J. Sutherland	379,916	Mar. 20	1581	416	42	1281
Ladder. Step	J. Hill	377,616	Feb. 7	398	{400 401}	42	571
Ladder. Step	J. T. Miller	376,102	Jan. 10	528	141	42	113

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Ladder. Step	A. M. Whiteley	378,638	Feb. 28	1929	512	42	897
Ladle. Foundry	G. A. Goodwin and W. F. How	377,747	Feb. 14	599	154	42	622
Ladles. Machine for making	I. Hamilton	376,377	Jan. 10	917	240	42	185
Lamp	C. H. Lyman	376,716	Jan. 17	1430	376	42	298
Lamp	B. B. Schneider	379,610	Mar. 20	1102	293	42	1198
Lamp	C. S. Upton	379,836	Mar. 20	1451	384	42	1257
Lamp	T. E. Adams	380,074	Mar. 27	1815	{484 485}	42	1337
Lamp. Arc	L. P. Pell	377,907	Feb. 14	859	221	42	674
Lamp-bracket	C. R. Harris	379,110	Mar. 6	366	104	42	1034
Lamp-burner	F. Rhind	379,813	Mar. 20	1409	375	42	1250
Lamp-burner	T. Fitzgerald	377,195	Jan. 31	2122	560	42	438
Lamp burner. Kerosene	C. L. Betts	378,865	Mar. 6	7	3	42	968
Lamp. Car	C. W. Sherburne and F. A. Taber	377,961	Feb. 14	938	245	42	691
Lamp. Car	O. W. Bennett	378,647	Feb. 28	1943	{516 517}	42	900
Lamp. Carbureting	G. W. Blair	375,796	Jan. 3	99	29	42	23
Lamp-chimneys. Manufacture of	M. J. Wightman and E. Rasmussen	378,818	Feb. 28	2301	587	42	948
Lamp. Double-arc	L. H. Leber	376,323	Jan. 10	845	222	42	171
Lamp. Electric	C. W. Adams	380,271	Mar. 27	2082	557	42	1391
Lamp. Electric arc	E. E. Higgins and J. James	377,615	Feb. 7	397	100	42	571
Lamp. Electric-arc	E. R. Knowles	379,792	Mar. 20	1366	364	42	1242
Lamp. Electric-arc	W. H. Miller	376,007	Jan. 3	300	{103 104}	42	78
Lamp. Electric-arc	E. J. Shaw	379,249	Mar. 13	560	156	42	1077
Lamp-extinguisher	T. Miller	379,121	Mar. 6	379	{107 108}	42	1037
Lamp-extinguisher for railway-cars	J. Miller and F. R. Page	380,120	Mar. 27	1897	506	42	1353
Lamp-extinguishing apparatus	H. M. Doubleday	378,358	Feb. 21	1526	399	42	809
Lamp fixture. Incandescent-electric	F. Rhind	379,908	Mar. 20	1569	414	42	1279
Lamp. Hanging	C. Heisler	380,114	Mar. 27	1874	498	42	1348
Lamp holder and cut-out. Incandescent-electric	C. Heisler	380,202	Mar. 27	1992	533	42	1372
Lamp holder and cut-out. Incandescent-electric	T. A. Edison	379,770	Mar. 20	1333	356	42	1235
Lamp. Incandescent electric	P. H. Griffin	378,883	Mar. 6	39	11	42	974
Lamp-shade holder	E. A. Colby	376,583	Jan. 17	1209	320	42	248
Lamp socket and electrical converter. Combined incandescent-electric	F. Thone	379,255	Mar. 13	566	157	42	1078
Lamp socket. Incandescent	M. L. Best	379,265	Mar. 13	579	160	42	1081
Lamp. Street	N. Guyer	376,950	Jan. 24	1782	468	42	363
Lamp-supporting attachment	R. M. Wanzer	376,692	Jan. 17	1306	367	42	281
Lamps. Adjustable reflector and hood-shade for	H. M. Young	377,445	Feb. 7	147	33	42	523
Lamps. Apparatus for extinguishing the lights of car	G. Wilkes	379,842	Mar. 20	1461	386	42	1259
Lamps. Socket and key for incandescent	L. J. Wing	378,913	Mar. 6	73	21	42	981
Lamps. Supporting-crane for electric	J. B. Belcher	378,916	Mar. 6	80	23	42	982
Land-roller	G. C. Foose	377,006	Jan. 31	1951	512	42	403
Land-roller	S. F. Hartley	380,033	Mar. 27	1758	471	42	1325
Land-roller	S. F. Hartley	380,263	Mar. 27	2069	561	42	1394
Land-roller	F. Twick	380,003	Mar. 27	1712	458	42	1317
Land-roller and clod-crusher	L. B. Phelps	380,131	Mar. 27	1899	507	42	1353
Land-roller and harrow	C. W. Colony (Reissue.)	10,911	Mar. 20	1589	419	42	1283
Lantern	J. H. Kelly and E. P. Follett	378,889	Mar. 6	47	13	42	975
Lantern. Signal	W. K. Beard and J. M. Raymond	376,573	Jan. 17	1196	316	42	244
Lantern. Signal	G. W. Lyth	380,283	Mar. 27	2111	565	42	1396
Lantern. Signal	W. H. Smith	380,142	Mar. 27	1913	510	42	1356
Lantern. Tubular	C. Bergener	378,648	Feb. 28	1946	517	42	900
Lantern. Tubular	L. F. Betts	379,304	Mar. 13	641	174	42	1093
Lantern. Tubular	R. Hermance	379,686	Mar. 20	1514	398	42	1269
Lanterns. Picture-holding disk for magic	G. Carette	376,631	Jan. 17	1301	342	42	264
Lanterns. Reflector attachment for tubular	L. F. Betts	377,287	Jan. 31	2272	600	42	465
Laryngoscope	J. Leiter	376,601	Jan. 17	1238	325	42	253
Last	A. S. Adler	379,039	Mar. 6	261	73	42	1015
Last-block fastener	H. S. Reynolds	377,439	Feb. 7	141	31	42	521
Last. Repairer's	A. Wiseman	379,434	Mar. 13	827	223	42	1130
Last. Shoe-maker's	L. E. Miles	379,590	Mar. 20	1071	285	42	1183
Lasting-awl	C. K. Bradford	376,939	Jan. 24	1768	465	42	360
Lasting-jack	S. D. Tripp	378,118	Feb. 21	1159	302	42	741
Lasting-machine	F. Chase	376,368	Jan. 10	905	237	42	182
Lasting-machine	J. W. Hatch	378,446	Feb. 28	1662	{436 437}	42	843
Lasting-machine	J. W. Hatch and J. Pitcher	378,506	Feb. 28	1745	460	42	860
Lasting-tool	J. Spring	379,035	Mar. 6	256	72	42	1014
Latch and lock. Combined	J. Adams	377,733	Feb. 14	578	149	42	619
Latch and lock. Combined	M. Jobborn	377,200	Jan. 31	2131	562	42	440
Latch and lock. Combined	M. Jobborn	379,788	Mar. 20	1361	362	42	1241
Latch. Gate	C. E. Angell	377,543	Feb. 7	293	74	42	551
Latch. Gate	W. R. White	376,568	Jan. 17	1188	315	42	242
Latch. Night	W. Bohannan	377,983	Feb. 14	868	252	42	696
Lathe	W. Chaplin	375,988	Jan. 3	358	96	42	73
Lathe	R. C. Fay	379,568	Mar. 20	1038	{276 277}	42	1177
Lathe	W. C. Jones and W. S. Rogers	379,313	Mar. 13	655	{177 178}	42	1095
Lathe	C. H. Russom	377,779	Feb. 14	678	{170 171}	42	639
Lathe. Button	F. A. Merwin	376,447	Jan. 17	1028	269	42	212
Lathe-feed	W. C. Jones and W. S. Rogers	377,761	Feb. 14	619	160	42	626
Lathe for turning irregular forms	P. Kettenring	378,322	Feb. 21	1472	385	42	797
Lathe head-stock lock	C. H. Weston. (Reissue)	10,900	Feb. 7	573	147	42	604
Lathe-tool	J. D. Hall	379,218	Mar. 13	519	146	42	1070
Lathe. Turning	E. Lindner	377,080	Jan. 31	1969	517	42	406
Lathe. Wood-turning	L. L. Hill	377,617	Feb. 7	399	101	42	571
Lathes. Attachment for turning	E. Lindner	377,079	Jan. 31	1968	517	42	406
Lathes. Taper attachment for	E. A. Alpress	376,843	Jan. 24	1641	{429 430}	42	335

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Lead or base bullion in smelting from slag, &c. Apparatus for separating	W. B. Devereux	377,802	Feb. 14	716	181	42	646
Lead traps. Making	J. A. Lowe	376,203	Jan. 10	683	180	42	140
Leaf-turner	L. Maas	377,569	Feb. 7	326	83, 84	42	585
Leather and other materials. Machine for ornamenting	E. B. Stimpson	376,613	Jan. 17	1266	{331 / 332}	42	257
Leather. Artificial	I. Choate and C. O. Norcross	376,855	Jan. 24	1657	.....	42	338
Leather-cutting machine	J., P., A., F., and A. Cave	379,857	Mar. 20	1485	{392 / 393}	42	1261
Leather-cutting machine	W. Freeman	377,298	Jan. 31	2284	604	42	467
Leather-dressing machine	G. V. Anderson	377,473	Feb. 7	187	44, 45	42	532
Leather. Machine for staking, stretching, and softening	W. M. Hoffman	378,066	Feb. 14	1079	284	42	718
Leather-splitting machine	W. E. Adams	378,157	Feb. 21	1223	{319 / 320 / 321}	42	751
Leather-splitting machine	W. E. Adams	378,158	Feb. 21	1226	{321 / 322 / 323}	42	752
Leather-splitting machine	A. Hull	379,700	Mar. 20	1233	328	42	1215
Leather-splitting machine	S. Rosa, Jr.	378,179	Feb. 21	1253	{330 / 331}	42	757
Leather-splitting machine	G. L. Tyler	378,185	Feb. 21	1261	{333 / 334}	42	759
Leather-splitting machine	G. L. Tyler	378,186	Feb. 21	1263	334	42	759
Leather-trimming machine	S. H. Randall	380,296	Mar. 27	2113	566	42	1397
Lemon-juice extractor	R. E. Bristow	377,140	Jan. 31	2053	538	42	423
Lemon-squeezer	W. K. Crofford	377,291	Jan. 31	2278	602	42	466
Letter-box	J. B. Archer	379,302	Mar. 13	639	{173 / 174}	42	1092
Letter-box	E. A. Dubey	378,935	Mar. 6	132	38	42	992
Letter-box	S. Thompson	380,148	Mar. 27	1921	512	42	1358
Letter-box. Alarm	G. F. Girvan	378,166	Feb. 21	1236	325	42	754
Lettering-block	J. Springer	377,020	Jan. 31	1988	520	42	410
Levee and ditching machine	E. J. Engman	379,864	Mar. 20	1507	{396 / 397}	42	1269
Level and inclinometer. Spirit	E. F. St. John	377,870	Feb. 14	801	205	42	662
Level. Plumb	W. C. Looker and J. Newlove	377,396	Feb. 7	44	13	42	504
Level. Plumb	C. Marshall	377,434	Feb. 7	135	30	42	520
Level. Plumb	C. Ritz	379,662	Mar. 20	1153	311	42	1203
Level. Plumb	E. A. Wentworth and A. J. Traver	377,658	Feb. 7	467	119	42	583
Level sheath. Spirit	J. S. Truitt	379,259	Mar. 13	572	159	42	1046
Lever hook. Cable	M. E. Pugh	379,721	Mar. 20	1264	337	42	1222
Lever-power engine	E. T. Wheet	378,155	Feb. 21	1222	319	42	751
Life-boat	J. A. Aniello	376,935	Jan. 24	1763	463	42	359
Life-float	H. H. Williams	378,993	Mar. 6	193	53	42	1003
Lifter: *See* Hide-lifter. Transom-lifter.							
Lifting-jack	G. S. Rickard	375,769	Jan. 3	66	20	42	17
Lifting-jack	F. H. Sleeper	379,294	Mar. 13	627	171	42	1091
Lifting jack. Carriage	D. Simmons	377,784	Feb. 14	684	173	42	641
Light: *See* Arc light. Vault-light. Pavement-light.							
Lightning-rod	S. R. Lawshe	375,756	Jan. 3	50	15	42	13
Limekiln	M. Sayre	375,896	Jan. 3	224	61	42	48
Limekiln	M. Sayre	375,897	Jan. 3	225	61, 62	42	48
Line-holder	J. V. Beavers	377,367	Feb. 7	2	1	42	495
Lines. Device for obtaining vertical	J. Beyerle	375,795	Jan. 3	98	29	42	23
Liniment	A. E. Banks	377,979	Feb. 14	964	.....	42	696
Liquid-receptacles. Distributing tip for	W. H. Underwood	378,742	Feb. 28	2074	547	42	921
Liquid-separator. Centrifugal	C. D. Shepard	379,133	Mar. 6	391	111	42	1039
Liquid-separator. Centrifugal	C. D. Shepard	379,134	Mar. 6	393	111	42	1040
Liquids in vacuum-pans. Treating	P. Casamajor	378,290	Feb. 21	1342	355	42	775
Liquids. Indicator for non-transparent receptacles containing	F. H. Palmer	377,533	Feb. 7	278	71	42	548
Liquids. Machine for agitating	J. F. Mains	377,315	Jan. 31	2306	670	42	471
Lithographic surfaces. Preparing	E. O. Schmiel	376,554	Jan. 17	1172	.....	42	239
Lithographic surfaces. Producing	H. Schoembs	379,731	Mar. 20	1277	.....	42	1224
Lock: *See* Alarm-lock. Bag or satchel frame lock. Carriage-door lock. Coin-operated lock. Combination-lock. Electric lock. Fire-arm lock. Hasp-lock. Knob-lock. Lathe head-stock lock. Nut-lock. Oar-lock. Railway-switch lock. Railway-switch-stand lock. Safe-lock. Seal-lock. Wagon-lock.							
Lock	V. Jeannot	378,593	Feb. 28	1871	495	42	886
Lock	W. H. Taylor	378,267	Feb. 21	1393	365	42	783
Lock	W. H. Taylor	378,268	Feb. 21	1394	366	42	783
Lock-spindles. Making	A. C. Rex	376,014	Jan. 3	401	106	42	80
Lock-strike	J. H. and T. D. Morris	380,266	Mar. 27	2077	556	42	1390
Locomotive	J. Blasdale	380,168	Mar. 27	1944	519	42	1363
Locomotive ash-pan	P. J. Brown	377,600	Feb. 7	376	95	42	567
Locomotive-brake	E. Beals. (Reissue.)	10,894	Jan. 17	1445	380	42	292
Locomotive. Electric	E. M. Bentley	377,229	Jan. 31	2179	575	42	448
Locomotive-engines. Whistle-recorder for	C. L. Houghton and W. I. Fox	376,595	Jan. 17	1135	297	42	292
Locomotive exhaust apparatus	J. Y. Smith	378,340	Feb. 21	1501	392	42	804
Locomotive-pilot	W. G. Harrison	375,747	Jan. 3	41	12	42	11
Locomotive smoke-conduit	B. T. Loomis	378,014	Feb. 14	1013	264	42	705
Locomotive smoke-stack	P. J. Brown	378,762	Feb. 28	2105	556	42	929
Log-canting device	W. D. Link	379,403	Mar. 13	780	210	42	1119

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Log-rolling device	L. T. Kline	377,717	Feb. 7	549	140	42	598
Log-turner. Steam	J. Torrent	379,086	Mar. 6	329	95	42	1027
Logs. Machine for shaving off the bark from	N. H. Brokaw	379,559	Mar. 20	1018	272	42	1174
Loom	H. Eastwood	377,425	Feb. 7	121	26	42	517
Loom	F. Kesselring	376,312	Jan. 10	896	{218 / 219}	42	168
Loom	J. A. Mattern	379,481	Mar. 13	900	243	42	1143
Loom	J. T. Meats	379,484	Mar. 13	904	244	42	1144
Loom for weaving pockets, &c	W. J. Hulford	379,311	Mar. 13	652	177	42	1095
Loom let-off mechanism	H. Litchfield	379,173	Mar. 6	439	124	42	1050
Loom let-off mechanism	J. P. Thompson	376,353	Jan. 10	886	232	42	179
Loom let-off mechanism	S. Watson	377,654	Feb. 7	459	118	42	582
Loom let-off mechanism	J. N. Stearns	377,535	Feb. 7	280	71, 72	42	549
Loom. Needle	J. N. Stearns	377,536	Feb. 7	284	72	42	549
Loom. Needle	G. F. Hutchins	380,118	Mar. 27	1881	500	42	1350
Loom shedding mechanism	G. C. Mills	378,895	Mar. 6	53	15	42	977
Loom-shuttle	G. F. Hutchins	380,117	Mar. 27	1879	500	42	1349
Loom take-up mechanism	W. H. Taylor	379,917	Mar. 20	1582	416	42	1221
Loom-temple	L. J. Knowles	376,774	Jan. 24	1528	402	42	315
Loom weft stop-motion	L. J. Knowles	376,775	Jan. 24	1530	403	42	316
Loom weft stop-motion	L. J. Knowles	376,776	Jan. 24	1532	403	42	316
Loom weft stop-motion	L. J. Knowles	376,777	Jan. 24	1534	404	42	316
Loom-motion	J. Maw	377,207	Jan. 31	2147	567	42	443
Looms. Positive shuttle-motion for	C. Bailey	378,567	Feb. 28	1853	493	42	877
Looms. Tension device for the warp-beam of	T. Lamb and J. D. Morley	379,402	Mar. 13	779	210	42	1119
Loop-surfaced fabric and making the same	O. R. Chase	376,068	Jan. 10	480	130	42	103
Lozenge-machine	E. C. Leahy	376,961	Jan. 24	1795	.....	42	366
Lubricant	J. S. Hall	376,952	Jan. 24	1785	469	42	364
Lubricant-cup	D. L. McKitrick	378,331	Feb. 21	1467	.....	42	800
Lubricating composition	A. J. Robinson	376,966	Jan. 24	1800	474	42	367
Lubricating device							
Lubricator: *See* Axle-lubricator. Pulley-lubricator.							
Lubricator	G. W. Amos	377,593	Feb. 7	358	92	42	564
Lubricator	W. Anderach	376,899	Jan. 24	1588	416	42	326
Lubricator	M. P. Coleman	380,023	Mar. 27	1748	467	42	1323
Lubricator	W. M. Derby	376,432	Jan. 17	1002	262	42	207
Lubricator	H. N. Hewlett	377,253	Jan. 31	2215	585	42	455
Lubricator	H. N. Hewlett	377,254	Jan. 31	2216	586	42	455
Lubricator	C. H. Parshall	376,676	Jan. 17	1367	359	42	275
Lubricator	J. Powell	379,243	Mar. 13	553	154	42	1076
Lubricator	J. P. Peterson	375,949	Jan. 3	302	81	42	62
Lumber-gage. Pocket	A. T. Linderman	378,796	Feb. 28	2148	568	42	938
Lumber trimming and assorting machine	W. Humans	375,749	Jan. 3	43	12, 13	42	12
Magnet for electrical apparatus. Permanent	E. L. Orcutt	378,552	Feb. 28	1812	478	42	874
Magnet. Relay	T. A. Edison	377,518	Feb. 7	261	66	42	544
Magnetic separator	W. Humans	375,751	Jan. 3	45	13, 14	42	12
Magneto-electric machine	W. Humans	375,750	Jan. 3	44	13	42	12
Magneto-electric machines. Armature for	E. F. Davis	379,939	Mar. 27	1617	430	42	1296
Mail-bag	J. E. Dennis, Jr	375,805	Jan. 3	111	32	42	26
Mail-bag	A. J. Gillespie	375,871	Jan. 3	168	50	42	41
Mail-bags. Cord-fastener and label-holder for	W. W. McCleary	376,781	Jan. 24	1539	465	42	317
Mail-crane	M. V. B. Ethridge	378,391	Feb. 21	1567	{410 / 411}	42	817
Mail matter. Machine for marking	J. G. Hardie, Jr	378,309	Feb. 21	1456	380	42	794
Malling-machine	C. A. Svensson	378,632	Feb. 28	1922	509	42	896
Mallet	R. C. Sinclair and J. Hodson	379,136	Mar. 6	397	112	42	1040
Malt or grain. Apparatus for effecting the turning of	K. Clementsen	379,935	Mar. 27	1613	429	42	1298
Mangling-machine and extension-table. Combined	J. L. Wortman	376,764	Jan. 24	1505	.....	42	311
Manifold sheet	M. P. Faris and H. A. Falls	375,807	Jan. 3	114	33	42	27
Manure-distributer	W. C. McTyeire	379,654	Mar. 20	1161	307	42	1200
Manure-distributer	W. M. Bonra	379,360	Mar. 13	718	195	42	1108
Map	A. C. Fell and B. F. Blair	379,455	Mar. 13	860	232	42	1135
Marker. Land	F. W. Lycett	379,117	Mar. 6	375	106	42	1036
Marking-rage	M. Gottfried	377,451	Feb. 7	156	36	42	525
Mashing-machine	G. Barnard	376,278	Jan. 10	781	207	42	160
Mask. Base-ball	D. J. O'Sullivan	379,655	Mar. 20	1162	307	42	1200
Mask. Base-ball	E. M. Van Duzer	376,217	Jan. 10	701	187	42	144
Mason's float-handle	L. Schaffer	376,968	Jan. 24	1802	474	42	367
Massage. Appliance for self	J. W. Mansfield	377,490	Feb. 7	213	51	42	536
Mast. Hollow							
Mat: *See* Door-mat. Metal mat. Metal-bar mat. Metallic mat. Rubber mat. Wire mat.							
Match for molding with gated patterns	J. Wachalac	378,634	Feb. 28	1924	510	42	896
Match-machine	L. Kittinger	377,943	Feb. 14	914	{236 / 237}	42	686
Match-machine tray	L. Kittinger	378,010	Feb. 14	1007	263	42	703
Match-safe	A. Cary	379,680	Mar. 20	1204	318	42	1209
Matrices. Apparatus for fitting up	G. Mohr	378,799	Feb. 28	2169	576	42	942
Mattress. Air	G. H. and B. F. Snavely	379,827	Mar. 20	1432	380	42	1254
Mattress-stuffing machine	E. N. Stephenson	376,399	Jan. 10	941	247	42	189
Mattresses. Wire fabric for	F. Hainsworth	379,012	Mar. 6	222	60	42	1008
Measure. Automatic grain	H. W. Cowan	379,269	Mar. 13	567	143	42	1068
Measure. Automatic grain	C. W. Hadley	377,936	Feb. 14	902	{231 / 232}	42	683
Measure. Milk	C. L. Cristenson	376,293	Jan. 10	800	212	42	163
Measure. Rotary grain	J. E. Busenbarrick and G. F. Mitchell	376,367	Jan. 10	903	237	42	182
Measuring and cutting fabrics. Apparatus for	H. H. Dille and E. W. McGuire	376,642	Jan. 17	1322	347	42	267
Measuring and cutting fabrics. Machine for	H. H. Dille and E. W. McGuire	376,641	Jan. 17	1318	{346 / 347}	42	266
Measuring apparatus. Coin-released height	W. P. Ingham	379,071	Mar. 6	303	89	42	1023
Measuring apparatus. Grain	A. J. Simpson	377,278	Jan. 31	2252	595	42	461

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Measuring distances. Instrument for	A. Osborn	376,338	Jan. 10	866	227	42	175
Measuring machine. Grain-	J. M. Lamb	379,231	Mar. 13	537	150	42	1073
Measuring-reel	E. M. Thomas	379,743	Mar. 20	1292	345	42	1227
Measuring the distance and height of objects. Instrument for	W. Farquharson. (Reissue)	10,908	Mar. 13	1004	269	42	1163
Measuring-vessel	J. O. Boggs	377,369	Feb. 7	3	1	42	495
Meat. Preserving	J. D. Reed	377,404	Feb. 7	55	15	42	506
Mechanical movement	A. L. Akins	377,509	Feb. 7	248	60	42	542
Mechanical movement	B. F Andrews	379,499	Mar. 13	931	250 251	42	1149
Mechanical movement	G. Dunham	376,769	Jan. 24	1522	400	42	314
Mechanical movement	I. N. Elliott and P. A. Reid	379,775	Mar. 20	1338	357	42	1226
Mechanical movement	L. F. Goben	379,199	Mar. 6	476	135	42	1057
Mechanical movement	J. F. Hanley	376,303	Jan. 10	812	214 215	42	165
Mechanical movement	W. Koch	379,479	Mar. 13	898	242	42	1143
Mechanical movement	L. H. Nash	378,847	Feb. 28	2251	599 600	42	957
Mechanical movement. Electro-	R. H. Mather	377,684	Feb. 7	505	129 130	42	590
Mechanical movement. Electro-	J. F. McLaughlin	379,802	Mar. 20	1386	368	42	1246
Mechanical movements. Electrical apparatus for effecting	R. T. Smith	377,413	Feb. 7	105	21	42	514
Medical apparatus. Electro-	T. R. Ten Broeck	377,872	Feb. 14	803	205	42	663
Medicinal preparation	L. B. Weld	379,299	Mar. 13	635	.....	42	1092
Medicine-cup and stopper	J. B. v. Fürstenwärther	377,483	Feb. 7	201	48	42	534
Metal-bar mat	W. C. Spelman	377,580	Feb. 7	341	88	42	561
Metal cylinders. Machine for shaping wrought-	F. J. Seymour	376,167	Jan. 10	631	160	42	132
Metal. Decorating	J. Baynes	378,420	Feb. 28	1616	425	42	833
Metal dividing or splitting machine	J. C. Russell	376,914	Jan. 24	1734	456	42	354
Metal frame. Ornamental	R. G. Boreham	377,231	Jan. 31	2180	575	42	449
Metal. Machine for rolling melted	G. Brooke	379,096	Mar. 6	347	99	42	1031
Metal mat	M. H. Wilson and W. D. Thomas	378,912	Mar. 6	71	21	42	980
Metal. Ornamenting	J. Baynes	378,421	Feb. 28	1617	425	42	833
Metal. Ornamenting	G. Matthews	376,605	Jan. 17	1245	326	42	254
Metal plate for metal structures. U-shaped	E. de la Sance	376,979	Jan. 24	1818	478	42	370
Metal-shaping machine	E. A. Walker	379,142	Mar. 6	405	114	42	1042
Metal-working machine. Compound	E. S. Babcock	377,976	Feb. 14	960	250	42	695
Metals. Apparatus for decorating	J. Baynes	379,092	Mar. 6	342	98	42	1030
Metals. Apparatus for oxidizing the surface of	G. W. Gesner	376,874	Jan. 24	1680	439	42	343
Metals by electricity. Working	N. De Benardos	379,453	Mar. 13	857	232	42	1135
Metals. Composition of	H. Berglin	375,917	Jan. 3	254	.....	42	53
Metals from their ores. Separating	S. H. Cochran	378,868	Mar. 6	11	4	42	969
Metals. Treatment of	W. A. Baldwin	379,438	Mar. 13	893	.....	42	1131
Metals. Treatment of	G. W. Gesner	379,896	Mar. 20	1511	398	42	1268
Metals with aluminum. Combining	W. A. Baldwin	378,278	Feb. 21	1413	.....	42	786
Metallic bodies. Die for forming hollow ornamental	J. Burkhardt	378,413	Feb. 21	1605	421	42	824
Metallic mat or floor-covering	W. O. Bement	377,479	Feb. 7	195	46	42	533
Metallic plate. Embossed	A. C. Hafely	378,442	Feb. 28	1657	.....	42	842
Metallic surfaces. Decorating	J. Baynes	378,422	Feb. 28	1618	426	42	833
Metallic wheel	J. W. Savene	377,579	Feb. 7	340	88	42	561
Metallurgical furnace	W. J. Taylor	380,147	Mar. 27	1918	512	42	1357
Meter: *See* Current-meter. Grain-meter. Gas-meter. Water-meter.							
Middlings-purifier	W. J. Fender	379,155	Mar. 6	419	118 119	42	1045
Middlings-purifier	H. W. Stone, Jr	375,782	Jan. 3	83	25	42	20
Milk aerating and cooling apparatus	E. W. Coffin	379,051	Mar. 6	278	81	42	1018
Milk. Apparatus for condensing and carbonating	O. Von Roden	376,496	Jan. 17	1095	287	42	225
Milk. Condensing and preserving	O. Von Roden	376,495	Jan. 17	1092	287	42	224
Milk-cooler	J. T. and T. C. Hays	377,675	Feb. 7	488	126	42	587
Milk-gage	J. S. Elliott	379,692	Mar. 20	1223	325	42	1213
Milk-receiver	B. J. Cady	376,291	Jan. 10	798	211	42	163
Mill: *See* Coffee-mill. Grinding-mill. Feed-mill. Roller-mill. Fanning-mill. Saw-mill.							
Milling-machine	A. H. Brainard	378,427	Feb. 28	1630	428	42	835
Milling-tools. Machine for shaping	C. H. Trask	379,187	Mar. 6	453	128 129	42	1053
Millstone-feeder	L. E. Kane	377,762	Feb. 14	621	160	42	626
Mines. Timber structure for	G. J. Goodhue	377,197	Jan. 31	2125	560	42	479
Mining-cages. Landing-catch for	J. L. Mitchell	377,402	Feb. 7	53	15	42	506
Mining drill. Coal-	W. A. J. Thompson	378,481	Feb. 28	1710	451	42	853
Mining-machine	E. Moreau	376,719	Jan. 17	1433	377 378	42	288
Mining-sluices. Rock-separating apparatus for	L. A. Fenner	375,808	Jan. 3	115	33	42	27
Mirror. Hand-	L. Wiederer	377,282	Jan. 31	2259	597	42	462
Mirrors and other articles. Pneumatic holder for	C. E. Dougherty	377,995	Feb. 14	982	256	42	700
Miter-box	B. F. Gardiner	377,299	Jan. 31	2284	604	42	467
Miter-box	H. D. Lanfair	376,200	Jan. 10	676	179	42	139
Mitering-machine	J. G. Googins	376,192	Jan. 10	662	176	42	137
Molasses-gate	J. Gérard and R. L. Webb	377,555	Feb. 7	309	79	42	554
Mold: *See* Sand mold.							
Mold-board	R. Jones	378,841	Feb. 28	2241	597	42	956
Molder's flask	J. Harrison	375,935	Jan. 3	285	77	42	59
Molding apparatus. Sand-	S. J. Adams	377,005	Jan. 31	1859	491	42	387
Molding apparatus. Sand-	S. J. Adams	377,006	Jan. 31	1862	491	42	387
Molding apparatus. Sand-	S. J. Adams	377,007	Jan. 31	1864	492	42	387
Molding apparatus. Sand-	S. J. Adams	377,008	Jan. 31	1867	492	42	388
Molding-machine	B. L. Bradley	376,704	Jan. 17	1412	371	42	284
Molding machine. Sand-	W. and S. Sykes	380,300	Mar. 27	2120	567	42	1398

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Molding machine. Wood-	W. J. Smith	376,268	Jan. 10	769	204	42	157
Molding machine. Wood-	W. J. Smith	376,269	Jan. 10	770	205	42	158
Moldings. Machine for cutting	G. P. Vicken	375,904	Jan. 3	234	63, 64	42	49
Money. Box for packing	E. M. H. Lonitz	379,966	Mar. 27	1656	441	42	1306
Monocycle	H. Behr	379,849	Mar. 20	1471	388 389	42	1260
Mop and brush. Combined	A. W. O'Bleuss	377,955	Feb. 14	931	242	42	689
Mop attachment	C. Mansbarger	378,605	Feb. 28	1885	499	42	888
Mop-holder	B. F. Gilbert, Jr	378,586	Feb. 28	1862	491	42	884
Mop-wringer	H. Blake	378,949	Mar. 6	124	36	42	991
Mop-wringer	A. M. Burnham	380,275	Mar. 27	2086	558	42	1392
Mop-wringer	H. I. Hotchkiss	377,157	Jan. 31	2074	545	42	428
Mop-wringing attachment	C. L. Fortin	376,711	Jan. 17	1421	374	42	286
Mortising-machine	R. S. Greenlee	377,749	Feb. 14	604	155 156	42	623
Mortising-machine. Endless-chain	C. H. Douglas	379,506	Mar. 20	1028	275 276	42	1175
Moth-proof bag	T. Manahan	376,005	Jan. 3	388	103	42	78
Motion. Device for converting	W. H. McAndrews	379,405	Mar. 13	782	211	42	1120
Motion. Device for converting	J. H. Pemberton	378,334	Feb. 21	1491	390	42	801
Motion. Means for converting	H. L. Arnold	377,133	Jan. 31	2045	535 536	42	422
Motion. Means for converting	H. James and G. Robinson	379,277	Mar. 13	599	165	42	1085
Motor: *See* Car-motor. Pyromagnetic motor. Churn-motor. Rotary motor. Electric motor. Self-acting motor. Fluid-motor. Steam-motor. Hydraulic motor. Water-motor. Petroleum-motor. Weight-motor. Pressure-motor.							
Motor	C. E. Cooley and E. G. Nason	379,004	Mar. 6	211	57	42	1006
Movement. Device for imparting combined rotary and reciprocating	J. Thomson	378,344	Feb. 21	1508	394	42	805
Mower	L. Erpelding	378,390	Feb. 21	1565	409 410	42	816
Mower. Lawn-	W. L. Frisbie	379,949	Mar. 27	1630	434	42	1301
Mower. Lawn-	E. Kelly	377,562	Feb. 7	318	81	42	556
Mower. Lawn-	J. H. Thomas	375,842	Jan. 3	157	44	42	35
Mower. Lawn-	J. F. Watermolen	379,350	Mar. 13	701	190 191	42	1104
Mower reel. Lawn-	D. B. Hiser	375,816	Jan. 3	124	36	42	29
Mowers and reapers. Cutter and cutter-bar for	C. E. Morton and S. F. Brown	377,464	Feb. 7	177	42	42	529
Mowers and reapers. Cutter-bar for	P. E. Shee	380,058	Mar. 27	1793	479	42	1332
Mowing-machine	W. N. Whiteley and W. Bayley	378,816	Feb. 28	2197	585 586	42	947
Muffler. Steam-	G. F. Royer	379,608	Mar. 20	1100	292	42	1188
Multiple drill	F. C. Weir, C. Partington, N. O. Goldsmith and E. W. Harden.	378,748	Feb. 28	2084	549	42	925
Music-box	A. L'Epée	378,399	Feb. 21	1578	414	42	819
Music-folio	W. J. Gronert and C. G. Conn	376,648	Jan. 17	1329	349	42	268
Music-stand. Folding	J. H. Macke, Jr	377,629	Feb. 7	418	106	42	575
Musical instrument	A. Lowmiller	376,443	Jan. 17	1017	267 268	42	210
Musical instrument. Mechanical	W. B. Tremaine	376,725	Jan. 17	1442	379	42	291
Musical instruments. Repeating-check for music-sheets of mechanical	J. Crannell	379,887	Mar. 20	1540	406	42	1274
Nail: *See* Horseshoe-nail. Shoe-nail. Screw-nail. Wire nail.							
Nail	E. Wilder	376,620	Jan. 17	1281	336	42	260
Nail distributing and feeding machine	F. F. Raymond, 2d	379,330	Mar. 13	678	183 184	42	1099
Nail-extractor	G. W. Lane	377,565	Feb. 7	321	82	42	556
Nail-finishing machine	E. E. Pierce	379,413	Mar. 13	797	214 215	42	1123
Nail machine. Wire-	J. L. Corey	377,238	Jan. 31	2194	578 579	42	451
Nail machines. Die-holder and straightening device for wire-	M. M. Smith	379,735	Mar. 20	1282	342	42	1225
Nail-making machine	F. Bryant	378,656	Feb. 28	1956	519 520	42	902
Nail-making machine	F. F. Raymond, 2d	376,208	Jan. 10	690	163	42	141
Nail-plate feeder	S. H. Shurtleff and L. R. Haag	379,135	Mar. 6	395	112	42	1040
Nail-strips. Machine for making flexible	E. B. Allen	378,850	Mar. 6	1	1	42	967
Nail-tongs	A. Wood	376,220	Jan. 10	705	187	42	145
Nails. Die for cutting and pointing wire	H. A. Stone	377,722	Feb. 7	564	142	42	599
Nails. Machine for making upholsterers'	F. J. Bergmann	378,824	Feb. 28	2214	589 590	42	950
Nailing-machine	J. P. Smith and W. C. Evans	376,114	Jan. 10	543	145	42	115
Nailing-machine	E. Wilder	376,619	Jan. 17	1277	334 335 336	42	279
Neckties. Display-box for	J. W. M. Uhrig	378,224	Feb. 21	1317	350	42	771
Needle-blanks. Machine for swaging	W. H. Dayton	376,144	Jan. 10	597	159	42	125
Needle-grooving machine	P. M. Beers	378,489	Feb. 28	1719	454 455	42	855
Netting. Machine for making wire-	W. F. Dennis	379,008	Mar. 6	214	58	42	1007
Newspaper-selling apparatus	E. Anthony	376,021	Jan. 3	410	108 109	42	82
Newspapers, &c. Automatic apparatus for the sale of	R. Alexander-Katz	378,945	Mar. 6	119	34, 35	42	980
Nippers. Cutting-	R. H. Johnson	377,759	Feb. 14	617	160	42	626
Non-polarizing constant-current battery	F. J. Crouch	379,372	Mar. 13	739	201	42	1111
Nozzle	C. L. Travis	378,531	Feb. 28	1779	470	42	893

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Nut-blanks. Method of and machine for making	S. S. Babbitt	376,224	Jan. 10	708	188 / 189	42	146
Nut-lock	L. Anderson	377,185	Jan. 31	2109	556	42	426
Nut-lock	H. C. Bowen	376,179	Jan. 10	646	172	42	135
Nut-lock	J. H. Burdick	377,188	Jan. 31	2112	557	42	426
Nut-lock	G. E. Clarke	380,188	Mar. 27	1972	527	42	1364
Nut-lock	J. B. Crossley	379,686	Mar. 20	1214	321	42	1211
Nut-lock	J. Edgar	378,779	Feb. 28	2195	561	42	963
Nut-lock	G. P. Fuller	376,771	Jan. 24	1525	401	42	315
Nut-lock	H. T. Haugh and W. S. Zickefoose	375,813	Jan. 3	132	35	42	89
Nut-lock	W. H. Haws	377,714	Feb. 7	545	139	42	507
Nut-lock	G. Heffner	377,613	Feb. 7	395	100	42	570
Nut-lock	R. M. Johnson	377,307	Jan. 31	2299	608	42	470
Nut-lock	W. A. Jordan	378,008	Feb. 14	1004	262	42	703
Nut-lock	R. M. Keating	379,278	Mar. 13	600	165	42	1065
Nut-lock	W. A. Leech and G. W. Fogle	380,123	Mar. 27	1891	503	42	1351
Nut-lock	F. and J. Rennie	378,618	Feb. 28	1903	504	42	892
Nut-lock	E. C. Rolls	379,533	Mar. 13	964	260	42	1155
Nut-lock	J. A. Saunders	376,347	Jan. 10	880	230	42	178
Nut-lock	A. W. Talley	379,036	Mar. 6	257	73	42	1014
Nut-lock	H. O. Whyman	378,503	Feb. 28	1829	482	42	876
Nut-making machine	J. H. Burdick	380,244	Mar. 27	2051	548	42	1384
Nut-tapping machine	E. N. Beecher	377,280	Jan. 31	2267	599 / 600	42	464
Nut-tapping machine	L. Wilkinson	378,468	Feb. 28	1697	446	42	849
Nuts. Machine for counterboring and tapping	J. Gielow	376,408	Jan. 10	956	250 / 251	42	191
Nuts. Machine for making	H. Harris	375,746	Jan. 3	39	11, 12	42	11
Nuts. Making	J. H. Burdick	380,243	Mar. 27	2049	547 / 548	42	1384
Oar-lock	L. P. Cook	379,153	Mar. 6	417	118	42	1045
Oar-lock	W. H. Rice	378,722	Feb. 28	2053	542	42	920
Oatmeal-machine	D. Brown	380,177	Mar. 27	1956	522	42	1365
Office-chair and operating-table. Combination	F. E. Graves	377,806	Feb. 14	722	182 / 183	42	647
Oil-burner	C. R. Hoopes	379,468	Mar. 13	878	237	42	1139
Oil-can	J. S. Hoy	378,886	Mar. 6	44	12	42	975
Oil-can	E. W. Rider	377,639	Feb. 7	482	110	42	577
Oil-can	J. H. Sutphen	379,738	Mar. 20	1285	343	42	1225
Oil-can or other vessel	A. R. W. Knight	379,517	Mar. 13	958	258	42	1154
Oil-carrying shell	G. A. Heath	379,161	Mar. 6	426	120	42	1047
Oil-cup	J. McNaughton and A. Bardsley	377,435	Feb. 7	136	30	42	520
Oil-cup	E. P. Shaffer	377,782	Feb. 14	692	172	42	640
Oil. Device for burning hydrocarbon	G. K. Cummings	377,146	Jan. 31	2060	541	42	425
Oil-distributing bomb or case	B. Arnold	376,503	Jan. 17	1105	289 / 290	42	226
Oil-distributing device for sea-going vessels	J. I. Hazard	380,111	Mar. 27	1870	498	42	1348
Oil-feeder	N. Seibert	379,733	Mar. 20	1280	341	42	1224
Oil-press box	G. W. Hatfield	376,438	Jan. 17	1010	265	42	209
Oil. Refining	R. J. Wilson	379,090	Mar. 6	340	97	42	1029
Oil. Refining cotton-seed	G. W. Scollay	378,113	Feb. 21	1152	.....	42	740
Oil. Refining cotton-seed	G. W. Scollay	378,114	Feb. 21	1154	.....	42	740
Oil-tank indicator	F. S. Mason	378,330	Feb. 21	1486	388	42	800
Oils. Refining Canadian and similar petroleum	H. Frasch	378,246	Feb. 21	1360	.....	42	778
Oils. Refining vegetable	G. W. Scollay	377,466	Feb. 7	57	.....	42	506
Oiler. Automatic	A. B. Griswold and J. M. Bradbury	379,643	Mar. 20	1147	303 / 304	42	1197
Opera or school seat	H. E. Gardiner	376,738	Jan. 24	1465	387	42	304
Ordnance. Breech-loading	W. H. Driggs and S. Schroeder	378,828	Feb. 28	2219	591	42	951
Ordnance. Breech-loading	A. Noble	377,906	Feb. 14	857	220	42	674
Ordnance. Breech-loading	T. Nordenfelt	379,024	Mar. 6	240	68	42	1011
Ordnance. Hydraulic loading and operating mechanism for	R. T. Brankston	377,934	Feb. 14	882	225 / 226 / 227 / 228	42	678
Ordnance. Hydraulic operating mechanism for	C. H. Murray	377,905	Feb. 14	856	219 / 220	42	673
Ordnance. Hydraulic operating mechanism for breech-loading	C. H. Murray	377,904	Feb. 14	853	218 / 219	42	672
Ordnance. Operating	A. Noble	377,954	Feb. 14	920	241	42	689
Ordnance. Operating	A. Noble	378,172	Feb. 21	1244	327 / 328	42	756
Ordnance. Recoil-mounting for	A. Noble	377,336	Jan. 31	2332	673 / 674	42	474
Ordnance, &c. Trunnion-bearing for	R. T. Brankston	378,282	Feb. 21	1419	371	42	787
Ore-concentrator	O. Campbell and W. Peet	376,853	Jan. 24	1655	432 / 433	42	338
Ore-concentrator	J. Sandon	379,418	Mar. 13	806	217	42	1125
Ore-concentrator	E. A. Wall	380,233	Mar. 27	2036	543	42	1381
Ore-crusher	A. P. Granger	376,878	Jan. 24	1686	440 / 441	42	344
Ore-crusher	C. Kaestner	377,459	Feb. 7	166	38, 39	42	527
Ore-crusher	S. Kendall	378,450	Feb. 28	1669	438	42	844
Ore-crusher	R. Uren	376,928	Jan. 24	1752	461	42	357
Ore crusher and pulverizer	L. Wimmer	380,006	Mar. 27	1721	461	42	1319
Ore-feeder	T. G. Cantrell	379,099	Mar. 6	350	100	42	1031
Ore-feeder	E. C. Loftus	378,371	Feb. 21	1543	403	42	812
Ore-pulverizer	H. H. Eames	379,943	Mar. 27	1622	432	42	1300
Ore-pulverizer	W. McLean	377,167	Jan. 31	2089	550	42	432
Ore. Treatment of	I. Hersey and M. R. Conley	378,588	Feb. 28	1864	492	42	884
Ore-washer	T. Sharp	378,626	Feb. 28	1914	506 / 507	42	894
Ores, &c. Machine for crushing or disintegrating	A. P. Granger	376,877	Jan. 24	1685	440	42	343
Ores. Reduction of	H. Hirsching. (Reissue)	10,912	Mar. 20	1592	419	42	1284

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Ores. Rotary and oscillating apparatus for distilling metallic	W. Richter and R. Lorenz	380,135	Mar. 27	1904	508	42	1354
Organ. Reed	M. S. Wright	380,071	Mar. 27	1809	483	42	1336
Oven. Baker's	F. Dührkop	379,941	Mar. 27	1630	431	42	1299
Oven. Reel	C. Stewart	377,965	Feb. 14	945	246	42	692
Overcheck crown-loop	H. Johnson and E. Jacobus	377,308	Jan. 31	2300	608	42	470
Overshoe	W. Hanley	376,378	Jan. 10	918	241	42	185
Overshoe	E. Forbes	378,245	Feb. 21	1359	358	42	777
Overshoe. Rubber	N. B. Holdsworth	375,818	Jan. 3	126	37	42	30
Overshoes. Device for attaching	E. H. Smith	379,422	Mar. 13	811	218	42	1126
Oyster-beds. Apparatus for removing star-fish from	H. Shaw and J. A. McCulloch	377,644	Feb. 7	438	112	42	578
Package comprising fragile articles	W. N. Durant	379,106	Mar. 6	361	103	42	1033
Package-register	G. E. De Freest and G. W. Wynkoop.	377,669	Feb. 7	479	123 / 124 / 125	42	586
Packet-folding machine							
Packing-box	A. T. Linderman	379,652	Mar. 20	1158	306	42	1200
Packing-case	J. Davy	376,519	Jan. 17	1130	295	42	231
Packing-case fastening	N. Beckwith, Jr	377,477	Feb. 7	194	46	42	533
Packing or storing vessel	G. D. Corey	380,092	Mar. 27	1843	491	42	1343
Packing. Piston	H. L. St. James	377,442	Feb. 7	144	32	42	522
Packing. Piston-rod	W. R. Ford	379,272	Mar. 13	589	163	42	1083
Pad: *See* Blotting-pad. Collar-pad. Color or ink pad. Harness-pad. Harness back-pad. Hoof-pad. Shoulder-pad. Stirrup-pad.							
Paddle-wheel	W. Bryant	379,362	Mar. 13	719	195 / 196	42	1108
Paddle-wheel. Feathering	C. P. Thresher	376,687	Jan. 17	1386	365	42	279
Padlock. Combination	E. L. Drake	379,508	Mar. 13	943	254	42	1151
Padlock. Combination	J. E. Spencer and J. C. Sanders	378,736	Feb. 28	2067	545	42	922
Paging-machine	J. McAdams	378,607	Feb. 28	1886	499 / 500	42	889
Pail-cover fastening	C. F. Loomis	379,797	Mar. 20	1377	366	42	1244
Pail. Lunch	C. M. and L. N. Thayer	376,119	Jan. 10	552	147	42	117
Pail. Sheet-metal	F. A. Walsh	380,151	Mar. 27	1924	513	42	1359
Paint	H. Burnett	378,826	Feb. 28	2218	.....	42	951
Paint-can press	W. C. Williams	379,190	Mar. 6	463	131	42	1055
Paint-cup	N. Holloway	377,306	Jan. 31	2297	608	42	470
Paint for coating ships	E. L. Kitchingman	377,810	Feb. 14	726	.....	42	648
Paint-press	R. C. Hopkins, H. Coventry, P. Neymann, and J. C. Beardslee.	379,464	Mar. 13	874	236	42	1138
Painter's combination pot-hook	L. Kent	376,825	Jan. 24	1609	421	42	329
Pan: *See* Evaporating-pan. Locomotive ash-pan.							
Pans. Body-wire and handle for dish	J. B. Melloy	377,632	Feb. 7	422	107	42	575
Paper bag	D. Appel	378,487	Feb. 28	1717	453 / 454	42	855
Paper bag	W. A. Lorenz	380,263	Mar. 27	2073	554 / 555	42	1389
Paper bag	W. A. Lorenz	380,264	Mar. 27	2074	555	42	1389
Paper-bag machine	W. A. Lorenz and W. H. Honiss	377,314	Jan. 31	2305	670	42	471
Paper bags. Machine for the manufacture of	C. F. Schmidt	378,851	Feb. 28	2259	601	42	958
Paper bags. Manufacture of	C. F. Schmidt	378,526	Feb. 28	1773	468	42	866
Paper box	T. F. W. Schmidt	377,640	Feb. 7	432	110	42	577
Paper-box-covering machines. Cut-off attachment for	H. Inman	376,096	Jan. 10	530	139	42	111
Paper-box machines, &c. Register for	E. L. Steele	375,784	Jan. 3	82	25	42	20
Paper box or pail	S. E. Baker	377,977	Feb. 14	962	251	42	695
Paper-boxes. Machine for staying the angles of	C. W. Hobbs	379,162	Mar. 6	427	120 / 121	42	1047
Paper clip and punch. Combined	J. C. Jensen	377,031	Jan. 31	1897	499	42	392
Paper-cutters. Means for operating	W. F. Hill	379,784	Mar. 20	1355	361	42	1230
Paper cutting and folding machine. Combined	J. H. Stonemetz	376,052	Jan. 3	453	120 / 121 / 122	42	91
Paper-cutting machine	G. Broussier	376,025	Jan. 3	420	111 / 112	42	84
Paper-drying machine	A. A. Simonds	378,266	Feb. 21	1392	365	42	783
Paper-fastener	J. C. Jensen	377,029	Jan. 31	1895	498	42	392
Paper-fastener	J. C. Jensen	377,032	Jan. 31	1898	499	42	392
Paper-fasteners. Inserter or needle for	J. C. Jensen	377,030	Jan. 31	1896	498	42	392
Paper feeding and cutting device	C. Kahler and L. E. Brookes	380,288	Mar. 27	2105	563	42	1395
Paper-folding machine	W. Downing	377,354	Jan. 31	2374	686	42	482
Paper-folding machine	W. Hill	379,698	Mar. 20	1229	327	42	1214
Paper for carpet-linings, &c. Folded	A. Gibb	379,571	Mar. 20	1045	278	42	1178
Paper holder and cutter. Roll	E. R. Booth and J. R. Williams	379,444	Mar. 13	889	227	42	1132
Paper-knife and stamp-holder. Combined	B. Rice	379,415	Mar. 13	803	216	42	1125
Paper leather-board, &c. Compound for making	C. E. Haynes	377,072	Jan. 31	1958	.....	42	404
Paper leather-board. Machine for making	C. E. Haynes	377,071	Jan. 31	1957	514	42	404
Paper. Machine for cutting into strips and reeling	E. Brissaut	375,728	Jan. 3	10	2, 3	42	5
Paper. Manufacture of	T. J. Pearce and M. W. Beardsley	378,520	Feb. 28	1761	.....	42	864
Paper or other material. Fastener or holder for	C. M. Durnil	377,824	Feb. 14	742	188	42	650
Paper-testing machine	E. Mill	377,361	Jan. 31	2384	688 / 689	42	484
Paper tubes. Machine for making	R. A. Sentman	377,643	Feb. 7	435	111 / 112	42	578
Paper-weight and pen, pencil, or cigar holder. Combined	G. L. Tuller	377,726	Feb. 7	558	143	42	600
Papeterie	J. Hertz	376,954	Jan. 24	1787	469 / 470	42	364
Parer. Apple	W. A. C. Oaks	379,324	Mar. 13	670	181 / 182	42	1098
Parers. Slicing and coring knife for apple	C. E. Hudson	377,106	Jan. 31	2015	598	42	414
Paste. Adhesive	M. W. Marsden	376,445	Jan. 17	1025	.....	42	212

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Pavement. Artificial-stone	F. F. Gibford	378,000	Feb. 14	996	260	42	701
Pavement-light	H. Resley	379,127	Mar. 6	385	110	42	1038
Pavements. Construction of artificial-stone or concrete	P. H. Jackson	375,999	Jan. 3	374	100 101	42	76
Paving and roofing compound	A. Walrath	376,172	Jan. 10	639	.....	42	134
Paving, &c. Block for	F. M. Pickering	379,027	Mar. 6	247	70	42	1012
Paving, &c. Clay-block for	J. C. Anderson	379,926	Mar. 27	1600	423	42	1296
Paving. Composition of matter for	H. Busse	376,290	Jan. 10	797	.....	42	163
Paving. Making artificial or elastic bitumen for	H. Busse	376,289	Jan. 10	797	.....	42	163
Pawl-and-ratchet mechanism	R. J. Ballew	376,467	Jan. 17	1052	275	42	216
Peanut-roaster	T. Lee	378,256	Feb. 21	1379	360	42	790
Peat. Treating	S. Helmann	378,395	Feb. 21	1572	.....	42	818
Peeler. Orange	C. H. Porter	379,328	Mar. 13	676	183	42	1099
Pen	J. W. Wise	379,433	Mar. 13	826	223	42	1129
Pen and holder. Fountain	F. S. Bartram	380,014	Mar. 27	1732	465	42	1392
Pen. Fountain	D. W. Lapham	376,778	Jan. 24	1535	404	42	317
Pen. Fountain	W. W. Stewart	376,760	Jan. 24	1495	394 395	42	300
Pen. Fountain	W. W. Stewart	378,986	Mar. 6	189	51	42	1001
Pen. Fountain	W. W. Stewart	378,987	Mar. 6	183	51	42	1001
Pen-holder	J. A. Kimball	379,789	Mar. 20	1362	363	42	1241
Pen-holder	L. L. Tower	378,223	Feb. 21	1316	349	42	771
Pen. Telegraphic	H. P. Copeland	379,368	Mar. 13	734	200	42	1110
Pens or tubes. Filling device for fountain	R. C. Rutherford and F. S. Bartram	378,524	Feb. 28	1768	468	42	865
Pens, pencils, &c. Ear-rack for	J. Graham	375,743	Jan. 3	35	10	42	10
Pencil	J. F. Dodd	378,084	Feb. 21	1109	290	42	731
Pencil. Copying	C. Walpuski	376,456	Jan. 17	1038	.....	42	214
Pencil-holder	C. De Meyer	377,194	Jan. 31	2121	550	42	438
Pencil-holder	A. Myers	378,897	Mar. 6	55	16	42	977
Pencil holder. Slate	L. P. Fodrea	378,783	Feb. 28	2133	564	42	923
Pencil or pin case	A. B. Chase	378,768	Feb. 28	2112	558	42	931
Pencil rubber-holder	J. Hoffman	376,196	Jan. 10	668	177	42	138
Pencil-sharpener	W. N. Wheless	377,974	Feb. 14	958	250	42	695
Pencil sharpener. Lead	T. H. Stafford	378,117	Feb. 21	1158	301	42	741
Pencil sharpener. Slate	T. J. Manning	378,329	Feb. 21	1486	388	42	800
Pencils. Compass attachment for	M. Hanower	376,379	Jan. 10	919	241	42	185
Pencils. Rubber-tip attachment for	L. S. Bacon	379,844	Mar. 20	1462	387	42	1259
Perambulators. Steering device for	C. R. Gorman and C. J. Fletcher	377,102	Jan. 31	2010	526 527	42	411
Perforated glass	L. and A. Appert	376,844	Jan. 24	1643	430	42	335
Perforating-machine	E. P. Donnell	379,379	Mar. 13	748	203	42	1113
Petroleum-engine	A. Spiel	377,866	Feb. 14	795	203 204	42	661
Petroleum-motor	V. List and J. Kosakoff	378,328	Feb. 21	1483	387 388	42	809
Photograph-burnisher	W. G. C. Kimball	379,314	Mar. 13	658	178	42	1096
Photograph-exhibitor	G. M. Portenus and F. S. Miller	379,592	Mar. 13	962	260	42	1155
Photographs. Rubbing-down device for mounting	C. S. Howland	375,820	Jan. 3	128	37	42	30
Photographer's kit	W. J. M. Dobson	379,377	Mar. 13	745	202	42	1113
Photographic accessory	J. C. Gomber	377,556	Feb. 7	310	79	42	554
Photographic apparatus	W. H. Lewis	379,964	Mar. 27	1653	440 441	42	1305
Photographic camera	F. H. Patterson	378,973	Mar. 6	155	45	42	997
Photographic camera	J. E. Thornton	379,343	Mar. 13	694	188	42	1103
Photographic camera and plate holder. Combined	J. A. Davison	376,798	Jan. 24	1568	412	42	323
Photographic cameras. Shutter mechanism for	M. Flammang	377,554	Feb. 7	308	79	42	554
Photographic dark-chamber	E. H. Riedel	380,136	Mar. 27	1905	508	42	1355
Photographic pictures. Making	A. A. Hart	376,802	Jan. 24	1573	.....	42	324
Photographic-plate holder	H. Coppin	376,181	Jan. 10	648	173	42	135
Photographic-plate holder	W. H. Fuller	376,983	Jan. 24	1524	479	42	371
Photographic-printing frame	L. F. Adt	376,840	Jan. 24	1638	428	42	335
Photographic printing in fatty inks	C. Raymond	377,498	Feb. 7	226	55	42	530
Photographic-tray holder	L. F. Adt	375,912	Jan. 3	246	67	42	51
Photographing apparatus. Automatic electric	E. N. Bliss and J. F. Middleton	378,426	Feb. 28	1624	427	42	834
Piano-action	S. Harcourt	376,477	Jan. 17	1065	279	42	219
Pianos. Lamp-supporting device for upright	G. S. Roberts	376,452	Jan. 17	1034	271	42	213
Pianos. Music-rack attachment for upright	H. Ziegler	378,486	Feb. 28	1716	453	42	855
Picture-frame	F. W. Lowe	377,567	Feb. 7	324	83	42	557
Pictures of natural scenery and life. Method of and apparatus for producing animated	A. Le Prince	376,247	Jan. 10	740	196 197	42	152
Pie-plates and similar pans. Guard for	F. P. Huff	380,116	Mar. 27	1878	500	42	1349
Pile-driving and well-drilling machine. Combined	F. M. Gray	376,474	Jan. 17	1061	278	42	218
Piling and substructure. Metal	S. W. Robinson	377,332	Jan. 31	2335	617	42	476
Pillow. Sham	L. Buntrock	378,952	Mar. 6	128	37	42	991
Pillow-sham holder	F. E. Clark	378,867	Mar. 6	11	3	42	969
Pillow-sham holder	E. S. Hemmenway and G. F. Stratton.	378,396	Feb. 21	1573	412	42	818
Pin: *See* Clothes-pin. Safety-pin. Printing-press gage-pin.							
Pin for neck-wear	G. Schrade	376,047	Jan. 3	448	119	42	90
Pinchers. Shoe-maker's	J. Knell	379,476	Mar. 13	889	239	42	1141
Pinion-cutting machine	F. Leman	377,945	Feb. 14	919	237 238	42	687
Pipe: *See* Sheet-metal pipe. Tobacco-pipe.							
Pipe connection. Roof cast-iron soil	J. T. Fitzpatrick	378,360	Feb. 21	1527	399	42	809
Pipe-coupling	J. Armstrong	376,130	Jan. 10	578	154	42	121
Pipe-coupling	G. H. Benjamin	376,061	Jan. 10	470	126	42	101
Pipe-coupling	D. W. Magee	379,798	Mar. 20	1378	366	42	1244
Pipe-coupling	A. H. Rowand	378,150	Feb. 21	1215	316	42	750
Pipe-coupling	L. T. White	377,130	Jan. 31	2043	535	42	421
Pipe-coupling	A. Wilbur	376,458	Jan. 17	1040	272	42	214

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Pipe-coupling. Flexible	P. M. Askren	379,628	Mar. 20	1128	299	42	1193
Pipe coupling. Steam	H. and G. Knaub	378,932	Mar. 6	103	29, 30	42	986
Pipe-cutter	G. G. Thompson	377,725	Feb. 7	557	143	42	600
Pipe-expander	H. Wojan	378,507	Feb. 7	246	59	42	542
Pipe-hanger	P. N. Kenway	376,480	Jan. 17	1069	280	42	220
Pipe-hanger	H. Trask	379,495	Mar. 13	815	219	42	1127
Pipe-joint	M. C. Bowers	377,988	Feb. 14	974	254	42	698
Pipe-joint. Universal	H. Fenton	379,947	Mar. 27	1628	433	42	1301
Pipe-joints. Tool for forming cold-packed	A. N. Rankin	376,609	Jan. 17	1256	329 330	42	255
Pipe raising or lowering device	L. Boore	375,985	Jan. 3	355	95	42	72
Pipe-sections. Uniting	A. L. Murphy	376,750	Jan. 24	1481	390	42	307
Pipe-thimble	A. T. Matthews	379,482	Mar. 13	902	244	42	1143
Pipe-thimble	A. T. Matthews	379,483	Mar. 13	903	244	42	1144
Pipe-well coupling	M. T. Chapman	378,234	Feb. 21	1346	355	42	775
Pipe-wrench	J. Clark	377,668	Feb. 7	479	123	42	585
Pipe-wrench	T. F. Krueger	379,519	Mar. 13	959	258	42	1154
Pipe-wrench	H. Parmelee	379,123	Mar. 6	381	108	42	1037
Pipe-wrench	D. R. Porter	376,396	Jan. 10	939	246	42	188
Pipe-wrench	A. R. Wygle	380,072	Mar. 27	1812	484	42	1336
Pipes and similar materials. Apparatus for treating	H. G. Beatley	377,597	Feb. 7	365	94	42	565
Pipes. Apparatus for treating metal	H. G. Beatley	378,756	Feb. 28	2096	552 553	42	927
Pipes. Die for threading and cutting	G. Williams	379,624	Mar. 20	1123	297	42	1193
Pipes. Safety-plate for steam	E. W. Marsh	375,885	Jan. 3	211	58	42	45
Pipes. Trap for exhaust-steam	E. Rutzler	379,542	Mar. 13	989	266	42	1160
Piping. Flexible	F. M. Wilder and G. H. Benjamin	376,401	Jan. 10	946	248	42	189
Pistol-holder	R. Newman	375,829	Jan. 3	138	40	42	32
Piston	A. M. Morrill	379,711	Mar. 20	1250	332	42	1219
Pistons. Cushioning device for steam	E. F. Smith	377,840	Feb. 14	765	195	42	655
Pitch-board. Adjustable	G. W. Oliver	378,069	Feb. 14	1084	285	42	719
Pitcher. Ice	J. E. White	377,820	Feb. 14	736	186	42	649
Pitcher. Water	T. Shaw	378,823	Mar. 20	1428	379	42	1253
Pitchfork	R. W. Glasgow	379,951	Mar. 27	1633	435	42	1302
Pitman-connection	M. N. and E. P. Lynn	377,461	Feb. 7	170	40	42	528
Plane	J. J. Tower	379,346	Mar. 13	697	189	42	1104
Plane. Bench	H. M. Clark	378,494	Feb. 28	1731	457	42	858
Plane. Bench	C. L. Mead and J. A. Traut	378,704	Feb. 28	2020	536	42	915
Plane. Bench	J. H. Shaw	377,645	Feb. 7	439	112	42	579
Plane. Bench	J. A. Traut	376,455	Jan. 17	1038	272	42	214
Plane. Block-rabbet	J. Doray	379,940	Mar. 27	1618	431	42	1299
Planer. Road	J. C. Steele	379,829	Mar. 20	1434	380	42	1254
Planers. Friction feed mechanism for iron	F. Phillips	378,106	Feb. 21	1140	298	42	797
Planing machine. Wood	W. H. Gray	377,250	Jan. 31	2213	584	42	454
Planter	D. R. N. Turner	379,834	Mar. 20	1449	383	42	1256
Planter attachment. Corn	W. H. Bowman	378,509	Feb. 28	1837	484	42	878
Planter. Automatic check-row corn	E. C. Culver	379,634	Mar. 20	1136	301	42	1195
Planter. Check-row	J. H. Jensen	375,875	Jan. 3	195	53, 54	42	42
Planter. Check-row	A. F. Tlede	378,222	Feb. 21	1314	349	42	770
Planter. Check-row corn	J. E. Bering	379,850	Mar. 20	1475	389	42	1261
Planter. Check-row corn	E. N. Williams	376,125	Jan. 10	570	152	42	120
Planter. Combined corn and cotton	E. P. Lynch	376,534	Jan. 17	1144	300 301	42	214
Planter. Corn	J. C. Barlow	378,279	Feb. 21	1414	369 370	42	786
Planter. Corn	A. G. Beale	377,059	Jan. 31	1936	508 509	42	400
Planter. Corn	A. Bussey	378,189	Feb. 21	1266	335	42	760
Planter. Corn	J. W. and G. W. Campbell	379,363	Mar. 13	721	196 197	42	1109
Planter. Corn	J. W. Craig	376,370	Jan. 10	908	238	42	183
Planter. Corn	J. De Butts	378,164	Feb. 21	1233	324	42	753
Planter. Corn	J. M. Getchell	379,389	Mar. 13	761	205	42	1116
Planter. Corn	J. H. Jones	376,823	Jan. 24	1606	421	42	329
Planter. Corn	A. L. A. Schiermeyer	379,989	Mar. 27	1686	450	42	1313
Planter. Corn	M. A. Spafford	380,298	Mar. 27	2115	566	42	1397
Planter. Corn	C. E. White	379,838	Mar. 20	1453	384 385	42	1257
Planter. Corn	A. Winston	376,422	Jan. 10	984	257	42	196
Planter. Cotton-seed	B. B. Pritchett	378,109	Feb. 21	1147	299	42	738
Planter, cultivator, and cotton-chopper. Combined corn and cotton	J. W. Carley	378,286	Feb. 21	1425	372 373	42	788
Planter. Seed	A. Barker	378,077	Feb. 21	1101	288	42	730
Planter. Seed	J. F. Guilmartin	376,243	Jan. 10	733	195	42	150
Planter. Seed	J. V. Harter	376,089	Jan. 10	511	137	42	109
Planters. Attachment for corn	M. Schmucker	379,821	Mar. 20	1426	378	42	1253
Planters. Compensating clutch for corn	J. S. Johnson	376,308	Jan. 10	820	217	42	166
Planters. Regulating attachment for corn	W. M. Robinson	378,724	Feb. 28	2035	542	42	920
Planting attachment. Corn	F. L. Aten	379,554	Mar. 20	1012	271	42	1173
Plasterer's jacket	J. Skeffington	375,958	Jan. 3	314	84	42	65
Plastering-machine	D. W. Miles	378,453	Feb. 28	1673	439	42	845
Plastic material. Machine for forming balls, &c., from	F. Heller and I. G. Hooper	379,068	Mar. 6	208	87, 88	42	1022
Plotter and protractor	W. J. Mitchell	376,332	Jan. 10	860	226	42	174
Plow	S. Barr	377,226	Jan. 31	2174	574	42	448
Plow	W. A. Fairbanks	377,296	Jan. 31	2282	603	42	467
Plow	E. Hixson	379,647	Mar. 20	1153	305	42	1199
Plow	J. McArthur	379,653	Mar. 20	1160	306	42	1200
Plow	E. Murraine	376,543	Jan. 17	1160	305	42	237
Plow	A. Olson	378,900	Mar. 6	58	17	42	978
Plow	J. Porteous	380,052	Mar. 27	1787	477	42	1331
Plow	R. W. Shelbourne and J. H. Sublett	377,646	Feb. 7	440	113	42	579
Plow	C. P. Sutton	376,790	Jan. 24	1559	409	42	321
Plow	C. M. Thompson	377,653	Feb. 7	458	118	42	581

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Plow and harrow. Combined	J. C. Horton	379,164	Mar. 6	430	121, 122	42	1048
Plow and planter. Combined	W. F. Leslee	379,897	Mar. 20	1555	400	42	1276
Plow and road-grader. Side-hill	E. Clark	375,802	Jan. 3	107	31	42	25
Plow attachment	E. G. Goddard	376,773	Jan. 24	1527	402	42	315
Plow attachment	J. T. Minard	375,762	Jan. 3	57	17	42	15
Plow attachment	H. S. Null and J. Bussard	376,393	Jan. 10	935	245	42	188
Plow attachment	W. Tyers	377,126	Jan. 31	2039	533	42	420
Plow-bar. Adjustable	C. R. Barfield	376,226	Jan. 10	714	190	42	147
Plow-beam	E. A. Wilcox	377,472	Feb. 7	187	44	42	531
Plow. Ditching	J. L. Olson	377,837	Feb. 14	762	194	42	654
Plow. Double-set	W. T. Maynard	380,214	Mar. 27	2010	538	42	1376
Plow. Fire-	J. B. Oliver. (Reissue)	10,909	Mar. 13	1008	270	42	1164
Plow. Mole-	T. Nowell and G. H. Wilson	376,674	Jan. 17	1366	358	42	275
Plow or cultivator. Listing	J. S. Crum	379,863	Mar. 20	1506	396	42	1267
Plow. Side-hill reversible	T. H. Whitaker	376,911	Jan. 24	1756	462	42	358
Plow-standard	A. J. Nellis	376,448	Jan. 17	1030	269	42	212
Plow. Sulky	M. T. Hancock	379,892	Mar. 20	1548	408	42	1275
Plow. Sulky	A. Lindgren	376,532	Jan. 17	1143	299, 300	42	233
Plow. Sulky	W. Strait	376,788	Jan. 24	1554	408	42	320
Plow. Wheel	E. P. Lynch	376,535	Jan. 17	1147	301	42	234
Plow. Wheel	E. P. Lynch	376,536	Jan. 17	1149	301	42	235
Plow. Wheel	E. Shook	375,777	Jan. 3	77	23	42	19
Plow-wheel	J. M. Young	375,789	Jan. 3	93	27	42	22
Plows. Sulky attachment for	N. C. Barnes	376,176	Jan. 10	643	172	42	134
Plows. Sulky attachment for	W. Cobb	375,868	Jan. 3	185	51	42	40
Plows. Sulky attachment for	G. H. Sawyer	379,288	Mar. 13	618	169	42	1068
Plumber's furnace	H. Ruppel	379,996	Mar. 27	1682	449	42	1312
Plumbing wall-paper, window-shades, &c. Device for	J. Panyard	376,341	Jan. 10	870	228	42	176
Pneumatic carrier	G. D. Burton	379,503	Mar. 13	936	252	42	1149
Pneumatic tubes and similar ways. Means for automatically operating the gates of	R. M. Curtiss	376,862	Jan. 24	1664	434, 435	42	339
Pocket attachment	J. T. Simpson	378,729	Feb. 28	2060	543	42	921
Pocket-book clasp	D. M. Read	379,724	Mar. 20	1269	338	42	1223
Pocket-books, &c. Elastic band for	J. S. Ebert	377,373	Feb. 7	8	3	42	496
Pocket-receptacle. Pickpocket-proof	S. Mendelson	379,319	Mar. 13	664	179	42	1097
Pocket-spring. Safety	J. C. Wakefield	379,347	Mar. 13	698	189	42	1104
Pole-changer	E. M. Hamilton	379,069	Mar. 6	299	85	42	1021
Pole-socket and neck-yoke	J. M. Kettlewood	377,679	Feb. 7	494	127	42	549
Polishing and varnishing machine	J. W. Hussey	376,198	Jan. 10	670	178	42	138
Polishing-powder. Manufacture of	V. Seib	376,211	Jan. 10	692	.....	42	142
Pool-ball box	F. Reinert	376,549	Jan. 17	1166	306	42	238
Pop-corn balls. Machine for making	W. T. Goodwin, Jr	377,303	Jan. 31	2293	605, 606	42	469
Post: *See* Fence-post.							
Post	A. W. Tourgée	377,337	Jan. 31	2341	679	42	477
Post-anchor	F. Hay	377,070	Jan. 31	1956	514	42	404
Post-extractor	W. R. Oyler	376,903	Jan. 24	1719	451	42	351
Posts, &c. Preserving	C. W. Parker	378,459	Feb. 28	1681	441	42	846
Pot: *See* Coffee-pot. Engine dash-pot. Ink-pot. Transplanting-pot.							
Potassium carbonate. Obtaining	F. Brünjes	376,366	Jan. 10	903	.....	42	382
Potato-digger	C. Babcock	378,646	Feb. 28	1942	516	42	900
Potato-digger	H. D. Binkley	376,229	Jan. 10	717	191	42	147
Potato-digger	P. A. Chippendale	379,682	Mar. 20	1206	319	42	1209
Potato-digger	D. Y. Hallock	376,086	Jan. 10	507	136	42	108
Potato digging, cleaning, and assorting machine	E. A. and F. Cameron	379,098	Mar. 6	349	99, 100	42	1031
Potato-drill	J. L. Ulsh	379,745	Mar. 20	1295	346	42	1227
Power mechanism	G. Cottrell	378,192	Feb. 21	1269	336	42	761
Power-shears. Shear-blade for	A. Higginson	376,383	Jan. 10	924	242	42	196
Preserving fruits, &c	H. I. Blits	378,999	Mar. 6	206	.....	42	1005
Preserving goblet, tumbler, &c	A. Roder	375,955	Jan. 3	309	83	42	64
Press: *See* Baling-press. Cigar-press. Cotton-press. Gunpowder-press. Hay-press. Paint-press. Paint-can press. Printing-press. Seal-press.							
Press	J. F. Allen	377,132	Jan. 31	2045	535	42	421
Press	L. D. Gordon	376,300	Jan. 10	809	214	42	164
Press for butter and other plastic material	G. F. Johnson	376,097	Jan. 10	522	139	42	112
Presses. Bale-ejecting attachment for	G. Calder	380,088	Mar. 27	1839	490	42	1341
Presses. Screw-bearing for	G. B. Boomer	378,950	Mar. 6	125	36	42	991
Pressure. Apparatus for regulating fluid	J. B. Stobaeus	379,667	Mar. 20	1183	313	42	1205
Pressure-gage. Mercury	E. Brown	379,305	Mar. 13	643	175	42	1093
Pressure gages. Combined cock and siphon for steam-	E. A. Wood	379,038	Mar. 6	260	73	42	1015
Pressure governor. Fluid-	R. Everitt	379,382	Mar. 13	751	204	42	1114
Pressure motor. Fluid-	W. R. Harris	376,821	Jan. 24	1604	420	42	328
Pressure regulator and cut-off	W. D. Thomas	378,342	Feb. 21	1505	393	42	805
Pressure regulator. Automatic fluid-	W. D. Sheldon	379,824	Mar. 20	1429	379	42	1253
Pressure regulator. Fluid-	W. S. Clarkson	378,291	Feb. 21	1434	374	42	790
Pressure regulator. Fluid-	W. B. Mason	379,586	Mar. 20	1065	284	42	1182
Printer and index-cutter. Combined	T. Wrigley	377,796	Feb. 14	708	178, 179	42	645
Printer's galley	F. H. Boynton	378,654	Feb. 28	1953	519	42	901
Printers' rules. Machine for cutting	W. H. Golding	379,777	Mar. 20	1341	358	42	1237
Printers' rules. Machine for mitering	W. H. Golding	379,778	Mar. 20	1344	358, 359	42	1237

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Printing and delivery mechanism. Web	S. D. Tucker	380,001	Mar. 27	1706	456, 457	42	1317
Printing device	S. G. Adams and J. B. Seymour, Jr	379,864	Mar. 20	1534	405	42	1273
Printing-machine. Cylinder	J. T. King	377,432	Feb. 7	129	28	42	519
Printing-machine. Cylinder	M. Vierengel	379,188	Mar. 6	456	129, 130	42	1053
Printing machine. Plate-	A. M. Marcilly	379,235	Mar. 13	541	151, 152	42	1074
Printing-machine. Platen	C. F. Howe	376,956	Jan. 24	1789	470, 471	42	364
Printing machine. Ticket-	W. H. Curtis	380,278	Mar. 27	2091	569	42	1393
Printing machine. Web-	J. H. Stonemetz	376,053	Jan. 3	456	122, 123	42	91
Printing-machines. Accumulating sheets for	L. E. Brookes	376,288	Jan. 10	795	210, 211	42	162
Printing-machines. Bed-motion for cylinder	C. H. Campbell	379,933	Mar. 27	1610	428, 429	42	1297
Printing-machines. Feed-gage for platen	F. A. Bagley	380,240	Mar. 27	2045	546	42	1383
Printing-machines. Gripper for platen	H. F. Bechman	378,160	Feb. 21	1229	323	42	753
Printing-machines. Ink-distributing device for	J. Hackett	378,441	Feb. 28	1657	435	42	842
Printing oil-cloth. Machine for	N. L. Tuck	377,789	Feb. 14	690	175, 176	42	642
Printing-press	J. M. Jones	379,958	Mar. 27	1644	438	42	1303
Printing-press and ruling-machine. Combined	J. Dale	380,191	Mar. 27	1976	529, 530	42	1369
Printing-press gage-pin	E. L. Megill	377,949	Feb. 14	994	239	42	668
Printing-press gage-pin	E. L. Megill	377,950	Feb. 14	995	239	42	668
Printing-press gage-pin	E. L. Megill	377,951	Feb. 14	996	240	42	668
Printing-presses. Inking apparatus for	G. W. Prouty	378,110	Feb. 21	1148	299	42	738
Printing-presses. Inking attachment for	J. R. Brodie	376,426	Jan. 17	994	260	42	206
Printing presses. Throw-off mechanism for job-	A. P. Barber	376,059	Jan. 10	467	125	42	101
Printing-transfer process	J. Baynes	378,419	Feb. 28	1614	425	42	833
Privy-seat	C. Kelley and J. Ball	379,538	Mar. 13	963	264, 265	42	1159
Projectile	W. H. Brown	376,728	Jan. 24	1450	381	42	301
Projectile	M. E. Gregg	376,302	Jan. 10	810	214	42	165
Projectile. Line-throwing	J. N. Fletcher	376,375	Jan. 10	914	240	42	184
Prop spring. Top-	A. C. Ohlsen	379,241	Mar. 13	605	166	42	1046
Propeller	W. N. Chandler	378,660	Feb. 28	1967	522	42	904
Propeller. Buoyant	O. Vandenburgh	377,193	Jan. 31	2104	555	42	435
Propeller-wheel	W. L. Strong	378,221	Feb. 21	1314	349	42	770
Propelling and steering apparatus. Boat	J. Hermans	379,014	Mar. 6	223	60	42	1009
Propelling mechanism. Boat	A. B. Smith	377,123	Jan. 31	2035	533	42	419
Protector: *See* Book-protector. Corset-steel protector. Electric-light and globe protector. Garment-protector. Stamp-protector. Tree-protector.							
Protractor	S. Darling	376,430	Jan. 17	1000	262	42	207
Provision-box and table. Combined	C. B. Rice	380,218	Mar. 27	2014	539	42	1376
Pruning implement	A. Bosch	379,359	Mar. 13	716	195	42	1107
Pruning implement	J. N. Parker	377,956	Feb. 14	931	249	42	690
Pulley	W. R. Fee	379,946	Mar. 27	1627	433	42	1300
Pulley. Band-	S. S. Barrie	380,077	Mar. 27	1696	486	42	1339
Pulley. Belt-	G. F. Haven and S. H. Post	379,111	Mar. 6	367	104	42	1034
Pulley-block	S. H. M. and F. G. Leib	378,625	Feb. 28	1914	506	42	894
Pulley-cover	J. G. Jebb	377,161	Jan. 31	2079	547	42	429
Pulley for variable speed	J. F. Welch	377,281	Jan. 31	2257	597	42	462
Pulley-key	P. McDermott	378,260	Feb. 21	1385	362	42	781
Pulley lubricator. Loose-	R. A. Anstin	376,466	Jan. 17	1051	275	42	216
Pulley. Self-lubricating	W. T. Carroll	376,633	Jan. 17	1304	343	42	264
Pulley. Self-lubricating loose	J. D. Wirth	380,007	Mar. 27	1723	461	42	1319
Pulley. Wooden split	W. R. Fee	379,198	Mar. 6	474	134, 135	42	1057
Pulleys to shafts. Means for securing	L. M. Batty	377,661	Feb. 7	471	120	42	584
Pulp-cylinders. Machine for forming	W. P. Stevens	375,839	Jan. 3	154	43	42	35
Pulverizer	A. H. Bliss	377,288	Jan. 31	2273	600, 601	42	405
Pulverizer and harrow	A. H. Tripp	376,927	Jan. 24	1751	460, 461	42	357
Pulverizer and weeder. Combined	E. C. Elwell	379,308	Mar. 13	649	176	42	1094
Pulverizing-machine	A. D., Sr., A. D., Jr., and D. C. Searls	376,112	Jan. 10	541	144	42	115
Pump	J. C. Carter	378,766	Feb. 28	2110	557	42	930
Pump	W. J. Hearn	376,362	Jan. 10	923	242	42	185
Pump	S. La Point	376,960	Jan. 24	1794	472	42	365
Pump	G. H. Laub	379,233	Mar. 13	539	150	42	1073
Pump	W. B. McGinnis	379,237	Mar. 13	545	152	42	1075
Pump	E. Neff	378,402	Feb. 21	1585	416	42	820
Pump. Air-	H. J. Doerr	378,666	Feb. 28	1976	524	42	906
Pump and aerating device. Beer-	D. Dunn	377,711	Feb. 7	542	138	42	596
Pump. Crank-	J. J. De Rycke	378,665	Feb. 28	1973	593, 594	42	905
Pump. Double-acting	D. Webster	376,696	Jan. 17	1399	368	42	281
Pump. Force-	C. W. Kinder	377,833	Feb. 14	757	192, 193	42	653
Pump. Force-	A. D. Shelnutt	378,338	Feb. 21	1499	392	42	803
Pump. Force-	B. C. Vandunzen	377,054	Jan. 31	1927	506	42	399
Pump governor. Air-	E. G. Moore	378,609	Feb. 28	1989	500	42	889
Pump or blower. Duplex	J. Dow	378,042	Feb. 14	1047	273, 274	42	712
Pump-piston and check-valve. Combined	J. M. Normand	378,848	Feb. 28	2254	600	42	958
Pump-rod attachment	S. Barr	377,225	Jan. 31	2173	573	42	447
Pump-rod attachment. Windmill	W. H. H. Dabney	376,710	Jan. 17	1420	373	42	286

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Pump. Steam	T. Hill	377,938	Feb. 14	906	232, 233, 234	42	684
Pump-valve	M. W. Murphy	378,846	Feb. 28	2250	599	42	957
Pumps. Pressure-regulator for	P. Schuff	378,726	Feb. 28	2057	543	42	920
Pumping-engine regulator	E. N. Dickerson, Jr	380,025	Mar. 27	1750	468	42	1328
Punch	A. Burrowes	376,136	Jan. 10	587	157	42	122
Punch	A. H. Raynal	376,009	Jan. 3	396	105	42	79
Punch. Metal	W. Snee	378,341	Feb. 21	1504	393	42	804
Punch. Spring	W. C. Jones	378,549	Feb. 28	1805	477	42	873
Punching and shearing machine. Metal	G. McDonald	377,264	Jan. 31	2232	590	42	457
Punching-press feeding mechanism	F. H. Richards	378,805	Feb. 28	2178	579, 580, 581	42	943
Pyromagnetic motor	T. A. Edison	380,100	Mar. 27	1855	493	42	1344
Quartz. Mill for crushing or grinding	G. Frisbee	378,879	Mar. 6	33	9	42	973
Quiller	J. Nightingale	376,607	Jan. 17	1247	327	42	254
Quilting-frame	J. Arbogast	378,914	Mar. 6	75	21	42	981
Quilting-frame	B. W. Raines	379,661	Mar. 20	1174	311	42	1200
Quilting-machine	A. Beck	378,915	Mar. 6	76	22, 23	42	981
Quilting-machine	W. Koch	379,477	Mar. 13	890	239, 240, 241	42	1142
Quilting-machine	W. Koch	379,478	Mar. 13	895	241, 242	42	1142
Quilting-machine	K. Zallud	376,621	Jan. 17	1282	337, 338, 339	42	260
Quilting-machine shuttle-carrier	W. Koch	379,480	Mar. 13	899	242, 243	42	1143
Quilting-machine. Shuttle-driver for	A. Beck	376,280	Jan. 10	783	208	42	160
Quinia. Preparing hydrochlorate of	L. B. Weld	379,298	Mar. 13	635	.....	42	1092
Quinine. Solution of	L. B. Weld	379,300	Mar. 13	636	.....	42	1092
Quoin	G. E. Jones	377,618	Feb. 7	403	101	42	572
Quoin	G. E. Jones	377,619	Feb. 7	404	102	42	572
Quoin	G. E. Jones	377,620	Feb. 7	405	102	42	573
Rack: *See* Clothes-rack. Display-rack. Displaying-rack. Gun-rack. Hat-rack. Hat and coat rack. Hay-rack. Towel-rack. Wagon-rack.							
Rack-elevator	W. R. Fitchitt	379,693	Mar. 20	1224	325	42	1213
Radiator	J. Bond	376,766	Jan. 24	1519	400	42	313
Radiator	J. Hopson, Jr	378,093	Feb. 21	1120	293	42	734
Radiator-connection	G. A. Kiley	376,481	Jan. 17	1071	280	42	220
Radiator. Hot-water	A. Drake	375,864	Jan. 3	182	50	42	40
Radiator. Steam or hot-water	A. Catchpole	379,047	Mar. 6	272	79	42	1017
Radiators. Vent-plug for steam	E. P. Waggoner	379,260	Mar. 13	573	159	42	1080
Rafter-gage	J. N. Crusor	378,387	Feb. 21	1562	408	42	816
Rail-brace	F. C. Weir	377,220	Jan. 31	2168	572	42	446
Rail-chair	I. Wolfe	378,856	Feb. 28	2267	603	42	900
Rail. Detector	C. R. and H. Johnson	377,430	Feb. 7	128	27	42	519
Rail-fastening. Central	T. A. Davies	376,945	Jan. 24	1776	467	42	362
Rail-joint	H. F. Cox	378,575	Feb. 28	1846	487	42	881
Rail-joint	G. H. Williams	376,402	Jan. 10	946	248	42	189
Rail-joint support	A. H. Ege	376,869	Jan. 24	1674	437	42	341
Rail-loading machine	C. P. Tittle	376,561	Jan. 17	1181	311	42	241
Rail-splice or fish-plate	H. F. Cox	378,541	Feb. 28	1797	475	42	871
Rails and rail-joints. Means for preventing the creeping of	J. J. Reilly	378,721	Feb. 28	2051	541	42	919
Rails. Apparatus for toughening steel	J. Coffin	378,083	Feb. 21	1107	290	42	731
Railway and car. Elevated	J. L. Chapman	379,681	Mar. 20	1205	319	42	1209
Railway and conduit for electric wires, &c. Elevated	A. C. Oehrle	379,904	Mar. 20	1565	412, 413	42	1278
Railway-brake	F. A. Holleman	377,198	Jan. 31	2126	560	42	439
Railway-brakes. Device for applying pressure to	N. J. Pritchard and J. S. Tompkin	377,775	Feb. 14	670	169	42	638
Railway-brakes. Valve for electro-pneumatic	J. F. Carpenter	378,658	Feb. 28	1982	521	42	903
Railway. Cable	E. V. Johnson	379,648	Mar. 20	1154	305	42	1199
Railway. Cable	J. F. Just	379,169	Mar. 6	436	123	42	1049
Railway. Cable	W. S. Phelps	378,903	Mar. 6	61	18	42	978
Railway-chair	S. Anthony	379,148	Mar. 6	412	117	42	1044
Railway construction. Street	R. T. White	375,850	Jan. 3	164	46	42	36
Railway construction. Street	R. T. White	375,852	Jan. 3	166	46	42	37
Railway construction. Street	R. T. White	375,853	Jan. 3	166	46	42	37
Railway construction. Street	R. T. White	375,854	Jan. 3	167	47	42	37
Railway construction. Street	R. T. White	375,855	Jan. 3	168	47	42	38
Railway cross-tie and sleeper	G. E. Blaine and E. Hill	380,274	Mar. 27	2005	558	42	1391
Railway-crossing	J. F. Crowell and F. C. Weir	378,827	Feb. 28	2218	590	42	951
Railway-crossing	W. H. and R. T. Shannon	376,756	Jan. 24	1489	393	42	308
Railway crossing. Cable	E. S. Holden	376,153	Jan. 10	611	164	42	128
Railway-crossing gate	S. T. Street	380,228	Mar. 27	2027	542	42	1379
Railway danger-signal	L. T. Mann	376,444	Jan. 17	1023	268	42	211
Railway. Electric	W. W. Hopkins	379,069	Mar. 6	300	88, 89	42	1023
Railway. Electric	W. W. Hopkins	379,070	Mar. 6	302	89	42	1023
Railway. Electric	R. M. Hunter	377,107	Jan. 31	2016	528	42	415
Railway. Electric	W. I. Ludlow	377,397	Feb. 7	45	19	42	504
Railway. Electric	C. T. Mason	378,259	Feb. 21	1793	362	42	701
Railway. Electric	F. M. Speed	380,060	Mar. 27	1795	480	42	1333
Railway. Electric surface	J. A. Enos	379,509	Mar. 13	944	254, 255	42	1151
Railway. Elevated	J. M. Hannahs	377,153	Jan. 31	2071	544	42	427
Railway. Elevated	D. D. Read	379,181	Mar. 6	447	126	42	1051
Railway. Elevated	W. P. Wood	376,829	Jan. 24	1615	423	42	331

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Railway-frog	H. Elliot	379,154	Mar. 6	418	118	42	1045
Railway-frogs. Filling-piece for	T. A. Griffin	380,031	Mar. 27	1756	470	42	1325
Railway-gate	J. Bolt	378,761	Feb. 28	2103	555	42	929
Railway grading and excavating machine	M. E. Pugh	379,722	Mar. 20	1266	338	42	1222
Railway grip. Cable	D. S. Mackey	377,527	Feb. 7	272	60	42	547
Railway grip. Cable	J. H. Robertson	377,499	Feb. 7	229	55, 56	42	539
Railway-rail bender and straightener	E. M. Woodin and F. J. Gibbs	377,184	Jan. 31	2108	556	42	435
Railway-rail chair and tie. Combined	N. M. Marks	376,250	Jan. 10	746	198	42	153
Railway rail-tie and rail-clamp	J. F. Hndec	379,222	Mar. 13	525	147	42	1071
Railway-rails to their ties. Device for fastening	H. D. Cone	377,191	Jan. 31	2116	559	42	437
Railway-signal	A W. Bennett and J. M. Millen	380,165	Mar. 27	1940	517, 518	42	1361
Railway-signal	A. B. Blackburn	376,362	Jan. 10	898	235	42	181
Railway-signal	R. F. Hageman	377,892	Feb. 14	834	213, 214	42	669
Railway-signal	T. C. Lewis	378,451	Feb. 28	1670	438	42	844
Railway-signal	T. S. Nicholson	377,634	Feb. 7	494	106	42	576
Railway-signal	J. T. Phillips	377,908	Feb. 14	859	221	42	674
Railway signaling device	T. P. Rodgers	378,850	Feb. 28	2257	601	42	958
Railway-sleepers. Finishing-rolls for the manufacture of iron	A. Märklin	377,948	Feb. 14	994	239	42	688
Railway snow-plow and car combined	J. Woolèy	376,698	Jan. 17	1402	369	42	282
Railway-station indicator. Electric	G. Guntz	378,440	Feb. 28	1655	434, 435	42	841
Railway structure	F. K. Hain	376,951	Jan. 24	1783	468, 469	42	363
Railway structure. Elevated	B. F. Hamilton	376,986	Jan. 24	1998	481	42	371
Railway-switch	A. J. Atkinson	376,465	Jan. 17	1050	275	42	216
Railway-switch	L. M. Brown	380,086	Mar. 27	1836	489	42	1341
Railway-switch	B. J. Downing	377,889	Feb. 14	831	213	42	668
Railway-switch	H. C. Geatty	376,772	Jan. 24	1596	401, 402	42	315
Railway-switch	E. Gordon	377,713	Feb. 7	544	139	42	597
Railway-switch	R. H. Isbell	379,072	Mar. 6	305	90	42	1023
Railway-switch	M. McCann	376,006	Jan. 3	389	103	42	78
Railway-switch	J. J. Peetz	378,213	Feb. 21	1299	344	42	767
Railway-switch. Automatic	F. N. Kelsey and W. A. Stevenson	377,941	Feb. 14	911	235	42	685
Railway-switch. Automatic	W. H. Stowell	378,809	Feb. 28	2183	582	42	945
Railway switch-frog. Street	J. Hope, Jr	376,479	Jan. 17	1067	279	42	220
Railway-switch lock	W. T. Manning	379,709	Mar. 20	1246	331, 332	42	1218
Railway-switch-stand lock	F. S. Mitchell	379,122	Mar. 6	380	108	42	1037
Railway system. Electric	D. G. Weems	376,567	Jan. 17	1185	313, 314	42	242
Railway-tie	J. M. Giberson	378,133	Feb. 21	1190	311	42	746
Railway-tie	W. P. Hall	375,996	Jan. 3	368	99	42	75
Railway-tie	C. P. Hawley	379,574	Mar. 20	1049	279	42	1179
Railway-tie	W. B. Henning	376,884	Jan. 24	1696	443	42	346
Railway-tie	J. Jacobs	378,399	Mar. 13	775	209	42	1119
Railway-tie	G. Kelton	377,162	Jan. 31	2079	547	42	429
Railway-tie	J. W. Smith	376,214	Jan. 10	696	185	42	143
Railway tie and chair. Metallic	C. G. Singer	379,612	Mar. 20	1104	293	42	1189
Railway tie and fastening	T. B. Moore	375,763	Jan. 3	57	17	42	15
Railway-tie and fastening therefor. Metallic	F. L. Barrows	376,280	Feb. 21	1417	370	42	787
Railway tie and joint	J. Hill	378,930	Mar. 6	100	29	42	986
Railway-tie. Combined wood and metal	C. P. Hawley	379,575	Mar. 20	1051	279	42	1179
Railway-tie. Metallic	C. P. Hawley	379,576	Mar. 20	1052	279	42	1179
Railway-tie. Metallic	S. B. Jerome	379,312	Mar. 13	654	177	42	1095
Railway time-signal	J. F. K. O'Connor	377,497	Feb. 7	225	54	42	539
Railway-track	G. C. Baker	376,132	Jan. 10	580	155	42	122
Railway track. Cable-traction	W. H. Young	379,922	Mar. 20	1586	418	42	1282
Railway-track clearer or snow-plow	L. J. Bergendahl	379,441	Mar. 13	835	225	42	1131
Railway-track. Machinery for laying	D. S. Moore	379,178	Mar. 6	444	125	42	1051
Railway track-scraper	H. M. Littell	376,668	Jan. 17	1355	356	42	273
Railway-tracks. Ice and snow-plow for	E. Leslie	380,042	Mar. 27	1770	474	42	1327
Railway traction-cable	P. J. Fransze	377,023	Jan. 31	1888	497	42	391
Railway-trains. Pipe-coupling for	N. Curtis	376,075	Jan. 10	491	132, 133	42	105
Railway. Tube-motor street	W. G. Creighton	376,429	Jan. 17	999	261	42	209
Railway-wheel	W. H. Kitson	375,879	Jan. 3	203	56	42	43
Railways at switches. Operating cable	L. M. Clement and G. C. Waitriss	379,306	Mar. 13	644	175	42	1063
Railways. Automatic block-signal system for	F. S. Gnerber	378,306	Feb. 21	1450	378, 379	42	793
Railways. Combined sleeper and chair for street	R. T. White	375,856	Jan. 3	169	47	42	38
Railways. Conduit for electric	S. D. Field	380,103	Mar. 27	1860	494, 495	42	1346
Railways. Construction of street	R. T. White	375,851	Jan. 3	165	46	42	37
Railways. Depression-pulley for cable	G. W. Douglas	377,743	Feb. 14	590	159	42	691
Railways. Gripper for cable	A. A. Shobe and W. Embley	379,993	Mar. 27	1695	452	42	1314
Railways. Gripping device for cable	A. A. Shobe and W. Embley	379,994	Mar. 27	1696	452, 453	42	1314
Railways. Rail-connection for electric	E. L. Orentt	378,517	Feb. 28	1756	464	42	863
Railways. Slot-switch for electrical and cable	S. H. Short	379,092	Mar. 6	320	93	42	1026
Railways. Spring-jack for electric	S. H. Short	379,091	Mar. 6	319	92	42	1026
Railways. Track for street	R. T. White	375,849	Jan. 3	163	45	42	36
Railways. Track-scraper for street	G. W. Davis	378,292	Feb. 21	1436	374	42	790
Railways. Traction-increasing system for electric	E. E. Ries	379,909	Mar. 20	1570	414	42	1279
Rake: *See* Hay-rake.							
Rake tooth. Horse	W. H. Patten	375,892	Jan. 3	219	60	42	47
Ram	J. F. Ward	379,427	Mar. 13	819	220	42	1128
Range-boilers. Pedestal for	A. P. Creque	376,767	Jan. 24	1520	400	42	313
Rasp	R. Vollschwitz	379,620	Mar. 20	1116	296	42	1191

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Rasp-cutting machine	J. and G. W. Stokes	376,400	Jan. 10	943	947	42	189
Ratchet-drill. Railway	A. Warren	380,152	Mar. 27	1925	513	42	1359
Ratchet drill-stock	C. H. Wilmoth	378,639	Feb. 28	1930	513	42	897
Razor-blades. Attachable and detachable back for	A. V. Brokhaline and C. Langbein	377,926	Feb. 14	885	228	42	679
Razors. Machine for honing	E. Wyltenbach	376,221	Jan. 10	705	188	42	145
Reamer	T. R. Almond	376,501	Jan. 17	1103	289	42	226
Reamer. Expansible	H. Cassidy	376,427	Jan. 17	995	261	42	206
Reaper and mower blades. Sharpener for	L. P. Sefton	379,335	Mar. 13	684	185	42	1101
Reclining-chair	A. E. Palmer	376,105	Jan. 10	533	142	42	114
Reclining-chair	C. H. Pew	378,902	Mar. 6	59	18	42	978
Reclining-chair. Adjustable	L. Berger	377,011	Jan. 31	1872	493	42	388
Reel: *See* Fishing-reel. Flour-bolting reel. Harvester-reel. Hose-reel. Measuring-reel. Mower-reel. Wire-reel. Yarn-reel.							
Reel-handle and fishing-reel. Combined	A. Coates	379,683	Mar. 20	1209	320	42	1210
Reeling-frame	E. Masson	378,933	Mar. 6	104	30	42	987
Reeling-machine	E. E. Bradley	376,509	Jan. 17	1111	291 / 292	42	228
Reeling-machines. Stop mechanism for	J. E. Atwood	376,571	Jan. 17	1191	315 / 316	42	243
Refrigeration. Artificial	W. Andrew	379,964	Mar. 13	577	160	42	1080
Refrigerator	J. Frenier	379,533	Mar. 13	977	263	42	1158
Refrigerator	S. Fritch	377,246	Jan. 31	2296	582	42	453
Refrigerator	G. M. Lee	378,254	Feb. 21	1377	361	42	780
Refrigerator	C. W. Monroe	379,521	Mar. 13	961	259	42	1155
Refrigerator	R. Schierenbeck	376,263	Jan. 10	765	203	42	157
Refrigerator-car	N. Bosmann	376,024	Jan. 3	417	110 / 111	42	83
Refuse-burners. Grate for	E. G. Teed	377,651	Feb. 7	456	117	42	581
Register: *See* Cash-register. Fare-register. Hot-air register. Package-register. Telegraph-register.							
Registering and numbering device	C. H. Davids	375,804	Jan. 3	109	31	42	25
Regulator: *See* Air-compressor regulator. Boiler-feeder regulator. Cut-off regulator. Damper-regulator. Draft-regulator. Electric-generator regulator. Electric-machine regulator. Feed-regulator. Gas-regulator. Gas-pressure regulator. Pressure-regulator. Pumping-engine regulator. Temperature-regulator. Windmill-regulator.							
Rein-guard. Harness	L. P. Tooley	379,186	Mar. 6	453	127	42	1053
Reins, &c. Manufacture of round	A. Lobdell	379,796	Mar. 20	1376	365	42	1244
Retorts. Device for charging	A. Lentz	376,531	Jan. 17	1142	299	42	233
Return-bend	R. G. Eunson	378,878	Mar. 6	32	8, 9	42	972
Revolver	A. Greth	378,091	Feb. 21	1117	292	42	733
Revolver	I. Johnson and A. Fyrberg	379,226	Mar. 13	531	148	42	1072
Revolver	I. Johnson and A. Fyrberg	379,227	Mar. 13	532	149	42	1072
Revolver	J. T. Smith	376,922	Jan. 24	1743	458 / 459	42	355
Revolver	D. B. Wesson	377,878	Feb. 14	815	208	42	665
Revolvers. Barrel-catch device for	D. B. Wesson	377,877	Feb. 14	814	208	42	665
Revolvers. Barrel-lock for	I. Johnson and A. Fyrberg	379,225	Mar. 13	529	148	42	1072
Rice-hulling machine	J. D. Belton	376,026	Jan. 17	1292	340	42	262
Riddle or sieve	E. Oliver	378,458	Feb. 28	1681	440	42	846
Rigging. Device for setting up	F. Wheeler	377,055	Jan. 31	1929	507	42	399
Ring: *See* Key-ring.							
Rivet-holding device	J. Bardsley	379,204	Mar. 13	501	141	42	1067
Rivet-setting machine	C. M. Platt and F. R. White	380,132	Mar. 27	1900	507	42	1353
Riveting-machine	G. W. Bradley	375,725	Jan. 3	6	2	42	3
Riveting-machine	H. O. Roberts	375,772	Jan. 3	69	21	42	18
Riveting-machine	J. L. Saxe, N. M. Seelye, and F. W. Coy	377,051	Jan. 31	1918	504 / 505	42	396
Road and ditching machine. Reversible	H. C. Moore	377,041	Jan. 31	1906	501	42	394
Road digger and grader	A. Finks	378,782	Feb. 28	2130	563 / 564	42	934
Road-machine	A. Finks	378,781	Feb. 28	2128	563	42	933
Roads. Machine for making, repairing, and cleaning	C. H. Burleigh	379,679	Mar. 20	1199	317 / 318	42	1207
Roaster: *See* Coffee-roaster. Peanut-roaster.							
Rock-breaker or ore-crusher	J. H. Lancaster	380,121	Mar. 27	1885	501 / 502	42	1350
Rock-drill. Hand	J. O. Patridge	380,051	Mar. 27	1785	477	42	1330
Rock-drills. Core-lifter for annular	H. Cossette	377,239	Jan. 31	2196	579	42	451
Rock-drills. Drift column or support for	P. Kelly	376,659	Jan. 17	1343	353	42	271
Rocket	W. Meissel	379,970	Mar. 27	1660	442 / 443	42	1206
Rod: *See* Connecting-rod. Lightning-rod.							
Rod-coupling	J. Bottomes	377,186	Jan. 31	2110	556	42	436
Roller: *See* Barrel-roller. Land-roller. Shade-roller. Saw-mill stock-roller.							
Roller-mill	H. A. Barnard	376,023	Jan. 3	415	110	42	83

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Rolling car-wheels. Machine for	R. Bagaley and W. Hainsworth	379,754	Mar. 20	1307	349	42	1230
Rolling flangeless center-bearing rails. Roll for	A. J. Moxham	378,211	Feb. 21	1297	344	42	767
Rolling girder-rails. Roll for	A. J. Moxham	378,209	Feb. 21	1295	342 / 343	42	766
Rolling girder-rails. Roll for	A. J. Moxham	378,210	Feb. 21	1296	343 / 344	42	766
Rolling metallic bodies to spheroidal forms. Device for	C. F. Tebbetts	375,783	Jan. 3	85	26	42	21
Rolling-mill housing	J. Eynon	379,510	Mar. 13	946	255	42	1151
Rolling-mill plant	C. H. Morgan	379,974	Mar. 27	1666	444	42	1308
Rolling-mill plant	C. H. Morgan and K. J. Sunstrom	379,902	Mar. 20	1561	411 / 412	42	1277
Rolling-mill roll	A. Newell	379,595	Mar. 20	1078	287	42	1184
Rolling-mills. Bloom-manipulator for	R. Nayasmith	378,612	Feb. 28	1893	501	42	890
Rolling-mills. Reversing mechanism for	D. B. Hicks	380,259	Mar. 27	2067	553	42	1388
Rolls. Mechanism for cleaning toothed feed	H. Tindell	378,739	Feb. 28	2071	546	42	923
Roof. Sheet-metal	F. E. Sagendorph	378,725	Feb. 28	2056	542	42	920
Roofing	H. Schulhoff	376,918	Jan. 24	1738	457	42	335
Roofing-felt. Machine for cutting, sanding, and rolling	B. C. Waite	380,065	Mar. 27	1802	481 / 482	42	1334
Room-ventilator	F. Foellmer	376,770	Jan. 24	1523	401	42	314
Rope-cutter	R. Heaton and P. Hohmann	378,004	Feb. 14	999	261	42	702
Rope-traveler	H. G. Powell	380,267	Mar. 27	2077	556	42	1390
Rotary engine	W. J. Fisk and H. L. Phelps	379,385	Mar. 13	755	204	42	1115
Rotary engine	A. Hemsath	379,112	Mar. 6	367	105	42	1035
Rotary engine	P. J. Weber	377,364	Jan. 31	2387	620	42	495
Rotary engine	D. Williamson	375,788	Jan. 3	91	27	42	22
Rotary engine	V. Popp	378,146	Feb. 21	1210	315	42	749
Rotary motor operated by fluid-pressure	A. B. Bullock	377,143	Jan. 31	2055	539 / 540	42	424
Rotary steam-engine	C. P. Stanbon	375,960	Jan. 3	316	84, 85	42	65
Rounding-out and channel-flap-turning machine	G. K. Birge, G. W. Shamp, and C. F. W. Lehmann.	376,134	Jan. 10	582	155 / 156	42	122
Routing-machine	J. Kerrivan	377,678	Feb. 7	493	127	42	588
Roving-frames. Spindle-tube bearing for	J. F. Roblin	380,220	Mar. 27	2016	539	42	1377
Rowlock	J. H. Pearce	376,344	Jan. 10	875	229 / 230	42	177
Rubber. Apparatus for coating fabric with	J. H. Hatch	376,437	Jan. 17	1009	265	42	209
Rubber-dam clamp	F. Southgate	375,778	Jan. 3	79	23, 24	42	19
Rubber goods. Machine for forming seamless	D. Harkins	378,247	Feb. 21	1363	358	42	778
Rubber goods. Machine for making figured gossamer	M. Dittenhoefer	378,776	Feb. 28	2122	560	42	932
Rubber. Lining hollow articles with hard	C. S. Hyer	378,369	Feb. 21	1541	403	42	812
Rubber mat for store cases and counters	M. Snyder and A. Roht	378,405	Feb. 21	1593	418	42	822
Rubber soles. Method of and apparatus for cutting	J. H. Pearce	376,343	Jan. 10	873	229	42	177
Rubber upon one or both sides. Machine for coating fabric with india-	A. L. Hall	378,984	Mar. 6	40	11	42	974
Rug-making device	A. Ryan	376,165	Jan. 10	629	168	42	132
Rule. Folding	P. Gleason	375,742	Jan. 3	34	10	42	10
Rule for measuring lumber	J. McLean	378,894	Mar. 6	53	15	42	976
Rule. Pocket	W. C. Meyer	378,142	Feb. 21	1204	313	42	748
Ruler and section-liner. Parallel	E. Baltzley	375,722	Jan. 3	2	1	42	3
Ruler, blotter, and paper-cutter. Combined	H. Goldsmith	378,928	Mar. 6	95	28	42	985
Ruler. Combination	S. L. Bettes	377,663	Feb. 7	473	120	42	584
Rulling attachment. Blackboard	S. Burdsall and C. Thompson	376,795	Jan. 24	1564	410	42	329
Running-gear	P. Casamajor	378,232	Feb. 21	1344	.....	42	775
Saccharine solutions. Treating	A. F. Chable	377,351	Jan. 31	2367	603	42	481
Sad-iron	G. J. Murdock	379,804	Mar. 20	1388	369	42	1246
Sad-iron	T. W. McFarland	376,782	Jan. 24	1540	405	42	318
Sad-iron heater	G. Heidel	379,867	Mar. 20	1513	398	42	1269
Sad-iron. Self-heating	J. F. Bliss	379,044	Mar. 6	968	78	42	1016
Sad-iron with removable handle	J. Sabold	379,416	Mar. 13	804	216	42	1125
Sad-irons. Detachable handle for	W. M. Lerch	375,942	Jan. 3	294	79	42	61
Saddle. Harness	F. Rehkopf	379,605	Mar. 20	1096	291	42	1187
Saddle. Harness	W. M. Lerch	375,943	Jan. 3	294	79	42	61
Saddle tree. Harness	F. Rehkopf	379,606	Mar. 20	1097	292	42	1187
Saddles. Pad-plate for harness	I. P. Wendell	377,343	Jan. 31	2354	.....	42	479
Safe-linings, &c. Compound for	H. Stanynought	376,215	Jan. 10	697	185 / 186	42	143
Safe-lock	H. Brockman	376,365	Jan. 10	902	236	42	182
Safety-brake	W. F. Hyatt	375,873	Jan. 3	190	53	42	41
Safety-pin	J. Jenkins	377,108	Jan. 31	2018	528	42	415
Safety-pin	J. Jenkins	378,318	Feb. 21	1467	383	42	797
Safety-pin	J. B. Batt	376,177	Jan. 10	645	172	42	125
Safety-switch	H. A. Bogel and O. L. F. Browne	378,664	Feb. 28	2004	530	42	911
Salt. Apparatus for manufacturing	R. G. Peters	377,968	Jan. 31	2237	591	42	456
Salt-making apparatus	C. A. Von Welsbach	377,701	Feb. 7	598	.....	42	594
Salts of cerium, &c. Obtaining	M. E. Austin	379,500	Mar. 13	932	.....	42	1149
Salve	G. H. A. Williams	377,592	Feb. 7	357	.....	42	564
Salve	J. C. Turner	380,092	Mar. 27	1711	458	42	1317
Sample-holder	S. L. Robertson	375,895	Jan. 3	222	61	42	47
Sand distributer and packer	R. Titcomb	379,256	Mar. 13	568	158	42	1079
Sand-distributing machine	S. J. Adams	377,009	Jan. 31	1868	492	42	388
Sand mold	S. J. Adams	377,004	Jan. 31	1857	491	42	387
Sand molds. Apparatus for withdrawing patterns from	S. J. Adams	377,010	Jan. 31	1870	492	42	388
Sand molds. Withdrawing patterns from	T. L. Prevost	378,522	Feb. 28	1765	467	42	865
Sand-paper holder	J. J. Carr	378,129	Feb. 21	1174	306	42	744
Sand-sifting machine	S. Palmer	378,712	Feb. 28	2039	538	42	917
Sash-balances. Manufacture of	M. H. Kinsley	376,314	Jan. 10	833	219	42	168
Sash-cord fastener	O. C. Seiter	376,349	Jan. 10	881	231	42	178
Sash-cord fastener	C. J. Anderson	375,975	Jan. 3	342	92	42	70
Sash-fastener	G. H. Aylworth	376,359	Jan. 10	894	234	42	180
Sash-fastener	G. J. Cline	377,990	Feb. 14	976	254	42	698
Sash-fastener	W. T. Davis	376,431	Jan. 17	1001	262	42	207

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Sash-fastener	K. D. Hughes	376,654	Jan. 17	1335	350	42	270
Sash-fastener	J. B. Keeter	377,522	Feb. 7	266	67	42	545
Sash-fastener	O. C. Ketring	378,794	Feb. 28	2146	567	42	937
Sash-fastener	N. McIntyre	376,252	Jan. 10	749	199	42	154
Sash-fastener	H. J. Murphy	378,515	Feb. 28	1753	463	42	863
Sash-fastener	R. H. North	379,242	Mar. 13	532	154	42	1076
Sash-fastener	G. D. Paul	379,124	Mar. 6	381	109	42	1037
Sash-fastener	F. L. Rosentreter	379,910	Mar. 20	1573	415	42	1240
Sash-fastener	H. I. Williams	380,277	Mar. 27	2041	545	42	1382
Sash fastener and holder combined	J. D. Axtell	378,351	Feb. 21	1518	397	42	807
Sash-holder	F. L. Rosentreter	379,664	Mar. 20	1175	312	42	1203
Sash-weight	M. L. Lisaberger	379,317	Mar. 13	662	179	42	1096
Saw	L. Lohman	378,203	Feb. 21	1287	340	42	765
Saw	H. C. Palmer	379,719	Mar. 20	1261	336	42	1221
Saw and planer. Combined	H. F. Burkhardt	375,730	Jan. 3	14	4	42	6
Saw-bench gage	F. E. Farwell	378,924	Mar. 6	89	26	42	984
Saw-clamp	C. F. Leopold	377,946	Feb. 14	920	238	42	687
Saw. Crosscut	P. Jacobus	377,521	Feb. 7	266	67	42	545
Saw-file-adjusting weight	W. Moore	377,528	Feb. 7	272	69	42	547
Saw filer, gage, and gummer. Combined	G. S. Jones	377,677	Feb. 7	491	127	42	588
Saw-filing machine	E. Tyden	378,060	Feb. 14	1069	280 / 281	42	715
Saw-grinding machine. Shingle	F. Challoner	379,682	Mar. 20	1133	300	42	1194
Saw-guide	A. House	379,165	Mar. 6	431	122	42	1048
Saw-jointer	R. E. Poindexter	377,328	Jan. 31	2329	676	42	474
Saw-mill	H. McEvilla	377,630	Feb. 7	419	106 / 107	42	575
Saw-mill carriage	G. M. Hinkley	378,683	Feb. 28	2003	525 / 530	42	910
Saw-mill carriage	D. C. Prescott	376,678	Jan. 17	1370	360	42	276
Saw-mill carriage	S. R. Smith	376,050	Jan. 3	451	120	42	90
Saw-mill carriages. Feed mechanism for	A. E. Hoffman	379,163	Mar. 6	428	121	42	1047
Saw-mill carriages. Feed mechanism for	A. Schnier and S. R. Smith	377,469	Feb. 7	184	43	42	531
Saw-mill carriages. Offset mechanism for	D. C. Prescott	378,717	Feb. 28	2045	540	42	918
Saw-mill carriages. Steam-feed for	J. B. St. Louis	376,169	Jan. 10	636	170	42	133
Saw-mill dog	W. H. Bennett	379,440	Mar. 13	834	225	42	1131
Saw-mill dog	W. S. Reeder	377,911	Feb. 14	863	222	42	675
Saw-mill-feed device	W. H. Gibbes, Jr.	376,592	Jan. 17	1226	323	42	250
Saw mill. Gang	W. F. Parish	379,657	Mar. 20	1165	308 / 309	42	1201
Saw mill. Gang	W. M. Wilkin	380,235	Mar. 27	2038	544	42	1381
Saw mill. Gang	W. M. Wilkin	380,236	Mar. 27	2039	544 / 545	42	1381
Saw-mill set-works	W. A. Campbell	375,800	Jan. 3	104	30	42	24
Saw-mill set-works	J. B. Stanwood and P. P. Lane	379,998	Mar. 27	1701	454	42	1315
Saw-mill set-works. Ratchet mechanism for	W. F. Parish	379,656	Mar. 20	1163	307 / 308	42	1200
Saw-mill stock-roller	W. A. Campbell	375,801	Jan. 3	106	31	42	25
Saw-set	S. Hargrave, Sr	377,853	Feb. 14	778	199	42	658
Saw-set	W. H. Nelson	378,017	Feb. 14	1016	265	42	705
Saw-sharpening device	G. W. Amesbury	378,277	Feb. 21	1410	369	42	786
Saw-swage	H. W. Williams	376,128	Jan. 10	574	153 / 154	42	121
Saw. Wood	A. G. Langlot	378,510	Feb. 28	1748	462	42	861
Saws. Device for dressing and jointing the teeth of	W. M. Green	376,647	Jan. 17	1327	348 / 349	42	268
Saws. Feed for stone	N. McIntyre	376,251	Jan. 10	748	195 / 196	42	153
Saws. Fence for	C. Seymour	378,939	Mar. 6	112	32	42	988
Saws. Guide for circular	J. S. Marshall	378,513	Feb. 28	1751	463	42	862
Saws. Handle for crescent	M. Bennett	375,916	Jan. 3	252	69	42	53
Saws. Machine for grinding shingle	W. H. Hall	379,108	Mar. 6	363	103 / 104	42	1034
Saws. Milling-machine for scarfing the ends of band	A. D. Catlin	377,707	Feb. 7	535	137	42	595
Saws. Side dresser for	C. E. Cleveland and J. Hanson	380,089	Mar. 27	1840	490	42	1342
Sawing-machine	C. M. Young	380,073	Mar. 27	1813	484	42	1337
Sawing machine. Circular	A. D. Catlin	377,706	Feb. 7	538	137	42	595
Sawing machine. Rail	E. C. Smith	375,959	Jan. 3	315	84	42	65
Sawing machines. Clamp for wood	J. Wilson	375,909	Jan. 3	241	66	42	51
Scaffold. Builder's	E. S. Moss	378,102	Feb. 21	1133	296 / 297	42	736
Scaffolding	D. S. Fisher	380,254	Mar. 27	2061	551	42	1387
Scale and register. Grain	L. Reynolds	376,044	Jan. 3	444	118	42	89
Scale. Automatic grain	C. B. Foreward	377,606	Feb. 7	384	97, 98	42	568
Scale. Automatic grain	J. Gnidinger	378,363	Feb. 21	1531	400 / 401	42	810
Scale. Automatic grain	C. J. Hartley	379,954	Mar. 27	1637	436	42	1302
Scale. Automatic grain	C. A. Lieb	377,433	Feb. 7	130	29, 30	42	519
Scale. Automatic grain	M. E. Reisert	376,679	Jan. 17	1373	361 / 362	42	277
Scale-beams. Lever foot and fulcrum of	J. J. Clarke	376,513	Jan. 17	1121	293	42	229
Scale. Electro-magnetic grain-weighing	W. A. Holley and U. Malin	377,383	Feb. 7	26	8	42	500
Scale for weighing grain	J. Dahle	377,292	Jan. 31	2278	602	42	466
Scale. Platform weighing	H. Paddock	376,042	Jan. 3	441	117	42	89
Scale. Pocket weighing	W. R. Watt	379,746	Mar. 20	1297	346	42	1228
Scale. Recording weighing	W. E. Selleck	378,557	Feb. 28	1720	460	42	875
Scale. Weighing	M. B. Lloyd	378,698	Feb. 28	2021	534	42	914
Scale. Weighing	W. C. Thomson	376,925	Jan. 24	1748	460	42	356
Scale. Weighing	A. Turnbull	378,382	Feb. 21	1556	407	42	815
Scarf. Neck	M. C. McDonald	377,570	Feb. 7	327	84	42	558
Scarf. Neck	J. J. Roche	377,690	Feb. 7	513	131	42	592
Scarf. Neck	G. Selowsky	379,182	Mar. 6	149	126	42	1052
Scarf. Neck	M. Wald	375,967	Jan. 3	330	88	42	68
Scissors and file. Combined	C. P. Hawley	376,596	Jan. 17	1231	324	42	251

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Scissors. Pocket	A. Paula	377,637	Feb. 7	430	110	42	577
Scoop. Coal	F. B. Barrows	376,434	Jan. 17	991	259	42	305
Scoops, &c. Bag-opening attachment for	F. Pease	379,491	Mar. 13	915	246	42	1146
Scourer: *See* Grain-scourer.							
Scraper and grader. Reversible road	H. D. Cook	378,922	Mar. 6	86	25	42	983
Scraper and grader. Road	W. J. Martin	377,082	Jan. 31	1973	518	42	407
Scraper. Ditching and grading	L. E. Ashley	376,022	Jan. 3	414	109 / 110	42	82
Scraper. Earth	J. D. Brainard	378,571	Feb. 28	1841	486	42	879
Scraper. Earth	W. E. Kilborn	377,523	Feb. 7	267	67	42	546
Scraper. Earth	C. G. Peterson and C. V. Rundblad	376,753	Jan. 24	1485	391	42	307
Scraper for railways. Track	H. M. Littell. (Reissue)	10,895	Jan. 24	1854	489	42	377
Scraper. Platform	D. M. Denehy and H. W. Childs	380,024	Mar. 27	1749	467	42	1323
Screen: *See* Insect-screen. Wire screen. Window-screen.							
Screen	J. P. Harrison	376,436	Jan. 17	1008	264	42	209
Screen for windows, doors, &c	J. Haish	376,881	Jan. 24	1692	442	42	345
Screens, grates, and panels. Construction of	J. Burkhardt	378,415	Feb. 21	1606	422	42	895
Screw	J. P. A. Hanlon	379,200	Mar. 6	479	135	42	1057
Screw	L. H. Palmer	378,614	Feb. 28	1896	502	42	891
Screw and making the same. Rolled-headed wood	H. A. Harvey	377,453	Feb. 7	158	37	42	525
Screw-bolts. Machine for finishing heads of	C. D. Rogers	376,416	Jan. 10	969	253 / 254	42	194
Screw-clamp	J. Mooney	378,896	Mar. 6	54	15	42	977
Screw-conveyer	L. Rossler	376,552	Jan. 17	1171	308	42	239
Screw-cutting die	E. J. Herman	377,614	Feb. 7	396	100	42	570
Screw eye. Reversible	C. O. Harley	377,611	Feb. 7	391	99	42	570
Screw machine. Metal	J. B. Clyne	376,942	Jan. 24	1771	465	42	361
Screw-nail. Wire	H. A. Harvey	377,452	Feb. 7	158	36	42	525
Screw-stock	E. Engels and B. Wesselmann	378,830	Feb. 28	2225	592	42	953
Screw-tap	E. Firth, A. and I. Tompkins	379,213	Mar. 13	514	144	42	1069
Screw-tap	L. Parkerton	376,342	Jan. 10	871	229	42	176
Screw. Wood	C. M. Whitmore	375,907	Jan. 3	240	65	42	50
Screws. Machine for making metal	E. Horton	379,577	Mar. 20	1053	280 / 281	42	1180
Scythe-fastener	L. R. Edwards	377,022	Jan. 31	1887	496	42	390
Seal	E. J. Brooks	379,885	Mar. 20	1535	405	42	1273
Seal-lock	C. A. Marshall	375,696	Jan. 3	211	58	42	45
Seal-lock	R. M. Sully	380,369	Mar. 27	2079	557	42	1390
Seal-lock	W. B. Waldron and G. C. Boller	379,348	Mar. 13	698	190	42	1104
Seal-lock	F. M. Ware and G. W. Benjamin	376,355	Jan. 10	889	233	42	179
Seal-lock	A. B. Schofield	378,624	Feb. 28	1911	506	42	894
Seal-press	W. F. Beasley	377,662	Feb. 7	472	120	42	584
Seal. Sheet-metal	G. W. Lore	380,212	Mar. 27	2005	536 / 537	42	1375
Seaming machine. Can	E. Norton and J. G. Hodgson	378,143	Feb. 21	1206	314	42	748
Seat: *See* Buggy-seat. Car-seat. Chair-seat. Opera or school seat. Privy-seat. Vehicle-seat. Wagon-seat.							
Seat convertible into a table	L. Evans	377,256	Jan. 31	2376	686	42	492
Seat-corner fastening	J. W. Marcy	378,606	Feb. 28	1886	499	42	889
Seat, easel, and sunshade. Combined	C. F. H. Richter	375,953	Jan. 3	306	82	42	63
Secondary batteries. System of electrical distribution by	J. S. Sellon	378,115	Feb. 21	1155	301	42	740
Secondary battery	J. S. Sellon	377,642	Feb. 7	434	111	42	578
Secondary battery	M. Stecher	378,029	Feb. 28	1918	508	42	895
Seed-cleaning machine. Cotton	H. E. Knerr	377,021	Feb. 7	405	102	42	573
Seed-drill and cultivator. Combined	J. Stutzenberger	380,061	Mar. 27	1798	480	42	1334
Seed-tester	H. A. Goetz	376,242	Jan. 10	731	194	42	150
Seed. Treating cotton	W. H. Burnet, J. Sears, and O. G. Burnham.	380,087	Mar. 27	1837	489	42	1341
Seeder and cultivator	I. F. Gilmore and A. P. Branaman	375,741	Jan. 3	32	10	42	10
Seeding-machine	W. D. Arnett	377,222	Jan. 31	2169	572	42	447
Seeding-machine	W. D. Arnett	377,923	Feb. 14	890	225	42	678
Seeding-machine	G. W. W. Billings	378,758	Feb. 28	2100	554	42	928
Seine	S. T. Winsor	379,751	Mar. 20	1302	347 / 348	42	1229
Self-acting motor and pump	F. G. Barthel	378,998	Mar. 6	205	56	42	1005
Separator: *See* Chop-separator. Coal-separator. Grain-separator. Liquid-separator. Magnetic separator. Steam-separator.							
Separator	J. J. De Rycke	379,009	Mar. 6	218	59	42	1007
Setting for ornaments	W. C. Edge	378,043	Feb. 14	1050	274	42	712
Sewer. Shoe	C. K. Sherburne	376,113	Jan. 10	542	144	42	115
Sewer-ventilator	W. H. McAndrews	379,899	Mar. 20	1558	410	42	1277
Sewerage or drainage of houses, towns, or districts and apparatus therefor.	A. Le Marquand	377,681	Feb. 7	496	128	42	589
Sewing-machine	E. E. Angell	378,075	Feb. 21	1097	287 / 288	42	729
Sewing-machine	S. Arnold	378,645	Feb. 28	1938	514 / 515 / 516	42	899
Sewing-machine	J. Bolton	376,285	Jan. 10	791	210	42	161
Sewing-machine	A. A. Bonton	378,653	Feb. 28	1952	519	42	901
Sewing-machine	W. O. Crain	376,978	Jan. 24	1817	478	42	370
Sewing-machine	O. C. Dolloff and R. M. Eastman	377,888	Feb. 14	829	212	42	667
Sewing-machine	J. Kayser	377,830	Feb. 14	752	190 / 191	42	652
Sewing-machine	M. Lachman	377,525	Feb. 7	270	68	42	546

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Sewing-machine	T. H. Martin	379,175	Mar. 6	441	124	42	1050
Sewing-machine	J. W. Post	378,804	Feb. 28	2176	579	42	943
Sewing-machine	E. Querol y Delgado	377,515	Feb. 7	257	64	42	543
Sewing-machine	J. Stewart and G. W. Weiss	378,630	Feb. 28	1919	506	42	895
Sewing-machine binder-guide	T. C. Robinson	378,904	Mar. 6	62	18	42	979
Sewing-machine bobbin-winder	J. E. Nealr	379,593	Mar. 20	1076	286	42	1183
Sewing machine. Book	J. R. Reynolds	378,461	Feb. 28	1683	441, 442	42	847
Sewing machine. Book	D. M. Smyth	378,467	Feb. 28	1695	445	42	848
Sewing machine. Book	D. M. Smyth	378,984	Mar. 6	175	49	42	1000
Sewing machine. Book	D. M. Smyth	378,985	Mar. 6	177	50	42	1000
Sewing-machine button-hole attachment	F. Egge	376,297	Jan. 10	806	213	42	164
Sewing-machine button-hole attachment	W. Schott	379,666	Mar. 20	1177	312, 313	42	1204
Sewing-machine clamp-centering device	H. M. Essington	377,891	Feb. 14	833	213	42	668
Sewing-machine embroidering attachment	J. W. Von Pittler	378,383	Feb. 21	1558	407	42	815
Sewing-machine embroidering attachment	J. W. Von Pittler	378,384	Feb. 21	1559	407, 408	42	815
Sewing-machine feeding attachment	S. D. Tucker	376,122	Jan. 10	562	149	42	118
Sewing-machine feeding device	E. Wardward	380,008	Mar. 27	1723	461, 462	42	1319
Sewing-machine feeding mechanism	J. Bolton	376,283	Jan. 10	787	208, 209	42	161
Sewing-machine guide	C. Torrey	379,668	Mar. 20	1185	314	42	1205
Sewing-machine hemmer	W. H. Ganss	378,048	Feb. 14	1059	277	42	714
Sewing-machine looper	R. Fryer	378,165	Feb. 21	1235	325	42	754
Sewing-machine. Multiple	M. Gardner	379,570	Mar. 20	1041	277, 278	42	1178
Sewing-machine oscillating shuttle-driver	J. Bolton	376,284	Jan. 10	789	209	42	161
Sewing-machine overcasting attachment	S. M. Moschcowitz	380,047	Mar. 27	1776	475	42	1328
Sewing-machine plaiting attachment	A. Hallett	375,744	Jan. 3	36	11	42	10
Sewing-machine quilting attachment	H. T. Davis	377,242	Jan. 31	2201	580	42	452
Sewing-machine ruffling attachment	E. J. Toof	377,363	Jan. 31	2356	609	42	485
Sewing-machine shuttle	D. Snitjer and M. Kuehn	377,052	Jan. 31	1924	506	42	398
Sewing-machine shuttle	C. E. Wilkinson	379,353	Mar. 13	704	192	42	1105
Sewing-machine shuttle	L. Williams	378,855	Feb. 28	2266	602	42	959
Sewing-machine shuttle-operating mechanism	J. Bolton	376,364	Jan. 10	900	236	42	181
Sewing-machine stand	J. Bolton	380,171	Mar. 27	1948	520	42	1363
Sewing machine. Straw-braid	F. Blackburn	380,167	Mar. 27	1943	518	42	1362
Sewing-machine table	J. Wertheim	378,636	Feb. 28	1926	511	42	897
Sewing-machine take-up	E. Querol y Delgado	377,516	Feb. 7	259	65	42	544
Sewing-machine tension	E. Querol y Delgado	377,517	Feb. 7	260	65	42	544
Sewing-machine tension-releasing device	H. M. Essington	377,890	Feb. 14	832	213	42	668
Sewing-machine trimming device	W. A. Neely and N. G. Rowell	379,714	Mar. 20	1253	334	42	1219
Sewing-machine trimming mechanism	W. A. Neely	379,410	Mar. 13	792	213	42	1132
Sewing-machine. Wax-thread	C. F. Harlow	378,929	Mar. 6	96	28	42	985
Sewing-machine. Wax-thread	A. S. Richardson	377,466	Feb. 7	179	42	42	530
Sewing-machines. Clamp-centering device for button-hole	H. M. Essington	377,932	Feb. 14	896	230	42	682
Sewing-machines. Clamp-centering device for button-hole	H. M. Essington	377,933	Feb. 14	897	231	42	682
Sewing-machines. Clamp for loopers for	J. R. Reynolds	378,462	Feb. 28	1686	442	42	847
Sewing-machines. Cutting mechanism for button-hole	J. G. Greene	376,475	Jan. 17	1063	278	42	218
Sewing-machines. Device for straightening and evening fabrics for	S. Arnold	378,823	Feb. 28	2212	589	42	950
Sewing-machines. Hemstitching attachment for	T. L. Melone	378,706	Feb. 28	2032	537	42	916
Sewing-machines. Machine for winding bobbins for	G. H. Willey	377,542	Feb. 7	292	74	42	551
Sewing machines. Moistening attachment for shoe	G. Blakeney	378,759	Feb. 28	2101	554	42	928
Sewing-machines. Ruffling attachment for	T. L. Melone	378,705	Feb. 28	2030	536	42	916
Sewing. Uniting fabrics by	S. Arnold	378,644	Feb. 28	1937	514	42	899
Shackle	F. McDonald	375,945	Jan. 3	296	80	42	62
Shade attachment. Window	S. O. Campbell	378,039	Feb. 14	1044	273	42	711
Shade fixture. Window	R. J. Betts	378,079	Feb. 21	1103	289	42	730
Shade rollers or poles. Making wooden	A. M. Cooley	379,685	Mar. 20	1212	321	42	1211
Shade-roller. Spring	G. T. Briggs	375,966	Jan. 3	356	95	42	72
Shaft attachment for vehicles	R. W. Hare and R. Sproul	379,462	Mar. 13	872	235	42	1139
Shaft bearing. Vertical	W. H. Evans	377,148	Jan. 31	2063	542	42	425
Shaft-coupling. Universal	A. Robes	379,030	Mar. 6	251	71	42	1013
Shaft for steamships	W. H. Brown	376,135	Jan. 10	584	156	42	139
Shaft-holder	G. J. Spenneberg	379,547	Mar. 13	996	267	42	1102
Shaft-iron	A. B. Webster	377,128	Jan. 31	2041	534	42	420
Shaft-support	C. P. Tener	376,017	Jan. 3	405	107	42	81
Shaft support. Vehicle	O. E. Kelly	379,703	Mar. 20	1237	329	42	1216
Shaft. Vehicle	W. J. McDermott	376,751	Jan. 24	1482	390, 391	42	307
Shafts. Device for multiplying speed of	M. J. Miller	379,971	Mar. 27	1661	443	42	1307
Shafts. Vehicle	S. Zimmerman	379,843	Mar. 20	1462	386	42	1259
Shafting. Machine for straightening and polishing metallic	A. P. Baldwin and T. L. Sedgwick	378,063	Feb. 14	1076	282, 283	42	717
Shaping-machine	J. Pepper, Jr	375,893	Jan. 3	220	60	42	47
Shaping-machine	W. H. Warren	377,969	Feb. 14	950	248	42	693
Shavings. Machine for packing	G. W. Chase	380,185	Mar. 27	1966	525	42	1367
Sheaf-carrier	C. H. and G. W. Elliott	379,212	Mar. 13	513	144	42	1069
Sheaf-carrier	A. Jewell	379,223	Mar. 13	526	147, 148	42	1071
Shearing-machine. Power	L. L. Sagendorph and G. C. Keene	377,500	Feb. 7	233	56, 57	42	540
Shears: *See* Sheep-shears.							
Sheep-shears	D. Cameron	376,233	Jan. 10	722	192	42	148
Sheet-metal-bending machine	E. R. Stasch	377,336	Jan. 31	2340	678	42	477
Sheet-metal can	H. Miller	377,495	Feb. 7	222	53	42	538
Sheet-metal-folding machine	C. Reising	377,863	Feb. 14	791	202	42	690
Sheet-metal knobs. Manufacture of	C. C. Andrews	376,502	Jan. 17	1104	289	42	226

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Sheet-metal pipe	A. J. and C. Lindemann	378,694	Feb. 28	2017	533	42	913
Sheet-metal pipe	J. B. Root	379,663	Mar. 20	1174	312	42	1203
Sheet-metal seam	E. J. Dolan	376,817	Jan. 24	1690	419	42	328
Sheet-metal shearing or punching machine	L. L. Sagendorph	377,780	Feb. 14	680	171	42	640
Sheet-metal splints. Manufacture of	J. E. Lee	376,666	Jan. 17	1393	355	42	273
Sheet-metal tube	E. K. Coas	379,937	Mar. 27	1615	430	42	1298
Shelf-fastener. Adjustable	H. D. Thatcher	379,252	Mar. 13	562	156	42	1078
Shield. Divisible bullet-proof	C. Adams	377,732	Feb. 14	577	149	42	619
Shingle	H. C. Henderson	380,203	Mar. 27	1995	534	42	1372
Shingle. Metallic	H. W. Harry	380,109	Mar. 27	1868	497	42	1347
Shingle-sawing machine	W. A. Campbell	379,856	Mar. 20	1483	391, 392	42	1263
Shingle-sawing machine	S. S. Morton	376,204	Jan. 10	684	181, 182	42	140
Ship-signal. Electric	J. W. Dooley	378,876	Mar. 6	30	*	42	972
Ships, &c. Construction of	W. H. Daniels	376,517	Jan. 17	1127	295	42	230
Shipping appliance	G. A. Gemünden and A. F. Gärtner	380,199	Mar. 27	1989	533	42	1371
Shirt	J. Falkenberg	377,149	Jan. 31	2064	542	42	426
Shoe	J. Lindstrom	379,172	Mar. 6	438	124	42	1049
Shoe-clasp	J. Zimmermann	380,305	Mar. 27	2125	569	42	1399
Shoe-nail	D. S. Grant	377,805	Feb. 14	721	182	42	647
Shoe-nail	L. Stephens	377,503	Feb. 7	241	58	42	541
Shoe-nail strip	D. S. Grant	377,804	Feb. 14	721	182	42	647
Shoe. Non-slipping	F. A. King and G. F. Brand	377,431	Feb. 7	128	27	42	519
Shoe or gaiter	J. A. Kelly	380,289	Mar. 27	2108	564	42	1395
Shoe or slipper	A. Zimmermann	377,822	Feb. 14	739	187	42	650
Shoes. Polishing compound for the soles of	C. L. Leonard	378,325	Feb. 21	1480	387	42	799
Shoulder-brace	L. T. J. Lubin	380,265	Mar. 27	2076	555	42	1390
Shoulder-pad	W. B. Haskins	376,394	Feb. 21	1571	412	42	818
Shovels, spades, &c. Manufacture of	J. C. Russell	376,398	Jan. 10	941	246	42	189
Show-case	J. J. Kelly	378,594	Feb. 28	1873	495	42	886
Show-case	H. B. King	377,857	Feb. 14	763	200	42	659
Show-case. Cabinet	C. Baum	375,980	Jan. 3	348	93	42	71
Show-stand	C. Toohey	375,844	Jan. 3	159	45	42	36
Show stand or case	S. C. Swett	379,139	Mar. 6	401	113	42	1041
Shutter-bower	A. A. Wheelock	378,346	Feb. 21	1512	395	42	806
Shutter-fastener	P. O. Guérin	379,695	Mar. 20	1246	326	42	1213
Shutter, Window	J. E. Phillips	377,771	Feb. 14	663	166	42	637
Shutter-worker	L. A. and O. L. Dosch	378,388	Feb. 21	1563	409	42	816
Shutter-worker	J. A. Edes	379,380	Mar. 13	749	203	42	1113
Shutter-worker	J. K. McGinkin	376,539	Jan. 17	1152	302	42	235
Siding-gage	H. Russell	377,085	Jan. 31	1983	519	42	409
Sieve. Box	A. F. Purefoy	376,450	Jan. 17	1031	270	42	213
Sifter	A. F. Purefoy	376,449	Jan. 17	1031	270	42	212
Sifter. Ash	J. A. Murphy	379,322	Mar. 13	668	181	42	1098
Sifter. Coal	W. Butcher and C. G. Bailey	379,267	Mar. 13	581	161	42	1081
Sifters. Driving-gear for flour	G. Daverio	380,249	Mar. 27	2058	550	42	1386
Sign	E. A. Dubey	380,026	Mar. 27	1751	468	42	1324
Sign	A. F. Foans	378,198	Feb. 21	1291	338	42	763
Sign	C. W. Shonk	376,919	Jan. 24	1739	457	42	355
Signal: *See* Fire-signal. Railway time-signal. Railway-signal. Ship-signal. Railway danger-signal.							
Signal apparatus. Electro-mechanical	W. W. Le Grande	377,026	Feb. 7	410	104, 105	42	574
Signal-box. Non-interfering	F. W. Cole	380,022	Mar. 27	1745	467	42	1322
Signaling system. Electrical auxiliary	G. F. Milliken and H. B. Lytle	377,083	Jan. 31	1977	519	42	408
Silicates and carbonates. Making alkaline	A. Kayser	376,409	Jan. 10	959	251	42	192
Silicates. Making alkaline	A. Kayser	376,410	Jan. 10	961	251	42	192
Singletree-hook	J. Macphail and F. M. Needham	376,806	Jan. 24	1584	415	42	326
Siphon	C. N. Tyler	378,811	Feb. 28	2187	582	42	946
Skate	E. H. Barney	378,424	Feb. 28	1621	426	42	834
Skate	J. A. Whelpley	377,703	Feb. 7	531	136	42	594
Skate	J. A. Whelpley	377,704	Feb. 7	532	136	42	595
Skate-fastening	E. H. Barney	377,733	Feb. 14	579	149	42	619
Skate-runner blank	E. H. Barney	378,488	Feb. 28	1718	454	42	855
Skewers. Machine for pointing	L. B. McNutt	378,934	Mar. 6	106	30, 31	42	987
Skin staking and softening machine	G. V. Anderson	380,239	Mar. 27	2043	546	42	1383
Skirt and bustle. Combined	E. K. Miller	377,401	Feb. 7	92	14	42	506
Skiving-machine	E. Gott	375,841	Jan. 3	118	34	42	28
Slag-furnace	O. T. X. Adams	379,436	Mar. 13	829	224	42	1130
Slag-furnace	O. T. X. Adams	379,527	Mar. 13	967	261	42	1156
Slag-furnace	O. T. X. Adams	379,883	Mar. 20	1533	404	42	1273
Slag-furnace	P. H. Adams, Jr	379,437	Mar. 13	830	224, 225	42	1130
Slag-furnace	P. H. Adams, Jr	379,625	Mar. 20	1125	298	42	1193
Slag-furnace	J. E. Peck	379,411	Mar. 13	793	213	42	1122
Slag-furnace	J. E. Peck	379,600	Mar. 20	1084	288, 289	42	1185
Slag-furnace	O. B. Peck	379,412	Mar. 13	795	214	42	1123
Slag-furnace	O. B. Peck	379,601	Mar. 20	1086	289	42	1185
Slag-furnace	O. B. Peck	379,720	Mar. 20	1262	337	42	1221
Slate grinding or dressing machine	S. S. Marshall	376,537	Jan. 17	1150	302	42	235
Slates. Frame for school	D. Scryngeour	376,786	Jan. 24	1551	407	42	320
Slats. Device for repairing broken	A. J. Dennis	379,688	Mar. 20	1213	322	42	1211
Sled	J. A. Crandall	376,585	Jan. 17	1213	320	42	248
Sled	J. T. Scott	379,130	Mar. 6	389	110	42	1039
Sled. Bob	F. L. Beard	376,927	Jan. 10	715	190	42	147
Sled. Bob	M. S. Tyler	376,492	Jan. 17	1089	286	42	224
Sled-brake	J. R. Holt	376,197	Jan. 10	670	177	42	138
Sled. Coasting	W. J. Baird	375,914	Jan. 3	249	68	42	59
Sleds. Coupler for bob	M. Cronin	377,739	Feb. 14	585	151	42	620
Sleeve-stay	A. M. Terry	380,063	Mar. 27	1800	481	42	1354

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Sleigh	D. S. Anderson	378,821	Feb. 28	2207	588	42	949
Sleigh	S. R. Bailey	379,303	Mar. 13	640	174	42	1092
Sleigh	C. Parkis	375,767	Jan. 3	63	18	42	16
Sleigh	A. Bostick	380,172	Mar. 27	1951	521	42	1364
Sleigh-knee	J. F. Hennessy	379,304	Mar. 13	767	207	42	1117
Sleigh-knee	E. King	379,170	Mar. 6	436	123	42	1049
Sleigh-knee	H. R. Mathias	376,671	Jan. 17	1358	357	42	274
Slideway	A. W. Meek	376,717	Jan. 17	1431	376	42	288
Sliding gate	J. M. Vanover	379,918	Mar. 20	1583	417	42	1291
Sliding or rolling gate	P. Hohorst	379,570	Mar. 20	1516	399	42	1239
Sling and truck combined	J. Hickson	377,757	Feb. 14	615	159	42	725
Slipper. Moccasin	W. H. Heeson	378,006	Feb. 14	1001	262	42	702
Smoke-consuming furnace	R. W. Hewett	376,822	Jan. 24	1605	{420 / 421}	42	329
Smoke-consuming furnace	J. Keane	378,096	Feb. 21	1125	294	42	735
Snap-hook	A. L. Hitchcock	377,559	Feb. 7	315	80	42	365
Snap-hook	T. H. Humphreys	380,286	Mar. 27	2103	562	42	1395
Snap-hook	J. Letchworth	380,124	Mar. 27	1892	504	42	1352
Snap-hook	G. D. Mosher	376,040	Jan. 3	439	117	42	88
Snow-plow	J. Appleby	380,076	Mar. 27	1824	{465 / 466}	42	1338
Snow-plow. Railway	A. G. Dailey	379,938	Mar. 27	1616	430	42	1298
Snow-scraper	J. W. Haines	378,307	Feb. 21	1453	379	42	794
Soap compound	F. C. Bauer	377,135	Jan. 31	2049	.....	42	422
Soda. Apparatus for the manufacture of	M. R. Wood	379,752	Mar. 20	1303	348	42	1229
Soda-recovering apparatus	R. H. Emerson	377,551	Feb. 7	304	77	42	353
Soda-water fountain	A. Christin	376,471	Jan. 17	1057	276	42	217
Sofa and table. Combined	J. E. Alden	378,996	Mar. 6	202	55	42	1005
Soldering machine. Can-cap	E. Norton and J. G. Hodgson	379,976	Mar. 27	1669	445	42	1308
Soldering-tool	C. L. Wagandt and J. S. Hull	379,141	Mar. 6	404	114	42	1042
Sole-edges. Machine for trimming	F. W. Coy and G. A. Fullerton	378,870	Mar. 6	17	4, 5, 6	42	970
Sole-laying machine	F. W. Coy	376,406	Jan. 10	951	{249 / 250}	42	190
Sole, stiffener, &c. Inner	A. F. Smith	376,419	Jan. 10	980	256	42	195
Sounding apparatus. Navigational	W. Thomson	377,696	Feb. 7	520	{133 / 134}	42	593
Spar. Fender	W. J. Rankins	379,329	Mar. 13	677	183	42	1099
Spark-arrester	F. Bruhn and J. Kamm	378,188	Feb. 21	1266	335	42	760
Spark-arrester	W. Gillis	377,485	Feb. 7	204	49	42	335
Spark-arrester	J. Haish	378,092	Feb. 21	1119	293	42	733
Spark-arrester	A. M. Henderson and J. W. Martin	378,507	Feb. 28	1746	461	42	861
Spark-arrester	F. P. Ziegler	376,499	Jan. 17	1098	288	42	225
Specking, burling, and knobbing table	C. C. Webber	377,655	Feb. 7	461	118	42	582
Spectacle case	W. F. Cloud	379,936	Mar. 27	1614	430	42	1298
Spectacles	J. P. Tryner	375,964	Jan. 3	325	87	42	67
Spectacles. Combination	B. Krause	378,965	Mar. 6	145	42	42	994
Speculum	G. E. Allen	379,553	Mar. 20	1011	271	42	1173
Speed-changer	A. Harding	376,150	Jan. 10	607	163	42	127
Speed-indicator	G. S. Heath	378,836	Feb. 28	2234	{594 / 595 / 596}	42	955
Spelling-board	J. Schuman and A. G. Baier	375,774	Jan. 3	71	21	42	18
Spheroidal and analogous bodies. Mechanism for forming ornamental	J. Burkhardt	378,417	Feb. 21	1608	422	42	825
Spheroidal bodies from sheet-metal tubes. Forming hollow	J. Burkhardt	378,412	Feb. 21	1603	421	42	824
Spike-extractor	E. Spears	377,865	Feb. 14	795	203	42	661
Spindle-step	F. Leininger	377,902	Feb. 14	850	217	42	672
Spindles. Driving-band for	J. J. Heywood	377,937	Feb. 14	904	232	42	684
Spinning-machine	M. Chapon	378,288	Feb. 21	1430	373	42	749
Spinning-machine, &c.	W. C. Sanford	376,851	Jan. 24	1621	424	42	331
Spinning-machine spindle-support	A. Wood. (Reissue)	10,897	Jan. 31	2392	691	42	486
Spinning-machines. Automatic roll-cleaner for	T. O. Cunningham	378,872	Mar. 6	21	7	42	971
Spinning-machines, &c. Ring and traveler for	J. Tatham	377,871	Feb. 14	802	205	42	663
Spinning-machines, &c. Scavenger-roll for	P. Laflin	375,881	Jan. 3	206	57	42	44
Spinning-mule	J. Hackaley	375,932	Jan. 3	280	76	42	58
Spinning-spindle and support therefor	J. A. Farmer	377,426	Feb. 7	122	26	42	518
Spinning-spindle support	W. [illegible] and G. A. Draper	378,877	Mar. 6	31	8	42	972
Spinning-spindle support	C. W. Roper	378,906	Mar. 6	65	19	42	979
Spinning-spindles, &c. Bobbin-holder for	W. F. Fuller	376,982	Jan. 24	1823	479	42	370
Spinning-spindles. Support for	W. T. Carroll	376,334	Jan. 10	732	192	42	148
Spirally-welded tube	J. B. Root	376,680	Jan. 17	1375	362	42	277
Spittoon and securing the same	J. F. Thompson	376,761	Jan. 24	1498	395	42	310
Splice-bar	A. McHugh	379,176	Mar. 6	442	125	42	1050
Spoke-socket	W. E. Hardin	377,893	Feb. 14	837	214	42	669
Spool	I. Cross	379,633	Mar. 20	1135	301	42	1195
Spool-holder	F. A. Purcell and J. K. Case	377,436	Feb. 7	137	30	42	520
Spooling-machine	J. M. Stone	376,334	Jan. 24	1035	425	42	332
Spooling-machines. Bobbin-holder for	P. Laflin	375,880	Jan. 3	204	56	42	44
Spout for sheet-metal vessels	D. Prendergast	377,048	Jan. 31	1915	503	42	396
Spring: *See* Balance-spring. Bolster-spring. Car-spring. Carriage-spring. Door-spring. Gate-spring. Pocket-spring. Prop-spring. Vehicle-spring. Vehicle bolster-spring. Wagon-spring. Wagon-seat spring. Watch-case spring.							
Spring	J. J. Brinkerhoff	379,502	Mar. 13	935	251	42	1149
Spring	J. Trent	377,125	Jan. 31	2037	533	42	420
Spring-clasp	C. J. White	380,154	Mar. 27	1927	514	42	1359
Spring compressor. Coiled	W. L. Goddard	377,803	Feb. 14	718	{181 / 182}	42	646
Spring for side-bar vehicles	E. Hutchinson	379,787	Mar. 20	1359	362	42	1240

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Sprinkler: *See* Clothes-sprinkler. Street-sprinkler.							
Sprinkling or other can	J. H. Kindlen	375,878	Jan. 3	202	56	42	43
Squeezer	G. Lindenthal	378,695	Feb. 28	2018	533	42	913
Staging	E. E. Strout	378,810	Feb. 28	2185	582	42	945
Stalls. Mat for horse	L. S. Stowe	377,786	Feb. 14	686	{173 / 174}	42	641
Stamp. Combination printing	T. Bartholomew	377,227	Jan. 31	2175	574	42	448
Stamp-guide	J. J. Broughall	379,931	Mar. 27	1608	427	42	1297
Stamp. Hand	J. J. Finke	378,065	Feb. 14	1078	283	42	718
Stamp. Perforating	N. Englund and O. Ohlson	379,271	Mar. 13	588	162	42	1092
Stamp-protector	W. P. Trowbridge	378,119	Feb. 21	1160	302	42	741
Stamps. Valve-gear for ore	E. Reynolds	377,578	Feb. 7	338	87	42	560
Stamping-machines, &c. Mechanism for electrically controlling	O. Mergenthaler	376,541	Jan. 17	1154	{303 / 304}	42	236
Stanchion	D. Y. Clark	376,069	Jan. 10	484	131	42	104
Stand: *See* Advertising-stand. Boiler-stand. Display-stand. Embroidery-stand. Flower-stand. Ink or other stand. Music-stand. Sewing-machine stand. Show-stand. Switch-stand. Wash-stand.							
Starch or other solid matter. Apparatus for drying	E. E. Duryea and P. H. Grimm	375,737	Jan. 3	22	7, 8	42	8
Starch. Preparing and treating	J. C. Schuman	379,034	Mar. 6	255	72	42	1014
Station-indicator	J. Iglesias	377,958	Jan. 31	2222	{587 / 588}	42	456
Station-indicator	E. S. Irvin	377,384	Feb. 7	28	8, 9	42	500
Station-indicator	R. Senftner	379,292	Mar. 13	624	{170 / 171}	42	1090
Statuette	F. J. Herrick	378,682	Feb. 28	2002	529	42	910
Stave-jointing machine	A. D. Catlin	376,139	Jan. 10	589	157	42	124
Stay. Garment	R. B. Wheeler	379,882	Mar. 20	1533	404	42	1273
Steak-perforator	T. W. Franklin	376,080	Jan. 10	496	134	42	107
Steam-boiler	F. G. Fowler	377,099	Jan. 31	2005	525	42	413
Steam-boiler	M. N. Lynn	377,460	Feb. 7	168	39, 40	42	527
Steam-boiler	W. H. Odell	376,205	Jan. 10	687	182	42	141
Steam-boiler	W. C. Rice	379,982	Mar. 27	1677	447	42	1310
Steam-boiler	G. W. Sheafey	379,336	Mar. 13	685	185	42	1101
Steam-boiler	G. R. Wilson	379,749	Mar. 20	1300	347	42	1228
Steam-boiler. Sectional	A. M. Dimmick and E. Z. Smith	376,371	Jan. 10	909	238	42	183
Steam-boiler. Sectional	A. Mercer	377,265	Jan. 31	2233	590	42	457
Steam-boiler. Sectional	D. F. Morgan	379,975	Mar. 27	1667	{444 / 445}	42	1308
Steam-boiler. Sectional	A. L. Riker	379,725	Mar. 20	1269	339	42	1223
Steam-boiler. Sectional	R. Ponnay	376,257	Jan. 10	756	{200 / 201}	42	155
Steam-brake	R. Hardie	375,933	Jan. 3	283	76	42	59
Steam-engine	P. Armington	378,643	Feb. 28	1935	514	42	898
Steam-engine	F. A. Cresswell	378,041	Feb. 14	1045	273	42	711
Steam-engine	H. N. Gale	377,247	Jan. 31	2207	{582 / 583}	42	453
Steam-engine	F. P. Hawkins	380,110	Mar. 27	1869	497	42	1347
Steam-engine	M. N. and E. P. Lynn	377,462	Feb. 7	172	40, 41	42	528
Steam-engine	M. N. and E. P. Lynn	377,463	Feb. 7	174	41	42	529
Steam-engine	G. W. Stewart	376,271	Jan. 10	772	205	42	158
Steam-engine indicator	W. F. Brown	377,601	Feb. 7	377	96	42	567
Steam-engine indicator	A. L. Ide	375,874	Jan. 3	191	53	42	41
Steam-engine. Multiple-cylinder	D. Wilkinson	376,459	Jan. 17	1041	273	42	214
Steam-engine. Oscillating	J. D. Bowne	379,630	Mar. 20	1130	290	42	1194
Steam-generator	F. M. Bartlett	377,228	Jan. 31	2177	574	42	448
Steam-generator	T. F. Morrin	377,324	Jan. 31	2318	{672 / 673}	42	473
Steam-generator	L. Serpollet	379,421	Mar. 13	809	218	42	1126
Steam-generator furnace	T. Main	378,967	Mar. 6	147	43	42	995
Steam-generator. Sectional	J. Kling, Jr	376,098	Jan. 10	523	140	42	112
Steam heater or radiator	E. E. Gold	379,952	Mar. 27	1634	435	42	1302
Steam-motor	O. E. Davidson	378,663	Feb. 28	1970	523	42	905
Steam-separator	A. Davidson	377,992	Feb. 14	978	255	42	698
Steam-separator	A. Davidson. (Reissue)	10,914	Mar. 27	2129	569	42	1400
Steam-trap	J. Bishop	376,850	Jan. 24	1650	432	42	337
Steam-trap	H. Creamer	376,586	Jan. 17	1215	321	42	249
Steam-trap	P. Fyte	380,281	Mar. 27	2096	561	42	1394
Steam-trap	F. J. Hladky	377,305	Jan. 31	2296	607	42	470
Steam-trap	J. R. Wade	378,482	Feb. 28	1711	451	42	854
Steam-traps. Straining device for	W. Haythorn	379,160	Mar. 6	425	120	42	1046
Steaming and cooking purposes. Device for	D. C. Ganter	376,084	Jan. 10	504	136	42	108
Steel and ingot-iron. Manufacture of	P. C. Gilchrist	377,609	Feb. 7	389	.....	42	569
Steel. Treating low	H. A. Harvey	376,194	Jan. 10	664	231	42	138
Steering apparatus. Ship	J. Edson	377,375	Feb. 7	9	3	42	497
Steering mechanism for vessels	W. Whitehead	379,849	Mar. 20	1457	385	42	1258
Stencils. Prepared sheet for	J. Brodrick	377,706	Feb. 7	534	.....	42	595
Stereotyping casting-box	I. D. Hurlbut	376,743	Jan. 24	1471	388	42	305
Stereotyping-machine	W. H. Nelson	379,241	Mar. 13	550	{153 / 154}	42	1076
Stereotyping. Matrix for	F. Schreiner and A. Schott	376,348	Jan. 10	880	231	42	178
Stirrup	S. T. Butler	380,376	Mar. 27	2087	559	42	1392
Stirrup attachment	J. C. Welcome	379,747	Mar. 20	1298	346	42	1228
Stirrup-pad	D. H. Jennings and W. H. Allen	376,526	Jan. 17	1138	298	42	232
Stirrups. Machine for making metal	F. H. Kindl	379,262	Mar. 6	486	137	42	1058
Stitching-horse	H. Doering	378,295	Feb. 21	1439	375	42	791
Stock-loading device	A. J. Martin and H. J. Bresse	376,896	Jan. 24	1710	448	42	349
Stock-waterer	G. A. Evenson and F. Yocum	376,031	Jan. 3	427	113	42	86
Stocking	E. Sutro	379,831	Mar. 20	1440	382	42	1255

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Stocking	F. Wilcomb	378,819	Feb. 28	2205	588	42	949
Stocking and skirt holder	A. Warren. (Reissue)	10,998	Feb. 7	569	147	42	603
Stocking-supporter	F. P. Butman	377,480	Feb. 7	197	47	42	533
Stocking-supporter	S. B. Ferris	376,298	Jan. 10	807	213	42	164
Stocking-supporter	A. M. Ziegler	376,464	Jan. 17	1049	275	42	216
Stone. Artificial	E. R. Schroeter	377,173	Jan. 31	2096	.....	42	433
Stone blocks. Manufacture of artificial	J. S. Peirce	378,715	Feb. 28	2043	539	42	918
Stone blocks or tiles for paving and other purposes. Means for molding artificial	J. S. Peirce	378,716	Feb. 28	2044	539	42	918
Stone-dressing machine	U. Cummings	376,296	Jan. 10	805	{212 / 213}	42	164
Stone-dressing tool	M. P. Higgins	378,313	Feb. 21	1461	381	42	795
Stone. Endless saw for cutting	F. Turrettini	379,835	Mar. 20	1451	384	42	1256
Stone or cement. Composition for the manufacture of artificial	I. Lichtentag	377,036	Jan. 31	1902	.....	42	396
Stone-sawing machine	V. G. Barney	377,660	Feb. 7	469	120	42	583
Stone-sawing machine	V. G. and R. L. Barney	377,595	Feb. 7	362	93	42	564
Stool. Piano	A. G. Hofstatter	377,856	Feb. 14	782	200	42	650
Stool. Piano	F. A. Porter	379,979	Mar. 27	1675	446	42	1310
Stools. Folding stand for camp	A. Cooper	378,574	Feb. 28	1845	487	42	880
Stop box and cock	C. G. Ette	380,196	Mar. 27	1984	531	42	1370
Stopper: *See* Bottle-stopper. Vessel-stopper. Can-stopper.							
Stopper-extractor	B. J. Greely	379,610	Mar. 6	220	59	42	1008
Store-service apparatus	J. T. Cowley	378,542	Feb. 28	1795	474	42	870
Store-service apparatus	G. R. Elliott	378,499	Feb. 28	1739	{458 / 459}	42	859
Store-service apparatus	T. P. Farmer	378,545	Feb. 28	1799	475	42	871
Store-service apparatus	C. W. McCormick	376,897	Jan. 24	1711	{448 / 449}	42	349
Store-service apparatus. Carrier for	M. F. Adams	378,537	Feb. 28	1786	471	42	869
Store-service apparatus. Switch for	H. L. Lovejoy	378,511	Feb. 28	1749	462	42	861
Store-service railways. Track for	R. A. McCarty	378,514	Feb. 28	1753	463	42	862
Stove	H. N. Hatch	377,454	Feb. 7	160	37	42	525
Stove	A. L. Kendall	378,449	Feb. 28	1668	437	42	844
Stove	G. R. Prowse	378,149	Feb. 21	1214	316	42	750
Stove	W. Stephenson	376,454	Jan. 17	1037	{271 / 272}	42	213
Stove	H. Waterman	377,876	Feb. 14	812	207	42	664
Stove-block	W. Carroll and C. A. Hill	378,572	Feb. 28	1842	{486 / 487}	42	880
Stove burners. Valve mechanism for vapor	D. E. Dangler and H. Ruppel	376,518	Jan. 17	1128	295	42	230
Stove. Coal	W. F. Beecher	379,629	Mar. 20	1129	299	42	1194
Stove. Cooking	A. Anderson	378,074	Feb. 21	1096	287	42	729
Stove. Cooking	G. W. Walker	377,471	Feb. 7	186	44	42	531
Stove-cover. Adjustable	S. Waterman	378,271	Feb. 21	1401	367	42	784
Stove-drum	G. Stephenson	376,115	Jan. 10	546	146	42	116
Stove for burning light fuel	R. O. Peyton	378,615	Feb. 28	1897	502	42	891
Stove for railway-cars	C. Bassiul	377,057	Jan. 31	1932	507	42	399
Stove. Heating	J. W. Cummer	378,871	Mar. 6	23	6	42	971
Stove. Heating	O. P. Daly	376,076	Jan. 10	492	133	42	106
Stove. Heating	P. A. Reno	376,013	Jan. 3	399	106	42	80
Stove. Heating	C. H. L. Schlapp	378,979	Mar. 6	162	47	42	998
Stove-hood	U. B. Newman	379,323	Mar. 13	669	181	42	1098
Stove-hood ventilator	A. S. Fisk	378,669	Feb. 28	1980	525	42	907
Stove or furnace	G. D. Blossom	378,161	Feb. 21	1231	324	42	753
Stove or furnace. Heating	L. L. Rowe	378,019	Feb. 14	1018	266	42	706
Stove or range. Cooking	E. W. Anthony	379,354	Mar. 13	706	192	42	1105
Stove-oven	G. F. Filley	377,378	Feb. 7	16	5	42	498
Stove. Parlor	M. Schneider	377,119	Jan. 31	2031	532	42	418
Stove-pipe coupling	A. Campbell	376,026	Jan. 3	424	112	42	84
Stove-pipe-grooving machine	E. G. Wilcox	376,173	Jan. 10	640	171	42	134
Stove-pipe ventilator	J. P. Ekstrum	379,774	Mar. 20	1337	357	42	1236
Stove. Regenerative hot-blast	H. A. Laughlin	379,707	Mar. 20	1243	331	42	1217
Stove. Safety self-extinguishing car	R. M. Bache	376,275	Jan. 10	777	206	42	159
Stove. Straw-burning	F. Girtanner	378,786	Feb. 28	2135	565	42	935
Stove. Vapor	M. L. Hull	377,159	Jan. 31	2076	546	42	428
Stove. Vapor or gas	H. Flynt	377,850	Feb. 14	774	198	42	657
Stoves. Adjustable grate for	W. H. B. Spaulding	376,758	Jan. 24	1492	393	42	309
Stoves. Burner for gas or vapor	S. Daniels	377,547	Feb. 7	297	76	42	552
Stoves. Device for regulating the flames of vapor	F. J. Hubbard	377,560	Feb. 7	316	81	42	556
Stoves. Feed-regulator for oil	F. S. Mason	376,446	Jan. 17	1026	269	42	212
Stoves. Oven for vapor	H. Flynt	378,301	Feb. 21	1445	377	42	792
Stoves. Soot-collector for gasoline	M. M. Joslyn	378,508	Feb. 28	1747	461	42	861
Stoves. Vapor-burner for gas	C. H. Shultz	377,407	Feb. 7	58	16	42	506
Strainer for water under pressure	T. Lee	376,924	Jan. 10	846	223	42	171
Strap: *See* Harness-strap.							
Strap-clasp	M. Vandercook and R. T. Bush	376,996	Jan. 24	1844	487	42	355
Straw. Artificial	M. C. Stone	375,962	Jan. 3	324	86	42	67
Straw-stacker	J. C. Eckstine	377,243	Jan. 31	2202	{580 / 581}	42	452
Straw-stacker	A. Furst	376,873	Jan. 24	1679	{438 / 439}	42	342
Straw-stacker	A. W. Straughn	377,723	Feb. 7	555	142	42	599
Street-cleaner	E. P. Nash	379,875	Mar. 20	1520	400	42	1270
Street-curb	A. B. Hoplin	379,401	Mar. 13	778	210	42	1119
Street-sprinkler. Railway	J. R. Gathright	378,672	Feb. 28	1985	526	42	908
Street-sweeping machine	W. Haas	378,002	Feb. 14	998	{260 / 261}	42	702
Stringed instruments. Tail-piece for	W. Gerke	377,068	Jan. 31	1953	513	42	403
Structural bar. Compound	J. S. Heath and E. C. Waters	378,003	Feb. 14	999	261	42	702
Stub-holder	J. M. Berry. (Reissue)	10,905	Mar. 6	493	138	42	1059

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Stub-holder	J. M. Berry, Jr	376,062	Jan. 10	472	126	42	102
Studs. Machine for setting lacing	L. Joncas	379,702	Mar. 20	1236	329	42	1216
Studs or pillars. Forming ornamental	J. Burkhardt	378,414	Feb. 21	1605	421	42	824
Stump-extractor	O. L. Gallup	378,500	Feb. 28	1740	459	42	859
Submarine torpedo-vessel	C. D. Shepard	379,991	Mar. 27	1689	451	42	1313
Submarine vessel	C. D. Shepard	379,992	Mar. 27	1693	452	42	1314
Sulky	M. McCormick	377,045	Jan. 31	1911	502	42	395
Sulky. Trotting	W. E. Lamson	377,035	Jan. 31	1901	500	42	393
Sulphite solutions. Production of	A. Frank	376,189	Jan. 10	658	.....	42	137
Sulphite solutions. Production of	A. Frank	376,190	Jan. 10	659	.....	42	137
Superheater and burner. Hydrocarbon	C. T. Schoen	379,879	Mar. 20	1529	403	42	1272
Supporter: *See* Boot or shoe supporter. Garment-supporter. Stocking-supporter.							
Surface and scratch gage	W. H. Stedman	375,901	Jan. 3	230	63	42	49
Surgeon's appliance	O. Schlatter, A. Schmid, and H. Burtscher.	376,264	Jan. 10	766	203	42	157
Surgical bandages. Making	W. B. and E. Robinson	378,178	Feb. 21	1252	330	42	757
Surgical chair	F. E. Case. (Reissue)	10,906	Mar. 6	494	{138 / 139}	42	1059
Surgical splint	A. Caller	377,145	Jan. 31	2059	{540 / 541}	42	425
Suspenders	T. D. Day	379,374	Mar. 13	742	201	42	1112
Suspenders. Display-card for	C. Voorhis	376,997	Jan. 24	1845	487	42	375
Suspension device	N. Jenkins	376,657	Jan. 17	1339	352	42	270
Suspension-hook	R. W. S. Barraclough	375,978	Jan. 3	346	93	42	70
Suspensory	B. Galland	378,304	Feb. 21	1449	378	42	793
Sweat-pad fastener	E. Q. Darr	378,239	Feb. 21	1353	357	42	776
Sweat-pad fastener	A. Hobt	377,715	Feb. 7	546	140	42	597
Sweat-pad hook	C. J. Gustaveson	377,152	Jan. 31	2070	543	42	427
Swimming apparatus	C. W. Petersen	377,638	Feb. 7	431	110	42	577
Swing	G. A. Dumbeck	379,768	Mar. 20	1329	355	42	1234
Swing	H. A. Goebel	377,380	Feb. 7	19	7	42	498
Swinging gate	W. Gepford	379,457	Mar. 13	862	233	42	1136
Swinging gate	O. West	376,358	Jan. 10	893	234	42	180
Switch: *See* Electrical switch. Safety-switch. Frogless switch. Telephone-switch. Railway-switch.							
Switch-point guard	P. R. Randall	379,809	Mar. 20	1403	373	42	1249
Switch-stand	F. W. Snow	375,900	Jan. 3	229	62	42	48
Switch-stand	A. A. Strom	378,024	Feb. 14	1024	268	42	707
Switch-stand	D. Tracy	378,025	Feb. 14	1025	268	42	708
Syringe. Vaginal	S. W. Beall	376,727	Jan. 24	1449	381	42	301
Table: *See* Combination-table. Sewing-machine table. Folding table. Specking, burling, and knobbing table. Ironing-table.							
Table	O. F. Groves	379,780	Mar. 20	1349	{359 / 360}	42	1238
Table and sofa. Combined	J. E. Alden	378,995	Mar. 6	200	54, 55	42	1004
Table attachment. Card	L. Drude and E. St. Arnauld	378,241	Feb. 21	1355	357	42	777
Table attachment. Card	L. Drude and E. St. Arnauld	378,242	Feb. 21	1356	357	42	777
Table-leaf support	F. A. Harter	376,594	Jan. 17	1220	323	42	251
Tackle-block straps and hooks. Machine for forming	E. Fletcher	375,928	Jan. 3	271	{73 / 74 / 75}	42	57
Tag	C. H. Gurney	376,033	Jan. 3	432	115	42	87
Tag	E. B. Webster	375,968	Jan. 3	330	88	42	68
Tag and manufacture of same	W. P. Kidder	377,109	Jan. 31	2018	529	42	415
Tag-holder and hasp-lock. Combined	R. W. Greene	378,393	Feb. 21	1570	419	42	818
Tag hook or needle	O. H. Hunter	377,160	Jan. 31	2078	546	42	429
Tag. Marking	S. Dancyger	379,054	Mar. 6	283	83	42	1019
Tailor's charcoal-iron	F. W. Eisenberg	378,297	Feb. 21	1441	376	42	791
Tally. Grain	R. R. Howell	377,158	Jan. 31	2075	{545 / 546}	42	428
Tamping-tool	W. B. Waldron and G. C. Boller	376,565	Jan. 17	1184	312	42	242
Tank: *See* Water-tank. Water-closet supply-tank.							
Tanks. Attachment for supply	W. B. Chamberlin	376,292	Jan. 10	799	211	42	163
Tanks. Automatic valve for water	C. H. Harkins	379,159	Mar. 6	424	120	42	1046
Tanned skin	V. Rivière	379,726	Mar. 20	1271	.....	42	1223
Tannery-hoist	A. F. Jones	375,938	Jan. 3	289	78	42	60
Tannin extracts. Manufacture of	H. M. Rau	376,345	Jan. 10	877	.....	42	177
Tanning	L. M. Waer, J. H. Phillips, and W. S. Kengla.	375,845	Jan. 3	160	.....	42	36
Tap. Collapsing	J. T. Hayden	378,310	Feb. 21	1458	380	42	795
Tap. Collapsing	B. B. Switzer	378,380	Feb. 21	1554	406	42	814
Tapping-machine	A. T. Miller	377,400	Feb. 7	49	14	42	505
Tapping mains. Device for	C. H. Simmons	378,116	Feb. 21	1157	301	42	741
Tapping steam, gas, or water fittings. Machine for	A. M. Burritt	379,761	Mar. 20	1318	351	42	1232
Targets. Means for packing flying	F. C. Damm	377,603	Feb. 7	381	97	42	568
Tea-kettle	L. P. Snyder and G. Waigle	377,124	Jan. 31	2037	533	42	420
Tea or coffee service	D. H. Murphy	380,048	Mar. 27	1781	476	42	1329
Tedder	J. A. Eddy	379,454	Mar. 13	859	232	42	1135
Tedder and rake. Combined	W. D. Miller	379,972	Mar. 27	1662	{443 / 444}	42	1307
Tedder-fork	C. H. Paxson	377,047	Jan. 31	1913	501	42	395
Telegraph-cable	W. R. Patterson	378,175	Feb. 21	1248	{328 / 329}	42	756

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date	Monthly volume. Spec.	Monthly volume. Drfg.	Official Gazette. Vol.	Official Gazette. Page.
Telegraph. Electric	D. Kunhardt	379,016	Mar. 6	227	61, 62, 63, 64, 65, 66	42	1009
Telegraph-instrument	E. M. Hamilton	379,060	Mar. 6	290	84	42	1021
Telegraph-instrument	W. S. Logue	377,110	Jan. 31	2020	520	42	415
Telegraph-key	E. M. Hamilton	379,063	Mar. 6	294	85	42	1022
Telegraph key and instrument	W. A. Melbourne	378,332	Feb. 21	1488	389	42	800
Telegraph key and sounder. Combined	B. Oehmen	377,862	Feb. 14	789	202	42	660
Telegraph. Police, fire, and district	E. T. Gibson	378,927	Mar. 6	92	27	42	984
Telegraph. Printing	P. B. Delany	378,437	Feb. 28	1649	433	42	840
Telegraph. Printing	J. H. Linville	377,763	Feb. 14	622	161, 162, 163	42	636
Telegraph. Printing	D. E. Pike	378,107	Feb. 21	1143	298	42	736
Telegraph. Railway	C. W. Williams	377,344	Jan. 31	2355	681	42	479
Telegraph-register	J. G. Noyes	375,766	Jan. 3	61	18	42	16
Telegraph-repeater	J. Kölzer	376,661	Jan. 17	1346	353, 354	42	272
Telegraph-repeater	L. Rnasell	378,464	Feb. 28	1688	442	42	847
Telegraph-sounder	E. M. Hamilton	379,061	Mar. 6	292	84	42	1021
Telegraph-sounder	E. M. Hamilton	379,064	Mar. 6	294	85	42	1021
Telegraph systems. Device for returning signals in district-	W. V. Lockwood	379,404	Mar. 13	781	211	42	1120
Telegraph-wire	W. Hewitt	379,535	Mar. 13	980	264	42	1139
Telegraphic and other uses. Tubular metallic pole for	A. Mills	377,953	Feb. 14	928	240	42	688
Telegraphic apparatus	S. B. Whitehead	376,569	Jan. 17	1188	315	42	243
Telegraphic repeater	J. Kolzer	379,203	Mar. 6	491	138	42	1039
Telegraphy	C. Ader	377,879	Feb. 14	816	208, 209	42	645
Telegraphy	T. A. Edison	377,374	Feb. 7	9	3	42	496
Telegraphy. Duplex	C. Selden	375,998	Jan. 3	226	62	42	48
Telegraphy. Multiple	C. Selden	378,181	Feb. 21	1256	331	42	758
Telegraphy. Printing	P. B. Delany	378,436	Feb. 28	1645	432, 433	42	839
Telephone	V. M. Berthold	375,862	Jan. 3	177	49, 50	42	39
Telephone	L. Ehrlich, B. Dubinski, and G. Rein	378,780	Feb. 28	2196	562	42	933
Telephone and telegraph circuits. Plug-switch for	G. H. Cole	377,237	Jan. 31	2193	578	42	451
Telephone-exchange central-office connection	E. P. Warner	378,030	Feb. 14	1033	270	42	709
Telephone-exchanges. Lock-out box and shunt-circuit for	C. H. Haskins	378,679	Feb. 28	1997	528	42	909
Telephone exchanges. Transfer-switch and circuit for	C. E. Scribner	377,441	Feb. 7	143	32	42	522
Telephone. Magneto-	F. H. Brown	376,706	Jan. 17	1415	372	42	285
Telephone. Magneto-	F. H. Brown	376,707	Jan. 17	1415	372	42	285
Telephone. Mechanical	N. B. Stubblefield and S. C. Holcomb	378,183	Feb. 21	1259	332	42	758
Telephone. Mechanical	J. P. Sunderland	376,923	Jan. 24	1746	459	42	356
Telephone-receiver	A. W. Brow	378,385	Feb. 21	1560	408	42	815
Telephone-receivers. Support for	W. E. Thurber and J. McConnell	376,615	Jan. 17	1269	332	42	258
Telephone-switch	J. R. H. Hinton	378,250	Feb. 21	1366	359	42	778
Telephone system	J. Crawford and J. B. Ker	375,925	Jan. 3	267	72	42	56
Telephone system	E. P. Trayer and G. R. Kugler	377,788	Feb. 14	689	174	42	642
Telephone-transmitter	J. F. Bahr	377,475	Feb. 7	191	45	42	532
Telephone-transmitter	T. A. Edison	378,044	Feb. 14	1051	274, 275	42	712
Telephone-transmitter	H. V. Hayes	377,612	Feb. 7	393	99	42	570
Telephone-transmitter	J. H. Irwin. (Reissue.)	10,915	Mar. 27	2131	570	42	1401
Telephonic transmitter	S. E. Beedy	376,060	Jan. 10	469	128	42	101
Telephonic transmitter	M. G. Farmer	378,298	Feb. 21	1442	376	42	792
Telethermometer	F. J. Dibble	379,766	Mar. 20	1325	353, 354	42	1223
Tellurian	C. W. Holbrook	378,885	Mar. 6	41	11, 12	42	974
Temperature-regulating system	W. S. Johnson	379,201	Mar. 6	479	136, 137	42	1067
Temperatnre-regulator	E. Gurney and C. W. Peniston	378,835	Feb. 28	2232	594	42	954
Temperature-regulator. Automatic	J. T. Hawkins	378,248	Feb. 21	1364	359	42	778
Temperature-regulator. Automatic	W. S. Johnson	378,137	Feb. 21	1195	311, 312	42	747
Temperature-regulator. Electric	L. F. Easton	377,021	Jan. 31	1884	496	42	390
Tent	W. R. Hamilton	379,274	Mar. 13	593	163	42	1083
Tent. Folding	L. F. Ryan	378,977	Mar. 6	159	46	42	997
Terry fabric	F. Leake	376,664	Jan. 17	1351	354	42	274
Tether	B. L. Mitchell	379,485	Mar. 13	908	245	42	1144
Textile fabrics. Machine for finishing and polishing	C. Tachon	376,993	Jan. 24	1835	483, 484	42	373
Textile fabrics. Machine for finishing and polishing	C. Tachon	376,994	Jan. 24	1838	484, 485	42	374
Textile fabrics. Machine for fixing cords to	E. Cornely	376,860	Jan. 24	1662	434	42	339
Thermoscopes. Circuit-closer and regulator for electro-magnetic	H. J. Haight	376,880	Jan. 24	1691	441, 442	42	345
Thermoscopes. Receiving, transmitting, and distributing instrument for electro-magnetic	H. J. Haight	376,149	Jan. 10	603	161, 162, 163	42	126
Thill-coupling	S. H. Atkins	378,860	Mar. 6	2	1	42	967
Thill-coupling	G. W. Ford	379,456	Mar. 13	861	222	42	1156
Thill-coupling	W. Hine	378,052	Feb. 14	1062	278	42	714
Thill-coupling	C. Huehn	377,716	Feb. 7	547	140	42	598
Thill-coupling	G. W. Hyatt and W. Dick	378,840	Feb. 28	2240	597	42	956
Thill-coupling	T. G. Ingham	379,578	Mar. 20	1058	282	42	1180
Thill-coupling	L. Miller and M. L. Wright	376,606	Jan. 17	1246	327	42	254
Thill coupling	T. H. B. Millsap	379,591	Mar. 20	1073	285	42	1183

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drfg.	Official Gazette. Vol.	Official Gazette. Page.
Thill-coupling	D. Murray	377,861	Feb. 14	789	201	42	609
Thill-coupling	J. W. Pendleton	378,262	Feb. 21	1387	363	42	781
Thill-coupling	L. Rinninsland	377,814	Feb. 14	731	185	42	649
Thill-support	A. Angus	377,922	Feb. 14	880	225	42	678
Thills. Safety-snap for carriage	H. H. Brown	376,469	Jan. 17	1053	276	42	217
Thrashers. Elevator and weighing attachment for	C. J. Hartley	377,358	Jan. 31	2377	607	42	483
Thrashing-machine	W. H. and J. Butterworth, Jr	379,762	Mar. 20	1319	351, 352	42	1232
Thrashing-machine	J. A. Rouse	377,214	Jan. 31	2156	569	42	444
Thrashing-machine	A. J. Wise	379,191	Mar. 6	464	131	42	1055
Thrashing-machine	H. T. Russell	379,730	Mar. 20	1274	340	42	1224
Thrashing-machine teeth. Die for making	F. I. Bowles	380,174	Mar. 27	1954	521	42	1364
Thread cases. Drawer for spool	E. G. Cone	376,858	Jan. 24	1660	433	42	339
Thread-holder for spools	W. F. D. Pascoe and J. W. Raub	378,519	Feb. 28	1760	465	42	861
Three-way safety-switch	M. H. Straus	377,176	Jan. 31	2098	553	42	434
Ticket-holder	F. E. Smith	377,335	Jan. 31	2339	678	42	476
Tickler. Office	E. P. Lorch	378,452	Feb. 28	1671	438	42	844
Tide-water elevator or system of utilizing the rise and fall of the tides.							
Tie: *See* Bale-tie. Railway-tie. Horse-tie. Railway cross-tie. Horse-tail tie. Railway-rail tie.							
Tile. Illuminating	J. Jacobs	377,939	Feb. 14	909	234	42	684
Tile. Illuminating	T. Sharta	378,558	Feb. 28	1822	480	42	875
Tile. Illuminating	T. Sharta	378,559	Feb. 28	1823	481	42	875
Tile-machines. Lubricating carriage for	G. Livingston and A. A. Spenny	379,795	Mar. 20	1375	365	42	1244
Tile. Paving	F. Brannigan	378,825	Feb. 28	2217	590	42	951
Tiles. Core for making hollow	P. R. Greene	380,030	Mar. 27	1755	470	42	1324
Tiles. Display-rack for	D. C. Meehan	379,589	Mar. 20	1071	285	42	1183
Time-pieces. Machine for regulating	W. B. Farrar	379,511	Mar. 13	946	255, 256	42	1152
Time-pieces. Seconds-setting mechanism for	F. Terstegen	379,833	Mar. 20	1442	383	42	1256
Time-recorder. Employé's	C. E. Van Voorhis	377,341	Jan. 31	2349	680	42	478
Time, temperature, and burglar alarm and call-bell. Electric	H. P. F. Jensen, B. W. Webb, and J. Jensen.	378,202	Feb. 21	1295	340	42	765
Time worked by employés and automatically computing their wages. Device for registering and recording the	F. L. Fuller	379,865	Mar. 20	1507	397	42	1268
Timing horses. Mechanism for	H. A. Leonard and G. Kettlewell	376,602	Jan. 17	1240	326	42	253
Tin. Machine for cutting blanks from	W. Hipperling	379,893	Mar. 20	1550	408	42	1275
Tinning zinc and other metals. Table for	J. K. Crowley	380,248	Mar. 27	2056	550	42	1396
Tinsmith's beading-machine	A. Shepard	377,470	Feb. 7	185	43	42	531
Tire-tightener	M. Chase	379,561	Mar. 20	1023	273	42	1174
Tire-tightener	G. D. Gaddis	379,950	Mar. 27	1632	435	42	1302
Tire-tightener	S. D. Tomlinson	376,491	Jan. 17	1088	286	42	224
Toasting or broiling implement	D. P. McHarg	377,398	Feb. 7	46	13	42	504
Tobacco. Device for curing	E. A. Boughton	379,094	Mar. 6	345	98	42	1030
Tobacco. Device for securing cut	F. Grill	380,256	Mar. 27	2064	552	42	1388
Tobacco-hanger	W. J. Southorp	378,727	Feb. 28	2058	543	42	921
Tobacco-pipe	H. Cullabine	377,241	Jan. 31	2200	580	42	452
Tobacco-pipe	J. F. Mallinckrodt	379,585	Mar. 20	1064	283	42	1182
Tobacco-pipe	L. Grathwol	379,391	Mar. 13	763	206	42	1116
Tobacco-reduing vat	F. Holt	380,038	Mar. 27	1765	473	42	1326
Toilet-cabinet. Nurse's	D. Ward	376,999	Jan. 24	1847	488	42	376
Tongue-support	F. G. Winnek	378,070	Feb. 14	1085	285	42	749
Tongue-support	J. R. Young	379,525	Mar. 13	966	260	42	1156
Tongue support. Vehicle	G. F. Litchard	376,667	Jan. 17	1354	355	42	273
Tonic. Alterative	W. Whitney	378,156	Feb. 21	1223	.....	42	751
Tonic compound	C. W. Stowe	377,842	Feb. 14	768	.....	42	656
Tool. Combination	J. Angus	376,058	Jan. 10	466	125	42	101
Tool. Combination	F. W. Ehlmann	377,142	Jan. 31	2055	538	42	424
Tool. Combination	G. F. Shaver	379,773	Mar. 20	1336	357	42	1236
Tool-driver. Rotary	J. Bell	377,783	Feb. 14	683	172	42	641
Tool-handle	W. Millspaugh	379,439	Mar. 13	833	225	42	1131
Tool-handle	O. Peck	376,413	Jan. 10	966	252	42	193
Tool-handle	C. M. Powers	379,877	Mar. 20	1527	403	42	1272
Tool-handle	A. C. Wells	377,688	Feb. 7	510	131	42	591
Tool-handle	C. L. Young	375,786	Jan. 3	88	26	42	22
Tool-handles. Screw-key fastening for	G. Hoffmann	377,003	Jan. 24	1854	489	42	377
Tool-operating mechanism	L. P. Lawrence	377,257	Jan. 31	2221	587	42	456
Tooth. Artificial	D. Genese	377,858	Feb. 14	785	200	42	659
Tooth. Artificial	J. W. Moffitt	377,248	Jan. 31	2210	583	42	454
Tooth. Artificial	T. S. Waters	378,015	Feb. 14	1014	264	42	705
Tooth-crown. Artificial	C. S. Hurlbut	377,970	Feb. 14	951	248	42	660
Tooth-crown. Artificial	J. E. Low	377,855	Feb. 14	781	200	42	659
Tooth-picks. Machine for cutting	E. A. Harris	376,603	Jan. 17	1241	326	42	253
Torpedo-nets and means for attaching and working them. Manufacture of	W. M. Bullivant	375,812	Jan. 3	121	35	42	28
Torpedo-placer	J. Wilhelm	379,854	Mar. 20	1481	390, 391	42	1262
Torpedo-placer. Railway	S. W. Doane	376,020	Jan. 3	409	108	42	81
Towing canal-boats. Apparatus for	D. W. Kingsley	376,078	Jan. 10	494	134	42	106
Toy. Automatic sand-mill	P. B. Sheldon	378,009	Feb. 14	1006	262	42	703
Toy cartridge-exploder	J. B. McHarg	379,132	Mar. 6	390	111	42	1039
Toy frog. Mechanical	S. E. Clark	377,399	Feb. 7	47	13	42	505
Toy marble-shooter	R. N. Stockton	375,807	Jan. 3	185	51	42	40
Toy money-box	J. H. Bowen	379,913	Mar. 20	1578	415	42	1290
Toy. Musical	C. D. Rogers	376,628	Jan. 17	1295	344	42	263
Toy pistol	E. R. Ives	376,611	Jan. 17	1260	330	42	256
Toy registering savings-bank	E. Headley	377,808	Feb. 14	724	183	42	648
Toy savings-bank	G. S. Iredell	379,534	Mar. 13	978	263	42	1158
Toy savings-bank. Mechanical	A. C. Rex	377,259	Jan. 31	2224	588	42	456
Toy. Walking	G. T. Fallis	379,607	Mar. 20	1098	292	42	1188
Trace-attachment clip	C. J. King	376,588	Jan. 17	1218	321	42	249
		378,649	Feb. 28	2011	531	42	912

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Trace-detacher	J. D. Blakeman	377,992	Feb. 14	967	259	42	626
Trace-fastening	W. N. Bailey	380,160	Mar. 27	1934	516	42	1360
Trace-fastening	J. H. Cory	377,738	Feb. 14	584	150	42	620
Trace-holder. Spring	W. B. Silvers	377,915	Feb. 14	869	223	42	677
Track. Overhead	H. G. Murrell	377,044	Jan. 31	1909	502	42	395
Traction-engine	A. K. Gibson	378,502	Feb. 28	1742	460	42	860
Traction-engine	M. E. Hershey	375,815	Jan. 3	123	36	42	29
Traction-engine	D. Remington	377,274	Jan. 31	2245	593 / 594	42	460
Traction-engine	H. D. Smith and F. M. Walker	379,906	Mar. 27	1699	453	42	1315
Traction-engines. Differential gear for	E. Kite	376,528	Jan. 17	1140	298	42	233
Traction-increasing apparatus. Electro-magnetic	E. E. Ries and A. H. Henderson	379,816	Mar. 20	1415	376	42	1251
Trade-marks and attaching them to fabrics. Forming	G. J. Browne	377,141	Jan. 31	2054	538	42	424
Transformer. Continuous and alternating	F. Jehl	379,073	Mar. 6	307	90	42	1023
Transplanting-pot	I. N. Foster	378,047	Feb. 14	1057	276	42	713
Transom-lifter	S. L. Hill	376,935	Jan. 24	1788	470	42	364
Transom-lifter	A. Langstrom	377,312	Jan. 31	2306	609	42	471
Transom-lifter	H. E. Russell, Jr	377,362	Jan. 31	2285	689	42	484
Trap: *See* Animal-trap. Hog-trap. Ant-trap. Insect-trap. Fish-trap. Steam-trap.							
Tray-chair	W. B. Pierce	377,720	Feb. 7	552	141	42	599
Tray or pan. Ash	W. M. Bowman	379,195	Mar. 6	472	133	42	1056
Tray. Sample	D. Goldstein	376,739	Jan. 24	1466	387	42	304
Trays, &c. Machine for making wooden	W. C. Freeman	380,255	Mar. 27	2062	552	42	1387
Treadle. Swinging	O. H. Gentry	380,029	Mar. 27	1754	470	42	1324
Treadles. Foot-holder for	C. S. Wardwell	376,566	Jan. 17	1185	312	42	242
Tree: *See* Saddle-tree.							
Tree-protector	J. O. Brown	377,448	Feb. 7	152	35	42	524
Tree-protector	E. L. Frantz	379,948	Mar. 27	1629	434	42	1301
Trellis-support	E. D. Watrous	377,444	Feb. 7	146	33	42	522
Tricycle	S. Elliott	379,270	Mar. 13	585	161 / 162	42	1092
Tricycle	G. W. Rodecap	376,551	Jan. 17	1169	307 / 308	42	238
Trigonometrical computations. Instrument for	A. J. Leachorn	378,257	Feb. 21	1380	362	42	780
Triple-expansion engine	M. T. Davidson	376,639	Jan. 17	1316	346	42	266
Trolling-spoon hook	J. R. Harlow	378,678	Feb. 28	1995	527	42	909
Trough: *See* Eaves-trough. Hog-trough. Feed-trough.							
Trousers-stretcher	H. E. Galloway	376,093	Jan. 10	503	135	42	108
Trousers-stretcher	E. McLaughlin	379,118	Mar. 6	376	106	42	1036
Truck	E. Graetz and E. F. Reinhold	377,486	Feb. 7	205	49, 50	42	535
Truck	M. Loree	376,389	Jan. 10	932	244	42	187
Truck	F. H. Otto	378,937	Mar. 6	110	32	42	988
Truck and extension-ladder. Fire-	R. Smith and H. H. Mansfield	375,779	Jan. 3	80	24	42	20
Truck and ladder	J. L. Crafts	379,053	Mar. 6	281	81, 82	42	1018
Truck and stand. Barrel	E. H. Gallup	375,740	Jan. 3	31	9	42	9
Truck. Car-	S. Davis	376,077	Jan. 10	493	133	42	106
Truck. Car-	J. R. Fish	378,925	Mar. 6	90	26	42	984
Truck. Car-	J. R. Fish	378,926	Mar. 6	91	26	42	984
Truck. Car-	A. C. Oehrle	379,005	Mar. 20	1566	413	42	1278
Truck. Fire-ladder	E. F. Steck	379,424	Mar. 13	813	219	42	1127
Truck for cars. Motor-	H. Skinner	377,122	Jan. 31	2034	532	42	419
Truck. Hack-	P. L. and C. D. Sword	380,062	Mar. 27	1799	480 / 481	42	1334
Truck. Hand-	S. Rogers	376,209	Jan. 10	691	183	42	142
Truck. Ladder-	E. F. Steck	379,495	Mar. 13	921	248 / 249	42	1147
Truck. Railway-motor	C. W. Hunt	379,786	Mar. 20	1358	362	42	1240
Truck. Stove-	G. Hess	378,135	Feb. 21	1192	311	42	746
Truck. Traction-	W. H. Bedell	376,703	Jan. 17	1411	370	42	284
Trucks. Apparatus for automatically counting and registering railway-	H. Mohr	379,800	Mar. 20	1382	367	42	1245
Trunk	J. B. Hubbell	379,514	Mar. 13	954	257	42	1153
Trunk or chest	M. J. S. Marshall	377,039	Jan. 31	1904	501	42	393
Trunk-top	F. Kukkuck	380,291	Mar. 27	2109	564	42	1396
Truss	L. B. Craig	376,861	Jan. 24	1663	434	42	339
Tub: *See* Bath-tub.							
Tubs. Adjustable frame for laundry-	C. J. Everett	378,580	Feb. 28	1853	489	42	882
Tubs. Adjustable support for laundry-	A. G. Robinson	379,333	Mar. 13	682	185	42	1101
Tube: *See* Sheet-metal tube. Spirally-welded tube.							
Tube	M. L. Ritchie	378,976	Mar. 6	158	46	42	997
Tube and making the same. Seamless	C. A. Marshall	377,318	Jan. 31	2311	671	42	472
Tube-bending device	W. C. Winfield	379,750	Mar. 20	1301	347	42	1220
Tube-blank and making the same	C. A. Marshall	377,317	Jan. 31	2309	670	42	472
Tube-expander	J. H. Richards and E. Huber	376,485	Jan. 17	1074	281	42	221
Tube-skelps for handling. Preparing	A. L. Murphy	376,780	Jan. 24	1538	405	42	317
Tubes. Making seamless	W. H. Brown	377,347	Jan. 31	2360	689	42	480
Tubes. Making seamless	W. H. Brown	377,348	Jan. 31	2362	683	42	481
Tubes. Manufacture of sheet-metal	E. K. Coss	378,709	Feb. 28	2113	558	42	931
Tubes. Method of and means for reducing the diameter of	A. Paterson	376,106	Jan. 10	534	142	42	114
Tubing. Making spirally-welded	J. B. Root	376,681	Jan. 17	1376	362	42	277
Tubular form. Machine for bending blanks into	D. S. Hall	380,107	Mar. 27	1865	496	42	1347
Tug coupling. Hame-	D. Hill	376,305	Jan. 10	814	215	42	165
Tug. Hame-	M. Commander	377,709	Feb. 7	540	138	42	596
Tug-hook	J. A. Brill	376,810	Jan. 24	1598	416	42	326
Tumbler or bottle washer	L. L. Rowe	378,621	Feb. 28	1908	505	42	893

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Turbine	J. T. Obenchain	379,718	Mar. 20	1258	336	42	1220
Turning cross-head pins. Machine for	B. J. Coates	376,235	Jan. 10	724	193	42	148
Turning-machine	R. B. Codling	379,307	Mar. 13	646	175 / 176	42	1094
Turret. Armor-	H. Gruson	376,985	Jan. 24	1826	480	42	371
Twine	J. Lyall	377,263	Jan. 31	2231	.....	42	457
Twist-drills. Die for making	A. W. Taber	380,146	Mar. 27	1917	511	42	1357
Type-bars. Machine for forming	O. Mergenthaler	378,797	Feb. 28	2149	568 / 569 / 570 / 571 / 572 / 573	42	938
Type-bars. Machine for producing	O. Mergenthaler	378,798	Feb. 28	2157	572 / 573 / 574 / 575 / 576	42	940
Type-beds. Cushioning device for	C. H. Campbell	380,182	Mar. 27	1963	524	42	1366
Type-line support	A. A. Low	375,757	Jan. 3	51	15	42	14
Type-line support	A. A. Low	375,758	Jan. 3	52	16	42	14
Type. Machine for dressing and grooving	W. H. Welsh	380,004	Mar. 27	1714	458 / 459 / 460	42	1318
Type-rubbing machine	F. Geissel	378,880	Mar. 6	35	9, 10	42	973
Type-writer	B. A. Brooks	379,085	Mar. 6	347	99	42	1031
Type-writer cabinet	W. Horrocks	376,092	Jan. 10	515	138	42	110
Type-writer cabinet	W. Horrocks	379,957	Mar. 27	1642	437 / 438	42	1303
Type-writers. Automatic electric spacing mechanism for	J. F. McLaughlin	379,406	Mar. 13	785	212	42	1120
Type-writers. Cabinet for	W. Horrocks	375,819	Jan. 3	126	37	42	30
Type-writing machine	G. W. Baldrige	376,624	Jan. 17	1289	339	42	262
Type-writing machine	W. J. Barron	376,701	Jan. 17	1409	370	42	283
Type-writing machine	A. T. Brown	376,180	Jan. 10	647	173	42	135
Type-writing machine	E. C. Locke	376,715	Jan. 17	1428	375	42	287
Type-writing machine	F. Haitz	377,455	Feb. 7	161	37	42	525
Umbrella	E. Q. Ison	378,963	Mar. 6	141	41	42	994
Umbrella	J. D. Nesbitt	375,947	Jan. 3	299	80	42	62
Umbrella	J. C. Warren	376,693	Jan. 17	1397	367	42	281
Umbrella and cane. Combined	W. H. G. Ellis	376,870	Jan. 24	1676	437	42	342
Umbrella-support	F. Haitz	377,456	Feb. 7	162	37	42	526
Umbrellas or parasols. Runner for	F. Spannuth	379,736	Mar. 20	1283	342	42	1225
Uncoupler. Automatic	W. R. Funk	378,392	Feb. 21	1570	411	42	817
Under-garment. Seamless	L. C. Hopkins	378,053	Feb. 14	1063	278	42	714
Upsetting-machine	W. Cooke and D. Carlough	376,295	Jan. 10	802	212	42	163
Valve	C. Cary	379,446	Mar. 13	843	227	42	1133
Valve. Automatic air-	A. H. Engstrom	376,799	Jan. 24	1569	412	42	323
Valve. Automatic electric	C. J. Hexamer	376,651	Jan. 17	1331	350	42	269
Valve. Back-pressure	W. A. Taylor	379,880	Mar. 20	1531	404	42	1272
Valve. Balanced slide-	L. Adams	378,751	Feb. 28	2088	550	42	926
Valve. Balanced slide-	E. J. Armstrong	377,221	Jan. 31	2168	572	42	446
Valve. Balanced slide-	T. H. Bourke	375,724	Jan. 3	5	1	42	3
Valve. Balanced slide-	J. H. Berry	378,917	Mar. 6	81	23	42	982
Valve. Check-	S. Smith	377,963	Feb. 14	842	246	42	691
Valve. Check-	P. Armington	378,642	Feb. 28	1934	513	42	898
Valve. Cut-off piston-	C. P. Weiss	379,297	Mar. 13	634	173	42	1092
Valve-facing device	J. F. Carpenter	377,989	Feb. 14	975	254	42	698
Valve for air-brakes	H. A. Rice and S. Graham	379,981	Mar. 27	1676	447	42	1310
Valve for steam-radiators. Automatic	H. R. Fay	375,927	Jan. 3	270	73	42	56
Valve-gear	D. F. Gallagher	376,082	Jan. 10	498	135	42	107
Valve-gear	K. Knott	379,400	Mar. 13	776	209 / 210	42	1119
Valve. Hydraulic	R. L. Teed	379,617	Mar. 20	1109	295	42	1190
Valve mechanism for blowing engines, pumps, and similar apparatus.	R. Forsyth and J. A. Potter	378,438	Feb. 28	1652	433 / 434	42	841
Valve. Piston-	T. H. Bourke	377,599	Feb. 7	372	95	42	566
Valve plugs, seats, &c. Machine for truing	D. F. Dunn	378,196	Feb. 21	1274	337	42	702
Valve. Pressure-regulating	F. Markgraf	376,101	Jan. 10	527	141	42	113
Valve. Reversing-	P. Maltby	378,604	Feb. 28	1892	498	42	888
Valve. Self-acting air-	D. T. Ellis	379,889	Mar. 20	1542	406	42	1274
Valve. Sewer-	P. F. Lenhart	378,600	Feb. 28	1878	496	42	887
Valve. Slide-	D. O. Ladd	377,078	Jan. 31	1966	517	42	406
Valve. Steam-	E. W. Cooke	379,684	Mar. 20	1211	320	42	1210
Valve. Steam-actuated	H. W. Bulkley	377,423	Feb. 7	118	25	42	517
Valve. Steam-engine	W. H. Hoffman	380,037	Mar. 27	1763	472	42	1326
Valve. Straight-way	H. P. Hood	375,872	Jan. 3	189	52	42	41
Valve. Tank-	H. C. Weeden	380,153	Mar. 27	1926	513	42	1359
Valve. Throttle-	C. Lozon	378,140	Feb. 21	1202	313	42	748
Valve. Throttle and governor	R. H. Mather	379,280	Mar. 13	602	165 / 166	42	1086
Valves. Device for operating throttle	R. C. McArthur	379,318	Mar. 13	663	179	42	1096
Valves. Device for reseating	C. P. Weiss	379,351	Mar. 13	702	191	42	1105
Valves. Spindle-connection for	H. R. Frisbie	376,981	Jan. 24	1822	479	42	370
Vane. Illuminated wind-	D. Rockwell	379,031	Mar. 6	252	71	42	1013
Vapor-bath. Electric	R. F. Jackson and W. R. Pope	380,261	Mar. 27	2070	554	42	1389
Vapor-burner	S. Daniels	377,548	Feb. 7	299	76, 77	42	552
Vapor-burner	W. R. Park	378,713	Feb. 28	2041	539	42	917
Vapor-burner	H. Ruppel	375,957	Jan. 3	312	83	42	64
Vapor-burner. Generating	J. B. Wallace	378,120	Feb. 21	1162	302 / 303	42	742
Varnish for finishing wood	L. C. Bolton	377,797	Feb. 14	711	.....	42	646
Vault-light	J. C. Haldeman	376,649	Jan. 17	1330	349	42	269
Vegetable-cutter	W. Doering	375,886	Jan. 3	112	32	42	26
Vegetable-slicer	H. J. Pomath	377,909	Feb. 14	861	221	42	675

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Vehicle bolster-spring	E. Cliff	376,857	Jan. 24	1659	433	42	338
Vehicle. Caterer's	J. F. Baldwin	377,594	Feb. 7	360	92, 93	42	564
Vehicle-coupling	C. M. Parker	378,714	Feb. 28	2042	539	42	917
Vehicle-dashers. Manufacturing	W. C. Reynolds and J. Smith	380,134	Mar. 27	1903	508	42	1354
Vehicle. Engine-driven	G. Daimler	376,658	Jan. 17	1314	{344 / 345}	42	265
Vehicle-evener	A. G. Brown	379,939	Mar. 27	1609	{427 / 428}	42	1297
Vehicle-gear	H. Clark	377,190	Jan. 31	2114	558	42	437
Vehicle-gear	M. B. Ring and J. I. Lavoie	377,211	Jan. 31	2151	568	42	441
Vehicle gear-iron	R. Mullholland	375,765	Jan. 3	59	18	42	16
Vehicle. Horse-breaking	E. Herrington	378,837	Feb. 28	2237	596	42	955
Vehicle-jack. Adjustable	L. B. Gifford	378,001	Feb. 14	997	260	42	701
Vehicle running-gear	C. A. Behlen	380,078	Mar. 27	1927	486	42	1339
Vehicle running-gear	E. H. Booth	377,666	Feb. 7	478	122	42	585
Vehicle running-gear	C. C. Caner	376,510	Jan. 17	1116	292	42	224
Vehicle running-gear	P. Emery	376,079	Jan. 10	495	134	42	107
Vehicle running-gear	J. Jackson	377,260	Jan. 31	2226	589	42	456
Vehicle running-gear	T. G. Mandt	380,213	Mar. 27	2008	537	42	1375
Vehicle running-gear	H. Warmington and B. Bulger	376,219	Jan. 10	703	187	42	145
Vehicle-seat	C. M. Blydenburgh	380,170	Mar. 27	1947	{519 / 520}	42	1361
Vehicle-seat	S. B. Irwin	376,887	Jan. 24	1699	444	42	347
Vehicle. Side-bar	O. Heingelman	377,382	Feb. 7	25	8	42	499
Vehicle. Spring	A. Bink	376,425	Jan. 17	903	260	42	205
Vehicle. Spring	C. Harrigan	380,032	Mar. 27	1756	471	42	1325
Vehicle. Spring	J. G. and L. H. Hnff	376,957	Jan. 24	1792	471	42	365
Vehicle. Spring	H. W. Pell	378,145	Feb. 21	1209	{314 / 315}	42	749
Vehicle. Spring	A. Schubert	378,180	Feb. 21	1255	331	42	758
Vehicle-spring	C. M. Blydenburgh	380,169	Mar. 27	1946	519	42	1363
Vehicle-spring	E. Cliff	379,366	Mar. 13	731	200	42	1110
Vehicle-spring	R. Crocker and J. Diehl	379,763	Mar. 20	1322	353	42	1233
Vehicle-spring	J. England	378,244	Feb. 21	1258	358	42	777
Vehicle-spring	A. C. Fish	378,300	Feb. 21	1444	376	42	792
Vehicle-spring	E. Jarrell	379,168	Mar. 6	435	123	42	1049
Vehicle-spring	E. Jarrell	379,470	Mar. 13	882	237	42	1140
Vehicle-spring	J. R. Locke	376,442	Jan. 17	1016	267	42	210
Vehicle-spring	C. P. Manee and E. J. Palmer	379,234	Mar. 13	540	150	42	1074
Vehicle-spring	H. A. Myers	376,104	Jan. 10	531	141	42	113
Vehicle-spring	L. Pentz	375,831	Jan. 3	140	41	42	33
Vehicle-spring	S. H. Raymond	376,161	Jan. 10	624	167	42	130
Vehicle-spring	C. W. Saladee	376,755	Jan. 24	1488	392	42	309
Vehicle-spring	E. Storm	375,902	Jan. 3	231	63	42	49
Vehicle-spring	E. Storm	377,584	Feb. 7	345	89	42	562
Vehicle-spring	J. W. Sullivan	376,614	Jan. 17	1268	332	42	257
Vehicle-spring	H. C. Swan	377,817	Feb. 14	733	185	42	649
Vehicle-spring	H. C. Swan	377,818	Feb. 14	734	186	42	649
Vehicle-transporter	V. Gustavson	379,011	Mar. 6	220	59	42	1008
Vehicle. Two-wheeled	F. W. Bowne	379,675	Mar. 20	1194	316	42	1206
Vehicle. Two-wheeled	W. N. Bryan	378,493	Feb. 28	1730	{456 / 457}	42	858
Vehicle. Two-wheeled	J. H. Cloyes	377,849	Feb. 14	773	198	42	657
Vehicle. Two-wheeled	J. H. Cloyes and E. B. Gray	377,848	Feb. 14	773	197	42	657
Vehicle. Two-wheeled	C. H. Eggleston	379,211	Mar. 13	513	144	42	1069
Vehicle. Two-wheeled	O. B. Fysh	379,059	Mar. 6	289	84	42	1020
Vehicle. Two-wheeled	B. J. Healy	378,447	Feb. 28	1665	437	42	843
Vehicle. Two-wheeled	C. W. and G. H. Jewett	378,791	Feb. 28	2142	566	42	937
Vehicle. Two-wheeled	W. H. Knapp	377,718	Feb. 7	551	140	42	598
Vehicle. Two-wheeled	H. A. Moyer	378,057	Feb. 14	1066	279	42	715
Vehicle. Two-wheeled	H. K. Olmsted	376,962	Jan. 24	1796	472	42	366
Vehicle. Two-wheeled	W. A. Paterson	379,599	Mar. 20	1084	288	42	1185
Vehicle. Two-wheeled	D. S. Pembroke	378,335	Feb. 21	1493	390	42	801
Vehicle. Two-wheeled	L. Raeger	379,723	Mar. 20	1268	338	42	1222
Vehicle. Two-wheeled	B. F. Rix	376,486	Jan. 17	1075	282	42	221
Vehicle. Two-wheeled	H. H. Smith	376,992	Jan. 24	1835	481	42	373
Vehicle-wheel	H. S. Bailey	380,012	Mar. 27	1728	464	42	1320
Vehicle-wheel	G. M. Hughes	378,961	Mar. 6	139	40	42	993
Vehicle-wheel	W. Knight	375,940	Jan. 3	292	78	42	60
Vehicle-wheel	H. J. Lawrence	379,315	Mar. 13	659	178	42	1096
Vehicle-wheel	G. L. H. Schneidewind	376,969	Jan. 24	1803	475	42	367
Vehicle-wheel	E. A. Seale and W. W. Downing	375,775	Jan. 3	72	22	42	18
Vehicle-wheels. Guard-rail for	J. C. Tatman	376,963	Jan. 3	324	87	42	67
Vehicle-wheels. Means for repairing	L. Miller, J. Erskine, and M. L. Wright	377,952	Feb. 14	926	240	42	628
Vehicles and motors. Apparatus for increasing the traction of	E. E. Ries	379,815	Mar. 20	1412	376	42	1250
Vehicles. Lug-bar for spring	E. H. Booth	377,985	Feb. 14	971	253	42	697
Vehicles. Spring-gear for	J. Steele	379,999	Mar. 27	1702	455	42	1316
Vehicles. Sun-shade attachment for	E. E. Dutton	378,829	Feb. 28	2225	{591 / 592}	42	953
Velocipede	C. H. Goodsell	377,610	Feb. 7	390	99	42	569
Velocipede	T. B. Jeffery	379,276	Mar. 13	595	164	42	1084
Velocipede	I. Johnson	379,294	Mar. 13	598	148	42	1072
Velocipede	I. Johnson and R. T. Torkelson	379,228	Mar. 13	533	149	42	1073
Velocipede	W. P. Kidder	375,755	Jan. 3	49	15	42	13
Velocipede	E. G. Latta	377,204	Jan. 31	2140	{565 / 566}	42	441
Velocipede	E. G. Latta	377,566	Feb. 7	322	82, 83	42	557
Velocipede	E. G. Latta	377,900	Feb. 14	847	216	42	671
Velocipede	E. G. Latta	378,253	Feb. 21	1375	{360 / 361}	42	779
Velocipede	E. G. Latta	378,693	Feb. 28	2015	532	42	913
Velocipede	E. G. Latta	379,017	Mar. 6	232	66	42	1010

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Velocipede	H. M. Pope	379,907	Mar. 20	1568	413	42	1279
Velocipede	P. L. C. F. Renouf and I. W. Boothroyd.	379,812	Mar. 20	1407	375	42	1250
Velocipede	W. Schroeter	379,290	Mar. 13	621	{169 / 170}	42	1089
Velocipede	R. Steel	376,051	Jan. 3	452	120	42	90
Velocipede	J. F. Steffa	375,961	Jan. 3	319	85, 86	42	66
Velocipede	C. F. Stillman	377,869	Feb. 14	800	204	42	662
Velocipede	A. M. Stoner	378,631	Feb. 28	1921	509	42	895
Velocipede	R. T. Torkelson	379,258	Mar. 13	570	158	42	1079
Velocipede-boat	F. J. and W. H. Ross	380,221	Mar. 27	2018	540	42	1377
Velocipede-handle	H. D. Hedger	379,955	Mar. 27	1638	436	42	1303
Velocipedes. Railway	C. L. Collier	376,073	Jan. 10	488	132	42	105
Velocipede-saddle	E. G. Latta	376,322	Jan. 10	842	222	42	170
Velocipede-saddle	E. G. Latta	376,662	Jan. 17	1348	354	42	272
Velocipede-saddle	E. G. Latta	376,892	Jan. 24	1703	445	42	347
Velocities of rotating mechanism. Apparatus for varying the	W. W. Beaumont	377,598	Feb. 7	368	95	42	586
Vending apparatus	M. Sielaff	378,982	Mar. 6	168	48	42	999
Veneer-machine	J. W. Trout	378,741	Feb. 28	2073	547	42	923
Vent-plug	M. Schnetz	377,087	Jan. 31	1986	519	42	410
Vent-plug for kegs and casks	W. F. Class	376,635	Jan. 17	1305	343	42	265
Ventilating apparatus for railway cars, factories, &c.	J. D. Yoak	376,494	Jan. 17	1091	287	42	224
Ventilator: *See* Awning-ventilator, Boot or shoe ventilator, Car-ventilator, Room-ventilator, Sewer-ventilator, Stove-hood ventilator, Stove-pipe ventilator, Wall-ventilator, Window-ventilator.							
Ventilator	S. W. Hurlburt	376,094	Jan. 10	518	138	42	111
Ventilator	M. A. W. Louis and C. T. Murray	376,827	Jan. 24	1612	422	42	330
Ventilator	F. C. Werner	378,989	Mar. 6	188	52	42	1002
Ventilator and damper. Combined	G. W. Miller	377,633	Feb. 7	423	108	42	576
Vessel-cover fastening	J. Karrmann	376,036	Jan. 3	434	116	42	87
Vessel-stopper	J. Ringen	377,275	Jan. 31	2249	594	42	461
Vessels against rats. Protector for	T. Wilson	376,839	Jan. 24	1637	428	42	334
Vessels. Apparatus for taking up the slack in steering-ropes of	J. F. Hanscom	379,461	Mar. 13	871	235	42	1138
Vessels. Sheet-ring detacher for	A. D. Post	378,554	Feb. 28	1814	479	42	874
Veterinary purposes. Harness for	L. C. Tiffany	378,153	Feb. 21	1219	318	42	750
Vise	R. E. M. Bain	376,623	Jan. 17	1288	339	42	261
Vise	P. Brown and W. Trabue	380,178	Mar. 27	1957	522	42	1365
Vise	B. R. Clark	378,092	Feb. 21	1105	299	42	731
Vise	J. W. McIntyre	378,893	Mar. 6	52	15	42	976
Vise. Foot-power bench	J. Goodrich	378,362	Feb. 21	1529	406	42	810
Vise or clamp. Hand	A. H. George	376,191	Jan. 10	660	176	42	137
Voting-machine	W. W. Ford	376,980	Jan. 24	1820	478	42	370
Wagon	E. M. Allen	376,934	Jan. 24	1760	463	42	358
Wagon bed and brake. Combined	S. R. Riffle	378,337	Feb. 21	1497	391	42	802
Wagon-brake	J. Gift	377,101	Jan. 31	2008	526	42	414
Wagon-brake	C. A. Lowell	375,884	Jan. 3	209	57	42	45
Wagon-brake block	C. P. Bateman	376,404	Jan. 10	949	249	42	190
Wagon-brake lever	W. A. Westbrook	378,123	Feb. 21	1167	304	42	742
Wagon. Dump	G. W. Richardson	377,331	Jan. 31	2234	577	42	476
Wagon. Dumping	J. Cameron, J. S. and W. S. Judson	380,277	Mar. 27	2088	{559 / 560}	42	1392
Wagon. Dumping	A. C. McEwen	376,902	Jan. 24	1718	{450 / 451}	42	351
Wagon. Dumping	A. Rodgers and W. T. Hatten	378,523	Feb. 28	1766	467	42	865
Wagon. Dumping	D. S. Watson	378,272	Feb. 21	1402	367	42	784
Wagon-gear	C. W. Saladee	376,417	Mar. 13	805	217	42	1125
Wagon-lock	I. M. McGonigle	376,329	Jan. 10	854	224	42	172
Wagon. Police patrol	J. Bonfield	379,266	Mar. 13	580	160	42	1081
Wagon-rack	R. Caldwell	380,181	Mar. 27	1961	{523 / 524}	42	1366
Wagon-rack	J. W. McMaster	378,703	Feb. 28	2027	{535 / 536}	42	915
Wagon reach-slide	F. G. Winnek	378,071	Feb. 14	1086	285	42	719
Wagon running-gear	M. S. Tyler	379,619	Mar. 20	1115	{295 / 296}	42	1191
Wagon-seat	C. Van Horn	377,540	Feb. 7	289	73	42	550
Wagon-seat spring	J. F. Moore	376,718	Jan. 17	1433	376	42	288
Wagon-skeins. Manufacture of	S. B. Parsons	379,026	Mar. 6	944	69	42	1012
Wagon-spring	E. G. Lee	375,941	Jan. 3	293	79	42	61
Wagon-spring brace	F. H. Mason	375,896	Jan. 3	135	39	42	31
Wall-covering	J. A. Shephard	376,350	Jan. 10	882	.....	42	178
Wall-covering. Manufacture of	I. B. Abrahams	377,283	Jan. 31	2259	597	42	463
Wall-ventilator and stove-pipe thimble	J. P. Ekstrom	380,027	Mar. 27	1752	{468 / 469}	42	1324
Walls. Building	E. E. Hiatt	378,838	Feb. 28	2238	596	42	955
Walls, ceilings, &c. Covering for	G. Pettit, Jr., and A. Bowers	377,534	Feb. 7	279	71	42	549
Walls. Straightening	P. B. Johnson	377,940	Feb. 14	909	234	42	685
Wardrobe-hook	H. L. Bradley	379,759	Mar. 20	1315	351	42	1231
Warp-beaming machine	N. Boyle	379,045	Mar. 6	270	78	42	1016
Warping-machine	W. Bancroft	377,659	Feb. 7	468	119	42	583
Wash-bench	W. N. Cochrane	378,921	Mar. 6	85	24	42	983
Wash-board-making machine	J. R. Clnxton	377,236	Jan. 31	2186	{577 / 578}	42	450
Wash-boiler	A. A. Klein	379,592	Mar. 20	1060	292	42	1181
Wash-bowl	T. C. Boyd and J. J. Wade	380,082	Mar. 27	1831	487	42	1340
Wash-bowl. Stationary	T. C. Boyd and J. J. Wade	380,083	Mar. 27	1832	488	42	1340
Wash-stand and water-closet. Combined	A. D. Elwell	376,871	Jan. 24	1677	438	42	342

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Washer: *See* Dish-washer. Ore-washer. Gas-washer. Tumbler or bottle washer.							
Washer-cutter	C. Wunderlick	376,974	Jan. 24	1812	477	42	369
Washers. Machine for making	H. A. Harvey	379,393	Mar. 13	765	207	42	1117
Washing-machine	C. T. Anderson	379,263	Mar. 13	575	159	42	1060
Washing-machine	W. L. G. Appleby	380,272	Mar. 27	2062	557	42	1391
Washing-machine	S. S. Barrie	376,379	Jan. 10	792	207	42	160
Washing-machine	F. P. Beisel	379,357	Mar. 13	711	193	42	1106
Washing-machine	J. Biddison	377,510	Feb. 7	249	60	42	542
Washing-machine	M. L. Blackwelder	378,919	Mar. 6	83	24	42	982
Washing-machine	G. F. Dunning	376,238	Jan. 10	727	193	42	149
Washing-machine	W. C. Edwards	378,243	Feb. 21	1356	358	42	777
Washing-machine	N. S. Johnson	377,829	Feb. 14	751	190	42	652
Washing-machine	J. F. Kuhlman	378,138	Feb. 21	1300	312	42	747
Washing-machine	W. I. McCausland	377,765	Feb. 14	654	164	42	635
Washing-machine	M. Newton	377,530	Feb. 7	275	69	42	548
Washing-machine	J. Shill	377,277	Jan. 31	2250	595	42	461
Washing-machine	I. Whitney	376,932	Jan. 24	1758	462	42	358
Washing-machine	G. E. Wood	375,858	Jan. 3	172	48	42	39
Washing or dyeing machines. Roller for	W. Birch	379,442	Mar. 13	836	226	42	1132
Watch-case pendant	P. Henry	378,959	Mar. 6	137	40	42	903
Watch-case spring	C. G. Harstrom	376,524	Jan. 17	1135	297	42	232
Watch-makers' lathes. Clamping-jaw for	E. Rivett	375,771	Jan. 3	68	21	42	17
Watch-makers' lathes. Counter-shaft bracket for	E. Rivett	375,770	Jan. 3	67	20	42	17
Watch-pocket. Safety	A. Dormitzer	380,279	Mar. 27	2094	560	42	1393
Watch-springs. Making	J. Logan	377,489	Feb. 7	212	51	42	536
Watch. Stem-winding	D. Perret	378,974	Mar. 6	156	45	42	997
Watch. Stem winding and setting	T. F. Sheridan	376,015	Jan. 3	401	106	42	80
Watch. Stem winding and setting	O. F. Stedman	380,225	Mar. 27	2024	541	42	1379
Watch. Stop-	E. Heuer	377,896	Feb. 14	841	215	42	670
Watch. Stop-	E. Heuer	377,897	Feb. 14	843	215	42	670
Watch. Stop-	V. Jeannot	378,592	Feb. 28	1869	494	42	885
Watch. Stop-	H. A. Leonard and G. Kettlewell	379,963	Mar. 27	1650	{439 / 440}	42	1305
Watch. Stop-	H. A. Lugrin	379,075	Mar. 6	311	91	42	1024
Watches. Display stand for non-magnetic	A. C. Smith	378,339	Feb. 21	1500	392	42	803
Watches. Stem winding and setting mechanism for	D. H. Church	379,050	Mar. 6	275	80, 81	42	1017
Watchman's electric controlling apparatus	O. Skrivan and F. Dvorak	376,920	Jan. 24	1740	{457 / 458}	42	355
Water-closet	E. T. Johnson	376,744	Jan. 24	1471	388	42	305
Water-closet	T. Kennedy	376,311	Jan. 10	825	218	42	167
Water-closet cistern	J. Demarest	378,294	Feb. 21	1438	375	42	791
Water-closet cistern	J. Demarest	378,664	Feb. 28	1972	523	42	995
Water-closet cistern	J. Demarest	379,376	Mar. 13	744	202	42	1112
Water-closet cisterns. Seat-connection for	J. Demarest	376,867	Jan. 24	1672	436	42	341
Water-closet coupling	J. P. Putnam	377,776	Feb. 14	672	169	42	638
Water-closet flushing apparatus	S. G. McFarland	378,100	Feb. 21	1131	296	42	736
Water-closet flushing-pipe	T. Butler	376,137	Jan. 10	587	157	42	123
Water-closet. Pump	W. Bishop	378,353	Feb. 21	1519	398	42	808
Water-closet. Siphon	T. Kennedy	376,092	Jan. 3	381	101	42	77
Water-closet supply-tank	J. Holden	379,639	Mar. 20	1232	328	42	1215
Water-closet valve	C. H. Harkins	380,257	Mar. 27	2065	553	42	1388
Water-closets. Apparatus for regulating the supply of liquids for	W. Davies	377,293	Jan. 31	2280	{602 / 603}	42	467
Water-closets. Device for closing the lids of	A. Chainay	378,162	Feb. 21	1232	324	42	753
Water-closets. Reservoir or tank apparatus for	G. W. Hubbard	378,367	Feb. 21	1538	402	42	811
Water-closets. Reservoir or tank apparatus for	G. W. Hubbard	379,310	Mar. 13	651	177	42	1094
Water-closets, &c. Water-supply apparatus for	D. S. Keith	377,261	Jan. 31	2220	589	42	457
Water-gage	M. Parker and J. E. Tupper	376,255	Jan. 10	753	200	42	155
Water-gate	E. E. Smith	377,089	Jan. 31	1987	520	42	410
Water-heater	A. A. Pierce	376,545	Jan. 17	1161	305	42	237
Water-heater furnace	A. Spence	380,297	Mar. 27	2114	566	42	1397
Water-heating apparatus	A. P. Creque	377,096	Jan. 31	2062	524	42	412
Water-heating apparatus. Fitting for	A. P. Creque	379,369	Mar. 13	584	161	42	1082
Water-melon holder	G. H. Moser	379,903	Mar. 20	1564	412	42	1278
Water-meter	W. A. G. Schönheyder	377,641	Feb. 7	433	111	42	578
Water-meter. Piston	F. E. Gilford	377,674	Feb. 7	487	126	42	587
Water-meter. Rotary	S. L. Shuttleton	375,899	Jan. 3	228	62	42	48
Water-meter with nutating piston	L. H. Nash	379,805	Mar. 20	1390	{369 / 370 / 371}	42	1247
Water-motor	S. S. Allin	379,753	Mar. 20	1306	348	42	1229
Water-motor	E. P. Ranks	376,610	Jan. 17	1259	330	42	256
Water or liquid heater	C. G. Marshall	378,513	Feb. 28	1750	462	42	802
Water-proof garment	C. W. Morrison	376,720	Jan. 17	1436	378	42	299
Water purifier and filter	O. H. Jewell	377,389	Feb. 7	35	10, 11	42	502
Water-purifying apparatus	J. H. Blessing	379,673	Mar. 20	1190	315	42	1206
Water-service apparatus	J. W. Hill	375,748	Jan. 3	41	12	42	12
Water-tank	H. A. Gleason	377,427	Feb. 7	123	26	42	518
Water-tube boiler. Sectional	E. J. Moore	376,483	Jan. 17	1072	281	42	221
Water-wheel	C. C. Taylor	379,741	Mar. 20	1289	344	42	1226
Water-wheel	J. N. Weeks	376,357	Jan. 10	892	{233 / 234}	42	180
Watering hogs and other animals. Device for	D. F. and J. A. Collingwood	377,016	Jan. 31	1879	494	42	389
Weaner. Animal-	W. H. Wheeler	377,794	Feb. 14	706	177	42	645
Wear-plate	J. W. Currier	379,210	Mar. 13	512	144	42	1069
Weather-boarding gage	E. Hotchkiss	378,548	Feb. 28	1803	476	42	872
Weather-strip	T. P. Asbury	376,846	Jan. 24	1646	431	42	336
Weather-strip	F. P. Bureaw	378,064	Feb. 14	1077	283	42	717
Weather-strip	G. P. Dodge	378,778	Feb. 28	2124	561	42	933
Weather-strip	L. M. Pratt	377,898	Feb. 14	703	195	42	655
Weather-strip	S. A. Rankin	375,951	Jan. 3	304	81	42	63

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Weather stripping	W. H. Cosper	379,208	Mar. 13	506	142	42	1068
Weaver's comb	P. Rooney	378,376	Feb. 21	1518	405	42	814
Weaving. Pile-wire for	G. Segschneider	379,545	Mar. 13	993	267	42	1161
Weed-cutter. Sectional	D. M. Denehy and H. W. Childs	376,735	Jan. 24	1459	385	42	303
Weigher. Automatic grain-	E. C. Wiley	377,417	Feb. 7	111	23	42	515
Weighing and registering apparatus. Grain	J. Pepper	379,325	Mar. 13	672	182	42	1098
Weighing and sacking grain. Device for	C. E. Cole	377,513	Feb. 7	255	63	42	543
Weighing and weight-printing machine	C. C. Clawson	379,858	Mar. 20	1488	{393 / 394}	42	1264
Weighing apparatus. Automatic grain-	E. R. Whitney	377,591	Feb. 7	354	92	42	563
Weighing apparatus for granular and powdered substances.	H. E. Snyder	376,683	Jan. 17	1379	361	42	277
Weighing apparatus. Grain-	M. E. Reisert	376,965	Jan. 24	1799	{473 / 474}	42	366
Weighing, bagging, and registering device. Grain	W. H. Grove	377,428	Feb. 7	124	27	42	518
Weighing, bagging, and tallying machine. Grain	F. R. Graetz	379,273	Mar. 13	590	163	42	1083
Weighing-machine. Coin-released	G. Reimann	376,910	Jan. 24	1758	{454 / 455}	42	353
Weighing machine. Automatic grain-	J. C. Morris	378,969	Mar. 6	150	44	42	996
Weighing, registering, and bagging machine. Grain	G. R. Kendrick	377,163	Jan. 31	2080	{547 / 548}	42	429
Weight-motor	I. H. Coller	377,929	Feb. 14	888	229	42	680
Weight-motor	D. Lindahl	379,316	Mar. 13	660	178	42	1096
Weights. Device for raising and lowering	M. V. Davis	378,293	Feb. 21	1437	375	42	791
Welding. Apparatus for electric	E. Thomson	375,784	Jan. 3	86	26	42	21
Welding chain-links. Machine for	J. C. Covert and J. Billingham	377,193	Jan. 31	2119	559	42	438
Welding links. Die for	W. C. Kroegher	377,395	Feb. 7	43	12	42	504
Welding-machine	T. F. Rowland	375,836	Jan. 3	150	43	42	34
Well	R. F. McCann	377,903	Feb. 14	892	247	42	672
Well-drilling machine	W. Manson	379,710	Mar. 20	1248	332	42	1218
Well or cistern cover	J. S. Redline	376,010	Jan. 3	397	105	42	79
Wells. System of bailing	S. C. Rhodes	378,619	Feb. 28	1903	504	42	892
Wheat-scouring machine	R. W. Welch	377,920	Feb. 14	876	224	42	678
Wheel: *See* Car-wheel. Paddle-wheel. Carriage-wheel. Plow-wheel. Emery-wheel. Propeller-wheel. Fifth-wheel. Railway-wheel. Gage-wheel. Vehicle-wheel. Gear-wheel. Water-wheel. Metallic wheel.							
Wheel	J. Bolick	376,938	Jan. 24	1766	464	42	360
Wheel	W. Sheridon	379,250	Mar. 13	561	156	42	1077
Wheel	G. E. Whitmore	379,841	Mar. 20	1460	386	42	1259
Wheels. Apparatus for the manufacture of	F. H. Gibbs	377,196	Jan. 31	2123	560	42	438
Whiffletree	F. R. Willson, Sr	376,462	Jan. 17	1046	274	42	215
Whiffletree attachment	G. Miles	379,238	Mar. 13	547	153	42	1075
Whiffletree-clip	F. W. Hoefer	379,869	Mar. 20	1516	399	42	1269
Whiffletree-hook	A. Curtis	376,733	Jan. 24	1457	384	42	302
Whiffletree-hook	N. F. Reed	376,011	Jan. 3	398	105	42	80
Whiffletree-hook	J. H. Foote	377,025	Jan. 31	1891	497	42	391
Whiffletree. Spring-	J. H. Foote	377,026	Jan. 31	1892	497	42	391
Whiffletree. Spring-	D. B. Allen and E. K. Warren	375,974	Jan. 3	341	92	42	69
Whip	G. Pirnie	375,950	Jan. 3	302	81	42	63
Whip	E. K. Warren	376,273	Jan. 10	774	206	42	159
Whip-core	J. J. Bohler	375,984	Jan. 3	354	95	42	72
Whip-lash attachment	W. Becker	377,137	Jan. 31	2050	537	42	423
Whip snapper attachment	C. S. Beebe	380,164	Mar. 27	1939	517	42	1361
Whip-socket	H. S. Cushman	378,602	Feb. 28	1970	522	42	904
Whip-stock core	M. Gage	379,641	Mar. 20	1145	303	42	1197
Whistle attachment. Automatic	W. S. Canney	379,268	Mar. 13	583	161	42	1081
Wind-instrument	C. G. Conn	378,771	Feb. 28	2115	558	42	931
Wind-instrument	H. P. Straw	379,616	Mar. 20	1107	294	42	1189
Winding or balling machine	J. Martzloff	377,206	Jan. 31	2146	567	42	443
Winding silk, &c. Spool-holding spindle for	J. L. Bugbee	375,921	Jan. 3	257	70, 71	42	54
Winding spools. Machine for	G. H. Wilkins	376,124	Jan. 10	566	{150 / 151 / 152}	42	119
Windmill	T. J. Alexander	378,073	Feb. 21	1093	287	42	729
Windmill	C. Brown	375,729	Jan. 3	10	3	42	5
Windmill	W. Burrows	378,429	Feb. 28	1634	430	42	836
Windmill	M. T. and M. C. Chapman	378,235	Feb. 21	1347	{355 / 356}	42	776
Windmill	L. A. Cooper	377,602	Feb. 7	380	96	42	567
Windmill	S. M. Fulton	379,512	Mar. 13	949	256	42	1152
Windmill	A. E. McNitt	377,491	Feb. 7	214	51	42	536
Windmill	I. L. Pfaff	379,125	Mar. 6	383	109	42	1038
Windmill	M. Steiner	377,964	Feb. 14	944	246	42	692
Windmill	W. C. Westaway	377,973	Feb. 14	956	249	42	694
Windmill-brake	J. Thompson	379,342	Mar. 13	603	188	42	1103
Windmill-regulator	O. Colvin	379,032	Mar. 6	279	81	42	1018
Windmills. Automatic regulating device for	C. F. Batham	379,847	Mar. 20	1467	{387 / 388}	42	1260
Windmills. Lightning-rod attachment for	E. O. Daniels	377,742	Feb. 14	588	{151 / 152}	42	621
Window and means for securing the same. Outside	B. P. Brooks	377,013	Jan. 31	1874	493	42	389
Window and picture hook	H. Loftie	378,891	Mar. 6	49	14	42	976
Window-bar	K. Kuenzel	377,624	Feb. 7	408	103	42	573
Window-frame	A. Woeber and J. L. Laumers	379,920	Mar. 20	1585	417	42	1282
Window frame and sash	J. E. Jones	376,959	Jan. 24	1794	{471 / 472}	42	365
Window-glass setting	J. V. Auth	377,474	Feb. 7	191	45	42	532
Window-guard	O. C. Rife	379,332	Mar. 13	681	184	42	1100
Window-screen	J. A. Baldwin	378,997	Mar. 6	204	55	42	1005

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Window-screen	W. J. Connell	377,991	Feb. 14	977	255	42	698
Window screen	H. H. Greenman	378,090	Feb. 21	1116	292	42	733
Window screen and fixture	G. H. Gould	378,587	Feb. 28	1863	492	42	884
Window-sill	H. Breuer	376,940	Jan. 24	1768	465	42	360
Window-ventilator	T. Bury	377,798	Feb. 14	712	180	42	646
Windows. Attachment for	C. C. MacKubin	380,126	Mar. 27	1898	504	42	1352
Windows. Device for raising or lowering	W. E. Horne	377,457	Feb. 7	164	38	42	526
Wire. Apparatus for tempering	E. J. Watson	378,746	Feb. 28	2080	548	42	924
Wire. Barb-	C. D. Rogers	376,418	Jan. 10	979	256	42	195
Wire. Barbed	J. W. Griswold	377,252	Jan. 31	2215	585	42	455
Wire-coiling machine	D. F. Stambaugh	376,685	Jan. 17	1381	363, 364	42	278
Wire. Device for tightening barb-	B. L. Mitchell	379,486	Mar. 13	909	245	42	1145
Wire-drawing machine	M. F. Roberts	377,864	Feb. 14	793	202, 203	42	660
Wire fabrics. Machine for manufacturing	F. Hainsworth	379,013	Mar. 6	223	60	42	1008
Wire-holder	B. J. Carroll	380,183	Mar. 27	1964	524	42	1367
Wire-joining machine	O. M. Pond and J. Provan	378,176	Feb. 21	1249	329	42	757
Wire. Lubricating	W. H. Sawyer	380,055	Mar. 27	1791	478	42	1331
Wire machine. Barb-	C. D. Rogers	376,417	Jan. 10	973	254, 255	42	194
Wire. Machine for forming fabrics from	D. C. Stover and O. E. Winger	376,560	Jan. 17	1178	310, 311	42	240
Wire. Manufacture of	E. Wheeler	378,031	Feb. 14	1034	270	42	709
Wire mat	W. R. Pitt	378,214	Feb. 21	1301	345	42	768
Wire mat. Woven-	F. L. Bryant	375,866	Jan. 3	183	51	42	40
Wire nail	W. A. Sweet	376,791	Jan. 24	1560	409	42	321
Wire or conductor. Covered or insulated	L. F. Requa	375,952	Jan. 3	305	82	42	63
Wire-polishing machine	L. Rammelsberg	380,162	Mar. 27	1935	516	42	1361
Wire. Reducing and finishing	J. Withington	377,000	Jan. 24	1847	.....	42	376
Wire-reel	C. B. Rumsey	376,913	Jan. 24	1732	455	42	354
Wire rods. Reeling apparatus for	F. H. Daniels	379,104	Mar. 6	356	101, 102	42	1032
Wire-rope tramway	E. C. Bacon	380,011	Mar. 27	1727	463	42	1320
Wire screen, &c	J. Burkhardt	378,416	Feb. 21	1607	422	42	825
Wire strands. Making open-twist	J. Vermeulen	377,415	Feb. 7	109	22	42	515
Wire-stretcher	F. O. Bjugstad	378,036	Feb. 14	1040	272	42	710
Wire stretcher	J. R. Merideth	377,169	Jan. 31	2091	551	42	432
Wire-stretcher	A. S. Runyon	375,956	Jan. 3	311	83	42	64
Wire-stretcher	S. K. Warren	379,669	Mar. 20	1186	314	42	1205
Wire. Tempering Bessemer-steel	E. W. Gillon	379,573	Mar. 20	1048	278	42	1178
Wire-tightener	J. W. Wear	376,694	Jan. 17	1398	368	42	281
Wire-tightener	J. W. Wear	376,695	Jan. 17	1399	368	42	281
Wire-unwinding apparatus	H. A. Bindeman	377,422	Feb. 7	117	24, 25	42	517
Wires or coils through flexible tubes. Apparatus for threading	W. H. Sawyer	380,054	Mar. 27	1789	478	42	1331
Wood-cutting machine	T. S. Crane	379,451	Mar. 13	851	230, 231	42	1134
Wood-drying kiln	J. A. R. Wyman	379,145	Mar. 6	409	115, 116	42	1043
Wood joint	J. Collins	376,236	Jan. 10	725	193	42	149
Wood turning and molding machine	C. L. Goehring	378,787	Feb. 28	2136	565	42	935
Wooden relief-plates. Manufacturing	C. Wittkowsky	379,301	Mar. 13	637	173	42	1092
Wool. Machine for extracting oils from	F. A. Owen and J. A. Harvey	379,808	Mar. 20	1399	372, 373	42	1248
Wool-washing machine	S. Davis	376,866	Jan. 24	1671	436	42	341
Woven fabric and package made therefrom	M. A. Hamilton	379,219	Mar. 13	521	146	42	1070
Woven pile fabric	J. Dobson	378,577	Feb. 28	1848	488	42	881
Wrench: *See* Chain-wrench. Pipe-wrench.							
Wrench	G. M. Allen	379,627	Mar. 20	1127	298	42	1193
Wrench	H. W. Atwater	376,504	Jan. 17	1106	290	42	227
Wrench	J. Byrne	379,504	Mar. 13	938	252	42	1150
Wrench	M. E. Campfield	379,445	Mar. 13	882	227	42	1133
Wrench	H. D. Cone	376,584	Jan. 17	1212	320	42	248
Wrench	J. L. Finch	378,299	Feb. 21	1443	376	42	792
Wrench	G. Gavin and L. W. Crome	378,584	Feb. 28	1860	491	42	883
Wrench	W. L. Gibson	378,585	Feb. 28	1861	491	42	883
Wrench	H. W. Hackley	377,827	Feb. 14	747	189	42	651
Wrench	F. S. Hazelton and C. Leach	377,755	Feb. 14	610	157	42	624
Wrench	R. F. Lancaster	376,891	Jan. 24	1702	445	42	347
Wrench	H. P. Roberts	376,991	Jan. 24	1834	483	42	373
Wrench	A. Roland	379,084	Mar. 27	1679	448	42	1311
Wrench	V. J. Van Horn	376,564	Jan. 17	1183	312	42	241
Wringer: *See* Clothes-wringer. Mop-wringer.							
Wringer	A. F. White and M. M. Flynn	380,234	Mar. 27	2037	544	42	1381
Yard-stick holder	M. Levy	377,526	Feb. 7	271	68	42	547
Yarn-reel	C. S. Foster	376,590	Jan. 17	1224	322	42	250
Yarns or threads. Mechanism for testing	R. Wallwork	379,088	Mar. 6	332	95, 96, 97	42	1028
Yoke guard. Neck-	H. Kniphals	376,099	Jan. 10	525	146	42	112
Yoke. Neck-	J. Edgar	376,868	Jan. 24	1673	437	42	341
Yoke. Ox-	W. W. Herren	375,814	Jan. 3	123	35	42	29
Zinc from its ores. Wet process of extracting pure	C. F. Croselmire	379,764	Mar. 20	1323	.....	42	1233

ALPHABETICAL LIST OF DESIGNS.

Design.	Name.	No.	Date.	Official Gazette. Volume.	Official Gazette. Page.
Advertising-staff	G. Fuchs	18,188	Mar. 20	42	1172
Badge	J. H. McMath	18,015	Jan. 10	42	100
Badge	J. M. Murphy	18,194	Mar. 20	42	1172
Badge	F. H. C. Woolley	18,184	Mar. 13	42	1066
Bags, &c. Material for hand-	H. Mehl	18,002	Jan. 3	42	2
Barber's dressing-case	T. J. Collins	18,022	Jan. 24	42	300
Bottle	R. M. Atwater	18,021	Jan. 24	42	300
Bottle or jar cover	C. A. Tatum	18,005	Jan. 3	42	2
Bottle-stopper	S. S. Newton	18,105	Feb. 21	42	727
Box	W. Schreyer	18,182	Mar. 13	42	1066
Bracelet	L. P. Juvet	18,189	Mar. 20	42	11 2
Broom-ferrule	A. Walrath	18,110	Feb. 21	42	727
Buckle	G. F. Eberhard	18,066, 18,067	Feb. 21	42	727
Burial-casket	J. Einsfield	18,009	Jan. 10	42	100
Burial-casket	J. Maxwell	18,193	Mar. 20	42	1172
Burial-casket	W. A. Sparks	18,172	Mar. 6	42	966
Burial-casket	W. J. Noble	18,030	Jan. 24	42	300
Burial-casket top	J. A. Kiessle	18,180	Mar. 13	42	1066
Cake ornament	F. Brackett	18,065	Feb. 21	42	727
Calendar	W. A. Kelsey	18,025	Jan. 24	42	300
Card	H. Fawcett	17,996 to 17,999	Jan. 3	42	2
Carpet	H. Fawcett	18,010	Jan. 10	42	100
Carpet	J. L. Folsom	18,048 to 18,058	Feb. 14	42	618
Carpet	J. L. Folsom	18,068 to 18,097	Feb. 21	42	727
Carpet	J. L. Folsom	18,124 to 18,152	Mar. 6	42	965
Carpet	O. Heinigke	18,154, 18,155	Mar. 6	42	965
Carpet	E. H. Hill	18,038, 18,039	Feb. 7	42	494
Carpet	E. H. Hill	18,113	Feb. 28	42	832
Carpet	H. Hunt	18,157 to 18,162	Mar. 6	42	965
Carpet	A. Lees	18,040	Feb. 7	42	494
Carpet	T. E. Meagher	18,041 to 18,046	Feb. 7	42	494
Carpet	T. E. Meagher	18,102 to 18,104	Feb. 21	42	727
Carpet	T. E. Meagher	18,115	Feb. 28	42	832
Carpet	O. Righter	18,106 to 18,109	Feb. 21	42	727
Carpet	O. Righter	18,116 to 18,121	Feb. 28	42	832
Carpet	W. E. Sayers	18,160 to 18,168	Mar. 6	42	965
Check or counter	W. M. Welling	18,122	Feb. 28	42	832
Check or counter	W. M. Welling	18,213	Mar. 27	42	1294
Coat, Lady's	H. F. Duke	18,008	Jan. 10	42	100
Coat, Lady's	M. V. Kavanagh	18,216	Mar. 27	42	1294
Coat, Miss's	M. V. Kavanagh	18,165	Mar. 6	42	965
Comb	P. Witteck	18,214	Mar. 27	42	1294
Confectionery	A. Schwarzschild and N. Greenfield	18,206	Mar. 27	42	1294
Corset	E. S. Rosenbluth	18,031	Jan. 24	42	300
Costume, Girl's	C. Sheils	18,063	Feb. 14	42	618
Costume, Lady's	H. F. Duke	18,023	Jan. 24	42	300
Costume, Lady's	E. Moran	18,062	Feb. 14	42	618
Costume, Lady's	J. Sheils	18,016	Jan. 10	42	100
Costume, Lady's	J. Sheils	18,171	Mar. 6	42	966
Costume, Lady's	J. Sheils	18,207	Mar. 27	42	1294
Costume, Lady's	M. Turner	18,174	Mar. 6	42	966
Costume, Miss's	M. B. Kent	18,060	Feb. 14	42	618
Desk, Cabinet-	F. A. Coffin	18,112	Feb. 28	42	832
Desk, Cabinet-	F. A. Coffin	18,153	Mar. 6	42	965
Desk, Cabinet-	F. A. Coffin	18,176	Mar. 13	42	1066
Desk, Cabinet-	F. A. Coffin	18,178	Mar. 13	42	1066
Desk, Writing-	F. A. Coffin	18,111	Feb. 28	42	832
Desk, Writing-	F. A. Coffin	18,177	Mar. 13	42	1066

Alphabetical list of designs, January to March, inclusive—Continued.

Design.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Dish	J. Slater	18,020	Jan. 17	42	201
Dynamos. Frame for	D. J. Hauss	18,099	Feb. 21	42	727
Engine-frame	R. M. Beck	17,995	Jan. 3	42	2
Eraser-holder	F. G. Osborn	18,003	Jan. 3	42	2
Flue stopper and collar	Z. T. Hall	18,059	Feb. 14	42	618
Furnace-front	F. A. Williams	18,123	Feb. 28	42	832
Garment-supporter	A. P. and H. P. Rindskopf	18,205	Mar. 27	42	1294
Gimp	S. Steinecke	18,173	Mar. 6	42	966
Gimp	C. Weinberg	18,183	Mar. 13	42	1066
Grave-stone	W. R. Stearns and G. W. Lewis	18,196 to 18,199	Mar. 20	42	1172
Hame-clip	O. H. Muntz	18,047	Feb. 7	42	494
Handle for dishes	E. Breuil	18,006	Jan. 10	42	100
Horseshoe	P. F. Greenwood	18,215	Mar. 27	42	1294
Lamp-burner	C. A. Evarts	18,202	Mar. 27	42	1294
Lamp. Incandescent	D. J. Hauss	18,098	Feb. 21	42	727
Lamp or lantern body	F. Billingham	18,200 to 18,201	Mar. 27	42	1294
Medal	J. P. Kirk, Jr	18,204	Mar. 27	42	1294
Medallion, &c	W. D. Smith	18,034	Jan. 31	42	386
Memorial tablet	F. A. Green	18,019	Jan. 17	42	204
Moccasins or shoes. Ornamentation of	J. E. Booth	18,186	Mar. 20	42	1172
Oil-cloth	C. T. and V. E. Meyer	18,026 to 18,029	Jan. 24	42	300
Package-holder	G. H. Benedict	18,036	Feb. 7	42	494
Paper. Ornamentation of	W. A. Pike	18,185	Mar. 13	42	1066
Paper-weight	D. Ball	18,064	Feb. 21	42	727
Pencil. Lead	L. Zeckendorf	18,032	Jan. 24	42	300
Piano-cover	L. French	18,203	Mar. 27	42	1294
Piano-cover. Front of	F. Kraemer	18,061	Feb. 14	42	618
Polonaise. Lady's	M. Turner	18,017	Jan. 10	42	100
Rug	G. B. Fox	18,011	Jan. 10	42	100
Rug	J. Pegel	18,004	Jan. 3	42	2
Shingle or roofing-plate	J. S. Thorn	18,208 to 18,212	Mar. 27	42	1294
Shrine	J. A. McGee	18,181	Mar. 13	42	1066
Skirt. Lady's walking	J. Sheils	18,217	Mar. 27	42	1294
Skirts. Ornamentation of	A. Hildt	18,100	Feb. 21	42	727
Spoon-handles. Ornamentation of	E. T. Schoonmaker	18,169 18,170	Mar. 6	42	965
Spur	A. Buermann	18,187	Mar. 20	42	1172
Stove. Cooking	W. J. Keep and C. Wipfler	18,101	Feb. 21	42	727
Stove. Gas	A. J. Doty	18,007	Jan. 10	42	100
Stove. Heating	C. T. Heisel	18,179	Mar. 13	42	1066
Stove. Heating	W. J. Keep and C. Wipfler	18,114	Feb. 28	42	832
Stove. Heating	W. J. Keep and C. Wipfler	18,190 18,191	Mar. 20	42	1172
Stove. Heating	J. K. McLaughlin	18,014	Jan. 10	42	100
Stove or range. Cooking	J. L. Gobeille	18,012	Jan. 10	42	100
Textile fabric	E. A. Fenner	18,000 18,001	Jan. 3	42	2
Tooth-powder holder	C. L. Bartlett	18,018	Jan. 17	42	204
Trimming	I. Goodman	18,033	Jan. 31	42	386
Type	A. M. Barnhart	18,035	Feb. 7	42	494
Type	W. Barnhart	18,175	Mar. 13	42	1066
Type	J. Guildenstine	18,013	Jan. 10	42	100
Type	C. E. Heyer	18,037	Feb. 7	42	494
Type. Font of printing	C. E. Heyer	18,024	Jan. 24	42	300
Type. Font of printing	C. E. Heyer	18,156	Mar. 6	42	965
Type. Font of printing	H. Ihlenberg	18,163	Mar. 6	42	965
Type. Font of printing	W. W. Jackson	18,164	Mar. 6	42	965
Water-closet	J. Slater	18,195	Mar. 20	42	1172
Water-closet bowl	O. J. McGann	18,192	Mar. 20	42	1172

ALPHABETICAL LIST OF TRADE-MARKS.

Title.	Name.	No.	Date.	Official Gazette. Volume.	Page.
Alloys and articles made therefrom	Phosphor Bronze Smelting Company	15,226	Feb. 21	42	728
Alloys and articles made therefrom. Metallic	Phosphor Bronze Smelting Company	15,225	Feb. 21	42	728
Articles of pharmacy, soap, dentifrice, and toilet vinegar which contain a certain odoriferous extract.	Rocke, Tompsitt & Co	15,079	Jan. 3	42	2
Atomizers	A. P. Lighthill	15,232	Feb. 28	42	832
Axes	E. F. Carpenter & Co	15,074	Jan. 3	42	2
Ball goods and outfits. Base	R. F. Fenno	15,196	Feb. 21	42	728
Banjos	C. E. Dobson	15,277	Mar. 13	42	1066
Bats for tennis, racket, cricket, and other games	R. Slazenger	15,098	Jan. 10	42	100
Beer	J. Wagner	15,327	Mar. 27	42	1294
Belting. Rubber	H. D. Edwards & Co	15,155	Jan. 31	42	386
Belting. Rubber	H. D. Edwards & Co	15,156	Jan. 31	42	386
Belting. Self-adjusting leather link	C. L. Ireson	15,279	Mar. 13	42	1066
Beverage. Non-alcoholic	C. H. Sagar	15,215	Feb. 21	42	728
Beverages. Carbonated	S. A. Ludin	15,280	Mar. 13	42	1066
Biscuits, crackers, wafers, and similar articles	Holmes & Contts	15,203	Feb. 21	42	728
Biscuits, crackers, wafers, and similar articles	Holmes & Contts	15,204	Feb. 21	42	728
Blacking or polish for stoves	Black Flag Stove Polish Company	15,135	Jan. 31	42	386
Blasting-machines, electric batteries, fuses, blasting caps and wires. Magneto	J. Macbeth	15,281	Mar. 13	42	1066
Bleaching-bluing	G. F. Soter	15,237	Feb. 28	42	832
Boots and shoes	T. Miles' Sons	15,210	Feb. 21	42	728
Boots and shoes	Parker, Holmes & Co	15,285	Mar. 13	42	1066
Boots and shoes	T. A. Whicher & Co	15,157	Jan. 31	42	386
Boots and shoes. Oil grain-leather	A. F. & J. Wm. Horner	10,089	Jan. 10	42	100
Broma	H. L. Pierce	15,265	Mar. 6	42	966
Brooms. Corn	R. R. and B. F. Carroll	15,158	Jan. 31	42	386
Candy	Hawley & Hoops	15,201	Feb. 21	42	728
Cement	H. Fleming	15,230	Feb. 28	42	832
Chicory, prunes, and raisins	F. Seggermann	15,097	Jan. 10	42	100
Chocolate	H. L. Pierce	15,270	Mar. 6	42	966
Chocolate for use in cooking and as a confection. Plain	Hawley & Hoops	15,163	Feb. 7	42	494
Chocolate. French sweet	H. L. Pierce	15,267	Mar. 6	42	966
Chocolate. French sweet	H. L. Pierce	15,272	Mar. 6	42	966
Chocolate. Josiah Webb & Co.'s premium	H. L. Pierce	15,271	Mar. 6	42	966
Chocolate. Manufactured	H. L. Pierce	15,266	Mar. 6	42	966
Chocolate. Sweet	H. L. Pierce	15,269	Mar. 6	42	966
Chocolate. Sweet vanilla	H. L. Pierce	15,273	Mar. 6	42	966
Chocolate. Webb's double vanilla	H. L. Pierce	15,262	Mar. 6	42	966
Cigars	E. Aschermann & Co	15,133	Jan. 31	42	386
Cigars and cigarettes	Waldauer & Baer	15,150	Jan. 31	42	386
Cigars, cigarettes, and chewing and smoking tobacco	Pemberton & Hill Tobacco Manufacturing Company	15,111	Jan. 17	42	204
Cloaks	Siegel, Cooper & Co	15,112	Jan. 17	42	204
Cloths, cashmeres, velvets, socks, stockings, and gloves. Dress	Bloomingdale Brothers	15,102	Jan. 17	42	204
Coat-linings	Alburger, Stoer & Co	15,276	Mar. 13	42	1066
Cocoa. Cracked	H. L. Pierce	15,263	Mar. 6	42	966
Cocoa. Cracked	H. L. Pierce	15,264	Mar. 6	42	966
Cocoa paste	H. L. Pierce	15,286	Mar. 13	42	1066
Cocoa shells. Webb's	H. L. Pierce	15,261	Mar. 6	42	966
Cocoa. Webb's pure	H. L. Pierce	15,268	Mar. 6	42	966
Collars and cuffs	Miller & Bingham	15,282	Mar. 13	42	1066
Confectionery, including jams, jellies, marmalades, preserved and canned fruits, and sweets.	C. Southwell & Co	15,308	Mar. 20	42	1172
Corks	Dalman, Esteva & Co	15,075	Jan. 3	42	2
Corn-cure	D. H. Aldrich	15,115	Jan. 24	42	300
Corn. Ensilage	D. H. Burrell & Co	15,194	Feb. 21	42	728
Corsets	J. H. Clark	15,291	Mar. 20	42	1172
Corsets	Jordan, Marsh & Co	15,322	Mar. 27	42	1294
Cotton prints	Freeman Manufacturing Company	15,316	Mar. 27	42	1294
Cotton. Spool	A. King & Co	15,076	Jan. 3	42	2
Cotton. Spool	A. King & Co	15,077	Jan. 3	42	2
Cotton. Spool	A. King & Co	15,108	Jan. 17	42	204
Cotton. Spool	A. King & Co	15,109	Jan. 17	42	204
Cough cure and certain proprietary medicines in the form of tablets.	F. Hiller, Jr	15,245	Feb. 28	42	832
Crackers, biscuits, and kindred articles	C. D. Boss & Son	15,227	Feb. 28	42	832
Cutlery, scissors, hunting and butcher knives, and razors. Pocket and table	Hubbell & Randall	15,320	Mar. 27	42	1294
Cutlery, scissors, razors, and table cutlery. Pocket	Schmachtenberg Bros	15,145	Jan. 31	42	386
Dentifrices	A. Rowland & Sons	15,094	Jan. 10	42	100
Detergent or cleansing powders	N. K. Fairbank & Company	15,161	Feb. 7	42	494
Draftsmen and engineers. Certain supplies and instruments for	E. G. Soltmann	15,220	Feb. 21	42	728
Draftsmen's and engineers' supplies and instruments	E. G. Soltmann	15,326	Mar. 27	42	1294
Drawers. Men's	J. Stiefel and B. M. Cohen	15,129	Jan. 24	42	300
Drugs capable of trituration and of being formed into pills or pellets.	A. S. Newcomb	15,110	Jan. 17	42	204
Dusters. Imitation-leather cloth	J. Hothersall & Co	15,319	Mar. 27	42	1294

Alphabetical list of trade-marks, January to March, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Earthenware, and glazed tiles. Printed, white granite, general.	T. & R. Boote	15,191	Feb. 21	42	728
Ejectors. Steam water	W. J. Sherriff	15,146	Jan. 31	42	386
Embroideries. Hamburg	L. Lévy & Bros	15,206	Feb. 21	42	728
Emollient	W. W. Scott	15,217	Feb. 21	42	728
Envelope-paper and envelopes	Holyoke Envelope Company	15,122	Jan. 24	42	300
Envelope-paper and envelopes	Holyoke Envelope Company	15,123	Jan. 24	42	300
Envelope-paper and envelopes	Holyoke Envelope Company	15,124	Jan. 24	42	300
Extracts and other perfumes	W. H. Riker	15,307	Mar. 20	42	1172
Faucets for barrels, &c. Wooden	J. Sommer, Jr.	15,287	Mar. 13	42	1066
Fertilizers	Bowker Fertilizer Company	15,103	Jan. 17	42	204
Fertilizers. Ground-bone	H. S. Miller & Co	15,209	Feb. 21	42	728
Fertilizers. Phosphates for	H. S. Miller & Co	15,181	Feb. 14	42	618
Fertilizers. Phosphates for	H. S. Miller & Co	15,183	Feb. 14	42	618
Fireproofing. Compound for	Griffith's Pyrodene Fireproofing Company.	15,119	Jan. 24	42	300
Flour	Barbour & Hamilton	15,081	Jan. 10	42	100
Flour	Marshall, Kennedy & Co	15,258	Mar. 6	42	966
Flour	E. Steinbrügge	15,238	Feb. 28	42	832
Flour	S. W. Weidler	15,224	Feb. 21	42	728
Flour and meal containing leavening properties	F. M. Holmes	15,308	Mar. 20	42	1172
Flour. Fancy winter-wheat patent	Gilbert, Waugh & Co	15,317	Mar. 27	42	1294
Flour, oatmeal, cornmeal, hominy, and grits	Newell Bros	15,184	Feb. 14	42	618
Flour. Roller-process	Gilbert, Waugh & Co	15,297	Mar. 20	42	1172
Flour. Wheat	Farwell & Rhines	15,314	Mar. 27	42	1294
Flour. Wheat	Farwell & Rhines	15,315	Mar. 27	42	1294
Flour. Wheat	Winona Mill Company	15,309	Mar. 20	42	1172
Flour. Wheat	Winona Mill Company	15,310	Mar. 20	42	1172
Food. Cattle	G. Fraser	15,255	Mar. 6	42	966
Food. Concentrated stock	J. H. Pollard	15,141	Jan. 31	42	386
Food for infants	V. Dietrich	15,295	Mar. 20	42	1172
Garters	G. Frost & Co	15,198	Feb. 21	42	728
Gin	Schade & Bussing	15,186	Feb. 14	42	618
Glassware. Hollow	La Compagnie des Cristalleries de Baccarat.	15,293	Mar. 20	42	1172
Gum. Chewing	Adams & Sons	15,189	Feb. 21	42	728
Gum. Chewing	C. T. Heisel	15,121	Jan. 24	42	300
Hair-cleanser	Smith Brothers	15,219	Feb. 21	42	728
Hair clippers or cutters	McCoy & Sanders	15,303	Mar. 20	42	1172
Hair. Preparation for the human	A. Rowland & Sons	15,093	Jan. 10	42	100
Hands and lips. Preparation for chapped	W. J. Pechin	15,305	Mar. 20	42	1172
Hats and bonnets and millinery materials. Ladies'	L. G. Thompson	15,131	Jan. 24	42	300
Hats and caps	Friedlander & Koch	15,091	Jan. 10	42	100
Hats, caps, and helmets	L. Bennett & Co	15,137	Jan. 31	42	386
Hats, caps, and helmets	L. Bennett & Co	15,153	Jan. 31	42	386
Hats, caps, and helmets	L. Bennett & Co	15,154	Jan. 31	42	386
Herb compound for certain diseases, a liniment, and a worm medicine.	A. S. Palmer	15,247	Feb. 28	42	832
Hoof-stimulant	O. J. Murphy	15,139	Jan. 31	42	386
Horse-blankets	W. Ayres & Sons	15,101	Jan. 17	42	204
Horse-blankets	W. Ayres & Sons	15,117	Jan. 24	42	300
Horse-blankets	W. Ayres & Sons	15,134	Jan. 31	42	386
Horse-blankets, covers, and nets, saddle housings, lap-robes, and lap-dusters.	W. Ayres & Sons	15,100	Jan. 17	42	204
Hose-supporters	Warren Hose Supporter Co	15,188	Feb. 14	42	618
Hosiery	E. B. Sudbury	15,221	Feb. 21	42	728
Hosiery and gloves	E. B. Sudbury	15,222	Feb. 21	42	728
Injection of milkweed	Roy Drug Co	15,248	Feb. 28	42	832
Iron and bituminous coal. Pig	Ohio and Western Coal and Iron Company.	15,284	Mar. 13	42	1066
Jewelry. Wash for cleaning and polishing	A. W. Isaacs	15,167	Feb. 7	42	494
Laundry-blue	R. F. S. Heath	15,202	Feb. 21	42	728
Laundry purposes. Solid polishing compound for	R. F. S. Heath	15,088	Jan. 10	42	100
Liniment for internal and external use	L. Fisher	15,106	Jan. 17	42	204
Liniment. Horse and cattle	J. G. Love	15,325	Mar. 27	42	1294
Lotion for the skin	L. S. Brigham	15,252	Mar. 6	42	966
Macaroni	C. Rivoire and T. Carret	15,144	Jan. 31	42	386
Mainsprings for time-pieces	L. Hammel & Co	15,200	Feb. 21	42	728
Malt extract	J. Hoff	15,164	Feb. 7	42	494
Medical compounds named. Various	S. Colcord	15,311	Mar. 27	42	1294
Medicinal lotion for the skin	J. A. and D. F. Davenport	15,244	Feb. 28	42	832
Medicinal preparation for use in certain named diseases	J. T. Davenport	15,104	Jan. 17	42	204
Medicinal remedies. Certain	Standard Medicine Company	15,251	Feb. 28	42	832
Medical remedies. Certain named	F. A. Richter	15,143	Jan. 31	42	386
Medicine	D. Kennedy	15,323	Mar. 27	42	1294
Medicine. Blood-purifying	Moore Manufacturing Company	15,212	Feb. 21	42	728
Medicine. Capsules containing	J. W. Gedney	15,176	Feb. 14	42	618
Medicine for certain named diseases	A. Wilson & Co	15,151	Jan. 31	42	386
Medicine for certain named diseases	B. M. Woolley & Co	15,152	Jan. 31	42	386
Medicine for diseases of the liver and kidneys	Sparks Medicine Company	15,147	Jan. 31	42	386
Medicine for female diseases	J. H. Schaaf	15,250	Feb. 28	42	832
Medicine for relieving epileptic fits and other nervous diseases.	Dr. S. A. Richmond Nervine Company.	15,274	Mar. 6	42	966
Medicine for the cure of all throat and lung diseases	G. M. Brown and J. M. Hunnicutt	15,178	Feb. 14	42	618
Medicine for the cure of certain named diseases	W. W. Neal and H. W. Todd	15,092	Jan. 10	42	100
Medicine for the cure of coughs and colds	G. Kneuper	15,125	Jan. 24	42	300
Medicine for the cure of headache, sea-sickness, epilepsy, and nervous debility.	F. Newbery & Sons	15,246	Feb. 28	42	832
Medicine for the cure of the tobacco habit	Universal Remedy Company	15,187	Feb. 14	42	618
Medicine. Proprietary invigorant	S. B. Murray	15,259	Mar. 6	42	966
Medicine to be applied to the nostrils and throat	F. M. Blodgett	15,136	Jan. 31	42	386
Medicines in the form of liquids, pills, and powders. Proprietary	J. R. Isbell and H. P. Sauls	15,138	Jan. 31	42	386
Metal. Babbitt	J. Bostwick	15,289	Mar. 20	42	1172

Alphabetical list of trade-marks, January to March, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Mince-meat for pies	Henderson, Adams & Co	15,107	Jan. 17	42	204
Mineral water and salt. Natural	Eisner & Mendelson Company	15,175	Feb. 14	42	618
Mineral water. Natural	Apollinaris Company	15,132	Jan. 31	42	386
Musical instruments. Stringed	Lyon & Healy	15,180	Feb. 14	42	618
Newspapers	Housewife Publishing Co	15,165	Feb. 7	42	494
Oil. Kerosene	W. Briscoe & Son	15,192	Feb. 21	42	728
Oil. Lubricating	W. P. Feeney	15,254	Mar. 6	42	966
Oil. Olive	P. Mottet & Cie	15,126	Jan. 24	42	300
Oxide of zinc, dry and in oil, spelter, and sheet-zinc	La Société de la Vieille Montagne	15,275	Mar. 6	42	966
Packings for machinery	A. Montgomery	15,169	Feb. 7	42	494
Paints, varnishes, dry colors, and paint ingredients	Farrand, Williams & Co	15,313	Mar. 27	42	1294
Pantaloons, coats, and vests	Marx & Haas	15,233	Feb. 28	42	832
Perfume. Toilet	P. M. Lorenz	15,302	Mar. 20	42	1172
Perfumery	Ladd & Coffin	15,205	Feb. 21	42	728
Perfumery	Lazell, Dalley & Co	15,301	Mar. 20	42	1172
Perfumery, sachet-powder, and other toilet preparations	Lazell, Dalley & Co	15,300	Mar. 20	42	1172
Phosphate. Ammoniated dissolved-bone	H. S. Miller & Co	15,182	Feb. 14	42	618
Photographic use. Albumenized paper for	Buchanan, Bromley & Co	15,193	Feb. 21	42	728
Picture supports or hangers. Certain	Brinkerhoff Company	15,073	Jan. 3	42	2
Pills	G. Higgins	15,231	Feb. 28	42	832
Pills	C. W. Palmer	15,235	Feb. 28	42	832
Pills and baby-syrup. Liver	R. E. Townsend	15,149	Jan. 31	42	386
Pills. Cod-liver-oil	Rigaud & Chapoteaut	15,306	Mar. 20	42	1172
Pipe and couplings for the same. Metallic	Spiral Weld Tube Company	15,171	Feb. 7	42	494
Plows. Furrow	Universal Plow Company	15,221	Feb. 21	42	728
Plumbers' earthenware	Colwell Lead Company	15,087	Jan. 10	42	100
Poison. Bedbug	H. Taylor, Sr	15,288	Mar. 13	42	1066
Potato-flour and potato-starch and all potato-starch products, including dextrine.	Norddeutsche Kartoffelmehl Fabrik	15,260	Mar. 6	42	966
Powder, soap, and compounds for cleaning and polishing metals.	Coffin, Redington & Co	15,292	Mar. 20	42	1172
Printers' inking-rollers. Composition for	A. Van Bibber	15,172	Feb. 7	42	494
Printing. Gage-pins, feed-guides, and other registering apparatus, tools, and machinery used in	E. L. Megill	15,234	Feb. 28	42	832
Radiators	A. A. Griffing Iron Company	15,278	Mar. 13	42	1066
Remedy for blood impurities	King Manufacturing Co	15,080	Jan. 3	42	2
Remedy for catarrh and kindred diseases	F. T. Montague & Co	15,168	Feb. 7	42	494
Ribbons and piece silks	Murphy, Grant & Co	15,170	Feb. 7	42	494
Rope for transmission of power over pulleys and for hoisting purposes.	Dodge Manufacturing Company	15,105	Jan. 17	42	204
Rope for transmitting power over pulleys and for hoisting purposes.	Dodge Manufacturing Company	15,118	Jan. 24	42	300
Rubber goods. Soft	India Rubber Comb Company	15,166	Feb. 7	42	494
Ruchings. Ladies'	E. Slayton	15,218	Feb. 21	42	728
Safe	Alpine Safe Co	15,190	Feb. 21	42	728
Salt. Blocks of natural	Chicago Sawed Salt-Block Company	15,174	Feb. 14	42	618
Saltpeter	Preservaline Manufacturing Company.	15,185	Feb. 14	42	618
Salve	L. A. Canterbury	15,195	Feb. 21	42	728
Sewing-machines	Williams Manufacturing Company	15,134	Jan. 17	42	204
Shirts, coats, jackets, and overalls	Galt & Branch	15,199	Feb. 21	42	728
Shoes. Ladies'	J. Faust & Son	15,206	Mar. 20	42	1172
Skin. Preparation for the	A. Rowland & Sons	15,095	Jan. 10	42	100
Soap	Ammonia Soap and Chemical Company.	15,116	Jan. 24	42	300
Soap	Colgate & Co	15,086	Jan. 10	42	100
Soap	J. C. Davis & Son	15,253	Mar. 6	42	966
Soap for laundry and toilet purposes	L. & J. Oakley	15,140	Jan. 31	42	386
Soap. Laundry	J. S. Kirk & Co	15,257	Mar. 6	42	966
Soap-powder	J. R. Gentleman	15,162	Feb. 7	42	494
Soaps and perfumeries	F. R. Arnold & Co	15,072	Jan. 3	42	2
Socks	Western Knitting Company	15,239	Feb. 28	42	832
Spool-cotton	A. King & Co	15,090	Jan. 10	42	100
Starch for laundry and culinary purposes	T. Kingsford	15,078	Jan. 3	42	2
Steam-gages	Star Brass Manufacturing Company	15,099	Jan. 10	42	100
Stoves. Oil	C. Riessner & Company	15,128	Jan. 24	42	300
Superphosphates or fertilizing materials	Crocker Fertilizer and Chemical Company.	15,294	Mar. 20	42	1172
Table-ware constructed of silver or of other metals and then plated or tinned.	G. I. Mix & Co	15,211	Feb. 21	42	728
Tea	F. A. Canchois	15,085	Jan. 10	42	100
Tea	C. K. Hammitt & Co	15,120	Jan. 24	42	300
Tea	C. D. Lathrop & Co	15,179	Feb. 14	42	618
Teas from China	C. D. Lathrop & Co	15,324	Mar. 27	42	1294
Teas. Mixed	J. P. Boone	15,083	Jan. 10	42	100
Thread. Gilling	Demarest & Joralemon	15,312	Mar. 27	42	1294
Tin and terne plates	Merchant & Co	15,207	Feb. 21	42	728
Tin plates	Merchant & Co	15,208	Feb. 21	42	728
Tobacco. Manufactured plug chewing	Bitting & Hay	15,160	Feb. 7	42	494
Tobacco. Plug	S. Reid Tobacco Company	15,142	Jan. 31	42	386
Tobacco. Smoking	Marburg Brothers	15,084	Jan. 10	42	100
Tonic beverage	Phillip Best Brewing Company	15,213	Feb. 21	42	728
Towels. Ladies'	J. Hothersall & Co	15,318	Mar. 27	42	1294
Toy musical instrument	A. Schoenhut & Co	15,216	Feb. 21	42	728
Tracing-cloth	A. Winterbottom & Sons	15,240	Feb. 28	42	832
Tracing-cloth	A. Winterbottom & Sons	15,241	Feb. 28	42	832
Tracing-cloth	A. Winterbottom & Sons	15,242	Feb. 28	42	832
Tracing-cloth	A. Winterbottom & Sons	15,243	Feb. 28	42	832
Under-clothing and outside suits for men and boys	H. W. Adler & Co	15,159	Feb. 7	42	494
Valves, cocks, and similar devices. Valves and packing for	Jenkins Bros	15,321	Mar. 27	42	1294
Valves. Rubber	Revere Rubber Company	15,214	Feb. 21	42	728
Venereal diseases. Cure for and preventive of	Sackett & Neat	15,240	Feb. 28	42	832
Wall-paper	G. K. Birge	15,082	Jan. 10	42	100

Alphabetical list of trade-marks, January to March, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Walls. Powder to be mixed with linseed-oil, &c., for coating	B. F. Ruth & Co	15,096	Jan. 10	42	100
Washing and cleaning fluid. Compound	M. D. Thompson	15,148	Jan. 31	42	386
Washing-machines	C. E. Ross	15,236	Feb. 28	42	832
Watch-cases	Brooklyn Watch Case Company	15,290	Mar. 20	42	1172
Watches, clocks, jewelry, and silverware	S. F. Myers & Co	15,304	Mar. 20	42	1172
Whetstones	A. F. Pike Manufacturing Company	15,127	Jan. 24	42	300
Whisky	Dublin Whisky Distillery Company	15,229	Feb. 28	42	832
Whisky	E. Taniere & Co	15,130	Jan. 24	42	300
Wines. Champagne and other	H. Abelé	15,173	Feb. 14	42	618
Wines. Sparkling	Hoehl Gebrüder	15,177	Feb. 14	42	618
Wines, whiskies, brandies, and other distilled spirits	Fischer & Heimicha	15,197	Feb. 21	42	728
Wood-wool and wood-wool wadding	P. Hartmann	15,256	Mar. 6	42	966
Woolen wearing-apparel. Certain	R. Slazenger	15,113	Jan. 17	42	204
Writing and copying fluids and inks	C. E. Ogden	15,283	Mar. 13	42	1066
Yarns. Worsted and woolen	A. J. Cameron & Co	15,228	Feb. 28	42	832

ALPHABETICAL LIST OF LABELS.

Title.	Name.	No.	Date.	Official Gazette. Volume.	Page.
"Alexr. King & Co. Machine Sewing Spool Cotton"	A. King & Co	5,471	Jan. 17	42	204
"Alexr. King & Co. Machine Sewing Spool Cotton"	A. King & Co	5,472	Jan. 17	42	204
"Arnold's Chemical Blue Black Copying Fluid"	C. E. Ogden	5,534	Mar. 27	42	1294
"Arnold's Chemical Writing Fluid"	C. E. Ogden	5,532	Mar. 27	42	1294
"Arnold's Office & Steel Pen Writing Ink"	C. E. Ogden	5,479	Jan. 31	42	386
"Arnold's Scarlet Writing Ink"	C. E. Ogden	5,535	Mar. 27	42	1294
"Belt Stud." (For Studs for Leather and Rubber Belts)	Greene, Tweed & Co	5,492	Feb. 21	42	728
"Boston Oat Meal" (For Soap)	J. S. Kirk & Co	5,518	Mar. 13	42	1066
"Cambria." (For Laundry Soap)	J. S. Kirk & Co	5,521	Mar. 13	42	1066
"Carbolic-Camphor." (For Laundry Soap)	J. S. Kirk & Co	5,514	Mar. 13	42	1066
"Ceres." (For Laundry Soap)	J. S. Kirk & Co	5,522	Mar. 13	42	1066
"Commonwealth." (For Toilet Soap)	J. S. Kirk & Co	5,506	Mar. 6	42	966
"'Cranberry' Horse Shoes"	B. L. Dulaney	5,530	Mar. 27	42	1294
"Crompton Velveteen"	Crompton Company	5,453	Jan. 3	42	2
"D. H. Jones' Anti-Bilious Cathartic Pills"	D. H. Jones	5,483	Feb. 7	42	494
"Day's Specific"	W. L. Day	5,475	Jan. 24	42	300
"Directions for Use." (For Stove Polish)	C. A. Shaw	5,465	Jan. 10	42	100
"Dr. McAllister's Compound Spirits of Juniper and Extract of Buchu, A Sure and Positive Cure for all Kidney and Genito-Urinary Diseases."	J. McAllister	5,462	Jan. 10	42	100
"Dr. Roy's White Injection of Milk-Weed"	Roy Drug Co	5,502	Feb. 28	42	832
"Dr. White's Pulmonic Balsam"	A. Paradis	5,493	Feb. 21	42	728
"Dr. White's Pulmonic Balsam"	A. Paradis	5,494	Feb. 21	42	728
"Dr. White's Sarsaparilla"	A. Paradis	5,487	Feb. 14	42	618
"Dr. White's Sarsaparilla"	A. Paradis	5,488	Feb. 14	42	618
"Fire Extinguisher"	G. Corbion, Jr	5,480	Feb. 7	42	494
"Fresh Cold Drops." (For a Medical Compound)	W. M. L. Fiske	5,511	Mar. 13	42	1066
"Germ Exterminating Medicine"	A. H. and C. Tiers and H. H. McAllister.	5,490	Feb. 14	42	618
"German Knitting Worsted"	A. J. Cameron & Co	5,499	Feb. 28	42	832
"German Knitting Worsted"	A. J. Cameron & Co	5,500	Feb. 28	42	832
"German Knitting Worsted"	A. J. Cameron & Co	5,501	Feb. 28	42	832
"Goff's Box-Plaited Braid"	D. Goff & Sons	5,470	Jan. 17	42	204
"Gold Dust." (For Washing Powder)	N. K. Fairbank & Company	5,481	Feb. 7	42	494
"Golden-Steel Gauge Pins." (For Printers' Feed Gages)	E. L. Megill	5,531	Mar. 27	42	1294
"Hepatic Extract." (For a Medicinal Preparation)	Hunt Kiddie Company	5,512	Mar. 13	42	1066
"Hiller's Hydrastine Restorative"	F. Hiller, Jr	5,454	Jan. 3	42	2
"Hinton's Hygienic Pulmonary Preserver," (For a Remedy for Coughs, &c.)	H. Douglas	5,486	Feb. 14	42	618
"Indurated Fibre." (For Ware Made of Indurated Wood Fibre)	Union Indurated Fibre Company	5,496	Feb. 21	42	728
"Jewelry Wash"	A. W. Isaacs	5,455	Jan. 3	42	2
"Kaskine," (For Proprietary Medicine)	Kaskine Company	5,461	Jan. 10	42	100
"Kickapoo Cough Cure"	Healy & Bigelow	5,478	Jan. 31	42	386
"Leroy's Mexican Egg Shampoo Cream"	Smith Brothers	5,503	Feb. 28	42	832
"Lock Clasp." (For Corsets)	Worcester Corset Co	5,460	Jan. 3	42	2
"Machine Copying Ink"	C. E. Ogden	5,533	Mar. 27	42	1294
"Maddin's Mosquito Mixture"	T. M. Maddin	5,529	Mar. 20	42	1172
"Mexican Cereus Pollen"	F. S. Newby and G. E. Rockwell	5,484	Feb. 7	42	494
"Microbe Destroyer"	J. J. Tobin	5,474	Jan. 17	42	204
"Mrs. Hunting's Baby Cordial"	E. C. Marshall	5,456	Jan. 3	42	2
"Mrs. Thompson's Washing and Cleaning Compound"	M. D. Thompson	5,489	Feb. 14	42	618
"Musk Toilet Soap"	J. S. Kirk & Co	5,519	Mar. 13	42	1066
"No Nails in this Shoe to Hurt the Feet. Soles Attached by Process of Boot and Shoe Sole Laying Co. Boston."	Boot and Shoe Sole Laying Company	5,477	Jan. 31	42	386
"Novelty Glove Fitting Jersey"	G. Schwab & Bros	5,457	Jan. 3	42	2
"Our School Shoe"	Chase, Merritt & Co	5,523	Mar. 13	42	1066
"Our School Shoe"	Chase, Merritt & Co	5,524	Mar. 13	42	1066
"Patchouly Toilet Soap"	J. S. Kirk & Co	5,516	Mar. 13	42	1066
"Patton's Chill Tonic Syrup"	E. G. and T. Patton	5,525	Mar. 13	42	1066
"Peptic." (For a remedy for Indigestion)	Standard Medicine Company	5,504	Feb. 28	42	832
"Pimlico Toilet Soap"	J. S. Kirk & Co	5,517	Mar. 13	42	1066
"Planet." (For Laundry Soap)	J. S. Kirk & Co	5,520	Mar. 13	42	1066
"Premium Stock Lager"	Haberle Brewing Company	5,482	Feb. 7	42	494
"Russell's Natural Remedy," (For a Medicine for Diseases of the Liver, &c.)	P. J. Russell	5,526	Mar. 13	42	1066
"Russian Oil Stove Blacking"	C. A. Shaw	5,464	Jan. 10	42	100
"Shively's Celebrated Catarrh Remedy"	S. A. Shively	5,473	Jan. 17	42	204
"Specially Prepared for ——" (For Preserves, Confectionery, &c.)	C. Southwell & Co	5,527	Mar. 13	42	1066
"Spencer's Fumigating Diphtheritic Pastilles. A Fumar Antiseptique for the Prophylactic and Specific Treatment of Diphtheria."	T. D. Spencer	5,466	Jan. 10	42	100
"Stein, Bloch & Co., Wholesale Tailors"	Stein, Bloch & Co	5,458	Jan. 3	42	2
"Temporary Enameling Cream"	E. J. Daniels	5,528	Mar. 20	42	1172
"The Best Tonic"	P. Best Brewing Company	5,495	Feb. 21	42	728
"The Famona Lunch Milk Biscuit"	C. D. Bossa & Son	5,498	Feb. 28	42	832
"The Howard Album Interchangeable Cards"	I. H. Brown	5,491	Feb. 21	42	728
"Truesdale's Healing Salve, 'Boro' Thymol Compound"	J. T. Woodhull	5,510	Mar. 6	42	966
"Tyree's Southern Carminative"	W. R. Tyree	5,485	Feb. 7	42	494
"Underwood's Copying Ink Ribbon"	J. Underwood & Co	5,467	Jan. 10	42	100
"Underwood's Indelible Copyable Ribbon"	J. Underwood & Co	5,468	Jan. 10	42	100

Alphabetical list of labels, January to March, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
"Underwood's Record Ink Ribbon"	J. Underwood & Co	5,469	Jan. 10	42	100
"Union Print Works." (For Textiles)	W. H. Locke, Jr	5,476	Jan. 24	42	300
"Washboard Soap"	J. S. Kirk & Co	5,513	Mar. 13	42	1066
"Washtub Soap," (For Laundry Soap)	J. S. Kirk & Co	5,507	Mar. 6	42	906
"Welch's Ægopodium, A Positive Cure for Rheumatism and Gout."	W. C. Welch, Jr	5,459	Jan. 3	42	2
"White Lavolite." (For a Washing Compound)	J. S. Kirk & Co	5,509	Mar. 6	42	906
"White Russian Bath." (For Soap)	J. S. Kirk & Co	5,515	Mar. 13	42	1066
"Whitney's Spring Tonic and Alterative Compound"	W. Whitney	5,497	Feb. 21	42	728
"Wm. Radam's Microbe Killer"	W. Radam	5,463	Jan. 10	42	100
"Yards in Detail," (For Bleached Goods)	N. H. Baker	5,505	Mar. 6	42	906
"Zinithia Soap"	J. S. Kirk & Co	5,506	Mar. 6	42	906

DISCLAIMERS.

Invention.	Patentee.	No. of patent.	Date of patent.	Disclaimer filed.	Official Gazette. Vol.	Page.
Car-door hanger	Dennis F. Van Liew	245,035	Aug. 2, 1881	Mar. 21, 1888	42	1294
Embossing upon plastered walls and other surfaces.	John H. Harding	278,238	May 22, 1883	Jan. 19, 1888	42	386
Hoisting apparatus and safety-hatches	James W. Osgood	124,614	Mar. 12, 1872	Feb. 8, 1888	42	618
Paper-bag machine	Frederick E. Porter	205,133	June 18, 1878	Mar. 22, 1888	42	1294

OFFICIAL GAZETTE

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OF THE

UNITED STATES PATENT OFFICE.

VOLUME XLIII.

APRIL 3 TO JUNE 26, INCLUSIVE,

1888.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1888.

CONTENTS.

ERRATA FOR VOLUME XLIII OF THE OFFICIAL GAZETTE.

ANNOUNCEMENTS—VOLUME XLIII.

DISCLAIMERS—VOLUME XLIII.

TEXT OF THE OFFICIAL GAZETTE, APRIL 3 TO JUNE 26, 1888, INCLUSIVE.

INDEX TO THE DECISIONS OF THE COMMISSIONER OF PATENTS AND OF THE UNITED STATES COURTS IN PATENT CASES.

DIGEST OF DECISIONS OF THE COMMISSIONER OF PATENTS AND OF THE UNITED STATES COURTS IN PATENT CASES.

INDEX OF PATENTS AND PATENTEES FOR THE QUARTER YEAR, APRIL 3 TO JUNE 26, 1888.

ERRATA.

380,511, page 62, strike out all after number—title, drawing, and claims—and insert WITHDRAWN.

380,543, page 74, line 1, each claim, strike out "rectangular," and last line of claim 2, strike out "jogs E at their upper corners" and insert *jog at g and h.*

380,545, page 74, in title, name of inventor, for "Camille Berton" read *Camille Bertou.*

380,781, page 152, in title, for "same place" read *Brooklyn, N. Y.*

380,866, page 175, strike out all after number—title, drawing, and claims—and insert CANCELED.

381,088, page 242, in title, after residence of inventor insert *assignor to The Ithaca Gun Company, Ithaca, N. Y.*

381,130, page 265, in title, name of inventor, for "John M. Hardy" read *John W. Hardy.*

381,360, page 327, in title, after "assignor" insert *of one-half.*

381,491, page 367, in title, after "assignors" insert *of one-half.*

381,596 and **381,597,** page 416, in title, after "assignor" insert *of one-half.*

381,697, page 441, in title, names of administrators, for "Benjamin C. Gulliver" read *William C. Gulliver.*

381,730, page 453, in title of invention, for "Depilating and Baling" read *Depilating and Baling.*

381,873, page 491, in title, name of assignee, for "The Excelsior Iron Fence Company (Limited.)" read *The Davy Excelsior Iron Fence Company, (Limited.)*

381,889, page 500, in title, strike out "minor" and also strike out "Alexander Scott, guardian of said William H. Scott."

381,895, page 502, in title, date of filing original application, for "Jan. 18, 1886," read *Jan.* 18, 1888.

381,958, page 530, strike out all after number—title, drawings, and claims—and insert WITHDRAWN.

382,399, page 668, third claim, line 3, for "down" read *drawn."*

382,730, page 775, in title, name of inventor, for "John Rancevan" read *John Rancevan.*

382,777, page 788, strike out all after number—title, drawing, and claims—and insert CANCELED.

383,408, page 976, title of invention, for "Valve-Gear" read *Mechanical Movements.*

384,035, page 1176, second claim, line 1, for "In" read *An.*

384,175, page 1217, in title, name of inventor, for "William B. Parsons, Jr." read *William B. Parsons.*

384,296, page 1261, strike out all after number—title, drawing, and claims—and insert WITHDRAWN.

384,400, page 1288, strike out all after number—title, drawings, and claims—and insert WITHDRAWN.

384,555, page 1331, in title, name of assignee, for "Logerwood Manufacturing Company" read *Logerwood Manufacturing Company.*

384,576, page 1338, eleventh claim, line 3, insert a comma after "opening" and for "supported" read *supports,* and twelfth claim, line 3, for "opening-supports" read *openings, supports.*

384,804, page 1412, in title, residence of assignees, for "Brooklyn, N. Y." read *Boston, Mass., and New York, N. Y.*

385,224, page 1546, in title, name of assignee, for "William G. Matz" read *William J. Matz.*

385,235, page 1551, title of invention, for "Process of Manufacturing Oxide of Iron" read *Process of Manufacturing Metallic Oxides.*

Page 628, decisions, Tilghman *et al. v.* Proctor *et al.*, paragraph 10 of syllabus, line 2, strike out "which the defendants used, if at all, is not conclusive evidence" and insert the same after line 11 of paragraph 9.

ANNOUNCEMENTS—VOL. XLIII.

Page.

ATTORNEYS—

Fraudulent practices by 393, 513, 635, 759, 859, 987, 1241, 1351, 1459

Order—Disbarring Oscar B. Barber 987

Alexander Melhado 1351

Rescinding order disbarring Frank A. Bidwell 119

CATALOGUES—

Request to publishers to furnish 759, 889, 1241, 1459

Changes in classification 253, 635

DRAWINGS—

Changing the names of attorneys thereon prohibited 1119

FOREIGN PATENT LAW—

German. Additional official rules 889

Indian 1588

Indexes to foreign patents 1

MAIL MATTER—

Distribution of, &c., in the Patent Office 119

Requesting attorneys to indicate by indorsement direction to be given to 253, 343, 513, 635, 889, 987, 1241, 1459

MODELS IN REJECTED AND ABANDONED CASES—

Notice of sale of 1, 119, 253, 393, 573, 635

PATENTS—

Law relating to the signing of 513

DISCLAIMERS.

	Page.
Henry W. Johns	636
Charles F. Tenney and Thomas J. Hobbs	1352
James G. Wilson	760

OFFICIAL GAZETTE

OF THE

UNITED STATES PATENT OFFICE.

APRIL–JUNE, 1888.

THE OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 43—No. 1. TUESDAY, APRIL 3, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
THE OFFICIAL GAZETTE	1
INDEXES TO FOREIGN PATENTS	1
NOTICE	1
ISSUE OF APRIL 3, 1888	1
DESIGNS	2
TRADE-MARKS	2
LABELS	2
PATENTS GRANTED	3
REISSUES	111
DECISIONS OF THE COMMISSIONER—	
Ex parte Blair	113
DECISIONS OF THE U. S. COURTS—	
Ott v. Barth	114
Yale Lock Manufacturing Company *et al.* v. New Haven Savings Bank	115
Welling v. La Bau	117

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Indexes to Foreign Patents.

The following indexes to foreign patents have been translated, compiled, and published under the authority of the Commissioner of Patents, and may be obtained as a Patent Office publication at the prices given below:

INDEX TO FRENCH PATENTS, 1791 to 1876, inclusive, (subject-matter, one volume, 935 pages, bound in cloth $10 00

INDEX TO ITALIAN PATENTS, 1848 to May 1, 1882, (subject-matter,) one volume, 120 pages—

Bound half-turkey	2 50
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Notice.—Models in Rejected or Abandoned Cases.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 9, 1888.

Notice is hereby given to inventors and the public that a large number of models is in the custody of this Office, which were received between the years 1879 and 1885, many of which have never become a part of the records of this Office. All such models and all models belonging to rejected or abandoned applications will be sold or otherwise disposed of under the provisions of section 485 of the Revised Statutes unless removed in sixty days from the date hereof.

Institutions of learning in good standing may, after the expiration of the time above limited, on written application, make selection before the day of public sale of models remaining unclaimed. The expense of removal or transportation of these models must be borne by the applicants or institutions of learning.

BENTON J. HALL,
Commissioner.

430 G—1—i

Issue of April 3, 1888.

Patents	306	No. 380,306 to No. 380,671, inclusive.
Designs	26	No. 18,218 to No. 18,243, inclusive.
Trade-Marks	18	No. 15,328 to No. 15,345, inclusive.
Labels	4	No. 5,536 to No. 5,539, inclusive.
Reissues	2	No. 10,918 to No. 10,919, inclusive.
Total issue	416	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nebraska	5	
Arizona Territory			Nevada		
Arkansas	1		New Hampshire	2	
California	12	2	New Jersey	6	1
Colorado	8		New Mexico Territ'y	2	
Connecticut	13		New York	60	7
Dakota Territory	1		North Carolina	1	
Delaware			Ohio	26	1
District of Columbia	7		Oregon	1	2
Florida			Pennsylvania	35	
Georgia	7		Rhode Island	2	1
Idaho Territory			South Carolina		
Illinois	40	2	Tennessee	2	
Indian Territory			Texas	4	
Indiana	15		Utah Territory		
Iowa	11		Vermont		
Kansas	6		Virginia		
Kentucky	9		Washington Territ'y		
Louisiana	2	1	West Virginia	1	
Maine	5		Wisconsin	10	
Maryland	6	1	Wyoming Territory		
Massachusetts	33	3	United States Army		
Michigan	7		United States Navy		
Minnesota	4				
Mississippi			Total to citizens of the United States	361	21
Missouri	17				
Montana Territory					

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic			Germany	6	
Australia			Italy		
Austria-Hungary			Mexico	1	
Belgium			New South Wales		
Bermuda			New Zealand	1	
Brazil			Norway		
Canada	7		Russia	1	
Chili			Scotland	7	
Colombia, U. S. of			Sweden		
Cuba			Switzerland		
Denmark			Victoria		
England	10	1			
Finland			Total to citizens of foreign countries	31	1
France	4				

DESIGNS.

18,218 to 18,220, inclusive.—BOTTLE OR JAR.—*Thomas B. Atterbury*, Pittsburg, Pa. Applications filed February 27, 1888. Serial Nos. 265,515 to 265,517, inclusive. Term of patents 7 years.

18,221.—BOTTLE.—*Richard M. Atwater*, Millville, N. J., assignor to *James Whitall, John M. Whitall*, and *J. Whitall Nicholson*, Philadelphia, Pa., *C. Albert Tatum* and *Francis M. Underhill*, New York, N. Y., and *John Mickle*, Millville, N. J. Application filed March 10, 1888. Serial No. 266,905. Term of patent 14 years.

18,222.—BATH-BRUSH.—*Charles J. Bailey*, Boston, Mass. Application filed March 3, 1888. Serial No. 264,771. Term of patent 14 years.

18,223.—JAR.—*William Henry Barr*, Steubenville, Ohio, assignor to *Alexander J. Beatty & Sons*, same place. Application filed January 11, 1888. Serial No. 260,452. Term of patent 3½ years.

18,224 and 18,225.—JAR.—*William Henry Barr*, Steubenville, Ohio, assignor to *Alexander J. Beatty & Sons*, same place. Applications filed January 12, 1888. Serial Nos. 260,581 and 260,582. Term of patents 3½ years.

18,226.—WRITING-DESK.—*Francis A. Coffin*, Indianapolis, Ind. Application filed December 15, 1887. Serial No. 258,634. Term of patent 7 years.

18,227.—CABINET-DESK.—*Francis A. Coffin*, Indianapolis, Ind. Application filed December 15, 1887. Serial No. 258,639. Term of patent 7 years.

18,228 to 18,234, inclusive.—CARPET.—*James L. Folsom*, Brooklyn, N. Y., assignor to *The Hartford Carpet Company*, Hartford, Conn. Applications filed January 26, 1888. Serial Nos. 262,045, 262,049, 262,052, 262,063, 262,070, 262,072, and 262,079. Term of patents 3½ years.

18,235.—CARPET.—*Otto Heinigke*, New Utrecht, N. Y., assignor to *The Hartford Carpet Company*, Hartford, Conn. Application filed January 26, 1888. Serial No. 262,083. Term of patent 3½ years.

18,236.—CARPET.—*Henry Hunt*, Greenville, N. J., assignor to *The Hartford Carpet Company*, Hartford, Conn. Application filed January 26, 1888. Serial No. 262,090. Term of patent 3½ years.

18,237.—COUPELET-SLEIGH.—*John Kingsbury*, Albany, N. Y. Application filed December 6, 1887. Serial No. 257,198. Term of patent 7 years.

18,238.—CHRISTMAS-TREE ORNAMENT.—*Philipp Knorpp* and *Gustave A. Mayer*, Stapleton, N. Y. Application filed February 6, 1888. Serial No. 263,183. Term of patent 3½ years.

18,239.—TYPE.—*Ernst Lauschke*, Chicago, Ill., assignor to *Barnhart Bros. & Spindler*, same place. Application filed February 18, 1888. Serial No. 264,540. Term of patent 14 years.

18,240.—CIGAR-STAND AND ASH-RECEIVER.—*Frank W. Moulton*, Washington, D. C. Application filed February 28, 1888. Serial No. 265,598. Term of patent 3½ years.

18,241.—RADIATOR.—*John B. Pierce* and *Joseph Bond*, Buffalo, N. Y. Application filed January 3, 1888. Serial No. 259,750. Term of patent 7 years.

18,242.—TOILET-CASE.—*George C. Varwig*, Philadelphia, Pa. Application filed February 27, 1888. Serial No. 265,521. Term of patent 3½ years.

18,243.—COFFEE-MILL BOX.—*Marcellus B. Willcox*, Cleveland, Ohio, assignor to *The Peck, Stow & Wilcox Company*, Southington, Conn. Application filed November 18, 1887. Serial No. 255,560. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,328.—CONDIMENT FOR ANIMAL-FOOD.—*Woolrich & Co.*, Palmer, Mass. Application filed February 13, 1888. Used since January 1, 1888.

"The representation of a mounted huntsman leaping a barrier and hounds in the foreground."

15,329.—CONFECTIONERY AND MEDICATED CONFECTIONERY.—*Allen & Hanburys*, London, England. Application filed December 14, 1887. Used since November, 1886.

"The device of a miter and the word 'MITRE.'"

15,330.—FERTILIZER.—*The Cincinnati Desiccating Company*, Cincinnati, Ohio. Application filed February 17, 1888. Used since December, 1887.

"The words 'OHIO VALLEY.'"

15,331.—MEN'S SOFT AND STIFF FUR AND WOOL HATS.—*Cook, Lyman, Smith & Company*, Chicago, Ill. Application filed February 13, 1888. Used since October 1, 1887.

"The words 'THE INDICATOR.'"

15,332.—CATARRH REMEDY.—*Ira B. Cushing*, Brookline, Mass. Application filed February 3, 1888. Used since May 1, 1887.

"The word 'QUINTOL.'"

15,333.—CONDITION-POWDERS.—*James C. Gage*, Stockton, Cal. Application filed February 1, 1888. Used since September, 1887.

"The words 'NEW HOPE.'"

15,334.—REMEDY FOR SKIN DISEASES.—*Joseph Giering* and *Anna Giering*, Baltimore, Md. Application filed February 10, 1888. Used since June 1, 1887.

"The words 'WONDER BALSAM.'"

15,335.—KEY WEST CIGARS.—*Grommes & Ullrich*, Chicago, Ill. Application filed February 13, 1888. Used since March 6, 1885.

"The words 'LA FLOR NELLIE.'"

15,336.—CIGARETTES.—*Kinney Tobacco Company*, New York, N. Y. Application filed February 13, 1888. Used since December 10, 1887.

"The words 'SPECIAL FAVOURS.'"

15,337.—CIGARETTES.—*Kinney Tobacco Company*, New York, N. Y. Application filed February 13, 1888. Used since November 22, 1887.

"The words 'EGYPTIAN FLOWERS.'"

15,338.—CIGARETTES.—*Kinney Tobacco Company*, New York, N. Y. Application filed February 13, 1888. Used since November 26, 1887.

"The word 'CLEOPATRA.'"

15,339.—A PREPARATION OF HERBS USED AS A REMEDY FOR DISEASES OF THE BLOOD AND LIVER AND FOR RHEUMATISM.—*Caroline Marks*, San Francisco, Cal. Application filed December 31, 1887. Used since January 1, 1887.

"A monogram formed of the two letters 'C M' within a conventional representation of a heart."

15,340.—WORSTED AND WOOLEN YARNS.—*Nonantum Worsted Company*, Newton and Boston, Mass. Application filed October 31, 1887. Used since January 1, 1885.

"The words 'SONORA SAXONY' and a circular field with the number '502' thereon."

15,341.—LARD.—*Rohe & Brother*, New York, N. Y. Application filed February 15, 1888. Used since January 1, 1882.

"The word 'POWHATTAN' and the representation of an Indian."

15,342.—LAGER-BEER.—*Eduard G. Schlieder*, New Orleans, La. Application filed February 10, 1888. Used since June 25, 1886.

"The figure of a crescent and a monogram of the letters 'E G S.'"

15,343.—WIRE BALE-TIES.—*The Trenton Iron Company*, Trenton, N. J. Application filed February 17, 1888. Used since January 17, 1888.

"The word 'ANCHOR.'"

15,344.—HATS.—*Triest & Co.*, New York, N. Y., and San Francisco, Cal. Application filed February 13, 1888. Used since June 17, 1885.

"The word 'SERVIA.'"

15,345.—YEAST.—*H. H. Warner*, Rochester, N. Y. Application filed February 18, 1888. Used since September 15, 1885.

"The representation of a log cabin and the word 'CABIN.'"

LABELS.

5,536.—Title: "NORWEGIAN PILE CURE."—*W. E. Dement*, Astoria, Oreg. Application filed February 25, 1888.

5,537.—Title: "KING'S PURELY VEGETABLE COUGH MEDICINE."—*Susan H. King*, Providence, R. I. Application filed February 25, 1888.

5,538.—Title: "SPECIAL FAVOURS." (FOR CIGARETTES.)—*Kinney Tobacco Company*, New York, N. Y. Application filed January 9, 1888. (Trade-Mark Registered.)

5,539.—Title: "DUTARD'S SPECIFIC." (FOR A REMEDY FOR SKIN DISEASES.)—*Snell, Heitshu & Woodard*, Portland, Oreg. Application filed February 4, 1888.

PATENTS

GRANTED APRIL 3, 1888.

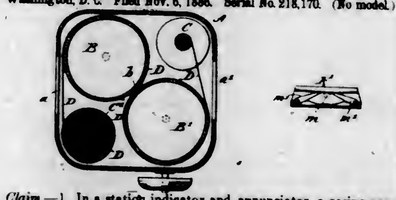
380,306. GATE. HENRY W. ALBRIGHT, Custer, Ind. Filed Dec. 19, 1887. Serial No. 258,356. (No model.)



Claim.—1. The combination of the end bars and pivoted connecting-rails, the plate H, having the portion *c* secured to the side of one of the rails, the portion *a* on the top of the rail, and the portion *b*, extending upward therefrom having the inclined rack-edge *h*, stepped as shown, the detent pivoted at one end between the end bars and having its other end notched and engaging the rack *h*, the hook or eye *j'*, and the cord *j*, connected to the detent and passing through the said hook or eye, substantially as set forth.

2. The combination, with the hinge-post B, the gate composed of the end bars, F G, and rails E, pivoted at their respective ends to said bars, and the hinge K, composed of the plates *k k'*, which hinge is secured to the bar G in such manner that the plate *k'* can turn upward no farther than to a position at right angles to the bar G, of the latching-post C, provided on its inner side with the vertical series of mortises L, adapted to receive the free end of the plate *k'* when the gate is raised to corresponding positions, as set forth.

380,307. STREET AND STATION INDICATOR. JOHN R. ARCHER, Washington, D. C. Filed Nov. 6, 1886. Serial No. 218,170. (No model.)



Claim.—1. In a station indicator and annunciator, a casing provided with apertures in its opposite faces, and having independent spring take-up and feed rollers pivoted therein, and a band passing over said rollers under a constant tension, substantially as and for the purpose described.

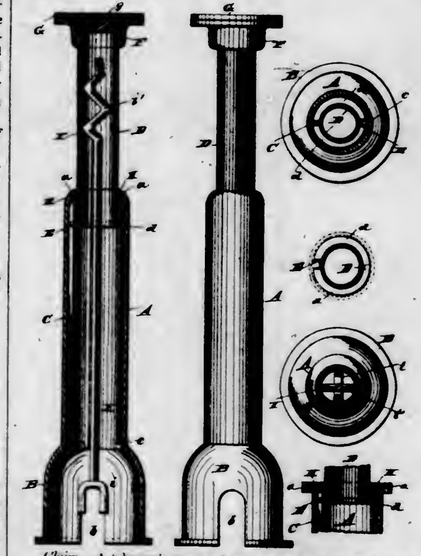
2. A station indicator and annunciator consisting of a casing provided with apertures in the opposite faces thereof, and having independent spring take-up and feed rollers pivoted therein; a band passing over the said rollers under a constant tension and having stations marked upon both sides, and a gong attached to the said casing and operated by the mechanism that imparts motion to the said band, substantially as and for the purpose described.

3. In a station indicator and annunciator, a casing provided with apertures in its opposite faces, and having journaled therein independent spring take-up and carrying rollers, over which a band passes at a constant tension, and provided at one end with ratchet-wheels, the levers provided with pawls, whereby the said ratchet-wheels may be turned, and a gong adapted to be operated simultaneously with the movement of the said carrying-rollers, substantially as and for the purpose described.

4. The combination of the casing A, carrying a gong, K, constructed as herein described, having journaled therein the spring take-up rollers C C' and the carrying-rollers B B', and provided at one end with a stop, H, and fixed guides *h h'*, ratchets E E', the spring-actuated levers F F', the connecting-bar *f*, lever F, and spring-actuated pawls *e e'*, together with the rope N, substantially as and for the purpose described.

5. In a station-indicator, the combination of a gong, K, and a lever, F', having a pin, *m*, adapted to engage spring-actuated pawls *m'* upon one end of a lever, *k*, the opposite end thereof being provided with a sounder, whereby a said gong is sounded, substantially as and for the purpose described.

380,308. STOP-COCK BOX. NICHOLAS BARRY, Jr., Muscatine, Iowa. Filed May 21, 1887. Serial No. 238,999. (No model.)



Claim.—A telescopic stop-cock box comprising an outer case, A, provided with an internal vertical rib, and diametrically opposite this rib and in a plane below it a stop, *c*, and a contracted upper end internally grooved and provided with a suitable packing, in combination with the inner section, D, having a notched flange at its lower end and a screw-threaded removable collar on its upper end, all constructed and adapted to operate substantially in the manner and for the purpose set forth.

380,309. PNEUMATIC HOOK. EMILE BERLINER, Washington, D. C. Filed Sept. 5, 1887. Serial No. 248,891. (No model.)

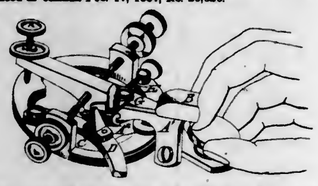
Claim.—1. As a new article of manufacture, an elastic air-cup having a hook or knob baked or cemented to it and forming with the same a continuous mass, substantially as set forth.

380,309.



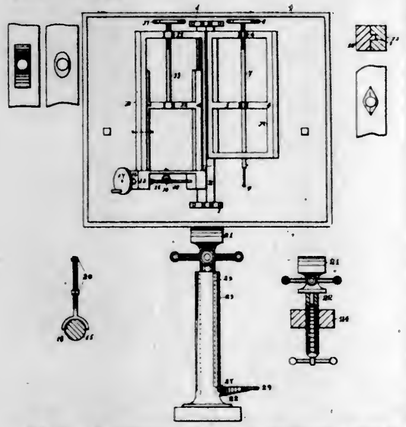
2. As a new article of manufacture, an elastic air-cup provided with a rubber hook, both forming one continuous mass, substantially as set forth.

380,310. TELEGRAPH-KEY. DAVID R. BORLAND, Montreal, Quebec, Canada. Filed Feb. 24, 1887. Serial No. 228,787. (No model.) Patented in Canada Feb. 17, 1887, No. 26,026.



Claim.—The automatic switch attachment composed of a lever, A', the fulcrum of which consists of a screw passing through the main lever of the key on the left-hand side immediately behind and below the finger-button, working by means of a roller, A^3, upon the inclined side of a brass upright, C, attached to the switch, thus opening the switch, as herein described, and of a tension-spring, E, one end of which is attached to an adjustable screw, F, in front of the right-hand center-post, the other being attached to the inner or convex side of the switch, by means of which the switch is automatically closed, the whole substantially as set forth.

380,311. APPARATUS FOR DRILLING AND COUNTERSINKING. HENRY A. BROWN, Denver, Colo. Filed Dec. 3, 1887. Serial No. 256,939. (No model.)



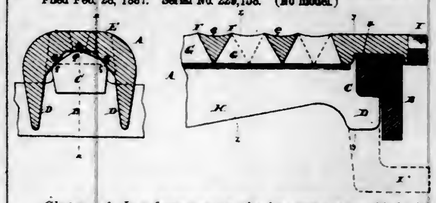
Claim.—1. The combination of a post or base pivotally mounted, a frame secured thereto and carrying a drilling mechanism, a frame secured thereto and carrying a milling or countersinking mechanism, and means for keeping the drills or the reamer and the material to be acted on in contact, substantially as set forth.

2. The combination, in a milling-machine, of a milling-tool made as a disk, having cutting or milling teeth upon its periphery, means for imparting rotation thereto, a frame carrying such means and the milling tool or wheel, and a second frame carrying such frame and means for moving the one frame within the other, substantially as set forth.

3. The combination of a post or base pivotally mounted, a frame secured thereto and carrying a drilling mechanism, a frame secured thereto and carrying a milling or reaming mechanism, stops for limiting the movement thereof, and latches for locking them, so that one or the other mechanism is in operative position, substantially as set forth.

4. The combination of a post or base pivotally mounted, a frame secured thereto and carrying a drilling mechanism, a frame secured thereto and carrying a drilling or reaming mechanism, stops for limiting the movement of the above elements, latches for locking them in position, a bed for receiving and holding the material to be operated on, and means for keeping such material and the tool in operation thereon in contact, substantially as set forth.

380,312. FURNACE-GRATE. JONATHAN COHN, Philadelphia, Pa. Filed Feb. 26, 1887. Serial No. 229,158. (No model.)

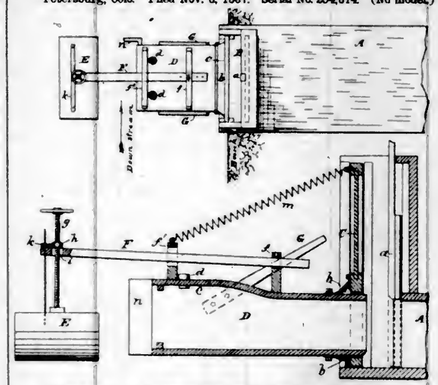


Claim.—1. In a furnace-grate, the bar-supports provided with triangularly-arranged supporting-edges, in combination with grate-bars having their ends upwardly recessed to fit over said supports, whereby said grate-bars may be independently rocked upon their supports with small amount of friction, substantially as and for the purpose specified.

2. In a furnace-grate, the combination of the supporting-bars B, having the supports C, formed with the bearing-edges *c*, and the bars A, formed with upwardly-recessed bearings, having angular faces *a* at their ends to rest upon the supports C, and also with means to rock them upon said supports, substantially as and for the purpose specified.

3. In a furnace-grate, a bar-support at one end, having triangularly-arranged supporting-edges, a bar-support at the other end, having a flat top, in combination with a grate-bar having its two ends upwardly recessed, one having angular faces and the other a flat face to rest upon said supports.

380,313. WATER-DISTRIBUTING APPARATUS. JOSEPH CORNELL, Petersburg, Colo. Filed Nov. 8, 1887. Serial No. 254,614. (No model.)



Claim.—1. In a water-distributing apparatus, a penstock, B, in combination with a vertical sliding frame, C, and an automatically-adjustable spout loosely connected with said frame, substantially as and for the purposes described.

2. In a water-distributer, in combination with a sliding frame, C, an adjustable spout provided with bumpers G and loosely connected with said frame, substantially as set forth and described.

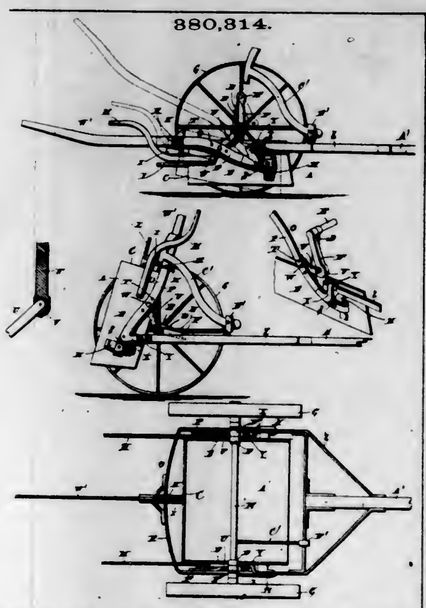
3. In combination with a penstock, B, an adjustable spout loosely mounted in front of the penstock and provided with coupling-blocks *f* and *f'*, an adjustable coupling-bar, F, extending through apertures in said blocks, and a float adjustably connected with said bar by means of a vertical screw, substantially as set forth and described.

4. In combination with the sliding frame C, the spout D, connected therewith and provided with air-space *c*, having vents *d*, bumpers G, and a retarding-spring, *m*, substantially as set forth, for the purposes specified.

380,314. WHEELED SCRAPER. PATRICK DREVY, Hastings, Nebr. Filed Oct. 10, 1887. Serial No. 251,976. (No model.)

Claim.—1. The combination, with the cranked axle, of the scraper pivotally hung thereon, the draft-frame pivotally secured to the sides

380,314.



of the scoop, the rearwardly-extending yoke pivoted to the sides of the scoop below and in advance of the pivotal point of the draft-frame and connected to the cranked axle, the arm B', rising from the draft-frame, and the catch C', pivoted to said arm and adapted to engage said yoke, as set forth.

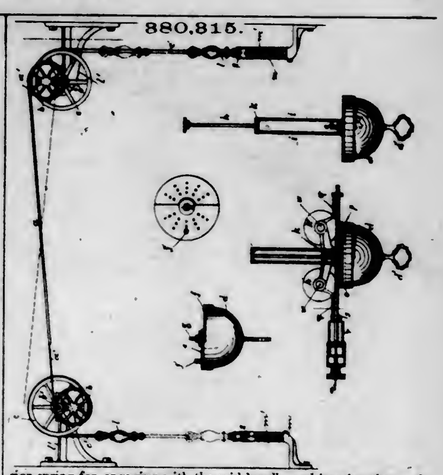
2. The combination of the cranked axle, the scoop hung thereon, the draft-frame pivoted to the scoop, the rearwardly-extending yoke, also pivoted to the scoop, the slotted arm extending rearwardly from the scoop, and the catch pivoted in said arm and engaging the scoop at its lower end and the yoke at its upper end, substantially as specified.

3. The combination of the scoop having the vertical standards D, the cranked axle journaled to the said standards and having the supporting-wheels, the draft-frame having its arms pivoted to the sides of the scoop, the yoke P, having its arms pivoted to the sides of the scoop at points below and in advance of the pivotal connections of the draft-frame, the said yoke P being further provided with the detents X, adapted to engage the draft-frame, for the purpose set forth, and the links U, connecting the said yoke to the cranks of the axle, substantially as described.

4. The combination of the scraper or scoop, the draft-frame pivotally connected thereto, the cranked axle from which the scoop is suspended and having supporting-wheels, the yoke P, extending rearward from the scoop and having its side arms pivoted to the sides of the scoop and longitudinally adjustable thereon, the said yoke being further provided with the detents X, for the purpose set forth, and the links U, pivoted to the lower ends of the crank-arms of the axle, and having their lower ends pivoted to the side arms of the yoke P and longitudinally adjustable thereon, substantially as described.

5. In combination with the scraper or scoop, the cranked axle from which the scraper or scoop is pivotally hung, the draft-frame pivotally attached to the scoop, and the yoke P, pivotally attached to the scoop or scraper and having the arms or detents X to engage the draft-frame and lock the scraper or scoop when the latter is swung to an inclined position, as set forth.

380,315.

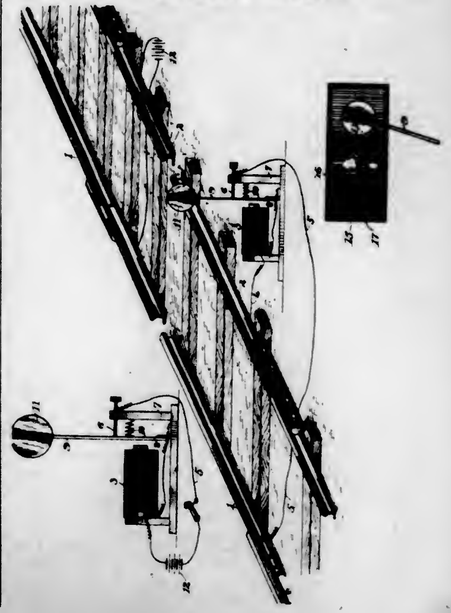


sion-spring for engaging with the said handle and keeping the track taut, substantially as set forth.

3. The combination of the wheeled cash-carrier carriage having the projecting pin *p*, the cash-box, and the extension-bars *h* and *i*, connecting the said cash-box to the carrier, so that it may be drawn up and down and rotated to engage with the said pin, substantially as set forth.

4. The combination of the cash-carrier track and the revoluble eccentric for raising its end, the wheeled carriage running on the track and provided with the extension *q* and piston *s*, the air-buffer *r*, the link connecting the buffer with the eccentric spindle, and the retaining-catch *v*, pivoted to the eccentric and engaging automatically with the carriage, whereby the said piston is drawn back, compressing the air within the buffer while the carriage is being released and until the catch strikes upon the boss of the said link and releases the carriage, substantially as set forth.

380,316. RAILWAY-SIGNAL. J. HAMILTON FARRAR, Chicago, Ill. Filed July 23, 1887. Serial No. 245,111. (No model.)



380,315. STORE-SERVICE APPARATUS. JOHN A. DUGGAN, Quincy, Mass. Filed May 17, 1886. Serial No. 202,381. (No model.)

Claim.—1. In a cash-carrier, the combination of the track provided with flexible ends, the two oppositely-arranged eccentrics secured upon revoluble spindles at the ends of the track, the pulleys also secured to the said spindles, and the cords and weights for turning the pulleys and keeping the track taut, substantially as set forth.

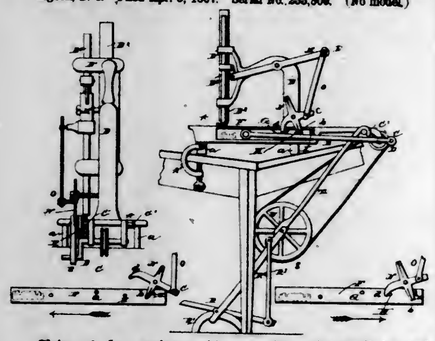
2. The combination of the cash-carrier track, the revoluble eccentric having the flexible end of the track secured to it, the pulley secured upon the eccentric spindle, the cord secured to the pulley and provided with a handle, and the vertically-sliding hook provided with a ten-

Claim.—1. A railway signaling apparatus, consisting of an electric circuit, a rheotome having a lever-armature, and a visual signal mounted on the latter, substantially as described.

2. In a railway signaling apparatus, an electric circuit in which a section of the track is included, a rheotome lying in said circuit, a vibrating armature carrying a visual signal, and a spring drawing said armature away from the pole of the rheotome, substantially as described.

3. In a railway signaling apparatus, an electric circuit in which a section of the track is included, a rheotome lying in said circuit, an armature carrying a signal-disk, a spring drawing said armature away from the pole of the rheotome, and a lamp-box having an opening over which the signal-disk vibrates, substantially as described.

380,317. SEWING-MACHINE. CHARLES I. FLEISCHMANN, Washington, D. C. Filed Apr. 5, 1887. Serial No. 233,809. (No model.)



Claim.—1. In a sewing-machine, a reciprocating needle-bar and needle, and a reciprocating shuttle, combined with a shuttle-carrier provided with studs or pins G H I, and a many-armed lever engaged by said studs or pins, and connections between the said lever and needle-bar to operate the latter, substantially as described.

2. In a sewing-machine, a reciprocating needle-bar, a reciprocating shuttle-carrier provided with laterally-projecting studs, and a many-armed lever having one of its arms bent and co-operating with said studs, and connected with the needle-bar to impart the usual dip to the needle-bar, so as to form the loop in the needle-thread, substantially as described.

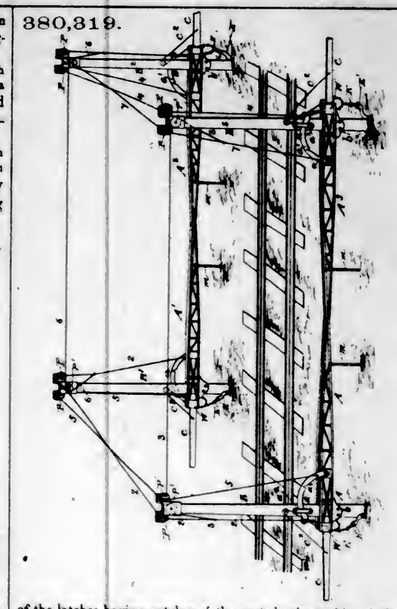
380,318. COVER FOR STRAINER-PAILS. SAMUEL E. FOREMAN, Randolph, Kans. Filed July 15, 1887. Serial No. 244,391. (No model.)



Claim.—The improved milk-pail composed of the body A, the detachable lid B, the strong springs H, retaining the lid on the body, the funnel D, secured centrally to the lid, the strainer C at the bottom of said funnel, the tube E, secured to and depending from the lid and surrounding the strainer, the cage F, and the saucer-shaped valve G, having its convexity downward.

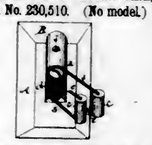
380,319. RAILWAY-GATE. LUCIAN M. FOSTER, Brunswick, N. Y., assignor to Samuel Foster, same place. Filed Feb. 25, 1887. Serial No. 228,887. (No model.)

Claim.—The combination, with the gates and connecting cables,



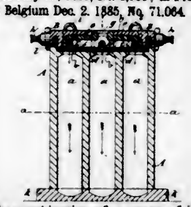
of the latches having notches a', the posts having guides a^2, the chain D, and the spring-stops E E', as and for the purpose specified.

380,320. BROOM-HOLDER. EDGAR GASH, Macomb, Ill. Filed Mar. 11, 1887. Serial No. 230,510. (No model.)



Claim.—In a broom-holder, the base A, having cut in the face side the groove B, in combination with the spiral spring d, seated in said groove and having arms s s, friction-rolls c c, and screw n, substantially as shown and described, for the purpose set forth.

380,321. MOLD FOR CASTING INGOTS. THOMAS HAMPTON and JOHN FACER, Barrow-in-Furness, County of Lancaster, England, assignors of one-third to Philip S. Justice & Co., Philadelphia, Pa., and London, England. Filed July 19, 1887. Serial No. 244,761. (No model.) Patented in England July 25, 1885, No. 8,981; in France Dec. 1, 1885, No. 172,635, and in Belgium Dec. 2, 1885, No. 71,064.



Claim.—1. The combination of a group of ingot-molds situated in proximity to each other, fire-brick or other refractory material covering and resting directly upon said molds and provided with holes c, situated centrally over the same, and a cover, B, resting above said refractory material and the molds and provided with a central gate, g, there being passages or gutters between the cover and said refractory material leading from the gate g to the holes c, substantially as described.

2. The combination of a group of ingot-molds situated in proximity to each other, fire-brick or other refractory material covering and resting directly upon said molds and provided with holes c, situated centrally over the same, a removable cover, B, bolted to the molds and provided with a central gate, g, passages or gutters leading from the

gate g to the holes c, and vents leading from the molds between the molds and the cover to the external air, substantially as described.

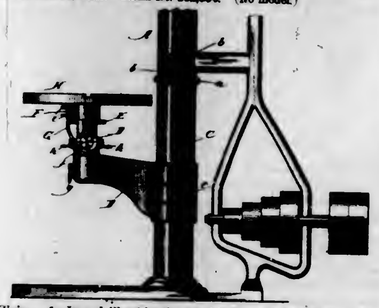
3. The combination of a group of ingot-molds situated in proximity to each other, slabs of refractory material covering the same and provided with holes c, situated centrally over the molds, and a removable cover having a central gate, g, and provided with removable gutter-bricks leading from the said central gate to the holes c, substantially as described.

4. In combination with a group of ingot-molds situated in proximity to each other, the cover B, with removable gutter-bricks e, and a central or common gate, g, to receive the molten metal, and also side passages, l, and ports m, to permit of the escape of air and gases, substantially as described and shown.

5. The combination of a series of separable ingot-molds, each having a covered end with an inlet-opening, and a cover inclosing a chamber having a refractory lining perforated at points opposite said inlets, and with an inlet for molten metal, substantially as described.

6. The combination, with the molds a, cover B, and slabs b, provided with holes c, of the lining of the holes c, provided with passages or ports r for the air and gases to escape through as the molds are being filled, substantially as shown and described.

380,322. UNIVERSAL TABLE FOR DRILLS. JOHN J. HARDY, Lake View, Ill., assignor to himself, Lewis W. Hardy, same place, and John A. Yale, Joseph E. Young, and David L. Hough, all of Chicago, Ill. Filed Jan. 30, 1888. Serial No. 262,356. (No model.)

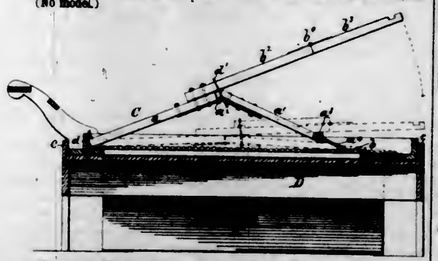


Claim.—1. In a drill-table, the combination of the chuck or face-plate H with the head-stock E, having the clamping-collar F and adapted to be tilted on a trunnion, D, substantially as and for the purpose specified.

2. In a drill-table, the head-stock E, carrying a chuck or face-plate, H, in combination with the trunnion D and stop G, substantially as and for the purposes specified.

3. In a drill-table, the chuck or face-plate H, carried by the head-stock E, trunnion D, with its spindle d, and stop G, in combination with the bracket or arm B and set-screw g, substantially as and for the purposes specified.

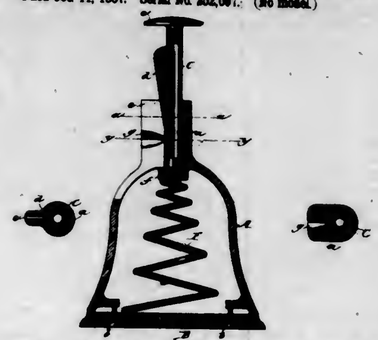
380,323. DEVICE EMPLOYED IN THE MANUFACTURE OF SPRING-BOTTOMS OF LOUNGES AND OTHER ARTICLES OF FURNITURE. FREDERICK B. HEMINGWAY, Clinton, Iowa, assignor to Hemingway & Kelly, same place. Filed Aug. 26, 1887. Serial No. 247,947. (No model.)



Claim.—1. The wire-web stretcher consisting of the jointed bar a a', having the cross-head a^3, provided with fingers a^4, adapted to hold against rods inserted through the meshes of a wire web, A, the jointed lever b^3 b^4, attached to the stretcher-bar, and the adjustable keeper d', in combination with supporting-frame B, a fulcrum-bar, d, attached to the frame and adapted to support one end of the stretcher-bar, and loose rods inserted through the meshes of the wire web, substantially as and for the purposes described.

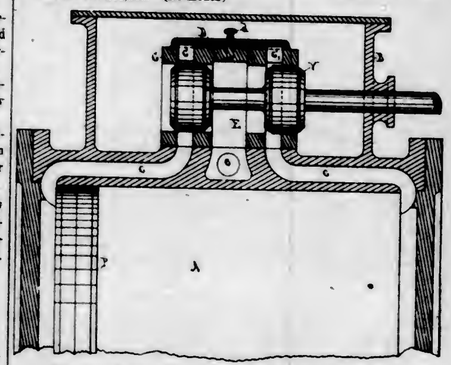
2. The bench D, provided on its top with a seat adapted to hold the frame of a lounge or other article of furniture, and having a hinged fly, E, provided with the fulcrum-bar c', in combination with the wire-web stretcher consisting of the jointed bar a a', having the cross-head a^3, provided with fingers a^4, adapted to hold against rods inserted through the meshes of a wire web, A, the jointed lever b^3 b^4, attached to the stretcher-bar, and the adjustable keeper d', substantially as and for the purposes described.

380,324. CIGAR-TIP CUTTER. VALENTINE HOWELL, Geneva, Ill. Filed Oct. 11, 1887. Serial No. 252,097. (No model.)



Claim.—A cigar-tip cutter consisting of the box or bell-shaped base A, a hub, a, integral therewith, said hub being provided with a projection on one side having a vertical slot, e, in it, and a tip-receptacle, g, formed in the projection of the hub across the line of the slot, a spring, F, mounted in the base A, and stem C, supported upon the spring, said stem being passed through hub a and provided with an inclined saw-toothed or serrated blade, d, held in the slot e of the hub projection, all constructed and combined substantially as and for the purpose set forth.

380,325. ENGINE-VALVE. EDWIN M. HUMPHREY, Hartford, Conn., assignor to James Ferguson, Bridgewater, Mass. Filed Feb. 8, 1888. Serial No. 263,379. (No model.)



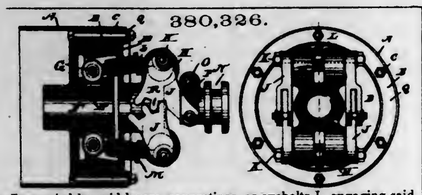
Claim.—1. The combination of the elongated ports c' c', opening through the wall of the valve-cylinder C into the steam-ports c c, and the valve D, seated over the same and adapted to rise and connect the chest B with the exhaust E, substantially as described.

2. The combination of separate relief-ports opening through the wall of the valve-cylinder C into steam-ports c c, and a single valve, D, covering the same and adapted to rise and relieve the engine, substantially as described.

380,326. FRICTION-CLUTCH. JOHN A. KELLER, Hamilton, assignor to the Falls Rivet Company, Cuyahoga Falls, Ohio. Filed Dec. 19, 1887. Serial No. 258,292. (No model.)

Claim.—1. In clutch-operating mechanism, the combination, with a pulley provided with a friction-surface and having a circumferentially-grooved hub, of a part, as a cone, provided with another friction-surface and having pivot-lugs, a pivot-ring set in the groove of the pulley-hub, pivots supported by said pivot-ring, levers connected for simultaneous motion and pivoted to said lugs, pivot-pins eccentri-

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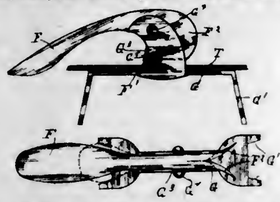
cally carried by said levers, connections, as eyebolts L, engaging said pivot-pins and the pivots of said pivot-ring, a sliding collar adapted to be moved by a shifter, and a link pivoted to said sliding collar and connected with said levers, substantially as and for the purpose set forth.

2. In a friction-clutch, the combination, substantially as set forth, of pulley A, provided with hub-groove E, and a conically-bored rim-bushing, B, secured to the pulley, with a cone, D, adapted to fit said rim-bushing, and provided with a hub carrying lugs H, levers connected together and having their hubs journaled in said lugs, sliding collar N, carrying pivot O, link P, connecting said collar and levers, pivot-pins K, eccentrically carried by the hubs of the levers, pivot-ring F, engaging the hub-groove of the pulley and carrying pivots G, eyebolts L, engaging the pivot-pins K and pivots G, and adjusting-nuts M upon the eyebolts.

3. In mechanism for forcibly drawing together the two parts of a clutch, the combination of pivots carried by one of said parts, connected levers journaled in the other of said parts, pivot-pins eccentrically carried by said levers, connections, as eyebolts, engaging said pivot-pins and first-mentioned pivots, a sliding collar carrying a pivot, and a link engaging said sliding collar and one of said levers, substantially as and for the purpose set forth.

4. In mechanism for forcibly drawing together the two parts of a clutch, the combination of an eccentric pivot mounted in one of said parts, a connection, as eyebolts, from such eccentric pivot to a pivot supported by the other of said parts, a lever connected to such eccentric pivot, and mechanism, as a collar and link, for imparting motion to said lever, substantially as and for the purpose set forth.

380,327. FASTENING DEVICE FOR SHOES, GLOVES, &c. GEORGE F. KRIEGER, Chicago, Ill. Filed Aug. 27, 1887. Serial No. 248,006. (No model.)

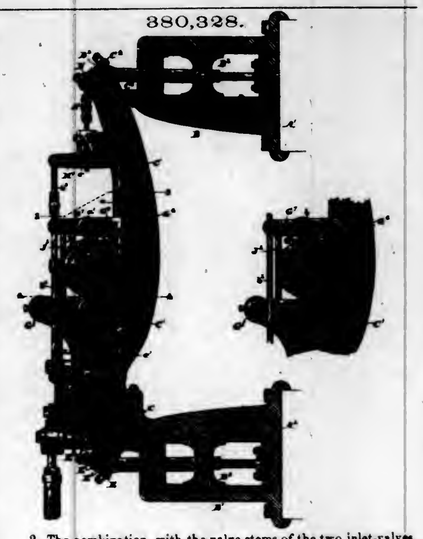


Claim.—In a fabric-fastening device, a base adapted to be secured to the fabric, provided with standards thereon, an elbow-lever pivoted near its angle to said standards and provided back of its pivotal point with springs, which, when the lever is depressed, engage the rear of said standards and assist in retaining said lever in its position.

380,328. VALVE-GEAR. ERASMUS D. LEAVITT, Jr., Cambridgeport, Mass. Filed Oct. 10, 1887. Serial No. 251,894. (No model.)

Claim.—1. In a steam-engine provided with an independent inlet-valve at each end of the cylinder, the combination, with the valve-stems and guiding cross-heads, of a cam-shaft having mounted thereon an inlet-cam and two cut-off cams, means, substantially as set forth, for adjusting said cut-off cams above the axis of said shaft, a pair of levers mounted upon fixed fulcrums upon opposite sides of said cam-shaft, one above and to the rear of and the other below and in front of said shaft, and each carrying an anti-friction roll, which bears against and is acted upon by the inlet-cam, a rod connecting the free end of one of said levers with the rear ends of two rocking levers mounted upon movable fulcrums, one above and one below said cam-shaft, a second and similar pair of levers, each provided with an anti-friction roll, one arranged above and to be acted upon by one of the cut-off cams and the other arranged below and to be acted upon by the other cut-off cam, a rod connecting the free end of one of said levers with the front ends of the above-mentioned rocker-levers, a yoke connecting each pair of roll-carrying levers together, and mechanism, substantially as set forth, for connecting the movable fulcrums of said rocker-levers with the valve-stem cross-head.

380,328.



2. The combination, with the valve-stems of the two inlet-valves, of two rocker-levers mounted upon movable cross-heads connected one to each of said valve-stems, rods connecting each end of one of said rocking levers with the corresponding end of the other rocker-lever, a cam-shaft, an inlet-cam fixed upon said shaft, a pair of roll-carrying levers, arranged one above and one below said inlet-cam, the movable end of one of said levers being pivoted to the rod which connects the rear ends of the rocker-levers, a yoke connecting the roll-carrying pins of said levers together, a pair of cut-off cams mounted on said shaft, means, substantially as described, for adjusting said cut-off cams circumferentially of said shaft, and a pair of roll-carrying levers, arranged one above and one below said cut-off cams, the roll carried by one lever being arranged to be acted upon by one of said cams and the roll carried by the other lever being arranged to be acted upon by the other cam, and the movable end of one of said levers being pivoted to the rod connecting the front ends of the rocker-levers, and a yoke connecting the roll-carrying pins of said last-mentioned levers, substantially as described.

3. The combination of the shaft F, the cams G, G^2, and G^3, the roll-carrying levers G^4, G^7, G^8, and G^9, the rocker-levers H and H', the jointed rods b^2 b^3 and c c', connecting the levers G^7 and G^9 with the rocker-levers H and H', the cross-heads H^3 and H^5, mounted in guideways H^4 and H^6, and mechanism, substantially as described, for automatically moving the cams G^2 and G^3 about the axis of the shaft F, whereby said cross-heads may have imparted thereto a variable reciprocation as a means of imparting a similar variable motion to the valve-stem connected therewith.

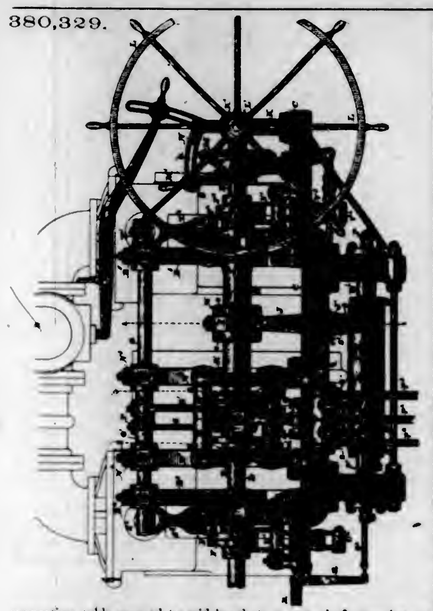
4. In combination with the cylinder of a steam-engine having independent valves at each end thereof, the stands B and B', firmly secured to the valve-chests of said cylinder, the valve-gear-supporting frame C C' C^2, pivoted at one end to one of the stands B B', and the link C^3, connecting the other end of said frame to the other stand B B', whereby provision is made for unequal expansions, substantially as described.

380,329. VALVE-GEAR. ERASMUS D. LEAVITT, Jr., Cambridgeport, Mass. Filed Oct. 10, 1887. Serial No. 251,895. (No model.)

Claim.—1. In a steam-engine provided with an independent induction-valve at each end of the cylinder, the combination, with the inlet-valve stems, of a rocker-shaft provided with a crank-arm at each end and an intermediate crank, a link connecting each of said end crank-arms with one of said valve-stems, a two-armed lever mounted upon and movable about said intermediate crank, a cam-shaft carrying an inlet cam and two cut-off cams, means having provision for adjusting said cut-off cams relative to the inlet-cam, a pair of inlet-cam levers connected together and to one end of said two-armed lever, and a pair of cut-off cam-levers connected together and to the other end of said two-armed lever, all constructed, arranged, and adapted to operate substantially as and for the purposes described.

2. In a steam-engine having an independent induction-valve at each end of its cylinder, the combination of the cylinder, a pair of brackets secured to and projecting from said cylinder, a valve-gear-

380,329.



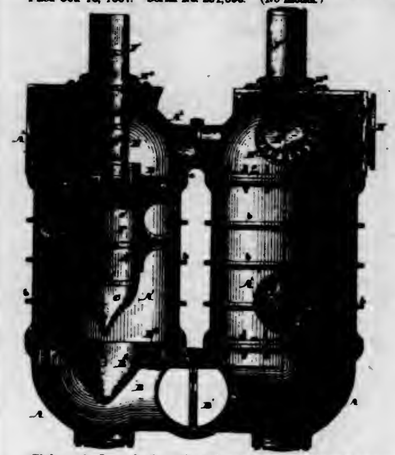
supporting table secured to said brackets, a cam-shaft carrying an inlet-cam and two cut-off cams, and having provision for adjusting said cut-off cams relative to the inlet-cam, a rocker-shaft provided at each end with a short crank-arm and with an intermediate crank, links connecting said end crank-arms to the inlet-valve stems, a two-armed lever mounted upon said intermediate crank, rods connecting one end of said two-armed lever to the inlet-cam levers and its other to the cut-off-cam levers, and links connecting the inlet-cam levers together and the cut-off-cam levers together, substantially as described.

3. As a means of adjusting the cut-off cams about the axis of its shaft, the combination of the cam-carrying shaft having a portion of its diameter for a section of its length cut away upon two opposite sides in such a manner as to form a spiral having two opposing parallel sides, a sleeve fitted to and movable circumferentially about said shaft and having mounted thereon the cam to be adjusted, and provided with two longitudinal slots cut through the same upon opposite sides thereof, two shoes, each having an inner surface fitted to a section of a flat side of the spiral of said shaft and provided with ribs to enter and move in the slots in said sleeve, a collar fitted to and movable endwise upon said sleeve and firmly attached to said shoes, and a vibratory lever for moving said collar and shoes endwise upon said sleeve, substantially as described.

4. The combination, in a steam-engine, of the cam-shaft D, having a spiral surface formed in a section of its length, a shoe or gib fitted to said spiral, a sleeve mounted upon said shaft and movable about the axis thereof, and provided with a longitudinal slot into which said shoe or gib extends, a collar fitted to and movable endwise upon said sleeve and firmly secured to said shoe or gib, a lever or levers connected at one end to said collar, a movable hydraulic cylinder mounted upon fixed hollow plungers and connected to said lever or levers, so as to vibrate the same as it moves in either direction, and means having provision for admitting water to either end of said cylinder according to the direction it is desired to move the gib-carrying collar.

5. The combination, with a shaft having a section of its length provided with a spiral surface, a cam-carrying sleeve mounted upon and movable about said shaft, and a collar mounted upon and movable endwise upon said sleeve and carrying a gib or shoe to engage said spiral surface of the cam-shaft, of the levers J J, rocker-shaft J', provided with the crank-pin s', the movable hydraulic cylinder W, provided with the partition a, the fixed hollow plungers W' and W^2, the fixed valve-cylinder Y, connected by suitable pipes to the source of water-supply and to the outer ends of the plungers W' and W^2, the valve-stem q, carrying the piston-valves q' and q^2, the lever s, fulcrumed upon the crank-pin s' and connected at one end to said valve-stem, and a governor connected to the opposite end of said lever s and adapted to vibrate it and move the valves in the cylinder Y as its balls are thrown outward or fall inward.

380,330. PUMP. ERASMUS D. LEAVITT, Jr., Cambridgeport, Mass. Filed Oct. 10, 1887. Serial No. 251,896. (No model.)



Claim.—1. In a single-acting plunger-pump, a plunger composed of two separate hollow cylinders of different diameters, the larger section having one closed end and one open end, and the smaller section projecting into the larger section and being secured to said larger section at a point within the same and some distance from its open end, and a wrist-pin located in said smaller section near its attachment to said larger section, in combination with a packing-box bearing for said smaller section projecting into the upper or discharge water-chamber and having an exterior diameter less than the interior diameter of the larger section of the plunger.

2. In a single-acting plunger-pump, the combination of a pump-barrel or casing, an annular inlet-valve plate at one end thereof provided with a central or nearly central conical or tapering chamber or pocket the walls of which are pendent from said plate, an inlet water-chamber beneath said inlet-valve plate and surrounding the walls of said pocket, an annular discharge-valve plate at the opposite end of said casing, a plunger-guiding open-ended cylinder pendent from said discharge-valve plate and central, or nearly so, thereof, an annular water-passage surrounding said plunger-guiding cylinder and extending to the discharge-valve plate, a plunger composed of two hollow cylinders of different diameters and secured together at a point within the larger section and some distance from its open end, said larger section having its lower or working end closed and made conical or tapering to enter the pocket pendent from the inlet-valve plate, a wrist-pin located within and near the lower or inner end of the smaller section of said plunger to receive the connecting-rod, and a water-chamber located above the discharge-valve plate and provided with a packing-box projecting into said chamber and having an exterior diameter less than the interior diameter of the larger section of the plunger.

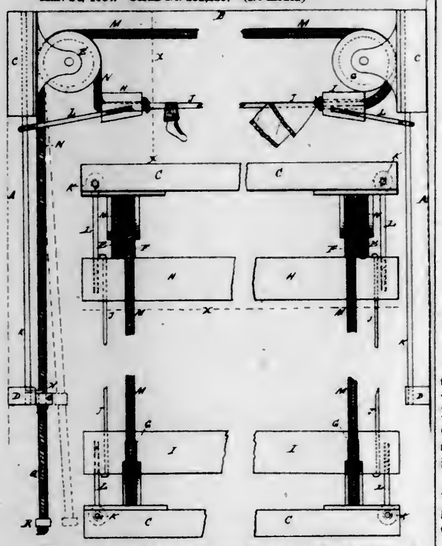
380,331. PLIERS OR PINCHERS. BENJAMIN J. LESLIE, Butler, Ky. Filed Feb. 21, 1887. Serial No. 228,359. (No model.)



Claim.—1. In combination with a pair of pliers of the character described, a yoke-piece secured to the ends of the pivot and constituting a movable fulcrum, and having its lower end flattened in the plane of the pivotal axis to an approximate edge to give an extended bearing for the fulcrum and constitute also a screw-driver, substantially as set forth.

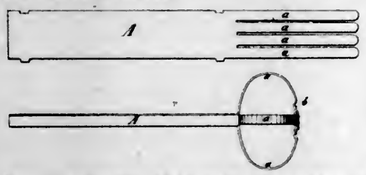
2. In combination with a pair of pliers, a yoke-piece secured as a fulcrum to the ends of the pivot, flattened to an approximate edge at its opposite or bearing end, and thickened above said edge into an offset or shoulder, substantially as and for the purpose set forth.

380,332. CLOTHES-DRIER. JOHN L. LINCOLN, Chicago, Ill. Filed Mar. 24, 1887. Serial No. 232,235. (No model.)



Claim.—An improvement in compartment clothes-driers, consisting of the wall-supports C D and guide-rods K, attached thereto, in combination with the line-bars H I, provided with eyebolts L, operating on the rods, the double pulleys F E, single pulleys G, and lines J, the cords M, attached to the bars I, running over pulleys G and F, and attached to bar O, the separate cords N, attached to the bar H, passing over pulleys E, and attached to bar O, and the bar R, suspended from the bar O by cords Q and the stop-pins V, for elevating, lowering, and holding the lines, as specified.

380,333. DOOR-KNOB AND CONNECTING-SHANK FOR THE SAME. WILLIAM LIVINGSTONE, Jersey City, N. J. Filed July 15, 1887. Serial No. 244,388. (No model.)



Claim.—1. A sheet-metal spindle and an integral skeleton knob-frame, substantially as set forth.

2. A knob consisting, essentially, of a skeleton frame having an integral spindle-socket and a shell secured to said frame, substantially as set forth.

3. The combination, with a hollow sheet-metal spindle and its integral skeleton knob-frame, of an adjustable knob-frame and its integral socket, substantially as set forth.

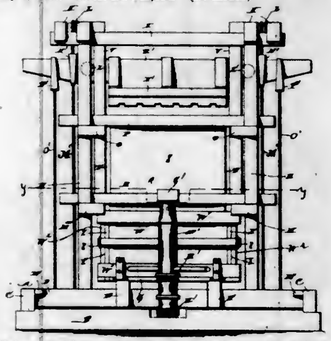
4. The combination, with a sheet-metal hollow spindle and its integral pronged skeleton knob-frame, of a re-enforce shell adapted to be held in contact with the skeleton knob-frame, substantially as set forth.

5. The combination, with a hollow spindle made of sheet-metal sections and joined longitudinally, of prongs integral with the spindle-sections and adapted to form a skeleton knob-frame, substantially as set forth.

6. The combination, with a hollow sheet-metal spindle, a skeleton knob-frame made integral with this spindle, and re-enforce shells adapted to fit on the skeleton knob-frame, of an outer finishing-shell that is secured upon the re-enforce jacket or shell, substantially as set forth.

7. The combination, with a hollow sheet-metal spindle and integral prongs that are locked at their outer ends to produce a stable knob-frame, of an outer finishing-shell that is mounted upon and secured to the skeleton knob-frame, substantially as set forth.

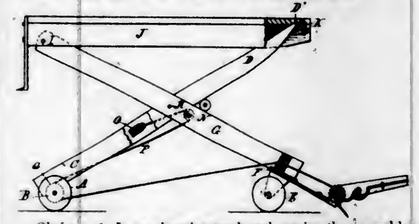
380,334. COTTON-PRESS. JOHN E. LOCKETT, Dancyville, assignor of one-half to J. S. Rhea and John W. Rhea, Somerville, Tenn. Filed July 7, 1887. Serial No. 243,684. (No model.)



Claim.—1. The combination, in a baling-press, of the press-box, the vertically-movable follower, the shaft having the drums, the elevating and lowering ropes connected to the follower and having their lower ends attached to the drums and coiled thereon in opposite directions, the capstan, and the rope coiled on the central drum of the shaft and having its ends attached to the capstan and coiled thereon in opposite directions, substantially as described.

2. The combination, in a baling-press, of the press-box having the vertical slots in its end walls, the frame for the press-box, having the guide-bars V projecting beyond the upper side thereof and arranged on opposite sides of the slots, the vertically-movable follower I', having the bar K' on its upper side, the ends of said bar projecting through the spaces between the guide-bars and having the rollers L' bearing against the outer sides of the guide-bars, the pulleys L, journaled at the top of the frame, the rotating shaft arranged under the press-box and having the drums, the ropes O', wound on two of the said drums and having their upper ends provided with yokes P', engaging the ends of bar K', and the ropes M', passed around the pulleys L, attached to the remaining drums and coiled thereon in a direction opposite ropes O', and having the yokes N' at their pendent ends engaging the ends of bar K', all combined to operate substantially as described.

380,335. TRUCK. MANFRED LOREE, Miamisburg, Ohio, assignor of two-thirds to David P. Clark, same place, and Charles R. Clark, Dayton, Ohio. Filed Sept. 7, 1887. Serial No. 248,956. (No model.)



Claim.—1. In an elevating-truck and carrier, the crossed bars centrally pivoted and mounted at their opposite ends on wheels, and having a roller-bar interposed between their forward ends and connected with rope and pulleys and windlass for elevating the truck, substantially as herein set forth.

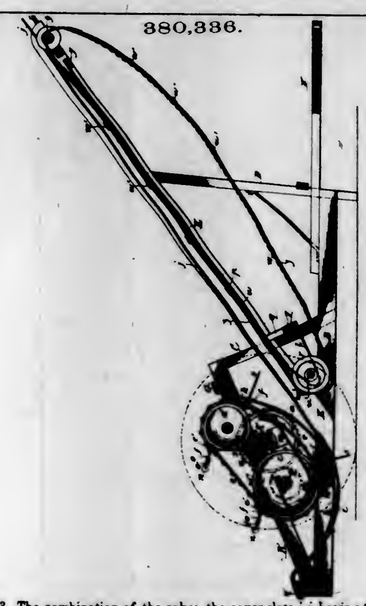
2. In an elevating-truck and carrier, the combination of the bars C G, centrally pivoted and having their opposite ends mounted on transporting-wheels and at their other ends carrying a platform, J, in combination with the roller-bar K, having a rope, P, and windlass, with the vibrating handle U, substantially as herein set forth.

380,336. HAY RAKER AND LOADER. JOHN H. LUX (for himself and as administrator of Philip Lux, deceased) and SAMUEL ENS, Hartville, Iowa. Filed Jan. 30, 1886. Serial No. 190,347. (No model.)

Claim.—1. The combination of the gear-wheels *a b*, sprocket-wheels *c d*, chains *e*, revolving rake-heads *f*, journaled in said chains and provided with rake-teeth *s*, the turning rollers *n*, having spring-shanks *o* attached to the rake-heads, and the eccentric guide *m*, substantially as described.

2. The cover-slats *j*, having the yielding or spring extensions *i* and their upper ends free, in combination with an elevator, the guide *k*, and the elliptically-revolving rakes *f s*, substantially as described.

380,336.



3. The combination of the rakes, the cover-slats *i j*, having their upper ends free and extending in rear of the rakes, and the elevator *w w'*, substantially as described.

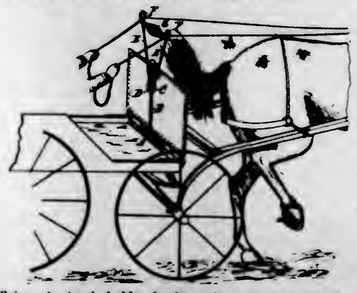
4. The supporting-bars *k* and elastic bars *l*, having the lower ends of said bars secured thereto, in combination with the revolving elevator *w w'*, substantially as described.

5. The combination of the longitudinal slats or bars *i j*, cross-slats *w'* of the elevator-chain, the longitudinal supporting-bar *p*, located below the upper surface of the elevator about the middle thereof, and the bars *k* at the sides, the shaft *v'* at the lower end of the elevator, and the disk *r*, located on said shaft in line with the bar *p*, substantially as described.

6. The combination of the rake-head *f*, spring-shank *o*, connected to said rake-head, clamping-plate *o'*, connecting the two arms of said shank, the roller *n*, carried by said shank, the eccentric guide *m*, and the guide-bar *k*, substantially as described.

7. The combination and arrangement of the elliptically-moving rakes having the shank *o*, and the guide *m*, and guide-bar *k*, with cover-bars composed of the elastic bars i, extended forward and beneath the line of travel of the rake-teeth, and the bars *j*, secured thereto and extended lengthwise of the carrier, revolving elevator *w w'*, and supporting-bars *k*, substantially as described.

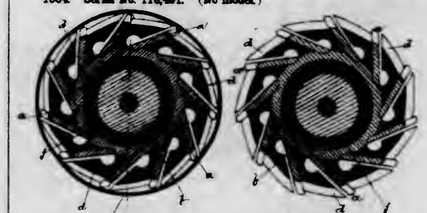
380,337. REIN-HOLDER. THOMAS MAHAN, New Orleans, La. Filed July 11, 1887. Serial No. 243,944. (No model.)



Claim.—1. A rein-holder having rein-carrying arms E laterally adjustable, substantially as and for the purposes set forth.

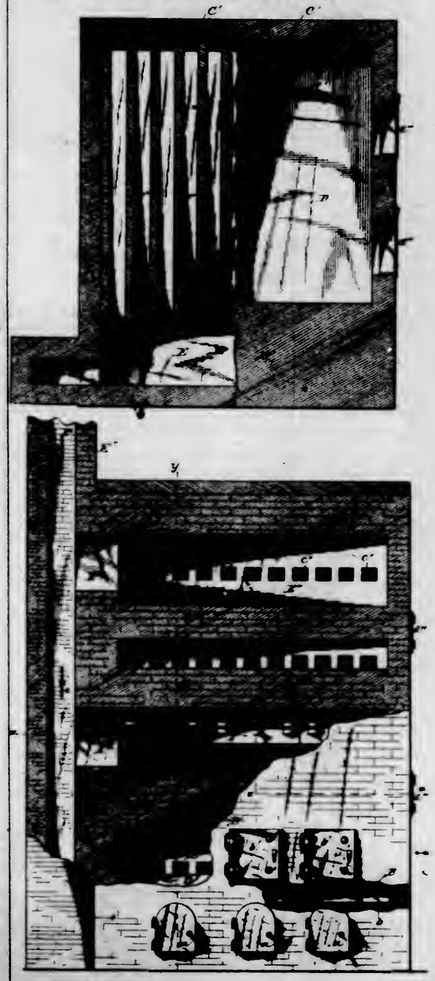
2. The combination of a line holder and rest consisting of a vertical standard with an adjustable sliding collar, to which are attached two divergent arms, which are laterally adjustable by a brace and swivel-joint, substantially as herein set forth.

380,338. ROTARY CUTTER. JAMES R. MAYHADEN, Taunton, assignor to the Russell Trimmer Company, Boston, Mass. Filed Jan. 23, 1884. Serial No. 118,491. (No model.)

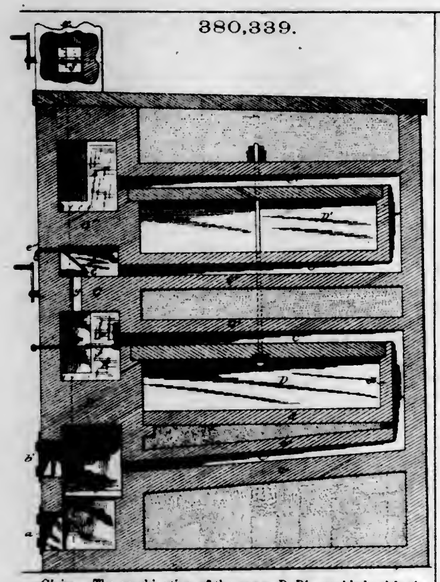


Claim.—The rotary cutter consisting of hub *f*, having integral teeth *d*, in combination with a guard consisting of hub *b*, having integral teeth *a*, the two hubs *f* and *b* fitting together, so that the guard-teeth *a* alternate with the cutting-teeth *d*, substantially as and for the purpose set forth.

380,339. BAKER'S OVEN. THOMAS R. MCFADDEN, Peoria, Ill. Filed Aug. 31, 1887. Serial No. 248,342. (No model.)



380,339.



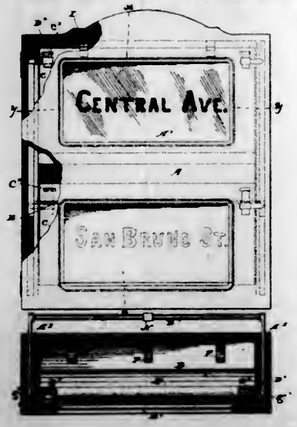
Claim.—The combination of the ovens D D′, provided with the continuous flues C C′ C² C³ C⁴ C⁵, the combustion-chamber B, the chamber E above said combustion-chamber, communicating with the smoke-flue, the cover G above the chamber E and having the opening *g*, provided with the adjustable damper *d*′, the chamber E² above the cover G, and the chamber E³ above the chamber E², also communicating with the smoke-flue, substantially as shown and described, and for the purposes set forth.

380,340. INCRUSTATION-PREVENTIVE. JOHN MULLICA and BENJAMIN F. MULLICA, Williamstown, assignors of one-half to Jonathan P. Stanger and Henry Rowen, both of Glassborough, N. J. Filed Apr. 20, 1887. Serial No. 235,522. (No specimens.)

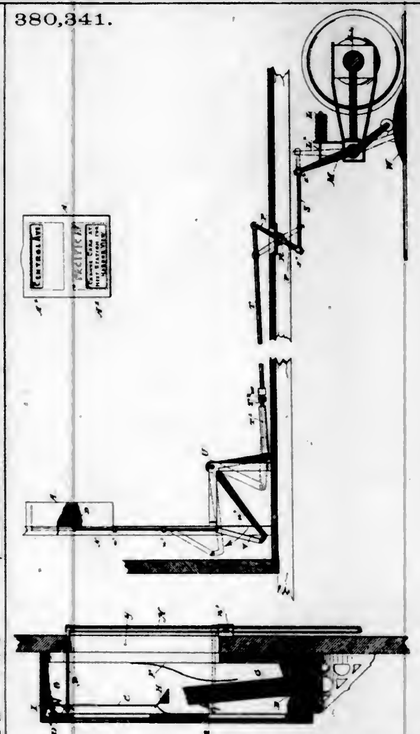
Claim.—In a preventive or remover of boiler-incrustation, sand prepared by burning, grinding, and washing, combined with floured charcoal, floured potato-starch, floured elm-bark, or their equivalents, in substantially the proportions stated, as herein specified.

380,341. STATION-INDICATOR. THOMAS W. MUNROE, San Francisco, assignor of two-thirds to Henry Burpee Berryman, Berkeley, Cal. Filed Oct. 26, 1887. Serial No. 253,479. (No model.)

Claim.—1. In a street or station indicator for railway-cars, the combination of a suitable case having a sight-opening, a set of indicator cards or plates, one half of which are provided with the names



380,341.



of the streets or other matter to be displayed in regular order and the other half thereof with the same matter repeated in reverse order, a vertically-movable elevator which is adapted to take hold of the foremost card of the set, elevate it and hold it for display at the sight-opening, and to discharge or release said card in the manner set forth, and an inclined ledge or shelf in the case beneath the sight-opening to support the bottom edge of the card when elevated and to direct the fall of said card when released, as set forth.

2. In a street or station indicator for railway-cars, the elevator D, having fingers D×, adapted to engage the top part of a card or plate to be elevated, the rod N, connected to the elevator, lever M, having its lower end set to engage with a line of stops or projections on the track, the spring applied to draw the lever back after passing the projection, and the connecting-rod S, lever P, rod T, lever U, and link V, connecting the lever M with rod N, substantially as set forth.

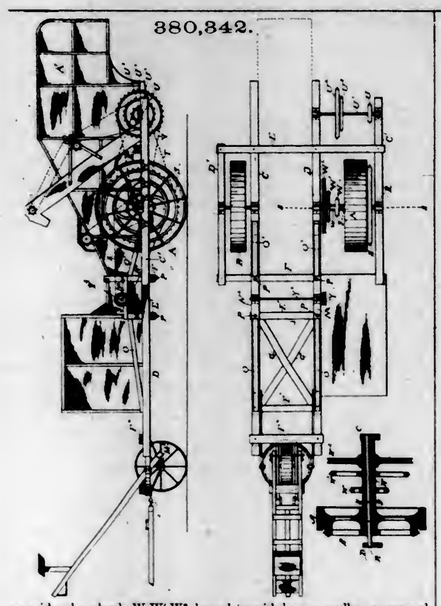
3. The combination of a suitable case with a sight-opening, the separate name-bearing cards C, the elevator D D×, operating-rod N, connected to the elevator, shelf H in the case under the sight-opening, rest-bar E in the case in front of the upper ends of the cards, and mechanism, substantially as described, adapted to be actuated by engaging with a line of stops or projections in the roadway and connected with the operating-rod to move the same down and up at intervals, as set forth.

4. In a street or station indicator, a set of independent cards or plates having openings or slits *c*×, bearing the names of the streets or other matter to be displayed in the required order, a card rest or holder at the bottom of a case or box below a sight-opening, a ledge or shelf in the case below the said sight-opening, with an inclined top to take the bottom edge of the card when elevated, and a vertically-movable elevating-bar having fingers D× D× to engage the slits *c*× in one card at each downward movement and to raise the same by an upward movement to the upper part of the case, in combination, as set forth.

380,342. TRAVELING THRASHER. CHARLES K. MYERS, Stockton, Cal. Filed Mar. 4, 1887. Serial No. 229,733. (No model.)

Claim.—The combination, with the main frame and the thrashing and separating devices of a traveling thrasher, a driving-wheel, and the axle upon which said wheel is mounted, of a sleeve loosely mounted

380,342.

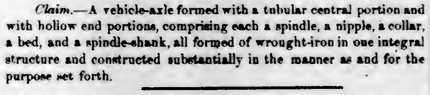


on said axle, wheels W W′ W², keyed to said sleeve, a collar, *y*, secured to said axle between the hub of the driving-wheel A and the said sleeve, and belts, as described, arranged to transmit motion to thrashing and elevating devices, substantially as described.

380,343. ALTERATIVE REMEDY. GEORGE M. PAINTER, Arcola, Mo. Filed Nov. 26, 1887. Serial No. 256,258. (No specimens.)

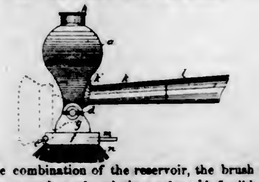
Claim.—A medical compound consisting of sarsaparilla, one ounce; nymphæa, one ounce; sanguinaria, one-sixteenth of an ounce; alcohol, seven ounces; water, nine ounces, as set forth.

380,344. VEHICLE-AXLE. ANDREW PATERSON, McKeesport, Pa., assignor to the National Tube Works Company, Boston, Mass. Filed Oct. 24, 1887. Serial No. 253,169. (No model.)



Claim.—A vehicle-axle formed with a tubular central portion and with hollow end portions, comprising each a spindle, a nipple, a collar, a bed, and a spindle-shank, all formed of wrought-iron in one integral structure and constructed substantially in the manner as and for the purpose set forth.

380,345. FOUNTAIN-BRUSH. JACOB A. PEARCE, Denver, Colo. Filed Aug. 26, 1887. Serial No. 247,902. (No model.)

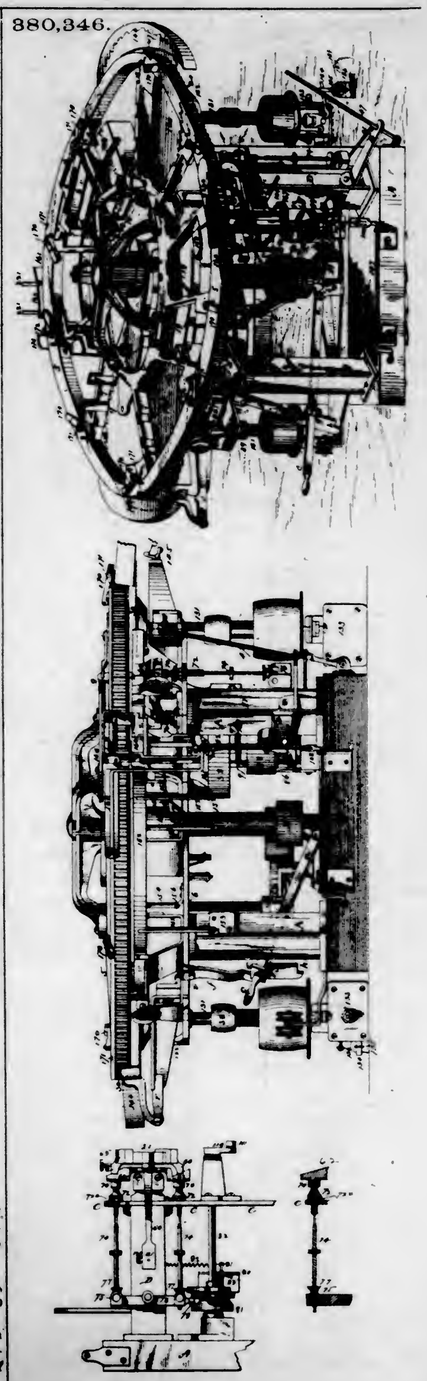


Claim.—The combination of the reservoir, the brush adjustably pivoted to the bottom thereof, and the perforated flexible pipe connecting with the reservoir and extending along and secured to one side of the brush-block, substantially as shown and described.

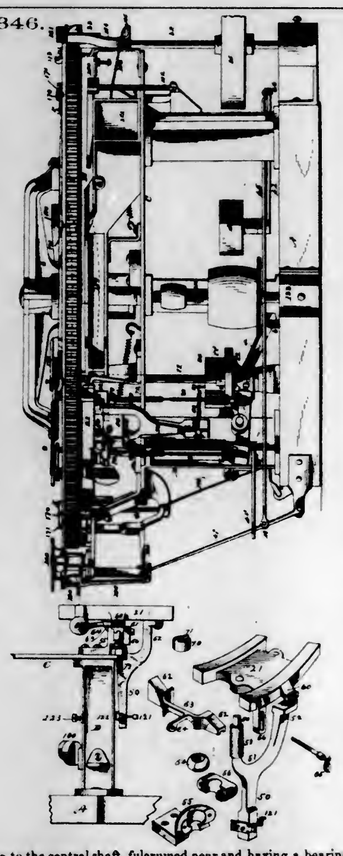
380,346. SHINGLE-SAWING MACHINE. WILLIS J. PERKINS, Grand Rapids, Mich. Filed June 20, 1887. Serial No. 242,264. (No model.)

Claim.—1. A shingle-sawing machine having saws mounted on vertical arbors and a rotary bolt-carriage supported on a central vertical shaft, in combination with a lever extending from the outside of

380,346.



380,346.



the frame to the central shaft, fulcrumed near and having a bearing on said shaft, whereby the shaft and carriage may be lifted to permit access of the saws, substantially as described.

2. The combination, with the rotary carriage and central vertical shaft of a shingle-sawing machine, of a lever formed of sections, the inner section fulcrumed near and engaging the central shaft of the carriage, and the outer section extensible beyond the outer portion of the frame of the machine, substantially as set forth.

3. The combination, with the rotary carriage of a shingle-sawing machine, of a central vertical supporting-shaft, a lever stepped under said shaft and extending outside the frame of the machine, and a swing-piece attached to the frame and adapted to engage said lever and hold it up or down, substantially as described.

4. The combination, with the rotating carriage of a shingle-sawing machine, of a dog near the periphery of said carriage, a bent arm pivotally connected at its outer end to said carriage and at its inner end bearing an anti-friction roll, a spring surrounding said arm, having an abutment on the carriage, and an adjustable abutment on the arm, whereby the pressure of the spring may be regulated, and a cam or incline on the frame against which the anti-friction roll has a bearing in the rotation of the carriage, substantially as described.

5. The combination, with the rotary carriage of a shingle-sawing machine, of a dog near the periphery thereof and guided in radial ways in said carriage, an arm connected to said dog and extending inwardly past the stationary dog toward the center of the carriage, a spring pressing said arm and dog inwardly, a cam-surface on the frame in position to press out the said arm during a portion of the revolution of the carriage, and a support for the inner end of said arm, substantially as described.

6. The combination, with the rotating carriage having a rack, of a shaft bearing a pinion engaging said rack, a pulley on said shaft, a counter-shaft toward the opposite side of the machine, having suitable pulleys and belt-connection to the pinion-shaft, a saw-shaft, and a belt-connection from said saw-shaft straddling the central arbor connecting to one of the pulleys on said counter-shaft, as set forth.

7. In a shingle-sawing machine, in combination, a horizontal saw, a tilt-table supported on a universal bearing, a pendent lever connected to said table, means for tilting the table longitudinally, and a shifter for operating the table laterally during the longitudinal movement, whereby the table is tilted longitudinally and laterally at the same time, substantially as described.

8. The combination, with the horizontal saws and rotary carriage of a shingle-sawing machine of the character described, of a tilt-table at each side of the machine, a train of mechanism by which either tilt-table may be tipped by power communicated from the rotary carriage, a handle near the operator's position, and connections, substantially as described, leading from the handle to each tilt-table, whereby the tilt-tables may be separately thrown into operation, as set forth.

9. The combination, with the rotating saws and carriage, of a tilt-table at each side of the machine, a train of mechanism, substantially as described, whereby each tilt-table may be separately actuated from the rotary carriage, a handle pivoted to the frame near the operator's position, a rod connecting said handle to the tilt-controlling catch at one side of the table, and a lever and controlling-catch connected to said rod, whereby the other tilt is actuated by moving the handle in reverse direction, as set forth.

10. The combination, in a shingle-sawing machine, of a tilt-table, an oscillating beam for rocking the same, a rotating cam engaging said beam, a power-driven rocker, and a clutch by which said rocker and cam may be thrown into connection.

11. The tilt-table and its walking-beam, the loosely-mounted cam, the rock-shaft and rocker-wheel fixed thereto, a clutch between the rocker and cam, and a holding-stop by which the rocker is held, so that the clutch cannot come into engagement.

12. The oscillating beam of the tilt-table engaging the race-cam, a rocker-wheel in proximity to the race-cam, having two stops thereon, and a detent in position to swing in front of one or the other of the stops of the rocker, the specified elements in combination, substantially as set forth.

13. The combination, with the tilt-table and its rocking beam, of the race-cam engaging said beam, the rock-shaft on which said cam is loosely mounted, having a rocker-wheel thereon provided with a series of stops, a clutch between the rocker-wheel and cam, and a plurality of detents in position to engage the stops on the rocker-wheel, and a handle on the frame near the operator's position by which said detents are operated, substantially as described.

14. The rotating carriage having block-receptacles and projections equal in number to the block-receptacles, the rock-shaft having an arm in position for engagement with each of these projections, a spring tending to rock said arm into position for engagement with said projections, and a detent which holds the spring under tension and the arm out of engagement, all combined, substantially as set forth.

15. The combination, with the rotating carriage, rock-shaft, and mechanism for throwing the shaft into engagement, as described, of the race-cam on said rock-shaft, a clutch whereby the shaft may be engaged to move the race-cam, and a stop fixed to the frame and engaging said race-cam to hold it (and the tilt-table) in fixed position at the extreme of movement of the table, substantially as described.

16. The combination, with the tilt-table and its oscillating beam, of the rock-shaft and race-cam thereon engaging said beam, the rocker-wheel, a catch on said wheel in position to engage the race-cam, and a pawl on the frame in position to engage the race-cam and to be lifted by the incline on the rocker-wheel, substantially as described.

17. The combination, with the tilt-table and its walking-beam, the race-cam engaging said beam, and the clutch-pawl and connecting mechanism, substantially as described, by which the race-cam is actuated from the rock-shaft, of a detent for operating the clutch-pawl the first time and having engagement with the race-cam for causing a second engagement of the clutch-pawl, substantially as set forth.

18. In a shingle-sawing machine, and in combination, a horizontal saw, a rotating carriage having block-receptacles, a tilt-table mounted on universal bearing beneath said carrier, mechanism for tilting said table in lateral direction, and a bearing on the frame against which a portion of the table is carried to produce a limited swing of the table in longitudinal direction.

19. The combination, with a rotating carriage and horizontal saw, of a tilt-table having automatic adjustment in all lateral directions, substantially as described.

20. The combination, with a rotary carriage and horizontal saws, of a tilt-table and mechanism for tilting the same, a rigid pendulous attachment to the tilt-table, and a bearing-surface on the frame, whereby the pendulum may be swing out of true, as set forth.

21. The combination, with a rotary carriage and horizontal saws, of a tilt-table having a rigid pendulous attachment, an adjustable piece on said attachment, and an adjustable bearing on the frame, against which said pendulum is supported.

22. The tilt-table supported on wedges having grooves on their lower surfaces, the inverted cups having splines entering said grooves, and the screw-collars and movable risers entering said cups, all the specified elements combined, substantially as stated.

23. The tilt-table guided by a universal bearing, a pendulum-lever fixed to the table and passing through said bearing, and an adjustable incline on said pendulum engaging a projection on the frame, all the specified elements in combination with mechanism for tilting the table, substantially as described.

24. The combination, with the frame and the rotating carriage and the movable piece for operating the tilt, of the operator's table in proximity to said carriage, a hinge connecting said operator's table to the frame, and an indicator on the table to show the position at which the tilt must be shifted.

25. In a shingle-sawing machine, the combination of a horizontal saw, a rotating carrier, a tilt-table mounted on universal bearing beneath the carrier, mechanism for rocking the tilt-table in lateral direction, and an adjustable bearing on the frame, against which part of the table is carried to produce limited longitudinal oscillation, as set forth.

26. In a shingle-sawing machine, the combination of the saw, the rotating carriage having bolt-receptacles which move over the saw, a bolt-supporting way consisting of two concentric circular tracks and two movable sections side by side and forming part of said tracks, adapted to be displaced from normal positions under the bolt.

27. The saw and carriage, substantially as described, the circular guideway, movable sections in and forming part of said guideway, supported on hinged posts, and lever mechanism connected to the posts, whereby the sections may be swung radially in opposite directions, all in combination, substantially as stated.

28. The combination, with the saw and carriage, arranged substantially as shown, of the circular supporting-way beneath the carriage, two movable sections forming part of said way, supported on hinged posts beneath the carriage, and a rod connecting one hinged post from one side of its pivot to the other post at the other side of its pivot, whereby the movable sections may be expanded radially to the table, but in opposite directions, substantially as described.

29. The combination, with the rotating carriage and its saw, arranged substantially as shown, of the circular way beneath the carriage, having a movable section, a movable bar outside the rotating carriage and connected to the movable section of the way, and a trip on the carriage adapted to be thrown into position to displace the movable track-section, as set forth.

30. The rotating carriage and saw, arranged substantially as described, the way beneath the carriage having a movable section, the movable bar outside the carriage connected to the movable section, the trip on the carriage, adapted to be thrown into position to engage the movable bar, and a stop on the frame in position to throw the trip out of operative position, substantially as described.

31. The combination, with a rotary carriage and a horizontal saw, of a block-supporting way consisting of two tracks, a section of each track in advance of the saw made movable, and a catch on the carriage in position to operate both tracks simultaneously, as set forth.

32. The combination, with the rotating carriage and a plurality of saws arranged substantially as described, of a way beneath the carriage, having a plurality of movable sections, and a trip on the carriage, adapted to be moved into position to actuate either movable section of the way, as set forth.

33. The combination, in a shingle-sawing machine, of a plurality of saws on opposite sides of the machine, a rotating table pivoted between said saws and having bolt-receptacles which move over the saws, a dog for each bolt-receptacle and inclines operating radially of the machine to operate said dogs, tilt-tables for each saw and inclines operating radially to change the same, and a way beneath the carriage, having movable sections arranged to be operated radially, and a pusher on the carriage, all substantially as shown and described.

34. The two saws arranged on vertical arbors at opposite sides of the machine, substantially as described, combined with the sawdust-spout for one saw, open at its side and covering an arc of the saw, and the sawdust-spout for the other saw, presenting its open end toward said saw, the two spouts uniting and extending to the side of the machine, substantially as described.

35. The combination, with a shingle-sawing machine, of a saw-arbor secured in vertical position at one side thereof, a bracket on the floor or support of the machine, a screw-bolt connected to the bearing-box of the saw-arbor and passing through said bracket, and set-nuts on said bolt in proximity to the bracket, substantially as described.

36. The combination, with a rotary saw, of a sawdust-spout having a movable section in proximity to the saw, substantially as described.

37. In a shingle-sawing machine, the rotating carriage, the tilt-table, adjunctive shifting mechanism, substantially as described, by which the tilt-table may be shifted by the movemeot of the carriage, a lever to throw said shifting mechanism into action, and a trip connected to the shifter and operating to disengage the same, so that the tilt is automatically restored to its first position, as set forth.

38. The combination, with the vertical saw-arbor having fixed collars, of a box fitting said collars and adjustable in a bridge-pot, and mechanism for holding said box and the arbor from rising.

39. The vertical saw-arbor and its fixed rings, the box fitting said rings, inclosed in a bridge-pot, a fork crossing said box above the rings, and mechanism for pressing down the fork, substantially as described.

40. The combination, with the vertical saw-arbor having fixed rings, of a box fitting said rings, a bridge-pot in which said box is adjustably inclosed, a fork crossing the dash-pot and bearing down the arbor-box, and a screw by which said fork may be depressed.

41. The combination, with the rotating carriage, of a fixed gage supported on the frame, by which the time for changing the position of the tilt-table is indicated.

42. The combination, with the rotating carriage, a plurality of tilt-tables, and a plurality of saws, of a series of gages supported on the frame for indicating the time to operate each tilt-table, substantially as described.

43. The combination, with the saw-carriage, of a wooden block furnishing a bearing for the same and an oil-retaining trough in which said block is seated.

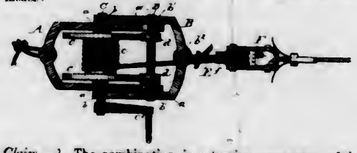
44. The combination, with the rotary saw-carriage, of lubricating-blocks supporting the rim of said carriage, a retaining-trough for each block, and an oil-cup communicating with the lower portion of the block, substantially as stated.

45. In combination, in a shingle-sawing machine, a series of block-receptacles grouped round a central axis, a movable dog at the outer side of each block-receptacle, a fixed dog at the inside of each block-receptacle, and an arm connected to the movable dog and extending inward past the fixed dog.

46. The combination, with a rotary carriage and horizontal saws, of a tilt-table having a simultaneous transverse and longitudinal movement, substantially as described.

47. In a shingle-sawing machine, a tilt-table, a carriage, and intermediate adjunctive mechanism by which the tilt-table is shifted by the carriage movement, a catch holding the table in its tilted position, and an abutting surface in position to disengage said catch, so that the tilt-table will be automatically restored to position, substantially as described.

380,347. TENSION APPARATUS. ELWOOD C. PHILLIPS, Richmond, Ind., assignor to Andrew Warren, St. Louis, Mo., and John W. March, Cincinnati, Ohio. Filed July 6, 1886. Serial No. 207,220. (No model.)



Claim.—1. The combination, in a tension apparatus, of the telescoping yokes, the windlass provided with friction-disks, the friction-brake, and the tension-rope, substantially as and for the purpose specified.

2. The combination, in a tension apparatus, of a shaft, a windlass mounted thereon and provided with friction-disks, a friction-brake, a yoke connected with the friction-brake and loosely connected with the shaft a yoke connected with the shaft and loosely connected with the friction-brake, a pulley, and a tension-rope, substantially as and for the purpose specified.

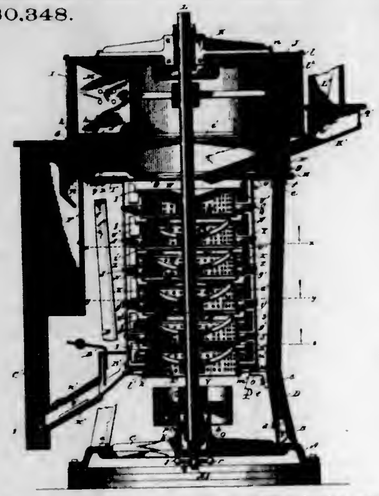
3. The combination, in a tension apparatus, of the yoke A, having slots *a* and *a'*, the yoke B, having openings *b* and slots *b'*, the windlass *c*, mounted upon shaft C and carrying friction-disks *c'*, the bar D, carrying friction-shoes *d* and pulley *f*, and the tension-rope E, substantially as and for the purpose described.

380,348. SMUT-MACHINE. FAUSTIN PRIEK, Milwaukee, Wis. Filed Oct. 14, 1886. Serial No. 216,253. (No model.)

Claim.—1. In a smut-machine, the combination, with a cleaning case or cylinder formed of upright bars with spaces between them, of a series of beaters having blades or wings decreasing in size from the upper to the lower portion of the case or cylinder, substantially as described.

2. In a smut-machine, the combination, with a cleaning case or cylinder, of a series of beaters gradually approaching nearer to the sides of the case or cylinder from the upper to the lower portion thereof and a series of pans interposed between upper and lower series of beaters, substantially as described.

380,348.



3. In a smut-machine, the combination, with a cleaning case or cylinder, of a series of beater blades or wings arranged one above the other, the upper series being farther removed from the sides of the case than the lower series, substantially as described.

4. In a smut-machine, the combination of a cleaning case or cylinder, a series of beater blades or wings arranged one above the other within the case or cylinder and approaching the sides of the case or cylinder from the upper to the lower portion thereof, a jacket or wall back of the front edges of one or more sets of blades and nearer to the wall of the cylinder at the lower than at the upper portion, and downwardly-inclined check plates or pans interposed between the sets of said blades or wings, substantially as described.

5. In a smut-machine, the combination of a cleaning case or cylinder, a series of beater blades or wings arranged one above the other within the case or cylinder, and revolving plates interposed between the said blades or wings to receive the grain on its passage down the series of beaters, the said blades or wings extending above and below the plane of each plate, substantially as described.

6. In a smut-machine, the combination of a cleaning case or cylinder, of a series of beater-blades arranged one above the other within the case or cylinder, and revolving plates interposed between said blades or wings to receive the grain on its passage down the series of beaters and each provided with a flange to prevent the grain passing over one edge of the plate, the said beater-blades projecting above and below the plane of each plate, substantially as described.

7. In a smut-machine, the combination of a cleaning case or cylinder, a series of beater blades or wings arranged one above the other within the case or cylinder, downwardly and inwardly inclined check plates or pans interposed between said blades or wings, and revolving plates onto which the grain is delivered from the inclined plates or pans, said blades or wings projecting above and below the plane of said revolving plates, substantially as described.

8. In a smut-machine, the combination of a cleaning case or cylinder, a series of beater blades or wings, revolving plates to receive the grain on its passage from the upper to the lower portion of the case or cylinder, and a stationary perforated drum or guard between the revolving plates to prevent the passage of the grain to the center of the case or cylinder, substantially as described.

9. In a smut-machine, the combination of a cleaning case or cylinder, a series of beater blades or wings within the case or cylinder, jackets around the inner edges of the blades or wings to limit the rebounding of the grain between said jackets and side of the case or cylinder, and a series of pans projecting inwardly from the cylinder and between said jackets, substantially as described.

10. In a smut-machine, the combination of a cleaning case or cylinder, a series of beater blades or wings within the case or cylinder, perforated jackets around the inner edges of the blades or wings to limit the rebounding of the grain between said jackets and side of the case or cylinder and permit the passage of air from the interior of the cylinder through said jackets, and pans projecting inwardly from the casing between said jackets, substantially as described.

11. In a smut-machine, the combination of a cleaning case or cylinder, a series of beater blades or wings within the case or cylinder, jackets around the inner edges of the blades or wings to limit the rebounding of the grain between said jackets and side of the case or cylinder, and a brush to remove adhering substances from said jacket, substantially as described.

12. In a smut-machine, the combination of a cleaning case or cylinder, an adjustable shaft carrying a series of revolving plates and beaters, a fixed annular plate or ring at the lower end of the case or cylinder, and a drum or shield around the inner periphery of the fixed plate or ring and vertically adjustable between it and the lower revolving plate, substantially as and for the purpose set forth.

13. In a smut-machine, a cleaning case or cylinder composed of a top and bottom plate, each formed with an offset and a recess or notch in its periphery, a series of upright bars or rods fitting said offsets, and cords binding said rods or bars together and fitting in said notches or recesses, substantially as and for the purpose set forth.

14. In a smut-machine, a cleaning case or cylinder composed of top and bottom plates, upright bars bearing against said plates, a series of bars or rods bound together in sections by cords, a section being fitted between each two upright bars, and bands passed around said sections and uprights and connected together at their ends to clamp said parts together, substantially as described.

15. In a smut-machine, the combination of a cleaning case or cylinder composed in part of upright bars or rods connected together by binding-cords, and a series of plates or pans located within the case or cylinder and formed with recesses to receive said binding-cords, substantially as described.

16. In a smut-machine, the combination of a cleaning case or cylinder composed in part of upright bars, a series of upright bars or rods connected together in sections by binding-cords, each section fitted between said first-named upright bars, and plates or pans within the case or cylinder connected to said first-named bars and formed with recesses to receive the binding-cords, substantially as described.

17. The combination, with a series of upright bars or rods connected together by binding-cords to form the cleaning case or cylinder of a smut-machine, of a protecting-covering for said binding-cords, substantially as described.

18. In a smut-machine, the combination of a cleaning case or cylinder having an inlet for air at its lower portion, a shaft passing through the same and carrying a series of beaters, a receiving-plate within the case or cylinder at the upper end thereof, a combined grain and air feeding spout having an inlet for air and one for the grain and opening into the case or cylinder to deliver to the top receiving-plate, whereby said spout may be less inclined and air admitted to assist the flow of the grain, and a fan to create an air-current through the case or cylinder, substantially as described.

19. The combination, with the upright bars D, sectional sides N^3, and drum F, of the annular plate E, connecting said bars together at their upper ends and interposed between them and said drum to form a base for said drum, and in connection with said uprights a frame in which said sectional sides may fit, substantially as described.

20. In a smut-machine, the combination of the plate E, formed with flange *g*, drum F, resting thereon, plate G, formed with opening *i* and having flange *h* on its under face, fitting inside of drum F, and flange *k* on its upper face, drum I, resting on plate G and fitting around flange *k*, and the plate J, resting upon drum I and having flange *l* fitting inside of said drum, substantially as and for the purpose set forth.

21. In a smut-machine, the combination of the base formed with upwardly-extending lugs, the upright channeled bars resting upon said base and having said lugs fitting in the channels of the bars, the top plate formed with lugs fitting in the channels of the bars, and bolts passing through the lugs and bars to secure the parts together, the said parts forming a portion of the frame of the machine, substantially as described.

22. In a smut-machine, the combination, with the cleaning case or cylinder, of an exterior inclosing-casing composed of upright bars diverging outwardly from their lower portions upwardly, sectional sides fitting in between said bars and secured thereto, the bars and sides forming a casing having a wall diverging from its lower end upwardly to form a space around the cleaning case or cylinder, enlarging from the bottom to the top of the case, and a shaft carrying a series of beaters within the cleaning-case, arranged one above the other and decreasing in size from the upper to the lower end of the casing, substantially as and for the purposes described.

23. The combination, with the circular bars or rods formed with notches, of binding-cords securing said bars or rods together and lying in the notches of the bars or rods to keep them from turning, substantially as described.

380,349. RUBBER STAMP. EDWIN REYNOLDS, Providence, R. I. Filed Apr. 15, 1886. Serial No. 199,034. (No model.)

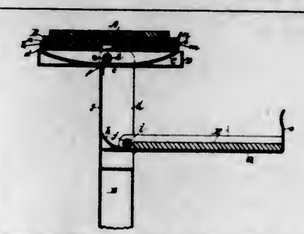
Claim.—1. The die-plate for rubber stamps, provided at one end with a projecting lip and at the other with a projecting pin, substantially as and for the purpose specified.

2. The combination of the die-plate, provided at one end with a projecting lip and at the opposite end with a projecting pin, with the holding-spring, provided at one end with a hook adapted for engagement with the groove or projecting lip of the die-plate and at the opposite end with a perforation adapted to receive the projecting pin, and the holding box or support for the spring, substantially as described.

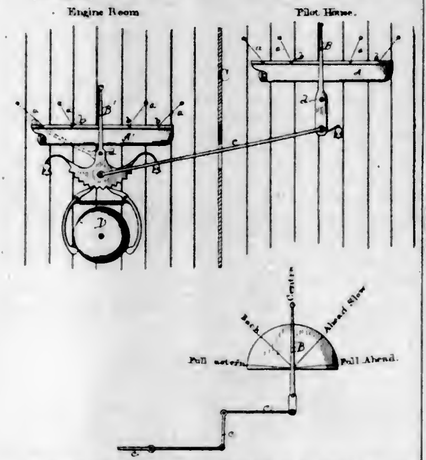
3. The combination of the removable die-plate, a supporting and holding spring, the box for holding the same, and the inking-pad box connected to the die-holding box, substantially as described.

4. The combination of the removable die-plate, its supporting and holding spring, the box for holding the same, pivoted to the hollow shank of an extension or handle, and the inking-pad box, also pivoted to the hollow shank and adapted for folding engagement with the die-holding box, substantially as described.

380,349.



380,350. PILOT'S AND ENGINEER'S SIGNAL FOR STEAMBOATS. CYRENIUS C. ROE, Wales, N. Y. Filed Dec. 22, 1887. Serial No. 258,648. (No model.)

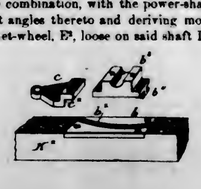


Claim.—1. The dial-boats A A', one placed in the pilot-house and the other in the engine-room of a steamboat, the bow of the dial-boat indicating the bow of the steamer, the two lever-indicators B B', pivoted in front of the dial-boats and connected by rods c, so that when one lever-indicator is moved the other lever-indicator is moved simultaneously in the same direction, and in combination with an alarm, all substantially as specified.

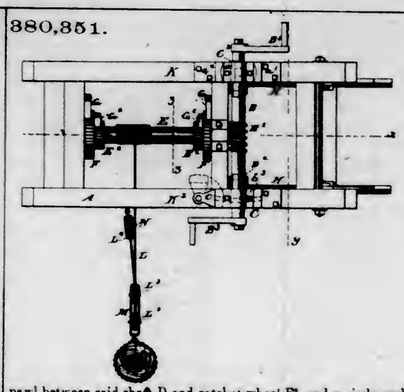
2. The two lever-indicators B B', suitably connected together, the dial-boats A A', one set in the pilot-house and the other in the engine-room, placed in connection therewith, and having notches *b b* and pointers *a a*, and all in combination with bells, gongs, or other suitable alarms, all substantially as and for the purpose specified.

380,351. STUMP-EXTRACTOR. OTTO F. R. ROLAPP, Fulton, Ky. Filed Nov. 8, 1887. Serial No. 254,609. (No model.)

Claim.—1. The combination, with the power-shaft B, of a shaft, D, arranged at right angles thereto and deriving motion therefrom, and a winding ratchet-wheel, E^2, loose on said shaft D, a ratchet and pawl between said shaft D and ratchet-wheel E^2, and an independent ratchet and pawl between the shaft and the frame of the machine, substantially as and for the purpose described.



380,351.

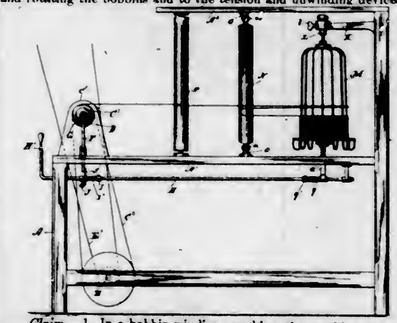


2. The combination, with the frame A, the shaft D, worm-wheel D^2, the shaft B, and worm B^2, of the spool E, loose on the shaft D and carrying the ratchet-wheel E^2, the ratchet-wheel F, fast on said shaft, and the pawl G on the frame engaging the ratchet-wheel F and engaging the ratchet-wheel E^2, all substantially as described, and for the purpose specified.

3. The combination, with the frame and the plate *b*, fixedly attached thereto, and provided with curved recess b^2, T-shaped in cross-section, as described, of the sectional journal-box C, provided upon its lower face with an extension to engage the recess b^2 in the plate, and a pivoted bearing on the opposite side of the frame, substantially as described.

380,352. BOBBIN-WINDING MACHINE. CHARLES R. RUMSEY, Homer, N. Y., assignor to the Wire Fabric Company, same place. Filed Aug. 5, 1887. Serial No. 246,206. (No model.)

Brief.—The object of the invention is to provide an improved machine for winding wire directly from the reel upon the bobbin, for use in the loom, &c., and relates particularly to the devices for holding and rotating the bobbins and to the tension and unwinding devices.



Claim.—1. In a bobbin-winding machine, the combination, with the rotating shaft having the friction-disk thereon, of the pivoted arm having the stud adapted to enter and support the bobbin and to sustain the latter when said arm is turned away from the friction-disk and the disk or collar, and arranged when turned on its pivot in one direction to bring the end of the bobbin into contact with the disk on the rotating shaft and when in the other direction to disengage the bobbin and support it, substantially as described.

2. In a bobbin-winding machine, the combination, with the rotating shaft having the friction-disk, of the pivoted arms for carrying the bobbin, having the stud and disk thereon, the lever connected to said arm for turning it, and the spring interposed in said connection, substantially as described.

3. In a bobbin-winding machine, the combination, with the rotating shaft having the friction-disk thereon, of the pivoted arm for carrying the bobbin, having the stud and disk, a shaft, the lever connected to the shaft, and an arm sleeved on said shaft and connected therewith by a spring and also connected to the pivoted arm carrying the bobbin, substantially as described.

4. The combination, with the reel, of a slightly-inclined unwinding-roller, and springs in which said roller has its bearings, substantially as described.

5. The combination, with the reel, of the slightly-inclined unwinding-roller, the springs on which it is supported, and the roller having its axis parallel with that of the reel, substantially as described.

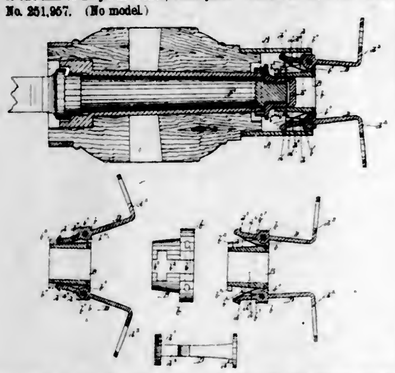
6. The combination, with the reel carrying the material, of a rotating shaft from which the bobbin is adapted to be rotated, devices for throwing the bobbin into rotation and disconnecting it, a brake adapted to be applied to the reel, and connections between the bobbin connecting and disconnecting devices and the brake, whereby when the bobbin is connected for rotation the brake is off the reel, and vice versa, as set forth.

7. The combination, with the normally rotating shaft with which the bobbin is adapted to be engaged, and devices for throwing it into and out of engagement therewith, of the reel containing the material to be wound on the bobbin, a brake adapted to be applied to the reel to stop its rotation, and connections between the bobbin engaging and disengaging devices, and the reel-brake, whereby when the bobbin is engaged with the shaft the brake will be removed, and vice versa, substantially as described.

8. The combination, with a rotating shaft with which the bobbin is adapted to be engaged, and devices for throwing it into and out of engagement therewith, of a reel containing the material to be wound upon the bobbin, a brake adapted to be applied thereto, and a shaft provided with a handle for operating it, to which the bobbin engaging and disengaging devices and the brake are connected on opposite sides through the medium of springs, whereby when the shaft is turned in one direction the bobbin will be held in engagement by spring-pressure and the brake released, but when in the opposite direction the brake will be applied by spring-pressure and the bobbin moved out of engagement, substantially as described.

9. The combination, with the rotating shaft having the disk, the pivoted arm having the stud and disk thereon, of the reel, unwinding and guide rollers, the shaft having the handle, the brake for operating on the reel connected thereto by a spring, and the spring-connection between the pivoted arm carrying the bobbin and the shaft, substantially as described.

380,353. WRENCH. HENRY M. RYDER, Taunton, Mass., assignor of one-half to Lloyd E. White, same place. Filed Oct. 10, 1887. Serial No. 251,967. (No model.)



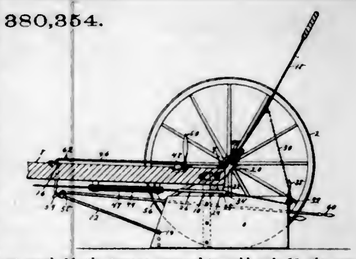
Claim.—The combination of a hub having an annular slotted flange upon the inside, and a wrench composed of a head formed with a diminished socket portion to pass inside the flange and fit over the nut, and spring-jaws with levers pivoted in the side of the head, the jaws being formed with a neck to fit in the slots of the flange, and a cross-piece on the end having a shoulder or clutch, so that when the wrench is fitted on the nut and the wheel is partially rotated to bring the necks of the jaws against the slots in the flange the springs will throw the necks into the slots and lock the wrench, nut, and hub together, substantially as described.

380,354. WHEEL-SCRAPER. CHARLES H. SAWYER, Minneapolis, Minn., assignor of one-half to H. A. Smith, same place. Filed Nov. 30, 1887. Serial No. 256,487. (No model.)

Claim.—1. The combination, in a wheeled scraper, with the wheels 2, of the axle provided with the cranks or offsets 9 and with the independent crank 11, the tongue secured to said crank 11, and the pan suspended upon said axle and provided with a bail connecting with said tongue, substantially as and for the purpose set forth.

2. The combination, in a wheeled scraper, with the wheels 2, of the axle provided with the cranks or offsets 9 and with the independent crank 11, the tongue secured to said axle 11, the pan suspended from said axle, the bail pivoted to said pan and connected with said tongue, and the lever 18, secured to said axle and adapted to be fastened to said pan and hold it in an elevated position, substantially as described.

380,354.



3. The combination, in a wheeled scraper, with the wheels 2, the tongue, and the axle provided with the cranks, of the pan suspended upon said axle and provided with the roll 32, the raising-lever 18, attached to said axle, the snatch-bar 26, and the chain connected with said snatch-bar passing under said roll 32 and connected with said lever 18, substantially as described.

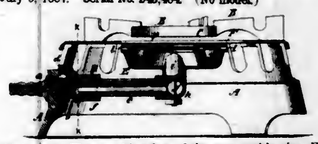
4. The combination, in a wheeled scraper, with the axle and the tongue secured thereto, of the pan suspended from said axle, the raising-lever 18, secured to said axle, the snatch-bar 26, provided with a hook adapted to engage a projection from said tongue, a tripping lever adapted to disengage said snatch-bar, and a chain connecting said snatch-bar with said raising-lever, substantially as described.

5. The combination, in a wheeled scraper, with the axle and the tongue secured thereto, of the pan suspended from said axle, the wheels 2, provided with the pinions 54, the bail 12, connected with said pan and extending over said tongue, and the rack-bars 56, connecting with said bail and adapted to be raised and brought into engagement with said pinions 54, substantially as described.

6. The combination, in a wheeled scraper, with the tongue provided with the recess 48, the axle, and wheels 2, of the pan suspended from said axle and provided with the bail 12, extending over said tongue and adapted to slide longitudinally thereon, the guard 46, arranged on said tongue, and the lever 50, all substantially as described.

7. The combination, with the scraper suspended upon the axle 4, of the raising-lever 18, the bell 42, the catch 38, the scratch-bar 26, and the chain 30, whereby said bell is sounded when the lever is drawn under the catch, substantially as described.

380,355. GAS-STOVE. JAMES L. SHARP, New York, N. Y. Filed July 6, 1887. Serial No. 243,484. (No model.)



Claim.—1. The combination of the removable ring F, having the rows $l^1 l^2$ of teeth on its outer and inner edges, respectively, the gutter E, having plain upper edges carrying said ring, the two branches i i on pipe h, which enter the gutter E on opposite sides, bolts j j, that pass through the ring F, through the branches i i, and through the pipe h, and the pipes e and h, substantially as described.

2. The tube D, having side opening, b, and perforated sleeve d, combined with the pipe e and nipple a, all arranged so that air may enter the pipe e through the perforated sleeve d, while the gas enters it from the nipple a.

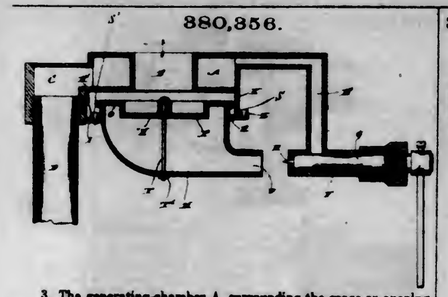
3. The stove-body A, having inwardly-projecting partial tube D, combined with the cap f, which completes the tube D, and with the nipple a, extending outward, and pipe e, extending inward, from said tube D, as specified.

380,356. VAPOR-BURNER. CHARLES H. SHULTZ, St. Joseph, Mo. Filed May 16, 1887. Serial No. 238,349. (No model.)

Claim.—1. The combination, in a vaper-burner, of the generating-chamber A, surrounding the vertical space or opening B, and the combined mixing-chamber and burner-head arranged under the generating-chamber, the said mixing-chamber and burner-head having the oil-cup P formed in the top of its cap, substantially as described.

2. The burner-head having its cap formed with a depressed top, which provides a receptacle for oil to start the generation of vapor, in combination with the generating-chamber arranged over the burner-head, substantially as described.

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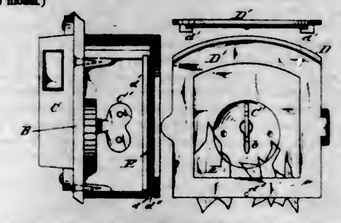


3. The generating-chamber A, surrounding the space or opening B, which is open from top to bottom throughout, combined with the burner-head M, arranged vertically below the generator and separate and distinct from the same, the bottom of the generator-chamber and the top of the burner-head being separated from each other by an intervening space, so that the free draft of air is allowed up the opening B to assist combustion, said burner-head having openings O in the top, which openings are adapted to direct jets of flame against the bottom of the generator-chamber.

4. In combination with the generating-chamber A, the burner having its cap or top provided with the depressed portion forming the oil-cup, and the series of openings O in the cap outside the oil-cup, said openings O being arranged directly below the bottom of the chamber A, as set forth.

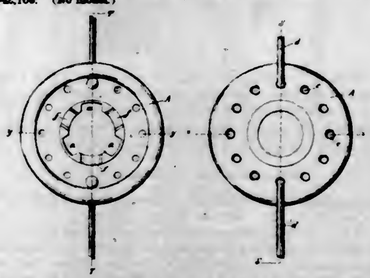
5. In a vapor-burner, the generating-chamber A, surrounding a central air space or opening, combined with the burner arranged below and out of contact with the under side of the generating-chamber, so that the burner will not close the central opening or space, but the latter will be entirely open at the top and bottom for the passage of air upward, as and for the purpose set forth.

380,357. KEY-HOLE GUARD FOR FIRE-ALARM SIGNAL-BOXES. HENRY SMITH, Buffalo, N. Y. Filed Dec. 23, 1887. Serial No. 258,689 (No model.)



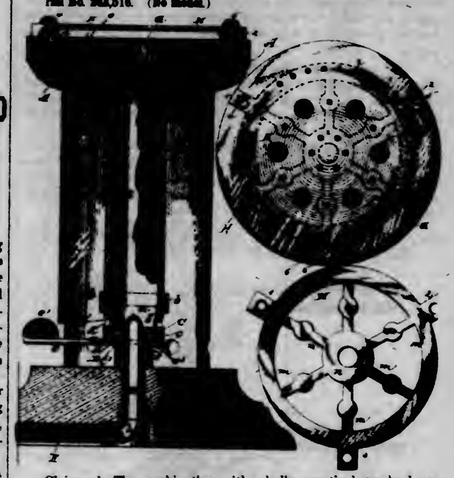
Claim.—The improved key-hole guard for fire-alarm boxes hereinbefore described, consisting of the casing D, having the recess d, and the door D', provided with the flanged strips d', the pin d'', and the frangible panel E, substantially as described.

380,358. WHEEL. WILLARD A. SMITH and IRVING A. WESTON, Syracuse, N. Y.; said Smith assignor to said Irving A. Weston, and Henry D. Weston, Jamesville, N. Y. Filed June 22, 1887. Serial No. 242,109. (No model.)



Claim.—In a suspension-wheel, spoke-disks for receiving the ends of the spokes provided with bell-mouthed perforations to receive the draw of the spokes, all substantially as shown, and for the purpose set forth.

380,359. GASEOUS-FUEL BURNER. WILLIAM T. SMITH, GEORGE A. REY, and THOMAS A. RYAN, Baltimore, Md. Filed July 6, 1887. Serial No. 243,516. (No model.)



Claim.—1. The combination, with a hollow vertical standard, an enlarged mixing-chamber communicating with the upper end of the standard, and an adjustable air-gate for closing or regulating the size of air-inlet openings in said standard, of a jet-plate located above the mixing-chamber, a deflector-ring above the jet-plate, and a gas-inlet nozzle discharging into the standard, substantially as set forth.

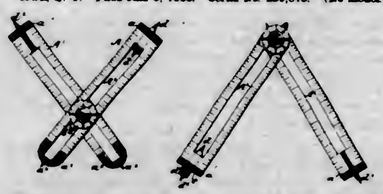
2. The combination, with a hollow vertical standard and a diametrically-enlarged mixing-chamber communicating with the standard and having a flat upper edge, a jet-plate located over the mixing-chamber and provided with a series of jet-holes, and a deflector-ring placed above the jet-holes, of a gas-inlet nozzle discharging into the standard, and a ring embracing the standard and having a series of holes adapted to register with a series of holes in the standard, substantially as set forth.

3. The combination, with a gas-mixing chamber carrying a jet-plate and a deflector-ring located above the jet-plate, of a hollow standard communicating with the mixing-chamber, a gas-jet nozzle discharging into the base of the standard, and a ring embracing the standard at a point near the discharge end of the nozzle and provided with a series of holes registering with holes in the standard, substantially as set forth.

4. The combination, with a casing, of a hollow standard therein, a mixing-chamber communicating with the upper end of the standard, and tubes passing through the mixing-chamber for conveying the heated air in the space between the casing and standard up to a point above the mixing-chamber, substantially as set forth.

5. The combination, with the outer casing, the inner hollow standard, the mixing-chamber communicating with the standard, and the tubes for conveying the air from the space between the standard and outer casing up to a point above the mixing-chamber, of the gas-jet nozzle discharging into the standard, and the ring embracing the standard and having holes adapted to register with holes in the standard, substantially as set forth.

380,360. COMBINED RULE, SQUARE, BEVEL, CALIPERS, DIVIDERS, &c. JAMES C. SPENCER, Rochester, and JAMES G. SMITH, Jamestown, N. Y. Filed Jan. 5, 1888. Serial No. 259,873. (No model.)



Claim.—1. A multiple tool consisting of the two graduated parts A A', slotted longitudinally, provided with stationary spurs at one end and at the other end with sliding spurs, and a pivot-bolt adjustably uniting these parts, substantially as and for the purpose described.

2. In a multiple tool, the combination of two graduated parts, A A′, slotted longitudinally, a pivot-bolt adjustably uniting them, sliding spurs having transverse grooves therein, and pivoted fingers engaging with said grooves and adapted to stand at right angle with the face of said parts A A′, substantially as and for the purpose described.

3. In a multiple tool, the combination of two graduated parts, A A′, slotted longitudinally, a pivot-bolt adjustably uniting them, a graduated washer and index upon said bolt, sliding spurs in the ends, and pivoted fingers to retain said spurs, substantially as and for the purpose described.

4. In a multiple tool, the combination of two graduated parts, A A′, slotted longitudinally, a pivot-bolt adjustably uniting them, and upon said bolt washers provided with tongues, a shield projecting from one of said tongues, and stationary spurs upon the ends of said parts A A′, substantially as and for the purpose described.

380,361. REVOLVER. William H. Sprague, Jamestown, N. Y.

Filed Mar. 3, 1886. Serial No. 193,863. (No model.)



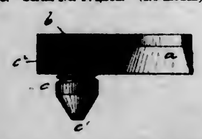
Claim.—1. In a fire-arm, a cylinder or load-receiver located within the handle or breech of said arm, and having its axis at an angle to the line of delivery of the projectile from the muzzle, and hinged to the frame at the breech of the barrel, in combination with a barrel having a curved and a straight section, substantially as and for the purpose described.

2. In a fire-arm, the combination of a barrel having a downward curve at its breech, with its supporting-frame, a semicircular shell hinged to said frame at the breech of the barrel, and a cylinder or load-receiver secured to said shell and moved therewith so as to bring a shell-holding chamber in alignment with the said barrel, substantially as and for the purpose described.

3. The combination of a pistol-barrel having a downward curve at its breech, its supporting-frame, and a shell hinged to said frame at the rear of the barrel, with a load-receiver located within the handle of said pistol and borne by the hinged shell, substantially as and for the purpose described.

380,362. HORSESHOE-CALK. Samuel Stowe, North Manchester, Conn., assignor to the Neverslip Horse Shoe Company, Boston, Mass.

Filed Aug. 13, 1886. Serial No. 174,362. (No model.)

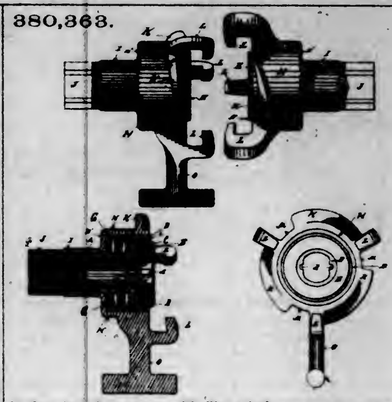


Claim.—In combination with a horseshoe having a threaded calk-socket with the top of the thread substantially equidistant from the axis of the socket, and the bottom of the thread at a gradually-decreasing distance from the axis in passing from the lower to the upper side of the shoe, a removable calk having a cylindrical stem with a thread of substantially equal height throughout its length, as and for the purpose set forth.

380,363. PIPE OR HOSE COUPLING. John C. Stunkard, Erie, Pa.

Filed May 16, 1887. Serial No. 238,411. (No model.)

Claim.—1. The combination, in a pipe or hose coupling, of a nipple adapted to be secured to a pipe or hose, provided with a collar on the outer end thereof, and a spring around said nipple back of said collar, with a coupling-head inclosing said spring and collar and rotating on said nipple, having spiral cams on the periphery thereof, and



hooks adapted to engage with like spiral cams on a corresponding coupling-head, substantially as and for the purpose set forth.

2. The combination, in a pipe or hose-coupling, of a nipple adapted to be secured to a pipe or hose, having a collar on the outer end thereof and elastic packing in the outer end of said collar, with a spiral spring encircling said nipple back of the collar, and a coupling-head inclosing said spring and collar and rotating on said nipple, having three spiral cams on the periphery thereof, and three hooks equidistant from each other adapted to engage with like cams on a duplicate coupling-head, substantially as and for the purpose set forth.

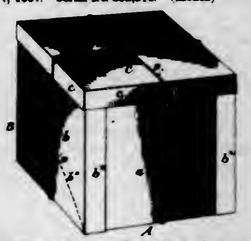
3. The combination, in a pipe or hose coupling, of the nipple A, having the collar B on the outer end thereof, and the removable packing-shell D in the end of said collar, with the spiral spring G, and the rotating coupling-head H, inclosing said spring and collar and having the cams K K K and the hooks L L L thereon, substantially as and for the purpose set forth.

4. The combination, in the rotary coupling-head of a pipe or hose coupling, of the chamber adapted to inclose the spring G and collar B, and the sleeve I on the inner end thereof, with the spiral cams K and the hooks L, substantially as and for the purpose set forth.

5. The combination, in a pipe of hose coupling, of two like rotating coupling-heads H H, each having sleeves I thereon, the spiral cams K, having notches N therein, and the hooks L, with the spiral springs G, inclosed within said coupling-heads and operating thereon to retain the hooks L of each of said coupling-heads in the notches N in the cams on the other and corresponding head when the two heads are coupled together, substantially as and for the purpose set forth.

380,364. FOLDING HAT-BOX. Susan R. Surles, Chipley, Ga.

Filed Oct. 17, 1887. Serial No. 252,518. (Model.)



Claim.—1. A paper box made of four pieces, A B B C, each having laps and folds, substantially as shown and described.

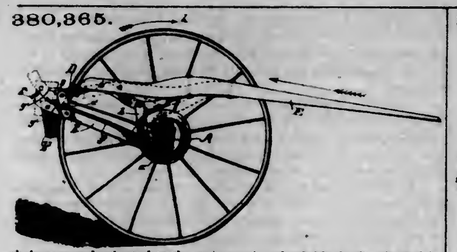
2. A paper-box bottom consisting of two plies, the ply *a′* being integral with the opposite sides *a a*, and the two-part ply *b′ b′* being integral with the opposite sides *b b*, substantially as shown and described.

380,365. VEHICLE-BRAKE. Thomas J. Thibodo, Godwin, Texas.

Filed Sept. 30, 1887. Serial No. 251,116. (No model.)

Claim.—1. In combination with the front running-gear of a vehicle drawn by shafts, the combination of the clips *a a′*, secured to the axle A, levers *b*, pivoted in clips *a*, draw-bars *b′*, their front ends pivoted to the lower end of the lever *b*, their rear ends pivoted to the lower ends of the straps *c c′*, straps *c c′*, pivoted to said bars at their lower ends, straps D, pivoted in the upper ends of said straps *c c′* and to levers *b*, braces *f*, their front ends secured to the clips *a′* and

380,365.

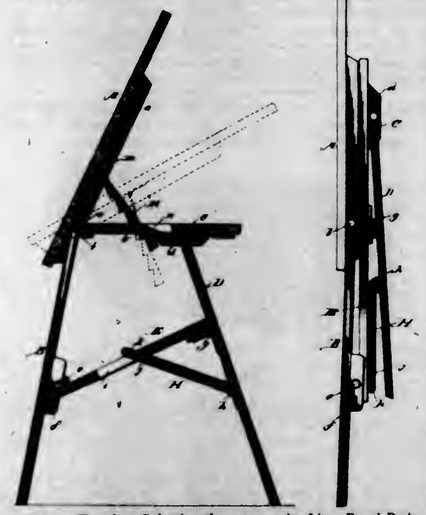


their rear ends pivoted to the straps *c c′*, and rub-blocks *b²*, pivoted in the rear ends of said draw-bars *b′*, substantially as shown and described, and for the purposes set forth.

2. In combination with the front running-gear of a vehicle drawn by shafts, the combination of the clips *a a′*, secured to the axle A, levers *b*, pivoted in clips *a*, draw-bars *b′*, their front ends pivoted to the lower end of the lever *b*, their rear ends pivoted to the lower ends of the straps *c c′*, straps *c c′*, pivoted to said bars at their lower ends, straps D, pivoted in the upper ends of said straps *c c′* and to levers *b*, braces *f*, their front ends secured to the clips *a′* and their rear ends pivoted to the straps *c c′*, rub-blocks *b²*, pivoted in the rear ends of said draw-bars *b′*, and ratchets *g*, hinged or pivoted to straps D and adapted to catch in the ratchet-notches *g′* in the rear ends of said draw-bars, substantially as shown and described, and for the purposes set forth.

3. In a buggy-brake, substantially as above described, in combination with the shafts E, straps D, levers *b*, straps *c c′*, and draw-bars *b′*, rub-blocks *b²*, said rub-blocks being wedge-shaped, their inner face adapted to the circumference of the buggy-wheels, their pivotal point being near their upper ends and outer corners, so that when the wheels turn back the lower end of said rub-blocks will fly back, thus leaving the wheel free to move backward, substantially as shown and described, and for the purposes set forth.

380,366. FOLDING TABLE AND BLACKBOARD COMBINED. Ferdinand Trapp, Chicago, Ill. Filed Oct. 14, 1887. Serial No. 252,673 (No model.)

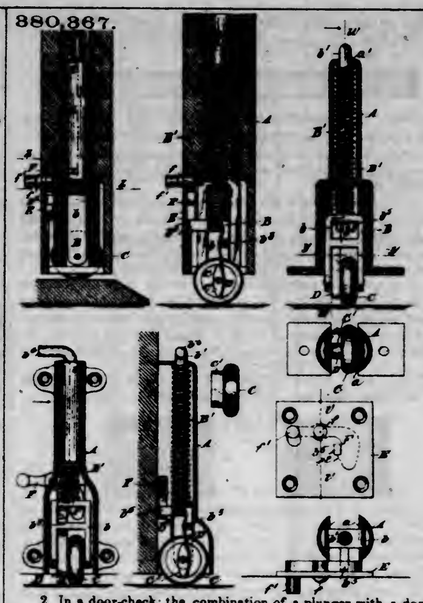


Claim.—The plate C, having the upper ends of legs B and D pivotally connected to it, the plate E, pivotally connected at its opposite edges to legs B and D at about mid-height thereof, the brace-rod H, pivotally connected to leg D and engaging with a slot in plate E, and blackboard A, pivotally connected with legs B and provided with pivotal ratchet-bar M, engaging with a pin in plate C, all substantially as described, for the purpose specified.

380,367. DOOR-CHECK. Ben. Tyrer, Chicago, Ill. Filed Aug. 8, 1887. Serial No. 246,602. (No model.)

Claim.—1. In a door-check, the combination of a roller having a cam on one side with a spring attached to the frame and bearing against the cam, so as to permit of rotation under considerable pressure.

380,367.



2. In a door-check, the combination of a plunger with a downwardly-pressing spring thereto attached, a roller journaled on the end of said plunger and provided with a cam on one side, and a spring secured to the frame and adapted to bear against said cam to permit of rotation of the roller under pressure.

3. In a door-check, the combination of a vertically-reciprocating plunger having a side lug with a pivoted weighted catch-lug whereby the plunger may be caught and held in an elevated position.

4. In a door-check, the combination of a vertically-reciprocating plunger with a spring which forces it downward, a lug in the side of said plunger, and a catch-lug on the door, whereby the plunger may be locked in an elevated position.

380,368. ORDNANCE. Charles M. Van Tine, Matteawan, N. Y.

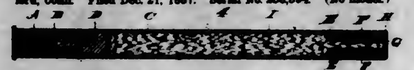
Filed Apr. 12, 1887. Serial No. 234,550. (No model.)



Claim.—1. A piece of ordnance or fire-arm having a tube connected by two openings with the bore for firing successively directly in the bore two charges of the material used to produce the propelling force, the charge nearest the projectile being first fired, which charges are separated by a wad in any known suitable manner, the forward opening of the tube into the bore being at a place which it is determined the projectile and wad at its base shall have just passed when the first charge has been fired, before the supplemental charge with which the tube is connected shall be fired, and the rear opening into the bore being at a place nearer the breech and where it can be connected with the supplemental charge, and mechanism for firing the first charge, all substantially as shown, for the purposes specified.

2. A piece of ordnance or fire-arm having two or more tubes, each connected by two openings with the bore, for firing successively directly in the bore three or more (according to the number of tubes) charges of the material used to produce the propelling force, the charge nearest the projectile being first fired, which charges are separated by wads in any known suitable manner, the forward opening of each tube into the bore being at a place which it is determined the projectile and wad at its base shall have just passed when the first charge has been fired, before the supplemental charge with which the tube is connected shall be fired, and the rear opening into the bore being at a place nearer the breech and where it can be connected with a supplemental charge to be fired by it, the tubes having their front openings nearest the first charge to have their rear openings farthest from the breech, and mechanism for firing the first charge, all substantially as shown, for the purposes specified.

380,369. SEA-OILING CARTRIDGE. ALBERT H. WALKER, Hartford, Conn. Filed Dec. 21, 1887. Serial No. 258,594. (No model.)

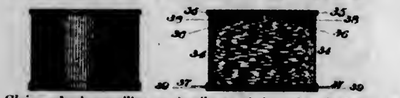


Claim.—1. A sea-oiling cartridge consisting of the shell A, containing powder in the rearward part of its interior, and the shell C, containing oil and provided with the forward opening, G, and entirely inclosed within the forward part of the interior of the shell A, all substantially as described.

2. A sea-oiling cartridge consisting of the shell A, containing powder in the rearward part of its interior, and the shell C, containing oil and provided with the opening G, and entirely inclosed in the forward part of the interior of the shell A, and provided with the block D, to sink it in the sea, all substantially as described.

3. A sea-oiling cartridge consisting of the shell A, containing powder in the rearward part of its interior, and the shell C, containing oil and provided with the opening G, and entirely inclosed in the forward part of the interior of the shell A, and provided with the air-chamber F, to sustain it in the sea, all substantially as described.

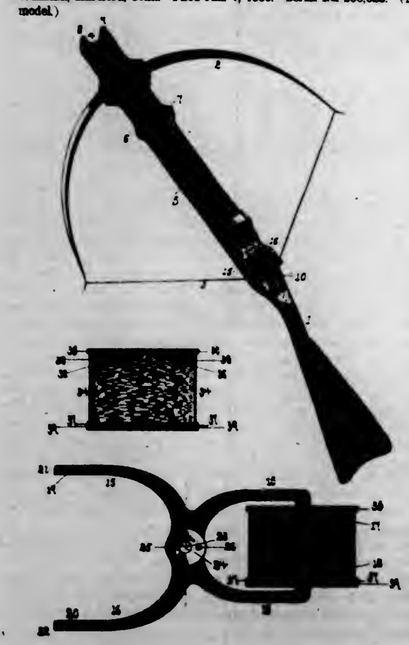
380,370. SEA-OILING PROJECTILE. ALBERT H. WALKER, Hartford, Conn. Filed Jan. 7, 1888. Serial No. 260,094. (No model.)



Claim.—1. A sea-oiling projectile consisting of a shell one end or side of the interior of which is provided with an air-chamber or its equivalent, and the opposite end or side of the interior of which is provided with a weight or its equivalent, and the intermediate part of the interior of which contains oil, substantially as described.

2. A sea-oiling projectile consisting of a hermetically-sealed shell one end or side of the interior of which is provided with an air-chamber or its equivalent, and the opposite end or side of the interior of which is provided with a weight or its equivalent, and the intermediate part of the interior of which contains oil, the two opposite sides or ends of which, that are provided with the air-chamber and the weight, respectively, being also provided with sections of walls easily punctured to make openings for the egress of oil and the ingress of water, respectively, all substantially as described.

380,371. PROJECTOR FOR SEA-OILING SHELLS. ALBERT H. WALKER, Hartford, Conn. Filed Jan. 7, 1888. Serial No. 260,025. (No model.)



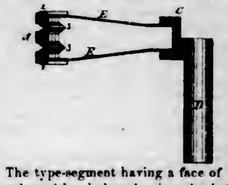
Claim.—1. A projector for sea-oiling shells, consisting of the levers 15 and 16, provided with the inwardly-projecting prongs 17 and 18, respectively, and pivoted together midway of their lengths by the bolt 23, and mutually provided with the spring 30, all substantially as described.

2. The combination of the cross-bow provided with the longitudinal groove 4 and the studs 6 and 7 on opposite sides of that groove, with the levers 15 and 16, provided with the inwardly-projecting prongs 17 and 18, respectively, and pivoted together midway of their lengths by the bolt 23, all substantially as described.

3. The combination of the cross-bow provided with the longitudinal groove 4 and the longitudinal slot 5 through the floor of that groove and the studs 6 and 7 on opposite sides of that groove, with the levers 15 and 16, provided with the inwardly-projecting prongs 17 and 18, respectively, and pivoted together midway of their lengths by the bolt 23, having the downward extension 28, adapted to reciprocate in the slot 5, all substantially as described.

4. The combination of the cross-bow provided with the longitudinal groove 4 and the longitudinal slot 5 in the floor of that groove and the studs 6 and 7 on opposite sides of that groove, with the levers 15 and 16, provided with the inwardly-projecting prongs 17 and 18, respectively, and also provided with the spring 30, and pivoted together midway of their lengths by the bolt 23, having the downward extension 28, adapted to reciprocate in the slot 5, all substantially as described.

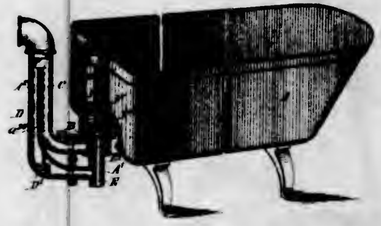
380,372. TYPE-SEGMENT FOR TYPE-WRITERS. LOUIS T. WEISS, Brooklyn, N. Y. Filed Mar. 21, 1887. Serial No. 231,679. (No model.)



Claim.—1. The type-segment having a face of electro-deposited metal, in combination with a hub and axis and a hollow frame of one piece of sheet metal without seam extending from the hub to the metal type-segment and soldered, substantially as set forth.

2. The type-segment having a rim projecting backwardly around its edge and V-channels between the lines of types, a hub, and a hollow sheet-metal frame extending from the hub to the type-segment and secured in place by solder, substantially as specified.

380,373. COMBINED OVERFLOW, SUPPLY, AND WASTE FOR TUBS. FRANK A. WELLS, Allegheny City, Pa. Filed Nov. 26, 1886. Renewed Nov. 18, 1887. Serial No. 255,457. (No model.)



Claim.—1. In combination with a tub and the waste-passage leading directly therefrom, an overflow-duct which opens directly into the tub and is wholly distinct from the waste-passage and the supply-pipe leading into said overflow-duct, substantially as set forth.

2. In combination with a tub and its waste-passage, an overflow-duct which opens directly into the tub at the bottom of the latter and is wholly distinct from the waste-passage, and which extends upward and then downward, and the supply-pipe opening into the overflow-passage between the tub and the downwardly-extending part of the overflow-passage, substantially as set forth.

3. In combination with a tub, the well B, communicating with the tub at the bottom of the latter, the overflow leading from said well upward and then downward in order to discharge, and the supply-pipe entering the overflow between the well and the portion which leads downward, substantially as set forth.

4. In combination with a tub, the well B, communicating with the tub at the bottom of the latter, the waste-pipe protruding through the well to the level of the tub-bottom and not communicating with the well, the overflow leading from said well upward and then downward and discharging into the waste-passage, and the supply-pipe entering the overflow between the well and the portion which leads downward, substantially as set forth.

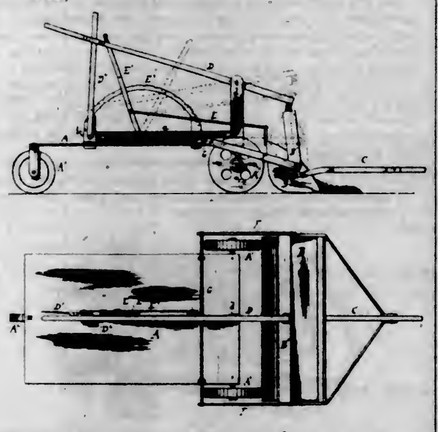
5. In combination with the tub, the overflow-passage having its mouth encircling the mouth of the waste-passage and leading thence upward before discharging downward, the supply-pipe entering the overflow-passage, and the strainer covering said overflow-passage mouth, whereby the overflow-current constantly washes the strainer with clear water while wastage is progressing and leaves it clean for the entrance of the supply, substantially as set forth.

6. In combination with the tub, the overflow leading from the bottom of the tub upward and then downward in order to discharge and the waste-pipe opening into the tub immediately adjacent to the overflow, whereby the clean water from the overflow washes over directly into the waste, substantially as set forth.

7. In combination with the tub, the overflow leading from the bottom of the tub upward and then downward in order to discharge, the waste-pipe opening into the tub immediately adjacent to the overflow, and the supply-pipe leading into the overflow between the tub and the portion which leads downward, whereby water from the supply-current may be passed through the overflow and directly out into the waste and made to flush the mouth of the waste-pipe, substantially as set forth.

8. The part A', having the well and the waste-passage and having lateral apertures leading, one from the well and one from the waste-passage, both on the same side, and flanged in the same plane, in combination with the part A^2, having the two passages of the overflow-duct terminating laterally in the same direction and corresponding in position to the two apertures in the part A', and provided with a transverse flange encircling both said terminal mouths, substantially as set forth.

380,374. EARTH-SCRAPER. GEORGE WILKINSON and JAMES MCCOURT, Acampo, Cal. Filed Sept. 30, 1887. Serial No. 251,144. (No model.)



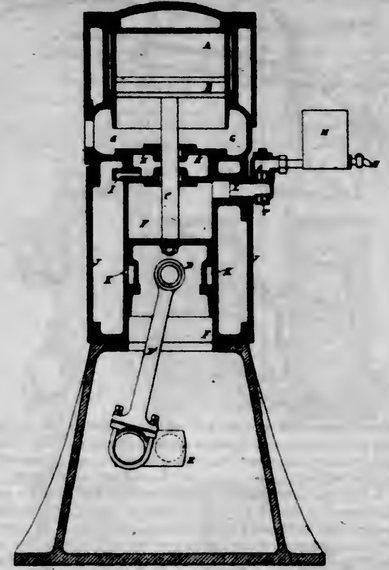
Claim.—1. A mounted scraper composed of the platform A, suitably mounted on the wheels A' A^3, and provided with the longitudinal bar *a*, the scraper B, provided with pole and bounds C and bail B', and a suitable system of levers for controlling the operation and position of the scraper, all combined and operating as set forth.

2. The scraper B, attached to the front of the platform A by means of the adjustable arms F, and its bail B', in combination with the levers D and E', suitably attached to the scraper, the fulcrum of the lever D' being a vertical forked standard, *d*, attached at its foot to the bar *a*, attached longitudinally to the center of the platform A, all as herein described and set forth.

3. The combination, substantially as described, of the platform A, mounted on the wheels A' at its front end, the trail-wheel A^3 at its rear, the longitudinal bar *a*, the foot *b*, the forked post *d*, the arms F, the scraper B and its bail B', the tongue and bounds C, and suitable lever devices for controlling such scraper from the platform A.

4. The platform A, suitably mounted, and having the scraper attachment B B' C attached at its front end by the adjustable arms F, attached to the cross-rod G, in combination with such cross-rod and with the foot-piece *b*, having the vertical post D^2 attached thereto, such post engaging with the lever D, having its fulcrum at the apex of the forked post *d*, secured to the longitudinal bar *a*, secured to the platform A, the rod E, and the lever D, being suitably connected with the scraper B B', all as shown and described.

380,375. HIGH-SPEED ENGINE. PETER W. WILLIAMS, Thames Ditton, and MARK H. ROBINSON, Kingston-on-Thames, County of Surrey, England. Filed Aug. 1, 1887. Serial No. 246,326. (No model.) Patented in England Oct. 14, 1886, No. 4,901.



Claim.—1. The combination of the steam-cylinder, the piston working therein, the piston rod or trunk extending therefrom, the buffer-piston having connection with said rod or trunk and with the crank-shaft of the engine, and the buffer-cylinder containing elastic fluid, closed at the end away from which its piston travels when the piston of the steam-cylinder is making its effective stroke, and provided with the side inlet or inlets, by way of which to admit elastic fluid between the closed end of the cylinder and its piston at or near the end of the effective stroke, substantially as and for the purpose set forth.

2. The combination of the steam-cylinder, the piston working therein, the piston rod or trunk extending therefrom, the buffer-piston having connection with said rod or trunk and with the crank-shaft of the engine, the buffer-cylinder containing elastic fluid, closed at the end away from which its piston travels when the piston of the steam-cylinder is making its effective stroke, and the inlet-valve P, by way of which to admit elastic fluid to the buffer-cylinder at its closed end, substantially as and for the purpose set forth.

3. In a high-speed engine, the combination of a single-acting steam-cylinder, its piston, a piston rod or trunk extending therefrom, the buffer-cylinder closed at one end, its piston connected with the steam piston rod or trunk, the connecting-rod, the crank-shaft, the side inlet or inlets of the buffer-cylinder admitting elastic fluid thereto at or near the end of the effective stroke of the piston of the steam-cylinder, and the inlet-valve, by way of which to admit elastic fluid to the buffer-cylinder at its closed end, substantially as and for the purpose set forth.

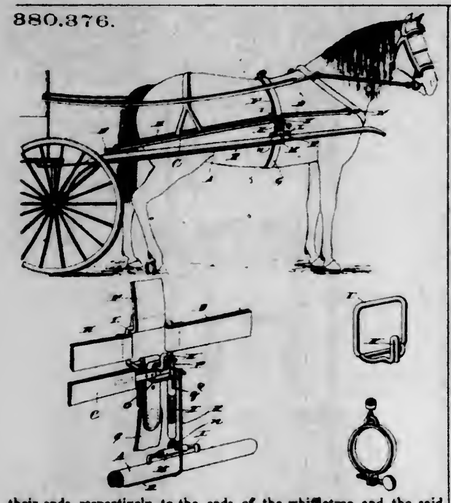
4. The combination of the steam-cylinder, its piston, the rod or trunk extending therefrom, the buffer-cylinder closed at one end, its piston, the crank-shaft, the connecting-rod, and the chamber M, provided with the cock N and communicating with the closed end of the buffer-cylinder by way of the valve-passage, substantially as and for the purpose set forth.

5. The combination of the steam-cylinder, its piston, the piston rod or trunk thereof, the buffer-cylinder, its piston, the inlet or inlets by which elastic fluid is admitted to the buffer-cylinder at or near the end of the effective stroke of the piston of the steam-cylinder, and the chamber or space at the closed end of the buffer-cylinder adapted to have its capacity adjusted to control the degree of compression of the elastic fluid in the buffer-cylinder, substantially as and for the purpose set forth.

380,376. HARNESS. MEADE WILLIAMS, Mount Vernon, Ind. Filed Jan. 4, 1888. Serial No. 259,756. (No model.)

Claim.—1. The combination of the keepers on the thills, the sleeves sliding thereon, the rear portions of the traces connected at

380,376.



their ends, respectively, to the ends of the whiffletree and the said sliding sleeves, the front portions of the traces attached to the harness in the ordinary manner, and the rings at their rear ends connected to the sliding sleeves, substantially as and for the purpose specified.

2. The combination of the sliding sleeves on the thills, the snap-hooks connected thereto, the rear portions of the traces attached to the ends of the whiffletree and the said snap-hooks, the front portions of the traces attached to the harness, and the rings at their rear ends engaged by the said hooks, substantially as and for the purpose specified.

3. The combination of the sliding sleeves, the snap-hooks attached to the sleeves, the rear portions of the traces attached to the whiffletree and the said hooks, the front portions of the traces, and the rings attached to their rear ends and provided with hooks K K, engaging with the said snap-hooks, substantially as and for the purpose specified.

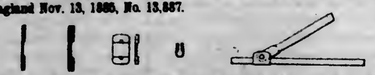
4. The combination, with the front portions of the traces and the rings at their rear ends provided with hooks K, of the sliding sleeves on the thills, the snap-hooks having loops at their upper ends attached thereto, the sliding spring-actuated bolts in the hooks, the rear portions of the traces attached at their front ends to the loops of the said hooks, and means, substantially as described, whereby the spring-actuated bolts may be withdrawn to release the hooks K, substantially as and for the purpose specified.

5. The combination, with the front portions of the traces having rings at their rear ends provided with hooks K, of the snap-hooks attached to the thills of the vehicle and having spring-actuated bolts, the said snap-hooks being engaged with the hooks K, the rear portions of the traces attached to the snap-hooks, and chains or cords attached to the spring-actuated bolts and extended to within reach of the driver of the vehicle, substantially as and for the purpose specified.

6. The combination, with the thills having sliding sleeves thereon and snap-hooks loosely mounted thereon, of the ring attached to the harness and adapted to be engaged by the said hook, substantially as specified.

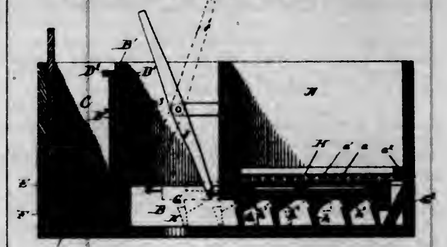
7. The combination, with the thills and the snap-hooks mounted loosely thereon and having spring-actuated bolts, of the ring attached to the harness and engaged by the said hook, and the cord or chain connected at one end to the said spring-actuated bolt and disposed at the other end within reach of the driver, substantially as and for the purpose specified.

380,377. MANUFACTURE OF GITS FOR UMBRELLA-FRAMES. JAMES WILLIS, Rosendale, Bournemouth, County of Hants, England. Filed May 7, 1887. Serial No. 237,463. (No model.) Patented in England Nov. 13, 1885, No. 13,557.



Claim.—The process hereinabefore described for forming the "gits" for the ribs of umbrellas, parasols, and sunshades, consisting in first drawing a length of wire or ribbon of steel with a thin central portion and thicker sides, then cutting the git-pieces from such wire or ribbon, and finally bending each git-piece and hardening and tempering it, substantially as described.

380,378. APPARATUS FOR MAKING BRINE. CLINTON B. WEBB, Chicago, Ill., assignor to himself and Robert B. Crouch, same place. Filed July 23, 1887. Serial No. 245,064. (No model.)



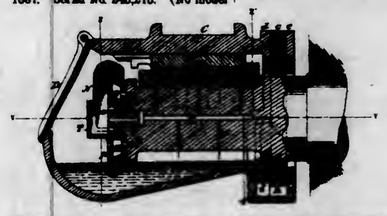
Claim.—1. The brine-making apparatus consisting of the salt-chamber constructed to contain the charge of salt and to permit the water to flow from it to a settling-chamber, the settling-chamber constructed to allow the brine from the salt-chamber to stand in a body, and the final outlet-chamber, the latter separated from the settling-chamber by a straining or filtering medium and containing the outlet, all combined and operating substantially as specified.

2. The brine-making apparatus consisting of the elevated salt-chamber adapted to contain a body of salt and having a perforated bottom to permit the water to flow from the salt, when added thereto, into the settling-chamber, the settling-chamber having a discharge-outlet in its bottom for removing the sediment, and the outlet-chamber separated from the settling-chamber by a partition provided with a straining device in the partition, substantially as specified.

3. The combination, in a single rectangular vat, of the elevated salt-chamber A, having its floor perforated, the settling-chamber B, partly underlying the salt-chamber A, and the outlet-chamber C, the latter being separated from the settling-chamber by a partition in which is a strainer or filtering device, substantially as specified.

4. The combination of the salt-chamber A, settling-chamber B, and the outlet-chamber C, with a stirring apparatus in the settling-chamber, consisting of a reciprocating hinged scraper, operating in conjunction with the waste-outlet for removing the sediment, substantially as specified.

380,379. CAR-AXLE BOX. KARL ZALLUD, New York, N. Y., assignor of one-half to Benjamin D. Gallaher, same place. Filed July 2, 1887. Serial No. 243,215. (No model.)



Claim.—1. In combination with an axle containing a longitudinal channel and channels extending therefrom to the axle-periphery, and a journal-bearing for said axle, a box inclosing said axle and bearing and adapted to contain a liquid lubricant, a bucket-wheel rotated by said axle, and a fixed chamber communicating with the longitudinal channel in said axle and arranged in proximity to the said bucket-wheel to receive the discharge thereof, substantially as described.

2. In combination with an axle containing a longitudinal channel and channels extending therefrom to the axle-periphery, and a journal-bearing for said axle, a box inclosing said axle and bearing and adapted to contain a liquid lubricant, a bucket-wheel supported upon and rotated by said axle, and a non-rotating chamber, also supported upon said axle, communicating with the longitudinal channel in said axle and arranged in proximity to said bucket-wheel to receive the discharge thereof, substantially as described.

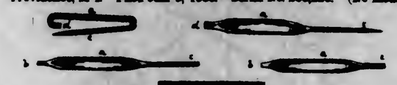
3. The combination of the axle A, having channels E F, bearing B, box C, bucket-wheel H, rigidly secured to the end of said axle, and stationary cover N, containing a chamber receiving the discharge of said bucket-wheel, and communicating with the channel E, substantially as described.

4. The combination of the axle A, having channels E F, bearing B, box C, containing lugs U', bucket-wheel H, rigidly secured to the end of said axle, cover N, containing chamber O, lugs U, sleeve Q, and flange R, and bolt G, substantially as described.

5. The combination of the axle A, inclosing-box C, having a chamber, *h*, plate *f*, containing segmental packing-ring *g*, and spring *i*, substantially as described.

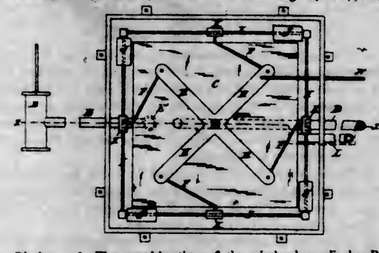
6. The combination of the axle A, inclosing-box C, having chamber *h*, plate *b*, having packing-ring *c*, plate *f*, having segmental packing-ring *g*, and spring *i*, substantially as described.

380,380. MANUFACTURE OF SAFETY-PINS. BARTON A. BALLOU, Providence, R. I. Filed Jan. 9, 1886. Serial No. 208,239. (No model.)



Claim.—The improved process of manufacturing safety-pins herein described, consisting in forming the central portion of the wire blank into a body portion, *a*, by a die and plunger, swaging one end of the wire to give it a longitudinal groove, reducing, elongating, tempering, and pointing the opposite end of the wire by cold-swaging by suitable dies, and bending the ends so as to make them engageable with each other, substantially as specified.

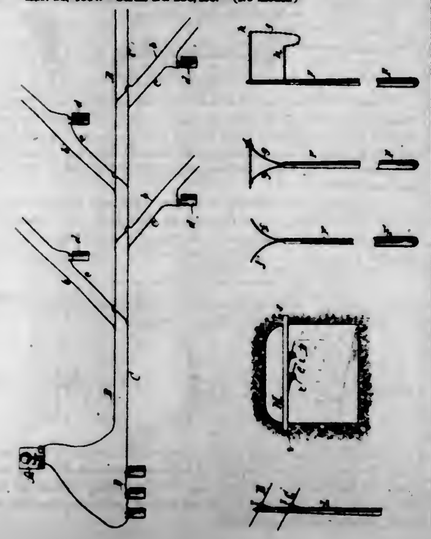
380,381. AUTOMATIC PNEUMATIC CAR-LAMP EXTINGUISHER. ABBOTT BERRY, Warden, Quebec, Canada. Filed Aug. 1, 1887. Serial No. 245,779. (No model.) Patented in Canada Aug. 24, 1887, No. 27,502.



Claim.—1. The combination of the air-brake cylinder B, connecting-pipe K, discharge-pipe D, valve G, air-drum C, cross-lever H, the four inclined rods I, connecting-rods F and sleeves K thereon, and sliding weights J, as described.

2. The combination of the air-brake cylinder B, the inlet and outlet pipes, a check-valve toward the air-brake cylinder, a cock-valve, G, suitable tubes leading to the lamps, through which the compressed air in the drum can be discharged, the connecting-link on one arm of the cross-lever H extending to the end of the car, the connecting-rods I, sleeves K, supported on the inclined rods I, and the sliding weights J, substantially as described.

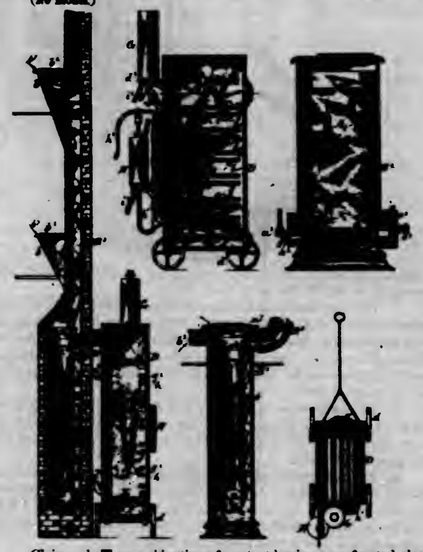
380,382. ELECTRO-MAGNETIC SIGNALING DEVICE FOR MINES. LOGAN MCKENNEY BULLITT and OSCAR C. GREENE, St. Paul, Minn. Filed Aug. 23, 1887. Serial No. 206,405. (No model.)



Claim.—1. The combination of the main battery, the main-circuit wires extending near each other along the line, the branch-circuit wires attached, respectively, to the main-circuit wires, and extending near each other in pairs along their lengths, and additional battery-cells placed, respectively, along the branch-circuit wires, substantially as herein specified.

2. In combination with two circuit-wires extending near each other in open circuit and branch-circuit wires attached to the respective main-circuit wires in pairs and near each other, a hand circuit-closer constructed substantially as described, and for the purpose herein specified.

380,383. SEWAGE AND NIGHT-SOIL DESICCATING APPARATUS. PHILIPP C. CLOSE, Augusta, Ga. Filed Feb. 4, 1887. Serial No. 226,505. (No model.)



Claim.—1. The combination of a retort having a perforated plate, a^4, in the top, a perforated plate, *a*, in the bottom, and a pipe to admit air under the bottom plate, with a casing inclosing said retort, and having flues to conduct a current of the production of combustion and heated air across the top and down one side and upward on the opposite side of said retort, substantially as described.

2. The combination of a vertical retort having a perforated plate in its upper and in its lower end, a casing inclosing said retort, and a furnace having supporting-wheels and a pipe upon one side connecting with said casing, whereby the products of combustion are directed down one side of the retort, substantially as and for the purposes described.

3. The combination of a vertical retort and its casing, separated by flues between them, with a furnace having the horizontal pipes g^3 within said furnace, and a tank, G, connected with said pipes, substantially as and for the purposes described.

4. The combination of a vertical retort and its casing with a furnace, a pipe connecting said retort and furnace, the tank G, having a discharge-pipe with lateral perforated branches within said furnace, the air-pump H, and the horizontal pipes A, substantially as and for the purpose described.

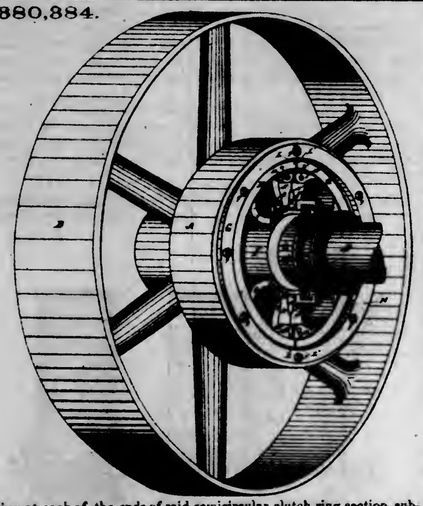
5. The combination of a vertical retort, having a perforated plate, *a*, in the bottom thereof, and the pipe a^3 under said plate, with a furnace having a continuous coil, *i*, therein, an air-pump, and a pipe to connect said pump and coil with the pipe a^3 in the bottom of the retort, substantially as and for the purposes described.

6. The combination of a vertical retort, having a perforated plate, *a*, and the pipe a^3, with a furnace and coil, *i*, an air-pump and connecting-pipe, and a vessel or reservoir for gas-producing liquids connected with said pump at its point of suction, substantially as and for the purposes described.

380,384. FRICTION-CLUTCH. HILES C. CROWELL, Erie, Pa. Filed Aug. 9, 1887. Serial No. 246,542. (No model.)

Claim.—1. The combination, in a friction-clutch, of an annular friction-ring with a clutch-ring consisting of two semicircular sections secured to spokes attached to the hub of the clutch, and levers oper-

380,384.



ating at each of the ends of said semicircular clutch-ring section, substantially as and for the purpose set forth.

2. The combination, in a friction-clutch, of a friction-ring of compressed paper, substantially as shown, with a clutch-ring consisting of two semicircular sections secured to spokes attached to the hub of the clutch, and levers mounted in the ends of said sections, and wedges on the shifting ring for operating said levers, substantially as and for the purpose set forth.

3. The combination, in a friction-clutch, of a hub, I, having a sectional clutch-ring, K K', mounted on the curved spokes J J and J' J', with the levers N N' N N' and wedges P P, substantially as and for the purpose set forth.

4. The combination of a friction-clutch ring composed of a hub having thereon spokes J J', and sectional rings K K', having thereon the ears M M', and the levers N N', with the adjusting-screws S S in said levers, and the sliding wedges P, secured to the shifting ring Q, substantially as and for the purpose set forth.

380,385. CIRCULAR-KNITTING MACHINE. HENRY CURTIS, Little Falls, N. Y., assignor of one-half to Wallace Hoss, same place. Filed Oct. 10, 1887. Serial No. 251,902. (No model.)

Brief.—The invention consists in an improved construction and combination of parts whereby the attachment and detachment of the needle-carrying head are rendered convenient and the wear of its bearing materially reduced.



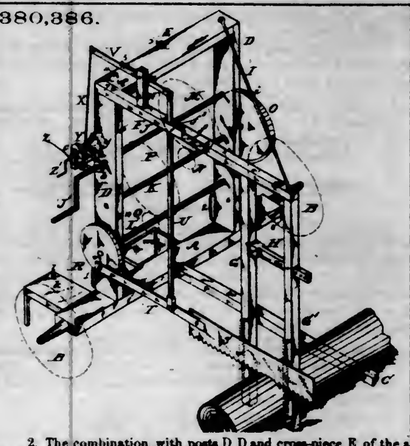
Claim.—1. The combination of the bed-plate A, provided with the eye *e*, and rabbet *a*, around the top edge of the eye, the pinion C, formed with the upward-projecting hub *l*, journaled in the eye *e*, and the head D, seated upon the top of said hub and having its base fitted rotatably in the rabbet *a* and detachably connected to the hub *l*, substantially as set forth.

2. The combination, with the bed-plate A, provided with the eye *e* and rabbet *a*, of the gear-wheel C, having the end of its hub flush with the base of the rabbet, the head D, detachably connected to the hub of the gear-wheel and having its base projecting into the rabbet *a*, and the wear-plate *b*, clamped between the end of the wheel-hub and base of the head and projecting into the aforesaid rabbet, substantially as described and shown.

380,386. SAWING-MACHINE. WILLIAM A. DEWBERRY, Peace, Ark. Filed Oct. 25, 1887. Serial No. 253,231. (No model.)

Claim.—1. In a portable sawing-machine, the combination, with the frame, of a hinged arm, F, and the legs G G', arranged parallel with each other and removably attached to the arm F, substantially as described.

380,386.



2. The combination, with posts D D and cross-piece E, of the arm F, fastened to one of the posts D and composed of two parts hinged together and provided with the staples *f'* and bolt F', the removable and adjustable legs G G', attached to the outer portion of the arm F and having bar H, fastened to one of the legs and adjustably secured to the other, and the brace I, extending from the arm F to the cross-piece E, substantially as described.

3. The combination, with the posts D D and the cross-piece E, having hooks 3 and 5 and staple 4, of the hinged arm F, having hook and eye 7, the hinged brace I, and the removable legs G G', having bar H and eyes 6, substantially as described.

4. In a portable sawing-machine, the combination, with the driving-shaft J, having pulley *b*, of the shaft Z, having loose pulley *c*, the belt *a*, connecting the two pulleys, the bolt *d*, secured to the shaft Z and adapted to engage with the pulley *c*, the drum Y, mounted on the shaft Z, the cord X, wound upon the drum, the lever V, to one end of which the cord X is attached, and the rod U, attached to the other end of the lever and connected with the saw, substantially as described.

5. The combination, with axle A, having box *m*, of posts D D, having loops 1 and 2, eye 7, and hooks 8 and 10, the cross-piece E, having hooks 3 and 5 and staple 4, the hinged arm F, having a hook, and hinged brace I, the removable legs G G', having bar H and eyes 6, the saw S, the crank-disk R, the pitman T, having eye 9, lever V, and rod U, having eye 11, and the removable upright W, substantially as described.

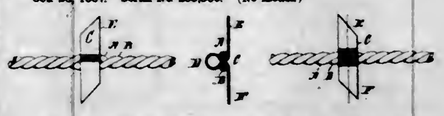
380,387. RAZOR. ADOLPH L. GATLER, New Britain, Conn. Filed Oct. 12, 1887. Serial No. 252,168. (No model.)



Claim.—1. The herein-described razor-blade, consisting of the thin attachable and detachable blade having the cutting-edge, and the back adapted for attachment to a handle and having a socket for receiving said blade, with the broad sides of the socket extending to near the cutting-edge of the blade, substantially as described, and for the purpose specified.

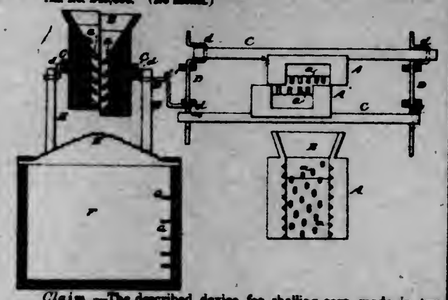
2. A razor-blade consisting of the back having a blade-receiving socket with a lower side groove and the attachable and detachable blade having a side rib adapted to fit both the top of the socket and said side groove for holding the blade with a more projecting edge when desired, substantially as described.

380,388. BARB-WIRE FENCE. J. W. GRENWOLD, Troy, N. Y. Filed Oct. 28, 1887. Serial No. 253,586. (No model.)



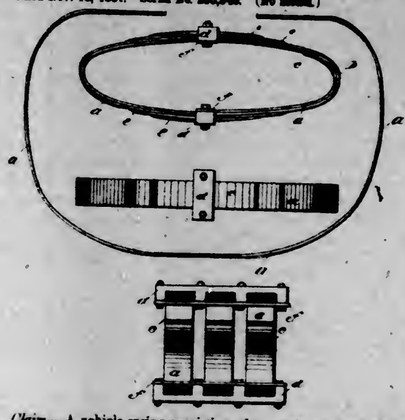
Claim.—In combination with a two-stranded wire cable, a barb-piece of thin sheet metal pointed at both ends, bent double to form a loop, and held between said strands, the loop being located on one side of said strands and the separated ends of said barb-piece on the other, substantially as described.

380,389. CORN-SHELLER. BENJAMIN HIBBERSON, Mount Vernon, assignor of one-half to M. M. Bush, Towns, Ga. Filed Sept. 14, 1887. Serial No. 249,699. (No model.)



Claim.—The described device for shelling corn, made in two parts, each part containing a half-hopper and a half-sheller section, each sheller-section having corresponding opposite sets of downwardly-inclined teeth, and each part supported on one of two parallel bars, C C, pivoted to the cranks of two opposite shafts, as shown, and for the purpose set forth.

380,390. VEHICLE-SPRING. ROBT. HUTCHISON, Springfield, Mass. Filed Nov. 16, 1887. Serial No. 255,249. (No model.)



Claim.—A vehicle-spring consisting of a continuous imperforate strip or band of metal bent or coiled upon itself two or more times with adjacent surfaces in contact, combined with clamps embracing the sides of the band, but without rivets passing through the strip, so that there may be a limited movement of the coils upon each other substantially as described.

380,391. DEVICE FOR DISPLAYING ADVERTISING-CARDS. OTTO C. HOFFMANN, Chicago, Ill., assignor to James H. Rosain, same place. Filed June 14, 1887. Serial No. 241,303. (No model.)



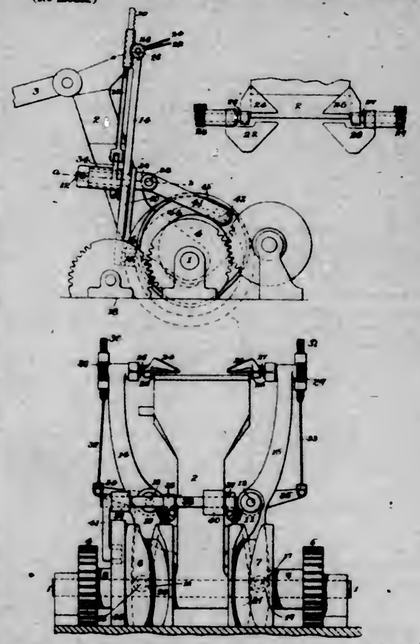
Claim.—1. In a device for displaying advertising-cards, an inclined trough or receptacle for holding cards, in combination with a stop against which the upper part of each card can come in contact when brought to the front, a movable frame carrying a thin bar, *b*, and a thin strip or piece, *c*, said bar *b* and strip *c* being arranged so as to come in contact, one with the upper edge and the other with the lower edge of the forward card, and a pivoted lever, H, loosely connected at its forward end to the movable frame, substantially as and for the purpose specified.

2. In a device for displaying advertising-cards, an inclined trough or receptacle for holding cards, in combination with a stop, F, and one or more stops, *f*, a movable frame provided with a cross-bar, *b*, and with a thin strip, *c*, a pivoted lever, H, loosely connected at its forward end to the movable frame, and provided with a slot at its rear end, and a cam, L, on a rotating shaft, J, substantially as and for the purpose specified.

3. In a device for displaying advertising-cards, an inclined trough or receptacle for holding cards, in combination with stops with which the upper and lower edges of the cards can come in contact, a movable frame provided with a cross-bar, *b*, and with a thin strip, *c*, arms *k*, pivoted lever H, loosely connected at its forward end to the movable frame, and provided with a slot at its rear end, and a cam, L, on a rotating shaft, substantially as and for the purpose specified.

4. In a device for displaying advertising-cards, an inclined trough or receptacle for holding cards, in combination with stops with which the upper and lower edges of the cards can come in contact, a movable frame carrying a thin bar, *b*, and a thin strip or piece, *c*, a pivoted lever, H, loosely connected at its forward end with the movable frame, and a link, *j*, pivoted at its upper end to the movable frame and pivoted at its lower end to a system of levers which operate catches which hold the cards for a limited time between the plates R S, substantially as and for the purposes specified.

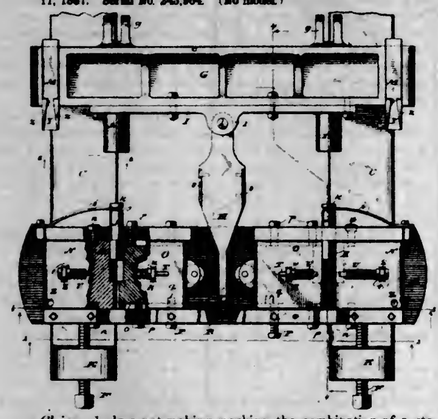
380,392. MECHANICAL MOTION. WILLIAM H. HOBBS and WILLIAM A. LORING, Hartford, Conn. Filed Mar. 7, 1887. Serial No. 229,986. (No model.)



Claim.—1. The combination of the shaft 1, the arm 2, rocking on that shaft, the cam 6, provided with the endless cam-groove 20, and the lever 14, worked by that cam, all constructed and arranged so that the lever 14 rocks with the arm 2 and also vibrates at an angle to the direction of that rocking, all substantially as described.

2. The combination of the cam 6, the lever 14, the cam 45, the shaft 26, and arms and rock-shafts intermediate the cam 45 and the shaft 26, all so constructed and arranged that the shaft 26 rocks on the lever 14 while that lever vibrates on its fulcrum, all substantially as described.

380,393. NUT-MAKING MACHINE. WILLIAM H. JOHNSON, Racine, assignor to the Elastic Nut Company, Milwaukee, Wis. Filed July 11, 1887. Serial No. 243,964. (No model.)



Claim.—1. In a nut-making machine, the combination of a stationary and a movable die-block, with a plunger and a mandrel interposed between the die-blocks, and mechanism for forcing the plunger forward and the movable die-block against the stationary die-block, substantially as set forth.

2. In a nut-making machine, the combination of a stationary and a movable die-block connected by a rod furnished with a retracting-spring for normally forcing said die-blocks apart, a plunger seated in the wall of the die-block frame and provided with a retracting-spring, a mandrel interposed between the die-blocks, and a reciprocating cross-head carrying a wedge-bar for forcing the movable die-block against the stationary die-block, and a stamp for forcing the plunger forward between the said die-blocks, substantially as set forth.

3. In a nut-making machine, the combination of a suitable bed consisting of side pieces having flanged guides or ways, a die-block frame clamped thereto, and carrying blocks provided with perforations, a reciprocating cross-head moving on said bed and carrying stripping devices, and mandrels having bent rear ends adapted for insertion in the said perforations and front ends edapted for lodgment in channels between the teeth of the stripping devices, substantially as set forth.

4. In a nut-making machine, the combination of a suitable bed consisting of side pieces having flanged guides or ways, a die-block frame clamped thereto, stationary die-blocks secured in said frame, and transversely-movable die-blocks sliding between the walls thereof, a reciprocating cross-head moving on said bed, and a wedge-bar pivotally connected to said cross-head and adapted to move against and thereby impart transverse motion to the said movable die-blocks, substantially as set forth.

380,394. DUST-PROOF THERMOSTAT. ABRAHAM S. KISSELL, Chicago, Ill. Filed Sept. 14, 1887. Serial No. 249,611. (No model.)

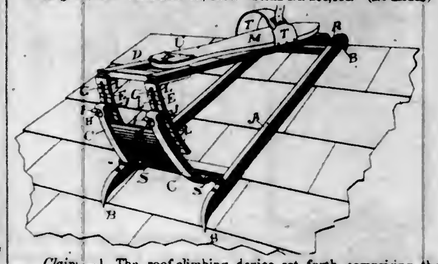


Claim.—1. In a thermostat, a compartment provided with a single opening, and the thermostatic bar projecting through said opening, and contact-points projecting into said compartment, in combination with a cover moving with said bar, but at all times completely closing said opening, substantially as described.

2. In a thermostat, a closed compartment provided with a single opening, the thermostatic bar passing freely through said opening, and contact-points projecting into said compartment, in combination with a slidable cover for said opening attached to and movable with the thermostatic bar, said cover being sufficiently large to close said opening at all times during the movement of said bar, substantially as described.

3. In a thermostat, a compartment provided with a single opening in the roof thereof, contact-points projecting in said chamber, and a cover for said opening sliding upon said roof and larger than the opening therein, in combination with the thermostatic bar passing snugly through said cover, but loosely through said opening, whereby said bar may have a lateral flexure and carry with it said slidable cover, substantially as described.

380,395. ROOF-CLIMBING DEVICE. FREDERICK KRAMER, Los Angeles, Cal. Filed Nov. 25, 1887. Serial No. 256,164. (No model.)

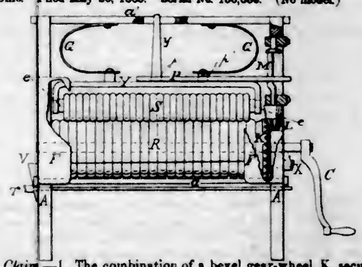


Claim.—1. The roof-climbing device set forth, comprising the combination of the roof-frame A, having the downwardly-projecting friction-points B, the sole-frame D, hinged at one end to the frame A and provided with the downwardly-projecting segmental arms E, the segmental arms C, hinged to the roof-frame, means for clamping the arms C and arms E to each other, the sole-plate M, and means for securing the same to the foot.

2. The roof-climbing device set forth, comprising the combination of the frame A, having the friction-points B, the frame D O, hinged at one end to the frame A and provided at the other end with the arms E, having the slots G and notches L, the arms C, hinged to the frame A and provided with the lugs J, the bolts H and nuts I, the sole-plate M, provided with the projection N, the bolt and nut P Q, and means for securing the plate M to the foot.

3. In a roof-climbing device substantially such as described, the combination set forth of the sole-plate M, provided with the projection N and bolt and nut P Q, and with means for securing the plate to the foot, and the frame D, provided with the socket O and hole V.

380,396. WASHING-MACHINE. HORATIO J. LOCKHART, POSEYVILLE, Ohio. Filed May 20, 1885. Serial No. 166,063. (No model.)



Claim.—1. The combination of a bevel gear-wheel, K, secured to roller R, the smaller bevel gear-wheel, L, meshing with and moved by said gear K, the crank-shaft M, forming the axis of and revolved by the smaller gear, L, the main frame having its cross-bar *a'* provided with a slot, the yoke-frame having an arm entering said slot, the rollers in said frame, and the pitman P, all substantially as herein shown and described.

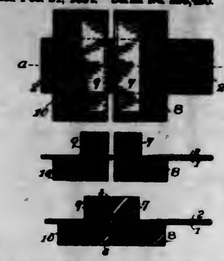
2. The main frame having its cross-bar *a'*, provided with a vertical slot elongated in the direction of the length of said bar, the yoke-frame movable longitudinally in said frame and having an arm, *y*, entering the said slot in cross-bar *a'*, and the rollers, all combined substantially as set forth.

3. The combination of the supporting-frame having cross-bar *a'*, provided with a slot, the yoke-frame Y, having an arm, *y*, entering said slot, the plates *e*, pivoted to said frame Y, the rollers S, journaled to said plates *e*, the roller R, crank-shaft M, gears K L, pitman P, and springs G G, all arranged and adapted for use substantially as set forth.

4. The combination, in a machine substantially as described, of a supporting or main frame having an opening forming a way for the stem of the T-brace, the T-brace having its stem movable in said opening, and the wedge interposed between the head of said brace and the main frame, substantially as set forth.

5. The main frame having a projection on one of its ends, the T-brace with its stem movable longitudinally in an aperture in the frame, with its cross-piece projecting from the opposite end of the frame, and the bifurcated wedge interposed between the cross-piece of the brace and the frame of the machine, substantially as set forth.

380,397. PROCESS OF MAKING CREASES IN SHEETS OF FLEXIBLE OR ELASTIC MATERIAL. WILLIAM A. LORIMER, Hartford, Conn., assignor to Felix W. Leibrock and Clarence A. Wolle, both of Bethlehem, Pa. Filed Feb. 21, 1887. Serial No. 228,695. (No model.)

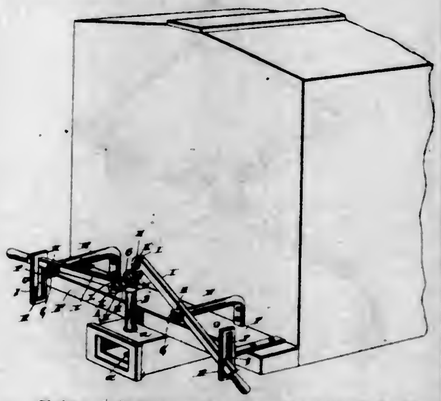


Claim.—The process of making two opposite and oppositely-extending creases in two adjacent thicknesses of flexible material, which consists in forcing that portion of the two thicknesses which is on one side of the line of the desired creases toward that portion which is on the other side of that line, and along the common plane occupied by those two thicknesses, all substantially as described.

380,398. COMPOSITION FOR LINING PETROLEUM-TANKS AND SIMILAR VESSELS. PATRICK MOLYNEAX, London, England. Filed Sept. 6, 1887. Serial No. 248,986. (No specimens.)

Claim.—An oil-proof paint or coating for tanks and similar vessels, consisting of a resin, as shellac, insoluble in petroleum, oil, or turpentine, a solvent suitable to said resin, and small percentages of a gum, as gum-arabic, and of glycerine, together with a mixture of metallic oxide and calcareo-argillaceous material, substantially as herein before specified.

380,399. CAR-COUPLING. JACOB F. MAGER, Allendale, Ill. Filed Oct. 6, 1887. Serial No. 251,040. (No model.)

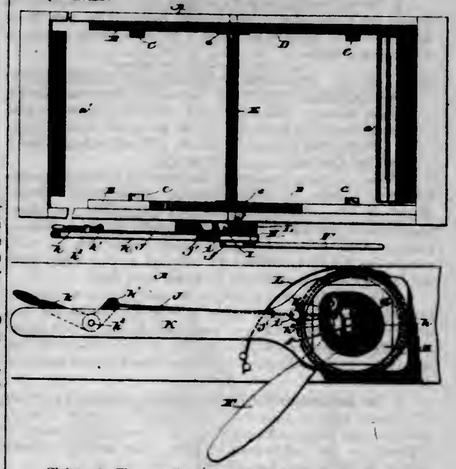


Claim.—1. In a car-coupling, the combination, with the draw-head having the aligned openings in the upper and lower sides thereof, of the coupling-pin having a ring, C, on the upper end, the pivoted levers I, having eyes on their inner ends connected to the ring C on the pin by the links M M, and the slotted guards O O, secured to the car near the outer ends of the said levers to guide the vertical motion thereof, substantially as and for the purpose specified.

2. In a car-coupling, the combination, with the draw-head having openings *a a'* therein, of the pin B, to fit in the said openings, the brackets E E, secured to the car and having the spindles G G on the outer ends threaded at the extremities, the levers I I, mounted loosely on the said spindles and held in place by nuts H, screwed on the ends of the latter, the guards O O, secured to the car near the outer ends of the levers and having the slots P to receive and guide the motion of the outer ends of the levers, and the notches R R in the sides of the said slots to receive the ends of the levers in the depressed position, the inner ends of the levers being connected to the upper end of the pin B, all constructed, arranged, and operated substantially as and for the purpose specified.

3. In a car-coupling, the combination, with the draw-head having the openings *a a'* therein, of the coupling-pin B, having the ring C on the upper end, provided at the top with the transverse groove or notch D, the pivoted levers I, having the eyes K at the inner ends, provided with the transverse notches or grooves L, and the links M, connecting the eyes K with the ring C and having the openings N in the sides thereof, substantially as and for the purpose specified.

380,400. BELT-CARRIER TIGHTENER. ROBERT W. MINER and WILLIAM MINER, Sanborn, Dak. Filed Dec. 29, 1887. Serial No. 259,206. (No model.)



Claim.—1. The combination, with the main frame of the carrier, of the slotted bars moving against the side rails of said frame and provided with racks on their upper edges, the roller *a*, journaled in said slotted bars, the shaft journaled on the side bars of the main frame, the pinions on said shaft, the ratchet-wheel on the extended end of said shaft, and the pawl engaging said ratchet-wheel, substantially as specified.

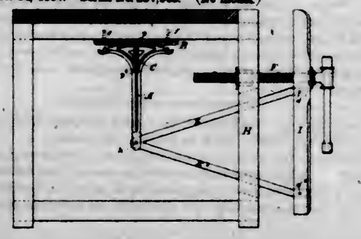
2. The combination, with the main frame of the carrier, of the slotted bars B, provided with the racks on their upper edges and moving on the pins or bolts C, the shaft E, journaled in said side bars and having one end outside its bearing squared, the pinions on said shaft, the ratchet-wheel on the squared end of the shaft, the pawl engaging said ratchet-wheel, and the wrench F, engaging said squared end, substantially as specified.

3. The combination, with the main frame of the carrier, of the bars B, having the slots *b b'* and racks D, the pins or bolts C, the shaft E, having the squared end *f* and the pinions *e e*, the ratchet-wheel, the recessed nut, the leaf-spring L, the pawl, and the spring attached to the recessed nut and forcing the pawl into engagement with the ratchet-wheel, substantially as specified.

4. The combination, with the main frame of the carrier, of the bars B, having the slots *b b'* and racks D, the pins C, the shaft E, having the squared end *f* and the pinions *e e*, the ratchet-wheel, the recessed nut, the leaf-spring L, the pawl, the spring attached to the recessed nut and bearing on the pawl, the wire I, having the ring *i* on its outer end, and the wrench K, provided with the angle-lever pivoted thereon at its angle, and the sliding wire J, having the hook *j* on its end, substantially as specified.

5. In combination with the main frame of the carrier, the slotted bars moving against the side rails of said frame and provided with racks, the roller *a*, journaled in said slotted bars, the shaft journaled in the side bars of the main frame, the pinions on said shaft to engage the racks, and the pawl-and-ratchet mechanism for the shaft, as set forth.

380,401. VISE. BRODY I. NEMOZA, San Francisco, Cal. Filed Dec. 14, 1887. Serial No. 257,908. (No model.)



Claim.—1. In a vise, the toothed sector A, slotted at *h* for the reception of bars E E^2, having the studs D^2 D^3 to engage the springs C C^2, the rack B, with sides and studs D D to engage springs C C^2 and secured to cross-bar *h*, the springs C C^2, by which the sector A is held to its engagement with rack B, and the bars or triangle E E^2, pivotally connected to sector A and secured to movable jaw of vise, substantially as and for the purpose described.

2. The combination, with the movable jaw I of a vise, of the stationary jaw H, the screw F, the toothed sector A, the rack B, the springs C C^2, and the bars or triangle E E^2, substantially as and for the purpose described.

380,402. **PRODUCTION OF DISULPHO AND DICARBO ACIDS OF THE DIAMIDOAZO-BENZIDINES.** LUDWIG PAUL, Fürstenberg-on-Oder, Prussia, Germany. Filed Aug. 16, 1887. Serial No. 247,113. (No specimens.) Patented in France Jan. 11, 1887, No. 184,160; in Germany Mar. 4, 1887, No. 3,208, and July 12, 1887, No. 3,339, and in England June 9, 1887, No. 8,266, and June 11, 1887, No. 8,437.

Claim.—1. The combination of the following tetrazo compounds known at present: (*a*) tetrazo-dipheuyl, tetrazo-ditolyl, tetrazo-dixylyl; (*b*) tetrazo-diphenyl-dicarbon acid and its ethers; (*c*) tetrazo compounds of the ethers of diamido-diphenol; (*d*) tetrazo-fluorene, tetrazo-stilbene, or the sulpho-acids of these bodies, with two molecules aniline, toluidine, xylidine, and cumidine, or their sulpho-acids, and the coloring-matters thereby produced, as set forth.

2. The transformation of the bodies resulting from the combination of the tetrazo compounds known up to the present with two equal or different molecules of alpha or beta naphthylamine or their sulpho-acids, aniline, toluidine, cumidine, xylidine, or their sulpho-acids, into new tetrazo compounds, and the coloring-matters thereby produced, as set forth.

3. The decomposition of those compounds resulting by operation of processes stated in claim No. 2, which contain amines or their sulpho-acids, into compounds containing the corresponding phenols or naphthols, or their sulpho-acids, by boiling water, and the coloring-matters thereby produced, as set forth.

4. The combination of the new tetrazo compound resulting from operation of processes stated in claim No. 2, with (*a*) alpha or beta naphthol, (*b*) alpha or beta naphthylamine, or their sulpho-acids, and the coloring-matters thereby produced, as set forth.

5. The combination of one molecule of any of the known tetrazo compounds mentioned in claim No. 1 with only one molecule of aniline, toluidine, xylidine, or cumidine, or their sulpho-acids, and the coloring-matters thereby produced, as set forth.

6. The transformation of the monoamidoazo compounds resulting from the operation of the processes stated in claim No. 5 into diazo compounds, and their combination with alpha or beta naphthol or their sulpho-acids, or alpha or beta naphthylamine or their sulpho-acids, and the coloring-matters thereby produced, as set forth.

7. The diazotization of the diamidoazo compounds resulting from the operation of the processes stated in claim No. 1 and of the monoamidoazo compounds resulting from the operation of the processes stated in claim No. 5, and combination with resorcin or its sulpho-acids, and the coloring-matters thereby produced, as set forth.

8. The transformation of the intermediate products resulting from the combination of one molecule of the known tetrazo compounds mentioned in claim No. 1 with one molecule of aniline, toluidine, xylidine, cumidine, alpha or beta naphthylamine, alpha or beta naphthol, resorcin, or the sulpho-acids of all these bodies, into bodies which contain the hydroxyl group, (4O,) instead of the free diazo group, by boiling with water, and the coloring-matters thereby produced, as set forth.

9. The transformation of the compounds resulting from the operation of the processes stated in claim No. 8, which contain naphthylamine sulpho-acids, into colors containing the alpha or beta naphthol sulpho-acids, by diazotizing and boiling with water, and the coloring-matters thereby produced, as set forth.

380,404. **VAPOR-BURNER.** LOUIS H. PIERPONT, Cambridge, Nebr. Filed Oct. 7, 1887. Serial No. 251,744. (No model.)

Claim.—1. A vapor-burner having the needle-valve provided with an opening which communicates with the outer air and extends to the point of the valve, for the purpose set forth, substantially as described.

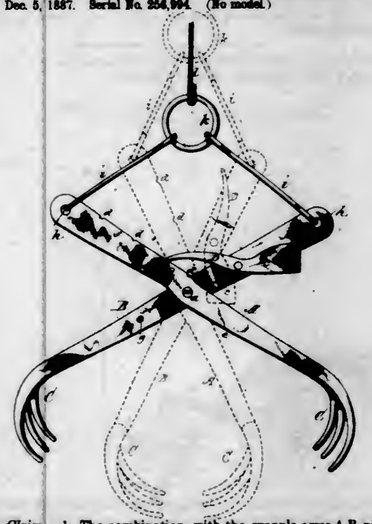
2. The combination of the generator, the valve-seat therein, the



ducts to supply vapor to the said valve-seat, and the needle-valve arranged in the valve-seat and having the opening extending to its point, and thereby adapted to supply air to the base of the flame, substantially as described.

3. The combination, in a vapor-burner, of the generator C, having the valve-seat F at its lower side, and the ducts D and E, communicating with the stand-pipe, and the valve-seat to supply vapor to the latter, and the needle-valve arranged in the valve-seat and having the opening communicating with the outer air and extending to its point to supply air to the base of the flame, substantially as described.

380,405. **GRAPPLE.** WILLIAM POTTER, Stockton, Kans. Filed Dec. 5, 1887. Serial No. 256,994. (No model.)



Claim.—1. The combination, with the grapple-arms A B, pivoted together at *a* and formed with claws C, of the latch D, pivoted near its center to the arm B above the pivot *a*, and having its outer end beyond its pivot weighted, as at *c*, substantially as and for the purpose specified.

2. The grapple described, consisting of the arms A B, formed with claws C and pivoted at *a*, the arm A above its point of connection with the arm B being formed on a different plane, as at *f*, and the upper face of said part *f* formed with a plurality of notches, *d*, the latch D, pivoted near its center to the arm B, above the pivot *a*, and its outer end weighted, as at *c*, and its inner end curved and arranged to engage the notches *d*, the links *i* on the upper ends of the arms, the ring *k*, and the rope *l*, all arranged and operating substantially as shown and specified.

380,406. **CAN-OPENER.** WILLIAM P. CHENOWETH, Kansas City, Mo. Filed July 2, 1887. Serial No. 243,354. (No model.)

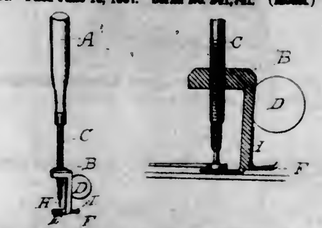
Claim.—1. The can-opener consisting, essentially, of the elongated handle, the shank with its projected corner, and the blade turned laterally at right angles to the shank, the whole constructed substantially as set forth.

380,406.



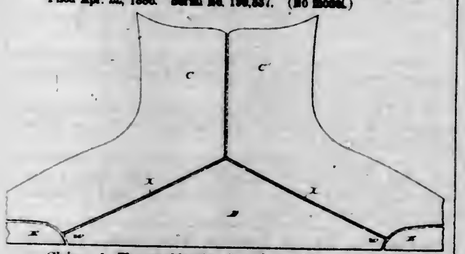
2. The can-opener consisting, essentially, of the flat handle portion, the shank C, the blade D, having the recess F, the point *d*, and the curved edge *d'*, substantially as described.

380,407. **TOOL FOR REMOVING WATCH-HANDS.** JEFFERSON C. RAND, Maynard, Iowa, assignor of one-half to George W. Hanes, same place. Filed June 18, 1887. Serial No. 241,741. (Model.)



Claim.—In a tool for removing watch-hands, the combination, with the piece B, of blades E and F, spring I, ear D, handle A, screw-threaded rod C, and point H, substantially as specified.

380,408. **BOOT OR SHOE.** LOUIS I. SHRADER, New Albany, Ind. Filed Apr. 22, 1886. Serial No. 199,837. (No model.)



Claim.—1. The combination, in a shoe, of the quarters cut away at the lower portions adjacent to the heel, as set forth, and a counter-piece of stiff sole-leather or other stiff material filling the space thus cut away and connected to both quarters and vamp, and constituting a rigid support at the sides of the heel, whereby the usual counter-stiffener is dispensed with, substantially as set forth.

2. The combination, in a shoe, of the quarters cut away at the lower part, as set forth, the vamp, and a counter-piece of stiff material having inclined edges secured to the edges of the quarters, and forward edges or ends secured to the edges of the vamp, substantially as set forth.

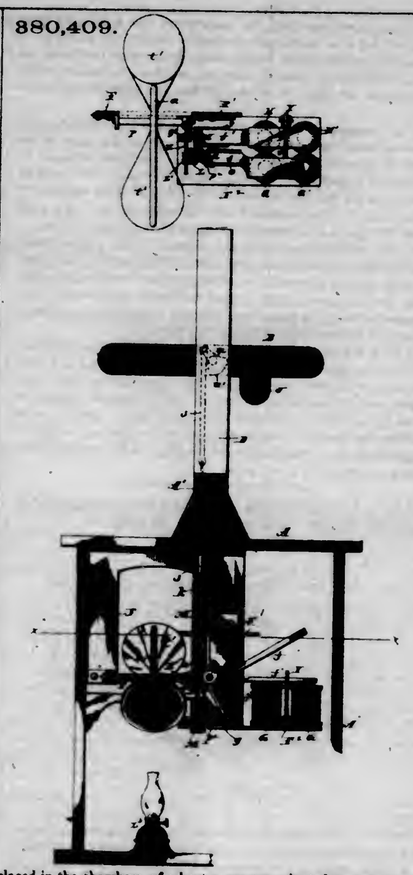
380,409. **SEMAPHORE SIGNAL APPARATUS.** FREDERICK SUTTER, and CHARLES WEHRMAN, Louisville, Ky. Filed Mar. 14, 1887. Serial No. 231,475. (No model.)

Claim.—1. The combination of a signaling-blade pivoted to go to "danger" by gravity, a motor vibrating by a change of liquid from chamber to chamber by heat and its return by gravity, and electrical holding devices, substantially as set forth.

2. In a thermo-motor for a semaphore signaling device, the combination, with two pivoted and hermetically-sealed chambers, two pipes connecting the chambers at opposite points, and volatile liquid



380,409.



placed in the chambers, of a heat-generator adapted to create vapor in one chamber and drive the liquid into the other chamber and vibrate the joined chambers by the preponderance of weight thus created, substantially as set forth.

3. In a thermo-motor for a semaphore signaling device, the combination, with two pivoted hermetically-sealed conical chambers provided with a volatile liquid, and two pipes oppositely located and attached by their ends to form communicating passages between the chambers, one chamber having two heads with an intervening space, the inner head being perforated to allow liquid to enter this space, of a heat-producer located in proximity to the lower chamber to create vapor and expel the liquid from this lower chamber into the upper chamber to vibrate it to or near a horizontal plane, substantially as set forth.

4. In a semaphore signaling device, the combination, with a visual signaling-blade pivoted and weighted to cause its vibration and outward extension, of electro-magnets and a thermo-motor that coacts with the gravitating blade to set it for danger or safety signals, the motor operating by the expulsion in volume of liquid from one chamber to another and its return by gravity to the chamber from which it was expelled, substantially as set forth.

5. In a semaphore signaling device, the combination, with a visual signaling-blade pivoted and weighted to vibrate from a vertical position by gravity, of two sets of electro-magnets, their armature-bars, and a motor that derives power from the vaporizing of a portion of its liquid contents, the expulsion of the major portion of the liquid from one chamber to another, and its return to the chamber from which it was expelled by gravity, substantially as set forth.

6. In a semaphore-signal, the combination, with a visual signaling-blade adapted to fall to a horizontal position by gravity, of two sets of electro-magnets, one set adapted to release the blade and allow it to fall and the other set effecting an elevation of the blade, substantially as set forth.

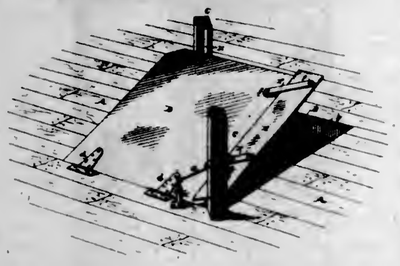
7. In a semaphore-signal, the combination, with a signaling-blade adapted to fall to a horizontal position by gravity and a motor, of two sets of electro-magnets, one set adapted to release the blade and allow it to fall and the other set adapted to release the motor, which latter returns the blade to its upright position, substantially as set forth.

8. In a semaphore signaling device, two sets of electro-magnets having weighted armature-bars pivoted to rest on the poles of the magnets by force of gravity, and a pivoted hook-plate adapted to have hooked engagement with the armature-bar of the dormant magnets to retain this bar in place on the poles of these magnets by enforced contact of the hook-plate with the armature-bar of the set of magnets that are charged with electricity, substantially as set forth.

9. In a semaphore-signal, the combination, with a signal-blade adapted to fall by gravity, and a depending sliding rod for turning said blade to an upright positon, of a motor, an electro-magnet, an armature-bar for locking said motor against movement, and a second electro-magnet having an armature-bar adapted to hold the signal-blade in an upright position, substantially as set forth.

10. In a semaphore-signal for the railway block system of signaling, the combination, with a signaling-blade adapted to fall to a horizontal position by gravity, of two sets of electro-magnets, their armature bars and latches, and a motor, one set of magnets adapted to hold the signal-blade in a position to indicate "safety" and the other set holding the motor in proper adjustment to effect an elevation of the signal-blade to a position indicating "safety" when the train leaves the block, substantially as set forth.

380,410. HATCH-DOOR. William Stevens, Philadelphia, Pa. Filed Nov. 23, 1887. Serial No. 255,859. (No model.)



Claim.—1. The combination of a main door for a hatchway, hinged to the floor and made slightly narrower than the hatchway, an auxiliary door, a linked connection between said main and auxiliary doors, and a link connecting with said auxiliary door at one end and the floor at the other end.

2. The combination of the main door D, auxiliary door E, parallel links F, connecting said doors, and adjustable link G, connecting the door E with the floor.

3. The combination of a main door for a hatchway, hinged to the floor and slightly narrower than the hatchway, an auxiliary door, parallel links connecting said main and auxiliary doors, a link connecting said auxiliary door to the floor, and means, substantially as described, for vertically adjusting said link at the floor end to suit the throw of the auxiliary door.

4. The combination of a hinged main door for a hatchway covering only a part of the opening of said hatchway, an auxiliary door adapted to slide over upon said main door and connected thereto by a movable connection, and a link connecting with said auxiliary door by a universal joint and also with the floor by a universal-jointed connection at its lower end arranged at a distance from the hinge of the main door.

380,411. CAR HEATER AND LIGHTER. Lucius R. Trumbull, Bristol, N. H., assignor of one-half to Nason W. Cass, same place. Filed Apr. 9, 1887. Serial No. 234,244. (No model.)

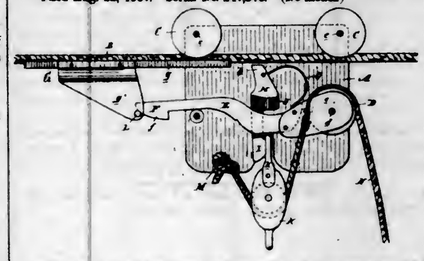
Claim.—1. In a car heater and lighter, the combination of a grenade, hammers for crushing the same, and slotted supports from which said hammers will automatically drop in case of collision or overturning of a car, all substantially for the purpose explained.

2. In an oil heater and lighter for cars, the combination of a grenade supported upon the base between and concentric with the various wicks, hammers having handles pivotally connected to the drum of said heater, and slotted supports from which said hammers will automatically fall upon said grenade in case of collision or the tipping of a car, substantially for the purpose set forth.

380,411.



380,412. HAY-CARRIER. Arthur W. Tuttle, Bay Claire, Mich. Filed Aug. 22, 1887. Serial No. 247,573. (No model.)



Claim.—1. In a hay-carrying apparatus, the combination of the bifurcated slotted latch E with the lever H and spring O, substantially as and for the purposes described.

2. In a hay-carrying apparatus, the combination of the bifurcated slotted latch E, lever H, spring O, and the stop G on the cord B, substantially as described.

3. In a hay-carrying apparatus, the combination of the bifurcated and slotted latch E, lever H, spring O, stop G, pulley-block K, provided with the loop *k*, the line or cord N, and the pulley D, substantially as and for the purposes specified.

380,413. DIE FOR UPSETTING METAL BARS. William R. Webster, Athens, Pa. Filed Sept. 25, 1884. Serial No. 143,995. (No model.)



Claim.—1. In a spreading-die for shaping the ends of rectangular bars, substantially as specified, the device of a central projection extending along a die-face, so as to engage the metal bar to be upset along its medial line and prevent it from deflecting sidewise during the process of upsetting, while permitting it to spread on each side thereof.

2. In a spreading-die for shaping the ends of rectangular bars, a die-face for supporting one side of the bar to be spread, in combination with a die-face having outwardly projecting and converging sides meeting along the center line of said die-face for supporting the bar on the other side along its medial line, while permitting it to spread and thicken on each side of said line while being upset.

3. In a spreading-die for shaping the ends of rectangular bars, a die-face for supporting one side of the heated end of the bar, having a central longitudinal depression, in combination with a die-face for supporting the opposite side of said end, having a central longitudinal projection, said depression and projection being arranged to coact in distorting the bar along its medial line.

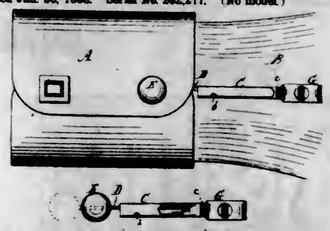
4. In a spreading-die for shaping the ends of rectangular bars, a die-face for supporting one side of the heated end of the bar, having a broad central longitudinal depression of uniform cross-section, in combination with a die-face for supporting the other side of said heated end, having a broad central longitudinal projection of uniform cross-section, whereby the bar is prevented from buckling during upsetting, while it is free to expand on each side of its medial line and to thicken simultaneously to any desired extent.

380,414. METHOD OF SPREADING THE ENDS OF RECTANGULAR METAL BARS. William R. Webster, Philadelphia, Pa. Filed Aug. 20, 1887. Serial No. 247,415. (No model.)



Claim.—The process of spreading the end of a rectangular metal bar, which consists in heating said end to the required temperature for upsetting, clamping it between die-faces, one or both of which are provided with a continuous central longitudinal depression or groove arranged to lie along the whole length of the heated end, and then upsetting it by pressure on its end and in the line of the central groove in the supporting die-face, all substantially as specified, and so that the heated end of the bar will be distorted and engaged with the grooved die-face along its medial line and throughout its length during the upsetting.

380,415. CUFF-FASTENING. Frank W. Allen, Rochester, N. Y. Filed Jan. 28, 1888. Serial No. 262,277. (No model.)

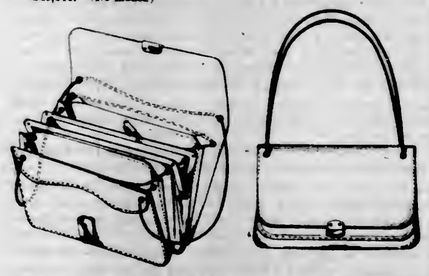


Claim.—1. In a cuff-fastener, the combination of a hollow metal shank having a clasp at one end and a wire with a button attached, said wire having at the inner end a hook-stem which runs in the shank and bears against the sides, said hook forming a spring to hold the wire at any adjustment, as herein shown and described.

2. In a cuff-fastener, the combination of a hollow metal shank having a clasp at one end and provided with a notch in one edge and a wire with a button attached, having at the inner end a spring-hook that runs in the shank, the notch forming a stop to the hook as the wire is drawn outward, as herein shown and described.

3. The combination of the hollow shank C, the wire D, provided with the spring-hook *a* at the inner end, and having the button E attached at the outer end, and the spring-clasp G, hinged at the inner end of the shank, so as to turn down vertically, as and for the purpose specified.

380,416. DEVICE FOR CLOSING AND CARRYING PURSES, &c. Emilie N. Ames, San Francisco, Cal. Filed Sept. 15, 1887. Serial No. 249,513. (No model.)

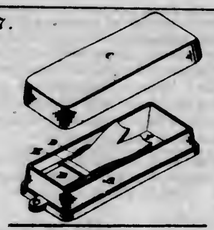


Claim.—As a new article of manufacture, a purse, hand-bag, or other similar article having a frame at the top or opening with a cord or chain for a handle passing through holes in each upper end of the several compartments and through the closing-flap and near the end and top or opening to close the same when picked up by it and to keep it closed when carried by it, substantially as described herein.

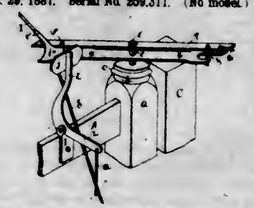
380,417. PENCIL-SHARPENER. Ignatius Balogh, Canton, Ohio. Filed Jan. 7, 1888. Serial No. 260,071. (No model.)

Claim.—As a new article of manufacture, a pencil-sharpener consisting, essentially, of the box A, having a cutter, as B, removably secured therein by a binding-loop, E, said cutter having concave cutting-edges H and a V-cutter, I, substantially as shown and described, and for the purpose set forth.

380,417.



380,418. GATE. John W. Barnhard and David H. Barnhard, New Albany, assignors of one-half to Elmer E. Anderson, Harlem, Ohio. Filed Dec. 29, 1887. Serial No. 259,311. (No model.)

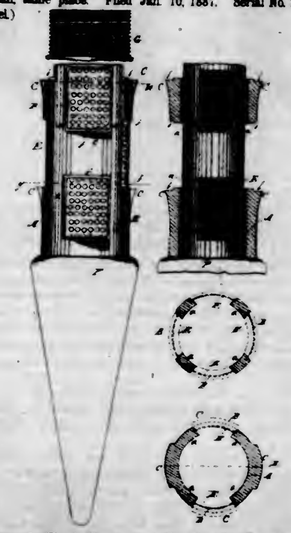


Claim.—1. In the above-described gate, the combination of gate A, hinged to post C, having latch *r*, and having its rear frame-post, *a*, provided with pin E, the fixed forked lever *e*, and pivoted lever F, (the latter having pins *f*,) with the pivoted rods G and I, and pivoted levers *g* and *i*, substantially as and for the purpose specified.

2. The combination of the gate A, hinged to post C, bell-crank lever L, and pivoted latch M, connected by rod Q, frame-post pin E, fixed forked lever *e*, and pivoted lever F, (the latter having pins *f*,) with the rods G and I, the latter having extension i^2 and pivoted operating-levers *g* and *i*, substantially as and for the purpose specified.

3. The combination of the gate A, hinged to post C, the latter having catch T, bell-crank lever L, and pivoted latch M, connected by rod Q, pivoted latch *r*, connected with arm F by cord S, frame-post pin E, fixed forked lever *e*, and pivoted lever F, (the latter having pins *f*,) with the rods G and I, the latter having extension i^2 and operating-levers *g* and *i*, all arranged and adapted to be operated substantially as and for the purpose specified.

380,419. SECTIONAL JACKET DRIVE-WELL POINT. Burnett B. Bignall and Robert A. Mabee, St. Charles, Ill., assignors to Viola S. Bignall, same place. Filed Jan. 10, 1887. Serial No. 223,877. (No model.)

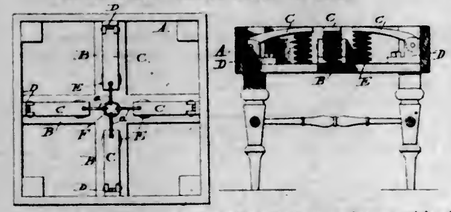


Claim.—1. The hollow part A G and point F, cast in one piece, and the part A provided with two or more vertical rows of elongated square-cornered holes, and the margins of the holes provided with re-

cessed seats *b b*, on which patches of wire-gauze, E, are placed and covered with perforated sectional jackets B, to lie below the surface of the part A, and the gauze and jackets secured by solder, *f*, uniting the jackets with the margins of the holes E, as specified.

2. The hollow part A, having formed therein one or more vertical rows of openings which are covered with inner gauze-wire cloth, E, and sections of a jacket, B, in combination with the wedge-shaped projections C below the jacket parts, as specified.

380,420. **SPRING-SEAT FOR CHAIRS.** ALBERT B. BLACKBURN, Springfield, Ohio, assignor of one-half to Elijah F. Darby, same place. Filed Dec. 13, 1887. Serial No. 257,769. (No model.)



Claim.—1. In combination with a chair or analogous article of furniture having a frame, a second frame adapted to be applied to the chair-frame, springs supported by said second frame, and pivoted blocks supported at their inner ends upon the springs, all substantially as shown.

2. In combination with a chair-frame, a second frame, as B, springs E, resting upon the frame B, brackets D, and blocks C, pivoted to the brackets and resting upon the springs and connected at their inner ends.

3. In combination with a chair-frame, A, a second frame, B, adapted to fit within the former, a series of pivoted blocks, C, and a series of springs, E, resting upon the frame B and supporting the inner free ends of the blocks, all substantially as shown.

4. In combination with the frame A, cross-bars B, brackets D, springs E, resting upon frame B, blocks C, pivoted in the brackets and resting upon the springs, loops or wires *a*, secured to the blocks C, and ring F, connected with the loops, all substantially as shown.

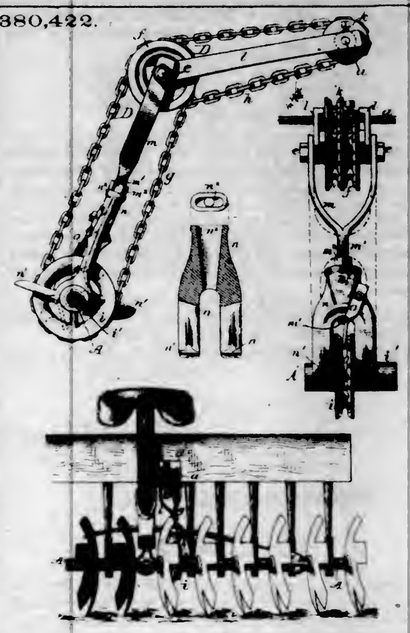
380,421. **ART OF MAKING STOCKINGS.** ELIJAH G. CHESTER, Philadelphia, Pa., assignor of two-thirds to Emil Sutro, Brooklyn, N. Y., and Paul E. Sutro, Philadelphia, Pa. Filed June 22, 1887. Serial No. 242,156. (Specimens.)



Claim.—1. The mode herein described of making stockings, said mode consisting in forming the leg and upper part of the foot in one piece, transferring this blank to another machine, knitting a strip thereon of different yarn to form the heel and sole, and securing the edges of the strip to the upper part of the foot, substantially as set forth.

2. The mode herein described of making stockings, said mode consisting in forming the leg and upper part of the foot in one piece, running the stitches at the back of the heel onto another knitting-machine, knitting thereon a strip to form the heel and sole, and securing the edges of the strip to the upper part of the foot, substantially as set forth.

380,422. **COMBINED SEEDER AND HARROW.** GEORGE M. CLARK, Higganum, Conn. Filed Jan. 30, 1888. Serial No. 262,390. (No model.)



Claim.—1. In a seeding-machine, the combination, substantially as hereinbefore described, of a seed-box shaft, a sprocket-wheel thereon connected by suitable drive-chain with a main sprocket-wheel revolved as a result of moving said machine while in service, and a flexibly-jointed chain frame extending from the main sprocket-wheel to the sprocket-wheel on the seed-box shaft, and having at its joint a chain-supporting sprocket-wheel, whereby substantially uniform relations are maintained between the chain and all of said sprocket-wheels regardless of those variations in the position of the main sprocket-wheel which are incident to the operation of seeding.

2. In a seeding-machine, the combination, substantially as hereinbefore described, of suitable sprocket-wheels and drive-chain employed therewith for communicating power to a seed-box shaft, and a three-part flexibly-jointed chain frame, one part of which is hinged at one end upon said shaft, and also hinged at its opposite end to one end of a second or middle part of said frame upon a pivot parallel with said shaft, the third part or base of said frame having its lower end supported by the axis of the main sprocket-wheel and its upper end swiveled to one end of said second or middle part for enabling a free torsional movement of said base portion of the frame during variations in the position of the axis of the main or driving sprocket-wheel.

3. In a seeding-machine, the combination, with a seed-box shaft, a sprocket-wheel thereon, a main or driving sprocket-wheel and drive-chain coupling said wheels, of a three-part chain frame which is interposed between said shaft and the main sprocket-wheel, is provided with an intermediate chain-wheel, and has its lower part or base loosely swiveled to the middle portion, substantially as described, for affording not only a torsional movement, but also lateral flexibility, and enabling said base part to freely conform to the various positions assumed by the main sprocket-wheel incident to adjusting and operating the machine.

4. In a seeding-machine, the combination, with the seed-box shaft, a sprocket-wheel thereon, a main or driving sprocket-wheel, and suitable drive-chain, of a flexibly-jointed chain-supporting frame which is interposed between said shaft and the axis of the main sprocket-wheel, is constructed in parts or sections, and has two of said parts adjustably connected and forming a longitudinally-extensible portion of the frame, substantially as described, whereby the drive-chain can be maintained in a tightened condition without impairing the swiveling movement of the lower portion of the frame in conforming to the varied positions of the main sprocket-wheel incident to the adjustment and operation of the machine in seeding.

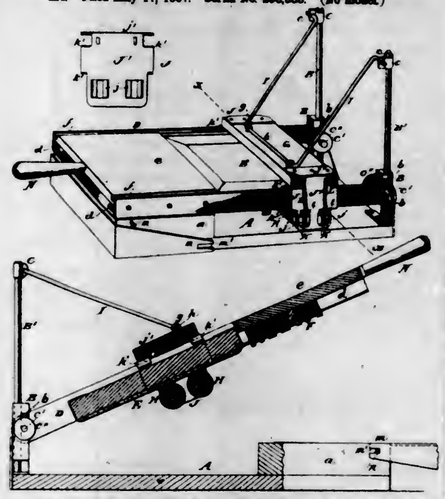
5. In a seeding-machine, the combination, substantially as hereinbefore described, of a seed-box having its agitator-shaft provided with a sprocket-wheel accessible near the center of the machine for the application of power thereto, a pair of revolving axles angularly adjustable with reference to the line of draft and having thereon soil-working devices, a main or driving sprocket-wheel upon and near the inner end of one of said axles, a jointed-chain frame extending from said main sprocket-wheel to the seed-box shaft, and drive-chain supported under even tension by said frame for communicating power to the seed-box shaft.

6. In a seeding-machine, the combination, with the seed-box shaft, a sprocket-wheel thereon, a main or driving sprocket-wheel, a chain frame extending from the main sprocket-wheel to the seed-box shaft and flexibly jointed upon a pivot or bolt which is parallel with said shaft, a double-grooved sprocket-wheel mounted in said frame between the main sprocket and the seed-box shaft, and two drive-chains for coupling said double-grooved sprocket-wheel, respectively, with said main sprocket-wheel and the sprocket-wheel on the seed-box shaft, substantially as described.

7. In a seeding-machine, the combination, with the seed-box shaft, a sprocket-wheel thereon, a main or driving sprocket-wheel, and suitable drive-chain, of a flexibly-jointed chain frame hinged at one end upon said shaft and at its foot supported on the axis of the main sprocket-wheel and provided with clearing-fingers at each side of and parallel with said wheel, substantially as described, whereby the chain and said main sprocket-wheel are protected against being unduly clogged by roots and earth while the machine is in service.

8. In a seeding-machine, the combination, with the seed-box shaft and its sprocket-wheel, a main or driving sprocket-wheel, and suitable drive-chain, of a stationary clearing stud or finger projecting into the chain groove of the main sprocket-wheel, substantially as described, for freeing said groove from earth, roots, and other obstructive matter while the machine is in service.

380,423. **STAMPING-PRESS.** WILLIAM H. H. CLARK, St. Louis, Mo. Filed May 17, 1887. Serial No. 238,553. (No model.)



Claim.—1. The combination, with the bed and standard socket-plates secured thereto and slotted, as described, of the arms D, carrying the inking-pad and type, and pivoted to and vertically adjustable in the slots of said socket-plates, substantially as and for the purpose described.

2. The combination, with the bed and the standard socket-plates secured thereto, of the standards removably inserted in said socket-plates, a reciprocating carriage carrying the rollers, and a removable pivotal connection between said carriage and standards, substantially as described.

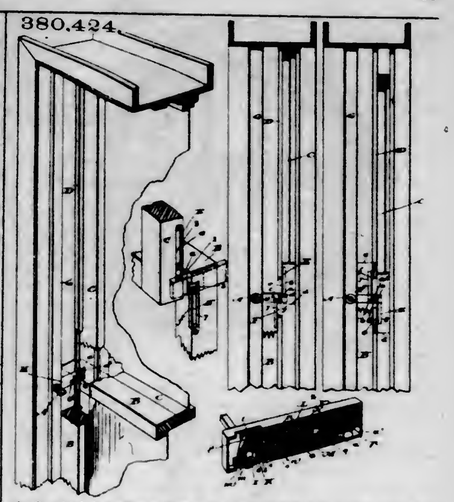
3. The combination, with the bed having raised portion provided with laterally-projecting pins, of a table-extension formed with side flanges provided with open-ended slots engaging said pins, substantially as and for the purpose described.

380,424. **SASH-FASTENER.** REUBEN CLARKE, Toronto, Ontario, Canada, assignor of one-half to William Ferguson Munro, same place. Filed May 25, 1887. Serial No. 239,345. (No model.)

Claim.—1. The combination of the box H, having a slot formed therein, the spindle I, the notched quadrant K, the bar L, carrying a catch and a pin which enters a slot formed in said quadrant and having a guide for the enlarged head of the pin O, which is actuated by the movement of said quadrant, and the spring N, which has bearings on said pin and the slotted end of the bearing-piece *p*, substantially as specified.

2. The combination of the box H, the spindle I, carrying a thumb-piece, the notched quadrant K, the bar L, and the bar M, loosely connected with the said quadrant and adapted to move the catches *a* and *b* in opposite directions, when actuated by said quadrant, in slots formed in said box H, and provided with guides for the head of the pin O, which is so formed as to enter the notches in said quadrant as it is caused to rotate, and the spring N, having suitable bearings and adapted to keep the head of the pin pressed into the notches on the quadrant, substantially as described, and for the purpose specified.

380,424.



3. The combination, with the window frame and sash, a socket-plate in a recess in the sash, and a catch fitted to engage a bearing in said plate, of a box let into the side of the window-frame and formed with a slot, a spindle projecting through said slot, a notched quadrant secured to said spindle, and a bar within said box engaging said quadrant and operated by said spindle to move said catch, substantially as described.

4. In combination with a window-sash, a socket-plate, F, rigidly attached to said sash in a recess made therein and having a slot, 3, and groove 7, so formed as to admit of a catch, *b*, passing into said groove and engaging at the end thereof when said catch *b* is actuated by mechanism let into the side of the window-frame and locking said sash after it has been partially opened, substantially as specified.

5. In combination with a window frame and sashes, the box H, with mechanism adapted to operate the catches *a* and *b*, and the socket-plates E and F, attached one to each sash and inversely arranged and which afford suitable bearings for the catches *a* and *b*, so as to lock in position the sashes B and C, substantially as described and specified.

6. The box H, let into a window-frame, the spindle I, notched quadrant K, the bar L, and the bar M, loosely connected with said quadrant and adapted to move the catches *a* and *b* in opposite directions when actuated by said quadrant, and provided with guides for the head of the pin O, which is so formed as to enter the notches in said quadrant as it is caused to rotate and is held therein by the action of the spring N, in combination with the socket-plate E, let into the upper sash, and the socket-plate F, let into the lower sash and having slots 2 and 3 and grooves 7 and 8, which afford suitable bearings on which the catches *a* and *b* may engage when moved into position by the thumb-piece A, formed on the end of said spindle I, so as to lock the sashes B and C in the required position, substantially as specified.

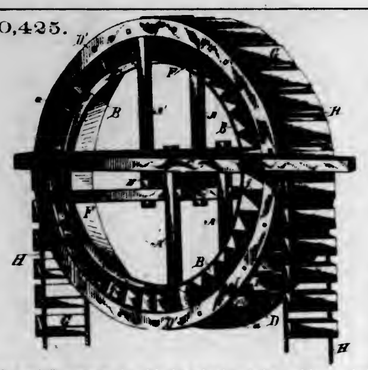
380,425. **CHAIN-PUMP.** JOSÉ JOAQUIN DE SILVA, Guanajuato, Guanajuato, Mexico. Filed Nov. 18, 1887. Serial No. 255,527. (No model.) Patented in Mexico Mar. 5, 1887.

Claim.—1. In a chain-pump, the combination, with a series of connected buckets, of a wheel adapted to support the same, said wheel having two parallel frames or spiders, a continuous peripheral partition, F, in the shape of a frustum of a cone, inclined to the axis of the wheel, and substantially-radial partitions meeting the former partitions and forming therewith inclined canals, substantially as described.

2. In a chain-pump, the combination, with a wheel provided upon its periphery with inclined canals, of a receiving-duct arranged in an



380,425.



arc substantially concentric with the wheel and situated in proximity to the discharge-openings of the canals, substantially as described.

380,426. TELEPHONE-TRANSMITTER. MOSES G. FARMER, Elliot, Me. Filed Apr. 14, 1887. Serial No. 234,796. (No model.)



Claim.—1. A telephone-transmitter having a set of fixed electrodes with roughened surfaces, a comminuted conductor connecting said electrodes, and a diaphragm resting against said comminuted conductor, substantially as described.

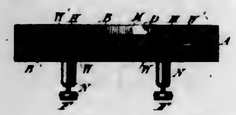
2. A telephone-transmitter having fixed electrodes, in combination with a conducting-powder resting thereon, and a diaphragm adapted to hold the powder in contact with said fixed electrodes, substantially as described.

3. A telephone-transmitter having rigid or fixed electrodes secured to the body of the instrument, in combination with a comminuted conductor resting directly on said fixed electrodes, and a diaphragm adapted to hold the comminuted conductor in place and vary the conducting capacity of the instrument as it is vibrated, substantially as described.

4. A telephone-transmitter consisting of fixed electrodes having roughened surfaces and comminuted powder resting thereon, with a diaphragm for holding said powder in place, and a retaining-ring, as described, for adjusting the diaphragm to and from the electrodes, substantially as described.

5. In a telephone-transmitter, the combination of fixed electrodes fitted in the base of the instrument and but slightly separated from each other, with carbon or other powder resting thereon, a diaphragm resting on the powder, and an adjustable retaining-ring fitted in the mouth of the instrument for adjusting the powder with relation to the fixed electrodes, substantially as described.

380,427. TELEPHONE-TRANSMITTER. MOSES G. FARMER, Elliot, Me. Filed Sept. 14, 1887. Serial No. 249,622. (No model.)



Claim.—1. A telephone-transmitter having comminuted powder retained between two conducting-plates, and two or more electrodes resting in the body of the powder between the plates, substantially as described.

2. A telephone-transmitter having two or more electrodes, in combination with front and back plates of conducting material, and carbon powder or analogous material located between said plates and entirely surrounding the electrodes, substantially as described.

3. The combination, in a telephone-transmitter, of a front and a back plate of conducting material, with two or more fixed perforated electrodes surrounded by carbon or analogous conducting-powder and located between the front and back plates, substantially as described.

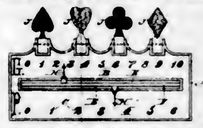
4. In a telephone-transmitter, the combination of a retaining-case having a back plate of metal located inside said case, two or more electrodes entirely surrounded by carbon or analogous conducting-powder, and an additional metallic plate for holding the carbon powder in place, substantially as described.

5. In a telephone, a retaining case or cup, in combination with two metal plates, one located in the base of the cup and the other resting upon carbon powder contained in said cup, with two or more electrodes embedded in the carbon powder, and a retaining-ring adapted to hold the outer plate against the carbon powder, substantially as described.

6. In a telephone-transmitter, a non-conducting cup having two or more binding-posts extending through the base of the cup and connected to two or more electrodes embedded in carbon powder, in combination with two metal plates adapted to hold such carbon powder within the cup, and a retaining-ring for holding the parts in contact with each other, substantially as described.

7. In a telephone, the combination of a retaining-cup having a metal plate in its interior, with two or more electrodes embedded in carbon powder located within said cup, with an exterior retaining metal plate, and a retaining-ring for holding said parts in connection, substantially as described.

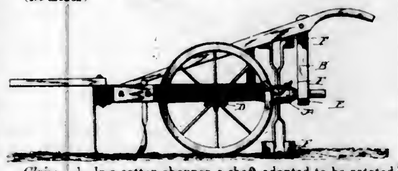
380,428. GAME-COUNTER. CHARLES FEARON, Philadelphia, Pa. Filed Dec. 13, 1886. Serial No. 221,417. (No model.)



Claim.—1. A game-counter having movable indices to indicate the number of games and points, and plates of the form of the different suits of a pack of playing-cards, hinged to the side of the counter to indicate the trump-suit, all as described.

2. A game-counter consisting of the body A, with a recess, slots, and bars, bent indices movably fitted to said bars, and trump-indicating plates pivoted or hinged to said body, substantially as described.

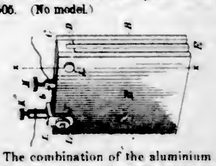
380,429. COTTON-CHOPPER. ALEXANDER FLEMING, Cedar Town, Ga. Filed Dec. 8, 1886. Renewed Feb. 6, 1888. Serial No. 263,166. (No model.)



Claim.—1. In a cotton-chopper, a shaft adapted to be rotated by the movement of the machine and provided with chopping-blades extending from the periphery, said blades arranged in pairs to act simultaneously, the adjoining edges of said blades being separated the length of a stand and their cutting-faces turned obliquely toward each other, substantially as and for the purpose set forth.

2. In a cotton-chopper, blades for forming stands, operating in pairs, the blades of the said pairs being separated the length of a stand and their cutting-faces turned obliquely toward each other, substantially as set forth.

380,430. GALVANIC CELL. WILLIAM FRISHMUTH, Philadelphia, Pa., assignor to William H. Gaw, same place. Filed Jan. 26, 1887. Serial No. 225,506. (No model.)



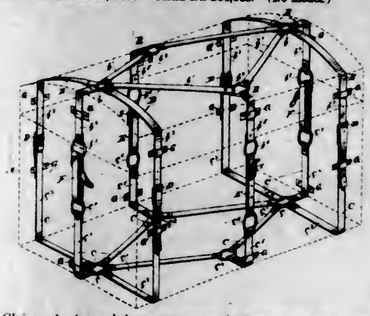
Claim.—1. The combination of the aluminium element E, having threaded rod F, the grooved bar C, nut G, zinc element B, and bolts L, substantially as described.

2. The combination of the aluminium element E, having threaded rod F, the grooved bar C, nut G, zinc elements B B, bolts L, and circuit-connection I, substantially as described.

3. The combination of the aluminium element E, having threaded rod F, grooved bar C, nut G, zinc elements B B, bolts L, circuit-connection I, and binding-posts K M, the said rod F, nut G, bolts L, circuit-

connection I, and binding-posts K M being of aluminium, substantially as described.

380,431. TRUNK-HARNESS. WILLIAM H. GAWN, San Francisco, Cal. Filed Jan. 23, 1888. Serial No. 261,685. (No model.)

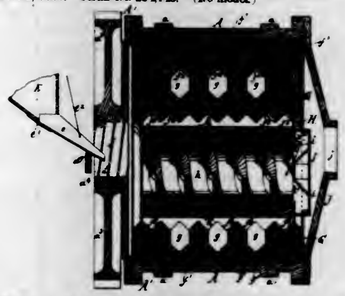


Claim.—1. A trunk-harness composed of two main portions—one for the top and the other for the bottom of the trunk—each portion having a center, from which radiate straps proceeding over the sides and ends of the trunk and united, the end straps having rings, and connected by straps running through both rings, whereby the harness may be tightened, substantially as described.

2. A trunk-harness composed of two main portions—one for the top of the trunk and the other for the bottom—each portion consisting of two ring-centers over the end centers of the top and bottom, straps radiating from these rings over the top and bottom, the center and the ends of the trunk, and over the sides of the trunk at each end, and buckles and straps for uniting the ends of the straps of each portion, substantially as described.

3. In a trunk-harness, straps passing in several directions over the trunk from the top and bottom and united by buckles or other suitable fastening devices, in combination with straps passing over the ends of the trunk and provided with rings, and cinch-straps united to one of said rings and passing back and forth through the rings for the purpose of tightening the entire harness, substantially as described.

380,432. PULVERIZER. PHILETUS W. GATES, Chicago, Ill. Filed Nov. 3, 1887. Serial No. 254,145. (No model.)



Claim.—1. In a pulverizer, the combination, with a surrounding reducing-surface, of a hollow roller provided with an exterior reducing-surface and with a return-screw on its inner surface, whereby the insufficiently-pulverized substances can be returned from the discharging end to the feeding end of the pulverizer, and introduced again between the pulverizing-surfaces exterior of the return feeding-screw for further pulverization, substantially as described.

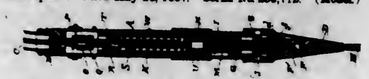
2. In a pulverizer, the combination of the cylinder A, the roller H, having an inner return feeding-screw, *h*, and an elevator, I, substantially as described.

3. In a pulverizer, the combination of the cylinder A, roller H, having an inner return feeding-screw, *h*, and a head with an outlet through which the sufficiently-pulverized materials are discharged, while the coarser substances are returned toward the feed end of the pulverizer, substantially as described.

4. The revolving reducing-cylinder A, provided with the discharge-head J', comprising rim j^4, central disk j^3, coverings j^4 of wire-gauze, and water-pipe J^3, in combination with the revolving reducing-roller H, having an inner return feeding-screw, substantially as described.

5. The combination of the revolving reducing-cylinder A, provided with the screw a^5 in its feed-receiving opening a^4, and with the head J', having wire-gauze-covered discharge-openings, and a water-pipe, J^3, in combination with the revolving reducing-roller H, having an inner return feeding-screw, *h*, substantially as described.

380,433. HAND-PIECE FOR DENTAL ENGINES. HENRY S. GRACE, San Francisco, Cal., assignor of one-half to Charles W. Decker, same place. Filed May 28, 1887. Serial No. 239,712. (Model.)



Claim.—1. In a dental hand-piece, the exterior casing, the interior cylinder, within which are fitted the rotary cam-shaft and the spiral spring which actuates the mallet, in combination with the spindle having the tool-holder and adjusting mechanism, and the intermediate reversible connecting-piece I, by which the two are united, substantially as described.

2. In a dental hand-piece, the exterior case, the interior cylinder having the slot and guiding-pin upon one side and the cam-shaft and spring fitted to its interior, in combination with the clutch, one portion of which is secured to the end of the cam-shaft, and the other slides upon a feather in the driving-shaft, which enters the upper end of the hand-piece, together with the sliding ring and pin, whereby the clutch may be made to engage or disengage with the cam-shaft, substantially as herein described.

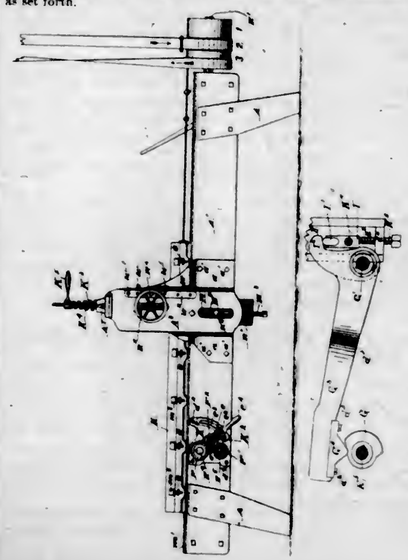
3. In combination with the spindle, the tool-holder, and the connecting devices, as shown, the yoke J, within which the milled head of the chuck-operating screw is fitted to turn, said device having a square opening in the lower end or cross-bar, whereby it is connected with the spindle, so as to rotate the same by the action of the flexible driving-shaft which connects with this device, substantially as described.

4. The dental plugger having an extension at right angles with a tip, within which a lever is journaled, so as to actuate a plugging-instrument, in combination with a supplemental hinged or jointed tip, X', carrying a guide for the plugging-tool, said extension and tool being adjustable to any angle of inclination with the actuating-lever, substantially as described.

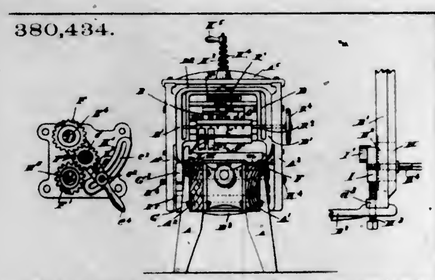
5. The rotary spindle, tool-holding chuck, and the driving mechanism of a dental plugger, in combination with the adjusting nut or sleeve *f*, engaging a shoulder on said spindle, and externally threaded, whereby the spindle may be made to run light and lost motion be taken up, substantially as herein described.

380,434. MACHINE FOR CUTTING MOLDINGS. WORCESTER HADDOCK, Cincinnati, Ohio, assignor of one-half to Stille & Dub'meier, same place. Filed July 6, 1886. Serial No. 207,216. (No model.)

Claim.—1. In a machine for cutting moldings, housings connected to the frame-work and having vertically-slotted side walls, a sliding frame, cutter-head attached thereto, adjusting-screws for vertically adjusting the sliding frame, arm G^2, and lever G^3, substantially as set forth.



380,434.



2. In a machine for cutting moldings, housings connected to the frame-work and having vertically-slotted side walls, a sliding frame, cutter-head attached thereto, bearing-block I, screw H^4, connecting the same to the frame and holding it in position, and adjustment-screws H^3, bearing and operating against said block I to secure the vertical adjustment of the sliding frame, substantially as and for the purpose set forth.

3. In a machine for cutting moldings, housings connected to the frame-work and having vertically-slotted side walls, a sliding frame, cutter-head attached thereto, bearing-block I, screw H^4, connecting the same to the frame and holding it in position, adjustment-screws H^3, bearing and operating against said block I to secure the vertical adjustment of the sliding frame, a carriage, K, having depending projection k', two-part hanger having recessed upper portion to receive the projection k' on the carriage, and a screw-threaded socket, a feed-screw engaging in said screw-threaded socket, and suitable means for actuating said feed-screw, substantially as set forth.

4. In combination with the sliding frame carrying the cutter-head, the bearing-block connected with said frame and having a knob or boss, I', having a rounded upper surface, the short arm G^2 and lever G^3, having hook-shaped ends to rest upon the bearing-block boss I', cam-shaft E^3, cam G thereon, projection G^4, depending from said long lever G^3 and engaging with the cam G, and rock-shaft G', connecting said arm G^2 and lever G^3 and supporting and imparting motion to said arm G^2, substantially as and for the purpose set forth.

5. In combination with a sliding frame carrying the cutter-head, a bearing-block connected with said frame and having a knob or boss, I', having a rounded upper surface, the arm G^2 and lever G^3, having hook-shaped ends to rest upon the bearing-block boss I', cam-shaft E^3, cam G thereon, projection G^4, depending from said lever G^3 and engaging with the cam G, rock-shaft G', connecting said arm G^2 and lever G^3 and supporting and imparting motion to the arm G^2, the carriage K, having depending hanger L, constructed substantially as described, feed-screw, actuating devices connected to one end thereof, a cross-shaft, E^4, bevel-wheels connecting said feed-screw and shaft E^4, yoke K^3, and a series of adjustable and interchangeable gears mounted on said cross and cam shafts and within the yoke K^3, respectively, substantially as and for the purpose set forth.

6. In a machine for cutting moldings, the combination of the sliding frame B, carriage K, rock-shaft G', arms G^2 G^3, cam G, and mechanism for operating the same, and the adjustable bearing block or piece I, substantially as and for the purpose set forth.

7. In a machine for cutting moldings, the combination of the sliding frame B, carriage K, rock-shaft G', arms G^2 G^3, cam G, adjustable bearing block or piece I, and adjusting-screw H^3, substantially as and for the purposes set forth.

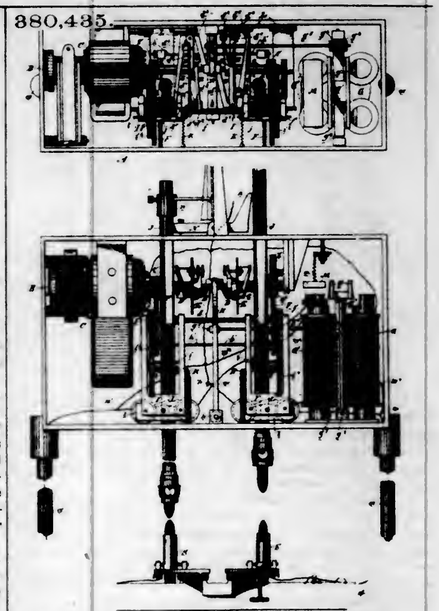
8. In a machine for cutting moldings, the combination, with the sliding cutter-head frame, of a bearing-block having a boss provided with a rounded upper edge, a screw holding said block in connection with the cutter-head frame, a short and a long armed lever, each supported on suitable rock-shafts and having hook-shaped ends to engage with the curved boss on the bearing-block, and a cam adapted to operate said levers, substantially as and for the purpose set forth.

380,435. ELECTRIC-ARC LAMP. AUGUST HARDING, Oakland, Cal. Filed Apr. 23, 1887. Serial No. 235,934. (No model.)

Claim.—1. In an electric-arc lamp, and in combination with a shaft and an electric motor tending to turn the shaft in one direction, independent friction-clutches fast on the shaft, independent friction-gears loose on the shaft, each engaged normally by a clutch, power-transmitting mechanism between the loose friction-gears and the carbon holder or rod, and a means controlled by an electro-magnet in the main circuit and an electro-magnet in the shunt-circuit around the arc for throwing either of the clutches from its engagement with its friction-gear, substantially as herein described.

2. In an electric-arc lamp, and in combination with a shaft and an electric motor tending to turn the shaft in one direction, independent friction-clutches fast on the shaft, each engaged normally by a clutch, power-transmitting mechanism between the loose gears and the carbon holder or rod, and an electro-magnet in the main circuit and an electro-magnet in the shunt-circuit around the arc and armatures operated thereby, and pivoted levers operated by the armatures and connecting devices, whereby either of the fast clutches is thrown from its engagement with its friction-gear, substantially as herein described.

380,435.



3. In an electric-arc lamp, and in combination with a shaft and a motor tending to turn the shaft in one direction, independent friction-clutches fast on the shaft, independent friction-gears loose on the shaft, each engaged normally by a clutch, power-transmitting mechanism between one of the loose gears and the carbon holder or rod, so as to feed said holder down, power-transmitting mechanism between the other loose gear and the carbon holder or rod, whereby it is raised, and a mechanism controlled by an electro-magnet in the main circuit and an electro-magnet in a shunt-circuit around the arc for throwing either of the clutches out of engagement with its friction-gear, substantially as herein described.

4. In an electric-arc lamp, the loose friction-gears E, forming a part of the chain by which the power is transmitted to operate the carbon holders or rods, in combination with the independent clutches D, consisting of the hubs fast on the power-shaft and having oppositely-extending arms, U-shaped pieces pivoted in one of said arms and having a friction shoe or clamp bearing against the friction-gear, and an adjustable spring-connection between one of the arms of said U-shaped pieces and the other arm of the hub, whereby the shoe is held to its engagement, substantially as herein described.

5. In an electric-arc lamp, two or more vertically-adjustable independent carbon holders or rods and mechanism normally out of gear for operating them, in combination with independent electro-magnets for throwing said mechanism into gear with each carbon holder or rod separately, said magnet being electrically connected and let into the main circuit by branches through the holders or rods and the arcs of their carbons, whereby the operating mechanism of but one holder is effected at one time, substantially as herein described.

6. In an electric-arc lamp, a shaft having an electric motor tending to turn it in one direction only and a carbon holder or rod, in combination with a chain of gearing between the rotating shaft and said holder or rod, a swinging bracket or hanger carrying gears forming part of said gear-chain, and an electro-magnet in the main circuit for completing and breaking the chain of gearing by swinging the bracket, substantially as herein described.

7. In an electric-arc lamp, a shaft having a motor tending to turn it in one direction and vertically-adjustable carbon holders or rods, in combination with the chain of gearing between said shaft and said holders or rods by which they may be raised and lowered, independent swinging brackets or hangers carrying gears forming part of said chain of gearing, and electro-magnets for swinging the brackets or hangers to make or break the chain of gearing, said magnets being electrically connected and let into the main circuit by branches which include the carbons and their holders or rods, whereby but one carbon may be in operation at one time, substantially as herein described.

8. In an electric-arc lamp, and in combination with a shaft and an electric motor tending to turn the shaft in one direction, independent friction-clutches fast on the shaft, independent friction-gears loose on the shaft, each engaged normally by a clutch, a chain of gearing from one end of the shaft to feed the carbon holder or rod down, a chain of gearing from the other end of the shaft to raise said holder or rod, a mechanism controlled by an electro-magnet in the main circuit and an electro-magnet in a shunt-circuit around the arc for throwing either of the clutches out of engagement with its friction-gear, whereby one gear-chain is rendered operative and the other broken, a swinging bracket or hanger carrying gears forming part of the gear-chains, and an electro-magnet in the main circuit for swinging the bracket or hanger to make or break the chains of gearing, whereby the carbon holder or rod is relieved to drop to contact when the current is interrupted, substantially as herein described.

9. In an electric-arc lamp, a shaft having an electric motor tending to turn the shaft in one direction and carbon holders or rods, in combination with independent friction-clutches fast on the shaft, independent friction-gears loose on the shaft, each engaged normally by a clutch, chains of gearing from said shaft to the carbon holders or rods, whereby they may be raised or lowered, a mechanism controlled by an electro-magnet in the main circuit and an electro-magnet in a shunt-circuit around the arc for throwing either of the clutches out of engagement with its friction-gear, a swinging bracket or hanger for each holder or rod and carrying gears forming part of the chains of gearing, and an electro-magnet for each hanger, said magnets being electrically connected and let into the main circuit by branches which include the carbons and their holders or rods, whereby the chain of gearing to each holder or rod may be completed or broken and but one carbon operated at one time, substantially as herein described.

10. In an electric-arc lamp, a rotating shaft, a carbon holder or rod, and a gear-chain by which the holder or rod is operated, in combination with a swinging bracket or hanger carrying gears forming part of the chain of gearing, an electro-magnet in the main circuit for completing said chain by swinging the bracket or hanger, a short circuit, and an electro-magnet and armature in said circuit, whereby the hanger-controlling magnet is short-circuited when the arc becomes abnormally long and the chain of gearing thereby broken to allow the holder or rod to drop, substantially as herein described.

11. In an electric-arc lamp, a shaft having an electric motor tending to turn it in one direction and carbon holders or rods, in combination with independent friction-clutches fast on the shaft, independent friction-gears loose on the shaft, each engaged normally by a clutch, chains of gearing from said shaft to the carbon holders or rods, whereby they may be raised or lowered, an electro-magnet in the main circuit and an electro-magnet in a shunt-circuit around the arc, mechanism controlled by said magnets for throwing either of the clutches out of engagement with its friction-gear, a swinging bracket or hanger for each holder or rod and carrying gears forming part of the chains of gearing, an electro-magnet for each hanger, said magnets being electrically connected and let into the main circuit by branches which include the carbons and their holders or rods, and a short circuit around said magnets normally open but brought into operation by the abnormal lengthening of the arc, whereby the hanger-controlling magnets are cut out and the holders or rods relieved, substantially as herein described.

380,436. CAR-AXLE OILER. ELMER HOUSEL, Summit, Ohio. Filed Jan. 27, 1888. Serial No. 262,094. (No model.)

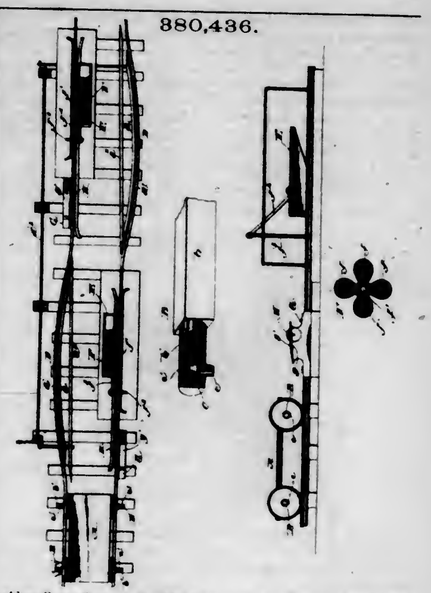
Claim.—1. The combination, with the axle secured to the bottom of the car so as not to rotate and having the openings in its journals, of the linchpins in and depending below said openings, the blocks with inclined upper edges, the oil-troughs and brushes, and means, substantially as described, whereby the linchpins are moved up and the journals pulled nearly from the hubs just before the said journals pass over the brushes, substantially as specified.

2. The combination, with the non-rotating axle having the vertical openings in its journals and the linchpins in said openings, of the blocks and the plates secured on said block, substantially as specified.

3. The combination, with the non-rotating axle having openings in its journals and the linchpins in and depending below said openings, of the blocks to move the linchpins completely within the corresponding openings, substantially as specified.

4. The combination, with the non-rotating axles having the openings in their journals and the linchpins, of the blocks with inclined upper edges, and the track having the curved main rails and curved guide-rails on the opposite sides from corresponding blocks, substantially as specified.

380,436.



5. The combination, with the non-rotating axles having the openings in their journals and the linchpins, of the railway having the widened parts D, and provided at such parts with the main and guide rails, the blocks on the opposite sides of the track from said rails, the oil-troughs, and the depending brushes, substantially as specified.

6. The combination, with the non-rotating axles having the vertical tapering openings in the journals and the tapering linchpins, of the blocks having inclined upper edges, the plates secured to said edges, and the wheels H, journaled upon the corresponding blocks near the top of the highest end thereof, substantially as specified.

7. The combination, with the axle B, having its central part square in transverse section and secured to the bottom of the car, and provided in its journals with the vertical openings C, having their upper halves of square diameter throughout and their lower halves tapering downward, the screw-taps c', engaging in the tapered upper orifices of the openings C, and the tapering linchpins c, fitting into the tapered portions of said openings and depending below the same, of the block having inclined edges and the plates secured to said edges, substantially as specified.

380,437. TELEPHONE. WARREN D. HOUSE, Kansas City, Mo., assignor to the House Improved Telephone Company, Philadelphia, Pa. Filed Mar. 1, 1887. Serial No. 229,363. (No model.)



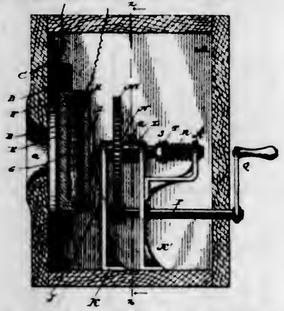
Claim.—1. In a telephone, the combination, with a body of vibratory electrolytic material, of an opposite electrode and means for moving the two relatively to each other, the same portion of the electrolytic body being constantly in contact with said electrode, substantially as described.

2. A telephone provided with a body of vibratory electrolytic material and an opposite axially-revolving-plate electrode in contact therewith, substantially as described.

3. A telephone provided with a body of vibratory electrolytic material, and an opposite axially-revolving-plate electrode having its edge in contact with said electrolytic body, substantially as described.

4. A telephone provided with a diaphragm of vibratory electrolytic material having a facing of conducting material and a rim-casing containing a saturating solution, substantially as described.

380,438. **TELEPHONE.** WARREN D. HOUSE, Kansas City, Mo., assignor to the House Improved Telephone Company, Philadelphia, Pa. Filed Mar. 1, 1887. Serial No. 229,364. (No model.)



Claim.—1. A telephone consisting of an electric circuit in which a moving body of vibratory electrolytic material constitutes one electrode, and having an opposite electrode in contact therewith, substantially as described.

2. A telephone consisting of an electric circuit in which a moving body of vibratory electrolytic material constitutes one electrode, and having an opposite diaphragm-electrode in immediate contact therewith, substantially as described.

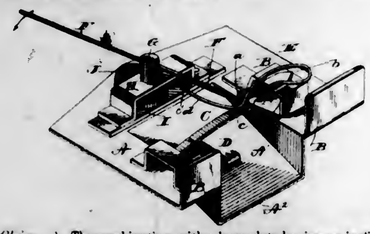
3. In a telephone, the combination of a plurality of electrolytic vibratory surfaces in contact, respectively, with opposite electrodes, and means producing motion between the surfaces and electrodes, substantially as described.

4. A telephone provided with a body of vibratory electrolytic material located between opposite electrodes and in moving contact therewith, substantially as described.

5. In a telephone, the combination, with a rotatory body of vibratory electrolytic material, of hinged diaphragm-electrodes in contact therewith, and an adjusting screw-bolt for regulating the pressure between the said body and diaphragms, substantially as described.

6. In a telephone of the kind described, an electrode consisting of an annulus of vibratory electrolytical material, a saturating material contained therein, and inclosing conducting-walls, substantially as described.

380,439. **ANIMAL-TRAP.** ORLANDO HUFFMAN, Friend, Nebr., assignor of one-half to Thomas Ellis Browne, same place. Filed Aug. 1, 1887. Serial No. 245,858. (No model.)



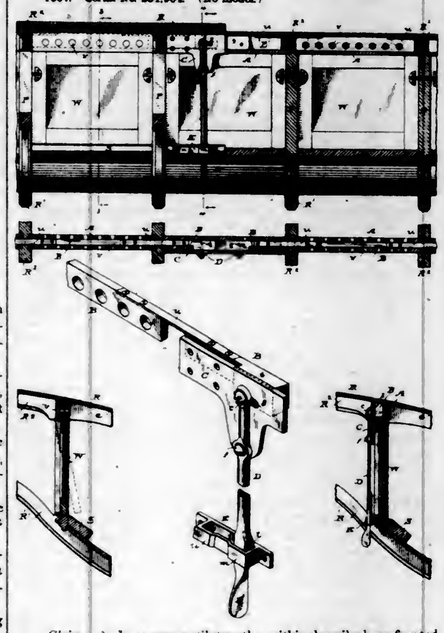
Claim.—1. The combination, with a base-plate having an inclined center portion sloping toward one side, a hammer-bar, and a spring for rotating the hammer-bar, of a bait-bar leading across said inclined portion of the base and located in a plane below the plane of the hammer-bar and provided with a shoulder to engage said hammer-bar, substantially as set forth.

2. The combination, with a base-plate, a hammer-bar, and a spring for rotating said bar, of a hinged bait-bar located in a plane below the path traversed by the hammer-bar and provided with a shoulder, and a latching-guard secured to the bait-bar and adapted to be engaged by the hammer-bar, substantially as set forth.

3. The combination, with a base-plate sloping toward one side edge, a bracket attached to the base-plate, and a bait-bar, of a latching-guard, an upright shaft, a hammer-bar secured thereto, and a spring to rotate the shaft and hammer-bar, substantially as set forth.

4. The combination, with a base-plate having an integral sloping portion made lowest at one side edge, a bracket, and a bait-bar having a shoulder or catch made on its upper surface, of a latching-guard attached to the bait-bar, an upright shaft, a spring for rotating said shaft, and a hammer-bar affixed at right angles to the shaft, substantially as set forth.

380,440. **CAR-VENTILATOR.** JOHN HUTTON, New Utrecht, assignor of one-half to John W. Fowler, Brooklyn, N. Y. Filed Mar. 22, 1887. Serial No. 231,964. (No model.)



Claim.—1. In a car-ventilator, the within-described perforated slides, each composed of several sections coupled together by flexible metallic unions, in combination with levers having fixed fulcrums and coupled directly to each slide at one end without slots in either part, substantially as herein specified.

2. The combination, in a car-dome, of stringers immediately below its roof, provided with lateral ventilating-openings and means, substantially as described, for closing or partly closing the same at will, and side windows beneath said stringers, mounted on horizontal pivots and having a limited opening movement, substantially as herein specified, for the purpose set forth.

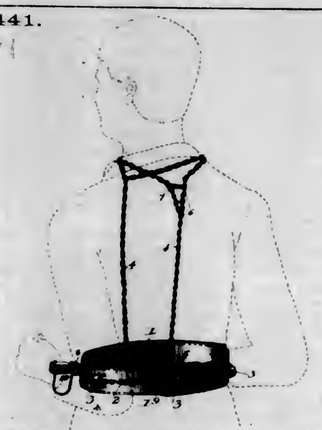
380,441. **MANACLE.** FRANK A. HYATT and EWING D. TANKERSLEY, Alamosa, Colo. Filed May 3, 1886. Serial No. 200,998. (Model.)

Claim.—1. In a manacle, the combination of the waist-chain, the single handcuffs secured to the sides of the waist-chain, the neck-chain provided with a neck-loop and having one end permanently secured to the front of the waist-chain, and a removable locking device connecting the other end of the neck-chain with the back of the waist-chain.

2. In a manacle, the combination of the waist-chain, the single handcuffs secured to the sides of the waist-chain, the neck-chain provided with a neck-loop and having one end permanently secured to the front of the waist-chain, an adjustable link for taking up the slack of the said neck-loop, and a removable locking device connecting the other end of the neck-chain to the back of the waist-chain.

3. In a manacle, the combination of the leather waist-belt provided with loops 3, the chain 2, passing through the said loops and having its ends secured together, the single handcuffs 10, attached to the sides of the said waist-chain, the neck-chain 4, provided with the neck-loop 6, the snap-link 7, for taking up the slack of the neck-loop,

380,441.



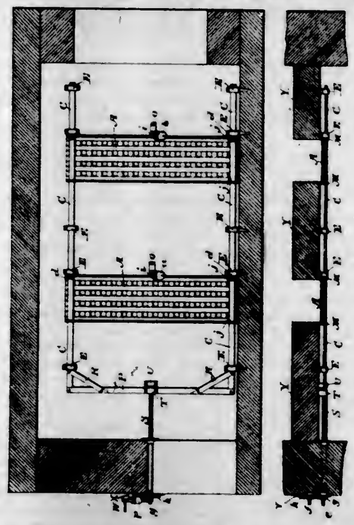
and the padlock 9, connecting the end of the neck-chain to the back of the waist-chain.

380,442. **PROCESS OF REFINING IRON.** GUSTAV LINDENTHAL, Pittsburg, Pa. Filed May 14, 1887. Serial No. 238,208. (No specimens.)

Claim.—1. The process herein described of purifying cast or pig iron, which consists in first desiliconizing and decarbonizing the metal, then adding aluminum to the molten metal and bringing the same in contact with basic material to react on the phosphatic and other impurities in the iron, as set forth.

2. The process herein described of refining iron, which consists in first desiliconizing and decarbonizing the molten cast-iron, then adding aluminum and bringing the molten metal into contact with iron ore or other suitable basic material to react on the phosphatic and other impurities, then subjecting the charge to a puddling action until the metal is reduced to wrought condition to form a ball or loop, as set forth.

380,443. **SLIDING JAIL-DOOR.** DONALD MCDONALD, Louisville, Ky. Filed Dec. 13, 1887. Serial No. 257,833. (No model.)



Claim.—1. The combination, with a series of sliding cell-doors, of a sliding framing forming ways upon which said doors may be run, and attaching devices for locking said doors to such framing, whereby the said doors may run thereon or be attached thereto and be opened and closed either singly or collectively by the movement thereof, substantially as set forth.

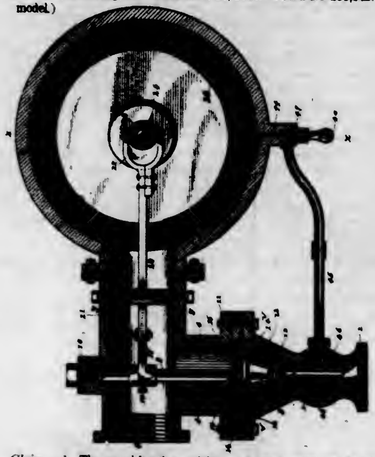
2. The combination, with a series of sliding cell-doors, of a sliding framing forming ways upon which said doors may be run, and attaching devices whereby said doors may be secured to said framing, of operating mechanism for effecting the movement of said framing from a position outside of the cell-corridor, substantially as set forth.

3. The sliding bars C, operated from the outside, as described, in combination with the sliding doors A, attachable to said bars, so as to slide therewith and be detachable from said bars, so as to slide independently thereof, substantially as and for the purposes described.

4. The sliding doors A, the sliding bars C, the cross-bar F, the nut T, and the screw S, with its spindle attachment, substantially as and for the purposes described.

5. The sliding doors A, the angle-irons M, the locking-holes *i* and *d*, and their adjacent counterparts located as described, and the locks *a* and *b*, substantially as and for the purposes described.

380,444. **PRESSURE-REGULATOR AND CUT-OFF.** OWEN J. MCGANN, Pittsburg, Pa. Filed Nov. 16, 1887. Serial No. 255,343. (No model.)



Claim.—1. The combination, with a pressure-regulator having a movable abutment and a cut-off governed thereby, of a plug or valve adapted to open or close communication between the high-pressure main and cut-off, and a normally-closed by-pass leading from the pressure-chamber of the regulator to the high-pressure main, whereby the movable abutment of the pressure-regulator may be raised to its highest position before the fluid from the high-pressure main is admitted through said cut-off, substantially as described.

2. The combination, with a cut-off and pressure-regulator having a movable abutment and governing said cut-off, of a three-way cock interposed between the high-pressure main and the cut-off, and a by-pass leading from the pressure-chamber of the regulator to the stop-cock casing, whereby communication may be alternately established between the high-pressure main and cut-off and the high-pressure main and by-pass, substantially as described.

3. In a pressure-regulator having a movable abutment, the combination, with a normally-vented pressure-chamber and a normally-closed auxiliary fluid-conduit for actuating the movable abutment, of simultaneously-operating valves for closing said vent and opening said conduit, substantially as described.

4. In a pressure-regulator having a movable abutment and governing a cut-off, the combination, with a normally-vented pressure-chamber, of a by-pass leading therefrom to the high-pressure main and simultaneously operating valves for said vent and by-pass, whereby a vent is provided for the discharge of leakage from the cut-off, said vent being adapted to be closed upon the opening of the by-pass, substantially as described.

5. In a pressure-regulator, the combination, with the pressure-chamber and movable abutment, of a vent-tube opening above and below said abutment, said vent being adapted to be closed at the top by the raising of the abutment and at the bottom by a spring-seated valve normally open, substantially as described.

6. In a pressure-regulator, the combination, with the lower compartment thereof provided with a vertical vent-tube, of a sleeve adapted to move on said vent-tube and connected with the movable abutment, and a valve having an angular stem resting upon the vent-tube, the valve-face being located in the line of movement of the sleeve, whereby on the raising of the movable abutment the top vent of the tube will be closed, substantially as described.

7. In a pressure-regulator, the combination, with the lower compart thereof provided with a vertical vent-tube, of a sleeve moving thereon and connected with the movable abutment, said sleeve having at its upper end a valve-seat, a valve having an angular stem resting upon the end of the vent-tube, a cap-piece inclosing the valve and sleeve, and a spring for pressing the valve downward, substantially as described.

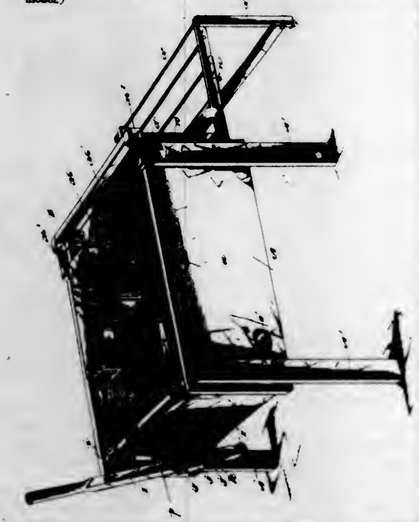
8. In a pressure-regulator, the combination, with the lower compartment, of the flexible diaphragm, an annulus for clamping the edges of the flexible diaphragm to said compartment, and a cap-piece separately secured to said annulus, substantially as described.

9. In a pressure-regulator, the combination, with the movable abutment and the rotary valve-stem, of a sleeve attached to the valve-stem and having an arm projecting therefrom, a link connected with the outer end of said arm, and a lever having its short arm connected with said link and its long arm connected with the movable abutment and fulcrumed in a partition between the pressure-chamber and cut-off, substantially as described.

10. In a pressure-regulator, the rotary cut-off described, consisting of a hollow conical valve located at the delivery side thereof, and provided with a stem sustained as against the gas-pressure from a centrally-located bearing-point whereon the end of the stem is arranged to turn, said valve having a series of side inlet-openings and exit-ports adjacent to the stem, and a conical seat having side openings adapted to register with the inlet-openings of the valve, substantially as described.

11. In a pressure-regulator having a movable abutment, the combination, with a normally-vented pressure-chamber and a normally-closed fluid-conduit for actuating the movable abutment, of a valve for opening said conduit and a valve for closing said vent, the latter valve being provided with a hand-operated stem for closing it, substantially as described.

380,445. WASHING-MACHINE. CAMDEN MEARS and JOHN W. MEARS, Bloomsburg, Pa. Filed Nov. 11, 1886. Serial No. 218,609. (No model.)



Claim.—1. In a washing-machine, the tub and cover provided with a plate on the cover and a second plate secured to the said first plate, the two being separated by suitable projections, which also support the second plate at both ends, a cog-wheel having an angular hole through it, loosely journaled between the plates, in combination with a vertically-reciprocating angular shaft, which slides freely through the hole in the cog-wheel and a rubber mounted thereon, and a gearing for rotating said wheel, shaft, and rubber alternately in opposite directions, substantially as and for the purposes specified.

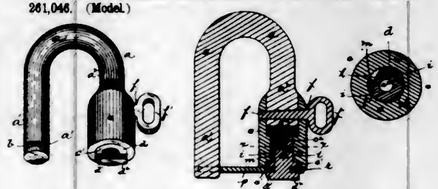
2. In a washing-machine, the combination of a suds-box having a swinging lid, the journal-plates affixed to the lid and having the aligned openings, a master-gear journaled in the plates and provided with a square opening which aligns with the openings in the plates, an agitator or rubber fixed to the lower end of a square shaft, which passes through the openings in the plates and master-gear and is free to move longitudinally therein, a rack guided by the plates for operating the master-gear and agitator, and a lever connected by a rod with the rack, whereby when the cover is elevated the agitator can be moved or adjusted in close proximity to the same to permit the ready removal of the fabrics, as and for the purpose set forth.

3. In a washing-machine, the combination of a suds-box having a hinged lid, the bearing-plates connected to the lid, a master-gear journaled in the said plates, the agitator connected by an intermediate shaft with the master-gear, a reciprocating rack for actuating the master-gear and having a fixed pin, a swinging hand-lever, a pitman intermediate of the lever and pin of the rack, and a fixed stop arranged in the path of the pin on the rack and adapted to come in contact therewith when the cover is elevated, substantially as described, for the purpose set forth.

4. In a washing-machine, the combination of a suds-box having a hinged lid or cover, the fixed bearing-plates D E, arranged parallel with each other and one having the flanges or ribs fitting in corresponding grooves in the other plate, the hollow aligned bosses therein, the guide-grooves and the through-bolts, the master-gear journaled in the hollow aligned bosses, the reciprocating rack working in the aligned guide-grooves, the agitator or rubber having the shaft passing through the master-gear, and a hand-lever connected with the rack, substantially as described, for the purpose set forth.

5. In a washing-machine, the combination of a suds-box having the swinging lid or cover, the fixed bearing-plates thereon, the master-gear journaled in the said plates and having the central square opening, the agitator or rubber having the square shaft passing through the opening in the master-gear and free to move longitudinally therein, the reciprocating rack, a hand-lever connected to the suds-box at an intermediate point of its length and adapted to impinge against the same at its lower extremity, the pitman intermediate of the lever and the rack, and a fixed stop on the lid or cover and arranged in the path of the inner end of the link, and the pin on the rack to which the link is connected, substantially as described, for the purpose set forth.

380,446. SEAL-LOCK. EDUARD MEIER, Pittsburg, assignor of one-half to Gustave Kaufman, Cresson, Pa. Filed Jan. 17, 1888. Serial No. 261,046. (Model.)



Claim.—1. In seal-locks, the combination, with a bow, of a frangible seal-plate connecting the ends thereof, and so closing the bow, and locking apparatus in one arm of said bow engaging with the seal-plate, substantially as and for the purposes set forth.

2. In seal-locks, the combination of a bow carrying a block turning in only one direction, and a frangible seal-plate having a stop thereon against which said block is turned, substantially as and for the purposes set forth.

3. In seal-locks, the combination of a bow having grooves in one arm and a locking apparatus in the other arm, and a frangible seal-plate having forked ends, one forked end slipping into said grooves and the other passing over said locking apparatus, substantially as and for the purposes set forth.

4. In seal-locks, the combination, with a bearing, of a rotating block fitting within said bearing and having a cam-face formed thereon, and a cylindrical pin engaging with said bearing and cam-face, substantially as and for the purposes set forth.

5. In seal-locks, the combination, with a bearing having its inner surface serrated or roughened, of a rotating block fitting within said bearing and having a cam-face formed thereon, and a cylindrical pin engaging with said bearing and said cam-face, substantially as and for the purposes set forth.

380,447. GATE FOR RAILWAY-CROSSINGS. MORTIMER B. MILLS, Chicago, Ill., assignor to the Pneumatic Gate Company, same place. Filed May 6, 1886. Serial No. 201,354. (No model.)

Claim.—1. A gate comprising upon opposite posts swinging bars connected together to cause the rise or descent of one bar to raise or lower with it the other, air-pressure cylinders each having its piston connected with the swinging bar on a post at one side of the axis, as described, and air-pressure mechanism to actuate the piston of one cylinder at a time in one direction, whereby that of the other cylinder is simultaneously actuated in the opposite direction, substantially as and for the purpose set forth.

380,447.



2. A gate comprising upon opposite posts swinging bars connected together to cause the rise or descent of one bar to raise or lower with it the other, air-pressure cylinders each having its piston connected with the swinging bar on a post at a side of the axis, as described, and air-pressure mechanism controlled by a suitable valve to actuate the piston of one cylinder at a time in one direction, whereby that of the other cylinder is simultaneously actuated in the opposite direction, substantially as described.

3. A gate comprising upon opposite posts swinging bars connected together to cause the rise or descent of one bar to raise or lower with it the other, air-pressure cylinders each having its piston connected with the swinging bar on a post at one side of the axis, as described, air-pressure mechanism to actuate the piston of one cylinder at a time in one direction, whereby that of the other cylinder is simultaneously actuated in the opposite direction, and a three-way cock for controlling the air-pressure mechanism, and comprising a shell, G, provided with holes *f*, and a valve, G′, provided with openings *x*, *x*′, and *x*², and with a recess, H, substantially as described.

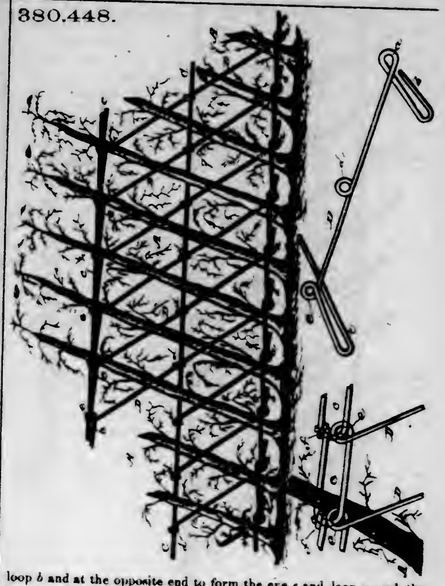
4. A gate comprising bars supported upon opposite posts, to which the bars are pivotally connected toward their rear ends to swing in a vertical plane, an endless connecting device adjusted upon the axis of each bar to cause the rise or descent of one bar to raise or lower with it the other, and air-pressure cylinders within one post on opposite sides of the axis of the swinging bar, each having its piston forming a connecting-link in the endless connecting device, in combination with an air-pressure pump communicating with the cylinders, and a valve within the connecting-passage constructed to afford communication simultaneously of the pump with one cylinder and of the other cylinder with the external atmosphere, as and for the purpose set forth.

5. A gate comprising vertically-swinging bars supported upon and moving with axes passing through them toward their rear ends and through posts A and A′, and pulleys C within the posts, in combination with cylinders B and B′, supported vertically within the post A on opposite sides of the axis therein, having pistons *l*, carrying piston-rods *s*, connected each with the lower cross-heads of a frame, *r*, moving in suitable guides, an endless connecting device passing over and secured upon the pulleys C and over pulleys *o*, suitably located within the posts A and A′ and containing the frames *r* as connecting-links, an air-pressure pump, F, communicating with the cylinders B and B′ above the pistons *l* therein through pipes *l*, *i*, and *i*′, and a three-way cock within the pipe *l*′, comprising a shell, G, provided with holes *f*, and a valve, G′, provided with openings *x*, *x*′, and *x*², and with a recess, H, the whole being constructed and arranged to operate substantially as and for the purpose set forth.

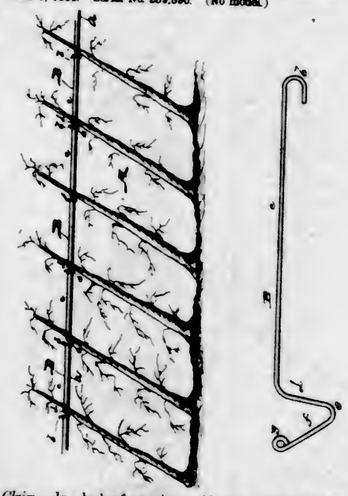
380,448. HEDGE. PHARES M. MISHLER, Hagerstown, Md. Filed Dec. 17, 1887. Serial No. 258,192. (No model.)

Claim.—In a hedge fence, the combination, with the inclined plants, of the oppositely-inclined plashing-wires D, each provided midway its length with the eye *d*, bent at one end to form the eye *c* and loop *b* and at the opposite end to form the eye *e* and loop *c*, and the horizontal wire C, passing through the eyes *d*, the upper and lower loops of the plashing-wires being interlocked to form the upper and lower rails of the hedge, substantially as described.

380,448.



380,449. HEDGE. JAMES A. MITCHELL, Westminster, Md. Filed Jan. 5, 1888. Serial No. 259,890. (No model.)

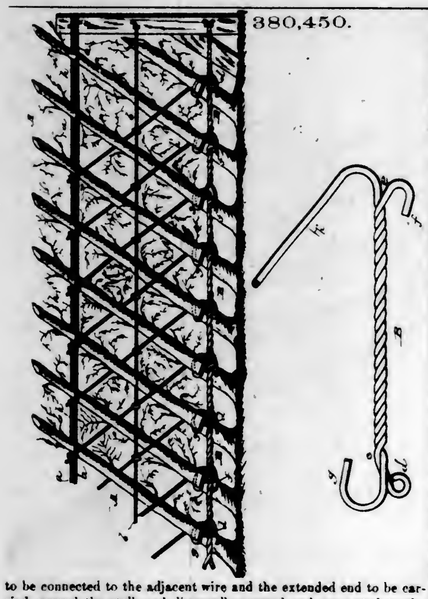


Claim.—In a hedge fence, the combination, with the inclined plants and the line-wire, of the tie-wires B, each consisting of the wire *c*, having at one end the hook *b* and bent at the opposite end, as at *d*, and again at *e*, to form a V-shaped portion, *f*, having the eye *g*, said tie-wires being joined together and the V-shaped portion looped to the line-wire, substantially as described.

380,450. HEDGE. JAMES A. MITCHELL, Westminster, Md. Filed Jan. 5, 1888. Serial No. 259,891. (No model.)

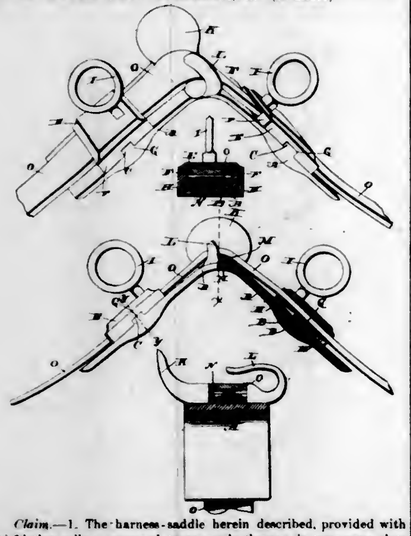
Claim.—In a hedge, the within-described plashing-wire, consisting of a long wire and a short wire twisted together, as shown, having at one end the eye *d* and hook *g* and at the opposite end the hook *f* and extended portion *h*′, said hooks and eyes of the portion B being adapted

380,450.



to be connected to the adjacent wire and the extended end to be carried around the stalk and diagonally upward and connected to the line-wire *a*, as shown and described.

380,451. HARNESS-SADDLE. JOHN W. MITCHELL, Macon City, Mo. Filed Oct. 3, 1887. Serial No. 251,343. (No model.)



Claim.—1. The harness-saddle herein described, provided with anti-friction rollers arranged transversely thereon in transverse slots in the pad-plate and mounted in studs integral with said plate, and guides or box-loops having depending flanges which bear upon the pad-plate and are recessed to receive the studs, substantially as described.

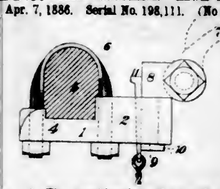
2. In a harness-saddle, the combination of the pad-plate having the transverse recesses B in its outer side and the studs C at the ends of the said recesses with the rollers D, journaled in the said studs, and the box-loops E, secured on the pad-plate and arranged over the studs C, substantially as described.

3. The combination of the pad-plate, the saddle or casting K, secured thereon and provided with a longitudinal slot in its central portion, and the roller N, journaled in the said slot of the saddle or casting K, substantially as and for the purpose specified.

4. The harness-saddle herein described, comprising a pad-plate provided near its ends with transverse concave slots and studs at their ends integral with the pad-plate, rollers journaled in bearings formed by the studs, box-loops arranged over the rollers and provided with depending flanges bearing upon the pad-plate and recessed to receive the studs, the said box-loops carrying the loops for the reins, the saddle or casting secured upon the upper side of the plate at the center thereof and provided with a longitudinal slot, and a roller-journal in the saddle or casting, substantially as described.

5. A harness-saddle comprising the plate A, the rollers D, journaled thereon near the ends, the box-loops E, arranged over the rollers and having the terrets or rings for the reins, and the tug-strap passing over the plate A and through the box-loops over the rollers, substantially as described.

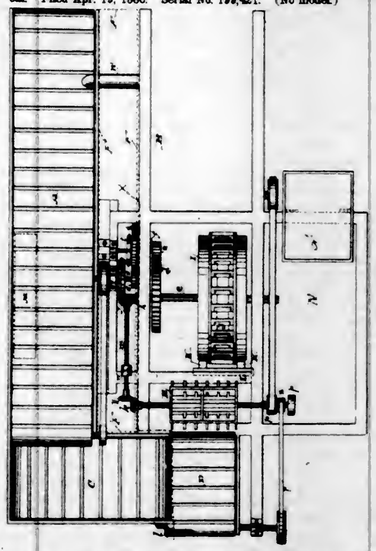
380,452. THILL-COUPLING. LEWIS B. MOATS, Jamestown, Pa. Filed Apr. 7, 1886. Serial No. 198,111. (No model.)



Claim.—1. The combination of a carriage-clip rigidly secured to the axle and provided with a slotted head, a block having a pivotal or hinged connection to the carriage thill or pole and provided with a depending lug constructed to fit in the slot in the clip-head, and a wedge, substantially as set forth.

2. A carriage-clip adapted to be rigidly secured to the axle and provided with a slotted head, in combination with a block having a pivotal or hinged connection to the carriage thill or pole and provided with a depending lug, recessed as described, and a wedge, substantially as set forth.

380,453. TRAVELING THRASHER. RUFUS R. MOORE, Modesto, Cal. Filed Apr. 19, 1886. Serial No. 199,421. (No model.)



Claim.—1. In combination, the frame, the bearing-wheel, the grain-carrying belt A, driven from the bearing-wheel, the belt C, the feeding-belt D, adapted to convey the material from the belt C to the thrashing-cylinder, and intermediate mechanism consisting of shafts and pulleys connected directly with the shaft of the thrashing-cylinder for driving the belt C and the feeding-belt D independent of belt A, substantially as described.

2. In combination, the frame, the cylinder, and receiving-belt A, the transverse belt C, and feeding-belt for delivering the material to the thrashing-cylinder, and mechanism, consisting of shafts, gear-wheels, and pulleys, driven directly from the main bearing and traction wheel of the machine, whereby the receiving-belt stops and moves in unison with the movement of the main bearing-wheel, while the transverse belt, thrashing-cylinder, and feeding-belt move in unison and independently of the movement of the receiving-belt and bearing-wheel of the machine, substantially as described.

3. The combination of bearing-wheels, an axle, the separator-frame constructed with upper and lower horizontal beams and vertical posts between them, one being located directly above the axle, the diagonal truss-rods connecting the lower beam with the upper beam at a point above the axle, and tightening-nuts whereby the frame-work is kept from sagging on either side of its line-support, substantially as described.

4. The thrashing-cylinder E, the driving-wheels, the driving-gear *k*, the jointed shaft *m*, and the clutch *n*', adapted to transmit rotation in one direction only from one portion of said shaft to the other, in combination with a feeding-belt, the carrying-belt supplying straw thereto, the cleaning mechanism, and the gearing whereby the said feeding and carrying belt and cleaning mechanism are driven directly from the cylinder-shaft and in unison therewith, substantially as described.

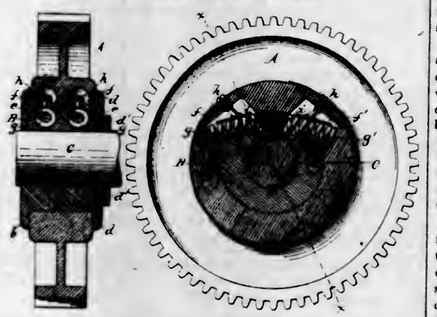
5. In combination with the receiving-belt, arranged parallel with the side of the thrasher and separator, and a belt adapted to receive straw therefrom, the separator-frame and the hinged wind board or feeder F, extending from the inner edge from end to end of the carrying-belt to the side of the separator-frame, substantially as described.

6. The combination, in a thrasher and separator, of the forward guiding and supporting wheels, O, the bolster, and the axle, a king-bolt passing through the bolster and the axle of said wheels, the draft-pole S, the draft-rod T, extending forward from the axle, and a clevis and metallic plate or frame whereby the said draft-rod is connected directly with the front of the machine, substantially as described

7. The bearing-wheel mounted upon an axle and having a portion of its periphery corrugated or roughened and the remainder made smooth, and the thrasher and separator frame, within which the axle of the wheel is journaled, in combination with the brakes K, suspended from the separator-frame and so formed as to press upon the smooth periphery of the wheel only, substantially as described.

8. The thrashing-machine having the separating mechanism contained within it, a bearing-wheel adapted to support the machine, and a train of gearing driven therefrom, in combination with the receiving traveling belt supported at an inclination and parallel with the side of the frame of the separator, and a tailings-conveyor extending from the rear of the cleaning-shoe directly to the carrying-belt, so as to deliver its contents thereon, substantially as described.

380,454. GEAR-WHEEL. CHARLES H. MORGAN, Buffalo, N. Y. Filed Dec. 19, 1887. Serial No. 258,291. (No model.)



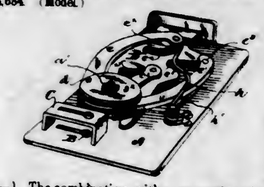
Claim.—1. The combination, with the rim and the hub or internal support upon which the rim is loosely mounted, and which are provided in their adjacent faces with cavities or recesses, of a connecting-spring arranged partly in the recess of the hub and partly in the recess of the rim, substantially as set forth.

2. The combination, with the hub or internal support provided with recesses extending outwardly in opposite directions, and the rim provided in its bore with recesses registering with the recesses of the hub, of connecting-springs arranged with their inner ends in the recesses of the hub and with their outer ends in the recesses of the rim, substantially as set forth.

3. The combination, with the hub provided in its face with a recess, of a rim loosely mounted on the hub and provided in its bore with a corresponding recess, a connecting-spring seated partly in the recess of the hub and partly in the recess of the rim, and a screw whereby the spring is held against the hub, substantially as set forth.

4. The combination, with the hub provided in its face with a recess, of a rim loosely mounted on the hub and provided in its bore with a corresponding recess, a connecting-spring seated partly in the recess of the hub and partly in the recess of the rim, a screw whereby the spring is held against the hub, and a protecting-plate interposed between the spring and the screw, substantially as set forth.

380,455. LOCK. JOSEPH PAILLEY, Springfield, Ohio, assignor of one-half to Martin Edighoffer, same place. Filed Nov. 9, 1887. Serial No. 254,684. (Model.)



Claim.—1. The combination, with a supporting-plate, a longitudinally-moving bolt, and a bolt-moving tumbler journaled on a suitable bearing on said supporting-plate, said tumbler being provided with a cam or projection adapted by a partial revolution thereof to produce a longitudinal movement of said bolt, of a key-supporting device independent of said tumbler-bearing and located outside the perimeter of and in such relation to said bolt-moving tumbler that a key inserted therein may engage with the notched periphery of said bolt-moving tumbler and rotate the same, substantially as set forth.

2. The combination, with the supporting-plate and the bolt-moving tumbler, one or more retaining catches or tumblers arranged in a series with said bolt-moving tumbler and separated from each other by the stationary disks, of a key-supporting device independent of the tumbler-bearing located in close proximity to said tumblers, so that they will be partially rotated by the movement of the operating-key, substantially as set forth.

3. The combination, with the longitudinally-moving bolt D, having a diagonal slot, *f*, of a bolt-moving tumbler, *c*, having a cam projection adapted to engage with said slot, and a notched periphery adapted to be engaged by the operating-key, a guiding-pin for said bolt, and a key-supporting device independent of the tumbler-bearing or support and located outside of the perimeter of said tumbler, substantially as and for the purpose set forth.

4. The combination, with the supporting-plate and the laterally-projecting stud, of the longitudinally-moving bolt and the bolt-moving tumbler, the retaining catches or tumblers arranged in series with said bolt-moving tumbler, the stationary disks between said tumblers, and the springs adapted to bear against the retaining catches or tumblers, the tumblers being adapted to be engaged by the operating-key, substantially as set forth.

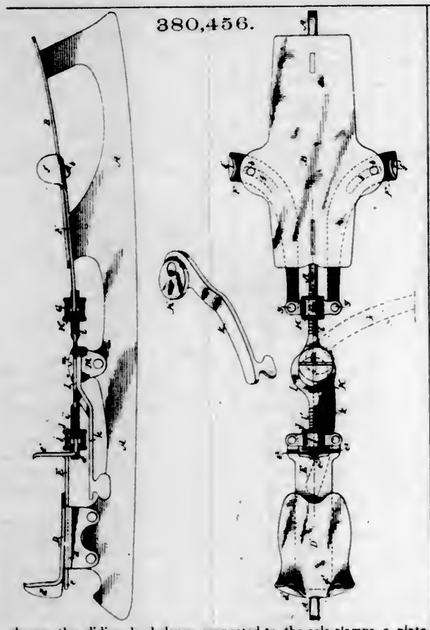
5. The combination, with the longitudinally-moving bolt bifurcated at the rear and extended on either side of a tumbler-supporting stud, of a guiding-pin projecting into a longitudinal slot in said bolt, a transverse slot, *f*, in said bolt, adapted to be engaged by a cam projection on a moving tumbler journaled on said stud, retaining catches or tumblers arranged in a series above said bolt-moving tumblers and separated from each other by stationary disks, said tumblers being provided with notched peripheries of varying shape adapted to be engaged by the operating-key, and a key-supporting device independent of said tumblers and outside the perimeter thereof, substantially as and for the purpose set forth.

6. The combination, with the supporting-plate, of a longitudinally-moving bolt bifurcated at the rear and extended on either side of the tumbler-supporting stud, a longitudinal guiding-slot, and a transverse operating-slot in said bolt, a bolt-moving tumbler journaled on said supporting-stud and having a cam projection adapted to engage in the operating-slot, a series of alternating moving tumblers and stationary disks arranged on said stud above said bolt-moving tumbler, each of said tumblers being provided with a notched periphery adapted to be engaged by the operating-key and provided with projecting arms having pins or projections adapted to engage in suitable notches or grooves in said bolt, and a retaining-pin, *d*, passing through said series of tumblers and disks and into the longitudinal groove in said bolt to hold the stationary disks against revolution, limit the rotation of said tumblers in either direction, and form a guide for said bolt, substantially as and for the purpose set forth.

380,456. SKATE-CLAMP. WILLIAM I. PARMELEE, Philadelphia, Pa., assignor to Alfred C. Rex, same place. Filed Jan. 18, 1888. Serial No. 261,144. (No model.)

Claim.—1. The combination, in a heel and sole clamping mechanism for a skate, of the sole-clamping levers, the stationary heel-

380,456.



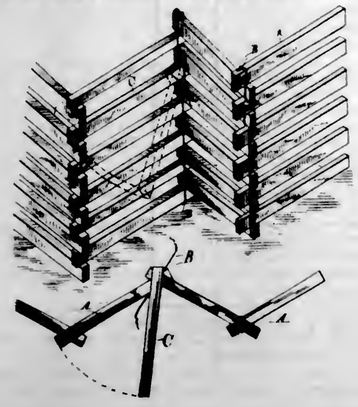
clamps, the sliding heel-clamp connected to the sole-clamps, a plate secured to or forming part of said connection, an eccentric pivoted to the body of the skate and adapted to fit an opening in said plate, and a lever for operating said eccentric, all substantially as shown and described.

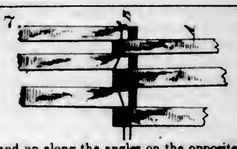
2. The combination of the sliding heel-clamp having a nut, sole-clamping levers, also having a nut, a plate, I, having a threaded stem adapted to the nuts, and an eccentric adapted to an opening in the plate and provided with a suitable lever, substantially as and for the purpose set forth.

3. The combination of the clamping-levers F F, the cross-head G, to which the clamping-levers are pivoted, a nut, H, confined longitudinally to said cross-head, but free to turn therein, a plate, I, having a threaded stem adapted to said nut, and an eccentric pivoted to the body of the skate and adapted to act upon the plate, I, all substantially as described.

380,457. FENCE. HARVY RICHWINE, Dora, Ind. Filed Jan. 23, 1888. Serial No. 261,675. (No model.)

Claim.—The combination, in a worm or zigzag fence, of the binding or tightening wire bound aronnd the rails at the points of intersection of the panels or sections and extending around the top and





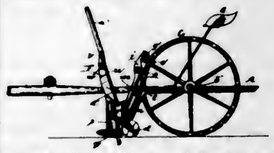
bottom rails and up along the angles on the opposite sides of the sections with one of the intervening middle rails to form the locking or fastening rail, said locking-rail having one of its ends between the lengths of wire upon the opposite sides of the panels at approximately right angles to the plane of its panel, and then swung or forced around into its normal position in the vertical series of its panel, and being held in position therein by the weight of the rails of the next adjoining panel, thereby twisting and tightening the fastening-wire and drawing the top and bottom and all the rails toward each other, substantially as described.

380,458. MUCILAGE-BOTTLE. WILLIAM ROOSEN, Chicago, Ill., assignor of one-half to William H. Redington, same place. Filed Sept. 29, 1887. Serial No. 251,013. (No model.)



Claim.—In combination with a mucilage-bottle having a groove in its neck, a stopper comprising a distributing-sponge, and a spring-wire secured thereto and adapted to be pressed into the mouth of the bottle and fit in the annular groove in its neck, substantially as described.

380,459. MOWER. WILLIAM SCHOELLER, New Waterford, Ohio. Filed Oct. 31, 1887. Serial No. 253,911. (No model.)



Claim.—1. A mowing-machine provided with a single drive-wheel having alternately-corrugated edges, in combination with a finger-bar frame and a cutter-bar supported immediately in front of said wheel, a lever fulcrumed on an angular arm in front of the drive-wheel, connected to the cutter-bar at its lower end and to the drive-wheel at its upper end by a hinged arm, for throwing the vibrating lever in and out of gear with the actuating-wheel, and studs on the hinged arm which engage with the rim of the wheel, substantially as described.

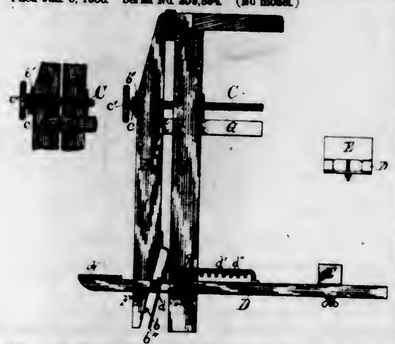
2. A mowing-machine provided with a single corrugated drive wheel and a frame, having an angular depending arm in front of the wheel, provided with a horizontal bracket, in combination with a finger-bar and a vibrating cutter-bar supported on said bracket, a lever fulcrumed on the angular arm of the frame, engaging with the cutter-bar at its lower end and connected to the drive-wheel at its upper end by an arm hinged to the lever to throw the vibrating lever in and out of gear with the actuating-wheel and provided with an oscillating plate pivoted on the arm at right angles to the hinged arm, said plate having studs for engaging with the corrugations in the edges of the wheel, and the pins on the hinged arm for limiting the movement of the oscillating plate, substantially as described.

380,460. HEAD AND BACK REST FOR RAILWAY-CARS. HIRAM R. SMITH, Atlanta, Ga., assignor of one-half to Ed. Holland, same place. Filed Sept. 7, 1887. Serial No. 249,059. (No model.)



Claim.—In a head and back rest for railway-cars, a leaf, A, having an elastic portion, E, said leaf being hinged to a leaf, B, in combination with a leaf, C, hinged to the leaf A, and having an opening to correspond with the elastic portion of leaf A, said leaves being provided with a protecting-strip of felt, G, and the outer edges of said leaves A and C separated by a spring, F, substantially as shown and described.

380,461. SELF-CLOSING VISE. HIRAM R. SMITH and GEORGE B. HINMAN, Atlanta, Ga., assignors of one-third to Ed. Holland, same place. Filed Jan. 5, 1888. Serial No. 259,894. (No model.)



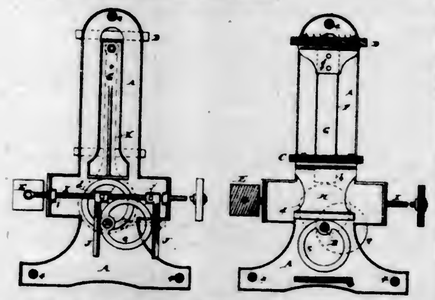
Claim.—1. In a self-closing vise, the combination of the jaw A, the adjustable jaw B, and the weighted lever D, adjustably pivoted to the jaw A and impinging against the jaw B, substantially as shown and described.

2. In a self-closing vise, the combination of the stationary jaw A, the adjustably-pivoted jaw B, the lever D, pivoted by the brackets *d'*, having indentations *d''*, and the roller F, substantially as shown and described.

3. In a self-closing vise, the combination of the stationary jaw A, the pivoted jaw B, and the weighted lever D, carrying the roller F and the pedal H, substantially as shown and described, and for the purpose specified.

4. In a self-closing vise, the jaws A and B, the screw C, the lever D, carrying brackets *d'* and pedal H, and having roller *d* working against the surface *b* of the jaw B, the pins *a*, inserted in the jaw A, and the bar G, pivoted to the jaw B and sliding through the jaw A all combined and operating substantially as described, and for the purpose specified.

380,462. JACQUARD MACHINE FOR LOOMS. JOHN S. SMITH and SAMUEL SMITH, Glasgow, County of Lanark, Scotland. Filed Nov 20, 1886. Serial No. 219,445. (No model.)



Claim.—1. In a Jacquard machine, the combination of the main frame and the vertically-reciprocating top and trap boards, adapted to approach toward each other or recede from each other, with a rotating shaft and eccentrics to simultaneously lower the top board and raise the trap-board, or vice versa, substantially as shown and described.

2. The combination, with the vertically-reciprocating top and trap boards or griffs, the card-cylinder, the guide-rods I, and arms J, of the shaft B and the eccentrics thereon, adapted, as described, to lower the top boards or griffs and raise the trap-board or griff, and vice versa, and reciprocate the card-cylinder, substantially as described.

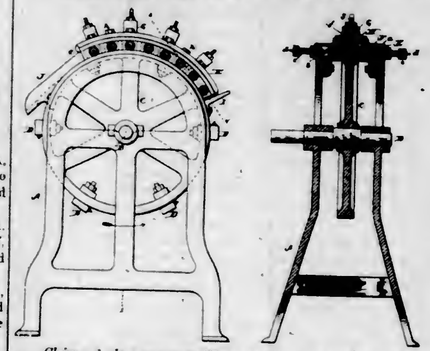
3. The combination, with the top board, the card-cylinder, the guide-rods I, and arms J, of the eccentrics *c d* and shaft B, substantially as described.

380,463. PRESERVING GRAPE MUST AND SKINS. FERDINAND SPRINGMUHL, London, England, assignor to the American Concentrated Must Company, San Francisco, Cal. Filed Sept. 14, 1887. Serial No. 249,723. (No specimens.)

Claim.—1. The mode or method of preserving grape-skins which consists in first freeing them of the stems, the juice, and seeds, and the superfluous juice, so as to render them as free from moisture as possible without heating them, and in then mixing with them their concentrated juice or must, substantially as herein described.

2. The mode or method of preserving grape-skins which consists in rendering them as dry as possible without heating, and in then mixing them with their own concentrated juice or must, introduced to them by atmospheric pressure due to the exhaustion of the air from the vessel in which they are contained, substantially as herein described.

380,464. COUNTER-STIFFENER MACHINE. CHARLES L. TERRELL, Fitchburg, Mass., assignor of one-half to Albert Sawyer, same place. Filed July 30, 1887. Serial No. 245,757. (No model.)



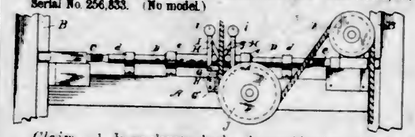
Claim.—1. In a counter-stiffener machine, the combination, with the wheel having former-blocks upon its periphery, of the yielding sliding blocks and corrugated plates arranged with reference to each other, substantially as specified.

2. The combination, in a counter-stiffener machine, of the wheel C, having former-blocks upon its periphery, with sliding blocks F and corrugated plate H, substantially as specified.

3. The combination, in a counter-stiffener machine, with a wheel having former-blocks upon its periphery, of a series of yielding sliding blocks mounted on each side of said wheel and arranged to act successively and simultaneously upon opposite sides of said former-blocks, as set forth.

4. The combination, in a counter-stiffener machine, of a wheel having rigid former-blocks upon its periphery, with a series of sliding blocks, and a corrugated plate having guide projections operated by springs, as and for the purpose set forth.

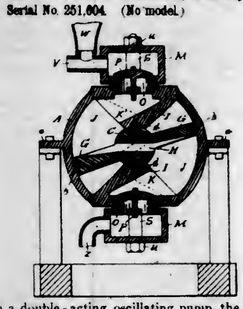
380,465. ELEVATOR-BRAKE. RALPH L. TEED, Chicago, Ill., assignor of one-half to Alexander McGuire, same place. Filed Dec. 2, 1887. Serial No. 256,833. (No model.)



Claim.—1. In an elevator-brake, the combination, with the car and its ways, of the gripping-levers, the rods for operating said levers, provided with threaded inner ends, the revoluble sleeve correspondingly threaded, the governor-wheel and its rope or cable, and a slide mounted on the car, connected to the sleeve to operate the same and provided with gripping devices to grip the governor-rope, said gripping devices being held in an inoperative position by means of a latch arranged in the path of the governor-arms when these latter are thrust outward, substantially as and for the purposes specified.

2. In an elevator-brake, the combination, with the revoluble sleeve for operating the way-gripping levers, of the governor-wheel and its rope, and the slide G, provided with gripping-levers H, having eccentric-wheels *i*, latch A, and spring H', substantially as and for the purposes specified.

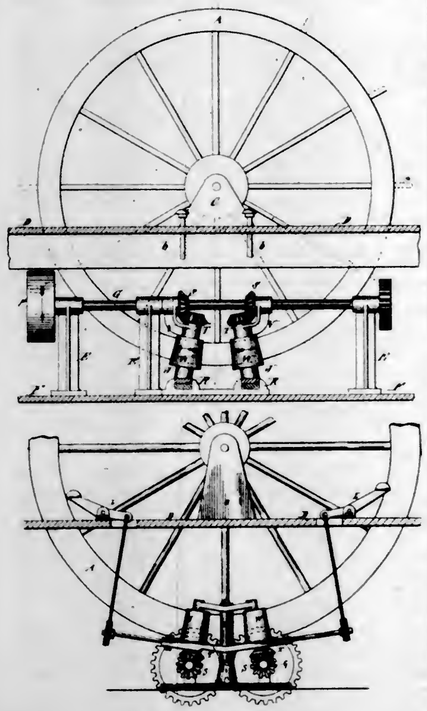
380,466. **PUMP.** DONAT WALDKIRCHER, Sandusky, Ohio. Filed Oct. 6, 1887. Serial No. 251,604. (No model.)

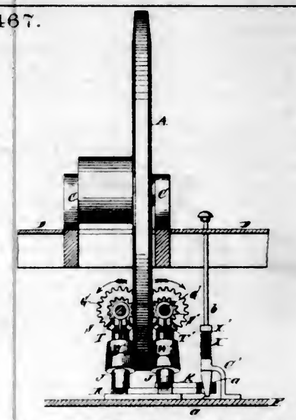


Claim.—In a double-acting oscillating pump, the combination of the reversible pump-cylinder A, the piston-rod C, the oscillating pistons G G, formed integral with said rod, the induction and eduction ports L L′ in said cylinder, the valve-seats O in said ports, valves P, independent of the cylinder, valve-chests M, partition K″ between the passages K K′, bolts R, screwed into said partitions, and the nuts U, all arranged substantially as described.

380,467. **STEERING APPARATUS.** JOHN M. WALLACE, St. Louis, Mo., assignor to John W. Trimler, same place. Filed Nov. 28, 1887. Serial No. 256,364. (No model.)

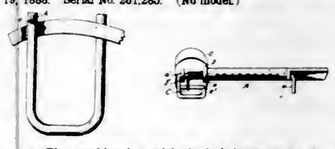
Claim.—In combination with a pilot-wheel, two sets of friction-wheels situated on opposite sides of the pilot-wheel, each set consisting of two friction-wheels adapted to always revolve in an opposite direction to each other and having their shafts journaled in movable rests, whereby they are adapted to be moved in and out against or away from the side of the pilot-wheel, each set of wheels being provided with a propelling-shaft journaled in the frame-work and united by spur-wheels, and thereby caused to revolve in opposite directions to each other, all operating to cause the pilot-wheel to revolve in one





direction when one wheel of each set is pressed against the sides of the pilot-wheel and in an opposite direction when the other wheel of each set is pressed against it.

380,468. **OX-BOW KEY.** WALTER WARR, Chandler, Minn. Filed Jan. 19, 1888. Serial No. 261,285. (No model.)



Claim.—1. The combination, with the bolt having a head and end portion of greater length than the diameter of the body of the bolt, of the lock-bar having the end corresponding with the end of the bolt bent at substantially right angles and adapted to stand at an angle to the said end of the bolt, substantially as and for the purpose described.

2. The combination, with the bolt having head and end portions extending beyond the sides of the body of the bolt, of the lock-bar journaled in the bolt lengthwise and having its end portion bent at right angles and adapted to fold in the plane of the end portion of the bolt and stand at an angle to the said end portion, substantially as and for the purpose described.

3. The combination, with the bolt having a tapering end, as B, of a lock-bar having an end, as *c*, adapted to fold close to the end and to stand at an angle thereto, substantially as and for the purpose described.

4. The combination, with the bolt-stock, the cross-bar *b*, the extension *b′*, and the web filling the angle between the cross-bar and the extension, of the lock-bar journaled at one end in the cross-bar and having its end adapted to fold close to the web, substantially as and for the purpose described.

5. The combination, with the bolt having a flattened head and the thumb-piece extending at an angle to the head, of the lock-bar having its end formed into a loop, substantially as and for the purpose described.

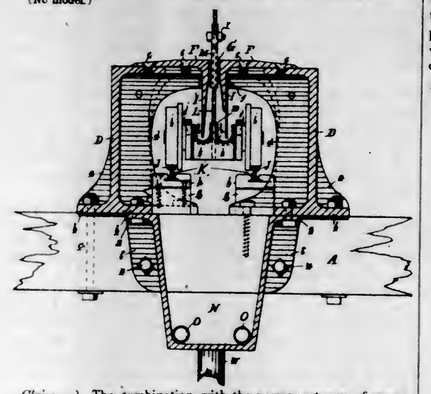
6. The combination, with the bolt having a flattened head, the thumb-piece, and the brackets located in the angle between the head and thumb-piece, as shown, of the lock-bar having its end bent to form a loop and the spring, substantially as and for the purpose specified.

7. The combination, with the bolt having a flattened head, the thumb-piece extending at right angles to the head and having its end deflected, and the brackets located in the angle between the thumb-piece and head, of the lock-bar having its end bent to form a loop, the loop being deflected, as set forth, and a spring mounted on the lock-bar and located between the brackets and having one end resting against the thumb-piece and the other end bearing on the loop, substantially as and for the purpose described.

8. The herein shown and described ox-bow bolt, composed of the stock longitudinally grooved, the tapering end, the flattened head, the thumb-piece standing at right angles to the head and having its end deflected, the brackets, the lock-bar having its ends bent at right angles, one end being bent to form a loop, which is deflected, as shown, and the spring placed on the lock-bar between the said brackets, one end of the spring bearing against the thumb-piece and the other end

against the loop of the lock-bar, substantially as and for the purpose described.

380,469. **UNDERGROUND CONDUIT FOR ELECTRIC RAILWAYS.** S. ARCA WHIPPLE, Detroit, Mich. Filed Aug. 19, 1887. Serial No. 247,378. (No model.)



Claim.—1. The combination, with the permanent way of an underground conduit for electric railways, of two lines of insulated rails secured upon opposite sides of said conduit, a metallic conductor adapted to travel upon these rails, an insulating-body dividing said traveler electrically, gutters formed in the top of said body, and an insulating impervious covering, substantially as described.

2. The combination, with the permanent way of an underground conduit for electric railways, of two lines of insulated rails secured upon opposite sides of said conduit, a metallic conductor adapted to travel upon these rails, an insulating-body dividing said traveler electrically, gutters formed in the top of said body, an insulating impervious covering, and dependent flanges from the top of the permanent conduit, reaching within proximity of the body of the traveler, substantially as described.

3. The combination, with the permanent way of an underground conduit for electric railways, of two lines of insulated rails secured upon opposite sides of said conduit, a metallic conductor adapted to travel upon these rails, an insulating-body dividing said traveler electrically, gutters formed in the top of said body, an insulating impervious covering, dependent flanges from the top of the permanent conduit, reaching within proximity of the body of the traveler, a standard secured to the body of the traveler and projecting between the dependent flanges to the outside of the conduit, and two conducting-wires concealed within said standard and electrically connected with the electrically-divided halves of the traveler, respectively, substantially as described.

4. In an underground conduit for electric railways, the combination, with the permanent way having two lines of insulated conductor-rails secured within the conduit upon opposite sides thereof, of a traveling conductor consisting of the central insulating-body, *k*, forming the platform or body of the conductor, the metallic sides *j*, one upon each side of the central body, the metallic wheels *i*, the central standard, L, secured directly to the central insulated body, *k*, and the insulated conducting-wires *n*, concealed within said standard and electrically connected with the respective metallic sides *j* of the traveler, substantially as described.

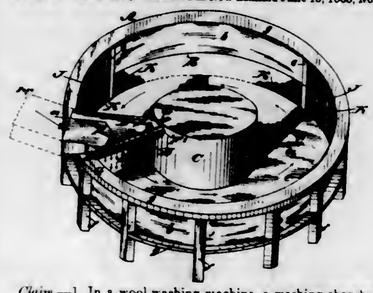
5. In an underground conduit for electric railways, the combination, with the permanent way having two lines of insulated conductor-rails secured within the conduit upon opposite sides thereof, of a traveling conductor consisting of metallic wheels *i*, metallic body *j*, insulating central body, *k*, the vertically-slotted central standard, L, secured directly to said central body, conducting-wires *n*, concealed within said standard and electrically connected with the respective sides of the traveler, and the fixing M, secured to the upper end of the said standard, substantially as described.

6. In an underground conduit for electric railways, the combination, with the permanent way having two lines of insulated conductor-rails secured within the conduit upon opposite sides thereof, of a traveling conductor consisting of metallic wheels *i*, metallic body *j*, insulating central body, *k*, provided with the gutters *l*, the insulating-covering *m* of the vertically-slotted standard L, and the conducting-wires *n*, secured within said standard and electrically connected to the opposite sides of the traveler, respectively, substantially as described.

7. In an underground conduit for electric railways, the combination of the side sections, D, bolted to the cross-ties, the covering-sections F, the dependent flanges I, and the gutter-sections N, bolted to the sections D and the cross-ties, respectively, substantially as described.

8. In an underground conduit for electric railways, the combination of the side sections, D, having the flanges *b*, bolted to the cross-ties, the slit E, cut away between the ends, the covering-sections F, provided with the dependent flanges I, and the gutter-sections N, provided with the flanges *s t*, all combined and arranged substantially as described.

380,470. **AUTOMATIC WOOL-WASHING MACHINE.** FREDERICK WILLIAMS, Alexandra, New Zealand. Filed July 25, 1887. Serial No. 245,229. (No model.) Patented in New Zealand June 15, 1885, No. 1,462.



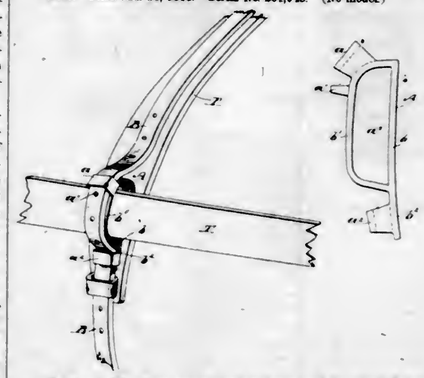
Claim.—1. In a wool-washing machine, a washing-chamber having perforated walls and plates for covering the same, substantially as described.

2. A wool-washing machine having a washing-vessel with a center block and an inlet-chute secured to said center block and the side of the vessel, substantially as described.

3. A wool-washing machine having a washing-vessel with perforations K in the bottom and sides, covering-plates for said perforations, a center block, a water-inlet chute secured to said block and the side of the vessel, and provided with a vertically-adjustable gate, said parts being combined substantially as and for the purpose set forth.

4. A wool-washing machine having a washing-vessel with perforations K in the sides thereof, and perforations K′ in the side about the water-level of said vessel, a center block, and a water-inlet chute secured to said block and to the side of the vessel, said parts being combined substantially as described.

380,471. **TRACE-SUPPORTER.** ALFRED ANDERSON, Stromsburg, Nebr. Filed Jan. 26, 1888. Serial No. 261,948. (No model.)



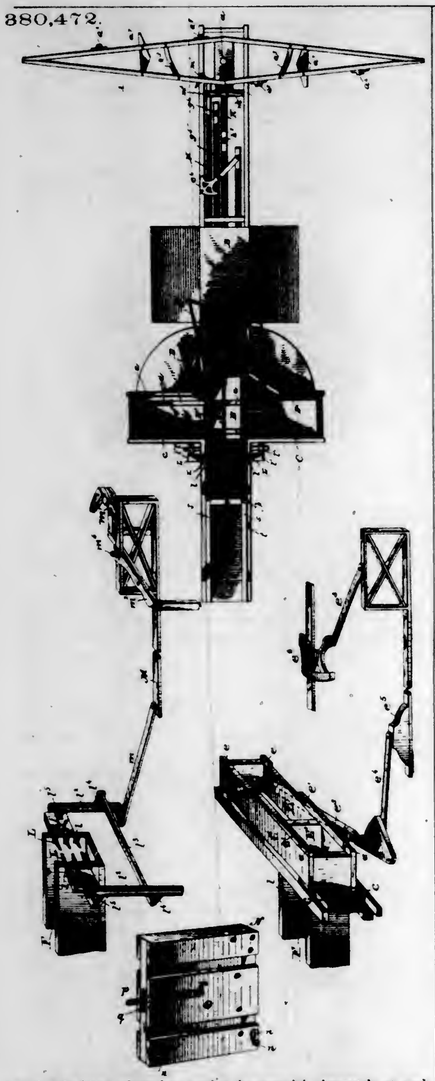
Claim.—1. The trace-support herein shown and described, formed of the plate *b*, projection b^2, main loop *b′*, and the upper and lower loop, *a* a^2, the latter mounted upon the projection b^2, substantially as described.

2. The trace-supporter formed of the plate *b*, main loop *b′*, projection *a′*, and the upper and lower loops, *a* a^2, the upper loop being set at an angle to the plate *b*, substantially as described.

380,472. **BALING-PRESS.** ROSEE W. ARCHER, Beeville, Tex., assignor of one-third to Calvin P. Rudolph, same place. Filed Sept. 14, 1887. Serial No. 249,637. (No model.)

Claim.—1. In a baling-press, the combination, with the baling-chamber and the reciprocating plunger, of an automatic transversely-

380,472.



moving feed-box adapted to receive the material alternately at each end and convey it to the baling-chamber, substantially as described.

2. In a baling-press, the combination, with the baling-chamber and the reciprocating plunger, of a transversely-moving feed-box and a pair of automatic feed-doors simultaneously and alternately opened and closed, substantially as described, for the purposes set forth.

3. In a baling-press having a transversely-sliding feed-box, the combination, with said feed-box, of a pair of feed-doors connected together, a power-sweep, and connecting-rods between the power-sweep and the feed-doors, whereby they are operated automatically and simultaneously by the said power-sweep, substantially as described.

4. In a baling-press, the combination, with the power-sweep, having a continuous circular motion, of a feed-box placed transversely to the press, and connections, substantially as described, between the power-sweep and the feed-box, whereby a transverse reciprocating motion of the feed-box is derived from the circular movement of the sweep, substantially as set forth.

5. In a baling-press, the combination, with the transversely-sliding feed-box, of a movable partition adapted to be shifted by the feed-box so as to form a temporary chamber at each end of the feed-box successively, substantially as described.

6. In a baling-press, the combination, with the baling-chamber, the reciprocating plunger working therein, and the power-sweep, of a series of needles or retaining-bars upon each side of said chamber, said series being connected together and to said power-sweep, whereby they are automatically operated by the movement of the latter, substantially as set forth.

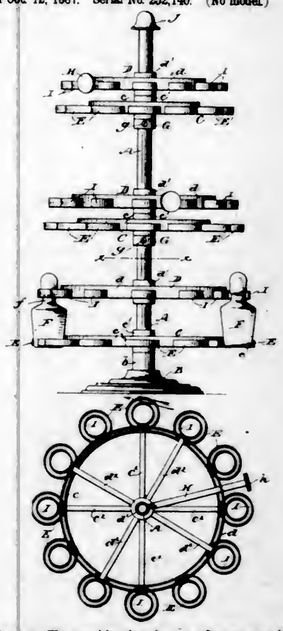
7. In a baling-press having feed-openings on opposite sides thereof and a pair of doors for closing such openings, the combination, with said doors, of mechanism for operating them simultaneously, the same consisting of a vertical shaft having a cross-head, a rod connecting the said cross-head to each of said doors, and a sliding frame connected to the said vertical shaft and operated by the power-sweep, whereby one of said doors is opened and the other closed, substantially as described.

8. In a baling-press having a feed-opening on each side thereof, the combination of a pair of hinged doors connected to the frame of the press by toggle-joints, a vertical shaft carrying a cross-head connected to said toggles, and a sliding frame for operating said vertical shaft, substantially as described.

9. The division-plate consisting of the grooved block O, in combination with the block N, having tongues sliding in said grooves, and springs P P, interposed between said blocks, substantially as described.

10. In combination with the baling-chamber, a division-plate composed of two sliding blocks having interposed springs, and a spring-actuated rod sliding within said division-plate, substantially as set forth. forth.

380,473. PERFUMERY-STAND. JAMES C. AUSTIN, Brooklyn, N.Y. Filed Oct. 12, 1887. Serial No. 252,140. (No model.)

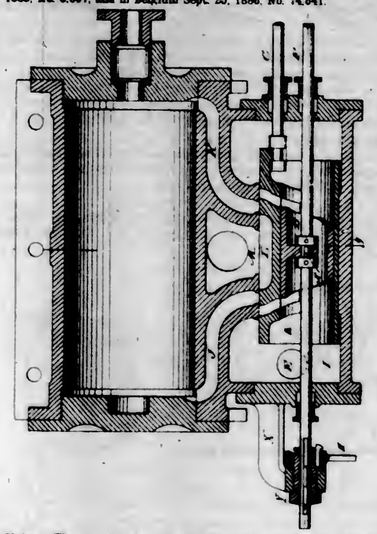


Claim.—1. The combination, in a perfumery-stand, of a post or bar, one or more bottle-supports held thereto, and corresponding locking devices movable toward and from the bottle-supports, and having rings or detents adapted to inclose or engage the bottle-necks to prevent removal of the bottles, substantially as herein set forth.

2. The combination, in a perfumery-stand, of a post or bar, one or more bottle-supports held thereto, corresponding locking devices movable toward and from the bottle-supports, and having rings or detents adapted to inclose or engage the bottle-necks, and a set-screw or equivalent latch securing the locking devices to the post or bar, substantially as herein set forth.

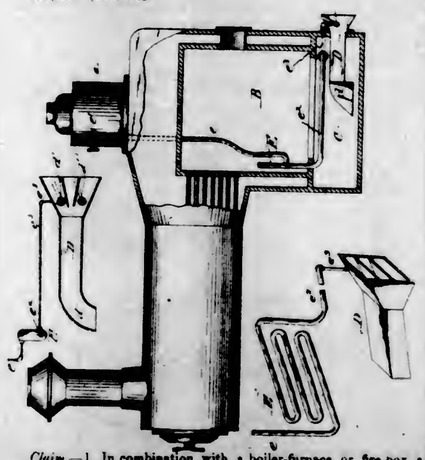
3. The combination, in a perfumery-stand, of a central supporting-post, A, one or more bottle-supports, C, held thereto, and comprising a ring, *c*, and hub *c'*, connected by radial rods *c²*, and rings or supports E, connected to the ring *c*, a locking device, D, corresponding with the supports C and arranged above them on the post A, and comprising a ring, *d*, and hub *d'*, connected by rods *d²*, and a set-screw, H, fitted in the parts *d d'* and adapted to bind on the post A, substantially as described, for the purposes set forth.

380,474. CUT-OFF VALVE. ROLAND BENTLEY, Dresden, and THOMAS FORD, Longton, County of Stafford, England. Filed May 31, 1887. Serial No. 239,801. (No model.) Patented in England June 8, 1885, No. 6,897, and in Belgium Sept. 25, 1886, No. 74,641.



Claim.—The combination of the following elements for the purpose of forming an automatic variable cut-off or expansion valve, to wit: the main slide-valve A, having the form of a hollow cylinder and provided with diagonal ports, the cylindrical cut-off valve B, constructed with diagonal passages and adapted to fit in said main valve, it also having both sliding and rotary motions therein, and the cylindrically-bored steam-chest having the diagonal steam-ports, and means for operating both valves A and B, all arranged as shown and described.

380,475. AIR-INJECTING DEVICE FOR BOILER-FURNACES. ELIJAH B. CORNELL, Philadelphia, Pa. Filed Oct. 12, 1887. Serial No. 252,139. (No model.)



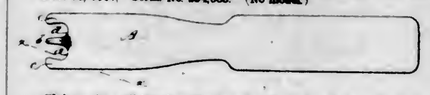
Claim.—1. In combination with a boiler-furnace or fire-box, a superheater located within the furnace, so as to be subject to the most intense heat of the same, a pipe-connection between the boiler and the superheater, an air-injector for said fire-box or furnace, having a pipe-connection with the outlet end of the superheater, which pipe-connection is of less bore or diameter than that of the superheater coils or pipes, whereby the steam-supply in the superheater is resolved into its gaseous elements for operating said injector, substantially as set forth.

2. In combination with a boiler-furnace or fire-box, a superheater located in said fire-box, a pipe-connection having a cut-off between the boiler and superheater, and an air-injector for said fire-box, having a pipe-connection with the outlet end of the superheater, which pipe-connection is of less diameter than that of the superheater coil or pipe, substantially as set forth.

3. In combination with a boiler, a furnace, a superheater located within the furnace, so as to be subject to the heat of the same, a pipe-connection between the boiler and the superheater, an air-injector for said furnace, and a pipe-connection between the outlet end of the superheater and the air-injector, which pipe-connection has a bore smaller than that of the superheater coils or pipes, whereby the steam-supply in the superheater is decomposed into its gaseous elements for operating said injector, substantially as set forth.

4. The combination of a boiler-furnace, a steam-pipe leading from the steam-space of the boiler, a superheater connected with said steam-pipe and with the ash-pit by a reduced connection, which retards the flow from the superheater and causes the heat of the fire-box to dissociate the gaseous elements of the steam in the superheater in the manner substantially as described, and for the purpose set forth.

380,476. NAIL-BRUSH. GEORGE H. COURSEN, Baltimore, Md. Filed Nov. 11, 1887. Serial No. 254,885. (No model.)



Claim.—In nail-brushes, the handle of the brush, provided at its rear end intermediately of its width with a projecting nail-cleaner, and with protecting-guards for said cleaner, also arranged to project from the rear end of the handle on opposite sides of the cleaner, and with intervening spaces between them and the cleaner, substantially as specified.

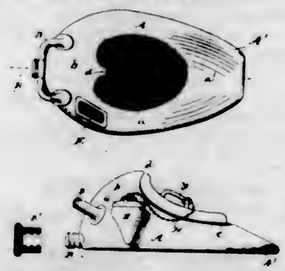
380,477. CAP-PROTECTOR FOR BLASTING-CARTRIDGES. THOS. DE COAR and WILLIAM KEANT, Russell Gulch, Colo. Filed Dec. 15, 1887. Serial No. 257,949. (No model.)



Claim.—1. A shield for fulminate caps, formed of a tube having an opening at one end for the insertion of the cap, and provided with a lid to partly close the opening after the introduction of the cap, substantially as described.

2. The shield D, formed of a closed tube pointed at one end and provided with a head, *b*, at the opposite end, said head having an opening, *c*, and a lid, *d*, substantially as described.

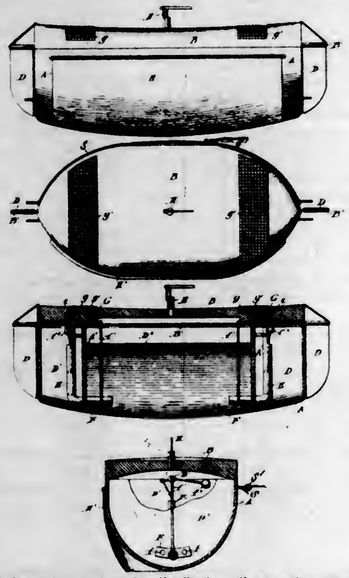
380,478. BED-PAN. KATE M. DUFFEY, Astoria, Oreg. Filed June 22, 1887. Serial No. 242,148. (No model.)



Claim.—1. The bed-pan A, formed with the main opening *a*, the rear portion of the pan being raised, as at *b*, the said raised portion terminating in a point, *d*, projecting into the main opening *a* in an upward and inward direction, substantially as and for the purpose specified.

2. The bed-pan A, formed with the main opening *a*, the end discharge-neck, B, the handle D in proximity to said discharge-neck, and the spout E in one side of the pan, substantially as and for the purposes specified.

380,479. FLOATING OIL-DISTRIBUTER FOR VESSELS. JOHN ERICSON, Sabine Pass, La. Filed July 19, 1887. Serial No. 244,733. (No model.)



Claim.—1. In a boat for distributing oil upon the water, the combination, with the hull A, provided with a cover, B, and divided into three compartments, D', D', and D^2, and oil-pumps E, located in the compartments D' and projecting into the oil-compartment D^2, of the crank-shaft B', provided with external blades, D, a packing of absorbent material in said cover connected with the pump, and means for introducing air into the compartment D^2, and for regulating and supplying the oil to said packing, substantially as herein set forth.

2. In a boat for distributing oil upon the water, the combination, with the hull A, provided with a cover, B, and divided into three compartments, D', D', and D^2, and oil-pumps E, located in the compartments D' and projecting into the oil-compartment D^2, of the crank-shaft B', provided with external blades, D, a packing of absorbent material in said cover connected with the pumps, the apertured swinging plates F, connected to the crank-shaft B', adapted to control the supply of oil to said pumps, an air-pump, H, located in said cover, and means for operating the oil-pumps from the crank-shaft, and means for keeping said hull to windward, substantially as shown and described.

3. The combination, with the hull A, of a crank-shaft journaled in and extending beyond said hull, blades attached to said shaft on the outside of the hull, oil-pumps in said hull and connected with said shaft, and a piece of flexible material secured to one side of said hull to form a pocket, substantially as set forth.

380,480. SPRING. JOHN D. FURMAN, Waynesville, Ohio. Filed Jan. 8, 1887. Serial No. 223,839. (No model.)

Claim.—1. A combination-spring for vehicles, consisting of a leaf and an extensible spiral spring rigidly attached to each other, substantially as set forth.



380,480.

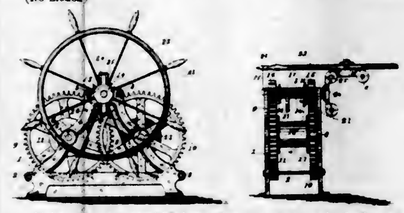


2. A combination-spring for vehicles, consisting of a leaf-spring and an extensible spiral spring with the block, substantially as described, for securing them together, as set forth.

3. A spring for vehicles formed by the combination of a leaf and an extensible spiral spring, in which the end of the leaf-spring is rigidly attached to the end of the spiral spring, substantially as and for the purpose set forth.

4. The leaf-spring for connecting the extension spiral spring with the weight or support, having a rigid connection with each other, substantially as and for the purpose set forth.

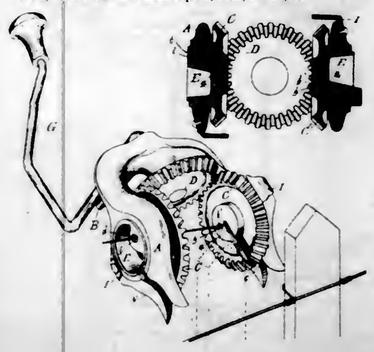
380,481. STEERING APPARATUS AND WINDLASS. WILLIAM M. GILLIS, Tonawanda, N. Y. Filed Oct. 26, 1887. Serial No. 253,389. (No model.)



Claim.—1. In a combined steering apparatus and windlass, two drums mounted upon shafts set parallel and opposite each other in bearings in the frame of the machine, each having a spur-wheel, 9 and 10, in combination with two pinions mounted on a steering-wheel shaft located at a point between the spur-wheels on a level with the top of the same and adapted to slide on feathers to prevent them from turning thereon, mechanism consisting of the pivoted arms 18 19, engaging with the grooves 38 in the sides of the pinions for throwing one or both pinions into or out of gear with the spur-wheels, pawls 33 34, adapted to swing and to be moved sidewise on the rods 3 for stopping one or both spur-wheels, and a steering-wheel for operating the device, whereby it may be used either for steering two boats or for a windlass, substantially as described.

2. In a combined steering apparatus and windlass, a holding-piece, 24, rigidly secured to the steering-wheel shaft, and a steering-wheel pivoted thereto by a pin, 25, passing through the lug *e* at one side of the steering-wheel hub, in combination with a removable pin, 26, adapted to pass in and fit a perforation in the holding-piece and lug projecting from the steering-wheel hub on the opposite side, which pin may be readily removed and the wheel turned over the top of the frame while passing low bridges, substantially as described.

380,482. MACHINE FOR MAKING PICKET FENCES. JOHN C. HAAG, Lansing, Mich. Filed Dec. 2, 1887. Serial No. 256,770. (No model.) Patented in Canada Sept. 1, 1887, No. 27,539.



Claim.—1. In a machine of the kind described, the combination of two wrapping-wheels having a common axis of rotation and provided with corresponding radial slots and inclined eccentric apertures, a bifurcated frame to which said wrapping-wheels are journaled and having slots communicating with the radial slots in the wrapping-wheels, suitable mechanism for revolving the wrapping-wheels, and the overhanging guides I, secured to the bifurcated frame, all arranged to operate substantially as described.

2. In a machine of the kind described, the combination of two wrapping-wheels having a common axis of rotation and provided with corresponding radial slots and inclined eccentric apertures, one of said apertures being closed at one end, a bifurcated frame to which said wrapping-wheels are journaled, having slots communicating with the radial slots in the wrapping-wheels, the intermeshing drive-wheel placed at right angles to the wrapping-wheels, and the hand-brace for communicating motion thereto, substantially as described.

3. In a machine of the kind described, the combination of two wrapping-wheels, C C, having a common axis of rotation, the wheel C, having an inclined eccentric aperture, *b*, and a bushing, *d*, in said aperture, and the wheel C', having inclined aperture *b'*, closed at one end and receiving the bushing *h*, the bifurcated frame A, having slots communicating with radial slots *a* in the said wrapping-wheels C C, the drive-wheel D, brace G, and handle B, the parts being constructed, arranged, and operating substantially in the manner and for the purposes described.

380,483. END-GATE. JACOB HAHN, De Kalb, Ill. Filed Feb. 23, 1888. Serial No. 265,031. (No model.)



Claim.—1. The combination of the box A, end-gate B, provided with cleat B', the nut D therein, bolt E, provided with collars E' and G, and the washer F, substantially as shown, and for the purpose described.

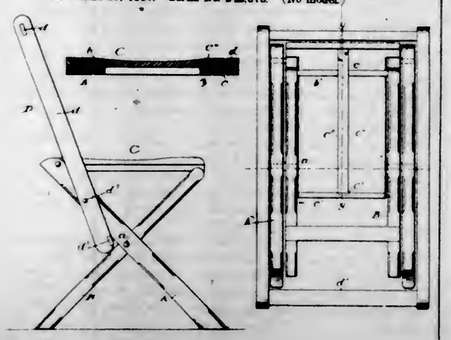
2. The combination of the box A, end-gate B, provided with sleeve H', arms J J, and end-gate C, provided with socket K, substantially as shown, and for the purpose described.

3. The combination of the box A, provided with holes J', the end-gate B, provided with holes J' and sleeve H', the bolt H, arms J J, and end-gate C, provided with socket K, substantially as shown, and for the purpose described.

4. The combination of the box A, provided with socket R, the end-gates C and B, provided with hinges L, the plate M, provided with slot N and lip V, plate S, provided with lip T, and the bolt O, provided with arm P, substantially as shown, and for the purpose described.

5. The combination of the end-gate C, suitably hinged to the end-gate B, the plate M, provided with sleeve M', slot N, and lip V, the plate S, provided with lip T, bolt O, provided with arm P, and box A, provided with socket R, substantially as shown, and for the purpose described.

380,484. FOLDING CHAIR. HIRAM F. HENRY, Gowanda, N. Y. Filed June 29, 1887. Serial No. 242,878. (No model.)



Claim.—1. The combination, with a folding stool constructed substantially as herein shown and described, of a back consisting of inflexible side pieces pivoted to the rear legs of said stool and inflexible cross-pieces respectively connecting the upper and lower extremities of said side pieces, so that when said back is folded laterally with the body of the stool both of its cross-pieces will shut beyond the ends of the legs of the stool, substantially as herein set forth.

2. The combination, with a folding stool constructed substantially as herein shown and described, of a back consisting of inflexible side pieces and inflexible cross-pieces respectively connecting the extremities of said side pieces, said back having its side piece pivoted to the outer legs of the stool below the seat, whereby when said back is folded laterally with the body of the stool its cross-pieces will respectively shut beyond the legs of the chair and the rear of the seat, substantially as herein set forth.

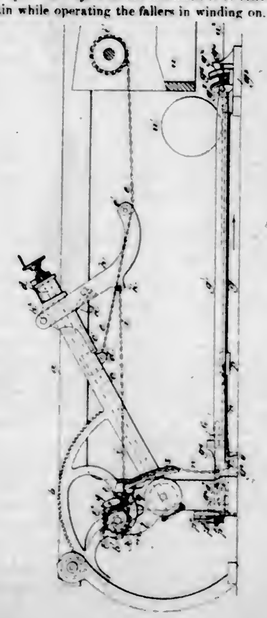
3. The combination, with a folding stool having its legs pivoted together off the center and having an inflexible seat pivoted off the center to and between the outer legs, of a back composed of inflexible side pieces connected at their respective extremities by inflexible cross-pieces and pivoted to the outer legs below the seat of the stool, between the pivot and upper ends of said legs, substantially as shown and described, for the purpose herein set forth.

4. The combination, with a series of folding stools constructed substantially as herein shown and described, of a back divided into a series of sections, each adapted to receive one of said stools, and the respective side pieces forming said sections being pivoted to the outer legs of said stools below their seats, substantially as shown and described, and for the purposes herein set forth.

5. The combination, with a stool having two pairs of legs, one pair adapted to fold within the other, and an inflexible seat pivoted to the outer legs, of a back composed of inflexible side pieces connected near their ends by inflexible cross-pieces, and said back being pivoted to the outer legs below said seat, whereby when the back is in use it is braced at its lower end against the rear of the outer legs and below the seat, and when the stool is folded said back surrounds the stool on all sides and lies in the same plane therewith, substantially as herein set forth.

380,485. NOSING MECHANISM FOR SELF-ACTING SPINNING-MULES, &c. RICHARD L. HOLT, Oldham, County of Lancaster, assignor to James Carter, Stalybridge, County of Chester, England. Filed Feb. 26, 1887. Serial No. 229,211. (No model.) Patented in England Apr. 22, 1886, No. 5,571; in France Dec. 6, 1886, No. 180,100; in Belgium Dec. 7, 1886, No. 77,362; in Canada Feb. 26, 1887, No. 26,077; in Spain Mar. 4, 1887, No. 6,590; in Austria-Hungary Apr. 12, 1887, No. 49,022 and No. 13,016, and in India Sept. 21, 1887, No. 1,234.

Brief.—The object of the invention is to relieve the shaper from all strain while operating the fallers in winding on.

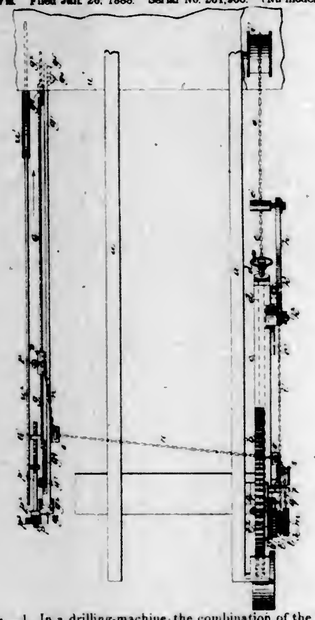


Claim.—1. The combination, with a cylindrical winding-on drum, the winding-on chain, the quadrant, the quadrant or radial arm, and the shaper-rod of a self-acting spinning-mule, of a lever operating on the winding-on chain to draw off a variable length of chain from the winding-on drum, a draft-chain connected with said lever, and take-up devices controlled from the shaper-rod and operating to take up the slack in the draft-chain, comprising a winding-on cam for said chain, operated from the shaper mechanism, and a ratchet and pawl for controlling the movements of the cam, substantially as described.

2. The combination, with a cylindrical winding-on drum, the winding-on chain, the quadrant, the quadrant or radial arm, and the shaper-rod of a self-acting spinning-mule, of a lever operating on the winding-on chain to draw off a variable length of chain from the winding-on drum, a draft-chain connected with said lever, and take-up devices controlled from the shaper-rod and operating to take up the slack in the draft-chain, comprising a winding-on cam for said chain, operated from the shaper mechanism, a ratchet and pawl for controlling the movements of the cam, a chain connected with the shaper-rod, and a chain-pulley for rotating the cam, substantially as described.

3. The combination, substantially as described, with the winding-on drum, the winding-on chain, the quadrant provided with a pin, b^2, the quadrant or radial arm, and the shaper-rod of a self-acting spinning-mule, of the lever *h*, pivoted to the radial arm, the ratchet-wheel *l*, pawl *q*, the cam or snail *k*, the chain *i*, secured to said cam and the lever *h*, the pulley *m*, the shaper-rod, and the chain *n*, connected, respectively, with pulley *m* and the shaper-rod, said parts being constructed and arranged substantially as and for the purpose specified.

380,486. DRILLING-MACHINE. SEBASTIAN HÖNINGER, Milwaukee, Wis. Filed Jan. 26, 1888. Serial No. 261,966. (No model.)



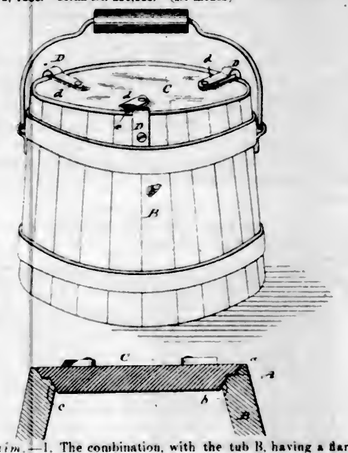
Claim.—1. In a drilling-machine, the combination of the boring-shaft I and its sleeve E, a tubular section, L, connected to the sleeve, an extension, M, rigidly connected to the shaft and having its bearings in said sleeve, a shell, S, for connection with said tubular section, a sleeve, T, transversely arranged in the shell, suitable gearing for connecting the shaft-extension and last-named sleeve, and a drill rigidly connected to this latter sleeve, substantially as set forth.

2. In a drilling-machine, the combination of the boring-shaft I and its sleeve E, a tubular section, L, connected to the sleeve, an extension, M, rigidly connected to the shaft and having its bearings in said sleeve, a tubular bracket, Q, connected to the tubular extension of the sleeve and extending at right angles therefrom, another extension, P, of the shaft, arranged in the bracket and geared to the first-named shaft-extension, a shell, S, connected to the bracket, a sleeve, T, transversely arranged in the shell and geared to the right-angular extension of said shaft, and a drill rigidly connected to this latter sleeve, substantially as set forth.

3. In a drilling-machine, the sleeve E, shaft I, tubular section L, shaft-extension M, and gear-wheel N, in combination with the shell S, sleeve T, gear-wheel U, cap W, and drill X, all arranged to operate substantially as set forth.

4. In a drilling-machine, the sleeve E and shaft I, in combination with the tubular section L, shaft-extension M, and gear-wheel N, the tubular bracket Q, provided with the housing R, the shaft-extension P, gear-wheels O and V, shell S, sleeve T, gear-wheel U, and drill X, carried by the latter sleeve, all arranged to operate substantially as set forth.

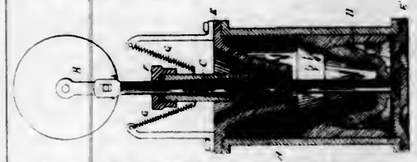
380,487. BUTTER-TUB. ALEXANDER C. HOWE, Idana, Kans. Filed Jan. 5, 1888. Serial No. 259,883. (No model.)



Claim.—1. The combination, with the tub B, having a flaring chine, A, grooved in two diameters, *a* and *b*, of the cover C, having a beveled rabbeted edge, substantially as described.

2. The combination, with the tub B, having the flaring chine A, grooved in two diameters, *a* and *b*, of the cover C, having the flaring beveled rabbeted edge, the clips D, secured to the tub, and the bevveled latches *d*, adapted to engage the said clips and hold the cover C securely in its place, substantially as described.

380,488. STEAM-ENGINE. SAMUEL E. JARVIS, Lansing, Mich. Filed June 4, 1887. Serial No. 240,246. (No model.)



Claim.—1. In an engine of the kind described, the combination, with the oscillating piston-rod, of an oscillating stuffing-box provided with an enlarged bore for the lateral play of the piston, and a ball-and-socket joint between the inner end of the stuffing-box and the cylinder-head, the center of motion of said ball-and-socket joint being located inside the cylinder, substantially as described.

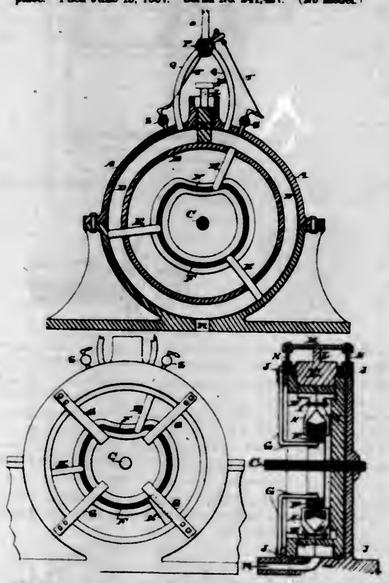
2. In an engine of the kind described, the combination, with the piston-rod, of a stuffing-box having a ball-and-socket bearing with the cylinder-head and an enlarged bore to provide for its relative angular play with the piston-rod, and a spring-connection between the cylinder and the stuffing-box, substantially as described.

3. In an engine of the kind described, the combination of the stuffing-box terminating in a ball-and-socket bearing at its inner end, the cylinder-head provided with a conical inward projection terminating in a socket-bearing at its inner end, and the enlarged bore in the stuffing-box to provide for relative angular play between the stuffing-box and piston-rod, substantially as described.

4. In an engine of the kind described, the combination of the stuffing-box terminating in a ball-and-socket bearing at its inner end and the cylinder-head provided with a conical inward projection terminating in a socket-bearing at its inner end, said ball-and-socket bearing having the center at or near the center of the cylinder, substantially as described.

5. In an engine of the kind described, the combination, with the inwardly-projecting conical head E, of the stuffing-box F, having a ball-and-socket joint therewith, and the piston-head D, consisting of an annular outer piston and an inner conically-recessed portion secured to the piston-rod and having a ball-and-socket joint with said outer portion, substantially as described.

380,489. ROTARY ENGINE. ALBIN L. JEFFERIS and WILLIAM C. THURMAN, Lincoln, Cal., assignors of one-fourth to J. C. Ingram, same place. Filed June 15, 1887. Serial No. 241,427. (No model.)



Claim.—1. In a rotary engine, the outer case having one side left open, the concentrically-revolving rim or wheel having pistons sliding through its periphery into the chamber formed by the face and flanges of the wheel and the interior of the outer case, the stationary cam-ring having grooves or channels upon opposite sides, in combination with the yokes or arms H, bolted together in pairs, with one end secured to the piston and the others bent so as to enter cam-grooves or channels, substantially as herein described.

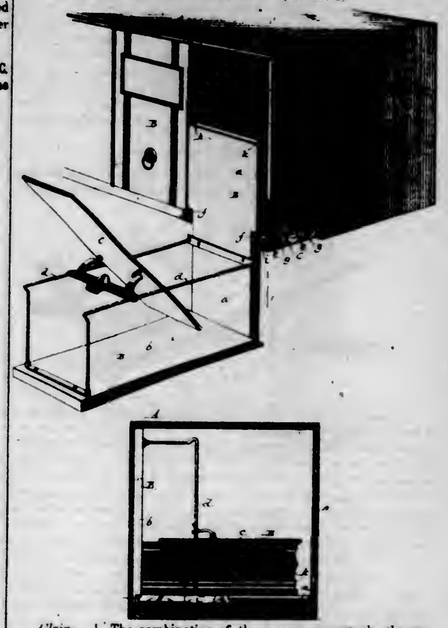
2. In a rotary engine, the outer stationary case, the concentric rotary rim or wheel having flanges projecting upon each side of the periphery, with grooves in their edges, and packing-rings fitting said grooves and corresponding grooves in the inside of the exterior case, in combination with the pistons sliding through slots in the periphery of the rotary ring, and connected by shanks H with a stationary cam, by which they are forced out and withdrawn to pass a fixed abutment, K, extending through the outer case and against the periphery of the rotary wheel, substantially as described.

3. In a rotary engine, the fixed outer case, the rotary rim with its radially-sliding pistons and the grooved cam by which they are actuated, in combination with an abutment extending through the outer case, so as to close the piston-chamber, the supporting-bar, and the adjusting-bolts, substantially as herein described.

4. In a rotary engine, the stationary outer case composed of the periphery and one closed side, a stationary grooved or channeled cam-ring supported from the opposite or open side of the case by the radial arms G, in combination with the concentrically-mounted rotary rim or wheel B, having flanges upon each side of its face, which form with the outer case the piston-chamber, within which the radially-sliding pistons receive the pressure of steam, the adjustable abutment K, and the steam-inlet passages opening upon each side of the abutment, and the exhaust-passage in the opposite part of the circumference of the case from the abutment, substantially as herein described.

5. The rotary flanged rim W, its radially-sliding pistons and packing-rings mounted concentrically within the fixed stationary case, having the fixed abutment, the steam-passages opening upon either side of the abutment, and the relief valves or cocks, in combination with the valve, whereby steam may be admitted to either of the passages, and connections whereby the relief-valves are correspondingly closed and opened, substantially as herein described.

380,490. SUSPENSION FILE-BOX. M. ROSETTE JEWELL, Rochester, N. Y., assignor to the Schlicht & Field Company, same place. Filed July 15, 1887. Serial No. 244,407. (No model.)



Claim.—1. The combination of the case or receptacle, the two slotted sliding bars provided with upturned hooked ends, screws passing through the slots in the bars and guiding and securing them to the bottom of the case, and the file-box provided with studs or trunnions on its edges to engage the said hooked ends of the slides, the file being recessed at its edges to admit the slides between it and the walls of the receptacle, as described.

2. In combination with the cabinet or receptacle, the sliding plates with upturned hooked ends, screws passing through the slots and guiding and securing the plates on the bottom of the receptacle, and the file-box arranged to slide upon and receive support from the bottom of the receptacle, and provided with studs or trunnions to engage the said hooked ends of the slides, as described.

3. In combination with the receptacle provided with slides, substantially as described, the file-box having the front board adapted to close the receptacle, and the base-board adapted at its rear end to bear against the side walls of the receptacle, reduced in width at its forward end to pass the slides, and provided with studs or journals to engage said slides.

4. In combination with the receptacle and the sliding plates therein, substantially as described, the file-box having its under edges rabbeted to override the slides, and provided midway of its length, or thereabout, with the lateral studs or journals to engage the slides.

380,491. EYEGLASSES. AMELIA KAHN, St. Joseph, Mo. Filed Mar. 21, 1887. Serial No. 231,713. (No model.)



Claim.—1. In an eyeglass, nose-guard springs each having thereon a pad-holding box, the springs being bent and applied at their upper ends, so as to permit a lateral adjustment of the pads to and from the glasses, and at their lower ends hanging free within pockets respectively surrounding such ends at their sides.

2. In an eyeglass, the combination, with the glass or its frame, of an open-mouthed pocket secured thereto and adapted to receive and protect at all sides the lower free end of the nose-guard spring and to permit its free movement, as set forth.

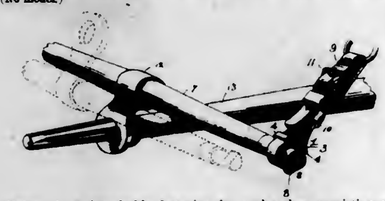
3. In combination with the nose-guard adjustably fixed at one

end and free at its other end, a spacious pocket on the glass or frame inclosing or surrounding such free end, but permitting ample movement of the same, as set forth.

4. An eyeglass having nose-guards holding leather, felt, or similar fibrous pads and fixed adjustably at the top, but free or unattached and terminating in a reduced part or pin at the bottom, such pin being housed in a spacious protecting cup or pocket, as set forth.

5. The combination of nose-guard springs adjustable at their upper ends, pad-holding boxes containing fibrous material held therein by its own resilience, and open-mouthed pockets adapted to receive and protect at all sides the lower free ends of the springs, substantially as set forth.

380,492. **NECK-YOKE FASTENING.** ADOLPH P. KOCH and WILLIAM C. KOCH, Effingham, Ill. Filed Feb. 2, 1888. Serial No. 262,744. (No model.)



Claim.—1. A detachable fastening for neck-yokes, consisting of a sleeve adapted to engage the end of the neck-yoke, having an extended recess adapted to register with a correspondingly-shaped projection on the neck-yoke end, and slotted projections to receive a harness-collar strap, substantially as described.

2. The combination, with a neck-yoke ferrule having a lateral projection or lug, of a detachable sleeve with an extended recess or slot adapted to register with said lug or projection on the ferrule, and strap-retaining projections, substantially as described.

3. The combination, with a neck-yoke having a ferrule provided with a lateral lug or projection, of a detachable sleeve with an extended recess or slot engaging said ferrule, and a harness-collar strap passing through slotted retaining projections in said detachable sleeve, substantially as described.

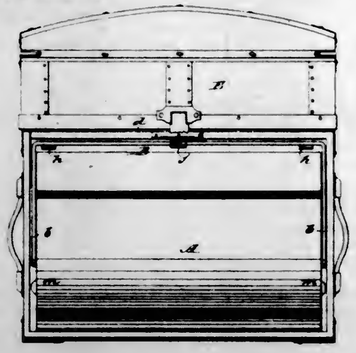
4. The combination, with the neck-yoke 7, having projection 8, of a detachable sleeve, 1, having an extended recess, 3, and projections 4, with slots 5, and a harness-collar strap, 9, passing through said slots 5, substantially as described.

380,493. **TRUNK.** WILLIAM J. LARGE, Brooklyn, N. Y. Filed Sept. 24, 1887. Serial No. 250,583. (No model.)

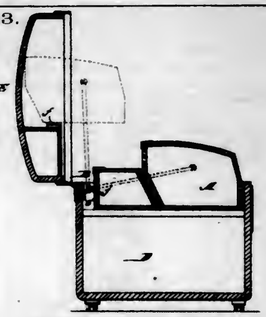
Claim.—1. In a trunk, the bail-shaped rod B, having its arms fastened one at each end of the trunk-tray, in combination with suitable bearings secured to the back of the trunk-body, substantially as described.

2. In a trunk, the bail-shaped rod B, having its arms fastened one at each end of the trunk-tray, in combination with open bearings secured to the back of the trunk-body and a spring-clasp for holding the rod B, substantially as described.

3. The tray A and knobs *m*, one at each end of the tray, the body A and bearings at the back thereof, and the cover E and rests *f* therein, one at each end, in combination with the bail-shaped rod B, having its arms fastened one at each end of the tray and the main part thereof held in the bearings at the back of the trunk-body, substantially as described.



380,493.

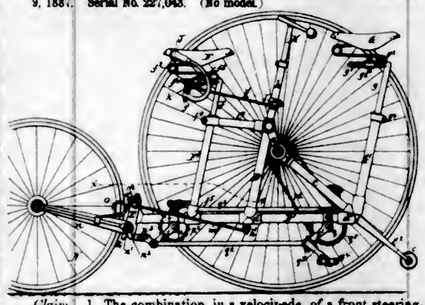


380,494. **NUT-LOCK.** JACOB T. LATCHAW, Bradford, Pa. Filed Feb. 4, 1887. Serial No. 226,499. (No model.)



Claim.—The combination, with a nut provided with a cavity or recess, *b*, tangential to the thread of the nut and extending only part way through, of a locking-pin cut transversely near its inner end to form a hook-like projection thereon, said locking-pin extending nearly to the inner end of the recess or cavity in the nut, which end provides an abutment for the pin, a pivoted spring secured to the edge of the nut and engaging the head of the locking-pin, and a screw-bolt having longitudinal grooves *a* intersecting its threads, substantially as specified.

380,495. **VELOCIPEDE.** EMMIT G. LATTA, Friendship, N. Y., assignor to the Pope Manufacturing Company, Portland, Me. Filed Feb. 9, 1887. Serial No. 227,043. (No model.)



Claim.—1. The combination, in a velocipede, of a front steering-wheel, rear wheels, a connecting-frame provided with a steering-head between the front and rear wheels, a saddle arranged above the steering-head, an open-fronted handle-bar arranged below the saddle, a steering-post arranged in rear of the saddle, and connecting-bars extending rearwardly from the handle-bar to the upper portion of the steering-post and forwardly from the lower portion of the steering-post to the steering-head, substantially as set forth.

2. The combination, in a tandem velocipede provided with two driving-wheels connected by a rigid frame, and a steering-wheel pivoted to said frame, of a front handle-bar and a rear handle-bar, both pivoted to the frame of the driving-wheels in rear of the pivot of the steering-wheel and in or near the center line of the machine, and connected together and with the steering-wheel, whereby both handle-bars and the steering-wheel move together independently of the driving-wheels, substantially as set forth.

3. The combination, in a velocipede, of a front steering-wheel, rear wheels, a connecting-frame provided with a steering-head between the front and rear wheels, front and rear handle-bars both pivoted to the frame and connected together and with the steering-head, said handle-bars being made of unequal length, whereby the longer bar controls the movement of the shorter bar, substantially as set forth.

4. The combination, in a tandem velocipede, of a front handle-bar and a rear handle-bar, and a connecting-rod attached to the bars and at different distances from their fulcrums, whereby one bar controls the other, substantially as set forth.

5. The combination, with the frame, of a vertically-adjustable saddle-support, a pivot secured to the saddle-support, and a handle-bar mounted on said pivot, whereby the handle-bar is raised and lowered with the saddle, substantially as set forth.

6. The combination, with the saddle and saddle-support, of a handle-bar pivoted to the saddle-support underneath the saddle, and curved outwardly, backwardly, and forwardly, substantially as set forth.

7. The combination, with the front steering-wheel, the rear wheels, and the connecting-frame provided with a steering-head between the front and rear wheels, of a front saddle and a rear saddle and their supports, both secured to the frame in rear of the steering-head, a steering-post arranged between the saddles, and having its lower end connected with the steering-head, and a handle-bar secured to the upper end of the steering-post, substantially as set forth.

8. The combination, with the front steering-wheel, the rear wheels, and the connecting-frame provided with a steering-head between the front and rear wheels, of a front saddle and a rear saddle and their supports both secured to the frame in rear of the steering-head, a steering-post arranged between the saddles and having its lower end connected with the steering-head, a rear handle-bar secured to the upper end of the steering-post, a front handle-bar, and a rod connecting the front handle-bar with the steering-post, substantially as set forth.

9. The combination, with the vertically-adjustable support of the front saddle and the handle-bar pivoted thereto, of a steering-post, a cross-head made vertically adjustable on the steering-post, and a rod connecting the handle-bar with said cross-head, substantially as set forth.

10. The combination, with the rear frame provided at its front end with a steering-head, and handle-bars pivoted to the rear frame and connected with the steering-head, of a front steering-wheel, a horizontal fork in which the front wheel is mounted, a horizontal pivot connecting the rear end of the fork with the steering-head, and a spring connecting the steering-head with the fork and permitting the fork to play vertically on its pivot without moving the steering-head and handle-bars, substantially as set forth.

11. The combination, with the rear frame provided at its front end with a steering-head, of a front steering-wheel, a horizontal fork in which the front wheel is mounted, a horizontal pivot connecting the rear end of the fork with the steering-head, and a bent spring provided with two coiled branches, secured at its middle to the steering-head and having its coiled branches connected with the branches of the fork, substantially as set forth.

12. In a tandem velocipede, the combination, with the main axle provided with the driven sprocket-wheel, of two crank-axles arranged, respectively, in front and in rear of the main axle, and each provided with a sprocket-wheel of different diameter arranged in line with the driven sprocket-wheel, and a drive-chain whereby the driven sprocket-wheel can be connected with the sprocket-wheel on either crank-axle at desire, substantially as set forth.

13. In a tandem velocipede, the combination, with the driving-wheel, of two rotating crank-shafts, cranks secured to said shafts, a connecting-rod attached to said cranks at equal distances from the shafts thereof, and pedals attached to said connecting-rod, substantially as set forth.

14. In a tandem velocipede, the combination, with two crank-shafts, of two pairs of cranks secured thereto, rods connecting said cranks, and pedal-extensions formed an one pair of said cranks and projecting beyond the journals of the connecting-rods, substantially as set forth.

15. In a tandem velocipede, the combination, with two crank-shafts, of two pairs of cranks secured thereto, rods connecting said cranks, and pedal-extensions formed on one pair of said cranks at an angle to the cranks, substantially as set forth.

380,496. **MACHINE FOR POINTING, DRILLING, AND REAMING.** FRANK LEHAR, Elgin, Ill. Filed Aug. 5, 1886. Serial No. 210,096. (No model.)

Claim.—1. An organization in which is combined a series of rotatable work-holding chucks that are adapted to have a step-by-step rotation around a common center, a series of tool-spindles that are less in number than said chucks and are each adapted to carry one of a series of pointing, drilling, and reaming or counterboring tools, means whereby each of said chucks may be moved into line with each of said tools and caused to rotate, and means whereby said tools may be simultaneously moved toward or from said chucks, whereby all of the various operations of pointing, drilling, and reaming or counterboring may be simultaneously carried on upon an equal number of pieces of work, substantially as and for the purpose specified.

2. An organization in which is combined a series of tools that are adapted by successive action to point, drill, and ream or counterbore a series of rotatable work-holding chucks that exceed said tools in number and are each adapted to be moved by successive steps into

380,496.



line with each of the latter, means whereby said tools may be simultaneously moved toward and from said chucks, and means whereby each of said chucks, after having passed within the line of action of each tool of the series, has a period of rest, whereby each of the said operations of pointing, drilling, and reaming or counterboring may be carried on simultaneously with the insertion of new and the removal of completed work, substantially as and for the purpose shown.

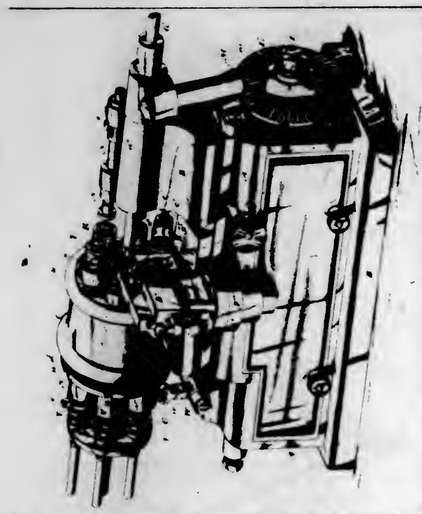
3. An organization in which a series of chuck-spindles are journaled at equidistant points within a pivoted head that is adapted to have a step-by-step rotation around or upon its pivotal bearing, in combination with means, substantially as shown, whereby as each spindle is moved with said head one step from a predetermined point it is caused to revolve within its bearings, and its revolutions are caused to cease when by the farther partial rotation of said head said spindle again reaches its starting-point, substantially as and for the purpose set forth.

4. An organization in which a series of chuck-holding spindles are journaled at equidistant points within a pivoted head that is adapted to have a step-by-step rotation around or upon its pivotal bearing, in combination with means, substantially as set forth, whereby as each spindle is moved from a predetermined point by the partial rotation of said head its chuck is automatically closed and the spindle caused to revolve within its bearings, and when by the complete rotation of said head said spindle reaches its starting-point it is automatically disconnected from its rotating mechanism and its chuck simultaneously opened, substantially as and for the purpose shown and described.

380,497. **MACHINE FOR THE MANUFACTURE OF PILLARS FOR WATCH-PLATES.** FRANK LEHAR, Elgin, Ill. Filed Aug. 5, 1886. Serial No. 210,096. (No model.)

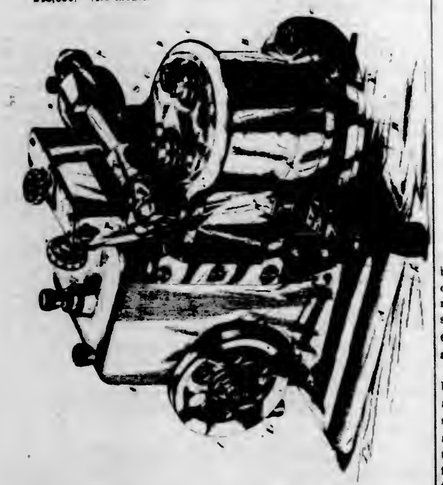
Claim.—1. As an improvement in the manufacture of pillars for watch-plates, an automatic organization in which are combined a journaled head that is adapted to be rotated step by step, a series of chuck-spindles which are journaled within said head and are each adapted to hold a stock-rod, a series of tools that by successive action are adapted to form and thread the screw-pivot to shape the body, to form the top-plate pivot, and to cut off the completed pillar, and means whereby said chucks are rotated within their head, said head is rotated step by step, said tools are moved into and out of contact with the work, and each stock-rod is fed forward and each of such operations is simultaneously performed, substantially as and for the purpose specified.

2. As an improvement in the manufacture of pillars for watch-plates, an automatic organization in which are combined a series of tools that by successive action are adapted to perform each of the operations between the roughing out and completion of a pillar, a series of stock-holding chucks which exceed said tools in number and are journaled within a journaled head that is adapted to have a step-by-step rotation around its axis, a stock-feeding mechanism which is arranged to act midway between the first and last of said tools, and means whereby said tools are moved into and out of contact with the work and each of said operations is simultaneously performed, substantially as and for the purpose shown.



3. As an improvement in the manufacture of pillars for watch-plates, an automatic organization in which are combined journaled chucks for holding a number of stock-rods and for simultaneously rotating the same around their axes, a cutter for forming the screw-pivot of a pillar, a die for threading such pivot, chucking mechanism for feeding forward the blank rod, a cutter for shaping the body of the pillar, a cutter for forming the top-plate pivot and cutting the same nearly from the rod, and means whereby said screw-pivot may be screwed into a pillar-plate and the completed pillar separated from the blank rod, said operations being performed in the order named upon each of said blanks, and all of said operations being simultaneously carried on, substantially as and for the purpose set forth.

380,498. MACHINE FOR THE MANUFACTURE OF GEAR-WHEELS. FRANK LEMAN, Elgin, Ill., Filed Aug. 5, 1886. Serial No. 210,099. (No model.)



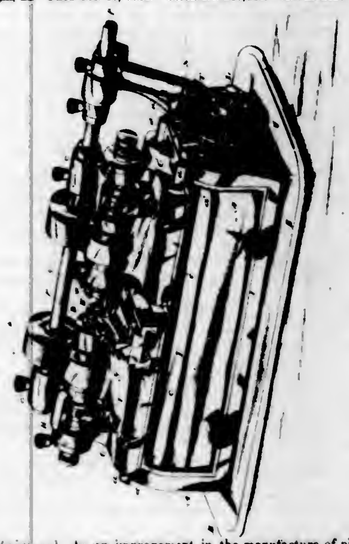
Claim.—1. As an improvement in means for cutting the teeth of wheels, an organization in which are combined a journaled head that is adapted to be partially rotated upon its axis, two wheel-arbor-holding quills which are journaled within said head and are each adapted to be rotated step by step when caused to occupy a certain predetermined position by the rotation of said head, and a rotating cutter that is adapted to move lengthwise of the wheel-arbor of the active quill between each of its partial rotations, substantially as and for the purpose specified.

2. As an improvement in means for cutting the teeth of wheels, an organization in which are combined two or more wheel-arbor-holding quills that are adapted to have a step-by-step rotation when brought into position before a cutter and to remain at rest when moved away from said cutter, substantially as and for the purpose shown.

3. As an improvement in means for cutting the teeth of wheels, a mechanism in which there are combined with a rotatable index-plate a rock-shaft that has one of its arms moved toward or from said index-plate by suitable means, a pawl which is pivoted upon said arm and by such action is adapted to engage with the toothed periphery of said index-plate, and an adjustable stop that is adapted to regulate the movement of said pawl upon its pivotal bearing and thereby determine the peripheral travel of its engaging end, substantially as and for the purpose set forth.

4. As an improvement in means for cutting the teeth of wheels, a mechanism in which are combined a rotatable index-plate, a rock-shaft arm that carries an operating-pawl and by its movements toward and from said index-plate causes said pawl to move over or upon the periphery of the same, and a locking-pawl that is adapted to engage with the toothed periphery of said index-plate and is lifted out of such engagement by the movement of said arm, which retracts said operating-pawl, substantially as and for the purpose shown and described.

380,499. MANUFACTURE OF PINION-BLANKS. FRANK LEMAN, Elgin, Ill. Filed Oct. 16, 1886. Serial No. 216,444. (No model.)



Claim.—1. As an improvement in the manufacture of pinion-blanks, the method employed, which consists in forming the staff end of a blank from and upon the projecting end of a rotating wire by means of a cutting-tool, and then by one operation of another cutter severing the blank from the wire and simultaneously pointing its rear end and the staff end of the blank next to be made, substantially as and for the purpose specified.

2. As an improvement in mechanism for manufacturing pinion-blanks, an organization in which are combined two chucks that are arranged to rotate in the same axial line with equal speed and in the same direction and are adapted, respectively, to grasp a wire stock and a partially-completed blank, means, substantially as described, for turning the staff end of a blank upon the wire stock as it projects from one chuck, means, substantially as described, for then feeding forward the wire stock until the staff end of the blank formed thereon is grasped within the other chuck, and means, substantially as described, for then cutting said blank from off the wire stock and simultaneously pointing its rear end and the staff end of the blank next to be made, substantially as and for the purpose shown.

3. As an improvement in mechanism for the manufacture of pinion-blanks, an organization in which are combined a chucking-spindle which is journaled within a movable head, a chucking-spindle that is journaled within a stationary head, means, substantially as shown, for automatically feeding the wire stock through one chuck into the other chuck, and means, substantially as shown, for simultaneously turning the staff end of one pinion-blank and completing another pinion-blank by pointing its rear end and severing it from the wire stock, substantially as and for the purpose set forth.

4. As an improvement in mechanism for the manufacture of pinion-blanks, an organization in which by cutters, substantially as described, the staff portion of a pinion-blank is formed upon the projecting end of a rotating wire stock, said stock is then moved longitudinally until the staff end is clamped within a second chuck, and the blank is then completed and severed from the stock by a cutter which points its rear end and simultaneously forms the staff end of another blank, substantially as and for the purpose shown and described.

5. As an improvement in mechanism for the manufacture of pinion-blanks, the combination of two rotatable spindles which are journaled in the same axial line, are adapted to rotate continuously and with uniform velocity in one direction, and are each provided with a split chuck, mechanism, substantially as described, by which the chucks are opened and closed at predetermined times, and mechanism, substantially as described, by which, when the said chucks are thus opened, a pinion-blank wire contained in one chuck is fed forward into the other chuck, substantially as and for the purpose shown.

6. As an improvement in mechanism for the manufacture of pinion-blanks, two rotatable chuck-spindles which are journaled in the same axial line and revolve in one direction with uniform velocity and are adapted to simultaneously grasp a pinion-blank wire, in combination with cutting or reducing tools, substantially as described, that by alternate action are adapted to give shape to and cut a pinion-blank from said wire, substantially as and for the purpose shown.

7. As an improvement in mechanism for the manufacture of pinion-blanks, the combination of two rotatable spindles which are journaled in the same axial line, are adapted to rotate continuously and with uniform velocity in one direction, split chucks that are secured in and revolve with said spindles, mechanism, substantially as shown, by which the chucks are opened and closed at predetermined times, mechanism, substantially as shown, by which, when thus opened, a pinion-blank wire contained within one of said chucks is fed forward into the other chuck, and mechanism, substantially as shown, whereby, when the wire blank is clamped within and rotates with said chucks, it receives the alternate action of cutting and reducing tools, substantially as and for the purpose shown and described.

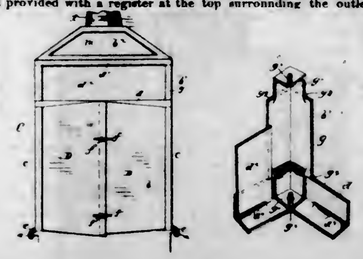
8. As an improvement in mechanism for the manufacture of pinion-blanks, two rotatable chuck-spindles which are adapted to simultaneously grasp and rotate a pinion-blank wire, in combination with cutting and reducing tools that by alternate action are adapted to partially form a pinion-blank upon said wire, and then to complete and sever such blank therefrom and simultaneously form the staff end of another blank, substantially as and for the purpose specified.

9. As an improvement in mechanism for the manufacture of pinion-blanks, the combination of two rotatable chuck-spindles which are adapted to simultaneously grasp a pinion-blank wire, a reducing-tool and a cutting-off tool, and mechanism, substantially as described, for giving to said tools alternate inward and outward movements, substantially as and for the purpose shown.

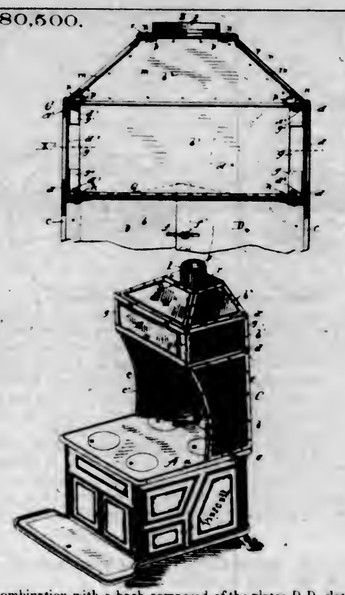
10. As an improvement in mechanism for the manufacture of pinion-blanks, the combination of two rotatable chuck-spindles which are adapted to simultaneously grasp and revolve a pinion-blank wire, mechanism, substantially as shown, by which the chucks are opened, the wire fed forward, and said chucks then closed, cutting and reducing tools that by alternate action are adapted to form and cut a pinion-blank from the blank-wire, and mechanism, substantially as shown, whereby a pinion-blank when completed is ejected from the second chuck, substantially as and for the purpose set forth.

380,500. COOK-STOVE VENTILATOR. JOHN F. LIMCOTT, Jefferson, Ill. Filed Sept. 12, 1887. Serial No. 249,469. (No model.)

Claim.—1. The within-described ventilator for cook-stoves, comprising two cheeks and a superimposed housing open at the bottom, and provided with a register at the top surrounding the outlet-flue



380,500.



in combination with a back composed of the plates D D, slotted at *f*, and provided with connecting-pins *f'*, substantially as and for the purposes described.

2. The combination, in a ventilating-hood for stoves, of the cheek-pieces, the two adjustable back plates, the superimposed housing provided with a register and a front door, and a main outlet-flue extending from the stove through the top of the said housing, substantially as described.

3. In a stove-ventilator, the combination, with the upper and lower sections, of the rectangular middle section composed of paneled frames, the corner-posts *g*, provided with slots at their upper and lower ends, the screw-fastenings, and the lugs d^3, adapted to receive the panels d^3, all constructed and adapted to operate substantially as described.

4. In a stove ventilator or hood, the combination of the lower section, *b*, composed of paneled cheek-pieces, the back thereof composed of annular lapped plates D D, slotted and connected together by studs, the superimposed intermediate section, *b'*, having a front door, and composed of angular frames and corner-posts, and a pyramidal section, b^2, also composed of angular paneled frames, and provided with a register adapted to receive through it the main flue, and a collar adapted to receive the upper part of the stove-pipe, substantially as described.

380,501. SASH-FASTENER. GEORGE D. LODER, Covington, Ky. Filed July 19, 1887. Serial No. 244,752. (No model.)



Claim.—1. The combination, in a window-fastening, of the tumbler 11, resting against spring 9, and slotted at its upper end, so as to move vertically upon its pivot, with the shoulders 12, trigger 15, and tripping-lug 4, substantially as described.

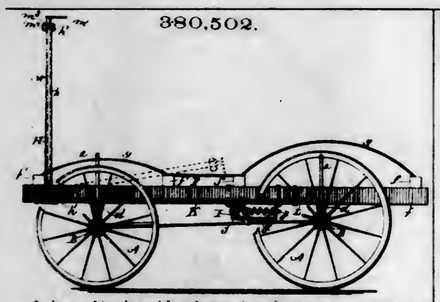
2. A window-fastening composed, substantially, of the plate 7, having the slots 13 and 14 and shoulders 12, the longitudinally-moving tumbler 11, spring 9, trigger 15, spring 19, and the tripping-lug 4, substantially as specified.

3. The combination, in a window-fastening, of the face-plate 7, having the side flanges, 20, with the swinging tumbler 11 and its trigger 15, substantially as described.

380,502. WAGON-BRAKE. WILLIAM J. MACKEY, Truro, Ill. Filed Jan. 3, 1888. Serial No. 259,564. (No model.)

Claim.—1. In combination with a hay-rack and wagon and a standard, H, located on said hay-rack, a shaft, M, carrying drum *m*, cords K K', pulleys L *l*, brake-bar, and springs *j*, substantially as and for the purpose specified.

380,502.

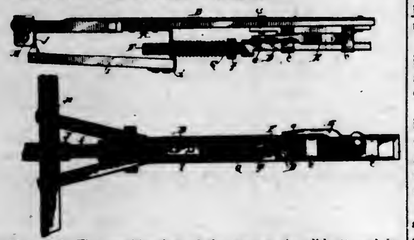


2. In combination with a hay-rack and wagon and a standard, H, located on said hay-rack, a shaft, M, provided with suitable appliances at its upper end for rotating it, and cords extending from said shaft to a brake-bar, substantially as and for the purpose specified.

3. In combination with a hay-rack and wagon and a standard, H, located on said hay-rack, shaft M, having ratchet-wheel and pawl, a crank and drum, *m*, the cords K K', pulleys L *l*, brake-bar, springs *j*, and rods *j*, substantially as and for the purpose specified.

4. In combination with a hay-rack and wagon, a shaft, M, which extends upwardly from the hay-rack to where it can be reached by the driver on a load of hay, and is connected at its lower end with cords which it is adapted to wind up, and which extend to and are connected with the brake-bar l, substantially as and for the purpose specified.

380,503. **TONGUE-SUPPORT.** LEWIS J. MAHOR, Delphi, Ind. Filed Dec. 28, 1887. Serial No. 259,219. (No model.)



Claim.—1. The combination of the tongue, the slide D, and its actuating-cam E, with the rod F, operated by said slide, the spring G thereon, and the devices for transmitting strain from spring G to the axle when the cam is closed, all constructed and arranged to operate substantially in the manner and for the purpose described.

2. The combination, with the axle and tongue and the slide and actuating-cam therefor and rod attached to said slide and supported in a depending bracket, of the bar hung upon the axle at one end and upon said bar at its other end and the spring mounted on said rod and engaging said bar, all constructed and arranged to operate substantially as and for the purpose described.

3. In a tongue-support, the combination, with the slide, actuating-cam therefor, attached rod, and supporting-bracket for said rod secured to and below the tongue, of the bar hung upon the axle at rear and upon said rod at front by an upstanding bracket, and the spring mounted on said rod engaging the bracket of said bar, and the adjusting-nut for said spring, substantially as described.

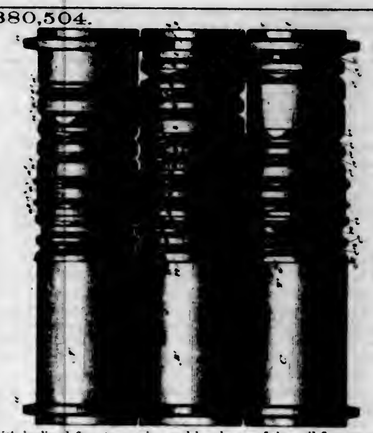
380,504. **MACHINE FOR REDUCING RAILROAD-RAILS.** SIDNEY MCCLOUD, Chicago, Ill. Filed Nov. 22, 1887. Serial No. 255,851. (No model.)

Claim.—1. In a machine for reducing railroad-rails, a pair of rolls for effecting the pass, substantially as at P, said rolls having grooves in which the head of the rail is compressed, and having an unobstructed open space at the side of said grooves wherein the lateral expansion of the metal can freely occur, substantially as described.

2. In a machine for reducing railroad-rails, a pair of rolls for effecting the pass, substantially as at P, the one roll having a broad shallow groove in which one side of the head of a rail is compressed, and the other roll having a deeper groove to receive the opposite side of the head of the rail, substantially as described.

3. In a machine for reducing railroad-rails, a pair of rolls for effecting the pass, substantially as at P, the one roll having a broad shallow groove in which one side of the rail-head is compressed and having a broad rib to bear upon the web of the rail, and having a deep groove

380,504.



with inclined face to receive and bend one of the rail-flanges, and the other roll having a deep groove to receive one side of the rail-head and having a groove of less depth than one of the rail-flanges to receive and compress said flanges, substantially as described.

4. In a machine for reducing railroad-rails, a pair of rolls for effecting the pass, substantially as at Q, one of said rolls having a groove to receive one side of the partially-compressed rail-head, and the other of said rolls being provided with a rib opposite said groove of the other roll, said rolls being formed with a broad and unobstructed space adjacent the tread of the rail-head, wherein said head may be freely extended, substantially as described.

5. In a machine for reducing railroad-rails, a pair of rolls for effecting the pass, substantially as at Q, said rolls having grooves to receive and compress the opposite flanges of the rail, said grooves being out of alignment with each other, substantially as described.

6. In a machine for reducing railroad-rails, a pair of rolls for effecting the third or following pass, substantially as at R, &c., one of said rolls having a groove to receive the partially-compressed rail-head, and having a groove to receive one of the partially-compressed rail-flanges, and the other of said rolls having two ribs, one opposite each of said grooves, substantially as described.

7. In a machine for reducing railroad-rails, the combination, with a pair of compressing-rolls, of diagonal guides for causing the passage of the blank obliquely through the rolls, substantially as described.

8. In a machine for reducing railroad-rails, the combination, with a set of three rolls having flat portions for compressing the blank, of two sets of diagonal guides, one of said sets for causing the passage of the blank obliquely between the middle and upper rolls and the other of said sets for causing the passage of the blank obliquely between the middle and lower rolls, substantially as described.

380,505. **TICKET-HOLDER FOR RAILROAD-CARS.** JOHN R. MCINTYRE, Saltsburg, Pa. Filed Dec. 29, 1887. Serial No. 259,306. (No model.)



Claim.—1. An apparatus or device for checking and holding tickets on railroad passenger-cars, consisting of a longitudinal shaft capable of turning in its bearings on either side of the car, and projecting perforated ticket-receivers mounted on said shaft, substantially as specified.

2. The combination, with shaft A and a series of holders forming bearings therefor at different points in its length, of perforated ticket-receivers arranged to project from one side of said shaft, and means adapted to restrict the turning of the shaft, whereby the ticket-receivers are raised up out of the way or lowered into a forward position, as required, essentially as and for the purposes herein set forth.

3. The combination, with shaft A, cranked or bent, as at *h*, of the catch D, the perforated ticket-receivers C, carried by arms *d*, attached to one side of said shaft, and the holders or bearings *b c* for the shaft, provided with rests or supports *i* for the arms of the receivers when down, substantially as shown and described.

4. In an apparatus or device for checking and holding tickets on railroad passenger-cars, substantially as described, the ticket-receivers C of pocket-like construction, having an open end, *e*, and divided into separate ticket-compartments, each of which is provided with a ticket-exposing opening, *g*, essentially as and for the purposes herein set forth.

380,506. **CANDLESTICK.** ROBERT H. MEHL and ROBERT KNOTT, Brooklyn, N. Y. Filed June 7, 1887. Serial No. 240,583. (No model.)



Claim.—In a candlestick, the wire A, bent at its lower end to form the supporting-arm B, and bent near its upper end to form the loop F, and also bent above said loop, as at *b c*, to form the extension *d*, in combination with the reflector E, secured to said wire below the loop, and the pin-wheel G, pivoted upon the extension *d*, substantially as described.

380,507. **SPRING-HEEL.** ERNEST A. MUDGER, Beaver Dam, Wis., assignor to George R. Swan, same place. Filed Oct. 4, 1887. Serial No. 251,449. (No model.)



Claim.—1. The herein-described spring-heel, the same comprising a metallic plate secured to the sole of the boot or shoe, a cushion fitting said metallic plate closely, a lift fitting said cushion closely, and a screw for removably clamping said lift in position and the cushion between said lift and plate.

2. The herein-described spring-heel, the same comprising a plate secured to the sole of the boot or shoe and provided with downwardly-projecting studs, a cushion provided with tubular projections on its lower face receiving said studs, a lift provided with recesses in its upper face engaging said tubular projections on the cushion, the adjacent faces of all said parts fitting each other closely, and a screw for removably clamping said lift in position and the cushion between said lift and plate.

3. The herein-described spring-heel, the same comprising a curved metallic plate secured to the sole of the boot or shoe, a cushion fitting said plate closely, its upper face being curved and its lower face flat, a lift fitting said cushion closely, and a screw for removably clamping said lift in position and the cushion between said lift and plate.

4. The herein-described spring-heel, the same comprising a metallic plate secured to the sole of the boot or shoe, downwardly-projecting studs formed thereon, one or more of which are provided with a vertical screw-threaded hole, a cushion provided with apertures or recesses receiving said studs, a lift also provided with an aperture into which said screw-threaded stud extends, and a screw, its shank passing into said screw-threaded hole in the stud, said screw removably clamping said lift in position and securing said cushion upon said stud and between said lift and plate.

5. The herein-described spring-heel, the same comprising a metallic plate secured to the sole of the boot or shoe, a downwardly-projecting stud formed thereon and provided with a vertical screw-threaded hole, a cushion provided with an aperture fitting said stud, a lift also provided with an aperture into which said stud extends, and a screw comprising a reduced screw-threaded shank passing into said hole in the stud, an enlarged shank forming a shoulder abutting against the lower end of said stud, and a head removably clamping said lift in position and said cushion between said lift and plate.

6. The herein-described spring-heel, the same comprising a metallic plate secured to the sole of the boot or shoe, a downwardly-projecting stud formed centrally thereon and provided with a vertical screw-threaded hole, a cushion provided with an aperture fitting said stud, a lift also provided with an aperture in which said stud loosely fits, said plate, cushion, and lift being provided with registering-studs, tubular projections, and recesses or depressions on their meeting faces for the purpose described, and a screw, its shank passing loosely through said hole in said lift and into said hole in the stud, and its head removably clamping said lift in position and said cushion between said lift and plate.

7. The combination, with a metallic plate secured to the sole of a boot or shoe and a stud projecting downwardly therefrom and provided with a screw-threaded hole, of a lift composed of two or more layers, a washer secured within said lift, said lift being provided with a hole above said washer for receiving the lower end of the stud, and a larger hole below said washer, and a screw, its shank passing loosely through said washer and into the hole in the stud, and its head fitting loosely in said hole below the washer and against said washer for removably clamping said lift in position.

8. The combination, with a metallic plate secured to the sole of a boot or shoe and a stud projecting downwardly therefrom and provided with a screw-threaded hole, of a lift composed of two or more layers, a washer secured within said lift, said lift being provided with a hole above said washer for receiving the lower end of the stud, and a larger hole below said washer, and a screw comprising a reduced screw-threaded shank fitting said hole in the stud, an enlarged shank fitting loosely in the hole in the washer and forming a shoulder abutting against the lower end of the stud, and a head fitting loosely in said hole below the washer and against said washer for removably clamping said lift in position.

9. In a spring-heel, the combination of a metallic plate secured to the sole of a boot or shoe, a cushion fitting against said plate, a lift fitting said cushion, lips on the outer edges of said cushion covering the cracks between said cushion and the plate and lift, and a screw for securing said lift in position and clamping said cushion between said lift and plate.

10. The metallic plate comprising a peripheral rim, a central stud and radial arms connecting said rim and stud, said plate being secured to the sole of a boot or shoe, in combination with the cushion having a recess engaging said plate, and a hole engaging said stud, and a screw for securing said cushion in position.

11. The metallic plate provided with a stud having a screw-threaded hole, said plate being secured to the sole of a boot or shoe, in combination with the lift comprising the layers provided with holes *c' c'*, the washer G, secured between said layers, nails *g*, passing through said layers and washer, nails *e'*, passing through said layers around said washer, and the screw having a shank passing into the hole in the stud, and a head abutting against said washer for removably clamping said lift in position.

380,508. **ELASTIC OR SPRING HEEL.** ERNEST A. MUDGER, Beaver Dam, Wis., assignor to George R. Swan, same place. Filed Jan. 20, 1888. Serial No. 261,408. (No model.)



Claim.—1. An improved spring-heel composed of sections, rubber bushing in the holes or apertures through which the retaining-screws are passed for securing the bottom section, and the cushion, as and for the purpose stated.

2. The bottom section of the heel, having apertures provided with elastic bushing, the cushion, and the retaining-screws passed through said bushing, whereby the forward spring is produced in walking, as stated.

3. As an improvement in spring-heels, the holes or apertures for the retaining-screws, provided with the rubber bushing, and the cup-shaped washers disposed in said apertures and having holes or apertures through which the retaining-screws are passed, as shown and described.

4. The herein-described spring-heel, the same comprising the elastic cushion, the bottom section, the holes or apertures, the rubber bushing, and the retaining-screws passed through said bushing and having their heads in holes or apertures of greater diameter than said heads, substantially as shown and described.

5. The combination, with the sole and the elastic cushion, of the apertures therethrough, having the rubber bushing secured therein, and the retaining-screws, substantially as shown and described.

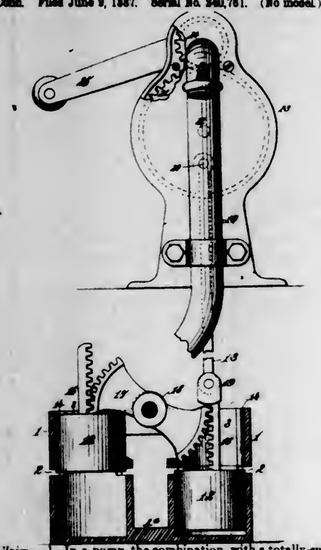
6. The combination, with the sole, the bottom section, and the cushion, of the elastic bushing secured in apertures and extending through corresponding apertures in said cushion, and the retaining-screws, substantially as shown and described.

7. The combination, with the sole, of the bottom section, the tubular extensions, the elastic cushion, and the retaining-screws, substantially as shown and described.

8. The herein-described improvement in spring-heels having means for producing the vertical and forward spring movement, consisting in providing the holes or apertures in the lower portion of said heel for the retaining-screws with rubber bushing and the elastic cushion, substantially as shown and described.

9. As an improvement in spring-heels of the class herein described, the heel comprising the bottom section and base and the posts or retaining-screws for securing said bottom section and base together, said posts or screws being rigid in one portion or section of said heel and passing loosely through openings in the other portion or section, and having play in said openings, whereby one portion or section has a forward and vertical movement with relation to the other portion or section and a forward spring movement is obtained in walking, substantially as set forth.

380,509. LIFT OR FORCE PUMP. JOHN NORTH, Middletown, Conn. Filed June 9, 1887. Serial No. 240,761. (No model.)

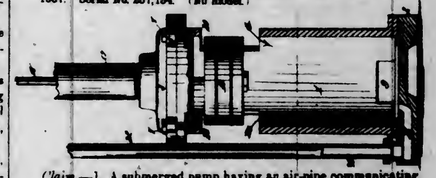


Claim.—1. In a pump, the combination, with a totally-submerged vertical cylinder having lateral inlet-ports intermediate its ends, of a water-way and a valve-chamber communicating directly with the base of said cylinder, a delivery-pipe rising from said valve-chamber, a check-valve located in said chamber, an air-pipe communicating with said water-way, and a bell-shaped plunger reciprocating in the submerged cylinder to open and close the lateral inlet-ports and force the water admitted through said ports below the plunger through the water-way at the base of the cylinder, and thence through the valve-chamber and delivery-pipe, substantially as described.

2. In a pump, the combination, with a pair of totally-submerged vertical cylinders having lateral inlet-ports, a common delivery-pipe, and alternately-reciprocating plungers, of water-ways leading from the base of each cylinder to a common delivery-pipe, check-valves located between said water-ways and delivery-pipe, an air-pipe communicating with a chamber common to said water-ways, and air-valves located in said chamber, substantially as described.

3. In a pump, the combination of a totally-submerged vertical cylinder mounted upon a base, 4, provided with an extension, 5, having formed therein a water-way, 7, leading from the lower end of the cylinder, and a valve-chamber, 6, and air-chamber 25ª, communicating with said water-way, said vertical cylinder being provided with lateral inlet-ports, 2, vertical channels 3, and check-pieces 14, a bell-shaped plunger, 12, a delivery-pipe, 10, communicating with the base of the cylinder, an air-pipe, 15, check-valve 8, and air-valve 15ª, substantially as described.

380,510. PUMP. JOHN NORTH, Middletown, Conn. Filed Dec. 6, 1887. Serial No. 257,134. (No model.)



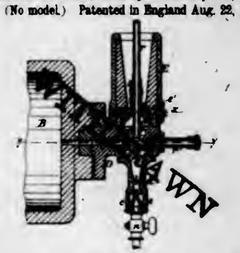
Claim.—1. A submerged pump having an air-pipe communicating with its interior beneath the piston and provided with openings in the wall of the barrel above which the piston rises at each stroke to admit the inflow of water and the escape of the air, said pump having water-ways communicating with the barrel at the bottom thereof and a valve closing said ways, substantially as described.

2. A submerged pump having an air-pipe communicating with its interior beneath the piston and provided with water-passages in the wall of the barrel leading to an exit-pipe, a single valve closing said passage and with openings cut through said wall and extending below the limit of the upward stroke, a piston moving in the pump-barrel, and a valve closing the water-ways at the upward stroke, whereby the cylinder is filled with air at each stroke and the latter displaced by water flowing in by gravity, substantially as described.

3. The combination, with the pump-cylinder having water-passages in its walls and openings cut through said walls, of a piston moving in the cylinder, an air-pipe entering the base and rising above the surface and provided with a valve closing at the downward stroke, and a ring-valve arranged in the chambered cap of the cylinder and closing the water-passages, the openings cut through the walls of the cylinder being extended below the highest point to which the piston rises, substantially as described.

4. The combination, with the cylinder having passages in its walls, said passages leading from the lower end of the interior to a central exit at the other end, of a piston reciprocating in the cylinder, an annulus-valve closing the water-passages, an air-pipe leading from a point above the surface to the interior of the cylinder beneath the piston, and a valve closing the air-passage at the downward stroke, the piston-rod being arranged to reciprocate in the exit-pipe and the cylinder having openings cut through the same above its center, substantially as described.

380,511. IGNITING APPARATUS FOR GAS-MOTOR ENGINES. NICOLAUS A. OTTO, Cologne, Prussia, assignor to the Gas Motoren Fabrik Deutz, Deutz-on-the-Rhine, Germany. Filed Sept. 26, 1887. Serial No. 250,736. (No model.) Patented in England Aug. 22, 1887, No. 11,444.



Claim.—1. An apparatus for heating an igniting-tube for gas-motor engines, consisting of a gas-injector, A, casing D, ring C, igniting-tube *r*, and chimney E, with lateral openings, substantially as described.

2. In an igniting apparatus for gas-motor engines, the combination, with the casing D, having a passage, *h*, leading to the cylinder, of the tubular gas-chamber *r'*, forming a prolongation of the passage *h*, the vertical igniting-tube *r*, entering the passage *h* between the cylinder and the gas-chamber *r'*, and an injector fixed to the bottom of the casing D, substantially as described.

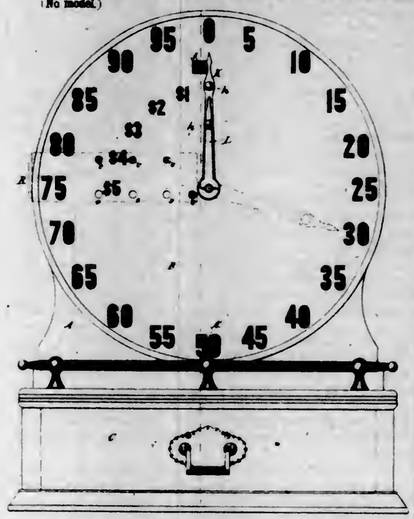
3. In igniting apparatus for gas-motor engines, the combination, with the igniting-tube *r* and passage *h*, leading to the cylinder, of the tubular gas-chamber *r'*, to the rear of the opening of the igniting-tube, and means, substantially as described, for allowing the escape of the non-combustible gases under pressure from the said passages and tube, substantially as described.

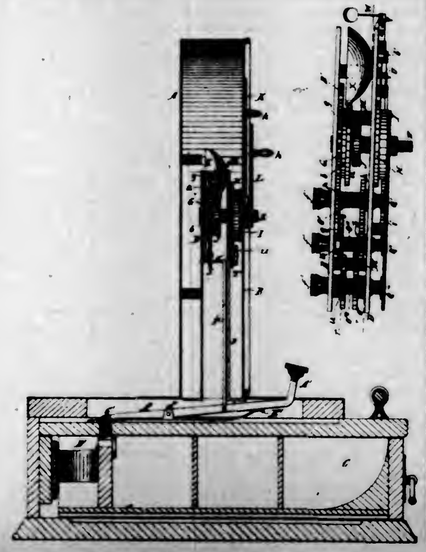
380,512. ARTIFICIAL TOOTH. JOHN J. R. PATRICK, Belleville, Ill. Filed Dec. 20, 1886. Renewed Dec. 1, 1887. Serial No. 256,066. (No model.)



Claim.—The combination, with the body of an artificial tooth, of a metal base having oppositely-bent teeth on one of its edges, said toothed portion being embedded in the body of the tooth, the projecting ends of the metal being bent around the cervical margin of the tooth, and the meeting ends of the base soldered together, as set forth.

380,513. CASH REGISTER AND INDICATOR. JOHN H. PATTERSON and JOHN F. HEADY, Dayton, Ohio, assignors to the National Cash Register Company, same place. Filed Dec. 2, 1887. Serial No. 256,743. (No model.)





Claim.—1. In a cash register and indicator, the combination of a numbered dial, a central shaft, an operating index-hand secured to said shaft in front of said dial, a zero-stop for said hand, a retracting-spring for said shaft, a ratchet secured upon said shaft and a wheel loose upon said shaft, an actuating-dog between said ratchet and wheel, registering mechanism actuated by said wheel, a locking-dog engaging with said ratchet, a releasing-key, a locking-bolt actuated by said releasing-key, a drawer locked by said bolt, a gong, its hammer and tripping-arm, and a link connecting said releasing-key with the locking-dog and tripping-arm, substantially as described.

2. In a cash register and indicator, the combination of a numbered dial, a central shaft, a sleeve upon the shaft, a pinion on the shaft and ratchet-and-pawl connection between said pinion and shaft, a wheel upon said sleeve and ratchet-and-pawl connection between said sleeve and wheel, a retracting-spring for said shaft and sleeve, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, locking mechanism applied to said shaft and sleeve, and registering mechanism actuated by the pinion upon the shaft and the wheel upon the sleeve, substantially as described.

3. In a cash register and indicator, the combination of a numbered dial, a central shaft, a sleeve upon the shaft, a pinion on the shaft and ratchet-and-pawl connection between said pinion and shaft, a wheel upon said sleeve and ratchet-and-pawl connection between said sleeve and wheel, a retracting-spring for said shaft and sleeve, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, locking mechanism applied to said shaft and sleeve, registering mechanism actuated by the pinion upon the shaft and the wheel upon the sleeve, a releasing-key, and connecting mechanism between said releasing-key and locking mechanism, substantially as described.

4. In a cash register and indicator, the combination of a numbered dial, a central shaft, a sleeve upon the shaft, a pinion on the shaft and ratchet-and-pawl connection between said pinion and shaft, a wheel upon said sleeve and ratchet-and-pawl connection between said sleeve and wheel, a retracting-spring for said shaft and sleeve, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, locking mechanism applied to said shaft and sleeve, registering mechanism actuated by the pinion upon the shaft and the wheel upon the sleeve, a releasing-key, a gong and gong-hammer, and connecting mechanism between said releasing-key and the gong-hammer and locking mechanism, substantially as described.

5. In a cash register and indicator, the combination of a numbered dial, a central shaft, a sleeve upon the shaft, a pinion on the shaft and ratchet-and-pawl connection between said pinion and shaft, a wheel upon said sleeve and ratchet-and-pawl connection between said sleeve and wheel, a retracting-spring for said shaft and sleeve, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, locking mechanism applied to said shaft and sleeve, registering mechanism actuated by the pinion upon the shaft and the wheel upon the sleeve, a releasing-key, a locking-bolt actuated by said releasing-key, a drawer locked by said bolt, and connecting mechanism between said releasing-key and locking mechanism, substantially as described.

6. In a cash register and indicator, the combination of a numbered dial, a central shaft, a sleeve upon the shaft, a pinion on the shaft and ratchet-and-pawl connection between said pinion and shaft, a wheel upon said sleeve and ratchet-and-pawl connection between said sleeve and wheel, a retracting-spring for said shaft and sleeve, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, locking mechanism applied to said shaft and sleeve, registering mechanism actuated by the pinion upon the shaft and the wheel upon the sleeve, a releasing-key, a locking-bolt actuated by said releasing-key, a drawer locked by said bolt, a gong and gong-hammer, and connecting mechanism between said releasing-key and the gong-hammer and locking mechanism, substantially as described.

7. In a cash register and indicator, the combination of a numbered dial, a central shaft, a sleeve upon said shaft, a ratchet secured to said shaft and a pinion loose upon said shaft, an actuating-dog between said ratchet and pinion, a ratchet secured to said sleeve and a wheel loose upon said sleeve, an actuating-dog between said ratchet and wheel, a retracting-spring for said sleeve and shaft, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, a locking-dog for each of said ratchets, and registering mechanism actuated by the pinion upon the shaft and the wheel upon the sleeve, substantially as described.

8. In a cash register and indicator, the combination of a numbered dial, a central shaft, a sleeve upon said shaft, a ratchet secured to said shaft and a pinion loose upon said shaft, an actuating-dog between said ratchet and pinion, a ratchet secured to said sleeve and a wheel loose upon said sleeve, an actuating-dog between said ratchet and wheel, a retracting-spring for said sleeve and shaft, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, a locking-dog for each of said ratchets, registering mechanism actuated by the pinion upon the shaft and the wheel upon the sleeve, a releasing-key, and connecting mechanism between said releasing-key and locking-dogs, substantially as described.

9. In a cash register and indicator, the combination of a numbered dial, a central shaft, a sleeve upon said shaft, a ratchet secured to said shaft and a pinion loose upon said shaft, an actuating-dog between said ratchet and pinion, a ratchet secured to said sleeve and a wheel loose upon said sleeve, an actuating-dog between said ratchet and wheel, a retracting-spring for said sleeve and shaft, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, a locking-dog for each of said ratchets, registering mechanism actuated by the pinion upon the shaft and the wheel upon the sleeve, a releasing-key, a gong and gong-hammer, and connecting mechanism between said releasing-key and the locking-dogs and gong-hammer, substantially as described.

10. In a cash register and indicator, the combination of a numbered dial, a central shaft, a sleeve upon said shaft, a ratchet secured to said shaft and a pinion loose upon said shaft, an actuating-dog between said ratchet and pinion, a ratchet secured to said sleeve and a wheel loose upon said sleeve, an actuating-dog between said ratchet and wheel, a retracting-spring for said sleeve and shaft, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, a locking-dog for each of said ratchets, registering mechanism actuated by the pinion upon the shaft and the wheel upon the sleeve, a releasing-key, a locking-bolt actuated by said releasing-key, a drawer locked by said bolt, and connecting mechanism between said releasing-key and locking-dogs, substantially as described.

11. In a cash register and indicator, the combination of a numbered dial, a central shaft, a sleeve upon said shaft, a ratchet secured to said shaft and a pinion loose upon said shaft, an actuating-dog between said ratchet and pinion, a ratchet secured to said sleeve and a wheel loose upon said sleeve, an actuating-dog between said ratchet and wheel, a retracting-spring for said sleeve and shaft, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, a locking-dog for each of said ratchets, registering mechanism actuated by the pinion upon the shaft and the wheel upon the sleeve, a releasing-key, a locking-bolt actuated by said releasing-key, a drawer locked by said bolt, a gong and gong-hammer, and connecting mechanism between said releasing-key and the locking-dogs and gong-hammer, substantially as described.

12. In a cash register and indicator, the combination of a dial provided with two series of numbers indicating, respectively, dollars and cents, a central shaft at right angles to said dial, a sleeve journaled upon said shaft, a ratchet secured to said shaft and a pinion loose upon said shaft, an actuating-dog between said ratchet and pinion, a ratchet secured to said sleeve and a wheel loose upon said sleeve, an actuating-dog between said ratchet and wheel, a retracting-spring for said sleeve and shaft, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, a locking-dog for each of said ratchets, and two sets of registering mechanism, one set arranged to be actuated by the pinion upon the shaft and the other by the wheel upon the sleeve, substantially as and for the purpose described.

13. In a cash register and indicator, the combination of a dial provided with two series of numbers indicating, respectively, dollars and cents, a central shaft at right angles to said dial, a sleeve journaled upon said shaft, a ratchet secured to said shaft and a pinion loose upon said shaft, an actuating-dog between said ratchet and pinion, a ratchet secured to said sleeve and a wheel loose upon said sleeve, an actuating-dog between said ratchet and wheel, a retracting-spring for said sleeve and shaft, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, a locking-dog for each of said ratchets, two sets of registering mechanism, one set arranged to be actuated by the pinion upon the shaft and the other by the wheel upon the sleeve, a releasing-key, and connecting mechanism between said releasing-key and locking-dogs, substantially as described.

14. In a cash register and indicator, the combination of a dial provided with two series of numbers indicating, respectively, dollars and cents, a central shaft at right angles to said dial, a sleeve journaled upon said shaft, a ratchet secured to said shaft and a pinion loose upon said shaft, an actuating-dog between said ratchet and pinion, a ratchet secured to said sleeve and a wheel loose upon said sleeve, an actuating-dog between said ratchet and wheel, a retracting-spring for said sleeve and shaft, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, a locking-dog for each of said ratchets, two sets of registering mechanism, one set arranged to be actuated by the pinion on the shaft and the other by the wheel upon the sleeve, a releasing-key, a gong, its hammer and tripping-arm, and a link connecting said releasing-key with the locking-dogs and tripping-arm, substantially as described.

15. In a cash register and indicator, the combination of a dial provided with two series of numbers indicating, respectively, dollars and cents, a central shaft at right angles to said dial, a sleeve journaled upon said shaft, a ratchet secured to said shaft and a pinion loose upon said shaft, an actuating-dog between said ratchet and pinion, a ratchet secured to said sleeve and a wheel loose upon said sleeve, an actuating-dog between said ratchet and wheel, a retracting-spring for said sleeve and shaft, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, a locking-dog for each of said ratchets, two sets of registering mechanism, one set arranged to be actuated by the pinion on the shaft and the other by the wheel upon the sleeve, a releasing-key, a gong, its hammer and tripping-arm, and a link connecting said releasing-key with the locking-dogs and tripping-arm, substantially as described.

16. In a cash register and indicator, the combination of a dial provided with two series of numbers indicating, respectively, dollars and cents, a central shaft at right angles to said dial, a sleeve journaled upon said shaft, a ratchet secured to said shaft and a pinion loose upon said shaft, an actuating-dog between said ratchet and pinion, a ratchet secured to said sleeve and a wheel loose upon said sleeve, an actuating-dog between said ratchet and wheel, a retracting-spring for said shaft and sleeve, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, a locking-dog for each of said ratchets, two sets of registering mechanism, one set arranged to be actuated by the pinion on the shaft and the other by the registering-wheel upon the sleeve, a releasing-key, a locking-bolt actuated by said releasing-key, a drawer locked by said bolt, a gong, its hammer and tripping-arm, and a link connecting said releasing-key with the locking-dogs and tripping-arm, substantially as described.

17. In a cash register and indicator, the combination of a dial provided with two series of numbers indicating, respectively, dollars and cents, a central shaft at right angles to said dial, a sleeve journaled upon said shaft, a ratchet secured to said shaft and a pinion loose upon said shaft, an actuating-dog between said ratchet and pinion, a ratchet secured to said sleeve and a combined ratchet and registering wheel loose upon said sleeve, an actuating-dog between said ratchet and the combined ratchet and registering wheel, a retracting-spring for said sleeve and shaft, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, a locking-dog for each of said ratchets, two sets of registering mechanism, one set arranged to be actuated by the pinion upon the shaft and the other by the registering-wheel upon the sleeve, substantially as described.

18. In a cash register and indicator, the combination of a dial provided with two series of numbers indicating, respectively, dollars and cents, a central shaft at right angles to said dial, a sleeve journaled upon said shaft, a ratchet secured to said shaft and a pinion loose upon said shaft, an actuating-dog between said ratchet and pinion, a ratchet secured to said sleeve and a combined ratchet and registering wheel loose upon said sleeve, an actuating-dog between said ratchet and the combined ratchet and registering wheel, a retracting-spring for said sleeve and shaft, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, a locking-dog for each of said ratchets, two sets of registering mechanism, one set arranged to be actuated by the pinion upon the shaft and the other by the registering-wheel upon the sleeve, a releasing-key, a gong, its hammer and tripping-arm, and a link connecting said releasing-key with the locking-dogs and tripping-arm, substantially as described.

19. In a cash register and indicator, the combination of a dial provided with two series of numbers indicating, respectively, dollars and cents, a central shaft at right angles to said dial, a sleeve journaled upon said shaft, a ratchet secured to said shaft and a pinion loose upon said shaft, an actuating-dog between said ratchet and pinion, a ratchet secured to said sleeve and a combined ratchet and registering wheel loose upon said sleeve, an actuating-dog between said ratchet and the combined ratchet and registering wheel, a retracting-spring for said shaft and sleeve, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, locking mechanism applied to said shaft and sleeve, registering mechanism actuated by the operation of said hands, and a coiled spring connecting said shaft and sleeve, whereby upon turning one of said hands said spring is wound up from the outside and upon turning the other of said hands it is wound up from the inside, substantially as described.

20. In a cash register and indicator, the combination of a dial provided with two series of numbers indicating, respectively, dollars and cents, a central shaft at right angles to said dial, a sleeve journaled upon said shaft, a ratchet secured to said shaft and a pinion loose upon said shaft, an actuating-dog between said ratchet and pinion, a ratchet secured to said sleeve and a combined ratchet and registering wheel loose upon said sleeve, an actuating-dog between said ratchet and the combined ratchet and registering wheel, a retracting-spring for said shaft and sleeve, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, a locking-dog for each of said ratchets, two sets of registering mechanism, one set arranged to be actuated by the pinion on the shaft and the other by the registering-wheel upon the sleeve, a releasing-key, a locking-bolt actuated by said releasing-key, a drawer locked by said bolt, a gong, its hammer and tripping-arm, and a link connecting said releasing-key with the locking-dogs and tripping-arm, substantially as described.

21. In a cash register and indicator, the combination of a numbered dial, a central shaft, a sleeve journaled on said shaft, two operating index-hands in front of said dial, secured one to said shaft and one to said sleeve, a zero-stop for said hands, locking mechanism applied to said shaft and sleeve, registering mechanism actuated by the operation of said hands, and a coiled spring connecting said shaft and sleeve, whereby upon turning one of said hands said spring is wound up from the outside and upon turning the other of said hands it is wound up from the inside, substantially as described.

22. In a cash register and indicator, the combination of a numbered dial, a central shaft, a sleeve journaled upon said shaft, a ratchet secured to said shaft, a coiled spring connected at one end to said ratchet and at the other end to said sleeve, two operating index-hands in front of said dial, secured one to said shaft and one to said sleeve, a zero-stop for said hands, locking mechanism applied to said shaft and sleeve, and registering mechanism actuated by the operation of said hands, whereby upon turning one of said hands said spring is wound up from the outside and upon turning the other of said hands it is wound up from the inside, substantially as described.

23. In a cash register and indicator, the combination of a numbered dial, a central shaft, a sleeve journaled upon said shaft, a pinion upon said shaft and ratchet-and-pawl connection between said shaft and pinion, a wheel upon said sleeve and ratchet-and-pawl connection between said sleeve and wheel, a coiled spring connecting said shaft and sleeve, two operating index-hands in front of said dial, secured one to said shaft and one to said sleeve, a zero-stop for said hands, locking mechanism applied to said shaft and sleeve, and registering mechanism actuated by the operation of said hands, substantially as described.

24. In a cash register and indicator, the combination of a numbered dial, a central shaft, a sleeve journaled upon said shaft, a ratchet secured to said shaft and a pinion loose upon said shaft, an actuating-dog between said ratchet and pinion, a ratchet secured to said sleeve and a wheel loose upon said sleeve, an actuating-dog between said ratchet and wheel, a coiled spring connected at one end to said sleeve and at the other end to the ratchet upon the shaft, two operating index-hands in front of said dial, secured one to said shaft and one to said sleeve, a zero-stop for said hands, a locking-dog for each of said ratchets, and registering mechanism actuated by the pinion on the shaft and the wheel upon the sleeve, substantially as described.

25. In a cash register and indicator, the combination of a dial provided with two rows of numbers indicating, respectively, dollars and cents, a central shaft at right angles to said dial, a sleeve journaled upon said shaft, a ratchet secured to said shaft and a pinion loose upon said shaft, an actuating-dog between said ratchet and pinion, a ratchet secured to said sleeve and a combined ratchet and registering wheel loose upon said sleeve, an actuating-dog between said ratchet and the combined ratchet and registering wheel, a coiled spring connected at one end to said sleeve and the other end to the ratchet secured upon the shaft, a zero-stop for the ratchet upon the shaft, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for the hand upon the sleeve, a locking-dog for each of said ratchets, two sets of registering mechanism, one set arranged to be actuated by the pinion upon the shaft and the other by the registering-wheel upon the sleeve, an actuating-dog between said ratchet and the combined ratchet and registering wheel, a retracting-spring for said shaft and sleeve, two operating index-hands in front of said dial, one for indicating dollars and one for indicating cents, and secured one to said shaft and one to said sleeve, a zero-stop for said hands, locking mechanism applied to said shaft and sleeve, registering mechanism actuated by the operation of said hands, a coiled spring connecting said shaft and sleeve, a releasing-key, a locking-bolt actuated by said releasing-key, a drawer locked by said bolt, and a link connecting said releasing-key with the locking-dogs and tripping-arm, substantially as described.

26. The combination and arrangement of the numbered dial B, the shaft E, provided with the hand L, ratchet *a b*, pinion G, loose upon the shaft E and connected to the ratchet *b* by a dog, *c*, the sleeve F, journaled upon the shaft E and connected to the ratchet *a* by a coiled spring, J, the ratchet H, secured to said sleeve, and the wheel I, loose upon said sleeve, the ratchet H and wheel I being connected by a dog, *d*, a hand, K, secured to the sleeve F, stops *f* and *g* for the hand K and ratchet *a*, registering mechanism actuated by the pinion G from the hand L and the wheel I from the hand K, and locking-dogs S and T for the ratchets *a* and H, substantially as described.

27. The combination and arrangement of the numbered dial B, the shaft E, provided with the hand L, ratchet *a b*, pinion G, loose upon the shaft E and connected to the ratchet *b* by a dog, *c*, the sleeve F, journaled upon the shaft E and connected to the ratchet *a* by a coiled spring, J, the ratchet H, secured to said sleeve, and the wheel I, loose upon said sleeve, the ratchet H and wheel I being connected by a dog, *d*, a hand, K, secured to the sleeve F, stops *f* and *g* for the hand K and ratchet *a*, registering mechanism actuated by the pinion G from the hand L and the wheel I from the hand K, locking-dogs S and T for the ratchets *a* and H, releasing-key A′, and link F′, connecting said releasing-key with the locking-dogs, substantially as described.

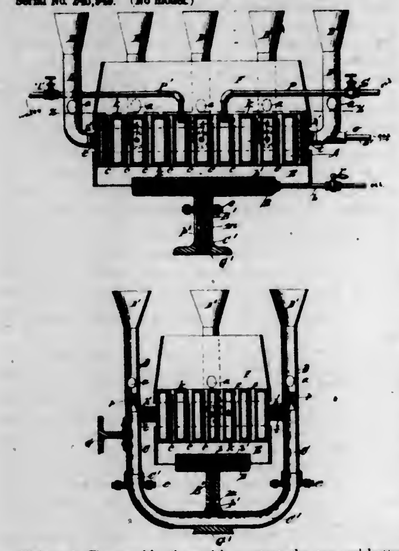
28. The combination and arrangement of the numbered dial B, the shaft E, provided with the hand L, ratchet *a b*, pinion G, loose upon the shaft E and connected to the ratchet *b* by a dog, *c*, the sleeve F, journaled upon the shaft E and connected to the ratchet *a* by a coiled spring, J, the ratchet H, secured to said sleeve, and the wheel I, loose upon said sleeve, the ratchet H and wheel I being connected by a dog, *d*, a hand, K, secured to the sleeve F, stops *f* and *g* for the hand K and ratchet *a*, registering mechanism actuated by the pinion G from the hand L and the wheel I from the hand K, locking-dogs S and T for the ratchets *a* and H, releasing-key A′, locking-bolt C′, secured to the key A′, drawer C, locked by the bolt C′, and link F′, connecting the key A′ with the locking-dogs S and T, substantially as described.

29. The combination and arrangement of the numbered dial B, the shaft E, provided with a hand, L, double ratchet *a b*, pinion G, loose upon the shaft E and connected to the ratchet *b* by a dog, *c*, the sleeve F, journaled upon the shaft E and connected to the ratchet *a* by a coiled spring, J, the ratchet H, secured to said sleeve, and the combined ratchet and registering wheel I, loose upon said sleeve, said ratchet H and wheel I being connected by a dog, *d*, a hand, K, secured to the sleeve F, a stop, *g*, for the ratchet *a*, and a stop, *f*, upon the dial for the hand K, two sets of registering mechanism, the one actuated by the pinion G from the hand L and the other by the wheel I from the hand K, the locking-dogs S T, trip-lever U, bell-crank V, gong-hammer W, gong X, connecting-link F′, united at one end to the dogs S T and lever U by means of the cross-bar *e* and at the other end to the releasing-key A′, the key A′, locking-bolt C′, and drawer C, substantially as and for the purpose described.

30. The combination and arrangement of the dial B, provided with the upper row of reading-openings, *v*, the shaft E, index-hand I, ratchet *b*, secured to said shaft, pinion G, loose upon said shaft, pinions *p q r*, the former meshing with the pinion G, lugs *s t* upon the pinions *p q*, and registering-disks Q′, Q″, and Q‴, connected to the pinions *p q r*, respectively, and each provided with a series of numbers exposed one at a time through its corresponding reading-opening *v*, whereby the amount registered on said disks at any time is numerically indicated by the numbers exposed through said reading-openings without the necessity of addition, substantially as described.

31. The combination and arrangement of the dial B, provided with two sets of reading-openings, *v*, the shaft E, provided with a hand, L, double ratchet *a b*, secured to said shaft, pinion G, loose upon said shaft and connected to the ratchet *b* by a dog, *c*, the sleeve F, journaled upon the shaft E and connected to the ratchet *a* by a coiled spring, J, the ratchet H, secured to said sleeve, and the combined ratchet and registering wheel I, loose upon said sleeve, said ratchet and wheel being connected by a dog, *d*, a hand, K, secured to the sleeve F, the pinions *p q r*, actuated by the pinion G, the disks Q′, Q″, and Q‴, connected to the pinions *p q r*, respectively, and each provided with a series of numbers exposed one at a time through its reading-opening *v*, the pinions N′, N″, and N‴, actuated by the wheel I, and the disks *k m o*, connected to the pinions N′, N″, and N‴, respectively, and each provided with a series of numbers exposed one at a time through its reading-opening *v*, whereby the respective total amounts registered at any time upon the two sets of disks Q′ Q″ Q‴ and P′ P″ P‴ and wheel I are each numerically indicated by the numbers exposed through the reading-openings *v* without the necessity of addition, substantially as described.

380,514. GENERATING-RETORT AND BURNER ATTACHED. WILLIAM P. PATTON, Harrisburg, Pa., assignor of three-fourths to William T. Hildrup, Sr., William T. Hildrup, Jr., and J. Harvey Patton, all of same place, and Seymour W. Tullock, Washington, D. C. Filed Aug. 2, 1887. Serial No. 245,949. (No model.)



Claim.—1. The combination, with a retort the top and bottom walls of which are parallel and lie nearly in a horizontal plane when in use, a series of flues secured in these top and bottom walls, a series of burners connected to the side walls of the retort that are adapted to burn mixed gas and air, the gas being generated from oil and water in the retort, an oil-feeding pipe that is connected to the retort, a water-supply pipe attached to the retort, and valves to control oil and water feed, of a burner that is connected to the retort-shell and is located below it, which is supplied with gas generated in the retort, and that consumes air mixed with gas to heat the retort, and protecting devices attached to the retort that prevent the air which enters the side burners from being vitiated by the products of combustion of the lower burner that heats the retort, substantially as set forth.

2. The combination, with a metallic retort-shell the top and bottom walls of which are parallel and lie in a nearly-horizontal position when in use, a series of vertical flues secured to the top and bottom walls of the retort, a series of burners connected to the side walls of the retort that are adapted to burn mixed gas and air, the gas being generated as consumed from oil and water introduced into the retort, an oil-feeding pipe, a water-supply pipe, and valves to control the feed of oil and water to the retort, of a set of burners that are connected to the retort and are located below it to throw flame through its flues, and which are formed to mix and burn air and gas, the gas being generated in the retort as it is used, an oil-feed pipe that feeds oil as a fuel to start the generation of gas, and protecting devices attached to the retort that protect the air which enters the side burners from being vitiated by the rarefied products of combustion thrown off by the lower burners that heat the retort, substantially as set forth.

380,515. PREPARING PAPER FOR WRAPPING METALLIC ARTICLES TO PREVENT TARNISHING, &c. JOHN C. PENNINGTON, Paterson, N. J. Filed June 3, 1887. Serial No. 240,144. (No specimens.)

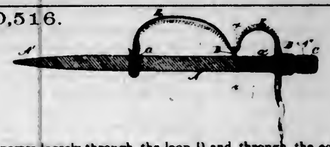
Claim.—1. The method of preventing metallic articles from rusting or tarnishing, which consists in wrapping them in or covering them with a paper having in it or upon its surface powdered metallic zinc, substantially as described.

2. As a new article of manufacture, wrapping-paper having incorporated with it or bearing upon its surface powder of metallic zinc, substantially as and for the purpose set forth.

380,516. HUSKING-PIN. HARRY H. PERKINS, Kewanee, Ill. Filed Feb. 8, 1887. Serial No. 226,926. (No model.)

Claim.—1. In a husking-pin, in combination, a pin, A, having holes *a a'*, loop D, and contracted screw-threaded end portion, A", with a binding-sleeve, B, having the hole *b*, corresponding with the hole *a'* in pin A", nut C, and strap E, one end of which is secured in the hole *a*, and

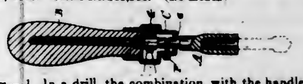
380,516.



which passes loosely through the loop D and through the coincident holes in the binding-sleeve and the husking-pin, substantially as and for the purpose specified.

2. In a husking-pin, in combination, a pin having holes *a a'*, loop D, and screw-threaded end A", strap E, binding-sleeve B, having the hole *b*, corresponding with the hole *a'* in pin A", and nut C, substantially as and for the purpose specified.

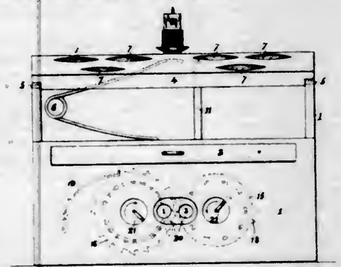
380,517. BOW-DRILL. AUGUST FRANKE, Detroit, Mich. Filed Feb. 9, 1888. Serial No. 263,519. (No model.)



Claim.—1. In a drill, the combination, with the handle or frame, of the drill-stock journaled therein, the ratchet-wheel secured upon the drill-stock, and the rack-bar working through a transverse slot in the frame and adapted to engage with the ratchet, substantially as described.

2. In a drill, the combination, with the handle and drill-stock journaled therein, of the case secured to the handle, the ratchet secured upon the drill-stock, the transverse aperture through the case, and the ratchet-bar, the parts being constructed and arranged to operate substantially as described.

380,518. EGG-TESTER. CONRAD REUTER, Henderson, Ky. Filed Oct. 23, 1885. Serial No. 180,739. (Model.)



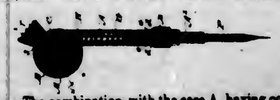
Claim.—1. The combination of a register or counter, a depressible testing-board having seats for the eggs, means for elevating said board after each depression and holding it normally in elevated position, and a connection between said counter and testing-board, substantially as set forth.

2. The combination, with a box or frame, a testing-board forming the top of the box, a register or counter located in the bottom of the box, and connections between said testing-board and counter, of a mirror placed removably over said counter beneath said testing-board, for the purpose set forth.

3. The combination of a register or counter, a depressible testing-board having seats for the eggs, a spring for holding said testing-board normally in elevated position, and a connection between said testing-board and counter, for the purpose set forth.

4. The combination, with a register or counter having a ratchet-wheel, a depressible testing-board having seats for the eggs, and a spring for holding said testing-board normally in elevated position, of a dog pendent from said testing-board and engaging said ratchet-wheel, as set forth.

380,519. ADDITION-REGISTER FOR PENCILS. HENRY C. ROSS, Leadville, Colo. Filed Nov. 4, 1887. Serial No. 254,333. (No model.)



Claim.—The combination, with the case A, having communicating tube A', slotted at its outer end, of the toothed disk B, having axial stem with index-hand, the friction-spring *c*, arranged between the disk and the side of the case, the spring-seated pencil-holder A^2, with lugs *e*,

and spring-pawl E, arranged in tube A, and collar D, arranged to hold the pencil-holder against the tension of its spring, substantially as shown and described.

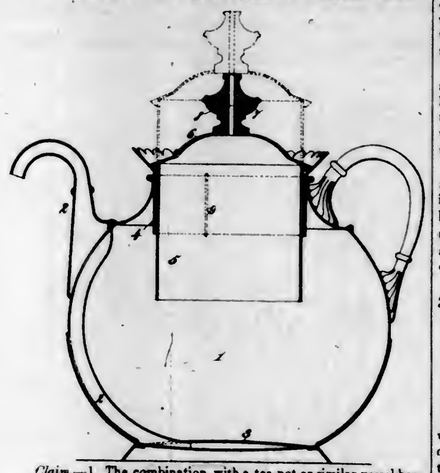
380,520. MOUTH-PIECE FOR PIPES. HENRY C. ROSS, Leadville, Colo. Filed Dec. 20, 1887. Serial No. 258,453. (No model.)



Claim.—1. A mouth-piece having two oppositely-faced cups spaced a short distance from each other to form an annular outlet, as described.

2. A mouth-piece attachment consisting of a hollow stem with two hemispherical cups attached thereto and facing each other and spaced a short distance apart to leave an annular opening for spreading and diffusing the smoke in a sheet, substantially as described.

380,521. COFFEE OR TEA POT. JOHN J. ROYLE, Manchester, County of Lancaster, England. Filed Oct. 31, 1887. Serial No. 253,889. (No model.) Patented in England May 11, 1886, No. 6,327; in France Oct. 21, 1886, No. 179,159, and in Belgium Oct. 22, 1886, No. 74,931.



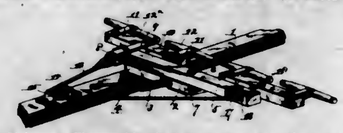
Claim.—1. The combination, with a tea-pot or similar vessel having a discharge-spout on one side extending from the interior lower portion of said vessel, of a cover having a knob or handle containing an air-inlet communicating with the external atmosphere and with the interior of the vessel, and a piston attached to the cover and working in the upper part of the vessel above the fluid that may be contained therein, whereby an increased quantity of air is inducted through the cover and into the vessel on raising said cover, and a pressure exerted on the surface of the fluid to cause its discharge through the spout on closing the air-inlet and forcing the cover and piston down, substantially as described.

2. The combination of a tea-pot or similar vessel having a discharge-spout on one side extending from the interior lower portion of said vessel, a cover having a knob or handle and an air-inlet, a piston attached to the cover and working in the upper part of the vessel, and a spring to raise the piston and cover, substantially as and for the purpose described.

3. The combination, with a tea-pot or similar vessel having a spout extending from the interior lower portion of the same upward upon one side thereof and terminating in an open external discharge-orifice, and also having an internal cylindrical portion extending downwardly from its open upper end, of the vertically-movable cover 6, provided with the air-passage 8 through it, and knob 7, and a cylindrical piston attached to and projecting downward from said cover, fitting substantially air-tight in the cylindrical portion of the vessel and arranged to move up and down above the liquid contained therein, substantially as described.

4. The combination, in a pot for holding liquids, of a discharge-spout leading from the lower part of its interior upward and outward upon one side thereof, and having its discharge end carried above the interior of the pot and thence curved over and downward and adapted to discharge liquid into an open vessel while the pot stands upon its base, a plunger attached to the cover of said pot and fitted to a tubular bore within the same snugly and adapted to force the fluid out through the spout by vertical movement, and an air-inlet into the pot above the surface of the liquid adapted to be left open to allow said plunger to be raised and to be covered when said plunger is lowered to prevent escape of the contents except through the spout, substantially as described.

380,522. FOUR-HORSE EVENER. WILLIAM D. SAUER, Ashton, Iowa. Filed Nov. 21, 1887. Serial No. 255,766. (No model.)

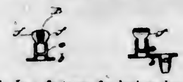


Claim.—1. The combination, with the tongue of a reaper, of the stationary arm, the cross-bar centrally pivoted to the outer end of the said arm and having a grooved pulley journaled in a slot in its right-hand end, a doubletree attached to the left-hand end of the cross-bar and having the singletrees, the grooved pulley secured upon the rear of the tongue, and a rope secured at one end to the left-hand end of the cross-bar, passing around the rear grooved pulley upon the tongue, through the slotted right-hand end of the said bar, and having attached to its right-hand end a doubletree provided with two singletrees.

2. The combination, with the tongue of a reaper, of a stationary arm, the centrally-pivoted cross-bar having a stirrup secured to its left-hand end and having a grooved pulley journaled in a slot in its right-hand end, the grooved pulley pivoted upon the rear of the tongue, the rope arranged as described, and the right-hand double and single trees.

3. The combination, with the tongue of a reaper, of the stationary arm and the braces for the same, the centrally-pivoted cross-bar having the stirrup secured to its left-hand end and having a grooved pulley journaled in a slot in its right-hand end, the grooved pulley journaled upon the rear end of the tongue, the rope arranged as described, and the doubletrees having the singletrees secured by the links to their ends, substantially as and for the purpose set forth.

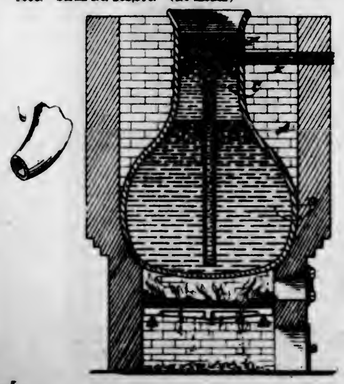
380,523. FASTENING FOR LACING-CORDS. GEORGE M. SAWYER, Glens Falls, N. Y. Filed Nov. 8, 1887. Serial No. 254,597. (No model.)



Claim.—1. In a fastener for lacing shoes, a tubular post, around which the cord may be wound, and spring-arms formed independently of the post and held within and projecting beyond the outer open end thereof, substantially as set forth.

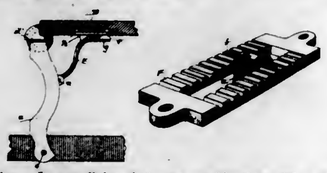
2. As an improved article of manufacture, the plate *b*, formed with the integral tubular rivet *c* at one side and the integral tubular post *e* at its other side, and the spring clamping-arms *f f*, secured at their inner ends within said tubular post and projecting at their free ends beyond the outer end thereof, substantially as set forth.

380,524. PROCESS OF DESILVERIZING LEAD BULLION. HERMAN H. SCHLAPP, Pueblo, Colo. Filed Nov. 11, 1886. Renewed Feb. 28, 1888. Serial No. 265,596. (No model.)



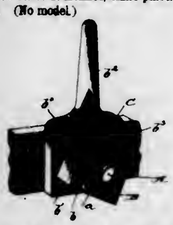
Claim.—The improvement in the process of desilverizing lead bullion by causing the melted bullion to fall in a finely-divided state through a column of zinc, which consists in initially arranging below the zinc column a bath of desilverized bullion or lead on which the zinc rests, and in drawing off the desilverized bullion from the bottom of the bath as fast as the fresh bullion is introduced into the column of zinc, substantially as herein set forth.

380,525. **RECLINING-CHAIR.** SOLOMON H. SCHNUCK, Cleveland, Ohio, assignor of one-half to C. F. Hunger, same place. Filed Oct. 27, 1886. Serial No. 217,331. (No model.)



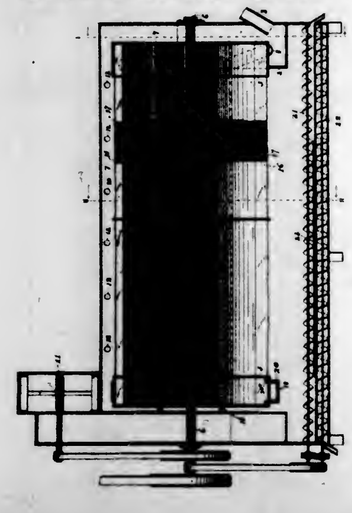
Claim.—In a reclining-chair, the combination, with a pivoted back and arm-rest and arm-post, said arm-rest being provided on its lower face with a recess, and a plate secured within said recess and provided with a centrally-located slot and with teeth on its upper face on opposite sides of the slot, of a brace pivoted at one end to the arm-post and provided at its opposite end with a laterally-projecting pawl adapted to engage the teeth of the slotted plate, substantially as set forth.

380,526. **NUT-LOCK.** WILLIAM N. SEARS, Wellington, Kans., assignor of one-half to M. V. B. Holmes, same place. Filed Dec. 31, 1887. Serial No. 259,454. (No model.)

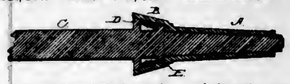


Claim.—In a nut-lock, the combination of the key having a square-shaped portion and a handle, and a series of circularly-arranged holes or apertures, the nut having an aperture near one corner thereof and the spring-held finger disposed in said aperture, substantially as shown and described.

380,527. **BOLTING-REEL.** MACONTUS SHANER, Beaver Falls, Pa. Filed May 14, 1887. Serial No. 238,235. (No model.)



380,528. **SAND-BAND FOR VEHICLE-AXLES.** JOHN H. SHARP, Columbus, N. J. Filed Nov. 23, 1887. Serial No. 255,967. (No model.)



Claim.—A sand-band for journals, consisting of a box or bearing provided with an outwardly-tapering flange or mouth, and a journal provided with collars D and E, having beveled edges which are adapted to fit the tapering mouth of the box or bearing, substantially as and for the purpose specified.

380,529. **FENCE.** GEORGE R. SHELLEY, Butler, Ky. Filed Dec. 9, 1887. Serial No. 257,446. (No model.)

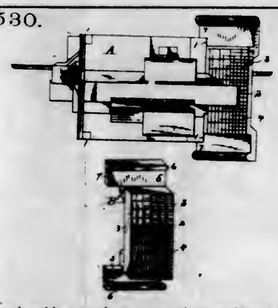


Claim.—The improved fence herein described, composed of the crossed stakes, the riders B, supported at their overlapping points in the upper crotches of the stakes by wires tying the stakes together above them, the top rails, D, supported in the lower crotches of the stakes between their joints by wires tying the stakes together below them, the lower short inclined braces having their lower ends resting on the ground and their upper ends tied to the top rails, D, at the overlapping joints thereof, the long inclined braces with their lower ends resting on the ground and their upper ends tied to the riders between the joints thereof, the said long and short braces having their lower ends together midway transversely between the ends of the members of the corresponding crossed stakes and inclining thence upward to each other, the lower set of rails G tied to both braces F H on opposite sides of their overlapping joints, the upper set of rails G tied only to the braces F at their overlapping joints, and the rails G' G' tied only to the braces H at their overlapping joints, substantially as specified.

380,530. **CUTTER-HEAD AND CUTTER-HEAD GAGE.** SAMUEL J. SHIMER, Milton, Pa., assignor to Samuel J. Shimer & Sons, same place. Filed Dec. 9, 1887. Serial No. 257,455. (No model.)

Claim.—1. In combination with a cutter-head formed with guide-slots in the parallel top and bottom faces and a cutting-bit secured to the cutter-head, a gage comprised of a metal plate formed with a central piece having graduations of measurements thereon, and formed with its ends extended and arranged below the upper face of the cen-

380,530.

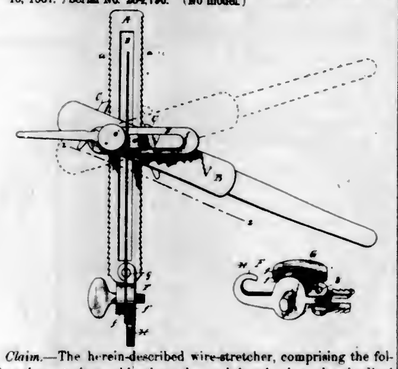


tral piece, and guide-extensions arranged to register with and set within the guide-slots in the head, substantially as described.

2. A cutter-head formed with open-end gage-slots in the parallel top and bottom faces, arranged in the direction of the line of the bevel of the cutting-bit for the reception of gage-supporting lugs, substantially as described.

3. The cutter-head gage herein described, consisting of the metal plate B', having a graduated central portion, 2, the end extensions, 5, arranged on a different plane parallel to the central portion, and the guide-pieces 7, to slide in open-end slots in the cutter-head, substantially as described, and for the purposes stated.

380,531. **WIRE-STRETCHER.** JOHN F. SHIPLEY, Council Bluffs, Iowa, assignor of one-half to William T. Cole, same place. Filed Nov. 10, 1887. Serial No. 254,796. (No model.)



Claim.—The herein-described wire-stretcher, comprising the following elements in combination: the rack-bar having a longitudinal slot, the operating-lever having an opening in one end, through which the rack-bar passes, the pawls, the rivet passing through the lever and the slot in the rack-bar, and having the roller d^4 mounted thereon and located in the said slot, the plate mounted on the rivet and pivotally connected with the operating-lever, the clamp carried by said plate, composed of the stop and the cam-lever, and the clamp pivotally connected with the end of the rack-bar and having one end extended to form a hook, substantially as described, for the purpose specified.

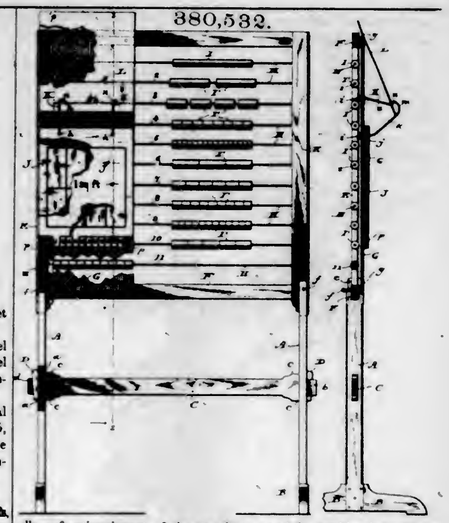
380,532. **EDUCATIONAL APPLIANCE.** HENRY O. R. SIEFERT, Milwaukee, Wis. Filed Nov. 26, 1887. Serial No. 256,202. (No model.)

Claim.—1. A frame provided with a series of wires, a block arranged on one of the wires, and a series of blocks arranged on the other wires, the latter blocks being individually a fractional part of the one first named, in combination with a series of charts, one of which has delineated thereon a symbol indicating an integer, and the others provided with a like symbol divided into fractional parts of said integer, substantially as set forth.

2. A suitable support, skeleton brackets secured to the support, and each bracket made from a single wire bent to have a horizontal portion, an upward and outwardly extended portion, and inwardly-curved portion terminating in a shoulder, and an inclined portion, in combination with a series of charts, each of which is provided with eyes to engage the brackets, substantially as set forth.

3. A skeleton frame provided with a series of wires, a block loosely arranged on one of the wires, and a series of blocks likewise arranged on each of the other wires, the latter blocks being individu-

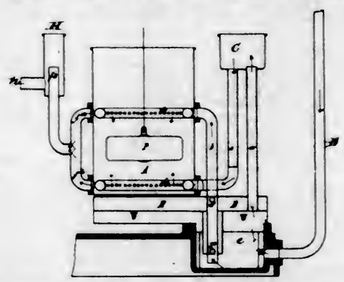
380,532.



ally a fractional part of the one first named, in combination with a screen secured to the front of the frame, whereby said blocks may be normally hid from view, suitable brackets secured to the screen, and a series of charts arranged on the brackets, one of these charts having delineated thereon a symbol indicating an integer, and the others provided with a like symbol divided into fractional parts of said integer, substantially as set forth.

4. A skeleton frame made in two sections, one of which comprises two vertical standards provided with detachable feet, and a cross-piece detachably uniting the standards, the other section detachably connected to the one first named and composed of two vertical pieces united by top and bottom cross-pieces, a series of wires extending from one to the other of the vertical pieces, and a screen for partially obscuring the wires, in combination with blocks arranged on the wires to represent an integer and fractional parts thereof, suitable brackets detachably connected to the screen in front of the frame, and a series of charts arranged on the brackets, one of these charts having delineated thereon a symbol that indicates an integer, and the others provided with a like symbol divided into fractional parts of said integer, substantially as set forth.

380,533. **SPECIFIC-GRAVITY APPARATUS.** LOUIS SIEMENS, Charlottenburg, Prussia, Germany, assignor to Gebrüder Siemens & Co., same place. Filed May 6, 1886. Serial No. 201,406. (No model.)



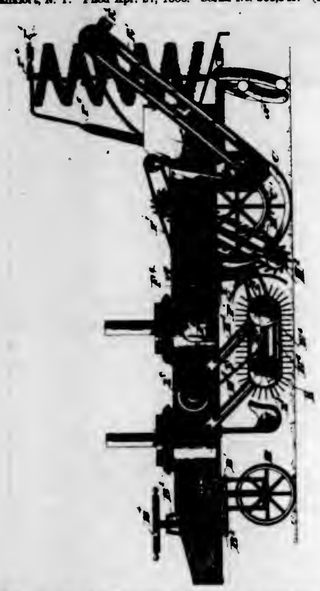
Claim.—1. In an apparatus for determining specific gravities, the combination of a cylinder, a float suspended therein between two hollow rings, the upper hollow ring connected with a receiving-chamber, the lower hollow ring connected with an inverted basin situated above the said chamber, and a basin situated below the level of the said cylinder and communicating with the said upper ring, substantially as and for the purpose described.

2. In an apparatus for determining specific gravities, the combination of a cylinder, a float suspended therein between two hollow rings, the upper hollow ring connected with a receiving-chamber, the lower hollow ring connected with a pipe terminating above such re-

ceiving-chamber, and a basin situated below the level of the said cylinder and communicating with the said upper ring, sustantially as and for the purpose described.

3. In an apparatus for determining specific gravities, the combination of a cylinder, a float suspended therein between two hollow rings, the upper hollow ring connected with a pipe terminating in a receiving-chamber, the lower hollow ring connected with an inverted basin, and a basin situated below the level of the said cylinder and communicating with the said pipe, substantially as and for the purpose described.

380,534. STREET-SWEEPING MACHINE. HENRY SNYDER, Frankfort, N. Y. Filed Apr. 27, 1886. Serial No. 200,349. (No model.)



Claim.—1. In a street-sweeping machine, the combination of an adjustable central sweeping mechanism and pivoted side sweeping mechanism, adapted to be swung up out of operative position, substantially as specified.

2. In a street-sweeping machine, the combination of the central sweeping mechanism, a collecting-elevator, an interposed perforated guard, and an imperforate receptacle arranged at the opposite end of the sweeping mechanism to the guard, substantially as specified.

3. In a street-sweeping machine, the combination of a side sweeping mechanism consisting of two rotary brushes, a central interposed transverse driving-shaft, and flexible shafts connecting the shafts and brushes, substantially as shown and described.

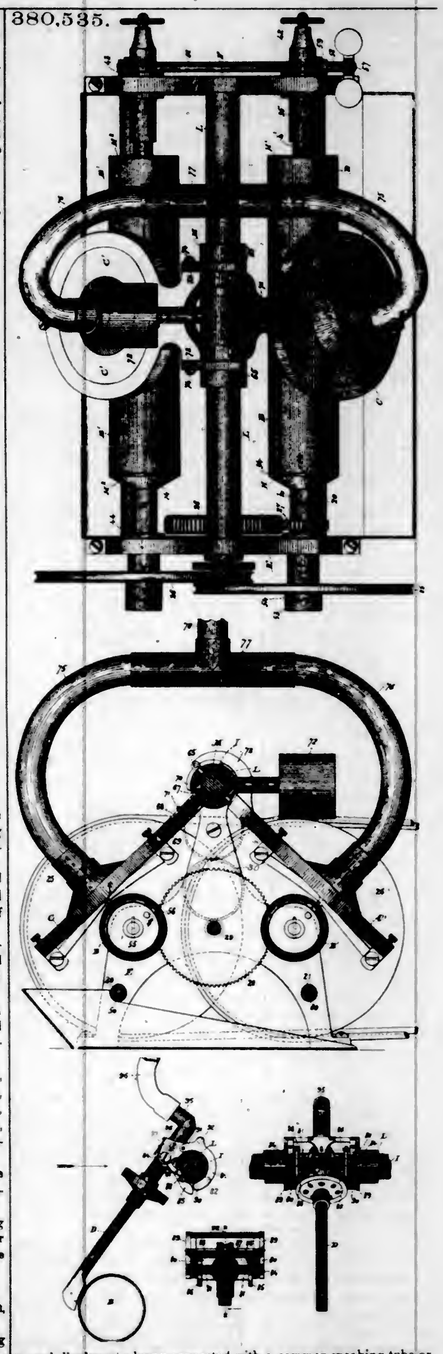
4. In a street-sweeping machine, the combination of a rotary brush mounted in a frame comprising a pivoted sector, a hinged plate, and connecting devices between the plate and sector, which permit of oscillation of the sector and brush, substantially as specified.

5. In a street-sweeping machine, the combination, with a motor, as D, connected with the traction-wheels, of a separate motor, as G, connected with the sweeping, collecting, and delivering mechanisms, and independent sprockets, as R R', mounted upon parallel shafts, whereby the surplus power of either motor may be directed to the assistance of the other motor, substantially as specified.

6. The combination of the endless sweeper E, the slotted frame E^3 E^4, inclined with respect to the truck A, and the elevating mechanism E' E^2 E^5, substantially as specified.

7. The combination of the truck A of the hinged plate O, having the T-rib O', the slide O^3, having the T-groove and pins O^4, the sector P, having the groove P', standard P^2, and caster P^3, the brush M, the caster P^5, standard P^4, and extension P^6, substantially as specified.

380,535. GRAPHOPHONE. CHARLES S. TAINTER, Washington, D. C. Filed Dec. 2, 1887. Serial No. 256,814. (No model.)



Claim.—1. In a graphophone, the combination, with the feeding and driving mechanism, of duplicate tablet-holders and duplicate recorders, each having a diaphragm and style, the air-chambers adjacent to said diaphragms being connected with a common speaking tube or passage, substantially as described.

2. In a graphophone, the combination of the duplicate tablet-holders and tablets, the feed-screw, the recorder-carriage adapted to be driven by said screw, and the two recorders, one for each tablet, both supported by said carriage and connected by a sound tube or passage, substantially as described.

3. In a graphophone, the combination, with the feed-screw and guide-tube, of holders for two tablets, one on each side of said feed-screw, the carriage adapted to slide on said guide-tube, and the two recorders hanging one on each side of said carriage, substantially as described.

4. In a graphophone, the combination, with the feed-screw and guide-tube, of the carriage comprising a sleeve in two parts hinged together and adapted to embrace said tube, substantially as described.

5. In a graphophone, the combination, with the feed-screw and guide-tube, of the carriage comprising a two-part sleeve, a recorder rigidly attached to said carriage, and a second recorder attached removably to said carriage, substantially as described.

6. In a graphophone, the combination, with the feed-screw and guide-tube, of the carriage comprising a sleeve divided lengthwise into two parts, said parts being hinged together, a recorder rigidly attached to said carriage, and a second recorder pivoted thereto at the hinges connecting the two parts, substantially as described.

7. In a graphophone, the combination, with the feed-screw and inclosing guide-tube having a slot with curved edge, of the carriage having a segmental nut for passing through said slot and engaging said screw, said nut having a beveled edge, and a spring for holding said nut in engagement with said screw, substantially as described.

8. In a graphophone, the combination, with the driving mechanism and a hollow cylindrical recording-tablet, of a tablet-holder comprising two rotatable disks for clamping the tablet between them, substantially as described.

9. In a graphophone, the combination, with a hollow cylindrical tablet, of the two holding-disks bearing against opposite ends thereof, one of said disks being movable toward and away from the other, substantially as described.

10. In a graphophone, the combination, with a hollow cylindrical tablet, of the two holding-disks adapted to clamp the tablet between them, one of said disks being movable toward and away from the other, and a spring bearing on said movable disk, substantially as described.

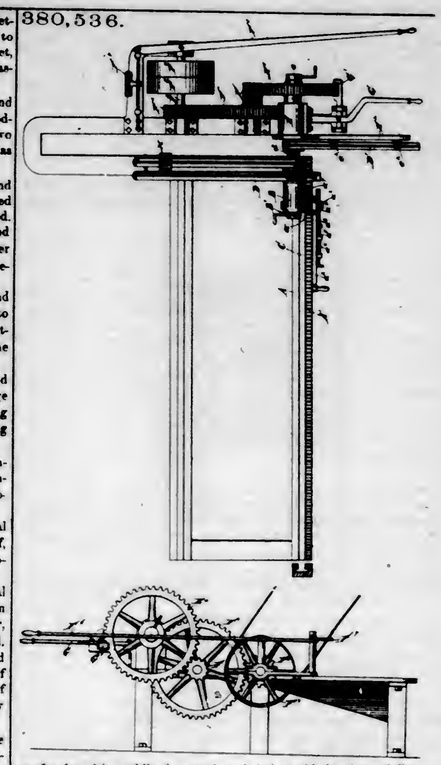
11. In a graphophone, the combination, with the feed-screw and tablet-holder, and gearing for driving the former from the latter, of clutch mechanism comprising a rod passing through the bearing of said tablet-holder and adapted to lock the same to the driving-pulley or release it therefrom, substantially as described.

12. The combination, with the feed-screw and guide-tube, of the reproducer-carriage comprising a frame having curved arms, a segmental nut carried by pivoted arms, and a spring pressing the two parts together, substantially as described.

13. The combination, with the feed-screw and guide-tube, of the reproducer-carriage comprising the frame with curved arms, the nut on a pivoted support, and the curved locking device, substantially as described.

14. The combination, with feed-screw and guide-tube, of the carriage, the reproducer pivoted thereto, the nut on a pivoted support, and the locking device comprising semicircular arms pivoted to said frame at or approximately at the intersection of a line drawn through the axis of the guide-tube with a perpendicular line drawn from the pivot of said reproducer, substantially as described.

380,536. MACHINE FOR ASSEMBLING RADIATOR-LOOPS. HARRISON H. TAYLOR, Detroit, Mich., assignor to the Detroit Steam Radiator Company, same place. Filed Dec. 7, 1887. Serial No. 257,257. (No model.)



Claim.—1. A machine for assembling radiator-loops, consisting of a revolving lever or support with means for driving the same, said lever or support adapted to revolve about the axis of the hubs to be united as a center, and another support adapted to hold in proper position the loop or loops already assembled to which the new loop is to be applied, substantially as and for the purpose set forth.

2. In a machine for assembling radiator-loops, the combination of a support for holding the first loop or loops to which the new loop is to be applied, a revolving lever or support for the loop to be applied, with means for revolving the same, and mechanism for causing one of said supports to approach the other, so as to engage the threads of the new loop with those loops already assembled, substantially as and for the purposes set forth.

3. In a machine for assembling radiator-loops, a support adapted to hold the first loop, said support provided with means for moving it and its loop or loops to the rear to make place for new loops to be added, substantially as and for the purposes described.

4. In a machine for assembling radiator-loops, a support for the first loop, provided with means for moving said support with its loop or loops to the rear to make place for new loops to be added, and in connection therewith mechanism for dogging said traveling support in any fixed position while the new loop is being added, substantially as and for the purposes described.

5. In a machine for assembling radiator-loops, the combination, with a support for holding the first loop and a revolving support for the loop to be added, of centering mechanism whereby the hub of the first loop is held concentrically with the axis of the revolving support, substantially as and for the purpose set forth.

6. In a machine for assembling radiator-loops, a support for holding the first loop and a bolt for simultaneously clamping the loop to its support and centering its hub, substantially as and for the purposes described.

7. In a machine for assembling radiator-loops, a support for the loops already assembled, in combination with a revolving lever or support for the loop to be added, and mechanism for centering said last-named loop upon its support, substantially as and for the purposes described.

8. In a machine for assembling radiator-loops, a revolving lever or support for the loop to be added, mechanism for driving the same, and a central bolt adapted to enter the hub of the loop and center it, substantially as and for the purposes described.

9. In a machine for assembling radiator-loops, a revolving support for the loop to be added, said support provided with means for engaging and holding the said loop and means for feeding it forward as it is engaged with and screwed upon the loops already assembled, substantially as and for the purposes described.

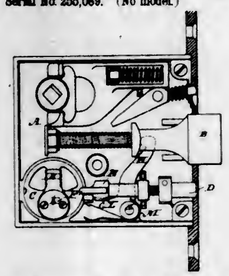
10. In a machine for assembling radiator-loops, a traveling support for holding the first loops and the loops already assembled, with mechanism adapted to move said assembled loops to the rear to make place for a new loop, and in combination therewith a revolving support for the loop to be added, means for engaging and centering the new loop thereon, and mechanism for moving said support toward the assembled loops, whereby the threads of the new loop are engaged therewith, substantially as and for the purposes described.

11. The combination, with a support for the assembled loops, of a revolving lever or support for the loop to be added, and a separating wedge-block adapted to rest upon the last loop and ward off from contact therewith the new loop to be applied, substantially as described.

12. The combination of the revolving lever E^2 with means for holding and centering a loop thereon, of a supporting-shaft, E', a driving-gear, E^3, and a lever, G, adapted to shift the said shaft longitudinally of its axis, substantially as and for the purposes described.

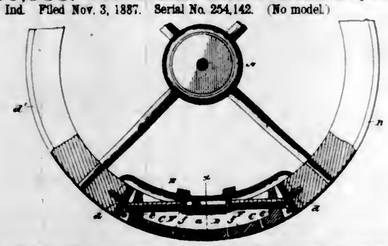
13. The combination, with a traveling support, B, of a pinion, *a*, engaged with a rack-bar, A', and a lever, pawl, and ratchet for revolving the shaft of the said pinion and causing the support to traverse back and forth along the ratchet-bar, substantially as and for the purposes set forth.

380,537. LOCK. WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Nov. 14, 1887. Serial No. 255,069. (No model.)



Claim.—The combination, in a lock having an escutcheon and set-screw fastening therefor, of a projection, G, on the set-screw fastening, a spring-actuated bell-crank lever, H, and a shoulder, L, on the bell-crank, forming a latch-connection, substantially as set forth.

380,538. TIRE-TIGHTENER. REUBEN N. VAN SLYKE, Hawpatch, Ind. Filed Nov. 3, 1887. Serial No. 254,142. (No model.)



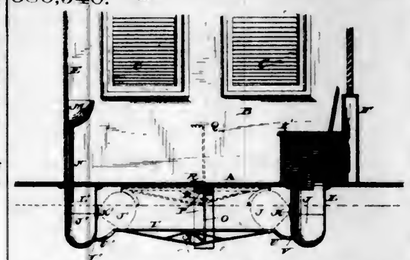
Claim.—The combination, with the felly, of the box secured therein, the tire, the threaded lugs secured to the tire and having lapping extensions beyond the ends thereof, the threaded connections of the said lugs, the eyebolts, the covering-plate, and securing-nuts.

380,539. EXTENSION-TRESTLE. JAMES E. WALLACE and CHAS. D. REESE, La Crosse, Wis. Filed July 21, 1887. Serial No. 244,956. (No model.)



Claim.—The combination, in a trestle, of the supporting-legs G, having the straps H rigidly secured thereto, the extensions E, having the racks E' on the outer sides, said extensions being passed through the straps H and movable longitudinally on the legs G, and adapted to play loosely between the opposing sides of said legs and said straps, and the set-screws engaging threaded openings in legs G, and having their points bearing against the inner sides of the extensions, for the purpose set forth, substantially as described.

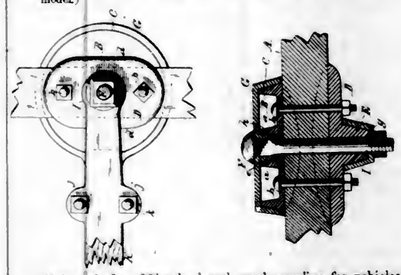
380,540. PRIVY. WILLIAM J. WHARTON, Washington, D. C. Filed Jan. 13, 1888. Serial No. 260,653. (No model.)



Claim.—1. The combination, with the privy-bowl I and its outlet, of the hinged tank or receptacle J, arranged below the same, a movable joint or connecting-rod, and a vertical reciprocating rod provided at its lower end with a right-angled arm or brace connected pivotally to the movable joint or connecting-rod, substantially as shown and set forth.

2. The combination of the swinging receptacles J J', jointed lock-connections U U', pivoted thereto, the arm T, pivoted at each end to the said lock-connections, and a vertically-reciprocating rod secured to the intermediate portion of said arm, substantially as and for the purpose shown and set forth.

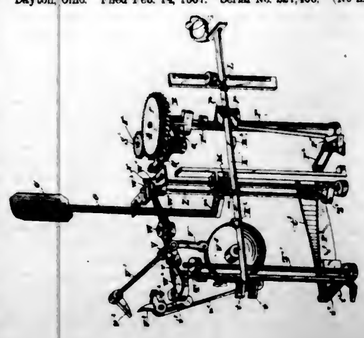
380,541. REACH-COUPLING FOR VEHICLES. STEPHEN M. WEED, New Haven, Conn. Filed Nov. 26, 1887. Serial No. 256,209. (No model.)



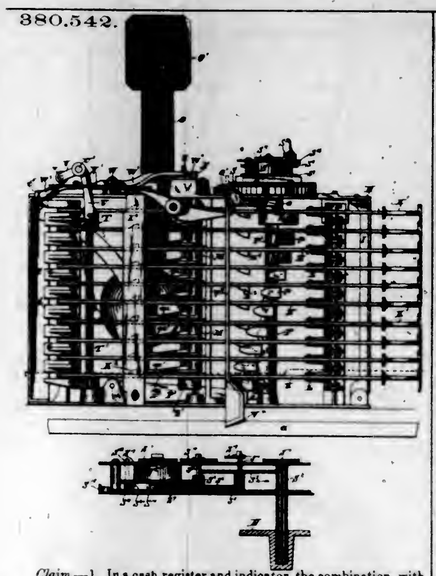
Claim.—1. In a fifth-wheel and reach-coupling for vehicles, the combination, with the axle A and reach K, of the iron B, provided with the conical periphery C, the iron D, provided with the conical projection E, the socket G, provided with the arm H, and the socket I, provided with the arm J, substantially as specified.

2. As an improved article of manufacture, a fifth-wheel and reach-coupling formed of the iron B, provided with the conical periphery C and with clips *c*, the socket G, fitted to the iron B and provided with the arm H, the oblong iron D, having the conical projection E and provided with the clips *d*, the arm J, having a socket, I, and the bolt F, adapted to hold the iron B, socket G, and the iron D and socket I in the position of use, substantially as specified.

380,542. CASH REGISTER AND INDICATOR. WALES ALDRICH, Dayton, Ohio. Filed Feb. 14, 1887. Serial No. 227,466. (No model.)



380,542.



Claim.—1. In a cash register and indicator, the combination, with a swinging arm bearing a target or tablet at a point removed from its pivot, of a reciprocating key-bar having a stop normally out of engagement with said arm, but adapted, when the key-bar is pulled, to positively engage it and move the target or tablet into view, substantially as described.

2. In a cash register and indicator, the combination, with a bell-crank lever having a target or tablet on one arm, of a reciprocating key-bar having a stop normally out of engagement with said lever, but adapted, when the key-bar is pulled, to positively engage the other arm of said lever and move the tablet into view, substantially as described.

3. In a cash register and indicator, the combination, with a series of swinging arms each bearing a target or tablet at a point removed from its pivot, of a series of reciprocating key-bars each bearing a stop normally out of engagement with its arm, whereby when any key-bar is pulled its stop will engage its corresponding arm, the latter will be turned, and the target or tablet borne by said lever brought to view, substantially as described.

4. In a cash register and indicator, the combination, with a series of bell-crank levers each of which bears upon one of its arms a target or tablet, of a series of corresponding key-bars each of which has a stop for co-operating with the other arm of its corresponding bell-crank lever, said stops being normally out of engagement with their levers, but arranged to positively engage and operate them when the key-bars are pulled, substantially as described.

5. In a cash register and indicator, the series of bell-crank levers mounted upon a common axis and having arms of different lengths, in combination with the targets or tablets supported by said arms and with the series of reciprocating key-bars having stops arranged to operate upon the bell-crank levers, said stops being normally out of contact with the levers, but operating when the key-bars are pulled to positively engage and move them, substantially as described.

6. In a cash register and indicator, the combination, with the series of targets or tablets, each mounted on independent swinging arms at a point removed from its pivot, of a series of independent key-bars having stops normally out of engagement with the swinging arms, adapted, when pulled, to positively actuate said arms, and means, substantially as described, for automatically returning an exposed target or tablet to normal position upon the exposure of the next succeeding target or tablet, substantially as described.

7. In a cash register and indicator, the combination, with the series of bell-crank levers bearing the targets or tablets, of the series of operating key-bars normally out of engagement with the levers, arranged, when pulled, to positively move the latter, the swinging retracting-rod arranged between the arms of the bell-crank levers, and connections, substantially as described, between the key-bars and the retracting-rod for causing said rod to return to normal position any disturbed bell-crank lever upon the pulling of any key-bar, substantially as described.

8. In a cash register and indicator, the combination, with the series of bell-crank levers bearing the targets or tablets, of the series of key-bars normally out of engagement with but adapted, when pulled, to positively operate said levers, the retracting-rod arranged between the arms of the bell-crank levers, a vibratory rod adapted to be turned upon pulling any one of the key-bars, and connections, substantially as described, for causing the motion of the vibratory bar to be communicated to the retracting-rod, substantially as described.

9. In a cash register and indicator, the combination, with targets or tablets mounted on swinging arms of different lengths, of guides, substantially as described, for giving lateral support to the tablets and preventing interference with each other when said tablets are swung into and out of view, substantially as described.

10. In a cash register and indicator, the combination of the independent bell-crank levers bearing the targets or tablets, the reciprocating key-bars, the vibratory bar connected so as to be operated upon by each of the key-bars independently, the retracting-rod common to all the bell-crank levers, the sliding plate, pivoted lever, rocking cam, and hinged latch forming the connection between the vibratory bar and the retracting-rod, substantially as described.

11. In a cash register and indicator, the combination, with the series of bell-crank levers bearing the targets or tablets and all mounted upon a common axis, of the retracting-rod carried by arms which are also mounted upon said common axis, and means for operating said retracting-rod, substantially as described.

12. In a cash register and indicator, the combination, with the reciprocating key-bars, of the bearings for the same near its opposite ends and the swinging links to which it is pivoted, substantially as described.

13. The combination, with the reciprocating key-bars, of the vibratory bar T, the rock-shaft U', having an arm, U, operated from the said bar T, the bell, the bell-hammer, and tripping mechanism, substantially as described.

14. The combination, with the money-drawer, of a movable top or cover therefor preventing the opening of the drawer when pushed in, and devices, such as described, for locking the movable top, substantially as set forth.

15. The combination, with the money-drawer, of a movable top for the same, devices, such as described, for locking the movable top, and means for shifting the top when released from the locking devices, so as to permit the drawer to be opened, substantially as described.

16. In a cash register and indicator, the combination, with a money-drawer, of a movable top for securing the drawer when pushed in, devices for locking the movable top, key-bars, and intervening mechanism between the key-bars and said locking devices, whereby upon the operation of a key-bar the movable top of the drawer will be released and the drawer enabled to be opened, substantially as described.

17. In a cash register and indicator, the combination, with the money-drawer, of a movable top for the same, devices, such as described, for locking the movable top, means for shifting the top when released from the locking devices, and key-bars and intermediate mechanism for operating the locking devices, so as to release the top of the money-drawer each time a key is pulled, substantially as described.

18. In a cash register and indicator, the combination, with the vibratory bar having the series of arms spirally arranged thereon, of a series of reciprocating key-bars provided with lugs or projections for engaging the arms of said vibratory bar, whereby the vibratory bar is moved to a greater or less extent by the operation of a key-bar, accordingly as the lug on said key-bar is nearer to or farther from the corresponding arm of the vibratory bar, substantially as described.

19. In a cash register and indicator, the combination, with a vibratory bar having a series of arms spirally arranged thereon, of the series of reciprocating key-bars provided with lugs for engaging the arms of said vibratory bar, and a registering mechanism actuated by said vibratory bar, substantially as described.

20. In a cash register and indicator, the combination, with a vibratory bar having the spirally-arranged arms, of the series of reciprocating key-bars having lugs or projections, as described, and the spring for returning the bar to normal position after being operated upon by either of the key-bars, substantially as described.

21. The combination, with the ratchet-wheel of the registering mechanism, of the vibratory bar having the spirally-arranged arms and carrying a pawl for engaging with said ratchet, and the series of key-bars having lugs or projections, substantially as described.

22. In a cash register and indicator, the combination, with a series of levers bearing the targets or tablets, the vibratory bar having the spirally-arranged arms, the registering mechanism, and connections between the bar and mechanism to actuate the latter, of the series of reciprocating key-bars having projections for engaging the target-levers and the vibratory bar, substantially as described.

23. In a cash register and indicator, the combination of a series of levers bearing the targets or tablets, the vibratory bar having the spirally-arranged arms, the registering mechanism, the series of reciprocating key-bars, and means, substantially such as described, operated by the key-bars for returning to normal position the displaced tablet-bearing levers, substantially as described.

24. In a cash register and indicator, the combination of a series of bell-crank levers bearing the targets or tablets, the vibratory bar having the spirally-arranged arms, the registering mechanism, the series of reciprocating key-bars, the rod for bringing the bell-crank levers back to normal position, and connecting mechanism, substantially such as described, between such rod and the key-bars, as set forth.

25. In a cash register and indicator, the combination of the series of reciprocating key-bars, the registering mechanism, and the series of targets or tablets actuated by the key-bars, the money-drawer, a locking top for the same, devices for locking said top, and connections, substantially as described, between said locking devices and the key-bars, whereby upon the pulling of a key-bar a target or tablet will be exposed to view, the registering mechanism will be operated, and the top of the money-drawer released, so as to enable the drawer to be opened, as set forth.

26. The combination, with the movable frame carrying the gear-train and indicators and the spring for automatically resetting the registering mechanism, of the pinion-shaft with which the registering mechanism is thrown into and out of connection, substantially as described.

27. A registering mechanism consisting of a train of gears mounted upon a movable frame, in combination with a pinion-shaft with which the first gear of the train engages, and a spring operating to keep the gear in mesh with the pinion-shaft, substantially as described.

28. A registering mechanism consisting of a gear-train mounted upon a movable frame, in combination with a pinion-shaft with which the first gear of the train engages, the spring operating to keep the gear-train in mesh with said pinion-shaft, and the cam-lever for moving the frame against the tension of the spring to throw the gear out of connection with the pinion-shaft, as described.

29. The combination, with the gear-train of the registering mechanism, of the spring for resetting said mechanism, the lug or stop on the last gear of said train, and the spring-detent with which said stop or lug engages, substantially as described, and for the purpose specified.

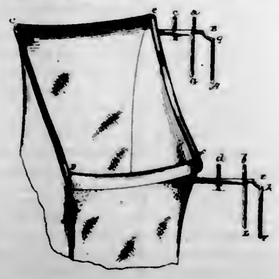
30. In a cash-register, the combination, with the series of bell-crank levers pivoted upon a vertical shaft and having horizontal arms of different lengths to which tablets are attached, of a series of keys adapted to co-operate with one of the arms of the levers for causing their rotation on the shaft, substantially as described.

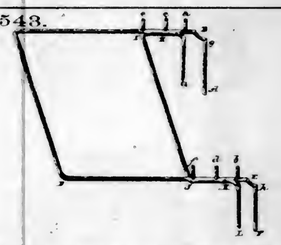
31. In a cash-register, the combination, with a series of bell-crank levers mounted on a vertical shaft and having horizontal arms of different lengths to which tablets are attached, of a series of key-bars adapted to engage each of the levers for actuating them, a vibratory bar common to all the levers, and connections between the key and retracting bars for causing the operation of the latter by the operation of any of the former, substantially as described.

32. In a cash-register, the combination, with the series of bell-crank levers pivoted upon vertical axes, having arms of different lengths on which are mounted vertical arms of different lengths carrying tablets, of a series of keys adapted to co-operate with one of the arms of the levers for causing their rotation on the axes, substantially as described.

380,543. HOLDER FOR MAIL-BAGS. CHARLES W. ALLEN, Deer Park, Ontario, Canada. Filed Sept. 3, 1887. Serial No. 248,758. (No model.) Patented in Canada Aug. 16, 1887, No. 27,439.

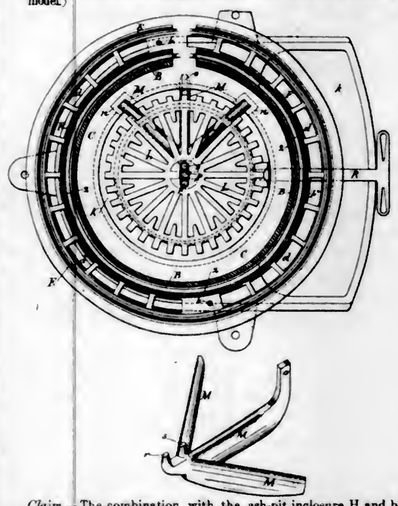
Claim.—1. A bag-holder consisting of a rectangular frame having the two downwardly-turned projections upon each of its inner corners to catch over a suitable support, and provided with studs or projections upon the tops of its inner corners for the bag to catch over, substantially as shown and described.





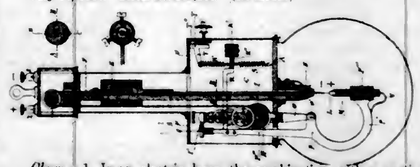
2. A bag-holder consisting of a rectangular frame having the two downwardly-turned projections upon each of its inner corners to catch over a suitable support, and provided with studs or projections for the bags to catch over, the downwardly-turned projections being provided with the jogs E at their upper corners, substantially as set forth.

380,544. SUPPORT FOR CAR-HEATER GRATES. WILLIAM C. BAKER, New York, N. Y., assignor to the Baker Heater Company, of New York. Original application filed Apr. 18, 1885, Serial No. 162,626. Divided and this application filed June 22, 1886. Serial No. 205,859. (No model.)



Claim.—The combination, with the ash-pit inclosure H and bottom plate and hearth, of the ring C above the ash-pit and having pendent loops closed at their lower ends, the triangular bracket having two arms passing into the pendent loops, and the intermediate third arm bearing upwardly against the under side of the ring, and the horns projecting upwardly at the apex, and the grate having a central opening and cross-bar resting between the horns of the bracket, substantially as specified.

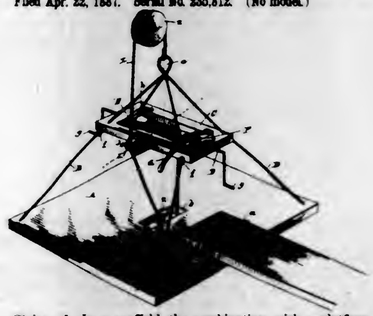
380,545. ARC LAMP. CAMILLE BERTON, Paris, France. Filed July 14, 1887. Serial No. 244,266. (No model.)



Claim.—1. In an electric lamp, the combination, with a vertically-movable carbon, C, a motor for advancing the carbon, a regulating wheel-train, and a band, F, connecting the wheel-train with the motor, of the lever P, having the weighted arm R, springs S S', connected with the arm R, for regulating the pressure of the lever against the carbon during consumption, and the rigid abutment-electrode L, carried by said lever P in the path of the carbon C, and upon which the carbon rests, the parts being so arranged that the pressure of the carbon upon the abutment will throw the lever into direct engagement with the wheel-train to stop the feed of the carbon, and as said carbon is consumed the lever will be moved away from the wheel-train to permit the feed of the carbon, substantially as described.

2. In an electric lamp, the carbon pencil C, the stationary carbon-guide B, the weight E, band F, and wheel-train connected by said band with the weight, in combination with the lever P, having weighted arm R, springs S S', connected with the arm R, rigid abutment-electrode L, carried by said lever in the path of the carbon C to support said carbon, and detent Q, carried by the lever P, for engagement with the wheel-train, all arranged so that the pressure of the carbon on the abutment L will throw the lever P to stop the feed of the carbon, and as the carbon is consumed the lever will be moved to release the carbon-feed mechanism, substantially as described.

380,546. SCAFFOLDING. HEBERIAN BRADIN, Kansas City, Mo. Filed Apr. 22, 1887. Serial No. 235,812. (No model.)



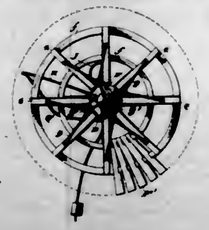
Claim.—1. In a scaffold, the combination, with a platform carrying a journaled pulley at its center, of a plate supported centrally above the platform and carrying a shaft and winding-drum and mechanism for checking the descent of the platform, and a rope secured to the winding-drum, passed around the journaled pulley, and passed over a pulley located at an elevated point and secured to the platform, substantially as set forth.

2. The combination, with a platform carrying a centrally-arranged journaled pulley, of brace-rods extending from said platform, a plate supported centrally of the platform by the brace-rods, a shaft journaled in the plate and having a winding-drum, an idler projecting from the plate, a loop at the upper ends of the rods, and a rope, substantially as set forth.

3. The combination, with a platform having a centrally-arranged pulley and a keeper or keepers, of rods secured to the platform, a plate supported centrally by the rods and carrying a shaft having a winding-drum, a pawl and ratchet, and friction wheel and brake, as described, an idler projecting from the plate, and a rope, substantially as set forth.

380,547. WINDMILL. THOMAS H. BREWER and ORA A. BREWER, Pawnee Rock, Kans. Filed June 16, 1887. Serial No. 241,512. (No model.)

Claim.—The combination, substantially as before set forth, of the vertical tubular shaft B, a rectangular frame or yoke having upper and lower members provided centrally with bearings to receive said shaft, a front vertical member provided at one side with a vane-head and centrally with a bearing for the wheel-shaft, and a rear vertical member carrying a pivot-stud, the vane pivoted to the vane-head, a guide-rod secured to the front and rear vertical members of the yoke, a guide-roll journaled on the vane and adapted to travel on the guide-rod, a weighted lever mounted on the pivot-stud of the rear vertical member, a rod connecting the upper end of said lever with the vane, the wind-wheel journaled in its bearing, and a rope or cord connected to the lever to elevate the weighted end thereof.





380,548. SPRING FOR LOCOMOTIVES. DANIEL BROADHURST, Dunmore, Pa. Filed Dec. 24, 1887. Serial No. 258,889. (No model.)



Claim.—1. The combination, in a locomotive driving-spring, of the arched plates, the standard D, having the enlarged lower end, the side plates, B, the spring bent over said standard, and the pivoted wings adapted to press against the ends of said spring, substantially as described.

2. A locomotive-spring consisting of a frame rigidly secured to the locomotive, the standard having the enlarged upper end, a spring bent over said standard and having its free ends extending downward, and the wings pivoted in said frame and adapted to receive the upper ends of the spring-hangers and press against said free ends of the spring, substantially as described.

3. A locomotive driving-spring consisting of a frame or housing, a supporting-standard, a spring bent over said standard, and wings pivoted to said housing and adapted to press against the ends of said spring, and carrying at their outer ends the spring-hangers, substantially as described.

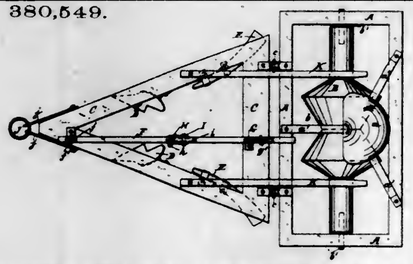
4. A driving-spring for locomotives, consisting of a housing having flanges formed on its interior adjacent side plates, a support for the middle portion of the spring, a spring bent over said support, and wings pivotally attached to said housing and having enlarged lower ends and slotted upper ends, substantially as set forth.

380,549. CULTIVATOR FOR LISTED CORN. JOSEPH W. BROWN, Miltonvale, Kans. Filed Sept. 1, 1887. Serial No. 248,515. (No model.)

Claim.—1. In a cultivator, the combination of a main frame, a roller having a central groove journaled in the main frame, a triangular frame hinged to the main frame, cultivating implements secured to the diverging sides of the triangular frame, and a caster for taking the weight of the triangular frame.

2. In a cultivator, the combination of a main frame, a roller having a central groove journaled in the main frame, a triangular frame hinged to the main frame, cultivating implements secured to the diverging sides of the triangular frame, a lever pivotally connected to

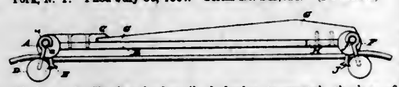
380,549.



the triangular frame at one end, a notched support and a spring-catch connecting the rear end of the lever with the frame, an adjustable spindle projecting through the lever, and a caster swiveling upon the said spindle and taking the weight of the said triangular frame.

3. In a cultivator, the combination of a main frame, a roller having a central groove journaled in the main frame, a triangular frame hinged to the main frame, cultivating implements secured to the diverging sides of the triangular frame, a caster for taking the weight of the triangular frame, a ring pivotally connected to the front of the said frame and adapting itself to different heights of draft, and handles projecting rearwardly from the said triangular frame for regulating its height.

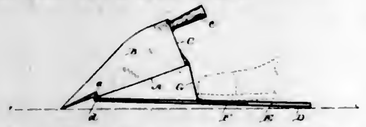
380,550. TROUSERS-STRETCHER. BENJAMIN H. CLOWES, New York, N. Y. Filed July 30, 1887. Serial No. 245,728. (No model.)



Claim.—1. The herein-described device to stretch the legs of trousers, composed of the roller A, having the eccentric-journal pins in its ends, the lever-bar B, secured to said roller, the catch C, the roller D, having the eyes *d* secured thereto, the stops E, the roller F, provided with the eccentric-journal pins *f*, the roller I, having the eyes *i* secured thereto, the locking-lever G, the fulcrum H, and the stops J, substantially as specified.

2. In a device to stretch the legs of trousers, the combination of the two pairs of rollers, whereby the leg is held at different parts thereof, the lever and fulcrum secured to a roller of one pair, and the lever-bar secured to the corresponding roller of the opposite pair, and having a detent upon it to hold the end of the lever attached to the first pair of rollers when the same is pressed down, substantially as specified.

380,551. DUST-PAN. EMMA S. COLT, Kansas City, Mo. Filed Dec. 1, 1887. Serial No. 256,690. (No model.)



Claim.—1. The combination, with the pan provided with a ledge to retain the dust, of a base-strip hinged to the bottom of the pan, and a standard hinged to the bottom of the pan to the rear of the hinge-connection between the base-strip and bottom, the said standard having a movable bearing on the base-strip, substantially as set forth.

2. The combination, with the pan and a base-strip hinged to the bottom of the pan near its front edge, of a standard hinged at one end to the rear edge of the pan, and its other end having a movable bearing on the base-strip, substantially as set forth.

3. The combination, with the pan and a base-strip hinged to the pan near its front edge, of a slide seated on the base-strip, and a link or standard hinged to the pan and to the slide, substantially as set forth.

4. The combination, with the pan and the grooved base-strip hinged to the pan near its front edge, of a slide seated in the groove in the base-strip, a standard hinged to the slide and to the pan, and a handle extending rearwardly from the back of the pan, substantially as set forth.

380,552. SHOE. JOHN CONDELL, New York, N. Y. Filed Nov. 22, 1887. Serial No. 255,908. (No model.)

Claim.—1. The upper for boots and shoes herein shown and described, having the ankle portion 1^a inclined toward the rear to overhang the end of the heel and provided with a downwardly-extended heel portion, 1^b, which overlaps the heel of the last without stretching, substantially as set forth.



2. In the manufacture of boots and shoes, an outer sole having a channel or crease formed in its edge to receive the seam uniting the insole, outer sole, and upper, substantially as described.

3. In the manufacture of boots and shoes, the combination, with an upper and insole, of an outer sole having a channel formed in its edge, and a line of stitching laid in said channel and passing through the grained surface of the outer sole through the upper and through the insole, substantially as described.

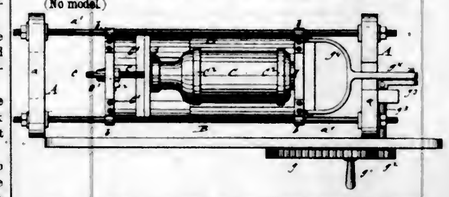
4. The combination, with a boot or shoe, of a heel having a forwardly-projecting tongue which underlies part of the arch of the instep, said heel having the highest portion of its tread at the forward part thereof, substantially as described.

5. The combination, with a boot or shoe, of a heel having a tongue or projection which partly underlies the arch of the instep, said heel having a tread which is convex from front to rear, the forward portion being the higher, substantially as described.

6. A shoe having the upper and sole united by stitching which enters the edge of the sole and passes obliquely inward through the upper, which lies upon the sole, and through the edge of the insole, which overlies the edges of the upper, the grained surface of the sole being laid next the foot, substantially as described.

7. A shoe having the sole, insole, and upper united by stitching passing obliquely from the edge of the sole through the superposed upper and provided with a heel having a tongue projecting forward under the instep portion, said heel being higher at the forward than at the rear portion, substantially as described.

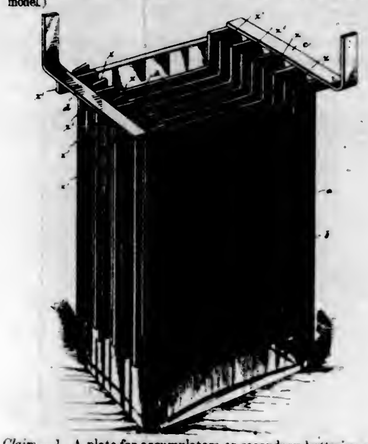
380,553. CHURN. ANTHONY DAUL, Brooklyn, assignor to Gustav Heerbrandt, New York, N. Y. Filed Dec. 2, 1887. Serial No. 256,738. (No model.)



Claim.—1. The combination of a supporting-frame having longitudinal guide-rods, a cradle having sleeves or eyes guided on said rods and slots, an adjustable cross-head, a jar or vessel in said cradle, transverse straps for attaching the jar to the cradle, and mechanism for imparting longitudinally-reciprocating motion to the cradle, substantially as set forth.

2. In a churn, the combination of a cradle formed of two semi-circular sections provided with slots, a cross-head adjustable in the head of the cradle, a vessel or jar, and transverse straps extending over the vessel and connected to the slots of the cradle, substantially as set forth.

380,554. SECONDARY BATTERY. NICHOLAS DE BENARDOS, St. Petersburg, Russia. Filed Dec. 23, 1887. Serial No. 259,206. (No model.)

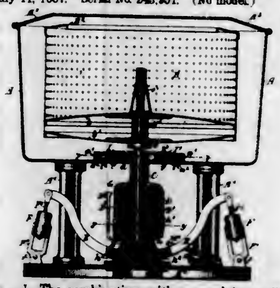


Claim.—1. A plate for accumulators or secondary batteries, consisting, essentially, of the frame A and the corrugated or bent strips or ribbons *a* and straight or plain strips or ribbons *b*, arranged alternating with each other in the space inclosed by the frame and secured individually at their ends to opposite sides of the frame, as and for the purposes hereinbefore set forth.

2. In an accumulator or secondary-battery plate, the combination, with plain strips or ribbons *b*, of corrugated or bent strips or ribbons *a*, alternating with strips *b*, and having their corrugations or bends oblique to their longitudinal edges, as and for the purposes hereinbefore set forth.

3. An accumulator-plate consisting of the circumscribing frame A, the plain strips *b*, and the strips *a*, alternating with the plain strips and formed with oblique corrugations or bends, as described, said strips being placed in the space inclosed by the frame and individually secured at their ends to said frame, as hereinbefore set forth.

380,555. CENTRIFUGAL MACHINE. GEORGE N. DOWNS, Chicago, Ill., assignor to the Troy Laundry Machinery Company, Troy, N. Y. Filed July 11, 1887. Serial No. 243,951. (No model.)



Claim.—1. The combination, with a revolving cylinder and a vertical supporting-shaft therefor, of a step or bearing engaging the lower end of the said shaft and affording the sole means of supporting the same, said bearing being connected with the machine-frame by a universal joint, rigid arms attached to the said bearing and extending outwardly from the same, and spring-connections between the outer ends of said arms and the machine-frame or other stationary support or supports, substantially as described.

2. The combination, with a revolving cylinder and a vertical supporting-shaft therefor, of a step or bearing engaging the lower end of the shaft and affording the sole means of supporting the same, said bearing being connected with the machine-frame by a universal joint, rigid arms attached to the said bearing, and spring-connections between the outer ends of the arms and the machine-frame embracing devices for adjusting the tension of the springs, substantially as described.

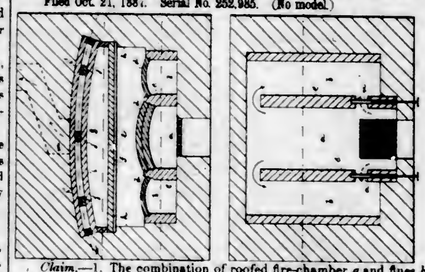
3. The combination, with a revolving cylinder and a vertical shaft supporting the same, of a step or bearing for the lower end of the shaft, said step or bearing being provided with an exterior spherical enlargement, a support for the bearing provided with a socket at its upper end to receive said spherical enlargement, a pulley attached to the shaft above the bearing and extending downwardly outside of said bearing and around the support thereof, radial arms rigidly attached to said bearing below the said spherical enlargement and socket, and spring-connections between the outer ends of said arms and adjacent stationary supports, substantially as described.

4. The combination, with a revolving cylinder and a supporting-shaft therefor, of a step or bearing for the lower end of the shaft, consisting of a box, D', provided with a central oil-recess, and a lining, D^a, inserted in said box and passing through the oil-recess, said lining being provided with exterior longitudinal grooves and with perforations extending from the said grooves to the bearing-face of the lining, substantially as described.

5. The combination, with the perforated revolving cylinder of a centrifugal extractor, a vertical shaft supporting the same, and a bearing for the shaft constructed to allow inclination of the latter, of an exterior shell or receptacle provided with an aperture in its bottom through which said shaft passes, and a freely-rotating ring larger than the shaft surrounding said shaft and sustained upon the receptacle adjacent to said aperture, substantially as described.

6. The combination, with a revolving cylinder of a centrifugal extractor, a shaft for supporting the same, a bearing for the shaft constructed to allow inclination of the latter, and an exterior shell or receptacle provided with a central aperture in its bottom, of a freely-rotating ring larger than the shaft, mounted upon said receptacle adjacent to said opening, and anti-friction rollers sustaining the ring and holding it from lateral motion, substantially as described.

380,556. BAKER'S OVEN. FRITZ DURROP, New York, N. Y. Filed Oct. 21, 1887. Serial No. 252,985. (No model.)

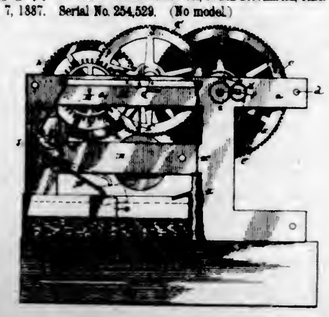


Claim.—1. The combination of roofed fire-chamber *a* and flues *b* with baking-chamber *g*, and with an intervening air-space, *c*, substantially as specified.

2. The combination of fire-chamber *a* and flues *b*, with which said fire-chamber communicates, with the oven *g*, and with an intervening air-space, *c*, and with a double roof, *i i'*, and flues *l*, connecting the flues *b* with the space between said double roof, substantially as specified.

3. The combination of fire-chamber *a* and flues *b* with the superposed air-space *c*, superposed baking-chamber *g*, having double roof *i i'* and flues *k k'*, and with the upright flues *l*, connecting flues *b* with flues *k'*, substantially as specified.

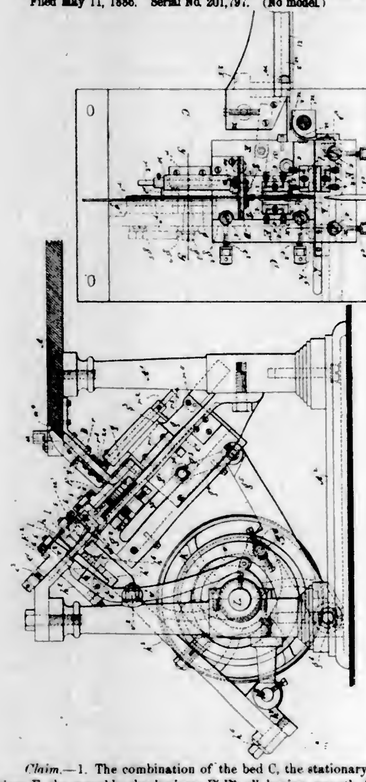
380,557. MOTOR. WILLIAM J. DUN, South Bloomfield, Ohio. Filed Nov. 7, 1887. Serial No. 254,529. (No model.)



Claim.—1. The apparatus comprising frame A, carrying shaft B, the shafts G, H, and J, driven from shaft B, the escapement-wheel I on shaft H, and the pendulum-dog *i*, engaging the same, with the crank-disk J' on shaft J, its wrist-pin *j'*, the walking-beam K, pivoted above the same and connected at one end to wrist-pin *j'* by a pitman and at the other end to the pump-pitman, and the float O, rod N, and its arm N', all constructed and arranged to operate substantially as and for the purpose described.

2. The apparatus comprising frame A, shafts B, G, H, and J, mounted thereon, springs E *e*, actuating shaft B, and gearing between said shafts, with the escapement-wheel I, dog *i*, and weighted adjustable pendulum I', the crank-disk J, its pin *j'*, walking-beam K, the rods connecting it with wrist-pin *j'* and pump-pitman, and the cranked rod N, its arm N', and its operating-float O, all constructed and arranged to operate substantially in the manner and for the purpose described.

380,558. **MACHINE FOR RUBBING TYPES.** GEORGE S. EATON and JAMES C. BIRCH, Brooklyn, N. Y., assignors to said George S. Eaton. Filed May 11, 1886. Serial No. 201,797. (No model.)



Claim.—1. The combination of the bed C, the stationary cheek-piece E, the movable cheek-pieces E' E², all having smooth flat surfaces between which the types are moved, and means for adjusting and holding the movable cheek-pieces, the cutters fastened upon the top surfaces of the cheek-pieces, the pushers acting at right angles to each other, and the mechanism for actuating the same, substantially as set forth.

2. The combination, with the inclined bed, the cheek-pieces, the cutters, and the pushers, of a feeding-slide at right angles to the inclined bed for feeding the types into the channel between the cheek-pieces, substantially as set forth.

3. The combination, in a type-rubbing machine, of an inclined bed, cheek-pieces, cutters and pushers, a feeding-slide at right angles to the bed, and a spring detaining-finger, and means for drawing back such finger and allowing the types to feed, substantially as set forth.

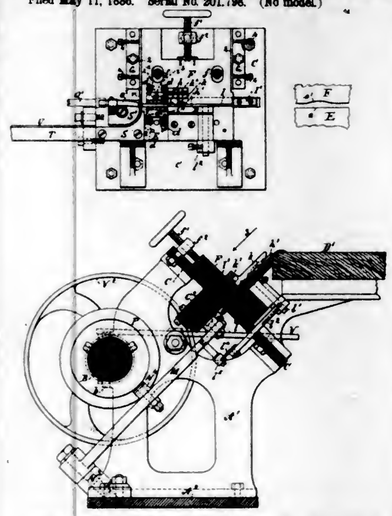
4. The combination, in a type-rubbing machine, of an inclined feeding-slide and a horizontal table to receive the type, and having an opening in it and a fence with an angle adjacent to the opening and against which the gate or sprue is broken off as the type is moved by hand on the table, substantially as set forth.

5. The combination, with the inclined feeding-slide, of a frictional detaining-finger having a tail for supporting the type, and means, substantially as set forth, for giving motion to the finger, as specified.

6. The combination, with the feeding-slide and yielding finger, of a hinged gate and its flange and adjusting-screw, substantially as set forth.

7. The combination, with the feeding-slide, of the body-plunger, the yielding detaining-finger, and the hinged gate, substantially as set forth.

380,559. **MACHINERY FOR RUBBING TYPE.** GEORGE S. EATON and JAMES C. BIRCH, Brooklyn, N. Y., assignors to said George S. Eaton. Filed May 11, 1886. Serial No. 201,798. (No model.)



Claim.—1. The combination, in a machine for rubbing type, of a table for receiving the types, an inclined feeding-slide down which the types are passed, a bed-plate at right angles to the feeding-slide, two metallic equalizers attached to the bed, and screws for adjusting one of said equalizers to vary the width of the opening between them and adapt the machine to different thicknesses of type, and cutters attached to the upper surfaces of the equalizers for removing the burrs at the bases of the letters, and a pusher for moving the types along between the equalizers, the opposite faces of the equalizers being flat, smooth, and parallel, so as to straighten and render true the bodies of the types, and firmly support such types while the burrs are being removed by the cutters, substantially as specified.

2. The combination, in a type-rubbing machine, of a bed-plate, two metallic equalizers attached to the bed-plate, and screws for adjusting and holding one of the equalizers, the faces of the equalizers being smooth and parallel, a reciprocating carriage beneath the bed-plate, a changeable pusher connected therewith and extending up through a slot in the bed-plate, cutters attached to the upper edges of the equalizers and acting to remove the burrs at the bases of the letters, a feeding-slide at right angles to the bed-plate, down which slide the types are passed in succession, and a detainer and means for moving the same, so as to allow the types to pass down in succession at the proper time in relation to the movement of the pusher, substantially as set forth.

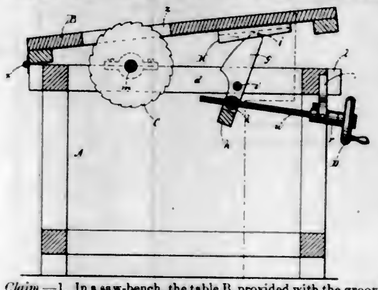
3. The combination, in a type-rubbing machine, of a bed-plate, a feeding-slide perpendicular to the bed-plate, two metallic equalizers having straight, smooth, and parallel faces, and a depression in the face of one of the equalizers in line with the feeding-slide to give space for the types to pass in freely between the equalizers, a pusher between the equalizers, and cutters upon the edges of the equalizers for removing the burrs at the bases of the letters while the types are straightened and smoothed by being passed through between the parallel faces of the equalizers, substantially as set forth.

4. The combination, with the bed and the equalizers, between which the types are passed, the pusher and the cutters for removing the burrs, of a feeding-slide down which the types are supplied, the steadying-

finger *k* above the feeding-slide, a hinge, *k'*, at the lower end of the finger, by which the same is attached to the equalizer F, the detainer *l*, and means for moving the same to allow the type to pass down the feeding-slide, substantially as set forth

5. The combination, in a machine for rubbing type, of two equalizers having smooth flat faces, a bed to which such equalizers are attached, and screws for adjusting and holding one of such equalizers, a changeable pusher and mechanism for reciprocating the same longitudinally between the equalizers, adjustable cutters fastened upon the equalizers for removing the burrs at the bases of the letters, a feeding-slide perpendicular to the bed-plate, a curved raceway at the end of the channel between the equalizers, and a removable rule for receiving the line of types, substantially as set forth.

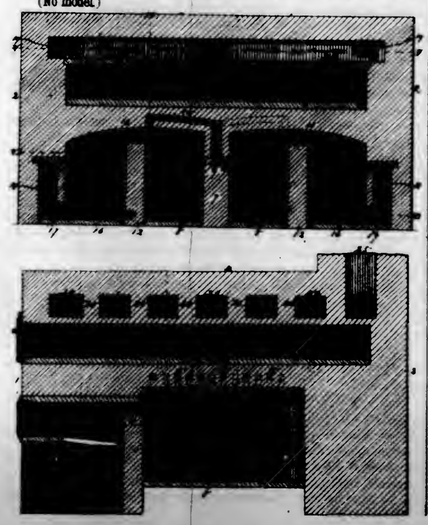
380,560. **BENCH FOR CIRCULAR SAWS.** FREDERIC R. FARWELL, Fitchburg, Mass. Filed Sept. 19, 1887. Serial No. 250,045. (No model.)



Claim.—1. In a saw-bench, the table B, provided with the grooved tracks H and hinged to the body A, in combination with the plates *g*, pivoted to said body and having their upper ends disposed in said tracks, and a screw for actuating said plates and raising and lowering the table, said screw working in a support on the frame-work of the machine and in a pivoted roll or nut connected with said plates, substantially as set forth.

2. In a saw-bench, the plates *g*, connected by the bar *h* and pivoted to the body A, the standards *t*, mounted on the bar *h*, the roll *k*, journaled in said standards and provided with the screw-threaded hole *b*, the tubular box *r*, pivoted in the bracket *p*, the screw-threaded rod *w*, mounted in the tube *r* and provided with the wheel D, and the table B, hinged to the body A and provided with the grooved ways H, all being constructed, combined, and arranged to operate substantially as set forth.

380,561. **BAKER'S OVEN.** WILLIAM C. FOWLER and WILLIAM G. SCHAEFER, St. Louis, Mo. Filed Feb. 21, 1887. Serial No. 228,399. (No model.)



Claim.—1. A baker's oven formed with a furnace, 6, bridge-wall 11, and combustion-chamber at the rear of the bridge-wall, having a longitudinal wall, 12, dividing the chamber into two parts, 8 and 16, and leaving a space or opening, 14, at the top, substantially as described.

2. A baker's oven formed with a furnace, 6, bridge-wall 11, a combustion-chamber at the rear of the bridge-wall, side flues, 17, a baking-chamber, 21, over the furnaces and chamber, flue-chamber 20 over the baking-chamber, a chimney at the rear part of the flue-chamber, and wall-chamber 18, communicating with the side flues and extending upward and forward to the flue-chamber, substantially as described.

3. A baker's oven formed with two furnaces, 6, bridge-walls 11, combustion-chambers at the rear of the bridge-walls, side flues, 17, a baking-chamber, 21, over the furnaces and chambers, a flue-chamber, 20, over the baking-chamber, having openings 19 at the front outer corners, deflectors 22, extending from the sides to near the middle, deflectors 23, extending to near each wall, and a chimney at the rear end, and the wall-chambers 18, extending from the side flues to the corner openings, substantially as described.

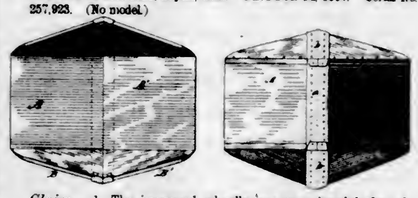
4. The combination, in a baker's oven, of a furnace and a combustion-chamber, a side wall of the furnace and chamber being formed with air-heating pipe and side openings into the combustion-chamber, and the top of the combustion-chamber being formed with flues connecting with the air-heating pipe discharging into the chamber, substantially as described.

5. The combination, in a baker's oven, of two furnaces, 6, side by side, bridge-walls 11, combustion-chambers side by side in rear of the bridge-walls, a longitudinal wall, 7, separating the furnaces and combustion-chambers, and an air-flue, 9, extending through the wall, having side openings, 10, into the combustion-chambers, substantially as described.

6. The combination, in a baker's oven, of two furnaces separated by a wall and two combustion-chambers, one in communication with each furnace, and separated by the same wall, an air-heating flue passing into the wall, arches extending over the combustion-chambers, longitudinal walls extending from the bottoms of the combustion-chambers to near the arches, and air-passages extending from the air-heating pipe to the sides and tops of the combustion-chambers, for the purpose set forth.

7. The combination, in a baker's oven, of two furnaces, two combustion-chambers, one in connection with each furnace, longitudinal walls 12, extending from the bottom to near the top of said chambers, a wall separating the furnaces and combustion-chambers, an air-heating flue, 9, in the wall, branches 10 and 15 of the flue discharging into the sides and tops of the combustion-chambers, flues 17 leading from the outer sides of the combustion-chambers into the chambers 18, flues leading from the chambers 18 to the front parts of the chamber 20, discharge-flue from the rear of chamber 20, and walls 22 and 23 in said chamber, arranged substantially as and for the purpose set forth.

380,562. **TRAY FOR WHEELBARROWS.** DAVID A. GARVER and CLARENCE H. STRAIGHT, Bryan, Ohio. Filed Dec. 14, 1887. Serial No. 257,923. (No model.)



Claim.—1. The improved wheelbarrow-tray hereinbefore described, having its sides and ends made in half-lengths and united together by strips of sheet metal, which cover the joints and are nailed to both parts, substantially as and for the purposes set forth.

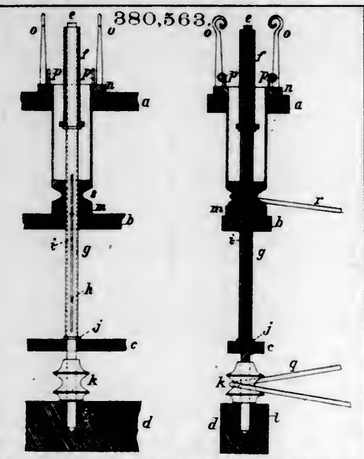
2. The improved wheelbarrow-tray hereinbefore described, the same being made in two independent transversely-divided sections, said sections being united by strips of sheet metal secured over the joint, substantially as shown and described.

380,563. **SPINNING-FRAME.** RICHARD GILL, WILLIAM H. BUTLER, and SAMUEL SMITH, Lawrence, Mass. Filed June 17, 1887. Serial No. 241,585. (No model.)

Brief.—The invention consists in an improved construction and combination of the spindle, flier, and bobbin-carrying tube, whereby the bobbin-carrying tube may be reciprocated while the spindle and flier bearings are stationary.

Claim.—1. The hollow whirl *n*, having eyelets *o* and *p*, and means for rotating said whirl, in combination with the spindle *e*, extending loosely through the vertical center of said whirl, means for rotating

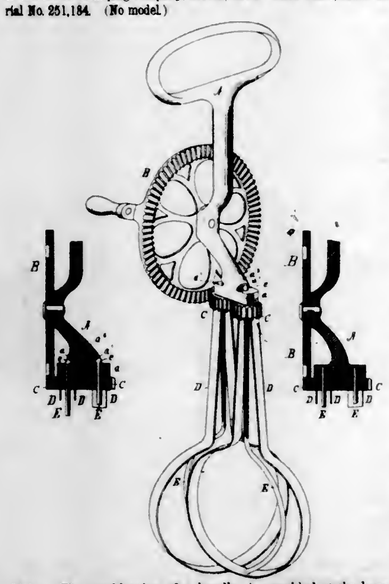
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said spindle independently of the whirl, the pin *i* on said spindle, and the sleeve *g*, fitting loosely on the spindle, and provided with the slot *h*, engaging said pin *i*, substantially as described.

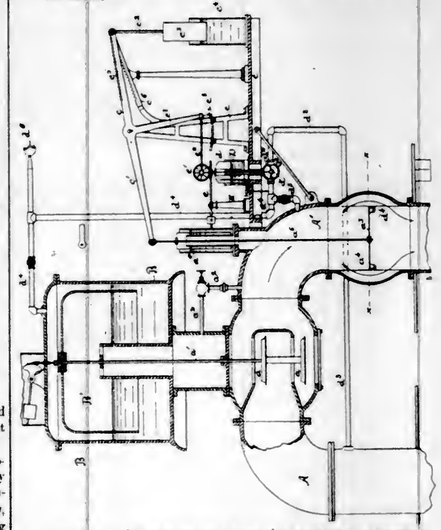
2. The hollow whirl *n*, having eyelets *o* and *p*, and means for rotating said whirl, in combination with the spindle *c*, extending loosely through the vertical center of said whirl, means for rotating said spindle independently of the whirl, the pin *i* on said spindle, the sleeve *g*, fitting loosely on the spindle, and provided with the slot *h*, engaging said pin *i*, and the builder-rail *c*, substantially as described.

380,564. EGG-BEATER. ETHAN HADLEY, Chicopee Falls, assignor to the Dover Stamping Company, Boston, Mass. Filed Oct. 1, 1887. Serial No. 251,184. (No model.)



Claim.—The combination of a handle, A, provided at the lower end with flanges *a*, and having an enlargement at the lower end of its shank above the flanges sufficient to cover or partly cover the holes provided in the flanges *a* for the insertion of the wires E, with said wires E restrained from longitudinal movement in either direction by means of the recess *a'* between the enlargement *a²* and the flanges *a* of the handle A, and an upset portion, *e*, of the wires E, in connection with the said wires, substantially as described.

380,565. GAS-PRESSURE-GOVERNING APPARATUS. FRANCIS H. HAMBLETON, Baltimore, Md. Filed Nov. 3, 1887. Serial No. 254,193. (No model.)



Claim.—1. In a gas-pressure-governing apparatus, a governor-float, as B', and means for loading the float actuated and controlled by the current of gas.

2. In a gas-pressure-governing apparatus, a governor-float, as B', and means for loading the same, in combination with a device for actuating the load interposed in the gas-current and operated thereby.

3. In a gas-pressure-governing apparatus, a governor-float and means for loading said float, in combination with an actuating device interposed in the gas-current, the pivoted lever *c'*, connected with the actuating device and operated thereby, and with the means for loading the float.

4. In a gas-pressure-governing apparatus, a governor-float, as B', and means for loading said float, in combination with a scale and pointer to indicate the volume of gas passing through the mains.

5. In a gas-pressure-governing apparatus, a governor-float, as B', and means for loading said float, in combination with a device for actuating the load interposed in the gas-current and operated thereby, and a device for indicating the volume of gas passing through the mains.

6. In a gas-pressure-governing apparatus, two governor-floats, as B' and *d*, the former arranged to regulate the pressure of gas in the distributing-main and the latter arranged to supply and cut off the load upon B', and automatically operated by the current of gas in the distributing-main.

7. In a gas-pressure-governing apparatus, an actuating device inserted in the gas-distributing main and operated by the current, in combination with a governor, as D, and governor-float, as *d*, and a pivoted lever connected with the loading device of the governor and the actuating device of the gas-current, substantially as described.

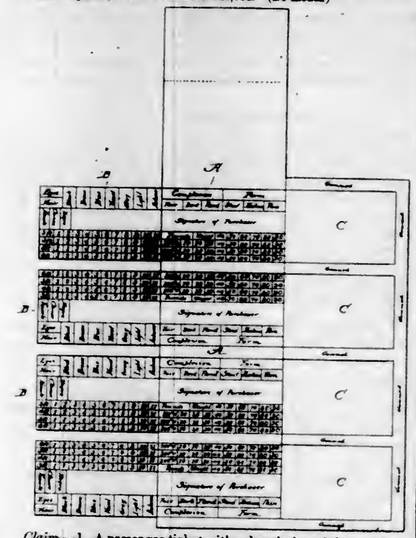
8. In a gas-pressure-governing apparatus, a governor, as D, provided with a float, a movable weight upon said float, in combination with a lever actuated by the gas-current to move the weight, and a counterbalancing-weight on the end of the lever operating vertically in a column of water, substantially as described.

9. In a gas-pressure-governing apparatus, a governor, as D, provided with a float, as *d*, an adjustable weight upon said float connected with an operating-lever, the lever actuated by means controlled by the gas-current, in combination with a series of counteracting-weights arranged to be picked up by said lever as the pressure is increased upon the governor-float and discarded as said pressure is diminished.

10. In a gas-pressure-governing apparatus, a governor, as D, provided with a float, an adjustable weight upon said float connected with an operating-lever, the lever actuated by means controlled by the gas-current, in combination with a weight arranged to move vertically in a column of water to counteract the movement of the lever, and a valve actuated by the governor-float and located in position to open or close an outlet of gas from the distributing-main, substantially as described.

11. In a gas-pressure-governing apparatus, a governor, D, provided with a float, an adjustable weight upon said float connected with an operating-lever, the lever actuated by means controlled by the gas-current in the distributing-main, in combination with a retarding-weight connected with said lever and moving vertically in a column of water, and a series of counteracting-weights arranged to be caught up and held by said lever as the pressure is increased upon the float and discarded as the pressure is diminished, substantially as described.

380,566. RAILROAD-TICKET. ROBERT I. HAMPTON, Athens, Ga. Filed Sept. 14, 1887. Serial No. 249,691. (No model.)



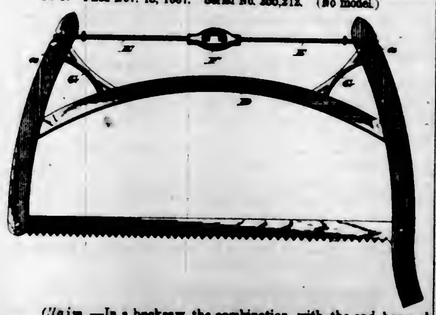
Claim.—1. A passenger-ticket with a description of the purchaser or party to use the same, sealable by itself, substantially as described.

2. A railroad-ticket having a middle portion bearing a descriptive list with space for signature, a flap at one end bearing another descriptive list, and an additional flap for sealing, substantially as described.

3. A railroad-ticket printed on its reverse side with matter indicative of personal description and having an end flap printed and an end flap for a cover, substantially as described.

4. A coupon-ticket consisting of a middle strip composed of a number of connected printed forms, each having a descriptive end flap and a covering end flap, the covering end flap to seal the ticket, substantially as set forth.

380,567. BUCKSAW-BRACE. WILLIAM HANKIN, Sr., Brooklyn, N. Y. Filed Nov. 15, 1887. Serial No. 255,212. (No model.)



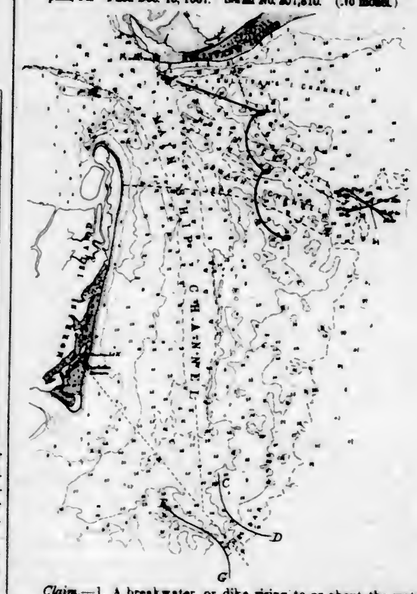
Claim.—In a bucksaw, the combination, with the end bar and handle-bar, of the longitudinal bowed brace having the upward curve, the oblique braces G, having their ends forked, and one end of each brace secured to the upper side of the longitudinally-bowed brace and the opposite end secured to the upper inner side of the end bar and handle-bar, respectively, as set forth.

380,568. ELECTRIC BELT. CORNELIUS B. HARRIS, London, England. Filed Dec. 13, 1883. Serial No. 114,954. (No model.) Patented in England Oct. 13, 1883, No. 4,881.



Claim.—An electric body-belt for curative purposes, consisting of the band A, having outer pockets, B, the batteries *b*, flap C, covering the batteries, a rheotome and induction-coil connected with said batteries, and terminal electrodes for applying the current to the body of the wearer, substantially as described.

380,569. DIKE OR BREAKWATER. LEWIS M. HAUPT, Philadelphia, Pa. Filed Dec. 13, 1887. Serial No. 257,810. (No model.)



Claim.—1. A breakwater or dike rising to or about the water-level, composed of a combination of curves so arranged as to resist and decompose the flood resultant over a portion of the outer bar, and at the same time to permit the free ingress of the tidal prism to the inner basin, substantially as described.

2. A breakwater rising to or about the water-level and composed of a combination of curves and right lines so arranged as to resist and decompose the flood resultant over a portion of the outer bar, and at the same time to permit the free ingress of the tidal prism to the inner basin, substantially as described.

3. The breakwater herein described, rising to or about high water and consisting of a concave curved portion and a flank angularly approaching but disconnected from the shore, to produce a reaction and compression upon that part of the flood intended to scour out and maintain the beach-channel, substantially as set forth.

4. A breakwater rising to or about high-water level and comprising one or more curves having their cusps or salients placed so as to cut the advancing waves and resolve them into components along the concave faces of the structure, substantially as described.

5. A breakwater rising to or about high-water level and for improving the channels of rivers and harbors, said breakwater consisting of one or more semi-ellipses having at the shore end a straight or approximately-straight flank, substantially as described.

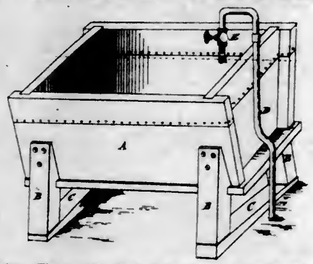
6. A dike for improving channels, said dike being composed of curves concave toward the current so disposed as to withdraw a part of the current from one channel and divert it into another, substantially as described.

7. A reaction-dike in tidal waters, composed of curves concave toward the current and disconnected from the main shore-lines, and so disposed as to divert part of the current force from one channel into another, substantially as described.

8. The combination of the breakwater composed of a series of

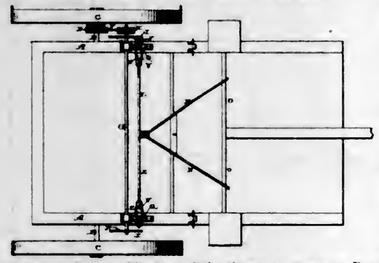
intersecting arcs and a straight or slightly-curved flank, and the dike composed of compound or reverse curves for conserving the energy of the inner forces, substantially as described.

380,570. **WATERING-STAND.** ATHANASIUS HAUSMAN, Louisville, Ky. Filed Mar. 24, 1887. Serial No. 232,444. (No model.)



Claim.—The combination of the reservoir or trough A, having legs B B, incline plane pieces C C, and supply-pipe D, as above described, in combination with the pivot-post G, bolt H, and washer-board F, substantially as described, and for the purpose set forth.

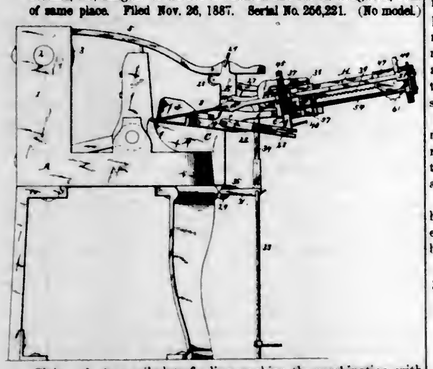
380,571. **CORN-PLANTER.** JAMES L. HENDERSON, Bloomington, Ind. Filed Jan. 23, 1888. Serial No. 261,558. (No model.)



Claim.—1. The combination of the frame A, the axles B, and driving-wheels C, with the sprocket-wheels D H, driving-chain F, shaft G, provided with the cam-disks I J, endwise-moving rod L, braces N, and the slide-rod O, substantially as shown and described.

2. The combination of the rod L, provided with a slotted adjustable casting at each end, with a U-shaped strap-iron having rollers journaled thereon, and which rollers pass through the slots in the castings, substantially as set forth.

380,572. **NAIL-PLATE FEEDER.** CHAS. R. HOUGHTON, Northumberland, Pa., assignor to Horace R. Johnson and Ida M. Houghton, both of same place. Filed Nov. 26, 1887. Serial No. 256,231. (No model.)



Claim.—1. In a nail-plate-feeding machine, the combination, with a rocking standard to operate the feed mechanism, of a pitman formed with a notch to detachably engage the head of the rocking standard, a sleeve fitted to slide on the rocking standard, and a lever to lift the sleeve and disengage the notch of the pitman from the head of the rocking standard, substantially as described.

2. In a nail-plate-feeding machine, the combination, with a rocking standard to operate the feed mechanism, of a pitman formed with a notch to detachably engage the head of the rocking standard, a sleeve fitted to slide on the rocking standard, a spring-actuated latch pivoted in the said sleeve to engage the rocking standard and hold the sleeve down thereon, a trip-lever moved by the progression of the nipper-rod carriage to release the said latch, and a lever to throw up the sleeve on the rocking standard, substantially as described, and for the purpose stated.

3. In a nail-plate-feeding machine, the combination, with a supporting-bar fixed to the bed of the nail-machine, of a rocking standard pivotally mounted in said support, a sleeve fitted to slide on said standard, a sliding box mounted on the projecting end of the supporting-bar, a connecting rod or bar between the sliding sleeve on the rocking standard and the sliding box to reciprocate the latter, and a rotatable nipper mechanism mounted on the sliding box, substantially as described.

4. In a nail-plate-feeding mechanism, the combination, with a supporting-bar fixed to the nail-machine, of a rocking standard journaled in the supporting-bar, a sliding box mounted on the projecting end of the supporting-bar and arranged to be reciprocated by the movements of the rocking standard, a nipper-rod carriage mounted pivotally on the sliding box to travel therewith, a ratchet-wheel having an apertare through its axis to take the nipper-rod journaled on the carriage, a nipper-rod journaled to the sleeve on the carriage and projected through the axis of the ratchet-wheel, a vibratory lever fixed on the journal of the rocking standard, and a ratchet-bar connected to the end of said vibratory lever and arranged to mesh with the ratchet-wheel on the nipper-rod, substantially as described, and for the purpose stated.

5. The combination, with the supporting-bar, the rocking standard, and the sliding box mounted on the supporting-bar and arranged to be reciprocated by the rocking standard, of the nipper-rod carriage pivotally mounted on the sliding box, a ratchet-wheel having a hollow journal mounted on the carriage, a sliding sleeve, as D, mounted on the carriage, a nipper-rod having one end journaled in the sliding sleeve and projected through the journal of the ratchet-wheel and having a gear-wheel on the end, a feeding-screw having a gear to mesh with the gear on the nipper-rod and projected through a fast and loose screw-box, a rack-bar to engage the ratchet on the nipper-rod, and the vibrating lever to operate the ratchet-bar, substantially as described.

6. The combination, in a nail-plate-feeding machine, with a rocking standard, a support carrying a sliding box, a nipper-rod support pivotally mounted on the sliding box, and a rotatable nipper-rod, of a feed-screw to carry the nipper-rod forward, and a loose box having a threaded bed, whereby the screw-rod can be carried back with a sliding movement, and a lever actuated by the rocking standard to clamp and unclamp the loose box, substantially as described.

7. In a nail-plate-feeding mechanism, the combination, with the rocking standard, the supporting-bar, and the sliding box, of the nipper-rod support or carriage pivotally mounted on the sliding box, a spring, as 41, to draw the nipper-rod support down, and a lever, as *d*, fixed on the journal of the nipper-rod support to raise the support, substantially as described, and for the purpose stated.
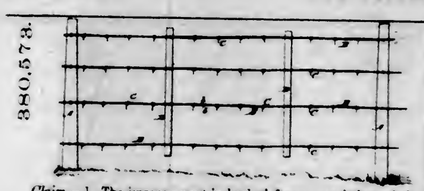
8. In a nail-plate-feeding machine, the combination, with the rocking standard, the supporting-bar, and the sliding box mounted on the projecting end of the support, of the nipper-rod support pivotally mounted on the sliding box, a rotatable nipper-rod mounted on the nipper-rod support and formed with an angular handle, and a spring, as 49, on the nipper-rod support, arranged with its free end to throw the nipper-rod flat on the bed-knife of the machine, substantially as described.

9. In a nail-plate-feeding machine, a rotatable and reciprocating nipper-rod having an angular handle projected loosely through a ratchet-wheel bar to rotate the ratchet-wheel and nipper-rod toward the machine, and a lever to reciprocate the ratchet-bar, substantially as described.

10. The combination, with the rocking standard, the supporting-bar, the sliding box, and the feed-screw, of the loose box threaded to engage the feed-screw, and the connecting rod or lever to lift the loose box and clamp the screw, substantially as described.

380,573. **BARBED FENCE.** ORLANDO HUFFMAN, Friend, Nebr., assignor of one-half to Hamilton W. Hewit, same place. Filed Nov. 12, 1887. Serial No. 254,961. (No model.)



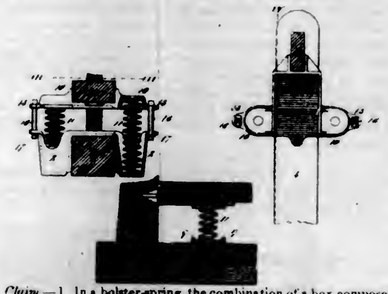


Claim.—1. The improvement in barbed fences, consisting of the posts, the cables extended therebetween and arranged one above the other, and the barbs secured thereto at intervals, said barbs projecting in one direction only from the cables, and all the barbs being projected in approximately a common plane and downward from the cables, substantially as set forth.

2. In a fence, a barbed cable consisting of two lengths or strands of wire extended side by side and a number of barbs secured at intervals thereto, the barbs being arranged in alternating series, those of one series being twisted around the strands of wire, binding them close together, while the barbs of the other series are passed between said strands, slightly separating them, and also twisted around such strands, substantially as set forth.

3. The improvement in barb fences herein described and shown, consisting of the posts, the cables formed of two strands of wire extended alongside of each other and not twisted together, such cables being arranged one above the other, the barbs secured to said cables and arranged in alternating series, the barbs of one series being twisted around the cables and binding the same closely together, while the barbs of the other series are twisted around and also passed between the strands, slightly separating the same, and the cleats or battens lapped against and extending between the cables and secured to them, substantially as and for the purposes specified.

380,574. **BOLSTER-SPRING FOR WAGONS.** JAMES M. HUNTER, St. Louis, Mo., assignor to the American Bolster Spring Company, same place. Filed Jan. 10, 1888. Serial No. 260,346. (No model.)

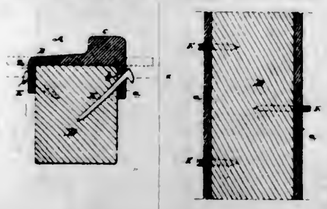


Claim.—1. In a bolster-spring, the combination of a box composed of an upper and a lower member, and springs located between the members, the lower member consisting of two pockets united by a web and having flanges 5, substantially as and for the purpose set forth.

2. In a bolster-spring, the combination of the box composed of two members and springs located between the members, the lower member consisting of pockets connected by a web having strengthening flanges 7, substantially as and for the purpose set forth.

3. In a bolster-spring, the combination of the springs and box composed of two members, the upper member having projections 14, sockets 10, and perforated lugs 13, and the lower member having perforated lugs 8 and bolts passing through the perforated lugs, substantially as and for the purpose set forth.

380,575. **STREET-RAILWAY.** RUDOLPH M. HUNTER, Philadelphia, Pa. Filed Oct. 14, 1887. Serial No. 252,297. (No model.)



Claim.—1. A street-railway rail having a base portion and a raised treading portion and very thin vertical flanges extending down from each edge of the rail, and having holes through its flanges arranged out of line, in which the space bounded by the under surface of the rail and the flanges is rectangular or substantially rectangular, in combination with a longitudinal stringer or sleeper of wood having its upper surface rectangular or substantially rectangular, so as to fit into the rail, and of the same width as the space between the vertical thin flanges to avoid cutting, and spikes driven in through the holes in the flanges into the sleeper, so that they are staggered.

2. The combination of the rail A, having the base portion and the raised treading portion and the very thin vertical depending flanges *a*, provided with holes *b*, the holes in one flange being out of line with those in the other flange, the wooden stringer or sleeper D, having a flat top and of the same width as the space between the depending flanges *a*, to avoid cutting, over the upper part of which the rail fits, and spikes E driven through said holes into the stringer or sleeper from opposite sides, substantially as shown.

3. The combination of the rail A, having the base portion and the raised treading portion and the very thin vertical depending flanges *a*, provided with holes *b*, the holes in one flange being out of line with those in the other flange, the wooden stringer or sleeper D, having a flat top, over the upper part of which the rail fits without cutting the stringer, and spikes E driven obliquely and downward through said holes into the body of the wooden stringer or sleeper from opposite sides.

4. A railway-rail having a cross-section formed with a raised or thickened treading portion of less width than the rail, and having very thin vertically-downward-extending flanges provided with tapering holes for oblique spikes, and forming a rectangular under surface, whereby the mass of metal is above for the support of the vehicles, and provided with the thin flanges to strengthen the rail against warping and provide a means of securing the rail to the stringer without exposing the spikes or waste of metal and allow the paving to be laid close up to the top of the rail on both sides.

5. A street-railway rail having a flat under surface, a raised and thick treading part, a base part extending from the edge to the treading part and gradually increasing in thickness, and a thin vertical flange extending down from the said base portion and directly under the edge thereof, and provided with holes for the passage of holding-down spikes.

6. The combination of a longitudinal rectangular stringer of wood having a flat top, a rail having a base part and thick treading part and a flat under surface of a width equal to the width of the stringer, and also provided with a thin vertical flange projecting down from the rail and arranged upon the side or surface of the wooden stringer, and spikes driven in through the flange and into the stringer.

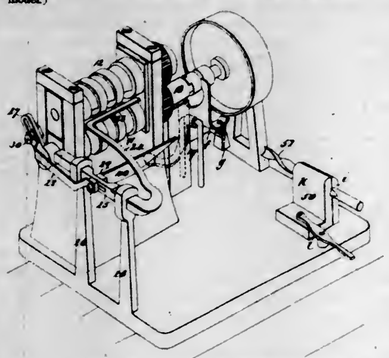
7. The combination of a longitudinal rectangular stringer of wood having a flat top, a rail having a base part and thick treading part and a flat under surface of a width equal to the width of the stringer, and also provided with a thin vertical flange projecting down from the rail, provided with tapering spike-holes, and arranged upon the side or surface of the wooden stringer, and spikes driven in through the flange and obliquely down into the stringer.

380,576. **VEST-PROTECTOR.** BENJAMIN IVES, Chicago, Ill. Filed Dec. 28, 1886. Serial No. 222,792. (No model.)



Claim.—A vest-protector formed of an apron having a perforated binding along its upper edge, and in combination therewith the S-shaped hooks C, received in the holes of the binding and adapted to engage the edges of the vest-pockets, substantially as herein shown and described.

380,577. APPARATUS FOR MAKING DRILLS. JOHN H. KANE, Huntington, W. Va. Filed May 27, 1887. Serial No. 239,539. (No model.)



Claim.—1. In a drill-making machine, the combination, with grooved rolls, of a reciprocating gage held in front of the rolls and operated from the shaft of one of the said rolls, substantially as herein shown and described.

2. In a drill-making machine, the combination, with a pair of rolls provided with grooves having cut-away portions, of a gage held in front of the rolls and a connection between the gage and the shaft of one of the said rolls for reciprocating the same, substantially as herein shown and described.

3. In a drill-making machine, the combination, with grooved rolls, the shaft of one of the rolls being provided with a crank-arm, of a gage held in front of the rolls, a slide to which the gage is attached, and a pitman connected to the said crank-arm and slide, substantially as herein shown and described.

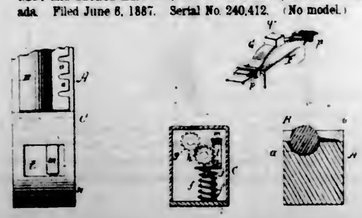
4. In a drill-making machine, the combination, with a pair of grooved rolls formed with cut-away portions, and intermeshing gears carried by the shafts of the said rolls, of a clutch-section carried by one of the said gears, a second clutch-section carried by the driving-section, a lever for throwing the clutch-sections in and out of gear, and a stopping device operated by the clutch-operating lever, substantially as herein shown and described.

5. In a machine for making drills, the combination, with a pair of rolls formed with graduated grooves having cut-away portions 5, of intermeshing gears carried by the rolls, one of said gears being made integral with a sleeve which constitutes the bearing for one end of the power-shaft, a clutch-section formed upon said sleeve, a sleeve mounted upon a feather carried by the main power-shaft and formed with a second clutch-section, a means for throwing the two clutch-sections into engagement, and a means for automatically releasing the said sections, a gage, a slide to which said gage is connected, and a pitman connected to the slide and to a crank-arm that is carried by one of the roller-shafts, substantially as described.

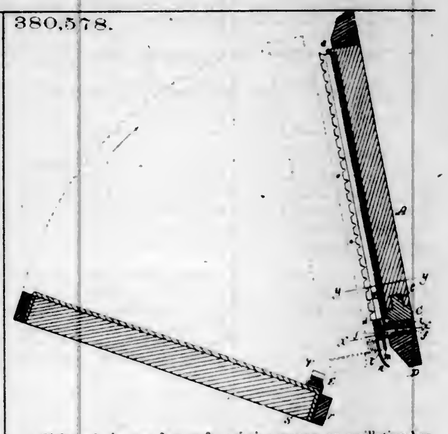
6. In a drill-making machine, the combination, with a pair of grooved rolls and intermeshing gears on the shafts of the said rolls, of a grooved sleeve attached to one of the gears and a spring-pressed stop for engaging the groove of the said sleeve, substantially as herein shown and described.

7. In a drill-making machine, the combination, with a pair of grooved rolls, intermeshing gears on the shafts of the rolls, a clutch, one section of which is provided with a groove, and clutch-operating lever, of a spring-pressed stop for engaging the groove, provided with an arm engaged by the clutch-operating lever, substantially as herein shown and described.

380,578. PERFORATOR FOR PRINTING-PRESSES. ROBERT KENNEDY and GEORGE KENNEDY, New Westminster, British Columbia, Canada. Filed June 6, 1887. Serial No. 240,412. (No model.)



380,578.



Claim.—1. In a perforator for printing-presses, an oscillating bar provided with a series of perforating-teeth, and means for rocking the bar to bring the teeth into the position of use, substantially as described.

2. In a perforator for printing-presses, the combination of the bar A, provided with the longitudinal semicircular groove *a*, the bar B, pivoted on the bar A and provided with a series of perforating-teeth, *o*, the pinion *g*, secured to one of the bearings of the bar B, the intermediate pinion, *h*, the spring-actuated rack *l*, provided with the finger *m*, and means, substantially as shown and described, for pushing in the said rack.

3. In a perforator for printing-presses, the combination of the bar A, provided with the longitudinal semicircular groove *a*, the bar B, pivoted on the bar A and provided with a series of perforating-teeth, *o*, the pinion *g*, secured to one of the bearings of the bar B, the intermediate pinion, *h*, the spring-actuated rack *l*, provided with the finger *m*, and the yielding contact formed of the plate F and bowed spring G, provided with the block *q*, substantially as described.

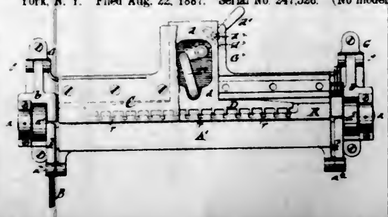
4. The combination, with the finger *m*, rack *l*, spring *j'*, pinions *g h*, and mechanism connected therewith, of the apertured guard-plate *n*, substantially as described

380,579. MEANS FOR OPERATING FEED-ROLLS. LEONARD KISSNER, Lancaster, Ohio, assignor to the Hocking Valley Manufacturing Company. Filed Oct. 20, 1887. Serial No. 252,902. (No model.)

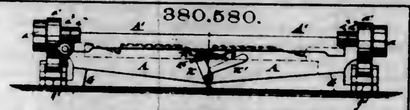


Claim.—The combination, with a roller journaled in fixed bearings and having a shaft extending therefrom with a driving gear-wheel thereon, of an adjustable roller journaled in movable bearings and provided with a universal joint, a shaft having a gear-wheel thereon meshed with the driving gear-wheel, said shaft having a universal joint at one end, and an angular bar adapted to have a sliding connection in the angular openings of said universal joints, substantially as set forth.

380,580. MACHINE FOR FOLDING SHEET METAL. NICOLAS KOENIG, North Tarrytown, assignor to Jacob Brombacher's Sons, New York, N. Y. Filed Aug. 22, 1887. Serial No. 247,526. (No model.)



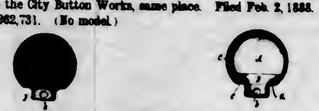
380,580.



Claim.—1. In a machine for folding sheet metal, the combination, with a stationary plate, around the edge of which the sheet metal is to be folded, of a folding-bar, a swinging frame by which the folding-bar is supported, a spring-clamp below the stationary plate, and an adjustable gage back of said clamp, the clamp being provided with a continuous edge, and with recesses back of said edge for the projections of the gage, substantially as set forth.

2. In a machine for folding sheet metal, the combination, with a stationary plate around the edge of which the sheet metal is to be folded, of a folding-bar, a clamp below the stationary plate, a swinging frame by which the clamp is supported and in which the folding-bar is journaled, and an adjustable gage back of the clamp, said folding-bar being provided with two sections, a laterally-adjustable section and a hinged section, and with a pivoted lever connected to the laterally-adjustable section, and a clamp-screw for clamping said section after the same has been adjusted, substantially as set forth.

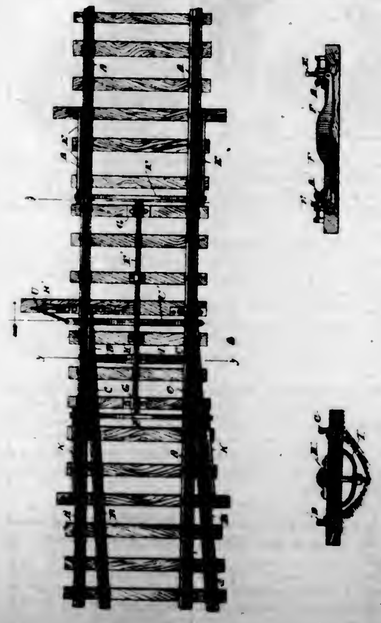
380,581. BUTTON. RUDOLPH LIEBMANN, New York, N. Y., assignor to the City Button Works, same place. Filed Feb. 2, 1888. Serial No. 262,731. (No model.)



Claim.—1. A ball-button consisting of the globular shell A, formed of a single piece of metal, a cloth, C, covering the same and partly lying inside the shell, and a circular metal back-plate, B, having an eye, *b*, lying within the shell and holding the edge of the cloth, substantially as described.

2. A ball-button consisting of the globular shell A, formed from one piece of sheet metal and open at its bottom, a metallic back, B, containing an eye, *b*, and a flaring rim, *c*, extending into the interior of the shell, and a cloth, C, tightly enveloping the shell and having its peripheral portion wedged between the shell and the flaring rim of the back, substantially as shown and described.

380,582. RAILROAD-SWITCH. LEROY J. LINDSEY, Seymour, Iowa. Filed Sept. 22, 1887. Serial No. 250,430. (No model.)



Claim.—1. The combination, with the stationary main rails and siding-rails of a car-track, of the movable switch-rails, the longitudinal rock-shaft connected therewith by a laterally-moving and vertically-adjustable curved cross-bar, said shaft being provided with a depending tap, and the switch-operating levers fulcrumed to the track and connected with the rock-shaft by transverse bars, whereby the switch-rails may be automatically operated by a passing car or train, substantially as described.

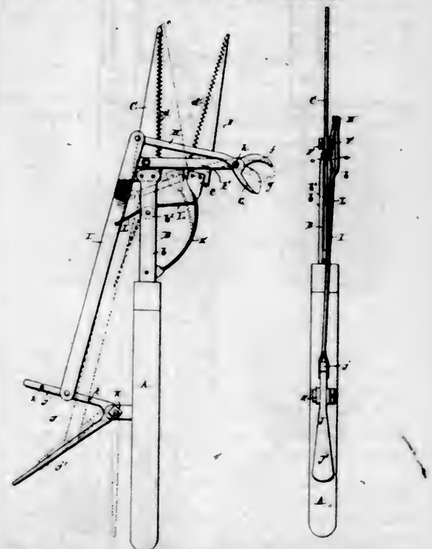
2. The combination, with the movable switch-rails, of the adjustable curved cross-bar, to the end of which said rails are pivoted, the arm or tap provided with an adjusting-nut to which said cross-bar is secured, and the operating rock-shaft carrying said arm or tap, and arranged to support the cross-bar and switch-rails, so as to reduce friction between the same and the ties, substantially as described.

3. The combination, with the vertical shaft, its upper and lower arms, and the laterally-shifting shaft and its wheels for operating the switch-rail shifting-levers, of the target-signal secured to the vertical shaft, whereby the position of the switches will be indicated from the moving car or train along the line of the track, substantially as described.

4. The combination, with the main rails of the track, of the levers L L, fulcrumed at each side of the same, the said levers being free each at one end and secured to the rocking cross-bar F at the other, so as to operate the rock-shaft to shift the switch-rails automatically upon the passage of a car or train, an adjustable curved bar connecting and supporting the movable switch-rails, and a rock-shaft with its tap connected to said curved bar, substantially as described.

5. The combination, with the movable switch-rails, of the inclined bearing-plates upon which the ends of the same are arranged to slide, and the adjustable curved bar connecting the movable switch-rails, whereby the said rails are guided to their seats and held there, and a rock-shaft with its tap connected to said curved bar, substantially as specified.

380,583. PRUNING IMPLEMENT. MICAJAH C. MALONE, Palmyra, Ill. Filed Nov. 29, 1887. Serial No. 256,455. (No model.)



Claim.—1. In a pruning-tool, the combination of the saw-blade firmly secured to the shank, the similar and opposing saw-blade secured to the free end of a leaf-spring, having its other end secured to the shank, the knife having its arm pivoted upon a bar secured to the fixed saw-blade, and mechanism, substantially as described, whereby both the movable saw-blade and the knife may be operated simultaneously, substantially as specified.

2. In a pruning-tool, the combination, with the handle, shank, and saw-blade firmly secured to the shank, of the leaf-spring, the saw-blade secured to the free end of said spring, the pulley journaled to the shank, the angle-lever pivoted to a stud secured to the handle, the link-bar pivoted on the outstanding arm of said lever, and the wire or rope connecting said link-bar and the free end of the leaf-spring and

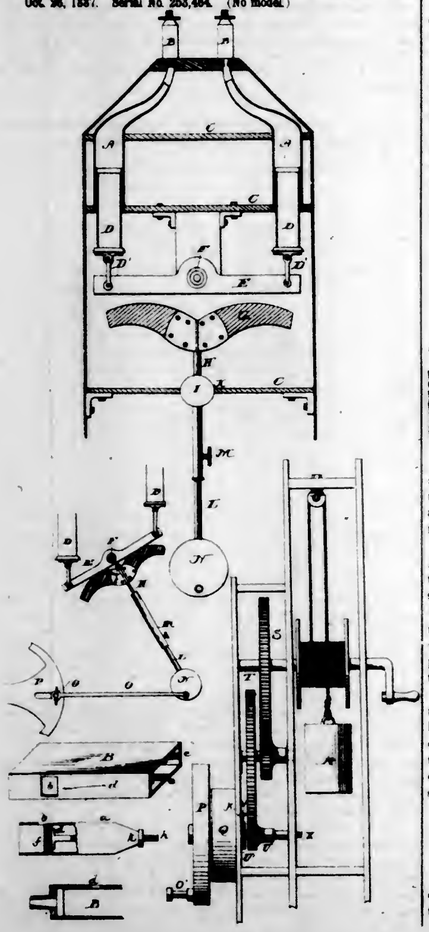
running against the said pulley on its outer edge, substantially as specified.

3. In a pruning-tool, the combination, with the handle, the shank secured thereto, the saw-blade secured to said shank, and the bifurcated guide-bar secured to said saw-blade, of the leaf-spring secured to the shank at its inner end, the saw-blade secured to the free end of said spring and moving between the arms of the guide-bar, and means, substantially as described, whereby the saw-blade secured to the spring is drawn to the fixed saw-blade, substantially as specified.

4. In a pruning-tool, the combination, with the handle, the shank, and the guide-bar secured to the saw-blade fixed to said shank, and having on its end the hook with its concavity facing the handle, of the convex-edged knife provided with a lever-arm and pivoted at its junction with the said arm to the guide-bar immediately to the inner side of the hook, the link-bar pivoted to the end of said lever-arm, and the angle-lever pivoted at its angle to a stud secured to the handle and having in its outstanding arm a series of adjusting-openings for the attachment of the adjacent end of the link-bar, substantially as specified.

5. In a pruning-tool, the handle, the rigid saw-blade, and the rigid pruning-hook secured to said blade, combined with the movable saw-blade, the pivoted shearing-knife, and the operating-lever connected to both the movable saw-blade and the pivoted shearing-knife, as set forth.

380,584. FOG-SIGNAL. EDGAR E. MANN, Newburg, N. Y., assignor, by mesne assignments, to William J. Scott, same place. Filed Oct. 26, 1887. Serial No. 253,464. (No model.)



Claim.—1. The combination, in a fog-horn, of two air-forcing cylinders, two pistons operating therein, a single lever operating the pistons, and a fog-horn connected with each cylinder.

2. In a fog-horn, the combination of two pipes, two air-cylinders connected therewith without valves, a piston in each air-cylinder, a rock-lever connected to the pistons, and a pendulum by which the rock-lever is actuated.

3. The combination, in a fog-horn, of two pipes, a piston in each pipe, a pivoted lever to which said pistons are connected by rods, as described, and a pendulum supported on a universal bearing having a mushroom head in position to engage said lever as the pendulum swings, as set forth.

4. The combination, in a fog-signal, of a rocking lever connected to the driving-pistons, a pendulum with mushroom head in position to engage the lever, and an extensible rod to said pendulum, as set forth.

5. In a fog-signal, the combination, with two horns, their pistons, and the actuating-lever, of a pendulum having a mushroom head and an extensible shaft, and a rotating disk connected to said pendulum, as set forth.

6. In a fog-signal, the combination, with the air-forcing pistons, of an actuating-pendulum therefor, said pendulum having a rod adjustable in length, and a disk connected by a pitman to said pendulum, said pitman having an adjustable pin-connection in the face of the disk, as set forth.

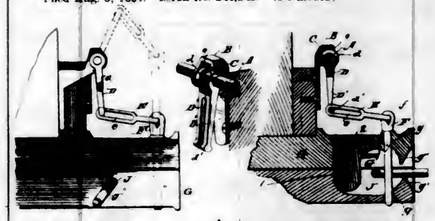
7. The combination, with the driving-pendulum of a fog-signal, of a driving spring-motor and a weight-motor, both spring and weight being connected to the axle of the driving-disk, as set forth.

8. In a fog-signal, a pipe or horn having a vibrating tongue at one side, a muffler in condition to engage said tongue, and a set-screw by which the position of the muffler relative to the tongue may be adjusted.

9. In a fog-signal, the combination of two horns, air-forcing mechanism, substantially as described, for sounding the horns, and mufflers bearing on the tongues and adjustable relatively thereto, by which the tones or pitch of the horns may be varied, as set forth.

10. The combination, in a fog-signal, of a plurality of horns, actuating-plungers therefor, and an adjustable pendulum driving mechanism, by which the stroke of the plungers may be regulated or varied substantially as described.

380,585. CAR-COUPLING. ANTOINE MÜLLER, Terra Haute, Ind. Filed Aug. 5, 1887. Serial No. 246,243. (No model.)



Claim.—1. The combination of the coupling-pin, the shaft A, the arm D, having a longitudinal slot, D', and cross-bar *d'*, and the connecting-rod E, connected at one end with the coupling-pin, and having a longitudinal slot, *e*, to receive the cross-bar *d'*, substantially as set forth.

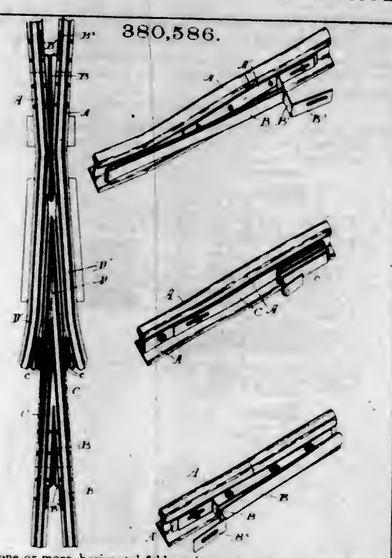
2. The combination of the bracket B, having stop-wall 4, the shaft A, the arm D, operated by said shaft and arranged to engage wall 4, the coupling-pin, and the connection between the same and the arm D, substantially as set forth.

3. The combination of the draw-head, the coupling-pin having a non-circular opening, the connecting-rod having a lateral stud provided with a non-circular head conformed to the opening in the coupling-pin, and the arm whereby to elevate said connection and pin, substantially as set forth.

4. The combination of the draw-head, the coupling-pin, the connecting-rod connected at one end with said pin and provided with a longitudinal slot, *e*, the arm D, having a slot, D', and provided with a cross-bar to enter slot *e*, and also provided with lugs *d*, journaled on the shaft A, the shaft A having a pin, C, arranged between the lugs *d* of the arm D, and the bearing-bracket B, having a stop-wall, 4, substantially as set forth.

380,586. FOOT-GUARD FOR FROGS, SWITCHES, &c. GEORGE NEVERS, Brunswick, Me. Filed Jan. 12, 1888. Serial No. 260,527. (No model.)

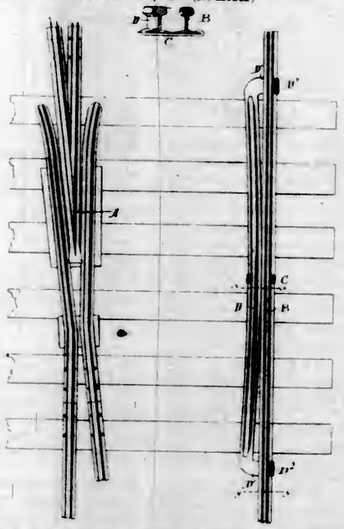
Claim.—1. A foot-guard for railway frogs, switches, &c., which consists of a bar of iron or other like material secured by one end to the side of the angular opening and extending into the said opening,



with one or more horizontal folds or laps, whereby said space is sufficiently filled to prevent the entrance of the foot and the guard rendered adjustable to spaces of different width, substantially as shown.

2. A foot-guard for the tapering spaces formed in frogs, switches, &c., which consists of a bar of iron or other like material, its two ends attached to the sides of the opening and being folded or bent to form a tongue or point extending into said opening, and horizontal shoulders or offsets near the ends, whereby said space is filled to prevent the entrance of the foot, substantially as shown.

380,587. GUARD-RAIL. GEORGE NEVERS, Brunswick, Me. Filed Jan. 12, 1888. Serial No. 260,528. (No model.)

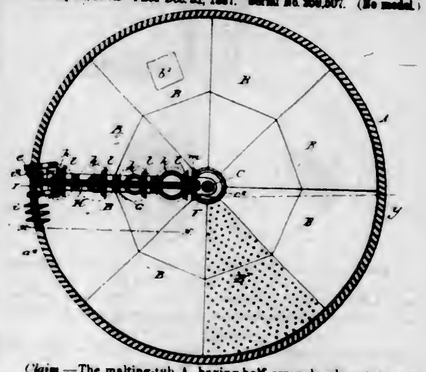


Claim.—1. A guard-rail having the lower flange at each end extended and bent horizontally outward and adapted to be secured to the lower flange of the main rail, substantially as shown.

2. A guard-rail having its lower flange at each end extended and bent horizontally outward and adapted to be hooked over the outer edge of the lower flange of the main rail, substantially as shown.

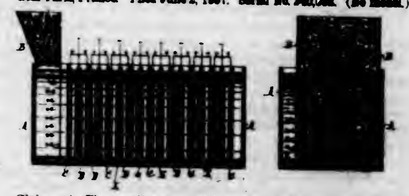
3. A guard-rail having the lower flange at each end extended and bent horizontally outward and connected with the main rail, in combination with a link for clasping the lower flanges of the main and guard rails, substantially as shown.

380,588. MALTING-MACHINE. HENRY HOTH and JOHN HOTH, Davenport, Iowa. Filed Dec. 31, 1887. Serial No. 259,507. (No model.)



Claim.—The malting-tub A, having half screw-heads cut on top of its wall, false perforated bottom B, air-conducting box or tube D, and main vertical drive-shaft C, in combination with a laterally-swinging wing, G, having one or more vertical shafts, H, with screw-threaded hollow perforated cones J attached, and also having a right-angled shaft, I, and worm *i* attached, all geared with a horizontal drive-shaft, K, connected with said wing, the whole suspended from said vertical drive-shaft, so that said worm may engage in said half screw-threads on the wall of said tub, and said horizontal drive-shaft geared with said vertical drive-shaft, whereby said cones may be rotated and said wing with its attachments caused to traverse around the wall of said tub by the rotation of said worm in said half screw-threads, substantially as described.

380,589. GALVANIC BATTERY. CHARLES R. O'KEENAN, St. Cloud, near Paris, France. Filed June 2, 1887. Serial No. 240,082. (No model.)



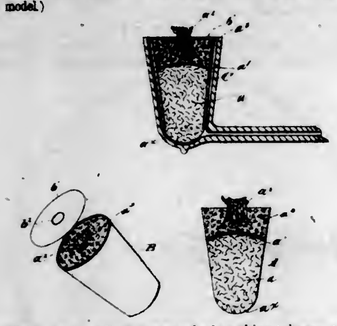
Claim.—1. The combination, with a galvanic battery, of a chamber or receptacle for containing crystals of the salt used for its exciting solution, and communicating with it through the medium of a depth-hole near the top of the battery and one or more other holes at lower levels, whereby the liquid from the battery enters said receptacle through said depth-hole, dissolves the crystals, and passes back to the battery through a hole at a lower level, thereby maintaining the solution at an approximately constant saturation and on a level with said depth-hole, and means for automatically supplying the battery with desaturating-liquid above the level of said depth-hole.

2. The combination, with a galvanic battery, of a receptacle for containing crystals of the salt used for its exciting solution, and communicating with it through the medium of holes at different levels, of which the upper hole is below the level of the liquids in the battery and the lower hole is above the bottom of the battery, means for automatically supplying the battery with desaturating-liquid to a level above said upper hole, and means for automatically discharging from the battery the spent liquid, and thereby keeping the level thereof below said lower hole.

3. The combination, with a galvanic battery, of an outflow-tube leading from the lower portion thereof and extending downward, and a cup containing a dense liquid, in which the bottom end of said tube is sealed, substantially as set forth.

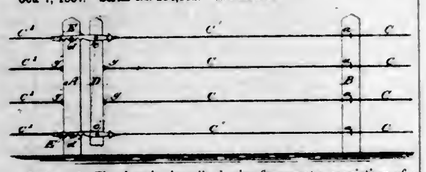
4. The combination, with a galvanic battery, of an outflow-tube leading from a lower portion thereof and extending downward, a mercury-cup in which the bottom end of said tube is sealed, and a discharge-tube leading from said cup above the level of the mercury therein, substantially as set forth.

380,590. CARTRIDGE FOR TOBACCO-PIPES. GEORGE H. PEABODY, Kansas City, Mo. Filed Jan. 10, 1888. Serial No. 260,373. (No model.)



Claim.—A cartridge composed of smoking-tobacco compressed in the shape of and adapted to fit the bowl of a pipe, having a portion of said cartridge composed of kiln-dried material and a division-leaf separating the kiln-dried from the moistened tobacco, as described.

380,591. WIRE GATE. EDWARD R. POTTER, Grinnell, Iowa. Filed Oct. 7, 1887. Serial No. 251,682. (No model.)

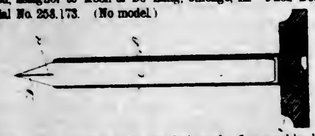


Claim.—1. The herein-described wire fence-gate, consisting of a series of horizontal wires extending from a permanent point of attachment to a fixed post to a perpendicular bar removably connected to an opposite post through latches pivoted to said bar, and bearing series of notches adapted to engage at various points of tension with latch-pins upon said opposite post when the gate-wires are drawn taut.

2. The herein-described wire fence-gate, consisting of a series of horizontal wires extending from a permanent point of attachment to a fixed post to a perpendicular bar removably connected to an opposite post through latches pivoted to said bar, which latches are provided at one end with a tail-piece for attachment of a gate-wire and at the opposite end with serial notches adapted to engage at various points of tension with latch-pins upon said opposite post when the gate-wires are drawn taut.

3. In a wire gate, the combination, with the connecting-bar, of the pivoted latch having a tail-piece for gate-wire connection adapted to lift the engaging end of said latch when said bar is advanced toward the latching-post, as described.

380,592. PAPER-HOLDING SPINDLE. SAMUEL POWELL, Ravenswood, assignor to Koen & De Lang, Chicago, Ill. Filed Dec. 17, 1887. Serial No. 258,173. (No model.)



Claim.—1. A desk-spindle consisting of a flattened body adapted to hold the papers and prevent the shifting or turning around of the same while held thereon, a pointed head adapted to pierce the papers and facilitate their filing, and a suitable base to which the flattened body is secured, substantially as set forth.

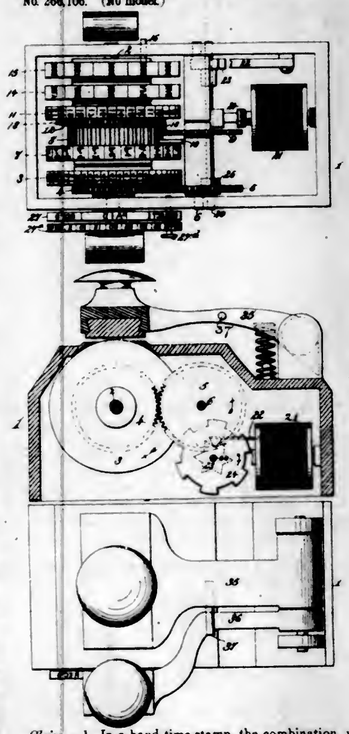
2. A desk-spindle having a flattened hollow standard secured to a suitable base, in combination with a transfer-stem adapted to enter the hollow of the standard, and pointed, so as to pierce the papers, substantially as described.

3. A desk-spindle having a flattened hollow standard secured to a suitable base, a transfer-stem adapted to enter the hollow of the standard, and a barbed head, substantially as described.

380,593. COMPOSITION FOR PRESERVING WOOD, &c. PIERRE L. GRABARTE and ELISABETH D'ESCALONNE, Paris, France. Filed Aug. 24, 1887. Serial No. 247,732. (No specimens.)

Claim.—A composition of matter for preserving wood, grain, seeds, cordage, fabrics, and other vegetable matters, consisting of a liquid composed of a solution of acetate of alumina, subacetate of lead, pyrolignite of lead, and glycerine, as described, and in the proportions specified.

380,594. ELECTRICAL TIME-STAMP. CHARLES A. RANDALL, New York, N. Y. Filed Aug. 19, 1886. Renewed Mar. 3, 1888. Serial No. 266,106. (No model.)



Claim.—1. In a hand time-stamp, the combination, with a series of type-wheels and an impression pad or lever for taking impressions from said type-wheels, of an electric motor comprising an electro-magnet, a rotary armature, substantially as shown, and means, substantially as described, for partly rotating the armature to a determined position, intermediate gearing for driving the type-wheels, and a time-keeper or clock mechanism for controlling the action of the electric motor, substantially as herein set forth.

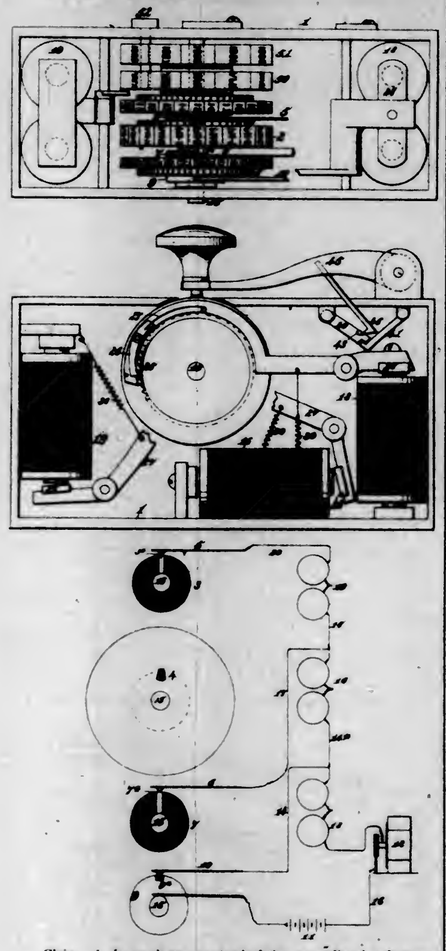
2. In a hand time-stamp, the combination, with the type-wheels, the impression-pad, the electromotor for rotating the type-wheels, and the clock-movement or time-keeper for controlling the electromotor, of auxiliary type-wheel or type-wheels and an auxiliary impression-pad, substantially as set forth.

3. In a time-stamp, the combination of the electromotor device consisting, essentially, of a revolving shaft, an armature having radial projections mounted on said shaft, means, substantially as described, for partly rotating the armature to a determined position, and an electro-magnet, with means, substantially as described, for communicating motion from the armature-shaft to a series of type-wheels, a circuit-wheel, and a clock-movement controlling the circuit-wheel, substantially as set forth.

4. In a time-stamp, the combination of the rotary shaft, the armature mounted thereon, the star-wheel also fixed on said shaft, and the spring-catch acting upon the star-wheel, with an electro-magnet, clock-movement, circuit-wheel, and time-printing wheels, substantially as herein set forth.

5. In a time-stamp, the combination of the shaft 6, the pin 10, the gear-wheel 9, having pin 13, and the spur-wheel 5, with an electro-motor acting upon the wheel 5, and type-wheels with spur-wheels co-operating with the wheel 9 and pins 10 and 13, substantially as set forth.

380,595. ELECTRICAL TIME-STAMP. CHARLES A. RANDALL, New York, N. Y. Filed Sept. 7, 1886. Renewed Mar. 3, 1888. Serial No. 266,107. (No model.)



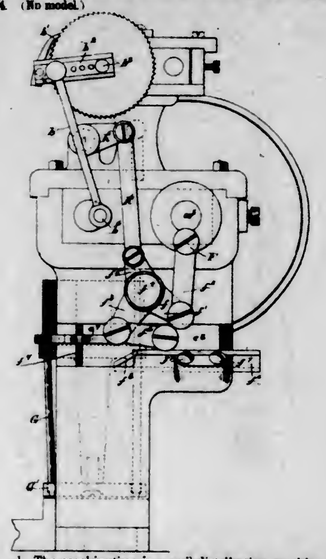
Claim.—1. In an electro-mechanical time-recording hand-stamp, the combination, with the electro-magnet, armature-lever, feed-pawl, and type-wheel, of the impression-lever, the swinging arms 40 and 41, pin 43, and arm 46, substantially as described.

2. In an electro-mechanical time-recording hand-stamp, the combination, with the circuit-controlling clock, the minute, hour, and day type-wheels, and impression-lever, of the circuit-wheels 9, 7, and 3, the insulating-pin 4, contact-springs 10, 6, and 5, independent electro-magnets 13 16 19, armature-levers, ratchet-wheels, feed-pawls, and retractile springs, substantially as described.

3. In an electro-mechanical time-recording hand-stamp, the combination of the type wheel or wheels, electro-mechanical devices for actuating the same, an impression-lever for taking an impression therefrom, and the non-interfering or locking mechanism 40 41 43 46, controlled by the impression-lever, as and for the purposes set forth.

4. The combination, in an electro-mechanical time-printing stamp, of type-wheels, an electro-magnet and its armature, means for intermittently operating the same, a feed-lever having a pawl and a retractile spring secured thereto, an impression lever and pad, and a locking mechanism controlled by the impression-lever for locking the feed-lever and preventing the action of the retractile spring when the impression-lever is depressed, all constructed and relatively arranged substantially as set forth, whereby the force of the electro-magnet places tension upon the retractile spring and the turning of the type-wheels is effected by the action of the spring when the feed-lever is free to move, as and for the purposes set forth.

380,596. NAIL MAKING AND DISTRIBUTING MACHINE. PRESCOTT F. RAYMOND, 2d, Newton, Mass. Filed Oct. 27, 1887. Serial No. 253,484. (No model.)



Claim.—1. The combination, in a nail-distributing machine, of a throat through which nails are fed in successive order, a nail-holder, E, having a series of nail-receiving holes, *c*, arranged in circular order therein, and adapted to be brought successively into register with the throat D, a hole-covering plate attached to the block to be rotated therewith, and devices for imparting to said holder alternate periods of rotation and rest, substantially as described.

2. The combination, in a nail-distributing machine, of a throat through which nails are fed in consecutive order, a clearer movable vertically in said throat to move nails therefrom, a nail-holder, E, having the nail-receiving holes *c* and the hole-covering plate c^4, and devices for imparting to said holder an interrupted rotation to bring its nail-receiving holes successively in line with the throat, substantially as described.

3. The combination, in a distributing-machine, of a block, tube, or nozzle having a throat, D, and the rotary nail-holding block E, having the holes *c*, arranged in a circular line, with a distributer comprising the tubes G, having their upper ends arranged and held in a circular line and their lower ends arranged to deliver nails in any desired form or arrangement, as and for the purposes described.

4. The combination, in a distributing-machine, of the rotary nail-holding block E, having the holes *c*, arranged in a circular line, with a distributer comprising the tubes G, having their upper ends arranged and held in a circular line and their lower ends arranged to deliver nails in any desired form or arrangement, as and for the purposes described.

5. The combination of a distributer comprising the tubes G, holding-plate c^4, having nail-receiving holes arranged in a circular order therein, the gage-plate G', and tube-receiving holes g^3, of any desired arrangement, and a rotary nail-holder arranged above the plate c^4 and having nail-holding holes *c*, arranged in a circular line and adapted to register with the holes of the tubes G, and an interposed hole-closing device for closing the holes of the nail-holder and keeping them closed until it is desired to deliver the nails as a gang or group to the tubes of the distributer, substantially as described.

6. The combination, in a nail-distributing machine, of a tube, block, or nozzle having the throat D, the nail pointing and severing dies *a a'* C C', and the clearer H, substantially as described.

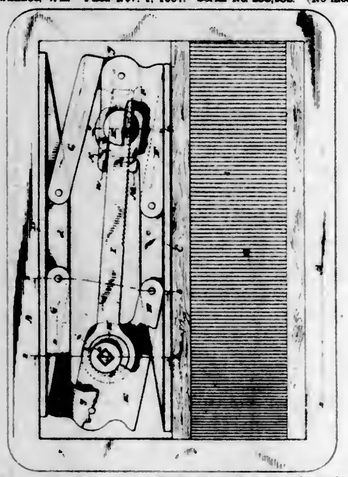
7. The combination of the nail-holder E, having nail-receiving holes *c*, the nail-covering plate c^4, the ratchet-wheel c^5, the feed-pawl c^6, having the pin, and the pawl-adjusting plate having the inclined surface f^6, substantially as described.

8. The distributer comprising the stationary plate or holder c^4, having holes arranged in circular order, the tubes G, and the plate

G', having tube-receiving holes of any desired order or arrangement, substantially as described.

9. The plate or tube holder e^4, arranged to hold the upper ends of the tubes in a circular line or order, and the tubes G and the removable plate G', having tube-receiving holes of any desired order or arrangement, substantially as described.

380,597. LOCK-UP FOR PRINTERS' FORMS. JACOB RUESCH, Milwaukee, Wis. Filed Nov. 1, 1887. Serial No. 253,952. (No model.)



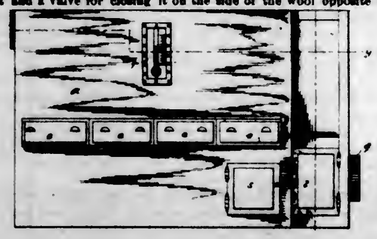
Claim.—1. A device for locking up forms in type-beds or chases, that comprises two parallel bars, toggle-joints uniting the bars, a rack eccentrically connected to one of the joints, a casting pivoted to another of the joints and provided with a passage for the rack, an arm on the casting for engagement with the rack, and suitable means for actuating this rack when engaged by the arm, substantially as set forth.

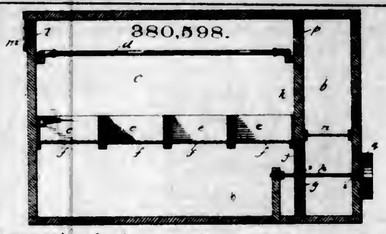
2. A device for locking up forms in type-beds or chases, that comprises two parallel bars, toggle-joints uniting the bars, a rack eccentrically connected to one of the joints, a hollow casting pivoted to another of the joints and provided with two arms, one of which constitutes a dog to engage the rack and the other a lever for actuating the casting to cause said engagement, and suitable means for operating said rack when engaged by the arm, substantially as set forth.

3. A device for locking up forms in type-beds or chases, that comprises the parallel bars C D, plates E E F F, pivoted in pairs to the bar C and provided with circular openings, bifurcated arms G, pivoted to the bar D and having ears *g*, pivoted in turn to the plates E E F F, the eccentric disk H, provided with an opening, *j*, and flanges *k*, the rack I, having its head *i* loosely fitted on the disk, and the casting K, having the arms M N, substantially as set forth.

380,598. APPARATUS FOR CARBONIZING THE VEGETABLE MATTER IN WOOL. CHARLES SCHREIBER, Methuen, Mass., assignor, by mesne assignments, to the Owasco Company, Portland, Me. Filed July 13, 1887. Serial No. 244,570. (No model.)

Claim.—1. In a wool drying and carbonizing machine, the combination, with the inclosing-casing and a support or supports for the wool, of a fan for creating a circulation of air in the casing, having its inlet and exhaust on different sides of the wool, a heater located on the side from which the air passes through the wool, an air-port and a valve for closing it between the fan and heater opposite the wool, an air-port and a valve for closing it on the side of the wool opposite the





heater, and a valve for cutting off communication between the fan and heater, substantially as described.

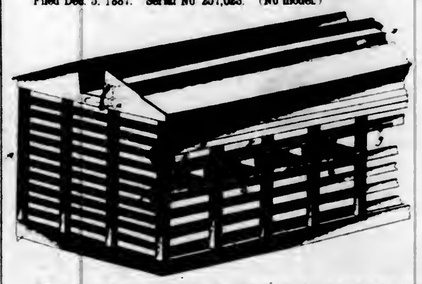
2. A wool drying and carbonizing machine having air inlet and outlet ports, slides for opening and closing said ports, chambers *b c*, the partition between said chambers, port *p*, fan *g*, valve *s* in chamber *b*, a bed of pipes, *d*, and a series of drawers, *e*, having foraminous bottoms, as set forth.

380,599. PROCESS OF CARBONIZING VEGETABLE MATTER IN WOOL. CHARLES SCHREIBER, Methuen, Mass., assignor, by mesne assignments, to the Owasco Company, Portland, Me. Filed Oct. 31, 1887. Serial No. 253,872. (No specimens.) Patented in Canada May 6, 1887, No. 26,625, and in England June 15, 1887, No. 8,575.

Claim.—1. The improvement in the art of treating wool for the purpose of destroying or carbonizing the vegetable substances therein, which consists in first treating the wool with a weak acid solution, then drawing or forcing a current of warm dry air through the entire mass or body of the wool and discharging such air in order to thoroughly dry the wool, and subsequently subjecting the entire mass to a current of hot dry air to carbonize the vegetable matter in the mass, substantially as set forth.

2. The improvement in the art of treating wool for the purpose of carbonizing or destroying the vegetable substances therein, which consists in treating the wool with a weak acid solution, then subjecting the entire mass to a current of dry air warmed to a temperature of about 75° or 80° Fahrenheit to thoroughly dry the wool, and subsequently subjecting the mass to a current of dry air heated to a temperature of about 175° or 180° Fahrenheit to destroy or carbonize the vegetable matter in the wool, substantially as set forth.

380,600. STOCK-CAR. NATHANIEL Z. SMITH, Washington, D. C., assignor to the Kohler Improved Cattle Car Company, New York, N. Y. Filed Dec. 5, 1887. Serial No. 257,023. (No model.)



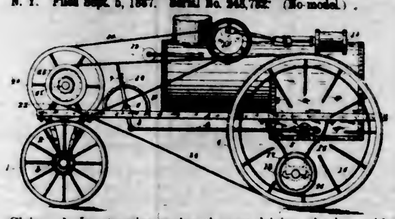
Claim.—1. In a water apparatus for stock-cars, a main pipe provided with a distributing-pipe having openings or outlets, the size of which is varied according to the location of the water-troughs, substantially as and for the purposes specified.

2. In a water apparatus for stock-cars, the main pipe provided with a main inlet, in combination with flexible hose-connections at the ends of the car, and an outlet-pipe provided with graduated openings, substantially as and for the purposes specified.

3. In a water apparatus for stock-cars, a main pipe provided with a distributing-pipe having openings or outlets, the size of which is varied according to the location of the water-troughs, in combination with the secondary pipes A, leading from said openings directly to the troughs, substantially as and for the purposes specified.

4. In a water apparatus for stock-cars, a main pipe provided with a distributing-pipe having openings or outlets, the size of which is varied according to the location of the water-troughs, in combination with the secondary pipes A, leading from said openings directly to the troughs, the shafts upon which said troughs are hung, and the hand-wheel J on said shaft for dumping them simultaneously, substantially as and for the purposes specified.

380,601. TRACTION-ENGINE. HERNANDO O. SICKLER, Buffalo, N. Y. Filed Sept. 5, 1887. Serial No. 248,782. (No model.)

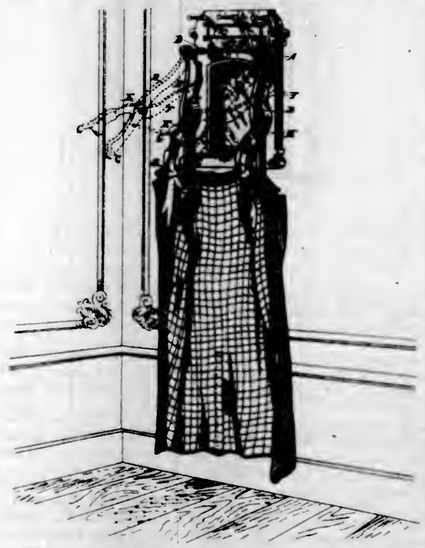


Claim.—1. In a traction-engine, the rear driving-wheels provided with inner side projecting rims, two smaller wheels mounted in fixed bearings on the body of the vehicle, and bearing upon the inner surfaces of the driving-wheel rims for supporting the weight of the vehicle, in combination with a reach connected by bearings with the axle of the driving-wheels, and an arm or lever pivoted to the reach and to the body of the vehicle, whereby the driving-wheels may be moved longitudinally back and forth, for the purposes substantially as described.

2. In a traction-engine, an engine-pulley connected by a cable with a grooved pulley mounted upon a shaft set in bearings on the platform of the vehicle and provided with two smaller pulleys, each having a series of grooves and located directly above the front wheels, in combination with the rear driving-wheels, each having a corresponding series of grooves, and a series of cables connecting said pulleys and driving-wheels, whereby the series of cables connect directly with the peripheries of the driving-wheels, so as to rest upon the ground and act as a track for the driving-wheels to roll upon, substantially as described.

3. The combination of the body of a vehicle provided with wheels 12, mounted in fixed bearings connected thereto, the driving-wheels provided with inner side rims, 16, and connected by bearings with a reach, a pivoted lever for connecting said reach with the body, and a curved bar, 11, and bolt 10, as and for the purposes described.

380,602. AUTOMATIC COAT-HOLDER. THOMPSON H. SIMMONS and RUFUS M. EASTMAN, Boston, Mass. Filed Jan. 12, 1888. Serial No. 260,541. (No model.)



Claim.—An automatic coat-holder consisting of a back, A, arms B B, suspended from a pivotal rod, C, attached to said back, and levers F F, pivoted to arms B B, with their upper portions between the said arms and backs, and so arranged that by force of gravitation the upper ends of levers F will act against back A, and thus cause their lower ends to coact with the free ends of arms B, forming jaws G G, as and for the purposes specified.

380,603. BRICK-TRUCK. JAMES C. STEELE, Statesville, N. C. Filed Sept. 19, 1887. Serial No. 250,141. (No model.)



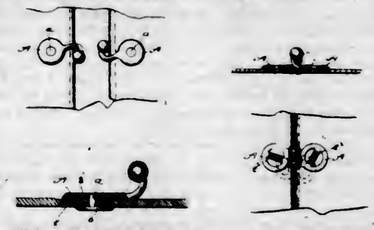
Claim.—1. In a truck, the combination, with the handles, of the crank-axle and a rest suspended by links from the ends of the handle and from the crank-axle, substantially as described.

2. In a truck, the combination, with the handles, of the crank-axle and wheels, a rest suspended therefrom by links, and a connection between the rear end of the rest and the handles, substantially as described.

3. In a truck, the combination, with the handles supported upon an axle and wheels, of a rest suspended therefrom, and an adjustable connection between the rear end of the rest and the handles, substantially as described.

4. In a truck, the combination, with the handles A, of the crank-axle B, rest E, formed of a bail-shaped metal bar suspended therefrom by links F and e^4, and cord G, connecting the rear end thereof with the handles, substantially as described.

380,604. GLOVE-FASTENER. ALBERT STERNER, Chicago, Ill. Filed Sept. 27, 1887. Serial No. 250,539. (No model.)



Claim.—The within-described improved glove-fastener consisting of a button having a broad flat annular surface, *c*, a concentric concavity, *c'*, an offset fastening, and a bridge, c^4, having a concave inner surface and a convex outer surface, as shown and described.

380,605. AUTOMATIC TRIP FOR GRAIN-BINDERS. OLE O. STORLE, Milwaukee, Wis., assignor of one-half to John H. Gordon, Rochester, N. Y. Filed May 3, 1884. Serial No. 130,199. (No model.)

Claim.—1. In a grain-binder, the rotary clutch-tripping arm driven by the knotter-driving shaft, in combination with a lug or stop on the compressor-operating pitman, and a clutch-dog pivoted to the pinion, which actuates the binder-operating gear-wheel, substantially as set forth.

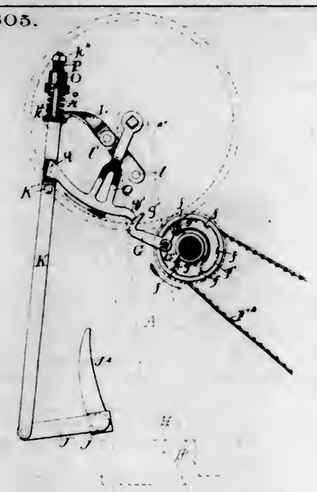
2. In a grain-binder, a rotary clutch-tripping arm driven by the knotter-driving shaft, in combination with a compressor-operating pitman having a lug or stop for engagement with said trip, and a tripping-spring secured to said pitman.

3. In a grain-binder, the combination of a binder-operating gear-wheel pinion and clutch with a clutch-dog attached to the said pinion, a rotary clutch-tripping arm adapted to revolve with the binder-operating gear-wheel, a compressor-operating pitman, a trip-spring connected thereto, a lug or stop on the pitman for engagement with said clutch-trip, and driving-connections between the binder-operating wheel and the pitman.

4. In a grain-binder, the combination of a binder-operating gear-wheel, pinion, and clutch with a clutch-dog pivoted to said pinion, a clutch-tripping arm adapted to revolve with the binder-operating gear, the compressor-operating pitman with a stud to arrest the trip-arm, driving-connections between the binder-operating wheel and the pitman, the frame mounted on said pitman and containing a compressor-spring, a plate or housing thereon, and a trip-spring seated on said plate and bearing against a nut or collar on the pitman.

5. In a grain-binder, the combination of a binder-operating gear-wheel, clutch-pinion, sprocket-wheel and clutch-dog pivoted to said pinion with a rotary clutch-tripping arm adapted to revolve with the

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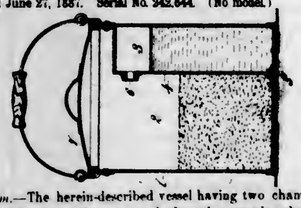


binder-operating gear-wheel, a compressor-operating pitman having a trip-spring secured to the upper part, and a lug or stop on said pitman for engagement with the rotary trip-arm.

6. In a grain-binder, the combination, with a binder driving-gear and cam-wheel, the clutch-pinion engaging said wheel, the constantly-rotating driving-wheel F, the clutch-dog pivoted to the pinion, the rotary trip adapted to revolve with the binder driving-gear, the compressor-operating pitman provided with a stud to engage the trip, a lever, L, actuated by the cam of the binder driving-gear, a frame, M, attached to said lever and movably mounted on the pitman, the compressor-spring N, and the relatively-weak trip-spring acting to urge the pitman upward, as described and shown.

7. In a grain-binder, the combination of the compressor-operating pitman having at its upper end the tenon with the shoulder k^3 and screw-thread, the frame M, seated on said shoulder and connected with an operating-lever, L, the compressor-spring N, sustained by said frame, the independently-movable plate O, sustained upon the compressor-spring, the relatively-weak trip-spring mounted on said plate, a series of washers, *p*, seated beneath the trip-spring, and the nut k^4, applied to the pitman and seated on top of the trip-spring.

380,606. **FIRE-KINDLER.** GEORGE D. STREETER, Waco, Tex. Filed June 27, 1887. Serial No. 242,644. (No model.)



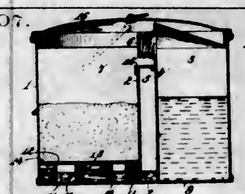
Claim.—The herein-described vessel having two chambers, one, provided with a movable cover and adapted to contain ashes, and the other closed, except as to a bottom passage in communication with the ash-chamber, and adapted to contain a combustible fluid, which flows through said bottom passage to saturate the ashes and prepare them for use in making fire-kindlers, substantially as described.

380,607. **FIRE-KINDLER.** GEORGE D. STREETER, Waco, Tex. Filed Sept. 2, 1887. Serial No. 248,634. (No model.)

Claim.—1. The combination of the vessel having a vertical partition, an oil-chamber and an ash-chamber, with a perforated false bottom in the ash-chamber and absorbent material below the false bottom, substantially as described.

2. The combination of the vessel having a vertical partition, the oil-chamber having its inner wall separated from the partition by an oil-space, the ash-chamber, a perforated false bottom in the ash-chamber, and absorbent material beneath said false bottom, substantially as described.

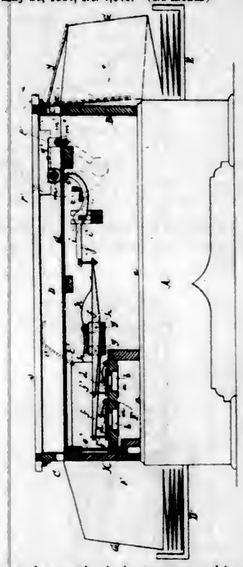
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3. The combination of the vessel having a vertical partition, the oil-chamber having its inner wall separated from the partition by an oil-space, a movable lid covering the top portion of the oil-space, an ash-chamber, and a perforated false bottom in the latter, substantially as described.

4. The combination of a vessel having a vertical partition, an oil-chamber, the vertical flanges forming receptacles for absorbent material, and the perforated false bottom resting on said flanges with the perforations directly over the absorbent material, substantially as described.

380,608. **MECHANICAL MUSICAL INSTRUMENT.** LOUIS ÉMILE JÉRÔME TRIBOUVILLE, Paris, France. Filed Aug. 18, 1887. Serial No. 247,264. Patented in France Feb. 1, 1887, No. 181,276, and in England May 26, 1887, No. 7,676. (No model.)



Claim.—1. In a mechanical organ operated by a perforated band, a series of feeler-levers pivoted beneath and substantially parallel with said band, each lever having its free end in contact therewith, a corresponding series of rock-levers pivoted beneath and parallel with said band and each connected at one end with the adjacent end of one of said feeler-levers, and a series of springs, *k k*, acting on said rock-levers and tending to press the free ends of the feeler-levers against the band and through the perforations therein, in combination with the reed-cells and reeds and a series of valves closing said reed-cells, each valve being connected with the free end of one of said rock-levers, whereby said valves are opened by the action of the springs *k k*, and a series of springs, *e e*, which close said valves, substantially as set forth.

2. In a mechanical organ, a series of parallel levers controlled by the passage of a perforated band and mounted on the organ-case, in combination with a sliding sound-board mounted beneath the ends of said levers and sliding in and out in the direction of the length of said levers, slides on the organ-case for said sound-board, the reeds and valves carried by said sound-board, and connections between each of said valves and one of said levers so arranged as not to obstruct the sliding movement of the board.

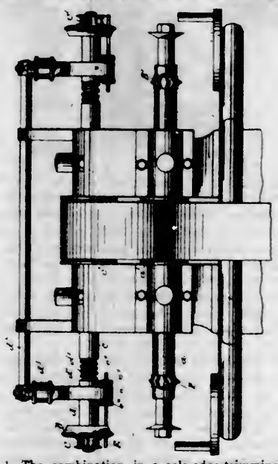
3. The combination of a sliding sound-board, the case provided with slides therefor, the reeds and valves borne by said board, a series of levers adapted to be controlled by the passage of a perforated band, and connections between the respective valves and said levers, consisting of hooks fixed to the valves and extending laterally over the ends of the levers, whereby they offer no obstruction to the sliding out of the board.

4. The combination of the organ-case constructed to form a passage for a perforated band, a pair of feeding-rollers adapted to engage and propel the band and one of them mounted in sliding blocks, a grooved roller on one side of the perforated band mounted in sliding blocks, a series of feeler-levers mounted on the other side of the band, an operating-lever, and mechanism intervening between said levers and said sliding blocks and between said lever and said feelers, so that upon the manipulation of said lever the feed-rollers are separated and the grooved roller and feelers are moved apart, whereby the insertion of a sheet of perforated paper is facilitated.

5. An organ-case and a swell consisting of longitudinally-extending shutters *s s*, hinged on both sides of said case and opening outward, and springs which normally close said shutters, in combination with a manipulating-lever having arms beneath each shutter, which raise the same when said lever is manipulated.

6. The combination, with a mechanical musical instrument constructed with a passage for a perforated band, of a folder for said band, consisting of a frame pivoted above the point where the band emerges from the organ.

380,609. **BOOT OR SHOE SOLE TRIMMING MACHINE.** CHARLES H. TRASK, Lynn, Mass., assignor to the Duplex Shoe Trimmer Company, Portland, Me. Filed June 8, 1887. Serial No. 240,597. (No model.)



Claim.—1. The combination, in a sole-edge-trimming machine, of a rotary sole-edge trimmer, and a sole-edge rest, E, arranged in relation to said trimmer to act as a support or rest for the edge of the outsole, and adapted for use in the trimming of the heel end of outsoles and spring-heels, as and for the purposes described.

2. The combination, in a sole-edge trimming machine, of a rotary trimmer, the horizontally-movable hood or piece D, and a sole-edge rest, E, extending horizontally outward from the face e^4 of said hood or piece D, as and for the purposes described.

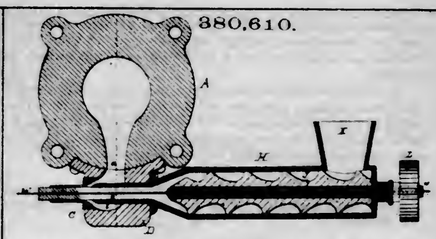
3. The combination, in a heel-trimming machine, of a rotary sole-edge trimmer, the sole-edge rest E, and means, substantially as specified, for moving the same into and out of operative position, substantially as described.

4. The combination, in a sole-edge-trimming machine, of a rotary trimmer, the hood or piece D, formed upon the end of a sleeve, *d*, which is movable upon the shaft carrying the rotary trimmer in opposition to a spring, the bracket d^1, the rod d^2, and the arm *e*, having a hole, e^1, the hood or piece D, having a hole, e^2, and the sole-edge rest E, extending through said holes e^1 e^2 to beyond the face e^4 of the hood or piece D, as and for the purposes described.

5. The combination of a rotary trimmer, the hood or piece D, having the hole e^2, the arm *e*, having the hole e^1, and the rest E, having a screw-threaded section, e^3, and nuts e^5 e^5, substantially as described.

380,610. **MACHINE FOR COVERING WIRE WITH LAYERS OF DIFFERENT MATERIALS.** JEAN T. VAN GEPEN, New York, N. Y. Filed Sept. 10, 1887. Serial No. 249,360. (No model.)

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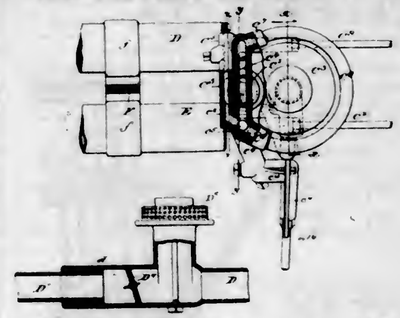


Claim.—1. The combination of a lead-press having a lateral chamber connecting with the lower end of the cylinder, in one of the walls of which chamber is a circular die, with a second cylinder containing a propelling-screw, which delivers its contents by a tubular nozzle just within the inner opening of the die and concentric with it, the whole operating to place two concentric layers of different materials around a wire which passes through the propelling-screw and the die.

2. The combination of the cylinder A and ram B of a lead-press, and the cylinder H and propelling-screw J, working therein, with a lateral chamber, *i*, in which are arranged the dies *c* and *h*.

3. The combination of the cylinder H and propelling-screw J, working therein, and perforated longitudinally to admit of the passage of a wire, and the tubular die *h*, with the cylinder A of a lead-press having the lateral chamber *i*, and the die C, all operating as and for the purposes herein set forth.

380,611. **VAPOR-STOVE.** J. BENNETT WALLACE, Chicago, Ill. Filed Jan. 18, 1886. Serial No. 188,817. (No model.)



Claim.—1. The combination, with a generator located at the end of the stove and provided with a suitable valve for sending vapor to additional burners, of a two-part vapor and air pipe, D D′, each part provided with a branch leading to a non-generating burner, the part D thereof being provided with an extension, *d*, fitted to receive the inserted end of the part D′, and provided with a butterfly-valve within said extension *d*, substantially as described.

2. In a vapor-generating burner, the combination, with a cap having lateral openings for the flame-jets, of a base portion consisting, first, of a casting having two separate chambers or compartments located at one side of the burner and provided one with an inlet-passage and the other with one or more outlet-passages; second, an apertured bottom plate beneath the cap, and, third, a bent horizontal wrought-metal or brass generating-tube having its ends connected with the several compartments referred to and extending between its ends in position to be heated by the flame-jets, substantially as described.

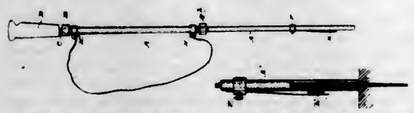
3. A generating burner having two jet-valves for the supply of vapor to two separate pipes for the conduct of vapor and air to non-generating burners, besides one jet-valve for its own supply, a chambered casting having a partition which separates its chamber into two compartments, an inlet-passage admitting liquid to one of the compartments of said casting, passages leading from the other compartment to the several jet-valves, a base-plate at one side of the casting, a curved wrought-metal tube leading from one chamber to the other of the casting around the margin of the base-plate, and a burner-cap constructed to give a flame adjacent to said tube throughout its length, substantially as described.

4. The burner-casting, substantially as shown and described, having the chamber C^4, divided by partitions *c* and *c′*, and provided with the pierced boss C^5, connected with the compartments indicated, a base-plate for the support of an apertured cap, a bent wrought-metal tube encircling the base-plate and connected at its ends into the com-

partments on opposite sides of the partition c, a jet-valve tube leading from the compartment c^3, and jet-valve tubes c^4 and c^5, leading from the delivery-compartment cut off by the partition c, substantially as described.

5. The combination, in a vapor-generating burner, of a partitioned chambered casting, a base-plate, and a wrought-metal or brass tube having its ends in communication with the compartments of the chambered casting and embracing and soldered to the margin of the base-plate, substantially as described, and for the purposes set forth.

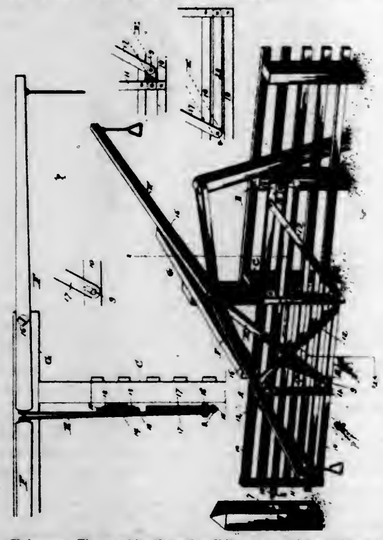
380,612. **HAND NAIL-DRIVING IMPLEMENT.** JOHN WEICHHARDT, San Francisco, Cal. Filed Sept. 22, 1887. Serial No. 250,454. (No model.)



Claim.—1. The combination, with the barrel or tube slotted in its lower portion and the piston or hammer working in said tube, of the spring-arm provided with the double inclined lug or tang operating in the slot in tube to hold the head of the nail in position, said spring-arm being adjustable on the tube by suitable means, as a collar and set-screw, substantially as described.

2. The combination, in a portable nail-driving machine or implement consisting of a nail-containing barrel or tube and hammer or piston, of the curved adjustable guide-rest and means for suspending the implement to the person of the operator, as described.

380,613. **SLIDING GATE.** WILLIAM R. WHITE, Neoga, Ill. Filed Oct. 12, 1887. Serial No. 252,173. (No model.)

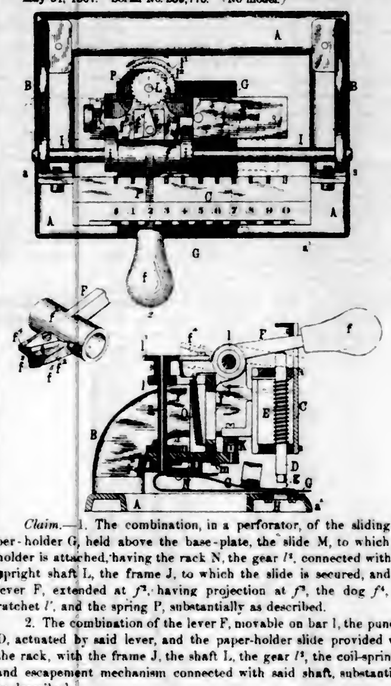


Claim.—1. The combination of a sliding gate, a longitudinal slat, 10, secured at one end to the gate and at the other end free to move, and having at such free end a latch, a suspended lever, E, mounted at one end independent of the gate and connected to said slat at a point between its ends to move the latch end thereof, and an operating-lever connected to the suspended lever to vibrate the same and slide the gate, substantially as described.

2. The combination of a sliding gate, a longitudinal slat, 10, secured at one end to the gate and at the other end free to move, and having at such free end a latch, a suspended lever, E, a connecting-strip, 17, mounted on the gate and interposed between the lever and the slat to move the latch end thereof, and an operating-lever connected to the suspended lever to vibrate the same and slide the gate, substantially as described.

3. The combination of a sliding gate, a longitudinal slat, 10, secured at one end to the gate and free to move at its other end, and having a latch at said free end, a suspended lever, E, a strip, 19, pivoted to the gate, and a connecting-strip interposed between one end of said strip 19 and said slat, and both strips connected to one end of the suspended lever, and an operating-lever connected to said suspended lever for raising the latch end of said slat and vibrating the lever to slide the gate open or closed, substantially as described.

380,614. **PERFORATOR.** JAMES WHITELAW, St. Louis, Mo. Filed May 31, 1887. Serial No. 239,770. (No model.)



Claim.—1. The combination, in a perforator, of the sliding paper-holder G, held above the base-plate, the slide M, to which the holder is attached, having the rack N, the gear l^2, connected with the upright shaft L, the frame J, to which the slide is secured, and the lever F, extended at f^2, having projection at f^3, the dog f^4, the ratchet l', and the spring P, substantially as described.

2. The combination of the lever F, movable on bar l, the punches D, actuated by said lever, and the paper-holder slide provided with the rack, with the frame J, the shaft L, the gear l^2, the coil-spring P, and escapement mechanism connected with said shaft, substantially as described.

3. The combination of the paper-holder slide provided with the rack, with the frame J, the shaft L, the gear l^2, the coil-spring P, the ratchet l', the lever F, extended and provided with the projection and dog, and the rod I, on which said lever turns and slides, and the punches D, each upheld by a spring, E, substantially as described.

4. The combination of the paper-holder slide, the rack, the frame J, the shaft L, the gear l^2, the coil-spring P, the ratchet l', the rod I, the lever F, extended and having the projection and dog, the guide C, and the punches D, each having a spring, E, substantially as described.

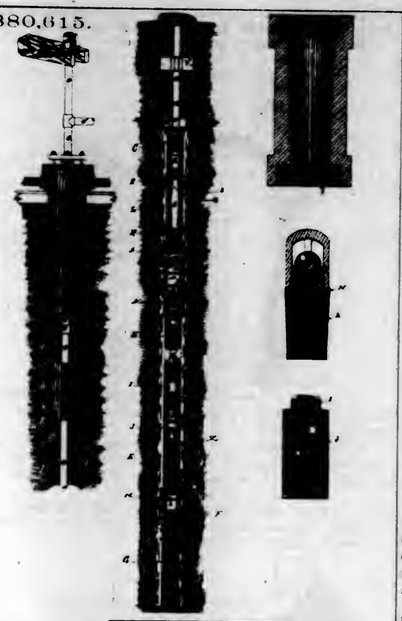
380,615. **OIL OR ARTESIAN WELL PUMPING MECHANISM.** HENRY H. ARGUE, Derrick City, Pa., assignor of one-half to Richard W. Argue, same place. Filed Apr. 22, 1887. Serial No. 235,817. (No model.)

Claim.—1. The combination, in an oil or Artesian well pump, of the working-barrel A, having a standing valve, H, and the packing-rings L M thereon, substantially as shown and described, and the pipe C, secured thereto and extending upward, having thereon the fixed collar Q, the loose collars R R, and curved guiding and supporting springs S, connecting said loose collars with the hollow plunger I, provided with a valve, J, and operating in said working-barrel A, and the hollow sucker-rod O, having guides V thereon and operating through the stuffing-box X in the casing-head W, substantially as and for the purpose set forth.

2. The combination, in an oil or Artesian well pump, of the pipe C, secured to and extending upwardly from the working-barrel A of the pump, with the thimble Q, the loose collars R R, and the curved springs S, connecting said loose collars, substantially as and for the purpose set forth.

3. The combination of the pump-barrel having shoulder B, the pump-plunger I, the leather packing-sleeves L, surrounding the plunger, the clamping-nut N, and the metal sleeves M, provided with flanges *n* and projections *n'*, interposed between the said leather sleeves and forming hollow chambers about their lower tubular extensions, substantially as set forth.

380,615.



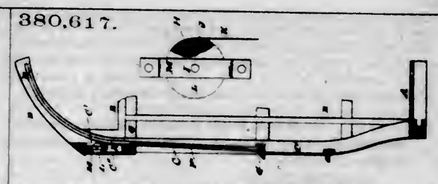
380,616. **ENVELOPE.** GABRIEL A. BORRICK, Boston, Mass., assignor, by mesne assignments, to the Coupon Envelope Company, Portland, Me. Filed Jan. 13, 1887. Serial No. 224,208. (No specimens.)

Claim.—An envelope consisting of the body portions A A, one of which is provided with the edge portions, A and *k*, to be folded in, and the other of which has the coupons B and D at its side and end, respectively, substantially as set forth

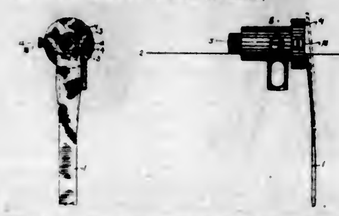
380,617. **PASSENGER-VEHICLE.** FREDERICK B. BROWNELL, St. Louis, Mo. Filed Oct. 13, 1884. Serial No. 145,377. (No model.)

Claim.—The combination of the posts C and rafters D, having the inwardly inclined and curved grooves E extending through them, a sash, F, having corner-studs G working in the grooves, and a counterbalance consisting of a bracket, M, pulley H, having arbor I secured to the side of the post and supported in the bracket, spring J, connected to the arbor and pulley, ribbon K, secured to the sash, and case L, substantially as shown and described.

380,617.



380,618. **WIRE-CUTTER.** PHINEAS W. CLARK, Lowell, Mass. Filed Feb. 3, 1888. Serial No. 262,896. (No model.)

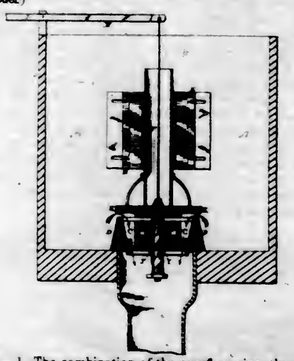


Claim.—1. The combination, with the fluted-cylinder holder adapted to be attached to a card-clothing-setting machine, of the fluted cylinder and means for clamping the same within said holder, the fly-cutter guide, and a clamping means whereby said guide is adjustably fixed upon the end of said fluted cylinder, substantially as described, and for the purposes specified.

2. The combination, with the fluted-cylinder holder adapted to be attached to a card-clothing-setting machine, of the fluted cylinder provided with a cavity in its cutting end, means for clamping said cylinder within said holder, the fly-cutter guide, and a clamping means whereby said guide is adjustably fixed upon the end of said fluted cylinder, substantially as described, and for the purposes specified.

3. The wire-cutting guide for use in cutting and guiding the wire in card-clothing-setting machines, which consists of the fluted cylinder and the fly-cutter guide fixed upon the end thereof, the end of said cylinder and the face of said guide forming a surface of revolution about the axis of said cylinder, substantially as described, and for the purposes specified.

380,619. **TIME CLOSING-VALVE FOR WATER-CLOSETS.** ALONZO W. CRAM, Haverhill, Mass. Filed June 27, 1887. Serial No. 242,648. (No model.)



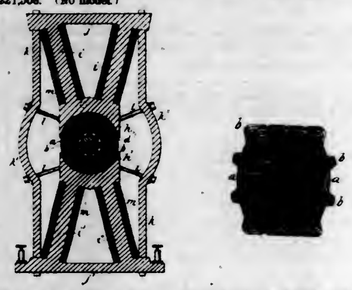
Claim.—1. The combination of the overflow-pipe, the valve connected to its lower end, the screw, and a nut placed upon the screw with the blades, the valve-seat provided with openings for the escape of the water, and the seat for the nut, and the operating-lever, substantially as shown.

2. The combination of the operating-lever, the tank, the overflow-pipe F, provided with wings, the valve K, secured to the lower end of the pipe, the coarse-threaded screw J, and the valve-seat D, placed in the bottom of the tank, provided with openings C and seat O, and the nut B, placed in an opening in the valve-seat, substantially as set forth.

3. The combination of the tank, the valve-seat placed in the bot-

tom of the tank and provided with passages for the escape of the water, and an opening through its center, the coarse-threaded screw which passes through the opening in the valve-seat, the valve secured to the overflow-pipe and the screw, and a nut placed in a recess in the seat and through which the screw passes, substantially as specified.

380,620. **DYNAMO-ELECTRIC MACHINE.** WALTER A. CROWDUS and HENRY M. SUTTON, Dallas, Tex. Filed Dec. 14, 1886. Serial No. 221,508. (No model.)



Claim.—1. A disk or flat ring adapted to be used in the construction of armature-cores, consisting wholly of iron wire, galvanized or otherwise magnetically insulated, wound into the form of a disk or ring, having projections or pole-pieces formed of iron wire wound thereon, the whole being secured together by solder or other suitable means.

2. An armature for dynamo-electric machines, consisting of disks or flat rings made of iron wire having pole-pieces of iron wire wound thereon at regular intervals, placed and held on the armature-shaft with the iron-wire pole-pieces of the adjacent disks or rings in contact and in line, the spaces between the pole-pieces of the several disks or rings thus forming longitudinal grooves in the periphery of the armature for the reception of the armature-wire.

3. In a field-magnet for dynamo-electric machines, in combination, two pole-pieces, top and bottom plates joined to the pole-pieces by branches upon which the insulated wire is wound, and side pieces connected to the top and bottom plates and having outward curves at their central parts opposite the pole-pieces.

4. In combination, the poles *h h'*, the branches or arms *i i* and *i' i'*, connected, respectively, to and extending divergently from the poles *h h'*, the top and bottom plates, *j* and *j'*, connected to the branches *i i* and *i' i'*, respectively, the side pieces, *k k*, having their central parts, *k' k'*, curved outwardly, and the bracing-bolts *l l*, substantially as and for the purpose set forth.

5. In combination, the disks *a*, composed of iron wire having the pole-pieces *b*, also composed of iron wire, the shaft *c*, the insulated wire *d*, wound in the spaces between the poles *b* of the disks, and the end clamping-nuts, *e e*, substantially as and for the purpose set forth.

6. In a dynamo-electric machine, in combination, the poles *h h'*, the branches or arms *i i* and *i' i'*, connected, respectively, to and extending divergently from the poles *h h'*, the top and bottom plates, *j* and *j'*, connected to the branches *i i* and *i' i'*, respectively, the side pieces, *k k*, having their central parts, *k' k'*, curved outwardly and connected to the top and bottom plates, *j* and *j'*, the bracing-bolts *l l*, and the armature composed of the disks *a*, of iron wire, having pole-pieces *b*, also of iron wire, the shaft *c*, the insulated wire *d*, wound in the spaces between the poles *b* of the disks, and the end clamping-nuts, *e e*, substantially as and for the purpose set forth.

380,621. **WHIFFLETREE-HOOK.** JAY C. DAVIS, Marshfield, Wis., assignor of one-half to George Suebert, same place. Filed May 14, 1887. Serial No. 238,271. (No model.)



Claim.—As an improved article of manufacture, the described attachment for whiffletrees and similar bars, the same consisting of a loop having a slot dividing and leading into it, such slot being formed or extended in a line diagonal to the direction of length of the loop, and a supporting-plate adapted for connection with said whiffletree or bar, substantially as and for the purposes specified.

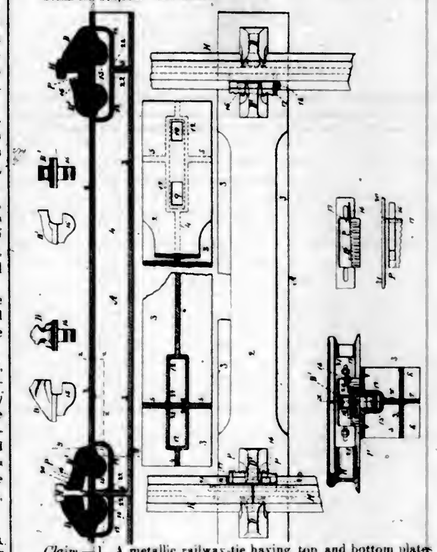
380,622. **HEARSE.** MICHAEL F. DEHINGER, Brooklyn, N. Y. Filed Jan. 24, 1888. Serial No. 261,748. (No model.)



Claim.—1. A hearse provided with corner pillars and blocks *f*, fitted detachably thereto and supporting ornaments or emblems, substantially as described.

2. The combination, in a hearse, of corner pillars, detachable blocks supporting ornaments or emblems, one socketed to receive a pin on the other, and a spring-catch, substantially as described.

380,623. **METALLIC RAILWAY TIE AND FASTENING FOR RAILS.** HENRY L. DE ZENG, Geneva, New York. Filed Oct. 17, 1887. Serial No. 252,552. (No model.)



Claim.—1. A metallic railway-tie having top and bottom plates extending the entire length of the tie and a longitudinal central flange or stem, 4, and cross-flanges 5, all cast in one piece, substantially as set forth.

2. A railway-tie having top and bottom plates extending the entire length of the tie, a longitudinal central flange or stem, 4, and the downward ribs 7 and 8 below the bottom plate, the whole cast in one piece, substantially as set forth.

3. A cast-iron railway-tie having top and bottom plates, a longitudinal central flange or stem, 4, and the box-inclosures 12 below the mortises or openings 9 and 10, substantially as set forth.

4. An iron railway-tie having a top plate extending the length of the tie and having mortises through it, a longitudinal central stem or flange, 4, the cross-flanges 5 beneath the rail, the box-inclosures 12 beneath the mortises in the top plate, and a bottom plate, 3, below the flanges 4 and 5, the whole cast in one piece, substantially as set forth.

5. The combination, with the clips D', of a wedge, P, having a groove in its upper surface, a bridge, 17, and a headed key, 16, to be passed into the groove and beneath the clip and bridge and bent up to retain the wedge in position, substantially as set forth.

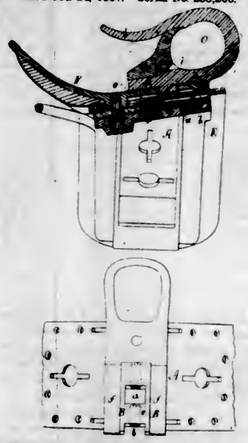
6. The combination, with the clip D', of the wedge P, having a flange, 20, that intervenes between the end of the clip and the rail, substantially as set forth.

7. The combination, with the clip D', of the wedge P, having the flange 20 and the joint-plate 21, substantially as set forth.

8. The wedge P, having a flange, 20, and the joint-plate 21, cast in one piece, substantially as set forth.

9. The combination, with the clip-piece, of the wedge grooved in its upper surface and having the flange 20, and the headed key 16, for holding the wedge in position, substantially as set forth.

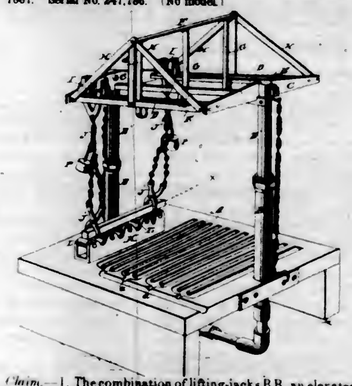
380,624. **HARNESS-SADDLE TREE.** WILLARD S. EVERETT, Hyde Park, Mass. Filed Oct. 24, 1887. Serial No. 253,268. (No model.)



Claim.—1. The harness-saddle tree provided with the abutment *c*, and having the hole or opening *a*, and the notch *b* and rabbets *f f*, as shown, in combination with the saddle F, having the hole *g* and notch *h*, corresponding in shape to the hole *a* and notch *b* in the abutment, and the check-rein-hook C, having pivoted to it the weighted latch H, and provided with the projections *e* and *d*, to enter the said holes and notches and be secured to the tree by the screw D, all substantially as described and represented.

2. The harness-saddle tree provided with the projection or abutment *c*, the opening *a*, notch *b*, and rabbets *f f*, and having arranged therein a hole screw-threaded and parallel, or practically so, to the top of the abutment to receive the screw D, all as shown, and substantially as described.

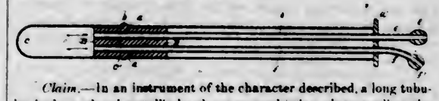
380,625. **APPARATUS FOR TRANSFERRING PIG-IRON FROM ITS BED.** WILLIAM H. FREDERICKS, Johnstown, Pa. Filed Aug. 24, 1887. Serial No. 247,786. (No model.)



Claim.—1. The combination of lifting-jacks B B, an elevated track-frame mounted upon the movable sections of the jacks and bearing rails D, wheeled trucks I, running upon said rails, and suspending chains and tongs J J', connected to said trucks, said devices being adapted for use in connection with a bed for casting pig-iron, substantially as and for the purpose described.

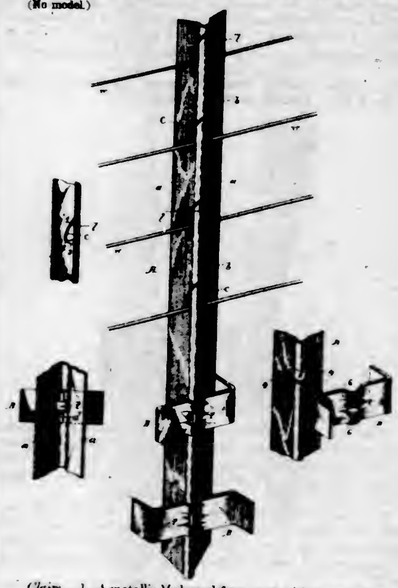
2. The combination of a series of rollers, L, lifting-jacks B B', an elevated track-frame mounted upon the movable sections of the jacks and bearing rails D, wheeled trucks I, running upon said rails, and suspending chains and tongs J J', connected to said trucks, said devices being adapted for use in connection with a bed for casting pig-iron, substantially as and for the purpose described.

380,626. **APPARATUS FOR COOLING OR WARMING THE RECTUM AND VAGINA.** JONATHAN R. HAMILTON, Minneapolis, Minn., assignor of one-half to Lyman R. Palmer, same place. Filed Aug. 27, 1887. Serial No. 248,015. (No model.)



Claim.—In an instrument of the character described, a long tubular body, a closed metallic head, a non-conducting plug coupling the same and provided with a non-conducting flange or ring for separating the ends of the body and head, and induction and eduction tubes extending through the body and plug to the chamber of the head, substantially as and for the purpose set forth.

380,627. **FENCE-POST.** LEGRAND R. HARMON, Carysville, and JASPER H. NOTT, Sidney, Ohio. Filed Jan. 30, 1888. Serial No. 262,490. (No model.)



Claim.—1. A metallic V-shaped fence-post with an approximately semi-cylindrical bead on the edge formed by the meeting of the sides, having a series of wire-securing lips on said edge, the said lips being formed by downwardly and rearwardly inclined and forwardly extending kerfs terminating in perforations in rear of the bead, substantially as described.

2. The combination, with a V-shaped metallic fence-post having an approximately semi-cylindrical bead on the edge formed by the meeting of the sides, an opening through said beaded edge, and an anchor-brace integral with the post on each side of said opening, of an anchor having a rearwardly-extending tongue to pass through the opening in the post and a key or other suitable device to pass between the tongue and the rear side of the bead, substantially as described, and for the purposes stated.

3. The combination, with a V-shaped metallic fence-post having an approximately semi-cylindrical bead on the edge formed by the meeting of the sides, an opening through said beaded edge, and an anchor-brace integral with the post on each side of said opening, of an anchor formed from a rectangular piece of metal having its ends

bent in opposite directions and having an integral rearwardly-extending tongue to pass through the opening in the post, and a key or other suitable device to pass between the tongue and the rear side of the head, substantially as described, and for the purposes stated.

380,628. DRAFT-DETACHING DEVICE. ANDREW R. HUMMAKER, Fulton, Ky. Filed Jan. 31, 1888. Serial No. 262,540. (No model.)

Claim.—1. The combination, with the beam, of the plate-bar, the

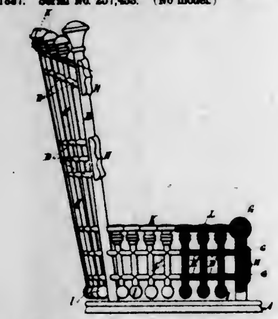


bolts inserted through said bar and the beam, the angle-bar hinged to plate-bar and fitting over the ends of the bolts, the detachable securing means for the angle-bar, and the spring for forcing the angle-bar away from the beam on the release of the securing means, as set forth.

2. The combination of the plate-bar, the angle-bar hinged to the front end thereof and provided with an opening in the end of its rearwardly-extending arm, the bolt connecting the plate-bar and the angle-bar and having a perforation in its extension above the angle-bar, a key engaging said perforation, the spring bearing upward against the rearwardly-extending arm of the angle-bar, and the cord extending from said key to a point within easy reach of the driver, substantially as specified.

3. The combination, with the beam provided with the recess *h*, the bolt *d'*, the perforated bolt *c*, the nuts on said bolts, and the coiled spring H, seated in the recess *h*, of the plate-bar C, the angle-bar D, provided with the openings *d'* and *c'* and connected to the plate-bar by the hinge *d*, the split ring F, and the cord G, all constructed and arranged substantially as shown and described, for the purpose specified.

380,629. CHAIR. GEORGE HUNSINGER, New York, N. Y. Filed Dec. 9, 1887. Serial No. 257,433. (No model.)



Claim.—1. The combination, with the chair-seat, of a back-frame having posts or standards and intermediate slats or posts, and tubular sections between the slats or posts, and wires passing through the posts and intermediate slats and through the tubular sections, the wires being tightened and held in place, substantially as set forth.

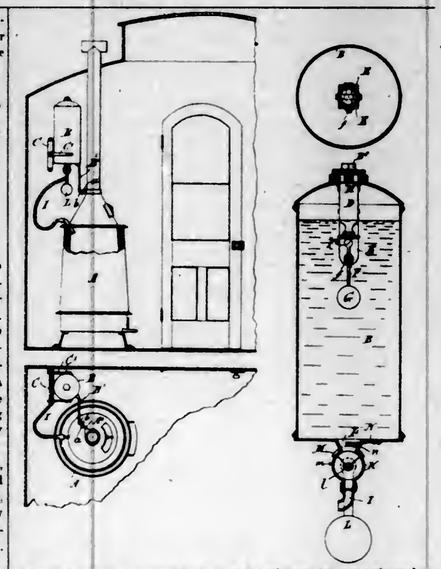
2. The combination, in a chair, of slats or posts perforated transversely, intermediate tubular sections between the slats or posts, wires passing through the slats or posts and tubular sections and uniting the parts together, and nuts for tightening up the wires, substantially as set forth.

3. The combination, with a chair-seat, of arms formed with vertical slats or posts having ornamental heads perforated transversely and a wire passed through the heads to unite them together, and nuts for tightening the wires, substantially as set forth.

4. The combination, in a chair, of round slats or posts perforated transversely at intervals, intermediate tubular sections with curved recesses at the ends to fit in between the slats or rungs, wires passing through the respective parts and by which they are strung up, and nuts at the ends of the wires for tightening the same, and cap-pieces covering the nuts, substantially as set forth.

380,630. SAFETY APPLIANCE FOR RAILWAY-CARS. JAMES A. JAMIESON, Montreal, Quebec, Canada, assignor of one-fourth to Frank Caverhill et al. John B. Caverhill, both of same place. Filed June 14 1887. Serial No. 241,304. (No model.) Patented in Canada June 27 1887, No. 27,073.

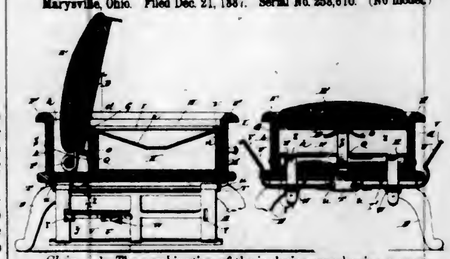
Claim.—1. The combination, with a car-heater, of a chemical fire-extinguisher in which the acid-chamber is kept closed by a swinging weighted lever holding a stopper up against its mouth, the said fire-



extinguisher being secured to the wall of the car by arms pivoted to it at points outside its vertical axis, a support from the heater holding the extinguisher normally in a vertical position, a pipe connecting the fire-extinguisher with the fire-chamber of heater, and a valve for automatically opening such connection by the tipping of the vessel, all as herein set forth, and for the purposes described.

2. In combination with a car-heater, a chemical fire-extinguisher constructed with arms projecting downward from top, an acid-vessel set inverted in a socket in the top and held between the arms, and a spring pressing it down on a seat carried on the upper end of a weighted swinging lever pivoted on a spindle passing through the arms, all as herein described, and for the purposes set forth.

380,631. CUSPIDOR. GEORGE KOCHENDORFER and JULIUS ROTH, Marysville, Ohio. Filed Dec. 21, 1887. Serial No. 258,610. (No model.)



Claim.—1. The combination of the inclosing-case having a receptacle, a swinging gravitating cover normally concealing the receptacle a roller-bar mounted in the case, the pivoted treadles, and flexible connections between the treadles and the roller-bar, and also between the roller-bar and the cover, which flexible connections are respectively wound in opposite directions on the said roller-bar, whereby when the treadles are depressed the cover will be raised, substantially as specified.

2. The combination of the inclosing-case having a receptacle, a swinging gravitating cover normally concealing the receptacle and pivoted near its rear edge to the case, the grooved roller-bar mounted in the case beneath the rear edge of the cover, the treadles mounted under the case, the connecting-straps Z Z, which are attached to the treadles and are wound on the roller-bar in the grooves therein, and the connecting-strap S, attached to the rear edge of the cover and wound on the roller-bar in the opposite direction to the straps Z Z, substantially as and for the purpose specified.

3. In a cuspidor, the combination of the inclosing-case A, a swinging gravitating cover mounted therein and adapted to normally conceal the receptacle, the roller-bar mounted in the case and connected

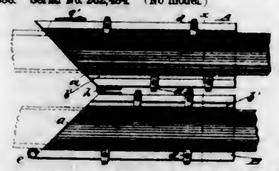
to the cover by a strap, S, or a similar flexible material, the treadles mounted in depending brackets under the case and having pressure-bars on their outer edges which project beyond the sides of the case and extend the entire length thereof, and the straps or other flexible connections Z between the treadles and the roller-bar, whereby when the former are depressed the latter is rotated, substantially as and for the purpose specified.

4. In a cuspidor, the combination, with the inclosing-case, the swinging gravitating cover mounted therein, the roller-bar, and flexible connections wound on the bar and attached to the cover, of the treadles mounted in suitable bearings under the case and having pressure-bars on their outer edges projecting beyond the sides of the case, buckles attached to the treadles, and the connecting-straps Z, wound on the roller-bar and attached at their lower ends to the said buckles, substantially as specified.

5. In a cuspidor, the combination of the inclosing-case having its upper edges upholstered or cushioned, the swinging cover mounted within the upper edges of the case and normally concealing the receptacle, the upper side of the said cover being upholstered or cushioned to correspond with the edges of the case, the roller-bar connected to the rear edge of the cover, and the treadles mounted under the case and connected to the roller-bar, substantially as and for the purpose specified.

6. In a cuspidor, the inclosing-case A, having its upper edges upholstered and provided with a receptacle, a swinging gravitating cover adapted to normally conceal the receptacle, the upper side of the cover being upholstered or cushioned, whereby the cuspidor has the appearance of a footstool, the treadles mounted under the case and connected to the cover, said treadles being adapted to bear against the under side of the case, and provided on their outer edges with outward and upward inclining longitudinal pressure-bars V, which extend along the sides of the case slightly above the bottom, as set forth.

380,632. MITER-BOX. CHARLES LYMAN, Clarinda, Iowa. Filed Jan. 31, 1888. Serial No. 262,484. (No model.)



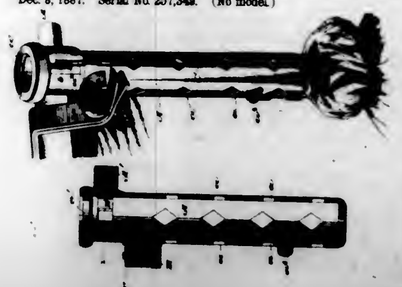
Claim.—1. A miter-box consisting of two hinged boxes, having their approaching ends beveled to produce a miter-joint, and provided upon their upper faces with a longitudinal groove, substantially as herein set forth.

2. A miter-box consisting of two hinged boxes, having their approaching ends beveled to produce a miter-joint, substantially as herein set forth.

3. A miter-box consisting of two hinged boxes, having their approaching ends beveled to produce a miter-joint, and provided upon their upper faces with a semicircular longitudinal groove, a shoulder intersecting said groove, and means for retaining the two boxes at right angles to each other, as and for the purposes set forth.

4. A miter-box consisting of two boxes hinged to fold parallel with each other, having their approaching ends beveled to produce a miter-joint, and provided upon their upper faces with a semicircular longitudinal groove, a shoulder intersecting said groove, and means for detachably retaining the beveled ends of the boxes in contact, substantially as and for the purposes set forth.

380,633. COMBINED WHIP AND ROBE LOCK AND LINE-HOLDER. HUDSON MARTIN and JOEL R. PALMER, Roanoke, Mo. Filed Dec. 8, 1887. Serial No. 257,349. (No model.)



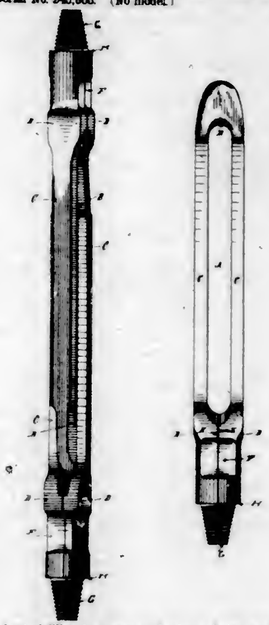
Claim.—1. The device herein set forth, comprising a whip-socket having a leather ring in the upper end thereof, the semicircular plate adapted to be propelled inward into the socket and having a reduced end, as set forth, a chain, C, permanently secured at one end to the socket and adapted to be thrown around the robe to lock the same, and then secured at its upper end to the reduced end of the semicircular plate, and the rein-holder on the side of the socket, constructed substantially as described.

2. The combination, with the socket constructed as set forth, of the corrugated sector-plate E, and the pawl F, having a corrugated head, as set forth, the said parts acting conjunctively to lock the reins in connection with the socket, as set forth.

3. The combination, with the whip-socket, of the semicircular plate B, actuated by a screw turned by a key, which has a reduced end, *b*, the chain F, adapted to be locked by the reduced end of the semicircular plate at its upper end and encircle the robe and be secured to a lug integrally formed with the lower part of the socket, substantially as described.

4. The combination, with the whip-socket proper, of the leather ring *a'*, mounted in the inner upper end thereof, and a semicircular spring-plate, B, mounted below said ring *a'* and attached to the inner end of a screw, S, adapted to be operated by a key to project the said plate B into or withdraw it from the internal part of the said socket, substantially as described.

380,634. DRILLING-JAR. CHARLES R. MCKINNEY, Tarport, assignor of one-half to William C. Walker, Bradford, Pa. Filed July 20, 1887. Serial No. 245,603. (No model.)



Claim.—1. A drilling-jar composed of two links, each made of a single piece of metal and having the pin ends thereof open, substantially as and for the purpose set forth.

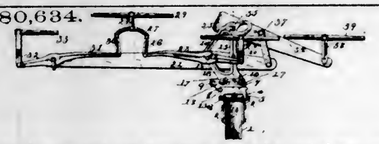
2. A drilling-jar section constructed of a single piece of metal, with the pin end thereof open, substantially as and for the purpose set forth.

3. The combination, in a drilling-jar, of two sections, A A, each of said sections having the ends D D thereof separated, substantially as shown, with one-half of the pin G on each of the ends D D, substantially as and for the purpose set forth.

380,635. DRAFT-EQUALIZER. JOHN PUTMAN, Beardstown, Ill., assignor to Martha A. Putman, same place. Filed July 9, 1887. Serial No. 243,872. (No model.)

Claim.—1. In a draft-equalizer, the combination of two clevis-plates secured to the sides of the end of a plow-beam, a casting having two perforated rearwardly-projecting ears pivoted upon a bolt passing through the perforations of the clevis-plates and having a flat

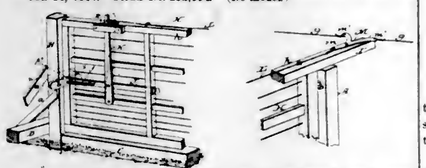
380,634.



forward face provided with laterally-projecting flat vertical ears, and a bar having a rearwardly-extending swivel-bolt pivoted in the casting and an inwardly-pointing lip upon its rear side engaging one of the flat ears and having the equalizer attached to it, as and for the purpose shown and set forth.

2. In a draft-equalizer, the combination of a perforated transverse bar swiveled to a casting secured to the clevis, two frames having each a V-shaped and a straight side piece, and having ears at their rear ends secured by bolts to the perforated bar, and having perforations at the apices of the V-shaped sides and at the middles of the straight sides, a long main lever pivoted near one end upon a bolt passing through the apices of the sides of the frames, two levers pivoted at a point one-third of their length, respectively, upon the fulcrum-bolt for the main lever and at the end of the long arm of the same, and having singletrees at the ends of their short arms, an arched bar having a singletree at its middle and having its ends connected by links to the ends of the long arms of the levers, and a shorter lever fulcrumed upon a bolt passing through the forward ends of the frames and having a singletree at its outer end, and straps pivoted to it near the fulcrum and to the end of the short arm of the main lever, as and for the purpose shown and set forth.

380,636. GATE. JOHN W. RUTLEDGE, Shannondale, Ind. Filed Oct. 11, 1887. Serial No. 252,094. (No model.)

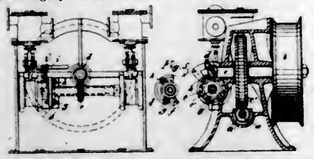


Claim.—1. The combination of the hinged or pivoted gate having a latch and suitable supporting-framing, the lever M, pivoted on the gate off the hinge or pivotal center thereof, and having arm *m*, and arms *m'* *m'* diverging from the rear end of arm *m*, the angles of both said arms *m'* *m'* to the arm *m* being approximately the same, a connection, L, uniting the arm *m* with the latch, and operating-cords connected with the arms *m'*, substantially as set forth.

2. The combination of the gate, hinged or pivoted and provided with a rearwardly-projected extension, the latch, the triple-armed lever pivoted on the rear extension of said gate, the connection between the main arm of said lever and the latch, and the operating-cords connected with the branches of said lever, substantially as set forth.

3. The combination of the gate having a rear extension, I, and provided with guides for the latch, the latch movable in said guides past the swinging edge of the gate, the lever pivoted to the gate below the latch, extended up past and engaged with the latch and projected above the gate, the triple-armed lever pivoted on the rear extension of the gate, and the operating-cords, substantially as set forth.

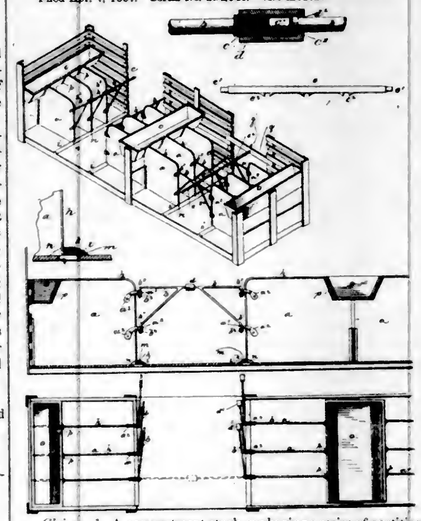
380,637. HOISTING MACHINERY. RICHARD SCHULZ, Tezel, near Berlin, Germany. Filed May 10, 1887. Serial No. 237,776. (No model.) Patented in Germany July 8, 1886, No. 39,139; in England Apr. 18, 1887, No. 5,626; in Italy June 30, 1887, XLII, 417, XXI, 21,565, and in Austria-Hungary Oct. 26, 1887, No. 16,990 and No. 46,837.



Claim.—1. The combination, with the valve-lever *i* and shaft *c* of the shaft *c'*, geared to and driven by shaft *c*, and a sector or segment provided with two tappets arranged to operate the lever *i* to cut off the steam, substantially as and for the purpose specified.

2. The combination, with the valve-lever *i* and shaft *c*, of the shaft *c'*, geared to and driven by shaft *c*, and a sector or segment, *f*, provided with two tappets, *g h*, adjustable in a slot, *f'*, in said segment, arranged to operate the lever *i* to cut off the steam, substantially as and for the purpose specified.

380,638. STOCK-CAR. NATHANIEL Z. SEITZ, Glen Rock, Pa., assignor to the Shellabarger Live-Stock Car Company, Washington, D. C. Filed Apr. 7, 1887. Serial No. 234,040. (No model.)



Claim.—1. A compartment stock-car having a series of partitions to form pairs of stalls or compartments lengthwise of the car, and swinging guards attached to such partitions and adapted to be locked together in alignment with the partitions, substantially as described.

2. A compartment stock-car having a series of partitions to form stalls or compartments and swinging guards attached to such partitions and adapted to be locked together in alignment with the partitions, and a cross-bar engaging the guards to brace or stay them, substantially as described.

3. A compartment stock-car having a series of partitions to form stalls or compartments in pairs lengthwise of the car, and a guard for each of said compartments, hung to the partitions and adapted to be turned out to close all the compartments but those desired to be filled when loading the car, substantially as described.

4. A compartment stock-car provided with a crane-like swinging guard hung to the partition of each compartment, combined with unions or couplings for locking the said guards together, substantially as described.

5. In a stock-car in which the stalls are arranged opposite each other, guards for such stalls, arranged on one of the stalls and having screw-threaded ends, and similar guards arranged on the opposite stalls, each provided with a screw-threaded slip-coupling or union adapted to engage the opposite guard, substantially as described.

6. In a stock-car having a series of compartments or stalls arranged opposite each other, a series of guards adapted to be brought into alignment to cover the passage-way between said stalls, and a cross-bar provided with projections to engage such united guards to hold them in position, substantially as described.

7. In a stock-car, the partitions provided with metal bindings *h*, having toes *i* at their lower ends, combined with keepers or guards to receive such toes, substantially as described.

8. In a stock-car in which the compartments or stalls are arranged opposite each other, with an intervening aisle or passage-way, guards for such stalls or compartments, arranged to be swung across the said aisle and united by couplings to close the aisle and to separate the pairs of stalls, and adapted to be disconnected when the stalls are emptied, and turned across the stalls to close them against entrance by incoming or outgoing cattle in loading or unloading the car, substantially as described.

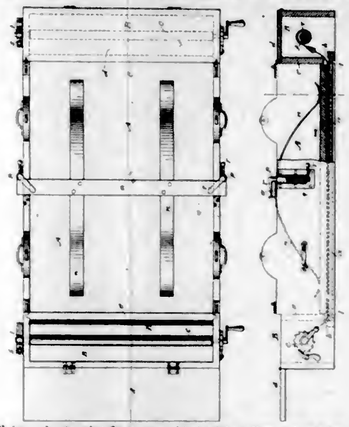
9. Guards or gates for the stalls of stock-cars, arranged in pairs, and one of such guards having near its end a screw-threaded enlargement, a terminal unthreaded portion of less diameter, and the other guard having a shouldered end provided with a screw-threaded slip-coupling or union adapted to operate in connection with the first-named guard, substantially in the manner and for the purpose set forth.

10. In a stock-car having partitions to form stalls, toes *i* on such partitions, combined with keepers arranged over openings in the car-floor, and the notched strip overlying said keeper, substantially as described.

11. In a stock-car, partitious suitably secured therein in pairs to form stalls, with an intervening passage-way, combined with gates or guards to close said passage-way, each of said gates or guards being connected to the stalls at a number of points and provided with couplings adapted to draw upon said stalls, and thus rigidly connect them under tension, to thereby stiffen and brace the said stalls, substantially as described.

12. In a stock-car, the partitions provided with toes *i*, combined with keepers or guards to receive such toes to lock the partitions in place, substantially as described.

380,639. PHOTOGRAPHIC-PRINTING FRAME. JOSEPH STRACHAN, Brooklyn, N. Y. Filed July 28, 1887. Serial No. 245,496. (No model.)



Claim.—1. A print-frame provided with rollers adapted to hold the drawing and sensitized paper, and connecting devices to cause the drawing and sensitized paper to move with the rollers and with each other, and a suitable place between the rollers for exposing the drawing and sensitized paper to the light.

2. A print-frame consisting of a middle portion, where the drawing and the sensitized paper are exposed, and two end boxes and rollers mounted therein, one roller to hold the drawing and sensitized paper before exposure, the other roller to hold them after exposure, and connecting devices to cause the drawing and sensitized paper to move with the rollers and with each other, substantially as shown and described.

3. A print-frame consisting of a middle portion, where the drawing and the sensitized paper are exposed, and two end boxes and rollers mounted therein adapted to feed and to receive the drawing and sensitized paper, respectively, and adjustable friction-bands adapted to bear on said rollers, substantially as shown and described.

4. A print-frame consisting of a middle division with a glass and an adjustable back piece, between which the drawing and sensitized paper are held and exposed, and two end boxes having slits through which the drawing and sensitized paper pass to or from the middle division, and rollers in said boxes to hold the drawing and sensitized paper, and hinged and sliding sides to said end boxes, substantially as shown and described.

5. A print-frame consisting of a middle division, with a glass under which the drawing and sensitized paper are exposed, and two end boxes and rollers mounted therein to hold the drawing and paper, and connecting devices to cause the drawing and sensitized paper to move with the rollers and with each other, and a crank-arm and a ratchet and pawl attached to each roller for moving the drawing and paper and holding the same taut, substantially as shown and described.

6. A device for fastening the drawing and sensitized paper in a print-frame to end rollers, consisting of a connecting-piece of suitable material adapted to be fastened to the roller at one end, eyelets at the other end of said connecting-piece, gripping-pieces passing through said eyelets, and bands on said gripping-pieces for opening or closing the jaws of the gripping-pieces, substantially as shown and described.

7. A device for fastening the drawing and sensitized paper in a print-frame to end rollers, consisting of a connecting-piece of suitable material adapted to be fastened to the roller at one end, a strip of metal inclosed in the other end of said connecting-piece, eyelets through said metal strip and the material inclosing it, gripping-pieces passing through said eyelets, bands on said gripping-pieces for opening or closing them, pins projecting inwardly from the ends of the gripping-pieces, and holders having holes to receive said pins and adapted to clamp the drawing and paper when the gripping-pieces are closed, substantially as shown and described.

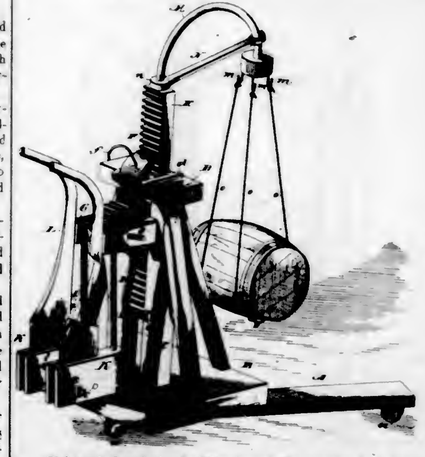
8. A print-frame consisting of a middle division, where the drawing and sensitized paper are exposed, and two end boxes and rollers mounted therein to hold the drawing and paper, and two pieces of suitable material, each one adapted to be fastened to its roller at one end, eyelets at the other end of each piece, gripping-pieces passing through the eyelets, and bands on said gripping-pieces for opening and closing the jaws of the gripping-pieces, substantially as shown and described.

9. In combination with a print-frame having a middle division, with a glass under which the drawing and sensitized paper are exposed, and two end boxes and rollers mounted therein to hold the drawing and paper, and strips of opaque material at the ends of the glass to mark the section-lines, substantially as shown and described.

10. A device for fastening in its place the back piece of a print-frame, consisting of a cross-piece, springs attached thereto and adapted to bear on the back of the print-frame, and bolts having a sliding connection with the print-frame, and projecting arms on said bolts, one adapted to bear on said cross-piece and the other to bear against some part of the print-frame, substantially as shown and described.

11. A print-frame consisting of a middle division, with a glass under which the drawing and the sensitized paper are exposed, and end boxes and rollers mounted therein to hold the drawing and paper, in combination with a back piece, a cross-piece, springs attached to said cross-piece and adapted to bear on the back piece, bolts having a sliding connection with the print-frame, and projecting arms on said bolts, one adapted to bear on said cross-piece and the other to be turned under some part of the print-frame, whereby the pressure of the back piece upon the drawing and paper can be removed when a new section of drawing is to be passed under the glass, all substantially as shown and described.

380,640. BARREL-LIFTER. SIMEON TURNER, Warren, Ind., assignor of one-half to Henry J. Coles, same place. Filed July 28, 1887. Serial No. 245,536. (No model.)

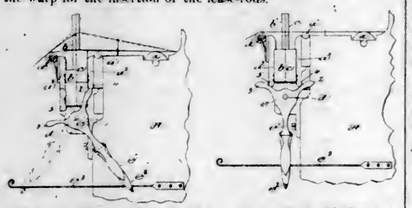


Claim.—1. In a device for lifting barrels, the combination of a base suitably mounted on casters or rollers, the posts C, having bearings for a lever, H, a cross-piece, D, connecting the upper ends of the posts, a rack-bar, E, pawl F, and arm pivotally secured to the rack-bar and provided with hooks, the parts being organized substantially as shown, and for the purpose set forth.

2. In a device for lifting and carrying barrels, a frame suitably mounted on rollers and provided with a lever having teeth formed on one end, a vertically-moving rack-bar adapted to engage with said teeth, and an arm pivotally attached to the rack-bar and provided with a braced arm, M, and head carrying a series of hooks, and means for connecting a barrel therewith, and handles pivotally secured to sliding blocks, substantially as shown, and for the purpose set forth.

380,641. **LEASE-FORMING MECHANISM FOR WARPING-MACHINES.** ALVIN WOODMAN, Marysville, New Brunswick, Canada. Filed Jan. 3, 1887. Serial No. 223,195. (No model.)

Brief.—The object of the invention is to facilitate the separation of the warp for the insertion of the lease-rods.



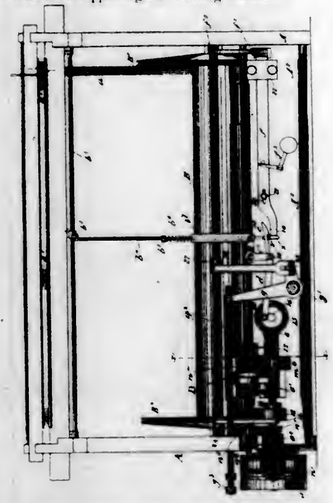
Claim.—1. The two lifting-bars *b c*, each provided with dents, as *b' c'*, and guides for the said bars, combined with a vibratory lifting device arranged at each end of the bars and each having the horns or tappets 2 and 3, to respectively act upon and lift the said bars, substantially as set forth.

2. The two lifting-bars *b c*, each provided with dents, as *b' c'*, and guides for the said bars, combined with a vibratory lifting device arranged at each end of the bars, and each having the horns or tappets 2 and 3, to respectively act upon and lift the said bars, and with a handle and locking devices, to operate substantially as set forth.

3. A lease-forming device for warping-machines, consisting of guides, as a^3, bars, as *b c*, guided thereby, said bars having dents, as *b' c'*, provided with eyes at their upper ends, and a fulcrumed lifting device having two arms, one arm engaging one of the holding-bars and the other arm the other holding-bar, so as to alternately raise one holding-bar above the other or set them at the same level, for the purpose set forth.

380,642. **WARPING-MACHINE.** WILLIAM BANCROFT, Hopedale, Mass., assignor of one-half to the Hopedale Machine Company, same place. Filed Feb. 27, 1886. Serial No. 193,411. (No model.)

Brief.—The object of the invention is to improve the construction of warping-machines, whereby the heads of the beam may be enlarged in diameter to enable the beam to hold more yarn, and consists in the improved means for supporting and rotating the beam.



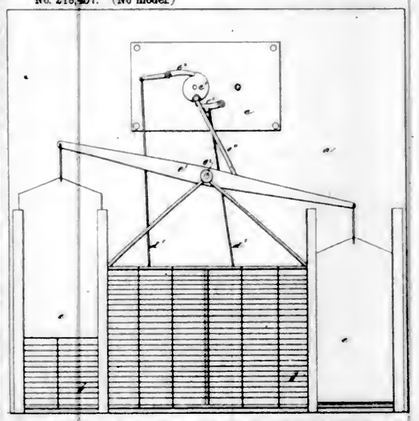
Claim.—1. The sectional cylinder and bearings therefor, located between its fixed central and end portions to support it, and independent supporting-rolls located at each bearing, the periphery of the said rolls coinciding with that of the cylinder at such points, combined with a yarn-beam resting thereon and rotated thereby, the heads of the warp-beam overlapping and crossing the center of rotation of the said cylinder, substantially as described.

2. The cylinder supported in bearings located between its ends and the supporting-rolls 31, combined with the warp-beam, the said rolls supporting the warp-beam or the yarn thereon opposite the bearings for the cylinder, substantially as described.

3. The cylinder composed of the fixed central part, *h*, and the fixed end portions, of like diameter, separated from the said central portion and provided with internal teeth, *m*, combined with the pinion *m'*, gears m^3 and m^4, constituting fast-speed mechanism, and the sleeve e^3, attached pinion *n'*, gears n^3 and n^4, and clutch D, constituting slow-speed mechanism, to drive the cylinder at different speeds, substantially as described.

4. The pivoted fingers *a'*, adapted to be connected to the warp-threads, the knock-off bar *b*, and arms *b'*, rock-shaft b^3, arm b^4, the rod b^5, spring, and guide, combined with the hook *c*, means to raise and lower the said guide and reciprocate the hook, the slide *f*, arms *f' f*^{3}, stopping devices, as described, and rock-shaft 23, to operate the said stopping devices, substantially as described.

380,643. **ANIMAL-TRAP.** HENRY BARRY, Chicago, Ill., assignor of one-half to Dennis Norton, same place. Filed Nov. 10, 1886. Serial No. 218,457. (No model.)

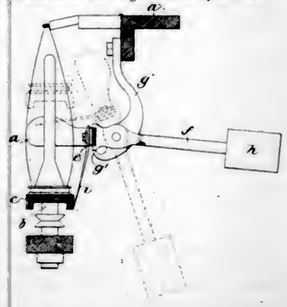


Claim.—1. In an animal-trap, the combination, with the main body of the trap provided with two separate entrance lanes or passages, of two vertically-sliding doors placed one in each passage and connected to move together in opposite directions, a clock mechanism connected to these doors to operate them and provided with a pair of stop-pawls, and a pair of bait-hooks in the passages connected to said pawls, substantially as and for the purpose set forth.

2. In an animal-trap, the combination, with the main body of the trap having two separate entrance-passages, each provided at its outer end with a sliding door and at its inner end with a series of hinged wires opening freely into the trap, of a clock mechanism provided with a shouldered cam-disk, a pair of stop-pawls for the same connected to the bait-hooks suspended in the passages, and a rock-shaft connected to the sliding doors and also connected to and operated by the clock mechanism, substantially as and for the purpose set forth.

380,644. **YARN-SEPARATOR FOR SPINNING-FRAMES.** HENRY C. CUNNINGHAM, Manchester, N. H., assignor to George Draper & Sons, Hopedale, Mass. Filed Jan. 7, 1888. Serial No. 260,029. (No model.)

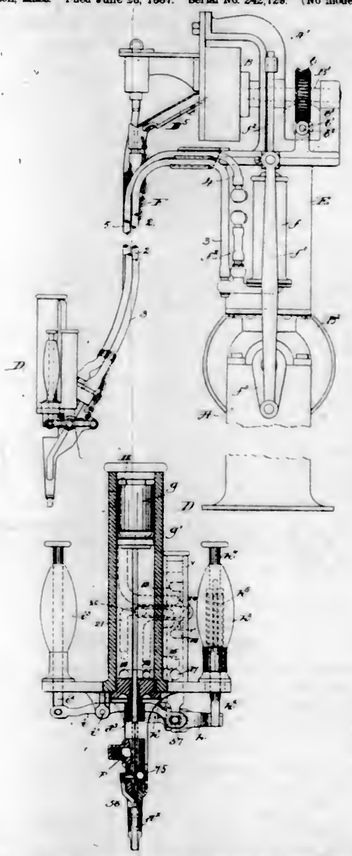
Brief.—The object of the invention is to relieve the ring-rail in its upward movement of the weight of the separators.



Claim.—1. The combination of the separators and their pivoted support with an actuating projection adapted to be engaged by the ring-rail in its downward movement for the purpose of bringing the separators into operative position, substantially as described.

2. The separators and their supporting-levers provided with counterbalanced weights and actuating projections for turning the separators downward, combined with supporting-hangers for said levers provided with stop projections for limiting the downward movement of the separators, substantially as described.

380,645. **NAILING-MACHINE.** HENRY W. DEAN, Sharon, assignor of two-thirds to Leonard R. Lothrop, Lynn, and Samuel A. Butler, Boston, Mass. Filed June 28, 1887. Serial No. 242,729. (No model.)



Claim.—1. In a tacking-machine, the flexible tack-conveying tube and a feeding device to feed tacks singly to the said tube, combined with a suspended head and an attached driver for driving the tacks at any point desired when delivered from the tube, substantially as described.

2. In a machine for driving tacks, the hopper mounted upon a stationary frame-work and a driver carried by a movable head suspended loosely therefrom, combined with a flexible tack-conducting tube connecting the movable head with the stationary frame-work, substantially as described.

3. In a machine for driving tacks, a hopper and an inclined raceway, combined with a flexible tack-conducting tube, a driver carried by a loosely-suspended and universally-movable head, and a let-off between the said tack-conducting tube and driver, substantially as described.

4. In a machine for driving tacks, a hopper, a universally-movable head, and an attached driver, combined with a tack-conveying tube connecting the said hopper and head, and with means, substantially as described, controllable from the movable head to force air into the upper end of said conveying-tube to move forward the tacks contained therein, as set forth.

5. In a machine for driving tacks, a hopper and a universally-movable head and driver, combined with a tack-conveying tube and with an air-exhausting device for exhausting the air from the lower part of the said tube, substantially as described.

6. In a machine for driving tacks, the head provided with the driver-passage, a feed-tube communicating therewith, a driver, and valves for closing the driver-passage simultaneously above and below the junction of the feed-tube therewith, and combined with means for exhausting the air from the lower portion of the feed-tube and in front of the tacks therein, substantially as described.

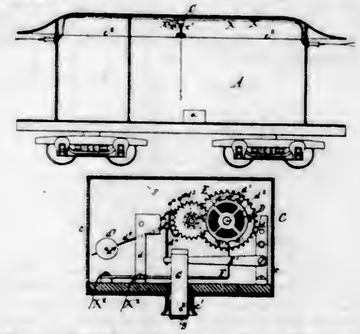
7. In a machine for driving tacks, a feed-tube and driver-passage with which it communicates, and a let-off device for permitting the tacks to pass from the feed-tube to the driver-passage one at a time, combined with a driver and means, substantially as described, controlling the operation of the driver and let-off device simultaneously, as described.

8. In a machine for driving tacks, a hopper, its stationary frame-work, a driver, and its movable head, combined with a flexible feed-tube and with a pump for exhausting the air from the feed-tube and for operating the driver by compressed air, substantially as described.

9. In a machine for driving tacks, a feed-tube and driver, and a plunger, d^6, for closing the upper end of the feed-tube, combined with an air-pump and with several flexible tubes for exhausting the air from the feed-tube from its lower end, causing the descent of the driver, and also for forcing the air into the feed-tube at its upper end, substantially as described.

10. In a machine for driving tacks, a hopper and raceway, a let-off valve mounted upon a stationary frame-work, the driver carried by a movable head, and a flexible feed-tube, combined with an air-pump and with pipes by which air is exhausted from the feed-tube at its lower end and forced into a cylinder to cause the descent of the driver, and with valves also carried by the movable head for controlling the flow of air.

380,646. **ELECTRICAL SIGNAL APPARATUS.** JOHN R. DE MIER, Las Cruces, N. Mex., assignor, by mesne assignments, to the De Mier Electric Train Signal Company. Filed June 9, 1887. Serial No. 240,779. (No model.)



Claim.—1. In a railroad signaling apparatus, the combination of the continuous electric-circuit wires X X, branch wires X^2 X^2, pendent hand pull-rope c^2, plug G, frame *d*, having binding-screws, and the special alarm C, comprising in its construction the contact-wheel E, contact-spring F, escape-wheel d^3, and escape d^4, and the other ordinary clock-work parts shown, substantially as and for the purpose described.

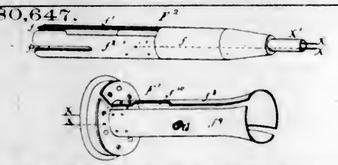
2. The combination of train circuit-wires X X, having branch wires X^2 X^2, escape-wheel d^3, escape d^4, contact-wheel E, contact-spring F, and check-spring E' of the signaling apparatus C, the plug G, chain c^2, and truck of a car, substantially as and for the purpose described.

3. The alarm-starting plug G, acting when in position against the check-spring E' of the signal apparatus C, and having lateral springs *g*, for holding it in the housing *c* while in position, substantially as and for the purpose described.

380,647. **ELECTRIC SIGNAL FOR RAILWAY-CARS.** JOHN R. DE MIER, Las Cruces, N. Mex., assignor, by mesne assignments, to the De Mier Electric Train Signal Company. Filed June 9, 1887. Serial No. 240,780. (No model.)

Claim.—1. The combination, with the pull-rope extending from end to end of the respective cars of a train and having an electrical

380,647.



signal apparatus combined therewith, of the pendent non-conducting handles *i*, provided with the slots *i'*, grooves i^2, and clamp-screws i^3, substantially as and for the purpose described.

2. The coupling F, comprising sections F' F^2, and having the plates f^6 f^7, having spring-clamps G, and the plates f^8 f^9, having slots f^{10}, substantially as and for the purpose described.

3. The coupling F, comprising sections F' F^2, and having the plates f^6 f^7, with notches f^{10}, and the plates f^8 f^9, with lips f^{11}, substantially as and for the purpose described.

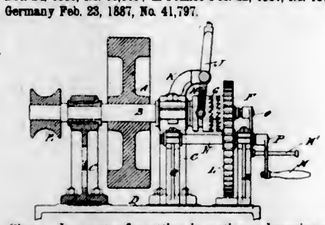
4. In the circuit-closer H, the conducting-rod A^4, having contact-spring A^{10} and tension-spring A^5, conducting-braces A^2 A^3, insulator A^6, branch conducting-wires X^2 X^3, and pull cord or rope, substantially as and for the purpose described.

5. In a manual electric-circuit closer for signals for railroad-trains, the combination of the pull-rope, electric conductors or circuit-wires, circuit-closing reciprocating rod, circuit-opening tension-spring, and cylindrical spiral-spring contact device applied on the said reciprocating rod and against a head, A^7, thereof, substantially as and for the purpose described.

6. In an electric train-signaling apparatus, the combination of the coupling portion F', having housing M, springs *m'*, and cap *m*, with the coupling portion F^2, having rubber packing m^2, substantially as and for the purpose described.

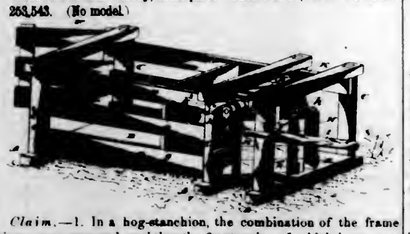
7. In an electric alarm signaling apparatus provided with a coupling and circuit-closing mechanism, the spiral-spring contact device A^{10}, and making a direct contact itself with the contact-plate, and arranged upon a reciprocating conducting-rod, A^4, which is insulated by a bushing of the contact-plate, against which (the plate) said spring-contact bears when the circuit is closed, substantially as and for the purpose described.

380,648. **MOTOR.** DIGBY DU BOULAY, London, England. Filed Mar. 7, 1887. Serial No. 229,898. (No model.) Patented in England Dec. 24, 1886, No. 16,915; in France Feb. 22, 1887, No. 181,730, and in Germany Feb. 23, 1887, No. 41,797.



Claim.—In a motor for setting in motion and moving railway rolling stock and lifting materials and for other purposes, the combination of a fly-wheel, A, mounted on a shaft, B, adapted to revolve, a pulley, E, on the same shaft, a clutch, G, thereon, a toothed wheel, F, on said shaft, and square head O, with toothed wheel L, gearing into toothed wheel F, and square head P, for operating said toothed wheel L by means of a hand-crank, substantially as and for the purpose set forth.

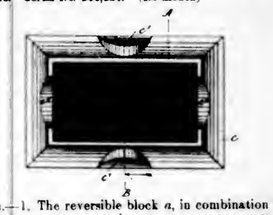
380,649. **HOG-TRAP.** BEVERLY W. DUNCAN, Dora, Ind., assignor of one-half to Isaac Leedy, same place. Filed Oct. 27, 1887. Serial No. 253,543. (No model.)



Claim.—1. In a hog-stanchion, the combination of the frame having a rear gate and uprights the front series of which have open spaces between them at the sides and front end, the partition adapted to be slid toward the forward end of the frame, the hinged doors ahead of the said partition having limiting-stops for regulating the outward movement thereof, and the lever arranged ahead of said hinged doors, adjustable, as set forth, substantially as described.

2. In a hog-stanchion, the combination of the frame constructed as set forth and having a rear end gate, the partition-board adapted to be turned to give passage to an animal thereby and having slots and shoulders engaging with the side slats of the frame and to slide thereagainst, the windlass having a handle and ratchet and pawl, the rope engaging with said windlass and connected to the sliding partition, the hinged doors, the pins for limiting the movement thereof, the front lever, and the pin for limiting the movement of said lever, substantially as described.

380,650. **PEN CLEANER AND HOLDER.** JACOB EDSON, Boston, assignor of one-half to John S. Rice, Cambridgeport, Mass. Filed Jan. 16, 1888. Serial No. 260,821. (No model.)



Claim.—1. The reversible block *a*, in combination with the base or socket *c*, having tapering or curved sides and ends, as described, and having on two opposite sides the finger projections *c' c'*, as and for the purpose set forth.

2. The reversible block *a*, in combination with the base or socket *c*, having on two opposite sides or ends the cut-away portions c^4 c^4, as and for the purpose set forth.

3. The reversible block *a*, in combination with the base or socket *c*, having its bottom provided with the circumferential groove c^5 and central raised portion, c^3, as and for the purpose set forth.

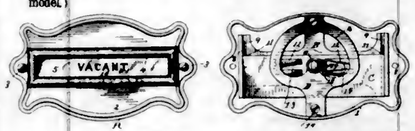
4. The reversible block *a*, in combination with the base or socket *c*, having tapering or curved sides, as described, and having on two of its opposite sides or ends the finger projections or lifters *c' c'*, the cut-away portions c^4 c^4, and having in its bottom the circumferential groove c^5, substantially as and for the purpose set forth.

380,651. **COILED SPRING.** FORMAN F. FOWLER and MARTIN V. B. WALDORF, Wolcott, N. Y. Filed Jan. 19, 1887. Serial No. 224,824. (No model.)



Claim.—The herein-described coiled spring, made of a cylindrical rod decreasing in diameter toward the apex of the spring, and at the apex squared and coiled into an eye, the coils of the spring decreasing in diameter and in pitch from the base to the apex, substantially as specified.

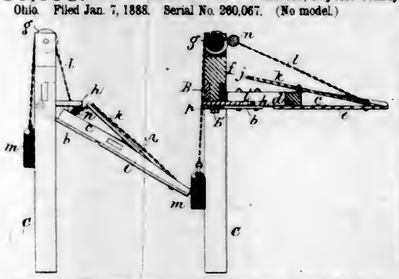
380,652. **DOOR-PLATE AND INDICATOR.** WILLIAM N. GARTSIDE, Richmond, Ind. Filed Dec. 7, 1887. Serial No. 257,227. (No model.)



Claim.—1. The combination, with the latch or lock of a door, of a shifting name-plate, consisting of a casing adapted to be secured to the face of a door and formed with an opening in its face, a shifting sign-plate seated within the casing and formed with a groove in its back, a tumbler journaled in a keeper in the casing and arranged with its lug in the groove of the shifting sign-plate, a casing adapted to be secured to the opposite face of the door, a tumbler-crank journaled in said last-named casing, formed with a socket to set over the shank of the tumbler, and a sliding bolt connected to the tumbler-crank, substantially as described.

2. The combination, with the latch or lock of a door, of a shifting name-plate, consisting of a casing adapted to be secured to the face of the door and formed with an opening in its face, a frame formed with an opening in its face and end flanges and seated in said casing, a shifting sign-plate seated within the casing on said frame and formed with a groove on its back, a tumbler journaled in a keeper in the casing and arranged with its lug in the groove of the shifting sign-plate, a casing adapted to be secured to the opposite face of the door, a tumbler-crank journaled in said named casing, formed with a socket to set over the shank of the tumbler, and a sliding bolt connected to the tumbler-crank, substanfially as described.

380,653. **FLOOD-GATE.** WINFIELD S. HOUTON, Fayette County, Ohio. Filed Jan. 7, 1888. Serial No. 260,067. (No model.)



Claim.—1. The combination, with a flood-gate suspended from a beam, as described, of a chain, a weight attached thereto, a ball on said chain, a pulley above the suspending beam over which said chain is carried, the notched piece with which said ball engages, and the tripper adapted to engage said chain below said ball and to disengage the latter as the gate reaches a limited height, and thus free the weight and cause it to raise the gate to its full height, substantially as set forth.

2. The combination, with a flood-gate, of a fixed pulley, a chain having one end attached to said gate and passing over said pulley, a weight at the opposite end of said chain adapted to elevate said gate, a ball on said chain between the weight and the end attached to the gate, a device to hold said ball in engagement when said weight is drawn up, and thereby prevent the latter from operating the gate with said ball engaged, and a tripping or detaching device to disengage said ball and allow said weight to elevate the gate when the latter shall have reached a limited height by the force of the water, substantially as hereinbefore set forth.

380,654. **INK.** MARSHALL C. LEFFERTS, New York, N. Y., and JOHN H. STEVENS, Newark, N. J. Filed Dec. 6, 1886. Serial No. 220,821. (No specimens.)

Claim.—1. An ink for use in printing upon celluloid or other pyroxyline compounds, consisting, essentially, of insoluble pigment in powdered form, a solvent of the pyroxyline compound, and a gum for binding the particles of pigment together.

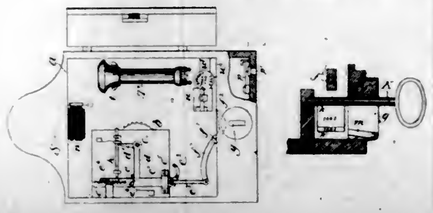
2. An ink for use in printing upon celluloid or other pyroxyline compounds, consisting, essentially, of insoluble pigment in powdered form, a gum for holding the particles of pigment together, and a volatile oil which is or becomes a solvent of the pyroxyline compound.

3. An ink for use in printing upon celluloid or other pyroxyline compounds, consisting, essentially, of insoluble pigment in powdered form, a gum for holding the particles thereof together, and a solvent consisting, essentially, of oil of cassia.

4. An ink for use in printing upon celluloid or other pyroxyline compounds, consisting, essentially, of insoluble pigment in powdered form, shellac, and a solvent of the pyroxyline compound.

5. An ink for use in printing upon celluloid or other pyroxyline compounds, consisting, essentially, of insoluble pigment in powdered form, shellac, and a solvent consisting, essentially, of oil of cassia.

380,655. **MUNICIPAL SIGNALING.** MORRIS MARTIN, Malden, Mass., assignor to the Municipal Signal Company, Portsmouth, N. H. Filed July 31, 1886. Serial No. 209,661. (No model.)



Claim.—1. A signal-box containing the following elements in combination: an automatic transmitter having a circuit-controlling surface and an actuating-motor, a winding device for said motor, an actuating device for the said winding device, arranged with relation thereto as described, whereby it operates the winding device to wind and then release the motor, and a locking device co-operating with said actuating device and winding device, as described, whereby the actuating device is engaged when the winding device is released and retained inoperative while the motor is running, substantially as described.

2. A signal-box and automatic transmitting device therein, combined with a key having a detachable indicating portion and a catch for said detachable portion, whereby the latter is removed from the key when the key is withdrawn from the box, the said key, when in the box, engaging and operating the automatic transmitting device, substantially as described.

3. A signal-box and automatic transmitting device therein, combined with a key composed of a main portion and detachable indicating portion co-operating with the transmitting device, as described, the entire key being capable of operating the transmitting device, while the main portion alone is insufficient to operate the transmitting device, and a catch that retains the detachable portion of the key when the main portion is removed from the box, substantially as described.

4. In a municipal signal system, the combination, substantially as described, of an electric circuit, a main office or receiving-station containing a receiving-relay and an indicating-signal, a series of signal-boxes each containing a signal-transmitting device, and also an independent hand-operated circuit-controlling device consisting of two pivoted levers, a contact-point for each lever, and a push-button to move the other lever in contact with its contact-point and to disengage the first lever from its contact-point, substantially as described.

5. In a municipal signal system, the combination, substantially as described, of an electric circuit, a main office or receiving-station containing a receiving-relay, a register, and an indicating-signal, a series of signal-boxes each containing a signal-transmitting device, and also an independent hand-operated circuit-controlling device consisting of a lever, *w*, spring *w'*, and a push-button having a pivoted lever, w^4, and spring.

6. In a municipal signal system, the combination, substantially as described, of an electric circuit, a main office or receiving-station containing a receiving-relay, a register, and an indicating-signal, a series of signal-boxes each containing a signal-transmitting device, and also an independent hand-operated circuit-controlling device accessible from the exterior of the box, as described, said circuit-controlling device being constructed and arranged to momentarily change the condition of the circuit when operated.

7. A telegraph apparatus comprising a series of stations and metallic circuit connecting the same and normally-open earth branches at the said stations, and a switch at one station, by which one of the earth branches at said station may be closed, and normally-open circuit-closers and signaling-instruments in the earth branches at the other stations, whereby an earth-circuit may be established through the said signaling-instrument if the switch is closed at the other station, substantially as and for the purpose set forth.

8. A telegraph apparatus comprising a main station and series of sub-stations and metallic circuit connecting the same, combined with normally-open earth branches at all the said stations and a switch and vibrator in the earth branch at the main station, and a normally-open circuit-closer and tap-bell in the earth branches at the sub-stations, substantially as and for the purpose described.

9. A signal-box and a transmitting device therein, combined with a key for effecting the operation of the transmitting device, said key having a detachable portion which is left in the box when the key is withdrawn therefrom, substantially as described.

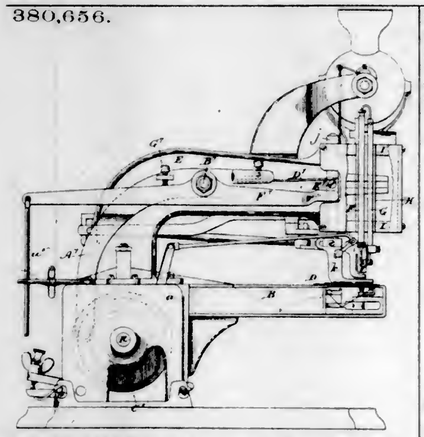
10. A signal-box and a transmitting device therein, combined with a key for effecting the operation of the transmitting device, said key being numbered and having a corresponding numbered detachable portion which is left in the box when the key is withdrawn, whereby a particular key which has been employed to operate the transmitting device may be detected, substantially as described.

11. A signal-transmitter, a motor mechanism, a winding device for the motor mechanism, and an actuating device for the winding device, combined with a spring-controlled slide-bar, *A*, which engages and holds the actuating devices during the time the motor is running, substantially as described.

380,656. **PRESSER-FOOT-OPERATING MECHANISM FOR SEWING-MACHINES.** JOSEPH MATHISON, Lynn, Mass., assignor to the Standard Button Fastening Company. Filed Feb. 23, 1886. Serial No. 192,797. (No model.)

Claim.—1. The combination, with the presser-foot and its bar, of the lever A^7, having a flexible extension or spring bearing on a projection on the presser-bar and forcing the latter with a yielding press-

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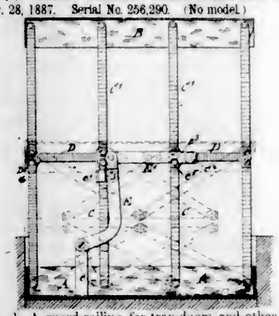


ure to the limit of its downward movement, and connections with the driving-shaft for operating said lever, as set forth.

2. The combination, with the presser-foot and its bar, of the lever F^7, adapted to bear against a projection on the presser-bar, the independently-movable lever A^7, pivoted as described, and having a flexible extension or spring bearing against the said projection on the presser-bar, and a projection, as G^7, arranged to act on the lever F^7, as set forth.

3. The combination, with the presser-foot and its bar having the projection E^7, of the lever F^7, adapted to bear against the lower side of said projection, and the independently-movable lever A^7, pivoted as described, and having the spring D^7 bearing on the upper side of said projection, and the adjustable screw or stud G^7, whereby the lever F^7 is operated to lift the presser-foot a distance governed by the adjustment of said screw, as set forth.

380,657. GUARD-RAILING. JOSEPH MUSER, New York, N. Y. Filed Nov. 28, 1887. Serial No. 256,290. (No model.)

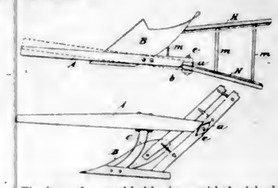


Claim.—1. A guard-railing for trap-doors and other purposes, composed of a base-piece, a top piece, a set of lower pivot-links, a set of upper pivot-links, intermediate transverse straps which connect the sets of pivot-links into groups, and a lifting and locking lever provided with a pivot-sleeve connected to the links of one group, and with a locking device for connection with the other group, substantially as set forth.

2. The combination of a base-piece, a top piece, sets of folding links pivoted, respectively, to the base and top pieces, intermediate connecting-strips pivoted to the sets of pivot-links so as to form groups and a lifting and locking lever pivoted to the base-piece and made of two pivoted sections, one section being provided with a pivot-sleeve that moves along one of the pivot-links of one group, while the second section is provided with locking devices for interlocking with one of the pivot-links of the other group, substantially as set forth.

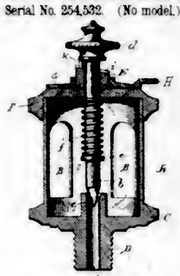
3. The combination of a base-piece, A, having an extension, A', a top piece, B, having a similar extension, B', a lower set of pivot-links, C, an upper set of pivot-links, C', side links, C^2 C^2, transverse connecting-straps D D D', connecting the pivot-links so as to form groups of links, the side strap, D', being formed of two sections hinged together and to one of the straps D, and a lifting and locking lever formed of two pivoted sections, E E', of which one section is pivoted to the base-piece A and provided with a pivot-sleeve, e', engaging one of the pivot-links of one group of links, while the second section is provided with locking devices for engaging the pivot-links of the upper group of links, so as to lock the parts of the guard-railing in raised position, substantially as set forth.

380,658. PLOW. JOSEPH B. NEFF, Burlington, Iowa, assignor to the Hapgood Plow Company, Alton, Ill. Filed Jan. 13, 1888. Serial No. 260,624. (No model.)



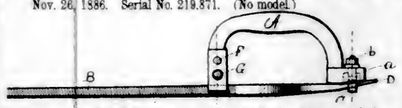
Claim.—The interchangeable block provided with the slotted perforation, adapted to be used on the outside of the handle as a strengthening-support to the handle, or interposed between the handle and beam in converting the plow into a three-horse plow, or placed on the inside of the beam to be carried, in combination with a beam provided with a recess on the side of its rear end, a handle seated in said recess, and a bolt seated through the said three parts—handle, block, and beam—substantially as and for the purpose set forth.

380,659. OIL-CUP. CHARLES H. NUNN, Rochester, N. Y. Filed Nov. 7, 1887. Serial No. 254,532. (No model.)



Claim.—The combination, with the oil-cup, of the cap F therefor, formed with central boss or collar, E, exteriorly threaded, as shown, and provided upon its upper face with a notched cam-surface, the cover G, having a central orifice threaded to engage the threads of the boss, and provided with a handle, H, and the spring-actuated valve-stem working through said boss and provided outside said cover with a projection, *k*, to engage the cam-surface on the boss, substantially as and for the purpose specified.

380,660. FILE-HANDLE. CHARLES J. PRANKARD, Troy, N. Y. Filed Nov. 26, 1886. Serial No. 219,871. (No model.)



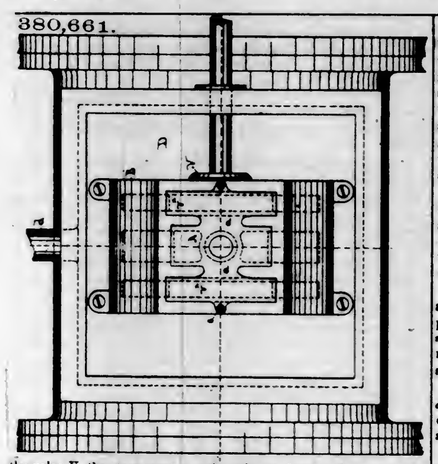
Claim.—The combination, with the file-handle provided at one end with means for securing it to the tang of file, of the rod F, attached transversely by a pin, *e*, to said handle, the right-and-left screw G, pinned transversely to the handle at *g*, and arranged parallel to said rod, and the parallel clamps E E, traveling on the rod F as a guide and carried by said screw, as described.

380,661. STEAM-VALVE. DAVID H. RICE, Brookline, assignor to James Ferguson, Bridgewater, Mass. Filed Dec. 12, 1887. Serial No. 257,590. (No model.)

Claim.—1. The combination of the steam-chest D, the valve-cylinder B, the valve V, the steam-ports *c c*, the exhaust-chamber E, and a relief-valve connecting the exhaust-chamber with the steam-chest, arranged to remain open while the steam is shut off from the chest, and having a plunger or plate connected therewith and adapted to be acted on by the steam-pressure when steam is let on and to close the relief-valve, substantially as described.

2. The combination of the steam-chest D, the valve-cylinder B, the valve V, the steam-ports *c c*, the exhaust-chamber E, and a relief-valve connecting the ports *c c* separately with the steam-chest, arranged to remain open while the steam is shut off from the chest, and having a plunger or plate connected therewith and adapted to be acted on by the steam-pressure when steam is let on and to close the relief-valve, substantially as described.

380,661.

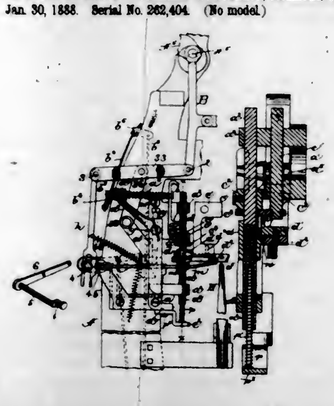


3. The combination of the steam-chest D, the valve-cylinder B, the valve V, the steam-ports *c c*, the exhaust-chamber E, and a relief-valve connecting the ports *c c* separately with the steam-chest, arranged to remain open while the steam is shut off from the chest, and having a plunger or plate connected therewith by a yielding connection and adapted to be acted on by the steam-pressure when it is let on and to close the relief-valve, substantially as described.

4. The combination of the steam-chest D, the valve-cylinder B, the valve V, the steam-ports *c c*, the passages c^3 c^3, opening into the ports, the relief-valves t^3 t^3, covering said passages, and the plunger or plate A, working up and down in an opening in exhaust-chamber E and connected to said relief-valves, substantially as described.

5. The combination of the steam-chest D, the valve-cylinder B, the valve V, the steam-ports *c c*, the passages c^3 c^3, opening into the ports, the relief-valves t^3 t^3, covering said passages, and the plunger or plate A, working up and down in an opening in exhaust-chamber E and connected to said relief-valves by yielding fastenings, substantially as described.

380,662. MACHINE FOR UNITING THE SOLES AND UPPERS OF BOOTS OR SHOES. STILLMAN W. ROBINSON, Columbus, Ohio. Filed Jan. 30, 1888. Serial No. 262,404. (No model.)



Claim.—1. In a machine for uniting soles to uppers by metallic fastenings, a horn to support the stock and a foot-piece, as d^3, adapted to be pressed down upon the stock preparatory to inserting each fastening, and a lift-rod to which the said foot-piece is attached, a collar, c^4, secured to the said bar, and a spring to elevate the said bar, combined with a measuring-plate and measuring-rod, and a clamp to hold the said measuring-rod in position to cause the measuring-plate to act as a stop to arrest the upward movement of the foot-piece preparatory to the action of the feeding-bar upon the stock, substantially as described.

2. The combination, with the horn to support the stock, of the feed-bar to engage and feed the stock over the horn, a foot-piece, and means, substantially as described, to force the said foot-piece down upon the stock to release and lift the same from the stock for a uniform distance irrespective of the thickness of the stock, substantially as described.

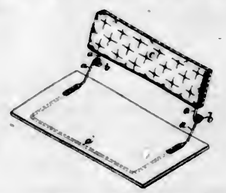
3. In a machine for uniting soles to uppers, the lift-rod d^3, its attached block and foot-lift, a collar, c^4, and the measuring rod and plate, combined with the clamp and with means, substantially as described, to act upon and release the clamp to permit the measuring-rod to ascend until arrested by the collar c^4, as and for the purpose set forth.

4. The combination, with the measuring-rod, the clamp, the hub a^7, and the rod *b*, of a spring, a^8, and the lever b^3, having a cam-shaped end to co-operate with the said hub to release the clamp, substantially as described.

5. The lever 33, its slotted cam-leg, and the feed-bar *m*, combined with the crank 5, having the arm 6, and the treadle and connecting-rod, to operate substantially as described.

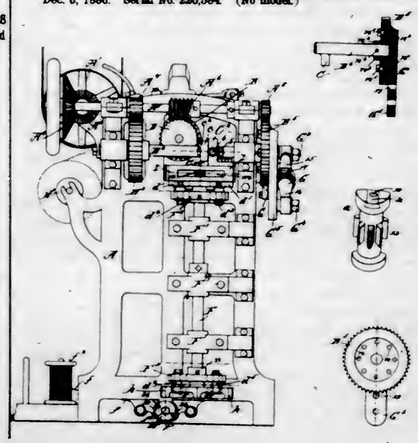
6. The presser-rod a^4, its collar c^4, and the measuring-rod, and its attached measuring-plate surrounding the said rod, combined with the spring-pressed pin *n*, to normally elevate the said presser-rod, as and for the purpose set forth.

380,663. VEHICLE-SEAT. CHARLES W. ROBISON and ROBERT R. ROBISON, Allegheny City, Pa. Filed Oct. 26, 1887. Serial No. 253,440. (No model.)

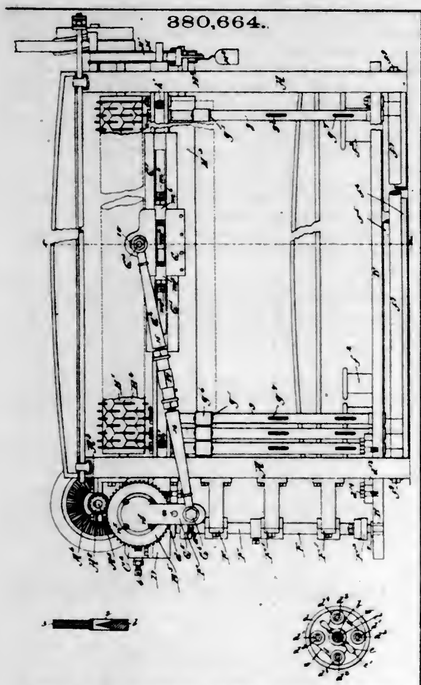


Claim.—As an improvement in seats for vehicles, a yielding back the frame-work of which is composed of bent metal rods having a bent spiral portion, so as to enable the back to accommodate itself to the movement of the vehicle, substantially as and for the purposes described.

380,664. WIRE-NETTING MACHINE. BENJAMIN SCARLES, Clinton, Mass., assignor to the Clinton Wire Cloth Company, same place. Filed Dec. 3, 1886. Serial No. 220,584. (No model.)



380,664.



Claim.—1. In a machine for the manufacture of wire-netting, a tube, *g*, to contain a cop of wire, the said tube having an opening at its side for the insertion of a cop, substantially as described.

2. In a machine for the manufacture of wire-netting, two twisting-segments, *a b*, provided with semi-gear, carriages in which the said segments are mounted loosely, and means, substantially as described, for rotating the said twisting-segments, combined with a hollow tube, *g*, rigidly attached to and rotated in unison with and by the twisting-segment *a*, the said tube being provided with an opening at one side for the introduction of a cop, substantially as described.

3. In a machine for the manufacture of wire-netting, two twisting-segments, *a b*, provided with semi-gear, carriages in which the said segments are mounted loosely, and means for rotating the said segments, combined with a hollow tube, *g*, connected to and rotated in unison with the twisting-segment *a*, the said tube being provided at its side near its upper end with the opening *g'*, for the introduction of the cop, and with a cover for the said opening, substantially as described.

4. In a machine for the manufacture of wire-netting, two twisting-segments, *a b*, provided with semi-gear, carriages in which the said segments are mounted loosely, and means, substantially as described, for rotating the said segments, combined with a hollow tube, *g*, connected to and rotated in unison with the twisting-segment *a*, the said tube being provided at its side near its upper end with the opening *g'*, for the introduction of the cop, and with slots or openings, and with a cover for the opening *g'*, substantially as described.

5. In a machine for the manufacture of wire-netting, reciprocating carriages D D' and E E', the twisting-segment *b b'*, the twisting-segment *a*, the foot *a'*, and the cop-holding tube *g*, rigidly and permanently connected with the twisting-segment *a*, and the foot *a'*, combined with the rack and with a semi-gear connected to the twisting-segments *a* and *b*, the said rack rotating both the said segments, the segment *a* carrying with it the cop-holding tube and its attached foot *a'*, the said foot rotating the segment *b'*, substantially as described.

6. The carriage E', the twisting-segment *b'* therein, the carriage E, the twisting-segment *b* therein, provided with a semi-gear, the carriage D, the twisting-segment *a* therein, provided with a semi-gear, a reciprocating rack, the cop-holding tube *g*, having an opening at its side for the insertion of the cop and being connected to the said twisting-segment *a* and having a foot, *a'*, and a carriage, D', the said foot *a'* fitting against the twisting-segment *b'*, combined with the rack *m* and with means to move it and the said carriages, substantially as described.

7. In a machine for the manufacture of wire-netting, a cop-holding tube and a twisting-segment, combined with an intermediate block or device having an abrupt convex annular surface, 89, located between the end of the block next the tube and the throat 90 of the block, the said convex surface constituting a compensating tension device to automatically increase the tension upon the cop-wire being drawn from the cop contained in the said tube, substantially as described.

8. In a machine for the manufacture of wire-netting, a series of twisting-segments, *b b'*, and means to support and actuate them, combined with the roll f^7, and roll f^8, parallel thereto and extending through the machine longitudinally, the said rolls acting upon opposite sides of the bobbin-wires passing to all the segments *b'*, whereby the said wires are all subjected to like and uniform tension.

9. In a machine for the manufacture of wire-netting, a series of twisting-segments, *a b*, carriages to support them, means to move the carriages to change the position of the twisting-segments with relation to each other in the formation of the mesh, a rack-bar to effect the rotation of the said twisting-segments, and a rotating crank, G^2, combined with an adjustable link and a slide, and with two adjusting-screws, m^3 and m^4, to alter the effective stroke of the rack with relation to the rotation of the crank in both the directions of movement of the said link, substantially as described.

10. In a machine for the manufacture of wire-netting, a series of twisting-segments, *a b*, carriages to support them, means to move the carriages to change the position of the twisting-segments with relation to each other in the formation of the mesh, a rack-bar to effect the rotation of the said twisting-segments, the gear B^2, the rotating crank G^2, and means, substantially as described, for adjustably connecting the said crank to the said gear, combined with an adjustable link and a slide, the said slide acting upon and moving the rack-bar in the carriage, substantially as described.

11. In a machine for the manufacture of wire-netting, the carriages D E D' E', the segmental twisters *b b'*, mounted in the carriages E E', the series of tubes *g*, to contain cops of wire and having openings at their sides to receive the cops of wire, and the twisting-segments *a* and feet a^2, secured to the said tubes, means, substantially as described, to actuate the carriage E, the rock-shaft F, having attached arms F^2 F^3, a series of studs to connect the said carriages, and cross-arms, combined with a single rack-bar located within the carriage D, and with means to reciprocate the said rack-bar, it engaging and rotating both series of segmental twisters *a b*, and, through the tubes *g*, rotating the segmental twister *b* and feet a^2, to operate substantially as described.

12. In a machine for the manufacture of wire-netting, a series of twisting-segments, *b b'*, and means to support and actuate them, combined with the roll f^7, and a roll, f^8, parallel thereto and extending through the machine longitudinally, and means, substantially as described, to adjust the centers of the said rolls relatively the one to the other to adjust the degree of tension to which all the said wires are subjected, for the purposes set forth.

13. The main carriage and the rack-bar and slide to engage and move it, and a link and crank, G^2, and the gear B^2, combined with the shaft B^4, provided with a cam, C, the gear B^3, and with the shaft A^5, provided with the two pinions A^7 A^8, to operate substantially as described.

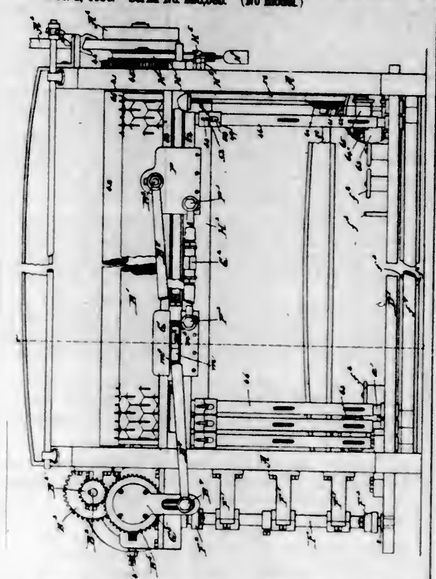
14. The main carriage and the rack-bar and slide to engage and move it, and a link and crank, G^2, and the gear B^2, combined with the shaft B^4, provided with a cam, C, the mesh-roll, its attached gear B, and the shaft A^5, having two pinions, A^7 A^8, and a worm, A^9, to operate substantially as described.

15. In a machine for the manufacture of wire-netting, the carriages D E, a series of twisting-segments therein, the shaft B^4, its attached collar, screws *n'*, and gear B^2, provided with a series of holes and made adjustable with relation to the said shaft, and a crank attached to the said gear, combined with a rack-bar to effect the rotation of the twisting-segments of both the said carriages, a slide to move it, and a link to connect the said crank and slide, the said link being adjustably connected to the said crank, as and for the purpose set forth.

16. In a wire-netting machine, a series of carriages and twisting-segments therein and means to move the said carriages, combined with adjustable stops connected directly to the said carriages, interposed between the said carriages and the frame to arrest the movement of the carriages, substantially as described.

17. In a machine for the manufacture of wire-netting, two sets of carriages, D E and D' E', twisting-segments *a b*, mounted in the carriages D E, and twisting-segment *b'*, combined with a series of tubes located between the said sets of carriages and provided with openings at their sides for the reception of the cop-wires, and with means to rotate the said tubes and cause the cop-wires to be carried about the bobbin-wires extended through the segments *b* and *b'*, substantially as described.

380,665. WIRE-NETTING MACHINE. BENJAMIN SCARLES, Clinton, Mass., assignor to the Clinton Wire Cloth Company, same place. Filed Dec. 3, 1886. Serial No. 220,585. (No model.)



Claim.—1. In a machine for the manufacture of wire-netting, the carriages D E, twisting-segments mounted therein, a rack-bar to rotate the said segments, and a slide to effect the movement of the rack-bar, combined with an auxiliary slide, a link to connect the said slides, and means to move the auxiliary slide, substantially as described.

2. The gear B^2, the shaft A^7, to rotate it, and the slotted arm G^4, connected to the said gear or moving with the said shaft and provided with serrations, and the slide and pitman and the rack and twisters, combined with the stud, washer, and nut, the serrations of the arm, nut, and washer being engaged together to firmly hold the stud and pitman in adjusted position, substantially as described.

3. The shaft B^4, its attached mutilated gear and finger, and the sleeve 38, its attached pinion 37, and finger 36, and worm, combined with the mesh-roll, and mechanism, substantially as described, intermediate the said worm and the mesh-roll, whereby the mesh-roll is rotated intermittingly by the said worm, substantially as described.

4. The carriage D', the cop-holding tube having at one end a block, 47, and the foot *a'* in the said carriage, the block and foot being connected together by a projection on one entering a hole in the other to effect their rotation in unison, yet form a loose connection, combined with the carriage D and twisting-segment *a* therein, and means to connect the upper end of the cop-holding tube with the said twisting-segments, substantially as described, whereby the cop-holding tube may be rotated positively by the segment *a* and yet be readily removed from the machine when it is desired to fill the tubes, as set forth.

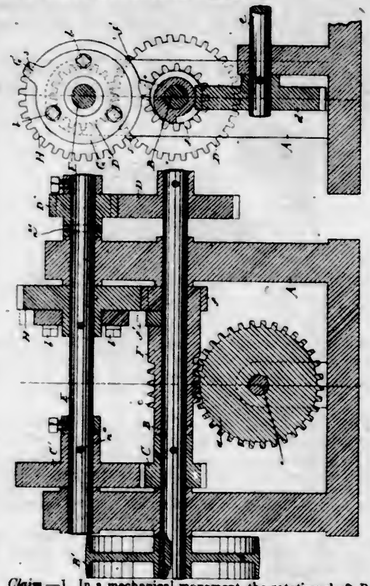
5. In a machine for the manufacture of wire-netting, the carriages, their twisting-segments, and cop-holding tubes and twisting mechanism, substantially as described, to twist together two or more wires to form a selvage, combined with the tension mechanism controlling not only all the bobbin-wires, but also the selvage-wires, the twisted selvage-wires issuing from one of the twisting-segments *b*, substantially as described.

6. In a machine for the manufacture of wire-netting, the carriages, their twisting-segments, and cop-holding tubes and tension mechanism for all the bobbin-wires, combined with twisting mechanism, substantially as described, to twist together two or more wires to form a selvage, the said twisted wires issuing from one of the twisting-segments *b*, combined with two shafts, 62, their spools or bobbins 64, and bevel-gears secured to the said shafts 62, and with means, substantially as described, to rotate the said shafts 62 in opposite directions, whereby the wires twisted together to form opposite selvages are twisted in opposite direction to permit the cop-wires twisted with them to fall into the spiral grooves between the wires twisted together to form the selvage, as set forth.

7. In a machine for the manufacture of wire-netting, the cop-holding tube provided at its upper end with grooves and supported at its lower end by a foot, combined with a segment, *a*, its block, and the sleeve 51, provided with a prong to enter the groove of the cop-holding tube, substantially as described.

8. The mesh-roll, the gear 45, attached to its shaft or journal at one end, the roll 42, and its attached gears 44 and 40, combined with the sleeve 38, having the worm 39, pinion 37, and means, substantially as described, to rotate the said sleeve, for the purposes set forth.

380,666. MECHANICAL MOVEMENT. BENJAMIN SCARLES, Clinton, Mass., assignor to the Clinton Wire Cloth Company, same place. Filed Dec. 3, 1886. Serial No. 220,587. (No model.)

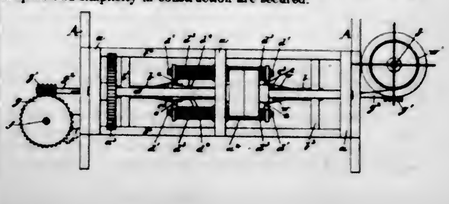


Claim.—1. In a mechanical movement, the rotating shaft B, the continuously-rotating shaft E, a pinion and gear to connect them and the gear *d*, and the sleeve F, having the worm and the pinion *f* and finger *f'*, combined with a mutilated gear and finger or projection attached to and moving with the continuously-rotating shaft E, the combination operating substantially as described, to rotate the gear *d* and its shaft intermittingly.

2. The shaft *e*, its attached gear *d*, the sleeve F, having the worm *e*, the pinion *f*, and finger or projection *f'*, and the shaft E, the pinion D', and toothed gear C' thereon, the shaft B, to support the said sleeve and the pinion C, and toothed gear D, attached to the said shaft, combined with the mutilated gear and the finger or projection rotated in unison with the said shaft E, the pinion D' and gear C being the one loose and the other fast, substantially as described, on the said shaft E, according to whether or not the shaft E is to be rotated at a speed faster or slower than the shaft B, as set forth, to operate all substantially as described.

380,667. WIRE TWISTING AND WINDING MECHANISM. BENJAMIN SCARLES, Clinton, Mass., assignor to the Clinton Wire Cloth Company, same place. Filed Dec. 3, 1886. Serial No. 220,588. (No model.)

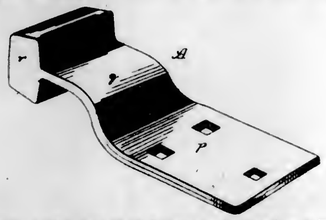
Brief.—The object of the invention is to provide a machine wherein two sets of wires are twisted together simultaneously and led from the twisting mechanism in opposite directions to be wound upon two spools, both spools being driven by the same shaft, whereby saving of space and simplicity in construction are secured.



Claim.—1. In a wire-twisting machine, a spindle, *b*, a pulley thereon provided at each side with means to support two or more bobbins or cops, and guide-rolls d^3, the bobbins or cops and the guide-rolls and the said spindle having parallel axes of rotation, combined with two spindles and with means to rotate the said spindles to effect the winding of the twisted wires coming from each end of the spindle *b* upon suitable spools, substantially as described.

2. The spindle *b*, its attached pulley having at each side two or more studs to support two or more bobbins, guide-rolls about which to pass the wires carried by the said bobbins or cops on their passage into and from the said spindle, and means to rotate the spindle *b*, combined with the shaft g^3, means to drive it, worms *g* thereon, worm-gear, and spindles *f*, the combination being and operating substantially as described, whereby two sets of wires may be simultaneously twisted and wound upon spools, as set forth.

380,668. METHOD OF FORMING A RAIL-BRACE FROM T-METAL. AXEL A. STROM, Austin, Ill. Filed Jan. 30, 1888. Serial No. 262,410. (No model.)

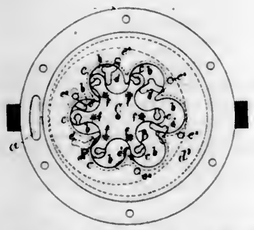


Claim.—1. The method of forming a rail-brace from a T-metal blank which consists in bending the web portion to form the shank of the brace and bending the wings of the base or flange toward each other to produce a continuation of the web or shank and form the foot portion, substantially as described.

2. The method of forming a rail-brace from a T-metal blank which consists in upsetting the head of the blank to cause it to fit between the head and flange of the rail to be braced, bending the web portion to form the shank of the brace, and bending the wings of the base or flange toward each other to produce a continuation of the web or shank and form the foot portion, substantially as described.

380,669. ROTARY WATER-METER. JAMES A. TILDEN, Hyde Park, Mass., assignor to the Hersey Meter Company, Portland, Me. Filed Apr. 19, 1886. Serial No. 199,312. (No model.)





Claim.—1. In a meter, the combination of a piston-chamber having measuring spaces or recesses with a piston and plates secured thereto to move therewith, substantially as described

2. In a meter, the combination of a chamber having measuring spaces or recesses, a distributing-chamber, and a pressure-chamber, with a piston and port-plates secured thereto to occupy the position in relation to the distributing-chamber and pressure-chamber indicated, whereby the piston is held balanced between the two bodies of water or fluid of the same head, substantially as described.

3. The combination, in a meter, of the piston-chamber having the measuring spaces or recesses, the piston C, having the ports *c*, and the port-plates D D′, secured to the piston and having the escape ports or passages or recesses *c′*, substantially as described.

4. The combination, in a meter, of the piston-chamber having measuring spaces or recesses, the piston having the port-plates D D′, provided with the escape ports or passages *c′* and the escape-passage E, and the flanges d^4 d^5, having the holes e^3, which register with the ports or recesses *c′* of the plates D D′, substantially as described.

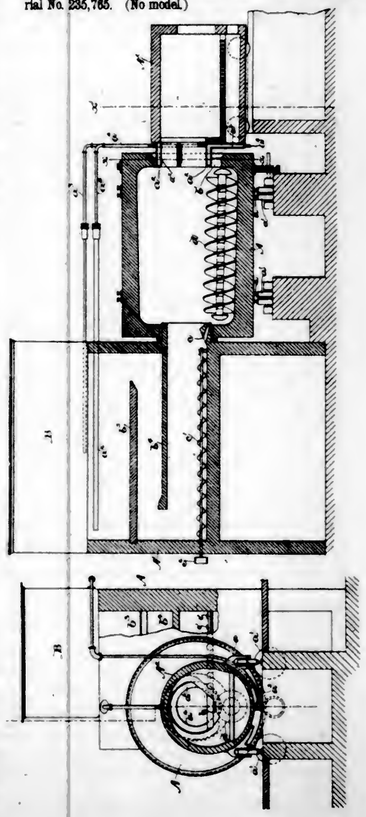
5. The combination of the distributing-chamber *a′*, the piston-chamber having measuring spaces or recesses, the piston having the port-plates D D′ secured thereto, the pressure-chamber F, and a passage or passages for connecting the chamber *a′* with the chamber F, substantially as described.

6. The combination, in a meter, of the distributing-chamber *a′*, the piston-chamber having measuring spaces or recesses, the pressure-chamber F, the piston C, port-plates D D′, secured thereto, the inlet-passages, the escape-ports *c′* e^3, and escape-passage E, substantially as described.

7. The combination, in a meter, of the wall of the piston-chamber, having the surfaces *d d′* extending outward therefrom, with a piston having port-plates secured thereto, adapted to overlap or extend upon the surfaces *d d′* and to be movable thereon, substantially as described.

8. In a meter, the combination of the shell with the wall d^2 of the piston-chamber, having the flanges d^4 d^5, and forming in connection with the casing of the meter the escape-passage E, communicating with the outlet *e*, substantially as described.

380,670. APPARATUS FOR THE RECOVERY OF SODA. JOHN E. WARREN and FRANCIS A. CLOUDMAN, Cumberland Mills, Me., assignors to S. D. Warren & Company, Boston, Mass. Filed Apr. 22, 1887. Serial No. 235,765. (No model.)



Claim.—1. In an apparatus for recovering chemicals from the spent liquors of pulp-digesters, the combination, with a rotary calcining-furnace, of a combustion-furnace, provided with a metallic throat having a surrounding water-jacket and extended into the rotary calcining-furnace, and pipes connecting the said jacketed throat with the liquor-tank and evaporating-chamber, substantially as and for the purpose specified.

2. In an apparatus for recovering chemicals from the spent liquors of pulp-digesters, a rotary calcining-furnace, combined with a loose gravitating agitating device located therein, whereby the recovered chemicals are prevented from adhering to the inner walls of the said furnace, substantially as described.

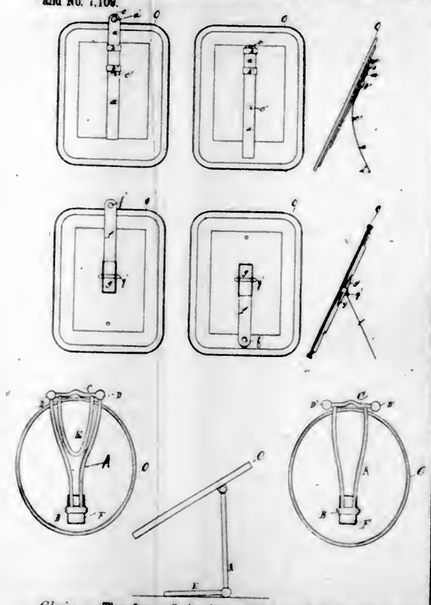
3. In an apparatus for recovering chemicals from the spent liquors of pulp-digesters, a rotary calcining-furnace, a combustion-furnace provided with an iron throat having a surrounding water-jacket and extended into the calcining-furnace, and a tank, B, connected to the said jacketed throat, combined with an evaporating-chamber, also connected with the said jacketed throat, the spent liquors being circulated aronnd and heated in the jacketed throat before entering the evaporating-chamber, substantially as described.

4. In an apparatus for recovering chemicals from the spent liquors of pulp-digesters, a rotary calcining-furnace, and a combustion-furnace provided with a water-jacketed iron throat extended into the calcining-furnace, combined with an evaporating-chamber provided with screw-conveyers located near the bottom thereof to feed the chemicals forward toward the calcining-furnace, substantially as described.

5. In an apparatus for recovering chemicals from the spent liquors of pulp-digesters, a rotary calcining-furnace, an independent agitating device located therein, and a combustion-furnace provided with an iron throat extended into the calcining-furnace, and having a surrounding jacket, combined with an evaporating-chamber provided with screw-conveyers located near the bottom thereof to feed the chemicals forward toward the calcining-furnace, substantially as described.

6. In an apparatus for recovering chemicals from the spent liquors of pulp-digesters, the combination, with a rotary calcining-furnace, of a combustion-furnace provided with a metallic throat extended into the rotary calcining-furnace, said throat being surrounded with a hollow jacket adapted to contain a fluid, as and for the purpose specified.

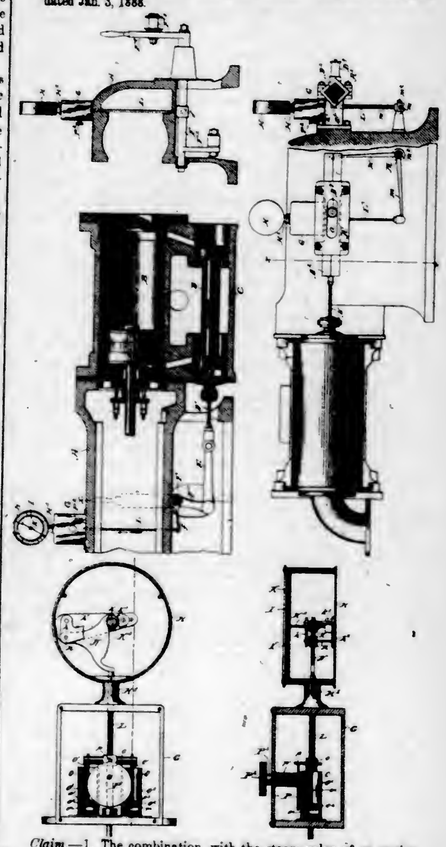
380,671. PICTURE-FRAME SUPPORT. FERDINAND SERVUS, Berlin, Germany. Filed Dec. 31, 1885. Serial No. 187,294. (No model.) Patented in Germany Jan. 30, 1885, No. 32,353, and Oct. 21, 1885, Nos. 35,098 and 35,099; in Belgium Dec. 4, 1885, No. 71,101; in England Dec. 31, 1885, No. 16,075, and in Austria-Hungary Apr. 16, 1886, No. 44,136 and No. 7,109.



Claim.—The frame O, having guide-loops *b b′*, in combination with the spring-plate *a*, sliding in said loops and having stops *c c′* and hole *a′*, substantially as set forth.

REISSUES.

10,918. STEAM-ENGINE INDICATOR. ALBERT L. IDE, Springfield Ill. Filed Mar. 12, 1888. Serial No. 267,056. Original No. 375,874, dated Jan. 3, 1888.



Claim.—1. The combination, with the steam-valve of an engine, of an indicator comprising a scale and an index-hand, one of which is movable relatively to the other, a part partaking of the motion of the valve constructed to engage and actuate the movable member of the indicator, means acting to carry the said movable part backwardly or into position with the index-hand at the zero-point of the scale, and retarding devices acting to check the speed of the said movable member of the indicator in its backward movement, substantially as described.

2. The combination, with the steam-valve of an engine, of an indicator comprising a scale and an index-hand, one of which is movable relatively to the other, a part partaking of the motion of the valve constructed to engage and actuate the movable member of the indicator, means acting to move the said movable part backward, and a dash-pot connected with and retarding the motion of the said movable member, substantially as described.

3. The combination, with the steam-valve of an engine, of an indicator comprising a scale and an index-hand, one of which is movable relatively to the other, a part partaking of the motion of the valve constructed to engage and actuate the movable member of the indicator, a spring acting to move the said movable member backward, and retarding devices acting to check the speed of the movable member in its backward movement under the action of the spring, substantially as described.

4. The combination, with the steam-valve of an engine, of an in-

dicator comprising a dial-plate and a rotating index-hand, a part partaking of the motion of the valve constructed to act upon the index-hand to throw the latter in one direction, means acting to turn said index-hand in a direction the reverse of that in which it is moved by the movable part connected with the valve, and a dash-pot or equivalent retarding device giving to the said index-band a slow backward movement, substantially as described.

5. The combination, with the steam-valve of an engine, of an indicator comprising a dial-plate, a revolving index-hand, a shaft sustaining the said index-hand, provided with a pinion, a gear-segment engaging the pinion, a spring applied to turn the hand backwardly, a movable part partaking of the motion of the valve acting upon said gear-segment, and a dash-pot or equivalent device acting to retard the motion of the gear-segment, substantially as described.

6. The combination, with the steam-valve of an engine, of an indicator comprising a dial and revolving index-hand, a shaft supporting the index-hand, provided with a pinion, a gear-segment engaging said pinion, a spring applied to the shaft to rotate the latter in a direction to carry the hand backwardly upon the scale, a vertically-sliding rod, L, engaging one end of the gear-segment, a dash-pot applied between the said rod L and a stationary support, and a part partaking of the motion of the valve constructed to engage and actuate the rod L, substantially as described.

7. The combination, with the steam-valve of an engine, of an indicator comprising a scale and an index-hand, one of which is movable relatively to the other, a movable part, as rod L, connected with the movable member of the indicator, a part partaking of the motion of the valve constructed to engage and actuate the said movable part, and a dash-pot connecting said movable part with a stationary support, said dash-pot consisting of a cylinder open at one end and a piston sliding in the cylinder and provided with an inwardly-opening valve, substantially as and for the purpose set forth.

8. The combination, with the scale and index-hand of an indicator and a vertically-movable rod, L, actuating the movable member of the indicator, of a part partaking of the motion of the valve constructed to engage and move vertically the said rod L, and an eccentric, P, engaging a projection or pin upon the said rod L, substantially as described.

9. The combination, with a steam-valve of an engine, of an indicator comprising an index-hand actuated by the valve, and a scale marked to show the horse-power developed by the engine under a given steam-pressure and a given speed of piston or number of revolutions of engine per minute, substantially as described.

10. The combination, with the steam-valve of an engine, of an indicator comprising an index-hand actuated by the said valve, and a series of scales marked to indicate the horse-power under two or more different steam-pressures, substantially as described.

10,919. BOOT OR SHOE. CHARLES F. MARTINE, Boston, Mass. Filed Feb. 7, 1888. Serial No. 263,291. Original No. 369,068, dated Aug. 30, 1887.



Claim.—1. In a boot of the class herein described, the combination of the quarter, the flap or fly formed to overlap the quarter and provided with a spring in its edge, a flexible cord attached to the fly and extending along the inner side of the same, a guiding-hook, *k*, for the cord attached to the quarter under the fly, and a holder for the end of the cord outside of the fly, as set forth.

2. A boot of the class herein described, having the flap or fly formed to overlap the quarter and provided with a spring, *b*, in its edge, and with an orifice, *i*, at its upper end, the cord *d*, attached at one end to the inner side of the fly and passed along said inner side to and through the orifice *i*, a hook arranged to detachably secure the cord to the quarter between the attached end of the cord and the orifice *i*, and means for securing the cord to the upper portion of the quarter, as set forth.

3. A boot of the class herein described, having the flap or fly formed to overlap the quarter and provided with a spring, *b*, in its edge, and with an orifice, *i*, in its upper end, the cord *d*, attached at one end to the inner side of the fly and passed along said inner side to and through the orifice *i*, and provided with the enlargement *j*, the hook *k*, arranged to be covered by the fly and to engage the cord near its point of attachment with the fly, and the hook *k'*, arranged above the hook *k* in position to receive the cord *d* and engage the enlargement thereof, as set forth.

4. The flap or fly having a spring inserted in its edge, composed of a plurality of strips of metal, as set forth.

5. The boot having the fly *c*, spring *b*, orifice *i*, and hooks *k k'*, combined with the lacing-cord attached at one end to the inner side of the fly, and provided with the adjustable enlargement *j*, as set forth.

PHOTO-LITH. NORRIS PETERS WASHINGTON, D.C.

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE BLAIR.

Decided March 24, 1888.

1. RESERVATION CLAUSES CONDEMNED.

Ex parte Roberts (40 O. G., 573) discussed, and distinction pointed out between cross-references and reservation clauses.

2. The introduction of reservation clauses covering subject-matter intended to be incorporated in future applications erects a warning by which the public is deterred from entering upon the particular field of invention, and also prevents the public from knowing just what property it is purchasing in dealing with patents containing reserved rights.

3. The natural and necessary effect of reservation clauses is to unlawfully prolong the monopoly of the invention. If as a matter of fact and law the subject-matter is properly divisible, the Office is open at all times to applicant, and his rights are safe without any reservation clause. If such be not the case, applicant has ample protection by filing his second application and have it pending concurrently with the first.

4. If the inventions are so nearly related to each other—as in case of an apparatus and process—that an application covering one invention discloses the other, applicant may fully protect his rights by incorporating in the applications cross-references, the effect of which would be the announcement that the invention claimed in the one was not the same as that claimed in the other.

PETITION.

MANUFACTURE OF STEEL.

Application of Thomas S. Blair, Jr., filed April 22, 1887. No. 235,747.

Mr. Darwin S. Wolcott for the applicant.

HALL, *Commissioner:*

In this case applicant claims a process, but in his specification and drawing he describes and shows an apparatus by which his process can be carried out. He asserts that this description is made with considerable particularity to enable the Office to have a clear understanding of the process claimed. Applicant makes no claim to the apparatus, but inserts a reservation clause relative to the same and expresses a purpose of filing a subsequent application for the apparatus.

The examiner requires applicant to strike out the reservation clause, and applicant appeals from such requirement, to which the examiner responds that he has followed the practice laid down in several decisions of former Commissioners. Applicant states that he relies upon the decision in *ex parte Roberts*, (40 O. G., 573,) and insists that when he claims in a pending application a part of an invention, properly divisible, or an invention which is so nearly allied or related to another as a process and an apparatus, he has the right to introduce a reservation clause in such application, and within a reasonable time after the issuance of patent thereon to come back and file a second application for the subject-matter so reserved.

A careful examination of the case of *ex parte Roberts* will disclose the fact that the Commissioner at that time was considering a question of jurisdiction or power. The examiner in that case had rejected the second application, holding that when two applications are pending, one showing but not claiming an invention claimed in the other, a failure to file cross-disclaimers operated to bar the issuance of a patent upon the latter. In discussing that question the Commissioner had occasion to arrange the authorities upon the propositions advanced, and held that the introduction of a reservation in the first application prevented the inference of dedication to the public which would otherwise arise; but it was distinctly stated that the practice of inserting reservation clauses was not intended thereby to be sanctioned or approved.

I understand that it has uniformly been the practice of the Office to require the reservation clauses in applications to be stricken out in order to compel the applicant to file his second application and have it pending concurrently with the first, and when that has been done and the merits of the applications have been settled to consider whether cross-references are necessary and whether the patents should issue at the same time. The purpose of such a practice is obvious, and it is consonant with public policy, for it has in view the preventing of the undue extension of a monopoly by first taking out a patent upon a part of an invention and subsequently upon another part, and so on, so long as it is within the power of the applicant to do so.

In the case before me the application shows a process and an apparatus by which the process can be carried out, although applicant claims the process alone. Under *ex parte Herr* (41 O. G., 463) there is no doubt that process and apparatus should be covered by separate applications, and the applicant in this case has seen proper to pursue such course. He has filed a separate application for the process, but he has not yet filed an application for the apparatus, and he may never do so; but by introducing a reservation clause into the present application and carrying it into his patent, in case one were granted, he would thereby erect a warning by which the public would be deterred from entering upon this field of in-

vention, and also would be prevented from knowing just what property it was purchasing in dealing with such patent. This would be the case to some extent if applicant should subsequently file the application as indicated; but the natural and necessary effect of such a course is to prolong to a greater or less extent the monopoly by securing a second patent at a later date.

Now if the applicant intends to patent both of these inventions—the process and the apparatus—he should either come into the Office with both applications, and have them pending concurrently, or, if he sees proper, he may file them separately; but he must take the consequences of electing the latter course by accepting his first patent without any reservation clause in it with reference to the second application. This is the policy of the requirement, and it is the only power the Office possesses by which it can control to this extent the action of applicants, protect the public against the extension of the monopoly, and secure its rights to the unclaimed inventions shown in patents.

If, as matter of fact and law, the process and the apparatus in the present case are distinct and separate inventions and applicant desires to patent them, the Office is open to him at all times. If they are separate and distinct inventions to such an extent that a disclosure of the apparatus in the patent for the process does not constitute a dedication of the former to the public, the applicant is safe without any reservation clause. If, on the other hand, such a disclosure of the apparatus operates to dedicate the invention to the public, then the applicant has ample protection by filing his application for the apparatus concurrently with that for the process, and if he chooses to omit both of these courses, in my opinion he has no right to insist upon retaining the reservation clause in his present application. There is a distinction between a reservation clause in such a case as this and cross-references such as would be required should a second concurrent application be filed for the apparatus. In the latter case, the inventions being so nearly related to each other, applicant would be required to file cross-references, the effect of which would simply be the announcement that the invention claimed in the one application was not the same as that claimed in the other.

To permit in a pending application a reservation of a claim for a future application would enable the applicant to have a patent issued including subject-matter for which no examination had been made to determine whether he had any right to a patent for the thing which he so reserved.

In my opinion, there should be a rule forbidding the introduction of reservation clauses in applications; but I feel satisfied that, in the absence of the rule, the Commissioner has the power, and it is the proper practice, to discourage their employment and to require their cancellation.

As already intimated, upon filing a second application for the apparatus this reservation clause would have to be changed or modified, so as to become a cross-reference, which, as said above, is not of the same effect as a reservation.

In my judgment, the action of the examiner was correct, and is therefore affirmed.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Northern District of Illinois.

OTT *v.* BARTH.

Decided July 5, 1887.

OTT—SOFA-BEDSTEADS—INFRINGEMENT.

The second claim of a patent issued to William Ott, January 23, 1877, for an improvement in sofa-bedsteads, which is as follows: "In combination with the sections A and B, the folding rods F F, and head-boards D and E, supporting the latter when extended to sustain the bolster, substantially as set forth." *Held* not to be infringed by a device which makes the folding rods rest upon the end pieces of the lounge-frame, instead of upon head-boards, which are dispensed with.

Mr. C. P. Jacobs and *Messrs. Dyrenforth & Dyrenforth* for the complainant.

Mr. William Zimmerman for the defendant.

BLODGETT, *J.:*

This is a bill in equity for an injunction and accounting by reason of the alleged infringement of a patent issued to the complainant on January 23, 1877, for an improvement in sofa-bedsteads. The improvement covered by this patent has reference to that class of sofas or lounges which may be opened or extended so as to form a bed, and embraces two features: first, an adjustable head-piece—that is, an arrangement whereby the head-piece of the lounge or sofa can be raised or lowered, within certain limits, at the will of the person using it, and, secondly, folding rests for the pillows or bolsters when the lounge is used as a bed. The controversy in this case has reference solely to the latter feature, and does not involve in any way the adjustable head-piece.

Infringement is only charged in this case as to the second claim of the patent, which is in the following words:

In combination with the sections A and B, the folding rods F F, and head-boards D and E, supporting the latter when extended to sustain the bolster, substantially as set forth.

The lounge or sofa under this patent is constructed in two sections, the fixed section resting upon legs, and a folding section hinged to it so as to turn over in such manner that the under side of the folding section should rest upon the top of the fixed section, and the "folding rods" F, as they are called, consisting of iron rods bent U-shaped, the lower ends of which are pivoted to the sides of the frames of the respective sections, so that they can be folded down into the inside of the frames when the sections are closed together, for the purpose of forming a sofa or lounge, and folded outwardly when the lounge is to be used for a bed, so as to form a rest for the bolster or pillows used with the bed, one of the utilities, if not the main one, of these folding bolster-rests being to extend somewhat the length of the bed beyond the length of the sofa, as these folding rods F extend beyond the head of the sofa or lounge.

The defenses set up are (1) non-infringement; (2) that the patent is void for want of novelty.

The proof shows a large number, comparatively speaking, of prior devices for folding sofa-beds in which folding head-boards or head-pieces are shown, so that it may be assumed as one of the established facts in this case that folding bolster-rests or pillow-rests for this class of beds were not new with this inventor. In connection with the adjustable head-piece of this lounge, the patentee uses what he calls the "head-boards," D and E, which are boards fastened to the head end of the lounge outside of and to the end pieces of the frames of the respective sections; and in describing the use of the folding rods F F he says they may be turned up out of the recesses in the sections where they rest, when the sections are closed so as to rest on the head-boards, to sustain the bolster, as shown in Fig. 1 of the drawings; and the illustration of this operation of these bolster-rests shows these folding rods resting upon the head-boards D and E, extending beyond the head of the lounge, so that the bolster and pillows would be even with, if not beyond, the end pieces of the lounge.

The defendant makes a lounge in which he uses folding rods constructed and operating precisely like the folding rods in the complainant's patent, except that instead of resting upon the head-boards, as shown in the complainant's patent, they rest upon the end pieces of the lounge-frame, the only object of their resting upon the head-board or lounge-frame being to hold these rods at the proper angle to sustain the pillows or bolster in a comfortable position for the occupant of the bed.

It is obvious that the end pieces of the defendant's lounge perform the same function in his mechanism as do the head-boards in the complainant's device. In both cases the head-boards or end pieces are only rests or fulcrums to hold the folding rods at the proper angle. But the difficulty in this case—and it seems to me an insuperable one—is that the complainant has made these head-boards D and E elements in the claim of his patent which it is alleged the defendant infringes. This claim covers three elements: first, the sections A and B, which are the folding sections of the lounge; second, the folding rods F F, and, third, the head-boards D and E; and the function of the head-boards of this claim is to support the folding rods when extended to sustain the bolster.

It is so well settled that it hardly requires authorities at this time that the omission of one ingredient of a combination covered by any claim of a patent averts any charge of infringement based on that claim. (Walker Pat., sec. 349.)

It is true, as already stated, that the end pieces of the defendant's lounge perform the same office with reference to these folding rods that is performed by the complainant's head-board; but the complainant has seen fit to make these head-boards elements of his patent. He has brought them into his combination as essential parts of it, and the defendant has merely left out these head-boards and constructed his bed by pivoting these folding rods upon the sides of the frames of the sections, dropping them slightly lower down than the complainant's construction shows and resting them upon the end pieces of his frame. In other words, he has wholly dispensed with the head-boards shown in the complainant's patent. He has not substituted what is an equivalent for the head-boards in the complainant's combination, but has dispensed wholly with the head-board, and has used the end pieces, which are not only in the complainant's lounge, but probably all other lounges, as the fulcrum on which his folding rods rest, so that the defendant cannot be said, it seems to me, to use the combination covered by this second claim, because he does not use the head-boards, but accomplishes the same result without their use. He throws the head-boards of complainant's patent away, and uses the portions of the structure which are left without substituting anything in the place of the head-board which he has rejected. As is said in *Water Meter Co. v. Desper*, (101 U. S., 335:)

It is a well-known doctrine of patent law that the claim of a combination is not infringed if any of the material parts of the combination are omitted. It is equally well known, if any one of the parts is only formally omitted, and is supplied by a mechanical equivalent performing the same office and producing the same result, the patent is infringed.

Here the defendant omits one of the elements of the complainant's combination and substitutes nothing for it, only using what he found in the complainant's lounge and in other lounges with these head-boards left out. It seems to me, therefore, the end pieces of these lounge-frames are not to be considered as the equivalent of the head-boards in this claim of complainant's patent. Complainant saw fit to make these head-boards an element in his combination. They were in his lounge for other purposes, and he saw fit to appropriate them to the purpose of these folding rods, and has a patent upon that in combination with the other parts of his lounge: and, having elected to make these head-boards an element in his combination, he can only claim an infringement when the head-boards, or some colorable substitute for them, is used.

It is perhaps unfortunate for this patentee that he did not see that any rest which would hold the folding rods at the proper angle was just as useful as the head-boards, and it would hardly seem possible that a mechanic looking at a drawing or model of his lounge could have escaped the observation that the folding rods might rest just as well upon the end pieces of the frames as upon the head-boards; and therefore he might, if he had seen fit to do so, have covered the idea of resting the folding rods upon either the head-boards or end pieces of his frame. In other words, any rest which would hold the folding rods at the required angle might have been properly considered as his invention if he had claimed it; but complainant saw fit to take his patent, so far as this feature of his device is concerned, upon the head-boards as an essential element of his structure, and the court can only protect him in what he has so claimed.

I am therefore reluctantly impelled to the conclusion that this defendant does not use the complainant's patent, so far as it is covered by the second claim. The bill is therefore dismissed for want of equity.

U. S. Circuit Court—District of Connecticut.

YALE LOCK MANUFACTURING COMPANY *et al. v.* NEW HAVEN SAVINGS BANK.

Decided September 10, 1887.

1. TIME-LOCKS—REISSUE—ENLARGEMENT OF ORIGINAL PATENT.

Reissued Letters Patent No. 8,580, to Samuel A. Little, for improvements in time-locks, by which the multiple bolt-work of a safe or vault door could be automatically both dogged or locked and unlocked at predetermined times, the dogging and

releasing being caused by the operation of the time mechanism, and the time for locking or unlocking being capable of alteration at the will of the operator, without disturbance of the clock-work, contained, *inter alia*, the following claim: "7. In a time-lock, the combination * * * of the time-movements and two adjustable devices, one for determining the time of locking and the other of unlocking." The original letters of the same patent contained, among others, the following claim: "2. The wheels B and C, with the depressions *d* and *f*, and the projections *e* and *g*, located relatively to each other as described, to increase and diminish the surface of a common cam, *i*, or depression *h*, by rotation on each other." * * * *Held*, that the seventh claim of the reissue was not an enlargement of the second claim of the original patent, because the latter should be construed broadly, and should not be confined to "a common cam," or to a device which was connected with the compound wheel in the same way in which the cam was connected, but was broad enough to include equivalent means of connection with the dog.

2. SAME—REJECTION OF CLAIM—SUBSEQUENT APPLICATION AND REISSUE.

The third claim of the application for a second reissue of the Little patent for time-locks was for devices consisting of a "compound disk composed of two single disks of the same shape and size, placed face to face on a common axis." When these two disks or wheels were fastened together by a thumb-screw, they formed one wheel or disk. In said third claim this compound disk was called "two adjustable devices." The Patent Office held that the compound disk constituted but a single adjustable device or single disk, and rejected the third claim, to which rejection the owners of the patent assented. *Held*, that they did not thereby abandon the right to claim, in a subsequent reissue, a double or compound disk, and obtain a valid patent therefor.

Mr. Samuel A. Duncan for the petitioner.

Mr. Edmund Wetmore and *Mr. Causten Browne* for the respondent.

SHIPMAN, *J.*:

On or about April 19, 1881, this court made an interlocutory decreg in the above-entitled cause, by which the defendant was enjoined against infringing the first and seventh claims of Reissued Letters Patent No. 8,550, to Samuel A. Little. (*Lock Manufacturing Co.* v. *Bank*, 19 Blatchf., 123; 6 Fed. Rep., 377.) No final decree has ever been made. The original Little patent was dated January 27, 1874. The three reissues were respectively granted May 9, 1876, January 8, 1878, and January 21, 1879. The answer of the defendant alleged that the original patent was not reissued for the purpose of correcting any supposed defective or insufficient specification, but to secure claims not warranted by the invention disclosed in the original patent, and that in the several reissues, and particularly in the last reissue, claims were inserted which were broader in their scope than the invention of the original patent warranted. The original patent and the application for the third reissue were introduced in evidence by the defendant.

This is a petition by the defendant to vacate the interlocutory decree and to grant a rehearing, with leave to the petitioner on such rehearing to introduce in evidence certified copies of the file-wrappers of the several issues of the patent and certain other documentary evidence, with such amendment of the pleadings as the newly-offered evidence may render expedient. The object of the rehearing and of the new evidence is to show that the first and seventh claims of the third reissue were improperly allowed by the Commissioner and are void.

Passing by the consideration of any question in regard to the laches of the defendant, or whether the evidence can properly be considered to be newly discovered, the claims of the several patents which are the subject of controversy upon this motion are as follows, claim 2 of original patent and claim 5 of the first reissue:

2. The wheels B and C, with the depressions *d* and *f*, and the projections *e* and *g*, located relatively to each other as described, to increase and diminish the surface of a common cam, *i*, or depression *h* by rotation on each other, for the purposes described.

Claim 3 of first reissue:

3. In a chronometric locking mechanism, the combination, as before set forth, of the clock-work and two adjustable devices for determining, respectively, the times of locking and unlocking.

Claim 2 of the second reissue:

2. In a time-lock, the combination, substantially as above set forth, of the time-movements and an adjustable device for determining the time of locking.

Claim 7 of third reissue:

7. In a time-lock, the combination, substantially as above set forth, of the time-movements and two adjustable devices, one for determining the time of locking and the other of unlocking.

The first claim of the third reissue is substantially like the seventh. The second claim of the original and the corresponding fifth claim of the first reissue were omitted by direction of the Patent Office in the second reissue by reference to a patent deemed to be anticipatory, and do not appear in the third reissue.

The first and the important question, and one by no means free from difficulty, is whether the seventh claim of the third reissue is an enlargement of the second claim of the original. The defendant's position is that the new claim, which was also the third claim of the first reissue, is for—

the combination, in a time-lock, of two adjustable devices, whose function is simply to determine the times of locking and unlocking without regard to the character of the devices or means by which the locking-dog is held in either its locking or in its retracted position, while in the original claim it is made a necessary element of the combination that there shall be a "common cam, *i*," the function of which is to hold the dog in its locking position.

The defendant's construction of this claim is undoubtedly what was wanted by the draftsmen when they drew it, and if that construction is the proper one the claim was improperly allowed by the Patent Office, for if it could ever have been properly obtained it was unseasonably applied for and is therefore invalid. It should not be thus construed, and was not so construed in the opinion of the court, which made the described holding part of the dogging mechanism and its equivalents a part of the claim. Upon the question of one of the alleged differences between the Little and the Holmes or Chinnock lock—viz., that the locking devices are actuated by mechanism of different methods of operation—the court said:

I do not regard the latching-gear and the tripping of the latch that holds the dog as strictly a mechanical equivalent for the direct action of the cam upon the dog; but it is plain that at the date of the Little patent the Chinnock method of holding and releasing a dog was a well-known substitute for that part of the Little mechanism which performs the same office, and therefore, so far as this mechanical combination is concerned, the latching-gear and the tripping mechanism are a mechanical equivalent for the action of the cam upon the dog.

While the claim should be made to include mechanism which is the equivalent of the described holding mechanism, inasmuch as Little was the first who applied time mechanism to a safe-door, by means of which locking could take place automatically at a predetermined period, he should not be confined to a narrow line of equivalents. In the case of *Plaintiff* v. *Bank*, (17 Fed. Rep., 531,) which was decided in August, 1883, Judge Lowell was called upon to determine whether the seventh claim was an undue expansion of the original patent, in view of the decision in *Miller* v. *Brass Co.*, (104 U. S., 350.) He said:

This point, though a difficult one, I decide in conformity with Judge Shipman's action, for the reason that in a patent like the original patent of Little it would be proper to construe his second claim somewhat broadly, and so as to reach the substituted adjustable devices and their connection with the "dog" in the lock of the defendants in that case, which were substantially like those in question here.

The conclusion is that, although the owners of the patent attempted to enlarge it, the seventh claim should be limited to the invention which was described and claimed in the original patent, which invention was not confined to "a common cam," or to a device which was connected with the compound wheel in the same way in which the cam was connected, but was broad enough to include equivalent means of connection with the dog.

The defendant further insists that the application of the patentee for the second reissue contained a proposed third claim in the following language, which was substantially the third claim of the first reissue:

3. In a time-lock, the combination, substantially as above set forth, of the time-movements and two adjustable devices for determining, respectively, the times of locking and unlocking;

that this claim was rejected by the Patent Office, and the patentee acquiesced in such rejection without appeal, and thereupon the patent was issued, claiming only a single adjustable device in the second claim. That claim has been already quoted. From these facts, the defendant says, it results that the claim for two adjustable devices was abandoned and could not be resumed in the third reissue.

The circumstances of this rejection and acquiescence are somewhat peculiar. The Little invention contained, in addition to the "adjustable devices," what was known as the Sunday device, for preventing unlocking during a period greater than twenty-four hours. The adjustable devices were, in brief—

a compound disk composed of two single disks of the same shape and size, placed face to face on a common axis, each having an equal portion of its periphery cut away, so as to leave in each a depression of the same form and size as that in the other. When those two disks or wheels are fastened together by a thumb-screw, they form one wheel or disk having a depression in its periphery.

This compound disk was called in the proposed third claim "two adjustable devices." The Patent Office thought that it should be called one device, and therefore rejected the claim. The reason was stated as follows:

The third claim is objectionable, as it appears to be for two devices for locking and unlocking, while applicant shows only one device for locking and unlocking and another for preventing unlocking at a particular time.

Thereupon the owners of the patent assented, the claim for two adjustable devices was withdrawn, the claim for one adjustable device remained, and the second reissue became very open to attack, because the courts might hold that the patent was in terms for a single device and should be so construed.

It is now insisted that because the Patent Office called the compound disk a single disk, and the owners of the patent assented to the name, therefore they abandoned a right to claim a double or compound disk, and can have a valid patent only for a single wheel. Such a conclusion rests too entirely upon technicality to merit favor. It may be the outcome of the principle suggested in *Leggett* v. *Avery*, (101 U. S., 256,) and confirmed in *Shepard* v. *Carrigan*, (116 U. S., 593; 6 Sup. Ct. Rep., 493;) but such a result would carry the principle to an improper extreme. The facts in the case are similar to the special circumstances in *Morey* v. *Lockwood*, (8 Wall., 230,) in consequence of which that decision is not considered to be incompatible with the other recent decisions upon the subject of reissues. (*Russell* v. *Dodge*, 93 U. S., 460; *Eames* v. *Andrews*, 122 U. S., 40; 7 Sup. Ct. Rep., 1073.)

The prayer of the petition is denied.

U. S. Circuit Court—Southern District of New York.

WELLING *v.* LA BAU.

Decided February 25, 1888.

1. MASTER'S REPORT—CONCLUSIVENESS OF.

The proceedings before a master have almost the same solemnity as a trial before a referee or a jury, and the familiar rule which precludes the court from setting aside a verdict which is not against the weight of evidence is to a great extent applicable.

2. MEASURE OF DAMAGES.

When the invention relates to a new composition of matter and the infringing article is made of the patented material, and this alone, the measure of the patentee's damages may be the entire profit which he would have made.

3. SAME.

This rule is not changed where the infringing articles are of a poorer quality than the complainant's if they are so nearly alike in appearance as to deceive not only buyers but experts in the trade.

EXCEPTIONS TO MASTER'S REPORT.

On the 30th of June, 1882, the complainant obtained a decree sustaining Reissued Letters Patent No. 5,940, dated June 30, 1874, for an improvement in artificial ivory. The defendant, having made and sold certain articles containing the patented composition—viz., shellac and talc in substantially equal parts—was adjudged an infringer, and a master was appointed to take the account. After a long and vigorously-contested controversy, during the progress of which the court was several times appealed to, the master, on the 24th of December, 1886, presented a report in which he assessed the complainant's damages at $3,634.94. After the date of the original patent, and probably about the year 1872, in the extreme southeastern portion of St. Lawrence county, New York, a mineral was discovered which was placed upon the market and known commercially as "fiber white." Large quantities of this mineral were used by the defendant.

The question of fact over which the main contest arose was whether fiber white was or was not talc. The master found that it had all the physical and chemical properties of talc, and was talc. He further found as follows: That the white checks sold by the defendant contained shellac and talc in substantially equal proportions: that from March 1, 1876 to May 1, 1879, the complainant had no competitor in the manufacture and sale of these checks other than the defendant: that during this period the defendant sold large quantities of infringing checks, which in very much the larger part were sold to parties who were or had been regular customers of the complainant; that the complainant was at all times ready and able to supply the market, and if the defendant had not interfered he would have sold, in addition to his regular sales, at least the number of checks sold by the defendant. Although the defendant's infringement continued, in connection with others, after May 1, 1879, the master limited the recovery to damages sustained prior to that date, the measure being the loss of profits which the complainant would have made had he sold the checks sold by the defendant at the defendant's prices.

On the 28th of December, 1886, the defendant filed

exceptions disputing the accuracy of the report in twelve particulars, the principal grounds being the alleged errors of the master in finding, first, that fiber white was talc; second, that the infringing checks contained shellac and talc in substantially equal parts; third, that the defendant was a competitor, and the only competitor, of the complainant; and, fourth, that the complainant was ready and able to supply the market. Other exceptions allege error in the computation and dispute the master's conclusions of law.

Mr. Frederick H. Betts for the complainant.

Mr. Lucien Birdseye and *Mr. James C. Cloyd* for the defendant.

COXE, *J.*:

The master has decided no question of fact which was not the subject of protracted and vehement contention. Testimony was introduced by both parties. Experts were called, and the disagreement between them was radical and irreconcilable. Every forward step made by the complainant was vigorously resisted by the defendant. Between them the master was compelled to decide.

It is wise not to lose sight of the fact that the court is not to determine these facts *de novo*. If the report has been fairly and honestly rendered, without undue influence or manifest error, it should be permitted to stand. It is a matter of no moment that a different result might have been reached had the accounting been taken by the court. If the record shows that there was testimony *pro* and *con*, so that intelligent minds might differ upon the questions presented, the court will not assume to substitute its judgment for that of the master. His decision upon disputed facts should be final. A master stands as the representative of the court. He is selected with special reference to his fitness and experience. In seeing and hearing the witnesses he possesses advantages in determining questions of fact which a reviewing tribunal can never have. A master's report is not to be lightly brushed aside. It is entitled to respect. The proceedings before him have almost the same solemnity as a trial before a referee or a jury, and the familiar rule which precludes the court from setting aside a verdict which is not against the weight of evidence is to a great extent applicable. (*Bates* v. *St. Johnsbury*, 32 Fed. Rep., 628; *Welling* v. *La Bau*, 32 Fed. Rep., 293; *Medsker* v. *Bonebrake*, 108 U. S., 66; *Wooster* v. *Thornton*, 26 Fed. Rep., 274; *Bridges* v. *Shelden*, 7 Fed. Rep., 17; *Green* v. *Bishop*, 1 Cliff., 186; *Donnell* v. *Columbian Ins. Co.*, 2 Sum., 366; *Mason* v. *Crosby*, 3 Wood. & Minot, 268.)

The principal contention arises over the finding of the master that the fiber white used by the defendant was talc. The complainant cannot succeed upon the theory that fiber white was an equivalent for talc, for it was not known at the date of the patent. If, however, it was talc in fact, the principal obstacle in the complainant's path is swept away. Recognizing its importance, the complainant has bent every energy to establish the affirmative and the defendant the negative of this proposition. As this is largely a scientific question, the situation may be well illustrated by placing in juxtaposition an epitome of the views of the expert witnesses, each being to some extent corroborated and to some extent contradicted by other testimony and by collateral facts and circumstances.

Prof. Chandler for the complainant.

I am familiar with the commercial article known as "fiber white." It is talc. I know fiber white to be talc by looking at it. It has the structure of talc. It has the fracture of talc. It has the luster of talc. It has the unctuous feel of talc, and no other mineral possesses all these properties at the same time. Taken together, they constitute the mineralogical identity of talc. There is no other mineral with which you would be liable to confound it.

Secondly, I have examined the pulverized mineral under the microscope, and the powder has the appearance of talc.

Thirdly, analysis shows it to be talc. I am satisfied, therefore, that this mineral is talc, as it possesses all the physical and chemical properties of talc.

Dr. Ledoux for the defendant.

It is utterly unreasonable, if not impossible, to even assume that fiber white is talc, because it does not correspond with one of the thirty-six analyses of talc shown in Dana's Mineralogy, or with any recognized specimen of talc. It contains more alumina, more lime, more manganese than any of them. Fiber white is fibrous; talc is not fibrous. Fiber white, when considered from a strictly mineralogical view, or chemically, or from a microscopic or other personal examination, cannot possibly be talc. I am confirmed in my opinion that fiber white is not talc by my recent investigations and by my failure to find any samples of fibrous talc by the most diligent search and inquiry.

It was the duty of the master to decide between these two opinions. He did decide that fiber white was talc, and he had so decided when this court (*Welling* v. *La Bau, supra*) said:

> If the master has found that fiber white is talc, although not dealt in commercially by that name, he has determined a disputed question of fact upon which the evidence is very conflicting. * * * The report of a master will not be set aside as to matters of fact upon which the evidence is doubtful or the inferences uncertain, much less where his conclusions are reached upon conflicting testimony and involved to a greater or less degree the credibility of the witnesses.

If the finding of the master upon this question were against the evidence, the court should not hesitate to set it aside; but it is thought, after a careful consideration of the testimony that it is not against the evidence and should be undisturbed.

The foregoing views dispose of nearly all the other exceptions which are based upon alleged errors of the master in deciding disputed questions of fact. If fiber white was talc, the proof is sufficiently clear that the defendant's white checks contained shellac and talc in substantially equal parts. The evidence adduced to establish the identity of the checks analyzed by Prof. Chandler with those manufactured by the defendant was sufficient to sustain the master's action in that regard, and the same is true of the testimony upon the question of competition and the ability of the complainant to supply the market. It is thought that the rule enunciated in the carpet design cases (*Dobson* v. *Dornan*, 118 U. S., 10; *Dobson* v. *Hartford Carpet Company*, 114 U. S., 439) has little application to the case at bar. Those decisions proceeded upon the theory that, as there was no evidence to establish the value imparted to the carpet by the design, it was error to attribute to the patent the entire profit made upon the sale of the carpets. When, however, the invention relates to a new composition of matter and the infringing article is made of the patented material, and this alone, the measure of the patentee's damages may be the entire profit which he would have made. There is no room for segregation. It is not at all like a patented improvement upon an existing machine, for there it is entirely clear that evidence must be given to show what portion of the profits is due to the patented feature. Where the patent covers the infringing article in its entirety, no such evidence can be given. There can be nothing in the proposition that because the defendant's checks were of a lower grade than the complainant's the master's computation is erroneous, for the reason, among others, that they were so nearly alike in appearance as to deceive buyers not only, but experts in the trade.

The evidence has been examined with care, and no error which would warrant the court in refusing to confirm the report has been discovered. In many respects the report is a most conservative one.

The exceptions are overruled, and the report of the master is confirmed.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

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CONTENTS.

	Page.
ORDER No. 469	119
ATTORNEYS	119
NOTICE	119
ISSUE OF APRIL 10, 1888	119
DESIGNS	120
TRADE-MARKS	120
LABELS	120
PATENTS GRANTED	121
REISSUES	246
DECISIONS OF THE COMMISSIONER—	
Kohler v. Kohler and Chambers	247
Clark v. La Dow	248
DECISIONS OF THE U. S. COURTS—	
Dale Tile Manufacturing Company (Limited) v. Hyatt	249
Felix v. Scharnweber	251

Order No. 469.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 4, 1888.

With the exceptions hereinafter noted, all official mail-matter will be received in the Chief Clerk's room and be opened by him or his personal representatives. Such matter will include all letters and their inclosures; applications for patents, designs, trade-marks, labels, caveats, reissues; all assignments, amendments, arguments, powers of attorney, protests, and papers relating to interference proceedings, (except as hereinafter provided,) and also letters of inquiry concerning pending applications.

All communications above mentioned will be stamped the day received and numbered and registered in the Chief Clerk's division before distribution to the various divisions for action.

Packages containing preliminary statements and other papers relating to interference proceedings, which under the rules of the Office are to be opened on certain fixed dates, will be in the Chief Clerk's division stamped on the envelope or wrapper the date received, numbered and registered, and then forwarded unopened to the proper division in the Office.

Communications from the Secretary of the Interior and co-ordinate branches of the Government, complaints and charges against attorneys and employés, and applications for appointment, promotion, and retention, and matters of a strictly personal character will be entered only upon the Commissioner's register.

Answers to the communications above recited will bear the mail-room number and the number the communication receives on the records of the division to which it has been referred for action, and also the number or letter number of such division.

All orders covering the subject-matter of this order are hereby rescinded.

The examiners are prohibited from receiving by hand amendments, arguments, and other papers presented by applicants and attorneys.

BENTON J. HALL,
Commissioner.

Attorneys.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., March 24, 1888.

SIR: I am directed by the Secretary to inform you that the order dated November 27, 1886, disbarring Frank A. Bidwell, of Mitchell, Dakota, from practice before this Department and its Bureaus has this day been rescinded.

Very respectfully,

GEO. A. HOWARD,
Chief Clerk.

The Commissioner of Patents.

Notice.—Models in Rejected or Abandoned Cases.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 9, 1888.

Notice is hereby given to inventors and the public that a large number of models is in the custody of this Office, which were received between the years 1879 and 1885, many of which have never become a part of the records of this Office. All such models and all models belonging to rejected or abandoned applications will be sold or otherwise disposed of under the provisions of section 485 of the Revised Statutes unless removed in sixty days from the date hereof.

Institutions of learning in good standing may, after the expiration of the time above limited, on written application, make selection before the day of public sale of models remaining unclaimed. The expense of removal or transportation of these models must be borne by the applicants or institutions of learning.

BENTON J. HALL,
Commissioner.

Issue of April 10, 1888.

Patents	425	No. 380,672 to No. 381,096, inclusive.
Designs	15	No. 18,244 to No. 18,258, inclusive.
Trade-Marks	14	No. 15,346 to No. 15,359, inclusive.
Labels	17	No. 5,540 to No. 5,556, inclusive.
Reissues	2	No. 10,920 to No. 10,921, inclusive.
Total issue	473	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	.....	Nebraska	1	.....
Arizona Territory	.....	.....	Nevada	.....	.....
Arkansas	.....	.....	New Hampshire	4	1
California	14	.....	New Jersey	24	2
Colorado	.....	1	New Mexico Terri'y	.....	.....
Connecticut	19	.....	New York	75	7
Dakota Territory	1	.....	North Carolina	2	.....
Delaware	1	.....	Ohio	20	.....
District of Columbia	1	.....	Oregon	2	1
Florida	1	.....	Pennsylvania	40	2
Georgia	3	1	Rhode Island	6	.....
Idaho Territory	.....	.....	South Carolina	2	.....
Illinois	30	5	Tennessee	3	1
Indiana	7	.....	Texas	7	1
Iowa	9	.....	Utah Territory	1	.....
Kansas	6	.....	Vermont	3	.....
Kentucky	1	2	Virginia	2	.....
Louisiana	6	.....	Washington Terri'y	1	.....
Maine	4	.....	West Virginia	1	.....
Maryland	1	.....	Wisconsin	8	4
Massachusetts	45	1	Wyoming Terri'y	.....	.....
Michigan	22	1	U. S. Army	.....	.....
Minnesota	5	.....	U. S. Navy	.....	.....
Mississippi	3	.....			
Missouri	9	.....	Total to citizens of the United States	398	30
Montana Territory	2	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	3	1	Germany	10	.....
Barbadoes	.....	.....	Mexico	1	.....
Belgium	.....	.....	Netherlands	.....	.....
Bermuda	.....	.....	New South Wales	.....	.....
Brazil	.....	.....	Russia	.....	.....
Canada	5	.....	Scotland	1	.....
China	.....	.....	Sweden	.....	.....
Colombia, U. S. of	.....	.....	Switzerland	1	.....
Cuba	1	.....	Victoria	1	.....
Denmark	1	.....	Wales	.....	.....
Ecuador	.....	.....			
England	15	.....	Total to citizens of foreign countries	42	1
France	3	.....			

DESIGNS.

18,244.—CORD.—*Leedham Binns*, Philadelphia, Pa., assignor to *Edward H. Godshalk*, same place. Application filed March 14, 1888. Serial No. 267,187. Term of patent 3½ years.

18,245 and 18,246.—LADY'S COSTUME.—*Henrietta F. Duke*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Applications filed February 23, 1888. Serial Nos. 265,056 and 265,057. Term of patents 3½ years.

18,247.—BUSINESS-CERTIFICATE.—*Caleb S. Gurney*, Kennebunk, Me. Application filed November 19, 1887. Serial No. 255,675. Term of patent 3½ years.

18,248.—BOX.—*Ole P. Hamborg* and *George O. Weding*, Mankato, Minn. Application filed December 27, 1887. Serial No. 259,192. Term of patent 7 years.

18,249.—BADGE FOR HATS.—*Charles J. Heller*, Philadelphia, Pa. Application filed February 23, 1888. Serial No. 265,083. Term of patent 7 years.

18,250.—TYPE.—*Charles E. Heyer*, Chicago, Ill., assignor to *Barnhart Bros. & Spindler*, same place. Application filed January 11, 1888. Serial No. 260,454. Term of patent 14 years.

18,251.—COOKING-STOVE.—*William J. Keep* and *Charles Wipfler*, Detroit, Mich., assignors to *The Michigan Stove Company*, same place. Application filed June 22, 1887. Serial No. 242,187. Term of patent 7 years.

18,252.—LADY'S COSTUME.—*Minnie Kent*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed February 23, 1888. Serial No. 265,049. Term of patent 3½ years.

18,253.—TRIMMING.—*Benjamin Lipper*, Philadelphia, Pa., assignor to himself, *Augustus A. Lazarus*, and *Isaac A. Schwarz*, all of same place. Application filed December 5, 1887. Serial No. 257,060. Term of patent 3½ years.

18,254.—COOKING-RANGE.—*Rodney F. Schermerhorn* and *Ferdinand S. Weller*, Quincy, Ill., assignors to *The Channon Emery Stove Company*, same place. Application filed January 12, 1888. Serial No. 260,583. Term of patent 7 years.

18,255.—LADY'S TEA-GOWN.—*Jennie Sheils*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed February 23, 1888. Serial No. 265,054. Term of patent 3½ years.

18,256.—MISS'S COSTUME.—*Louise Soderholm*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed February 23, 1888. Serial No. 265,050. Term of patent 3½ years.

18,257.—GAS OR VAPOR STOVE.—*Charles A. Stockstrom* and *Louis Stockstrom*, St. Louis, Mo. Application filed October 18, 1887. Serial No. 252,764. Term of patent 14 years.

18,258.—GAS OR VAPOR STOVE.—*Charles A. Stockstrom* and *Louis Stockstrom*, St. Louis, Mo. Application filed February 28, 1888. Serial No. 265,597. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,346.—METALLIC STAPLES AND GOODS UNITED BY SUCH STAPLES. *Acme Staple and Machine Company*, Philadelphia, Pa. Application filed February 6, 1888. Used since December 24, 1884.
"The word 'ACME.'"

15,347.—TOILET AND WRAPPING PAPER.—*Albany Perforated Wrapping Paper Company*, Albany, N. Y. Application filed January 17, 1888. Used since December 1, 1887.
"The word 'POLYGON.'"

15,348.—MEDICAL TEA.—*David Rock & Co.*, Madison, Wis. Application filed January 24, 1888. Used since March 12, 1887.
"The word-symbol 'ST. ANTHONY'S WONDER TEA.'"

15,349.—BEER.—*Valentin Blatz*, Milwaukee, Wis. Application filed February 21, 1888. Used since February 17, 1888.
"The representation of a star having on its face a representation of a hop-blossom."

15,350.—PHARMACEUTICAL AND MEDICAL PREPARATIONS GENERALLY.—*B. Fragner*, Prague, Bohemia, Austria-Hungary. Application filed February 21, 1888. Used since April 30, 1878.
"The representation of a soaring eagle with the initials 'B F' on its shield and inclosed in a triangle, with the inscription 'OCHRANNÁ ZNAMKA SCHUTZ-MARKE.'"

15,351.—HOSIERY.—*Otto Heinze & Co.*, New York, N. Y. Application filed January 12, 1888. Used since September 1, 1887.
"The representation of a griffin and a pair of wings, each mounted on a crown, the griffin facing the wings and the whole surmounted by a crown."

15,352.—WINES.—*August Kreiser*, New York, N. Y. Application filed January 28, 1888. Used since August 24, 1883.
"The representation of a human head and face surrounded by a wreath of grape-leaves, and a bunch of grapes hanging directly under the chin, the whole surrounded by fancy scroll-work and surmounted by an eagle."

15,353.—RUBBER MATS.—*New York Belting and Packing Company*, New York, N. Y. Application filed February 23, 1888. Used since February 1, 1885.
"The letters 'N. Y. P. M.'"

15,354.—TONIC NUTRIENT BEVERAGE.—*Phillip Best Brewing Company*, Milwaukee, Wis. Application filed February 20, 1888. Used since July, 1887.
"The figure of a woman in flowing drapery bearing in one hand a wreath above her head and in the other an open scroll."

15,355.—PULMONARY MEDICINE, AND LUNG-HEALER.—*D. Frank Powell*, La Crosse, Wis. Application filed January 30, 1888. Used since 1882.
"An engraved portrait of the registrant and the words 'COUGH CREAM' in large type immediately about it."

15,356.—PULMONARY BITTERS AND BLOOD-TONIC.—*Britha Andersen Scotte*, Chicago, Ill. Application filed January 16, 1888. Used since August 1, 1885.
"The word 'NORWEGIAN' and a sprig or sprigs of hop and blossoms thereon, and sprigs of caraway with the caraway-seeds."

15,357.—TYPE-WRITING MACHINES.—*Standard Typewriter Manufacturing Company*, New York, N. Y. Application filed February 23, 1888. Used since 1881.
"The word 'STANDARD.'"

15,358.—CANNED TOMATOES.—*Starr & Bro.*, Salem, N. J. Application filed July 23, 1887. Used since August 1, 1877.
"The word 'CENTENNIAL' and a monogram or symbol consisting of a six-pointed star, the letter 'B,' and the character '&.'"

15,359.—TABLE-SAUCE.—*Duncan Warren*, Detroit, Mich. Application filed February 23, 1888. Used since November 7, 1887.
"The words 'GREAT BEGUM.'"

LABELS.

5,340.—Title: "W. C. ALLEN'S NERVE BALM."—*Lewis J. Bailey, G. W. Willis*, and *W. C. Allen*, Atlanta, Tex. Application filed March 8, 1888.

5,341.—Title: "RUDOLPH'S PHOSPHORIZED ELIXIR OF OATS."—*Hegeman & Company*, New York, N. Y. Application filed March 16, 1888.

5,342.—Title: "FLORIDA SYRUP OF TAMARINDS AND PRUNES."—*H. J. Heister*, Memphis, Tenn. Application filed March 9, 1888.

5,343.—Title: "LE SURE'S SPAVIN CURE."—*John G. Le Sure & Co.*, Keene, N. H., and Boston, Mass. Application filed March 16, 1888.

5,344.—Title: "MANITOU NATURAL MINERAL TABLE WATER."—*Manitou Mineral Water Company*, Manitou Springs, Colo. Application filed February 29, 1888. (Trade-Mark Registered.)

5,345.—Title: "DR HALL'S SANITARY KNITTING YARN."—*Nonantum Worsted Company*, Boston and Newton, Mass. Application filed March 12, 1888.

5,346.—Title: "LEMON AND ORANGE ELIXIR."—*Pemberton Medicine Co.*, Atlanta, Ga. Application filed March 10, 1888.

5,347.—Title: "DR. PRICE'S STOMACHIC POWDERS."—*Russell C. Price*, Waukegan, Ill. Application filed March 5, 1888.

5,348.—Title: "DR. PRICE'S HEART REGULATOR." (FOR A MEDICINE.)—*Russell C. Price*, Waukegan, Ill. Application filed March 5, 1888.

5,349.—Title: "DR. PRICE'S RED LINIMENT."—*Russell C. Price*, Waukegan, Ill. Application filed March 5, 1888.

5,350.—Title: "DR. PRICE'S BLACK LINIMENT."—*Russell C. Price*, Waukegan, Ill. Application filed March 5, 1888.

5,351.—Title: "LEMON HONEY." (FOR A PULMONARY REMEDY.)—*John F. Seaman*, New York, N. Y. Application filed March 1, 1888.

5,352.—Title: "WALKER'S RHEUMATIC CURE."—*John Walker Seaton*, Louisville, Ky. Application filed March 10, 1888.

5,353.—Title: "DR. HENLEY'S DANDELION TONIC."—*Snell, Heitshu & Woodard*, Portland, Oreg. Application filed March 9, 1888.

5,354.—Title: "WHITE'S WORM POWDERS." (FOR A MEDICINE.)—*Stockton & Willis*, Richmond, Ky. Application filed February 13, 1888.

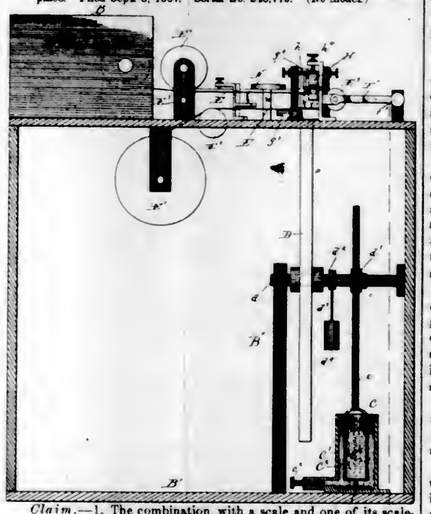
5,355.—Title: "TRIANGULAR." (FOR BISCUITS.)—*Van Derveer & Holmes Biscuit Company*, New York, N. Y. Application filed March 12, 1888.

5,356.—Title: "WANAMAKER'S SHOE DRESSING."—*John Wanamaker*, Philadelphia, Pa. Application filed March 15, 1888.

PATENTS

GRANTED APRIL 10, 1888.

380,672. **AUTOMATIC WEIGHING AND RECORDING SCALE.**
EDWARD H. AMET, Chicago, Ill., assignor to Herbert A. Streeter, same place. Filed Sept. 5, 1887. Serial No. 248,779. (No model.)



Claim.—1. The combination, with a scale and one of its scale-levers, of a variable counterpoise, a rack-bar connected therewith, a type-wheel having a shaft furnished with a gear meshing with said rack, an inking-roller, a printing-block, and a key-lever connected with said inking-roller and printing-block for operating the same, substantially as specified.

2. The combination, with a scale and one of its scale-levers, of a variable counterpoise, a rack-bar connected therewith, a type-wheel having a shaft furnished with a gear meshing with said rack, an inking-roller mounted on a vibratory arm or lever swinging transversely across the periphery of said type-wheel, substantially as specified.

3. The combination, with a scale and one of its scale-levers, of a variable counterpoise, a rack-bar connected therewith, a type-wheel having a shaft furnished with a gear meshing with said rack, said shaft being provided with a counterbalance-weight, as d^6, to compensate for the friction of the moving parts, substantially as specified.

4. The combination, with a scale, of a variable counterpoise, a rack-bar, c, connecting said variable counterpoise with one of the scale-levers, gear d', meshing with said rack-bar and connected with the device for indicating the weight, a dash-pot, and its piston connected with said rack-bar for regulating the movement thereof, substantially as specified.

5. The combination, with a scale, of a variable counterpoise consisting of mercury-containing vessel C', mercury C^3 therein, movable weight-cup C^2, mercury C^4 therein, said weight C^2 C^4 being connected with one of the scale-levers, and said mercury-vessel C' being provided with an adjusting-screw, c^2, substantially as specified.

6. The combination, with a scale, of a variable counterpoise consisting of mercury-containing vessels C', mercury C^3 therein, movable weight-cup C^2, mercury C^4 therein, said weight C^2 C^4 being connected with one of the scale-levers, and rack-bar c, type-wheel D, shaft d, and gear d', substantially as specified.

7. The combination, with a scale, of a variable counterpoise consisting of mercury-containing vessel C', mercury C^3 therein, movable weight-cup C^2, mercury C^4 therein, said weight C^2 C^4 being connected with one of the scale-levers, and rack-bar c, type-wheel D, shaft d, gear d', inking-roller G, mounted on vibratory lever g, printing-block F, lever F', spring F^3, and key-lever H, substantially as specified.

8. The combination, with a scale and one of its scale-levers, as a, of a variable counterpoise, C, rack-bar c, type-wheel D, shaft d, gear d', paper-strip guide and holding rollers, inking-roller G, mounted on a transversely-moving vibratory arm, g, printing-block F, lever F', spring F^3, pawl-lever K for releasing the paper-holding roller, and operating-lever H, substantially as specified.

9. The combination, with a scale and one of its scale-levers, as a, of a variable counterpoise, C, rack-bar c, type-wheel D, shaft d, gear d', paper-strip guide and holding rollers, inking-roller G, mounted on a transversely-moving vibratory arm, g, printing-block F, lever F', spring F^3, pawl-lever K for releasing the paper-holding roller, operating-lever H, pawl-lever L_4 operated by the wheel of the car, and mechanism connecting said pawl-lever with said operating-lever H, substantially as specified.

10. The combination, with a scale and one of its scale-levers, as a, of a variable counterpoise, C, rack-bar c, type-wheel D, shaft d, gear d', paper-strip guide and holding rollers, inking-roller G, mounted on a transversely-moving vibratory arm, g, printing-block F, lever F', spring F^3, pawl-lever K for releasing the paper-holding roller, operating-lever H, and a spring-motor for winding up the paper strip, substantially as specified.

11. The combination, with a scale, of a variable counterpoise, C, rack c, type-wheel D, shaft d, gear d', said type-wheel being furnished with type d^4, with division-marks d^5 between the same, and a stationary pointer printing-type, d^7, substantially as specified.

12. The combination, with a scale, a variable counterpoise, and type-wheel, of a strip-guide roller, E^3, lever F', upon which said roller is journaled, and a printing-block, F, pivoted to the shaft of said guide-roller, substantially as specified.

13. The combination, with a scale, a variable counterpoise, and type-wheel, of a paper-strip-guide roller, E^3, lever F', upon which said roller is journaled, and a printing-block, F, pivoted to the shaft of said guide-roller, and a spring, F^3, substantially as specified.

14. The combination, with a scale, of a variable counterpoise, C, rack c, type-wheel D, shaft d, gear d', said type-wheel being furnished with type d^4, with division-marks d^5 between the same, a stationary pointer printing-type, d^7, and a magnifying-glass, N, substantially as specified.

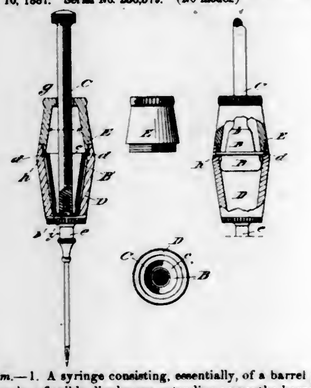
15. The combination, with a scale and one of its scale-levers, as a, of a variable counterpoise, C, rack-bar c, type-wheel D, shaft d, gear d', paper-strip guide and holding rollers, inking-roller G, mounted on a transversely-moving vibratory arm, g, printing-block F, lever F', spring F^3, pawl-lever K, for releasing the paper-holding roller, operating-lever H, link g^4, and arm g^4 on said lever H, substantially as specified.

16. The combination, with a scale and one of its scale-levers, as a, of a variable counterpoise, C, rack-bar c, type-wheel D, shaft d, gear d', paper-strip guide and holding rollers, inking-roller G, mounted on a transversely-moving vibratory arm, g, printing-block F, lever F', spring F^3, pawl-lever K, for releasing the paper-holding roller, operating-lever H, arm h', sliding spring-catch h^3, the holding-roller E^3 being furnished with stop-pin k', engaging the bent end k of said pawl-lever K, substantially as specified.

17. The combination, with a scale and one of its scale-levers, as a, of a variable counterpoise, C, rack-bar c, type-wheel D, shaft d, gear d', paper-strip guide and holding rollers, inking-roller G, mounted on a transversely-moving vibratory arm, g, printing-block F, lever F', spring F^3, pawl-lever K, for releasing the paper-holding roller, operating-lever H, link g^4, arm g^4 on said lever H, arm h', sliding spring-catch h^3, the holding-roller E^3 being journaled with stop-pin k', engaging the bent end k of said pawl-lever K, substantially as specified.

18. The combination, with a scale and one of its scale-levers, of a variable counterpoise, a rack-bar connected therewith, a type-wheel having a shaft furnished with a gear meshing with said rack, an inking-roller, a printing-block, and a key-lever connected with said inking-roller and printing-block for operating the same, a scale-platform, a lever adapted to be operated by the article to be weighed on the platform, and mechanism connecting said lever with said key-lever, substantially as specified.

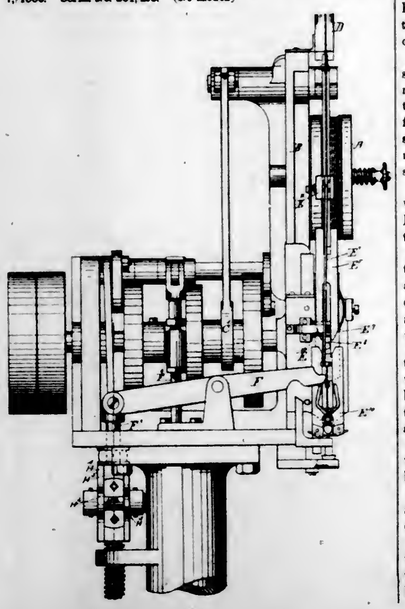
380,673. **SYRINGE.** CHESTER M. BARTON, Hatfield, Mass. Filed Mar. 10, 1887. Serial No. 230,579. (No model.)



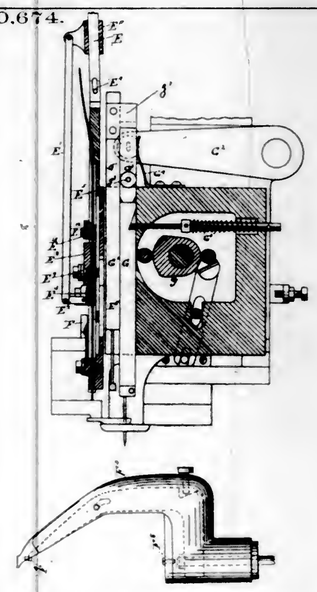
Claim.—1. A syringe consisting, essentially, of a barrel provided with a nozzle, a flexible diaphragm extending across the barrel and attached by its edges thereto, and a plunger attached to the central part of the diaphragm and having a handle at the end opposite the nozzle, substantially as described.

2. The syringe having barrel D, the ring E, connected to said barrel by a screw-thread, the elastic nipple secured between the ring and the barrel, and a plunger secured to the central part of the nipple and guided at the other end by the ring E, the parts being combined and operating substantially as described.

380,674. **PEGGING-MACHINE.** EDWIN E. BEAN, Boston, Mass., assignor to the Star Metallic Thread Company, same place. Filed May 7, 1886. Serial No. 201,426. (No model.)



380,674.



Claim.—1. In a boot and shoe pegging machine, the combination, with a drum which carries the pegging-wire and a rocker-arm operating to feed the same, of a pivoted guide grooved on its upper face and supported upon the rocker-arm to rise and fall with it, all substantially as set forth.

2. In a boot and shoe pegging machine, the combination of the rocker-arm C^3, the connecting-rod E, the arm E', locking-piece E^3, and shoe E^3, all substantially as set forth.

3. In a boot and shoe pegging machine of the character described, the combination, with the wire-feeding devices having a feed-plate, E^3, formed with a wedge-shaped end, E^7, substantially as set forth, of the fixed jaws E^{10}, for cutting off the peg-wire, having a wedge-shaped opening for engagement with the wedge E^7, substantially as described.

4. In a boot and shoe pegging machine of the character described, the combination, with the wire-locking devices, as set forth, mounted in the sliding block E^5, and the sliding plate E^2, on which the said block is frictionally secured, of the adjustable abutment F, for limiting the downward movement of the said block, and the fixed stop E^{13}, attached to the head of the machine for limiting its upward movement, all substantially as described, and for the purposes herein set forth.

5. In a boot and shoe pegging machine, the combination of the wire-feeding devices, the lever F, engaging therewith, connecting-rod F', foot-lever F^2, and horn F^3, connected with said lever, all substantially as set forth.

6. In a machine for pegging boots and shoes, the combination, with the foot-lever F^2, connected at one end with the horn and its support and at the other with the connecting-rod F', of the straight non-jointed centrally-pivoted supplementary lever F^5, mounted in said foot-lever, as shown, and connected at one end with the clincher-rod F^4 and at the other end with the connecting-rod F^6, all substantially as set forth.

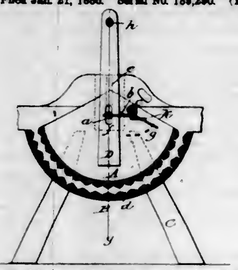
7. In a machine for pegging boots and shoes, the combination of the vertically-movable horn F^3, with the clinching-rod F^4, located within said horn and adapted to engage with it and lift it, and also having a slight movement within it, whereby the upward motion of the clinching-rod may also impart upward motion to the horn, substantially as set forth.

8. In a machine for pegging boots and shoes, the combination, with the rocker-arm G^2, of the driving-bar G' and the awl-bar G, having a flexible or jointed upper portion, as shown.

9. In a machine for pegging boots and shoes, the combination of an awl-bar, G, the stop G^2, provided with a spring, as shown, and the cam J.

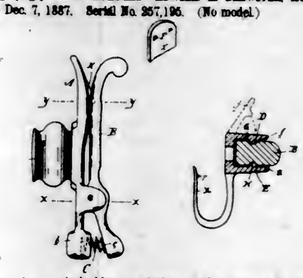
10. In a machine for pegging boots and shoes, the improved device herein shown for locking the horn, it consisting of the combination, with the rod F', of the connecting-rod H, stirrup H', pin H^2, box H^4, and shoe H^5, all substantially as set forth.

380,675. **WASHING-MACHINE.** JARED M. BOUGHTON, East Saginaw, Mich. Filed Jan. 21, 1888. Serial No. 189,290. (Model.)



Claim.—In a washing-machine, the combination of the rocker A, having arms provided with slots *f*, an axle, *a*, passing through said slots, a rod, *c*, and springs *b*, coiled around said rod and having one end attached to the axle and the other end adjustably secured to the rocker, as and for the purpose set forth.

380,676. **REIN-HOLDER.** EDWARD E. BREWSTER, Holly, Mich. Filed Dec. 7, 1887. Serial No. 257,196. (No model.)



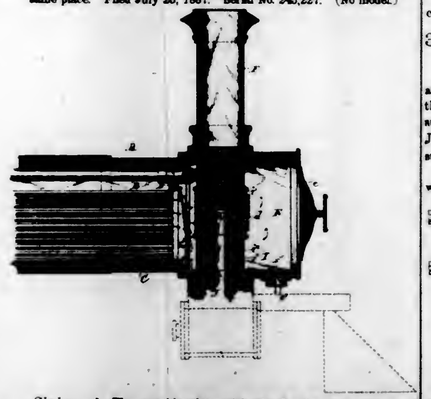
Claim.—1. A rein-holder consisting of the jaws A B, the jaw A being provided with a projection, K, and the jaw B having a cavity, L, adapted to receive the projection K, substantially as shown and described.

2. In a rein-holder, as described, a latch or projection, K, slanting gradually toward the top of the apparatus and forming a square shoulder at its lower end, substantially as shown and described.

3. In a rein-holder, as described, a clamp, X, provided on its inside with the spurs *p*, substantially as and for the purpose described.

4. The combination of the jaw A, the ears *a f*, the lugs D H, with the jaw B, provided with the cavities E G, substantially as described.

380,677. **DRAFT-EQUALIZER AND SPARK-ARRESTER.** ANDREW J. CRANE, Dunmore, Pa., assignor of one-half to George B. Smith, same place. Filed July 25, 1887. Serial No. 245,227. (No model.)

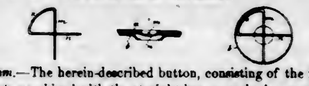


Claim.—1. The combination, with the flue-head, a perforated draft-pipe, and an exhaust-nozzle within said pipe, of a slotted and perforated diaphragm secured to the flue-head and a series of perforated deflectors secured to the diaphragm in front of the slots, for the purposes above set forth.

2. The combination, with the flue-head, a perforated draft-pipe, and an exhaust-nozzle within said pipe, of a perforated and transversely-slotted diaphragm secured to the flue-head and a series of perforated flanged deflectors secured to the diaphragm in front of the slots, in the manner and for the purposes above set forth.

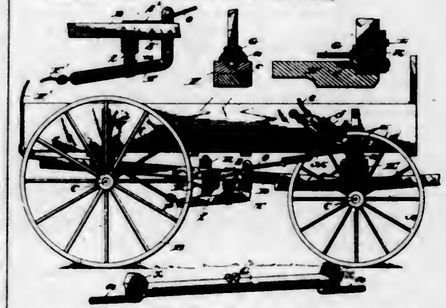
3. The combination, with the flue-head, the smoke-box, the smoke-stack, a draft-pipe extending from the bottom of said box to the bottom of the stack and perforated throughout its length, and an exhaust-nozzle within said pipe, of a slotted and perforated diaphragm secured to the flue-head and a series of perforated deflectors secured to the diaphragm in front of the slots, for the purposes set forth.

380,678. **BUTTON.** JAMES M. ELLIS, New Haven, Conn. Filed Sept. 3, 1887. Serial No. 248,745. (No model.)



Claim.—The herein-described button, consisting of the front and back parts, combined with the straight bars *m* and *n* in one piece with the curved part *x*, the length of the bars equaling the diameter of a circle of which the curved part *x* is an arc, the said bars arranged between the front and back parts of the button, and crossing each other at right angles at the center of the openings in said parts, as shown and described.

380,679. **WAGON-BRAKE.** ROBERT FORD, Sr., Earling, Iowa. Filed Dec. 10, 1887. Serial No. 257,480. (No model.)



Claim.—1. The eccentric G, provided with trunnions *a*, in combination with a recessed bolster, F, and an operating-lever, K, said eccentric being connected with the brake, substantially as shown and described.
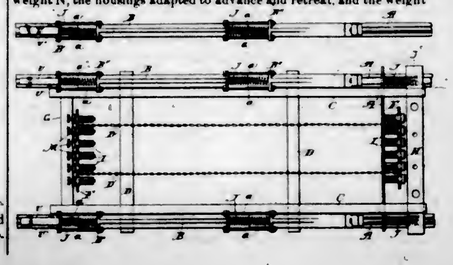
2. In combination with the eccentric G, the pivoted and perforated bar M, coupling-rod O, and plate *i*, substantially as specified.

3. The plate S', lever T, spring *t*, bolt *u*, and rod or chain Y, in combination with a perforated reach, substantially as specified.

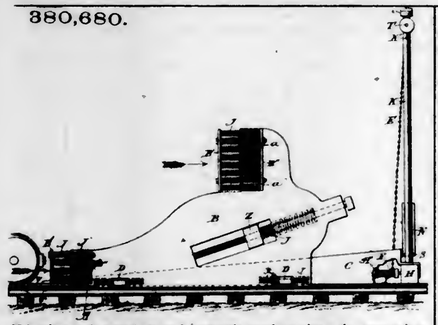
380,680. **TRACK-BUFFER.** ROBERT P. GARRET, Norristown, Pa. Filed Dec. 10, 1887. Serial No. 257,553. (No model.)

Claim.—1. In combination, the tracks A, the housings B, and the attached weight N, said housings adapted to advance and retreat, and the weight N having spring-pockets and supporting-rod openings, the supporting-rods K and L, with connecting chain-rod T, and the springs J and the chains E, with shackles P and flanged spring-rod O, substantially as and for the purposes set forth.

2. In combination, the tracks A, the housings B, and the attached weight N, the housings adapted to advance and retreat, and the weight



380,680.



N having spring-pockets and supporting-rod openings, the supporting-rods K and L, with flanged chain-rod T, the springs J and chains E, with flanged spring-rods O connected to them, and the chain-rods F, with the chambers I and the springs J, substantially as and for the purposes set forth.

3. In combination, the tracks A, the housings B, and the attached weight N, the housings adapted to advance and retreat, and the weight N having supporting-rod openings, the supporting-rods K and L, and the springs J and chains E, the chain-rods F, with the chambers T and springs J, and the gage-beam H and the anchoring-bar G, adapted to hold the spring-chambers in position, substantially as and for the purposes set forth.

4. In combination, the tracks A, the housings B, having spring-pockets carrying springs J, the under friction-bar, D, adapted to bear against the pocketed springs and having hooks D', the attached chains E, with weight N, the latter having supporting-rod openings, the supporting-rods K and L, with the connecting-rod T, the chain-rods F, with the chambers I and their springs, and the gage-beam H and the anchoring-bar G, adapted to hold the spring-chambers in place, substantially as and for the purposes set forth.

5. In combination, the tracks A, the housings B, and the attached weight N, said housings adapted to advance and retreat, and the weight N having spring-pockets and supporting-rod openings, the supporting-rods K and L, with connecting chain-rod T, the springs J, and the chains E, the gage-beam H, adapted to hold spring-chambers I and support the-rods K and L, and the springs surrounding the supporting-rods K and L, substantially as and for the purposes set forth.

6. In combination, the tracks A, the housings B, and the attached weight N, having spring-pockets and supporting-rod openings, the supporting-rods K and L, with connecting chain-rod T, the springs J, and the chain E, the gage-beam H, adapted to hold the supporting-rods and the springs surrounding them, and the plate S, interposed between said springs and the weight, substantially as and for the purposes set forth.

7. The combination of the housings B, adapted to advance and retreat, the connected chains E, and weight N, having attached shackles P, for lifting the same, the weight-supporting rods K and L, and the coupling-bar R, made in halves, with surrounding parts allowing the supporting-rods to pass, substantially as and for the purposes set forth.

8. In combination, the rails A and the housings B, adapted to advance and retreat, the springs J, and the adjustable fender-plates B', supported by said housings, the gage-beam H, adapted to support springs to receive the bearing-bar A', said bearing-bar A', and the bed-bars C, with upper friction-bar, Z, and lower friction-bar, D, substantially as and for the purposes set forth.

9. In combination, the rails A and the housings B, the gibs U, fastened to the ends of the housings and locked thereto by their upturned ends, and adapted to receive the weight of the train and keep the ends of the housings in place, the friction-bar D, and the bed-bars C, with the springs J, and fender-plate B', adapted to move back and forth with their springs, substantially as and for the purposes set forth.

10. In combination, the rails A, the housings with a projecting end and with an upper and lower face, having pockets cast therein adapted to contain springs, the said springs J, and the fender-plates B', adapted to move back and forth with said springs, and the gibs U, having lugs U' attached thereto and serving as a medium by which the device is operated.

11. In combination, the rails A, the housings B, situated thereon, with an upper and lower vertical face with spring-pockets therein, the springs J, adapted to fit within said pockets and having a fender-plate, B', adapted to move back and forth with said springs, and a rod, *a*, suited to hold the parts in position, substantially as and for the purposes set forth.

12. In combination, the rails A, the housings B, situated thereon and adapted to advance and retreat, and having vertical faces with spring-pockets cast therein adapted to contain springs, the said springs J, and the fender-plates B', adapted to move back and forth with said springs, and having a rod, *a*, to hold the parts in place, the gage-beam H, with spring-pockets cast therein, and the gage-beam springs J, adapted to receive the abutment of the housings, substantially as and for the purposes set forth.

13. In combination, the rails A, the housings B, adapted to slide thereon, and having vertical faces with pockets therein adapted to hold springs, the springs J, adapted to be held within said pockets and having fender-plates B', suited to move back and forth with said springs, and having a rod, *a*, to hold the parts in position, the attached weight N, with spring-pockets, and its springs J, and the tubular supporting-rods K and L, carrying spring-chambers and their springs, with a cross chain-rod and chains, substantially as and for the purposes set forth.

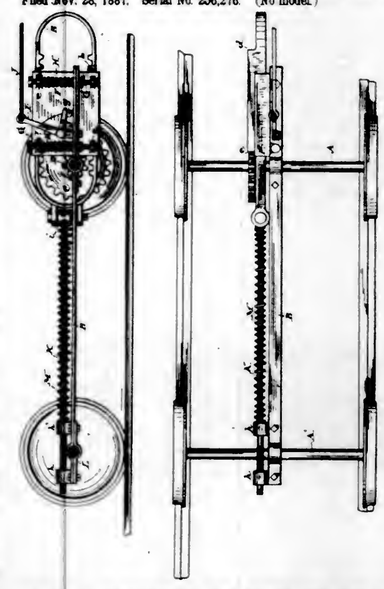
14. In combination, the rails A, the housings B, situated thereon and adapted to advance and retreat, the attached chains E, with weight N, the spring-pockets I, having slots for chain-rods F to work back and forth, and with springs J and the chain-rods F, operating substantially as and for the purposes set forth.

15. In combination, the rails A, the housings B, adapted to advance and retreat, and having springs J and adjustable plates B', with rods *a*, to hold the parts in place, a cross-bar, D, having an independent back-and-forth movement when the housings are at rest, and the springs J, to receive the bearing of said cross-bar in its movements, substantially as and for the purposes set forth.

16. In combination, the rails A, the housings B, adapted to advance and retreat, and having springs J and adjustable plates B', with rods *a*, to hold the parts in place, a cross-bar, D, having an independent back-and-forth movement when the housings are at rest, and the springs J, to receive the bearing of said cross-bar in its movements, and the gage-beam H, with its springs J, operated substantially as and for the purposes set forth.

17. In combination, the housings B, adapted to advance and retreat, and having abutting faces adapted to carry springs J and fender-plates B', said springs and fender-plates and the gaging-beam H, with its springs J and the bearing-bar A' interposed between the housings and the gaging-beam springs, and adapted to receive the bearing of said housings and work back and forth, substantially as and for the purposes set forth.

380,681. CAR STARTER AND BRAKE. JOHN HEIMLICH, Oak Harbor, Ohio, assignor of one-half to Emery Thierwechter, same place. Filed Nov. 28, 1887. Serial No. 256,276. (No model.)

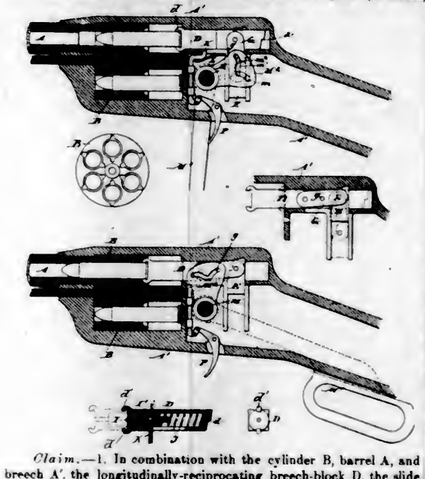


Claim.—1. In a car-starter, a loop provided with racks, a rod connected therewith at one end, the opposite end of said rod guided in a bracket attached to the axle of the hind wheels, and a spiral spring carried by said rod, arranged to be compressible by the momentum of the car, and when expanding to start said car, in combination with differential gears secured to the front axle, a guidable frame for said loop, and a lever for adjusting said frame, substantially as and for the purpose set forth.

2. In a car-starter, the reach B, affording pivotal support for the lever I, and means to suspend the frame F, adjusted by said lever, differential gears secured to the front axle, and a rack-loop provided with a spiral spring and arranged for alternate engagement in said gears, substantially as and for the purpose set forth.

3. In a car-starter, the combination of the axle A, differential gears C D, secured thereto, a rack-loop held and adjusted in alternate respective relation therewith, and a spiral spring, M, carried by a rod in connection with said loop and guided in a bracket of the hind axle, the spring being interposed between said bracket and loop, substantially as and for the purpose described.

380,682. BREECH-LOADING FIRE-ARM. FRANCIS G. D. HOLMES, Phillipsburg, N. J. Filed May 24, 1887. Serial No. 239,509. (No model.)

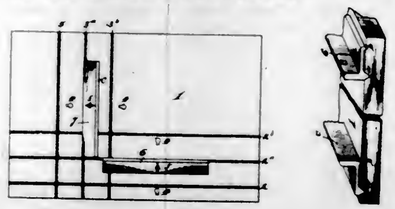


Claim.—1. In combination with the cylinder B, barrel A, and breech A', the longitudinally-reciprocating breech-block D, the slide E, reciprocating vertically across the rear end of the breech-block, the link G, pivoted to and connecting said breech-block and slide, and the lever M, connected to said link for operating said parts, substantially as specified.

2. In combination with the cylinder B, barrel A, and breech A', the longitudinally-reciprocating breech-block D, the slide E, reciprocating vertically across the rear end of the breech-block, the link G, pivoted to and connecting said breech-block and slide, said link being provided with a laterally-projecting pin, *g*, shaft M, and lever M', provided with the arm M^3, having slot *m m' m*^{3}, engaging said pin *g*, substantially as specified.

3. In combination with the barrel A and breech A', the longitudinally-reciprocating hollow breech-block D, having a slot in its bottom, the firing-pin I, collar I', mounted thereon and sliding within said breech-block, said collar being provided with the groove *i*, spring J for forcing said pin and collar forward, spring-actuated dog K, adapted to extend through said slot and engage said groove, and trigger I', substantially as specified.

380,683. MACHINE-GAGE. GEORGE C. JAMES, Cincinnati, Ohio. Filed May 6, 1887. Serial No. 237,348. (No model.)



Claim.—1. The combination, with a grooved table, of a right-angled guide composed of a vertical face-plate, *c*, and a horizontal part, 9, provided with a longitudinal flange, *a*, having inclined sides or their described equivalent engaging the groove in the table, and a clamping device for clamping said flange in the groove of said table, substantially as described.

2. The combination, with a grooved table, of a right-angled guide composed of a vertical face-plate, *c*, and a horizontal part, 9, provided at one edge with a bearing-flange, *b*, and at the other edge with a longitudinal V-shaped flange, *a*, or its described equivalent, engaging the groove in the table, and a clamping device for clamping said V-shaped flange in the groove of the table, substantially as described.

3. The combination of the grooved table having key-hole slots, the right-angled guide having its horizontal part provided with a V-shaped flange, *a*, or its described equivalent, a bolt, 8, and a nut, 5, for clamping the flange in the groove of the table, substantially as described.

4. The combination, with the grooved table, of a right-angled guide composed of a vertical face-plate and a horizontal part provided along the opposite edges with two longitudinal flanges, *a b*, one provided with inclined sides or their described equivalent, with a vacant space between the flanges, and a clamping device for clamping the guide in place, substantially as described.

380,684. CAR-COUPLING. JOSEPH KROUPA, St. Louis, Mo. Filed Dec. 6, 1887. Serial No. 257,072. (No model.)



Claim.—1. The combination, with the draw-bar having a recess in the rear of its throat and the coupling-latch, of the lock-bar, the lock-bar head, the ribs and grooves for holding the head and bar against longitudinal displacement, and the removable plate for disclosing an opening into the said recess, substantially as and for the purpose described.

2. The combination of the draw-bar, the coupling-latch, the lock-bar, the stop, the spring interposed between the stop and the lock-bar, the rock-shaft having levers at its ends, and the arm secured at one end to the rock-shaft and having its other end engaging with the lock-bar, substantially as and for the purpose described.

3. The combination of the draw-bar, the coupling-latch composed of a vertical bar and two horizontal arms, the vertical bar being extended below the arms, and the lock-bar for engaging with said extension, substantially as described, and for the purpose specified.

4. The combination, with the draw-bar, the coupling-latch, the lock-bar, and the uncoupling mechanism, of the gravity-bars mounted on a common pivot and having an interlocking shoulder.

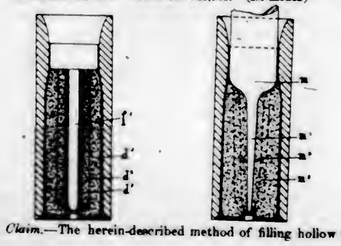
380,685. BILL-HOLDER. HARVEY E. LEASURE, Williamsburg, Iowa. Filed Apr. 26, 1887. Serial No. 236,126. (No model.)



Claim.—1. The combination, in a bill-holder, of the double spiral spring *a* with the central hinge, substantially as set forth.

2. The combination, in a bill-holder, of the double-acting spiral spring *a* with the hinged flap B, substantially as described.

380,686. METHOD OF COMPRESSING GUNPOWDER OR ANALOGOUS MATERIALS. WILHELM LORENZ, Carlsruhe, Baden, Germany. Filed June 16, 1887. Serial No. 241,575. (No model.)



Claim.—The herein-described method of filling hollow bodies—

such as cartridge-shells, &c.—with compressed gunpowder or other compressible materials, which method consists, first, in filling such hollow body to a certain degree with the compressible material, then introducing a tapering needle into the center of such material for effecting a radial compression of the same and producing a longitudinal canal therein, then filling such canal with another charge of said material and repeating said process, and finally forcing a die into the open end of said hollow body for effecting the axial compression of the several annular layers of radially-compressed material.

380,687. **SNAP-HOOK.** JOHN L. MARTIN, Canton, Kans. Filed Jan. 28, 1886. Serial No. 262,565. (No model.)

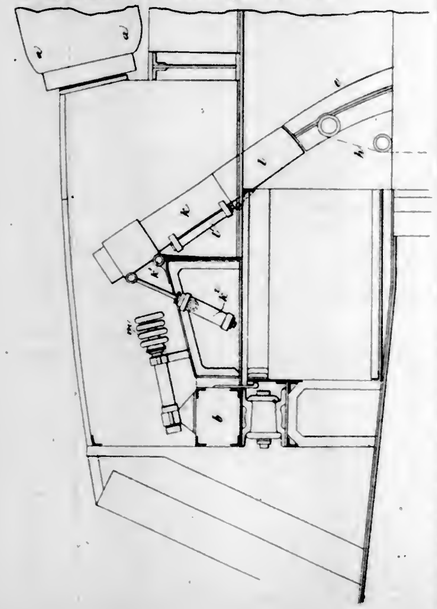


Claim.—The herein-described snap-hook, comprising the double hook A G, the guards I, the levers J and L, the slots O and N, and the spring P, all substantially as set forth, and forming in combination the outlines of the figure 8.

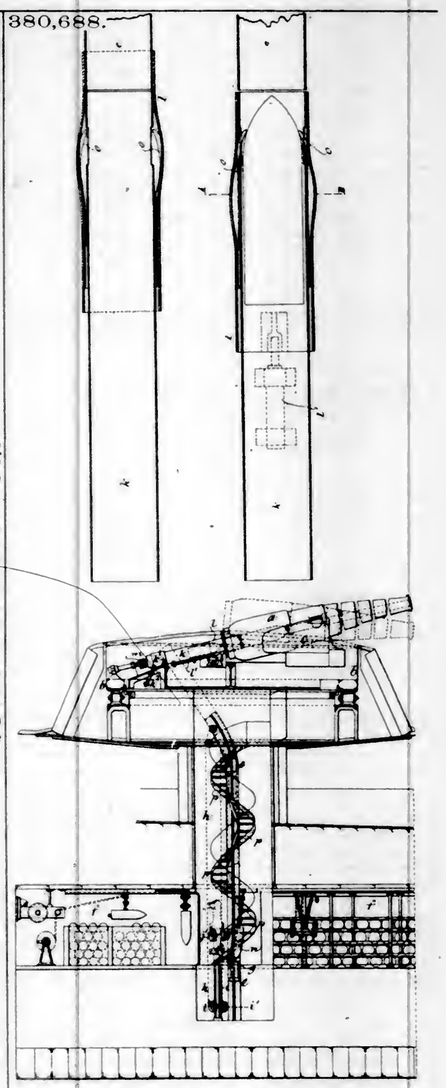
380,688. **APPARATUS FOR LOADING HEAVY GUNS.** CHARLES H. MURRAY, Elswick Works, Newcastle-upon-Tyne, England, assignor to W. G. Armstrong, Mitchell & Co., (Limited,) same place. Filed May 31, 1887. Serial No. 239,858. (No model.) Patented in Italy Mar. 31, 1886, No. 21,357.

Claim.—1. The combination of the turret or turn-table, the gun or guns mounted thereon, and the ammunition-hoist attached centrally to and beneath the turret or turn-table and extending down to a magazine-chamber, substantially as and for the purpose set forth.

2. The combination of a turret or turn-table, a gun or guns mounted thereon, an ammunition-hoist centrally beneath the turret, and a loading trough or tube above the hoist and movable about a pivot, whereby it connects with the trunk of a hoist while it receives the charge and with the breech of the gun while it delivers the charge into it, substantially as and for the purpose set forth.



380,688.

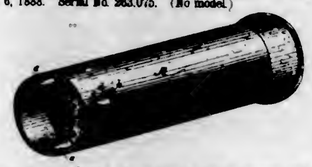


3. The combination of the gun, a hoist raising ammunition to the gun, a loading trough or tube above the hoist and movable about a pivot to connect at one time with the trunk of the hoist and at another with the breech of the gun, fingers in the loading trough or tube operated to retain the projectile and charge within it, and a rammer passing through the loading trough or tube and into the gun, substantially as and for the purpose set forth.

4. The loading apparatus consisting of a pivoted trough or tube having the sliding part, a rammer in rear of it, a hydraulic cylinder and ram on the pivoted trough or tube operating the sliding part thereof, retaining-fingers on the pivoted trough or tube actuated by said sliding part, and a hydraulic cylinder and ram connected with the trough or tube and moving it about its pivot, substantially as and for the purpose set forth.

5. The combination of the turret or turn-table, the gun or guns mounted thereon, the ammunition-hoist attached centrally to and beneath the turret or turn-table and extending down to a magazine-chamber, and the spiral stairs surrounding the hoist and extending from the turret or turn-table to the magazine-chamber, substantially as set forth.

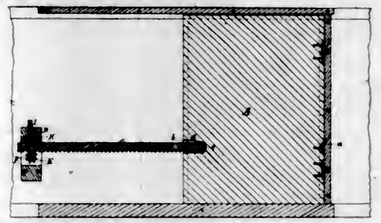
380,689. **CARTRIDGE.** G. MOORE PETERS, Xenia, Ohio. Filed Feb. 6, 1888. Serial No. 263,075. (No model.)



Claim.—1. A cartridge the sides of which are cut and indented to leave inwardly-projecting holding-pieces, the said pieces being indented in such manner that when pressed inward their inner faces are convex, the shell being entirely cut away at the bottom of said holding-pieces, which are forced inward, so that their edges press against the wad or ball.

2. A cartridge the sides of which are indented and cut to leave inwardly-projecting holding-pieces, each separate holding-piece having an arc-shaped base, as and for the purpose set forth.

380,690. **MECHANISM FOR OPERATING SLIDING DOORS.** IRA C. PEIRCE, Hyde Park, Mass. Filed June 16, 1887. Serial No. 241,534. (No model.)



Claim.—1. The sliding door supported in the usual manner, and provided with the bar B and chamber *d*, and having the rack C pivoted in such chamber, in combination with pinion E, shaft F, hand-wheel G, friction-roll H, and box D, said box D containing the pinion, shaft, and roll, and being located at the free end of the rack C, all being arranged and to operate substantially as described.

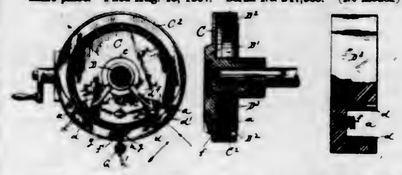
2. The combination of the sliding door provided with the bar B and chamber *d*, and having the rack C, provided with a notch, *e*, pivoted to said door in the chamber *d*, with the pinion E, its shaft F, and hand-wheel G, the friction-roll H, box D, and bolt I, said box D containing the pinion, shaft, roll, and bolt, and being located at the free end of the rack C, all being arranged and to operate essentially as set forth.

380,691. **ROTARY NOZZLE-HEAD FOR WATER-MOTORS.** EDWIN S. PIPER, Bristol, Conn., assignor of one-half to S. Emerson Root, same place. Filed Dec. 22, 1886. Serial No. 222,245. (No model.)



Claim.—In a nozzle-head for water-motors, the combination, with a hollow conical bearing having its larger end open and adapted to be secured to a water-supply pipe, its smaller end closed to form a flat bearing-face, and a discharge-port of forward pitch in its side, of a rotary frame coned out to fit over such conical bearing and the flat face thereof and adjustable for wear thereupon, and provided with a circular series of inclined water-passages conforming in size at their inner ends to the said discharge-port and gradually tapering at their outer ends, and each being of different discharging capacity, and a pivot passing through such head and entering the flat face of the conical bearing, substantially as set forth.

380,692. **METAL-PLANING MACHINE.** LUCIUS W. POND and FREDERICK E. NORTON, Worcester, Mass., assignors to Henry C. Fish, same place. Filed Aug. 15, 1887. Serial No. 247,006. (No model.)



Claim.—1. The combination, with the rotating flange D^3 and the rotating hub c, carrying dogs, as described, of the pins *d d*, placed in said dogs in position to engage the rotating flange, substantially as described.

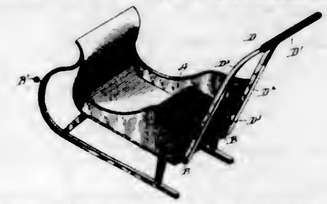
2. In a friction device consisting of a disk, C, having a hub, c, a rotating flange and dogs seated in said hub c and arranged to engage said flange, the spring *f*, in combination with said dogs, substantially as described.

3. In a friction device, the combination, with a rotating disk provided with a flange, a pair of driving-dogs arranged to engage said flange, and a stop-pin held rigidly in the path of said dogs and provided with longitudinal grooves, of the friction-blocks removably held in said grooves, substantially as described.

4. The combination, with a rotating flange, D^3, dogs D^4, and disk C, of the plate F', attached to the stationary portion of the machine and having a pin, F, held in the path of the dogs D^4, and a pin, G, with connected friction devices, substantially as described.

5. The combination of rotating flange D^3, dogs D^4, arranged to engage said flange, rotating hub c, provided with pockets *b b*, holding the inner ends of said dogs, said pockets being deeper than the entering ends of the dogs, so the radial position of the dogs will be determined by the flange D^3, substantially as described.

380,693. **CHILD'S SLED.** JACOB F. PRATT and WELLINGTON CRARE, Coldwater, Mich. Filed Jan. 4, 1888. Serial No. 259,766. (No model.)



Claim.—1. The combination, with a child's vehicle provided with attaching devices at its front and rear ends, of a handle and a laterally-adjustable clamping device formed in two sections and provided at their inner ends with a long slot and a clamping-screw, substantially as and for the purpose described.

2. The combination of the body A of a child's vehicle, provided with eyebolts B B, with a handle, D, provided with a laterally-adjustable bracket or brace, D^2, arranged between the side bars, D^2 D^2, of said handle, whereby said side bars may be spread apart or drawn together, substantially as and for the purpose described.

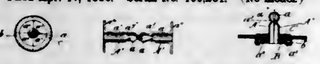
3. The combination of the body A of a child's vehicle, provided with eyebolts B B, with a handle, D, provided with a laterally-adjustable bracket or brace, D^2, consisting of two sections or parts, d' d^3, having hooks *d d*, a slot, d^4, and a clamping or screw bolt, E, substantially as and for the purpose described.

4. The combination, with the rear end of a child's vehicle provided with recessed or socket plates, of a handle having side bars, and lever-clamps pivoted to said side bars and provided with cam-shaped hooks, substantially as and for the purpose described.

5. The combination, with the rear end of a child's sled or carriage, of a handle pivotally supported thereon near its lower edge, recessed or socket plates arranged near the upper edge and sides thereof, the handle, and the pivoted lever-clutches having cam-shaped hooks and secured to the side bars of said handle for engaging with the recess of said plates, substantially as and for the purpose described.

6. The combination, with the rear end of a child's sled or carriage, of a handle pivotally supported thereon near its lower edge, recessed or socket plates arranged near the upper edge and sides thereof, the handle, the pivoted lever-clutches having cam-shaped hooks and secured to the outer surfaces of the side bars of said handle, and a laterally-adjustable bracket or brace arranged between said side bars, substantially as and for the purpose described.

380,694. GLOVE-FASTENING. EUGENE PRINGLE, Gloversville, N. Y. Filed Apr. 17, 1886. Serial No. 199,261. (No model.)



Claim.—1. A spring-stud having outwardly-turned sectional base portions, and in combination with the same the binding-piece B, clinched or turned to hold the sections of the said base portions on the same plane, substantially as and for the purposes set forth.

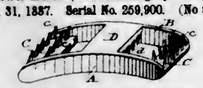
2. In a slitted spring-stud, the combination, with duplicate sections A′ A′, two or more thereof, having each a head portion, a stem portion, and a horizontal base portion, made from a single piece, of the base holding and binding piece B, arranged on one side of the joined base portions of the sections of the stud, and secured therewith to hold them on the same plane and securely together, substantially as and for the purposes set forth.

3. In a slitted spring-stud, the gradually tapering slit (or slits) *c*, extended downwardly between the upper portions of the head of the stud and from the same to the joined base portions of the sections of the stud, with said joined portions held by binding-piece B, arranged on one side of said joined base portions and secured therewith, substantially as and for the purposes set forth.

4. A slitted spring-stud provided with longitudinal slit or slits *c* between the oppositely-located and neighboring head sections and stem sections, and having below the head sections the reduced portions or necks a^2 a^2, the stem portions of the sections A′ being secured from shifting in relation to each other by binding and holding piece B, secured to the base portions, which are made continuous with the respective stem portions, substantially as and for the purposes set forth.

5. The combination, with a stud having its holding-stem in connection with its horizontal base, of the base-holding piece B, made integral with the downwardly-projected central clinching-tube, *b′*, and having its marginal edge *b* turned on the upper surface of said base and the lower end of the clinching-tube turned tightly against the lower side of the fabric, or on a washer against the fabric, substantially as and for the purposes set forth.

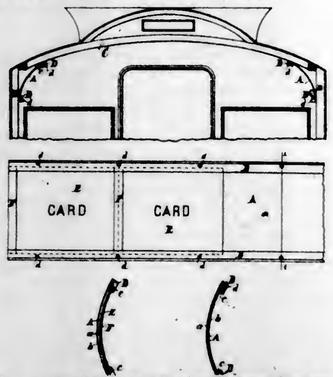
380,695. BELT-COUPLING. NICOLAS QUEIN, Kirchberg-on-the-Wechsel, Lower Austria, Austria-Hungary. Filed June 12, 1886. Renewed Dec. 31, 1887. Serial No. 259,900. (No model.)



Claim.—1. The belt-coupling herein described, consisting of the sides A B, connected by cross-bars C C and D, provided with teeth or points *c d*, arranged to engage with the ends of the belt from opposite sides, as shown and specified.

2. The belt-coupling described, consisting of the sides A B, connected by cross-bars C C, provided with upward-projecting teeth *c*, and middle bar, D, provided with downward-projecting teeth *d*, arranged to engage and clinch the ends of the belt, all as and for the purpose set forth.

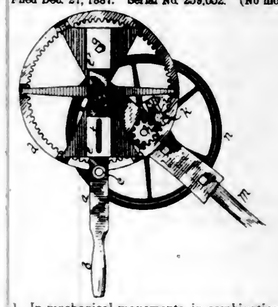
380,696. ADVERTISING-RACK. ISAAC H. RANDALL, Boston, Mass. Filed Nov. 21, 1885. Serial No. 183,577. (No model.)



Claim.—1. An advertising-rack adapted for use in a street-car, consisting of the body A, having a continuous concave face, and longitudinal moldings along the edges thereof having grooves *c*, adjacent to and in substantially the same plane as the concave face of the body, in combination with screws or equivalent devices for connecting the rack to the car engaging with the moldings outside the grooves therein, substantially as and for the purpose set forth.

2. An advertising-rack adapted for use in a street-car, consisting of a back, A, having a continuous concave face and longitudinal moldings connected by the back, and rabbeted to form longitudinal grooves immediately adjacent to the concave face of the back, and detachable and adjustable elastic strips F, adapted to be sprung into said grooves and to cover the adjacent edges of the signs held in the rack, substantially as described.

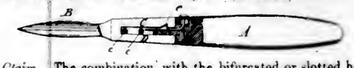
380,697. MECHANICAL MOVEMENT. GARRETT SCHENCK, Austin, Ill. Filed Dec. 27, 1887. Serial No. 259,052. (No model.)



Claim.—1. In mechanical movements, in combination, the reciprocating bar, the crank-axle, the pinion, the gear-wheel, and the handle-bar *a*, removably secured to the gear-wheel and provided with handles *b* and *c*, as and for the purpose set forth.

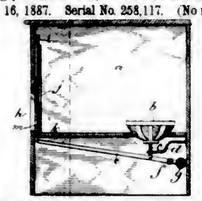
2. In mechanical movements, in combination, the reciprocating bar, the crank-axle, the pinion, the fly-wheel, the gear-wheel having the sockets, provided one with a longitudinal slot and the other with a set-bolt, and the handle-bar having handles *b* and *c*, as and for the purpose set forth.

380,698. SURGICAL KNIFE. WILLIAM SCHOTT, Brooklyn, N. Y. Filed Nov. 2, 1887. Serial No. 254,030. (No model.)



Claim.—The combination, with the bifurcated or slotted handle, the metal plate G, secured therein, and the spring-arm H, bent and provided with button F, extending out through the handle, of the blade with a bifurcated shank adapted to fit into the slotted handle over the plate G and arm H, the shank and spring-arm being formed with engaging parts which lock the blade in place, as set forth.

380,699. HEN'S NEST. EMIL M. SCHUMACHER, West View, Pa. Filed Dec. 16, 1887. Serial No. 258,117. (No model.)



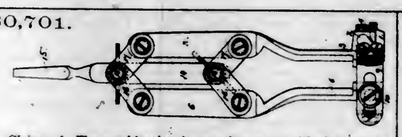
Claim.—In a hen's nest, the combination of a pivoted weighted lever situate below the nest, a nest mounted on the lever, and a sliding door connected by a positive connection with the lever, whereby the door is operated positively by movement of the nest, substantially as and for the purposes described.

380,700. DENTIFRICE. JACOB SCHWARTZ, Portland, Oreg. Filed Jan. 6, 1888. Serial No. 260,003. (No specimens.)

Claim.—The herein-described composition of matter to be used as a dentifrice and for toothache, consisting of alum, salt, laudanum, water, oil of peppermint, oil of cloves, alcohol, and raspberry-sirup, in the proportions specified.

380,701. SPOKE-AUGER. SIMON B. SHAFFER, Ekalaka, assignor to himself and Henry Elmer Gift, Miles City, Mont. Filed Dec. 1, 1887. Serial No. 256,609. (No model.)

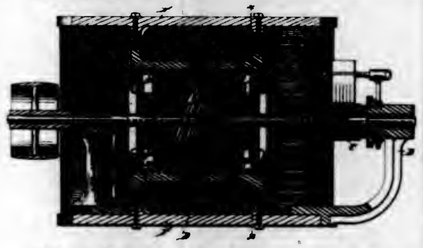
380,701.



Claim.—1. The combination, in a spoke-auger, with the cutter 1, of the stock 2 for holding the same, the bars 3 and 6, having the concave parallel faces 5 and 7, the latter forming a gage, and the links and screws adjacent to the faces and near the upper parts of the bars for adjusting the distance between the bars 3 and 6 and holding them parallel to each other, and varying the distance between the cutter and gage for cutting larger or smaller tenons, substantially as set forth.

2. The bar 3, stock 2, and cutter 1, and the clamping-screws, in combination with the bar 6, having a concave gage at the end adjacent to the cutter 1, the connecting-link 9, the bar 14, and prismatic shank, the parallel links 16 and 17, connecting the bars 3, 6, and 14, and the clamping bolts and nuts, substantially as set forth.

380,702. DYNAMO. HENRY B. SLATER, Detroit, Mich., assignor to the Detroit Motor Company, same place. Filed Dec. 29, 1886. Serial No. 222,897. (No model.)



Claim.—1. In a dynamo-machine, the combination, with an armature wound so as to present deep recesses upon both sides of the plane of its spokes, of field-magnets provided with pole-pieces arranged opposite the periphery of the armature-ring, outside of the latter, and independent field-magnets parallel to the former, provided with pole-pieces arranged opposite the periphery of the armature-ring, but inside the same, said interior pole-pieces connected with the adjacent exterior pole-pieces, substantially as and for the purposes described.

2. In a dynamo-machine, the combination, with an armature wound so as to present deep recesses upon both sides of the plane of its spokes, of field-magnets arranged at right angles to the shaft, and provided with pole-pieces located opposite the periphery of the armature-ring and outside the same, and in connection therewith independent field-magnets parallel with the former, having pole-pieces located opposite the periphery of the armature-ring, but within the same, and a corresponding set of independent field-magnets and pole-pieces located within the ring on the opposite side of the plane of its spokes, the pole-pieces of said interior magnets connected with the adjacent pole-pieces of the exterior field-magnets, substantially as and for the purposes described.

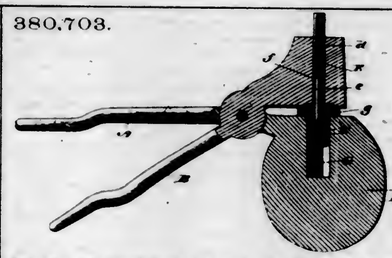
3. In a dynamo-machine, the combination, with an armature wound so as to present deep recesses on both sides of the plane of its spokes, of four field-magnets arranged at right angles to the shaft, provided with common pole-pieces located opposite the periphery of the armature-ring, outside of the same, and in connection therewith two independent field-magnets parallel with the former, provided with common pole-pieces opposite the periphery of the armature-ring and within the same, and upon the opposite side of the plane of the spokes two other independent field-magnets parallel with the former, with common pole-pieces similarly arranged, said interior pole-pieces connected with the adjacent exterior pole-pieces, substantially as and for the purposes described.

380,703. RIVET-EXTRACTOR. PHILIP SMITH, Harmony, Pa. Filed Oct. 22, 1887. Serial No. 253,079. (No model.)

Claim.—1. The punch described, comprising two hinged levers one provided with a head axially perforated, as described, to receive a punch, and the other enlarged so as to be of great mass relatively to the other parts of the device, and having a recess to receive a die, substantially as specified.

2. The hand implement described, consisting, essentially, of the two hinged levers, one of which is provided at its forward end with an enlargement flattened on its upper side and recessed centrally, as at G, whereby it can receive the die, as described, and the opposite lever having a central vertical aperture in its forward end, a socket,

380,703.



f, therein, and a punch having an annular shoulder, and a spring surrounding the punch between the shoulder and the said socket, and means for retaining the spring in position, substantially as shown and described.

380,704. FASTENER FOR COFFINS. WILLIAM A. SPARKS, Rochester, N. Y., assignor to the Stein Manufacturing Company, same place. Filed May 28, 1887. Serial No. 239,615. (No model.)

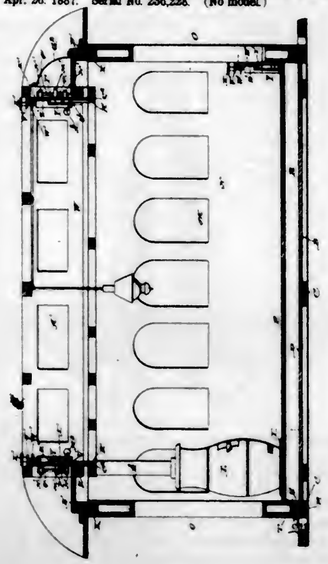


Claim.—1. In a burial-casket having a joint between the lid and body of the same, the combination of a packing in said joint, a clamp turning on a screw, having an offset setting over the edge of the lid to secure the joint, and a stop to prevent the clamp turning when set up to tighten the joint, substantially as and for the purpose set forth.

2. A securing-clamp for the joint of metallic burial-caskets or like articles, turning on the screw which serves to set up the clamp, having an offset bearing on the edge of the lid to compress the joint, and a stop on the clamp, all substantially as and for the purpose set forth.

3. The combination, in a burial-casket having a joint between the body and its lid, of a flexible packing in the joint, a clamp for tightening the joint, and a stop for holding the clamp in its operative position when compressing the joint, substantially as and for the purpose set forth.

380,705. RAILWAY-CAR. JOHN W. THOMAS, Tyrone, Pa. Filed Apr. 26, 1887. Serial No. 236,228. (No model.)



Claim.—1. In a railway-car, the combination of the platform A, to which the trucks are secured, and the main section or body M, arranged on the platform and adapted to become detached therefrom when the car overturns, substantially as described.

2. A railway-car made in detachable sections, the said sections being fitted together by tongue-rails, balls, and grooves, and recesses adapted to receive the said tongue-rails and balls, substantially as described.

3. The combination, in a railway-car, of the platform A, the stoves or heaters secured thereto, and the main section or body of the car M, detachably secured to the platform and adapted to leave the latter when the car overturns, the said main section or body of the car having the floor or false bottom provided with openings through which the stoves project, substantially as described.

4. The combination, in a railway-car, of the platform A, having the base plates or blocks H, provided with the projecting rings or flanges I, the stoves rigidly attached to the platform and arranged in the rings or flanges I, and the section or body M of the car, detachably secured to the platform A and having the floor provided with the openings to receive the rings or flanges I, and the stove-pipes rigidly attached to the main section or body and loosely connected to the stoves, substantially as described.

5. The combination, in a railway car, of the platform A, having the projecting tongue or rail E on its upper side made in detachable sections, and the body of the car detachably secured to the platform and having the grooves on its under side adapted to receive the tongue or rail E, substantially as described.

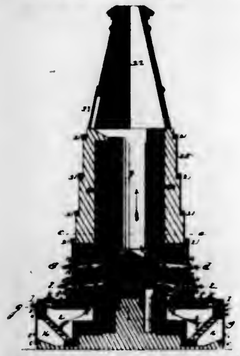
6. The combination, in a railway-car, of the main body or section M, the dome detachably secured on the said main body or section and adapted to fall from the same in the event that the car overturns, the tanks G^3, and lamps or gas-fixtures attached to the said dome, for the purpose set forth, substantially as described.

7. The locking devices for securing the detachable parts of a railway-car together, the said locking devices consisting, essentially, of the engaging-arms R', the plates I', to operate the said arms, and the pivoted swinging arms Y', to operate the said plates and cause the latter to release the arms R' when the car overturns, substantially as described.

8. The combination, in locking devices to secure detachable parts of a railway-car together, of the pivoted arm R', the longitudinally-movable plates I', to engage the upper ends of the arms, the springs to normally move the said plates from the said arms, and the pivoted weighted levers or arms Y', having the cams to engage the plates I'. for the purpose set forth, substantially as described.

9. The combination of the pivoted locking-arms R', the movable plates I', to engage the same, for the purpose set forth, the adjustable plates W', the rocking or swinging arms Y', pivoted to the said plates and having the cams to operate the plates I', and the adjusting-screw to move the said plates, substantially as described.

380,706. LIMEKILN. JOHN H. WALLSTROM, Rockford, Ill. Filed Aug. 18, 1887. Serial No. 247,260. (No model.)



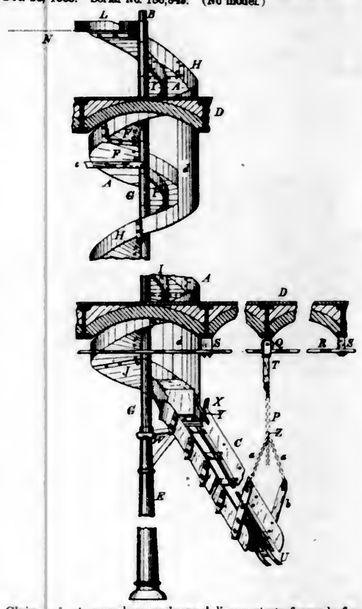
Claim.—1. In a limekiln, the combination of a furnace, a central core in the base of the furnace, combustion-chambers, an annular gas-flue, flues connecting the combustion-chambers and annular gas-flue, radial flues to the furnace, and flues connecting the annular flue and radial flues, substantially as and for the purpose set forth.

2. The combination of the furnace, combustion-chambers, a system of flues consisting of an annular flue, radial flues to the furnace, and flues connecting the annular flue with the radial flues and with the combustion chambers, and a series of radial air-flues to the furnace above the gas-flues, opening into the furnace, substantially as and for the purpose set forth.

3. The combination of a furnace, combustion-chambers, a system of gas-flues consisting of an annular gas-flue, radial flues to the furnace, and flues connecting the annular flue with the radial flues and with the combustion-chambers, and draw-openings, substantially as and for the purpose set forth.

4. The combination of a furnace, combustion-chambers, a system of gas-flues, substantially as shown and described, between the combustion-chambers and furnace, and non-conducting chambers surrounding the furnace within the furnace-walls, substantially as and for the purpose set forth.

380,707. CHUTE. HULBERT H. WARNER, Rochester, N. Y. Filed Dec. 28, 1885. Serial No. 186,849. (No model.)



Claim.—1. A parcel or package delivery chute formed of a series of spiral chute-sections attached together by means of the depressed lips J, substantially as described.

2. The combination, with the spiral package-delivery chute A, of the inclined discharge-trough C, guideway U, and table or platform O, substantially as described.

3. The combination, with the spiral package-delivery chute A, of the inclined movable discharge-trough C, track R, connection P, bracket T, and slide or roller Q, substantially as described.

4. The combination, with the spiral package-delivery chute A and the movable inclined discharge-trough C, provided with arms *b b*, of the connection *a a* P, bracket T, track R, and slide or roller Q, substantially as described.

380,708. TANNING PROCESS. ANTOINE WARTER and HENRY C. KOEGEL, Newark, N. J. Filed Mar. 6, 1888. Serial No. 266,340. (No specimens.)

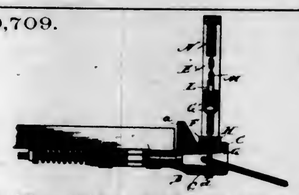
Claim.—The process of tanning herein described, which consists in first depilating the skin, then subjecting it to a neutral solution formed by dissolving hydrated aluminium sesquioxide in an acid, and then treating the skin with a neutral solution of hydrated sesquioxide chromium dissolved in an acid, as set forth.

380,709. CAR-COUPLING. JOHN G. WILLIAMS, Chicago, Ill., assignor to Frank P. Williams and Mary M. Williams, both of same place. Filed July 12, 1887. Serial No. 244,116. (No model.)

Claim.—1. As an element of an automatic car-coupler, as described, the draw-head B, provided on top and bottom faces with notches for inserting plates C C and on its sides with notches *c*, for embedding the shanks of clamp-bolts D, all substantially as set forth, for the purpose described.

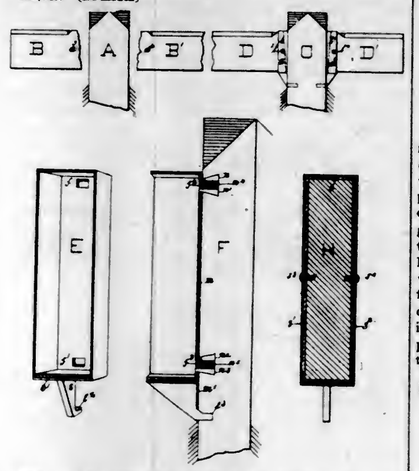
2. As an element of an automatic car-coupling, as described, the

380,709.



draw-head B, provided on its top and bottom faces with notches *c*, for inserting plates C C on its sides, with notches *c*, for embedding the shanks of clamp-bolts D, and with heel *b*, all substantially as set forth, for the purpose described.

380,710. METALLIC SOCKET-CONNECTION FOR STONE COPING. WILLIAM WILLIAMS, Huntingdon, Pa. Filed June 9, 1887. Serial No. 240,843. (No model.)



Claim.—1. In a coping or curbing, the combination, with panels having unwrought ends a^4 a^4, of the intermediate posts, C, provided with metallic sockets *a a'*, for the reception and support of the adjacent pieces of stone, and jointed together with soft metal, substantially as described.

2. The combination, with a stone coping, of the metallic socket E, having apertures *f f'*, leaden bottom *e'*, brace *e*, and dowel e^3, substantially combined for the purpose specified.

3. The combination, with a stone coping, of the metallic socket E, apertures *f f'*, leaden bottom *e'*, brace *e*, dowel e^3, half-wedge tenons n' n^3, independent half-wedge tenons n n^3, lead backing *m m'*, filling of soft metal n^4 n^5 between half-wedges, substantially for the purpose set forth.

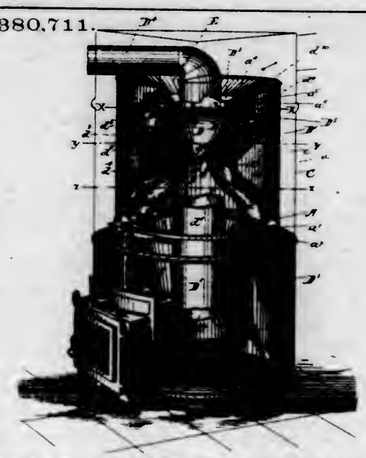
4. The combination, with a stone coping, of the socket E, having an interjacent stratum of lead filling, *s s' s²*, and set-screws s^3 s^4, substantially for the purpose set forth, as described.

380,711. HEATING-FURNACE. EDGAR W. ANTHONY, Brookline, Mass. Filed Apr. 14, 1887. Serial No. 234,806. (No model.)

Claim.—1. In a heating stove or furnace, the combination of the fire-pot, the outer radiator shell or casing, *a*, the plate a^3, extending outwardly from the fire-pot wall, the tubes or pipes *d'*, having inlets without the said plate and bent or curved inward, as specified, the inner radiator, D, having the chamber d^4, into which the passages of said tubes or pipes enter, and having the inclined surface d^6, the tubes or pipes d^9, extending upwardly therefrom and having passages opening into the upper part of the air-heating chamber *c*, the said air-heating chamber *c*, and the casing C, the chamber *d'*, connected with the combustion-chamber, as specified, and the smoke-escape outlet d^{20}, substantially as described.

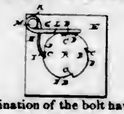
2. The combination, in a heating stove or furnace, of the fire-pot a^2, the annular plate a^3, extending outward from the edge thereof and having the cup or recess *a'* in its upper edge, and the holes A^3, each of which is surrounded by the cup or recess A', the tubes or pipes *d'*, the upper ends of which are connected and have the inner and outer

380,711.



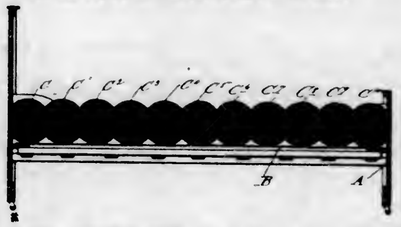
recesses or cups, d^4, the radiator comprising the section d^5, having the edge *e*, which fits the inner cup or recess, d^4, and has the edge d^{14}, which fits the cup or recess d^{15} of the part d^6 of the radiator, the said part d^6 having the cup or recess d^{16} about its upper edge, and the edge d^{11}, which fits the outer recesses, d^4, and which sections together form the chamber d^6, the openings d^{17} from said radiator, and the cups or recesses d^{18} of the said openings, and the upper plate, D^2, having the cup or recess a^4, and the central opening, d^{20}, provided with a pipe or collar, d^{19}, and pipes or tubes d^9, extending downward from the said plate D^2, the lower ends of which enter said recesses or cups d^{16}, and the casing or shell *a*, the lower end of which extends into said cup *a'* in the annular plate a^3, and which has an annular top plate, a^4, the edge of which extends into the upper cup, a^4, as and for the purposes specified.

380,712. NUT-LOCK. PETER L. BRADY, Hearne, Tex. Filed July 30, 1887. Serial No. 244,628. (No model.)



Claim.—The combination of the bolt having longitudinal grooves, provided with the square shoulders C on one side and the inclined shoulders D on the opposite side, the nut having the stud projecting from its face at one corner, and the latch formed from a single piece of bent wire and adapted to engage the grooves in the bolt, and consisting of the arm H, the eye at the upper end of said arm pivoted on the stud, and the arm L, extending from the said eye and bearing against one side of the bolt, substantially as described.

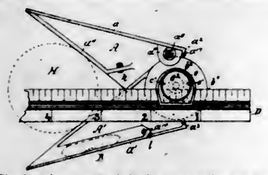
380,713. SECTIONAL MATTRESS. NELSON CLEMENT, Chicago, Ill. Filed Aug. 16, 1887. Serial No. 247,118. (No model.)



Claim.—A mattress composed of a series of loose sections, each such section being a cylindrical bolster adapted to be turned with either face up and to be interchangeable for occupying either position on the bed-bottom, as set forth.

380,714. COMBINED CENTER, T, AND TRY SQUARE, BEVEL, AND CLINOMETER. HAMPTON W. EVANS, Philadelphia, Pa. Filed Nov. 29, 1887. Serial No. 256,573. (No model.)

380,714.



Claim.—1. The herein-described device, consisting of two triangular-shaped metallic pieces pivoted together, and a blade or rule held in position between a shouldered head and plate, substantially as and for the purposes set forth.

2. The herein-described device, consisting of two triangular-shaped pieces pivoted to each other and forming the stock or head thereof, a clamp-plate held in position in a shouldered head carried by the stud forming the pivotal connection of said pieces, and a blade or rule held between said clamp-plate and shouldered head by means of a thumb-screw, substantially as and for the purposes set forth.

3. The herein-described device, consisting of two triangular-shaped pieces pivoted together and forming the stock or head of the device, a clamp-plate held in position in a shouldered plate formed integral with a stud having a threaded shank to which a washer and nut are attached, and said means forming the pivotal connection of said two-part head, and a blade held between said shouldered plate and plate by means of a thumb-screw, substantially as and for the purposes set forth.

4. The herein-described device, consisting of a triangular-shaped two-part head or stock with disks having recessed openings therein, a clamp-plate held in position in a shouldered plate formed integral with a stud having the lower portion thereof partially cut away, and a threaded shank to which is attached a washer and nut, and arranged so as to form the pivotal connection of said two-part head, a blade held in position between said shouldered plate and plate by means of a thumb-screw, substantially as and for the purposes set forth.

5. The herein-described device, consisting of two triangular-shaped metallic pieces with disks having recessed openings therein, means for pivoting the two metallic pieces together, a graduated blade, and means, as described, for holding the same in position, a seat formed integral with one of the triangular-shaped pieces, and a screw carrying a plate held in position by means of a spring interposed between said plate and seat, substantially as and for the purposes set forth.

6. The herein-described device, consisting of two triangular-shaped metallic pieces provided with cheeks and graduated disks having recessed openings therein, means forming the pivotal connection of said metallic pieces, a clamp-plate and thumb-screw, a blade held in position between said clamp-plate and the shouldered plate of the pivotal connection, and means, as described, in the projections or flanges of said triangular-shaped pieces, whereby said blade may be held in proper adjustment or position, substantially as and for the purposes set forth.

7. The herein-described device, consisting of two triangular-shaped metallic pieces with cheeks, and having in one of said pieces a bulb, and formed integral with said pieces are two partially-graduated disks with recessed openings therein, a shouldered head provided with a stud partially cut away, and with a threaded shank fitting into the recessed openings of said disks, a washer and nut attached to said stud and the threaded shank thereof, a clamp-plate with a turned-down lip held in said shouldered head, a thumb-screw fitting into said plate and head, and a blade held in position thereby but free to turn on said pivotal connection to any angle or position to the device, substantially as and for the purposes set forth.

380,715. BOOT OR SHOE. HARRISON W. FURBER, Boston, Mass. Filed Jan. 17, 1888. Serial No. 261,011. (No model.)



Claim.—1. The herein-described boot or shoe, having its quarters joined together from 2 to 3 to form a short heel-seam, the edges of the quarters above the said heel-seam being inturned, and an elastic gore stitched to the said inturned edges vertically above the heel-seam, all as shown and described.

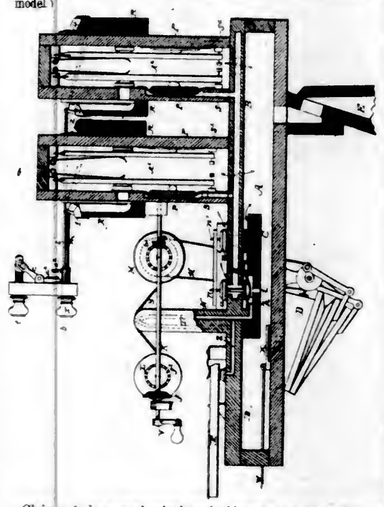
2. The quarters stitched together from 2 to 3 to form a heel-seam, and the elastic gore stitched to the said quarters vertically above the said heel-seam, combined with the stay *f* at the top of the heel-seam, substantially as described.

3. The quarters stitched together from 2 to 3 to form a heel-seam, and the elastic gore stitched to the said quarters vertically above the said heel-seam, combined with the stay *f* at the top of the heel-seam, and with a protecting-piece, *g*, partially overlapping the elastic gore, substantially as described.

4. The quarters united together from 2 to 3 to form a heel-seam, and the elastic gore stitched to the quarters above and in line with the heel-seam, combined with the quarter-lining stitched together, then opened out and stitched, each quarter-lining to a part of itself, whereby when the seam uniting the two halves of the quarter is cut the edges so left will be finished or folded edges, as described.

5. The quarters united together from 2 to 3 to form a heel-seam, and the elastic gore stitched to the quarters above and in line with the heel-seam, combined with the quarter-lining stitched together, then opened out and stitched, each quarter-lining to a part of itself, and with the elastic stay-strip united to the quarter-lining to stretch after the seam uniting the two parts of the quarter-lining is severed, substantially as described.

380,716. MECHANICAL MUSICAL INSTRUMENT. MERRITT GALLY, New York, N. Y. Filed Aug. 2, 1887. Serial No. 245,990. (No model.)

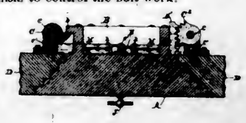


Claim.—1. In a mechanical musical instrument which is operated by means of a perforated or slotted music-sheet, the combination, with the music-sheet, of a take-up roller and a wind-motor therefor and a hand-crank motor for rewinding the sheets.

2. The combination, with the music-sheet, the take-up roller, and the wind-motor therefor, of a hand-crank motor adapted to be used in lieu of the wind-motors when desirable, substantially as specified.

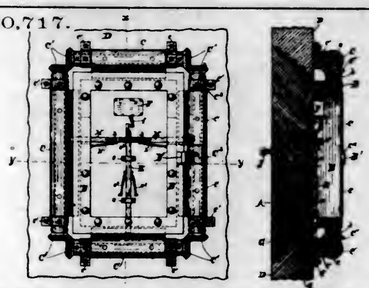
3. The combination, with the stop-rods, of the swinging bar a^3, the operating-lever, and the supplemental draw-stop *t*, substantially as specified.

380,717. BURGLAR-PROOF SAFE. MAX S. GOLDSMITH, Cincinnati, Ohio. Filed Dec. 23, 1887. Serial No. 258,784. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the door having upon its inner face laterally-projecting flanges, abutments journaled in bearings secured upon the jamb and geared together, a rack upon the door-edge and gear upon the abutment to engage together and automatically turn the abutments against the flanges as the door is closed, a bolt-work to lock the abutments, and a time mechanism to control the bolt-work.

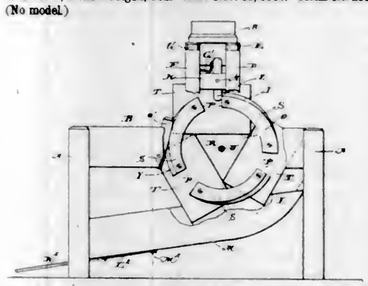
380,717.



2. The combination, substantially as specified, of the door having inwardly-projecting flanged frame B *b*, rack B', time-movement F *f*, and the spring bolt-work controlled by said time mechanism, with the door-frame having journaled abutments C *c*, engaging gears C', and cog C^3, for the purpose set forth.

3. The combination of the door-frame, the abutments C, journaled in bearings secured thereon and surrounding the door-opening, the beveled gears C', gearing said abutments together, the cog C^3, secured upon one of said abutments, with the door A, provided with the frame B, having flange *b*, and rack B', to engage the cog C^3, the bolt-bar E, beveled at the lower end and hooked at the upper end to engage the releasing-hook of the time mechanism, the bolt-bars H, linked to the bar E, the springs *h'* and e^4, to pull the bar down when released, the tappet G, to throw up the bar E when the door is closed, and the time mechanism F *f*, constructed as and for the purpose set forth.

380,718. AUTOMATIC GRAIN-MEASURING MACHINE. ABRAM J. GRISSOM, White Wright, Tex. Filed Nov. 18, 1887. Serial No. 255,523. (No model.)



Claim.—1. The combination, in a grain-measuring machine, of the revoluble head having the boxes provided with the stops I', the counterbalance-lever supporting one end of the axis of the head, and the stop K', to successively engage each of the stops I', and thereby arrest the rotation of the revoluble head, substantially as described.

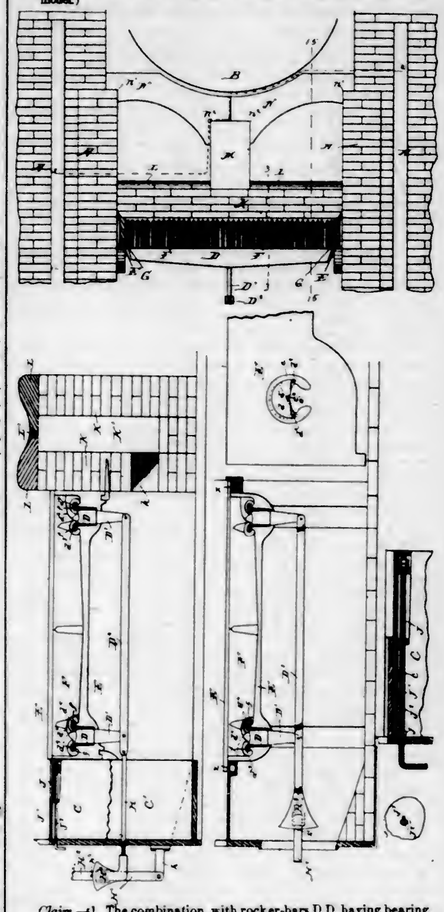
2. The combination of the revoluble head having the boxes or compartments T, provided with the stops I', the weighted lever supporting one end of the axis of the head, the stop K', adapted to engage each of the stops I' in succession, and the latch M', having the shoulder or offset N', adapted to be tripped by the stops I' and fall behind the same, and thereby prevent retrograde rotation of the head, substantially as described.

3. The combination of the hopper having the valve I, the measuring-head having the boxes or compartments adapted to pass in succession under the hopper and provided with the cam-sectors having the spaces I' between them, the lever Z, adapted to be engaged successively by the said cam-sectors and to drop into the said recesses, and connections between the said lever and the valve to automatically close the latter as each measuring box or compartment passes from under the hopper, substantially as described.

4. The combination of the revoluble counterbalanced measuring-head having the boxes or compartments and the cam-sectors, the spring-actuated lever O', bearing against the said cam-sectors in succession, the registering mechanism, and connections between the same and the lever O' whereby the latter will automatically operate the registering mechanism as the head revolves, substantially as described.

5. The combination of the revoluble counterbalanced measuring-head having the boxes or compartments and the cam-sectors, the spring-actuated lever O', engaging the said sectors in succession, the registering mechanism having the operating ratchet-wheel, and the rod attached to the lever O' and adapted to engage and operate the ratchet-wheel as the head revolves, substantially as described.

380,719. GRATE AND FURNACE FOR STEAM-BOILERS. GEO. GULLICKSON, Chicago, Ill. Filed July 26, 1886. Serial No. 209,129. (No model.)



Claim.—1. The combination, with rocker-bars D D, having bearing wings or cams d^3 d^3, of grate-bars F, having bearing eyes or grooves *f* at each end, the bearing eyes or grooves in the alternate grate-bars fitting on the opposite wings or cams on said rocker-bars, substantially as specified.

2. The combination of grate-bars F F with rocker-bars D D and frame-pieces or supports E E, furnished with raised ledges *e'*, said rocker-bars having a rocking or rolling bearing on the raised ledges *e'* of said frame-pieces or supports, substantially as specified.

3. The combination, with grate-bars provided with bearing eyes or grooves at both ends of said bars, of a pair of rocker-bars provided with bearing-wings, said bearing eyes or grooves partially encircling said bearing-wings, substantially as shown and described, whereby the grate-bars are held in place and adapted to be put in place or removed only over the end of said bearing-wings, substantially as specified.

4. The combination, with shaking grate-bars F F, of rocker-bars D D, upon which said grate-bars are mounted, a movable operating-lever connected with said rocker-bars and provided with a handle-socket, a handle adapted to be inserted in said socket, and a movable slotted registering guard plate or block provided with a recess through which said handle may be inserted into the socket of said operating-lever when the rocker-bars occupy their normal position, said slotted guard plate or block being attached to the movable connecting-rod connecting the operating-lever with the rocker-bars, and said handle being provided with a projection or enlargement to prevent its insertion or removal except when the socket of the operating-lever regis-

ters with the guard-plate and the rocker-bars are thus left in their normal position, substantially as specified.

5. In a furnace, the combination, with the grate, of bridge-wall K, having a central passage, K′, communicating with the space below the grate, fire-tile L, surmounting said bridge-wall, provided with perforations L′, central hollow tile M, and central hollow arch-tile N, communicating with said tile M and having perforations *n*, leading into the fire-space, said central hollow tile M communicating with said hollow bridge-wall, substantially as specified.

6. In a furnace, the combination of the grate, bridge-wall K, and arch-tile N N N with the central vertical supporting-tile M M M, said tile N N N having notches or offsets $n' n^2$ at their ends, substantially as specified.

7. The combination of the grate-bars F, having open bearing eyes or grooves *f* and cut-away portion $d^3 d^4$ at its ends, and the rocker-bars D D, having bearings $d^3 d^4$, said bearing-wings being cut away at the end to permit the insertion of the grate-bars, substantially as specified.

8. The combination of the grate-bars F, having open bearing eyes or grooves *f* and cut-away portion $d^3 d^4$ at its ends, and the rocker-bars D D, having bearing-wings $d^3 d^4$, said bearing-wings being cut away at the end to permit the insertion of the grate-bars, said rocker-bars having a rocking or rolling anti-friction bearing upon their pivots or supports, substantially as specified.

9. The combination, with grate-bars, of rocker-bars D D and frame-pieces or supports E E, furnished with curved bearing-ledges *e′ e′*, said rocker-bars D D being furnished with flat bearing ends *d d*, resting upon said ledges *e′ e′*, whereby said rocker-bars are given a rolling motion on said curved bearing-ledges, substantially as specified.

10. The combination, with grate-bars, of rocker-bars D D and frame-pieces or supports E E, furnished with bearing-ledges *e′ e′*, said rocker-bars D D being furnished with flat bearing ends *d d*, resting upon said ledges *e′ e′*, said ledges being provided with projections $e^2 e^2$, and said bearing ends *d d* being provided with corresponding notches, *d′ d′*, substantially as specified.

11. The combination, with grate-bars F F, having bearing-grooves *f*, of rocker-bars D D, having each a pair of bearing cams or wings, $d^3 d^4$, for said grate-bars, and supports or frame-pieces E E, having bearing-ledges *e′ e′*, said rocker-bars D D having offset bearing ends *d d*, to bring the center of motion on about a level with said cams or wings $d^3 d^4$, said bearing cams or wings $d^3 d^4$ on each rocker-bar D engaging each the eyes *f* of alternate grate-bars, substantially as specified.

12. The combination, with grate-bars F F, having bearing-grooves *f*, of rocker-bars D D, having bearing cams or wings $d^3 d^4$ for said grate-bars, supports or frame-pieces E E, having bearing-ledges *e′ e′*, said rocker-bars D D having offset bearing ends *d d*, to bring the center of motion on or about a level with said cams or wings $d^3 d^4$, operating-arms D′ D′, connecting-bar D^3, connecting-rod H, lever H′, furnished with a handle-socket, handle H^3, having projections h^3, and slotted block H^2, having notch h^2, substantially as specified.

13. The combination, with shaking grate-bars, of rocker-bars D, operating-arms D′, connecting-bar D^3, connecting-rod H, lever H′, having handle-socket *h′*, handle H^3, having projection h^3, and block H^2, having notch h^2, substantially as specified.

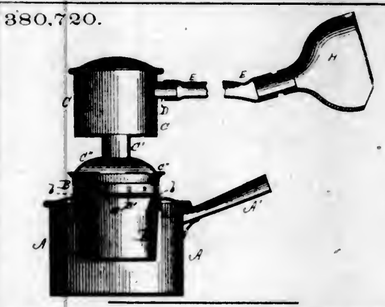
14. The combination, with side frame-pieces or supports, E E, of rocker-bars D D, having wings or cams $d^3 d^4$, grate-bars F F, having bearing-grooves *f*, partially encircling said wings or cams $d^3 d^4$, said bearing-grooves *f* being of a hook shape, and said wings or cams $d^3 d^4$ being enlarged to fit within the hollow of such hook-shaped bearing-grooves, and thus adapted to be inserted in place only over the ends of said cams or wings, and removable stationary locking side grate-bars, G, secured to one of said pieces E, substantially as specified.

15. The combination, with side frame-pieces or supports, E E, of rock-bars D D, having wings or cams $d^3 d^4$, grate-bars F F, having bearing-grooves *f*, partially encircling said wings or cams $d^3 d^4$, said bearing-grooves *f* being of a hook shape, and said wings or cams $d^3 d^4$ being enlarged to fit within the hollow of such hook-shaped bearing-grooves, and thus adapted to be inserted in place only over the ends of said cams or wings, and removable stationary locking side grate-bars, G G, said bars G G and frame-pieces E E being furnished with interlocking grooves and projections, whereby the bars G G are supported from and secured to said frame-pieces, substantially as specified.

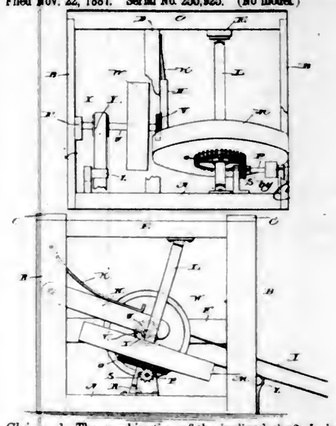
380,720. INHALER. JACOB B. HENRY, Boston, Mass. Filed Jan. 14, 1888. Serial No. 260,706. (No model.)

Claim.—The herein-described apparatus for use in inhaling the fumes of tar, consisting of the hot-water vessel A, provided with the opening *a*, the tar-vessel B, and the cooling-tank consisting of the main portion C, neck C′, and base C″, said cooling-tank being provided with the pipe D for supporting one end of a flexible tube having a mouth-piece at its other end, substantially as and for the purpose set forth.

380,720.



380,721. GEARING. HENDERSON HOLLOWAY, Harrisonville, Mo. Filed Nov. 22, 1887. Serial No. 256,925. (No model.)



Claim.—1. The combination of the inclined shaft L, having the wheel M, the shaft U, having its inner end journaled in a movable support, and provided with a pinion, V, engaging wheel M, the said shaft U being further provided with a balance-wheel, W, and the pulley X, substantially as described.

2. The combination of the inclined shaft L, having the wheel M, the shaft P, geared to the said shaft L, the pivoted arm H, having its free end arranged over the wheel M, the shaft U, having its outer end journaled in a fixed support and its inner end journaled in the bearing at the free end of the arm H, the said shaft being provided with the pinion V at its inner end, engaging the wheel M, and further provided with a balance-wheel, W, and a pulley, X, substantially as described.

3. In combination with the inclined shaft L, having the wheel M, the shaft P, geared to the said shaft L, the pivoted arm H, having its free end arranged over the wheel M, the shaft U, having its outer end journaled in a fixed support and its inner end journaled in the free end of the arm H, the spring K for the said arm H, and the pinion V on the shaft U, engaging the wheel M, as set forth.

380,722. BUTTON-FORMING MACHINE. RUDOLPH HORMANN, Hoboken, N. J. Filed Jan. 19, 1887. Serial No. 224,825. (No model.)



Claim.—1. The combination, in a button-forming machine, of a central removable cylindrical ejector and a support therefor, a cylindrical sleeve surrounding this ejector and adapted to be moved longitudinally past the same, and a cap carried on the top of the movable sleeve and supporting a removable die provided with a central opening through which an eyeleting-plunger is forced by suitable mechanism, substantially as described.

2. The combination, in a button-forming machine, of a suitably-supported central post, a removable ejector-plunger surrounding the same, a removable adjusting-sleeve connected with an external longitudinally-moving sleeve, a longitudinally-moving sleeve and mechanism for moving it longitudinally past the central ejector, a cap closing the top of said longitudinally-moving sleeve, a die containing a cylindrical chamber supported in said cap, and an eyeleting-plunger and mechanism for forcing the same through the cap, substantially as described.

3. In a button-forming machine, a base provided with a post, in combination with a removable ejector supported thereby, and an exterior moving sleeve whereby buttons of varying size may be produced, substantially as described.

4. In a button-forming machine, the combination, with a base provided with a central post adapted to receive removable ejectors D D′, of different sizes, of a cap, H, adapted to receive alterable dies F F′, of different sizes and having central openings, and a longitudinally-moving eyeleting-plunger, substantially as described.

5. In a button-forming machine, the combination, with a base provided with a central post adapted to receive removable ejectors D D′, of different diameters, of a cap, H, adapted to receive alterable dies F F′, to coact with said ejectors, an eyeleting mechanism passing centrally through said dies, and an exterior intermediate longitudinally-moving sleeve carrying said cap and adapted to separate and bring together the dies and plungers, substantially as described.

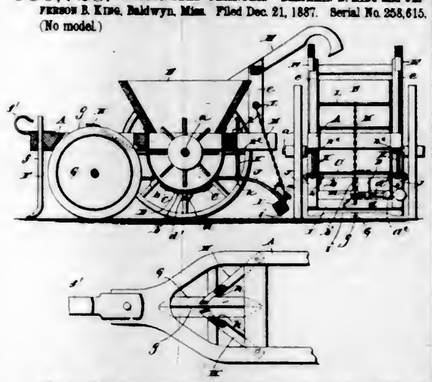
6. In a button-forming machine, the combination, with a base provided with a post adapted to support button-forming blocks of different sizes, of a movable cap adapted to receive alterable dies of different sizes for forming the back of the button, and mechanism for bringing the cap and dies down upon the button in the process of formation, substantially as described.

7. In a button-forming machine, the combination with a base, and a central post extending therefrom, of a removable button-forming block having a button-forming chamber, the said block being supported upon said central post, substantially as described.

8. In a button-forming machine, the combination of a base adapted to support alterable button-forming blocks, alterable button-block, as D′, a cylinder, as R, corresponding to said block, a cap adapted to receive alterable button-forming dies, alterable die, as F, corresponding to the diameter of the block, and mechanism for closing the cap upon the base when the button is to be formed, substantially as described.

9. In a button-forming machine, the combination, with a base and a central post supported therein, of a removable button-forming block or thimble having a button-forming chamber, the said block or thimble surrounding said central post, substantially as described.

380,723. COTTON-SEED PLANTER. BENJAMIN D. KING and JEFFERSON B. KING, Baldwyn, Miss. Filed Dec. 21, 1887. Serial No. 258,615. (No model.)



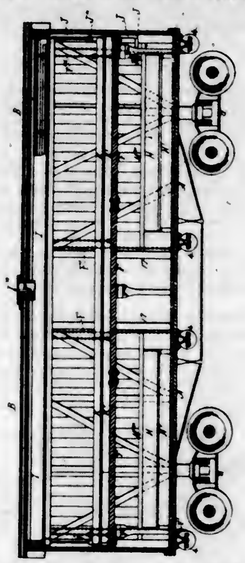
Claim.—The improved cotton-seed planter herein described and shown, comprising the main frame A and suitable carrying-wheels therefor, the furrow-opener F, adjustably mounted in the front end of the main frame, the furrow-wheel G, journaled in the main frame in rear of the furrow-opener and in advance of the carrying-wheels, and having a double-beveled periphery, the scrapers H, secured at their rear ends to the main frame, and provided at their front ends with the beveled portions *h*, bearing on the upper portion of the periphery of the furrow-wheel, the hopper B, mounted in the main frame in rear of the furrow-wheel, and having an adjustable sliding door, D, in its bottom, the springs J, secured to the main frame and extending rearward and downward therefrom, the coverer-bar I, secured to the free ends of said springs, the eyebolts K, adjustably mounted in the main frame and engaging said springs, and the chain M, secured to the coverer-bar and to a cross-bar, L, above the main frame, substantially as specified

380,724. MEDICINE-SPOON. CHARLES LANGGUTH, Boston, assignor of two-thirds to James R. Wood, Woburn, and James L. Ripley, Somerville, Mass. Filed Jan. 7, 1888. Serial No. 260,056. (No model.)



Claim.—The herein-described improved spoon, consisting of the handle A and bowl B, said handle and bowl being provided with the continuous passage C, whose inlet *b* is at the center of the inner side or bottom of the bowl, whose outlet is at the end of the handle, and which extends through the handle and within the wall of the bowl to said inlet, substantially as and for the purpose set forth.

380,725. STOCK-CAR. CHARLES LANGGUTH, Boston, Mass., assignor of two-thirds to James R. Wood, Woburn, Mass., and Charles A. Sinclair, Portsmouth, N. H. Filed Jan. 10, 1888. Serial No. 260,372. (No model.)



Claim.—1. In a stock-car, the combination, with the body of the car, of the vertically-movable platform F, pulleys 3, situated near the top of the car, drums 4, secured to the bottom of the car, and chains F′, said platform and the floor of the car being perforated to admit of the passage of the same, substantially as and for the purpose described.

2. The combination, with the body of the car, of the stationary posts C, swinging posts C′, and locking-bar *d*, provided with the locking-pin 1, substantially as and for the purpose set forth.

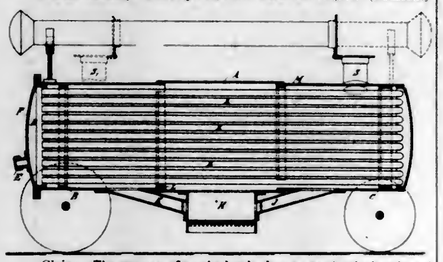
3. The hereinbefore-described hay-rack, consisting, essentially, of the bar L, pivotally secured to the car-roof, said bar being provided with the rods L′, extending at right angles therefrom and having their ends bent into the hooks or loops *l*, and the parallel bar N, provided with the similar rods, L″, whose ends *l″* are similarly looped, the loops or hooks in the rods in each series passing around the bodies of the corresponding rods in the opposite series, and means whereby said hay-rack may be secured when extended and dropped to the side of the car and when raised and contracted to the top of the car, substantially as and for the purpose described.

4. In combination with a hay-rack extending horizontally along the side of a car, the hereinbefore-described packer, consisting, essentially, of the packing hook or loop P, rigidly secured to the carriage P″, said carriage being provided with wheels P″, and a track, R, extending along the side of the car and supported by a bracket, S, rigidly secured to said side, substantially as and for the purpose set forth.

5. The combination, with the floor F, of the supporting and stiffening angle-iron bars 21, substantially as and for the purpose described.

6. A stock-car adapted to be used also as a car for ordinary freight, and provided with the following parts or appliances, viz: the vertically-movable platform F, the stationary collapsible trough H H′ H″, the vertically-movable collapsible trough K K′ K″, the contractible hay-rack L N L′ L″ l′ l″, and the tank I, provided with suitable conducting-pipes, said movable trough and hay-rack being adapted to be secured to the roof of the car, and said stationary trough being adapted to be locked against the side of the car, substantially as and for the purpose described.

380,726. **PROCESS OF MAKING HYDROGEN.** WILHELM MAJERT, Grunau, near Berlin, and GUSTAV RICHTER, Falkenberg, near Grunau, Prussia, Germany. Filed Apr. 12, 1887. Serial No. 234,502. (No model.)

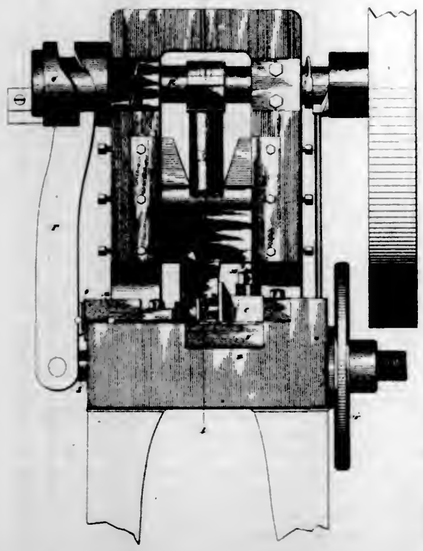


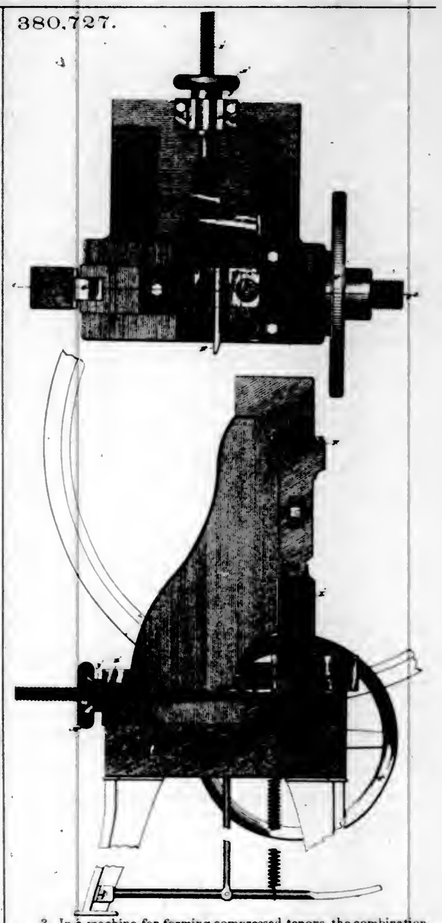
Claim.—The process of producing hydrogen gas by the heating of a mixture of zinc-dust and a substance containing water in chemical combination, substantially as and for the purpose described.

380,727. **MACHINE FOR COMPRESSING TENONS.** WILLIAM F. MORTON, New Haven, Conn., assignor of one-half to Holcomb Brothers & Co., same place. Filed Apr. 23, 1887. Serial No. 235,835. (No model.)

Claim.—1. In a machine for forming compressed tenons, the combination, with a movable die adapted to be advanced in one direction to compress a tenon-blank and to be retired in another direction to expose such blank for compression, of dies co-operating with such movable die to completely inclose and compress the blank, substantially as set forth.

2. In a machine for forming compressed tenons, the combination, with a movable edge die retiring to expose the blank for flatwise compression, of a movable side die retiring to expose the blank for edgewise compression, and dies co-operating with such dies to completely inclose and to compress the blank, substantially as set forth.





3. In a machine for forming compressed tenons, the combination, with a side die and an edge die adapted to be retired in pace with the compression of a tenon-blank to expose the same for such compression, of dies co-operating with such retiring dies to completely inclose the blank from the beginning to the end of the compressing operation, substantially as set forth.

4. In a machine for forming compressed tenons, the combination, with dies covering the sides and one edge of a tenon-blank, of an adjustable die to cover the other edge of the blank, which is thus completely covered by the dies, substantially as set forth.

5. In a machine for forming compressed tenons, the combination, with dies covering the edges and one side of a tenon-blank, of an adjustable die for covering the other side of the blank, which is thus completely inclosed by the dies, substantially as set forth.

6. In a machine for forming compressed tenons, the combination, with an adjustable side die and an adjustable edge die, of dies co-operating with such dies to completely inclose and to compress a tenon-blank, substantially as set forth.

7. In a machine for forming compressed tenons, the combination, with a positively-moved edge die and a positively-moved side die, of dies co-operating therewith to completely inclose a tenon-blank which is gradually exposed for compression by the retirement of two of the dies, substantially as set forth.

8. In a machine for forming compressed tenons, the combination, with a retiring side die and a retiring edge die, of springs for maintaining such dies in their normal positions, and one or more dies co-operating with such retiring dies to completely cover and to compress a tenon-blank, substantially as set forth.

9. In a machine for forming compressed tenons, the combination, with a positively-moved die, of a retiring die engaged and retired thereby, and one or more dies co-operating with those mentioned to completely inclose and to compress a tenon-blank, substantially as set forth.

10. In a machine for forming compressed tenons, the combination, with a positively-moved edge die, of a retiring side die engaged and retired thereby, and one or more dies co-operating with those mentioned to completely inclose and to compress a tenon-blank, substantially as set forth.

11. In a machine for forming compressed tenons, the combination, with a positively-moved side die, of a retiring edge die engaged and retired thereby, and one or more dies co-operating with such dies to completely inclose and to compress a tenon-blank, substantially as set forth.

12. In a machine for forming compressed tenons, the combination, with a retiring side die, of a die-block located below the said die, which normally hangs over its inner end, and two or more dies co-operating with such die to completely cover and to compress a tenon-blank, substantially as set forth.

13. In a machine for forming compressed tenons, the combination, with a retiring side die, of an adjustable die-block located below it, means for holding the said block in its adjustment, and two or more dies co-operating with the said die to completely cover and to compress a tenon-blank, substantially as set forth.

14. In a machine for forming compressed tenons, the combination, with a retiring side die, of a normally stationary edge die, a die-block located below the side die and supporting the edge die to permit the free movement of the side die between them, and two or more dies co-operating with such dies to completely inclose a tenon-blank, substantially as set forth.

15. In a machine for forming compressed tenons, the combination, with a retiring side die, of a die-block located below it and two or more dies co-operating with such die to completely cover a tenon-blank, the said side die and block being connected together for a free movement of the former upon the latter, substantially as set forth.

16. In a machine for forming compressed tenons, the combination, with a retiring side die, of a die-block located below and co-operating with it, a spring for the die, means for limiting the movement of the die under the action of the spring, and two or more dies co-operating with the said die to completely cover a tenon-blank, the said die and block being loosely dovetailed together, substantially as set forth.

17. In a machine for forming compressed tenons, the combination, with a retiring side die, of a stationary edge die having a horizontal recess in its lower face, a clamping-block entering the outer end of such recess and carrying an upright stud passing through the said die, which is thereby clamped in place, and one or more dies co-operating with the dies mentioned in completely covering a tenon-blank, substantially as set forth.

18. In a machine for forming compressed tenons, the combination, with a retiring side die having a beveled end, of a positively-moved edge die conforming to the beveled edge of the side die, and one or more dies co-operating with such dies to completely inclose a tenon-blank, substantially as set forth.

19. In a machine for forming compressed tenons, the combination, with a retiring side die having a beveled end, of a die-block located below it and having its inner end beveled to conform to the bevel of the die, a positively-moved edge die conforming to the bevel of the said die and block and co-operating with them, and one or more dies co-operating with such dies to completely inclose and compress a tenon-blank, substantially as set forth.

20. In a machine for forming compressed tenons, the combination, with a positively-moved carrier, of a die mounted thereupon so as to move independently of the motion it has therewith, and dies co-operating with such die to completely cover and to compress a tenon-blank, substantially as set forth.

21. In a machine for forming compressed tenons, the combination, with a positively-moved carrier, of an edge die movably mounted thereupon, a positively-moved side die engaging with the said edge-die and moving it upon the carrier independent of the motion it has therewith, and dies co-operating with such dies to completely cover and compress a tenon-blank, substantially as set forth.

22. In a machine for forming compressed tenons, the combination, with a positively-moved carrier, of a movable edge die mounted thereupon, a spring for such die, a stop for limiting the play of the die upon the carrier, and dies co-operating with such die to completely cover and to compress a tenon-blank, substantially as set forth.

23. In a machine for forming compressed tenons, the combination, with a positively-moved carrier, of a movable edge die mounted thereupon, a spring for such die, a retaining-block secured to the carrier and retaining the spring in place and limiting the movement of the die upon the carrier, and dies co-operating with such die to completely inclose and to compress a tenon-blank, substantially as set forth.

24. In a machine for forming compressed tenons, the combination, with side and edge dies adapted to completely inclose a tenon-blank and to compress the same, for which purpose one or more of the dies are retired, of a forward guiding-extension co-operating with the dies, substantially as set forth.

25. In a machine for forming compressed tenons, the combination, with a stationary edge die having a forward guiding-extension, of dies co-operating with such die in completely inclosing a tenon-blank, substantially as set forth.

26. In a machine for forming compressed tenons, the combination with dies adapted to inclose a tenon-blank, of bearings for supporting and protecting the parts of the blank adjacent to the parts thereof subjected to compression, substantially as set forth.

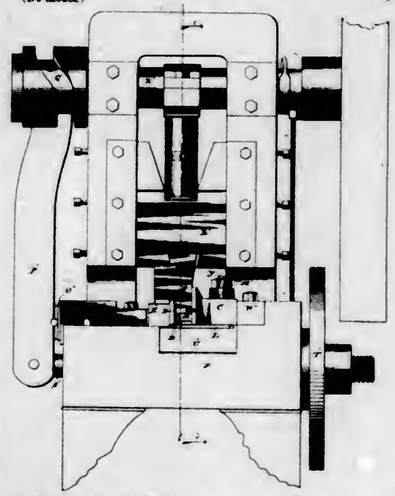
27. In a machine for forming compressed tenons, the combination, with an edge die positively moved for the edgewise compression of a tenon-blank, of means for adjusting the compressing action of such die, and dies co-operating with the said die to completely inclose and to compress the blank, substantially as set forth.

28. In a machine for forming compressed tenons, the combination, with a retiring side die and a positively-moved side die, of means for adjusting the former die toward and away from the latter die, and dies co-operating with such dies to completely inclose and to compress a tenon-blank, substantially as set forth.

29. In a machine for forming compressed tenons, the combination, with a movable side die, of a normally stationary edge die, a movable edge die effecting the edgewise compression of a tenon-blank and the retirement of the movable side die to expose the blank for such compression, and a side die effecting the flatwise compression of the blank and the retirement of the movable edge die to expose the blank for such compression, substantially as set forth.

30. In a machine for forming compressed tenons from a tenon-blank, the combination, with a beveled movable side die, of a normally stationary edge die, a movable edge die conforming to the bevel of the side die and effecting the edgewise compression of the blank and the retirement of the movable side die to expose the blank for such compression, a side die effecting the flatwise compression of the blank and the retirement of the movable edge die to expose the blank for such compression, and a beveled die-block located below the movable side die, substantially as set forth.

380,728. **METHOD OF FORMING COMPRESSED SPOKE-TENONS.** WILLIAM F. MORTON, New Haven, Conn., assignor of one-half to Holcomb Brothers & Co., same place. Filed Dec. 30, 1887. Serial No. 259,386. (No model.)



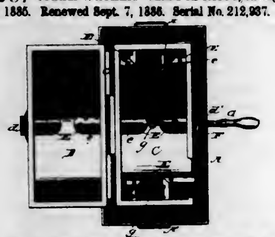
Claim.—1. A method of forming compressed tenons, consisting in simultaneously subjecting the entire surfaces of both sides and both edges of a tenon-blank to compression applied directly to them, substantially as set forth.

2. A method of forming compressed tenons, consisting in simultaneously subjecting the entire surfaces of both sides and both edges of a tenon-blank to compression applied directly to the sides of the blank in one direction and directly to the edges of the blank in a diametrically opposite direction, substantially as set forth.

3. A method of forming compressed tenons, consisting in simul-

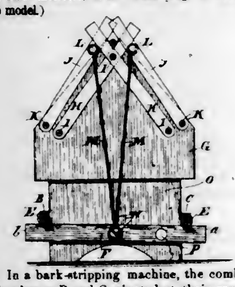
taneously subjecting the entire surfaces of both sides and both edges of a tenon-blank to direct compression and in keeping the said surfaces completely confined from the beginning to the end of the operation, substantially as set forth.

380,729. STEAM-WASHER. JAMES M. REDDY, Chicago, Ill. Filed Apr. 24, 1886. Renewed Sept. 7, 1888. Serial No. 212,937. (No model.)



Claim.—The receptacle A B, in combination with the receptacle C D, provided with the elbow-tubes E, having openings *e*, substantially as and for the purpose specified.

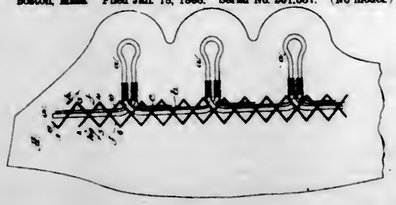
380,730. WILLOW-BARK-STRIPPING MACHINE. JOACHIM SCHILDHAUER, New Holstein, Wis. Filed Aug. 1, 1887. Serial No. 245,768. (No model.)

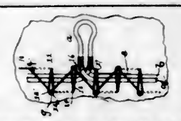


Claim.—1. In a bark-stripping machine, the combination of a bench, A, operating-levers B and C, pivoted at their rear ends to the rear end of said bench A, and resting at their front ends upon the two-armed lever F, two-armed lever F, pivoted to the front end of said bench at right angles to said levers B and C, stationary stripping-blades H H, rigidly affixed to an upward-projecting standard at the front end of said bench A, movable blades J J, pivoted at one end to said upward-projecting standard and connected at their free ends with said two-armed lever F by the connecting links or rods M M, and connecting links or rods M M, pivoted at their lower ends to said lever F and at their upper ends to said movable blades J J, all substantially as and for the purpose specified.

2. The combination of the bench A, provided at its front end with the stationary vertical standard G, stationary vertical standard G, stationary blades H H, rigidly affixed to said standard G, movable blades J J, pivoted to said standard G on the respective outward sides of said blades H H, connecting-links M M, pivoted at their upper ends to said blades J J upon pins L L, and at their lower ends to the two-armed lever F upon a single pivotal bolt, N, pivotal bolt N, two-armed lever F, secured at one side of its center to the front end of said stationary frame upon pivot P, pivot P, and levers B and C, located, respectively, upon the respective sides of the bench A and pivoted at their rear ends to the rear end of said bench A, bearing at their front ends upon the lever F, respectively, upon the respective sides of the pivot P, whereby, by the downward pressure of the lever C, said movable blades are separated, while by the downward pressure upon said lever B they are drawn together, substantially as and for the purpose specified.

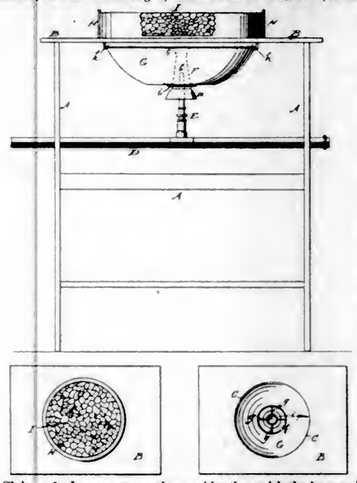
380,731. BUTTON-PIECE FOR BOOTS OR SHOES. ALBERT SHEA, Boston, Mass. Filed Jan. 18, 1888. Serial No. 261,067. (No model.)





Claim.—A button-hole piece having its bar or stay-cord and thrums confined to the inside of the button-hole piece by a blind-stitch composed of thread which enters and emerges from the button-hole piece at one and the same side without showing at the face of the material, the said stitches being made in the material alternately at opposite sides the bar or stay-cord, the thread from one stitch made at one side the stay-cord in the direction of its length being carried across the stay-cord to the stitch made at the opposite side thereof in the direction of its length, substantially as described.

380,732. GAS-STOVE. JAMES SMITH and HARRY J. BOYD, London, Ontario, Canada. Filed Aug. 1, 1887. Serial No. 245,889. (No model.)



Claim.—1. In a gas-stove, the combination, with the burner *b*, the top plate, B, having a circular opening, C, and the metallic basket H, supported on said plate and containing a bed of pumice or lava, of a metallic basin, G, having a central lower opening *i*, and attached to the under side of the top plate beneath its circular opening C in such a manner as to leave an intermediate air-space, *h*, and a trumpet-shaped tube, F, having expanded ends *a* and *c* and supported in the basin-opening *i* around the burner and extended above the same, substantially as described.

2. In a gas-stove, the combination of the top plate, B, having a circular opening, C, the metallic basket H, supported above said opening and containing a bed of pumice or lava, the metallic basin G, having a central lower opening, *i*, and supported beneath the opening C, so as to leave an air-space, *h*, between the top plate and the rim of the basin, the trumpet-shaped tube F, having expanded ends *a c* and supported vertically in the basin-opening *i* in such a manner as to extend from the top of the basin to a point beneath its bottom, the ring *d*, supported within said tube, and the burner *b*, extending through said ring and into said tube, substantially as described.

380,733. LADDER FOR CITY FIRE-DEPARTMENT SERVICE. ERNST F. STECK, Chicago, Ill. Filed Jan. 30, 1888. Serial No. 262,443. (No model.)

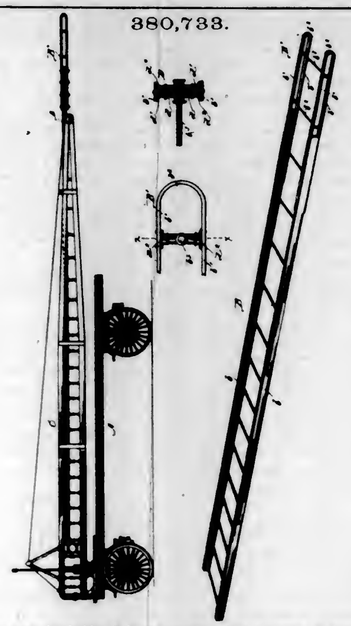
Claim.—1. A ladder for fire-department service, constructed for the greater portion of its length substantially of wood, but having its end that is to be raised to the burning building prolonged by a metal ladder-extension, for the purpose set forth.

2. A ladder for fire-department service, having at one end a metal prolongation or extension comprising metal straps or bars *b'*, secured to the main length of ladder and connected together by rounds, for the purpose set forth.

3. The ladder B, having at one end an extension formed by the metal bars or straps *b'*, combined with rounds *b²* and supports D, attached to said bars or straps and supporting the rounds.

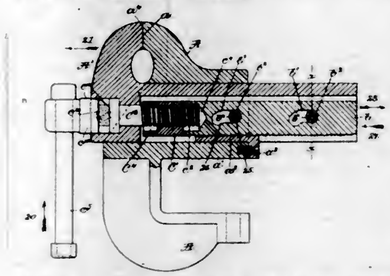
4. The combination, with the ladder C, fulcrumed upon a truck,

380,733.



of the extension-ladder B, having at one end an extension or prolongation, B', constructed of metal and provided with rounds, substantially as and for the purpose described.

380,734. VISE. WILLIAM L. TOBEY, Boston, Mass. Filed Nov. 8, 1887. Serial No. 254,630. (No model.)



Claim.—1. In a vise, the combination, with a fixed jaw provided with a toothed bar or surface, a^2, of a movable jaw supported by and movable in the fixed jaw, a rack-bar, *b*, provided with a cam-slot, *b'*, a pin or roller extended through said cam-slot, and a threaded shaft connected to and so as to operate the rack-bar, substantially as and for the purpose specified.

2. In a vise, the combination, with a fixed jaw provided with a toothed bar or surface, a^2, of a movable jaw supported by and movable in the fixed jaw, a rack-bar, *b*, provided with a cam-slot, *b'*, and having a recess or chamber, *c*, a pin or roller extended through said cam-slot, a nut, *c'*, loosely fitted in said recess or chamber, and a threaded shaft to engage the said nut, as and for the purpose specified.

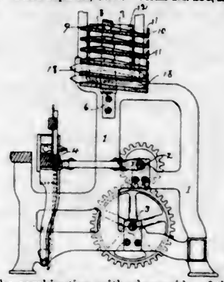
380,735. WRENCH. WILLIAM L. TOBEY, Boston, Mass. Filed Jan. 3, 1888. Serial No. 259,632. (No model.)

Claim.—A wrench substantially as described, it containing a stationary jaw having a shank threaded at one edge, a movable jaw, as *b*, placed thereon loosely, and an adjusting-nut interiorly threaded and mounted loosely in and carried by the said movable jaw, and a spring to normally engage the threads of the said nut with the threads of the handle-shank, to operate substantially as described.

380,735.

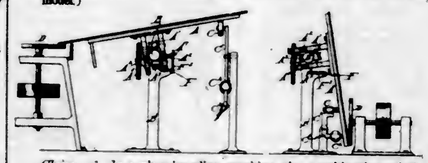


380,736. SHUTTLE-HOLDER ATTACHMENT FOR LOOMS. WILLIAM WATTIE, Worcester, Mass., assignor to the Knowles Loom Works, same place. Filed Sept. 23, 1887. Serial No. 250,484. (No model.)



Claim.—The combination, with a loom-side, of the stand 6, bolted thereto, and a series of inclined stationary shelves, 7, having side flanges and an end flange supported on said stand for furnishing a supplementary attachment for the reception of extra shuttles, substantially as shown and described.

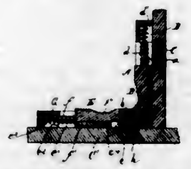
380,737. MACHINE FOR BEVELING GLASS. FERDINAND ARNHEIM, New York, N. Y. Filed May 26, 1887. Serial No. 239,504. (No model.)



Claim.—1. In a glass-beveling machine, the combination of the table A, having the adjustable trucks A', with adjusting-screws A^3, and binding-truck A^3, with spring-bearing A^4, and the rail B, and mill D, constructed and operated as and for the purposes herein shown and set forth.

2. In a glass-beveling machine, the combination of the table A, having the adjustable trucks A', binding-truck A^3, and rail B, with the bearing-roll C, lever C', and adjustable weight C^2, constructed and operated substantially as and for the purposes herein shown and set forth.

380,738. SHUTTER-FASTENER. JOSEPH A. BACHMAN, Austin, Tex. Filed July 11, 1887. Serial No. 244,006. (No model.)



Claim.—1. The combination, with the plate A, having a longitudinal slot, and the bolt fitted and adapted to slide in said slot and provided with a projecting lip, of the catch composed of a plate having two openings, and a stop closing the outer end of one of the openings, and the latch-bolt fitted and sliding in one opening, and having its end extended across the opening closed by said stop and adapted to overlap said lip of the aforesaid bolt, substantially as and for the purpose specified.

2. The combination, with the two plates arranged at right angles

to each other and having their approximate ends beveled, forming a miter-joint, each plate having a slot or opening, of the bolt fitted in the slot of one plate, and having its lower end widened or projected forward and notched in its under edge and provided with a projecting lip, the latch-bolt fitted in the slot of the other plate and adapted to fit over the lip of the aforesaid bolt, the stop *h*, and the springs seated in extensions of the slots and placed on stems projecting from the bolts, substantially as and for the purpose specified.

380,739. TOOTH-PICK. ROBERT A. RACON, New York, N. Y. Filed Jan. 21, 1888. Serial No. 261,497. (No model.)

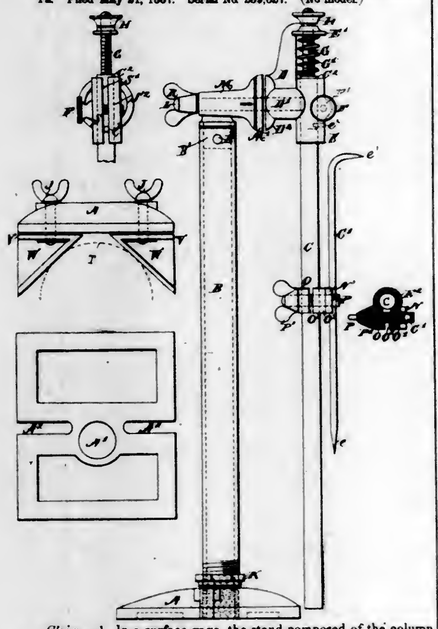


Claim.—1. The combination, with a handle, A, of a bow, B, adjustably secured thereto and provided with a strand, E, substantially as described.

2. The combination, with the handle A, of a bow, B, pivotally secured thereto, and a strand secured to the ends of said bow, substantially as described.

3. As a new article of manufacture, the tooth-cleaner herein described, comprising the handle A, the bow B, screw *b*, nut C, holdfast D, and strand E, all substantially as described.

380,740. SURFACE-GAGE. HENRY C. BALDRAUGH, Harrisburg, Pa. Filed May 21, 1887. Serial No. 239,027. (No model.)



Claim.—1. In a surface-gage, the stand composed of the column B, the base A, having secured therein the column by a screw-joint, the nut K on the column for jamming onto the base and interlocking the parts, and of the cross-head M, formed with the shank B^3, whereby it is secured removably on said column, it having a longitudinal bore, in combination with the joint D, held abutted to the correspondingly-enlarged outer end of the cross-head by means of the axial bolt L, inserted in said bore and provided with the binding thumb-nut R, substantially as and for the purpose set forth.

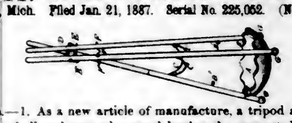
2. In a surface-gage, the combination, with the stand composed of the base A, column B, cross-head M, and nut K, of the stem-holding joint D, pivoted to said cross-head of said stand to swing in a vertical plane and be clamped fixedly by means of the binding-nut R on the axial bolt L, uniting said joint to the stand, of the round stem C, sleeved in the socket E on said joint, and having the reduced part G thereof inserted through the arm E', formed on the upper end of said joint, of the spring G', applied around said reduced part between the shoulder formed in reducing the stem and the under side of said arm, and the adjusting-nut H on the threaded upper end of said stem, the same bearing exteriorly on said arm and by aid of said spring regulating the position of said stem in the socket E when not clamped fast therein in the act of adjusting the needle C to test a surface properly, substantially as set forth.

3. In a surface-gage, the combination, with the stand, of the instrument having the cross-head M thereon and the reversible joint D, pivoted thereto to swing in a vertical plane and be clamped rigidly in position after adjustment, said joint being provided with the arm E', and the socket E, formed with the longitudinal slot S' in its wall, of the stem C, having its reduced part G inserted in a bearing in said arm and its round body sleeved in said slotted socket, of the spring G', applied around said part G between said arm and the shoulder C^3 on said stem, of the nut H on the said stem's reduced and threaded part for adjusting it longitudinally, and of the binding-screw F, working loosely in the part S of the wall of the socket E, and having its threaded point traveling in the part S^3 of said wall for springing said parts closer together and clamping the round body of the stem in said socket, substantially as and for the purposes set forth.

4. In a surface-gage, the combination, with the round stem C, adjustably mounted on the stand of the instrument, and suspending thereby the testing-needle, of the clamp E^3, embracing said stem and formed with the abutments O O', having the slot O^3 between them, and having the screw-bolt P inserted through holes formed in the abutments, of the thumb-nut P' on the threaded end of said bolt, of the needle C', inserted through an eye in the bolt in lieu of the head thereof, and of the pillow-block N, having a central eye with said bolt therein, and a seat on its face, in which said needle is held in position when said block and clamp are drawn taut in driving taut said nut, substantially as and for the purposes set forth.

5. In a surface-gage, the combination, with the base A, formed with the opposite corresponding slots, A^3, of the guide-pieces W, formed, as shown, with parallel edges, and similarly-beveled inner faces, adapted to rest tangentially upon a cylindrical body and to align parallel with the axis of the same, and of the bolts J, inserted through said slots and traveling in tapped holes in the top plates, V, of said pieces for clamping the same adjustably to the under side of said base, substantially as and for the purpose set forth.

380,741. ARTICLE OF FURNITURE. JULIUS BERKEY, Grand Rapids, Mich. Filed Jan. 21, 1887. Serial No. 225,052. (No model.)



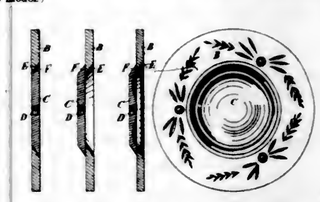
Claim.—1. As a new article of manufacture, a tripod adapted to be used as a hall-rack or parlor-stand, having the supports B B B, suitably joined near the top, and the shelf or stretcher A, vertically adjustable within the supports, all substantially as and for the purpose described.

2. The shelf or stretcher A, for a tripod for furniture uses, projecting beyond the supports B and constructed with projections upon its edge to retain a picture or other article resting upon it.

3. The combination of the supports B, shelf A, screw-eyes B', and loops B^3, the screw-eyes attached to the supports and the loops to the shelf and the screw-eyes adapted to be turned and lock the shelf in position, substantially as described.

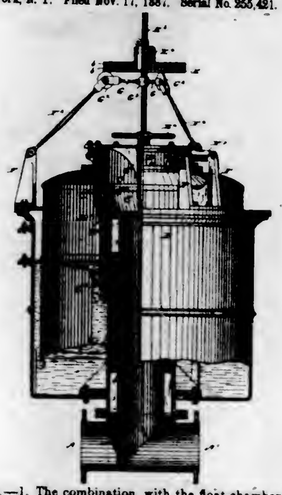
4. In a tripod to be used as furniture, the supports B, suitably jointed near the top, the adjustable shelf A, with the retaining devices described, and the chain C, substantially as and for the purposes shown.

380,742. METHOD OF MAKING WOODEN BOWLS. JULIUS BERKEY, Grand Rapids, Mich. Filed July 27, 1887. Serial No. 245,470. (No model.)



Claim.—The herein-described method of making wooden bowls and similar articles, which consists in sawing out from a board a circular portion with beveled edges, attaching the upper surface of the part so cut out to the lower surface of the part from which it was cut in such a manner as to cover opening left, and then turning the bowl from the block so formed, substantially as described.

380,743. AUTOMATIC GAS-GOVERNOR. FREDERICK BERDEL, New York, N. Y. Filed Nov. 17, 1887. Serial No. 255,421. (No model.)



Claim.—1. The combination, with the float-chamber and a removable top therefor, and a valve-chamber in the float-chamber and having near its lower end an outlet communicating with the float-chamber, of a valve within said chamber and accessible from the top of the float-chamber, substantially as and for the purpose described.

2. The combination, with the float-chamber, of a valve-chamber therein of increased area at its top and provided at its lower end with an outlet communicating with the float-chamber, substantially as and for the purpose described.

3. The combination, with the float-chamber, of the valve-chamber therein having an outlet near its lower end communicating with the float-chamber and outlets from the valve-chamber above the valve into the float-chamber, substantially as described.

4. The combination, with the water-tank and float-chamber, of a weight-support, an adjustable rod carrying said support and engaging the float-chamber, and pivoted connections between said rod and the water-tank, and the roller G^3, on which the weight-support rests.

5. The combination, with the water-tank and float-chamber, of the vertical rod adjustably connected with said float-chamber, a weight-support vertically movable on said rod, a cross-head on said rod directly beneath said weight-support and sustaining the weight of the same, arms pivoted to said cross-head, and arms F^3, pivotally connecting said arms with the water-tank, substantially as described.

6. The combination, with the inlet-pipe, of an outlet-pipe inclosed within the same and a valve attached to the upper end of the outlet-pipe and serving to close the upper end of the inlet-passage, as set forth.

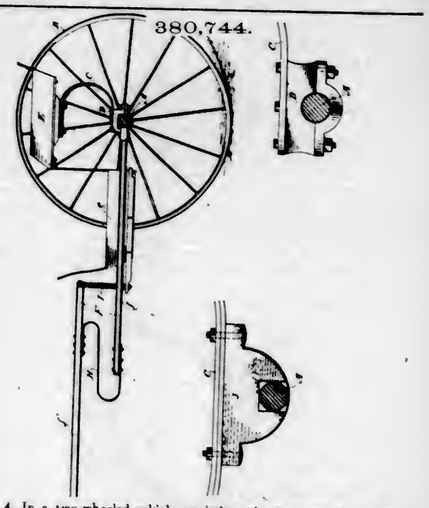
380,744. TWO-WHEELED VEHICLE. KASSON A. BRIGHAM, Gilroy, Cal. Filed Jan. 10, 1888. Serial No. 260,367. (No model.)

Claim.—1. In a two-wheeled vehicle, an independently-moving body, in combination with sectional or divided shafts, the rear sections being clipped solidly to the axle and the adjacent ends of the two sections overlapping, a connection between the sections forward of the rear ends of the forward sections and on which said sections fulcrum, and a connection between the body and the overlapping rear ends of the forward sections at a point back of their fulcrum-connection, substantially as herein described.

2. In a two-wheeled vehicle, an independently-moving body, in combination with sectional or divided shafts, the rear sections being clipped solidly to the axle and the adjacent ends of the two sections overlapping, a connection between the sections forward of the rear ends of the forward sections and on which said sections fulcrum, and springs connecting the body with the overlapping rear ends of the forward sections, substantially as herein described.

3. In a two-wheeled vehicle, an independently-moving body, in combination with sectional or divided shafts clipped to the axle and the forward sections lying above and overlapping the forward ends of the rear sections, springs connecting the sections at a point in front of the rear ends of the forward sections, and a connection between the body and the overlapping rear ends of the forward shaft-sections, substantially as described.

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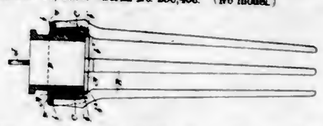


4. In a two-wheeled vehicle, an independently-moving body, in combination with the sectional shafts clipped at their rear ends solidly to the axle and having their forward sections above and overlapping the rear sections, a spring connecting the forward end of the rear sections with the upper sections at a point forward of their rear ends, and a spring-connection between the forward part of the body and the overlapping rear ends of the upper sections, substantially as described.

5. In a two-wheeled vehicle, a wheeled axle, a body, and intervening body-supporting springs pivoted to the axle, in combination with sectional or divided shafts clipped solidly to the axle and having the forward sections overlapping their rear sections, a spring connecting the sections, and springs connecting the body with the overlapping rear ends of the forward sections at a point behind the connection of the section-uniting springs, substantially as herein described.

6. In a two-wheeled vehicle, the wheeled axle, the body, the springs supporting the body, and the elastic bearing by which the springs are connected with the axle, in combination with the sectional shafts clipped rigidly to the axle, the sections of said shafts overlapping and connected by springs, and the springs connecting the forward portion of the body with the projecting rear end of the forward sections of the shafts, substantially as herein described.

380,745. SPECULUM. PHILANDER CHAMBERLIN, Santa Cruz, Cal. Filed Dec. 19, 1887. Serial No. 258,406. (No model.)



Claim.—1. A speculum comprising an annular internally-threaded hub, arms pivoted in said hub, and an annular externally-threaded nut fitting the internally-threaded hub and bearing against the arms, whereby they are expanded, substantially as described.

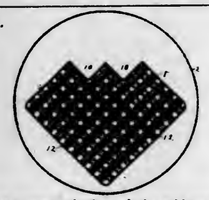
2. A speculum comprising an annular internally-threaded hub, arms pivoted in the hub, springs affecting said arms, whereby they are normally drawn together or contracted, and an externally-threaded annular nut fitting the internally-threaded hub for operating against the arms and effecting their expansion, substantially as described.

380,746. BOILER. WILLIAM K. DRAN, Minneapolis, Minn. Filed Nov. 21, 1887. Serial No. 255,698. (No model.)

Claim.—1. In a boiler, the combination, with the shell, of the horizontal combustion-chamber having its opposing walls parallel to each other and provided with a right-angular break or breaks formed in the top of said chamber, and the tubes having their ends secured in the opposite parallel walls of the chamber, substantially as described.

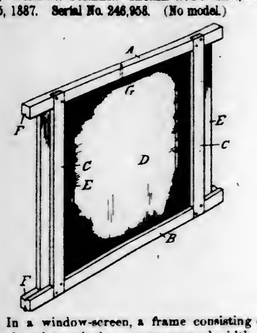
2. In a boiler, the combination, with the shell 2, of the horizontal combustion-chamber 8, provided with the recess 10 in its top, having its walls parallel with the bottom walls of the chamber, and the series

380,746.



of tubes extending transversely through the said combustion-chamber, with their ends secured in its opposing walls.

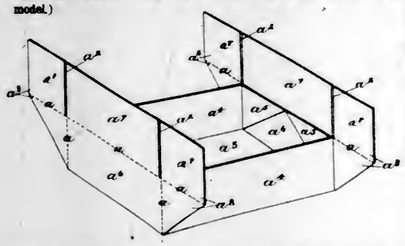
380,747. WINDOW-SCREEN. THOMAS W. DOWLING, Detroit, Mich. Filed Aug. 15, 1887. Serial No. 246,958. (No model.)



Claim.—1. In a window-screen, a frame consisting of top and bottom rails of a length to suit the greatest normal width of window-sashes, and of side rails secured thereto at a distance apart to suit the normally-smallest width of window-sashes, said top and bottom rails being provided with a two-sided groove, one side being beveled, as shown, and the wings having a corresponding bevel engaging said grooves, substantially as and for the purpose described.

2. In a window-screen, the combination of a frame consisting of top and bottom rails of a length to suit the greatest normal width of window-sashes, and of side rails secured thereto at a distance apart to suit the normally-smallest width of window-sashes, and of extension-wings slidingly secured between the top and bottom rails and at a distance from the inner face of the top and bottom rails equal, or nearly so, to the width of the parting-strips, substantially as and for the purpose described.

380,748. PAPER BOX. CHARLES W. ELLIOTT, Moncton, New Brunswick, Canada. Filed Feb. 27, 1888. Serial No. 265,770. (No model.)



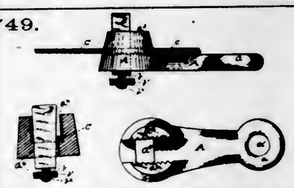
Claim.—1. The herein-described box-blank A, scored and cut to form side pieces, a^3, a^4 a^4, a^4 a^4, each side piece a^4 having two ears, a^5, and each side a^3 having a flap, a^7, and two flaps, a^6, substantially as and for the purpose set forth.

2. The herein-described box made up of side a^3, sides a^4 a^4 a^4 a^4, the sides a^4 having inwardly-bent ears a^5 between the sides a^4 a^4 and the inwardly-bent flaps a^7 thereon, and the sides a^4 a^4 having flaps a^6 folded against portions of the outer and inner surfaces of sides a^4, substantially as and for the purpose set forth.

380,749. WIRE-GRIPPER. BARTHEL ERBE, Pittsburg, Pa. Filed Nov. 29, 1887. Serial No. 256,479. (No model.)

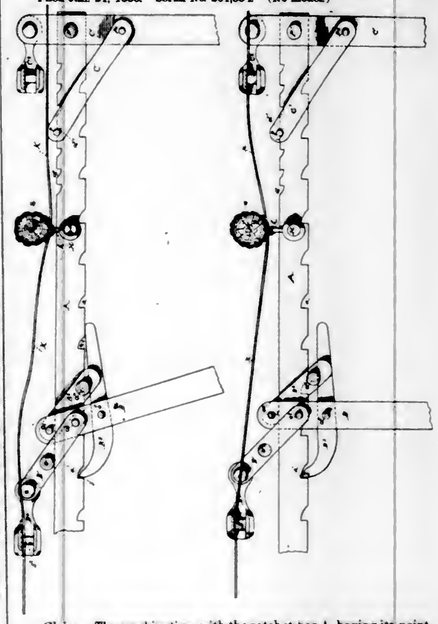
Claim.—The wire-gripper consisting of the plate A, provided at one end with means for connecting it to a stretcher and with two facing serrated lugs at the other, and of a tapered key secured in a mortise

380,749.



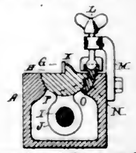
formed between said lugs and having a limited movement therein, substantially as described.

380,750. WIRE-STRETCHER. BARTHEL ERBE, Pittsburg, Pa. Filed Jan. 21, 1888. Serial No. 261,554. (No model.)



Claim.—The combination, with the ratchet-bar A, having its point of attachment between its ends, of an operating-lever provided with the requisite pawls and grippers on each side of such point, as and for the purpose specified.

380,751. MACHINE FOR CUTTING FILES. CRAWFORD M. FAIRBANKS, Lincoln, R. I. Filed Dec. 13, 1887. Serial No. 257,743. (No model.)

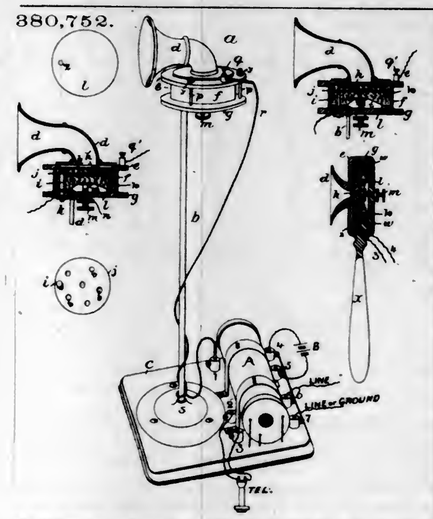


Claim.—The combination of the screw L, with its tail-piece N, having a spline, O, with the carriage H, having a longitudinal groove, P, the whole arranged and operating in the manner substantially as described.

380,752. TELEPHONE-TRANSMITTER. ISAIAH H. FARNHAM, Malden, assignor to the New England Telephone and Telegraph Company, Boston, Mass. Filed Nov. 26, 1887. Serial No. 256,200. (No model.)

Claim.—1. The combination, in a telephone-transmitter, of a containing-chamber having rigid non-conducting walls and a mobile, resilient, and extensible rear wall or floor closing the lower end thereof, a mass of granulated or finely-divided conducting material inclosed within said chamber and upon the said floor, a horizontal flexible vibratory diaphragm surmounting the said mass, closing the other end

380,752.



of said chamber, and constituting one of the electrodes of a circuit, a second or complementary electrode embedded or buried in the finely-divided conducting material, and an adjusting device for the extensible rear wall, whereby the said wall may be extended into the interior of the chamber, thus diminishing the capacity thereof, and for the purpose of maintaining permanent but elastic connection between the diaphragm and conducting mass, substantially as hereinbefore described.

2. The combination, in a telephone-transmitter of the type or class hereinbefore specified, of a mass of granular carbon, a cell or chamber with vertical non-conducting side walls confining said mass, a horizontal conducting-diaphragm stretched over the said granular mass, a mobile or elastic and extensible floor closing the cell at its lower end and supporting the granular mass upon its upper surface, and an adjusting device acting upon the center of the said extensible floor and adapted to elevate the same into the interior of the chamber, thus contracting the space thereof, whereby an initial contact is maintained between the carbon and the diaphragm, and whereby an elastic cushion is also provided for the carbon mass, as described.

3. In a telephone-transmitter of the character hereinbefore referred to, the combination of a containing-chamber with non-conducting side walls, a flexible, vibratory, and conducting diaphragm closing one end of said chamber and serving as one electrode, an elastic and extensible non-conducting floor or rear wall closing the other end of said chamber, an adjusting or regulating screw controlling the said elastic rear wall and adapted to force the center thereof into the interior of said chamber, a mass of granular or finely-divided carbon inclosed within said chamber, and a complementary or fixed electrode perforated for the free passage of the carbon particles and mounted or stretched within the said chamber and through the mass of carbon between the diaphragm and rear plate, substantially as specified.

4. The combination, in a granular-carbon transmitter, with a cell containing the granules, of a flexible metal vibrating diaphragm closing one end of the said cell and connected with one end of an electric circuit, a fixed electrode inclosed in said cell, extending through and in contact with the carbon granules, and connected with the other end of an electric circuit, a mobile and resilient rear wall or floor closing the other end of the said cell, and adjusting devices acting upon the said elastic floor and adapted to raise the center thereof into the interior of said cell for the purpose of initially compressing the granules to the requisite degree, and of establishing and maintaining elastic and yielding contact between the diaphragm and the carbon granules and between the respective granules, as described herein.

5. In a telephone-transmitter of the hereinbefore-described character, the combination, with a loose mass of conducting particles confined within a chamber having a rigid and vertical side wall, and a conducting and flexible diaphragm surmounting the said mass, of an elastic cushion closing the lower end of said chamber and forming the floor thereof, upon which the said mass rests, and whereby the said mass may be retained in yielding but permanent contact with the surmounting diaphragm.

6. A telephone-transmitter comprising the following elements: a containing-cell having rigid non-conducting side walls, a metal cap-piece therefor, and a flexible conducting vibratory diaphragm clamped thereby to the upper edge of the said side walls, a mouth-piece fitted to an orifice in the center of said cap-piece, a metal plate fitted to the lower edge of the cell, constituting a portion of the outer case thereof and closing the same, a complementary perforated electrode mounted upon a standard fixed to said plate, a sheet of thin elastic rubber or its equivalent stretched over the inner surface of said plate, a mass of granular or finely-divided carbon inclosed in said cell between the rubber sheet and flexible diaphragm and surrounding the perforated electrode, and an adjusting-screw extending through the closing case-plate and bearing upon the center of the rubber sheet, whereby the same may be projected forward into the cell for the purpose of establishing and adjusting contact-pressure between the carbon particles and the diaphragm and to provide an elastic cushion for the said particles, substantially as described.

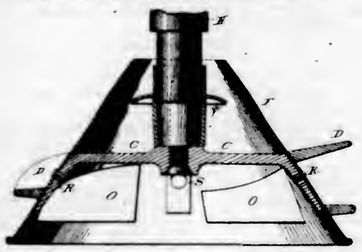
7. A telephone-transmitter comprising the following elements in combination: a containing-cell in the form of a short cylinder having rigid vertical non-conducting side walls, a metal cap-piece therefor centrally perforated for the reception of a mouth-piece, a horizontal platinum vibrating diaphragm clamped to the upper edge of said cylinder, a sheet of thin elastic rubber, serving as the rear wall, bottom, or floor of the containing-cell, and clamped to the lower edge of the vertical wall thereof by a metal plate, which plate is bolted to but insulated from the cap-piece, a fixed or complementary electrode suspended or mounted within the cell at a suitable distance from the diaphragm and in electrical connection with the said lower metal plate, a mass of finely-divided carbon in a loose and free state inclosed within the said cell and upon the rubber floor thereof, and an adjusting device for the said carbon and rubber floor, consisting of a screw projecting through the lower metal plate against the center of the said rubber floor, whereby the said floor-center may be elevated and the carbon particles elastically compressed with respect to one another and brought into permanent and resilient contact with the horizontal diaphragm which rests upon the upper surface of said particles, as described.

8. In a granular carbon transmitter, a carbon-containing cell with vertical non-conducting side walls having a flexible conducting-diaphragm to close its upper end, and an adjustable elastic floor closing its lower end, upon which the carbon particles rest within the chamber, and whereby they can be moved into and maintained in elastic contact with the diaphragm, for the purposes specified.

9. In a telephone-transmitter of that class in which the current-varying material is a mass of finely-divided carbon in a loose and free state, a horizontal and flexible conducting-diaphragm, and a carbon-holding chamber mounted immediately thereunder, clamped to the edges thereof, having rigid non-conducting side walls, and provided with a spring floor or rear wall supporting the mass of carbon, the central portion of which floor is adjustable by means of a screw with respect to the diaphragm, whereby the said mass of carbon may be caused to make an initial but elastic and variable contact with the diaphragm, substantially as and for the purposes specified herein.

10. In a telephone-transmitter of the hereinbefore-described type or class, a horizontal vibrating diaphragm and a carbon-holding cup supported below the said diaphragm and provided with an elastic and extensible spring-bottom, upon which the inclosed mass of carbon rests, and whereby the said carbon may be maintained in intimate but elastic contact with the said diaphragm.

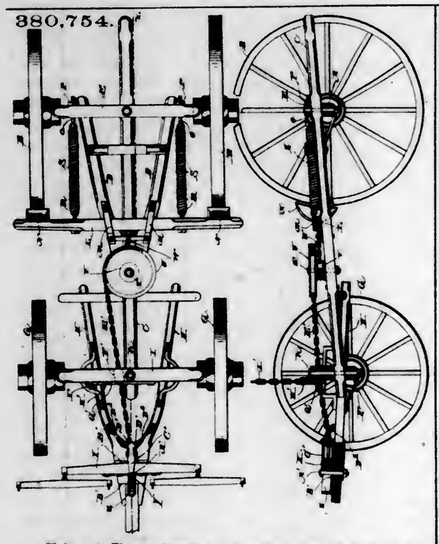
380,753. CHURN-DASHER. JOHN R. FINLEY, Memphis, Tenn. Filed Nov. 26, 1887. Serial No. 256,197. (Model.)



Claim.—The combination, with the dasher-rod, of the cruciform piece C, the funnel-shaped dasher F, having openings O, and provided with wings or flanges D, rivets R, screws S, and valve V, substantially as described.

380,754. AUTOMATIC WAGON-BRAKE. JOSEPH H. FISHER, Merchantville, N. J. Filed Jan. 21, 1888. Serial No. 261,511. (No model.)

380,754.



Claim.—1. The combination, in a vehicle-brake, of the brake-bar, the springs to normally move the same rearward and apply the brakes, the longitudinally-movable whiffletree, the revoluble pulleys U V, rigidly connected together, the chain W, connecting one of said pulleys to the brake-bar, and the chain E', connecting the other pulley to the whiffletree, substantially as described.

2. The combination, in a vehicle-brake, of the brake-bar, the springs to normally move the latter rearward and apply the brakes, the longitudinally-movable whiffletree, the chain E', and connections between said whiffletree and the brake-bar, the bolster I, having the opening F', through which the chain E' passes, and the lever G', pivoted to the front side of the bolster and adapted to be turned so as to clamp the chain E', for the purpose set forth, substantially as described.

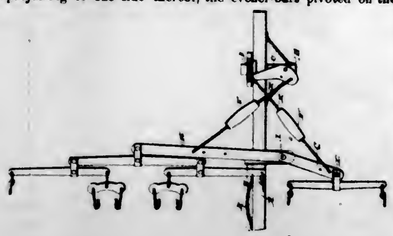
3. In an automatic vehicle-brake, the combination of the brake-bar, the spring to normally move the same rearward and apply the brakes, the longitudinally-movable whiffletree having the slotted arm Z, the bolt A', extending through said slotted arm and connecting the same to the front hounds, and connections between the said whiffletree and the brake-bar, substantially as described.

4. The combination, in an automatic vehicle-brake, of the brake-bar guided in keepers M on the rear hounds, the springs to normally move the brake-bar rearward and apply the brakes, the pulleys U V, rigidly connected together and pivoted on the reach, the chain W, connecting the smaller pulley V to the brake-bar, the longitudinally-movable whiffletree, and the chain E', connecting the same to the larger pulley, substantially as described.

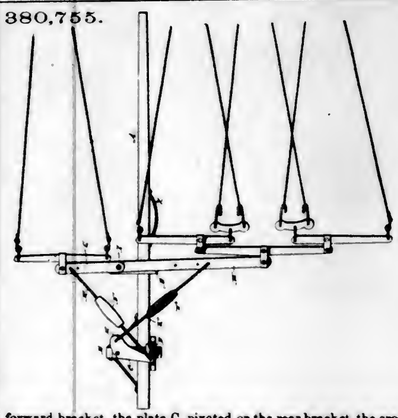
380,755. DRAFT-EVENER. JOSEPH W. GAMBLE, Adair, Iowa, assignor of one-half to Jacob McCarney, same place. Filed Feb. 4, 1888. Serial No. 263,058. (No model.)

Claim.—1. The combination of the tongue, the brackets secured thereto and projecting to one side thereof, the evener-bars pivoted to the forward brackets by a common pivot, the plate C, pivoted on the rear bracket, and the adjustable connecting-rods between the evener-bars and the plate C, as set forth.

2. The combination of the tongue, the brackets secured thereto and projecting to one side thereof, the evener-bars pivoted on the



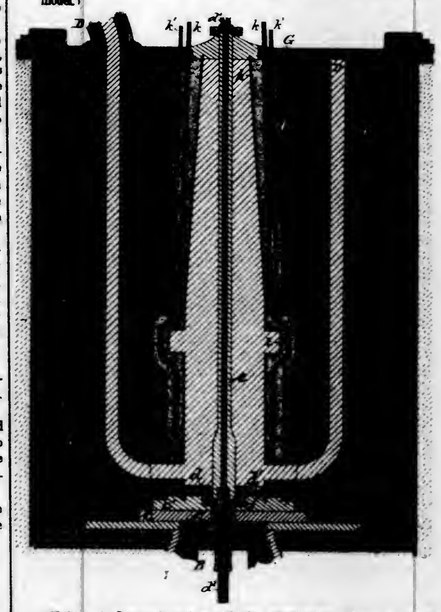
380,755.



forward bracket, the plate C, pivoted on the rear bracket, the crossed connecting-rods between the said plates and the evener-bars, and the adjustable sleeves mounted on said rods to lengthen and shorten the same, as set forth.

3. The combination of the tongue, the brackets secured thereto, the evener-bars pivoted on the forward bracket, the plate C, pivoted on the rear bracket, the adjustable connecting-rods between the said plate and the evener-bars, and the keeper D, secured on the rear bracket over the end of the plate C, substantially as specified.

380,756. APPARATUS FOR CASTING ORDNANCE. RICHARD J. GATLING, Hartford, Conn. Filed July 23, 1887. Serial No. 245,085. (No model.)



Claim.—1. In combination with the pit, the base-pieces centered on the hollow stud, the hollow bolt, the steel core-piece, the brace at the top of the pit that supports the upper end of the core-piece, and the sheet-metal form or mold lining, all substantially as described.

2. In combination with the pit having the gun-casting support, the sectional flask and runways that are composed of lengthwise and lateral sections interlocked and bolted together, all substantially as described.

3. In combination with the pit having the central man-hole and its approach under the center of the gun-casting, the supporting-plates with central opening, the stud *d*, fitted within the central opening of the supporting-plates, the hollow bolt that unites the plates, the steel tube that forms the center of the gun, the brace that extends across the top and supports the upper end of the said tube, and the lock-nut or coupling whereby the said tube is removably secured to the base-plate and the removal from the pit of the gun after it has been cast is provided for, all substantially as described.

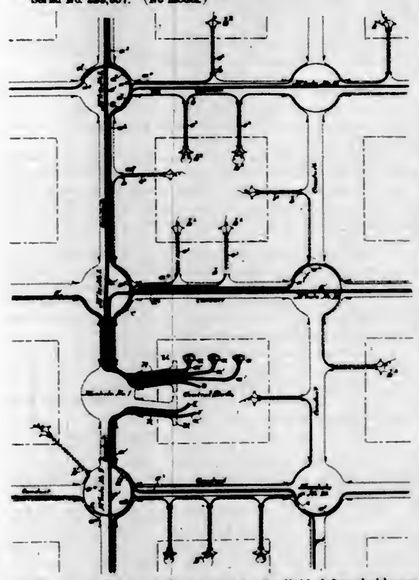
4. The casting-pit herein described, consisting of the outer mason-work, the metallic lining, and the annular fire-box M, arranged at the base of the pit, and having draft-pipes *m*, substantially as described, and for the purpose stated.

5. The casting-pit herein described, consisting of the base-pit B, the outer mason-work, the metallic lining to the mason-work, the annular fire-box M at the base of the pit, and the base pieces or plates *c c'*, adapted to support the flask, substantially as described.

6. The combination, with a casting-pit having a metallic lining and a floor to support the flask, of a sectional flask and runways, and the lateral brace-pieces *l*, formed with a curve or bend, *l'*, whereby the expansion of the flask is provided for, substantially as described.

7. The flask for casting ordnance herein described, consisting of the outer sectional parts, I, having interlocking annular grooves and projections, an inner metallic shell to form the outline of the mold and formed with runways at its base leading through the packing and the outer shell, a packing between the outer and inner shells of the flask, and a base-piece to support the shells and packing, substantially as described.

380,757. SYSTEM OF ELECTRICAL DISTRIBUTION. WILLIAM H. HART, Brooklyn, and JAMES T. GOODFELLOW, Troy, N. Y., assignors to William Hampden Johnstone, Philadelphia, Pa. Filed Mar. 3, 1887. Serial No. 229,657. (No model.)



Claim.—1. The flat flaring longitudinally-divided detachably-connected casing *a*, constructed, as set forth, to clamp and condense the wires as they enter the cable.

2. The combination of the conduits, the man-holes interposed at intervals therein, the main cable of separate wires passing therethrough, and the flat flaring longitudinally-divided casing *a*, attached to the cable to bunch or condense and clamp the wires as they enter the cable, as set forth.

3. The flat flaring flanged longitudinally-divided detachably-connected sectional casing *c*, interposed between the main and branch cables, and in which their connections are formed, as set forth.

4. The combination of the conduits, the man-holes interposed at intervals therein, the main cable of separate wires passing therethrough, the flaring sectional casing connected with the main cable, and the branch cables united with the sectional casing in the man-holes and connecting in the casing with the main cable, all organized and operating as set forth.

5. The combination of the conduit, the man-holes interposed at intervals therein, the main cable of separate wires passing therethrough, the longitudinally-sectional casing *c*, connected with the main cable, the branch cables united with the sectional casing in the man-holes and connected in the casing with the main cable, and the insulating-packing, all organized for joint operation, as set forth.

6. The combination, substantially as herein set forth, of the casing, the wires having their terminals therein, and the interposed connecting spring-clips uniting their respective terminals.

7. The combination, substantially as herein set forth, of the conduits, the man-holes interposed therein, the sectional casing (having packed joints) connected with the conduits in the man-holes, the main cable entering the casing, branch cables entering the same casing, and detachable connections uniting the terminals of the main and branch cables.

8. The combination of the conduits, the man-holes interposed at intervals therein, the main cable of separate wires passing therethrough, the sectional casing *c*, interposed between the main and branch cables, and similar casings, *d*, interposed in the branch cables in the same man-hole, these members being organized for joint operation, as set forth.

9. The combination of the conduits, the man-holes interposed at intervals therein, the main cable of separate wires passing therethrough, the sectional casing *c*, interposed between the main and branch cables, sectional casings *d* in the branch cables, and detachable connections between the terminals in the latter, as set forth.

10. The combination of the sectional casing *d*, the wire terminals therein, the insulated bushing, the spring-clips, and the detachable connecting-pieces, all organized for joint operation, as set forth.

11. The flanged sectional casing through which the wires pass, constructed, as described, with hooks or eyes by which to suspend it close to the walls of the man-hole.

12. The combination, substantially as herein set forth, of the conduits, the man-holes interposed therein, the cables passing therethrough, the casing in which the terminals of the wires are connected, and the connections which suspend the casing in the man-hole.

13. The combination of the conduits, the man-holes interposed at intervals therein, the cables, the sectional casings through which the cables pass, the suspending-racks in the man-holes, and the connections by which the casings and cables are suspended, as set forth.

14. The combination, substantially as herein set forth, of the conduits, the man-hole, its inwardly and upwardly projecting ledge, and the cable-racks supported thereby.

15. The combination, substantially as herein set forth, of the man-hole, its supporting-ledges, a bracket or rest projecting downwardly from the roof of the man-hole, and cable-racks interposed between the rest and ledge.

16. The combination, substantially as herein set forth, of the man-hole, its supporting-ledges, a bracket or rest projecting downwardly from the roof of the man-hole, cable-racks interposed between the rest and ledge, and a brace or cross-bar connecting the racks, for the purposes described.

17. The combination, substantially as herein set forth, of the tapering top of the man-hole, its depending flange or drip-ring, and the cable-racks.

18. The man-hole constructed, as set forth, of rings composed of detachable segments to permit of the removal of any portion of any segment desired.

19. The man-hole constructed, as set forth, of separable segments and hubs provided with flanges of uniform size with the separable segments to enable one to replace the other.

20. The man-hole constructed, as set forth, with a tapering, conical, or contracted top or opening, with a depending flange or drip-ring encircling said opening to protect the man-hole and contents from moisture.

21. The combination of the conduits, the sectional man-holes interposed therein at intervals, exit-traps and valves in the bottom section of each man-hole, removable perforated false bottoms resting on the flanges of the bottom sections of the man-holes, and cables of separate wires passing through the conduits and man-holes and up through the false bottoms, as set forth.

22. The combination of the conduits, the sectional man-holes interposed therein at intervals, removable perforated false bottoms resting on the flanges of the lower sections, cables of separate wires passing through the conduits and man-holes and up through the false bottoms, casings or junction-boxes in which said cables unite, suspending-racks in the man-holes, and connections between the racks and cables, as set forth.

23. The combination of the bottom section of the man-hole, flanged ring-sections resting thereon, other sections composed of detachable segments, connecting-hubs attached to some of said segments, and a cone-shaped cap-section resting on flanges of the section below it, as set forth.

24. The man-hole segments constructed, as set forth, of plain segments, interposed flanged hub-sections, overlapping plates, and detachable fastenings uniting the three.

25. The combination of the tongue-shaped interlocking superposed tongued and grooved conduit-sections, their detachable bands, the overlapping hooks on the bands, and the locking-pins or wedge-rods, all constructed as set forth.

26. The combination of the interlocking superposed tongued and grooved conduit-sections, their end flanges, the side flanges on the bottom sections, the detachable clamps hooking on the side flanges and overlapping the detachable flanged top clamp, and the locking-pins or wedge-rods which fasten the parts securely together, as set forth.

27. The conduit constructed, as herein set forth, of the tongue-shaped interlocking tongued and grooved conduit-sections, their internal ledges, horizontal partitions, longitudinal grooves in the sections, and vertical flanges or division-plates integral with the horizontal partitions and fitting in the grooves, whereby the partitions of one section are firmly supported by the other.

28. The combination of the longitudinally internally-grooved conduit-sections and the series of separate detachable horizontal partitions provided with integral vertical ribs or flanges to fit in the grooves of the section or plate below it and with grooves to receive the flange of the plate above it.

29. The conduit constructed, as described, with tongue-shaped interlocking superposed tongued and grooved conduit-sections, their detachable bands, overlapping hooks, and locking-pins, longitudinal internal grooves and ledges, and flanged and grooved horizontal partitions, the flange of one partition resting in the groove below it, while its groove receives the flange of the partition above it, whereby the parts are easily removed or replaced and yet held securely in position, as set forth.

30. The combination of the sectional conduit, its removable partitions, the hubs for lateral branches detachably secured to the conduits over the hand-holes, and the bridge or connection pieces connecting the hubs and partition-plates, as set forth.

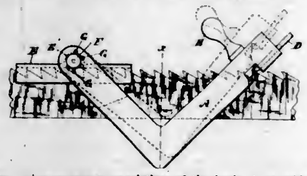
31. The combination of the conduit-sections, the removable partitions, the bell-mouthed hubs detachably secured to the conduit-sections, the branch pipes connected with the hubs, and the cables passing through the chambers formed by the partition and through the branch pipes and spliced in the hubs out of the way of the direct wires, as set forth.

32. The combination, substantially as herein set forth, of the trough-shaped conduit-sections, their internal division-plates, a lateral opening in the conduit-sections, branch conduits, and removable connection-pieces between the main and branch conduits adapted to the various divisions from which it is desired to lead the cables.

33. The combination of the conduit-sections, their partitions, the sectional terminal box, the cables passing through the chambers in the conduits, and terminal wires branching from said cables through openings in the packed joint of the terminal box at the line of junction of its sections.

34. The terminal box constructed, as set forth, of flat abutting sections having radial openings through which at their line of junction the branch wires pass.

380,758. SAW-SWAGE. SAMUEL HILL, Ottawa, Ontario, Canada. Filed Jan. 13, 1888. Serial No. 260,667. (No model.)



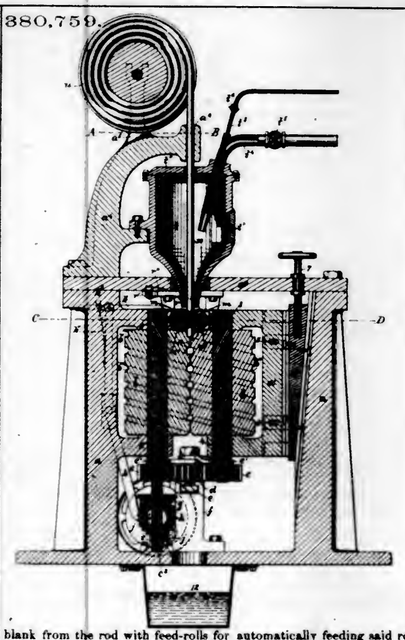
Claim.—A saw-swage consisting of the body A, provided with a slit, B, to receive the saw, and having at one end a punch, D, and anvil C at the end of the slit, and the other end of the body provided with holes G and thumb-screw F, and a grooved bar, E, to bear on the top of the saw-teeth, as set forth.

380,759. METAL-ROLLING MACHINE. DANIEL R. KEMPSTER, Boston, Mass. Filed Feb. 29, 1888. Serial No. 265,740. (No model.)

Claim.—1. In an organized continuous metal-rolling mill, the combination of two dies having their adjacent working-faces adapted to move in opposite directions with cutters for automatically severing the metal blank from the rod prior to rolling and forming said blank, for the purpose set forth.

2. In an organized continuous metal-rolling mill, the combination of two dies having their adjacent working-faces adapted to move in opposite directions and cutters for automatically severing the metal

380,759.



blank from the rod with feed-rolls for automatically feeding said rod into the mill, for the purpose set forth.

3. In an organized continuous metal-rolling mill, the combination of two dies having their adjacent working-faces adapted to move in opposite directions, cutters for automatically severing the metal blank from the rod, and feed-rolls for automatically feeding said rod into said dies and cutters with a furnace for heating said rod, for the purpose set forth.

4. In an organized continuous metal-rolling mill, the combination of two dies having their adjacent working-faces adapted to move in opposite directions, cutters for automatically severing the metal blank from the rod, feed-rolls for automatically feeding said rod into said dies and cutters, and a furnace for heating said rod with a reel or support for holding said rod, for the purpose set forth.

5. In an organized continuous metal-rolling mill, in combination, two dies having their adjacent working-faces adapted to move in opposite directions, automatic cutters, automatic feeding mechanism, and a reel or support for holding the metal rod or bar, substantially as and for the purpose set forth.

6. Two die-rolls provided with working-grooves formed obliquely to the line or plane of their movement and two parallel shafts carrying the said die-rolls, combined with each other and with gearing to rotate the said die-rolls in the same direction, to operate substantially as described.

7. Two die-rolls provided with working-grooves formed obliquely to the line or plane of their movement and two shafts carrying the said die-rolls, combined with each other and with gearing to rotate said die-rolls in the same direction, and with mechanism for adjusting the distance between said die-rolls, substantially as and for the purpose set forth.

8. Two die-rolls provided with working-grooves formed obliquely to the line or plane of their movement and two shafts carrying the said die-rolls, combined with each other and with gearing to rotate said die-rolls in the same direction, and with feed-rolls for supporting and feeding the metal blank into said die-rolls, for the purpose described.

9. Two rotating die-rolls mounted in bearings and provided with working-grooves formed obliquely to the line or plane of their movement and scored or milled to aid in rotating the blank being acted upon within said grooves, combined with each other and with gearing to drive the said die-rolls in the same direction at the same surface speed, the registering-point of the said working-grooves between the said die-rolls constantly changing from one end of said die-rolls to the other, and thereby in rolling, condensing, and forming the metal-blank said blank is bodily conveyed along within said die-grooves in a straight

line parallel with a central line between said die-rolls, for the purpose described and set forth.

10. In combination, the supporting-frame and the rolls supported thereby and having oblique working-grooves tapering from their finishing to their starting ends, substantially as described.

11. A die-roll having a working-groove formed obliquely to the line or plane of its movement and having a cutter on its starting or blank-entering end, substantially as and for the purpose described.

12. The die-rolls *b*, having cutters *b' b'* and grooves *b'' b''*, substantially as shown and described.

13. In combination, the frame *a a' a²*, the wedge *a''*, and adjusting-screw 7, substantially as described.

14. The shaft i, cam *j*, lever *k*, and pawl *k'*, in combination with the feed-ratchet *s*, adjustable shafts *m' m''*, feed-rolls *m m*, and connecting mechanism, substantially as described, for supporting and operating said devices, for the purpose set forth.

15. In combination, the feed-shafts *m' m''*, the feed-rolls *m m* and friction-gears *p p* thereon, the notched disk *r*, spring-detent *r'*, stand *n*, and connecting mechanism, substantially as described, to operate in the manner set forth.

16. The frame composed of the stationary parts *a a²* and movable part *a'*, in combination with mechanism for adjusting the position of said movable part and means, substantially as described, for rigidly securing it to the stationary part, as set forth.

17. In combination, the frame or bed, the shaft i, suitably supported thereon, the bevel-gears *h g*, the shafts *c' c''*, the gears *c* thereon, connected with links *c' c'*, the intermediate gear, *d'*, suitably supported on the frame or bed *a*, and the die-rolls *b b*, supported in the bearings 1 2 3 4 so as to revolve therein and be adjustable to or from each other, to operate substantially as described.

18. The die-rolls arranged in a vertical position, substantially as described, combined with feeding mechanism arranged so as to feed the blank metal vertically into said die-rolls, for the purpose substantially as set forth.

19. The frame and its top plate, combined with the stand *a⁴* and rod-supporting reel *u*, substantially as described.

20. The stand *a⁴*, having forked arms or reel-bearings *a⁵* and rod-guide *a⁶*, combined with the furnace *t* and means, substantially as described, for heating said furnace, for the purpose set forth.

21. The furnace constructed with one end contracted so as to concentrate the heat, as described, and the other end provided with a removable cover, for the purpose set forth, in combination with the blow-pipe or means for heating said furnace, substantially as and for the purpose specified.

22. The frame *a a'* and wedge *a''*, constructed and combined as described, whereby a longitudinal movement of said wedge in either direction gives a corresponding lateral movement to the frame *a'*, substantially as and for the purpose described.

23. The frame *a a'* and screws 5 6, substantially as and for the purpose set forth.

24. The shaft i, suitable bearings, *i' i''*, therefor, the feed-cam *j* on said shaft and provided with a double-throw groove, as described, the lever *k*, pivoted on the side of the mill and provided with a stud and roll for running in said cam-groove, as set forth, and the pawl *k'* and its spring *k''*, all combined to operate substantially as described, for the purpose set forth.

25. The combination of an automatic continuous metal-rolling mill with means, substantially as described, for scaling and cooling the hot finished articles, as set forth.

380,760. LOOM FOR CROSS-WEAVING. CHARLES A. LITTLEFIELD, Fall River, Mass., assignor to Elias A. Tuttle and James T. Milne, both of same place. Filed Feb. 19, 1887. Serial No. 228,167. (No model.)

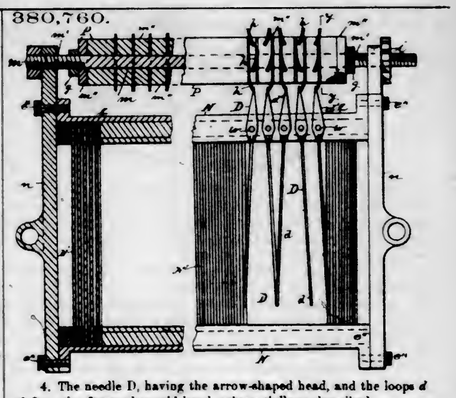
Brief.—In addition to the ordinary harness and a series of half-heddles, the loom is provided with a stationary supplemental reed having a series of needles pivoted to the top rail thereof and adapted to be deflected to the left or right by laterally-inclined lugs on a pattern-cylinder, thus deflecting the warps which are raised by the ordinary harness to one side or the other of the tie-warps which pass through the said needles. The warp-threads passed through the loops of the needles may be raised as desired by the half-heddles.

Claim.—1. The combination, with the shaft or spindle *m*, sleeves or washers *m''*, and nuts *g*, of the lugs *h*, having the laterally-deflected portions, substantially as described.

2. The combination, with the shaft or spindle *m*, sleeves or washers *m''*, nuts *g*, lugs *h*, having the laterally-deflected portions, and means for rotating said shaft or spindle, of the reed and needles pivoted thereto and constructed, as described, to be deflected by the engagement therewith of the said lugs, substantially as described.

3. The combination, with the shaft or spindle *m*, sleeves or washers *m''*, nuts *g*, lugs *h*, having the laterally-deflected portions, and means for rotating said shaft or spindle, of the reed and needles D, pivoted thereto, substantially as described.

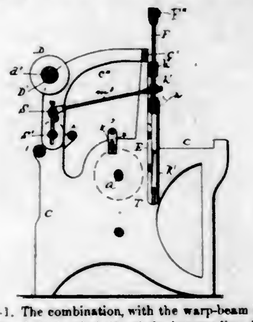
380,760.



4. The needle D, having the arrow-shaped head, and the loops *d* of fine wire fastened to said head, substantially as described.

380,761. LOOM FOR CROSS-WEAVING. CHARLES A. LITTLEFIELD, Fall River, Mass., assignor to Elias A. Tuttle and James T. Milne, both of same place. Filed Feb. 21, 1887. Serial No. 228,362. (No model.)

Brief.—A sectional warp-beam, composed of a grooved barrel, correspondingly-shaped plates, spacing-pieces for the grooves, and removable end plates, holds the tie-warps, which thence pass around a whip-roll moved at each crossing of the warps to slacken the tie or crossing warps by means of an arm operated by the needle-holding frame.



Claim.—1. The combination, with the warp-beam body or barrel grooved at *d'* and the heads *k kᵘ*, of the intermediate heads, *m*, having projections *m'*, and the blocks *l*, substantially as described.

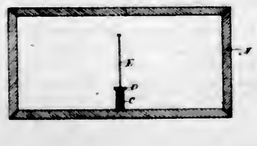
2. The combination, with the needle-holding frame having stand *k'* and means for actuating said frame, of screw *n*, slotted arm *m²*, rod S, means for connecting said arm to said rod, rod S', and arms *f'f'*, substantially as described.

3. The combination, with the needle-holding frame, stand *k'*, and means for actuating said frame, of screw *n*, slotted arm *m²*, rod S, blocks *x²* and *o*, bolt *g²*, rod S', and arms *f' f'*, substantially as described.

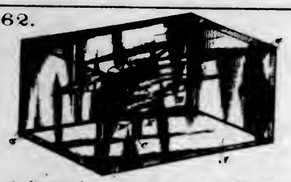
4. The combination, with the needle-holding frame, stand *k'*, and means for actuating said frame, of screw *n*, slotted arm *m²*, rod S, blocks *x²* and *o*, slotted as described, bolt *g²*, passing through the slots in said blocks, arms *f' f'*, and rod S', substantially as described.

5. The needle R', having a flat tapering inclined angular head, an elongated eye in line with said inclined head made through the body of the needle, and an open slotted and flat foot portion, as described.

380,762. SHOW-CASE FOR ENTOMOLOGICAL AND OTHER SPECIMENS. CHARLES F. MCGLASHAN, Truckee, Cal. Filed Dec. 19, 1887. Serial No. 258,407. (No model.)



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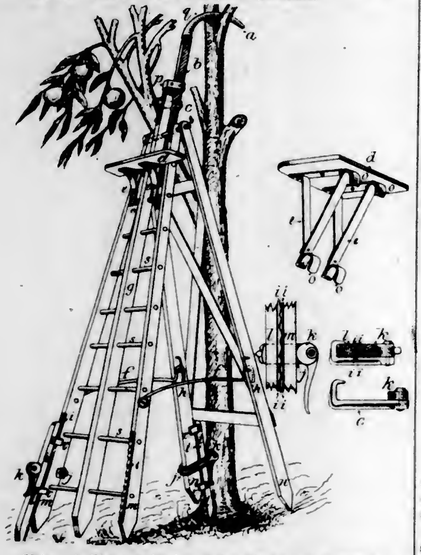


Claim.—1. In combination with a hermetically-sealed all-glass case for confining and preserving entomological and other specimens, the standard fixed within the case for receiving the impaling-pin of the specimen, said standard being treated with a suitable insecticide or preservative, substantially as described.

2. In combination with a hermetically-sealed all-glass case for confining and preserving entomological and other specimens, the standard cemented in the bottom of the case to its inner surface and receiving the impaling-pin in its top, and a piece of absorbent material—such as blotting-paper—treated with an insecticide or preservative and located on top of the standard, substantially as described.

3. A hermetically-sealed all-glass case, in combination with the medicated standard secured inside of it, the medicated piece of paper secured on top of the standard, and an impaling pin for the specimen passing through the paper and into the standard, substantially as described.

380,763. FRUIT-LADDER. MATTHEW H. MURPHY, Portland, Oreg. Filed Feb. 13, 1886. Serial No. 191,877. (No model.)



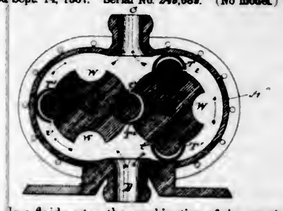
Claim.—1. The combination of the side bars, *m*, middle bar, *g*, similar thereto, the rungs *s*, the props *n*, pivoted at the upper end of the side bars, and the hooks *f*, substantially as described.

2. In a fruit-ladder, the combination, with the bars *m* and *g*, having rounds *s*, of the legs *n*, mounted to turn on the uppermost round *s*, the hooks *f*, passing through the staple *h*, locking the legs and bar together when closed, and the hook *a*, projecting from the top of the extension-bar *b*, having a heavy felt covering, *q*, substantially as herein shown and described.

3. In a fruit-ladder, the combination, with bars *m* and *g* and rounds *s*, of the legs *n*, mounted to turn on the uppermost round *s*, and the hooks *f*, the step *d*, the brackets *c* on the same for suspending the step *d* from any of the rounds *s*, substantially as herein shown and described.

4. In a fruit-ladder, the combination, with the bars *m* and center bar, *g*, having rounds *s*, of the legs *n*, mounted to turn on the uppermost round *s*, the hooks *f*, and step *d*, with brackets *c* on the same, and the adjustable feet *l*, attached to the bars *m* and legs *n* by clasp *j*, held firmly by eccentric *k*, substantially as herein shown and described.

380,764. ROTARY LIQUID-METER. WILLIAM R. PEARSON, Saugus, assignor to George R. Swasey, Boston, Mass. Filed May 22, 1886. Renewed Sept. 14, 1887. Serial No. 249,689. (No model.)



Claim.—In a fluid-meter, the combination of the rotating buckets H H' with the valves T T' T² T³, each of the said valves having a center piece, V V' V² V³, all adapted to operate together substantially as described, and for the purpose set forth.

380,765. ELECTRIC ACCUMULATOR. JOHN M. PENDLETON, New Brighton, N. Y. Filed Sept. 1, 1887. Serial No. 248,430. (No model.)



Claim.—1. The improved method of making electrodes for electric accumulators, composed of a conducting-support, a receptive material of lead oxide or salt of lead applied thereto, and a metal covering which consists in first applying the receptive material to the support, then placing sheets of metal foil in contact therewith, and, lastly, puncturing or forcing small holes through the metal foil into the prepared body of the support, substantially as and for the purpose set forth.

2. The improved method of making and forming electrodes for electric accumulators, which consists in first applying to a lead supporting-plate a receptive material of lead oxide or salt of lead, then submitting said prepared plate to a conversion process, then placing sheets of metal foil in contact with the plate when "formed," and puncturing or forcing small holes through the metal foil into the formed plate, and, lastly, converting the lead-foil into active material.

380,766. ELECTRIC CUT-OUT. CHARLES G. PERKINS and JOHN TREGONING, Hartford, Conn. Filed July 2, 1887. Serial No. 243,224. (No model.)



Claim.—1. An insulating-block carrying two or more fusible strips for separate circuits, combined and detachably connected with a suitable supporting-block carrying terminals to separate circuits, substantially as described.

2. An insulating-block carrying two or more fusible strips for separate circuits, a suitable supporting-block carrying terminals to separate circuits, and a spring-clamp for coupling said block to its support.

3. An insulating-block carrying circuit-terminals connected in pairs by safety-strips, the said block having a button-hole slot, as described, in combination with a spring button-bolt for securing the block in place, substantially as described.

4. The combination, with a block supporting the terminals of a main and a branch circuit, of a movable block supporting safety-strips, said strips, when the block is in place, making connection between the main and branch circuit terminals.

5. The combination, with a block supporting circuit-terminals, of a removable block supporting corresponding spring-terminals, the latter being joined in pairs by safety-strips, as and for the purpose set forth.

380,767. CORN-SHELLER. SAMUEL G. PILLSBURY, Long Island, Kans., assignor of one-half to Alice V. Whitcomb, same place. Filed Aug. 30, 1887. Serial No. 248,293. (No model.)

Claim.—1. The combination, with a corn-sheller having a discharge-opening, B, in its end, of the plate G, secured to the body of the sheller, a fan mounted on said plate below the discharge-opening B, and means for rotating said fan, substantially as set forth.

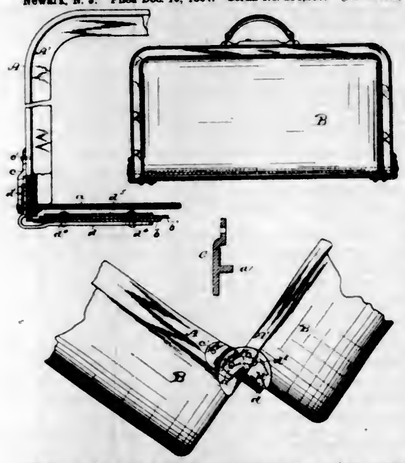
380,767.



2. The combination, with a corn-sheller having the discharge-opening B and the band-wheel E attached to one of the revolving shafts of the sheller, of the base-plate G, secured to the sheller and having the outwardly-projecting arms I I, provided with bearings in the ends, the shaft K, mounted in the said bearings, the band-wheel L on the end of the shaft, the band or belt O connecting the said band-wheels E and L, and the fan M, secured to the shaft K between the bearings, all constructed and arranged substantially as and for the purpose specified.

3. The combination, with a corn-sheller having the discharge-opening B and the band-wheel E attached to one of the revolving shafts of the sheller, of the base-plate G, secured to the body of the sheller, and having the opening H therein to align with the opening B, the arms I I, secured to the said plate and having bearings therein, shaft K, mounted in the bearings and having the band-wheel L on the end connected to the band-wheel E by the belt O, and the fan M on the shaft K, comprising the radial arms *a a*, arranged in pairs, and the transverse bars *a' a'*, secured at the ends to the said radial arms, the said fan being arranged below the discharge-opening B, whereby, as the cobs drop therefrom after having passed through the sheller, the wings of the rapidly-rotating fan strike the same, as and for the purpose hereinbefore specified.

380,768. SHOE FOR TRAVELING-BAGS. CHARLES REINISCH, Newark, N. J. Filed Dec. 13, 1887. Serial No. 258,259. (No model.)



Claim.—1. In a bag-shoe, the combination of an end tip secured to the lower end of the bag-frame, and so formed as to leave a space between said tip and the bag-frame, and provided with a bar extending across said space, a base-plate secured to the bottom of said bag near the joint and provided with a hooked portion extending up into and working within the space between the tip and the bag-frame, and engaging with the bar therein, for the purposes set forth.

2. In a bag-shoe, the combination, with a bag-frame, of an end tip secured to the lower end of the said bag-frame at the joint thereof, and so formed as to leave a space between said tip and the bag-frame, and provided with a bar extending across said space, and a base-plate secured to the bottom of said bag-frame near the joint, and provided with a hooked portion extending up into and working within the space between the tip and the bag-frame when the bag is opened and closed and engaging with the bar therein, for the purposes set forth.

3. In a bag-shoe, the combination of a bag-frame, an end tip secured to the outside of said bag-frame at the joint and so formed as to leave a space between the same and the said bag-frame, a rivet uniting said bag-frame sections together at the joint and extending across the space between the tip and said bag-frame, a base-plate secured to the bottom of the bag at the joint, and provided with a hooked portion extending up into and working within the space between the tip and the bag-frame when the bag is opened and closed and engaging with the rivet or bar therein, for the purposes set forth.

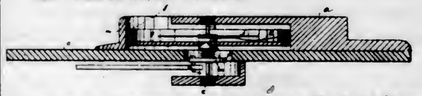
4. In a bag-shoe, the combination of a bag-frame, end tips secured to the outside of said frame at the joints and so formed as to leave a space between the same and the said bag-frame, a bar extending longitudinally through the bottom of the bag and the ends of the frame-sections at the joints, thus forming the rivets on which said frame-sections turn, and also extending across the spaces between the end tips and the sides of the bag-frame sections at the joint, base-plates secured to the bottom of the bag near the joints, and provided with hooked portions extending up into and working within the spaces between the tips and the bag-frame when the bag is opened and closed and engaging with the bar therein, for the purposes set forth.

5. A bag-shoe consisting of an end tip-plate adapted to be secured to the bottom of the side of a bag-frame at the joint, and an independent base-plate adapted to be secured to the bottom of a bag at said joint, said tip and base plates being provided with engaging portions and thereby held in separable and movable engagement one with the other, for the purposes set forth.

6. In combination, a bag, B, a tip, *c*, secured to said bag at the joint and so formed as to leave a space between the same and the bag-frame at the joint, a bar extending across the space thus made, a base-plate, *d*, provided with a hooked end, *d''*, extending up into the space between the tip and the bag-frame and engaging with the bar therein, a washer-plate, *d³*, arranged in the bottom of the bag, and rivets uniting the base-plate with the washer and extending through the bottom of the bag, for the purpose set forth.

7. A bag-shoe having an end tip-plate provided with a pin or bar thereon, said plate being adapted to be secured to a bag-frame at the joint, and a base-plate adapted to be secured to the bottom of a bag at the joint, and provided with a bent-up end having a curved slot therein which engages with the pin on the tip-plate, for the purposes set forth.

380,769. WATCH-BALANCE. PETER W. ROHDE, New York, N. Y., assignor of one-half to Meiners & Schuette, same place. Filed Nov. 16, 1887. Serial No. 255,297. (No model.)



Claim.—1. The combination of a balance-staff with a balance-wheel, and with a yielding centering-sleeve loosely surrounding the staff, and with an arm connecting the staff with the wheel, substantially as specified.

2. The combination of balance-wheel having a perforated arm, with balance-staff passing loosely through said perforation, and with a yielding centering device, and with a radial arm connecting the balance-wheel with the balance-staff, substantially as specified.

3. The combination of balance-wheel having a perforated arm, with balance-staff passing loosely through said arm, and with a yielding centering device, and with a radial arm connected at one end to the staff and entering with the other end an enlarged opening in the balance-wheel, substantially as specified.

4. The combination of balance-wheel having a perforated arm, with balance-staff passing loosely through said arm, and with a conical centering device, and with a radial arm connecting the balance-wheel with the staff, substantially as specified.

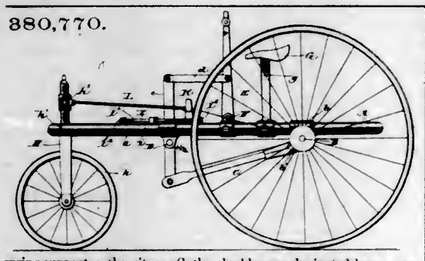
5. The combination of a balance-wheel with a balance-staff, and with a yielding centering device, and with a flange around the balance-wheel, substantially as specified.

6. The combination of balance-wheel having perforated arm, with balance-staff passing loosely through said arm, and with a centering device, and with a connecting-arm, and with a flange around the balance-wheel, substantially as specified.

380,770. TRICYCLE. HENRY W. SCHIERMEYER, Daykin, Nebr. Filed Dec. 9, 1887. Serial No. 257,380. (No model.)

Claim.—The herein-described tricycle, comprising the triangular frame A, composed of the side bars, *a*, and rear bar, *a'*, the crank-axle B, having the drive-wheel fixed upon it, the seat secured to the

380,770.



spring-support *g*, the pitman C, the double-armed pivoted lever *c*, secured to the rock-shaft D, the link-rods *d*, the actuating-lever E, secured to the rock-shaft F, the steering-wheel *h*, the steering-wheel standard H, the transverse bar h^3, secured to the said standard near its upper end, the turn-table attached to the main frame, the transverse foot-bar attached to the turn-table, and the guide wires or cords L, connecting the corresponding arms of the bars K and h^3, all constructed and arranged substantially as and for the purpose specified.

380,771. POTATO-DIGGER. ABRAM B. SHANTS, Sliters, N. Y. Filed Oct. 24, 1887. Serial No. 253,275. (No model.)



Claim.—1. In a potato-digger, the combination of the plow A, with the guide-wheel C, revolving on the axle *c*, attached to the handles of the plow, and with the sifting-wheel D, revolving on the arm *d*, all substantially as described, and for the purposes set forth.

2. In a potato-digger, the plow A, having attached to the nose of the share A' the strap *a'*, with the drag *b*, attached to the share A' at the end farthest from the nose, with the guide-wheel C, revolving on the axle *c*, and with the sifting-wheel D, revolving on the arm *d*, all substantially as described, and for the purpose set forth.

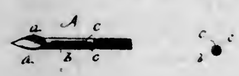
380,772. SWINGING GATE. HENRY SIPE, Cleburne, Tex. Filed Jan. 12, 1888. Serial No. 260,540. (No model.)



Claim.—1. In a swinging gate, the combination, with the main posts A and A', of the slotted batteu C, the hinge-bolt *b*, and bell-crank lever E, (said bell-crank lever having a slot, *e*, in its lower end which traverses a pin in the slot F of the batten C,) a spring, H, and gravity-catch I, all operated as described, and for the purposes set forth.

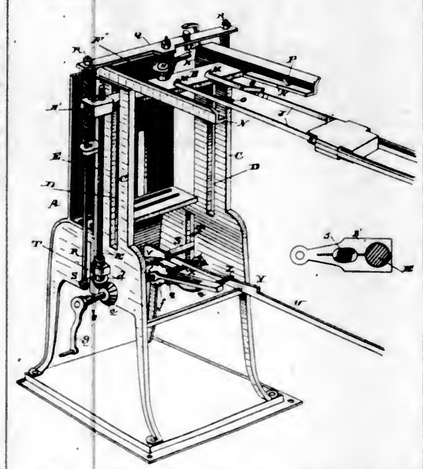
2. The combination, with the main posts A and A', the former having the shallow recess *j* therein, of hinges *a a' b b'*, slotted batten C, bell-crank lever E, connected with the upper hinge-bolt, *b*, and with a pin in the slot F in the batten C, spring H, gravity-catch I, gate, and roller, all arranged and operated substantially as set forth.

380,773. COMBINED NEEDLE AND CORD. FRANKLIN A. SMITH, Jr., Providence, R. I. Filed May 20, 1885. Serial No. 233,821. (No model.)



Claim.—In combination with a cord or ligature, a one-piece sheet-metal needle consisting of a cylindrical tube the edges of one end of which are brought together and inturned and embedded into said cord to securely attach the needle thereto, the opposite end of said needle being angled and broader at a point immediately behind the said end than the diameter of the remainder of said needle and the cord or ligature, and sharpened to form a penetrating end, substantially as herein set forth.

380,774. FEEDER FOR CAN-BODY-MAKING MACHINES. JOS. STEVENS, San Francisco, Cal. Filed Nov. 10, 1887. Serial No. 254,761. (No model.)



Claim.—1. The horizontally-reciprocating carrier-arms and the vertically-moving vacuum lifting device having a valve, by which device metal sheets are raised so as to allow the carrier to pass beneath the sheet, in combination with a mechanism for opening the valve, so as to destroy the vacuum and allow the sheet to fall upon the carrier-arms, substantially as herein described.

2. The horizontally-reciprocating carrier-arms having the lugs or catches by which the sheets are advanced at the reciprocation of the arms, in combination with the supporting-ledges N and the gravity pawls or catches P, by which the sheets are held after each advance while the carrier returns, substantially as herein described.

3. The elastic block having the concave chamber in its lower face, an opening from said chamber for the escape of air when the chamber is reduced in size, and a valve controlling said opening so as to maintain the vacuum after the same is formed, substantially as herein described.

4. The movable vacuum lifting device consisting of an elastic block having a concave chamber in its lower face, an air-passage leading from said chamber and controlled by a valve, H, in combination with a lever by which said valve is operated, and a mechanism whereby the lever is moved to open the valve when it is desired to destroy vacuum, substantially as herein described.

5. The vertically-moving vacuum lifting device, the horizontal bar situated above the machine, to which said device is attached, the vertical spring-actuated side rods, R, and the transverse bar S, moving in guides T, in combination with the incline or cam V, by which the bar is depressed so as to draw the vacuum-forming cup downward, substantially as herein described.

6. The table B, by which the sheets of metal are supported, the vertically-moving vacuum lifting-cup F, and the horizontally-reciprocating carriers J, in combination with the screw-rods E, beveled gears, shaft *b*, and pawl-and-ratchet mechanism, by which the screws are turned so as to elevate the table the thickness of a sheet after each removal of one therefrom, substantially as herein described.

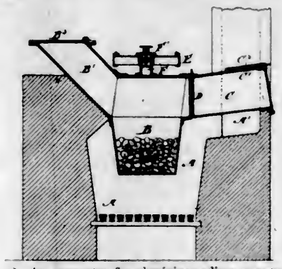
7. The table for supporting the blanks, vertical screw-rods by which the table is raised, the beveled gears, the horizontal shaft having the ratchet-wheel fixed upon it, and the pawl-carrying lever by which said ratchet is rotated, in combination with the horizontally-reciprocating bar U, having the incline Y, which engages a pin from the pawl-carrying lever, so as to actuate the same, substantially as herein described.

380,775. PROCESS OF OBTAINING SODIUM, &c. ORLANDO M. THOWLESS, Newark, N. J. Filed Nov. 5, 1887. Serial No. 254,423. (No specimens.)

Claim.—1. The process of obtaining sodium or potassium which consists in heating a carbonaceous or other suitable reducing material, gradually supplying caustic soda or caustic potash or other suitable compound of sodium or potassium thereto, and then condensing the vapor evolved, substantially as described.

2. The process of obtaining sodium or potassium which consists in heating a carbonaceous or other suitable reducing material, gradually supplying heated caustic soda or caustic potash or other suitable compound of sodium or potassium thereto, and then condensing the vapor evolved, substantially as described.

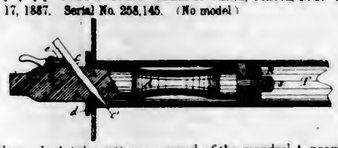
380,776. APPARATUS FOR OBTAINING SODIUM, &c. ORLANDO M. THOWLESS, Newark, N. J. Filed Nov. 5, 1887. Serial No. 254,424. (No model.)



Claim.—1. An apparatus for obtaining sodium or potassium, consisting of a retort located in a furnace, and having a supply-chute, a side chamber exposed to the heat of the furnace and connecting with the retort in the furnace, and having a regulating-door adapted to adjustably close the connection, and a condenser, substantially as described.

2. In an apparatus for obtaining sodium or potassium, the combination, with furnace A, having flue A', of retort B, having chute B' with cover B^3, chamber C, having door D, and a condenser, E, connected with retort B by pipe F, having stop-valve F', substantially as described.

380,777. TUBE-CUTTER. JAMES R. VANCE, Geneva, N. Y. Filed Dec. 17, 1887. Serial No. 258,145. (No model.)



Claim.—1. A tube-cutter composed of the mandrel A, provided with a diagonal channel, *a*, and a cutter, *c*, sustained adjustably longitudinally in said channel to cut the tube inside of the boiler, substantially as shown.

2. A tube-cutter consisting of a mandrel adapted to enter into the tube to be cut, a collar on the mandrel abutting against the end of the tube, a channel extending diagonally through the mandrel from the outer side of the said collar to the inner side thereof, and a cutter sustained adjustably longitudinally in said channel, substantially as described and shown.

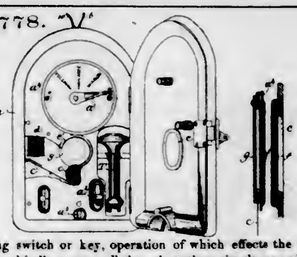
3. In combination with the mandrel A, having the channel *a* extending diagonally through it, the cutter *c*, extending longitudinally through said channel, and a clamp on the mandrel engaging the shank of the cutter and holding the same in its position, as set forth.

4. The combination of the mandrel A, provided with the oblique channel *a*, the cutter *c*, extending through said channel and having its shank serrated, and the eccentric *e*, pivoted to the mandrel and having a serrated face engaging the said shank of the cutter, substantially as described and shown.

380,778. MUNICIPAL TELEGRAPH APPARATUS. JOHN C. WILSON, Boston, Mass., assignor to the Municipal Signal Company, Portsmouth, N. H. Filed June 29, 1886. Serial No. 206,571. (No model.)

Claim.—1. In a police-signal system, the combination, substantially as described, of several sub-stations, each containing a signal-transmitting apparatus, means for operating it, a visual indicator, and an actuating electro-magnet therefor, with a main station and an electric circuit which includes the several sub-stations and the main station, said main station containing a signal-receiving instrument and a

380,778. V



controlling switch or key, operation of which effects the movement of the visual indicators at all the sub-stations simultaneously.

2. The main office and signal-box, having a sight-opening and a single electric wire connecting them, and transmitting apparatus in the said signal-box and corresponding receiving apparatus at the main office, combined with a visual indicating-signal in the box adapted to move into and out from view at the sight-opening to be observed by a passing officer, and actuating electro-magnet therefor included in the single wire connecting the box and main office, and independent means located at the main office, which may be operated at will to move the visual indicating-signal into and out from view at the sight-opening in the box, substantially as described.

3. In a police-signal system, the combination, substantially as described, of several sub-stations, each containing a signal-transmitting apparatus, means for operating it, a visual indicator and an actuating electro-magnet therefor, and a polarized receiving-instrument, S, shunt 12, and circuit-closer *m*, with a main station and an electric circuit which includes the several sub-stations and the main station, said main station containing a signal-receiving instrument and a controlling switch or key, operation of which effects the movement of the visual indicators at all the sub-stations simultaneously, and a pole-changing key for operating the polarized receiving-instruments.

4. A signal-box and signal-transmitting devices therein, and a main office and signal-receiving instruments thereto, and a circuit connecting the said box and office, the signal-box being provided with a sight-opening, and a luminous surface behind said opening, combined with a visual indicating-signal in the box and means to operate the same from the main office, the said indicating-signal having a target movable into and out from view through the sight-opening at the front of the luminous surface, substantially as described.

5. A main office and signal-box, and circuit connecting them, and signal transmitting and receiving instruments in the said box and main office, the said receiving-instruments including a relay in the main circuit, combined with an indicating-signal in the box, and actuating electro-magnet therefor operated by changes in current strength without opening the circuit, and a circuit-controlling device at the main office, by means of which the strength of the current is changed, and a shunt around the receiving-relay controlled by the said circuit-controlling device, whereby the current in the relay is maintained constant during the changes in the strength of the current in the main line, substantially as described.

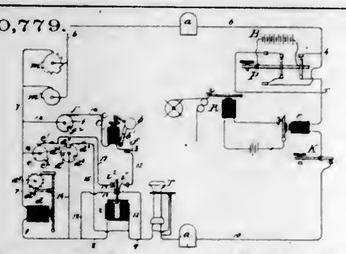
6. A municipal telegraph apparatus comprising the following elements: a signal-box containing signal-transmitting apparatus and a polarized signal-instrument, and an indicating-signal instrument having a neutral actuating-magnet, and a main office and circuit connecting the same with the signal-box and a receiving-relay at the main office, and a pole-changer which reverses the current without opening the circuit, and a circuit-controlling device by which the current strength is changed to operate the indicating-signal at the box, substantially as described.

7. In a municipal telegraph apparatus, a signal-box and the following instrumentalities therein, viz: signal-transmitting devices, and indicating-signal and actuating electro-magnet therefor, and a shunt of low resistance around said magnet, and a telephone and shunt of low resistance around the same, and a movable telephone-support controlling the said shunts, closing that of the telephone when the latter is on the support and closing that of the indicating-signal magnet when the telephone is off the support, substantially as described.

380,779. MUNICIPAL TELEGRAPH. JOHN C. WILSON, Boston, Mass., assignor to the Municipal Signal Company, Portsmouth, N. H. Filed July 28, 1886. Serial No. 209,304. (No model.)

Claim.—1. A series of stations and circuit connecting the same, and indicating-instruments at said stations included in normally-open branches of said circuit, combined with a normally-shunted electro-magnetic circuit-controlling device or switch governing the branch circuit of said indicating-instrument, and a step-by-step device controlling the shunt for said switch, whereby the said shunt is opened

380,779.



and the switch rendered operative at a definite position only of the step-by-step device, substantially as described.

2. The combination of a step-by-step device and actuating-magnet therefor, with a shunt for said actuating-magnet, and a circuit-closer therein governed by said step-by-step device and arranged to close the said shunt at a definite position of said step-by-step device, and an electro-magnetic circuit-controlling device or switch, also controlling the said shunt for the actuating-magnet of the step-by-step device, whereby said shunt may be opened and the step-by-step device again operated, substantially as described.

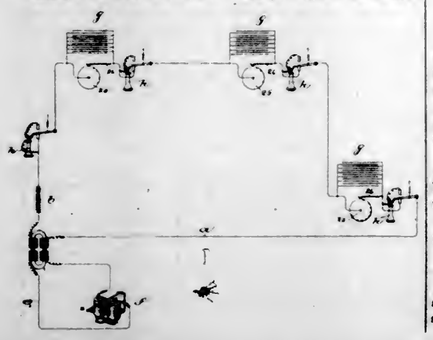
3. The combination of the step-by-step device and actuating-magnet therefor, with a shunt for the said actuating-magnet, and circuit-closer therein governed by the step-by-step device, arranged to close the said shunt when the step-by-step device arrives at the unison point, and an electro-magnetic circuit-controlling device or switch, also controlling the said shunt for the actuating-magnet of the step-by-step device, and a shunt for the magnet of said circuit-controlling device controlled by the step-by-step device, substantially as and for the purpose set forth.

4. In a police-signal system, the combination, substantially as described, of a main station and several sub-stations and circuit connecting them, and visual indicating-instruments at the sub-stations, an electro-magnetic device responsive to the impulses different from that employed in the transmission of the signals for operating the visual indicating-instruments, and another electro-magnetic device controlled by the operator at the main office for including and thereby rendering operative the electro-magnetic device controlling the operation of the visual indicating-instruments, substantially as described.

5. In a police-signal system, the combination, substantially as described, of several sub-stations and a main station and circuit connecting them, said main station containing a signal-receiving instrument, a pole-changing key, and a signal-transmitting key, and the sub-stations containing the signal-transmitting device, a visual indicating-instrument responsive to the movement of the pole-changing key of the main station, and an electro-magnetic device responsive to the transmitting-key of the main station for rendering operative by means of said pole-changing key the variable indicating device of the several substations independently, substantially as described.

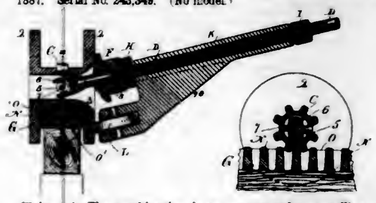
6. In a municipal telegraph system, the combination of the actuating-magnet, the shunt therefor, and means controlled by the armature of said actuating-magnet for closing said shunt at unison point, thereby cutting itself out, with an electro-magnetic device responsive to the impulses different from that employed to effect the actuating-magnet for opening said shunt of the actuating-magnet that it may be again actuated, substantially as described.

380,780. TELEPHONE AND SIGNALING CIRCUIT. JOHN C. WILSON, Boston, Mass., assignor to the Municipal Signal Company, Portsmouth, N. H. Filed June 18, 1887. Serial No. 241,738. (No model.)



Claim.—In an electric circuit, one or more automatic signal-transmitters and an induction-coil, one of the coils of which is included in the said circuit and the other in a secondary circuit, and a receiving-instrument in the said secondary circuit, combined with a condenser placed in a shunt-circuit around each signal-transmitter, and with telephones which operate in the circuit either through the signal-transmitters or through the condenser, as and for the purpose set forth.

380,781. PROPELLING CANAL-BOATS. HALSEY H. BAKER, Plainfield, N. J., assignor to Edward A. Deveau, same place. Filed July 5, 1887. Serial No. 243,349. (No model.)



Claim.—1. The combination, in an apparatus for propelling canal-boats, of a stationary rail and rack, and the supports therefor directly below such rail, a pinion, and flanges at the ends of the pinion and forming guides that extend down at each side of and below the bottom of the rail to hold the pinion in position, and a shaft and universal joint within the pinion, substantially as set forth.

2. The combination, in an apparatus for propelling canal-boats, of a shaft to be propelled by power on the boat, a stationary rail and rack at the side of the canal, a pinion running upon the rack, and flanges at the ends of the pinion extending down the sides of and below the bottom of the rail to guide the pinion, a jaw at the end of the shaft, and a joint-block and transverse pin passing through the hollow pinion and forming a universal joint within the pinion, substantially as set forth.

3. The combination, in an apparatus for propelling canal-boats, of a shaft to be driven by power upon the boat, a stationary rail and rack upon the bank of the canal, a pinion with guide-flanges running on the rail and rack, an adjustable conical collar upon the shaft adjacent to the end of the pinion, and a universal joint connecting the shaft and the pinion, substantially as set forth.

4. The combination, in an apparatus for propelling canal-boats, of a shaft to be driven by power, a stationary rail and rack upon the bank of the canal, a pinion with guide-flanges at the sides of the rail, a universal joint connecting the shaft and pinion, a sleeve around the shaft, and a pendent flange with an inclined lower edge for guiding the pinion to place upon the track, substantially as set forth.

5. The combination, in an apparatus for propelling canal-boats, of a shaft to be driven by power, a stationary rail and rack upon the bank of the canal, a pinion running upon the rack with guide-flanges at the sides of the rail, a universal joint connecting the shaft and pinion, a sleeve around the shaft, and a pendent flange with an inclined lower edge for guiding the pinion to place upon the track, a jaw in the flange, and a conical wheel running against the inner flange of the pinion, substantially as set forth.

380,782. SCREW-STOPPER FOR BOTTLES. HENRY BARRETT and JOHN J. VARLEY, London, England. Filed Dec. 21, 1887. Serial No. 258,597. (No model.)



Claim.—1. A screw-stopper having within intersecting passages made through its body a stationary valve of elastic material and of larger diameter than its valve-seat, and serving by its own resilience to close at the same time both said passages.

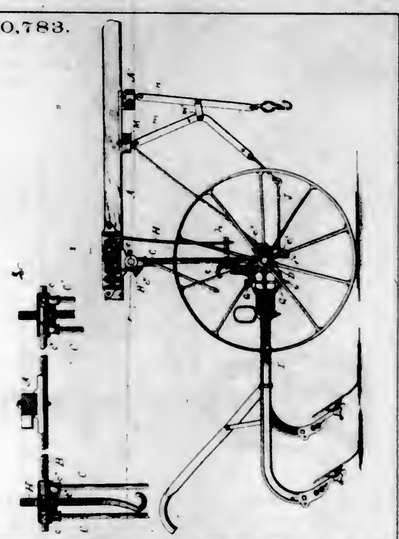
2. A screw-stopper for bottles having therein an axial and a transverse bore communicating with each other, and an elastic valve serving by its own elasticity to close such communication.

3. A screw-stopper with a vertical passage, *c*, having a gradual downward taper, a transverse passage intersecting the same near its bottom, and a tight-fitting elastic valve lodged in the space where these passages intersect.

380,783. CULTIVATOR. THOMAS W. BEAL, Sandwich, Ill., assignor to the Sandwich Enterprise Company, same place. Filed Mar. 22, 1887. Serial No. 231,933. (No model.)

Claim.—1. The combination of a rigid cross-bar and supports adjustably secured thereto having bearings in their lower ends, and springs secured to said supports with short axles loosely mounted in

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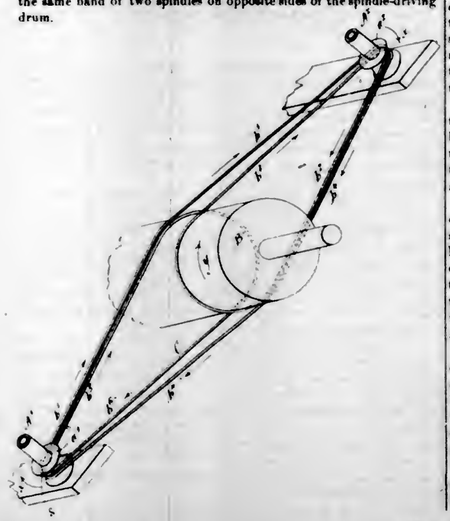
said bearings, means for securing the cultivator-beams to said axle, arms extending upward from said axles and rigidly connected therewith, and connecting devices between said arms and springs, substantially as and for the purpose specified.

2. In a cultivator, short axles loosely mounted in suitable bearings having rearward-projecting coupling-jaws rigidly secured to said axles, combined with means for attaching the draft directly to said axles, or some part rigidly connected therewith, substantially as and for the purpose set forth.

3. The combination of the tongue, a cross-bar rigidly secured thereto having pivoted to each end a depending arm with an evener pivoted to said tongue, an arm loosely depending from each end thereof, and links which connect the depending arms on each side of the tongue together near their middle points, substantially as and for the purpose specified.

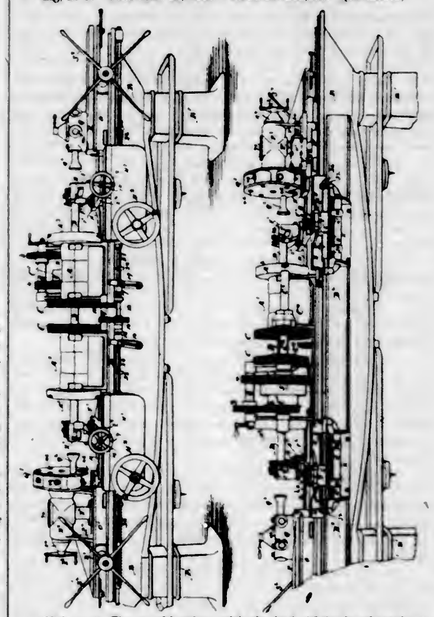
380,784. SPINDLE-DRIVING DEVICE FOR SPINNING-MACHINES, &c. LEBEDIAH BIDDLE, Philadelphia, Pa. Filed Feb. 25, 1887. Serial No. 228,868. (No model.)

Brief.—The invention has for its object the driving by one and the same band of two spindles on opposite sides of the spindle-driving drum.



Claim.—The combination, with the driving drum or cylinder and the two spindles with their whirls on opposite sides, respectively, of said drum, of the band passing from the whirl of one of said spindles across and over the drum, but not around it, to and around in front of the whirl of the opposite spindle, from thence around the drum back to the whirl of the last-named spindle, then across and under the drum, but not around it, to the whirl of the first-named spindle, and from thence around this last-named whirl in front, then back and around the drum to the point on said last-named whirl from which the band started, as set forth.

380,785. LATHE FOR TURNING AXLES. JOHN L. BOGERT, Flushing, N. Y. Filed Mar. 28, 1887. Serial No. 232,806. (No model.)



Claim.—1. The combination, with the bed, of the head-stocks A A', one of which is adjustable lengthwise of the bed, the tubular spindles in the respective head-stocks through which the article to be turned is passed, and the clamping-chuck at the outer end of each spindle, the back shaft, cone-pulleys, and gearings, substantially as specified, whereby the axle or other article to be turned is grasped by the chucks adjacent to the place where the work is to be done and the parts can be adjusted and revolved, substantially as specified.

2. The combination, with the head-stocks A A' and the bed B, of the tubular spindles A^2 and chucks A^3, through which the article to be turned is passed, the driving-shaft C^3 and cone-pulleys mounted upon one of the head-stocks, and the gears C^4 upon the shaft C^3 and the driving-gears C upon the respective tubular spindles, substantially as set forth.

3. The combination, in a lathe for turning axles or other articles, of two head-stocks, one of which is adjustable, the bed upon which said head-stocks are supported, the tubular spindles and chucks for holding the work, the gearing for revolving the spindle, cross-slides, carriages, tools, and tool-holding posts for turning the end portions of the axle and turret-heads for holding the tools employed in finishing the end portions of the axle, and the beds and slides and mechanism for supporting and moving the respective turret-heads, substantially as specified.

4. The combination, in a lathe for turning axles and other articles, of a cross-slide, two tool posts or holders supported by the same, a carriage upon which the slide rests, means for moving the carriage longitudinally of the lathe, a taper-bar and a traveler upon the same connected to the cross-slide, and means for adjusting the taper-bar, substantially as set forth, whereby either tool can be brought into action in turning the taper, substantially as set forth.

5. The combination, with a tool-holder and a cross-slide for the same, of a carriage upon which the cross-slide rests, an adjustable stop-screw and the screw for adjusting the tool-holder upon the

cross-slide, means for moving the carriage longitudinally of the lathe, a taper-bar and a traveler upon the same, a bracket for sustaining the taper-bar, and mechanism, substantially as specified, for adjusting and holding the taper-bar, substantially as specified.

6. The combination, with the slide and the tool-holder, of a taper-bar, a traveler upon the taper-bar connected to the slide, two sector-levers gearing together, pivotal connections from the same to the taper-bar, one of which connections is nearer to the pivot of the sector than the other connections, and a bed or bracket for supporting the parts whereby the taper-bar can be moved laterally to vary the position of the same in relation to the axis of the lathe, and clamping-bolts for holding the taper-bar, substantially as set forth.

7. The combination, with the taper-bar, the sector-levers, and the bracket or bed for supporting the same, of the clamping-bolts 25 and 26, and the adjusting-screws 32, for determining the lateral movement of the taper-bar, substantially as set forth.

8. The combination, in a lathe for turning axles or similar articles, of two head-stocks, their tubular spindles and chucks, two cross-slides and the tools, holders upon the same, and the taper-bars, and mechanism for supporting such taper-bars and allowing them to be moved laterally in shifting one set of tools out of action and the other tools into action in turning the taper, substantially as set forth.

9. The combination, with the head-stocks and tubular spindles and chucks for holding and revolving an axle or similar article, of turret-heads for holding the tools made use of in finishing the ends of the axle, slides for supporting the turret-heads, and mechanism, substantially as specified, for revolving the turret-heads progressively and bringing the successive tools into action, substantially as set forth.

10. The combination of a vertically-revolving turret-head having holes for the reception of the tools and an opening to allow for the insertion or removal of the axle or other article being operated upon with a horizontal spindle, turret-slide, and mechanism, substantially as specified, for revolving the turret-head progressively and for holding the same in position, substantially as set forth.

11. The hanging lever V, pivoted at its upper end to the bolt U for locking the turret-head, said lever V having a cam-shaped projection that comes in contact with the turret-stock at the end of the mortise within which said cam-lever V hangs, so that the bolt is withdrawn by the joint action of the cam and the finger V', and said lever V swings by gravity, so as not to require a spring, substantially as specified.

12. The combination, in a lathe for turning axles or other articles, of two head-stocks, one of which is adjustable, a bed upon which said head-stocks are supported, tubular spindles and chucks for holding the work, gearing for revolving the spindles, slides, and holders for the tools for turning the end portions of the axles, substantially as specified.

13. The combination, in a lathe for turning axles or other articles, of two head-stocks, one of which is adjustable, a bed upon which said head-stocks are supported, tubular spindles and chucks for holding the work, gearing for revolving the spindles, carriages traveling along said bed, and tool-holders for the tools for turning the end portions of the axle, substantially as specified.

14. The combination, with the revolving chucking device, of the vertically-revolving turret-head having holes for the reception of the tools and an opening to allow for the insertion or removal of the article to be operated upon, a horizontal spindle, turret-stock, mechanism for sliding the same, and mechanism, substantially as specified, for securing the vertically-revolving turret-head in the proper position, substantially as set forth.

15. The combination, in a lathe for turning taper articles, of a tool-holder, means for moving the tool-holder and tool, and a taper-bar slotted at the ends, and clamping and adjusting screws, and a traveler upon the taper-bar to give the lateral motion to the tool as the tool and holder are moved longitudinally of the lathe, substantially as set forth.

16. The combination, in a lathe, of mechanism for revolving the article to be operated upon, and a vertically-revolving turret-head for containing the successively-operating tools and having an opening to allow for the insertion or withdrawal of the article operated upon, substantially as specified.

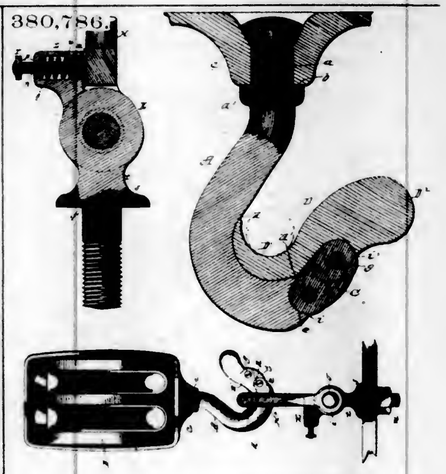
17. The combination, with the tool-holder, of a cross-slide for the same and a carriage upon which the cross-slide rests, said carriage having open jaws at the back end, and the bolt H^3, to tie the ends of the carriage together, substantially as set forth.

380,786. **RELEASING DEVICE FOR BOATS, &c.** JAMES L. CATHCART, Alexandria, Va. Filed May 26, 1887. Serial No. 239,459. (No model.)

Claim.—1. A hook having its outer end pivotally connected to the main body of the hook by a link-bar.

2. The combination, with the bent hook-body, of a shouldered link-bar adapted to support in swinging adjustment the hinged outer end of the hook, substantially as set forth.

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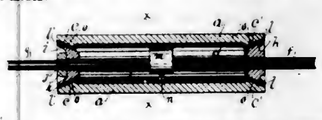


3. The combination, with a block provided with sheaves, of a hook-body, a link-bar, and a hook end, the body, link-bar, and hook end being hinged together, substantially as set forth.

4. The combination, with shackle consisting, essentially, of a loop and a stop for limiting the movement of the loop in one direction, of a hook consisting, essentially, of a body and an end, the latter being pivotally connected to the body of the hook, substantially as set forth.

5. The combination, with a sheave-block and a hook swiveled thereto, said hook having a hinged hook end and a link connecting this end to the body of the hook, of a shackle consisting, essentially, of a hinged loop and a spring-actuated slide-bolt adapted to impinge against the hinged loop of the shackle when the latter is supporting a load, substantially as set forth.

380,787. **CYLINDER FOR COTTON-SEED-HULLING MACHINES.** ABEL D. CATLIN, Bay City, Mich. Filed Apr. 15, 1887. Serial No. 234,929. (No model.)

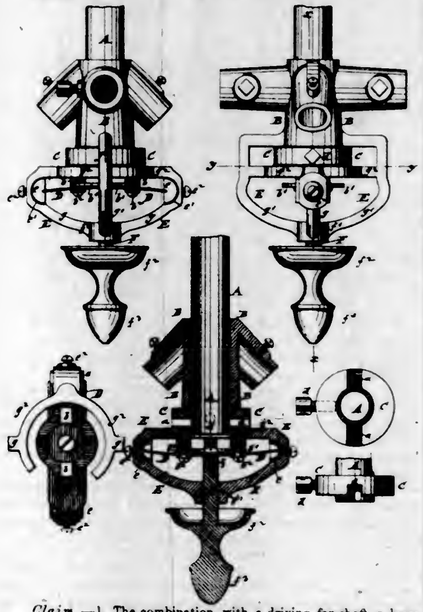


Claim.—1. In a cotton-seed-hulling cylinder, the combination, with the hollow cylindrical shell of hardened or chilled metal and provided with inwardly-beveled end openings, the heads provided with central shaft-openings and with beveled peripheries and passed into the openings in the opposite ends of the cylinder-shell, of the bushing *o*, of soft metal, between the shell and the peripheries of the heads, and means of securing the heads in position, substantially as and for the purpose set forth.

2. In a cotton-seed-hulling cylinder, the combination, with the cylindrical shell *a*, provided with the chamber *d*, having the inwardly-beveled end portions, *c* and *c'*, the shaft *e*, provided with a screw-thread, of the head *h*, secured to the shaft and provided with a beveled periphery and passed into the one end of the chamber, the removable head *i*, provided with a beveled periphery and passed into the opposite end of the chamber, the metal bushing *o* between the heads and cylinder-shell, and the nut *k*, engaging with the screw-thread, substantially as and for the purpose set forth.

3. In a cotton-seed-hulling cylinder, the combination, with a hollow cylindrical shell of hardened or chilled metal, and provided with inwardly-beveled end openings, as described, the cylinder-heads provided with central shaft-openings and beveled peripheries and passed into the said end openings of the cylinder, and the soft-metal bushing between the heads and cylinder, of a shaft passed through the heads and cylinder-shell and rigidly secured to one of the heads and having a screw-thread extending beyond the opposite head, and a nut upon the shaft and engaging with the said screw-thread, substantially as and for the purpose set forth.

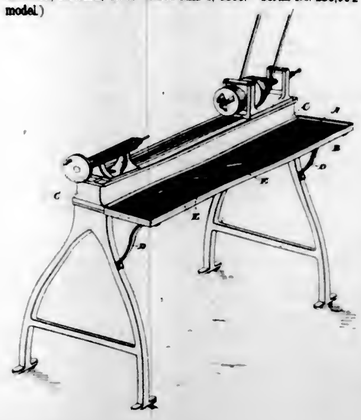
380,788. **ROTARY FAN.** ROBERT B. CRISSEL, Elizabeth, assignor, by direct and mesne assignments, to the Backus Water Motor Company, Newark, N. J. Filed Dec. 23, 1887. Serial No. 259,225. (No model.)



Claim.—1. The combination, with a driving fan-shaft, a loose fan-hub on the same, a clutch-frame made integral with the fan-hub, a recessed collar applied to the driving-shaft below the fan-hub, a transverse spring-plate supported by the clutch-frame, lugs attached to the spring-plate and engaging the recesses of the collar, and a spindle swiveled to the spring-plate and guided in bearings of the clutch-frame, substantially as set forth.

2. The combination, with a fixed collar at the lower end of the driving-shaft, said collar having recesses at the under side, a clutch-frame, a fan-hub located above the collar and made integral with said fan-hub, a transverse spring-plate, adjustable sockets guided in recesses of the clutch-frame, lugs attached to the spring-plate and engaging the recesses of the collar, and a spindle swiveled to the spring-plate and guided in bearings of the clutch-frame, substantially as set forth.

380,789. **SHELF OF WIRE-NETTING FOR LATHES.** HENRY T. CLAWSON, Newark, N. J. Filed Jan. 6, 1888. Serial No. 259,964. (No model.)



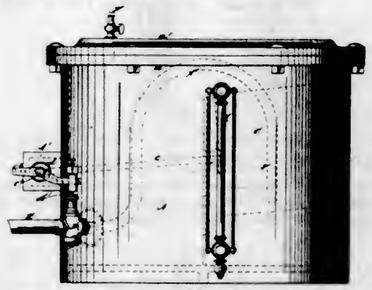
Claim.—The improved tool-holding attachment composed of the screen shelf arranged adjacent to the working parts of the machine conveniently for the workman to lay his tools thereon when not in use, substantially as described.

380,790. **PROCESS OF MANUFACTURING CASTER-ROLLERS.** ROBERT B. CODLING, Bristol, Conn. Filed Aug. 29, 1887. Serial No. 248,125. (No model.)



Claim.—That improvement in the art of manufacturing caster-rollers and analogous articles which consists of, first, forming the castings with an irregular-shaped driving-face; second, centering and holding said castings with a driving device adapted to engage said driving-face and positively revolve the casting, and turning its periphery while it is thus driven, and, third, gripping the casting in stationary jaws, which grasp said turned periphery, and finishing the sides while it is thus held, substantially as described, and for the purpose specified.

380,791. **STEAM-TRAP.** GEORGE DIXON, Jersey City, N. J. Filed Nov. 15, 1887. Serial No. 255,269. (No model.)



Claim.—1. The combination and arrangement, substantially as herein set forth, with a closed chamber for the collection of the liquid of condensation, of a discharge-valve, and an open bucket-float which operates the said valve, substantially as described, and a siphon connected with the said discharge-valve and arranged to discharge the liquid of condensation from the said bucket-float, substantially in the manner and for the purpose described.

2. The combination and arrangement, substantially as herein shown and described, with a closed chamber for the collection of the liquid of condensation, of an exterior valve interposed in the discharge-passage and connected with and operated by an open float-bucket situated in the said inclosed chamber, and a siphon situated within the said chamber and communicating at opposite extremities with the bucket-valve and the said exterior discharge-valve, substantially in the manner and for the purpose described.

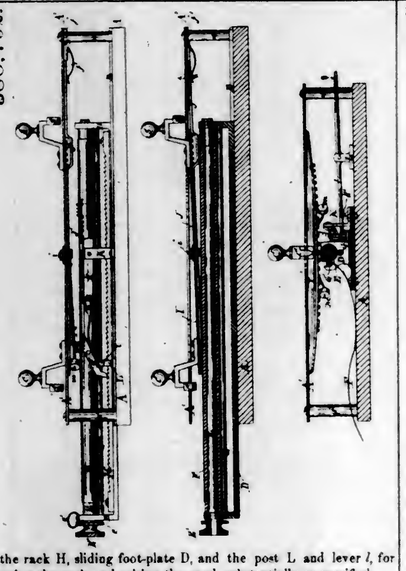
3. The combination, substantially as herein shown and described, of the closed chamber A, bucket-float C, lever *c*, rock-shaft *c'*, actuating-arm *c²*, discharge-valve D, and siphon S, the whole arranged and operating substantially in the manner and for the purpose described.

380,792. **TYPE-WRITING MACHINE.** ADOLPHE P. EGGIS, Fribourg, Switzerland. Filed June 1, 1886. Serial No. 203,880. (No model.) Patented in England May 24, 1886, No. 6,935; in France Aug. 5, 1886, No. 177,787; in Germany Aug. 13, 1886, No. 39,044, and in Austria-Hungary Nov. 7, 1886, No. 47,566 and No. 11,812.

Claim.—1. The plate A', having a central opening therein, letters, figures, and marks arranged in an arc around one side of said opening, and perforations in said plate opposite each of them, in combination with a pivoted frame, J, hinged to said plate upon one edge, a disk, I, pivotally supported upon said frame and having type upon its under surface in opposite sets near the periphery, inking-rollers upon arms secured to the frame J, arms and knobs C S, pointers C' S', and a cylinder for the paper, and mechanism, substantially as specified, for operating the same, substantially as set forth.

2. The plates A and A' and connecting-posts, forming the frame of the machine, the plate A' having a circular opening therein, in combination with the revolving type-disk I, the pivoted frame J, carrying said type-disk, the stud N upon the frame J, the post or support K upon the plate A, the lever *k* and pawl *k'*, connected to said support

380,792.



K, the rack H, sliding foot-plate D, and the post L and lever *l*, for releasing the rack and raising the pawl, substantially as specified.

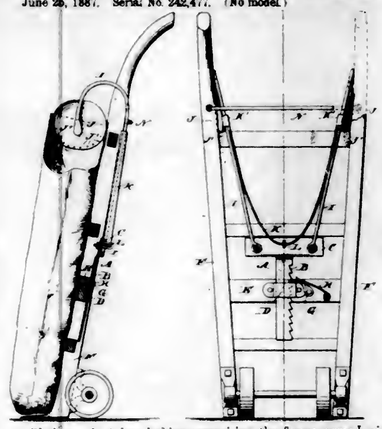
380,793. FORK-GUARD. FREDRICK C. FRICKER, Northampton, Mass., assignor to the Northampton Cutlery Company, same place. Filed Dec. 29, 1887. Serial No. 259,290. (No model.)



Claim.—1. The combination, with the fork-shank having the cheek-pieces *a* and the fork-guard provided with an aperture, of a headed spindle pivotally hung in said cheek-pieces, the flanged cup *k*, and the spiral spring between said cup-flange and the spindle-head, substantially as and for the purpose described.

2. The combination, with the fork-shank having the cam-shaped cheek-pieces *a a* and the fork-guard provided with a polygonal aperture, *d*, of a headed spindle, *f*, of polygonal cross-section, pivotally hung in said cheek-pieces, the flanged cup *k*, and the spiral spring *j*, between said cup-flange and the spindle-head, substantially as and for the purpose described.

380,794. BAG-HOLDER. FRANK G. FISCHER, Harrold, Dak. Filed June 28, 1887. Serial No. 242,477. (No model.)



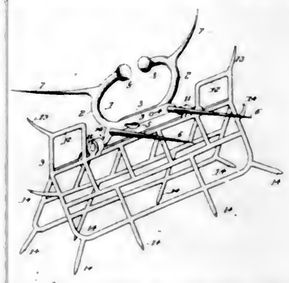
Claim.—1. A bag-holder comprising the frame, arms I, pivoted to the upper end thereof and provided at their free ends with disks having projections on their outer faces, and the U-shaped spring K, secured at its bend to the frame and provided at its upper or free ends with ears K', through which the arms I freely pass, substantially as set forth.

2. A combined bag-holder and hand-truck comprising the truck F, having a cross-piece, E, a keeper on the under side of said cross-piece, and a spring-actuated pawl, G, the T-shaped frame, the longitudinal arm of which is toothed on one edge for said pawl and passed through the keeper, the arms I I, pivoted to the transverse arm or cross-piece, extending upward along the under side of the truck, and curved to the front thereof near the handles, devices at the free ends of said arms for engaging the bag, and a U-shaped spring, K, secured to the frame and having loops at its free ends through which the arms I freely pass, substantially as set forth.

380,795. WATER-PROOF PAINT. MATTS FRED, Hancock, Mich. Filed Dec. 3, 1887. Serial No. 257,285. (No specimens.)

Claim.—The herein-described composition of matter to be used as a water-proof paint, consisting of charcoal, boiled linseed-oil, turpentine, litharge, and binoxide of manganese, in or about the proportions specified.

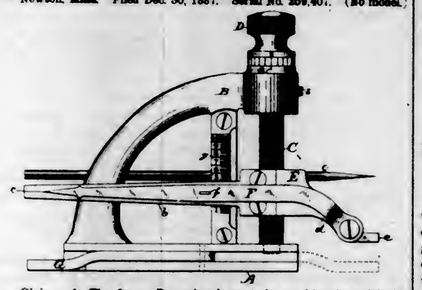
380,796. CALF-WEANER. HENRY W. FULLER and WALTER FULLER, Seneca, Kans. Filed Dec. 21, 1887. Serial No. 258,565. (No model.)



Claim.—1. In a calf-weaner, the combination, with nose-piece 1, having pivoted arm 2, fastening-pin 5, and spikes 6 and 7, of V-shaped frame 9, pivoted to nose-piece 1, and having extensions 12, and spikes 13 and 14, substantially as described.

2. A calf-weaner consisting of a detachable nose-piece having side and front spikes, and a lattice-work frame with side and bottom and upwardly-projecting spikes, and formed in two portions projecting downward and diverging and pivoted to the nose-piece, substantially as described.

380,797. PLANER-GAGE AND CALIPERS. WILLIAM HADDOW, Newton, Mass. Filed Dec. 30, 1887. Serial No. 259,407. (No model.)



Claim.—1. The frame B, having base A, in combination with the measuring-screw C, the nut E, and the setting-arm *e* and pointer F, mounted on said nut, substantially as described, and for the purpose specified.

2. The combination of the frame B, having base A and scale *g*, the measuring-screw C, the nut E, measuring-arm *b*, registering with the scale and having the index *c*, and the pointer F, pivotally mounted on a bracket which extends from the nut E and provided with the setting-arm *e*, substantially as described, and for the purpose specified.

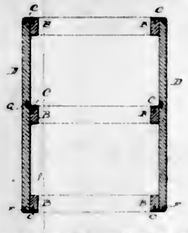
3. The combination of the measuring-screw and nut with the caliper-arm G, setting-arm *e*, the pointer F, pivotally mounted, and the index-mark *c* on an arm extending from the nut E, substantially as described, and for the purpose specified.

4. The combination of the measuring-screw and nut having an arm carrying the index *c*, the pointer F, pivoted upon an extension of the nut and bearing the setting-arm *e*, and the depth-gage fitted to the arm *e*, substantially as described, and for the purpose specified.

5. The combination of the frame B, having base A, the under face of which represents the zero-line, the measuring-screw C, nut E, and bushing *q*, for regulating the endwise adjustment of the screw C, substantially as described, and for the purpose specified.

6. The combination of the measuring-screw, the nut E, having the arm with index-mark *c*, the pointer pivoted upon an extension of said nut and having the setting-arm *e*, and a spring for holding the pointer to the index-mark, substantially as described, and for the purpose specified.

380,798. FASTENER FOR WAGON-PANELS. HENRY HETT, New York, N. Y. Filed Dec. 16, 1887. Serial No. 258,086. (No model.)

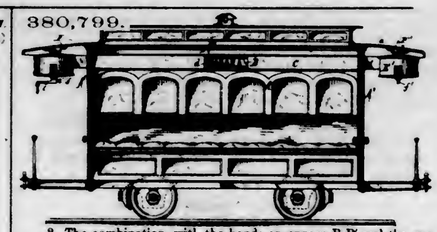


Claim.—In a wagon-top, the combination, with the bows, of angle-irons secured to the front and rear edges of the front and rear bows, respectively, an angle-iron secured to one edge of an intermediate bow, and wooden panels provided in the ends with longitudinal grooves for receiving the flanges of the angle-irons on the front and rear bows, and a vertical groove on its inner surface between the ends for receiving the flange of the angle-iron on the intermediate bow, substantially as set forth.

380,799. INDICATOR FOR STREET-CARS. FRANK HICKS, Buffalo, N. Y., assignor of one-half to Edward Dwyer, same place. Filed Oct. 22, 1887. Serial No. 253,062. (No model.)

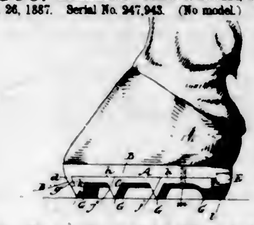
Claim.—1. The combination, with a car provided with an internal longitudinal band-guide or way having an observation-opening within the car and extending through the end walls of the car, of vertical shafts arranged outside of the car-body above the platforms and provided with hand-cranks, a band or apron bearing the names of the cross-streets and attached with opposite ends to said vertical shafts, and casings surrounding said vertical shafts, and with which the ends of the band-guide are connected, substantially as set forth.

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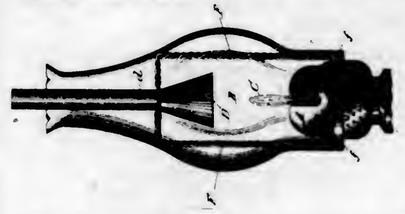
2. The combination, with the bands or aprons B B' and the vertical shafts *f f'*, arranged at opposite ends of the car outside of the car-body, and provided with hand-cranks, of the longitudinal band-guides C C', extending through the end walls of the car and provided outside of the car-body with windows or openings *k*, and observation-openings *d*, arranged in said band-guides within the car-body, substantially as set forth.

380,800. HORSESHOE. ISRAEL G. HOWELL, Hopewell, N. J. Filed Aug. 26, 1887. Serial No. 247,943. (No model.)



Claim.—The horseshoe consisting of the main shoe having the flat solid toe and heel calks, the toe-calk being broader at the front than at its rear, and of the supplementary removable shoe having sharpened calks upon its under side and recesses in its upper side, one of which recesses of the supplementary shoe is of a corresponding shape with the toe-calk of the main shoe, while the other recesses of said supplementary shoe are step-shaped and located at the heel ends of the same, said shoes being connected together, substantially as shown and described, and for the purpose set forth.

380,801. LAMP-CHIMNEY. CHARLES L. INGALLS, Lowell, Mass., assignor of one-half to George F. Blair, same place. Filed June 26, 1885. Serial No. 169,819. (No model.)



Claim.—The combination, with a lamp burner and chimney, of a bell-mouth flue or tube extending above the top of the chimney and a support for the same, said support being composed of elastic wires, twisted as shown, the ends being formed into a spring-clamp, *f*, adapted to clasp the cone of the burner.

380,802. GAS-BURNER. WALTER M. JACKSON, New York, N. Y., assignor to the Gas Consumers Benefit Company of the United States, same place. Filed Nov. 1, 1886. Serial No. 217,684. (No model.)



Claim.—As a new article of manufacture, a gas-regulator constructed and adapted to be applied to an ordinary gas-burner, and consisting of an inverted-cup-shaped shell or cylinder, B, open at its lower end and closed at its upper end and provided near its upper end with a series of openings, *c*, an inner and movable inverted-cup-shaped shell or cylinder, A', of less length than the outer cylinder and open at its

bottom, and provided with the opening *a* in its upper end, and a perforated disk or cap, C, secured at its outer edge to the lower end of cylinder B, whereby all of the parts of the regulator are secured together, the lower end of the regulator being provided with an outwardly-projecting flange to insure an annular space between the outer cylinder and the pillar, substantially as set forth.

380,803. **REGULATOR FOR GAS-BURNERS.** WALTER M. JACKSON, New York, N. Y., assignor to the Gas Consumers Benefit Company of the United States, same place. Filed Apr. 14, 1887. Serial No. 234,829. (No model.)



Claim.—1. In a regulator for gas-burners, the combination, with an outer shell diametrically enlarged at its open end, of an inner movable shell and inwardly-projecting lugs or ears for holding the inner shell in position, substantially as set forth.

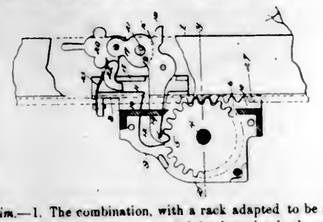
2. In a regulator for gas-burners, the combination, with a cylindrical shell having an enlarged offset portion formed integral near its base and perforations in its side wall, of an interior sliding chamber having a perforated head, and a base-ring provided with ears to support the inner chamber, substantially as set forth.

380,804. **BOOT OR SHOE.** OMAR H. JEWELL, Chicago, Ill., assignor of one-half to William M. Mathisen, same place. Filed July 26, 1887. Serial No. 245,379. (No model.)



Claim.—A boot or shoe upper consisting of the outer leather, *a*, and lining *b*, and the metallic intermediate layer, *c*, interposed between parts *a* and *b*, and extending across the top of the toe or foot, substantially as set forth.

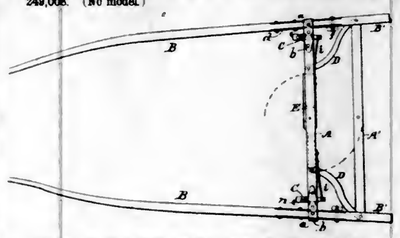
380,805. **SASH-BALANCE.** THOMAS JONES, Danville, Pa. Filed Nov. 8, 1887. Serial No. 254,610. (No model.)



Claim.—1. The combination, with a rack adapted to be secured to the window-sash, of a frame adapted for insertion in the window-frame, provided with a spring-actuated pinion, an angle-lever provided with an arm engaging said pinion, a trip-lever pivoted to said angle-lever and engaging the vertical member of the latter, an arm upon said trip-lever engaging a lug upon the frame, and a spring attached to said lug bearing upon said arm, substantially as shown and described.

2. The combination, with a rack adapted to be secured to the window-sash and a locking-block likewise adapted to be secured to said sash, of a frame adapted for insertion in the window-frame, provided with a spring-actuated pinion, an angle-lever having its horizontal member provided with a projection engaging the pinion, and its vertical member provided with a central aperture and a lip integral with the lower end, a trip-lever pivoted to said angle-lever, provided with a pin entering the aperture of the latter, and an integral curved arm engaging a lug upon the frame, and a spring attached to said lug bearing upon said arm, all arranged to operate as herein set forth.

380,806. **CONVERTIBLE SHAFTS AND POLE FOR VEHICLES.** WILLIAM H. KELLY, Greenville, Va. Filed Sept. 7, 1887. Serial No. 249,008. (No model.)



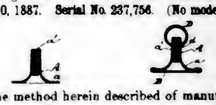
Claim.—1. In vehicle-shafts, the detachable shafts B, provided with slotted strips *d*, a perforated central pole-piece, E, pivotally connected with a cross-bar, and securing-bolts, substantially as set forth and described.

2. In combination with a cross-bar, A, the singletree attachments C, each provided with an eye, *k*, and a hook, *n*, substantially as and for the purposes described.

3. In combination with a cross-bar, A, the singletree attachments C, each being provided with an eye, a hook, *n*, and securing-pin, and connected with a spring attached to said cross-bar, substantially as set forth and described.

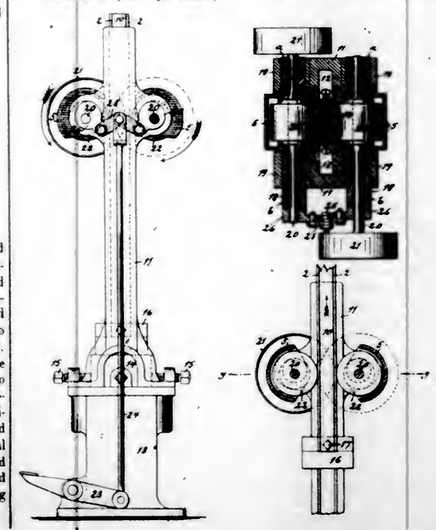
4. In combination, a central pole-piece and detachable shafts of a vehicle, a bolt, F, provided with a gripping plate, *q*, and securing-nut, substantially as and for the purposes described.

380,807. **MANUFACTURE OF BUTTONS.** DANIEL A. LADD, Newark, N. J., assignor to the Newark Collar Button Company, same place. Filed May 10, 1887. Serial No. 237,756. (No model.)



Claim.—The method herein described of manufacturing buttons, consisting in first forming a shank and an approximately-spherical hollow and apertured body, then inserting the end of the shank in the aperture of the body, and finally compressing the body to the form of the head of a button, substantially as described, whereby the head will be firmly secured to the shank and provision made for giving form to the head and securing the same to the shank at one and the same operation, as set forth.

380,808. **DROP-HAMMER.** FRANK M. LEAVITT, Brooklyn, N. Y., assignor to the E. W. Bliss Company, same place. Filed Dec. 8, 1887. Serial No. 257,324. (No model.)



Claim.—1. The combination, with a hammer-body mounted to slide in ways, of revoluble rollers movably mounted at the sides of the hammer-body, substantially as shown and described.

2. The combination, with a hammer-body mounted to slide in ways, of revoluble rollers mounted at each side of the hammer-body, and a means for throwing said rollers toward said body, as and for the purpose stated.

3. The combination, with a hammer-body mounted to slide in ways, of revoluble rollers mounted in a plane through which the hammer-body travels, and a means for throwing the rollers toward the hammer-body, as and for the purpose stated.

4. The combination, with a hammer-body and its guides, of rollers, shafts upon which the rollers are mounted, housings through which the shafts are passed eccentrically, and a means for turning the housings, as and for the purpose stated.

5. The combination, with a hammer-body and its guides, of rollers mounted upon shafts at the sides of the hammer-body, housings through which the roller-shafts are passed eccentrically, a treadle, a rod connected thereto, links connected to the rod, and connections between the links and the housings, substantially as described.

380,809. **ROTARY EXCAVATOR FOR REMOVING SNOW.** EDWARD LESLIE, Orangeville, Ontario, Canada. Filed Aug. 31, 1887. Serial No. 248,367. (No model.)

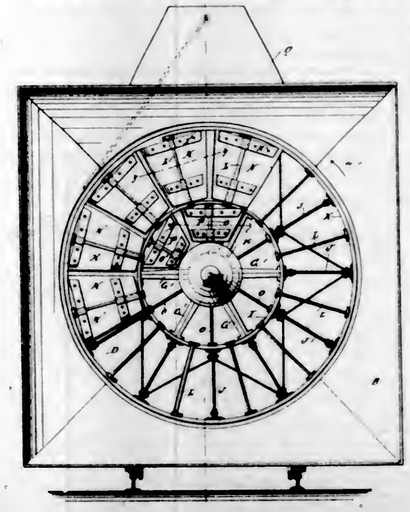
Claim.—1. In an excavator, a revolving wheel provided with radial fans, an outer set of knives, and an inner set of knives, both sets of knives being held in front of said wheel, substantially as described.

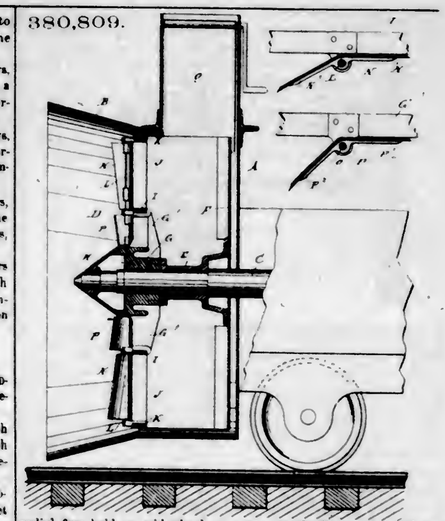
2. In an excavator, the combination, with a revolving wheel provided with radial fans and a cone in its center in front, of an outer set of knives held in front of said wheel and in front of the fans, and a second or inner set of knives forming an opening to the inside of the wheel, substantially as shown and described.

3. In an excavator, the combination, with a revolving wheel provided with a hub carrying an inner disk, of a second hub fastened to the front of the first-mentioned hub, and having radial arms or spokes, a ring secured to said radial arms or spokes, radial fans secured to said ring and to said disk, an outer ring held in front of said fans, and two sets of knives, of which the outer set is held in front of said fans and the other set is held between the inner ring and the hub, substantially as described.

4. In an excavator, the combination, with a revolving wheel provided with a hub carrying an inner disk, of a second hub fastened to the front end of the first-named hub and having radial arms or spokes, a ring secured to said radial arms or spokes, radial fans secured to said ring and to said disk, an outer ring held in front of said fans, two sets of knives, of which the outer set is held in front of said fans and the other set is held between the inner ring and the hub, and a cone held in front of the second hub so that the snow from the center passes into the inner set of knives, substantially as shown and described.

5. In an excavator, the combination, with a revolving wheel, of

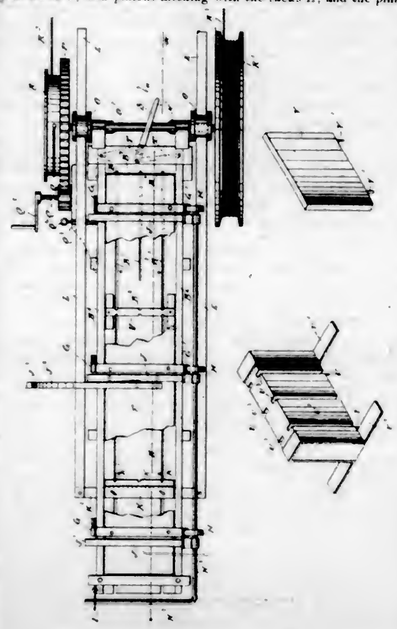




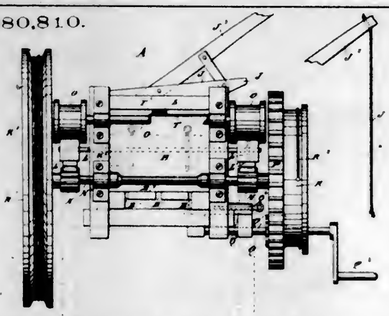
radial fans held on said wheel, an outer set of self-reversing knives held in front of said wheel and an inner set of self-reversing knives held similarly on the said wheel, substantially as described.

380,810. **BALING-PRESS.** ANDREAS MATTLEWS, Giddings, Tex. Filed Nov. 29, 1887. Serial No. 256,397. (No model.)

Claim.—1. In a baling-press, the combination, with the slotted baling-box and the slotted division-block U, provided with the downwardly-extending pins U' and the longitudinally-extending feet U^2, adapted to be placed in said baling-box to make two bales at a time, of the sliding plunger K, transverse bar K^2, secured to said plunger, arms L, rigidly secured to the transverse bar and having the racks L' on their under sides, the shaft N', provided with the pinions N and the gear-wheel P, said pinions meshing with the racks L', and the pinion



380,810.



Q, meshing with gear-wheel P and carried on shaft Q', having the handle Q^2, all operating substantially as shown and described.

2. In a baling-press, the combination, with a slotted baling-box, of a plunger held to slide in said box, arms rigidly connected with said plunger and provided with racks on their under sides, a shaft provided with pinions meshing with said racks, and having at its ends drums upon which ropes are wound in reverse directions, substantially as shown and described.

3. In a baling-press, the combination, with a slotted baling-box, of a sliding plunger having secured to its rear face the transverse bar K^2, to which are rigidly connected the arms L, having the racks L' secured to their under sides, the shaft N', provided with the pinions N, meshing with said racks, and carrying at its ends the drums R and R', and the ropes R^3 and R^4, wound in reverse directions upon said drums, the drum R' being of greater diameter than the drum R, substantially as shown and described.

4. In a baling-press, the combination, with a baling-box, of the cover F, hinged to one side of said box and provided with the bars J, having beveled projecting ends J', whereby they are adapted to rest against the hinge side of said box when the cover is lifted and hold it in an upright position, substantially as shown and described.

5. In a baling-press, the division-block U, provided with the downwardly-projecting guide-pins U' and the longitudinally-extending feet U^3, and having on each face the vertical slots U^3, substantially as shown and described.

6. In a baling-press, a slotted box, a cover hinged to one side of said box, and lugs formed on the free edge of the said cover, in combination with the cam-wheels having shoulders adapted to engage said lugs, a longitudinal shaft secured to the outside of said bale-box and carrying said cam-wheels and bent at right angles at the end of said box, forming a handle, and the hook I, pivoted to the end of the bale-box and adapted to lock the cam and shaft in place, substantially as shown and described.

7. In a baling-press, the combination, with a baling-box, of a cover hinged on one side of the said box, and bars provided with projecting ends and secured to the said cover, said projecting ends being adapted to rest against the hinge side of the baling-box when the cover is open, an inclined arm secured to one of said bars, and a rope secured to the outer end of the said arm for opening the said cover, substantially as shown and described.

8. In a baling-press, the combination, with a baling-box, of a lever fulcrumed on one end of the said baling-box, and arms pivotally connected with the said lever and with the sides of the said box, so as to enable the operator to move the said sides outward for removing the finished bale, substantially as shown and described.

380,811. CHISEL-GAGE. CHARLES L. MEAD, New York, N. Y., assignor to the Stanley Rule and Level Company, New Britain, Conn. Filed Jan. 26, 1888. Serial No. 261,982. (No model.)



Claim.—1. The herein-described gage for chisels, the same consisting of the body, the clamping mechanism for attaching it to a chisel-blade, and a guard immediately above and forward of the rear edge of the throat in the under side of said body and extending rearwardly and upwardly, substantially as described, and for the purpose specified.

2. The herein-described gage for chisels, the same consisting of the body and clamping mechanism for attaching the gage to a chisel-blade, said body being formed of sheet metal and having the guard *b* bent upwardly from the bottom face of said sheet-metal body, substantially as described, and for the purpose specified.

380,812. PASSENGER-VEHICLE. ROBERT A. MORSE, Chicago, Ill. Filed Dec. 19, 1887. Serial No. 258,370. (No model.)



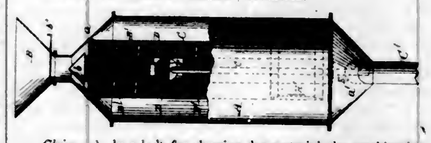
Claim.—1. In a passenger-vehicle, the combination, with the body, of a front door having its bottom connected with the body in a manner free to slide in outward direction, substantially as described.

2. In a passenger-vehicle, the combination, with the body, of curved guideways, and a door the bottom whereof is movably mounted upon said curved guideways, substantially as described.

3. In a passenger-vehicle, the combination, with the body having slots in its floor, of the guideways B and the door provided with the shoes C, substantially as described.

4. In a passenger-vehicle, the combination, with the body having an open front, of a front door curved in vertical direction, a correspondingly-curved window to slide within said door, and suitable guides for said window, substantially as described.

380,813. BOLT. GEORGE D. MURDOCH, Brooklyn, N. Y. Filed June 23, 1887. Serial No. 242,280. (No model.)

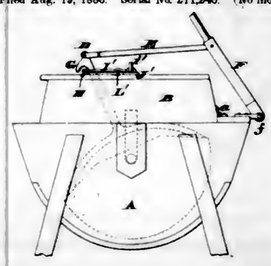


Claim.—1. In a bolt, for cleaning dry material, the combination, with a casing provided with an inlet and outlet, of an air-inlet pipe, a perforated air-chamber, an inclosing perforated conducting-chamber provided with an inlet and outlet, and a series of deflecting-rods intervening the said chambers, substantially as shown and described.

2. In a bolt for cleaning dry material, the combination, with a casing provided with an inlet and outlet, of a perforated air-chamber inclosed at top and bottom, an air-supply pipe leading into said chamber, and a plate surrounding the air-chamber opposite said pipe, an inclosing perforated chamber provided with an inlet and outlet, and a series of deflecting-rods intervening said chambers, substantially as shown and described.

3. In a bolt for cleaning dry material, the combination, with a casing having a conical top and bottom, an inlet at said top and an outlet at said bottom, of a perforated air-chamber inclosed at top and bottom, an air-supply pipe leading into said chamber, a tube leading from said pipe to the casing-outlet, and a plate surrounding said air-chamber opposite said air-supply pipe, an inclosing perforated conducting-chamber having an inlet and outlet surrounding the air-chamber, and a series of baffle-rods intervening the two chambers, substantially as shown and described.

380,814. WASHING-MACHINE. HENRY NADERMANN, Cincinnati, Ohio. Filed Aug. 19, 1886. Serial No. 211,240. (No model.)

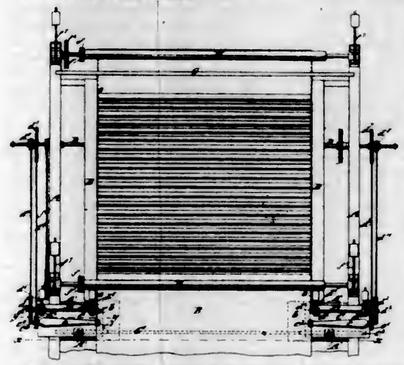


Claim.—1. In combination with a washing-machine having a spurred lever, D G, attached to a vertically-shiftable vibrating rubber, a swinging locking device consisting of the cross-bar H, side bars, I I', and extensions *i i'*, a sliding bar, K, being adapted to travel along said side bars, for the purpose described.

2. In combination with a washing-machine having a spurred lever, D G, attached to a vertically-shiftable vibrating rubber, a swinging locking device consisting of the cross-bar H, side bars, I I', and extensions *i i'*, a sliding bar, K, being adapted to travel along said side bars, which latter are notched or indented at L L', for the purpose described.

3. In combination with a washing-machine having a vibrating and vertically-shiftable lever playing within a longitudinal slot in the top of the lid, and a swinging bar mounted upon said lid and serving as a prop that supports said lever while it is being elevated, a stop or detent being provided to retain said lever in its elevated position, substantially as described.

380,815. MACHINE FOR SEWING COMFORTABLES AND OTHER FABRICS. FRANK L. PALMER, New London, Conn. Filed July 11, 1887. Serial No. 243,943. (No model.)



Claim.—1. The combination, with an edge-sewing machine provided with feeding devices for grasping and feeding along the edge of a fabric, of a gang sewing-machine for quilting and provided with feeding devices operating synchronously therewith, and mechanism, substantially as described, for operating the edge-sewing machine and the gang-machine independently of each other, whereby provision is afforded for maintaining a surplus of fabric between the said machines, substantially as set forth.

2. The combination, with an edge-sewing machine provided with feeding devices for grasping and feeding along the edge of a fabric, of a gang sewing-machine for quilting the fabric and provided with feeding devices, and mechanism, substantially as described, for operating the feeding devices of the said machines independently of each other, whereby provision is afforded for stopping and starting at will the feed of the fabric through either machine, substantially as herein set forth.

3. The combination, with an edge-sewing machine provided with edge-feeding devices for grasping and feeding along the edge of a fabric, of a pair of feed-rolls in front of or beyond the said machine and extending substantially the full width of the fabric for feeding or moving the body portion of the fabric, substantially as herein described.

4. The combination, with an edge-sewing machine and edge-feeding rolls therefor adapted to grasp the edge portion only of the fabric, of a pair of rolls extending substantially the full width of the fabric for feeding the body portion thereof, substantially as herein described.

5. The combination, with two edge-sewing machines for stitching the edges of a fabric and a gang sewing-machine for quilting the fabric throughout its width, of separate feed-rolls for each edge-sewing machine, adapted to grasp the edge portion only of the fabric, and a pair of feed-rolls extending substantially the full width of the fabric for feeding the whole fabric uniformly to the gang sewing-machine, substantially as herein described.

6. The combination, with a bed or table and a pair of feed-rolls for feeding substantially the entire width of the fabric and producing its movement over the bed or table, of two edge-sewing machines mounted on base-plates adjustable toward and from each other and arranged behind the said pair of feed-rolls, and pairs of edge-feeding rolls mounted on the base-plates of the two edge-sewing machines and adjustable with said machines, substantially as herein described.

7. In a sewing-machine for combining together face fabrics and an interposed filling, the combination, with a gang sewing-machine and its feed-rollers, of feeding devices, as rollers E, behind the gang sewing-machine, whereby the multiple fabric is carried forward toward the gang, and mechanism, substantially as described, whereby such feed rollers or devices E and the feed-rollers of the gang-machine may be driven and stopped independently of each other, substantially as herein set forth.

380,816. ICE-CREEPER. WILLIAM W. PRESTON and EDWARD F. PRESTON, Bismarck, Mich. Filed Oct. 19, 1887. Serial No. 253,316. (No model.)

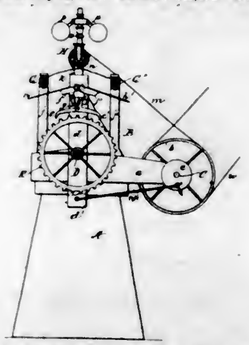


Claim.—1. As an improved article of manufacture, an ice-creeper consisting of the curved shank C, having opposite side flanges, *c c*, curved to fit the curve of the shoe in front of the heel and notched at their ends, as at *d d*, and the rearward extension, *l*, to rest on the shoe-heel, the spring S, secured and concealed within the recess formed on the under side of the shank C, the swinging spur-frame having an angular cross-bar extending through the notches *d* under the spring, and curved side bars, *k*, at opposite sides of the shank, substantially as set forth.

2. In an ice-creeper, the shank C, curved to conform to shank of the shoe, and formed with the heel-extension *b* and the curved side flanges, *c c*, forming a spring receiving and concealing chamber and having notches in their edges near their rear ends, substantially as set forth.

3. The herein-described ice-creeper, consisting in the curved shank, C, having a heel-extension, *b*, and notched side flanges, *c*, a spring concealed within the recess formed by said flanges, securing rivets at opposite ends of the shank, the stop *m* on the outer side of the front end of the shank, the swinging frame having an angular cross-bar, *e*, curved side arms, *k k*, at opposite sides of the shank, and the spurs *l l* at the outer corners of the frame, substantially as set forth.

380,817. ELECTRICAL GOVERNOR. FRANK R. PRICHARD, Cedar Falls, Iowa. Filed July 27, 1887. Serial No. 245,434. (No model.)



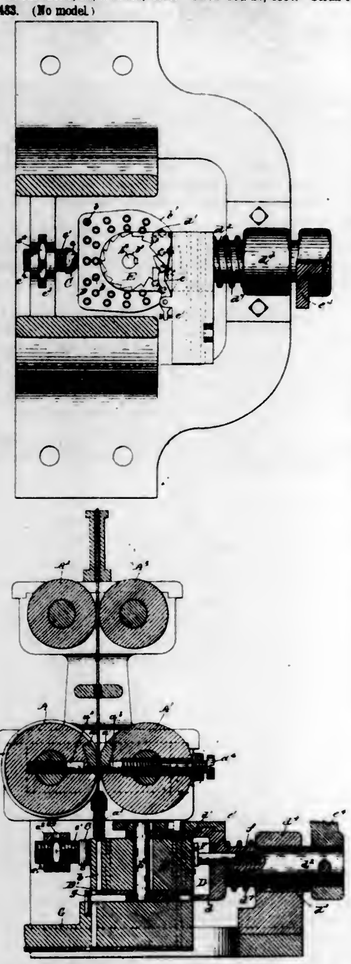
Claim.—1. In an electrical governor, the combination, with the ratchet-wheel and the shaft upon which it is fixed, of a continuously-oscillating vertical lever, the separate and independent pawls *e e'*, pivoted thereon above the ratchet-wheel and having upward-projecting arms *g g'*, respectively, the armature-levers *f f'*, pivoted above the pawls and having depending arms *i i'*, normally engaging the arms *g g'* and holding the pawls out of engagement with the ratchet, the armatures *h h'*, projecting from said levers, and the magnets G G' above the armatures, substantially as set forth.

2. In an electrical governor, the combination, with the ratchet-wheel and its shaft, of the pawls, the levers normally holding the pawls out of engagement with the ratchet-wheel, the armatures projecting from said levers, the electro-magnets to operate said armatures, the circuit-wires, the battery, the contact-points *s t* in said circuit, the lever *r*, connected with the battery and extending between the contact-points, and the centrifugal governor, the vertically-movable rod *q* thereof operating the lever *r*, substantially as set forth.

3. An electrical governor consisting in the frame, the horizontal shaft D, having a gear at one end and a ratchet-wheel, E, on the other,

the vertical oscillating lever loosely mounted on the shaft D, the pawls *e e'*, the armature-levers *f f'* above the pawls and normally holding them out of engagement with the ratchet, the magnets G G', for actuating the armature-levers, electric circuit, the contact-points *s t* therein, the pivoted lever *r*, extending between the contact-points and connected with the battery, the centrifugal governor H, the horizontal shaft *l* operating the same, the vertical rod *q* of the governor to operate the contact-lever, the horizontal shaft C, having pulley *b* and crank-disk *c*, the rod *u*, connecting the crank-disk with the lower end of the oscillating pawl-carrying lever, and the belt *m*, leading from the pulley *b* to a pulley on the governor-shaft *l*, combined and operating substantially as set forth.

380,818. **NAIL MAKING AND DISTRIBUTING MACHINE.** FREEBORN F. RAYMOND, 2d, Newton, Mass. Filed Oct. 27, 1887. Serial No. 253,453. (No model.)



Claim.—1. The combination of a nozzle, tube, or block having a throat or passage through which nails are adapted to be fed in successive order, with a distributing-block having a series of nail-receiving holes and a cam or pattern surface, a cam gage, roll, or abutment, and means for intermittingly rotating the block, whereby the nail-receiving holes are brought successively in line with the throat or passage, substantially as described.

2. A nail-distributer comprising a block having a series of nail-receiving holes mounted in a yielding holder and provided with a cam or pattern surface, and a cam roll, gage, or abutment, and means for intermittingly rotating said block, substantially as described.

3. The combination of the nail-distributing block B, having a cam or pattern surface, *b'*, and the nail-receiving holes *b*, with the gage or abutment C and the yielding block-holder D, and devices for imparting intermittent periods of rest and rotation to the block, substantially as described.

4. The combination of the distributing-block B, having the holes *b* and a cam or pattern surface for governing the relation of the holes to a stationary throat or nozzle as the block is rotated, and a perforated hole-covering slide-plate, B', carried by the block, substantially as described.

5. The combination of the block B, having the holes *b* and the cam or pattern *b'*, the gage C, the holder D, the shaft *b*⁴, the ratchet-wheel E, and pawl *e*, and operating-lever carried by an arm, *e*⁴, attached to or integral with said holder D, so as to be movable with the block B, as and for the purposes described.

6. The combination of a nozzle, block, or tube having a throat or passage through which nails are adapted to be delivered one by one, with a nail-distributing block having the holes *b* and movable horizontally, and devices for providing the block with alternate periods of rotation and rest, whereby the holes *b* are adapted to be brought successively in register with the throat, although not arranged upon a circular line, as and for the purposes described.

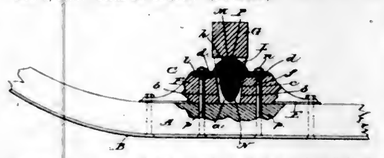
7. The combination of a nozzle, tube, or block having a passage through which nails are adapted to be delivered one by one, a nail-distributing block, B, having nail-receiving holes *b*, and a movable hole-covering plate, B', movable in relation to the throat and governed in its horizontal position by a cam, and having intermediate periods of rotation and rest, with a nail-carrier, G, having nail-receiving holes of the same arrangement as the holes of the distributing-block B, as and for the purposes described.

8. The combination of a nozzle, block, or tube having a throat or passage through which nails are adapted to be fed one by one, the distributing-block B, having the holes *b* and mounted in a yielding holder to be horizontally movable in opposition to a spring, said holder and spring, and an adjustable gage, C, as and for the purposes specified.

9. The combination of the nozzle through which nails are adapted to be fed one by one, the intermittent rotary and horizontally-movable block B, its yielding holder D, a gage, C, and devices for intermittingly rotating the block mounted upon and carried by the holder D, as and for the purposes described.

10. The nail-distributing block B, adapted to have both an intermittent rotary and horizontal movement imparted to it and provided with two or more lines of nail-receiving holes, the adjustable gage or abutment, and a block, nozzle, or tube having a throat through which nails are fed in successive order, as and for the purposes described.

380,819. **SLEIGH.** NELSON G. REYNOLDS, Bangor, Mich. Filed Nov. 8, 1887. Serial No. 254,589. (No model.)



Claim.—1. The combination, with the knee or riser C, having a socket, *a*, and transverse depression *f*, of a plate having hanger-arms L, and transverse pintle or shaft M, provided with the lug N, and a confining-plate, P, substantially as and for the purpose described.

2. The combination, with the knee or riser C, having a socket, *a*, and transverse semicircular depression *f*, of a plate having hanger-arms L, carrying transverse pintle or shaft M, provided with the lug N, and a confining-plate, P, having a transverse semicircular recess, *h*, substantially as and for the purpose described.

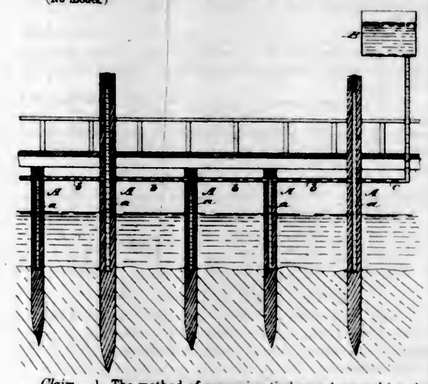
3. The combination, with the knee or riser C, having the socket *a*, the rabbeted outer face, *d*, and the transverse semicircular recess *f*, of a plate having hanger-arms L, carrying transverse pintle or shaft M, provided with the lug N, and a confining-plate, P, having the extended face portion *l* and a transverse semicircular recess, *h*, all substantially as and for the purpose described.

4. In a sleigh, the combination, with the runner having a knee or riser, C, secured thereto, provided with a socket, *a*, and transverse depression *f*, of the cross-beam provided with the hanger-arms L, carrying the pintle or shaft M, provided with the lug N, and the securing-plate P, substantially as and for the purpose described.

5. In a sleigh, the combination, with the runner having a knee or riser, C, provided with the socket *a*, the rabbeted outer face, *d*, and the transverse semicircular depression *f*, of the cross-beam provided with the plate H, having hanger-arms L, carrying the transverse pintle or shaft provided with the lug N, and the semicircularly-recessed confining-plate P, arranged for operation substantially as and for the purpose described.

6. In a sleigh, the combination, with the runner having a knee or riser, C, provided with the socket *a*, transverse depression *f*, and bolt-holes *c c*, of the cross-beam provided with the hanger-arms L, carrying the transverse pintle or shaft M, provided with the lug N, the confining-plate P, having bolt-holes *m m*, and the bolts *p p*, passing upwardly through the sleigh shoe and runner, the standard F, and the confining-plate P, and provided with nuts *n n*, substantially as and for the purpose described.

380,820. **METHOD OF PRESERVING SUBMERGED TIMBERS.** HIRAM L. RICKS, Eureka, Cal. Filed Aug. 24, 1887. Serial No. 247,741. (No model.)

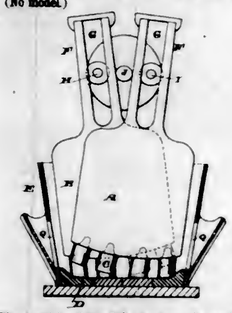


Claim.—1. The method of preserving timbers submerged in salt-water, which consists in keeping the timbers so submerged soaked with fresh water, substantially as set forth.

2. The herein-described method of preserving submerged timbers, which consists in supplying to the timbers interiorly fresh water under pressure, substantially as specified.

3. The herein-described method of preserving submerged timbers, which consists in continuously supplying to the timbers from the interior fresh water under pressure, substantially as set forth.

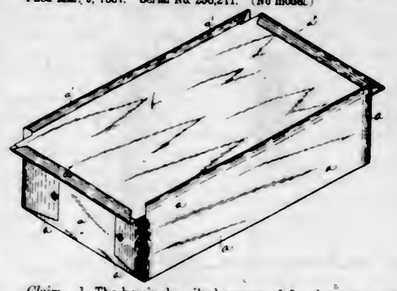
380,821. **CRUSHING-MILL.** ALPHEUS E. ROE, San Francisco, Cal., assignor to Tatum & Bowen, same place. Filed Sept. 21, 1887. Serial No. 250,358. (No model.)



Claim.—1. The combination of the mortar, the oscillating stamps having the vertically-slotted extensions at the upper ends, as shown, the driving-shaft having the disk or crank fixed upon its end, and an outer disk or crank having a short shaft, journaled in line with the driving-shaft, in combination with a similar disk intermediate between the slotted extensions of the blocks, and crank-pins extending through the slots of the two blocks from opposite sides of the intermediate disk, so that power is communicated to drive the two from the single shaft, substantially as herein described.

2. A crushing-mill comprising a single mortar having discharge-openings in its ends, a plural number of oscillating blocks having projecting stamps, and a driving-shaft having crank-pins connected with said blocks and operating the blocks in opposite directions, whereby the ore is thrown alternately from one side of the stamps to the other, substantially as and for the purpose described.

380,822. **MANUFACTURE OF PLANISHED SHEET-IRON.** WILLIAM ROGERS, Pittsburg, Pa., and WILLIAM H. ROGERS, Wheeling, W. Va. Filed Mar. 9, 1887. Serial No. 230,211. (No model.)



Claim.—1. The herein-described process of forming a protective coating on sheet metal, consisting in heating the sheets while permitting the access of oxygen thereto, so as to form an oxide coating thereon or increase the coating thereof, hammering said sheets while in a heated condition, and finally reheating the sheets to a red heat while protected from the atmosphere, and subjecting the sheets while so protected and heated to a hammering operation, substantially as set forth.

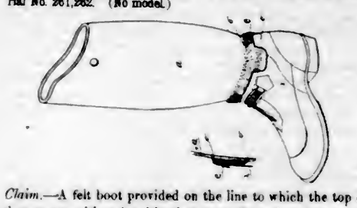
2. The herein-described step in the art of forming a protective coating on sheet metal, consisting in taking ordinary sheets of metal and heating them, while permitting the access of oxygen thereto to increase the thickness of the oxide coating thereon, and then hammering the sheets while hot and inclosed in a box, substantially as set forth.

3. The herein-described step in the art of forming a protective coating on sheet metal, consisting in inclosing the ordinary sheets of metal in a box, heating said box, while permitting the access of a small amount of air to the sheets therein, and then hammering said box and the contents while hot, substantially as set forth.

4. The herein-described step in the art of forming a protective coating on sheet metal, consisting in inclosing sheets having an oxide coating thereon in an air-tight box, heating the same, and finally hammering the box and contents while hot, substantially as set forth.

5. The herein-described step in the art of forming a protective coating on sheet metal, consisting in raising sheet metal having an oxide coating thereon to a red heat while protected from the atmosphere, and subjecting the sheets while so protected and heated to a hammering operation, substantially as set forth.

380,823. **FELT-BOOT PROTECTOR.** HARRY SAUNDERS, Toledo, Ohio, and EDWARD C. RAUCH, Monroe, Mich. Filed Jan. 19, 1888. Serial No. 261,262. (No model.)



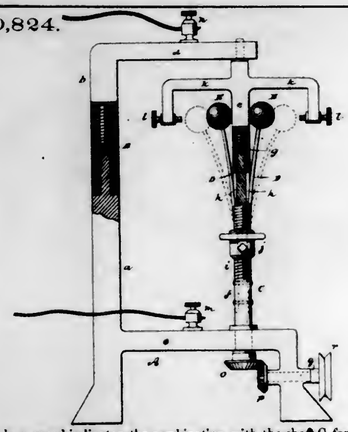
Claim.—A felt boot provided on the line to which the top of the overshoe comes with a band having a woolly or furry outer surface, said surface of said band being adapted to present a yielding surface to and to extend over the top of said overshoe to exclude substances from said overshoe, substantially as shown and described.

380,824. **ELECTRICAL SPEED-INDICATOR.** FREDERICK W. SCHLEPEGRELL, Charleston, S. C. Filed June 21, 1887. Serial No. 242,014. (No model.)

Claim.—1. In an electric speed-indicator, the combination, with the frame A, consisting of the two parts *a b*, insulated from each other and having parallel arms *c d*, respectively, provided with binding-posts, of a shaft journaled between said arms *c d*, and formed of insulated sections, the upper section, *e*, of which has horizontal angular arms, and the governor-arms provided at their free ends with balls or weights operating between the section *e* and the ends of its horizontal arms, substantially as set forth.

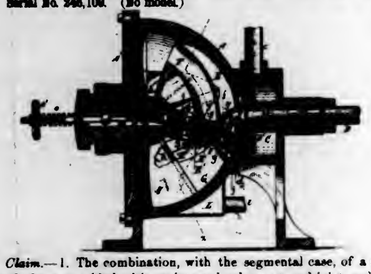
2. In an electric speed-indicator, the shaft C, formed of insulated sections, horizontal angular arms on the section *e*, provided with contact-screws *l l*, projecting toward the shaft, and the governor-arms secured to the lower section and having balls or weights at their free ends normally resting against the section *e*, in line with the contact-screws, substantially as set forth.

380,824.



3. In a speed-indicator, the combination, with the shaft C, formed of the externally-threaded part *f*, the part *e*, provided with the arms *k*, the insulation *g*, connecting the parts *f e*, the contact-screws *l*, the springs D, and the nut *j*, substantially as described.

380,825. **STEAM-ENGINE.** ELMER S. SMITH, Buffalo, N. Y., assignor of one-half to Ray V. Pierce, same place. Filed Aug. 4, 1887. Serial No. 246,109. (No model.)



Claim.—1. The combination, with the segmental case, of a segmental piston provided with an internal valve-seat and inlet and exhaust passages, and a valve capable of movement in said seat in one direction by centrifugal force and in the opposite direction by a tension device, whereby the valve is adjusted automatically and the supply of the actuating-fluid is increased or reduced inversely with the speed, substantially as set forth.

2. The combination, with the segmental case and the segmental piston provided with an internal valve-seat and inlet and exhaust passages, of a valve capable of longitudinal movement in said seat, and a spring which resists the outward movement of the valve in its seat, substantially as set forth.

3. The combination, with the segmental case, of a knuckle, M, secured to said case, a segmental piston provided with an internal valve-seat and inlet and exhaust passages, a valve capable of longitudinal movement in said seat, and a resisting-spring attached to said knuckle and connected with the valve, substantially as set forth.

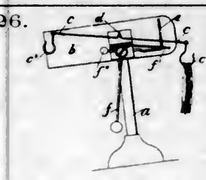
4. The combination, with the segmental case A A′ and segmental piston B, provided with supply-ports *e*, main ports F, and exhaust-space G, of the valve capable of longitudinal movement in the seat, and with inlet-ports *f f′* and exhaust-ports *g h*, substantially as set forth.

5. The combination, with the segmental case A A′ and segmental piston B, provided with an internal valve-seat, E′, of the valve E, provided with an equalizing-passage, *r*, extending from end to end of the valve, substantially as set forth.

6. The combination, with the segmental case A A′, provided with an external chamber, L, of the segmental piston B, provided with ports F, an exhaust-space, G, around said ports, and openings whereby said exhaust-space communicates with the exhaust-chamber L, substantially as set forth.

380,826. **BALANCE APPARATUS FOR ASCERTAINING COUNTS OR NUMBERS OF YARN.** EMIL STAUB, Leipsic, Saxony, Germany, assignor to George Thomas, Manchester, England. Filed Apr. 2, 1887. Serial No. 233,408. (No model.) Patented in England May 19, 1886. No. 6,708.

380,826.



Claim.—1. An apparatus for ascertaining the counts of yarn or numbers of yarn, consisting of a scale, a weight, and a templet, the templet and weight bearing the same relation to one another that the standard of length bears to the standard of weight, substantially as described.

2. In a balance apparatus, the combination, with a scale-beam, of a pendulum provided with an arm which is always held horizontal, and with which the scale-beam is parallel when balanced, substantially as described.

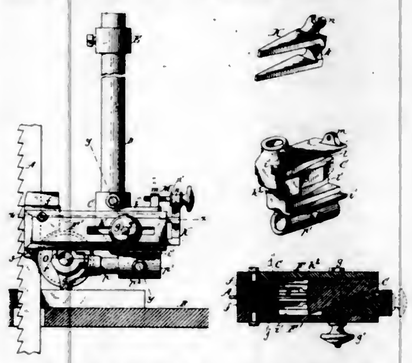
3. In a balance apparatus, the combination, with a pedestal and a scale-beam mounted thereon, of a guide-arm, *c*, projecting over the scale-beam, and the pendulum *f*, provided with the weighted arm *f′* and the bent arm *f″*, projecting under the scale-beam, substantially as herein shown and described.

380,827. **PATTERN FOR CASTING.** FREDERICK M. STEVENS, Brooklyn, N. Y. Filed July 25, 1887. Serial No. 245,238. (No model.)



Claim.—The pattern P, having forked lug D projecting from its face, said lug having branches *d d* grooved internally at *c c* to fit a tappet-nut, E, substantially as shown and described, and for the purposes set forth.

380,828. **SAW-GUIDE.** GEORGE F. STRIBGEL, Buffalo, N. Y. Filed Oct. 27, 1887. Serial No. 253,507. (No model.)



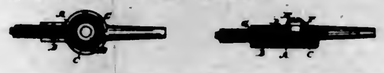
Claim.—1. In a saw-guide, the combination, with a stationary head, of guide-plates secured to opposite sides of said head and made longitudinally adjustable thereon, and a sliding wedge interposed between the head and one of said guide-plates, whereby the guide-plates are adjusted laterally, substantially as set forth.

2. The combination, with the head C and the adjustable slotted guide-plates, of a clamping-bolt whereby said guide-plates are attached to the head C, a wedge arranged between the head C and one of the guide-plates, and an adjusting-screw whereby the wedge is operated.

3. The combination, with the head C, provided with inclines *l l′*, and the adjustable slotted guide-plates F F′, of a screw-bolt, *g*, provided with a thumb-nut, *g′*, a wedge, K, bearing with one side against the inclines *l l′* and with its opposite side against the plate F′, and an adjusting-screw, M, whereby the wedge K is operated, substantially as set forth.

4. The combination, with the head C, provided with a socket, *p*, and the adjustable guide-plates, of a guide-roller, O, an adjustable rod, *p*, arranged in the socket *p′*, and to which said roller is journaled, and guard-lugs *q*, extending beyond the periphery of the roller, substantially as set forth.

380,829. **ELECTRICAL HAND-CORD TIP.** HENRY J. SWARTS, Detroit, Mich., assignor of one-half to J. W. Dart, same place. Filed Sept. 3, 1887. Serial No. 248,687. (No model.)

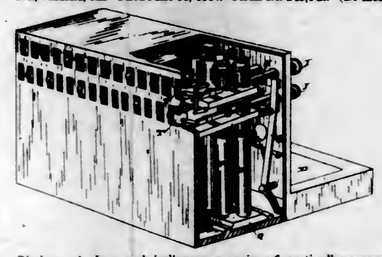


Claim.—In an electrical hand-cord tip, the combination, with the body A, having an internally-screw-threaded projection, and the recesses B C, of the clamp F and screw E, substantially as set forth.

380,830. **ARTIFICIAL STONE.** OMAR A. TANNER, Jersey City, N. J. Filed Sept. 12, 1887. Serial No. 249,407. (No specimens.)

Claim.—The composition of brimstone, plumbago, silica, paraffine, and coal-tar, in proportions substantially as herein described, for the purpose set forth.

380,831. **CASH REGISTER AND INDICATOR.** EDWARD T. TAYLOR, Oakland, Cal. Filed June 30, 1887. Serial No. 243,042. (No model.)



Claim.—1. In a cash-indicator, a series of vertically-arranged tubes having transversely-moving slides, and disks which are discharged singly from the upper to the lower portion of the tube by the movement of said slides, and push-buttons showing the amounts to be deposited, in combination with a till or drawer for the reception of the amount, and a hinged cover or door with connecting-rods and locking-bolt so arranged as to be operated to open the cover by the movement of the button, substantially as herein described.

2. The vertically-arranged tubes with transversely-moving slides and disks which are delivered singly from the upper part of the tubes to the lower by the movement of the slides, an operating-slide, and a button having the amount to be registered marked upon its front, and a till or drawer for the reception of the money, having a hinged cover by which it is closed, and a lock, in combination with connecting rods and levers which are operated by the inward movement of the indicating-button so as to allow the cover to be opened simultaneously with said movement, substantially as herein described.

3. A series of vertically-arranged tubes having transversely-moving slides, and disks which are delivered singly from the upper to the lower portion of the tube by the movement of the slides, and the push-buttons which are connected with them, in combination with rollers or cylinders having figures marked upon one side corresponding with those of the push-buttons and connected with the slide and buttons so that said figures will be thrown up into view when the button is pressed inwardly, and a disk dropped to the bottom of the tube, substantially as herein described.

4. The indicating rollers or cylinders journaled upon horizontal shafts and connected with the movable slides and indicating push-buttons, so that they are rotated by the movement of said slides and buttons to present the figures to view, in combination with latches or hooks by which they are retained in position after the button and slide has returned to its normal position, substantially as described.

5. The indicating rollers or cylinders eccentrically mounted upon horizontal shafts and connected with the indicating push-buttons, and slides whereby the disks are delivered from the upper to the lower part of the connecting-tubes, a shaft lying parallel with the rollers and having latches attached thereto, by which any roller is held in position to exhibit the indicating-figures upon its surface when the corresponding button is depressed, said latches also acting to release any other roller and allow it to return by gravitation to its normal position and conceal its figures, substantially as herein described.

6. A series of rollers or cylinders having indicating-figures upon their surface and connected with correspondingly-marked push-buttons upon the opposite side of the case, hooks or latches by which the cylinders are retained in position to exhibit the figures after the button has been depressed, and connecting-links whereby all other cylinders are returned to their normal position so as to conceal the figures upon them, substantially as herein described.

7. In a cash-indicator, a series of weighted or eccentrically-mounted or spring-actuated rollers having indicating-figures upon one side corresponding with those of a push-button or indicator with which they are connected, and intermediate slides passing transversely through vertically-arranged tubes containing disks, so that the disks are dropped singly from the upper to the lower portion of the tube and the amount corresponding with that marked upon the button is indicated upon the roller or cylinder and retained in view until the next deposit is made, substantially as described.

8. The sets of disk-holding tubes placed one above the other, the upper series having the transversely-moving slides by which the disks are allowed to fall singly into the lower tubes, the latter being graduated or marked to show the amount represented by the contained disks, substantially as described.

9. The sets of superposed tubes standing in vertical lines, those above having transversely-moving slides by which a series of disks are deposited in the lower tubes, said lower tubes being marked to indicate the amounts represented by the contained disks and supported in a removable base, substantially as herein described.

380,832. **CHURN-COVER.** JAMES H. TAYLOR, Westfield, Mass. Filed Apr. 4, 1887. Serial No. 233,540. (Model.)



Claim.—1. A fastening for churn-heads and analogous articles, consisting of the combination, with the head of the churn and with the hooks *y* on the body of the latter, of the center piece, *o*, having sockets in its border, the levers K, having one end engaging in said sockets and the other projecting beyond the border of said head, the cam-lever *w*, pivotally attached to said center piece, the yoke E, engaging with said lever, and the bolt A, fixed to said head and passing through said center piece and yoke, and having the nut *s* thereon, substantially as set forth.

2. A fastening for churn-heads and analogous articles, consisting of the combination, with the head of the churn and with the hooks *y* on the body of the latter, of the center piece, *o*, having sockets in its border, the spring J beneath said center piece, the levers K, having one end engaging in said sockets and the other projecting beyond the border of said head, the cam-lever *w*, pivotally attached to said center piece, the yoke E, engaging with said lever, and the bolt A, fixed to said head and passing through said center piece and yoke, and having the nut *s* thereon, substantially as set forth.

3. In combination with the removable head of a vessel having a bolt, A, attached thereto, a center piece, *o*, the levers K, having one end engaging with said center piece, a cam-lever, *w*, hung on said center piece, and a yoke, E, attached to said bolt, and having a swinging motion thereon and engaging with said cam-lever, substantially as set forth.

380,833. **ROLLER FOR PRODUCING ALTO-RILIEVO ORNAMENTATION.** JOHN H. THAMES, Chicago, Ill. Filed July 5, 1887. Serial No. 243,472. (No model.)

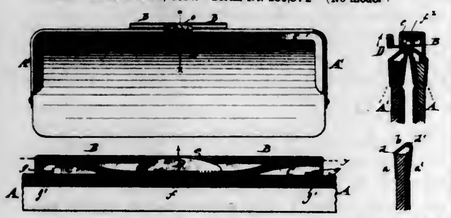


Claim.—1. A roller for producing alto-rilievo ornamentation, made with a rim on the face of which are produced sunken or intaglio patterns, and said rim being cut away to conform to the outer margins of the patterns, and also cut through to conform to inside openings of the patterns, substantially as described, for the purposes set forth.

2. A roller for producing alto-rilievo ornamentation, comprising a rim, A, held to a suitable hub adapted for connection to a driving-

shaft, and said rim cut away at both side edges, to conform to the outer margins of patterns produced *in intaglio* on its face, and also cut through at G to conform to the margins of inside openings of the patterns, substantially as herein shown and described.

380,834. POCKET-BOOK FRAME. BENNO VON EIGEN, Newark, N. J. Filed Dec. 30, 1887. Serial No. 259,374. (No model.)



Claim.—1. A pocket-book frame provided with jaws, the side walls of which are bent so as to form an obtuse outer and an oblique inner angle with the top portion of the jaw, substantially as set forth.

2. The combination, in a pocket-book frame, with the jaws of the same, of an open-bottomed casing attached to one jaw and provided with a recess at the side, a spring located in said casing, said spring having a laterally-extending slotted tongue, and a projection or catch in the other jaw adapted to be engaged by said spring-tongue, substantially as set forth.

3. The combination, in a pocket-book frame, of one jaw provided with a casing open at the bottom, said casing having inwardly-bent lugs and a recess at the inner side, of a spring retained in said casing, said spring having a laterally-extending tongue provided with a slot and finger-piece, and a projection or catch on the other jaw adapted to be engaged by the slot of the spring-tongue, substantially as set forth.

380,835. NURSING-BOTTLE. WALTER F. WARE, Camden, N. J. Filed Apr. 14, 1887. Serial No. 234,838. (No model.)



Claim.—1. A soft sucking-nipple, B, provided with sucking-holes and adapted to be clasped over the vent of a nursing-bottle, A, also provided with inlet air-tube C, opening through the side of the nipple, dependent from the interior surface thereof, and provided with a valve, substantially as and for the purposes described.

2. A soft sucking-nipple, B, adapted to be clasped over the vent of a nursing-bottle, A, and provided with an elongated inlet air-tube, C, opening through the side of the nipple, the latter having soft flattened sides near its end to close the tube against the exit of the contents of the bottle through the tube, but still to allow air to enter the bottle as the contents of the bottle are diminished, substantially as described.

380,836. COMBINED OUTSIDE AND INSIDE CALIPERS. OLIVER D. WARFIELD, Chicopee Falls, Mass. Filed Nov. 3, 1887. Serial No. 254,166. (No model.)



Claim.—1. The combination, in a pair of calipers, of legs 1 1, formed with inclined arms 3, bowed arms 2, semicircular threaded recesses 5, and screw 6, with pivoted studs 7 and 9, screw-threaded rod 8, thumb-nut 10, and slotted spring 11, substantially as described.

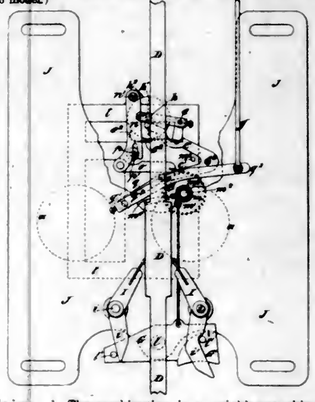
2. Calipers consisting of legs formed with inclined arms at one end and bowed arms at the other, and with semicircular threaded recesses and a pivot-screw resting therein, a screw-threaded rod, an adjusting-nut, and a spring, substantially as described.

3. The combination, with a spring consisting of a bowed strip of metal slotted between its ends, of a pair of caliper-legs extending through the slotted portion of the spring and movable therein, substantially as described.

4. The combination, with calipers having pivoted double-ended legs and means for adjusting the same, of a removable spring, substantially as described.

5. The combination, in a pair of calipers, of legs 1 1, having arms 2 3, semicircular threaded recesses 5, and screw 6, with pivoted studs 7 and 9, screw-threaded rod 8, thumb-nuts 10 and 29, and slotted spring 11, substantially as described.

380,837. COIN-OPERATED WEIGHING-MACHINE. THEODORE A. WEBER, New York, N. Y., assignor to the National Weighing Machine Company, same place. Filed Oct. 11, 1887. Serial No. 251,997. (No model.)

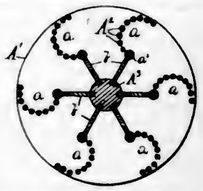


Claim.—1. The combination, in a weighing-machine, with the platform and index and a connection between them, of an automatic arresting device for arresting said connection both at the zero position and in the position to which it is brought in weighing, a motor for controlling the operation of said arresting device, a stop for said motor, a tumbler or lever for receiving a coin, and a connection between said tumbler and stop, all substantially as herein described, for effecting the temporary liberation of the motor to permit the temporary disengagement of said arresting device by the weight of the coin, as herein set forth.

2. The combination of the connecting-rod D, dogs I I, the loaded disengaging-lever G, the windlass *m*, and chain or cord *m'*, for operating said lever, a motor for operating said windlass, a stop for said motor, the tumbler-lever *r*, for receiving the coin, and connections, substantially as herein described, between said tumbler-lever and the said stop and motor, whereby the weight of the coin is made to liberate the windlass from the motor and disengage the motor from its stop, all substantially as herein set forth.

3. The combination of the connecting-rod D, the arresting-dogs I I, the loaded disengaging-lever G, the cord or chain *m'*, the windlass *m* and its ratchet-wheel m^2 and stop-pawl *q*, a motor furnished with a pawl, *o*, for operating said windlass, the tumbler-lever *r*, for receiving the weight of a coin, and the connection *g* between the tumbler-lever and the pawl *o*, whereby the pawls *q* and *o* are caused to be removed from the ratchet-wheel by the weight of the coin, substantially as herein described.

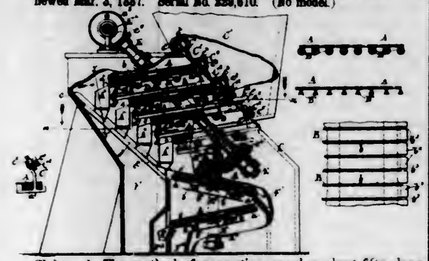
380,838. DYEING APPARATUS. URBAN WELDON, Cohoes, N. Y. Filed Dec. 27, 1887. Serial No. 258,983. (No model.)



Claim.—In a dyeing apparatus, a dipping wheel or cylinder rotary in a dye-vat, consisting of two heads provided with bearings and connected by a hub, radial partitions, and longitudinal pockets, said partitions consisting of rows of pins or rods projecting radially from the hub to the several pockets at points about half-way between the hub and periphery of the wheel, the pockets consisting of rounded rods extending longitudinally from head to head of the wheel, and having a cross-sectional arrangement approximately in the form of a semicircle, the inside wall of the respective pockets at its point of

junction with the rows of radially-projecting pins being approximately right-angular to said pins, substantially as described, and for the purposes set forth.

380,839. SEPARATOR. ANDREW WEMPLE, Chicago, Ill., assignor of one-half to Louis Gathmann, same place. Filed Dec. 3, 1884. Renewed Mar. 3, 1887. Serial No. 229,610. (No model.)



Claim.—1. The method of separating round or short from long particles, which consists in passing the mixed particles through a reciprocating screen which is moved over stationary bars or wires adjacent to its lower surface at such rate of speed as to leave the screen-apertures open a sufficient time to permit the passage of short or round particles, but to prevent the passage of particles which are long relatively to their diameter, substantially as set forth.

2. The combination, with a suitable frame or housing provided with supporting bars or rods, of a screen mounted to slide upon the said rods, a frame supported by the rods and provided with a series of bars or wires located below and adjacent to the screen, and means, substantially as described, for reciprocating the said screen, substantially as set forth.

3. The combination, with a series of shaking screens placed one above another, and a series of stationary wires or bars located below and adjacent to each of the said screens, of a series of troughs attached to said screens, a series of tables for receiving the material passing through the several screens, located below and attached to the latter, an incline, *c*, adapted to receive the material from the several tables, a passage for receiving the material from the several troughs, and an auxiliary screen located in position to receive the material passing from the incline *c*, substantially as and for the purpose set forth.

4. The combination, with a series of shaking screens, of a series of troughs attached to the said screens and provided with central discharge-spouts, a series of receiving-tables attached to the screens, an incline, *c*, adapted to receive the material from the several tables, a central passage, F, adapted to receive the material from the said troughs, and guides or deflectors, as c^4, adapted to prevent the entrance to the passage F of the material passing from the said tables, substantially as and for the purpose set forth.

5. The combination, with a series of reciprocating screens and a series of stationary wires or bars located below and adjacent to each of said screens, and a common hopper for supplying the several screens, of a series of inclined partitions or tables located between the screens for receiving the material passed through the latter, an incline, *c*, arranged to receive the material from the several tables, a series of troughs attached to the screens for receiving the tailings from the latter, a passage adapted to receive the material from the several troughs, and one or more auxiliary screens located in position to receive the material from the incline *c*, and each provided with a series of wires or bars located below and adjacent to it and adapted to receive the material from the said incline *c*, substantially as and for the purpose set forth.

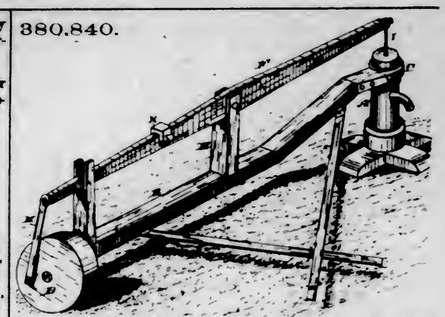
6. The combination, with a hopper provided with an exit-opening, of a longitudinally-movable gate placed over the opening and arranged to form part of the wall of the hopper, a reciprocating screen receiving material from the hopper, and means connecting the gate with the screen constructed to permit vertical adjustment of the gate, substantially as described.

380,840. HORSE-POWER PUMPING APPARATUS. HARRY D. WHITE, Cottonwood, Cal. Filed Aug. 24, 1887. Serial No. 247,790. (No model.)

Claim.—1. The central pivot having the horizontal arm mounted thereon, and a crank-wheel journaled upon the outer end of the arm, so as to travel upon the ground and support the same, in combination with a lever having its center fulcrumed upon a post fixed upon the arm B, its outer end connected with the crank-pin in said wheel and the inner end with the pump, substantially as herein described.

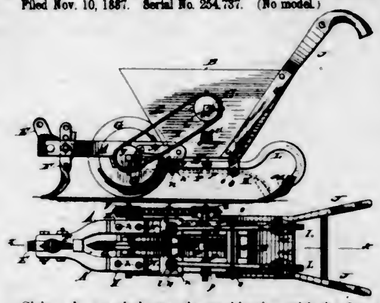
2. The horizontal arm or bar having its outer end supported by a wheel which travels upon the ground, its inner end fitted to turn about a central pivot, and a lever extending horizontally above the arm and having its center fulcrumed upon a post supported from the arm

380,840.



and its outer end connected with a crank-pin on the traveling wheel, in combination with a secondary lever fulcrumed upon a post outside the line of travel of the wheel, its inner end connected with the primary oscillating lever by a link or pitman and its outer end connected with a pump-rod exterior to the fulcrum-post, substantially as herein described.

380,841. COTTON-PLANTER. JACOB R. WHITE, Greenville, Ala. Filed Nov. 10, 1887. Serial No. 254,737. (No model.)



Claim.—In a seed-planter, the combination, with the frame and a yoke-plate, N, secured to the frame and provided with the pivot *n*, of the plow-beams L, provided with the eyes *l* and adjustably connected together by the rod P and nuts *p*, the downwardly-projecting and apertured lugs *o*, secured to the frame, and the rod O, secured in the lugs *o* and supporting the plow-beams, substantially as herein shown and described.

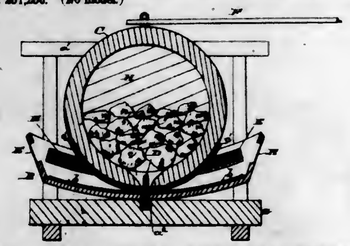
380,842. APPARATUS FOR EXAMINING ORES. JOHN R. WILLIAMSON, Seattle, Wash., and WILLIAM W. HICKTER, Oakland, Cal. Filed Mar. 1, 1887. Serial No. 229,346. (No model.)



Claim.—1. An apparatus for examining ores, consisting in the battery, the wire C, connected to one terminal thereof and having a metallic brush, D, the wire *a*, connected to the other terminal, the telephone-receiver B, connected to the wire *a*, and having a wire, C', provided with a metallic brush, D', substantially as set forth.

2. In an apparatus for examining ores, electric conductors, the terminals of which are adapted to contact with the ore, and a telephone-receiver interposed between the ends of one conductor, substantially as set forth.

380,843. ORE-PULVERIZER. DAVID BARATINI, Murphy's, and WILLIAM P. STEVENSON, Douglas Flat, Cal. Filed Oct. 1, 1887. Serial No. 251,256. (No model.)

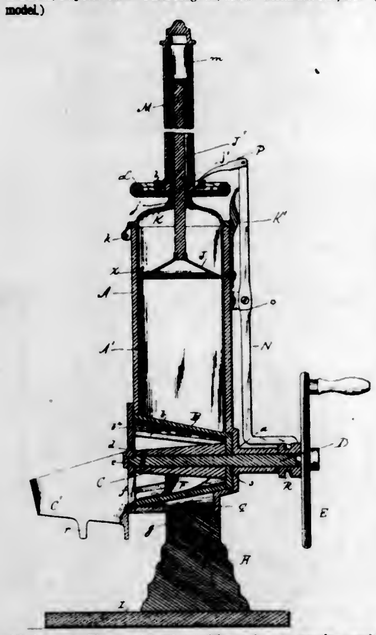


Claim.—1. In an ore-pulverizer, a bed-piece and a rocking mortar supported thereby, in combination with a rolling weight operating in the mortar, and having a socket in its base loosely fitting over a pin in the base of the mortar, substantially as herein described.

2. In an ore-pulverizer, a bed-piece, in combination with a rocking mortar supported thereon and having a central pin seated loosely in a socket of the base-piece, and a rolling weight operating in the mortar and having a socket loosely fitted over the pin of the mortar, substantially as herein described.

3. In an ore-pulverizer, a bed-piece and a rocking mortar mounted thereon, and having a pin seated loosely in a socket in the bed-plate, in combination with a rolling weight operating in the mortar and having a socket loosely fitting over the pin of the mortar, and a reciprocating pitman connected with the rolling weight, whereby it is operated, substantially as herein described.

380,844. ICE-SHAVING MACHINE. RUSSELL H. BATES and DANIEL L. BATES, Dayton, Ohio. Filed Aug. 16, 1887. Serial No. 247,099. (No model.)



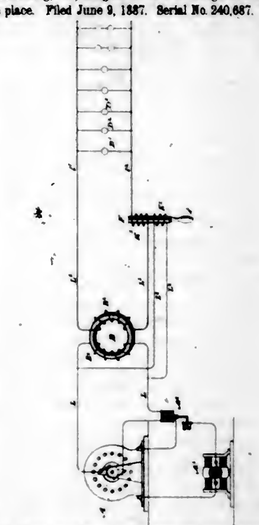
Claim.—1. The combination, with an ice-receptacle provided with a cover, of a rotary cutter, its shaft, a cam-raceway on said shaft, the pivoted lever actuated by said raceway, a pawl hinged to the upper end of said lever, the upper turn-wheel having a ratchet engaged by said pawl, the follower having a screw-threaded spindle, and a screw-threaded collar secured in the cover through which said spindle passes, as set forth.

2. The combination, with an ice-receptacle, of the rotary cutter, the follower, its screw-threaded spindle having a stop-nut, the hinged lid, the upper turn-wheel having a screw-threaded collar for actuating said spindle and a ratchet, the hinged pawl actuating said ratchet, the pivoted lever, a cam-raceway operating said lever, and the cutter-shaft rotating said raceway, as set forth.

3. The combination, with the ice-receptacle, of the rotary cutter having the form of a hollow truncated cone provided at intervals with longitudinal slots and knives, the truncated conical hub having its larger base adjacent to the smaller base of the cutter, the spiral scraper extending into the cutter, the cutter-shaft, and its turn-wheel, as set forth.

4. In an ice-shaver, the combination, with the ice-receptacle provided with a rotary cutter, of the follower J, having the flange *x*, and the hinged lid connected to and adapted to remove and restore the follower, as set forth.

380,845. SYSTEM OF ELECTRICAL TRANSLATION. REGINALD BELFIELD, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed June 9, 1887. Serial No. 240,687. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, with an electric generator and a circuit for the same, of an induction-coil having its primary coil in said circuit, a circuit including the secondary coil, means for varying the resistance of the secondary circuit, a soft-iron core, and two coils acting upon said core, one of which coils is included in the secondary circuit and the other of which coils is in circuit with said primary coil.

2. The combination, with a source of electric currents and translating devices, of two converters having their primary coils connected with said source in multiple arc with each other and their secondary coils connected in series with each other and said translating devices.

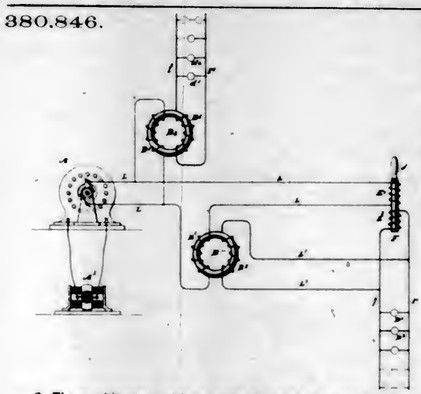
3. The combination, with a source of electric currents and translating devices, of two converters having their primary coils connected with said source in multiple arc with each other and their secondary coils connected in series with each other and said translating devices, and means for modifying the effective action of the core of one of said converters upon its coils.

380,846. SYSTEM OF ELECTRICAL TRANSLATION. REGINALD BELFIELD, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed June 9, 1887. Serial No. 240,688. (No model.)

Claim.—1. The combination, with a source of electric currents and a circuit therefor, of a converter having its primary coil connected in said circuit, translating devices connected in the secondary circuit of said converter, a soft-iron core, and two coils applied thereto, one of said coils being connected in series with said primary coil and the other in multiple arc with said secondary coil.

2. The combination, with a source of electric currents and a circuit therefor, of a converter having its primary coil connected in said circuit, translating devices connected in the secondary circuit of said converter, a soft-iron core, and two coils applied thereto, one of said coils being connected in series with said primary coil and the other in multiple arc with said secondary coil, means for altering the relative action of said soft-iron core and its coils.

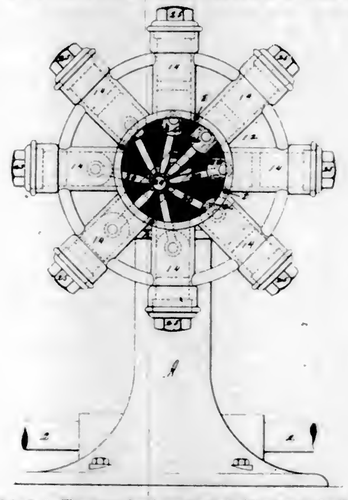
380,846.



3. The combination, with a source of electric currents and a circuit therefor, of a converter having its primary coil connected in said circuit, translating devices connected in the secondary circuit of said converter, a soft-iron core, and two coils applied thereto, one of said coils being connected in series with said primary coil and the other in multiple arc with said secondary coil, and one or more converters in multiple arc with the first-named converter.

4. The combination, with a source of electric currents and a circuit therefor, of a converter having its primary coil connected in said circuit, translating devices connected in the secondary circuit of said converter, a soft-iron core, and two coils applied thereto, one of said coils being connected in series with said primary coil and the other in multiple arc with said secondary coil, means for altering the relative action of said soft-iron core and its coils, and one or more converters in multiple arc with the first-named converter.

380,847. MULTIPLE-CYLINDER MOTOR. ELIJAH B. BENHAM, Holyoke, Mass. Filed Aug. 29, 1887. Serial No. 248,140. (No model.)



Claim.—1. The motor-head constructed with a series of cylinders radiating from a common center, having a shaft-passage therethrough, substantially as described, a series of water-passages therein extending from one side of said head to said cylinders, and the tubular projection *y*, surrounding said shaft-passage, combined with the valve-case 6, the hollow valve 10, through which said shaft passes, having an annular recess in its end to receive said tubular extension, and the ring-nut 9 in the inner wall of said case, forming an external bearing for said valve between its ends, substantially as set forth.

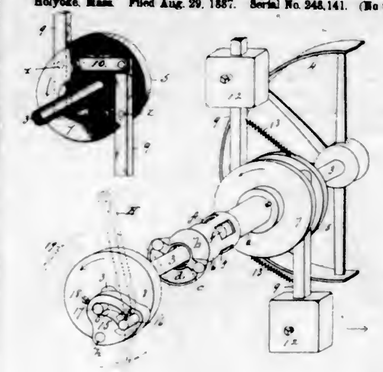
2. In combination, the pitmen 30, having the arms 28 thereon extending in a line with the crank-pin, integral with the pitmen, and having their bearing-surfaces all in the same plane opposite the sides of said crank-pin, the thimble 27, interposed between the arms of said pitmen and the crank-pin and having a flange thereon covering the ends of said arms, and a ring surrounding said arms and crank-pin, substantially as set forth.

3. In combination, the motor-head 12, the valve-case 6, secured to said head and having the valve-chamber therein, the valve 10, having the enlargement *e*, the ring-nut 9, surrounding said valve, having a screw-connection with the interior of said chamber, and engaging with said enlargement *e*, whereby said valve is held adjustably against said head and said chamber is divided into the receiving and exhaust sections *c* and *b*, respectively, and inlet and discharge passages in said case communicating with said valve-chamber sections, substantially as set forth.

4. The valve-case 6, containing the valve-chamber and having the inlet and discharge passages 7 and *x*, respectively, leading to and from opposite ends of said chamber, combined with the ring-nut 9, screwed into said chamber and dividing it into a receiving and an exhaust section, and the hollow valve 10, extending through said nut and having openings through its walls communicating with the exhaust section of said valve-chamber, substantially as set forth.

5. The motor-head 12 and the valve-case 6, secured to the rear end of said head, combined with the valve-case extension 20, having the packing-thimble 21 therein and secured to the valve-case, and the valve 10, extending through said case 20 and surrounded by said packing-thimble, substantially as set forth.

380,848. SPEED-GOVERNOR FOR MOTORS. ELIJAH B. BENHAM, Holyoke, Mass. Filed Aug. 29, 1887. Serial No. 248,141. (No model.)



Claim.—1. A driving-shaft of a motor having a crank-disk, substantially as described, fixed thereon, a crank-pin having a pivotal connection on the face of said crank-disk, whereby said pin may assume different positions relative to the axis of said driving-shaft, a valve, substantially as described, capable of reciprocating rotary motion on said shaft, having a disk, 7, fixed on one end thereof, and a disk, 5, fixed on said shaft opposite the disk 7, combined with two weight-bearing levers pivoted to the face of disk 5 and having a link-connection, substantially as described, with the opposite disk, 7, and retracting-springs connected to said levers, substantially as set forth.

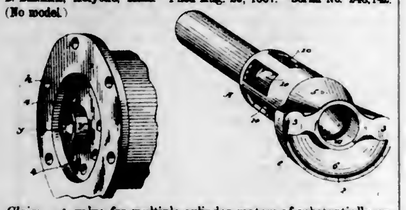
2. Means for regulating the speed of motors by varying the stroke of the pistons thereof, consisting of a driving-shaft having a disk, 5, fixed thereon and a crank-disk fixed on its end, two weighted levers pivoted near one end thereof on the face of said disk 5, extending tangential to the periphery of said disk, two retracting-springs connected to said levers, and a valve, substantially as described, capable of a reciprocating rotary movement on said shaft, having a disk, 7, fixed on one end thereof opposite said disk 5, combined with two links having a pivotal connection with the ends of said levers and with the disk 5, a crank-pin plate having a curved slot therein and having the crank-pin fixed thereto pivoted to said crank-disk, and a pin fixed in said last-named disk and entering said slot, substantially as set forth.

3. The driving-shaft 3, having a crank-disk, substantially as described, fixed thereon, a crank-pin having a pivotal connection on the face of said crank-disk, whereby said pin is free to assume positions more or less removed from the axis of said shaft, a valve, substantially as described, capable of reciprocating rotary motion on said shaft, having a disk, 7, fixed on one end thereof, and a disk, 5, fixed on said shaft opposite the disk 7, combined with two levers pivoted between said

disks to the face of disk 5 and having a link-connection, substantially as described, with disk 7, a weight, 12, adjustably attached to each of said levers, and a retracting-spring, substantially as described, connected with one or both of said levers, substantially as set forth.

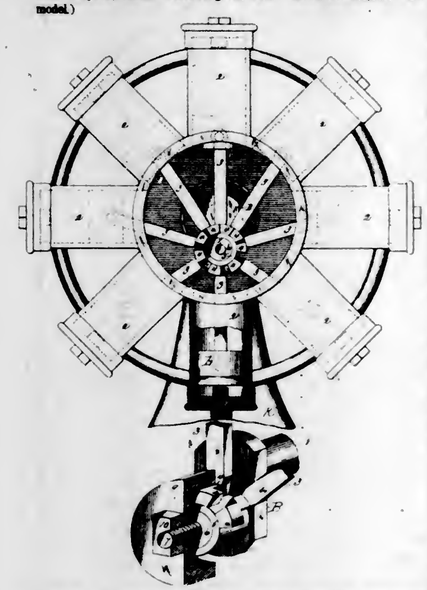
4. In an engine, substantially as described, in which the direction of the action of the piston force upon the crank-pin is controlled by the timing of the admission of the motor-fluid, the combination, with the crank-disk 8, having the projecting fixed pin 17, of the crank-pin plate 15, having a slot in which said fixed pin engages and an adjusting-screw, 18, in its border capable of engaging with said pin, substantially as set forth.

380,849. VALVE FOR MULTIPLE-CYLINDER ENGINES. ELIJAH B. BEMAN, Holyoke, Mass. Filed Aug. 29, 1887. Serial No. 248,142. (No model.)



Claim.—A valve for multiple-cylinder motors of substantially cylindrical form, having a semicircular open bearing end, as described, an annular chamber, w, in said end, to receive a tubular projection on a motor, a chamber, 9, communicating with said open end of the valve, and an exhaust port or ports, 10, through the sides of that part of the valve surrounding said chamber 9, substantially as described.

380,850. PITMAN-AND-CRANK CONNECTION. ELIJAH B. BEMAN, Holyoke, Mass. Filed Aug. 29, 1887. Serial No. 248,143. (No model.)

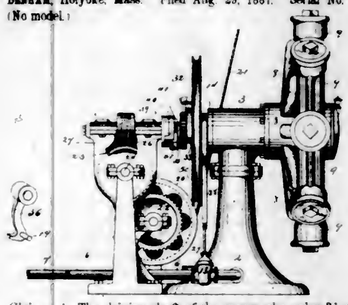


Claim.—1. The within-described pitman-and-crank connection, consisting of the combination, with the pin of the crank, of the sleeve 5, inclosing said pin, a series of pitmen, each having an arm extending at right angles thereto toward the end of the crank-pin and bearing on the sides of said sleeve, and a cylindrical cup, 9, secured against the end of the crank-pin and inclosing the arms of the pitmen, substantially as set forth

2. The within-described pitman-and-crank connection, consisting of the combination, with the pin of the crank, of the sleeve 5, inclosing said pin, a series of pitmen, each having an arm extending at right angles thereto toward the end of the crank-pin bearing on the sides of said sleeve, said arms having a lateral offset, *a*, on one side, and a cylindrical cup, 9, secured against the end of the crank-pin and inclosing the arms of the pitmen, substantially as set forth.

3. The within-described pitman-and-crank connection, consisting of the combination, with the pin of the crank having the screw-threaded extension 7, of a sleeve covering said pin, a series of pitmen, each having an arm extending at right angles thereto toward the end of said pin and bearing on the sides of said sleeve, a cylindrical cup inclosing said pitman-arms and crank-pin, and a nut screwing on said crank-pin extension, substantially as set forth.

380,851. HYDRAULIC-ELEVATOR MECHANISM. ELIJAH B. BEMAN, Holyoke, Mass. Filed Aug. 29, 1887. Serial No. 248,144. (No model.)



Claim.—1. The driving-shaft of the motor, the valve 31, through which said shaft passes, a ratchet-gear, 34, fixed on the end of said valve, having a yoke, 35, thereon, a pulley, 40, fixed on said shaft, two valve-controlling segments, 41, adjustably connected to said pulley and each having an engagement with said yoke, a cam, 33, fixed at the end of the valve-case, combined with a reversing-pulley, 32, having a free rotary motion at the side of said cam, a starting and stopping valve connected with said reversing-pulley, and a pawl, 36, hung on the side of said last-named pulley, capable of engaging with said ratchet-gear and with said cam, substantially as set forth.

2. The reversing-pulley 32, having a cam-groove, 15, in one side thereof, the stop-valve 13, the connecting-rod 28, connected with said valve and having an engagement with said cam-groove, the pawl 36, hung on the side of said pulley, and the ratchet-gear 34, combined with the fixed cam 33, controlling the engagement of said pawl with said gear, substantially as set forth.

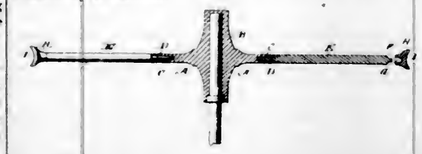
3. A hydraulic motor, substantially as described, comprising a valve-case and a driving-shaft, a cam, 33, fixed at the end of said valve-case, combined with a valve, 31, located on and having an indirect connection, substantially as described, with said driving-shaft, whereby it is capable of a degree of rotary motion independent of said shaft, a gear fixed on said valve, and a reversing-pulley, 32, having a pawl thereon capable by means of said cam of alternate engagement with and disengagement from said gear, substantially as set forth.

4. A motor, substantially as described, and its driving-shaft, a reversing-pulley hung on the motor-case and capable of being turned thereon, the motor-valve having one end projecting from said case and having a ratchet-gear fixed thereon, a yoke, as described, fixed on said gear, a pawl hung on said reversing-pulley engaging with said gear, combined with a pulley fixed on said driving-shaft having two pivoted segments thereon, each of which has a pin capable of engaging with the opposite ends of said yoke, substantially as set forth.

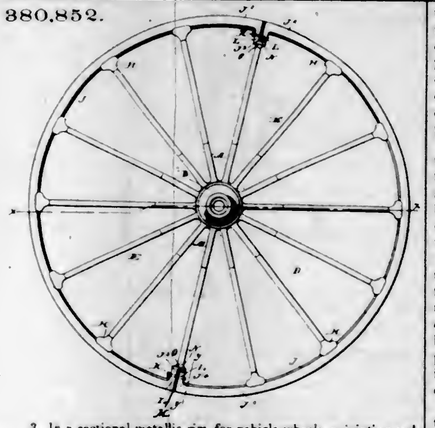
380,852. VEHICLE-WHEEL. JOSEPH BLAIR, Duluth, Minn. Filed Aug. 11, 1887. Serial No. 246,630. (No model.)

Claim.—1. In a vehicle-wheel, the combination of a hub, spokes, caps fixed on the outer ends of the spokes having outer sockets, a split metallic rim fitted to run circularly in said sockets, but incapable of shifting laterally therein, one of the split ends of said rim being fastened immovably to the corresponding cap and the other end adjustable thereon, and a rim take-up, substantially as described.

2. In a take-up for a sectional metallic wheel-rim, the jointing ends connected by a dovetail slide-joint, and both formed with ears, in combination with a binding-screw for drawing the ears together, substantially as described.



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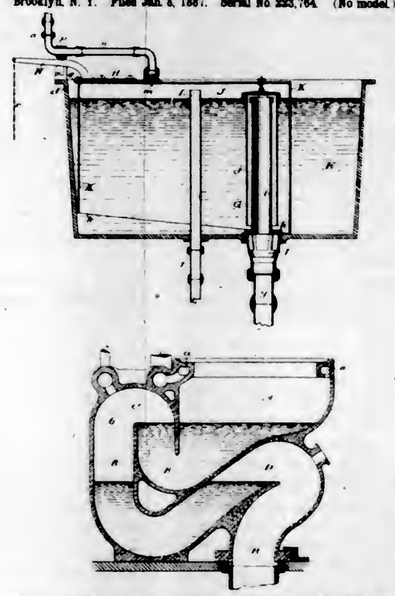


3. In a sectional metallic rim for vehicle-wheels, a jointing end, J³, of one rim-section having a socket for reception of a spoke-tenon, substantially as described.

380,853. COMPOSITION FOR LINING VESSELS. JAMES A. BLANCHARD, Brooklyn, N. Y. Filed June 3, 1887. Serial No. 240,187. (Specimens.)

Claim.—As a new article of manufacture, the herein-described composition of matter for rendering air-tight and proof against corrosion wrappers or casings for holding chloride of lime and like corrosive compounds, consisting of resin, black pitch, gypsum, and petrolatum, combined in substantially the proportions herein specified.

380,854. PNEUMATIC FLUSHING-TANK. JAMES E. BOYLE, Brooklyn, N. Y. Filed Jan. 3, 1887. Serial No. 223,764. (No model.)



Claim.—1. The combination of a tank, a float-valve for supplying water thereto, a flushing-pipe leading from said tank, an outlet-valve opening from said tank to said pipe and adapted when operated to cause an outflow from said tank, a lever for operating said valve, an air-pipe projecting up in said tank and opening above the water-level therein, and an open-bottomed vacuum chamber or box placed in said tank over said air-pipe and constructed to be lifted out at will.

2. The combination of a tank, a float-valve for supplying water thereto, a flushing-pipe leading from said tank, an outlet-valve opening from said tank to said pipe and adapted when operated to cause an outflow from said tank, a lever for operating said valve, an air-pipe projecting up in said tank and opening above the water-level therein, and an open-bottomed vacuum chamber or box placed in said tank over said air-pipe, constructed to be lifted out at will, and having a capacity equal to the volume of air required to be drawn from the air-pipe by the operation of the tank.

3. The combination of a tank, a float-valve for supplying water thereto, a flushing-pipe leading therefrom, an outlet-valve opening from the tank to said pipe and adapted when operated to establish an outflow from said tank, a lever for operating said valve, an open-bottomed vacuum-chamber arranged in said tank and movable up and down therein, an air-pipe opening within said chamber above the water-level in the tank, and mechanical means for lifting said chamber.

4. The combination of a tank, a float-valve for supplying water thereto, a flushing-pipe leading therefrom, an outlet-valve opening from said tank to said pipe, an open-bottomed vacuum-chamber arranged in said tank and movable up and down therein, an air-pipe opening into said chamber above the water-level, and an operating-lever connected to said chamber and to said outlet-valve, whereby the pulling of said lever simultaneously raises said chamber, thereby creating a partial vacuum in said air-pipe, and opens said valve, thereby establishing the outflow and maintaining said vacuum.

5. The combination of a tank, a float-valve for supplying water thereto, a flushing-pipe leading therefrom, an outlet-valve opening from the tank to said pipe, a lever for operating said valve, a vacuum-chamber pivoted in said tank and connected to said lever, whereby when the lever is pulled the chamber is tilted, and an air-pipe opening into said chamber above the water-level.

6. The combination of a tank, a float-valve for supplying water thereto, a flushing-pipe leading therefrom, an outlet-valve opening from the tank to said pipe, a vacuum-chamber arranged in said tank mounted on pivots on a horizontal axis and capable of being tilted, an operating-lever fixed to said chamber, and an air-pipe opening into said chamber above the water-level.

7. The combination of a tank, a float-valve for supplying water thereto, a flushing-pipe leading therefrom, an outlet-valve opening from the tank to said pipe, a lever or equivalent mechanical means for operating said valve, a vacuum-chamber arranged in said tank and movable up and down therein, an air-pipe opening into said chamber, and a vent-valve for permitting escape of air from said chamber.

8. The combination of a tank, a float-valve for supplying water thereto, a flushing-pipe leading therefrom, an outlet-valve opening from the tank to said pipe and adapted when operated to cause an outflow of water from said tank sufficient for one flush, a lever for operating said valve, a vacuum-chamber arranged in said tank, adapted to be raised and lowered therein and connected to said lever, an air-pipe opening into said chamber, a vent-valve in said chamber opening outward, a vent-tube leading from the tank, and a flexible tube connected to said vent-valve and to said tube.

9. The combination, with a water-closet consisting of a bowl, two traps, and an intervening air-space, of a tank, a float-valve for supplying said tank, a flushing-pipe extending from said tank to the bowl, an air-pipe extending upward from said air-space and opening in the tank above the water-level, an operating-lever for said tank, and a movable air-bell or vacuum-chamber arranged in said tank in communication with said air-pipe and connected to said lever, whereby on the lifting of said air-bell a partial vacuum is created within it and in said air-pipe and air-space.

10. The combination, with a water-closet consisting of a bowl, two traps, and an intervening air-space, of a flushing-tank, a movable air-bell therein, an operating-lever and pull for lifting said bell, and an air-pipe extending from the said air-space and terminating in said air-bell, whereby on lifting said bell a partial vacuum is created in said pipe and air-space.

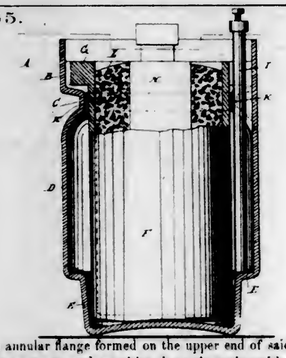
380,855. GALVANIC BATTERY. HORATIO J. BREWER, New York, N. Y. Filed June 3, 1887. Serial No. 240,120. (No model.)

Claim.—1. In a galvanic battery, the combination, with a porous cup provided with a flange having a recess, of a containing-jar provided in its neck with a recess, and a positive electrode passing through said recess in the flange of the porous cup and through said recess in the containing-jar, substantially as shown and described.

2. In a galvanic battery, the combination, with a porous cup provided with a flange having a recess, of a containing-jar having a reduced bottom part for receiving the lower end of said porous cup, and an electrode resting on the shoulder formed on the reduced bottom part, said electrode also passing through the recess formed in the flange of the porous cup, substantially as shown and described.

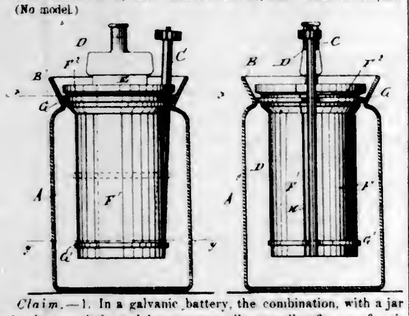
3. In a galvanic battery, the combination, with a containing-jar provided in its neck with a recess and having a reduced bottom part, of a porous cup resting with its lower end in said reduced bottom part

380,855.



of the jar, an annular flange formed on the upper end of said porous cup and having a recess, and a positive electrode resting with its lower end on the shoulder formed by said reduced bottom part, said electrode also passing through the recess in the neck of the jar and through the recess in the flange of the porous cup, substantially as shown and described.

380,856. GALVANIC BATTERY. HORATIO J. BREWER, New York, N. Y. Filed Feb. 19, 1887. Renewed Dec. 31, 1887. Serial No. 259,482. (No model.)

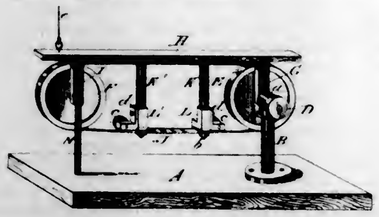


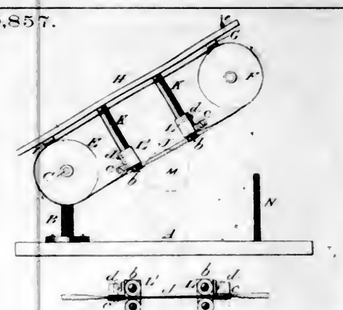
Claim.—1. In a galvanic battery, the combination, with a jar having its mouth formed by an outwardly-extending flange, of positive and negative electrodes held together by elastic bands, of which the upper one rests on the said flange and supports the electrodes in the jar, substantially as shown and described.

2. In a galvanic battery, the combination, with a jar having its mouth formed by an outwardly-extending flange, of the negative electrode having a head, an elastic band passing around the said head, and the positive electrode pressed by the said elastic band against the flange of the jar, substantially as shown and described.

3. In a galvanic battery, the combination, with a jar having its mouth formed by an outwardly-extending flange, of the negative electrode, consisting of a carbon-plate and two plates pressed against the said carbon-plate, and the said plates having a recess extending throughout their length, a head formed on the said plates, an elastic band passing around the said head, and the positive electrode held in the said recess, pressed by the said elastic band against the said flange of the jar, substantially as shown and described.

380,857. BAND SAWING-MACHINE. CALVIN BRYANT, Keene, N. H., assignor of one-half to Samuel C. Keeler, same place. Filed Dec. 17, 1886. Serial No. 221,876. (No model.)





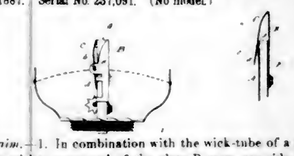
Claim.—1. As an improvement in band sawing-machines, the combination, with a vertically-swinging frame carrying the saw, located transversely to the log and movable toward and away from the same, of saw-pulleys mounted in said frame, a saw-blade carried by the pulleys, and guide-rollers arranged in proximity to the blade with their axes at an angle to that of the pulleys, so that the cutting portion of the blade may be turned to an angle with relation to that portion of the blade upon the pulleys, substantially as described.

2. As an improvement in band sawing-machines, a vertically-swinging frame carrying the saw pivoted upon the driving-shaft, said frame being placed transversely to the log and provided with guide-carrying arms and guide-rollers, which latter lie in a plane at right angles to the plane of movement of the frame, in combination with the saw-blade and its carrying-pulley, all arranged and operating to drive the saw and so guide the same that its cutting portion shall be deflected at a right angle to the remainder of the blade, substantially as described.

3. In a band sawing-machine, the combination of the swinging frame located transversely to the log and movable toward and from it, the supporting-standards for the frame, guide-arms and the saw-guides arranged in close proximity to the saw, with their axes at right angles to those of the saw-pulleys, the saw-pulleys and saw-blade carried thereby, whereby said saw-blade has its cutting portion turned into the plane of movement of the saw-frame and at a right angle with that portion of the blade upon the pulleys, substantially as and for the purposes specified.

4. In a band sawing-machine, the standard B, provided with a journal-bearing, *a*, and the driving-shaft C, carrying pulleys D and E, in combination with the swinging frame located transversely to the log and movable toward and away from the same, pulley F, saw-blade J, and guide-rollers *b c*, in close proximity to the blade and attached to guide-blocks L L' for the purpose of turning and guiding said saw-blade so that its cutting portion will lie in the plane of movement of the saw-frame, said rollers *b* lying in a plane at right angles to that of the pulleys, while rollers *c* lie in the same plane as the pulleys, substantially as described.

380,858. LAMP-EXTINGUISHER. EDSON L. BRYANT, Ansonia, Conn., assignor of one-half to Wallace & Sons, same place. Filed May 4, 1887. Serial No. 237,091. (No model.)



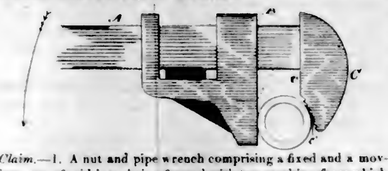
Claim.—1. In combination with the wick-tube of a lamp-burner, an extinguisher composed of the plate B upon one side of the wick-tube and the part C upon the opposite side of the wick-tube, hinged to the plate B, the said parts adapted to be moved together up and down upon the wick-tube as a guide, the part C and the wick-tube, upon their adjacent faces, constructed the one with a projection toward the other, and the said other constructed to engage said projection as the extinguisher approaches its extreme up position, substantially as described.

2. The combination of the wick-tube, the plate B, arranged upon one side of said tube and the part C upon the other side of the tube, hinged to the said part B, the said parts B and C adapted to be moved up and down upon the wick-tube, the part C constructed with one or more projections, *d*, downward below the line of the hinge, and so as to bear upon the surface of the wick-tube, and an engaging device between the wick-tube and the said part C, adapted to engage the said part C at a predetermined point in its rise, and thereby impart the closing movement to the said part C, substantially as described.

3. The combination of the wick-tube, plate B upon one side of the wick-tube and the part C upon the opposite side of the wick-tube, hinged to the said plate B, the said plate and hinged part C adapted to be moved up and down upon said wick-tube, the wick-tube constructed with an outward projection, *f*, toward the said hinged part C, and the said hinged part C constructed with a corresponding inward projection, *e*, the said projections *e f* being adapted to engage each other as the extinguisher approaches its extreme up position, substantially as described.

4. The combination of the wick-tube, the plate B on one side of the said wick-tube, and the part C upon the opposite side of the wick-tube, hinged to said plate B, the said plate and hinged part C being adapted to be moved up and down upon the wick-tube as a guide, a lever hung in the burner, one arm extending into engagement with the said plate B, the other extending outward as a handle, the wick-tube and the said part C constructed with corresponding projections on their adjacent faces adapted to engage each other as the extinguisher approaches its extreme up position, substantially as described.

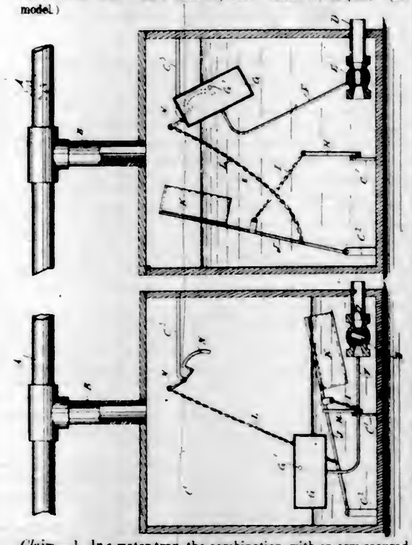
380,859. WRENCH. MATTHEW E. CAMPFIELD, Pittsburg, assignor to the Brown Specialty Manufacturing Company, Etna, Pa. Filed Nov. 12, 1887. Serial No. 254,998. (No model.)



Claim.—1. A nut and pipe wrench comprising a fixed and a movable jaw, one of said jaws being formed with two working-faces which stand at an angle to each other, and one of said faces provided with grasping-teeth, the other jaw having a single straight face which is parallel to one of the faces of the double-faced jaw and extends over both, substantially as shown and described.

2. A nut and pipe wrench comprising a fixed and a movable jaw, the fixed jaw being formed with two working-faces, *c c'*, the inner face, *c*, being plain and at right angles to the shank, and the outer face, *c'*, being outwardly inclined and provided with grasping-teeth, and the movable jaw having a plain straight face which is parallel to the face *c* of the fixed jaw and extends over the two faces *c c'*, substantially as shown and described.

380,860. WATER-TRAP FOR GAS-MAINS. ALEXANDER CRAMBERS, Toledo, Ohio. Filed June 30, 1887. Serial No. 242,991. (No model.)



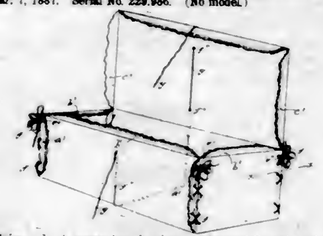
Claim.—1. In a water-trap, the combination, with an arm secured by one end to the outlet-valve and a float secured to the other end of the said arm, of a catch-lever fulcrumed in the trap-casing and adapted to lock the said arm in place, and a lever carrying a float and fulcrumed in the trap-casing and adapted to unlock the said catch-lever from the said arm when sufficient water has accumulated in the casing, substantially as shown and described.

2. In a water-trap, the combination, with an arm secured by one end to the outlet-valve and carrying a float on its other end, of a lever having a catch adapted to lock the said arm in place, a second lever fulcrumed in the trap-casing and carrying a float, and a chain connecting the said second lever with the lever having the catch, substantially as shown and described.

3. In a water-trap, the combination, with an arm secured by one end to the outlet-valve and a float held on the other end of said arm, said float being provided with a pin, of a tripping-lever adapted to engage said pin on said float, a chain connected with said tripping-lever, a lever pivoted in the trap-casing and connected with said chain, and a float held on said lever, substantially as shown and described.

4. In a water-trap, the combination, with a casing connected with the main line, of an outlet-pipe held in said casing, a valve secured to the inner end of said outlet-pipe, which, with its valve, is sealed by water in the casing, an arm secured to one end of said valve, a float provided with a pin and secured to the other end of said arm, and a tripping-lever adapted to engage said pin on said float, so as to hold the valve in an open position until a sufficient quantity of the water accumulated in the casing has been discharged, substantially as shown and described.

380,861. PAPER BOX. KATE J. COLLIER, New York, N. Y. Filed Mar. 7, 1887. Serial No. 229,986. (No model.)



Claim.—1. A paper box having perforated lips *a'*, and folded to shape with said lips overlapping at the corners, and lacings *f*, passed through the perforations of the lips and athwart the corners of the box, substantially as and for the purpose herein set forth.

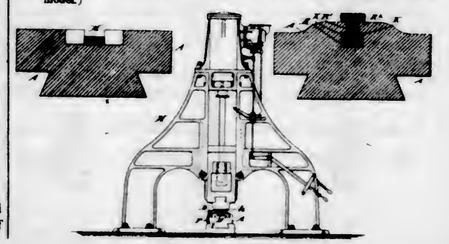
2. A paper box having leaves *b'* integral therewith and arranged to fold inward over the interior of the box, lips *a'*, integral with the blank and arranged to overlap at the corners of the box, and flaps *c'*, integral with the blank and arranged at the free edges of the cover, substantially as and for the purpose herein set forth.

3. A paper box having holes *f'''*, and with perforated lips *a'* integral therewith and overlapping at the corners of the box, lacings *f*, passed through the perforations of the lips and athwart the said corners, and a locking-string, *g*, passed through the holes *f'''* in the body and cover, substantially as and for the purpose herein set forth.

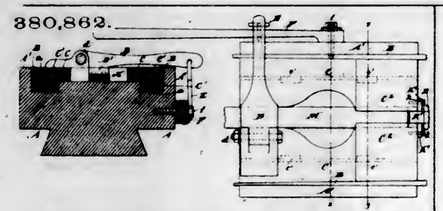
4. A paper box having the locking-string *g* and lacings *f*, with a blank folded to shape provided with holes *f'''*, and having integral therewith the perforated lips *a'*, leaves *b'*, and cover *c*, provided with flaps *c'*, substantially as and for the purpose herein set forth.

5. In a paper box, the combination, in a blank having lips *b'* integral therewith and arranged to fold inward over the interior of the box, and perforated lips *a'*, arranged to overlap and be secured at the corners by fastening devices passed through the perforations of said lips *a'*, substantially as and for the purpose herein set forth.

380,862. UPSETTING-MACHINE. WATTS COOKE and DANIEL CARLOUGH, Paterson, N. J. Filed Jan. 10, 1888. Serial No. 260,357. (No model.)



380,862.



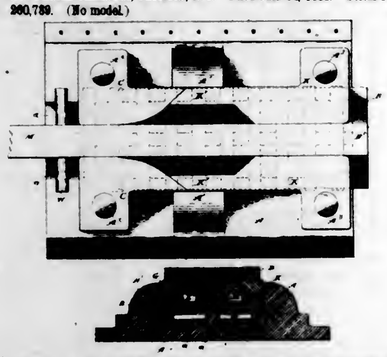
Claim.—1. In a machine for upsetting eye-bars, the hammer-die A and means for reciprocating it, in combination with the bed A, exchangeable cheeks C, and ram R, arranged for joint operation as herein specified.

2. In a machine for upsetting eye-bars, the bed or bottom die, A, having grooves *a*, exchangeable cheeks C, having lips C^3 extending partially over the space to receive the metal to be upset, in combination with the hammer-die *h* and means for operating it, and with suitable provisions for ramming the metal into the die, as herein specified.

3. In a machine for upsetting eye-bars, the header or ram described having the main body R of a section corresponding to that of the bar to be upset, the web R', and strengthening part R^3, arranged to serve relatively to the cheeks C and lips C^3, substantially as herein specified.

4. In a machine for upsetting eye-bars, the lever D, carrying the clamp D', and means for operating it forcibly and yieldingly by hand, in combination with the upsetting-ram R, and hammer-die *h*, and means for reciprocating it, as herein specified.

380,863. MACHINE FOR UPSETTING EYE-BARS. WATTS COOKE and DANIEL CARLOUGH, Paterson, N. J. Filed Jan. 14, 1888. Serial No. 260,789. (No model.)



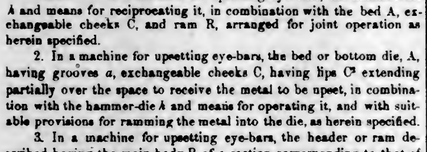
Claim.—1. In a machine for upsetting eye-bars, in combination with the means for supporting and holding the bar against end movement, the short cheeks C C, long cheeks K K, supports A, ram R, and means, as the bottom die, B, and top die, G, for restraining the expansion facewise, arranged for joint operation, substantially as herein specified.

2. In a machine for upsetting eye-bars, the series of anti-friction rollers W, mounted in the bed A, in combination with the movable lower die, B, suitable cheeks or edge dies and top die, and the ram R, as herein specified.

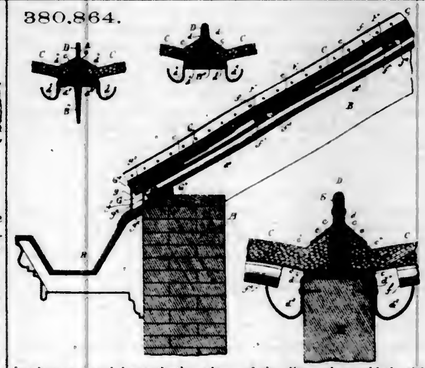
380,864. TILE ROOFING. ARTHUR W. COOPER, Chicago, Ill. Filed Dec. 20, 1887. Serial No. 258,456. (No model.)

Claim.—1. A tile roof comprising supporting beams or rafters, tiles arranged edge to edge and resting thereon, and metal jointing-strips extending between and beneath the edges of the tiles and provided with longitudinal gutters, said tiles being provided with beveled flanges at their side edges and arched in their central parts, substantially as described.

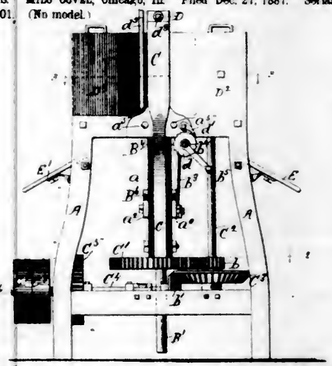
2. A tile roof comprising supporting beams or rafters, tiles arranged edge to edge and resting thereon, metal jointing-strips extending between and beneath the edges of the tiles and provided with longitudinal gutters, said tiles being provided with beveled flanges at their side edges and being arched in their central parts, and cross-gutters located beneath the transverse joints between the tiles and discharging at their ends into said longitudinal gutters, substantially as described.



380,864.



380,865. MACHINE FOR STRAIGHTENING AND HAMMERING SAWS. MILO COVEL, Chicago, Ill. Filed Dec. 21, 1887. Serial No. 259,001. (No model.)



Claim.—1. In a machine of the character herein set forth, the combination, with the supporting-frame, of the vertical shafts B B', the sliding bearing-blocks in which said shafts are journaled, the companion swaging-rolls rigidly mounted on the upper ends of said shafts, and means for imparting a vertical movement to said shafts, whereby the swaging-rolls may be brought to bear on any desired part of the saw-plate, substantially as and for the purpose set forth.

2. In a machine of the character herein set forth, the combination, with the vertically-arranged shafts having stretching and straightening rolls on the upper ends thereof, of the slide-blocks B^4 B^5, provided with the downwardly-projecting parts *a a'*, the cross-head B^6, constructed in two parts and connected by the straps a^2 a^3, the standards and guides C C, the flexible band b^2, the winding-shaft b^4, and the hand-crank for rotating said winding-shaft, substantially as and for the purpose set forth.

3. The combination, with the supporting-frame, of the vertical shafts B B', the means described for transmitting motion from one to the other, the spur-wheel C^7, mounted on the vertical shaft B', the pinion *b*, the vertical shaft C^8, on which said pinion is mounted, the bevel gear-wheel C^9, also mounted on the shaft C^8, the bevel-pinion *b'*, the horizontal shaft C^4, the gear-wheel C^5, the pinion b^3, and the companion horizontal shaft C^6, whereby the required motion is transmitted to the vertical shafts carrying the swaging-rolls, substantially as set forth.

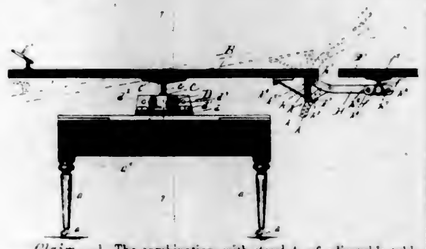
4. The combination, with the standards or guides C C, of the clamp or yoke D, pivoted at one end to one of said standards and adjustably secured at the other end to the companion standard, substantially as and for the purpose set forth.

5. In a machine of the character herein set forth, the combination, with the vertical shaft B, having a swaging-roll mounted on the upper end thereof and adapted to have a slight lateral adjustment, of the shaft B', carrying the companion swaging-roll, the standard or guide C on that side, the cam-shaft d^3, and the hand-lever d^5, whereby said roll is forced in the direction of the other by hand, and the spring d^7, for automatically separating said rolls when released from the pressure of the cam-shaft, substantially as and for the purpose set forth.

6. In a machine of the character herein set forth, the combination, with the table-bed, of the anvil-blocks D^2 D^3 and the swaging-rolls, said anvils being placed on opposite sides of said rolls and arranged diagonally relative to each other for the purpose of bringing the faces of said anvils in line with the pathway of the saw and on opposite sides of the same, whereby the saw may be operated upon from either side before or after the same has passed through the swaging-rolls, substantially as and for the purpose set forth.

7. Jointly with the saw stretching and straightening machine, the reflecting-plates E E', adjustably secured to the frame-work of said machine and located at opposite ends of the same and in line with the path of the saw, substantially as and for the purpose set forth.

380,866. SURGEON'S COMBINED OPERATING-TABLE AND DESK. FRANK L. COWLES, Delavan, Wis. Filed Dec. 1, 1887. Serial No. 256,632. (No model.)



Claim.—1. The combination, with stand A, of adjustable table B, a ball-and-socket joint between the two, a clamp-screw and crank, and a head-rest mounted upon an adjustable pivotal arm, H, substantially as specified.

2. The combination, with stand A, of adjustable table B, a ball-and-socket joint between the two, an adjustable head-rest, F, an adjustable arm, H, pivoted to said table, and a ball-and-socket joint between said head-rest and arm, substantially as specified.

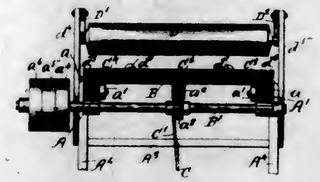
3. The combination, with an operating-table, of an adjustable head-rest mounted by a ball-and-socket joint upon an adjustable arm, H, pivoted to said table, adjustable pivotal brace-arm K, bracket K', having notch or recess l^3, and slot l^2, and pin *l'*, substantially as specified.

4. The combination, with an operating-table, of an adjustable head-rest mounted by a ball-and-socket joint upon an adjustable arm, H, pivoted to said table, adjustable pivotal brace-arm K, bracket K', having notch or recess l^3, slot l^2, and pins *l'*, said head-rest F, pivotal arm H, and brace-arm K being bodily removable from said table, substantially as specified.

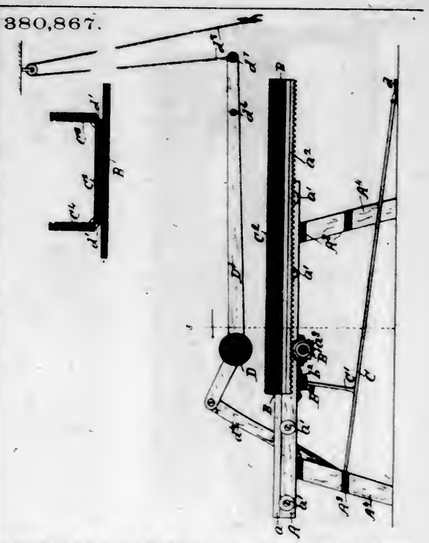
380,867. BUTTER-WORKER. FRANCIS E. CRAWFORD, New Sharon, Iowa. Filed July 26, 1887. Serial No. 245,312. (No model.)

Claim.—1. In a butter-worker, the combination, with a reciprocating table carried by a table-bed, said table consisting of the central part, C^2, and the side leaves, C^3 C^4, hinged to and adapted to be folded over on said central part, as described, of the hand-levers D' D^3, pivoted independently of the table-bed, and the roller D, having fixed journal-bearings in said levers, whereby said roller may be instantly raised upward to permit of the table-leaves being turned inward to mass the butter on the central part of the table without stopping the machine, substantially as set forth.

2. In a butter-worker, the combination, with a reciprocating table, of the roller D, the hand-levers D' D^3, bent upward at their inner ends, and the posts d^4 d^5, to which said bent-up ends are pivoted, substantially as set forth.



380,867.



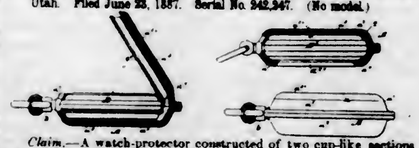
380,868. FIFTH-WHEEL FOR VEHICLES. EDWARD R. DAVIS, Detroit, Mich. Filed Dec. 17, 1887. Serial No. 258,196. (No model.)



Claim.—1. In a fifth-wheel, the base-ring having upright arms, the rings attached to said arms, and the series of interposed balls in combination with the upper section, E, its under face resting on the series of balls, as and for the purposes specified.

2. In combination with the platform of a vehicle, the base-ring E', the uprights attached thereto, the series of metal balls, the rings attached to the uprights, their adjacent faces pressing said balls at a point above the horizontal center of said balls, and the ring-section E, lying on said balls at an elevation to the rings a R, and having transverse arms *f*, with hole *t*, as and for the purposes set forth.

380,869. WATCH-PROTECTOR. JULIUS DERRIKER, Salt Lake City, Utah. Filed June 23, 1887. Serial No. 242,247. (No model.)

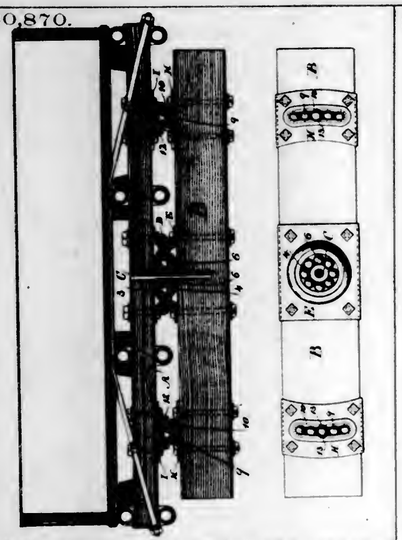


Claim.—A watch-protector constructed of two cup-like sections of stiff leather joined together at their margins, one of said sections having a slit, *x*, which exteuds part way around the section, whereby an integral self-closing cap, $a^{\times}$, is formed, and having also a notch, a^4, which extends from the said slit *x* down to the median line of the protector, as set forth.

380,870. CENTER BEARING FOR CAR-TRUCKS. GEORGE W. DITHRIDGE, New York, N. Y. Filed Aug. 26, 1887. Serial No. 247,800. (No model.)

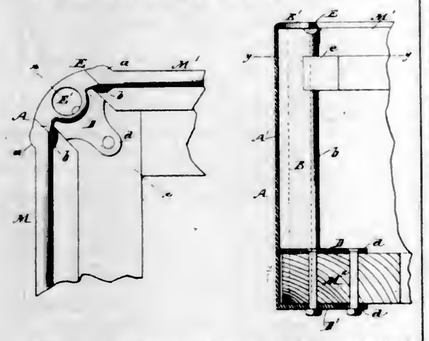
Claim.—1. The combination, with the king-bolt and the truck-frame and transom-beam, of the king-bolt plates fastened to the respective parts and having annular grooves and hard-metal balls within the grooves, the upper king-bolt plate extending down around the lower king-bolt plate outside the groove for the balls, substantially as set forth.

380,870.



2. The combination, with the truck-frame and transom-beam, of segmental side bearing-plates, each lower plate being grooved and hard-metal balls introduced into the grooves through central openings, the end upper portions of the grooves being narrower than the diameter of the balls, substantially as set forth.

380,871. CORNER-IRON. JOSEPH DOTY, Wellsville, N. Y. Filed Dec. 8, 1887. Serial No. 257,302. (No model.)



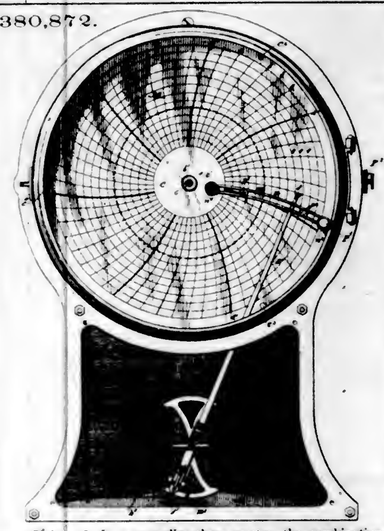
Claim.—1. A corner-iron consisting of a body having longitudinal side mortises, spaced partitions at the lower end, and an apertured cap, substantially as set forth.

2. A corner-iron consisting of a body, longitudinal ribs integral with said body near the outer edges and provided with an outwardly-inclined flange, a horizontal partition connecting the ribs at the bottom, a parallel horizontal partition forming the base of the body and spaced from the partition connecting the ribs, substantially as shown and described, and for the purpose herein set forth.

3. A corner-iron consisting of a body, longitudinal ribs integral with said body near the outer edges and provided with an outwardly-inclined flange, whereby side mortises are formed, a horizontal partition connecting the ribs at the bottom, a parallel horizontal partition forming the base of the body and spaced from the partition connecting the ribs and a cap-plate integral with the body, and ribs at the top provided with a central circular aperture forming a socket, all combined as and for the purpose herein set forth.

380,872. RECORDING-THERMOMETER. DANIEL DRAPER, Hastings-upon-Hudson, N. Y. Filed Nov. 10, 1887. Serial No. 254,743. (No model.)

380,872.

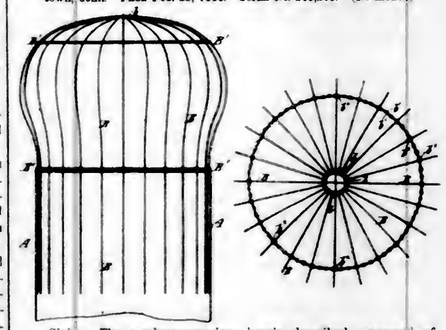


Claim.—1. In a recording-thermometer, the combination, with a clock-movement and a chart carried thereby, of thermostatic strips, a recording-lever actuated thereby, a plate extending over the chart, and insulated contact-points carried upon said plate and adjustable by reference to the chart to any desired points thereon, said points constituting one terminal of an electric circuit, said recording-arm constituting the other terminal.

2. In a recording-thermometer, the combination, with the recording-arm, the revolving chart, and the thermostatic strips for moving the arm with reference to the chart, of the plate placed in front of said chart and carrying limiting contact-stops adjustable to any desired points in the divisions on the chart, said stops being designed to constitute the terminals of an electric circuit, substantially as described.

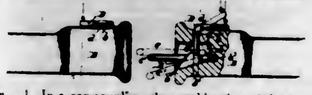
3. In a recording-thermometer, the combination, with the recording-arm, of the chart, the limiting-stops adjustable with reference to the divisions upon said chart, a support for said stops, the plate of insulating material carrying the support in front of the chart, and the binding-post attached to said support and extending through said plate, whereby electrical connection may be made with the support outside of the plate substantially as described.

380,873. CONDUCTOR-STRAINER. PAUL DRENDUL, Chicago, Ill., assignor to the Gilbert & Bennett Manufacturing Company, Georgetown, Conn. Filed Feb. 25, 1888. Serial No. 265,295. (No model.)



Claim.—The conductor-strainer herein described, composed of ribs extending upward and downward and a horizontal binder composed of two rings of crimped wire laid one on another, and having the ribs inserted in the holes formed by the crimps or bends of the two rings which are opposite each other, the wire of one ring lying outside alternate ribs and inside the intermediate ribs, and the wire of the other ring lying inside such alternate ribs and outside such intermediate ribs, substantially as herein described.

380,874. CAR-COUPLING. JOHN V. D. ELDERDER, Detroit, Mich., assignor of one-half to Louis Du Bois and Henry Wunsch, both of same place. Filed Feb. 28, 1887. Serial No. 229,184. (No model.)



Claim.—1. In a car-coupling, the combination of the draw-bar B, having an opening, b', in its top, a recess, b^3, in its rear wall, and a post, B', located in its mouth and provided with front and rear inclined faces, and with a recess, b^3, at its rear upper end, an angular pin, D, pivoted in the opening b', and a link, C, substantially as shown and described.

2. The combination, with a car-body and draw-bars located at its opposite ends, of the cross-sills a a', longitudinal sills G' G^3, the yokes F, secured to the draw-bars, and the rod G, connecting said yokes and provided with a spring, H, at each end, substantially as shown and described.

3. The combination, with a draw-bar, of a post constructed with angular front and rear faces projecting upward in the open mouth of the draw-bar to permit a link engaging about said post, a pin to engage said post in the rear of its front face, said post cut away to form a shoulder on its upper rear face to receive and engage the lower end of said pin above the base of the mouth of the draw-bar, the construction being such that the link may engage in the rear of the post and pin and below the upper extremity of said post, substantially as described.

4. The combination, with a draw-bar constructed with an orifice, b^3, in the rear of its open mouth adapted to hold the link in a horizontal position independently of the pin, of a post projecting upward in the open mouth of the draw-bar, a pin to engage the post in the rear of its front face, said post cut away to form a shoulder in its upper rear face to receive and engage the lower end of the pin above the base of the mouth of the draw-head, the construction being such that the link may engage in the rear of the post and pin and communicate the strain of the draft to the draw-bar in a longitudinal direction, the engagement of the pin with the post being substantially at the vertical center of the mouth of the draw-bar, substantially as described.

5. The combination, with a draw-bar, of a post projecting upward in the open mouth of the draw-bar to permit a link engaging about said post below its upper extremity, a pin engaging said post in the rear of its front face above the base of the mouth of the draw-head, the mouth of said draw-head at the sides of said post constructed on an angle rising from the front of the draw-head to the rear of the post and constructed to support a coupling-link near the vertical center of the draw-head, and upon a downward incline from the rear of the post, substantially as described.

6. The combination, with a car-body and a combined bumper and draw-bars located at its opposite ends, and each provided with a yoke engaged therewith on the central line of draft, of sills a a', longitudinal sills G' G^3, a rod, G, connecting said combined bumpers and draw-bars on the central line of draft, said rod provided with springs H at its extremities, each having a bearing against the adjacent cross-sills, and serving as a combined bumper and draft-spring, substantially as described.

7. The combination, with a car-body provided with cross-sills a a' and longitudinal sills G' G^3, of a combined bumper and draw-bars located at opposite ends of the car, each provided with a yoke engaged therewith on the central line of draft, a rod, G, connecting said yokes on the said central line of draft through said combined bumper and draw-bars, springs H at the extremities of said rod, each having a bearing against the adjacent cross-sill and the adjacent yoke, said springs serving as combined bumper and draft-springs, and said rod having a movable engagement with the yokes and cross-sills, substantially as described.

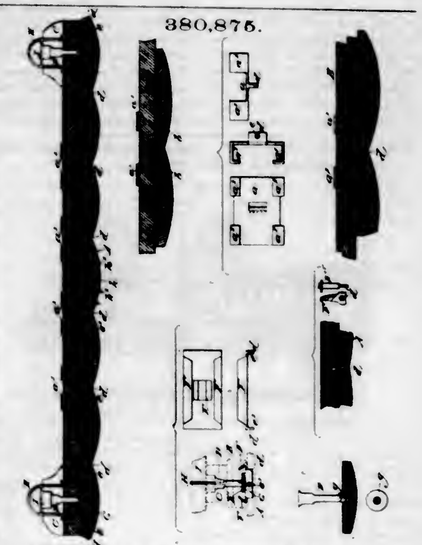
380,875. TOBOGGAN. CHARLES H. EMERSON and WILLIS H. WETMORE, Burlington, Vt.; said Wetmore assignor to said Emerson. Filed Aug. 17, 1887. Serial No. 247,212. (No model.)

Claim.—1. In a toboggan or coaster, the combination, as herein described, of the slats and the cross-bars with the fasteners, which secure the slats, without the aid of rivets or screws or other fastenings passing vertically into the slats, by means of pins passing through projecting lips of the fasteners and horizontally into the edges of the said slats.

2. In a toboggan or coaster, the combination of the slat and the cross-bar and the hand-rail-holder bolt with the improved form of clip, which grasps both edges of the same slat, substantially as described, whereby the parts named are securely united without putting the said bolt through the slat, as heretofore.

3. In a toboggan or coaster, the combination of the slat and the cross-bar and the bolt D with the double-threaded nut g, substantially as described.

380,875.



4. In a toboggan or coaster, the combination of the block C, interposed to elevate the hand-rail I above the cross-bar B, with the bolt D and the fastener H, substantially as described.

5. In a toboggan or coaster, the combination of the hand-rail fastener H, provided with feet to be wedged into the sides of the holes bored to receive them, with the block C and cross-bar B.

6. In a toboggan or coaster, the combination of the fastening-clips and the slats with the cross-bars made in two wedge-shaped pieces, by which means more or less flexibility is secured, as required, while the whole are quickly and tightly united, substantially as herein described and illustrated.

7. In a toboggan or coaster, the combination of the bottom slat and the cross-bar with the eyebolt F F^3 and the pin e, substantially as and for the purposes described herein.

8. In a toboggan or coaster, the combination, as herein described and illustrated, of a steering device having one or more revolving or oscillating runner-blades shaped and constructed so as to automatically resist and prevent a side or sluing movement.

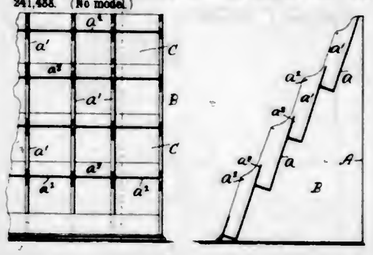
9. The combination, in a toboggan or coaster, of a self-acting steering device formed of one or more runners attached rigidly to the bottom of the coaster and depending upon the concave shape or sharp edges alone to resist a sluing movement.

10. In a toboggan or coaster, the combination of an automatic steering device provided with skate-action runners, and the controlling-springs n n' n^3, and the securing or covering clip a^3, substantially as herein described and illustrated.

380,876. ALTERATIVE TONIC. FERNANDO RECOVAR, Mexico, Mexico. Filed Jan. 31, 1888. Serial No. 262,567. (No specimens.) Patented in Mexico Oct. 14, 1887.

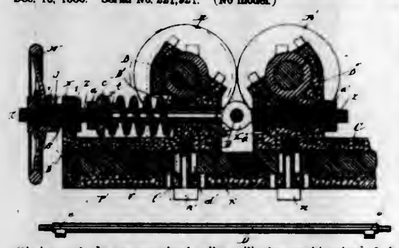
Claim.—The herein-described medical compound, consisting of simple sirup, extract of sarsaparilla, extract of dulcamara, extract of saponaria, iodoarseniate of iron, sulphate of morphia, and the tincture of sassafras, in the proportions herein specified.

380,877. CABINET-CASE FOR HOLDING RAILWAY-POLDERS. GEORGE A. FELLOWS, Chicago, Ill. Filed June 16, 1887. Serial No. 241,488. (No model.)



Claim.—A cabinet-case for railway-folders, consisting of a series of compartments arranged in rows one above another and receding, as described, and provided with an inclined back or backs, and the rods a^4, extending along the front of the series of compartments, whereby the folders are retained in an inclined position, so that the title-page may be conveniently read, and are prevented from falling out or doubling over the low cut-away front, substantially as set forth.

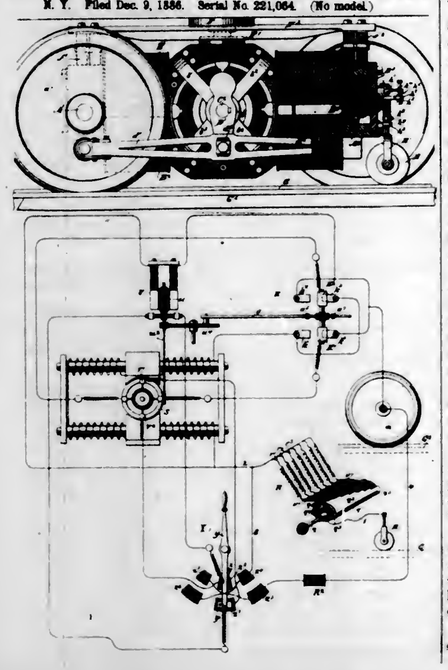
380,878. **ROLLER-MILL.** PHILO FERRIER, Ypsilanti, Mich. Filed Dec. 18, 1886. Serial No. 221,921. (No model.)



Claim.—1. In an organized roller-mill, the combination of the fixed boxes, the sliding boxes, the rollers journaled therein, the horizontal rods made fast at their inner ends to the fixed boxes and having the journal-bearings K, the cam-shaft journaled therein, the cams of said shaft engaging with the sliding boxes, the hand-lever made fast to said cam-shaft, and the springs mounted on the horizontal rods and having engagement with the sliding boxes, whereby the rolls are retained in an operative position.

2. In combination with the fixed boxes, the sliding boxes, the rolls journaled in said boxes, the horizontal rods adjustably attached at their inner ends to the fixed boxes and having the journal-bearings K, the cam-shaft journaled in said bearings, and the hand-lever made fast to the cam-shaft, the cams of said shaft engaging with the sliding boxes, and the coiled springs mounted on the horizontal rods, their inner ends pressing against the sliding boxes and their outer ends provided with abutments adjustably mounted on the horizontal rods, as and for the purposes specified.

380,879. **ELECTRIC LOCOMOTOR.** STEPHEN D. FIELD, Yonkers, N. Y. Filed Dec. 9, 1886. Serial No. 221,064. (No model.)



380,879.



Claim.—1. The combination, with a car-truck, of an electric motor supported between the axles of said truck, a crank-arm upon the shaft of said motor, a coupling-bar having a sliding connection with said crank-arm, and a crank-pin upon one of the wheels of said truck coupled with said connecting-bar.

2. The combination, substantially as hereinbefore set forth, with the armature of an electric motor, of a crank-arm at one end thereof, two wheels of a vehicle, a link connecting the same, and a vertically-sliding connection between said crank-arm and said link.

3. The combination, with the wheels of a vehicle and their axles, of an electric motor mounted upon said axles, intervening springs permitting slight relative moments between the axles and the motor, linked connections between the wheels upon each side of the vehicle, crank-arms carried upon the shaft of the motor, and vertically-yielding connections between said crank-arms and the linked connections.

4. The combination, with the driving-wheels of a vehicle, of crank-pins upon the same, a horizontal link connecting the crank-pins, an electric motor mounted upon the axles of said wheels, having its axis in the plane of the axes of the driving-wheels, a crank upon the shaft of the motor, and a vertically-yielding connection between the crank and said link.

5. The combination, with the wheels of a vehicle, of crank-pins carried thereby, links connecting the crank-pins of the wheels upon each side of the vehicle, an electric motor carried upon the axes of said wheels and having the axis of its armature in the plane of the axes of said wheels, a crank at each end of the armature-axis, said cranks being set at an angle with reference to each other, and vertically-yielding connections between the cranks and the respective links.

6. An electric motor, in combination with a truck between the axles of which it is supported, and a vehicle supported upon said motor.

7. In an electric locomotive, the combination, with the armature and the field magnets, of the axles of the locomotive, the boxes at the ends of the field-magnets, into which said axles extend, bearing-blocks for said axles, and yielding springs between said blocks and the upper portions of said boxes.

8. The combination, with an electric motor, of two pairs of wheels and their respective axles, the body of a car, a turn-table supported on the motor, through which said car bears upon said electric motor, and a yielding support between said body and said axles.

9. In an electric machine, an armature-core composed of insulated plates of soft iron and interposed zinc plates, substantially as described.

10. In an electric machine, an armature consisting of a core composed of plates of soft iron separated from each other, with plates of zinc interspersed therewith, and bobbins of insulated wire binding the plates together, substantially as described.

11. The combination, with an electric motor, of a contact-wheel adjustable in an angular direction from the line of travel, a spring tending to force the wheel downward, an adjustable stop for limiting the downward thrust, and a quadrant and arm applied thereto for regulating the angular position of the contact-wheel.

12. The combination, substantially as hereinbefore set forth, with an electric motor, of conductors for supplying currents thereto, a device for controlling said motor, a second electric motor for controlling said device, having its field-magnets included in a shunt upon the armature of the motor, and a circuit including the armature of the second motor derived from approximately the neutral points of the armature of the first motor.

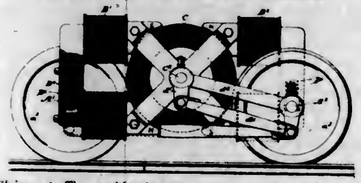
13. In an electric machine, a commutator composed of insulated segments of different lengths, certain of which segments extend across the width of the commutator, while others are insulated at certain predetermined points.

14. The combination, with the armature of an electric motor, of a commutator having certain of the commutating-plates extended beyond the others, a pair of brushes applied to the commutator, and a second pair of contact-brushes applied to the extended plates, substantially as described.

15. An electric circuit-controller consisting of a series of contact-springs, a contact-surface in the form of a segment of a cylinder, a shaft upon which it is loosely mounted, a knee-joint connecting the same with the shaft, whereby one edge may be thrown a greater or less distance from the shaft, and a non-conducting striking-surface for the spring.

16. A circuit-controlling device consisting of a series of contact-springs, a contact-plate movable in one direction or the other beneath the springs, means for forcing the plates against the pressure of the springs when it is to be moved in a direction for releasing the latter and for forcing it in the opposite direction when it is to be passed beneath the springs, and a non-conducting bearing-surface for said springs when they are released from the contact-plate.

380,880. **ELECTRIC LOCOMOTIVE.** STEPHEN D. FIELD, Yonkers, N. Y. Filed Dec. 31, 1887. Serial No. 259,467. (No model.)



Claim.—1. The combination, with an electric motor, of a vehicle carrying the same and supported on springs, a crank-arm at each end of the armature-shaft set at an angle with reference to each other, crank-arms upon the wheels upon opposite sides of the vehicle, coupling-bars connecting the respective cranks of the motor with the cranks of the vehicle-wheels, supporting-bars between the axle of the motor and the driven axle, and links connecting the respective vehicle-wheels with other vehicle-wheels upon the corresponding sides, substantially as described.

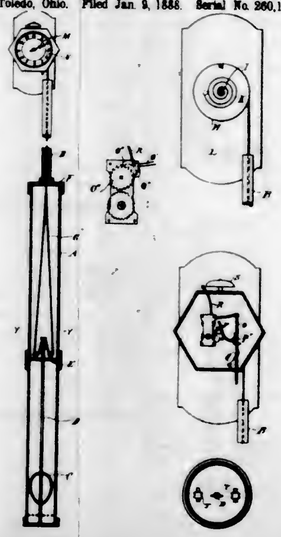
2. The combination, with an electric motor, of a truck carrying the same composed wholly or in part of the magnetic frame of the motor resting on springs, crank-arms upon the axles of the motor and of the vehicle, respectively, a link or coupling-bar connecting said crank-arms, and a rigid support between said axles, substantially as described.

3. In an electric locomotor, the combination of the armature-shaft, two of the axles of the vehicle, crank-arms upon the respective ends of the armature-shaft, coupling-bars connecting the crank-arms of the armature with crank-arms upon the wheels, and supporting or strengthening bars extending from one axle to the other, substantially as described.

4. The combination of the electric motor having the armature C and its shaft C^2, the vehicle having an axle, A^2, the cranks d' and e' upon the respective axles, the coupling-bar d^6, and the strengthening or supporting bar d^5, extending from one axle to the other.

5. The combination of the electric motor having the armature C and its shaft C^2, the vehicle having an axle, A^2, the cranks d' and e' upon the respective axles, the coupling-bar, the strengthening or supporting bar d^5, extending from one axle to the other, and the link connecting the crank e' with another axle of the vehicle, substantially as described.

380,881. **ALARM WATER-GAGE.** GEORGE FISHER and PETER RAPPOLD, Toledo, Ohio. Filed Jan. 9, 1888. Serial No. 260,146. (No model.)

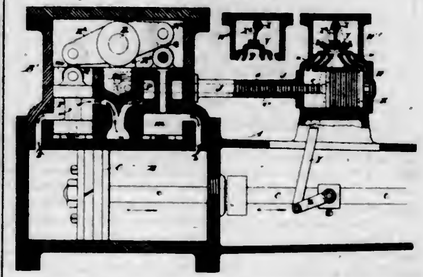


Claim.—1. In an alarm water-gage, a well, a float adjustably secured to a vertical rod within the well, having a flexible connection with an alarm and indicator, as and for the purpose set forth.

2. In an alarm water-gage, a well, a hollow float therein adjustably secured to a vertical rod, in combination with an alarm mechanism, and ropes or like connections with the rod and alarm mechanism, as and for the purpose set forth.

3. In an alarm water-gage, a well, a float adjustably secured to a rod moving therein and through a transverse plate secured within the well, in combination with a disk revolving with a central stud having an indicator upon one end and a tripping-lug centrally thereof adapted to release an escapement connected with an alarm, and a flexible connection from the rod to the disk, as and for the purpose set forth.

380,882. **STEAM-ACTUATED VALVE.** JAMES H. FOGARTY, New York, N. Y., and FREDERICK M. WHEELER, Montclair, N. J. Filed June 13, 1887. Serial No. 241,126. (No model.)

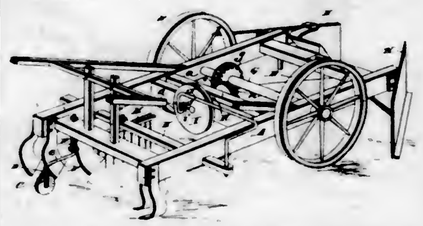


Claim.—1. The two piston-valves P, links Q, and arms R^3, in combination with each other and with the main piston C, rod c, and a pump operated by the latter and with the arm R', rod e, piston E, cylinder W, and valve V, with provisions for operating the latter by the movement of the main piston, all substantially as herein specified.

2. In a steam-pump having balanced main valves P, actuated by a connected piston, E, the controlling-valve V, actuated by the motion of the main piston through connections, as Z Y, and provided with adjusting means x, whereby the intermittent motion imparted from the main piston may be varied, substantially as herein specified.

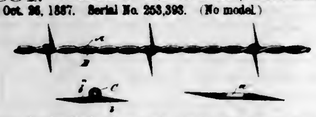
3. The close-fitting tube J, inclosing the circumferentially-grooved rod e, in combination with the steam-chest B', cylinder W, and piston E, and means, as valve V, for distributing the steam to this cylinder, the said rod e operating through means, as the shaft R and its arms R' R^3 and connected piston-valves P, to distribute the steam to the main cylinder B, all substantially as herein specified.

380,883. **RICE-RAKE, COTTON-CHOPPER, AND CULTIVATOR.** JOHN A. GARDNER, Calico, N. C. Filed Jan. 16, 1888. Serial No. 260,844. (No model.)



Claim.—In a cotton-chopper, a shaft suitably mounted in crossbars of the main frame and provided at one end with suitable means for receiving motion from the wheels of the chopper and at its other end with a disk having a series of holes or concavities extending from the center to the circumference, a reciprocating bar capable of carrying either a rake or a chopper and having at one of its ends a hole or receptacle, and a rod, one of its ends being adapted to fit in the hole or receptacle of the reciprocating rod and its other end capable of entering any of the holes or concavities of the disk, whereby the motion of the reciprocating bar may be regulated from fast to slow, said rod being bent or arched intermediate of its ends in order to clear the sides of the chopper in its motion back and forth, substantially as described.

380,884. WIRE-BARB. MERRITT GREENE, Marshalltown, Iowa. Filed Oct. 26, 1887. Serial No. 253,393. (No model.)



Claim.—A wire-barb whose ends terminate in needle-points and whose central portion is flattened on one side for a sufficient distance to wrap entirely around the strand and form a shoulder which shall keep the barb always at right angles to the strand, and which constitutes a socket with sufficient bearing to prevent the barb from turning.

380,885. LAMP-EXTINGUISHER. WEBSTER M. GREENE, Lowell, Mass., assignor of one-half to Freeman W. Puffer, same place. Filed Feb. 18, 1887. Serial No. 228,136. (No model.)



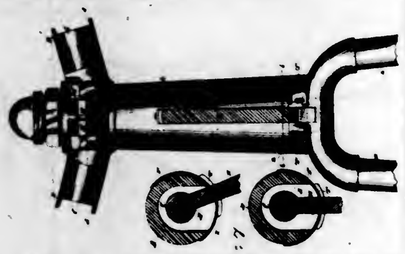
Claim.—1. In combination with a wick-tube of a lamp-burner, a reservoir detachably attached to and supported by said lamp-burner, and adapted to contain a flame-extinguishing fluid, and provided with one or more discharge-pipes arranged to discharge the contents of said reservoir over the top of said wick-tube when said wick-tube and reservoir are inclined or overturned, as and for the purpose specified.

2. The combination of a lamp-burner provided with a wick-tube, and a reservoir arranged around said burner and detachably attached thereto and supported thereon and provided with discharge-pipes leading from said reservoir to the top of said wick-tube, said reservoir being adapted to contain a flame-extinguishing fluid, and upon the overturning of said lamp-burner or the inclining of the reservoir to discharge said fluid through said discharge-pipes at the top of said wick-tube, as and for the purpose specified.

3. The combination of a lamp burner provided with a wick-tube and with a draft-plate, the annular reservoir provided with discharge-pipes arranged on opposite sides of said wick-tube, and brackets or arms arranged between said draft-plate and said reservoir, as and for the purpose specified.

4. The combination of a lamp-burner provided with a wick-tube and with a draft-plate, the annular reservoir provided with discharge-pipes arranged on opposite sides of said wick-tube, the discharge ends of said discharge-pipes being covered with wire-gauze, and brackets or arms arranged between said draft-plate and said reservoir, as and for the purpose specified.

380,886. BICYCLE. CHARLES F. HADLEY, Chicopee, assignor to the Overman Wheel Company, Boston, Mass. Filed July 8, 1886. Serial No. 207,439. (No model.)



Claim.—1. In a cycle, the combination, with a steering-head provided with a circular bearing having a flat face, of a handle-bar having a split collar provided with an opening corresponding in shape to the said bearing and with lugs, the collar being split and the lugs being located opposite the flat wall of such opening, and a bolt mounted in such lugs for clamping the collar upon the bearing and thus rigidly securing the handle-bar to the steering-head with a compensation for wear, substantially as set forth.

2. In the steering-head of a bicycle, the combination, with a head having a conical chamber and a screw-threaded circular chamber located in its upper end, the conical chamber being located above the circular chamber, of a spindle and an externally screw-threaded adjustable bearing-screw therefor, and a conical check-nut having a screw-threaded circular opening adapting it to be screwed over the said bearing, and a smooth tapering outer face bearing upon the walls of the conical chamber, substantially as set forth.

3. In the steering-head of a bicycle, the combination, with a head, a slotted dust-shield, and a backbone, of a strap closing the lower portion of the slot in the shield and secured to the backbone, substantially as set forth.

4. In the steering-head of a bicycle, the combination, with a head and a backbone, of a slotted dust-shield carried by the backbone and provided near its lower end with an opening affording access to the head for oiling its lower bearing when the backbone is deflected to one side and normally closed by the head, substantially as set forth.

5. In a bicycle, a handle-bar having a collar provided upon its opposite faces with upwardly-inclined lugs, and handle-arms secured to such lugs, substantially as set forth.

6. In a cycle, a step consisting in the combination, with a single strap passed around to nearly encircle a backbone or reach of a vehicle, with its free ends extended outward from such backbone or reach in parallel lines, of a bolt passing through such arms at a point closely adjacent to the backbone or reach for clamping the strap thereto, and a post shouldered at each end and interposed between the outer ends of the arms, substantially as set forth.

7. In a cycle, the combination, with a crank-shaft having a circular spindle end provided with a flat face, of a crank having its inner end split and provided with two perforated lugs, and with an opening having a flat wall located opposite the said lugs, and two corresponding curved walls respectively extending from opposite ends of the flat wall to the split in the crank, and a bolt mounted in the lugs and clamping the crank upon the spindle end, the specified shape of the spindle end and of the opening in the crank securing a rigid lock and compensation for wear, substantially as set forth.

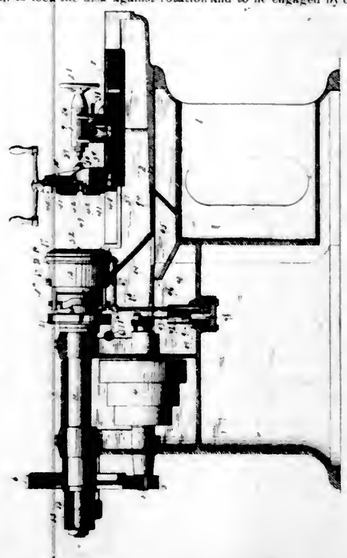
380,887. MACHINE FOR CUTTING THE THREADS ON BOLTS. WILLIAM S. HALSEY, Bridgeport, Conn. Filed Sept. 7, 1887. Serial No. 249,027. (No model.)

Claim.—1. In a screw-thread-cutting machine, the cutter-head having two cams, 67, and disk 19, having four stop-teeth, in combination with lever 63, gravity-latch 78, latch 72, and dog 81.

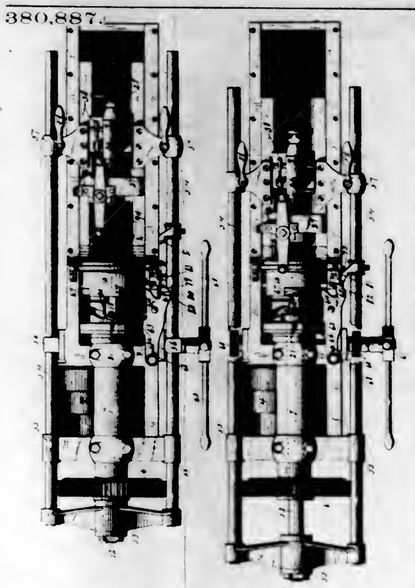
2. The cutter-head having cams 67, the cutters, disk 19, having stop-teeth and a cam-groove, the cutter-operating slides, ring 14, and bars having rollers engaging the cam-groove, in combination with lever 63, gravity-latch 78, latch 72, and dog 81.

3. The combination, with the cutters, cutter-operating slides, sliding ring, and bars having rollers 25, of disk 19, having a cam-groove with which the rollers engage.

4. The cutter-head having cams 67, the cutter-head shaft, loose disk 19, having stop-teeth, and a friction-collar engaging said disk, in combination with a spring-actuated lever adapted to engage the stop-teeth to lock the disk against rotation and to be engaged by cams 67, whereby it is disengaged from the stop-teeth.



380,887.



5. The cutter-head, cutter-head shaft, and disk 19, loose on said shaft, in combination with nut 22, engaging the shaft to hold the disk in place, and a friction-collar secured to the disk and engaging the nut, whereby the disk is caused to move with the shaft.

6. The cutter-head, cutter-head shaft, and disk 19, loose on said shaft and provided with stop-teeth, in combination with nut 22, engaging the shaft to hold the disk in place, a friction-collar engaging the nut to cause the disk to rotate with the shaft, and a lever adapted to engage the stop-teeth to lock the disk against rotation, substantially as and for the purpose set forth.

7. The cutter-head having cams 67, cutter-head shaft, cutters, loose disk 19, having a cam-groove and stop-teeth, the friction-collar engaging the disk, and cutter-operating mechanism actuated from the cam-groove, in combination with spring-actuated lever 63, adapted to engage the stop-teeth, whereby the cutters are opened or closed, and to be engaged by cams 67, whereby it is disengaged from the stop-teeth, leaving the cutters at either the opened or closed position.

8. The cutter-head having cams 67, the loose disk having stop-teeth, and the friction-collar, in combination with lever 63, and a spring adapted to throw said lever inward to engage one of the stop-teeth, whereby the disk is held against rotation until the lever is thrown out by one of the cams 67.

9. The cutter-head having cams 67, the cutter-head shaft, the loose disk having stop-teeth, and the cone-pulley and intermediate gearing, in combination with the friction-collar, and spring-actuated lever 63, pivoted forward of the cone-pulley and adapted to engage said lever and said stop-teeth.

10. The cutter-head having cams 67, the loose disk having stop-teeth, and the friction-collar, in combination with spring-actuated lever 63, adapted to engage said stop-teeth and cams, and gravity-latch 78, adapted to engage lever 63, to hold it in the retracted position when thrown out by one of the cams.

11. The cutter-head having cams 67, the loose disk having stop-teeth, the friction-collar, and the counter-rods, in combination with spring-actuated lever 63, adapted to engage the stop-teeth and cams, gravity-latch 78, engaging said lever, a sliding block carrying a latch adapted to engage the gravity-latch, and dog 81 upon one of the counter-rods, which engages the latch, causing it to trip the gravity-latch and permit the lever to engage one of the stop-teeth.

12. Lever 63, a spring acting to throw said lever inward, and a gravity-latch acting to hold it at its retracted position, in combination with a sliding block carrying latch 72, the counter-rods, and a dog upon one of said rods which moves the latch forward and causes it to trip the gravity-latch, so that lever 63 can be thrown inward by the spring.

13. Spring-actuated lever 63, having notch 64 and horn 82, in combination with gravity-latch 78, having a projection adapted to engage said notch, a spring-actuated sliding block carrying a spring-actuated latch having a notch, 73, and a stump, 74, and a reciprocating dog, 81, whereby when said dog engages notch 73, the latch is carried forward and engages the gravity-latch, forcing the latter out of notch 64, so that the lever can move inward, the horn then engaging stomp 74, which disengages notch 73 from the dog and permits the block to move backward, the horn acting at the same time to hold the gravity-latch in position.

14. The combination, with the cutter-head having cams 67, the cutters, the loose disk having stop-teeth, and spring-actuated lever 63, engaging said cams and stop-teeth, of a gravity-latch adapted to engage said notch, a spring-actuated sliding block carrying a spring-actuated latch adapted to engage the gravity-latch, and a reciprocating dog adapted to engage the latch, whereby, at the predetermined time, lever 63 is released and moves inward, engaging one of the stop-teeth to open or close the cutters, one of said cams acting an instant later to disengage the lever from the stop-teeth, so that the cutters will remain at either the opened or closed position.

15. Spring-actuated lever 63, having notch 64 and horn 82, in combination with gravity-latch 78, having projection 80, adapted to engage said notch, spring-actuated sliding block 69, carrying spring-actuated latch 72, and a reciprocating dog which engages the latch, moves it forward with the block, and trips the gravity-latch to release lever 63.

16. Spring-actuated lever 63, having notch 64 and horn 82, and gravity-latch 78, having projection 80, adapted to engage said notch, in combination with sliding block 69, carrying spring-actuated latch 72, having notch 73 and stump 74, spring 77, and a reciprocating dog which engages the latch, moves it forward with the block, and trips the gravity-latch to release lever 63, which, as it moves inward, engages the stump, thereby disengaging notch 73 from the dog and allowing spring 77 to return the block and latch to their normal positions.

17. Counter-rods 54 on opposite sides of the machine and provided with rack-teeth 59, in combination with shaft 61, having hand-levers and pinions engaging both of the counter-rods, whereby the strain upon the parts in use is made central.

18. The cutter-head having oil-groove 84, inclines 85 on opposite sides thereof, and channels leading to the interior, in combination with a cap covering said groove and engaging the inclines, ring 87, for holding the cap against the inclines, and a pipe for supplying oil to the groove.

19. The combination, with the cutter-head having an oil-groove and channels leading to the interior, cap 86, shaft 3, and oil-sump 90, of a pipe, 89, leading from said sump to said cap, and a pump having a rod, 93, eccentrically connected to the end of said shaft, whereby oil is supplied from the said sump to the interior of the cutter-head under pressure.

20. The combination, with the cutter-head, of a dish-shaped sump, 95, under the cutter-head to receive the waste oil, having an opening, 96, at its edge, and a screen, 94, to catch the chips, of a sump, 90, to receive the overflow, a pipe connecting said sump with the cutter-head, and a pump for forcing the oil thereto.

21. The combination, with the cutter-head, an oil-sump, 90, a pipe leading from said sump to the cutter-head, and a pump for supplying oil thereto, of a sump, 95, to receive the waste oil, made dish-shaped to allow the dust to settle, and provided with an opening at its edge to permit the overflow to pass into sump 90, and a screen under the cutter-head to catch the chips.

22. The combination, with the cutter-head, spindle, and counter-rods, of a sliding bed, clamps for securing said bed to the counter-rods, and an adjustable and removable tail-stock carried by the sliding bed.

23. Counter-rods on opposite sides of the machine and provided with rack-teeth on their under sides, in combination with an operating-shaft having pinions engaging the rack-teeth and a sliding bed having clamps to secure it to the counter-rods.

24. The combination, with the cutter-head, counter-rods, and sliding bed, of vertically and longitudinally adjustable clamping-jaws carried by the sliding bed.

25. The combination, with the sliding bed having dovetail projection 39, of block 40, engaging said projection, clamping-jaws carried by said block, and a screw-pin passing through the block and engaging the sliding bed to lock the clamping mechanism against longitudinal movement when required for certain grades of work.

26. The combination, with the jaw-carriers and screw 44, having a central enlargement, with a groove, 47, of a slide, 48, engaging said groove, a spring acting to hold the slide in engagement, and a set-screw whereby it may be locked in engagement to hold the jaw-carriers against vertical movement when required for certain grades of work.

27. The jaws, jaw-carriers, and a screw, 44, having a groove, 47, in combination with slide 48 and set-screw 50.

28. The sliding bed and block 40, adapted to move transversely thereon, in combination with the jaws carried by screw 44, having

groove 47, a slide engaging said groove, and a spring holding it in engagement therewith, but adapted to permit the slide to move out of the groove when vertical movement of the jaws is required.

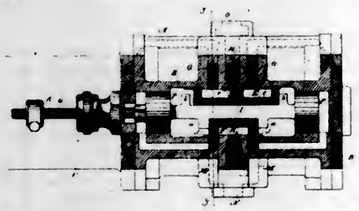
29. The sliding bed, block 40, adapted to move transversely thereon, and screw-pin 51, to lock it against movement when required, in combination with the jaws carried by screw 44, having groove 47, a slide engaging said groove, and a set-screw adapted to hold the slide in engagement with the groove to lock the jaws against vertical movement.

30. The jaw-carriers and right and left threaded screw 44, by which they are carried, and which is provided with a central groove, in combination with a slide and a spring acting to hold it in engagement with the groove, whereby the jaw-carriers and screw are held against vertical movement until the slide is pressed out of the groove.

31. The combination, with the cutter-head and cutters, of the sliding bed, clamping mechanism carried thereby, and a set-screw, slide, and screw-pin, whereby said mechanism is locked against vertical and longitudinal movement to permit irregular bolts of any length to be centered for the cutters.

32. The cutter-head and tail-stock spindles, counter-rods, and sliding bed, in combination with the vertically and longitudinally adjustable clamping mechanism carried by the sliding bed, whereby irregular bolts centered by the spindles may be firmly clamped and held in position.

380,888. **STEAM-ACTUATED VALVE.** WILLIAM W. HAWKOM, San Francisco, Cal. Filed Nov. 11, 1886. Serial No. 218,651. (No model.)



Claim.—1. In a direct-acting engine, the main cylinder and the steam-chest cast together, having the main steam and exhaust ports upon one side of the steam-chest and the auxiliary steam and exhaust ports upon the opposite side, in combination with the main and auxiliary valves having their seats upon opposite sides of the steam-chest, substantially as and for the purpose herein described.

2. In a direct-acting engine, the main and auxiliary valves fitted to travel against opposite sides of the steam-chest, which form the seats therefor, corresponding main and auxiliary ports communicating with the sides of the steam-chest, and the auxiliary piston having recesses upon opposite sides of its intermediate shank for the purpose of driving the valves, substantially as herein described.

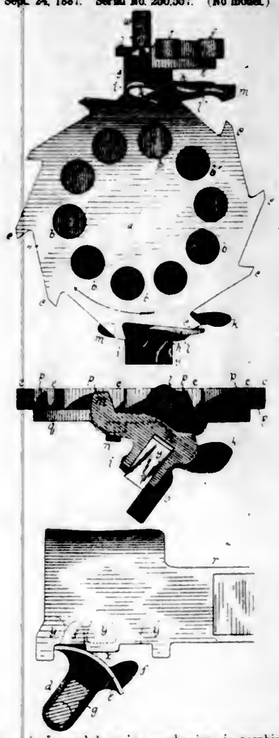
3. In a direct-acting engine, the steam-chest having main and auxiliary ports upon its opposite sides, in combination with a main double-chambered or B valve and an auxiliary valve of the D form upon opposite sides of the steam-chest, an auxiliary piston, piston-rod, and tappet, and the main piston, piston-rod, and tappet-arm, substantially as herein described.

4. In a direct-acting engine, the steam-chest having seats or faces for the main and auxiliary valves, said faces being parallel with a plane passing through the center of the steam-chest and the steam-cylinder, and having main and auxiliary steam and exhaust ports made in them, in combination with the main and auxiliary valves fitting these faces upon opposite sides of the steam-chest, an auxiliary piston by which the main and auxiliary valves are actuated, a piston-rod extending outward from said piston, having tappets fixed to it, and a main piston and piston-rod having a tappet-arm fixed to it, so as to engage the tappets upon the auxiliary piston-rod, substantially as herein described.

5. In a direct-acting engine, the main valve of the B form and an auxiliary valve of the D form having their seats upon opposite sides of the steam-chest, in combination with the main and auxiliary pistons, ports for steam and exhaust for both, main and auxiliary valves upon opposite sides of the steam-chest, and the main and auxiliary pistons and rods with tappet-arms and tappets, substantially as herein described.

6. In a direct-acting engine having the main and auxiliary valves and the main and auxiliary steam-ports upon opposite sides of the steam-chest, as shown, the main and auxiliary exhaust-ports opening upon opposite sides of the steam-chest into corresponding chambers, and the connecting channel or passage between the two chambers, substantially as herein described.

380,889. **CORN-PLANTER.** GEORGE D. HAWORTH, Decatur, Ill. Filed Sept. 24, 1887. Serial No. 250,557. (No model.)



Claim.—1. In seed-dropping mechanism, in combination, a seed-plate having peripheral teeth and a drive-pawl pivoted to move tangentially and radially with relation to the seed-plate in operative contact therewith, as and for the purpose set forth.

2. In seed-dropping mechanism, in combination, a seed-plate having peripheral teeth, a rock-bar traversing the plate diametrically, and pawls on the ends of the rock-bar adapted to swing to and from the plate and rest in operative contact therewith with the plate, as and for the purpose set forth.

3. In seed-dropping mechanism, in combination, a seed-plate having peripheral ratchet-teeth and undercut ratchet-recesses, a rock-bar traversing the plate diametrically, and pawls on the ends of the bar in operative contact with the plate, carrying each a stop projection adapted to the recesses of the plate, as and for the purpose set forth.

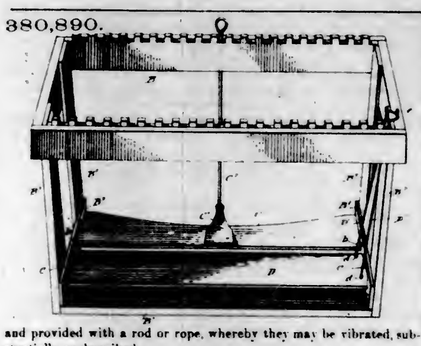
4. In seed-dropping mechanism, in combination, the seed-plate having peripheral ratchet-teeth and undercut recesses with their faces opposed to the faces of the teeth, a stationary subjacent plate having lips or guide-inclines at the periphery of the ratchet-plate adjacent to the pawls, a rock-bar traversing the plates diametrically, and pawls on the ends of the rock-bar, having propelling-teeth, locking projections, and cams or catches adapted to bear against the lips of the stationary plate and draw the pawls in contact with the ratchet-teeth, as and for the purpose set forth.

5. In seed-dropping mechanism, in combination, a rocking lever adapted to swing over its center and having an arc-bearing and peripheral teeth, a shake-bar resting on the arc and having teeth in mesh with the teeth of the lever, and a boss or block interposed between the arc and the bar at the center of their operative contact, as and for the purpose set forth.

380,890. **TAN-VAT.** JOSEPH HEAD, York, Pa. Filed Feb. 12, 1887. Serial No. 227,418. (No model.)

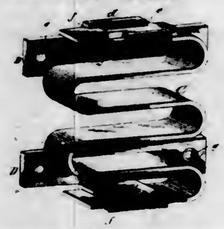
Claim.—The combination, with a tan-vat, of a floating hide-supporting frame consisting of a top frame, B, notched to receive the hide-supporting cross-strips *a*, a bottom frame, B', connected to the upper frame by inclined uprights B'', and cross-pieces B''', connecting said uprights, and agitators C and D, pivoted at their ends in said cross-pieces

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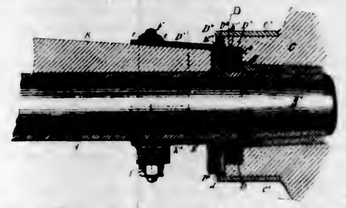
and provided with a rod or rope, whereby they may be vibrated, substantially as described.

380,891. **SPRING FOR ROCKERS.** GEORGE H. HEBBARD, Sherburne, assignor of one-half to Nathan A. Bundy, Oxford, N. Y. Filed Dec. 24, 1887. Serial No. 258,888. (No model.)



Claim.—The combination, with the rocker and base, of the brackets D, secured to said rocker and base, respectively, and formed with lugs *d*, having channels *e*, and the spring C, having the shape of the double S, with its ends seated in said channels and formed with shoulders *f*, substantially as shown and described.

380,892. **WAGON-AXLE.** NATHAN L. HOLMES, Racine, Wis. Filed May 31, 1887. Serial No. 239,823. (No model.)



Claim.—1. The combination, with the metal part A and wooden part B of an axle, of two metal parts or castings, each of which partially embraces the said metal and wooden parts, and which are provided at their ends nearest the axle-arm with ring-shaped or annular parts surrounding the metal part A of the axle, and means for drawing and holding the said castings together, substantially as described.

2. The combination, with a metal part, A, and wooden part B of an axle, of a metal part or casting, E, fitted to the lower surface of the metal part A and provided with a ring, E', embracing the axle, a second metal part or casting covering the end portion of the wooden part of the axle, a collar, D, made integral with the casting D' and superposed upon the ring E', and means for drawing and holding said castings together, substantially as described.

3. The combination, with the metal part A of an axle and the wooden part B thereof, of a casting, E, fitted against the under surface of the metal part A and provided with a ring, E', embracing the said metal part of the axle, a shell or casting, D', embracing the end portion of the wooden part of the axle, a collar, D, made integral with the casting D', and a U-shaped metal bar or clip for clamping the said castings upon the axle, substantially as described.

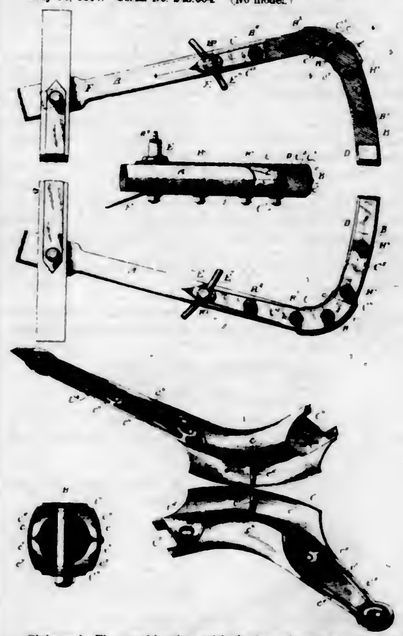
4. The combination, with the metal part A of an axle and the wooden part B thereof, of a casting, E, fitted against the under surface of the metal part A and provided with a ring, E', embracing the said metal part A, a shell or casting covering the end portion of the wooden part of the axle, and a collar, D', made integral with the said shell or casting and embracing the ring E', the contact-surfaces of the said ring E' and the collar D' being circumferentially ridged or grooved, substantially as and for the purpose set forth.

5. The combination, with the metal part A of an axle and the wooden part B thereof, of a casting, E, fitted against the under surface of the metal part A, a casting or shell, D', embracing the end portion of the wooden part B of the axle, and a collar, D, made integral with the shell D' and embracing the ring E', the said ring E' being provided with a flange, E⁴, fitting against the collar inside of the said shell, substantially as described.

6. The combination, with the metal part A of an axle and the wooden part B thereof, of a casting, E, fitted against the under surface of the metal part A and provided with a ring, E', embracing the said metal part of the axle, a shell, D', embracing the end portion of the wooden part of the axle, and a collar, D, surrounding the metal portion of the axle and cast integral with the shell D', a curved metal bar or clip, F, embracing the said metal part or shell, and two rigidly-connected vertically-apertured lugs or projections, as E⁵ or H', engaging said clip at points adjacent to the lower edge of the said shell D', substantially as and for the purpose set forth.

7. The combination, with an axle, of an axle-collar provided with two flanges, D² D³, the flange D³ having an offset or inwardly-bent portion formed in the lower part thereof, forming a notch, *d*, in the outer face of the flange, and a wheel-hub provided with a rabbet, C', receiving the flange D² and abutting against the flange D³, substantially as described.

380,893. **WAGON-GEAR.** NATHAN L. HOLMES, Racine, Wis. Filed July 30, 1887. Serial No. 245,664. (No model.)



Claim.—1. The combination, with the hounds and sway-bar provided with transverse notches or gains in their top and bottom surfaces, of coupling pieces or castings C and C', consisting of plates fitted against the top and bottom surfaces of the hounds and sway-bar and provided with marginal flanges embracing the sides of said hounds and sway-bar, and with transverse projections upon the under sides of the said flat plates, said projections being constructed to engage the said notches or gains in the hounds and sway-bar, and clamping-bolts inserted through the castings and the hounds and sway-bar for holding said parts together, substantially as described.

2. A metal coupling piece or casting, as C or C', connecting the hounds and sway-bar of a wagon-gear, said coupling piece or casting consisting of a plate provided with marginal flanges and a transverse projection, as C⁴ or C⁵, on its inner surface adjacent to its end, and with an external recess, as C⁶ or C⁷, forming with the said projection

an offset in the said plate, said external recess being adapted to receive the end of a strap or brace attached to the hound or sway-bar, substantially as described.

3. The combination, with the hounds, a sway-bar provided with a transverse notch or gain in its top surface near its end, and a strap, D, secured to the top surface of the sway-bar, of coupling pieces or castings C and C', consisting of plates provided with marginal flanges embracing the sides of the hounds and sway-bar, the said casting C being provided at one end with a transverse projection, C^3, entering said notch or gain in the sway-bar, and with an external recess, C^4, constructed to receive the end of the strap D, substantially as described.

4. The combination, with a hound and sway-bar provided with notches *a* and *b* in their upper and lower horizontal surfaces adjacent to their ends, of flanged castings C C', fitted over the end portions of the hound and sway-bar and provided with transverse inwardly-extending parts (C^2 C^2, engaged with the said gains or notches *a b*, and bolts inserted through the said castings and the hound and sway-bar for holding the parts together, substantially as described.

5. The combination, with the hounds and sway-bar provided with transverse notches or gains *a* and *b* in their top and bottom surfaces adjacent to their ends, of coupling pieces or castings C and C', consisting of plates fitted against the top and bottom surfaces of the hounds and sway-bar and provided with marginal flanges embracing the sides of said hounds and sway-bar, each of said castings C and C' being provided at one end upon its inner surface with a transverse projection engaging one of the notches or gains *a* and *b*, and with an external depression or recess occupying the spaces external to the said projection, a metal strap, D, secured to the top surface of the sway-bar and having its end inserted in the recess of the casting C, a metal brace, E, having its end inserted in the recess of the casting C', and bolts inserted through said castings, strap, brace, hound, and sway-bar for securing said parts together, substantially as described.

6. A coupling piece or casting, C or C', for connecting the ends of a hound and sway-bar, said coupling piece or casting consisting of a plate provided with marginal flanges embracing the sides of said hound and sway-bar and prolonged to form an arm extending along the top or bottom surface of the hound or sway-bar, the under or inner surface of said plate and arm being recessed to form ribs which bear against the wooden hounds and sway-bar, substantially as described.

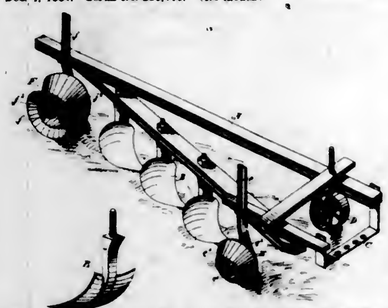
7. The combination, with hounds, sway-bar, and circle-posts of a wagon-gear, of means for connecting the hounds with the sway-bar, consisting of two flanged coupling pieces or castings, C and C', embracing the top and bottom surfaces and the sides of said hounds and sway-bar in their parts adjacent to their ends, the castings C C at the top of the hounds and sway-bar being provided with rigid extensions or arms (C^2 C^2), extending to a point beneath and supporting the said circle-posts, substantially as described.

380,894. **PACKAGE FOR OILS, &c.** CHARLES S. HOMER, New York, N. Y., assignor to Valentine & Company, same place. Filed Jan. 24, 1888. Serial No. 261,764. (No model.)



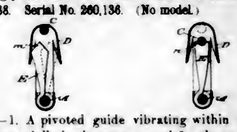
Claim.—In combination, a thin compressible tube provided with a mouth and stopper, and an absorbent substance filled to saturation with a fluid, as and for the purpose described.

380,895. **GANG-PLOW.** HALL M. IRWIN, Hanford, Cal. Filed Dec. 1, 1887. Serial No. 256,719. (No model.)



Claim.—In a gang-plow, the frame of said plow having the swiveled wheel D on one side of its front, and the plow-bottoms B, unprovided with landsides, in combination with the inclined double-rimmed wheels E and F in front of and behind the plows, the main rim of said wheels traveling squarely, the one in the bottom of the furrow previously made and the other on the unplowed ground, and the secondary rim of said wheels traveling against the landsides, the one of the furrow previously made and the other of the furrow made by the plow-bottom immediately in front of it, substantially as described.

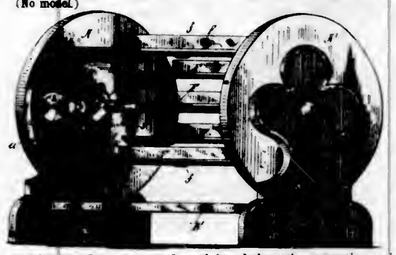
380,896. **SAFETY-PIN.** JOEL JENKINS, Montclair, N. J. Filed Jan. 9, 1888. Serial No. 260,136. (No model.)



Claim.—1. A pivoted guide vibrating within the shield of a safety-pin, substantially in the manner and for the purpose herein set forth.

2. A pivoted guide vibrating within the shield of a safety-pin, and whose free end is recessed to engage the point of the pin, substantially in the manner and for the purpose herein set forth.

380,897. **REVOLVING SHELF.** CREWS JEWELL, Winter Park, Fla., assignor of three-fourths to William S. Harbert and William T. Rickards, both of Evanston, Ill. Filed Dec. 31, 1887. Serial No. 259,529. (No model.)



Claim.—1. In a system of revolving shelves, the respective series of gear-wheels C, C', and C^3, in combination with the shafts E and the shelves F, the ratchet-wheel C^2, the spring-detent D and treadle D', and the cylinders A and A', connected by the spindle A^4 and supported by the short shafts A^3 and C^4, journaled in the standards B, substantially as and for the purposes specified.

2. In a system of revolving shelves, the gear-wheel C, secured on a short shaft which revolves in the socket-bearings *c*, secured between the ends of the cylinder A, in combination with the gear-wheel C^3, which is rigidly secured on one end of the shaft E, upon which is rigidly secured the shelf F, and which passes through the inner heads of the cylinders A and A', and with the gear-wheel C, secured on one end of the short shaft C^4, passing through the outer head of the cylinder A and through the adjacent standard B, substantially as and for the purposes specified.

3. In a system of revolving shelves, the gear-wheel C, secured within and at the center of the cylinder A on the short shaft C^4, journaled in the center of the outer head of the cylinder A and in the adjacent standard B, in combination with the gear-wheel C', secured on a short shaft placed in socket-bearings between the heads of the cylinder A, so that said gear-wheel will revolve and engage with gear-wheel C^3 to which is rigidly secured the shaft E, having secured rigidly upon it the shelf F, substantially as and for the purposes specified.
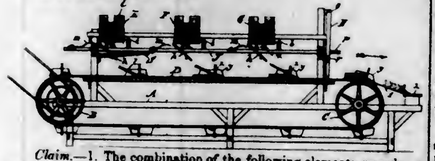
4. In a system of revolving shelves, the ratchet-wheel C^2, located in a recess of the standard B adjacent to the cylinder A, and secured on the short shaft C^4, journaled in said standard and in the center of the cylinder A, in combination with the spring-detent D and treadle D', with which it is connected at its lower end, and which is secured to said standard near the base of the same, substantially as and for the purposes specified.

5. In a system of revolving shelves, the combination, substantially as set forth, of the connecting-spindle A^4, the cylinder A', secured at its center on the short shaft A^3, journaled in a socket-bearing in the adjacent standard B, the cylinder A, having in its center a bearing for the short shaft C^4, journaled at its outer end in the adjacent standard B, and having the gear-wheel C and the ratchet-wheel C^2 secured on it, the gear-wheel C', and the gear-wheel C^3, to which is rigidly secured the shaft E, having secured rigidly upon it the shelf F.

6. In a system of revolving shelves, the combination of the shafts E, secured to the shelves F, the outside gear-wheels, C^3, the series of gear-wheels C C', and the cylinder A, substantially as and for the purposes specified.

7. In a system of revolving shelves, the cylinder A, having a socket-bearing to receive a journal of the short shaft C^4, in combination with the respective series of gear-wheels C, C', and C^3, the shafts E, and the connecting-spindle A^4, substantially as and for the purposes specified.

380,898. **MACHINE FOR GATHERING AND COLLATING BOOK-SIGNATURES.** SAMUEL R. JOHNS, Indianapolis, Ind., assignor of one-third to Alexander R. Monroe, same place. Filed Aug. 31, 1887. Serial No. 248,330. (No model.)



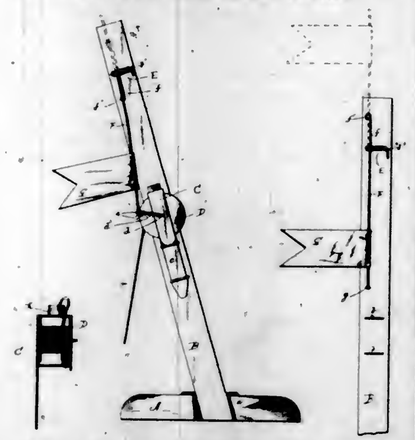
Claim.—1. The combination of the following elements, namely: a main frame, a conveyer-belt arranged to traverse said main frame, a series of open chutes arranged in regular succession above said conveyer-belt, each of said chutes having its lower end closed by two alternately-removable covers, said covers being arranged one above the other, so as to leave a narrow space between them, and intermediate connecting mechanism connecting said conveyer-belt and covers, whereby the covers are alternately operated to open and close the chutes by the forward movement of the belt, all substantially as and for the purpose specified

2. In a machine for gathering book-signatures, the combination, with the main frame, the conveyer-belt arranged to traverse said frame, and the series of open chutes arranged above the conveyer-belt and each having its lower end closed by two alternately-removable covers arranged one above the other, of the sliding frame mounted on the main frame and arranged to reciprocate thereon, means for reciprocating said frame, and intermediate connecting mechanism connecting said sliding frame and covers, whereby the covers are alternately opened and closed by the reciprocating movement of the sliding frame, substantially as specified.

3. In a machine for gathering book-signatures, the combination, with the chute E, the door *h*, hinged thereto, and the hook *i*, arranged to engage and hold the door when closed, of the sliding frame J, having the lug *x* and arm *m*, whereby the door is opened and closed by the reciprocating movement of the frame, substantially as specified.

4. In a machine for gathering book-signatures, the combination, with the main frame, the conveyer-belt mounted thereon, the series of chutes arranged above the conveyer-belt, the sliding frame, the plates *i*, secured to the sliding frame, and the doors *h*, hinged to the chutes, of the lever N, pivoted to the main frame, the series of arms *m* and lugs *x*, secured to the sliding frame, spring S, attached to the main frame and sliding frame, and block *y*, secured to the conveyer-belt and arranged to engage the lever N, whereby the sliding frame is reciprocated and the series of chutes simultaneously opened and closed, substantially as and for the purpose specified.

380,899. **FISHING-REEL SIGNAL.** LYMAN M. JOHNS, Johnson, Vt. Filed Feb. 25, 1888. Serial No. 264,961. (No model.)



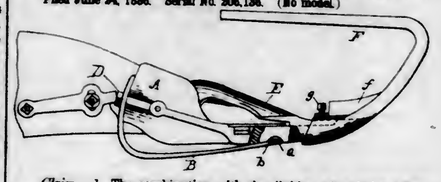
Claim.—1. The combination, with the base, of the standard having at its upper end a spring terminating in a free looped end, the movable flag-wire non-integral with said spring, the reel-frame, and the reel, the handle of which is adapted to hold and release the flag-wire, substantially as shown, after the said wire has been drawn down, as set forth.

2. The combination, with the removable base having an inclined socket, of the inclined removable standard, the flag-wire, the removable reel-frame, the reel having a handle adapted to hold and release the flag-wire, and a spring attached to the staple on the upper end of the standard, and having a free end adapted to throw up the flag-wire when it is released by the reel-handle, as set forth.

3. The combination, with the standard having staple *b'* at its upper end and small lock-staple *g* about midway, of the movable flag-wire turning on staple *b'*, whereby the flag-wire may be brought down and held when not in use, as set forth.

4. The combination, with the base, of the standard provided with staple *b'* at its upper end, the spring E, secured about said staple and having a free looped end, *f f'*, the flag-wire, the reel-frame, and the reel having a handle, *d'*, terminating in a shoulder, *e*, as set forth.

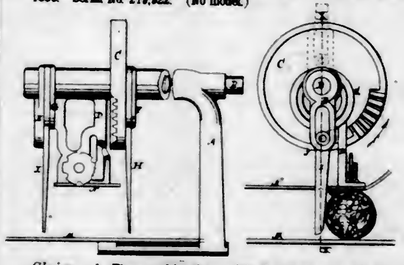
380,900. **DIVIDER FOR MOWING-MACHINES.** JAMES H. JOHNS, Rockford, Ill., assignor to Emerson, Talcott & Company, same place. Filed June 24, 1886. Serial No. 206,136. (No model.)



Claim.—1. The combination, with the divider, of an independent wing-guard secured to the top of the divider near its front end and extending rearwardly therefrom along the upper and inner sides of the divider, the said wing-guard being of a hollow curved form in cross-section and presenting an inwardly-deflecting surface as it extends rearwardly along the divider, and being narrowed down at its forward end and provided with a depressed seat for the fastening-bolt, whereby the said guard may be secured to the divider without presenting an obstruction to the grass, substantially as set forth.

2. The combination, with the divider, of a supplemental divider having a detachable connection with the horn of the divider by means of a holding-screw seated in the socket fitted over the horn of the divider and bearing upon the horn, said supplemental divider being provided with a guard-rib rising from its upper face forward of the holding-screw, substantially as set forth.

380,901. **BUNDLE-EJECTING MECHANISM FOR GRAIN-BINDING MACHINES.** MOSES A. KELLER, Batavia, N. Y. Filed Nov. 26, 1886. Serial No. 219,922. (No model.)



Claim.—1. The combination, with the stationary binder and knotter frames and knotter-operating shaft, of the stationary eccentrics affixed to said frames, the ejecting-arms journaled upon said eccentrics, and means for revolving said arms from the knotter-operating shaft, all arranged substantially as described, whereby the arms are given an accelerated motion as they strike the bundle.

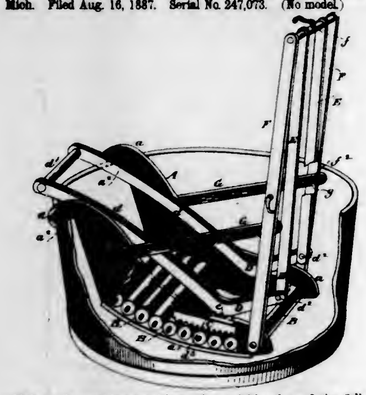
2. The combination, with the stationary eccentrics and knotter-operating shaft, of the revolving bundle-ejecting arms journaled upon said eccentrics, the rollers journaled to the arms, and the slotted cranks on the shaft for operating the ejecting-arms, as set forth

3. The combination, with the stationary binder and knotter frames and knotter-operating shaft, of the stationary eccentrics affixed to said frames, the ejecting-arms journaled upon the eccentrics, and the slotted knotter-operating wheel and slotted crank on the knotter-operating shaft, and connecting mechanism for revolving said ejecting-arms more rapidly as the same strike the bundle, as set forth.

4. The improved bundle-ejecting mechanism, composed of two

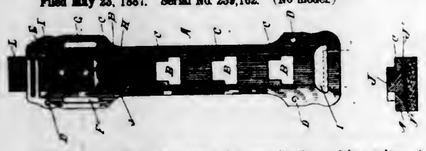
stationary eccentrics, one secured to the frame A and one to the knotter-frame D, and having journaled upon said eccentrics two revolving ejecting-arms, H and I, operated by and in conjunction with two slotted revolving cranks, E and C, actuated by the knotter-operating shaft B.

380,902. **WASHING-MACHINE.** JOHN KILLEFER, Bloomingdale, Mich. Filed Aug. 16, 1887. Serial No. 247,073. (No model.)



Claim.—In washing-machines, the combination of the following instrumentalities, namely: the frame A, having a concave bed of rollers, the top-connected standards F F, pivoted to one end of said frame and having studs f^3, the braces G G, pivoted to the other end of said frame and having notches g g, and the angled levers D D, connected by end handle carrying a pivoted rubber at the angles and hung by pivoted bars E E to the top cross-bar of the standards, whereby the whole may be used in a tub to wash clothes, or folded up in the manner shown and described.

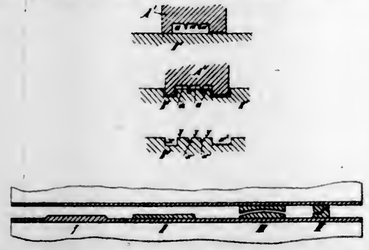
380,903. **HAME-TUG.** CHARLES A. KUPFER, Burlington, Iowa. Filed May 23, 1887. Serial No. 239,162. (No model.)



Claim.—1. In a hame-tug, the combination, with a plate, A, having perforations B, said perforations B having female dovetailed portions C and beveled ends b, of a key, J, having male dovetailed portions J′ and a tongue, H, substantially as described.

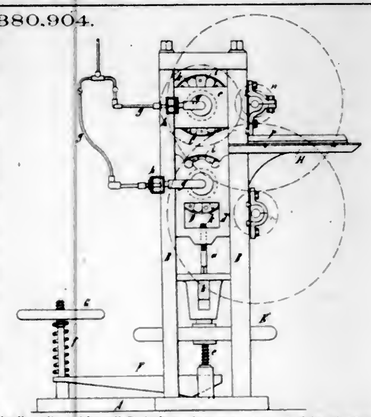
2. In a hame-tug, the combination, with a plate, A, said plate provided with a depressed loop, I, an elevated loop, E, side loops, F and G, and a series of perforations, B, having dovetailed portions C and beveled ends b, of a key, J, provided with a tongue, H, and beveled portions J′, substantially as described.

380,904. **MACHINE FOR EMBOSSING WOOD OR OTHER MATERIAL.** BERNHARD LUDWIG, Vienna, Austria-Hungary. Filed July 18, 1887. Serial No. 244,606. (No model.) Patented in England Sept. 10, 1886, No. 11,543; in France Sept. 10, 1886, No. 178,539, and in Austria-Hungary Dec. 21, 1886, No. 35,374 and No. 64,351.

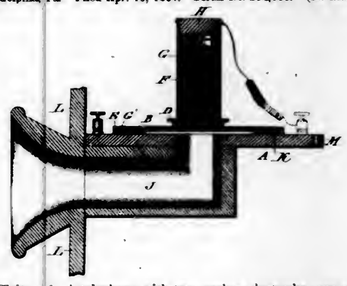


Claim.—In a machine for embossing wood or other material by the application of heat and pressure, the combination, with the vertically-adjustable roll D, bolts a, bar v, screw c, and hand-wheel E, of the lever F and adjustable spring f, substantially as described.

380,904.



380,905. **ELECTRICAL TELEPHONE.** F. DU PONT MARSTON, Philadelphia, Pa. Filed Apr. 15, 1887. Serial No. 234,908. (No model.)



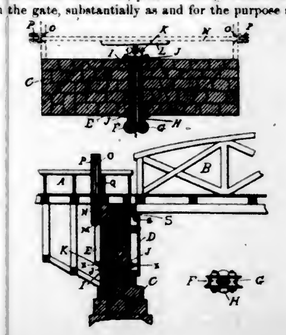
Claim.—1. A telephone with two carbon electrodes, one only of which has a peripheral connection with a transmitting electrical generator, the other being held loosely in a guide, substantially as described.

2. A telephone having a carbon diaphragm with peripheral contact, as described, a loose gravitating electrode of smaller dimensions than the diaphragm upon which it rests, and a sound-conveying tube located beneath the diaphragm, substantially as described.

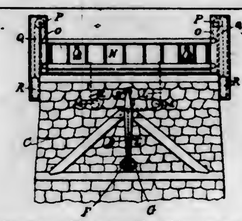
3. In a telephone, a horizontal carbon diaphragm having a peripheral connection for one conductor, a gravitating electrode being sustained in a dust-tight guide-tube, substantially as described.

380,906. **SWING-BRIDGE.** CHARLES W. MARTIN, Wallaceburg, Ontario, Canada. Filed June 22, 1887. Serial No. 243,196. (No model.)

Claim.—1. The combination, with the movable bridge-gate and the stem I, of the vertical oscillating lever and the chain connected with the lower end of said lever, passed through said stem, and connected with the gate, substantially as and for the purpose specified.

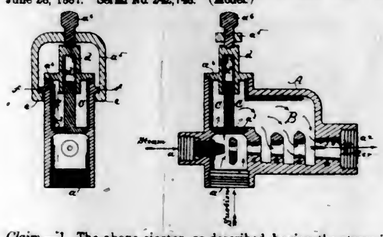


380,906.



2. The combination, with a movable bridge-gate, of the oscillating lever D, chain E and its operative connection with the gate, sheaves F and G, head H, stem I, secured in bearings, and the cam S, all arranged to operate substantially as described.

380,907. **EJECTOR.** JOHN M. MARTY, Cleveland, Ohio. Filed June 28, 1887. Serial No. 242,743. (Model.)

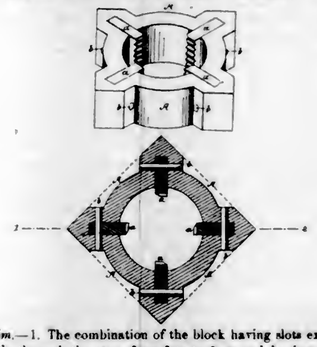


Claim.—1. The above ejector, as described, having the steam-inlet and water-inlet and the gradually-widening discharge-openings c, chamber C C, channel B, and valve a^2, set between the steam-nozzle and said gradually-widening discharge-openings c, substantially as shown and described, and for the purposes set forth.

2. In an ejector as above described, the valve a^2, set in chamber C C and adapted to be operated by its own weight and the inertia of the water, substantially as shown and described, and for the purposes set forth.

3. In an ejector as above described, in combination with said ejector, the cap a^4, fitting on and covering the upper end of the chamber C C, strap a^3, its lower ends, c, catching under the lugs f, set-screw a^4, working through the upper part of said strap and screwing down on the upper end of the barrel d of said cap, and valve a^2, its stem fitting in and working up and down in opening d' in the barrel d of said cap, substantially as shown and described, and for the purposes set forth.

380,908. **SCREW-CUTTING DIE.** FRANCIS I. MAULE, Philadelphia, Pa. Filed Dec. 7, 1887. Serial No. 257,204. (No model.)



Claim.—1. The combination of the block having slots extending completely through the same from face to face, and having opposite sides parallel from face to face of the block, with cutting-bits fitting snugly in said slots, and transverse retaining-pins passing through openings in the block and bits, all substantially as specified.

2. The combination of the block having a central opening, and slots extending outward therefrom, with cutting-bits fitting snugly in said slots and bearing at their outer ends against the bases of the slots, and transverse pins passing through openings in the block and bits and serving to cause said bits to bear firmly against the outer bearings in the block, all substantially as specified.

380,909. **BARBER'S CHAIR.** EDWARD MELCHIOR, Chicago, Ill. Filed Sept. 17, 1887. Serial No. 249,969. (No model.)



Claim.—1. The combination, with the arm or support B, carrying the treadle A, pivoted therein, and the lever C, carried by said arm or support and operated by the treadle A, and having the eccentric end e, of the locking-bar F and block E, substantially as described.

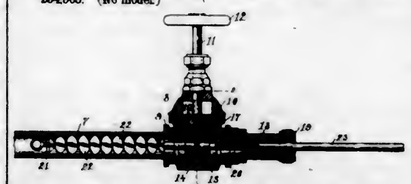
2. The combination, with the arm or support B, treadle A, pivoted therein, and lever C, carried thereby and operated by the treadle A, and having the eccentric end c, of the locking-bar F, block E, and a spring, D, for operating the said lever C, substantially as described.

3. The combination of the arm B, treadle A, and lever C, carried by said arm and operated by the treadle A, with the block E, having the serrated face e, and bar F, having the serrated face f, all operating substantially as described.

4. The combination of the treadle A and the arm B, carrying said treadle and having a longitudinal slot, the lever C, located in said slot, operated by the treadle A, and having the eccentric acting end c, the spring D, engaging said arm and lever, the block E, having serrations e, and the bar F, having serrations adapted to engage the serrations of the block E, with the bar H, arm I, and rock-shaft J, for tilting the chair, substantially as described.

5. The combination of the rocking shaft J, arm I, and block E with the bars H and F, and means, substantially as described, for forcing said bar F into and out of engagement with the block E, all operating so as to form a triangular support, substantially as described.

380,910. **APPARATUS FOR CLEANING CHARGED GAS-PIPES.** PATRICK MCGEE, Providence, R. I. Filed Apr. 13, 1887. Serial No. 234,565. (No model.)

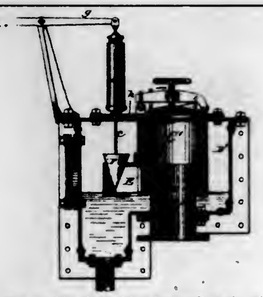


Claim.—1. The combination, as hereinbefore set forth, with a gas-pipe, of a cleaning device provided with a rod, a clamping device provided with means whereby it may be fastened upon the opened end of the gas-pipe and support the cleaning-rod within said pipe, and a packing-box mounted upon the outer end of the gate-valve casing, the said cleaning-rod extending through the gate-valve and the packing-box, substantially as and for the purpose herein described.

2. The combination, as hereinbefore set forth, with a gas-pipe, of a cleaning device provided with a sectional rod, a removable gate-valve provided with means whereby it may be fastened to the open end of the pipe and support the cleaning-rod within said pipe, and having the two parts of the valve provided with grooved rubber packing for packing the rod to provide against leakage, and a removable packing-box mounted upon the outer end of the valve-casing for preventing the escape of gas, substantially as described.

380,911. **HYDRAULIC MAIN FOR GAS-WORKS.** GEORGE A. MCILHENNY and THOMAS G. LAMMDEN, Washington, D. C. Filed Apr. 11, 1887. Serial No. 234,401. (No model.)

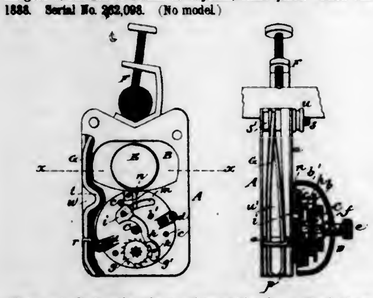
380,911.



Claim.—1. The combination, with a hydraulic main, of a dip-pipe provided with a lateral valve-chamber located within said main, a valve-seat in the top of said chamber, and a conical valve provided with a vertical stem projecting through the top of the main, substantially as described.

2. The combination, with a hydraulic main, of a dip-pipe provided with a lateral valve-chamber located within said main, a valve-seat in the top of said chamber, a conical valve provided with a vertical stem, and a water-sealed pipe serving as a guide for said stem, substantially as described.

380,912. BURGLAR-ALARM. WILLIAM E. MCINTOSH, Keene, N. H., assignor of one-half to Frank H. Wyman, same place. Filed Jan. 27, 1888. Serial No. 262,098. (No model.)



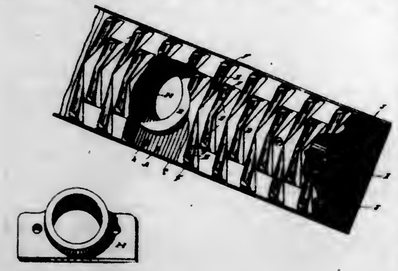
Claim.—1. In burglar-alarms, the combination, with the hammer *h*, having the pin *i*, of the plate *b'*, having the arc slot *m*, the pallet *g'* on the same shaft as the hammer, the escapement-wheel *g*, and spring clock mechanism, substantially as described.

2. In burglar-alarms, the combination of the chamber B, downwardly inclined toward the middle and there provided with the groove *o*, the roller E, arranged loosely in said chamber, the spring *n*, extending over said groove, and the hammer *h*, having a pin to engage with said spring, whereby said hammer may be held or released, as described.

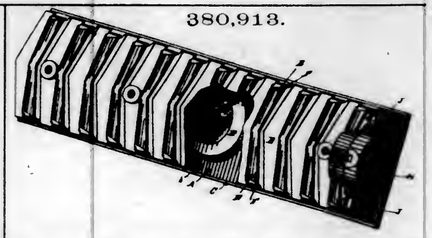
380,913. GAS-FUEL BURNER. CHARLES H. MILLER, Erie, Pa. Filed Aug. 26, 1887. Serial No. 247,987. (No model.)

Claim.—1. The combination, in a gas-fuel burner, of an upper or top section having hollow corrugations projecting above the plane of said top and gas-outlet openings at the ends of each of said corrugations, with a base secured thereto, substantially as and for the purpose set forth.

2. The combination, in a gas-fuel burner, of a base-section having a central gas-inlet opening, and a top section having an end gas-

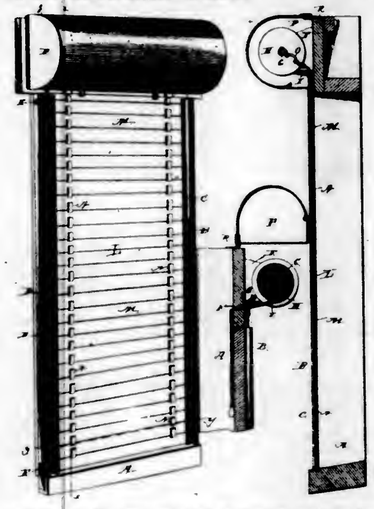


380,913.



inlet opening, with an interchangeable cap for said gas-inlet openings, substantially as and for the purpose set forth.

380,914. SHUTTER. JOHN T. MILLER, Thayer, Kans. Filed Oct. 24, 1887. Serial No. 253,224. (No model.)



Claim.—1. The combination of the rotating shaft, the flexible metallic curtain connected thereto and adapted to be coiled thereon, said curtain comprising the slats arranged in the same plane with their opposing edges in contact, and the U-shaped straps engaging openings in the upper edge of each slat and having their arms secured to opposite sides of each superincumbent slat, and the guides to retain and direct the edges of the said metallic flexible curtain or shutter, substantially as described.

2. The guide-plates B, having the grooves C on their inner edges, for the purpose set forth, and provided with the flange-plates D at their outer edges, adapted to bear against the outer sides of the door or window frame, substantially as described.

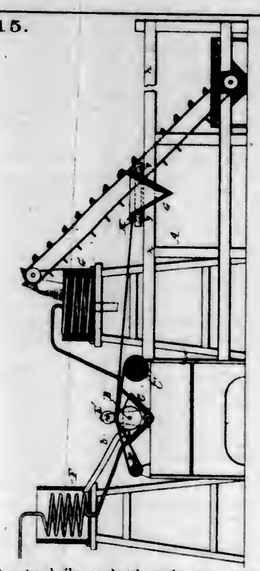
3. The combination of the frame having the brackets at its upper side, the shaft journaled in the said brackets, the flexible metallic curtain or shutter having its upper edge connected to the shaft and adapted to be coiled thereon, and the cap or cover hinged at the upper inner corner to the frame and adapted to be folded downward over the shaft and the bracket to conceal the same from view, substantially as described.

380,915. MANUFACTURE OF ROOFING-FELT. HENRY M. MINER, Green Point, N. Y. Filed July 15, 1887. Serial No. 244,417. (No model.)

Claim.—1. In an apparatus for the manufacture of roofing fabric, the combination, with the main frame A, of the paper-reel C, return-roll E, coating-roll B, and pressure and surplus-removing roll E', located directly above the coating-roll B, substantially as set forth.

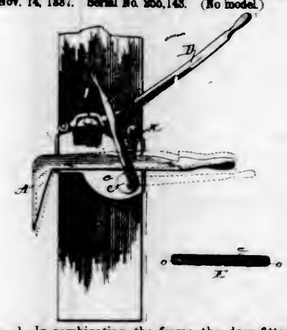
2. In an organized plant or apparatus for the manufacture of roofing material, the combination of the following elements, to wit: a main frame, a series of rolls for feeding, coating, and returning the felt from the reel over the coating-roller, a supply-trough below the coating-roller, a traveling sand-hopper, a sand-heater located on or near the line of travel of the hopper and having means of communica-

380,915.



tion therewith, a tar boiler or kettle, and a steam-generator having pipes leading to the boiling-kettle, the coating-roller trough, and the sand-heater, substantially as described.

380,916. SAW-MILL DOG. JAMES H. MINER, Baton Rouge, La. Filed Nov. 14, 1887. Serial No. 255,143. (No model.)



Claim.—1. In combination, the frame, the dogs fitted to guides in said frame, said guides being deeper at the rear than the depth of the shank of the dog, whereby the said dog is permitted an adjustment to throw the point in or out, a spring-pin engaging with notches in the upper side of the dog, and an independent lifting and holding device arranged beneath the dog, substantially as described.

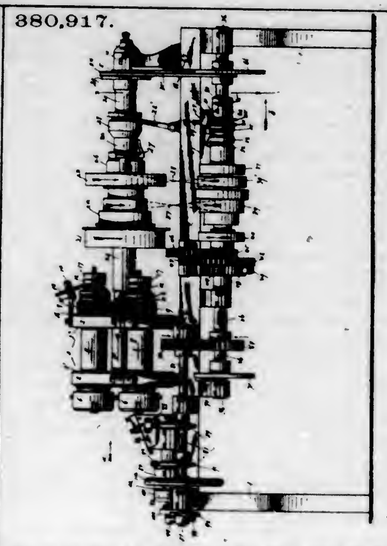
2. In combination, a frame arranged to slide on the guide-standard, having guides made to allow sliding movement of the dog, and also tipping movement to draw the point toward the standard, a spring-pin fitting notches in the upper edge of the shank of the dog, and an eccentric and lever independent of the dog for raising and holding the shank thereof, substantially as described.

3. In combination, the guide-standard having a row of holes, the frame sliding thereon, the lever slotted to receive a pin set in the frame, a pin, as H', passing through the end of the said lever and through one of the holes in the standard, guides in the frame arranged to allow sliding and tipping movement of the dog, a spring-pin fitting notches in the upper edge of the shank of the dog, and a device for lifting and holding the shank, all substantially as described.

380,917. MACHINE FOR SHAVING HEADS OF BOLTS, NUTS &c. HENRY MINTER, Worcester, Mass. Filed Nov. 25, 1887. Serial No. 256,071. (No model.)

Claim.—1. In a machine for finishing the heads of bolts, &c., the combination, with the intermittent rotary head consisting of two disks and a central sleeve, of a series of spindles mounted therein adapted

380,917.



to hold the blanks to be finished, and having a rotary motion independent of said head, and provided with gears for driving said spindles, and a clutch mechanism to throw into or out of operation the gear-driving mechanism, substantially as shown and described.

2. In a machine for finishing the heads of bolts, &c., the combination, with the intermittent rotary head and a series of spindles having an independent rotary motion mounted therein for holding the blanks to be finished, of mechanism for rotating said head intermittently, and mechanism for locking and holding the head stationary at regular intervals, substantially as shown and described.

3. In a machine for finishing the heads of bolts, &c., the combination, with the intermittent rotary head and a series of spindles for holding the blanks to be finished mounted on said head, and having an independent rotary motion, of a tool-holder mounted on a shaft having a longitudinal motion, and also a rocking motion, said tool-holder carrying a tool having a rocking motion directly in front of the blank to be operated upon, substantially as shown and described.

4. The combination, with the tool-holder carrying a tool mounted on a shaft having a longitudinal motion, and said shaft, of mechanism, substantially as described, for operating said shaft to cause the tool to have a rocking motion as it acts upon the blank to be finished, and also to have a motion toward and away from said blank, in the manner substantially as shown and described.

5. In a machine for finishing bolts, &c., a tool-holder, 86, carrying a tool for operating on the bolts and mounted on a rocking shaft and adapted to have a rocking motion back and forth in front of the bolt to be finished, and also a longitudinal motion toward and away from the bolt, substantially as set forth.

6. The combination, with the intermittently-rotating head 3, consisting of two disks and a central sleeve mounted on and turning with a central shaft, of blank-holding spindles 7, mounted in said head 3 and having a rotative motion independent thereof, and provided with pulleys for belt-connection and gears for gear-connection for driving said spindles, and a clutch mechanism to throw into or out of operation the gear-driving mechanism, for the purpose stated, substantially as shown and described.

7. The combination, with the rotating head 3, fast upon and revolving at regular intervals with a shaft having an intermittent motion and carrying the blank-holding spindles 7, said spindles 7 having an independent rotative motion, of mechanism for locking and holding the head 3, for the purpose stated, consisting of a spring-actuated bolt, 77, operated at regular intervals by a cam through the intervention of connecting-levers, in the manner substantially as shown and described.

8. The combination, with shaft 5, having the head 3, carrying the blank-holding spindles 7 therein, secured thereon, and a notched disk, 29, fast on said shaft, of a gear, 34, loose on said shaft and carrying a pawl, 31, to engage the notched disk 29, and a rack, 35, and a cam for operating said rack to transmit a rotary motion to the shaft 5 and cause the head 3 to make a one-third revolution, substantially as shown and described.

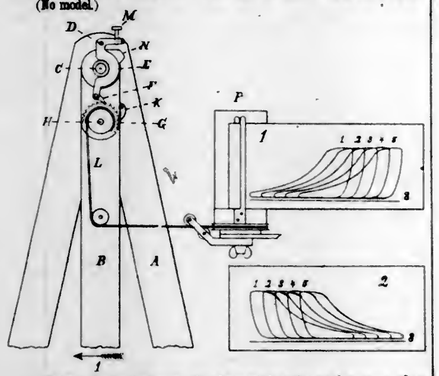
9. The combination, with the shaft 5, having the head 3 secured thereon, carrying the blank-holding spindles 7, of a sleeve, 20, loose on said shaft and provided with a gear, 19, for rotating the spindles 7, and a driving-pulley, 21, fast on said sleeve, which has a rotary motion independent of the shaft 5, for the purpose stated, substantially as shown and described.

10. The combination, with the shaft 5 and sleeve 20, supported loosely thereon, cone-pulley 22, and pulley 23, loose on said sleeve, and a clutch mechanism for causing them to revolve with said sleeve, of the shaft 36, carrying a cone-pulley, 39, a gear, 41, eccentrically mounted on the hub of said pulley, and an internal gear, 44, for driving at a slower rate through a system of gears, the shaft 36, and a pulley, 39, an internal gear, 51, on said shaft, and a clutch mechanism fast on said shaft to engage with the gear 51, by which the shaft 36 is driven at a higher rate of speed, all constructed and operated substantially as shown and described.

11. The combination, with the intermittently-rotating head 3, and blank-carrying spindles 7, supported and rotating therein, of tool-holders 86 and 87, mounted on shafts 82 and 83 and having a rocking motion directly in front of the blanks to be operated upon, and mechanism consisting of levers connected at one end with said tool-holders and at the other end with eccentrics on a shaft for drawing over the tool-holders to cause the tools to operate and for moving them back after they have operated, substantially as shown and described.

12. The combination, with the tool-holder 86, supported on shaft 82, and said shaft, of means for giving a positive longitudinal motion to said shaft against springs serving to withdraw the tool from contact with the blank upon its backward motion, consisting of a screw, 99, working against the end of the shaft 82 and operated by a cam through the intervention of connecting-levers, in the manner substantially as shown and described.

380,918. STEAM-ENGINE INDICATOR ATTACHMENT. JOSEPH R. MITCHELL, Oakland, Cal. Filed Nov. 8, 1886. Serial No. 218,333. (No model.)



Claim.—1. An indicator for determining the performance of an engine or other similar machine, said indicator having a card on which the diagram is traced, in combination with the vibrating lever receiving its motion from said engine or other machine, and a connection for varying the length of connection between said lever and the indicator, whereby a series of consecutive separate diagrams are made on the card, substantially as described.

2. In combination with an indicator-cylinder for carrying a card on which a diagram is traced to show the performance of an engine or other machine, a vibrating lever, and a connection between said lever and the indicator-cylinder, whereby the cylinder's limits of oscillation are shifted to provide for making a series of consecutive separate diagrams on the indicator-card, substantially as described.

3. The vibrating lever deriving motion from the engine or other machine, and the card-bearing cylinder of the indicator, in combination with a cord and the vibrating lever attached thereto, so as to vary the length of connection when the lever moves, whereby the cylinder's limits of oscillation are shifted to provide for a series of consecutive separate diagrams on the indicator-card, substantially as described.

4. The combination, with an indicator-cylinder for carrying a card on which a diagram is to be traced to show the performance of an engine or other machine, and a vibrating lever deriving motion from said engine or machine, of a cord connecting the lever with the indicator-cylinder, whereby the limits of oscillation of said cylinder are shifted to provide for making a series of consecutive separate diagrams on the indicator-card, substantially as described.

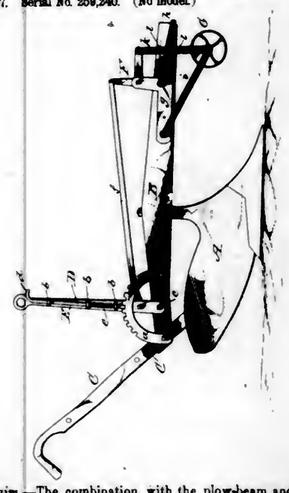
5. The combination, with the vibrating lever deriving motion from the engine or other machine, and the card-bearing cylinder of the indicator, of a cord attached at one end to the cylinder and a connection between its other end and the vibrating lever, whereby its length is varied at the beginning of the movement of the lever to shift the cylinder's limits of oscillation at the time when the pencil describing the diagrams is moving on the exhaust-line, substantially as and for the purpose herein described.

6. The combination, with the cord, the indicator-cylinder, the vibrating lever, and the means for shortening said cord for the purpose described, of a drum carried by the lever and to which one end of the cord is attached, a ratchet on the drum, and a pawl engaging the ratchet as the lever moves and turning it partially, substantially as described.

7. The combination, with the cord, the indicator-cylinder, the vibrating lever, and the means for shortening said cord, for the purpose described, and holding it, of a drum carried by the lever and to which one end of the cord is attached, a ratchet on the drum, a pawl engaging the ratchet as the lever moves and turning it partially, and a retaining-pawl for holding it to the position turned, substantially as described.

8. The combination, with the cord, the indicator-cylinder, the vibrating lever, and the means for shortening said cord at the beginning of either stroke of the lever, and for the purpose described, of a drum carried by the lever and to which one end of the cord is attached, a ratchet on the drum, a retaining-pawl engaging the ratchet, an actuating-pawl for turning it, a pivoted lever carrying said pawl, and a connection between said pawl-lever and the main vibrating lever, whereby the engagement of its pawl with the ratchet is varied as to time, substantially as described.

380,919. PLOW. ALBERT M. NASH, Owego, N. Y. Filed Dec. 28, 1887. Serial No. 259,240. (No model.)

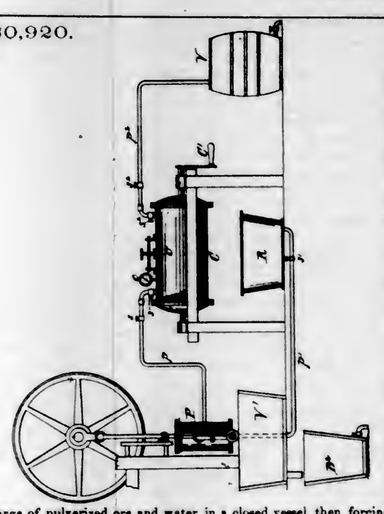


Claim.—The combination, with the plow-beam and the bracket *g*, secured thereto, near the forward end thereof, of the bell-crank lever F, pivoted to said bracket, the arm *i*, secured at one end to said bracket, the arm *k*, pivoted at one end to one arm of said bell-crank, the wheel G, journaled in the lower ends of said arms *i* and *k*, the connecting-rod *f*, pivoted to the other arm of said bell-crank, and the operating-lever E, pivoted to the beam and connected with said rod, substantially as shown and described.

380,920. METHOD OF CHLORIDIZING FINELY-DIVIDED AURIFEROUS MATERIALS. JAMES C. NEWBERY and CLAUDE T. J. VAUTIN, London, England. Filed May 4, 1887. Serial No. 237,146. (No specimens.) Patented in Victoria Mar. 29, 1886, No. 4,484; in South Australia Apr. 1, 1886, No. 669; in New Zealand Apr. 12, 1886, No. 1,796; in New South Wales May 28, 1886; in Queensland June 28, 1886, No. 107; in Tasmania Sept. 4, 1886, No. 421; in England Mar. 28, 1887, No. 4,609; in France May 31, 1887, No. 183,912, and in Belgium June 1, 1887, No. 77,679.

Claim.—The herein-described process of separating precious metals from their ores by chlorination, which consists in introducing chlorine into or mixing an agent capable of generating chlorine with a charge of pulverized ore and water in a closed vessel, then forcing air into said vessel under a sufficient pressure to liquefy the chlorine gas, substantially as described, for the purpose specified.

380,920.



380,921. DEVICE FOR SEALING FRUIT-JARS. WILLIAM W. OSMOND, Green Ridge, Pa. Filed Jan. 5, 1888. Serial No. 259,877. (No model.)



Claim.—1. The combination, with a jar or other vessel and a cover for the same, of a spring-bail formed of a single piece of wire pivoted to the jar and adapted to swing over the cover, said bail being composed of a straight body portion to extend over the cover of the jar, a circular vertical spring loop or coil at each end of the body portion, and the arms which extend downwardly from the loops or coils and are pivoted to the jar at their ends, and a locking-lever formed of a single piece of wire provided at its ends with eyes loosely embracing the central part of the body portion, said lever being provided with elbows to engage the cover of the jar, substantially as described.

2. In combination, a jar or other vessel, a cover for the same provided with a boss centrally located upon its upper surface, said boss being provided with a pair of grooves or depressions in its upper face, a spring-bail composed of a body portion to swing over the cover, a vertical spring loop or coil at each end of the body portion, and the arms extending downwardly from the loops and pivoted to the jar at their lower ends, and a V-shaped locking-lever formed of a single piece of wire, the opposite ends of which are bent to form eyes loosely embracing the central part of the body portion of the bail, the opposite or handle portion of the lever being bent upwardly between the elbows and the lower or closed end of the lever, whereby when the cover is clamped in position the elbows of the lever rest in the grooves in the boss and its lower end rests upon the upper surface of the cover, substantially as described.

380,922. ELECTRODE FOR SECONDARY BATTERIES. RICHARD PACKER, Chester, Pa. Filed Nov. 7, 1887. Serial No. 254,502. (No model.)



Claim.—1. An electrode or element for secondary batteries, consisting of two flat plates laterally united together and having in their opposing lateral faces a series of internal cells for the reception of a suitable active material, the adjacent cells of the two plates aligning to form a continuous cell or pocket transversely through the plates, except at the ends of the cells adjoining the lateral exposed faces of the plates, at which points all the cells are closed by thin walls made integral with the plates, substantially as and for the purpose set forth.

2. An electrode or element for secondary batteries, consisting of two metallic plates having a series of cells or indentations formed in the meeting faces thereof for the reception of active material, and so arranged as to leave solid portions intermediate of the cells, in which solid portions threaded openings are formed, and screws fitted in the openings to firmly unite the plates together, substantially as described.

3. An electrode or element for secondary batteries, consisting of two metallic plates having cells or indentations formed in the meeting faces thereof to receive active material, and which cells extend only partially through the plates to form an integral wall at one end of the cells, and devices for firmly uniting the plates together, substantially as described.

4. An electrode or element for secondary batteries, consisting of metallic plates having internal cells or depressions in the meeting faces thereof, and insulating-screws passed through the plates and having one or both ends extended beyond the vertical exposed faces of the plates, substantially as described, for the purpose set forth.

380,923. RAILWAY-FROG. ISAAC A. PERRY, Wilmington, Del. Filed July 16, 1887. Serial No. 244,439. (No model.)

Claim.—1. The combination, in a railway-frog, of the base-plate, the point having tongues engaging with openings in said base-plate, and a detachable retainer for the nose of the point, said retainer having a tongue adapted to an opening in the base-plate and provided with a toe projecting beneath said plate, all substantially as specified.

2. The combination of the base-plate, the point of the frog, the retainer-plate therefor, recessed for the reception of said point and having a tongue adapted to an opening in the base-plate, and a transverse key whereby said tongue is secured to the base-plate, all substantially as specified.

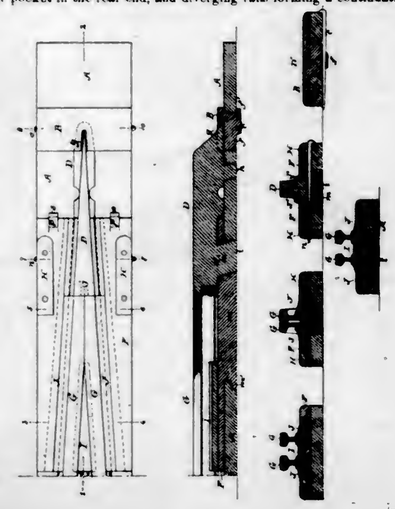
3. The combination of the base-plate of the frog, the point, and the point-supporting plate having a tongue adapted to an opening in the base-plate, said tongue being provided with a toe engaging with the base-plate and held in engagement therewith by contact of the point with the supporting-plate, all substantially as specified.

4. The combination of the base-plate, the point and its supporting-plate, both having tongues adapted to a recess in the base-plate, with a transverse retaining-key confined to the base-plate and passing through the tongues of the point and its supporting-plate, so as to retain them both, all substantially as specified.

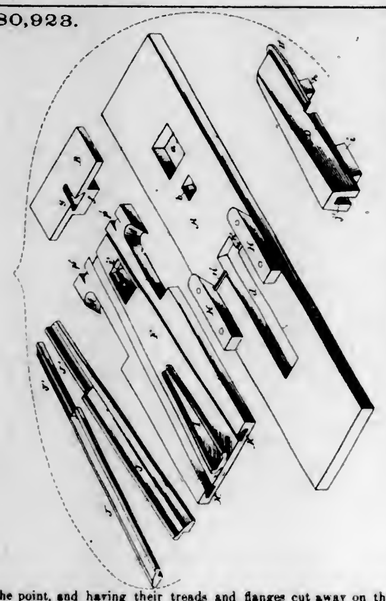
5. The combination of the base-plate of the frog, having an opening therein and lugs H thereon, with the supporting-plate constructed to engage with said lugs, and having a tongue for adaptation to the opening in the base-plate, all substantially as specified.

6. The combination of the base-plate of the frog and its lugs, the supporting-plate mounted on said base-plate and engaging with said lugs, and keys engaging with the front end of the supporting-plate and retaining the same in position for engagement with said lugs, all substantially as specified.

7. The combination of the base-plate, the point having a recess or pocket in the rear end, and diverging rails forming a continuation



380,923.

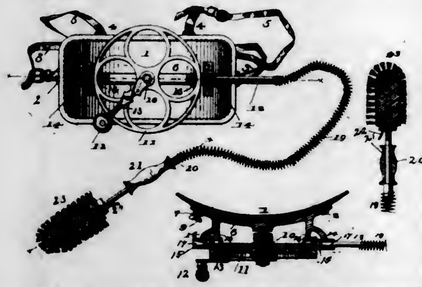


of the point, and having their treads and flanges cut away on the inner side to permit the approach of the webs and the formation of tongues entering said pocket in the point, all substantially as specified.

8. The combination of the point of the frog and the diverging rails forming a continuation of the same, the supporting-plate, means for securing the point thereto, a filling-piece interposed between the rails, and wedge-plates engaging with the outer flanges of the rails and adapted to inclined ways in the supporting-plate, all substantially as specified.

9. The combination of a rail and a supporting-plate therefor, with a retaining-plate engaging with the flange of the rail, and having a tongue projecting beneath the supporting-plate and engaging with an inclined way in the under side of the same, all substantially as specified.

380,924. MACHINE FOR GROOMING ANIMALS. NIELS PETERSEN, Copenhagen, Denmark. Filed Nov. 21, 1887. Serial No. 255,787. (No model.)



Claim.—1. In a machine for grooming animals, the combination of a frame adapted to be strapped or otherwise secured to a person's body, two shafts at opposite ends of the frame, having socketed outer ends and provided with pinions upon their inner ends, a crown-wheel journaled in bearings in said frame and meshing with said pinions, whereby the shafts are revolved in opposite directions, and a flexible shaft or coupling having a cylindrical brush at one end and a short shaft at the other adapted to fit removably in either socket of the shafts, substantially as described.

2. In a machine for grooming animals, the combination of a pad or plate having eyes for the attachment of straps for securing it to the body of the person using the machine, a frame secured removably to the pad and having a central bearing and two pairs of diametrically-opposite bearings diametrical to the central bearing, a crown-wheel having its shaft journaled in the central bearing and having a handle for revolving it, shafts journaled in the opposite bearings and having pinions engaging the crown-wheel between the bearings of each pair of bearings, a short shaft fitting with one end in a socket in the outer ends of the shafts and having a flexible shaft or coupling secured to its outer end provided with a shaft at its outer end formed with a suitable catch, a handle having the shaft at the outer end of the flexible coupling journaled within it, and a cylindrical brush having a socket at its end for fitting securely upon the outer shaft portion and having a suitable catch for the engagement of the catch of the said shaft portion, as shown and described.

3. In a machine for grooming animals, the combination of a curved pad or plate provided with eyes in its side edges and in its upper edge, shoulder-straps secured at their lower ends to the back of the said pad and at their upper ends to the eyes of the upper edge of the pad, and a belt secured at its ends to the eyes in the side edges of the pad, whereby the said pad is adapted to be secured to the body of the person using the machine, bearings secured to said pad, two shafts journaled in said bearings and having socketed outer ends and provided with pinions on their inner ends, a crown-wheel journaled in suitable bearings and meshing with said pinions, whereby the shafts are revolved in opposite directions, and a flexible shaft having a brush at one end and a short shaft at the other adapted to fit removably in either of the sockets of the shafts, substantially as described.

380,925. MICROPHONE-TRANSMITTER. GEORGE M. PHELPS, Brooklyn, assignor to The Western Union Telegraph Company, New York, N. Y. Filed Oct. 2, 1879.



Claim.—1. The combination, substantially as hereinbefore set forth, with a diaphragm, of a mouth-piece constructed, substantially as hereinbefore set forth, with a flat top confronting said diaphragm and an outwardly-flaring bottom to deflect the sound-waves upward and prevent the deposit of moisture in its inner cavity, as described.

2. The combination, substantially as hereinbefore set forth, of a diaphragm, a casing for supporting the same, and the mouth-piece formed in said casing and terminating in a flat top beneath said diaphragm and flaring laterally and downwardly, substantially as described.

3. The compound diaphragm hereinbefore described, consisting of the combination of a thin metal disk or disks with a disk or disks of soft paper or equivalent material, the metal and paper disks being arranged alternately and all cemented together to produce a smooth pure articulation.

4. The combination, substantially as hereinbefore set forth, of a metal disk or diaphragm, a disk of soft paper or equivalent material cemented to and projecting beyond the metal disk at its periphery, and a ring clamping said disk or disks at or near the edges, substantially as described.

5. The combination, substantially as hereinbefore set forth, of the case or holder, the ring of soft paper or equivalent material resting thereon, a diaphragm resting on the ring, another similar ring resting on the diaphragm, and a weighted tension-ring resting upon the whole to allow slight play of the diaphragm while clamping it securely in place, as described.

6. The combination, substantially as hereinbefore set forth, of the case or holder, the downwardly-flaring mouth-piece in one side thereof, the diaphragm in the top of the case, its soft-paper rings, and the weighted metal tension-ring on that side of the diaphragm opposite the mouth-piece.

7. The standard mounted upon the diaphragm and provided with two arms, one carrying by means of a yielding support the inertia-weight, the other the adjusting-screw for the contact-surfaces, substantially as hereinbefore set forth.

8. The combination, substantially as hereinbefore set forth, of the diaphragm, the standard mounted thereon, the plate-spring mounted on the standard, and the inertia-weight supported solely by the spring and containing a seat for the electrode, whereby the diaphragm may be thrown into vibration by the impact of the sound-waves without being impeded by the inertia of the weight.

9. The combination, substantially as hereinbefore set forth, of a diaphragm, a standard, a yielding spring, disks or buttons of carbon or other suitable material interposed between said standard and spring, a weight modifying the pressure upon the carbon, and adjusting mechanism for regulating the normal pressure upon the disks or buttons, substantially as described.

10. The combination, substantially as herein set forth, of a diaphragm, a weight, its flexible support, an electric-circuit regulator composed of carbon or other suitable material, and a connection at or near the center of the diaphragm in line with the carbon and weight.

11. The combination, substantially as hereinbefore set forth, of the standard and the annular inertia-weight for modifying the pressure in a microphone-transmitter mounted upon a spring and provided with a guide-slot moving over the standard, substantially as hereinbefore set forth.

12. The combination, substantially as hereinbefore set forth, of the case, the downwardly-flaring mouth-piece in the side thereof, the weighted clamping-ring, the diaphragm in the top of the case, the standard mounted on the diaphragm, and the inertia-weight and its supporting-spring mounted on the standard.

13. In a microphone-transmitter, the combination, substantially as hereinbefore set forth, of the convex platinum-faced screw with the convex platinum-faced plug, carbon disks, and interposed platinum lens.

14. The combination, substantially as hereinbefore set forth, of the forked standard, the inertia-weight and its contact buttons or electrodes mounted on one branch thereof, and the adjusting-screw mounted on the other branch.

15. The combination, substantially as hereinbefore set forth, of the diaphragm, the forked standard, the inertia-weight, its insulated supporting-spring, contact buttons or electrodes, and connecting-wire mounted on said standard.

380,926. NUT-LOCK. JOHN H. PIPER, Brooklyn, N. Y. Filed Jan. 26, 1888. Serial No. 262,278. (No model.)



Claim.—1. A locking-nut comprising an inner ring-like member, as *a*, slitted and provided with a female screw, and an outer ring-like slitted member, as a^x, embracing said inner member, substantially as set forth.

2. A locking-nut comprising an inner ring-like member, as *a*, having a longitudinal tapered slit, *b*, and a female screw, and an outer ring-like member, as a^x, embracing said inner member, and having a longitudinal tapered slit, b^x, said slits being oppositely arranged, as described.

3. A locking-nut comprising two slitted or open ring-like members, one embracing the other, and the slits or openings oppositely arranged, the inner member having a female screw and a tapered form exteriorly, and the outer member having a tapered form internally, as set forth.

380,927. PRODUCTION OF AZO COLORS. ALCIDE FRANÇOIS POIRRIER and DANIEL AUGUSTE ROSENSTIEHL, Paris, France, assignors to the Société Anonyme des Matières Colorantes et Produits Chimiques de St. Denis, same place. Filed Dec. 29, 1887. Serial No. 259,297. (No specimens.) Patented in France June 20, 1887, No. 184,549, and in England June 20, 1887, No. 9,315.

Claim.—1. The described process of reducing in an alkaline medium nitro-aromatic amines, particularly metanitraniline, the isomeric nitro-toluidines fusible at 107° centigrade and 78° centigrade, and nitro-xylidine fusible at 123° centigrade, substantially as described.

2. The process of preparing azoic coloring-matters by the application of the products obtained by the reduction in an alkaline medium of nitro-aromatic amines, particularly nitraniline, the isomeric nitro-toluidines fusible at 107° centigrade and 78° centigrade, and nitro-xylidine fusible at 123° centigrade, the said process consisting in combining the polyazoic derivatives of these reduction products with the phenols, the oxyphenols, the naphthols, the oxynaphthols, the primary, secondary, and tertiary amines, the diamines, and also the alkyl, sulpho, and carboxyl derivatives of all these bodies, substantially as described.

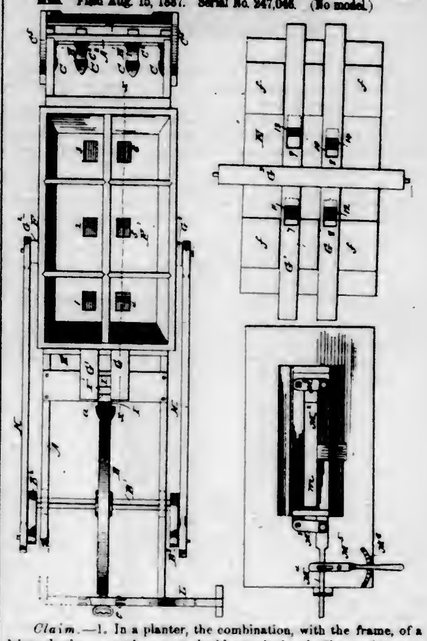
3. The coloring-matters products of the described reaction having the characteristics set forth

380,928. PRODUCTION OF DIAZOIC COLORING-MATTERS. ALCIDE FRANÇOIS POIRRIER and ZACHARIE ROCHER, Paris, France, assignors to the Société Anonyme des Matières Colorantes et Produits Chimiques de St. Denis, same place. Filed Dec. 29, 1887. Serial No. 259,299. (No specimens.) Patented in England Sept. 19, 1887, No. 12,692.

Claim.—1. The process of producing coloring-matters by the reaction of the nitrodiazo benzols, toluols, xylols, &c., with the isomers and homologues of alpha-naphthylamine sulpho, especially the naphthionic acid of Witt, substantially as described.

2. The new coloring-matters having the described properties and colors, products of the combination of nitrodiazo-benzols, nitrodiazo-toluols, nitrodiazo-xylols, &c., with the isomers and homologues of naphthionic acid, especially the naphthionic acid of Witt, substantially as described.

380,929. COMBINED PLANTER AND FERTILIZER-DISTRIBUTER. JAMES M. POPE, Canton, Miss., assignor of part to Reuben William Garrison, same place, and William Clanton Joyner, Madison County, Miss. Filed Aug. 15, 1887. Serial No. 247,046. (No model.)



Claim.—1. In a planter, the combination, with the frame, of a drive-wheel supported upon a double-cranked axle, the seed-hopper F, provided with a series of compartments each having in its bottom a seed-opening, said hopper also having a bottom, F', provided with a series of seed-openings, a bed-plate, E, also provided with a series of seed-openings, two seed-slides, G G', each connected intermediately of its length to a cross-bar, G^2, and having seed-openings one upon opposite sides of said cross-bar, and pitmen for connecting the ends of the cross-bar with the cranks of the axle, substantially as described.

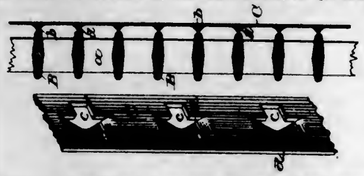
2. In a planter, the combination, with the frame A, of the drive-wheel B, crank-axle B', hopper F, having double set of openings 1 2 3 4 5 6 in the bottom thereof, the slides G G', openings at 7 8 9 10, the slide-plate E, having openings 11 12 13 14, and means for reciprocating the slides between the bottom of the hopper and the slide-plate, substantially as described.

3. In a planter, the combination, with the frame A, of the drive-wheel B, double-crank axle B', hopper F, provided with a series of compartments each having in its bottom a seed-opening, said hopper also having seed-openings in the bottom, the bed-plate E, provided with seed-openings, the slide-plates G G', fitted in channels in the slide-plate and connected with a cross-bar, G^2, said plates G G' also having seed-openings, one in each of which plates being arranged upon opposite sides of said cross-bar, and pitmen H, located upon opposite sides and outside of the machine-frame and connecting the ends of said cross-bar G^2 with the cranks upon the ends of the axle, substantially as described.

4. The combination, with the frame of a planter, of the drive-wheel B, furrow-opener I, seed-hopper F, slide G, driven from the wheel B, a series of covering-shovels, C, supported at the rear end of the frame, and a board, D, secured by diagonal braces to the frame and to the shovels C in rear thereof to brace them, substantially as described.

5. The combination, with the frame of a planter, of the furrow-opening and seed-dropping devices, a series of covering-shovels, C, secured at their upper ends to the frame in rear of the seed-dropper and at their lower ends to a cross-bar, C^4, and a diagonal brace-bar, C^5, connecting the frame with said cross-bar, substantially as described.

380,930. BLIND-ROD FOR SLIDING BLINDS. GEORGE POPPERT, Milwaukee, Wis. Filed Oct. 12, 1886. Serial No. 215,980. (No model.)



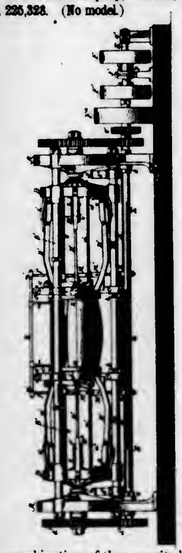
Claim.—1. A blind-slat rod consisting of a metallic strip stamped out at suitable intervals to present loops for engagement with the slat-staples, as set forth.

2. A blind-slat rod provided at intervals with apertures for the passage of slat-staples, and having loops stamped out therefrom at right angles to the apertures for engagement with said staples, as set forth.

3. As a new article of manufacture, a continuous metallic strip stamped out at suitable intervals to present apertures, and loops at right angles to said apertures, substantially as and for the purpose set forth.

4. The combination of a blind having pivoted slats with an operating-rod consisting of a flat metallic strip stamped out at intervals to present apertures and loops, and suitable staples arranged to unite said slat and rods, substantially as and for the purpose set forth.

380,931. BARREL-MAKING MACHINE. GEORGE RENFUSS, JOHN G. RENFUSS, and MARTIN O. RENFUSS, Philadelphia, Pa., assignors to the American Barrel and Stave Company, Camden, N. J. Filed Jan. 24, 1887. Serial No. 225,328. (No model.)



Claim.—1. The combination of the opposite heads provided with clamps for supporting the heads of the barrel and grooves for receiving the ends of the staves, mechanism for feeding the staves in succession into said grooved heads, and pusher-arms for forcing hoops over the staves, all substantially as specified.

2. The combination of the guideways for the staves, levers carrying stave-pushing fingers, and a rod to which both the ways and levers are pivoted, all substantially as specified.

3. The combination of the grooved stave receiving heads and means for feeding the staves in succession thereto with fingers for retaining the barrel-heads and spring-actuated carriers for said fingers, whereby they can be pushed out of the way as the staves are fed around the heads of the barrel, all substantially as specified.

4. The combination of the grooved stave-receiving heads with retaining-fingers and spring-actuated levers carrying the same and pivoted in respect to the fingers as described, whereby the fingers have a movement both radially and from and toward the face of the head, all substantially as specified.

5. The combination of the grooved stave-receiving head, fingers for retaining the barrel-head thereon, the hoop-driving head and its arms, and mechanism whereby said hoop-driving head on its forward movement is caused to act upon said fingers and withdraw them from the path of the hoop, all substantially as specified.

6. The combination of the opposite heads grooved for the reception of the ends of the staves and pivoted at their upper ends, so that they can be separated to permit the discharge of the barrel after the setting up of the same is completed, all substantially as specified.

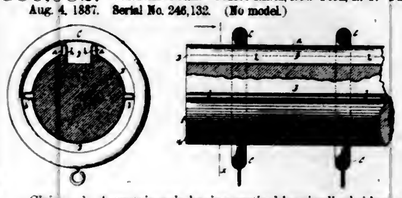
7. The combination of the opposite grooved heads pivoted at their upper ends with a spring for drawing the lower ends of the heads together and stops for limiting said inward movement, all substantially as specified.

8. The combination of the opposite grooved stave-receiving heads, the hoop-driving heads, and arms on one set of heads adapted to engage with the other set of heads as the hoop-driving heads are withdrawn after driving the hoops, whereby the stave-receiving heads are also retracted, so as to discharge the barrel, all substantially as specified.

9. The combination of the opposite grooved stave-receiving heads, the hoop-driving heads, catch-arms serving to connect said heads together and insure a simultaneous retracting movement thereof, and means for tripping said catches when the retraction of the stave-receiving heads is completed, all substantially as specified.

10. The combination of the opposite grooved heads which receive the staves during the setting up of the barrel, means for retracting said heads in order to release the barrel, and opposite retaining-fingers whereby the barrel is held in its proper central position during the retraction of the supporting-heads, all substantially as specified.

380,932. CURTAIN-POLE. JULIUS RINGS, New York, N. Y. Filed Aug. 4, 1887. Serial No. 246,132. (No model.)

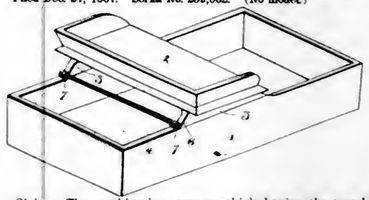


Claim.—1. A curtain-pole having vertical longitudinal ridges *a a* on its top and horizontal longitudinal ridges *b b* on its sides, in combination with curtain-rings supported concentric with said pole by means of its said ridges, substantially as shown and described.

2. In a curtain-pole, the combination, with the core A, of the envelope B, surrounding said core and having vertical longitudinal ridges *a a* on its top and horizontal longitudinal ridges *b b* on its sides, whereby the pole is adapted to support curtain-rings concentrically, substantially as shown and described.

3. In a curtain-pole, the combination, with the core A, having a longitudinal groove, D, in its top, of the metallic envelope B, having vertical longitudinal ridges *a a* on its top and horizontal longitudinal ridges *b b* on its sides, substantially as shown and described.

380,933. BOOT-FRAME FOR VEHICLES. FRANK E. ROBERTS, Austintown, Ohio, assignor of one-half to Philip M. Kroeck, same place. Filed Dec. 27, 1887. Serial No. 259,062. (No model.)

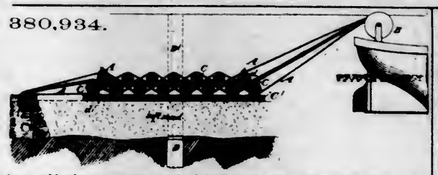


Claim.—The combination, with a vehicle having the turn-button secured beneath the rear portion of its seat, and the spring formed with a catch at its upper end secured to the rear end piece of the vehicle, of the covered boot-frame, hinged at its sides, formed at its forward end with the longitudinal slots, and having the loop at its rear end adapted to engage with the spring-catch, as and for the purpose herein shown and specified.

380,934. CONSTRUCTION OF CANALS, RAILROAD-BEDS, &c. JOHN E. ROBINSON, Philadelphia, Pa. Filed Sept. 7, 1887. Serial No. 249,085. (No model.)

Claim.—In the construction of canals, railroad-beds, and other earth works and structures, the method herein described of construct-

380,934.



ing and laying a mattress or bed, by interweaving logs with wire ropes or cables as the latter are paid out from a moving carrier, tying together a series of said logs and cables so interwoven with planks and cables, and sinking the whole upon a foundation of leveled piles, substantially as set forth.

380,935. UMBRELLA-RUNNER RETAINER. JOHN ROSE, Philadelphia, Pa., assignor of one-half to Charles F. Dollner, same place. Filed Nov. 7, 1887. Serial No. 254,527. (No model.)

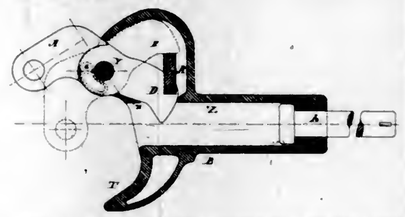


Claim.—1. The combination of the stick of an umbrella with a runner-retainer having a front bar forming a spring-tongue and a back bar integral with said front bar and secured to the stick midway, or thereabout, of its length, but otherwise free from connection with said stick, whereby the resiliency of the spring-tongue is supplemented by that of a portion of the back bar, all substantially as specified.

2. An umbrella-runner retainer having a front bar forming a spring-tongue, with enlargement projecting beyond the face of the same, and a segmental back bar integral with the front bar, and having a fastening-lug midway, or thereabout, of its length, that portion of the back bar between the fastening-lug and the end of the spring-tongue being resilient, all substantially as specified.

3. The combination of the stick, having therein a saw-kerf with true segmental base, with a retainer having a front bar forming an elastic tongue, with inclined enlargement projecting beyond the face of the stick, and a resilient segmental back bar integral with said front bar, and having a fastening-lug midway, or thereabout, of its length, but otherwise free from connection with the stick, all substantially as specified.

380,936. CAR-COUPLING. HYLAS SABINE, Richwood, assignor of one-half to Logan C. Newsom, Columbus, Ohio. Filed July 22, 1887. Serial No. 244,994. (No model.)



Claim.—1. The combination of the draw-head having the housing-chamber and the longitudinal cavity communicating therewith, the vibrating coupling-jaw provided with the locking-arm confined in its movements within said chamber and cavity, and the pivot by which the coupling-jaw is attached to the draw-head at a point about the same distance from the pulling-point as from the locking-point of the jaw, substantially as and for the purpose set forth.

2. The combination of the draw-head, the vibrating coupling-jaw provided with the locking-arm and pivoted in the draw-head about midway its width and at a point about the same distance from its locking-point as from its pulling-point, and the vertically-moving locking-bolt resting at its lower end upon the upper surface of the locking-arm when the coupling-jaw is open and dropping into its dogging position upon the closing of the jaw, substantially as and for the purpose set forth.

3. The combination of the draw-head having the housing-chamber, the vibrating obtuse-angled coupling-jaw having its locking-arm within said chamber, and the pivot attaching the coupling-jaw to the draw-head by passing through the locking-arm at a point about equal distances from the locking-point and pulling-point of the jaw, substantially as and for the purpose set forth.

4. The combination of the draw-head, the vibrating coupling-jaw having the locking-arm, the vertically-moving locking-bolt dogging the locking-arm when the coupling-jaw is closed, the lifting-chain, its controlling devices, and the spring engaging the chain, substantially as and for the purpose set forth.

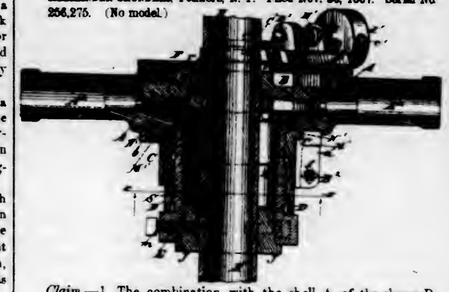
5. The combination of the draw-head having the inclined segmental roller-bearing groove, the vibrating coupling-jaw having the inclined segmental roller-bearing groove, and the anti-friction roller, substantially as and for the purpose set forth.

6. The coupling-jaw having the inclined segmental roller-bearing groove, as and for the purpose set forth.

7. The draw-head provided with the inclined segmental roller-bearing groove and the inlet-groove, as and for the purpose set forth.

8. The combination of the draw-head having the housing-chamber communicating with its longitudinal cavity, the vibrating obtuse-angled coupling-jaw having the locking-arm confined in its movements within said chamber and cavity, the pivot attaching the coupling-jaw to the draw-head about midway the width of the jaw, the vertically-moving locking-bolt resting at its lower end upon the upper surface of the locking-arm when the coupling-jaw is open and dropping into its dogging position upon the closing of the jaw at a point about the same distance from the pivot as the pivot is from the pulling-point of the jaw, and the controlling devices of the locking-bolt, substantially as and for the purpose set forth.

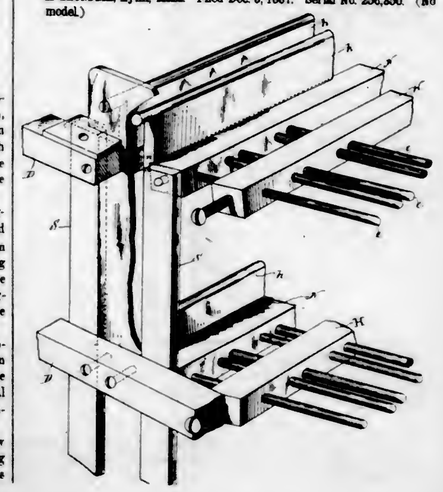
380,937. COMBINED PIPE CUTTING AND THREADING TOOL. ALEXANDER SAUNDERS, Yonkers, N. Y. Filed Nov. 23, 1887. Serial No. 256,275. (No model.)



Claim.—1. The combination, with the shell A, of the sleeve D, constructed with the flange N', the split collar C, constructed with the rabbet M', and devices for tightening and loosening the said split collar upon the said sleeve, substantially as and for the purpose herein set forth.

2. The combination of the split collar C, constructed with the rabbet M', slotted flange *b*, and lugs *f*, the internally-threaded sleeve D, constructed with the flange N', the externally-threaded axle-sleeve E, the shell A, cover F, having guides A', sliding head B', screw D', cutter C', and the set-screws *m* and B², all substantially as and for the purpose herein set forth.

380,938. RACK FOR HOLDING BOOTS AND SHOES. SAMUEL L. SAUNDERS, Lynn, Mass. Filed Dec. 3, 1887. Serial No. 256,850. (No model.)



Claim.—1. A rack for holding boots and shoes, consisting of a frame-work made up of a suitable base and end standards, supporting-bars arranged between the sections of the frame, and parallel pins extending from said bars, with a space between their outer ends for supporting the boots or shoes between them, substantially as described.

2. A rack for holding boots and shoes, consisting of an open frame-work made up of a suitable base and end sections, horizontal supporting-bars pivoted in the end sections, and parallel pins supported at one end from said bars for holding the boots and shoes, substantially as described.

3. A rack for holding boots and shoes, consisting of an open frame-work made up of a suitable base and end supports, a series of horizontal supporting-bars, and pins extending from said bars in pairs, with a space between the pins of each pair for receiving the upper of the shoe, each shoe being held separately, substantially as described.

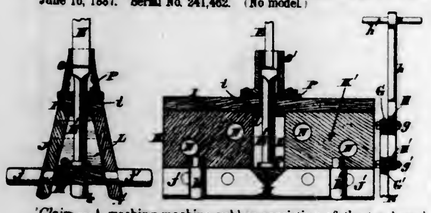
4. In combination with a suitable frame-work, horizontal pivoted bars, pins extending from said bars to support each boot and shoe, and a bar, N, connecting the rear ends of the pins of each series together, and a vertically-movable connecting-bar, S, for two or more of the bars N of the same series, whereby the holding-racks formed by the pins *c* may be shifted to change their position from a horizontal to an inclined position, substantially as described.

5. In combination with a suitable frame-work, horizontal pivoted bars H, pins projecting therefrom for supporting the boots and shoes, horizontal bars N for connecting the rear ends of said pins, whereby the pins of each series may be tilted on the pivot of the bar H, and a locking-plate for holding the racks in an inclined position, substantially as described.

6. In combination with a suitable frame-work, horizontal bars H, pins projecting therefrom for supporting the boots or shoes, horizontal bars N for connecting the rear ends of the pins of each series, a movable connecting-bar, S, for two or more of the bars N of each series, and a pivoted locking-plate, *h*, for holding the pins in an inclined position, substantially as described.

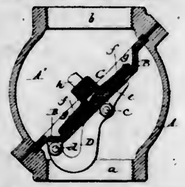
7. In combination with a suitable frame-work, horizontal bars H, pins projecting therefrom for supporting the shoes between them, horizontal bars N for connecting the rear ends of the pins, movable bars S, connecting the series of bars N, and the pivoted locking-plate *h*, having a shoulder, *n*, and being under spring-tension, substantially as described.

380,939. WASHING-MACHINE. FRIEDRICH SCHUMPE, Cincinnati, Ohio, assignor of one-half to John M. Hammelrath, same place. Filed June 16, 1887. Serial No. 241,462. (No model.)



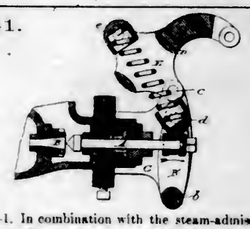
Claim.—A washing-machine rubber consisting of the top board, I, downwardly and outwardly flaring side boards, J J', and blocks K K', said boards and blocks being perforated at N and provided, respectively, with pins *j j' k*, for the purpose described.

380,940. CHECK-VALVE. LOUIS SCHUTTE, Philadelphia, Pa. Filed May 30, 1887. Serial No. 238,866. (No model.)



Claim.—In a check-valve, the dished or concave plate containing the throat or seat proper, in combination with the valve located on the concave side and the curved valve-carrying arm located on the convex side and pivoted to the plate in the same plane with the throat or seat.

380,941. DEVICE FOR OPERATING VALVES AND OTHER MECHANISMS. LOUIS SCHUTTE, Philadelphia, Pa. Filed June 11, 1887. Serial No. 241,083. (No model.)



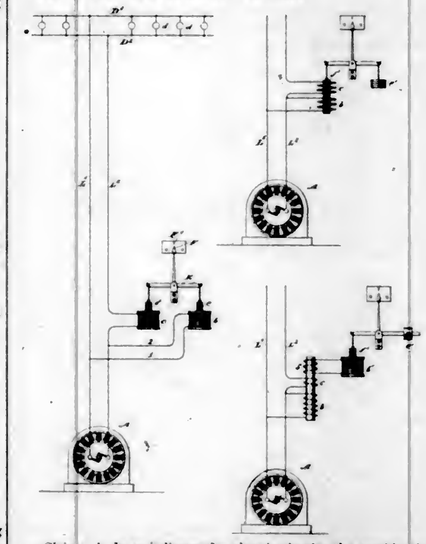
Claim.—1. In combination with the steam-admission valve of a steam-injector, a float, a lever connected with and operated by said float, and a spring located between the lever and valve, said spring acting at one end on the valve to move the same and movable at the opposite end with the lever, substantially as described, whereby the slowly-moving float is enabled to effect the opening and closing of the injector with an instantaneous action, thereby avoiding the waste of steam and insuring the proper action of the injector.

2. The injector-body provided with the rigid cheek-plates, in combination with the valve-spindle, the forked lever B, pivoted between the cheek-plates straddling the spindle and connected to the latter by pivots, the forked lever D, also pivoted to the cheek-plates, the spring seated between and against the two levers, and the float connected to lever D.

3. The spindle and its operating-lever B, provided with the pivoted spring-bearing *d*, in combination with the independently-pivoted lever D, having the bearing *e*, pivoted thereto, and the compression-spring seated between and against said bearings *d e*.

4. A reciprocating spindle, a lever pivoted thereto, and a compression-spring bearing at one end on said lever to move the spindle endwise, in combination with a second and independent lever bearing on the opposite end of the spring and arranged, as described, to change the angle or inclination of the spring in respect to the first-named lever, whereby the spring and first lever are enabled to move independently of the second lever and throw the valve suddenly first in one direction and then in the other.

380,942. ELECTRIC INDICATOR. OLIVER B. SHALLENBERGER, Rochester, assignor to George Westinghouse, Jr., Pittsburg, Pa. Filed Apr. 23, 1887. Serial No. 235,838. (No model.)

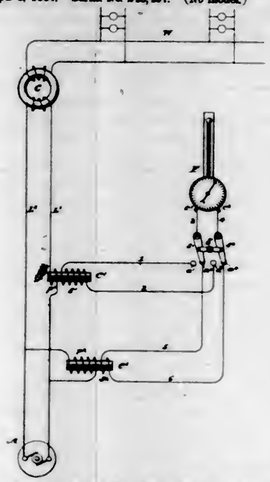


Claim.—1. In an indicator for electric circuits, the combination of two opposing coils, the one connected in a shunt-circuit with the translating devices and the second in a series therewith at or near the source of electricity, substantially as described.

2. The combination, with a source of electricity, of two opposing coils, one connected in a shunt and the other in a series with the work-circuit, and an indicator affected by the currents traversing the coils, substantially as described.

3. An indicator for electric circuits, consisting of two coils, one connected in shunt upon and the other in series with the work-circuit, one of said coils being adjusted to secure a predetermined per cent. greater effect per unit of current than the other, and an index operated by the coils.

380,943. VOLT-AMMETER. OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Sept. 1, 1887. Serial No. 248,467. (No model.)

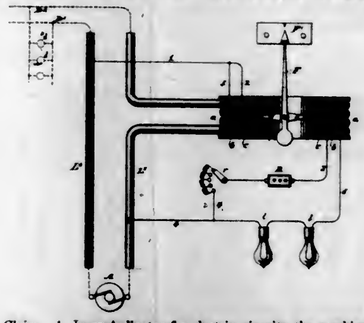


Claim.—1. An ammeter for alternating or pulsatory currents, consisting of the combination, with a voltmeter, of an electric converter having its primary coil connected in series with the work-circuit and its secondary coil connected through said voltmeter, substantially as described.

2. The combination, with a source of alternating or pulsatory electric currents and a work-circuit therefor, of an electric converter having its primary coil connected in series with the work-circuit, a Cardew voltmeter, and means for placing the same in the circuit of the secondary coil of said converter.

3. The combination, with a source of alternating or pulsatory current and its circuit, of an electric converter having its primary coil connected in series with the work-circuit of the source, a second converter having its primary coil connected in multiple arc with said work-circuit, a voltmeter, and means for placing said voltmeter in circuit with the secondary coil of either of said converters.

380,944. ELECTRICAL-PRESSURE INDICATOR. OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Sept. 1, 1887. Serial No. 248,468. (No model.)



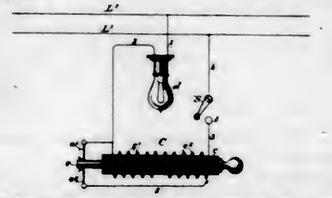
Claim.—1. In an indicator for electric circuits, the combination of two opposing coils, the one connected in a shunt-circuit with the translating devices and the second in series therewith at or near the source of electricity, an indicator affected by currents traversing the coils, an artificial resistance in circuit with the shunt-coil, and a coil for opposing the effect of said shunt-coil upon said indicator, and a resistance in circuit therewith, said resistances being differently affected by currents traversing them.

2. The combination, with a source of electricity, of two opposing coils, one connected in shunt and the other in series with the work-circuit, an indicator affected by currents traversing the coils, and a second coil, also in shunt upon the series coil and opposing in its effects the action of the first-named shunt-coil, and artificial resistances in the respective circuits of the shunt-coils, which are differently affected by currents traversing them.

3. The combination of two opposing coils, an armature acted upon thereby, two branch circuits including said coils respectively, a carbon resistance in one circuit and a metallic resistance in the other circuit, and a third coil opposing the coil connected in circuit with the carbon resistance.

4. An electric indicator consisting of two opposing coils, a metallic resistance in circuit with one coil, a resistance varying with the quantity of current traversing it in circuit with the second coil, a third coil, and an indicator acted upon by the resultant effects of the three coils.

380,945. ADJUSTABLE INDUCTIVE RESISTANCE. OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Sept. 1, 1887. Serial No. 248,471. (No model.)



Claim.—1. The combination, with an incandescent electric lamp and a circuit supplying currents thereto, of an adjustable inductive resistance for turning down the lamp, consisting of magnetizable material and opposing coils of wire wound about the same, both of which are normally included in circuit, substantially as described.

2. The combination, with an incandescent electric lamp, of opposing coils placed in the circuit thereof in series, a core of soft iron applied to said coils and acted upon by currents traversing the same, and means for withdrawing the core a greater or less distance from one of said coils.

3. The combination, with an incandescent electric lamp, of opposing coils placed in the circuit thereof, a core of soft iron applied to said coils and acted upon by currents traversing the same, means for withdrawing the core a greater or less distance from one of said coils, a short-circuiting device or shunt around said coils, and a circuit-closer completing the connections of the same when the core is within both coils.

4. An adjustable inductive resistance consisting of opposing coils connected in series in an electric circuit, a core of soft iron acted upon thereby, and means for withdrawing the core from one of the coils, thereby increasing the inductive resistance, substantially as described.

5. The combination, with two opposing coils and a core of soft iron acted upon thereby, and capable of being withdrawn a greater or less distance from one of the coils while still remaining under the inductive influence of the other coil, of a short-circuiting device about said coils, closed by said core when the latter is in the inductive field of both of said coils.

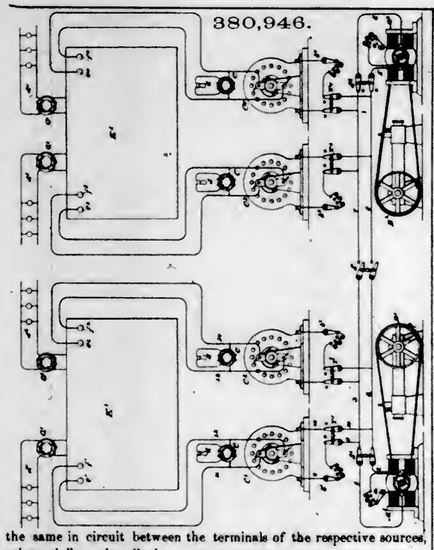
380,946. CENTRAL STATION FOR ALTERNATE-CURRENT SYSTEMS OF ELECTRICAL DISTRIBUTION. OLIVER B. SHALLENBERGER, Rochester, and HENRY M. BYLLESBY, Pittsburg, assignors to the Westinghouse Electric Company, Pittsburg, Pa. Filed Jan. 21, 1888. Serial No. 261,456. (No model.)

Claim.—1. The combination, with two sources of electricity and terminal trunk-wires for the respective sources, of two systems of translating devices, means for placing either system in circuit with either pair of trunk-wires, and a switch for connecting said trunk-wires in parallel, substantially as described.

2. The combination, with two sources of electricity, two sets of terminals therefor, and means for placing the sources in connection therewith, of two systems of translating devices, switches for placing the same in connection with either set of terminals at will, a circuit-interrupting device for each pole of each source, a synchronizing device for indicating the currents from each source, and means for connecting the terminals of the respective sources at will.

3. The combination, with two sources of electricity and two systems of translating devices, of switches for placing either system in connection with either or both sources, a voltmeter, and means for placing

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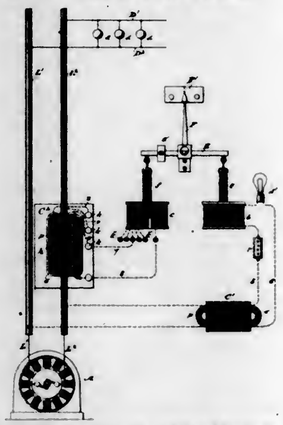


the same in circuit between the terminals of the respective sources, substantially as described.

4. The combination, with the terminals L', L^3, L^2, and L^4, and the conductors l', l^3, l^4, and l^2, of the coupling-switch K, for connecting said terminals, and the double-pole switches N' and N^3, for connecting either pair of conductors at will, substantially as described.

5. The combination, with two sources of electricity and two systems of translating devices, of trunk-wires connected with the respective sources, switches for making or breaking such connections, a switch for placing said trunk-wires and thus the said sources in parallel circuit, and means for interrupting the circuit-connections of either system of translating devices.

380,947. ELECTRICAL INDICATOR. OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Dec. 9, 1887. Serial No. 257,408. (No model.)



Claim.—1. An electric indicator consisting of two coils opposing each other, one coil receiving currents dependent upon the potential at the terminals of the source of electricity and the second receiving currents dependent upon the current in the work-circuit, and an indicating device operated by the resultant effect of said currents.

2. An electric indicator consisting of a converter having its primary coil connected in series with one of the supply-conductors leading to the work-circuit, a coil of insulated wire connected in circuit with the secondary coil of the converter, an indicating device acted upon thereby, and a coil connected with the respective terminals of the source and opposing the effects of the first-named coil, substantially as described.

3. The combination, with an electric converter having its primary coil connected in circuit with the main line and its secondary circuit adjustable with reference to its length, of a coil of insulated wire connected in the secondary circuit, a second coil opposed thereto, means for supplying said second coil with currents proportional to the difference of potential at the terminals of the source, and means actuated by said opposed coils for indicating the potential on the work-circuit.

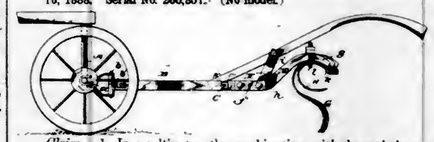
4. The combination, with the source of electricity and a work-circuit supplied therefrom, of a converter having its primary coil connected with said source, a solenoid connected in the circuit of the secondary coil, the conductor constituting the solenoid being adjustable with reference to its active length, a second solenoid acting in opposition thereto, a second converter, the secondary coil of which includes said second solenoid in its circuit, and conductors connecting the primary coil of said second converter with the respective terminals of the source of electricity.

5. An electric indicator consisting of the coils *b* and *c*, the lever E, acted upon thereby, an electric converter having its secondary coil connected through the coil *c*, a second converter having its secondary coil connected through the coil *b*, and means for supplying currents to the primary coils of the respective converters.

6. An electric indicator consisting of a converter the primary coil of which is designed to be connected in an electric circuit, means for adjusting the length of the conductor constituting the secondary coil, a solenoid included in the secondary circuit, the length of the conductor constituting the solenoid being adjustable, a second solenoid acting in opposition to the first-named solenoid, a converter including the second solenoid in its secondary circuit, and an indicator affected by currents traversing said solenoids.

7. An electric indicator consisting of a converter the primary coil of which is designed to be connected in an electric circuit, means for adjusting the active length of the conductor constituting the secondary coil, a solenoid included in the secondary circuit, a second solenoid acting in opposition to the first-named solenoid, and an indicator affected by currents traversing said solenoids.

380,948. CULTIVATOR. JAMES SHANK, Clayton, Ill. Filed Jan. 16, 1888. Serial No. 260,857. (No model.)



Claim.—1. In a cultivator, the combination, with the main beams of the auxiliary beams, curved as shown, the spring-teeth, the springs secured at one end to the upper ends of the said teeth, and the yokes securing both springs and teeth to the rear curved ends of the auxiliary beams, substantially as specified.

2. In an improved cultivator, the combination of the truck, the curved beams having their forward ends parallel and properly coupled to the truck or axle, the curved brace-rods and securing-nuts, the curved handle-braces, the handle, the auxiliary beams, curved as shown, the spring-teeth, the springs secured at one end to the upper end of the said teeth, and the yokes securing both springs and teeth to the rear curved ends of the auxiliary beams, substantially as specified.

380,949. CLOTHES-DRIER. OSCAR M. SHANNON, Chicago, Ill. Filed July 6, 1886. Serial No. 207,160. (No model.)



Claim.—1. The combination, with a clothes-drying closet provided with an air-inlet at or near the bottom and with a suitable air-outlet, of a series of horizontally-sliding clothes-racks occupying the upper part of the closet, a series of horizontal gas-pipes arranged transversely in the lower part of the closet and provided with rows of burners giving their flames in the same air-space in which the clothes are suspended, and a perforated guard extending horizontally across the closet above the gas-burners and below the clothes-racks, substantially as described.

2. The combination, with a clothes-drying closet provided with a bottom air-inlet and with a suitable air-outlet, of a series of horizontally-sliding clothes-racks occupying the upper part of the closet, a series of horizontal gas-pipes arranged transversely in the lower part of the closet and provided with rows or burners giving their flames in the same air-space in which the clothing is suspended, a series of deflecting-plates located severally over the rows of burners and having spaces between them, and a stationary perforated guard located above the deflecting-plates and below the clothes-racks, substantially as described.

3. The combination, with a clothes-drying closet provided with an air-inlet at or near the bottom and with a suitable air-outlet, of horizontally-sliding clothes-racks occupying the upper part of the closet, a series of horizontal gas-pipes in the lower part of the closet, provided with rows of burners giving their flames in the same air-space in which the clothes are suspended, a device for mixing atmospheric air with the gas entering the gas-pipes within the closet, and a perforated guard extending horizontally across the closet above the gas-burners and below the clothes-racks, substantially as described.

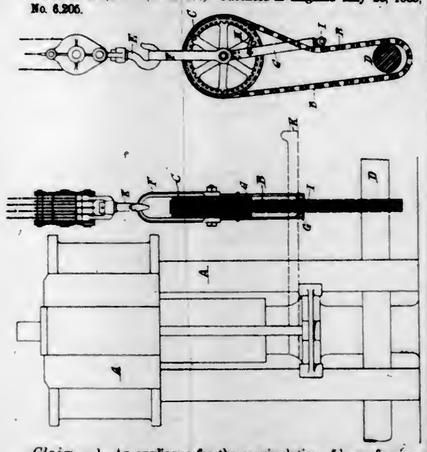
4. A clothes-drying closet through which heated air circulates, provided with double walls having air-passages therein open at the bottom to the external air of the room in which the closet is located, in combination with an outlet duct or flue leading out of the room and in separate communication with both the interior of the closet and the air-passage of the walls, whereby a movement of air from outside the closet through the wall-space is induced to prevent radiation of heat from the closet into the room, and whereby, also, the heated air from both the interior of the closet and the air-space is conducted out of the room, substantially as described.

5. The combination, with a longitudinally-sliding rack of a clothes-drying closet, of a supplemental bar movably sustained beneath one of the main bars of the rack, and devices, substantially as described, for holding said supplemental bar against the main bar, substantially as described.

6. The combination, with a longitudinally-sliding rack of a clothes-drying closet, of a supplemental bar suspended beneath one of the main bars of said rack, links pivotally connecting the said supplemental bar with the rack-bar and permitting movement of the suspended bar in the plane of the rack-bar, and a device or devices for supporting said supplemental bar in an elevated position against said rack-bar, substantially as described.

7. The combination, with a longitudinally-sliding rack of a clothes-drying closet, of a supplemental bar located beneath one of the bars of said rack, links pivotally connecting the supplemental bar with the rack-bar, and a spring acting upon one of said links and arranged to hold the supplemental bar in its elevated position, substantially as described.

380,950. APPLIANCE FOR MANIPULATING LARGE FORGINGS. GEORGE SIDDELL, Sheffield, County of York, England. Filed Jan. 4, 1888. Serial No. 259,737. (No model.) Patented in England May 20, 1885, No. 6,206.



Claim.—1. An appliance for the manipulation of large forgings and consisting of a toothed wheel, an endless chain passing around it, and a pivoted lever carrying a pawl or pawls to act on the toothed wheel, substantially as described

2. An appliance for the manipulation of large forgings and consisting of a toothed wheel, means for raising and lowering it, a chain passing around the wheel and the forging to be manipulated, and a pivoted lever adapted to bear against the chain and having a pawl or pawls to act on the toothed wheel, all substantially as and for the purpose set forth.

380,951. GARMENT-CLASP. DWIGHT L. SMITH and ALBERT D. SMITH, Waterbury, Conn. Filed Feb. 16, 1888. Serial No. 264,213. (No model.)

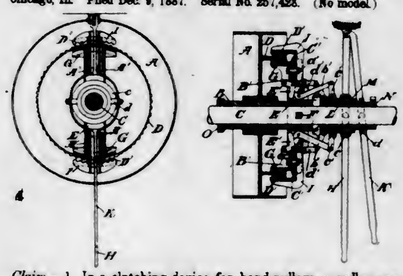


Claim.—1. The herein-described garment-clasp, consisting of the sheet-metal body B, having a projecting backwardly-curved jaw, A, the said body constructed with lateral projections C C, the said projections turned at right angles to the body, and the edges of the projections turned inward parallel with the body to form flanges *b b*, and so as to leave a space between the body and the said turned-over flanges, the said body at its end opposite the jaw constructed with a device by which it may be attached, combined with a second jaw, F, made from wire and corresponding to the jaw on the body, the two sides of the said jaw F turned inward to form pivots *d d*, with diverging spring-handles H H extending from said pivots, the said pivots hung between the ends of said lateral projections C C and the back of the jaw, the said spring-handles being adapted to pass beneath the said flanges *b b* when the jaws are in the closed position, substantially as described.

2. A clasp consisting of the body B, made from sheet metal and constructed with a jaw, A, backwardly curved and projecting therefrom, the body constructed with lateral projections C, the said projections constructed with notches *a* at their jaw end, the said projections turned backward from the body, and the edges of the projections turned inward to form flanges *b b* parallel with the surface of the body, the edges of the said flanges converging from the jaw end upward, combined with a second jaw, F, made from wire, the ends of the jaw turned inward to form pivots *d d*, and thence turned upward to form diverging spring-handles H H, the said second jaw arranged upon the body B, with its pivots in the notches *a a*, substantially as described.

3. The herein-described garment-clasp, consisting of the sheet-metal body B, having a projecting backwardly-curved jaw, A, the body at the end opposite the jaw constructed for attachment, combined with a second jaw, F, made from wire, corresponding to the jaw on the body, the two sides of the said jaw F turned inward to form pivots *d d*, with handle H H extending from said pivots, the said jaw F hinged by its pivots to the said body, and the said handles constructed to interlock with the body when the jaws are in the closed position, substantially as described

380,952. CLUTCH FOR BAND-PULLEYS. WILLIAM H. SMITH, Chicago, Ill. Filed Dec. 9, 1887. Serial No. 257,428. (No model.)



Claim.—1. In a clutching device for band-pulleys, a pulley provided with a projecting rim, in combination with shoes or jaws adapted to impinge on said rim and impart motion to the pulley by frictional contact, and supplemental shoes or jaws adapted to engage the other side of the rim after the pulley has been set in motion.

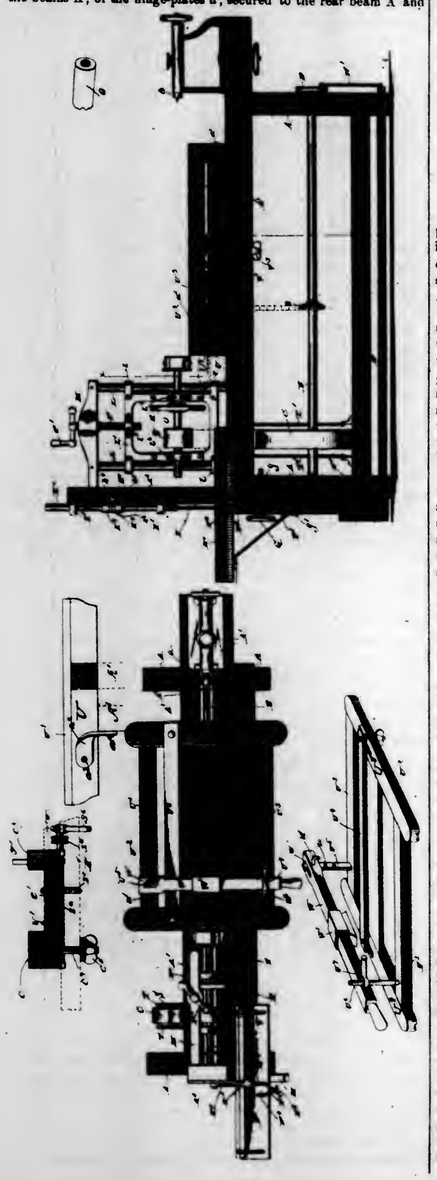
2. In a clutching device for band-pulleys, a pulley provided with a projecting annular rim having its external surface corrugated, in

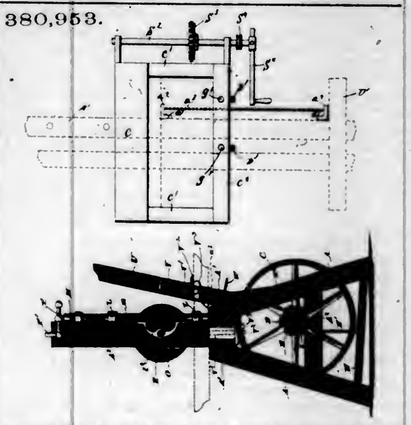
combination with a shoe having its face similarly corrugated and adapted to engage the corrugations in the rim, as set forth.

3. In a clutching device for band-pulleys, a pulley provided with a projecting rim, in combination with clamping-jaws adapted to clutch both sides of the rim, said jaws being independently operated, one set of jaws to impart motion to the pulley by frictional contact, while the other positively locks or holds the pulley from slipping.

380,953. COMBINED MORTISING, TENONING, AND PLANING MACHINE, AND TURNING-LATHE. EDGAR W. SNEDEKER, Jamesburg, N. J. Filed June 11, 1887. Serial No. 241,090. (No model.)

Claim.—1. The combination, with the supporting-frame having the beams A′, of the hinge-plates *a*′, secured to the rear beam A′ and





projecting laterally therefrom, the rod a^3, inserted through the projecting portions of the plates *a*′, and the table U, pivoted at an intermediate point of its length upon the ends of the rod a^3, whereby when said table is swung backward its rear edge will rest against the beam A′ and the table be thereby supported in its raised position, as set forth.

2. The combination, with the legs A, of the elongated beams A′, supported by the same and having an intervening space between them, the table F, mounted in connection with said beams, the vertical longitudinally-slotted arm F′, depending from said table, the metallic block *g* in one of the legs A, the clamping-screw having a hand-wheel, G, inserted through the slot in the arm F′ and engaging the block *g*, the staple *g*′, secured to one of the legs A and receiving and guiding the vertical arm F′, the standard A^2, erected upon the beams A′, adjacent to the table F, the chisel-bar carried by said standard, and the treadle H, for operating said chisel-bar, substantially as specified.

3. The combination, with the supporting-frame, the shaft B, journaled therein and having a sprocket-wheel, *s*, and the table U on the supporting-frame, of the removable table rested on the table U, the shaft s^2, carried by the removable table, the sprocket-wheel s^3 on said shaft, adapted to be geared to the sprocket-wheel *s*, and the pulley s^4 on said shaft, adapted to actuate a feed mechanism, substantially as set forth.

4. The combination, with the beams A′, of the table U, hinged thereto, the bolt V′, hinged to the said table and adapted to pass between the beams A′, and the plate V^3, carried by said bolt and adapted to be turned so as to engage under the beams A′ and lock the table thereto, as set forth.

5. The combination, with the beams A′, of the frame, the table U, hinged thereto and having its upper face provided with a track, the top table, U^3, fitted and movable on the track of the hinged table, and clamping devices to lock the hinged table in its horizontal position, as set forth.

6. The combination, with the beams A′, of the frame, the table U, hinged thereto and having its upper face provided with a track, the top table, U^3, fitted and movable on the track of the hinged table, clamping devices to lock the hinged table in its horizontal position, and the vertically-adjustable clamping-lever W, carried by the top table, U^3, as set forth.

7. In combination with the beams A′, set at a distance apart, the table U, hinged thereto, and the swinging bolt V′, carried by the table and fitting between the beams A′, as set forth.

8. In combination with the swinging table U, the top table, U^3, having the adjustable bar U^4, the clamping-bolts connected to the bar U^4, and the vertically-adjustable clamping-lever W, as set forth.

9. The combination, with the standard A^2, having the arms K′, carrying the chisel-bar K^2, of the bifurcated link K^3, having recesses k^2 arranged in opposite sides of the lower portion of the bifurcation, the collar K^4 on the chisel-bar K^2 in the bifurcated portion of the link K^3, and the securing reversing-lever K^5, hinged to the collar K^4 and having an end, k^3, adapted to engage the recesses k^2 in the lower portion of the bifurcated link K^3 to lock the chisel-bar when reversed, substantially as described.

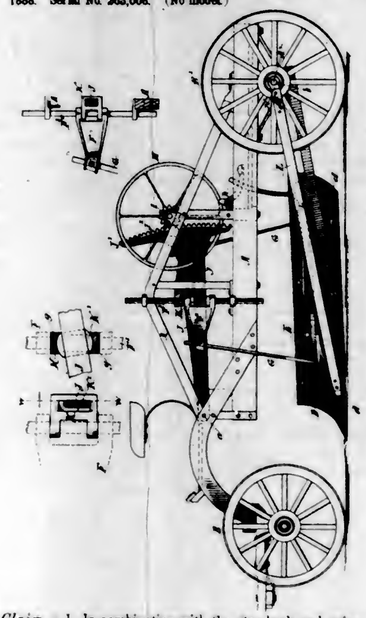
10. The combination, with the standard A^2, of the arms K′, carrying the chisel-bar K^2, the lower one of said arms being formed with an integral guide-box, K^6, the vertically-moving rod K, having the integral lug or projection *k* and moving in said box K^6, the bifurcated link K^3, attached to the chisel-bar secured to the upper end of said rod, the independent treadle H, connected to the lower end of said rod K,

the spring S, adjustably secured at its lower end to the lug *k* and at its upper end to the under side of the supporting-beams, and the nut K^{16}, for adjusting said spring S′, substantially as described.

11. The combination, with the beams A′, having an intervening space, of the hinged table U, having the longitudinal strip, as shown, the casting V, the rod V′ in pivotal connection with the casting, the plate V^2, and the winged nut V^3, substantially as described.

12. The feeding-frame U^3, consisting of the transverse bars U^5, having slots therein, the longitudinal bars U^6, the adjustable strip U^4, the apertured upright U^8, the screw-threaded upright U^9, having the clamping-arm U^7, and the lever W, adjustably pivoted in the upright U^8 and having the central casting, W″, adapted to engage with the top surface of and clamp the material being operated upon, substantially as described.

380,954. MACHINE FOR MAKING, REPAIRING, AND CLEARING ROADS. GEORGE W. TAFT, Kennett Square, Pa. Filed Feb. 4, 1888. Serial No. 263,006. (No model.)



Claim.—1. In combination with the standards and swing-arms from which the scraper is suspended, and the rotating hand-wheels provided with pinion-gears, the levers J, fulcrumed at their front ends on the carrying-frame and provided at their rear ends with gear-segments J′, that mesh with said hand-wheel gears, and coupling-pieces connecting said levers with the swing-arms and standards, substantially as set forth.

2. In a road-machine having a diagonal adjustable scraper, the combination, with the lifting-supports whereby the respective ends of the scraper are raised and depressed, of a lever fulcrumed at one end and having a gear-segment at its opposite end and connected or coupled at an intermediate point to said lifting-support, a rotatable hand-wheel provided with a pinion that engages said gear-segment for raising and depressing said lever and scraper-supports by rotation of said hand-wheel, and a brake or stop for retaining the parts at positions of adjustment.

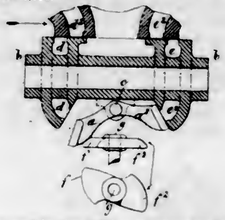
3. In a road-machine having a diagonal scraper and a supporting carriage or frame mounted on wheels, in combination with said scraper, a side brace jointed or hinged to the advance end of the scraper-blade to permit freedom of adjustment and supported at its rear end upon the end of the axle outside of the wheel, for the purpose set forth.

4. In a road-machine having a carrying-frame mounted on wheels and a diagonal adjustable scraper, the combination, with the scraper, of a side brace detachably jointed to the forward end of the blade and provided at its rear end with an eye to slip onto the projecting end of the axle (or its nut) at the outside of the wheel.

5. The detachable side brace having at its forward end the curved finger *m*, and provided at its rear with an adjustable bearing-plate, and a clamp to retain said plate at position of adjustment, in combination with the scraper-blade provided with the joint-eyes *d*, for engaging with said finger *m*, and a rear axle provided with nuts or seats for supporting said bearing-plate, for the purpose set forth.

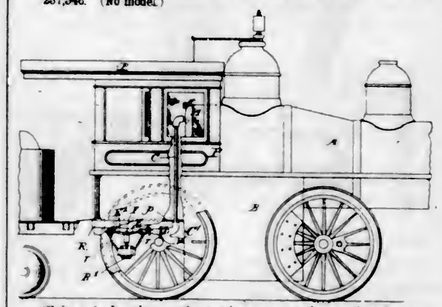
6. In a road-machine, the combination, with the upwardly and downwardly adjustable support that sustains or carries the scraper or end of the scraper-blade, of the blade-adjusting lever J, and a coupling for connecting said lever and support, provided with a rocking bearing, K′, substantially as and for the purpose set forth.

380,955. CUT-OFF MECHANISM FOR SLIDE-VALVES. JOHN H. TANGYE, Soho, and WILLIAM JOHNSON, Jr., Moxley, County of Stafford, England. Filed Nov. 22, 1887. Serial No. 255,906. (No model.) Patented in England Feb. 18, 1885, No. 2,230; in France Nov. 18, 1885, No. 172,367; in Victoria Aug. 9, 1886, No. 4,662, and in New South Wales Oct. 6, 1886, No. 1,939.



Claim.—The combination, with a reciprocating slide-valve, of an oscillating flap-valve pivoted between its ends below the valve, and a movable regulator connected with a governor and acting alternately on the said opposite ends of the pivoted valve, substantially as described.

380,956. LOCOMOTIVE FIRE-EXTINGUISHING APPARATUS. LUCIUS E. TRUESDELL, Bristol, N. H. Filed May 9, 1887. Serial No. 237,546. (No model.)



Claim.—1. In a locomotive-engine, a steam pipe or pipes for conducting live steam from the boiler to the fire-box, a suitable valve for closing the passage for steam, and operating mechanism whereby said valve may be automatically opened in case of accident, comprising a toggle and a movable supporting-block for same, all operating substantially for the purpose set forth.

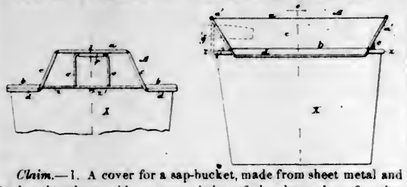
2. In a locomotive-engine, a steam-pipe for conducting live steam from the boiler to the fire-box, a suitable valve, and operating mechanism whereby said valve may open automatically in case of sudden jar or accident, comprising a toggle, an adjustable supporting-shaft for same, and a movable block or weight upon which said supporting-shaft rests, all operating substantially for the purpose set forth.

380,957. BOTTLE-STOPPER. SELDEN TWITCHELL, Philadelphia, Pa. Filed Sept. 6, 1886. Serial No. 212,821. (No model.)



Claim.—A bottle having on the inner wall of its neck an annular projection with the depending angular seat *a*, the said neck having an inclined portion, as at *b*, in combination with a buoyant ball with peripheral groove and provided with an elastic rim secured in said groove, all substantially as and for the purpose set forth.

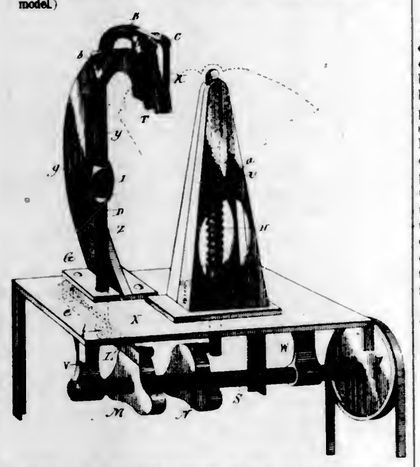
380,958. COVER FOR SAP-BUCKETS. HENRY WALCOTT, Rochester, Vt. Filed Dec. 28, 1887. Serial No. 259,214. (No model.)



Claim.—1. A cover for a sap-bucket, made from sheet metal and wired at its edges, said cover consisting of the elevated roof-section *a*, the upright sides *c c*, and the lateral portions *b b*, provided with inturned retaining-flanges *d d*, whereby the cover is retained in place by its own elasticity, as set forth.

2. A cover, A, for a sap-bucket, having an elevated central roof-section, *a*, forming hoods *a' a'*, and provided with an ice-guard attached to the under side of one of said hoods, substantially as set forth.

380,959. SHOE-UPPER-TURNING MACHINE. FRANK D. WALDEN, Jeffersonville, Ind. Filed Jan. 30, 1888. Serial No. 262,455. (No model.)



Claim.—1. A shoe-upper-turning machine in which devices for turning the edges of shoe-uppers and for pressing the same are combined, consisting of the standard A, attached to a suitable frame, X, the upright shaft U, to which a reciprocating movement up and down is given by the cam-wheel N and the coiled spring H, the presser G, likewise attached to the frame X, composed of the fixed standard *g*, and the presser-arm B, actuated by the cam-wheel M, and the lifting device F, all substantially as described.

2. A shoe-upper-turning machine consisting of two standards, A and G, attached to the frame X, the standard A constructed to admit freely the shaft U, and having a recess adapted to receive the coiled spring H, the standard G consisting of the arm *g*, supporting the presser-arm B, attached to it between the ears *c c* by a pin, the connecting-rod D, the lever L, the shaft S, supporting the cam-wheels M and N and the pulley-wheel J, and the lifting device F, substantially as described.

3. In a shoe-upper-turning machine, the frame X, the standard A, the standard G, the connecting-rod D, connecting the presser-arm B with the lever L, formed in two sections, *y* and *z*, connected by the extension screw-nut I, the lifting device F, the cam-lever L, the shaft S, supporting the cam-wheel M, which actuates the presser-arm B through the lever L and the connecting-rod D, and the cam-wheel N, which actuates the upright shaft U and the pulley-wheel J.

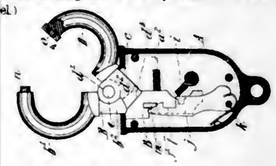
4. In a shoe-upper-turning machine, the upright shaft U, rounded and flattened at its upper end to form a turning-iron, supporting the collar E and resting by means of an offset and friction-roller against the periphery of the cam-wheel N and working freely in the standard A, and supporting a coiled spring jammed between the collar E and the standard at P, the lifting device F, its lever catching the shaft under the collar and adapted to remove the shaft U from engagement with the cam-wheel N, the presser-arm B, constructed to press the edge of a shoe-upper between its surface *k* and the head of the standard *g*, and the shaft holding the cam-wheels adapted to actuate the upright shaft U and the presser-arm B by means substantially as described.

380,960. PROCESS OF MAKING EGG-CASES. ENOS L. WALKER, St. Louis, Mo., assignor of one-half to Gabriel Hoyt, Brooklyn, N. Y. Filed July 19, 1887. Serial No. 244,787. (No model.)



Claim.—The process of making cell-cases, which consists in taking a suitable number of pairs of strips, each pair being of different lengths, and stitching them on each side of a single long strip, each strip of the longest pair being stitched on opposite sides to the long strip, each strip of the next longest pair to each strip of the longest pair, and so on, the sizes of the strips decreasing in the same proportion on each side of the long strip in a complete cell-case, said stitching operation consisting in the following steps: first, forming a line of stitching at the upper inner edge or angle of the first upper cell, then at the inner edges or angles of the cells below the first upper cell, then at the outer edges or angles of said cells, then at the upper outer edge or angle of the first upper cell, then at the upper unstitched edge or angle of the second upper cell and the unstitched upper outer edge of the third upper cell, then at the unstitched edges or angles of the cells below the second upper cell, then at the unstitched edges or angles of the cells below the third upper cell, and so on in the same manner stitching as many cells as there are strips provided for them, substantially as described, and for the purpose set forth.

380,961. PADLOCK. DAVID WAINE and ISAAC WAINE, Willenhall, County of Stafford, England. Filed Sept. 26, 1887. Serial No. 250,719. (No model.)



Claim.—1. In a padlock and in combination, a non-rotating case, a shackle formed in two parts, a sliding support for said parts, and operating means for the sliding support, substantially as described.

2. In combination, the case, the shackle formed in two parts, a sliding support, B, the pivot-point *c* of the two parts of the shackle being on said support and adjacent to the opening in the case, a tumbler and operating means for the support, whereby the pivot may be thrown into and out of the case, substantially as described.

380,962. CLOTH-CUTTING MACHINE. ALBIN WARTH, Stapleton, N. Y. Filed Nov. 12, 1887. Serial No. 254,985. (No model.)

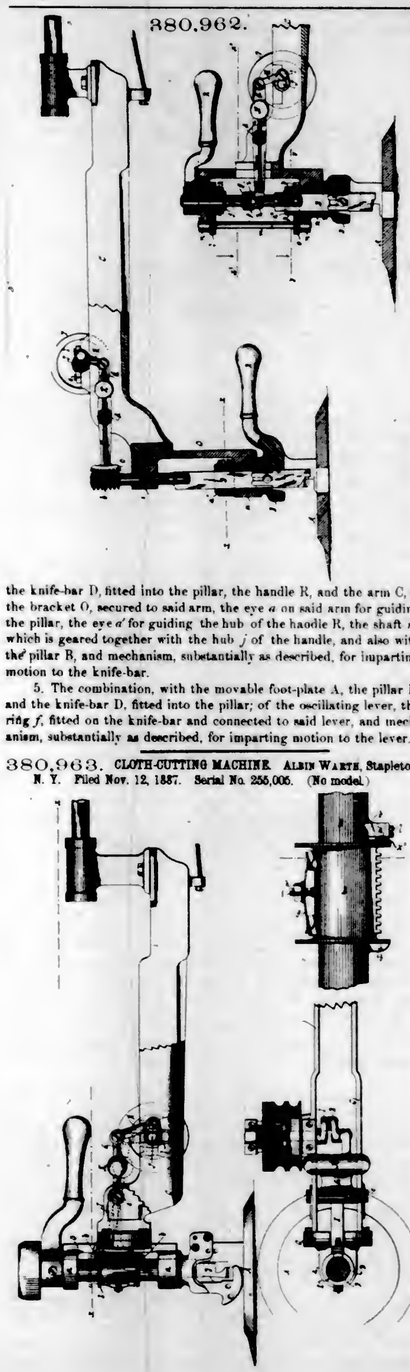
Claim.—1. The combination, with the movable foot-plate A, the pillar B, and the knife-bar D, fitted into the pillar, of the oscillating lever directly engaging the knife-bar above the foot-plate, and mechanism, substantially as described, for imparting motion to said lever.

2. The combination, with the movable foot-plate A, the pillar B, and the knife-bar D, fitted into the pillar, of the lever F G, directly engaging the knife-bar, the weight K, having a movement in a direction opposite to that of the knife-bar for balancing the weight of the knife-bar, and mechanism, substantially as described, for imparting motion to the double-armed lever.

3. The combination, with the movable foot-plate A, the pillar B, the knife-bar D, fitted into the pillar, and the arm C, of the bracket O, secured to said arm, the eye *a* on said arm for guiding the pillar B, the eye *a'* for guiding the upper portion of the knife-bar D, the oscillating lever having direct engagement with the knife-bar, and mechanism, substantially as described, for imparting motion to the double-armed lever.

4. The combination, with the movable foot-plate A, the pillar B,

380,962.



the knife-bar D, fitted into the pillar, the handle R, and the arm C, of the bracket O, secured to said arm, the eye *a* on said arm for guiding the pillar, the eye *a'* for guiding the hub of the handle R, the shaft *m*, which is geared together with the hub *j* of the handle, and also with the pillar B, and mechanism, substantially as described, for imparting motion to the knife-bar.

5. The combination, with the movable foot-plate A, the pillar B, and the knife-bar D, fitted into the pillar; of the oscillating lever, the ring *f*, fitted on the knife-bar and connected to said lever, and mechanism, substantially as described, for imparting motion to the lever.

380,963. CLOTH-CUTTING MACHINE. ALBIN WARTH, Stapleton, N. Y. Filed Nov. 12, 1887. Serial No. 255,005. (No model.)

Claim.—1. The combination, with the movable foot-plate A, the pillar B, the knife-bar D, fitted into the pillar, and the sleeve E, fitted on the pillar and made to engage the knife-bar, of a double-armed lever made to engage the sleeve, a weight connected to said lever and having a reciprocating movement in a direction opposite to that of the knife-bar, and mechanism, substantially as described, for imparting motion to the double-armed lever.

2. The combination, with the movable foot-plate A, the pillar B, the knife-bar D, fitted into the pillar, and the sleeve E, fitting on the pillar and engaging the knife-bar, of a double-armed lever engaging the sleeve, the transverse shaft J, situated approximately in the same vertical plane with the inner end of the double-armed lever, a belt-pulley on said shaft, and a connecting-rod for connecting said shaft with the inner end of the double-armed lever, substantially as described.

3. The combination, with the foot-plate A, the pillar B, the knife-bar D, fitted into the pillar, and the sleeve E, fitting on the pillar and engaging the knife-bar, of spring-supported friction-blocks *f f*, placed into openings in the sleeve and bearing upon the pillar, and means for adjusting the tension of said friction-blocks, substantially as described.

4. The combination, with the foot-plate A, the pillar B, the knife-bar D, fitted into the pillar, and the sleeve E, fitting on the pillar and engaging the knife-bar, of friction-blocks *f f*, placed into openings in the sleeve and bearing upon the pillar, a spring, *g*, acting on said blocks, and screw-stud *i* and a nut, *k*, for adjusting the tension of said spring, substantially as described.

5. The combination, with the foot-plate A, the pillar B, the sleeve E, fitted on the pillar, the knife-bar D, fitted into the pillar, and the lugs *b b*, extending from the knife-bar and straddling the sleeve, of an adjustable bearing, *k*, fitted on one of the lugs *b*, substantially as described.

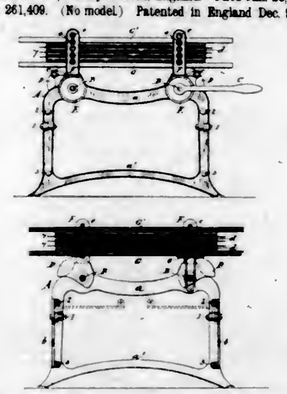
380,964. PILLOW-SHAM HOLDER. WILLIAM WATSON, Ilion, N. Y. Filed Feb. 15, 1887. Serial No. 227,699. (No model.)



Claim.—1. The sham-supporting frame comprising the journaled bar and lifting-rod carried thereby, said lifting-rod being bent from a single piece of wire to form the legs *c* and the continuous cross-bar *c'*, the latter being bent at intervals to form a series of circular rings, *c²*, arranged at right angles to the bar *c'*, and thereby adapted to curve the sham over the said bar, as set forth.

2. A pillow-sham holder having its cross-bar *c'* bent at intervals to form a series of circular rings, *c²*, which are arranged at right angles to the bar *c'*, and extending both above and below the same, so as to curve the shams over the cross-bar, as set forth.

380,965. APPARATUS FOR PRESSING TROUSERS. GEORGE WHITAKER, London, County of Middlesex, and LLEWELLYN L. B. WILLIAMS, Shortlands, County of Kent, England. Filed Jan. 20, 1888. Serial No. 261,409. (No model.) Patented in England Dec. 9, 1887, No. 16,966.

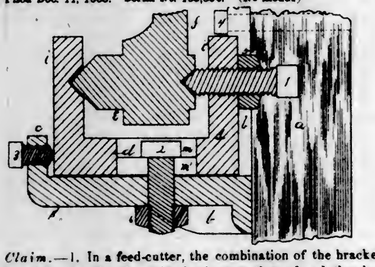


Claim.—1. The combination, substantially as hereinbefore set forth, of the frame A, the shafts B, having cams D thereon, a board or plate, G, resting on said cams and bearing the trousers or other articles to be pressed, a board or plate, G', covering the trousers or other articles, rods or bars *c*, engaging the frame A, or an attachment

thereto, means for imparting motion to the shafts B, and ratchet-wheels and detents for preventing retrograde motion.

2. The combination of pressing boards or plates G G, with the shafts B and cams thereon for imparting pressure, a hinged or jointed frame, A, in which said shafts are mounted, uprights F, carried by said frame, and rods or bars *e*, engaging said uprights, all substantially as and for the purposes hereinbefore set forth.

380,966. **FEED-CUTTER.** WILLIAM E. WHITMAN, Winthrop, Me. Filed Dec. 11, 1885. Serial No. 185,350. (No model.)

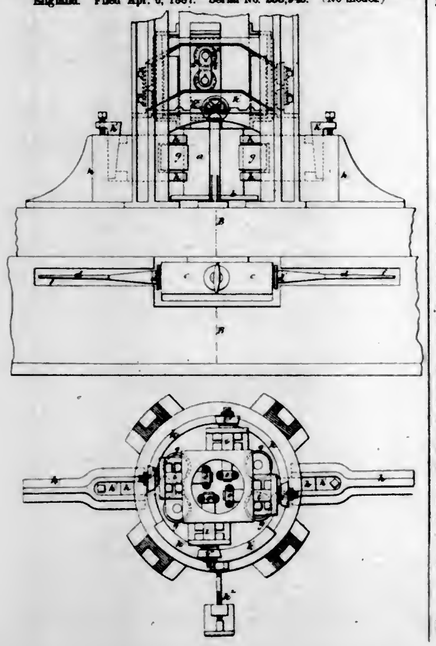


Claim.—1. In a feed-cutter, the combination of the bracket *s*, the box *d*, having the slot *x* in the bottom thereof and the downwardly-projecting lip 11 thereon, the brake *f*, having the knife 9, attached thereto, pivoted in said box, the set-screw 7, passing through the lip 11 and against the bracket *s*, and the bolt 2 and nut 6, for adjustably securing the box to the bracket, as fully described and set forth.

2. In a feed-cutter of the class described, the combination of the face-plate *b*, having the bracket *s* cast integral therewith, the box *d*, having the downwardly-projecting lip and the slot cut in bottom thereof, the set-screw passing through said lip against the bracket *s*, and the bolt 2 and nut 6, for adjustably securing the box to the bracket, as fully set forth.

3. In a feed-cutter of the class described, the combination of the bracket *s*, having thereon the upwardly-projecting lip *c*, the box *d*, with slot *x* cut in the bottom thereof, the set-screw 3, passing through the lip *c* against said box *d*, and the bolt 2 and nut 6, for adjustably securing the box to the bracket, as fully described.

380,967. **FEATHERING-PROPELLER.** ROBERT WILCOX, London, England. Filed Apr. 6, 1887. Serial No. 233,943. (No model.)



Claim.—1. The propeller consisting of two or more vertical hollow shafts suitably driven in a revolving or rotary motion and carrying at their lower ends radial blades controlled by feathering-rods within the shaft and slide-block wheels traveling over circular guide-paths, the said blades during part of the revolution assuming a horizontal position and being contained within cavities or recesses in the ship, and during the other part of the revolution being out of the cavities or recesses and vertical, or in position to exert an efficient pressure against the water, whereby to propel the ship, substantially as set forth.

2. The combination, with the vessel, recessed as described, of the rotating hollow shaft having the boss at its lower end, the feathering propeller-blades having their rounded shanks fitted into the boss, the feathering-rods within the rotating hollow shaft, the cranks connecting these rods with the shanks of the propeller-blades, the slide-blocks, the arms of which pass through slots in the sides of the rotating hollow shaft and are attached to the feathering-rods, the rollers of the slide-blocks, and the circular guide-path provided with the inclined part fixed in position during the working of the propeller-blades, substantially as and for the purpose set forth.

380,968. **SHEAF-CARRIER.** LEWIS B. WILLEY, Pewamo, Mich. Filed June 9, 1887. Serial No. 240,757. (No model.)



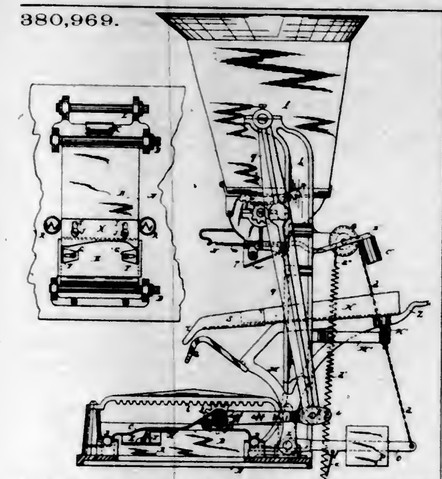
Claim.—1. The combination, substantially as before set forth, of the brackets secured at their inner ends to the harvester-frame, the carrier-head journaled at the outer ends of said brackets and provided with a projecting lug, *c*, the dropper-arms bent near their inner ends into vertical form and individually pivoted vertically to the carrier-head, and provided at their upper ends with cranks *f*, at right angles to their vertical portions, the shifter-bar secured to the outer ends of said cranks and connected to the carrier-head by a spring, an operating-lever near the driver's seat, and a rod connecting the lug *c* with said lever.

2. The combination of the brackets fixed at their inner ends to the harvester-frame, the operating-lever within reach of the driver, the connecting-rod arranged substantially as described, the rocking carrier-head consisting of a tubular bar journaled in the outer ends of the brackets and provided with vertical openings and an upper bar, E, having corresponding openings and connected to the tubular bar by stay-bolts, the dropper-arms journaled in the openings of the bars forming the carrier-head and provided at their inner ends with cranks, a shifter-bar secured to and supported by said cranks, a spring connected to the carrier-head and pressing rearward on the shifter-bar, and a lug projecting upward from the carrier-head and secured at its end to the end of the connecting-rod.

380,969. **CIGAR-BUNCHING MACHINE.** JOHN R. WILLIAMS, Newark, N. J., assignor to the John R. Williams Company, New York, N. Y. Filed Nov. 14, 1887. Serial No. 255,048. (No model.)

Claim.—1. The stationary rolling-table having the mold or recess E therein, the apron resting on said table and extending across said

380,969.



mold, and the reciprocating roller, combined with the elevated hopper for holding the filler-tobacco, and a tilting chute, N, for directing each charge of the filler-tobacco from the elevated hopper to the said apron, the lower end of said chute having side extensions, Y, adapted to depress the said apron into the said mold to form the pocket for the charge of tobacco, substantially as and for the purposes set forth.

2. The rolling-table having the mold or recess therein, the forming-plate on the rear edge of said mold, the apron resting on the table and extending across the mold, and the reciprocating roller, in combination with an elevated hopper for holding the filler-tobacco, and a tilting chute for directing each charge of the tobacco downward to the apron, the lower end of the chute having side extensions adapted to depress the said apron into said mold to form the pocket, substantially as set forth.

3. The rolling-table having the mold or recess therein, the apron resting on said table and extending across said mold, and the reciprocating roller, in combination with the elevated hopper, the hinged section, and the chute carried by said section for directing each charge of the tobacco downward to the apron, the lower end of the chute having side extensions adapted to depress the said apron into said mold to form the pocket, substantially as set forth.

4. The rolling-table having the mold or recess therein, the apron resting on said table and extending across said mold, longitudinally-adjustable end pieces for the mold, and the reciprocating roller, in combination with an elevated hopper and a tilting chute for directing each charge of the tobacco downward to the apron, the lower end of the chute having side extensions adapted to depress the said apron into said mold to form the pocket, substantially as set forth.

5. The rolling-table, mold, apron, and reciprocating roller, in combination with the elevated hopper for holding the filler-tobacco, a chute for directing each charge of the tobacco to the apron, the feed-shaft *n* in said hopper, joined rods extending from said hopper to the axle of the said reciprocating roller, and gearing connecting the axle of said feed-shaft with said rods, whereby with each movement, either forward or backward, of the reciprocating roller the feed-shaft will be operated, substantially as set forth.

6. The rolling-table having the mold or recess therein, the apron resting on said table and extending across said mold, and the reciprocating roller, in combination with an elevated hopper for holding the filler-tobacco, and a tilting chute for directing each charge of tobacco downward to said apron, said chute having adjustable side wings and also extensions at its lower end adapted to depress the apron into said mold to form the pocket, substantially as set forth.

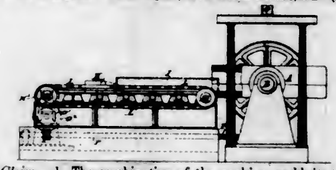
7. The rolling-table having the mold or recess therein, the apron resting on said table and extending across said mold, and the reciprocating roller, in combination with the elevated hopper, the charge-box below said hopper and having a door at its bottom, the hinged section having an arm adapted to open said door, and the chute carried by said section and leading from the charge-box to the apron, the lower end of the chute having side extensions adapted to press the apron into the said mold to form the pocket, substantially as set forth.

8. The rolling-table having the recess therein, the apron extending across said table and recess, the plates *F* in the ends of said recess and having their front edges inclined, and the reciprocating roller, in combination with the hinged section, the chute carried by said section, an elevated hopper for the filler-tobacco, and extensions Y at the lower end of the chute adapted to form the pocket of the apron within the recess E, substantially as set forth.

9. The rolling-table, mold, apron, and reciprocating roller, in combination with the elevated hopper for holding the filler-tobacco, a chute for directing the tobacco to the apron, the feed-shafts *m n* in said hopper, the joined rods *q s*, extending from the shaft *m* to the shaft of the reciprocating roller, the segment *r* on rod *q*, and the pinion on the shaft *n* engaging said segment, substantially as set forth.

10. In a cigar-bunching machine, the table, apron, and reciprocating roller, combined with the elevated hopper, the charge-box *p* at the lower end of the hopper, the cut-off plate *u* between the said hopper and box, the spring A′, connected with said plate *u*, the rotating cam *y*, and plate *x*, one end of said plate *x* being connected with the plate *u*, and the other end being in contact with said cam, substantially as set forth.

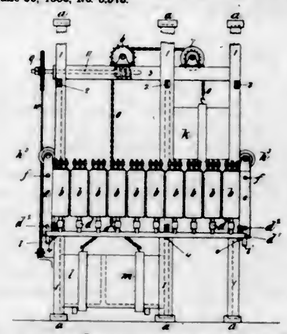
380,970. **APPARATUS FOR MANUFACTURING COMPOUND PLATES OF IRON AND STEEL.** ALEXANDER WILSON, Sheffield, County of York, England. Filed May 17, 1887. Serial No. 238,494. (No model.)



Claim.—1. The combination of the rocking mold, its trunnions, the worm-wheel on one of the trunnions, the worm gearing with the worm-wheel, the worm-shaft, the driving-shaft having clutch-connection at one end with the worm-shaft, the shaft P, with which the opposite end of the driving-shaft has clutch-connection, the intermediate shaft actuated by the shaft P, the driven shaft actuated by the intermediate shaft, the series of rollers, the girder, and the endless chains actuated by said driven shaft and operating the girder, substantially as and for the purpose set forth.

2. The combination of the trunnioned frame, the lower part of the mold detachably secured to said frame, the upper part of the mold, the cotter-bolts having loose-jointed connection with the lower part of the mold, the lugs on the upper part of the mold, the stop-lugs on the lower part of the mold, the guideway-stops, and the cotter-wedges, substantially as and for the purpose set forth.

380,971. **CONSTRUCTION OF STATIONARY AND ITINERANT ELECTRICAL BATTERIES.** JAMES T. ARMSTRONG, London, England. Filed Sept. 1, 1887. Serial No. 248,534. (No model.) Patented in England June 30, 1886, No. 8,573.



Claim.—1. In an electrical-battery apparatus, the combination of the battery cells or cups, the electrolyte supply-tubes connected therewith, the vertically-movable supply and discharge receiving cisterns connected with the tubes leading to the cells and operating to rise and fall alternately, whereby the liquid will discharge from the cells into one cistern when the latter is lowered and flow from the other into the cells while the supply-cistern is raised, substantially as described, and a stationary feeding-cylinder, substantially as and for the purposes set forth.

2. A galvanic battery comprising a closed outer trough or box having grooved end walls, the movable inner frame having a slot in its top, the carbon electrodes fitted into said slot, and the porous plates and the metal electrodes placed in the outer trough on each side of the inner frame, substantially as herein set forth.

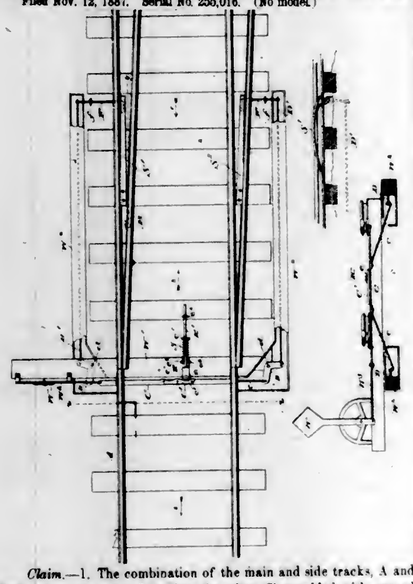
3. A galvanic-battery electrode or element formed of tinned scrap-iron molded or pressed into the desired shape, substantially as herein set forth.

4. The within process of forming a galvanic-battery electrode or element from waste metals and mixtures and amalgamations of such waste metals, consisting in piling the metal and subjecting it to pressure to press the particles together without forming a solid block to form a cellular plate, and then suspending said plate in the liquid in the battery-cell to dissolve and separate parts of the metal from the portion to form the electrode, substantially as described.

5. In a galvanic battery, a porous plate formed of refuse material or slag from blast or other furnaces, substantially as herein set forth.

6. A perambulating or itinerating electrical apparatus comprising a car or wagon having a depressed center forming a passage-way, the battery-cells arranged at the sides of said passage-way, and the movable supply and stationary feeding-cisterns arranged at one end of the car, substantially as herein set forth.

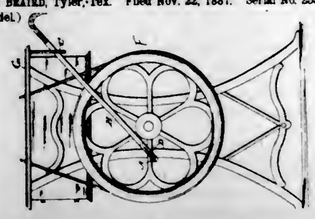
380,972. RAILROAD-SWITCH. WILLIAM S. ARNOLD, Clyde, Kans. Filed Nov. 12, 1887. Serial No. 255,016. (No model.)



Claim.—1. The combination of the main and side tracks, A and B, the tranaverse bar C, having the plate C', provided with curved indentations, the roller *c*, carried by a sliding frame, E, the rods *c*, the bell-crank levers D, the connecting-rods D', the levers F, having inner upwardly-bent ends, and the rails S' and S², substantially as described.

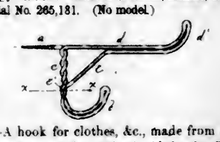
2. The combination of the main and side tracks, A and B, the tranaverse bar C, having the central top plate, C', provided with curved indentations, the roller *c*, carried in the end of a spring-actuated sliding frame, E, the rod *c*, connected to the end of the bar C, the rod W³, connected to the bar C and target W, the bell-crank levers D, also connected to the rods *c*, the connecting-rods D', the levers F, having the inner upwardly-bent curved ends, and the flat upwardly-curved rails S' and S², enlarged at their central portions and adapted to engage with upwardly-projecting ends *f* of the levers F, substantially as described.

380,973. HAND PROPELLING DEVICE FOR SEWING-MACHINES. KATE P. BRAIRD, Tyler, Tex. Filed Nov. 22, 1887. Serial No. 255,860. (No model.)



Claim.—The attachment herein described, consisting of the combination of the handled rod B, having a jointed connection at one end for connecting with the fly-wheel, and the loop-shaped guide C, having perforated and flanged ends adapted to be screwed to the bottom of the table and to receive and guide the rod B, substantially as and for the purpose described.

380,974. HOOK. GEORGE C. BEALS, Buffalo, N. Y. Filed Feb. 24, 1888. Serial No. 265,181. (No model.)



Claim.—A hook for clothes, &c., made from a single piece of wire, having the screw portion *a*, the double hooks *d'* and *b*, the twisted upright portion *c*, and the brace *e*, having its lower end engaged in a loop of the twisted portion *c*, substantially as shown and described.

380,975. CANE-GUN BARREL. EDWARD D. BEAN, Arlington, Mass., assignor to the Cyclist's and Sportsman's Gun and Rifle Company, Kittery, Me. Filed Aug. 29, 1887. Serial No. 248,149. (No model.)



Claim.—1. The improved gun-barrel composed of the inner metal tube, the intermediate tube inclosing the metal tube, and the external water-proof binding case or tube covering the intermediate tube, as set forth.

2. The improved gun-barrel composed of the inner metal tube, the intermediate tube inclosing the metal tube, and the external case of leatheroid shrunk upon the intermediate tube, as set forth.

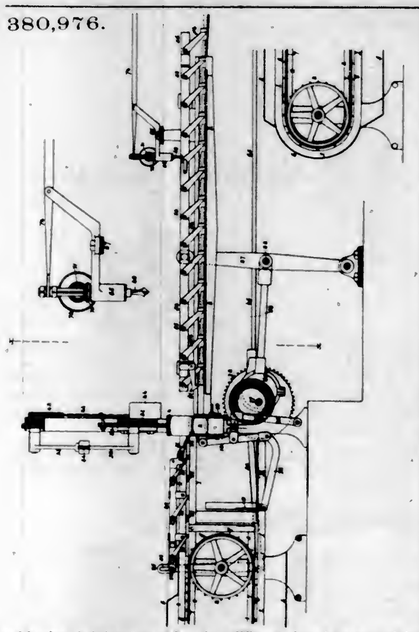
3. The improved gun-barrel composed of the inner metal tube, the collar, and tip or ferrule applied to said tube, the intermediate tube inclosing the metal tube between said collar and tip, and the external case of leatheroid shrunk upon the wooden tube and extended beyond the end of the latter upon the collar, as set forth.

380,976. BARREL-MAKING MACHINE. MARIA E. BRADLEY, GEORGE RENFURM, J. GEORGE RENFURM, and MARTIN O. RENFURM, Philadelphia, Pa., assignors to the American Barrel and Stave Company, Camden, N. J. Filed Oct. 27, 1887. Serial No. 253,522. (No model.)

Claim.—1. The combination of stave-bending dies, a stave-feedway having opposite guides constructed to press upon the ends of the staves, and mechanism whereby the staves are fed from the bender to the guides and caused to traverse along the latter, all substantially as specified.

2. A stave-feedway in which are combined a central bar pressing upon one side of the stave at or near the middle and end bars pressing upon the opposite side of the stave at and near the ends of the same

380,976.



and having their bearing-surfaces in a different plane from that of the central bar, all substantially as specified.

3. The combination of the stave-bending dies, the fingered feed-bars, means for reciprocating the latter, and stave-guides constructed to press upon the staves as they are being fed forward, all substantially as specified.

4. The combination of the stave-bending die with spring-clips at the ends of the same for preventing undue recoil of the stave on the rise of the die, all substantially as specified.

5. The combination of a steam-box, a stave-feedway and endless feed-chain traversing said steam-box, a stave-receptacle, and means for conveying the staves from said receptacle to the feedway and chain, all substantially as specified.

6. The combination of the steam-box with the endless feed-chain and its sprocket-wheels, and a stave-feedway comprising upper and lower guides and curved connecting-guides concentric with the feed-chain at one end, all substantially as specified.

7. The combination of stave-bending dies, retainers for preventing undue recoil of the bent stave, a stave-feedway having bearings whereby the stave is held in bent form, and means for feeding the stave directly from the bending-dies into said stave-feedway, all substantially as specified.

8. The combination of a stave-feedway, a reciprocating feed-bar having yielding presser-fingers, and elastic clips whereby the staves are prevented from moving backward on the retraction of said fingers, all substantially as specified.

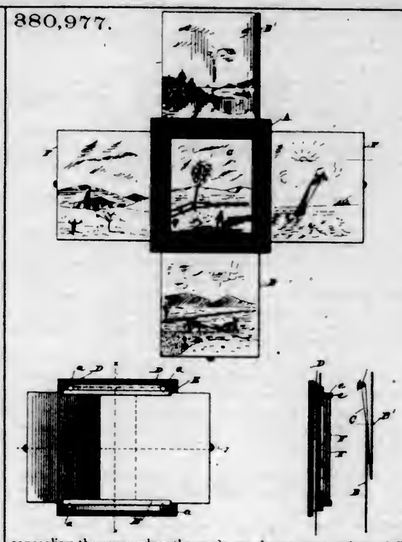
9. The combination of opposite longitudinal feedways, means for intermittently feeding the staves along the same, an auger-spindle adapted to bearings located above the feedways and intermediate of the same, and means for rotating and reciprocating said spindle, all substantially as specified.

10. The combination of the main shaft of the machine, a loose driving-pinion thereon, a disk secured to the shaft and having a clutch-finger engaging said pinion, and a stop-rod having a beveled head for engaging with said finger and moving it to disengage the pinion therefrom, all substantially as specified.

380,977. PICTURE-EXHIBITOR. ADAM H. BECK, Savannah, Ga., assignor of one-half to John House, same place. Filed Mar. 5, 1888. Serial No. 266,159. (No model.)

Claim.—1. A picture-exhibitor having a series of picture-holding slides located in the rear thereof and moving in vertical and horizontal planes, respectively, pulleys secured to the margin of said picture-exhibitor, and cords passing over said pulleys and secured to the opposite ends of each pair of the picture-holding slides for exhibiting or

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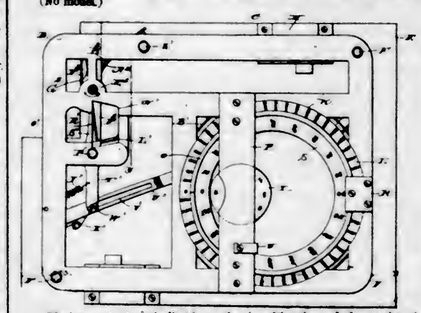


concealing the same when the cords are drawn upon, substantially as described, and for the purpose set forth.

2. In a picture-frame, the rollers or sheaves secured to the rear margin of the frame, over which operating-cords are passed, having their ends secured to the lower part of one picture and the opposite ends of the cords secured to the upper part of the other picture, said cord when drawn upon giving a reverse movement to the pictures and bringing them into view, substantially as described, and for the purpose set forth.

3. In a picture-frame, the combination, with the frame A and the transversely-arranged picture-supporting cleats E, secured thereto and provided with channels or grooves *d' d' e e*, of the pulleys or rollers D D, over which pass the operating-cords C, for displaying and concealing the pictures P P, whereby the vertical and lateral pictures are simultaneously projected from and closed within the frame, as set forth.

380,978. REGISTERING AND CANCELING BALLOT-BOX. AUGUSTUS BIGELMAN, Troy, N. Y. Filed Dec. 20, 1887. Serial No. 258,594. (No model.)



Claim.—1. In a ballot-box, the combination of the registering mechanism, the swinging spring-pressed gate, connections between the gate and the registering mechanism, and the shaft E², having the sweep-arms adapted to pass between the bars of the gate, and thereby operate the gate when a ballot is interposed between said sweep-arms and said gate, substantially as described.

2. In a ballot-box, the combination of the cage to receive the ballot, the gate closing one side of the cage, the registering mechanism, connections between the same and the gate to operate the former, and the shaft E², having sweep-arms adapted to pass between the bars of the cage and of the gate, and to thereby operate the latter when a ballot is deposited in the cage, substantially as described.

3. In a ballot-box, the combination of the cage to receive the bal-

lot, the spring-pressed gate closing one side of the cage, and the shaft E^3, having the sweep-arms provided with printing or marking surfaces, for the purpose set forth, substantially as described.

4. In a ballot-box, the combination of the gate, the shaft E^3, having the sweep-arms provided with printing-surfaces, and the yielding leaf having the inking-surface adapted to contact with the printing-surfaces of the sweep-arms, substantially as described.

5. The combination of the revolving shaft E^3, having the arms provided with printing-surfaces, and the hinged or pivoted spring-pressed leaf having the inking-surface and arranged in the path of the sweep, substantially as described.

6. The combination of the yielding gate to arrest the ballot and the printing-sweep to force the ballot past the gate against the resistance of the latter, and thereby print or mark the ballot, as set forth.

7. The combination of the ballot-box having the opening R^3, the plate or diaphragm E, having the opening O, out of register with the opening R^3, the cage or way communicating with the latter opening, the gate closing one side of said cage, the registering mechanism, connections between the same and the gate, and the sweep device to press the ballot against the gate, and thereby open the latter and sweep the ballot into opening O, substantially as described.

8. The combination of the ballot-box having opening R^3 with the plate or diaphragm having opening O, the cage having the opening M, the gate closing the front side of the cage and having similar openings, the registering mechanism, connection between the same and the gate, and the revolving shaft E^3, having the sweep-arms adapted to pass through the openings in the cage and gate, substantially as described.

9. In a ballot-box, the combination of the gate controlling the admission of ballots and having arm T, the registering mechanism, the operating-arm F therefor, the link connecting said operating-arm to the gate-arm T, and the spring to normally keep the gate closed, substantially as described.

10. The combination of the unite-disk X, having the tappet-arm and ratchet-wheel Y, the numbered ring S, having the studs adapted to be engaged in succession at each rotation of disk X, said ring having the pawl E, the numbered ring L, having the teeth, the fixed cam adapted to engage pawl E with the teeth of ring L in succession at each rotation of ring S, the operating-arm F, having the pawl G engaging the ratchet-wheel, the yielding gate having arm T, the link U, connected to arm F and having slot V, the pin W of the arm T, working in said slot, and the spring X, connecting the link to the arm T, substantially as described.

11. The combination of the registering mechanism having the operating-arm, the gate having arm T, the link connected to the operating-arm and having slot V, the pin or stud working in said slot and secured to arm T, and the spring X, connecting the arm T to the link, substantially as described.

12. In a ballot-box having the opening R^3, the plate or diaphragm having the opening O, the cage or passage-way for the ballot communicating with the opening R^3, the gate closing the outlet for the cage or way, the registering mechanism connecting with the gate, and the sweep to press the ballot against the gate, said sweep carrying a printer or stamp to come in contact with the ballot, and said sweep being adapted to open the gate and sweep the ballot, after it is printed, through the opening O, as set forth.

13. A ballot-box having an opening, R^3, the plate or diaphragm having the opening O, the cage or way for the ballot communicating with the opening R^3, the gate closing the outlet for the cage or way, the registering mechanism connecting with the gate, the sweep to press the ballot against the gate and open the latter and discharge the ballot into the opening O, and the printer actuated by the sweep to stamp the ballot at or about the time it is recorded, as set forth.

14. The combination of the yielding gate to arrest the ballot, the printing-sweep to force the ballot past the gate against the resistance of the latter, the registering mechanism, and connections between the same and the gate, for the purpose set forth, substantially as specified.

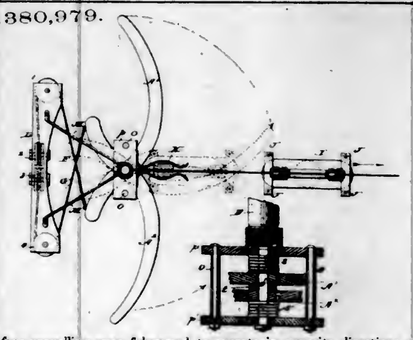
15. The combination of the pivoted spring-pressed gate to arrest the ballot and the printing-sweep to force the ballot past the gate against the resistance of the latter, substantially as described.

16. The combination of the yielding gate to arrest the progress of the ballot and the pivoted printing-sweep to force the ballot past the gate and simultaneously print or mark the ballot, substantially as described.

380,979. CASH-CARRIER. LOUIS J. BISHOP, Cleveland, Ohio. Filed Nov. 26, 1887. Serial No. 256,260. (No model.)

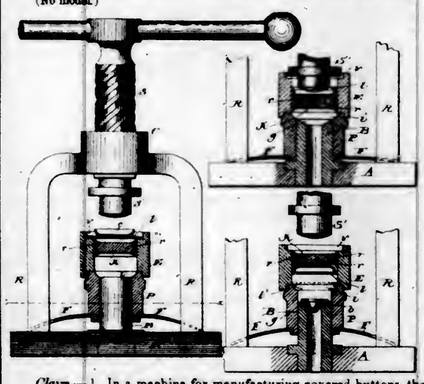
Claim.—1. A propelling device for a cash-carrier, consisting of the combination of two curved-face levers disposed with their convex sides facing each other, the said levers being fulcrumed to operate in opposite directions upon the carrier with a cam action, as described.

2. The combination, with the track-wire and the cash-carrier mounted thereon and having friction-rollers J at its ends, of the curved-face propelling-arms fulcrumed to operate in opposite directions on the friction-rollers with a wiper-cam action, as described.



3. The combination, with the propelling-arms A' A^3, of the pillar B, with plates *p p'* and bolts *o o o'*, the springs *s s'*, pulleys 1 2 3 4, and pull-cords F, G, and H, attached to the propelling-arms, substantially as and for the purpose described.

380,980. MACHINE FOR MAKING BUTTONS. FRITZ BOCKE, Barmen, Prussia, Germany. Filed May 20, 1887. Serial No. 238,828. (No model.)



Claim.—1. In a machine for manufacturing covered buttons, the combination of a lower support for the body of the button, a spring-actuated sleeve sliding upon the support and having the upper end of its bore slightly beveled or widened, a reversible sleeve, each end of which is provided with a rabbet and adapted to fit upon the upper end of the lower sleeve, an upper interchangeable die, and a piston for operating the same, as and for the purpose shown and set forth.

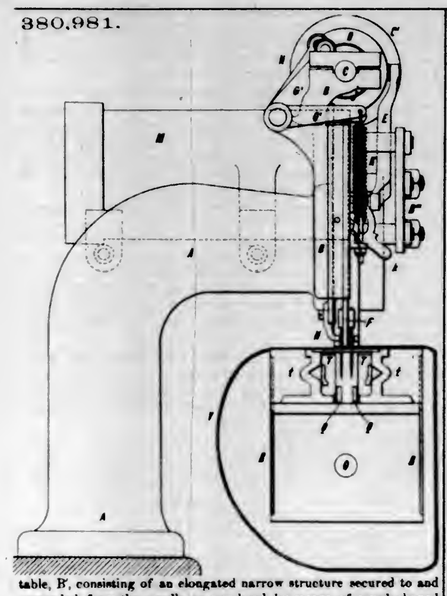
2. In a machine for manufacturing covered buttons, the combination of a lower support for the body of the button having a concaved upper end, a spring-actuated sleeve sliding upon the support, a reversible sleeve fitting with its rabbeted or stepped ends upon the upper end of the lower sleeve, a piston sliding within the upper sleeve and having concave faces and split packing-springs in circumferential grooves in its sides, a female screw-threaded box supported upon uprights above the sleeves, a screw turning in the box and having means for revolving it, and an interchangeable die secured in the lower end of the screw, as and for the purpose shown and set forth.

3. In a machine for manufacturing buttons with textile covering, the combination of a body-support, a sleeve sliding upon the support, a flat upwardly-bulging spring having its central apertured portion bearing against the lower end of the sleeve and having its notched ends fitting upon the uprights of the press, an upper sleeve fitting upon the upper end of the lower sleeve, a piston sliding in the sleeve and having a concave face, and an upper die having means for forcing it down, as and for the purpose shown and set forth.

380,981. MACHINE FOR SEWING BAGS. LOUIS BOLLMANN, Vienna, Austria-Hungary. Filed Aug. 30, 1886. Serial No. 212,208. (No model.)

Claim.—In a machine for sewing bags, tubes, or webs, the combination, with suitable stitching and feeding mechanism, of a sewing-

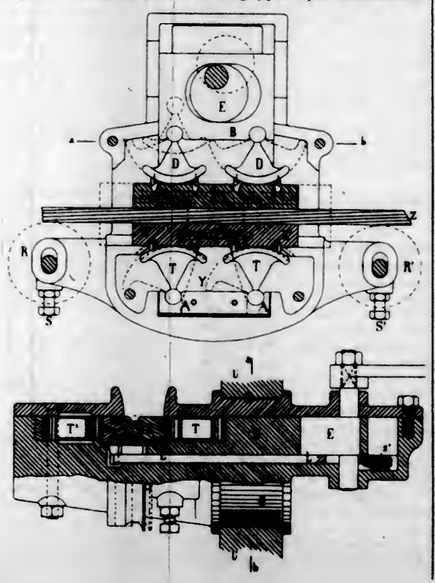
380,981.



table, B', consisting of an elongated narrow structure secured to and suspended from the needle arm or head by means of a web-shaped vertical connection, B'', located on a line with the needles, substantially as shown and described.

380,982. GRIP FOR ELEVATED WIRE-ROPE LINES. ADOLF BLEICHERT, Gohlis, near Leipsic, Saxony, Germany, assignor to Adolf Bleichert & Co., same place. Filed Apr. 25, 1887. Serial No. 236,072. (No model.) Patented in Germany Feb. 27, 1887, No. 41,441; in Belgium Apr. 4, 1887, No. 76,968, and in Austria-Hungary Aug. 16, 1887, No. 13,829 and No. 34,232.

Claim.—1. The combination of the two longitudinal sliding cable-grip jaws having interlocking projections, a sliding block connected to one of the grip-jaws for raising it clear of the cable, and an eccentric segment, whereby the pressure of the grip-jaws upon the cable is automatically increased in proportion to the longitudinal displacement of the jaws by frictional contact with the cable, and a stop upon the grip-case against which the end of the segment may strike when raised by the block, thereby restoring the grip-jaws to their normal position.



2. The combination of the two longitudinal sliding cable-grip jaws having interlocking projections, a sliding block connected to one of the grip-jaws for raising it clear of the cable, an eccentric segment whereby the pressure of the grip-jaws upon the cable is automatically increased in proportion to the longitudinal displacement of the jaws by frictional contact with the cable, and a stop upon the grip-case against which the end of the segment may strike when raised by the block, thereby restoring the grip-jaws to their normal position.

3. The combination of two cable-grip jaws having interlocking projections and sliding longitudinally with the cable, a sliding block connected to one of the grip-jaws for raising it clear of the cable, an eccentric segment, a stop upon the grip-case for the end of the segment to strike against, and a bolt engaging with one of the grip-jaws and preventing both of them from sliding longitudinally until they are pressed upon the cable, substantially as and for the purpose set forth.

4. The combination of two longitudinally-sliding cable-grip jaws having interlocking projections, a sliding block connected to one of the grip-jaws for raising it clear of the cable, and two segments pivotally supported by the said sliding block and by the grip-case, respectively, and bearing against the grip-jaws, one of said segments being eccentric, whereby the pressure of the grip-jaws upon the cable will be automatically increased in proportion to their longitudinal displacement by the cable, substantially as set forth.

5. The combination of two longitudinally-sliding cable-grip jaws having interlocking projections, a sliding block connected to one of the grip-jaws for raising it clear of the cable, an eccentric journaled in the grip-case for operating the sliding block, a hand-lever for turning the eccentric, and two segments pivotally supported by the said sliding block and by the grip-case, respectively, and bearing against the grip-jaws, one of said segments being eccentric, whereby the pressure of the grip-jaws upon the cable will be automatically increased in proportion to their longitudinal displacement by the cable, substantially as set forth.

6. The combination of the upper and lower interlocking grip-jaws, a sliding block for raising the upper jaw, two segments pivoted in the said block and bearing against the upper jaw, a vertically-adjustable stationary block in the lower part of the case, two eccentric segments pivoted in said stationary block and bearing against the lower jaw, and a plate secured to said stationary block and provided with a projecting pin engaging with a slot in the lower grip-jaw, substantially as and for the purpose set forth.

7. The combination of the upper and lower interlocking grip-jaws, a sliding block for raising the upper jaw, a segment pivoted to the

sliding block and bearing against the upper jaw, an eccentric segment pivotally supported in the lower part of the case and bearing against the lower jaw, the stops upon the case for restoring the jaws to their normal position when the upper jaw is raised, and a bolt engaging with one of the grip-jaws and preventing them both from sliding longitudinally until they are pressed upon the cable, substantially as and for the purpose set forth.

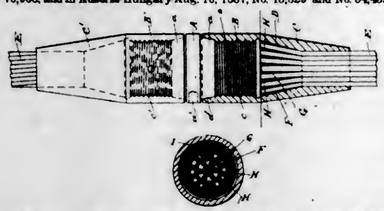
8. The combination of the upper and lower interlocking grip-jaws, a sliding block for raising the upper jaw, a segment pivoted to the sliding block and bearing against the upper jaw, an eccentric segment pivotally supported in the lower part of the case and bearing against the lower jaw, the stops upon the case for restoring the jaws to their normal position when the upper jaw is raised, a bolt engaging with one of the grip-jaws and preventing them both from sliding longitudinally until they are pressed upon the cable, an eccentric journaled in the case for operating the sliding block, and a pin projecting from the said eccentric for withdrawing the said bolt from engagement with the grip-jaw just before it touches the cable, substantially as and for the purpose set forth.

9. The combination of the upper and lower interlocking cable-grip jaws, a sliding block connected to the upper grip-jaw for raising it clear of the cable, a segment pivoted to the said block and bearing against the said upper grip-jaw, an eccentric journaled in the case for operating the sliding block, a bolt engaging with the lower grip-jaw and preventing both jaws from sliding longitudinally until they are pressed upon the cable, and the two separate pins projecting from the said eccentric for reciprocating the said bolt in and out of engagement with the lower jaw, substantially as and for the purpose set forth.

10. The combination, with a stationary overhead line, a car running on the line, and a continuously-moving cable, of a grip secured to the car-frame and provided with grip-jaws, a hand-lever for throwing the jaws in and out of gear with the cable, and with an eccentric segment which automatically increases and decreases the grip of the jaws in proportion to the amount of tractive force required to move the car over the varying grades of the line.

11. The combination, with a stationary overhead line, a car traveling on the line, and a continuously-moving cable, of a bearing secured to the car-frame, a grip provided with a trunnion projecting from its case in line with the center of the cable and at right angles to its longitudinal axis, and a bolt and a disk for holding the said trunnion pivoted in position in the said bearing, substantially as and for the purpose set forth.

380,983. **COUPLING DEVICE FOR WIRE ROPES.** ADOLF BLEICHERT, Gohlis, Saxony, Germany, assignor to Adolf Bleichert & Co., same place. Filed Jan. 12, 1888. Serial No. 260,551. (No model.) Patented in Germany Mar. 1, 1887, No. 41,588; in Belgium Apr. 4, 1887, No. 76,968, and in Austria-Hungary Aug. 16, 1887, No. 13,829 and No. 34,432.



Claim.—1. In a wire-rope coupling, the combination of a junction-piece provided with a screw-threaded portion, a sleeve provided with a tapering socket and engaging with said screw-threaded portion, the rings surrounding the end of the rope and its central wire, and the wedges inserted between the layers of wires for expanding the end of the rope within the said socket, substantially as set forth.

2. In a wire-rope coupling, the combination of a junction-piece provided with right and left hand screw-threaded portions, the two sleeves provided with tapering sockets and engaging with the said screw-threaded portions, the rings surrounding the ends of the ropes and their central wires, and the wedges inserted between the layers of wires for expanding the ends of the ropes within the said sockets of the sleeves, substantially as set forth.

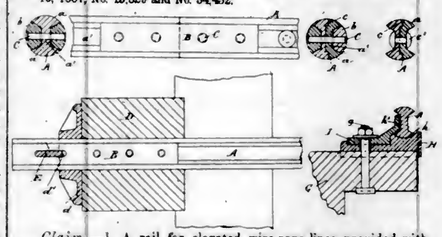
3. In a wire-rope coupling, the combination of a junction-piece provided with a screw-threaded portion and the tapering portion *a*, a sleeve screwed upon the junction-piece and provided with a tapering socket and with a tapering portion, *d*, fitting said portion *a* and relieving the screw-thread from lateral strains, the rings surrounding the end of the rope and its central wire, and the wedges inserted between the layers of wires for expanding the rope within the said tapering socket, substantially as set forth.

4. In a wire-rope coupling, the combination of the screw-threaded junction-piece, the sleeve screwed upon the said junction-piece and provided with a tapering socket, the locking-pin passing through said sleeve and junction-piece, the rings surrounding the ends of the rope and its central wire, and the expanding wedges driven in between the layers of wires, substantially as and for the purpose set forth.

5. In a wire-rope coupling, the combination of the screw-threaded junction-piece, the sleeve screwed upon said junction-piece and provided with a tapering socket, the rings surrounding the end of the rope and its central wire, the semicircular wedges inserted between the layers of wires, and the flat wedges inserted between the ends of the semicircular wedges, whereby the end of the rope is expanded within the said socket, substantially as set forth.

6. In a wire-rope coupling, the combination of the screw-threaded junction-piece, the sleeve screwed upon said junction-piece and provided with a tapering socket, the solid conical ring surrounding the end of the rope and fitting said socket, the tapered ring driven over the central wire of the rope, the semicircular wedges inserted between the layers of wires, and the flat wedges inserted between the ends of the semicircular wedges, whereby the end of the rope is expanded within the said socket, substantially as and for the purpose set forth.

380,984. **RAIL FOR ELEVATED WIRE-ROPE LINES.** ADOLF BLEICHERT, Gohlis, Saxony, Germany, assignor to Adolf Bleichert & Co., same place. Filed Jan. 12, 1888. Serial No. 260,552. (No model.) Patented in Belgium Apr. 4, 1887, No. 76,968, and in Austria-Hungary Aug. 16, 1887, No. 13,829 and No. 34,432.



Claim.—1. A rail for elevated wire-rope lines, provided with spherical-faced flanges united by a vertical web, in combination with junction-plates having spherical outer surfaces and countersunk rivets uniting said rail and plates so that their cross-section is substantially circular, as set forth.

2. A rail for elevated wire-rope lines, formed in two parts, riveted together, and provided with interlocking shoulders, and with spherical-faced flanges, in combination with junction-plates having spherical outer surfaces and countersunk rivets uniting said rail and plates so that their cross-section is substantially circular, as set forth.

3. The combination, with the rail A, having spherical-faced flanges *a*, the plates B, and the countersunk rivets fastening said plates and rail together, of the key E, passing through the end of said plates and rail for anchoring the end of the rail, substantially as set forth.

4. The combination, with the rail A, of the bracket secured to the top of the intermediate support, said bracket being curved convexly in its longitudinal direction and provided with a concave seat for the rail, and the bracket I, secured to the support-bracket and provided with the flange *h'* to prevent the rail from turning, substantially as set forth.

380,985. **MECHANISM FOR GRINDING DIES.** MATTHIAS BROCK, Boston, Mass. Filed June 11, 1886. Serial No. 204,852. (No model.)

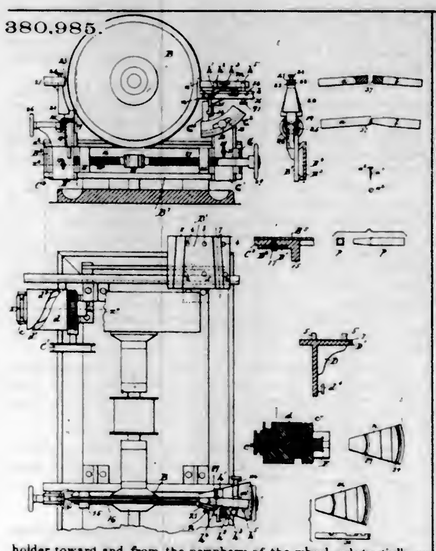
Claim.—1. The grinding-wheel C and the reciprocating carriage D, having a top or rest, D', provided with two or more sets of pins or projections arranged in pairs, the centers of the pins or projections of each pair being in a line at an angle to the face of the grinding-wheel according to the bevel to be given to the ends of the cutters, the said top or rest being also provided with two grooves of varying depth from end to end, substantially as described.

2. The guideway, the slide C^4, and its attached latch having separate notches, combined with the slide C^3, its attached carriage having a top plate, D', and a pin or stud, d^6, and the wheel C, whereby the stroke of the carriage D may be changed to enable two or more different dies to be held upon it to be ground.

3. The guideway, the slide C^4, having the pin or stud d^3, the slide C^3 and its attached carriage, and latch to connect them, combined with the cam-hub *d*, and with a clutch to operate it at the proper times, substantially as described.

4. The carriage having the adjustable arm 20, provided with a gear, combined with a pinion to partially rotate the said arm, the axis of the said pinion being tangential to the periphery of the scoring-wheel, and with a diamond-holder to hold a diamond to shape the edge of the said wheel, and with the adjusting devices to adjust the said diamond-holder toward and from the periphery of the wheel, substantially as described.

380,985.



5. The guideway B^1, the slide B^2, the carriage B', made adjustable vertically in the said slide and provided with the arm 20, pivoted with relation to the said carriage, combined with means, substantially as described, to turn the said arm 20 in the arc of a circle about the periphery of the said grooving-wheel, substantially as described.

6. The bed 36 and the rest-plate h, having a pin or projection, h^3, combined with the rest h', having a pin or projection, h^4, and with means to adjust the plate h, substantially as described.

7. The wheel B, the bed 36, the rest-plate h thereon, having a pin or projection, h^3, and the adjustable rest h', having a pin or projection, h^4, combined with the standard G^2, made adjustable in the arc of a vertical circle struck from the periphery of the said wheel, and with means, substantially as described, to tip the said bed 36 about a center at right angles to the axis of rotation of the said wheel, as set forth.

8. The bed 36, the rest-plate h thereon, and the rest-plate h', having a pin or projection, combined with an eccentric to support the die to be grooved or scored.

9. The wheel B, the rest-plate h', the standard G^2, and the bed 36, made adjustable on the said standard, combined with the foot G', upon which the said standard is made adjustable in the arc of a circle at right angles to the axis of rotation of the shaft carrying the said scoring-wheel, substantially as described.

10. The rest-plate h and bed 36, and the standard G^2, having a segmental foot, combined with the vertically-adjustable carriage G', slide to hold the same, and guideway for the slide to operate in, substantially as described.

11. The bed 36 and the rest-plate thereon, combined with the finger n', to serve as a stop for the end of the die being grooved, substantially as described.

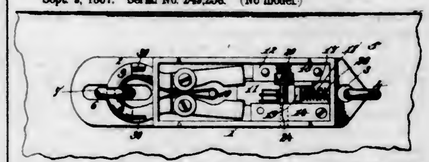
12. The combination, in a machine for grinding tack-making dies at a bevel, and also grooving the same, of a rotating shaft, A^4, its attached cup-shaped grinding-wheel C, the grooving or scoring wheel B, the reciprocating carriage D, having a top or rest, D', provided with pins or projections 4 and 6, arranged in pairs to hold the tools while their faces are being ground to the proper bevel, the rest-plate h, having a pin or projection, h^3, the plate h', having a pin or projection, h^4, the bed 36, to support the plate h, and means to adjust the said bed, whereby the beveled face-dies may be scored or grooved to the angle desired, substantially as described.

13. The combination, in a machine for scoring or grooving dies, of the following instrumentalities, viz: a scoring or grooving wheel, a guideway, a slide, B^2, a carriage, B', adjustable therein and having an arm provided with a holder containing a diamond by which to shape the periphery of the said wheel, a slide, G', a carriage therein, a bed connected to the said carriage, a rest-plate, h, mounted in the said bed, a connected finger, n', to form a stop, as described, and a right and left hand threaded screw to connect the two slides B^2 and G, whereby when the slide B^2 is adjusted to cause the diamond to reduce the diameter of the said wheel, and the bed 36 and rest-plate with its attached finger will be correspondingly advanced toward the center of rotation of the said wheel B, to insure uniformity in depth of groove to be made in the dies, notwithstanding variations in the diameter of the said wheel, substantially as described.

14. In a machine for grinding scores in dies used in tack-making, the scoring-wheel B, the rest h, to support the tool to be scored, pivoted, being parallel to the axis of the said wheel, a bed, 36, upon which the said rest is pivoted, means to adjust the said bed radially toward and from the center of rotation of the said wheel, the standard G^2, having a foot, G^3, and the vertically-adjustable post G', upon which the foot G^3 is made adjustable, substantially as described.

15. The scoring-wheel B, the standard G^2, provided with the segmental foot, the foot G', upon which the foot G^3 is adjustable in the arc of a circle, and the bed 36, its attached foot 35, made adjustable in the arc of a circle on the standard G^2, combined with the adjustable rest-plate h, made adjustable on the bed 36 in the arc of a circle, the combination being and operating substantially as described, whereby the tool may be adjustable, substantially universally, for the purpose set forth.

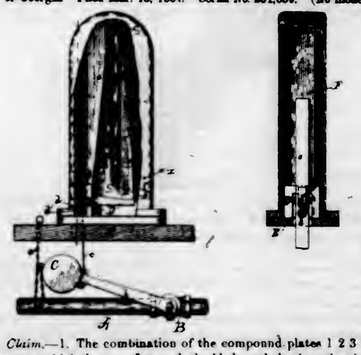
380,986. **MAIL-BAG LOCK.** JAMES C. BROWN, Sedalia, Mo. Filed Sept. 9, 1887. Serial No. 249,258. (No model.)



Claim.—1. In a mail-bag lock, the combination, with a lock-case formed with a hasp, of a pair of locking-arms pivoted in said case and having curved ends adapted to pass through a staple engaged in said hasp, a spring located between said pivoted arms to throw their curved ends apart, and a sliding bolt adapted to enter between the rear or inner ends of said arms and thereby hold their opposite curved ends firmly together, substantially as described.

2. The combination of a lock-case formed with a hasp, a pair of locking-arms pivoted in said case and adapted to interlock at one end across the hasp-slot, a spring located between said arms to throw their interlocking ends apart, a sliding bolt adapted to enter between the inner ends of said arms and thereby hold their interlocked ends together, and a spring-actuated collar mounted on the key-spindle and having a lug to engage a notch in the sliding bolt, substantially as described.

380,987. **AUTOMATIC CUT-OFF.** WALKER G. BROWNE, Atlanta, Ga., assignor to the United States Automatic Water Cut-Off Company, of Georgia. Filed Mar. 15, 1887. Serial No. 231,039. (No model.)



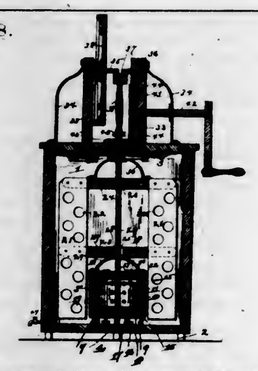
Claim.—1. The combination of the compound plates 1 2 3 4, the support to which they are fastened, the U-shaped elastic spring joining said plates, the spring *f*, the screw *f'*, the lever D, the bolt *e*, the catch *d*, the rod *c*, and the spring *d'*, substantially as set forth.

2. The compound plates 1 2 3 4, the lever D, the catch *d*, and the rod *c*, in combination with the weight C, the lever *b*, valve B, and chain *c'*.

380,988. **CHURN.** CYDNOR B. CAMPBELL, Glouster, Ohio. Filed Dec. 27, 1887. Serial No. 259,065. (No model.)

Claim.—1. In a churn, the combination, with the churn having the upwardly-projecting screw in its bottom, of the cylinder supported on short legs and having the central threaded bottom opening, the perforated rim or sides, and the bottom and top openings, the valves,

380,988.



the piston and piston-rod, the revolving crank-shaft, and the connecting-pitman, substantially as set forth.

2. In a churn, the combination, with the churn-body having the upwardly-projecting screw in its bottom, of the cylinder supported on short legs and having the central threaded bottom opening, the perforated rim or sides, the removable top, and the bottom and top openings, the valves, and the reciprocating piston, substantially as set forth.

3. In a churn, the combination, with the churn-body having the hinged cover, of the cylinder supported on short legs, having the perforated rim or sides and the bottom and top openings, the valves, the piston and piston-rod, the perforated dasher-blades connected by the cross-bars and having the clutch-collar at their upper ends, the pinion having the downwardly-extending clutch-collar, the compound gear-wheel, the crank-shaft having the pinion and the balance-wheel upon it, and the connecting-pitman, substantially as set forth.

4. In a churn, the combination, with the churn-body having the hinged cover and the retaining-screw in its bottom, of the cylinder supported on short legs and having the central threaded bottom opening, the perforated rim or sides, the top bearing, the removable top, and the bottom and top openings, the valves the piston and piston-rod, the perforated dasher-blades connected by the cross-bars and having the clutch-collar at their upper ends, the pinion having the downwardly-extending clutch-collar, the compound gear-wheel, the crank-shaft having the movable pinion and the balance-wheel upon it, and the connecting-pitman secured at its lower end to the piston-rod by the removable key, substantially as and for the purpose herein set forth.

380,989. SECONDARY BATTERY. HIRAM H. CARPENTER, New York, N. Y. Filed Oct. 8, 1887. Serial No. 251,837. (No model.)



Claim.—1. A hollow electrode composed of alloy containing lead and silver and a body of active material within the same, substantially as and for the purpose described.

2. An electrode for secondary or storage batteries, consisting of the hollow metal plate provided within with a series of distance pieces or posts between the walls of the plate, substantially as and for the purpose specified.

3. An electrode for secondary or storage batteries, consisting of the hollow plate with perforated walls, having within distance pieces or posts between the two walls, substantially as and for the purpose shown.

4. A hollow electrode for secondary batteries, adapted to receive the active material within it, having a movable cap covering its top, substantially as and for the purpose set forth.

5. In an electrode for secondary or storage batteries, in combination with the hollow perforated plate, the movable cap covering the top thereof, substantially as and for the purpose specified.

6. In an electrode for secondary batteries, in combination with the hollow perforated receptacle for the active material, the movable cap on such receptacle, having slots to admit the passage of the electrolytic fluid used, substantially as and for the purpose shown.

7. In an electrode for secondary or storage batteries, in combination with the hollow perforated plate, the movable cap provided with a series of slots to admit the electrolytic liquid used, and with guide-slots and screws or pins on the plate sides engaging the guide-slots, substantially as and for the purpose set forth.

8. An electrode for secondary or storage batteries, having a band of silver at the acid-line, substantially as and for the purpose specified.

9. In combination with an electrode of lead and silver, a protecting-band of silver on the electrode at the point to which the acid rises therein when the electrode is placed in the battery, substantially as and for the purpose shown.

10. In a storage or secondary battery, in combination with an electrode for carrying it, the active material composed of carbonate of lead and silver, substantially as and for the purpose shown.

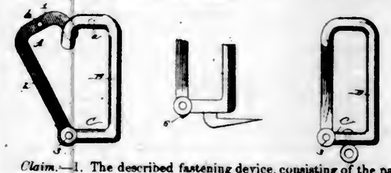
11. In a secondary or storage battery, in combination with a positive electrode provided with active material composed of oxide of lead and silver, a negative electrode provided with active material composed of carbonate of lead and silver, substantially as and for the purpose set forth.

12. In combination with an electrode of lead and silver, a body of active material containing carbonate of lead and silver, substantially as and for the purpose specified.

13. In a secondary or storage battery, in combination with the positive and negative electrodes composed of lead and silver and provided, respectively, with oxide of lead and silver and carbonate of lead and silver as active materials, the electrolytic liquid, substantially as and for the purpose shown.

14. A hollow electrode for secondary or storage batteries, adapted to receive and hold within it the active matter and made telescopic, so as to accommodate itself to any change in the bulk of the active material within it, substantially as set forth.

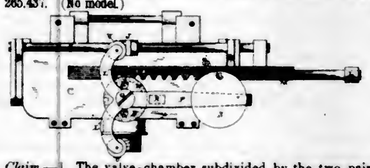
380,990. FASTENING DEVICE. WILLIAM D. CARTER, West Bridgewater, and WINFIELD S. LOUTHER, West Bellevue, Pa. Filed Nov. 15, 1887. Serial No. 255,251. (No model.)



Claim.—1. The described fastening device, consisting of the parts A and B, pivotally connected out of the line of strain, the part A consisting of the straight and hooked sections, said hooked section having a socket formed therein, the part B consisting of the straight and hooked sections, and the extension C, carrying a device for attaching the link in position for use, said hooked section of the part B having a lug formed upon its under side, adapted, when the parts A and B are interlocked, to engage with the socket upon the hooked section of part A, substantially as described.

2. In combination, the parts A and B, pivotally connected, the part B carrying a stud, as 6, for limiting the movement of the part A, substantially as described.

380,991. STEAM-ENGINE. WILLIAM F. CLARK, Chicago, Ill., assignor of two-thirds to John H. Harris and Isidor Bacharach, both of same place. Filed Sept. 1, 1886. Renewed Feb. 27, 1888. Serial No. 265,437. (No model.)



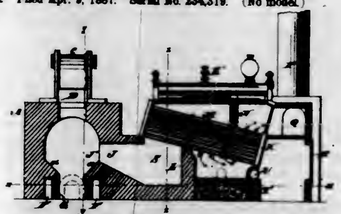
Claim.—1. The valve-chamber subdivided by the two pairs of transversely-arranged partitions F, having conical ports, in combination with the sliding valve-rod provided with a pair of double conical elastic valves, E, each disposed to work between two of said partitions, substantially as set forth, the said valve-chamber being at its end compartments, *c'*, connected with a discharge-passage, at its middle connected with an inlet-passage, and at its intermediate compartments, *c*, connected with passages leading to the ends of a piston-cylinder, substantially as and for the purpose described.

2. The combination, with the piston-rod, of the reciprocating rack-bar M, connected to the piston-rod and reciprocating in unison therewith, the loosely-mounted oscillatory pinion N, engaged by the said rack-bar and provided with a pair of lateral studs or projections, the vibratory weighted lever P, hung independently of the oscillatory pinion and actuated intermittingly by the studs or lateral projections of said pinion, and a valve mechanism for controlling the supply and discharge to and from the piston-cylinder, comprising a slide-rod, I, having a projection standing between and in the path of a pair of arms with which the weighted lever is provided, substantially as described.

3. The combination, with the valve-chamber subdivided by partitions F, of the valve-rod provided with a pair of valves disposed relatively to the said partitions, substantially as set forth, the slide-rod I, for shifting the valve-rod, and vibratory weighted lever adapted for intermittingly engaging a stud or projection, J, upon the slide-rod I, substantially as described, and for the purpose set forth.

4. The combination of the steam-cylinder, piston-rod, and a suitable connection, L, with the rack-bar M, the pinion provided with studs, and the weighted lever provided with the arms L', the rod I, provided with a stop or projection for the arms to strike against, the valve-rod provided with valves and the valve-chamber provided with valve-seats, substantially as set forth.

380,992. BAGASSE-FURNACE. FREDERIC COOK, New Orleans, La. Filed Apr. 9, 1887. Serial No. 234,319. (No model.)



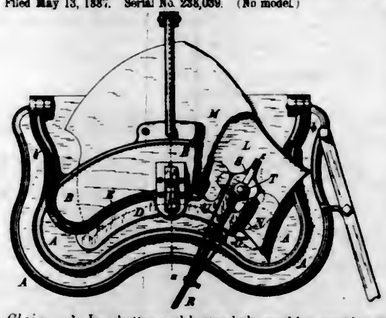
Claim.—1. A furnace for burning bagasse, having the oven-shaped combustion-chamber E, sloping at front and rear into a contracted base, I, the air-flues F, extending around the front, rear, and side walls of said base, the tuyeres G, arranged in said front and rear walls of the contracted base, an air-forcer connected with said air-flues, the flues J, leading from the oven-chamber, the bridge-wall L, the deflector N, and a multitubular part of boiler located between the bridge-wall and the deflector, substantially as described.

2. A furnace for burning bagasse, having the oven-shaped combustion-chamber E, sloping at front and rear into a contracted base, I, the air-flues F, extending around the front, rear, and side walls of said base, tuyeres G in said front and rear walls, an air-forcer connecting with said air-flues, the flues J, bridge-wall L, depending deflector N, and a multitubular water-tube boiler inclined between the bridge-wall and deflector and connected by water-legs with a cylinder-boiler, K', above, substantially as described.

380,993. COMPOUND OIL-DRESSING FOR RUBBER BELTS. GEORGE W. COOPER, New Orleans, La. Filed Sept. 26, 1887. Serial No. 250,749. (No specimens.)

Claim.—A composition of matter to be used on rubber belts in order to render them elastic, pliant, and soft, and to prevent them from slipping, consisting of crude rubber, (caoutchouc,) oil of turpentine, oil of lemon-grass, citronelle, gum-arabic, and fish-oil, in the proportions specified, mixed with condensed linseed-oil, and cooked for the time above set forth.

380,994. BUTTON-FLY-MARKING MACHINE. HENRY R. CORNHILL, Sr., Rochester, N. Y., assignor to Adolph Sorge, Jr., same place. Filed May 13, 1887. Serial No. 238,059. (No model.)



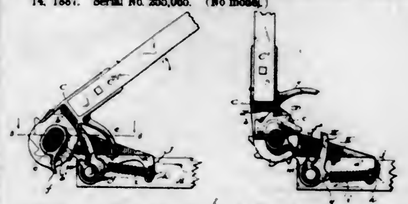
Claim.—1. In a button and button-hole marking machine, the combination of a marking device, as R S T, and the adjustable gages U U', substantially as described.

2. In a button and button-hole marking machine, the combination of a marking device, as R S T, adjustable gages U U', and sliding clamp W, substantially as described.

3. In a button and button-hole marking machine, the combination of a marking device, as R S T, adjustable gages U U', sliding clamp W, and sliding yoke Z, substantially as described.

4. In a button and button-hole marking machine, the combination of a marking device, as R S T, adjustable gages U U', and sliding rod V, substantially as described.

380,995. WINDLASS. HENRY F. CRANDALL, Milwaukee, Wis., assignor to the Milwaukee Harvester Company, same place. Filed Nov. 14, 1887. Serial No. 255,065. (No model.)



Claim.—1. The combination, with the axle and ratchet-wheel, of the lever and its slotted jaws, one of which has a finger projecting from its lower edge, and a spring-pawl for engagement with the teeth of the ratchet-wheel, said pawl having a lug for engagement with the jaw-finger, as set forth.

2. The combination, with the ratchet-wheel and axle, of a lever and its slotted jaws and dog for engaging the teeth of the ratchet-wheel, a finger depending from one of the jaws, a spring-pawl for engaging the teeth of the ratchet-wheel, and a lug projecting from the spring-pawl in the path of the finger of the jaw, substantially as set forth.

3. The combination, with the lever, ratchet-wheel, jaws, and spring-pawl, of an arm projecting from the rear of the casting, of which the jaws form a part, and a stop for limiting the inner movement of the arm, substantially as set forth.

380,996. UMBRELLA-HANGER. JESSE A. CRANDALL, Brooklyn, N. Y. Filed Jan. 12, 1888. Serial No. 260,533. (No model.)

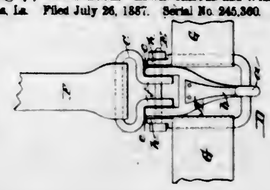


Claim.—1. In a hanger for parasols, the combination, with the supporting-rod A, of the connected side plates embracing said rod, and the cam E, pivoted between said plates, and the block H, interposed between said cam and rod A and concaved on its face for engagement with said cam and rod, substantially as and for the purpose specified.

2. The hanger C, composed of side plates, D D, cam E, and blocks H *h*, constructed and arranged substantially as and for the purpose described.

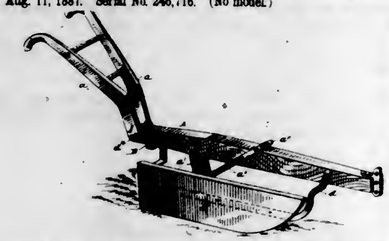
3. The combination, with rod A, of the hanger C thereon, composed of plates D D, the socket-piece F, pivoted between the said plates and having circular head *f*, the cam E, pivoted between the upper ends of said plates, having handle *e*, and the clamping-blocks H *h*, engaging the cam and head *f*, respectively, substantially as and for the purpose described.

380,997. SNAP-HOOK. EDWIN CRIPPEN and WILLIAM KING, New Orleans, La. Filed July 26, 1887. Serial No. 245,360. (No model.)



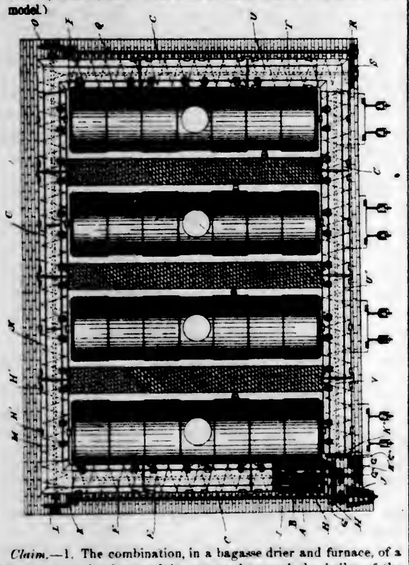
Claim.—The combination, with the snap-hook, of the shackles C D and bolt E, substantially as described.

380,998. **PLOW-FENDER.** EVERETTE O. DAVIS, Jersey, Ga. Filed Aug. 11, 1887. Serial No. 246,716. (No model.)



Claim.—As an improvement in plow-fenders, the combination, with the plow-beam having the plow-shovel, of the laterally-adjustable bracket secured near the rear end of the beam in rear of said plow-shovel, a longitudinally-disposed rod or bar pivotally secured at its front end to said plow-beam in front of the plow-shovel and extended rearwardly on an incline, and having its rear end or arm working in a slot of said bracket, the front and rear ends of said bar being carried downwardly and outwardly and connected by a central horizontal portion, and the plate or fender secured to said horizontal portion and caused to occupy an inclined position with relation to the plow-beam, substantially as shown and described.

380,999. **BAGASSE DRIER AND FURNACE.** ARELARDO G. DE AGUILAR, Havana, Cuba. Filed June 21, 1887. Serial No. 242,023. (No model.)



Claim.—1. The combination, in a bagasse drier and furnace, of a series of communicating conduits arranged around the boiler of the furnace, whereby the refuse is thoroughly dried before it reaches a point above the entrance to the fire-chamber, conveyers located in said conduits, and a door in one of said conduits located above the entrance to the fire-chamber, substantially as set forth.

2. The combination, in a bagasse drier and furnace, of a series of boilers, a conduit extending entirely around them, and conveyers for passing the bagasse through said conduit, whereby it is subjected to a continuous drying action until it has reached the front of the boilers, when it is thoroughly dried and ready for use as fuel, substantially as set forth.

3. The combination, in a bagasse drier and furnace, of a series of boilers, the fire-chambers thereunder, a conduit extending around them at the sides, rear, and front, conveyers located in said conduit, and chutes located at the front of said boilers communicating with the conduits and provided with doors, substantially as set forth.

4. The combination, in a bagasse drier and furnace, of a series of boilers, a conduit exteoding around them, a series of conveyers in said conduit having geared connection with each other, whereby they are moved together, and outlets in said conduit in front of the boilers, substantially as set forth.

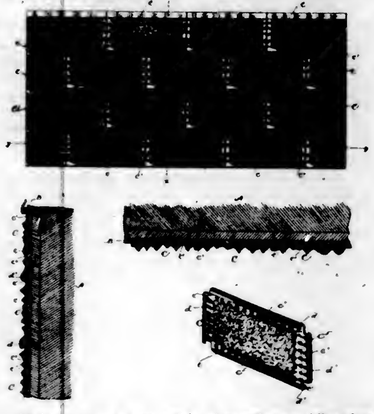
5. The combination, in a bagasse drier and furnace, of the boilers, a conduit arranged in juxtaposition to said boilers, conveyers for passing the material through said conduit, the doors of the fire-chamber below the boilers, and doors in said conduit in front of the boilers and above the doors of the fire-chambers, and adapted to open the latter, substantially as and for the purpose set forth.

6. The combination, in a bagasse drier and furnace, of the boilers, a conduit extending around said boilers having reticulated openings for the escape of moisture, and conveyers in the conduit for feeding the refuse to the front of the boilers through doors in the conduit, substantially as set forth.

7. The combination, in a bagasse drier and furnace, of the boilers, a conduit extending around said boilers having reticulated openings for the escape of moisture, doors for closing said openings, doors in said conduit in front of the boilers, and conveyers in the conduit for feeding the refuse to the front of the boilers and through the latter doors, substantially as set forth.

8. The combination, in a bagasse drier and furnace, of the fire-chamber and the boilers, a conduit extending around the boilers and provided with openings into the fire-chamber, conveyers in said conduit, and self-closing doors for said openings, substantially as set forth.

381,000. **SHEET-METAL SIDING FOR COVERING THE WALLS OF BUILDINGS.** JOHN B. DETERMANN, Louisville, Ky., assignor of one-half to Joseph F. Wagner, same place. Filed Oct. 7, 1887. Serial No. 251,737. (No model.)



Claim.—1. As a new article of manufacture, siding-plates for buildings, formed with a central raised panel and a corrugated inclosing-margin on a lower plane, whereby communication between the air-spaces beneath the panels of adjoining plates is afforded through said corrugations, substantially as set forth.

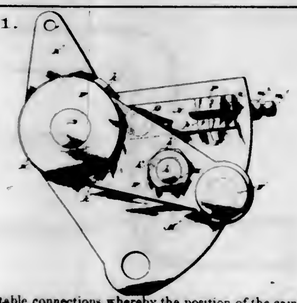
2. In a siding for buildings, the combination of the sheathing, the surface B, of felt or other suitable material, the plates provided with a central raised panel having inwardly-projecting supporting-points and a narrow corrugated inclosing-margin having oppositely-disposed interlocking bends on opposite sides, and the securing-nails seated under said bends, substantially as set forth.

381,001. **RELEASING VALVE-GEAR.** CHARLES A. DIXON, Newburg, N. Y., assignor to Robert Whitehill, same place. Filed Oct. 4, 1887. Serial No. 251,453. (No model.)

Claim.—1. In combination with the lever and the spring-actuated catch thereon, the valve-operating crank provided with a projection having an inclined face over which the catch rides and which forces the latch outward as the lever swings in one direction, and an abrupt face to be engaged by the catch as the lever swings in the other direction, and a cam to operate the catch to release the projection on the valve-crank, substantially as and for the purpose specified.

2. In combination with the lever having the spring-actuated catch with the beveled face, the valve-crank provided with a projection having an inclined face and an abrupt face to engage the catch on the lever as the lever swings in one direction and the other, and a movable cam for actuating the catch to release the projection on the crank-

381,001.



arm, and suitable connections whereby the position of the cam can be adjusted from the governor of the engine, substantially as and for the purpose set forth.

3. In combination with the valve crank-arm having a lug or bearing-piece, the lever, the sliding block thereon carrying a catch-plate to engage the lug on the crank-arm, the spring actuating the block, a cam carried on an adjustable piece, and a roller on the sliding block adapted to be engaged by the cam, substantially as and for the purpose shown.

4. In combination with the valve crank-arm provided with a bearing-piece, the swinging lever, the sliding block thereon provided with a roller and with a catch-plate, the spring engaging the block, and a rotary collar carrying a cam, substantially as and for the purpose set forth.

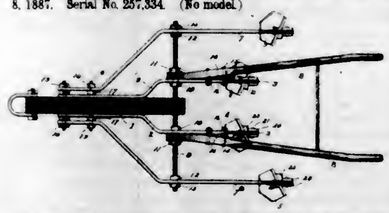
5. In combination with the valve crank-arm and the lever actuated by the valve-operating mechanism, the sliding spring-actuated catch on the lever, an inclined face on the crank-arm to engage and move the latch against the stress of the spring as the lever moves in one direction, a shoulder on the crank-arm to be engaged by the catch as the lever moves in the other direction, the cam-collar carrying a cam to operate the spring-catch to disconnect the lever and arm, and means for returning the valve crank-arm into position to close the valve, substantially as and for the purpose described.

6. In combination with the rotary collar adapted to be turned by suitable connections with the governor of an engine, and provided with a cam, the valve crank-arm provided with a lug or bearing-piece, the lever actuated from the valve-operating mechanism, the sliding catch on the lever, the spring engaging the catch, and a roller on the catch adapted to engage the cam, substantially as and for the purpose specified.

7. In combination with the lever actuated from the valve-operating mechanism and the sliding spring-pressed catch on the lever, the valve crank-arm provided with a cam-face to move the catch against the stress of its spring and a shoulder to be engaged by the catch, a collar provided with the two opposite cams, and a suitable projection or arm on the catch for engagement with the cams, so that the latter shall move the catch against the stress of its spring out of position to engage the shoulder on the valve crank-arm, substantially as and for the purpose set forth.

8. In combination with the valve crank-arm provided with the bearing-piece having the rounded outer side, the lever, the sliding spring-pressed block thereon, and a catch-plate carried by the block, substantially as and for the purpose described.

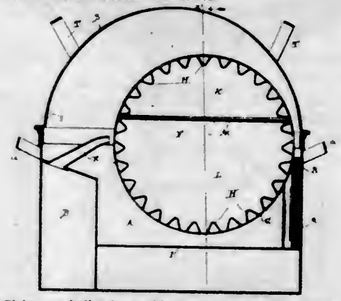
381,002. **CULTIVATOR.** ELIAS EAST, Armour, Tex. Filed Dec. 8, 1887. Serial No. 257,334. (No model.)



Claim.—1. The combination, with a flat shovel and a shank, of the bead 25 on said shovel, having a transverse slot therethrough, a slotted wedge inserted between said shovel and shank, and a bolt passing through said bead, wedge, and shank, substantially as set forth.

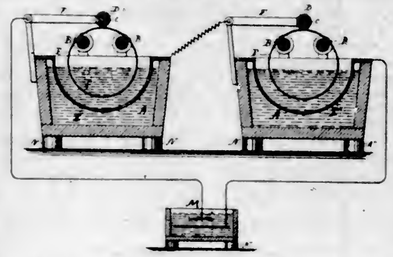
2. In a cultivator, the combination, with the central draft-beam, of the bars 2, arranged one on each side of the said beam and having their rear ends bent outward therefrom and curved downward for carrying shovels, the bolts 6, passing through said beam and bars and having projecting screw-threaded ends, nuts 17 on said bolts clamping said bars and beam together, the bars 7, resting upon the nuts 17 and having the bolts 6 passing therethrough, and being bent outward and downward at their rear ends for carrying the shovels, and nuts 19 on the outer ends of the bolts 6, clamping bars 7 to nuts 17, a screw-threaded rod passing through said central beam and bars 2 7, and nuts on said rod on both sides of each of the bars 2 7, for holding them in place, essentially as set forth.

381,003. **WASHING-MACHINE.** JOHN R. ELLIOTT, Clinton, Mo., assignor of one-half to William I. A. Bodine, same place. Filed Nov. 10, 1887. Serial No. 254,815. (No model.)



Claim.—A boiler for washing-machines, having a steam-chest in one end provided with a feed-pipe and a discharge-pipe, and a perforated false bottom extending from the steam-chest to the other end of the boiler, substantially as specified.

381,004. **APPARATUS FOR FORMING SHEETS OF NICKEL OR OTHER METAL BY ELECTROLYSIS.** MOSES G. FARMER, Eliot, Me. Filed Oct. 17, 1887. Serial No. 252,529. (No model.)



Claim.—1. In a depositing-tank, the combination of a curved plate immersed in the solution and forming the anode, a cathode ring or hoop having a peripheral conducting-surface mounted above said plate, and supporting and steadying rollers on opposite sides of the ring or hoop, as set forth.

2. The combination, in a depositing tank or vat, of a curved anode sheet or plate immersed in the solution, a cathode ring or hoop having a peripheral conducting-surface, two supporting-rollers inside of the hoop, and an outer pivoted steadying and conducting roller resting on its periphery, as set forth.

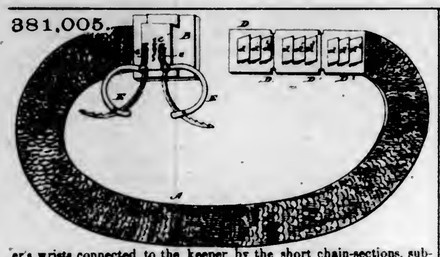
3. The combination, in an electrolytical tank or bath, with a fixed anode, of a hoop or cylinder of metal for receiving a deposit, two insulated rollers forming bearings for said hoop, a contact cylinder or roller carried by a pivoted lever and bearing upon the hoop above the supporting-rollers, and means for rotating the hoop in the bath, as set forth.

381,005. **SHACKLE.** LEONIDAS C. FERRELL and DAVID ISRAEL, Donaldsonville, La. Filed Oct. 27, 1887. Serial No. 253,571. (No model.)

Claim.—1. In a shackle, the combination, with the end piece provided with a keeper having a transverse key-hole and a rib or strike on its inner face in front of the key-hole, of the hasp provided with spring-catches, substantially as set forth.

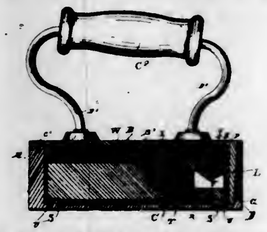
2. As an improved article of manufacture, a shackle consisting of the belt, the end piece at one end thereof provided with a keeper having a transverse key-hole and a rib or strike on its inner face in front of and parallel with the said key-hole, the sectional hasp secured to the opposite end of the belt and having rearward-inclined spring-catches on the several sections, and the two handcuffs to encircle the prison-

381,005.



er's wrists connected to the keeper by the short chain-sections, substantially as set forth.

381,006. **SAD-IRON.** ISAAC C. H. GILMORE and HENRY B. STAFFORD, Oskaloosa, Iowa. Filed June 3, 1887. Serial No. 240,170. (No model.)

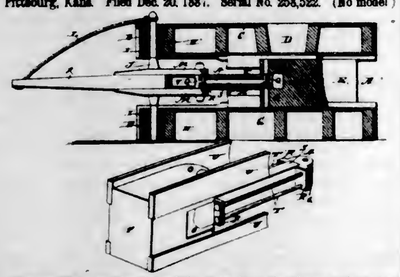


Claim.—1. In a core-heating iron, the combination of the shell or body A, having the vertical wedge-shaped grooves G in opposing sides at its rear end, and the door L, adapted to close into the said wedge-shaped grooves, the said door being wedge-shaped in vertical transverse section, and having one side secured in one of the grooves G by a hinge-bolt, substantially as described.

2. In a sad-iron, the outer cast-iron shell, H, having the posts or shoulders formed integrally therewith on its inner side, combined with the inner sheet-iron shell in a single piece and fitting against the shoulders or posts, so as to be held by the shoulders or posts at a distance from the outer shell and form a space between the inner and outer shells, as set forth.

3. In a sad-iron, the combination of the shell H, having the posts or shoulders formed integral on its inner side, said posts or shoulders forming one side of the groove G, and also serving as a means of attachment of both the top plate and inner shell, the door L, hinged in the groove G, the inner wrought-iron shell fitting against the posts or shoulders, and the top plate secured to the posts or shoulders, as set forth.

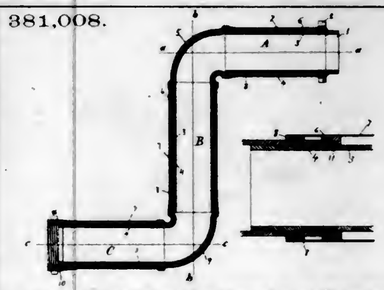
381,007. **HAY-PRESS.** THOMAS S. GORRELL and EDWARD M. TUBBS, Pittsburg, Kans. Filed Dec. 20, 1887. Serial No. 258,522. (No model.)



Claim.—The combination of the press-box, the plunger, the sweep provided with the arms M on its upper and lower sides, the sockets Q, pivoted to the plunger and between the arms M and having the projections R, the rod S, having its ends fitted in said sockets, and the securing-rods arranged parallel with said rod S and having their ends secured rigidly to the projections R, substantially as set forth.

381,008. **FLEXIBLE PIPE-COUPLING.** JOHN H. GOULD, Philadelphia, Pa. Filed Jan. 7, 1888. Serial No. 260,027. (No model.)

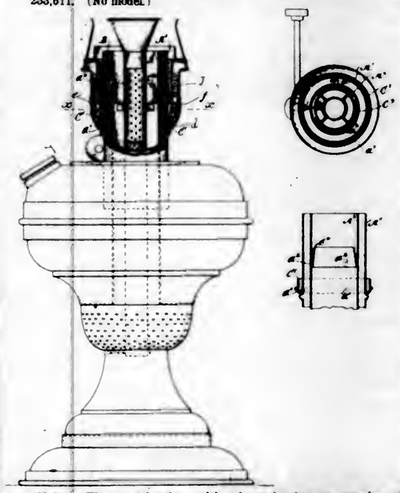
Claim.—1. In a flexible pipe-coupling, the combination of a member provided with a union-piece, 1, having screwed or secured to it a tube, 3, and covering-tube 7, provided with a shoulder at 8, with a tube, 4, having shoulder 6, said tube being secured to an elbow-piece connecting another member placed at right angles to the first, substantially as herein described, and for the purpose specified.



2. In a flexible pipe-coupling having a member composed of a union-nut with tubes 3 and 7 secured thereto, said tube 7 having an inward-projecting shoulder, 8, and adapted to slide or telescope upon the shouldered tube 4, secured to an elbow connecting it with another member of the coupling, the combination of said member with a similar member placed with intersecting axes and so arranged as to be free to rotate and expand simultaneously, substantially as described, and for the purpose specified.

3. A coupling for pipes having a telescoping member composed of an inner tube, 3, and an outer tube, 7, provided with an inward-projecting shoulder, 8, and the tube 4, sliding between said tubes 3 and 7, and having shoulder 6 to engage with shoulder 8 for the purpose of preventing the separation of the tubes, said tubes 3 and 7 being secured to a suitable casting, as also is tube 4, said arrangement of tubes to be connected at each end with an oscillating member to give lateral flexibility, substantially as set forth.

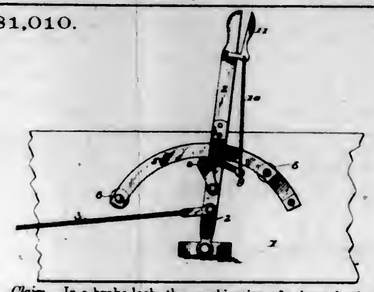
381,009. **LAMP.** JAMES G. HALLAS, Waterbury, Conn., assignor to S. Elwood May, New York, N. Y. Filed Apr. 4, 1887. Serial No. 233,611. (No model.)



Claim.—The combination, with a lamp having an annular wick-tube, of a collar surrounding the outer wall of the wick-tube near its lower end so as to form an open-topped gutter, and provided with an external annular flange, of an air-distributer supported upon said flange so as to be maintained at a distance from the wick-tube, the outer wall of the wick-tube being provided opposite said collar with perforations, and a diaphragm supported by said distributer and extending between the same and the wick-tube, and provided at its upper edge with a portion turned outwardly or away from the wick-tube, substantially as specified.

381,010. **BRAKE-LOCK.** ANDREW HAMER, Racine, Wis., assignor of one-third to Charles P. Jorgensen, same place. Filed Dec. 27, 1887. Serial No. 259,032. (No model.)

381,010.



Claim.—In a brake-lock, the combination of a lever having the brake-rod pivoted to it, a segmental rail or bar concentric with the fulcrum of the lever and having its lower concave edge serrated, a cam pivoted upon the lever at its lower end and bearing with its serrated cam-face against the lower edge of the segmental bar or rail, and having a forwardly-extending weighted arm, and a rod pivoted to the said arm at its lower end and having a tilting handle at its upper end, as shown and described.

381,011. **SAW-TOOTH.** ENOCH HARRIS, Evansville, Ind. Filed Jan. 17, 1888. Serial No. 261,015. (No model.)



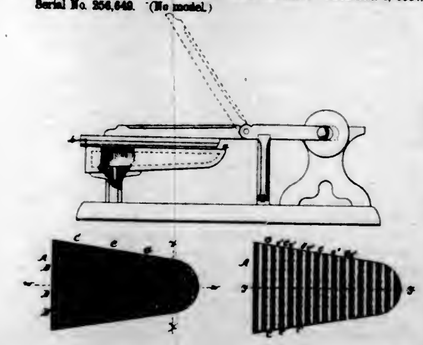
Claim.—1. The combination of the saw-blade having the solid projections B, provided with the recesses D, and the insertible saw-teeth having the arms G H, adapted to fit on the front and rear edges of the solid projection, and the pins, rivets, or keys to secure the said insertible projections to the solid projections, substantially as described.

2. The combination of the saw-blade having the solid projections B and the curved recesses C, provided with the grooves E, and the insertible teeth having the arms G H to fit on opposite sides of the solid projections, the arms H having extensions I to fit in recesses C, said arms H being provided with the ribs or flanges to engage the grooves E, substantially as described.

3. The combination of the saw-blade having the solid projections B, provided with the recesses D, the insertible saw-teeth having the arms G, to fit in recesses D, and the arms H, to bear on the rear side of the projections, and the pins, rivets, or keys fitted in transverse openings formed in the opposing sides of the solid projections and arms G, substantially as described.

4. The saw-blade having the solid projections B, in combination with the insertible teeth secured on the points of the solid projections, the latter being narrower than the corresponding portions of the insertible teeth, and thereby forming hollows *a*, for the purpose set forth, substantially as described.

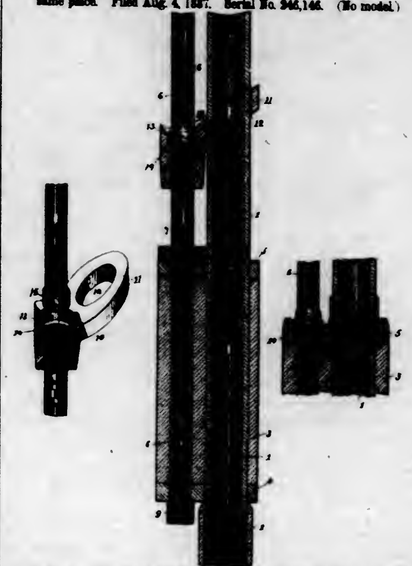
381,012. **STEAM-BOX USED IN MAKING FELT OR FELTED ARTICLES.** ALFRED A. HAWLEY, Kennebunk, Me. Filed Dec. 1, 1887. Serial No. 256,649. (No model.)



Claim.—1. In the manufacture of felt, a steam-box having its top surface provided with projections, as set forth.

2. In the manufacture of felt, a steam-box having its top surface provided with the ridges *c'*, as set forth.

381,013. **PACKER FOR OIL AND GAS WELLS.** ISAAC N. HOADLEY, Bradford, Pa., assignor to the Hoadley Packer Company, (Limited,) same place. Filed Aug. 4, 1887. Serial No. 246,146. (No model.)



Claim.—1. The combination, with the oil-pipe and a gas-pipe, one of which being in two or more sections, of a packing surrounding said pipes, a flange above and below said packing and supported by one of said pipes and adapted to compress said packing, the guides 10 and 11, supported by the upper flange and having a seat adapted to receive the upper section of the sectional pipe, substantially as set forth.

2. The combination, with the packing, the oil-pipe, and a flange surrounding said pipe and adapted to compress said packing, of the gas-pipe made in sections, a guide having a perforated arm surrounding the oil-pipe, and a seat, one section of the gas-pipe carrying said guide and supported upon said flange, and a gasket in said seat adapted to support the upper sections of the pipe, as set forth.

3. The combination, with an oil-pipe and a gas-pipe, one of which being in two or more sections, of a packing surrounding said pipes, flanges above and below said packing supported by one of said pipes and adapted to compress said packing, one section of the sectional pipe being screwed into the upper flange, the guide 10 11, supported by said section, a gasket, and a seat in said guide, in which said gasket rests, adapted to receive the upper section of the said pipe, substantially as set forth.

381,014. **PLOW-STANDARD.** WILLIAM H. HODGSON, Winona, Minn. Filed May 3, 1887. Renewed Mar. 17, 1888. Serial No. 267,443. (No model.)

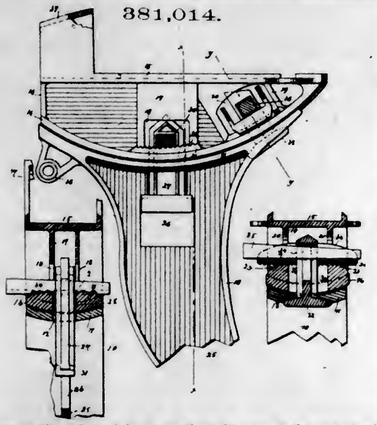
Claim.—1. The combination, with a plate arranged for connection with a plow-beam having its lower face made convex, both longitudinally and transversely, of a standard provided with a plate on its upper end, having its upper surface made concave both longitudinally and transversely, and means for connecting the standard to the said plate, substantially as described.

2. The combination, with a plow-beam, of a plate secured thereto and having its lower face convex longitudinally and transversely, a plow-standard formed with a plate on its upper end having its upper face concave longitudinally and transversely, and means for adjustably securing the standard to the plate on the plow-beam, substantially as herein shown and described.

3. The combination, with a plow-beam, of a convex plate rigidly connected thereto, a standard, a concave plate formed thereon, key-bolts passing through the plates, and wedges arranged in connection with the bolts, substantially as described.

4. The combination, with a plate, 15, of a convex plate, 14, rigidly connected thereto, cages arranged between the two plates, trans-

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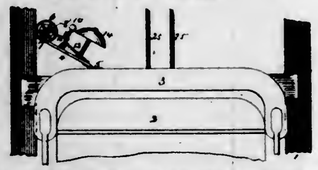
verse corrugations formed in connection with one of the cages and longitudinal corrugations formed in connection with the other, a plow-standard, a concave plate formed thereon, key-bolts passing through the concave and convex plates, and wedges arranged in connection with the key-bolts, substantially as described.

5. The combination, with a convex plate, 14, and a means for connecting said plate to a plow-beam, of transverse corrugations formed above said plate, a plow-standard, a concave plate formed thereon, a key-bolt passing through apertures formed in the concave and convex plates, and a wedge arranged to pass through said key-bolt and engage with the corrugations formed in connection with the convex plate, substantially as described.

6. The combination, with a convex plate, 14, and a means for connecting said plate with a plow-beam, of cages 17 and 19, transverse corrugations 22 and longitudinal corrugations 24, a plow-standard, a concave plate formed thereon, a T-shaped opening formed in the web of the standard, a T-shaped key-bolt, 27, formed with recesses 31, a wedge, 30, a key-bolt, 32, a corrugated washer, 34, and a bolt, 35, substantially as described.

7. The combination, with a plow-beam, of a standard adjustably connected thereto and formed with an eye, 38, a plow-handle, and braces 39 leading from said handle to the eye 38, substantially as described.

381,015. ALARM FOR ELEVATORS. JOHN W. HOLDSWORTH, St. Louis, Mo., assignor of one-half to Robert Dodsworth, same place. Filed Apr. 5, 1887. Serial No. 233,755. (No model.)



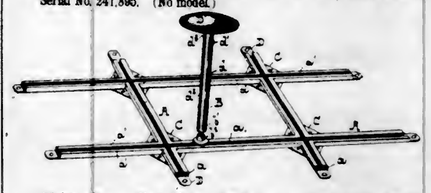
Claim.—1. In an elevator, the combination, with the fixed and the movable parts thereof, of a wheel affixed to one and bearing constantly against the other, so as to be rotated continuously during the movement of the elevator, a bell, a hammer for sounding the bell, and mechanism actuated by the wheel for imparting motion to the hammer, whereby the latter causes the bell to sound continuously during the movement of the elevator, substantially as set forth.

2. The combination, with an elevator-car, of the swinging frame 4, jointed at one end thereto, a wheel or pulley, 6, carried by said frame and bearing against an upright, as post 1, a bell, a hammer, and mechanism actuated by the wheel 6, communicating motion to the bell-hammer, substantially as set forth.

3. The combination, with the elevator-car, of a frame hinged at one end thereto, a wheel, 6, carried by said frame and bearing against post 1, a bell carried by said frame, a bell-hammer, a wheel, 8, rotated by the wheel 6 and having a tooth, 9, the rod 13, engaging at one end with the bell-hammer and engaged at the other by said tooth, and the spring 12, connected to the hammer for throwing it against the bell, substantially as and for the purposes set forth.

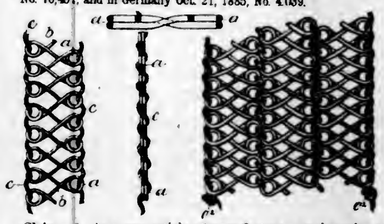
4. The combination, in an elevator-alarm, of the frame 4, hinged to the car, a wheel, 6, carried by said frame and bearing against the side post, 1, the flanged wheel 8, carried by wheel 6, and having tooth 9 located upon its inner periphery, the rod 13, having hooked end 15, adapted to be engaged by the tooth 7, the bell 14, the hammer 10, arm 11, by which it is carried, and the spring 12, for forcing the hammer against the bell, substantially as and for the purposes set forth.

381,016. HAT OR BONNET HOLDER FOR TABLES AND WARDROBES. VIRGINIA M. HOLLYDAY, Carroll, Md. Filed June 20, 1887. Serial No. 241,895. (No model.)



Claim.—In an adjustable standard for supporting hats or bonnets, the combination, with a rod having at its upper end a pin and a spring, of a tube adapted to slide on said rod, said tube being provided with a slot extending nearly its entire length, into which the pin on the rod enters, and also with a series of slots through which the said spring is adapted to project, and a supporting-plate secured to the upper end of said tube, substantially as specified.

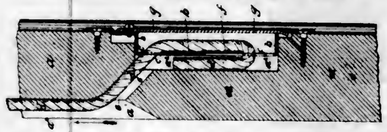
381,017. SPRING-WIRE BAND. JOHN JACKSON, Springfield Gravelly Hill, near Birmingham, County of Warwick, assignor to Patrick Alphonsus Martin, Birmingham, England. Filed Sept. 6, 1886. Serial No. 212,876. (No model.) Patented in England Mar. 25, 1885, No. 3,830; in France Oct. 10, 1885, No. 171,588; in Belgium Oct. 12, 1885, No. 70,457, and in Germany Oct. 21, 1885, No. 4,039.



Claim.—1. As a new article of manufacture, a spring-wire net or mat composed of several widths of similarly-coiled wires united at their edges by yielding continuous connections passing through the eyes of the coiled wire, substantially as described.

2. As a new article of manufacture, a spring-wire net or mat composed of several tapering widths of wire band united at their edges by yielding connections, substantially as described.

381,018. SASH-CORD FASTENER. JOHN H. JONES, Manchester, County of Lancaster, England. Filed July 13, 1887. Serial No. 244,183. (No model.) Patented in England Sept. 4, 1886. No. 11,266.



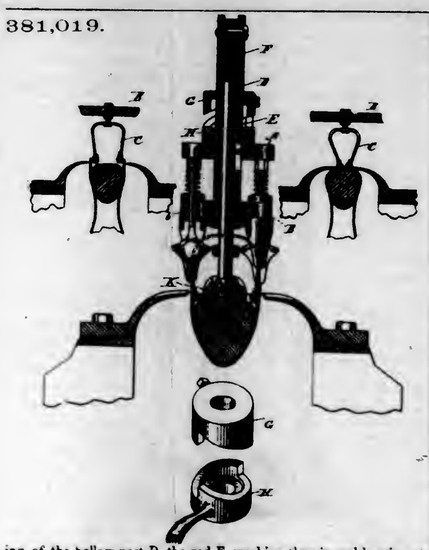
Claim.—The plate or box for a sash-stile provided with a hole, *e*, and below the latter a wedge-shaped hole or slot, *f*, having its tapering end extending toward the hole *e*, whereby a cord inserted in the two holes will when pulled wedge itself in the slot *f*, substantially as described.

381,019. LASTING-MACHINE. CHARLES H. KELLEY, Boston, assignor to Charles B. Lancaster, Newton, Mass. Filed Nov. 25, 1887. Serial No. 256,048. (No model.)

Claim.—1. In a lasting-machine, the combination, with inwardly-sliding lasting-plates, of springs, substantially as described, extending downwardly on the inner side and below the edge of the upper to be lasted and adapted to hold the same with a yielding grip against the inward pressure of the slides, all substantially as set forth.

2. In a lasting-machine having an overhanging gripping attachment, the improved device for raising and lowering the same, consist-

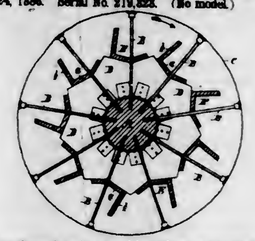
381,019.



ing of the hollow post D, the rod E, working therein and bearing at its lower portion upon a downhold, and the cam-lever F, all substantially as set forth.

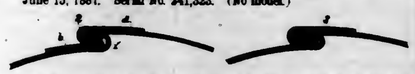
3. In a lasting-machine having an overhanging gripping attachment of the character described, the combination, with the upper and lower plates, A B, of the post D, secured to the lower plate and passing through the upper plate, and the wedge-cam G H, formed in two parts, one fixed to the post and the other adapted to turn around the same upon the plate A, all substantially as set forth.

381,020. FLOUR-DRESSER. REUBO KNIPPLER, Cleveland, Ohio. Filed Nov. 24, 1886. Serial No. 219,823. (No model.)



Claim.—In a flour-dressing machine, the combination of the following elements: shaft A, radially-located lag-screws B, bolting-cloth C, disks D, and buckets E, the parts being constructed, arranged, and operating substantially as and for the purposes set forth.

381,021. STOVE-PIPE. WILLIAM A. LIST, Wheeling, W. Va. Filed June 15, 1887. Serial No. 241,323. (No model.)

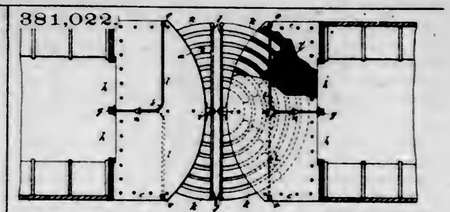


Claim.—A pipe-section having its adjacent or meeting edges provided with hooks 1 and 2, in combination with one or more cleats having one of their ends secured within the point or edge of one of the hooks and their free ends adapted to bend or fold over the other hook when the two hooks are in engagement with each other, substantially as set forth.

381,022. CAR-PLATFORM. THOMAS W. MOORE, Plainfield, N. J., assignor to Thomas W. Moore, Jr., same place. Filed Jan. 30, 1888. Serial No. 262,473. (No model.)

Claim.—1. The improvement in construction of passenger-cars which consists of entrance and exit passages separately arranged side by side at the ends of the cars and at each side thereof, substantially as herein shown and described.

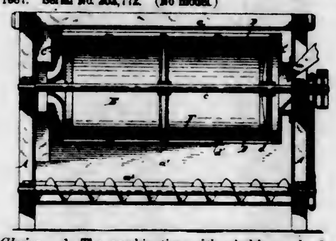
2. The improvement in construction of passenger-cars which



consists of an extensible platform and dividing-rail providing entrance and exit passages side by side over the platform, said extensible platform being contractile to allow the turning of the cars on curves, substantially as described.

3. The improvement in construction of passenger-cars which consists of separate entrance and exit passages over the platform divided by the guard-rail extending from the middle of the doorway and changeable for dividing the passages to either side of the car, substantially as described.

381,023. BOLTING-REEL. ORVILLE M. MOSER, Jackson, Mich., assignor to the Knickerbocker Company, same place. Filed Oct. 19, 1887. Serial No. 252,772. (No model.)



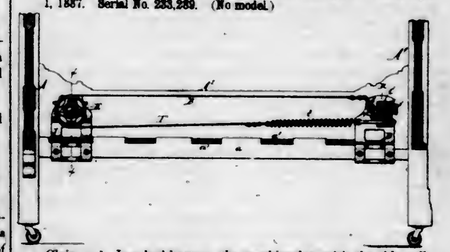
Claim.—1. The combination, with a bolting-reel, of a rotating support arranged within the reel, and a cylindrical agitator-net mounted upon said support, substantially as set forth.

2. The combination, with a bolting-reel, of a rotating support arranged within the reel, and an internal agitator composed of intertwined spiral wires mounted upon said support, substantially as set forth.

3. The combination, with a bolting-reel, of a drum arranged within the reel, and an agitator-net mounted upon said drum, substantially as set forth.

4. The combination, with a bolting-reel, of a drum arranged within the reel, supports attached to the drum and projecting beyond the surface thereof, and an agitator-net resting upon said supports, substantially as set forth.

381,024. BED-BOTTOM. WALTER B. NOYES, Buffalo, N. Y., assignor to the Chicago Roller Spring Company, Chicago, Ill. Filed Apr. 1, 1887. Serial No. 233,289. (No model.)



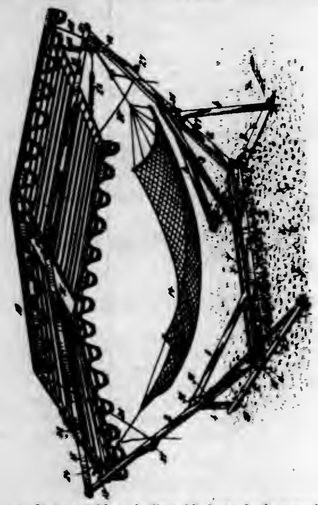
Claim.—1. In a bed-bottom, the combination, with the side rails, bottom cross-bar, C, spring-roller E, and flexible straps B, connecting the roller E with the bottom cross-bar, of an extension-piece, E', adjustably secured to the roller, whereby the roller can be lengthened or shortened, substantially as set forth.

2. The combination, with the roller E, shaft I, and springs M, surrounding said shaft and connecting the roller with the shaft, of a cap, H, secured to the roller and provided with a hub, *h'*, forming a journal for the shaft, a collar, *k*, secured to the outer end of the shaft, and a cap, K, formed with the collar *k* and provided with a pawl, *l*, adapted to engage in a notch, *l'*, formed in the hub *h'* of the roller, substantially as set forth.

3. In a bed-bottom, the combination, with the hollow roller E, and a frame, N, secured to the inner surface of the roller, and provided with a rod, *n*, of a central shaft, I, mounted in bearings in the frame N, and springs M, surrounding the shaft I, and secured at one end to the shaft and provided at their opposite end with a loop, *m*, which engages over the rod *n* of the frame N, substantially as set forth.

4. In a bed-bottom, the combination, with the side rails, bottom cross-bar, C, and a roller, E, journaled in brackets secured to the side rails, of a series of flexible straps, B, secured at one end to the roller E and at their opposite end to the bottom cross-bar, and flexible straps T, secured at one end to the roller E, below the straps B, so as to turn the roller E in an opposite direction to the straps B, and connected at their opposite ends to the cross-bar C by springs *t*, substantially as set forth.

381,025. FRAME FOR HAMMOCKS, &c. WILBUR F. PARMELEE, Middletown, Conn., assignor to Dwight J. Payne, same place. Filed Sept. 15, 1887. Serial No. 249,770. (No model.)



Claim.—1. In a portable and adjustable frame for hammocks and swings, the combination of a base, struts pivoted to said base, an inner brace connected with each strut, pivoted side braces having a swiveled connection with the struts, and cross-pieces connecting the lower ends of the swiveled side braces and independent of the base and struts, said cross-pieces being movable toward and from the base, substantially as described.

2. The combination, with a base and pivoted struts, of an upper cross-bar to connect the upper ends of the struts when said struts are in a vertical position, inner braces pivoted to the struts and adapted to be connected with either the base or upper cross-bar, side braces having a swiveled connection with the struts, and cross-pieces connecting the lower ends of the swiveled side braces and independent of the base and struts, substantially as described.

3. The combination, with a base having a series of lateral recesses and struts pivoted to the ends of the base, of inner braces pivoted to the struts and provided with laterally-projecting pins to engage the lateral recesses of the base, side braces connected with the struts, and cross-pieces independent of the base and struts to connect the lower ends of the side braces, said cross-pieces and side braces being movable toward and from the base, substantially as described.

4. The combination of the base 1, the pivoted struts 2, pivoted arms 15, attached to the upper ends of said struts, said arms being pivotally connected at their inner ends, the awning 19, having central cross-rod or stretcher, 17, and end cross-rods or stretchers, 21, and the springs 23, connecting the ends of said awning with the struts, substantially as described.

5. The combination of the base 1, the pivoted struts 2, having hooks 13 and buttons 27, the arms 15, pivoted to each other and to the upper ends of the struts, the awning 19, having cross-rods or stretchers 17 and 21, said awning being connected centrally to the inner pivotally-connected ends of the arms 15, the springs 23, and the cords 26, substantially as described.

6. The combination of the base 1, the pivoted struts 2, having pins 12 at their lower ends, the pivoted side braces, 4, and the cross-pieces 8, connecting said side braces and provided with castings 11 to engage the pins 12, substantially as described.

381,026. HEATING-STOVE. JOHN A. PRICE, Scranton, Pa. Filed Feb. 10, 1887. Serial No. 227,155. (No model.)



Claim.—1. The combination, with the base and the vertical standards mounted thereon, of the metal panels forming the sides and back and the corner-pieces recessed, as shown, secured to the standards, and operating to secure the panels in position by clamping their edges, and also serving as upright flues for the passage of air, substantially as described.

2. The combination, with the base and the vertical standards having the channels, the flanges at the sides of the channels, and the metal panels forming the inclosing-casing of the stove, of the removable corner-pieces having the channels therein adapted to be secured over the corner channels and co-operating with the flanges at the sides of the same to clamp the edges of the casing-panels, substantially as described.

3. The combination, with the base, the grooved vertical standards, and the metal panels, of the grooved pieces forming with the grooved standards vertical hot-air flues and operating when placed in position to secure the edges of the panels between the pieces and the edges of the channels in the standards, substantially as described.

4. The combination, with the fire-pot, of the two diving-flues on opposite sides thereof, the chambers formed on the other two sides of the fire-pot not connected with the diving-flues, and the vertical hot-air tubes extending through the chambers and communicating with them, substantially as described.

5. The combination, with the fire-pot, of the two diving-flues on opposite sides thereof, the two chambers formed on opposite sides of the fire-pot between the diving-flues, but not connected with the latter, and the vertical hot-air flues connected with said chambers, one of the walls of each being exposed to the heat of products in the diving-flues, substantially as described.

6. The combination, with the stove-base having the chamber therein connected with the exit-flue and the fire-pot located above said base, of the two diving-flues on opposite sides the fire-pot connected with said chamber, the two chambers formed at the sides of the fire-pot between the two diving-flues, but not connected therewith, and the vertical hot-air flues communicating with said chamber and with the external air, substantially as described.

7. The combination, with the fire-pot and the diving-flues at the sides thereof, of the chambers also at the sides of the fire-pot, but not connected therewith, and the vertical hot-air flues communicating with said chambers, the external air, and with a hot-air chamber at the top of the stove, substantially as described.

8. The combination, with the fire-pot having the metal portions, and the diving-flues formed in part by said metal portion, of the chamber formed at the sides of the fire-pot with an interposed section of fire-brick between it and the fire, and the vertical heat-flues communicating with said chamber and with the external air, substantially as described.

9. The combination, with the fire-pot constructed in sections, each having the recesses in its ends, of the sections of fire-brick inserted in said recesses and covering the joint between the sections, substantially as described.

10. The combination, with the fire-pot constructed in sections, having the recesses in their ends under-cut, as shown, and the sections of fire-brick having the ends adapted to fit the recesses, whereby the sections of the fire-pot will be held together and the joints between them covered, substantially as described.

11. The combination, with the fire-pot made in sections, having the recesses at the adjoining ends, of the fire-bricks, said bricks and sections having interlocking projections and recesses, whereby the former will hold the sections together and cover the joints between them, substantially as described.

12. The combination, with the fire-pot made in sections, each consisting of a corrugated portion exposed to the fire and having at the ends recesses, of the fire-bricks, the recesses and bricks having interlocking projections and recesses, whereby the sections will be held together by the bricks and the joints between the sections covered by the latter, substantially as described.

13. The combination, with the hot-air chamber located above the fire-pot, of the vertical flues communicating therewith and the hinged doors adapted to be folded down to form a supplemental bottom or to be folded up against the sides of the chamber, substantially as described.

14. The combination, with the hot-air chamber located above the fire-pot, having the openings in its side communicating with the external air, of the hinged doors located therein, adapted to be folded down to form a supplemental bottom for the chamber and when turned up against the sides of the chamber forming continuations of the vertical flues, substantially as described.

15. The combination, with the hot-air chamber and the hot-air flues communicating therewith, of the hinged doors located within the chamber, adapted, when folded down, to leave a small space between them and operate as retarding devices for the hot air passing up the flues and adapted to fold up against the sides of the chamber to form continuations of the vertical flues, substantially as described.

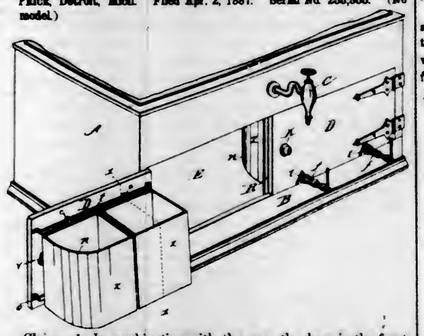
16. The combination, with the fire-pot, and the plate or plates pivoted at the sides and adapted to be folded over upon the top thereof for arresting active combustion, of the water-receptacle placed in proximity to the fire-pot and adapted to be heated therefrom, and having a steam-pipe leading to the ash-pit below the grate, substantially as described.

17. The combination, with the fire-pot, of the removable fuel-reservoir mounted on one side the fire-pot, having the reverse curved section located in its lower end capable of being rotated and serving as a bottom for the reservoir when removed and as a means of withdrawing the fuel and depositing it in the fire-pot when in position on the stove, substantially as described.

18. The combination, with the fire-pot and the diving-flues at the sides thereof, of doors or plates pivoted at the sides of the diving-flues and adapted to be folded over upon the fuel in the fire-pot to retard or arrest combustion without obstructing the diving-flues, substantially as described.

19. In a stove, the combination, with vertical flues, of the base consisting of the side and end pieces having the projections at the ends adapted to be secured to each other, substantially as described, of the perforated cap or corner plates secured over said projections and forming the outer side of the flues, as set forth.

381,027. SODA-WATER-DISPENSING APPARATUS. ORRIN J. PRICE, Detroit, Mich. Filed Apr. 2, 1887. Serial No. 233,355. (No model.)



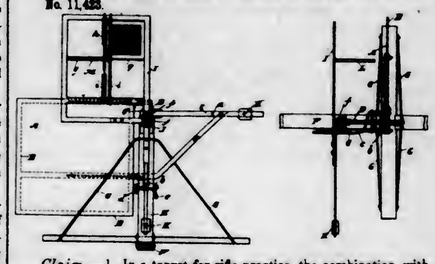
Claim.—1. In combination with the case, the door in the front, the cooling-chamber, and the sirup-cans attached to the back face of the door, having a faucet projecting through the door, said cans and faucets swinging with the door, as and for the purposes set forth.

2. In a device for the purposes specified, the combination of the case having the perforated L-shaped partition, the doors hinged to the front of the case, having the notches or inlets at the bottom, and the cans having faucets the necks of which fill the openings at the bottom of the doors, said cans being attached to the back face of the doors, the faucets projecting through the doors, and with the cans swing on said doors when opening and closing them, as and for the purposes specified.

3. In a device as set forth, the combination of the case, having the swinging door at the front opening into the cooling-chamber, and a vessel having a faucet attached at the bottom thereof, said vessel being attached to the back face of the door in such a manner as to project the faucet through the bottom of the door, the faucet and the can standing on an incline, substantially as and for the purposes set forth.

4. In an apparatus as set forth, the combination of the case, having a door opening into a chamber at the front, the opening *d'* at the bottom of said door, and the detachable can having a faucet made fast thereto, said can and faucet being mounted on the door in an inclined position, as and for the purposes specified.

381,028. TARGET AND INDICATING DEVICE THEREFOR. THOS. R. RALSTON, Bothwell, County of Lanark, Scotland. Filed Jan. 3, 1888. Serial No. 259,591. (No model.) Patented in England Aug. 22, 1887, No. 11,423.



Claim.—1. In a target for rifle practice, the combination, with the frame carrying the target and pivoted to a standard, of a lever mounted on the standard, and projections, substantially as described, on the frame, adapted to be engaged by said lever for maintaining the said frame in elevated or lowered position, as set forth.

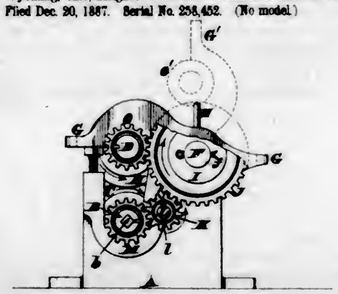
2. In a target for rifle practice, the combination, with the swinging frame mounted on a standard and having projections *a d*, of a lever fulcrumed on the standard for engaging said projections, and a counterpoise mounted on the frame for controlling its movement, substantially in the manner set forth.

3. In a target for rifle practice, the combination, with two frames swinging across the line of fire and each mounted on a shaft supported on a standard, of gear-wheels secured on said shafts and intermeshing, whereby said frames are made to move simultaneously, as and for the purpose set forth.

4. In a target for rifle practice, the signaling-frame I, furnished with two swinging indicating boards or disks, L M, lying normally at right angles to the frame and capable of being turned and held parallel with it, the said frame being also provided with a counterpoise, K, which when the frame is released from its lowered position swings it partially upward, substantially as described.

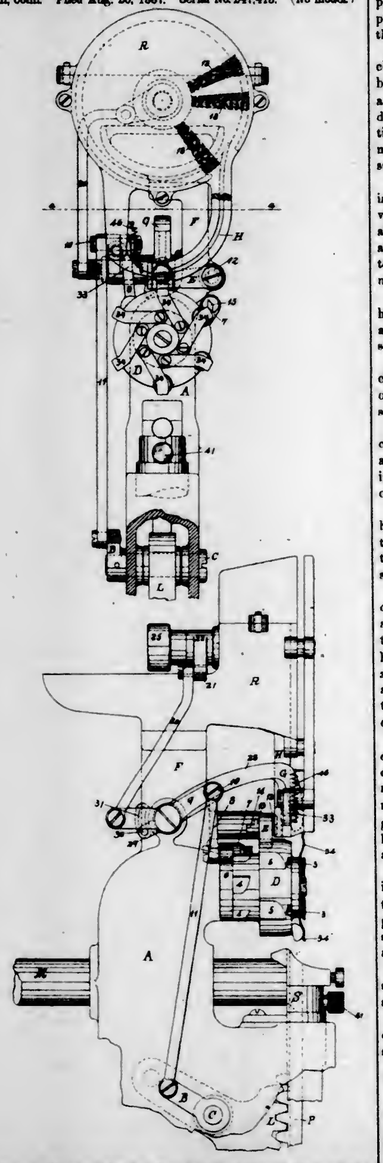
5. In a target for rifle practice, the combination of a target-frame and a signaling-frame pivoted on a standard and connected together to operate reciprocally at the same time by means of intermeshing gear-wheels mounted on said frames, substantially in the manner herein set forth.

381,029. LEATHER-CREASING MACHINE. SILAS H. RANDALL, Wyoming, Ohio, assignor of one-half to James D. Randall, same place. Filed Dec. 20, 1887. Serial No. 258,452. (No model.)



Claim.—The combination, in the herein-described leather-creasing machine, of an unadjustable creasing-roll having a gear-wheel at one end, an adjustable creasing-roll having a gear-wheel at one end, a rock-shaft arranged longitudinally of the machine, a swinging arm rigidly secured to each end of said rock-shaft, which arms carry the adjustable creasing-roll, and a pair of idler-wheels that communicate motion from one roll-gear to the other, one of said idler-wheels being journaled upon said rock-shaft, for the purpose set forth.

381,030. **BUTTON-SETTING MACHINE.** FRANCIS H. RICHARDS, Hartford, assignor to the American Button Fastener Company, New Britain, Conn. Filed Aug. 20, 1887. Serial No. 247,413. (No model.)



Claim.—1. The combination, in a button-setting machine, of the driver for forcing the fastener against the setting-die, a revolving head located above the driver and carrying a series of setting-dies, means (as a ratchet apparatus or the like) operating to turn forward said head to bring said dies successively over said driver, and a movable abutment operating to lock said head against forward movement during the setting operation, substantially as described.

2. The combination, in the button-setting machine herein described, of a button-chute having a fixed position in the machine, the button-carrying revolving head, and a plunger operating to deliver the buttons from the chute to said head, all substantially as described.

3. The combination of the button-chute, the detent normally closing the passage therefrom, the movable setting-die arranged to be placed under said passage to receive the buttons therefrom, and the plunger operating to drive the buttons through said passage and past the detent onto said die, all substantially as described.

4. The combination, in a button-setting machine having a driver-channel and a reciprocating driver working therein, of the revolving button-carrying die-head above said driver, a button-chute leading to a point adjacent to said head, a plunger arranged and operating to deliver buttons from the chute to said head, and means (as connections or the like) operating to move the plunger toward the head simultaneously with the movement of the driver toward said head, all substantially as described.

5. The combination, in a button-setting machine, of the revolving head having ratchet-notches and abutment-notches, ratchet devices operating to intermittingly feed forward said head, a movable abutment operating to limit said forward movement by striking said abutment-notches, and means (as a latch or the like device) operating to temporarily withdraw said abutment prior to the beginning of said movement, all substantially as described.

6. The combination, in a button-setting machine and with the head D thereof, of the arm 6, carrying pawl 7 and pin 15, movable abutment E, and latch 13 on said abutment, all substantially as described.

7. The combination, with the revolving head D, of the button-chute leading to a point adjacent thereto, and the plunger G, carried on the swinging arm 28, all arranged and operating substantially as described.

8. The combination, in the button-feeding mechanism of a machine, of the brush-shaft, the actuating-arm freely fitted on said shaft, and a clutch, substantially as described, for connecting and disconnecting said arm and shaft, whereby the brush may be operated by power or by hand, all substantially as described.

9. In the button-feeding mechanism of a machine, the improved button-reservoir consisting of the hopper R, provided with a brush turning on a horizontal shaft, and having the supply-pan extending therefrom and opening thereinto at a point below said shaft, all substantially as shown and described.

10. The combination, in a button-setting machine, of a reciprocating driver, a revolving button-carrier (or die-head) above said driver, a button-chute conducting buttons to said carrier, (or die-head,) button-feeding devices (as an oscillating brush or the like) for supplying buttons to said chute, the intermediate rocker connected to be operated correspondingly with the driver, connections from the rocker to and operating the button-feeding devices, and connections, substantially as described, from the rocker to and operating the carrier, (or die-head,) all substantially as described.

11. The combination, in a button-setting machine, of a reciprocating driver, a revolving head above said driver, a button-chute conducting buttons to a point adjacent to said head, the intermediate rocker connected to be operated correspondingly with the driver, connections from the rocker to and operating the revolving head, a plunger constructed and arranged to deliver buttons from the chute to said head, and connections, substantially as described, from the rocker to and operating said plunger, all substantially as described.

12. The combination, in a machine of the class specified and having a revolving button-carrier, of the intermediate rocker connected to and operating said carrier, the button-plunger carried on an arm pivotally supported, substantially as described, and a slack connection, substantially as described, from said rocker to and operating said arm, all substantially as described.

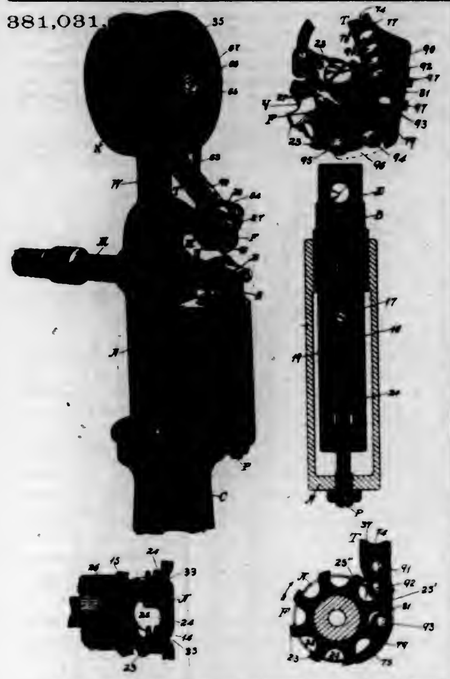
13. The combination, with the magazine and with the presser-slide, of the driver having a groove, 39, and the stop N, carried in said slide, all substantially as described.

14. The combination, with slide S, of the stop N, notched at both ends, screws 44, having heads overlying said ends, and screw 45, substantially as described, and for the purpose specified.

381,031. **BUTTON-SETTING MACHINE.** FRANCIS H. RICHARDS, Hartford, assignor to the American Button Fastener Company, New Britain, Conn. Filed Sept. 6, 1887. Serial No. 248,962. (No model.)

Claim.—1. In a button-setting machine, a setting-die, in combination with a button-carrier in front of and extending under said die, said carrier having a button-receiving pocket extending into the part thereof under said die, and through which the button-fastener prong can have access to said die, substantially as described.

381,031.



2. In a button-setting machine, a setting-die, in combination with a rotary button-carrier in front of and extending under said die, said carrier having a series of button-receiving pockets extending into the part thereof under said die, and through which the fastener-prongs can have access to said die, substantially as described.

3. The combination, in a button-setting machine, of a setting-die, a rotary carrier in front of and having a rim extending under said die, and having one or more button-receiving pockets, and the button-chute leading to said die, said chute terminating in a channel for the passage of said rim and the button-shanks, substantially as described.

4. The combination of the stationary setting-die and the wheel F, having the rim N extending under said die, said wheel having the button-head-receiving pockets 25, and said rim having the corresponding button-shank-receiving openings 24, through which the button-fastener prong has access to said die, substantially as described.

5. The feed-wheel F, consisting of a disk or plate, 15, and the rim N at one side of said plate, the whole having the button-receiving pockets, all substantially as described.

6. The feed-wheel F, consisting of a disk or plate, 15, having the pockets 25, the rim N at one side of said plate and having the openings 24, and the cut or slot 14, extending laterally from said openings 24, substantially as described.

7. The feed-wheel F, consisting of a disk or plate, 15, having the pockets 25, and the rim N at one side of said plate and having the openings 24, the plate 15 between said pockets 25 forming teeth that extend outside of rim N, substantially as shown and described.

8. The combination of the frame H, having the rounded edge 61 and provided with a setting-die, the feed-wheel carried on said frame and having a part extending under said die, and the finger 79, forming the outer wall of the space or channel 75, all substantially as described.

9. The combination and arrangement, with the fixed setting-die and the button-chute T, leading to said die, of the intermittingly-moving feed-wheel F, having teeth 23, spaced as described, so that when the feed-wheel is at rest holding one button at the setting-die another button may, in sliding down the chute, pass the point of tooth 23″ and rest on tooth 23′, all substantially as shown and described.

10. The combination, in the button-feeding mechanism of a machine, of the button-reservoir, a rotary reciprocating button-feeding brush in said reservoir, an intermittingly-rotating feed-wheel, and the button-chute leading from said reservoir to said feed-wheel, said brush and wheel being timed and coacting to move forward simultaneously, all substantially as described.

11. The combination, in the button-feeding mechanism of a machine, of the button-reservoir, a rotary reciprocating button-feeding brush in said reservoir, a feed-wheel, a button-chute leading from said reservoir to said feed-wheel, an arm operatively connected to feed said wheel, and a second arm connected to be operated from said brush, said arms being arranged in opposite directions from the feed-wheel axis and the brush-shaft, respectively, and connected together to be operated simultaneously, all substantially as described.

12. The combination, with the setting-die and with the feed-wheel having a rim extending under said die, said wheel having button-receiving pockets, substantially as described, of the spring-guide arranged in front of said wheel and operating to hold the button with its shank in the opening in said rim and against said die, all substantially as described.

13. The combination, with the setting-die and with the feed-wheel having a rim extending under said die, and having button-receiving pockets, substantially as described, of the button-guiding edge 61 within said wheel, the button-guiding finger 79 outside of said wheel, and the button-chute leading to said wheel and terminating in the channel between said edge 61 and finger 79, substantially as described.

14. The combination, with the setting-die and with the feed-wheel having a rim extending under said die, and having button-receiving pockets, substantially as described, of the button-guiding edge 61 within said wheel, the button-guiding finger 79 outside of said wheel and forming the outer wall of the channel 75, and the spring-guide arranged to serve as a cover for said channel and operating to hold a button in the pocket of said wheel and with its shank against said die, all substantially as described.

15. The combination, with the setting-die and with the feed-wheel having a rim extending under said die, and having button-receiving pockets, substantially as described, of the movable presser-slide under said rim, said slide having a driver-channel in alignment with said die, and through which the fastener can be driven up through the fabric and through the pocket in said rim into said die, all substantially as described.

16. The combination, with the setting-die and with the button-carrier having a rim extending under said die, and having button-receiving pockets, substantially as described, of the movable presser-slide under said rim, said slide having a driver-channel in alignment with said die, and the reciprocating driver in said channel, operating to drive the fastener-prong through the fabric and the pocket in said rim into said die, all substantially as described.

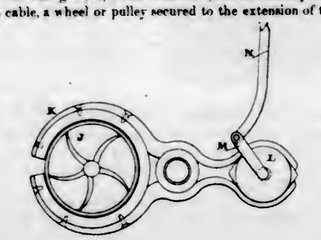
17. The combination, in a button-setting machine, of the movable presser-slide, the reciprocating driver, a yielding plunger, as 19, carried on said slide, and a stop limiting the downward stroke of, and a spring acting downward on, said plunger, all arranged and operating substantially as described.

18. The combination, in a machine of the class specified, of the stationary setting-die, a rotary button-carrier having a rim extending under said die, and having button-receiving pockets, substantially as described, the movable presser-slide under said rim and die, having a driver-channel in alignment with said die, the reciprocating driver in said channel, means (substantially such as described) operating said slide from the driver during the latter part of the stroke of the driver, and connecting mechanism operating the driver and carrier, whereby said carrier is moved forward during the downward stroke of said slide, all substantially as described.

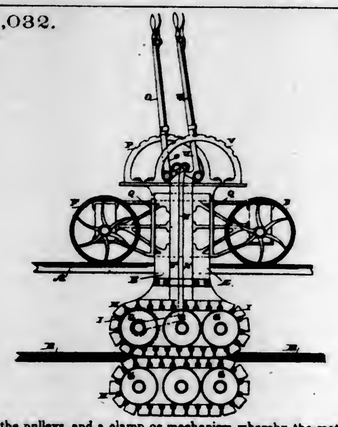
381,032. **CABLE-RAILROAD GRIP.** ALPHEUS K. ROE, San Francisco, Cal., assignor of one-half to John H. Bolles, same place. Filed Aug. 19, 1886. Serial No. 211,342. (No model.)

Claim.—1. A cable-railway grip composed of parallel endless chains passing around pulleys which carry the chains one above and one below the cable and in close contact therewith, in combination with a friction-pulley secured to the shaft of one of the chain-carrying pulleys, and a strap and operating lever or mechanism by which the pulleys and chains are arrested and caused to travel with the cable, substantially as herein described.

2. The parallel endless chains passing around pulleys above and below the traveling cable, which hold the chains constantly in contact with the cable, a wheel or pulley secured to the extension of the shaft



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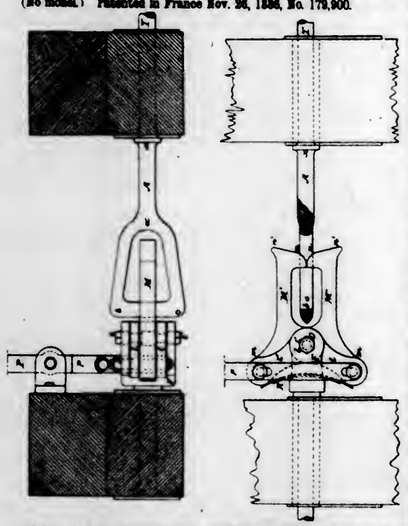


of one of the pulleys, and a clamp or mechanism whereby the motion of the pulleys and chains may be arrested, so that the car to which they are attached may be moved with the cable, substantially as herein described.

3. The parallel endless chains passing around pulleys supported upon the grip-frame traveling in contact with the cable, in combination with a vertical cylinder or turn-table upon the car or truck frame and supporting the grip-frame which passes through its center, so that the whole may be reversed without turning the car, substantially as herein described.

4. The grip-frame composed of two sections hinged together, in combination with chain-pulleys attached in series to each of the two sections, and parallel endless chains passing around said pulleys, so as to be compressed upon the cable, or so that the cable may be released therefrom by the movement of the hinged portion, substantially as herein described.

381,033. CAR-COUPLING. EDMOND JOSEPH ROULLIÉ and LÉONCE ALEXIS SIEBERT, Paris, France. Filed Aug. 8, 1887. Serial No. 246,450. (No model.) Patented in France Nov. 26, 1886, No. 179,900.

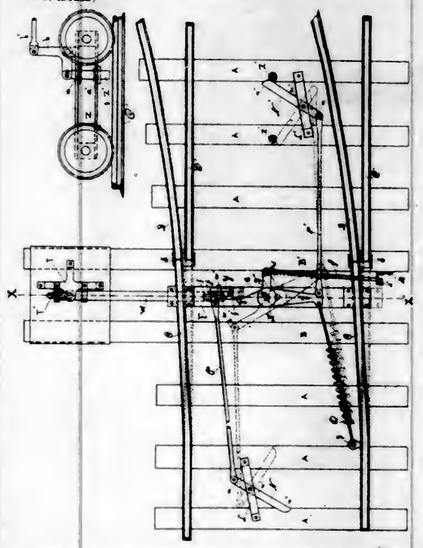


Claim.—1. An automatic car-coupling comprising an eye or loop on one car, in combination with a pair of spring-jaws on the other car, a supporting-yoke for these jaws, and toggle-joint links connecting the lever-arms of the jaws with the supporting-yoke, substantially as and for the purpose set forth.

2. An automatic car-coupling comprising an eye or loop on one car, in combination with a pair of spring-jaws on the other car, a supporting-yoke for these jaws, toggle-joint links connecting the lever-arms of the jaws with the supporting-yoke, and an operating-lever also connected to the said lever-arms, substantially as described.

3. An automatic car-coupling comprising a bar having an eye or loop on one car, in combination with a pair of jaws on the other car, a draw spring and rod for each, and devices for regulating the tension, substantially as described.

381,034. SAFETY-SWITCH. WILLIAM R. ST. CYR and FRANK R. MCDONALD, Minneapolis, Minn. Filed Oct. 4, 1887. Serial No. 251,388. (No model.)



Claim.—1. In a railway-switch, in combination, a suitable base-plate rigidly secured to the free ends of the movable rails and provided with a longitudinal slot, a switch draw-bar provided with a lug working in said slot, and a pivoted locking device secured to said base-plate and adapted to detachably engage said lug and rigidly connect said base-plate and draw-bar, as and for the purpose set forth.

2. In combination with the movable rails C C, the base-plate F, rigidly secured to said rails and provided with the slot *f*, a switch-stand, T, provided with a crank-shaft, T', the draw-bar W, mounted at one end on said crank-shaft and provided at the other with the lug *w*, working in said slot, and with the cross-pin *w'*, securing the lug therein, and the pivoted locking device G J, secured to said base-plate, as and for the purpose set forth.

3. In a railway safety-switch, in combination with a common switch draw-bar, a base-plate rigidly connected to the free ends of the movable rails, a pivoted locking device secured to said base-plate and adapted to detachably engage with said draw-bar and lock it to said base-plate, a trip-lever mounted on a suitable support located at a suitable distance from the switch, a connecting-rod from said tripping-lever to said pivoted locking device, and a tripping-pin mounted in suitable bearings on the locomotive-truck and adapted to strike said tripping-lever and unlock said base-plate from said draw-bar, substantially as described, whereby the movable rails tend to align themselves with the fixed rails of the main track by their own elasticity.

4. In combination for closing an open railway-switch, a base-plate rigidly secured to the free ends of the movable rails, a bell-crank lever pivoted to said base-plate and having one arm lengthwise of the ties and the other lengthwise of the rails, a draw-rod or movable fulcrum pivotally secured at one end to the arm of said lever which is lengthwise of the rails, and having its other end held, with allowance for a limited longitudinal movement, in a suitable fixed support near the rail-line, an actuating-lever mounted on a suitable fixed support located on the track at a suitable distance from the switch, a connecting-rod extending from said actuating-lever to the other or cross arm of said bell-crank lever, and an actuating-rod mounted on the locomotive-truck and adapted to engage said actuating-lever, substantially as set forth, whereby the movable rails are aligned with the fixed rails of the main track positively by motion communicated from the moving train.

5. In a railway-switch, in combination, a base-plate rigidly secured to the free ends of the movable rails, a lever pivoted intermediate its extremities to said base-plate and having one arm lengthwise of the track, a draw-rod or movable fulcrum pivotally secured at one end to said lever-arm and having its other end held, with allowance for a limited longitudinal movement, in a suitable fixed support or base of resistance near the rail-line, substantially as described, whereby power applied to the free arm of said lever will close said switch.

6. In a railway safety-switch, in combination with a common switch draw-bar, a base-plate rigidly connected to the free ends of the movable rails, a pivoted locking device secured to said base-plate and adapted to detachably engage with said draw-bar and lock it to said base-plate, a tripping device adapted to trip said lock and disengage said base-plate and draw-bar by motion from a moving train, and a retraction-spring fixed at one end to a suitable base of resistance and directly or indirectly attached at one other to said pivoted locking device and adapted to restore said locking device to its normal position after it has been tripped, as and for the purpose set forth.

7. In a railway safety-switch, in combination with a common switch draw-bar, a base-plate rigidly connected to the free ends of the movable rails, a locking device secured to said base-plate and adapted to detachably engage with said draw-bar and lock it to said base-plate, and a tripping device adapted to trip said lock and disengage said draw-bar and base-plate by motion communicated from a moving train; substantially as and for the purpose set forth.

8. In a railway safety-switch, in combination with a common switch draw-bar, a base-plate secured to the movable rails, a combined locking device and rail-shifting lever pivoted to said base-plate, adapted to detachably lock together said draw-bar and base-plate and to shift the rails after the draw-bar and base-plate are unlocked, a tripping device provided with a rigid connection to said locking device and adapted to trip the same by motion from the moving train, and a connection from said shifting-lever to a fixed point of resistance near the rail-line, substantially as described.

9. In a railway-switch, in combination, a suitable base-plate rigidly secured to the free ends of the movable rails and provided with a longitudinal slot, a common switch draw-bar provided with a lug working in said slot, a bell-crank lever having one arm lengthwise of the track pivoted to said base-plate and provided with a hook on the other arm adapted to detachably engage with said lug and lock together said draw-bar and base-plate, a trip-lever mounted on a suitable support at a suitable distance from the switch, a connecting-rod from said trip-lever to said bell-crank lever, a draw-rod or movable fulcrum connected at one end to a fixed base of resistance near the rail-line and at the other pivotally attached to the arm of said bell-crank lever lengthwise of the track, and a tripping-pin or actuating-rod mounted in suitable bearings on the locomotive-truck, substantially as and for the purpose set forth.

10. In a railway-switch, in combination, a suitable base-plate rigidly secured to the free ends of the movable rails and provided with a longitudinal slot, a switch draw-bar provided with a lug working in said slot, and a gravity-dog pivoted to said base-plate and adapted to fall behind said lug and lock the same in its outermost position, substantially as set forth.

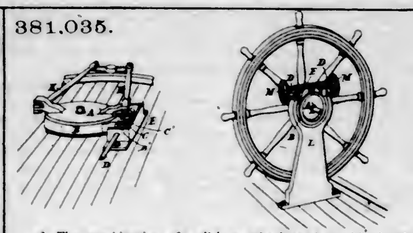
11. In combination, the movable rails C C, the base-plate F, rigidly secured to said rails and provided with the slot *f*, the switch-stand and crank-shaft T T', the draw-bar W, provided with the lug *w*, working in said slot, and the cross-pin *w'*, securing it therein, the lever G *g' g''* *g'''*, provided with the hook J, pivoted to said base-plate, the draw-rod S, secured at one end in the angle-iron R and at the other pivoted to the lever-arm *g'''*, the trip-lever supports L L', the trip-levers N N', mounted on said supports, the connecting-rods P P', from the levers N N' to the arms *g' g''*, respectively, the retraction-spring Q, attached at one end to the lever-arm *g'* and at the other to the staple *q*, fixed in rail C, and the drop-pin Z', mounted in bearings on the locomotive-truck Z, substantially as described.

381,035. APPARATUS FOR CONTROLLING SHIPS' RUDDERS. THOMAS G. STEVENS, Rectory Cottage, Swanscombe, County of Kent, England. Filed Nov. 15, 1887. Serial No. 255,221. (No model.) Patented in England Jan. 6, 1887, No. 169.

Claim.—1. The combination of a disk or wheel on the rudder-head or geared thereto, so as to turn with it, a friction-band embracing such disk or wheel, and screw-nuts pivoted to or bearing against projections on the ends of the band and screwing one onto a right-handed and the other onto a left-handed screw-thread cut on a spindle carried in fixed bearings.



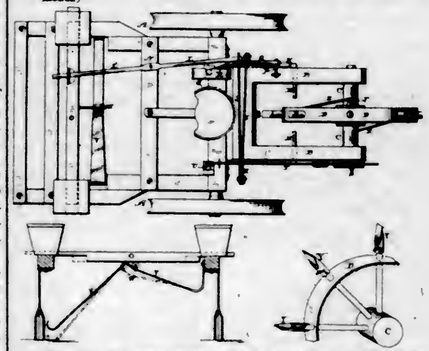
381,035.



2. The combination of a disk or wheel on the rudder-head or geared thereto, so as to turn with it, a friction-band embracing such disk or wheel, screw-nuts pivoted to or bearing against projections on the ends of the band, and a spindle carried in fixed bearings and having right and left handed screw-threads cut upon it, one screw-thread of larger diameter than the other and the screw-threads screwing into corresponding screw-nuts, substantially as described.

3. The combination of a disk or wheel on the rudder-head or geared thereto, so as to turn with it, a friction-band embracing such disk or wheel, screw-nuts pivoted to or bearing against projections on the ends of the band, a spindle with right and left handed screw-threads cut upon it screwing into such nuts, and a projection on the band entering a recess in a fixed block, or a projection on the block entering a recess in the band to prevent the band from turning, substantially as described.

381,036. ATTACHMENT FOR CORN-PLANTERS. WILLIAM H. STEVENS, Abbott, Miss. Filed Jan. 16, 1888. Serial No. 260,919. (No model.)



Claim.—1. The combination, with the corn-planter, of the frame B, which is loosely connected thereto and adapted to be raised at its rear end, the shaft C, journaled in said frame and provided with the operating-wheel D and the ratchet-wheel S, cams E, secured to the wheel D, the rocking shafts H, journaled upon the frame B and connected together by the rod I, the rod J, connected to one of the rocking shafts, the operating-lever L, pivoted upon the frame, the seed-slide, and the rod T for causing the shaft C to partially revolve, substantially as shown and described.

2. The combination of the dropping-bar O, provided with a projection, W, and the operating-lever L, with the spring V, which is secured to the frame at one end, and which has its other end loose, so as to strike the ground each time the dropping-bar is moved endwise, substantially as set forth.

3. The operating-wheel D, having the ends of its spokes projecting beyond the rim, and the extensions, which are to be applied to the ends of the spokes, the parts being combined and arranged to operate substantially as specified.

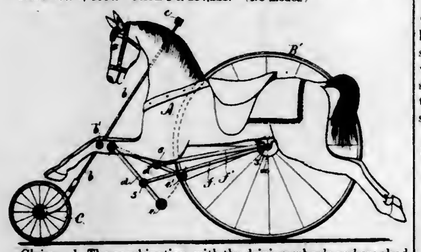
381,037. WEATHER-STRIP FOR CAR-DOORS. EDWARD R. STILES, Litchfield, Ill. Filed Dec. 31, 1887. Serial No. 259,515. (No model.)



Claim.—1. The combination of the car-body, the door-posts suitably recessed, and the weather-strips placed in the recesses and standing at a right angle to the door, with the sliding car-door, against the inner side of which the strips close, substantially as shown.

2. The combination of the car-body, the door-posts suitably recessed, and the weather-strips provided with extensions Q, which extend down outside of the body of the car, and which are placed in the recesses in the door-post, and suitable hooks or devices for holding the strips, with the sliding door, against the inner sides of which the strips close, substantially as described.

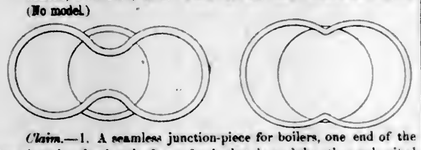
381,038. **VELOCIPEDE.** CHARLES F. STILLMAN, New York, N. Y. Filed Dec. 7, 1887. Serial No. 257,223. (No model.)



Claim.—1. The combination, with the driving-wheels and cranked axle, the steering-wheel, backwardly-inclined rod, and handle-bar, and a body extending from the cranked axle to the steering-rod, of treadles pivoted at their front ends to the body and foot-pieces at their back ends that rise and fall, and connecting-rods from the treadles to the cranks of the driving-wheel axle, substantially as specified.

2. The combination, with the driving-wheels B B', their cranked axle *a*, steering-wheel C, backwardly-inclined rod *b*, handle-bar c, and a body, A, connecting the driving and steering wheels of the treadles *d d'*, pivots 1 2 for the same at their front ends and foot-pieces or spools *e e'* at their back ends, the connecting-rods *f f'*, receiving at their back ends the cranks of the driving-wheel axle, and pivoted at 5 6 at their forward ends to the treadles at points between the pivots and foot-pieces, substantially as and for the purposes specified.

381,039. **JUNCTION-PIECE FOR STEAM-BOILERS.** GEORGE S. STRONG, New York, N. Y. Filed Jan. 23, 1888. Serial No. 261,638. (No model.)

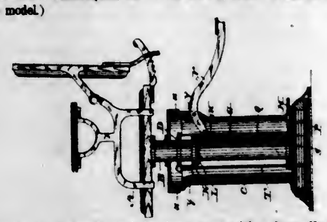


Claim.—1. A seamless junction-piece for boilers, one end of the junction-piece having the form of a single tube and the other end united segments of tubes.

2. A seamless junction-piece for the fire-boxes and combustion-chamber of a boiler, one end of the junction-piece being flanged and having the form of a single tube, while the other end is flanged and has the form of united segments of tubes.

3. A seamless junction-piece for boilers, drawn up of a single sheet of metal, one end of the junction-piece having the form of a single tube and the other the form of united segments of tubes.

381,040. **DENTAL CHAIR.** LEVI STUCK, Hart, Mich., assignor to H. D. Justi, Philadelphia, Pa. Filed Nov. 2, 1887. Serial No. 254,054. (No model.)

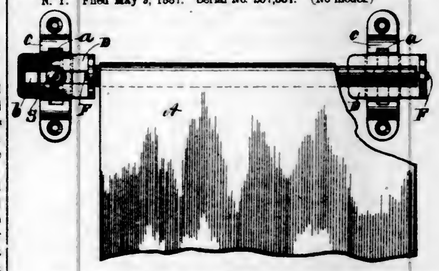


Claim.—1. A dental chair having a seat with a depending standard, a casing in the top opening of which said standard is inserted, the cross-bar F, secured to and within said casing, the annulus D, surrounding said standard and having a lip, E, resting on said cross-bar F, and also having its inner periphery inclined, the rod G, pivoted to the side of the annulus D opposite to the lip E, the treadle projecting through an opening in the casing C and having its inner end secured to the lower end of rod G, and the spring P, secured to the inner arm of said treadle and to the base, said parts being combined substantially as and for the purpose set forth.

2. A dental chair having a seat with depending standard, a case in which said standard is inserted, a recessed cross-bar within said casing, an annulus surrounding said standard and having a lip resting in the recess of said cross-bar, the inner periphery of said annulus being inclined, a rod pivotally attached to the side of the annulus opposite from the lip, and a treadle connected with said rod, said parts being combined substantially as and for the purpose set forth.

3. A dental chair having a seat with standard and a casing in which said standard is inserted, the cross-bar F, the annulus D, with lip E and inclined inner periphery, the rod G, pivotally attached to said annulus at the side opposite the said lip, the treadle H, connected with said rod G, the cross-bar L, the annulus K, with teeth K' on one side of the inner periphery, the link M, secured to said annulus K on the same side thereof as the teeth K', and the lever N, with spring Q, said parts being combined substantially as and for the purpose set forth.

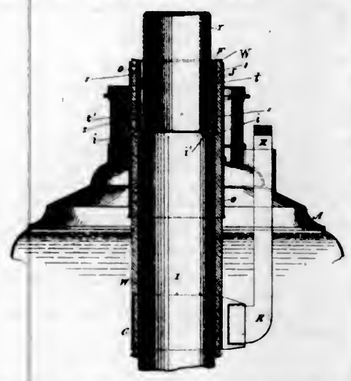
381,041. **CURTAIN-ROLLER SUPPORT.** GEORGE L. TYLER, Troy, N. Y. Filed May 9, 1887. Serial No. 237,531. (No model.)



Claim.—1. Curtain-roller bearings formed of longitudinally-slotted and crossing plates adjustable horizontally and vertically by screws and nuts, as shown and described.

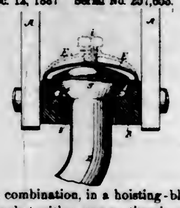
2. The combination, with a slide-plate provided with screw-slot *b* and pivot-aperture *c'*, of a wall-plate provided with a slot, *a*, and screw-holes *d*, and a binding-screw, S, and nut E, substantially as described, and for the purposes set forth.

381,042. **LAMP.** CHARLES S. UPTON, New York, N. Y. Filed Mar. 25, 1887. Serial No. 232,418. (No model.)



Claim.—The combination, with the inner wick-tube, I, and the outer wick-tube, O, of the short sleeve S, fitting around the upper end of the inner wick-tube inside the wick-space and having a horizontal inwardly-projecting flange, F, resting on the top of the inner wick-tube, and formed with perforations *s*, the said perforations providing passages for conveying the surplus oil from the upper part of the wick-space to the surface of the inner wick-tube, and the flange preventing the oil from overflowing the top of the inner wick-tube, substantially as described.

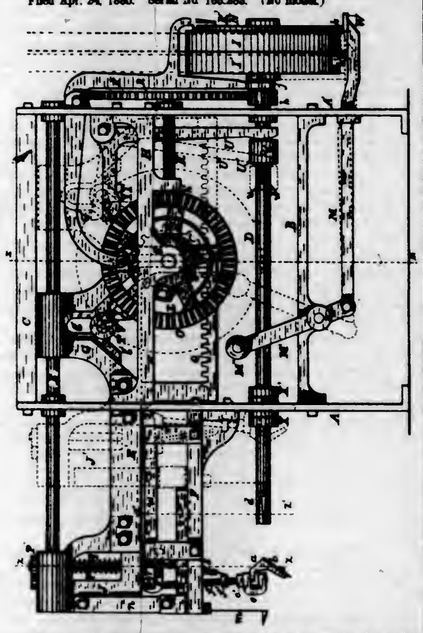
381,043. **HOISTING-TACKLE.** SAMUEL M. VAUCLAIN, Philadelphia, Pa. Filed Dec. 12, 1887. Serial No. 257,653. (No model.)



Claim.—1. The combination, in a hoisting-block, of a bearing having a cup-shaped socket with a groove therein, a series of spheres having a bearing in said groove, and a hook having a rounded head which rests upon the spheres and is free to turn and to rock thereon, all substantially as described.

2. The combination of the supporting-bar and the swinging head swiveled thereon with the cap E, secured to the bar B, and occupying such a position in respect to the head of the hook as to prevent said head from jumping from its bearings, all substantially as described.

381,044. **APPLE-PARER.** FRANK R. WILLIAMS, Rochester, N. Y. Filed Apr. 24, 1885. Serial No. 163,263. (No model.)



Claim.—1. In an apple-paring machine, the combination, with the main frame and a rotary shaft for the fruit, of a reciprocating carriage carrying the paring-blade, having a rack thereon and a gear co-operating with said rack to cause the movement of the carriage in a direction to co-operate with the shaft carrying the fruit and perform the paring operation, and an arm secured to said gear co-operating with the carriage for causing its return movement, substantially as described.

2. In an apple-paring machine, the combination, with the main frame and a rotary shaft for the fruit, of a reciprocating carriage carrying the paring devices located thereon, having a rack, a gear co-operating with said rack to cause the movement of the paring devices in a direction to co-operate with the shaft carrying the fruit, and an arm mounted on the gear, of greater radius than the teeth, co-operating with the rack for operating against the carriage to return it to first position at greater speed than its first movement caused by the rack, substantially as described.

3. In an apple-parer, the combination, with the main frame and the rotary shaft to which the fruit is secured, of a reciprocating carriage, devices for reciprocating it positively in both directions, a rotary paring-blade mounted thereon, and devices upon the main frame with which the rotary paring-blade co-operates to cause a rotation of it when the carriage is moved in one direction, and means, substantially as described, for moving the blade and its operating devices out of engagement when the carriage is moved in the opposite direction, substantially as described.

4. The combination, with the main frame and the rotating shaft, of the reciprocating carriage and means for reciprocating it positively in both directions, a rotary paring-blade mounted thereon, a gear with which it is connected, a rack located on the main frame for rotating the gear and blade during the reciprocation in one direction, means for causing the disengagement of the gear and rack, and a device (such as a spring) for returning the rotary blade to its first or starting position, substantially as described.

5. The combination, with the main frame, the reciprocating carriage having means for operating upon the fruit mounted thereon, a rotating pulley, and a wheel connected therewith operating upon the carriage to positively reciprocate it in both directions and having a cam thereon, of the fruit-shaft and a clutch and brake operated by the cam on the wheel for placing said pulley and fruit-shaft in engagement during the reciprocation of the carriage in one direction and disconnecting them and applying the brake to the fruit-shaft during the reciprocation of the carriage in the other direction, substantially as described.

6. The combination, with the main frame, the shaft carrying the fruit, the reciprocating and swinging carriage having devices mounted thereon for operating upon the fruit, a rotating pulley, and a wheel connected therewith operating upon the carriage to positively reciprocate it in both directions and to swing it toward and away from the fruit-shaft and having a cam thereon, of a clutch operated by said cam and operating to connect the fruit-shaft and rotating pulley when the carriage is moved in one direction and to disconnect them when the carriage is swung away from the shaft and moving in the opposite direction, as set forth.

7. The combination, with the main frame, of the rotating shaft, the reciprocating and swinging carriage having an abutment or shoulder, the mutilated gear, the rack on the carriage, the arm on the gear having the projection co-operating with the abutment on the carriage, and the gib and flange for holding the carriage and main frame together when the former is swung into engagement, substantially as described.

8. The combination, with the main frame, the rotating shaft, the reciprocating and swinging carriage pivoted above and to one side of the shaft and carrying the paring-blade, the abutment on said carriage, and the extended curved flange, of the gear so connected with the carriage as to move it in one direction, and having the arm carrying the projection co-operating with the abutment and flange and operating to move said carriage in the opposite direction and swing it in toward the rotating shaft, and means for holding the carriage when swung in such position, substantially as described.

9. In a paring-machine, the combination, with the shaft on which the fruit is secured, a reciprocating carriage and means for reciprocating it, and a rack on the main frame, of a gear mounted on the carriage, having the extended tooth and the paring-blade mounted on said gear, substantially as described.

10. In a paring-machine, the combination, with the shaft carrying the fruit, the reciprocating carriage, means for reciprocating it, and a rack on the frame, of a gear on the carriage having the extended tooth and adapted to be rotated by the rack, the paring-blade pivoted upon the gear, and the spring for moving said blade toward the axis of the gear, substantially as described.

11. In a paring-machine, the combination, with the shaft carrying the fruit, of the reciprocating carriage and means for reciprocating it, the gear on the carriage or plate carrying the paring-blade and means for rotating it during the reciprocation of the carriage, the rod pivoted to the plate and a spring for moving it toward the center, and the paring-blade secured to said rod and permitted a limited rotary motion thereon, substantially as described.

12. The combination, with the rotary gear or plate, the rod pivoted thereto, and the spring for moving it toward the center thereof, of the casting carrying the paring-blade secured to and projecting in advance of said rod and permitting a limited rotary motion thereon, substantially as described.

13. The combination, with the rotary gear or plate, the rod pivoted thereto, and the spring for moving it toward the center thereof, of the casting carrying the paring-blade through which the rod passes loosely and projecting the knife in advance of said rod, and the loop-casting secured rigidly to the rod inclosing the end of the blade-casting and limiting its movements, substantially as described.

14. In a paring-machine, the combination, with the main frame and a rotary shaft for the fruit, of a reciprocating carriage carrying devices for operating upon the fruit during the reciprocation and having a rack thereon, a gear on the main frame co-operating with said rack to cause the movement of the carriage in one direction, and an arm secured to said gear co-operating with the carriage for causing its return movement, substantially as described.

15. In a paring-machine, the combination, with the main frame and the rotating shaft for the fruit, of the reciprocating and swinging carriage carrying devices for operating upon the fruit during the reciprocation and having a rack and a flange thereon, a gear on the frame co-operating with said rack to cause the movement of the carriage in one direction and having the arm carrying a projection adapted to move the carriage in the opposite direction by co-operating with a projection on the carriage and to swing the same toward the rotating shaft by co-operating with the flange, substantially as described.

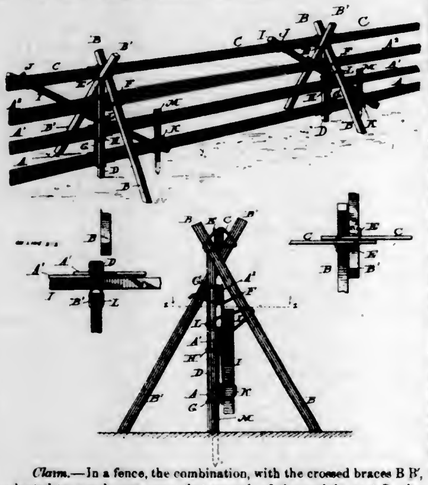
381,045. **MANUFACTURE OF PURPLE-BLACK AZO DYE-STUFF.** OTTO N. WITT, Westend, near Berlin, assignor to the Badische Anilin and Soda Fabrik, Mannheim, Germany. Filed Jan. 28, 1888. Serial No. 262,266. (Specimens.)

Claim.—The purple azo dye-stuff hereinbefore described, which forms in a dry state a black powder and dissolves readily in boiling water, forming a solution of a deep purple color, which remains liquid on cooling, if the dye-stuff be quite pure; but if a small quantity of an alkali be present said solution on cooling solidifies into a gelatinous mass of brownish-red color, which becomes liquid and purple on renewed heating.

381,046. **PURPLE AZO DYE-STUFF.** OTTO N. WITT, Westend, near Berlin, assignor to the Badische Anilin and Soda Fabrik, Mannheim, Germany. Filed Jan. 28, 1888. Serial No. 262,267. (Specimens.)

Claim.—The purple azo dye-stuff hereinbefore described, which forms in its dry state a jet-black powder and is easily soluble in cold water, forming a solution which is precipitated by the addition of a large excess of alkali, while small quantities of alkali may be added without any apparent change.

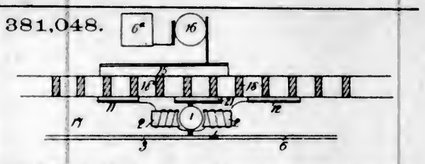
381,047. **FENCE.** FREMAN R. WOOD, Alpine, Mich. Filed July 20, 1887. Serial No. 244,536. (No model.)



Claim.—In a fence, the combination, with the crossed braces B B', adapted to merely rest upon the ground, of the upright post D, also adapted to rest upon the ground and having its upper end beveled to support one of the braces, riders C, resting in the upper crossed ends of the braces and secured to each other and to the braces by means of a wire, E, rails A A' A², secured to the upright post D by means of wire G and loops H, diagonal binder I, secured at its upper end to the rider and crossing the rails between the braces, a stake, M, driven into the ground, and a wire, K, passing about the stake, the lower rail, and the binder, all substantially as shown.

381,048. **CONTACT-MAKING DEVICE FOR ELECTRIC RAILWAYS.** FRANK WYNNE, Westminster, County of Middlesex, England. Filed June 6, 1887. Serial No. 240,490. (No model.) Patented in England July 15, 1886, No. 9,315; in Germany Jan. 27, 1887, No. 41,336; in France Mar. 9, 1887, No. 182,077; in Belgium Sept. 2, 1887, No. 78,757, and in New South Wales Oct. 4, 1887, No. 335.

Claim.—1. The combination, with a covered channel, a main conductor of electricity therein, contacts fixed in said channel and insulated from said conductor, said contacts having parts exposed in said channel and in the road on which a vehicle is to be propelled, an electric motor on said vehicle, a car-motor contact adapted to make



contact with said fixed contacts, and a return-conductor, of a reversible electrically-propelled carrier or contact-maker adapted to travel in said channel, and having a single electric motor provided with a rubbing or rolling contact in electrical connection with said main conductor, and also rubbing or rolling contacts arranged to bear successively against said exposed fixed contacts and place these contacts in electrical connection with said electric conductor, substantially as herein described, for the purposes set forth.

2. The combination, with a covered channel, a main conductor of electricity therein, contacts fixed in said channel and insulated from said conductor, said contacts having parts exposed in said channel and in the road on which a vehicle is to be propelled, an electric motor on said vehicle, a car-motor contact adapted to make contact with said fixed contacts, and a return-conductor, of a reversible electrically-propelled carrier or contact-maker having an electric motor with double windings, through which currents of electricity may pass in opposite directions, a rubbing or rolling contact in electrical connection with said windings and adapted to bear on said main conductor, and separate rubbing or rolling contacts electrically connected to said windings and adapted to travel successively against the parts of said fixed contacts exposed in the channel, substantially as herein described, for the purposes set forth.

3. The combination, with a covered channel, a main conductor of electricity therein, contacts fixed in said channel and insulated from said conductor, said contacts having parts exposed in said channel and in the road on which a vehicle is to be propelled, an electric motor on said vehicle, a car-motor contact adapted to make contact with said fixed contacts, and a return-conductor, of a reversible electrically-propelled carrier or contact-maker having an electric motor with double windings in opposite directions, a rubbing or rolling contact in electrical connection with said windings and adapted to bear on said main conductor, and separate rubbing or rolling contacts electrically connected to said windings and adapted to travel against the parts of said fixed contacts exposed in the channel, substantially as herein described, for the purposes set forth.

4. The combination, with a covered channel, a main conductor of electricity therein, contacts fixed in said channel and insulated from said conductor, said contacts having parts exposed in said channel and in the road on which a vehicle is to be propelled, an electric motor on said vehicle, a car-motor contact, and a return-conductor, of a reversible electrically-propelled carrier or contact-maker having an armature, a field magnet or magnets with double windings in opposite directions, a rubbing or rolling contact in electrical connection with said windings and adapted to bear on said main conductor, and separate rubbing or rolling contacts, also electrically connected to said windings and adapted to travel against the parts of said fixed contacts exposed in the channel, substantially as herein described, for the purposes set forth.

5. The combination, with a covered channel, a main conductor of electricity therein, contacts fixed in said channel and insulated from said conductor, said contacts having parts exposed in said channel and in the road on which a vehicle is to be propelled, an electric motor on said vehicle, a car-motor contact, and a return-conductor, of a reversible electrically-propelled carrier or contact-maker having an electric motor wound with double windings and provided with a field-magnet, the iron of which is arranged to surround the motor-armature longitudinally and form a closed magnetic circuit, a rubbing or rolling contact in electrical connection with said windings and adapted to bear on said main conductor, and separate rubbing or rolling contacts electrically connected to said windings and adapted to travel against the parts of the contacts exposed in the channel, substantially as herein described, for the purposes set forth.

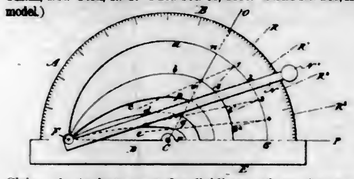
6. The combination, in a reversible electrically-propelled carrier or contact-maker designed to travel in a pipe or channel, of an electric motor with double windings in opposite directions, the motor-armature having its axis arranged parallel to that of the channel in which the carrier travels and surrounded longitudinally by iron, and rubbing or rolling contacts in connection with the double windings in opposite directions, substantially as herein described, for the purpose specified.

7. The combination, in a reversible electrically-propelled carrier or contact-maker, of an electric motor having double windings in opposite directions, separate rubbing or rolling contacts connected with the said windings in opposite directions and arranged to travel against contacts exposed in a channel in which the carrier or contact-maker

travels, and a rubbing or rolling contact insulated from the carrier or contact-maker, and also arranged to travel against said exposed contacts and to place them in electrical connection with a return-conductor in said channel, substantially as herein described, for the purpose specified.

8. The combination, in a reversible electrically-propelled carrier or contact-maker, of an armature, 1, a field-magnet, 2, with double windings in opposite directions, sliding or rolling contacts 11 and 12, in connection with said double windings, carrying-wheels 5, and gearing 9, all substantially as herein described, for the purposes specified.

381,049. **INSTRUMENT FOR DIVIDING ANGLES.** ADOLPH SAXE YÄNEL, New York, N. Y. Filed Oct. 16, 1886. Serial No. 216,419. (No model.)

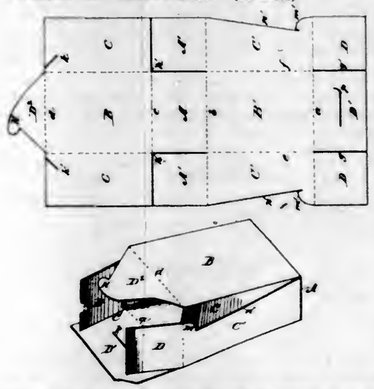


Claim.—1. An instrument for dividing angles and sectors, consisting of a frame-plate having a number of bands, the edges of which are polysecting curves, substantially as shown and described.

2. An instrument for dividing angles and sectors, consisting of a frame having the edge D forming a base and provided with a number of bands, the edges of which are polysecting curves, substantially as shown and described.

3. In an instrument for dividing angles and sectors, a frame having the edge D forming a base and provided with a number of bands, the edges of which are polysecting curves, in combination with a straight-edge pivoted on the said frame, substantially as shown and described.

381,050. **PAPER BOX.** ALBERT H. ZUGALLA, Brooklyn, N. Y. Filed May 24, 1887. Serial No. 239,231. (No model.)



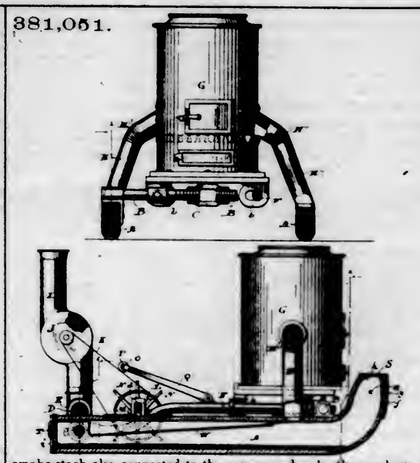
Claim.—1. A box-blank provided with the spaced transverse scores *a*, *b*, *c*, and *d*, the longitudinal scores *e* and *f*, the straight cuts *g g'*, the angular cuts *k k'*, the side recesses, *n' n'*, whereby segmental lips *m' m'* are produced, the inclined cuts *k k'*, adapted to receive said lips, and a flap-section centrally at one end of the said blank adapted to be folded and fastened, substantially as herein set forth.

2. A substantially rectangular box-blank cut and scored as herein set forth having an integral flap centrally at one end and provided with recessed edges *n' n'*, segmental aligning lips *m' m'*, and oppositely-inclined cuts *k k'*, adapted to receive said lips, substantially as shown and described, whereby the box is securely fastened without the use of adhesive material, as set forth.

381,051. **DEVICE FOR MAKING ICE ROADS.** DANIEL J. ARPIN, Grand Rapids, Wis. Filed Feb. 3, 1888. Serial No. 262,885. (No model.)

Claim.—1. A device for making ice roads, that comprises a sled having a hollow runners interiorly provided with deflecting plates, and means, substantially as described, for heating said runners, whereby snow may be melted by contact therewith, as set forth.

2. A device for making ice roads, that comprises a sled having hollow runners interiorly provided with deflecting plates, a heater arranged on the sled, pipes connecting the runners and heater, and a



smoke-stack also connected to the runners, whereby the products of combustion are drawn through said runners to heat the same, substantially as set forth.

3. A device for making ice roads, that comprises a sled having hollow runners, a heater arranged on the sled, pipes connecting the runners and heater, a smoke-stack also connected to the runners, and a blower for increasing the draft, substantially as set forth.

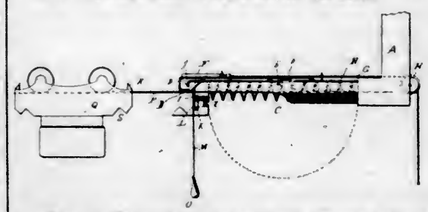
4. A device for making ice roads, that comprises a sled having hollow runners, a heater arranged on the sled, pipes connecting the runners and heater, a smoke-stack also connected to the runners, a blower arranged in the smoke-stack, and a shaft having a belt-connection with the blower and provided with spokes that come in contact with the surface over which the sled passes to impart motion to said shaft, substantially as set forth.

5. A device for making ice roads, that comprises a sled having hollow runners, a heater arranged on the sled, pipes connecting the runners and heater, a smoke-stack also connected to the runners, a blower arranged in the smoke-stack, a shaft arranged to have vertical play in its bearings and belt-geared to the blower, spokes arranged on the shaft to come into contact with the surface over which the sled passes to impart motion to said shaft, and a suitably-arranged belt-tightener, substantially as set forth.

6. A device for making ice roads, that comprises a sled having hollow runners open at their rear ends and provided at their front ends with draft-openings, a smoke-stack connected to the runners, and cut-off plates for the rear ends and draft-openings of said runners, substantially as set forth.

7. A device for making ice roads, that comprises a sled having hollow runners open at their rear ends and each runner provided with a top opening, front-draft openings, and cut-off plate for its open rear end, substantially as set forth.

381,052. **CASH-CARRIER APPARATUS.** JOHN F. BURDETT, Lowell, Mass. Filed July 11, 1887. Serial No. 243,980. (No model.)



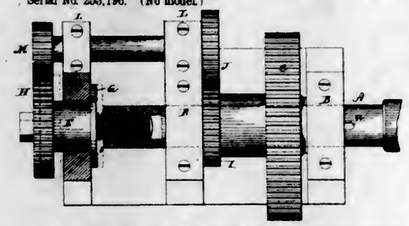
Claim.—1. The combination, in a cash-carrier apparatus, of a carrier, a track for the same, a spring for impelling the carrier, a stationary tube inclosing said spring, and a catch adapted to move on said tube for holding the carrier and constructed to move in one direction independent of the spring, substantially as described.

2. The combination, in a cash-carrier apparatus, of a carrier, a track for the same, a spiral spring for impelling the carrier, a catch to hold said carrier, and a stationary tube forming a guide for spring and catch, and a supplemental catch carried by said spring, substantially as described.

3. The combination, in a cash-carrier apparatus, of a carrier, a track for the same, a spring for impelling the carrier, a catch to hold said carrier, and a tube forming a guide for the spring and carrier, having the inclined slots *b* and latches E, substantially as described.

4. The combination, in a cash-carrier apparatus, of a carrier, a track therefor, a spring for impelling the carrier, a catch for holding said carrier, a cord for compressing the spring, and another cord and weight independent of the propelling-spring for drawing forward the catch passed through the eyes N on the forward end of the tube, substantially as described.

381,053. **MACHINE FOR TAPPING STEAM, GAS, OR WATER FITTINGS.** ALBERT M. BURRITT, Waterbury, Conn. Filed Oct. 24, 1887. Serial No. 253,196. (No model.)



Claim.—1. In a tapping-machine substantially such as described, the combination of the revolving spindle, which carries the tap, a leading-screw arranged to revolve concentric with said spindle, and adapted to engage the said spindle longitudinally, a gear on said spindle and revolving therewith, a second gear on said screw, through which said screw receives its revolving movement, and gears intermediate between the said gear on the screw and the said gear on the spindle, whereby the revolution of the spindle may impart differential revolution to said screw, a hub in connection with said screw arranged in a bearing of less length than the length of the hub, the said hub provided with a collar on its opposite ends to limit the extent of such longitudinal movement, substantially as described.

2. The combination of the revolving tap-spindle A, made tubular at its rear end and internally screw-threaded, the leading-screw D, concentric with said spindle and screw-threaded corresponding to the interior of the rear end of the spindle, so as to work therein, the said spindle attached to or made a part of the hub E, the said hub E arranged in a bearing concentric with the spindle, but free for a limited amount of longitudinal movement, a gear, I, on said spindle and revolving therewith, a second gear, H, on said screw, through which said screw receives its revolving movement, and gears intermediate between the said gear on the spindle and the said gear on the screw, whereby revolution may be communicated to said leading-screw from said spindle, substantially as described.

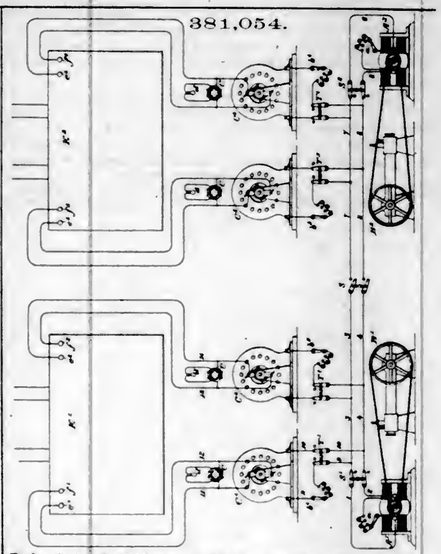
381,054. **ALTERNATE-CURRENT SYSTEM OF ELECTRICAL DISTRIBUTION.** HENRY M. BYLLESBY, Pittsburg, and OLIVER B. SHALLENBERGER, Rochester, assignors to the Westinghouse Electric Company, Pittsburg, Pa. Filed Oct. 29, 1887. Serial No. 253,710. (No model.)

Claim.—1. The combination of two driving-engines, two electric generators respectively driven thereby, two alternate-current generators having their respective field-magnet coils normally supplied with currents from the respective generators, and switches for placing field-magnet coils of either alternate-current machine in connection with the first-named generators either singly or in multiple arc, substantially as described.

2. The combination, with two independently-driven electric generators, of two or more alternate-current generators having their field-magnet coils normally supplied from said generators, respectively, switches for placing the field-magnet coils of the alternate-current generators either independently or jointly in connection with either or both of the first-named generators, and means for regulating the strength of the current from the latter generators, substantially as described.

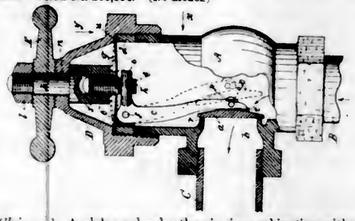
3. In an alternate-current system of distribution, the combination of four or more alternate-current generators, two independent sources of current supplying the field-magnet coils of the said generators interchangeably, switches for connecting said generators with said sources independently or in parallel at will, systems of translating devices, and switches for placing said systems of devices in circuit with said generators independently of each other, substantially as described.

4. The combination of the sources of electricity A′ and A², the conductors 3 4 and 7 8, and the switch S, for uniting the same, respectively, the switches S′ and S², for connecting the last-named conductors with the respective poles of the respective sources of electricity, the alternate-current machines C′ C² C³ C⁴, and the switches T′ T² T³ T⁴, for placing the field-magnet coils of the respective machines in circuit with said conductors 3 4 and 7 8, substantially as described.



5. The combination of two alternate-current electric generators, independent exciters for the same having their circuit-connections normally through the field-magnet coils of the same, each exciter having a generating capacity sufficient to supply the field-magnets of both alternate-current generators, and switches for connecting the circuit of either exciter through the field-magnet coils of both alternate-current generators.

381,055. **STOP-VALVE.** JOHN A. CREELMAN, Rochester, N. Y., assignor of one-half to George H. Graham, same place. Filed Feb. 8, 1888. Serial No. 263,338. (No model.)

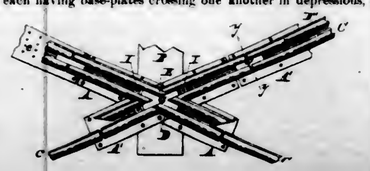


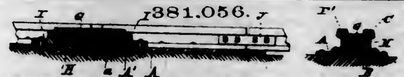
Claim.—1. A globe and valve therein, in combination with a cap for the globe, a stem in the cap, a handle secured to the stem, a diaphragm, a stud rigid with the diaphragm operated by the handle, and a connecting bar or lever within the globe for said stud and valve, substantially as shown and described.

2. A globe and valve, in combination with a cap for the globe, a stem held by the cap, a handle secured to the stem, a diaphragm, a stud rigid with the latter operated by the handle, and a connecting-bar for said stud and valve, said bar being formed with a stop for the valve, substantially as and for the purpose set forth.

381,056. **RAILWAY-CROSSING.** JAMES CUMMING, Buffalo, N. Y. Filed Jan. 24, 1888. Serial No. 261,719. (No model.)

Claim.—1. In railway-crossings, the series of removable frog-sections, each having base-plates crossing one another in depressions, as





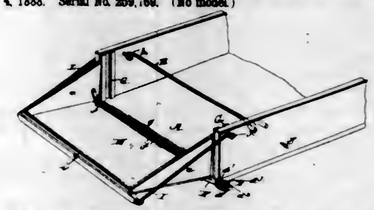
described, secured together, with the rail of one section overlapping the joints of the base-plates of the adjoining sections, substantially as and for the object specified.

2. In railway-crossings, a series of frogs consisting each of a base-plate, A, having centrally a depression, *a*, a base-plate, A′, intersecting said base-plate at said depression, the running and guard rails riveted to said base-plates, the bridge-pieces located at the intersection of said rails, the cushion underneath, and the stops for said bridge-pieces, constructed and combined substantially in the manner as and for the object stated.

3. In combination with the intersecting rails of a crossing or switch frog, a bridge-piece, substantially as described, having the rubber cushion and the end stops, as and for the purpose indicated.

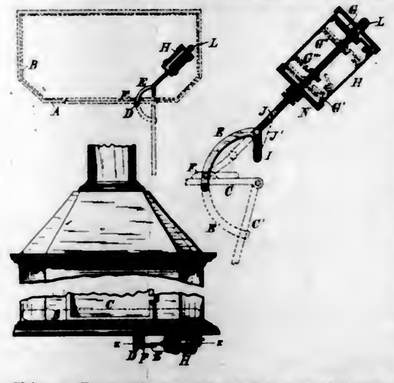
4. In a railway-crossing, a series of removable frogs, each having the rails of one overlapping the adjoining edge of the opposite base-plate, said rails being riveted to their respective base-plates and secured to the rails of the adjoining frogs by fish-plates and bolts, as described, whereby each series of frogs may be readily removed without disturbing the remaining frogs, as and for the purpose specified.

381,057. **END-GATE.** JOHN CUNNINGHAM, Manito, Ill. Filed Jan. 4, 1888. Serial No. 259,769. (No model.)



Claim.—The combination of the wagon-body having the upper edge of its rear end made convex, the cross-bar *d*, secured to the bottom of the body at its rear end and projecting beyond the sides thereof, the bearing-brackets formed from a single metallic strap having its middle portion doubled on itself to form the upward and inward extending loops *d′*, and having their flat ends brought together and rested on the ends of the cross-bar *d*, the bolts inserted vertically through said ends *d²* and the cross-bar, the end-gate having its upper inner edge made convex, the cross-bar F, secured to the end-gate and having its ends playing in the loops *d′*, and means for holding the end-gate in its raised and lowered positions, substantially as specified.

381,058. **AIR-CUSHION FOR LETTER-BOXES.** JAMES G. CUTLER, Rochester, N. Y. Filed July 6, 1887. Serial No. 243,758. (No model.)



Claim.—1. The combination, with a mail-box provided with an interior air-cushion, of means, substantially as described, for inflating the cushion, operated by the opening or closing of the door of the box, as and for the purposes set forth.

2. The combination, with a mail-box provided with an interior air-cushion and a movable door, of an air-forcing device connected to the air-cushion and arranged to be operated by the movement of the door, substantially as described.

3. The combination, with a mail-box provided with an interior air-cushion and a movable door, of an air-cylinder, H, communicating with the air-cushion and provided with piston G, and suitable connecting mechanism, whereby the movement of the door is transmitted to the piston, substantially as described.

4. The combination, with the descending tube of a mail-chute, of the mail-box A, provided with an interior air-cushion and a movable door, and a suitable air-forcing device adapted to inflate the air-cushion and arranged to be operated by the door of the box, substantially as described.

5. The combination, with the mail-box A, provided with hinged door B and air-cushion C, of air-pump H, connecting pipe and valve L, and suitable connecting mechanism, whereby the piston of the pump is operated from the door, substantially as described.

6. The combination, with the mail-box A, provided with air-cushion B and movable door C, of a suitable air-forcing apparatus connected to the air-cushion, and adjustable connecting mechanism between the door and the said apparatus, whereby the volume of air delivered to the cushion may be varied, substantially as described.

7. The combination, with the mail-box A, provided with air-cushion B and door C, of the air-cylinder H, pipe L, piston G, connection J, and segment E, substantially as described.

8. The combination, with the mail-box A, air-cushion B, and door C, of the segment E, having radial extension I, and connection J, adjustable thereon and arranged to communicate motion from the door to an air-forcing apparatus adapted to inflate the air-cushion, substantially as described.

9. The combination, with the mail-box A, provided with interior air-cushion, B, and movable door C, of a suitable air-forcing apparatus connected with the air-cushion, arranged to be operated by the movement of the door, and located beneath the mail-box, substantially as described.

381,059. **METALLIC RAILWAY-TIE.** WALTER H. DONALDSON, San Francisco, Cal., assignor of one-half to Robert R. Reid, same place. Filed July 14, 1887. Serial No. 244,344. (No model.)



Claim.—1. In combination with a railway-tie and the rail thereon, clamps or dogs pivoted in the top of the tie, and having their upper ends hooked and engaging the base-flanges of the rails and their lower ends passing beneath the top of the tie, and wedges driven transversely through the tie and bearing on the lower ends of the dogs, whereby they are deflected and their upper ends made to clamp the rails, substantially as described.

2. In combination with a railway-tie and the rails thereon, clamps or dogs pivoted in slots in the tie, and having their upper ends hooked and engaging the base-flanges of the rails on their inner and outer sides and their lower ends passing in opposite directions and crossing under the top of the tie, and transverse wedges through the tie and acting on the lower ends of the dogs to cause their upper ends to clamp the rails, substantially as described.

3. A metallic railway tie or sleeper having a top plate with longitudinal slots and downturned side flanges with transverse slots, in combination with clamps or dogs pivoted in the slots of the top plate, and having their upper ends hooked and engaging the flanges of the rails and their lower ends crossing under the top plate, and wedges driven through the slots of the side flanges and bearing on the lower ends of the dogs, whereby their upper ends are clamped on the flanges of the rails, substantially as herein described.

4. A metallic railway tie or sleeper having a top plate with longitudinal slots, downturned side flanges with transverse slots, and a central longitudinal web with transverse slots, in combination with clamps or dogs pivoted in the slots of the top plate, and having their upper ends hooked and engaging the flanges of the rails and their lower ends crossing under the top plate, and wedges driven through the slots of the side flanges and central web and bearing on the lower ends of the dogs, whereby their upper ends are clamped on the flanges of the rails, substantially as described.

381,060. **BED-SPRING.** COLUMBUS W. DOSWELL, Fulton, Mo. Filed Aug. 4, 1887. Serial No. 246,129. (No model.)



Claim.—1. The herein shown and described spring made of a single wire, having a coil-spring formed on one end, and having its other

end bent to form a series of return folds wholly to one side of and about in the plane of the upper convolute of the spring, the interlocking-eye a', to engage with the adjacent spring, the supporting-arm a^3, extending beneath and at right angles to the return folds and located midway of their ends, and the downward extension a^4 for engaging with the convolutes of the spring, substantially as and for the purpose specified.

2. The herein shown and described bed-bottom, composed of a series of slats, and a series of single springs arranged in parallel lines and having their lower ends clamped to the slats and their upper ends extended laterally in the same direction and bent to form a series of return folds between each two springs and at right angles to the line of springs, and having said extended portion of one spring interlocked with the next adjacent spring and brought back beneath its folds to support them, and having the inner end of said extension bent down and engaged with the convolute of the spring, of which it is an integral part, substantially as described.

381,061. BUSK FOR CORSETS. GERHARD DÜNNEBACKE, Unna, Westphalia, assignor, by mesne assignments, to Robert Hinrichsen, Hamburg, Germany. Filed Sept. 8, 1885. Serial No. 176,471. (No model.) Patented in Belgium Feb. 2, 1885, No. 67,723; in France Feb. 10, 1885, No. 166,963; in England May 5, 1885, No. 5,535, and in Austria-Hungary July 19, 1885, No. 13,294 and No. 37,317.

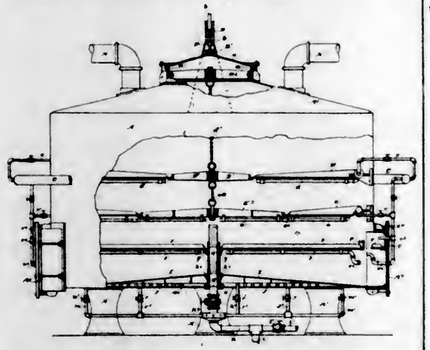


Claim.—1. In a corset-busk, two superposed parts or blades united by an elastic bending joint comprising one or more helical springs, each spring attached at one end to the upper part or blade and at its other end to the lower part or blade, substantially as set forth.

2. The combination, with the upper part of a corset-busk and with the lower part of said busk, of one or more helical springs interposed between the said upper and lower parts of the busk, the upper ends of the helical springs being permanently attached to the lower end of the upper part of said busk, and the lower ends of said helical springs being permanently attached to the upper end of the lower part of the busk.

3. The combination, with the upper part of a corset-busk and with the lower part of said busk, of one or more helical springs slotted at their ends and secured to the upper and lower parts of the busk, substantially in the manner described.

381,062. PERCOLATOR. JOHN W. EVANS, Cleveland, Ohio. Filed July 12, 1886. Serial No. 207,860. (No model.)



Claim.—1. In a percolator for extracting oil, the combination, with so-called "breakers" hinged to the side of the percolator, and a depressible center piece for supporting the inner end of the breakers, said breakers having perforated pipes attached underneath, of corresponding perforated pipes connected with the center piece, the latter pipes being made movable to couple or uncouple with the pipes of the breakers, substantially as set forth.

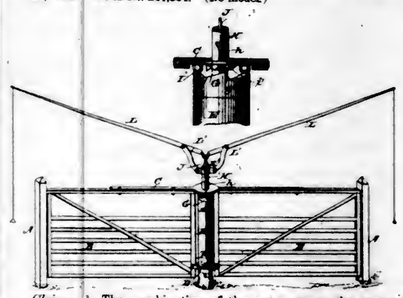
2. In a percolator for extracting oil, the combination, with breakers, perforated pipes, and center piece, substantially as indicated, of supporting bifurcated brackets having hollow seats forming half-boxes, and corresponding hollow trunnions on the breakers for engaging the said seats, forming steam-connections between the outside pipes and the said perforated pipes, and arranged substantially as indicated, whereby the breakers are detachable from the brackets.

3. In a percolator, the combination, with cross-bars, and perforated pipes connected with the cross-bars, of ball-and-socket elbows connecting the perforated pipes with the supply-pipes, substantially as described.

4. In a percolator, the combination, with perforated plates forming a conical false bottom, of a heating-coil located between the perforate and imperforate bottoms, substantially as set forth.

5. In a percolator, the combination, with cross-bars and the perforated pipes, substantially as indicated, of a perforated stand-pipe, the same having shoulders for supporting the cross-bars, and a block for supporting the stand-pipe and the inner ends of the plates of the false bottom, said block having channels on the under side thereof, substantially as set forth.

381,063. GATE. GEORGE FORD, New Harmony, Ind. Filed Aug 21, 1886. Serial No. 211,551. (No model.)



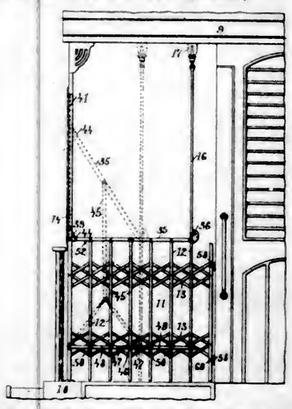
Claim.—1. The combination of the gate proper, the gate-post, the tube H, having slots h, the inclines G, the bearings I', and the hanger-rod and cross-shaft, substantially as set forth.

2. The combination of the gate, the post, the inclines G, the lugs i', the tube H, having slots h, the hanger-rod, the bearings I', and the cross-shaft, substantially as set forth.

3. The post E, having inclines G, and tube H, provided with slots h, combined with the gate-sections, the connecting-bar fitted over the tube H, and provided with lugs i' and bearings I', the hanger-rod, and the cross-shaft, substantially as set forth.

4. The combination of the central post, the inclines G, the bearings I', for engaging such inclines, the tube H, having inclined slots h, the gate-sections, the loop-hinge fitted over the post and connected with the gate-sections, the lugs i', the hanger-rod, the cross-shaft, and the levers, substantially as set forth.

381,064. FOLDING AND SWINGING GATE. JOHN R. GOODWIN, Providence, R. I., assignor to William P. Goodwin, same place. Filed Oct. 12, 1887. Serial No. 252,100. (No model.)



Claim.—1. The combination, with a folding gate and the hinge-bar thereof, of the operating-rod hinged to the gate and connected movably to the hinge-bar, whereby the gate may be extended and folded by the movements of the operating-rod, as described.

2. The combination, as hereinbefore set forth, with a folding gate provided with the uprights, of an operating-rod hinged to one of the uprights and provided with a locking device engaging one of the other uprights, whereby the gate may be securely locked against folding, substantially as and for the purpose herein described.

3. The combination, as hereinbefore set forth, with a folding gate having the uprights, of an operating-rod recessed to receive the upper ends of said uprights and hinged by one end to the gate, whereby the operating-rod may act as a brace for the uprights when the gate is extended, substantially as and for the purpose herein described.

4. The combination, as hereinbefore set forth, with a folding gate and an operating-rod hinged thereto and acting to extend and fold the gate by its movements, of the brace-links pivoted to the gate near the base thereof by their corresponding ends, and the pivoted brace-bar intermediate the said operating-rod and the other ends of the said links, substantially as and for the purpose herein described.

5. The combination, as hereinbefore set forth, with a folding gate having the uprights provided with the hooked lugs, of the operating-rod hinged to the gate, the brace-links pivoted by corresponding ends to the gate, near the base thereof, and adapted to engage with the said lugs when the gate is extended, the brace-bar pivoted to the other ends of the brace-links and pivoted to the operating-rod, substantially as and for the purpose herein described.

6. The combination, as hereinbefore set forth, with the hinge-bar and the folding gate having the uprights, of the operating-rod hinged to the gate and having a movable or sliding connection with the hinge-bar, the brace-links pivoted by their corresponding ends to the uprights of the gate, and the brace-bar pivoted to the operating-rod and to the other ends of the brace-links, substantially as and for the purpose herein described.

7. The combination, as hereinbefore set forth, with the slotted hinge-bar and the folding gate having the uprights, of the traveler provided with rollers and mounted on the hinge-bar and taking through the slot thereof, the operating-rod hinged by one end to the gate and hinged by the other end to the traveler on the hinge-bar, and provided with a handle, substantially as and for the purpose herein described.

8. The combination, as hereinbefore set forth, with the folding gate having the uprights, one of which is notched, of the operating-rod recessed to receive the heads of the uprights and hinged to the gate, and provided with the spring-acted bolt, which engages the notch of the said upright, substantially as and for the purpose herein described.

9. The combination, as hereinbefore set forth, with the folding gate, of the one or more stationary double snap-latches for engaging and holding the outer end of the gate when the same is extended, substantially as and for the purpose herein described.

10. The combination, as hereinbefore set forth, with the folding gate 11, of the operating-rod 35, hinged by one end to the gate and acting to fold and extend the gate, as described.

11. The combination, as hereinbefore set forth, with the hinge-bar 14 and the folding gate 11, of the operating-rod 35, hinged by one end to the gate and movably connected by the other end to the hinge-bar 14, substantially as and for the purpose herein described.

12. The combination, as hereinbefore set forth, with the hinge-bar 14, formed with slot 41, and the folding gate 11, attached to the bar and the connecting-rod 16, of the operating-rod 35, pivoted to the rod 16, the slide or traveler 39, mounted on the hinge-bar 14, and the rod 35, hinged thereto, the brace-bar 45, pivoted to the rod 35, and the slotted brace-rods 48 and 49, hinged to the hinge-bar 14 and the connecting-rod 16, respectively, and hinged to the brace-bar 45, substantially as described.

13. The combination, as hereinbefore set forth, with the folding gate 11, having the uprights 12, provided with the hooked lugs 50, of the operating-rod 35, hinged to the gate, and the slotted brace-links 48 and 49, the brace-bar 45, intermediate the rod 35 and the said links, substantially as described.

14. The combination, as hereinbefore set forth, with the hinge-bar 14, formed with slot 41, and the gate 11, having the connecting-rod 16, of the slide or traveler 39, working on the hinge-bar, the operating-rod 35, hinged to rod 16 and pivoted to the slide 39, and provided with the handle 44, and formed with the recesses 51, the brace-links 48 and 49, and the brace-bar 45, intermediate the links and the brace-rod, as described.

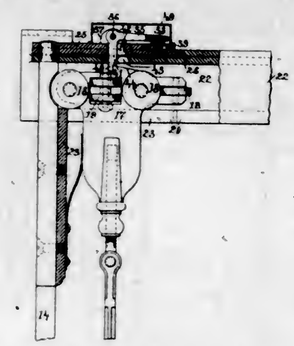
15. The combination, with the gate 11, having the uprights 12, one of which is notched at 57, of the operating-rod 35, formed with the socket 53 and opening 56, and the spring-acted bolt 52, for engaging the notch 57 of the upright, as described.

16. The combination, as hereinbefore set forth, with the folding gate 11, of the two-way snap-latches 58, for preventing lateral play of the gate when extended as described.

381,065. FOLDING AND SWINGING GATE. JOHN R. GOODWIN, Providence, R. I., assignor to William P. Goodwin, same place. Filed Oct. 12, 1887. Serial No. 252,101. (No model.)

Claim.—1. In a gate of the class described, the combination, as hereinbefore set forth, with a rolling hanger for supporting the gate, and a track for the hanger provided with a swinging section or bracket forming part of the track, and the fixed framing, of a trip-locking device engaged and actuated by the moving hanger and appropriate to lock the swinging section or bracket and the fixed framing together when the gate is extended, as and for the purpose herein described.

381,065.



2. In a gate of the class described, the combination, as hereinbefore set forth, with a traveling hanger for supporting the gate, and a track for the hanger provided with a swinging section or bracket comprising part of said track, and the fixed framing, of a trip-locking device mounted on the swinging section or bracket and engaged and operated by the moving hanger and appropriate to lock the swinging section to the fixed portion or framing when the gate is in closed or extended position, substantially as and for the purpose described.

3. In a gate of the class described, the combination, as hereinbefore set forth, with the rolling hanger for suspending the gate, and the track for the hanger provided with a swinging section or bracket composing part of the said track, and the fixed framing, of a trip-locking device comprising a spring-acted lever-arm mounted on the swinging section and having a trip, and engaged by the traveling hanger, and a latch appropriate to lock the swinging section to the fixed framing, as and for the purpose herein described.

4. In a gate of the class described, the combination, as hereinbefore set forth, with a traveling hanger for suspending the gate, and the track for the hanger provided with the swinging section comprising a part of said track, the said section or bracket provided with a slotted support-flange, and the framing provided with a slotted extension or shelf engaged by the said flange, the trip-locking device mounted on the said support-flange and extending down through the slots of the flange and the extension or shelf, and appropriate to be tripped by the rolling hanger and to lock with the fixed framing, substantially as and for the purpose herein described.

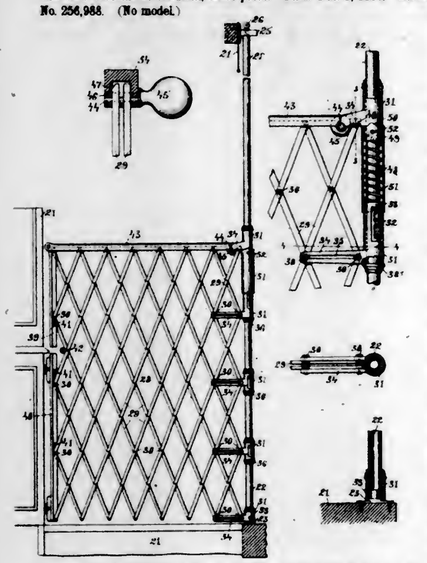
5. In a gate of the class described, the combination, as hereinbefore set forth, with the traveling hanger and the track therefor provided with a swinging section or bracket comprising a part of said track, the fixed framing provided with the slotted shelf or extension, and the slotted support-flange upon the said swinging section and engaging the said shelf or extension, of the trip-locking device mounted on the support-flange and engaged and actuated by the hanger and appropriate to lock with the shelf or extension, and the casing or housing for covering the said locking device, substantially as and for the purpose herein described.

6. The combination, with the framing 22, provided with the slotted extension 26, the swinging section 23, provided with the slotted support-flange 25, the rolling hanger 17 for supporting the gate, and the track 20 therefor, of a trip-locking device for locking the swinging section and the fixed framing together, the said device automatically operated by the rolling hanger, substantially as and for the purpose herein described.

7. The combination, with the framing 22, provided with the slotted extension 26, the hinge-bar 14, and the swinging section or bracket 23, provided with the slotted support-flange 25, the rolling hanger 17 for supporting the gate, and the track 20 for the hanger, of the spring-acted lever-arm 35, provided with the trip 40, engaged by said hanger and having the latch 41 for locking the said swinging section to the framing, substantially as and for the purpose herein described.

8. The combination, with the swinging section and the trip-locking device mounted thereon, substantially as described, of the casing 49 for housing the said device, substantially as described.

381,066. FOLDING AND SWINGING GATE. JOHN R. GOODWIN and GEORGE GOODWIN, Providence, R. I., assignors to said George Goodwin and William P. Goodwin, same place. Filed Dec. 5, 1887. Serial No. 256,988. (No model.)



Claim.—1. A lazy-tong gate of the class described, having the hinging side thereof held at the basal point thereof against vertical movement, whereby the gate may be trussed and stayed when extended, and whereby the basal line of the gate may be projected and folded on the horizontal, as described.

2. The combination, as hereinbefore set forth, with the hinge-bar, of a gate composed of pivoted rods of the lazy-tong order, such gate having the hinging side thereof held stationary against vertical movement at the basal point thereof, and pivoted at one or more points of such side to sliding members mounted loosely on the hinge-bar, as described.

3. The combination, as hereinbefore set forth, with the hinge-bar and the lazy-tong gate, of a set of sliding hinge-sleeves mounted on the hinge-bar and provided with lateral guide-braces or lugs to which the several points of the gate are pivoted, substantially as and for the purpose herein described.

4. The combination, as hereinbefore set forth, with the hinge-bar and the lazy-tong gate, of the set of sliding hinge-sleeves mounted on the hinge-bar and provided with the guide-braces to which the gate is pivoted, the lowest sleeve held against vertical movement and the other sleeves provided with stops to limit the downward movement thereof, substantially as described.

5. The combination, as hereinbefore set forth, with the hinge-bar and the lazy-tong gate, of the set of sliding hinge-sleeves mounted on the hinge-bar and provided with guide braces or lugs to which the gate is hinged by its respective points, such hinge-sleeves capable of sliding vertically and of turning in the horizontal, and provided with guiding devices mounted on the hinge-bar, substantially as and for the purpose herein described.

6. The combination, as hereinbefore set forth, with the hinge-bar and the lazy-tong gate, of the set of sliding and turning hinge-sleeves mounted on the hinge-bar and provided with slotted guide braces or lugs to which the several points of the gate are connected by hinge-pins sliding in the slots of the guide-braces, substantially as described.

7. The combination, as hereinbefore set forth, with the hinge-bar and the sliding hinge-sleeves mounted thereon and the lazy-tong gate having its rods pivoted to the guide-braces on such sleeves, of the vertical brace-bar located at the locking side of the gate and to which the rods of the gate are pivoted, the upper hinge-sleeve sliding on the hinge-bar, and the operating-lever hinged intermediate the said upper hinge-sleeve and the vertical brace-bar, whereby the elevation and depression of the end of the operating-lever hinged to said sleeve may accordingly fold and project the gate, substantially as and for the purpose herein described.

8. The combination, as hereinbefore set forth, with the hinge-bar and the sliding hinge-sleeves sliding thereon, the gate composed of pivoted rods of the lazy-tong order, of the upper sleeve sliding on the hinge-bar and having a projection or lug formed with a latch-socket, the upper end of one of the pivoted rods of the gate provided with a latch which is adapted to lock in the latch-socket when the gate is extended, substantially as described.

9. The combination, as hereinbefore set forth, with the hinge-bar and the lazy-tong gate, of the sliding hinge-sleeves mounted on the hinge-bar and provided with the lateral guide-braces, the L-shaped guide-slots formed in the sleeves, and the fixed guide-studs on the hinge-bar taking through said slots, and the stops fixed on the hinge-bar to limit the downward movement of the sleeves, the rods of the said gate pivoted to the guide-braces on the sleeves, substantially as and for the purpose herein described.

10. The combination, as hereinbefore set forth, with the hinge-bar, the sliding hinge-sleeves mounted thereon and provided with the guide-braces, and the lazy-tong gate pivoted to the said guide-braces, of the coil-spring encircling the hinge-bar and having one end thereof secured to one of the said hinge-sleeves, a fixed collar on the hinge-bar, and the other end of said spring secured thereto, so as to hold the spring while the sleeve moves, substantially as described.

11. The combination, as hereinbefore set forth, with the hinge-bar, the sliding hinge-sleeves mounted thereon and provided with the guide-braces, and the lazy-tong gate pivoted to the guide-braces, of the coil-spring encircling the hinge-bar and having one end thereof attached to one of the sleeves, a collar fixed to the hinge-bar and the other end of the said spring secured thereto, and the casing fixed to the collar and receiving the end of the sleeve to which the spring is attached, substantially as and for the purpose herein described.

12. The combination, as hereinbefore set forth, with the hinge-bar for the gate secured at its foot, of the bracket for receiving the head of the hinge-bar, which is adjustably mounted in the bracket, substantially as described.

13. In a gate of the class described, the combination, with the hinge-bar for the gate, of a sliding sleeve mounted on the bar and connections intermediate the sleeve and the gate, a set-screw mounted on said sleeve, and a socket on the hinge-bar to receive the foot of said screw to lock the sleeve in fixed position thereon, substantially as and for the purpose herein described.

14. The combination, as hereinbefore set forth, with the hinge-bar provided with the longitudinal guiding-ribs, of the sliding hinge-sleeves mounted on the hinge-bar and formed with guide-grooves to receive the guide-ribs, substantially as described.

15. The combination, as hereinbefore set forth, with the lazy-tong gate, of the hinge-bar provided with guide-ribs, the sliding hinge-sleeves mounted on the hinge-bar and each formed with a longitudinal and a transverse guide-groove to receive the guide-ribs, the sleeves provided with guide-braces and the gate pivoted to such braces, the sleeves adapted to slide over the guide-ribs and then to be turned on the hinge-bar, and the guide-ribs coacting with the transverse guide-grooves of the sleeves as stops against vertical descent of the sleeves when the sleeves are turned on the hinge-bar, substantially as described.

16. The combination, with the hinge-bar and the lazy-tong gate hinged thereto, of the slotted vertical brace-bar pivoted to the locking side of the gate and provided with a right-angled inwardly-projecting extension formed with a slot and a pivot-stud, the cross-rods of the gate working in said slot, a sliding hinge-sleeve mounted on the hinge-bar and provided with a lug or projection, and the operating-lever hinged by its respective ends to the extension on the brace-bar and the lug on the sleeve, substantially as described.

17. The combination, as hereinbefore set forth, with the turnable hinge-bar and the fixed hinge-sleeves mounted thereon and provided with the guide-braces formed with vertical slots, of the lazy-tong gate having the pivot-studs thereof working in the vertical slots of the guide-braces, the two sliding hinge-sleeves mounted on the hinge-bar and provided with lugs or projections, the brace-bar pivoted to the locking side of the gate, and the operating-lever hinged by its respective ends to the brace-bar and to the lug on the said uppermost hinge-sleeve, one cross-rod of the gate being pivoted to the lug on the sliding sleeve next below the uppermost sleeve, substantially as described.

18. The combination, as hereinbefore set forth, with the hinge-bar and the lazy-tong gate hinged thereto, of the upper sliding sleeve mounted on the hinge-bar and provided with guiding means and adapted to slide and turn on the bar, the said sleeve provided with a horizontal guide-brace formed with a slot, the sleeve next below provided with guiding means and adapted to turn on the hinge-bar, but not to slide thereon, and formed with an upright arm, and the lever pivoted by one end to the said upright arm on the sleeve and having a fixed stud working in the slot of the said horizontal extension, said lever adapted to cover the heads of the cross-rods of the gate when the latter is extended, substantially as described.

19. The combination, as hereinbefore set forth, with the hinge-bar and the railing connected therewith, of the sliding and rotating hinge-sleeves mounted on the hinge-bar and provided with guiding means, the guide-braces on said sleeves, the lazy-tong gate having the cross-rods thereof pivoted to the guide-braces of the sleeves, a cut-away casing mounted on the hinge-bar, and a coil-spring encircling the bar under torsional tension, with one end fixed in the said casing and the other end fixed in the uppermost sleeve, substantially as described.

20. The combination, as hereinbefore set forth, with the hinge-bar and the sliding hinge-sleeves mounted thereon and provided with the horizontally-extending guide-braces or lugs, of the lazy-tong gate pivoted to the guide-braces, the vertical brace-bar pivoted to the locking side of the gate, and the operating-lever hinged between the brace-bar and the lug on the upper hinge-sleeve, the lever formed with a horizontal slot, and a pivot-stud on the gate working in such slot, substantially as described.

21. In a gate of the class described, the combination, as hereinbefore set forth, with the tubular hinge-bar formed with an upper and a lower transverse section, with the meeting faces of the sections formed irregular, so as to clutch, of a core for the sectional hinge-bar and a pin to prevent the upper section from rotating, but not from vertical movement, a lifting-stud for lifting the upper section out of contact with the lower section, so as to part the clutch-faces to allow the lower section to rotate, a longitudinal guide-rib on the lower section, and a sleeve having an L-shaped slot for engaging the lifting-stud, said sleeve provided with a groove for the guide-rib and sliding over the lower section, but not turning therein, the operating-lever hinged to said sleeve, substantially as and for the purpose herein described.

22. In a gate of the class described, the combination, as hereinbefore set forth, with the tubular hinge-bar comprising two transverse sections, the upper one of which is spring-acted and both having an irregular-formed clutch-like meeting face, of a core for the hinge-bar and a pin to prevent the rotation of the upper section, but not the vertical movement thereof, a lifting-pin for lifting the upper section out of engagement with the lower section, so as to part the clutch-faces to allow the lower section to rotate, a longitudinal guide-rib on the lower section, and a sliding sleeve formed with an L-shaped slot for receiving the lifting-pin and provided with a guide-groove for the guide-rib, the said sleeve sliding on the lower section, but prevented from turning thereon by the guide-rib, the operating-lever hinged to the said sleeve, substantially as described.

23. In a gate of the class described, the combination, as hereinbefore set forth, with the tubular hinge-bar comprising two transverse sections formed with clutch-like meeting faces, of a vertically-moving core for the hinge-bar, the upper section being fixed thereto, and a pin for preventing the core and upper section from turning, but not from moving vertically, a lifting-pin fixed to the core, and an L-shaped slot formed in the lower section to allow the pin to project through the section, a longitudinal guide-rib on the lower section, and a sliding sleeve mounted on the lower section and formed with an L-shaped slot to receive the said lifting-pin and provided with a guide-groove for the said guide-rib, the operating-lever hinged to the said sleeve, substantially as described.

24. The combination, with the pivoted cross-rods of a lazy-tong gate, of the transversely-divided brace-bar pivoted to the locking side of the gate for the purpose of spanning the hand-rail on the car, substantially as described.

25. The combination, with the hinge-bar 22 and the lazy-tong gate 28, of the hinge-sleeves 31, provided with the slots 32 and the guide-pins 33, the guide-braces 34, and the pivot-studs 30, attached thereto, substantially as described.

26. The combination, with the hinge-bar 22 and the lazy-tong gate 28, of the hinge-sleeves 31, provided with the slots 32 and the guide-pins 33, working in such slots, the guide-braces 34, provided with the slots 35, and the pivot-studs 30, working in the said slots and pivoted to the solid part of the guide-braces, substantially as described.

27. The combination, with the hinge-bar 22 and the lazy-tong gate 28, of the sliding hinge-sleeves 31, provided with the guiding means, the guide-braces 34, secured to the said sleeves, and the pivot-studs 30, attached to the braces, the collar 49, fixed to the hinge-bar, and the coil-spring 48, secured by its respective ends to the collar 49 and the adjacent hinge-sleeve 31, the casing 51, attached to the collar, substantially as and for the purpose herein described.

28. The combination, with the hinge-bar 22 and the lazy-tong gate 28, of the sliding hinge-sleeves 31, provided with the guiding means, the guide-braces 34, and the pivot-studs 30, connected therewith, the upper hinge-sleeve, 31, and the brace-bar 39 40, and the operating-lever 43, hinged between the head of the brace-bar and the guide-brace on the upper hinge-sleeve, substantially as described.

29. The combination, with the hinge-bar 22 and the upper sliding hinge-sleeve, 31, mounted thereon and provided with the guide-brace 34, of the vertical brace-bar 39 40, and the operating-lever 43, hinged to the brace-bar, and the bolt 44, hinging the lever to the brace 43 and the knob 45 on the bolt, substantially as described.

30. The combination, with the hinge-bar 22 and the lazy-tong gate 28, of the sliding hinge-sleeves 31, mounted on the hinge-bar and provided with the guide-braces 34, the pivot-studs 30, connected with the braces, the said sleeves formed with the guide-grooves 38, the guide-ribs 37, fixed upon the hinge-bar, substantially as described.

31. The combination, with the hinge-bar 22, formed with the sockets 57 and 58, of the upper hinge-sleeve, 31, provided with set-screw 54 and formed with the projection 34, and the operating-lever 43, pivoted to the projection 34, substantially as described.

32. The combination, with the hinge-bar 22 and the lazy-tong gate 28, of the sliding hinge-sleeves 31, provided with the guide-braces 34, the pivot-studs 30, connected to the braces 34, the collars 36, fixed to the hinge-bar for limiting the downward movement of the sleeves, substantially as described.

33. The combination, with the turnable hinge-bar 22 and the lazy-tong gate 28, of the two upper sliding hinge-sleeves, 31, and the operating-lever 43, hinged to the topmost sleeve, and the cross-rod 29 of the gate pivoted to the adjacent sleeve 31, the fixed hinged sleeves 31, provided with the guide-braces 34, formed with the vertical slots 35, the pivot-studs 30 of the gate working in the said slots 35, substantially as described.

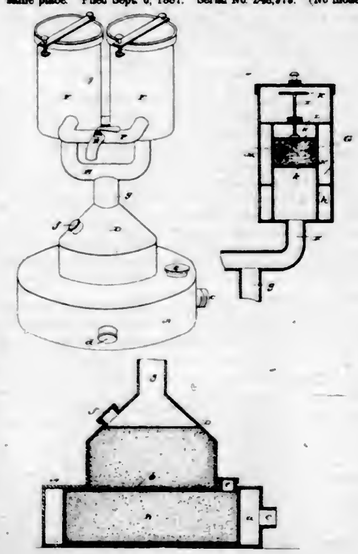
34. The combination with the hinge-bar 22, of the uppermost hinge-sleeve, 31, provided with guiding means and having the guide-brace 34, formed with slot 35, the subjacent sleeve 31, formed with slot 32, and the pin 33 for such slot, and the upright arm 63 on the latter sleeve 31, the lever 43, pivoted to the upright arm 63, and provided with the stud 62, working in the slot 35 of the guide-brace, substantially as described.

35. The combination, with the tubular upper and lower sections, 64 and 69, provided, respectively, with the clutch-faces 65 and 70, of the core 68 and the stem 72 and the casing 73, the guide-slot 66 and the guide-pin 67 working therein, the lifting-pin 74, and the slotted sleeve 31, provided with guiding means and engaging with its slot the lifting-pin 74, substantially as described.

36. The combination, with the upper section, 64, and the lower section, 69, provided with the clutch-faces 65 and 70, respectively, of the core 68, and the stem 72 for supporting the core, the spring 71 and the casing 73, the guide-slot 66, formed in the upper section, 64, and the guide-pin 67, fixed to the core, the lifting-pin 74, fixed to the lower section, 69, and the sliding sleeve 31, provided with the L-shaped slot 32 for engaging with pin 74, the said sleeve provided with guiding means, substantially as and for the purpose herein described.

37. The combination, with the hinge-bar 22, the sliding hinge-sleeves 31, mounted thereon and provided with the guide-braces 34, the lazy-tong gate 28, pivoted to said guide-braces, of the forked operating-lever 43, provided with the slot 77 and hinged to the gate and to the forked guide-brace 34 of the uppermost hinge-sleeve 31, substantially as described.

381,067. WATER-FILTER. HENRY W. GRELLE, New Orleans, La., assignor of two-thirds to Frank J. Koerner and George W. Byrne, Jr., same place. Filed Sept. 6, 1887. Serial No. 248,979. (No model.)



Claim.—The combination, with the concentric water-chamber having apertures, as described, of the central perforated filtering-chamber arranged therein, the filtering-chamber arranged above the central chamber and having the pipe leading from its top, the cotton-chambers having perforated bottoms and a perforated compressing-top, the clear-water chambers surrounding the cotton-chambers and communicating therewith, the pipes connecting the cotton-chambers with the filtering-chambers, and the draft-pipes leading from the clear-water chambers, substantially as specified.

381,068. **COMBINATION-LOCK.** HERBER C. GRIFFIN, Franklin Falls, N. H., assignor to the Griffin Lock Company, same place. Filed Dec. 17, 1887. Serial No. 258,158. (Model.)

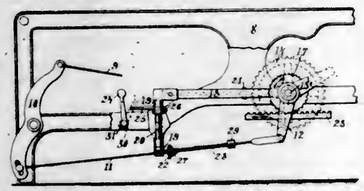


Claim.—1. The combination, with a combination-lock, of an operating-spindle composed of two parts, one movable longitudinally upon the other and rotative only in unison therewith, and a suitable spring whereby said movable member is held in its normal position, substantially as and for the purpose explained.

2. The combination, with the lock-housing having a projection or stop-lug near the operating-spindle, the said spindle, a knob or handle portion for rotating the same capable of longitudinal movement thereon, and provided with a slot for engaging the stop-lug on said lock-housing, and a suitable spring whereby said movable knob is held normally clear of the said stop-lug, all substantially as and for the purpose set forth.

381,069. **SPINNING-MULE.** WILLIAM HACKALEY, Fall River, Mass., assignor of two-thirds to John Hackaley and James P. Hillard, both of same place. Filed Mar. 5, 1887. Serial No. 229,853. (No model.)

Brief.—The invention consists in an improvement upon the Mason mule, and has for its object to prevent the wind-clutch from clutching and to hold it open during doffing, so that it will be necessary to move only those parts of the machinery which are intermediate of the spindles and the clutch-pinion in order to turn the spindles. The further object is to prevent the connections which operate the wind-clutch from being broken while the latter is open.



Claim.—1. In a spinning-mule, the combination, as hereinbefore set forth, with a wind-clutch and a shaft therefor, and mechanism, substantially as described, for clutching and unclutching the wind-clutch, of a movable stop acting to prevent the wind-clutch from clutching, whereby the wind-clutch may be left open or unclutched when desired.

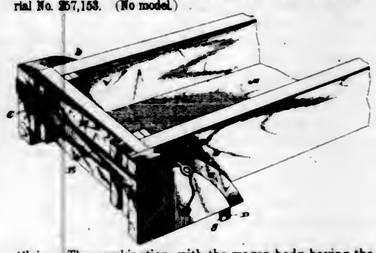
2. In a spinning-mule, the combination, as hereinbefore set forth, with a wind-clutch and shaft, a wind-clutch spring-fork, an arm engaging the fork, a stand or support for the fork and arm, and a wind-clutch lever for operating the wind-clutch, of a movable stop adapted to prevent the wind-clutch lever from operating the wind-clutch when the stop is in action, whereby the wind-clutch may remain open in doffing, for the purpose herein described.

3. In a spinning-mule, the combination, as hereinbefore set forth, with a wind-clutch and shaft, the back-off rod, and connections intermediate of the wind-clutch and the back-off rod for operating the wind-clutch, of a spring-acted wind-clutch dog mounted on the back-off rod and acting yieldingly on said connections, and a movable stop for holding the connections against the action of the wind-clutch dog, substantially as herein described, whereby the stop may prevent the wind-clutch dog on the back-off rod from closing the wind-clutch in doffing, for the purpose described.

4. In a spinning-mule, the combination, as hereinbefore set forth, with the wind-clutch and shaft, the back-off rod, and connections intermediate of the wind-clutch and the back-off rod, said connections provided with an adjustable stop-arm for striking the stop, of a wind-clutch dog sliding on the back-off rod and a spring for the dog, an adjustable block mounted on the back-off rod for the spring to abut against, and a movable stop for preventing the action of the wind-clutch dog from causing the wind-clutch to clutch, substantially as and for the purpose herein described.

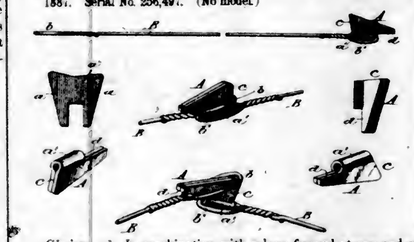
5. In a spinning-mule, the combination, as hereinbefore set forth, of the wind-clutch and shaft, the back-off rod provided with the wind-clutch dog 27 and the spring 28, the connections intermediate of the wind-clutch and back-off rod for operating the wind-clutch, the adjustable stop-arm 25, mounted on said connections, and the movable stop 24, for preventing the action of said connections, substantially as and for the purpose herein described.

381,070. **END-GATE.** NICHOLAS HENIKER, Randolph, assignor of one-half to Henry Reitenour, Union City, Ind. Filed Dec. 6, 1887. Serial No. 257,153. (No model.)



Claim.—The combination, with the wagon-body having the rear portion of its side walls provided with transverse perforations arranged in the arc of a circle, of the hinged end-gate having the curved walls C, the locking-pin secured thereto, as shown, the curved metal strip c, secured to the outer side of the curved edge of the side walls and terminating in a clip, D, which has a perforation, g, and extends over the straight edge of the said side walls to the outer sides of the wagon-body, substantially as shown and described.

381,071. **WIRE BALE-TIE.** WILLIAM HEWITT, Chambersburg, assignor to the Trenton Iron Company, Trenton, N. J. Filed Nov. 30, 1887. Serial No. 256,497. (No model.)



Claim.—1. In combination with a loop formed at one end of a wire composing the band of a wire bale-tie, an independently formed metal locking-head possessing a hook and a brace and engaged with and secured to one side or lateral member of said loop.

2. In a wire bale-tie, the combination of a wire band formed with a closed loop at each of its ends, with an independently formed and applied metal locking-head possessing a hook, a brace, and a hollow sleeve, through which one side or lateral portion of one of the loops of the wire band passes in order to effect the attachment of said head, substantially as set forth.

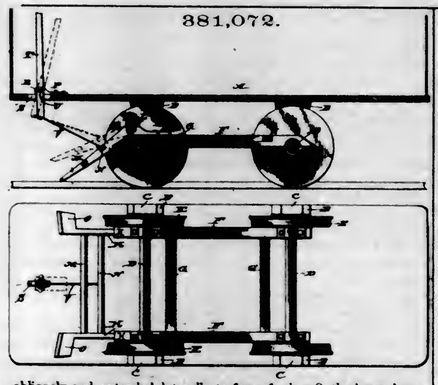
3. In a wire bale-tie, the combination of a wire band formed with a closed loop at each of its ends, with an independently formed and applied locking-head composed of a blank of metal possessing wing portions connected by a web or neck portion, and engaged with one of the loops of the wire band by being folded as to its neck portion about one side or lateral portion of said loop, substantially as set forth.

381,072. **TRACK-CLEARER.** JOHN B. HOAGLAND, Nashville, Tenn., assignor of one-half to R. F. Meacham, same place. Filed July 29, 1887. Serial No. 245,606. (No model.)

Claim.—1. The combination of the car-platform having the depending hangers B, the car-axles provided with the bearing-boxes attached to the hangers, said axles having the wheels E, the beams F, connecting the said axles and bearing thereon, cross-bars connecting the said beams, and the fenders pivotally connected to the beams F and adapted to clear the track of obstructions in advance of the wheels, substantially as described.

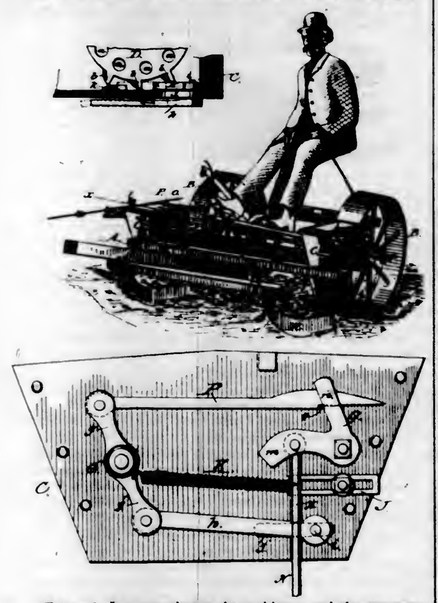
2. The combination, with a car, of the truck-beams F, the plates H, bolted to the top portion of the said beams F, the arms K, having their upper ends pivoted in said plates H and their lower ends arranged

381,072.



obliquely and extended laterally to form fenders O, the lower brace, M, the upper brace, N, the rod V, connected to the upper brace, N, and the lever T, connected at its lower end to the rod V and extending up through the platform of the car, substantially as described.

381,073. **CORN-PLANTER.** AUSTIN S. HOUCK and EDWIN HOUCK, Bedford, Iowa. Filed Dec. 17, 1887. Serial No. 258,166. (No model.)



Claim.—1. In a corn-planter, the seed-boxes and the transverse shaft passing through said boxes, in combination with the arms G, fixed on said shaft, the pitmen or links pivoted in the lower ends of the arms and provided with wrist-pins passing through slots in the boxes, a pawl carried by each pin and reciprocating in each box, a stop on the inside of each box for checking the forward movement of the pawl, and a spring for retracting said pawl, substantially as described.

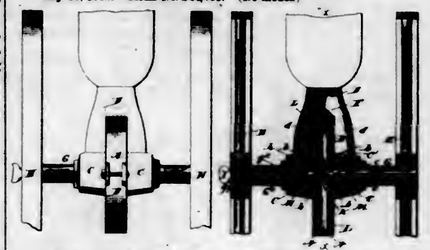
2. The seed-boxes provided with the rotating dropper-plates and the oscillating shaft, arms, pitmen, and pawls for actuating said plates, in combination with a plate, E, in each box over the dropper-plate, said plate E being provided with a slot having downwardly-converging walls for directing the grain to the dropper-plate, and the bar *f*, projecting into the discharge end of the slot, substantially as described.

3. The main frame, an oscillating shaft, the arms G, the pitmen or links A, the pawls H, and the seed-boxes having rotating dropper-plates, in combination with springs connected with said arms G, a foot-lever or treadle pivoted to the main frame, and a rod or bar connecting said lever with the shaft, whereby the latter is oscillated, substantially as described.

4. In a corn-planter, the combination of the seed-boxes having rotary dropper-plates, the oscillating transverse shaft, the arms G thereon, adjacent to each seed-box, a pitman, P, connected to the upper ends of said arms, a pitman attached to the lower ends of said arms, pawls carried by said lower pitmen and actuating the dropper-plates, the bell-crank levers operated by the upper pitmen, the runners having valves therein, and rods extending from said valves to the lower arms of the bell-crank levers, whereby said valves are operated during the movements of the shaft and dropper-plates, substantially as described.

5. The combination, with the seed-boxes, complementary seed-dropping mechanism, and an oscillating shaft for actuating the seed-dropping mechanism, of a bell-crank lever on each seed-box connected with the valve in the adjacent runner, and a pitman carried by the shaft and operating the lever to open said valve, said lever having a lower arm adapted to engage the pitman during its upward movement, whereby the upper arm of the lever is released and the valve automatically closed, substantially as described.

381,074. **COFFEE-MILL.** JOSEPH P. HUMBLE, Plainfield, N. J. Filed July 19, 1887. Serial No. 244,765. (No model.)



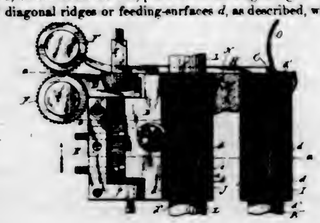
Claim.—1. In a coffee-mill, the combination of the case B, having bearings in the sides, the shaft G, comprising the portion G', having the reduced portion *g* on the inner end, and the portion G^2, having the recess g^2 therein to receive the said stud, the set-screw I in the end of the portion G^2, and adapted to bear at the inner end against the end of the reduced portion *g*, and the disks L L, rigidly secured on the inner ends of the said portions G' G^2 of the shaft G, respectively, substantially as specified.

2. In a coffee-mill, the combination of the case B, having bearings in the sides, the shaft G', journaled in one of the said bearings and having the shoulder *g'*, and the reduced portion *g* on the inner end, the shaft G^2, journaled in the other bearing and having the recess g^2 extending longitudinally therethrough to receive the said reduced portion *g*, the inner side of the said recess g^2 being provided with a groove to receive the rib M on the side of the stud, spiral spring coiled around the reduced portion *g*, between the end of the shaft G^2 and the shoulder *g'* on the shaft G', and the thumb-screw I, operating in the threaded opening in the end of the shaft G^2 and bearing at the inner end against the end of the reduced portion *g*, and the grinding-disks L L, secured on the inner ends of the said shafts and adapted to be turned thereby within the case B, substantially as specified.

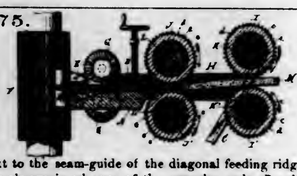
3. The combination of the shaft consisting of the hollow shaft G^2, the shaft G', having the reduced portion *g* fitting in the hollow portion g^2, and thereby providing the shoulder *g'*, the case, the grinding-disks secured on the inner meeting ends of shafts G' G^2, and the spring coiled around the reduced portion *g* and bearing against the shoulder *g'* and the end of the hollow shaft G^2, to press the grinding-disks against the sides of the case, substantially as specified.

381,075. **MACHINE FOR SPLITTING SCRAP-LEATHER.** JOHN A. JOSSELYN, Brookfield, Mass. Filed Oct. 11, 1886. Serial No. 215,841. (No model.)

Claim.—1. The combination, with the seam-guide H and edging-knife C, of the feed-rolls I I', provided with diagonal grooves or flutes *c* and diagonal ridges or feeding-surfaces *d*, as described, whereby the



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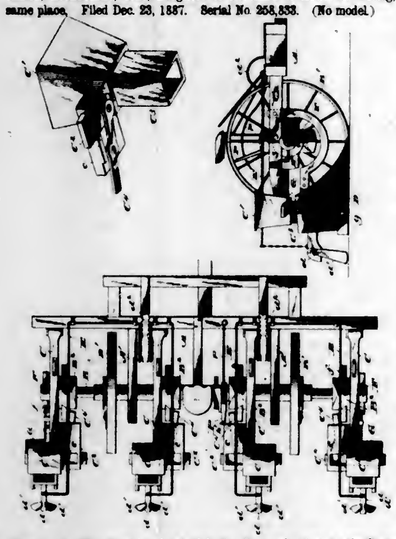


ends *d'* next to the seam-guide of the diagonal feeding ridges or surfaces *d* are always in advance of the opposite ends, d^3, substantially as and for the purposes set forth.

2. The combination, with the seam-guide H and splitting-knife B, of the feed-rolls J J', provided with diagonal grooves or flutes *e* and diagonal ridges or feeding-surfaces *d*, as described, whereby the ends *d'* next to the seam-guide of the diagonal feeding ridges or surfaces *d* are always in advance of the opposite ends, d^3, substantially as and for the purposes set forth.

3. The combination, with the seam-guide H, edging-knife C, and splitting-knife B, of the two sets of feed-rolls I I' and J J', provided with diagonal grooves or flutes *e* and diagonal ridges or feeding-surfaces *d*, as described, whereby the ends *d'* next to the seam-guide of the diagonal feeding ridges or surfaces *d* are always in advance of the opposite ends, d^3, substantially as and for the purposes set forth.

381,076. CORN-PLANTER. WILLIAM KOCHER and WILLIAM J. RANCK, Lookbourne, Ohio, assignors of one-third to Lewis R. Young, same place. Filed Dec. 23, 1887. Serial No. 258,833. (No model.)



Claim.—1. The combination, with the frame having a shaft or axle passing therethrough, of the arms C, connected to the frame and extending between and on the outside of the bearing-wheels and carrying seed-boxes on their rear ends, the enlargement or projections formed on one side of each of the said seed-boxes, the slides working in said enlargement, the lever-arms connected to said slides and projecting beyond the forward end of the said enlargement, and the toothed cam-wheels mounted upon the axle and engaging with projecting ends of the lever connected to the slides of the seed-boxes, substantially as described.

2. The combination, with the main frame having an axle arranged therein, as set forth, toothed cam-wheels mounted on said axle, of the arms C, hinged to the main frame and carrying seed-boxes on their rear ends, projections formed with one side of each seed-box, slides working in said projections and seed-box and having levers connected thereto which engage with the toothed cam-wheels on the axle, the boots or runners in connection with the seed-boxes, and the rods and levers connected to the rear portion of said boots or runners and extending to the forward part of the machine adjacent to the driver's seat, whereby said arms, seed-boxes, and runners may be independently raised from the ground, substantially as described.

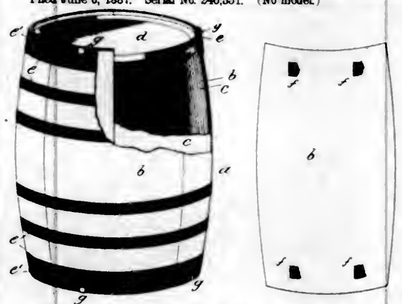
3. The combination, with the main frame, of the arms C, hinged thereto, carrying seed-boxes on their rear ends, the main shaft or axle carrying toothed cam-wheels, the slides for said seed-boxes automatically operated by said toothed cam-wheels, the boots or runners D, in connection with the seed-boxes, the projections *d* on the rear side thereof, downwardly-projecting arms or coverers *d'*, and the levers E, all arranged as set forth, substantially as described.

4. The combination, with the shaft or axle mounted in the main frame, as set forth, of the wheels F on each end thereof, having strikers *f* diametrically arranged, the marker-rod G, pivoted to the frame of the machine and having and other bent end adapted to engage with the strikers *f* of the wheel F, and the coiled spring S, mounted in connection with the frame of the machine and bearing upon the upper part of the rod G, and acting to normally keep the markers in a raised position, substantially as described.

5. In combination with the main shaft or axle, the ratchet-wheel mounted adjacent to the driver's seat, the pawl P, adapted to engage with said ratchet-wheel, the rod *p*, mounted and constructed as set forth and passing through the said pawl P to limit its movement and cause a positive engagement of said pawl with the ratchet-wheel, the wheels F on the outer ends of the shaft, having strikers *f*, and the spring-actuated marker G, substantially as described.

6. In combination with the main frame, the axle-shaft mounted therein, as set forth, having the toothed cam-wheels, the hinged arms C, carrying seed-boxes at their rear ends, the diametrically-operated slides in engagement with said seed-boxes operated by the toothed cam-wheels, the boot or runners D, connected to the arm C by curved link, and the rods or levers connected to said boots or runners and extending to the forward part of the machine, whereby the said arms and boots or runners may be raised, as set forth, substantially as described.

381,077. BARREL. GEORGE S. LONG, Hartford, Conn., assignor of two-thirds to Edward H. Judd and Frederick C. Rockwell, same place. Filed June 6, 1887. Serial No. 240,351. (No model.)



Claim.—1. In a barrel or like package, in combination, a number of stave-sections of straw-board or like fibrous material arranged in layers that break joints with eachother, the staves of each layer being provided with interlocking and inturned hollow indentations, the adjacent walls of which on the side near the ends of the stave form angular shoulders, and the hoops whereby the stave-sections are held together, all substantially as described.

2. In combination with the outer stave-sections, *b*, the inner stave-sections, *c*, having the inward-projecting and interlocking hollow indentations *f*, forming the shoulders *f''* within the barrel, the head *d*, resting on the said shoulders, and with an upturned flange around its edge that fits upon and conforms to the straight slope of the inner side of the staves, and the hoops, all substantially as described.

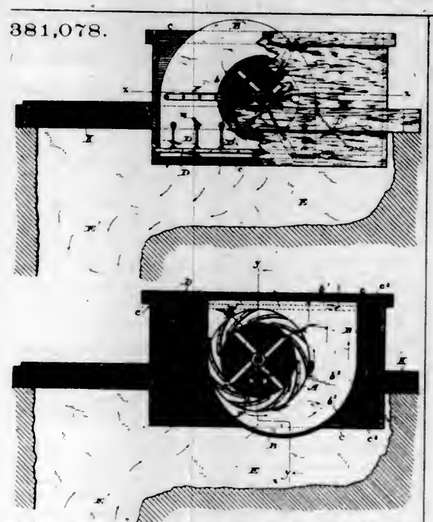
3. In a barrel or like package, the combination of the stave-sections *b c*, made of sheets of fibrous material, as straw-board, each section having the hollow indentations *f*, that serve as locking devices for the sections and as a head-support, the barrel-head made of like fibrous material and having the flanged and beveled edge, and the hoops whereby the barrel-sections are held together, all substantially as described.

4. The combination, with the stave-sections *b c*, of sheets of fibrous or pulpy material, as paper, having the hollow indentations *f*, with shoulder *f''*, that forms the head-support, a head, *d*, a hoop inclosing the staves near the end, and a locking-clamp, *g*, with its foot *g'* held in place in the hollow of the indentations and its free end turned over the outer edge of a hoop, all substantially as described.

381,078. VENTILATING APPARATUS. FRANCIS MURPHY, Chicago, Ill. Filed May 7, 1887. Serial No. 237,401. (No model.)

Claim.—1. In a ventilating apparatus, the combination, with a rotary fan-wheel, of the reversible fan-wheel casing inclosing the fan-wheel, and a chamber open at oppositely-disposed points and constituting a passage wherein the fan-wheel casing is mounted and capable of adjustment for directing a current either way through the said chamber, substantially as described.

381,078.



2. In a ventilating apparatus, the combination, with the receiving-chamber open at opposite points, of a fan-wheel, and the reversible fan-wheel casing provided with a flange or ledge, D, and mounted within the receiving-chamber to turn about the axis of the fan-wheel, said ledge of the fan-wheel casing being adapted to close the space between the sides of the receiving-chamber and the fan-wheel casing when the latter is in position to discharge from either of the oppositely-arranged openings of the receiving-chamber, substantially as described.

3. The combination, substantially as hereinbefore set forth, with the fan-wheel casing capable of rotary adjustment about the axis of the fan-wheel and provided with hollow journals, of the fan-wheel having its axle extending through the hollow journals of the fan-wheel casing, the said journals of the fan-wheel casing being supported upon bearings independent of the bearings for the fan-wheel axle, substantially as set forth.

4. In a ventilating apparatus, the combination, with the rotary adjustable fan-wheel casing, of the fan-wheel having its axle independent of the fan-wheel casing and mounted upon separate rocking bearings, substantially as described.

381,079. GRAIN-BINDER. MARION L. NICHOLS, New York, N. Y., assignor to the Nichols Harvester Company, same place. Filed Jan. 11, 1887. Serial No. 224,094. (No model.)

Claim.—1. The combination of a separator-arm for dividing the grain, mounted so as to oscillate a trip-arm, and mechanism, substantially as described, for connecting said arms, as set forth, whereby the trip is caused to automatically and positively control the movements of the separator by the grain accumulated to form the bundle and cause it to hold the incoming grain during the binding operation.

2. The combination of the carrier, a binding mechanism, packers, and a separating-arm operating in a reverse direction to the packers, and a trip mechanism for controlling the separating-arm, substantially as described, whereby the separating-arm is caused to act upon the incoming grain upon the carrier and force it back and out of the way of the packers, as and for the purpose set forth.

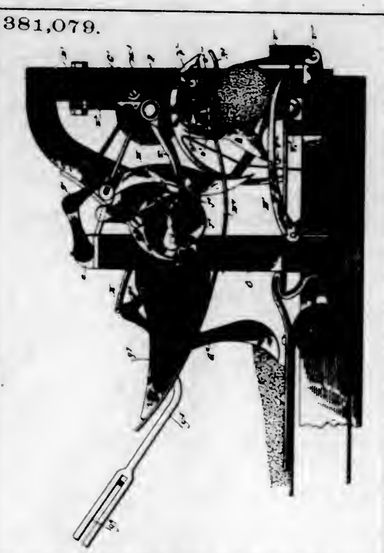
3. An automatic trip for grain-binders acted upon and controlled by the separating-arm, in combination with means to be controlled by the driver in his seat on the machine for operating the trip at will, substantially as described.

4. The combination of an automatically-operated separator and an automatically-operated trip, with means to be controlled by the driver for throwing the same into action at will, substantially as described.

5. An automatic trip for grain-binders acted upon and controlled positively by the separating-arm, substantially as described, whereby the grain to form the bundle is separated from the incoming grain before the binding devices are brought into action, as and for the purpose set forth.

6. The combination of the horizontally-arranged carrier, a trip-arm located in the path of the grain, a separating-arm actuated by the trip-arm, and a binder-mechanism trip actuated by the separating-arm, substantially as and for the purpose set forth.

381,079.



7. The combination, with the intermittently-rotating pinion for imparting motion to the separator, of the bifurcated pivoted rocking arm operated by the trip-arm to rock said arm and cause it to alternately disengage and engage the clutch of the pinion to throw the same into and out of action, substantially as and for the purpose set forth.

8. The combination of the fixed jaw, the pivoted jaw, the rod or shaft provided with the disk or head, and a revolving drive-wheel provided with cams to engage the head to reciprocate the shaft and positively open and close the jaw, substantially as described.

9. The combination of the swinging frame carrying the gripper, the reciprocating combined cord guide and stripper, a knife, the arm or lever for reciprocating the cord guide, stripper, and knife, an arm connected with the knife-arm and forming a guide for and connection between the gripper-frame, cord guide, stripper, and knife, and a revolving drive-wheel provided with cams for reciprocating the cord guide, stripper, and knife, intermittently operating the gripper, and swinging the gripper-frame from the knotter, substantially as and for the purpose set forth.

10. The combination of the revoluble knotter-shaft, the combined cord guide and stripper, a knife having a fixed relation to the cord guide and stripper, the cam and rack wheel for revolving the knotter and moving the knife and guide in one direction, and the revolving ejector-arm for reciprocating the cord guide and knife in the opposite direction to sever the cord and strip the knot from the knotter, substantially as and for the purpose set forth.

11. The combination of the reciprocating knife, the gripper, and means, substantially as described, for connecting said gripper and knife, as set forth, whereby the knife is reciprocated and the gripper-frame swung bodily from the knotter and intermittently rotated by the knife-reciprocating mechanism.

12. The combination of the cord guide and stripper, a knife, a cord-gripper, and an arm or lever for operating the same, substantially as described, whereby the cord guide and stripper is reciprocated and the gripper swung to and from the knotter and intermittently revolved, for the purposes set forth.

13. The reciprocating cord guide and stripper, in combination with an ejector-arm acting on the stripper to cause the same to strip the knot simultaneously with its action in ejecting the bundle, as and for the purpose set forth.

14. The combination of the cord guide and stripper, a knife, and an arm or lever for operating said parts, having a swinging movement imparted thereto by the revolving gear and cam wheel and the revolving ejector-arm, substantially as described.

15. The slotted frame for carrying the tying devices, provided with bearings for the driving-shaft upon each side of the cam and gear wheel, in combination with the driving-shaft provided with the key

seat or slot to engage the feather in the gear-wheel, substantially as and for the purpose set forth.

16. The combination of the guiding and depressing arm with the separating-arm, operating and timed in their movements substantially as and for the purpose set forth.

17. The combination of the tension and take-up arm, the rocking arm pivoted to the end of the take-up arm and connected to the frame by a link operating substantially as described, and the needle-shaft provided with the cam or projection to engage the arm of the take-up and operate the same, and through it the rocking arm, as and for the purpose set forth.

381,080. **GRAIN-BINDING HARVESTER.** MARION L. NICHOLS, New York, N. Y., assignor to the Nichols Harvester Company, same place. Filed Jan. 11, 1887. Serial No. 224,025. (No model.)



Claim.—1. A harvester-frame, in combination with two or more supporting-wheels having pivotal connections with the frame and means for connecting them together intermediate of their pivotal connections, substantially as described, whereby the main frame is caused to have a lateral motion relative to the ground actuated by the wheels in turning the machine.

2. The combination of the main frame with the divided supporting-frame carrying the wheels at its outer ends and having pivotal connections with the main frame at points between the wheels and its point of division, and means for causing the parts of the frame to be actuated, one by the other, in the movement of the wheels in turning the machine, substantially as described.

3. The combination of the binder-frame, a main supporting-wheel arranged in rear thereof and having a pivotal connection therewith, a front supporting-wheel, also having a pivotal connection with the frame, a tongue connected to the wheel-frame, and means for connecting the wheel-frames intermediate of their pivotal connections, so as to move in unison, substantially as described, whereby the swinging of the tongue will cause the rear wheel to be turned at an opposite inclination to the front wheel and the frame to have a lateral motion relative to the ground, as set forth.

4. The combination, with the front and rear supporting-wheels having the carrier and binding devices located between the same, of an end wheel located at the grain side of the machine and having its frame supported at front and rear, substantially as described, whereby the main frame may move endwise in relation to said end wheel in turning the machine.

5. The combination of the front and rear supporting-wheels connected by means of the pivoted arms, the end or grain wheel connected to one of the arms of said supporting-wheels, and the main frame supported by the wheels, substantially as described, whereby the main frame is caused to move endwise in turning the machine, as and for the purpose set forth.

6. The combination of the harvester-frame, an outer or grain wheel supported in guideways, and the arms or levers connecting the grain-wheel with the turning mechanism, substantially as and for the purpose set forth.

7. The combination of the harvester-frame, an outer or grain wheel having its frame supported at froot and rear in guideways in the harvester-frame, and means, substantially as described, for connecting the grain-wheel with the turning mechanism.

8. The combination of the harvester-frame, an outer or grain wheel supported in guideways, the rock-shaft in the harvester-frame, the arms or levers for connecting the rock-shaft with the grain-wheel frame, and means, substantially as described, for connecting the rock-shaft with the turning mechanism, as and for the purpose set forth.

9. The combination of the slotted supporting-frame for the grain-wheel, mounted on tracks or guideways and connected through mechanism with the pivoted supporting-wheels, the bell-crank lever pivoted to the supporting-frame and carrying at one end the grain-wheel, and means, substantially as described, connected to the other end of said lever for raising and lowering the grain-wheel, all substantially as set forth.

10. The combination of the cutting and grain delivering and binding devices described, and means for operating the same, with the automatic clutch mechanism acting to throw the same into and out of action in turning the machine, and a lever or shifting device for throwing the mechanism into and out of action by hand, substantially as set forth.

11. The combination of the main frame with the divided supporting-frame carrying the wheels at its outer ends and having pivotal connections with the main frame at points between the wheels and its points of division, a driving and driven mechanism, and an automatic and hand operating clutch, substantially as described, whereby in turning the machine the driven mechanism may be thrown automatically out of action or may be thrown out by hand, as set forth.

12. The swiveling reel-post, combined with means, substantially as described, for automatically acting upon the reel to turn it in turning the machine, as and for the purpose set forth.

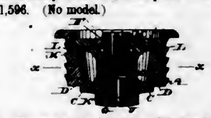
13. The combination of the harvester-frame, a pivoted wheel-supporting frame, a swiveling reel-post, and means, substantially as described, for connecting the reel-post with the wheel-supporting frame, as and for the purpose set forth.

14. The combination, with the front and rear supporting-wheels connected by the pivoted arms, of the swiveling reel-post connected with the arm of one of the supporting-wheels, substantially as described, whereby the reel is caused to be moved automatically out of the way of the team in turning the machine, as set forth.

15. A swiveling reel-post carrying the reel, combined with the machine to move said reel to and from the cutters automatically in turning the same, and means, substantially as described, whereby the reel can be raised and lowered in its various angles of relation to the machine, as and for the purpose set forth.

16. The combination of the carrier extending in beyond the cutters, the binding devices located at the inner end thereof, a vertically-arranged butt-rake pivoted near the inner end of the carrier and extending to the cutters, and means, substantially as described, arranged adjacent to the cutters, for imparting both an endwise and reciprocating motion to the rake, as set forth.

381,081. **BUNG AND AIR-VENT.** ANTHONY PAPE, Philadelphia, Pa., assignor to Joseph Morwitz, same place. Filed Jan. 23, 1888. Serial No. 261,596. (No model.)

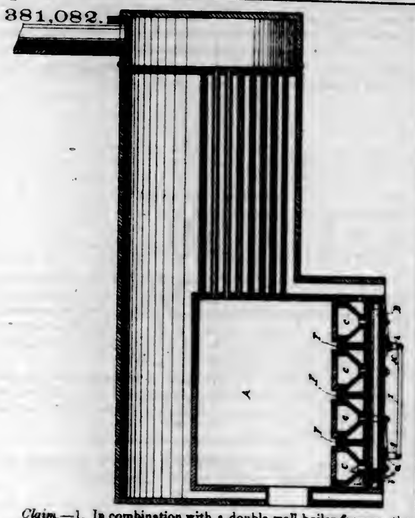


Claim.—1. The metal bushing A, with the inner grooves, E, the shoulder M, and the spiral under face, D, in combination with the bung B, having the lugs C, the valve-seat G, with a shoulder bearing against the under face of bung B and having the central duct, J, and the valve F, with a side duct, H, substantially as described.

2. The metal bushing A, with inner grooves, E, and spiral under face, D, the bung B, with an interiorly-threaded portion, the exteriorly-screw-threaded valve-seat G, with shoulder bearing against the under face of bung B and provided with central opening or duct, J, and the exteriorly-screw-threaded valve F, having side ducts, H, open at the top and bottom, and the packing *a*, secured to the under face of the said valve F, said parts being combined substantially as and for the purpose set forth.

381,082. **BOILER-FURNACE.** GEORGE W. PARKINSON, Laurens, assignor of one-half to Daniel P. Goggans and Frank P. McGowan, both of Laurens County, S. C. Filed Aug. 23, 1887. Serial No. 247,573. (No model.)

381,082.



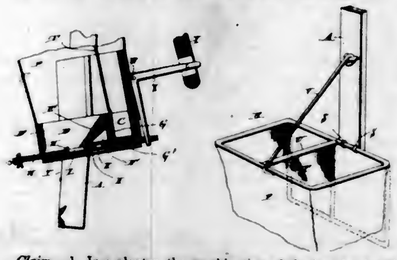
Claim.—1. In combination with a double-wall boiler-furnace, the hollow grate-bars closed at their outer ends and connected by transverse tubes, and having the inlet-pipe for the feed-water and the tube connecting the grate with the boiler, substantially as specified.

2. In a fire-box, the combination, with the tube-bars forming part of the grate, of the water-boxes rising from and communicating with said tube-bars and forming the upper surface of the grate, substantially as specified.

3. In a fire-box, the combination of the water-tube forming part of the grate, the rectangular water-chambers rising from and communicating with said tube and forming the upper surface of the grate, and the shaking frame having its bars between the sides of said chamber and moved upward and downward by means substantially as specified.

4. In a boiler-furnace, the combination, with the tube-bars B, connected at their alternate ends by the transverse tubes *b* and having the water-boxes *c*, forming the upper surface of the grate, of the shaking frame F, having intersecting bars and devices for operating the same, substantially as specified.

381,083. **HAND-PLANTER.** SAMUEL A. PAYNE, Scottsburg, Ind., assignor of two-thirds to James L. Fisher and John M. Stout, same place. Filed Jan. 10, 1883. Serial No. 260,287. (No model.)



Claim.—1. In a planter, the combination of the box having the compartments C D and the bottom opening, N, and the slide arranged on the bottom of the box, under the lower edge of the partition, between the compartments, said slide having the openings K L, the latter being provided with the upwardly-projecting flange at its lower ends, substantially as described.

2. The combination, in a hand corn-planter, of the standard, the box secured thereto near its lower end, the slide arranged in the said box, the flexible hopper having its lower end secured to the box, the frame distending the upper end of the hopper and having one side hinged to the standard, the hook to engage the free end of the said frame and thereby distend the hopper, the operating-rod guided in the keeper on the standard, and a bell-crank lever connecting the lower end of the said rod to the slide, substantially as described.

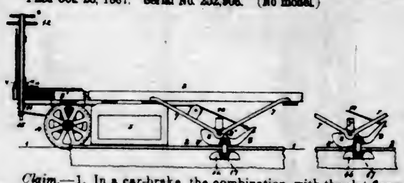
3. In a combined hand corn-planter and fertilizer-distributer, the combination of the standard A, the box B, secured thereto and communicating with the lower end of the hopper, said box having the compartments C D, the slide arranged under the said box and having the openings K and L, the latter provided with the upwardly-projecting flange at its lower end, the plate I, secured under the bottom of the box and supporting the slide and provided with the opening N, for the purpose set forth, the operating-rod guided in a keeper on the standard and adapted to be reciprocated, and connections between the said rod and the slide to operate the latter, substantially as described.

4. In a hand corn-planter, the hopper P, made of cotton fabric or other suitable flexible material, the frame R, to which the upper end of the hopper is secured, said frame being hinged to the standard of the corn-planter, and the rod V, to engage the hopper and hold it extended, as set forth.

5. In a hand corn-planter, the hopper having its lower end rigidly secured to the standard or leg of the planter and its upper end hinged to said standard, whereby the hopper may be collapsed, and the locking device to hold the hopper distended, as set forth.

6. In a hand corn-planter, the combination of the standard A, the box B, secured thereto and having the partition E, forming compartments C D, one side of said partition being inclined or beveled, the brush G, secured to the outer side of the partition, the slide, and the hopper secured to the box and having the partition T, as set forth.

381,084. **CAR-BRAKE.** ELBRIDGE H. PURDY, Cincinnati, Ohio. Filed Oct. 20, 1887. Serial No. 252,906. (No model.)

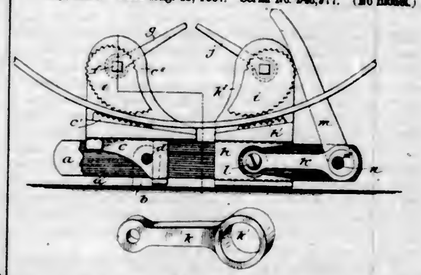


Claim.—1. In a car-brake, the combination, with the slot-flanges of a cable-conduit, of a pair of linked grip-jaws, 8 16, connected by cable 10, with hand-wheel 11 12, ratchet-wheel 13, and pawl 14, as and for the purpose set forth.

2. In combination with the brake proper, 8 16 17, the cable 10, and the grip-operating stem 15, the tubular hand-wheel stem 11, sleeved around said grip-operating stem, as set forth.

3. The combination of brake proper, 8 16 17, the cable 10, the tubular hand-wheel stem 11, and the grip-operating stem 15, within said tubular stem and terminating in ratchet-wheel 6', having the retaining-pawl 6'', the releasing-pedal 6''', and the retracting-spring 6IV, as set forth.

381,085. **TIRE-UPSETTING MACHINE.** ROBERT RUTTER, Butte City, Mont. Filed Aug. 15, 1887. Serial No. 246,977. (No model.)



Claim.—1. The combination, in a tire-upsetter and with the heads or seats for the tire formed with standards and with bosses projecting from said standards, of gripping-cams recessed to receive the said bosses, substantially as shown and described.

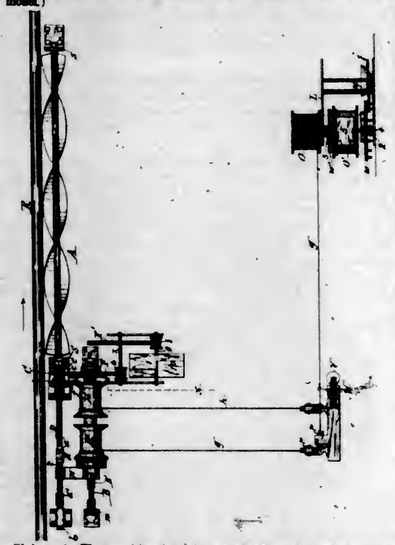
2. The separate parallel bars *a*, stationary and sliding heads *c h*, gripping-cams *e i*, and means, substantially as described, for operating said cams and sliding heads.

3. The combination, with the stationary heads *c h* and means for operating the latter, and the gripping-cams *e i*, of the pins *f*, projecting on the outside of the machine, and operating-levers *g j*, substantially as shown and described.

4. The combination, with the machine-frame, of the heads *c h*, formed with standards c^a h^a, and bosses projecting laterally from said

standards, the gripping-cams *e i*, levers *g j*, and the link and cam-lever *k m*, substantially as shown and described.

381,086. **RAILROAD-SIGNAL.** WARDELL B. SHERMAN, Oneida, N. Y.; Marion R. Foland and Charles G. Foland administrators of said Sherman, deceased. Filed Apr. 11, 1887. Serial No. 234,357. (No model.)



Claim.—1. The combination of a spirally-flanged shaft pivoted at the side of the railway-track and axially parallel therewith, a pivoted counter-shaft, gears transmitting motion from the flanged shaft to the counter-shaft, a drum on the counter-shaft, signaling mechanism provided with actuating-drums, and a driving cord or chain connecting said drums, as set forth.

2. In combination with the spiral A, a pinion arranged rotatable independent of said spiral, a clutch adapted to connect and disconnect said pinion and spiral, a counter-shaft, a gear on the counter-shaft engaging the pinion, a pulley or drum mounted loosely on said shaft, screw-threads on a portion of the length of the counter-shaft, a nut working on said screw-threaded portion and coupled with the aforesaid pulley or drum, and an arm projecting from the nut and adapted to shift the aforesaid clutch, as and for the purpose set forth.

3. In combination with the spiral A, the shaft D, movable longitudinally and provided with the shoulders *a a'*, the pinion C, mounted loosely on said shaft, clutch-faces *c c'*, respectively, on the pinion and spiral shaft, the spring *b*, arranged to force the shaft D toward the spiral, the catch *d*, adapted to engage the shoulder *a*, the counter-shaft B, provided with the screw-threaded portion B', the ratchet-wheel C, fixed to said shaft, the gear-wheel F, mounted loosely on the counter-shaft and meshing in the pinion C, the pawl *f* on said gear-wheel, the drum H, rigid on the counter-shaft, the drum H', loose on said shaft, a longitudinally-sliding coupling between said drums, the nut I, working on the screw-threaded portion of the counter-shaft and coupled with the loose drum, the arm N, projecting from the nut and movably connected with the shaft D and adapted to encounter the shoulder *a'*, and the tripper *t*, connected with the arm N and adapted to trip the catch *d*, substantially as described and shown.

4. In combination with the spiral A, counter-shaft B, drum H', and mechanism for transmitting motion from the spiral to the counter-shaft, signal or alarm mechanism, clock-work arranged to operate said signal or alarm mechanism, the drums O O', connected to said clock-work, the rope or chain *g*, connected at opposite ends with the drums H' and O, the rope *g'*, connected to the drum O', and the weight V', connected to said rope, substantially as and for the purpose set forth.

5. In combination with the spiral A, counter-shaft B, drums H H', and mechanism for transmitting motion from the spiral to the counter-shaft, a signal mechanism, clock-work arranged to operate said signal mechanism, the drums O and O', connected to said clock-work, the rope or chain *g*, connected with the drums H' and O, the rope *g'*, connected to the drum O', the weight V', attached to the free end of said rope, the pulley U, the rope or chain A, connected to the drum H and running over the pulley U, and the weight V, attached to the free end of the rope or chain *h*, substantially as described and shown.

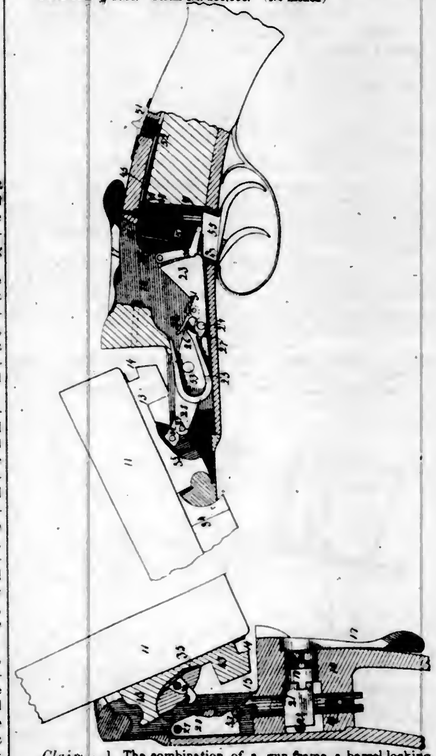
381,087. **SCALE-BEAM.** ALBERT H. SMITH, Memphis, Tenn. Filed Dec. 12, 1887. Serial No. 257,615. (No model.)



Claim.—1. A scale for weighing, the several and co-operating parts of which consist of the beam A, having a slot, *a*, and an eye, *a'*, the poise B, having lugs *b b*, a screw-seat, 1, and an eye, *b'*, the bolt C, and the poise D, having a chamber, *d*, all as hereinbefore described, for the purposes of balancing, locking, and increasing the weighing-power of said scale, as hereinbefore set forth.

2. The combination of a scale-beam, as A, having a slot, as *a*, and an eye, *a'*, with the poise B, moving longitudinally in said slot, and the bolt C, in the manner described, for the purpose of assuring a true balance of the beam.

381,088. **BREECH-LOADING GUN.** LEROY H. SMITH, Lisle, N. Y. Filed Jan. 6, 1888. Serial No. 259,960. (No model.)



Claim.—1. The combination of a gun-frame, a barrel-locking bolt fitted to slide longitudinally therein, a bolt-retractor journaled in the frame at right angles to the bolt, a block adjustably secured upon the bolt, and means for engaging the block with the retractor, substantially as shown and described.

2. The combination of a locking-bolt for a breakdown gun, a block fitted to slide longitudinally upon the said bolt and adapted to engage a bolt-retractor, and a set-screw in the said block, substantially as shown and described.

3. The combination of a gun-frame, a barrel hinged at the forward end thereof to break down, a locking-bolt fitted to slide in the frame to engage the barrel, a spring fitted to impel the bolt constantly forward, a block longitudinally adjustable upon the locking-bolt and transversely slotted with a tapering slot on its upper side, a bolt-retractor vertically journaled in the gun-frame and provided with an external lever, and having a lug projecting into the said slot in the bolt-block, engaging the whole rear wall of the slot and one end of the front wall, substantially as shown and described, whereby parts may be adjusted to hold the barrel securely, and at the same time to hold the bolt-retractor lever in line on the gun-tang, as set forth.

4. The combination of a pivotal gun-hammer, having a toe projecting at one side of the pivot, and a return-bend spring therefor, having an upward bearing at its end against the frame of the gun and a downward bearing at its bend, and having a notch fitted to engage the said toe, the end of the said spring projecting beyond the said notch to engage the hammer beyond its pivot, whereby the hammer is first impelled to strike its blow and afterward cause to rebound and the spring is maintained in proper relation to the hammer, substantially as shown and described.

5. The combination of a gun-frame, a pair of hammers pivoted near their lower ends therein, a rocker journaled in each hammer above its pivot, a pair of levers permanently connected at their forward ends by a cross-bar and hung midway upon pivots to the frame, their rear end being rounded to engage the said rockers, a pair of gun-barrels hinged to the forward part of the frame, and a hook having its open side forward connecting the barrels with the said cross-bar, substantially as shown and described.

6. The combination of a pair of gun-hammers pivoted near their lower ends, a pair of cocking-levers hung midway upon pivots forward of the hammers and having rounded rear ends, and a pair of rockers journaled in the hammers above the pivots thereof and provided with open bearings to receive the said rounded ends of the cocking-levers, and with an arm upon each rocker projecting above the said bearing, substantially as shown and described.

7. The combination, with a gun-hammer and a cocking-lever therefor, substantially as described, of a rocker pivoted to the hammer and provided with an open bearing to receive the end of the lever, and with a guiding-arm extending beyond the bearing at one side thereof.

8. The combination of a gun-frame having a hinge-pin fixed in its forward end, a pair of gun-barrels having a downward-projecting lug to engage the frame, the said lug having a bearing opening forward to engage the said hinge-pin, a pair of cocking-levers hung in the frame and connected by a cross-bar, and a hook depending from the said lug, with its open side forward to engage the said cross-bar, substantially as shown and described.

9. The combination, with a gun-frame provided with a hinge-pin, a barrel or barrels hinged upon the said pin by a bearing opening at one side, and a cocking lever or levers hung in the frame, of a hook and cross-bar adapted to engage the barrels with the said levers, the said hook being open at that side which permits it to disengage the said cross-bar by the act of moving the barrel in the direction to remove its hinge-bearing from the hinge-pin, substantially as shown and described.

10. The combination of a gun-barrel, a lug projecting therefrom having an open or half-hinge bearing, and a hook and cross-bar adapted to engage each other to connect the barrels with a cocking device, the said hook being open on that side adapted to disengage the cross-bar, and thereby to disengage the barrel from the cocking device by the act of parting the said half-hinge from its mate, substantially as shown and described.

11. The combination of a gun-frame having one member of a hinge open at the rear side formed on its forward end, a barrel or barrels provided with a portion of the opposite member of the said hinge open on its forward side, a cocking device hung in the frame, a hook and a cross-bar connecting the barrels with the said cocking device, the two aforesaid members of the hinge and the said hook all being open on corresponding sides, whereby the two parts of the hinge may be disengaged from each other, and the hook may be disengaged from the cross-bar by moving the barrel rearward and upward, as set forth.

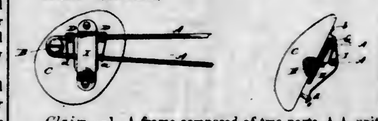
12. The combination of a gun-frame, one or more triggers pivoted therein, a push-pin journaled to slide in bearings in the frame and stepped near one end upon the triggers, and provided with an enlargement and a shoulder thereto near the other end, a safety-plate fitted to slide under the tang, and having a narrow slot to receive the small upper end of the said pin, the slot being enlarged at each end, the plate having also three notches in its under side, a shoe mounted freely on the push-pin, and having a tooth to engage either of the said notches in the safety-plate, and a spring acting between the push-pin and the shoe, substantially as shown and described.

13. The combination of the triggers, push-pins stepped thereon, the notched safety-plate at one end thereof, the shoe having a tooth to engage the said notches, and a spring between the shoe and pin, substantially as shown and described.

14. The combination of a gun-locking bolt, triggers, the push-pin stepped on the triggers, and the slotted safety-plate fitted to slide past the end of the pin, and having an offset into the path of the bolt, substantially as shown and described.

15. The combination of a gun-locking bolt, triggers and a push-pin stepped thereon, and a plate fitted to slide beneath the tang and adapted to stop or release the pin from action, the said plate having an offset into the path of the locking-bolt, substantially as shown and described.

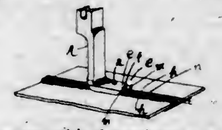
381,089. **TRUSS.** LEVI R. STUART, Seymour, Conn., assignor of one-half to W. R. Roberts, same place. Filed Dec. 20, 1887. Serial No. 258,482. (No model.)



Claim.—1. A frame composed of two parts, A A, united at the forward end, the pad C, hinged to the upper part A of the frame, the pad extending downward therefrom, with a helical spring surrounding the upper part of the frame as a pintle, the end of the spring made fast to the said frame, the spring constructed with an extension or arm downward from the coils onto the pad below the frame, substantially as described, the said spring operating to turn the body upward from the lower part of the frame and give to it a lifting action.

2. The combination of a frame composed of two parts, A A, a pad hinged to the upper part of the frame, a spring between the frame and pad to operate upon the body of said pad below the hinge, and a yoke, I, outside the frame, the yoke secured at its upper end to the pad both above and below the frame, the said yoke serving to limit the extent of the lifting action of the pad, substantially as described.

381,090. **PRESSER-FOOT FOR SEWING-MACHINES.** DANIEL A. SUTHERLAND, Lynn, Mass. Filed May 5, 1887. Serial No. 237,196. (No model.)



Claim.—As a new article of manufacture, a presser-foot made in one piece with two semicircular grooves or channels, *e e*, arranged parallel throughout the under surface of the presser-foot, the central fin, *f*, dividing the channels, and the lateral side projections, *m m*, extending below the bottom surface of the central fin, substantially as described.

381,091. **PROCESS OF CONVERTING A PHOTOGRAPHIC IMAGE ON A GELATINE SURFACE INTO A RELIEF OR INTAGLIO.** HENRY SUTTON, Ballarat, Victoria. Filed Nov. 9, 1887. Serial No. 254,696. (No specimens.)

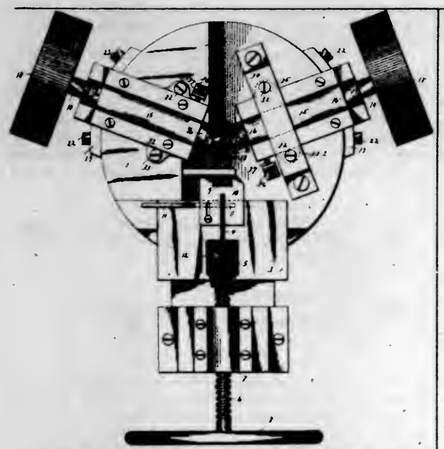
Claim.—The herein-described method of converting a photographic image on a gelatine surface into a relief or intaglio printing-surface, which consists in immersing the plate bearing the photographic image in water of a temperature below that of the melting-point of the unexposed parts of the gelatine, in order to swell the same by absorption, then taking out the plate and removing the free water from the surface thereof, then exposing the plate to a degree of heat at which the unexposed parts of the gelatine will begin to melt until the water-absorbed gelatine has been dissolved, substantially as described.

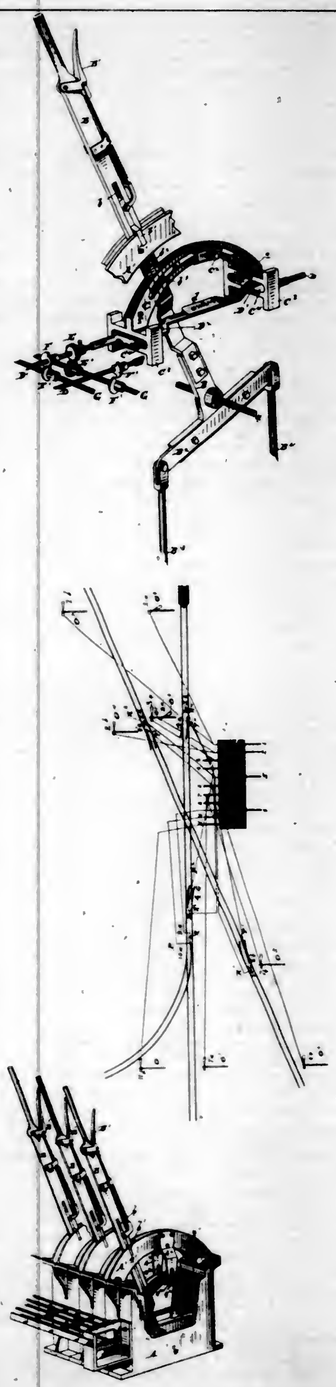
381,092. **MACHINE FOR GROOVING BIT-BLANKS.** JAMES SWAN, Seymour, Conn. Filed Jan. 26, 1888. Serial No. 261,973. (No model.)

Claim.—1. The combination, with a chuck for carrying the blank and a guide to receive the blank, of grooving-cutters on opposite sides of the guide, shafts therefor, and hinged boxes for said shafts which permit the cutters to be thrown out of operative position without stopping their movement.

2. In a grooving-machine, the combination, with a guide for the blank, of cutters on opposite sides thereof and arranged obliquely thereto, shafts for said cutters, and hinged boxes for the shafts.

3. A machine for grooving bit-blanks, consisting, essentially, of a chuck for carrying the blanks, having axial rotation as it moves forward, a guide to steady the blanks, cutters which groove the blanks, and hinged journal-boxes for said cutters, which permit them to be moved into and out of operative position.





4. In a machine for grooving bit-blanks, the combination, with the cutters and shafts therefor, of boxes in which said shafts are journaled, and sliding blocks to which said boxes are hinged, whereby the pitch at which the grooves are cut may be regulated.

5. A circular table having grooves in its opposite edges and blocks adjustable in said grooves, in combination with grooving-cutters, shafts therefor, and boxes for said shafts, which are hinged to said blocks, as and for the purpose set forth.

6. The combination, with the cutters, their shafts, and hinged boxes therefor, of weights acting to hold the cutters in operative position, and rods, levers, and a foot-lever, substantially as described, whereby the power of the weights may be overcome and the cutters thrown out of operative position.

7. The bed, extension, chuck, and cutters, substantially as described, in combination with an adjustable guide secured to the extension and a stop carried by the guide, which limits the forward movement of the chuck, as and for the purpose set forth.

8. The combination, with the chuck, guide, and cutters, of hinged boxes in which the cutter-shafts are journaled, means, substantially as described, for holding the cutters in operative position, and set-screws 32, whereby the depth of the cut may be regulated.

9. The circular bed having upper and lower planes and grooves 19 in the edges thereof, in combination with upper and lower cutters, shafts and boxes therefor, and blocks adjustable in said grooves, to which the boxes are hinged.

10. The bed having upper and lower planes and grooves in the edges thereof and blocks adjustable in said grooves, in combination with the upper and lower cutters, shafts, and boxes therefor hinged to said blocks, lugs upon the upper box, and set-screws passing through them and engaging the bed to regulate the depth of cut of the upper cutter, and a bracket, 34, having set-screws passing through it and engaging lugs upon the lower box, whereby the depth of cut of the lower cutter is regulated.

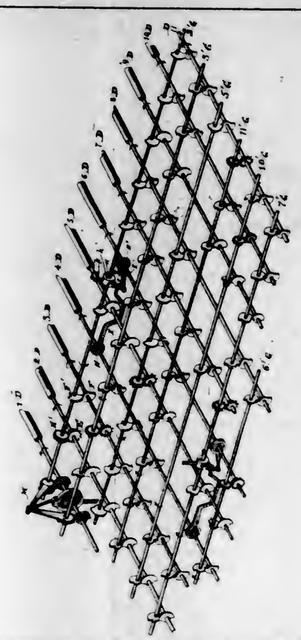
11. The upper and lower cutters, shafts, and boxes therefor, in combination with a rod and weight hinged to the upper box, a rod controlled by a weight bearing against the lower box, a pivoted lever, 29, to which both rods are pivoted, and a foot-lever adapted to engage lever 29 to raise the rod pivoted to the upper box and lower the rod bearing against the under box, whereby the cutters are thrown out of operative position.

12. The bed, sliding blocks, cutters, shafts, and hinged boxes, in combination with plates 36 and screws 37, engaging the boxes to prevent lateral movement of the cutters in use.

381,093. SWITCH AND SIGNAL INTERLOCKING. JAMES J. TURNER, Richmond, Ind., assignor to himself and John F. Miller, same place. Filed Mar. 3, 1887. Serial No. 229,492. (No model.)

Claim.—1. In a switch and signal interlocking device, the combination of the latch of the actuating-lever with a movable segment, C, connected with and operated by said latch and having crank-operating devices at each end, and a rotating shaft having crank-arms formed in it at an angle of about forty-five degrees with each other, said shaft connecting with an interlocking frame.

2. In a switch and signal interlocking device, the combination of the actuating-levers secured in a frame, latches secured to said levers, movable segments C, connected with and operated by said latches and having crank-actuating devices at each end, rotating shafts having crank-arms formed therein at an angle of about forty-five degrees to each other, and a locking-plate, *d*, secured upon the shaft between the crank-arms, as shown and described, so that the shaft, having made half its revolution during the unlatching of the lever, is locked against the lever until it has completed its throw and is in position to be latched again.



3. In a switch and signal interlocking device, the combination, in a frame, of the actuating-lever having a latch secured to and actuating a movable segment, C, and through it a rotating shaft having crank-arms, all substantially as specified, and the detent-segment A', having detents *a' a'*, corresponding to the two normal positions of the actuating-lever, said segment being of circular outline between the detents, so as to hold the latch stationary during the throw of the lever.

4. In a switch and signal interlocking device, the combination, in a frame, of the slotted actuating-lever having a latch-extension moving in said slot and connected with a slotted segment, C, having crank-actuating devices attached to each end, and the shaft D, having crank-arms, substantially as shown and described, said segment being guided in a vertical direction by a slotted hanger, A^2.

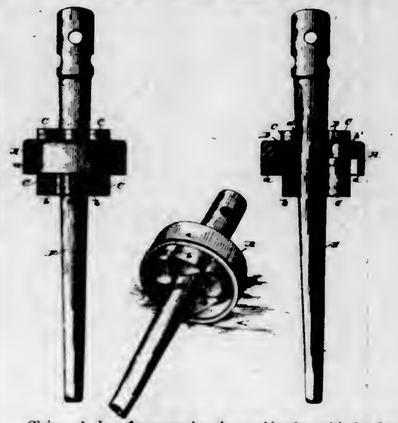
5. In a switch and signal interlocking device, the combination, with rotating shafts in the interlocking frame connected with and actuated by the latches of the actuating-levers, of rotating shafts actuated by the shafts connected with the lever-latches by spiral gear-wheels, said two systems of shafting crossing but not intersecting each other in parallel planes, so that locking devices can be secured to the shafts in such manner as to interlock any shaft with any other shaft or lever and in any desired sequence.

6. In a switch and signal interlocking device, the combination of the movable segments C, connected with and actuated by the lever-latches, the shafts D, having crank-arms D' D^2, said shafts extending across the interlocking frame, and a system of shafts crossing but not intersecting the shafts D in said interlocking frame, said shafts being connected with and actuated by shafts D.

7. In a switch and signal interlocking device, the combination of shafts D, connected with and actuated by the latches of the actuating-levers, the transverse system of shafts G G, &c., connected with and actuated by the shafts D through spiral gears E E', and the rotating locking-dogs F F', secured to the upper and lower system of shaft in pairs at their points of intersection.

8. In a switch and signal interlocking device, the combination of a system of rotating shafts connected with and operated by the latches of the actuating-levers, a system of rotating shafts crossing but not intersecting the first shaft system and actuated by it, substantially as described, and the device for making the movement of any lever dependent on the relative position of two other levers, which consists of the cams H H', secured to two shafts connected with the two levers whose relative position is to govern the third lever, the feather L, secured in a cross-shaft connected with the third lever, the cam-rings and connecting-rods I I', the lever J, and the slotted sleeve K, all connected and operating substantially as shown and described.

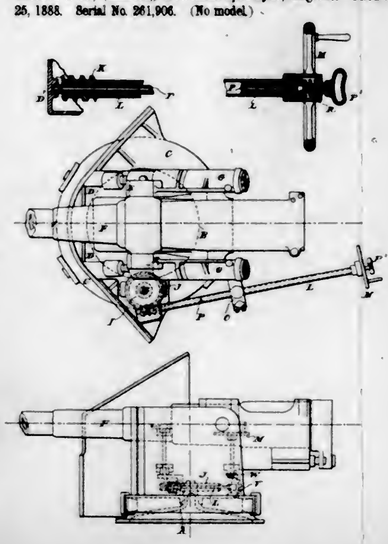
381,094. PIPE-EXPANDER. GEORGE C. VAN KEUREN, Duquoin, Ill. Filed Dec. 9, 1887. Serial No. 257,432. (No model.)



Claim.—1. In a flue-expander, the combination, with the plate or head having a central opening and radiating slots and a groove or recess, of the rollers having their necks in said slots, the ring disposed in said groove or recess, having its ends disconnected, the V-shaped lugs or arms projecting from said plate or head, and the tapering mandrel designed to be inserted through said central opening and bear against the said ring and rollers, substantially as shown and described.

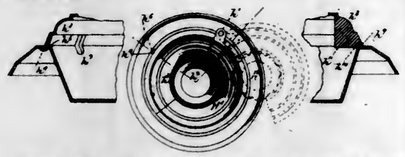
2. The combination, with the plate or head having the central opening provided with a circular groove and the radiating slots, of the rollers secured in slots, and the ring having its end disconnected and disposed in said groove for retaining said rollers in position, substantially as shown and described.

381,095. APPARATUS FOR TRAINING GUNS. JOSIAH VAVASSEUR, Bear Lane, Southwark, County of Surrey, assignor to W. G. Armstrong, Mitchell & Co., (Limited,) Newcastle-upon-Tyne, England. Filed Jan. 25, 1888. Serial No. 261,906. (No model.)



Claim.—The combination of a centrally-pivoted gun having its center of gravity approximately over the pivot or axis, a worm-wheel on the axis, or on an axis geared therewith, and a worm which can be thrown into gear therewith and then turned by hand to turn the gun slowly, or thrown out of gear to allow of the gun being turned quickly.

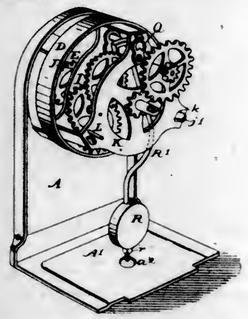
381,096. **HEATING-STOVE.** WILLIAM R. WALKER and GEORGE R. WILBUR, Taunton, Mass. Filed Apr. 2, 1885. Serial No. 161,017. (No model.)

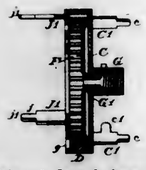


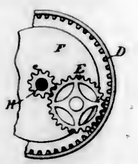
Claim.—The combination of the oven H, the top plate, *h*, having the hole h^6, the stationary section h^3 of the oven-cover, having the hook h^4, which enters the said hole h^6, and the stays h^7, and the swing ing section H', substantially as and for the purposes described.

REISSUES.

10,920. **CLOCK-MOVEMENT.** ARTHUR E. HOTCHKISS, Cheshire, Conn. Filed Jan. 3, 1888. Serial No. 259,752. Original No. 221,310, dated Nov. 4, 1879; Reissue No. 9,656, dated Apr. 12, 1881; Reissue No. 10,062, dated Mar. 14, 1882.



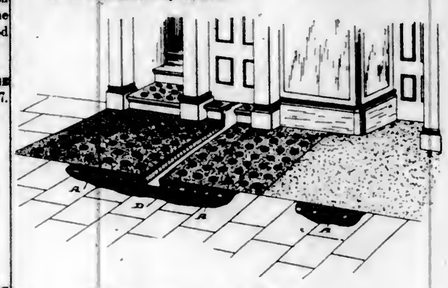




Claim.—1. In a clock-movement provided with a circular rack, the circular disk F, rotated by the mainspring and carrying the planet-wheel E only, which connects the rack with the center pinion, as set forth.

2. In combination with a pendulum-rod provided with the plate S, fastened to the rod, a spring arranged on the rod to hold the pendulum-ball against the adjusting-nut, as set forth.

10,921. **FLOOR, ROOF, OR AREA-COVERING.** PETER H. JACKSON, San Francisco, Cal. Filed Nov. 30, 1887. Serial No. 256,563. Original No. 367,343, dated July 26, 1887.





Claim.—1. In a sidewalk, area-covering, floor, or roof, the combination of corrugated metal plates having dovetailed corrugations extending lengthwise of the plate and supporting the sidewalk or surface composed of artificial stone or concrete, and bars, bearers, or strips of metal extending longitudinally within the corrugations, substantially as herein described.

2. In a sidewalk, area-covering, floor, or roof, corrugated metal plates with the corrugations extending lengthwise of the plate, so as to support the sidewalk or surface of cement, artificial stone, or concrete, in combination with strips of metal bent so as to fit the dovetailed corrugations either upon the exterior or interior, or both, substantially as herein described.

3. In a sidewalk, area-covering, floor, or roof, corrugated metal plates with the corrugations extending lengthwise of the plate, to support a sidewalk or surface composed of cement, artificial stone, or concrete, in combination with a metallic grating comprising the bars D, extending longitudinally within the corrugations, and angle-iron end bars, to which the bars D are riveted, extending across and beneath the ends of the plate, substantially as herein described.

4. In a sidewalk, area-covering, floor, or roof, corrugated metal plates having dovetailed corrugations extending lengthwise of the plate, in combination with a superposed surface or sidewalk of cement, artificial stone, or concrete, spread upon the plate and filling the corrugations, which act as a bond when employed, the corrugated plate at the bottom resisting the tensile strain, and the cement, artificial stone, or concrete above, which acts to resist the compressive force, substantially as described.

5. In a sidewalk, area-covering, floor, or roof, corrugated metal plates with the corrugations extending lengthwise of the plate without separate side beams or bearers, that portion of the plate between the corrugations being perforated to receive illuminating-glasses, in combination with a filling between the glasses of cement, artificial stone, or concrete, which is supported by the plate and fixed to the floor or surface, substantially as described.

6. In a sidewalk, area-covering, floor, or roof, corrugated metal plates with dovetailed or wedge-reversed-shaped corrugations extending lengthwise of the plate at the bottom, without separate side beams or bearers, that portion of the plate between the corrugations being perforated to receive illuminating-glasses, in combination with a filling between the glasses of cement, artificial stone, or concrete, which is supported by the plate and fixed to the floor or surface, substantially as described.

PHOTO LITH. NORRIS PETERS WASH. D.C.

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

KOHLER *v.* KOHLER AND CHAMBERS.

Decided March 29, 1888.

STATEMENT OF THE CASE.

One of two joint patentees files a sole application for the invention; an interference is declared between the patent of the joint patentees and the application of the sole applicant, and motion is made to dissolve, based on the ground that the Office has no power to declare the interference and cannot issue a patent to the sole applicant under these circumstances.

1. JOINT PATENTEES.

Motion overruled, and *Held* that when patent issues to joint inventors as such neither is *the* inventor, but the invention is made by an entity composed of both parties, and that joint patentees are not the same as the sole applicant claiming the invention.

2. INTERFERENCE DECLARED.

It is true that in an interference declared under such circumstances neither party could antedate the other as to the time the invention was conceived and embodied; but the question of priority would necessarily resolve itself into a determination as to whether the entity composed of the joint patentees had ever made the invention at all. If they never made the invention, then no date could be established for them, and the sole applicant would be entitled to the award as the real and true inventor. The interference will develop the truth and the facts, and if it shall appear that the invention was joint, patent will be denied the sole applicant. If, on the other hand, it shall appear that the joint application was prepared and executed through misapprehension or mistake, then the interference should be determined in favor of the sole applicant.

3. IS THE SOLE INVENTOR ESTOPPED BY HIS FORMER OATH?

An applicant is not estopped by reason of his oath filed with a joint application from asserting his rights as sole inventor; nor should he be denied a patent on account of having made an error or mistake in the matter of joint inventorship.

4. RIGHTS OF ASSIGNEES.

The rights of assignees under the joint patent are protected, for if the sole applicant has assigned and transferred all the right and title which he had in the invention, then such assignees become the owners of the sole invention, and the Office, if satisfied on this point, would permit them to take charge of and control all proceedings had in and under the sole application.

APPEAL from Examiner of Interferences.

KILN DUMPING-FLOOR.

Application of Frank Kohler filed November 8, 1887, No. 254,623. Patent No. 362,893, granted Frank Kohler and William A. Chambers, May 10, 1887; application filed January 3, 1887.

Mr. Schuyler Duryee for Kohler.

Mr. Paul Bakewell and *Mr. F. W. Ritter, Jr.*, for Kohler and Chambers.

HALL, *Commissioner:*

Kohler and Chambers filed joint application for a patent, and afterward assigned the entire invention covered by the patent which was issued to them to the Crown Metal Perforating Company and J. W. Clemens. Nine months after the patent was issued—viz., November 8, 1887—Kohler filed a sole application covering the same invention, assigning one-half interest therein to Schuyler Duryee. An interference was duly declared between these two applications. January 14, 1888, two motions were filed by the assignees of the patent, as follows:

First. To dissolve the interference, and attached to this motion is an affidavit made by Kohler on January 11, 1888, explaining the circumstances under which he was induced to file his sole application, and stating:

> I now wish to withdraw the application which I have filed in my own name, and it is my wish that the interference declared may be dissolved.

This motion was denied by the Examiner of Interferences on the 20th of February, 1888, for the reason that the question of priority must be determined.

Second. A motion was also filed for a suspension of the order requiring preliminary statements pending the determination of the first motion. This motion was also denied, but the time was extended for the filing of such statements.

It is insisted by the assignees of the joint invention of Kohler and Chambers that the Office has no power or jurisdiction to declare an interference between such patentees and an application filed subsequently by one of the joint patentees as sole inventor, and that patent cannot issue to the sole applicant until after the original patent, which it is claimed was issued erroneously, has been surrendered to the Government and vacated, and consequently that no patent can issue to Kohler under these circumstances. I think the difficulty with this view is that it fails to regard the inventors Kohler and Chambers as being one entity. If A and B are in fact joint inventors and a patent issues to them as such, neither A nor B is an inventor; but the invention is made by a third entity composed of A and B, so that Kohler and Chambers as patentees of a joint invention are not the same as Kohler the sole inventor of the same invention.

It is undoubtedly true that if an interference be declared, as has been done in this case, and is conducted to a conclusion, neither Kohler and Chambers on the one hand, nor Kohler on the other as a sole applicant, could antedate the other party as to the time when the invention was conceived and embodied. The question of priority would, however, remain, and in such a case would necessarily resolve itself into a question whether the entity composed of Kohler and

Chambers jointly had ever made any invention at all, because if, as a fact, they never had made the invention, then it still is true that Kohler as sole inventor had made the invention first. This phase of this question is arising constantly in the Office in interference cases where one of the parties to the interference is attempting to pirate the invention of the other. Of course he fixes his dates in his preliminary statement and endeavors to antedate the real inventor, and his evidence is all directed to establishing the earlier date; but when the whole evidence is presented the Office becomes satisfied that such party was not an inventor at all and awards priority to the real inventor. In such case the defeated party has made no invention whatever to which a date could be given, and it might be thought under such circumstances that instead of an award of priority there should be a dissolution of the interference; but such has never been the practice, and ought not to be, so that I have no doubt that in a case of this kind it is proper and right that an interference should be declared. The question then recurs whether Kohler, by reason of having joined in the oath filed with the application of Kohler and Chambers, stating that they were original and first inventors, is estopped or in any manner denied the right to take out a patent for the invention as the sole inventor thereof. Attention has been called to some authorities upon this point, and it seems to be uniformly conceded that no such principle of estoppel applies, and that there is no reason why an applicant should be denied a patent on account of having made an error or mistake as to the matter of his joint inventorship.

The interference will undoubtedly develop the truth and the facts, and if it shall appear that there was a joint invention and no sole invention Kohler will be denied the patent. If, on the other hand, it shall appear that the joint application of Kohler and Chambers was prepared and executed through misapprehension or mistake, which very often occurs in matters of this character, and that Kohler alone was the inventor, then the interference will be determined in his favor.

A more serious question occurred to me when the motion was presented, arising from the fact that Kohler and Chambers have assigned their patent to the Crown Metal Perforating Company and J. W. Clemens. The suggestion is that having done this Kohler ought not to be allowed now to institute any proceedings as an applicant for a sole patent by which the rights of his assignees may be impaired or clouded. This would undoubtedly be true at law or equity as enforced in the courts; but I am not aware of any provision of the statute or of any decision recognizing the proposition that the fact of taking out a patent as a joint inventor and assigning the invention will debar a sole inventor, who has made the mistake of entering into the joint application, from subsequently rectifying such error and applying for a patent in his own name. I do not see that it estops in any way the rights of either parties.

If it be true, as stated by counsel, that Kohler has assigned and transferred to these assignees all the right and title which he had in the invention which he described in the instrument of assignment, then they will become the assignees and owners of the sole invention and have all the benefit that can be derived therefrom. I am therefore constrained to think that the assignees of Kohler and Chambers have no right to ask for the dissolution of this interference upon such grounds. If the statement made by them be true that they as assignees are the owners of this invention by reason of the assignment, whether it be a joint invention by Kohler and Chambers or the sole invention of Kohler, then as such assignees they would have the right to apply to the Office to take charge of Kohler's application and control it, and if they see proper to do that and shall satisfy the Office as to their rights, such result will follow, and it would be in their power to prevent the issue of patent upon the sole application of Kohler, and they can allow the interference proceeding to fail by reason of the control which they would have over it in this manner.

I therefore think that the Examiner of Interferences was correct in refusing this motion, and sustain his action. In view of the fact that extended time has been given for the filing of preliminary statements, there is no occasion to consider the appeal taken from his action in refusing to suspend the order requiring such preliminary statements pending the determination of the first motion.

CLARK *v.* LA DOW.

Decided March 29, 1888.

STATEMENT OF THE CASE.

Two applications of La Dow are involved in this interference, in one of which he is the junior and in the other the senior applicant. In his preliminary statement he sets up public sale of the invention, which, if established, would bar all parties. Clark moves that La Dow be required to file drawings and descriptions of the invention alleged to have been sold and furnish other information.

Held that in view of the averments of public use it would be unjust and unnecessary to put Clark to the expense of taking his evidence first, so long as La Dow was attempting to destroy the necessity of an interference, and ordered that La Dow be required to proceed first and take such evidence as he desires which shall establish the facts set forth in his preliminary statement, and also in support of the question of priority. Clark may then follow with evidence rebutting that offered by La Dow.

APPEAL from Examiner of Interferences.

DISK-HARROWS.

Application of George M. Clark filed September 22, 1886; No. 214,242. Applications of Charles La Dow filed January 2, 1886, and October 25, 1886, Nos. 187,421 and 217,133.

Mr. William C. Wood for Clark.

Messrs. Baldwin, Hopkins & Peyton for La Dow.

HALL, *Commissioner:*

It will be seen from the above dates of the filing of the applications involved in this interference that La Dow is junior to Clark as to one application and senior as to the other.

La Dow in his preliminary statement has set forth that he made and sold in the year 1876 thirteen machines embodying the invention in issue. This was ten years before the applications here involved were filed in this Office, and if true in all particulars would of course bar both of the applicants. Thereupon Clark moves that La Dow shall be required to file drawings accurately illustrating the invention which in his preliminary statement he alleges to have been sold at such times as would bar the issue of a patent to either of these contestants, and that he accompany the same with a full and clear description, verified under oath, and that he also disclose the names of the parties, &c.

I am not aware of any rule or practice by which the Commissioner can require a party to an interference to furnish drawings, statements, and information under oath in the manner requested by this motion, and yet the case presents features which seem not to be provided for by the rules—viz., that La Dow by the statements which he sets forth in his preliminary statement as to public use and sale puts himself in the attitude of an affirmant of the proposition that all the applications in this interference are barred, and yet in the further progress of the interference, in consequence of the fact that in one of the applications Clark is the junior, he will be required to proceed and take evidence before La Dow can be called upon to take testimony in support of the proposition which, if established, would bar these applications. Of course it would be unjust as well as unnecessary to put Clark to the trouble and expense of taking evidence on the question of priority so long as there stands behind him this effort on the part of La Dow to destroy the necessity of an interference and the taking of such evidence in support of priority.

I therefore direct that in this case La Dow shall proceed and take such evidence as he may desire to establish the facts set forth in his preliminary statement as to sales of the invention alleged to have been made more than two years prior to the filing of the applications, and also in support of his issue as to priority, and that Clark shall then follow with evidence rebutting that of La Dow as to sales, &c., and in support of his issue as to priority. The Examiner of Interferences is instructed to arrange the dates in accordance with and to carry out this order.

I am aware that this order is not specally provided for in the rules of practice; but I feel justified in making it, on account of the peculiar features of the case and also because, as I understood when the motion was argued, it would not be objectionable to the parties themselves.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

DALE TILE MANUFACTURING COMPANY (LIMITED) *v.* HYATT.

Decided March 19, 1888.

JURISDICTION—PRACTICE.

Where in a suit at law in a State court for the recovery of license-fees under a written contract the plaintiff recovered damages, and the defendant by writ of error brought the suit into this Court as involving a Federal question, and the defendant in error moved in this Court to dismiss the writ of error for want of jurisdiction, and also moved to affirm the judgment of the State court, *Held* that the motion to dismiss must be denied because the validity of a second reissue subsequent to that under which the license was given had been set up in defense below and that presented a Federal question. *Held* that the motion to affirm the judgment of the State court must be granted because the same was clearly right.

IN ERROR to the City Court of New York.

STATEMENT OF THE CASE.

The original action was brought in a court of the State of New York by Elizabeth A. L. Hyatt, a citizen of New York, and the owner of letters patent for an improvement in illuminated basement and basement-extensions, against the Dale Tile Manufacturing Company, (Limited,) a corporation organized by the laws of New York, upon a written agreement between the parties, dated December 28, 1880, which contained, either in itself or by reference to previous agreements, the following provisions: The agreement began by reciting that letters patent for this invention had been issued to the plaintiff on August 27, 1867, and reissued on August 6, 1878. The plaintiff, on her part, licensed the defendant to make and sell within certain States and districts during the full term of the patent and of any extension or renewal thereof illuminated basements and basement-extensions and materials therefor, and agreed not to manufacture herself or to license others to manufacture within the same territory. The defendant, on its part, acknowledged the validity of the said letters patent; consented that the plaintiff might obtain further reissues thereof when and as often as she should choose without prejudice to this agreement, and promised to pay her a fee of seventy cents for each square foot of surface in gratings made by the defendant to be used in illuminated basements or basement-extensions made and sold by it under the license; provided, however, that until a court should have given a decree sustaining the validity of the above-named patents the plaintiff should receive a fee of thirty cents only in lieu of the fee of seventy cents, and that if at any time an adverse decision should be rendered against the validity of the patent, and not be appealed from for three months, the fees under this license should cease, and the defendant agreed to make such payments and render accounts to the plaintiff quarterly. It was further stipulated that either party knowingly violating the agreement should forfeit all rights under it.

The defendant in its answer admitted the agreement and set up sundry breaches thereof by the plaintiff, and, among others, that on September 27, 1881, she obtained from the United States a reissue of her patent, whereby a discontinuance of actions previously brought by her against infringers in the circuit court of the United States became necessary, and she refused to bring new suits against them.

The plaintiff afterward, by leave of court, amended her complaint by alleging the reissue of 1881.

By order of the City Court of New York the case was referred to a referee, who found that the plaintiff was the owner of the letters patent issued and twice reissued as aforesaid; that there had been no breach of the agreement on her part; that the defendant made and sold the invention under the license and rendered quarterly accounts for the royalties down to and including the quarter ending October 31, 1881; that by the account for that quarter there appeared to be due to the plaintiff the sum of five hundred and twenty-four dollars and fifty-five cents, which the defendant refused to pay, and that in December, 1881, the plaintiff gave notice to the defendant that it had forfeited its license and withdrew the notice upon its promise to pay the royalties.

The defendant requested the referee to find, as a conclusion of law, that by the plaintiff's surrender of the patent on taking out the reissue of 1881 the license held by the defendant was canceled and became of no effect, and also that the court had no jurisdiction of the action, because it involved necessarily and directly the construction of letters patent of the United States. The referee declined so to find, and reported as his conclusion of law that the plaintiff was entitled to judgment against the defendant for the sum of five hundred and twenty-four dollars and fifty-five cents, with interest from November 1, 1881.

The referee filed with his report an opinion in which he said that the defense at first proceeded upon the theory that the plaintiff had violated her agreement by not prosecuting and restraining infringers; but that defense was abandoned because it appeared that she had assumed no such duty, and that "the defense was finally rested upon this sole ground: That the reissue of the patent in 1881 was entirely void, because it covered much more ground than the patent of 1867 as reissued in 1878, and that therefore the surrender of 1878 left no patent whatever existing," but that the defendant was not in a position to raise this question, because it could not in this action to recover the royalties agreed upon deny the validity of the original patent or of any reissue thereof so long as it had not been declared void by a court of

competent jurisdiction and while the defendant retained and acted under its license from the plaintiff.

The City Court of New York gave judgment for the plaintiff on the referee's report. That judgment was affirmed by the court of common pleas, and the defendant appealed to the court of appeals, which affirmed the judgment and remitted the case to the City Court of New York. The opinion filed by the court of appeals and included in the transcript sent up to this Court is mentioned, but not reported in full, in 106 N. Y., 654, and is copied in the margin.*

The defendant sued out this writ of error, and assigned for error that the State courts, both of original and of appellate jurisdiction, had no power to entertain the issues in this action, because they involved directly and solely the validity of the letters patent reissued by the United States to the plaintiff on September 27, 1881. The defendant moved to dismiss the writ of error for want of jurisdiction, and also moved to affirm the judgment.

* PECKHAM, *J:*

We think this case is controlled by that of *Marston* v. *Swett*, reported upon two appeals to this court. (See 66 N. Y., 206; 82 N. Y., 526.)

The general and material features of the two cases are similar. In both there was an agreement on the part of the plaintiff to refrain from manufacturing in consideration, among other things, of the promise of the defendant to pay the royalties. While continuing the manufacture under the license, the defendant ought not to escape liability to pay the royalties.

The defendant's counsel, it is true, seeks to distinguish this case from *Marston* v. *Swett*, *supra*, because, as he says, since the reissue of the patent in 1881, which he insists was wholly void, the defendant has no protection from the manufacture by others, for the reason that by the surrender of the patent of 1878 and the reissue of 1881 there was no valid patent in existence, and the consideration for the promise to pay royalties had therefore wholly failed.

There was consideration enough for the promise to pay such royalties, in that the plaintiff bound herself not to manufacture and because the defendant could not be called to account as an alleged infringer while manufacturing under the license.

If it were a question of the validity of the reissue of 1881 and a decision of that question were necessary to the decision of this case, the defendant is of course correct in his claim that a State court has no jurisdiction to determine such an issue; but within the decision of the *Marston* case no such question arises. The defendant has protection enough to base its promise to pay royalty upon as long as it so conducts itself toward plaintiff as to prevent her from treating it as an infringer. In other words, so long as the defendant continues to manufacture under its licenses, (the patent not having been legally annulled,) and thus elects to treat the agreement as in existence, it prevents the plaintiff from treating the defendant in any other light than that of a licensee. If the defendant desired to repudiate any obligation under this agreement, it should have given notice to the plaintiff that it refused to longer recognize its binding force, and that it would thereafter manufacture under a claim of right founded upon the alleged invalidity of the patent. Otherwise the defendant in claiming to manufacture under the license and refusing to pay the royalties thereunder would, if successful, prevent the plaintiff from recovering anything from it. She could not treat the defendant as an infringer, because it was manufacturing under a license from her, and she could not collect the royalties under the license, (although herself refraining from manufacturing, as she had agreed,) because the defendant would allege the invalidity of the patent, although continuing to manufacture under cover of a license from its owner. Such doctrine cannot stand a moment. Of course, as is said in the *Marston* case, from the time that the patent is annulled by proper legal proceedings no royalties could be collected, even though no notice of a repudiation of the agreement had been thereafter served.

There is another ground upon which it seems to me this judgment might well rest. Under the clause in the agreement between the parties which provided for a forfeiture of all rights thereunder if one party should willfully violate one of its provisions the plaintiff gave notice of such forfeiture to the defendant based upon its refusal to pay the royalties which it had acknowledged to be due for the quarter ending October 31, 1881, (the very quarter in question here,) an account of which it had rendered under the oath of its secretary, as provided for in such agreement. Subsequently to the service of such notice the plaintiff withdrew the same at the request of the defendant and upon its promise to pay these very royalties which it had already acknowledged to be due. A failure to carry out such promise gives, as it seems to me, a good cause of action.

The defendant says there was no consideration for such a promise, because there was no patent upon which to ground a license, and the defendant therefore had no license and no protection; but the plaintiff of course contended that the reissued patent was valid, and at the request of the defendant the plaintiff withdrew her notice of forfeiture of the license, and thus reinstated the defendant in its possession and freed it from the liability to be proceeded against as an infringer and put to expense and inconvenience in the defense of such a litigation. This was saved at the request of the defendant and upon its special promise to pay the royalties. Plainly here was a good and sufficient consideration for the defendant's promise.

The judgment should be affirmed, with costs. All concur.

Mr. E. D. McCarthy for the appellant.

Mr. George W. Van Slyck for the appellee.

Mr. Justice GRAY, after stating the case as above reported, delivered the opinion of the Court.

The defendant contended in the courts of New York that those courts had no jurisdiction, because the plaintiff's right to maintain her action depended upon the question whether the second reissue of her patent was valid or invalid under the patent laws of the United States, and that of that question the courts of the United States had exclusive jurisdiction. The judgments of each court of the State holding that the question of the validity of that reissue could not be contested in this action, and assuming jurisdiction to render judgment against the defendant, necessarily involved a decision against the immunity claimed by the defendant under the Constitution and laws of the United States, which this Court has jurisdiction to review. The motion to dismiss must therefore be denied, but the decision was so clearly right that the motion to affirm is granted.

The action was upon an agreement in writing, by which the plaintiff, as owner of letters patent, already once reissued, granted to the defendant an exclusive license to make and sell the patented articles within a certain territory during the term of the patent and of any extension or renewal thereof; and the defendant expressly acknowledged the validity of the letters patent, and stipulated that the plaintiff might, without prejudice to this agreement, obtain further reissues, and promised to pay to the plaintiff certain royalties so long as no decision adverse to the validity of the patent should have been rendered.

The defendant contended that this was a case arising under the patent laws, of which the courts of the United States have exclusive jurisdiction. (Rev. Stat., sec. 629, cl. 9; sec. 711, cl. 5.) But it is clearly established by a series of decisions of this Court that an action upon such an agreement as that here sued on is not a case arising under the patent laws.

It has been decided that a bill in equity in the circuit court of the United States by the owner of letters patent to enforce a contract for the use of the patent right, or to set aside such a contract because the defendant has not complied with its terms, is not within the acts of Congress by which an appeal to this Court is allowable in cases arising under the patent laws, without regard to the value of the matter in controversy. (Act of July 4, 1836, c. 357, sec. 17, 5 Stat., 124; Rev. Stat., sec. 699; *Wilson* v. *Sandford*, 10 How., 99; *Brown* v. *Shannon*, 20 How., 55.)

Following those decisions, it was directly adjudged in *Hartell* v. *Tilghman* (99 U. S., 547) that a bill in equity by a patentee, alleging that the defendants had broken a contract by which they had agreed to pay him a certain royalty for the use of his invention and to take a license from him, and thereupon he forbade them to use it, and they disregarded the prohibition, and he filed this bill charging them as infringers, and praying for an injunction, an account of profits, and damages, was not a case arising under the patent laws, and therefore the parties, being citizens of the same

State, not within the jurisdiction of the circuit court of the United States. And the judges who dissented from that conclusion admitted it to be perfectly well settled—

that where a suit is brought on a contract of which a patent is the subject-matter, either to enforce such contract or to annul it, the case arises on the contract, or out of the contract, and not under the patent laws. (99 U. S., 558.)

In the still later case of *Albright* v. *Teas*, (106 U. S., 613,) a patentee filed a bill in equity in a State court, setting up a contract by which he agreed to assign his patent to the defendants, and they agreed to pay him certain royalties, and alleging that the defendants had refused to account for or pay such royalties to him, and had fraudulently excluded him from inspecting their books of account. The defendants answered that the plaintiff had been paid all the royalties to which he was entitled, and that if he claimed more it was because he insisted that goods made under another patent were an infringement of his. This Court held that it was not a case arising under the Constitution or laws of the United States, removable as such into the circuit court under the act of March 3, 1875, (c. 137, sec. 2, 18 Stat., 470.)

It was said by Chief Justice Taney in *Wilson* v. *Sandford*, and repeated by the Court in *Hartell* v. *Tilghman* and in *Albright* v. *Teas*—

The dispute in this case does not arise under any act of Congress; nor does the decision depend upon the construction of any law in relation to patents. It arises out of the contract stated in the bill, and there is no act of Congress providing for or regulating contracts of this kind. The rights of the parties depend altogether upon common law and equity principles. (10 How., 101, 102; 99 U. S., 552; 105 U. S., 619.)

Those words are equally applicable to the present case, except that, as it is an action at law, the principles of equity have no bearing. This action, therefore, was within the jurisdiction, and the parties being citizens of the same State, within the exclusive jurisdiction of the State courts, and the only Federal question in the case was rightly decided.

Upon the merits of the case it follows from what has been already said that no question is presented of which this Court upon this writ of error has jurisdiction. (*Murdock* v. *Memphis*, 20 Wall., 590.) The grounds of the judgment below appear in the opinion of the court of appeals, to which, under the existing acts of Congress, this Court is at liberty to refer. (*Philadelphia Fire Association* v. *New York*, 119 U. S., 110; *Kreiger* v. *Shelby County Railroad*, *ante*.) Whether that court was right in its suggestion that it would have no jurisdiction to determine the validity of the second reissue if incidentally drawn in question in an action upon an agreement between the parties, we need not consider, inasmuch as it expressly declined to pass upon any such question, because it held that in this action to recover royalties due under the agreement the defendant, while continuing to enjoy the privileges of the license, was estopped to deny the validity of the patent or of any reissue thereof. The decision was based upon the contract between the parties; and the court did not decide, nor was it necessary for the determination of the case that it should decide, any question depending on the construction or effect of the patent laws of the United States. (*Kinsman* v. *Parkhurst*, 18 How., 289; *Brown* v. *Atwell*, 92 U. S., 327.)

Judgment affirmed.

Supreme Court of the United States.

FELIX *v.* SCHARNWEBER.

Decided March 19, 1888.

JURISDICTION—PRACTICE.

In an action of assumpsit in a State court for the recovery of license-fees under a written contract the plaintiff recovered damages and the defendant brought the suit into this Court as involving a Federal question, and the defendant in error moved in this Court to dismiss the writ of error for want of jurisdiction. *Held* that as the question at issue in the State court was not of priority of invention or of the validity or construction of any patent, but simply whether the reels made and sold were the same, or substantially the same, as mentioned in the contract, no Federal question was presented. *Held*, in allowing a writ of error to this Court, the certificate of the chief justice of a State court that a Federal question arose is not conclusive upon this Court and cannot supply the want of evidence of such fact in the record.

IN ERROR to the Supreme Court of the State of Illinois.

STATEMENT OF THE CASE.

This was an action of assumpsit brought in the circuit court of Cook county, in the State of Illinois, by Scharnweber against Felix to recover royalties under the following contract signed by both parties:

Memorandum of agreement between Benjamin F. Felix and William Scharnweber, both of the city of Chicago, made this 12th day of February, 1878, witnesseth: That whereas the said Benjamin F. Felix and William Scharnweber are joint proprietors of a certain patent for an improved rope-reel, and it is mutually decided between them that the interests of both are best subserved by one of them having exclusive control of the manufacture and sale of said reel: It is hereby agreed that the said Benjamin F. Felix shall make such arrangements as may appear most desirable to him for their manufacture and supervise and direct solely their sale. On each and every rope-reel sold the said William Scharnweber is to receive a royalty of one dollar, to be paid to him on the last business day of each and every month. The said William Scharnweber agrees not to manufacture any rope-reels whatever or cause them to be manufactured, but can make sales and report the same to Benjamin F. Felix or Felix, Marston & Blair, who will deliver and collect for the same.

The defendant pleaded non-assumpsit, with notice that he would prove a failure of consideration by the plaintiff's manufacturing rope-reels and selling them to third persons.

At the trial the plaintiff offered evidence that at first the reels made under the contract worked satisfactorily, but afterward the defendant complained to him that they had too many coils and needed larger rolls; that thereupon, in January, 1879, he made and showed to the defendant a model of a reel with little pieces of cast-iron on the wooden roller, so as to form a screw to hold the flanges, and that reels subsequently sold by the defendant made from a later model furnished by one Mason were of the same construction, except in being wholly of iron, and that there was no difference in principle between them. The defendant objected to the admission of this evidence as going to show that the plaintiff invented the new style of reel and as collaterally attacking another patent. The court admitted the evidence and the defendant excepted to its admission.

The defendant afterward offered in evidence a patent issued to Mason on June 10, 1879, for the iron reel—

for the purpose of showing, or tending to show, that this reel was not the same reel as that patented on January 29, 1878, and referred to in the contract.

The plaintiff objected to its admission on the ground that it had nothing whatever to do with this suit on the contract. But the court admitted it.

The defendant also put in evidence the patent of January 29, 1878, No. 199,681, to Felix and Scharnweber, as well as evidence tending to show that the old style of reel did not work well and was unsatisfactory to purchasers, and called Mason as a witness, who testified that he invented the reel described in his patent.

It was admitted on both sides that the defendant had made and sold three hundred and thirty-five of what he called the old style or original style of rope-reels, on which he had paid the plaintiff a royalty of one dollar each, and two thousand one hundred and sixty-four of what the defendant called the new style, on which no royalty had been paid.

The court instructed the jury that if they should find from the evidence that the plaintiff and defendant executed the contract sued on, and that the defendant thereafter sold rope-reels such as or substantially like the rope-reel mentioned in the contract,

the plaintiff was entitled to recover under the contract for all such rope-reels sold by the defendant, if any.

The defendant excepted to this instruction, and requested the court to instruct the jury, as follows:

This is an action on a contract for royalty claimed upon the sale of certain rope-reels invented by the plaintiff and sold by defendant or his firm. Under this contract, as alleged in the declaration, the defendant is liable only for royalty unpaid, if any, on such reels sold by him or his said firm as are contemplated or covered by the terms of the contract. He is not liable in this suit for royalty on any other [and] different reels, whether invented by him, by the plaintiff, or any one else.

The court at first refused to give this instruction, and the defendant excepted to the refusal. The court then modified the instruction requested by inserting the word "and," as above printed in brackets, and gave the instruction so modified. The bill of exceptions contained these further statements:

To which action of the court in modifying said instruction the defendant duly excepted.

Thereupon the court further charged the jury for the defendant, as follows: Therefore, unless you find from the evidence that the defendant owes to the plaintiff royalty upon a sale of the original Scharnweber reels made substantially as these reels were made at the date of the contract between the parties then your verdict should be for the defendant.

No other instructions were given to the jury by the court.

The jury returned a verdict for the plaintiff in the sum of two thousand two hundred and fifty-five dollars. The defendant moved for a new trial; but upon the plaintiff's remitting the sum of ninety-one dollars from the verdict the court overruled the motion. The defendant excepted to this ruling and judgment was rendered upon the verdict.

The defendant appealed to the Appellate Court for the First District of Illinois, assigning for error the admission of incompetent evidence for the plaintiff and the charge to the jury. The appellate court affirmed the judgment.

The defendant then appealed to the Supreme Court of Illinois, which affirmed the judgment of the appellate court, and in the opinion filed with its clerk held that the charge of the court to the jury was as full and favorable to the defendant as the law would warrant, inasmuch as it confined the issue to the number of reels sold under the contract, and the question of fact how many machines were sold by the defendant under the contract was conclusively settled by the findings of the lower courts, and that in the admission of the testimony objected to by the defendant there was no error—certainly none that could affect the merits of the case under the instructions given to the jury.

A writ of error was allowed by the Acting Chief Justice of the Supreme Court of Illinois upon the petition of the defendant representing that in said case in that court the defendant set up and relied on the patent granted by the United States to Mason on June 10, 1879, the validity of that patent was assailed, and the decision was against the rights and privileges set up by the defendant under it, and also that in said proceedings he alleged that the jurisdiction to try the questions so involved was exclusively in the courts of the United States and the decision of the court was against him. The plaintiff moved to dismiss the writ of error for want of jurisdiction.

Mr. B. C. Cook for the appellant.
Mr. Henry Decker for the appellee.

Mr. Justice GRAY, after stating the case as above reported, delivered the opinion of the Court.

This record does not present any Federal question. No such question is stated in the pleadings involved in the rulings at the trial or in the final judgment or mentioned in the opinion of the Supreme Court of Illinois.

The action was brought upon a contract in writing between the parties, being the joint owners of a patent for an improved rope-reel, by which it was agreed that the defendant should have the exclusive control of the manufacture and sale of the reel, paying to the plaintiff a certain royalty on each reel sold. This was not a case arising under the patent laws of the United States within the exclusive jurisdiction of the Federal courts, (*Dale Tile Manufacturing Co.* v. *Hyatt*, *ante*,) and no suggestion that it was appears by the record to have been made in either of the courts of the State.

The only exceptions taken by the defendant at the trial were to the admission of evidence offered by the plaintiff and to the instructions given by the court to the jury. But that evidence does not appear to have been admitted for any other purpose than to show that the reels made and sold by the defendant were substantially like those mentioned in the agreement sued on. At the time of its admission no letters patent were in the case. The question at issue was not of priority of invention or of the validity or construction of any patent, but simply whether the reels made and sold by the defendant were such as or substantially like those mentioned in his contract with the plaintiff, and in the instructions to the jury the plaintiff's right of recovery was carefully limited to such reels. The patent to Mason was introduced in evidence afterward, and by the defendant himself, against the plaintiff's objection, and no ruling upon the validity or the construction of either patent or upon the legal effect of the evidence was requested by the defendant or made by the court.

The petition upon which the writ of error was allowed by the Acting Chief Justice of the Supreme Court of Illinois does indeed represent that the patent to Mason was set up by the defendant and its validity assailed, and that the defendant also alleged that the jurisdiction to try the questions involved was exclusively in the courts of the United States, and that the decision of the State court was against him on both these points; but in allowing a writ of error from this court to the highest court of a State and in issuing a citation the chief justice of that court does but exercise an authority vested by Congress in him concurrently with each of the justices of this Court. (Rev. Stat., sec. 999; *Gleason* v. *Florida*, 9 Wall., 779; *Bartemeyer* v. *Iowa*, 14 Wall., 26.) When counsel applying for the allowance of the writ of error insist that a Federal question has been decided against the plaintiff in error, the chief justice of the State court may feel bound to allow the writ for the purpose of submitting to the final determination of this Court whether such a question was necessarily involved in the judgment sought to be reviewed, but his certificate that such a question arose and was decided against the plaintiff in error cannot supply the want of all evidence to that effect in the record. As has been more than once observed by this Court—

the office of the certificate as it respects the Federal question is to make more certain and specific what is too general and indefinite in the record, but is incompetent to originate the question. (*Parmelee* v. *Lawrence*, 11 Wall., 36, 39; *Brown* v. *Atwell*, 92 U. S., 327, 330.)

Writ of error dismissed for want of jurisdiction.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

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CONTENTS.

	Page.
ORDER No. 472	253
NOTICES	253
ISSUE OF APRIL 17, 1888	253
DESIGNS	254
TRADE-MARKS	254
LABELS	254
PATENTS GRANTED	255
REISSUES	376
DECISIONS OF THE U. S. COURTS—	
Dolbear *et al.* v. American Bell Telephone Company, Molecular Telephone Company *et al.* v. American Bell Telephone Company *et al.* American Bell Telephone Company *et al.* v. Molecular Telephone Company *et al.* Clay Commercial Telephone Company *et al.* v. American Bell Telephone Company *et al.* People's Telephone Company *et al.* v. American Bell Telephone Company *et al.* Overland Telephone Company *et al.* v. American Bell Telephone Company *et al.*	377
Edward Barr Company (Limited) v. New York and New Haven Automatic Sprinkler Company	382

Order No. 472.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 11, 1888.

The following changes in Class 176, Electric Lighting, are hereby directed:

The subdivision and reclassification of Arc Lights, as follows:

Lights, Arc—
Gravity-feed,
Gravity-feed clutch,
Gravity-feed gear-clutch,
Positive-feed,
Positive-feed clutch,
Positive-feed gear-clutch,
Arc and incandescent,
Non-feeding.

The class of Systems and Appliances is abolished, and as a substitute therefor the following sub-classes are created:

Electric lighting, systems.
Arc lights, special features.
Incandescent lights, special features.

BENTON J. HALL,
Commissioner.

Notice.

UNITED STATES PATENT OFFICE,
Washington, D. C., April 13, 1888.

To expedite the distribution of the mail in this Office, and to insure the prompt and certain delivery of communications to the divisions and officials having charge of the matters to which they relate, attorneys and correspondents are respectfully requested to enter upon the upper left-hand corner of amendments and other communications, if known to them, the number of the room and the name of the examiner or designation of the division to which the communication should be sent.

BENTON J. HALL,
Commissioner of Patents.

43 O G—3—i

Notice.—Models in Rejected or Abandoned Cases.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 9, 1888.

Notice is hereby given to inventors and the public that a large number of models is in the custody of this Office, which were received between the years 1879 and 1885, many of which have never become a part of the records of this Office. All such models and all models belonging to rejected or abandoned applications will be sold or otherwise disposed of under the provisions of section 486 of the Revised Statutes unless removed in sixty days from the date hereof.

Institutions of learning in good standing may, after the expiration of the time above limited, on written application, make selection before the day of public sale of models remaining unclaimed. The expense of removal or transportation of these models must be borne by the applicants or institutions of learning.

BENTON J. HALL,
Commissioner.

Issue of April 17, 1888.

Patents	423	No. 381,097 to No. 381,519, inclusive.
Designs	4	No. 18,259 to No. 18,262, inclusive.
Trade-Marks	20	No. 15,360 to No. 15,379, inclusive.
Labels	7	No. 5,557 to No. 5,563, inclusive.
Reissues	2	No. 10,922 to No. 10,923, inclusive.
Total issue	456	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	.....	Nebraska	2	.....
Arizona Territory	.....	.....	Nevada	.....	.....
Arkansas	2	.....	New Hampshire	4	.....
California	15	1	New Jersey	19	.....
Colorado	3	.....	New Mexico Territ'y	2	.....
Connecticut	22	.....	New York	74	11
Dakota Territory	2	.....	North Carolina	3	.....
Delaware	.....	.....	Ohio	23	.....
District of Columbia	2	.....	Oregon	2	.....
Florida	1	.....	Pennsylvania	23	5
Georgia	2	1	Rhode Island	2	.....
Idaho Territory	.....	.....	South Carolina	2	.....
Illinois	47	.....	Tennessee	3	.....
Indian Territory	.....	.....	Texas	4	.....
Indiana	7	.....	Utah Territory	.....	.....
Iowa	5	1	Vermont	.....	1
Kansas	6	.....	Virginia	5	.....
Kentucky	2	.....	Washington Territ'y	1	.....
Louisiana	3	.....	West Virginia	2	.....
Maine	2	.....	Wisconsin	11	.....
Maryland	9	1	Wyoming Territory	.....	.....
Massachusetts	55	4	United States Army	.....	.....
Michigan	10	.....	United States Navy	1	.....
Minnesota	3	.....			
Mississippi	1	.....	Total to citizens of the United States	396	25
Missouri	9	.....			
Montana Territory	.....	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	.....	.....	Germany	7	1
Australia	.....	.....	Hawaii	1	.....
Austria-Hungary	.....	.....	Mexico	.....	.....
Belgium	.....	.....	New South Wales	.....	.....
Bermuda	.....	.....	New Zealand	.....	.....
Brazil	.....	.....	Norway	.....	.....
Canada	4	.....	Russia	.....	.....
Chili	.....	.....	Scotland	1	.....
Colombia, U. S. of	.....	.....	South Australia	1	.....
Cuba	.....	.....	Sweden	1	.....
Denmark	1	.....	Victoria	.....	.....
England	11	1			
Finland	.....	.....	Total to citizens of foreign countries	31	2
France	4	.....			

DESIGNS.

18,259.—CUSPIDON.—*Henry Beeston*, Philadelphia, Pa. Application filed January 17, 1888. Serial No. 261,050. Term of patent 3½ years.

18,260.—CHAMBER-VESSEL.—*John A. Davis*, Springfield, Ohio. Application filed March 1, 1888. Serial No. 265,866. Term of patent 7 years.

18,261.—BRUSH.—*Lorenzo D. Grant*, Lansingburg, N. Y. Application filed February 1, 1888. Serial No. 262,691. Term of patent 7 years.

18,262.—LAMP-FOUNT.—*Albert Patitz*, Meriden, Conn., assignor to *The Bradley & Hubbard Manufacturing Company*, same place. Application filed February 27, 1888. Serial No. 265,524. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,360.—ENVELOPES.—*Peter Arata*, New York, N. Y. Application filed February 15, 1888. Used since January 1, 1887.

"The word 'DAISY.'"

15,361.—BARBED FENCE-CABLE.—*Baker Wire Company*, Des Moines, Iowa. Application filed January 24, 1888. Used since January 1, 1888.

"The words 'BAKER PERFECT' and the representation of a piece of barbed-wire cable."

15,362.—BISCUITS FOR DOGS, HORSES, CATTLE, AND OTHER ANIMALS.—*G. H. Bonnor & Co.*, London, England. Application filed February 24, 1888. Used since December, 1886.

"The word 'COMBERMERE.'"

15,363.—WHEAT-FLOUR.—*Bourne, Graham & Fell*, New York, N. Y. Application filed February 27, 1888. Used since February 14, 1888.

"The words 'GRANO DE ORO.'"

15,364.—MEDICINAL EXTRACTS, PILLS, ELIXIRS, AND CHEMICALS.—*Hance Brothers & White*, Philadelphia, Pa. Application filed June 20, 1887. Used since 1865.

"The representation of a shield with a human figure thereon rising out of a spray of flowers."

15,365.—PLEASURE CARRIAGES.—*Healey & Co.*, Now York, N. Y. Application filed February 25, 1888. Used since January 1, 1886.

"The firm-name 'HEALEY & CO.' in autograph form."

15,366.—MEDICINE FOR DYSPEPSIA AND PULMONARY DISEASES.—*The Hunt Kiddie Company*, Gloucester, Mass., and New York, N. Y. Application filed February 13, 1888. Used since July 1, 1887.

"The representation of the liver of a fish between horizontal and vertical lines."

15,367.—BOOTS AND SHOES.—*Mayer Sam & Co.*, New York, N. Y. Application filed February 24, 1888. Used since March 28, 1885.

"The word 'PALACE.'"

15,368.—MEDICAL COMPOUND FOR AIDING DIGESTION AND CURING DYSPEPSIA.—*The New York Pharmacal Association*, Yonkers, N. Y. Application filed February 28, 1888. Used since January, 1873.

"The word 'LACTOPEPTINE.'"

15,369.—MEDICINAL PREPARATIONS GENERALLY.—*Henry M. O'Neil*, New York, N. Y. Application filed February 20, 1888. Used since October, 1884.

"The words 'SHORT STOP.'"

15,370.—PHARMACEUTICAL PREPARATIONS.—*Adrian Paradis*, Brooklyn, N. Y. Application filed February 24, 1888. Used since February 16, 1888.

"The words and figures 'PARADIS, ACCURACY, 1879, PURITY,' all inclosed in a circular border surrounding and by another circular border separated from a representation of scales or balances and a mortar and pestle."

15,371.—COUGH-DROPS.—*George W. Pepper*, Peabody, Mass. Application filed January 3, 1888. Used since September 13, 1885.

"A vignette likeness of the registrant and the words 'GEO. W. PEPPER'S DIAMOND COUGH DROPS,' the word 'DIAMOND' being upon a diamond-shaped figure."

15,372.—WIRE NAILS.—*Pittsburgh Wire Nail Company*, Pittsburg, Pa. Application filed February 9, 1888. Used since September 15, 1887.

"The words 'THE NAIL OF THE PAST—OF THE FUTURE,' in connection with the representation of two nails, one of which is a cut nail and the other a wire nail."

15,373.—COMPOSITION OF HERBS TO BE USED AS A TEA.—*Quaker Remedies Co.*, Philadelphia, Pa. Application filed January 21, 1888. Used since January, 1887.

"The words 'QUAKER TEA.'"

15,374.—BONELESS FISH.—*Shute & Merchant*, Gloucester, Mass. Application filed February 27, 1888. Used since February 8, 1888.

"The word 'WEDGE.'"

15,375.—TYPE-WRITING MACHINES.—*Standard Typewriter Manufacturing Company*, New York, N. Y. Application filed February 23, 1888. Used since 1881.

"The word 'REMINGTON.'"

15,376.—TYPE-WRITING MACHINES.—*Standard Typewriter Manufacturing Company*, New York, N. Y. Application filed February 25, 1888. Used since 1881.

"A circular disk-shaped mark having circumferential notches, so as to represent an official seal."

15,377.—SUSPENDERS.—*Scranton Suspender Company*, Swanton, Vt. Application filed December 14, 1887. Used since December 1, 1885.

"The words 'KEEP YOUR PANTS ON WITH THE ATWOOD SUSPENDER.'"

15,378.—CANNED OYSTERS AND VEGETABLES.—*Solomon Davies Warfield*, Baltimore, Md. Application filed February 21, 1888. Used since May, 1887.

"The word 'DAGGER.'"

15,379.—HOSIERY.—*Wex & Söhne*, Chemnitz, Saxony, Germany. Application filed February 17, 1888. Used since January 15, 1887.

"The word 'VICTORIA,' arranged in a curved line with an enlarged and ornamented initial letter 'V.'"

LABELS.

5,557.—Title: "BAILEY'S RUBBER TOILET BRUSH."—*Charles J. Bailey & Co.*, Boston, Mass. Application filed February 21, 1888.

5,558.—Title: "CORN STARCH SUBSTITUTE WOOD FILLER."—*S. Bowen's Sons*, Philadelphia, Pa. Application filed March 20, 1888.

5,559.—Title: "EXTRA BLACK BIRD GIN."—*James de Fremery & Co.*, San Francisco, Cal. Application filed March 20, 1888. (Trade-Mark Registered.)

5,560.—Title: "F. S. PEACOCK'S AROMATIC EXTRACT OF BLACKBERRY AND GINGER."—*William C. Peacock*, Atlanta, Ga. Application filed March 19, 1888.

5,561.—Title: "IMPROVED STENCILS."—*John Trischka*, New York, N. Y. Application filed March 19, 1888.

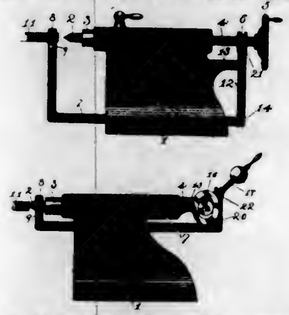
5,562.—Title: "CHALYBEATE SALINE."—*William R. Warner*, Philadelphia, Pa. Application filed March 20, 1888.

5,563.—Title: "BRILLIANT COFFEE." (FOR ROASTED COFFEE.)—*Yehling & Coenen*, New York, N. Y. Application filed February 25, 1888.

PATENTS

GRANTED APRIL 17, 1888.

381,097. **ATTACHMENT FOR LATHES.** JOHN W. ALLEN, Hartford, Conn. Filed July 1, 1887. Serial No. 243,063. (No model.)



Claim.—1. A foot-block and spindle of a lathe, a centering device, and a sliding bar carrying said centering device, in combination with a lever connecting said bar and spindle and pivoted between them, substantially as and for the purpose specified.

2. A foot-block, spindle, and dead-center of a lathe, a centering device, and a sliding bar carrying said centering device, in combination with a link and lever which connect said bar and spindle, substantially as and for the purpose specified.

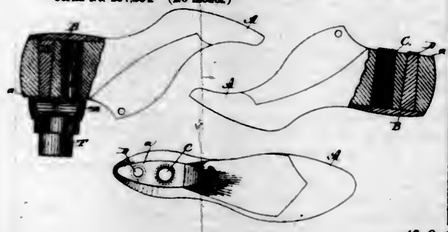
3. A foot-block, spindle, and dead-center of a lathe, a rest for holding blanks in position to take the dead-center, and a sliding bar carrying said rest, in combination with a lever which is provided with a cam engaging said spindle, substantially as and for the purpose specified.

4. In a lathe, a foot-block, a spindle, a dead-center, a rest, and a sliding bar carrying said rest, in combination with a lever which is pivoted in a bracket upon said block and is adapted to impel said bar and spindle simultaneously in opposite directions, substantially as and for the purpose specified.

5. A foot-block, a spindle, and a dead-center of a lathe, and a rest for holding blanks in position to take said dead-center, in combination with a lever connected with said bar and carrying a cam which engages said spindle, substantially as and for the purpose specified.

6. As means of setting blanks of different sizes in position to receive the dead-center of a lathe, a rest mounted upon a movable support and consisting of two arms which form an angle with each other, and are provided with screws for contact with said blanks, substantially as and for the purpose specified.

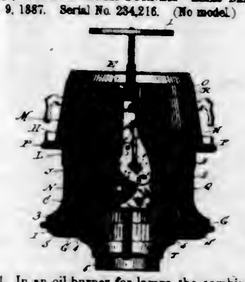
381,098. **LAST.** DAYTON HALL, Albany, N. Y. Filed Dec. 8, 1887. Serial No. 257,284. (No model.)



Claim.—1. A last provided with a metallic heel-plate, in combination with a coniform sleeve and a coniform stud, as herein described, both sleeve and stud being made of metal and having a slightly greater length than the depth of the cone of the last, said heel-plate, sleeve, and stud all being made independently of each other, and the sleeve and stud being inserted in said last, so that the larger end of each will have a separate bearing against the inner face of said heel-plate, as and for the purpose herein specified.

2. The combination, with a last provided with a metallic heel-plate and having a metallic sleeve and a metallic stud inserted separately in the cone of said last, the inner ends of both sleeve and stud having a separate bearing against the inner face of said heel-plate, and the outer ends of both projecting slightly from the upper face of the cone of the last, of a jack provided with a single pin which is fitted to the bore of the sleeve of the last, but is of insufficient length to bear against the heel-plate, said pin being arranged eccentrically to the center of the jack-spindle, on which said jack is fitted, as and for the purpose herein specified.

381,099. **ARGAND LAMP-BURNER.** ELIAS BEACH, Chicago, Ill. Filed Apr. 9, 1887. Serial No. 234,216. (No model.)



Claim.—1. In an oil-burner for lamps, the combination of a perforated outer shell, a removable tube, a tube-holder formed with openings in its sides, vertical and horizontal draft-tubes, and thimbles connecting the horizontal draft-tube to the tube-holder, substantially as described.

2. The combination, in an Argand burner, of the vertical tube E, the conical spider I, having a continuous rim and projections at the bottom, the horizontal tube B, the bracket F, the crank J, toggle-lever K, rack-bar N', and the spur-wheel 10, substantially as described.

3. The combination, in an Argand burner, of a rack-bar constructed with a projection or pin, a slotted crank, a toggle-lever hinged thereto and having a lug resting on said pin, and means for operating the said parts, substantially as described.

4. The combination, in an Argand burner, of the cone, the spreader having a downwardly-extending shank, the tubular rack-bar having an open top, an open side, and a projecting pin, and devices for operating said bar, substantially as described.

5. In an Argand burner, the combination of the cone, the spreader, the toggle-lever K, the crank J, the rack-bar N', and means for operating the latter, substantially as described.

6. In an Argand burner, the combination of the male joint T, the support S, the outside shell, A, the tube-holder, and the lock-ring G, for uniting the said parts, substantially as described.

7. The combination, in an Argand burner, of a wick-engaging ring, the rack-bar connected to said wick-engaging ring, a shaft provided with a spur-wheel engaging said rack, the central air-tubes, a deflector or spreader connected with said rack-bar, a crank hinged

within the central air-tubes, and a toggle-lever hinged to the crank and having an arm extending into the open side of the rack-bar and forming a support for the spreader, the rack-bar and crank being provided the one with a projecting pin and the other with a recess engaging the same, substantially as described.

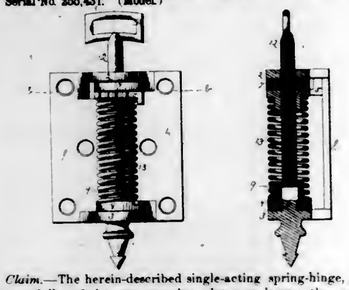
8. The combination, in an Argand burner, of a deflector or spreader, a conical spider, the vertical tube, the rack-bar provided with a projecting pin, a shaft and spur-wheel, a toggle-lever having a bent arm extending into the rack-bar and a stop or shoulder formed upon the opposite side thereof, a slotted crank, and a supporting-bracket, substantially as described.

9. The combination, in an Argand burner, of a vertical tube, E, the deflector I, the spider I_1, the rack-bar N', provided with the projection or pin, the slotted crank J, the toggle-lever K, hinged to said crank, the spur-wheel, and the operating-shaft, substantially as described.

10. The combination, in an Argand burner, of the wick-raiser, the movable tubular rack-bar having the projection, the slotted crank J, the toggle-lever K, the conical spider I_1, and the deflector I, the slot in the crank and the construction of the toggle-lever allowing the required travel of the rack-bar, substantially as described.

11. The combination, in an Argand burner, of the wick-raising ring having flexible arms, the deflector, the rack-bar having the pin, the slotted crank, the toggle-lever hinged to said crank, the bracket to which the crank is hinged, and means for moving said rack-bar, substantially as described.

381,100. SPRING-HINGE. WILLIAM H. BEATH, Rockford, Ill., assignor to Charles H. C. Burlingame, same place. Filed Nov. 17, 1887. Serial No. 255,431. (Model.)



Claim.—The herein-described single-acting spring-hinge, consisting, essentially, of the two securing plates or leaves, the combined clutch-head and ratchet, the spring and the pintle-key, the securing-plate being provided with ears perforated to register with one another, the spring seated at one end directly on one of the ears and at the opposite end on the combined clutch-head and ratchet, the pintle-key extending through the axial center of the hinge and combined clutch-head and ratchet, and one of the plates being further provided with a pawl to engage the teeth on the ratchet, substantially as set forth.

381,101. STOVE-DOOR. WILLIAM F. BECHER, Cleveland, Ohio. Filed Oct. 3, 1887. Serial No. 251,285. (No model.)



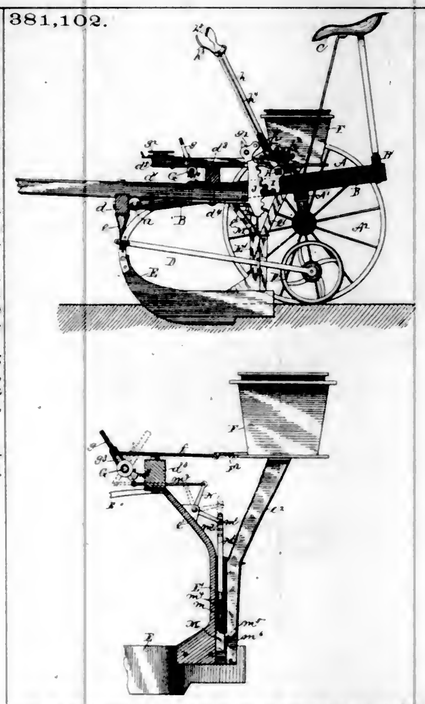
Claim.—1. In a stove-door or parts of a stove or furnace secured together by suitable means, the door-section C, a frame, B, with the mica interposed between said frame and the back of section C, in combination with the section A, having an air-conduit arranged in open relation with apertures in said frame B and section C, with an outlet from the conduit, whereby the external air is induced and directed over the interior face of the mica, in the manner and by the means substantially as described.

2. A stove-door provided with one or more mica panels and having air openings or conduits in the sections of said door leading from the front thereof to the inside of the mica, constructed and arranged for the induction of external air through said openings or conduits and directed to and over the interior face of the mica, in the manner substantially as described, and by the means for the purpose set forth.

381,102. CHECK-ROW CORN-PLANTER. JAMES E. BERING, Decatur, Ill., assignor to the Chambers, Bering, Quinlan Company, same place. Filed Jan. 3, 1888. Serial No. 259,571. (No model.)

Claim.—1. In a corn-planter, in combination with the rear frame carried on wheels, the forward frame hinged thereto and provided

381,102.



with the seed dropping and planting mechanisms, and a rock-shaft, H, journaled to the rear frame and provided with a lock-lever, A, at one end and a sector-gear at its mid-length, the tongue extended in rear of the forward frame and provided with a segment-gear, J, which gears with the sector I, substantially as and for the purpose specified.

2. In combination with a corn-planter of the type herein described, having a rear frame mounted on wheels and extended forward and hinged at its forward end to the forward end of a forward frame, to which the tongue is fixed to extend in rear of said forward frame, a rock-shaft journaled to said rear frame and provided with a lock-lever at one end and a sector-gear at its mid-length, and a segment-gear on the rear end of the tongue, substantially as and for the purpose described.

3. In combination with a corn-planter of the type herein described, having a rear frame mounted on wheels and extended forward and hinged at its forward end to the forward end of a forward frame, to which the tongue is fixed to extend in rear of said forward frame, a rock-shaft journaled to said rear frame and provided with a lever at one end and a sector-gear at its mid-length, and a segment-gear on the rear end of the tongue, substantially as and for the purpose specified.

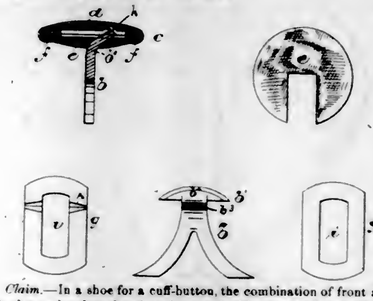
4. In a check-row corn-planter with seeding mechanisms actuated by a check-row line having tappets, in combination with said actuating and seed-dropping mechanisms, a discharge-valve in the seed-tube adjustable with reference to the seed-tube and its actuating mechanism, whereby it may be made to delay or hasten the discharges, substantially as and for the purpose specified.

5. In a corn-planter, in combination with a seed-tube, and a discharging-valve adjustably connected with its actuating mechanism, and with reference to the seed-tube discharge-opening, substantially as and for the purpose described.

6. In combination with the seed-tube E', bell-crank lever N, and its actuating mechanism, and the discharge-valve M, an adjustable valve-stem M', substantially as and for the purpose specified.

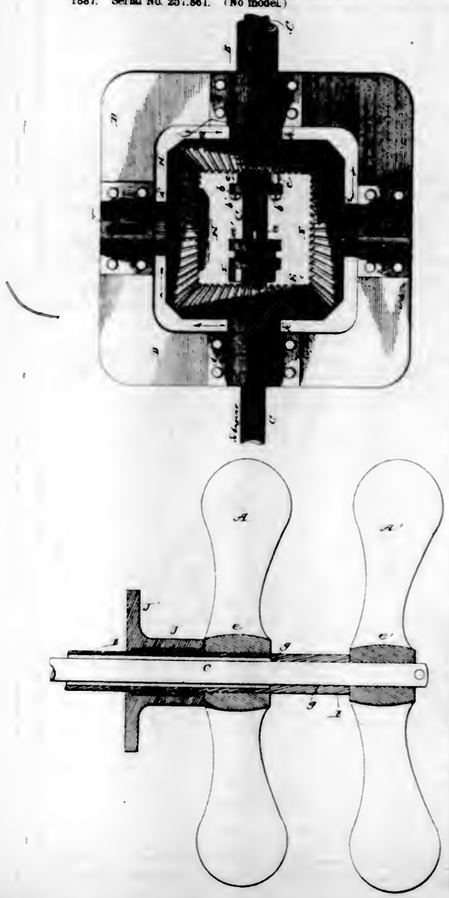
7. In a corn-planter, in combination with check-rower actuating mechanism of the type herein described, a seed-measuring valve in the seed-box, and a discharging-valve in the seed-tube, said valves both actuated by the same check-row rock-shaft, and an adjustable connection between the discharge-valve and its actuating mechanism, substantially as and for the purpose specified.

381,103. BUTTON. ACHILL BIFFART, Newark, N. J. Filed Oct. 3, 1887. Serial No. 251,292. (No model.)



Claim.—In a shoe for a cuff-button, the combination of front and back plates, *d e*, slotted spring-plates *g g'*, with a recess, *h*, to hold the shank or post in position, and all held in position in regard to each other by turning the edge of the front plate over upon the edge of the back plate, all the above parts constructed and combined substantially as set forth.

381,104. PROPELLER-WHEEL. JASON S. BISHOP, Olean, N. Y., assignor of one-half to Frank W. Higgins, same place. Filed Dec. 14, 1887. Serial No. 257,861. (No model.)

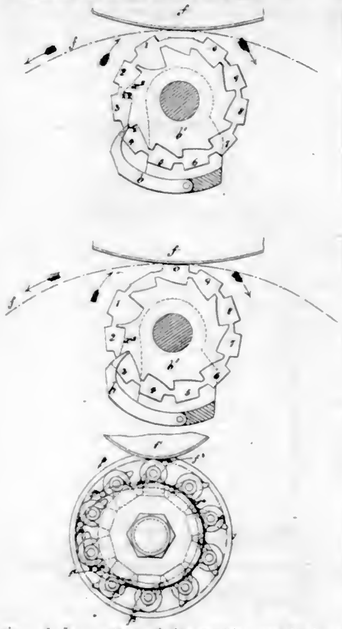


Claim.—1. In propelling mechanism for boats, the combination, with a support, a hollow shaft journaled therein and carrying a propeller-wheel, and a solid shaft journaled in said support and in the hollow shaft and carrying a propeller-wheel, of a gear-wheel secured to one shaft, a gear-wheel loosely mounted on the other shaft, and a sliding clutch loosely mounted on the solid shaft for locking the said loose wheel to the shaft, substantially as set forth.

2. In propelling mechanism for boats, the combination, with a bed-plate, a hollow shaft journaled therein and carrying a propeller-wheel, and a solid shaft journaled in the bed-plate and in the hollow shaft and carrying a propeller-wheel, of a gear-wheel adjustably secured to one shaft, a gear-wheel loosely mounted on the other shaft, intermediate gear-wheels meshed with said wheels, and a sliding clutch-collar on one shaft adapted to lock the loose gear-wheel to its shaft, substantially as set forth.

3. In propelling mechanism for boats, the combination, with a bed-plate, a hollow shaft journaled therein and carrying a propeller-wheel, a gear-wheel adjustably secured thereto, a solid shaft journaled in the bed-plate, and also in the hollow shaft, and carrying a propeller-wheel, and a gear-wheel loosely mounted on the solid shaft, of intermediate gear-wheels meshed with the said gear-wheels, and a sliding clutch mounted on the solid shaft and adapted to lock the loose gear-wheel to said shaft, substantially as set forth.

381,105. NUMBERING MECHANISM. JOHN M. BLACK, London, England. Filed Mar. 3, 1886. Serial No. 193,857. (No model.) Patented in England Feb. 18, 1884, No. 3,484, and June 6, 1884, No. 8,673; in Germany Apr. 27, 1886, No. 38,867; in France May 10, 1886, No. 176,024, and in Belgium Oct. 27, 1886, No. 67,501.

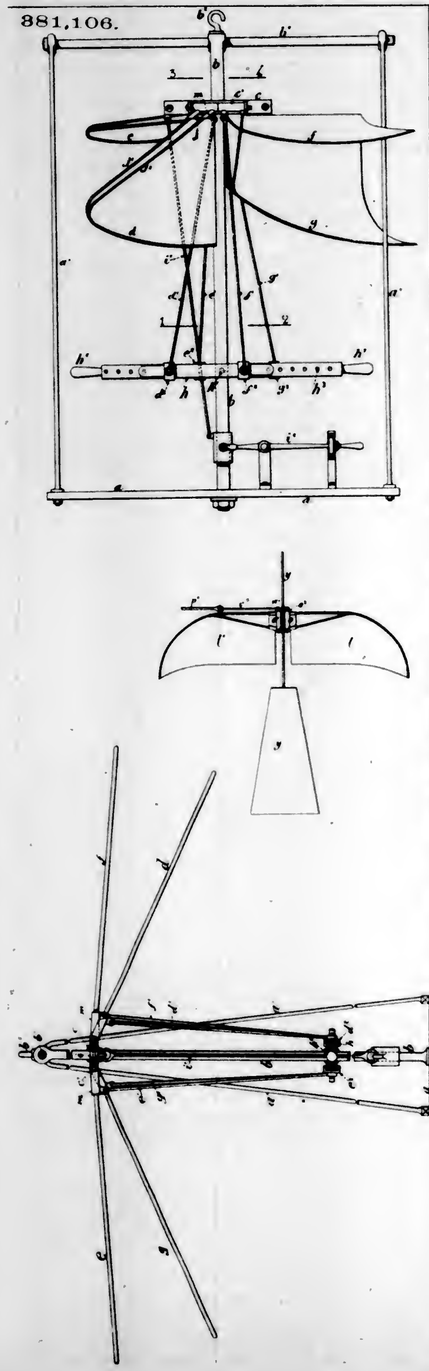


Claim.—1. In a rotary printing-machine, the fixed annular grooved cam f^5, in combination with printing-cylinders and the levers, pawls, and ratchets through which said cam changes the type-numbers, substantially as set forth.

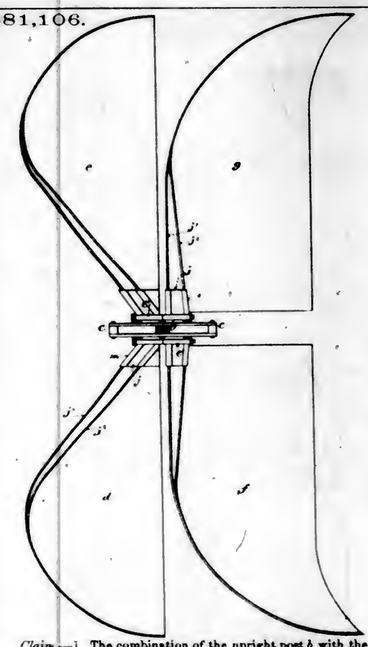
2. A series of numbering-disks, each having ten dies and a blank space, and each provided with a ratchet-wheel having eleven teeth, one of which is somewhat cut away, in combination with a pawl provided with means, substantially as described, for giving the same a motion not quite equal to the length of two teeth, except at the point where the pawl reaches the cut-away tooth at the end of its motion.

381,106. APPARATUS FOR AERIAL NAVIGATION. BLAISE BOSTEEL, Paris, France. Filed May 12, 1885. Serial No. 165,196. (No model.) Patented in France Apr. 13, 1885, No. 168,266; in Belgium Apr. 17, 1885, No. 68,548; in England Apr. 24, 1885, No. 5,118; in Italy Apr. 29, 1885, XXXVI, 213, and in Germany May 4, 1886, No. 33,963.

381,106.



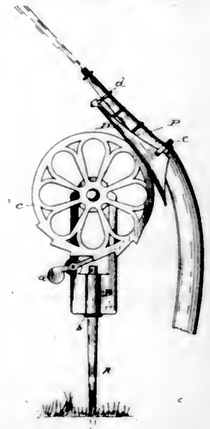
381,106.



Claim.—1. The combination of the upright post *b* with the frame *c*, carrying pivoted wings *d e f g*, and with the lever *h* on the post *b*, rods *d' e' f' g'*, and clasps d^2 e^2 f^2 g^2, the said clasps and rods serving to connect the lever *h* with the pivoted wings, respectively, substantially as herein shown and described.

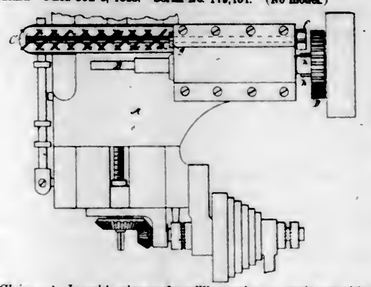
2. The combination of the rudder *y* with the horizontal tube *p*, wings *l l'*, tube o^2, crank-arbors *o o'*, and with mechanism, substantially as described, for oscillating said crank-arbors and said tube *p*, the wings *l l'* being secured to the crank-arbors *o o'*, which project from the tube o^2, that is carried by the tube *p*, said tube *p* also carrying the rudder, as specified.

381,107. ADJUSTABLE GARDEN-HOSE AND PIPE SUPPORTER. CHARLES BOOER, Buffalo, N. Y. Filed Sept. 21, 1887. Serial No. 250,370. (No model.)



Claim.—In combination with the vertical rod A, having the shoulder *b* thereon, the holder B, setting on rod A and resting on the shoulder *b*, swinging loosely thereon, the wheel C, pivoted to the holder B, having ratchet-teeth on part of its periphery and a pipe-rest on the upper edge, and a weighted pawl, *a*, pivoted to frame B, operating in connection with the teeth, all substantially as specified.

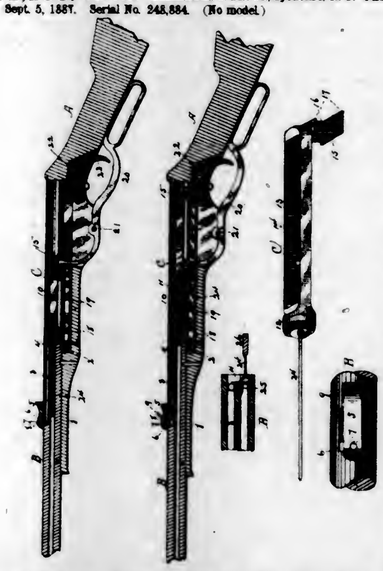
381,108. MILLING-MACHINE. AMOS H. BRAINARD, Hyde Park, Mass. Filed Oct. 6, 1885. Serial No. 179,131. (No model.)



Claim.—1. In a chip-clearer for milling and gear-cutting machines, the combination, substantially as set forth, with a machine part on which the chips fall, a gutter therein to receive the chips, a bearing for the support of a rotary clearer-shaft, and means for rotating such shaft, of a series of vanes, *c*, formed with or secured to such shaft, said vanes being arranged parallel to each other and oblique to the axis of their shaft, the vanes corresponding to a portion only of the clearer-circle, so that one longitudinal side of the clearer is free from vanes, whereby when the clearer-shaft is so turned that the vanes project upwardly from the shaft no vanes will project downwardly into the chip-trough.

2. In a gear-cutting or milling machine, the combination, substantially as set forth, with a machine part on which the chips fall, a trough therein to receive the chips, a bearing for the support of the clearer-shaft, and means for giving intermittent rotation to such clearer-shaft, of a clearer-shaft, *d*, provided with a longitudinal series of vanes, *c*, arranged parallel to each other and oblique to the axis of said shaft, the vanes filling a portion only of the clearer-circle.

381,109. AIR-GUN. ALEXANDER T. BROWN, Syracuse, N. Y. Filed Sept. 5, 1887. Serial No. 248,884. (No model.)



Claim.—1. The combination, with the trigger-guard lever pivoted in the fore-end and extending upward and engaging directly with the piston in the receiving-chamber forward of the stock, of the piston having a solid head, a slotted body, and a rearward and downward stem, and the spring connected to the piston-stem and to the fore-end, and the trigger, substantially as shown and described.

2. In an air-gun, a barrel provided with a bore, in combination with a magazine wholly within the barrel and communicating with the bore at one end, and at the other end having a loading-aperture opening out through the barrel, provided with a transversely-rotating perforated bolt adapted to close the loading-aperture air-tight, substantially as described.

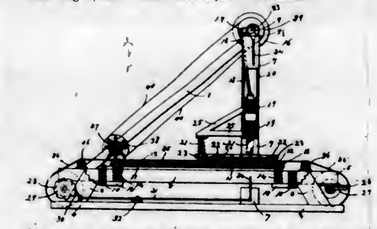
3. The combination, with the barrel having a magazine wholly within the body thereof and the magazine communicating with its bore and having a rotating closer in the loading-aperture, of a receiver between the stock and barrel and in line therewith, a piston within the receiver, having a solid head in which a starting-rod is secured, a slotted body and a stem upon the rear end, and a spring connected to the piston-stem and fore-end, substantially as described.

4. The combination, with the barrel, the magazine wholly within it, and the opening connecting the magazine to the bore, of a starting-rod secured in the piston-head and having an enlargement of its body adjacent to the piston-head, substantially as described.

5. In combination with a barrel having a magazine wholly within it connected to its bore, a receiver between the stock and barrel, having a longitudinal slot for part of its length, a piston fitting therein and having a stem extending down through the slot, a spring connecting the piston-stem to the fore-end, and a trigger-guard pivoted in the fore-end and extended upward and engaging directly with the piston, substantially as described.

6. A pivoted trigger-guard extending upward and engaging directly with the body of the piston in the receiving-chamber, in combination with the piston, substantially as described.

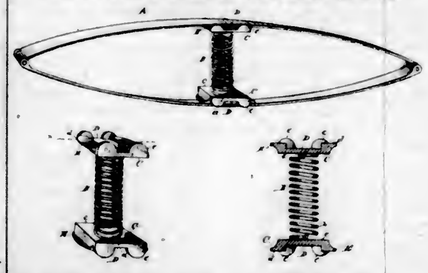
381,110. CARPET-CLEANING MACHINE. AUGUSTUS BURCKARD, Baltimore, Md., assignor of one-third to Edward D. Miller; same place. Filed Aug. 2, 1887. Serial No. 245,921. (No model.)



Claim.—1. In a carpet-cleaning machine, the combination of the bed 11, the rotating shaft 9, the cranks 17, the connecting-rods 18, the cross-head 19, the guides 20, the beater 22, constructed of wire-netting and secured to the cross-head 19, and mechanism to feed the carpet between the said beater 22 and bed 11, consisting of the eccentric 33, eccentric-rod 34, lever 31, pawl 30, ratchet-wheel 29, and roller 28, for the purpose set forth.

2. In a carpet-cleaning machine, the combination of the bed 11, the rotating shaft 9, the cranks 17, the connecting-rods 18, the cross-head 19, the guides 20, the beater 22, constructed of wire-netting, the springs 21, by which the beater 22 is suspended from the cross-head 19, and mechanism for feeding the carpet between the said beater 22 and bed 11, consisting of the eccentric 33, eccentric-rod 34, lever 31, pawl 30, ratchet-wheel 29, and roller 28, for the purpose set forth.

381,111. VEHICLE-SPRING SUPPORT. JOHN S. COCKERHOUR, Olney, Ill. Filed Dec. 16, 1887. Serial No. 258,068. (No model.)



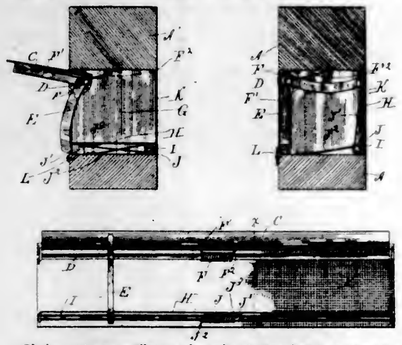
Claim.—1. A self-holding support for stationary springs of vehicles, consisting of a coiled spring having flanged plates secured to

its ends, said plates having elongated supports to rest upon the inner side, and projecting ears or flanges to fit closely upon the edges of the leaves of the stationary spring, as set forth.

2. A self-holding support for stationary springs of vehicles, consisting of a coiled spring having flanged plates secured to its ends by staples over the coil, said plates having recesses in their outer sides, with elongated supports extending therefrom at right angles to the coil, and ears or flanges on the sides of the plates in the same direction with the coil, to fit upon the edges of the stationary spring, as set forth.

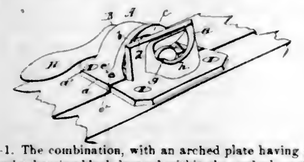
3. An adjustable support for stationary springs of vehicles, consisting of a coiled spring having flanged plates secured to its ends by staples in the sides of the plate over the coil, the ends of said coil being turned or bent from the plates, the outer side of the plates being provided with recesses having elongated supports extending from the outer plane thereof at right angles to the coil, and the sides of the plates having ears or flanges extending from the sides of the lower part of the recess on the sides and beyond the supports in the direction of the coil, as set forth.

381,112. VENTILATOR. EDWARD J. COLBY, Chicago, Ill. Filed Aug. 8, 1887. Serial No. 246,395. (No model.)



Claim.—(n a ventilator adapted to be applied to an aperture opening both into the exterior and interior of a room, the combination of a flap hinged upon a transverse rod at the inner edge, a similar flap similarly hinged at the outer edge, both provided with actuating-springs, an arm from one which engages and simultaneously operates the other, and a locking device, substantially as described, which retains the whole in position.

381,113. FASTENER FOR THE MEETING-RAILS OF SASHES. OSBORN R. COOKE, Salem, Ohio. Filed Dec. 23, 1887. Serial No. 258,834. (Model.)



Claim.—1. The combination, with an arched plate having an inclined face, and a bearing-block located within the arched portion of said plate and having an inclined face, of a bolt having a lug adapted to rest and move between said inclined faces, substantially as set forth.

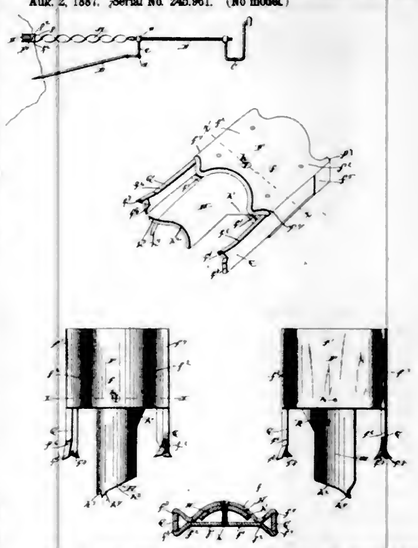
2. The combination, with an arched plate having an inclined face, a bearing-block located within the arched portion of said plate and having an inclined face, and a locking-plate provided with a depending rim, the latter having an inclined face, of a bolt having a lug adapted to rest and move between said inclined faces, and a tongue adapted to engage the inclined face of the rim.

3. The combination, with an arched plate, a bearing-block, a locking-plate, and a rotary and longitudinally-sliding bolt located between the arched plate and bearing-block and provided with a lug adapted to engage inclined faces on the plate and block, and with a tongue for engaging a rim on the locking-plate, of a handle secured to the bolt and adapted to engage an inclined surface on the arched plate for drawing the meeting-rails of the sashes together.

4. The combination, with the arched plate and the locking-plate having a depending rim, of the bolt having a cam-shaped end and a tongue, substantially as and for the purpose set forth.

5. The combination, with the arched plate having a cam-face for the lug on the bolt and a cam-face for the handle, and a bearing-block having a cam-face for said lug, of a bolt having a lug and a handle attached to the bolt, substantially as set forth.

381,114. COAL-DRILL BIT. DANIEL CORGAN, Luzerne, Pa. Filed Aug. 2, 1887. Serial No. 245,961. (No model.)



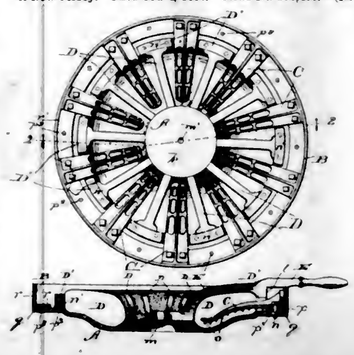
Claim.—1. The combination of the flat plate *f'*, the curved plate *f*, riveted to the upper side thereof, and the cutter H, secured to the under side of the curved plate by a set-screw and provided with the wedge-shaped spur *h'*, resting against the front edges of the plates *f f'*, substantially as set forth.

2. The combination of the plates *f f'*, riveted together and having their side edges flared outwardly and bent to form guides *f³ f⁴*, the side cutters fitted in said guides, and the central cutter adjustably secured to the plate *f*, substantially as set forth.

3. The combination, with the plates *f* and *f'*, forming edge guides and a central cavity when united, of the edge cutters, G G, the rear stops for said cutters, the central cutter, H, having the spur *h'*, and the set-screw for permanently securing said latter cutter, substantially as described.

4. The cutter H, having the cutting-points h^3 h^4, formed at the one side of its front beveled edge, h^3, and the wedge-shaped crushing-spur *h'*, in combination with the edge cutters, G G, held by the plate F, as described, substantially as set forth.

381,115. APPARATUS FOR CASTING CAR-WHEELS. JOHN R. DAVIES, Pullman, Ill., assignor to the Allen Paper Car Wheel Company, of New Jersey. Filed Oct. 4, 1887. Serial No. 251,409. (No model.)



Claim.—1. A core-support for use in casting car-wheel centers, comprising a ring and arbors secured to the ring and extending toward the center thereof, substantially as described.

2. A core-support for use in casting car-wheel centers, comprising a ring, B, having a vertical portion, *r'*, and a horizontal portion, *r*, and arbors secured to the ring and extending radially therefrom toward its center, substantially as described.

3. A core-support for use in casting car-wheel centers, comprising a core-plate, A, a ring, B, upon the core-plate, and arbors C, secured to the ring and extending radially therefrom toward its center, substantially as described.

4. A core-support for use in casting car-wheel centers, comprising a core-plate, A, a ring, B, upon the core-plate, arbors C, secured to the ring and extending radially therefrom toward its center, and partitions D, removably secured between the arbors, substantially as described.

5. A core for use in casting car-wheel centers, comprising, in combination, a ring, B, and arbors C, enveloped in hardened sand, secured to the ring and extending toward the center thereof, substantially as described.

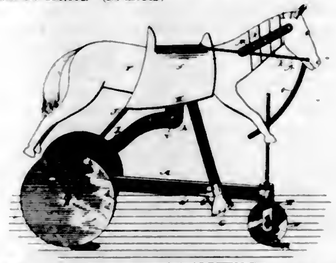
6. A core for use in casting car-wheel centers, comprising, in combination, a ring, B, arbors C, secured to the ring and extending radially therefrom toward its center, and hardened sand enveloping the individual arbors, and leaving radial spaces for forming the ribs of the wheel, substantially as described.

7. The combination, with a core-box for use in casting car-wheel centers, of a pivotal sweep, E, comprising a lever having a handle portion at one end, and at its opposite end pivotally attachable to and detachable from the core-plate, substantially as and for the purpose set forth.

8. The combination of a core-plate, A, a ring, B, upon the core-plate, arbors C, secured to the ring and extending radially therefrom toward its center, partitions D, removably secured between the arbors, and a pivotal sweep, E, substantially as described.

9. The combination of a core-plate, A, a ring, B, upon the core-plate, arbors C, secured to the ring and extending radially therefrom toward its center, partitions D, removably secured between the arbors, and a pivotal sweep, E, having a pivot, *m*, and a projection, *l*, substantially as described.

381,116. HOBBY-HORSE. WILLIS DAVIS, Woodstock, N. Y., assignor of one-half to Abram D. Rose, same place. Filed Nov. 23, 1887. Serial No. 256,001. (No model.)



Claim.—1. The combination of the truck, the parallel arms I, extending upward and forward from the rear end thereof, the body having a recess, *j*, in its under side, the projection *h*, depending from the body in advance of said recess, and having its lower end pivoted between the upper ends of the arms I, the conveying-wheels at the rear end of the truck, having a cranked axle, and the pitman arranged between the arms I, and having one end mounted on said cranked axle, and its other end pivoted in the recess *j* in the body, as set forth.

2. In a hobby-horse, the combination, with the body and head, of the neck composed of transverse sections, the non-elastic cords connecting the body, sections, and head in median lines above and below, and the elastic strips connecting the body, sections, and head on each side, midway between said non-elastic cords, substantially as specified.

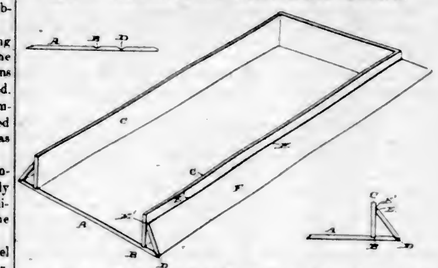
3. In a hobby-horse, the combination, with the body, head, saddle, and bridle secured to the head, of the neck composed of transverse sections, each beveled from its central vertical line on both sides and both faces, the non-elastic cords connecting the body, head, and sections in median lines above and below, and the elastic strips connecting the body, sections, and head midway between the elastic strips, substantially as specified.

4. The combination, with the truck, the horse supported thereon and provided with a guide-bar, O, the vertical standard journaled in the truck and provided near its upper end with a longitudinal slot for the passage of said guide-bar O, and the guide-wheel journaled in the lower end of said standard below the truck, substantially as specified.

5. In a hobby-horse, the neck composed of a series of transverse sections having an elastic connection, as set forth.

6. In a hobby-horse, the neck composed of a series of transverse sections beveled on their opposing faces, the elastic connection for the sections of the neck, and the head secured to the flexible neck and movable therewith, as set forth.

381,117. PRINTER'S GALLEY. OCTAVUS A. DEARING, San Francisco, Cal. Filed June 30, 1887. Serial No. 243,043. (No model.)



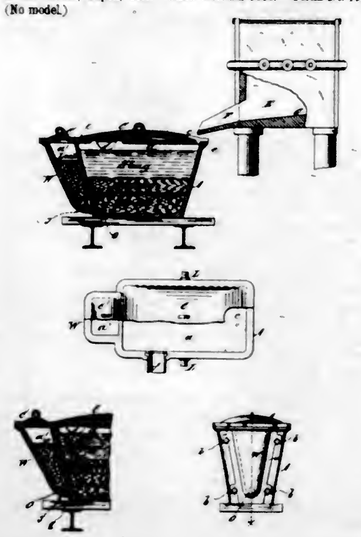
Claim.—1. In a printer's galley, the base channeled to receive the vertical facing and extending outward beyond said facing, so as to be folded inwardly at an acute angle to form a brace or re-enforce for said facing, substantially as described.

2. In a printer's galley, the base extending beyond the line of the vertical facing which is secured thereto, and having a groove or channel formed in its upper surface, so that the outer edge may be bent inwardly at an acute angle to form a brace or re-enforce for the vertical facing-plate without the necessity of annealing, substantially as described.

3. In a printer's galley, the base-plate having the vertical facing-strip secured to it, a groove or channel formed in the base outside of the facing-strip, so that the outer portion may be folded in at an acute angle to rest against the outer side of the facing, said groove or channel being formed to receive a strip of solder, which is afterward melted, so as to fill and unite the angle, substantially as described.

4. The re-enforcing strip or brace bent inwardly and forming a continuous piece or extension with the base-plate of the galley, said extension having the edge chamfered, so as to rest against the outer side of the facing-plate and form a channel for the reception of the solder, substantially as described.

381,118. APPARATUS FOR SEPARATING LEAD OR BASE BULLION IN SMELTING FROM SLAG, MATTES, AND SPEISS. WALTER R. DEVEREUX, Aspen, Colo. Filed Feb. 24, 1886. Serial No. 193,067. (No model.)



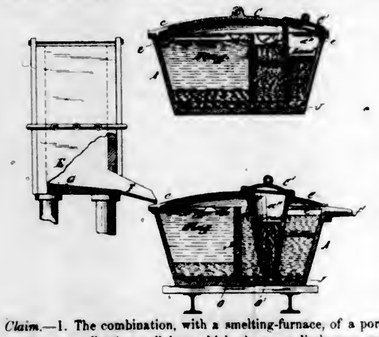
Claim.—1. The combination, substantially as hereinbefore described, with a smelting-furnace having no crucible proper, of a portable receiver or collecting-well, receiving the discharge from said furnace, and an exterior chamber or well connected with the interior of said vessel at the bottom, whereby the heavier portion of the material tapped from said furnace into the receiver flows through said opening and fills said exterior chamber in proportion as the static pressure in the receiving-vessel increases.

2. The combination, substantially as hereinbefore described, with a smelting-furnace having the crucible eliminated, of a portable receiver or collecting-well for receiving the discharge from said furnace, and an exterior chamber or well connected with the interior of said vessel at the bottom, whereby the heavier portion of the material tapped from said furnace into said receiver flows through said opening and fills said exterior chamber in proportion as the static pressure in the receiving-vessel increases.

3. The combination, substantially as hereinbefore described, with a smelting-furnace having no crucible proper, of a portable receiver or collecting-well for receiving the discharge from said furnace, an exterior chamber or well so constructed and arranged that it may be detached from the receiver, and an opening in the bottom of the side wall of said receiving-vessel, connecting the interior of said vessel with said removably-attached exterior chamber, whereby the heavier portion of the material tapped from said furnace into said receiver flows through said opening and fills said chamber in proportion as the static pressure in the receiving-vessel increases.

4. The combination, substantially as hereinbefore described, with a smelting-furnace having no crucible proper, of a portable receiver or collecting-vessel into which said furnace discharges, an exterior chamber or well so constructed and arranged that it may be detached from the receiver, means for attaching said exterior well to said receiver, substantially as described, an opening in the side walls of the receiver connecting the interior of the same at the bottom with the bottom of said exterior chamber, and means for covering said receiver and exterior chamber, substantially as described.

381,119. APPARATUS FOR SEPARATING BASE BULLION FROM SLAG, MATTES, AND SPEISS. WALTER B. DEVEREUX, Aspen, Colo. Filed Feb. 25, 1886. Serial No. 193,199. (No model.)



Claim.—1. The combination, with a smelting-furnace, of a portable receiver or collecting-well into which the same discharges, two diaphragms placed in the interior of said receiver, whereby it is divided into three separate compartments, said diaphragms being so arranged and constructed that they may be shifted therein or removed therefrom at pleasure, and openings in the base of said diaphragms of such dimensions that the said compartments are connected with each other, substantially in the manner set forth.

2. The combination, substantially as hereinbefore set forth, with a smelting-furnace, of a portable receiver or collecting-well into which the same discharges, a diaphragm placed in the interior of said receiver, dividing the same into two separate compartments, provided with an opening at or near the base for connecting the compartments and a lead-well placed in either of said compartments, provided with an opening in its base below the level of the opening in the diaphragm, for the purposes set forth.

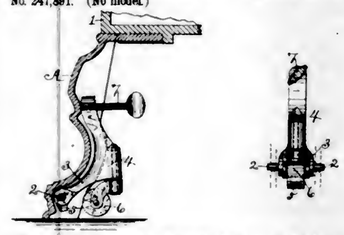
3. The combination, substantially as hereinbefore set forth, with a smelting-furnace, of a portable receiver or collecting-well into which the same discharges, a diaphragm placed in the interior of said receiver, dividing the same into two separate compartments, provided with an opening at or near the base for connecting the compartments, and a lead-well placed in either of said compartments, provided with an opening at its base below the level of the opening in the diaphragm, said lead-well and diaphragm being so arranged and constructed that they can be raised, lowered, or shifted in said receiver, or removed therefrom at pleasure.

4. The combination, with a portable receiver or collecting-well subdivided interiorly into compartments, substantially as described, of one or more discharge-spouts placed at or near its upper rim at such points that the material accumulating in each compartment will automatically and continuously flow off from that compartment through a separate spout when the same becomes full.

5. The combination, substantially as hereinbefore set forth, with a smelting-furnace, of a portable receiver or collecting-vessel into which said furnace discharges, a movable diaphragm in said receiver, whereby the same is subdivided into two compartments, an opening at or near the bottom of said diaphragm, whereby the said compartments are connected, a movable lead-well placed in one of said compartments, having an opening in its bottom below the level of the opening in said diaphragm, and means for supporting and adjusting said diaphragm and lead-well in said receiver, substantially as described.

6. The combination, substantially as hereinbefore set forth, with a smelting-furnace, of a portable receiver or collecting-well into which said furnace discharges, a diaphragm in said receiver, whereby the same is subdivided into two compartments, having an opening at or near its base connecting said compartments, a lead-well having an opening in its extreme base below the level of the opening in said diaphragm, and independent covers, substantially as described, for covering said receiver and lead-well, respectively.

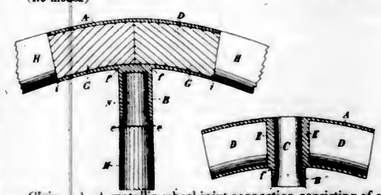
381,120. CASTER ATTACHMENT FOR STOVES OR FURNITURE. MARTIN DEVOY, Syracuse, N. Y. Filed Aug. 26, 1887. Serial No. 247,891. (No model.)



Claim.—1. A caster attachment for stoves and furniture, consisting of a leg, an angular lever having a front arm journaled upon an arbor transverse to the leg, and an upper arm provided with a hand-screw bearing against the leg and adapted to force the upper arm back from the leg, and a caster mounted in the angle of the lever, combined and operating substantially as described.

2. In a caster attachment for stoves and furniture, the combination, with a leg thereof, of an angular lever having a front arm journaled upon an arbor transverse to the leg and provided with a stud, 5, and an upper arm provided with a hand-screw bearing against the leg and adapted to force the upper arm back from the leg and the stud against it, and a caster mounted in the angle of the lever, substantially as described.

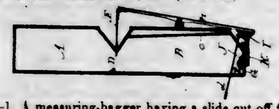
381,121. RIM-JOINT AND SPOKE-SOCKET FOR VEHICLE-WHEELS. JOHN A. EASTMAN, Bangor, Me., assignor of one-half to Charles E. Hill, same place. Filed Aug. 11, 1887. Serial No. 246,727. (No model.)



Claim.—1. A metallic wheel-joint connection consisting of a hollow T-shaped casting, A, having a spoke-socket, C, passing completely through its center extending into a collar, B, on the under side of the rim, substantially as shown and described.

2. The combination of a rim-joint connection consisting of a metallic casing entirely inclosing the ends of the rim or fellies and conforming to the curve thereof, with a spoke-socket consisting of a ferrule or collar, B, cast upon the under side of the rim-joint cover A, having its inner edges chamfered to receive the spoke, substantially as and for the purpose described.

381,122. MEASURING-BAGGER. JOHN H. FORSYTH, Fargo, Dak. Filed Feb. 1, 1888. Serial No. 262,686. (No model.)

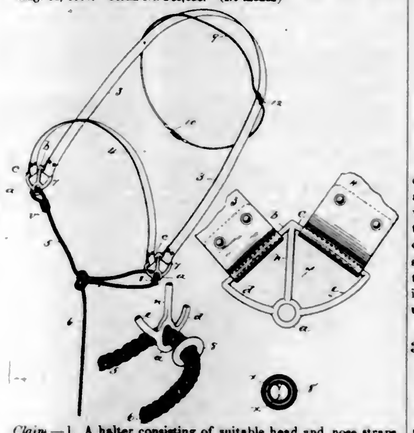


Claim.—1. A measuring-bagger having a slide cut-off for the receiving-port and a hinged door for the discharge-port of the measuring-chamber, in combination with a hinged or pivoted lever having the slide cut-off attached at one end of lever and the other end detached from but so arranged and adjusted as to impinge and operate the hinged discharge-door simultaneously with the cut-off, substantially as herein described.

2. In combination with a measuring-bagger, the lever H, with the slide F and the roller J attached thereto, and a hinged discharge-door, arranged to operate substantially as herein described.

3. The combination, in a measuring-bagger, of the lever H, the slide F, and the roller J, with the hinged door G, provided with the recess K, substantially as described.

381,123. HALTER. DANIEL C. FROST, Springfield, Mass. Filed Aug. 11, 1887. Serial No. 246,655. (No model.)

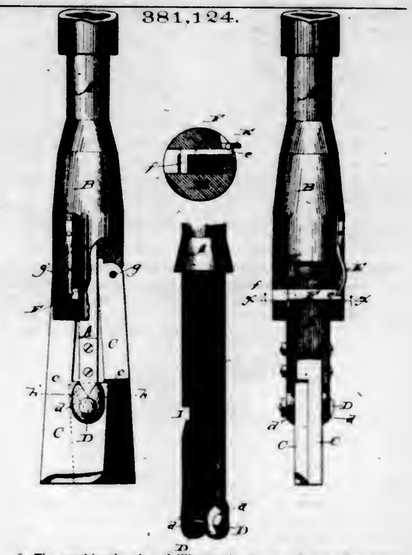


Claim.—1. A halter consisting of suitable head and nose straps, as described, combined with two corner-irons, 7, having the rings *a* and bars thereon, to which the ends of said straps are secured, combined with a single cord constituting the jaw-strap 5 and the leading-strap 6, said cord having one end secured to one of said corner-irons and its opposite end passing through the ring *a* of the other and loosely knotted on the jaw-strap, and the ring 8, fixed on said cord outside one of the corner-irons, substantially as set forth.

2. In combination, the cheek-strap 3, the clips 12, having a perforation through each end thereof and secured on said strap, and the throat-latch passing through the perforated ends of said clips and between said ends and the adjoining side of the cheek-strap, substantially as set forth.

3. In a halter, a combined jaw-strap and leading-line for a halter, consisting of the combination, with the corner-rings of a halter, of a cord having one end secured to one of said rings and its opposite end passing through the second corner-ring and loosely knotted on the jaw-strap, and the ring 8, fixed on said cord outside one of said corner-rings, substantially as set forth.

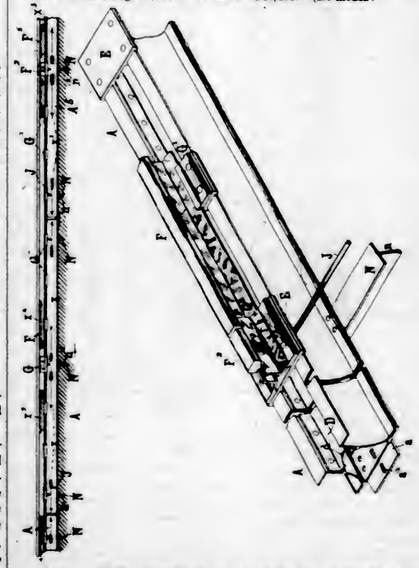
381,124. DRILLING-TOOL. HARRY S. GAIL, Highland Park, assignor to Frederick C. Austin, Chicago, Ill. Filed Aug. 23, 1887. Serial No. 247,635. (No model.)



Claim.—1. The combination, in a drilling-tool, of a case, B, operating-jaws, one or both of which jaws are pivoted in the case B and provided with an inclined slot, a shank, A, to which the drill-rod is attached, provided with a notch, I, and movable up and down in the case B, and terminating at its lower end in ears or lugs which embrace the jaws over the inclined slot, a bolt passing through the lugs on the drilling-shank and the slot in the jaw or jaws, a locking-piece, F, fitting into the notch in the shank and preventing it from moving up and down in the case B, and a spring, E, holding the locking-piece in the notch until positively pressed out of engagement, substantially as described.

2. The combination, in a drilling-tool, of a case, B, operating-jaws, one or both of which jaws are pivoted in the case B and provided with an inclined slot, a shank, A, to which the drill-rod is attached, provided with a notch, I, and movable up and down in the case B, and terminating at its lower end in ears or lugs which embrace the jaws over the inclined slot, a bolt passing through the lugs on the drilling-shank and the slot in the jaw or jaws, a locking-piece, F, fitting into the notch in the shank and preventing it from moving up and down in the case B, and a spring, E, holding the locking-piece in the notch until positively pressed out of engagement, substantially as described.

381,125. RAILWAY-BEDDING. FRANÇOIS X. GHORSET, Camden, N. J. Filed Aug. 20, 1887. Serial No. 247,470. (No model.)



Claim.—1. The combination of the line of rail consisting of the long rails and the short rail-pieces alternately arranged with the sup-

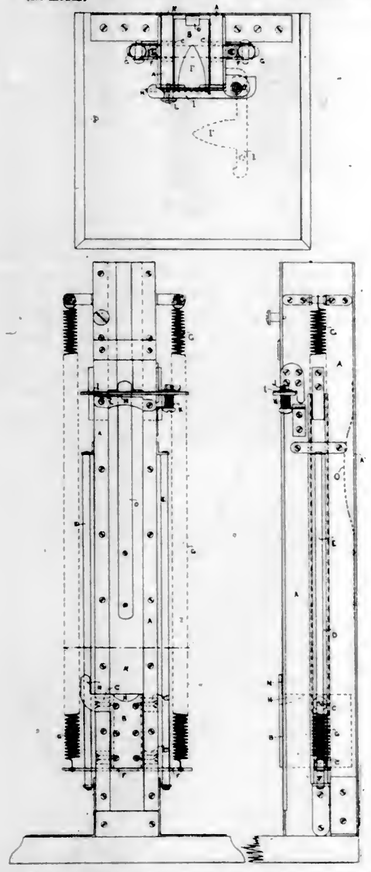
porting-stringers, said long rails and said stringers each being fastened at its middle, substantially as described.

2. The combination, in a line of rail, of the long rail-sections, the fixed rail-piece F^2, and the supporting-stringer, said stringer being fixed longitudinally at the middle to the bedding, and being free to expand and contract from its middle to its ends, substantially as described.

3. The combination, in a line of rail, of the fixed rail-piece F^1, the abutting long rails, and the supporting-stringer, said stringer being fixed longitudinally at its middle to the bedding, and being free to expand and contract from its middle to its ends, and being attached to said rail-piece and supporting the rail-piece, and also the ends of the adjoining long rails, substantially as described.

4. The longitudinal stringers fixed each midway in its length to a rail or rail-piece above, and also in the bedding beneath, substantially as described.

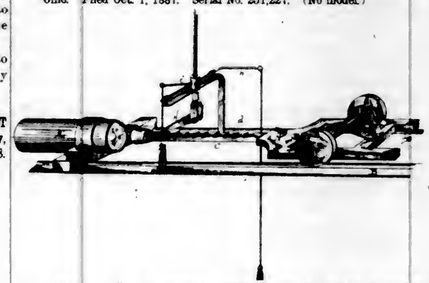
381,126. APPARATUS FOR RECEIVING TICKETS FROM TICKET PRINTING OR NUMBERING MACHINES. JOHN GRAHAM, Barnsbury, County of Middlesex, England. Filed Nov. 14, 1887. Serial No. 255,078. (No model.)



Claim.—1. In a railway-ticket printing or numbering or other similar machine, the fixed receiving tube or box open in front or at one side, and having a block or false bottom, B, sliding therein, and drawn or pressed constantly toward the upper end thereof by means of springs G or other suitable devices, and a spring-actuated latch, I, and blade I′, constructed, arranged, and operating as hereinbefore described, and illustrated in the drawings hereto annexed.

2. The combination, with the receiving tube or box of a railway-ticket printing or numbering or other similar machine, of the latch I, provided with a blade, I′, which serves, when closed, to prevent the descent of the tickets or other similar articles delivered by the machine while those below are being removed, and which is liberated automatically by the ascent of the block or false bottom B, and opened by the spring K, substantially as hereinbefore described, and illustrated in the drawings hereto annexed.

381,127. CASH AND PARCEL CARRIER. GEORGE F. GREEN, Kalamazoo, Mich., assignor of two-thirds to Oliver S. Kelley, Springfield, Ohio. Filed Oct. 1, 1887. Serial No. 251,227. (No model.)



Claim.—1. The combination, with the car A, having a ratchet, of the spring-case E, the inclosed spring F, the piston *g*, and a pawl mounted at the station, adapted to engage said ratchet, substantially as described.

2. The car A, provided with the front projecting bumper-rod, C, having the ratchet-serrations *d*, combined with the fixed spring-case E, spring F, piston *g*, and pawl H, pivoted to a fixed support, substantially as set forth.

381,128. REEL-SUPPORT. GEORGE F. HALL, Boston, Mass., assignor to the Nonantum Worsted Company, of Massachusetts. Filed Oct. 19, 1887. Serial No. 252,783. (No model.)



Claim.—1. The bail-wires *c d*, pivoted together and having loops or eyes c'' d'', in combination with the stay *e*, connecting said loops, and the flat reel *b*, pivoted to the bail-wires *c d* at their junction, substantially in a manner and for the purpose set forth.

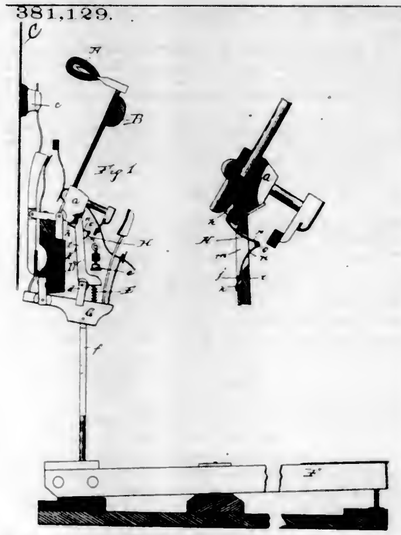
2. The bail-wires *c d*, pivoted together by means of their respective eyes c' c' and inwardly-projecting pivots d' d', in combination with the flat reel *b*, having recesses in its side edges for the reception of the pivots d' d', substantially as and for the purpose set forth.

3. The improved reel holding and supporting device, as described, consisting of the bent wire *c*, having eyes c' c' in its upper ends and loop or eye c'' in its lower end, and the bent wire *d*, having inwardly-bent pivots d' d' in its upper end, adapted to pass through the eyes c' c' and into the side edges of the flat reel *a*, combined with the stay-cord or equivalent device *e*, and the loops or eyes c'' d'' on the lower portion of the folding supports *c d*, as and for the purpose set forth.

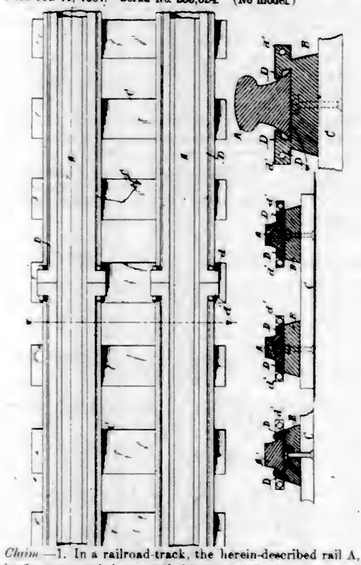
381,129. PIANO-ACTION. STILLWELL R. HARCOURT, Chicago, Ill., assignor to the W. W. Kimball Company, same place. Filed Nov. 26, 1887. Serial No. 256,207. (No model.)

Claim.—The combination, with the hammer and jack of a piano-forte action, the jack having a slot, *m*, of the spring H, let into the butt and secured to the jack, and having an elbow-like bend projecting through the slot of the jack, substantially as set forth.

381,129.



381,130. RAILROAD-TRACK. JOHN M. HARDY, Shelbyville, Mo. Filed Oct. 19, 1887. Serial No. 253,024. (No model.)

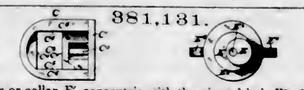


Claim.—1. In a railroad-track, the herein-described rail A, having the flat top *a* and the expanded bottom *a′*, the bed B, running continuously under the rail, the side bars, D D, running continuously by the side of the rail and having the fastening-lugs d' d^3, substantially as and for the purposes set forth.

2. In a railroad-track, the continuous bed B and the side bars, D D, running continuously and having the ears d' d^3, in combination with the rails, substantially as set forth.

381,131. SASH-HOLDER. JOHN HARTMAN, Jr., Philadelphia, Pa. Filed Mar. 28, 1885. Serial No. 160,427. (No model.)

Claim.—A sash-holder consisting of the plate or bolt C, of uniform thickness, in the portion C^4, and having therein a guiding-slot, C^3, and a lip, C_1, formed thereon; also an aperture, C^4, of which the vertical sides C^4 fit an concentric, E, and the horizontal sides C^4 fit upon



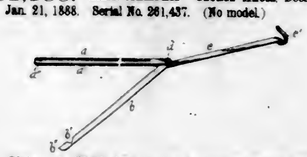
381,131.

a boss or collar, E′, concentric with the pivotal hole E^2 of the eccentric E, and the flat surface C^4 fits against a flange, E^3, on the winged and flanged eccentric E, in combination with the said eccentric E, the whole constructed and arranged to be applied and operated as shown and described.

381,132. PRODUCTION OF BLUE-RED AZO DYE-STUFF BY THE ACTION OF TETRAZO-DITOLYL SALTS ON BETA-NAPHTHYLAMINE MONOSULPHO-ACID. ERNST HASSENKAMP, Elberfeld, Germany, assignor, by mesne assignments, to Edward N. Dickerson, Jr., New York, N. Y. Filed Mar. 1, 1887. Serial No. 229,338. (Specimens.)

Claim.—The bluish-red coloring-matter hereinbefore described, having the qualities specified, substantially as described.

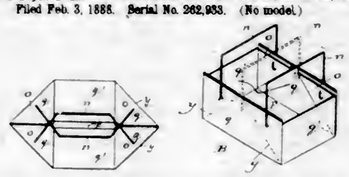
381,133. HAIR-CRIMPER. GEORGE HAUS, Decatur, Ill. Filed Jan. 21, 1888. Serial No. 261,437. (No model.)



Claim.—1. The hair-crimping device comprising sheath *a a′*, blade *b*, and clasp-bar *c*, all pivoted at *d*, as and for the purpose set forth.

2. In hair-crimpers, in combination, the sheath composed of bars *a a′*, separated and secured by strut-rivet *a″*, blade *b*, having depression *b′* and extension *b″*, and clasp-bar *c*, having hook *c′*, all pivoted at *d*, as and for the purpose set forth.

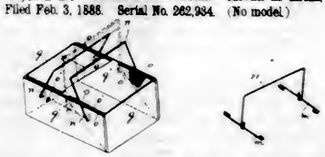
381,134. PAPER RECEPTACLE. OLIVER H. HICKS, Chicago, Ill. Filed Feb. 3, 1888. Serial No. 262,933. (No model.)



Claim.—1. A receptacle comprising a single sheet of material folded to produce the base *p*, sides *q* and *q′*, corners *o*, folded toward each other to lie against two opposite sides, and oblique creases *y* on opposite sides of the receptacle, against which the corners lie, and converging from the corners toward the upper edges of the said sides, whereby, in collapsing the receptacle at the creases *y*, the portions of the sides on opposite sides of the said creases and against which the corners lie and the adjacent sides of the receptacle and the corners *o* fold toward each other, substantially as described.

2. A receptacle comprising a single sheet of material folded to produce the base *p*, sides *q* and *q′*, and corners *o*, folded toward each other to lie against two opposite sides of the receptacle, oblique creases *y* on opposite sides of the receptacle, against which the corners lie, converging toward the upper edges of the said sides, and spring-bails *n*, securing the corners *o* to the sides against which they are folded, substantially as and for the purpose set forth.

381,135. PAPER RECEPTACLE. OLIVER H. HICKS, Chicago, Ill. Filed Feb. 3, 1888. Serial No. 262,934. (No model.)



Claim.—1. A receptacle formed of a single sheet of material folded upon itself and creased and having the corner portions unsevered from the sheet and folded inward, and having one fold only of each corner portion fastened at two opposite sides, whereby the receptacle may be reduced to a collapsed condition without augmenting the number of creases necessarily produced to form the receptacle, substantially as and for the purpose set forth.

2. A receptacle formed of a single sheet of material folded upon itself and creased and having the corner portions unsevered from the sheet and folded inward, and bails *n*, each passing at each end through one only of the folds and the adjacent side, whereby the receptacle may be reduced to a collapsed condition without augmenting the number of creases necessarily produced to form the receptacle, substantially as and for the purpose set forth.

3. A collapsible receptacle comprising a single sheet of material folded to produce the sides *q* and *q'*, and corners provided with oblique creases *x*, forming corner folds, *o* and *o'*, and folded inward, and spring-bails *n*, securing one fold only of each corner fold, *o* or *o'*, to the adjacent sides, substantially as and for the purpose set forth.

381,136. CORK-RETAINER. JOHN G. HIRSCH, Milwaukee, Wis. Filed Dec. 12, 1887. Serial No. 257,648. (Model.)

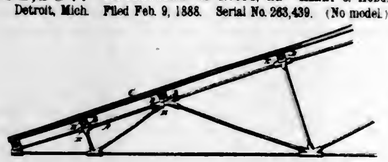


Claim.—1. A cork-retaining device comprising a strip of springy metal bent horizontally upon itself between its extremities to produce a flat top portion, *r*, forming a practically continuous plate to press upon and completely or substantially cover the top of the cork, and bent toward its extremities to produce vertically and outwardly rounded bails *o*, and spring clamping-arms *q*, substantially as described.

2. A cork-retaining device comprising a strip of springy metal bent horizontally upon itself between its extremities to produce a flat top portion, *r*, having the convolutions laterally contiguous to form a practically continuous plate to press upon and completely or substantially cover the top of the cork, and bent toward its extremities to produce vertically and outwardly rounded bails *o*, and spring clamping-arms *q*, substantially as described.

3. A cork-retaining device comprising a strip of springy metal bent horizontally upon itself between its extremities to produce a flat top portion, *r*, bent downward toward its rear edge to produce a stop, r^2, and forming a practically-continuous plate to press upon and completely or substantially cover the top of the cork, and bent toward its extremities to produce vertically and outwardly rounded bails *o*, and spring clamping-arms *q*, substantially as described.

381,137. CONSTRUCTION OF ROOFS, &c. HENRY C. HODGES, Detroit, Mich. Filed Feb. 9, 1888. Serial No. 263,439. (No model.)





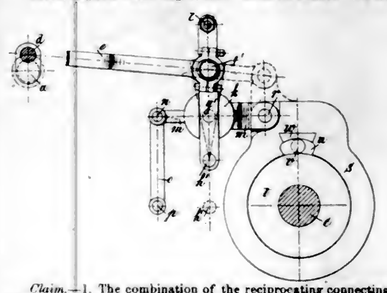
Claim.—1. In the construction of metallic roofing, the combination, with the roof-sheet, the purlin, and the rafter at their points of intersection, of the blocks D E, and the whole fastened together, substantially as and for the purposes described.

2. The combination, with the roof-sheet, of tubular metallic purlins and rafters, said rafters, purlins, and roof-sheets united with intermediate blocks, D E, and the whole fastened together, substantially as and for the purposes described.

3. A joint consisting of the combination, with corrugated or channeled metal, of a brace or purlin and an intermediate block, D, shaped upon one side to conform to said channel, and upon the opposite side grooved to admit and conform to the purlin or brace, the whole secured by a bolt or rivet, substantially as and for the purposes described.

4. The block E, grooved on its upper and lower sides to conform to and receive the surfaces of two intersecting elements, in combination with the block D, grooved in its under side, and means, substantially as described, for fastening them together.

381,138. APPARATUS FOR THE TRANSMISSION OF POWER. THOMAS D. HOLLICK and WILLIAM R. RICKARD, London, County of Middlesex, England. Filed Aug. 8, 1887. Serial No. 246,380. (No model.)

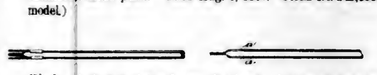


Claim.—1. The combination of the reciprocating connecting-rod *e* with the ring *s*, having recess *u*, tapering at both ends, the roller *v* in said recess, the ring *t*, the shaft *c*, the plates *x x'*, which carry the journals of said roller, the connecting-rod *z*, and the lever A, substantially as set forth.

2. The combination of the reciprocating connecting-rod *e* with the ring *s*, having recess *u*, tapering at both ends, the roller *v* in said recess, the ring *t* within said ring *s*, the shaft *c*, and the plates *x x'*, in which said roller is journaled, the rocking of said plates in one direction or the other determining the position of said roller and the direction of rotation of shaft *c*, substantially as set forth.

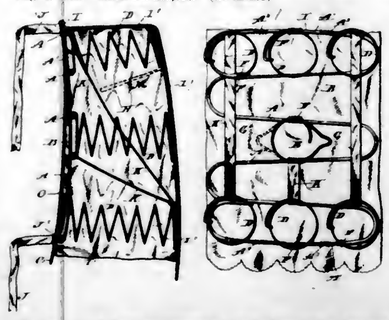
3. The connecting-rods *e* and *m*, the block *k*, and the vertical bars *g g'*, having the pins *h h'*, on which said bars turn, in combination with a shaft, *c*, and intervening connections for transmitting motion, said block being journaled in connecting-rod *m*, and said bars *g g'* being adapted to be raised or lowered in recesses of said trunnion to regulate the amount of motion transmitted, substantially as set forth.

381,139. UMBRELLA. HENRY JEFFERY, Stocksbridge Works, near Sheffield, County of York, England, assignor to Samuel Fox & Co., (Limited,) same place. Filed Aug. 1, 1887. Serial No. 245,533. (No model.)



Claim.—A stretcher of trough-wire having notches *a* near the fork end of the stretcher, within which the parts *b'* of the piece *b* lie, substantially as described.

381,140. BUSTLE. HARRIET A. JEWELL, Cleveland, Ohio. Filed Aug. 3, 1886. Serial No. 209,838. (No model.)



Claim.—1. A bustle comprising a vertically-yielding base, consisting of a wire forming frames and intermediate transverse frame-connecting portions, and horizontal springs having their lower coils laterally expanded mounted upon the bends, substantially as specified.

2. A bustle-base consisting of a wire or its described equivalent,

and comprising frames A' and intermediate transverse bends, A^3, and a lining, B, secured thereto, substantially as specified.

3. In a bustle, the combination, with a base consisting of frames A', intermediate bends, A^3, and a lining, B, of horizontally-projecting coiled springs D, secured to the base, and a covering, H, secured to the outer ends of the horizontal springs and to the base, substantially as specified.

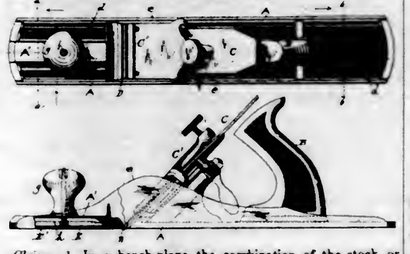
4. The combination of the base A, having the transverse bends A^3 and the lining B, with the springs D, the covering H, and the guy-tapes K, substantially as specified.

5. The combination of the vertically-yielding base A, the springs D, the covering H, the lining C, and the attaching-bands J J', substantially as specified.

6. The combination of the base A, adapted for vertical expansion and contraction, and the coils D, mounted thereon, with the central spring or link, E, and tape K, whereby the expansion and contraction of the frame A' is limited, substantially as specified.

7. The combination, with the base A, provided with the springs D, of the stop-arm M, connected at one end only to the outer end of the center one of the upper series of springs, whereby the downward swing of said top series is limited, whereby the weight of additional clothing sufficient to sag the top series of springs is supported by the said stop-arm, substantially as specified.

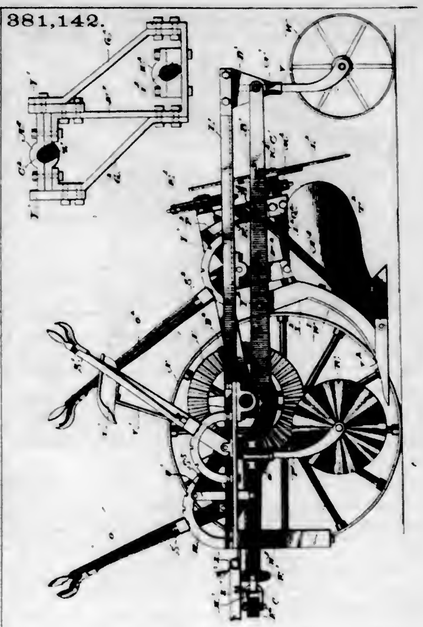
381,141. BENCH-PLANE. IVER JOHNSON and REINHARD T. TORKELSON, Worcester, Mass.; said Torkelson assignor to said Johnson. Filed Oct. 31, 1887. Serial No. 253,829. (No model.)



Claim.—1. In a bench-plane, the combination of the stock or body having a T-shaped recess in its under side in front of the throat, with the widest part thereof next to said throat, with the T-shaped plate E, fitted to slide longitudinally in said bottom recess, vertical screw-bolt *f*, fastened to the top of said plate E, preferably to the tongue portion E' thereof, and screw-handle *g*, having a threaded opening to receive the upper threaded portion of the screw-bolt, and whereby when said handle is turned the plate may be clamped to the stock after adjustment, substantially as shown and described.

2. In a bench-plane, the combination of the stock or body having its bottom and top surfaces corrugated in the manner described, and also having a T-shaped recess in its under side in front of the throat, with the widest part thereof next to said throat, with the T-shaped plate E, fitted to slide longitudinally in said bottom recess, vertical screw-bolt *f*, fastened to the top of said plate E, preferably to the tongue portion E' thereof, and screw-handle *g*, having a threaded opening to receive the upper threaded portion of the screw-bolt, and whereby when said handle is turned the plate may be clamped to the stock after adjustment, substantially as shown and described.

381,142.



381,142. PLOW AND PULVERIZER. SYLVESTER T. JOHNSTON, St. Louis, and COLUMBUS JOHNSTON, Clarksville, Mo. Filed Dec. 23, 1887. Serial No. 258,842. (No model.)

Claim.—1. The combination, in a wheel-plow, of the frame having the rearward-extending bar E, the trailing wheel W, supporting the rear end of said bar, the plow-beam, pivotal connections between the rear ends of the beam E and plow-beam, the lever S', pivotally secured to the frame, and the link connecting the same to the front end of the plow-beam, whereby the latter may be raised or lowered, substantially as described.

2. The combination, in a wheel-plow, of the frame to which the plow-beam is connected, the shaft F, journaled in said frame and having the traction-wheel H, the pulverizer-frame pivoted or hinged to the shaft, the shaft F^3, journaled to the pulverizer-frame and having the pulverizer, and connections between the said pulverizer and the shaft F to transmit rotary motion of the latter to the former, and the lever to raise or lower the pulverizer-frame, substantially as described.

3. The combination, in a wheel-plow, of the frame having the driving-shaft F, provided with the gear-wheel I, the pulverizer-frame pivoted or hinged at one end to shaft F and having the shaft C^3 and the shaft F^3, the pinion D^3 on shaft C^3, meshing with gear-wheel I, the pulverizer attached to wheel I^3, the chain-and-pulley connections between the shafts C^3 and I^3, and the lever to raise and lower the free end of the pulverizer-frame, substantially as described.

4. The combination, in a wheel-plow, of the frame, the wheel H on one side of the frame, the standard K, depending from the opposite side thereof, the arm L, pivoted to said standard and having spindle M, the supporting furrow-wheel N, journaled on said spindle, the lever, connections between the same and arm L to raise and lower the latter, the rearward-extending bar E, and the furrow-wheel W, having the vertical shaft or support journaled to the rear end of bar E, substantially as described.

5. The combination of the frame having the rearward-extending bar E, the diagonal bar L', connections between the bar L' and the rear end of bar E, the plate or standard M', depending from the rear end of bar L', the plow-beam having its rear end pivoted to said plate or standard and provided at the front end with the clevis, and the lever to raise and lower the front end of the plow-beam, substantially as described.

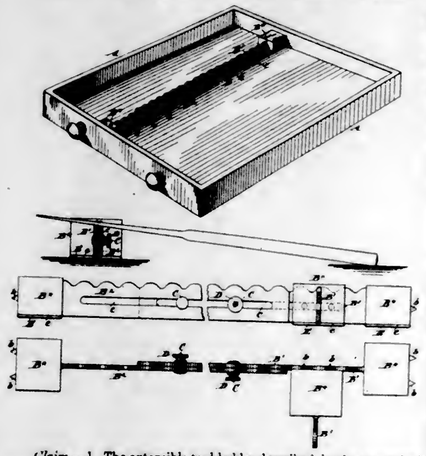
6. The combination, in a wheel-plow, of the frame having the supporting-wheels of unequal diameters on opposite sides and having the rearward-extending arm, the tongue pivotally attached to the front end of the frame, the furrow-wheel at the rear end of the arm, the plow-beam having its rear end pivotally connected to the rear end of the arm and having the clevis at its front end, and the lever to raise and lower the front end of the plow-beam, substantially as described.

7. The combination of the frame having the rearward-extending bar E, the traveling caster-wheel W, supporting the rear end of said bar, the wheels H and N, of unequal diameter, on opposite sides of the frame, the plow-beam having its rear end pivotally connected to bar E, and the lever to raise and lower the front end of the plow-beam, and the lever O, and connections to raise and lower the wheel N, substantially as described.

8. The frame having the traction-wheel H, the plain wheel N, the driving shaft or axle F for the traction-wheel, the pulverizer driven thereby, and the plow share and beam, the arrangement of the traction-wheel on one side of the plow-beam obviating the use of a land-side, as set forth.

9. The frame having the traction-wheel H, the plain wheel N, mounted on an independent bearing, the driving shaft or axle F for the wheel H, the pulverizer connected to the driving-shaft, and the furrow-wheel W, running in rear of the plow in line with the furrow and obviating the use of a sole or heel to the plow, and the arrangement of the traction-wheel H on one side of the plow obviating the use of a landside to the plow, as set forth.

381,143. DENTAL-TOOL HOLDER. JOSEPH A. KIMBALL, New York, N. Y. Filed Aug. 19, 1887. Serial No. 247,347. (No model.)



Claim.—1. The extensible tool-holder described, having a notched upper edge and a broad base and slotted body, with holding means D, adapted to serve the double functions of a tool-holder, and an adjustable partition for a drawer, as herein specified.

2. The two-part tool-holder B' B³ and holding means D, each part equipped with ends B⁶ *b*, adapted to engage with the interior of a drawer, as herein specified.

381,144. TRICYCLE. FREDERICK R. KOHLER, Canton, Ohio. Filed Jan. 9, 1888. Serial No. 260,259. (No model.)

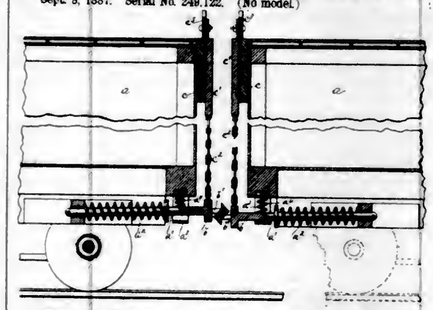


Claim.—1. In a tricycle, the combination of a front frame, a back frame, a vertically-adjustable handle-bar support, and a seat-support connected with the vertically-adjustable handle-bar support and the back frame, the connection of the seat-support with the back frame being vertically adjustable, substantially as set forth.

2. In a tricycle, the combination of a bifurcated front frame having an upwardly-extended pipe-section, a handle-bar support vertically adjustable in said pipe-section, a back frame pivotally secured to the front frame, a vertically-adjustable post in connection with the back frame, and a seat-support connecting said post and the vertically-adjustable handle-bar support, substantially as set forth.

3. In a tricycle, the combination of a bifurcated front frame provided with shoulders, a back frame, pivotally secured to the front frame and seated on said shoulders, the said back frame consisting of a pair of branches extending from the socket L, which embraces the front frame to the rear axle, a combined brace and seat-post support, N, interposed between the branches, a seat-post secured in said support in vertical adjustment, a handle-bar support, and a seat-support connecting the said vertically-adjustable post and the handle-bar support, substantially as set forth.

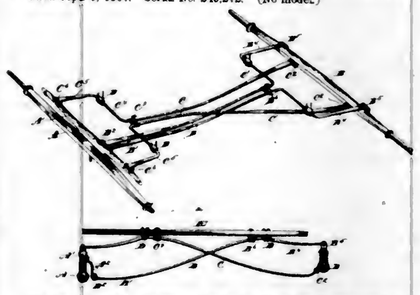
381,145. CAR-COUPLING. DENNIS LADD, Madison, Ind. Filed Sept. 8, 1887. Serial No. 249,122. (No model.)



Claim.—1. The combination, with the car-body and its coupler having a vertical play at its forward end, of a slide secured upon the face of the car end and connected to the coupler, and an eccentric-lever on said slide to operate it, substantially as and for the purpose set forth.

2. The combination, with the car *a* and its hooked coupler *a'*, of the guide *c*, slide *c'*, chain *c²*, and eccentric-lever *c³*, all constructed and arranged to operate substantially as and for the purpose set forth.

381,146. RUNNING-GEAR FOR VEHICLES. GEORGE W. LEE, Wooster, Ohio, assignor of one-half to William H. Banker, same place. Filed Sept. 9, 1887. Serial No. 249,272. (No model.)



Claim.—1. In combination with the front and rear axles of a vehicle, two combined reaches and springs, each comprising two rods connected at their ends to the axles and bolster, respectively, and bent to form supporting-arms connected to the body of the vehicle, and having their ends flattened to form springs, substantially as specified.

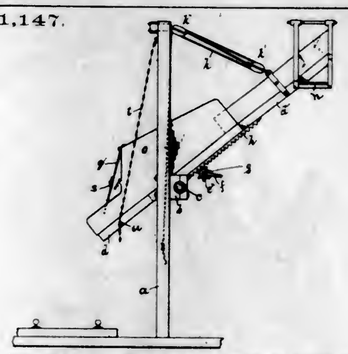
2. The combination, with the axles A and B, the former having the head-bar A', of the front reach, B, connected by the clip A⁵ to said head-bar and extending rearwardly and connected by the clip B⁴, thence extending rearwardly to form the arms B³, flattened as at B⁴, and connected to the rear axle, as at B⁵, and of the reach C, flattened as at C', and connected, as at C², to the rear axle, and connected, as at C³, and diverging to form the arms C⁴, and flattened, as at C⁵, to form springs, and connected, as at C⁶, to the head-bar, substantially as specified.

3. The combination, with the body E and the axles A and B, of the reaches B and C, having the arms C⁴ B³, and the springs B⁴ C⁵, and connected as at B², B⁵, B⁶, C³, C⁶, and C², substantially as specified.

381,147. COAL-CHUTE. EUGENE F. LEWIS, Preston, Conn. Filed Dec. 12, 1887. Serial No. 257,726. (No model.)

Claim.—1. In combination with uprights *a*, a two-part chute trunnioned in said uprights, one of said chute-sections being provided with racks and the companion section with engaging pinions, shaft and crank, as described, for adjusting said chute longitudinally, and a system of pulleys and a rope for varying the inclination of said complete chute, all being substantially as and for the objects set forth.

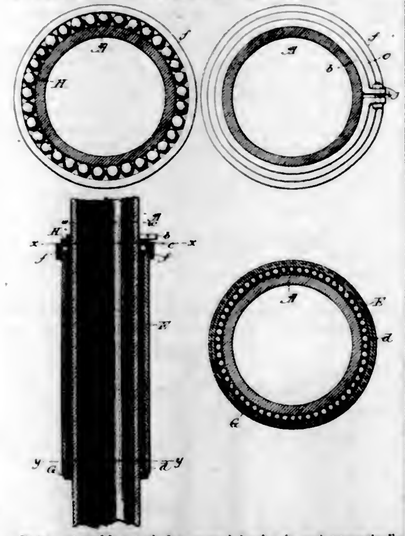
381,147.



2. In combination with uprights *a*, a two-part chute trunnioned in said uprights, one of said chute-sections being provided with racks and the companion section with engaging-pinions, shaft and crank, as described, for adjusting said chute longitudinally, a system of pulleys and rope for varying the inclination of the complete chute, a pocket formed on the lower chute-section, a gate at the discharge end thereof, and a latch for locking said gate, all being substantially as and for the object specified.

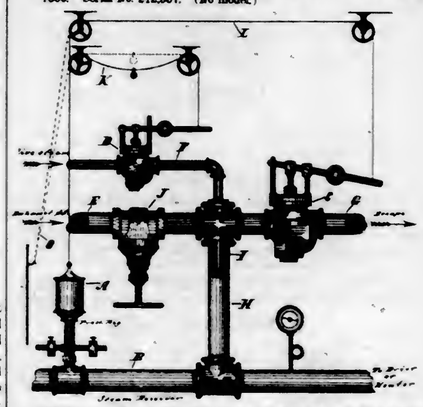
3. Uprights *a*, a two-part telescopic chute trunnioned between said uprights, mechanism for adjusting and supporting said chute at different degrees of inclination, a rack-and-pinion mechanism, as described, for adjusting longitudinally one end of the chute, a pocket at the lower end of said chute, a gate at the discharge end of said pocket, and a locking device for governing said gate, all of said elements being constructed and combined as herein described, and for the objects specified.

381,148. BEARING AND SUPPORT OF RUDDER-STOCKS UPON VESSELS. JOSEPH M. LONG and JOHN MCCAFFREY, Le Claire, Iowa. Filed Feb. 27, 1888. Serial No 265,529. (No model.)



Claim.—A rudder-stock for a vessel, having its weight vertically sustained by movable metallic balls upon the top of a tube through which it is vertically inserted, and its lateral pressure against movable metallic balls at the top and bottom of said tube, substantially as described.

381,149. REGULATING LIVE STEAM AND EXHAUST FROM STEAM-ENGINES. JAMES J. LOWDEN, Boston, Mass. Filed Aug. 31, 1886. Serial No. 212,337. (No model.)

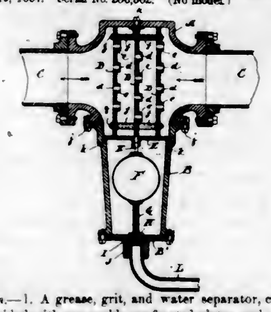


Claim.—1. In combination with an exhaust-steam pipe having a discharge-opening, a valve governing said opening, a live-steam pipe communicating with the exhaust-steam pipe and having a valve, a pressure-regulator communicating with the exhaust-steam pipe, and suitable connections between the regulator and the valves on the respective pipes, substantially as set forth.

2. In combination with an exhaust-steam pipe having a branch leading to the atmosphere or any suitable receptacle, a live-steam pipe communicating with said exhaust-steam pipe, a pressure-regulator, also communicating with the exhaust-steam pipe, a valve on the live-steam pipe connected to the pressure-regulator, and a valve on the branch pipe, also connected to the regulator, substantially as set forth.

3. In combination with an exhaust-steam pipe, a pressure-regulator connected to and operating two balance-valves, one on the live-steam pipe and one on the exhaust branch pipe, said valves being operated by the regulator in reverse direction to each other, so that when one valve is being opened the other is being closed, substantially as set forth.

381,150. SEPARATOR. JAMES J. LOWDEN, Boston, Mass. Filed Dec. 19, 1887. Serial No. 258,302. (No model.)



Claim.—1. A grease, grit, and water separator, consisting of a body provided with removable perforated plates, and a receiver provided with an automatic discharge-valve, substantially as set forth.

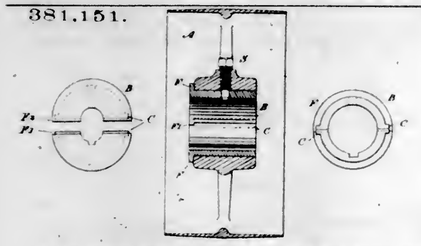
2. The body A, provided with perforated plates D, in combination with the receiver B, provided with a valve, H, operated by a float, substantially as set forth.

3. The body A, perforated plates D, pipes *f*, bolts *g*, and screws *h*, in combination with the receiver B and cover B', the perforated plate E, valve H, rod G, and float F, substantially as and for the purposes set forth.

381,151. PULLEY-BUSHING. JOHN J. MAHONEY, Holden, Mass. Filed Dec. 10, 1887. Serial No. 257,504. (No model.)

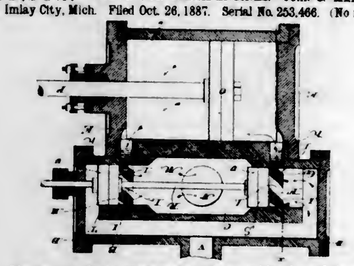
Claim.—1. The bushing composed of separable parts and having each thereof provided with a tongue, C, a flange, F, a rabbet, F³, and a tongue, F⁴

381,151.



2. The bushing composed of separable parts and having each thereof provided with a tongue, C, a flange, F, a rabbet, F^2, and a tongue, F^3, in combination with a hub or sleeve constructed to receive said bushing and a set-screw, as and for the purposes set forth.

381,152. VALVE FOR STEAM-ENGINES. JOHN S. MARSHALL, Imlay City, Mich. Filed Oct. 26, 1887. Serial No. 253,466. (No model.)



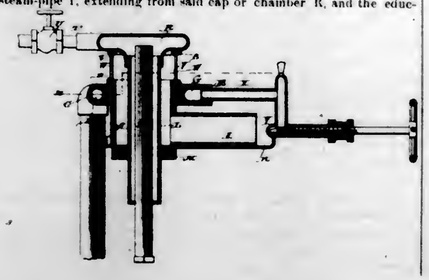
Claim.—1. In a steam-engine, the combination of the steam-cylinder A, having the vertical recesses K adjoining its heads and extending transversely from wall to wall, the steam-chest extending at each end beyond said cylinder and taking steam centrally on top at V, the valve-cylinder provided with the inclined spiral ports G H, opening directly into the recesses K, and all in the same vertical plane open at its ends to take steam from the steam-chest, and having the exhaust-opening at its central port, and the valves S T provided with expansion packing-rings of ordinary construction, substantially as specified.

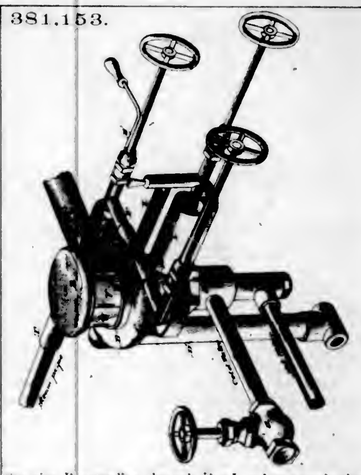
2. In a steam-engine, in combination with the steam-cylinder, the steam-chest extending at each end beyond the said cylinder, and the valve-cylinder within the steam-chest adjoining the steam-cylinder and having ports opening directly thereinto, the said steam-cylinder, steam-chest, and valve-cylinder being cast integral with each other, and the cylinder-heads and steam-chest heads fitted to their seats by ground joints, substantially as specified.

381,153. VAPOR-BURNER. EDWARD G. MARTIN, Concordia, Kans. Filed June 17, 1887. Serial No. 241,649. (No model.)

Claim.—1. The combination of the vapor-burner, the chamber or cap R, arranged above the same, the supply-pipe L, communicating with the cap or chamber R and extending through the burner, and the hot-water eduction-pipe P, extending through the pipe L into the cap or chamber R, substantially as described.

2. The vapor-burner having the commingling-chamber, in combination with the water-supply pipe L, extending through the commingling-chamber, the cap or steam-chamber R, secured to the upper end of pipe L, and arranged above the commingling-chamber, the steam-pipe T, extending from said cap or chamber R, and the eduction-pipe P, extending through pipe L and communicating with the cap R, substantially as described.





3. The combination of the commingling cup or chamber A, having the groove B in its upper edge, the pipe L, extending up from the commingling cup or chamber, the cap R, screwed to the upper end of the said pipe and removable therefrom, and having a groove, S, on its lower side, the burner-plates V, having openings W, and secured in the grooves S and B, and the eduction-pipe P, communicating with cap R, substantially as described.

4. A vapor-burner having the generating-chamber provided with the inlet-opening D, the chambers G and H, communicating at their inner ends with the said inlet-opening, and the pipes F and X, attached to the outer ends of said chambers, substantially as described.

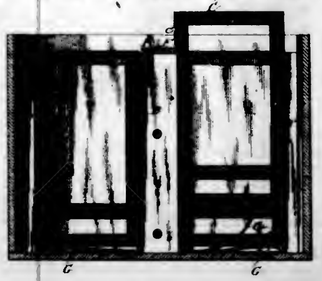
5. The combination, in a vapor-burner, of the needle-valve, the sleeve Z, secured to one side of the burner-head, the elbow A', having its inner end pivoted in the sleeve arranged opposite the point of the needle-valve and forming a commingling-chamber in which the vapor is mixed with air, and the handle B', attached to the said elbow and adapted to turn the same in the sleeve, substantially as described.

6. The vapor-burner having the commingling-chamber A, in combination with the hollow cap R, arranged above the commingling-chamber, the pipe to supply said cap with water, the eduction-pipe, and the burner-plates V, having openings W, and secured between the cap R and commingling-chamber, substantially as described.

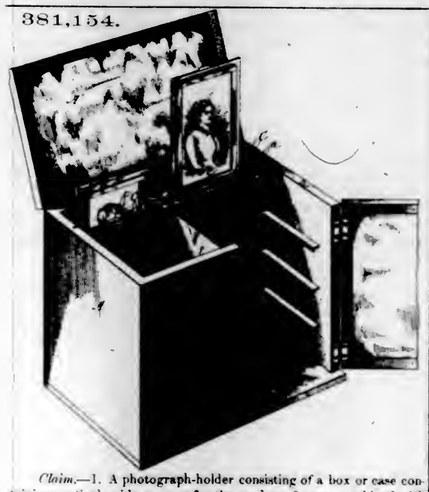
7. The vapor-burner having the commingling-chamber, in combination with the needle-valve, the supply-pipe L, extending through the commingling-chamber, the cap or steam-chamber R, secured to the upper end of pipe L and arranged above the commingling-chamber, the eduction-pipe P, communicating with the cap and extending down through the pipe L, the drip-cup arranged against the lower side of the commingling-chamber, and the nut M, secured to the pipe L and bearing against the drip-cup, substantially as described.

8. In combination with the commingling-chamber *a*, the cap R and the burner-plates V, having openings W, and secured between the cap and the commingling-chamber, as set forth.

381,154. PHOTOGRAPH-HOLDER. JULIA MCAFFERTY, Chicago, Ill. Filed June 27, 1887. Serial No. 242,574. (No model.)



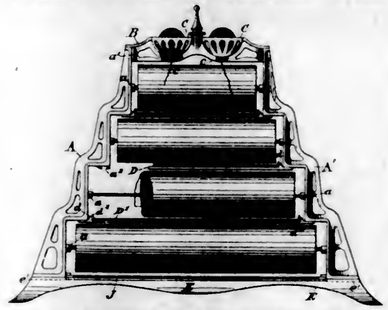
381,154.



Claim.—1. A photograph-holder consisting of a box or case containing vertical guide-grooves for the cards or frames, combined with springs or their equivalents for raising the frames or cards, automatic locks for locking into the edges of the cards or frames near their upper and lower ends to hold them up or down, and push-buttons or their equivalents for disengaging the locks and allowing the cards or frames to be raised or lowered, substantially as set forth.

2. In a photograph-holder, the combination of the right-angled locking-levers D with the springs E, blocks B, notched sashes C, and vertically-arranged push-rods *f*, whereby a vertical push upon the rods releases the locks from the frames and allows the corresponding slides to be thrown up or down, substantially as described.

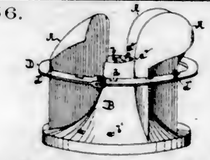
381,155. PAPER AND TWINE HOLDER. JOHN G. MCBRIDE, San Francisco, Cal. Filed Aug. 9, 1887. Serial No. 246,540. (No model.)



Claim.—1. In a combined paper and twine holder, the combination of roll-supporting frames formed in a series of steps provided with bearings *a a*, a connecting-bar having cup-shaped expansions, each provided with a small hole, a base having a projecting lip for tearing the paper evenly from the roll, and the tearing-bars, substantially as described.

2. In a combined paper and twine holder, the combination of the sides A A', having bearings for supporting-spindles, and the lower end of each of which is supplied with dovetail projections *e*, and the upper end of each of which is provided with a dovetail groove or recess, *a'*, and having dovetail grooves or recesses a^3, the base E, having a lip, J, and having dovetail grooves or recesses *e e*, the connecting-bar B, having cup-shaped expansions C C, each of which is provided with a small hole, *c*, in its lower part, and having its end provided with a dovetail projection, *b*, and the tearing-bar D, provided with lugs *d d'* and stop d^3, the front edge of which is curved, and the upper tearing-bar, D', which is provided with holes d^2 d^3, and the wedges K, substantially as described.

381,156. MOLDING APPARATUS. JOHN R. MCCORMICK, Holyoke, Mass. Filed Dec. 12, 1887. Serial No. 257,727. (No model.)



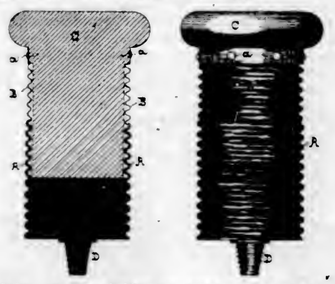
Claim.—1. The apparatus for use in molding turbine wheels herein described, consisting of hub-pattern B, having the series of orifices *b* at its small end and the series of orifices *b'* near its large end, arranged substantially as shown, whereby it is adapted to pivotally support the wheel-buckets, a ring having within its inner surface a series of recesses to receive the outer edges of the buckets, and devices, substantially as described, for adjusting and securing the buckets within said recesses, substantially as and for the purpose set forth.

2. The apparatus herein described, consisting of the hub-pattern having the series of orifices *b* at one end and the series of orifices *b'* near its opposite end, ring D, having the series of recesses *d*, and wedges or keys *d'*, substantially as described.

3. The combination, with a series of buckets, A, having lugs a^3, provided with pins a^3 and projections *a'*, of hub-pattern B, having a series of orifices at one end to receive said pins a^3, and a series of orifices near its opposite end to receive said projections *a'*, ring D, composed of two semicircular sections pivoted together at one end and having within its inner surface a series of recesses, *d*, and wedges or keys *d'*, substantially as set forth.

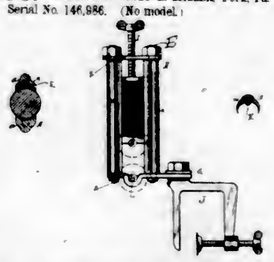
4. The ring D, composed of two semicircular sections pivoted together at one end and secured together at their opposite ends by a bolt or other similar device, said ring having within its inner surface a series of recesses, *d*, arranged at regular intervals about said inner surface, substantially as and for the purpose described.

381,157. GREASE-CUP. HENRY D. MENTZEL, Baltimore, Md. Filed May 24, 1887. Serial No. 239,188. (No model.)



Claim.—A grease-holding cup, which consists in an interiorly-threaded shell, an exteriorly-threaded hollow plug or plunger, and a handle which is inserted in the said plug, all combined substantially as and for the purpose specified.

381,158. WRINGER. JOHN L. MILLER, York, Pa. Filed Nov. 1, 1884. Serial No. 146,986. (No model.)

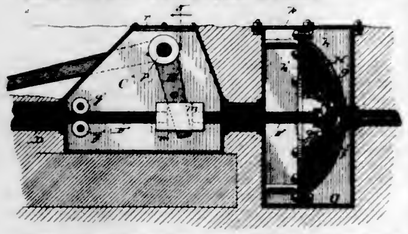


Claim.—1. A wringer-frame composed of posts A A, whereof each is composed of two concave sections, *a a*, secured at top and bottom to arch-plate F and saddle *c*, respectively, as described, combined with rollers B B and the solid rubber springs D, incased within said posts, and with the adjusting-screws I, as set forth.

2. A wringer-frame composed of the posts A A, each composed

of concave sections *a a*, the connecting-plates F G, saddles *c c*, combined with the bolts E, rollers B B, springs D D, and tension-screws I, as set forth.

381,159. GATE. MORTIMER B. MILLS and FRANK W. MILLS, Chicago, Ill., assignors to the Mills Railroad Gate Company, same place. Filed Sept. 17, 1887. Serial No. 249,948. (No model.)

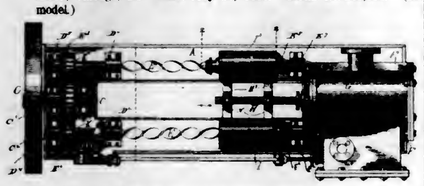


Claim.—1. In a gate, the combination of a swinging bar, a pivotally-supported bell-crank having one arm inclosed in an underground water-tight casing, and its other arm outside the said casing, and connected with the bar to one side of its axis, and a collapsible receiver, H, having its diaphragm connected with the incased arm of the bell-crank by a horizontal rod, and communicating with a fluid-pump, I, substantially as described.

2. In a gate, the combination of a swinging bar, a pivotally-supported bell-crank connected from one arm with the bar to one side of its axis, and having its opposite arm inclosed in a water-tight casing, a collapsible receiver, H, communicating with a fluid-pump, I, and having plates *g* and *g'* on opposite sides of its diaphragm, and a rod, F, connecting the plate *g* with the inclosed arm of the bell-crank, substantially as described.

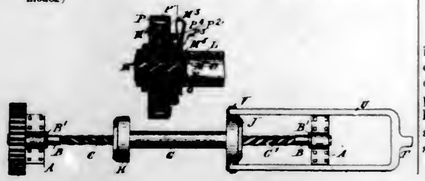
3. In a gate, the combination of two swinging bars, B and B', underground chambers C and C', an underground housing, G, an underground conduit, D, connecting the chambers and housing, bell-cranks E and E', pivotally supported at the said chambers, and their arms *o* and *o'*, respectively, outside and within the said chambers, and having their arms *o* connected with the bars to corresponding sides of the axes thereof, a collapsible receiver, H, in the housing G, communicating with a fluid-pump, I, and a rod, F, extending through the chambers and conduit D, connecting the diaphragm of the collapsible receiver with the arms *o'* of the bell-crank, substantially as described.

381,160. DEVICE FOR CONVERTING MOTION. EDWARD A. MOON, Chicago, Ill. Filed May 27, 1886. Serial No. 203,358. (No model.)



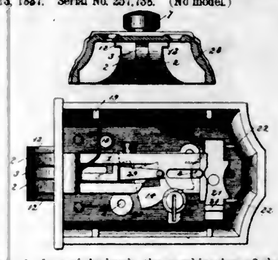
Claim.—In a device for transforming reciprocating into rotary motion, the combination of a piston for imparting reciprocating motion with two spiraled shafts journaled parallel with the reciprocating part, two clutches, one on each spiral shaft, set so as to operate the shafts, one while moving in one direction, the other in the other, both of said clutches being secured to the reciprocating part, and suitable pinions, shafts, and wheels, whereby the rotary motion of the spiral shaft is communicated, so as to impart a continuous rotary motion to a fly-wheel.

381,161. DEVICE FOR CONVERTING MOTION. EDWARD A. MOON, Cleveland, Ohio. Filed June 6, 1887. Serial No. 240,478. (No model.)



Claim.—A device for converting reciprocatory into rotary motion, consisting of a shaft journaled and provided with oppositely-spiraled ends, in combination with a sliding clutch the ends of which are provided with oppositely-spiraled pieces having engaging-surfaces on opposite sides of said pieces and with engaging-surfaces on the ends of the shell of the clutch, and suitable means, consisting of the ring N, having the pins O, projecting through and adapted to traverse the slots L' of the collar P^3, whereby the spiraled pieces may be changed in position with reference to the clutches, so that either of the engaging-surfaces may be brought into proximity to the engaging-surface of the clutch, so that the spiraled piece may be fastened upon the engaging-surface either when the clutch moves to the right or to the left, as may be desired.

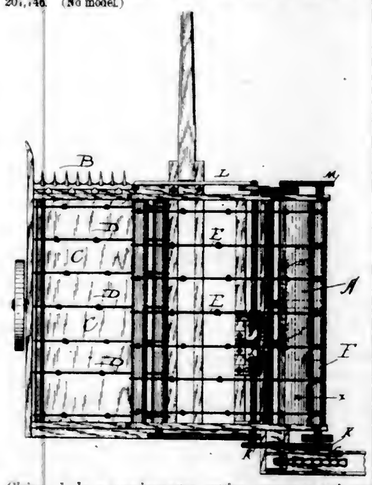
381,162. NIGHT-LATCH. ROBERT MUENCH, Chicago, Ill. Filed Dec. 13, 1887. Serial No. 257,738. (No model.)



Claim.—1. In a night-latch, the combination of the bolt-head 2, having the pivotal piece 3 and the feather-like projections 12 on the sides thereof, and means, substantially as described, for operating the said parts, with a keeper, 28, having grooves corresponding with feathers 12, substantially as described.

2. In a night-latch, the combination of a bolt-head, 2, having feather-like projections 12 and pivotal piece 3, said pivotal piece being provided with a shoulder, 6, and pivotally-connected piece 5, with tumblers 14, and keeper 28, having grooves corresponding with feathers 12, substantially as set forth.

381,163. CORN-HARVESTER. JAMES A. NORTON, Odebolt, Iowa, and JOHN A. STONES, Chicago, Ill. Filed July 12, 1886. Serial No. 207,746. (No model.)



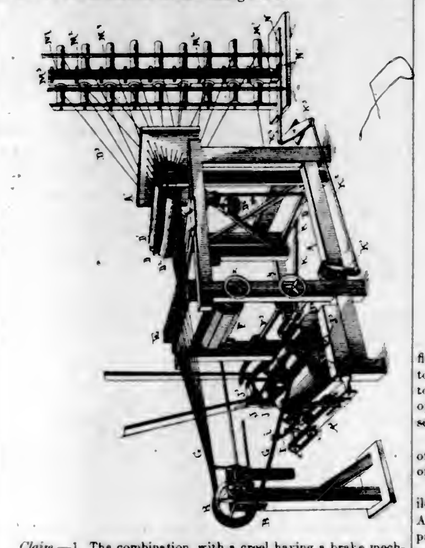
Claim.—1. In a corn-harvester, cutting apparatus, and conveying mechanism moving transversely to the line of draft of the machine, the conveying mechanism having spaces into which the ears of corn may depend as the stalks are carried sidewise onward to the picking-rollers, and picking-rollers, to which the stalks are delivered, located transversely to the line of movement of the delivering mechanism and adapted to seize the stalks while the ears are still hanging and pinch or snap them off, substantially as described.

2. In a corn-harvesting machine, the combination of a series of

knotted cords lying parallel to the sickle to carry the severed stalks to the elevating device, two series of moving knotted elevating-ropes, one above the other, lying at an angle and transverse to the tongue or line of draft of the machine to receive the severed stalks between the two series from the conveyers and elevate them and deliver them sidewise directly to the separating-rollers, and separating-rollers situated at the top of the elevating-ropes to detach the ears from the stalks, substantially as described.

381,164. WARPING AND BALLING MACHINE. EPHRAIM E. ORRELL, Ware, Mass., assignor to the Otis Company, same place. Filed June 22, 1886. Serial No. 205,943. (No model.)

Brief.—The invention consists in improvements in the means for regulating the feed of the warp-threads, in the leasing mechanism, and in the traverse mechanism for the balling device.



Claim.—1. The combination, with a creel having a brake mechanism to retard the revolution of the spools, of a warping-machine having two rolls, under which pass the threads of the skein, and an intermediate rising roll, over which said threads pass, means for automatically raising said roll to take up the slack when the tension of the skein is lessened, and mechanism connecting said roll with the brake mechanism of the creel, whereby the revolution of the spools is retarded when the roll rises, substantially as and for the purpose set forth.

2. In a warping-machine, the combination, with the rolls D^9 D^8, journaled in stationary bearings, of the roll D', a vertically-movable frame D, in which roll D' is journaled, counter-weights D^{10}, connected with said frame D, rock-shaft K^6, arm or lever K, arm K', rod K^9, lever K^8, sliding bar N, wedge N', creel C, and bar M, provided with pin M' and brake-studs M^2, substantially as and for the purpose set forth.

3. The combination, in a warping-machine provided with a leasing device, of a set of drawing-rolls, one of which is movable, a creel having a brake mechanism, and suitable levers connected with each other and with the movable roll and the brake mechanism for automatically taking up the slack and applying the brakes when the machine is stopped to tie a thread, substantially as described.

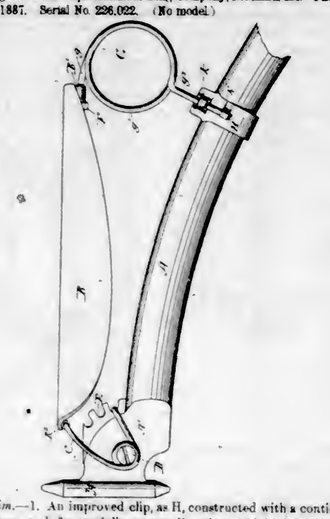
4. The combination, with frame or box L, carrying the needles E, of polygonal roller F, hand-wheel X, sliding bars F^5, connecting-rods F^2, shaft F^3, cranks F^4, and hooks F^6, whereby the roller is locked at its highest point, substantially as shown and described.

5. The combination, with the chain P, having the stud P', and the supporting and actuating wheels for said chain, of the block O, having the cam-groove, and switch-points O', springs O^3, and guide-bar I, substantially as described.

6. The combination, with block O, means for reciprocating the same, and guide-bar I, pivoted on said block, of stops or fingers A^4, substantially as and for the purpose described.

7. The combination with chain P and its stud P' and wheels *x x'*, of slide-block O, having the cam-groove, the switch-points O', springs O^3, the pivoted guide-bar I, and the fingers or stops A^4, substantially as and for the purpose described.

381,165. VELOCIPEDE-SEAT. HARRY M. POPE, Hartford, Conn., assignor to the Pope Manufacturing Company, Portland, Me. Filed Jan. 31, 1887. Serial No. 226,022. (No model.)

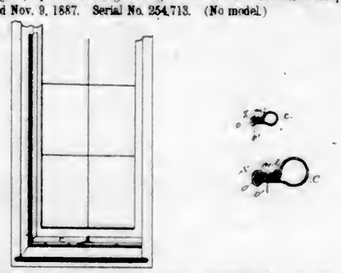


Claim.—1. An improved clip, as H, constructed with a continuous flexible loop, as *h*, for partially surrounding the part it is to be attached to, with holding-lugs, as *h' h'* and h^3 h^3, and grips, as K K', for the parts to be supported thereon, and with means, substantially as set forth, operating between the lugs to draw the grips and the lugs together to secure the clip and the parts supported by it together in position.

2. An improved connecting-nut, as L, constructed with two series of facets and angles, the facets of one series being opposite the angles of the other.

3. The combination, in a velocipede-saddle mechanism, with a flexible seat-piece, as B, and a front support, as C, and a perch or reach, as A, and an independent rear spring or springs, as G G, of downwardly-projecting rods, as g^2 g^2, and an adjustable clip, as H, having a loop, as *h*, beneath and partly inclosing the perch, and grip-lugs, as h^2 h^2, open holding lugs or trips, as *h' h'*, grips, as K K', and a connecting-nut, as L, constructed to operate essentially as set forth.

381,166. WEATHER-STRIP. JOSIAH POTTON, New York, N. Y., assignor, by mesne assignments, to Charles R. Vincent, same place. Filed Nov. 9, 1887. Serial No. 254,713. (No model.)



Claim.—1. A weather-strip cushion consisting of a tubular part, *c*, having its edges lapped and re-enforced by an edge-binding ridge or cord, *s*, in combination with a metallic binding-plate having one edge grasping the re-enforced lapped edges of the cushion, its other edge having a closed lap or fold forming a bearing upon the tubular part of the cushion at one side only of its lapped parts, substantially as described, for the purpose specified.

2. A weather-strip consisting of a rubber tubular-formed cushion having its lapped edge parts re-enforced by a lateral edge-binding ridge or cord, *s*, in combination with a metallic binding-plate, *m*, having one edge formed with a grasped or turned-over part for the re-enforced lapped cushion parts, its other edge having a closed lap or fold, and

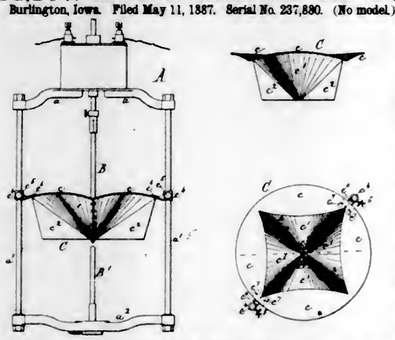
having between these formed edges a longitudinal ridge corrugation

381,169

having between these formed edges a longitudinal ridge corrugation forming a bearing upon the outer side only of the cushion-lapped parts, substantially as described.

3. A weather-strip composed of a rubber tubular part having its lapped edge parts bound by a metallic plate placed upon one side only of such lapped parts and formed with a semi-tubular edge part, *o o'*, for grasping the lapped edge parts, an inner under lapped edge forming a bearing, *i*, and a longitudinal bearing-rib, *n*, on its inner side, as shown and described.

381,167. REFLECTOR FOR ELECTRIC LAMPS. HIRAM PURDY, Burlington, Iowa. Filed May 11, 1887. Serial No. 237,880. (No model.)



Claim.—1. The electric-lamp reflector constructed in form of an inverted truncated cone with concaved inclined side reflecting-plates, *c'*, the lower ends of which are united at the inverted apex of the cone and form a central opening just large enough for the passage down through the reflector of the carbon stick B of an electric lamp A, thus locating the said concaved side reflecting-surfaces in position for receiving and reflecting the electric rays directly from the incandescent body of light below the end of the carbon stick, substantially as and for the purpose described.

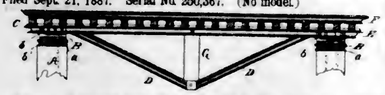
2. The electric-lamp reflector constructed in form of an inverted truncated cone with concaved inclined side reflecting-plates, *c'*, curved laterally-projecting reflecting-plates *c*, attached to the upper edges of the plates *c'*, and openings c^3 and *d* for the passage through the reflector of the carbon stick B of the electric lamp, substantially as and for the purpose described.

3. The electric-lamp reflector constructed in form of an inverted truncated cone with concaved inclined side reflecting-plates, *c'*, a series of vertical radial reflector-plates, c^3, and central openings, c^3 and *d*, for the passage of the carbon stick B of an electric lamp down through the reflector, substantially as and for the purpose described.

4. The electric-lamp reflector constructed in form of an inverted truncated cone with laterally-projecting curved reflecting-plates *c* and vertical radial reflecting-plates c^3, substantially as and for the purpose described.

5. The electric-lamp reflector constructed in form of an inverted truncated cone with inclined concaved side reflecting-plates, *c'*, laterally-projecting top reflecting curved plates, *c*, which overhang the plates *c'*, the inclined radial reflector-plates c^3 below the plates *c* and extending out from the inclined concaved plates *c'*, and passages c^4 and *d*, substantially as and for the purpose described.

381,168. TRUSS-BRIDGE. HENRY W. RAMSAY, Lincoln, Nebr. Filed Sept. 21, 1887. Serial No. 250,367. (No model.)

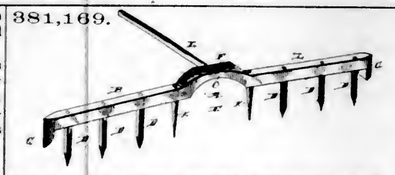


Claim.—1. The combination, in a truss-bridge, of piles A, cross-pieces B, stringers C, trusses D, the cross-pieces, stringers, and trusses formed of T-rails, strut G, ties E, and track-rails F, substantially as described.

2. The combination, in a truss-bridge, of piles A, caps *a*, splice-plates *b*, cross-pieces B, stringers C, trusses D, the cross-pieces, stringers, and trusses formed of T-rails, strut G, ties E, and track-rails F, substantially as described.

381,169. CULTIVATOR. VERNON RHODES, Memphis, Tenn. Filed Jan. 11, 1888. Serial No. 260,490. (No model.)

Claim.—1. In a cultivator, the combination of the head A, the teeth D, secured thereto on opposite sides of a central open space, E,



and the teeth K, adjacent to the space E and arranged in front of the line of the other teeth, substantially as specified.

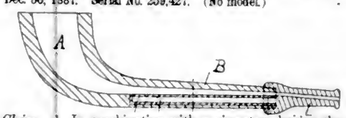
2. In a cultivator, the combination of the head A, the transversely wedge-shaped or triangular teeth D, secured thereto and disposed with their inner sides, or the sides toward the center, inclined inward toward the rear, and their outer sides parallel with the line of motion of the cultivator, whereby the soil will be drawn inward toward the center, as and for the purpose hereinbefore specified.

3. In a cultivator, the combination of the head having the central arch, C, provided on its back or upper side with a cutter, F, and the teeth secured to the lower side of the head on opposite sides of the said arch, substantially as specified.

4. The improved cultivator herein described and shown, having a head provided with a central arch or bowed portion reduced or tapered toward its upper edge or back to form a cutting-edge, F, for the purpose described, the teeth attached to the head, and the cutters arranged at the ends of the head, all constructed and arranged substantially as and for the purpose specified.

5. In a cultivator, the head having a central bowed portion or arch provided at its back or upper side with a cutting-edge, F, and the teeth attached to the head, substantially as and for the purpose specified.

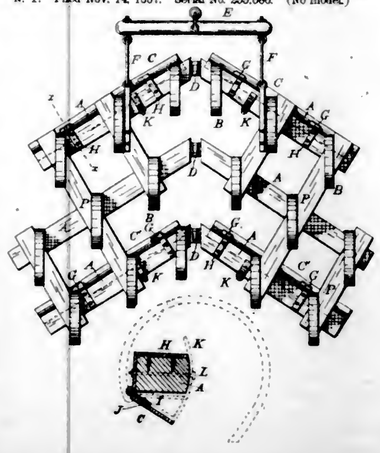
381,170. PIPE-STEM. ELIAS H. ROGERS, Durham, Conn. Filed Dec. 30, 1887. Serial No. 259,427. (No model.)



Claim.—1. In combination with a pipe-stem having the smoke-passage, the tubular nicotine-receptacle situated on the lower side of such passage, so that the smoke passes along over its top, and having in such top an opening near each end, substantially as and for the purpose specified.

2. In combination with a pipe-stem having a smoke-passage, the tubular nicotine-receptacle situated on the lower side of such passage, so that the smoke passes along over its top, and having in such top an opening near each end to let the nicotine through, with its end toward the pipe-bowl closed and its other end open, and a mouth-piece on the stem adapted to close the open end of the receptacle, substantially as and for the purpose specified.

381,171. SPRING-TOOTH HARROW. REUBEN A. ROSE, Geneseo, N. Y. Filed Nov. 14, 1887. Serial No. 255,080. (No model.)



Claim.—1. The combination, with the harrow-frame having spring-teeth mounted on its front and rear bars, of guards hinged at their forward edges to said front and rear bars in advance of the spring-teeth, the rear edges of said guards being connected by a rigid adjustable connection to their respective supporting-bars, whereby the depth of the furrow made by such teeth may be regulated, substantially as described.

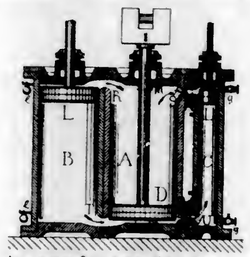
2. The combination, with the harrow-frame having spring-teeth mounted on its front and rear bars, of guards hinged at their forward edges to said front and rear bars and extending throughout their entire length in advance of the spring-teeth, the rear edges of said guards having the upwardly-extending arms *k* adjustably connected to their respective supporting-timbers, substantially as described.

3. The combination, with the harrow formed of two sections, the front and rear timbers of each of which are inclined back from the line of draft, said timbers having spring-teeth secured thereto, of guards hinged at their forward edges to the under side of each of said timbers in advance of the spring-teeth, the rear edges of said guards being provided with the rigid arms *k* and adjustable connections between said arms and their respective supporting-timbers, substantially as described.

4. The combination, with a spring-tooth harrow, of an inclined guard, C, hinged to the harrow-timbers at its forward edge and adjustably connected thereto at its rear edge, and consisting of the wooden plate M, having metal facing N, provided with a thickened wearing-surface at the rear edge, substantially as described.

5. The combination, with the bar A of a spring-tooth harrow, of the inclined pivoted adjustable guard C, extending continuously from end to end of the bar and attached thereto by the hinges G, consisting of the strap secured to the upper side of the guard and the strap H bent over the upper side of the bar and secured thereto, substantially as described.

381,172. REGENERATING EXHAUST-STEAM. EILERT O. SCHARTAU, Philadelphia, Pa. Filed Jan. 4, 1887. Serial No. 223,947. (No model.)



Claim.—As a means for regenerating exhaust-steam, the combination, with a steam-engine cylinder, of one or more cylinders, B and C, same constituting a reservoir or reservoirs for exhaust-steam, their united capacity being less than or equal to that of the steam-cylinder, and the piston or pistons L L, all arranged and operating substantially as set forth.

381,173. CASTER. MARTIN B. SCHENCK, Meriden, Conn. Filed Sept. 3, 1887. Serial No. 248,729. (Model.)

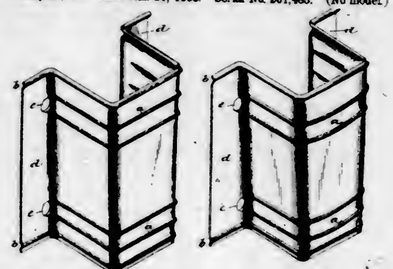


Claim.—1. In a caster, the combination, with the housing-plate having an axial perforation and an upwardly-projecting annular flange thereon, of a circular base-plate having an elongated perforated boss, the perforation of which extends through the base-plate, a peripheral flange projecting downwardly from said base-plate and adapted to surround the annular flange on the housing-plate and having a space between them for the anti-friction rollers, and a headed spindle secured to the base-plate and passing through said perforated boss, its head being adapted to bear on the end of said boss, substantially as set forth.

2. In a caster, the combination, with a base-plate having an elongated perforated boss, the perforation extending through the base-plate, of the floor-wheel housing having an axial perforation, a spindle secured to the base-plate and passing through said perforated boss, and a head on said spindle, adapted to engage the end of said boss out of contact with the housing, substantially as set forth.

3. In a caster, the combination, with the housing-plate provided with an axial perforation, of the base-plate, also provided with an axial perforation, a headed spindle received by said perforation, lugs on top of the base-plate surrounding its perforation, and side projections on the spindle situated between said lugs, substantially as and for the purpose set forth.

381,174. STAKE-POCKET FOR CARS. CHARLES T. SCHOEN, Philadelphia, Pa. Filed Jan. 21, 1888. Serial No. 261,483. (No model.)



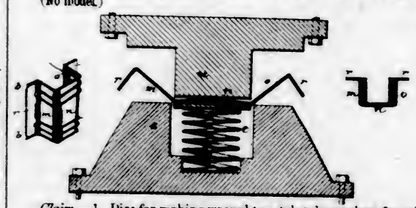
Claim.—1. A stake pocket or holder constructed of wrought metal and having edge beads or flanges for bracing the same, and also provided with projections to hold in position the medium employed for fastening the pocket to the car and prevent displacement, substantially as described.

2. A stake-pocket struck up from sheet metal and formed with re-enforcing beads or flanges, which serve also to receive the strap or clip for securing the pocket to the car, substantially as described.

3. A stake pocket or holder for railway-cars, constructed of sheet metal and having strengthening beads or flanges on its edges, and a suitable number of intermediate beads or flanges, which, in addition to re-enforcing the pocket or holder, also serve to receive the fastening bands or clips, substantially as described.

4. A stake pocket or holder constructed of wrought metal and having edge beads or flanges for bracing the same, and also having a suitable number of pairs of strengthening beads or flanges, which additionally serve to receive the medium employed for fastening the pocket to the car and prevent displacement, substantially as described.

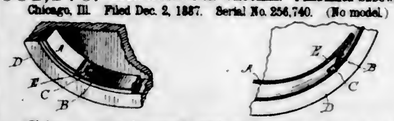
381,175. DIE FOR MAKING STAKE-POCKETS FOR CARS. CHAS. T. SCHOEN, Philadelphia, Pa. Filed Jan. 21, 1888. Serial No. 261,484. (No model.)



Claim.—1. Dies for making wrought-metal stake-pockets for railway-cars, provided with matrices and projections for forming the sides of the pocket, and appropriate parallel beads thereon for receiving the straps for securing such pockets to the car, substantially as described.

2. Dies for making wrought-metal stake-pockets for railway-cars, provided with matrices and projections for forming the body and body-flanges and beads thereon, substantially as described.

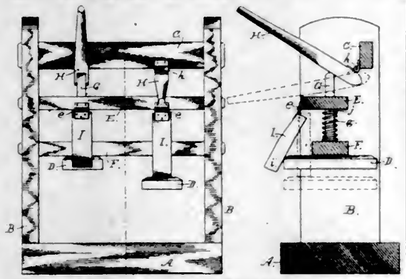
381,176. MAINSPRING FOR WATCHES. FREDERICK SEDGWICK, Chicago, Ill. Filed Dec. 2, 1887. Serial No. 256,740. (No model.)



Claim.—1. As an improved article of manufacture, a watch-mainspring provided with a backwardly-projecting tongue upon its outer end, and a perforation, as E, through said spring at the free end of said tongue of sufficient size to freely receive the usual stud of a winding-barrel when the end of said tongue is in engagement with said stud and the spring is partially or wholly unwound, substantially as shown and described.

2. The combination, with a watch-mainspring, of the tongue B, perforation E, a winding-barrel, and stud C, whereby when the stud is placed in the barrel said tongue may engage with and said perforation may lie opposite to or receive said stud, substantially as shown and described.

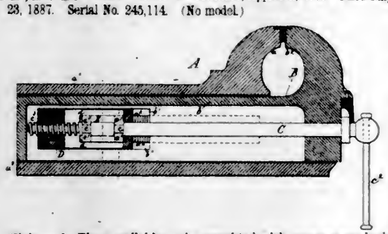
381,177. CIGAR-MOLD PRESS. DAVID SLAUGHTER, Mountville, Pa., assignor of one-half to Sam Matt Fridy, same place. Filed May 7, 1887. Serial No. 237,415. (No model.)



Claim.—1. The combination of the frame composed of the base A, the standards B, the beam C, and plates E and F, arranged as described, with the platen D, the rod G, supported by the spring *g*, the lever H, and the gravity-stay I, substantially as and for the purpose specified.

2. In a cigar-mold press, the combination, with the platen and mechanism for depressing the same, of a gravity-stay hinged to a cross plate of the frame above said platen, substantially as and for the purpose specified.

381,178. VISE. DAVID W. STARKEY, Appleton, Wis. Filed July 23, 1887. Serial No. 245,114. (No model.)



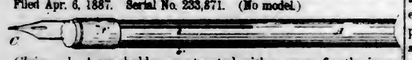
Claim.—1. The parallel-jaw vise provided with one or more locking-racks, a^3, a nut, D, having a forward extension with slots b', toothed blocks E, a shaft with a screw and one or more cams, said shaft having its cams formed directly upon its periphery forward of the nut, and the nut having the said toothed blocks set into its oblong slots and sliding back and forth in said slots, substantially as and for the purpose described.

2. In a parallel vise, A B, the combination of the housing a', having one or more racks, a^3, the screw-shaft C, having screw-threaded portion c^4, and one or more cams formed directly on its periphery and within its greatest diameter and forward of the screw-thread of the nut, the nut D, having slot *d*, and blocks having lugs e', provided with teeth, substantially as and for the purpose described.

3. In the described parallel vise, the blocks E, having spring e^3 and pin e^4, in combination with the rack a^3, having groove a^5, and operating screw-shaft C, substantially as and for the purpose described.

4. In combination, a parallel-jaw vise operated by a screw and constructed and arranged in the parts, substantially as described—to wit, having a movable jaw which is readily moved to any desired position without the intervention of the screw, a combined nut and case, D, holding the toothed blocks E, which, by the intervention of the cams, can be locked to the outer or stationary jaw, a cam or cams formed on the periphery of the screw-shaft contiguous to the screw-threaded portion of said shaft, one or more toothed blocks containing disengaging pins or studs e^4, movable outward radially by said cams, and a rack bar or bars, all for the purpose described.

381,179. PEN-HOLDER. WILLIAM W. STEWART, Brooklyn, N. Y. Filed Apr. 6, 1887. Serial No. 233,871. (No model.)



Claim.—1. A pen-holder constructed with a space for the insertion of the pen, the said space being varied by the notches or recesses, substantially as described, and adapted to receive pens of different sizes.

2. A pen-holder consisting of a central stock and a sleeve inclosing it, with an annular space between them for the insertion of the pen, said space being varied by the notches or recesses, substantially as described, and adapted to receive pens of varying sizes.

3. A pen-holder consisting of a central stock and a sleeve inclosing it, with an annular space between them for the insertion of the pen, and notches in said stock at varying distances apart adapted to receive pens of different widths.

4. A pen-holder consisting of a central stock and a sleeve inclosing it, with an annular space between them for the insertion of the pen, and notches $a\ a'$ in said stock, adapted to receive the smallest pen, notches $b\ b'$, adapted to receive pens of medium size, and notches $c\ c'$, adapted to receive the largest pens.

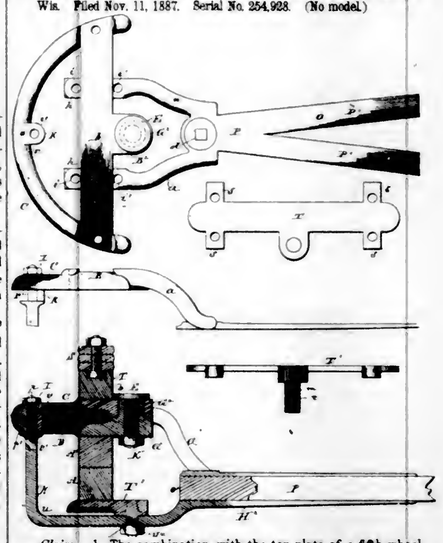
381,180. CHAMBER-PAIL. GEORGE W. STILSON, Brooklyn, N. Y. Filed May 3, 1886. Serial No. 201,007. (No model.)



Claim.—1. A chamber-pail consisting of a metal body or casing supporting an earthenware lining, provided with a circumferential bead, as set forth, said lining being provided with an overhanging edge or rim at top, and a circumferential bead therebelow, substantially as shown and described.

2. The combination, with the metal body A, having circumferential bead D, of the earthenware lining E, having circumferential bead F, and overhanging rim G, the whole arranged substantially as and for the uses and purpose shown and described.

381,181. GEAR-IRON FOR VEHICLES. HENRY C. SWAN, Oshkosh, Wis. Filed Nov. 11, 1887. Serial No. 254,928. (No model.)



Claim.—1. The combination, with the top plate of a fifth-wheel, an integral base-plate for a spring seat-block, and the side braces that extend rearwardly and jointed at their ends to connect with the top plate of the reach, of a lower fifth-wheel plate, and a short king-bolt adapted to bear with its head upon the top plate of the fifth-wheel and the top edge of an integral collar that projects from the lower plate of the fifth-wheel, substantially as set forth.

2. In a fifth-wheel, the combination, with the upper plate having rearwardly-converging side braces adapted to be attached to the reach-bar and provided at a point between said braces with an opening, of the lower plate having an upwardly-projecting boss adapted to snugly fit within the opening in the upper plate, and a king-bolt, the head of which rests above the upper surface of the top plate and bears on the upper end of the collar, substantially as set forth.

3. The combination, with the top plate of a fifth-wheel, a base-plate for a spring seat-block integral with this top plate, a spring seat-block, and a spring mounted on the block,, of two side braces made integral with the base-plate and joined at their rear ends, and a forked reach-plate which is a rearward extension of the joined rear ends of the lateral braces, substantially as set forth.

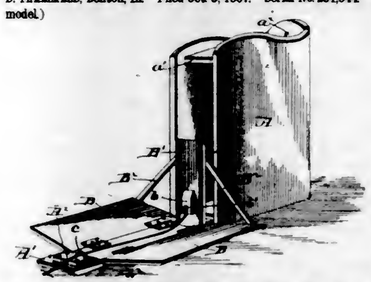
4. The combination, with an axle, its wooden cap-piece, a reach, a guard stay-bar that is extended rearwardly to produce a bifurcated reach-plate, and bent upwardly at its forward end to engage the fifth-wheel, and a pivot-plate located between the guard stay-brace and the axle and provided with a depending bolt to engage the stay-brace, of a top plate of a fifth-wheel, side braces for this top plate, a bifurcated top reach-plate integral with the side braces, a lower plate of this fifth-wheel, and a king-bolt to connect the two plates of the fifth-wheel, said king-bolt being in an axial line with the depending bolt of the pivot-plate, substantially as set forth.

5. The combination, with an upper fifth-wheel plate, and a lower fifth-wheel plate, a guard stay-bar adapted to hold the two plates together by a nut and collar on its vertical front end and permit the lower fifth-wheel plate to turn on its center, of the pivot-plate secured to the axle and pivotally attached to the guard stay-bar, substantially as set forth.

6. The combination, with an axle, a fifth-wheel composed of two plates pivoted together behind the axle, and a king-bolt forming the pivot center of the fifth-wheel, of a lower pivot-plate, a depending pivot-bolt, and a guard stay-bar connected to the axle by the pivot-plate and its pivot-bolt, this bolt having its axis in a vertical line with the longitudinal axis of the king-bolt, substantially as set forth.

7. The combination, with an axle, a reach, a spring seat-block, and a spring, of a fifth-wheel composed of two plates pivoted together by a king-bolt in the rear of the axle, the top plate of the fifth-wheel being attached to the spring seat-block and reach, the lower plate of the fifth-wheel being secured on top of the axle, a lower plate that extends under the axle and furnished with a depending pivot-bolt which is axially central with the king-bolt, and a guard stay-bar connected to the reach at its rear end, to the lower pivot-plate of the axle immediately in the rear of the axle, and to the top and bottom plates of the fifth-wheel by its front upwardly-bent end, substantially as set forth.

381,182. CASE FOR THE PRESERVATION OF BOOKS. CHARLES D. THERKELD, Benton, Ill. Filed Oct. 5, 1887. Serial No. 251,544. (No model.)



Claim.—1. The combination of the case proper, the drop-door hinged to said case, the leaves hinged to said drop-door, the standard erected at the rear of the drop-door and provided with a staple, and the flexible connection between the same and the side of the box, substantially as described.

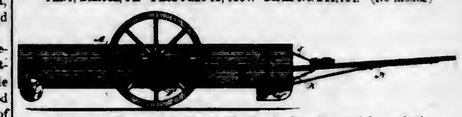
2. The combination of the case proper, the drop-door having an elastic connection with said case, the leaves hinged to said door, the braces for said leaves, the rear standard, and the retaining-cord C, substantially as described.

3. As an improved article of manufacture, the herein-described book protector and support, comprising a case, a drop-door elastically connected with the case, and hinged leaves carried by said door, substantially as described.

4. A book protector and support comprising a case, a swinging drop-door, and a pair of automatically-opening leaves carried by said door.

5. A book protector and support comprising a case, a drop-door hinged thereto, and a standard at the hinged end of the door having a flexible connection with the case.

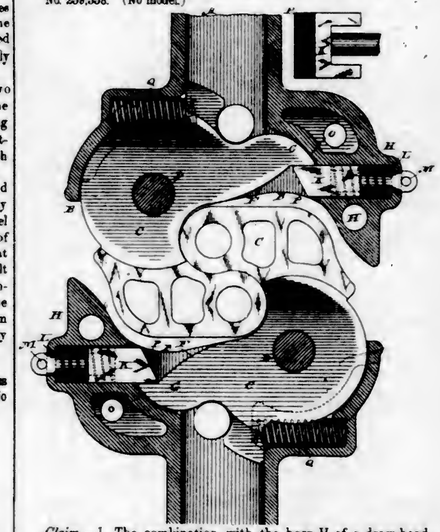
381,183. DRAFT ATTACHMENT FOR VEHICLES. JOHN H. TIFFANY, Dimock, Pa. Filed June 13, 1887. Serial No. 241,101. (No model.)



Claim.—1. In combination with the body of a vehicle and the draft appliances, an attachment consisting of rods, chains, or cords connecting the said body to the draft, whereby the body is balanced by the tension of the draft upon said attachment, substantially as described.

2. In combination with a vehicle-body, the tongue, and elastic tongue-support, the whiffletrees, and the adjusting device attached to the top and bottom of the body and to the whiffletrees, substantially as and for the purpose described.

381,184. CAR-COUPLING. JAMES TIMMS, Columbus, Ohio, assignor of one-half to R. M. Rownd, same place. Filed Dec. 29, 1887. Serial No. 259,358. (No model.)



Claim.—1. The combination, with the horn H of a draw-head, and a knuckle provided with an arm, G, of a catch connected with the horn to hold the knuckle in the coupled position, substantially as set forth.

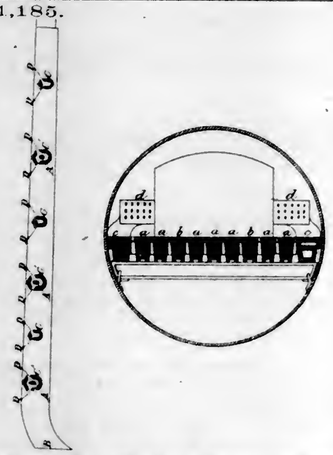
2. The combination, with the horn H of a draw-head, and a knuckle provided with an arm, G, of a catch connected with the horn to hold the knuckle in the coupled position, and a spring, Q, to throw the knuckle into the uncoupled position when the latch is unfastened, substantially as set forth.

381,185. GRATE. ALFRED TOLHURST, Gravesend, CHARLES A. GLASBROOK, Charlton, and ABEL PHILBEY, Gravesend, County of Kent, and THOMAS LOCKERBIE, Commercial Road, County of Essex, England; said Glasbrook, Philbey, and Lockerbie assignors to said Alfred Tolhurst. Filed Sept. 20, 1887. Serial No. 250,302. (No model.) Patented in England Dec. 10, 1884, No. 16,241, and June 25, 1886, No. 8,407; in France June 28, 1886, No. 177,074; in Belgium June 30, 1886, No. 13,676, and in Germany July 8, 1886, No. 39,241.

Claim.—1. A fire-grate having hollow fire-bars divided longitudinally each into two parts, and having on their sides interlocking projections with apertures through which to deliver air and steam to the fire on the fire-grate, substantially as described.

2. A fire-grate having hollow fire-bars provided with open mouths or entrances and having along their sides interlocking projections, with delivery-orifices within the projections, and passages leading from them obliquely upward through the projections, substantially as set forth.

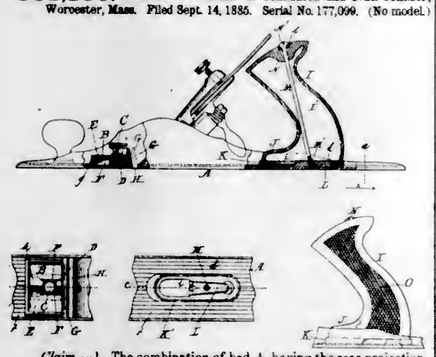
381,185.



3. A fire-grate having hollow fire-bars divided longitudinally into two parts and having upper and lower passages, the latter with an open mouth or entrance and the former delivering air and steam to the fire above said mouth, substantially as described.

4. In a fire-grate, the combination of a hollow fire-bar divided longitudinally into two parts and having upper and lower passages, and at the outer end an open mouth to receive a steam-jet, with a rose-piece or apertures over the mouth at the front of the furnace for the delivery of air and steam to the fuel, substantially as described.

381,186. PLANE. REINHARD T. TORKELSON and IVER JOHNSON, Worcester, Mass. Filed Sept. 14, 1885. Serial No. 177,099. (No model.)



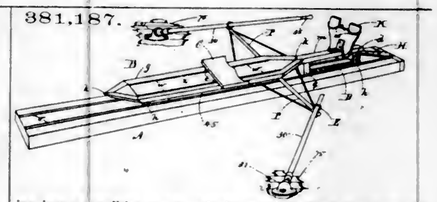
Claim.—1. The combination of bed A, having the rear projection, L, upon the top thereof provided with the dovetail or bevel edges *k*, substantially as described, with the detachable socket-piece K, provided with an oblong vertical slot, *i*, having edges inclined toward each other, and adapted to be placed over said projection L, then forced forward and held vertically under the beveled edges *k* aforesaid, handle I, fitted at the bottom in said socket-piece K, and fastening-rod M, passed longitudinally through said handle and into bed A, substantially as and for the purpose set forth.

2. In a bench-plane, a throat-adjusting device located above the bed A in front of the throat H, consisting of said bed having the dovetail flanges F F and supporting-flanges *g*, in combination with the slide B, arranged over said flanges, and having the projection G next to said throat, the nut D, fitted to slide longitudinally over the bed between the dovetail flanges F F aforesaid, the latter holding said nut and slide B in position vertically, and thumb-screw C, fitted to turn in suitable vertical openings in the slide and nut, substantially as and for the purpose set forth.

381,187. ROWING-MACHINE. WILLIAM TRACY and JACOB H. TRACY, Cambridge, Mass. Filed Jan. 10, 1888. Serial No. 260,343. (No model.)

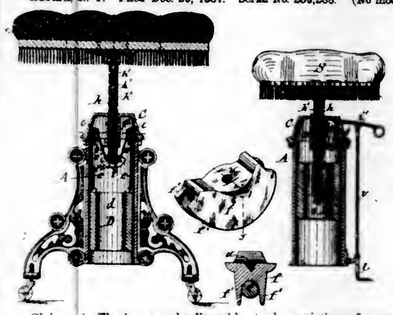
Claim.—1. In a rowing-machine, the combination of the following instrumentalities, to wit: a body provided with a longitudinally-arranged chamber, a carriage having trucks adapted to travel on tracks on said body and provided with outriggers carrying rowlocks, a foot-piece secured to a bar attached to the forward end of said carriage, oars disposed in said rowlocks and having their outer ends jointed to the floor, and a coiled spring connecting the said carriage and body and acting to force or draw it in the direction of the foot-piece, all being constructed, combined, and arranged to operate substantially as set forth.

381,187.



2. In a rowing-machine, the body A, provided with the tracks *v* and chamber *x*, in combination with the carriage B, provided with the bar *m*, standards *d*, wheels *h*, and grooves *w*, the outriggers P, secured to said carriage, the rowlocks E, mounted in said outriggers, the foot-rest K, secured to said bar, the seat C, provided with runners *t*, adapted to slide in grooves in said carriage, the bumper H, secured to said body and provided with the cushion *r*, the spiral spring D, connecting said carriage and body, oars 30, mounted in said rowlocks and having their outer ends jointed to the floor by the ball-and-socket joint 31, substantially as set forth.

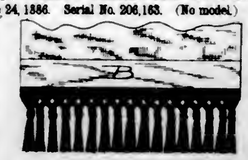
381,188. ADJUSTABLE STOOL OR CHAIR. GEORGE W. TRIPP, Auburn, N. Y. Filed Dec. 29, 1887. Serial No. 259,288. (No model.)



Claim.—1. The improved adjustable stool, consisting of a standard formed with a vertical central channel extending through the lower end thereof and provided with a vertical guide-sleeve at its upper end, sheaves pivoted to the upper part of the interior of the standard, cords or chains running over said sheaves and carrying between their adjacent ends a bearing-block, a weight attached to the pendent ends of the said cords or chains, a spindle carrying the seat and stepped on the said bearing-block, and a catch adapted to engage said spindle and confine the same in its adjusted position, as set forth.

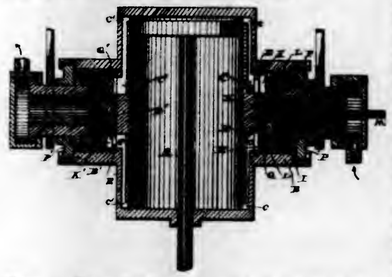
2. The combination of the tubular standard A, cap C, provided with the cylindrical guide *a*, sheaves *c c*, pivoted to the interior of the standard, the weight D, formed with the central passage, *d*, the cord or chain *e*, running over the sheaves and connected at opposite ends to the aforesaid weight, the bearing-block *f*, mounted on the central portion of the cord or chain, the spindle *h*, sliding in the guide *a* and stepped on the bearing-block *f*, and provided with circumferential grooves *h'*, a catch connected to the standard and adapted to engage either of the aforesaid grooves, and the seat S, secured to the spindle, substantially as described and shown.

381,189. WINDOW-CURTAIN BAR. IRA R. TRIPP, Aurora, Ill. Filed June 24, 1886. Serial No. 206,163. (No model.)



Claim.—A curtain-bar comprising two main parts or sides, between which the curtain is interposed in use, and from the top and bottom of one of which sides tongues or lugs project across the top and bottom of the opposite side, which they overlap and clasp, substantially as described.

381,190. CUT-OFF VALVE. AARON VAN GUYSLING, Albany, N. Y. Filed Oct. 12, 1887. Serial No. 252,107. (No model.)



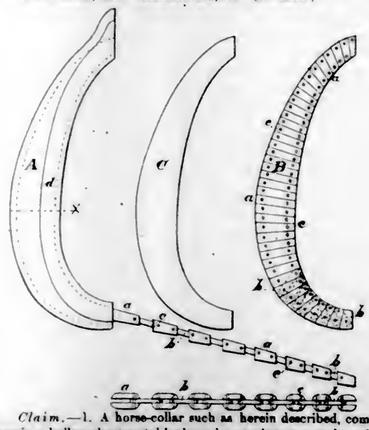
Claim.—1. The combination of the cylinder, its ingress and egress ports on opposite sides thereof, and the valve-chest, with the main valve G in said chest for alternately opening and closing the ingress-ports, and the oscillating cut-off valve L, pivoted upon the valve G and adapted to regulate the admission of steam therethrough, all constructed and arranged to operate substantially in the manner and for the purpose described.

2. The combination, with the valve-chest of an engine having ports leading to each end of the cylinder, of the plate-valve having corresponding ports, the cut-off valve having wings adapted to cover and uncover the ports simultaneously, and the bridge-plate and hollow sleeve through which steam is admitted to the valve-chest, substantially as specified.

3. The combination, with the steam-chest having ports leading to each end of the cylinder, of the plate-valve having port-openings and a central boss for centering the valve in the chest, and the bridge-plate and hollow sleeve whereby steam is admitted to the valve-chest, substantially as specified.

4. The combination, with the plate-valve having radial ports and a central boss, of the valve having radial wings adapted to simultaneously cover or uncover said ports, and the valve-stem having a bearing in said boss and working independently of the plate-valve, substantially as and for the purpose specified.

381,191. HORSE-COLLAR. HORACE VAN WAGONER, Newark, N. J. Filed June 21, 1887. Serial No. 241,963. (No model.)



Claim.—1. A horse-collar such as herein described, combining therein a hollow sheet-metal body and a coating or covering of celluloid or other analogous material formed thereon, substantially as described, for the purposes set forth.

2. The method herein set forth of making horse-collars—to wit, forming by means of suitable dies a hollow body composed of tin or other appropriate material, then covering the same with a coating of plastic material, and subjecting the same to pressure in suitable molds or dies, substantially as and for the purpose set forth.

3. The method herein set forth of making horse-collars—to wit, forming by means of suitable dies a hollow body composed of tin or other appropriate material, filling said body with a removable core to enable it to withstand the required pressure, covering said body with a coating of plastic material, and then subjecting the same to pressure in suitable molds or dies, and subsequently removing the core, as and for the purposes set forth.

381,192. STEAM STREET-CAR MOTOR. WILLIAM VOGEL, Chicago, Ill., assignor, by direct and mesne assignments, to the Vogel Petroleum Heating Company, same place. Filed Oct. 18, 1886. Serial No. 216,595. (No model.)

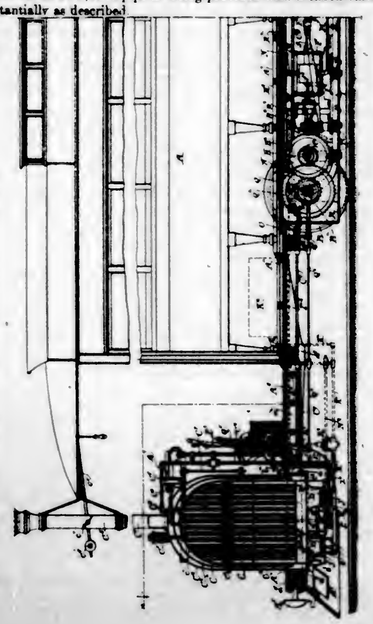
Claim.—1. The combination, with the supporting-wheels of a street-car and a car-body provided with platforms at both ends, of a steam driving-gear located beneath the car-body and between the axles, a steam-generator located upon the outer end of the platform at one end of the car, and a feed-water heater located upon the outer end of the platform at the opposite end of the car, substantially as described.

2. A device for heating feed-water and preventing the noise of escaping steam in a car-motor, consisting of a tank or receptacle, E, a chamber, E', the said tank E being constructed to hold the feed-water and communicating at its top with the open air, and a pipe, E^4, leading from the top of the chamber E' and opening into the lower part of the said tank E, substantially as described.

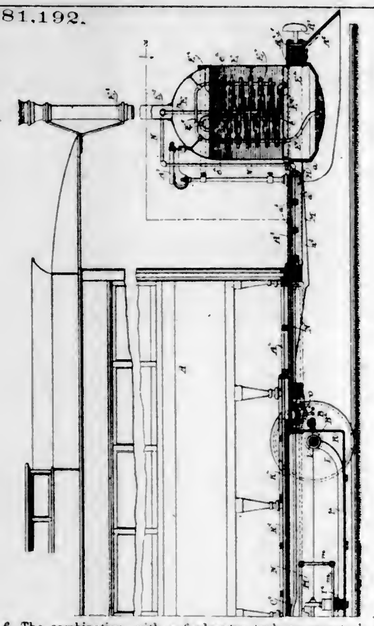
3. The combination, with a feed-water tank or receptacle, E, open at its top to the air, of a chamber, E', communicating with the exhaust-pipe of an engine, and a pipe, E^4, leading from the top of the chamber E' and discharging into the lower part of the said tank, said pipe E^4 being bent into tortuous or spiral form within the tank, substantially as described.

4. The combination, with a feed-water tank or receptacle, E, communicating at the top with the open air, of a chamber, E', communicating with the exhaust-passage of a steam-cylinder, and a pipe, E^4, leading from the top of the chamber E' and opening into the lower part of the tank E, said pipe E^4 being provided with a perforated head, *e'*, at its exit end, substantially as described.

5. The combination, with a feed-water tank or receptacle, E, and chamber E', located beneath the tank E and connected with an exhaust-steam pipe, of a pipe, E^4, leading from the top of the chamber E^3 and discharging into the tank, and a second pipe, E^5, leading from the bottom of the chamber E' and extending upwardly to a point above the water-level in the tank and discharging into said tank near the bottom thereof, said pipe E^5 being provided with a check-valve, substantially as described.



381,192.



6. The combination, with a feed-water tank or receptacle, E, communicating at its top with the open air, and a chamber, E', connected with the exhaust-passage of a steam-cylinder, of a pipe, E^4, leading from the top of the chamber E' and opening into the lower part of the tank E, and a second pipe or tube, E^3, extending from the bottom of the chamber E' into the said tank E, substantially as described.

7. The combination, with the steam-generator and steam-cylinders of a car-motor, of a feed-water tank, E, communicating at its top with the open air, a chamber, E', exhaust-pipes connecting the cylinders with the said chamber E', a pipe or tube, E^4, connecting the chamber E' with the tank E, and a passage connecting the steam-generator with the said chamber E, whereby steam allowed to escape from the generator will be delivered to said chamber E' and will make its escape through the pipe E^4 and the tank, substantially as described.

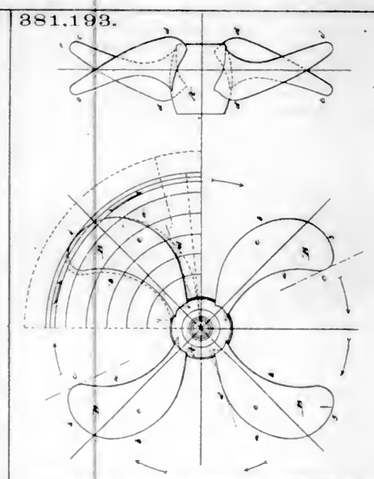
8. The combination, with the body and axles of a street-car, of a steam driving-gear located beneath the body between the axles and comprising a steam-cylinder and piston, a cross-head attached to the piston, a crank-shaft located between and parallel with the axles at that end of the cylinder opposite to the one at which the cross-head is located, driving-connections between the crank-shaft and one of the axles, and two connecting-rods uniting the cross-head and crank-shaft, said connecting-rods being located at opposite sides of the cylinder, substantially as described.

9. The combination, with the supporting-wheels of a street-car and a car-body yieldingly supported thereon, of a steam driving-gear located beneath the car-body between the wheel-axles, a frame sustaining the said driving-gear, said frame being supported upon the axles independently of the car-body, and a casing surrounding and covering the driving-gear on all sides and supported solely by and upon the said frame independently of the car-body, substantially as described.

10. The combination, with the supporting-wheels of a street-car and a car-body yieldingly supported thereon, of a steam driving-gear located beneath the car-body between the wheel-axles, a frame sustaining the said driving-gear, said frame being supported upon the axles independently of the car-body, and a casing surrounding and covering the driving-gear on all sides and supported upon the said frame independently of the car-body, said casing being provided with a removable top, and the car-floor being provided with an opening to allow access to said top, and a removable floor-section or grating covering the said opening in the car-floor, substantially as described.

381,193. SCREW-PROPELLER. ALEXANDER VOGELSANG, New York, assignor to the Vogelsang Screw Propeller Company, Brooklyn, N. Y. Filed Nov. 23, 1887. Serial No. 255,965. (Model.)

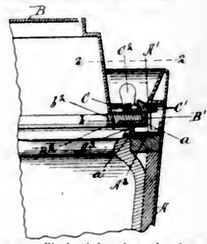
381,193.



Claim.—1. A propeller in which the cutting-edge of each blade moves or lies in an advanced plane of the part of the next preceding blade in the same radius and in the plane of rotation of the screw, substantially as described.

2. A propeller in which the leading parts of two successive blades are situated at different distances from the hub in a plane which is normal to the axis of the propeller-shaft and the blades diametrically opposite each other are alike, substantially as described.

381,194. BURIAL-CASKET. JAMES WALKER, Chicago, Ill. Filed Jan. 25, 1888. Serial No. 261,873. (No model.)



Claim.—1. In a metallic burial-casket, the fastener consisting of the metal plate C, having the parallel slots c running lengthwise, and on one of its faces the wedge-shaped projection C', its thin end terminating near one end of said plate, and having the thumb-piece C^2 rising from the same face at the end opposite to said projection, in combination with the screws c', the flange B' on the lid B, and the lip A' on the body A of said casket, when constructed and operated substantially as and for the purpose specified.

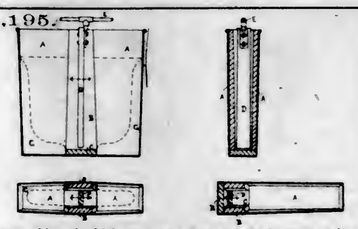
2. In a metallic burial-casket, the lip A', extending inward and downward at an acute angle from the upper edge of the sides of the body A of said casket, in combination with the wedge-like projection C' on the metal plate C, which is secured upon the upper face of the flange B' of the lid B of said casket, and with the ledge A^3 on the inner side of the body of said casket, when constructed and operated substantially as and for the purpose stated.

3. The rim A^5 on the ledge A^3 upon the inner side of the body A of a burial-casket, in combination with the rubber gasket B^3, secured to the bottom of the flange B' on the lid of said casket, and with the wedge C' upon the plate C and the lip A' on the body A of the casket, when constructed and operated substantially as and for the purpose stated.

381,195. APPARATUS FOR THE PRODUCTION OF TRANSPARENT ICE. HENRY J. WEST, 116 Southwark Bridge Road, County of Surrey, England. Filed Mar. 5, 1885. Serial No. 157,830. (No model.) Patented in England Mar. 16, 1881, No. 1,147, and in France June 21, 1881, No. 143,520.

Claim.—1. The combination, with a receptacle for water to be frozen, of a chamber within said receptacle having walls of insulating

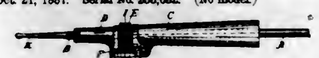
381,195.



material, two sides of which are open from top to bottom, and an agitator operating in said insulated chamber, for the purpose set forth.

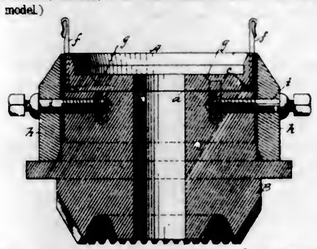
2. The vertical agitator D, provided with a handle, E, for giving it backward and forward horizontal motion, in combination with an insulating-chamber open on two sides from top to bottom, and a receptacle for water to be frozen, said insulated chamber being within said receptacle and said agitator operating within said chamber, substantially as set forth.

381,196. DENTAL DRILL. ADELBERT H. WINN, Nashville, Mich. Filed Oct. 21, 1887. Serial No. 253,032. (No model.)



Claim.—In a dental drill, a driving-shaft and a shaft having the tool attached, in combination with bearings connected by a hinge-joint and adjusted by a worm gear and screw, and gears having semi-circular interlocking teeth, substantially as described.

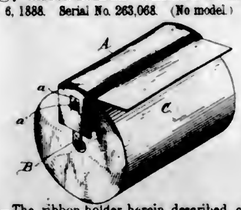
381,197. NEEDLE-CYLINDER FOR KNITTING-MACHINES. THOS. H. WORRALL, Laconia, N. H. Filed June 17, 1887. Serial No. 241,608. (No model.)



Claim.—1. A knitting-machine cylinder consisting of a base or body cylinder, B, and a removable top cylinder, A, the latter provided with a circumferential groove at its lower outer edge, and radial tricks or grooves *d*, formed in its lower surface, extending from said circumferential groove inward, substantially as and for the purposes described.

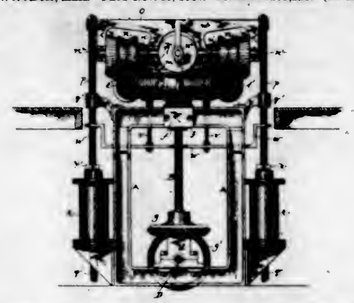
2. A knitting-machine cylinder consisting of a base or body cylinder, B, having a plain upper surface, and a removable top cylinder, A, the latter provided with a circumferential groove at its lower outer edge, and radial tricks or grooves *d*, formed in its lower surface, of a width corresponding to the diameter of the needle-shanks and of greater depth than the same, and vertical peripheral grooves *b*, in combination with the needles and clamping-sections, substantially as and for the purpose described.

381,198. RIBBON-HOLDER. WILLIAM E. WRIGHT, Ashland, Nebr. Filed Feb. 6, 1888. Serial No. 263,068. (No model.)



Claim.—The ribbon-holder herein described, consisting of the rigid plate A, having its ends struck down, as shown, and formed with upward projecting points *a'*, arranged in slots *a*, and an elastic band, B, having its ends lodged on the points of the plate in said slots, all substantially as specified.

381,199. WIRE-ROD-REELING MACHINE. HORACE A. YOUNG, Worcester, Mass. Filed Nov. 15, 1887. Serial No. 255,228. (No model.)



Claim.—1. In a wire-rod-reeling machine, the combination of the reel with a series of rotary wheels mounted horizontally in a suitable frame above the reel, having vertical reciprocating movements, whereby the wire rod is retained in proper position during the coiling operation and released for removal at completion, substantially as set forth.

2. In a wire-rod-reeling machine, a rotary horizontal reel-base having an open circular receptacle or pocket near its outer edge, and inclined top surfaces or tracks at each side thereof, in combination with a series of rotary wheels arranged above said reel-base, and also having vertical reciprocating movements, substantially as and for the purpose set forth.

3. The combination of the reel of a wire-rod-reeling machine with a series of rotary wheels whose axes are at right angles to the axis of said reel and radiate from one common center, and which wheels are mounted in a frame having reciprocating movements toward and from the reel in the direction of its axis, substantially as and for the purpose set forth.

4. In a wire-rod-reeling machine, the combination of the rotary reel-base, having an open circular receptacle or pocket near its outer edge and inclined top surfaces or tracks at each side thereof, with a series of rotary wheels having inclined or cone-shaped hubs corresponding to the bevel of said surfaces or tracks and mounted horizontally in a frame arranged above the reel, having vertical reciprocating movements imparted to it, substantially as and for the purpose set forth.

5. The combination of the reel-base, having a circular receptacle or pocket near its outer edge and inclined top surfaces or tracks at each side thereof, with a series of rotary wheels arranged over the receptacle, also having inclined or cone-shaped hubs corresponding to the bevel of the tracks on the reel-base and mounted horizontally in a frame having vertical reciprocating movements imparted to it by means substantially as described, and the hood arranged and fastened in front of one of the aforesaid rotary wheels, substantially as and for the purpose set forth.

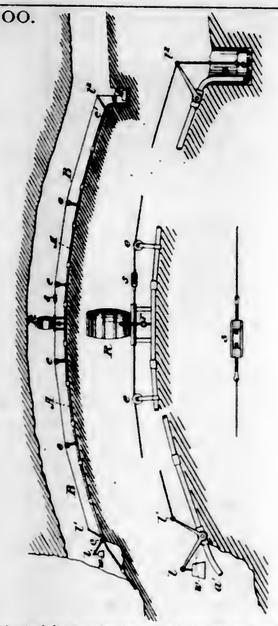
6. The combination of the rotary reel-base, having an open circular rod receptacle or pocket near its outer edge and a series of vertical radial slots or openings, with a series of radial-coil-lifting arms fitted to work in said vertical openings, and means, substantially as described, for elevating and lowering said arms, for the purpose specified.

7. The combination of the reel-base of a wire-rod-reeling machine, having an open rod receptacle or pocket near its outer edge, and inclined top surfaces at each side thereof, also suitable openings to receive coil-lifting arms, and a series of rotary wheels over the top of the said receptacle for keeping the wire rod in position during the coiling operation, with said lifting-arms arranged radially around the central shaft, and means, substantially as described, for elevating said arms to lift the coil out of its receptacle, substantially as set forth.

8. A wire-rod-reeling machine comprising, in combination, a reel-base having a circular receptacle or pocket near its outer edge, and inclined top surfaces or tracks at each side thereof, also having suitable openings for the reception of coil-lifting arms, and means, substantially as described, for rotating said reel, a frame arranged over the reel having mounted and fitted to turn horizontally thereon a series of wheels having cone-shaped hubs corresponding to the bevels of the aforesaid tracks on the reel-base, means, substantially as described, for imparting vertical reciprocating movements to said frame and its wheels, radial arms arranged under the reel-base for lifting the completed rod-coil, and means, substantially as described, operatively connected with the frame and wheel-lifting mechanism, for elevating said arms, all constructed and arranged to operate substantially as set forth.

381,200. AUTOMATIC METHOD OF DRAINING COAL-MINES. GEORGE ZITZMANN, Millvale, Pa. Filed Oct. 22, 1887. Serial No. 253,051. (No model.)

381,200.



Claim.—1. A siphon operating as a drainage-pipe and provided with valves, in combination with means connected thereto at or near the extremities of the siphon for automatically opening and closing said valves, substantially as described.

2. In apparatus for draining coal-mines, the discharge-pipe A, operating as a siphon having within it cut-off valves *c* and *c'*, operated by lever-arms actuated by weights attached thereto, substantially as and for the purposes set forth and described.

3. The improved apparatus for operating automatically a siphon drain-pipe, consisting of the combination of discharge-pipe A, and cut-off valves *c* and *c'*, operated by means of lever-arms *l*, *l'*, and *P*, connected by cable B, weighted at its extremities, substantially as shown and described.

381,201. MULTIPLE TRANSFER-PAD. GEORGE H. ARTHUR, Chicago, Ill. Filed Dec. 20, 1886. Serial No. 222,129. (No model.)



Claim.—1. A multiple copying appliance consisting of a sector-shaped base, A, composition body B, and perforate base C, intersecting the composition and furnishing means for the attachment of the same to the base A, essentially as herein described.

2. A multiple copying appliance consisting of a sector-shaped base, A, composition body B, and perforate base C, of cheese or other cloth, intersecting the composition and furnishing means for the attachment of the same to the base A, essentially as herein described.

3. A multiple copying appliance consisting of a sector-shaped base, A, composition body B, perforate base C, intersecting the composition, and flanged plates D, forming an end protection to the composition and a means for securing the attaching-base C to the sector-shaped base A, as set forth.

381,202. TRACTION-WHEEL. EDWARD H. ASHCROFT, Lynn, Mass. Filed Nov. 15, 1887. Serial No. 255,157. (No model.)

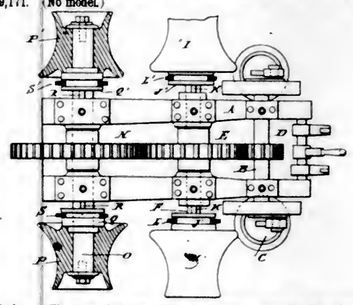


381,202.



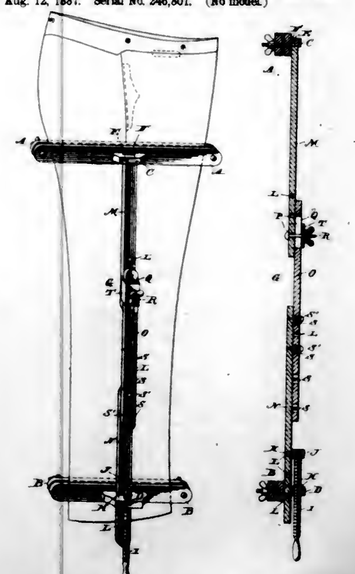
Claim.—The locomotive or car driving or traction wheels having shallow recesses or cavities formed in their treads or peripheries, as and for the purposes specified.

381,208. WINDLASS. EARLE C. BACON, Brooklyn, assignor to Copeland & Bacon, New York, N. Y. Filed Feb. 28, 1887. Serial No. 229,171. (No model.)



Claim.—The combination, with the frame A, parallel horizontal shafts B F O, journaled thereon, and having keys at their opposite ends, the meshing pinions D E N on said shafts and increasing in diameter from D to N, and means for operating the main shaft D, of the loose drums H I at opposite ends of the shaft F, the clutch-collars J and their operating-levers, the loose drums P P' at opposite ends of the shaft O, and the clutch-collars Q Q', provided with operating-levers, substantially as set forth.

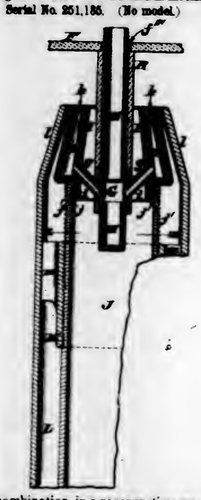
381,204. GARMENT-STRETCHER. FRED E. BAILEY, Manchester, N. H., assignor of one-half to Everett L. Burrows, same place. Filed Aug. 12, 1887. Serial No. 246,801. (No model.)



Claim.—1. In a stretcher of the character described, the combination of a pair of garment-clamps, a lug on one having a squared socket, a lug on the other having a squared guide-hole, a brace fitted to slide in the guide-hole and having a neck adapted to the socket, a bearing fixed to the brace, a nut on the lug with the guide-hole, and a hand-screw working in the nut against the bearing, substantially as described.

2. In a stretcher of the character described, the combination of a pair of clamps, a sectional extension-brace, a nut on one clamp, a hand-screw working therein, a bearing for the screw, and a pin on the bearing, the different sections of the brace being each formed with a hole adapted to receive the said pin, substantially as described.

381,205. REGENERATIVE GAS-LAMP. CHARLES E. BELL, Greenfield, Ohio, assignor of one-half to Edward L. McClain, same place. Filed Oct. 1, 1887. Serial No. 251,135. (No model.)



Claim.—The combination, in a regenerative gas-lamp, of inner air-tube, J, screw-threaded at *j j'*, a screw-threaded nozzle, I K *k*, engaged with the thread *j*, a gas-tube, E, having branches *g*, connecting with said nozzle, and an outer air-tube, L, having a contracted upper end, *l*, and a series of arms, *m*, provided with a nut, M, that engages with the thread *j'* of said inner air-tube, as herein described.

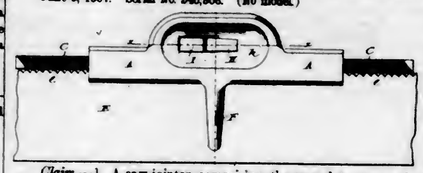
381,206. BRUSH. HENRY BERRY, Shelton, Conn., assignor to the Derby Silver Company, same place. Filed Aug. 25, 1887. Serial No. 247,800. (No model.)



Claim.—1. The combination, with the metallic backing, of a key secured to the inner face thereof, a brush having a recess in its back within which the key is adapted to fit, and a stratum of cement arranged within the recess and surrounding the key, substantially as set forth.

2. The combination, with the brush having an undercut recess in the back thereof, of a metal backing provided interiorly with a key and annularly with a projecting flange, said backing being adapted to be secured to the brush-back by the embedding of the key in the cement within the undercut recess, and also by the turning of the annular flange to embrace the brush-back at its edges, substantially as set forth.

381,207. SAW-JOINTER. CHARLES R. BLACK, Topeka, Kans. Filed June 9, 1887. Serial No. 240,808. (No model.)



Claim.—1. A saw-jointer comprising the two plates recessed on their inner adjacent faces to form saw and file receiving spaces, and provided, respectively, with a slot and a locking projection engaging the same, whereby the plates may be readily assembled or disconnected, substantially as set forth.

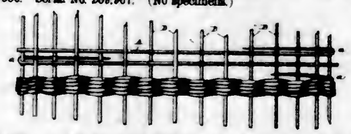
2. A saw-jointer comprising two plates, A B, formed with opposite inclined faces, *a b*, and recessed to provide a slot, D, between them to receive a saw-blade, and also to receive a triangular file, and one plate having a hook, H, and the other plate formed with a slot, I, admitting the hook for locking the plates together, substantially as shown and described.

381,208. SWEAT-BAND FOR HATS. THOMAS W. BRACHER, New York, N. Y. Filed Dec. 22, 1887. Serial No. 258,641. (No model.)



Claim.—A sweat-band having a reed or spring, B, placed directly upon the raw edge thereof, a thread, *d*, running along said spring, and a thread, *e*, passing through the band and over the spring and interlocking with the thread *d* on the spring, said thread *e* acting with a direct longitudinal pull through the thread *d* upon the outer edge of the spring to hold said spring upon the raw edge of the band, as specified.

384,209. FLAG OR RUSH MATTING AND METHOD OF MAKING THE SAME. JOHN BRAY, Jr., Washington, D. C. Filed Aug. 4, 1886. Serial No. 209,967. (No specimens.)



Claim.—1. The method herein described of weaving a fabric from tapering strands of flags or rushes, the same consisting in arranging the strands alternately with their thicker ends in opposite directions as a weft, and folding over and interweaving the smaller ends with the warp at each edge of the fabric, so as to form a selvage therefor at each side of uniform thickness, substantially as specified.

2. A matting composed of strands of flags or rushes woven as a weft with a suitable warp, the thick ends of the strands being placed in opposite directions alternately, and the thin ends turned in and interwoven with the fabric, so as to form a uniform selvage on both edges of the fabric, substantially as specified.

381,210. FASTENER FOR MEETING-RAILS OF SASHES. JOHN R. BROWN, Honolulu, Hawaii. Filed Sept. 15, 1887. Serial No. 249,801. (No model.)



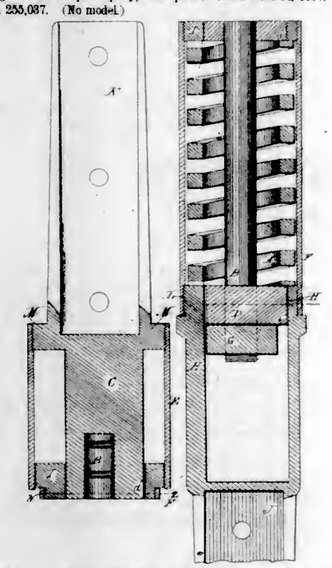
Claim.—1. In a window-fastener, the combination, with a stand-

ard provided with a horizontal recess in the lower front edge, and a horizontal base and a lever pivoted in said standard, provided with a weighted projection upon the outer end, and an oval-shaped inner end having a locking-pin secured transversely therein, of a U-shaped finger-plate pivoted upon a horizontal base, having the extremities of its members weighted and provided with vertical studs above the pivotal points adapted to engage said locking-pin, substantially as shown and described, and for the purpose herein set forth.

2. In a window-fastener, the combination, with a standard having a concaved outer edge and provided with a horizontal base, and a horizontal recess in the forward edge near said base, a lever pivoted in said standard, provided with a weight at the outer end adapted to normally engage the rear surface of the standard and limit the inward throw, and an oval-shaped inner end provided with a transverse locking-pin, of a U-shaped finger-plate pivoted upon a horizontal base, having the extremities of the members weighted and inclined, and provided above the fulcrum with vertical studs having convex outer edges adapted to engage the locking-pin, all arranged to operate substantially as shown and described.

381,211. COMPENSATING PUMP-ROD.

WILLIAM H. BURNHAM and JOHN H. MILLER, Batavia, Ill., assignors to the United States Wind Engine and Pump Company, same place. Filed Nov. 14, 1887. Serial No. 255,037. (No model.)

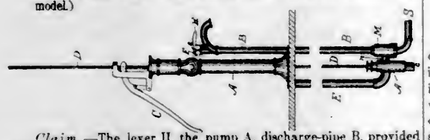


Claim.—1. In cushioned pump-rods, the upper rod-attaching portion, K, having the core C as a part thereof, and the lower rod-attaching portion, J, having the guide-connection H as a part thereof, in combination with the washer D *b*, nut G, rod B, nut I, spring A, and case F, as and for the purpose specified.

2. The nuts G I, washer D *b*, in combination with the spring A, rod B, and rod-attaching portion J K, for keeping the two-part pump-rod in line, as specified.

381,212. PUMP.

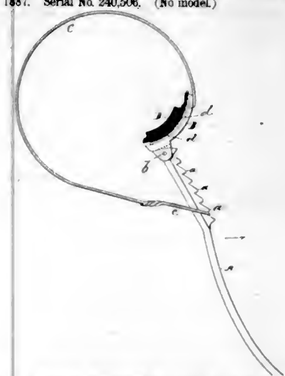
WILLIAM H. BURNHAM and JOHN H. MILLER, Batavia, Ill., assignors to the United States Wind Engine and Pump Company, same place. Filed Nov. 29, 1887. Serial No. 256,382. (No model.)



Claim.—The lever H, the pump A, discharge-pipe B, provided with the stop *l*, discharge-pipe S, valve *f*, rod *d*, and a lock, W, provided with catches *h q*, in combination with the exterior valve-chamber, M, provided with the seat *p*, and the clutch-plate *m*, for securing the discharge-pipe S, so as to project in any desired position, as specified.

381,213. WRENCH.

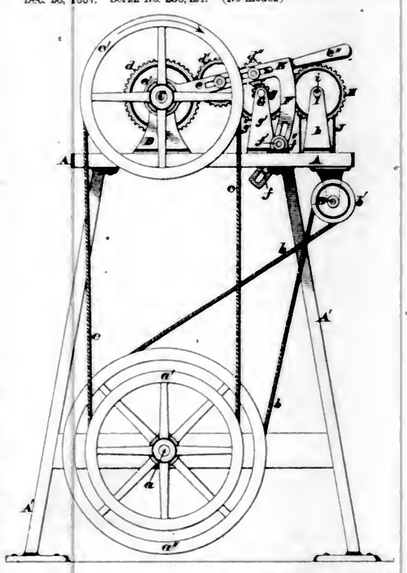
JAMES H. CHRISTIE, Brooklyn, N. Y. Filed June 7, 1887. Serial No. 240,506. (No model.)



Claim.—A wrench adapted for screwing on or unscrewing jar-covers, constructed, substantially as herein shown and described, of a lever or handle serrated on one edge, a fulcrum-block provided with a friction-cushion, pivoted on an end of the handle, and a wire secured to that end of the fulcrum-block opposite the handle and having its free end looped for adjustable engagement over the serrated handle, as and for the purpose set forth.

381,214. ENGRAVING AND CHASING MACHINE.

JOHN A. COBURN, Springfield, Mass., assignor to John C. Dueber, Newport, Ky. Filed Dec. 20, 1887. Serial No. 258,421. (No model.)



Claim.—1. The combination, in an engraving and chasing machine, of a spindle provided with a chuck or other means of attaching the blank, a slide-rest having the ornamented roll or die journaled in it and carrying the tracer and cutting-tool, a swinging lever provided with gears that communicate motion from said spindle to a counter-shaft, and a flexible coupling communicating motion from said shaft to said roll, substantially as described.

2. The combination, in an engraving and chasing machine, of a spindle provided with a chuck or other means of attaching the blank, a slide-rest having the ornamented roll or die journaled in it and carrying the tracer and cutting-tool, a train of gearing communicating motion from said spindle to a longitudinally-shiftable counter-shaft, and a flexible coupling communicating motion from said shaft to said roll, substantially as described.

3. The combination, in an engraving and chasing machine, of main spindle C, provided with a chuck, *c'*, an adjustable slide-rest having the ornamented roll or die O journaled in it and carrying the tracer *r'* and cutter *k'*, a train of gear-wheels, as *d*, *d'*, *d''*, *g*, *g''*, and H, that communicate motion from said spindle to the longitudinally-shiftable shaft I *i*, and gears L *l*, shafts K *k* N *n*, and flexible couplings *k' n'*, that communicate motion from said shaft to said roll, substantially as described.

4. A slide-rest for an engraving and chasing machine, which rest combines the head P *p''*, carrying the roll-bearings *o o'*, reciprocating head-slide Q *q''*, traversing block R, feed-screw *r*, reciprocating tool-carriage S *s''*, link *r''*, and one or more springs, *q*, the swinging plate V *v*, pivoted at *v'* to the sliding plate W and provided with a worm, *v''*, driven by a screw, X, applied to said plate W, and the bed 3, having a guide, 2, and leading-screw 5, as described.

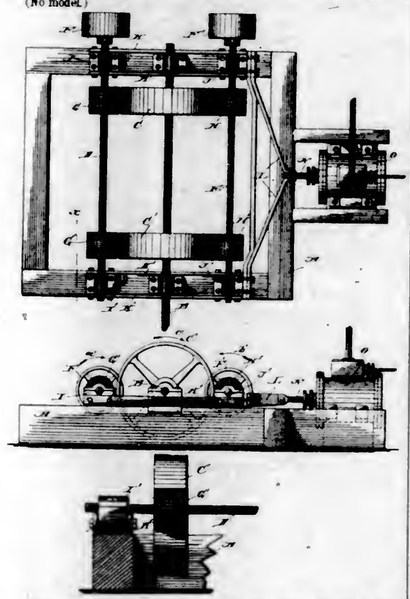
5. The combination, in an engraving and chasing machine, of a slide-rest head, P, provided with roll-bearings *o o'*, a reciprocating head-slide, Q, a link, *r''*, that communicates motion from said slide to the tool-carriage S, a traversing block, R, mounted upon said slide, a feed-screw, *r*, for shifting said block, and one or more springs, as *q*, for advancing said slide, as herein described.

6. The combination, in an engraving and chasing machine, of the sliding plate W, swinging plate V *v v'*, worm *v''*, screw X, bearing Y, shank *y*, spring *y'*, and bearing *x*, which latter is secured to said sliding plate, for the purpose described.

7. The combination, in an engraving and chasing machine, of the slide-rest head P, reciprocating tool-carriage S, and stop-screw T, the head of the latter being graduated, for the purpose described.

381,215. REVERSING-GEAR FOR SAW-MILLS.

EUROPE N. COLLETT, Whelen Springs, Ark. Filed Jan. 13, 1888. Serial No. 260,595. (No model.)

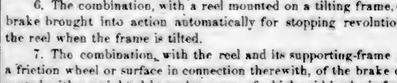


Claim.—1. The combination, with a rack-shaft mounted in stationary bearings and wheels secured on the said shaft, of two shafts placed parallel with the said rack-shaft, one on each side of the said wheels, pulleys secured on the said shafts and adapted to engage alternately said wheels, bearings in which the said shafts are mounted to rotate, bars for connecting the said bearings with each other, a piston-rod connected with the said bearings, and a steam-cylinder containing a piston connected with said piston-rod, substantially as shown and described.

2. The combination, with a cylinder provided with a piston having a piston-rod, of bearings mounted to slide and connected with the said piston-rod, shafts mounted to rotate in the said bearings and provided with driving-pulleys secured on the said shafts, and a stationary rack-shaft placed between the said shafts and carrying wheels adapted to be engaged on opposite sides by the said transmitting-pulleys, substantially as shown and described.

381,216. HARNESS-STRAP ATTACHMENT.

ENOCH COVERT, Farmer Village, N. Y. Filed Feb. 6, 1888. Serial No. 263,061. (No model.)

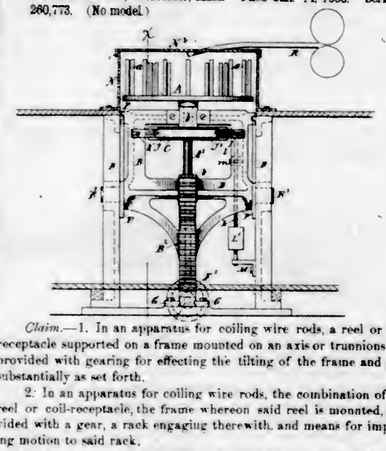


Claim.—1. In a harness-strap attachment, the combination of the sheet-metal plate having one of its ends doubled on itself to form a loop and secured by a rivet, and having the depression or angle for the tuck-loops formed therein and the strap secured to the same, the buckle arranged in the said loop, and the keepers confined between the metal plate and the strap, substantially as described, and for the purpose set forth.

2. In a harness-strap attachment having the sheet-metal plate doubled, as described, and provided with the depression or angle at a point intermediate of the ends of the said plate, the latter being extended from the said point in a single thickness to form the hooked protecting portion, the buckle secured to the said plate, and the keepers or tuck-loops confined between the plate and the strap, substantially as and for the purpose set forth.

381,217. REELING APPARATUS FOR ROD-ROLLING MILLS.

FRED H. DANIELS, Worcester, Mass. Filed Jan. 14, 1888. Serial No. 260,773. (No model.)



Claim.—1. In an apparatus for coiling wire rods, a reel or coil-receptacle supported on a frame mounted on an axis or trunnions and provided with gearing for effecting the tilting of the frame and reel, substantially as set forth.

2. In an apparatus for coiling wire rods, the combination of the reel or coil-receptacle, the frame whereon said reel is mounted, provided with a gear, a rack engaging therewith, and means for imparting motion to said rack.

3. In an apparatus for coiling wire rods, in combination, the reel or coil-receptacle mounted upon a frame, a friction-gear upon the shaft of the reel, and a driving friction-gear with which said reel-driving friction-gear engages when the supporting-frame is in upright or working position.

4. In an apparatus for coiling wire rods, the combination of the reel, the tilting frame whereon said reel is mounted, and a hydraulic cylinder and piston with connections for tilting said frame and reel, for the purposes set forth.

5. In an apparatus for coiling wire rods, the combination, with the reel having its shaft mounted in bearings on the swinging frame and provided with a friction-wheel that engages with the driving mechanism friction-wheel when the reel is in working position, of a frame-tilting mechanism adapted for holding the friction-wheels in contact, substantially as set forth.

6. The combination, with a reel mounted on a tilting frame, of a brake brought into action automatically for stopping revolution of the reel when the frame is tilted.

7. The combination, with the reel and its supporting-frame and a friction-wheel or surface in connection therewith, of the brake connected with a weighted lever, by means of which said brake is forced against the surface for stopping the reel when the position of the supporting-frame is changed.

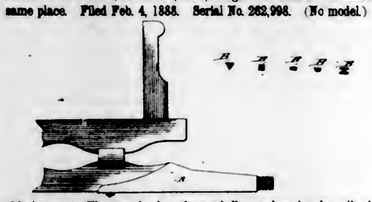
8. The combination, with the reel and its hood, of a tilting reel-supporting frame having its axis at one side of the axis of the reel, whereby depression of the reel is effected when the frame is tilted, substantially as set forth.

9. The combination, with the reel mounted on a tilting frame, of the cylindrical guard-casing having the side extension, as shown, for allowing the tipping of the reel.

10. The combination, with the tilting frame, reel, and reel-shaft supported thereon having the friction wheel or surface, the brake jointed to the frame at one side and connected at its opposite side with a lever fulcrumed on said frame, of a stop for throwing said brake out of engagement when the reel is in working position.

381,218. MANUFACTURE OF THIMBLE-SKEINS FOR AXLES.

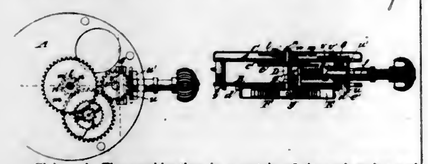
JOSEPH P. DAVIDSON, Columbus, Ohio, assignor to Edmund N. Hatcher, same place. Filed Feb. 4, 1888. Serial No. 262,998. (No model.)



Claim.—1. The method, substantially as herein described, of making sheet or wrought metal thimble-skeins, which consists in first bending over the skein-blank until its longitudinal margins nearly meet, and then applying a separate connecting or uniting strip of metal to the adjacent marginal portions of said blank, then heating said parts or pieces, and welding the same together to form a close double seam both internally and externally of the skein, as set forth.

2. A sheet or wrought metal thimble-skein composed of a bent metal blank and a separate connecting-strip at or between the longitudinal seam of the skein, both welded or united together, substantially as specified.

381,219. STEM WINDING AND SETTING WATCH. WALTER D. DAVIES, Brooklyn, N. Y., assignor to the Ansonia Clock Company, Ansonia, Conn. Filed Dec. 1, 1887. Serial No. 256,621. (No model.)



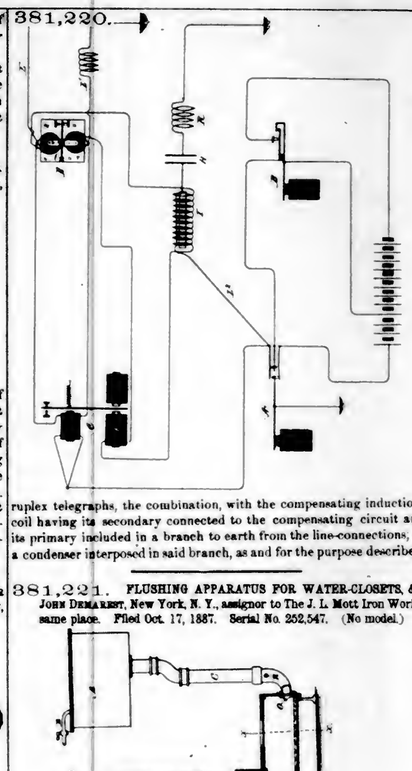
Claim.—1. The combination, in a watch, of the mainspring and a barrel therefor having teeth on its periphery for winding, and applied outside of the back plate and concentric therewith, and a central spindle turning in a bearing in the center of said plate and carrying the wheel for driving the movement, and having the inner end of the mainspring connected with it, substantially as herein described.

2. The combination, with the spring-barrel and the stem-spindle of a watch and a winding-pinion gearing directly with teeth on the barrel, and in which the said spindle is capable both of turning and moving longitudinally, of fixed bearings for said pinion in which it may rotate, but by which it is always kept in gear with the teeth on the barrel, a contrate clutch, one member of which is upon the said wheel and the other fast upon said spindle, and a spring for keeping the said clutch in gear, substantially as herein described.

3. The combination, in a watch, of a stem-spindle and a pinion fast on said spindle for setting the hands, a winding-pinion in which said spindle is free both to turn and to move lengthwise, and which is itself free to turn, but incapable of moving in an axial direction, a contrate ratchet-clutch, one member of which is fast on the winding-pinion and the other fast on the spindle in such position that when it is in gear with the other member the setting-pinion is out of gear from the dial-work, and vice versa, and a spring applied to said spindle to hold the clutch in gear and hold the setting-pinion out of gear, all substantially as herein described.

4. The combination, with the front and back plates of the watch having openings c', with recesses c^3 c^4, of the plates r, constituting journal-bearings and having tongues r' r' to enter said recesses, and a winding-pinion, the body of which occupies the space between the said plates r, and which has journals received in said bearings, all substantially as and for the purpose herein set forth.

381,220. STATIC COMPENSATOR FOR TELEGRAPHS. MINOR M. DAVIS, Brooklyn, N. Y. Filed May 4, 1887. Serial No. 237,084. (No model.)



Claim.—In a static compensating apparatus for duplex and quadruplex telegraphs, the combination, with the compensating induction-coil having its secondary connected to the compensating circuit and its primary included in a branch to earth from the line-connections, of a condenser interposed in said branch, as and for the purpose described.

381,221. FLUSHING APPARATUS FOR WATER-CLOSETS, &c. JOHN DEMAREST, New York, N. Y., assignor to The J. L. Mott Iron Works, same place. Filed Oct. 17, 1887. Serial No. 252,547. (No model.)

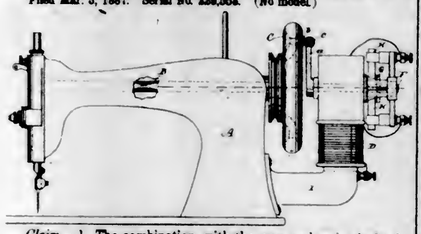
Claim.—1. The combination, with the cistern or reservoir A, of a stationary siphon pipe or case, K, closed at its upper end, the discharge-pipe C, extending up within the siphon-case K and having a valve-seat at its upper end, a float within the case K, open at the upper end, and a valve at the lower end to rest upon the seat to close the discharge-pipe, substantially as set forth.

2. The combination, in a cistern or reservoir, of the siphon-case K, a standing discharge-pipe within that case, the open float E, the valve F below the same, and the tubular slotted guides G within the standing pipe, substantially as set forth.

3. The combination, with the privy-container L, of a water-cistern, A, a discharge-pipe connecting the cistern to the container, a stationary case within the cistern closed at the top and forming part of a siphon, a float within the case open at the top and forming a continuation of the discharge-pipe, and a valve between such float and the discharge-pipe, substantially as specified.

4. The combination, with the container L for a range of privies, of the flushing-pipe C, supply-cistern A, and deflector O, to direct the water along the bottom of the container, the sewer-pipe Q at the distant end of the container, and a deflector over the sewer-pipe and hanging from the top of the container, with its lower edge above the bottom of the container, to allow the water to pass freely under the deflector into the sewer and prevent the water splashing back from the end of the container, substantially as specified.

381,222. ELECTRIC MOTOR. PHILIP DIEHL, Elizabeth, N. J. Filed Mar. 3, 1887. Serial No. 229,558. (No model.)



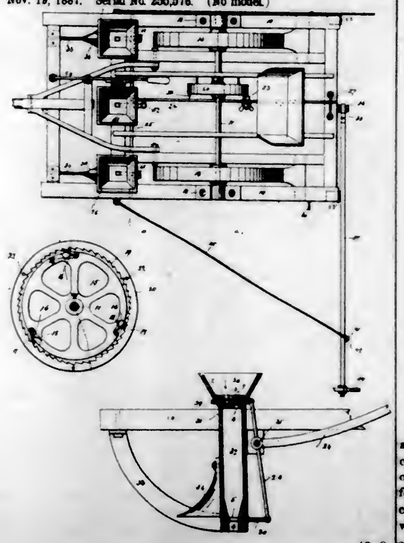
Claim.—1. The combination, with the arm and main shaft of a sewing-machine, of an electric motor having its shaft separate from but centrally in line with the said main shaft, or approximately so, a supporting-bracket for said motor, and suitable detachable connections between the motor-shaft and main shaft, substantially as set forth.

2. The combination, with the arm and main shaft of a sewing-machine, of an electric motor having its shaft separate from but centrally in line with the said main shaft, a supporting-bracket for said motor attached to said arm, and suitable connections between the motor-shaft and main shaft, substantially as set forth.

3. The combination, with the sewing-machine main shaft B and fly-wheel C, of the electric motor, the shaft F of which is centrally in line with the said shaft B, said motor-shaft having the crank-arm d, provided with the dog b, adapted to engage and rotate said fly-wheel, substantially as set forth.

4. The combination, with the motor support or bracket, of the socketed field-magnet core-piece d, adapted to be removably secured to said support or bracket, substantially as set forth.

381,223. CORN-PLANTER. CHARLES C. DU CRAY, Iowa County, Wis., assignor to himself and Harry J. F. Webb, Dubuque, Iowa. Filed Nov. 19, 1887. Serial No. 255,576. (No model.)



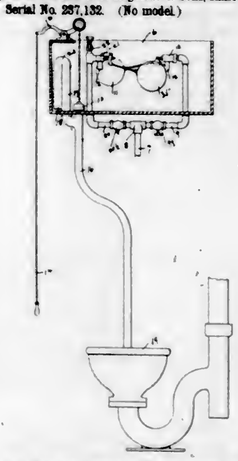
Claim.—1. In a corn-planter, the combination, with a main shaft or axle, of a wheel carried thereby and provided with pins, a transverse shaft, a lever rigidly connected to said shaft and provided with a projection which extends into the path of the pins, a hopper, a seed-delivery trough arranged below the hopper, and a lever provided with seed-delivery slides, one of which is arranged beneath the hopper and the other at the lower portion of the delivery-trough, substantially as described.

2. In a corn-planter, the combination, with a main shaft or axle, of a wheel rigidly connected thereto and provided with pawls, a second wheel loosely mounted thereon and formed with internal ratchet-teeth, with which the pawls engage, pins extending outward from the side of the flange of the ratchet-wheel, a transverse shaft, a lever rigidly connected thereto and provided with a projection which extends into the path of the pins, a hopper, a seed-delivery trough arranged below the hopper, a lever carried by the transverse shaft, and feed-slides connected to the opposite ends of said lever and arranged the one to operate in connection with the hopper and the other in connection with the delivery-trough, substantially as described.

3. The combination, with the axle or shaft having a fixed wheel provided with spring-pawls secured thereon, and a loose wheel mounted on said shaft, having internal ratchet-teeth extending over said fixed wheel and adapted to be engaged by said pawls, and projecting pins extending laterally therefrom, of a transverse rock-shaft journaled in the main frame and provided at each end with vertical arms, said arms having the upper and lower seed-delivering slides arranged to operate alternately in a seed-delivery trough of the hopper, said rock-shaft having a rearwardly-extending lever provided with a stop which extends in the path of the projecting pins on the aforesaid loose wheel, whereby said lever and rock-shaft operate, substantially as shown and described.

4. In a corn-planter, the combination of a main frame, 10, carrying the drive axle or shaft 11, said shaft provided with a fixed wheel, 15, having recesses 16, spring-pawls 17, pivoted in said recesses, a loose wheel, 20, having a circumferential flange extending over said wheel 15 and provided with internal ratchet-teeth, 19, and laterally-extending pins 22, and transverse rock-shaft 25, mounted in the frame 10, having the arms 28 connected thereto, said arms having the upper and lower seed-slides, 29 and 30, secured thereto, a rearwardly-extending lever, 24, centrally connected to said rock-shaft and provided with a stop, 23, placed in line of the pins 22 and having its rear end guided in a bail, 27, the hopper 20, having seed-troughs 32, furrow-openers 33, and levelers 34, arranged in front of the troughs 32 above the lower edges of the furrow-openers, all arranged to operate substantially as and for the purpose described.

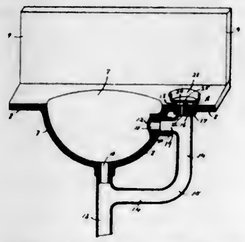
381,224. FLUSHING-CISTERN. WILLIAM DUNNETT, Baltimore, Md., assignor of one-half to J. Regester & Sons, same place. Filed May 4, 1887. Serial No. 237,132. (No model.)



Claim.—In a flushing-cistern for water-closets, the combination of a system for flushing by hand, consisting of a float-valve to automatically admit or shut off the water to the said cistern by the rise or fall of water therein, and a flushing-valve operated by hand, and a system for automatically flushing, consisting of a float-valve which is automatically opened for flushing by the rise of water in the said cistern, and a water-supply pipe, 20, provided with a cock or valve for admitting

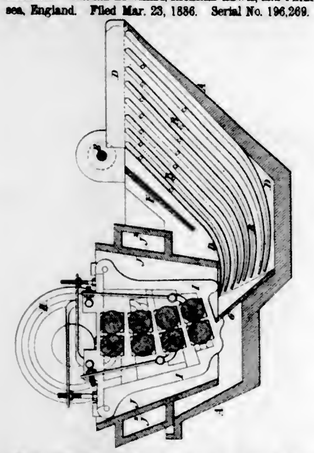
water to the said cistern and to regulate the intervals of flushing, and the cut-off cocks 9½ and 20½, whereby the systems may be changed from one to the other, for the purpose set forth.

381,225. ATTACHMENT FOR WASH-STANDS, BATH-TUBS, AND SINKS. WILLIAM DUNNETT, Baltimore, Md., assignor of one-half to J. Regester & Sons, same place. Filed Oct. 17, 1887. Serial No. 252,537. (No model.)



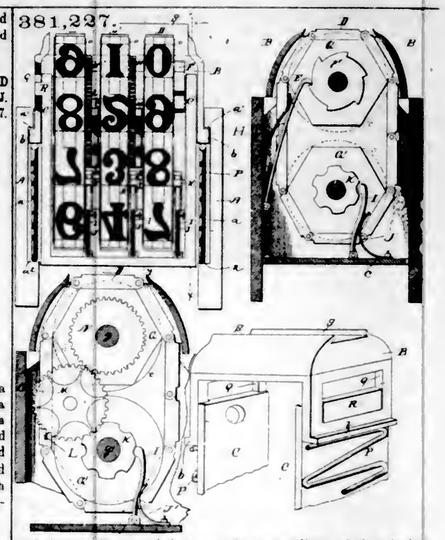
Claim.—In attachments to lavatory vessels, the combination of a vessel provided with an outlet and overflow, a top slab forming a ledge around the said vessel, a drain-pipe connected to said outlet, a branch drain-pipe connected to said drain-pipe and extended to and open to the top of the said slab, a pipe connecting overflow with said drain-pipe, and a soap-tray consisting of a dish and perforated winged socket, the said soap-tray seated in the said opening of the branch drain-pipe, whereby the top of the slab may be drained and the soap-tray easily removed and adjusted, for the purpose set forth.

381,226. COATING METAL PLATES WITH TIN OR OTHER METALS. DANIEL EDWARDS, RICHARD LEWIS, and PHILIP JONES, Swansea, England. Filed Mar. 23, 1886. Serial No. 196,269. (No model.)



Claim.—The improved process of successively and continuously coating metal plates with tin, &c., which consists in inserting the plates one by one and each alone into a molten coating-bath, keeping them separated while in the bath, allowing them to remain therein at rest for like periods of time, moving them forward in succession one at a time in the order in which they were inserted and without previously changing their positions in the bath, passing them through grease or flux composition above the bath, and inserting other plates in the places of the coated plates as the latter are respectively removed, substantially as and for the purpose set forth.

381,227. NUMBERING-MACHINE. CHARLES S. ELLIS, Memphis, Tenn., assignor of one-half to Jacob J. Sturia, same place. Filed Dec. 6, 1886. Serial No. 220,831. (No model.)



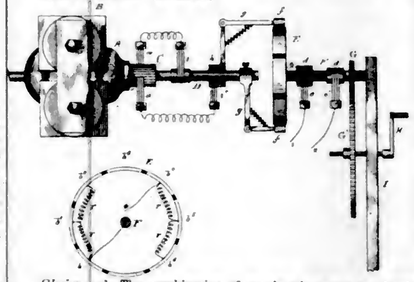
Claim.—1. A numbering device consisting of a case adapted to be locked in with a form of type, the rule-frame located within the case and movable in and out relative thereto, the frame carrying the printing devices supported by the rule-frame and having a limited movement relative thereto, a series of movable printing devices supported by the frame, a ratchet and pawl for moving the first printing device of the series at each movement of the frame in one direction, and devices interposed between the succeeding printing devices, whereby each is moved forward one step after each complete revolution of the preceding printing device, substantially as and for the purpose set forth.

2. The combination, with the case, the rule-frame, and the chain-carrying frame having a limited movement relative to the rule-frame, and both movable relative to the case, of the series of printing-chains and the ratchet and pawl for moving the first chain of the series, as and for the purpose described.

3. The combination, with the case and the chain-carrying frame having shafts near each end, of the chain-wheels supported by said shafts, the printing-chains, the ratchet-wheel, the pawl, the pinions O and N, the spur-wheel M, and the pin L, projecting laterally from a link of the adjacent printing-chain, substantially as and for the purpose described.

4. The combination, with the case, the frame, the printing-chains, and the connections consisting of the ratchet F and pawl E between the case and the first chain of the series, of the pinions O and N, the spur-wheel M, and the pin L, projecting laterally from the adjacent chain, substantially as set forth.

381,228. MEANS FOR REGULATING AND CONTROLLING ELECTRIC MOTORS. BRADLEY A. FISKE, U. S. Navy. Filed June 27, 1887. Serial No. 242,581. (No model.)



Claim.—1. The combination of an electric motor, mechanism adapted to be moved by hand, and regulating apparatus for said motor affected by the movements both of said motor and of said hand mechanism, whereby variations in the relative speed or the relative direction of movement of said motor and said hand mechanism produce variations in the speed or direction of movement of the motor, substantially as set forth.

2. The combination of an electric motor, means for regulating its speed or direction, or both, and two sets of contact devices, variations in whose relative position affect said regulating means to vary the speed or direction of the motor, one set of contact devices being arranged to be moved by the motor and the other to be moved by hand, substantially as set forth.

3. The combination of an electric motor, a body adapted to be moved by hand, contacts carried by said body, between which a circuit to the motor is completed, and terminals for said circuit adapted to be moved by the motor and to bear on said contacts, whereby when said terminals are removed from said contacts the circuit is broken, substantially as set forth.

4. The combination of an electric motor, a body adapted to be moved by hand in either direction, contacts carried by said body between which a circuit to the motor is completed, and terminals for said circuit adapted to be moved by the motor and to bear on said contacts, whereby the reversal of the movement of said hand-moved body reverses the current in said circuit, substantially as set forth.

5. The combination of an electric motor, means for regulating its speed or direction, or both, and two sets of contact devices, variations in whose relative position affect said regulating means to vary the speed or direction of the motor, one set of contact devices being arranged to be continuously rotated by the motor and the other to be continuously rotated by hand, substantially as set forth.

6. The combination of an electric motor, a rotating body adapted to be revolved by hand, a series of contacts carried by said rotating body, terminals of a circuit-supplying current to the motor carried by the motor-shaft and bearing on said contacts, and resistance-coils in the circuit between said contacts, whereby variations in the position of said terminals upon said contacts causes a variation of the resistance in circuit, substantially as set forth.

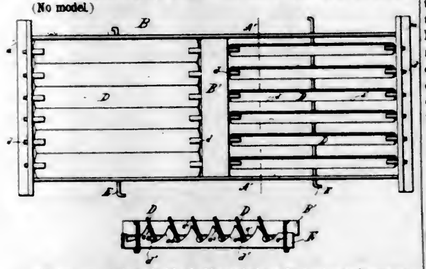
7. The combination of an electric motor, a rotating body adapted to be revolved by hand, contacts carried by said rotating body between which a circuit to the motor is completed, and terminals for said circuit carried by the motor-shaft and adapted to bear on said contacts, whereby when said terminals are removed from said contacts the circuit is broken, substantially as set forth.

8. The combination of an electric motor, a rotating body adapted to be revolved by hand in either direction, contacts carried by said rotating body between which a circuit to the motor is completed, and terminals for said circuit carried by the motor-shaft and adapted to bear on said contacts, whereby the reversal of the movement of said rotating body reverses the current in said circuit, substantially as set forth.

9. The combination of an electric motor, a rotating body, contacts carried by said rotating body, terminals of a circuit to the motor carried by the motor-shaft and bearing on said contacts, and regulating devices affected by variations in the position of said terminals upon said contacts to vary the speed or direction of motion of the motor, a handle for turning said rotating body, and gearing between said handle and said rotating body for converting a slow movement of said handle into a rapid movement of said rotating body, substantially as set forth.

10. The combination of an electric motor, a rotating body adapted to be revolved by hand and carrying a series of contact-plates, two of said contact-plates being disconnected from each other, two being joined through no resistance and others being joined through resistances, and terminals of a circuit to the motor carried by the motor-shaft and bearing on the surface of said body, substantially as set forth.

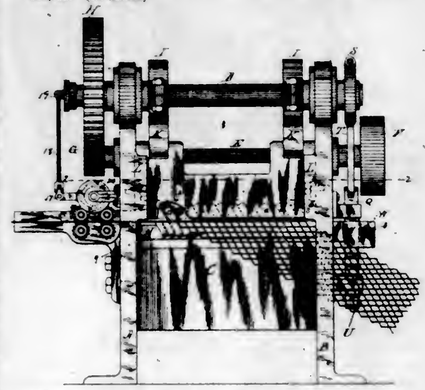
381,229. DETACHABLE SHELF AND HEAT-REGULATOR FOR OVENS. OSCAR F. FROST, Monmouth, Me., assignor of one-half to Augustus A. Fillebrown, Ayer, Mass. Filed June 8, 1887. Serial No. 240,636. (No model.)



Claim.—1. A detachable shelf consisting of a horizontal rectangular frame, B, to rest on the slide rests or supports of a baking-oven, counterbalanced shutters D, pivoted within the frame at their ends, and a sliding bar placed edgewise under said shutters, extending through the ends of the frame to form a handle or finger-piece, and having a series of recesses, e', in its upper surface, into which the counterbalanced sides of the shutters extend when open, and intermediate walls or projections, one for each shutter and contacting with the lower faces thereof, substantially as set forth.

2. In an oven-shelf and heat-regulator, the combination, with a frame, B, consisting of the angular side pieces, A, end pieces, A', central dividing-bar, B', and a series of shutters pivoted in said ends and dividing-bar, of sliding bars E, extending transversely beneath said shutters through the sides of the frame to form the operating finger-pieces or handles, and provided in their upper edges with a series of recesses, e', having a concaved wall, e^2, and an opposing convex wall, e^3, one for each shelf, all arranged to operate substantially as herein shown and described.

381,230. MACHINE FOR SLASHING AND EXPANDING FLAT SHEET METAL TO FORM MESHES. JOHN F. GOLDING and GEORGE B. DURKEE, Chicago, Ill., assignors, by direct and mesne assignments, to the Expanded Metal Company, of Missouri. Filed Mar. 31, 1885. Serial No. 160,735. (No model.)



Claim.—1. In a machine for cutting and expanding flat metal into meshes, the combination of two sliding cutter-heads each provided with cutters and each set of cutters arranged in step form on its respective head, the movement of one cutter-head being longitudinal and the movement of the other being at or near a right angle thereto, the cutters of each set adapted to fit into and pass over the faces of the other set, and a suitable intermittent feeding device arranged and adapted by means of mechanism to feed metal between said cutters in line with and in the direction of the forward travel of said longitudinally-traveling head.

2. In a machine for cutting and expanding flat metal into meshes, the combination of two sliding cutter-heads each provided with cutters and each set of cutters arranged in step form on its respective head, the movement of one cutter-head being longitudinal and the movement of the other being at or near a right angle thereto, the cutters of each set adapted to fit into and pass over the faces of the other set, and a suitable fixed guide located at the rear of and parallel with the travel of said longitudinally-sliding head.

3. In a machine for cutting and expanding flat metal into meshes, the combination of two sliding cutter-heads each provided with cutters and each set of cutters arranged in step form on its respective head, the movement of one cutter-head being longitudinal and the movement of the other being at or near a right angle thereto, the cutters of each set adapted to fit into and pass over the faces of the other set, and a suitable clamping device constructed substantially as described and adapted for holding the metal and preventing its retreat while it is being cut and expanded.

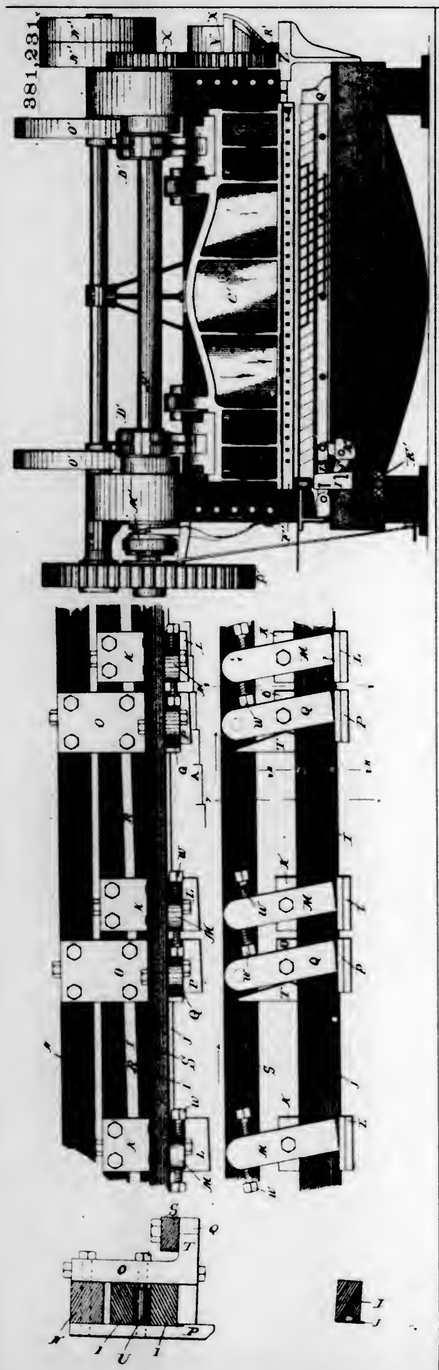
381,231. MACHINE FOR MAKING SLASHED METALLIC SCREENING. JOHN F. GOLDING, Chicago, Ill., assignor to the Expanded Metal Company, of Missouri. Filed Jan. 7, 1887. Serial No. 223,644. (No model.)

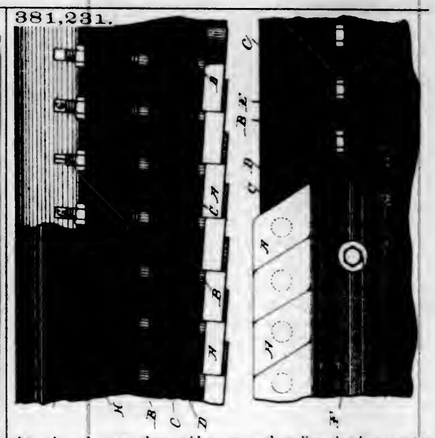
Claim.—1. In a machine for manufacturing slashed metallic screening, the combination of two cutter-heads with cutters in each head being set edge to edge, and their faces being set at an angle with each line of said cutters in step form and adjustable backward and forward in the angle in which they are set.

2. A movable cutter having a center stock and four cutting sides, two of said cutting sides being parallel with each other and oblique to the other two cutting sides.

3. In a machine for manufacturing slashed metallic screening, the combination of fixed guide-bars provided with spaces or slots within,

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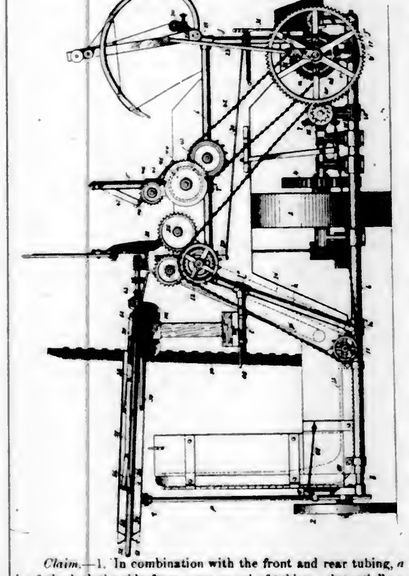




through, or between them, said spaces or slots diverging in a greater or less degree from the line of the guide in said bars in the direction of the feed, with suitable feeding mechanism.

4. In a machine for manufacturing slashed metallic screening, the combination therewith of an intermittent feeding device, consisting of an actuating-bar loosely attached to one end of one or more locking-dogs, said dogs being loosely secured at or near their centers to journals and clamping against jaws at their opposite ends, said journals and jaws being securely attached one above the other to a bar or bars connecting the requisite number of said journals and jaws, all of said parts being held in their respective positions by a guide-bar fixed to the main frame of the machine.

381,232. HARVESTING-MACHINE. ALBERT GOODYEAR, New Haven, Conn. Filed Aug. 2, 1886. Serial No. 209,719. (No model.)



Claim.—1. In combination with the front and rear tubing, *a* and *b*, of the bed, the side frames composed of tubing, substantially as described, and the clips uniting the side frames with the bed, substantially as described, whereby the side frames are adjustable on the bed, as set forth.

2. In the bed-frame of a harvesting-machine, in combination, the front and rear tubing, *a* and *b*, the tubing *a'* and *b'*, forming a telescope

or sliding joint with the former, and the cross-tubing *c* and *d*, substantially as described.

3. In combination with the side frames, the seat-supporting tubing *l l'*, mounted thereon, and the clips whereby the said tubing is adjustably secured to said frames, substantially as described.

4. In combination with the tubing *a*, *b*, and *c* and the uprights *j j'*, the cross-piece *k*, the binding-needle shaft mounted thereon, and the clips whereby the bearings of said shaft are adjustably secured to said piece *k*, substantially as described.

5. In combination with the side frames, composed of the upright tubing *h h'* and *j j'*, *h* and *j* connected by the cross-tube *i* and *h'* and *j'* by the cross-tube *i'*, the uprights *r r'*, mounted on the tubing *i i'*, and clips whereby the uprights are adjustably secured to the tubing, substantially as described.

6. In combination with the tubing *a*, *b*, and *c*, the uprights *s s'*, the clips adjustably securing said uprights to the tube *c*, and the knotting-mechanism shaft *t*, having its bearings on said uprights, substantially as described.

7. In combination with the tubing *a* and *b* and the shaft *u*, the uprights on which are mounted the bearings of said shaft, and the clips whereby said uprights are adjustably secured to said tubing.

8. In combination with the tubing *a* and *b*, the shaft *w*, having its bearings on uprights, and the clips whereby said uprights are adjustably secured to said tubing, substantially as specified.

9. In combination with the tubing *a* and *b*, the cross-piece *c*, and the clips whereby said cross-piece is adjustably secured to said tubing, substantially as described

10. In combination with the tubing *a* and *b* and the ground-wheel, the cross-pieces *f* and *g*, with which the ground-wheel is connected, and the clips whereby said cross-pieces are adjustably secured to said tubing, substantially as described.

11. In combination with the frame of the machine, the cross-tubing *f* and *g*, the ground-wheel having its bearings in uprights on said tubing, and the clips whereby said uprights are adjustably secured to said cross-tubing, substantially as described.

12. In combination with the frame of the machine, the cross-tubing *e* and *f*, the shaft 6, having its bearings on said tubing, and the clips whereby said bearings are adjustably secured to said tubing, substantially as described.

13. In combination with the grain-elevator and the folding binding-platform, an intermediate grain-receptacle upon which the grain is delivered, and mechanism, substantially as described, whereby the divider is actuated by the tripping of the tripper to throw the bundle of grain onto the folding binding-platform, substantially as described.

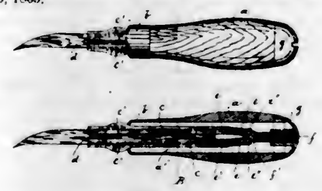
14. In combination, the tripper 27, the grain-receptacle 26, the folding binding-platform, the needle, and mechanism whereby the tripping of the tripper causes the platform to rise and the needle to descend simultaneously, thereby compressing the bundle, substantially as described.

15. In combination, the grain-receptacle 26, the tripper 27, the divider, the folding binding-platform, the binding-needle, and mechanism, substantially as described, whereby the divider is actuated by the tripping of the tripper to throw a bundle of grain onto the platform in its normal position, and whereby said platform is raised as the needle descends, thereby compressing the grain, substantially as described.

16. In combination, the rising and falling binding-platform, the hopper, and the tripper whereby the binding-platform is set in operation by the accumulation of grain in the hopper, substantially as described.

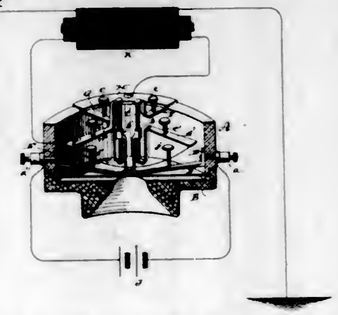
381,233. KNIFE-BLADE HOLDER. EUGENE H. GOULD, Beverly, Mass. Filed Feb. 23, 1888. Serial No. 264,909. (No model.)

Brief.—Improvement on Letters Patent No. 51,297, dated December 5, 1865.



Claim.—A knife-blade holder consisting of the longitudinally-grooved handle *a*, its capped and grooved ferrule *b*, and threaded nut *g*, in combination with the grooved clamping-bars *e e*, having cam projection *e' e'* at or near their outer ends, links *c c*, pivoted to the inner ends of said clamping-bars, and the adjustable screw *f*, pivoted in its inner end to the said links *c c*, as and for the purpose set forth.

381,234. TELEPHONE-TRANSMITTER. JOHN M. GRAHAM, Pittsburg, Pa., assignor to himself, Sarah C. Graham, Martha Graham, and Thomas C. L. Graham, all of same place. Filed May 12, 1887. Serial No. 238,014. (No model.)



Claim.—1. In a telephone-transmitter, the combination, with a casing and its diaphragm, of a pair of springs secured to the casing, projecting inwardly toward the center of the diaphragm, and then bent upwardly and away from the said diaphragm and carrying electrodes at their free ends, and two pairs of contact-springs arranged opposite each other and engaging the ends of the electrodes, the said springs being connected with opposite terminals of the primary wire of the induction-coil, substantially as described.

2. The combination, in a transmitting-telephone, of the casing A, provided with the mouth-piece B, the diaphragm D, clamped in the casing, the springs E E', bearing upon the diaphragm and carrying electrodes *c c'*, the contact-springs F G, connected together and with one terminal of the primary wire of the induction-coil, the contact-spring G, being arranged to press upon the inner end of the electrode *c'*, the contact-spring F, being arranged to press upon the onter end of the electrode *c*, the contact-springs F' G', connected together and with the remaining terminal of the primary wire of the induction-coil, the contact-spring G' being arranged to press upon the inner end of the electrode *c*, the contact-spring F' being arranged to press upon the outer end of the electrode *c'*, and the battery and line connections, substantially as described.

3. The combination, in a transmitting-telephone, of the casing A, provided with the mouth-piece B, the diaphragm D, clamped in the casing, the springs E E', bearing upon the diaphragm and carrying electrodes *c c'*, the contact-springs F G, connected together and with one terminal of the primary wire of the induction-coil, the contact-spring G being arranged to press upon the inner end of the electrode *c'*, the contact-spring F being arranged to press upon the outer end of the electrode *c*, the contact-springs F' G', connected together and with the remaining terminal of the primary wire of the induction-coil, the contact-spring G' being arranged to press upon the inner end of the electrode *c*, the contact-spring F' being arranged to press upon the outer end of the electrode *c'*, the battery and line connections, and the adjusting-screws *c' f f'*, substantially as described.

381,235. APPARATUS FOR THE PROPULSION OF SHIPS OR VESSELS. EMMANUEL GRIFFON, Bordeaux, France. Filed Oct. 18, 1887. Serial No. 252,716. (No model.)

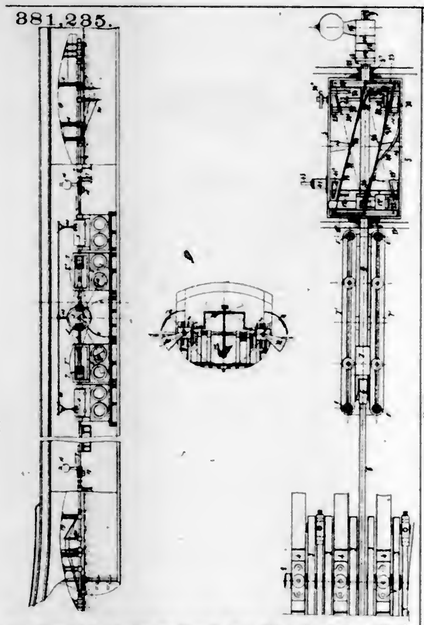
Claim.—1. A propeller for a vessel, consisting of a shaft or rod and paddles attached thereto on one side only of its axis, said shaft or rod receiving a longitudinal rectilinear reciprocating motion in a fore-and-aft direction or lengthwise of the vessel and an oscillating movement about its own axis, substantially as herein described.

2. The combination, with the rectilinearly-reciprocating propeller-shaft 9, of the mechanism herein described for producing the oscillating motion of said shaft, said mechanism consisting of two rods or ways, 24 24', arranged obliquely to the axis of said shaft, the tilting lever 12, fitted to the shaft to have a limited oscillating movement independently thereof, and the springs 30 30, attached to the said rods or ways 24 24', all substantially as herein set forth.

3. The combination, with the rectilinearly-moving propeller-shaft, the tilting lever, and the rods or ways 24 24', arranged obliquely to said shaft, of the rolling frame 5, furnished with trunnions through which said shaft passes and fixed bearings for said trunnions, substantially as and for the purpose herein set forth.

4. The combination, with the rectilinearly-reciprocating propeller-shaft 9, of the rolling frame 5, the rods or ways 24 24', pivoted in said rolling frame and furnished with springs 30 30, the rods 25 25', connecting said pivoted rods 24 24' to form a movable parallelogram, the

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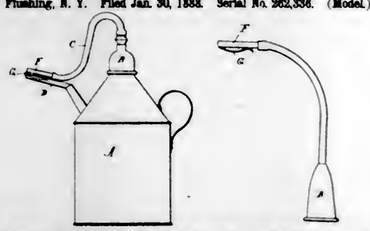
tilting lever 12, the cylinder 41 and piston 41', and the spring 40, the whole forming a reversible mechanism for producing the oscillation of the shaft in either direction relatively to the reciprocating rectilineal movement thereof, substantially as herein set forth.

5. The combination, with the oscillating and rectilinearly-reciprocating propeller shaft or rod 9, the rods or ways 24 24', arranged obliquely to the axis of said shaft or rod, and the tilting lever 12, which is fitted to said shaft or rod to have a limited oscillating movement independently thereof, and is provided with an extension, 12', below the said shaft or rod, and which runs on said rods or ways, of the adjustable brake for controlling the fall of said tilting lever, said brake consisting of the adjustable blocks 33 33 and spring-plates 35 35, attached to said blocks for acting upon the said extension 12' of the said lever, and the screw 34', for adjusting the said blocks, all substantially as herein described.

6. The combination, with the propeller-shaft 9 and the tilting lever 12, for turning it on its axis, of the roll-counterpoise consisting of the counterpoise 15, fitted to the shaft, and the spring-actuated keys 36 37, for causing the engagement of the counterpoise 15 with the shaft during the reciprocating movements of the latter and their disengagement at the end of each stroke of the shaft, substantially as herein described.

7. The combination, with the oscillating and rectilinearly-reciprocating propeller-shaft and the paddles projecting radially and perpendicularly therefrom, of the braces 21, parallel with the shaft and connecting the paddles together, and the oblique braces 22, connecting the paddles with the shaft, substantially as herein described.

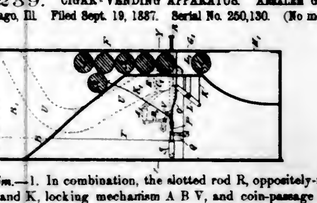
381,236. ATTACHMENT FOR FILLING-CANS. JOHN H. J. HAINER, Flushing, N. Y. Filed Jan. 30, 1888. Serial No. 262,336. (Model.)



Claim.—1. In a check or safety attachment for filling cans or vessels, a flexible tube provided at one end with a flexible or elastic cap adapted to be sprung over and closed directly upon the mouth of the can itself and at its opposite end with means for attachment to the nozzle of the can.

2. As a new article of manufacture, a safety attachment for filling-cans consisting of a flexible tube having at one end a tip provided with means for attachment directly to the side of the spout or nozzle and parallel therewith, and having at its opposite end an elastic cap adapted to be sprung over the mouth of the can itself.

381,237. FIRE-KINDLER. HIRAM M. HANNORE, Camden, N. J. Filed Jan. 4, 1888. Serial No. 259,757. (No specimens.)



Claim.—A composition for fuel cartridges, consisting of calcined magnesia, carbonate of magnesia, and asbestus fiber, in proportions substantially as herein set forth.

381,238. COMBINED TIE, CHAIR, AND FISH-PLATE. DANIEL HARRINGTON and MORRIS A. KRAUS, New Brunswick, N. J. Filed Dec 29, 1887. Serial No. 259,308. (No model.)



Claim.—1. The combination, with a railway-chair provided with the compound recess *a a'* and a rail fitted in the recess *a'*, of an angular fish-plate, C, having its vertical member concaved upon its inner bearing-surface and the horizontal member fitting into the recess *a*, having its under surface partially conformed to the contour of the rail-flange and partially concaved, and means, substantially as shown and described, for binding the fish-plate to the rail and said plates to the chair, substantially as set forth.

2. The combination, with a tie having a concaved under surface, a chair upon said tie provided with a compound recess, *a a'*, and a rail fitted in the recess *a'*, of angular fish-plates C, having the inner bearing-surfaces of their vertical members concaved and the under surface of their horizontal members entering the recess *a* partially conformed to the contour of the rail-flange and partially concaved, and bolts, substantially as shown and described, passing through the fish-plates, chair, and tie, and through said fish-plates and rails, as and for the purpose herein set forth.

3. The combination, with a railway-chair provided with a compound recess, *a a'*, and a rail fitted in the recess *a'*, of an angular fish-plate, C, having its vertical member concaved upon its inner bearing-surface and the horizontal member provided with a centrally-integral projection or wing, D, adapted to fit in a correspondingly-shaped portion of the recess *a*, and having its under surface partially conformed to the contour of the rail-flange and partially concaved, and means, substantially as shown, for binding said fish-plate to the rail and said plates to the chair, substantially as shown and described.

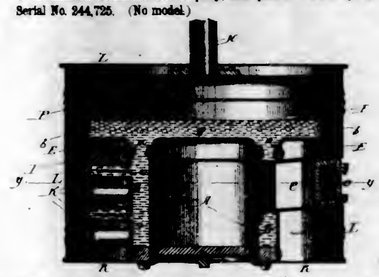
4. In a railway chair and fish-plate, essentially as shown and described, the fastening or clamping bolt E', provided with a nut, c^3, U-shaped in cross-section and having its cavity filled with an elastic contact-block, c^4, and provided with a nut, c', at its outer end, said nut adapted to lock the nut c^3 securely upon the bolt E', substantially as herein shown and described.

381,239. CIGAR-VENDING APPARATUS. ABRALEM G. HART, Chicago, Ill. Filed Sept. 19, 1887. Serial No. 250,130. (No model.)

Claim.—1. In combination, the slotted rod R, oppositely-moving plates J and K, locking mechanism A B V, and coin-passage U, substantially as set forth.

2. The combination of hopper-receptacle R, narrow passage L, coin-passage U, slotted rod R, oppositely-moving plates J and K, spring S, and tripping mechanism A B V and connecting parts, substantially as described.

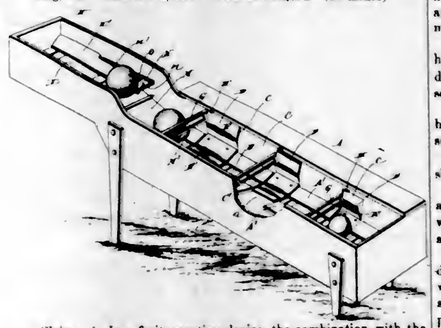
381,240. BOILER. WILLIAM E. HAXTUN, Kewanee, Ill., assignor to the Haxtun Steam Heater Company, same place. Filed July 19, 1887. Serial No. 244,725. (No model.)



Claim.—1. In a boiler, the combination of a fire-pot, a water-space outside of such fire-pot, a smoke-flue around such water-space, a chute or passage through which fuel can be fed to the fire-pot, which chute passes through the water-space around the fire-pot and is entirely closed on the bottom, top, and one side, but has an opening in one side which communicates with the smoke-flue which surrounds the water-space, substantially as and for the purposes specified.

2. In a boiler, the combination of a fire-pot, a water-space outside of such fire-pot, a smoke-flue around such water-space, water-tubes communicating with such water-space and extending into the smoke-flue, a chute or passage through which fuel can be fed to the fire-pot, and a passage through one wall of the chute and communicating with the smoke-flue around the water-space, substantially as and for the purposes specified

381,241. AUTOMATIC FRUIT-ASSORTER. THOMAS HIATT, Leesburg, Fla. Filed Nov. 2, 1887. Serial No. 254,094. (No model.)

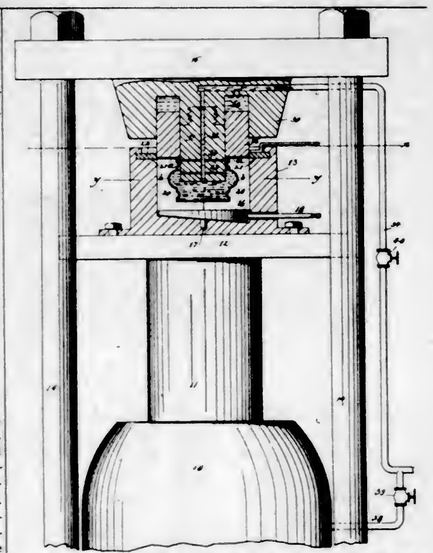


Claim.—1. In a fruit-assorting device, the combination, with the sizing-board A, having the groove A' therein and the openings *a*, of graded sizes, of the escapements D, journaled in the said openings and having the grooved wings E to close the openings *a*, with the grooves therein aligning with the groove in the sizing-board, substantially as and for the purpose specified.

2. In a fruit-assorting device, the combination, with the inclined sizing-board A, having openings *a* therein, and the inclined side C, with similar adjacent openings, *c*, of the revolving escapements journaled in the said openings, having the wings E, the swinging gages G above the said openings and engaging the upper wings of the escapements, and the spring-catches to engage the said upper wings on the side opposite the gages and prevent the escapements from revolving in the reverse direction, substantially as and for the purpose specified.

3. In a fruit-assorting device, the combination, with the feed-board, of the loop-shaped stop N, embracing the lower end of the feed-board and having its arms *n' n'* pivoted to the sides thereof, and the chute pivoted at an intermediate point below the end of the said board and connected at its end to the said stop, whereby the weight of the latter normally holds the chute raised, substantially as specified.

381,242. HYDRAULIC SHAPING-PRESS. ARTHUR E. HOBSON, Hartford, Conn., assignor of one-half to I. J. Steane & Co., same place. Filed Dec. 17, 1887. Serial No. 258,183. (No model.)



Claim.—1. In a hydraulic shaping-press, the combination, with a ram carrying a die-holder, of a head-block provided with a bearing-surface and arranged above the die-holder, whereby the edges of the blank may be clamped to the upper face of the die, substantially as described.

2. In a hydraulic shaping-press, the combination, with a die-holder, of an apertured head-block provided with a bearing-surface and arranged above the die-case, whereby the edges of the blank may be clamped to the upper face of the die, substantially as described.

3. In a hydraulic press, the combination, with a ram, of a die-holder carried thereby, an apertured plunger arranged to enter the die-holder, and a ring surrounding the plunger, substantially as described.

4. In a hydraulic press, the combination, with a ram, of a die-holder carried thereby, an apertured plunger, and an annular ram surrounding said plunger, as and for the purpose stated.

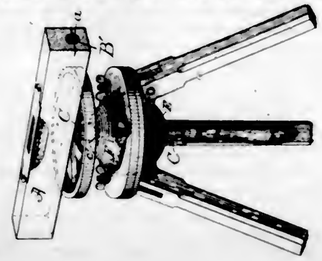
5. The combination, with a ram, of a die-holder and a wedge-shaped block mounted within the holder, substantially as described.

6. The combination, with a ram, of a die-holder supported thereby, a wedge-shaped block mounted within the die-holder and provided with a downwardly-extending pin, and an outwardly-extending lever arm or handle, substantially as described.

7. The combination, with a ram, of a die-holder carried thereby, dies adapted to fit said holder, a blank-holding plate arranged to fit within the die-holder above the die, and a head-block provided with a centrally-apertured plunger that is in connection with a water-supply, substantially as described.

8. The combination, with a ram, of a die-holder, 13, dies 20, mounted therein, a plate-holder, 22, a head-block, a plunger, 31, supported thereby and formed with a bore, 32, a ram, 35, mounted about the plunger, and a water-supply, substantially as described.

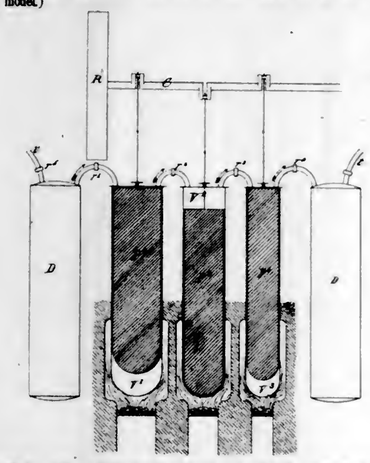
381,243. LEVELING-INSTRUMENT. WILLIAM C. HOLMES, Atlanta, Ga. Filed Nov. 19, 1887. Serial No. 255,664. (No model.)



Claim.—1. In a leveling-instrument, the ball D, provided with a passage through it for the reception of the spindle C, the spindle C having a support for the level at its upper end, and the handle attached to the lower end of said spindle, for the purpose set forth.

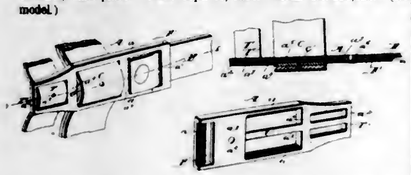
2. In a leveling-instrument, the ball D, supported and secured by the plate E and the cap F, said plate and cap being attached to each other by thumb-screws, the leather washer *d*, to give a holding-surface to said ball, the spindle C, secured to the ball D, for the purpose of adjusting the said ball, and the handle attached to said spindle, substantially as shown and described.

381,244. **UTILIZING EXHAUST-STEAM.** MORITZ HONIGMANN, Grevenberg, Germany. Filed Jan. 20, 1888. Serial No. 261,363. (No model.)



Claim.—The within-described improvement in the method of utilizing exhaust-steam, consisting in converting it into steam of a pressure higher than the atmosphere by causing it to pass in contact with heated surfaces and subjecting it to mechanical compression during its passage over said surfaces, substantially as herein set forth.

381,245. **THROAT-LATCH FASTENER.** FRANKLIN O. HOPSON, Waxahachie, Tex., assignor of two-thirds to John F. Strickland and W. C. Jones, same place. Filed Sept. 19, 1887. Serial No. 250,128. (No model.)



Claim.—1. The herein-described connecting-plate for bridles, having a securing part, T', at one end, having a stud, a^7, a loop, B', at the other end, and a tongueless buckle, C, in the middle, the buckle C and securing part T' having a common central longitudinal bar, a^3, and the stud a^7 being formed on said bar, all integrally constructed for the reception of the brow-band, cheek-strap, and throat-latch, as set forth.

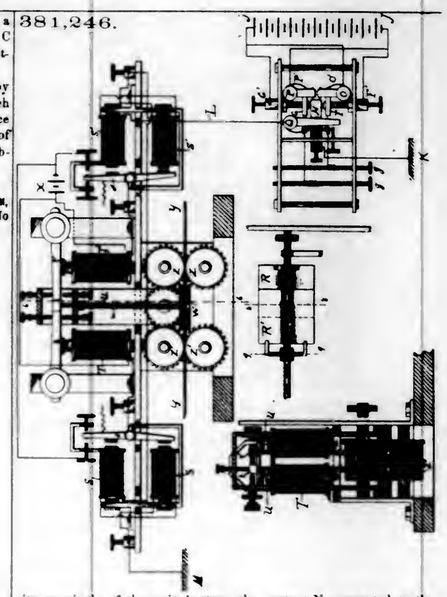
2. The herein-described connecting-plate for bridles, having the side and end bars, the intermediate transverse bars, a^3 and a^4, and the central longitudinal bar, a^3, having a stud, a^7, in one portion thereof, substantially as described.

3. The herein-described connecting-plate for bridles, having the side bars, *a a*, the end bars, *a' a³*, the transverse bars a^3, having a rivet-hole, a^6, the longitudinal bar a^3, extending between the transverse bar a^3 and the end bar a^3, the transverse bar a^4, and the stud a^7 on the longitudinal bar a^3 between the bars a^4 and a^3, substantially as specified.

381,246. **TELEGRAPHY.** ZEROT P. HOTCHKISS, Oak Park, Ill., assignor of one-fourth to Carlos J. Ward, same place. Filed Feb. 14, 1887. Serial No. 227,506. (No model.)

Claim.—1. The combination, substantially as set forth, of the perforated sending-strip A, the levers F G, connected with opposite terminals of the main battery, the levers O P, connected with opposite terminals of the main battery, the contact N, connected to the ground, and the contacts Q, connected to the line.

381,246.

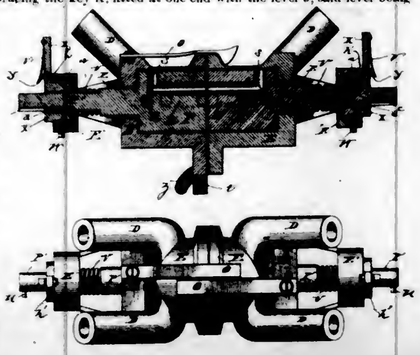


2. In a system of telegraphy, in combination with a telegraphic line, a duplex transmitting-instrument having levers, as F G, connected to opposite terminals of the battery and adapted to be operated by a sending-strip, as A, a ground-contact, as N, contacts, as O P, connected to opposite terminals of the battery, and a contact, as Q, connected to the line, whereby currents of opposite polarity may be sent over said line, and a duplex receiving-instrument having puncher, as U U', and polarized relays, as S S', to separate the currents and deliver those of one polarity to a magnet which operates one punch and those of opposite polarity to a magnet which operates the other punch, whereby a strip may be perforated in duplication of the sending-strip, substantially as described.

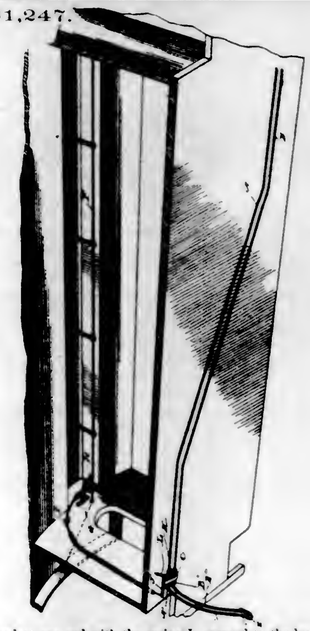
3. The combination, in a transmitting-instrument adapted, in connection with a perforated strip, to transmit electrical impulses of different polarity, of a mechanical strip-feeding mechanism and a governing-fan composed of the two flat blades R R', said blades adapted to slide one upon the other to adjust the speed of said feeding mechanism, substantially as and for the purpose set forth.

381,247. **RAILWAY-SIGNAL.** THOMAS M. JENKS, Chicago, Ill. Filed Oct. 15, 1887. Serial No. 252,484. (No model.)

Claim.—1. In a railway-signal mechanism, the four-way cock C, secured under the end of a passenger-car and furnishing communication between the pipes A and A' and B and B', respectively, and embracing the key K, fitted at one end with the lever J, said lever being



381,247.



combined at one end with the spring L, secured to the bottom of the car, and at the other end with the cord l, which passes up and is secured to the bell-cord F, drawn down over the rollers H H in the bracket G at the end of the car, substantially as and for the purposes specified.

2. In a railway-signal mechanism, the four-way cock C, containing the key K, pierced at right angles with the holes M M and having the grooves N N extending along a part of its opposite sides, in combination with the pipes A' and A and B' and B, extending lengthwise beneath a passenger-car, the said pipes A' and B' opening into the hose A'' and B'', which extend to and furnish communication with the pipes D D of the coupler E, and through this with corresponding pipes and hose communicating with any air-pump and suitable signaling apparatus of common construction on the locomotive of the train, substantially as and for the purposes stated.

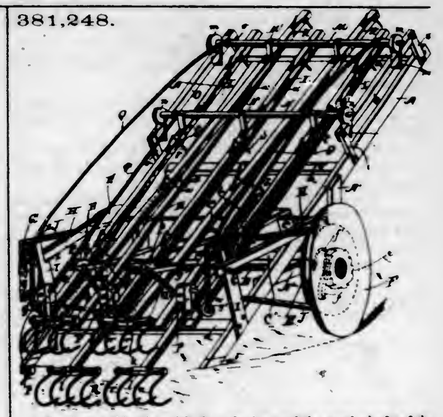
3. In a railway-signal mechanism, the coupler E, consisting of two similar parts, each terminating in a plane face at one end and at the other end in the pipes D D and the annular enlargement E', which is recessed to receive the boss of the handle X and notched at the points *h* and *q*, forty-five degrees apart, to receive the pin Y, secured to the spring V, which is in turn secured to the upper end of the handle X, said parts containing the respective halves of the cock P and being combined with each other face to face by the springs O O, secured to them, and the hinge *z* on one part passing through the aperture *b* in the lug *t* on the other part, substantially as and for the purposes specified.

4. In a railway-signal mechanism, the four-way cock P, formed of two halves fitted in the coupler E, also formed of two halves and having the holes Q passing therethrough at right angles near its outer ends, and the two holes R R, parallel with its axis and opening at the sides, and the tubes J J, connecting with corresponding holes in the halves of the cock, and the hole S, opening at the side of said cock, with the spiral springs V upon the rods P' of the cock, said rods being longitudinally grooved at e upon their periphery and having the radial pins *u* near their ends, and the annular enlargement E' of the coupler having the screw W, the inner end of which engages with a groove, *a*, in the handle X, carrying the key *d*, substantially as and for the purpose described.

381,248. **HAY-LOADER.** CHARLES C. JEWETT and DEWITT C. JEWETT, Sand Spring, Iowa. Filed Oct. 27, 1886. Serial No. 217,348. (No model.)

Claim.—1. The combination, with the crank-shaft and the rake-bars, of the hangers journaled at their upper ends to the crank-shaft and pivotally connected at their lower ends with the rake-bars, substantially as set forth.

381,248.



2. The combinatin, with the rake-bar and the crank-shaft, of the swinging hanger interposed between the crank-shaft and rake-bar and supporting the latter, and the pitman connecting the crank-shaft with the cross-bar, substantially as described, and for the purpose set forth.

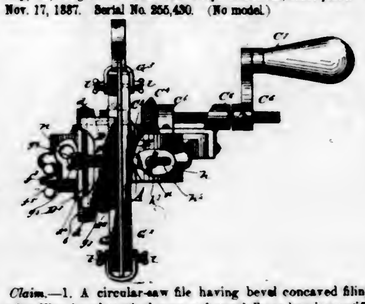
3. The combination, with the two sets of alternately-driven rake-bars and the crank-shaft having two oppositely-disposed cranks of greater length than the cranks composing the crank-shaft, of the swinging hangers connecting said rake-bars with the crank-shaft, and the pitmen connecting each of said oppositely-disposed cranks with the cross-bars, respectively, substantially as set forth.

4. The combination of the incline having elevated ways on each side, the cross-bars held to and working upon said ways, the two sets of alternately-driven rake-bars having the rake-bars of each set connected with one of the cross-bars, the crank-shaft having oppositely-disposed cranks at each end, the swinging hangers supporting said rake-bars from the crank-shaft, and the pitmen connecting each of said cranks with the cross-bars, substantially as set forth.

5. The combination, with the two cross-bars, the rake-bars, and the crank-shaft having two oppositely-disposed cranks of greater length than the remaining cranks composing the crank-shaft, of the pitmen connecting each of said oppositely-disposed cranks with the cross-bars, substantially as and for the purpose described.

6. The combination of the draft-frame having a standard, the axle, the incline fixedly secured upon the axle and having a depending link, the spring interposed between the standard and link, the ways, the cross-bars, the two sets of alternately-driven rake-bars, the crank-shaft having two oppositely-disposed cranks at each end, the swinging hangers, the pitmen between the cross-bars and cranks, the standards having lateral stops, and the pivoted links supporting the crank-shaft at their outer ends, substantially as set forth.

381,249. **SAW-FILING MACHINE.** DAVID W. JOHNS, Allegheny City, Pa., assignor of one-half to Joseph F. Belfour, same place. Filed Nov. 17, 1887. Serial No. 255,430. (No model.)



Claim.—1. A circular-saw file having bevel concaved filing-surfaces for filing bevel-toothed saws, substantially as herein specified.

2. In a saw-filing machine, the combination, with a rotary saw-file, A, provided with a feeding-cam in its edge, of a recessed frame, C, a stud, B, inserted in the frame and adapted to support the file, and a saw-guide, 3, formed of the lower part, D^2, provided with ears *d* and the boss 4, the upper part, D, pivoted between the ears *d* and provided with a longitudinal groove, d^2, and the gage E, adjustably secured to the frame C, substantially as specified.

3. The combination, with the boss 4 of the saw-guide 3, of the bar d^3 and the clamping-bolt f^3, substantially as specified.

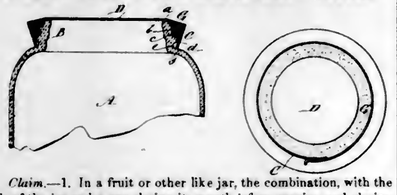
4. In a saw-filing machine, the combination, with the saw-guide 3, of the saw-carrier formed of the bars G G^2 and clamps G^3, substantially as specified.

5. In a saw-filing machine, the combination, with the frame C, provided with the socket *n*, of the standard H, the slotted bracket H^3, and the arbor H^2, substantially as specified.

6. In a saw-filing machine, the combination, with the saw-guide 3, of the bar D^4, bent twice at right angles and carrying adjustable saw-guiding rollers *m*, substantially as specified.

7. In a saw-filing machine, the combination, with the rotary file A, provided with the adjustable feeding-cam A^2, of the bevel-wheel C^3, the bevel-pinion C^4, the shaft C^5, the crank C^7, adjustable on the shaft C^5, the frame C, and the supports for the rotary file A, the bevel-wheel C^3, and the shaft C^5, substantially as specified.

381,250. FRUIT-JAR. JOHN R. JONES and ROBERT JONES, Massillon, Ohio. Filed Feb. 14, 1888. Serial No. 264,024. (No model.)

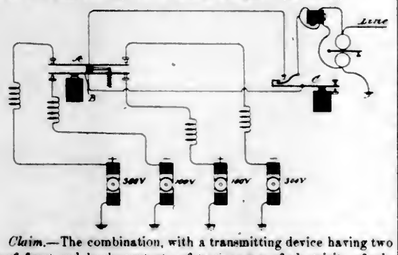


Claim.—1. In a fruit or other like jar, the combination, with the neck of the jar and a cap closing its mouth, of an opening and closing ring arranged outside of said neck and forming, in connection with the exterior of the neck, a surrounding groove adapted to hold a sealing composition, substantially as specified.

2. The combination, with the neck of the jar and a cap closing its mouth, of an outer opening and closing spring-ring arranged to form the outer wall of a sealing-groove surrounding the neck of the jar, essentially as described.

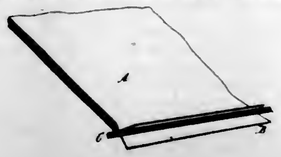
3. The jar provided with annular grooves and projections on the exterior of its neck, in combination with a cap closing the mouth of the latter, and an opening and closing ring arranged to form the outer wall of a sealing-groove around the outside of the neck, substantially as specified.

381,251. DYNAMO-TELEGRAPHY. FRANCIS W. JONES, New York, N. Y. Filed Nov. 11, 1887. Serial No. 254,936. (No model.)

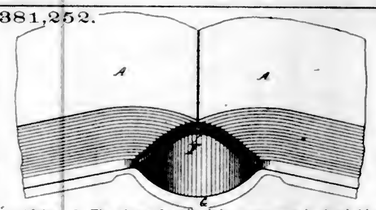


Claim.—The combination, with a transmitting device having two sets of front and back contacts, of two sources of electricity of substantially the same tension, but opposite polarity, whose connections with the circuit are governed, respectively, by one set of contacts, two other sources of current, also of opposite polarity, but of different tension from the first, similarly governed by the second set of contacts, and a second back and front contact-transmitter that in its normal position closes the connection for one set of contacts of the first transmitter, and when depressed breaks such connection and closes the connection for the other set, substantially as and for the purpose described.

381,252. BOOK-BINDING AND BOOK. WILL M. KINNARD, Dayton, Ohio. Filed Sept. 10, 1887. Serial No. 249,300. (No model.)



381,252.



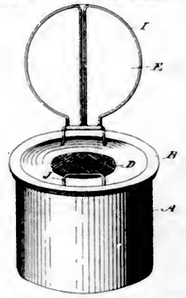
Claim.—1. The above-described improvement in book-binding, which consists in attaching the sections of the book to the back by means of an intervening compact round or oval body, to which the sections are attached by a flexible joint, substantially as and for the purpose described.

2. The above-described improvement in book-binding, which consists in stitching the sections to a strip of leather or book-muslin in which is wrapped a round or oval cord and binding said cord directly to the back, substantially as and in the manner described.

3. A book in which the sections are attached to a round or oval cord by a flexible joint and the cord attached securely to the back, substantially as and for the purpose specified.

4. In a book-binding, a round or oval cord intervening between the sections of the book and the back and attached to the sections by a flexible joint, substantially as and for the purpose described.

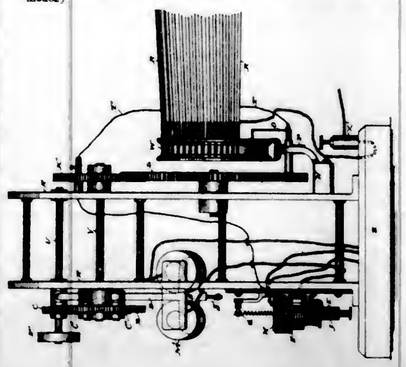
381,253. DRIP-CAN. HEDWIG L. KINPORTS, Annville, Pa. Filed Dec. 22, 1887. Serial No. 258,673. (No model.)



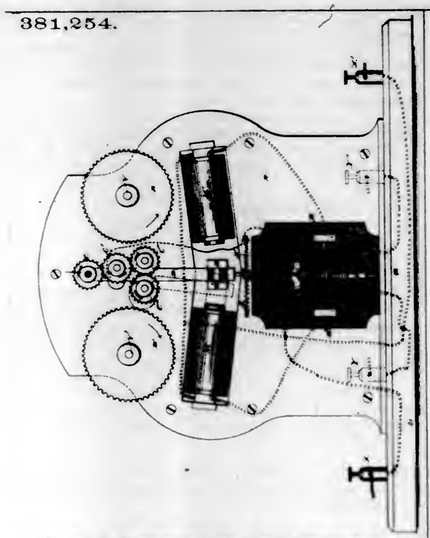
Claim.—1. In a drip-can, the combination, with a can, of a concave cover held on the mouth of the can and having a central aperture, and a self-opening lid pivoted on the said cover, substantially as shown and described.

2. In a drip-can, the combination, with a can, of a concave cover held on the mouth of the said can and having a central aperture, a screen covering the said central aperture, and a self-opening lid pivoted on the said cover, substantially as shown and described.

381,254. REGULATOR FOR ELECTRIC CURRENTS. EDWARD R. KNOWLES, Brooklyn, N. Y., assignor to the Mutual Electric Manufacturing Company, of New York. Filed Apr. 22, 1886. Serial No. 199,756. (No model.)



381,254.



Claim.—1. A commutator, one or more resistances connected therewith, a suitable brush, and electrical connections, combined with two magnets, the pendulous armature arranged between them and provided with pinions set in motion by any suitable prime mover, and gearing interposed between said pinions and the commutator to be engaged by one or the other of the pinions on the armature to rotate the commutator in one direction or its opposite to put more or less resistance into the main circuit as one or the other of the magnets is energized through fluctuations of the main current to be regulated, substantially as set forth.

2. The electro-magnets M M', a pendulous armature therefor, oppositely-rotating pinions carried by said armature, a main driving-pinion and an idler between them, and a local circuit in which the said magnets are arranged, combined with a reversible commutator, resistances thereon, and a main circuit for increasing or diminishing the resistance in the main circuit by fluctuations in the main current, substantially as set forth.

381,255. WHIFFLETREE ATTACHMENT. DAVID R. LAKIN, Eugene City, Oreg., assignor of one-half to William I. Vawter, same place. Filed Dec. 1, 1887. Serial No. 256,646. (No model.)



Claim.—1. The bar or doubletree band formed with a hole through it having a slot in its wall, in combination with the singletree-band having formed rigidly therewith a bolt provided with a lateral pin adapted to pass through the apertured band when the pin is in line with its slot and to pivotally lock the two bands together when turned out of line with the slot, substantially as described.

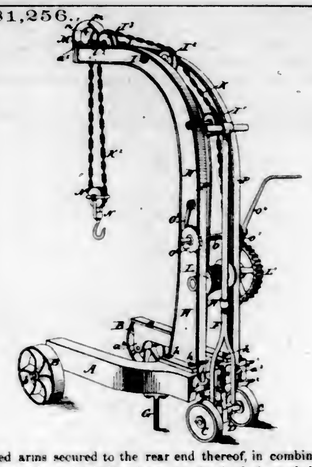
2. The bar or doubletree band formed with a boss or leaf on one face and a slotted aperture, in combination with the singletree-band provided with a bolt formed integrally therewith, having a lateral pin and a leaf below the band, whereby the two bands may be pivotally locked together and have a firm connection one with the other, substantially as described.

3. The combination of the bar or doubletree, formed with the hole through it, having a slot in its wall, the band to encircle said tree, and formed with a hole having a slot in its wall corresponding to that in the bar or tree, and the singletree-band provided with the bolt having the lateral pin to pass through the slots in the doubletree and its band when in line therewith and to pivotally lock the parts together when turned to an angle therewith, substantially as described.

381,256. CRANE. DAVID T. LANE, Franklin, Pa., assignor of one-half to D. I. Dale, same place. Filed Sept. 22, 1887. Serial No. 250,394. (No model.)

Claim.—1. In a traveling crane, the U-shaped bed-plate having

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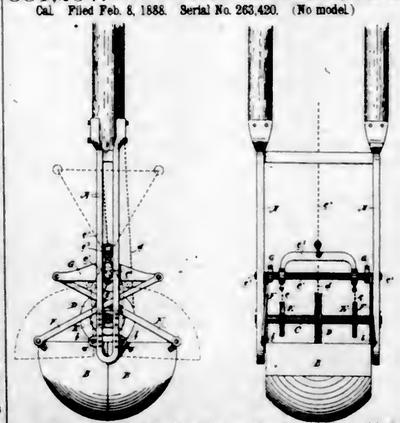
curved arms secured to the rear end thereof, in combination with a lifting-tackle and winding-drum, truck-wheels journaled upon stud-axles fixed to the forward end of the U-shaped bed-plate, and truck-wheels having a crank-axle pivotally connected with the rear end of said bed-plate, substantially as described.

2. In a traveling crane, the bed-plate having arms projecting upwardly therefrom, in combination with the lifting-tackle and winding-drum, truck-wheels journaled upon axles fixed to one end of the bed-plate, a crank-axle and truck-wheels pivoted to the opposite end of said bed-plate, and a handle secured to the crank-axle and adapted to raise or lower and to guide the frame in its movements, substantially as described.

3. In a traveling crane, the bed-plate having arms for supporting the load secured thereto, in combination with a lifting-tackle supported upon the arms, truck-wheels at one end of the bed-plate, a crank-axle swiveled at the other end of the bed-plate, a handle secured to the axle, and legs depending from the frame, substantially as described.

4. In a traveling crane, the combination of the bed-plate and the curved arms projecting upwardly and forwardly therefrom, with a beam carrying a sheave-pulley at its upper end and supported by the bed-plate at its lower end, and held between the upper and forward ends of the curved arms, and a lifting-tackle supported substantially as described.

381,257. DREDGER-DIPPER. MANLEY C. LAWTON, Staten Island, Cal. Filed Feb. 8, 1888. Serial No. 263,420. (No model.)

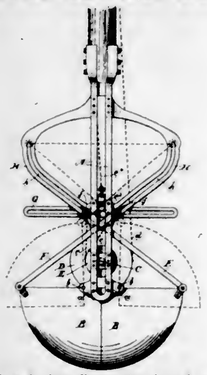


Claim.—1. In a dredger, the combination of the guide-frame, the cross-heads sliding therein, the pivoted jaws, and the links F, said links crossing each other and having their ends secured to the jaws and to the ends of the sliding cross-heads, whereby said jaws are operated, substantially as herein described.

2. In a dredger-dipper, the pivoted jaws, the sliding cross-shaft

with its lifting-chain, the rotary shaft with its larger sheave and smaller sheaves, and the oppositely-wound chains whereby the cross-shaft is made to move down, in combination with the cross-heads carried by the cross-shaft, and the crossing links attached to the jaws of the dipper and to the ends of the cross-heads, substantially as herein described.

381,258. DREDGER-DIPPER. MANLEY C. LAWTON, Staten Island, Cal. Filed Feb. 8, 1888. Serial No. 263,421. (No model.)



Claim.—1. In a dredger-dipper, the pivoted opposing jaws, in combination with the crossing links attached to said jaws, the sliding cross-heads, and a sliding or varying connection between said cross-heads and the upper ends of the links, substantially as herein described.

2. In a dredger-dipper, the pivoted opposing jaws, in combination with the crossing links attached to said jaws, the sliding longitudinally-slotted cross-heads, and pins or studs by which the upper ends of the links are connected with and slide in the slotted cross-heads, substantially as herein described.

3. In a dredger-dipper, the pivoted opposing jaws, in combination with the crossing links attached to said jaws, the sliding longitudinally-slotted cross-heads, the fixed slotted guide-brackets, and pins or studs in the upper ends of the links and passing through the slots in the guide-brackets and in the cross-heads, substantially as herein described.

4. In a dredger-dipper, the pivoted opposing jaws, in combination with the crossing links attached to said jaws, the sliding longitudinally-slotted cross-heads, the fixed guide-brackets having slots with approximately vertical outer ends and thence curving inwardly, and pins or studs in the upper ends of the links and passing through the slots in the guide-brackets and in the cross-heads, substantially as herein described.

5. In a dredger-dipper, the pivoted opposing jaws, the sliding cross-shaft with its lifting-chain, the rotary shaft having the large sheave with chain *d*, and the smaller sheaves with chains *e*, in combination with the crossing links attached to the jaws, the sliding slotted cross-heads carried by the cross-shaft, and the pins or studs in the tops of the links, and with which the chains *e* are connected, said pins or studs passing through the slotted cross-heads, substantially as herein described.

6. In a dredger-dipper, the combination of the pivoted opposing jaws, the sliding cross-shaft with its lifting-chain, the crossing links by which the jaws are operated, the sliding slotted cross-heads carried by the cross-shaft, the fixed slotted guide-brackets, and the pins or studs connecting the links with the slotted brackets and with the slotted cross-heads, the rotary shaft having the larger sheave and the smaller sheaves, the chain on the larger sheave, and the oppositely-wound chains on the smaller sheaves connected with the studs or pins of the links, all arranged and adapted to operate substantially as herein described.

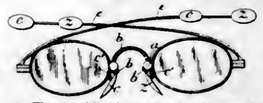
381,259. SHOE. CHARLES T. LEE, Boston, Mass. Filed May 17, 1887. Serial No. 238,452. (No specimens.)



Claim.—1. As an improved article of manufacture, a shoe, slipper, or other article of foot-wear made wholly or in part from the fibrous inner lining of the seed-pod of the vine or plant known as the *Luffa acutangula*, as specified.

2. As an improved article of manufacture, the herein-described foot-covering, consisting of an upper made from the fibrous inner lining of the seed-pod of the *Luffa acutangula* and a leather sole secured to said upper, as specified.

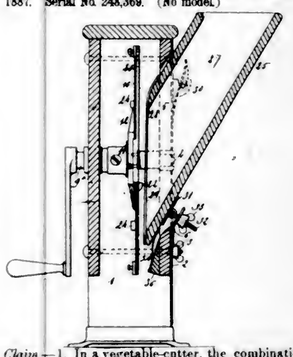
381,260. ELECTRO-MAGNETIC SPECTACLES. JOHN T. LEIGHTON, Edinburgh, County of Edinburgh, Scotland. Filed July 16, 1887. Serial No. 244,545. (No model.) Patented in England Sept. 2, 1886, No. 11,179.



Claim.—1. The combination, with the frame of spectacles or eyeglasses, of the bridge *a*, composed of magnetic metal wound with the insulated electrical conductor *b*, the ends of the said bridge connected with the studs of insulating material, *c'*, the metallic plates c z, secured to said studs *c'*, each of said plates c z electrically connected with the electrical conductor *b*, substantially as shown and described.

2. The combination, with the frame of spectacles or eyeglasses, of the electrical terminals secured thereto and insulated one from the other, each of said terminals adapted to be electrically connected with a source of electricity, substantially as shown and described.

381,261. VEGETABLE-CUTTER. ANTHONY LETHERT, Jordan, Minn., assignor to himself and Michael Geis, same place. Filed Aug. 31, 1887. Serial No. 248,369. (No model.)



Claim.—1. In a vegetable-cutter, the combination, with a frame having an apertured front and a slotted angular plate below said aperture, of a feed-box provided with a spring resting upon the inner side of the front below the aperture and a screw pivoted at the base of the feed-box and carrying a thumb-nut adapted to bear upon said slotted angular plate, said feed-box being connected to the frame at the top, substantially as specified.

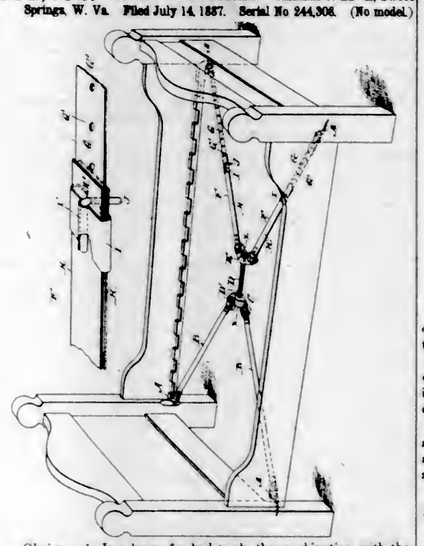
2. In a vegetable-cutter, the combination, with a frame having an apertured front and a slotted angular plate below said aperture, of a feed-box provided with a spring resting upon the inner side of the front below the aperture and with pins resting or fitting in slotted ears held upon the said front, a spring secured to said front and holding said pins in said ears, and a screw pivoted at the base of the front of said box and carrying a thumb-nut adapted to bear upon said slotted angular plate, substantially as set forth.

3. In a vegetable-cutter, the combination, with a frame having an apertured front and a slotted angular plate held below said aperture, a spindle journaled in said frame, and a revoluble disk keyed upon said spindle, carrying knives, of a feed-box adapted for insertion in the aperture of said front, provided with a spring engaging the inner side of the front below the aperture, and a screw pivoted at the base carrying a thumb-nut adapted to engage the said slotted angular plate at the top.

4. In a vegetable-cutter, the knife-carrying disk provided adjacently to one set of its knives or cutters with a series of spaced apertures below the cutting-edges of said knives or cutters, a grooved projection between the apertures and the knives, additional cutters projecting through said apertures, a plate carrying said cutters and held in said grooved projection, and buttons applied to said disk and engaging said plates, substantially as set forth.

5. In a vegetable-cutter, the combination, with a frame having a detachable face, a spindle journaled in said frame, and a feeder detachably and adjustably secured to the frame, of a disk keyed upon the shaft, provided with a hub, 11, integral with its rear side, recesses 13, blocks 14, spanning said recesses at the outer ends, knives held in said recesses, adjusted by set-screws 15 and 16, a series of spaced apertures, 19, below the cutting-edges of the knives, a grooved projection between the apertures and the knives, cutters 22, projecting through said apertures, a plate, 21, carrying said cutters, held in said grooved projections, and buttons 24, engaging said plates, substantially as shown and described.

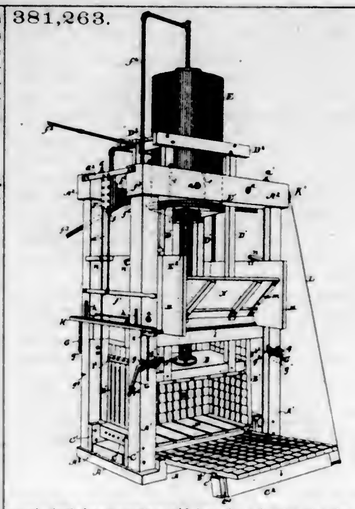
381,262. BRACE FOR BEDSTEADS. CHARLES P. LEWIS, Sweet Springs, W. Va. Filed July 14, 1887. Serial No. 244,308. (No model.)



Claim.—1. In a brace for bedsteads, the combination, with the bands F, having a slide or ferrule, I, thereon provided with the longitudinal groove I', of the apertured band G, extending between the bands H and the separate and independent angle-pin J, the vertical arm of which is passed through apertures in the different bands, and the horizontal arm held in the groove I', substantially as set forth.

2. The combination, with a bedstead having the hooks A at its four inner corners, of the bands B B, connected to two of the hooks, the longitudinally-apertured head C, secured to the inner ends of said straps, the bands F, formed of the separate and independent straps G H, a longitudinally-grooved ferrule on the straps H, and the angle-pins J, over the horizontal arms of which the said ferrule is slid, the nut E, having a screw-threaded aperture, and the bolt D, turning freely in the head C, engaging the nut and formed with the intermediate squared part, D', substantially as set forth.

381,263. BALING-PRESS. WALTER J. F. LIDDELL, Charlotte, N. C., assignor of one-half to Walter S. Liddell, same place. Filed Dec. 13, 1887. Serial No. 257,799. (No model.)



Claim.—1. The combination, with the main frame, of a sliding frame connected with and guiding the platen, a steam-cylinder located upon said main frame for actuating the platen and also serving as a guide or means for steadying the movements of said sliding frame, substantially as described.

2. The combination, with the main frame, of a steam-cylinder located above said frame, an inner frame surrounding and sliding upon said cylinder and guiding the press-platen, and a suitable valve and connections for admitting steam to said cylinder to drive the piston thereof in either direction, for the purpose and substantially as described.

3. A press-chamber door composed of serrated slats having their adjacent faces recessed or cut out for a portion of their length, substantially as and for the purpose described.

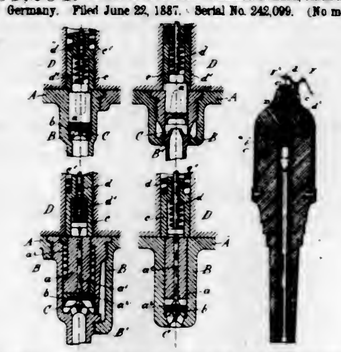
4. A press-chamber the side walls of which are hinged at their bases to the frame of the press and each composed of serrated slats provided on their adjacent faces with recesses, for the purpose and substantially as described.

5. The doors of the press-chamber, in combination with clamps for holding said doors closed, bars for engaging said clamps, and a crank-shaft for operating said bars for releasing the clamps, substantially as described.

6. The hinged doors of a press-chamber, in combination with pivoted clamps for holding said doors closed, and a pivoted clamp-holding bar by which said clamps are held to their work and released when desired, substantially as described.

7. The combination, with the doors of a press, of pivoted clamps, a clamp-holding bar, and a crank-shaft provided with a lever for actuating it and thereby operating the clamp-holder bar, substantially as described.

381,264. PERCUSSION-FUSE. WILHELM LORENZ, Carlsruhe, Baden, Germany. Filed June 22, 1887. Serial No. 242,099. (No model.)



Claim.—1. In a primer for cartridges, the cartridge-case A, anvil C, cap *b*, resting on said anvil, and reaction-plug *a*, sliding within said cartridge-case behind said cap, in combination with the breech-piece D, arranged behind and in alignment with the cartridge-case, the guide-case c, sliding within said breech-piece, the strong spring *c'*, forcing said guide-case forward, the striking-bolt *d*, sliding within said guide-case, and the weak spring *d'*, forcing said firing-pin forward, as and for the purpose set forth.

2. In a primer for cartridges, the cartridge-case A, anvil C, cap *b*, resting on said anvil, and reaction-plug *a*, sliding within said cartridge-case behind said cap, in combination with the breech-piece D, arranged behind and in alignment with the cartridge-case, the guide-case *c*, sliding within said breech-piece, said guide-case being of larger diameter than said reaction-plug, the strong spring *c'*, forcing said guide-case forward, the stop c^2, limiting such forward movement, the striking-bolt *d*, sliding within said guide-case, said striking-bolt being smaller in diameter than said reaction-plug, and the weak spring *d'*, forcing said firing-pin forward, as and for the purpose set forth.

3. In a primer for cartridges, the cartridge-case A, anvil C, cap

b, resting on said anvil, longitudinally-perforated reaction-plug *a*, sliding within said cartridge-case, and firing-pin *a'*, sliding within the perforation in said reaction-plug, in combination with a breech-piece, D, arranged behind and in alignment with the cartridge-case, a spring-actuated guide-case, *c*, therein, an independently spring-actuated striking-bolt, *d*, within said guide-case, and means for tripping said striking-bolt and thereby exploding the cap, substantially as described.

4. In a primer for cartridges, the cartridge-case A, anvil C, cap *b*, resting on said anvil, internally-recessed and longitudinally-perforated reaction-plug *a*, sliding within said cartridge-case, firing-pin *a'*, sliding within the perforation in said reaction-plug, and spring a^5, disposed in the recess in said reaction-plug and operating to draw said firing-pin back within said plug, in combination with a breech-piece, D, arranged behind and in alignment with the cartridge-case, a spring-actuated guide-case, *c*, therein, an independently spring-actuated striking-bolt, *d*, within said guide-case, and means for tripping said striking-bolt and thereby exploding the cap, substantially as described.

5. In a primer for cartridges, the cartridge-case A, anvil C, cap *b*, resting on said anvil, reaction-plug *a*, sliding within said case, and spring a^5, for pressing said plug gently against the back of the cap, in combination with a breech-piece, D, arranged behind and in alignment with the cartridge-case, a spring-actuated guide-case, *c*, therein, an independently spring-actuated striking-bolt, *d*, within said guide-case, and means for tripping said striking-bolt and thereby exploding the cap, substantially as described.

381,265. **BAG-FASTENER.** HENRY A. MARTENS, St. Joseph, Dak. Filed Jan. 17, 1888. Serial No. 261,020. (No model.)



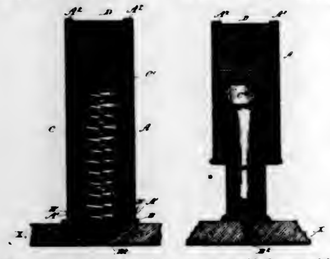
Claim.—1. The combination, in a bag-fastener, of two clamps hinged together, one clamp being formed with a toothed arm and the other being provided with a spring-bolt adapted to engage the said toothed arm, substantially as shown and described.

2. The clamp A, provided in a pocket thereof with a spring-bolt, F, in combination with the clamp B, hinged to the clamp A, and formed with a projecting toothed arm, E, for engagement with the bolt F, both clamps being formed with the headed projections C, to aid in clamping the device on a bag, substantially as shown and described.

3. The clamp A, provided in a pocket thereof with a spring-bolt, F, and formed with a longitudinal groove, H, in the inner face, in combination with the clamp B, curved on its inner face to correspond with the groove H, and formed with a toothed arm, E, for engagement with the bolt F, substantially as shown and described.

4. The clamp A, formed with a projection, C, the said projection being slotted at its base, as at *a*, the spring-bolt F in a pocket in said clamp carrying the stud *f*, in combination with the clamp B, also having a projection, C, and formed with the toothed arm E, substantially as shown and described.

381,266. **DENTIST'S DISK-HOLDER.** WILLIAM B. MILLER, Altoona, Pa. Filed Aug. 31, 1887. Serial No. 248,382. (No model.)



Claim.—1. A device for the purpose specified, comprising a cylindrical body portion provided with clips at its upper end, a removable bottom, a spring seated therein, and a follower-plate mounted on the spring, substantially as specified.

2. In combination with a support, a disk-holding device consisting of a bottom removably secured to said support, and a holder mounted on the bottom and provided with clips at its upper end, substantially as specified.

3. The combination, with the base X, of the bottom B, secured thereto by means of the screw B^3, provided with the lugs B', the holder A, having the slots A', mounted on said bottom and adapted to receive the lugs B, and provided with the clips A^3, and of the spring C and follower-plate C', substantially as specified.

381,267. **THILL-COUPLING.** AUGUSTUS F. MOLTKEN, Oakland, Cal. Filed Oct. 5, 1887. Serial No. 251,566. (No model.)



Claim.—1. In a thill-coupling, the combination, with the bearing-plate secured to the axle, having the socket a^2, of a shaft-iron having the cross-pin *d*, the latch pivoted thereon within the socketed bearing-plate, and a spring having one arm bearing against the cross-pin and forcing said latch to its seat in the socket, substantially as described.

2. In a thill-coupling, the combination of the bearing-plate secured to the axle and having a socket with recesses at one end and shoulders at the other, a shaft-iron having the cross-pin *d*, a latch within the socketed bearing-plate and pivoted on said pin, a spring bearing against said pin and holding the latch in its seat, and a lever pivoted in the forward end of the bearing-plate and having its lower portion engaging the forward edge of the latch, whereby the latch may be thrown from its engagement with the shoulders of the socket, substantially as described.

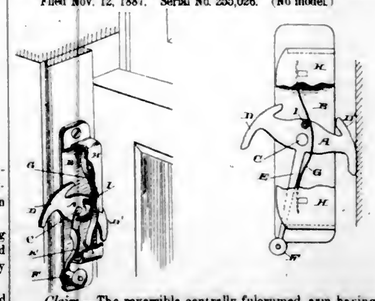
3. In a thill-coupling, a bearing-plate secured to the axle, and having a socket with recesses at one end and shoulders at the other, in combination with a shaft-iron having a forked rear end, a transverse pivot-pin between the forks of the shaft-iron for fitting in the recesses of the socketed bearing-piece, and a latch pivoted on the pin for fitting in the socketed bearing-piece and engaging with its forward edge the shoulders of said socket, substantially as herein described.

4. In a thill-coupling, a bearing-plate secured to the axle and having a socket with recesses at one end and shoulders at the other, in combination with a shaft-iron having a pivot-pin in its rear end for fitting the recesses of the socket, a latch-plate pivoted on the pin for fitting in the socket and engaging with its forward edge the shoulders in said socket, and the spring seated in the socketed bearing-plate for holding the latch forward to its engagement, substantially as herein described.

5. In a thill-coupling, a bearing-plate secured to the axle and having a socket with recesses at one end and shoulders at the other, in combination with the shaft-iron having the pivot-pin for fitting the recesses of the socket, a latch pivoted on the pin for fitting the socket and engaging with its forward edge the shoulders therein, a spring seated in the socket for holding the latch to its engagement, and a lever pivoted to the forward end of the bearing-plate and engaging with its lower end the forward edge of the latch, whereby the latch may be thrown from its engagement with the shoulders of the socket, substantially as herein described.

6. In a thill-coupling, the bearing-plate for receiving the shaft-connection, and having a rearwardly-extending slotted yoke or shank provided with teeth on its under surface, in combination with a clip fitting over the axle and having its bolt ends passing down through the slots of the yoke or shank, the nut for holding the clip, and a toothed washer held by one of the nuts to the toothed under surface of the yoke or shank, whereby the bolt end of the clip may be adjusted and held to different positions, substantially as herein described.

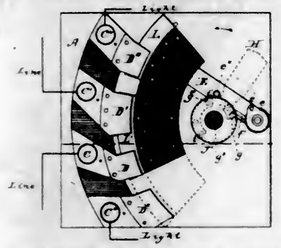
381,268. **SASH-HOLDER.** FRANK B. MOORE, San Francisco, Cal. Filed Nov. 12, 1887. Serial No. 255,026. (No model.)



Claim.—The reversible centrally-fulcrumed arm having the segments upon its opposite ends, a lever attached to it, by which it may be turned, and the spring and anti-frictional stud moving over the

spring, so as to hold the device in either position, substantially as herein described.

381,269. **ELECTRIC-CONTACT CHANGER.** PRESTON C. MORSE, Natick, Mass. Filed Sept. 1, 1887. Serial No. 248,499. (No model.)



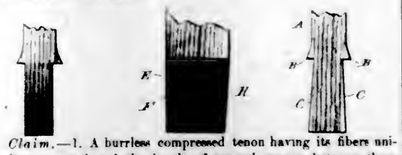
Claim.—1. An escape-wheel provided with a cylindrical surface between the points *i i'*, which cylindrical surface is adapted to engage the cam-pin *e''* upon the radial arm E, and which escape-wheel G is also provided with the pins *g g''*, adapted to engage the tail *f''* of the torsion-spring F, in combination with the radial arm E, provided with the cam-pin *e''*, and in further combination with the torsion-spring F, substantially as and for the purposes described.

2. As a means of actuating the automatic making and breaking of electrical contacts, the combination of the arc and line binding-posts C C' C'' C''' and their contact-plates D D' D'' D''', holding fixed relations with each other, the radial arm E, carrying the insulated contact-plates L L', substantially as described, which radial arm E is provided with the cam-pin *e''*, and the torsion-spring F, one end of which torsion-spring is held in fixed relation with said radial arm E and the other end of which is moved to the right or left, for the purpose of tension in one direction or the other by means of the pins *g g''* on the escape-weel G, and with said escape-wheel G formed, as described, to engage said cam-pin *e''* during a portion of its revolution and permit its passage from side to side at other times under the influence of the spring F, substantially as and for the purposes described.

3. In a contact-changer for electric lines and loops, the arrangement of the contact-plates D D' D'' D''' in continuous geometric arc upon the same side of a common center, in combination with the metallic plates L L', also arranged in continuous arc around the same common center and mounted upon the radial arm E, pivoted at the same common center and actuated by a spring alternately in one or the other direction, in combination with an escape-wheel, G, pivoted away from a common center, but upon a radius of the same circle, and provided with the cam-pins *g* and *g''*, adapted to engage on the one side or the other the tail *f''* of the spring F, substantially as and for the purposes described.

4. The escape-wheel G, formed upon its edge with a segmental cylindrical bearing-surface, as shown, extended from *i* to *i'*, and provided with the handle H, and furnished with abutments for the spring F, adapted to engage the same in either direction, substantially as and for the purposes described.

381,270. **SPOKE-TENON.** WILLIAM F. MORTON, New Haven, Conn., assignor of one-half to George F. Holcomb, H. Sherman Holcomb, and Hobart B. Bigelow, all of same place. Filed Apr. 23, 1887. Serial No. 235,836. (No model.)

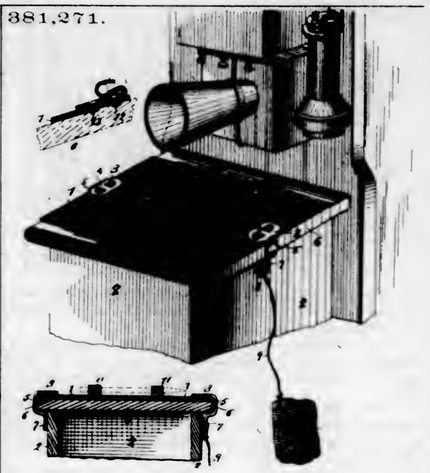


Claim.—1. A burrless compressed tenon having its fibers uniformly compacted and the bonds of natural process between them preserved unbroken by simultaneous edgewise and sidewise compression, substantially as set forth.

2. A burrless compressed tenon having straight sides, a straight face, a beveled back, and its fibers uniformly compacted, and the bonds of natural process between them preserved unbroken by simultaneous edgewise and sidewise compression, substantially as set forth.

3. A tenon-blank having both of its sides and both of its edges beveled, so as to gradually widen it both sidewise and edgewise from its inner to its outer end, substantially as set forth.

381,271. **SLATE FOR TELEPHONE-DESKS.** EMIL T. MUELLER, La Crosse, Wis. Filed Jan. 23, 1888. Serial No. 262,239. (No model.)

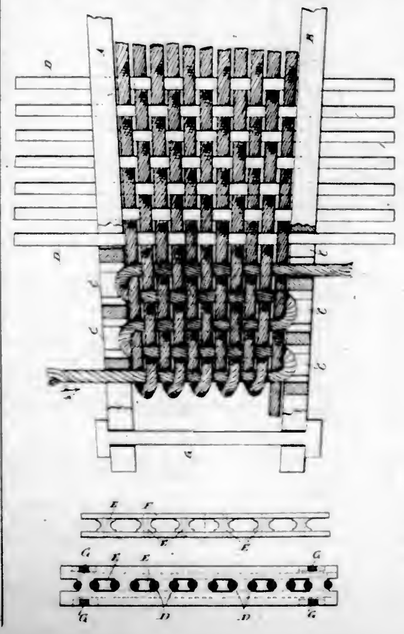


Claim.—1. A telephone silicate slate consisting of a sheet of suitable material covered with a slate composition and having clips formed with bent arms adapted to engage the edges of the top of a desk, substantially as shown and described.

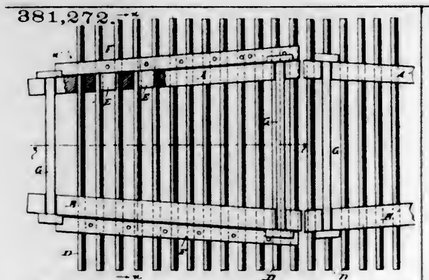
2. A telephone silicate slate consisting of a sheet of suitable material covered with a slate composition and having retaining-clips adapted to clamp the edges of a desk, and hooks to hold a slate or lead pencil, substantially as described.

3. A telephone silicate slate consisting of slate 1, having clips 3 secured thereto by bent lips 4, and pencil-retaining hooks 11 secured thereto by bent lips 12, substantially as described.

381,272. **FRAME FOR USE IN THE MANUFACTURE OF OIL-PRESS MATS.** MARCUS T. MURPHY and JUNIUS A. MURPHY, New Orleans, La. Filed Apr. 14, 1887. Serial No. 234,782. (No model.)



381,272.



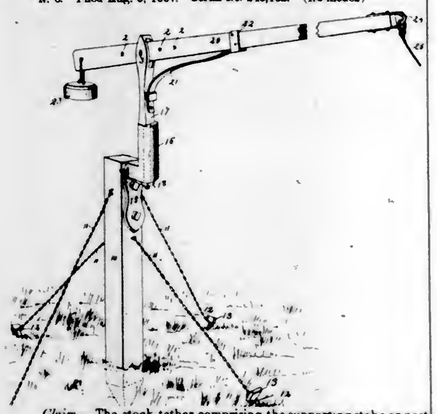
Claim.—1. In a frame for use in the manufacture of oil-press mats, the combination, with the mat-plates, of pusher-bars held on said mat-plates, substantially as shown and described.

2. In a frame for use in the manufacture of oil-press mats, the combination, with the mat-plates and woof-rods, of pusher-bars held against the outside of said mat-plates, substantially as shown and described.

3. In a frame for use in the manufacture of oil-press mats, the combination, with the mat-plates having slots, of pusher-bars provided with lugs fitting into said slots, so as to leave space for the woof-rods, substantially as shown and described.

4. In a frame for use in the manufacture of oil-press mats, the combination, with the mat-plates, each having slots, of pusher-bars resting against the outside of said mat-plates and provided with lugs projecting inward from said pusher-bars into said slots in the mat-plates, and woof-rods held in openings between the mat-plates and said lugs, substantially as shown and described.

381,273. STOCK-TETHER. WILLIAM OVERAKER, Hillsborough, N. C. Filed Aug. 5, 1887. Serial No. 246,182. (No model.)



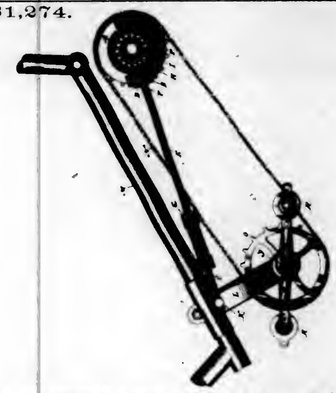
Claim.—The stock-tether comprising the supporting stake or post braced in position by chains or ropes connected to said post or stake and to pegs driven into the ground, the bracket fixed or bolted to the stake or post and provided with an offset having a tubular socket, the standard having a shank let into and held in said socket, the pivoted and adjustable beam extending through a slot in said standard and having applied to its outer free end a shackle to which is connected the tie-rope, and a spring connected at one end to said standard and having at its opposite end a loop through which passes the said beam, substantially as set forth.

381,274. VELOCIPEDE. ALBERT H. OVERMAN, Newton, assignor to the Overman Wheel Company, Boston, Mass. Filed Sept. 8, 1887. Serial No. 249,064. (No model.)

Claim.—1. In a velocipede, a brace consisting of a rod and a ball-bearing directly connected with one end thereof and situated between the main axle and the crank-axle of the vehicle, substantially as set forth.

2. In a velocipede, a brace consisting of an adjustable rod and a ball-bearing located at one end thereof and situated between the main axle and the crank-axle of the vehicle, substantially as set forth.

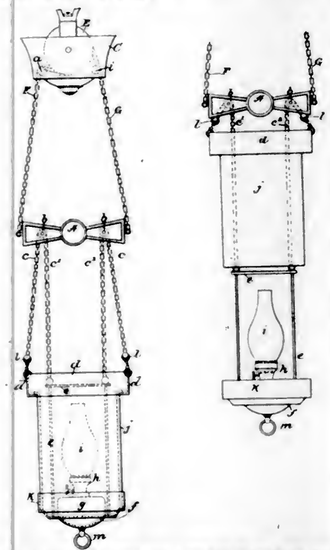
381,274.



3. In a velocipede, a brace consisting of a rod and a ball-bearing pivoted to one of its ends, such brace being interposed between the main axle and the crank-axle of the vehicle, substantially as set forth.

4. In a velocipede, a brace consisting of a sectional rod, including a threaded sleeve for adjusting it, and a ball-bearing located at one end of such rod, the brace being interposed between the main axle and the driving-axle of the vehicle, substantially as set forth.

381,275. LAMP-FIXTURE. DEXTER W. PARKER, Meriden, Conn., assignor to the Charles Parker Company, same place. Filed Dec. 8, 1885. Serial No. 185,032. (No model.)

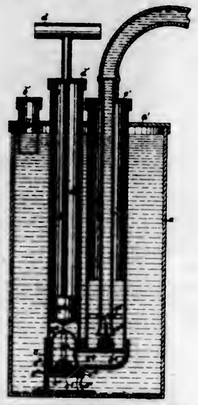


Claim.—1. In combination with a suitable spring-drum device for properly counterbalancing the entire weight of the suspended parts, a suitable cross-bar or frame-like device, A, suspended from said spring-drum device by a double run of chains or cords, a pair of suspension-chains depending from said cross-bar in the manner specified, a globe or shade suspended from one set of the ends of said pair of chains, and a lamp-holder adapted to support the lamp with its burner and chimney suspended from the other set of ends of said pair of chains, the whole arranged and operating together in substantially the manner and for the purpose hereinbefore set forth.

2. In combination with the cross-bar A and a lamp-frame and globe-holder suspended therefrom, so as to be relatively adjustable, as set forth, a set of suspender or supporter chains or cords, F and G,

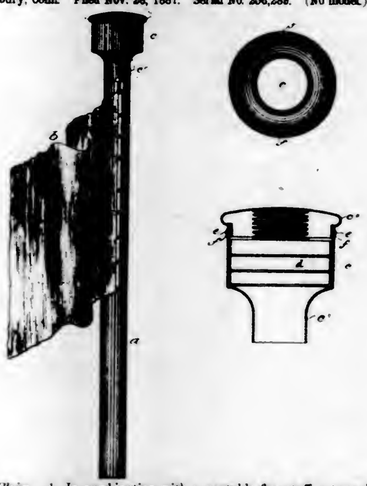
and a spring-drum supporter, E, the whole arranged and operating together substantially as and for the purpose hereinbefore described.

381,276. PORTABLE FIRE-EXTINGUISHER. EDWARD K. PARKER, Randolph, Mass. Filed June 9, 1887. Serial No. 240,741. (No model.)



Claim.—In a pump or fire-extinguisher, the valve-case *c*, having the internal annular groove, c^7, in combination with the improved removable valve-cage composed of two or more arched spring-bails, c^4 c^4, secured together in their upper ends, and having outwardly-projecting lips c^5 c^5 in their lower ends adapted to enter and rest within said annular groove c^7, as and for the purpose set forth.

381,277. TORPEDO-SIGNAL HOLDER. ROBERT J. PATTON, Waterbury, Conn. Filed Nov. 28, 1887. Serial No. 256,289. (No model.)



Claim.—1. In combination with a portable flag-staff, a torpedo-carrier having a removable cover, all substantially as described.

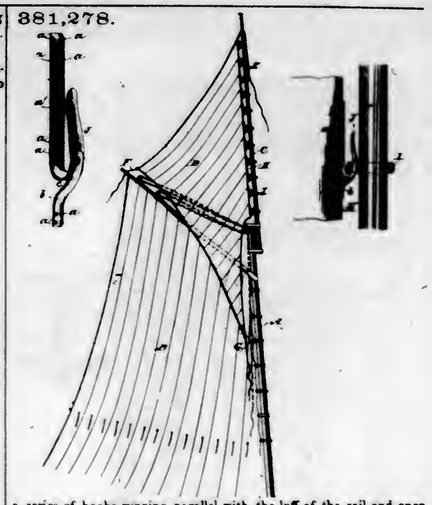
2. In combination with a portable flag-staff, *a*, a torpedo-carrier, *c*, secured thereto by its shank *c'*, the said holder having a removable cap or cover, c^3, with a projecting pin adapted to engage an angular slot in the body of the holder, all substantially as described.

3. In combination with the portable flag-staff *a*, the holder *c*, secured thereto, and the cover c^3, removably secured to the holder and bearing a spring projecting within the body of the holder, all substantially as described.

381,278. RIG AND GEAR FOR GAFF-TOPSAILS. CHARLES A. POST, New York, N. Y. Filed Aug. 2, 1887. Serial No. 245,910. (No model.)

Claim.—1. The described improvement in top-sails, consisting in

381,278.



a series of hooks running parallel with the luff of the sail and open at their upper ends, permanently attached to the luff of the sail adjacent to the top-mast and removable therewith, as and for the purposes set forth.

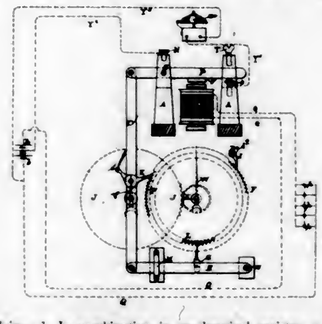
2. The described combination in rig for top-sails, consisting of hooks permanently attached to the luff of the top-sail and hoops constructed to slide upon the mast or its equivalent, the said hooks being detachably engaged with said hoops, substantially as set forth.

3. As a new article of manufacture, a hook, J, having a shank, *a'*, running parallel with the hook and adapted to rest against the luff of the sail, provided with holes *a a*, substantially as set forth.

4. As a new article of manufacture, a hook, J, having a concaved shank to fit the luff-rope, provided with the holes *a a*, and a guard at the bottom to prevent fouling, substantially as set forth.

5. As a new article of manufacture, a hook, J, having a shank, *a'*, adapted to be fastened to the luff of a sail, and a guard, *b*, substantially as and for the purposes set forth.

381,279. ELECTRICAL REGISTERING DEVICE. SAMUEL M. FREEMAN, Newark, N. J. Filed May 27, 1886. Serial No. 203,354. (No model.)

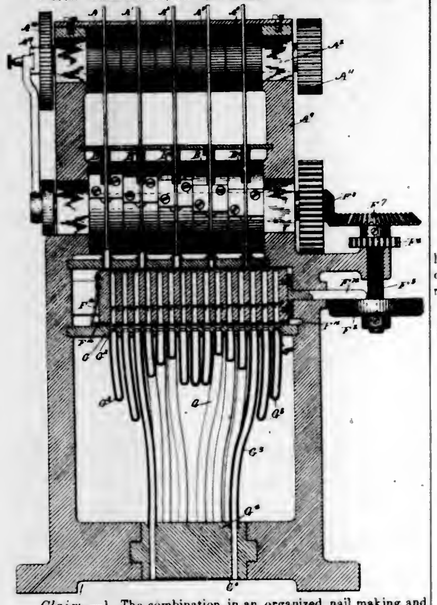


Claim.—1. In combination, in an electrical register, a ratchet-wheel having two series of teeth, the teeth of one series pointing in the reverse direction from the other, a connecting-rod, D, a pawl arranged thereon, a lever, P, arranged to give movement to said connecting-rod, an electric device for actuating the lever P, a lever, H, connected to the lever P by said rod D, a dial, and index-hands, said parts being arranged and adapted to operate substantially as set forth.

2. A registering mechanism consisting of an electro-magnet, an armature-lever, a rod, D, pivoted to said lever and carrying a pivoted pawl, a rod, H, provided with a tooth, G, and to which the pawl-carrying rod is pivoted, and a ratchet-wheel having series L and F of teeth, the teeth of one series pointing reversely from those of the other series, substantially as set forth.

381,280. MACHINE FOR MAKING, DISTRIBUTING, AND DRIVING NAILS.

FREEBORN F. RAYMOND, 2d, Newton, Mass. Filed Dec. 9 1887. Serial No. 257,367. (No model.)



Claim.—1. The combination, in an organized nail making and distributing machine, of devices for feeding a number of wires, devices for simultaneously forming nails from the ends thereof, and the throats or passages E, through which the formed nails are fed, and the movable carrier-block F, substantially as described.

2. The combination, in an organized nail making and distributing machine, of devices for feeding a number of wires, devices for simultaneously forming nails from the ends thereof, and the throats or passages E, through which the formed nails are fed, the movable carrier-block F, and the distributer G, substantially as described.

3. The combination, in an organized nail making and distributing machine, of devices for feeding a number of wires, devices for simultaneously forming nails from the ends thereof, the throats or passages E, through which the formed nails are fed, the movable carrier-block F, the distributer G, and the nail-carrier H, substantially as described.

4. The combination, in an organized nail making and distributing machine, of devices for feeding a number of wires, devices for simultaneously forming nails from the ends thereof, the throats or passages E, through which the formed nails are fed, the movable carrier-block F, the distributer G, the nail-carrier H, and the nail-driving devices, substantially as described.

5. The combination of a series of wire-feeding devices simultaneously or substantially simultaneously actuated, a series of nail-making devices to be simultaneously or substantially simultaneously actuated, the throats E, receiving-block F, and its operating-cam F^3, substantially as described.

6. The combination, in a nail-distributing machine, of the block F, having the nail-receiving holes F^9, F^{10}, and F^{11}, and its operating-cam F^3, substantially as described.

7. The combination of the series of point-forming and nail-severing rolls B^8 B^7, their shafts B^9 B^{10}, the cam-shaft F^3, connected with the shaft B^9, the cam F^3, and a nail-receiving block, F, connected with said cam, substantially as described.

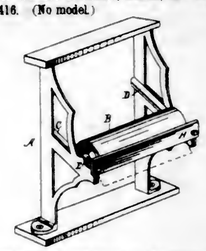
8. The combination of a series of wire-feeding devices adapted to feed a number of wires simultaneously, or substantially so, a series of nail-forming devices adapted to simultaneously or substantially simultaneously form a group of nails from the ends of said wires, a nail-receiving block having holes which receive the formed nails, and a nail-distributer, substantially as described.

9. The combination of the nail-receiving block F, its cam F^3, and the nail-distributer G, substantially as described.

10. The series of nail-pointing rolls set upon their respective shafts out of a common horizontal line, whereby they are caused to act progressively or successively, as and for the purposes described.

381,281. PAPER HOLDER AND CUTTER.

JOHN REYNOLDS, Chicago, assignor to Wallace R. Gilbert, Austin, Ill. Filed Sept. 12, 1887. Serial No. 249,416. (No model.)



Claim.—A paper-holder consisting of a frame with a perpendicular back, inclined supports C D, extending from the perpendicular part of the frame, forming an oblique angle therewith, cutting-knife H, and roller B, constructed substantially as shown.

381,282. CISTERN-CLAMP FASTENER.

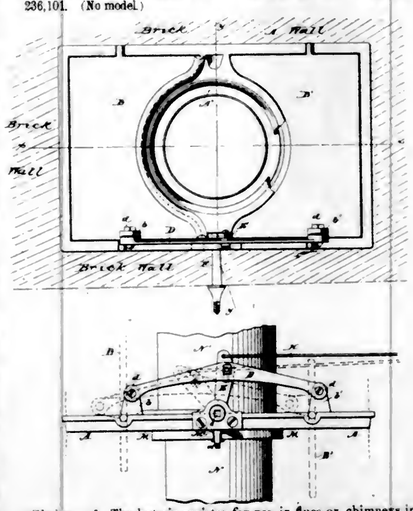
WILLIAM A. RIGGS, Jr., New Orleans, La. Filed Oct. 6, 1887. Serial No. 251,603. (No model.)



Claim.—The combination of the hoop A, having perforated flanges B, a bolt, C, having heads D, and springs E, substantially as set forth.

381,283. HOT-AIR REGISTER FOR FIRE-PLACE HEATERS.

WILLIAM F. ROSSMAN, Hudson, N. Y. Filed Apr. 25, 1887. Serial No 236,101. (No model.)



Claim.—1. The hot-air register for use in flues or chimneys in connection with fire-place heaters, the same consisting of the rigid frame A, the ring rigidly secured within it, and one or more valves which are pivoted in said frame and are adapted to close the opening or openings between it and the said ring, as shown and described.

2. The combination, substantially as shown and described, of the ring-shaped collar M, having vertical flange *m*, with a supporting-frame to which it is attached, valves B B', an upper flue-pipe resting on said collar, and the lower pipe entering said collar and having a slip or sliding connection therewith.

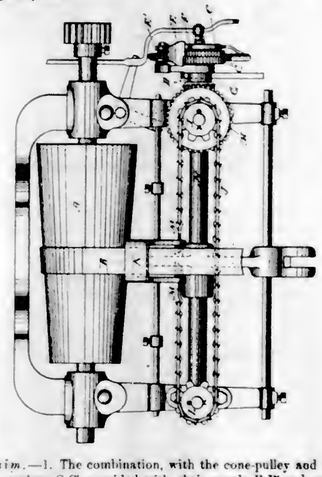
3. The combination, with a frame adapted to be placed and supported in a fire-place or flue, of a ring-shaped and flanged collar, M *m*, which is detachably connected with the under side of said frame, and valves B B', substantially as shown and described.

4. The combination, with frame A, the central ring, A', and the valves B B', pivoted upon said frame at each side of the ring, of the rocking bar E, connecting-bar D, and a rod for operating the valves, as shown and described.

381,284. EVENER FOR RAILWAY-HEADS.

JAMES SHERIDAN, Newton, Mass., assignor to the Pettee Machine Works, same place. Filed June 27, 1887. Serial No. 242,680. (No model.)

Brief.—The usual screw for actuating the cone-belt shifter is replaced by an endless chain with suitable actuating-gearing, the object being to secure more rapid movement of the belt-shifter with greater economy of power.

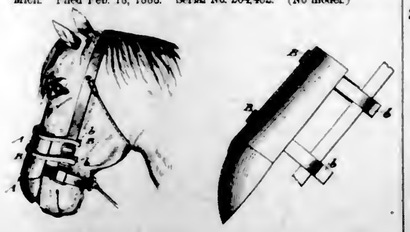


Claim.—1. The combination, with the cone-pulley and its belt and the ratchets C C, provided with their pawls E E' and mounted upon a common shaft, of the beveled gears G H, the latter carrying the sprocket-wheel I, an endless chain, J, engaging with said sprocket-wheel and attached to a sliding belt-guide which surrounds and moves the belt, a suitable tension-roller for giving tension to the chain, and a rod or sliding support for the belt-guide, all substantially as set forth.

2. The combination, for the purposes described, of the belt-guide K, provided with a suitable sliding support or rod, the endless chain attached to the said guide and provided with devices for taking up the slack, as described, the tension-sprocket L, and the sprocket I, mounted upon the beveled gear H, whereby the motion to and fro is imparted to the belt-guide, and the belt is thereby moved correspondingly to regulate the speed of the drawing-roll.

381,285. BRIDLE ATTACHMENT.

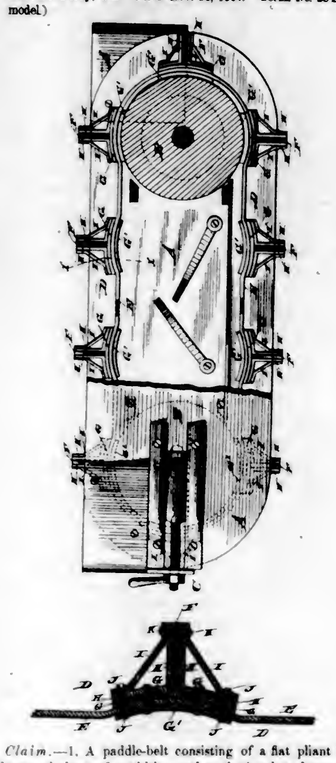
CLEMENT S. SHUF, Shepherd, Mich. Filed Feb. 18, 1888. Serial No. 264,482. (No model.)



Claim.—The combination of the nose-protector A A' and the springs B B, having clasps *b b* at their projecting ends, as shown and described.

381,286. PADDLE-BELT FOR PROPELLERS.

WILLIAM H. SILSBY, Martin's Ferry, Cal. Filed Nov. 10, 1887. Serial No. 254,769. (No model.)



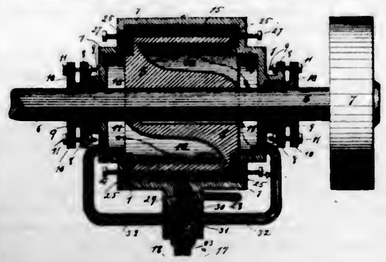
Claim.—1. A paddle-belt consisting of a flat pliant band and rigid warped plates of a width equal to the band, and carrying paddles attached at intervals to the face of the band, the outer and inner faces of each plate being constructed to form concentric cylindrical segments, and the band being applied to one of said faces so as to permanently assume the curve of the same, substantially as described.

2. A paddle-belt consisting of a flat pliant band, warped cylindrical plates, carrying paddles, applied at intervals to the face of the band, and fastening-rivets passed through the plates and apertures in the flat band, substantially as described.

3. A paddle-belt consisting of a flexible band having a series of rigid curved plates fastened thereto, each plate having a pair of uprights fixed thereto, between which a paddle is interposed, inclined side braces, bolts or rivets uniting the upper ends of the braces and posts and the paddle, and other bolts or rivets uniting the lower ends of the braces, the rigid curved plates, and the band, substantially as described.

381,287. ROTARY ENGINE.

JAMES E. SHEVELY, Chetopa, Kans. Filed Dec. 15, 1887. Serial No. 257,947. (No model.)



381,287.

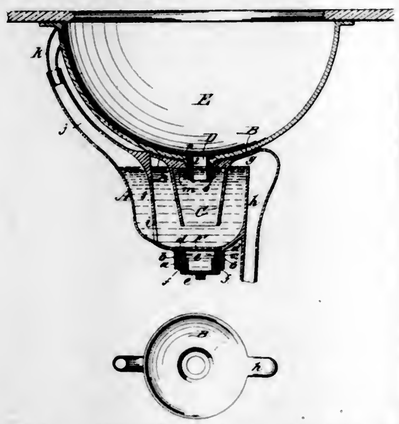


Claim.—1. In a rotary engine, the combination, with a cylinder-casing having sliding abutment-blocks, of an eccentric rotary piston having S-shaped recesses opening into steam-chests in the casing, and steam-ports connecting the recesses with an annular chamber in the casing, substantially as described.

2. In a rotary engine, the combination, with a cylinder-casing having yielding abutment-blocks mounted on ball-bearings, of an eccentric piston having recesses opening into steam-chests in the casing, and steam-ports opening into an annular chamber in the casing, substantially as described.

3. The combination, with the casing 1, having abutment-blocks 19, recesses 20, with ball-bearings 21, and springs 22, steam-chests 13, branch pipes 32, passage 29, feed-pipe 28, rotary valve 31, and discharge-pipe 33, of an eccentric piston, 5, having S-shaped recesses 12, ports 14, yielding block 17, projection 26, and washers 25, having set-screws 27, substantially as described.

381,288. TRAP. EMILY A. STEARS, Brooklyn, N. Y. Filed Apr 25, 1887. Serial No. 236,094. (No model.)



Claim.—1. A trap-bowl having an apertured top and provided with a tube projecting downward from the inner surface of the top and integral therewith, a discharge-opening near the top, a discharge-passage communicating with the discharge-opening and extending down below the bottom of the bowl, an overflow-inlet near the bottom, and a passage extending up along the side of the bowl and communicating with the inlet-opening, substantially as described.

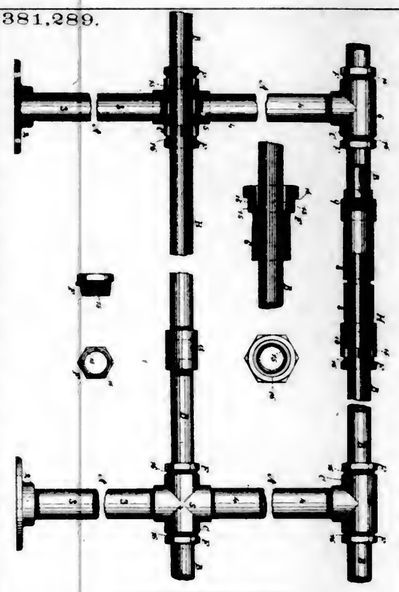
2. An improved trap-bowl having an apertured top and bottom, the aperture in the bottom being closed by a plug and provided with a discharge-opening near the top, a discharge-passage communicating with the discharge-opening, an overflow-inlet near the bottom and opposite the discharge-opening, and a passage extending up along the side of the bowl and communicating with the inlet-opening, substantially as herein shown and described.

381,289. TUBULAR IRON RAILING. EDWARD STEPHENS, Arlington, N. J., assignor to Edward C. Stephens, same place. Filed Aug. 8, 1887. Serial No. 246,398. (No model.)

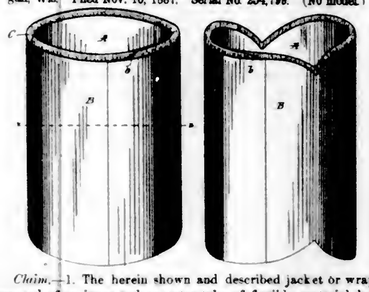
Claim.—1. The combination, with the rails and the posts and tubular couplings through which the rails pass, of the combined nuts and tubular wedges, each being in one piece, so that the wedges are held in place by the nuts, and the nuts are held from turning by the wedges, substantially as set forth.

2. The combination, with the tubular posts and couplings, and the tubular rails passing through the coupling, of the reducer 9, the tube 8, and the combined nut and tubular wedge, forming an expansion-joint, substantially as set forth.

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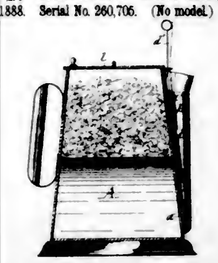
381,290. PACKING FOR BOTTLES. EDGAR J. STEWART, Sheboygan, Wis. Filed Nov. 10, 1887. Serial No. 254,799. (No model.)



Claim.—1. The herein shown and described jacket or wrapper, composed of an inner and an outer tube of flexible material, having the edges overlapped and secured together, the edge of one tube being extended and secured to the opposite tube, and the packing material placed between the two tubes, substantially as described.

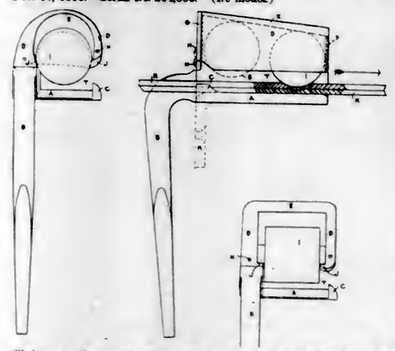
2. A wrapper or jacket composed of an outer and an inner tube, each tube having overlapping edges, and the edge of one tube being extended and secured between the overlapping edges of the other tube, and the packing placed between the two tubes, substantially as described, for the purpose specified.

381,291. BEER-PITCHER. MYRON STONE, Texas, N. Y. Filed Jan. 14, 1888. Serial No. 260,705. (No model.)



Claim.—The improved beer-pitcher consisting of the receptacle A, provided with the ports *a* and *a'*, respectively at or near its base and at or near the top, the spout *b*, extending from beneath the port *a* to the top of the receptacle, the vertical guides *c c*, the valve *d*, sliding in said guides and reaching from the bottom of one port to the bottom of the other port, and the lid *l* on the top of the receptacle, substantially as described and shown.

381,292. REIN-HOLDER. DANIEL H. STUBBS, Prescot, County of Lancaster, England, assignor to Thomas Bisborough, same place. Filed Feb. 17, 1888. Serial No. 264,380. (No model.)

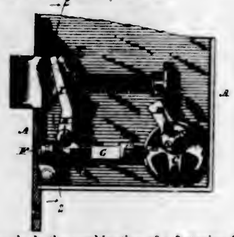


Claim.—1. In combination with a plate, as A, a hollow box overhanging the plate and open on its lower side, a rolling device, I, within the box, and a flange or rib, C, along the outer edge of the plate A, as and for the purpose set forth.

2. In combination with a plate, an overhanging hollow box open on its under side and provided with an inclined top, a rolling device, as I, placed within the box and projecting through the opening therein, and supports or guides for said device arranged parallel with the inclined top.

3. In combination with a plate, as A, an overhanging hollow box open on its under side and provided with re-entering or inwardly-projecting edges, and a roller or ball projecting through the opening in the box and supported by the inwardly-projecting edges thereof.

381,293. LOCK. WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Feb. 16, 1888. Serial No. 264,211. (No model.)



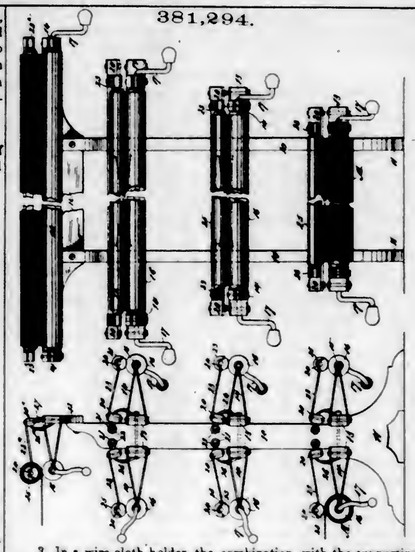
Claim.—In a lock, the combination of a fastening for the escutcheon, and a lever connecting said fastening and the lock-bolt, whereby when the fastening is moved to release the escutcheon the lever holds the bolt in operative position, substantially as set forth.

381,294. WIRE-CLOTH HOLDER. WILLIAM A. TEA, Clyde, Ohio. Filed Jan. 30, 1888. Serial No. 262,383. (No model.)

Claim.—1. In a wire-cloth holder, the combination, with a supporting-frame and a roller journaled in brackets projecting from the said frame, of a pivoted and spring-pressed bar above the said roller, outwardly-projecting arms secured to the said bars, and a roller removably held in the outer ends of the said arms, substantially as described.

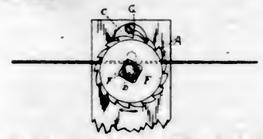
2. In a wire-cloth holder, the combination, with a supporting-frame, brackets projecting from said frame, and a roller journaled in said brackets, of a pivoted and spring-pressed bar, arms secured to said bar and having their outer ends formed with sockets, and a roller held above and in engagement with the first-named roller by the engagement of the sockets of the said arms with its journals, substantially as herein described.

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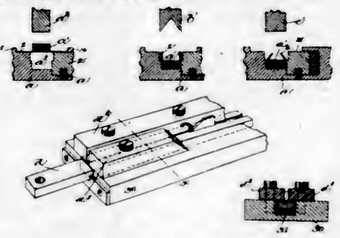
3. In a wire-cloth holder, the combination, with the supporting-frame provided with cross-bars 12, brackets 14, secured to said cross-bars, and rollers 16, journaled in said brackets and provided with crank-handles 17, of the cross-bars 20, pivoted to the frame, the springs 26, secured to the said cross-bars 13 and 20, the arms 23, secured to the cross-bars 20 and provided with the sockets 24, and the rollers 25, having their journals in the sockets of said arms, substantially as herein shown and described.

381,295. TIGHTENER AND FASTENER FOR WIRES. ADELBERT L. THOMPSON, East Avon, N. Y. Filed Nov. 19, 1887. Serial No. 255,647. (No model.)



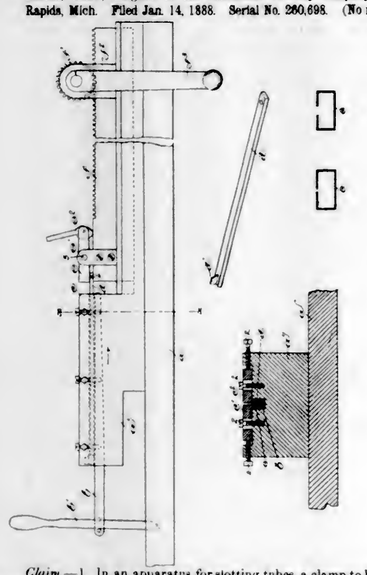
Claim.—A tightener or fastener consisting of a hollow shaft, L, having a projecting square end, F', a ratchet-plate, K, and a front plate, F, provided with the pin, bolt, or stud H, integral with each other, in combination with the post-bolt D, washer C, and pawl G.

381,296. APPARATUS FOR MAKING RACEWAYS FOR BUTTON-SETTING MACHINES. JOHN H. VIETOR, Boston, Mass., assignor to the Peninsular Novelty Company, Grand Rapids, Mich. Filed Feb. 1, 1887. Serial No. 226,129. (No model.)



Claim.—In combination, a die, a mandrel to enter said die, with a sheet-metal blank interposed between the two, and a series of plungers constructed successively to bend up the ends of the blank, then turn them in toward each other, and then flatten them down upon the mandrel, and a cutter to finish the adjacent edges of the downturned ends, and thus complete a slotted rectangular tube, substantially as described.

381,297. MACHINE FOR SLOTTING TUBES. JOHN H. VINTON, Boston, Mass., assignor to the Peninsular Novelty Company, Grand Rapids, Mich. Filed Jan. 14, 1888. Serial No. 260,698. (No model.)



Claim.—1. In an apparatus for slotting tubes, a clamp to hold the tube and a cutter adapted to be drawn through the tube, combined with means for drawing said cutter through the tube, substantially as described.

2. In an apparatus for slotting tubes, the clamp to hold the tube, the cutting tool or blade, and its carrying-bar adapted to be placed within the tube, combined with an engaging device for the cutter-carrying bar, and means for moving the engaging device to draw the cutter-carrying bar and its cutting tool or blade through the tube, substantially as described.

3. In an apparatus for slotting tubes, a clamp composed of a recessed block to receive the tube to be slotted, two parallel gage-bars partially covering the recess of the block, and means for holding the tube to be slotted firmly against the two parallel gage-bars, combined with a cutter adapted to be drawn through the tube coincident with the opening between the said parallel bars, and means for drawing the cutter through the tube, substantially as described.

4. In an apparatus for slotting tubes, the clamp to hold the tube, the said clamp consisting of a recessed block, two parallel gage-bars partially covering the recess in the block, and a wedge-shaped bar to firmly raise the tube against the parallel bars, combined with a cutter adapted to cut the tube coincident with the space between the parallel gage-bars, substantially as described.

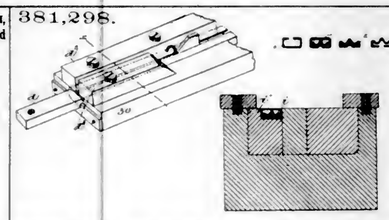
5. In an apparatus for slotting tubes, the clamp to hold the tube and a cutter adapted to operate within the clamp to cut the slot in the tube, combined with an engaging device for the cutter, and means, substantially as described, for moving the engaging device, as and for the purposes set forth.

6. In an apparatus for slotting tubes, a clamp composed of a recessed block to receive the tube to be slotted, two parallel gage-bars partially covering the recess of the block and formed at their lower edges to present cutting-edges, and means for holding the tube to be slotted firmly against the two parallel gage-bars, combined with a cutter adapted to be drawn through the tube coincident with the opening between said parallel bars, substantially as described.

381,298. METHOD OF MAKING RACEWAYS FOR BUTTON-SETTING MACHINES. JOHN H. VINTON, Boston, Mass., assignor to the Peninsular Novelty Company, Grand Rapids, Mich. Filed June 13, 1887. Renewed Mar. 19, 1888. Serial No. 267,768. (No model.)

Claim.—1. The method herein described of making raceways for button-setting machines, which consists in bending a blank over a quadrangular mandrel, withdrawing the mandrel, cutting a slot in one side of the tube, and grooving or corrugating longitudinally the opposite side of the said tube, substantially as described.

2. The method herein described of making raceways for button-



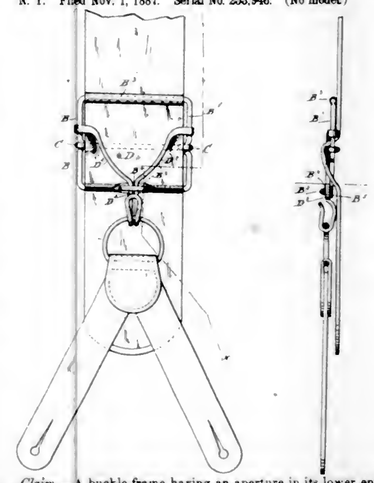
setting machines, which consists in bending a blank over a quadrangular mandrel to form a tube, and afterward grooving or corrugating longitudinally by pressure one side of the said tube, substantially as described.

381,299. STOVE-GRATE. EDWARD WALTER, Buffalo, N. Y. Filed May 20, 1887. Serial No. 238,857. (No model.)



Claim.—In a stove-grate, a circular rim having a series of curved bars arranged parallel with each other and projecting downward and inward from said rim, so as to leave a space between their ends at a point below the rim, in combination with a rocking or rotative portion consisting of a shaft set in bearings in the circular rim and a series of curved bars projecting parallel with each other from said shaft and set angularly thereon, so as to project outward and downward below the shaft, whereby, when the shaft is turned so that the curved bars project down between the lower portions of the curved bars on the circular rim, the space is sufficiently closed to hold the fuel, and when turned up, so that the bars project above the rim, a large open space, *c*, is left on each side of the shaft for the passage of ashes and cinders, as described.

381,300. SUSPENDER-BUCKLE. WILLIAM J. WALTERS, Prospect, N. Y. Filed Nov. 1, 1887. Serial No. 253,946. (No model.)

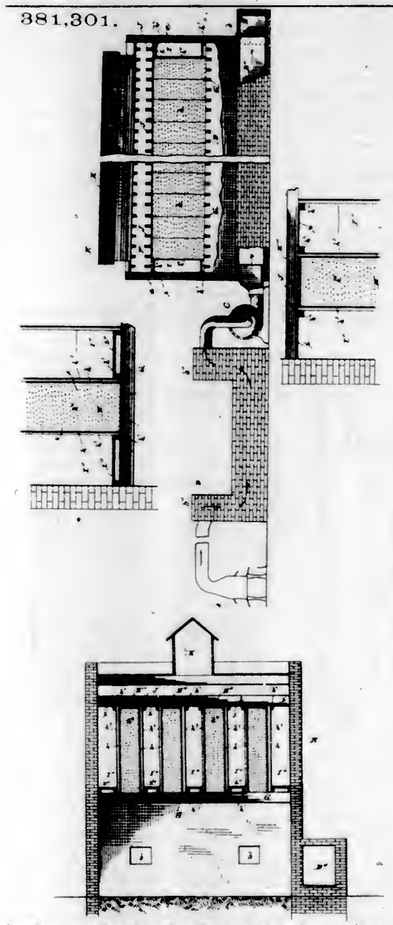


Claim.—A buckle-frame having an aperture in its lower end bar and provided with an intermediate cross-bar, in combination with a clamp sliding on the side bars of the frame and projecting downward in front of the intermediate cross-bar and through the aperture of the lower end bar, substantially as shown and described.

381,301. APPARATUS FOR COLLECTING AND UTILIZING WASTE LEAD-FUMES. GEORGE H. WARD, Joplin, Mo. Filed July 7, 1887. Serial No. 243,652. (No model.)

Claim.—1. In combination with the stack of a lead-ore-smelting furnace or lead-refining furnace, a cooling and condensing house or chamber, a horizontal connecting and conducting flue, substantially as

381,301.



described, extending direct from the stack of the furnace and entering the lower portion of said cooling and condensing house or chamber, and perforated sheet-metal or wire-cloth partitions mounted upon a frame-work in the said cooling and condensing house above the entrance of the conducting-flue, said perforated sheet-metal or wire-cloth partitions forming a metallic condensing compartment or strainer, (in lieu of bags or compartments formed of textile fabric,) by which the ascending fumes which enter the cooling and condensing house through the horizontal flue direct from the furnace are strained and collected in the lower portion of said house without liability of damage to the straining fabric, substantially as set forth.

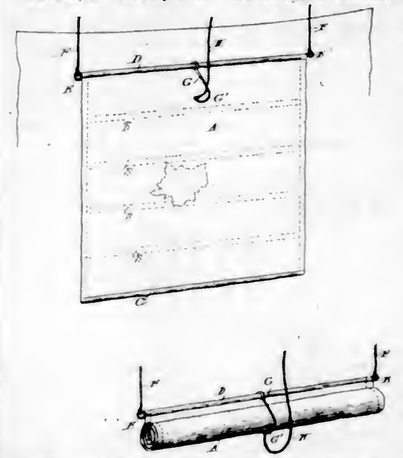
2. As an improvement in collecting and utilizing waste lead-fumes, cooling and condensing rooms fitting with condensing-compartments comprising perforated sheet-metal or wire-cloth partitions mounted upon a frame-work, substantially as described, said cooling and condensing rooms being provided with the corresponding intermediate ceiling formed of perforated sheet metal or wire-cloth, and having a lower room or compartment connected with the stack of an ore-smelting furnace or lead-refining furnace by the horizontal flue, substantially as set forth.

3. In combination with the stack of a lead-ore-smelting furnace, a flue extending from the same, and a cooling and condensing house divided by a flooring, as at i", between the series of condensing and straining compartments into two stories or compartments, the lower one of which connects with said flue, and provided in its upper story with a series of condensing-compartments formed by perforated sheet metal or wire-cloth, and having open bottoms, through which the collected lead-fumes drop to the lower story and are there collected in bulk, a ceiling, as at i, of wire-cloth being formed above said flooring and between the condensing and straining compartments, substantially as set forth.

4. As an improvement in collecting and utilizing waste lead-fumes, the combination, with the stack of a lead-ore-smelting furnace or lead-refining furnace, of a horizontal flue extending from the same, a cooling and condensing house divided into an upper and lower story and having said flue entering the latter, a series of collecting-compartments located in the upper story and having an open bottom and a closed top and sides formed of perforated sheet metal or wire-cloth, a flooring, as at i", located between said compartments at their lower ends, and a ceiling, as at i, formed of perforated sheet metal or wire-cloth and located between said compartments at their tops, substantially as set forth.

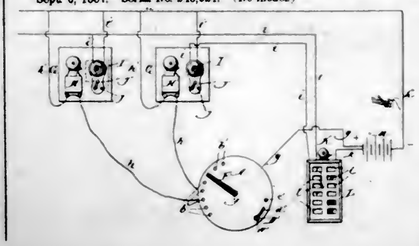
5. As an improvement in collecting and utilizing waste lead-fumes, the herein-described cooling and condensing house comprising a lower story connected by a flue with the stack of a lead-ore-smelting furnace or lead-refining furnace, and an upper story having a frame-work formed of a series of longitudinal strips and vertical connecting-strips, a series of longitudinal straining-compartments formed with open bottoms and closed tops, and with sides formed of perforated sheet metal or wire-cloth secured to said frame-work, a series of longitudinal passage-ways between said compartments, a flooring for said passage-ways located at the lower ends of said compartments, and a ceiling or perforated sheet metal or wire-cloth located at the tops of the passage-ways, substantially as set forth.

381,302. LEAK-STOPPER FOR VESSELS. LOUIS WEBER, Connellsville, Pa. Filed July 8, 1887. Serial No. 243,793. (No model.)



Claim.—In a leak-stop for marine vessels, the combination, with a canvas sheet and horizontal stay-rods secured to one side of said sheet, of ropes for supporting the uppermost stay-rod, a hook secured in the middle of the uppermost stay-rod and adapted to support the rolled-up canvas sheet, and a rope secured to the end of said hook and used for releasing the hook from the canvas-sheet roll, substantially as shown and described.

381,303. ELECTRIC SWITCH-BOARD. RICHARD H. WELDEN, Chicago, Ill., assignor to himself and Joseph Calmeyn, same place. Filed Sept. 6, 1887. Serial No. 248,921. (No model.)

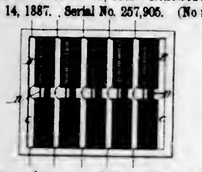


Claim.—1. The combination, with a base or bed, A, carrying a series of pins or posts, *b*, of the band C, for bringing all of the pins or posts into a circuit simultaneously, substantially as and for the purposes specified.

2. The base or plate A, having the groove *a* and a series of pins, *b*, in combination with the band C and swinging arm D, for drawing the band into contact with all of the pins or holding the band out of contact with the pins, substantially as and for the purposes specified.

3. The bed or base A, having the groove *a* and a series of pins or posts, *b*, in combination with the band C, swinging arm D, and switch-key F, for ringing all of the bells in a circuit or each bell singly, substantially as and for the purposes specified.

381,304. ELECTRICAL COIL AND CONDUCTOR. EDWARD WESTON, Newark, N. J. Filed Oct. 13, 1885. Renewed June 18, 1886. Again renewed Dec. 14, 1887. Serial No. 257,905. (No model.)

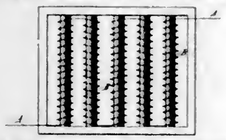


Claim.—1. A conductor consisting of two metallic portions, one composed of a material the electrical resistance of which increases with an increase in its temperature, and the other composed of a material the electrical resistance of which decreases under similar conditions, as and for the purpose specified.

2. A conductor consisting of two metallic portions, one of which is composed of a material the electrical resistance of which increases with an increase in its temperature, and the other is composed of an alloy of copper, manganese or its equivalent, and nickel, as set forth.

3. A rheostat, resistance, or other electrical instruments of the kinds described, the conductors of which consist of two portions, one composed of a metal or alloy the electrical resistance of which increases with an increase in its temperature, the other of an alloy the resistance of which decreases under similar conditions, as set forth.

381,305. ELECTRICAL COIL AND CONDUCTOR. EDWARD WESTON, Newark, N. J. Filed Oct. 13, 1885. Renewed June 18, 1886. Again renewed Dec. 14, 1887. Serial No. 257,906. (No model.)

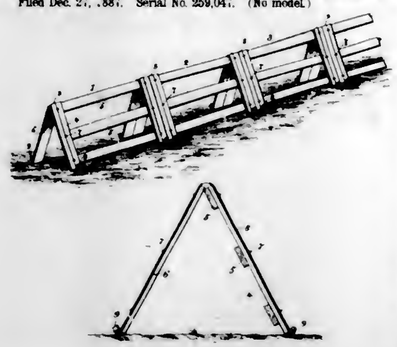


Claim.—1. A coil or conductor wound in convolutions composed of an alloy of manganese and copper or its equivalent.

2. A coil or conductor wound in convolutions composed of copper and ferro-manganese, in the proportions of seventy parts of copper and thirty parts of ferro-manganese.

3. A rheostat, resistance, or other electrical instrument of the kinds herein described, the coils or conductors of which are composed of an alloy of copper and manganese or its equivalent.

381,306. PORTABLE FENCE. ALBERT WHEAT, Reading, N. Y. Filed Dec. 27, 1887. Serial No. 259,047. (No model.)

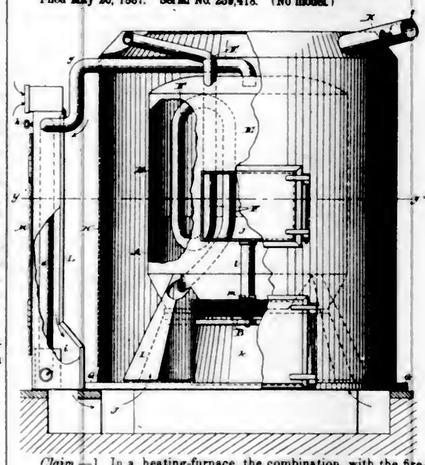


Claim.—1. A portable fence made in sections, each section consisting of posts and rails and mounted in an inclined position, and having inclined braces or supports, and braced by means of flexible strips extending over the section transversely to its length, secured thereto and fastened to pegs driven into the ground, the inclined braces and fence-section resting against the pegs, substantially as described.

2. In a portable fence, a fence-section consisting of rails and posts and inclined braces supporting the fence-section in an inclined position, braces of flexible material passing over the fence-section transversely to its length and secured to the inclined braces and fence-posts, and fastened at their ends to pegs driven into the ground, the fence-posts and inclined braces resting against the pegs, substantially as described.

3. In a portable fence, a fence-section consisting of the horizontal rails 5, posts 4, the inclined braces 6, the securing-wires 8, and staples 7, secured to braces 6 and cross-strips 4, and the pins 9, to which the wires 8 are fastened and against which the braces 6 and posts 4 abut, substantially as described.

381,307. HEATING-FURNACE. JAMES WHITE, Brooklyn, N. Y. Filed May 26, 1887. Serial No. 239,418. (No model.)



Claim.—1. In a heating-furnace, the combination, with the fire-pot, combustion-chamber, the smoke and hot-air pipes, and the air-chamber under the ash-pit, of an air-conduit inclosing the smoke-pipe of the furnace communicating with the air-chamber under the ash-pit, separate and independent air-conduits leading from the air-space under the ash-pit through the combustion-chamber from its outer side at different points and into the ends of the hot-air-distributing pipes, whereby the air receives its first increment of heat from the smoke-pipe, its second increment from the chamber under the ash-pit, and is finally heated by the pipes extending through the combustion-chamber and delivered in separate columns to separate distributing-pipes, substantially as specified.

2. In a heating-furnace, the combination, with the fire-pot A, combustion-chamber E, and the air-supply chamber J, of the separate and independent conduits I outside of the ash-pit and connecting the chamber J with the fire-pot through its sides, the pipes F, extending from the conduits on the inner sides of the fire-pot up through and out of the combustion-chamber, and the casing H, provided with the ducts K, into which the outer ends of the pipes project, substantially as set forth.

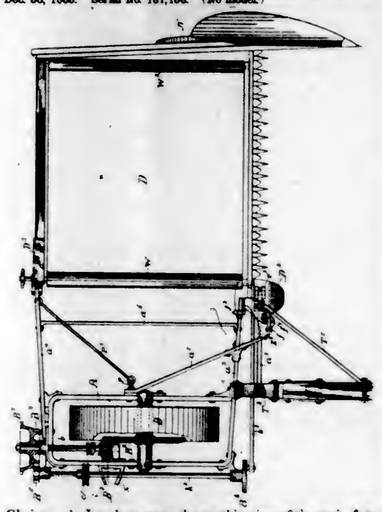
3. In a heating-furnace, the combination of the fire-pot A, combustion-chamber E, the looped air-pipes F, entering the fire-pot A and extending through the top of the combustion-chamber, the conduits I, communicating with the pipes F and adapted to receive the air-supply to the furnace, the air-chamber H, inclosing the fire-pot and combustion-chamber, and provided with the ducts K, surrounding the ends of the pipes F, and the dampers *c*, inserted in the ducts K, substantially as described.

4. The combination, with the air-trunk section L, of the smoke-pipe *g*, passing horizontally through the trunk, the vertical branch pipes *d d'*, the damper *h*, interposed between the pipes *d d'*, the horizontal pipe *e*, connecting the lower ends of the pipes *d d'* and extending beyond the sides of the trunk-section L, and the water-tank *i*, adapted to inclose the lower ends of the branch pipes *d d'* and the horizontal pipe *e*, substantially as described.

5. In a heating-furnace, the combination of the ash-pit C, fire-pot A, combustion-chamber E, the looped air-pipes F, entering the fire-pot

and extending through the top of the combustion-chamber, the air-conduits I, the air-chamber H, the air-ducts K, provided with dampers *c* and surrounding the ends of the hot-air pipes F, the cold-air trunk L, communicating with the conduits I and chamber H, the smoke-pipe *g*, extending horizontally through the air-trunk L and provided with the damper *h*, the horizontal pipe *e*, connecting the pipes *d d'*, extending through the sides of the trunk L and provided with the caps *f*, and the water-vessel *i*, inclosing the lower ends of the pipes *d d'* and the horizontal pipe *e*, substantially as described.

381,308. HARVESTER. WILLIAM M. WHITELEY and WILLIAM BAYLEY, Springfield, Ohio; said Bayley assignor to said Whiteley. Filed Dec. 30, 1885. Serial No. 187,138. (No model.)



Claim.—1. In a harvester, the combination of the main frame, the cutting apparatus and platform hinged to the main frame or extended parts thereof by two hinge-joints, a grain-wheel, N, and a truss-rod, *d*, extending from a bracket carried by the main frame near one of the hinge-joints to near the outer edge of the platform, where it is secured thereto, said truss-rod operating to render the connection between the main frame and the platform rigid when the machine is in operation, as set forth.

2. A harvester-frame surrounding the main driving-wheel, composed of a single bar of wrought metal bent into a nearly-rectangular form and properly secured together, one end projecting toward the grain end of the machine and forming one point of support for the inner shoe, and in front of said bar another bar one end of which is fixed to the front of said frame or to some fixed part thereof, while its inner end projects to the inner shoe and is pivoted thereto, both of said bars being braced and supported by another bar extending from about the middle of the inside bar of the main frame to and across said projecting bars and fixed thereto, substantially as and for the purposes shown and described.

3. In a harvester, the combination of the main frame, a folding platform and cutting apparatus, and a reel having a jointed shaft, whereby it may be folded into line with the machine to reduce its width, said reel having jointed and folding supporting-arms and blades, a fixed part for limiting the extension of the reel, and a removable head pivoted to the arms and adapted to abut against the arms and hold them extended, substantially as set forth.

4. A harvester-reel constructed with the arms pivoted to a head at their inner ends and to the blades at their outer ends, a removable head, the arms being sustained in an extended position by said removable head being forced against them, and pivoted braces, also extending to the reel-blades and pivoted thereto, the said head being removable for the purpose of folding the reel centrally into a small diameter, substantially in the manner and for the purposes shown and described.

5. A harvester-reel having a fixed head and constructed with the arms pivoted to said fixed head at their inner ends and to the reel-blades at their outer ends, a removable head, the arms being held in an extended position by the abutment against them of said removable head, and braces pivoted in said removable head and whose outer ends are pivoted to the reel-blades, the said head being removable for the purpose of folding the reel centrally, in combination with a reel-shaft pivoted to the reel-head or some fixed part thereof for the purpose of folding the reel to the side of the machine, substantially in the manner shown and described.

6. In a self-binding harvester, an end-board formed of two or more boards flexibly pivoted or jointed to each other and to a part of the binder-frame, the said joints or hinges being controlled by a spring, substantially in the manner and for the purposes shown and described.

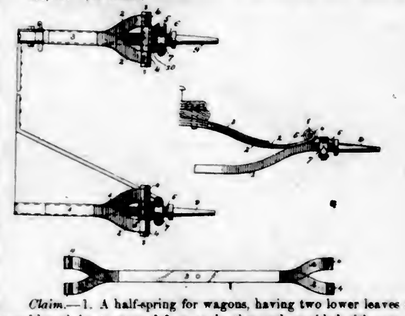
7. In a grain-binding harvester, the combination of the binding machanism, the belt which delivers the cut grain to the binding devices, a hinged end-board consisting of the part Q, carried by the binder-frame, and the part R, hinged to part Q, and a spring interposed between parts Q and R and tending to keep them extended, substantially as set forth.

8. In a grain-binding harvester, the combination of the binding mechanism, the belt which delivers the cut grain to the binding devices, a board, Q, hinged to an extension of the binder-frame, and a board, R, hinged to board Q, the board Q bearing near its free end against some part of the frame for the delivery-belt, substantially as set forth.

9. In a harvester, the combination of the inner shoe having along its back an angular recess, an angular finger-bar fitted in said recess, where it is bolted, and top plate, D^4, riveted both to the finger-bar, as at e^3, and to the shoe, as at e^2, whereby it serves both to brace the finger-bar and to cover the knife-head, substantially as set forth.

10. A harvester-reel constructed with the arms pivoted to a head at their inner ends and to the blades at their outer ends, a removable head adapted to abut against and secure the arms when extended, pivoted braces extending between the blades and the removable head and pivoted in the latter, and a screw-fastening for compressing the removable head against the arms.

381,309. WAGON-SPRING. DARIUS WILCOX, Derby, assignor to Wilcox & Howe, Birmingham, Conn. Filed Jan. 23, 1888. Serial No. 261,703. (No model.)



Claim.—1. A half-spring for wagons, having two lower leaves of equal length bent outward from each other and provided with eyes at their ends.

2. A half-spring for wagons, consisting, essentially, of two lower leaves of equal length, the opposite ends of said leaves being bent outward from each other and provided with eyes in the same horizontal plane and in line with each other.

3. The combination, with a half-spring having two lower leaves of equal length, the ends of said leaves being bent outward and provided with eyes 4, of an eye, 5, secured to the axle, and a bolt passing through said eyes, whereby the springs are secured in place.

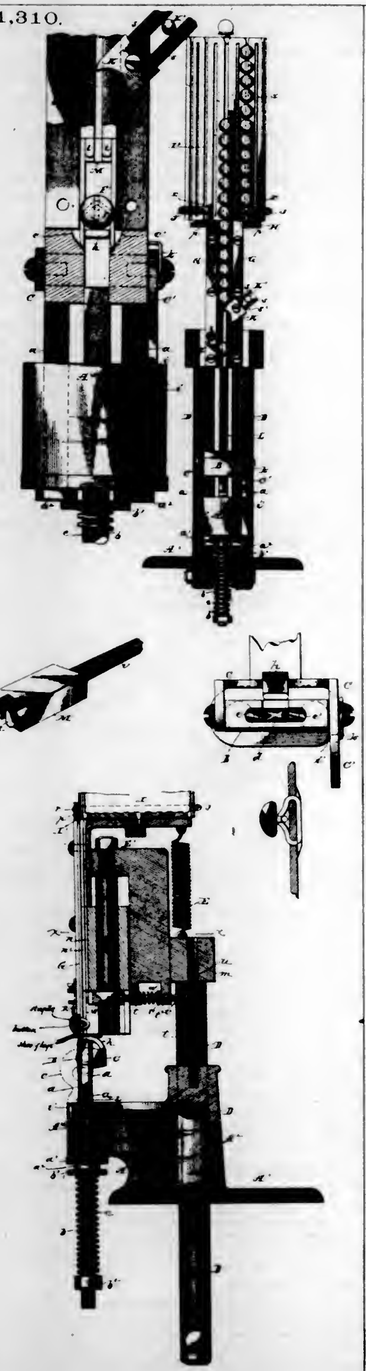
4. The combination, with a half-spring having two lower leaves of equal length bent outward from each other, and having eyes 4 at their ends in the same horizontal plane, of an eye, 5, secured to the axle between eyes 4, and a bolt passing through said eyes, the portion of the bolt in eye 5 being eccentric to the portions in eyes 4, so that when the weight tends to straighten the spring in use the eccentric is caused to turn in eye 5.

381,310. BUTTON-SETTING MACHINE. ALEXANDER G. WILKINS, Meadville, Pa., assignor of one-half to Andy L. Dunbar, same place. Filed Dec. 7, 1887. Serial No. 257,237. (No model.)

Claim.—1. In a button-setting machine, the combination, with a bracket-head supported to reciprocate vertically, and a sliding block carrying a raceway, of a platen and a staple-feeding magazine adapted to be turned on the platen to line its chutes with the raceway, substantially as set forth.

2. In a button-setting machine, the combination, with a base-plate and guide-post affixed to the base-plate, of two sliding bars, a bracket-head affixed to the sliding bars, a sliding block, a raceway adapted to move with the sliding block, a platen, and a spring located between the platen and bracket-head, substantially as set forth.

381,310.



381,310.



3. In a button-setting machine, the combination, with a bracket-head adapted to reciprocate vertically, a plunger-rod, a sliding block guided by the plunger-rod, a platen, and a spiral spring located between the platen and the bracket-head, of a raceway, a magazine, a base-ring for the button-chutes of the magazine, and two stop posts or studs that engage the free ends of the cut base-ring, substantially as set forth.

4. In a button-setting machine, a skeleton button-and-staple holding and feeding magazine having a base-ring loosely supported at the lower ends of the chutes, the ends of said ring being separated sufficiently for the passage of the buttons from a single chute, substantially as set forth.

5. In a button-setting machine, a skeleton button-and-staple holding and feeding vertical cylindrical magazine, made up of separate chutes and provided with a loosely-fitting base-ring that rests on projections at the lower end of the magazine, and has a portion of its body removed, forming two free ends, and stops on a platen on which the magazine rests, adapted to engage the free ends of the ring, substantially as set forth.

6. In a button-setting machine, the combination, with a bracket-head supported to reciprocate vertically, a raceway adapted to reciprocate on the bracket-head, and a magazine located above the raceway and moving with the same, and a feeding-fork adapted to feed one button at a time and stop all others above it in the raceway, of a detent-spring below the feeding-fork, which will discharge a button and an attached staple at every stroke of the machine, substantially as set forth.

7. In a button-setting machine, the combination, with a sliding block and a raceway, of an upsetting-die supported to reciprocate horizontally, a spring to hold this die out of the path of a staple in the raceway, and a cam-post adapted to engage the free end of the shank of the upsetting-die to project the upsetting-die above a staple which has passed the die and is still retained in the raceway by a detent-spring, substantially as set forth.

8. In a button-setting machine, the combination, with a raceway, a sliding block, a bracket-head, two sliding bars, a perforated base-block, and a cam-post affixed to the top of the base-block, of an upsetting-die adapted to reciprocate in the lower end of the sliding block and engage the cam-post at one end to project it above a button-staple when the staple is to be clinched, substantially as set forth.

9. In a button-setting machine, the combination, with a bracket-head secured to a reciprocating rod, a sliding block, a raceway, and an adjustable magazine located above said raceway, of a button-feeding fork, and a finger projecting from the bracket-head and engaging the forks of the button-feeder, substantially as set forth.

10. In a button-setting machine, the combination, with a bracket-head supported to reciprocate vertically, a sliding block that reciprocates on a plunger which is attached to a limb of the bracket-head, a plunger, a raceway, and a platen which are attached to the sliding block, of a spiral spring that holds the platen and attached sliding block away from the limb of the bracket-head, substantially as set forth.

11. In a button-feeding machine, the combination, with a reciprocating bracket-head, a sliding block, and a raceway, of a button-feeding fork, a finger to engage this fork, and a detent-spring that prevents the improper escape of buttons from the lower end of the raceway, substantially as set forth.

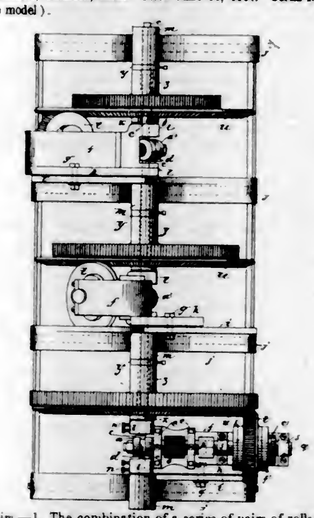
12. In a button-feeding machine, the combination, with a staple-guiding block having diagonal grooves to deflect the points of a staple in opposite directions from a straight line, of a yoke, a spacing-tongue integral with or affixed to the yoke, and a cam-arm adapted to vibrate the tongue outwardly when a staple is to be clinched, substantially as set forth.

13. In a button-setting machine, the combination, with a base-plate and a T-head projection on the upper side of the base-plate, of two guide-rods, adapted to slide in holes in this T-head, and a staple-guiding block affixed to the upper ends of the guide-rods, substantially as set forth.

14. In a button-setting machine, the combination, with a base-plate, and a T-head projection connected to a guide-post located on the top surface of the base-plate, of a staple-guiding block, an anvil-bar, two guide-rods, a center guide-rod, and a spring to hold the staple-guiding block above the T-head piece on which the anvil-bar is secured between the guide-rods, substantially as set forth.

15. In a button-setting machine, the combination, with a base-plate, a T-head portion of the base-plate perforated to receive guide-rods, two guide-rods, a staple-guiding block, a spacing-tongue, a pivoted yoke to which the tongue is affixed, a cam-arm, a spring adapted to hold the staple-guiding block off of the T-head, and an anvil-bar, of two sliding bars, a bracket-head, a sliding block, a raceway, a platen, a magazine, a combined button-feeding fork and cut-off, a finger to engage this fork, a detent-spring, and an upsetting-die adapted to normally lie out of the path of a button-staple when the bracket-head is moved upward, and to be projected over a staple when this staple is to be clinched, substantially as set forth.

381,311. MACHINE FOR COLD-ROLLING WIRE. HENRY A. WILLIAMS, Taunton, Mass. Filed June 30, 1887. Serial No. 242,928. (No model.)



Claim.—1. The combination of a series of pairs of rolls arranged in different angles about a common axis and being adjustable circumferentially thereto, and a guideway in said axis for conducting the wire from one pair to another of said rolls, substantially as described.

2. The combination of a series of pairs of rolls arranged in different angles about a common axis and being adjustable circumferentially thereto, and a guideway in said axis consisting of hollow guide-tubes, substantially as described.

3. The combination of a series of pairs of rolls arranged in different angles about a common axis and being adjustable circumferentially thereto, and a guideway in said axis consisting of hollow guide-tubes, which are also the pivot-supports of the roller-beds, said tubes being supported in the main frame, substantially as described.

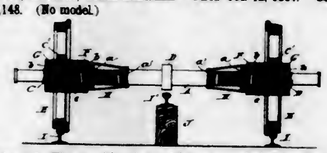
4. In a wire-rolling mill, a series of pairs of rolls arranged in a continuous train and successively geared with a common driver, so that each pair shall have a greater speed of rotation than the one that precedes it, and each pair separately geared to said driver, with an intervening friction-clutch adapted to shift and graduate the speed of the rolls to the speed of the wire, substantially as described.

5. The combination, with the series of pairs of wire-reducing rolls arranged in different angles about a common axis, of a driving-wheel, *u*, geared with each pair and mounted on a sleeve concentric with said axis and also geared with pinions on the common driving-shaft, substantially as described.

6. The roller-bed frames pivoted on the guide-tubes supported in the main frame and having a trunnion-sleeve, *x*, forming the bearing of the driving-wheel *u*, substantially as described.

7. In a wire-rolling mill having a series of pairs of rolls adjustably arranged in different angles about a common axis, the roll-bed frames pivoted in said axis and having a clamping-flange, *h*, in combination with a slotted clamping-flange, *i*, of the main frame and a clamping-bolt, *g*, substantially as described.

381,312. CHANGEABLE GAGE-TRUCK FOR CARS. SAMUEL R. WILSON, Adelaide, South Australia. Filed Oct. 12, 1887. Serial No. 252,148. (No model.)



Claim.—1. The combination, with a car-axle having externally-threaded ends and an integral square portion midway of its length, of wheels thereon having internally-threaded hubs and bosses, and adjustable stops for holding said wheels in position on said axle, substantially as shown and described, for the purpose herein set forth.

2. The combination, with a car-axle having externally-threaded ends and wheels thereon having internally-threaded hubs and bosses, and adjustable stops for holding said wheels in position on said axle, of a square block clamped on said axle midway of its length, substantially as shown and described, for the purpose herein set forth.

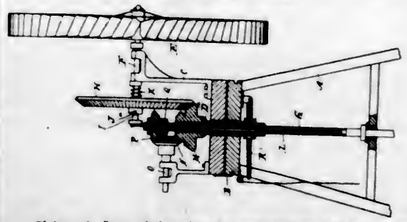
3. The combination, with a car-axle having externally-threaded ends and wheels thereon having internally-threaded hubs and bosses, and adjustable stops for holding said wheels in position on said axle, of two square blocks clamped on said axle, equidistant from each other and from the threaded portions of said axle, substantially as shown and described, for the purpose herein set forth.

4. The combination, with a car-axle having externally-threaded ends, wheels thereon having internally-threaded hubs and bosses, and a square portion integral with said axle midway of its length, of an elevated rail fixed in the center of the railway-track, substantially as shown and described, for the purpose herein set forth.

5. The combination, with a car-axle having externally-threaded ends, wheels thereon having internally-threaded hubs and bosses, and a square block clamped on said axle midway of its length, of an elevated rail fixed in the center of the railway-track, substantially as shown and described, for the purpose herein set forth.

6. The combination, with a car-axle having externally-threaded ends, wheels thereon having internally-threaded hubs and bosses, and two square blocks clamped on said axle equidistant from each other and from the threaded extremities of said axle, of two elevated rails fixed in the center of the railway-track, substantially as shown and described, for the purpose herein set forth.

381,313. WIND-ENGINE. ALVIN T. WINCHELL, Albion, Mich. Filed Feb. 3, 1887. Serial No. 226,387. (Model.)



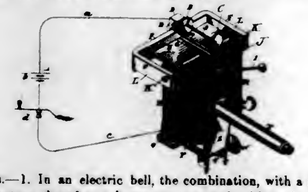
Claim.—1. In a wind-engine, the combination, in a power-transmitting gearing, of the horizontal bevel-pinions M P, turning in opposite directions to balance the resistance equally on the turo-table, and vertically movable on their shaft, and connections between said pinions, as set forth.

2. The combination, with the turn-table and wheel E, of the hollow sleeve D, forming the pivot-point of said table, the shaft L, passed loosely through the sleeve D, the double gear-wheel M, loosely supported on said shaft, the crown-wheel H on the wheel-shaft F, the pinion P, and the miter-pinion N, all substantially as described.

3. In a wind-engine, the vertical shaft L, carrying the drive-pinion P and having a clutch-connection therewith, the horizontal windmill-shaft F, carrying the crown-wheel H and having a clutch-connection therewith, and the intermediate gear-wheels, M N, arranged at right angles to each other, all substantially as described.

4. In a wind-engine, the combination, with the turn-table and the frame C, of the hollow shaft D, forming the center of the turn-table, the hollow shaft L, passing loosely through the shaft D, means, substantially as described, for vertically moving the shaft D, the double gear-wheel M, loosely supported on the shaft L, the pinions N P, their shafts, the crown-gear H, and its shaft, all substantially as and for the purposes specified.

381,314. ELECTRIC BELL. FRANK R. WOOD, New York, N. Y., assignor to the New Haven Clock Company, New Haven, Conn. Filed Apr. 29, 1886. Serial No. 200,530. (No model.)

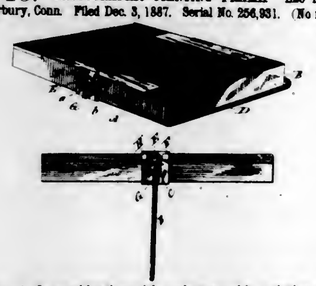


Claim.—1. In an electric bell, the combination, with a magnet, of an armature therefor, a hammer connected with and actuated thereby, an adjustable stop in the path of a part moved by the armature, an electric conducting-circuit from said magnet passing through said stop and part and adapted to be made or broken by the movement of the latter, a short circuit adapted to cut out said stop and part, and a switch connected with the stop and operated by the latter's adjustment to complete the short circuit, substantially as set forth.

2. In an electric bell, the combination, with a magnet, of an armature, a bell-hammer controlled by the latter, a contact-spring carried by the armature, and a cam arranged to be set for contact with such spring to escape the same and to be cut in and out of the circuit of the instrument, substantially as set forth.

3. In an electric bell, the combination, with a magnet, of an armature, a bell-hammer controlled by the latter, a contact-spring carried by the armature, an insulated rotary shaft, and a cam located upon such shaft, which is turned to engage the cam with the said spring and to disengage it therefrom, substantially as set forth.

381,315. PHOTOGRAPHIC-PRINTING FRAME. LEO F. ADT, Waterbury, Conn. Filed Dec. 3, 1887. Serial No. 256,931. (No model.)

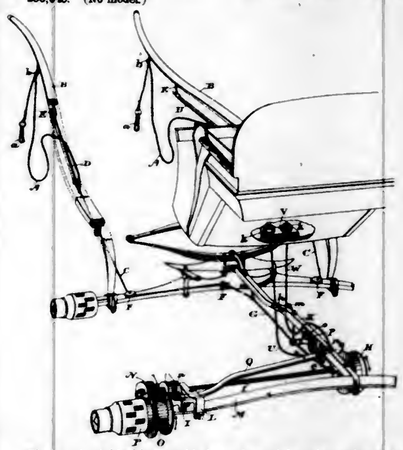


Claim.—1. In combination with a photographic-printing frame a prop consisting of two legs pivoted to the respective sides of the frame, and so as to swing into or out of the plane of the frame, with a stop on the frame in a position to support the prop in its closed position, and a second stop in the frame arranged to support the prop in its open position, substantially as described.

2. As an article of manufacture, the herein-described prop for photographic-printing frames, consisting of a pair of pivot-plates, *a*, adapted to be secured to the respective sides of the frame, and constructed with a projecting pivot, E, and with the stops F G, combined with the prop, consisting of the legs A B and the connection D, the two ends of the legs terminating in eyes corresponding to the pivots on the plates, substantially as described.

3. The herein-described prop for photographic-printing frames, consisting of a pair of pivot-plates, *a*, adapted to be secured to the respective sides of the frame, and constructed with stops F G, combined with legs A B, pivoted by one end to said plates, substantially as described.

381,316. DEVICE FOR CHECKING HORSES. FREDERICK T. AIKINS, Toronto, Ontario, Canada. Filed Oct. 28, 1887. Serial No. 253,645. (No model.)



Claim.—1. A hitching-cord independent of the reins and attached to the bridle-bit and to a cord connected at one end to a drum and a spring connected at or near its other end, and connecting said cord with the under side of the shaft, in combination with driving mechanism arranged to connect the drum to the wheel of the vehicle, and with mechanism arranged to throw the driving mechanism in and out of gear, substantially as and for the purpose specified.

2. The cord A, connected at one end to the bridle-bit and at its other end to the cord C, which is held taut by the spring D, and is connected, either directly or through the cord G, to the drum H, and a shaft, I, on which the drum H is journaled, and connected by means of the ratchet-dog *d* and ratchet-wheel J to the said shaft, in combination with the pulley N, fastened to the shaft I, and arranged to engage with the pulley O, fastened to the hub P, substantially as and for the purpose specified.

3. The cord A, connected at one end to the bridle-bit and at its other end to the cord C, which is held taut by the spring D, and is connected, either directly or through the cord G, to the drum H, a shaft, I, on which the drum H is journaled, and connected by means of the ratchet-dog *d* and ratchet-wheel J to the said shaft, a pulley, N, fixed to the shaft I and arranged to engage with the pulley O, fixed to the hub P, in combination with the pivoted lever Q, having attached to one end a T-shaped plate, R, carrying friction-pulleys *g*, which project behind the flanges of the disks S, and a cord, U, connected to the long end of the lever Q, and extending through a hole in the bottom of the vehicle, substantially as and for the purpose specified.

4. The pivoted lever Q, connected to and arranged to adjust one end of the shaft I, in combination with the adjustable spring-plate X, having a head, *q*, formed on it to engage with the end of the lever Q, substantially as and for the purpose specified.

5. The pivoted lever Q, connected to and arranged to adjust one end of the shaft I, in combination with the adjustable spring-plate X, having a head, *q*, formed on it to engage with the end of the lever Q, and a cord, W, arranged to withdraw the spring-plate X away from the end of the lever Q, substantially as and for the purpose specified.

6. A lever, Q, pivoted in the bracket L and having the friction-pulleys *g* attached to its short end and arranged to engage with the flanged disks S, which are connected to the shaft I, in combination with the spring T, arranged to actuate the lever Q, substantially as and for the purpose specified.

381,317. TUG OR TRACE CARRIER. GEORGE T. ARNOLD, Lancaster, Ky. Filed Apr. 20, 1887. Serial No. 235,563. (No model.)



Claim.—The improved trace or tug carrier having the back plate or body and the frame provided with shoulders, and lugs forming the cross-shaped aperture, substantially as described.

381,318. METALLIC SHINGLE. EDGAR R. BARKER, Junction City, Kans. Filed Jan. 30, 1888. Serial No. 262,439. (No model.)



Claim.—1. The roofing-plate or metallic shingle having a hook-shaped edge, *a*, extending its entire length on one side, and a hook-shaped edge, *b*, of smaller diameter, on its other side, extending only a part of its length and formed of double thickness, with a nailing flange, *c*, substantially as and for the purpose described.

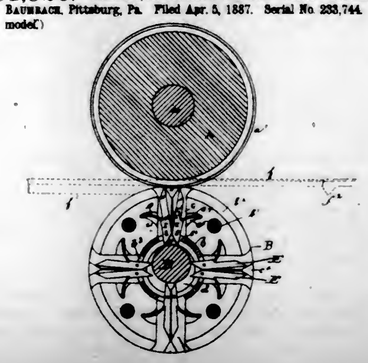
2. The roofing-plate or metallic shingle having a hook-shaped edge, *a*, extending its entire length on one side and a hook-shaped edge, *b*, on the other side, of smaller diameter, extending a part of its length and of double thickness, with nailing-flange *c*, and the curled lip or flange *d*, extending from the bottom of hooked edge *b* to the lower end of the shingle, substantially as and for the purpose described.

381,319. BUTTON. FRANK P. BARNEY, Chartley, Mass., assignor to Engley, Wetherell & Co., same place. Filed Jan. 30, 1888. Serial No. 262,330. (No model.)

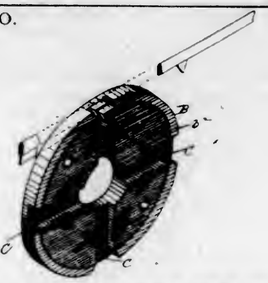


Claim.—In a button of the class described, the combination, with the shank *a*, having the shoulders a^2 and cross-head *a'*, of a shoe, B, composed of the shell *b*, the concavo-convex disk *b'*, and the slotted disk C, provided with the two shoulders or abutments *c'*, formed by slitting the disk on opposite sides of the slot *c* and forcing out the metal, said parts being constructed and arranged substantially as described, for the purposes specified.

381,320. ROLLS FOR MAKING BARBED WIRE. MICHAEL J. BAUMBACH, Pittsburg, Pa. Filed Apr. 5, 1887. Serial No. 233,744. (No model.)



381,320.

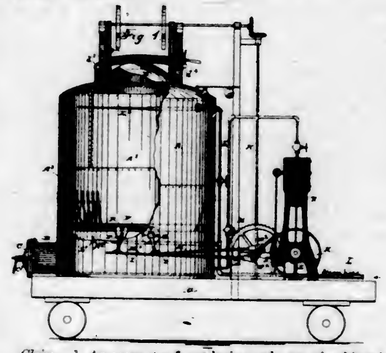


Claim.—1. In rolls for rolling barbed or toothed rods, the combination, with a roll having a slit or slot in the periphery, of movable cutters fitted in radial grooves in said roll, and means for automatically projecting said cutters while the roll is in operation, substantially as described.

2. In rolls for rolling barbed or toothed rods, the combination, with a roll having a peripheral slit or slot and radial holes, with triangular heads or blocks set in said holes and divided to form a continuation of said slit or slot, of movable cutters and means for projecting said cutters and retracting the same, whereby a strip of metal passing through said slit will have teeth formed upon it by said cutters, substantially as described.

3. In combination with the roll B, having radial grooves C C, tongue *c*, and head *c'*, and the hollow shaft upon which said roll is mounted, the stationary shaft D, having the cam-groove *d*, and the movable cutting-jaws, constructed and arranged substantially as described.

381,321. APPARATUS FOR REDUCING BITUMINOUS ROCK. GEORGE E. BELMOR, San Francisco, Cal. Filed Sept. 29, 1887. Serial No. 251,084. (No model.)



Claim.—1. An apparatus for reducing and preparing bituminous rock for the purposes herein described, consisting of a steam-tight tank, A, with an inlet in the top and a drawing-off opening in the side at the bottom, which are fitted with steam-tight covers, and having its interior divided longitudinally by a grate-surface into an upper melting or reducing space, A', and a lower receiving and heating space, A^2, and having a steam-coil in each space, and connection of the same outside the tank with a steam-supply, as hereinbefore set forth.

2. An apparatus for reducing and preparing bituminous rock as a material for street-pavements, consisting of a steam-tight tank, A, having a grate-surface composed of grate-bars to which a rocking or oscillating motion is imparted, and having in the spaces above and below said grate-surface a steam-coil and connection thereof, with a steam-supply outside the tank.

3. In an apparatus for reducing bituminous rock, the combination of a steam-tight tank mounted on a wheeled truck, having its interior space divided longitudinally by a grate-surface, with an inlet from the outside into the upper space, and a draw-off opening from the lower space, a steam-coil in each space leading through the tank-shell to the outside, and connection thereof with a steam-supply, the elevator and engine mounted on the same truck, and connecting-shaft.

4. In an apparatus for reducing bituminous rock, the combination, with the tank A, of the rocking grate-surface consisting of the separated suspended grate-bars, the rocking bars R, slotted blocks P, and

the crank-shaft and connecting-rods having connection with said rocking bars by crank-arms, for operation as set forth.

381,322. CONVEYER APPARATUS. GEORGE C. BLICKENSDERFER, Stamford, Conn. Filed Dec. 15, 1887. Serial No. 257,963. (Model.)



Claim.—1. In a conveyer apparatus, the combination of a fixed track extending between terminal stations, a car on said track, a slack propeller cord or wire extending between said stations adapted to be moved bodily and to engage said car, and supports fixed at a distance from the track to hold the propeller-cord in a position to propel the car.

2. In a conveyer apparatus, the combination of a fixed track extending between terminal stations, a car on said track which has running-wheels embracing said track and a special propelling-sheave, a slack propeller cord or wire extending between said stations adapted to be moved bodily longitudinally and to engage with said special propelling-sheave on said car, and fixed supports at a distance from the track at both said terminal stations to hold the propeller-cord in position to act propulsively on said car when drawn upon from either end.

3. In a conveyer apparatus, the combination of a fixed track extending between terminal stations, a car on said track, a slack propelling cord or wire extending between said stations out of contact with the track and adapted to engage the car, and fixed supports for said propeller-cord at a distance from said track, all substantially as described.

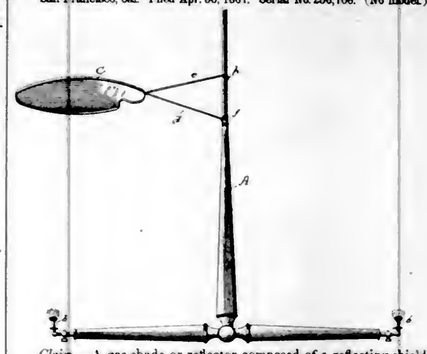
4. In a conveyer apparatus, the combination of terminal stations, a track connecting said stations, a car running on said track having a special propeller-sheave on said car, sheaves fixed at said stations always at a greater distance from said track than the propeller-sheave on said car, and a slack propeller cord or wire having limited longitudinal bodily movement, which passes about the sheaves at the stations and the propeller-sheave on the car.

5. In a conveyer apparatus, the combination of a track extending between terminal stations, a car on said track having a propeller-sheave, a slack propeller cord or wire extending between the stations, having limited longitudinal bodily movement, and provided with handles or pulls whereby it can be drawn taut from either end, and supports fixed at a distance from the track, said propeller-cord being adapted to engage the sheave on the car, all substantially as described.

6. In a conveyer apparatus, the combination of a track extending between terminal stations, a car on said track having a propeller-sheave, a slack propeller cord or wire extending from station to station adapted to have a longitudinal movement bodily, and supports fixed at a distance from the track, the propeller-cord being adapted to engage the sheave on the car to propel the car either way from each station, substantially as described.

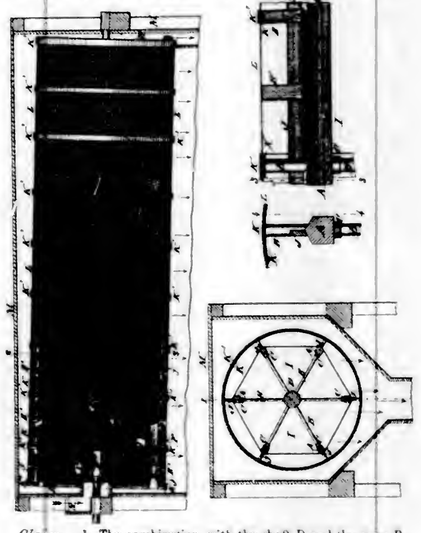
7. In a conveyer apparatus, the combination of a fixed flexible track, an inflexible catch fixed at each end of said track, a car running on said track having inflexible catches, and a propelling cord or wire acting upon said car, which when drawn upon will lift the car and deflect the track, and thereby disengage said catches.

381,323. GAS-LIGHT SHIELD AND REFLECTOR. ANNIE L. BOOMER, San Francisco, Cal. Filed Apr. 30, 1887. Serial No. 236,706. (No model.)



Claim.—A gas shade or reflector composed of a reflecting-shield and two rods or wires, the rods or wires secured to the shield at or near the same point and projecting from the shield at an acute angle with each other, one of them terminating in a semicircular bearing and the other in a hook, substantially as described.

381,324. BOLTING-REEL. HEZEKIAH BRIDENTHAL, Vincennes, Ind., assignor of eleven-twelfths to John E. Hall, St. Louis, Mo. Filed July 27, 1886. Serial No. 209,253. (No model.)



Claim.—1. The combination, with the shaft D and the arms B, of the collars C on said arms some distance from their extremities, the longitudinal ribs A, perforated for the passage of said arms and bearing against the collars C, the impervious material G, supported by said ribs, the circular hoops K, supported at the extremities of said arms, and the bolting material L, stretched over said hoops, substantially as set forth.

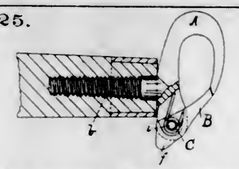
2. The combination, with the shaft D, the arms B, radiating therefrom, and the impervious drum supported by said arms some distance from their extremities, of the longitudinal strips J, secured to the arms B outside of the drum, the brackets B', secured to the strips J between the arms B, the hoops secured to the extremities of the arms B and the brackets B', and the bolting material stretched over the hoops K, substantially as and for the purpose set forth.

381,325. WHIFFLETREE-SNAP. LAMBERT J. BRISTOL, New Haven, Conn. Filed Jan. 14, 1888. Serial No. 260,782. (No model.)

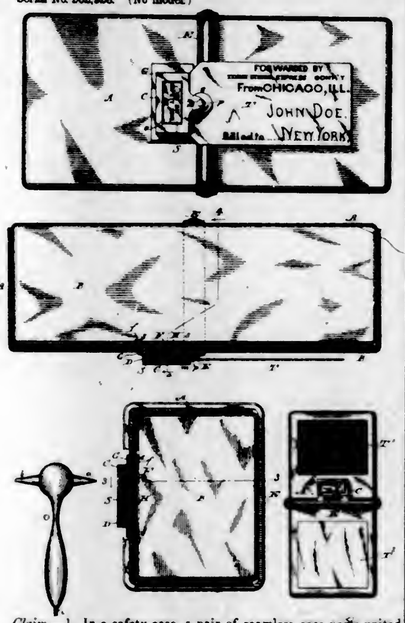
Claim.—1. As a new article of manufacture, a whiffletree-snap consisting of a hook provided with ears *c d*, a tongue pivoted between the ears on a pin projecting inwardly from one of the ears and having a cavity inclosing the spring, a spiral spring surrounding a portion of the pin, on which the tongue turns, bearing at one end against the tongue and at the other end against the body of the hook, and a shank adapted to be driven or screwed into the end of the whiffletree, substantially as described.

2. In a whiffletree-snap, a hook formed on the shank in a plane at an angle with the plane of the ears which carry the tongue, whereby the backward-projecting end of the trace is permitted to pass the tongue without being bent, substantially as described.

381,325.



381,326. SAFETY-CASE FOR MONEY-PACKAGES, &c. EDWARD J. BROOKS, East Orange, N. J., assignor to E. J. Brooks & Company, New York, N. Y., and Chauncey H. Crosby, Chicago, Ill. Filed Feb. 3, 1888. Serial No. 262,928. (No model.)



Claim.—1. In a safety-case, a pair of seamless case parts united by a longitudinal lap-joint and having one part of a spring-fastened telescopic seal-holder attached to one of said case parts, in combination with a sliding band or keeper which embraces the closed case and is provided with the other part of said seal-holder, and a frangible seal within said holder, substantially as hereinbefore specified.

2. The combination, in a safety-case, of a case proper having a longitudinal joint and provided with one part of a spring-fastened telescopic seal-holder, in combination with a sliding band or keeper which embraces the closed case and is provided with the other part of said seal-holder, a frangible seal within said holder, and an eyeleted tag which is held in place by a stud-pin and a masking-lip on the respective parts of the seal-holder, substantially as hereinbefore specified.

3. In a safety-case having a spring-fastened telescopic seal-holder, one part of said seal-holder having a perforated marginal flange to engage with the inside of one of the case parts, in combination with a frame which embraces the protruding portion of the same outside of the case part and is provided with stud-rivets which extend inward through said flange, substantially as hereinbefore specified.

4. In a safety-case having a spring-fastened telescopic seal-holder, the within-described lock part having a recessed back within which the spring-catch is adjusted and secured, and having a perforated marginal flange to engage with the inside of one of the case parts, in combination with a frame which embraces the protruding portion of said lock part outside of the case part and is provided with stud-rivets extending inward through said flange, and a back plate attached by the same rivet-studs, substantially as hereinbefore specified.

381,327. KNIFE-BLADE BURNISHER. DANIEL T. BROWN, Roxbury, Conn. Filed Mar. 12, 1888. Serial No. 267,001. (No model.)



Claim.—In combination with the base A, the plates B B and C, the lower part of the plate C extending into the space between the plates B B, the faces of said plates being longitudinally curved and transversely rounded, as shown, and said faces being also made smooth, as and for the purpose set forth.

381,328. HINGED-SHOE BUTTON. GEORGE C. BOEBER, North Attleborough, Mass., assignor of one-half to S. K. Merrill & Co., Providence, R. I. Filed Feb. 3, 1888. Serial No. 262,872. (No model.)



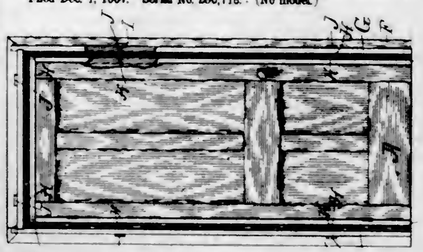
Claim.—1. The combination, with the button-head, of a cup or plate mounted to rotate thereon, two L-shaped arms pivoted in said cup or plate, and a lever-plate, substantially as described, secured to the button-head and engaging the inner ends of the arms to move them into position when the head is turned, substantially as set forth.

2. The combination, with the button-head, of a cup or plate mounted to rotate thereon, two L-shaped arms pivoted to said cup or plate, a lever-plate, substantially as described, secured to the button-head and engaging the inner ends of the arms to move them into position when the head is turned, and a spring for engaging the cup and locking it with relation to the head, substantially as set forth.

3. The combination, with the button-head, of a cup or plate mounted to rotate thereon, two L-shaped arms having inner and outer pivots and hinged to said cup, a sleeve, *d*, surrounding and forming a bearing for the inner pivots, and a lever-plate, substantially as described, secured to the button-head and engaging the inner ends of the arms to move them into position when the head is turned, substantially as set forth.

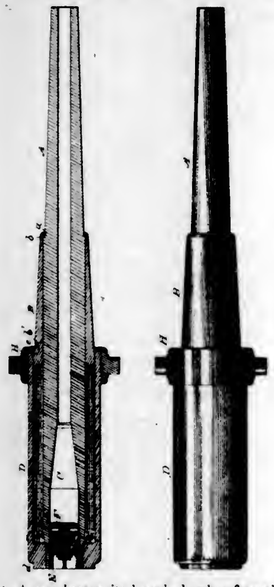
4. The combination, with the button-head, of the cup C, having a flange, c^2, and notches c^3, the arms B B', hinged to the cup, the lever-plate E, secured to the button-head, engaging the inner ends of the arms, as described, and having tongues *e*, which are bent under the flange c^2 to hold the cup C in place, and the spring G, attached to said plate and arranged, as described, to engage the notches c^3 and lock the arms with relation to the button-head, substantially as set forth.

381,329. ADJUSTABLE JAMB. BENJAMIN F. CAHILL, Atlanta, Ga. Filed Dec. 1, 1887. Serial No. 256,718. (No model.)



Claim.—In a door-casing, the adjustable jamb B, adjusted by means of the screws H engaging with a stationary-held nut in the stationary part of the siding, said screw being prevented from moving longitudinally by its head and the collar *h* and pin *h'*, in combination with the top bar, C, said jambs B and top bar, C, connecting by interlocking tongues, as set forth.

381,330. BREECH-LOADING ORDNANCE. CHARLES C. CHAMBERLAIN, Muskegon, Mich. Filed Dec. 7, 1887. Serial No. 257,228. (No model.)



Claim.—1. A gun having its breech-chamber formed with a frusto-conical front section of gradual taper and a shorter cylindrical rear section, these being so proportioned that the projecting force shall be developed from the part of the charge contained in the frusto-conical and the following force from the part contained in the cylindrical section of the breech-chamber, as set forth.

2. The combination of a gun body or core having a diminished tapered portion at its rear, a metallic coil embracing the core and extending forward beyond such taper, and an outer casing engaging the gun-body and closely confining the coil, as set forth.

3. As an improvement in guns, the combination, with the body or core thereof, of breech and chase sleeves engaging the same at their remote sections, such sleeves being respectively screw-threaded and outwardly flanged at their contiguous ends, and a screw-threaded and inwardly-flanged trunnion-band engaging such sleeves and rigidly connecting them when the band is screwed up.

4. The improved gun herein described, comprising the barrel provided with a front and rear shoulder, *a* and *a'*, respectively, the chase-sleeve having in front flange *b* and in rear flange *b'*, the breech-sleeve externally screw-threaded at its forward end and provided with an engaging-flange, *d'*, at its rear end, and the internally-screw-threaded trunnion-band having an inwardly-turned flange, whereby when the trunnion-band is screwed up the flange of the said band is made to engage the shoulder upon the chase-sleeve and firmly draw to it the breech-sleeve, thus tending to unite the two closely together and re-enforce the longitudinal strength of the gun, as set forth.

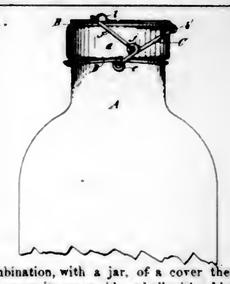
5. As an improvement in guns, the barrel provided with the enlarged conical powder-chamber, in combination with the breech-sleeve and wire coil embracing the barrel at the rear, the chase-sleeve, and the trunnion-band connecting said sleeves, substantially as specified.

6. The combination of the barrel A, provided with the conical powder-chamber, the wire coil surrounding said barrel, the breech-sleeve inclosing said coil, the chase-sleeve, and trunnion-band, said trunnion-band screwed onto the breech-sleeve and connecting it with the chase-sleeve, all arranged for joint operation, substantially as shown and described.

381,331. JAR. GEORGE L. CARLL, Brooklyn, assignor to Abraham V. Whiteman, Port Chester, N. Y. Filed Oct. 21, 1887. Serial No. 253,096. (No model.)

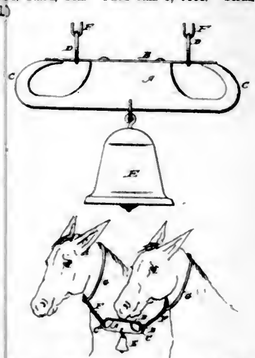
Claim.—1. The combination, with a jar, of a cover therefor provided with a projection upon its upper side, a swinging bail with which said cover is loosely connected, and a second swinging bail adapted, when swung in one direction, to secure the cover, and when swung in another direction to contact with and support the cover when the latter is off from over the jar, substantially as specified.

381,331.



2. The combination, with a jar, of a cover therefor provided with a projection upon its upper side, a bail with which said cover is loosely connected, provided with loops, and another bail pivoted in said loops and adapted to be swung over the cover to engage said projection, substantially as and for the purpose specified.

381,332. YOKE FOR CONNECTING ANIMALS. WILLIAM CARMICHAEL, Baird, Tex. Filed Jan. 5, 1888. Serial No. 259,917. (No model.)



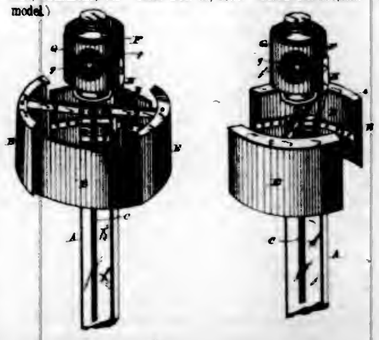
Claim.—1. The coupling-bar A, having its lower side weighted and formed with one or more hooks C, and provided with a spring, B, extending along the upper edge outside of and overlapping the hook, substantially as and for the purpose described.

2. The coupling-bar A, having hooks C at its opposite ends, and provided with a spring, B, extending outside of and overlapping both hooks, substantially as and for the purpose described.

3. The coupling-bar A, having a hook, C, at one or both ends, the bell E, attached to the lower side of the bar A, and the spring B, extending along the upper edge of the bar and overlapping the hook upon the outside, substantially as shown and described.

4. The combination, with the halters or collars G G and the chain F, of the coupling-bar A, having one or more hooks, C, and a spring, B, overlapping the same upon the outside of the hook, substantially as and for the purpose described.

381,333. RAILROAD SEMAPHORE-SIGNAL. THOMAS I. CHAPMAN, Richmond, Va. Filed Dec. 16, 1887. Serial No. 258,133. (No model.)



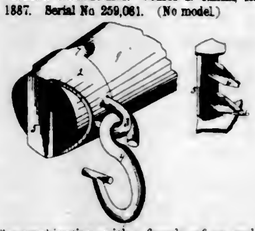
Claim.—1. In a signal, the combination of two opposite fixed danger-semaphores mounted upon a supporting-post with two movable all-right semaphores corresponding in size to the fixed semaphores and mounted upon a vertical rod, and movable to rotate horizontally therewith, whereby they can be shifted so as to cover the danger-semaphores, all constructed and arranged substantially as and for the purpose described.

2. In a signal, the combination, with the supporting-post and opposite fixed semaphores thereon, of the movable semaphores mounted upon a rod secured to said post, adapted to be shifted to cover the said semaphores, and the lantern mounted on said rod and its hood mounted on said post, all constructed and arranged substantially as and for the purpose described.

3. The combination, with the opposite fixed semaphores mounted upon a supporting-post, of the movable vertical rod on said post, and the opposite semaphores mounted on said rod by proper brackets and adapted to be shifted by said rod to cover said fixed semaphores and having inwardly-standing flanges on their upper edges, substantially as and for the purpose described.

4. In a railway-signal, the combination, with the supporting-post having opposite semaphores, B, mounted on brackets secured thereto and bent on arcs of a horizontal circle, of the vertical operating-rod secured to said post and having diametrically-opposite brackets secured thereto above semaphores B, and carrying on their outer ends the semaphores E, bent on arcs of a circle having rod C as its center, and provided on their upper edges with inwardly-standing flanges *c c*, the lamp mounted on said rod and its hood mounted on said post and provided with openings *g* on its sides adjoining semaphores B, all constructed and arranged substantially in the manner and for the purpose described.

381,334. TRACE-FASTENING. JULIUS S. CLARK, Rockford, Ill. Filed Dec. 27, 1887. Serial No. 259,081. (No model.)



Claim.—1. The combination, with a ferrule, of an end fastening projected into the end of the whiffletree, the fastening when in position occupying a position oblique to the longitudinal axis of the ferrule, substantially as set forth.

2. The combination, with a ferrule, of an end fastening consisting, essentially, of a tongue extending inwardly from an end piece in engagement with the ferrule, said tongue when in position to fasten occupying a position oblique to the longitudinal axis of the ferrule, substantially as set forth.

3. The combination, with a ferrule, of an end piece in engagement with the ferrule and provided with inwardly-projected tongues, said tongues occupying when in position to fasten positions oblique to the longitudinal axis of the ferrules, substantially as set forth.

4. The combination, with a ferrule, of an end piece formed integral with the ferrule and provided with a tongue projected inwardly therefrom, the end of the tongue being provided with a greater bevel on one side than on the other to throw it to one side of a line parallel with the axis of the ferrule as the fastening is driven home, substantially as set forth.

5. The combination, with the whiffletree, of the ferrule and an end fastening projected into the end of the whiffletree obliquely to the axis of the ferrule, the ferrule being provided with a trace-fastening and with lips projecting from its edges and indented into the wood, substantially as set forth.

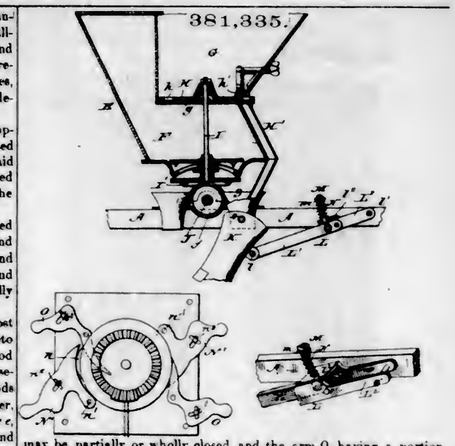
6. The combination, with the whiffletree, of the ferrule and an end fastening projected into the end of the whiffletree obliquely to the axis of the ferrule, the ferrule being provided with lips projecting from its edge and indented into the wood, substantially as set forth.

7. The herein-described whiffletree-hook, consisting of the ferrule and an end fastening occupying a position oblique to the longitudinal axis of the ferrule, the ferrule being provided with a trace-fastening, substantially as set forth.

381,335. PLANTER AND FERTILIZER-DISTRIBUTER. LEWIS CHARLES and JOHN CHARLES, Clear Spring, Md. Filed Aug. 9, 1887. Serial No. 246,552. (No model.)

Claim.—1. The combination of the hopper provided with a fertilizer-compartment having a discharge-opening, the fertilizer-discharging disk, the adjustable gage N', whereby the discharge-opening

381,335.



may be partially or wholly closed, and the arm O, having a portion extended within the fertilizer-compartment and adjustable substantially as and for the purposes specified.

2. In a machine, substantially as described, a boot-support consisting of two sections pivoted together, one of such sections having an extension beyond the pivot overlapping the other, the rod or bolt connected with one section and extended past the overlapping portion of the other, and a spring on said rod, substantially as and for the purpose specified.

3. The combination, with the pivoted boot and the framing of the boot-supporter, pivoted at its opposite ends, respectively, to the boot and framing and formed in sections pivoted together, of a portion extended from one of the sections past the pivot and partially overlapping the other portion, and a spring for forcing the said overlapping portion toward the section it overlaps, substantially as set forth.

4. The pivoted boot and the main frame, combined with the boot-support, consisting of sections L' and L^2, pivoted together, one of which sections has an overlapping portion, l^2, the rod or bolt M, and the spring thereon, all being arranged and operating substantially as and for the purposes specified.

5. The improved planter and fertilizer-distributer herein described and shown, consisting of the framing, the hopper mounted thereon and formed into seed and fertilizer compartments, the seed-dropper, the conducting-tube leading thence to the boot, the pivoted boot, the fertilizer-discharging mechanism, the horizontal and vertical shafts geared together and with the drive-wheel, whereby to operate the seed-dropper and fertilizer-discharging mechanism, and the boot-support formed in sections pivoted together and having one of the sections formed with an overlapping extension, a rod or bolt, M, and a spring thereon, all substantially as and for the purposes specified.

381,336. GALVANIC BATTERY. CHARLES R. B. CLAFLIN, Jr., and JOSEPH W. FLAGG, Worcester, Mass. Filed Nov. 17, 1886. Serial No. 219,191. (No model.)

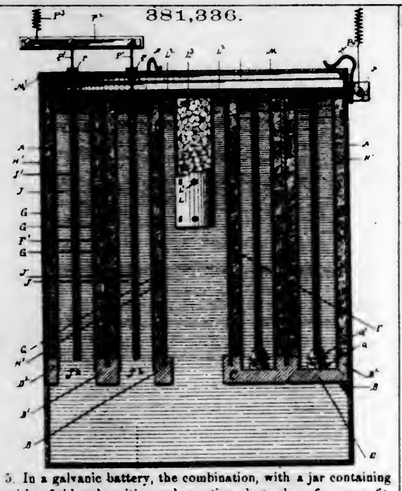
Claim.—1. In a galvanic battery consisting of a jar containing an exciting-fluid, a positive electrode formed of a wall standing vertically in said exciting-fluid, a negative electrode formed of a vertical wall presenting an opposing face to the positive electrode, a perforated wall parallel with the surface of the negative electrode, and a depolarizing material held between the negative electrode and said perforated wall, substantially as described, and for the purpose set forth.

2. In a galvanic battery, the combination, with a jar containing an exciting-fluid, of a spider or disk having openings and supporting the positive and negative electrodes, said spider or disk being maintained in position in said jar above the bottom, so as to form a chamber for the deposit of solid matter, substantially as described.

3. In a galvanic battery, the combination, with a jar containing an exciting-fluid and a central reservoir containing the crystals of the exciting-salt, of a series of positive and negative electrodes placed alternately around said central reservoir, with annular spaces between said electrodes for the exciting-fluid, said annular spaces communicating with each other, substantially as described, and for the purpose set forth.

4. In a galvanic battery, the combination, with a jar containing an exciting-fluid and positive and negative electrodes, of supporting-feet by which said positive electrodes are held above the bottom of the jar, the upper surface of said feet being conical, as and for the purpose set forth.

381,336.



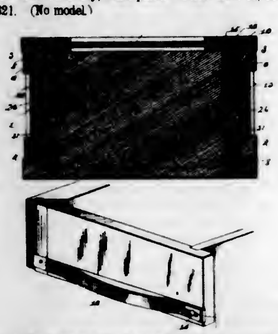
5. In a galvanic battery, the combination, with a jar containing an exciting-fluid and positive and negative electrodes, of a cover fitting said jar, an elastic gasket between said jar and cover, and elastic hooks attached to said jar and engaging the upper surface of the cover substantially as described.

6. In a galvanic battery, the combination, with a jar containing an exciting-fluid and positive and negative electrodes, of a central chamber communicating with the spaces around the positive and negative poles, and a reservoir suspended in said central chamber, substantially as described, and for the purpose set forth.

7. In a galvanic battery, the combination, with a jar containing an exciting-fluid, of the positive electrodes J', negative electrodes F F', perforated walls G, and depolarizing material, H', said electrodes, perforated walls, and depolarizing material being arranged in vertical walls immersed in the exciting-fluid, substantially as described.

8. In a galvanic battery, the combination, with a jar containing an exciting-fluid and positive and negative electrodes, of spurs B, spider C, having openings J^3, said spider supporting the electrodes above the bottom of the jar, and a central reservoir containing the crystals of the exciting-salt, substantially as described.

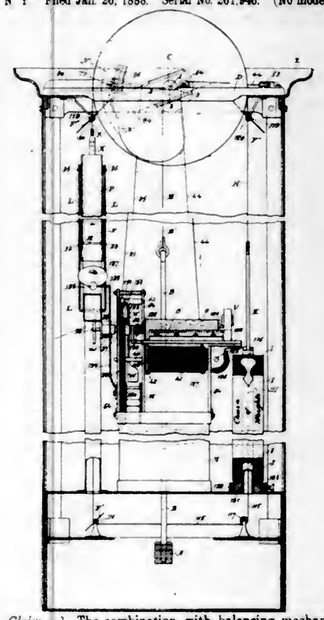
381,337. BUREAU. DWIGHT C. CLAPP, Owosso, Mich., assignor of one-half to David M. Batey, same place. Filed Nov. 19, 1887. Serial No. 255,621. (No model.)



Claim.—1. In a bureau, wash-stand, or similar article of cabinet-ware, a flat spring bulged outward at its middle secured to the end piece of a drawer at one end, and having a longitudinally-slotted straight end sliding upon a stud upon the end of the drawer, and having the outermost end bent to form a lip, as shown and set forth.

2. In a bureau, wash-stand, or similar article of cabinet-ware, the combination of drawer-guides at one panel, having spring-cushioned guide-blocks bearing against one end of the drawers, the drawers, and flat springs bulged at their middles and secured at one end to the end pieces of the drawers, and having their longitudinally-slotted free ends sliding upon studs or pins upon the ends of the drawers, as shown and set forth.

381,338. COIN-CONTROLLED MUSICAL WEIGHING AND WEIGHT-PRINTING MACHINERY. CLEMENT C. CLAWSON, Newark, N. J., assignor to the United States Machine and Inventions Company, New York, N. Y. Filed Jan. 26, 1888. Serial No. 261,946. (No model.)



Claim.—1. The combination, with balancing mechanism having a counterpoise whose counterbalancing effect increases with the motion of said mechanism, of a traveling belt connected at both ends with said mechanism, so as to be drawn back and forth thereby, and a regulating-fan driven by said belt, substantially as described.

2. The combination, with a balancing mechanism comprising a drum in connection with a counterpoise whose counterbalancing effect increases with the motion of said drum, of a belt having its ends connected with said drum on opposite sides of the axis thereof, and a regulating-fan driven by said belt, substantially as described.

3. The combination, with balancing mechanism having a drum or rotary device mounted in bearings whereon it may roll, as well as rotate, about a fixed axis, of a brake or brakes arranged at or near the end of the drum's traverse, so as to be engaged when the drum rolls to one side and disengaged in equilibrium when the drum is in an intermediate position, substantially as described.

4. The combination, with a drum forming part of the balancing mechanism, a printing-form connected by a flexible supporting-band with said drum on one side of its axis, and a counterpoise connected by a flexible supporting-band with the said drum on the opposite side of its axis, of a belt connected at one end with the said drum through said printing-form and its supporting-band, and at the other through the band which supports said counterpoise, substantially as described.

5. The combination, with a drum forming part of the balancing mechanism, a printing-form connected by a flexible supporting-band with said drum on one side of its axis, and a counterpoise connected by a flexible supporting-band with the said drum on the opposite side of its axis, of a belt connected at one end with the said drum through said printing-form and its supporting-band, and at the other through the band which supports said counterpoise, and a regulating-fan driven by said belt, substantially as described.

6. The combination, with balancing mechanism having a counterpoise composed of a series of weights connected together, so as to be automatically lifted in succession by the motion of said mechanism, and the printing-form adjusted or controlled by said mechanism, of a vertically-adjustable block or support whereon the weight rests when not suspended, so that the adjustment of said block or support regulates the position of the printing-form, substantially as described.

7. The combination of the printing-form, its supporting-band, the drum, the series of counterpoise-weights, their supporting-band, the hollow post over which the counterpoise-weights pass, and the belt connecting the said printing-form with the aforesaid band for supporting the counterpoise-weights, said belt running over guides and through said hollow post, substantially as described.

8. The combination, with a weighing-scale, of a power-driven mechanism connected with said scale and containing a drum, a wire or cord wound upon the said drum, a grooved distributing-wheel engaged by said wire or cord, and a plain shaft on which said wheel is loosely mounted, so as to be capable of sliding back and forth on said shaft, the operating power being conveyed through said cord or wire to the said drum, substantially as described.

9. The combination, with the traversing and rotating drum and its counterpoise, of the fan or fans arranged at or near the end of the drum's traverse, so as to be engaged or disengaged by the motion of said drum, substantially as described.

10. The combination, with the drum forming part of the balancing mechanism, the flexible printing-band connected with said drum on one side of its axis, and the counterpoise connected by a flexible supporting-band with the drum on the opposite side of the axis, of a belt connecting the lower end of the printing-band with the lower end of the counterpoise-supporting band, and guides or pulleys over which said belt is drawn, substantially as described.

11. The combination, with the drum, the flexible printing-band, the counterpoise, the counterpoise-supporting band, and the belt connecting the lower ends of said bands, of the regulating-fan driven by said belt, substantially as described.

12. A musical weighing-machine comprising, first, the weighing machinery composed of balancing and weight-indicating mechanisms with a platform or support for the persons or objects weighed arranged outside the standard containing said mechanisms; second, an automatic musical instrument, and, third, connections between the weighing machinery and the musical instrument, so that the latter plays a tune whenever a weighing takes place, substantially as described.

13. A musical weighing-machine comprising, first, the weighing machinery composed of balancing and weight-indicating mechanisms with a platform or support for the persons or objects to be weighed arranged outside the standard containing said mechanisms; second, an automatic musical instrument, and, third, connections between the weighing machinery and the musical instrument composed of a lock or detent for one of the elements mentioned under first and second, and means for releasing it by the operation of the other of said elements, so that the instrument plays a tune whenever a weighing takes place, substantially as described.

14. A musical weighing-machine comprising, first, balancing mechanism; second, a weighings-controller, as hereinbefore defined, and, third, an automatic musical instrument connected with said weighings-controller, so that the instrument plays a tune whenever a weighing takes place, substantially as described.

15. A musical weighing-machine comprising, first, a balancing mechanism; second, an automatic musical instrument, and, third, a weighings-controller, as hereinbefore defined, connected with said instrument and operated by stored power, substantially as described.

16. A coin-controlled musical weighing-machine comprising, first, a balancing mechanism; second, an automatic musical instrument; third, a weighings-controller, as hereinbefore defined, and, fourth, a coin-motor which controls the weighings-controller and the musical instrument, so that on the introduction of proper coins weighings are effected and tunes played at the same time, substantially as described.

17. A coin-controlled musical weighing-machine comprising, first, a balancing mechanism; second, a musical instrument; third, a weighings-controller; fourth, power-driven mechanism, whereby said instrument and said weighings-controller are operated, and, fifth, a coin motor which controls both the said instrument and the said weighings-controller through the power-driven mechanism, substantially as described.

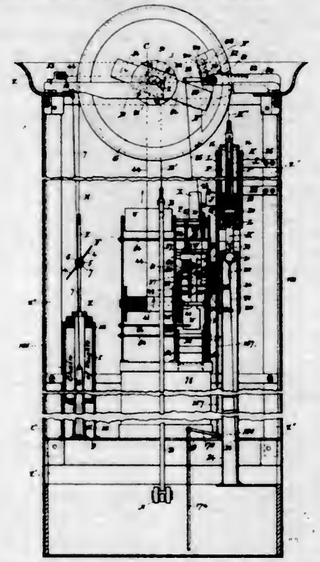
18. A coin-controlled musical weighing-machine comprising, first, a balancing mechanism; second, a lock or detent for said balancing mechanism; third, a clock-work connected with said detent so as to release the said detent when operated; fourth, a musical instrument connected with or driven by said clock-work, and, fifth, a coin-motor which controls said clock-work, and through it the detent and the musical instrument, substantially as described.

19. A coin-controlled musical weighing and weight-printing machine comprising, first, a balancing mechanism; second, a lock or detent for said balancing mechanism; third, a ticket printing and delivering mechanism whose type are adjusted and controlled by said balancing mechanism; fourth, a clock-work connected with said detent and said ticket printing and delivery mechanism, so as to release the detent and after a time print and deliver a ticket; fifth, a musical instrument connected with or driven by said clock-work, and, sixth, a coin-motor which controls said clock-work, and through it the detent, the ticket printing and delivery mechanism, and the musical instrument, substantially as described.

20. A musical coin-controlled machine having a movable platform, an upright glass case or standard, and coin-controlled weighing and tune-playing machinery exposed to view in said case, the balancing mechanism of such machinery being connected with the said platform, substantially as described.

21. A weighing-machine comprising a coin-controlled power-driven mechanism connected with the weighing machinery, so that it operates during the weighing, and a gong or bell which is sounded by said mechanism after the latter has run for a suitable time, substantially as described.

381,339. COIN-CONTROLLED WEIGHING AND WEIGHT-PRINTING MACHINERY. CLEMENT C. CLAWSON, Newark, N. J., assignor to the United States Machine and Inventions Company, New York, N. Y. Filed Dec. 2, 1887. Serial No. 256,798. (No model.)



Claim.—1. The combination, with a rotatory device and a counterpoise whose counterbalancing effect increases with the motion of said rotatory device, of a double bearing for said rotatory device—namely, a limited non-sliding bearing—which allows the said device to turn through a fraction of its angular movement, and a pivot-bearing whereof one part turns in or on the other when the limits of said non-sliding bearing are reached, substantially as described.

2. The combination, with a rotatory device and a counterpoise composed of a series of connected weights, of a double bearing for said rotatory device—namely, a limited non-sliding bearing and a pivot-bearing whereof one part turns in or on the other when the limits of the non-sliding bearing are reached—substantially as described.

3. The combination, with a rotatory device and a counterpoise whose counterbalancing effect increases with the motion of said device, of a bearing for said rotatory device formed by fulcrum-pieces attached to the rotatory device and having bearing-surfaces of convex curvature and level stationary bearing-surfaces on which said fulcrum-pieces rest, substantially as described.

4. The combination, with a drum and a counterpoise composed of a series of connected weights, of journals for said drum, and level stationary bearing-surfaces whereon said journals rest and roll, substantially as described.

5. The combination, with a rotatory device and a counterpoise whose counterbalancing effect increases with the motion of said device, of a double bearing for said device formed by journals attached thereto, which journals roll upon stationary bearing-surfaces and turn as pivots at the ends of said surfaces, where the traversing motion is arrested by stops, substantially as described.

6. The combination, with a rotatory device and a counterpoise composed of a series of connected weights, of the bearing for said device formed by journals which roll on stationary bearing-surfaces and turn as pivots at the ends of said surfaces, where the traversing motion is arrested by stops, substantially as described.

7. The printing-form composed of the flexible or soft-rubber band with type on one side and teeth on the opposite side thereof, in combination with a printing-finger and means for adjusting the said form

in front of said finger, which latter is independent of said means and is movable transversely to said form, substantially as described.

8. Vertically-movable printing-type which can be pushed out to print, in combination with the roller-guides therefor, and the printing-fingers movable transversely to the said form independently of said guides, substantially as described.

9. Vertically-movable printing-type which can be pushed out to print, in combination with the inking-roller, the guide-roller on the opposite side of the type from said inking-roller, and the horizontally-movable printing-finger, substantially as described.

10. A vertically-movable printing-form composed of type mounted on a flexible or soft-rubber band provided with side flanges, in combination with guides which overlap said side flanges, and between which the form moves, and a horizontally-movable printing-finger, substantially as described.

11. A vertically-movable printing-form having teeth on the back thereof and side flanges, in combination, a flanged guide-roller whose periphery bears against said side flanges, and is cut away for the passage of the said teeth, the flanges on the roller overlapping the flanges on the printing-form, substantially as described.

12. The combination, with balancing mechanism having a counterpoise whose counterbalancing effect automatically increases with the motion of said mechanism, of a printing-form composed of type and holding-teeth attached to opposite sides of a flexible or soft-rubber band, and a printing-finger, said form being adjusted or controlled by the said balancing mechanism, substantially as described.

13. The combination, with balancing mechanism having a counterpoise whose counterbalancing effect automatically increases with the motion of said mechanism, of the movable type which can be pushed out to print, an inking-roller, and a printing-finger, substantially as described.

14. The combination, with a revolving drum, of the band wound on the axle for applying the power to rotate the drum, the chain of weights, the counterpoise-band connected with the said chain of weights and wound upon the said drum, the printing-type, and the band connected with said type and wound on the drum in the opposite direction to the counterpoise-band, so that the type are lowered as the weights are raised, substantially as described.

15. The combination, with the upright card-box, the movable printing-type, and the horizontally-movable printing-finger, of the horizontally-reciprocating pusher, and the curved discharge-passage extending from a point opposite the end of the pusher, substantially as described.

16. The combination, with the upright card-box, of the horizontally-reciprocating pusher, and the curved discharge-passage extending from a point opposite the end of the pusher, and formed between the periphery of a roller and an inclosing concave, substantially as described.

17. The combination, with balancing mechanism and printing mechanism having printing-type adjusted or controlled by said balancing mechanism, of ticket-delivery mechanism comprising an upright card-box, a horizontally-reciprocating pusher, and a curved discharge-passage, substantially as described.

18. The combination, with balancing mechanism and printing mechanism having printing-type adjusted or controlled by said balancing mechanism, of ticket-delivery mechanism comprising an upright card-box, a horizontally-reciprocating pusher, and a curved discharge-passage formed by the periphery of a roller and an inclosing concave, substantially as described.

19. The combination, with balancing mechanism, of printing mechanism comprising type adjusted or controlled by said balancing mechanism, an inking-roller and a printing-finger, and a ticket-delivery mechanism, substantially as described.

20. The combination, with balancing mechanism, of printing mechanism comprising a soft-rubber type form adjusted or controlled by said balancing mechanism, an inking-roller and a printing-finger, and ticket-delivery mechanism comprising the upright card-box, the reciprocatory pusher, and the curved discharge-passage, substantially as described.

21. The combination, with a weighing-scale provided with an upright glass case or standard, and having the balancing mechanism supported and exposed to view in said case or standard, of a lock or detent which when engaged prevents motion of the balancing mechanism by the weight on the scale, a clock-work which operates to withdraw said lock or detent, and a coin-motor which releases said clock-work, substantially as described.

22. The combination, with a weighing and weight-printing machine having a power-driven mechanism to effect the printing, of a lock or detent for said machine connected with said mechanism, so as to be withdrawn thereby a suitable time in advance of the printing, and a coin-motor which releases said power-driven mechanism, substantially as described.

23. The combination, with a rotatory device and a counterpoise connected therewith whose counterbalancing force increases with the motion of said device, of a buffer or buffers for arresting the motion of said rotatory device, substantially as described.

24. The combination, with a rotatory device and a counterpoise connected therewith whose counterbalancing effect increases with the motion of said device, of the lock or detent, and a buffer or buffers, substantially as described.

25. The combination, with the rotatory device and counterpoise, of the locking-plate attached to said rotatory device, and the lock or detent carried by the machine-frame, substantially as described.

26. The combination, with the rotatory device and counterpoise, of the locking-plate held between pieces of yielding material, like soft rubber, at the edges of said plate, and a stop or stops in the path of said locking-plate, substantially as described.

27. The rocking detent or lock having a buffer at one or both ends, in combination with the rotatory device, a counterpoise, and a locking-plate on said rotatory device, substantially as described.

28. The combination, with the rotatory device and counterpoise, of the locking-plate held between pieces of yielding material, like soft rubber, at the edges of said plate, and a stop or stops also of yielding material, like soft rubber, in the path of said locking-plate, substantially as described.

29. The rocking detent or lock having a buffer at one or both ends, in combination with the rotatory device, a counterpoise, and a locking-plate on said rotatory device held between pieces of yielding material, like rubber, substantially as described.

30. The rotatory device, the counterpoise, the lock or detent for said rotatory device, and the buffer or buffers, in combination with the power-driven mechanism and coin-motor, substantially as described.

31. The coin-spout having a portion inclined from the vertical, and provided with flanges for supporting a proper coin near its edges and allowing small coin to drop through, and provided also with an incline below such flanged portion for conducting the smaller coin, in combination with the rotatory coin-holder for receiving coin from both inclines, and an escapement-lever against which only the coins supported by the flanges are directed, substantially as described.

32. The combination, with balancing mechanism exposed to view in its case, of a tube of opaque material surrounding the counterpoise, which is drawn from said tube by the operation of said balancing mechanism, and a coin-controlled lock or detent for said balancing mechanism, substantially as described.

33. The combination, with the drum, a counterpoise, and a band connected with the counterpoise and wound on said drum, of a fan movable with said band and counterpoise and revolved by such movement, substantially as described.

34. The combination, with the balancing mechanism having a counterpoise whose counterbalancing effect increases with the motion of said mechanism, the lock or detent, the printing mechanism, and the power-driven mechanism for releasing the detent and after running a certain time effecting the printing, of the fan for moderating the motion of the balancing mechanism so that it will the sooner come to a balance, substantially as described.

35. The balancing mechanism, the lock or detent therefor, and the ticket printing and delivering mechanism, in combination with a coin-motor whereby the operation of both sets of mechanism is controlled, substantially as described.

36. The combination, with a counterpoise formed of a series of weights which are successively lifted, of a spring connected with the bottom weight, substantially as described.

37. The combination, with the rotatory drum, of a band wound thereon, a rubber printing-band attached to one end thereof, and the weight and spring at the bottom of said printing-band, substantially as described.

38. The combination, with power-driven mechanism comprising a train of gearing, of an escapement-lever engaging a revolving pin on said gearing, a coin-spout for directing a coin against said escapement-lever, and one or more pins on another part of the gearing, which, by holding back the escapement-lever, permit the first-named pin to complete more than one revolution before the mechanism is arrested, substantially as described.

39. The drum having journals resting upon level stationary bearing-surfaces between stops, in combination with bands connecting the drum and its axle with the counterpoise and the power, respectively, substantially as described.

40. The combination of the scale-lever, the drum having journals resting upon level bearing-surfaces between stops, the band which conveys the pressure from the scale-lever to the axle of said drum, the series of scale-weights, the printing-form, and the bands between the drum and the scale-weights and printing-form, respectively, substantially as described.

41. The upright inclosed frame having a glass front and composed of a top and base, and the corner-pieces extending from top to base, in combination with balancing mechanism supported by and exposed to view in said frame, having a counterpoise whose effect increases with the motion of said mechanism, substantially as described.

42. The upright frame or standard of the weighing-scale, having a glass front and a vertical partition provided with a mirror on the face thereof, in combination with balancing mechanism, and a coin-controlled power-driven mechanism in front of said partition, and a weight for driving said power-driven mechanism behind said partition, said mechanism being supported by said frame, substantially as described.

43. The combination, with the mechanical power-driven mechanism, and the coin-motor which controls the same, of a shutter movable to close the coin slot or passage, and operating mechanism whereby said shutter is moved and the said slot or passage closed automatically when the power-driven mechanism is run down, substantially as described.

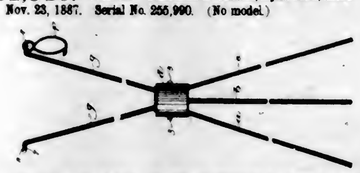
44. The combination, with a balancing mechanism, the detent therefor, a mechanical power-driven mechanism for releasing the detent, and a coin-motor for controlling the said power-driven mechanism, of a shutter movable to close the coin slot or passage, and operating mechanism whereby said shutter is moved and the slot or passage closed automatically when the power-driven mechanism is run down, substantially as described.

45. The combination, with a weighing and weight-printing mechanism having a coin-controlled ticket printing and delivery mechanism operated by a mechanical power, of a shutter movable to close the coin slot or passage, and operating means whereby said shutter is moved and the said slot or passage automatically closed when the power-driven mechanism is run down, substantially as described.

46. The combination, with a clock-work driven by a weight, and a coin-motor which controls said clock-work, of a shutter for closing the coin slot or passage of said coin-motor, a finger in the path of said weight, and connections between the finger and the said shutter, so that the shutter is closed automatically when the weight presses down the said finger, substantially as described.

381,340. TRIPOD.

FREEMAN N. COTTLE, Hyde Park, Mass. Filed Nov. 23, 1887. Serial No. 255,990. (No model.)



Claim.—1. In a tripod, the legs or supports *a b c* and the shell or case *d*, combined with the locking or retaining device sliding within the said shell, substantially as described, for holding the supports spread and permitting them to lie parallel as desired, and with arms or brackets erected in the said locking device, substantially as and for the purposes set forth.

2. In a tripod, the legs or supports *a b c*, bent outwardly at their upper ends, as at 2, combined with the shell or case *d*, having perforations in its cylindrical portion, as shown, and the locking or retaining device movable in the said shell, and provided with arm or bracket receiving sockets 5, substantially as described.

3. In a tripod, the legs or supports *a b c*, bent as at 3, and also having the outwardly-bent portions 2 at their upper ends, combined with the shell or case *d*, having perforations, as shown, to receive the said bent portions, and the locking or retaining device, as described, within the said shell, to hold and spread the legs or supports, and also adapted to receive in its top arms or brackets *g*, substantially as and for the purposes set forth.

4. In a tripod, the legs or supports *a b c* and the cylinder shell or case, combined with the locking or retaining device therein for the legs or supports, consisting of the cylinder or plug *f*, provided at its top with sockets to receive arms or brackets, and the guide-plate *e*, loosely connected thereto, substantially as described.

5. In a tripod, the shell or case, the legs or supports *a b c*, made detachable, as shown and described, and the chart-sustaining arms or brackets *g*, combined with the locking or retaining device within the said shell for and co-operating with the upper ends of the legs or supports, substantially as described.

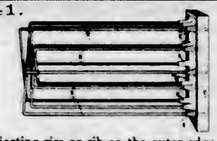
6. In a tripod, the legs, the retaining shell or case *d* therefor, the socketed rotatable sliding plug within the said shell, and arms to enter the said socketed plug, substantially as described.

7. In a tripod, the shell or case *d*, the rotatable sliding plug therein, the legs intermediate the said shell and plug, and supports or arms *g*, erected in the said plug, substantially as described.

381,341. PAVING-BLOCK.

REYNOLDS I. COWDEN, Lestonia, Ohio, assignor of one-half to Charles M. Schmick, same place. Filed Apr. 22, 1887. Serial No. 235,736. (No model.)

Claim.—As a new article of manufacture, a paving-block consisting, essentially, of a body or backing and metal cap or head, the latter



having a projecting rim or rib on the outer edge of its inner or lower face adapted to overlap the adjacent edges of the body of backing, and anchors consisting, essentially, of the rods bent into loop form and rigidly secured at their end to said inner or lower face of the cap or head and embedded in the body or backing, substantially as set forth.

381,342. BULLETIN-BOARD.

LEVI J. DE LAND, Fairport, N. Y. Filed Sept. 2, 1887. Serial No. 248,636. (No model.)



Claim.—1. The bulletin-board herein described, consisting of the uprights A A, having transverse grooves *a a* formed in them, the cross-bars B C, the straps D, looped around the uprights A, and seated in the grooves *a* thereof, and lapped at their ends on opposite sides of the said cross-bars, and the plates E, secured to the opposite sides of the uprights A A, and projected beyond the inner edges thereof, all substantially as and for the purposes specified.

2. In a bulletin-board, the combination of side rails, plates secured to the opposite sides of said rails and projected inwardly past the inner faces of said rails, forming pockets between said rails, whereby bulletins supported thereby may be seen from either side of the bulletin-board, substantially as set forth.

3. In a bulletin-board, the combination of the side rails, the cross bar or bars connecting such rails, and the plates secured to the side rails and extended past the inner edges thereof, forming the sides of the pockets, such plates being provided at their lower ends with extensions bent at right angles to the main portions of the plates, forming the bottoms of the pockets, substantially as and for the purposes specified.

4. The herein-described bulletin-board comprising the side rails provided with pockets to receive the bulletins, the cross-bars extended between said side rails, and the straps D, looped around the rails and secured to the cross-bars, substantially as set forth.

5. The improved bulletin-board herein described, consisting of the side rails, the cross-bars, the straps D, looped around the rails and secured to the cross-bars, and the plates E, secured to the side rails and projected inwardly past the inner edges thereof, forming pockets between said side rails, substantially as set forth.

381,343. ELECTRIC TRAIN-SIGNALING APPARATUS.

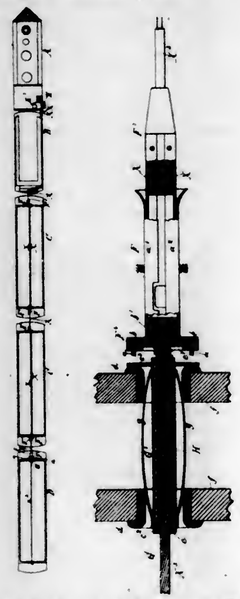
JOHN R. DE MIER, Las Cruces, N. Mex. Filed Mar. 10, 1888. Serial No. 266,785. (No model.)



Claim.—1. In an electric car-coupling, the combination of a detachable coupling-section, D, having an automatic circuit-closer, d^3, and the semi-cylindrical electric conductors, $c\,c'$, of the stationary coupling-section C, and a circuit-closing spring, F, having a bridging-flange, *f*, and lug f', substantially as and for the purpose described.

2. The combination of the electric conductor *c* of the stationary coupling-section C, pull-rod *e*, having contact-plate e^4, and the conductor c' of said section, having contact-spring c^4, substantially as and for the purpose described.

381,344. ELECTRIC TRAIN-SIGNALING APPARATUS. JOHN R. DE MIER, Las Cruces, N. Mex. Filed Mar. 10, 1888. Serial No. 266,786. (No model.)

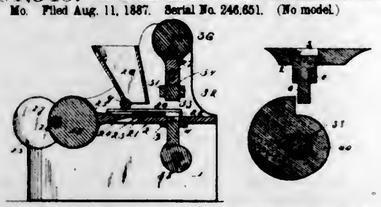


Claim.—1. In an electric train-signaling apparatus, the combination, with an electric coupling between cars, of the end contact portion, F^4, provided with the spring-contact device *a* and attached to the portion F of said coupling, the conductor's pull-rope, the flanged tubes G G', and the tension-spring H, said tubes and spring being supported by the car and one of the tubes connected to the coupling between the cars, substantially as and for the purpose described.

2. In an electric train-signaling apparatus, the combination, with the electric coupling between the cars, of a contact-end portion, F^4, provided with contact-springs *a*, and having an electrical conducting pull-rope and a flanged tube, G, attached to it, the flanged tube G', and spiral spring H, substantially as and for the purpose described.

3. The combination of the curved flat spring-bars, the eyes *d d* of car-walls, the stationary flanged tube G', sliding flanged tube G, tension-spring H, conductor's pull-rope X^4, and coupling between cars provided with contact-end portion, F^4, having spring-contacts, substantially as and for the purpose described.

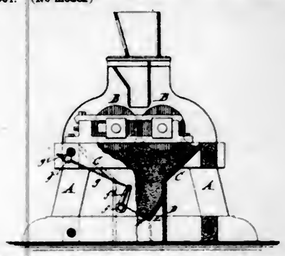
381,345. BRICK-MACHINE. WILLIAM DENGOLESKY, Booneville, Mo. Filed Aug. 11, 1887. Serial No. 246,651. (No model.)



Claim.—1. In a brick-machine, the combination, with a frame, of three shafts journaled therein, each of which is provided with a cog-wheel upon one end, said wheels being of the same size, an operating-wheel upon the side of the frame engaging with the wheels and adapted to rotate them in unison, a pair of eccentrics upon each of the shafts, said eccentrics being arranged diametrically opposite each other, two feed-slides, two sets of compressor-blocks, and a hopper above the slides.

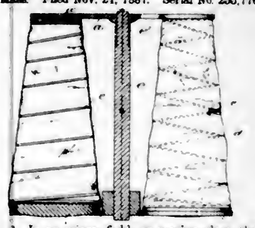
2. In a brick-machine, the combination of a frame, a movable feed-slide, an adjustable guide-board, and two vertically-movable compressor-blocks, the lower one of which passes through the guide-board and is regulated thereby, and eccentrics.

381,346. GRINDING-MILL. ANTON DOBLER, New York, N. Y., assignor to Charles Dobler, same place. Filed Dec. 4, 1886. Serial No. 220,661. (No model.)



Claim.—In a malt or grain mill, the combination, with the crushing-rolls, of a collecting-hopper below the rolls, a conveyer-trunk connected to the discharge end of said hopper, a valve in said trunk, and a spring normally holding said valve closed, whereby said hopper is kept filled with a passing mass of crushed grain, which excludes therefrom the ingress of air and is discharged in predetermined quantities.

381,347. OPERA, FIELD, OR MARINE GLASS. GEORGE H. EATON, Boston, Mass. Filed Nov. 21, 1887. Serial No. 255,776. (No model.)

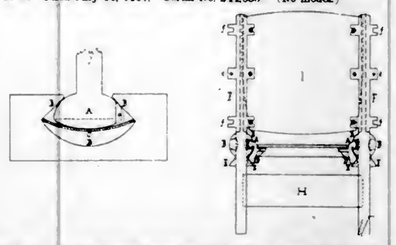


Claim.—1. In an opera, field, or marine glass, the two lens-holding plates *a b*, combined with two spiral springs, as *c c'*, one end of each spring being connected with one of the lens-holding plates, and the opposite end of each spring connected with the other lens-holding plate, and a covering for said springs, substantially as described.

2. In an opera, field, or marine glass, the two lens-holding plates *a b* and two spiral springs, *c c'*, attached at each end to the lens-holding plates, combined with the rod *e*, adapted to engage one of the lens-holding plates, and made movable through the other, and means, substantially as described, for moving the said rod *e* in the direction of its length only, as and for the purpose set forth.

3. In an opera, field, or marine glass, the two lens-holding plates, the flexible connections by which they are joined one to the other, combined with the rod *e*, passing through one of the lens-holding plates, and having at one end an attaching or engaging device to engage the other lens-holding plate, a series of teeth, *e'*, and a toothed wheel, *f*, substantially as and for the purpose specified.

381,348. UNIVERSAL JOINT. OLIVER N. EATON, New York, N. Y. Filed July 11, 1887. Serial No. 244,035. (No model.)



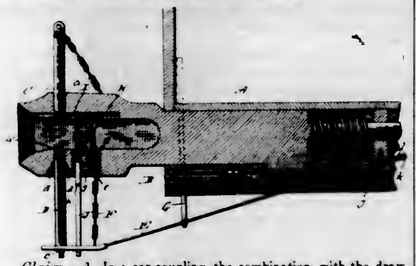
Claim.—1. A universal joint consisting of a double-convex ball or button with a suitable segment removed from its side, in combination with a corresponding double-concave socket, substantially as specified.

2. A universal joint consisting of a double-convex ball or button with a suitable section removed from its side, in combination with a corresponding double-concave socket containing an elastic disk or plate, in the manner and for the purpose substantially as specified.

3. A universal joint adapted to chairs with folding seat, consisting of seat-supports provided with double-convex ball or button, in combination with frames provided with double-concave sockets containing elastic disk or plate and provided with suitable stop, in the manner and for the purpose substantially as specified.

4. As combined by universal joints, a chair-frame and folding seat, said frame provided on each side with a perforated flange in the middle and slotted flange above and below, in combination with a chair-back having sides converging below the middle, in the manner and for the purpose substantially as specified.

381,349. CAR-COUPLING. RICHARD J. EDWARDS, Galena, Ill. Filed Feb. 6, 1888. Serial No. 263,104. (No model.)



Claim.—1. In a car-coupling, the combination, with the draw-head provided with the vertical pin-apertures, the front and rear walls of the lower portion of the lower one of said apertures being cut away or beveled, as at *d*, of the lower setting-pin setting in the lower beveled aperture, and the pivoted lever E, connected to the said lower pin, as and for the purpose set forth.

2. The combination, with the draw-head provided with the usual vertical pin-apertures, of the coupling-pin, the sliding dog in the draw-head to the rear of the coupling-pin, the lever H, pivoted in the draw-head and engaging with the said sliding dog, the depending rod J, attached to the said lever H, and levers for operating the depending rod, substantially as described.

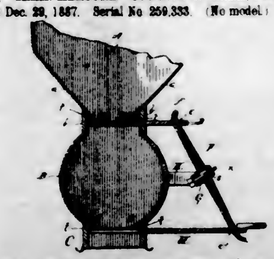
3. The combination, with the draw-head provided with the usual vertical apertures, of the coupling-pin, the lower setting-pin, the sliding dog I, sliding in a recess to the rear of the coupling-pin aperture, the pivoted lever H, engaging with the said sliding dog, the depending rod J, and operating-levers, substantially as described.

4. The combination, with the draw-head, of the coupling-pin, the sliding dog I, the pivoted lever H, engaging with and operating the said sliding dog, the said pivoted lever being provided on its lower end with a forward extension or arm, *g*, the depending rod J, hung on this arm *g* and provided with shoulders or projections *i*, the pivoted lever E, and a crank-shaft for operating this lever E, substantially as described.

5. The combination, with the draw-head, of the coupling-pin, the lower setting-pin, D, the lever E, for operating and supporting the said pin D, the sliding dog I, pivoted lever H, for operating the said dog, the shouldered depending rod J, hung upon the said pivoted lever H, the said depending rod J passing through a longitudinal slot in the lever E, and the crank-shaft for operating said lever E, substantially as described.

6. The combination, with the draw-bar, of the vertical setting-pin D, inserted in the lower aperture of the draw-head, and the lever E, attached loosely to the lower end of this pin D, the rear end of the said lever E being yieldingly and pivotally attached to the car-timbers, substantially as described.

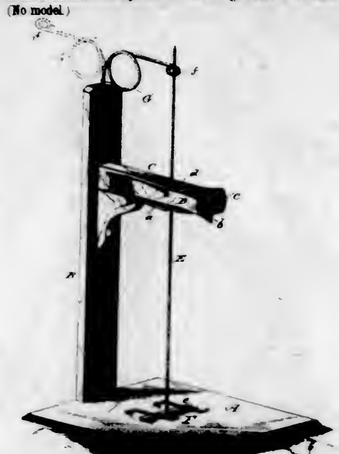
381,350. GRAIN-MEASURE. FRIEDRICH H. EHLERS, Montevideo, Minn. Filed Dec. 29, 1887. Serial No. 259,333. (No model.)



Claim.—1. In a grain-meter, the combination, with the hopper A, the chute C, the intermediate enlargement, B, and the two rectilinear slides D H, of the rocking bar G, its bearing-arms, and a slotted vibrating lever, F, endwise adjustable on said bar and provided with curved ends freely engaging with the said slides, substantially as and for the purposes described.

2. The combination, in a grain-measuring device, of a hopper having inclined sides *a a*, terminating at *a' a'* in narrow bearings below the upper end of cheeks *b b*, the enlarged receptacle B, also terminating in narrow bearings *c c* below the upper end of the chute C, the said bearings leaving clearing-spaces *t t*, the slides D H, and a lever, F, having hooked ends engaging loosely with both of said slides and endwise adjustable on a rocking bar, G, substantially as described.

381,351. DEVICE FOR STRINGING AND FILING PAPERS. WILLIAM E. BLAIR, Port Royal, S. C. Filed Aug. 16, 1887. Serial No. 247,080 (No model.)



Claim.—1. In a device for stringing and filing papers, a suitable base provided with an upright, in combination with a stringing-wire and a pivoted or laterally-swinging guard connected to the upright, and operating substantially as and for the purpose set forth.

2. In a device for stringing and filing papers, a suitable base having a holding device connected thereto and provided with an upright having a horizontally-extending arm and a latch, in combination with an upright stringing-wire having a cross-bar at one end, substantially as and for the purpose specified.

3. In a device for stringing and filing papers, the combination, with a stringing-wire provided with a cross-bar at its lower end, of a suitable base and standard, the latter having a horizontally-extending arm provided with a spring-latch for holding the stringing-wire in an upright position, substantially as and for the purpose set forth.

4. In a device for stringing and filing papers, a suitable base provided with an upright having a horizontally-extending arm and means for holding a stringing-wire thereto, and a spring-guard attached to said upright and operating substantially as and for the purpose specified.

5. In a device for stringing and filing papers, the combination, with the stringing-wire having a cross-bar at its lower end, of a holding device secured to the base of the device, a spring-latch upon a horizontal arm extending from the upright of the base, and a spring-guard, substantially as and for the purpose described.

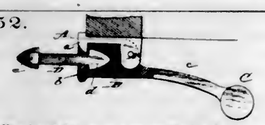
6. In a device for stringing and filing papers, the combination, with a stringing-wire provided with a cross-bar at its lower end, of an arm extending horizontally from the upright of the device and having a recess and a notch, and a spring-latch seated in said recess, both spring and arm at their extremities being curved outwardly, as shown.

7. In a device for stringing and filing papers, the combination, with a detachable stringing-wire, of a guard therefor, having an eye with which the point of the wire engages, substantially as and for the purpose specified.

381,352. CAR-COUPLING. SIMON FAIRMAN, Baltimore, Md., assignor to Benjamin G. Harris, same place. Filed Nov. 23, 1887. Serial No. 256,007. (No model.)

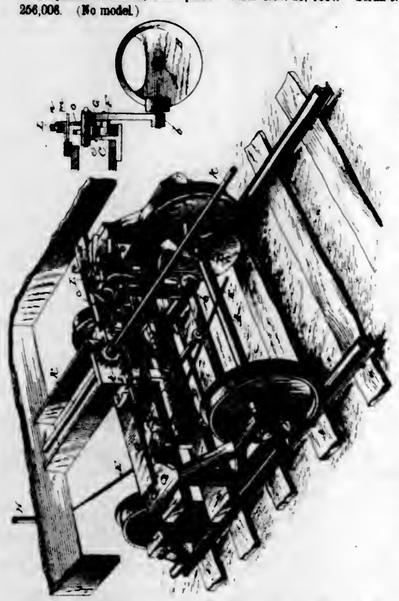
Claim.—1. A coupling-head for cars, composed of a fixed part, A, having a shoulder, *a*, and a part, B, hinged thereto, having a cavity fitting over the fixed part, a shoulder corresponding to the shoulder *a*, and a rear weighted arm, all substantially as described.

381,352.



2. A coupling-head for cars, composed of a fixed part having a shoulder, *a*, and a part, B, hinged thereto, having a cavity fitting over the fixed part, a shoulder corresponding to the shoulder *a*, and a rear weighted arm, in combination with a link having arrow-head-shaped ends and the additional half-heads *c*, substantially as described.

381,353. CAR-BRAKE. SIMON FAIRMAN, Baltimore, Md., assignor to Benjamin G. Harris, same place. Filed Nov. 23, 1887. Serial No. 256,006. (No model.)



Claim.—1. In combination with car-brakes and the operating-chain therefor, a cam-wheel fixed upon the axle, having double-inclined faces, a lever operated by the cam-wheel, a bar arranged to bear against the brake-chain, and connections between the bar and the oscillating lever, whereby the oscillations of the lever push the bar against the chain, substantially as described.

2. In combination with the brakes and chain of a car, a cam having double-incline lateral faces, a lever operated by the cam, and a laterally-sliding rack-bar operated by a pawl on the lever and arranged to bear against the chain of the brake, substantially as described.

3. In combination with the brakes and chain of a car, the sliding rack-bar arranged to bear against the chain, the holding and the working pawls, the latter carried upon a lever, the said lever, and the cam-wheel on the axle, substantially as described.

4. In combination with the brakes and chain of a car, the sliding rack-bar arranged to bear against the chain, the holding and the working pawls, the latter carried upon a weighted lever, the said lever, and the cam-wheel having double-inclined faces, substantially as described.

5. In combination with the brakes and chain of a car, laterally-sliding rack-bar, working-pawl carried upon an oscillating lever and worked by a cam on the axle, an arm on said pawl, a plate arranged to operate said arm, and connections between the plate and the working-shaft, substantially as described.

6. In combination, a cam-wheel on the axle, having double-inclined faces, a weighted oscillating lever carrying a working-pawl, a sliding rack-bar worked by the pawl, a holding-pawl, and a stud on the rack-bar arranged to operate against the chain of the brake, with mechanism for releasing the brake, substantially as described.

7. In combination with a brake-applying apparatus having pawls by which it is operated and held, a sliding rack, a shaft carrying a pinion engaging with the rack, and connections between them and the pawls, whereby the turning of the shaft is communicated to the pawls to release the brakes, all substantially as described.

8. The operating-rod carrying a pinion engaging with a sliding rack-bar which releases the working and holding pawls of the brake-applying mechanism, the rack on said bar being arranged in relation to its pinion to cease action when the brakes are released and to allow the pinion to continue to turn, substantially as described.

9. In combination, the operating-shaft carrying a pinion, the sliding rack-bar engaging therewith, an inclined extension of the rack-bar, a weighted lever operated by the inclined extension, and an arm on the working-pawl of the brake-applying apparatus operated by the weighted lever to release the brake mechanism, all substantially as described.

10. In combination with the brakes of a car and with the chain and hand-wheel shaft thereof, a laterally-moving bar carrying a friction-pulley arranged to press the chain aside and apply the brake, all substantially as described.

11. In combination, the cam-wheel, the weighted lever carrying a pawl with an arm thereon, and having also an arm on its upper end above the pawls, and a weighted lever carrying a plate arranged to press down the arms and to throw the weighted lever and the pawl out of connection with their working parts, substantially as described.

12. In combination with the operating-rod of a railway-car brake, a shell, Q, on the end of each rod, hemispherical in shape, with a cylindrical extension provided with a slot, *q*, the slots being arranged on opposite sides, as explained, in combination with a dumb-bell coupling having a pin, *r*, fitted to the slots, the pin on one ball of the dumb-bell being on the upper side and on the other ball on the lower side, substantially as described.

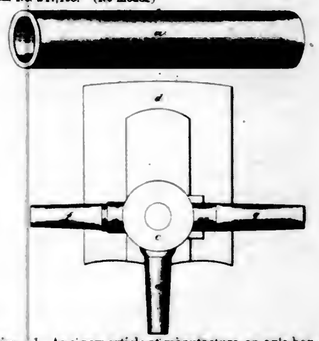
381,354. PYROXYLINE VARNISH. WALTER D. FIELD, Short Hills, N. J. Filed Aug. 13, 1887. Serial No. 246,864. (No specimens.)

Claim.—1. The improvement in making pyroxyline solutions or compounds consisting in dissolving or converting the pyroxyline by subjecting it to the action of the aforesaid mixture of the acetic-acid derivatives of the lighter alcohols of fusel-oil or its specified substitute, substantially as described.

2. A pyroxyline solution or compound, especially a thin solution or lacquer, consisting of pyroxyline dissolved in or converted by the aforesaid mixture of the acetic-acid derivatives of the lighter alcohols of fusel-oil or its specified substitute, substantially as described.

3. The varnish or lacquer composed of pyroxyline dissolved in a menstruum, consisting of naphtha in conjunction with the aforesaid mixture of the acetic-acid derivatives of the lighter alcohols of fusel-oil or its specified substitute, substantially as described.

381,355. MANUFACTURE OF AXLE-SKEINS. EDWIN FIRTH, ALBERT TOMPKINS, and IRA TOMPKINS, Troy, N. Y. Filed Aug. 17, 1887. Serial No. 247,195. (No model.)



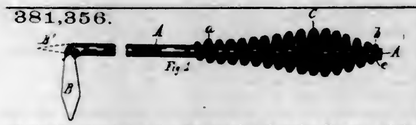
Claim.—1. As a new article of manufacture, an axle-box made of a single piece of cold-drawn seamless steel tubing, substantially as described.

2. The combination of the die to receive the blank, the vertically-movable hammer, the rotating hub journaled to the hammer, and the series of punches or formers attached to the said hub and radiating therefrom, substantially as described.

381,356. FIRE-POKER. JOHN E. GAITLEY, Troy, N. Y. Filed Dec. 31, 1885. Serial No. 187,202. (No model.)

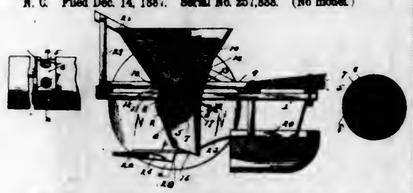
Claim.—The herein-described fire-poker, composed of a shank, A, provided with an annular groove, *c*, and a coiled spring, C, the inner

381,356.



coil of said spring being of a diameter less than the diameter of the shank and in engagement therewith, and the outer coil of which is adapted to engage the groove in the shank to retain said coil in position, substantially as described, and for the purposes set forth.

381,357. PEANUT-PLANTER. RUFUS GARDNER, Scotland Neck, N. C. Filed Dec. 14, 1887. Serial No. 257,888. (No model.)



Claim.—In a peanut-planter, the combination of the drive-wheels and the cylinder, the metal band formed in sections and with the series of cups or openings, and the screws working through the said openings, the hopper having the slots in its lower end and the brushes secured at the inner ends of the said slots, and the spout having the rounded recessed upper end and the strip of leather secured across the upper curved end of the spout, substantially as and for the purpose set forth.

381,358. WHEELBARROW. DAVID A. GARVER and CLARENCE H. STRAIGHT, Bryan, Ohio. Filed Jan. 28, 1888. Serial No. 262,228. (No model.)

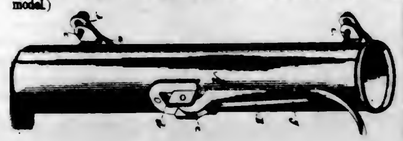


Claim.—1. In a wheelbarrow-frame, the combination, with the handles or side bars, A A, of the cross-bars *b b'*, bolted thereto, their ends projecting beyond the side bars, and the bars *a a'*, arranged in pairs at opposite sides of the barrow and bolted to the projecting ends of the cross-bars *b b'*, as shown, the lower ends of each pair joined together and forming legs, and the upper ends separated to form front and rear supports for the tray, substantially as and for the purpose described.

2. In a wheelbarrow-frame, the combination, with the handles or side bars, A A, of the cross-bars *b b'*, bolted thereto, their ends projecting beyond the side bars, the bars *a a'*, arranged in pairs at opposite sides of the barrow and bolted to the projecting ends of the cross-bars *b b'*, as shown, the lower ends of each pair joined together and forming legs, and the upper ends separated to form front and rear supports for the tray, and the cross-bar *d*, arranged in the angles formed by the meeting ends of the bars *a a'* and connecting the legs at opposite sides, substantially as shown and described.

3. In a wheelbarrow-frame, the combination, with the handles or side bars, A A, of the braced legs formed of bars *a a'*, arranged in pairs at opposite sides of the barrow and connected at their lower ends, the socketed foot-pieces *c*, which receive the ends of the bars *a a'* and hold them together, the transverse bar *d*, arranged in the angles of the meeting ends of the bars *a a'*, and bolts passing through the foot-pieces *c* and bar *d*, to clamp and hold the parts together, substantially as shown and described.

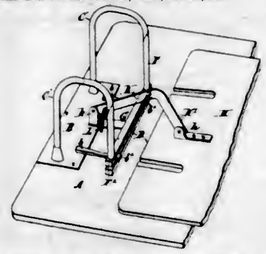
381,359. COMBINED WHIP-SOCKET AND REIN-HOLDER. GEORGE H. GASKINS, Newburg, N. Y., assignor to Henry Garner and Charles M. Dimmick, same place. Filed Aug. 19, 1887. Serial No. 247,381. (No model.)



Claim.—1. In a combined whip-socket and rein-holder, the vertical cylindrical case having a rectangular opening in its one side, the elongated leaf-spring secured at its upper end to the top inner surface of the case and depending portion to be engaged and compressed by the butt of the whip, and thereby retain the same, and having its lower end flattened, and a lever pivoted on the side of the case, and having one end extending through the opening therein and engaging with the lower flattened free end of the spring, substantially as described.

2. The combination, in a combined whip-socket and rein-holder, of the vertical cylindrical case having an opening in one side, a vertical leaf-spring secured at its upper end within said case, and having its lower free portion curved, as described, a cast-metal bracket secured on the side of said case and having an opening registered with an opening in the latter, integral ears formed on said bracket, and a lever having a central curved portion pivoted in said ears, and a lower portion extending through the opening in the said bracket and case and contacting with said spring, and an upper outer portion curved, as specified, and adapted to be thrown against the case when the spring and the lower portion of the lever are forced to one side, substantially as set forth.

381,360. OFFICE-FILE FOR LETTERS, PAPERS, &c. FREDERICK GAMLEY, Montreal, Quebec, Canada, assignor to John J. Drummond, Chicago, Ill. Filed Jan. 5, 1888. Serial No. 259,876. (No model.) Patented in Canada Oct. 13, 1887, No. 27,812.



Claim.—1. In a letter-file, the combination, with the back plate and cover, of a bent lever with short arm resting on and pivoted to cover and long arm pivoted to back and held to it by springs, all as herein specified, and for the purposes set forth.

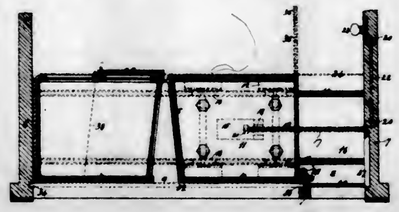
2. In a letter-file, the combination, with the back plate, of a metal plate on same carrying arched wires, a loose bar held in place by arms from such plate, wires projecting from same, and a spring projecting from plate bearing against projection on loose bar and holding it at any angle, all substantially as herein set forth.

3. The combination, with the bar D, carrying wires E E, and spring *d*, of receiving-tubes F F, mounted on bar F' and slipped over wires E E, all as and for the purposes set forth.

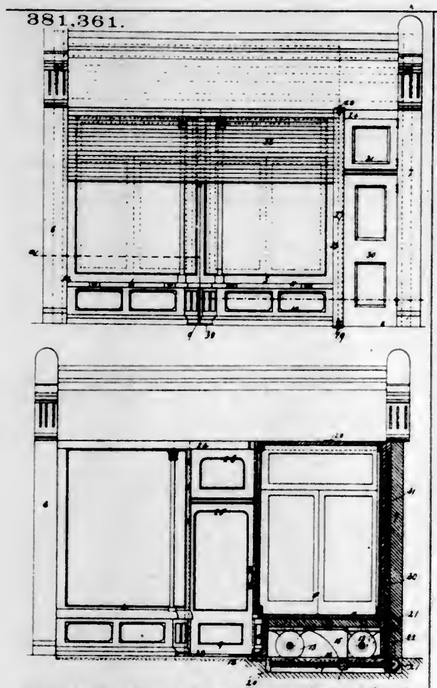
381,361. SHOP-FRONT. JOHN GOOCH, Brompton Road, County of Middlesex, England. Filed Apr. 1, 1887. Serial No. 233,276. (No model.) Patented in England Mar. 14, 1887, No. 3,850; in France Mar. 23, 1887, No. 182,396; in Belgium Mar. 23, 1887, No. 76,835; in Norway Mar. 29, 1887, No. 501; in Germany Mar. 29, 1887, No. 41,009; in Sweden Mar. 31, 1887, No. 1,028; in Canada Apr. 12, 1887, No. 26,433; in Italy Apr. 21, 1887, No. 21,437; in Victoria Apr. 29, 1887, No. 5,045; in Tasmania May 7, 1887, No. 463/9; in New Zealand May 16, 1887, No. 2,239; in South Australia May 23, 1887, No. 812; in Spain June 15, 1887, No. 6,843; in New South Wales July 30, 1887, No. 2,115; in Austria-Hungary Aug. 27, 1887, No. 12,350 and No. 34,539; in Queensland 1887, No. 293, and in India Dec. 28, 1887, No. 222½.

Claim.—1. A shop-front in two parts, one movable laterally with reference to the other, substantially as and for the purpose set forth.

2. A shop-front in two parts, one mounted on wheels, and thereby movable laterally with reference to the other.



381,361.



3. A shop-front in two parts, one of which is fixed and the other movable laterally, in combination with a door to close the space between the two parts when they are separated, and a door and removable upright for the space left between the side wall of the shop and the movable part when the parts are brought together, substantially as set forth.

4. The combination of the fixed part of a shop-front and a movable part having an extension, 15, below the same, a feed-screw to which the said extension is adapted below the flooring, and operative gearing for the said feed-screw, all substantially as specified.

5. The combination of the movable part of a shop-front mounted on wheels, with guiding-rails for the wheels, a guiding-rail at the top, a depending extension from the said movable part, a feed-screw adapted to the said extension, and gearing for the feed-screw.

6. The combination of the fixed and movable parts of a shop-front with a movable upright adapted to fit against the said movable part when it is closed against the fixed one, and serving as as a door-post, and a hinged door in connection therewith, all substantially as specified.

7. The combination of the fixed and movable parts of a shop-front with a movable upright adapted to fit the movable part of the shop-front, and having a guiding-groove, 33, for the rolling shutter, all substantially as specified.

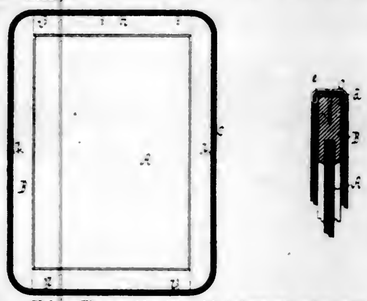
381,362. WASHING-MACHINE. OLIVER J. GRAHAM, Spokane Falls, Wash. Filed Nov. 10, 1887. Serial No. 254,825. (No model.)



Claim.—1. The combination, with the oscillating washing-box, of the internal removable end attachments comprising a compressed-air chamber and dashing-buckets in each, substantially as described.

2. The combination, with the rectangular oscillating washing-box, of the cleat-blocks C^3, the turn-buttons d', and the frames or attachments D, held between said cleat-blocks and turn-buttons and comprising the back plate, d^2, the horizontal plate d^3, the side plates, d^4, the downwardly-inclined plate d^5, which, with said back, horizontal, and side plates, form the compressed-air chamber D', and the angularly-mounted upwardly-projecting plates d^7 and d^8, forming the dashing-buckets D^2 and D^3, substantially as described.

381,363. MUFFLED FRAME FOR SCHOOL-SLATES. GEORGE GRAY, New York, N. Y. Filed Jan. 17, 1887. Serial No. 224,624. (No model.)



Claim.—The combination, with a frame of a slate, of a tubular binding of soft fabric and a sheet-metal concave stiffening-strip, said strip being inclosed in the tubular binding and attached with the binding to the periphery of the frame by overlapping its inclosed edge upon each side of the frame and by nails driven through both the fabric and strip into the periphery thereof, thereby muffling the periphery and sides of the frame by a single piece of fabric, substantially as shown and described.

381,364. DENTAL PLUGGER. BYRON W. HAINES, San Francisco, Cal. Filed Sept. 2, 1886. Serial No. 212,484. (Model.)



Claim.—1. In a dental plugger, the combination of the tool-carrier M, pivoted hammer H, spring K, rod C, link l, loosely jointed to the end of the rod, spring G, and mechanism, substantially as described, for producing rectilinear movement of the rod from the motion of a rotary spindle.

2. In a dental plugger, a movable block, M, forming a carrier for the plugging point or tool, having a socket, *m*, and cut away on its inner side to form an anvil portion or surface to receive blows of a pivoted hammer vibrating in an arc, said anvil-surface being substantially at a right angle to the line of the plugging-point, substantially as described.

3. In a dental plugger, the combination of a hammer vibrating in an arc across the plugger-stock to operate a plugging point or tool at substantially a right angle to the line of the plugger, a spring to throw the hammer, and a rectilinearly-moving rod attached to the hammer by a stud and slotted link and having a movement backward to compress the hammer-spring and a quick movement forward in advance of the action of the hammer-spring, substantially as described, to operate as set forth.

4. In a dental plugger, the combination of the vibrating hammer H, tool-carrier M, and spring tool-locking clamp L, substantially as set forth.

5. In combination with the tool-carrying block M, having the tool-socket *m* and shoulder M^6, the slotted spring-clamp L, substantially as set forth.

6. The combination, with the hammer H, of the spring-plate P, attached at one end to the face of the hammer near the center of movement and setting away from the face at the opposite end, substantially as described.

7. In a dental plugger, the combination of the rotating shaft B, stirrup-piece D, having the clutch D' at one end and carrying the cam-surface E on the other end, the sliding clutch-collar B', the spring B^4, slide A^3, the rod C, with cam-surface E', engaging the cam E, and the spring G, applied to operate substantially as set forth.

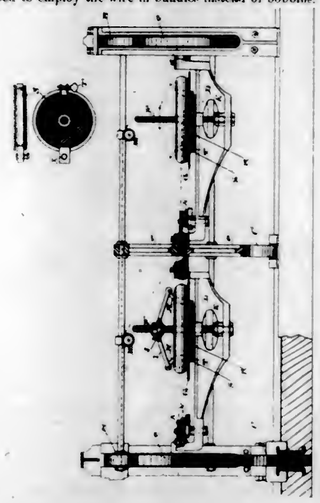
8. In a dental plugger, the combination, with the revolving stirrup-piece connected to the rotary shaft B by a clutch which permits longitudinal adjustment of the stirrup-piece, of the screw-threaded sleeve F', capstan-nut F, and spring locking-washer f^6, having a bearing on the end a^3 of the tubular coupling-piece A', substantially as described, for operation as set forth.

9. In a dental plugger, the combination of the head A, having a hammer-chamber with a socket through the end thereof at a right angle to the line of the plugger-stock, the pivoted hammer vibrating in said chamber in an arc tangent to the line of the socket, tool-carrying block M, movable in said socket, and a tool-clamp, L, adapted to confine a plugging point or tool against the end of said block and to yield and follow the movement produced by the impact of the hammer, substantially as set forth.

10. In a dental plugger, the combination, in a suitable case having a socket to hold a movable tool-carrying block, as described, of the block M, having a tool-socket, *m*, and cut-away portion between the ends, and the spring-hammer H, provided with a slotted nose, h^3, substantially as set forth.

381,365. WIRE-ROPE-MAKING MACHINE. ANDREW S. HALLIDIE, San Francisco, Cal. Filed Oct. 6, 1887. Serial No. 251,664. (No model.)

Brief.—The machine is an improvement upon that shown in Letters Patent No. 369,055, dated August 30, 1887, and is particularly adapted to employ the wire in bundles instead of bobbins.



Claim.—1. In a wire-strand-making machine, an outer revolving frame and supplemental frames journaled in the axis of the outer frame and counterweighted to prevent their revolution, in combination with the vertical spindles, the disk or plate upon which the wire bundles are supported, the hinged or pivoted arms, and the levers connecting their upper ends with the central collar which slides upon the spindle, substantially as herein described.

2. In a wire-strand-making machine, the outer revolving frame, supplemental frames journaled longitudinally in the axis of the revolving frame and counterweighted to prevent their revolution, the wire-bundle-supporting plate or disk turning upon a vertical spindle, the hinged arms, levers, and sliding collar, in combination with the tension-rollers and the hinged spring-actuated lever, substantially as herein described.

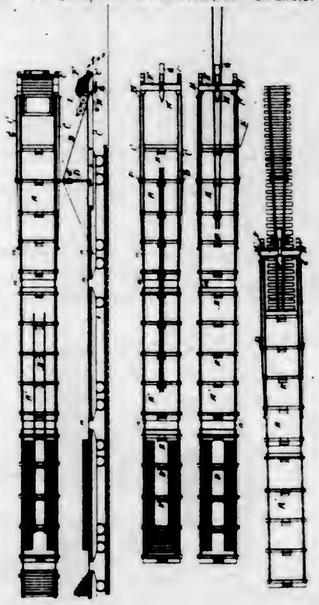
3. The wire-strand-making machine consisting of the outer revolving frame and the supplemental counterweighted wire-supporting swifts, the frames of which are journaled longitudinally in the outer main frame, in combination with levers fulcrumed in said supplemental frames, having pulleys journaled upon the levers, and a spring acting upon the lever, substantially as herein described.

4. In a wire-strand-making machine, the outer revolving frame, the inner swift-supporting counterweighted frames journaled in the axis of the outer frame, and the tension-pulleys and lever, in combination with the brake acting upon the revolving swifts, substantially as herein described.

5. In a wire rope or strand making machine, an outer revolving frame composed of disks with rods extending horizontally from end to end of the frame and uniting the disks, supplemental counterbalanced frames journaled in the axis of the outer revolving frame, and swifts upon which the bundles of wire are supported, journaled loosely on vertical spindles fixed in the frames D, in combination with the counter-shaft extending longitudinally beneath the center of the frame A, pulleys or rollers secured to said shaft beneath the disks of the revolving frame A and by which said disks are supported and driven, and corresponding guiding pulleys or rollers journaled in the fixed frame or standards, so as to press upon the upper portion of and guide the disks, substantially as herein described.

6. In a rope-machine, the horizontal revolving frames within which the counterbalanced supports are journaled, in combination with a horizontal driving-shaft extending beneath the revolving frames, with rollers by which the disks of the frame are supported and driven, and guide-rollers journaled upon the stationary frame or standards, so as to steady and support the upper edges of the disks, substantially as herein described.

381,366. LAYING RAILROAD-TRACK. GEORGE F. HARRIS, New York, N. Y. Filed Sept. 17, 1887. Serial No. 249,989. (No model.)

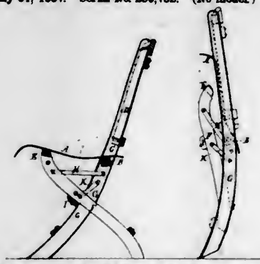


Claim.—1. The herein-described improvement in the method of transporting by and delivering from a construction-train of cars the loose metal rails, it consisting in primarily placing said rails in piles on said cars, then securing the rails together end to end while on the cars and pushing or transporting them endwise forward relatively to the cars, supporting them on anti-friction devices in front of the train till they are opposite the positions they are to occupy, and finally carrying them (while still joined) laterally and placing them in position on the ground or road-bed, whereby the rails on one side of two adjacent track-sections can be removed and laid together, substantially as set forth.

2. The herein-described improvement in the method of transporting and delivering from a construction-train of cars the metal rails, it consisting in primarily placing said rails in piles on said cars, then securing the rails together end to end to form pairs, placing two of such pairs side by side on the train, advancing the two pairs simultaneously, afterward separating the one pair from the other at a point in front of the train, carrying the pairs in opposite directions laterally, and laying them in final position on the ties, whereby all of the rails of two track-sections can be delivered and laid substantially simultaneously, as set forth.

3. The combination, with the car of a construction-train, of the divider H or guide, arranged, substantially as set forth, to separate laterally two advancing rails, as described.

381,367. FOLDING CHAIR. HERBERT J. HARWOOD, Littleton, assignor to the Harwood Manufacturing Company, Boston, Mass. Filed May 31, 1887. Serial No. 239,732. (No model.)

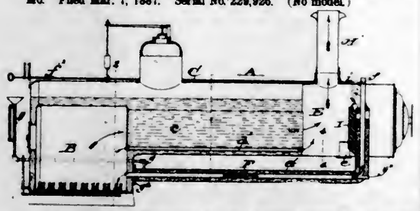


Claim.—1. In the folding chair, the combination, with the fore and back legs, the back, and turn-down seat, the latter being hinged to the rear legs and independent of the front ones, of the two pairs of metallic arms arranged with and connecting the front and back legs and pivoted to them, as set forth, and of the bar J, connecting the back legs and extending laterally beyond them, so as to bear on the front legs when the chair is unfolded and in use.

2. The combination, with the fore and back legs, the back, and turn-down seat, the latter being hinged to the rear legs and independent of the front ones, of the two pairs of metallic arms arranged with and connecting the front and back legs and pivoted to them, as set forth, and of projections from the back legs to bear against the fronts of the front legs when the chair is unfolded or in use by a sitter, as specified.

3. The combination, with the fore and back legs and the turn-down seat, the latter being hinged to the rear legs and independent of the front ones, of the two pairs of metallic arms applied to the legs, and of the bar I, applied to either set of legs, so as to serve as a rest or stop for the back legs when the chair is unfolded and in use.

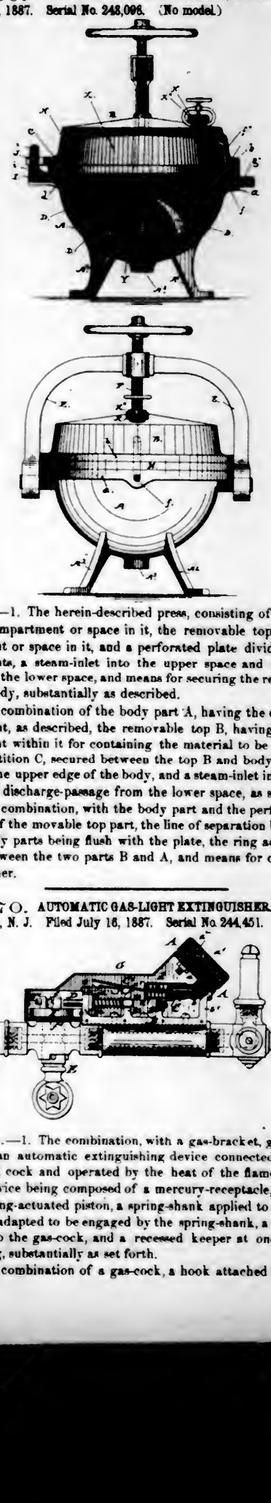
381,368. STEAM-BOILER. CLEMENTINA J. M. HAYNA, St. Louis, Mo. Filed Mar. 7, 1887. Serial No. 229,926. (No model.)



Claim.—1. The combination of the furnace-chamber, the chamber beyond the barrel, and the flue leading from the furnace-chamber beneath the barrel and extended upward through the smoke-box E, as described, said flue being surrounded by a water-chamber open at the top, substantially as described.

2. In a boiler-furnace, the screen in front of the upturned portion of the chamber G, in combination with the chamber E, as and for the purpose described.

381,369. FILTER-PRESS. ADAM HEBERER, Alameda, Cal. Filed Aug. 27, 1887. Serial No. 248,096. (No model.)

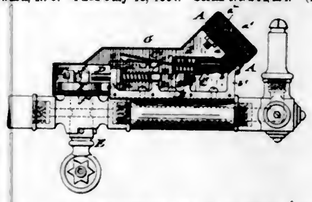


Claim.—1. The herein-described press, consisting of the body A, having a compartment or space in it, the removable top B, having a compartment or space in it, and a perforated plate dividing the two compartments, a steam-inlet into the upper space and a discharge-outlet from the lower space, and means for securing the removable top upon the body, substantially as described.

2. The combination of the body part A, having the drip space or compartment, as described, the removable top B, having a space or compartment within it for containing the material to be pressed, the strainer-partition C, secured between the top B and body A on a line flush with the upper edge of the body, and a steam-inlet into the upper space and a discharge-passage from the lower space, as set forth.

3. The combination, with the body part and the perforated plate set into it, of the movable top part, the line of separation between said top and body parts being flush with the plate, the ring adapted to be inserted between the two parts B and A, and means for clamping the parts together.

381,370. AUTOMATIC GAS-LIGHT EXTINGUISHER. LOUIS HECK, Newark, N. J. Filed July 16, 1887. Serial No. 244,451. (No model.)



Claim.—1. The combination, with a gas-bracket, gas-cock, and burner, of an automatic extinguishing device connected to said gas bracket and cock and operated by the heat of the flame, said extinguishing device being composed of a mercury-receptacle, a guide-cylinder, a spring-actuated piston, a spring-shank applied to the piston, a spring-bolt adapted to be engaged by the spring-shank, a spiral spring connected to the gas-cock, and a recessed keeper at one end of the spiral spring, substantially as set forth.

2. The combination of a gas-cock, a hook attached to the same, a spiral spring, a keeper attached to the inner end of the spring, and a spring-bolt for engaging said keeper, substantially as set forth.

3. The combination of a gas-cock, a recessed hook attached to the same, a spiral spring, a recessed keeper attached to the inner end of the spring, a spring-bolt engaging the recessed keeper, and a clearing-pin sidewise of the end of the spring-bolt, substantially as set forth.

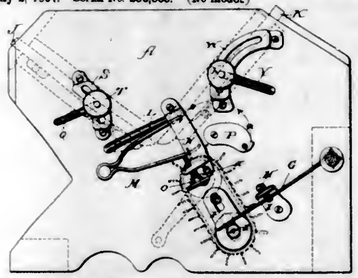
4. The combination of a gas-cock, a spiral spring, a recessed keeper at the inner end of the spring, a hook attached to the gas-cock for engaging said keeper, a spring-bolt adapted to engage the keeper and set the spiral spring to tension, a spring-actuated piston having a spring-shank, a guide-cylinder for the piston, means for locking and releasing the spring-bolt, a mercury-receptacle arranged near the gas-outlet and communicating with the guide-cylinder, and a gas-burner, substantially as set forth.

5. In a gas-light-extinguishing device, the combination of a mercury-receptacle, a cylinder communicating with said receptacle, a piston guided in said cylinder, a spiral spring acting on the piston, a casing for retaining said spiral spring, a spring-shank attached to the piston and provided with a catch, and a spring-bolt adapted to be engaged by said catch, substantially as set forth.

6. The combination of a mercury-receptacle arranged in proximity to the gas-outlet, a cylinder connected to said receptacle, a spring-actuated piston guided in said cylinder, a spring-shank attached to the cylinder and provided with a catch, an inclined lug, a bracket-arm having a rounded-off end for engaging said lug, and a spring-actuated bolt having a lug adapted to be engaged or released by the catch of the spring-shank, substantially as set forth.

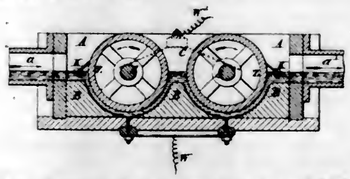
7. The combination of a gas-burner, a mercury-receptacle, a cylinder communicating with the same, a spring-actuated piston guided in said cylinder, a spring-shank applied to the piston, said shank being provided with means for engaging or releasing the spring-bolt, a spring-bolt acted upon by a spring of less force than the spring of the piston, a spiral spring having a recessed keeper at the inner end and adapted to be locked by the spring-bolt, and a gas-cock having a recessed hook for engaging said keeper and setting the spring to tension on being opened, substantially as set forth.

381,371. MILL-FEED. GOTTLIEB HELLER, Dillon, Kans. Filed May 2, 1887. Serial No. 236,583. (No model.)



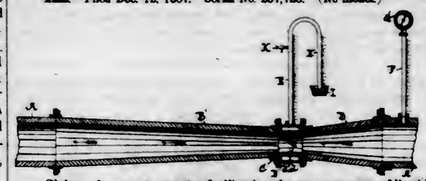
Claim.—In a mill-feed, the combination of the frame, a pivotal sliding feed-board, a crank arranged to bear against the lower end of said board, a spring that in turn impinges against the crank, a pivoted latch for the spring and crank, and means, substantially as described, for securing the feed-board in an adjusted position, as set forth.

381,372. APPARATUS FOR ELECTROLYSIS. EUGENE HERMITE and CHARLES F. COOPER, Pownall Road, Dalston, County of Middlesex, England, assignors of one-third to Edward James Paterson, same place. Filed Oct. 25, 1887. Serial No. 253,353. (No model.) Patented in England Feb. 8, 1887, No. 1,993.



Claim.—In apparatus for electrolyzing bleaching and disinfecting solutions, the combination, in a trough through which the solution flows, of concaves or troughs of platinum or its equivalent connected to one terminal of an electric generator and zinc cylinders connected to the other terminal revolving above these with scrapers bearing against them, substantially as described.

381,373. APPARATUS FOR MEASURING THE QUANTITY OF WATER FLOWING THROUGH A PIPE. CLEMENS HERSCHEL, Holyoke, Mass. Filed Dec. 12, 1887. Serial No. 257,728. (No model.)



Claim.—1. As a means for facilitating the measurement of liquids flowing through a pipe by the method herein described, an ajutage or Venturi tube located in said pipe, said ajutage being perforated at the point of its smallest cross-section, whereby suction will be created by the liquid as it flows through the pipe, a suitable gage for measuring the intensity of said suction, and a gage for indicating the head of the liquid in the cylindrical portion of the pipe adjacent to said ajutage, arranged and operating substantially in the manner set forth.

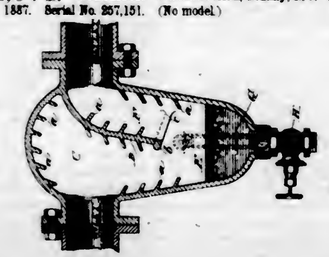
2. As a means for facilitating the measurement of liquids flowing through a pipe by the method herein described, an ajutage or Venturi tube located in said pipe, said ajutage comprising a throat-piece having at the point of its smallest cross-section a series of perforations, an air-chamber surrounding said throat-piece and communicating therewith by means of said perforations, a vertically-disposed tube communicating with said air-chamber, and a gage for indicating the level of the liquid in said tube, substantially as and for the purpose set forth.

3. As a means for facilitating the measurement of liquids flowing through a pipe by the method herein described, an ajutage or Venturi tube located in said pipe, said adjutage comprising a throat-piece having at the point of its smallest cross-section a series of perforations, an air-chamber surrounding said throat-piece and communicating therewith by means of said perforations, a vertically-disposed tube communicating with said air-chamber, a valve governing the admission of air to said tube, a gage for indicating the level of the liquid in said tube when said valve is open, and a vacuum-gage for indicating the suction created in said tube by the passage of the liquid through the ajutage when said valve is closed, arranged and operating substantially in the manner and for the purpose set forth.

4. The liquid-metering apparatus herein described, consisting of the converging and diverging pipe-sections B B' located in pipe A, throat-piece C, uniting said sections, said throat-piece having the series of perforations *c*, jacket D, surrounding said throat-piece, and having air-chamber *d*, communicating with the perforations *c*, tube E, communicating with said air-chamber, tube F, communicating with pipe A at a point adjacent to said pipe-section B, and suitable gages for indicating the level of the liquid in said tubes E F, arranged and operating substantially in the manner set forth.

5. The liquid-metering apparatus herein described, consisting of a conduit, A, having the converging and diverging portions B B', throat-piece C, uniting the ends of said portions B B', said throat-piece having a bore increasing slightly in diameter from a central cylindrical portion toward each end, and having in its central cylindrical portion the series of perforations *c*, jacket D, surrounding said throat-piece, and having air-chamber *d*, communicating with the bore of the throat-piece by means of the perforations *c*, tube E, communicating at one end with said air-chamber and having its opposite end bent to form the limb H, the end of which limb is immersed in mercury, tube F, communicating at one end with conduit A adjacent to the diverging portion B thereof, and a pressure-gage, as G, connected with said tube at its opposite end, arranged and operating substantially as and for the purpose described.

381,374. SEPARATOR. FRANK A. HIER, Tenafly, N. J. Filed Dec. 6, 1887. Serial No. 257,151. (No model.)



Claim.—The combination, with the shell or casing to be inserted in a line of pipe, a depending partition, and a well beneath said partition, of ridges, as shown, projecting from the interior surfaces of said shell at points where the force of the steam-current is received or deflected, said ridges being disposed transversely to the currents, whereby the heavier particles are separated therefrom.

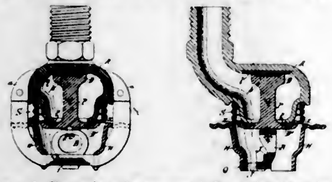
381,375. **LUBRICATOR.** JOHN R. HODGES and WILLIAM M. DAVIS, Portage, Wis. Filed Jan. 12, 1886. Serial No. 188,284. (No model.)



Claim.—1. The combination, in a lubricator, of the oil-receptacle A, the open side cover, D, and screw-stem provided at its lower end with stop valve E, loosely supported by the screw *c*, all arranged as shown, and for the purpose specified.

2. The combination, in a lubricator, of an oil-receptacle and an internal feeding-tube provided with a rim secured by screw-threads in the base of said receptacle, and having an upright feeding-passage through said tube and receptacle, and a lateral passage leading out from said feeding-passage below said rim and arranged to open into said receptacle when said tube is raised, substantially as and for the purposes set forth.

381,376. **AUTOMATIC FIRE-EXTINGUISHER.** CHARLES L. HORACK, Brooklyn, N. Y. Filed Oct. 27, 1882. Serial No. 75,287. (No model.)



Claim.—1. The casing of an automatic fire-extinguisher, having a disk closing its outlet, in combination with a fusible joint holding said disk to its seat until released by the heat of a fire, and a hood independent of said casing and furnishing protection for said disk as well as for the fusible joint, substantially as set forth.

2. The casing of an automatic fire-extinguisher, having a disk closing its outlet, in combination with a hood surrounding said disk and supported in close proximity to said outlet and of a diameter less at bottom than at top, whereby the disk when released from its seat adjusts itself within said hood, substantially as and for the purpose set forth.

3. The casing of an automatic fire-extinguisher, having a disk closing its outlet, in combination with a protecting-hood surrounding said disk, and a yoke rigidly supporting said hood in position, substantially as set forth.

4. The casing of an automatic fire-extinguisher, having a valve held to its seat by a device fusible under the influence of a fire, in combination with a yoke and a hood, said yoke supporting the fusible device as well as the hood, and the hood protecting the fusible device, substantially as set forth.

5. In an automatic fire-extinguisher, the combination, with a valve closing the outlet and adapted to move downward after having been released by the heat of a fire, of bracing mechanism supporting the valve and secured to a yoke by fusible solder in a substantially vertical plane, and a spring adapted to expand downward while actuating the valve and bracing mechanism, part of the bracing mechanism intermediate the valve and yoke and above the part of the yoke containing said vertical plane being provided with a surface deflected laterally from said vertical plane for the purpose of converting thrust of the spring after the fusing of the solder into motion of the bracing mechanism lateral to said vertical part of the yoke, substantially as set forth.

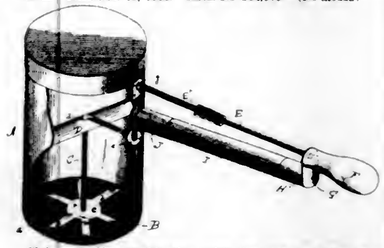
6. In an automatic fire-extinguisher, the combination, with the valve closing the outlet, of bracing mechanism supporting the valve and secured to the yoke by fusible solder substantially in two planes and a spring for releasing the solder-joint, part of said bracing mechanism being deflected laterally for the purpose of converting thrust exerted by the spring into motion of that part of the bracing mechanism to which said solder had been applied lateral to both said planes on said yoke, substantially as set forth.

7. In an automatic fire-extinguisher, the combination, with a valve closing the outlet, of bracing mechanism supporting the valve and secured to a yoke by fusible solder in two planes substantially at right angles to each other, a spring for releasing the solder-joint, part of the bracing mechanism being provided with a surface deflected laterally for the purpose of converting after the fusing of the solder the thrust of the spring into motion of that part of the bracing mechanism which contains said deflected surface, and also contains such surfaces to which the fusible solder had been applied in a direction lateral to both the planes on the yoke to which the bracing mechanism was attached, substantially as set forth.

8. In an automatic fire-extinguisher, in combination with a valve closing its outlet, a bracing mechanism supporting said valve and secured to a yoke by fusible solder substantially in two planes, whereby said solder upon its softening, owing to the heat of a fire, is subject in part to sliding strain and in part to tearing strain, part of the bracing mechanism being provided with a surface deflected laterally to both planes for the purpose of directing after the fusing of the solder, and under the influence of the thrust of the spring, the part of the bracing mechanism containing the surfaces to which the solder had been so applied in a direction lateral to both the planes on the yoke, substantially as set forth.

9. In an automatic fire-extinguisher, in combination with a valve, V, closing its outlet, a spring, S, resting on said valve, bracing mechanism supporting said valve and secured to a yoke by fusible solder substantially in two planes and constructed with a deflected surface on the brace B, forming part of said bracing mechanism, for the purpose of converting thrust of the spring into motion of said brace lateral to both planes on said yoke, substantially as set forth.

381,377. **INSECT-DESTROYER.** ASA H. INGALLS, Hanover Centre, N. H. Filed Feb. 15, 1888. Serial No. 264,079. (No model.)



Claim.—1. The combination, with the receptacle having a perforated bottom, of the rotary clearer, the bent axle, the bent operating-rod passing through the wall of the receptacle, and a handle or arm below the rod having a bearing for said rod, whereby the clearer is rotated by turning the rod, or the receptacle is oscillated and the clearer rotated at the same time by swinging said rod from side to side, as set forth.

2. The combination, with the receptacle provided with a perforated bottom and an opening, *f*, of the rotary clearer, the bent axle, the transverse cross-bar having an opening or bearing for said axle, the hooked bent operating-rod and its handle, and the arm or handle I, having an arm, G, perforated to give an outer bearing for said operating-rod, as set forth.

381,378. **GAS-BURNER.** WALTER M. JACKSON, New York, N. Y. Filed Feb. 26, 1886. Serial No. 193,352. (No model.)

Claim.—1. In a gas-burner, the combination, with a shell having a valve-seat, of a plunger slightly smaller in diameter than the internal diameter of the shell for forming a restricted gas-passage between its side walls and the inner face of the shell, the said plunger being closed at the top and open at the bottom, and provided on the upper surface of the top with a conical valve adapted to be moved into contact with its seat by the combined pressure of gas below the plunger and the frictional contact of the gas in its upward passage between the walls of the plunger and shell, substantially as set forth.

381,378.



2. In a gas-burner, the combination, with a shell and a perforated diaphragm dividing the interior of the latter into two chambers and forming a valve-seat, and a stationary tube located within the lower chamber around the gas-inlet, of a plunger slightly smaller in diameter than the internal diameter of the shell for forming a restricted gas-passage between its side walls and the inner face of the shell, the said plunger being closed at the top and open at the bottom, and provided on the upper surface of its top with a conical valve adapted to be moved into contact with its seat by the combined pressure of gas below the plunger and the frictional contact of the gas in its upward passage between the walls of the plunger and shell, substantially as set forth.

381,379. **BURNER-TIP.** WALTER M. JACKSON, New York, N. Y., assignor to the Gas Consumers Benefit Company of the United States same place. Filed Nov. 1, 1886. Serial No. 217,685. (No model.)



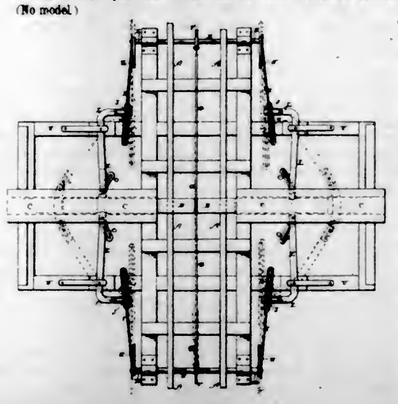
Claim.—As a new article of manufacture, a regulator for gas burners consisting of a base having an opening therein, a cylinder secured to said base and having gas-escape openings at its side, an inner cylinder open at its lower end and having a gas-escape opening in its upper closed end, the latter being of less capacity than the escape-openings in the outer cylinder, and weights placed within said inner cylinder, for the purpose herein set forth.

381,380. **GAS TIP AND PILLAR.** WALTER M. JACKSON, New York, N. Y., assignor to the Gas Consumers Benefit Company of the United States, same place. Filed Dec. 18, 1886. Serial No. 221,979. (No model.)



Claim.—The herein-described method of forming gas-outlets, consisting, essentially, in cutting or punching a series of openings through the flat or externally-convex surface of the top of a closed pillar or tip and subsequently changing the directions or axes of said openings by depressing or countersinking the top of the pillar or tip, substantially as set forth.

381,381. **RAILROAD-GATE.** ANDREW H. JOHNSON and ALBERT G. MARAFFEY, Tryon, Miss. Filed Jan. 23, 1888. Serial No. 261,582. (No model.)



Claim.—1. The combination of the two spring-actuated gates and suitable guiding-frames therefor, with shafts journaled upon opposite sides of the gates, levers projecting from the middle of the shafts and connected together at their upper ends, plates connected to the ends of the shafts, slotted levers I, pivoted on said plates, and the pivoted levers L, operated at one end by the levers I and serving to open the gates through the slotted arms O at the other, substantially as shown.

2. The combination of the two gates moving from opposite sides of the track, springs for closing the gates after having been opened, and the inclosing-frames in which the gates move, with shafts E, provided with a plate, H, at each end, the two levers I, pivoted to opposite ends of each plate, so as to move in opposite directions, pivoted levers L, provided with studs or projections at each of their ends engaging levers I and slotted arms O, which project from the sides of the gate, the lever F, secured to the shafts E midway between the tracks, and the rod G, which connects the upper ends of the levers together and which passes in between the gates, substantially as set forth.

381,382. **TELEPHONE-TRANSMITTER.** EDWARD H. JOHNSON, New York, N. Y. Filed Apr. 10, 1884. Serial No. 125,298. (Model.) Patented in England Jan. 16, 1885. No. 652.



Claim.—1. In a telephone-transmitter, the combination, with a sound-receiving body and a stationary electrode, of a movable electrode and a magnet-armature, both carried by said sound-receiving body, and an electro-magnet which is brought into action by a movement tending to separate the electrodes, and then attracts said armature in the direction to draw the electrodes together, substantially as set forth.

2. In a telephone-transmitter, the combination, with a stationary and a movable electrode, of a sound-receiving body carrying the movable electrode and closely fitted within or upon a support, so as to form a closed air-space back of it, which acts as an air-cushion, tending to prevent abnormal movements of such sound-receiving body and the electrode carried by it, substantially as set forth.

3. In a telephone-transmitter, the combination, with a stationary and a movable electrode, of a sound-receiving body carrying the movable electrode, a magnet-armature carried by such sound-receiving body, a magnet brought into action by a movement tending to separate the electrodes and acting in the direction to draw the electrodes together, and an air-cushion back of the sound-receiving body, formed by fitting such body closely within or upon a support, and tending to prevent abnormal movements of such sound-receiving body and the electrode carried by it, substantially as set forth.

4. In a telephone-transmitter, the combination, with electrodes, of an electro-magnet located in a shunt around such electrodes, such magnet acting to draw such electrodes together, substantially as set forth.

5. In a telephone-transmitter, the combination, with electrodes, of an electro-magnet located in a shunt around such electrodes, and an air-cushion, such magnet and said air-cushion acting together to prevent abnormal movements of such electrodes, substantially as set forth.

6. In a telephone-transmitter, the combination, with a sound-wave-receiving body carrying the movable electrode, and a magnet-armature, also carried by such sound-wave receiver, of an electro-magnet acting on such armature and tending to draw the electrodes together, said magnet being located in a shunt around the electrodes, substantially as set forth.

7. In a telephone-transmitter, a sound-wave receiver adapted to move bodily, composed of a hollow cylinder having the characteristic of extreme lightness, and closed at the end receiving the impact of the sound-waves, in combination with electrodes whose relation is affected by the movements of such sound-wave receiver, substantially as set forth.

8. In a telephone-transmitter, the combination, with electrodes, of a sound-wave receiver adapted to move bodily, and a magnet located in a shunt around such electrodes and acting to draw such electrodes together, substantially as set forth.

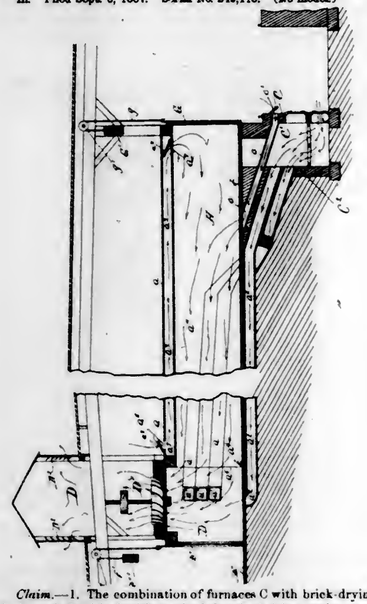
9. In a telephone-transmitter, the combination, with electrodes, of a sound-wave receiver adapted to move bodily, and a magnet located

in a shunt around such electrodes, and an air-cushion, such magnet and said air-cushion acting together to prevent abnormal movements of such sound-wave receiver, substantially as set forth.

10. In a telephone-transmitter, the combination, with the sound-wave receiver D and electrodes *b c*, of the separable shell A B, the contact-plates *f g*, and the circuit-connections therewith, substantially as set forth.

11. In a telephone-transmitter, the combination, with the case, the bodily-moving sound-wave receiver, and the electrodes, one of which is carried by such bodily-moving sound-wave receiver, of the split receptacle *i* in the case, the pin *k*, entering such receptacle, and the wire *l*, extending from such pin to the movable electrode, substantially as set forth.

381,383. BRICK-DRYING TUNNEL. ERNEST V. JOHNSON, Chicago, Ill. Filed Sept. 8, 1887. Serial No. 249,115. (No model.)



Claim.—1. The combination of furnaces C with brick-drying tunnels A, each furnished with tracks *b* for the brick-carrying cars, and having their division-walls and floors furnished with a series of heating or radiating fire-flues extending longitudinally along the tunnels and leading from the furnace at one end of the tunnels to the exit or smoke flue at the opposite end thereof, whereby the tunnels are continuously and uniformly heated and dried from end to end, said fire-flues being imperforate, so as to confine the products of combustion in the same, substantially as specified.

2. The combination, with furnaces C, of brick-drying tunnels A, furnished with tracks *b* for the brick-carrying cars, and having side or division walls composed of hollow tile, *a*, forming continuous longitudinal fire-flues *a'*, leading from the furnace to the exhaust or exit flue thereof at the opposite end of the tunnel, said division-walls being in part composed or built up wholly of hollow tile, so that the same hollow-tile fire-flue, *a'*, in such wall will heat the two contiguous tunnels separated thereby, said fire-flues being imperforate, so as to confine the products of combustion in the same, substantially as specified.

3. The combination, with furnaces C, of brick-drying tunnels A, furnished with tracks *b* for the brick-carrying cars, and having their floors or walls furnished with continuous longitudinal fire-flues leading from the furnace to the exit-flue at the opposite end of the tunnel, said fire-flues imperforate, so as to confine the products of combustion in the same, substantially as specified.

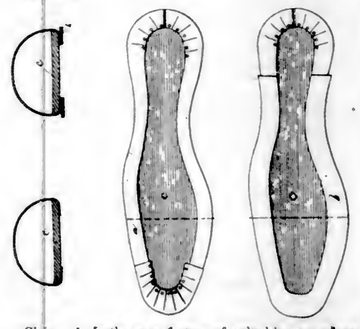
4. The combination, with furnaces C, of brick-drying tunnels A, each furnished with tracks *b* for the brick-carrying cars, and having their division-walls or floors furnished with a series of heating or radiating fire-flues extending longitudinally along the tunnels and leading from the furnaces at one end of the tunnels to the exit-flue at the opposite end thereof, said tunnels being also furnished at their tops with fresh-air heating and drying hollow-tile flues a^3, opening into the tunnels at the furnace end thereof, substantially as specified.

5. The combination, with furnaces C, of brick-drying tunnels A, each furnished with tracks *b* for the brick-carrying cars, and having their division-walls and floors furnished with a series of hollow-tile heating or radiating fire-flues, a' a^3, extending longitudinally along the tunnels and leading from the furnaces at one end of the tunnels to the exit-flue at the opposite end thereof, said tunnels being also furnished at their tops with fresh-air heating and drying hollow-tile flues a^3, opening into the tunnels at the furnace end thereof, and said furnaces C having fresh-air heating and drying flues *c*, extending along their arch or top and opening into said tunnels, substantially as specified.

6. The combination, with furnaces C, of brick-drying tunnels A, each furnished with tracks *b* for the brick-carrying cars, and having their division-walls and floors furnished with a series of hollow-tile heating or radiating fire-flues, a' a^3, extending longitudinally along the tunnels and leading from the furnaces at one end of the tunnels to the exit-flue at the opposite end thereof, said tunnels being also furnished at their tops with fresh-air heating and drying hollow-tile flues a^3, opening into the tunnels at the furnace end thereof, exit flues or chambers D, and fans or blast-producing devices D', substantially as specified.

7. The combination, with furnaces C, of brick-drying tunnels A, each furnished with tracks *b* for the brick-carrying cars, and having their division-walls and floors furnished with a series of hollow-tile heating or radiating fire-flues, a' a^3, extending longitudinally along the tunnels and leading from the furnaces at one end of the tunnels to the exit-flue at the opposite end thereof, said tunnels being also furnished at their tops with fresh-air heating and drying hollow-tile flues a^3, opening into the tunnels at the furnace end thereof, and said furnaces C having fresh-air heating and drying flues c, extending along their arch or top and opening into said tunnels, and exit flues or chambers D, and fans or blast-producing devices D', said tunnels being furnished with doors F and G for closing their opposite ends, substantially as specified.

381,384. MANUFACTURE OF WELTED BOOTS OR SHOES. MYRON L. KEITH, Brockton, Mass. Filed Jan. 13, 1888. Serial No. 260,652. (No model.)



Claim.—1. In the manufacture of welted boots or shoes, the improved step consisting of temporarily attaching a welt molded to required shape to the upper by means such as cement, and then permanently attaching said welt to the upper and inner sole, as set forth.

2. The improved method of making welted boots or shoes herein described, the same consisting in first temporarily attaching a welt molded into proper final shape to the upper by means such as cement, then permanently attaching the welt to the upper and inner sole, then temporarily securing the outer sole to the welt, and finally permanently attaching the outer sole to the welt outside of the upper, as set forth.

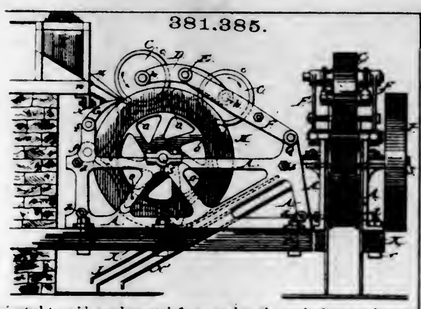
3. The improved method of making welted boots or shoes herein described, the same consisting in molding a strip of leather into a form corresponding to the margin or contour of the outer sole, temporarily securing said molded welt to the upper, permanently attaching said molded welt to the upper and inner sole, and finally attaching the outer sole to the molded welt.

381,385. ORE-CRUSHING MACHINE. SMITH W. KIMBLE, Denver, Colo. Filed Nov. 28, 1885. Serial No. 184,155. (No model.)

Claim.—1. An improved ore-crusher comprising a main frame, a corrugated wheel mounted to rotate therein, a supplemental frame over the main frame, carrying a plural number of crushing-rolls engaging the corrugated wheel, and the arms F, pivotally secured to the main and supplemental frames, substantially as described.

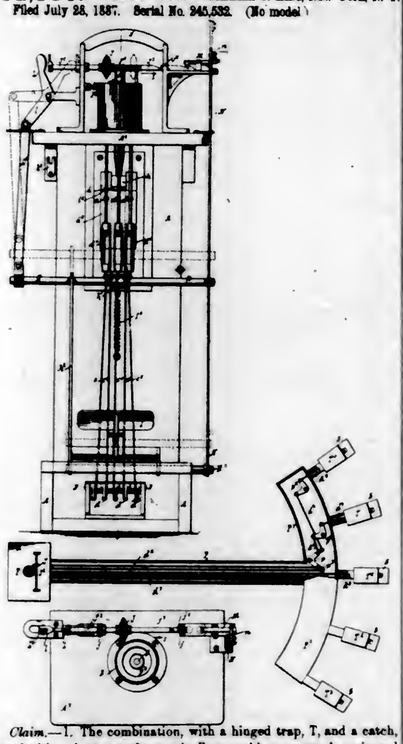
2. An improved ore-crusher comprising a main frame, a corrugated wheel rotating therein, a pivotally-secured supplemental frame above the main frame, carrying a plural number of crushing-rolls, arms

381,385.



pivoted to said supplemental frame and to the main frame, a hopper and feed-spout, and a knocker-arm operated by the movement of the corrugated wheel, substantially as described.

381,386. PIGEON-TRAP. JEREMIAH J. KING, New York, N. Y. Filed July 28, 1887. Serial No. 245,532. (No model.)



Claim.—1. The combination, with a hinged trap, T, and a catch, E, for locking the trap, of a vertically-movable segment, *b*, a pivoted crank-lever, *d*, connections between said crank-lever and catch, connections between said crank-lever and segment, a vertically-movable slide, G, a spindle carried by said slide and engaging the segment when raised, and means for raising and lowering the slide to actuate the segment, substantially as described.

2. The combination of a trap, T, a vertically-movable segment, *b*, a pivoted crank-lever, *d*, a catch, E, for locking the trap, connections between said catch and crank-lever and between the crank-lever and segment, a vertically-movable slide, G, a spindle carried by the latter and engaging the segment *b*, and a pivoted treadle, I, connected with the slide, substantially as described.

3. The combination, with a series of traps, of a case, B, a series of vertically-movable segments guided by the latter, a series of pivoted crank-levers, catches E, for locking the traps, connections between the respective crank-levers and segments and between the said crank-levers and catches, and means, substantially such as described, for raising the segments to operate the crank-levers and open the traps, substantially as described.

4. The combination, with a series of traps, of a case, B, a series of vertically-movable segments guided by the latter, a series of pivoted crank-levers, connections between the respective segments and crank-levers, a series of catches, E, for locking the traps, connections between said catches and crank-levers, a vertically-movable guide, G, a spindle, *f*, carried by the slide to engage the segments, and means for raising and lowering the slide and rotating the spindle, substantially as described.

5. The combination, with a series of traps, of a series of vertically-movable segments, a series of pivoted levers, connections between said levers and segments, a series of catches for locking the traps, connections between said catches and levers, a vertically-movable slide, a spindle carried by the slide and having a finger to engage the segments, means to rotate the spindle, and a treadle for raising the slide and spindle, substantially as described.

6. The combination, with a series of traps and catches for locking the same, of a series of rising and falling segments arranged about a common center, connections between each segment and the locking-catch of each trap, a spindle, *f*, having a finger, *f'*, to engage the segments, means for intermittently rotating the spindle, and mechanism for raising and lowering the spindle to operate the segments and release the traps, substantially as described.

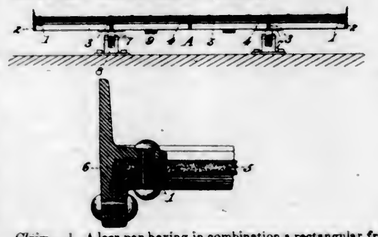
7. The combination, with a series of traps and catches for locking the same, of a series of segments arranged about a common center, connections between each segment and the locking-catch of each trap, a slide, G, a spindle, *f*, having a head, F', and a finger, *f'*, and supported by the slide, a sliding bolt, J', having a hook, *j'*, and a device, J, to engage the head of the spindle, the lever L *l*, for moving the sliding bolt, a latch, M, for engaging the hook on the sliding bolt, a device, N *n*, for releasing the latch, a spring, J^3, for retracting the sliding bolt, and means, substantially as described, for operating the lever L *l*, the releasing-catch, and raising and lowering the spindle.

8. The combination, with a series of traps and the locking-catches E for the same, of a series of segments, connections between each segment and each catch, a spindle having a head, F', and provided with a finger, *f'*, engaging the segments, a slide supporting the spindle, means, substantially such as described, for imparting motion to the slide to raise and lower the spindle, and an engaging device for rotating the spindle, substantially as shown and described.

9. The combination, with a series of traps and locking-catches for the same, of a series of segments, connections between each segment and each catch, a spindle movable in the direction of and about its axis and having a finger, *f'*, to engage and lift the segments, mechanism for raising and lowering the spindle, and an engaging device for automatically rotating the spindle subsequent to its linear movement, substantially as shown and described.

10. The hollow segments *b*, having their adjacent sides beveled to form a sharp juncture, in combination with the actuator F, having a finger, *f'*, provided with a knife-edge, the traps, a locking-catch for each trap, connections between each segment and each catch, and devices, substantially as described, for raising and lowering and rotating the actuator to operate the segments.

381,387. LEER-PAN. WILLIAM C. KING, Pittsburg, Pa. Filed Dec. 30, 1886. Serial No. 222,977. (No model.)



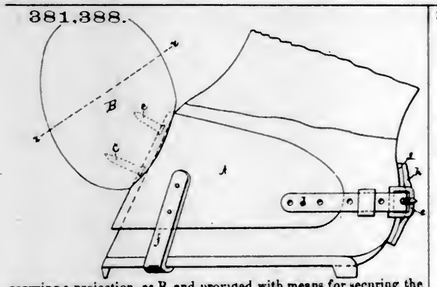
Claim.—1. A leer-pan having in combination a rectangular frame and an asbestus bed for supporting the articles to be annealed, substantially as set forth.

2. A leer-pan having in combination a rectangular frame, an asbestus bed for supporting the articles to be annealed, and angle-bars clamping the asbestus to the frame and forming a rim at the ends of the same, substantially as set forth.

381,388. HORSE-BOOT. MOSES KIMBEL, Newark, N. J. Filed Oct. 3, 1887. Serial No. 251,306. (No model.)

Claim.—1. An improved boot for a horse's foot, combining therein a rigid spring-plate, A, adapted to conform to the shape of the hoof and

381,388.



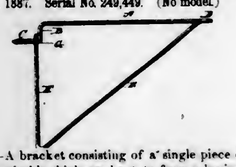
carrying a projection, as B, and provided with means for securing the same to the hoof, substantially as and for the purposes set forth.

2. An improved boot for horses' feet, combining therein a flexible or spring plate, A, adapted to conform to the shape of the hoof and carrying a projection, as B, and provided with means for securing the same to the hoof, and a cushion, as *g*, said parts being arranged with relation to one another, substantially as and for the purposes set forth.

3. The combination of a flexible or spring plate, A, adapted to conform to a horse's hoof, a projection, as B, hooks, as *f*, and straps, as *d*, arranged with relation to each other and adapted to operate substantially as and for the purposes set forth.

4. The combination of a flexible or spring plate, A, adapted to conform to a horse's hoof, a projection, as B, hooks, as *f*, straps as *d*, and a cushion, as *g*, said parts being arranged and adapted to operate substantially as and for the purposes set forth.

381,389. BRACKET. HENRY P. KOCHSMEIER, Freeport, Ill. Filed Sept. 12, 1887. Serial No. 249,449. (No model.)



Claim.—A bracket consisting of a single piece of wire or a metallic rod of suitable thickness bent to form a horizontal supporting-arm having a shoulder or offset at its rear end terminating in a screw or other suitable means of attachment, and an eye at its forward end, an oblique bracing-rod extending from said eye and terminating in a vertical rod having an eye at its end which engages with the shoulder or offset upon the end of the horizontal arm, whereby the vertical arm of the bracket is prevented from yielding and is maintained in its proper position at right angles to the horizontal supporting-arm.

381,390. ORNAMENTATION OF SHEET METAL. JOHN KOEBEL, Milwaukee, Wis. Filed Oct. 29, 1887. Serial No. 253,768. (No specimens.)

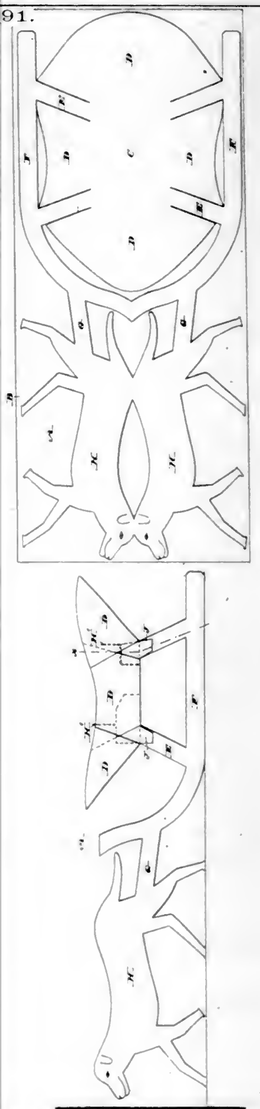
Claim.—1. In the ornamentation of sheet metal, the process of forming a colored crystallized surface thereon by coating the same with a mixture of water, muriatic acid, nitric acid, and bichromate of potash, and immediately thereafter cleaning the surface with clear water, then pouring muriatic acid over the whole surface and draining it off, and next again coating the surface with a solution of hyposulphite of soda and cleaning it, as before, with clear water, substantially as set forth.

2. In the ornamentation of sheet-tin, the process of forming a colored crystallized surface thereon by first heating the sheet metal until the tin begins to melt, then cooling it by sprinkling cold water or blowing cold air against the heated surface, and next coating the cooled surface with a mixture of water, muriatic acid, nitric acid, and bichromate of potash, cleaning the surface with clear water, pouring muriatic acid over the whole surface and draining it off, and again coating it with a solution of hyposulphite of soda and cleaning it, as before, with clear water, substantially as set forth.

381,391. TOY. ISAAC D. LAW, Philadelphia, Pa., assignor of one-half to John G. R. McCorkell, same place. Filed June 23, 1887. Serial No. 242,239. (No model.)

Claim.—A toy consisting of a sleigh with the double figure of an animal integral therewith, said double figure being united at top and the sides and end pieces of the body of the sleigh having openings at the lower corners thereof, and a seat having end pieces, J, passing through said openings and secured to the sides, substantially as described.

381,391.

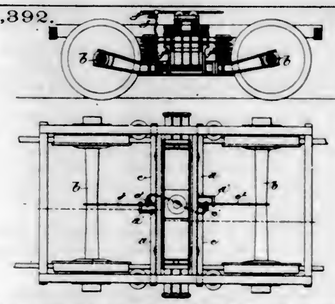


381,392. AIR-BRAKE ATTACHMENT. GEOFFREY R. LEHY, Boston, Mass. Filed June 28, 1887. Serial No. 242,736. (No model.)

Claim.—1. In an air-brake attachment, an actuating-bar carried by one of the equalizer-bars of the truck and a pair of separable controlling levers carried by said actuating-bar, combined with another actuating-bar carried by the opposite equalizer-bar of said truck, the outer end of which enters between the said controlling-levers, which latter by their movement control the application of the brakes, substantially as described.

2. In an air-brake attachment, two equalizing-bars of the truck, combined with two actuating-bars carried, respectively, by the equalizer-bars, and means, substantially as described, controlled by said actuating-bars for applying the brakes whenever one end of one of said equalizer-bars falls below the level of the opposite equalizer-bar, substantially as described.

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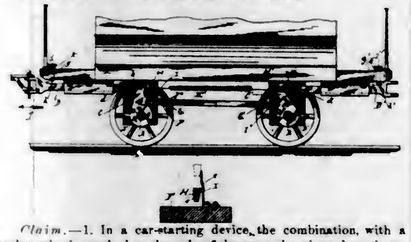


3. In an air-brake attachment, the actuating-bars *c d*, carried by the equalizer-bars, and the separable controlling-levers, combined with a box or frame, *c'*, recessed, as described, and having the openings normally closed by said controlling-levers, and a conduit between said boxes *c'* and the air-reservoir, substantially as described.

4. The actuating-bar *c'*, combined with the controlling-lever c^3 c^4 and the axle *b*, passing between the outer ends of the controlling-levers, and means, substantially as described, controlled by the lever c^3 c^4 for applying the brakes whenever said levers are moved, substantially as described.

5. In an air-brake attachment, an air-escape pipe or conduit leading from the air pipe or cylinder of the air-brake, combined with two controlling-levers for said conduit, said controlling-levers embracing the axle, and means, substantially as described, carried by the equalizer-bars of the truck for effecting the operation of the said controlling-levers, as and for the purposes set forth.

381,393. CAR-STARTER. JOHN M. LINSCOTT, Worcester, Mass. Filed Dec. 5, 1887. Serial No. 257,055. (No model.)



Claim.—1. In a car-starting device, the combination, with a ratchet-wheel attached to the axle of the car and a pivoted pawl-carrying arm or lever connected with the draw-bar of the car, by which the axle is rotated, of a draw-bar provided with a single shoulder and a dog arranged to engage said shoulder and thereby prevent the entire reverse movement of the draw-bar and connected pawl-carrying arm or lever for the purpose of maintaining the pawl in engagement with its ratchet-wheel, substantially as described.

2. In a car-starting device, the combination, with a draw-bar provided with a shoulder and a dog arranged to engage said shoulder, by which the reverse movement of the draw-bar is prevented, of a pivoted pawl-carrying arm or lever, a ratchet-wheel attached to the axle of the car, a pawl provided with a wing extending from the side of the pawl, and a tongue hinged to said arm or lever in the path of said wing, whereby the pawl is lifted out of engagement with said ratchet-wheel, substantially as described.

3. In a car-starting device, the combination of ratchet-wheels attached to the car-axles, pivoted pawl-carrying levers working in opposite directions and connected with the draw-bars of the car, and a spring connecting said pawl-carrying arms or levers, substantially as described.

4. In a car-starting device, the combination, with ratchet-wheels attached to the car-axles and pivoted arms or levers, as described, of pawls sliding in ways in said pivoted levers, wings attached to said pawls, and tongues hinged to said pawl-carrying levers or arms, with their free ends connected by sliding sleeves, substantially as described.

5. In a car-starting device, the combination, with ratchet-wheels attached to the car-axles, pivoted pawl-carrying levers or arms, pawls carried in said arms or levers and provided with wings, and tongues hinged to said pivoted arms or levers, of a blade-spring attached to said hinged tongues, with their free ends arranged to rest against said wings and hold the pawls from engaging their respective ratchet-wheels, substantially as described.

381,394. COMMUTATOR-BRUSH FOR ELECTRIC GENERATORS. CHARLES P. LOOMIS, Somerville, Mass., assignor to the Loomis Electric Manufacturing Company, New York, N. Y. Filed Dec. 15, 1886. Serial No. 221,642. (No model.)



Claim.—1. A commutator-brush for a dynamo or other magneto-electric machine, composed of strips G, diagonally arranged to the plane of said brush, soldered together at one end, and bearing at the other end upon the commutator, whereby an increased edgewise and lengthwise bearing of said brush upon the commutator is secured, so that each strip is subjected to the same amount of wear, and falling away of the lowermost strip, causing sparking and short-circuiting of the current, is obviated.

2. A commutator-brush composed of a multiplicity of sheet-metal strips diagonally arranged to the plane of said brush, and means for securing said strips together at the end remote from the commutator.

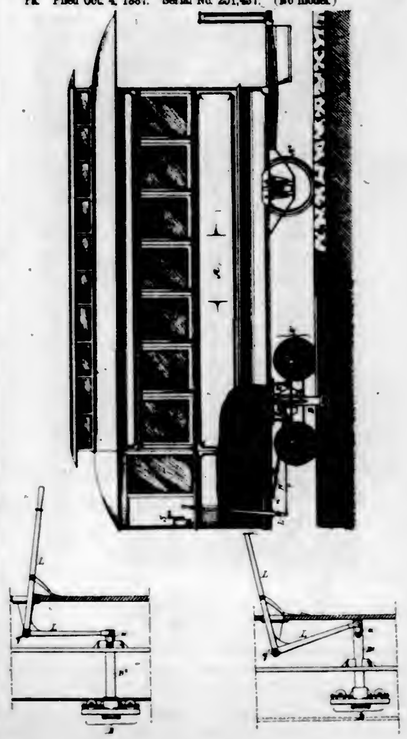
3. A commutator-brush composed of a multiplicity of sheet-metal strips, as G, diagonally arranged to the plane of said brush, and metal pieces, as L M, embracing said strips at one end, all of which are soldered together at said end.

4. A commutator-brush consisting of a multiplicity of thin metal strips diagonally arranged to the plane of said brush, soldered or otherwise fastened together at one end, and having a bearing upon the commutator at the free and flexible end, the said bearing being the resultant of an end, lengthwise, and diagonal bearing.

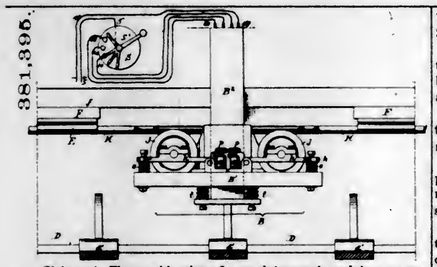
5. A commutator-brush composed of metal strips diagonally arranged to the plane of said brush, substantially as described.

6. A commutator-brush composed of strips diagonally arranged to the plane of said brush, and having the axis of the brush arranged substantially at right angles to the axis of the commutator.

381,395. ELECTRICAL RAILWAY. JOHN C. LOVE, Philadelphia, Pa. Filed Oct. 4, 1887. Serial No. 251,437. (No model.)



381,395.

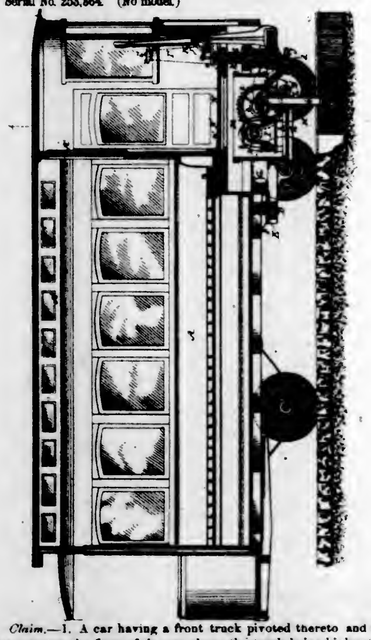


Claim.—1. The combination of an underground conduit, carrying the line-conductors of an electrical railway in its upper part, with a car having guides, a contact-carrier vertically movable in said guides and provided with contacts adapted to be held up in electrical connection with the conductors, and a hand-lever pivoted to the car and connected to the said carrier to press the contacts up against the under sides of the conductors, substantially as described.

2. An electrical railway having three or more line-conductors, of which one is a common return-wire and the others are outgoing wires, a generator for each circuit, a number of cars, each carrying a motor and contacts for all of the several conductors, and a switch, with which the several contacts are in electrical connection, substantially as described.

3. The underground conduits of an electrical-railway system and a car having the contact-carrier movable into and out of the conduit, in combination with an overhead line between the interrupted ends of the conduits, a trolley running on the overhead line, and depending conductors on the trolley to be connected up with the motor on each succeeding car, all substantially as described.

381,396. RAILWAY-CAR. JOHN C. LOVE and JAMES F. SNEDIKER, Philadelphia, Pa., assignors to said John C. Love. Filed Oct. 31, 1887. Serial No. 253,864. (No model.)



Claim.—1. A car having a front truck pivoted thereto and carrying a motor, the floor of the car above the truck being higher than the main floor to accommodate the motor, and the sides of the car-body being at a uniform distance from the ground throughout, all substantially as specified.

2. The combination of a four-wheeled truck, a motor carried thereby, and a pivot located away from the center of the truck, whereby the space for the motor is increased, all substantially as specified.

3. A car having a floor on different levels, a partition dividing the car into two compartments, and a seat in one compartment formed by an extension of the floor of the other compartment, substantially as specified.

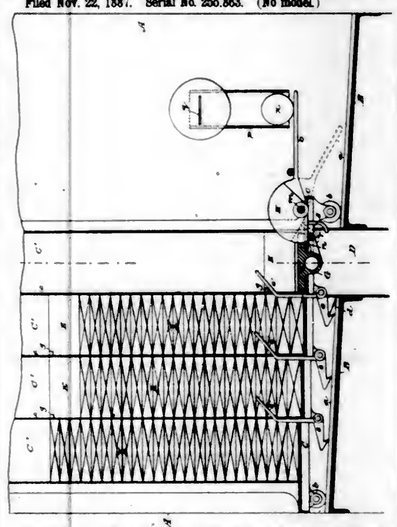
4. The combination of a four-wheeled truck, pivoted in front of the center and carrying axles D D, with a box, M, for containing a motor, situated between the axles, substantially as specified.

5. The car having an elevated floor, a truck below said floor, a pivot-pin or king-bolt, a conductor, an operating-lever, and a rod connecting the two together, said rod passing through the king-bolt, substantially as specified.

6. A car having the floor of the operator's quarters elevated above the main floor of the car, with windows *a* in the rear of the operator's quarters, but above the roof of the main body of the car, substantially as set forth.

7. The combination of a car with a pivoted truck, the permanent floor of the car extending over the truck, with a motor on the truck, and below the said floor, an operating-lever carried by the truck, and extending up above the floor of the car, all substantially as described.

381,397. VENDING APPARATUS. RÉNÉ MABELLE, Paris, France. Filed Nov. 22, 1887. Serial No. 255,863. (No model.)



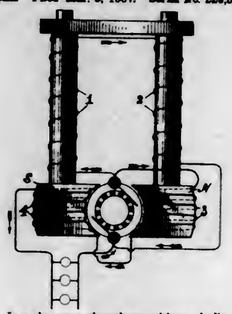
Claim.—1. In a vending apparatus, the combination, with an inclosing-box having an inclined track and a delivery-outlet, and a carriage mounted on said track and bearing the several receptacles for the articles to be sold, of weights on the articles and the detents for holding the carriage against rolling down said track, said detents being actuated by said weights, substantially as and for the purpose set forth.

2. In a vending apparatus, the combination, with the inclosing-box provided with a coin slit and chute and a delivery-outlet, and the receptacle for the stack or pile of articles to be sold and delivered, arranged over said delivery-outlet, of the self-retracting pusher arranged in guides and adapted to traverse said receptacle, the vibrating dog normally in engagement with a notch in the retracted pusher and with its lever standing under the discharging end of the coin-chute, and the retractor for said dog, substantially as set forth.

3. In a vending apparatus, the combination, with the inclosing-box, as A, having an inclined track, as *a a*, a stop, as *d*, and a delivery chute or outlet for the articles sold, of a carriage mounted on said track and carrying a series of receptacles, as C C, the latches *e e*, carried by said carriage and provided each with an inclined tail, *e'*, and adapted to engage said stop *d*, and the weights E in the respective receptacles C, each weight having a projecting stud, *g*, to engage the tails *e'* on the latches and lift the latter, substantially as and for the purposes set forth.

4. In a vending apparatus, the combination, with the outer box provided with a coin slit and chute and a delivery-chute, and a receptacle for the articles arranged over said delivery-chute, of a pusher, *i*, provided with an operating-stem and retracting-spring, and a notch, *n*, to receive the dog, the pivoted dog H, provided with an arm or lever, *o*, which stands under the outlet of the coin-chute, and a retractor for said dog, carried by said pusher, substantially as set forth.

381,398. DYNAMO-ELECTRIC MACHINE. RICHARD H. MATHER, Windsor, Conn. Filed Mar. 3, 1887. Serial No. 229,537. (No model.)

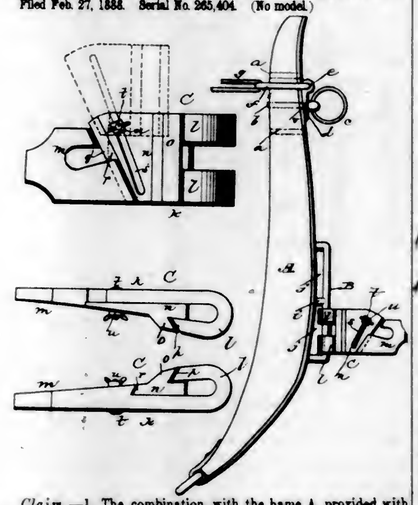


Claim.—1. In a dynamo-electric machine, a helix which is wound upon a pole-piece of the field-magnet and is let into the face of said pole-piece, substantially as and for the purpose specified.

2. Upon the pole-pieces of a field-magnet, a number of helices which are wound around the horns of said pole-pieces, substantially as and for the purpose specified.

3. In a shunt-wound dynamo-electric machine, two pole-piece helices, one of which is wound in the same direction as the field-magnet and the other of which is wound in the opposite direction, substantially as and for the purpose specified.

381,399. HAME. ALEXANDER C. MATLACK, Independence, Cal. Filed Feb. 27, 1888. Serial No. 265,404. (No model.)



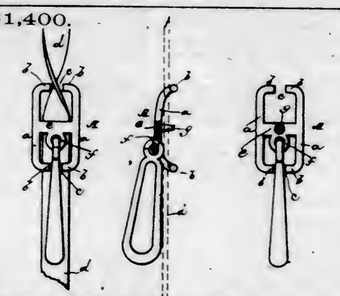
Claim.—1. The combination, with the hame A, provided with the vertical series of perforations *a*, strap *g*, link *f*, bolt *b*, and ring *e*, of the plate *d*, provided at its upper end with the eye *e* and at its lower end with the transverse perforation *r*, the former adapted to receive the link and the latter the bolt, as shown, and for the purpose set forth.

2. The herein-described draft-hook, adapted to be attached removably to a hame, consisting of the main portion having at its forward end the double hooks, the ends of which are beveled, and at its rear end a single hook having the inclined slideway, the lock-plate, thicker at its forward end and provided with the side flange having the inner bevel, the rear inclined and beveled edge, and the slot, bolt, and nut, the whole adapted to operate as and for the purposes set forth.

381,400. GAG-RUNNER. HARRY B. MAXWELL, Rome, N. Y. Filed Feb. 13, 1888. Serial No. 263,770. (No model.)

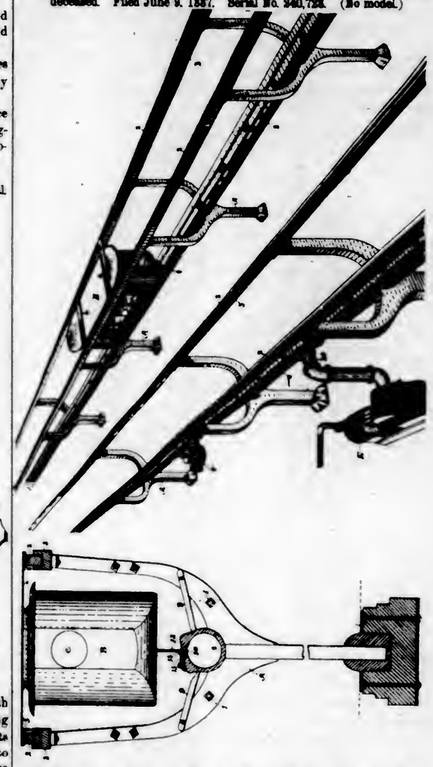
Claim.—1. The improved gag-runner herein described, consisting

381,400.



of side bars terminating in openings at their ends, and connected by a cross-bar provided with a depending eye and a projecting stud, and a runner pivoted in said eye, all substantially as set forth.

381,401. PNEUMATIC-RAILWAY SYSTEM. THOMAS J. MAYALL, Reading, Mass.; Lucy A. Mayall executrix of said Thomas J. Mayall, deceased. Filed June 9, 1887. Serial No. 240,723. (No model.)



Claim.—1. A pneumatic-railway system provided with a pneumatic tube and with rails or tracks of an anti-friction compound, substantially as described.

2. The combination, with the pneumatic tube and the anti-friction rails, of the car or vehicle provided with runners for sliding on said rails, substantially as described.

3. The combination, with the car and means for propelling the same, of the rails or tracks composed of rubber compounded with anti-friction substances, substantially as described.

4. The combination, with the car having runners, of the rails composed of rubber compounded with graphite and powdered asbestus, substantially as described.

5. The combination of the pneumatic tube, the carrier adapted to travel therein, the anti-friction rails, the car provided with runners, and the bar connecting said carrier with said car, substantially as described.

6. The combination of the Y-shaped pillars, the anti-friction rails at the top of the same, the car hung by suspension-plates on said rails, the pneumatic tube, and means for propelling the car therefrom, substantially as described.

7. A car for pneumatic-railway systems having suspension-plates and runners consisting of shoes secured to said plates, substantially as described.

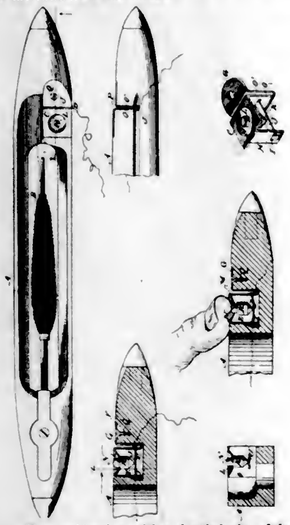
8. The combination of the slotted pneumatic tube and the flexible packing consisting of rubber compounded with anti-friction material, substantially as described.

9. The combination of the pneumatic tube having a continuous longitudinal slot, the flexible anti-friction packing therefor, the car, the carrier within said tube, and the rod or bar passing through said slot and connecting said car and carrier, substantially as described.

10. The combination of the slotted pneumatic tube having a lining composed of rubber mixed with graphite and asbestus, the carrier within said tube, the car sliding on rails, the bar connecting said car and carrier, and the anti-friction packing, substantially as described.

381,402. THREAD-GUIDE FOR LOOM-SHUTTLES. THOMAS J. MAYALL, Reading, Mass.; Lucy A. Mayall executrix of said Thomas J. Mayall, deceased. Filed June 10, 1887. Serial No. 240,934. (No model.)

Brief.—The thread-passage is formed by bending a piece of sheet metal back upon itself, thus leaving a space having parallel walls, through slots in which a spring-piece passes to hold the thread down. A button resting on the spring affords opportunity for retracting the same to allow the entrance of the thread.

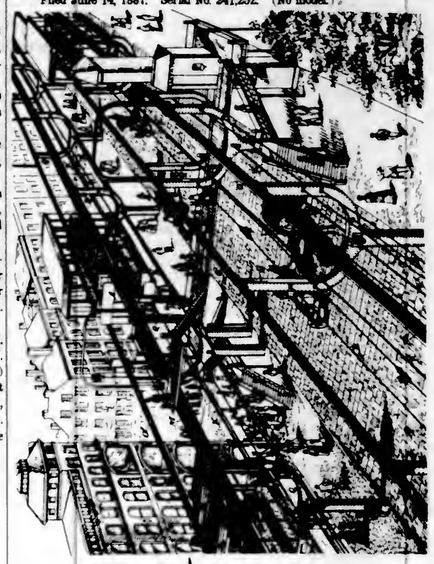


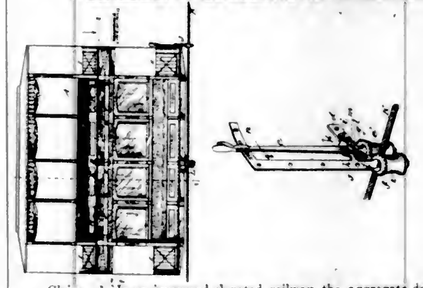
Claim.—1. The combination, with a shuttle-body, of the thread-guide comprising two walls forming between them a thread-space, said walls being slotted, as set forth, a thread-locking strip extending through said walls and across said space, and a push-button or plunger for withdrawing the locking end of said strip when the thread is inserted, substantially as described.

2. The combination, with a shuttle-body, of the thread-guide comprising a sheet-metal strip folded upon itself to form a thread-space, a flexible spring-locking device having its end extending across said space through slots in the walls thereof, and a plunger for depressing said spring at the middle and so withdrawing the locking end, substantially as described.

3. The combination, with a shuttle-body, of the thread-guide comprising a frame having a concave top and being provided with a thread-space, one of the walls of said space projecting above the other, a spring-locking device having its end extending across said space to hold the thread therein, and a plunger for depressing said spring at the middle to withdraw the locking end from said space, the end of said plunger projecting through the concave top of the frame, substantially as described.

381,403. ELEVATED RAILWAY. THOMAS J. MAYALL, Reading, Mass.; Lucy A. Mayall executrix of said Thomas J. Mayall, deceased. Filed June 14, 1887. Serial No. 241,252. (No model.)





Claim.—1. In an improved elevated railway, the aggregate devices composing an elevated rail-bed, to wit: the vertical right-angle rail-guard O', whose base forms the track-bed O, the elastic chairs N N, having a depressed bed to receive the rail, and the clutch-bolts *t*, provided with reflexed and upright gripping-lugs *p p'*, in combination with a perforated rail-support, P, and bifurcated rail-supports Q, substantially as and for the purpose specified.

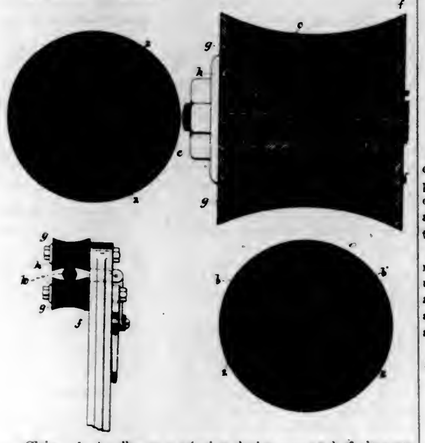
2. In an improved elevated railway, the double car A, having an intermediate chamber between the floor of the elevated story and the deck of the suspended story to receive the duplex axles G, the bolster-plates T and U, and the spring X, with their necessary adjunctive bolt and screws arranged to coact with an elevated rail-bed, as herein described.

3. In combination with an elevated-railway carriage, the clutch J, adapted to continuously bind the cable K by duplex friction-rolls which rotate with the motion imparted therefrom when the car is at rest, the momentum of said car being established by the inertia of said friction-rolls secured through the medium of notched disks *f* and *g*, confining or releasing said rolls by action of a locking-lever, *h*, having an inclined slot, *m*, whereby it is moved by the oscillating lever *e*, substantially as described.

4. In combination with a single or double constructed car having its truck equidistant from floor to roof, the pendent adjustable sheave L, the slotted supporting-frame L^2, and holding-nuts L^3, adapted to loosely confine the cable K, to facilitate its connections with the car and to prevent undue oscillation of said cable, as explained.

5. In an elevated railway, the combination, with the carriage A and rail-guard O, of the transverse supporting-bars *q*, designed to uphold said carriage in case of derailment, substantially as specified.

381,404. FRICTION-ROLLER FOR CABLE-GRIPS AND OTHER PURPOSES. THOMAS J. MAYALL, Reading, Mass.; Lucy A. Mayall executrix of said Thomas J. Mayall, deceased. Filed June 16, 1887. Serial No. 241,511. (No model.)

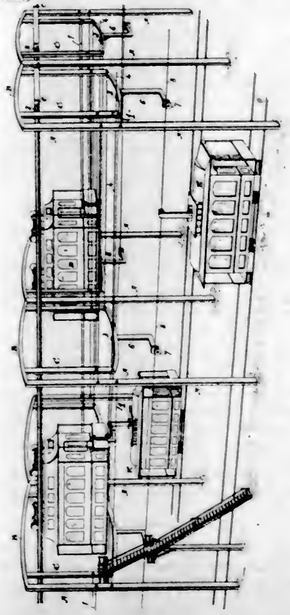


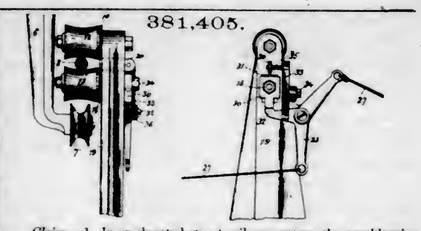
Claim.—1. A roller or a gripping device composed of alternate layers of rubber and cloth disposed transversely to the gripping-surface, substantially as described.

2. A roller composed of alternate layers of rubber and cloth arranged transversely to the axis of the roller, the layers of cloth being so disposed that the ends of the cut threads come to the surface, substantially as described.

3. In a gripper, a roller composed of successive layers of cloth and rubber arranged transversely to the axis of the roller, the layers of cloth being composed of sectors in which the warp-threads all run radially, substantially as described.

381,405. COMBINED ELEVATED AND SURFACE RAILWAY. THOMAS J. MAYALL, Reading, Mass.; Lucy A. Mayall executrix of said Thomas J. Mayall, deceased. Filed June 21, 1887. Serial No. 242,036. (No model.)

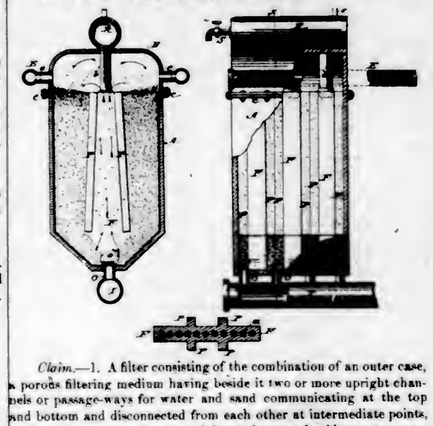




Claim.—1. In an elevated street-railway system, the combination of the upright posts on opposite sides of the roadway, the top cross-pieces, the hanging frames of approximately rectangular form, the overhead tracks, the rollers for the cable drawing the overhead cars, and the depending arms having rollers for the return-cable, substantially as described.

2. A grip mechanism for cable-railway cars, comprising a pair of rollers having notched disks, a three-arm lever for moving one of said rollers toward and away from the other, and a locking device operated by said lever for engagement with the notches in said disks, and a cord, one leading from two of the arms of said lever, substantially as described.

381,406. FILTER. MARSHALL MCDONALD, Washington, D. C. Filed Nov. 2, 1887. Serial No. 254,089. (No model.)



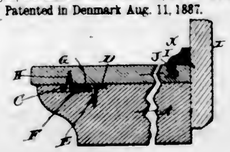
Claim.—1. A filter consisting of the combination of an outer case, a porous filtering medium having beside it two or more upright channels or passage-ways for water and sand communicating at the top and bottom and disconnected from each other at intermediate points, and an inlet for water arranged beneath one of said passage-ways, whereby the water and sand are made to rise in one passage-way and descend in one or more of the others with a progressive circulation in the same direction, as set forth.

2. A filter having beside its filtering-faces an upwardly-converging channel for a rising column of sand, and a downwardly-converging chamber for a descending column of sand in open communication at both top and bottom, in combination with an inlet-pipe located below the channel for the ascending column, and an outlet-pipe located above the channel for the descending column, substantially as and for the purpose described.

3. The filtering-plates F, made of porous earthenware, with channel-ways *a* in the same, and flanges P P' on the sides thereof, substantially as and for the purpose described.

4. The combination of case A B, with inlet-pipe I and outlets E E, the channeled filtering-plates F, with wings P P, the reservoir R, and pipe *b'*, connecting said reservoir with the filtering-plates, substantially as and for the purpose described.

381,407. TOP PLATE FOR STAIR-STEPS. CHRISTIAN MOHRING, Copenhagen, Denmark. Filed Nov. 11, 1887. Serial No. 254,896. (No model.) Patented in Denmark Aug. 11, 1887.



Claim.—1. In combination with a common stair-step, a top plate having a fastening for securing the outer edge to the step, and having a tongued strip engaging a groove in the inner edge of the upper side and secured to the vertical face of the next step above, as shown and described.

2. In combination with a common stair-step, a top plate having a hook-shaped fastening engaging a correspondingly-shaped fastening in the step, and a strip secured to the vertical face of the next step above and engaging a groove at the inner edge of the top plate with its tongue, as shown and described.

3. In combination with a common stair-step, a top plate having an inwardly hook-shaped fastening upon its under side engaging a correspondingly-shaped outwardly-opening fastening in the step, and a suitable strip secured to the top plate at the inner edge and to the vertical face of the next step above, as shown and described.

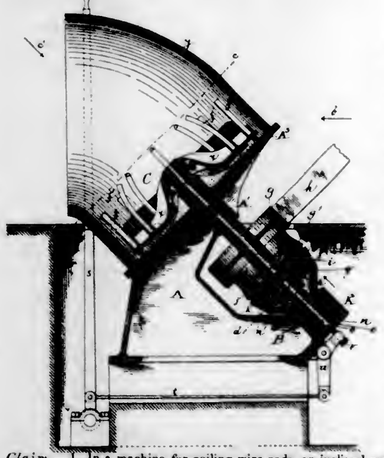
4. The combination of a common stair-step, having grooves or recesses in its upper face near or at the outer edge, plates secured flush with the face of the step covering the inner ends of the grooves or recesses, a top plate for the step, and plates secured to the under side of the top plate and having inwardly-pointing lips engaging under the plates in the recesses, as shown and described.

5. The combination of a common stair-step, having grooves or recesses in its upper face near or at the outer edge, plates secured flush with the face of the step covering the inner ends of the grooves or recesses, a top plate for the step, plates secured to the under side of the top plate and having inwardly-pointing lips engaging under the plates in the recesses, and a strip secured to the vertical face of the next step above and having a tongue engaging a groove in the upper face of the top plate near the inner edge, as shown and set forth.

6. The combination of a common stair-step, having grooves or recesses in its upper face near or at the outer edge, plates secured flush with the face of the step covering the inner ends of the grooves or recesses, a top plate for the step, plates secured to the under side of the top plate, and having inwardly-pointing lips engaging under the plates in the recesses, and a strip secured to the under side of the top plate at the outer edge of the same covering the joint between the top plate and the upper face of the step, as shown and set forth.

7. The combination of a common stair-step, having grooves or recesses in its upper face near or at the outer edge, plates secured flush with the face of the step covering the inner ends of the grooves or recesses, a top plate for the step having a downwardly-projecting strip or flange at its forward edge and having a groove in the upper face near the inner edge, plates secured to the under side of the top plate and having inwardly-projecting lips engaging under the plates in the inner ends of the recesses or grooves, and a strip secured to the vertical face of the next step above and having a tongue upon its lower edge engaging the groove in the top plate, as shown and described.

381,408. WIRE-ROD-REELING MACHINE. CHARLES H. MORGAN, Worcester, Mass. Filed Jan. 30, 1888. Serial No. 262,476. (No model.)



Claim.—1. In a machine for coiling wire rods, an inclined reel having a double row of spokes or pins, between which the rods may be coiled, and a protecting-guard surrounding said reel, substantially as and for the purposes set forth.

2. A machine for coiling wire rods, comprising, in combination, the following elements: a reel mounted on the upper end of an inclined shaft and having a double row of spokes or pins, between which the rods may be coiled, said inclined shaft fitted to turn in suitable inclined stationary bearings in the frame, means for rotating said shaft and for shipping and unshipping the power to and from the same, substantially as shown and specified.

3. In a machine for coiling wire rods, the reel thereof having a double row of spokes or pins, between which the rods may be coiled, and a series of radial flanges upon the top surface thereof (preferably in line with said spokes or pins) for holding the rods above said top surface, substantially as and for the purpose set forth.

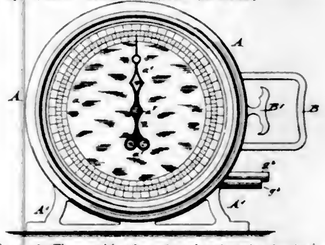
4. In a wire-rod-reeling machine, the combination of the frame, the reel, and a protecting hood or guard secured to said frame and extending around and over the top of the reel in the manner described, said reel being mounted on the upper end of an inclined rotary shaft, and having a double row of spokes or pins, between which the rods may be coiled, and said inclined shaft being fitted to turn in suitable inclined bearings in the frame, substantially as and for the purpose set forth.

5. The coil-removing apparatus consisting of a truck made in substantially the manner described, and having a hook at its forward end adapted to be passed under the coil to remove the same, substantially as set forth.

6. The combination, with a reel having radial flanges to hold the coil above the bottom thereof, of a truck having at its forward end a hook adapted to be inserted between said flanges under the coil to remove the latter, substantially as set forth.

7. The combination, with a reel mounted on an inclined shaft and having radial flanges, as specified, and a hood or guard curving over said reel and open in front, of a truck provided with a projecting hook shaped to enter said hood and remove the coil from the reel, substantially as described.

381,409. COIN-CONTROLLED CIGAR-DELIVERING EXERCISING-MACHINE. FERDINAND MOSSER, New York, N. Y., assignor, by mesne assignments, to the Hand Power Test Machine Company, of New Jersey. Filed Apr. 7, 1887. Serial No. 233,996. (No model.)

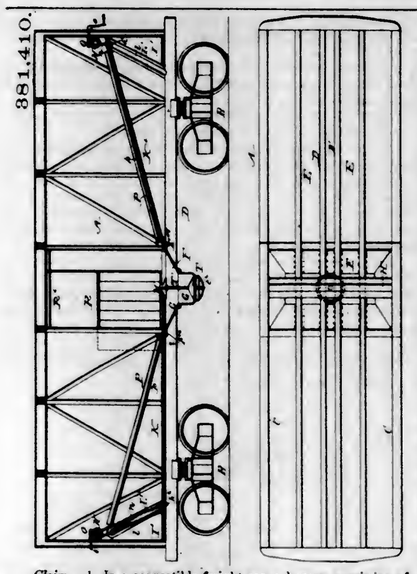


Claim.—1. The combination of a closed casing having a fixed handle, a movable handle, a guided and spring-actuated slide-frame in said casing, means for connecting the movable handle with the slide-frame, a locking device for retaining the slide-frame in normal position, a releasing device for unlocking the slide-frame, pusher-rods attached to the slide-frame, and package-delivering devices operated by said pusher-rods, substantially as set forth.

2. The combination of a closed casing having a fixed handle, a movable handle, a guided and spring-actuated slide-frame at the interior of the casing, a slide-rod connecting the movable handle with said slide-frame, a locking device for retaining said slide-frame in normal position, a releasing device for unlocking the slide-frame, one or more pusher-rods attached to said slide-rod, and storage-receptacles having bottom guide-tubes and exterior delivery-tubes in line with the lower parts of the pusher-rods, substantially as set forth.

3. The combination of a closed casing having a fixed handle, a movable handle, a guided and spring-actuated slide-frame at the interior of said casing, a slide-rod connecting the movable handle with said slide-frame, a locking device for retaining said slide-frame in normal position, a releasing device for unlocking the slide-frame, one or more pusher-rods attached to said slide-rod, one or more detachable storage-receptacles, guide-frames for said receptacles, bottom guide-tubes, and exterior delivery-tubes at the lower ends of said guide-frames in line with the pusher-rods, openings in the upper part of the casing, and a lid and lock for closing said openings, substantially as set forth.

381,410. CONVERTIBLE FREIGHT-CAR. WILLIAM F. MOSHOP, Philadelphia, Pa., assignor of one-half to Morris M. Hirsh, Chicago, Ill. Filed Nov. 23, 1887. Serial No. 256,002. (No model.)



Claim.—1. In a convertible freight-car, a hopper consisting of a series of flanged sections secured in place and to the framing of the car by bolts, substantially as described.

2. In a convertible freight-car, a hopper composed of a number of metallic sections having outwardly-projecting flanges which embrace and are secured to the sills of the car, substantially as described.

3. In a convertible freight-car, the combination, with the undivided intermediate sills of the car, of a hopper having flanged sections which lie between and are bolted to said sills, substantially as described.

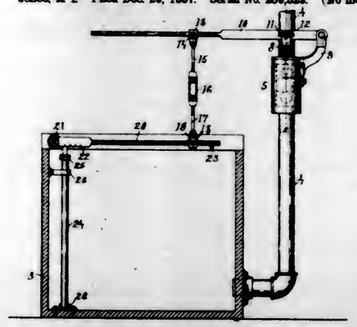
4. In a convertible grain-car, a hopper having upper and lower sections bolted together on a horizontal line, the upper section being divided vertically into a series of small sections flanged on their edges and secured between and to the sills of the car, substantially as described.

5. In a convertible grain-car, the combination, with a hopper having a central escape-opening, of a vertically-operating valve, a threaded set-screw upon which said valve travels, a transverse key-shaft, and intermediate gearing coupling said shaft and set-screw, substantially as described.

6. In a convertible grain-car, a hopper having upper and lower sections horizontally divided and flanged at their meeting edges and bolted together, the flanges of the lower section being formed with elongated bolt-holes for the purposes of adjustment, substantially as described.

7. In a convertible grain-car, the combination, with the adjustable floor and the cleats, of the anti-friction rollers, substantially as described.

381,411. TEMPERATURE-CONTROLLER. ROBERT NEWTON, Providence, R. I. Filed Dec. 29, 1887. Serial No. 259,329. (No model.)



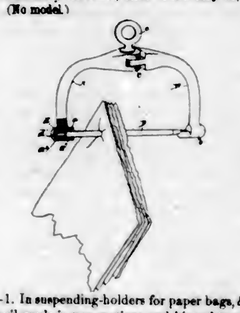
Claim.—1. The combination, as hereinbefore set forth, with the steam-heated vat and the steam-supply therefor provided with a controlling-valve, of, an expansible bar supported within the vat, and a pivoted lever engaged by said bar, the pivoted valve-lever connected with and operating the valve, and a link of adjustable length connected adjustably with both of said levers, substantially as and for the purpose herein described.

2. The combination, as hereinbefore set forth, with the steam-heated vat and the steam-supply therefor provided with a controlling-valve, of an expansible bar supported within the vat, and a pivoted lever engaged by said bar, the pivoted valve-lever connected with and operating the said valve, each lever having a slide mounted adjustably thereon, and a screw-threaded rod hinged to each slide, a turn-buckle connecting the said screw-threaded rods, substantially as and for the purpose herein described.

3. The combination, with the vat 3, having the steam-supply pipe 4, provided with a controlling-valve, of the valve-lever 10, connected with and operating said controlling-valve, the slide 13, adjustable on the lever 10, and the rod 15, hinged thereto, the turn-buckle 16 and the rod 17, attached thereto, the pivoted lever 20, and the slide 18, adjustably mounted on lever 20 and connected with the rod 17, and the expansible bar 24, engaging the lever 20, substantially as and for the purpose herein described.

4. The combination, with the vat 3, provided with the supply 4, and the controlling-valve 5, located in the supply 4, of the arm 9 and the valve-lever 10, pivoted to the arm and provided with slot 11, in which works the pin 12 of the valve-stem 8, the slide 13, provided with screw 14, the screw-threaded rod 15 and the attached turn-buckle 16, the rod 17 and the connected slide 18, provided with the set-screw 19, the pivoted lever 20, and the expansible bar 24, engaging said lever 20, substantially as and for the purpose herein described.

381,412. SUSPENDING-HOLDER FOR PAPER, PAPER BAGS, &c. STEPHEN B. PALMER, Cleveland, Ohio. Filed July 19, 1887. Serial No. 244,730. (No model.)



Claim.—1. In suspending-holders for paper bags, &c., the combination, with a bail made in two sections and hinged together to turn laterally, of a needle rigidly secured to the one member of the bail, and a notch or seat for the needle-point made in the other member of the bail, the parts being arranged substantially as set forth.

2. A suspending-holder for paper bags, &c., consisting, essentially, of a pair of hinged sections and a needle secured to one section and adapted to engage the other section, substantially as set forth.

3. The combination, with hinged bail and needle, substantially as indicated, of a seat in the one member of the bail for receiving the needle-point, and inclines arranged on either side of the seat for guiding the needle to such seat, substantially as set forth.

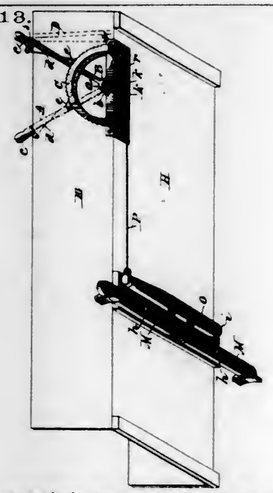
4. The combination, with bail made in two sections hinged together, each member terminating in a depending hub, substantially as indicated, of a needle having a shank of reduced size, and the engaging-hub having a bore of two sizes for engaging, respectively, the shank and body of the needle, the parts being arranged substantially as set forth.

5. The combination, with a sectional bail and a pintle for pivotally connecting said section, the said pintle having an eye or loop for suspending the device, of a needle secured to one section and adapted to engage the other section, substantially as set forth.

381,413. WAGON-BRAKE. EDMUND A. PARKER, Rushville, Ill. Filed Apr. 3, 1886. Serial No. 197,597. (No model.)

Claim.—1. In a wagon-brake, the combination of a semicircular ratchet-frame, a hand-lever placed in and pivoted to said frame having its short arm bent back at right angles and extended beneath the wagon-box, a lever of the second class secured to the under side of the box, brake-levers connected to the same, and a rod connecting said hand-lever and "second-class" lever, substantially as described.

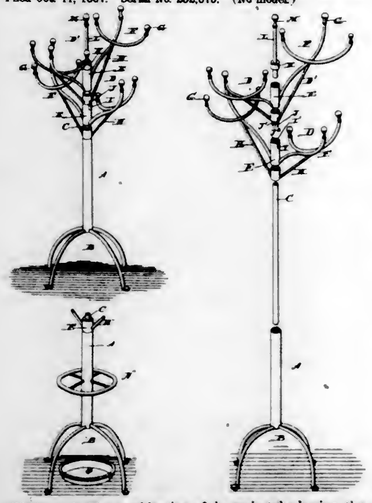
381,413.



2. In a wagon-brake, the combination, with the semicircular ratchet-frame, of a hand-lever placed within said frame, having a pawl pivoted thereon and a broad bearing-surface formed near its lower end, its short arm bent back at right angles and extended beneath the box of the wagon, a lever of the second class secured to the bottom of the box, levers having brake-shoes at their outer ends connected to the same in the rear thereof, and a rod connected to said hand-lever and second-class lever, substantially as described.

3. In a brake for wagons, the combination of the ratchet-frame C, having a broad metallic base, *r*, secured to and extending under the wagon-box, a hand-lever, A, placed within said ratchet-frame having a pawl pivoted thereto engaging with said ratchet, and having a broad bearing, *a*, secured to broad bearing *b* on the ratchet-base, a short arm, *k*, bent at right angles and extended beneath the box, a lever, O, secured to the under side of the box, levers *m m*, located in the rear of and connected to said lever O, and a rod for connecting arm *k* with lever O, substantially as described.

381,414. CLOTHES-STAND. SEWELL A. PARKER, San José, Cal. Filed Oct. 11, 1887. Serial No. 252,075. (No model.)



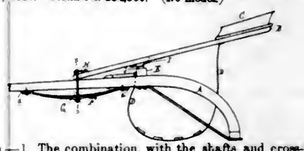
Claim.—1. The combination of the main tube having the supporting-legs, the removable pivot-rod, the lower bracket consisting of a sleeve having the diverging arms and having the sockets at its upper end, and the upper bracket consisting of the sleeve having the diverging arms and having the retaining-pins at its lower end, substantially as set forth.

2. The combination of the main tube having the supporting-legs, the pivot-rod, the brackets formed each with the central sleeves, the diverging arms, and the braces, and having, respectively, the sockets and pins at the meeting ends of their sleeves, and the cap-piece having the projecting hat-support, substantially as set forth.

3. The combination of the main tube having the supporting-legs, the pivot-rod, the lower bracket consisting of a central sleeve having the diverging arms, formed at its upper end with the annular interior recess and the small sockets, and the upper bracket consisting of the central sleeve having the diverging arms and formed at its lower end with the outer annular recess, and the retaining-pins, substantially as set forth.

4. The combination of the main tube having the supporting-legs, the pivot-rod, the brackets formed each with the central sleeves, the diverging arms, and the braces, and having, respectively, the annular recesses, the sockets, and pins at the meeting ends of their sleeves, and a cap-piece, substantially as set forth.

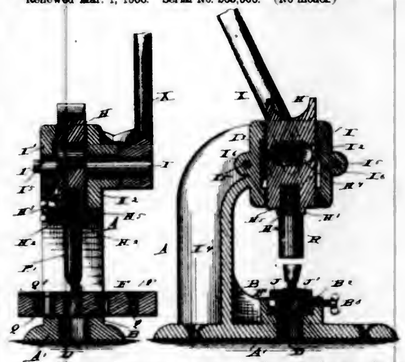
381,415. ROAD-CART. WILLIAM A. PATERSON, Flint, Mich. Filed Nov. 7, 1887. Serial No. 254,509. (No model.)



Claim.—1. The combination, with the shafts and cross-bar of a road-cart, of seat-bars fulcrumed upon the cross-bars, semi-elliptical seat-supporting springs attached to the under side of the shafts and having a longitudinal play thereon, and links embracing the shafts and connecting the forward end of the seat-bars with the springs at or near the center thereof.

2. The combination, with the shafts and cross-bar of a road-cart, of seat-bars having their forward ends connected to springs secured to the shafts, and cup-bearings I J, formed between the seat-bars and cross-bar, substantially as described.

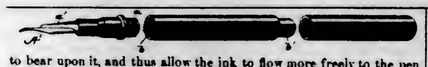
381,416. DIE AND PUNCH FOR MAKING METAL CROWNS FOR TEETH. JOHN J. R. PATRICK, Belleville, Ill. Filed Apr. 21, 1886. Renewed Mar. 1, 1888. Serial No. 265,868. (No model.)



Claim.—An improved apparatus for the manufacture of metal crowns for teeth, comprising a main frame carrying a standard adapted to receive a vertically-movable tool-holder, the said frame having a die-seat with outlet base-aperture receiving interchangeably a cutting-die, a clipping-die, a shrinking-die, and a female die, as described, and provided with means for truing the same with relation to the manipulating-tools, the tool-holder having a slotted body and the shaft of the hand-lever having a cam engaging the said slot, substantially as specified.

381,417. FOUNTAIN-PEN. GEORGE PELLINGER, Akron, Ohio. Filed Nov. 18, 1887. Serial No. 255,522. (No model.)

Claim.—1. In a fountain-pen, a stem having an outward-projecting elongated tongue grooved on its under surface and connecting with a hole or conduit extending throughout its entire length, the tip of the said tongue having a slit designed to open when pressure is brought

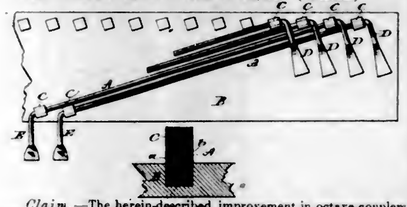


to bear upon it, and thus allow the ink to flow more freely to the pen, substantially as described.

2. In a fountain-pen, the combination of a stem having an outward-projecting elongated tongue grooved on its under surface and connecting with a hole or conduit extending throughout the length of the stem, the tip of the said tongue having a slit designed to open when pressure is brought to bear upon it to allow a larger flow of ink to the pen, and a wick designed to convey the ink by force of capillary attraction from the reservoir or fountain to the upper side of the pen-point, substantially as described.

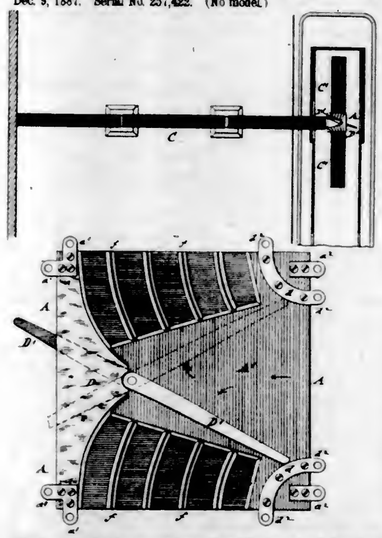
3. In a fountain-pen, the combination of a stem having an outward-projecting elongated tongue grooved on its under surface and connecting with a hole or conduit extending throughout the length of the stem, the tip of said tongue having a slit designed to open when pressure is brought to bear upon it and allow a larger flow of ink to the pen, a wick designed to convey the ink by force of capillary attraction from the reservoir or fountain to the upper side of the pen-point, and a reservoir or fountain formed in the handle of the pen to contain the ink requisite to the perfect working of the pen, substantially as described.

381,418. OCTAVE-COUPLER. FREDERICK PRITCHARD, Meriden, Conn. Filed Dec. 20, 1887. Serial No. 258,481. (No model.)



Claim.—The herein-described improvement in octave-couplers, consisting of the series of diagonal shafts, each shaft provided with arms at its two ends, combined with the coupler-board, and bearings for said shafts, each of said bearings consisting of an inverted-U-shaped block, C, lined with a non-metallic flexible material set over said shafts, and a block, *d*, presenting a non-metallic flexible surface toward the shaft, and set within the open end of the block C, said bearings secured in the coupler-board, substantially as described.

381,419. SWITCH FOR ICE-RUNS. JOHN REIS, Rondout, N. Y., assignor of one-half to the Brewers Ice Company, of New York. Filed Dec. 9, 1887. Serial No. 257,422. (No model.)



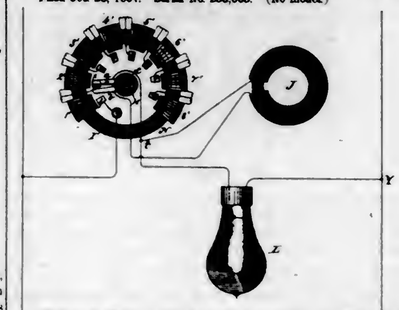
Claim.—1. An apparatus comprising the main and side runs, a platform connected to said runs, chains for suspending said platform, and a tongue fulcrumed to the platform and adapted to send the cakes of ice from the main run to either one of the side runs, substantially as set forth.

2. A switch for ice-runs, consisting of a platform having a raised and tapering abutment, provided with a V-shaped horizontal opening, and a tongue fulcrumed to the platform at the forward end of the abutment and extended through said opening to the rear of the same, substantially as set forth.

3. A switch for ice-runs, composed of a platform, a raised abutment, a smooth middle portion, depressed side portions provided with curved rails, and a tongue fulcrumed to the middle portion and extending back of the abutment, substantially as set forth.

4. A switch for ice-runs, composed of a platform having eye-straps for the suspending-chains, and connecting-hooks, a raised and forward-projecting abutment, a smooth middle portion, an oscillating tongue fulcrumed to said middle portion, raised blocks at the front corners of the platform, and depressed side portions provided with curved rails, substantially as set forth.

381,420. REACTIVE COIL. E. WILBUR RICE, Jr., Lynn, Mass. Filed Oct. 28, 1887. Serial No. 253,665. (No model.)



Claim.—1. The combination, with a variable or adjustable sectional electro-magnetic coil placed in an alternating magnetic field, of an electric switch and an artificial resistance or reactive coil, as described, in the connection between the terminals of the coil-section when the switch is connected with both coil-terminals at the same time.

2. The combination, with a variable or adjustable sectional magnetic coil in an alternating magnetic field, of a series of switch contacts or plates connected to the coil-sections and a two-part switch having an artificial resistance or reactive coil in the circuit between the two parts, as and for the purpose described.

3. The combination, with an induction-coil having a sectional wound set of coils, of an electric switch for varying the length of wire in a set to vary the potential at the terminals of the secondary, and a reactive coil, J, connected with the switch and included successively in multiple with the coil-sections as the switch is moved for varying the number of coils in circuit.

4. The combination, with an induction-coil having its primary wound in sections, of a switch for diminishing or increasing the length of wire on the primary in order to increase or diminish the potential at the terminals of the secondary, and a reactive coil, J, included successively in multiple with the sections on the primary as the switch moves to diminish or increase the length of primary wire in circuit, as and for the purpose described.

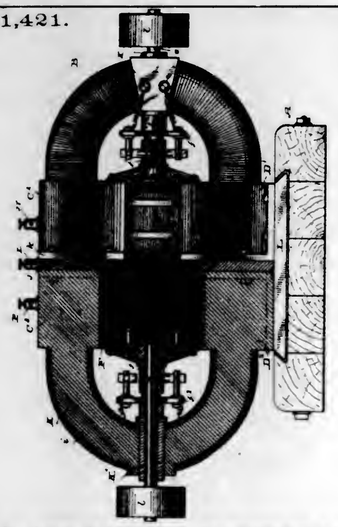
381,421. DYNAMO-ELECTRIC GENERATOR. ELIAS E. RICE, Baltimore, Md., assignor of one-half to Albert H. Henderson, same place. Filed Apr. 25, 1887. Serial No. 236,386. (No model.)

Claim.—1. In a dynamo-electric machine, the combination, with a main exterior field-magnet system, of two ring-armatures arranged facing each other between the polar extensions thereof, and an auxiliary field-magnet secured to and supported by the exterior pole-pieces and extending between and into the interior of both armatures, substantially as described.

2. In a dynamo-electric generator, the combination of two ring-armatures and two commutators upon a single shaft, arranged facing each other, and exterior and interior field-magnets common to both armatures, substantially as described.

3. In a dynamo-electric generator, the combination, with a double set of field-magnets and pole-pieces united at or near the central portion of the machine, of a single armature-shaft, two armatures mounted upon said shaft within the influence of the said pole-pieces and facing each other, and an auxiliary field-magnet located within the armatures and in juxtaposition to the pole-pieces of the main field-magnets, substantially as described.

381,421.



4. In a dynamo-electric generator, the combination of a double set of field-magnets facing toward each other, an armature-shaft, two armatures on said shaft facing each other and arranged to rotate within the field of force set up by said field-magnets, and an auxiliary field-magnet having projections or extensions therefrom of diamagnetic metal, said extensions being placed between the ends of the opposing main field-magnet cores, whereby the said auxiliary field-magnet is suspended in position to extend into the facing armatures, substantially as described.

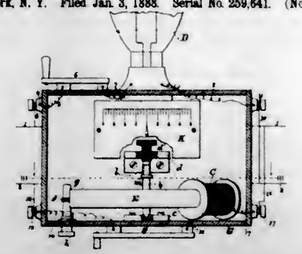
5. In a dynamo-electric generator, the combination, with the exterior field-magnet cores and a pair of ring-armatures arranged facing each other upon a main shaft parallel with said cores, of a pole-piece common to both armatures and having a comparatively thin web of metal at its neutral line, said pole-piece embracing both exterior and interior portions thereof and formed in one single piece, substantially as described.

6. A duplex pole-piece for dynamo-electric generators, having segmental grooves on each side for the reception of a pair of ring-armatures, as described, the said grooves being separated by a comparatively thin web of metal at the neutral line, substantially as set forth.

7. A dynamo-electric generator composed of two independent and separable U-shaped field-magnets, their extremities forming pole-pieces arranged to embrace, respectively, two separate armatures mounted on the same driving-shaft, said driving-shaft extending in a direction parallel to the arms of the U-shaped magnets and journaled in bearings at the neutral points thereof, substantially as described.

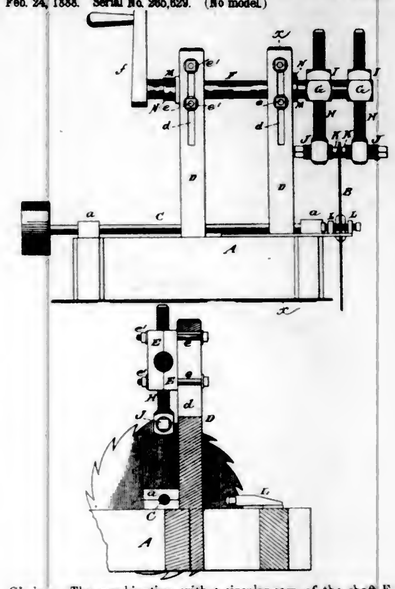
8. In a dynamo-electric generator, the combination, with the field-magnet cores and end or frame pieces, of journal-bearings mounted in said frames or end pieces at the neutral magnetic line, two or more armatures mounted upon the main shaft rotating in said bearings and facing toward each other, commutators for said armatures and commutator-brush carriers therefor located in the space between the journal-bearings and armatures, and auxiliary magnets supported from said field-magnet cores and extending between and into the armatures, substantially as described.

381,422. ELECTRICAL INDICATOR. ANDREW L. RIKER, New York, N. Y. Filed Jan. 3, 1888. Serial No. 259,641. (No model.)



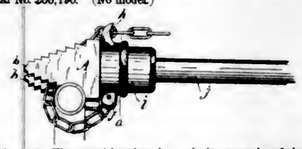
Claim.—An electrical indicator comprising, in combination, a semi-cylindrical casing, the curved front whereof is provided with a glass-covered opening, a dial-plate behind the latter, a curved solenoid, a curved armature mounted on an oscillating spindle, an adjustable spring attached to one end of said armature and pulling against the attraction of said magnet, and a pointer carried by said spindle and extending between said dial-plate and glass, substantially as described.

381,423. SAW-GUIDE. JOHN S. ROBINSON, Mannington, assignor to L. G. Robinson, Marion County, W. Va. Filed Mar. 18, 1887. Renewed Feb. 24, 1888. Serial No. 265,629. (No model.)



Claim.—The combination, with a circular saw, of the shaft F, having the transverse integral nuts G G, the screws H H, working through said nuts and having transverse head-nuts, the screws J, and the guides K, as and for the purpose set forth.

381,424. CHAIN-WRENCH. WINFIELD S. ROLLINGS, Indianapolis, Ind., assignor to Roswell R. Rouse, same place. Filed Oct. 24, 1887. Serial No. 253,190. (No model.)



Claim.—1. The combination, in a chain-wrench, of the reversible serrated head, the handle secured to the head, the chain, and the collar arranged to rotate in relation to the head and having means for permanently securing the chain to one side thereof and for detachably securing the chain to the opposite side, all arranged to co-operate substantially as and for the purpose specified.

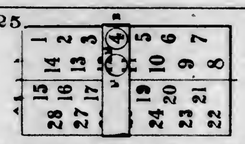
2. The combination, in a chain-wrench, of the reversible serrated head, the collar arranged to rotate on said head, the chain secured at one end to said collar, and the stop formed on the collar and adapted to receive a link of the chain, all substantially as specified.

3. In a chain-wrench, head A, having two-faced jaws *b b*, neck *c*, and screw-threaded shank *d*, collar *e*, having stop *h* and lugs *f f*, a chain attached at one end to said lugs, coupling *i*, and handle *j*, all combined and arranged to co-operate in the manner specified.

381,425. GAME-COUNTER. NATHAN ROSENWASSER, Cleveland, Ohio, and FRANK ROSENWATER, Omaha, Nebr. Filed Mar. 9, 1887. Serial No. 230,296. (No model.)

Claim.—1. In a game-counter or analogous article, a bar crossed vertically by two or more parallel columns of numbers or other characters, all arranged with relation to each other and to two or more

381,425



orifices and their relative position in a slide moving vertically up and down over the face of or over both sides of the said bar, so that when one of said numbers or characters upon said bar is visibly indicated through one of said orifices no other number or character upon said bar will be similarly indicated, as described.

2. In a game-counter or analogous article, a bar containing two or more parallel vertical columns of numbers or other characters, in combination with a slide passing vertically over said columns, said slide containing an orifice near one end situated relatively to the numbers or other characters in said columns so as to visibly indicate through said orifice any one of the characters in either column, according to the direction in which the orificed end is kept—to the right or to the left—when being moved over the bar, all as described.

381,426. DRAW-BAND. JOHN N. SARGENT, Aurora, assignor to himself and Gilbert H. Wymond, Dearborn County, Ind. Filed Jan. 20, 1888. Serial No. 261,431. (No model.)

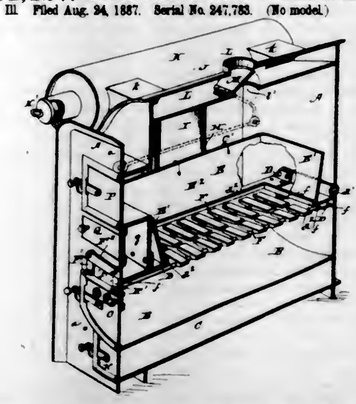


Claim.—1. The herein-described draw-band, composed of a strap having one reduced screw-threaded end and a slot in the other end, and adapted to be bent around the object to be clamped by passing its threaded end through its slotted end and securing the same by a nut, in combination with a block, D, having its inner face concaved to bear tightly against the object clamped and inserted between the ends of the strap and the object, substantially as and for the purpose described.

2. The combination of band A, having one end slotted and the other end reduced, shouldered, and screw-threaded, and a nut thereon, with a washer, D, concaved on its inner surface to fit snugly on the surface of the object to be clamped and placed on the threaded end of band A and forming the bearing of the nut below the slotted end of the band, substantially as and for the purpose described.

3. The combination of band A, having screw-threaded end B and slotted at its other end, with the concaved washer D, having bore E for the passage of the end B of the band, and a nut, F, on said end binding the slotted end of the strap against said washer, substantially as specified.

381,427. HOT-AIR FURNACE. PHILIP H. SCHEURER, Nashville, Ill. Filed Aug. 24, 1887. Serial No. 247,783. (No model.)



Claim.—1. The combination, in a furnace, of the casing, the ash-box located therein, and a clean-out formed below said ash-box, the fire-box, and the side flues formed between the fire-box and the casing and opening at their lower ends below the fire-box, and down flues or passages for the passage of the heat to the said side flues, substantially as set forth.

2. The combination of the casing, the fire-box therein and separated at its sides from the casing, forming spaces between the fire-box and casing, the plates G, fitted between the fire-box and casing and forming the flues H therebetween, the top having radiators, and the box-extensions I, extending between the said radiators and the plates G, substantially as and for the purposes set forth.

3. In a furnace, the combination of the casing, the ash-box, the grate-rest, the fire-box, and the side flues, said parts being formed in detachable sections, whereby they may be placed and removed through the fire-box door, substantially as set forth.

4. The combination of the main casing and the grate-rest therein, having guides *g g'*, the fire-box arranged above the grate-rest and separated at its sides from the casing, the furnace-top, the plates G, held in the guides *g g'*, and the box-extensions supported on plates G and extended therefrom to the furnace-top, substantially as set forth.

5. The combination of the casing, the top mounted thereon and having central and side radiators, the fire-box located in the casing and separated at its sides therefrom, the ash-box below said fire-box and the clean-out below the ash-box, and side flues extended from the side radiators of the top between the fire-box and casing and into the clean-out, substantially as and for the purposes specified.

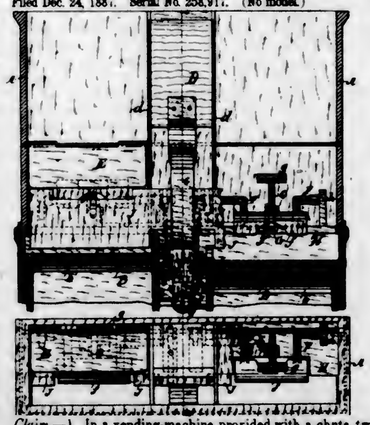
6. The combination of the casing, the furnace-top, the fire-box located within the casing and separated therefrom, forming an air space or passage, and a flue connected at its upper end with the furnace-top, extended between the fire-box and casing, and open at its lower end, whereby the heat may be directed down between the fire-box and casing alongside of such flue, and thence upward therethrough to the furnace-top, all substantially as and for the purposes specified.

7. The combination of the casing, the top thereon, and the fire-box, grate, and rest D in said case, the plates G, fitted between the fire-box and casing and having shoulders 1 to bear on rest D, and provided with notches 3 and 4 at their upper ends, and the box-extension fitted on said plates and engaging the notches 3 and 4 thereof, substantially as set forth.

8. The combination of the casing, the ash-box and grate-rest therein, guides *g g'*, provided on the casing and grate-rest, the plates G, fitted between the fire-box and casing, and having shoulders 1 arranged to bear on the grate-rest between the guides *g'* thereof, and having wings 2 fitted to engage the guides *g*, and having notches 3 and 4 at their upper ends, and the box-extensions I, supported on the plates G and engaging the notches 3 and 4 thereof, substantially as and for the purposes specified.

9. A furnace having an ash-box, a fire-box, a clean-out below said ash-box, and air-passages leading from the clean-out into the fire-box, combined with the drum-like top, the side flues leading from said top into the clean-out, and a valve whereby the products of combustion may be permitted to pass directly from the fire-box through said top, or may be directed downward through the clean-out and side flues, and thence through the top, substantially as and for the purposes specified.

381,428. VENDING APPARATUS. OTTO SCHIBSEN, New York, N. Y. Filed Dec. 24, 1887. Serial No. 258,917. (No model.)



Claim.—1. In a vending-machine provided with a chute, two delivery-receptacles having projecting lugs upon their adjacent ends, in combination with a lever provided with a ratchet tooth or teeth disposed to engage said lugs and impede the outward movement of said

receptacles, while allowing the reverse movement to the same, said lever being balanced to be tipped by a coin deposited in said chute, and thereby to release said lugs and free either of said receptacles, substantially as described.

2. In a vending-machine provided with a chute, two delivery-receptacles having projecting lugs upon their adjacent ends, in combination with a lever balanced to be tipped by a coin deposited in said chute, said lever being provided with loosely-mounted segments or teeth disposed to impede the outward movement of said lugs, either segment being adapted to turn independently, allowing the lug upon the adjacent receptacle to be moved inward and the same closed without tilting the lever so far down as to free the other receptacle, substantially as described.

3. In a vending-machine provided with a chute, two delivery-receptacles having projecting lugs upon their adjacent ends, in combination with a lever balanced to be tipped by a coin deposited in said chute, said lever being provided with a weight adjustable for lighter and heavier coins and with loosely-mounted segments or teeth disposed to impede the outward movement of said lugs, either segment being adapted to turn independently, allowing the lug upon the adjacent receptacle to be moved inward and the same closed without tilting the lever so far down as to free the other receptacle, substantially as described.

4. In a vending-machine, two delivery-receptacles provided with grooves upon their adjacent ends, in combination with a bar disposed so as to extend partially into said grooves, a pivoted tongue or shaft supporting said bar, the said bar being adapted to be pressed out of the groove in one receptacle by a movement of such receptacle, and by the same movement to be driven farther into the groove of the other receptacle, locking the latter, whereby either receptacle is allowed to be drawn forth singly, but both receptacles prevented from being opened simultaneously, substantially as described.

5. In a vending-machine, two delivery-receptacles having grooves upon their adjacent ends, in combination with a bar suitably supported between said receptacles and provided with rollers disposed so as to extend into said grooves, either roller being adapted to be pressed out of the groove of the receptacle into which it extends by a movement of such receptacle, and by the same movement the other roller to be driven farther into the groove of the other receptacle, locking the latter, whereby either receptacle is free to be drawn forth singly, but both receptacles prevented from being opened simultaneously, substantially as described.

6. In a vending-machine provided with a chute, two delivery-receptacles having grooves upon their adjacent ends, in combination with a lever having connections with both of said receptacles, said connections being adapted to lock the same, the said lever being balanced to be tipped by a coin deposited in said chute, and thereby to release said receptacles, and a bar suitably supported between said receptacles and disposed to extend partially into said grooves, said bar being adapted to be pressed out of the groove in one receptacle by a movement of such receptacle, and by the same movement to be driven farther into the groove of the other receptacle, locking it, whereby upon the tilting of said lever either receptacle is free to be drawn forth singly, but both prevented from being opened simultaneously, substantially as described.

7. In a vending-machine provided with a chute, two delivery-receptacles having grooves upon their adjacent ends, in combination with a lever having connections with both of said receptacles, said connections being adapted to lock the same, the said lever being balanced to be tipped by a coin deposited in said chute, and thereby to release said receptacles, and a bar suitably supported between said receptacles and provided with rollers disposed to extend into said grooves, either roller being adapted to be pressed out of the groove of the receptacle in which it extends by a movement of such receptacle, and by the same movement the other roller to be driven farther into the groove of the other receptacle, locking it, whereby upon the tilting of said lever either receptacle is free to be drawn forth singly, but both prevented from being opened simultaneously, substantially as described.

8. In a vending-machine provided with a chute, two delivery-receptacles having grooves and lugs upon their adjacent ends, in combination with a bar suitably supported between said receptacles and disposed to extend partially into said grooves, said bar being adapted to be pressed out of the groove in one receptacle by a movement of such receptacle, and by the same movement to be pressed farther into the groove in the other receptacle, locking the latter, and a lever provided with a ratchet tooth or teeth arranged so as to impede the outward movement of said lugs, while allowing the reverse movement to the same, said lever being balanced to be tipped by a coin deposited in said chute, and thereby to release said lugs, substantially as described.

9. In a vending-machine provided with a chute, two delivery-receptacles having grooves and lugs upon their adjacent ends, in combination with a bar suitably supported between said receptacles and provided with rollers disposed to extend partially into said grooves, either roller being adapted to be pressed out of the groove of the receptacle in which it extends by a movement of such receptacle, and by the same movement the other roller to be driven farther into the groove of the other receptacle, locking it, and a lever adapted to be tipped by a coin deposited in said chute, said lever being provided with loosely-mounted segments or teeth arranged to impede the outward movement of said lugs, either segment being adapted to turn independently, allowing the lug upon the adjacent receptacle to be moved inwardly and the same closed without tilting the lever so far down as to free the other receptacle, whereby upon the deposite of the proper coin in said chute, either of said receptacles is freed, so that it may be drawn forth singly, but both receptacles prevented from being opened simultaneously, and upon the closing of either receptacle the same is moved back without unlocking the other receptacle, substantially as described.

10. In a vending-machine, a delivery-receptacle, in combination with a hinged plate arranged adjacent to said receptacle and adapted to support the articles to be sold, a shaft placed beneath said plate and provided with a tongue adapted to be brought in contact therewith, and a crank-arm secured to said shaft, said arm having also connection with said receptacle, whereby upon the moving of the latter said shaft is turned, said tongue is brought in contact with said plate, the same being thereby shaken or tipped, and the articles to be sold impelled forward into said receptacle, substantially as described.

11. In a vending-machine provided with a chute, two delivery-receptacles having projecting lugs upon their adjacent ends, in combination with a lever adapted to be tipped by a coin deposited in said chute, said lever being provided with loosely-mounted segments or teeth disposed to impede the outward movement of said lugs, either segment being adapted to turn independently, allowing the lug upon the adjacent receptacle to be moved inward and the same closed without tilting the lever so far down as to free the other receptacle, and separate shaking mechanisms placed adjacent to said receptacles and having connections therewith, each shaking mechanism being adapted to be operated by a movement of the adjacent receptacle, substantially as described.

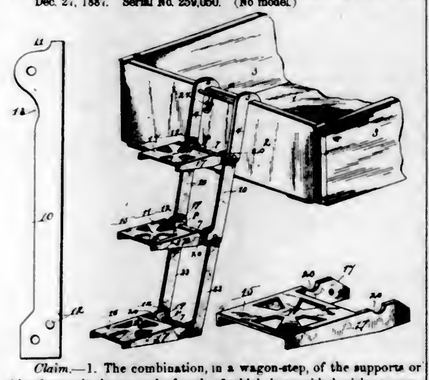
12. In a vending-machine provided with a chute having a lower hinged or swinging portion, two delivery-receptacles, in combination with a lever provided with prongs and having connections with both of said receptacles, said connections being adapted to lock the same, the said prongs being disposed to extend about the swinging portion of said chute and support a coin deposited therein, the said lever being adapted to be tilted by such coin, and thereby to unlock said receptacles, and connections between said receptacles and the swinging portion of said chute, whereby upon the opening of either receptacle the swinging portion of said chute is moved forward, shoving the coin from said prongs and releasing said lever, substantially as described.

13. In a vending-machine provided with a chute having a lower hinged or swinging portion, two delivery-receptacles having lugs upon their adjacent ends, in combination with a lever provided with prongs projecting about the lower portion of said chute and with segments or teeth disposed to impede the outward movement of said lugs, either segment being adapted to turn independently, allowing the lug upon the adjacent receptacle to be moved inward without tilting the lever so far down as to free the lug upon the other receptacle, the said lever being balanced to be tipped by a coin deposited in said chute, and thereby to free both of said lugs, the said prongs being adapted to support such coin, and connections between the hinged or swinging portion of said chute and said receptacles, whereby upon the opening of either receptacle the swinging portion of said chute is moved forward, shoving the coin from said prongs and releasing said lever, and upon the closing of such receptacle the same is moved back without unlocking the other receptacle, substantially as described.

14. In a vending-machine provided with a chute having a lower hinged or swinging portion, two delivery-receptacles, in combination with shaking mechanisms placed adjacent to said receptacles and adapted to impel forward into said receptacles the articles to be sold, a lever provided with prongs and having connections with both of said receptacles, said connections being adapted to lock the same, the said lever being adapted to be tilted by a coin deposited in said chute, and thereby to unlock said receptacles, the said prongs being disposed to extend about the hinged portion of said chute and support a coin deposited therein, and connections between said receptacles and said shaking mechanism and between said receptacles and the hinged portion of said chute, whereby upon the opening of either receptacle the shaking mechanism connected therewith is operated and the swinging portion of said chute is moved forward, shoving the coin from said prongs and releasing said lever, substantially as described.

15. In a vending-machine provided with a chute having a lower hinged or swinging portion, two delivery-receptacles having lugs and grooves upon their adjacent ends, in combination with a bar suitably supported between said receptacles and provided with rollers disposed to extend partially into said grooves, either roller being adapted to be pressed out of the groove of the receptacle in which it extends by a movement of such receptacle, and by the same movement the other roller to be driven farther into the groove of the other receptacle, locking the latter, a lever provided with prongs projecting about the lower portion of said chute and with segments or teeth disposed to impede the outward movement of said lugs, either segment being adapted to turn independently, allowing the lug upon the adjacent receptacle to be moved inwaard without tilting the lever so far down as to free the lug upon the other receptacle, the said lever being balanced to be tipped by a coin deposited in said chute, and thereby to free both of said lugs, the said prongs being adapted to support such coin, and connections between the hinged or swinging portion of said chute and said receptacles, whereby upon the deposit of the proper coin in said chute either of said receptacles is freed, so that it may be drawn forth singly, but both receptacles prevented from being opened simultaneously, and upon the opening of either receptacle the swinging or hinged portion of said chute is swung forward, shoving the coin from said prongs, and upon the closing of such receptacle the same is moved back without unlocking the other receptacle, substantially as described.

381,429. WAGON-STEP. EDWARD SCOTT, Cedarville, Ark. Filed Dec. 27, 1887. Serial No. 259,050. (No model.)



Claim.—1. The combination, in a wagon-step, of the supports or side pieces, the lower end of each of which is provided with an apertures, and a stop or projection upon its inner side, a rod in the apertures, and a step pivotally secured upon the rod, the upper edges of the sides of which are each provided with a notch or recess, 20, in front of their pivotal point, and has its rear end cut off or inclined to engage with the stop or projection.

2. The combination, in a wagon-step, of supports or side pieces, the lower end of each of which is provided with a stop or projection upon its inner side, and an aperture, a rod through the apertures, a step pivotally secured upon the rod, and a sleeve upon the rod between the side pieces of the step.

3. The combination, in a wagon-step, of the supports or side pieces, the upper ones of which are provided at their upper ends with means, substantially as described, for securing them to the wagon-bed, and the lower ones are provided at their upper ends with the recess 13 below their pivotal points, and with the notch 11 at their upper ends, a stop or projection upon the inner side of the lower end of each of the side pieces, rods for securing the side pieces together, and a step pivotally secured upon each of the rods.

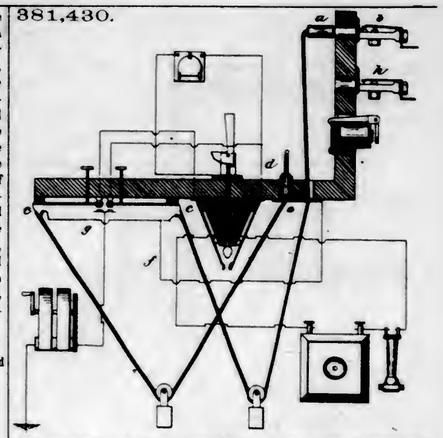
381,430. CIRCUIT FOR DOUBLE-STRANDED TELEPHONE-SWITCH-BOARD CORDS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Dec. 27, 1886. Renewed Nov. 21, 1887. Serial No. 255,768. (No model.)

Claim.—1. In a switch-board apparatus, the combination, with a pair of loop-plugs and their pair of double-stranded cords, of a metallic plate, *c*, in connection with one of said strands, and the heel-pieces of said plugs connected with the tips, respectively, whereby when one plug is inserted in a spring-jack the two strands will be connected together, substantially as described.

2. The combination, with the two terminals of a spring-jack, *b*, of a loop-plug inserted therein, and the strands of a flexible cord and another loop-plug, with its heel, which connects with its tip resting upon a metallic plate or connection, which is connected with a strand, *g*, of the cords, whereby circuit is closed between the different terminals of said spring-jack through the different strands of the cord, substantially as and for the purpose specified.

3. In a telephone-exchange switch-board apparatus, a pair of loop-plugs and their pair of double-stranded cords, one strand including the telephone and the other strand being connected with a metallic connection, with which the heel-piece of either of the plugs may be connected, in combination with the two terminals of a spring-jack, in which either of the plugs may be inserted, whereby the two terminals of the spring-jack may be connected together through the different strands, substantially as described.

381,430.



4. In a telephone switch-board, the combination of a double-stranded cord, two double terminal plugs, the two strands respectively connected together, the two insulated portions of the plugs, metallic heels, one to each plug, each connected with one of the terminals of its plug and with the same strand of the cord, a plate with which the heels of the plugs may make contact, and a connection from said plate to the strand of the cord which is not normally in connection with the heels of the plugs, whereby contact between the heel of a plug and the plates connects together the two strands of the cord, while lifting the plug removes that connection and leaves the branch connection to the plate open.

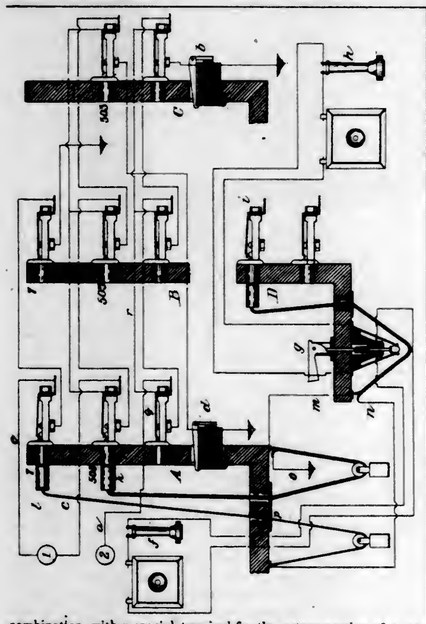
5. The combination, with a spring-jack switch, of a loop-plug inserted therein, the spring of said switch being connected with the point of the plug, and the frame of the switch being connected with the metallic sleeve of the plug, the strands of a flexible cord connected with different terminals of a corresponding plug, said plug being provided with a metallic heel connected with its sleeve, and a connection, *f*, from the metallic plate upon which said heel rests leading to the strand *g*, which connects the tips, whereby the two strands of the cord are connected together, substantially as described.

381,431. LONG-DISTANCE CONNECTION FOR MULTIPLE SWITCH-BOARDS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Jan. 3, 1887. Renewed Nov. 21, 1887. Serial No. 255,774. (No model.)

Claim.—1. In a telephone-exchange system, the combination, with the multiple switch-boards, each provided with a different connection for each of the telephone-lines, of the special connections upon one or more of said boards for the return portions or sides of the metallic circuits, the annunciators of the metallic circuits being placed upon the said one or more boards, which are provided with the extra switches in the return portions of said metallic circuits, and switching apparatus at said one or more boards, whereby any of these metallic circuits may be connected with one another, with other lines of the exchange, or extended by a loop-connection to a long-distance room, substantially as described.

2. A metallic telephone line-circuit, one limb of which is connected with a different switch or spring-jack on each of two or more multiple switch-boards, said limb extending through a subscriber's station, and the return portion or limb of said circuit being connected with a special spring-jack on one or more of the multiple switch-boards, the individual annunciator of said circuit being placed upon a board having the special connection for the return limb of the said circuit, the special connection or spring-jack of the line having its individual number, and said number being also indicated at the other switch of the line upon the same board or boards, in combination with switching apparatus, whereby the metallic circuit may be extended by a loop to the long-distance room, substantially as described.

3. Upon one of a series of multiple switch-boards, each provided with a separate terminal for each of the different telephone-lines, the



combination, with a special terminal for the return portion of a metallic circuit, said special terminal having its own number, and said number being repeated in connection with the other terminal of the same line upon the same board, whereby the operator at said board upon observing the said special number in connection with the general number of the line will know that the line is a metallic circuit, and the number of the special terminal of said line upon said switch-board.

4. In a telephone-exchange system, the combination, with multiple switch-boards, each provided with a different connection for each of the telephone-lines, of the special connection for one or more of said boards for the return limbs of the metallic circuits, and switching apparatus, whereby any of these metallic circuits may be connected with one another or other lines of the exchange, or extended by a loop-connection to the long-distance room, substantially as described.

5. In a telephone-exchange system, the combination, with multiple switch-boards, each provided with a different connection for each of the telephone-lines, of special connections upon one or more of said boards to the return portions or limbs of the metallic circuits, said special connections having their individual numbers, as 7, which special numbers are represented upon the other or general terminals, as at terminal 503 on the same board, at said one or more boards, whereby the operator may at a glance determine whether any line is a metallic-circuit line, and whereby any of these metallic circuits may be connected with one another, with other lines of the exchange, or extended by loop-connections to the long-distance room, substantially as described.

381,432. PORTABLE STOCK-COOLER. LEONHARD TH. SCHWANN, Cleveland, Ohio. Filed June 20, 1887. Serial No. 241,855. (No model.)



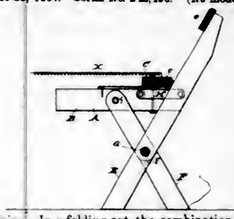
Claim.—1. A portable cooling-coil consisting, essentially, of a coil of pipe, a series of brace-rods attached thereto and provided with a socket, a nandle one end of which is secured in said socket, and hose attached to the ends of the coil, substantially as set forth.

2. A portable cooling-coil consisting, essentially, of a coil of pipe, a handle attached thereto, and hose attached to the ends of the coil, the said hose being attached to the coil at a point near the handle, whereby the handle and hose can be grasped by the operator, substantially as set forth.

3. The combination, with a coil of pipe having upturned ends and hose attached to the ends of the coil, of a series of brace-rods secured to the coil and carrying a socket, and a handle secured in said socket, substantially as set forth.

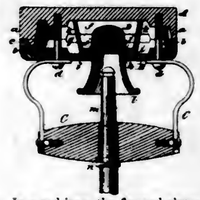
4. The combination, with a coil of pipe having upturned ends and hose connected with the pipe, substantially as indicated, of a handle for lifting the coil, said handle having brace-rods connected with the different parts of the coil, the said handle being embraced by the ends of the pipe, and clamps for bracing the coil, substantially as set forth.

381,433. FOLDING COT. CHARLES T. SEGAR, Utica, N. Y. Filed June 25, 1887. Serial No. 242,496. (No model.)



Claim.—In a folding cot, the combination, with the frame A, composed of the side rails and end bars, the legs pivoted to the bars G, the legs F being pivoted at *f* on the inner surface of the adjacent side rail, the strips *c d*, and the links H, pivoted to the rails, of the brace-bars *b'* and the spacing-blocks *h*, substantially as specified.

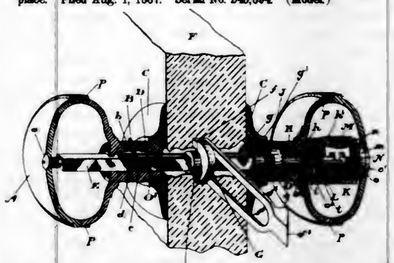
381,434. SAD-IRON. JAMES L. SHARP, New York, and JAMES D. LUTHER, Brooklyn, N. Y. Filed July 5, 1887. Serial No. 243,311. (No model.)



Claim.—1. In a sad-iron, the flanged plates A and B, one of said plates having a gas-and-air inlet, in combination with the perforated cup D, and ring *j*, having legs *k*, for holding the cup D securely within the iron, substantially as described.

2. The plate A, having flange *a*, notched to form openings *f*, in combination with the plate B, perforated cup D, ring *j*, having legs *k*, and funnel *l*, as specified.

381,435. COMBINED LATCH AND LOCK. JOHN SHARPE, Toronto, Ontario, Canada, assignor of one-half to Jose Alexander Banfield, same place. Filed Aug. 1, 1887. Serial No. 245,894. (Model.)



Claim.—1. The combination, with the lock-case and a spring-latch, of the knobs, a spindle connecting said knobs and formed with square portion at one end and cylindrical at the other, a leg on said spindle, and a key inserted into one of said knobs to engage said lug, substantially as and for the purpose specified.

2. The combination, with the door-knob A, having a slot, *b*, formed in the shank thereof, the square spindle E, rigidly secured in said shank, and having a groove and a recess, *c*, formed therein, and a cylindrical portion, *h*, with slot g^3 on the outer end thereof, the slide D, provided with the pin B for moving the same, and adapted to engage the recess, and having lug *g* on the end thereof, of the outer door-knob, K, having shank O, provided with slot *g'*, whereby when the lug on the slide is projected to engage the slots *g'* and g^3 the outer knob is locked to the spindle E, which actuates a spring-latch, substantially as described.

3. The combination, with the outer door-knob, K, the door-knob A, having slot *b* formed in its shank, the spindle E, formed with slot g^3, recess *c*, and circular recess, and having squared end, to which the door-knob A is rigidly secured, and the shank of the outer door-knob having slot *g'*, of the pin B and the slide D, having lug *g*, substantially as and for the purpose specified.

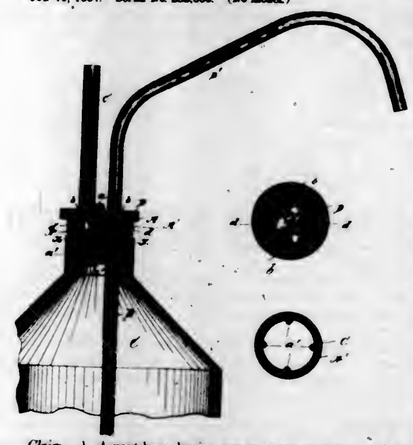
4. The combination, with the outer door-knob, K, the spindle E, having formed integral therewith the lug *k'*, and the guard M, provided with wards, as described, of the knob-cylinder L, slotted to receive said guard, the cylinder-tumbler N, slotted at *o* and grooved to receive a key, and with slot *t*, and the lug *k* on the cylinder-tumbler and journaled in the recess in the cylindrical end *h* of the spindle, substantially as described.

5. The combination, with the spindle having a recess formed in its cylindrical end, the inner door-knob having a cylinder formed in its lower half, and the outer door-knob having in its upper half a circular aperture, of the cylinder-tumbler grooved axially and formed with key-hole and slotted to receive a guard, a guard with wards which the key is adapted to pass, a slide formed with a lug, and a lug integral with the spindle, all arranged and operating substantially as and for the purpose specified.

6. The combination of the inner and outer door-knobs, a spindle connecting said inner and outer door-knobs and having a circular groove in its cylindrical end, and a cylinder in the outer knob, of a recessed cylinder-tumbler adapted to receive a key and journaled to move in a cylinder in outer knob, guard with wards, lug integral with spindle, pin working in circular groove in cylindrical end of spindle, knob-rose, slide with lug adapted to engage with and to become disengaged from slot in shank of outer knob, and slot in spindle when actuated by a pin passing through slide and adapted to rock in a recess in spindle, and inner door-knob rigidly attached to squared end of spindle, having slotted shank for the pin which actuates the slide, the whole being arranged and operated to unlatch or unlock a door, substantially as described.

7. The combination, with the spindle E, the guard M, and knob cylinder L, fixed in a slot in door and slotted to receive guard M, with wards formed therein, of cylinder-tumbler N, suitably journaled to rotate in said cylinder, and slotted at *o* and grooved to receive a flat key, together with lug *k'*, integral with spindle E, against which lug the key is adapted to engage after passing the wards in guards M, substantially as described, and for the purpose specified.

381,436. BUNG. JAMES H. SHERWOOD, Brooklyn, N. Y. Filed Oct. 19, 1887. Serial No. 252,809. (No model.)



Claim.—1. A vent-bung having one or more apertures and provided with a threaded shank, in combination with a disk formed with corresponding apertures and secured to said bung by a pin or bolt, about which said disk is adapted to rotate or turn, and a bushing provided with inner projecting lugs, and a threaded portion above said lugs adapted to receive said shank, substantially as described.

2. In combination with a can or vessel, a vent-bung provided with an aperture, a pipe leading from such aperture into said vessel, the said aperture being also adapted to receive connections for completing a siphonic attachment, and said bung being further provided with an opening or openings for the passage of air, substantially as described.

3. In combination with a can or vessel, a vent-bung, A, provided with two or more apertures, and a pipe leading from one of said apertures into said vessel, and a cover, D, having apertures corresponding to those in said bung and adapted to receive the pipes C B', the said cover being secured to said bung and adapted upon the removal of the pipes C B' to move thereon and to seal the same, substantially as described.

381,437. SHOW-STAND. ARCHIBALD F. SMITH, Philadelphia, Pa. Filed Oct. 10, 1887. Serial No. 251,877. (No model.)



Claim.—1. The combination, in a show-stand, of a base, a bar pivoted thereto so that it is free to assume different angles in respect to the base, and a second bar confined laterally thereto and adjustable longitudinally on said pivoted bar, all substantially as specified.

2. The combination of the projecting bar of the stand having a notched face, the form pivoted to the upper end of the said bar, and a brace pivoted to said form and adapted to the notches in the face of the bar, all substantially as specified.

3. The combination, in a show-stand, of the flat base portion A, with a vertical bar, B, hinged thereto, and a hooked rod, *c*, pivoted to bar B and adapted to eyes on the base, with a bar, D, vertically adjustable on said bar B, the whole being so constructed as to fold flat, substantially as and for the purpose described.

4. The combination, in a show-stand, of a base, a bar, B, pivoted thereto, a T-shaped bar, D, adjustable longitudinally on said pivoted bar, and a form, A, pivoted to the upper or T portion of said bar D, the whole being so constructed as to fold flat, substantially as and for the purpose described.

381,438. BUTTON. ISAAC SMITH, Brooklyn, N. Y., assignor of one-half to Frederick S. Beck, same place. Filed Feb. 16, 1888. Serial No. 264,316. (No model.)



Claim.—The herein-described improvement in composition-faced buttons and other articles, consisting in a metal cup-shaped face-blank perforated, and a coating of composition pressed upon the outer surface of said face-blank, so as to interlock with the said perforations, but leave the flange of the cup exposed, combined with a back in shape corresponding to the interior of the flange of the cup, and the said flange of the cup closed over the edge of said back, substantially as described.

381,439. FIRE-PROOF MATERIAL. JAMES SMITH, Cleveland, Ohio. Filed Aug. 1, 1887. Serial No. 245,863. (No specimens.)



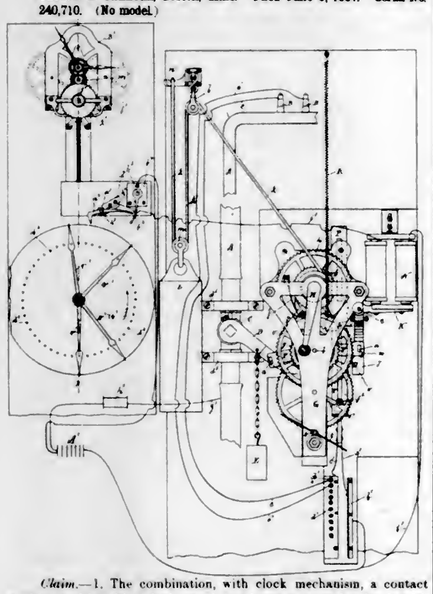
Claim.—1. Fire-proof lathing consisting, essentially, of coarse wire-cloth suitable for plastering thereon, a backing of wire-cloth, and

a filling of mineral wool, the parts being fastened together with wire, substantially as set forth.

2. In fire-proof material, the combination, with a layer of so-called "mineral wool," of sheets of wire-cloth made to embrace the mineral wool, the sheets of wire-cloth being fastened with wire along the edges thereof, and the material quilted through and through with wire when necessary, substantially as set forth.

381,440. MACHINE FOR LIGHTING AND EXTINGUISHING GAS

GEORGE R. THAXTER, Boston, Mass. Filed June 9, 1887. Serial No. 240,710. (No model.)



Claim.—1. The combination, with clock mechanism, a contact making and breaking device, and an electro-magnet in circuit with said device, of a lever, as F, and its actuating mechanism, a lever, as J, on the armature of the magnet, whereby the movements of said lever F are controlled, a circuit-maker operated by said lever F, and gas-burners in the lighting-circuit, substantially as shown and described.

2. The combination, with the faucet C and its operating-lever, of the lever F, provided with an arm, as H, the armature K and its lever, provided with stops *u*, and the reducing-gears and their operating drum and weight by which the lever F is actuated, substantially as shown and described.

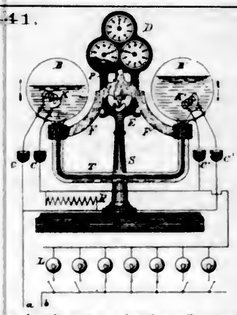
3. The combination, with the faucet and its lever and weight, of the lever F, the reducing-gears and their operating-drum, and the armature and its lever, provided with a stop, as *v*, substantially as shown and described.

4. The combination, with an electro-magnet and its armature and means for making and breaking its circuit at given times, of a lever secured to said armature and provided with projections or stops, as *u v*, the circuit-maker, as P, and the lever F, having an arm, as H, arranged to rotate when the lever F is not in contact with a stop, *u v*, on the armature-lever, whereby the lighting-circuits are closed, substantially as shown and described.

5. The combination, with a circuit having an electro-magnet therein and a contact making and breaking device, of clock mechanism and a dial, as *s'*, connected therewith, said dial having a series of perforations, d^2, and pointers *v'*, provided with pins to enter said perforations, whereby said pointers may be secured at any point on the dial or may be raised from the surface thereof, substantially as shown and described.

381,441. ELECTRIC METER.

ELIHU THOMSON, Lynn, Mass. Filed Oct. 19, 1887. Serial No. 252,792. (No model.)



Claim.—1. In an electric meter, a resistance or heating coil traversed by the current or a portion of the current, or by a current induced from the current to be measured or metered, a fluid subject to the heating effect of the resistance or coil, whereby a movement of such fluid is set up, a means of resisting the said movement of the fluid, and a registry dial or apparatus for recording the amount of such fluid movement occurring in any given time.

2. In an electric meter, a heating coil or resistance immersed in a vaporizable liquid like alcohol, a closed receptacle for said liquid connected with a second receptacle by a narrow tube, and registry apparatus for indicating the amount of transfer of liquid from one receptacle to the other during any given time.

3. In an electric meter, a suspended or oscillatory structure consisting of two or more receptacles connected together at their lower portions by a narrow tube or set of narrow passages and containing alcohol or other vaporizable fluid, a resistance or heating coil for each receptacle, and switch devices whereby upon each oscillation an alternation of electric connection from one heating-coil to the other is made, substantially as described.

4. In an electric meter, in combination with an oscillatory device containing vaporizable liquid, as described, and with a heating coil or coils or resistance, an induction-coil, one coil of which is traversed by the currents to be metered or measured and the other coil of which is connected in circuit with the heating or evaporating coil, as described.

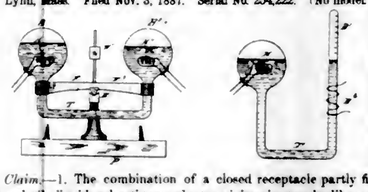
5. In an electric meter, an induction-coil, one coil being in the circuit to the transiating devices and the other in the circuit to the meter apparatus proper, as described.

6. In an electric meter, a receptacle for a vaporizable liquid *in vacuo*, said receptacle consisting of two chambers connected at the bottom with a restricted tube or passage or series of passages, and each chamber having a heating-conductor, substantially as described.

7. In an electric meter, a pivoted receptacle of two parts connected by a tube of narrow bore, each part containing a heating-conductor, switch devices for changing the current from one heating-conductor to the other, as described, and means for counting or indicating the movements of the pivoted receptacle.

381,442. ELECTRO-MECHANICAL DEVICE.

ELIHU THOMSON, Lynn, Mass. Filed Nov. 3, 1887. Serial No. 254,222. (No model.)



Claim.—1. The combination of a closed receptacle partly filled with volatile liquid, a heating-conductor giving rise to a bodily movement of said liquid, and a register for indicating the amount of said movement.

2. The combination of a closed receptacle partly filled with a volatile liquid, and a coil or other resisting part of an electric circuit in heating proximity to a wick or other porous substance extending into said liquid.

3. The combination of a closed receptacle partly filled with volatile liquid, a heating-conductor giving rise to a bodily movement of such liquid, and a switch-magnet in an independent circuit for controlling the passage of the heating-current.

4. The combination of a closed receptacle partly filled with volatile liquid, and a heating-conductor within such receptacle and in heating proximity to a wick or equivalent porous substance extending into said liquid.

5. The combination of a closed receptacle consisting of two communicating chambers or bulbs partly filled with a volatile liquid, a heating-conductor applied to one chamber or bulb, and a source of heat applied to the other chamber or bulb.

6. The combination of a closed receptacle consisting of two closed communicating chambers or bulbs partly filled with a volatile liquid and differentially-heated conductors applied to said chambers or bulbs.

7. The combination of a closed receptacle consisting of two closed chambers or bulbs communicating below and differentially-heated conductors applied to said chambers to produce a retarded movement of said liquid from one receptacle to the other.

8. The combination of a pivoted receptacle consisting of two closed chambers or bulbs communicating below, a heating-conductor applied to one chamber or bulb and giving rise to a bodily movement of said liquid, and a register for indicating the movement of said pivoted receptacle.

9. An oscillating structure consisting of two closed chambers or bulbs communicating below and partly filled with volatile liquid, and heating-conductors applied to said chambers or bulbs and adapted to force said liquid from one chamber to the other.

10. An oscillating structure consisting of two closed chambers or bulbs communicating below, mounted on a pivot and partly filled with volatile liquid, and heating-conductors applied to said chambers or bulbs and adapted to drive the liquid from one bulb to the other, and switch devices for alternately connecting said conductors with the heating-current.

11. An oscillating structure consisting of two closed chambers or bulbs communicating below, mounted on a pivot and partly filled with volatile liquid, heating-conductors applied to said chambers or bulbs, and automatic switch devices mounted on said chambers or bulbs for connecting said heating-conductors successively with the heating-circuit.

12. A pivoted receptacle consisting of two closed chambers or bulbs communicating below and partly filled with volatile liquid, heating-conductors giving rise to an oscillatory motion of said receptacle, and a register for indicating the movement of said receptacle.

13. A pivoted receptacle consisting of two closed chambers or bulbs communicating below, heating-conductors giving rise to an oscillation of said receptacle, and means for controlling an independent electric circuit actuated by the movement of said receptacle.

14. A group of pivoted receptacles, each consisting of two closed chambers or bulbs communicating below and partly filled with volatile liquid, a revolving pivot or axis, and a heating-conductor acting successively on the bulbs or chambers on one side of said pivot or axis.

15. A group of pivoted receptacles, each consisting of two closed chambers or bulbs communicating below and partly filled with volatile liquid, a revolving pivot or axis, heating-coils, and switch devices for successively connecting said coils into circuit on one side of said pivot.

16. A group of pivoted receptacles, each consisting of two closed chambers or bulbs communicating below and partly filled with volatile liquid, a revolving pivot or axis, heating-conductors giving rise to a rotary motion of said pivot or axis, and a register for indicating the amount of movement of said pivot or axis.

17. The combination of a closed receptacle partly filled with volatile liquid, a heating-conductor applied to said receptacle, and an inclosing case or box which is a non-conductor of heat.

18. The combination of a pivoted receptacle consisting of two closed chambers or bulbs communicating below and partly filled with a layer of comparatively heavy liquid below and a layer of comparatively light and volatile liquid above, and heating-conductors in heating proximity to said layers of volatile liquid, substantially as specified.

19. A pivoted receptacle in unstable equilibrium, consisting of two closed chambers or bulbs communicating below and partly filled with volatile liquid, heating-conductors applied to said chambers or bulbs giving rise to oscillatory movements of said receptacle at definite periods, and a register for indicating the movement of said receptacle.

381,443. ELECTRIC METER.

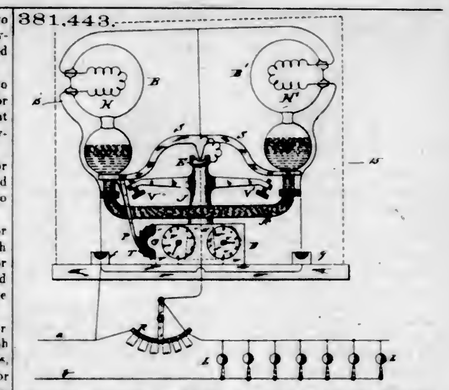
ELIHU THOMSON, Lynn, Mass. Filed Dec. 31, 1887. Serial No. 259,448. (No model.)

Claim.—1. The combination, with two confined bodies of fluid contained in separate chambers, of a shiftable pivoted or tilting weight controlled in its position by the expansions of said fluid, electric heaters for expanding the same, and switches controlled by the movements of the shiftable weight for shifting the electric current to the heaters alternately, as and for the purpose described.

2. In an electric meter, the combination, with separate confined bodies of expansible fluid, of electric heaters for heating the same, a register of the expansions of said fluid, and electric switches governing the flow of current to the heaters and controlled by such expansions, as and for the purpose set forth.

3. The combination, substantially as described, of a body of liquid contained in a pivoted or movable receptacle and interposed between two gas-chambers, electric heaters for causing expansion of the gas in said chambers alternately and consequent movement of the body of interposed liquid, and electric switch devices controlled by the movement thus produced for bringing the heaters alternately into action, as and for the purpose described.

4. An electric meter consisting of a pivoted tilting receptacle comprising air or gas boxes or bulbs connected by spaces containing a body of liquid, heating-coils for causing expansion of the gas and



consequent movement of the liquid, electric switch devices controlled by the movements of the receptacle for throwing the heating-coils into and out of action alternately, and an automatic register of the number of oscillations or movements.

5. In an electro-thermo-expansion device, a closed receptacle of metal containing a fluid of any character susceptible to heat and an electro-magnetic coil adapted to act inductively on the metal of the receptacle to develop heating electric currents in said metal.

6. The combination, with a pivoted or tilting receptacle containing a shiftable body of liquid, of electric switch devices mechanically operated by said receptacle, and an electro-magnetically-controlled switch governed by the latter, and in turn controlling the electric heater, by whose heating effects a movement of the liquid bodily is induced.

7. The combination, with two confined bodies of fluid contained in chambers forming a pivoted or tilting structure, of a shiftable weight moved by the expansive force of said fluid, electric heaters for causing expansion of the fluid, and switches controlled by the movements of the tilting structure for shifting the electric current, as and for the purpose described.

381,444. SCOURING COMPOSITION FOR FIBERS AND FABRICS.

CHARLES TOPPAN, Salem, Mass. Filed Apr. 4, 1887. Serial No. 233,630. (No specimens.)

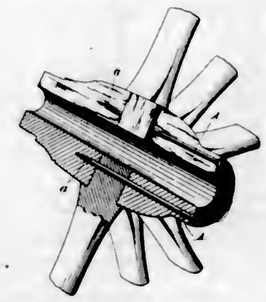
Claim.—1. A composition, substantially as herein described, of benzine, mustard-seed oil, and an alkali.

2. A composition, substantially as herein described, of benzine, mustard-seed oil, and caustic soda.

3. A bath for the treatment of yarns and fabrics, consisting of a mixture of benzine, mustard-seed oil, and an alkali in water.

381,445. WHEEL.

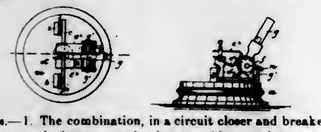
JAMES T. UPINGTON, Lexington, Ky. Filed Sept. 19, 1887. Serial No. 250,122. (No model.)



Claim.—1. The combination of a hub, spoke, and screw or pin, A, extending lengthwise of the hub, transfixing the spoke, and having a screw-threaded portion engaged in the hub beyond the spoke, substantially as and for the purposes specified.

2. The combination of a hub, spoke, and pin extending longitudinally from the end of the hub through the spoke and partially through the hub beyond the spoke, substantially as and for the purposes specified.

381,446. SWITCH, CIRCUIT-BREAKER, &c. JOHN VON DER KAMMER, Newark, N. J. Filed Feb. 18, 1888. Serial No. 264,504. (No model.)



Claim.—1. The combination, in a circuit closer and breaker, of a base having terminals, a connecting-bar movable to and from said terminals, and a handled head having spring-arms bearing upon said connecting-bar, one of said arms serving to raise said bar when the handle is turned in one direction, and the other of said arms serving to depress said bar when said handle is turned in the reverse direction, and holders for detaining the said movable bar in either its raised or lowered position, substantially as set forth.

2. In combination, in a circuit breaker and closer, a base having terminals, a connecting-bar arranged on a post sliding at right angles to said base, suitable holders, such as the dogs *A*, for holding the said post in its raised and lowered positions, and a handled head pivoted in suitable bearings and providing arms for raising and lowering the connecting-bar, and projections for releasing the said holders, substantially as and for the purposes set forth.

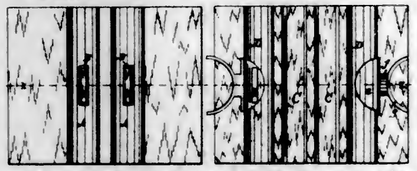
3. In combination, a base having terminals, a vertically-sliding post having a connecting-bar and having notches, dogs for engaging said notches and holding said post in its raised and lowered positions, and a handled head having projections adapted to engage said dogs to release the same from holding relation to said post, and spring-arms for raising and lowering said connecting-arm when the same is released from or in contact with said terminals, substantially as set forth.

4. In a circuit breaker and closer, &c., the combination, with a base having terminals, of a vertically-sliding post having a connecting-bar, dogs adapted to hold said post at the upper or lower limit of its stroke or movement, and a handled head having arms to operate the connecting-bar, and projections to release the dogs, substantially as and for the purposes set forth.

5. In combination, a base having terminals and having a perforation to receive a sliding post, the said post having a connecting-bar to engage the terminals, dogs to engage said post and hold the same at the upper and lower limits of its movement, a spring to hold said dogs normally in contact with said post, and a handled head having projections to release said dogs and having spring-arms to raise or lower the connecting-bar when released, substantially as and for the purposes set forth.

6. In combination, a base, a connecting-bar movable to and from said base, terminals arranged on said base and having spring-contact surfaces, and a head having spring-arms extending over and beneath said connecting-bar for depressing and raising said bar from contact with the terminals, and holders for detaining the said connecting-bar in either its raised or lowered position, substantially as set forth.

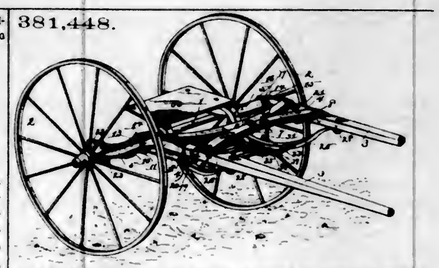
381,447. DIE FOR ATTACHING TERRETS TO HAMES. WILLIAM H. WALKER, Milford, Conn. Filed July 1, 1887. Serial No. 243,079. (No model.)



Claim.—Dies for preparing hame-bodies for the reception of terrets and for securing the latter thereto, consisting of an upper die provided with cavities A A and projections B B, and a lower die having cavities C C and D D, and also with cavities, as *e*, *f*, and *g*, conforming to the shape of and adapted to receive the terret rings and shanks, all adapted to operate substantially as herein described, for the purposes set forth.

381,448. TWO-WHEELED VEHICLE. AUSTIN WARNER and JORDAN J. D. SCOLES, Knoxville, Iowa. Filed Nov. 19, 1887. Serial No. 255,633. (No model.)

Claim.—1. In a two-wheeled vehicle, the combination of the shafts divided to form the short rear sections and the main front sections, the hinges, the elastic packings, the slotted check-plates, and the bolts passing through the said slots the springs formed with eyes



at their front ends, and the stirrups arranged as described, substantially as set forth.

2. In a two-wheeled vehicle, the combination, with shafts having the staples and the eyebolts arranged as described, of the seat-frame having the seat at its rear end, formed with the side pieces having the apertures at their front ends connected by the cross-rod, and formed with the outer eyes and the inner loops, and the hinged foot-support having the side bars formed at their rear ends with the eyes and bent at their front ends to form the hooks, and the supporting-links, substantially as and for the purpose set forth.

3. In a two-wheeled vehicle, a seat-frame having a hinged foot-support adapted to be turned back out of the way when required.

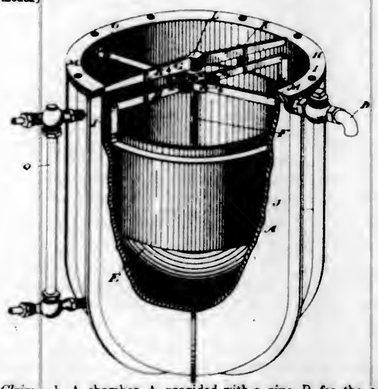
4. In a two-wheeled vehicle, the combination, with a seat-frame having the large inner side loops, of a foot-support hinged at its rear end and formed at its forward end with the side hooks.

5. In a two-wheeled vehicle, the combination, with a seat-frame having its side pieces connected by the cross-rod and provided with the large inner loops, of a hinged foot-support formed with the side bars, having the eyes at their rear ends and the hooks at their front ends adapted to engage with the said loops, substantially as and for the purpose shown and set forth.

381,449. CEMENT FOR CALKING METALLIC JOINTS. WILLIAM WATKINS, Chicago, Ill. Filed Jan. 16, 1888. Serial No. 260,841. (No specimens.)

Claim.—An iron cement or putty formed of sweet-oil and molasses mixed with barytes, Venetian red, plumbago, paris-white, yellow ocher, litharge, and red lead, in about the proportions set forth.

381,450. FEED-WATER REGULATOR. JAMES W. WEAVER, Toronto, Ontario, Canada. Filed Sept. 26, 1887. Serial No. 250,712. (No model.)



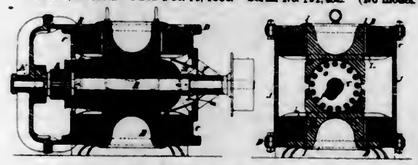
Claim.—1. A chamber, A, provided with a pipe, D, for the admission of water, and a pipe, C, for its discharge, in combination with the cup or float E, having communication with said chamber and suspended from the head G, and the levers M, arranged to form a toggle-joint with the said head, and a cut-off valve, substantially as and for the purpose specified.

2. A chamber, A, provided with a pipe, D, for the admission of water, and a pipe, C, for its discharge, the plungers N O, connected together by the levers M, which are centrally jointed, in combination with the cup or float E, connected to the levers M and levers H, the latter of which are pivotally supported from the cross-bar L and support the weight J, substantially as and for the purpose specified.

3. A chamber, A, provided with a pipe, D, for the admission of water, and a pipe, C, for its discharge, a plunger, N, forming a cut-off valve for the feed-pipe D and connected by the toggle-jointed levers M to the plunger O, which butts against an adjustable cap, *e*, in combination with the cup or float E, suspended from the toggle-jointed levers M within the chamber A, substantially as and for the purpose specified.

4. A chamber, A, provided with a pipe, D, for the admission of water, and a pipe, C, for its discharge, a plunger, N, forming a cut-off valve for the feed-pipe D and connected by the toggle-jointed levers M to the plunger O, which butts against an adjustable cap, *e*, in combination with the cup or float E, suspended from the toggle-jointed levers M, connected to the pivoted levers H, which are pivotally supported and connected to the counterpoise-weight J, substantially as and for the purpose specified.

381,451. DYNAMO-ELECTRIC MACHINE. JONAS WENSTRÖM, Örebro, Sweden. Filed Feb. 10, 1886. Serial No. 191,432. (No model.)



Claim.—1. In a dynamo-electric machine, the combination, with the magnetizing-coils located in annular spaces between the iron cores and iron casing-cylinders, of the iron cases provided with air-circulating apertures leading from the interior through to the outer periphery of the machine.

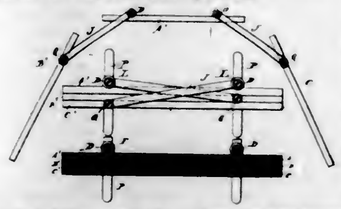
2. In a dynamo-electric machine, in combination with the magnetizing-coils located in annular spaces between the cores and casing, the spacing-pieces next to the cores for the purpose of providing air-circulating spaces next to the cores.

3. In a dynamo-electric machine, the combination of a fan, H, located within one side of the casing, and the casing and cores provided with ventilating air-discharge apertures, substantially as herein set forth.

4. In a dynamo-electric machine, in combination with an armature-core having a series of longitudinal holes or grooves near the periphery thereof, armature-coils arranged in the said holes or grooves by series, having two pairs of coils in one groove, the returning parts of each pair of coils being inserted in other separate grooves, substantially as herein specified.

5. In a dynamo-electric machine, the combination, with an armature having its coils arranged in peripheral grooves in and lengthwise of its core, of the pole-pieces of the magnet made oblique, the degree of obliquity in the direction of the motion of the armature being equal to one pitch of the grooves of the armature, substantially as herein set forth.

381,452. FOLDING MIRROR. PETER WIEDERER, Stapleton, N. Y. Filed Dec. 28, 1887. Serial No. 259,235. (No model.)

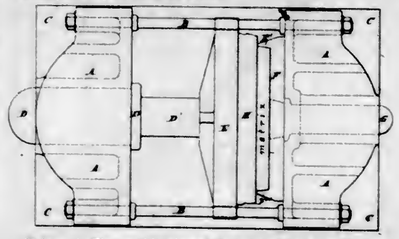


Claim.—1. The combination of a main mirror, two wing-mirrors, upright tubes on the back of the main-mirror frame, rods in said tubes, links mounted to swing on said rods at the top and bottom edges of the main-mirror frame, and pivoted to the top and bottom edges of the said wing-mirror frames, substantially as set forth.

2. The combination of a main mirror, two wing-mirrors, upright tubes on the back of the main mirror, rods passed longitudinally through said tubes, links mounted to swing on said rods at the top and bottom edges of the main-mirror frame, the wing-mirrors being pivoted to the swinging ends of said links, and legs on the lower ends of said rods, substantially as set forth.

3. The combination of the main mirror A, the wing-mirrors B and C, the tubes D on the back of the main mirror, the rods E in said tubes, the links J and K, the tubular legs N on the lower ends of said rods, and the screws N' in said legs passed into annular grooves O of the rods E, substantially as set forth.

381,453. APPARATUS FOR THE MANUFACTURE OF ARMOR-PLATES. ALEXANDER WILSON, Sheffield, County of York, England. Filed Apr. 9, 1887. Serial No. 234,260. (No model.) Patented in England May 5, 1882, No. 2,130; in France May 23, 1882, No. 149,126, and in Belgium May 24, 1882, No. 56,010.

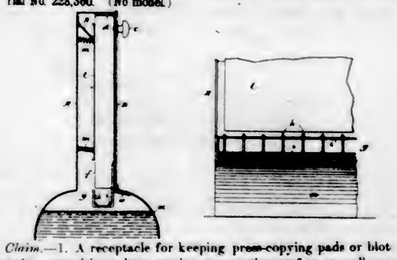


Claim.—1. The combination of the bolsters, the plate E, the press for actuating said plate, and the plate and ribs F F', substantially as and for the purpose set forth.

2. The combination of the bolsters A, the tie-bars B, the plate E, moved to and fro between the bolsters by the ram of the press D in one of the bolsters, the plate and ribs F F', and the plate H, substantially as and for the purpose set forth.

3. The combination of the bolsters A, the tie-bars B, the press D, the plate E, the plate and ribs F F', the movable part F³ in the plate F, and the press G, adapted to operate upon said movable part, substantially as and for the purpose set forth.

381,454. RECEPTACLE FOR KEEPING PRESS-COPYING PADS MOIST. CHARLES L. WISE, New York, N. Y. Filed Feb. 21, 1887. Serial No. 228,360. (No model.)



Claim.—1. A receptacle for keeping press-copying pads or blotters moist, comprising a base serving as a seating-surface as well as a water-reservoir, and a rack or holder for the pads or blotters arranged in a vertical position above the base of and within the same inclosure as said reservoir, whereby the pads or blotters are held edgewise above the surface of the water within the base of the reservoir, substantially as and for the purpose described.

2. The receptacle for keeping press-copying pads or blotters moist, comprising a base for water and a compartment having a door provided upon its inner surface with a rack for supporting the pads or blotters above the water in said reservoir, substantially as described.

3. The receptacle A, provided with a water-reservoir, in combination with an open-bottom vertical blotter-holder suspended, when in operative position, above the water in said reservoir and within the same inclosure, substantially as described.

4. The receptacle A, having a water-reservoir in its base, and a hinged door provided with a blotter-compartment upon its inner surface, comprising side walls and a rack at the bottom thereof, substantially as set forth.

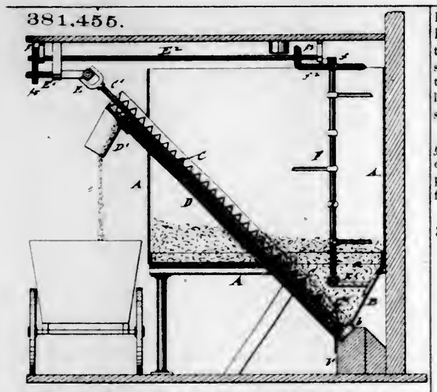
5. A receptacle for keeping press-copying pads or blotters moist, comprising a base which serves as a seating-surface and as a water-reservoir, and a blotter-holder located above said base within the same inclosure as said reservoir, combined with a sponge within the water-reservoir, substantially as set forth.

6. The receptacle A, having a base, as *a*, and an inclosed blotter-holder, combined with the door B, provided with a curved lip, as *c*, at its bottom, substantially as set forth.

7. The receptacle A, having a water-reservoir in its base and a hinged door carrying a blotter-rack, combined with the spring compression-board connected to the interior back of said receptacle by a link-joint, substantially as set forth.

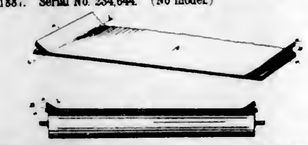
381,455. CONVEYER FOR BREWERS' GRAINS. ERNST G. W. WENZ, New York, N. Y. Filed July 8, 1887. Serial No. 243,743. (No model.)

381,455.



Claim.—The combination, with a grain-tank having a hopper formed in its bottom, of an inclined conveyer-screw casing having its lower end in the hopper and its upper end projecting beyond the side of the tank, a conveyer-screw in said casing, a line-shaft, a universal joint connecting the shaft of the screw with the line-shaft, and an agitator driven from the same line-shaft that drives the screw, said agitator extending from the line-shaft to near the lower part of the conveyer-hopper, substantially as herein shown and described.

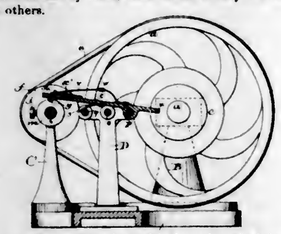
381,456. APRON FOR ORE-CONCENTRATING MACHINES. GEO. E. WOODBURY, San Francisco, Cal. Filed Feb. 4, 1886. Renewed Apr. 13, 1887. Serial No. 234,644. (No model.)



Claim.—An apron for ore-concentrators, formed of layers of material of the character described and having the upper layer separate from the layer or layers beneath it at and along its edges, and elastic wedge-shaped pieces B, fixed in the spaces between the edges of said layers and adapted by their form to support the detached portions of the upper layer at an angle to the upper face of the belt, and by their elasticity to allow the edges to bend or yield in traveling over the rollers.

381,457. MACHINE FOR WINDING SEWING-MACHINE BOBBINS. CHARLES WOODMAN, Chelsea, Mass. Filed Mar. 15, 1886. Serial No. 190,280. (No model.)

Brief.—The object of the invention is to provide an improved machine on which a plurality of sewing-machine bobbins may be mounted and successively filled, after which all may be removed and replaced by others.



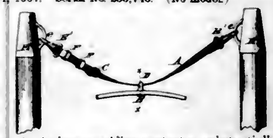
Claim.—1. The combination, with the rod or shaft *i* and its driving mechanism, of the horizontal rods I' and *q*, and the bar *t*, pivoted on the said rod I' and provided with a tension-spring, *v*, and with a spring, 3, engaging the said rod *q*, substantially as set forth.

2. The combination, with the rod or shaft *i*, adapted to hold a series of bobbins, the sleeve *g*, having head 2, provided with the set-screw *j* and the thread-retaining spring *z*, and the collar *n*, having the set-screw *n'*, of mechanism for rotating said sleeve, substantially as described.

3. The combination, with the bed-plate A, having the standards B, C, D, and E, of the stud *a*, adjustably secured to the said standard B, a driving-pulley mounted on said stud, the rod or shaft *i*, having the sleeve *g*, provided with the head 2, the pulley *f*, mounted on said sleeve, the set-collar *n*, between which and the said head the bobbins to be filled are held, the rods I' and *q*, and the bar *t*, adapted to slide lengthwise of the said rods and provided with a tension-spring, *v*, substantially as set forth.

4. The combination, with the tension-bar *t*, having thread-passage *y*, and the tension-spring *v*, having the thread-passage *w*, of the circular tension-plate *x*, adapted to be partially rotated to bring a new portion into use when one portion thereof is worn, substantially as set forth.

381,458. LINE-PROTECTOR. FRANK C. YORK, Salina, Kans. Filed Nov. 21, 1887. Serial No. 255,746. (No model.)

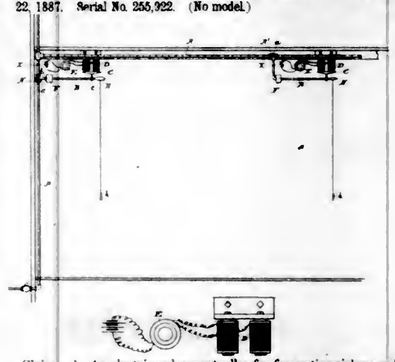


Claim.—1. An improved line-protector, substantially as described, comprising a protector-strap provided at one extremity with a buckle, whereby it may be doubled upon itself and secured in order to adjust or vary its length, and a breast-collar guide through which said strap may move longitudinally, whereby the adjustment of the strap at one of its ends may be equalized on both sides of the breast-collar guide, substantially as set forth.

2. In a line-protector, the combination of the thills, the collar, the guide-loop fixed to the collar and having an outer keeper-bar and an inner bearing-bar, and the protecting-strap held and movable longitudinally between the said keeper and bearing-bars of the guide-loop, and connected at its ends with the thills, substantially as and for the purposes specified.

3. The line-protector herein described, consisting of the guide-loop having an inner bearing-bar and an outer keeper-bar and adapted for connection with the collar, and the protector-strap held and movable longitudinally in the guide-loop and provided at one extremity with a buckle, whereby it may be doubled upon itself and secured in different adjustments, as and for the purposes specified.

381,459. ELECTRIC VALVE-CONTROLLER FOR AUTOMATIC FIRE-EXTINGUISHERS. THOMAS ATKINSON, Richmond, Va. Filed Nov. 22, 1887. Serial No. 255,922. (No model.)

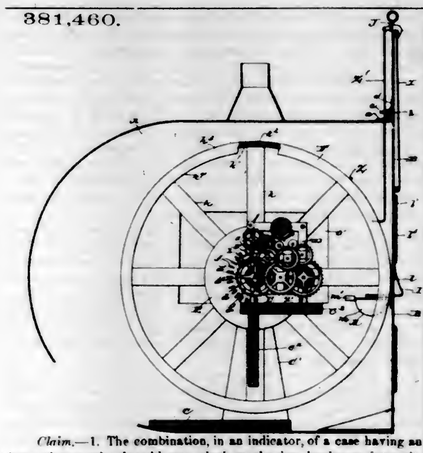


Claim.—1. An electric valve-controller for fire-extinguishers, substantially as herein described, consisting of a drop-lever attached to said valve for opening and closing the same, a normally-active electro-magnet having an armature attached to the end of said lever for holding the lever in elevated position, and a sliding weight fitted upon the lever, substantially as and for the purpose set forth.

2. The herein-described improvement in valve-controllers, consisting of the lever B, a sliding weight, F, upon said lever, an electro-magnet above the lever, and an armature secured to the lever, said armature being adapted to limit the outward movement of said weight, substantially as shown.

381,460. INDICATOR. THOMAS J. BARTLETT, Knoxville, Tenn., assignor of one-half, by direct and mesne assignments, to John C. Gunn, C. W. Horan, and C. Oldham, same place, and Howard J. Barlow, Pomona, Fla. Filed Aug. 25, 1887. Serial No. 247,865. (No model.)

381,460.



Claim.—1. The combination, in an indicator, of a case having an inspection-opening in said case, clock mechanism having an intermittently-rotating wheel, a leaf hinged on said case, and devices operated by the wheel to drop said leaf when a predetermined point of said wheel arrives opposite said opening, substantially as described.

2. The combination, in an indicator, of a case having an inspection-opening, a leaf hinged on said case, a clock mechanism having an intermittently-rotating wheel, F, the dog K to engage the leaf when the latter is turned upward, and connections between said dog and wheel whereby the latter will trip the dog and release the leaf when a predetermined point on said wheel reaches the inspector-opening, substantially as described.

3. The combination, in an indicator, of the case having the inspection-opening and the hinged leaf l, the dog K, engaging said leaf when the same is raised and having the rod Z', and the clock mechanism having the intermittently-rotating wheel F, provided with stud Z, to operate the rod Z', for the purpose set forth, substantially as described.

4. In an indicator, the clock mechanism having the toothed wheel T and the notched spring-actuated wheel d^3, in combination with the rock-shaft *g*, having the pawl *g'* engaging wheel d^3, and the pawl g^2, the tripping devices connected to said rock-shaft and engaging the wheel d^3, and the cam N', having notch N to receive pawl g^2, and the intermittingly-rotating wheel F, substantially as described.

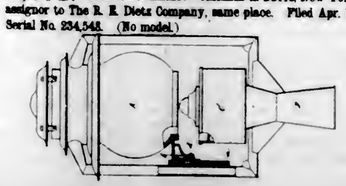
5. In an indicator-clock-mechanism, the combination of the toothed wheel T, the spring-actuated notched wheel d^3, the gearing connected to wheel d^3, and having the cam N', provided with notch N, the rock-shaft having the pawl g^2 engaging notch N, the pawl *g'*, engaging the wheel d^3, and the arm *i*, and the trip *i'*, connected to the arm *i* and engaging the wheel T, and the intermittingly-rotating wheel F, substantially as described.

6. In an indicator, the combination, with the shaft *d* and its actuating mechanism, of the sleeve *e*, loose on said shaft, the number-wheel having its hub secured to said sleeve and provided with the projections *f*, and the spring-pawl *f'*, rigidly secured to shaft *d* and adapted to engage said projections, substantially as described.

7. In an indicator, the combination of the case having the hinged leaf, the clock mechanism having an intermittently-rotating wheel, devices operated by said wheel to drop the leaf when the wheel reaches a certain predetermined point in its revolution, the alarm mechanism, and the rod L to actuate the same, the said rod being struck by the leaf when the latter drops, substantially as described.

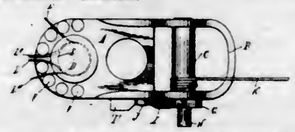
8. The combination, with the actuating and tripping mechanism, of the number-wheel having the spokes bent horizontally and connected by wire rings, a number-band having its side portions bent to form flanges, substantially as described.

381,461. TUBULAR LAMP. CHARLES L. BETTS, New York, N. Y., assignor to The R. E. Dietz Company, same place. Filed Apr. 12, 1887. Serial No. 234,543. (No model.)



Claim.—In a tubular lamp, the sliding bracket mounted upon ways provided for it and engaging with the lower margin of the globe, and the operating-lever arranged to move and hold the bracket, the parts being combined substantially in the manner and for the purposes set forth.

381,462. COMBINED WIRE STRETCHER AND TENSION. MATTHEW F. COMMETT, Jr., Peoria, Ill., assignor, by mesne assignments, to the Star Fence Machine Company, same place. Filed Sept. 1, 1887. Serial No. 248,516. (No model.)

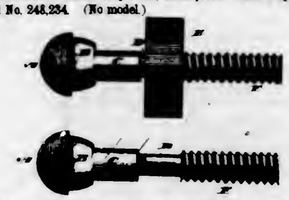


Claim.—1. As a wire-tension, the plate A, provided with the stud E, rigidly fixed thereto, and with studs F, arranged about the stud E at suitable distances therefrom and from each other, whereby the fence-wires passed around the stud E may be held in contact with any desired number of degrees of its circumference and at the same time be permitted to slip longitudinally when drawn with sufficient force.

2. In apparatus of the class described, a plate provided with an integrally-formed stud flanged at its free end, and with means adapted to prevent the unwinding and to allow the longitudinal slipping of wires wound about said stud, substantially as and for the purpose set forth.

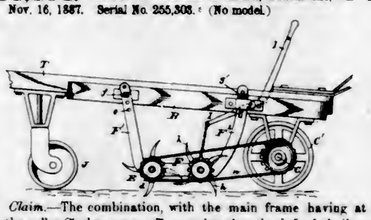
3. As a combined wire-stretcher and wire-tension, the combination of the plate or frame A, stud E, rigidly fixed thereto, studs F, arranged about a stud, E, at a suitable distance from it and from each other, the drum C, mounted in said frame, cord K, ratchet-wheel G, pawl I, and lever P, substantially as set forth.

381,463. NUT-LOCK. GUSTAVE COOK, New Orleans, La., assignor of one-third to Hilder May & Co., same place. Filed Aug. 29, 1887. Serial No. 248,234. (No model.)



Claim.—The headed bolt having the shoulder B, the reduced plain shank C, groove D, and the threaded portion F, in combination with a nut, substantially as specified.

381,464. HARROW. THOMAS R. CRANE, Heathsville, Va. Filed Nov. 16, 1887. Serial No. 255,303. (No model.)

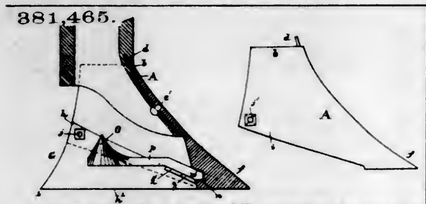


Claim.—The combination, with the main frame having at one end the roller C, the tongue T, carrying the wheel J of the harrow-frame, located between the roller and wheel, said harrow-frame consisting of the pivoted adjustable arms F' and slotted adjustable curved arms F², the intermediate arms F, connected to arms F' and F² and provided with journals for the harrow, the chain *n*, connecting sprocket-wheels of the harrow and roller, and the sectional lever I, substantially as shown and described.

381,465. SHOE FOR GRAIN-DRILL TUBES. THOMAS R. CRANE, Heathsville, Va. Filed Jan. 17, 1888. Serial No. 261,027. (No model.)

Claim.—1. A convertible shoe for grain-drills, comprising the combination of the narrow shoe-body A, having straight vertical side walls, *i*, and a front point, *f*, and the two separate detachable wings G, each provided with a top flange and having flared or spread-out sides, whereby the said narrow shoe may be used alone, or by attaching the wings be converted into a broad shoe.

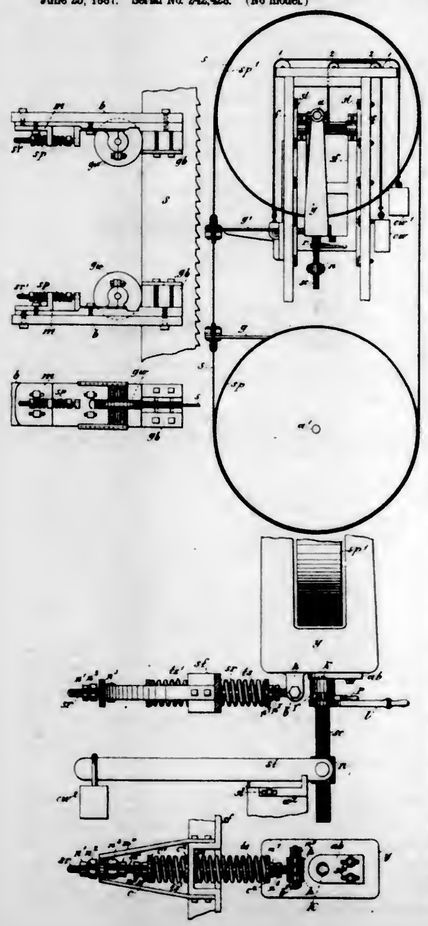
381,465.



2. A convertible shoe for grain-drills, comprising the shoe-body A, having a point, *f*, and two sockets, *l*, in the rear of the said point, two detachable wings, G, each having a longitudinal shoulder, *k'*, a vertical flange, *k*, rising from said shoulder, a flared side extending from the said shoulder to the base edge, and at the front provided with a lug, *l*, which fits in the aforesaid socket in the rear of the point, and a rear bolt, *j*, to secure each wing.

3. A convertible shoe for grain-drills, comprising the combination of the shoe-body A, having a point, *f*, two detachable wings, G, having flared sides and each provided with a notch, *k*, and secured to the shoe-body, and a grain-spreader, O, having a shank with side lugs, *K'*, each of which occupies one of the said notches.

381,466. BAND-SAW MILL. WILLIAM M. DICKERSON, Indianapolis, Ind., assignor of one-half to Lewis W. Holloway, same place. Filed June 25, 1887. Serial No. 242,423. (No model.)



Claim.—1. A band-saw mill wherein the axle of the upper saw-pulley is journaled upon a yoke carried upon a secondary frame moving upon slides inside the main frame, such secondary frame and its load balanced by a counter-weight, substantially as shown and described.

2. A band-saw mill comprising, in combination, an upper and lower saw-pulley, the former carried in bearings upon the top of a yoke having a screw-rod connected at its lower end for adjusting the tension of the saw upon the pulleys, a lever connected with such screw-rod carrying a weight which supports the load of the yoke and the saw-pulley, such lever resting upon an adjustable fulcrum and its upper end entering a socket in an adjustable block, whereby the center of the screw-rod may be brought into line with the center of the saw upon the upper pulley, substantially as shown and described.

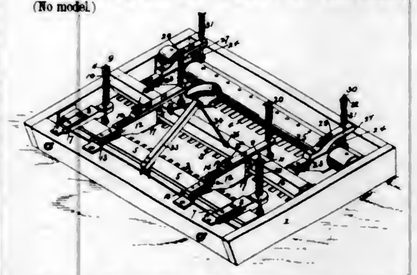
3. A band-saw mill comprising, in combination, a saw carried upon upper and lower saw-pulleys and moving in guides between such pulleys, such guides provided with guide-wheels which press against the back of the saw, mounted in bearings upon a movable plate, which also provides bearings for a spring-rod carrying a coiled spring thereon, whose force holds the periphery of the guide-wheel against the back of the saw, and having an elastic backing that allows the saw to recede under overpressure brought against its cutting-edge, substantially as shown and described.

4. A band-saw mill comprising, in combination, upper and lower saw-pulleys supported upon suitable axles, the axle of the upper pulley having bearings upon the top of a yoke, a spring-rod connected at the bottom of such yoke carrying a pair of tension-springs having independent action, the compression of one operating to loosen the other, thus compensating for any undue strain upon either side of the saw, substantially as shown and described.

5. A band-saw mill comprising, in combination, upper and lower saw-pulleys, the former journaled in bearings upon the top of a yoke attached to a frame sliding in the main frame, a ratchet-and-screw mechanism connected to the lower end of the yoke for adjusting the tension of the saw upon the pulleys, and provided with a lever carrying a weight on its outer end, which balances that of the yoke and the saw-pulley, a spring-rod fastened at one end to such sliding frame carrying a pair of tension-springs mounted thereon having independent action, such spring-rod also connected to the yoke, to which the upper saw-pulley is journaled, whereby undue tension on either side of the saw acting upon the yoke will be compensated by a corresponding movement of the spring-rod compressing one and loosening the other of such tension-springs, substantially as shown and described.

6. A band-saw mill comprising, in combination, a lower saw-pulley mounted upon an axle having bearings in a part of the foundation-frame, an upper saw-pulley whose axle is journaled in bearings upon the top of a yoke which is connected with a secondary frame movable vertically in the main frame, a ratchet-and-screw mechanism connected to the lower end of such yoke for adjusting the tension of the saw upon the pulleys, a lever carrying a pivot-nut which works upon such screw-rod, carrying a weight on its outer end for balancing the weight of the yoke and pulley, a spring-rod connected at one end to such yoke, and also to the sliding frame, carrying springs mounted thereon having independent action, whereby an unequal tension on one side of the saw will operate to relieve the pressure upon one of the springs and to compress the other, and thus equalize the tension upon both sides of the saw, substantially as shown and described.

381,467. HARROW. BENTON ESSIG, Disko, Ind., assignor of one-half to Selton Essig, same place. Filed Nov. 5, 1887. Serial No. 254,377. (No model.)



Claim.—1. The combination of the frame having a series of longitudinal slots, the hinged arms, the cutter-bar secured to said arms and provided with a series of harrow-teeth, and the central cutter-bar pivotally secured to the front piece of the harrow-frame and carrying a series of arrow or other shaped teeth or knives.

2. The combination of the frame having a series of longitudinal slots, the hinged arms, the cutter-bar secured to said arms and provided with a series of harrow-teeth, the central cutter-bar and its connecting-arms pivotally secured to the front piece of the frame, and the cylindrical cutter-bar and its connecting-arms pivotally secured to the central cutter-bar.

3. The combination of the frame having a series of longitudinal slots, the hinged arms, the cutter-bar secured to said arms and provided with a series of harrow-teeth passing through the slots in the bottom of the harrow-frame, the upright rods engaging the extended ends of the connecting-arms and having coiled springs encircling the same, said springs being operated by suitable thumb-nuts.

4. The combination of the frame having a series of longitudinal slots, the hinged arms, the cutter-bar secured to said arms and provided with a series of harrow-teeth, the connecting-arms secured by hinged connections to the front piece of the harrow-frame and having threaded uprights provided with suitable thumb-nuts extending therefrom, the cutter-bar suitably journaled in the sides of the frame and carrying a series of arrow or other shaped knives or teeth, said cutter-bar being suitably secured to its connecting-arms by pivoted auxiliary arms rigidly secured to the under sides of said connecting-arms, and the slotted plates pivotally secured to the central cutter-bar.

5. The combination of the frame having a series of longitudinal slots, the hinged arms, the cutter-bar secured to said arms and provided with a series of harrow-teeth, the connecting-arms secured by hinged connections to the front piece of the frame and having threaded uprights provided with suitable thumb-nuts extending therefrom, the cutter-bar suitably journaled in the sides of the frame, carrying a series of arrow or other shaped knives, said cutter-bar being suitably secured to its connecting-arms by pivoted auxiliary arms rigidly secured to the under sides of said connecting-arms, the slotted plates pivotally secured to the central cutter-bar, the tension-regulating arms provided with suitable perforations or holes in the ends thereof, and the upright threaded rods passing through the holes in the ends of the tension-regulating arms and having coiled springs encircling the same, said springs being operated by suitable thumb-nuts.

6. The combination of the frame having a series of longitudinal slots, the hinged arms, the cutter-bar secured to said arms and provided with a series of harrow-teeth, the central cutter-bar pivotally secured to the front piece of the harrow-frame by suitable connecting-arms and carrying a series of arrow or other shaped teeth or knives, the cylindrical cutter-bar suitably journaled in the sides of the frame and carrying a series of pointed or round cutter-teeth, the hinged connected arms provided with perforated sleeves encircling the cylindrical cutter-bar, the perforations in said sleeves registering with a perforation in each end of the cylindrical cutter-bar, and the pins adapted to fit into said perforations and retain said cutter-bar in its adjusted position.

7. The combination of the frame having a series of longitudinal slots, the hinged arms, the cutter-bar secured to said arms and provided with a series of harrow-teeth, the central cutter-bar and its connecting-arms pivotally secured to the front piece of the frame, and the cylindrical cutter-bar and its connecting-arms pivotally secured to the central cutter-bar, and means, substantially as described, for regulating the tension of the connecting-arms.

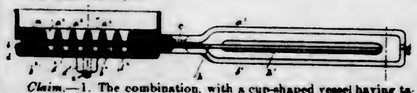
381,468. SAD-IRON HEATER. NATHAN FORESHAW, St. Louis, Mo. Filed Oct. 11, 1887. Serial No. 251,993. (No model.)



Claim.—1. The sad-iron heater above described, consisting of a hollow receptacle or holder for the irons, open at the top and bottom, and a removable hood or cover for the same, also open at the bottom, but closed on top, and having a suitable bail or handle, the holder being provided with suitable rests or supports for the irons within and at its base, the said holder and hood having in their sides slots through which the handles of the irons may project, substantially as shown and described above.

2. A sad-iron heater consisting of a hollow receptacle or holder for the irons, open at the top and bottom, and having within and at its base suitable rests or supports for the irons, and having in its sides vertical slots through which the handles of the irons may project, such slots conforming in number and position to the rests or supports for the irons within the holder, and a removable hood or cover to be placed over the holder, also hollow, open at the bottom, but closed on top, and provided with a suitable bail or handle having in its sides vertical slots in number and position conforming to the vertical slots in the holder, and having also at the upper end of these vertical slots, and at one side thereof, horizontal slots connecting with the same, so as to form one opening, whereby the handles of the irons projecting through the vertical slots in the holder and cover may be locked with the cover and secured in place, and the slots in the holder may be closed so as to prevent the heat from escaping.

381,469. APPARATUS FOR TESTING GRAIN. PAUL GROSSMANN, Artern, Saxony, Germany. Filed Sept. 14, 1887. Serial No. 249,616. (No model.) Patented in Germany Nov. 6, 1886, No. 39,622; in England Nov. 29, 1886, No. 15,569, and in Austria-Hungary Apr. 6, 1887, No. 46,594 and No. 11,700.



Claim.—1. The combination, with a cup-shaped vessel having tapered apertures in its bottom and provided with a handle, of a plate provided with a handle pivoted to the handle of the cup-shaped vessel, which plate is also provided with tapered apertures in line with those of the vessel, and a blade pivoted between the two handles to swing between the upper surface of the plate and the under side of the cup-shaped vessel, substantially as shown and described.

2. The combination, with a cup-shaped vessel having tapered apertures in its bottom, of a plate pivoted to the under side of the cup-shaped vessel and also provided with apertures coinciding with those in the bottom of the vessel, a check-plate pivoted to the under side of the above-mentioned plate and also provided with tapered apertures the centers of which coincide with those of the apertures in the other plate and the cup-shaped vessel, and a blade pivoted between the cup-shaped vessel and the plate pivoted to it, substantially as shown and described.

3. The combination, with the cup-shaped vessel *a*, having tapered apertures a^3 and the handle *a'*, of the plate *b*, having tapered apertures b^3 and handle *b'*, the pivot *c*, by which the handles *a' b'* are pivoted together, and the blade *h*, mounted on the pivot *c* at the under side of the cup *a*, substantially as shown and described.

4. The combination, with the cup-shaped vessel *a*, having the tapered apertures a^3, of the plate *b*, having the tapered apertures b^3, the plate *d*, provided with the lug *d''*, the screw *c*, projecting downward from the plate *b*, on which plate the lug *d''* is mounted to turn, the catch *f*, and the blade *h*, pivoted between the cup-shaped vessel and the plate *b*, substantially as shown and described.

381,470. OVEN ATTACHMENT. CHARLES H. HARBOR, Lebanon, Oreg., assignor to himself and William H. Reed, same place. Filed Nov. 14, 1887. Serial No. 255,098. (No model.)



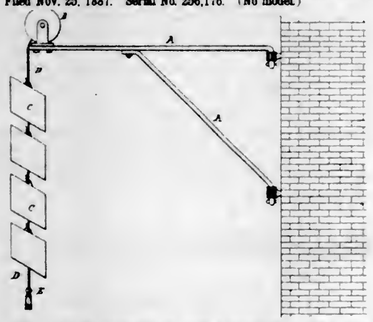
Claim.—1. The combination, with a cooking stove or range, of a vertical shaft passing through the bottom of an oven, a disk mounted on the end of said shaft within the oven, the pivoted oscillating lever supporting said shaft at one end, and mechanism for rotating said shaft, the worm-shaft engaging the opposite end of said lever, and the shaft and gearing for actuating said worm-shaft, all substantially as and for the purpose described.

2. The combination, with a cooking stove or range, of the revolving disk, its supporting-shaft squared on its lower end, the bevel-gear loosely mounted on the lower end of said shaft, the bracket for supporting said gear, and the mechanism engaging said gear and rotating the shaft, the pivoted lever bearing said shaft at one end, the worm-shaft engaging the opposite end of said lever to oscillate the same, and the shaft and gearing for actuating said worm, all constructed and arranged substantially in the manner and for the purpose described.

381,471. PROCESS OF PRODUCING BLUE-RED COLORING-MATTER. ERNST HASSENKAMP, Elberfeld, Prussia, Germany, assignor, by mesne assignments, to Edward H. Dickerson, Jr., New York, N. Y. Filed Mar. 1, 1887. Serial No. 229,339. (Specimens.)

Claim.—The process for producing new bluish-red coloring-matters, which consists in combining salts of the tetrazo compound of paradiamines or their sulphonic or carbonic acids with the new alkyl-naphthylamine sulphonic acids, substantially as described.

381,472. EXPRESS-CALL. CHARLES J. HEITTMAN, New York, N. Y. Filed Nov. 25, 1887. Serial No. 256,176. (No model.)



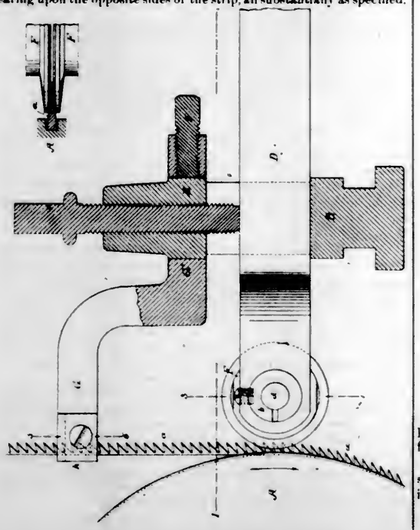
Claim.—1. The combination, with a swinging crane hinged or attached to the outside wall of a house near a window or door or other convenient support, of a hollow drum mounted in suitable bearings upon the outer end of said crane, into and out of which drum is wound a flexible strap attached to a fixed axle revolving in said drum, and to which are attached, as specified, by means of spring-clips, one or more cards or signs bearing the name of an express or other company, said strap being loaded to counterpoise the resilience of a spring which is mounted in said drum to act upon said axle, substantially as and for the purpose set forth.

2. In an express or other call, the combination of the crane A, hinged or attached to the wall of a building or other convenient support, the drum B, mounted in bearings at A' and A× upon said crane, the spring F, arranged and attached as specified, the strap D, attached to the axle B', the spring-clips c, fastened to the strap D, the signs C, detachably secured by the clips c, and the weight E, attached to the strap D, all substantially as and for the purpose set forth.

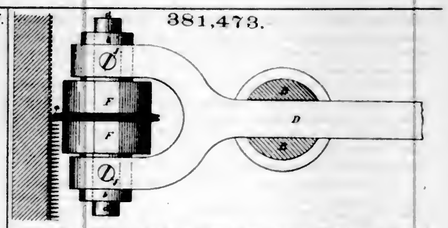
381,473. DEVICE FOR CLOTHING GROOVED CYLINDERS WITH TOOTHED STRIPS OF METAL. FRANK HOUSER and WILLIAM H. CLARKSON, Philadelphia, Pa., assignors to The James Smith Woolen Machinery Company, same place. Filed Aug. 25, 1887. Serial No. 247,844. (No model.)

Claim.—1. The within-described tool for effecting the application of a toothed strip to a grooved cylinder, said tool consisting of a presser having a groove for the reception of the toothed strip, and opposite pressing-flanges constructed to bear upon the sides of the strip below the tips of the teeth of the same, all substantially as specified.

2. The within-described tool for applying toothed strips to grooved cylinders, said tool consisting of a rotating presser having flanges for bearing upon the opposite sides of the strip, all substantially as specified.



381,473.



3. The within-described tool for applying toothed strips to grooved cylinders, said tool consisting of a rotating presser having a groove with flaring sides adapted to bear upon the flaring sides of the strip, all substantially as specified.

4. The within-described pressing-tool, consisting of a bar, a rotating presser, and sleeves forming bearings for the journals of said presser, said sleeves being adjustable in respect to the bar, all substantially as specified.

5. The within-described pressing-tool, consisting of a bar having a forked end, a pair of pressing-disks, and laterally-adjustable sleeves carried by the forked end of the bar and forming bearings for the spindles of said disks, all substantially as specified.

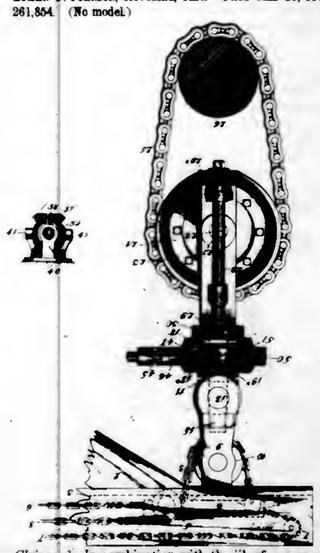
6. The within-described guide for directing a toothed strip to a grooved cylinder, on which it is to be wound, said guide consisting of a pair of rigid jaws, providing between them a passage which approximates closely to the normal thickness of the strip, all substantially as specified.

7. The within-described guide for the toothed strip, said guide consisting of a fixed jaw and a movable jaw, forming between them a passage for said strip, all substantially as specified.

8. The combination of the rotary presser for bearing upon the sides of a toothed strip and forcing the same into the groove of the cylinder, with a pair of jaws between which the strip passes before reaching the presser, all substantially as specified.

9. The combination of the lathe-post, the presser-bar carried thereby, and the guide-bar secured to the post and adjustable circumferentially thereon, all substantially as specified

381,474. DEVICE FOR HANDLING HEAVY MASSES OF METAL. LUMAN F. JOHNSON, Cleveland, Ohio. Filed Jan. 25, 1888. Serial No. 261,854. (No model.)



Claim.—1. In combination with the jib of a crane, a loosely-suspended pulley having a chain depending therefrom, and mechanism for rotating said pulley, substantially as specified.

2. In combination with the jib of a crane, a loosely-suspended swiveled pulley having a chain mounted thereon, and means for rotating said pulley, substantially as specified.

3. The combination of the jib of a crane with hangers depending

therefrom, a yoke swiveled in said hangers, a pulley loosely mounted in said yoke, and means for operating said pulley, substantially as specified.

4. The combination, with the jib of a crane, of hangers connected therewith, a yoke swiveled in said hangers and carrying gears, and having a loose pulley mounted therein, and means, substantially as described, for giving motion to said gears and from thence to the pulley, substantially as specified.

5. The combination of the jib of a crane with a hanger adjustably connected therewith, a yoke swiveled in said hanger and provided with a loose pulley carrying a depending chain, and a train of gearing leading from a motor to said pulley for operating the latter, substantially as specified.

6. In combination with the jib of a crane, a loosely-suspended hanger carrying a swiveled yoke provided with a pulley, a chain depending therefrom, gears mounted on said yoke, and mechanism, substantially as shown and described, for transmitting motion to said gears and pulley, substantially as specified.

7. The combination, with a jib having a trolley mounted thereon, of a vertically-adjustable hanger connected to said trolley, and a swiveled yoke mounted in said hanger and carrying a loose pulley having a depending chain, substantially as specified.

8. The combination of the jib of a crane with a loosely-suspended hanger provided with a casting-suspending device, and mechanism for rotating said device, substantially as specified.

9. The combination, with the jib having loosely-suspended hangers, of a yoke swiveled therein provided with gears of a sliding shaft geared to said gears, and mechanism for rotating said shaft, substantially as specified.

10. The combination, with hangers having a swiveled casting-supporting device provided with gears, of a flexible sliding shaft having a gear meshing with the first-mentioned gear, and mechanism for rotating said shaft, substantially as specified.

11. The combination, with the jib of a crane, of the hangers 9, chain 8, pulley 10, and block 11, swiveled in said hangers, the yoke 14, swiveled in said block and carrying the gears 18* and 18 and 30, and the pulley 24, having the chain 25, the vertical shaft 28, having gears 29* 29, mounted on said yoke and meshing with said pulley, substantially as specified.

12. The combination, with the hangers 9, having the block 11 swiveled therein, of the yoke 14, swiveled in said block and provided with a fast gear, 19, and a loose gear, 17, the gears 47 and 51 meshing with said fast and loose gears, and the ring 49, having bearings 48 for supporting gears 47 and 51, substantially as specified.

13. The combination of the hanger 14 with the loosely-mounted pulley 23, carrying the chain 25, and having the facial gear 24 secured thereto, substantially as specified.

14. The yoke 14, having bearings 21 27, in combination with the pulley 23, loosely mounted in the bearing 21 and having the facial gear 24 and chain 25, the shaft 28, mounted in bearings 27 and having the gear 29* meshing with said facial gear, substantially as specified.

15. The combination of the plate 40, having the shaft 38, perforated, as at 39, and the opposite bearings, 41, with the double-faced gear 37, mounted on the shaft 38, the pivotal bearing 42, mounted in the bearings 41, and the shaft 43, loosely mounted in the bearing 42 and passing through the opening 39 and carrying the keyed gear 44, which meshes with the gear 37, substantially as specified.

16. The combination of the shaft 31, having the gear 32, with the shaft 34 mounted in bearings 33 and having gears 35, 36, the gear 37, mounted on a shaft, 38, the pivoted plate 40, mounted in bearings 41 on said plate, and the shaft 43, mounted to slide in bearings 42, and having the gear 44 splined thereon, substantially as specified.

17. The combination of the sliding shaft 43, having the joint 45 connecting it to the shaft 46, carrying the gear 47, with the ring 49, having the opposite bearing, 48, the shaft 50, mounted therein and carrying the gear 51, and the fast gear 18 and the loose gear 18*, meshing with said gears 51 and 47, substantially as specified.

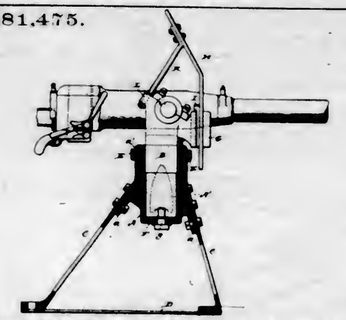
381,475. ELASTIC PEDESTAL FOR MOUNTING GUNS. ALFRED C. KOERNER, Paris, France, assignor to the Hotchkiss Ordnance Company, (Limited,) of England. Filed Dec. 17, 1887. Serial No. 258,218. (No model.) Patented in England Mar. 6, 1885, No. 2,944.

Claim.—1. In an elastic pedestal for mounting guns, the combination of the gun-supporting block, radiating elastic legs secured thereto, and a base-ring, substantially as described.

2. In an elastic pedestal-mounting for guns, the combination of the gun-supporting block A, having recesses *a'* for receiving the upper extremity of the legs, and radiating lugs *a*, to which the legs are secured, elastic legs C, ring E, binding the upper extremities of the legs to the block, and base-ring D, uniting the lower extremities of the legs, substantially as described.

3. The combination of the gun, its pivot B, block A, having socket A' for receiving the pivot of the gun, and radiating elastic legs secured

381,475.



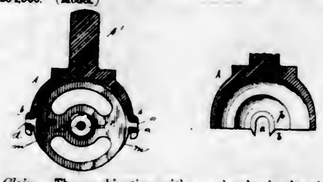
to block A at one extremity and to the base-ring D at the other, substantially as described.

4. In an elastic pedestal-mounting for guns, the combination, with block A, having socket A', of the steel washer F and locking-screw *g*, interposed between the base of the pivot and the bottom of the socket, substantially as and for the purpose set forth.

5. The combination, with a machine-gun turning upon a pivot, of pivot B, forward channel-supports G G, projecting from the pivot on each side of the gun, wedges I I, back-stays K K, lugs L L, extending from the pivot to the rear on each side of the gun and to which the back-stays are secured, and shield H, straddling the gun and supported by the back-stays and forward supports, substantially as and for the purpose hereinbefore set forth.

6. In an elastic pedestal for mounting guns, the combination of the gun-supporting block and the radiating elastic legs secured thereto, substantially as described.

381,476. CASTER. ADOLF LEHMANN, New York, N. Y., assignor of one-half to John F. Luth, same place. Filed Nov. 5, 1887. Serial No. 254,366. (Model.)



Claim.—The combination, with a socket having bearings formed at diametrically-opposite points, the socket being recessed at its inner side around said bearings, of a center plate having gudgeons connected by re-enforced parts with said plate, and a center hub extending at right angles to said plate, and half-balls on the faces of the center plate and connected by a transverse pin passing through said hub, substantially as set forth.

381,477. HINGED-SHOE BUTTON. RUSSELL H. LEWIS, Providence, R. I., assignor to R. L. Hall & Co., same place. Filed Nov. 8, 1887. Serial No. 254,604. (No model.)



Claim.—1. The combination, with the lever-arms and the hinge-plate, formed with journal-bearings for the lever-arms, and the spring for actuating the arms, the cap for containing the hinge-plate and the spring, of the finishing back plate conforming to the outline of the cap, and provided with a central slot for the passage of the lever-arms, and formed with depressions to receive the journal-bearings of the hinge-plate, such finishing plate placed against the under face of the hinge-plate and concealing the same, and held in position by the cap, substantially as and for the purpose herein described.

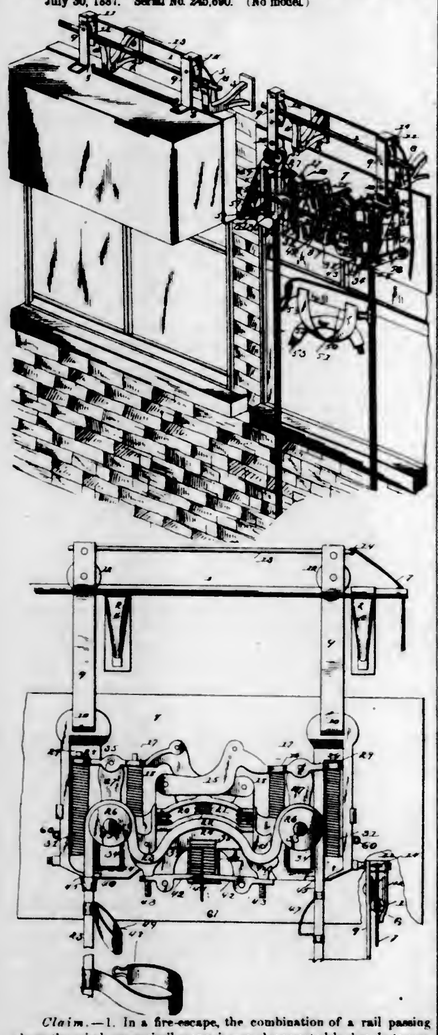
2. The combination, with the hinge-plate or equivalent provided with the integral forked holding-lugs 19, of the actuating-spring 18, engaged and held in position by such lugs, substantially as described.

3. The combination, with the cap 8 and the slotted hinge-plate 11, having the lever-arms 16 hinged therein, and the spring for the arms, of the finishing back plate, 12, having the slot 20 and formed with the recesses 21 and the depression 22, such back plate held in

position by the rim of the cap and concealing the hinge-plate, substantially as and for the purpose herein described.

4. The combination, with the cap 8, the top plate, 10, set therein, and the hinge-plate 11, having the central slot, 13, and formed with the journal-bearings 14 and the forked holding-lugs 19, the spring 18, held by such lugs, of the lever-arms 16, provided with the journals 15 and having the intermeshing gears 17, the finishing back plate, 12, having the slot 20, and formed with the recesses 21 and the depression 22, and held in position by the rim of the cap 8, substantially as described.

381,478. **FIRE-ESCAPE.** JOHN C. LUND, Eau Claire, Wis. Filed July 30, 1887. Serial No. 245,690. (No model.)



Claim.—1. In a fire-escape, the combination of a rail passing above the windows or similar openings and supported by brackets consisting of outwardly-projecting portions and upwardly-projecting portions having the rail secured to their ends, straps supporting the apparatus and having the upper ends doubled and having pulleys traveling upon the rail journaled in the doubled ends and having a rod secured by its ends to the said ends, and a cord secured to the end of the rod and passing over a pulley in the rail above the window to within reach of the window, as and for the purpose shown and set forth.

2. In a fire-escape, the combination of a frame having frictional devices, a rope passing over the frictional devices and having means for supporting a person, arms pivoted upon the ends of the frame and connected by a rod, brackets projecting from the lower portions of the ends of the frame, toggle-arms pivoted to the arms and to the brackets, and cords secured by their ends to the joints of the toggle-arms and passing through eyes upon the ends of the frame and upon the middle of the frame within reach of the place of exit, serving to tilt the rope-supporting arms down, as and for the purpose shown and set forth.

3. In a frictional fire-escape, the combination of two levers fulcrumed near the middle of the frame and crossing each other and formed with two pairs of eyes projecting laterally from the outer portions, coiled springs wrapped around vertical guide-rods projecting into the eyes of the levers and bearing upward against the eyes, an upwardly-facing convex friction-block at the middle of the frame having the rope passing over it, a brake-yoke having the inner portions of the levers bearing against its upper convex side and bearing with its concave under side against the rope above the friction-block, two downwardly-facing convex friction-blocks at the ends of the central block, arms pivoted to the outer portions of the levers and having pulleys journaled in their lower ends and having the rope passing over them, levers pivoted in the frame at the middle of the same and having the outer short arms provided with upwardly-facing concave brake-shoes bearing against the rope and the friction-blocks and having eyed inner ends, a block bearing against the inner ends of the brake-levers, and arms pivoted to the inner portions of the upper levers and having the lower ends pivoted to the block, as and for the purpose shown and set forth.

4. In a frictional fire-escape, the combination of a frame having two vertical pairs of slots near the ends of the side pieces and two vertical slots in the middles, two levers fulcrumed at their inner ends, crossing each other at both sides of the middle of the frame and having two pairs of laterally-projecting eyes at their outer ends, vertical guide-rods for the eyes upon the outer sides of the frames, having coiled springs bearing upward against the eyes of the levers, arms pivoted to the levers between the eyes and having laterally-projecting studs at their lower ends sliding in the vertical slots of the sides of the frame and forming bearings for the trunnions of pulleys journaled between the ends of the arms, an upwardly-facing convex friction-block at the middle of the frame, two downwardly-facing convex friction-blocks at the ends of the central block, a curved yoke having the inner portions of the levers bearing against its convex upper side and having coiled springs secured to its concave under side, a curved brake-shoe secured with its convex upper side to the lower ends of the springs, a block sliding in the middle of the frame and having laterally-projecting bolts and downwardly-projecting rods having coiled springs around them, the laterally-projecting bolts sliding in the central vertical slots, two levers fulcrumed near the center of the frame and having adjustable upwardly-facing concave brake-shoes at their short outer arms and having the eyed inner ends sliding upon the rods of the central sliding block bearing against the springs, and the rope passing over the convex central block and under the side blocks and over the pulleys, as and for the purpose shown and set forth.

5. In a frictional fire-escape, the combination of a frame having suitable frictional devices, a rope passing through the frame and the friction devices, stirrups and slings upon the rope for supporting a person, and yielding stops secured upon the rope to bear against the perforations in the under side of the frame through which the rope passes, stopping the rope with one sling outside of the window and the other at the ground, as and for the purpose shown and set forth.

381,479. **WAGON-BOX.** GEORGE W. MANLOVE and EDMUND A. PARKER, Rushville, Ill., assignors to said Edmund A. Parker, Hubbard Parker, Milwaukee, Wis., and Edmund L. Parker, Minneapolis, Minn. Filed Apr. 17, 1886. Serial No. 199,273. (No model.)

Claim.—1. In a wagon-box, the combination, with the sides and bottom, of rigidly-secured braces extending beyond the ends of the sides and an end-gate having cleats secured to and projecting beyond its ends, said cleats having straight outwardly-extending flanges, through which pass the bolts for securing the gate in position, as set forth.

2. In a wagon-box, the combination, with the bottom and sides, of an end-gate provided with cleats having outwardly-extending flanges with rounded upper corners, said cleats projecting beyond the ends of the sides of the box, and rods for securing said gate in place, substantially as described.

3. In a wagon-box, the combination, with the bottom and sides, of an end-gate pivotally secured at its upper side portion and provided with cleats having outwardly-extending flanges with rounded upper corners, said cleats extending beyond the ends of the sides of the box, and locking-levers pivoted to said cleats near their lower edges, substantially as described.

4. In a wagon-box, the combination, with the sides and bottom, of an end-gate pivotally secured at its upper side portion, cleats having outwardly-extending flanges with rounded upper corners, secured to said gate, a brace extending across the central portion of said gate, and having a hook attached to its lower end, locking-levers pivoted to the lower ends of said cleats, the short arms of which are bent down and forward and adapted to pass through openings in the flanges and into rigidly-secured braces, substantially as described.

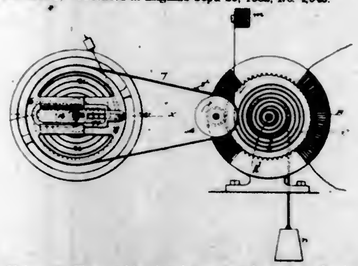
5. In a wagon-box, the combination, with the sides having braces A and the bottom, of the end-gate having brace D and cleats B, with flanges *b*, the levers *d*, having their long arms arranged to be placed in hook *m*, and their short arms adapted to enter openings in said flanges, and end braces, A, substantially as described.

6. A wagon-box consisting of the sides and bottom portions, said sides provided with cleats at their forward ends, which have straight inwardly-extending side and bottom flanges, and also with braces at their rear ends which project beyond the same, a rear end-gate having cleats which extend beyond its ends, said cleats having outwardly-extending flanges, a forward end-gate provided with cleats which extend beyond its ends, and locking-levers and rods for securing the said gates in place, substantially as described.

7. In a wagon-box, a series of braces secured to the ends of cross-beams on the ontside of said box, said braces having open slots or grooves in their outer bottom portions, whereby the same are allowed to be adjusted in or out, and clasps secured to their upper outer sides, substantially as described.

8. An extension for a wagon-box, consisting of side portions having downwardly-extending staples secured thereto and cleats having straight inwardly-extending side flanges attached to the forward ends, and outwardly-extending cleats secured to the rear ends of said sides, a front gate having cleats B' secured thereto, and a rear gate having braces D' and flanged cleats B', and a rod for securing said rear gate in place, substantially as described.

381,480. **ELECTRIC METER.** SAMUEL D. MOTT, New York, N. Y., assignor, by direct and mesne assignments, to The Schuyler Electric Company, Middletown, Conn. Filed Aug. 24, 1883. Serial No. 104,642. (No model.) Patented in England Sept. 29, 1882, No. 4,646.



Claim.—1. The combination, in an electric meter, of a balance-wheel, a mechanical adjusting or regulating mechanism that may be set or adjusted to determine the natural rate of vibration or oscillation of said balance-wheel, and an electro-responsive device such as an electro-magnet placed in the circuit of the current to be registered for setting or moving the adjusting or regulating mechanism to a point in its range of adjustment depending upon the strength of the electric current, as and for the purpose described.

2. The combination, substantially as described, of a retarder consisting of an ordinary balance-wheel and escapement, and means for lengthening or shortening the hair-spring of the balance-wheel, controlled by the electric current to be registered.

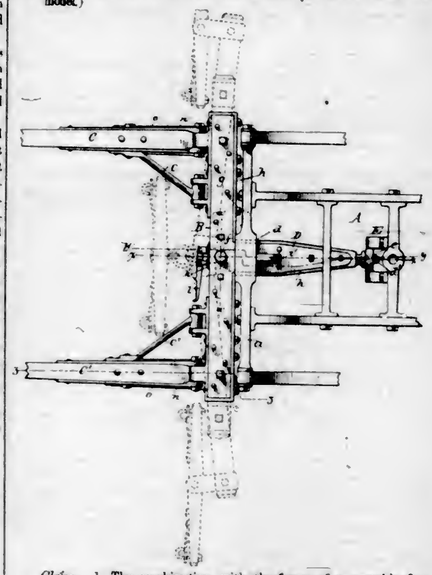
3. The combination, as and for the purpose described, of the balance-wheel, the mechanism for regulating the length of the hair-spring, and electro-magnetic actuating devices for operating said regulating mechanism.

4. The combination, in an electric meter, of a balance-wheel for a train of wheels, driven by a constant power and connected with or forming a registering-train, a mechanism for adjusting or regulating the oscillations of said balance-wheel, and an electro-magnetic motor energized by the current to be registered and connected with the regulating or adjusting mechanism and serving to adjust the position of the same.

5. The combination, in an electric meter, of the balance-wheel, the radially and circumferentially movable adjusting-stud for varying the effective length of the hair-spring, and means for moving said stud circumferentially in accordance with the variations in the strength of the current to be registered.

6. The combination of the adjusting-stud 9, mounted on a sliding piece provided with rack-bar, fixed studs for engaging with said rack-bar, and a rotating support for the sliding piece adjusted by mechanism controlled by variations in an electric current.

381,481. **DETACHABLE DRAFT-FRAME FOR VEHICLES.** LEVI G. MOWRY, Buffalo, N. Y. Filed Jan. 23, 1888. Serial No. 261,568. (No model.)



Claim.—1. The combination, with the frame of a portable fire-engine or other vehicle, of a draft-frame detachably secured to said frame, a pair of thills pivoted to said draft-frame, and whiffletrees, also attached to said draft-frame, substantially as set forth.

2. The combination, with the frame of a portable fire-engine or other vehicle provided with a horisontal opening or socket, of a draft-frame provided with a tongue detachably secured in said socket, a pair of thill-poles pivoted to said draft-frame independently of each other, and a set of whiffletrees, also attached to said draft-frame, substantially as set forth.

3. The combination, with the frame A, provided with a cross-bar, *a*, having a socket or opening, *d*, and a depending arm, E, having a socket or opening, *e*, of a draft-frame, B, provided with a tongue arranged in said sockets, a spring-catch, whereby the tongue is removably secured in its sockets, and a pair of thills pivoted to the draft-frame B, substantially as set forth.

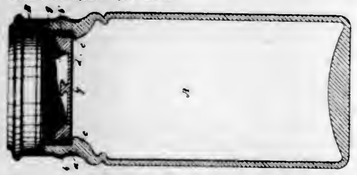
4. The combination, with the frame A, having a cross-bar, *a*, and sockets *d e*, and the draft-frame B, having a tongue, D, arranged in said sockets, of a catch pivoted to said tongue and adapted to bear against the cross-bar *a*, a wedge, *j*, whereby said catch is operated, a spiral spring, *k*, whereby said wedge is held against said catch, and a lever, whereby said wedge is retracted from the catch, substantially as set forth.

5. The combination, with the draft-frame B and tongue D, of re-

enforcing plates *g g*, secured to opposite sides of the frame B and its tongue, and a re-enforcing strap, *h*, secured to the edges of said parts, substantially as set forth.

6. The combination, with the draft-frame B, provided with plates *n*, of the thill-poles C C, provided with plates *o*, abutting against the plates *n*, substantially as set forth.

381,482. FRUIT-JAR. AMBROSIUS NÖLTNER, Dürkheim, Bavaria, assignor to Eugen Deutsch, Musbach, Germany. Filed Jan. 31, 1888. Serial No. 262,529. (No model.)

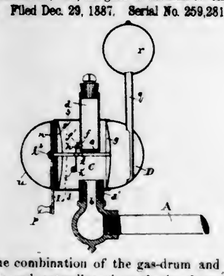


Claim.—In a fruit-jar having a neck lined with a threaded metal piece, the annular flange c, forming part of the neck and arranged immediately below the threaded metal portion, so as to project inwardly, in combination with the disk *d*, the threaded metal cover B, and the interposed lid *f* and packing *e*, substantially as and for the purpose specified.

381,483. OINTMENT. ALBERT PROCHOWICZ, Winona, Minn. Filed Oct. 11, 1887. Serial No. 252,055. (No specimens.)

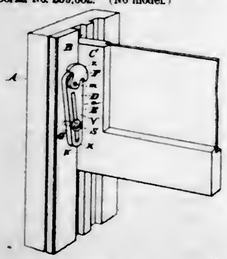
Claim.—The combination of ingredients hereinafter specified, consisting of melted beeswax, linseed-oil, melted rosin, spirits of turpentine, oil of laurel, spirits of camphor, oil of spike, and oil of juniper, substantially as specified.

381,484. SAFETY ATTACHMENT FOR GAS-BURNERS. EUGENE R. PRUITT, Baltimore, Md., assignor of one-half to Charles W. Johnson, same place. Filed Dec. 29, 1887. Serial No. 259,281. (No model.)



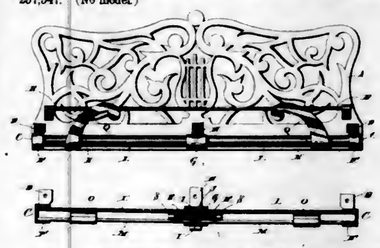
Claim.—The combination of the gas-drum and air-chamber, an endwise-movable rod extending through the drum having two diaphragms, a burner having a port on the inside of the drum, a spring-shank provided with a valve to engage the port by the action of the rod, a lever connected to said rod, the inclines in connection with the lever, and means to conduct heat from the flame of the burner to the air-chamber, substantially as shown and described.

381,485. SASH LOCK AND FASTENER. HENRY C. REYNOLDS, Norfolk, Va., assignor of one-half to J. A. C. Groner, same place. Filed Jan. 3, 1888. Serial No. 259,602. (No model.)



Claim.—The reversible sash-fastener consisting of the slotted plate having the wedge portion on one side of the slot, and on the other side thereof the parallel-edge bar continued by the bend to join the lower end of said wedge portion, the screw engaging the slot, and the reversible sector-cam pivoted to the broader end of the slotted plate, substantially as specified.

381,486. MUSIC-HOLDER. DATUS E. RUGG, Albany, N. Y., assignor to Rittie E. Rugg, same place. Filed Dec. 10, 1887. Serial No. 257,547. (No model.)



Claim.—1. The combination, with the music-rack, of the slotted rotatable tubes mounted near the lower edge of the same, the slides adjustably mounted in said tubes, and the pressure-plates carried by said slides and extending through the slots of the tubes, substantially as set forth.

2. The combination, with the rack, of the horizontal rod B, secured thereto above and parallel with its lower edge, the rotatable tubes mounted on the rack below said rod, the pressure-plates carried by said tubes, and the springs within the tubes normally throwing the pressure-plates against the rod B, as set forth.

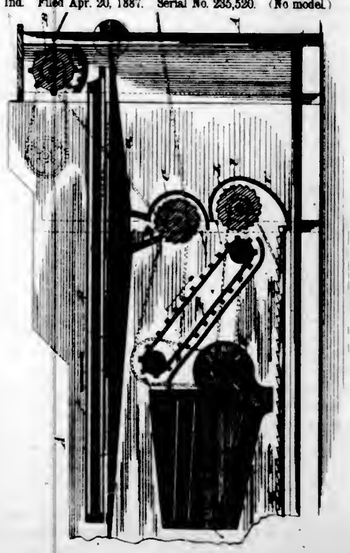
3. The combination, with the rack, of the caps C, secured thereto at the lower corners thereof, the sleeve G at the center of the same, the rotatable tubes mounted in said caps and sleeve, the coiled springs arranged in said sleeve and the ends of the tubes, and the pressure-plates carried by said tubes, as set forth.

4. The combination, with the rack, of the rotatable tubes mounted thereon, having the longitudinal slots M, the slides mounted in said tubes and having the ribs P, fitting in the slots M, the pressure-plates extending from the said ribs, and the springs mounted in the tubes, substantially as specified.

5. In combination with the slotted rotatable tubes, the pressure-plates carried by the tubes, said plates having a sliding movement on the tubes independent of the rotary movement of the latter, and the spring for actuating said tubes, as set forth.

6. In combination with the slotted rotatable tubes, the springs therefor, and the pressure-plates carried by the tubes, the said pressure-plates being adjustable along the tubes, as set forth.

381,487. CLOVER-HULLER. ALFRED T. SHEETS, Germany, assignor of one-half to the Birdsell Manufacturing Company, South Bend, Ind. Filed Apr. 20, 1887. Serial No. 235,520. (No model.)



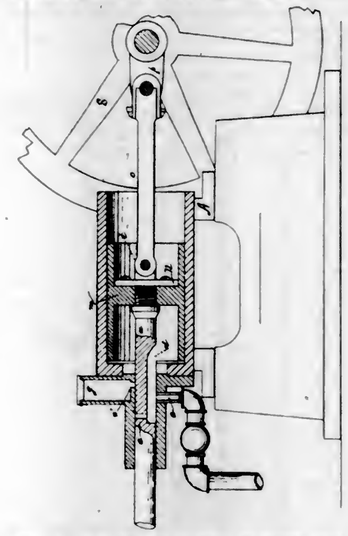
Claim.—1. The combination, with the primary hulling-cylinder, the conveyer-belt, and screen-shoe, of the secondary hulling-cylinder and a conveyer for conducting the seed from the screen-shoe to said cylinder, all substantially as and for the purpose specified.

2. In a clover-hulling machine, the combination, with the primary hulling-cylinder, the conveyer-belt F, and screen-shoe E, constructed substantially as described, of an auxiliary hulling-cylinder situated below the primary huller and rotating oppositely thereto, and the horizontal conveyer-floor M, adapted to receive partially-hulled seed from the screen-shoe and conduct it to the auxiliary huller, all substantially as specified.

3. The combination of the primary huller C, the secondary huller L, situated below huller C, and the screen-shoe, with the conveyer F, adapted to receive the seed from both hullers and convey it to the screen-shoe, all substantially as described.

4. The combination of the huller C, the conveyer-belt F, the screen-shoe E, the huller L, its partial casing *l*, located below huller C, means whereby it is oppositely rotated thereto and made to discharge the seed upon conveyer F, and the horizontally-vibrating conveyer-floor M, situated below the screen-shoe and belt F and conveying partially-cleaned seed from the screen-shoe E to the huller L, substantially as described.

381,488. GAS-ENGINE. GEORGE W. STEWART, New York, N. Y. Filed July 25, 1887. Serial No. 245,169. (No model.)



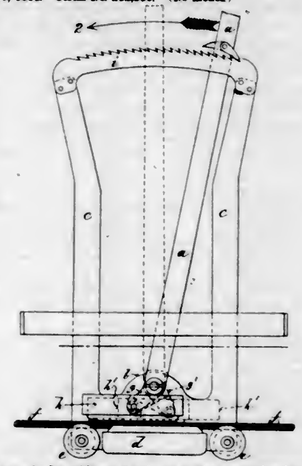
Claim.—1. An exhaust and air-supply mechanism which consists of the cylinder *r*, provided at each end with the caps or seats *t* and *t'*, the valve-stem *j*, carried by the engine-piston and provided with a valve, as *i*, arranged to be seated by the valve-stem before the same has completed its stroke and to be unseated again at the beginning of its return-stroke, as set forth and specified.

2. A gas-engine constructed of a proper cylinder and piston, as *m*, secured to a piston-rod extension, as *a*, provided with the supply port or channel *d* and igniting-port *e*, arranged to communicate through the igniting-port *e'* with the funnel *g*, in combination with a gas-supply pipe, *c*, and burner *y*, as and for the purpose specified.

3. A gas-engine constructed of a suitable cylinder with the piston *m*, piston-rod extension *a*, provided with the supply-channel *d*, arranged to communicate with and receive gas from the supply-pipe *c*, the same to be ignited, as described, through the ports *e* and *e'*, in combination with an exhaust and air-supply mechanism, consisting of the cylinder *r* and provided with the caps *t* and *t'*, the valve-stem *j*, carried by the piston *m*, and provided with a valve, as *i*, all arranged to operate as described, and for the purpose specified.

4. A gas-engine constructed of a suitable cylinder and piston, as *m*, and rod *a*, provided with the supply and igniting ports, as described, the supply-pipe *c*, and igniting-burner *y*, all arranged to operate as described, in combination with a relief mechanism, which consists of the valve *i*, arranged to be operated by the valve-stem *j* within the cylinder *r* in such a manner as to close the exhaust-port before the stroke of the piston is completed, and to open the same again at the beginning of the return-stroke, as described.

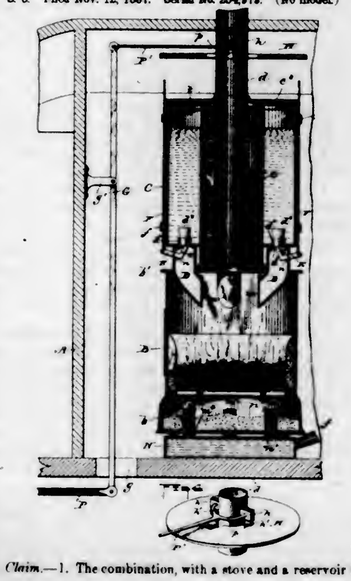
381,489. GRIP-GEAR FOR CABLE ROADS. MORRIS TOLLE, St. Louis, Mo., assignor of one-third to Hugh L. Fox, same place. Filed Jan. 30, 1886. Serial No. 262,339. (No model.)



Claim.—1. In cable-road grip-gear, the operating-lever on the dummy, extended through the floor of the car, fulcrumed to the lower grip-framing, and having its lower end extending downward from the fulcrum as an arm, this arm being pivoted to the upper part of the grip, in combination with the lower part of the grip, substantially as described, and for the purpose set forth.

2. In cable-road grip-gear, the combination of the operating-lever on the dummy, extended through the floor of the car and fulcrumed to the lower grip-framing, and having arms at opposite inclinations from the operating-lever, with the upper and lower parts of grips, substantially as and for the purpose described.

381,490. CAR-HEATER. CHRISTIAN W. WIECKING, Jr., Walhalla, S. C. Filed Nov. 12, 1887. Serial No. 254,979. (No model.)



Claim.—1. The combination, with a stove and a reservoir located

above the same, of tubes connecting said reservoir with the interior of the stove, means for normally closing said tubes, levers to open communication through the tubes, vertical rods to operate said levers and extending upwardly upon the exterior of the reservoir above the upper end of the same, a weight suspended above the reservoir and upper ends of said rods, a rod detachably holding said weight suspended, and a vertical lever connected with said rod, whereby when the lever is operated the weight is detached and dropped upon the upper ends of the vertical rods and communication through the tubes is thus opened, substantially as described.

2. The combination, in a car-heater, with a stove, a reservoir in communication with the same, and means for normally closing communication between the stove and reservoir, of a weight suspended above the stove, a rod beneath the car, a vertical lever connected at its lower free end to said rod, and a rod adapted to normally hold said weight detachably suspended and connected to the upper free end of said lever, whereby when the rod beneath the car is operated the weight is released from its suspended position and dropped to open communication between the stove and reservoir, substantially as described.

3. In combination, a stove having a smoke-flue, a water-reservoir provided with a tube through which said smoke-flue passes, tubes connecting the said reservoir with the interior of the stove, the lower ends of said tubes bending inward and being provided with hinged covers, plugs normally closing said tubes, and rods and levers to force said plugs from their seats, for the purpose described.

4. In combination, a stove, a water-reservoir, outlet-tubes connecting said reservoir with the interior of the stove, plugs, levers pivoted in said tubes, upwardly-extending rods attached to said levers, a weight suspended above said rods, a rod to removably hold said weight suspended, a vertical lever, and a rod beneath the car connected with said lever, substantially as described.

5. The combination, with a stove, of a reservoir supported above the stove, tubes extending from the reservoir into the interior of the stove, the lower ends of said tubes bending downwardly and inwardly toward the center of the stove or fire-pot, covers hinged at their upper edges to the open ends of said tubes to swing outwardly, and means for normally closing said tubes, substantially as described.

6. A stove and a smoke-flue for the same, in combination with a reservoir above the stove, provided with a tube through which said smoke-flue passes, partitions dividing said reservoir and tube into compartments, and tubes connecting each compartment of the reservoir with the interior of the stove, and means to normally close said tubes, substantially as specified.

7. In combination, a stove, a reservoir, outlet-tubes connecting said reservoir with the interior of the stove, means for normally closing said tubes, levers pivoted in said tubes for opening communication between the reservoir and interior of the stove, upwardly-extending rods pivoted at their lower ends to the levers and adapted to operate the same, and a weight detachably suspended above the upper ends of said rods and adapted to fall upon the same and open communication between the reservoir and stove, substantially as described.

8. The combination, in a car-heater, with a stove provided with a smoke-flue, a reservoir in communication with the stove, means for normally closing communication between the stove and reservoir, and rods and levers to open communication into the stove, of a weight suspended above the ends of said rods and provided with a central aperture, through which the smoke-flue passes, and a rod adapted to hold said weight detachably suspended, whereby when the rod is operated the weight is dropped upon the ends of said rods, thereby operating the levers and opening communication between the stove and reservoir, substantially as described.

9. The combination, with a stove and a smoke-flue for the same, of a reservoir provided with a central tube having a closed bottom and communicating with the interior of the reservoir at its upper end, the smoke-flue passing through said tube and provided with openings near the bottom of the tube, and hinged doors or covers to normally close said openings, substantially as described.

10. In a car-heater, the combination, with a stove, a reservoir in communication with the same, means for normally closing communication between the stove and reservoir, levers for opening communication between the stove and reservoir, and rods connected with said levers and adapted to operate the same, of a flat weight detachably suspended above the ends of said rods, and a rod beneath the car connected with said flat weight, whereby when the rod is operated the weight is dropped upon the upper ends of said rods and the levers open communication between the stoves and reservoir, substantially as described.

11. In a car-heater, the combination, with a stove, a reservoir in communication with the same, means for normally closing communication between the stove and reservoir, levers for opening communication between the stove and reservoir, and upwardly-extending rods connected to said levers and adapted to operate the same, of the smoke-flue provided with ears, a weight suspended above the upper ends of said rods and provided with ears and with an aperture, through which passes the smoke-flue, a forked rod passing through said ears and detachably holding said weight suspended upon the smoke-flue, and a lever and rod for operating said forked rod, substantially as described.

381,491. VETERINARY SURGICAL DEVICE. IRVING W. BIBBINS, Cobleskill, N. Y., assignor of one-fourth to Henry Sitterly, same place. Filed June 17, 1887. Serial No. 241,681. (Model.)

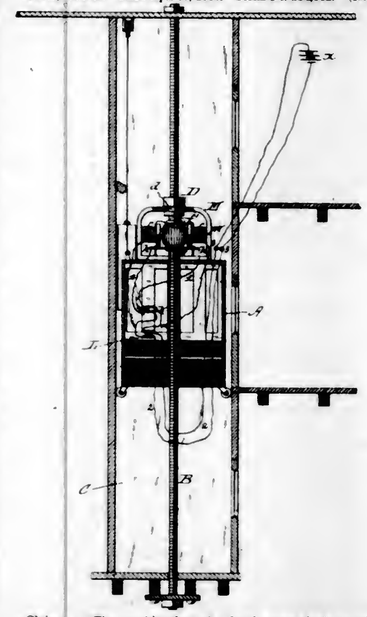


Claim.—1. In an appliance to prevent masturbation or abuse in stallions, a shield to conform to the outline of the belly provided at its front with a perpendicularly-depending guard, and with means whereby the appliance is fastened to the animal, substantially as set forth.

2. An appliance to prevent masturbation or abuse in stallions, comprising a shield provided at its front with a perpendicularly-depending guard and at its rear with extension-pieces, and an intervening hollowed-out space, whereby lateral displacement of the shield is prevented when secured in position in front of and around the sheath of the animal, substantially as set forth.

3. The shield A, having rearward extensions, and combined with the guard B, having braces c' c^2, substantially as set forth.

381,492. ELECTRIC ELEVATOR. GEORGE C. BLICKENDERFER and JOHN K. HALLOCK, Erie, Pa., assignors to said George C. Blickenderfer, trustee. Filed Apr. 13, 1887. Serial No. 234,582. (No model.)



Claim.—1. The combination of a fixed screw shaft or column, a revolving nut or gear in engagement with said shaft, a cage or car supported by or suspended from said gear, and an electric motor and circuit-connections for effecting the rotation of said gear to raise and lower said cage, substantially as set forth.

2. The combination of a fixed screw shaft or column, a revolving nut or gear in engagement with said shaft and affixed to an electric-motor armature-shaft, a car or cage supported by said armature-shaft, field-magnets for said armature located upon said cage, circuit-connections for said motor, and devices for reversing the direction of rotation of the armature-shaft and revolving nut, substantially as set forth.

3. The combination of an elevator-car, an electric motor secured to the car, having an armature and shaft therefor separate from the car, and provided with a screw nut or gear which engages with a fixed screw-shaft, substantially as set forth.

4. In combination with a fixed screw-rod, an armature-shaft having a threaded nut engaging with the screw-rod, a field-magnet frame swiveled to said nut, and an elevator-car attached to said frame, substantially as set forth.

5. In combination with a fixed screw-rod, an elevator-car suspended or supported by a revolving nut or gear on said shaft, an electric motor on the car for revolving said nut, and separate and movable conductors leading from the car to terminals of fixed conductors isolated at or about half-way up the elevator-well, substantially as set forth.

6. The combination of a fixed screw-rod, an elevator-car, an electric motor on the car having a tubular armature-shaft, gear-connection between said armature-shaft and the screw-rod, and devices for reversing the direction of rotation of the armature for changing the direction of travel of the car, substantially as set forth.

7. The combination of a fixed screw-rod, an elevator-car, an electric-motor field-magnet frame secured to said car and having a bearing or support on the motor armature-shaft which is separate from the car, and a gear-connection between said armature-shaft and the screw-rod, substantially as set forth.

8. The combination, with an elevator-car and a fixed screw-rod, of an electric motor on said car having a hollow or tubular armature-shaft for engagement with said screw-rod, substantially as set forth.

9. The combination, with an elevator-car and a fixed screw-rod, an electric motor on said car the armature-shaft of which is in engagement with said screw-rods, as and for the purpose set forth.

10. In combination with a traveling car on a fixed screw-rod, an electromotor the armature-shaft of which engages directly with said screw-rod, as and for the purpose set forth.

11. The combination of a fixed screw-rod, a revolving gear on said rod, a car or cage suspended or supported by said gear, and a motor for rotating said gear to raise and lower the car, substantially as set forth.

12. In combination with a fixed screw-shaft of an elevator-car and its operating devices, an electromotor having a hollow armature-shaft in engagement with said devices, substantially as set forth.

13. In combination with an elevator-car, an electric motor having its field-magnets and frame secured to the car, and its armature-shaft journaled in said frame and supported directly upon the elevating mechanism, substantially as set forth.

14. The combination of a fixed screw-shaft, an elevator-car, an electric motor, a rotating gear on the motor armature-shaft in engagement with the screw-shaft, a generator or battery, and reversing and cut-out switches, substantially as set forth.

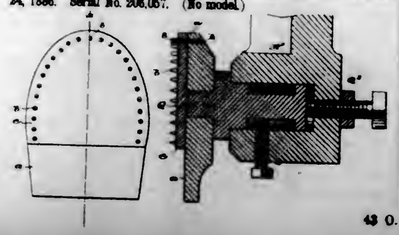
15. The combination of fixed screw-shaft, an elevator car or cage, an electric motor therefor having tubular armature-shaft in engagement with said screw-shaft, and reversing and cut-out switches located in said car, substantially as and for the purpose set forth.

16. The combination, with an elevator-car, an electric motor for actuating said car, flexible circuit connections or conductors 2 2 for the motor connected at one end to the car and at the other to fixed terminals of a line of conductors, and a cut-out switch and devices for reversing the motor included in said circuit-connections, substantially as shown and described.

17. The combination, with an elevator-car, an electric motor for propelling the car, devices for controlling the movement of and reversing the direction of rotation of the motor armature-shaft, and flexible electric conductors 2 2 in circuit with said motor and secured to and hanging pendent from the car and the fixed ends or terminals of a line or working circuit, substantially as set forth.

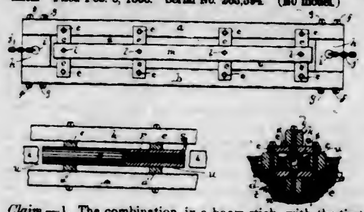
18. The combination of an elevator-car having an actuating or propelling electric motor, brushes for the commutator of the motor, a dial and indicator, and gearing interposed between said indicator and brushes, substantially as and for the purpose set forth.

381,493. HEEL-MACHINE. JAMES H. CUNNINGHAM, Brockton, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed June 24, 1886. Serial No. 206,057. (No model.)



Claim.—In a heel-trimming machine, the pattern-plate, as *a*, provided with a series of short fixed points arranged about the said plate to indent the top lift of the heel being trimmed, the said points being arranged with relation to the edge of the plate to insure the pricking of holes in the top lift at the desired distance from the edge of the top lift for the reception of slug-nails, substantially as described.

381,494. BOOM-STICK. FRANK H. DURELL, Bay City, and WILLIAM GOLDIE, West Bay City, assignors to James Reid & Co., St. Ignace, Mich. Filed Feb. 8, 1888. Serial No. 263,394. (No model.)



Claim.—1. The combination, in a boom-stick, with the timbers *a* and *b*, placed parallel with and at a short distance from each other, of the saddle-pieces *c* and *d*, placed across and with their ends secured, respectively, to the upper and lower sides of the said timbers, and the timber *k*, located centrally upon and secured to the said saddles *c*, and the timber *m*, located centrally below and secured to the under side of the said pieces *d*, substantially as and for the purpose set forth.

2. The combination, in a boom-stick, of the timbers *a* and *b*, secured in position a short distance from and parallel with each other by the saddle-pieces *c* and *d*, bolted to the timbers, a timber, *k*, centrally located upon and secured to the saddle-piece *c*, the timber *m* below and secured to the saddle-pieces *d*, with the blocks *h* between the ends of the timbers *a* and *b*, and provided with an opening, *i*, and the bolts *f* and *g*, passed through the side timbers and the blocks, substantially as and for the purpose set forth.

3. In a boom-stick, the combination, with the side timbers, *a* and *b*, secured in position a short distance from and parallel with each other by the cross-saddles *c* and *d*, bolted thereto, the upper timber, *k*, upon and secured to the saddles *c*, and the timber *m* below and secured to the saddles *d*, of the floats *o*, provided with an air-chamber, *p*, and secured in position between the said saddles *c* and *d*, substantially as and for the purpose set forth.

4. The herein-described boom-stick, consisting, substantially, of the side timbers placed near to and parallel with each other and provided with blocks *h*, secured between their ends, and having a series of cross-saddle pieces bolted to their upper sides, and a second series of cross-saddle pieces bolted to their under sides, a light timber centrally located upon and secured to the said upper saddle-pieces, and a heavy timber centrally located and secured to the under sides of the said lower saddle-pieces, substantially as and for the purpose set forth.

5. A boom-stick consisting, substantially, of the side timbers and the upper and under timbers secured in position in the form of a cross in transverse section and provided with the angular troughs *s* on the lateral sides of the said upper timber and with the angular troughs *t* on the lateral sides of the said lower timber, substantially as set forth.

6. A boom-stick consisting of the side timbers and the upper and lower timbers placed parallel with each other and secured in position in the form of a cross in transverse section, substantially as set forth.

7. A boom-stick consisting of the side timbers and the upper and lower timbers secured in position substantially in the form of a cross in transverse section and having a longitudinal central opening between the said timbers, substantially as set forth.

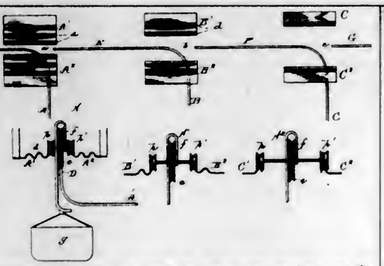
8. The herein-described boom-stick, consisting of the side timbers and the upper and under timbers secured in position in the form of a cross in transverse section and provided with a longitudinal central opening and with lateral side openings, substantially as described.

9. A boom-stick consisting, substantially, of the lateral timbers secured in a position parallel with each other by a series of upper and under cross-saddles, an upper timber parallel with the said lateral timbers and secured to the central portion of the upper cross-saddles, and a lower timber parallel with the said lateral timbers and secured to the said lower saddles and having a longitudinal central opening between the said timbers, and having lateral openings between the said upper and under timbers and the lateral timbers, substantially as described and shown.

381,495. SWITCH FOR STORE-SERVICE APPARATUS. RICHARD M. DYER, East Orange, N. J. Filed June 29, 1887. Serial No. 242,818. (No model.)

Claim.—1. In store-service apparatus, the combination of a way having one or more breaks in its continuity, wheeled carriers travel-

381,495.



ing on such way, and bridge-plates for supporting carriers over the breaks, substantially as set forth.

2. In store-service apparatus, the combination, with a way having one or more breaks in its continuity and wheeled carriers traveling on such way, of bridge-plates at such breaks and extra switching-wheels on the carriers engaging such bridge-plates selectively, substantially as set forth.

3. In store-service apparatus, the combination, with a way having one or more breaks in its continuity and wheeled carriers traveling on such way, of a set of parallel bridge-plates at each break and extra switching-wheels on both sides of the carriers engaging such bridge-plates selectively, substantially as set forth.

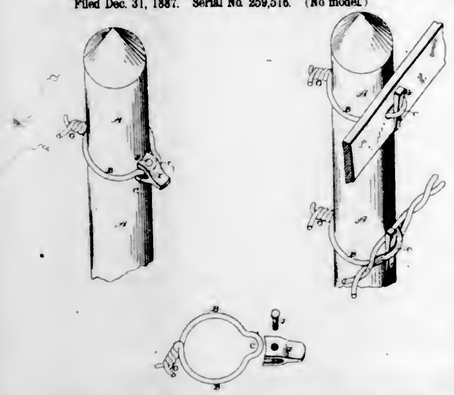
4. In store-service apparatus, the combination, with a way having one or more breaks in its continuity and wheeled carriers traveling on such way, of bridge-plates at such breaks and extra switching-wheels on the carriers engaging such bridge-plates selectively and of smaller diameter than the main wheels of the carriers, substantially as set forth.

5. In store-service apparatus, the combination, with a way having one or more breaks in its continuity and wheeled carriers traveling on such way, of bridge-plates at such breaks and extra switching-wheels on the carriers engaging such bridge-plates selectively and mounted on the same shafts as the main wheels of the carriers, substantially as set forth.

6. In store-service apparatus, the combination, with a way having one or more breaks in its continuity and wheeled carriers traveling on such way, provided with extra switching-wheels located at different distances apart for the different carriers, of a set of parallel bridge-plates at each break, the bridge-plates at the several breaks being separated by spaces of different width, substantially as set forth.

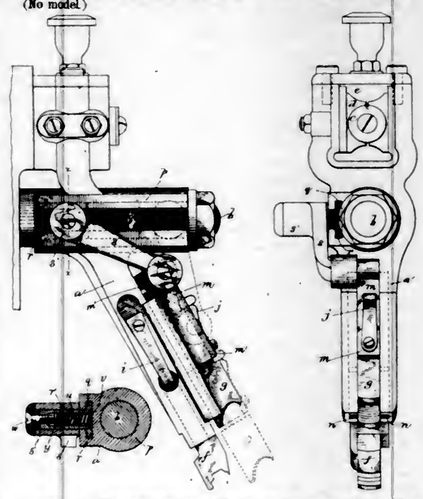
7. In store-service apparatus, the combination, with a way having one or more breaks in its continuity, the ends of the sections approaching the breaks being deflected laterally, of sets of parallel bridge-plates at the breaks having different widths of separation and wheeled carriers provided with extra switching-wheels engaging the bridge-plates and located at different distances apart, so as to act selectively with the bridge-plates, substantially as set forth.

381,496. FENCE. NAHUM W. FRENCH, North Haverhill, N. H. Filed Dec. 31, 1887. Serial No. 259,516. (No model.)



Claim.—The combination, with the fence-post of a clasp made from a single piece of wire having a loop or extension formed upon one side and secured in position upon the post by having its ends twisted together, a panel of the fence, and a wedge-shaped key for fastening the panel in position, substantially as shown.

381,497. SOLE-EDGE-BURNISHING MACHINE. WILLIAM GORDON, Melrose, assignor, by direct and mesne assignments, to Arthur Fuller, trustee, Boston, Mass. Filed Feb. 18, 1888. Serial No. 264,601. (No model.)



Claim.—1. The combination, with the carrier adapted to hold a burnishing-tool, *f*, of the socket *m*, fitted to move in guides on said carrier and adapted to hold a burnishing-tool, *g*, in different positions, as set forth.

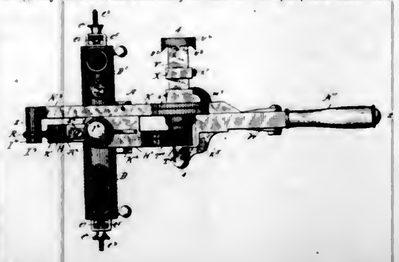
2. The combination of the carrier adapted to hold a burnishing-tool, *f*, a socket, *m*, fitted to slide on said carrier and adapted to hold a burnishing-tool, *g*, a slide, *r*, fitted to slide on said carrier at an angle to the direction in which said socket slides, and a link, *s*, connecting said slide and socket, as set forth.

3. The combination of the carrier adapted to hold a burnishing-tool, *f*, a socket, *m*, fitted to slide on said carrier and adapted to hold a burnishing-tool, *g*, a slide, *r*, fitted to slide on said carrier at an angle to the direction in which said socket slides, a link connecting said slide and socket, and provided with a boss or handle, *s'*, whereby the slide-link and socket may be moved, as set forth.

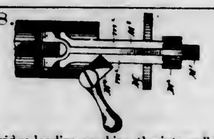
4. The combination of the carrier adapted to hold a burnishing-tool, *f*, a socket, *m*, fitted to slide on said carrier and adapted to hold a burnishing-tool, *g*, a slide, *r*, fitted to slide on said carrier at an angle to the direction in which said socket slides, a link connecting said slide and socket, and a friction device or brake whereby said slide is prevented from moving accidentally, as set forth.

381,498. CARTRIDGE-LOADING MACHINE. GEORGE D. HUNTER, Auburn, Ill., assignor of one-half to Elizabeth Hunter, same place. Filed June 24, 1887. Serial No. 242,396. (No model.)

Claim.—1. In a cartridge-loading machine, the frame or casing having vertically-arranged rammer-guide and shell-holding cylinders, horizontally-arranged cylindrical guide-chambers located on opposite sides of said rammer-guide and shell-holding cylinders, and front and rear brackets or extensions, the said parts of the frame or casing being integrally formed, substantially as and for the purposes described.



381,498.



2. In a cartridge-loading machine, the integrally-formed frame or casing consisting of vertically-arranged rammer-guide and shell-holding cylinders and horizontally-arranged cylindrical guide-chambers located upon opposite sides of said rammer-guide and shell-holding cylinders, in combination with separate measuring-cylinders adapted to be independently reciprocated in said guide-chambers in their axial lines, so as to empty their contents directly into the said shell-holding cylinder, the rammer, and means for reciprocating the same, substantially as described.

3. In a cartridge-loading machine, the integrally-formed frame or casing consisting of the vertical cylinders, the upper one of which guides the rammer and the lower one holds the shell, and horizontal cylindrical guide-chambers crossing the same intermediately and in axial line, in combination with the reciprocating hammer, the independently-movable cylindrical measuring-cylinders supported in said horizontal cylindrical guide-chambers, and ammunition-canisters mounted thereon, substantially as described.

4. In a cartridge-loading machine, the combination, with the frame or casing having guide-chambers and a shell-holding cylinder communicating with each other, of separate movable measuring-cylinders adapted to be moved independently within said guide-chambers in the same axial line, and so as to cross the shell-holding cylinder, substantially as described.

5. In a cartridge-loading machine, the combination, with the frame or casing having integrally-constructed cylindrical guide-chambers formed with slots having notches, of a shell-holding cylinder communicating therewith and independently-movable measuring-cylinders fitted to reciprocate within said guide-chambers, each having a handle adapted to move within the slot and engage with its notch, substantially as described.

6. An ammunition-measuring cylinder for cartridge-loading machines, comprising a cylindrical case formed with inlet and outlet holes and provided with an inclined annular wall and with a fixed and an adjustable head, substantially as described.

7. An ammunition-measuring cylinder for cartridge-loading machines, comprising a longitudinally-slotted cylindrical case having inlet and outlet holes, an inclined annular wall, a fixed head, and a movable head adapted to fit and slide therein, and an adjusting screw-rod having an index-pin thereon projecting through the slot in said cylinder, said screw being connected with the movable head for adjusting the same, substantially as described.

8. In a cartridge-loading machine, the combination, with the casing having integrally-formed open-ended guide-chambers and a shell-holding cylinder communicating with the latter, of movable ammunition-measuring cylinders, each being fitted with an inclined annular wall and a fixed and an adjustable head and adapted to be removed from and inserted through the ends of said guide-chambers, substantially as described.

9. In a cartridge-loading machine, the combination, with the measuring-cylinder having the inclined annular wall and the fixed head and the yoke, of the sliding head, and the screw shaft or rod passing through the yoke, the fixed head, and inclined annular wall and yoke, and provided with the set-nuts for adjusting the sliding head, substantially as described.

10. In a cartridge-loading machine, the combination, with the slotted guide-chamber provided with graduations near the slot, of the measuring-cylinder arranged within said guide-chamber and provided with a fixed head and a movable head, and a screw-rod having an indexed pin for registering with said gradnations on the guide-chamber, substantially as described.

11. In a cartridge-loading machine, the combination, with a casing having two vertically-arranged and two horizontally-arranged chambers or cylinders formed integrally and intersecting intermediately of their axial lines and having at said point of intersection a wad-opening, of separately-movable measuring-cylinders fitted in the horizontal chambers, a rammer fitted to work in the upper chamber, and means for holding the shell in the lower chamber, substantially as described.

12. In a cartridge-loading machine, the combination, with the casing having a shell-holding cylinder, of a swinging arm pivoted to the casing and projecting beneath said shell-holding cylinder, a rest-plate, M, notched to engage with the upright portion of said arm, and a set-screw beneath the same for adjusting it, substantially as described.

13. In a cartridge-loading machine, the combination of the casing having the shell-holding cylinder, the swinging arm pivoted to the casing and projecting beneath said shell-holding cylinder, the adjusting-screw, and the rest-plate loosely mounted thereon, notched to engage with the flanges on said swinging arm and having one portion thicker or heavier than the other, substantially as described.

14. The combination, in a cartridge-loading machine, of the casing having a shell-holding cylinder, the swinging arm pivoted to the casing and carrying a rest-plate adapted to drop beneath said shell-holding cylinder, and a latch pivoted to the casing for holding said arm and rest-plate in position, substantially as described.

15. In a cartridge-loading machine, the combination, with a casing having a shell-holding cylinder, of removable cylindrical bushings for receiving shells of various sizes, provided with shoulders upon their inner surfaces, near their upper ends, and fitted within said shell-holding cylinder, and secured by a set-screw abutting against said bushings, substantially as described.

16. In a cartridge-loading machine, the combination, with the casing having a shell-holding cylinder provided with a hole in its lower end for admitting a screw-driver, of a rammer having a centrally-apertured bushing secured in its lower end, a removable marking-die having its shank fitted in said aperture, and a screw passed through the hole in the lower end of said shell-holding cylinder and into the lower end of said rammer for binding or releasing the shank of said die, substantially as described.

17. In a cartridge-loading machine, the combination, with the casing having a shell-holding cylinder, of a reciprocating rammer adapted to move therein, the cord attached at one end to said rammer, the grooved pulleys attached to the casing and having the cord passed beneath them, and the operating-lever having said cord attached at its rear end and a hollow screw-capped handle at its opposite end, substantially as and for the purpose described.

18. In a cartridge-loading machine, the casing having a horizontally-arranged cylindrical guide-chamber provided with a chute leading to the shot-canister and formed with an enlarged pocket above the discharge-opening of said chute for relieving the shot of pressure, in combination with the horizontal shot-measuring cylinder fitted and movable within said guide-chamber, substantially as described.

19. In a cartridge-loading machine, the combination, with the casing having the guide and shell holding cylinders formed integrally therewith and the independently-movable measuring-cylinders, of a reciprocating rammer, and a lever pivoted to the casing and connected by a cord and pulleys to said rammer, substantially as described.

20. In a cartridge-loading machine, the combination, with the casing having a shell-holding and a rammer-guide cylinder, of the rammer adapted to move vertically in said rammer-guide cylinder, a spring inclosed in said rammer, an operating-lever, and a cord connected to said lever and passing up into said rammer, to which it is fastened, substantially as described.

21. In a cartridge-loading machine, the combination of a casing having a shell-holding cylinder with a rammer provided with a rubber block in its upper end, a cord attached at one end to said rubber block, and an operating-lever to which the other end of said cord is attached, said rubber block acting to relieve the cord of any strain brought upon it by a sudden blow of the rammer, substantially as described.

22. In a cartridge-loading machine, the combination, with the casing, of a vibratory lever, a revolving crimper supported upon said lever, gearing connected thereto and engaging a rack on the frame, and thereby revolving said crimper by the movement of the lever, and a movable cartridge-carrier mounted upon said lever for feeding the cartridge to the crimper, substantially as described.

23. In a cartridge-loading machine, the combination, with the casing, of a vibratory lever, a revolving crimper thereon, gearing engaging a rack on the frame and revolving said crimper by the movement of said lever, a cartridge-carrier fitted to slide upon said lever, a grip-lever, and a cord connected with the carrier for actuating it, substantially as described.

24. In a cartridge-loading machine, the combination, with the casing, of the lever pivoted thereto, a crimper carried thereby and rotated by gearing operated by the movement of said lever through the engagement of such gearing with a rack on the frame, a carrier fitted in guides upon the lever, a grip-lever, a pulley, and a cord connecting said grip-lever with the carrier, substantially as described.

25. In a cartridge-loading machine, the combination, with the casing A, of the vibratory lever K, the rotary crimper T, the shaft T', the pinion T^3, the rack T^4, the carrier V, fitted to slide in guides upon said lever, and a gage-block, X, adjustably secured upon said carrier to adapt it for shells of different lengths, substantially as described.

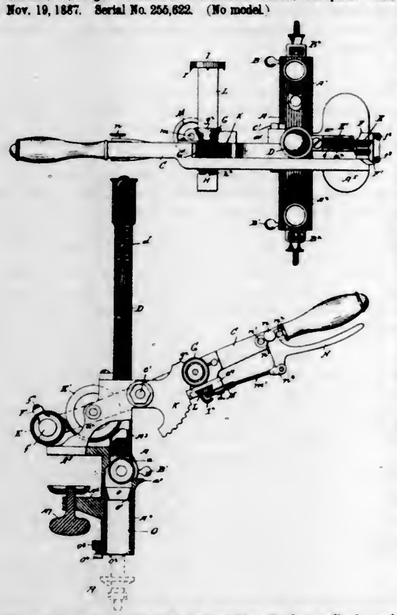
26. In a cartridge-loading machine, the casing A, the rack T^4, and the vibratory lever K, attached to said casing, said vibratory lever having operatively arranged upon it and combined with it the rotary crimper T, having a conical recess leading to the crimper devices, the shaft T', the pinion T^3, the carrier V, and also the grip-lever W and the cord w^3, the latter being attached to said carrier and grip-lever for moving the cartridge within said conical recess and into proper alignment and contact with said crimper, substantially as described.

27. In a cartridge-loading machine, the combination, with the casing, of a vibratory lever, a crimper, a supporting-shaft therefor having bearings upon said lever, the cartridge-carrier, and a conical pin supported upon the lever to receive the thrust of the crimper, substantially as described.

28. In a cartridge-loading machine, the combination, with the shell-holding cylinder G, of the rammer I, the cord R, the pulleys R' R², the vibratory lever K, for operating said rammer, the crimper T, the toothed segment plate or rack T¹, and the pinion T², substantially as described.

29. In a cartridge-loading machine, the combination of the casing, the vibratory lever pivoted thereto, the rotary crimper and its gear-pinion and bearings arranged upon said vibratory lever, and a stationary segment gear or rack attached to said casing for engaging and rotating the pinion and crimper, substantially as described.

381,499. CARTRIDGE-LOADING MACHINE. GEORGE D. HUNTER, Auburn, Ill., assignor of one-half to Elizabeth Hunter, same place. Filed Nov. 19, 1887. Serial No. 255,622. (No model.)



Claim.—1. In a cartridge-loading machine, the integrally-formed frame or casing consisting of the vertically-arranged rammer-guide and shell-holding cylinders, the horizontally-arranged cylindrical guide-chambers radiating from coincident centers, and broad clamping-jaws projecting from said central point in the same plane with and in rear of said guide-chambers, in combination with the clamping-screw, the rammer, the cord, hand-lever, and measuring-cylinders, substantially as described, for the purpose specified.

2. In a cartridge-loading machine, the integrally-formed frame or casing consisting of vertically-arranged rammer-guide and shell-holding cylinders, the latter having a wad-opening at its upper end, and horizontally-arranged cylindrical guide-chambers located upon opposite sides of said rammer-guide and shell-holding cylinders and in advance of the axial line of the same, so as to properly expose said wad-opening, and also close its top, bottom, and sides at intervals, in combination with the measuring-cylinders, the rammer, the cord, and the hand-lever, substantially as described.

3. In a cartridge-loading machine, a casing comprising horizontal guide-chambers and vertical rammer-guide and shell-holding cylinders, the shell-holding cylinder being formed with a wad-opening at its upper end, and with a stationary bracket or shelf arranged beneath said opening for receiving and supporting wads while loading and for preventing them from dropping, substantially as described.

4. In a cartridge-loading machine, the casing having a shell-holding cylinder, in combination with a hand-lever pivoted to the casing, a spring-actuated rammer supported within the casing, and a cord secured to the rammer, and also to a detachable cord-holding sleeve secured to the rear end of said hand-lever, substantially as described.

5. In a cartridge-loading machine, the combination, with the casing having a shell-holding cylinder, of the spring-actuated rammer, the hand-lever, the cord secured to the said rammer, and the cord-holding sleeve fitted upon said hand-lever and having spiral grooves to receive the said cord and a clamping-plate for securing it therein, substantially as described.

6. In a cartridge-loading machine, the casing having a shell-holding cylinder, in combination with the spring-actuated rammer supported upon said casing, a hand-lever pivoted to the casing, a cord secured to the rammer, and a cord-holding sleeve having a polygonal opening fitted upon a correspondingly-shaped pin projecting from said hand-lever for securing and adjusting the cord thereon, substantially as described.

7. In a cartridge-loading machine, the casing having a shell-holding cylinder, in combination with the spring-actuated rammer supported upon said casing, a cord secured to the rammer, a hand-lever pivoted to the casing and having a laterally-projecting pin, a cord-holding sleeve fitted upon said pin, and a screw for securing the said sleeve thereon, substantially as described.

8. In a cartridge-loading machine, the casing having shell-holding and rammer-guide-cylinders, in combination with the spring-actuated rammer inclosed within said guide-cylinder, a single-grooved pulley supported upon the casing with its periphery tangential to the central axis of said guide-cylinder, a hand-lever pivoted to the casing, and a cord connecting the rammer with the hand-lever at a point above the lower portion of said pulley, substantially as and for the purpose described.

9. In a cartridge-loading machine, the combination, with the casing, of a vibratory hand-lever, a revolving crimping-wheel pivoted upon said lever, and having a gear-pinion formed integrally therewith, and having a central recess formed axially therein, and a stud or pivot bolt supported upon said lever, and having a conical end fitted within the axial recess of said crimping-wheel, substantially as and for the purpose described.

10. In a cartridge-loading machine, a casing comprising horizontal guide-chambers, vertical rammer-guide and shell-holding cylinders, and a segment-gear, in combination with a hand-lever pivoted to the front of said casing, and the combined crimping-wheel and gear-pinion pivoted to said hand-lever, said crimping-wheel being formed with a flaring or bell-shaped mouth, substantially as and for the purpose described.

11. In a cartridge-loading machine, the combination, with the casing, of the vibratory hand-lever C, the revolving crimping-wheel G, having an axial recess, *g*, the stud or pivot bolt H, fitted within said recess, the stud-rest I, and the screw-bolt I', substantially as and for the purpose described.

12. In a cartridge-loading machine, the combination, with the casing, of the vibratory hand-lever, the rotary crimping-wheel supported upon said lever, a movable cartridge-carrier mounted upon said hand-lever, a grip-lever adjustable upon said hand-lever, and a cord connecting the same with said cartridge-carrier, substantially as and for the purpose described.

13. The combination of the stationary segment-gear, the vibrating hand-lever pivoted thereto, and the rotary crimping-wheel supported upon said hand-lever, with a movable cartridge-carrier mounted upon said hand-lever, a grip-lever provided with a pivoted projection upon its lower extension, and a cord passing around a sheave-pulley and connecting said pivoted projections with said cartridge-carrier, substantially as described.

14. The combination of the stationary segment-gear, the vibratory hand-lever pivoted thereto, and the rotary crimping-wheel supported upon said hand-lever, with a movable cartridge-carrier mounted upon said hand-lever, an adjustable grip-lever provided with a pivoted projection upon its lower extension, and a wire cord passing around a sheave-pulley and connecting said pivoted projection with said cartridge-carrier, substantially as described.

15. In a cartridge-loading machine, the combination, with the casing, of the vibratory hand-lever, a rotary crimper supported upon said lever, a movable cartridge-carrier fitted in guides upon said hand-lever, and having a grooved or channeled rib extending beneath the same, a cord fitted and guided within said grooved rib, a grooved horizontally-arranged pulley, and a grip-lever, substantially as and for the purpose described.

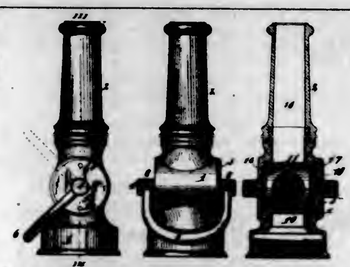
16. In a cartridge-loading machine, the casing having a shell-holding cylinder, A⁴, provided with a lug, *o*², and a cylindrical bushing, O, having a flanged lower end, *o*³, and fitted within said shell-holding cylinder, and a clamping-screw fitted into said lug and against said flange, so as to press upwardly against the flange of said bushing, in combination with the rammer and mechanism for operating the same, substantially as described.

381,500. HOSE-NOZZLE. MARCELLUS O. KUPFERLE, St. Louis, Mo. Filed June 11, 1887. Serial No. 241,010. (No model.)

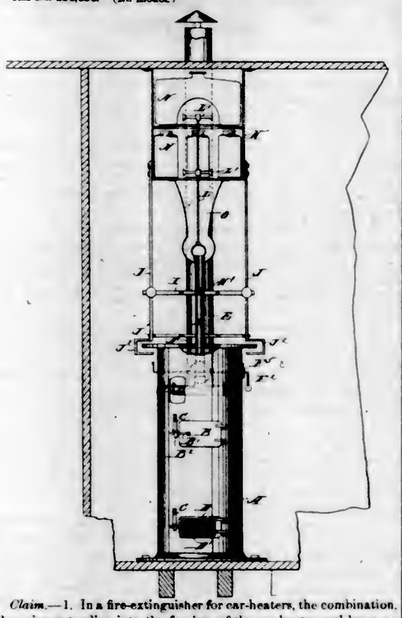
Claim.—1. In a hose-nozzle, in combination with the body 10, the plug 3, seated therein, having the way or opening 9, spindles 4, and shoulder 19, cap 5, having shoulder 18, and handle 6, the whole being so constructed and combined that the handle will retain the plug from making a complete revolution, and the plug will in turn retain the cap.

2. In a hose-nozzle, the combination of body 10, plug 3, seated therein, having way or opening 9, spindles 4, and shoulder 9, cap 5, having shoulder 18, and U-shaped handle 6, adapted to operate in connection with said shouldered plug and cap, substantially as set forth.

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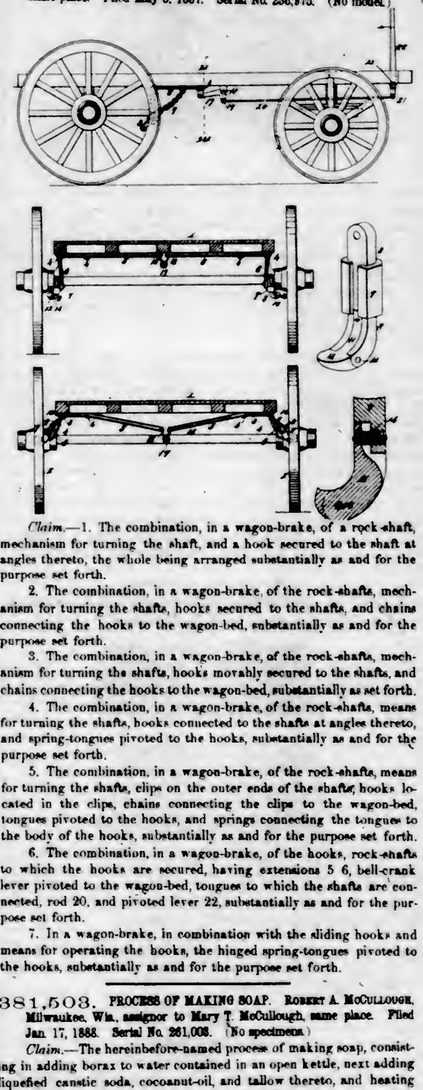
381,501. AUTOMATIC FIRE-EXTINGUISHER FOR CAR-HEATERS. LOUIS A. LYON, Shorter's Depot, Ala. Filed May 2, 1887. Serial No. 236,858. (No model.)



Claim.—1. In a fire-extinguisher for car-heaters, the combination, with a pipe extending into the fire-box of the car-heater and hung on a universal joint, of a rod secured to the upper end of said pipe, hammers secured to said rod, a funnel extending upward and secured to the upper end of said pipe, glass vessels containing a fire-extinguishing fluid and placed in such a relative position to said hammers that the vessels are broken by said hammers, the fluid running into said funnel and into said pipe, thus passing to the fire-box of the car-heater, substantially as shown and described.

2. In a fire-extinguisher for car-heaters, a casing secured to the roof of the car, and glass vessels held in said casing and containing a fire-extinguishing fluid, in combination with a pipe extending into the fire-box of the car-heater located below said casing, a universal joint in which said pipe is hung, the universal joint being supported from said casing, a rod secured to the upper end of said pipe, hammers formed on said rod and adapted to break said vessels, and a funnel secured to the upper end of said pipe and extending upward to the bottom of said casing, so that the fire-extinguishing fluid flows, after the vessels are broken, into the said funnel and then through the pipe to the car-heater, substantially as shown and described.

381,502. WAGON-BRAKE. JOHN W. MARTIN, St. Louis, Mo., assignor, by direct and mesne assignments, of one-third to Asa S. Mason, same place. Filed May 3, 1887. Serial No. 236,975. (No model.)



Claim.—1. The combination, in a wagon-brake, of a rock-shaft, mechanism for turning the shaft, and a hook secured to the shaft at angles thereto, the whole being arranged substantially as and for the purpose set forth.

2. The combination, in a wagon-brake, of the rock-shafts, mechanism for turning the shafts, hooks secured to the shafts, and chains connecting the hooks to the wagon-bed, substantially as and for the purpose set forth.

3. The combination, in a wagon-brake, of the rock-shafts, mechanism for turning the shafts, hooks movably secured to the shafts, and chains connecting the hooks to the wagon-bed, substantially as set forth.

4. The combination, in a wagon-brake, of the rock-shafts, means for turning the shafts, hooks connected to the shafts at angles thereto, and spring-tongues pivoted to the hooks, substantially as and for the purpose set forth.

5. The combination, in a wagon-brake, of the rock-shafts, means for turning the shafts, clips on the outer ends of the shafts, hooks located in the clips, chains connecting the clips to the wagon-bed, tongues pivoted to the hooks, and springs connecting the tongues to the body of the hooks, substantially as and for the purpose set forth.

6. The combination, in a wagon-brake, of the hooks, rock-shafts to which the hooks are secured, having extensions 5 6, bell-crank lever pivoted to the wagon-bed, tongues to which the shafts are connected, rod 20, and pivoted lever 22, substantially as and for the purpose set forth.

7. In a wagon-brake, in combination with the sliding hooks and means for operating the hooks, the hinged spring-tongues pivoted to the hooks, substantially as and for the purpose set forth.

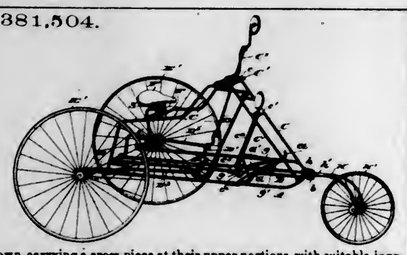
381,503. PROCESS OF MAKING SOAP. ROBERT A. MCCULLOUGH, Milwaukee, Wis., assignor to Mary T. McCullough, same place. Filed Jan. 17, 1888. Serial No. 261,008. (No specimens.)

Claim.—The hereinbefore-named process of making soap, consisting in adding borax to water contained in an open kettle, next adding liquefied caustic soda, cocoanut-oil, and tallow thereto, and heating the same to a point from about 190° to 240° Fahrenheit, and rapidly agitating the mass until it becomes homogeneous, next melting a similar quantity of cocoanut-oil and tallow and running it into an open tank and adding to it about the same quantity of liquefied caustic soda as before, and thoroughly mixing this mass, and then mixing the two described masses together with a mixture of silicate of soda and dissolved starch, and letting the whole remain for from half an hour to an hour in the tank, with occasional agitation until the whole mass is thoroughly saponified.

381,504. TRICYCLE. RICHARD MULLINS, Newark, Ind. Filed Dec. 2, 1887. Serial No. 256,822. (No model.)

Claim.—1. The combination of the skeleton frame A, the central reach-bars B, the forwardly-inclined braces C, bent in the shape as

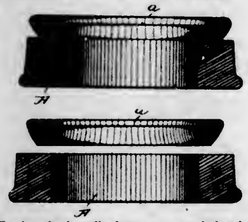
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shown, carrying a cross-piece at their upper portions, with suitable journal-boxes thereon for the reception of the crank-operating handle, in connection with the crank-shaft of the road-wheels, as set forth, and with a saddle mounted in their rear portion above the mechanism of the machine, a steering mechanism, as set forth, having a rear central guide-piece, G', moving upon a clip, c^4, uniting the parts of the frame A, a bifurcated steering-fork fulcrumed in the front end of the frame A and carrying a steering-wheel, H', and the braced steering-bar G, connected to the steering-fork H and to the guide G', substantially as described.

2. The combination, with the main frame A, having the upwardly-extending braces C, provided with the cross-piece c', of the lower cross-piece or clip, c^3, on the reaches B, the uniting brace c^2, the cross-piece C', carrying journal-boxes c, the crank-handles C^3, mounted in said journal-boxes c, the saddle F, mounted upon the cross-strip on the rear bent portion of the braces C, the connecting-rods D, the crank-shaft D', passing through a journal-box, D^2, on the reaches B, the connecting-rod D^3, the rear main crank-shaft, E, the road-wheels E', the ratchet mechanism mounted relatively between said main crank-shaft and the road-wheels, the front clip, c^4, the foot-piece G, having braces g, the steering-fork H, fulcrumed in the forward part of the main frame A, and carrying a steering-wheel, H', as shown, to the rear central guide or center piece, G', moving on the clip c^4, substantially as described.

381,505. ART OF MAKING TIRES. JAMES MUPTON, Maywood, Ill. Filed Feb. 1, 1887. Serial No. 226,116. (No model.)



Claim.—The herein-described process, consisting in, first, casting a bloom with a central opening; second, cutting off the top portion of the annular bloom, and subsequently rolling the bloom into a tire, whereby tires of determinate weights and sizes may be produced with but little, if any, turning, substantially as specified.

381,506. PAPER-REEL FOR SHORT-HAND MACHINES. CHARLES S. OLCOTT and JOSEPH P. ELLACOTT, Chicago, Ill. Filed Jan. 10, 1887. Serial No. 223,851. (No model.)



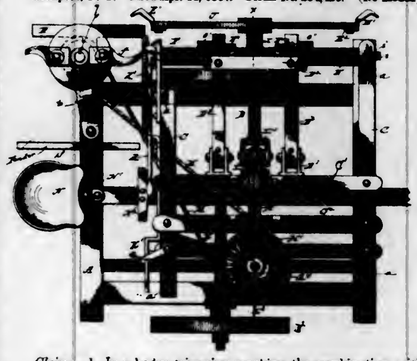
Claim.—1. In a short-hand type-writer machine, the combination of a supporting-frame with a rotating shaft thereon and a pivoted arm, a receiving-reel journaled thereon, pulleys—one on the shaft and one on the reel—and an elastic belt over the pulleys, so that by the rotation of the shaft of the machine the reel is rotated and the printed paper is wound thereon.

2. In a short-hand type-writer machine, the combination of the body of the machine and its rotating shaft with a pivoted arm, a reel journaled on such arm, said reel consisting of a bar with pins at right angles thereto and one at each end, a pulley secured on the reel, a pulley secured on the shaft of the type-writer frame, and an elastic belt passing from pulley to pulley, so that the reel may occupy different positions about the pivotal point of its supporting-arm and in all positions will be driven from the mechanism of the machine by the elastic belt.

381,507. GUNPOWDER. CHAUNCEY J. OLDS, Valley Falls, assignor to the Schaghticoke Powder Company, Schaghticoke, and the Laflin & Rand Powder Company, New York, N. Y. Filed May 24, 1887. Serial No. 239,219. (Specimens.)

Claim.—An explosive compound consisting of carbonized peas combined with saltpeter, sulphur, and charcoal made from willow or other trees, substantially as described.

381,508. HEDGE-TRIMMING MACHINE. REUBEN W. OLIVER, Lockport, N. Y. Filed Apr. 11, 1887. Serial No. 234,429. (No model.)



Claim.—1. In a hedge-trimming machine, the combination, with a suitable frame, a jointed shaft journaled therein, and a cutter-head affixed to the shaft, of a rocking cam-shaft located transversely beneath the jointed shaft, and means for rocking said shaft, substantially as set forth.

2. In a hedge-trimming machine, the combination, with a jointed shaft and a cutter-head secured thereon, of a rocking shaft transversely located beneath the jointed shaft, said rocking shaft having cams thereon, and means for rocking and locking the shaft in the desired position, substantially as set forth.

3. The combination, with a rotary jointed shaft and a cutter-head rigidly secured thereon, said head having a set of detachable cutters, of a hinged frame adapted to support the jointed shaft, and a cam-shaft transversely located beneath one end of the hinged frame for elevating or depressing the latter by its rotation, substantially as set forth.

4. In a hedge-trimming machine, the combination, with a rotary cutter-head having detachable cutters, a jointed shaft, a cam-shaft, and cams, of a hinged frame, hinges in line with the joint of the drive-shaft, a coupler that affords universal movement to the connected sections of the jointed shaft, a lever fixed to the cam-shaft, and a ratchet-bar to secure the cams in elevated or depressed position, substantially as set forth.

5. The combination, with a rotary jointed shaft, a cutter-head secured thereto and having cutters attached, and a cam-shaft located transversely beneath one end of the jointed shaft and having cams thereon, of a drive-shaft, a drive-wheel, and gearing to connect the drive-shaft to the drive-wheel, substantially as set forth.

6. In a hedge-trimming machine, the combination, with a rotary cutter-head secured on a jointed shaft, a hinged frame adapted to support the shaft, a cam-shaft and cams, a drive-shaft, and gearing to communicate motion from the driving-wheel to the cutter-head, of a bevel-gear shaft, a lever pivoted to the frame and affording a support in which the lower end of the bevel-gear shaft is stepped, and a hand-lever loosely connected to the pivoted lever, whereby the latter is laterally shifted, substantially as set forth.

7. In a hedge-trimming machine, the combination, with a rotary cutter-head adapted to trim the sloped sides of a hedge, of a gage-board located to the rear of the main cutter-head and adapted to align with the latter in its various adjustments, and a device for securing said gage-board in the desired position, substantially as set forth.

381,509. VEHICLE-WHEEL. STEPHEN PUFFER, Oxford, N. Y. Filed Dec. 6, 1887. Serial No. 257,106. (No model.)



Claim.—The combination of externally-screw-threaded hub, the screw-threaded plates D applied to its ends, the perforated disks through which the inner ends of the spokes pass, the clamping-plates I, the nuts J, the spokes, and the felly, substantially as shown and described.

381,510. PORTABLE TRESTLE. JOHN G. ROSE, West Willow, Pa. Filed Jan. 24, 1887. Serial No. 225,413. (No model.)

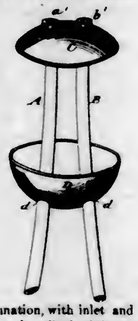


Claim.—1. The combination, in a trestle, with the beam to be supported, of pairs of plates having upright portions which bear against said beam and lower portions spreading outward and having channels formed on their exterior faces to receive the legs, arms extending inward from said upright portions and each provided with a series of perforations, and a rod for engaging the corresponding perforations in each pair of arms, substantially as and for the purpose specified.

2. The combination, in a trestle, with the beam, of plates pivoted together in pairs below said beam by arms each having a series of perforations, and a rod for engaging said perforations, the plates extending upward to embrace said beam, and legs removably connected with the lower part of the plates, for the purpose specified.

3. The combination, in a trestle, with the beam, of pairs of plates composed of upright portions bearing against said beam, lower portions spreading outward and having channels formed on their exterior faces to receive the legs, arms extending inward from said upright portions and pivoted together, and detachable connections between the tops of said plates, substantially as and for the purpose specified.

381,511. SYRINGE. WILLARD STREETMAN, Ad Hall, Tex. Filed Dec. 3, 1887. Serial No. 256,902. (No model.)

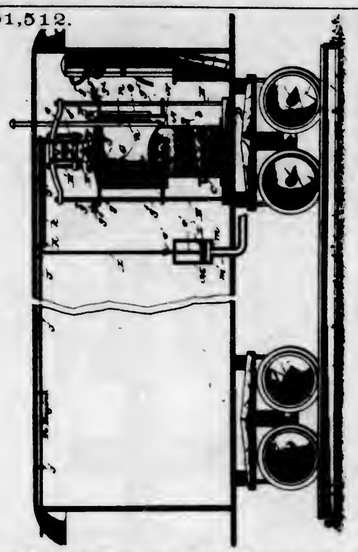


Claim.—The combination, with inlet and outlet tubes A B, provided with end fittings, as described, of the two concavo-convex disks C D, arranged on the tubes with their concavities opposite to each other, the disk C being made of soft rubber and adapted to be inserted within the vagina and the disk D adapted to be pressed against the vulva during the operation of syringing, as described.

381,512. CAR-HEATER. FRANK TROWBRIDGE, Fond du Lac, Wis., assignor to Howard T. Sackett, same place. Filed Mar. 31, 1887. Serial No. 233,194. (No model.)

Claim.—1. A car-heater having a swinging grate provided with

381,512.



a crank-arm, in combination with a vertically-movable cover adapted to strike the crank-arm when it descends, to thereby turn the grate, as and for the purpose described.

2. A car-heater having the swinging grate and ash-pan arranged one below the other, and each having a crank-arm, in combination with a vertically-movable cover adapted to completely inclose the heater, and having the independent operating lugs or shoulders arranged in the paths of the crank-arms to strike the latter during the descent of the cover, as and for the purpose described.

3. The combination, with a heater and a vertically-movable cover adapted to inclose the heater, of a swinging grate supported in the heater and a swinging ash-pan, also supported in the heater on a plane below the grate, said grate and ash-pan each having a crank-arm arranged in the path of the cover, to be struck by the latter when it descends, as and for the purpose described.

4. The combination, with a car-heater, of a vertically-movable cover adapted to completely inclose the heater, fixed guide-rods arranged exteriorly to the heater and cover, arms fixed to the cover and fitted over the guide-rods, and automatic catches carried by the cover and adapted to engage the guide-rods to lock the cover to the latter, as and for the purpose described.

5. In a car-heater, the combination of the fixed guide-rods, the vertically-movable cover having the guide-arms fitted over the rods and fixed to the cover, and the spring-controlled locking-pins carried by the guide-arms, substantially as described.

6. In a car-heater, the combination of the vertical guide-rods, a vertically-movable cover connected to said rods, to be guided thereby, a pair of jaws supported by the rods above the position occupied by the cover when elevated, and spring-catches carried by the cover, which are automatically locked to the guide-rods when the cover is lowered to inclose the heater, as and for the purpose described.

7. In a car-heater, the combination, with a vertically-movable cover having inwardly-projecting lugs or shoulders at different elevations, of a swinging grate provided with a crank-arm arranged in the path of one of the lugs, a swinging ash-pan arranged below the grate and likewise having a crank-arm disposed in the path of the other lug, and a fixed tank arranged below the ash-pan and grate, to receive the contents of the same when they are turned, as and for the purpose described.

8. In a car-heater, the combination of a vertically-movable cover, a pulley supported in a fixed bracket above the cover, the smoke-pipe fitted in a socket in the heater, and a cord passing over the pulley and connected at its ends to the cover and smoke-pipe, substantially as described, for the purpose set forth.

381,513. SAFETY-PIN. FRANK M. TWITCHELL, Naugatuck, Conn., assignor to H. Twitchell & Son, same place. Filed Jan. 16, 1888. Serial No. 260,867. (No model.)

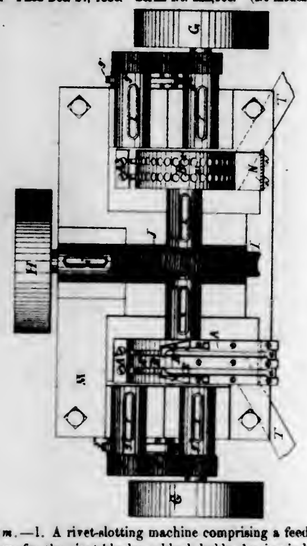
Claim.—In a safety-pin made of wire, a cup-shaped guard secured to the guard end of the wire, with an open slot on each side into the guard, the slot on one side being out of line with the slot on the op-

381,513.



posite side, and so that each side substantially covers the slot in the opposite side, substantially as described.

381,514. **MACHINE FOR SLOTTING RIVET-SHANKS.** JACOB J. UEBELHOER, Syracuse, N. Y., assignor to Judson L. Thomson & Co., same place. Filed Dec. 27, 1886. Serial No. 222,866. (No model.)



Claim.—1. A rivet-slotting machine comprising a feeding-gage having ways for the rivet-blanks, a blank-holder having indentations or recesses in its periphery to hold the heads of the rivet-blanks, a curvilinear slotted guide underneath the blank-holder and coincident therewith to hold the stem of the rivet against lateral displacement while being operated on by the cutters, and cutters projecting into the slot of the guide, substantially as and for the purpose set forth.

2. The combination of the automatic successive feeding-gage with the rotating blank-holder having circular indentations in its periphery to receive the heads of the blanks, a curvilinear slotted guide to hold the stem of the rivet against lateral displacement during the cutting operation, cutters for milling out the shank of the rivets, and supplemental cutters for finishing and pointing the rivets simultaneously, substantially as and for the purpose set forth.

3. The combination of the rotating blank-holder having circular indentations to receive and carry the blanks, a slotted curvilinear guide to hold the rivet-shank against lateral displacement during the cutting operation, and a cutting device having three cutting-surfaces arranged side by side, the middle cutting-surface extending below the side cutting-surfaces, whereby a rivet is slotted and its clinching-points are cut to a chisel-shaped point simultaneously in the one operation, substantially as and for the purpose set forth.

4. The combination of the rotating blank-holder having circular indentations to receive and carry the blanks, a slotted curvilinear guide to hold the rivet-shank against lateral displacement during the cutting operation, and two sets of reversely-rotating cutters, each composed of three cutters arranged side by side upon an arbor, with the central cutter longer than the side cutters and shaped to slot the rivet while the side cutters shape the outer sides of the clinching-prongs to a chisel-point simultaneously and in the one operation, substantially as and for the purpose set forth.

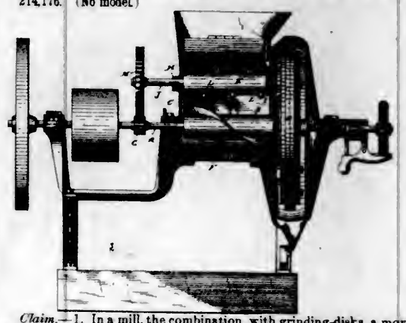
5. The combination of the rotating blank holder or carrier B, having series of circular indentations or recesses *a'* in its periphery, and a curvilinear guide, D, located underneath the blank-holder and coincident therewith and having a slot, *d*, for each row of indentations *a'* in the blank-holder B, and cutters C C', located centrally in the slot *d*, substantially as and for the purpose set forth.

6. The combination of the rotating blank-holder B with the trough T and the stripping device F', having an opening for the rivets to drop through into the trough T, substantially as and for the purpose set forth.

7. The cutter C, consisting of the saws *c c c'*, mounted on a common arbor, the side saws, *c c*, being shaped to cut a chisel-point on the clinching-prongs of the rivets S and the central saw shaped to bifurcate the rivet, substantially as and for the purpose set forth.

8. The combination of the main frame M, having vertical extensions *m m*, U-shaped bearing O for the worm J, and side extensions, *n n*, to support the stripping device F' and the trough T, substantially as and for the purpose set forth.

381,515. **CRUSHING AND GRINDING MILL.** JAMES F. WINCHELL, Springfield, Ohio. Original application filed Nov. 16, 1885, Serial No. 182,953. Divided and this application filed Sept. 21, 1886. Serial No. 214,176. (No model.)



Claim.—1. In a mill, the combination, with grinding-disks, a moving conveyer having also the capacity of crushing, and a chamber in which said conveyer operates, of a crusher mounted between the supply of the material and the said conveyer and geared to rotate at a less speed than the conveyer.

2. In a mill, the combination, with the main shaft, the grinding-disks mounted thereon, a moving conveyer having also the capacity of crushing and mounted upon the said main shaft, and a chamber in which said conveyer operates, of the crusher mounted above the conveyer and having protuberances and geared with the said main or conveyer shaft and rotating at less speed than the same.

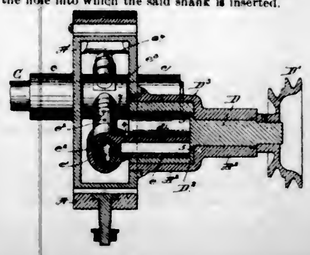
3. In a mill, the combination, with a moving conveyer having also the capacity of crushing and a chamber in which the conveyer operates, of a rotating crusher having protuberances and mounted above the conveyer geared thereto and rotating at a lower speed than the same.

4. In a mill, the combination, with the grinding-disks, a moving conveyer having also the capacity of crushing, and a chamber in which the conveyer operates, of a shaft mounted between the supply of the material and the said conveyer and having projections, and means to actuate the said shaft.

5. In a mill, the combination, with the grinding-disks and a moving conveying-crusher operating, substantially as described, to crush as well as convey, and a chamber in which the conveying-crusher operates, of the upper portion of the mill and a shaft mounted therein and between the supply of the material and said conveying-crusher, and having projections operating, substantially as described, to agitate the material, and means to actuate the said shaft.

381,516. **MECHANISM FOR OPERATING DOFFER-COMBS OF CARDING-MACHINES.** ELIJAH WRIGHT, North Andover, Mass., assignor to the Davis & Furber Machine Company, same place. Filed Jan. 3, 1887. Serial No. 223,217. (No model.)

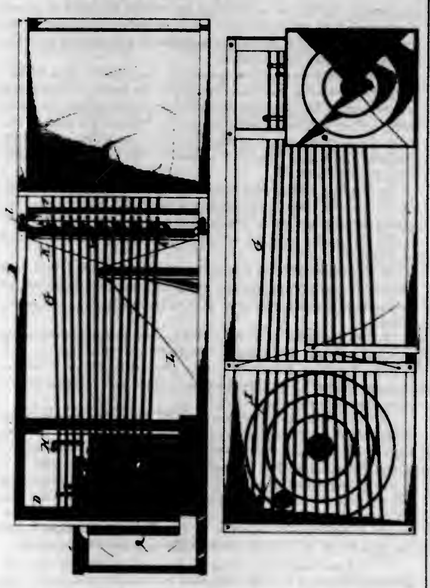
Brief.—The driving-shaft has its inner end enlarged and provided with two or more holes at different distances from its center. Said holes are for the reception of a shank having a sleeve which receives the end of an arm forming part of a hub attached to the comb-shaft. The amount of motion communicated to the comb will thus depend upon the hole into which the said shank is inserted.



Claim.—1. The comb-shaft, the attached hub having an arm, c^4, and the rotating shaft D, combined with the shank *c*, loosely connected eccentrically to the head of the shaft D, the said shank having at its outer end the hollow sleeve *c'*, the said sleeve receiving the arm c^4, and the said arm c^4 rocking the comb-shaft and holding the shank *c* in the head of the shaft D, substantially as described.

2. The comb-shaft, the attached hub having an arm, c^4, and the rotating shaft D, having the enlarged head provided with two or more holes located at different distances from the center of rotation of the said head, in combination with the sleeve having the shank *c*, substantially as described.

381,517. **SELF-REGISTERING TARGET.** WALTER K. WRIGHT and WILLIAM H. BROWN, Fort Concho, Tex. Filed Dec. 31, 1887. Serial No. 259,518. (No model.)



Claim.—1. The combination, with the case A, of the target-sections movable longitudinally therein, each independent of the other, and provided with an elongated slot, *c*, and the pins *b*, passed through said case and the slots in the sections and detachably holding them together, as set forth.

2. The combination, with the indicator, the target composed of movable sections, and the rods G, carrying the disks and actuated by engagement with the push-bar of said sections, of a notched bar arranged at right angles to the length of said rods, and the pawls *g* on said rods engaging the notches of the bar, substantially as and for the purpose specified.

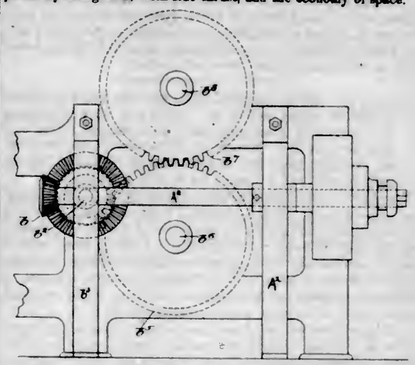
3. The combination, with the target made in sections movable longitudinally, of the indicator arranged at a distance from said target on the same horizontal plane, the rotatable rods extended from the target to the indicator and rotated by engagement with said target-sections during the inward movement of the target-sections, and the disks carried by said rods and normally horizontal, substantially as described.

4. The combination, with the movable target-sections and the indicator arranged at a distance from said target upon substantially the same horizontal plane, of the rotatable rods G, extended from the target to the indicator, the weighted arms H on said rods to the rear of the target and actuated during the inward movement of the target-sections by engagement therewith, and the disks I on the rods to the front of the indicator and arranged to normally assume a horizontal position, as set forth.

5. The combination, with the movable target-sections and the indicator, of the rotatable rods actuated by engagement with the target-sections during the inward movement thereof, the weighted arms on said rods independent and disconnected from the target-sections, and the disks on said rods in front of the indicator, substantially as described.

381,518. **LOOM DRIVING-GEAR.** HORACE WYMAN, Worcester, Mass., assignor to the Crompton Loom Works, same place. Filed July 28, 1887. Serial No. 245,008. (No model.)

Brief.—The arrangement of gearing described has for its objects the persistent and steady driving of the cross-shafts, the saving of power by doing away with side thrust, and the economy of space.

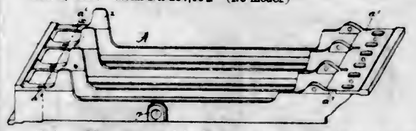


Claim.—1. The two shafts b^4 and b^5, with their gears b^6 and b^7, of equal diameters, and the driving-shaft A^3, provided with a driving-pulley and a pinion, as *b*, combined with the intermediate bevel-gear, *b'*, and spur-gear b^4, connected together and mounted upon a stud, the combination being and operating substantially as and for the purpose described.

2. The driving-shaft A^3, its driving-pulley and bevel-pinion *b*, bevel-wheel *b'*, and its attached spur-pinion b^4, stud b^3, and the main frame having an attached stand, as A^2, provided with a box for the driving-shaft, and the stand b^3, provided with a box for the driving-shaft, and also to support the stud, combined with two shafts, b^4 and b^5, having gears b^6 and b^7 of equal diameter, to operate substantially as described.

3. The two shafts b^4 and b^5, their gears b^6 and b^7, of equal diameter, and a driving-shaft, A^3, provided with a pulley and with a pinion, *b*, and bearings for the said shaft, combined with the intermediate bevel and spur gear, whereby the said driving-shaft may be located at a point between the two shafts b^4 and b^5, substantially as described.

381,519. **SHUTTLE-BOX FOR LOOMS.** HORACE WYMAN, Worcester, Mass., assignor to the Crompton Loom Works, same place. Filed Dec. 6, 1887. Serial No. 257,104. (No model.)



Claim.—The cast-metal body A, comprising the back, top, and bottom of the shuttle-box, it having integral with it fastening projections, as a^6 a^7, holes a^8, and the flange 16, and hub 17, combined with the pieces B C, having holes, as 3 and 6, to receive the said projections, and with the division-plates having the projections 8, to enter the holes in the arms a^4, constituting part of the back of the box, and with the projections 12 and 13, to enter holes in the pieces B C, substantially as described.

REISSUES.

10,922. **RUNNING-GEAR.** JOHN M. BROSIUS, Atlanta, Ga., assignor of one-half to Thompson H. Jones, same place. Filed June 6, 1887. Serial No. 240,463. Original No. 270,382, dated Jan. 9, 1883.



Claim.—1. In a vehicle-axle, the combination of the squarely grooved or recessed axle-tree C, the spindles F, having inner rectangular portions, E, the bolts I, and the bolts J, substantially as described, and for the purpose specified.

2. In an adjustable axle, the combination of the squarely grooved

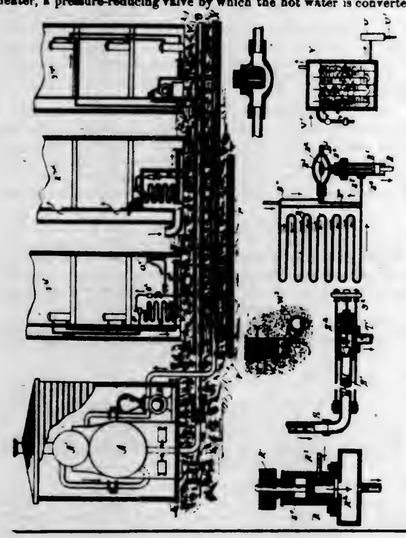
or recessed axle-tree C, the spindles F, having inner square portions, E, having horizontal slots G, and vertical slots H, vertical nutted bolts J, and horizontal nutted bolts I, substantially as and for the purpose shown and set forth.

3. In an adjustable axle, the combination of the squarely grooved or recessed axle-tree C, having central square block, D, the spindles F, having inner square portions, E, having horizontal slots G and vertical slots H, vertical nutted bolts J, and horizontal nutted bolts I, having hooks K, adapted to have draft-chains attached to them, substantially as and for the purpose shown and set forth.

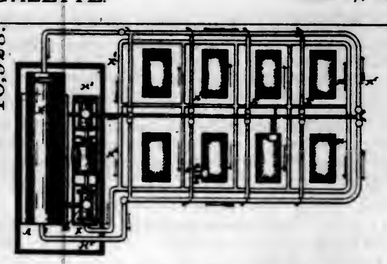
10,923. **MEANS FOR SUPPLYING HEAT AND STEAM OR WATER POWER TO CITIES, TOWNS, &c.** WILLIAM R. PRALL, Washington, D. C., assignor, by mesne assignments, to the National Heating Company, New York, N. Y. Filed Mar. 27, 1883. Serial No. 268,726. Original No. 279,283, dated Mar. 13, 1883. Patented in England July 23, 1879, No. 2,967, and in Germany Jan. 27, 1880, No. 13,525.

Claim.—1. In a system for supplying heat and power from a central station to large districts of buildings in which water is used as a heat-conveying medium, the combination of a heater, a supply-pipe leading from the heater to the building or buildings where heat or power is required and returning to the heater, a pressure-reducing valve, a radiator or other means by which the heat of the water is utilized, and a system of return-pipes by which the water is returned to the heater, substantially as shown and described.

2. In a hot-water and steam heat and power system, the combination of a heater, a supply-pipe leading from and returning to the heater, a pressure-reducing valve by which the hot water is converted



10,923.



into steam, a radiator or other means for utilizing the steam, a system of return-pipes by which the water of condensation is returned to the heater, and means for forcing a circulation in the supply-pipes, substantially as shown and described.

3. In a hot-water heating system, the combination of a heater, a supply-pipe leading from and returning to the heater, a force-pump or other means for causing a circulation in the supply-pipe, a circulating coil or radiator or other means for utilizing the heat of the water, and a system of return-pipes by which the water, after being circulated for heating purposes, is returned to the heater, substantially as shown and described.

4. The combination of a heater, a supply-pipe leading from and returning to the heater, a force-pump, a hot-water engine, pipes connecting the engine with the supply-pipe, a return-pipe, and pipes connecting the engine with the return-pipe, substantially as shown and described.

5. The combination of a heater, a supply-pipe leading from and returning to the heater, a force-pump, a return-pipe independent of the supply-pipe, and a preheater, as A, substantially as shown and described.

6. The combination of the water-heater, a supply-pipe leading from and returning to the heater, a radiator or other means for utilizing the hot water, a discharge-water trap, and a system of return-pipes communicating with the trap and heater and radiator for reconveying the water to the heater.

7. The combination, with the separate supply and return pipes, of the tank V, provided with the partitions extending from the bottom upward to within a short distance of the top, and the trap U, constructed and operating substantially as shown and described.

8. The combination of the hot-water-supply pipe leading from and returning to the heater, the return-pipe, the radiators, and the differential discharge-water trap composed of the casings B^3, the diaphragm B^2, the stem B^4, the valve B^5, the barrel B^6, and pipes B, and the pipes B^9, B^8, B^{10}, and B^{11}, substantially as shown and described.

9. In a central-station heat and power system, whereby heat and power are furnished to large districts of buildings in cities and towns, the combination of a heater, a street supply-pipe leading from and returning to the heater, a force-pump, a street return-pipe communicating with the heater, branch pipes leading from the supply-pipe to the building where heat or power is required, branch return-pipes leading from the building and connecting with the street return-pipe, branch street supply and return pipes communicating with the main supply and return pipes, whereby the heating medium is circulated around the several blocks of the district, and means for controlling the flow in each and every section.

PHOTO LITH. NORRIS PETERS WASHINGTON

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

DOLBEAR *et al. v.* AMERICAN BELL TELEPHONE COMPANY.

Appeal from the Circuit Court of the United States for the District of Massachusetts.

MOLECULAR TELEPHONE COMPANY *et al. v.* AMERICAN BELL TELEPHONE COMPANY *et al.* AMERICAN BELL TELEPHONE COMPANY *et al. v.* MOLECULAR TELEPHONE COMPANY *et al.*

Appeals from the Circuit Court of the United States for the Southern District of New York.

CLAY COMMERCIAL TELEPHONE COMPANY *et al. v.* AMERICAN BELL TELEPHONE COMPANY *et al.*

Appeal from the Circuit Court of the United States for the Eastern District of Pennsylvania.

PEOPLE'S TELEPHONE COMPANY *et al. v.* AMERICAN BELL TELEPHONE COMPANY *et al.*

Appeal from the Circuit Court of the United States for the Southern District of New York.

OVERLAND TELEPHONE COMPANY *et al. v.* AMERICAN BELL TELEPHONE COMPANY *et al.*

Appeal from the Circuit Court of the United States for the Southern District of New York.

Decided March 19, 1888.

1. BELL—TELEGRAPHY—No. 174,465.

Letters Patent No. 174,465, granted to Alexander Graham Bell, March 7, 1876, for improvements in telegraphy, adjudged valid as to the fifth claim thereof, and to have been infringed.

2. BELL—ELECTRIC TELEGRAPHY—No. 186,787.

Letters Patent No. 186,787, granted to Alexander Graham Bell, January 30, 1877, for improvements in electric telegraphy, adjudged valid as to the third, fifth, sixth, seventh, and eighth claims thereof, and to have been infringed.

3. THE INVENTION OF THE BELL PATENT OF MARCH 7, 1876, CONSIDERED.

The sound of articulate speech is one of the "vocal or other sounds" referred to in said patent. The art or process described in said patent consists in gradually changing the intensity of a continuous electric current so as to make it correspond exactly to the changes in the density of the air caused by the sound of the voice, and devising a way in which these changes of density could be made and speech actually transmitted put the art in a condition for practical use. In doing this both discovery and invention, in the popular sense of these terms, were involved—discovery in finding the art and invention in devising the means to make it useful. A patent for the art does not necessarily involve a patent for the particular means for doing it, and the mention of means in the specification is only necessary to show that the art can be used to advantage.

4. THE FIFTH CLAIM OF THE BELL PATENT OF MARCH 7, 1876, CONSIDERED AND DEFINED.

What Bell claims is the art of creating changes of intensity in a continuous current of electricity exactly corresponding to the changes of density in the air caused by the vibrations which accompany vocal or other sounds, and of using that electrical condition thus created for sending and receiving articulate speech telegraphically.

5. CLAIM NOT INCONSISTENT WITH DECISION IN O'REILLY *v.* MORSE. (15 How., 62.)

This claim is not in opposition to the decision in *O'Reilly* v. *Morse*, but is sustained by it, as this claim is not for the use of a current of electricity in its natural state as it comes from the battery, but for putting a continuous current in a closed circuit into a certain specific condition, suited to the transmission of vocal and other sounds and using it in that condition for that purpose.

6. SAME.

It may be that electricity cannot be used at all for the transmission of speech except in the way Bell has discovered, and that therefore, practically, his patent gives him its exclusive use for that purpose; but that does not make his claim one for the use of electricity distinct from the particular process with which it is connected in his patent.

7. PERFECTION IN OPERATION NOT ESSENTIAL TO THE VALIDITY OF A PATENT.

The law does not require that a discoverer or inventor, in order to get a patent for a process, must have succeeded in bringing his art to the highest degree of perfection. It is enough if he describes his method with sufficient clearness and precision to enable those skilled in the matter to understand what the process is, and also if he points out some practical way of putting it in operation.

8. THE BELL PATENT OF MARCH 7, 1876, NOT LIMITED TO A MAGNETO-INSTRUMENT.

The Bell patent is not confined to a magneto-instrument and such modes of creating electrical undulations as could be produced by that form of apparatus.

9. THE FIFTH CLAIM OF SAID PATENT RESTATED.

1. The method of transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations similar in form to the vibrations of the air accompanying the said vocal or other sounds, substantially as set forth. 2. The apparatus for transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations, substantially as set forth.

10. THE SAME EXPLAINED.

The method, as herein described, includes both the magneto method and the variable-resistance method. The current must be kept closed to be used successfully; but this does not necessarily imply that it must be so produced or so operated upon as to be incapable of being closed. There is nothing in the patent which requires it to be operated by instruments which are incapable of making the break. The patent is both for the magneto and variable-resistance methods and for the particular magneto apparatus which is described, or its equivalent. There is no patent for any variable-resistance apparatus. The claim upon this broad construction is not "a claim for speech transmission by transmitting it—or, in other words, for all such doing of a thing as is provable by doing it." No one before Bell knew how to put electricity in a certain condition for successful use in speech transmission.

11. NO ANTICIPATION OF THIS CLAIM BY REIS.
Bell's patent is not anticipated by the descriptions of the Reis telephone, which operated by a different method, using an intermittent or make-and-break current.

12. NO ANTICIPATION BY VAN DER WEYDE.
Van der Weyde copied Reis, and it was not until after Bell's success that he found out how to use a Reis instrument so as to make it transmit speech.

13. NO ANTICIPATION BY MCDONOUGH.
McDonough was anticipated by Reis, and in his application for a patent made a circuit-breaker so adjusted as to break the connection by the vibrations of the membrane one of the elements of his invention.

14. NO ANTICIPATION BY VARLEY.
Varley's patents describe a Morse key, or something equivalent, and there is implied an operation on the principle of the electric telegraph—viz., by making and breaking the circuit.

15. NO ANTICIPATION BY DRAWBAUGH.
Considering the history of Drawbaugh's inventions as described in evidence with perfected apparatus prior to Bell's invention, and the conduct of Drawbaugh after Bell's telephone had been patented and had become notorious, and the fact that Drawbaugh brought forward and patented other inventions after Bell's telephone had become universally talked about, and did not apply for a patent on his telephone until July, 1880, with other facts detailed at length, the Court comes to this conclusion, viz: "We do not doubt that Drawbaugh may have conceived the idea that speech could be transmitted to a distance by means of electricity, and that he was experimenting upon that subject; but to hold that he had discovered the art of doing it before Bell did would be to construe testimony without regard to the ordinary laws that govern human conduct."

16. FRAUD IN PROCURING THE BELL PATENT OF MARCH 7, 1876.
The Court examine the testimony in respect to the charges of fraud in procuring said patent, and conclude that the charges had no foundation in fact.

17. BELL'S PATENT OF JANUARY 30, 1877, NOT AFFECTED BY PRIOR ENGLISH PATENT.
The effect of section 4887 of the Revised Statutes is not to render invalid an American patent by an English patent of an earlier date for the same invention, but only to limit its term.

18. THE FIFTH CLAIM OF SAID PATENT CONSTRUED.
The fifth claim of this patent is not for the magnet, but for the telephone of which it forms a part.

Mr. Causten Browne and *Mr. J. E. Maynadier* for Dolbear *et al.*

Mr. G. P. Lowrey, Mr. W. H. Peckham, and *Mr. H. D. Donnelly* for Molecular Telephone Company.

Mr. W. W. Kerr for Clay Commercial Telephone Company.

Mr. Lysander Hill, Mr. Don M. Dickinson, and *Mr. T. S. E. Dixon* for People's Telephone Company.

Mr. E. N. Dickerson, Mr. J. J. Storrow, and *Mr. Chauncey Smith* for American Bell Telephone Company.

Mr. Chief Justice WAITE delivered the opinion of the Court.

The important question which meets us at the outset in each of these cases is as to the scope of the fifth claim of the patent of March 7, 1876, which is as follows:

> The method of, and apparatus for, transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations similar in form to the vibrations of the air accompanying the said vocal or other sounds, substantially as set forth.

It is contended that this embraces the art of transferring to or impressing upon a current of electricity the vibrations of air produced by the human voice in articulate speech in a way that the speech will be carried to and received by a listener at a distance on the line of the current. Articulate speech is not mentioned by name in the patent.

The invention as described—

> consists in the employment of a vibratory or undulatory current of electricity in contradistinction to a merely intermittent or pulsatory current, and of a method of, and apparatus for, producing electrical undulations upon the line-wire.

A "pulsatory current" is described as one "caused by sudden or instantaneous changes of intensity," and an "electrical undulation" as the result of "gradual changes of intensity exactly analogous to the changes in the density of air occasioned by simple pendulous vibrations."

Among the uses to which this art may be put is said to be the "telegraphic transmission of noises or sounds of any kind," and it is also said that the undulatory current, when created in the way pointed out, will produce through the receiver at the receiving end of the line "a similar sound to that uttered into" the transmitter at the transmitting end. One of the means of imparting the necessary vibrations through the transmitter to produce the undulations may be the human voice. Articulate speech is certainly included in this description, for it is an "uttered" "sound" produced by the "human voice." It is contended, however, that "vocal sounds" and "articulate speech" are not convertible terms either in acoustics or in telegraphy. It is unnecessary to determine whether this is so or not. Articulate speech necessarily implies a sound produced by the human voice, and, as the patent on its face is for the art of changing the intensity of a continuous current of electricity by the undulations of the air caused by sonorous vibrations, and speech can only be communicated by such vibrations, the transmission of speech in this way must be included in the art. The question is not whether "vocal sounds" and "articulate speech" are used synonymously as scientific terms, but whether the sound of articulate speech is one of the "vocal or other sounds" referred to in this claim of the patent. We have no hesitation in saying that it is, and that if the patent can be sustained to the full extent of what is now contended for it gives to Bell and those who claim under him the exclusive use of his art for that purpose until the expiration of the statutory term of his patented rights. In this art—or, what is the same thing under the patent law, this process, this way of transmitting speech—electricity, one of the forces of nature, is employed; but electricity left to itself will not do what is wanted. The art consists in so controlling the force as to make it accomplish the purpose. It had long been believed that if the vibrations of air caused by the voice in speaking could be reproduced at a distance by means of electricity the speech itself would be reproduced and understood. How to do it was the question. Bell discovered that it could be done by gradually changing the intensity of a continuous electric current, so as to make it correspond exactly to the changes in the density of the air caused by the sound of the voice. This was his art. He then devised a way in which these changes of intensity could be made and speech actually transmitted. Thus his art was put in a condition for practical use. In doing this both discovery and invention, in the popular sense of those terms, were involved—discovery in finding the art and invention in devising the means of making it useful. For such discoveries and such inventions the law has given the discoverer and inventor

the right to a patent—as discoverer for the useful art, process, or method of doing a thing he has found, and as inventor for the means he has devised to make his discovery one of actual value. Other inventors may compete with him for the ways of giving effect to the discovery; but the new art he has found will belong to him and those claiming under him during the life of his patent. If another discovers a different art or method of doing the same thing, reduces it to practical use, and gets a patent for his discovery, the new discovery will be the property of the new discoverer, and thereafter the two will be permitted to operate each in his own way without interference by the other. The only question between them will be whether the second discovery is, in fact, different from the first.

The patent for the art does not necessarily involve a patent for the particular means employed for using it. Indeed, the mention of any means in the specification or descriptive portion of the patent is only necessary to show that the art can be used, for it is only useful arts—arts which may be used to advantage—that can be made the subject of a patent. The language of the statute is that "any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter" may obtain a patent therefor. (Rev. Stats., sec. 4886.) Thus an art—a process—which is useful is as much the subject of a patent as a machine, manufacture, or composition of matter. Of this there can be no doubt, and it it abundantly supported by authority. (*Corning* v. *Burden*, 15 How., 252, 267; *Cochrane* v. *Deener*, 94 U. S., 780, 787, 788; *Tilghman* v. *Proctor*, 102 U. S., 707, 722, 724, 725; *Fermentation Co.* v. *Maus*, 122 U. S., 413, 427, 428.)

What Bell claims is the art of creating changes of intensity in a continuous current of electricity exactly corresponding to the changes of density in the air caused by the vibrations which accompany vocal or other sounds, and of using that electrical condition thus created for sending and receiving articulate speech telegraphically. For that, among other things, his patent of 1876 was, in our opinion, issued, and the point to be decided is whether as such a patent it can be sustained.

In *O'Reilly* v. *Morse* (15 How., 62) it was decided that a claim in broad terms (p. 86) for the use of the motive power of the electric or galvanic current, called "electro-magnetism, however developed, for making or printing intelligible characters, letters, or signs at any distances," although "a new application of that power" first made by Morse, was void, because (p. 120) it was a claim "for a patent for an effect produced by the use of electro-magnetism distinct from the process or machinery necessary to produce it;" but a claim (p. 85) for "making use of the motive power of magnetism, when developed by the action of such current or currents substantially as set forth in the foregoing description, * * * as means of operating or giving motion to machinery which may be used to imprint signals upon paper or other suitable material, or to produce sounds in any desired manner, for the purpose of telegraphic communication at any distances," was sustained. The effect of that decision was, therefore, that the use of magnetism as a motive power, without regard to the particular process with which it was connected in the patent, could not be claimed, but that its use in that connection could.

In the present case the claim is not for the use of a current of electricity in its natural state as it comes from the battery, but for putting a continuous current in a closed circuit into a certain specified condition suited to the transmission of vocal and other sounds and using it in that condition for that purpose. So far as at present known, without this peculiar change in its condition it will not serve as a medium for the transmission of speech, but with the change it will. Bell was the first to discover this fact and how to put such a current in such a condition, and what he claims is its use in that condition for that purpose, just as Morse claimed his current in his condition for his purpose. We see nothing in Morse's case to defeat Bell's claim. On the contrary, it is in all respects sustained by that authority. It may be that electricity cannot be used at all for the transmission of speech except in the way Bell has discovered, and that therefore, practically, his patent gives him its exclusive use for that purpose; but that does not make his claim one for the use of electricity distinct from the particular process with which it is connected in his patent. It will, if true, show more clearly the great importance of his discovery, but it will not invalidate his patent. But it is insisted that the claim cannot be sustained, because when the patent was issued Bell had not, in fact, completed his discovery. While it is conceded that he was acting on the right principle and had adopted the true theory, it is claimed that the discovery lacked that practical development which was necessary to make it patentable. In the language of counsel—

> there was still work to be done and work calling for the exercise of the utmost ingenuity and calling for the very highest degree of practical invention.

It is quite true that when Bell applied for his patent he had never actually transmitted, telegraphically, spoken words so that they could be distinctly heard and understood at the receiving end of his line; but in his specification he did describe accurately and with admirable clearness his process—that is to say, the exact electrical condition that must be created to accomplish his purpose—and he also described with sufficient precision to enable one of ordinary skill in such matters to make it a form of apparatus which, if used in the way pointed out, would produce the required effect, receive the words, and carry them to and deliver them at the appointed place. The particular instrument which he had and which he used in his experiments did not, under the circumstances in which it was tried, reproduce the words spoken so that they could be clearly understood; but the proof is abundant and of the most convincing character that other instruments carefully constructed and made exactly in accordance with the specification, without any additions whatever, have operated and will operate successfully. A good mechanic of proper skill in matters of the kind can take the patent, and by following the specification strictly, can, without more, construct an apparatus which, when used in the way pointed out, will do all that it is claimed the method or process will do. Some witnesses have testified that they were unable to do it. This shows that they, with the particular apparatus they had and the skill they employed in its

use, were not successful—not that others, with another apparatus perhaps more carefully constructed or more skillfully applied, would necessarily fail. As was said in *Loom Co.* v. *Higgins*, (105 U. S., 580, 586)—

When the question is whether a thing can be done or not, it is always easy to find persons ready to show how not to do it.

If one succeeds, that is enough, no matter how many others fail. The opposite results will show that in the one case the apparatus used was properly made, carefully adjusted, with a knowledge of what was required, and skillfully used, and that in the others it was not.

The law does not require that a discoverer or inventor, in order to get a patent for a process, must have succeeded in bringing his art to the highest degree of perfection. It is enough if he describes his method with sufficient clearness and precision to enable those skilled in the matter to understand what the process is, and if he points out some practicable way of putting it into operation. This Bell did. He described clearly and distinctly his process of transmitting speech telegraphically by creating changes in the intensity of a continuous current or flow of electricity in a closed circuit, exactly analogous to the changes of density in air occasioned by the undulatory motion given to it by the human voice in speaking. He then pointed out two ways in which this might be done—one by the "vibration or motion of bodies capable of inductive action, or by the vibration of the conducting-wire itself in the neighborhood of such bodies," and the other "by alternately increasing and diminishing the resistance of the circuit, or by alternately increasing and diminishing the power of the battery." He then said he preferred to employ for his purpose "an electro-magnet * * * having a coil upon only one of its legs;" and he described the construction of the particular apparatus shown in the patent as figure 7, in which the electro-magnet or magneto method was employed. This was the apparatus which he himself used without entirely satisfactory results, but which Professor Cross, Mr. Watson, Doctor Blake, Professor Pope, and others testify has done, and will do, what was claimed for it, and transmit speech successfully, but not so well, indeed, as another constructed upon the principle of the microphone or the variable-resistance method.

An effort was made in argument to confine the patent to the magneto instrument and such modes of creating electrical undulations as could be produced by that form of apparatus, the position being that such an apparatus necessarily implied—

a closed circuit incapable of being opened and a continuous current incapable of being intermittent.

But this argument ignores the fact that the claim is, first, for the process, and, second, for the apparatus. It is to be read (1) as a claim for—

the method of transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations similar in form to the vibrations of the air accompanying the said vocal or other sounds, substantially as set forth—

and (2) as for—

the apparatus for transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations, * * * substantially as set forth.

The method, "as herein described," is to cause gradual changes in the intensity of the electric current used as the medium of transmission, which shall be exactly analogous to the changes in the density of the air occasioned by the peculiarities in the shapes of the undulations produced in speech, in the manner "substantially as set forth"—that is to say, "by the vibration or motion of bodies capable of inductive action; or by the vibration of the conducting-wire itself in the neighborhood of such bodies," which is the magneto method; or "by alternately increasing and diminishing the resistance of the circuit; or by alternately increasing and diminishing the power of the battery," which is the variable-resistance method. This is the process which has been patented, and it may be operated in either of the ways set forth. The current must be kept closed to be used successfully; but this does not necessarily imply that it must be so produced, or so operated upon, as to be incapable of being opened. If opened, it will fail to act for the time being, and the process will be interrupted; but there is nothing in the patent which requires it to be operated by instruments which are incapable of making the break.

The apparatus, "as herein described," which is included in the claim, is undoubtedly one in which an electro-magnet is employed, and constructed "substantially as set forth" in the specification. One acting on the variable-resistance mode is not described further than to say that the vibration of the conducting-wire in mercury or other liquid included in the circuit occasions undulations in the current, and no other special directions are given as to the manner in which it must be constructed. The patent is both for the magneto and variable-resistance *methods* and for the particular magneto apparatus which is described, or its equivalent. There is no patent for any variable-resistance apparatus. It is undoubtedly true that when Bell got his patent he thought the magneto method was the best. Indeed, he said, in express terms, he preferred it; but that does not exclude the use of the other if it turns out to be the most desirable way of using the process under any circumstances. Both forms of apparatus operate on a closed circuit by gradual changes of intensity, and not by alternately making and breaking the circuit or by sudden and instantaneous changes, and they each require to be so adjusted as to prevent interruptions. If they break, it is a fault, and the process stops until the connection is restored. It is again said that the claim, if given this broad construction, is virtually "a claim for speech-transmission by transmitting it, or, in other words, for all such doing of a thing as is provable by doing it." It is true that Bell transmits speech by transmitting it, and that long before he did so it was believed by scientists that it could be done by means of electricity if the requisite electrical effect could be produced. Precisely how that subtle force operates under Bell's treatment, or what form it takes, no one can tell. All we know is that he found out that by changing the intensity of a continuous current, so as to make it correspond exactly with the changes in the density of air caused by sonorous vibrations, vocal and other sounds could be transmitted and heard at a distance. This was the thing to be done, and Bell discovered the way of doing it. He uses electricity as a medium for that purpose, just as air is used within speaking distance. In effect he prolongs the air-vibrations by the use of electricity. No one before him had found out how to use electricity with the same effect. To use it with success it must be put in a certain condition. What that condition was he was the first to discover, and with his discovery he astonished the scientific world. Professor Henry, one of the most eminent scientists of the present century, spoke of it as "the greatest marvel hitherto achieved by the telegraph." The thing done by Bell was "transmitting audible speech through long telegraphic lines," and Sir William Thomson, on returning to his home in England, in August or September, 1876, after seeing at the Centennial Exposition, in Philadelphia, what Bell had done and could do by his process, spoke in this way of it to his countrymen:

Who can but admire the hardihood of invention which devised such very slight means to realize the mathematical conception that, if electricity is to convey all the delicacies of quality which distinguish articulate speech, the strength of its current must vary continuously, as nearly as may be, in simple proportion to the velocity of a particle of air engaged in constituting the sounds.

Surely a patent for such a discovery is not to be confined to the mere means he improvised to prove the reality of his conception.

We come now to consider the alleged anticipation of Philipp Reis. And here it is to be always kept in mind that the question is not whether the apparatus devised by Reis to give effect to his theory can be made, with our present knowledge, to transmit speech, but whether Reis had in his time found out the way of using it successfully for that purpose; not as to the character of the apparatus, but as to the mode of treating the current of electricity on which the apparatus is to act, so as to make that current a medium for receiving the vibrations of air created by the human voice in articulate speech at one place, and in effect delivering them at the ear of a listener in another place. Bell's patent is not alone for the particular apparatus he describes, but for the process that apparatus was designed to bring into use. His patent would be quite as good if he had actually used Reis's apparatus in developing the process for which it was granted.

That Reis knew what had to be done in order to transmit speech by electricity is very apparent, for in his first paper he said:

As soon as it is possible to produce anywhere and in any manner vibrations whose curves shall be the same as those of any given tone or combination of tones, we shall receive the same impression as that tone or combination of tones would have produced on us.

Bourseul also knew it before Reis, for in a communication, published in a Paris journal in 1854, he said:

Reproduce precisely these vibrations, [to wit, the vibrations made by the human voice in uttering syllables,] and you will reproduce precisely these syllables.

Reis discovered how to reproduce musical tones; but he did no more. He could sing through his apparatus; but he could not talk. From the beginning to the end he has conceded this. In his first paper he said:

Hitherto it has not been possible to reproduce the tones of human speech with a distinctness sufficient for every one. The consonants are for the most part reproduced pretty distinctly, but the vowels as yet not in an equal degree. The cause of this I will attempt to explain. According to the experiments of Willis, Helmholtz, and others, vowel tones can be produced artificially if the vibrations of one body are from time to time augmented by those of another, something as follows: An elastic spring is set in vibration by the blow of a tooth on a toothed wheel. The first vibration is the greatest, and each subsequent one is smaller than the preceding. If after a few vibrations of this kind (the spring not coming to a rest in the meantime) the tooth-wheel imparts a new stroke, the following vibration will be again a maximum, and so on. The pitch of the tone produced in this way depends upon the number of vibrations in a given time, but the character of the tone upon the number of swellings in the same time. * * * Our organs of speech probably produce the vowels in the same manner through the combined action of the upper and lower vocal chords, or of these latter and the cavity of the mouth. My apparatus reproduces the number of vibrations, but with an intensity much less than that of the original ones, though, as I have reason to believe, to a certain degree proportional among themselves; but in the case of these generally small variations the difference between large and small vibrations is more difficult to perceive than in the case of the original waves, and the vowel is therefore more or less indistinct.

And again:

I have succeeded in constructing an apparatus with which I am enabled to reproduce the tones of various instruments, and even to a certain extent the human voice.

No one of the many writers whose papers are found in the records claim more than this for Reis or his discoveries. Although his first paper was published in 1861, and Bell did not appear as a worker in the same field of scientific research until nearly fifteen years afterward, no advance had been made by the use of what he had contrived or of his method toward the great end to be accomplished. He caused his instruments to be put on the market for sale, and both he and those whom he employed for that purpose took occasion to call attention to them by prospectus, catalogue, and otherwise, and to describe what they were and what they would do. In his own prospectus, which was published in 1865 and attached to the apparatus, he says:

Every apparatus consists * * * of two parts, the telephone proper and the receiver. * * * These two parts are placed at such a distance from each other that singing or toning of a musical instrument can be heard in no other way from one station to the other except through the apparatus; [and,] besides, the human voice there can be reproduced (according to my experience) just as well the tones of good organ-pipes from F—c, and those of the piano.

Albert, the mechanician employed to make the instruments, in his catalogue, published in 1866, enumerates among the things he has for sale—

Telephone of Reis for reproduction of tones by electricity.

In a work on electricity, by Robert M. Ferguson, published by William and Robert Chambers, London and Edinburgh, in 1867, it is said, in speaking of the telephone:

This is an instrument for telegraphing notes of the same pitch. Any noise producing a single vibration of the air, when repeated regularly a certain number of times in the second, (not less than thirty-two,) produces, as is well known, a musical sound. * * * A person when singing any note causes the air to vibrate so many times per second, the number varying with the pitch of the note he sings, the higher the note the greater being the number of vibrations. If we then, by any means, can get these vibrations to break a closed circuit, * * * the note sung at one station can be reproduced, at least so far as pitch is concerned, at another. Reis's telephone (invented 1861) accomplishes this in the following way, [which is then described.]

But it is needless to quote further from the evidence on this branch of the case. It is not contended that Reis had ever succeeded in actually transmitting speech, but only that his instrument was capable of it if he had known how. He did not know how, and all his experiments in that direction were failures. With the help of Bell's later discoveries in 1875 we now know why he failed.

As early as 1854 Bourseul, in his communication, which has already been referred to, had said, substantially, that if the vibrations of air produced by the human voice in articulate speech could be reproduced by means of electricity at a distance, the speech itself would be reproduced and heard there. As a means of stimulating inquiry to that end, he called attention to the principle on which the electric telegraph was based and suggested an application of that principle to such a purpose. He said:

The electric telegraph is based on the following principle: An electric current passing through a metallic wire circulates through a coil around a piece of soft iron, which it converts into a magnet. The moment the current stops the piece of iron ceases to be a magnet. This magnet, which takes the name of

electro-magnet, can thus in turn attract and then release a movable plate, which, by its to-and-fro movement, produces the conventional signals employed in telegraphy.

Then after referring to the mode in which speech is transmitted by the vibrations of the air, he said:

Suppose that a man speaks near a movable disk sufficiently flexible to lose none of the vibrations of the voice; that this disk alternately makes and breaks the connection with a battery; you may have at a distance another disk which will simultaneously execute the same vibrations.

That Reis was working all the time, from the beginning to the end of his experiments, upon the principle of the telegraph as thus suggested by Bourseul, is abundantly proven. Thus, in his first paper, after describing his cubical-block apparatus, he says:

If now tones or combinations of tones are produced in the neighborhood of the block, so that sufficiently powerful waves enter the opening *a*, then these sounds cause the membrane *b* to vibrate. At the first condensation the hammer-like wire *d* is pushed back; at the rarefaction it cannot follow the retreating membrane, and the current traversing the strips remains broken until the membrane forced by a new condensation again presses the strip * * * against *d*. In this way each sound-wave causes a breaking and closing of the current. At each closing of the circuit the atoms of the iron wire inside the distant spiral are moved away from each other; on breaking the circuit these atoms seek to regain their position of equilibrium. When this happens, in consequence of the reciprocal actions of elasticity and inertia, a number of vibrations are produced and they give the longitudinal sound of the rod. This is the case if the making and breaking of the current occur with comparative slowness. If they occur more rapidly than the oscillations of the iron core, due to its elasticity, the atoms cannot complete their course. The paths described become shorter in proportion as the interruptions are more frequent, but then are just as numerous as these. The iron wire no longer gives its longitudinal normal tone, but a tone whose pitch corresponds to the number of interruptions in a given time. This is the same as saying that the rod reproduces the tone impressed upon the interrupter.

Such was the beginning, and it was maintained persistently to the end as well by Reis as by those who availed themselves of what he was doing. To this the Reis-Legat apparatus forms no exception, for in the paper describing it Legat says:

The operation of the apparatus described is as follows: When at rest, the galvanic circuit is closed. When the air which is in the tube *a b* of the apparatus is alternately condensed and rarefied by speaking into it, (or by singing or introducing the tones of an instrument,) a movement of the membrane closing the smaller opening of the tube is produced, corresponding to such condensation or rarefaction. The lever *c d* follows the movements of the membrane and opens and closes the galvanic circuit at *d g*, so that at each condensation of the air in the tube the circuit is opened, and at each rarefaction the circuit is closed. In consequence of this operation the electro-magnet of the apparatus, in accordance with the condensations and rarefactions of the column of air in the tube * * * is correspondingly demagnetized and magnetized, and the armature of the magnet is set into vibrations like those of the membrane in the transmitting apparatus.

We have not had our attention called to a single item of evidence which tends in any way to show that Reis or any one who wrote about him had it in his mind that anything else than the intermittent current caused by the opening and closing of the circuit could be used to do what was wanted. No one seems to have thought that there could be another way. All recognized the fact that the "minor differences in the original vibrations" had not been satisfactorily reproduced; but they attributed it to the imperfect mechanism of the apparatus used, rather than to any fault in the principle on which the operation was made to depend.

It was left for Bell to discover that the failure was due not to workmanship, but to the principle which was adopted as the basis of what had to be done. He found that what he called the "intermittent" current—one caused by alternately opening and closing the circuit—could not be made under any circumstances to reproduce the delicate forms of the air-vibrations caused by the human voice in articulate speech, but that the true way was to operate on an unbroken current by increasing and diminishing its intensity. This he called a "vibratory" or "undulatory" current, not because the current was supposed to actually take that form, but because it expressed with sufficient accuracy his idea of a current which was subjected to gradual changes of intensity exactly analogous to the changes of density in the air occasioned by its vibrations. Such was his discovery, and it was new. Reis never thought of it, and he failed to transmit speech telegraphically. Bell did, and he succeeded. Under such circumstances it is impossible to hold that what Reis did was an anticipation of the discovery of Bell. To follow Reis is to fail, but to follow Bell is to succeed. The difference between the two is just the difference between failure and success. If Reis had kept on, he might have found out the way to succeed; but he stopped and failed. Bell took up his work and carried it on to a successful result.

As to what is shown to have been written and done by Doctor Van der Weyde, it is only necessary to say that he copied Reis, and it was not until after Bell's success that he found out how to use a Reis instrument so as to make it transmit speech. Bell taught him what to do to accomplish that purpose. So as to James W. McDonough. We presume that it will not be claimed that he is entitled to more than he asked for in his application for a patent filed April 10, 1876, and there a "circuit-breaker," so adjusted as to "break the connection by the vibrations of the membrane," is made one of the elements of his invention. The Patent Office was clearly right in holding that he had been anticipated by Reis.

The patents of Cromwell Fleetwood Varley, of London, England, granted, one June 2, 1868, and the other October 8, 1870, were for improvements in electric telegraphs. The objects of the invention covered by the first were—

to cut off the disturbance arising from earth-currents to obtain a high speed of signaling through long circuits, and, should the conductor become partially exposed, to preserve it from being eaten away by electrolytic action.

And the object of the second was the—

increase of the transmitting power of telegraph-circuits by enabling more than one operator to signal independent messages at the same time upon one and the same wire to and from independent stations.

While this patentee in his specification says "by my invention I superpose upon the currents used for working the ordinary telegraphs rapid undulations or waves, which do not practically alter the mechanical or chemical power of the ordinary signal-currents," and that "these undulations are made to produce distinct and independent audible or other signals so long as these undulations are produced, whether ordinary signal-currents be flowing or not," it is apparent that he uses the terms "undulations" and "waves" in an entirely different sense from Bell, for his patent implies operation on the principle of the electric telegraph—that is to say, by making and breaking the circuit. A Morse key, or something equivalent, is to be used, and, besides, in the descriptive portion of the patent, it is said:

When the current is flowing through the coils of the electro-magnet, the horns of the fork *k* are drawn apart and the spring *l'* loses its contact. Then, as the attraction of the magnet ceases, the horns of the fork spring back. This remakes the contact, and so a continual tremor is communicated to the tuning-fork.

In short, there is nothing in any part of the specification to indicate that the patentee had in his mind

"undulations" resulting "from gradual changes of intensity exactly analogous to the changes in the density of air occasioned by simple pendulous vibrations," which was Bell's discovery and on which his art rests. Varley's purpose was to superpose—that is to say, place upon the ordinary signal-current another, which, by the action of the make-and-break principle of the telegraph, would do the work he wanted.

Another alleged anticipation is that of Daniel Drawbaugh.

Bell got his patent March 7, 1876, and the fortunate accident which led to his discovery occurred June 2, 1875. Active litigation to enforce his patented rights was begun by his company on the 12th of September, 1878, with a suit in the Circuit Court of the United States for the District of Massachusetts against Richard A. Dowd. This suit was defended by the Western Union Telegraph Company, and vigorously contested. The answer was filed November 4, 1878, setting up alleged anticipations by Gray, Edison, Dolbear, and others. The record fills twelve hundred printed pages; but before a decision was reached the case was compromised and a decree entered by consent. The litigation ended at some time in the latter part of the year 1879. The last deposition was taken on the 19th of September in that year. The next contested suit was brought in the same court on the 28th of July, 1880, against Albert Spencer and others. An answer was filed in this case September 6, 1880, and depositions afterward taken, some of those in the Dowd suit being used in this by stipulation. On the 27th of June, 1881, a decision was announced by Judge Lowell, sustaining the patent, upon which a decree was entered.

On the 14th of November, 1879, Abner G. Tisdel filed in the Patent Office an application for a patent for a new and useful improvement in speaking-telephones, and on the 18th of November, 1879, Frank A. Klemm also filed an application for a patent for a new and useful improvement in telephone-transmitters. These inventions were transferred by assignment to Ernest Marx and Frank A. Klemm, of New York city, Moritz Loth, of Cincinnati, and Simon Wolf, of Washington. On the 6th of March, 1880, these parties entered into a mutual agreement to the effect that—

each and all of their interests in said improvements and inventions, and the letters patent to be issued therefor, shall be merged and consolidated as common stock in a corporate body, under the laws of either of the States of Ohio, New York, or the general laws of the United States relating to the formation of incorporations in the District of Columbia, or of such other States or Territories as may be found necessary hereafter.

This agreement was recorded in the Patent Office March 10, 1880.

On the 6th of May, 1880, Edgar W. Chellis, a merchant of Harrisburg, Pennsylvania, M. W. Jacobs, a lawyer at the same place, and Lysander Hill, a lawyer, then residing in Washington, in the District of Columbia, made an arrangement with Daniel Drawbaugh by which they were to become jointly interested with him in his alleged telephone inventions, each to have a quarter interest. Nothing was paid for this, but each of the parties was to have one-fourth of anything that should be realized from the enterprise. On the 24th of May, 1880, Simon Wolf, one of the parties interested in the Klemm and Tisdel inventions, visited Harrisburg on business with Chellis in reference to telephone matters. On the 18th of May, four days before this visit, a patent was issued to Wolf and his associates upon the invention of Tisdel. While Wolf was in Harrisburg negotiations were begun with Chellis for a transfer of the Drawbaugh inventions to the owners of those of Klemm and Tisdel. These negotiations resulted in a conditional contract of the 22d of June, by reason of which Chellis, Jacobs, Hill, and Drawbaugh went to Washington, and there, on the 21st of July, 1880, Drawbaugh, claiming to "have invented certain new and useful improvements in the transmission of vocal speech, and the apparatus to be used for such purpose, for which I am about to make application for letters patent of the United States," assigned to Klemm, Marx, Wolf, and Loth "the full and exclusive right to the said invention, as fully set forth and described in the specification prepared and executed by me, dated the 21st day of July, 1880, preparatory to obtaining letters patent of the United States therefor," and he, at the same time and by the same instrument, authorized and requested the Commissioner of Patents to issue the patent to his assignees, "each as assignee of one-fourth part." The specification referred to in the assignment has not been put in evidence in any of the cases. In the course of taking the testimony it was called for by the Bell Company; but the counsel for the opposite party refused to produce either the original or a copy from the Patent Office. The assignment was recorded in the Patent Office July 22, 1880, and in the official digest of assignments the following notation appears:

About to make appl'n. Spe'n dated July 21, 1880.

On the morning of July 22, 1880, the following appeared in the *Cincinnati Commercial*, a newspaper printed at Cincinnati, Ohio:

TELEPHONE COMBINATION.

(*Special to Cincinnati Commercial.*)

WASHINGTON, D. C., *July* 21.—An application for a patent was filed to-day that, in consequence of its vastness of interest, as well as wealth of prospect, renders it a subject of national interest. A company of leading business men has been formed, that has bought up all the telephone patents antedating those now in use, and known as the Bell, Gray, and Edison patents. The company is composed of leading business men from all parts of the country, Cincinnati being largely represented and interested. The cash capital of the company is $5,000,000, with headquarters in New York, and in about sixty days they will open up the telephone, which will certainly result in the driving out of all telephones in the market, save the ones they hold, or else the compelling the Gray, Bell, and Edison lines to pay the new company a munificent royalty. It appears from the testimony now on file and in the possession of the new company, which is conclusive and exhaustive, that the inventor of the telephone is a poor mechanic, living near Harrisburg, Pa., named Daniel Drawbaugh. Owing to his poverty, he was unable to push his patent on the market. The new company have secured and are sole possessors of this invention, antedating those now in use. They are also owners of four patents for telephones issued to Mr. Klemm, of New York. A large number of capitalists were here to-day to see the filing of the application, and they assert, with a positiveness that is almost convincing, that it will not be long till they have entire charge of the telephones, not only in this country, but in the world, and that they will be able to establish lines by which messages can be transmitted for almost a song.

Mr. Lipman Levy, of the law firm of Moulton, Johnson & Levy, of Cincinnati, was here to-day in the interest of the Cincinnati parties, who, as already stated, are among the most prominent financial men of our city.

Afterward, on the 23d of August, 1880, the following appeared in the *Journal of Commerce*, a newspaper printed in the city of New York:

A NEW TELEPHONE COMPANY.

A company has recently been formed in this city, with a capital of $5,000,000, for the purpose of manufacturing telephones. The company is to be known as The People's Telephone Company, and a number of leading capitalists in this city and Cincinnati are interested in it. The telephones are to be manufactured under the patents of Frank A. Klemm and Abner G. Tisdel, and the application for patents of Daniel Drawbaugh, of Eberly's Mills, Cumberland county, Pa., filed July 21, 1880. It is

claimed by those interested in the new enterprise that Drawbaugh is really the inventor of the telephone, and had completed one years before Professor Bell or any one else had manufactured one. He was, however, in very humble circumstances, and his neighbors, who knew of his experiments, looked upon him as a harmless lunatic. He continued improving his original telephone, and it is claimed that the one which the new company proposes to furnish is superior to any now in use. The company has fitted up a factory in Brooklyn, and in three months will be prepared to supply 1,000 of the new telephones. As soon as operations are actively commenced, it is expected that legal proceedings will be begun against the new company by the Gold and Stock Telegraph Company, which holds most of the existing patents, and a long and interesting legal fight is anticipated.

On the 30th of August, 1880, the People's Telephone Company was incorporated, under the general laws of New York, with an authorized capital stock of $5,000,000, for—

manufacturing, constructing, owning, furnishing, letting, and selling telephones, and the apparatus used therewith, under the inventions and patents of Abner G. Tisdel, Frank A. Klemm, Daniel Drawbaugh, and other inventions and patents which may hereafter be assigned to said company—

and on the 4th of September, 1880, Klemm, Loth, Marx, and Wolf, in consideration of $4,999,550, represented by 99,991 shares of stock, assigned and transferred to that company all their interest in the Klemm, Tisdel, and Drawbaugh inventions, those of Drawbaugh being described as—

the inventions in telephones made by Daniel Drawbaugh, of Eberly's Mills, Cumberland county, in the State of Pennsylvania, for which application for patents was made on or about the 21st day of July, 1880, and which was assigned to us on the [twenty-] first day of July, 1880, as more particularly appears in a deed of assignment recorded in the United States Patent Office in Liber W. 25, page 85, in the Book of Transfers of Patents.

For the assignment from Drawbaugh to Klemm, Marx, Loth, and Wolf $20,000 was paid in money to Chellis. Jacobs, Hill, and Drawbaugh, and they were also to have a certain amount of the stock of the proposed corporation when formed. What amount they actually got Chellis, who was sworn as a witness in the case, declined to tell, but he admitted it was large.

At this time and in this way the attention of the general public was called for the first time to the fact that Drawbaugh claimed to have anticipated Bell in the discovery of the telephone. Bell's success had been proclaimed more than four years before at the Centennial Exposition in Philadelphia. In the meantime inventions in aid of his discovery had been multiplied. According to the testimony of Park Benjamin, more than one hundred patents had been issued and indexed under the word "telephone." Numerous interferences had been declared and considered at the Patent Office. Gray, Edison, Dolbear, and others had either claimed for themselves, or others had claimed for them, priority of invention and discovery, and Bell had thus far been sustained as against them all. Blake had perfected his microphone apparatus, and Bell's patent had become a great commercial success.

The People's Company either began or threatened to begin operations under its charter, and on the 20th of October, 1880, the Bell Company brought suit against it in the Circuit Court of the United States for the Southern District of New York, to prevent any infringement of the Bell patents. In the bill it was alleged—

that telephone-exchanges now exist in more than two hundred and seventy-five towns and cities of the United States, and in every State thereof, and exist in substantially every city in the United States having more than fifteen thousand inhabitants, and in many smaller places; * * * that there are now in use more than one hundred thousand electric speaking-telephones licensed by and paying royalty to [the Bell Company;] that the owners of said Bell patents, and those who now are or heretofore have been licensed by them, have devoted great time and attention and large sums of money to the development of the telephone and the introduction thereof into extensive use, and to the proper construction of the most suitable telephone lines and systems and telephonic appliances, and have constructed many thousand miles of telephone-lines for use with telephones owned by [the Bell Company,] and licensed by it for such use, and that nothing which the defendants, or F. A. Klemm, A. G. Tisdel, and D. Drawbaugh * * * have done has contributed in any substantial way to the development of the telephone or the introduction thereof into use.

The bill then avers that Klemm, Marx, Loth, and Wolf, having become the owners of the Klemm and Tisdel improvements, and having heard that Drawbaugh—

claimed that he had made some experiments relating to electric speaking-telephones, (which experiments, if made, were incomplete, imperfect, unfruitful, and long before abandoned,) entered into an arrangement with him to set up and claim that he was the first inventor of the speaking-telephone, and to make application for a patent therefor; and thereafter, alleging and pretending that said Drawbaugh was the original and first inventor of the electric speaking-telephone, and that electric speaking-telephones had not before such application been in public use or on sale for more than two years, with the knowledge and consent of Drawbaugh, they did, on or about the 21st day of July, 1880, induce him to make and cause to be filed in the Patent Office of the United States an application for a patent to issue to them as assignees of the said Drawbaugh, as the first and original inventor of the electric speaking-telephone, the said defendants well knowing at the time that electric speaking-telephones had been in public use by [the Bell Company and its licensees] for more than two years before said application.

It was then further alleged that if Drawbaugh had ever made his pretended inventions they—

have not been by him, or any one claiming under him, introduced into public use, and that knowledge thereof has been withheld from your orators and the public, except so far as they have been disclosed within the three months last past by certain newspaper publications.

To this bill the People's Company filed an answer in December, 1880, or January, 1881. The record does not show the precise date. In this answer it was said that Drawbaugh was—

the original and first inventor and discoverer of the art of communicating articulate speech between distant places by voltaic and magneto electricity—

and that—

long prior to the alleged inventions by [Bell, Gray, and Edison he,] then and now residing at Eberly's Mills, constructed and operated practical working electric speaking-telephones at said Eberly's Mills and exhibited their successful operation to a great number of other persons resident in his vicinity and elsewhere—

that his telephones as then constructed and operated—

contained all the material and substantial parts and inventions patented [in the patents of Bell, and] also other important and valuable inventions in electric and magneto telephony, and were fully capable of transmitting and were actually used for transmitting articulate vocal sounds and speech between distant points by means of electric currents; that some of the original machines and instruments, invented, made, used, and exhibited to many others long prior to the said alleged inventions of Bell, or either of them, are still in existence and capable of successful practical use, and are identified by a large number of persons who personally tested and used them and knew of their practical operation and use in the years 1870, 1871, 1872, 1873, 1874, and both prior and subsequently thereto; that certainly more than fifty and probably not less than one hundred persons, or even more, were cognizant of said Drawbaugh's invention and use of said telephones, and of his claim to be the original and first inventor thereof, prior to the alleged inventions of said Bell, or either of them; that said Drawbaugh for more than ten years prior to the year 1880 was miserably poor, in debt, with a large and helpless family dependent on his daily labor, and was from such cause alone utterly unable to patent his invention or caveat it or manufacture and introduce it on the market; that said Drawbaugh never abandoned his said invention, nor acknowledged the claims of any other person or persons thereto, but always persisted in his claims to it and intended to patent it as soon as he could procure the necessary means therefor; that said Drawbaugh never acquiesced in the public use of said Bell, Gray, Edison, Blake, or other telephones, nor in the claims of the alleged inventors thereof, nor gave his consent to such use.

It is then said that Drawbaugh, after finding by experiment that his invention was capable of successful working—

conceived that its range and capacity for usefulness to the public might be very greatly enlarged; that many improvements of great value might be made and added to it, which, without departing from its principle, might increase its value to himself and to the public, and therefore set himself at work to discover and invent such improvements; that he discovered and invented some of said additional improvements prior to any alleged invention by Bell, and that, notwithstanding his embarrassed and impoverished pecuniary condition and his utter want of proper mechanical tools, materials, and appliances to conduct such work, he labored with all reasonable diligence to perfect and adapt his said improvements, and did finally, in due exercise of such reasonable diligence, perfect and adapt the same, and that, in so far as the said Bell has incorporated such improvements in his said two patents, or either of them, he, the said Bell, has surreptitiously and unjustly obtained a patent or patents for that which was in fact first invented by Drawbaugh, who was using reasonable diligence in perfecting and adapting the same, and therefore the patent or patents of the said Bell therefor is or are invalid and void.

It is then said that—

the defendant, in good faith and relying upon its legal rights, * * * caused applications to be made and filed in the Patent Office for letters patent on the inventions of the said Daniel Drawbaugh, with the intention of procuring interference proceedings to be instituted, in accordance with the statute, against the patents of said Bell and the pending applications of said Gray, Edison, and others, in order that said Drawbaugh may be adjudged by the Commissioner of Patents to be, as he rightfully is, the original and first inventor of the electric speaking-telephone, and may be adjudged entitled to receive a patent or patents therefor.

The People's Company began taking depositions on the 19th of April, 1881, but Drawbaugh himself did not appear as a witness until December 7, 1881. After that time others were examined, and when the proofs were closed between three and four hundred witnesses had been produced whose testimony was taken and put into the record to establish the priority of Drawbaugh's invention. This testimony, as is now claimed, shows the story of that invention to have been as follows:

Early conception and experiments with the continuous current, 1862, 1866, and 1867.
Tea-cup transmitter and receiver, 1866 and 1867.
Tumbler and tin cup and mustard-can, ("F" and "B,") 1867 and 1869.
Improvement on "B," ("C,") 1869, 1870.
Further improvement upon "C," and the more perfect magneto instrument "L," 1870, 1871.
Mouth-piece changed to center and adjusting-screw inserted, (Exhibit "A,") 1874.
"D" and "E," perfectly adjusted and finished magneto instruments, January and February, 1875.
"L," "M," "G," and "O," from February, 1875, to August, 1876.
"H," August, 1876.
"J," "N," and "P," 1878.

This statement of the Drawbaugh claim we have quoted from the brief of counsel appearing in his behalf, and his success in the litigation has been placed, as we understand it, both in the answer and in the argument on the truth or falsehood of what is thus set forth.

The letters "F," "B," &c., in the statement refer to exhibits in the cause, being certain instruments claimed to have been made and used by Drawbaugh in the progress of his work and preserved until now. The original tea-cup instrument was not produced; but Drawbaugh in his deposition gave what he said was a drawing, showing how it had been constructed. "F," "B," "C," "I," and "A" were neither of them in a condition for use when they were put in evidence, and no one of all the witnesses except Drawbaugh could tell how they were originally constructed, or what the process was by which sound was transmitted when they were used. All any of the witnesses could say on that subject was that they had used one or more of the different instruments at Drawbaugh's shop, had heard sounds and sometimes spoken words through them, and that Drawbaugh told them the sound was carried on the wire by electricity. There was nothing whatever produced in print or in writing on the subject, not even a memorandum or a drawing of any kind, and there is nothing in the testimony to show that Drawbaugh ever told any one how his earlier instruments were made or what his process was until he was called as a witness in December, 1881, and explained it in his testimony. This was nearly twenty years, according to the present claim, after he had begun his experiments, nearly seven after he had made and used "D" and "E," "perfectly adjusted and finished magneto instruments," and more than five after "L," "M," "G," "O," and "H" had been constructed and kept in his shop. It was also nearly six years after the date of Bell's patent, more than five after the success of his discovery had been proclaimed at the Centennial Exposition in Philadelphia, four after his process had got into public use, three after it had become an established success, and two after he had brought his first suit for the establishment of his rights against Dowd, who represented the Western Union Telegraph Company, to a successful termination.

Under these circumstances it becomes important to consider the conduct of Drawbaugh in reference to his alleged invention during this twenty years of eventful history as connected with the discovery and use of telephones. If his present claim is true, his experiments began almost as far back as those of Reis, and he had in his shop at Eberly's Mills, within three miles of Harrisburg, telephones that were substantially perfect months before Bell (on the 2d of June, 1875) got the clue to his subsequent discoveries. It is conceded that "D" and "E," made, as is claimed, in February, 1875, are substantially as good magneto instruments as any Bell had used before December, 1881, and "L," "M," "G," "O," and "H," all of which it is claimed were constructed by August, 1876, and some in February, 1875, are as good or nearly as good microphones as those of Blake, which were not invented until 1878. This is the theory of Drawbaugh's defense as it is set forth in the answer and in the argument, and by it his case must stand or fall. The claim is that the discovery of the process was complete, and that perfect telephones had been made and were in a condition for use a year and more before Bell got his patent.

Drawbaugh was, when he gave his deposition, fifty-four years of age, and had lived all his life at or near Eberly's Mill, a small village near Harrisburg. He was a skillful and ingenious mechanic, and if he made "D" and "E" and the instruments which came after them at the time it is said he did he had good tools and good materials in 1875 and 1876 and was capable of doing the best of work. He was also somewhat of an inventor, and had some knowledge of electricity. According to the testimony he was an enthusiast on the subject of his "talking-machine," and showed it freely to his neighbors and people from the country when they visited his shop.

The Centennial Exposition was opened at Philadelphia in May, 1876, and Drawbaugh visited it on the 17th of October, 1876, remaining four or five days. Before he went he had heard, as he says, that some one besides himself had invented a speaking-telephone, which he had the impression was on exhibition there. If what he now claims is true, he had then on hand in his shop Exhibits "D," "E," "L," "M," "G," "O," and "H," all of them good instruments of their kind, and capable of transmitting speech, and some of them but just finished. Bell's apparatus had been exhibited to the Board of Judges in June before, and had attracted marked attention. The matter was

much discussed in the public press, and yet it never seems to have occurred to Drawbaugh to take any of his telephones with him when he went, although they were small in size, and some, or all of them, could have been carried without serious inconvenience.

When giving his testimony he was examined in chief as to that visit, and this is what he said on the subject of telephones:

Q. 386. Did you attend the Centennial Exhibition, at Philadelphia, in the year 1876?—A. Yes, sir; I did.

Q. 387. Can you give the date on which you went there?—A. I can by reference to a book. It was October 17, 1876. The 17th was a day on which I dated a letter from Philadelphia, while I was there on that visit.

Q. 388. How long did your visit there last?—A. About four or five days, to the best of my recollection.

Q. 389. Who went with you on that visit?—A. Mr. George Leonard.

Q. 390. Was that the only visit to the Centennial Exhibition that you made?—A. Yes, sir; it was.

Q. 391. At the time that you went there, or before that time, had you heard that somebody else besides yourself had invented a speaking-telephone—or a telephone?—A. Yes, sir; some time before that. I don't remember how long, but not a great while.

Q. 392. When you went there, did you suppose it would be on exhibition there?—A. I don't remember whether I had heard that it was on exhibition or not; but I got the impression some way that it was on exhibition.

Q. 393. While you were there at the Centennial did you see any telephones, or make an effort to see any there?—A. Yes, sir; I made an effort and seen an instrument called a telephone, and supposed it to be the instrument spoken of—the one of which I had heard. I was looking and had made some inquiry, and was directed or came to a portion of the building where I saw on a counter some man's telephone—the name I don't remember. At that time, or several times that I called, there was no one there to attend to it. I spoke to another party that had something else on exhibition—I don't recollect what it was—just near by, and I asked him whether there was any one there to attend or to show the instruments. I was informed then there was no one there to show them.

Q. 394. If you remember, please state what kind of an instrument it was that you saw there, and state what information you were able to obtain there regarding it and its mode of operation?—A. There was a number of instruments placed onto a raised portion—something like a shelf. That is, it resembled something like pigeon-holes, a box open in front, and each instrument at the back of it had an electro-magnet. The number of instruments I don't remember. I don't remember of counting them. If I am not mistaken, there may have been a dozen or more, perhaps; some were larger than others. I could not give you a much better description than that. I couldn't get any information about them. This attendant made some remarks about the instruments, but he didn't understand them, and couldn't explain them. I was several feet from where the instruments were. They were placed, it occurs to me, on a raised place like a shelf, just about high enough for a man to speak into; that is the way it looked to me. I did not go in behind the counter to examine them, although there was an opening to go in by, because I did not like to make too free, as there was no one there.

Q. 395. Did you see any circulars lying around there, referring to these instruments, or other advertisements of them?—A. I don't remember about that; it may have been.

Q. 396. What was your impression as to the character of the instruments when you finally left them?—A. I was impressed with the idea that they were instruments to telegraph by sounds—a certain sound to represent a certain letter of the alphabet. I am not certain how I got the idea, or whether any person told me that at the time, but that is the idea that I had. When I said certain sounds, I meant that sounds of a different pitch would represent different letters.

Q. 397. Do you know whether that was "Gray's Harmonic Telegraph" that you saw there or not?—A. It didn't say "telegraph;" I am confident it was called "telephone." I didn't see the working parts of the interior, except the electro-magnets. I took the name of the man and his address on a piece of paper and put it in my pocket, but I don't know what became of it. I don't know whether it was "Gray's Harmonic Telegraph" or not.

Q. 398. Did you see any tuning-forks about it?—A. I did not.

That was all he did during his entire visit to ascertain whether any one besides himself had actually entered upon this then new and interesting field of invention and discovery. He spoke to no one about what he had done himself, and he made no special effort to find out whether that which was on exhibition was in any respect like what he had at home. Neither did he when he got home, so far as the records show, say anything to his neighbors or visiting friends about what he had seen or heard. He had apparently lost all interest in "talking-machines." Not so, however, with his other inventions. The testimony shows that during the early part of 1876 he was much occupied in building an electric clock, which he thought of exhibiting at the Centennial. This he did not do, however, but either just before he went to Philadelphia or soon after Rufus E. Shapley, a jeweler of Mechanicsburg, went, by his invitation or on his suggestion, to Eberly's Mills to look at the clock which he had made. Soon afterward the clock was taken to Shapley's store in Mechanicsburg, and on the 8th of November, 1876, Drawbaugh by an instrument in writing transferred to Shapley a half-interest in the "clock I am getting up, the said R. E. Shapley to pay for patenting the same." Shapley had then two thousand dollars in money which Drawbaugh was anxious to have him invest in that business, and the clock was taken by him to his shop, so that it might be examined with that end in view if it should prove to be useful. Sometime afterward it was taken back to Eberly's Mills, where it remained until April 1, 1878, or thereabout, when a clock company was formed, and that clock, or another one substantially like it, was taken about the country for exhibition. For this Drawbaugh was paid five hundred dollars, with an interest in the profits, and on the 20th of September, 1878, he applied for a patent for improvement in earth-batteries for electric clocks, which was issued January 14, 1879, to the members of the clock company. The enterprise does not seem to have been productive of any great success.

In November or December, 1878, while this clock was on exhibition at Harrisburg, Drawbaugh was introduced to Edgar W. Chellis. He had with him at the time a "wooden model of a faucet" that he wanted Chellis and another man to take each a third interest in. An arrangement was afterward made by which Chellis got a two-thirds interest, he paying for it two hundred and fifty dollars, January 7, 1879. On the 14th of the same month Drawbaugh filed in the Patent Office an application for a patent for "improvement in rotary measuring-faucets," Chellis to have a two-thirds interest. After this application an interference was declared, March 29, 1879, between Drawbaugh and David A. Hauck, who had filed a conflicting application January 17. In his preliminary statement upon this interference Drawbaugh said that he had conceived the idea of his faucets and sketched them late in the fall of 1876; that he made a working model in the spring of 1877, and actually tested it then, but the Patent Office model was not completed until about the 1st of November, 1878. The case was closely contested, but finally decided in favor of Drawbaugh, January 15, 1880. The patent was granted to him and Chellis, July 6 of the same year. In this contest Jacobs and Hill, who afterward became interested in his telephone claims, appeared as the counsel of Drawbaugh.

On the 2d of July, 1879, Drawbaugh filed another application in the Patent Office for improvement in water-motors, Chellis to have in this also a two-thirds interest. Upon this application a patent was issued March 16, 1880.

It is impossible to believe, if Drawbaugh had in his shop when he reached home from the Centennial Exhibits "D," "E," "L," "M," "G," "O," and "H," or even "D" and "E" alone, that he would have set himself to work in the first instance at developing his clock enterprise or perfecting his former conception of a measuring-faucet, instead of making some effort to call the attention of his friends to his great discovery of the telephone, which he was in danger of losing by the patent which had been issued to another, and which he could not but have known was even then attracting the greatest attention: and in this connection it must be kept in mind that the theory of the defense is, as stated in the answer, that Drawbaugh had at that time fully perfected his invention, and that while at first he "conceived that its range and capacity for usefulness to the public might be very greatly enlarged," he had before the date of Bell's patent, "notwithstanding his embarrassed and impoverished pecuniary condition and his utter want of proper mechanical tools," finally perfected his work. His conduct afterward, therefore, is to be judged not as that of one who was still in the midst of his experiments and doubtful of the results, but of one who had arrived at the end and had completed his success.

No man of his intelligence, with or without the enthusiasm upon the subject which it is said he possessed, could have remained silent under such circumstances. As we have read the testimony, it is not even pretended that he took any of his instruments outside of his own village until May, 1878, when, as is claimed, he showed one to his friend Stees, in Harrisburg, whom he had known for years, and who was the first to use, and, in fact, was then using, a Bell telephone in that place upon a private line of his own between his office and his shops. This produced no results, and when afterward, in January, 1879, Chellis was told that Drawbaugh had "a phonograph and a telephone that he had invented" he gave it no attention, because, to use his own language—

I was interested in the faucet and motor business and wished to push them, and I did not think we could do much with the telephone, as Bell had a patent, and I did not know that he could antedate them.

And again, when speaking of a conversation he had with Drawbaugh, he said:

I advised him to drop it, (the telephone,) as he could not antedate Bell. He said he did not know about that; that he had been working on it a good while. It was his way of expressing himself. When I would say "You can't antedate Bell," he would say "I don't know about that; I have been working at it a good while."

This, it must be remembered, was in 1879, after the telephone had become a success, and after it had been a year or more in use in Harrisburg, where Chellis lived. It is impossible to believe that either Chellis or Drawbaugh was ignorant of the approximate time of Bell's invention, which had been the subject of frequent newspaper comment from the time of its exhibition at the Centennial. The subject was often referred to in the Harrisburg and Mechanicsburg papers, and it is not for a moment to be supposed that all of these various articles escaped their attention. Under such circumstances, if it were true that Drawbaugh had made his "D" and "E," as is now claimed, in February, 1875, he certainly would have said so, and would not have contented himself with so doubting an answer to Chellis's suggestion of his inability to antedate Bell as that which Chellis now says he gave.

Another important fact in this connection is one which is proved by the testimony of Andrew R. Kiefer, who from 1868 had been division telegraph-operator, having charge of the middle division of the Pennsylvania railroad and residing in Harrisburg. From 1867 to the winter of 1881-'2 he was a member of a partnership firm in that place which was engaged in "the manufacture of burglar-alarms, electric hotel-annunciators, and fine electric work for the Government—instruments for the Signal Bureau, patent models, &c." He had also, since 1876, kept a place for the sale of electrical supplies. He had known Drawbaugh certainly since 1876, and probably before. Drawbaugh met him on different occasions and talked upon electrical matters. In the course of their acquaintance Drawbaugh showed him an electrical fire-alarm apparatus and the works of his electric clock; but the subject of telephones was never alluded to between them until in the summer of 1881, when this occurred. We quote from Kiefer's deposition:

In the summer of 1881 I took my wife out for a drive, and went over to see his (Drawbaugh's) works, never having seen them, and having promised to come and see him sometime. My wife, not caring about going through the shop, remained in the carriage, and I went through alone with Mr. Drawbaugh. He showed me through the shops and introduced me to Mr. Chellis, and showed me parts of the water-motor and some other things of his getting up. On account of my wife's being in the carriage alone, I did not stay long. As I stepped into, or was just in, the carriage, Mr. Drawbaugh said: "I forgot to show you my telephone." I did not get out again to go and see it, and I drove away without seeing it, expecting to see it again; but I have never got over to the shop since.

This was after the suit of the Bell Company against the People's Company was begun, and of course after the matter got into the hands of Chellis and his associates. It is no answer to the criticism of Drawbaugh's conduct in this particular to say, as was said in argument, that—

one reason why he did not speak or apply to every man with whom he had personal acquaintance was that he was ridiculed by his neighbors; that his invention was considered a humbug by them and of no commercial value.

Bell's success was proclaimed in the *Harrisburg Patriot* as early as February 26, 1877, and the days of ridicule were then past. If Drawbaugh had at that time in his shop the machines which it is now claimed were all complete as they now are by August, 1876, and most of them before, there cannot be a doubt that he would have taken them to some place where they could be tried, and show that they would do what he had all along claimed for them. All he had to do at any time after he came back from the Centennial was to take any pair of his little instruments to his friend Zeigler or his friend Stees, at Harrisburg, attach them to a line-wire, and show what he had. They were men who could appreciate his achievement and help him if it was, as he now says it was, a success. It would certainly have been easier then, within two years of the time the first of them were made and within a year of the date of Bell's patent, to show that he "antedated" Bell, than it was three years afterward, when he was brought into the controversy through the instrumentality of his associates, not, as must be evident to all, to get a patent for himself, but to defeat that of Bell. And in this connection it is specially significant that the application which it is claimed was made for a patent on the 21st of July, 1880, and the specification of his invention which was then written out, have been purposely and designedly kept out of the case, although their production was demanded. They were written before this suit was begun, and it is impossible to believe that they would have been withheld, at least upon the call of the opposite party, if they were in all respects consistent

with the subsequent developments of the case. The excuse given by counsel at the time that they were—

in the secret archives of the Patent Office—

and—

if produced and published in this cause would possibly invite the filing of contesting applications, and result in interference and additional litigation, besides unnecessarily prolonging the taking of testimony here and increasing the expenses—

we cannot accept as satisfactory, especially as in the answer it was said that one object of filing the application was to procure—

interference proceedings to be instituted against the patents of Bell, in order that Drawbaugh may be adjudged by the Commissioner to be, as he rightfully is, the original and first inventor.

We have not overlooked the depositions that have been taken in such large numbers to show that Drawbaugh was successful with "F," "B," "C," "I," and "A" before "D" and "E" were made. They have been studied with care, and if they contained all the testimony in the case it would be more difficult to reach the conclusion that Drawbaugh's claim was not sustained. But in our opinion their effect has been completely overcome by the conduct of Drawbaugh, about which there is no dispute, from the time of his visit to the Centennial until he was put forward by the promoters of the People's Company, nearly four years afterward, to contest the claims of Bell. He was silent so far as the general public were concerned, when if he had really done what these witnesses now think he did he would most certainly have spoken. There is hardly a single act of his connected with his present claim from the time he heard, before going to Philadelphia, that some one else had invented a telephone which was on exhibition at the Centennial that is not entirely inconsistent with the idea even then of a complete discovery or invention by himself which could be put to any practical use. It is not pretended that what he did was done in private. He had influential friends with ample pecuniary resources, ready to help him in bringing out his inventions when they promised success. He easily got aid for his clock and for his faucet. The news of Bell's invention spread rapidly and at once, and it took but a few months to demonstrate to the world that he had achieved a brilliant success. If it were known at Eberly's Mills alone that Drawbaugh had been doing the same thing for years in his shop there—and it certainly would have been known all through the little village if it had actually been done—no one can believe that the public would be kept in ignorance of it until four years afterward, when a "special" from Washington "to the *Cincinnati Commercial*" announced a "Telephone Combination" "to have entire charge of the telephones, not only in this country, but in the world," that could transmit messages "for almost a song."

But there is another fact in this case equally striking. As has already been seen, "F," "B," "C," and "I" were in no condition for use when they were produced and put in evidence. They were mere "remains," and no one but Drawbaugh himself could tell how they were made or how they were to be used. He undertook to reproduce some of them, especially "F" and "B." This was in the latter part of 1881, while the testimony was being taken. The Bell Company proposed that they should be tried to see if they would do what the witnesses said had been done with the originals, which the "remains" show must have been exceedingly primitive in their character. The testimony also shows that when they were originally used by or in the presence of the witnesses no particular care was taken in their adjustment. They were lying around in the shop or standing upon shelves. Some say that when experiments were made they were held in the hand or allowed to stand on the table. Many testify to satisfactory results, and Drawbaugh himself said in his deposition:

I would have persons in the cellar reading printed matter—some advertisement or something—and I could hear the words that were read; and at other times I would go down into the cellar and read something, and, coming up, they would repeat the words to me that I had read.

The proposition of the Bell Company was accepted, and the reproductions were tried in March, 1882, under the most favorable circumstances. Three days were occupied in the test, and it is substantially conceded that it was a failure. Occasionally a sound was heard, and sometimes a word; but "it would not transmit sentences." At the time of these experiments "F," which was the transmitter, was placed on a table, and used as Drawbaugh said it was originally. Two years afterward other reproductions were presented differently constructed and used in a different way, and these would "talk;" but they were neither made nor used in the same way as the originals. To our minds the result of the second experiments conclusively showed that the original instruments could not have done what the witnesses supposed they did, and that what they saw and heard was produced by some other means than an electric speaking-telephone. We do not doubt that Drawbaugh may have conceived the idea that speech could be transmitted to a distance by means of electricity, and that he was experimenting upon that subject; but to hold that he had discovered the art of doing it before Bell did would be to construe testimony without regard to "the ordinary laws that govern human conduct." (*Atlantic Works* v. *Brady*, 107 U. S., 192, 203.)

Without pursuing the subject further, we decide that the Drawbaugh defense has not been made out.

Another objection to Bell's patent, put forth in the oral argument of Mr. Hill and in the printed brief signed by him, and in that signed by Mr. Dixon, is that his application as originally filed in the Patent Office did not contain his present fourth claim, or any description of the variable-resistance method, and that all which now appears in the specification on that subject, including the fourth claim, was surreptitiously interpolated afterward.

Bell's application was filed February 14, 1876, and afterward, during the same day, Elisha Gray filed a caveat, in which he claimed as his invention—

the art of transmitting vocal sounds or conversations telegraphically through an electric circuit—

and in his specification described the variable-resistance method. The precise charge now made in the printed brief of Mr. Hill is that—

Mr. Bell's attorneys had an underground railroad in operation between their office and Examiner Wilbur's room in the Patent Office, by which they were enabled to have unlawful and guilty knowledge of Gray's papers as soon as they were filed in the Patent Office—

and—

that an important invention and a claim therefor were bodily interpolated into Bell's specification between February 14, 1876, and February 19, 1876, by Pollok in consequence of the guilty knowledge which the latter already had of the contents of Gray's caveat before the declaration of interference with Gray on February 19th.

So grave a charge, made in so formal a manner, is entitled to careful consideration. It involves the professional integrity and moral character of eminent attorneys, and requires us to find from the evidence that after Bell swore to his application on the 20th of January, 1876, and after the application thus sworn to had been formally filed in the Patent Office, an examiner, who got knowledge of the Gray caveat, put in afterward, disclosed its contents to Bell's attorneys; that they were then allowed to withdraw the application, change it so as to include Gray's variable-resistance method over Bell's signature and over the *jurat*, and then restore it to the files, thus materially altered, as if it were the original, and all this between February 14 and February 19.

Although much stress was laid in argument on the fact that what purported to be a certified copy of the specification of Bell, as found in the file wrapper and contents printed in the Dowd case, differed materially from the patent, the cause of these differences has been explained in the most satisfactory manner, and we entertain no doubt whatever that the specification as now found in the patent is precisely the same as that on which the order to issue was made. If any alterations were made they were all done before February 19, and the fair copy which is now found on the files of the Office is precisely as it was when the order for the patent was granted. Not a shadow of suspicion can rest on any one growing out of the misprint of the specification in the Dowd case. All that remains, therefore, on which to rest this serious charge is that in a paper handed by Bell to George Brown, of Toronto, describing his invention, and which was intended to be used in England to secure a British patent, what is now claimed to be an interpolation in the American application is not to be found. It is but right to say that during the whole course of the protracted litigation upon the Bell patent no argument was ever presented based on this discrepancy until the brief of Mr. Hill was filed in this Court on the 18th of January, 1887, six days before the argument in these appeals was begun. So far as we are advised, nothing had ever before occurred in the cases that seemed to make it necessary to prove when the variable-resistance method or the fourth claim was put into the American application or why it was left out of the paper handed to Brown. It seems always to have been assumed until the cases got here that because it was in the American patent it was rightfully there. Certainly there is nothing in the pleadings in any of the cases to direct attention to the materiality of this fact.

A comparison of the paper handed Brown with the American application shows that they differ in more than thirty different places besides those which relate to the variable-resistance method and the fourth claim. The differences are generally in forms of expression, thus indicating that one was written after the other and evidently for the purpose of securing greater accuracy. The paper handed Brown was clearly a rough draft and not a fair copy, for the record shows that it bore on its face the evidence of many erasures and interlineations. Bell says in his testimony that he began writing his specification in September or October, 1875, and wrote and rewrote it a number of times, finally adopting that mode of expression which seemed to him the best to explain his invention and the relation which one portion bore to another. He visited Brown in Canada in September and again in December, 1875. The arrangement was made between them on the 29th of December, at this last interview, by which Brown was to interest himself in getting out British patents. Other inventions besides the telephone were included in the contract entered into for that purpose.

Bell returned to Boston on the 1st of January and immediately set himself to work to complete his specification. He had it done, so that it was taken to Washington by Mr. Hubbard about the 10th of that month and delivered to Pollok and Bailey, the attorneys. It was then examined by the attorneys, found correct, and a fair copy made and returned on the 18th to Bell in Boston for his signature and oath. It was signed and sworn to in Suffolk county, Massachusetts, January 20, and immediately returned to the attorneys. Afterward Pollok met Bell in New York, and it was again gone over with care by the two together. No change whatever was made in it at that time, and Pollok took it back with him to Washington.

On the 25th of January, 1876, Bell met Brown, who was then on the way to England, in New York. It is now assumed that the paper which Brown took to England was handed to him then, and because the variable-resistance method and the fourth claim were not in that it is argued that they could not have been in the American specification at that time; but no one has said when the paper was actually handed to Brown. Bell says he cannot tell, but that it must have been after he made his contract with Brown on the 29th of December. As the American specification was signed and sworn to five days before the interview with Brown on the 25th of January and the paper of Brown differs from it in so many particulars besides that now in question, it would seem to be clear that the paper was a copy of some former draft which Bell had made—possibly one taken to Canada in December—and not of that which was perfected afterward. As the specification which had been prepared and sworn to was a fair copy, without erasures or interlineations, the fact that the paper handed Brown was not a fair copy would imply that it was not intended to be an exact transcript of the other. At any rate the bare fact that the difference exists under such circumstances is not sufficient to brand Bell and his attorneys and the officers of the Patent Office with that infamy which the charges made against them imply. We therefore have no hesitation in rejecting the argument. The variable-resistance method is introduced only as showing another mode of creating electrical undulations. That Bell had had his mind upon the effect of such a method is conclusively established by a letter which he addressed to Mr. Hubbard on the 4th of May, 1875, and which is found in the Dowd record, introduced into the Overland case by stipulation. Its insertion in his final draft of his specification is another proof of the care with which his work had been done.

In the case of the Clay Commercial Company objection was made to the sufficiency of the proof of the incorporation of the American Bell Telephone Company and of its title to the Bell patents. Upon the

first point the proof was (1) a special act of the General Court of Massachusetts, entitled "An act to incorporate the American Bell Telephone Company," which authorized certain persons, therein named, and their associates to organize themselves under the provisions of chapter 224 of the acts of 1870 and the acts in amendment thereof for telephone purposes, and (2) a certificate of the Secretary of the Commonwealth in the form required by section 11 of chapter 224 that certain persons, among whom were the most of those mentioned in the special act, were legally organized and established as an existing corporation under the name of the American Bell Telephone Company. This section made such a certificate "conclusive evidence of the existence of a corporation" organized under that chapter. The authority granted by the special act to the persons named to organize as a corporation in this way gave them the authority to select a corporate name, and also made the statutory certificate conclusive evidence of their corporate existence.

The objections to the proof of title are not, in our opinion, well taken. We do not deem it necessary to add to the length of this opinion by referring particularly to the testimony on that point.

This disposes of all the cases so far as the patent of March 7, 1876, is concerned. It remains only to consider the patent of January 30, 1877, about which but little has been said either in the oral or printed arguments. Apparently it received but little attention by counsel or the court in either of the cases below. In the Dolbear case it was by consent excluded from the decree, and of course is not presented by that record in this Court. In all the other cases the patent was sustained, and the Clay Commercial Company was adjudged to have infringed the third, fifth, sixth, seventh, and eighth claims; the Molecular Company the sixth, seventh, and eighth, but not the fifth; the People's Company the fifth, sixth, and eighth, and the Overland Company the third, fifth, sixth, seventh, and eighth. From the decree in favor of the Molecular Company as to the fifth claim the Bell Company has appealed.

In the case of the Clay Commercial Company it was alleged in the answer that the substantial and material parts of the things described and claimed were described and claimed in a prior British patent taken out by or for Bell, dated December 9, 1876, and that inasmuch as the American patent does not bear the same date with the foreign patent and is not limited to expire therewith it is void. This point has not been pressed in the argument here, and, in our opinion, it has been settled by the decision of this Court in *O'Reilly* v. *Morse* (15 How., 62, 112) and impliedly by that in *Siemens* v. *Sellers* (123 U. S., 276) at the present term that the effect of section 4887 of the Revised Statutes is not to render invalid an American patent which does not bear the same date as a foreign patent for the same invention, but only to limit its term.

The patent itself is for the mechanical structure of an electric telephone to be used to produce the electrical action on which the first patent rests. The third claim is for the use in such instruments of a diaphragm made of a plate of iron or steel, or other material capable of inductive action; the fifth, of a permanent magnet constructed, as described, with a coil upon the end or ends nearest the plate; the sixth, of a sounding-box, as described; the seventh, of a speaking or hearing tube, as described, for conveying the sounds, and the eighth, of a permanent magnet and plate combined. The claim is not for these several things in and of themselves, but for an electric telephone in the construction of which these things or any of them are used; hence the fifth claim is not anticipated by the Schellen magnet, as was decided in the Molecular case below. The patent is not for the magnet, but for the telephone of which it forms but part. To that extent the decree in that case was erroneous.

It follows that the decree in each of the cases, so far as it is in favor of the Bell Company and those claiming under it, must be affirmed, and that the decree in the Molecular case, so far as it is against that company on the fifth claim of the patent of January 30, 1877, must be reversed and a decree directed to that extent in its favor. It is consequently so ordered.

Mr. Justice GRAY was not present at the argument and took no part in the decision of these cases.

Mr. Justice LAMAR, not being a member of the Court when these cases were argued, took no part in their decision.

DISSENTING OPINION.

Dissenting opinion of Justices FIELD, BRADLEY, and HARLAN, delivered by Mr. Justice BRADLEY.

Mr. Justice FIELD, Mr. Justice HARLAN, and myself are not able to concur with the other members of the Court sitting in these cases in the result which has been reached by them. Without expressing an opinion on other issues, the point on which we dissent relates to the defense made on the alleged invention of Daniel Drawbaugh, and applies to all the cases in which that invention is set up. We think that Drawbaugh anticipated the invention of Mr. Bell, who at most is not claimed to have invented the speaking-telephone prior to June 10, 1875. We think that the evidence on this point is so overwhelming with regard both to the number and character of the witnesses that it cannot be overcome. As this is a question of fact, depending upon the weight of the evidence, and involves no question of law, it does not require an extended discussion on the part of those who dissent from the opinion of the majority, which is very ably drawn and presents the case with great clearness and force. On the point mentioned, however, we cannot concur in the views expressed.

The essence of the invention claimed by Mr. Bell is the transmission of articulate speech to a distance by means of an electrical current subjected to undulations produced by the air-vibrations of the voice. There are two modes (as yet discovered) by which these undulations may be thus produced. In one they are produced by interposing in the circuit a substance whose electrical conductivity may be varied by the concussions or vibrations of the air produced by the voice. This is called the "variable-resistance process," because the electrical current is subjected to the variable resistance (or conductivity) of the substance thus interposed. By the other mode the undulations are produced by the inductive effect of an armature (or small flat piece of iron) attached to the membrane spoken against and placed near to the poles of an electro-magnet situated in the circuit. In both cases the undulations impart the vibrations which caused them to another diaphragm at a distance (called the "receiver") by means of an electro-magnet in the circuit, placed near to an armature affixed to such diaphragm. These vibrations thus reproduced are detected by the ear, and the spoken words are heard.

We are satisfied from a very great preponderance of evidence that Drawbaugh produced and exhibited in his shop as early as 1869 an electrical instrument by which he transmitted speech so as to be distinctly heard and understood by means of a wire and the employment of variable resistance to the electrical current. This variable resistance was produced by causing the electrical current to pass through pulverized charcoal, carbon, and other substances acted upon by the vibrations of the voice in speaking. This was the whole invention so far as the principle of variable resistance is concerned. We are also satisfied that as early as 1871 he reproduced articulate speech at a distance by means of a current of electricity, subjected by electrical induction to undulations corresponding to the vibrations of the voice in speaking, a process substantially the same as that which is claimed in Mr. Bell's patent.

In regard to the instrument in which the principle of variable resistance was used, more than seventy witnesses were examined, who either testified to having seen it and heard it, or established such facts and circumstances in relation to it as to put its existence and date beyond a question. With regard to the instrument in which electrical induction was employed to produce the requisite undulations, some forty or fifty witnesses were produced, many of whom saw it and heard speech through it, and others either saw it or heard it talked about in such a manner as to fix the time when it was in existence. On the questions of time and result there is such a cloud of witnesses in both cases that it seems almost impossible not to give credence to them. The evidence of some of them may have been shaken with regard to the time they had in mind; but that of the great majority was not shaken at all, but corroborated by circumstances which rendered the proof irrefragable. Many of them, it is true, were plain country people; but they heard the words through the instrument, and that is a matter about which they could not be mistaken. It did not require science nor learning to understand that. But the witnesses were not confined to this class. A number of them were people of position in society—official, professional, and literary—all, however, like the inventor, regarding the matter more as one of curiosity than of public importance.

As it would serve no useful purpose to repeat the testimony of these witnesses, we shall refrain from doing so. We will only add that nearly all the original instruments used by Drawbaugh were produced on the trial and identified by the witnesses. Some of them were broken and in a dilapidated condition, but sufficiently perfect to be accurately reproduced. Their very form and principle of construction showed that they were intended for speaking-telephones and nothing else. Drawbaugh certainly had the principle and accomplished the result. Perhaps without the aid of Mr. Bell the speaking-telephone would not have been brought into public use to this day, but that Drawbaugh produced it there can hardly be a reasonable doubt.

We do not question Mr. Bell's merits. He appreciated the importance of the invention, and brought it before the public in such a manner as to attract to it the attention of the scientific world. His professional experience and attainments enabled him to see at a glance that it was one of the great discoveries of the century. Drawbaugh was a different sort of man. He did not see it in this halo of light. Had he done so, he would have taken measures to interest other persons with him in it, and to have brought it out to public admiration and use. He was only a plain mechanic, somewhat better instructed than most ordinary mechanics, a man of more reading, of better intelligence; but he looked upon what he had made more as a curiosity than as a matter of financial, scientific, or public importance. This explains why he did not take more pains to bring it forward to public notice. Another cause of his delay in bringing his invention to public notice was that he was ever indulging the hope of producing speech at the receiving end of the line loud and distinct enough to be heard across a room, like the voice of a person speaking in an ordinary tone.

It is perfectly natural for the world to take the part of the man who has already achieved eminence. No patriotic Briton could believe that anybody but Watt could produce an improvement in the steam-engine. This principle of human nature may well explain the relative feeling toward Bell and Drawbaugh in reference to the invention of the telephone. It is regarded as incredible that so great a discovery should have been made by the plain mechanic, and not by the eminent scientist and inventor. Yet the proof amounts to demonstration, from the testimony of Mr. Bell himself, and his assistant, Watson, that he never transmitted an intelligible word through an electrical instrument, nor produced any such instrument that would transmit an intelligible word, until after his patent had been issued, while for years before Drawbaugh had talked through his so that words and sentences had again and again been distinctly heard. We do not wish to say a word depreciatory of Mr. Bell. He was original, if not first. He preconceived the principle on which the result must be obtained by that forecast which is acquired from scientific knowledge, as Leverrier did the place of the unknown planet; but in this, as in the actual production of the thing, he was, according to the great preponderance of the evidence, anticipated by a man of far humbler pretensions. A common astronomer, by carefully sweeping the sky, might have been first in discovering the planet Neptune, while no one but a Leverrier or an Adams could have ascertained its existence and position by calculation. So it was with Bell and Drawbaugh. The latter invented the telephone without appreciating the importance and completeness of his invention. Bell subsequently projected it on the basis of scientific

inference, and took out a patent for it. But as our laws do not award a patent to one who was not the first to make an invention, we think that Bell's patent is void by the anticipation of Drawbaugh.

U. S. Circuit Court—Southern District of New York.

EDWARD BARR COMPANY (LIMITED) *v.* NEW YORK AND NEW HAVEN AUTOMATIC SPRINKLER COMPANY.

Decided August 18, 1887.

1. RIGHT TO PRELIMINARY INJUNCTION—PRESUMPTION OF VALIDITY.
To entitle a complainant to a preliminary injunction, restraining the infringement of Letters Patent, there must be a special presumption in favor of the validity of the patents, arising from an adjudication in a federal court, acquiescence by the public, or a successful interference in the Patent Office.

2. SAME—FIRE-EXTINGUISHER.
A preliminary injunction, restraining the infringement of Letters Patents No. 307,456, November 4, 1884, and No. 357,987, February 15, 1887, for automatic fire-extinguisher, denied, as nothing appeared in the motion papers showing such a former adjudication, public acquiescence, or successful interference in the Patent Office, between the parties or their privies.

3. SAME—PRESUMPTION—PARTIES TO—RESTRICTION OF—INTERFERENCE.
A presumption of validity arising from a successful interference in the Patent Office only applies against the parties to the interference and their privies. It does not extend to litigants who do not make the infringing article under a grant from the interferer.

Mr. Philip R. Voorhees for the complainant.
Messrs. Wetmore & Jenner for the defendant.

LACOMBE, *J.*:

This is an application for a preliminary injunction to restrain defendants from infringing two patents owned, in whole or in part, by complainant. Both these patents cover improvements in apparatus for the automatic extinguishment of fires. The first patent, No. 307,456, was granted November 4, 1884, to Frank Gray, and it is contended that one claim only of such patent is infringed. The other patent, No. 357,987, was granted February 15, 1887, to William S. Gray, (jointly with Frank Gray,) and it is contended that it is infringed in its entirety.

Before a preliminary injunction to restrain infringement of a patent is granted there must be a special presumption that the patent is valid. That presumption does not arise from the presentation of the unattended Letters Patent. It may be shown, however, by proof that the patent has been suitably adjudicated in a federal court, and there held valid, or that its validity has been suitably acquiesced in by the public, or that the patent has successfully undergone an interference in the Patent Office. When either of these facts appears the validity of the patent will be presumed. (Walk. Pat., section 665, and cases cited.)

As to the first of these patents, (No. 307,456, to Frank Gray)—namely, that for an independent pipe—there has been neither adjudication nor interference. The only proof of acquiescence is a general allegation in the bill. No facts bearing on this point are disclosed. Nearly three years have elapsed since its issue, but to what extent specimens of the patented article were made and sold by the patentees, or under their license, or, indeed, whether any one ever made or used such apparatus, does not appear. The complainant therefore has not made out such *prima facie* case as entitles him to a preliminary injunction under the first patent.

As to the second patent, there has been no adjudication, and the time since it was issued is so short that, without exceptional circumstances, (which are not shown,) it cannot be claimed that there has been general acquiescence. The complaint relies on a successful interference in the Patent Office, to which one Bishop was a party. That such a successful interference is sufficient ground for presuming the validity of a patent is abundantly settled by authority, with one restriction—namely, that such presumption arises only against the parties to the interference and their privies. In *Greenwood* v. *Bracher*, (1 Fed. Rep., 856,) *Smith* v. *Halkyard*, (16 Fed. Rep., 414,) and *Pentlarge* v. *Beeston* (14 Blatchf., 354) the defendants had been parties to the interference. In *Holliday* v. *Pickhardt* (12 Fed. Rep., 147) the defendants were the representatives of Caro, who was a party to the interference, and whose product was before the Patent Office. In *Peek, &c., Co.* v. *Lindsay* (18 O. G., 63, 2 Fed. Rep., 688) the interfering application was put in by one Webb; "patent to be issued to his assignees, Landers, Frary & Clark," who were defendant's vendors. In *Celluloid Manufacturing Co.* v. *Chrolithian Co.* (32 O. G., 383, 24 Fed. Rep., 275) the plaintiff was the assignee of Sanborn, to whom the patent was granted after an interference declared between him and one Kanouse, "an applicant for a patent for the same invention, for the benefit and at the expense of the defendants," who "were heard upon the questions involved in the interference case and were privies to the judgment upon it."

No authority is shown for extending the principle invoked to cover litigants who do not manufacture the alleged infringing article under the grant, assignment, or permit of the interferer, and who did not, either personally or through the interferer, have the opportunity to be heard in the Patent Office. In the case at bar the defendants use as part of their apparatus a particular piece of mechanism invented and patented by Bishop; but concededly it has nothing to do with either patent sued on, and is no infringement. Bishop is also in defendants' employ, though in what capacity does not appear. Certainly he is not an officer of the company. An affidavit sworn to by him has been read by defendants on this motion. Those facts, however, do not make them his privies. They do not claim the right to manufacture under any grant or permission from him, nor is there anything to show such a community of interest as would warrant the inference that his interference in effect secured to defendants their opportunity to be heard in the Patent Office.

Motion denied.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

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CONTENTS.

	Page.
NOTICES	393
ISSUE OF APRIL 24, 1888	393
DESIGNS	394
TRADE-MARKS	394
LABELS	394
PATENTS GRANTED	395
REISSUES	504
DECISIONS OF THE COMMISSIONER—	
Ex parte Smith	505
Ex parte Maxim	506
Ex parte Johnson	507
Boulton *v.* Illingworth	508
DECISIONS OF THE U. S. COURTS—	
Hoskin *et al.* *v.* Fisher *et al*	509
DECISIONS OF STATE COURTS—	
Wilson *v.* Keely	511

Notice—Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 18, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 487 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL,
Commissioner.

Notice.

UNITED STATES PATENT OFFICE,
Washington, D. C., April 13, 1888.

To expedite the distribution of the mail in this Office, and to insure the prompt and certain delivery of communications to the divisions and officials having charge of the matters to which they relate, attorneys and correspondents are respectfully requested to enter upon the upper left-hand corner of amendments and other communications, if known to them, the number of the room and the name of the examiner or designation of the division to which the communication should be sent.

BENTON J. HALL,
Commissioner of Patents.

Notice.—Models in Rejected or Abandoned Cases.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 9, 1888.

Notice is hereby given to inventors and the public that a large number of models is in the custody of this Office, which were received between the years 1879 and 1885, many of which have never become a part of the records of this Office. All such models and all models belonging to rejected or abandoned applications will be sold or otherwise disposed of under the provisions of section 485 of the Revised Statutes unless removed in sixty days from the date hereof.

Institutions of learning in good standing may, after the expiration of the time above limited, on written application, make selection before the day of public sale of models remaining unclaimed. The expense of removal or transportation of these models must be borne by the applicants or institutions of learning.

BENTON J. HALL,
Commissioner.

43 O G—4—1

Issue of April 24, 1888.

Patents	378—No. 381,520 to No. 381,897,	inclusive.
Designs	19—No. 18,263 to No. 18,281,	inclusive.
Trade-Marks	19—No. 15,380 to No. 15,398,	inclusive.
Labels	7—No. 5,564 to No. 5,570,	inclusive.
Reissue	1—No. 10,924.	
Total issue	424	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	.....	Nebraska	1	.....
Arizona Territory	.....	.....	Nevada	2	.....
Arkansas	.....	.....	New Hampshire	1	.....
California	7	1	New Jersey	24	1
Colorado	2	.....	New Mexico Terri'y.	.....	.....
Connecticut	16	.....	New York	57	9
Dakota Territory	.....	.....	North Carolina	2	.....
Delaware	.....	.....	Ohio	33	.....
District of Columbia.	2	.....	Oregon	3	.....
Florida	1	.....	Pennsylvania	40	5
Georgia	.....	.....	Rhode Island	5	.....
Idaho Territory	.....	.....	South Carolina	5	.....
Illinois	48	1	Tennessee	4	.....
Indiana	4	.....	Texas	4	.....
Iowa	6	.....	Utah Territory	2	.....
Kansas	7	.....	Vermont	3	.....
Kentucky	3	.....	Virginia	1	.....
Louisiana	1	.....	Washington Terri'y.	.....	.....
Maine	3	1	West Virginia	2	.....
Maryland	10	1	Wisconsin	7	1
Massachusetts	35	1	Wyoming Terri'y.	.....	.....
Michigan	13	.....	U. S. Army	.....	.....
Minnesota	4	1	U. S. Navy	.....	.....
Mississippi	.....	.....			
Missouri	10	.....	Total to citizens of		
Montana Territory	1	.....	the United States	360	22

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	.....	1	Germany	9	.....
Barbadoes	.....	.....	Mexico	.....	.....
Belgium	.....	.....	Netherlands	.....	.....
Bermuda	.....	.....	New South Wales	1	.....
Brazil	.....	.....	Russia	.....	.....
Canada	6	.....	Scotland	2	1
China	.....	.....	Sweden	1	.....
Colombia, U. S. of	.....	.....	Switzerland	2	.....
Cuba	.....	.....	Victoria	.....	.....
Denmark	.....	.....	Wales	.....	.....
Ecuador	.....	.....			
England	13	2	Total to citizens of		
France	3	.....	foreign countries	37	4

DESIGNS.

18,263.—COOKING-STOVE.—*Willard J. Andrews*, St. Louis, Mo., assignor of one-half to *John Uri Musick*, same place. Application filed December 19, 1887. Serial No. 258,417. Term of patent 14 years.

18,264.—CLOCK-DIAL.—*Archibald Bannatyne*, Waterbury, Conn., assignor to *The Waterbury Clock Company*, same place. Application filed May 3, 1887. Serial No. 237,013. Term of patent 7 years.

18,265.—ADVERTISING-PICTURE FRAME.—*Frank H. Durell*, Bay City, Mich. Application filed August 22, 1887. Serial No. 247,619. Term of patent 14 years.

18,266.—FURNITURE-CASTER.—*Emile Garet*, Hoboken, N. J., assignor to *Merklen Brothers*, New York, N. Y. Application filed March 19, 1888. Serial No. 267,792. Term of patent 14 years.

18,267 and 18,268.—ORNAMENTATION OF GLASSWARE, &c.—*Thomas G. Hawkes*, Corning, N. Y. Applications filed January 9, 1888. Serial Nos. 260,230 and 260,231. Term of patents 7 years.

18,269.—FONT OF PRINTING-TYPE.—*William W. Jackson*, Philadelphia, Pa., assignor to *The MacKellar, Smiths & Jordan Company*, same place. Application filed March 31, 1888. Serial No. 269,212. Term of patent 7 years.

18,270.—MATCH.—*Levi Kittinger*, Akron, Ohio. Application filed March 26, 1888. Serial No. 268,584. Term of patent 14 years.

18,271.—TYPE.—*Ernst Lauschke*, Chicago, Ill., assignor to *Barnhart Bros. & Spindler*, same place. Application filed January 11, 1888. Serial No. 260,455. Term of patent 14 years.

18,272.—CLOCK-DIAL.—*William Lawson*, Waterbury, Conn., assignor to *The Waterbury Clock Company*, same place. Application filed April 20, 1887. Serial No. 236,600. Term of patent 7 years.

18,273.—COFFIN-PLATE.—*Oliver McCarthy*, Meriden, Conn., assignor to *The Meriden Britannia Company*, same place. Application filed January 3, 1888. Serial No. 259,749. Term of patent 14 years.

18,274.—NURSERY-BURNER.—*Charles T. Martin*, Chicago, Ill., assignor to *The Consumers Gas Saving and Inspection Company*, same place. Application filed March 14, 1888. Serial No. 267,159. Term of patent 7 years.

18,275 to 18,280, inclusive.—OIL-CLOTH.—*Charles T. Meyer* and *Victor E. Meyer*, Bergen, N. J., assignors to *Edward C. Sampson*, New York, N. Y. Applications filed March 26, 1888. Serial Nos. 268,596 to 268,601, inclusive. Term of patents 3½ years.

18,281.—BUTTON-FASTENER.—*Warren G. Slater*, Fremont, Mich. Application filed February 16, 1888. Serial No. 264,261. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,380.—PLASTER BAS-RELIEFS, STATUARY, STATUETTES, MOLDINGS, AND SIGNS.—*Bas Relief Manufacturing Company*, New York, N. Y. Application filed February 29, 1888. Used since February 1, 1888.

"The word 'TONIKA.'"

15,381.—MEN'S BOOTS AND SHOES.—*Chase, Merritt & Co.*, Boston, Marlborough, and Milford, Mass. Application filed February 13, 1888. Used since December 13, 1887.

"A broad serrated seal of circular form and green color."

15,382.—NEWSPAPERS.—*John S. Conroy*, New York, N. Y. Application filed February 29, 1888. Used since December 1, 1887.

"The words 'WEST SIDE SENTINEL.'"

15,383.—SPADES, SHOVELS, AND AGRICULTURAL IMPLEMENTS.—*Thomas Drysdale & Co.*, New York, N. Y. Application filed June 12, 1886. Used since November 7, 1882.

"The word 'RICHIBUCTO.'"

15,384.—PULVERIZED SLATE.—*Highland Slate Manufacturing Company*, Portland and Brownville, Me., and Boston, Mass. Application filed February 18, 1888. Used since February, 1888.

"The word 'TALCKENE.'"

15,385.—BOILER-INCRUSTATION PREVENTIVE AND REMOVER.—*Imperial Chemical Co.*, Philadelphia, Pa. Application filed February 29, 1888. Used since July 1, 1886.

"The word 'IMPERIAL.'"

15,386.—DRESS-SHIELDS.—*Isaac B. Kleinert*, New York, N. Y. Application filed February 25, 1888. Used since February 15, 1886.

"The representation of a Maltese cross on a dress-shield."

15,387.—DRESS-SHIELDS.—*Isaac B. Kleinert*, New York, N. Y. Application filed February 25, 1888. Used since February 15, 1886.

"The word 'KLEINERT' on the representation of a Maltese cross."

15,388.—DRESS-SHIELDS.—*Isaac B. Kleinert*, New York, N. Y. Application filed February 25, 1888. Used since February, 1884.

"The word 'INDESTRUCTIBLE.'"

15,389.—METALLIC PENS, EXCEPT THOSE MADE OF PRECIOUS METALS OR IN IMITATION OF THE SAME.—*D. Leonardt & Co.*, Birmingham, county of Warwick, England. Application filed August 29, 1887. Used since August 17, 1886.

"The words 'D. LEONARDT & CO.'s BALL POINTED PENS.'"

15,390.—FLOUR.—*Marshall, Kennedy & Co., (Limited,)* Pittsburg, Pa. Application filed January 13, 1888. Used since 1853.

"The representation of two stars, one above the other."

15,391.—LAMP-CHIMNEYS.—*Minneapolis Glass Company*, Minneapolis, Minn. Application filed February 29, 1888. Used since January 1, 1888.

"The word 'AUREOLA.'"

15,392.—CANNED VEGETABLES, CORN, TOMATOES, AND FRUITS.—*J. H. Preston & Sons*, Webster, Md. Application filed March 2, 1888. Used since August 1, 1877.

"The word 'LUNCHEON.'"

15,393.—CANNED GREEN CORN.—*Benjamin Reiff*, Philadelphia, Pa. Application filed March 16, 1888. Used since October, 1887.

"The word 'VICTORIA' combined with the arms of the State of Maine."

15,394.—GRANULATED WASHING-POWDER.—*The Riverside Soap Company*, Paterson, N. J. Application filed December 1, 1887. Used since May 1, 1887.

"The word 'KLENZER.'"

15,395.—NATURAL APERIENT WATER.—*Andreas Saxlehner*, Buda-Pesth, Austria-Hungary. Application filed May 3, 1886. Used since March 1, 1886.

"The word 'ARPAD.'"

15,396.—APPARATUS FOR COLLECTING, FILTERING, AND STORING WATER.—*Robert Cooke Sayer*, Redland, Bristol, England. Application filed January 9, 1888. Used since July, 1887.

"The words 'UNITING,' 'DIVIDING,' and 'SAFETY.'"

15,397.—WHISKY.—*George & John Gordon Smith*, Inveraven, Banff, Scotland. Application filed March 12, 1888. Used since January 10, 1826.

"The word 'GLENLIVET.'"

15,398.—LAMP CHIMNEYS AND WICKS FOR CERTAIN LAMPS.—*Charles S. Upton*, New York, N. Y. Application filed December 24, 1887. Used since September 1, 1884.

"The words 'THE ROCHESTER,' arranged in a straight line."

LABELS.

5,564.—Title: "LAVENDER CREAM." (FOR THE TOILET.)—*James Addison Beebe*, Philadelphia, Pa. Application filed March 9, 1888.

5,565.—Title: "BENNETT'S HEALING DUST FOR HORSES."—*R. R. Bennett*, Brooklyn, N. Y. Application filed March 29, 1888.

5,566.—Title: "DYSPEPSIA REMEDY."—*William W. Fithian*, Philadelphia, Pa. Application filed March 29, 1888.

5,567.—Title: "MRS M. A. KERR'S COUGH SYRUP."—*M. A. Kerr*, Olney, Ill. Application filed March 15, 1888.

5,568.—Title: "POINTS OF RUBBING VARNISH."—*Lawson Valentine Company*, New York, N. Y. Application filed March 26, 1888.

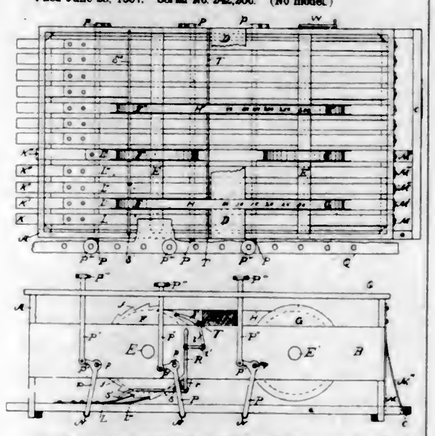
5,569.—Title: "THE "BEST" TONIC."—*Phillip Best Brewing Company*, Milwaukee, Wis. Application filed January 19, 1888.

5,570.—Title: "KICKAPOO SPRINGS MINERAL WATER."—*Clara H. Schmidt* and *Walter B. Starbird*, Stockton, Cal. Application filed November 26, 1887.

PATENTS

GRANTED APRIL 24, 1888.

381,520. **CASH-REGISTER.** HANS A. ALM, Red Lake Falls, Minn. Filed June 23, 1887. Serial No. 242,306. (No model.)



Claim.—1. The combination, with a suitable supporting-frame, as A B, of drum-supporting shafts E and E' on said frame, the tape holding and unwinding drum G', mounted on the shaft E', the tape receiving and winding-up drum F', mounted on the shaft E and provided with the ratchet-teeth *f*, a registering-tape, H, marked at fixed common distances apart with multiple denominations of a common money unit mounted upon said drums and unwinding from one to the other, a sliding bar, K, provided with a spring-pawl, L, for engaging said ratchet-teeth *f*, a pivoted bell-crank lever, P, for actuating said sliding bar, and a retraction-spring, M, for returning said sliding bar to its normal position after its stroke, substantially as and for the purpose set forth.

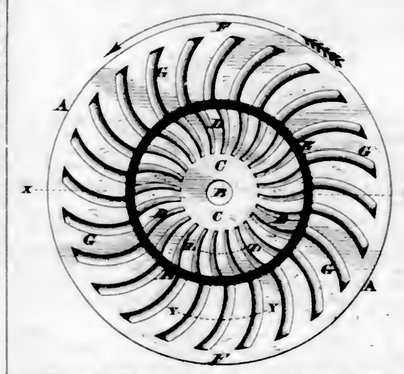
2. In a cash-register, the combination, with the tape holding, unwinding, and winding-up drums F and G, the ratchet *f*, attached to the wheel F, the sliding bar K, provided with the spring-pawl L for engaging said ratchet, the pawl-shaft T, the locking-pawl V, mounted on said shaft and having a limited movement independent of the shaft, the depressing-rod S' directly above the pawl L, a crank, *t*, attached to the shaft T, the pivoted bell-crank lever R, having one arm rigidly attached to the rod S', and the link *l'*, connecting the other arm of said bell-crank lever to the crank *t*, substantially as described.

381,521. **SIPHON.** GEORGE W. ARPER, Oakland, Cal. Filed Jan. 22, 1887. Serial No. 225,081. (No model.)

Claim.—In siphons for coal-oil cans, the faucet having the chamber D and the chamber E, the valves J and K, connected by the connecting-bar I, in combination with the siphon B, constructed and operated substantially as and for the purposes set forth.



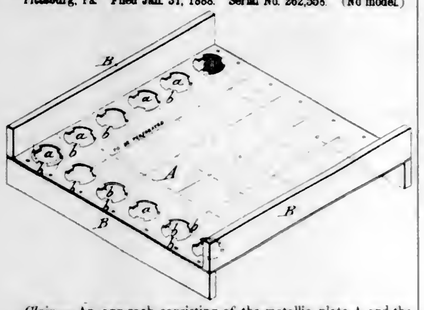
381,522. **MILLSTONE-DRESS.** JOSEPH BACHULEIN, Cincinnati, Ohio, assignor of one-half to Michael Trott, same place. Filed Aug. 8, 1887. Serial No. 246,477. (No model.)



Claim.—A millstone-dress consisting of a series of tangentially-curved second furrows, D, running against the draft and having inclined leading-edges *d* and vertical trailing-edges *d'*, a series of tangentially-curved skirt-furrows, G, running with the draft and having vertical leading-edges *g* and inclined trailing-edges *g'*, a concentric distributing-groove, E, between these sets of furrows, the inner wall

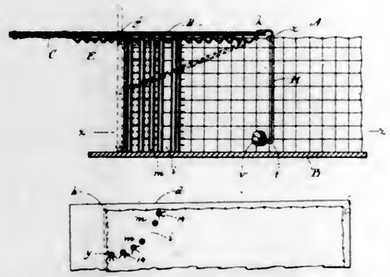
of said groove being vertical and its outer wall inclined, and an unfurrowed annular portion, F, at the rim of the stone, which annulus prevents the ground material being discharged directly from the outer ends of the skirt, as herein described.

381,523. EGG-RACK. RICHARD W. BEATTY and GEORGE HOFFNER, Pittsburg, Pa. Filed Jan. 31, 1888. Serial No. 262,558. (No model.)



Claim.—An egg-rack consisting of the metallic plate A and the frame B, the plate being attached to the frame and provided with apertures *a*, each aperture having three or more horizontal lugs, *b*, and recesses *c*, extending from lug to lug, the lugs having concaved ends, whereby the eggs are held in position and free circulation of air around them is permitted, substantially as and for the purposes described.

381,524. TRAP. WILLIAM R. BLANEY, Swampscott, Mass. Filed Dec. 27, 1887. Serial No. 258,949. (No model.)



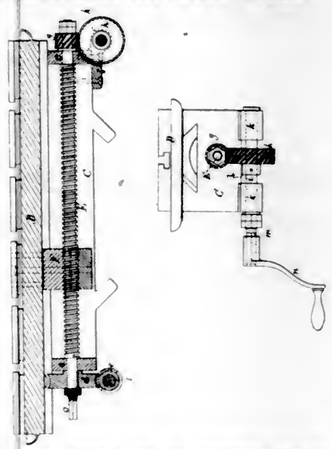
Claim.—1. In a cage-trap, the combination, with the body, an outwardly-swinging end door pivoted across its upper edge, and means for setting, tripping, and closing said door, of the vertical bars *m m*, extending from top to bottom of the cage and arranged in the arc of a circle around each vertical side corner of the door, substantially as described.

2. In a cage-trap, the combination, with the body, an outwardly-swinging end door pivoted across its upper edge, and means for setting, tripping, and closing said door, of the vertical bars *m m*, extending from top to bottom of the cage and arranged in the arc of a circle around each vertical side corner of the door, two of said bars being left a greater distance apart than the others, forming a space, *i*, substantially as described.

3. In a cage-trap, the combination, with the body, an outwardly-swinging end door pivoted across its upper edge, and means for setting, tripping, and closing said door, of the vertical bars *m m*, extending from top to bottom of the cage and arranged in the arc of a circle around each vertical side corner of the door, certain of said bars having radially-projecting barbs 14, substantially as described.

4. In a cage-trap, the combination, with the body, an outwardly-swinging end door pivoted across its upper edge, and means for setting, tripping, and closing said door, of the vertical bars *m m*, extending from top to bottom of the cage and arranged in the arc of a circle around each vertical side corner of the door, two of said bars being left plain and a greater distance apart than the others, forming space *i*, and the remainder of said bars provided with radially-projecting barbs 14, substantially as described.

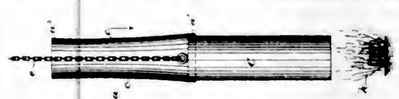
381,525. MILLING-MACHINE. AMOS H. BRAINARD, Hyde Park, Mass. Filed Feb. 13, 1888. Serial No. 263,767. (No model.)



Claim.—1. In a milling-machine, the combination of the carriage and table connected with each other and provided with the feeding-screw and nut, with the spiral pinion, the spiral gear and its shaft, the latter supported in bearings secured to the carriage, all being arranged and for use substantially as set forth and represented.

2. In a machine having a carriage and table provided with a feeding-screw and nut, and arranged with each other, substantially as shown, the combination therewith of the spiral pinion, spiral gear, and the supporting-shaft of the latter arranged in bearings secured to the carriage to be operated, and for use essentially as described and represented.

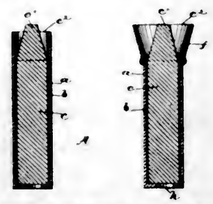
381,526. METHOD OF STRAIGHTENING TUBES. LEVI L. BURDON, Providence, R. I. Filed Oct. 4, 1887. Serial No. 251,398. (No model.)



Claim.—1. The method of straightening tubes, which consists essentially, in passing a cylindrical arbor longitudinally through and in continuous contact with a heated tube of substantially the same diameter as the arbor, thereby giving to the tube a uniform interior diameter corresponding to the diameter of the arbor, substantially as hereinbefore set forth.

2. The hereinbefore-described improved mode of straightening metallic tubes, the same consisting in inserting slightly one end of the shaping-arbor within one end of the tube to be acted upon, and then subjecting the arbor and tube to the action of heat, which expands the tube and permits it to slide down and from the arbor by gravity.

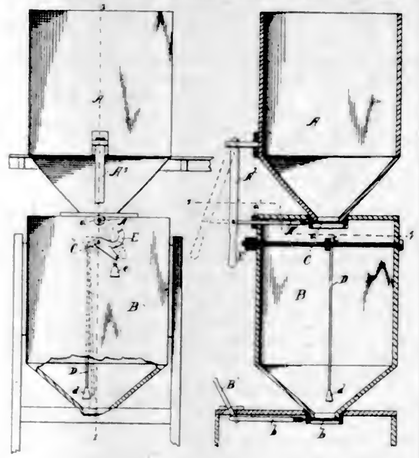
381,527. METHOD OF MAKING COMPOUND INGOTS. LEVI L. BURDON, Providence, R. I. Filed Oct. 4, 1887. Serial No. 251,399. (No model.)



Claim.—1. The improved method herein described of making compound ingots, the same consisting, first, in preparing the surfaces of the base-metal core and the seamless gold shell to unite with solder; next, introducing the core within said shell, thereby forming an annular space between them, then inserting a sleeve of solder into said annular space, and finally subjecting the whole to a high temperature, which fuses the solder and unites the core and shell with a uniform thickness of the same.

2. The improved method of making compound ingots, which consists in inserting a cylindrical base-metal core having a slightly-reduced diameter within the outer or gold shell, the surfaces thereof having been previously prepared to be united by solder, and having a chamber, as c^2, formed at the upper end, then inserting a thin sleeve of silver or other suitable solder between the core and shell and placing loose solder in said chamber, and finally placing the whole within a suitably prepared and heated furnace, thereby fusing the solder and uniting the core and outer shell with a uniform thickness of the same, the ingot after withdrawal from the furnace being adapted to be rolled and drawn down to produce seamless filled plated wire.

381,528. AUTOMATIC LATCH FOR GRAIN-GARNERS. PATRICK E. CANFIELD, Chicago, Ill., assignor of one-half to Alexander W. Pond, same place. Filed Nov. 21, 1887. Serial No. 255,837. (No model.)



Claim.—1. The combination, with the weighing-hopper, of the garner or receiving-hopper, a valve for closing the said garner, means for operating said valve, and an automatic latch operated by the descent of the grain from the weighing-hopper to lock the said valve and prevent its being moved, substantially as and for the purposes specified.

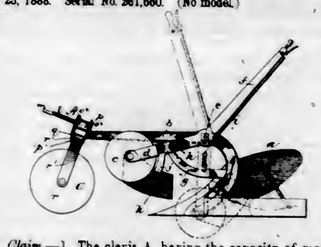
2. The combination, with the weighing-hopper, of the garner or receiving-hopper, a valve for closing the garner, means for operating said valve, a latch to lock said valve and prevent its being operated, and a rod, rope, or chain connected to said latch to operate the same and arranged within the weighing-hopper with its lower end in close proximity to the discharge-orifice thereof, substantially as and for the purpose specified.

3. The combination, with the garner and its valve and valve-rod, of a latch adapted to engage the said valve-rod to lock the valve, and a rod, rope, or chain connected to the said latch to operate the same and arranged within the weighing-hopper with its lower end in close proximity to the discharge-orifice thereof, substantially as and for the purposes specified.

4. The combination, with the garner and its valve and valve-rod, of the weighing-hopper, the rock-shaft provided with a latch to engage the said valve-rod, and a rod, rope, or chain connected to the rock-shaft, and having its lower end arranged in close proximity to the discharge-orifice of the weighing-hopper, substantially as and for the purposes specified.

5. The combination, with the garner and its valve and valve-rod, of the weighing-hopper, the rock-shaft mounted in said hopper and provided with a weighted latch to engage the valve-rod of the garner, and a rod, rope, or chain connected to the rock-shaft to operate the same, arranged within the weighing-hopper, and provided at its lower end with a weight or bob arranged in close proximity to the discharge-orifice of the weighing-hopper, substantially as and for the purposes specified.

381,529. PLOW. DANIEL H. CARPENTER, Orlando, Fla. Filed Jan. 23, 1888. Serial No. 261,660. (No model.)



Claim.—1. The clevis A, having the capacity of movement of a universal joint, and composed of a draft-arm, *l*, a knob, *n*, on one end of said arm, and a box, B, for receiving the knob on said arm, and a yoke, *p*, and wedge *q*, for securing the arm and box together and in position for use, substantially as described.

2. The plow-beam, a bracket, *r'*, for the width-gage, and clevis having a universal joint combined with a yoke and wedge engaging the beam, bracket, and clevis-joint for uniting these parts, substantially as described.

3. The plow-beam combined with a clevis provided with a universal joint and rigidly fixable to the beam in any desired position, and having an angular seat for the whiffletree, so as to maintain the whiffletree at any elevation at which it may be placed, substantially as described.

4. A drag-colter hung low from the beam with its effective cutting-edge in proximity to the earth, and approximately horizontal or at a slight acute angle to the earth, combined with a wheel, or its described equivalent, to turn over and hold down the stubble or grass for the action of the colter, substantially as described.

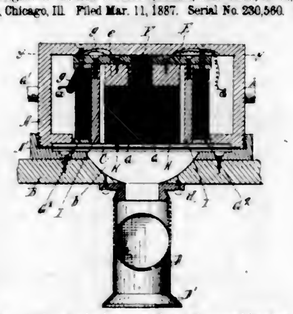
381,530. HAT-WIRE. ALANSON CARY, New York, N. Y. Filed July 13, 1887. Serial No. 244,197. (No model.)



Claim.—1. As an improved article of manufacture, a hat-brim wire of an equilateral-triangle shape in transverse section throughout its length, substantially as specified.

2. In a hat-brim wire of triangular shape in transverse section throughout its length, the wire having the angles formed by its meeting sides made rounded or blunt, essentially as described.

381,531. TELEPHONE-RECEIVER. WILLIAM H. COLLINS, Chicago, Ill., assignor of one-half to Jacob Kirkner, New York, N. Y., and Robert Bines, Chicago, Ill. Filed Mar. 11, 1887. Serial No. 230,560. (No model.)



Claim.—1. In a telephone-receiver, the combination, with a vibratory diaphragm of magnetic material, of a soft-iron core, a coil of primary wire surrounding said core and suitably connected to a battery or other source of electricity, and a coil of secondary wire surrounding said primary coil, connected to the line, and having its end surface exposed to the diaphragm and exerting a magnetic influence thereon, substantially as and for the purposes specified.

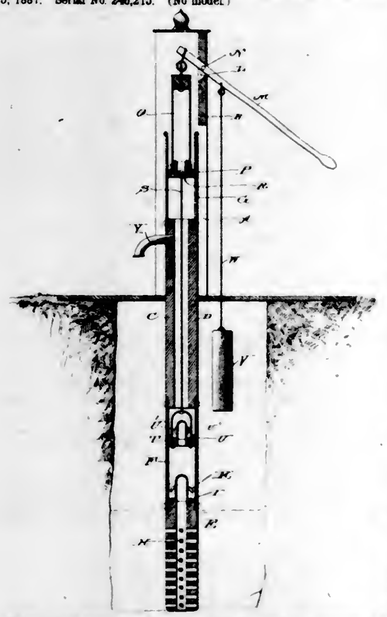
2. In a telephone-receiver, the combination, with a vibratory diaphragm of magnetic material, of a soft-iron core, a coil of primary wire surrounding said core and suitably connected to a battery or

other source of electricity, and a coil of secondary wire surrounding said primary coil and suitably connected to the line, the said coils having their end surfaces exposed to the diaphragm and exerting a magnetic influence thereon, substantially as and for the purposes specified.

3. In a telephone-receiver, the combination, with the vibratory diaphragm of magnetic material, of the main soft-iron core and one or more auxiliary soft-iron cores presenting their end surfaces to but not in contact with the diaphragm, an iron plate on which said cores are mounted, the primary wire coiled around the said main and auxiliary cores and connected to the battery, and the secondary wire connected to the line and coiled around the primary wire, substantially as and for the purposes specified.

4. In a telephone-receiver, the combination, with the vibratory diaphragm of magnetic material, of the central soft-iron core, a coil of primary wire surrounding the same and connected to a battery or other source of electricity, a coil of secondary wire surrounding said primary coil and connected to the line, the cylindrical auxiliary soft-iron core surrounding the said core and coils and itself surrounded by a coil of the primary wire, and an iron plate on which both cores are mounted, substantially as and for the purposes specified.

381,532. PUMP. WILLIAM W. CULLY, Wilson, Kans. Filed Aug. 5, 1887. Serial No. 246,215. (No model.)



Claim.—The pump-barrel composed of the wooden sections D E, the metallic cylindrical section F, connecting them, and the metallic cylindrical section G at the upper end of section D, in combination with inlet-valves K at the lower end of section F, the vertically-movable air-chamber O, arranged in section G, and having the packing at its lower open end, the rod S, depending from the said air-chamber, extending through the section D, and the valved plunger T, fitted snugly in the section F and connected to the lower end of the rod S, substantially as described.

381,533. SOLDERING-IRON. CARL R. DANIELSON, Rockford, Ill. Filed Jan. 21, 1888. Serial No. 261,527. (No model.)

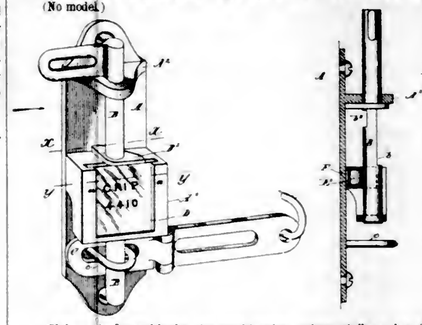


Claim.—1. The combination, with the fuel-reservoir, the soldering-iron, and the burner, the fuel-reservoir being provided with laterally-extending lugs, of yoke-arms fixed to the soldering-iron at one end, said arms being removably secured to the said laterally-extending lugs on the fuel-reservoir, substantially as set forth.

2. The combination, with a hollow soldering-iron, of a damper to control the escape of the products of combustion, substantially as set forth.

3. The combination, with the soldering-iron, of a metallic jacket embracing the soldering-iron, and an asbestus packing between the soldering-iron and the metallic jacket, substantially as set forth.

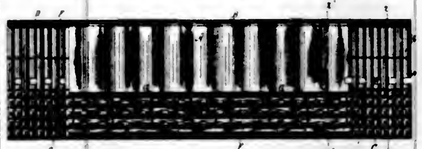
381,534. SEAL-LOCK. CHARLES E. DAVIS, Chicago, Ill., assignor to John W. Norris, same place. Filed Sept. 15, 1887. Serial No. 249,734. (No model.)



Claim.—1. In seal-locks, the combination, substantially as herein set forth, of a lock-frame arranged and adapted to sustain in operative position a frangible sealing-plate, a shackle-bolt capable of axial and perpendicular motion, provided with a recess, *b*, which admits of the locating of the frangible sealing-plate within the frame and upon a plane perpendicularly within the arc of travel described by the larger diameter of said bolt, and a device or devices adapted to automatically secure said bolt perpendicularly in position from which it cannot be removed without being first turned upon its axis, all arranged with relation to each other and adapted to be operated substantially as described.

2. The combination, with a lock-frame adapted to sustain in operative position a frangible sealing-plate, of the axially and perpendicularly movable bolt B, provided with a recess, *b*, flange B', and recess *b'*, and the spring E, all arranged with relation to each other and adapted to be operated substantially as shown and described.

381,535. STOVE-BACK. LEVI M. DEVORE and WALLACE GREENE, Freeport, Ill. Filed Aug. 7, 1886. Serial No. 210,323. (No model.)



Claim.—1. In stove-backs provided with breaking-lines, strengthening-webs of metal formed integrally with the back and extending across these lines, said webs adapted to be readily broken away, when desired, along any breaking-line, substantially as set forth.

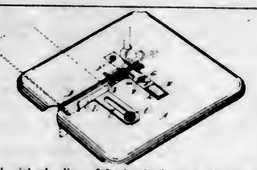
2. A stove-back having a series of weak or breaking lines approximately parallel to its margin and a series of apertures each of which extends across the interval between two consecutive breaking-lines, substantially as shown and described, whereby breaking away the margin of the back along the outer of such two lines leaves a notch in the edge of the back.

3. A stove-back formed with breaking-lines weaker than the body of the stove-back, the weaker of said breaking-lines being nearest the detachable margin of the stove-back, and the remaining lines being successively stronger in the order of their distances from said margin.

381,536. WELT-TRIMMER FOR SEWING-MACHINES. JOHN W. DEWEES, Philadelphia, Pa., assignor to the Dewees Fabric Trimmer Company, (Limited,) same place. Filed Aug. 11, 1884. Serial No. 140,295. (No model.)

Claim.—1. The combination, with the feeding and stitch-forming mechanism of a sewing-machine and a cloth-plate having an open-

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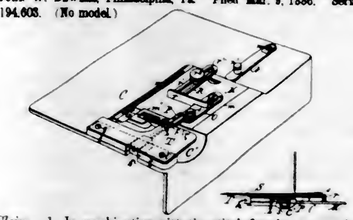


ended slot parallel with the line of feed, of trimming devices arranged transversely to said feed-line and in a horizontal plane, said trimming device including a jaw or cutter which moves horizontally and transverse to the feed-line, and means for moving said jaw or cutter, substantially as shown and described.

2. The combination, with the cloth-plate A of a sewing-machine having intersecting slots D and D', of a stationary shoe or jaw, F, and a movable cutter or jaw, G, located in the slot D', substantially as shown and described.

3. The combination, with cloth-plate A, having intersecting slots D D', of fixed shoe or jaw F and movable jaw G, located in slot D', lever H, connecting-rod K, and eccentric C, connecting the jaw G with the operating-shaft, substantially as shown and described.

381,537. TRIMMING ATTACHMENT FOR SEWING-MACHINES. JOHN W. DEWEES, Philadelphia, Pa. Filed Mar. 9, 1886. Serial No. 194,603. (No model.)



Claim.—1. In combination with the stitch-forming mechanism of a sewing-machine, a trimming attachment comprising a stationary jaw having a horizontal cutting-edge and located in a horizontal plane, and a moving jaw or chisel, also having a horizontal cutting-edge and located in a horizontal plane, said moving jaw being adapted and designed to be moved across the stationary jaw, the edges of both jaws passing, whereby a horizontal shear cut is obtained, substantially as shown and described.

2. In combination with the stitch-forming mechanism of a sewing-machine, a vibrating lever, K, adapted and designed to be moved in a horizontal plane, a cutting tool or jaw carried thereon having a horizontal cutting-edge, and a stationary jaw, P, having a horizontal cutting-edge, *p'*, said jaws being located in a horizontal plane, and the moving jaw being adapted and designed to move horizontally past the edge of the stationary jaw, substantially as shown and described.

3. In combination with the stitch-forming mechanism and cloth-plate of a sewing-machine, a slide, M, a cutting-tool, P, mounted thereon and having a horizontal cutting-edge, *p'*, a moving jaw, L, having a horizontal cutting-edge, and located in a horizontal plane, said jaws being adapted and designed to effect a horizontal shear cut, and means for vibrating said moving jaw, substantially as shown and described.

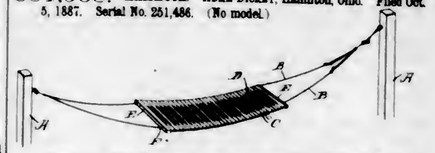
4. The combination, with the cloth-plate of a sewing-machine and a movable trimming-jaw, L, of a slide, M, carrying a cutter or trimmer jaw, P, and a pivoted dog-bar, N, substantially as shown and described.

5. The combination, with the stitch-forming mechanism of a sewing-machine, of a cloth-plate, C, having a depression or groove, C', and two horizontally-disposed trimming-jaws, one of which is stationary, and the other is provided with means whereby it is moved horizontally, the edges of said jaws being over said groove and designed and adapted to trim the depending edge of fabric in the latter, substantially as shown and described.

6. The combination, with the cloth-plate of a sewing-machine and a movable trimming-jaw, L, of a slide, M, having a trimming-jaw, P, and an adjustable guide and gage, R, on said slide, substantially as shown and described.

7. The combination, with the stitch-forming mechanism, feed-bar, and presser-foot of a sewing-machine, of trimming devices located in front of said foot and presser bar, said trimming devices being in a horizontal plane and having horizontal cutting-edges, and having means for imparting a horizontal motion transverse to the line of feed thereto, whereby fabric to be trimmed and hemmed has its superfluous edge or part outside the line of stitching removed by a horizontal cut in advance of the formation of the stitch, substantially as shown and described.

381,538. HAMMOCK. ADAM DICKEY, Hamilton, Ohio. Filed Oct. 5, 1887. Serial No. 251,486. (No model.)



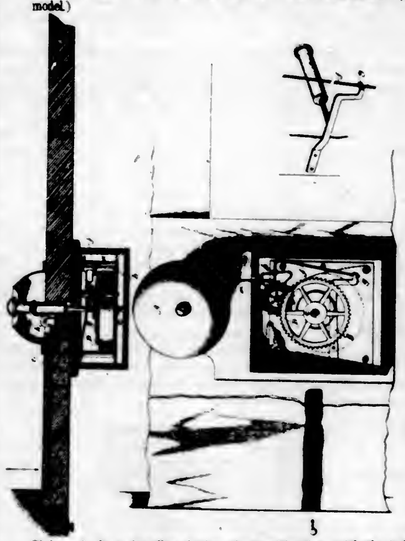
Claim.—1. In a hammock, the combination, substantially as set forth, of a pair of ropes, B, adapted to be attached to posts, a series of slats superposed transversely upon the said ropes, and rope-guides attached near the ends of the individual slats and loosely engaging the ropes, so as to permit the slats to move individually and collectively along the ropes.

2. In a hammock, the combination, substantially as set forth, of a pair of hammock-ropes, a series of slats superposed transversely upon said ropes, each slat having broadened ends and narrow intermediate portions, and rope-guides attached near the ends of the individual slats and loosely engaging the ropes, so as to permit the slats to move individually and collectively along the ropes.

3. In a hammock, the combination, substantially as set forth, of a pair of hammock-ropes, a series of slats superposed transversely upon the ropes, rope-guides attached at the ends of the slats and loosely engaging the ropes, so as to permit the slats to move individually and collectively along the ropes, and stretcher-bars engaging the ropes and disposed against the initial and terminal slats of the series.

4. In a hammock, the combination, substantially as set forth, of a pair of hammock-ropes, a series of slats superposed transversely upon the ropes, rope-guides attached near the ends of the slats and loosely engaging the ropes, so as to permit the slats to move individually and collectively along the ropes, a stretcher-bar loosely engaging the ropes at one end of the series of slats, and keepers serving to lock the stretcher-bar to the ropes.

381,539. COMBINED DOOR-BELL AND ALARM. CLARENCE M. DILLEY, Jackson, Mich. Filed Mar. 26, 1887. Serial No. 232,534. (No model.)



Claim.—1. In a signaling device, the combination, with the bell, the hammer, and the clock-work mechanism, of an arm, a spring-plate having a suitable stop at its free end to engage with and hold said arm in its normal position, a push-button arranged at right angles to said arm and operating directly thereon, and a cord connected with said push-button and passing over suitable pulleys or guides, serves as an auxiliary means of operating the push-button, substantially as and for the purpose described.

2. A signaling device consisting of a bell, a hammer mounted on a rocking shaft, clock-work mechanism in connection with the shaft, an arm, also connected with the rocking shaft, and a spring-plate having a stop on its free end to engage with and to limit the movement

of said arm, and a push-button arranged at right angles to and adapted to operate the spring-plate, substantially as described.

3. In a device for the purpose described, a bell, clock-work mechanism, a hammer, an arm connected therewith, and a push-button engaging with a spring-plate, which is secured at one end, its free end having a suitable stop to engage with and limit the movement of said arm, and arranged at right angles to the push-button, and a cord secured at one end to said push-button and passing over suitable guides or pulleys and connected with some movable part of the building, as a door or window, to serve as an auxiliary or supplemental alarm mechanism, substantially as and for the purpose described.

4. In a signaling apparatus, a bell, a hammer, clock-work mechanism for operating the same, an arm in connection with the hammer through a rocking shaft, a spring-plate having a stop on its free end to engage with and to limit the movement of said arm, and thus prevent the bell from sounding, a push-button arranged at right angles to and adapted to operate the said plate, and an auxiliary alarm-cord, i, connected with said push-button and extending over suitable guides or pulleys, as a door or window frame, substantially as described.

381,540. GARDEN-HOSE CARRIAGE. JOHN J. DIVKEY, Aurora, Ill. Filed Aug. 17, 1887. Serial No. 247,163. (No model.)

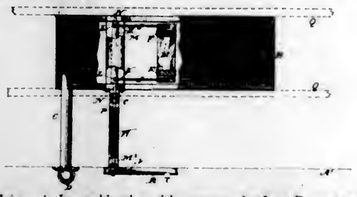


Claim.—1. In a garden-hose carriage, a hub secured to one end of the reel and having the inner end portion of its bore expanded to form a chamber, c^4, combined with a pipe-joint, H, secured upon the body-frame and providing for one end of the reel a short pivot-support or journal, which is extended within the chamber in the hub and provided at its inner end with a shoulder, M, between which and the end of the chamber—that is, at the junction of the larger with the smaller portion of the bore of the hub—is placed a packing, the receiving-hose that is to be wound upon the reel being connected with the hub, and the discharge-hose being connected with the pipe-joint H, substantially as described.

2. In a garden-hose carriage, the combination, with the reel and wheeled body-frame, of a hub, E, secured to one end of the reel and having an expanded inner end portion of its bore forming a chamber, c^4, the pipe-joint H, secured to the body-frame and extending into the hub as a hollow bearing therefor, a shoulder, M, provided upon the inner end of the hollow bearing at a point within the chamber in the hub and having a rounded or convexed face formed opposite the end c^4 of the chamber, which said end is made concave in correspondence with the opposite face of the shoulder on the hollow bearing, and a packing placed between said faces, substantially as described.

3. The combination, with the reel and wheeled body-frame, of the hub E, secured to the reel and mounted upon a hollow short pivot or journal afforded by one end, h, of a pipe-joint, H, that is secured to the body-frame, the coupling K, having an end portion, k^2, screwed into an expanded portion, c^3, of the bore through the hub, and a shoulder, M, provided upon the hollow bearing at a point within the expanded portion of said bore of the hub, substantially as described.

381,541. FLOAT AND LEVEL INDICATOR FOR LIQUID-RESERVOIRS. WILLIAM E. EASTMAN, Boston, Mass., assignor to the Eastman Freight Car Heater Company, Portland, Me. Filed Apr. 7, 1887. Serial No. 234,079. (No model.)



Claim.—1. In combination with a rectangular float, E, constructed with re-entering angles G G, and repercussive bands F, adapted to operate within a closed reservoir to indicate its fluid contents, the quadrantal plate R, provided with an index, U, actuated by a duplex rock-shaft, M M^2, the restraining-spring V, semi-cylindrical covering W, and hermetic tank B, with its co-operative parts C D, substantially as and for the purpose described.

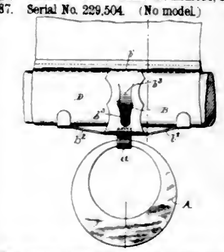
2. In combination with a quadrantal segmentally-slotted indicating-plate, R, index-arm U, and rock-shafts M M^2, a float, E, having re-entering angles G G within its ends to circumscribe its rotation and to receive the reflexed arms J J, by which it is suspended, as in the manner set forth.

381,542. SOLUTION FOR VOLTAIC BATTERIES. CHARLES E. EGAN, Columbus, Ohio, assignor, by direct and mesne assignments, to William Y. Miles and S. W. Smith, both of same place. Filed Sept. 8, 1887. Serial No. 249,194. (No specimens.)

Claim.—1. An excitant for a galvanic battery containing ferric sulphate and a chromic compound.

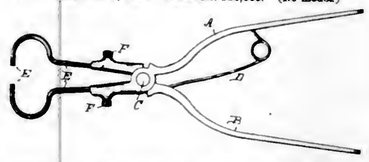
2. An excitant for a galvanic battery consisting of ferric sulphate, chromic acid, and water.

381,543. SHADE-PULL. CHAS. W. ELLIOTT, Boston, Mass. Filed Mar. 3, 1887. Serial No. 229,504. (No model.)



Claim.—The device above described, made up of the pull A and clasp B, having the inwardly-bent projections $b\,b'$, inwardly-bent springs b^2 b^2, and sidewise-extending springs b^3 b^3, substantially as and for the purpose set forth.

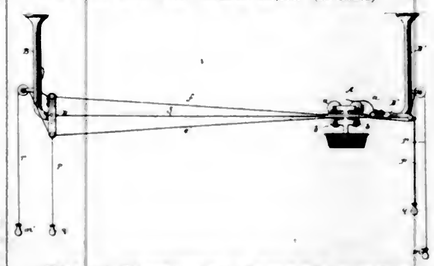
381,544. SOLDERING-PLIERS. OWEN F. GARVEY, Pawtucket, R. I. Filed Dec. 9, 1886. Serial No. 221,083. (No model.)



Claim.—1. The improved pliers herein described, consisting of the arms or levers A, pivoted together, the unequal-armed spring D, removably and reversibly fixed between them, the jaws provided with longitudinal and transverse perforations, the interchangeable jaws E, fitted in the longitudinal perforations, and set-screws F, engaging said jaws through the transverse perforations, as set forth.

2. The improved pliers herein described, provided with arms or levers A, pivoted together and having in the ends of each a perforation, and a screw-threaded opening transversely located with reference to and communicating with said perforation, removable and interchangeable jaws E, fitted in the perforations, and set-screws F, engaging said jaws through the screw-threaded openings, as set forth.

381,545. STORE-SERVICE APPARATUS. JOHN H. GOODFELLOW, Troy, N. Y., assignor to the Lamson Store Service Company, Boston, Mass. Filed Jan. 27, 1888. Serial No. 262,150. (No model.)

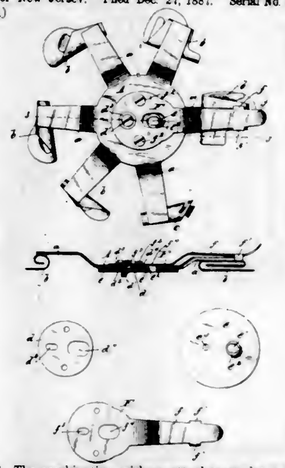


Claim.—1. The combination, in a store-service apparatus, of a stationary track, two separable propeller-wires on opposite sides of the stationary track, and a double-wheeled carrier, substantially as and for the purpose set forth.

2. The combination, in a store-service apparatus, of a stationary track, a carrier traveling thereon provided with two sets of wheels, and flexible propeller-wires upon opposite sides of the track passing between the wheels and separable to propel the carrier, substantially as set forth.

3. The combination of the double-wheeled carrier, a stationary track, two flexible propeller-wires on opposite sides of the track and passing between the wheels, and operating appliances for separating the propeller-wires from the track, substantially as described.

381,546. ATTACHMENT-HOLDER FOR SEWING-MACHINES. JOHN M. GRIMM, Chicago, Ill., assignor to The Singer Manufacturing Company of New Jersey. Filed Dec. 27, 1887. Serial No. 259,091. (No model.)



Claim.—1. The combination, with an attachment plate or holder provided with a series of radial arms, each of which carries a sewing-machine attachment, as a hemmer or braider, of a central circular stationary hub or pivot-plate on which the said attachment plate or holder may be turned, and means for securing the attachment-plate and the said hub or pivot-plate together.

2. The combination, with an attachment plate or holder provided with a series of radial attachment carrying-arms, and with a central circular opening or recess, of a hub or pivot-plate fitting said opening or recess, a base-plate, to which the said hub or pivot-plate is attached, and a spring-arm connected with the said hub or pivot-plate and serving to hold the attachment plate or holder in any position to which it may be adjusted.

3. The combination, with the attachment plate or holder A, having a series of radial attachment carrying-arms a, of the base-plate c, the central hub or pivot-plate, d, laterally adjustable on the said base-plate, and a spring-arm connected with the said hub or pivot-plate and having depending lugs to embrace any of the arms of the attachment plate or holder.

4. The combination, with the attachment plate or holder A, having a series of attachment carrying-arms, of the base-plate c, having the hole c', and the boss c^3, surrounding the latter, the hub or pivot-plate d, having the slots d^3 and d^4, the holding-plate F, secured to the said hub or pivot-plate and provided with a spring-arm to secure the attachment plate or holder in place.

381,547. CRANK FOR VELOCIPEDES. JOHN HARRISON, Winchester, County of Hants, England. Filed Dec. 13, 1887. Serial No. 257,792. (No model.) Patented in England Feb. 4, 1886, No. 1,685.



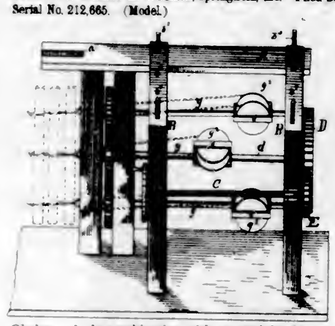
Claim.—1. The combination, with a crank, of a sliding arm for carrying the pedal-pin, and a spring for automatically regulating the length of the entire crank and arm in proportion to the pressure applied to the pedal-pin, substantially as set forth.

2. The combination of the crank provided with a longitudinal guide-slot, the arm B, sliding in the slot, and a spring secured to the crank and to the said arm for retracting the arm within the slot, substantially as and for the purpose set forth.

3. The combination of the crank provided with a longitudinal guide-slot, the arm B, sliding in the slot, and a spring secured to the crank and to the said arm for retracting the arm within the slot, substantially as and for the purpose set forth.

4. The combination of the crank A, provided with the curved guide-slot a, the curved arm B, provided with the slot b', and sliding in the guide-slot, the pin c', limiting the movement of the arm, the cover-plate C, the screws c, and the spiral spring D, for retracting the arm within the slot, substantially as and for the purpose set forth.

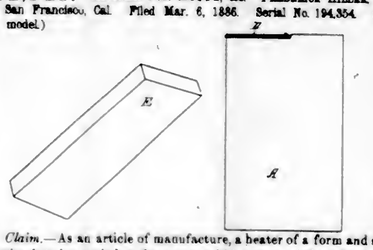
381,548. UPRIGHT WIRE AND PICKET FENCE MAKING MACHINE. MCCORD HILL and JOHN N. RIDER, Walnut Grove, assignors of one-third to William H. Williams, Springfield, Mo. Filed Sept. 4, 1886. Serial No. 212,665. (Model.)



Claim.—1. In combination with an upright fence-making machine, having a cog-wheel, D, on one of the twister-shafts, pinion E, shaft C, balance-wheel F, having a handle, f, and frames B B, substantially as shown and described.

2. In combination with an upright fence-making machine, having cog-wheel D on one of the shafts g, frames B B, having arms b^3 b^3 b^4 b^4, cross-pieces b^5 b^5, uprights b b, shaft C, having balance-wheel F, provided with a handle, f, and pinion E, substantially as shown and described, and for the purpose set forth.

381,549. HEATER FOR MUFFS, &c. FREDERICK HILLER, Jr., San Francisco, Cal. Filed Mar. 6, 1886. Serial No. 194,354. (No model.)



Claim.—As an article of manufacture, a heater of a form and size adapting it to be carried on the person, said heater consisting of a sheet-metal case of rectangular form having its entire surface perforated, a door at one corner of the box, a removable metallic plate or bar adapted to be introduced into said case in a heated condition, and a covering of textile fabric inclosing said case, permitting the gradual escape of the heat therefrom, and also protecting the metallic case from contacting with the hand or other part of the body.

381,550. CURRY-COMB. URBANE B. HIRD, Cleveland, Ohio. Filed June 18, 1887. Serial No. 241,726. (No model.)



Claim.—1. A curry-comb having a series of metallic blades with smooth cutting-edges and a band extending around the comb and in

closing the ends of the blades, said band having a smooth cutting-edge like the blades, substantially as set forth.

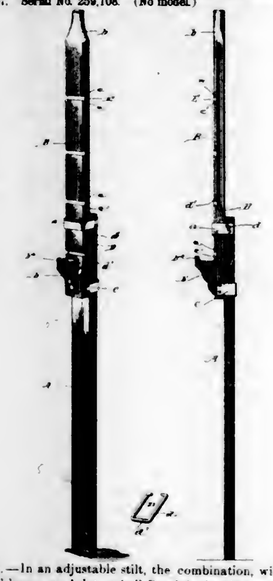
2. A curry-comb provided with a series of parallel metallic blades secured to a close back, the two central blades inclined outward from the center in opposite directions and raised above the blades on either side, said blades having smooth sharp cutting-edges and a sharp-edged band encircling the comb and forming guards and supports for the ends of the blades, substantially as set forth.

381,551. ART OF MAKING SHOE-MAKERS' LASTS. FREDRICK G. HITZFELD, Denver, Colo., assignor to M. E. Hitzfeld, same place. Filed July 13, 1887. Serial No. 244,217. (No model.)

Claim.—1. The herein-described process of obtaining an impression of the upper and under surface of the human foot, which consists of placing the foot supporting the body on wet paper, the whole being supported on a yielding substance, and covering the upper surface of the foot with a thin layer of wet paper and covering the same with plaster-of-paris and allowing the paper to set to the form of the foot before the same is removed.

2. The herein-described process of making a pattern for a last conforming to the shape of the foot while it is supporting the body, which consists in placing the foot upon sand covered with wet paper while supporting the weight of the body, covering the upper surface of the foot with wet paper, and then covering such paper with plaster-of-paris, allowing time for the plaster and paper to set before removing from the foot, substantially as set forth.

381,552. STILT. LARSON HOFFMAN, Hartford, Conn. Filed Dec. 27, 1887. Serial No. 259,108. (No model.)



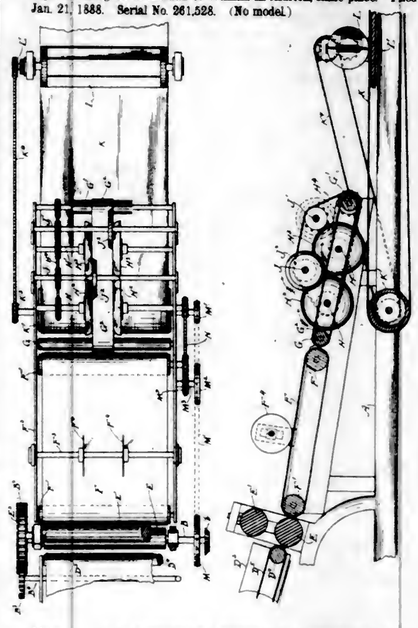
Claim.—In an adjustable stilt, the combination, with the foot-bar A, metal loop *a*, and detent-bail D, of the handle-bar B, provided with the foot-block near its lower end, and having the transverse notches provided with the extensions *e e* across its inner surface, and the metal loop C, secured to the lower end of said handle-bar, substantially as specified.

381,553. CAN FOR PRINTERS' INK, &c. CHARLES H. HOLLIS, Boston, Mass. Filed Jan. 13, 1888. Serial No. 260,593. (No model.)



Claim.—The herein-described can, open at one end and having a flat head at the other, comprising a cylindrical body, A, a nipple, z, disposed at the center of said head, a cap for closing said nipple, and a concavo-convex follower, C, having annular packing r and adapted to slide longitudinally within said body, its concave face closing said nipple from the interior when said follower is projected inward, substantially as described.

381,554. BREAD-MAKING MACHINE. ALBERT A. HUMBLE, Chicago, Ill., assignor of one-half to William H. Aldrich, same place. Filed Jan. 21, 1888. Serial No. 261,528. (No model.)



Claim.—1. In a bread-making machine, the combination of an apron narrower than the strip of dough to be fed thereto, rolls upon opposite sides of said apron having rounded faces for turning up the edges of the dough strip, and auxiliary rolls, one in advance of the other, for alternately folding one and then the other of said edges, and means, as chains and sprocket-wheels, for actuating said apron and rolls in unison, substantially as shown and described.

2. The combination, in a bread-making machine, of the apron F, in proximity to rolls for feeding the dough thereto, cutters F^4, arranged to operate in conjunction with said apron, a narrow apron, G^3, forming rolls H^3 H^3, folding-rolls J^3 J^3, all having inner beveled or rounded faces, and means, such as chains and sprocket-wheels, for actuating said several parts in unison, substantially as shown and described.

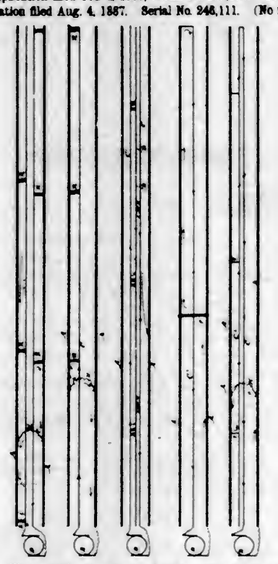
3. The combination, in a bread-making machine, of the feed-rolls E E', apron F, arranged to receive the dough therefrom, cutters F^4, arranged above and to operate in conjunction with said apron, narrow apron G^3, arranged in the path of the dough, forming rolls H^3 H^3 J^3 J^3, having inner rounded or beveled faces and arranged substantially as specified, and means, such as chains and sprocket-wheels, for actuating said parts in unison, substantially as shown and described.

4. The combination, in a bread-making machine, of the feed-apron D^2, feed-rolls E E', arranged to receive the dough therefrom, apron F, arranged in the path of the dough, cutters F^4, constructed to operate in conjunction with said apron, narrow apron G^3, forming rolls H^3 H^3 J^3 J^3, arranged substantially as specified, and having interior rounded or beveled faces, and means, such as chains and sprocket-wheels, for actuating said parts in unison, substantially as shown and described.

5. In a bread-making machine, the combination of a feeding-apron for receiving the dough, feeding-rolls for imparting a uniform thickness to the dough, a receiving-apron, means, as revolving cutters, in conjunction therewith for trimming the strip or strips of dough to a uniform width, one or more narrow aprons for receiving the strips thus gaged, forming rolls upon each side of said narrow apron or aprons for turning up the edges of said dough, secondary forming-rolls upon opposite sides of said apron, one in advance of the other, for alternately folding one and then the other of said edges upon the main body, a receiving-apron for said roll or rolls thus formed, a revolving cutter, and means, as a series of chains and sprocket-wheels, for actuating said parts in unison, substantially as shown and described.

6. The combination, with a bread-making machine provided with feeding-rolls, cutters, and aprons for gaging the thickness and width of the dough and conveying it continuously through the machine, of one or more aprons narrower than the width or widths, respectively, of the strip or strips of dough so gaged, forming rolls upon the respective sides thereof for raising the edges of the strip, folding-rolls for alternately folding one and then the other of said strips upon the main body, a revolving cutter for dividing it into loaves when so folded, and means, as belts and gears, for actuating said parts in unison, substantially as shown and described.

381,555. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Electric Car Company of America, same place. Original application filed Oct. 4, 1886, Serial No. 215,200. Divided and this application filed Aug. 4, 1887. Serial No. 246,111. (No model.)



Claim.—1. The combination, in an electric railway, of two working-conductors, a traveling motor receiving electricity from said conductors, one or more auxiliary conductors connecting with said working-conductors, a generator of electricity to supply an electric current to the working-conductors and through the auxiliary conductors, the said auxiliary conductors acting as resistances to the passage of the electric current through the motors and return, and being so connected to the line that the resistance to the passage of the current through the said motor, working and auxiliary conductors shall be substantially the same or constant for various positions of the motor upon the line.

2. The combination, in an electric railway, of two working-conductors, a generator to supply electricity directly to one of said conductors, and an auxiliary resistance-conductor connecting with the generator, and also with the other working-conductor.

3. In an electric railway, the working-conductors, in combination with a traveling motor receiving electricity from said working-conductors, a generator to supply electricity to said working-conductors, and an artificial resistance or resistances varying with the distance from the generator and connecting the generator of electricity with said working-conductor, whereby the resistance from the generator through the motor and return is the same for any position of the motor on the line.

4. In an electric railway, the combination of two working-conductors, an electrically-propelled vehicle receiving electricity therefrom, and a generator of electricity having its poles connected with said working-conductors at relatively different distances from one terminal of the line, whereby the resistances from the generator through the line-motor and return are equal or substantially equal for all positions of the motor on the line between the connections of the generator with the conductors.

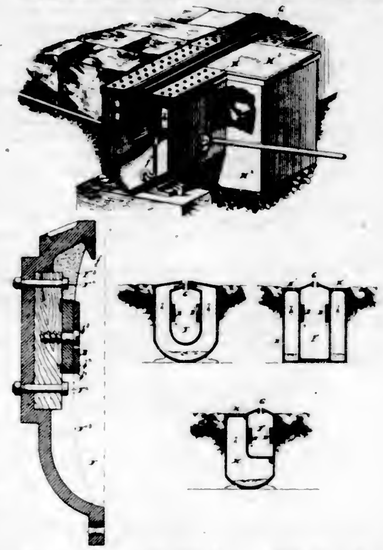
5. In an electric railway, the combination of two working-conductors, an electrically-propelled vehicle receiving electricity therefrom, and a generator of electricity having its two poles coupled, respectively, with said working-conductors, one pole being coupled with one conductor near the generator, and the other pole with the other conductor at a relatively greater distance from the generator, whereby the current in passing through the line and the motor shall pass in the same direction over both working-conductors, and in which the resistance to the passage of the current from the generator through the line-motor and return is equal or substantially equal for all positions of the motor on the line.

6. In an electric railway, the combination of two working-conductors, an electrically-propelled vehicle receiving electricity therefrom, an electric generator, and connections between said generator and working-conductors, whereby the current passes over both of said working-conductors in the same directions.

7. In an electric railway, two working-conductors arranged parallel along the track of a railway and having the electric currents flowing over each conductor in the same direction, and an electrically-propelled vehicle receiving electricity from said working-conductors.

8. In an electric-railway system, the combination of a traveling electric motor with two working-conductors from which the electric motor receives current, and with an electric generator whose terminals are connected, respectively, to one of the alternate ends of each of the aforesaid working-conductors.

381,556. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Electric Car Company of America, same place. Original application filed July 19, 1886, Serial No. 208,418. Divided and this application filed Sept. 19, 1887. Serial No. 250,060. (No model.)



Claim.—1. The combination of an outer drainage-conduit with an inner slotted working-conduit, substantially as and for the purpose specified.

2. The combination of an outer drainage-conduit with an inner slotted working-conduit, and perforated plates or covers for the outer conduit arranged between the walls of the two conduits, substantially as and for the purpose specified.

3. The combination of an outer drainage-conduit with an inner slotted working-conduit having raised slot edges, and perforated plates or covers for the outer conduit arranged between the walls of the two conduits, substantially as and for the purpose specified.

4. The combination of an outer drainage-conduit with an inner slotted working-conduit, and removable perforated plates or covers for the outer conduit arranged between the walls of the two conduits, substantially as and for the purpose specified.

5. The combination of an outer drainage-conduit with an inner slotted working-conduit, and drainage-wells for said outer conduit, substantially as and for the purpose specified.

6. The combination of an outer drainage-conduit with an inner slotted working-conduit, and drainage-wells for said inner conduit, substantially as and for the purpose specified.

7. The combination of an outer drainage-conduit with an inner slotted working-conduit, and drainage-wells for both of said conduits, substantially as and for the purpose specified.

8. The combination of an outer drainage-conduit with an inner slotted working-conduit, drainage-wells for both of said conduits, and removable covers to said drainage-wells, substantially as and for the purpose specified.

9. The combination of a drainage-conduit with a working-conductor conduit having a longitudinal slot in its upper part, and made integral with the drainage-conduit, and in which the two conduits form one structure, and drainage-pipes to drain off the water from the conductor-conduit into the drainage-conduit, substantially as and for the purpose specified.

10. The combination of a drainage-conduit and a working-conductor conduit, the two made integral or arranged side by side, whereby the drainage-conduit carries off the water before it reaches the slot of the working-conduit, substantially as and for the purpose specified.

11. The combination of a slotted working-conductor conduit with an outer case or drainage-conduit, and longitudinal cleaning-passages between the wall of the two conduits, substantially as and for the purpose specified.

12. The combination of a slotted conduit formed of metal with a longitudinal stringer of wood or insulating material secured to its side, a working-conductor secured to the wood, and a filling of insulating material between the upper part of the conductor and upper part of the conduit, substantially as and for the purpose specified.

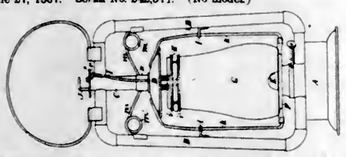
13. The combination of a slotted conduit formed of metal with a longitudinal stringer of wood or insulating material secured to its side, a working-conductor consisting of two metals united to form a compound conductor secured to the wood, and a filling of insulating material between the upper part of the conductor and upper part of the conduit to cover the joints between the metals forming the conductor and the conductor and wood and wood and conduit-wall, substantially as and for the purpose specified.

14. The combination of a slotted conduit of metal, a longitudinal stringer of wood or insulating material upon its wall, a working-conductor secured to said stringer, and insulating material covering the side of the conduit and stringer, but exposing the face of the conductor, substantially as and for the purpose specified.

15. In a slotted conduit formed in two halves, the combination of one-half thereof, formed of metal, with stringers of wood or insulating material upon its wall, a working-conductor secured to said stringers, and insulating material covering the side of the conduit and stringer but exposing the face of the conductor, substantially as and for the purpose specified.

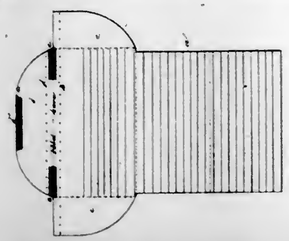
16. The combination of a metallic slotted conduit having longitudinal recesses in its walls, longitudinal stringers set into said recessed walls, and working-conductors secured upon said stringers, substantially as and for the purpose specified.

381,557. LANTERN. HARVEY L. JEWELL, Bangor, Me. Filed June 27, 1887. Serial No. 242,571. (No model.)



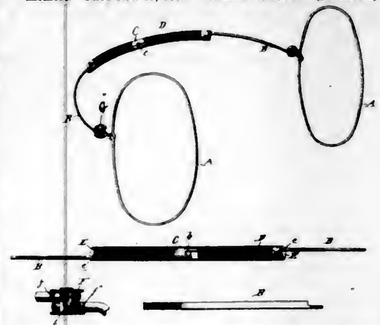
Claim.—In a lantern, the combination, with the main frame of the lantern, having the central tube, C, of the holder-frame provided with the bearing fitting and adapted to slide upon the said tube, the lifting-spring *m*, secured to the main frame, extending inward, and secured at its inner end to the holder-frame, and at the top of the latter and near said bearing a catch for holding the sliding frame against the stress of said spring, substantially as set forth.

381,558. COMBINED LETTER-SHEET AND ENVELOPE. WILLIAM H. KISTER, Chicago, Ill. Filed Feb. 28, 1887. Serial No. 229,186. (No model.)



Claim.—In a letter-sheet and envelope, a main body formed with a top and two end flaps, and provided with two lines of perforations across the top of the sheet and base of the top flap at equal distances from the folding-line, and a central seal on the top flap and two corner seals entirely between the perforated lines, substantially as shown and described.

381,559. EAR-MUFF. ISAAC R. KLEINERT, New York, N. Y., and ROBERT C. MANVILLE, Waterbury, Conn.; said Manville assignor to said Kleinert. Filed Dec. 15, 1887. Serial No. 257,977. (No model.)

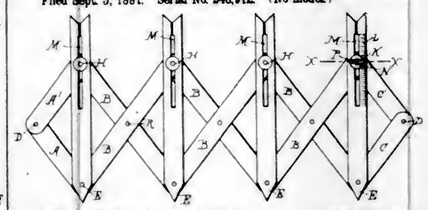


Claim.—1. The combination, with the slide and ear-loop of an ear-muff, of a double washer having its opposite portions connected by a neck at one side of the same and embracing and securing together both slide and loop, and a pivot passing through the double washer, the slide, and loop, substantially as described.

2. The combination, with the slide and loop of an ear-muff, of a double washer provided with stops to hold the loop in its proper position and the pivot passing through the double washer, the slide, and loop, substantially as described.

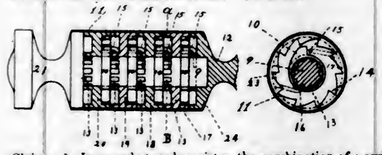
3. The combination, with a tube, C, of two slides lapping over each other, each having a hook formed on its end to act as a stop and prevent its leaving the tube, the hook on one side having its end pointing in a direction opposite to that on the other, substantially as described.

381,560. MULTIPLE DIVIDER. JACOB KRUMSCHEID, Boston, Mass. Filed Sept. 5, 1887. Serial No. 248,912. (No model.)



Claim.—The combination of the lazy-tongs A A' B B C C with the uprights E E, thumb-screw K P, and pointer N, all operating together, substantially as described, and for the purpose set forth.

381,561. CASH-REGISTER. WATSON F. LAMB, New York, N. Y. Filed Nov. 18, 1887. Serial No. 255,478. (No model.)



Claim.—1. In a pocket cash-register, the combination of a series of wheels, 17, 18, 19, and 20, having numbers upon their peripheries, provided with suitable pawls and ratchets for operating the retaining-pawls 16, and the central spindle, 9, provided with a cam, 10, and a series of recesses, 13, for each number-wheel 17, 18, 19, and 20, and enlarged at one end to form an end support for number-wheel 20, and also a seat or bearing for an inclosing cylindrical shield, substantially as described.

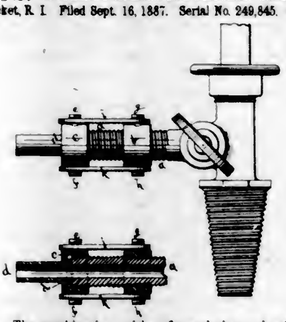
2. In a pocket cash-register, the combination of a series of number-wheels, 17, 18, 19, and 20, provided with pawls and ratchets for operating the retaining-pawls 16, a central spindle, 9, carrying cams 10, recesses 13, and enlarged at one end to form a handle, 21, and the revolving thumb-piece or handle 12, of the same form as the handle 21, mounted upon the opposite end of the spindle 9, provided with an annular rabbet, 24, and carrying within a recess, 22, a spring-pawl, 15, as described, and for purposes set forth.

3. The combination, in a cash-register, of a series of number-wheels, 17, 18, 19, and 20, provided with spring-pawls 15 and internal ratchets, 14, the spindle 9, the thumb-piece 12, having an annular rabbet, 24, and the slotted inclosing-shield 11, flanged inwardly and into said annular rabbet 24 in thumb-piece 12, substantially as described.

4. In a pocket cash-register, the combination of spindle 9, provided with a cam, 10, and a series of recesses, 13, for each number-wheel 17, 18, 19, and 20, the slotted shield 11, secured rigidly thereto, the thumb-piece 12, provided with spring-pawl 15, and a series of number-wheels, 17, 18, 19, and 20, each having upon its periphery a series of numbers from 0 to 9, inclusive, and provided with an annular recess in one side, the periphery of which is formed into ratchet-teeth 14, the annular recess 22 in the opposite side, in which is secured a spring-pawl, 15, and dog 16, substantially as shown and described.

5. In a pocket cash-register constructed substantially as described, the series of cams 10, pawls 15, retaining-pawls 16, a series of number-wheels, 17, 18, 19, and 20, each having internal ratchet, 14, and a series of numbers upon its periphery, and a central spindle having a series of recesses, 13, for each number-wheel, said spindle being composed of the parts 9 and 12, the opposite ends of which are enlarged to form handles, the part 12 revolving upon part 9, whereby wheels 17, 18, 19, and 20 are operated as described, and for the purposes set forth.

381,562½ COUPLING FOR HOSE AND FAUCETS. THOMAS MACKEL, Pawtucket, R. I. Filed Sept. 16, 1887. Serial No. 249,845. (No model.)



Claim.—The combination, with a flanged pipe and a faucet having an externally-screw-threaded extension, of a loose coupling engaging the flange on the pipe and provided with lateral lugs, an internally-threaded sleeve on said extension provided with lateral lugs, and clasps in engagement with the lugs on the said coupling and sleeve, substantially as described.

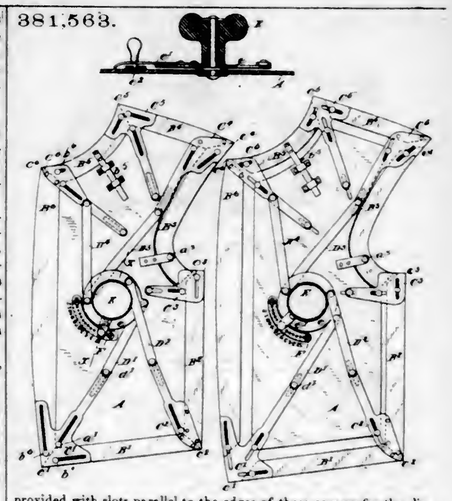
381,563. ADJUSTABLE PATTERN-CHART. SOLOMON MANDELBAUM, Chicago, Ill. Filed Dec. 10, 1886. Serial No. 221,198. (No model.)

Claim.—1. A tailor's pattern consisting of a body-piece, edge-pieces, guide-arms which maintain the edge pieces in their relative positions to the body-piece, and connection-rods, in combination with a crank-disk to which the connection-rods are attached at different relative distances from the center to secure to each its proper distance of travel, by which means the edge pieces are simultaneously adjusted inwardly and outwardly to increase or decrease the size of the pattern without altering the relative proportion of its parts, substantially as shown and described.

2. In a tailor's pattern, the edge pieces forming the outline of the pattern, capable of a universal and simultaneous adjustment outwardly or inwardly to increase or decrease the size of the pattern, the said pieces being provided at their ends with projecting slip-rivets, in combination with guide-arms capable of moving in a determined relative direction upon a central body-piece, A, and having their ends of a coincident shape with the edges of the contiguous edge-pieces, and provided with slots lying parallel to such edges, in which the slip-rivets of the edge pieces slide, whereby the corners of the pattern are maintained intact and the edge pieces guided and supported, substantially as shown.

3. In a tailor's pattern, the edge pieces, B' B^2 B^3, &c., provided at their ends with projecting slip-rivets, and the guide-arms C' C^2 C^3, &c., which complete the contour of their respective corners, and are

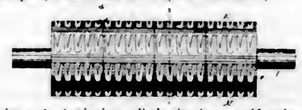
381,568.



provided with slots parallel to the edges of these corners for the slip-rivets of the edge pieces to slide in, by which means the edges of these pieces are maintained in coincident lines with those of the guide-arms, the guide-arms being maintained in a determined path by similar rivets and slots in the body-piece A, as shown, in combination with the body-piece A, the connecting-rods D' D^2 D^3, &c., and the rotation-disk *c*, by which universal adjustment is given the parts, all substantially as described.

4. In a universal pattern, the combination of the edge pieces, B' B^2 B^3, &c., the guide-arms C' C^2 C^3, and the connecting-bars D' D^2 D^3, with the adjusting-disk *c*, the latter being provided with a stopping and gaging device, *c'*, acting on the arc-piece F, all substantially as shown.

381,564. COTTON-GIN. CHARLES T. MASON, Jr., Sumter, S. C. Filed Apr. 6, 1885. Serial No. 161,299. (No model.)



Claim.—1. A ginning-cylinder having a uniformly-circular periphery and in said periphery openings, and in each of said openings a single tooth having its point disposed on the level of the cylinder-surface.

2. A ginning-cylinder having an envelope or bearing-surface uniformly circular and containing a series of elongated slots or openings, each of said openings being provided with a single tooth attached at one end and extending lengthwise of the slot, but in the same plane with the adjacent portion of the envelope.

381,565. COTTON-GIN. CHARLES T. MASON, Jr., Sumter, S. C. Filed June 30, 1887. Serial No. 242,943. (No model.)

Brief.—The hopper is provided with two adjustable seed-boards, the upper one of which allows all seed to pass, while the lower allows only completely-cleaned seed to pass.

Claim.—1. In a cotton-gin containing a ginning mechanism and a roll-box, two adjustable seed-boards, one seed-board regulating the outflow of seed from the roll-box to the second seed-board, and said second seed-board regulating the escape of seed from the machine, substantially as described.

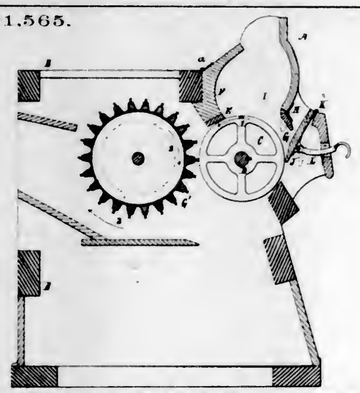
2. The combination of a ginning mechanism, a roll-box, an inclined seed-board at the lower portion thereof, and a second inclined seed-board arranged below said first-mentioned seed-board, substantially as described.

3. The combination of a rotary ginning-cylinder, a roll-box, an adjustable inclined seed-board at the lower portion thereof, and a second adjustable seed-board arranged below said first-mentioned seed-board, substantially as described.

4. The combination of the roll-box I, hinged seed-board G, hinged seed-board J, and ginning-cylinder, substantially as described.

5. The combination, with a ginning-cylinder, C, of the breast A,

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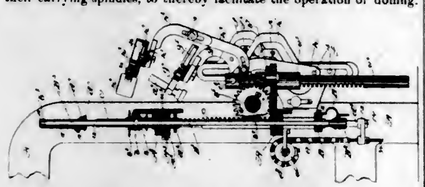


containing the stripper-bar E, roll-box I, adjustable seed-board G, and adjustable seed-board H, substantially as described.

6. The combination of a ginning-cylinder, a stripper-bar above said cylinder parallel to the axis of rotation, but eccentrically disposed with reference to said axis and in rear of a vertical plane passing through said axis, roll-box I, adjustable seed-board G, and adjustable seed-board H, substantially as described.

381,566. SPINNING-MACHINE. JAMES MARJERISON, Lawrence, Mass. Filed Feb. 15, 1886. Serial No. 192,057. (No model.)

Brief.—The object of the invention is to provide means whereby several bobbins may be simultaneously applied to or removed from their carrying-spindles, to thereby facilitate the operation of doffing.



Claim.—1. The spindle-rail B, the dead-spindles, and the foot-steps B^3, combined with the spring-holders B', upon or by which the steps are detachably supported, substantially as described.

2. The spindle-rail B, the dead-spindles, the steps to support them, the builder-rail d^3, and the tubes a, connected therewith, and thus adapted to be moved vertically thereby, combined with the rack-bars c^4, the rock-shaft c^5, supported by the said bars, and thus adapted to be moved vertically, the clamps g^4, operatively connected with said rock-shaft, the racks or toothed rods c, the doffing-shaft b^3, and the gears thereon, to operate substantially as set forth.

3. The rock-shaft c^5, its attached arms f, provided with a pin, the rail g^3 and means to support it from the said shaft, and the clamps g^4, combined with the cams f^3, and with means to raise and lower the said rock-shaft, as and for the purpose set forth.

4. The rock-shaft c^5, its attached arm or arms f, having studs f', the rail g^3, supports for connecting the latter with said rock-shaft, the clamps g^4, and the cam-plates f^3, combined with the arms h h^3, the rail h^3, the clamps h^3, the pins or projections 15 on the arms h, the cam-plates h', the rack-bars c^4, the doffing-shaft b^3, and gears on the latter engaging said rack-bars, substantially as set forth

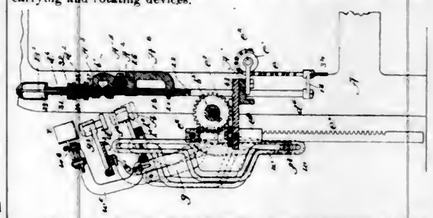
5. A series of dead-spindles, steps to support them, a step-rail, a collar-rail, a series of collars, a builder-rail, means to move it, a series of tubes, a, attached to the said builder-rail and provided with supports, as plates d^3, for the bobbins, a series of sleeves provided with whirls and yokes or fliers, combined with a series of clamps to receive the empty bobbins, a series of clamps to remove the full bobbins, and means for supporting and operating said clamps, substantially as set forth.

6. The rock-shaft c^5, its arm f, provided with pins f' and its attached arm g', the rail g^3, carried by the arms g', the clamps g^4 thereon, and the cam-plates f^3, combined with cam-plates h', arms h, having pins or projections 15, arms h^3, bar h^2, and clamps h^3, and with means to raise and lower the said rock-shaft, the cam-plates during such movements causing the oscillation of the rails h^3 and g^3 and their attached clamps to operate substantially as described.

7. The combination, with a vertically-movable spindle-rail and a series of steps and spindles supported thereby, of a set of vibratory and vertically-movable clamps to receive empty bobbins, a set of vibratory and vertically-movable clamps to remove full bobbins, and supports and operating mechanism for the said clamps, substantially as set forth.

381,567. SPINNING-MACHINE. JAMES MARJERISON, Lawrence, Mass. Filed Aug. 26, 1887. Serial No. 247,930. (No model.)

Brief.—The objects of the invention are to provide improved doffing devices for cap-spinning frames and to improve the bobbin carrying and rotating devices.



Claim.—1. A series of dead-spindles, a series of sleeves, 25, loose thereon, a series of whirls surrounding the said sleeves and loosely connected therewith, a collar-rail and extension, A^4, to hold the spindles and form bearings for the sleeves and whirls, a series of caps for the said spindles, a series of bobbin-driving tubes adapted to be rotated by the said sleeves, and a builder-rail, combined with a series of vibrating and vertically-movable clamps or jaws to remove and then reapply the said caps, a series of vibrating and vertically-movable clamps or jaws to receive empty bobbins and apply them to the bobbin-driving tubes, and a series of vibrating and vertically-movable clamps or jaws to engage and remove full bobbins from the said tubes, and with supports and operating mechanism for the said clamps or jaws, substantially as described.

2. The dead-spindle, the loosely-surrounding rotating and vertically-movable slotted sleeve provided with a recessed head, 24, the whirl having a stud or projection entering the slot of the said sleeve, a collar-rail provided with an upper bearing to receive and support the said whirl loosely and prevent vertical movement of the whirl, and a depending yoke-shaped portion serving as a steadying-bearing for the said sleeve, and also forming a rest or support for the said dead-spindle, combined with a cap, the independent bobbin-driving tube, the base of which is connected to the head of the sleeve, and with an independent builder-rail and means to move it to raise and lower the sleeve and bobbin-driving tube on the dead-spindle, substantially as described.

3. The dead-spindle, the independently-movable builder-rail, and the grooved oil-cup 23, resting thereon, combined with the rotating sleeve extended through the said rail and cup and having an attached head, 24, provided at its under side and about the said sleeve with an annular flange or projection, $24^\times$, to enter snugly and revolve within the groove or chamber $23^\times$ of the said cup 23, and with the bobbin-receiving tube having at its lower end a collar or projection to enter a recess cut in the upper side of the said head 24, to operate all substantially as shown and described.

381,568. STEAM DYNAMO-ELECTRIC MACHINE. RICHARD H. MATHER, Windsor, Conn. Filed Aug. 19, 1886. Serial No. 211,261. (No model.)

Claim.—1. A dynamo-electric machine having a ring-armature, in combination with a rotating or revolving steam-engine which is surrounded by said armature, substantially in the manner and for the purpose specified.

2. A dynamo-electric machine whose armature contains a steam-engine, substantially in the manner and for the purpose specified.

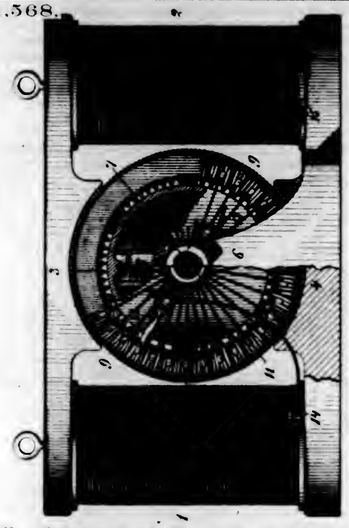
3. A rotating or revolving steam-engine having a general cylindrical form, in combination with a dynamo-electric armature, which is rigidly attached to the periphery of said engine, substantially in the manner and for the purpose specified.

4. A steam-engine and a dynamo-electric machine, combined in such a manner that the armature-shaft of the dynamo is utilized as a steam and exhaust pipe for the engine, substantially in the manner and for the purpose specified.

5. A dynamo-electric machine having a steam-engine located between the poles of the field-magnet, substantially in the manner and for the purpose specified.

6. A steam-dynamo in which the steam-engine is mounted upon a hollow shaft, and in which the armature is mounted upon the engine, substantially in the manner and for the purpose specified.

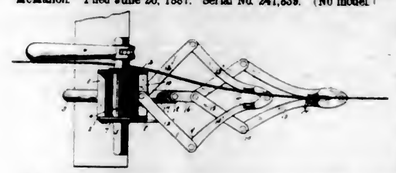
381,568.



7. Upon the armature-shaft of a dynamo-electric machine, a steam-engine which is insulated from its boiler, substantially in the manner and for the purpose specified.

8. A steam-dynamo, a steam-boiler, and a connecting steam-pipe, in combination with steam-tight insulation which is inserted between two otherwise contiguous parts of said pipe, substantially in the manner and for the purpose specified.

381,569. WIRE-STRETCHER. JAMES H. MCMAHON, New Milford, and DANIEL D. MANGUM, Lanesville, Conn.; said Mangum assignor to said McMahon. Filed June 20, 1887. Serial No. 241,839. (No model.)



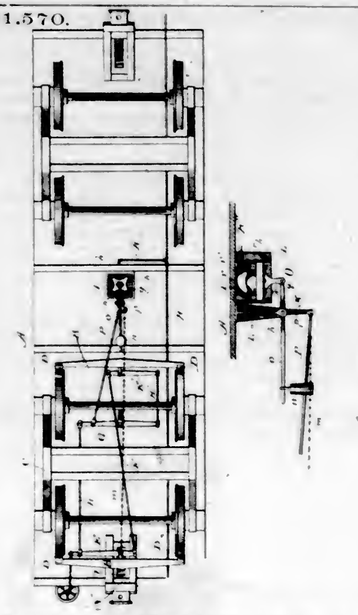
Claim.—In a wire-stretcher, the combination of a plate provided with ears on one side to receive the drum-shaft, and with a securing device on the other, a square-ended shaft carrying a drum, a ratchet-wheel on the drum-shaft and pawl to engage therewith, a ratchet-lever, a strap or its equivalent attached to the drum, and two gripping devices, one fixed and one attached to the drum-strap, each composed of two pairs of connected toggle-levers, of which the outer pair has upwardly-extending grasping-jaws, substantially as set forth.

381,570. CAR-BRAKE. FRANK WM. MILLS, Chicago, Ill. Filed Aug. 16, 1887. Serial No. 247,062. (No model.)

Claim.—1. The combination, with the brake mechanism of a car, of a collapsible and expansible receiver, I, adapted to communicate with the air-pressure supply, a bell-crank lever, M, having a weighted arm, o, and arms p and q, a cross-head, O, having a convex surface to engage with the diaphragm of the receiver I and pivotally connected with the arm o of the bell-crank lever, and a rod, P, connecting the arm p with the lever mechanism of the brakes, substantially as described.

2. The combination, with the brake mechanism and draw-bar of a car, of a collapsible and expansible receiver, I, adapted to communicate with the air-pressure supply, and a weighted bell-crank lever, M, having one arm connected with the sliding draw-bar and lever mechanism of the brakes and another arm connected with the said receiver, substantially as and for the purpose set forth.

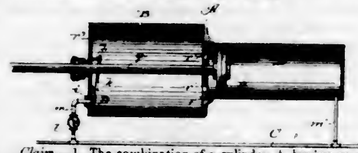
3. The combination, with the brake mechanism and draw-bar of a car, of a collapsible and expansible receiver, I, adapted to communicate with the air-pressure supply, a bell-crank lever, M, carrying an adjustable weight, n, and having one arm connected with the said receiver, and a cable or chain, m, connecting another arm of the said lever M, which is connected with the brake mechanism, with the draw-bar, substantially as and for the purpose set forth.



4. The combination, with the brake mechanism and draw-bar of a car, of a collapsible and expansible receiver, I, adapted to communicate with the air-pressure supply, a bell-crank lever, M, having arms p and q connected, respectively, with the brake mechanism and receiver, and an arm, o, carrying an adjustable weight, n, and a cable or chain, m, connecting the arm p with the sliding draw-bar, substantially as and for the purpose set forth.

5. The combination, with the brake mechanism and draw-bar of a car, of a collapsible and expansible receiver, I, adapted to communicate with the air-pressure supply, a bell-crank lever, M, having an arm, o, provided with an adjustable weight, n, and arms p and q, a cross-head, O, having a convex surface in contact with the said receiver and movable in guides and pivotally connected with the arm q of the bell-crank lever, a rod, P, and a chain or cable, m, connecting the arm p of the bell-crank lever respectively with the brake mechanism and draw-bar, substantially as and for the purpose set forth.

381,571. CAR-BRAKE. MORTIMER B. MILLS, Chicago, Ill. Filed Nov. 29, 1887. Serial No. 256,452. (No model.)



Claim.—1. The combination of a cylinder, A, having an opening, m, and an opening, m', adapted to communicate with the air-pipe which leads from the compressed-air supply of an atmospheric car-brake device, a valve, D, in the cylinder, comprising a pivotal lever, k, and stopper i, a spring, k, operating to hold the stopper i normally in position to close the opening m, and a piston in the cylinder between the openings m and m' and adapted to be connected with the car-brakes, substantially as and for the purpose set forth.

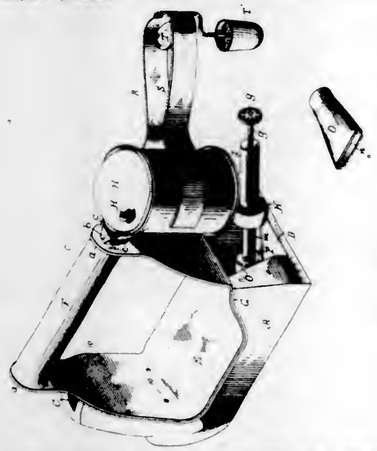
2. The combination of a cylinder, A, comprising a chamber, B, having a perforated head, r, and a chamber, B', having an open end at which it is secured to the chamber B at the end provided with the perforated head, a piston within the chamber B', adapted to be connected with the brakes of a car, an opening in the chamber B, provided with a suitable valve and adapted to afford controllable communication of the said chamber with the air-pipe leading from the compressed-air supply, and an opening in the chamber B', adapted to afford open com-

munication with the said air-pipe, substantially as and for the purpose set forth.

3. The combination of a cylinder, A, comprising a chamber, B, having a perforated head, *r*, and a chamber, B′, having an open end at which it is secured to the chamber B at the end provided with the said perforated head, a piston within the chamber B′, adapted to be connected with the brakes of a car, an opening, *m*, in the chamber B, a valve, D, maintained normally by a yielding pressure against the opening *m* to close it, and an opening, *m′*, in the chamber B′, the openings *m* and *m′* being adapted to be connected with the air-pipe which leads from the compressed-air supply, substantially as described.

4. The combination of a cylinder, A, comprising a chamber, B, having a perforated diaphragm, *r*, a chamber, B′, having an open end at which it is secured to the chamber B at the end provided with the perforated head, openings *m* and *m′*, respectively, in the chambers B and B′ and adapted to communicate with the air-pipe which leads from the compressed-air supply of an atmospheric car-brake device, a valve, D, in the chamber B, comprising a pivotal lever, *k*, and stopper *i*, a spring, *h*, operating to hold the stopper *i* normally in position to close the opening *m*, and a piston, *p*, in the cylinder between the openings *m* and *m′*, provided with a rod, *q*, supported in the heads *r* and *r²* and adapted to be connected with the car-brakes, substantially as and for the purpose set forth.

381,572. SAD-IRON. WILLIAM H. MULL, Lawrence, Kans., assignor to Jacob M. Zook, same place. Filed Nov. 17, 1887. Serial No. 255,434. (No model.)



Claim.—1. In a self-heating sad-iron arranged with a gasoline-tank, a detachable heating-clasp for said tank, substantially as herein set forth.

2. In a self-heating sad-iron arranged with a gasoline-tank, a metallic clasp having arms which detachably engage opposite sides of said tank, substantially as and for the purpose set forth.

3. In a self-heating sad-iron arranged with a gasoline-tank, the combination of the tank, a detachable heating-clasp, and a lighting-cup carried by said clasp, substantially as herein set forth.

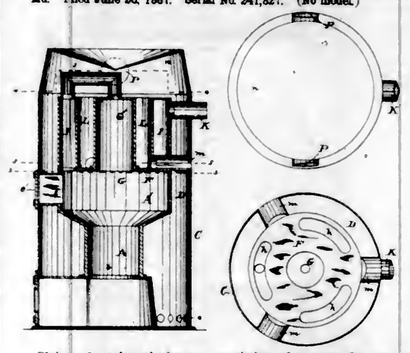
4. In a self-heating sad-iron, the combination of the gasoline-tank, a heating-clasp detachably located upon said tank, and a lighting-cup detachably located upon said clasp, substantially as herein set forth.

381,573. NUT-LOCK. EDWARD H. A. OAKLEY, Aiken, S. C. Filed June 13, 1887. Serial No. 241,172. (No model.)



Claim.—The combination of a rail, fish-plates having perforations to receive bolts, and radial slots leading from said perforations, with a nut and a bolt having a head provided with grooves in its periphery, and a key adapted to enter the radial slots in the fish-plate and the grooves in the head of the bolt, the head or outer end of said key being less in height than the edges of the groove, whereby said head is wholly embedded in said groove and adapted to be retained therein by upsetting said edges over the key, substantially as described.

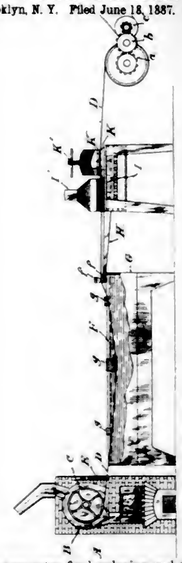
381,574. HOT-AIR FURNACE. JOHN R. OLDERSHAW, Baltimore, Md. Filed June 20, 1887. Serial No. 241,827. (No model.)



Claim.—1. A hot-air furnace consisting of a grate, fire-pot, and combustion-chamber, a dome, G′, the hot-air chamber L, surrounding the dome, and an annular smoke-chamber, I, communicating with the combustion-chamber, a pipe, *j*, connecting said dome and annular smoke-chamber and passing over chamber L, a jacket, C, inclosing said chambers, dome, and fire-pot, and having openings near its base, a chamber surrounding the fire-pot, annular chamber, and dome communicating with said hot-air chamber L, the lateral pipes *m*, passing through jacket C, chambers D and I, and connected with the chamber L, substantially as specified.

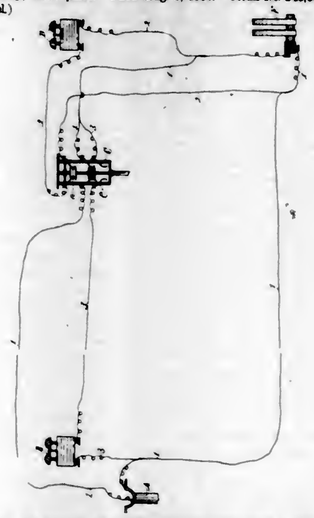
2. The fire-pot A, in combination with the combustion-chamber A′, having top wall, F, with openings G *h*, the dome G′, the annular smoke-chamber I, the heating-chamber D, the hot-air chamber L, the jacket C, with openings *o*, the pipe *j*, connecting dome G′ and chamber I, the lateral pipes *m*, passing through jacket C, chambers D I, and communicating with the hot-air chamber L and the exit-flue K, substantially as described.

381,575. APPARATUS FOR TEMPERING STEEL BANDS. JOSHUA OLDHAM, Brooklyn, N. Y. Filed June 18, 1887. Serial No. 241,760. (No model.)



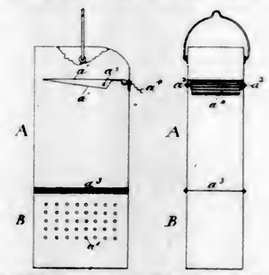
Claim.—An apparatus for hardening and tempering steel bands, consisting of a heating-chamber containing a wheel on which a steel band is to be wound and exposed to the products of combustion, a tank adjacent thereto adapted to contain oil or other hardening substance, through which the steel band from the wheel in the oven is passed, a fire-place with clamping-dies located over the same, over which fire and between which dies the steel band is adapted to be drawn, and a tension and drawing mechanism, substantially as described.

381,576. ELECTRIC SIGNALING APPARATUS. MYRON W. PARRISH, Detroit, Mich., assignor to the Parrish Bros. and Peck Electrical Company, same place. Filed Aug. 3, 1887. Serial No. 246,065. (No model.)



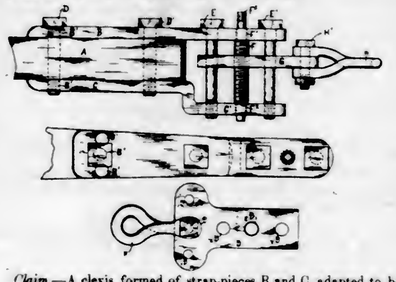
Claim.—An electric signaling apparatus comprising a circuit of a higher resistance, a circuit of a lower resistance, a generator or battery in said circuits, a bell or alarm in the circuit of the higher resistance, and a circuit-breaker in the lower-resistance circuit, whereby when the latter circuit is broken the circuit of the higher resistance will ring the bell or alarm, and a return-circuit connecting with the generator and partly composed of a portion of the circuit of the lower resistance, a bell or alarm in the return-circuit, and a combined circuit maker and breaker having movable points for contacting with the several wires of the circuits, whereby when disconnected from the higher and lower resistance circuits to "break" said circuits a contact is established with the wires of the return-circuit to "make" the same, and thus give the responsive signal, substantially as set forth.

381,577. TRAP FOR WELLS. WALTER W. PRAY, Toronto, Ontario, Canada. Filed Sept. 17, 1887. Serial No. 249,922. (No model.)



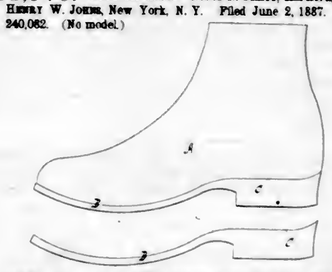
Claim.—A well-cleaner consisting of two sheet-metal vessels, the upper one of which is water-tight and provided with a tilting platform and stairs leading thereto, and made to disconnect from the lower vessel when so required by flange and groove or other suitable means, the lower vessel being perforated in its widest sides and partially filled with charcoal to act as a filter, and which serves to sink the trap to the required depth, the whole constructed and arranged substantially as and for the purposes set forth.

381,578. ADJUSTABLE CLEVIS. JOHN PEYNES, Pottstown, Pa. Filed Sept. 5, 1887. Serial No. 248,842. (No model.)



Claim.—A clevis formed of strap-pieces B and C, adapted to be secured to a beam, A, and united by guide-bolts E E′, in combination with a draft-plate, G, adapted to be guided by said guide-bolts, and with an adjusting-screw, F, loosely journaled in said strap-pieces, substantially as shown and described.

381,579. BOOT OR SHOE. RUFUS N. PRATT, Hartford, Conn., and HENRY W. JOHNS, New York, N. Y. Filed June 2, 1887. Serial No. 240,062. (No model.)



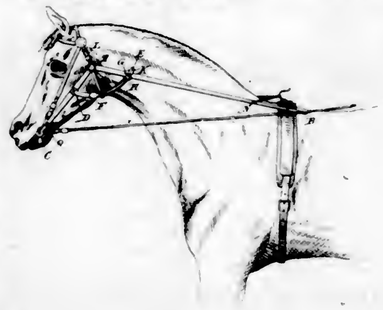
Claim.—1. As an improved article of manufacture, the herein-described boot or shoe having an upper or body portion made of a flexible asbestus composition or cloth and a sole and heel formed of a tough or rigid asbestus composition, substantially as hereinbefore set forth.

2. As an improved article of manufacture, a sole for boots and shoes formed of a tough or rigid composition composed mainly of asbestus and a sufficient quantity of rubber or equivalent vulcanizable or binding compound or material, as set forth.

3. As an improved article of manufacture, a sole and heel for boots and shoes in one piece formed of a tough or rigid composition composed mainly of asbestus and a sufficient quantity of rubber or equivalent vulcanizable or binding compound or material, as set forth.

4. As an improved article of manufacture, a sole and heel in one piece formed of a tough or rigid composition composed mainly of asbestus mixed with an oxide of iron or its equivalent and a sufficient quantity of rubber or equivalent vulcanizable or binding compound or material, as set forth.

381,580. DEVICE FOR CHECKING HORSES. THOMAS J. QUINN and DONALD MCLELLAN, Woodstock, Ontario, Canada. Filed May 24, 1887. Serial No. 239,268. (No model.)

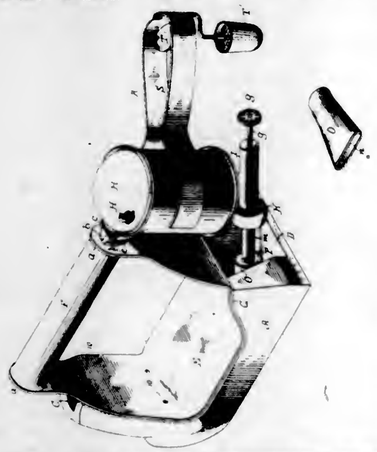


munication with the said air-pipe, substantially as and for the purpose set forth.

3. The combination of a cylinder, A, comprising a chamber, B, having a perforated head, *r*, and a chamber, B', having an open end at which it is secured to the chamber B at the end provided with the said perforated head, a piston within the chamber B', adapted to be connected with the brakes of a car, an opening, *m*, in the chamber B, a valve, D, maintained normally by a yielding pressure against the opening *m* to close it, and an opening, *m'*, in the chamber B', the openings *m* and *m'* being adapted to be connected with the air-pipe which leads from the compressed-air supply, substantially as described.

4. The combination of a cylinder, A, comprising a chamber, B, having a perforated diaphragm, *r*, a chamber, B', having an open end at which it is secured to the chamber B at the end provided with the perforated head, openings *m* and *m'*, respectively, in the chambers B and B' and adapted to communicate with the air-pipe which leads from the compressed-air supply of an atmospheric car-brake device, a valve, D, in the chamber B, comprising a pivotal lever, *k*, and stopper *i*, a spring, *h*, operating to hold the stopper *i* normally in position to close the opening *m*, and a piston, *p*, in the cylinder between the openings *m* and *m'*, provided with a rod, *q*, supported in the heads *r* and r^3 and adapted to be connected with the car-brakes, substantially as and for the purpose set forth.

381,572. SAD-IRON. WILLIAM H. MULL, Lawrence, Kans., assignor to Jacob M. Zook, same place. Filed Nov. 17, 1887. Serial No. 255,434. (No model.)



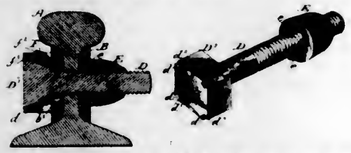
Claim.—1. In a self-heating sad-iron arranged with a gasoline-tank, a detachable heating-clasp for said tank, substantially as herein set forth

2. In a self-heating sad-iron arranged with a gasoline-tank, a metallic clasp having arms which detachably engage opposite sides of said tank, substantially as and for the purpose set forth.

3. In a self-heating sad-iron arranged with a gasoline-tank, the combination of the tank, a detachable heating-clasp, and a lighting-cup carried by said clasp, substantially as herein set forth.

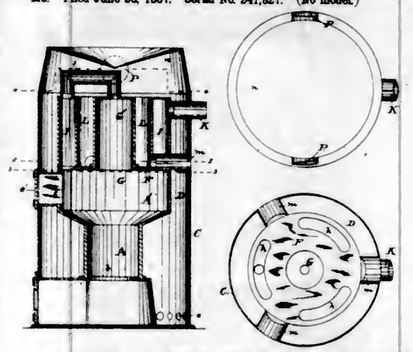
4. In a self-heating sad-iron, the combination of the gasoline-tank, a heating-clasp detachably located upon said tank, and a lighting-cup detachably located upon said clasp, substantially as herein set forth.

381,573. NUT-LOCK. EDWARD H. A. OAKLEY, Aiken, S. C. Filed June 13, 1887. Serial No. 241,172. (No model.)



Claim.—The combination of a rail, fish-plates having perforations to receive bolts, and radial slots leading from said perforations, with a nut and a bolt having a head provided with grooves in its periphery, and a key adapted to enter the radial slots in the fish-plate and the grooves in the head of the bolt, the head or outer end of said key being less in height than the edges of the groove, whereby said head is wholly embedded in said groove and adapted to be retained therein by upsetting said edges over the key, substantially as described.

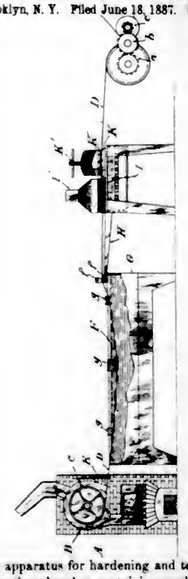
381,574. HOT-AIR FURNACE. JOHN R. OLDERSHAW, Baltimore, Md. Filed June 20, 1887. Serial No. 241,827. (No model.)



Claim.—1. A hot-air furnace consisting of a grate, fire-pot, and combustion-chamber, a dome, G', the hot-air chamber L, surrounding the dome, and an annular smoke-chamber, I, communicating with the combustion-chamber, a pipe, *j*, connecting said dome and annular smoke-chamber and passing over chamber L, a jacket, C, inclosing said chambers, dome, and fire-pot, and having openings near its base, a chamber surrounding the fire-pot, annular chamber, and dome communicating with said hot-air chamber L, the lateral pipes *m*, passing through jacket C, chambers D and I, and connected with the chamber L, substantially as specified.

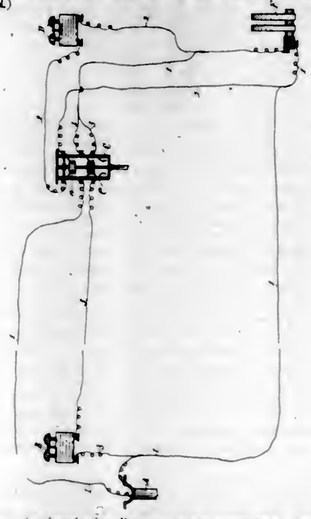
2. The fire-pot A, in combination with the combustion-chamber A', having top wall, F, with openings G *h*, the dome G', the annular smoke-chamber I, the heating-chamber D, the hot-air chamber L, the jacket C, with openings *o*, the pipe *j*, connecting dome G' and chamber I, the lateral pipes *m*, passing through jacket C, chambers D I, and communicating with the hot-air chamber L and the exit-flue K, substantially as described.

381,575. APPARATUS FOR TEMPERING STEEL BANDS. JOSHUA OLDHAM, Brooklyn, N. Y. Filed June 18, 1887. Serial No. 241,760. (No model.)



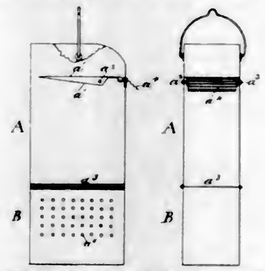
Claim.—An apparatus for hardening and tempering steel bands, consisting of a heating-chamber containing a wheel on which a steel band is to be wound and exposed to the products of combustion, a tank adjacent thereto adapted to contain oil or other hardening substance, through which the steel band from the wheel in the oven is passed, a fire-place with clamping-dies located over the same, over which fire and between which dies the steel band is adapted to be drawn, and a tension and drawing mechaniam, substantially as described.

381,576. ELECTRIC SIGNALING APPARATUS. MYRON W. PARRISH, Detroit, Mich., assignor to the Parrish Bros. and Peck Electrical Company, same place. Filed Aug. 3, 1887. Serial No. 246,085. (No model.)



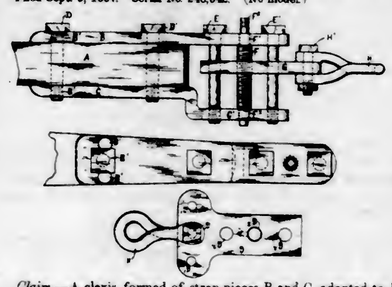
Claim.—An electric signaling apparatus comprising a circuit of a higher resistance, a circuit of a lower resistance, a generator or battery in said circuits, a bell or alarm in the circuit of the higher resistance, and a circuit-breaker in the lower-resistance circuit, whereby when the latter circuit is broken the circuit of the higher resistance will ring the bell or alarm, and a return-circuit connecting with the generator and partly composed of a portion of the circuit of the lower resistance, a bell or alarm in the return-circuit, and a combined circuit maker and breaker having movable points for contacting with the several wires of the circuits, whereby when disconnected from the higher and lower resistance circuits to "break" said circuits a contact is established with the wires of the return-circuit to "make" the same, and thus give the responsive signal, substantially as set forth.

381,577. TRAP FOR WELLS. WALTER W. PRAY, Toronto, Ontario, Canada. Filed Sept. 17, 1887. Serial No. 249,922. (No model.)



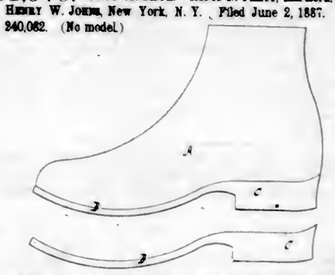
Claim.—A well-cleaner consisting of two sheet-metal vessels, the upper one of which is water-tight and provided with a tilting platform and stairs leading thereto, and made to disconnect from the lower vessel when so required by flange and groove or other suitable means, the lower vessel being perforated in its widest sides and partially filled with charcoal to act as a filter, and which serves to sink the trap to the required depth, the whole constructed and arranged substantially as and for the purposes set forth.

381,578. ADJUSTABLE CLEVIS. JOHN PETERS, Pottstown, Pa. Filed Sept. 5, 1887. Serial No. 248,842. (No model.)



Claim.—A clevis formed of strap-pieces B and C, adapted to be secured to a beam, A, and united by guide-bolts E E', in combination with a draft-plate, G, adapted to be guided by said guide-bolts, and with an adjusting-screw, F, loosely journaled in said strap-pieces, substantially as shown and described

381,579. BOOT OR SHOE. RUFUS N. PRATT, Hartford, Conn., and HENRY W. JOHNS, New York, N. Y. Filed June 2, 1887. Serial No. 240,062. (No model.)



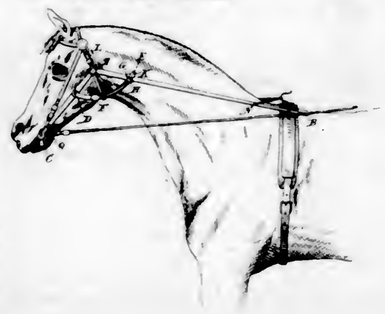
Claim.—1. As an improved article of manufacture, the herein-described boot or shoe having an upper or body portion made of a flexible asbestus composition or cloth and a sole and heel formed of a tough or rigid asbestus composition, substantially as hereinbefore set forth.

2. As an improved article of manufacture, a sole for boots and shoes formed of a tough or rigid composition composed mainly of asbestus and a sufficient quantity of rubber or equivalent vulcanizable or binding compound or material, as set forth.

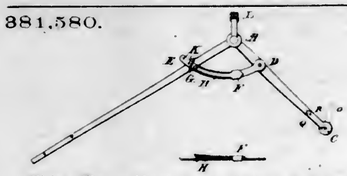
3. As an improved article of manufacture, a sole and heel for boots and shoes in one piece formed of a tough or rigid composition composed mainly of asbestus and a sufficient quantity of rubber or equivalent vulcanizable or binding compound or material, as set forth.

4. As an improved article of manufacture, a sole and heel in one piece formed of a tough or rigid composition composed mainly of asbestus mixed with an oxide of iron or its equivalent and a sufficient quantity of rubber or equivalent vulcanizable or binding compound or material, as set forth.

381,580. DEVICE FOR CHECKING HORSES. THOMAS J. QUINN and DONALD MCLELLAN, Woodstock, Ontario, Canada. Filed May 24, 1887. Serial No. 239,268. (No model.)

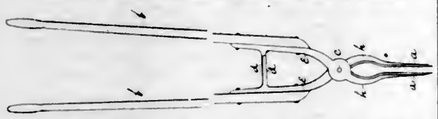


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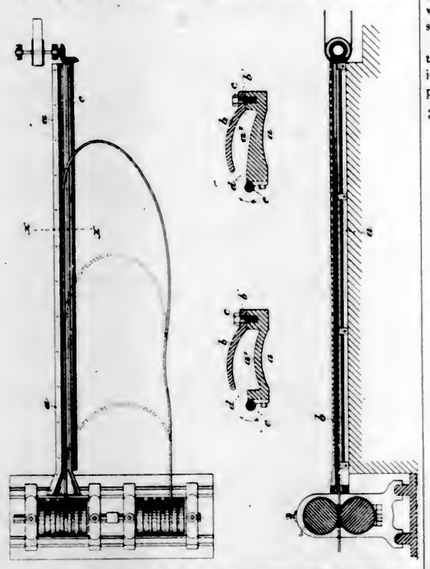
Claim.—The combination of the longer arm or checkrein and the shorter arm or cheek-piece A C, adjusted by means of the brace D E and its sliding spring, and fastened to the bit by the spring safety-lock in the manner described, and substantially as and for the purpose hereinbefore set forth.

381,581. GRUBBING-PINCHERS. JAMES M. RICKETSON, New Bedford, Mass. Filed Dec. 15, 1886. Serial No. 221,692. (No model.)



Claim.—The grubbing-pinchers herein described, consisting of two narrow, flat, and parallel blades, having their upper portions curved outwardly and then inwardly, said blades crossing and being pivoted to each other at the point of crossing, and being extended upwardly to form arms for attachment to handles, said arms being provided on their inner sides with projections or foot-pieces so placed as to pass each other when the arms are closed, substantially as described and shown.

381,582. GUIDE FOR WIRE-ROD MILLS. HENRY ROBERTS, Pittsburg, Pa., assignor to himself, George T. Oliver, and Andrew J. Day, same place. Filed Dec. 17, 1887. Serial No. 258,153. (No model.)



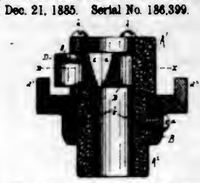
Claim.—1. In a rod-mill, the combination, with adjacent pairs of rolls, of an open guide extending transversely from the delivery side of one pair of rolls, said guide having a convex bottom, substantially as and for the purposes described.

2. In a rod-mill, the combination, with adjacent pairs of rolls, of an open guide extending transversely from the delivery side of one pair of rolls and a rotary shaft extending parallel therewith, substantially as and for the purposes described.

3. A guide of the character described, having a bottom piece or trough and a removable cap secured to the bottom piece at one side, and at the other side separated from the bottom piece, so as to afford an opening, *d*, substantially as and for the purposes described.

4. In a wire-rod mill, a guide-trough leading from a pair of rolls and having a convex bottom, substantially as and for the purposes described.

381,583. TUBE-EXPANDER. CHARLES H. ROBINSON, St. Paul, Minn. Filed Dec. 21, 1885. Serial No. 186,399. (Model.)



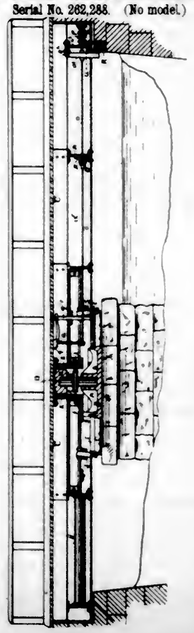
Claim.—1. In a tube-expander, a head having a central longitudinal bore, and channels extending radially and laterally through said head and communicating with said central bore, in combination with expanding-rollers located in said radial channels, each of said rollers having on one end a cavity or recess, and stop-pins inserted through the head of the tube-expander, with their ends entering the recesses in said rollers, substantially as set forth.

2. In a tube-expander, a head cast or formed in a single piece having a central longitudinal bore, and channels extending radially and laterally through said head and communicating with said central bore, in combination with expanding-rollers located in said radial channels, each of said rollers having on one end a cavity or recess, and stop-pins inserted through the head of the tube-expander, with their ends entering the recesses in said rollers, substantially as set forth.

3. In a tube-expander, a head having a central longitudinal bore and channels extending radially and laterally through said head and communicating with said central bore, in combination with expanding rollers located in said radial channels, each of said rollers having on one end a cavity or recess and having its opposite end plain and square, and stop-pins inserted through the head of the tube-expander, with their ends entering the recesses in said rollers, substantially as set forth.

4. As a new article of manufacture, an expanding-roller for a tube-expander, said roller having one end plain and square and having a cavity or recess in the opposite end, substantially as and for the purpose set forth.

381,584. BRIDGE. REUBEN A. SAWYIER, Columbus, Ohio. Filed Jan. 28, 1888. Serial No. 262,288. (No model.)



Claim.—1. In a swinging bridge, the combination, with the pier and frame-work of a bridge, the latter having adjustable truss-rods D, of the vertical pivot-pin A, supported loosely in a socket of the bed-plate B and having cap *a*, said bed-plate supporting a segmental angular rim, *g*, the inclosed springs *k'*, supported by the frame-work, and spring-rods *h*, connected, as described, with the ends of the rim *g*, substantially as and for the purpose specified.

2. In a swinging bridge, the combination, with the pier and frame-work of a bridge, the latter having adjustable truss-rods D, and pivot-box *c'*, having set-screws *f*, of the vertical pivot-pin A, having collar F, supported in a socket of the bed-plate B and having cap *a*, said bed-plate supporting a segmental rim, *g'*, inclosed spring *k'*, supported in the frame-work, and spring-rods *h*, connected with the ends of rim *g* by cables h^3, substantially as and for the purpose specified.

3. The combination of the bridge frame-work having truss-rods D, the pivot-pin A, having cap *a*, said pin pivoted, as described, within block B, the latter supporting a segmental rim, *g*, inclosed spiral springs *k'*, spring-rods *h*, connected, as described, with the ends of the rims *g*, with the circular track I, supported by the pier, and track-wheels J, pivoted beneath the frame-work of the bridge, substantially as and for the purpose specified.

4. In a swinging bridge, pivoted as described, the combination of the frame-work, the bumpers L, having rollers *m*, said bumpers supported at the sides of the bridge by spring-coiled rods *l l'*, the latter being made to bear against one arm of a bell-crank lever, O, pivoted, as described, within the frame-work, spring-actuated latch-operating rod *o*, connected with the remaining arm of said lever, and hinged latch-bar *o'*, with the latch-box R, supported, as described, in an abutment-wall, having recess *r*, slots *r'*, and coiled spring r^2, seated within said recess, sliding top plate, S, having latch-notch *v* and lugs *s*, the latter adapted to bear against and to be made to compress the spring r^2, substantially as and for the purpose specified.

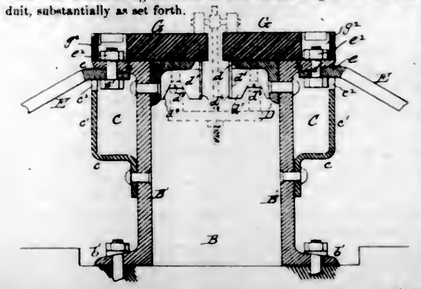
5. In a latch for swinging bridges, the combination, with the box R, having central recess, *r*, slots *r'*, coiled springs r^2, and pins s^2, projecting from either side of said slots *r'*, of the top plate, S, having slots, lugs *s*, and notch *v*, and slot-covering plates s^3, substantially as and for the purpose specified.

6. In a mechanism for operating a swinging bridge, the combination, with the bridge frame-work, the pier, a segmental rack supported on said pier, a vertical shaft, *q'*, having its upper end opposite an opening in the bridge-floor, and carrying on its lower end a pinion-wheel engaging with the teeth of said rack, of a bell-crank lever, Q, pivoted beneath the floor of said bridge, having its upper arm slotted to receive the upper end of shaft *q'*, a spring-actuated latch-operating rod, *o*, carrying latch-bar *o'*, and having its rear end secured to the lower arm of said lever Q, substantially as and for the purpose specified.

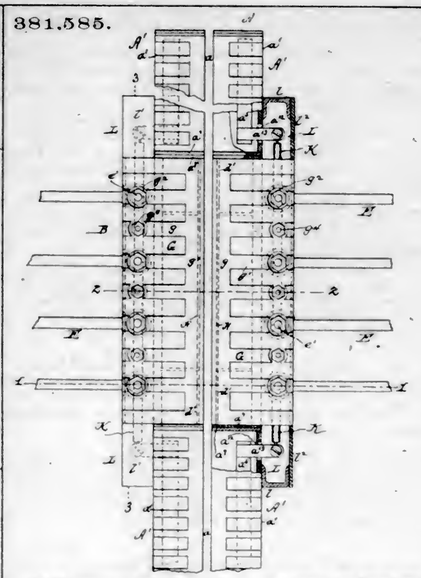
7. A track for swinging bridges, consisting of a circular plate, *i'*, having bolted thereto in sections a track, I, and strengthening-bars i^2, bolted to said plate opposite the joints of said track-segments, substantially as and for the purpose specified.

381,585. TRAP FOR ELECTRIC-RAILWAY CONDUITS. WILLIAM M. SCHLEICHER, Philadelphia, Pa. Filed May 29, 1886. Serial No. 203,655. (No model.)

Claim.—1. In an electric railway, the combination of a slotted conduit having at intervals along its length removable man-hole or trap covers, a line of parallel conductors having intervals or spaces adjacent to said covers, insulating or non-conducting guide-blocks secured to said covers in line with and having a cross-section corresponding to that of the conductors to fill up the spaces or intervals therein, electrical couplings at or around said spaces for completing the continuity of the conductors, and an electrically-propelled car having a current-collector for contact with said conductors and guide-blocks, whereby the circuit of the conductors is not interrupted when the collector travels in contact with said guide-blocks, nor when the latter are removed for withdrawing the collector from or inserting it into the conduit, substantially as set forth.



381,585.



2. The combination of a slotted conduit, a trap in the line of and forming part of the conduit, having guide-blocks *d'* and H, and provided with chambers C, exterior to the trap, and a line of conductors secured within the conduit in line with blocks H and having electrical couplings or bridges passing through chambers C, substantially as set forth.

3. The combination of a slotted conduit, a trap in the line of and forming part of the conduit, chambers C outside of the trap, removable cap or cover for the trap and chambers C, a line of electrical conductors secured within the conduit and passing through chambers C, and guide-blocks of electric non-conducting material within the trap in line with said conductors, substantially as set forth.

4. In an electric railway, a conduit having electrical conductors, a trap in the line of the conduit and having outside chambers, C, through which the conductors pass, a removable cover, and electric non-conducting guide-blocks in the trap in line with the conductors, substantially as set forth.

5. In an electric railway, a conduit having electrical conductors, a trap in the line of the conduit, having guide-blocks *d'* in line of the conductors, removable cover for the trap, having guide-blocks H in line with blocks *d'*, and chambers C, exterior to said trap and through which the conductors pass, substantially as set forth.

6. In an electric railway, the combination of a slotted conduit having a trap in the line of the conduit provided with outside chambers C, a line of conductors secured within the conduit and broken away at the trap, so as not to enter the same, electric couplings or bridges passing through chambers C for connecting the conductors around the trap, and a traveling current-collector for contact with said conductors, substantially as set forth.

7. In combination with slotted conduit-sections having electric conductors passing laterally out of said sections at their ends, a trap in the line of and between said sections and having electric non-conducting guide-blocks H, and outside chambers, C, in which are located electrical connections for coupling the lateral ends of said conductors, substantially as set forth.

8. The combination of separate slotted conduit-sections, each composed of separate sides or beams, each having separate electrical-conductor sections, a trap in line with and between said conduit-sections and having blocks *d'*, chambers C outside of the trap, through which the conductor-sections are coupled, and a removable cover for said trap, having blocks H aligning with block *d'*, substantially as set forth.

9. The combination, with a slotted conduit, of electrical conductors having at intervals along their length insulation or non-conducting blocks, couplings for leading the conductors around said insulation or blocks, and metal facing for said insulation or blocks, substantially as and for the purpose set forth.

10. In combination with a slotted conduit and its electrical conductors, a trap in the line of and forming part of the conduit, and the

non-conducting blocks *d* and H, having separate facings or plates *d*[3] and *h*, substantially as set forth.

11. In a trap for conduits for electrical conductors, having bottom contact-surfaces, guide-blocks of non-conducting material in line with the conductors, and couplings for leading the conductors around said blocks, substantially as set forth.

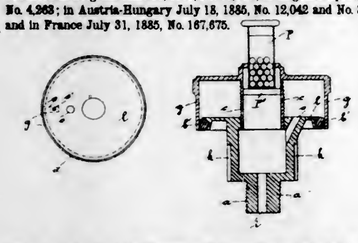
12. In combination with conduits for electric conductors for electric railways, a trap in line with the conductors, having removable cover provided with electric non-conducting blocks H, in line with the conductors, and electric couplings for leading the conductors around said blocks, substantially as and for the purpose set forth.

13. In combination with a slotted conduit having electrical conductors, the trap sides or beams B', having top flange, *b*, braces E, bolted to said flange, and trap-cover G, having openings *g*[3], substantially as set forth.

14. In an electric railway, a slotted conduit composed of sections, each section composed of side bars or beams having top flanges approaching each other, and a trap in line with said sections, composed of side beams or bars having top flanges on the outside of the beams or arranged reversely to those of the conduit-sections, substantially as set forth.

15. The combination, with a slotted conduit, of a trap located in the line of the conduit and having electric non-conducting guide-blocks H, said conduit being composed of separate side beams or bars having outside chambers, C, braces E, and removable covers G, substantially as and for the purpose set forth.

381,586. LUBRICATOR. MAX SCHNEIDER, Doos, near Nuremberg, Bavaria, Germany. Filed Feb. 15, 1888. Serial No. 264,102. (No model.) Patented in Belgium Mar. 31, 1885, No. 68,201; in England Apr. 9, 1885, No. 4,963; in Austria-Hungary July 18, 1885, No. 12,042 and No. 37,935, and in France July 31, 1885, No. 167,675.

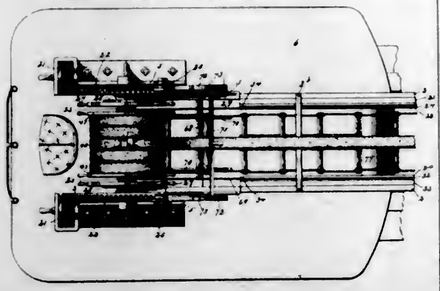


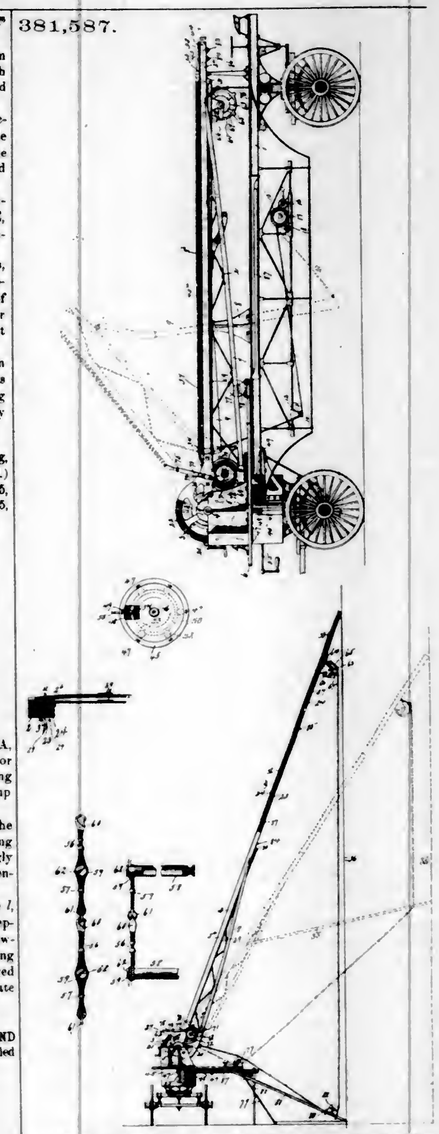
Claim.—1. In a lubricator, the combination of the body A, having the circular plate *l*, the hollow stem and an opening, the cup or receptacle *g*, having the screw-stem *c*, engaging a threaded opening in the plate, and the packing between the said plate and the said cup or receptacle.

2. In a lubricator, the combination of the body A, having the circular plate *l*, the hollow stem *k*, and the opening *o*, communicating with the bore of said stem, with the cup or receptacle fitting snugly on the plate, and having the screw-stem *c*, engaging a threaded opening in the plate, for the purpose set forth.

3. The combination of the body A, having the circular plate *l*, the depending hollow stem *k*, and opening *o*, with the cup or receptacle *g*, fitting snugly on the plate A, and having the hollow screw-stem *c*, engaging a threaded opening in the plate and communicating with the bore of the hollow stem, and the weighted piston arranged in the bore of the screw-stem *c*, all arranged and adapted to operate substantially as described.

381,587. COMBINED EXTENSION-LADDER, FIRE-ESCAPE, AND HOSE-CARRIAGE. CHARLES R. SCHUMANN, South Norwalk, Conn. Filed Oct. 17, 1887. Serial No. 252,580. (No model.)





Claim.—1. The combination, with the ladder-carrier, the lifting-lever, rope 10, and the winding-drum, of castings 3, to which the ladder-carrier is attached, and which are provided with racks 22, and winding-pinions engaging said racks, whereby the ladder-carrier may be raised to any desired position, substantially as described.

2. The combination, with the ladder-carrier, the lifting-lever, rope 10, the winding-drum, and roller 11, of castings 3, to which the ladder-carrier is attached, and which are provided with racks 22, and winding-pinions engaging said racks, substantially as described.

3. The combination, with the ladder-carrier, the lifting-lever, rope 10, and the winding-drum, of castings 3, to which the ladder-carrier is attached, and which are provided with racks 22, winding-pinions engaging said racks, and pawls and ratchets, whereby backward movement of the ladder-carrier is prevented, substantially as described.

4. The combination, with castings 3, having racks, winding-pinions engaging said racks, the ladder-carrier secured to the castings, and lifting mechanism, substantially as described, of slides 23 and 24, winding-drums 25, ropes extending from said drums passing over pulleys and connected to the rear end of slide 23, and ropes 32, one end of each of which is connected to the ladder-carrier, passes thence over a pulley on slide 23, and is connected to the rear end of slide 24, whereby when ropes 29 are wound said slides are extended.

5. The combination, with castings 3, lifting mechanism, substantially as described, and brace 7, of slides 23 and 24, ropes 29 and 32, and winding-drums 25.

6. Shaft 4, castings 3, rigidly attached thereto, and the ladder-carrier secured to the castings, in combination with slides 23 and 24, ropes 29 and 32 for extending said slides, shaft 26, carrying winding-drums 25 for ropes 29, and a hose-reel journaled on shaft 26.

7. The ladder-carrier and slides 23 and 24, in combination with sprocket-wheels 65, journaled at the outer end of slide 24, sprocket-wheels 70, journaled at the inner end of the ladder-carrier, and a flexible ladder carried by said sprocket-wheels.

8. The combination, with the ladder-carrier and slides 23 and 24, of sprocket-wheels 65 and 70, a flexible ladder, and a rope, 76, connected to the outer end of the ladder, as and for the purpose set forth.

9. The table, shaft 46, gear-wheel 53, and supporting-wheel 50, in combination with pinion 54 and rollers 51, against which the supporting-wheel bears.

10. The table, shaft 46, and gear 53, in combination with housing 45, rollers 47, upon which the table rests, and rollers 48, carried by the table, which bear against the outer side of the housing.

11. The housing having rollers 47 and 51, in combination with shaft 46, carrying the table and having gear-wheel 53, and supporting-wheel 50, engaging rollers 51, and a pinion, 54, engaging the gear-wheel.

12. The combination, with the ladder-carrier and slides 23 and 24, of dovetails 37 on the ladder-carrier, and slide 23, and grooves in both slides having rollers 38, which engage the dovetails, and ropes 29 and 32, arranged as described, whereby the slides are extended.

13. The combination, with the ladder-carrier having cross-pieces 2[b], of the hose-reel and hose and longitudinal strips 39, secured to the cross-pieces by which the hose is supported.

14. The combination, with the ladder-carrier, slides 23 and 24, and ropes 29 and 32, by which they are extended, of sprocket-wheels 65 and 70, pawls and ratchets to hold wheels 65 against backward movement, and a flexible ladder carried by said sprocket-wheels, whereby when sprocket-wheels 70 are turned backward the ladder may be drawn inward to return the slides to their normal position.

15. The ladder-carrier and slides 23 and 24, in combination with sprocket-wheels at the outer end of slide 24, sprocket-wheels at the inner end of the ladder-carrier, a continuous chain carried by said sprocket-wheels and friction-pulleys 71, and straps 72, whereby the movement of the chain is controlled when used as a fire-escape.

16. The ladder-carrier, slides 23 and 24, and ropes 29 and 32, in combination with sprocket-wheels 65 and 70, an endless ladder passing over said sprocket-wheels, a pawl and ratchet to prevent backward movement, friction-pulleys upon the shaft of wheels 70, straps engaging said pulleys, and levers to operate the straps to control the movement of the ladder.

17. The ladder-carrier, slides, and sprocket-wheels, in combination with an endless ladder carried by the sprocket-wheels, braces 79 and 81, and rollers 77 and 82.

18. The combination, with the table, ladder-carrier, and slides, of an endless ladder, sprocket-wheels by which it is carried, pawls and ratchets for preventing backward movement, friction-pulleys and straps for controlling the forward movement, and pulleys 77 and 82, for guiding the ladder.

19. The combination, with the table, ladder-carrier, slides, and endless ladder, of brace 79, secured to the table and carrying sliding block 80, brace 81, engaging said block, and a roller, 82, carried by sliding bearings 83 upon said brace, over which the ladder passes, substantially as described.

20. The combination, with the table, ladder-carrier, and slides, of an endless ladder and a brace, 35, for supporting the parts in use.

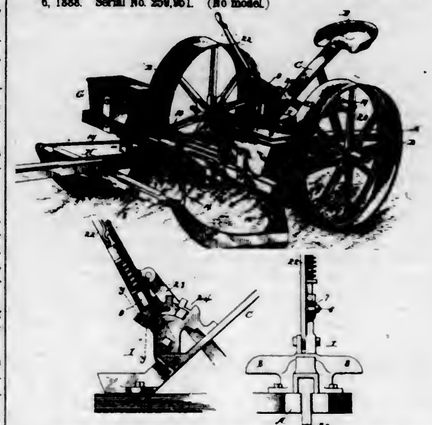
21. The ladder-carrier, rack, pinion, and lifting-lever for raising it, the slides having rollers 38, and the sprocket-wheels, in combination with an endless ladder carried by the sprocket-wheels, and pawls, ratchets, and friction-straps, whereby its movement is controlled when used as a fire-escape.

22. The table, ladder-carrier, slides, and ladder, in combination with the lifting-lever, rope 10, and racks and pinions for raising the ladder, and a pinion and gear for rotating the table, substantially as described.

23. Shaft 4, the ladder-carrier, slides, and ladder, in combination with the lifting-lever, rope 10, winding-drum 13, a pawl and ratchet to prevent backward movement of said drum, racks 22 on shaft 4, pinions engaging them, and racks and pinions to hold said shaft against backward movement.

24. The table and a rack and pinion for turning it, and the ladder-carrier journaled on said table, in combination with a lifting-lever and rope, and racks and pinions for raising the ladder-carrier, substantially as described.

381,588. CORN-PLANTER. JAMES SELBY, Peoria, Ill. Filed Jan. 6, 1888. Serial No. 259,951. (No model.)



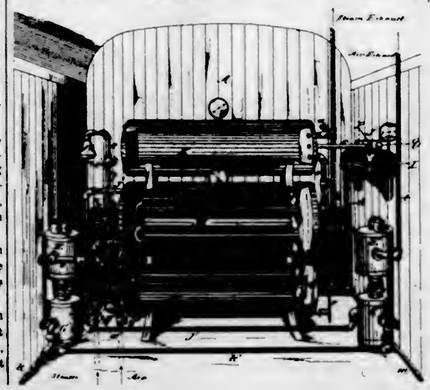
Claim.—1. In a corn-planter, the combination, with the main frame and runners pivotally connected thereto, of a lever pivoted to the main frame and connected to move the runners, a hand-lever connected to the first-named lever by a link, and a pawl and a segment for holding the hand-lever and runners in their adjusted position, substantially as described.

2. In a corn-planter, the combination, with the main frame with runners pivotally connected thereto, of a lever, 20, pivoted to the main frame, loosely connected at its front end to the runner-frame, and extending rearward of the seat-standard, the hand-lever pivoted to the main frame and connected to the rear of the first-named lever by a link, 23, and a pawl and segment for holding the hand-lever and runners in their adjusted position, substantially as described.

3. In a corn-planter, the combination, with the main frame having runners pivotally connected thereto, and a toothed segment provided with an adjustable supplemental plate having a portion of the teeth of the segment, of a hand-lever connected to raise and lower the runners and having a pawl for engagement with the teeth of said segment, said hand-lever and pawl adapted to lock and prevent the runners from rising, but permit them to descend to follow the inequalities of the ground, substantially as described.

4. The herein-described bracket 1, provided with a toothed segment, 24, and foot-rests 8, integral therewith, substantially as described.

381,589. HEATING BY COMPRESSED HOT OR SUPERHEATED AIR. THOMAS J. SIMPSON, Worthington, Minn. Filed Apr. 4, 1887. Serial No. 233,557. (No model.)



Claim.—1. The combination, with an air-compressing device, of an air-supply pipe, steam-chambers through which said pipe passes for heating the air before it is compressed, suitable pipes and radiators for holding the compressed hot air, an automatic relief-valve for governing the pressure, a reservoir for receiving and storing the surplus compressed air, and an auxiliary air-compressing device arranged to be actuated by the compressed air stored up in the reservoir, substantially as and for the purpose set forth.

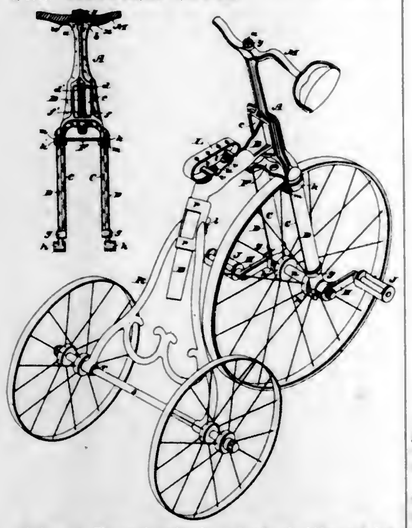
2. The combination, with a steam-actuated air-compressing pump, of a live-steam chamber through which the steam is supplied to the pump, an exhaust-steam chamber for receiving the exhaust-steam from the pump, an air-supply pipe passing through said chambers, a system of heating-pipes and radiators, and an automatic and adjustable relief-valve for governing the pressure in said pipes, substantially as and for the purpose set forth.

3. The combination, with a steam-actuated air-compressing pump, of a live-steam chamber through which the steam is supplied to the pump, an exhaust-steam chamber for receiving the exhaust-steam from the pump, an air-supply pipe passing through said chambers, a system of heating-pipes and radiators, a reservoir for the surplus compressed air, an adjustable automatic valve for opening communication between the heating-pipes and the reservoir when a predetermined pressure has been reached, and an auxiliary air-compressing pump arranged to be driven by the surplus compressed air in the reservoir and to force hot air into the heating-pipes, substantially as and for the purpose set forth.

4. The combination, with the live-steam chamber B, exhaust-steam chamber F, and reservoir K, of a steam air-pump and an auxiliary air-pump, an air-supply pipe passing through the steam-chambers, and a heating-pipe connected with the air-cylinder of each pump and with the reservoir K, said reservoir also being connected with the driving-cylinder of the auxiliary pump, substantially as set forth.

5. A car-heating system comprising an air-heating coil in the dome of the locomotive, independent steam and air pipes, a pump having steam and air cylinders connected, respectively, with said pipes, live and exhaust steam chambers surrounding the air-pipe before it reaches the pump, a closed hot-air-supply pipe running from the pump through the car, a receiving-tank to which said heating-pipe returns, a reservoir communicating with said tank, an automatic pressure-valve controlling the communication between said tank and reservoir, and an auxiliary compressing-pump connected with the reservoir and with the hot-air-supply pipe, substantially as and for the purpose set forth.

381,590. **TRICYCLE.** MARION SLUTZ, Canton, Ohio. Filed Jan. 3, 1888. Serial No. 259,713. (No model.)



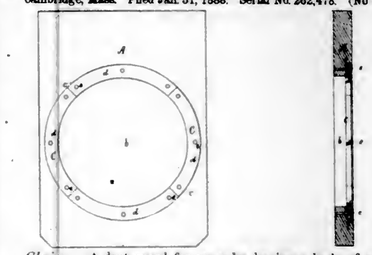
Claim.—1. The combination, in a tricycle, of a bifurcated front frame, the prongs of which are made in sections, one of said sections provided with a journal-box for the axle-shaft, the other with a securing-loop, and the yoke F, having the clasping-bows *k*, and the set-screw *m*, by which the parts may be secured in adjustment, substantially as described, and for the purpose set forth.

2. The combination, in a tricycle, of a back frame formed of two sections, B and K, the rear portion of section B of a V or angle form and the front portion of section K having a corresponding socket, and the screw *l*, by which the two frames may be secured in desired adjustment, substantially as described, and for the purpose set forth.

3. In a tricycle, the combination of the back B, spring L, loops *t*, and the hooks *u*, substantially as described, and for the purpose set forth.

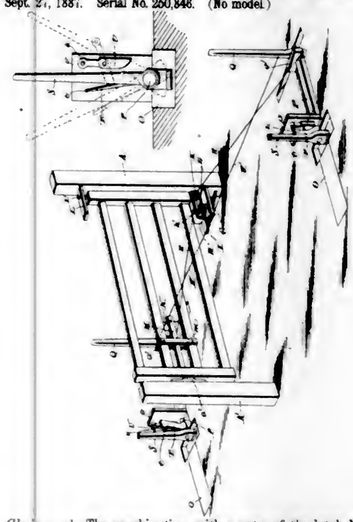
4. In a tricycle, the combination of a handle-bar having a groove, *w*, the frame A, shoulders *b*, extending in opposite directions between the walls of the groove, threaded pin *a*, and a nut, *g*, substantially as shown and described, and for the purpose set forth.

381,591. **DUST-GUARD FOR CAR-AXLES.** WILLIAM S. SOULE, Cambridge, Mass. Filed Jan. 31, 1888. Serial No. 262,478. (No model.)



Claim.—A dust-guard for car-axles having a body of wood or other suitable material provided with a circular opening to receive the car-axle, said body being provided with a rabbet leading out of said circular opening and having a rawhide ring made in sections to fit to said axle, secured in said rabbet and to the body, as described, all being arranged with the axle-box and for use substantially as set forth and represented.

381,592. **GATE.** HIRAM A. SPENCER, Valley Mills, Tex. Filed Sept. 27, 1887. Serial No. 250,846. (No model.)



Claim.—1. The combination, with a gate, of the latch M, projecting at its outer end beyond the free end thereof, and the vertical coiled spring N, attached at its ends to the gate and at its center to the inner end of the latch, substantially as specified.

2. The combination, with a gate having vertical end bars and horizontal rails, of the latch disposed between two of the horizontal rails and projecting at its outer end through a vertical slot in one of the vertical bars, the vertical coiled spring attached at its ends to the rails above and below the latch and connected at an intermediate point to the inner end of the latch, and the vertical guide-bars secured to the gate on the opposite sides of the latch, substantially as specified.

3. The combination, with the gate, of the horizontal shaft P, having a lever on the end connected to the gate, and the vertical arm S, connected to the shaft P and adapted to be engaged by the axle of a passing vehicle to turn the shaft, the lower end of the arm being weighted to cause it to automatically assume a vertical position, substantially as specified.

4. In a gate, the combination of the post A, having the ledge C at the lower end, provided on the upper side with the spindle D, the hinge H, comprising the box or body *h*, provided at the inner end with the aligned vertical openings *h' h'* to receive the spindle D, and also with the bearing h^3 in the upper side at the outer end and the socket h^3 in the lower side aligned therewith, and the arm I, secured to the inner end of the said body, the gate hinged at the top to the post A and provided at the bottom with the depending spindle K, journaled in the bearing h^3 and seated at the lower end in the socket h^3, and the lever Q, pivoted to a suitable standard and connected by cords or other suitable means at the lower end to the outer end of the body *h* and at a point above the pivot to the inner end of the arm I, substantially as and for the purpose specified.

5. The combination, with a gate-post, A, hinge H, pivoted at its center to a ledge on the inner side thereof, and the gate hinged at the top to the post and at the lower end to the inner end of the said hinge H, of the horizontal shaft P, the lever Q, secured to one end thereof and connected by cords R R' to the outer and inner ends of the hinge H, the crank T, secured to the other end of the shaft P, and the swinging arm S, journaled on the shaft and adapted to be engaged by the front axle of a vehicle passing over the same to rotate the hinge and swing the gate open or shut, substantially as and for the purpose specified.

6. In a gate, the combination, with the post A, having a ledge at the lower end, hinge H, pivoted at the center to the said ledge, and the gate hinged at the top to the post and at the bottom to the rear or outer end of the hinge H, of the standards *o o'* on each side of the gate, shafts P, journaled in bearings in the standards, cranks T, secured to the inner ends of the shafts and having arms *t* thereon, swinging weighted arms S, journaled on the shafts and adapted to engage the arms *t*, the levers U, pivoted to the standards *o* and having the lateral arms *u*, to be engaged by the arms S, the lower ends of the said levers U being adapted to bear against the upper ends of the cranks to operate them, and the levers Q, secured to the outer ends of the shafts P and connected at the lower and upper ends, respectively, to the outer and inner ends of the hinge H, substantially as and for the purpose specified.

7. The combination, with the gate, of the shafts P, journaled in standards on opposite sides of the gate, the swinging weighted arms S, journaled on the said shafts, cranks T T, secured to the shafts and adapted to be engaged by the swinging arms, and the levers U, pivoted above the cranks and adapted to be engaged by the swinging levers, the said levers being adapted, when operated, to operate the cranks T, the shafts P being connected, substantially as described, with the gate, whereby when the same are rotated the gate is either opened or closed, substantially as and for the purpose specified.

381,593. **CLEANER-ARM FOR THE TEETH OF HORSE HAY-RAKES.** NORMAN STAFFORD, Canastota, N. Y., assignor to Patten, Stafford & Myer, same place. Filed Nov. 11, 1886. Serial No. 218,646. (No model.)



Claim.—1. In a wheel-rake, the combination of the cleaner consisting of a head having arms projecting rearward therefrom between the teeth, the head mounted in clips on the under side of the shafts or tongue in front of and below the axle-tree to rock freely, so that the arms will have a vertical oscillating motion, pins projecting from the head and playing in the clips, and a bolt in the clips with which the pins engage to limit the rocking of the head, substantially as set forth.

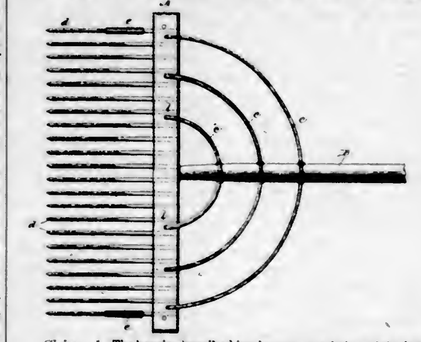
2. The combination, in a wheel-rake, of the cleaner consisting of a head having arms projecting rearward therefrom between the teeth, the head mounted in clips on the under side of the shafts or tongue in front of and below the axle-tree to rock freely, so that the arms may oscillate, but be prevented from striking the ground by a pin projecting from a head and engaging the shoulder of the clip, and a bolt with which the pin also engages for limiting the upward movement of the arms, substantially as set forth, for the purposes stated.

3. In a wheel-rake, the combination of the cleaner consisting of a rocking head mounted in clips on the frame having arms extending therefrom between the teeth, the pins in the head, the shoulder in the clip for limiting the movement of the pins and preventing the cleaner-arms from coming in contact with the ground and leaving the same free to be elevated with the hay or straw, substantially as set forth.

4. In a wheel-rake, the combination of the cleaner consisting of a rocking head mounted in clips on the frame, arms extending between the teeth, the clips provided with the shoulder, and the bolt for limiting the rocking of the head and the movement of the cleaner-arms, substantially as set forth.

5. In a wheel-rake, the combination of the cleaners consisting of a rocking head mounted in clips on the frame, having pins forwardly projecting therefrom and arms rearwardly projecting therefrom between the teeth and provided with barbed projections near their rear end, the clips provided with a shoulder, and bolt for limiting the rocking of the head and the movement of the cleaner-arms.

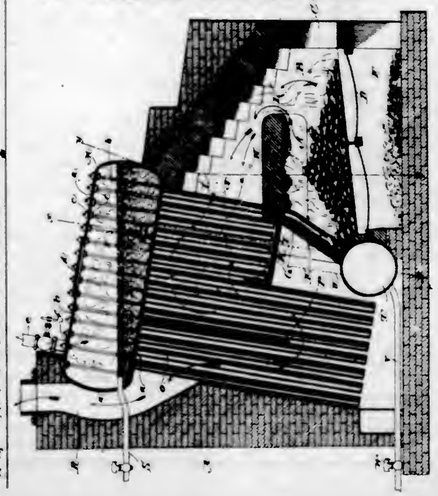
381,594. **COMBINED RAKE AND FORK.** LYTLE R. STAGNER, Marshall, Mo. Filed Oct. 15, 1887. Serial No. 252,513. (No model.)



Claim.—1. The herein-described implement, consisting of the handle, the cross-head, the teeth, the receptacle made distinct from the teeth, and slides, said slides being secured at one end to a tooth and at the other secured in the cross-head transversely to the teeth, and the teeth and receptacle being arranged approximately in the same plane, whereby the device can be pushed along upon the slides to accumulate a load upon the teeth and receptacle, and then used as a fork.

2. The herein-described implement, consisting of the handle, the cross-head, the teeth, receptacle, and slides, the teeth and receptacle being arranged approximately in the same plane and the ends of the slides passed through the cross-heads at right angles to the same and secured therein, the other end being secured to teeth, substantially as specified.

381,595. **BOILER AND FURNACE.** ALLAN STIRLING, Yonkers, N. Y. Filed Jan. 24, 1888. Serial No. 261,773. (No model.)



Claim.—1. The setting, the boiler supported thereon, the fire-box in the front of the setting and having the arch H over its rear portion, and the rearward and upward inclined series of steps L, extending from over the front portion of the fire-box to the boiler, substantially as described.

2. The combination of the boiler having the depending water-tubes and the furnace or setting in which the boiler is located, provided with the fire-box having the arch H, and the partitions I P, to direct the caloric-currents between the water-tubes, substantially as described.

3. The steam-boiler having the man-hole plate and the steam-pipes provided with the flange *f*, and the brace or bolt rods connecting the sides of the boiler and extending through the man-hole plate and the flange *f*, substantially as described.

4. The combination of the inclined boiler, the setting supporting the same, and having the rearward and upward inclined series of steps L, extending to the lower portion of the boiler, and the fire-box arranged under the series of steps L, whereby the latter direct the most intense heat to that portion of the boiler where the water is deepest, substantially as described.

5. A steam-boiler furnace having the fire-box provided with the grate D, the wall E, supporting one end of the grate and forming the rear side of the fire-box, the forwardly-inclined and upwardly-extending plate or partition G, rising from the wall, and the forward and upwardly inclined arch H, extending from the partition or plate and arranged over the major portion of the fire-box, as set forth.

6. A steam-boiler furnace having the fire-box provided with the grate D, the wall E, supporting one end of the grate and forming the rear side of the fire-box, the forward-inclined and upwardly-extending plate or partition G, rising from the wall, and the forward and upwardly inclined arch H, extending from the partition or plate and arranged over the major portion of the fire-box, and the plate or partition I, extending rearwardly from the arch H, as set forth.

7. A steam-boiler furnace having the fire-box provided with the grate D, the wall E, supporting one end of the grate and forming the rear side of the fire-box, the forward-inclined and upwardly-extending plate or partition G, rising from the wall, and the forward and upwardly inclined arch H, extending from the partition or plate and arranged over the major portion of the fire-box, the upper portion or roof of the furnace over the fire-box being inclined upward and provided on the under side with the ascending shoulders or steps L, as set forth.

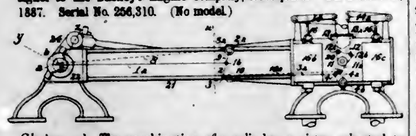
8. A steam-boiler furnace having the fire-box provided with the grate D, the wall E, supporting one end of the grate and forming the rear side of the fire-box, the forward-inclined and upwardly-extending plate or partition G, rising from the wall, and the forward and upwardly inclined arch H, extending from the partition or plate and arranged over the major portion of the fire-box, the plate or partition I, extending rearwardly from the arch H, the upper portion or roof of the furnace above the fire-box being inclined both upward and rearward and provided on the under side with ascending shoulders or steps, as set forth.

9. In combination with the furnace having the arch H over the fire-box, the roof over the fire-box being arched concentrically with the arch H, and provided with the steps L, as set forth.

10. The combination of the boiler having the depending long tubes O at its rear portion, and the depending shorter tubes, N, at its front portion, with the furnace supporting the boiler, and having the fire-box at its front end and the partition I, extending rearward therefrom under the short tubes N, and the depending partition P, arranged among the tubes O, substantially as described.

11. The steam-boiler having the man-hole plate, and the steam-pipe provided with the flange *f*, and the bolt-rods *b*, having one end screwed to one side of the boiler and projecting through the opposite side thereof and through the flange of the steam-pipe, and the man-hole plate, the said projecting ends of the bolts having the nuts *c*, substantially as described.

381,596. VALVE-GEAR. JOSEPH W. THOMPSON, Salem, Ohio, assignor to the Buckeye Engine Company, same place. Filed Nov. 28, 1887. Serial No. 256,310. (No model.)



Claim.—1. The combination of a cylinder, a piston adapted to reciprocate therein, independent valves for performing the functions of admission and cut-off and of exhaust, respectively, a wrist-plate connected to the exhaust-valves and coupled to an eccentric having a fixed range of movement, and a wrist-plate connected to the induction-valves and coupled to an eccentric which is adjustable between a position of substantial concentricity and one corresponding with the maximum range of motion of the induction-valves, substantially as set forth.

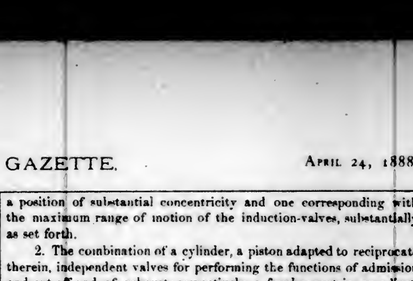
2. The combination of a cylinder, a piston adapted to reciprocate therein, independent valves for performing the functions of admission and cut-off and of exhaust, respectively, a fixed eccentric, an adjustable eccentric which is variable between a position of substantial concentricity and one giving maximum traverse, a centrifugal governor coupled to the adjustable eccentric, and a compound-rocker system connected to both of said eccentrics and to the valves, these members being combined for joint operation to impart to the valve or valves performing the functions of admission and cut-off the movements of substantially the fixed eccentric only for the latest point of cut-off, and movements compounded of those of both eccentrics for earlier points of cut-off, substantially as set forth.

3. The combination of a cylinder, a piston adapted to reciprocate therein, an exhaust valve or valves, a main rocker working upon a fixed bearing, an eccentric fixed upon a shaft rotated by the piston and coupled directly to said rocker, intermediate connections coupling the exhaust valve or valves with said rocker, an induction valve or valves controlling admission and cut-off, a supplemental rocker working upon a bearing on the main rocker and coupled to the induction valve or valves, a centrifugal governor, and an adjustable eccentric coupled to the governor and connected to a pin on the supplemental rocker, substantially as set forth.

4. The combination of a main or working cylinder, an induction-valve controlling admission thereto, a pressure-cylinder communicating at one end with the chest of the induction-valve and at the other with the main cylinder at the end thereof supplied by said valve, and a piston fitting the pressure-cylinder and coupled to the induction-valve, substantially as set forth.

5. The combination of a main or working cylinder, an induction-valve controlling admission thereto, a wrist-plate connected with an eccentric and coupled to a lever which operates the induction-valve in such relation that the major portion of the traverse of the valve when under pressure is in the direction of opening, and a piston coupled to the induction-valve and working in a cylinder which communicates at one end with the chest of the induction-valve and at the other with the main cylinder at the end thereof supplied by said valve, substantially as set forth.

381,597. GOVERNOR. JOSEPH W. THOMPSON, Salem, Ohio, assignor to the Buckeye Engine Company, same place. Filed Nov. 28, 1887. Serial No. 256,311. (No model.)



Claim.—1. In a centrifugal governor, the combination, substantially as set forth, of a supporting case or disk, a valve-operating eccentric pivoted thereto, a weight secured to an arm which is connected to the eccentric and movable therewith about its pivot, a weight secured to an arm pivoted to the case, and a link which is fixed at one end to one of the weight-arms and connected by a pivotal joint to the other weight-arm.

2. In a centrifugal governor, the combination, substantially as set forth, of a supporting case or disk, an eccentric connected to a supporting-plate which is pivoted to the disk, a weight fixed upon an arm secured to the supporting-plate, a weight fixed upon an arm pivoted between its ends to the disk, and a link jointed to said arm exterior to its pivot and fixed at its opposite end to the other weight-arm.

3. In a centrifugal governor, the combination, substantially as set forth, of a supporting case or disk, a weighted arm pivoted thereto, and a spring which is fixed at one end to the disk and connected at its opposite end to a ring or thimble fitting a knife-edge bearing on the weighted arm.

4. In a centrifugal governor, the combination, substantially as set forth, of a supporting case or disk, an eccentric, and a weighted arm pivoted independently thereto, a ring or plate fixed upon or adapted to rotate with the case and having an annular channel adjacent to its periphery, and pipes or passages leading from said channel to the pivots of the eccentric and weighted arm.

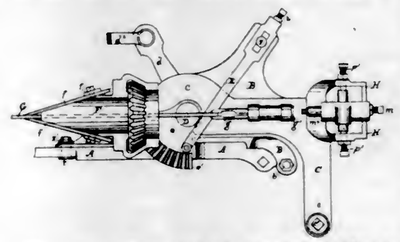
5. In a centrifugal governor, the combination, substantially as set forth, of a supporting case or disk, an eccentric and connected weighted arm pivoted thereto, a weighted arm pivoted independently to the disk, a link jointed to said arm and fixed at its opposite end to the other weight-arm, a ring or plate fixed upon or adapted to rotate with the case and having an annular channel adjacent to its periphery, pipes or passages leading from said channel to the pivots of the eccentric and of the weight-arm, and a pipe leading from the pivot of the weight-arm to the joint between said arm and the link.

381,598. TAG OR LABEL FOR POULTRY. IRVING J. TRUE, Hope Valley, R. I. Filed Sept. 3, 1887. Serial No. 248,678. (No model.)



Claim.—As an improved article of manufacture, the poultry-label herein described, consisting of a strip of sheet metal having at one end an opening and near the same end a raised cross-bar, with an opening upon each side of said cross-bar, all substantially as set forth.

381,599. NAIL-PLATE FEEDER. ARAMEL H. TYRRELL, Tyrrell Hill, Ohio. Filed Jan. 27, 1887. Serial No. 225,740. (No model.)



Claim.—1. In a nail-plate feeder, the mechanism for lifting the working-barrel to allow its revolution, consisting of a fixed vertical plate having pivoted thereto and parallel therewith a movable plate supporting the working-barrel and feeding mechanism, in combination with a vibrating segment-rack for actuating the working-barrel, and a pitman connecting the vibrating rack and the fixed plate and having its points of connection at a greater distance than the radius of said rack, substantially as described.

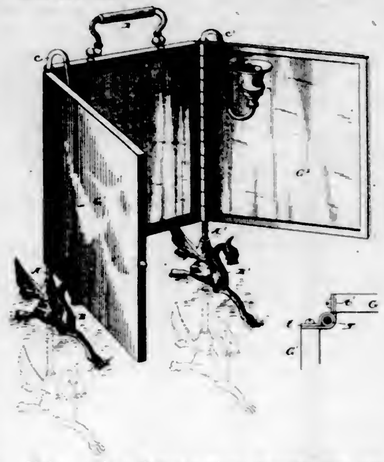
2. In a nail-plate feeder, the fixed vertical plate B, having lateral adjustment to vary the angle which it presents to the cutting-dies, in combination with a movable plate parallel with and pivoted to said fixed plate and having journaled in it a rocking shaft, a segment-rack rigidly affixed to said shaft and adapted to rotate the working-barrel, and a pitman pivoted at one end to said rack and at the other end to the fixed plate B and having the distance between the pivots of said pitman greater than the radius of the rack to which it is pivoted, substantially as shown and described.

3. The combination of the laterally-adjustable fixed plate B, the movable plate C, supporting the working-barrel and pivoted to the plate B at a point below and in rear of the working-barrel, the rack *c'*, of circular or segmental form, attached to a shaft journaled in plate C and adapted to rotate the working-barrel, and the lifting-pitman E, pivoted at one end to said rack and at the other end to said fixed plate by an adjustable pivot, the distance between the pivots of said pitman being greater than the radius of said rack, substantially as described.

4. In a nail-plate feeder, the feeding mechanism consisting of the slide *h'*, carrying the clamp h^3, and supported in a case or frame pivoted between the screw-bearings *p p'*, in combination with the wedge-block, the stationary clamp h^4, having limited pivotal movement, the plates B and C, and the adjustable rigid stops *l* and *m* and spring-stops l^3 and m^3, substantially as described.

5. The combination of the slide *h'*, supported in a case pivoted between vertical adjustable bearings and having a clamp pivotally attached to its free end, the wedge-block, and the adjustable stop *m*, and spring-stops l^3 and m^3, and the fixed clamp h^4, with limited pivotal movement, all attached to and operating with the plate C, and the adjustable rigid stop *l*, attached to and operating with the plate B, substantially as described.

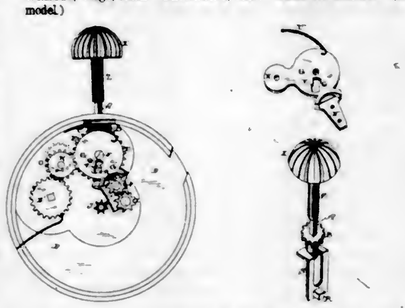
381,600. MIRROR. JEAN B. VIENNET, Paris, France. Filed Nov. 10, 1887. Serial No. 254,780. (No model.) Patented in France Apr. 12, 1886, No. 173,306.



Claim.—1. In a three-part mirror, the combination, with the frames provided with hinge-sections, of the rods passing through the sections and supporting the mirror, the mirror being vertically adjustable upon said rods, substantially as described.

2. In a three-part mirror, the combination, with the frames provided with hinge-sections, of tubes embraced by the hinge-sections and connecting the latter and rods passing through said tube and vertically adjustable therein, substantially as described

381,601. STEM WINDING AND SETTING WATCH. JOEL N. WHIPPLE, Volga, Iowa. Filed Dec. 9, 1887. Serial No. 257,433. (No model.)



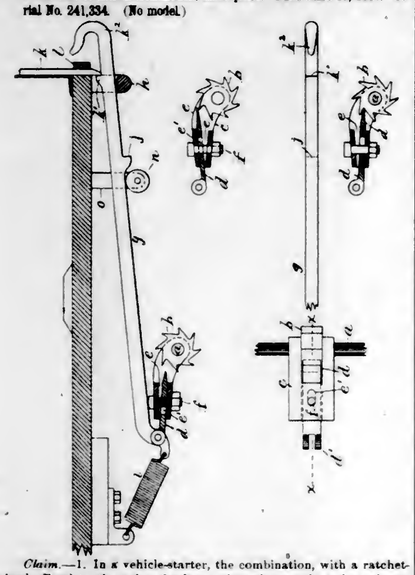
Claim.—1. The combination of the plate D, having a slot or opening, L, formed therein, with the pivoted yoke which carries both the intermediate setting and winding mechanisms, and which has an arm projecting therefrom having the two pinions I pivoted thereon, and which arm moves below the wheels in the slot formed in the plate, substantially as shown.

2. The combination of the endwise-moving winding-stem, the pinion through which the winding-stem passes, and the slide provided with an arm swiveled upon the inner end of the winding-stem with the slotted yoke carrying the intermediate setting and winding mechanisms, and the wheel E, which is operated by the pinion, substantially as described.

3. In a stem winding and setting watch, the pivoted yoke carrying both the intermediate winding and setting wheels, a spring for holding the yoke in position, an endwise-moving winding-stem, and a slide connected to the winding-stem and provided with an arm for turning the yoke upon its pivot, substantially as set forth.

4. The combination of the winding-stem, made screw-threaded at its outer end, with the crown, crown-stem, and the screw, which is passed through the crown to make connection with the winding-stem, substantially as specified.

381,602. CAR-STARTER. JAMES ZELIFF, Newark, N. J., assignor of one-half to Lillian Lemasena, same place. Filed June 15, 1887. Serial No. 241,334. (No model.)



Claim.—1. In a vehicle-starter, the combination, with a ratchet-wheel affixed to the axle, of a lever pivoted upon the axle and provided with a longitudinal socket, *e*, a sliding pawl fitted within said socket to engage the teeth of the ratchet-wheel, a draw-bar connected with the rear end of said pawl, and a spring operating to retract the draw-bar and pawl and to thus hold the pawl normally out of the ratchet-teeth, as and for the purpose set forth.

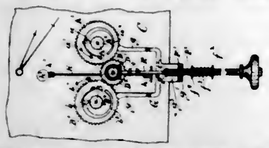
2. In a vehicle-starter, the combination, with a ratchet-wheel affixed to the axle, of a lever pivoted upon the axle and provided with a longitudinal socket, *e*, a sliding pawl fitted within said socket to engage the teeth of the ratchet-wheel, a bolt inserted through the socket, and a slot in the sliding pawl to limit its movement, as and for the purpose set forth.

3. In a vehicle-starter, the combination, with a ratchet-wheel affixed to the axle, of a lever pivoted upon the axle and provided with a longitudinal socket, *e*, a sliding pawl movable laterally and longitudinally in the socket to clear the teeth of the ratchet-wheel, a bolt through the socket, and a slot in the pawl to limit its longitudinal movement, as and for the purpose set forth.

4. In a vehicle-starter, the combination, with a ratchet-wheel affixed to the axle, of a lever pivoted upon the axle and actuated by a draw-bar of the car, a pawl movable with the lever to engage the teeth of the ratchet, a spring or weight to retract the draw-bar wheel, a latch upon the platform to engage the draw-bar, and a stud upon the draw-bar to fit within the latch when the draw-bar is retracted, as and for the purpose set forth.

5. In a vehicle-starter, the combination, with a ratchet-wheel affixed to the axle, of a lever pivoted upon the axle and actuated by the draw-bar of the car, a pawl movable with the lever to engage the teeth of the ratchet-wheel, and a roller for sustaining the forward end of the draw-bar, as and for the purpose set forth.

381,603. WINDING AND SETTING ATTACHMENT FOR CLOCKS. JOHN ZELLY, Cincinnati, Ohio, assignor of one-half to Frederick Fischer, same place. Filed July 1, 1887. Serial No. 243,068. (No model.)



Claim.—1. The combination of the gear-wheels A' B', mounted loosely on the spring-arbors A B, means for connecting these wheels to and disconnecting them from the spring-arbors A B, idler D, meshing with wheels A' B', and rod for rotating idler D, substantially as and for the purposes specified.

2. The combination of the gear-wheels A' B', mounted loosely on the spring-arbors A B, means for connecting these wheels to and disconnecting them from the spring-arbors A B, idler D, meshing with wheels A' B' and having on its face beveled gear-wheel D', and stem E, provided with beveled gear-wheel D^3, meshing with beveled gear-wheel D', substantially as and for the purposes specified.

3. The combination of the gear-wheels A' B', mounted loosely on the arbors A B, ratchets A^3 B^3, rigidly attached to the arbors A B, pawls *a b*, provided with tails a^2 b^2, springs *a' b'*, idler D, meshing with wheels A' B', sliding yoke G, provided with arms *g g*, and means for operating idler D, substantially as and for the purposes specified.

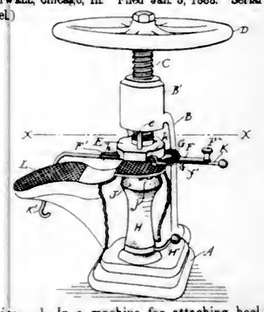
4. The combination of the gear-wheels A' B', mounted loosely on the arbors A B, ratchets A^3 B^3, rigidly attached to the arbors A B, pawls *a b*, provided with tails a^2 b^2, springs *a' b'*, idler D, meshing with wheels A' B', beveled gear D', attached to idler D, stem E, having beveled gear D^3, meshing with beveled gear D' and provided with the enlarged squared head *e'*, rod F, provided with the chamber *f* and contracted squared opening *f''*, and sliding yoke G, provided with arms *g g* and flange *g'*, substantially as and for the purposes specified.

5. The combination of the crown-wheel h^3, mounted on arbor h^2, gear-wheel *h'*, stem H, gear *h*, and movable rod F, provided with gear-wheel F', spring f^3, and movable collar f^4, and a stop against which the collar f^4 impinges in compressing spring f^3, substantially as and for the purposes specified.

6. The combination of gear-wheels A' B', loosely mounted on spring-arbors A B, ratchets A^3 B^3 and pawls and springs, idler D, stem E, rigidly attached to idler D and provided with squared head *e'*, spring I, provided with sliding collar I', sliding rod F, provided with chamber *f* and contracted squared opening *f''*, annular groove f^5, lever J, and spring *j*, substantially as and for the purposes specified.

7. In a device for setting and winding clocks, the combination of the sliding shaft having annular chamber, one portion of said chamber being contracted, with flat sides for engaging the sides of the winding-shaft and carrying pinion and idler D, and the wheels A' B', each provided with ratchet affixed to its shaft, pawls *a b*, and springs *a' b'*, the sliding shaft carrying pinion for actuating the clock-hand shaft, the last-named pinion being located at the front of the clock, substantially as and for the purpose specified.

381,604. MACHINE FOR ATTACHING HEEL-PLATES. WILLIAM J. ATWELL, Chicago, Ill. Filed Jan. 3, 1888. Serial No. 259,536. (No model.)



Claim.—1. In a machine for attaching heel-plates to rubber shoes, the combination, with the head-block E, having one or more grooves or bores, *h h*, of the adjustable heel-plate holder F, having one or more prongs, F', constructed to slide and be held within the groove or grooves *h* of the head-block E, substantially as shown and described.

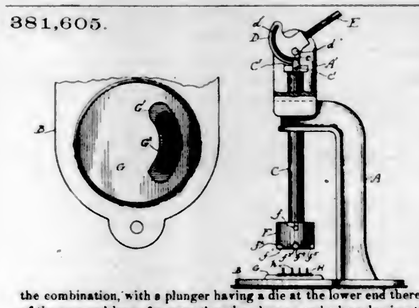
2. The combination, with a machine having a die and head-block for attaching heel-plates to rubber shoes, of the adjustable toe-support K, having bent part K', and means—as a set-screw—for securing the same in any desired position, substantially as shown and described.

381,605. MACHINE FOR ATTACHING HEEL-PLATES. WILLIAM J. ATWELL, Chicago, Ill. Filed Feb. 4, 1888. Serial No. 262,988. (No model.)

Claim.—In a machine for attaching heel-plates to rubber shoes,

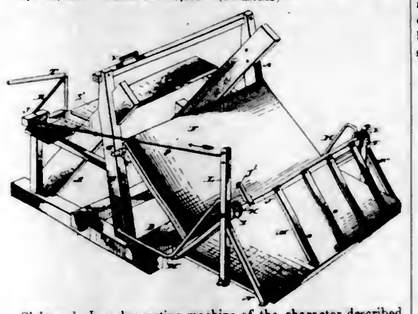


381,605.



the combination, with a plunger having a die at the lower end thereof, of the cam and lever for actuating the plunger, and a base having two heel-plate depressions, one within and deeper than the other, formed in its face and conformable in shape to the forms of the heel-plates, substantially as shown and described.

381,606. HARVESTER. JOHN R. BEARD, Springfield, Ohio. Filed Apr. 18, 1887. Serial No. 235,152. (No model.)



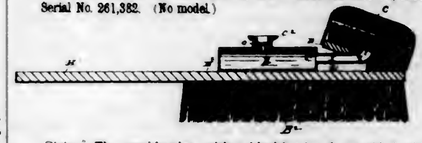
Claim.—1. In a harvesting-machine of the character described, the combination, with the inclined discharge-platform secured to the frame of the said machine, and bars or beams forming carrier-supports secured to said frame and extending beyond the outer edge of the said platform, of a bundle-carrier detachably mounted in the outer ends of the said supports, and consisting, essentially, of a horizontal platform, vertical posts secured to the center of the front and rear ends of the carrier-platform, a shaft mounted in said posts, and arms extending diagonally from the said shaft to the platform, and devices to tip the carrier to discharge the bundles therefrom.

2. In a harvesting-machine of the character described, the combination, with the inclined binder-deck thereof removably mounted upon the frame of the machine, and rods or beams forming carrier-supports also secured to said frame and extending beyond the outer edge of the said platform, a foot and hand lever mounted upon the machine, and a rope or cord connected with the lever, of a carrier detachably mounted in said supports, consisting of a horizontal platform, vertical posts secured about the center of the front and rear ends of the carrier-platform, a shaft mounted in the said posts, and confining-arms extending diagonally from the said shaft to the platform and secured thereto, said rod being connected to the upper end of one of said posts, whereby the carrier-platform may be tilted.

3. In a harvesting-machine of the character described, a convertible bundle-carrier and clover attachment consisting of the following instrumentalities: detachable arms having shaft-bearings formed at one of their ends and adapted to be secured to the harvester-frame by their other ends, a platform, posts secured at about the center of the front and rear ends thereof, one of said posts forming a lever to tilt the platform, a shaft mounted in the said posts and adapted to fit the bearings of the said arms, a series of confining-arms extending diagonally from the shaft to the platform, a rocking arm extending from said shaft, and a rod secured to said arm to rock the shaft and move the confining-arms from the platform, the said carrier-platform being substantially like the discharge-platform of the machine, and having trunnions, whereby the attachment is adapted to fit the bearings of the platform or to be suspended at the lower end of the same when in position, substantially as shown and described

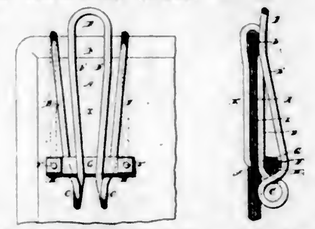
4. A convertible bundle-carrier and clover attachment consisting of a platform, posts, and braces connected to each other and to each end of said platform and extending above it, and the posts above the braces, and forming a lever, a shaft mounted in said posts, confining-arms secured to the shaft and extending to the platform, a locking-arm secured to said shaft to lock the confining-arms in a set position and to move them from the platform, metallic spools on said shaft forming journals, and detachable supports constructed at the one end to form bearings for said spools and at the other to connect with the harvesting-machine.

381,607. BLACKING-BRUSH. JOHN H. BEAUREGARD and WILLIAM F. BIDWELL, Lansingburg, N. Y.; said Beauregard assignor to Clarence E. Stacks, Troy, N. Y. Filed Dec. 3, 1884. Renewed Jan. 20, 1888. Serial No. 261,382. (No model.)



Claim.—The combination, with a blacking-brush provided with a polishing and a dauber brush on opposite sides of the brush-frame, of a liquid-receptacle, R, formed with a vent-stem, *o*, having a screw-cap, *c*, fitted thereto, and a conduit-pipe, I, leading from the liquid-receptacle and projected through the back of the dauber-brush, an absorbent substance, S, secured to the projecting end of the said conduit-pipe and arranged within the bristles of the dauber-brush, and a blacking-box formed to fit over the frame of the dauber-brush, substantially as described, and for the purpose stated.

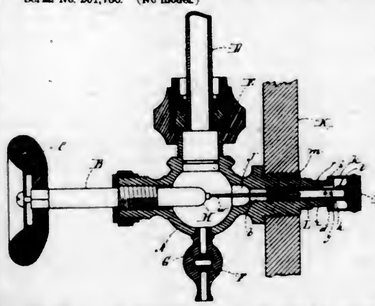
381,608. REIN-HOLDER. WILLIAM E. BEISSNERT, Fortress, Ill., assignor of one-half to James F. Edwards, same place. Filed Jan. 25, 1888. Serial No. 261,859. (No model.)



Claim.—1. The improved rein-holder consisting of the tongue B, the coils C, and the clamping-arms D E, adapted to pass over the top edge of the dash-board, the arms E having their lower ends securely fastened to the dash-board, as set forth.

2. The improved rein-holder comprising the tongue B, the coils C at the lower end of the tongue, the arms D, rising from said coils, the arms E, formed integral with the arms D and arranged parallel therewith, the said arms E having their lower ends bent at right angles and inserted transversely through the dash-board, the bar G, fitted on the said ends of the arms E, and the nuts H, turning on the said ends up against the bar G, as and for the purpose specified.

381,609. VALVE FOR WATER-GAGES. WILLIAM H. BRAY, Boston, and CORNELIUS NICKERSON, Chelsea, Mass. Filed Jan. 24, 1888. Serial No. 261,780. (No model.)



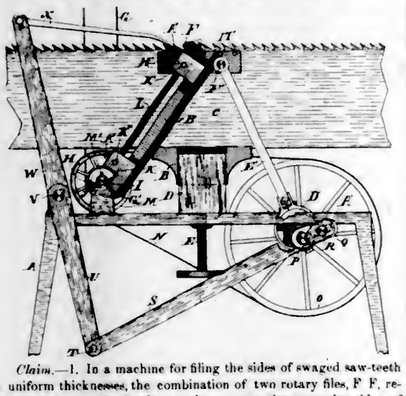
Claim.—1. In a valve of the character described, the nipple L, having an exterior wide annular groove, *z*, forming a boss, *y*, at its end, and also having a valve-seat, *i*, in combination with the valve M, arms *k*, secured thereto and extending inward past the valve-face, and hooks

d on the ends of said arms adapted to engage said annular groove *z* and boss *y*, substantially as described.

2. In a valve of the character described, the body A, having nipple *m*, the auxiliary nipple L, continuing the same and having a valve-seat at its inner end, a valve, M, adapted to be seated on said seat, and a perforated tube, *r*, connected to said valve and sliding within said nipples, in combination with the valve-seat J, main valve H, closing against said seat in a direction opposite that in which valve M closes, and rod *w*, continuing said main valve and adapted to open the auxiliary valve M as the main valve H closes, said rod being guided in said tube *r*, substantially as described.

3. In a valve of the character described, the body A and nipple *m*, the auxiliary nipple L, having the duct *b*, boss *y*, and valve-seat *i*, the valve M, provided with arms *k*, having hooks *d*, the hollow valve-stem *r*, connected with the valve M and provided with the holes *h*, and the valve H, provided with the rod *w*, all combined and arranged to operate substantially as set forth.

381,610. SAW-FILING MACHINE. HERMAN L. BUMP, McMillan, Wis. Filed Oct. 8, 1887. Serial No. 251,801. (No model.)



Claim.—1. In a machine for filing the sides of swaged saw-teeth to uniform thicknesses, the combination of two rotary files, F F, respectively adapted to simultaneously act upon the respective sides of the saw-teeth of a saw, two swinging file-supporting shafts, L L, respectively geared to a pivotal supporting-shaft, and oscillating shaft-supporting frame B, pivoted at one end upon said supporting-shaft and connected at its other end by oscillating mechanism with the drive-shaft of the machine, substantially as and for the purpose set forth.

2. In a machine for cutting and forming the sides of swaged saw-teeth into uniform shapes and thicknesses, the combination of the file-supporting frame B', connecting-bar E', pivoted at one end to said frame B' and connecting at its other end by an eccentric, D', to a rotary shaft, P, whereby with each rotation of said shaft P said frame B' is oscillated upon its supporting-shaft I, supporting-shaft I, stationary frame A, beveled gears J J and K K, communicating between the pivotal drive-shaft I and the file-supporting shafts L L, shafts L L, rotary files F F, and mechanism for simultaneously communicating motion from said eccentric supporting-shaft P to said pawl X and saw-supporting frame B, whereby as said files are rotated they are simultaneously moved in and out of contact with the surface to be filed, substantially as and for the purpose specified.

3. In a machine for cutting or forming the sides of swaged saw-teeth into uniform thicknesses, the combination of the file-supporting frame B', bar E', eccentric D', shaft P, crank Q, crank-pin R, connecting-bar S, lever N, pivotal shaft U, lever W, and pawl X, motion being simultaneously communicated from said shaft P through said crank, bar, levers, and pawl to the saw, and through eccentric D' and bar E' to the saw-supporting frame B', whereby said files are thrown out of contact with the saw-teeth as the saw is moved forward by the action of said pawl, substantially as and for the purpose set forth.

4. The combination of the frame B', pivoted at its front end to the rotary shaft I, adjustable journal-boxes J', shafts L, rotary files F, gears K, and adjustable gears J, said gears J, shafts L, and the rotary files thereon being adapted by moving said adjustable journal-boxes to be adjusted toward and from each other to conform to saws of various thicknesses, substantially as set forth.

5. In a machine for filing saws, the combination of the oscillating file-supporting frame B', pivoted at its lower end upon a supporting drive-shaft of the adjustable saw-guides or bearing-plates H' H', attached to the upper end of said frame B' upon the respective sides of the saw, and plate-adjusting screws I' I', said plates H' H' being adapted to hold the saw centrally between the rotating files at a point where the files come in contact with the saw-teeth, substantially as and for the purpose specified.

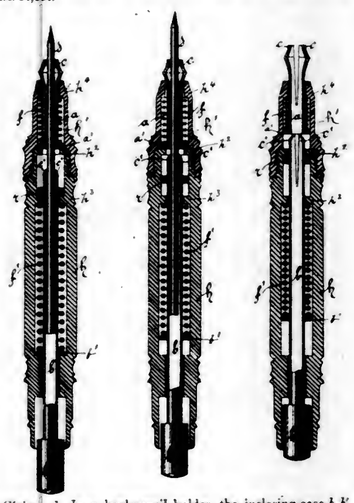
381,611. LEAD-PENCIL HOLDER. OTTO BUSSLER, Nuremberg, Bavaria, Germany. Filed Jan. 11, 1886. Serial No. 188,201. (No model.) Patented in England Dec. 18, 1885, No. 15,583.



Claim.—1. The outer casing and the fixedly secured lead-containing tube, combined with the sliding tube *b*, provided with a conically-apertured front extension, a clamping device loosely seated in the upper end of the lead-containing tube and capable of a slight longitudinal movement within said front extension of the sliding tube, and an actuating-spring whereby the jaws of the clamping device are normally held closed around the head passing through the lead-containing tube, substantially as set forth.

2. The outer casing, A, lead-containing tube *a*, sliding tube *b*, provided with a front projection, *b'*, having a conically-shaped interior, spring *f*, and clamping device Z Z', resting on a conical seat at the top of said lead-containing tube, substantially as set forth.

381,612. PENCIL-HOLDER. OTTO BUSSLER, Nuremberg, Bavaria, Germany. Filed Feb. 19, 1886. Serial No. 192,512. (No model.) Patented in England Jan. 7, 1886, No. 275, and in Germany Dec. 20, 1886, No. 37,881.

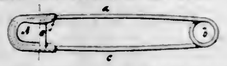


Claim.—1. In a lead-pencil holder, the inclosing-case *h h'*, combined with the lead-holding case *a*, auxiliary lead-holding case *b*, button *k*, and springs *f f''*, the whole constructed and operating substantially as set forth.

2. In a pencil holder or case, a front cylindrical pencil-case, *a*, centrally apertured longitudinally for the pencil-lead *d* and provided with an actuating-spring, *f*, and an outside embracing jaw-piece, A^4, arranged to press the jaws *c*, forming the outer end of the case *a*, upon the said lead *d*, in combination with a similarly-formed inner case, *b*, which is actuated by a spring, *f*, and provided with a sliding clamping-ring, *x*, moving longitudinally in an annular chamber in the handle or case of the pencil and arranged to clamp the inner case, *b*, upon the lead *d* when the said clamping-ring is thrown forward and to release it therefrom when the said clamping-ring is thrown backward, substantially as described and set forth.

3. In a pencil case or holder, the inner sliding tube or lead-grip, *b*, slotted and provided at its front end with inwardly-inclined grip-jaws *c'*, adapted to hold the lead in place when it is otherwise released, in combination with a sliding clamping-ring fitted exteriorly thereon and arranged to move forward and backward on the said tube and within a housing formed for it in the outer case, so as to cause it to press the jaws *c'* upon the lead *d* when it is thrown forward and release them therefrom when it is retracted, substantially as described and set forth.

381,613. SAFETY-PIN. DANIEL A. CARPENTER, New York, N. Y. Filed June 6, 1887. Serial No. 240,379. (No model.)



Claim.—1. In a safety-pin constructed with the ordinary sharpened member, coil, and unsharpened member, a guard extending from the unsharpened member into the hood which receives the point of the pin and adapted to bar the passage of the point out of the shield, substantially in the manner described.

2. In a safety-pin constructed with the ordinary sharpened member, coil, and unsharpened member, a guard rigidly secured at the back of the pin and extending to the hood, said guard being adapted to bar the passage of the point out of the shield, and also to yield and allow the point to pass out of or into the shield, substantially as and for the purpose described.

3. In a safety-pin constructed with the ordinary sharpened member, coil, and unsharpened member, a guard rigidly secured at the back of the pin and extending into the hood, against the side or sides of which it bears, said guard being constructed to yield when pressed inward and to return to its normal position, but not to be pressed outward, substantially as and for the purpose described.

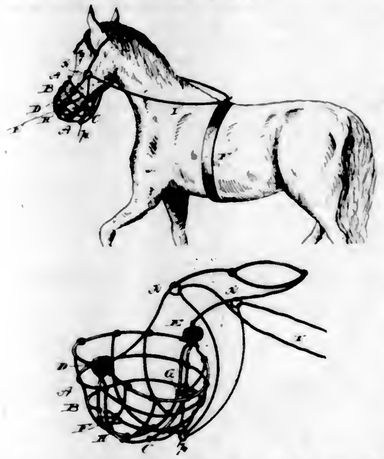
4. In a safety-pin constructed with the ordinary sharpened member, coil, and unsharpened member, a shield having an integral portion extending across the throat of the shield into the hood and forming a guard that bars the passage of the point of the pin out of the shield, said guard being adapted to yield when pressed inward and then allow the point of the pin to pass, substantially as and for the purpose described.

5. In a safety-pin having the ordinary sharpened member, coil, and unsharpened member, a shield constructed from a blank, B, the arms *e* of said blank forming spring guard members integral with the shield and adapted to operate substantially as described.

381,614. ELECTRIC-LIGHT CARBON. THOMAS L. CLINGMAN, Asheville, N. C. Filed May 14, 1887. Serial No. 238,249. (No specimens.)

Claim.—An electric-arc-light carbon having powdered serpentine commingled with its composition.

381,615. MUZZLE. ROBERT B. COLE, Palmersville, Tenn. Filed Dec. 30, 1887. Serial No. 259,403. (No model.)

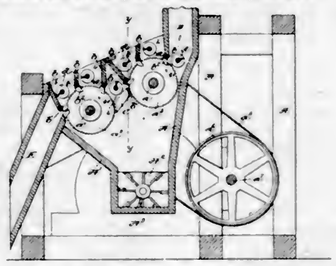


Claim.—1. In a muzzle, the combination, with the sections B C, hinged together at their upper inner corners by coiled springs D and E, formed integral with section B, of the loops F G, secured to section B and connected to section C, and the ring *p*, attached to said section C, substantially as shown and described, and for the purpose set forth.

2. The muzzle herein described, consisting of the sections B' C, the coiled springs D E, connecting said sections at their upper inner corners and formed integral with section B, the controlling-loops F G, secured to section B and connected to section C, said section C having ring *p*, the cheek-straps provided with rings K, and the reins I, passing through rings K and ring *p*, and adapted to connect with the surcingle I'', as and for the purpose specified.

381,616. METHOD OF AND APPARATUS FOR TREATING FIBER-COATED SEED. WILLIAM F. CORBY, Cambridge, Mass. Filed Jan. 5, 1887. Serial No. 223,458. (No model.)

Brief.—A current of air is employed to draw or blow the material fed into the machine against rotary toothed surface therein, the same current of air removing the resulting fiber from the machine. The casing over the rotating toothed surface is divided into a series of communicating pockets, each having a worm, and through which the material successively passes in its course through the machine. The pockets are separated by check-bars having fingers protruding between the saws to assist the latter in supporting the material and to prevent the same from being carried past the check-bars by the saws.



Claim.—1. The herein-described improvement in the art or method of treating fiber-coated seeds to remove the fiber therefrom, which consists in bringing the fiber-coated seed in forcible contact with a rotary toothed surface by suction and removing the detached fiber by the same pneumatic force, substantially as described.

2. In a machine for removing the fiber from fiber-coated seed, a casing, and a rotary toothed surface therein, combined with a number of check-bars provided with fingers co-operating with said toothed surface and arranged to form series of pockets having openings at opposite ends to afford communication of one pocket with the other in succession, substantially as and for the purpose described.

3. In a machine for removing the fiber from fiber-coated seed, a casing and a rotary toothed surface therein, and a number of check-bars provided with fingers co-operating with the said toothed surface and arranged to form a series of pockets communicating with each other at opposite ends by means of openings therein, combined with a worm in each of said pockets to carry the seed discharged into one end of a pocket to the other end thereof and to the next pocket, substantially as and for the purpose described.

4. In a machine for removing the fiber from fiber-coated seed, a casing, a rotary toothed surface therein, and a number of check-bars provided with fingers co-operating with the said toothed surface and arranged to form a series of pockets which communicate with each other at opposite ends by means of openings therein, and a worm in each pocket to carry the seed discharged into one end of a pocket to the other end thereof and to the next pocket, combined with a fan connected with the casing to draw a current of air therethrough and keep the seed against the toothed surface and remove the detached fiber, substantially as described.

5. In a machine for removing the fiber from fiber-coated seeds, a casing, two sets or gangs of saws or toothed surfaces therein, check-bars, and the chute C, forming pockets and provided with fingers and with openings leading from one pocket to another, combined with a worm in each pocket to carry the seed discharged into one end of a pocket to the other end thereof, as and for the purpose set forth.

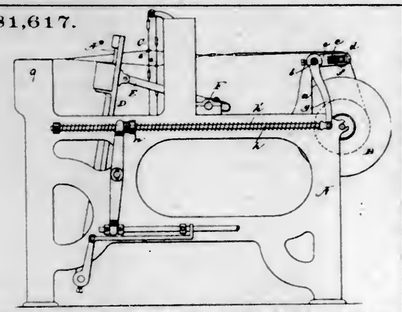
381,617. WHIP-ROLL FOR LOOMS. DANIEL DURKIN, Northbridge, assignor to George Draper & Sons, Hopedale, Mass. Filed Aug. 31, 1887. Serial No. 248,373. (No model.)

Brief.—This arrangement of yielding whip-roll is designed to obviate smashes when a shuttle is caught in the shed, and, further, to prevent the occurrence of thick and thin places in the fabric after the stoppage and restarting of the loom.

Claim.—1. The breast-beam, and warp-beam, and bearing-roll *f*, and boxes to support its journals or ends, and guides for the boxes, combined with springs co-operating with the said boxes to permit the bearing-roll to be moved bodily in a substantially horizontal plane toward and from the breast-beam and the fell of the cloth, and with the rod or shaft *b*, arm *g*, and means to act upon the said arm to vibrate the said rod or shaft and bearing-rail, to operate all substantially as and for the purpose set forth.

2. The bearing-roll *f*, the boxes *d*, having feet d^3, and the springs *e*, to engage the said feet, combined with the socketed and slotted arms or guides in which the said boxes are free to slide, the said boxes

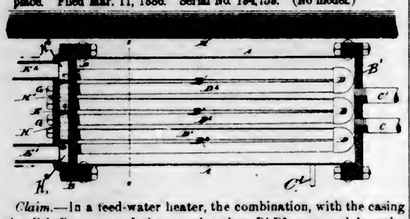
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receiving in them the journals of the bearing-roll *f*, the springs and feet preventing the escape of the boxes from the slots of the arms or guides, substantially as described.

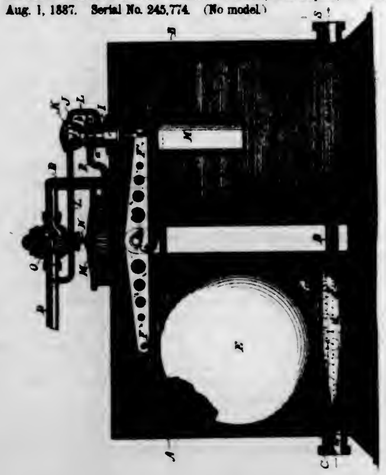
3. The bearing-roll *f*, the boxes *d*, having feet d^3, and the springs *e*, to engage the said feet, combined with the socketed and slotted arms or guides in which the said boxes are free to slide, and with the shaft *b*, carrying the said arms or guides, the said boxes receiving in them the journals of the bearing-roll *f*, the springs and feet preventing the escape of the boxes from the slots of the arms or guides, substantially as described.

381,618. **FEED-WATER HEATER.** THADDEUS FAIRBANKS, St. Johnsbury, Vt., assignor to the Feed Water Heater Company, same place. Filed Mar. 11, 1886. Serial No. 194,759. (No model.)



Claim.—In a feed-water heater, the combination, with the casing A, the disk B, connected thereto, the pipes D' D^2, arranged in series one above the other and connected in pairs by bends D and secured to the disk, of the disk-cap E, having partitions *e*, extending across the inner face thereof, the pipes E' E^2, connected to the disk and disk-cap, the chambers H H' H^1 H^2, formed by said disk and disk-cap, the disk B', having pipes C C', connected thereto and interposed between the bends D, and the drip-pipe C^2, attached to the bottom of the casing, as shown and described.

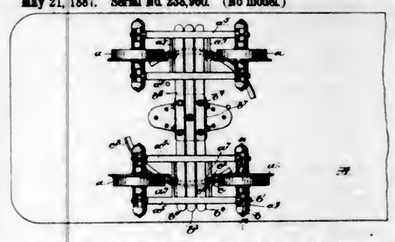
381,619. **DEVICE FOR REGULATING THE QUALITY OF CARBURETED VAPOR OR GAS.** EDWARD J. FROST, Philadelphia, Pa. Filed Aug. 1, 1887. Serial No. 245,774. (No model.)



Claim.—1. The combination of an inclosing receptacle into which both the vapor-pipe and air-blast pipe lead, a balance-beam, a float mounted upon one arm thereof, a valve-operating device actuated by the other arm thereof, and a valve operated by said device and controlling the said air-blast pipe, substantially as set forth.

2. The combination of the vessels A and B, communicating as described, the balance-beam and float arranged therein, the perforated pipes *c* and *d*, the former communicating with the vapor-pipe, the latter communicating with the air-blast pipe, the double valve *a b*, actuated by the balance-beam, the aneroid whose inlet and outlet are controlled by said double valve, as described, and the valve O, actuated by said aneroid and controlling the air-inlet of the pipe *d*, substantially as set forth.

381,620. **CAR-TRUCK.** LOUIS GODDU, Winchester, Mass. Filed May 21, 1887. Serial No. 238,960. (No model.)



Claim.—1. In a car-truck, two wheel-supporting frames, each consisting of arch-bars and tie-bars joined together and adapted to support a wheel and its axle at each end, combined with a bolster uniting the same, each wheel-supporting frame sustaining its wheels independent of the other, substantially as specified.

2. In a car-truck, two wheel-supporting frames consisting of arch-bars and tie-bars joined together and adapted to support a wheel and its axle at each end and provided each at its opposite ends with journal-boxes, a journal-bearing in said boxes, and a lubricating cup or reservoir attached to each journal-bearing, combined with a bolster uniting the said frames, substantially as described.

3. In a car-truck, a rigid wheel-supporting frame consisting of arch-bars a^4 and tie-bars a^5, joined together and adapted to support a wheel-axle at each end to obviate twisting strain or effect on the said axles, substantially as described.

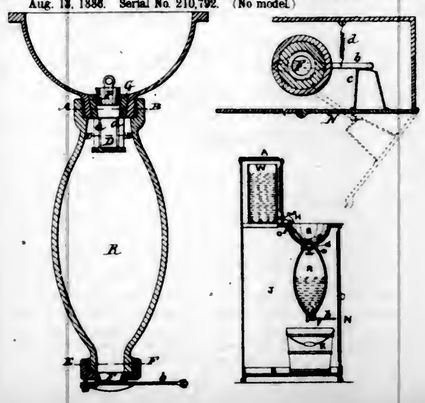
4. In a car-truck, two wheel-supporting frames consisting each of arch a^4 and tie-bars a^5, joined together and provided at their opposite ends with journal-boxes a^3, substantially as described.

5. In a car-truck, a wheel-supporting frame consisting of arch a^4 and tie-bars a^5 and a cross brace or bar, a^7, combined with a spindle, c', extended into the bar a^7 and provided at its lower end with a friction or bearing roller, substantially as described.

6. In a car-truck, a wheel-supporting frame consisting of arch a^4 and tie-bars a^5 and a cross brace or bar, a^7, combined with a spindle, c', extended into the bar a^7 and provided at its lower end with a roller, c^2, having an inclined or beveled periphery, substantially as described.

7. In a car-truck, two wheel-supporting frames, each composed of arch and tie and cross bars cast integral, combined with a bolster uniting said frames, substantially as described.

381,621. **WASH-STAND.** JOHN D. HALL, Philadelphia, Pa. Filed Aug. 13, 1886. Serial No. 210,792. (No model.)



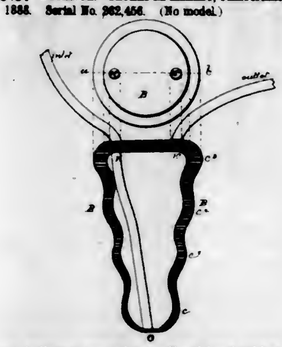
Claim.—1. The combination of the basin and its outlet-plug with a waste-retaining reservoir having an oval form and provided with a bottom valve, and with a splasher-plate suspended horizontally within the upper end of said reservoir for the purpose of intercepting and deflecting the water discharging from the basin, substantially as specified.

2. The combination, with the stand or cabinet having a fixed wash-bowl and a door for access to the slop-bucket, of a waste-retaining reservoir connected with the neck of said basin, having a discharge-valve at its lower end provided with a handle, which, when the valve is open, stands in position to be struck by the closing of the door to close said valve, for the purpose described.

3. A wash-stand or cabinet having a top water-supplying tank, W, provided with a self-closing valve, a bottom water-tight tank, a fixed bowl, B, having a discharge-plug and an overflow-pipe, and a door having an inside bracket, *c*, in combination with a waste-retaining reservoir, R, attached to the discharge-neck of the basin, having a valve or gate at its lower end provided with a handle, *b*, arranged to be closed by the action of the door-bracket in closing said door, for the purpose described.

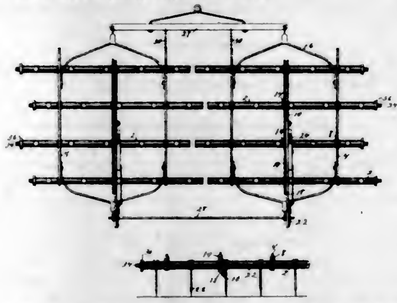
4. The combination of the basin, its outlet-plug, and a removable ring-plug forming a seat for the latter, with a waste-retaining vessel having a bottom valve and splasher-plate suspended therein from the said removable ring-plug, substantially as described, for the purpose specified.

381,622. **SYRINGE.** THOMAS M. HEALEY, Cumberland, Md. Filed Jan. 30, 1888. Serial No. 262,456. (No model.)



Claim.—A hollow truncated cone, B, of hard rubber or similar material, provided on its conical outer surface with a series of corrugations, and further provided with outlet and inlet tubes, arranged as shown and described, to convey fluids to and from said cone, as and for the purpose specified.

381,623. **HARROW.** JOSEPH HILDEBRAND, Alton, Iowa. Filed Oct. 29, 1887. Serial No. 253,718. (No model.)

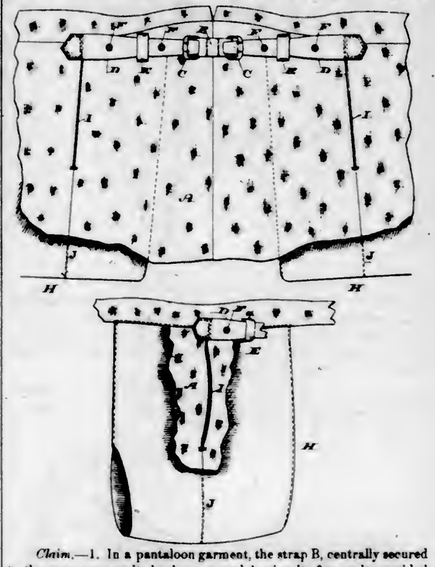


Claim.—1. The combination, in a harrow, of the frame 4, the round tooth-bars 2, the rods 8, passing through said tooth-bars and loosely secured to said frame 4 and permitting said tooth-bars to oscillate upon said frame, the bars 10, arranged above and below said tooth-bars, links 16, connecting said bars 10 and extending at right angles to said tooth-bars, and the lever 18, pivoted to both of said bars 10 and provided with the catch 20 and the serrated or notched bars 24, with which said catch is adapted to engage, substantially as described, and for the purpose set forth.

2. The combination, in a harrow, of the tubular tooth-bar 2, the rod 32, extending longitudinally through said bar, the series of teeth 26, passing through said tubular bars and through said rod 32, and a locking device for drawing said bar 32 lengthwise in the tubular bar and securing the same, substantially as described.

3. The combination, in a harrow, of the tubular tooth-bar 2, the bar 32, arranged within said tubular tooth-bar and provided with a threaded end, the series of teeth 26, extending through said tubular bar and through said bar 32, and a locking-nut, 36, arranged upon the threaded end of the bar 32 and bearing against the end of the tooth-bar, substantially as described.

381,624. **TROUSERS OR OVERALLS.** JOHN HETHERINGTON, Jr., Haywards, Cal. Filed Dec. 24, 1887. Serial No. 258,923. (No model.)

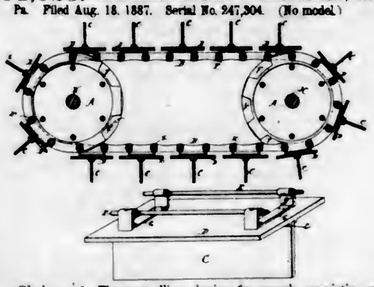


Claim.—1. In a pantaloon garment, the strap B, centrally secured to the garment near its back seam and having its free ends provided with buckles, in combination with the independent straps secured to the sides and engaging said buckles, said straps having eyelets for tools, and the loops E, through which the side straps pass, whereby spaces or compartments are formed, substantially as described.

2. In a pantaloon garment having a single side opening, a pocket formed of a single piece seamless at the bottom and having a longitudinal seam in line with the opening, whereby an independent pocket is formed upon each side of the opening, as herein described.

3. In a pantaloon garment having a single side opening, a pocket having a longitudinal seam in line with the opening, thereby forming an independent pocket upon each side of said opening, substantially as described.

381,625. **PROPELLING DEVICE.** WILLIAM JOHNSTON, Pittsburg, Pa. Filed Aug. 18, 1887. Serial No. 247,304. (No model.)



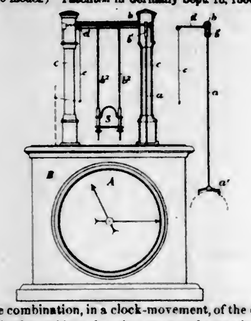
Claim.—1. The propelling device for vessels, consisting of the endless chain, the two-armed outwardly-projected brackets, and the buckets or paddles secured thereto, substantially as described.

2. The propelling device for vessels, consisting of the endless chain, the two-armed outwardly-projected brackets, the flat plate-like buoys, and the buckets or paddles, all connected together, substantially as described.

3. The endless chain and the paddles or buckets carried thereby, in combination with the intermediate brackets having their projecting arms mounted upon the pivot-rods of the chain and projecting the paddles or buckets therefrom, substantially as described.

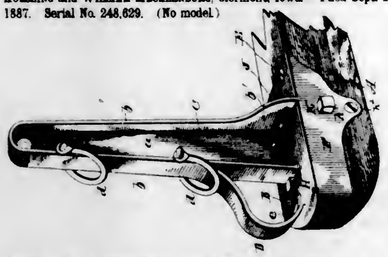
4. The combination of the endless chain, the brackets projecting therefrom, the flat plate-like buoys secured to said brackets and having on their outer side parallel ribs, and buckets or paddles secured in the seat between said ribs, all substantially as described.

381,626. **CLOCK.** ARTHUR JUNGHANS and HEINRICH E. JUNGHANS, Schramberg, Würtemberg, Germany. Filed Oct. 20, 1887. Serial No. 252,875. (No model.) Patented in Germany Sept. 18, 1886, No. 39,365.



Claim.—The combination, in a clock-movement, of the escapement *a'*, connected with the guide-rod *a*, the upper end engaging with the fork *b'*, rigidly fixed to the arbor *b*, journaled within the columns *c*, the arm *d*, and cord *e*, adapted to operate and move any suitable objects substantially as shown and described.

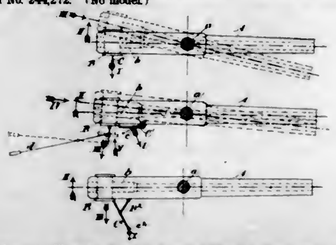
381,627. **STANDARD FOR WAGON-BOLSTERS.** RUDOLPH F. KOEBLING and WILLIAM MECKLENBURG, Clermont, Iowa. Filed Sept. 2, 1887. Serial No. 248,629. (No model.)



Claim.—1. The combination, with a flange-braced standard and a base-plate formed integral therewith, of a downwardly-projecting lug or flange formed on the under side of the base-plate and extending transversely along the inner edge thereof, substantially as set forth.

2. The combination, with a flange-braced standard, of a base-plate formed integral therewith, said base-plate being extended behind and before the standard and having a bolt-hole in each of said extensions, and a flange completely surrounding the base-plate and having bolt-holes therein, said flange being restricted on one edge to a downwardly-projecting lug, substantially as set forth.

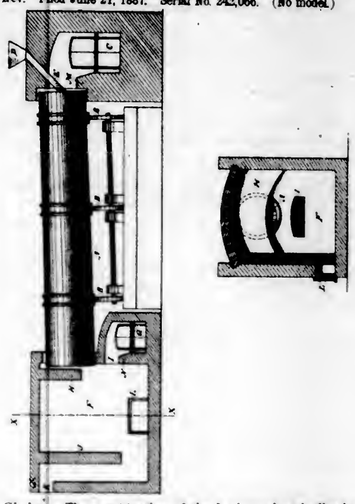
381,628. **VERTICAL BREECH-CLOSING MECHANISM FOR GUNS.** WILHELM LORENZ, Carlsruhe, Baden, Germany. Filed July 14, 1887. Serial No. 244,272. (No model.)



Claim.—1. The gun A and the breech-block B, movable vertically therein, in combination with a link one end of which normally supports said breech-block, the other end being attached to the carriage, and connections between said gun and link, whereby the latter is automatically operated by the motion of the gun in firing to disengage its supporting end from said breech-block and allow the latter to fall, as and for the purpose specified.

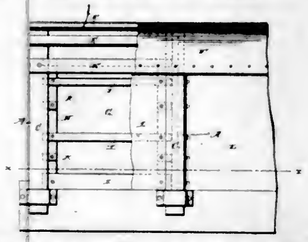
2. The gun A and the breech-block B, movable vertically therein, in combination with a link, D, horizontal guides D' on the gun-carriage for supporting said link, and a nose, A', on said gun, having a beveled face adapted to strike said link for automatically forcing it beneath and into engagement with said breech-block for supporting it by the descent of the breech of said gun after its displacement by the recoil of firing, as herein specified.

381,629. **ORE-ROASTING FURNACE.** JAMES L. LOVELL, Austin, Nev. Filed June 21, 1887. Serial No. 242,066. (No model.)



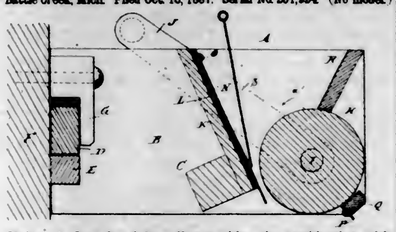
Claim.—The combination of the horizontal or inclined rotary roasting-chamber having a feed-hopper and main fire-place discharging into one end, and a receiving-chamber at the opposite end, into which both coarse ore and dust and the fumes are received, said chamber having a wall extending downward and close to the end of the cylinder, so as to reduce the discharge-opening, a second wall at the rear of said chamber extending downward, so as to form a tortuous outlet into the following chambers and stack, and a supplemental fire-place adjacent to or beneath the discharge end of the cylinder, whereby the heat from said fire-place passes out in contact with the ore and dust which is discharged from the cylinder, substantially as herein described.

381,630. **VEHICLE-TOP.** THOMAS B. MCCURDY, Lancaster, Tex. Filed Feb. 3, 1888. Serial No. 262,883. (No model.)



Claim.—As an improvement in vehicle-tops, the combination of the supporting-bows having grooves in their side, the upper ends of the grooves overlapping the curtain-supporting frames, comprising the flexible side bars, H, provided with lateral tongues fitting in the grooves of the supporting-bows, and the cross-bars I, secured to the side bars, H, and having their ends fitted in said grooves, and the covering L, secured to said frame, substantially as specified.

381,631. **DOUGH-KNEADING MACHINE.** BRYANT H. MELENDY, Battle Creek, Mich. Filed Oct. 10, 1887. Serial No. 251,994. (No model.)



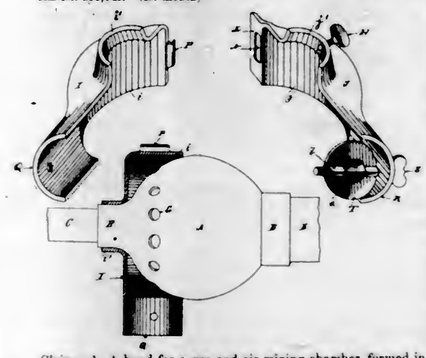
Claim.—1. In a dough-kneading machine, the combination, with a frame open at top and bottom, of a roller journaled therein, a partition held in the frame in front of the roller, and a plate adjustably secured to the partition and having its lower end projecting below the said partition, substantially as herein shown and described.

2. In a dough-kneading machine, the combination, with a frame open at top and bottom, of a roller journaled therein, a partition in the frame in front of the roller, a plate adjustably secured on the partition, a partition in the frame above the roller, with its lower end a short distance from the said roller, and a scraper on the under side of the roller, substantially as herein shown and described.

3. In a dough-kneading machine, the combination, with a frame open at the top and bottom and provided with sides, of a roller mounted to rotate in the said sides of the frame, a partition held in front of said roller, a plate held on the front of said partition, and a metallic plate held in front of said intermediate plate, substantially as shown and described.

4. In a dough-kneading machine, the combination, with a frame provided with sides and cross-pieces, of a board provided with a cross-piece, on which rests one of the cross-pieces of the frame, and a latch pivoted on said board and adapted to pass over said cross-piece on the frame, so as to lock the latter to said board, substantially as shown and described.

381,632. **SECTIONAL HOOD FOR GAS AND AIR FUEL MIXING CHAMBERS.** CHARLES H. MILLER, Erie, Pa. Filed Oct. 21, 1887. Serial No. 253,045. (No model.)



Claim.—1. A hood for a gas and air mixing chamber, formed in two sections, having means for securing them together, and the flanges *i'* and *j'*, and provided with a tubular extension for the inlet of air, in combination with a damper pivoted in the said tubular extension for regulating the inlet of air, substantially as set forth.

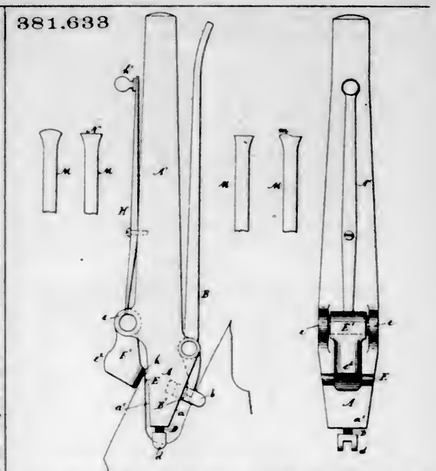
2. A hood for a gas and air mixing chamber, consisting of the two sections I and J, provided with the semicircular flanges *i'* and *j'*, the semi-tubular extensions Q and R, the perforated flange L, and the hook-shaped lip P, in combination with the damper T, pivoted in the said extensions Q and R, and the thumb-screws S and H, for operating the damper and clamping the sections in position, substantially as set forth.

381,633. **SAW-SWAGE.** JAMES H. MINER, Baton Rouge, La. Filed June 29, 1887. Serial No. 242,870. (No model.)

Claim.—1. In a saw-swage, the combination, with the body portion, of a steadying-pin having a forked end, and a screw-threaded shank fitting in a screw-threaded socket of the body portion, substantially as described.

2. In a saw-swage, the combination, with a recessed body portion,

381,633



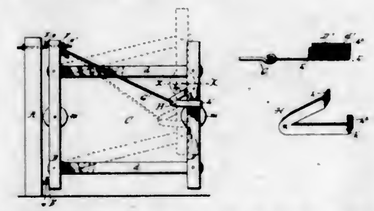
of a pin fitting in the recess of the body portion and provided with a forked outer end, and a pivoted lever engaging said pin, substantially as herein shown and described.

3. In a saw-swage, the combination, with the body portion A, formed with the under die, E, of the upper die pivoted to the body portion to have lateral play, and the lever H, for moving the said die laterally, substantially as herein shown and described.

4. The combination, with the body A and handle A', a pin, B', adapted to slide in the rear edge of said body, having a forked outer end, a lever, B, operating said pin, and a convex die, E, formed transversely the front face of said body, of an adjustable upper die, E', having a convex inner surface, and means for manipulating said die, substantially as shown and described.

5. The combination, with the body A and handle A', a pin, B', adapted to slide in the rear edge of the body, having a forked outer end, a lever, B, operating said pin, and a convex die, E, formed transversely the front face of said body, of an adjustable upper die, E', having a convex inner surface, means for manipulating said die, and a set-screw, D, having a forked outer end adapted to elevate or depress the body, all arranged to operate substantially as shown and described.

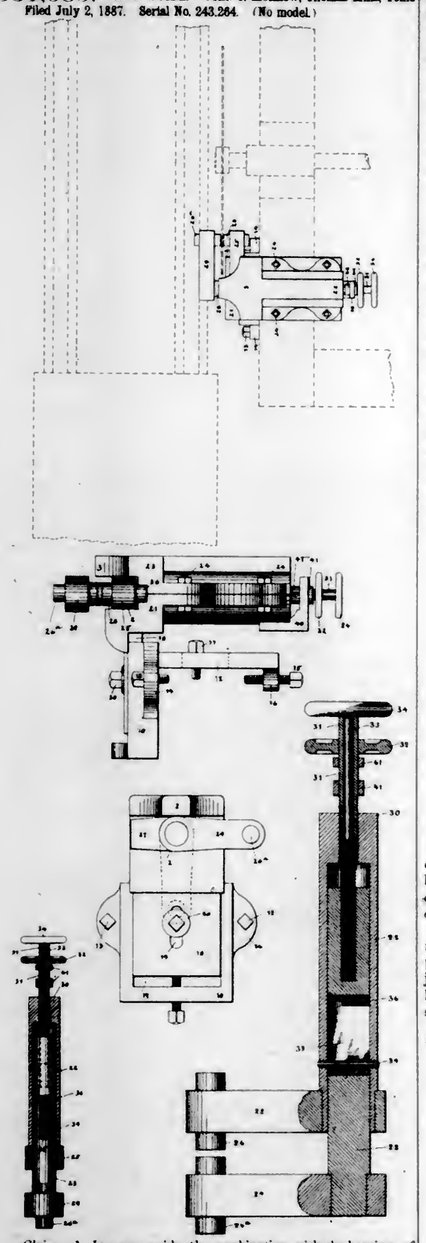
381,634. **GATE.** HARVEY E. MOORE, Lena, Ohio. Filed Oct. 21, 1887. Serial No. 253,010. (No model.)



Claim.—1. The combination, with the frame composed of an inner and an outer vertical bar relatively adjustable, substantially as shown, and cross-bars pivotally connected at their ends with the said vertical bars, of the clasp H, having the end *h* of its upper shorter portion bent at right angles to bear against the inner side of one of the said vertical bars and the end *h'* of its lower longer portion similarly bent to bear against the outer side of said bar, and the rod G, connecting the clasp with the other of the said vertical bars, substantially as and for the purpose described.

2. The combination, with the frame having vertical bars that are relatively adjustable, of the connecting-rod and the clasp H, having upper and lower portions or arms of unequal length, the ends of which are bent at right angles and bear, respectively, against opposite sides of one of the said vertical bars, the longer portion or arm having its end bent a second time at right angles, as at h^2, to engage with the said bar to prevent lateral displacement of the clasp therefrom, substantially as set forth.

381,635. SAW-GUIDE. JOHN O. MORROW, Thomas Mills, Tenn. Filed July 2, 1887. Serial No. 243,264. (No model.)



Claim.—1. In a saw-guide, the combination, with the bearing, of a longitudinally-adjustable hollow shaft mounted in said bearing, an arm on the shaft and a guiding-pin on the arm, a rotary longitudinally-adjustable shaft within the hollow shaft and having an arm provided with a guiding pin or bearing, and means for locking the inner shaft against rotation within the hollow shaft, substantially as set forth.

2. In a saw-guide, the combination, with the hollow shaft having an arm provided with a guide pin or bearing, of the inner shaft having a longitudinal and transverse communicating slots, an arm provided with a guide pin or bearing, and a pin passed through the hollow shaft and slot of the inner shaft, whereby the inner shaft may be locked from rotation within the outer shaft, substantially as set forth.

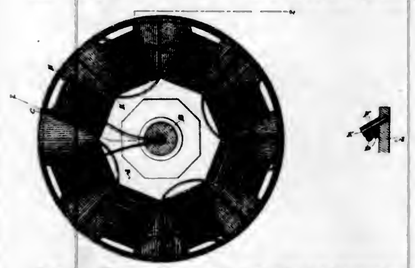
3. The combination, with the bearing having upper and lower shoulders, the longitudinally-adjustable rotary hollow shaft therein, provided with an arm normally held from rotation between said shoulders, but adapted to be reversed therein, and the guide-pin on said arm, of the longitudinally-adjustable shaft within said hollow shaft and provided with an arm, and a guiding pin or bearing, substantially as set forth, whereby the position of the arms may be reversed for use with right or left saws, as described.

4. The combination, with the seat 10, having slot 12 in its upper plate, lug 16 at the end thereof, vertical dovetail groove in the outer face of its vertical plate, and the set-screws 13, 11, and 15, of the bearing, comprising upper and lower sections, 21 23, the former having the depending leg 18 engaging the said dovetail slot, and the adjustable shafts and the arms carried thereby and provided with guide-pins, substantially as set forth.

5. The combination, with a seat, of a bearing formed with an arm-seat or shoulder, a hollow rotary shaft, an arm and extension rigidly connected thereto and arranged to rest upon the arm-seat, a shaft mounted within the hollow shaft, an arm carried thereby, guiding pins or bearings carried by the two arms, and a means, substantially as described, for adjusting the shafts, as and for the purpose stated.

6. The combination, with a hollow shaft and its support, of a rotary shaft mounted within the hollow shaft and formed with slots 35 and 36, a pin, 39, connected to the hollow shaft and passing through the slot 35 of the inner shaft, arms carried by the shafts, guide-pins carried by the arms, and adjusting-screws connected to the shafts, substantially as described.

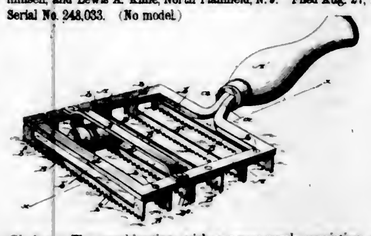
381,636. ARMATURE FOR DYNAMOS. MORITZ A. MÜLLER, Newark, N. J., assignor to the United States Electric Lighting Company, New York, N. Y. Filed Oct. 17, 1887. Serial No. 252,543. (No model.)



Claim.—1. The combination, with the cylindrical armature-core of a magneto or dynamo electric machine, of rows or series of insulated pins or plugs inserted in the ends of the core, substantially as described, and insulated conductors wound longitudinally upon the core and around the said pins or plugs, as set forth.

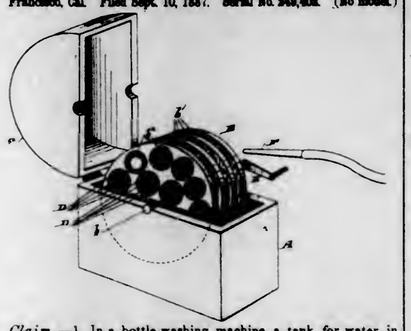
2. The combination, with the cylindrical armature-core of a magneto or dynamo electric machine, of rows or series of steel pins or plugs driven into holes in the ends of the core and having their projecting ends covered or coated with an insulating material, and insulated conductors wound longitudinally upon the core and around the said pins or plugs, as set forth.

381,637. CURRY-COMB. FRANK S. NEAL, Plainfield, assignor to himself, and Lewis A. Kline, North Plainfield, N. J. Filed Aug. 27, 1887. Serial No. 248,033. (No model.)



Claim.—The combination, with a curry-comb consisting of a rectangular skeleton frame and a series of toothed bars arranged in pairs transversely the frame, each bar provided with a recess upon the upper edge, whereby the body of the bars is below the plane of the frame, of a grooved weight adapted to roll upon the upper edges of contiguous bars, and a guide-rod attached to said frame over the movable weight, substantially as and for the purpose herein set forth.

381,638. BOTTLE-WASHING MACHINE. HENRY PALMER, San Francisco, Cal. Filed Sept. 10, 1887. Serial No. 249,408. (No model.)



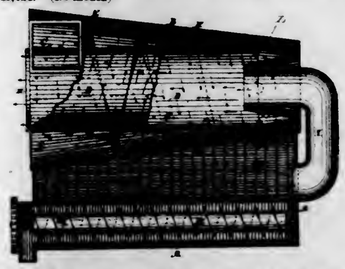
Claim.—1. In a bottle-washing machine, a tank for water, in combination with a rotary bottle-carrying drum or frame mounted in said tank, said drum having rows of aligned perforations or holes for receiving the bottles in a horizontal position parallel with its axis, substantially as herein described.

2. In a bottle-washing machine, a tank for water, in combination with a rotary drum therein, forming a carrier for the bottles and consisting of a series of parallel separated plates, disks, or open frames provided with rows of aligned holes or sockets for receiving the bottles in a horizontal position parallel with the axis of the drum, substantially as herein described.

3. In a bottle-washing machine, a tank for water, in combination with a rotary drum mounted therein and consisting of parallel-spaced plates or disks having rows of aligned holes to receive the bottles in a horizontal position parallel with the axis of the drum, said holes being enough larger in diameter than the bottles they receive to allow said bottles a play without danger of breaking, substantially as herein described.

4. In a bottle-washing machine, a tank for water, in combination with a rotary bottle-carrying drum or frame mounted in said tank and having rows of aligned holes for receiving the bottles in a horizontal position parallel with its axis, and transverse bars, rods, wires, or cords secured to the rims of the holes for scraping the bottles, substantially as herein described.

381,639. DUST-COLLECTOR. HENRY N. POMEROY, Sparta, Wis., assignor to J. A. Warner, same place. Filed Sept. 8, 1887. Serial No. 249,128. (No model.)

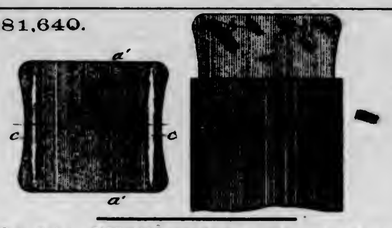


Claim.—The combination of the spout C, the slotted conical tube B, the hollow cylinder D, the spiral partition E between the cylinder and tube, the dust-receptacle G beneath, and the air-pipe I, all arranged and operating substantially as set forth.

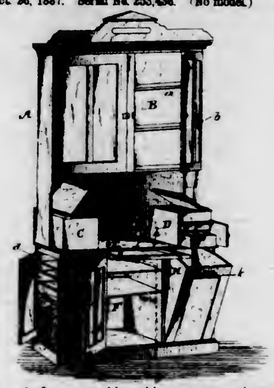
381,640. BELT-FASTENER. WILSON L. POTTER, Hartford, Conn., assignor to the Jewell Belting Company, same place. Filed Aug. 10, 1887. Serial No. 246,642. (No model.)

Claim.—The improved belt-hook consisting of a base-plate made of metal cast to shape with strengthening-ribs extending lengthwise of the plate on its back, the said ribs being thickest at the center and tapering to their ends near the opposite edges of the plate, and with lines of projecting teeth on the under surface of the plate at its opposite ends, all substantially as described.

381,640.



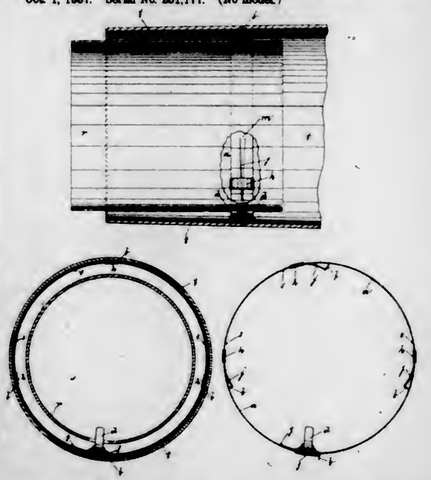
381,641. PORTABLE PANTRY. HENRY M. RAMEY, Grinnell, Iowa. Filed Oct. 26, 1887. Serial No. 253,434. (No model.)



Claim.—1. In a portable cabinet-pantry, substantially as described, the combination of the working-table, the sliding kneading-board extensible in a plane parallel with and proximate to that of said working-table, and the receptacle-door located beneath, hinged on a vertical axis to swing forwardly and have contact with the under surface of the kneading-board when both are extended, for the purposes set forth.

2. In a portable cabinet-pantry, substantially as described, the combination of the working-table, the sliding kneading-board extensible in a plane parallel with and proximate to that of said working-table, the receptacle-door hinged on a vertical axis to swing forwardly and have contact beneath the surface of the kneading-board when extended, and the foot-bracket adapted to extend from the door to the floor, as and for the purposes set forth.

381,642. CUFF-HOLDER. JAMES H. REED, Lynn, Mass. Filed Oct. 1, 1887. Serial No. 251,177. (No model.)

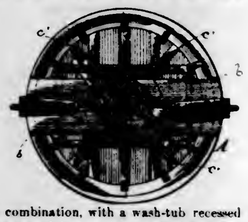


Claim.—1. A cuff-holdar consisting of a flexible metallic band, as *a*, provided with a device, as *d*, for securing the cuff, and having projections, as *b*, whereby said band is secured inside the coat-sleeve, substantially as set forth.

2. The combination, with the expansible band *a*, provided with outwardly-projecting prongs, as *b*, of the clasp *f*, whereby the ends of the band are held in sliding contact, and the button or securing device *d*, whereby the cuff is secured to the band, for the purposes and substantially as shown and described.

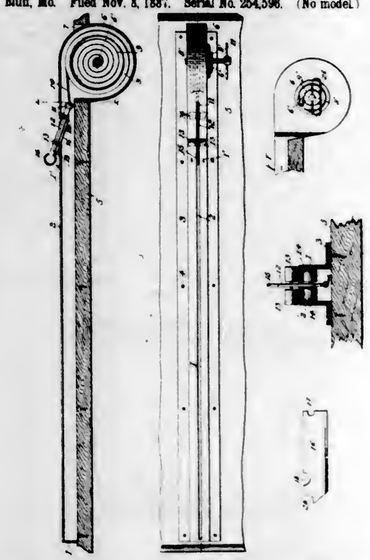
3. A cuff-holder consisting of a flexible metallic band provided on its interior with a device for securing the cuff thereto and having prongs or projections, as *b*, mounted on springs, as *j*, set in openings in the band, said prongs being retracted by the action of the springs and projected by the slides *k*, substantially as shown and described.

381,643. WASHING-MACHINE. LOUISA REINHARDT, Louisville, Ky. Filed Apr. 28, 1887. Renewed Mar. 15, 1888. Serial No. 267,247. (No model.)



Claim.—The combination, with a wash-tub recessed at *b b*, and provided with ears *a a*, of the rotative standard G, bearing an armed rubber and a crank, and provided with an annular groove, the two-part cross-bar bolted together and provided with loops, and the two-part washer *n*, all substantially as specified.

381,644. CLOTH-CUTTING MACHINE. GEORGE A. RIES, Poplar Bluff, Mo. Filed Nov. 3, 1887. Serial No. 254,596. (No model.)



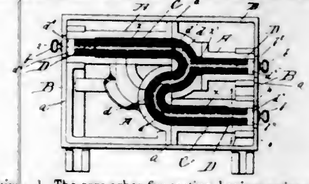
Claim.—1. A cloth-cutter consisting of a longitudinally-slotted cloth-support, a knife having one end projecting through the slot of the support and provided with laterally-projecting stops above and below the said support, and a retracting-spring and cord connected to the end of the knife below the cloth-support, substantially as described.

2. A cloth-cutter consisting of a longitudinally-slotted casing and a sliding knife-frame having one end projecting through the said slot, a knife secured in said frame, a spring-actuated roller or drum, and a cord connected to the said drum and to the end of the knife-frame within the casing, substantially as described.

3. A cloth-cutter consisting of a longitudinally-slotted casing, a sliding knife-frame held in an inclined position in the said slot, a knife secured in said frame, a spring-actuated roller or drum, and a cord connected to the said drum and knife-frame, substantially as described.

4. The combination of the slotted casing 1, holding-pins 1′, knife-holder 12, having notched knife 16, set-screws 19, and ring 15, rollers 13 14, connecting-cord 10, and spring-roller 8, with pawl 6′, ratchet 9′, and handle 21, substantially as described.

381,645. CORE-ARBOR FOR CASTING CURVED PIPE. PETER RIETH, Chicago, Ill., assignor to the L. Wolff Manufacturing Company, same place. Filed Jan. 23, 1888. Serial No. 261,625. (No model.)



Claim.—1. The core-arbor for casting, having sections hinged together, substantially as specified.

2. The combination, with a supporting-frame, of a core-arbor composed of sections hinged together, substantially as specified.

3. The combination, with a supporting-frame, of an arbor composed of two or more end sections rigidly attached to said frame and one or more hinged sections, said arbor being provided with an intermediate detachable joint, substantially as specified.

4. The combination, with a supporting-frame, of an arbor having two or more end sections, clamping devices for rigidly attaching said end sections to said frame, and one or more hinged sections, said arbor being furnished at an intermediate point with a detachable joint adapted to be united or disunited only when the end sections or one of them are unclamped or loosened, substantially as specified.

5. The combination, with supporting-frame B, furnished with slots or notches *b′*, of arbor D and clamp-screws *b*, mounted in said slots or notches *b′*, substantially as specified.

6. The combination, with the supporting-frame B, of the arbor furnished with heads *d*⁴, provided with registering sockets or grooves, said frame being provided with registering lugs or guides, substantially as specified.

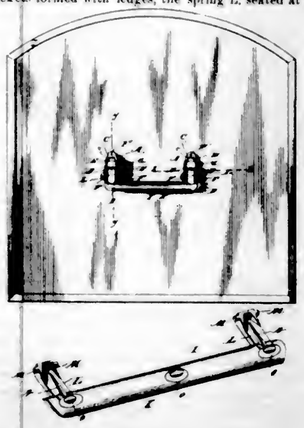
7. The combination, with frame B, having slots or notches *b′*, of an arbor composed of end sections, D D, and intermediate hinged sections, *d*, said arbor being provided with a detachable joint at an intermediate point, and clamp-screws *b*, substantially as specified.

8. The combination of frame B, having slots or notches *b′*, of an arbor composed of end sections, D D, and intermediate hinged sections, *d*, said arbor being provided with a detachable joint at an intermediate point, and clamp-screws *b*, said arbor and frame being provided with registering guides and grooves b^5 b^3, substantially as specified.

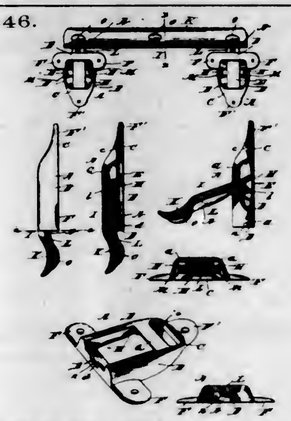
9. The combination, with supporting-frame B, of an arbor having three end sections, D D D, rigidly clamped to said frame, and intermediate hinged sections, *d d*, substantially as specified.

381,646. HANDLE. THOMAS L. RIVERS, Newark, N. J. Filed Feb. 25, 1887. Serial No. 228,863. (Model.)

Claim.—1. A handle for trunks and the like, comprising the hollow brackets formed with ledges, the spring E, seated at its ends on



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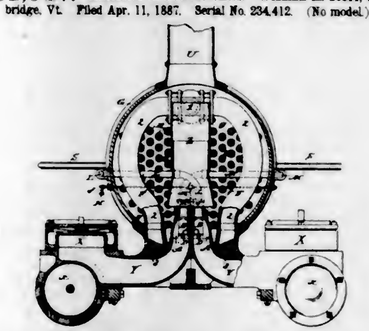


the ledges, and the handle I, journaled at each end in sockets of the brackets, and having its ends at the journals bearing on the spring between the ledges, whereby said spring serves to hold the handle closed down to the trunk, as set forth.

2. In a handle for trunks and the like, the brackets A, comprising the side arms, B, connected by cross-pieces, the lower cross-piece, D, having a recess, *n*, combined with the handle comprising the bar K and the ends L, the latter being journaled in the brackets and provided with the ribs N along the inner side, the said ribs being fitted in the recesses *n* when the handle is closed down against the trunk, as set forth.

3. A handle for trunks and the like, comprising the brackets having ledges, a cross-bar, G, located between the ledges, said cross-bar limiting the upward movement of the handles and holding the latter in an inclined position, the spring E, seated at its ends upon the ledges, and thus leaving the intermediate portion of the spring free, and the handle comprising the bar K and ends L, the latter being pivoted in sockets of the brackets and bearing upon the spring at all times, the lower edge of the bar K being turned or curved outward, and offsets or knobs O, provided on the inner face of the bar K, as set forth.

381,647. HEATING RAILWAY-CARS. WILLIAM M. SCOTT, Cambridge, Vt. Filed Apr. 11, 1887. Serial No. 234,412. (No model.)

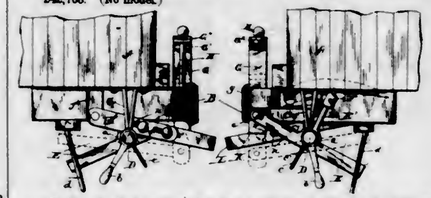


Claim.—1. The combination, with locomotive smoke-box, the exhaust-nozzle within the smoke-box, and provided at one side with an opening, *a*, and the valve B, opening inward therefrom, of the chamber J, also within the smoke-box, and having an opening, *s′*, registering with the opening *a*, the valve N within the chamber closing said opening, and having a spring for throwing it toward the valve B, substantially as set forth.

2. In a railway-car heating apparatus, the combination, with the locomotive smoke-box, the exhaust-nozzle within the same and provided with side opening, *a*, and inward-opening valve B, of the chamber J, also within the smoke-box, and having an opening, *s′*, registering with nozzle-opening *a*, the valve N, hinged at its lower end within the chamber to close the opening *s′*, the spring O, the check-valve P at the outer end of the said chamber, and the pipe leading from said outer end and adapted to connect with the cars, substantially as set forth.

3. A car-heating apparatus comprising the two exhaust-flues A A within the smoke-box of a locomotive, and provided with openings *a* in their opposite sides, and inward-opening valves B for said openings, the chambers J between the ends of the boiler-flues and the said nozzles and communicating with said nozzles, the check-valves within said chambers, and the pipes connected at their inner ends with the outlet ends of said chambers, crossed in front of the boiler-flues, and leading rearward from opposite sides of the smoke-box for connection with the cars, substantially as set forth.

381,648. CAR-COUPLING. WILLIAM B. SEAL, Baltimore, Md., assignor to William S. Reins, same place. Filed June 28, 1887. Serial No. 242,763. (No model.)



Claim.—1. In a car-coupler, the combination, with a draw-head and a rocking shaft, of a coupling-pin-operating lever, a slide pivoted thereto, and devices on the shaft for operating the lever, substantially as set forth.

2. In a car-coupler, the combination, with a draw-head and a rocking shaft located below same, of a pivoted operating-lever, a slide loosely connected to said lever and carrying a pin-holder, a link-controller, and devices secured to the shaft and engaging, respectively, the link-controller and operating-lever, substantially as set forth.

3. In a car-coupler, the combination, with a draw-head, rocking shaft located below same, and a coupling-pin-operating lever, of a weighted arm projecting from said lever and a device secured to the rocking shaft for operating the lever, substantially as set forth.

4. In a car-coupler, the combination, with a rocking shaft, an operating-lever, a slide loosely pivoted thereto, and a weighted arm projecting from the lever, said slide having a pin-holder pivoted thereto, of an extensible link-controller and devices for operating the controller and the operating-lever, substantially as set forth.

5. In a car-coupler, the combination, with a rocking shaft, of a pivoted extensible link-controller and a device secured to the shaft for operating the controller, substantially as set forth.

6. In a car-coupler, the combination, with a coupling-pin-operating lever, of a sliding and rocking shaft carrying a device adapted to engage said lever.

7. In a car-coupler, the combination, with a link-controller, of a sliding and rocking shaft carrying a device adapted to engage the link-controller for elevating same, substantially as set forth.

8. In a car-coupler, the combination, with a coupling-pin-operating lever and a link-controller, of a sliding and rocking shaft carrying devices adapted to engage said lever and controller for operating same, substantially as set forth.

9. In a car-coupler, the combination, with an operating-lever and slide, of a pin-holder having an elongated slot adapted to receive the pin, substantially as set forth.

10. In a car-coupler, the combination, with an operating-lever and slide, of a slotted pin-holder pivoted to the slide and a casing mounted in the slot, substantially as set forth.

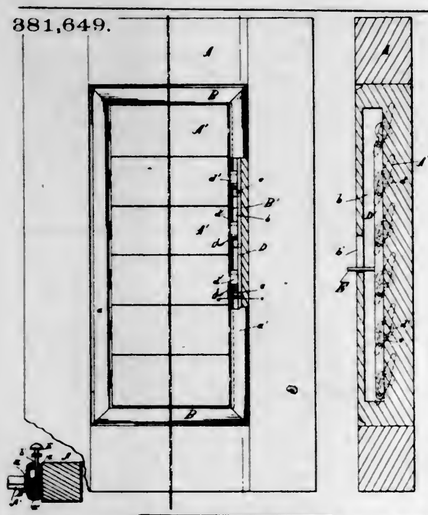
11. In a car-coupler, the combination, with a shaft, of a pin-operating device, a link-controller, and devices secured to the shaft whereby the pin-operating device or link-controller can be moved independently of each other, substantially as set forth.

12. In a car-coupler, the combination, with a sliding and rocking shaft, of a pin-operating lever, a link-controlling device, and devices secured to the shaft and adapted to engage said lever and link-controlling device for operating them, substantially as set forth.

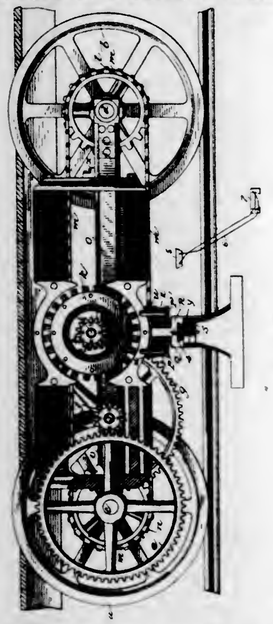
381,649. SLATTED BLIND. JOHN A. SHERRINGTON, New York, N. Y. Filed June 11, 1887. Serial No. 241,021. (No model.)

Claim.—The improvement in slatted blinds, which consists of the combination, with the slats and the frame provided with a recessed molding, of a fixed plate let into said molding and provided with a series of apertures, collars fitted upon the slat-tenons and adapted to turn said slats, which collars have their bearings in the slots of said fixed plate, and are provided with angle-arms entering the recesses of the molding, and a rod to which are pivotally connected the said angle-arms, and which is provided with an operating-pin, substantially as set forth.

381,649.



381,650. ELECTRIC MOTOR FOR RAILWAYS. SIDNEY H. SHORT, Denver, Colo., assignor to the United States Electric Company, same place. Filed Sept. 23, 1885. Serial No. 177,859. (No model.)

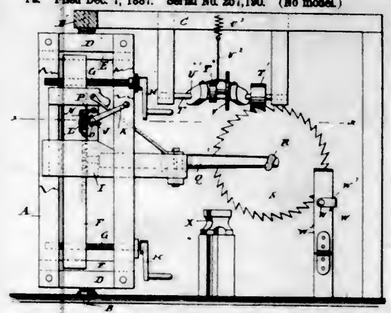


Claim.—1. In combination with an electric motor carried on a car, a current-gatherer pivoted on a piece, as Q, connected to the motor by bolts and interposed springs, substantially as described.

2. In combination with an electric motor carried on a car, a pivoted block, as R, a current-gatherer pivoted on a piece, as Y, and dovetail connections between the parts Y and R.

3. In combination, in an electric motor on a railway-car, a pivoted block, as R, a current-gatherer pivoted on a piece, as Y, dovetail connections between the pieces Y and R, and a pin, *t*, through the flanges of these parts, substantially as described.

381,651. CIRCULAR-SAW HOLDER. JOHN SLATER, Parthenia, Pa. Filed Dec. 7, 1887. Serial No. 257,190. (No model.)



Claim.—1. In a circular-saw holder, the combination of an adjustable frame, a shaft journaled in and projecting from said frame, and a saw-arbor on the end of and at right angles to the said shaft, substantially as described.

2. In a circular-saw holder, the combination of a pivoted main frame, a longitudinally and vertically adjustable frame carried by said main frame, a shaft journaled in and projecting from the adjustable frame, and a saw-arbor on the end of and at right angles to the said shaft, substantially as herein shown and described.

3. In a circular-saw holder, the combination of a vertically and longitudinally adjustable frame, a shaft for holding the saw to be operated upon journaled in the said frame, a pivoted frame, a grinding-wheel journaled in the said pivoted frame, a cord attached to the pivoted frame, and a spring connected to said cord and to a support, substantially as described.

4. In a circular-saw holder, the combination, with a supporting-frame, of a bar fitting on ways in the said frame and provided with a rack, a screw for adjusting the bar, a sliding frame on said bar, a pinion engaging the rack on the bar, and means for locking the said sliding frame, substantially as described.

5. In a circular saw-holder, the combination, with a vertically and longitudinally adjustable frame and a main frame supporting the said frame and mounted to turn vertically, of a shaft mounted to turn in the said adjustable frame and carrying the circular saw to be operated upon, and an anvil on which the said circular saw can be placed while held on the said shaft, substantially as shown and described.

6. In a circular-saw holder, the combination, with an adjustable frame and a shaft for carrying the saw to be operated upon journaled in said frame, of the vise W, consisting of the fixed jaw W', the hinged jaw W^1, and the hinged V-shaped clip W^2, provided with the set-screw W^4, substantially as described.

7. In a circular-saw holder, the combination, with a main frame mounted to turn, of guideways formed on the said frame, a post mounted to slide on the said guideways, screw-rods mounted to turn on the said frame and screwing in the said post, a frame held vertically adjustable on the said post, and a shaft mounted to turn on the said frame and carrying the circular saw to be operated upon, substantially as shown and described.

8. In a circular-saw holder, the combination, with a main frame mounted to turn and provided with guideways, of a post held to slide longitudinally on the said guideways, a frame held to slide vertically on the said post, a transverse shaft mounted in the said frame and provided with a crank-arm, a gear-wheel secured on the said shaft, a rack secured to the said post and into which the said gear-wheel meshes, and a longitudinally-extending shaft mounted to turn in the said frame and adapted to carry the circular saw, substantially as shown and described.

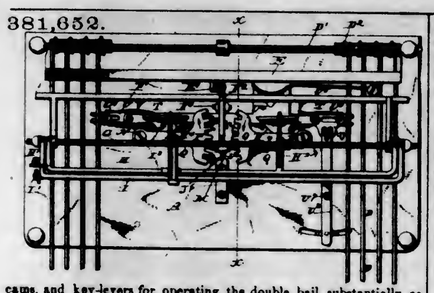
381,652. TYPE-WRITING MACHINE. CHARLES SPIRO, New York, N. Y. Filed Sept. 26, 1885. Serial No. 178,217. (No model.)

Claim.—1. In a type-writer of the class specified, the combination, with the type-wheel or its described equivalent, of a series of keys, a pivoted segment, a cam for operating the same, connections between the cam and the keys, and connections between the wheel and segment, substantially as specified.

2. The combination of a type-wheel, its shaft, and a pinion thereon, a pivoted segment, a cam arranged adjacent thereto and movably connected therewith, and a bail connected with the cam and with the keys, substantially as specified.

3. The combination of a type-wheel, shaft, and pinion, an oscillating segment meshing with the pinion, independently-movable cams for oscillating the segment, oppositely-inclined bails for moving the

381,652.



cams, and key-levers for operating the double bail, substantially as specified.

4. In a type-writer, a type-wheel mounted on a shaft, in combination with a pivoted standard for the shaft, oppositely-inclined bails, substantially as described, for raising and lowering the shaft, and a swinging segment and cams for tilting the standard, substantially as specified.

5. The combination, with the type-wheel and its shaft having peripheral grooves, of a standard pivotally supported for tilting and a fixed stop arranged in front in the direction of the movement of the grooved portion of the shaft when tilted, substantially as specified.

6. The combination, with a type-wheel, its grooved shaft, and a locking-wheel mounted thereon, of a fixed stop and locking-bracket, and mechanism, substantially as described, for elevating and tilting the shaft, substantially as specified.

7. The combination of a type-wheel having a series of circumferentially-disposed printing characters on its periphery, its shaft, a pivoted standard for the shaft, a lifting-lever, and a lifting-lever operating-bail, and a series of keys having different shapes to vary the operation of the lifting-lever, substantially as specified.

8. The combination, with a series of keys having varied shapes, of a feed-bail, a lifting-bail, and a printing-character selecting-bail, arranged in the order specified, from the key-shaft, whereby the successive functions indicated are successively performed in the depression of each key, substantially as specified.

9. A compound bail comprising two bails, one portion of one projecting above the adjacent portion of the other, whereby the one portion is adapted to perform an independent function and both portions are adapted to perform conjointly a succeeding independent function, substantially as specified.

10. The combination of a double bail, two independently-movable cams, and a segment for rotating and tilting the type-wheel, and key-levers having adjacent to the double bail notches of varied depths, substantially as described, for communicating motion to the parts specified in varied degrees by single key-levers, substantially as specified.

11. A type-wheel the periphery of which is divided circumferentially into three printing-fields, in combination with oppositely-inclined bails and segments and a pinion mounted on the type-wheel shaft, substantially as described, for bringing either field into operative position and for partially rotating the selected field for the selection of individual printing-characters thereof, substantially as specified.

12. A type-wheel the periphery of which is divided into three printing-fields, each having a plurality of circumferential lines of printing-characters, in combination with double-inclined bails, segments, and a lifting-lever, and a pinion mounted on the type-wheel shaft, substantially as described, for bringing either field into operative position and for elevating said wheel for bringing either line of characters into operation and for partially rotating said wheel to bring either character in either line into operation, substantially as specified.

13. The combination of a type-wheel mounted for tilting and having a pinion on its shaft, a segment for rotating said pinion, a cam for determining the relative position of the segment on the pinion, and mechanism, substantially as described, for moving the cam and for restricting its movement within a limited portion of the face of the cam, comprising a bail operated by a key-lever, substantially as specified.

14. The combination of the type-wheel J, shaft J^4, notched, as at J^5, and carrying locking-wheel I, the pivotally-supported standard K, locking-bracket L', and shaft-locking lug J^6, substantially as specified.

15. The combination of a tilting type-wheel having a pinion on its shaft, a segment meshing with said pinion, and cams, substantially as described, for oscillating said segment and for moving it and said pinion bodily for the purpose of tilting said type-wheel, substantially as specified.

16. The combination of a tilting type-wheel having a pinion and locking-wheel on its shaft, a segment for operating said pinion, cams for operating said segment, bails for operating said cams, a locking-bracket, and a series of keys, each different from the other in configuration at points which come in contact with said bails, substantially as specified.

17. The combination of a type-wheel, a series of key-levers of varied outline, a lifting-bail, and a compound bail, one portion of which varies in outline from the other portion thereof and each portion having a projecting arm, a pair of cams adjacent to said arms and adjacent to the type-wheel-operating segments, and a lifting-lever adjacent to the lifting-bail and arranged to come in contact with the shaft of the type-wheel, substantially as specified.

18. The combination of the type-wheel J, the pivoted standard K, the fixed slotted standard W^7, and the inker-arm W^8, provided with the pin W^9 and carrying an inking-pad, W, pivotally mounted on the arm, substantially as specified.

19. The combination of the pivotally-supported standard K, the type-wheel J, the shaft J^4, notched or grooved, as at J^5, and the fixed stud J^6, substantially as specified.

20. The combination, with the carriage and platen C, the former provided with the rack-bar C', of the rock-shaft E^2, carrying the feed and check pawls, connecting-rod E', the feed-bail E, the keys D, the lifting-bail F, the lifting-lever F^2, the compound bail H I, having arms H^3 I^3, the cams R S, the segments O P, the pinion M, the shaft J^4, standard K, and the type-wheel J, substantially as specified.

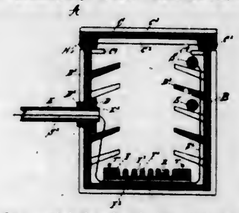
21. The combination of the shaft D', the keys mounted thereon, the compound bail H I, having arms H^3 I^3, the cams R S, segments O P, having the pins Q, and the reciprocating bar U, substantially as specified.

22. The combination of the type-shaft, wheel J^4, pinion M, segments O P, cams R S, bar U, having projection U^6, detent U^5, and lever U^4, substantially as specified.

23. The combination, in a type-writer, of two bails arranged one within the other and one projecting above the other at the ends, substantially as specified.

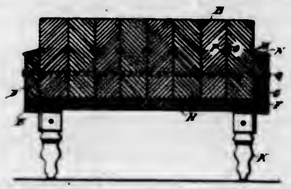
24. The combination of two bails, one arranged within and projecting above the other at one end and having an irregular outline, with a series of keys having an irregular outline proportioned to that of the bails, substantially as specified.

381,653. CONDUIT. JAMES STEEL, Paterson, N. J. Filed Apr. 30, 1885. Renewed Sept. 1, 1887. Serial No. 248,577. (No model.)



Claim.—In a conduit for electrical conductors, the combination, with the sides B, provided with arms or brackets B^2, and having flanges B' B^3, secured by bolts G, and having elastic packing-strips H, of the top or cover C, having lugs C', for securing the sides against lateral pressure, the elastic packing-strips H', arranged between lugs C', the cover having raised portions C^{10} and flanges C^9 C^9, the shaft C^7, having arms C^8, to engage lugs C^9, the lugs C^9, to engage arms C^8, and the drips C^6, for covering openings in said cover C, substantially as described.

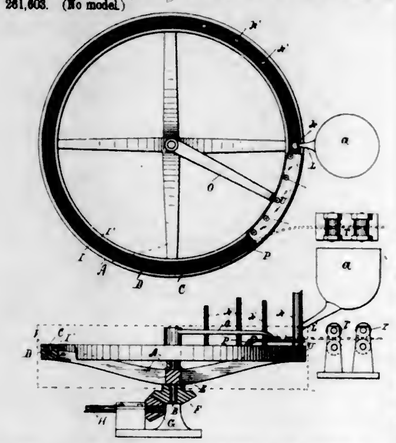
381,654. SECTIONAL MEAT-BLOCK. BENJAMIN A. STEVENS, Toledo, Ohio. Filed Nov. 22, 1887. Serial No. 255,930. (No model.)



Claim.—1. In a sectional meat-block, corner-irons having an upper angled portion and a lower angled portion of less area, side bars resting upon shoulders formed by the different areas of the angled portions, a base-board connected with the side bars, and legs attached to the lower angled portion, as and for the purpose set forth.

2. A sectional meat-block comprising a table formed of side and bottom boards, blocks inclosed within and extending above the side boards, the surfaces of the outer blocks being formed with grooves, and metal plates placed within the grooves and secured to the upper edges of the side boards, substantially as described.

381,655. PROCESS OF CASTING METAL. DANIEL C. STOVER, Freeport, Ill., assignor of one-half to the Washburn & Moen Manufacturing Company, Worcester, Mass. Filed Jan. 23, 1888. Serial No. 261,603. (No model.)



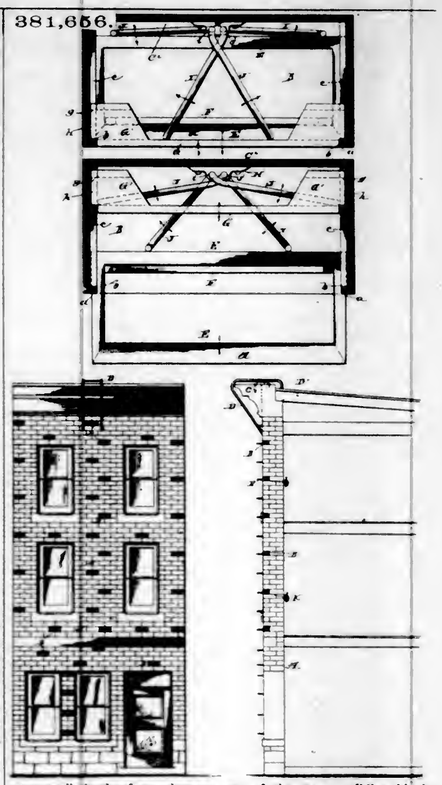
Claim.—1. The process of casting metals, which consists in submerging a mold in and filling it with a rapidly-changing body of cooling-liquid under pressure, and then pouring cooling-liquid and the molten metal together into said mold, filling the mold to the desired extent with metal and displacing the cooling-liquid to a corresponding extent.

2. In forming articles from molten metal, the method which consists in subjecting the molten metal while in a suitable mold to the compressive and cooling action of a body of liquid in direct contact with the molten metal and itself under pressure during such contact.

3. The process of casting metal, which consists in covering the molten metal while in a suitable mold with a body of cooling-liquid in direct contact with the metal and rapidly changing said liquid during the process of solidification, whereby the metal is protected from air and injurious gases, while its heat is quickly transferred to the liquid without causing material vaporization thereof.

4. In forming articles from molten metal, the method which consists in submerging a mold in and filling it with a cooling-liquid, and then pouring a cooling-liquid and the molten metal together into the mold, filling the mold and displacing the cooling-liquid, whereby the heat of the metal is quickly removed without causing injurious vaporization of said cooling-liquid.

381,656. LADDER. GEORGE H. THOMPSON, Reading, Pa. Filed Dec. 29, 1887. Serial No. 259,300. (No model.)



Claim.—1. An angular box adapted to be set in the wall of a building and having a sliding step, and mechanism located within the box for moving the step outwardly, substantially as set forth.

2. An angular box adapted to be set in the wall of a building and having one open face and a sliding step located wholly within the box, the outer face of said step, when the latter is in its closed position, resting flush with the side edges of the open face of the box, substantially as set forth.

3. A ladder composed of a series of boxes, a step in each box, mechanism for sliding said step, a stop to limit its outward movement, and strips in the box to sustain the weight brought to bear upon the step, substantially as set forth.

4. A ladder composed of a series of boxes, a step in each box, levers in the box, a stop for limiting the outward movement of the step, and mechanism for operating the levers to slide the step, substantially as set forth.

5. A ladder composed of a series of boxes, a step in each box, a stop to limit the forward movement of said step, a sliding block mounted on bearings above the step, a bracket secured in the box, and levers fulcrumed in the bracket and bearing at their ends against the sliding block and the step, substantially as set forth.

6. A ladder composed of a series of boxes, a step in each box, a stop to limit the forward movement of the step, a sliding block mounted in the box above the step, a bracket secured within the box, a pair of levers fulcrumed in the bracket and having their free lower ends bent at right angles to said brackets and adapted to bear against the step, and the upper ends of the levers bent at right angles to the bracket and made to cross at a point above the bracket and bear at their free extremities against the sliding block, substantially as set forth.

7. A ladder composed of a series of boxes having open faces and an inwardly-projecting flange at each end of the open face of each box, strips on the end plates of the box, a step in each box beneath said flanges and strips, a stop to limit the forward movement of the step, a sliding block provided with hollow boxes adapted to slide on said strips, and levers fulcrumed in the box and bearing at their free ends upon the steps and sliding block, respectively, substantially as set forth.

8. A ladder composed of a series of boxes, a step in each box, a stop to limit the forward movement of said step, a sliding block having hollow blocks fixed thereto, projecting pads secured to said hollow blocks and adapted to slide upon bearings above the step, and levers fulcrumed in the box and bearing at their respective ends against the step and sliding block, substantially as set forth.

9. The combination, with a box adapted to be set into the wall of a building and having a sliding step, of a sliding block and intermediate connections, whereby a movement imparted in one direction either to the step or block moves the other of said parts in the opposite direction.

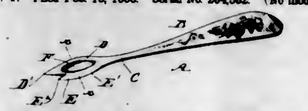
10. The combination, with a building, of a series of boxes secured in the walls thereof and a sliding step in each box, substantially as set forth.

11. The combination, with a building, of a series of boxes secured in the walls thereof at suitable intervals, a sliding step in each box, a sliding block mounted in the box above the step, and levers fulcrumed in the box and bearing upon the sliding block and step, respectively, substantially as set forth.

12. The combination, with a building, of a series of boxes secured in the walls thereof, a sliding step in each box, a sliding block mounted in the box above the step, and mechanism for operating said step and block to conceal the working parts of the device, or adapt the same for use, as desired, substantially as and for the purpose set forth.

13. The combination, with a building, of a series of boxes secured in a wall thereof, a sliding step in each box, and a bell connected with one of said steps, whereby when the step is moved the bell is sounded.

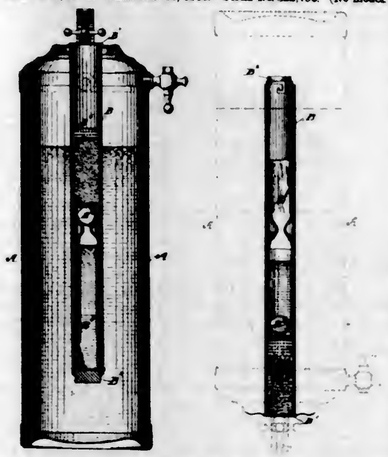
381,657. GRAPE-SEED EXTRACTOR. SARAH E. TOUCEY, New York, N. Y. Filed Feb. 18, 1888. Serial No. 264,532. (No model.)



Claim.—1. A grape-seed extractor consisting of a handle, a flat-pointed pick having a groove in its upper face, and a lateral cutting-blade, substantially as described.

2. A grape-seed extractor consisting of a handle, a flat pick having a sharpened point on its end in line with the handle and a groove in its top face, and a cutting-blade projecting laterally from the pick, and its point forking out therefrom a short distance within the point of the pick, substantially as described.

381,658. CHEMICAL FIRE-EXTINGUISHER. THOMAS G. TURNER, New York, N. Y. Filed Dec. 27, 1886. Serial No. 222,730. (No model.)



Claim.—1. The combination, with the exterior receptacle, and the interior receptacle closed at its upper and open at its lower end of the perforated vessel or tube placed in the upper, and the acid-containing vessel in the lower, portion of the interior receptacle, and the valve normally closing said acid-containing vessel, substantially as and for the purpose described.

2. The combination, with the exterior receptacle, and the interior receptacle closed at its upper and open at its lower end, which terminates a short distance from the bottom of the exterior receptacle, of the gas-generating ingredients placed in said interior receptacle, and the flexible cap placed over the open end thereof, substantially as set forth.

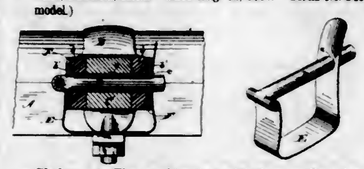
3. The herein shown and described fire-extinguisher, composed of the exterior receptacle having an aperture in its upper end, the interior receptacle provided with a flanged cover which overlaps and closes said aperture, and having its lower, end open and extended to within a short distance of the bottom of the exterior receptacle, the perforated vessel located in the upper, and the vessel for the acid in the lower, portion of the interior receptacle, the valve normally closing the acid-vessel, and the flexible cap placed over the open end of the interior receptacle, substantially as and for the purpose described.

4. A fire-extinguisher composed of the exterior receptacle for holding the extinguishing-fluid, the inner vessel, the cap normally closing the inner vessel for excluding the surrounding fluid therefrom, and receptacles for the gas-generating ingredients arranged at different levels in said inner vessel, the lower receptacle having an opening in its top and the upper receptacle being perforated, whereby the ingredients are caused to combine by inverting the apparatus for generating the gas, which, moving the cover and being liberated, is conveyed through said fluid to the top thereof by said inner vessel, substantially as and for the purpose described.

5. The combination, with the exterior receptacle for holding the extinguishing-fluid, of the interior receptacle, the cap normally closing said interior receptacle, from which the extinguishing-fluid is at all times excluded, and receptacles for the gas-generating ingredients confined in said interior receptacle at different levels, the lower receptacle having an opening in its top and the upper receptacle being perforated, whereby the ingredients are caused to combine upon inverting the apparatus, the gas being conveyed through the fluid without commingling therewith to the top, where it acts as a piston to expel the fluid, substantially as set forth.

6. The combination, with the exterior receptacle, of the interior receptacle, the cap normally closing said interior receptacle, from which the extinguishing-fluid is at all times excluded, removably connected with the top and extending to within a short distance of the bottom of said exterior receptacle, and receptacles for the gas-generating ingredients placed in said interior receptacle at different levels, the lower receptacle having an opening in its top and the upper receptacle being perforated, whereby the ingredients are caused to combine upon inverting the apparatus for making the gas which is conveyed through to the top of the extinguishing-fluid without commingling therewith, substantially as and for the purpose described.

381,659. THILL COUPLING-PIN. JOHN E. VAIL and JAMES B. VAIL, Fairfield, Mich. Filed Aug. 12, 1887. Serial No. 246,795. (No model.)



Claim.—1. The combination, with the coupling-pin, of the U-shaped spring locking-shackle hinged at the end of one of its arms to the head of the coupling-pin D, provided with an aperture in its free arm adapted to receive the free end of the pin, substantially as shown and described.

2. The combination, with the coupling-pin D, having the T-shaped head, of the U-shaped spring locking-shackle E, having the end of one of its arms bifurcated and bent around the T-shaped head, so as to hinge the shackle to said head, and provided in its free arm with an aperture, *c*, adapted to receive the free end of the pin, and an outwardly-inclined extension projecting beyond said aperture, substantially as shown and described.

3. The clip B, having projecting lugs or ears *b b*, provided with apertures *b' b'*, and the thill-shank C, having the aperture *c*, in combination with the coupling-pin D, having the U-shaped spring locking-shackle E, hinged at the end of one of its arms to the head of the pin, and provided in its free arm with an aperture, *c*, adapted to receive the free end of the pin, substantially as shown and described.

381,660. WATER-CLOSET. FRANK A. WELLS, Chicago, Ill., assignor of one-third to the H. O. Nelson Manufacturing Company, St. Louis, Mo. Filed Oct. 15, 1885. Serial No. 179,931. (No model.)



Claim.—1. In combination with the hopper, the siphon communicating with it at the bottom and having both its ascending and its descending limbs disposed adjacent to the hopper, substantially as set forth.

2. In combination with the hopper, the siphon by which it is evacuated and the trap between the siphon and the soil-pipe, both the ascending and the descending branches of both the siphon and the trap being disposed adjacent to the hopper.

3. In combination with the hopper, the siphon formed integrally therewith, both the ascending and the descending portion of the discharging-duct being adjacent to the hopper-chamber, substantially as set forth.

4. In combination with the hopper, the siphon and the trap between it and the soil-pipe, both formed integrally with the hopper, both the ascending and the descending branches of the siphon and the trap being disposed adjacent to the hopper-chamber, substantially as set forth.

5. In combination with the hopper having a central discharge-

mouth, the siphon communicating with it at such discharge-mouth, and having both its ascending and descending limbs disposed adjacent to the hopper, substantially as set forth.

6. In combination with the hopper having a central discharge-mouth, the siphon communicating with it at such discharge-month, and the trap between the siphon and the soil-pipe, all the ascending and the descending branches of both the siphon and the trap being disposed adjacent to the hopper, substantially as set forth.

7. In combination, substantially as set forth, the hopper, siphon, and trap formed integrally, the hopper having a central discharge, the ascending and descending ducts of both the siphon and the trap being disposed adjacent to the hopper, and the discharge branch of the trap being produced downward and curved underneath the center of the hopper to form a central supporting-stem for the entire integral structure, substantially as set forth.

381,661. **WHEELED COASTER.** ORRIN A. WHEELER, Springfield, Mo. Filed Aug. 3, 1887. Serial No. 246,043. (No model.)



Claim.—1. A wheel-coaster comprising a platform, front and rear axles provided with rollers or wheels centrally pivoted to said platform, and opposite bent springs arranged to cross each other, loosely connected to each end of said axles and to the platform, substantially as specified.

2. A wheel-coaster comprising a platform, front and rear axles provided with wheels and centrally pivoted to said platform by an inwardly-disposed spring, and opposite bent springs arranged to cross each other, loosely connected to each of the ends of said axle and projecting toward and secured to the ends of the platform, substantially as specified.

3. A wheel-coaster comprising a platform, front and rear axles provided with wheels, an inwardly bent and disposed spring tightly connected to the center of the axle, forming a pivotal bearing therefor, angularly-disposed U-shaped shackles connected to the ends of the axles, and opposite bent springs pivoted to the shackles and arranged to cross each other and forwardly projected toward the end of the platform and connected thereto, substantially as specified.

4. A wheeled coaster comprising axles and a platform, the former pivotally connected to said platform, and opposite-semi-concavo-convex springs pivotally connected with the axles and arranged to cross each other and rigidly connected with the platform, substantially as and for the purpose set forth.

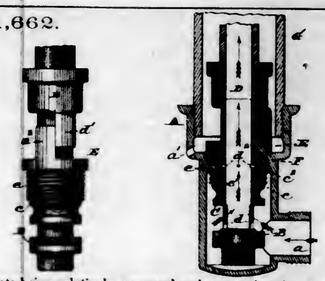
5. In combination with the platform and axles of a wheel-coaster, a casting, as G, mounted on the front axle thereof, a casting, as F, pivoted to the casting G and provided with bearings for a transverse bar, springs connecting said bar with the platform, and a pin for locking the castings together, substantially as specified.

6. The combination of the platform A and axles B, pivoted thereto by means of the springs D^3 and having their ends loosely connected with said platform by means of the springs C^3, substantially as specified.

7. The concavo-convex bent springs D^3 C^3, connected, as at D C, to the axles B B', and bent as at C^3 D^3, and connected to the platform, as at C^4 D^4, substantially as specified.

8. The combination, with the front axle of a wheel-coaster, of a casting, G, having the plate G', arms G^2, and bearings G^3 for said axle, and of the casting F, pivoted, as at F^4, to said casting G, and formed with the arms F^3, plate F', collars F^5, a bar, F^6, and the springs C^3 D^3, and the pin F^6, for locking said casting together, substantially as specified.

381,662. **HYDRANT-VALVE.** OSCAR R. WILSON, Collinsville, Ill. Filed Dec. 12, 1887. Serial No. 257,571. (No model.)



Claim.—1. The combination of the valve-chamber A, having the inlet *a*, as described, the valve within said chamber, the valve-seat C, having the stop *c* and screw-threaded at *c'*, the packing-ring F above the upper end of the valve, the valve-chamber cap E, having the lug e^3 and screw-threaded to fit the valve-seat and the valve-chamber, and the valve-stem D, constructed as described and provided with the lug *d'*, said several parts being relatively arranged and proportioned substantially as and for the purpose described.

2. The combination, in a hydrant-valve, of the valve B, the valve-seat C, having the stop *c*, the valve-chamber, the valve-chamber cap E, having the lug *e*, and the hollow valve-stem D, having the openings *d* at its lower end to admit the water and provided with the lug *d'*, all said parts being relatively arranged and proportioned and combined together as and for the purposes described.

381,663. **CONVERTIBLE VEHICLE.** WILLIAM H. YATES, Auburn, N. Y., assignor of one-third to Samuel B. Spiller, same place. Filed Feb. 21, 1888. Serial No. 264,851. (No model.)



Claim.—1. The runner-supported frame carrying a child's-carriage body supported on springs, in combination with the wheels pivoted to the arms of overhanging cranked rock-shafts, substantially as and for the purposes stated.

2. The runner-supported frame carrying a child's-carriage body supported on springs, two cranked rock-shafts supported in bearings under the frame, and projecting on either side beyond the same, and carrying on their outer ends arms to which wheels are pivoted, the whole being so arranged and combined that by the partial rotation of the rock-shafts in one direction the whole will be supported and carried on the wheels, and by rotating in the opposite direction the whole will be supported on the runners, substantially as shown and described.

3. The runner-supported frame carrying a child's-carriage body supported on springs, in combination with cranked rock-shafts having arms carrying wheels, the whole being so arranged and combined that the arms with the wheels will swing backward and upward to bring the runners into working position, and downward and forward to bring the wheels in working position, substantially as described and shown.

4. The runner-supported frame carrying a child's-carriage body supported on springs, the cranked rock-shafts having arms at their outer ends, to which wheels are pivoted, said rock-shafts being supported by bearings, and having a link-piece connecting the cranked parts of said shafts together above their axis of rotation, substantially in the manner described and shown.

5. The runner-supported frame carrying a child's-carriage body supported on springs, the cranked rock-shafts, the link-piece M, connecting the same together, in combination with the locking mechanism for holding the same in the several adjusted positions, substantially as and for the purpose stated.

6. The combination of the connecting-piece P with the arms of the rear axles, the arch-piece H, and the catch K, as and for the purpose stated.

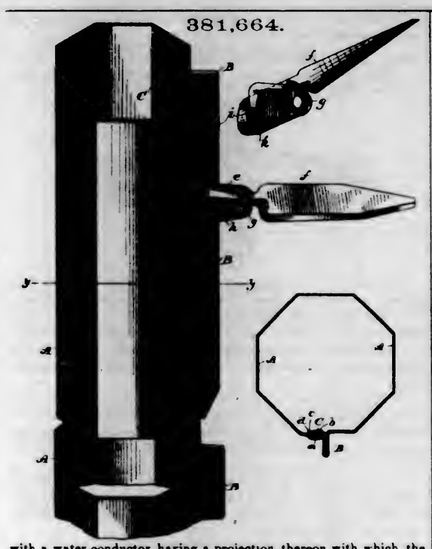
381,664. **WATER-CONDUCTOR.** JOHN W. ABRAHAMS, Allegheny, Pa., assignor to John Davis, same place. Filed June 23, 1887. Serial No. 242,200. (No model.)

Claim.—1. A water-conductor having an expansible projection, in combination with a seam adjacent to and folded against one side of said projection, whereby the seam is protected, substantially as described.

2. A support for water-conductors, provided with a fixed jaw and a pivoted movable jaw, the adjacent surfaces of said jaws being inclined in opposite directions, substantially as described.

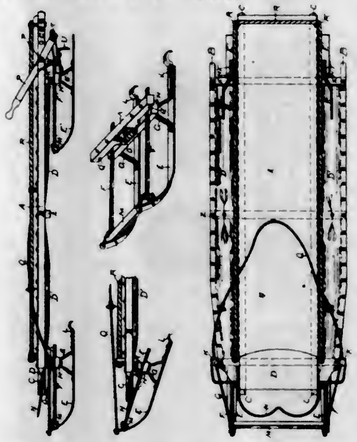
3. A support for water-conductors, provided with a fixed jaw, a pivoted movable jaw, and a body portion or shank, in combination

381,664.



with a water-conductor having a projection thereon with which the support engages, substantially as described.

381,665. **SLED.** SAMUEL L. ALLEN, Cincinnatus, N. Y. Filed Dec. 7, 1887. Serial No. 257,251. (No model.)



Claim.—1. A sled provided with a bob hinged on a horizontal pivot and having claws rigidly secured to the rear of the runners, whereby when the said bob is raised to a more or less vertical position the said claws act as a brake, substantially as described.

2. A sled having a seat provided with a trough along the outer edge of said seat, arranged substantially as and for the purposes described.

3. In a sled, the combination of a king-bolt, a butt-hinge, and the cross-beach of a sled-bob, whereby the bob is free to turn on both a vertical and horizontal axis, substantially as described.

4. A sled provided with a one-piece double foot-rest, one part of which, *n*, is directly in front of the user and the other part, *n'*, at the sides, whereby two persons may make use of the same at the same time, substantially as described.

5. A sled-runner provided with a rearwardly-projecting claw rigidly secured thereto, as and for the purposes substantially as described.

6. A brake consisting of a claw hinged to a sled and provided with a slotted guide, in combination with a pivoted hand-lever provided with a spring and a rod or pin, whereby the rod or pin slides in the slotted guide, substantially as and for the purposes described.

7. In a sled, the combination of a seat provided along its outer edges with a hand-rail and a trough projecting beyond the hand-rail, whereby the hand-rail is protected, substantially as described.

8. In a sled, the combination of the cross-piece K', the cross-bench H', provided with the top piece, F', and the bolt S', whereby the bolt is free to oscillate, substantially as described.

9. A vertically and horizontally turning bob provided with a locking device whereby the bob is either held rigidly or is free to turn, substantially as described.

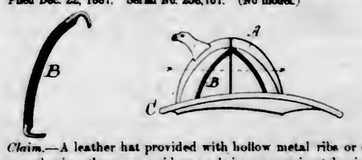
10. A sled provided with two bobs, the front bob having the ends of its cross-piece or cross-bench grooved, in combination with the steering-rope, substantially as described.

11. A sled provided with a front horizontally and vertically turning bob having the outer ends of its cross-pieces or cross-benches grooved, in combination with a steering-rope, whereby the steering-rope may be used to steer the front bob or to operate it as a brake, substantially as described.

12. A bob-sled provided with rope-steering grooves situated in or back of the same vertical plane as the axis of the horizontal hinge-bolt of the sled and in the same horizontal plane as the points of attachment of the rope to the runners, substantially as described.

13. A sled having its side bar and runner of struck-up metal provided with a connecting-piece, F^6, riveted thereto, substantially as described.

381,666. **HAT FOR FIREMEN.** THOMAS ANDERSON, Brooklyn, N. Y. Filed Dec. 22, 1887. Serial No. 258,767. (No model.)

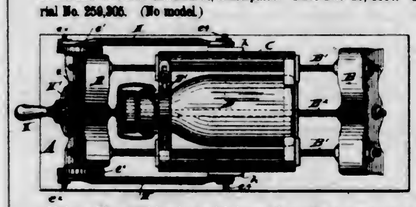


Claim.—A leather hat provided with hollow metal ribs or cones for strengthening the same, said cones being approximately circular in cross-section and attached to the body of the hat, substantially as set forth.

381,667. **CONCRETE PAVEMENT.** GEORGE A. BAYARD, Bellefonte, Pa. Filed Dec. 28, 1887. Serial No. 259,258. (No specimens.)

Claim.—The improved concrete pavement herein described, consisting of a foundation-layer of coarse broken stone and ashes or pebbles, a second layer of broken stone, cinders, pebbles, and tar, a third layer of sand, small pebbles, and coal-tar, resin, and unslaked lime, and a surface-coating of cement and sand, as described and specified.

381,668. **CHURN.** WILLIAM BECHTOLD, New York, N. Y., assignor of one-half to David Eisenhardt, same place. Filed Dec. 29, 1887. Serial No. 259,305. (No model.)

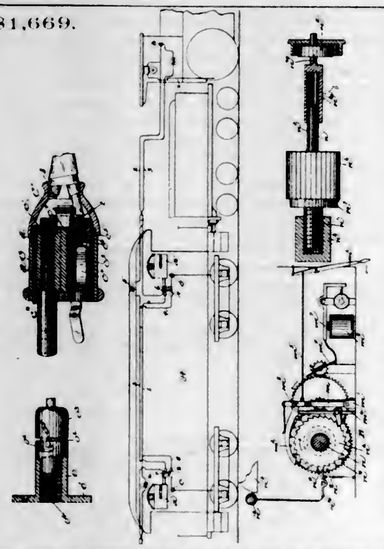


Claim.—The combination, with inwardly-inclined standards, parallel horizontal curved rods secured in said standards at opposite ends near their tops, a third curved horizontal rod secured in the standards below and between the parallel rods, and a carrier reciprocating upon said rods provided with recesses at its ends of unequal depth, of a cream-receptacle held in said carrier and resting in said recesses, a transverse shaft journaled in one standard provided with a disk at each end carrying a wrist-pin, connecting-bars pivoted to the outer sides of the carrier and to said wrist-pins, and means, substantially as described, for rotating said shaft, as set forth.

381,669. **COMBINED STATION-INDICATOR AND SIGNALING APPARATUS FOR RAILWAY-TRAINS.** JOHN H. BICKFORD, Salem, Mass. Filed Nov. 26, 1886. Serial No. 219,946. (No model.)

Claim.—1. A signaling system for railway-trains, which consists of an electric circuit and station-indicators, substantially as described therein, and a circuit-controller for operating the station-indicators, combined with an audible alarm located upon the engine and connected in a ground branch or terminal joined to the main circuit, and a circuit-controller located within or upon the car, also connected in a

381,669.



ground branch or terminal joined to the main line for operating the audible alarm, substantially as described.

2. In a signaling system for railway-trains, a main electric circuit and station-indicators placed within the cars and connected with the circuit, and a circuit-controller, also connected with the circuit, for operating the station-indicators, combined with an audible alarm, also connected with the circuit, but responsive to current changes of different character from that employed to operate the station-indicators, and circuit-changers for operating the audible alarm, substantially as described.

3. In a signaling system for railway-trains, an electric circuit composed of two battery-lines, as described, and two indicators located within a single car and placed one in each line, combined with a switch for cutting out the rearmost indicator of the car, substantially as described.

4. In a signaling system for railway-trains, two station-indicators in each car and circuit-controllers therefor connected in a round circuit, an audible alarm located at or upon the engine, and circuit-controllers therefor included in ground terminals or branches leading from the round circuit, combined with couplings for connecting the lines of one car with the corresponding lines of the next car to continue the circuit, all substantially as described.

5. In an electric circuit having ground-terminals, as described, two station-indicators and a circuit-controller therefor, an audible alarm and a circuit-controller therefor, and switches for simultaneously cutting out the rearmost indicator and ground-terminal, combined with couplings for connecting the lines with corresponding lines to continue the circuit, substantially as described.

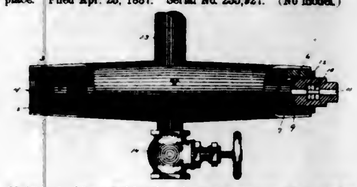
6. A coupling device for connecting electric circuits, which consists of two like halves or portions, each consisting of an insulating-block, C, having metal sockets c' c^2, a pin, c^3, fitted into one of the sockets and contact-springs secured within the other socket, the terminals of the lines making electrical connection through the sockets, substantially as described.

7. A coupling device for connecting electric circuits, which consists of two like halves or portions, each consisting of an insulating-block, C, having metal sockets c' c^2, a pin, c^3, fitted into one of the sockets and contact-springs secured within the other socket, and a contact spring or strip, c^4, substantially as described.

8. A coupling device for connecting electric circuits, which consists of two like halves or portions, each consisting of an insulating-block, C, having metal sockets c' c^2, a pin, c^3, having the conical point against which one terminal of the wire bears, said pin being fitted into one of the sockets and contact-springs secured within the other socket, and a conical-pointed screw, c^4, against which another terminal of the wire bears, substantially as described.

9. In an electric circuit, the bell B, consisting of motor and laterally-movable winding-shaft for winding it, the ratchet-toothed drum having the smooth-faced hub a^2, the pawl for rotating the shaft to wind the motor, combined with an electro-magnet for releasing the motor, and a striking-lever operated by the motor when released, substantially as described.

381,670. STEAM-TRAP. FREDERICK G. BOTSFORD, Erie, Pa., assignor, by mesne assignments, to the Erie Car Heating Company, same place. Filed Apr. 23, 1887. Serial No. 235,927. (No model.)

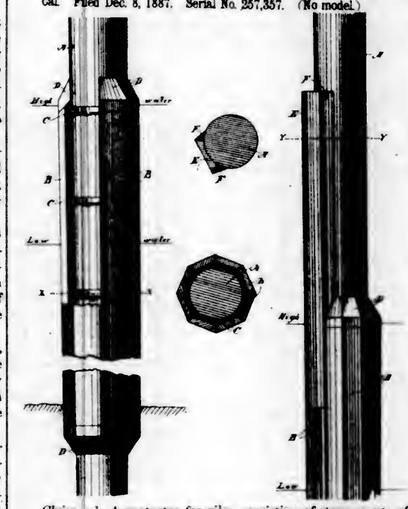


Claim.—1. The combination, in a steam-trap, of a tubular body adapted to retain steam and water, having an expansion-tube secured in one end thereof, with an annular or hollow valve-seat secured in the opposite end of said body, against which the open end of said expansion-tube operates, so that the air will circulate entirely through said expansion-tube and valve-seat, substantially as and for the purpose set forth.

2. The combination, in a steam-trap, of a hollow tubular body having a bushing, 2, in one end thereof, into which bushing an expansion-pipe, 5, is secured, with a bushing, 6, having guides 7 therein, and the adjustable valve-plug 8, substantially as and for the purpose set forth.

3. The combination, in a steam-trap for car-heating, of a hollow tubular body having a tubular expansion-pipe, 5, secured therein, with the hollow adjustable valve-plug 8, constructed substantially as shown, and for the purpose set forth.

381,671. PROTECTING PILES. GEORGE BROWN, San Francisco, Cal. Filed Dec. 8, 1887. Serial No. 257,357. (No model.)

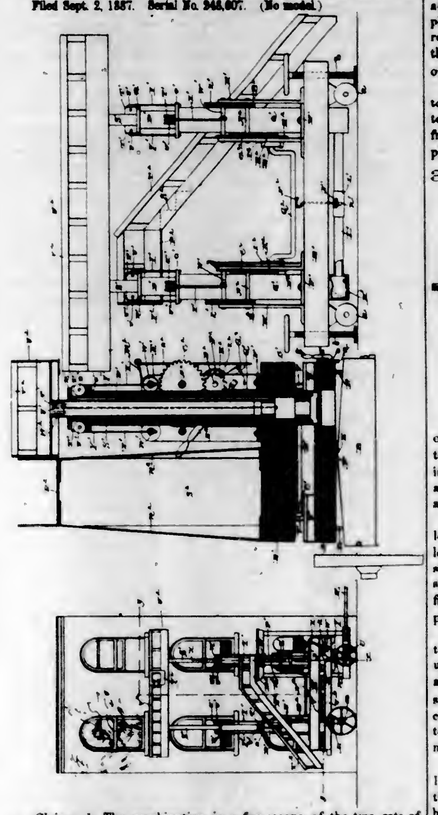


Claim.—1. A protector for piles, consisting of staves made of resisting or prepared wood, said staves being jointed at their edges and supported at a short distance from the pile by blocks secured around the pile at intervals, in combination with a filling of adhesive or protecting material poured into the spaces between the staves and the pile, substantially as herein described.

2. The staves made of wood having their edges jointed, the supporting-blocks secured around the pile at intervals and so disposed that the inner faces of the staves are secured to the support by them, and an intermediate filling of adhesive or protecting material, in combination with the beveled end blocks fitting and forming the continuation of the staves and closing the ends thereto, substantially as herein described.

3. The staves jointed and supported upon the series of blocks secured to the pile so that a space is left between the pile and the stave, and the filling of adhesive or protecting material between the staves and the pile, in combination with the fender or extension with the angular side piece, substantially as herein described.

381,672. PORTABLE FIRE-ESCAPE. WILLIAM BROWN, Duncannon, assignor of one-half to Henry Wilson Shoffsley, Philadelphia, Pa. Filed Sept. 2, 1887. Serial No. 248,607. (No model.)



Claim.—1. The combination, in a fire-escape, of the two sets of telescopic or intersliding tubes, the cage carried thereby, the gearing to operate the said tubes and thereby raise or lower the cage, and the single-crank shaft to impart motion to the said gearing, whereby both sets of telescopic tubes will be raised or lowered at the same rate of speed, and thereby prevented from binding, substantially as described.

2. The combination of the intersliding or telescopic tubes G', F', and S', the shafts W' on opposite sides of the tube G', the gear-wheels of similar size secured on the said shafts and meshing with each other, the elevating ropes or chains X', attached to the lower end of the tube F', passing over guiding-sheaves on opposite sides of the tube G' on the upper end thereof and having their outer ends attached to the said shafts or drums W' and adapted to be wound thereon when the said shafts are rotated, and means, substantially as set forth, to rotate the said shafts, substantially as described.

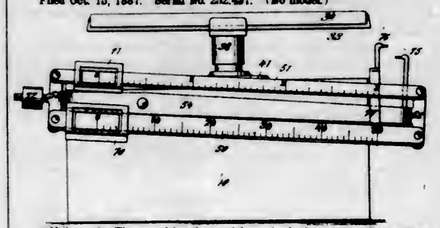
3. The combination, in a fire-escape, of the intersliding or telescopic tubes, the lower one of which is provided with an inlet-opening valve, the interior tubes fitting snugly in the exterior or lower tubes, the tube I', connecting the lower ends of the exterior tubes and having the opening K', and means, substantially as set forth, to open or close the said opening, substantially as described.

4. The combination, in a fire-escape, of the portable base having the two sets of valved intersliding or telescopic tubes, the cage carried by the said tubes, mechanism to operate the tubes, and thereby raise and lower the cage, the tube I', connecting the lower ends of the telescopic tubes and having the opening K', the sleeve fitted snugly on the said tubes, having the opening adapted to register with the opening K', and the arm M', and the rod N', attached to the said arm and extending up through an opening in the portable base, for the purpose set forth, substantially as described.

5. The combination, in a portable fire-escape, of the platform, the axles on which the platform is centrally hinged or pivoted, and thereby adapted to tilt laterally, and the rock-shaft having the eccentric cam adapted to tilt the platform A, the base B', hinged or pivoted on the platform A and adapted to tilt or incline longitudinally thereon, the rock-shaft W, having the eccentric cams to raise or lower one end of the supporting-base, and the interslding or telescopic tubes supported on the base and carrying the cage, substantially as described.

6. The combination, in a portable fire-escape, of the base adapted to be adjusted to a horizontal position and carrying the interslding or telescopic tubes, the cage attached thereto, and the plumb swinging freely from an elevated support, near one corner of the base, for the purpose set forth, substantially as described.

381,673. COUNTER-SCALE. JOHN B. BUTTERWORTH, Portland, Oreg. Filed Oct. 15, 1887. Serial No. 252,437. (No model.)



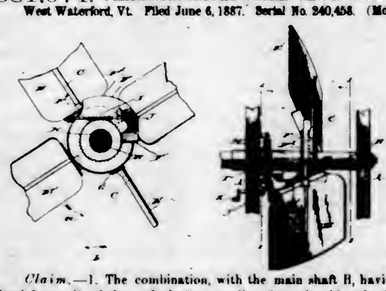
Claim.—1. The combination, with an inclosing-case, of a system of scale-levers mounted therein, a standard extending upward from the scale-levers and through the cover of the case, a sleeve surrounding the standard and extending downward from the plate-frame, and a second sleeve connected to the case-cover and extending upward about the first-named sleeve, substantially as described.

2. The combination, with an inclosing-case, of a system of scale-levers mounted therein, a standard extending upward from the scale-levers and through the cover of the case, a sleeve surrounding the standard and extending downward from the plate-frame, a second sleeve connected to the case-cover and extending upward about the first-named sleeve, and a third sleeve extending downward from the plate-frame and about the second sleeve, substantially as described.

3. The combination, with an inclosing-case, of a system of sectional levers, a spider supported by said levers and formed with an upwardly-extending standard, a lug arranged at one side of the standard, a sleeve surrounding the standard and engaging said lug, a plate-supporting frame carried by the sleeve, a sleeve connected to the case-cover and surrounding the first-named sleeve, and a downwardly-extending sleeve carried by the plate-frame and surrounding the first-named sleeve, substantially as described.

4. The combination, with a frame, 11, formed with standards 12, 17, and 57, of a lever, 15, having a cross-bar, 14, that is supported by the standards 12, a lever, 21, that is supported by loops that are upheld by the standards 17, a loop, 24, connecting the levers 15 and 21, a beam, 54, carrying the weight-beams, a bar, 55, to which the beam 54 is rigidly connected, said bar being supported by the standards 57, an arm, 60, extending outward from the bar 51, a loop connecting the arm 60 and the lever 15, a spider supported by the levers 15 and 21, and a plate supported by the spider, substantially as described.

381,674. FEATHERING-PADDLE WHEEL. AMOS H. CARPENTER, West Waterford, Vt. Filed June 6, 1887. Serial No. 240,458. (Model.)



Claim.—1. The combination, with the main shaft B, having a fixed frame, D, of the rock-shafts extending through said main shaft, having bearings also in the said frame, and provided with blades at their opposite ends at right angles to each other, the sleeve loose on the main shaft and having a cam-track, F, projecting beyond the periphery of the frame D, provided with a curved approach, F^2, to engage the inner end of the blade, and a straight portion, F^3, against

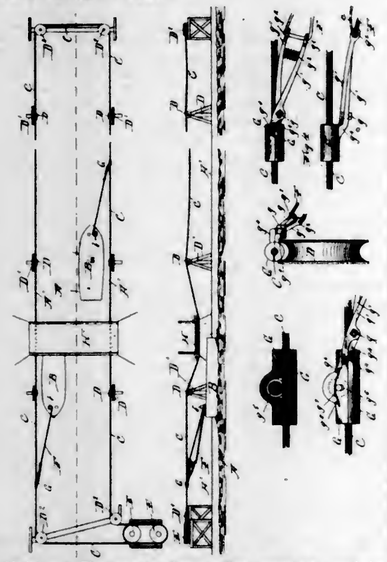
which the blade is held flatwise, and gearing for operating the said sleeve, substantially as set forth.

2. The combination, with the main shaft having a fixed frame, D, of the rock-shafts extending through the said shaft, having bearings also in said frame and provided with blades at right angles to each other, the stops G on the inner ends of the blades and engaging the outer face of the said frame, the rotary sleeve H, loose upon the main shaft, and having operating-gearing at its outer end and a cam-track, F, on its inner end projecting beyond the frame D, having a straight portion, F^2, to engage the faces of the blades at their inner ends, and the curved approach F in the path of the inner ends of the advancing blades, substantially as set forth.

3. In a propeller, the blade E, having the rib E^2 along its inner end at the front face thereof, and the stop G, projecting below the inner edge of the blade from the opposite or rear face thereof, substantially as set forth.

4. The combination, with the main shaft, and the rock-shaft extending therethrough and having blades at right angles to each other at their ends, of the rotary sleeve H, loose on the shaft, the cam-track $F F' F^2$ at the inner end thereof to engage and guide the inner ends of the blades, the gear on the sleeve, and the worm-shaft for operating and locking said gear and sleeve, substantially as set forth.

381,675. SYSTEM AND APPARATUS FOR PROPELLING CANAL-BOATS. CHRISTIAN F. CASSLEMAN, Chicago, Ill. Filed Nov. 28, 1887. Serial No. 256,323. (No model.)



Claim.—1. The apparatus for propelling canal-boats, consisting of an endless cable with pulleys on which said cable travels journaled on suitable supports on the banks of the canal, grip devices suspended from and carried by said cable, and tow-lines connecting said grip devices with the canal-boats, said grip devices having jaws with longitudinal grooves to fit upon the cable, substantially as specified.

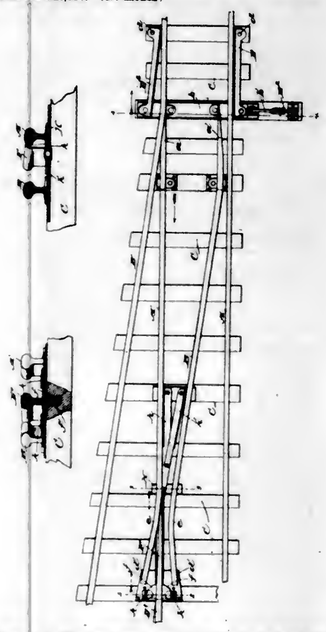
2. The apparatus for propelling canal-boats, consisting in the combination of an endless traveling cable, pivoted grip-jaws fitting upon and gripping the traveling cable and furnished with a pair of grip arms or levers, and a double tow-line passing in a loop through the eyes of said grip-arms, whereby the tension of the tow-line will close the jaws of the grip, said grip-jaws and lever being suspended from and carried by the traveling cable, substantially as specified.

3. The apparatus for operating canal-boats, consisting in an endless traveling cable and a grip suspended therefrom and carried thereby, consisting in jaws G G, fitting upon and gripping the cable, having arms $g' g'$, pivoted together and furnished with eyes g^3 g^3 and spring g^4, for opening the same, and a double tow-line, F, passing through the eyes of said grip-arms and connected at both ends to the snubbing-post of the canal-boat, substantially as specified.

4. The combination of an endless traveling cable, idler-pulleys over and under which said cable passes, fitting upon and gripping the cable, grip-jaws G G, grip-arms $g' g'$, pivoted together and having offsets g^4 g^4 to adapt said grip device to pass over and under said idler-pulleys, and a doubled tow-line connected to said grip-arms and attached to the boat, substantially as specified.

5. The apparatus for propelling canal-boats, consisting in an endless traveling cable, grip-jaws G G, fitting upon and gripping the cable, having pivoted arms $g' g'$, one of said grip-jaws being furnished with a transverse friction-roller and a spring for forcing said roller into engagement with the cable when the jaws are closed, and a tow-line connecting said grip-arms with the canal-boat, substantially as specified.

381,676. AUTOMATIC SWITCH AND FROG FOR RAILROADS. LAWRENCE W. CROMER and GEORGE GAVIN, Eureka, Nev., assignors to themselves and Fred M. Heitman, same place. Filed June 22, 1887. Serial No. 242,139. (No model.)



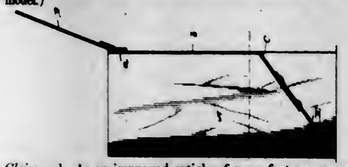
Claim.—1. The combination, with the inner and siding rails of a railway-track, of the switch-points $a a'$, pivoted to the ties of said track at one end, a transversely-sliding plate, b, adapted to receive the other end of said switch-points, and angle-bars D D^3, pivoted outside the main rails to said transverse plate and to a tie of the track, substantially as shown and described, and for the purposes herein set forth.

2. The combination, with the main and siding rails of a railway-track, switch-points pivoted to the ties at one end and to a plate, b, sliding transversely beneath the track at the other, angle-bars D D^3, pivoted outside the main rails to said transverse plate and to one of the ties, and a switch-lever, B^3, adapted to move with said plate, of an engine and tender provided with spring-actuated plungers adapted to engage said angle-bars, and means for operating said plungers, substantially as shown and described, and for the purposes herein set forth.

3. The combination, with the main and siding rails of a railway-track, of a frog-point, F, pivoted at the junction of the inner rails, angle-bars $h h'$, pivoted to the ties between the inner rails, the bar h pivoted to the wedge end of said point, and the bar h' pivoted to said bar h in front of said point, substantially as shown and described, whereby the frog-point is automatically operated by the flanged wheels of a passing train, as herein set forth.

4. The combination, with the main and siding rails of a railway-track, of a frog-point, F, pivoted at the junction of the inner rails, provided with attached ears f, a plate, d', secured to one of the ties and beneath the ears f and provided with guide-lugs k, angle-bars $h h'$, pivoted between the inner rails to one another and to the said frog-point, and a guide-plate, H, adapted to slide beneath the rails, secured to said angle-bars in front of the frog-point, substantially as herein shown and described, and for the purposes herein set forth.

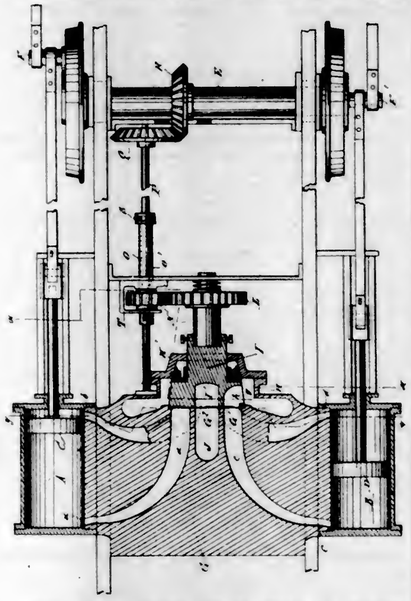
381,677. ENVELOPE-HOLDER. LUCIAN M. CULVER and WILLIAM F. SMITH, Kiowa, Kans. Filed Sept. 2, 1887. Serial No. 248,572. (No model.)



Claim.—1. As an improved article of manufacture, an envelope-holder consisting of a receptacle having a hinged cover, its front wall having a thumb-recess in its lower edge, the inclined floor having an interspace between its lower edge and the front wall of the receptacle, and the said bottom also having spring-strips with their free ends extending to the said front wall, substantially as specified.

2. A holder for envelopes and the like having its bottom inclined and provided with spring-strips extending to the front wall of the said holder, the said front wall notched, as described, so as to permit the contained articles to be withdrawn, substantially as specified.

381,678. VALVE-GEAR. JAMES DES BRISAY, Kamloops, British Columbia, Canada. Filed Aug. 2, 1887. Serial No. 245,923. (No model.)



Claim.—1. The combination, with the cylinders A B, the saddle G, provided on its inner end with the valve-seat G', and the ports $a b$ and $c d$, leading, respectively, from the said cylinders to the said seat, and the steam-chest H on the inner end of the saddle and provided with a steam-inlet and the cover H', of the rotary valve having a horizontal axis opposite exhaust-ports $e g$, leading from the face of the valve inward to the central exhaust-passage, and the opposite inlet-ports, $f h$, leading from the face of the valve to opposite points in its periphery and communicating with the steam-chest, substantially as set forth.

2. The combination, in a locomotive valve-gear, of the cylinders A B, the saddle G, having the valve-seat G', steam-chest H, ports $a b$ and $c d$, leading from opposite ends of the cylinders through the rear face of the saddle, the rotary valve I within the steam-chest, and having a rearward-extending horizontal axis provided with gear L, and having the ports $e g f h$, with the shaft P, parallel with the axis of the rotary valve and driven from the main drive-shaft, the slotted sleeve O, sliding on said shaft P and turning therewith, and the gear N, meshing with gear L, having a pin entering the slot in the sleeve, substantially as set forth.

3. In a valve-gear for locomotives, the rotary valve I, having a central recess, I', and partition I^3, the exhaust-ports leading from the face of the valve to said recess from opposite sides of the partition, and the inlet-ports leading from the periphery of the valve e through its face, substantially as set forth.

381,679. WINDMILL. JOEL DEVERAUX, Culbertson, Nebr., assignor to George S. Lord, same place. Filed Aug. 20, 1887. Serial No. 247,462. (No model.)



Claim.—1. The combination of the horizontal revoluble case D, having the mouth on one side, and the vane with the wind-wheel F, arranged eccentrically in the case, the axis of the said wheel being in line with the axis on which the case turns, substantially as described.

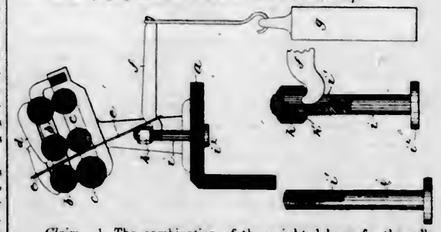
2. The combination of the horizontal revoluble case D, having the vane, the mouth on one side, the hinged door arranged on one side of the said mouth, the weight and connections to keep the same open against the force of the wind, and the wind-wheel F, arranged eccentrically in the said case, the axis of the said wheel being in line with the axis on which the case turns, substantially as described.

381,680. COMPOSITION FOR SOFTENING AND RENOVATING LEATHER. LEOPOLD C. DEWILLERS, Brooklyn, assignor of one-half to Paulin Floquet, New York, N. Y. Filed May 24, 1887. Serial No. 239,224. (No specimens.)

Claim.—The herein-described composition of matter for softening and renovating leather, which consists of soft water, salts of sorrel, castile-soap free from potash, oil, and ammonia, combined in substantially the proportions stated.

381,681. FULCRUM FOR THE WEIGHT-LEVERS FOR THE ROLLS OF SPINNING-FRAMES. WILLIAM DRISCOLL and JAMES F. BOYLEN, Taunton, assignors of one-half to George Draper & Sons, Hopedale, Mass. Filed Jan. 7, 1888. Serial No. 260,061. (No model.)

Brief.—The object of the invention is to produce a fulcrum-piece of inexpensive construction that is simple, durable, and easily adjustable for the purpose of bringing the lever into the proper position without disengaging the lever from the fulcrum or stirrup.

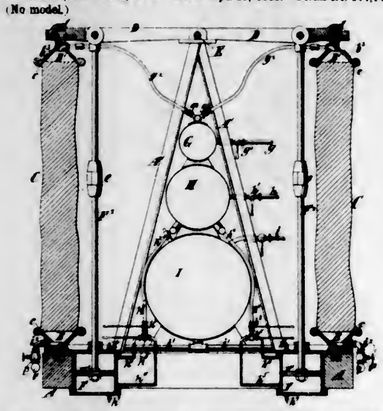


Claim.—1. The combination of the weighted lever for the rolls of a spinning-frame with a support connected with the top board and a fulcrum longitudinally adjustable with relation to said support, substantially as and for the purpose described.

2. The combination of a supporting-bolt threaded at one end and provided with a recess in said threaded portion with a nut co-operat-

ing with said threaded portion and provided with an annular V-shaped projection at one end, substantially as and for the purpose described.

381,682. APPARATUS FOR IMPREGNATING WOOD. PLIMMON H. DUDLEY, New York, N. Y. Filed Sept. 15, 1885. Serial No. 177,147. (No model.)



Claim.—1. In an apparatus for impregnating timber, the combination, with two sockets or heads to receive the ends of the stick, of a motor having a cylinder and piston, and connections whereby one socket or head is operated by the motor to hold the sockets or heads in fluid-tight contact with the ends of the stick, and pipes connected with the sockets or heads, whereby fluid may be supplied at one end of the stick and exhaustion applied at the other end thereof, and a pipe connected with the motor-cylinder for supplying motive fluid thereto, substantially as herein described.

2. The combination, with sockets or heads having conical faces to receive the ends of sticks of different sizes, of a lever carrying one socket or head, a pressure-cylinder and a piston connected with said lever for forcing the sockets or heads in fluid-tight contact with the ends of the stick, and pipes connected with the sockets or heads, whereby fluid and exhaustion may be applied to opposite ends of the stick, substantially as herein described.

3. The combination, with a number of pairs of sockets or heads to receive the ends of sticks, and motors and connections for forcing the sockets or heads upon the ends of the sticks, of a frame or carriage supporting the aforesaid parts, a vacuum-cylinder, an air-pressure cylinder, and a fluid-reservoir upon said frame or carriage, and pipes and valves whereby air may be supplied to the several motors, and whereby fluid may be supplied to one socket or head of each pair and exhaustion applied to the other socket or head of each pair, substantially as herein described.

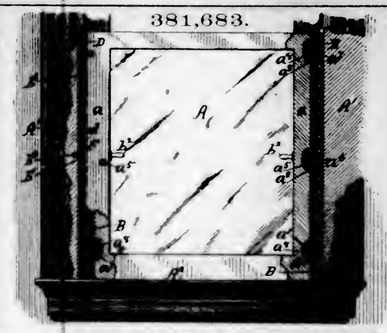
4. The combination, with the base-frame A and rows of sockets or heads B at opposite sides thereof, of the upper sockets or heads, B', and their carrying-levers D, a center frame, A', supporting the fulcrums for said levers, motor cylinders and pistons F F', and rods F³, connecting said pistons and levers, the fluid-reservoir I, and pipes and valves connecting it with the lower sockets or heads, the pressure-cylinder H, and pipes and valves connecting it with the motor-cylinders, and the vacuum-cylinder G, and pipes and valves connecting it with the upper sockets or heads, B', substantially as herein described.

381,683. WINDOW. EDWARD E. EDGERTON and ROBERT METCALF, Chicago, Ill. Filed Oct. 29, 1887. Serial No. 253,715. (No model.)

Claim.—1. The combination, with a window, of the clamping plate or plates B, provided with the angular lugs C, the central aperture, a^4, and the curved slots a^7, the spindle a^8, the cam-roller a^6, and the bearing-pins a^9, engaging with said curved slots, whereby said plate is adjustably retained in proper position relative to the window and inclosing-frame, substantially as and for the purpose set forth.

2. In a window, the combination, with the stiles, of the clamping plate or plates B, adjustably inserted in said stiles and provided with the angular wedging-lugs C and the aperture a^4, the spindle or spindles a^8, having a cam-roller mounted thereon and inserted in said aperture, the pins a^9, and the grooved jambs recessed to receive the wedging-lugs, whereby said plate may be made to engage with or disengage from the jamb, substantially as and for the purpose set forth.

3. In a window, the combination, with the stiles, of the clamping plate or plates B, provided with the central aperture, a^4, and having the curved slots a^7 near each end, the cam-roller a^6, working in the



opening a^4, and the riding pins a^9, rigidly inserted in said stiles and loosely engaging with said slots, substantially as and for the purpose set forth.

4. The combination, with a window and the inclosing-jamb provided with a longitudinal groove, of a clamping-plate provided with the angular wedging-lugs C, the aperture a^4, and the curved slots a^7, the riding or bearing pins a^9, adapted to engage with said slots, and the spindle having a cam-roller mounted eccentrically thereon and inserted in said aperture a^4, whereby the rotation of the same adjusts said plate with reference to the stile of the window and the inclosing-jamb, substantially as and for the purpose set forth.

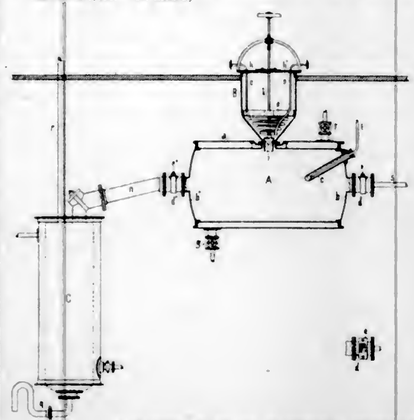
5. The combination, with a window, of the sleeve or sleeves b', inserted in the stiles of said window and projecting into the sash-cord groove in the jamb, the cord-plate F, loosely engaging with the inner projecting end of said sleeve, and the sash-cord secured to the upper part of said plate, and the locking-bolt b^3, moving in said sleeve or sleeves and forming a pivot on which the window may be turned, as described, and for the purpose set forth

381,684. WIRE FASTENER FOR BOXES. JOSEPH ESSELBACH, Dresden, Saxony, Germany. Filed Dec. 17, 1886. Serial No. 221,837. (Model.)



Claim.—The combination of a box having sides *b* with spiral wire *a*, the edge of which is embedded in sides *b* and the upper side of which is flattened out and is flush with such sides, substantially as described.

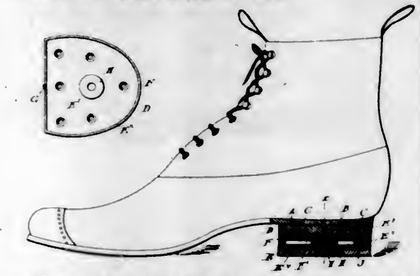
381,685. APPARATUS FOR OBTAINING PHOSPHORUS TRICHLORIDE. CONSTANTIN FAHLBERG, Selbke-Westerhusen, Prussia, Germany, assignor to Fahlberg, List & Co., same place. Filed Dec. 2, 1887. Serial No. 256,753. (No model.)



Claim.—1. In an apparatus for the production of phosphorus trichloride, the combination, with each other, of a retort made of metal, a steam-jacket surrounding the same, a vessel for melting phosphorus, a valve for controlling the flow of phosphorus from the said vessel to the retort, a pipe for admitting chlorine to the retort, a refrigerator for condensing the vapors of phosphorus trichloride produced, sight-glasses through which the contents of the retort can be examined, and a thermometer inserted into the retort, substantially as hereinbefore described.

2. In an apparatus for the production of phosphorus trichloride, the combination, with each other, of the retort A, made of metal, the steam-jacket *a*, the vessel B, communicating with the top of the retort and provided with the steam-heating coil *o*, valve *i*, and regulating-screw *k*, the chlorine-supply pipe *s*, the refrigerator C, connected to the retort by the pipe *n*, sight-glasses *e e'*, and thermometer *t*, substantially as specified.

381,686. SHOE-HEEL. ANTONINUS FARINA, New York, N. Y., assignor, by mesne assignments, to Petrina Farina, same place. Filed July 7, 1887. Serial No. 243,623. (No model.)



Claim.—A detachable heel for boots and shoes, consisting of a sectional body, a sole-leather casing surrounding the body, projecting above the sides and back of the same, so as to set up around the sole of the boot or shoe, and projecting below the body equally on all sides to form a socket, and a detachable tap having a reduced part permanently attached thereto and fitted removably to said socket, the periphery of said tap coinciding accurately with that of the leather casing at the lower edge, which is in contact with the tap, substantially as shown and described.

381,687. BASE-BALL GLOVE. FREDERICK G. FISCHER, Kansas City, Mo., assignor of one-half to John C. Higdon, same place. Filed Sept. 3, 1887. Serial No. 249,097. (No model.)



Claim.—1. A base-ball glove provided with fingers having hinged sections upon the back, said sections being composed of hard material and having their ends arranged to lock one against the other to prevent abnormal backward strain, in the manner and for the purpose described.

2. A base-ball player's protective device, consisting of hinged sections composed of hard material arranged to fit over the back of the hand, said sections having their ends arranged to lock one against the other, in combination with pliable holding-loops, substantially as described.

3. A base-ball glove provided with hinged sections of hard material upon the back of the fingers, the ends of the sections locking one against the other and being bent upwardly to prevent pinching, substantially as described.

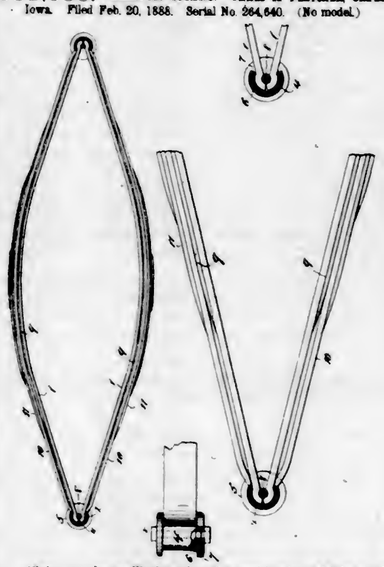
4. A ball-player's glove having strips of hard material arranged upon the back of the fingers thereof, substantially as specified, and the outer ends of said strips provided with cushions, as and for the purpose set forth.

5. A ball-player's glove having a covering of hard material arranged upon the back of the fingers thereof, substantially as specified, said covering being arranged in sections and the sections being hinged together, and the end sections being provided with tips or cushions of pliable material, for the purpose set forth.

6. A ball-player's glove having strips of hard material arranged upon the back of the fingers thereof, in combination with portions of the material of which the glove is composed, as G, which encircle said strips and hold them in position, substantially as specified.

7. A ball-player's glove comprising a piece of leather or other suitable material arranged in the form of a glove, a covering of hard material arranged in sections upon the back of the fingers of the glove and hinged together so as to allow the fingers to be closed inwardly and yet prevent them from being knocked backward, a plate of hard material to which the rear sections are loosely connected, and tips of pliable or elastic material which are carried by the end sections of the covering, substantially as specified.

381,688. ELLIPTIC SPRING. JAMES R. FLETCHER, Clarksville, Iowa. Filed Feb. 20, 1888. Serial No. 264,640. (No model.)



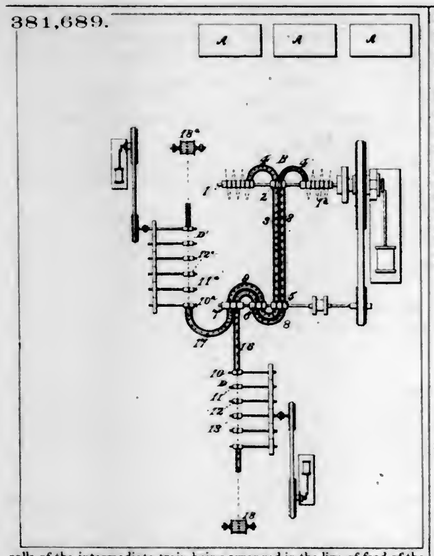
Claim.—1. In an elliptic spring, the combination, with inner plates, of outer plates formed with inturned ends which rest upon the inner plates, sockets by which the plates are united, and spacing-leaves interposed between the plates, substantially as described.

2. In an elliptic spring, the combination, with inner plates formed with curved ends 2, of outer plates formed with inturned ends which rest against the inner plates, spacing-leaves held between the outer and the inner plates, a disk formed with a tube-like flange in which the bent ends of the inner plates rest, a second disk formed with a groove in which the tube-like flange fits, and a bolt by which the disks are united, said bolt passing between the bent ends of the inner plates, substantially as described.

381,689. ROLLING-MILL PLANT. WILLIAM GARRETT and SAMUEL T. WELLMAN, Cleveland, Ohio. Filed Aug. 3, 1887. Serial No. 246,029. (No model.)

Claim.—1. A rolling-mill plant having, in combination, a billet-train, an intermediate train, the pairs of rolls forming such train having their axes in line with each other, and a rod-train, the receiving-

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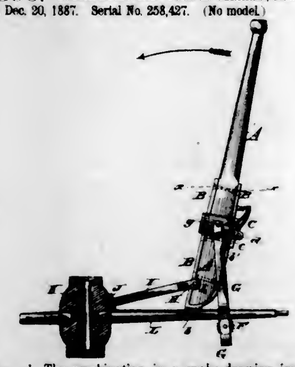


rolls of the intermediate train being arranged in the line of feed of the delivery-rolls of the billet-train, and the delivery-rolls of the intermediate train and the several pairs of rolls of the rod-train being arranged in a common line of feed, or approximately so, and connected by guides or troughs, substantially as set forth.

2. A rolling-mill plant having, in combination, a billet-train composed of two sets of roughing-rolls and a pair of finishing-rolls, an intermediate train, and two continuous rod-trains, the receiving-rolls of the intermediate train being arranged in the line of feed of the finishing-rolls, and the receiving-rolls of one continuous train being arranged in the line of feed of the delivery-rolls of the intermediate train, while the receiving-rolls of the other continuous train have their axes in line with the axes of the rolls of the intermediate train, or approximately so, substantially as set forth.

3. A rolling-mill plant having, in combination, two pairs of roughing-rolls and a pair of finishing-rolls, the roughing-rolls being arranged on opposite sides of the finishing-rolls and with their axes in line with the axes of the finishing-rolls, or approximately so, substantially as set forth.

381,690. SPOKE-DRAWER. JOHN M. GERMANN, New York, N. Y. Filed Dec. 20, 1887. Serial No. 258,427. (No model.)



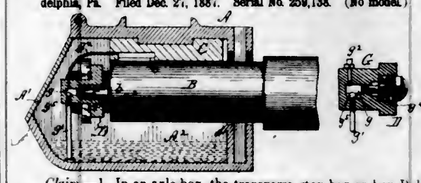
Claim.—1. The combination, in a spoke-drawing implement, of a main bar adapted to bear on and grip one edge or face of a spoke, a stirrup held to the bar and adapted to grip the opposite edge or face of the spoke, and a thrust-bar connected to the main bar and adapted to bear on the wheel-hub, substantially as herein set forth.

2. The combination, in a spoke-drawing implement, of a main bar adapted to bear on and grip one edge or face of a spoke, a collar or sleeve adjustable on said bar, a stirrup held to the collar and adapted to grip the opposite edge or face of the spoke, and a thrust-bar connected to the main bar and adapted to bear on the wheel-hub, substantially as herein set forth.

3. The combination, in a spoke-drawing implement, of a main bar, A, a strap, B, fixed thereto and provided with teeth *b*, a stirrup, G, held to the bar A or a collar thereon, and provided with a gripping-wheel, F, and a thrust-bar, I J, pivoted to the main bar or its strap and adapted to bear on the wheel-hub, substantially as herein set forth.

4. The combination, in a spoke-drawing implement, of a main bar, A, a strap, B, fixed thereto and provided with teeth *b b'*, a collar or sleeve, D, fitted on the bar and provided with a pawl, C, engaging the teeth *b'*, a stirrup, G, pivoted to the collar D and provided with a gripping-wheel, F, and a thrust-bar, I J, pivoted to the main bar or its strap and adapted to bear on the wheel-hub, substantially as herein set forth.

381,691. CAR-AXLE LUBRICATOR. GEORGE F. GODLEY, Philadelphia, Pa. Filed Dec. 27, 1887. Serial No. 259,138. (No model.)



Claim.—1. In an axle-box, the transverse stop bar or key D, located in front of the end of the axle and having supports on the sides of the box, and locking devices for maintaining the bar in position so as to be removable from the box, substantially as set forth.

2. In an axle-box, the combination of a socket, *a*, on one side of the box and lugs on the opposite side of the box, a bar, D, engaging with said socket and lugs, and a locking key or bolt engaging with said lugs and bar, substantially as set forth.

3. In combination with a car-axle box and axle, a stop key or bar provided with a pump operated by the end-thrust of the axle to elevate oil from the oil-well of the box to the axle brass or bearing, substantially as set forth.

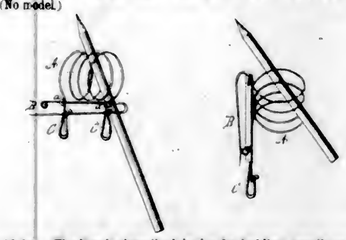
4. In combination with a car-axle and box, a stop key or bar having a pump provided with a piston having a reacting spring operated by the end-thrust of the axle, as and for the purpose set forth.

5. The combination, in an axle-box, of an axle-journal, a brass or bearing, a stop key or bar having pump G, a pipe-connection between pump G and said brass, and a pipe-connection with the box oil-well, and said pump being located and arranged to be operated by the end-thrust of the axle, substantially as set forth.

6. As a new article of manufacture, a stop bar or key for car-axle boxes having a pumping attachment, substantially as set forth.

7. The bar D, having chamber *g*, pipe g^2, pipe g', with check-valve g^3, and piston g^4, projecting beyond one side of said bar and having a reacting spring, g^5, substantially as set forth.

381,692. COMBINED PENCIL-RACK AND EYEGLASS-HOOK. JAMES GRAHAM, Detroit, Mich. Filed Dec. 10, 1887. Serial No. 257,562. (No model.)

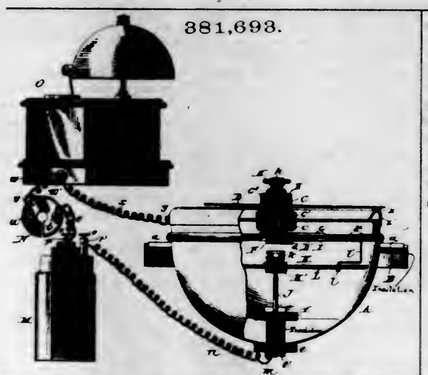


Claim.—The herein-described device for holding pencils and similar articles, consisting of a coiled wire attached to a suitable pin for fastening to a garment and provided with a depending hook or hooks for supporting an eyeglass or similar article, substantially as described.

381,693. ELECTRIC ALARM FOR SHIPS' COMPASSES. AUGUSTUS GROSS, Newcastle, New South Wales. Filed Oct. 11, 1887. Serial No. 251,968. (No model.)

Claim.—1. An improved mariner's compass consisting of a bowl insulated from the binnacle and having a conducting-wire on its bezel, a hollow axle passing vertically through the compass-glass, forked course-setters, one having rigid and the other flexible arms, and fitted

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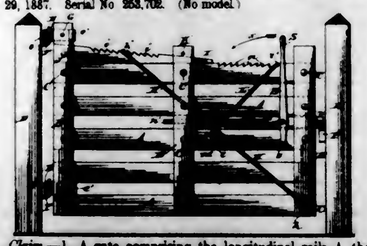
to said axle one above and the other below the compass-glass, a spindle in said axle, fitted with a milled nut and carrying a pinion at its lower end, a rack in said axle, engaged by said pinion and attached to a block adjustable on the arms of the lower course-setter, a compass-card having a cap of diamond-hard steel in its center, a bar-magnet secured beneath said card, a pin connected to said magnet and projecting above the north point of said card between the arms of the lower course-setter, a pivot insulated from said bowl and on which said card plays, and conducting-wires respectively connecting said pivot and the bezel of said bowl with an electric battery and an alarm-bell, all constructed, arranged, and adapted to operate substantially as shown and described, and for the purpose herein set forth.

2. In a mariner's compass, the combination, with the bowl A, insulated from the binnacle B, and provided with the conducting-wire *x* in its bezel, the hollow axle C, spindle E in said axle, provided with milled nut H and pinion F, the rack G, engaged by said pinion, the course-setters D D', fitted on said axle, one above the other, the block I, attached to said rack and movable on the arms of the course-setter D', the compass-card K, having a steel cap, K', in its center, a vertical pin, *l*, near its periphery, and a bar-magnet secured to its under side, and the pivot J, insulated from said bowl and on which said card plays, of an electric battery, M, and an alarm-bell, O, and connections, as specified and shown, between said battery and bell, and the bezel of said bowl and the pivot on which the compass-card plays, substantially as shown and described, for the purpose herein set forth.

3. In a mariner's compass, the combination, with the bowl A, the hollow axle C, the spindle E in said axle operated by the milled nut H and carrying the pinion F, of the forked course-setter D, fitted on said axle above the compass-glass and having rigid arms, the forked course-setter D', fitted on said axle below the compass-glass and having flexible arms, and the rack G in said axle engaged by the pinion F and attached to the block I, movable on the arms of the course-setter D', substantially as shown and described, for the purpose herein set forth.

4. In a mariner's compass, the combination, with the hollow axle C, spindle E in said axle, provided with the nut H and pinion F, and the rack G, engaged by said pinion, of the forked course-setter D', having flexible arms and fitted on said axle below the compass-glass, and the block I, attached to said rack and movable on the arms of said course-setter, substantially as shown and described, for the purpose herein set forth.

381,694. GATE. JUDSON M. HATCHER, Americus, Mo. Filed Oct. 29, 1887. Serial No. 253,702. (No model.)



Claim.—1. A gate comprising the longitudinal rails A, the uprights B, bolts C, the notched bar I, pivoted to the upper edge of the inner uprights B just above the top rail and projecting along the upper side thereof, beyond its center between the upper ends of the middle uprights, and the stirrup H, pivoted to the lower ends of the forward uprights and extending upward and rearward across the notched bar I, substantially as set forth.

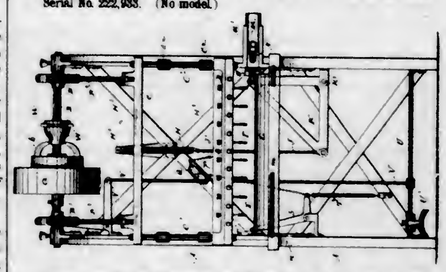
2. A gate consisting in the longitudinal rails A, the upper rail being notched at *a*, the three pairs of uprights B, the bolts C, the bar I, pivoted between the upper ends of the inner uprights and projecting along the upper surface of the top rail beyond the center thereof, the stirrup H, pivoted to the lower ends of the front uprights and extending upward and rearward across the notched bar I, and the short stirrup L, pivoted near the center of the gate and extending upward and forward across the notched part *a* of the upper bar A, substantially as set forth.

381,695. RUNNING-GEAR. ELIJAH HICKMAN, Red Bluff, Cal. Filed Aug. 16, 1887. Serial No. 247,135. (No model.)



Claim.—The combination, with a wagon-body, a segmental plate attached to the under forward side of said body, a front bolster pivotally secured to the body carrying friction-rollers adapted to engage said segmental plate, and a hind bolster rigidly secured to said body, of the forward axle adapted to turn with the forward bolster, and the rear axle pivotally secured to said hind bolster, substantially as shown and described, whereby the body is kept in a level horizontal position and the shock of obstructions striking the wheels intercepted, as herein set forth.

381,696. BAG-PUNCHING MACHINE. FEODOR HIRSCH, New York, N. Y., assignor to Lewis T. Samuel, same place. Filed Dec. 29, 1886. Serial No. 222,933. (No model.)



Claim.—1. In a machine for punching bags or sacks, the combination, with a frame, of a vertically-movable punch-holder in the same, and laterally-movable bag-stretching levers, and mechanism, substantially as described, for operating said bag-stretching levers from the vertically-movable punch-holder, substantially as shown and described.

2. A machine for punching bags or sacks, constructed with a vertically-movable punch-holder, a laterally-movable punch-holder operated with the vertically-movable punch-holder, and a bag-stretching mechanism operated by the vertically-movable punch-holder, substantially as shown and described.

3. In a machine for punching bags or sacks, the combination, with the vertically-movable frame, of punches held in the same, a bag-support below the punch-holder, an angle-lever operated from the vertically-movable frame, a laterally-sliding piece connected with one end of the angle-lever, and a punch held on said laterally-sliding piece, substantially as shown and described.

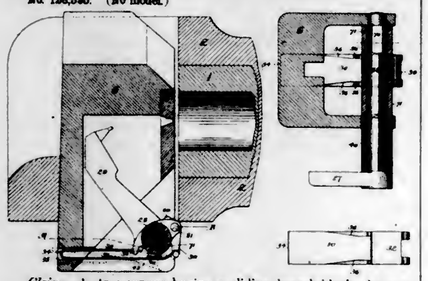
4. In a machine for punching holes in bags or sacks, the combination, with a vertically-movable frame, of punches held on the same, a pivoted angle-lever connected by a rod with the vertically-movable frame, a laterally-movable slide connected with the angle-lever, a punch on said slide, and an arm having a tapered end projecting from the frame a short distance from said laterally-movable slide, substantially as shown and described.

5. In a machine for punching bags or sacks, the combination, with a vertically-movable frame, of punches held in the same, a bag-support below the punches, and a fixed tapering arm at one end of the bag-support, and a laterally-movable tapered arm at the other end of the support, substantially as shown and described.

6. In a machine for punching bags or sacks, the combination, with the vertically-movable frame, of punches held on the same, a bag-support below the punches, a fixed tapered arm at one end of the bag-support, a laterally-movable tapered arm at the opposite end of the

bag-support, a pivoted angle-lever on one end of which the movable tapered arm is fastened, a rocking hub, a chain connecting the angle-lever with the rocking hub, and a chain connecting the rocking hub with the vertically-movable punch holder or frame, substantially as shown and described.

381,697. BREECH-LOADING ORDNANCE. BENJAMIN B. HOTCHKISS, Paris, France; Maria H. Hotchkiss and Benjamin C. Gulliver, administrators of Benjamin B. Hotchkiss, deceased, assignors to the Hotchkiss Ordnance Company, London, England. Filed Apr. 18, 1884. Serial No. 128,393. (No model.)



Claim.—1. In a cannon having a sliding breech-block, the combination, with the hammer, of a mainspring having one arm connected to the hammer in front of its axis and the other arm connected to the hammer in the rear of its axis, substantially as described.

2. The combination, with the breech-block, its recess 35, and the hammer 29, of the two-armed mainspring 30 32, one each of which arms is connected to the hammer at opposite sides of its axis, substantially as described.

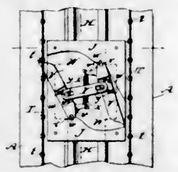
3. The combination, with the hammer having ears 38 38, for engagement with a spring, of the spring-arm 30, having removed parts, as at 36 36, adapting its end to be engaged by the ears of the hammer, whereby said spring is maintained laterally, substantially as described.

4. The hammer 29, connected and supported relatively to its spindle or shaft 28 by means of the polygonal seat in its tubular hub 71 and correspondingly-shaped portion 70 of the shaft 28, substantially as described.

5. The combination, with the tubular hub, of the hammer having an interior polygonal seat, of its shaft 28, having a correspondingly-shaped part, 70, engaging with said seat, and the tubular bearing 40, surrounding one end of said shaft, substantially as described.

6. The combination, with the hammer-shaft provided with the recess and the handle for cocking the hammer, of the hammer mounted to turn upon said shaft, and the swinging segment-block 39, pivoted upon the hammer and arranged to engage with said recess to lock the hammer and be disengaged therefrom to release the hammer, substantially as described.

381,698. AUXILIARY MOTOR FOR WINDMILLS. GEORGE C. HUNTER, Chebanse, Ill. Filed Dec. 14, 1887. Serial No. 257,840. (No model.)



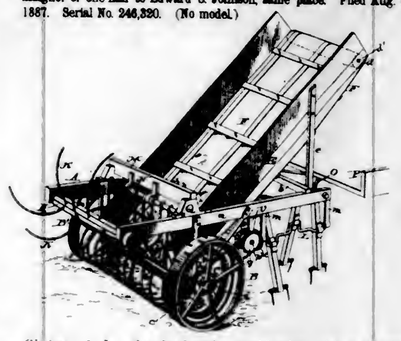
Claim.—1. In a motor, the combination, with the cross-head J, of the pawls V V, pivoted at their opposite ends thereto and provided at their inner pivotal ends with inwardly-extending projections v', and the coil-spring X, connected at its ends to the said projections v' to throw the free ends of the pawls outward, substantially as set forth.

2. In a motor, the combination, with the cross-head J, recessed across its face, as shown at W, and oppositely-inclined walls w' w', forming stop-shoulders, of the pawls V, pivoted at their opposite ends within said recess at the inner ends of the inclined walls and formed with inwardly-extending projections v' v', and the spring X, connecting said projections and throwing the pawls outward against the stop shoulders or walls w', substantially as set forth.

3. In a motor, the combination, with a frame and an endless chain thereon, of a sliding head fitted on the frame, two pawls pivoted to the head, each provided with a pin between its ends and adapted to alternately engage opposite sides of the belt, a spring connecting the pawls, and a link slotted at its ends and receiving said pins thereon, substantially as herein set forth.

4. In a motor, the combination, with a frame and an endless belt moving thereon, of a sliding head, J, fitted on the frame and provided with a recess, W, and shoulders w w', of pawls V V, pivoted near the shoulders w and adapted to the shoulders w' and provided with lugs v' v', a spring, X, connected to these lugs, and a link, Y, attached to the pawls V V by a pin-and-slot connection, substantially as described, for the purposes set forth.

381,699. HAY-LOADER. NATHAN S. JOHNSON, Mendon, Mich., assignor of one-half to Edward S. Johnson, same place. Filed Aug. 6, 1887. Serial No. 246,320. (No model.)

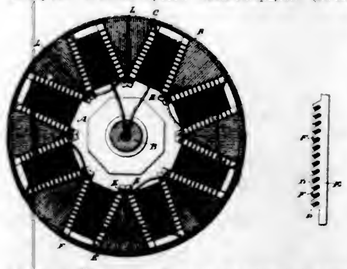


Claim.—1. In a hay-loader, the combination, with a wheeled frame, of an elevating-apron, a rake in rear thereof, and a divider mounted lengthwise upon the frame of the machine in advance of the rake and comprising a series of depending legs adapted to oscillate in a plane at right angles to the travel of the machine and divide the grain.

2. In a hay-loader, the combination, with a wheeled frame, of an elevating-apron, a rake in rear of said apron, a rotating feeder located in rear of the rake and adapted to be actuated positively as the machine is drawn along, and a positively-actuated divider comprising a series of depending oscillating legs mounted upon the main frame in advance of the rake, whereby they are adapted to divide the grain as the machine is drawn along.

3. In combination with frame A, wheels B B', a sprocket-wheel, r, secured to the wheel B, a shaft, p, mounted in the frame parallel with the axle of wheels B B' and provided with sprocket-wheel q and bevel-gear o, a crank-shaft, L, mounted upon the frame at right angles to shaft p and provided at one end with a bevel-gear, n, to mesh with gear o, divider-legs applied to said shaft L, substantially as shown, and a belt, t, serving to communicate motion from the driving-wheel B to the divider-legs.

381,700. ARMATURE FOR DYNAMOS. JOHN F. KELLY, New York, N. Y., assignor to the United States Electric Lighting Company, same place. Filed Oct. 17, 1887. Serial No. 252,539. (No model.)



Claim.—1. The combination, with the cylindrical armature-core of a magneto or dynamo electric machine, of rows or series of cleats, stops, or guides located at the ends of the core, substantially as described, and insulated conductors wound longitudinally upon the core and around or through the stops or guides, as set forth.

2. The combination, with the cylindrical armature-core of a magneto or dynamo electric machine, of the serrated or notched slats or strips, E, of insulating material secured to the ends of the core, and conductors wound longitudinally upon the sides of the core and carried through the notches in the slats from one coil-space to another, as herein set forth.

381,701. FENDER FOR CULTIVATORS. JOHN W. KENNEDY, Miltonvale, Kans. Filed Jan. 17, 1888. Serial No. 260,966. (No model.)



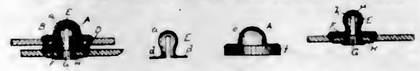
Claim.—A fender for cultivators, consisting of the flat blade G, rounded at its lower front corner, as shown at b, curved outward along its upper longitudinal edge, as shown at c, and the apertured strap d, curved between its ends to fit the curve c, and secured to the blade, substantially as set forth.

381,702. PAPER-CLIP. JABEZ W. KING, Toledo, Ohio. Filed Nov. 3, 1887. Serial No. 254,211. (No model.)



Claim.—As a new article of manufacture, a paper-clip having a clamping-frame mounted upon a transverse bar, spring portions integral with the frame, a lever fulcrumed upon the bar and connected with the springs, and having a pencil or pen-holder formed of a coil of wire attached to the frame, as and for the purpose set forth.

381,703. FASTENER FOR GLOVES, &c. EDWIN J. KRAFTSER, Boston, Mass. Filed Feb. 11, 1888. Serial No. 263,740. (No model.)



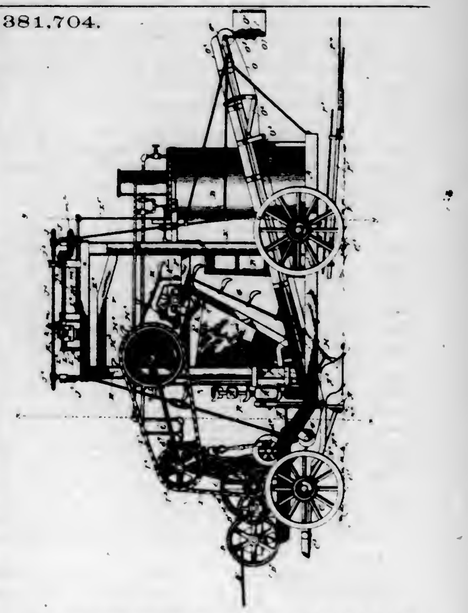
Claim.—1. A flexible button member consisting of a struck-up stud, E, divided from beneath, as at k, into two flexible flanged wings, in combination with an eyelet, G, a collet, F, and a washer, H, substantially as described.

2. In a fastener, a flexible button-hole member secured to one flap of a glove or other article, and consisting of a cover, A, an eyelet, C, a flexible washer, B, and a washer, D, in combination with a button member secured to the other flap of the glove or other article, substantially as described.

3. In a fastener, a flexible button member secured to one flap of a glove or other article, and consisting of a collet, F, an eyelet, G, a washer, H, and a struck-up stud, E, divided from beneath, as at k, into two flexible flanged wings, in combination with a button-hole member secured to the other flap of the glove or other article, substantially as described.

4. In a fastener, a flexible button member secured to one flap of a glove or other article, and consisting of a collet, F, an eyelet, G, a washer, H, and a struck-up stud, E, divided from beneath, as at k, into flexible flanged wings, in combination with a flexible button-hole member attached to the other flap of the glove or other article, and consisting of a cover, A, a flexible washer, B, an eyelet, C, and a washer, D, substantially as described.

381,704. DITCHING-MACHINE. HENRY G. LANE, Bucyrus, Ohio. Filed Jan. 6, 1888. Serial No. 259,977. (No model.)



Claim.—1. In a ditching-machine, the combination of the truck-frame having front and rear supporting-wheels, the propelling mechanism and the engine at one end of the frame nearly above the axle of the supporting-wheels, the boiler and the water-tank at the other end of the frame, the boiler being in the rear of and the water-tank in the front of the axle of the supporting-wheels, and the elevator located wholly between the ends of the frame and held down to its work by the weight of the devices at each end of the frame, substantially as set forth.

2. In a ditching-machine, the combination of the truck-frame, the engine and propelling mechanism located at the front end of the frame, the boiler and water-tank at the rear end of the frame, the excavating devices between the two ends of the frame, and the mud-belt or carrier-apron, said mud-belt being located on one side of the frame and the water-tank on the opposite side to evenly distribute the weight over the truck-frame, substantially as described.

3. In a ditching-machine, the combination of the shaft d^6, the engines applied to each end of the shaft d^6, the shaft d^3, having the sprocket-wheel d^3 on its onter end, the gearing d^6 d^7, connecting the shafts d^3 and d^6, the shaft o^3, extending from one side to the other side of the machine and having the sprocket-wheel o^4 on one end and the roller o' on the other end thereof, the sprocket-chain o^5, connecting the sprocket-wheels d^5 and o^4, and the mud-belt supported at one end on the roller o' and driven thereby, substantially as specified.

4. The combination, with the truck-frame, the uprights, and the excavator-carrying frame composed of an upper and lower rectangular frame united by vertical bars and a bracket depending from the lower frame, of three sprocket-wheels, two of the wheels being placed at about the same level, the one in advance of the other, the rear one being journaled in adjustable bearings, and the third wheel being journaled in the lower ends of the bracket, and the elevator-chain supported by and passing around the said sprocket-wheels, substantially as and for the purpose described.

5. The combination, with the vertically-adjustable excavator-carrying frame, the shaft H^6, having the sprocket-wheel H^4, and the shaft d^5, having the sprocket-wheel d^3, of the shaft I^4, having the sprocket-wheels I^3 and I^3, the rods i and i', and the sprocket-chains I and I', substantially as and for the purpose described.

6. In a ditching-machine, the combination, with a vertically-adjustable excavator and a power-driven shaft, of an equalizing-shaft placed intermediate of the power-shaft and the excavator, and gearing connecting the equalizing-shaft with the excavator and with the power-driven shaft, substantially as and for the purpose described.

7. The combination, in a ditching-machine, of the vertically-adjustable excavator having an extended shaft, H^5, and the sprocket-wheel H^4 thereon, the shaft d^5, having the sprocket-wheel d^3, the equalizing-shaft I^4, having two sprocket-wheels, the sprocket-chains I and I', and the two pairs of rods i and i', embracing the aforesaid wheels and having their adjacent ends united by the said equalizing-bar, which is journaled therein, and their outer ends journaled on the shafts H^5 and d^5, respectively, substantially as and for the purpose described.

8. The combination, with the excavator-carrying frame and the excavator-chain, of the sprocket-wheel for supporting said chain, consisting of a hub, radial spokes, and side rims, substantially as set forth.

9. The combination, with the excavator-chain, of a sprocket-wheel support consisting of a hub, radial spokes, and rims fastened to the sides of the spokes at a short distance from their outer ends, the outer edges of the rims being beveled to a chisel-edge, substantially as and for the purpose described.

10. The combination, with the truck-frame, the uprights, the excavator-carrying frame, the feed-screws connected to revolve together, the power-driven shaft K, the shaft M, geared at one end with a

feed-screw and having a gear-wheel, m', at the other end, the pair of idle-pinions k and k', mounted on shaft K and meshing with the gear-wheel m' on diametrically-opposite sides thereof, each pinion having a half-clutch, the double clutch k^3, mounted on shaft K and adapted to move thereon between the pinions k and k', and means for moving the said clutch k^3, substantially as and for the purpose described.

11. The combination of the uprights, the excavator-carrying frame, the feed-screws, the sprocket-wheels, the sprocket-chain, the power-shaft K, the pair of idle-pinions, gearing connecting the idle-pinions with one of the feed-screws, the clutch-sleeve, and hand-lever suitably connected with the clutch-sleeve, as and for the purpose described.

12. The combination of the truck-frame, the uprights, the vertically-adjustable excavator-carrying frame, the feed-screws, the sprocket-wheels, the sprocket-chain, the shaft M, geared at one end with one of the feed-screws and having a gear-wheel, m', on its opposite end, the power-driven shaft K, the idle pair of pinions k, meshing with the gear-wheel m', the clutch-sleeve working between the pinions, the yoke, the hand-lever, and the intermediate devices connecting the hand-lever and yoke, as and for the purpose described.

13. The combination, with the excavator-carrying frame, the feed-screws geared to revolve together, the power-driven shaft K, the idle-pinions geared with one of the said feed-screws, and the clutch-sleeve, of the yoke L, the bar L', the rock-shaft L^4, the arm L^3, connecting one end of the rock-shaft with bar L', and the hand-lever L^5, fastened to the other end of the rock-shaft and extending within convenient reach of the operator, substantially as and for the purpose described.

14. In a ditching-machine, the combination of the vertically-adjustable excavator-carrying frame, the feed-screws, the sprocket-wheels, the sprocket-chain, the cross-bar j^4, and the rollers j^3, embracing the sprocket-chain and adjustable on the bar j^4, substantially as and for the purpose described.

15. In a ditching-machine, the combination, with the adjustable excavator-carrying frame, the sleeve S', and set-screw s, of the grader composed of a right-angled bar having its vertical branch inserted in said sleeve and adjustable vertically and horizontally therein, as and for the purpose described.

16. The combination, with the ditching-machine, of the tile-chute composed of ways and adjustable side guide-bars, substantially as described, to accommodate different-sized tiles.

17. The combination, with the ditching-machine, of the tile-chute composed of ways and rollers journaled between the ways and forming a support for the tile, substantially as set forth.

18. The combination, with the ditching-machine, of the tile-chute, the adjustable brackets p, and the guide-bars carried by the brackets, substantially as and for the purpose described.

19. The combination, with the ditching-machine, of the tile-chute, the brackets p, having their lower ends slotted, the set-screw p', and the guide-bars secured to the upper ends of the brackets, substantially as set forth.

20. The combination, with the ditching-machine, of the tile-chute, the guide-bars, the adjustable brackets having slots p^3, and the set-screws p^2, for securing the brackets to the tile-chute in any relative position, substantially as and for the purpose described.

21. The combination, with the tile-chute, of the shoe located beneath and extending forward of the said tile-chute and pivotally connected therewith, substantially as and for the purpose described.

22. The combination, with the tile-chute and the shoe located beneath and extending forward of the said tile-chute, of the bottom Q', connected with the said shoe and extending rearwardly therefrom, substantially as and for the purpose described.

23. The combination, with the tile-chute having side guide-bars, of the shoe pivotally connected with the tile-chute and extending forward thereof, the bottom Q', and the horizontal guide-bars p^4, pivotally connected with the side guide-bars of the tile-chute and independent of the bottom Q', and the shoe Q, substantially as and for the purpose specified.

24. The combination, with the tile-chute having side bars laterally adjustable, of the shoe and the bottom Q', provided with side guide-bars adjustable laterally, substantially as and for the purpose specified.

25. The combination, in a ditching-machine, of the excavator and two clearers embracing the sides of the excavator and having sloping front and rear edges and curved outwardly like mold-boards of plows, and having beam-extensions which are connected with the axle of the machine, substantially as and for the purpose described.

26. The combination, with the excavator, of the shield N, substantially as and for the purpose described.

27. The combination, with the excavator, of the shield N, adapted to travel on the ground in advance of the excavator and provided with a curved nose, n^3, at its lower end, substantially as and for the purpose described.

28. In a ditching-machine, the combination, with the excavator, of the shield N, the brace-bar N', having a positive connection with the shield and permitting it to rise and fall, and the bar N^3, substantially as described.

29. The combination, in a ditching-machine, of the shield having vertical grooves near each edge, the T-bar N', having its ends fitting in the grooves, and the bars N^3, substantially as described.

30. In a ditching-machine, the combination, with the excavator-carrying frame, hereinbefore specified, and the bracket F^3, supporting the lower sprocket-wheel, of the housing G^4, closing in the lower portion of the bracket and forming a shield for the said sprocket-wheel, and the excavator-chain embracing the housing, substantially as set forth.

31. The combination, with the scantlings O^4, the sides O^3, supported at a distance above the scantlings, and the mud-belt supported between the sides, of the deflectors O^5, substantially as and for the purpose described.

32. The combination, with the sides and scantlings and the mud-belt, of the elbow-bracket O^6, pivoted at one end to the scantling and vertically adjustable at the other end, and the roller journaled between the brackets and adapted to bear on the mud-belt, substantially as and for the purpose described.

33. The combination, with the mud-trough and the chute O', of the segment O^8 and the clamp O^7, for regulating the pitch of the chute and its direction of inclination, substantially as and for the purpose described.

34. A link for an excavator-chain, having a rib projecting laterally therefrom and an excavator-blade secured to said rib, substantially as and for the purpose described.

35. A link for an excavator-chain, having a rib projecting therefrom and the excavator-blade provided with a recess for receiving said rib and secured thereto, substantially as and for the purpose specified.

36. A link for an excavator-chain, having an excavator-blade projecting laterally therefrom, forming excavator-fingers at its forward edge, the extreme fingers of which are longer than the intermediate fingers and are sharpened to a knife-edge, substantially as and for the purpose set forth.

37. The combination, with the excavator, the lifting side thereof moving in a straight line, of an ejector having a pivotal support and adapted to travel in a vertical plane and be projected across the path of the excavator-blades, substantially as set forth, for the purpose described.

38. The combination, with the excavator, of the ejector composed of radial arms or spokes, and blades set crosswise of the spokes and secured to their ends to form cross-heads, substantially as described.

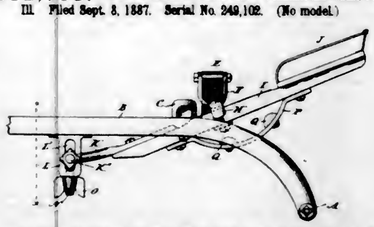
39. The combination, with the excavator, of a spoke and the blades set at an incline to the spoke and secured to the end thereof to form a cross-head that is set obliquely or at an incline to the spoke, substantially as described, for the purpose specified.

40. The combination, with the excavator, of a spoke having the lower side of its outer end forming an ogee curve, substantially as and for the purpose described.

41. The combination, with the excavator, of a spoke having its outer end bifurcated to form two arms, the lower arm forming an ogee curve, and the cross-head secured to the arms, substantially as set forth.

42. The herein-described ejector, for the purpose described, composed of a hub, spokes having bifurcated ends, and the cross-heads set at an incline to radial lines, substantially as described, for the purpose specified.

381,705. TWO-WHEELED VEHICLE. WILLIAM LAWLESS, Ottawa, Ill. Filed Sept. 8, 1887. Serial No. 249,102. (No model.)



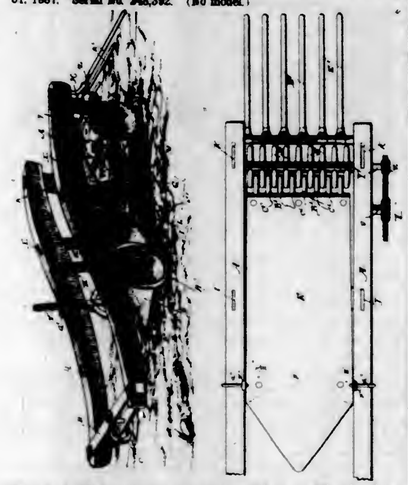
Claim.—1. In a two-wheeled vehicle, the combination, with the shaft-bars and a cross-bar connecting the same, of a spring carried by the said cross-bar and having upwardly-projecting ends, and seat-bars pivoted to the under side of the shaft-bars, projecting rearwardly under the cross-bar, and pivotally hung from the ends of the spring, whereby the upward movement of the seat-bars will be limited by the cross-bar, substantially as described.

2. In a two-wheeled vehicle, the combination, with the shaft-bars and a cross-bar connecting the same, of a spring carried by said cross-bar and having upwardly-projecting ends, seat-bars adjustably and pivotally connected to the shaft-bars, and clips pivoted to the spring and engaging hooks on the shaft-bars, substantially as herein shown and described.

3. In a two-wheeled vehicle, the combination, with the shaft-bars, of a slotted bearing secured to each shaft-bar, seat-bars, each having a pivot on its end held in said slotted bearing, and an eyebolt held on the said pivot and bearing for adjusting the said seat-bars, substantially as shown and described.

4. In a two-wheeled vehicle, the shaft-bars carrying a cross-beam and a spring held on said cross-beam, in combination with seat-bars supported by said spring, a pivot formed at the end of each seat-bar, a slotted bearing secured to each shaft-bar and carrying the pivot ends of the seat-bars, and an eyebolt held on each pivot and passing through the said bearing, substantially as shown and described.

381,706. POTATO-DIGGER. JAMES LEE, Liston, Iowa. Filed Aug. 31, 1887. Serial No. 248,392. (No model.)



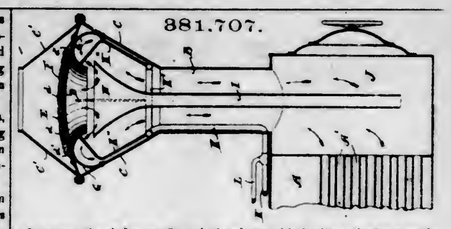
Claim.—1. The combination, in a potato-digger, of the plow having the inclined mold-board, the rotating shaft Y, arranged at the rear end of the mold-board and having the fingers A', for the purpose set forth, and the downwardly-inclined independent screen-bars trailed in rear of the machine, having their upper ends pivoted, and on which the potatoes are thrown by the fingers A'.

2. The combination, in a potato-digger, of the plow or scoop, the rotating shaft Y, arranged at the rear end thereof and having the fingers A', the transverse bar arranged in rear of the said shaft, and the independent screen-bars having the front upper ends pivoted to the said transverse bar, the lower ends of said bars being adapted to drag on the ground, substantially as described.

3. The combination, in a potato-digger, of the plow-beams, the standards I K, depending therefrom, the landside-plates G, attached to the lower ends of said standards, the braces L M, arranged transversely between, connecting, and extending upward above the said landside-plates, and the inclined mold-board attached to the front ends of the landside-plates and having its rear portion supported upon and secured to the braces L M, substantially as described.

4. The combination, in a potato-digger, of the plow, the driving-shaft O, arranged under the mold-board thereof and having the wheel P, provided with the peripheral spurs R, the shaft U, arranged under the mold-board, having the gear-wheel X at one end, and provided with the sprocket-wheel connected to a similar sprocket-wheel on the shaft O by a sprocket-chain, the shaft Y, arranged at the rear end of the mold-board and having the arms or fingers A', and the pinion attached to the shaft Y and meshing with the wheel X, the transverse bar in rear of shaft Y, and the independent screen bars or fingers having their upper ends pivoted to the said bar and their lower ends trailing on the ground, substantially as described.

381,707. SPARK-ARRESTER. HOSEA W. LIBBEY, Boston, Mass. Filed June 30, 1887. Serial No. 243,046. (No model.)



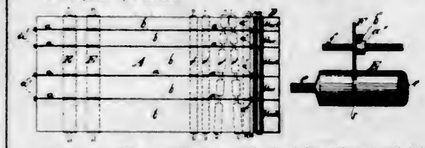
Claim.—1. In a funnel or chimney, B, the combination of a filter of sponge, the deflector G, and pipe I, provided with a flaring mouth, H, substantially as shown and described.

2. In a funnel or chimney, the perforated plate or grating D, sponge E, and wire-netting F, the deflector G, and pipe I, with flaring mouth H, in combination with the pipe K K', provided with jets K'', for causing water or steam to impinge upon the sponge, substantially as and for the purposes set forth.

3. In a funnel or chimney, a filter of sponge, in combination with jets of steam or water, substantially as and for the purposes set forth.

4. In a funnel of a locomotive, a filter of sponge, in combination with the grating D, provided with pins or hooks d, for preventing the sponge from shifting, substantially as shown and described.

381,708. INKING APPARATUS FOR LITHOGRAPHIC PRESSES. FRANKLIN MACDONALD, New York, N. Y. Filed Nov. 19, 1887. Serial No. 255,592. (No model.)



Claim.—1. The combination, with the inking-slab A and ink-rollers E of a lithographic press, of the roller-indenting disks F, substantially as and for the purpose herein set forth.

2. The combination, with the inking-slab A and ink-rollers E of a lithographic press, of the wires or ribs a a, substantially as and for the purpose herein set forth.

3. The combination, with the inking-slab A and ink-rollers E of a lithographic press, of the roller-indenting disks F and the wires or ribs a a, substantially as and for the purpose herein set forth.

4. The combination, with the inking-slab A and ink-rollers E of a lithographic press, of the adjustable roller-indenting disks F, substantially as and for the purpose herein set forth.

5. The combination, with the inking-slab A and ink-rollers E of a lithographic press, of the adjustable wires or ribs a a, substantially as and for the purpose herein set forth.

6. The combination, with the inking-slab A and ink-rollers E of a lithographic press, of the adjustable roller-indenting disks F and the adjustable wires or ribs a a, substantially as and for the purpose herein set forth.

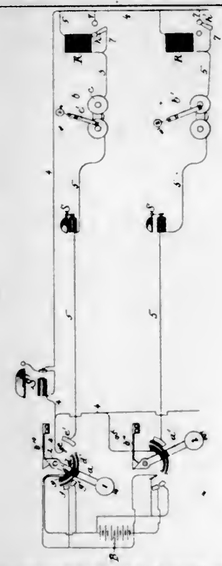
381,709. ANNUNCIATOR AND SIGNALING APPARATUS. MORRIS MARTIN, Malden, assignor of one-half to Chas. Follen Adams, Boston, Mass. Filed June 14, 1886. Serial No. 205,114. (No model.)

Claim.—1. A series of keys or switches and corresponding series of indicating-instruments connected in circuit therewith, combined with a signaling-instrument located near the keys and resistance in circuit with each key and indicating-instrument, by which the said signaling-instrument near the keys may be rendered inoperative, and means for removing the resistance from each circuit independently of the others, whereby the said signaling-instrument is operated when the key is operated in the circuit from which the resistance is removed, substantially as described.

2. The combination, with a polarized indicating-instrument, of a key or switch movable to and fro between two different positions, and contact-pieces fastened to and movable with said switches, and co-operating stationary contact-pieces connected in circuit with a battery and with the said indicating-instrument and located with relation to the contact-pieces on the switch as set forth, the said contact-pieces on the switch touching the stationary contact-pieces in its movement from one to the other position, but passing beyond and being out of contact with the said stationary contact-pieces when the switch is in either extreme position, whereby the polarity of the current is reversed during the movement of the switch from one to the other position, substantially as described.

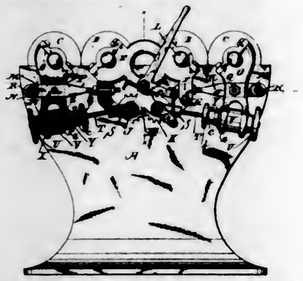
3. An annunciator and signaling apparatus comprising a series of keys or switches and a signaling-instrument adjacent thereto, and a

381,709.



series of indicating-instruments connected in circuit one with each of the said keys, and means connected with each circuit controlling the signaling-instrument near the keys, by which the said signaling-instrument may be made to operate or not, as desired, when the key in any desired circuit is moved, substantially as described.

381,710. ROLLER-MILL. JONATHAN D. MAWHOOD, Richmond, Ind., assignor to the Richmond City Mill Works, same place. Filed Dec. 30, 1886. Serial No. 222,997. (No model.)



Claim.—1. In a roller-mill, a frame, a pair of rolls, a roll-housing for one roll of the pair, a supporting-bar for the housing of the movable roll, and a roll-housing for said movable roll, said housing having a mortise loosely engaging said bar, so as to be free to rock in all directions thereon, and a pivot-bolt uniting said movable-roll housing to said bar, combined substantially as and for the purpose set forth.

2. In a roller-mill, a frame, a fixed-roll housing provided with a downwardly-projecting lug, a bar at the side of the frame provided with a threaded end, and nuts engaging said lugs, an outer end support for said bar, and a movable-roll housing pivoted to said bar, combined substantially as and for the purpose set forth.

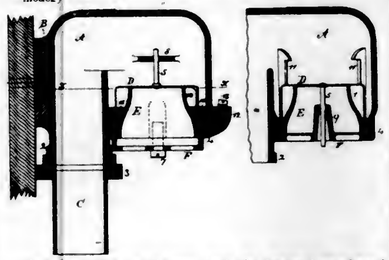
3. In a roller-mill, a frame, a fixed-roll housing, a bar, M, projecting therefrom and having an end slot, a lever-form movable-roll housing having an intermediate mortise engaging said bar, and an eccentric, N, supported by the frame and engaging said end slot, combined substantially as and for the purpose set forth.

4. In a roller-mill, a frame, a fixed-roll housing, a movable-roll housing, a nut, an adjusting-screw, T, engaging said nut and having a hand-wheel engaging outside the movable-roll housing, spring Z upon said screw, a nut, *b*, upon said screw for adjusting the tension of the spring, and a collar, *c*, splined to the screw and disposed between said spring and said nut *b*, combined substantially as and for the purpose set forth.

5. In a roller-mill, a frame, a fixed-roll housing, a pivoted-roll housing provided with teats W and U, a screw, T, having threaded connection with the frame, a hand-wheel fast on said screw and engaging said teat U, a collar, X, on said screw and engaging said teat W, spring Z on said screw engaging said collar X, and nut and collar on the screws to serve in adjusting the tension of the spring, combined substantially as and for the purpose set forth.

6. In a roller-mill, a frame provided with outwardly-projecting bosses, a roll-housing disposed contiguous to said bosses, bolts engaging said housing and bosses, and facings of metal of low fusibility disposed between the housing and bosses and seating closely around said bolts and into the facial inequalities of the bosses and contiguous housing parts, combined substantially as and for the purpose set forth.

381,711. AIR-INLET FOR SEWERS AND DRAINS. EZRA S. MCCLELLAN, Paterson, N. J. Filed July 5, 1887. Serial No. 243,352. (No model.)



Claim.—1. The combination, with the inverted-cup-shaped air-valve, of the hollow case A, having a connection for the pipe leading to the sewer side of the trap or drain, and a rim with an opening through which the air-valve is inserted, a hollow thimble beneath and within the cup-shaped air-valve and connected to the rim, and a liquid in the annular cup between the rim and the thimble, substantially as set forth.

2. The combination, with the inverted-cup-shaped air-valve, of the hollow case having an opening in the bottom thereof for the admission of the air-valve, a movable open hollow thimble within and below the inverted-cup-shaped air-valve, a stem upon the air-valve and a guide or guides for the same, and mercury in the annular trough around the thimble, substantially as set forth.

3. The combination, with the inverted-cup-shaped air-valve, of a case having an opening through which the air-valve is introduced, a pipe leading from the case to the sewer or drain, an open hollow thimble within the air-valve, and a ring for securing the thimble firmly within the rim of the case, and mercury in the annular trough around the thimble, substantially as set forth.

4. The combination, with the inverted-cup-shaped air-valve, of a case having a rim and opening through which the air-valve is introduced, a movable open hollow thimble within and below the air-valve and having a ring around its lower end passing into the rim of the case, and a follower having air-inlet openings through it and secured to the rim of the case, substantially as set forth.

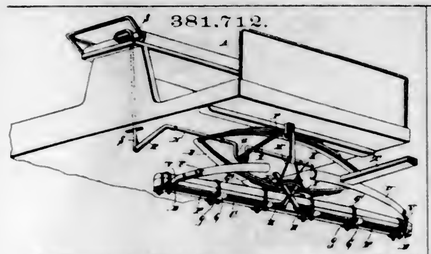
5. The combination, with the inverted-cup-shaped air-valve, of a case with an opening on the under side through which the air-valve is introduced, a separate open thimble within the air-valve, a ring-follower for securing the thimble to the case, and mercury in the annular trough around the thimble and into which the lower edges of the air-valve pass, and guide-wings to aid in retaining the air-valve in position as it rises or falls, substantially as specified.

6. The combination, with the inverted-cup-shaped air-valve, of a case having an annular mercury-trough into which the edges of the air-valve dip, an open thimble forming an air-inlet opening through the case and below the valve, and a supply-cup outside the case with a hole through which the mercury is introduced into the trough, and a plug for the supply-cup, substantially as set forth.

381,712. HORSE-DETACHER. JAMES MCMORRIES, Thorp's Spring, Tex. Filed Dec. 10, 1887. Serial No. 257,542. (No model.)

Claim.—1. The combination, with the body and the axle, of the crank-shaft journaled on the under side of the body, the sliding rods mounted on the front side of the axle, the ring connected to said rods to draw them together when it is raised, the pulley mounted on the under side of the body, the link connected to the ring, the strap passing over the said pulley and connected to the link, and the crank-shaft, as set forth.

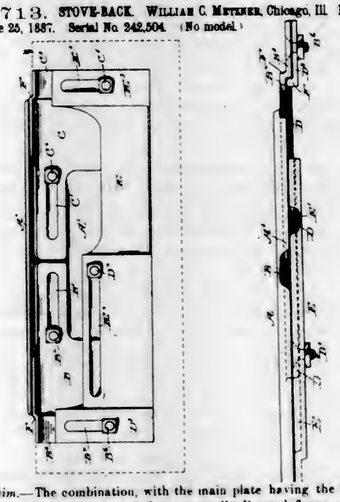
381,712.



2. The combination of the sliding rods, springs to normally hold said rods projected, the crossed levers pivoted together and having their lower ends pivoted to the sliding rods, the ring mounted loosely on the upper ends of said crossed levers, and mechanism for raising and lowering said ring, as set forth.

3. In a horse-detacher, the combination, with the thill-clips having the registering-eyes E E, of the sliding spring-actuated rods F F, engaging normally in the said eyes, the levers I I, pivoted together and attached at their lower ends to the said rods, the ring K, sliding on the upper arms of the levers, the link M, attached to the ring, the pulley P, mounted on a suitable bearing on the vehicle, the transverse shaft N, having the crank O, the hand L, passing over the pulley P and connected at its ends respectively to the crank O and the link M, the arm R, attached to the end of the shaft N, and the vertical operating-rod S, connected at the lower end to the extremity of the said arm, substantially as and for the purpose specified.

381,713. STOVE-BACK. WILLIAM C. METTENER, Chicago, Ill. Filed June 25, 1887. Serial No. 242,504. (No model.)

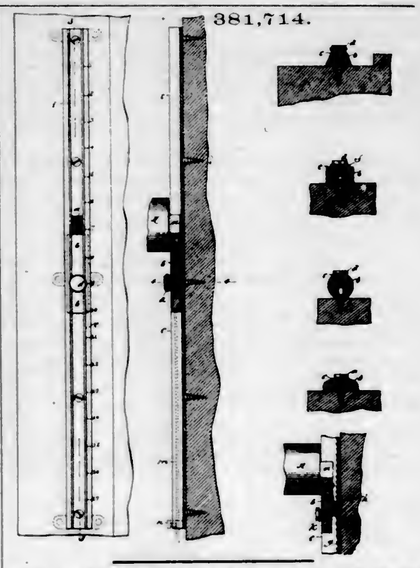


Claim.—The combination, with the main plate having the rearwardly-curved upper edge and the rearwardly-directed flange at its lower edge, of slotted end plates lying between said rearwardly-curved upper edge and said flange, and each secured to said main plate by a bolt, and two overlapping bottom plates, one of which is channeled to receive the other, (the sides of the channel of the former engaging the edges of the latter,) and which are bound together adjustably by means of a bolt passing through a slot and hole in said plates, and each having a vertical slot at its outer end through which a bolt passes and secures it to the adjacent end plate, substantially as shown and described.

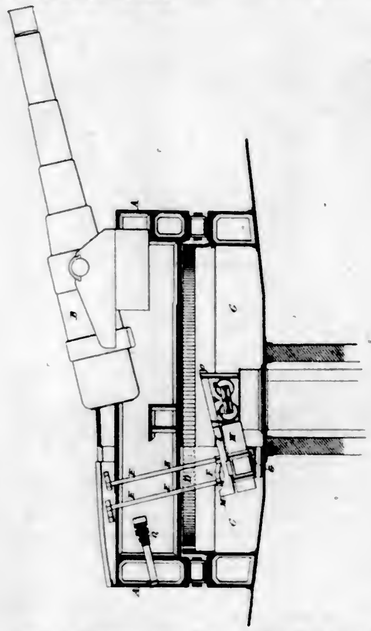
381,714. SUPPORT FOR SHADE-ROLLERS. EUGENE H. MUDGE, New York, N. Y. Filed Nov. 17, 1887. Serial No. 255,414. (No model.)

Claim.—The combination, with a curtain or shade roller, of the guides *c*, arranged to be secured to the opposite sides of the window-frame, and having slots for receiving and guiding the studs projecting from the ends of the roller, one of said slots being of a width to prevent one of said studs from turning, and the adjustable blocks or bearings *b*, fitted into said slots beneath said projecting studs and adapted to support the same, substantially as described.

381,714.



381,715. APPARATUS FOR CONVEYING AMMUNITION TO GUNS. CHARLES H. MURRAY, Newcastle-upon-Tyne, England, assignor to W. G. Armstrong, Mitchell & Co., (Limited,) same place. Filed June 7, 1887. Serial No. 240,556. (No model.)



Claim.—1. The combination of the turn-table or turret, a gun or guns mounted thereon, a hoist carried by the turret or turn-table in rear of each gun and descending into a chamber or space below the turn-table, and a central hoist by which ammunition can be raised up into the chamber or space to be transferred to the hoists descending

from and carried by the turn-table, substantially as and for the purpose set forth.

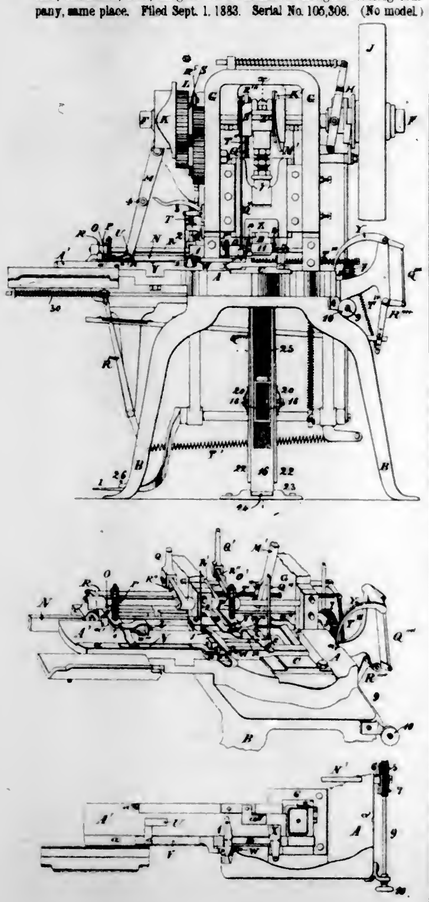
2. The combination of the turn-table or turret A, a gun or guns, B, mounted thereon, a hoist in rear of each gun descending into a chamber or space, C, below the turn-table, and inclined so as to bring its lower end into proximity with the upper end of a central hoist by which ammunition can be raised up into the chamber or space C to be transferred to the hoists descending from the turn-table, substantially as described.

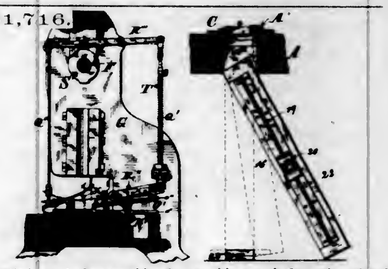
3. The combination of the turn-table or turret A, two guns, B, mounted thereon, a hoist, D, in rear of each gun descending into a chamber or space, C, below the turn-table, a central hoist, N, for raising ammunition into this space, the pivoting-head N' of the central hoist, and the pivoting shot-tray I of the hoist D, and bolt R for locking the one to the other, substantially as described.

4. The combination of the turn-table or turret having the space or chamber immediately beneath it, the central hoist by which ammunition is raised into the space or chamber, the gun mounted on the turn-table, the hoist carried by the turn-table in rear of the gun descending into the space or chamber to elevate the ammunition raised thereto, and provided with the shot-tray and with the powder-chamber beneath the shot-tray, the hydraulic cylinder in the chamber or space, and the telescopic ram thereof actuating the hoist in rear of the gun to successively bring the shot-tray and the powder-chamber into loading position, substantially as and for the purpose set forth.

381,716. MACHINE FOR PUNCHING CARDS.

SAMUEL J. MURRAY, Cincinnati, Ohio, assignor to the Russell & Morgan Printing Company, same place. Filed Sept. 1, 1883. Serial No. 105,306. (No model.)





Claim.—1. In a machine for punching cards from the printed sheet, the combination, with any suitable punch and short feed and with an adjustable gage, of the long-feed mechanism, constructed and operating substantially as set forth.

2. In a machine for punching cards from the printed sheet, the combination, with a punching mechanism and with a short-feed mechanism, of the auxiliary or long-feed mechanism, whose gripper O is operated from cams K S, which rotate once to as many rotations of the short-feed cams K' S' as the number of card-prints on the sheet substantially as set forth.

3. In a machine for punching cards from the printed sheet, the provision on the short-feed clamp X of the arm 1, connected by rod 2 with lever 3 in the described combination with stud 4 on the long-feed lever M, as and for the purposes set forth.

4. In a machine for punching cards from the printed sheet, the auxiliary or long-feed mechanism, consisting of supplementary carriage N, having the gripper O, the feed-arm M, the spring T, the hinged frame R R³, the rock-bar R³, and the duplex cam K S, which mechanism is so connected by gearing L with the short-feed cam-shaft F as to revolve once to as many rotations of said shaft F as the number of card-prints, substantially as and for the purpose set forth.

5. In a machine for punching cards from the printed sheet, the combination, with the described long-feed mechanism, of the adjusting mechanism consisting of the gage U V, having the adjusting-screw W, substantially as set forth.

6. In a machine for punching cards from the printed sheet, the combination, with the described short feed, of the cam-formed stop 5, the shaft 9, having handle 10, and the worm-gear 7 8, connecting the said stop and shaft, as set forth.

7. In a machine for punching cards from the printed sheet, the combination, with the described long and short feed mechanisms, of receiving-table A', having shoulder *a*, roller *a'*, and the elastic lips *a''*, *a'''*, and *a*ᴵᵛ, substantially as set forth.

8. In a machine for punching cards from the printed sheet, the combination of punch D, crank-shaft F, cam S', the short-feed gripper O', and the mechanism Q' Q'' R' R'' R''', which connects said cam with said gripper, and the spring T' and clamp X, which operate alternately with said gripper, in the manner and for the purposes explained.

9. The remnant-discharging mechanism, consisting of finger Y, having rod-and-lever connection Q'''× R'''× with the long-feed movement, substantially as set forth.

10. The combination of a portable receiving-box, 16, step 23, recessed table and die, the box being supported between the step and die through the table, as set forth.

381,717. SHELL-FUSE.

THORSTEN NORDENFELT, Westminster, England. Filed July 12, 1887. Serial No. 244,084. (No model.) Patented in England Feb. 13, 1884, No. 3,235; in France Feb. 15, 1884, No. 160,354; in Italy Dec. 31, 1884, No. 17,765, and in Spain Sept. 2, 1885, No. 5,043.



Claim.—1. The combination, substantially as set forth, of the body of the fuse having the central chamber, the mantelet consisting of a ring cylindrical on its interior and split from end to end, occupying one end of the chamber and movable endwise thereof, the hammer at the opposite end of the chamber and adapted to move endwise thereof, with its end toward the mantelet of reduced diameter and yieldingly embraced thereby, said hammer being cylindrical on so much of its surface as is at any time to be embraced by the mantelet and the fulminate, whereby the hammer and mantelet are normally held in position of safety, while on firing the gun the hammer becomes surrounded throughout its length, or nearly so, by the mantelet, and is set free to move with the mantelet, thereby exploding the fulminate upon impact of the shell.

2. The combination, substantially as set forth, of the body of the fuse having the central chamber, a hammer at one end of the chamber, a split-ring mantelet at the opposite end thereof and embracing one end of the hammer, and with difficulty movable along it toward its opposite end, the fulminate at the inner end or base of the central chamber fired upon movement of the hammer, the time-fuse ring capable of being turned around the body and about the inner end of its central chamber, and the slowly-burning time-fuse composition contained in the ring, to which the fire from the fulminate passes, the whole so arranged that on firing the gun the hammer travels relatively to the mantelet, and the time-fuse composition becomes instantly ignited.

3. The combination, substantially as set forth, of the fuse-body having the central chamber, a hammer and a split-ring mantelet at opposite ends of the chamber, with the mantelet embracing one end of the hammer, and with difficulty movable along it toward the other end, the rear fulminate at the inner or base end of the central chamber fired upon movement of the mantelet, the time-fuse ring capable of being turned around the body and about the inner end of its central chamber, the slowly-burning time-fuse composition contained in the ring, and to which passes the fire from the fulminate at the inner end of the central chamber, and the front fulminate fired upon movement of the hammer, whereby on firing the gun the mantelet travels relatively to the hammer and at once ignites the rear or time-fuse fulminate, at the same time setting the hammer free to be thrown forward to ignite the front or percussion fuse fulminate upon impact of the shell.

381,718. METALLIC ALLOY.

HEINRICH OSTERMANN and AXEL PRIP, Geneva, Switzerland. Filed Feb. 16, 1888. Serial No. 264,251. (No specimens.)

Claim.—An alloy composed of platinum, forty to fifty parts; copper, fifteen to twenty-five parts; nickel, twenty-five to thirty-five parts; wolfram, one to two parts; cobalt, one to two parts, and cadmium, one to two and a half parts, substantially as described, and for the purpose specified.

381,719. METALLIC ALLOY.

HEINRICH OSTERMANN and CHARLES LACROIX, Geneva, Switzerland, assignors to the Usine Genevoise de Degrossissage d'Or, same place. Filed Feb. 16, 1888. Serial No. 264,260. (No specimens.)

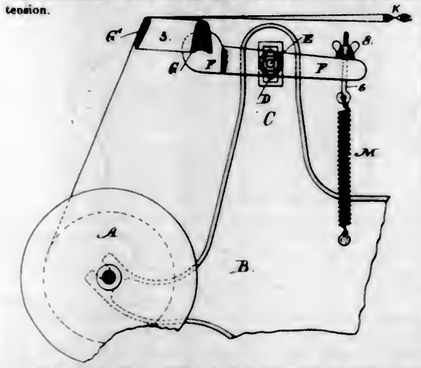
Claim.—1. An alloy composed of gold, palladium, copper, silver wolfram, and cobalt, for the purpose specified.

2. An alloy composed of gold, thirty to forty parts; palladium, twenty-five to thirty-five parts; copper, thirty to forty parts; silver, one-tenth of one part to one part; wolfram, one part to five parts; and cobalt, one-half of a part to two and a half parts, substantially as described, and for the purpose specified.

381,720. WHIP-ROLL FOR LOOMS.

ANTHONY F. PARKER, Charleston, S. C. Filed Aug. 22, 1887. Serial No. 247,612. (No model.)

Brief.—The whip-bar, to which the bearing-bar is attached, is provided at its ends with V-shaped projections, which fit into corresponding recesses in the levers. The levers are capable of vertical adjustment by means of the boxes in the loom-frame, and the springs employed for holding the bearing-bar against the warp have nut-and-bolt connections with the levers, which thus allow of variation of the tension.

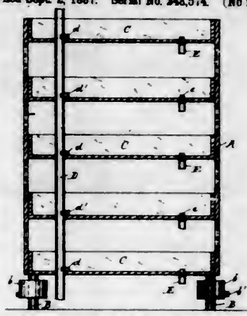


Claim.—1. The combination, with the yarn-beam, of the levers F, the adjustable pivot-studs for the same, the springs M, the whip-bar G, having V-shaped ends resting in notches in the levers F, the bearing-bar G', and the arms that connect the same to the whip-bar, substantially as set forth.

2. The whip-bar G and bearing-bar G', parallel to each other and connected by arms, and the V-shaped ends to the whip-bar, in combination with the levers F, notched to receive the whip-bar, the pivot-studs E and the slotted stands C for receiving the same, the spridge M, and the screws and nuts connected therewith for adjusting the levers F, substantially as set forth.

381,721. PROVISION-SAFE.

HARRIET RANDOL, Pottersburg, Kans. Filed Sept. 2, 1887. Serial No. 248,574. (No model.)

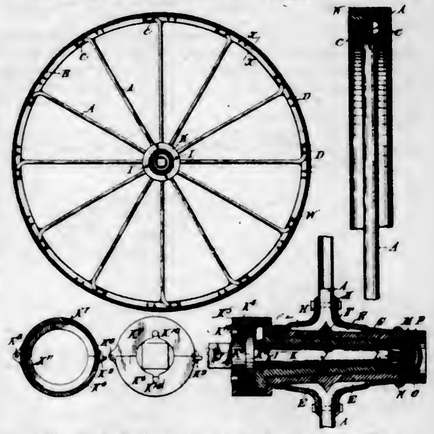


Claim.—1. In a provision-safe, the combination of an inclosing-case, water-tight trays supported within the case, and a pipe extending through all the trays and provided with plugs for letting the water out of each tray when desired.

2. In a provision-safe, the combination of an inclosing-case, water-tight trays supported within the case, short pipes provided with plugs for letting the water out of one tray into the next beneath it, and a long vertical pipe extending through all the trays and provided with lateral holes and plugs for draining each tray separately.

381,722. VEHICLE-WHEEL.

CHARLES A. READE, Chicago, Ill. Filed July 29, 1887. Serial No. 245,599. (No model.)



Claim.—1. A vehicle-wheel consisting of an outer circle of T-iron, a series of spokes bifurcated at their outer ends so as to straddle the flange of the iron and secured thereto and bifurcated at their inner ends, and a sleeve with a ridge which the inner bifurcated ends straddle, and plates which secure the sleeve and bifurcated ends together.

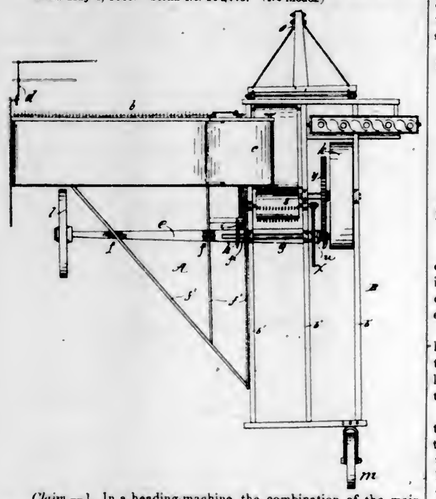
2. A vehicle-wheel consisting of an outer circle of iron spokes bifurcated at their outer ends, being bent in opposite directions and secured to said iron.

3. The combination of an outer circle of T-iron, a series of tubular spokes bifurcated at their outer ends, said ends being bent in opposite directions and secured to said T-iron, as shown, and a center sleeve, and plates whereby the spokes are secured to form the hub.

4. The combination of a vehicle-wheel with an axle having at one end an oil-supplying chamber, a box which contains the same, and hinged portions K⁷ and K⁸, slotted to receive the pins K¹⁰, as and for

the purpose set forth, and at the other end a waste-oil-receiving receptacle, both of said receptacles opening against the axle, one at each side of hub, so that the oil is constantly supplied and the waste oil is constantly carried off.

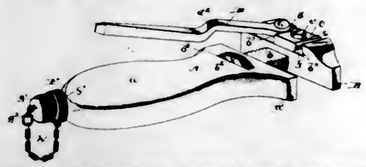
381,723. **COMBINED HEADER AND THRASHER.** GILBERT C. REYNOLDS, JAMES PATERSON, and WILLIAM PATERSON, Stockton, Cal. Filed May 8, 1885. Serial No. 164,775. (No model.)



Claim.—1. In a heading-machine, the combination of the main frame B, the shaft *g*, mounted transversely therein, the drive-wheel *k*, and the axle *e*, projecting from the main frame, and the header-frame pivoted on the shaft *g*, and the axle *e*, the pivots on the axle being in line with the axis of the shaft *g*, the knife *b*, and the draper *c*, constructed and operating substantially as herein described.

2. In a combined header and thrasher, the combination of the main frame, the shaft *g*, mounted transversely therein, the drive-wheel *k*, and the axle *e*, projecting from the main frame, the pivots on said axle being in line with the axis of the shaft *g*, and the header-frame pivoted on the shaft *g*, the knife *b*, the draper *c*, and the thrasher *s*, substantially as herein described.

381,724. **COMBINATION-TOOL.** GEORGE W. RIBBLE, Harrisonburg, Va. Filed Sept. 8, 1886. Serial No. 213,032. (Model.)



Claim.—1. As a new article of manufacture, the compound tool consisting of a wrench having an adjustable jaw and a fixed jaw, the former being removable and carrying the fixed and movable jaws of a spoke grip or tightener, as described.

2. The wrench having the removable jaw, shaped as at b^4, to form one of the jaws of the spoke-grip, the movable clamping-block mounted on the said jaw of the wrench, and the operating-lever bearing upon the clamping-block, as set forth.

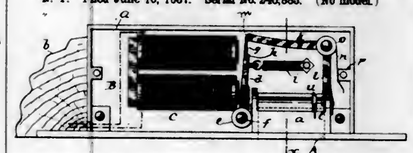
3. The wrench having its movable jaw provided with a lip forming one of the jaws of the spoke-tightener, a movable clamping-block connected to the said jaw of the wrench, and a cam-lever pivoted at one end to the jaw of the wrench to bear upon the block and bent downwardly at an intermediate point of its length toward the handle of the wrench, and adapted to lie parallel and in close proximity thereto when folded, as and for the purpose described.

4. In a combination-tool, an oil-reservoir, a hollow plug connected to the open end of the reservoir and having a removable cap, a fixed seat connected to the plug, an endwise-movable spout operating through the plug, and a spring fitted on the seat for normally impelling the spout through the plug, as and for the purpose described.

5. In combination with an oil-reservoir, a cap removably fitted over the end of a plug communicating with the reservoir, a movable spout housed within the plug, and a spring for impelling the spout toward the cap, as and for the purpose described.

6. In combination with the oil-reservoir, a wrench, a spring-controlled spout fitted in one end of the plug communicating with the reservoir, and a cap detachably fitted on the outer end of the said plug and impinging upon the free end of the spout to force the latter inwardly, and thereby compress the spring which operates against a fixed seat, as and for the purpose described.

381,725. **ELECTRIC DOOR-OPENER.** JOHN SCHNEIDER, New York, N. Y. Filed June 10, 1887. Serial No. 240,853. (No model.)

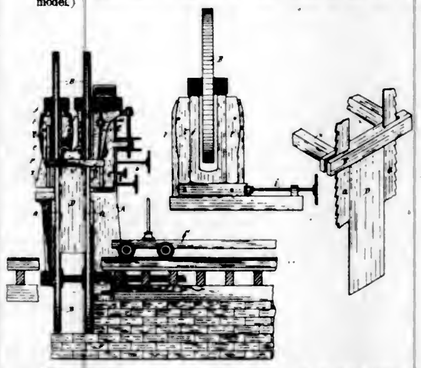


Claim.—1. In an electric door opener and lock, the combination of a lock-latch, a magnet-armature, and a bent lever, one arm pressing upon the lock-latch in a direction to partially resist the movement of the lock-latch and the other arm pressing upon the armature in a direction to form an approximate right angle with said armature.

2. In an electric door opener and lock, the combination of a lock-latch, a magnet-armature, and a bent lever, one arm pressing upon the lock-latch in a direction to partially resist the movement of the lock-latch and the other arm pressing upon the armature in a direction to form an approximate right angle with said armature.

3. In an electric door opener and lock, the combination of an electro-magnet, a pivoted armature therefor having a retractile spring tending to hold the armature from the magnet, a shoulder or projection upon the armature on that side opposite to the magnet, a pivoted bent lever having one arm rectilinear and the other arm curved, a notch upon the end of the curved arm, a retractile spring tending to press the notch *m* of the curved arm upon the end of the armature in a direction to form an approximate right angle between said armature and the curved arm, and an enlarged portion upon the rectilinear arm, having a curved surface pressing upon the lock-latch and tending to hold the same in normal position, the said lock-latch being pivoted in a direction at right angles to that of the bent lever and being provided with a retractile spring which tends to rotate the latch.

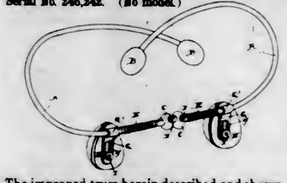
381,726. **BAND-SAW MILL.** FURMON S. SMITH and THOMAS KELLY, Diamond Lake, Mich. Filed Aug. 2, 1887. Serial No. 245,907. (No model.)



Claim.—1. In combination, a log-carriage, the upright frame, the pulleys, the saws back to back upon said pulleys, the sliding guide having rollers mounted thereon between the saws and the plate pendent from said guide and arranged to fill the space between the saws where the sawing is done, substantially as set forth.

2. In a band sawing-machine, the combination of the upright frame, the upper and lower sets of pulleys bearing the saws, the sliding block and screw, the upright standards pivoted to said block at their lower ends and pivoted to the frame-work of the machine near their upper ends, and the forked support detachable between said pivoted standards, one of the upper pulleys being mounted in bearings on said pivoted support, substantially as and for the object stated.

381,727. **TRUSS.** HENRY C. STICKNEY, Portland, Oreg. Filed Aug. 5, 1887. Serial No. 246,242. (No model.)



Claim.—The improved truss herein described and shown, comprising the spring-band A, having the pads B B on its ends, the arms G G, having the integral collars G' mounted on the band A and free to turn thereon, the collars C C, secured upon the band A by the set-screws D D, and the springs E E, coiled around the band and having their opposite ends secured, respectively, to the collars C and the arms G, substantially as specified.

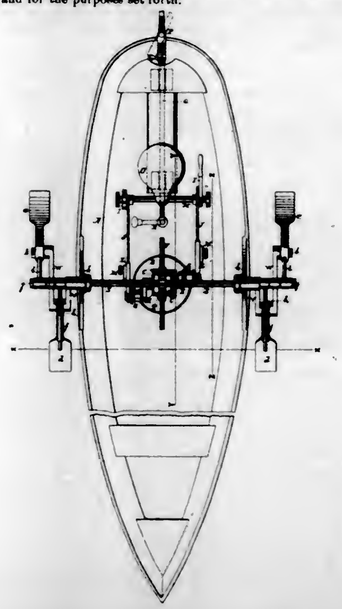
381,728. **SASH-CORD FASTENER.** GEORGE L. THOMPSON, Englewood, Ill. Filed Dec. 6, 1887. Serial No. 257,075. (No model.)

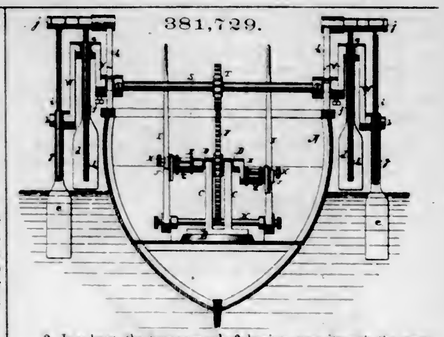


Claim.—A sash-pulley shell adapted for insertion into a round hole in the window-stile, said shell being substantially circular but slightly greater in its vertical diameter than in its horizontal diameter, whereby the shell may be firmly held in its horizontal position without the use of screw-threads or other similar means of attachment and may be inserted by simple pressure, substantially as described.

381,729. **BOAT.** GEORGE N. TIBBLES, Jersey City, N. J. Filed Aug. 19, 1887. Serial No. 247,348. (No model.)

Claim.—1. In a boat, the transverse shaft S, having upon its ends the arms V W, carrying crank-pins *a b*, respectively, which are in line with each other and on opposite sides of the center of said shaft, combined with the propeller-blades *d d* and *e e*, respectively, loosely hung upon said crank-pins, the guides *f f* and *g g*, respectively, on the rear surface of said blades, the loosely-hung rods *h h* and *i i*, respectively, entering said guides, and mechanism for rotating the shaft S, substantially as and for the purposes set forth.





2. In a boat, the transverse shaft having upon its ends the arms V W, carrying crank-pins *a b*, respectively, on opposite sides of the center of said shaft, combined with the propeller-blades loosely hung upon said crank-pins, the loosely-hung guide-rods *h i*, adapted to move in the guides on said propeller-blades, the horizontal shaft D, having crank-arms at its ends and carrying the gear-wheel F, and the pinion-wheel T, secured upon the shaft S and being in engagement with the gear-wheel F, substantially as set forth.

3. In a boat, the horizontal shaft S, carrying two pairs of corresponding crank-arms upon its ends, combined with the propeller-blades secured upon said crank-arms, the horizontal shaft D, having the crank-arms upon its ends and carrying the gear-wheel F, the pinion-wheel T, secured upon the shaft S and being in engagement with said gear-wheel, the vertical levers I and pitman-rods J, the latter being pivotally secured at one end to the levers and at their other ends being provided with hook-shaped extremities, and locking-slides L, substantially as and for the purposes set forth.

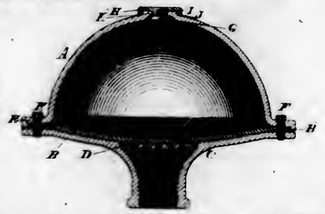
381,730. **DEPILATING AND BALING.** JOSEPH TOWNSEND, Glasgow, County of Lanark, Scotland. Filed June 7, 1887. Serial No. 240,563. (No specimens.) Patented in England Aug. 28, 1886, No. 10,967; in Germany June 4, 1887, No. 42,526; in Belgium June 8, 1887, No. 77,759; in Canada June 24, 1887, No. 27,042, and in Austria-Hungary Oct. 21, 1887, No. 22,806 and No. 49,063.

Claim.—1. As an improvement in the treatment of hides or skins, the mode herein described of preparing them for tanning, said mode consisting in subjecting the hides or skins to the action of aluminate of soda or of potash for the removal of the hair, substantially as set forth.

2. As an improvement in the treatment of hides or skins, the mode herein described of preparing them for tanning, said mode consisting in first steeping the hides or skins in aluminate of soda or potash and unhairing them, and then steeping them in a solution containing boracic acid.

3. As an improvement in the treatment of hides or skins, the mode herein described of preparing them for tanning, said mode consisting in first steeping the hides in aluminate of soda or of potash and unhairing them, and then treating them with a solution containing boracic acid and a salt of alumina.

381,731. **PLUMBER'S AIR-CUSHION.** ALBERT H. WALKER, Hartford, Conn., assignor to Cyrus C. Clapp, same place. Filed Jan. 25, 1888. Serial No. 261,840. (No model.)



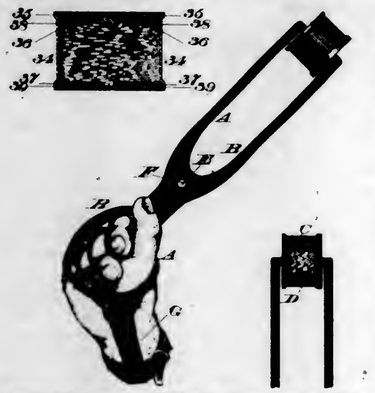
Claim.—1. The combination of the shell A, the diaphragm B, and the shell C, provided with the perforated diaphragm D, the three parts being hermetically united together, so as to have an air-chamber within the shell A above the diaphragm B and a water-chamber provided with the perforated diaphragm D below the diaphragm B, all substantially as described.

2. The combination of the shell A, provided with the valve G, the diaphragm B, and the shell C, provided with the perforated dia-

phragm D, all hermetically united together, so as to have a chamber for compressed air within the shell A above the diaphragm B and a water-chamber provided with the perforated diaphragm D below the diaphragm B, all substantially as described.

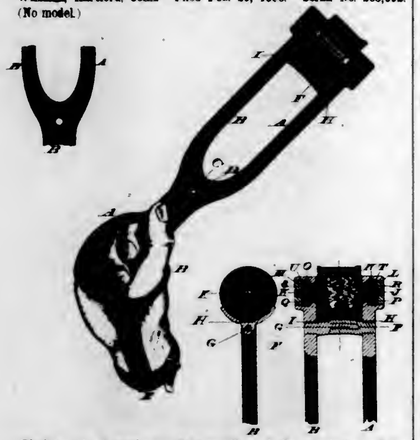
3. The combination of the shell A, the valve G, provided with the stud I, and the screw-cap H, all united together to hermetically seal the shell A, substantially as described.

381,732. **PROJECTOR FOR SEA-OILING SHELLS.** ALBERT H. WALKER, Hartford, Conn. Filed Feb. 15, 1888. Serial No. 264,101. (No model.)



Claim.—A projector for sea-oiling shells, consisting of the levers A and B, crossing each other midway of their lengths and pivoted together by the bolt E, and having their rear ends made in the form of the rear ends of the two members of tailors' shears, respectively, and provided at their forward ends with the axially-opposite and inwardly-projecting prongs C and D, respectively, all substantially as described.

381,733. **PROJECTOR FOR SEA-OILING SHELLS.** ALBERT H. WALKER, Hartford, Conn. Filed Feb. 29, 1888. Serial No. 265,692. (No model.)



Claim.—1. A projector for sea-oiling shells, consisting of the levers A and B, crossing each other and mutually articulated midway of their lengths and pivoted together by the bolt C, and provided at their forward parts with the dowel-socket F and the therein-entering dowel G, respectively, the meeting wings H and I, respectively, and the axially-opposite and inwardly-projecting prongs J and K, respectively, all substantially as described.

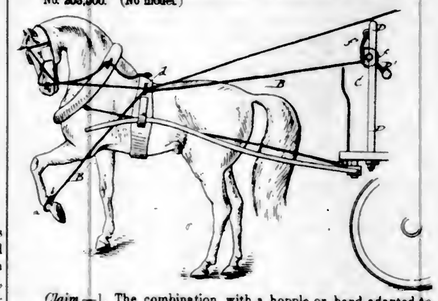
2. A projector for sea-oiling shells, consisting of the levers A and B, crossing each other and mutually articulated midway of their lengths and pivoted together by the bolt C, and provided at their forward parts with the axially-opposite and inwardly-projecting prongs J and K, respectively, the strippers P and Q, respectively, adjacent to those prongs, and the springs R and S, adjusted to work those strippers, respectively, all substantially as described.

3. A projector for sea-oiling shells, consisting of the levers A and B, crossing each other and mutually articulated midway of their lengths and pivoted together by the bolt C, and provided at their forward parts with the dowel-socket F and the therein-entering dowel G, respectively, the meeting wings H and I, respectively, the axially-opposite and inwardly-projecting prongs J and K, respectively, the strippers P and Q, respectively, adjacent to those prongs, and the springs R and S, adjusted to work those strippers, respectively, all substantially as described.

381,734. **ALUM-TANNED SKIN.** ANTOINE WARTER and HENRY C. KOECHL, Newark, N. J. Filed Mar. 23, 1888. Serial No. 268,296. (No specimens.)

Claim.—As a new article of manufacture, a tawed or alum-tanned skin subsequently impregnated with the sesquioxide of chromium, as set forth.

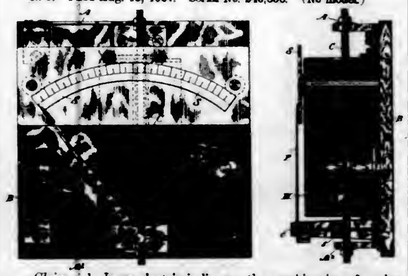
381,735. **DEVICE FOR STOPPING HORSES.** AUGUST WEDEKIND, Brooklyn, N. Y. Filed June 16, 1886. Renewed Oct. 27, 1887. Serial No. 253,500. (No model.)



Claim.—1. The combination, with a hopple or band adapted to be applied to one of the fore feet of the horse below the fetlock, a connecting-strap attached to said hopple or band, and a rein-guide through which said connecting-strap is passed, and a windlass on the wagon-body, substantially as set forth.

2. The combination of a hopple or band applied to the fore foot of the horse below the fetlock, a connecting-strap attached by a spring-clasp to rings of the band, a rein-guide for supporting the connecting-strap, and a windlass having a pawl-and-ratchet mechanism on the wagon-body, substantially as set forth.

381,736. **ELECTRIC INDICATOR.** EDWARD WESTON, Newark, N. J. Filed Aug. 13, 1887. Serial No. 246,838. (No model.)

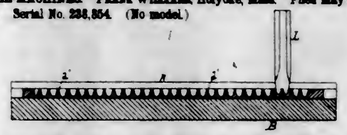


Claim.—1. In an electric indicator, the combination of a solenoid or hollow coil with a core having its longitudinal axis coincident with the axis of the solenoid, and springs for supporting said core, which are flexible in one direction, so as to permit the free longitudinal movement of the core, and rigid in other directions, to prevent any lateral movement of the same.

2. In an electric indicator, a core or armature supported upon the ends of two flat springs and free to move longitudinally, but not laterally, in combination with an index or pointer and a retracting-spring.

3. In an electric indicator, the combination of a solenoid with an axial core freely suspended therein and supported by two springs at different points of its length, a pointer or index, and the arm *s*, pin *p*, and spring R, for communicating the motion of the core to the pointer.

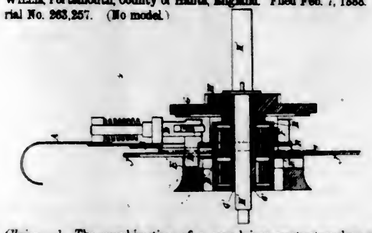
381,737. **METHOD OF RENEWING STRAINER-PLATES FOR PAPER-MACHINES.** FRANK WILLIAMS, Holyoke, Mass. Filed May 30, 1887. Serial No. 238,854. (No model.)



Claim.—1. The method of renewing strainer or screen plates of paper-machines herein set forth, which consists in securing the plate face downward upon a suitable bed by means of clamps bearing continuously upon two sides of the plate, and applying sufficient pressure to the ribs upon the rear side of the plate to expand the metal at the face of the plate and decrease the width of the slots therein, substantially as described.

2. The method of renewing strainer or screen plates of paper-machines, which consists of the following steps, viz: first, securing the plate face downward upon a bed-plate by means of clamps bearing continuously upon two sides of the former-plate; second, applying sufficient pressure to the ribs at the rear side of the plate to expand the metal at the face of the plate and completely close the slots therein, and, third, making new slots in the plate, substantially as set forth.

381,738. **TELEGRAPHIC SIGNALING APPARATUS.** JAMES R. WILLIS, Portsmouth, County of Hants, England. Filed Feb. 7, 1888. Serial No. 263,257. (No model.)

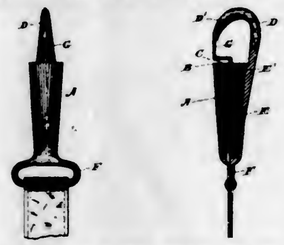


Claim.—1. The combination of a revolving contact-maker with a pair of spiral springs coiled in opposite directions and connecting the contact-maker to the part whose movement is to be signaled.

2. The combination of the radial arm B with its contact-maker A, the spring-bolt D D′, the ring E, the cams F F′, the tube G′, and the springs I I′, substantially as described.

3. The combination of the radial arm B with its contact-maker A, the spring-bolt D D′, the notched ring E, the cams F F′, the tube G′, the springs I I′, the toothed wheel J, the pinion K, and fly L, substantially as described.

381,739. **SNAP-HOOK.** EDWARD A. WILSON, Dockertown, N. J. Filed Feb. 24, 1888. Serial No. 265,165. (No model.)

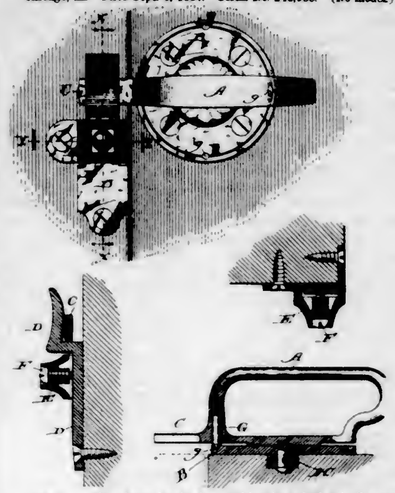


Claim.—1. In a harness or other snap-hook, the combination of a sleeve forming the body of the snap and provided with a hook, a coiled or spiral spring in the sleeve, and a tongue made integral with the said spring, substantially as described.

2. In a harness or other snap-hook, the combination of a sleeve forming the body of the snap-hook and provided with a hook, and a coiled spring placed within said sleeve and bent so as to project and form a tongue bearing against the hook, substantially as described.

3. In a harness or other snap-hook, the combination of a sleeve having a hook formed integral with it, a wire coiled in the shape of a spiral spring within the sleeve and having one end projecting through an aperture in the head of the said sleeve and bent so as to form a tongue adapted to bear against the end of the hook and close the snap, substantially as described.

381,740. **LEVER LATCH AND HANDLE.** JOHN F. WOLLENSAK, Chicago, Ill. Filed Sept. 6, 1887. Serial No. 248,988. (No model.)



Claim.—1. In a lever-latch, the combination of a latch, C, a catch, D, a retaining-piece, E, and a set-screw, F, substantially as described.

2. In a lever-latch, the combination of a handle, A, provided with a spring-pin, G, a base-plate, B, provided with a hole or holes, *g*, a latch, C, and a catch, D, substantially as described.

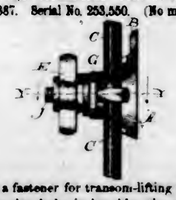
3. In a lever-latch, the combination of a handle, A, provided with a spring-pin, G, a base-plate, B, provided with a hole or holes, *g*, a latch, C, a catch, D, and a set-screw, F, substantially as described.

381,741. **TRANSOM-LIFTER.** JOHN F. WOLLENSAK, Chicago, Ill. Filed Oct. 6, 1887. Serial No. 251,555. (No model.)



Claim.—In a fastener for transom-lifting rods, the combination of a shell or case having holes in its sides through which the lifting-rod may pass, a hole in its outer end through which the outer end of a fastening device may extend, and a projection, as E, on its outer end, a fastening device having a ring or eye on its inner end and screw-threads on its outer end inserted in the shell or case from the inside with its threaded end extending out through the hole in the outer end of the shell, a transom-lifting rod passing through the holes in the side of the shell or case and through the ring or eye on the inner end of the fastening device, and a nut having an extension, as F, on one side screwed onto the outer end of the fastening device and drawing the lifting-rod against the outer edges of the holes in the shell or case, the extension on the nut and the projection on the shell contacting against each other as the nut is unscrewed and preventing its removal when the parts are together, substantially as described.

381,742. **TRANSOM-LIFTER.** JOHN F. WOLLENSAK, Chicago, Ill. Filed Oct. 27, 1887. Serial No. 253,550. (No model.)

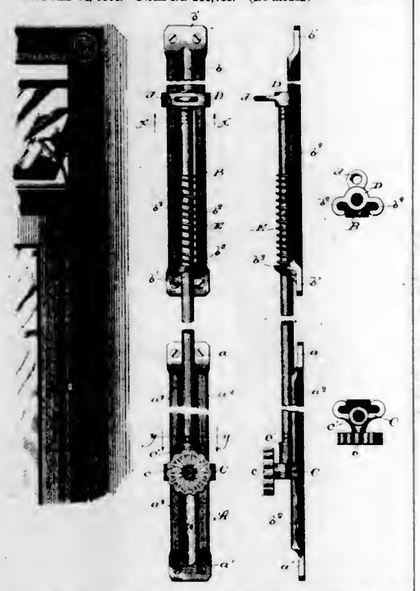


Claim.—1. In a fastener for transom-lifting rods, the combination of a shell or case having holes in its sides through which the lifting-rod may pass, a washer engaging non-rotatably with the outer end of

the shell or case and having a projection, as *d*, a lifting-rod passing through the holes in the shell or case and held in a fixed position when the fastening-nut is screwed down, and a fastening-nut having an extension, as *e*, the extension on the nut and the projection on the washer engaging with each other as the nut is unscrewed and preventing its removal when the parts are together, substantially as described.

2. In a fastener for transom-lifting rods, the combination of a shell or case having holes in its sides through which the lifting-rod may pass and a hole in its outer end through which the threaded end of a fastening device may extend, a washer on the outer end of the shell or case held non-rotatably, and also having a hole through which the threaded end of the fastening device may extend, and a projection, as *d*, a fastening device having a hook or ring on its inner end and screw-threads on its outer end extending out through the holes in the shell and washer to receive a fastening-nut, a lifting-rod passing through the holes in the shell or case and through the hook or ring on the inner end of the fastening device, whereby it may be drawn and held against the outer edges of the holes, and a fastening-nut having an extension, as *e*, screwed on the outer end of the fastening device and drawing the lifting-rod against the outer edges of the holes in the shell or case, the extension on the nut and the projection on the washer contacting against each other as the nut is unscrewed and preventing its removal when the parts are together, substantially as described.

381,743. TRANSOM-LIFTER. JOHN F. WOLLENSAK, Chicago, Ill. Filed Jan. 14, 1888. Serial No. 260,763. (No model.)

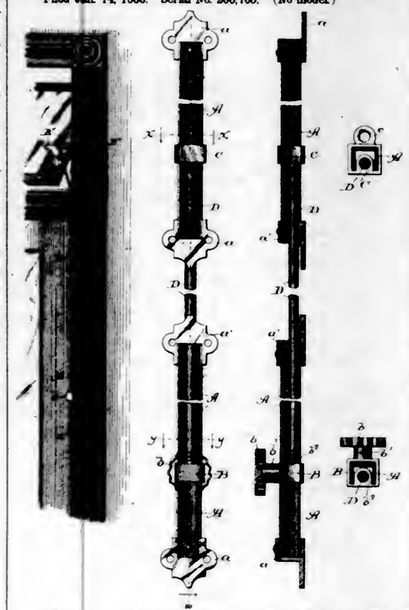


Claim.—1. In a transom-lifter, an externally-grooved and outwardly-flanged stationary guide-plate for guiding the lifting-rod, substantially as described.

2. In a transom-lifter, the combination of externally-grooved and outwardly-flanged stationary guide-plates for the upper and lower ends of the lifting-rod, a fastening device sliding upon the lower plate and adapted to receive the lower end of the lifting-rod, a head-block sliding upon the upper plate and adapted to be secured to the upper end of the rod, and the lifting-rod connecting the fastening device and head-block, substantially as described.

3. In a transom-lifter, the combination of externally-grooved and outwardly-flanged stationary guide-plates for the upper and lower ends of the lifting-rod, the upper plate having a projection at or near its lower end through which the rod may pass, a fastening device sliding upon the lower plate and adapted to receive the lower end of the lifting-rod, a head-block sliding upon the upper plate and adapted to be secured to the upper end of the rod, a lifting-rod connecting the fastening device and head-block, a bracket attached to the transom, and a lifting-arm connecting the head-block and bracket, substantially as described.

381,744. TRANSOM-LIFTER. JOHN F. WOLLENSAK, Chicago, Ill. Filed Jan. 14, 1888. Serial No. 260,765. (No model.)

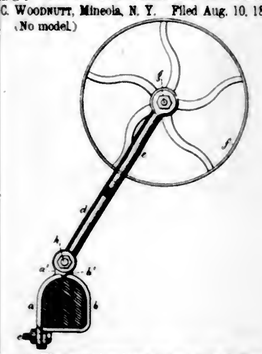


Claim.—1. In a transom-litter, a guiding-shell closed at the front and open at the back and having supporting-brackets, substantially as described.

2. In a transom-lifter, the combination of guiding-shells closed at the front and open at the back, supporting-brackets, slotted head-block, and a lifting-rod connecting the head-block and fastening device, substantially as described.

3. In a transom-lifter, the combination of guiding-shells closed at the front and open at the back, supporting-brackets, slotted fastening device, slotted head-block, lifting-rod connecting the head-block and fastening device, a bracket attached to the transom, and a lifting-arm connecting the bracket with the head-block, substantially as described.

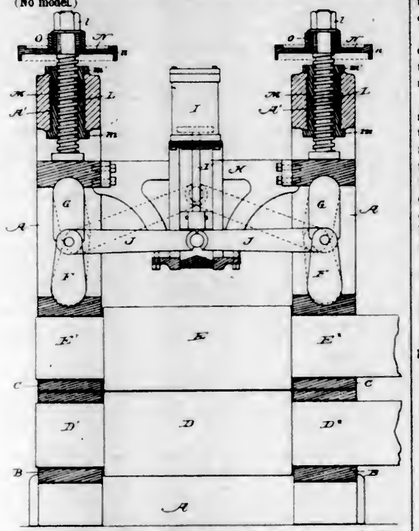
381,745. DEVICE FOR ASSISTING IN TRAINING HORSES. HENRY C. WOODNUTT, Mineola, N. Y. Filed Aug. 10, 1887. Serial No. 246,563. (No model.)



Claim.—1. The combination, with the shaft B and wheel *f*, of an adjustable clip adapted to be connected upon the shaft, and an arm carrying the wheel *f* and adjustably pivoted to said clip, substantially as and for the purposes set forth.

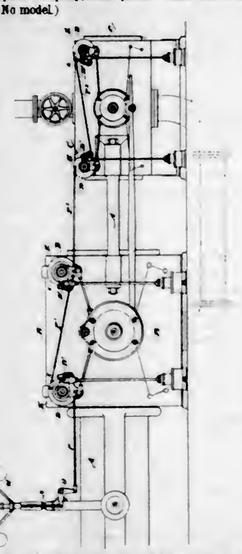
2. The clip-pieces *a b*, the hubs *a' b'*, having radially-serrated opposing faces *i*, the arm *d*, forked at *e* and having radially-serrated faces, the wheel *f*, and the bolts *h* and *g*, for connecting the parts, substantially as and for the purposes set forth.

381,746. METHOD OF ROLLING SHEET METAL. FRANKLIN H. WRIGHT, Lake View, Ill. Filed Jan. 16, 1888. Serial No. 260,871. (No model.)



Claim.—The herein-described method of rolling sheet metal, which method consists in subjecting the body of the sheet of metal to the pressure of the rolls and withdrawing the pressure of said rolls from said sheet while said rolls pass over the ends of said sheet, substantially as and for the purposes herein described.

381,747. VALVE-GEAR. JOHN YOUNG, Newark, N. J., assignor to the Watts Campbell Company, same place. Filed Oct. 1, 1887. Serial No. 251,169. (No model.)

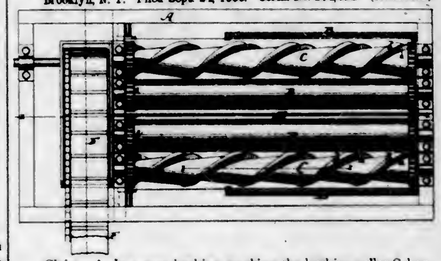


Claim.—1. In a Corliss engine, the adjustable cam-wheels E *e*, arranged concentric to their respective valve-shafts D, adapted to perform the double functions of releasing said valves at variable periods according to the positions of the cams and of serving as levers to transmit a reversed motion, in combination with the governor M and rod P, connecting said governor with the first of said cam-wheels, and a rod, P^{x}, connecting such cam-wheel with the next cam-wheel, and with ordinary or suitable means operated by the motion of the engine for opening said valves, and with ordinary or suitable means for causing the valves to close promptly when released, all arranged for joint operation substantially as herein specified.

2. In a steam or gas engine, two or more cylinders arranged tandem, with rods P^{x} P^{2} P^{3}, connecting the several cam-wheels E of the train of steam-valves directly together, so that each one actuates the next, and so on throughout the series, as herein specified.

3. In a tandem compound Corliss engine, the four steam-valve shafts D, with the corresponding cam-wheels, E *e*, mounted loosely thereon, adapted to release said valves at variable periods, in combination with each other and with the governor M, bell-crank lever O, rod P, connecting said governor with the first of said cam-wheels, a rod, P^{x}, connecting such cam-wheel with the next, a similar rod, P^{3}, connecting the last cam-wheel of the first cylinder with the first cam-wheel of the next cylinder, and, finally, a rod, P^{4}, connecting the latter with the last cam-wheel, thus completing the series, all arranged for joint operation substantially as and for the purpose set forth.

381,748. CORN-HUSKING MACHINE. HENRY H. ARMSTEAD, Brooklyn, N. Y. Filed Sept. 24, 1886. Serial No. 214,404. (No model.)



Claim.—1. In a corn-husking machine, the husking-roller C, having spiral projecting thread *a* and spiral elastic thread *b*, carried on the edge of the thread *a*, the space between the metallic threads being uncovered and free, as and for the purpose specified.

2. The combination of the husking-roller C, having spiral projecting thread *a* and spiral elastic thread *b*, which is secured in a recess in spiral *a*, with the contiguous roller D, as described.

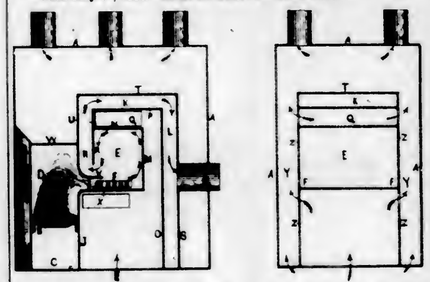
3. The combination of two sets of husking-rollers, C D C D, with the intermediate knife, E, for cutting in two the stalks that fall crosswise, as described.

381,749. BRUSH. JOSEPH J. ASHBURNER, London, England. Filed Oct. 5, 1887. Serial No. 251,527. (No model.) Patented in England May 18, 1886, No. 6,687.



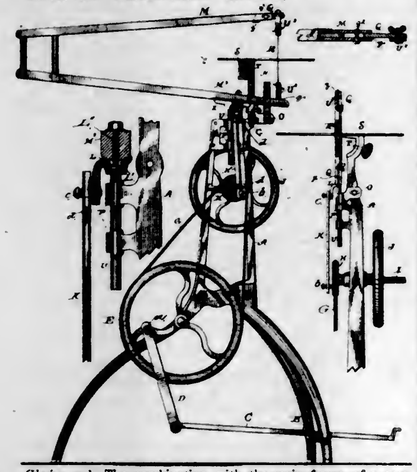
Claim.—A brush provided with recesses in the stock of the same for the reception of water, substantially as described.

381,750. HOT-AIR FURNACE. CLOVIS N. BACON, Boston, Mass. Filed July 17, 1886. Serial No. 208,317. (No model.)



Claim.—The combination, with an outer casing, of a fire-chamber within said casing, a drum communicating with the space between the outer casing and fire-chamber, and having within it a combustion-chamber connected with the fire-chamber, a deflector extending partially across the mouth of the combustion-chamber, a second deflector extending in proximity to the end of the first-named deflector, and a casing partially surrounding the drum and forming with a portion of the walls of the drum a smoke-exit flue, substantially as described.

381,751. SCROLL-SAW. HENRY L. BEACH, Montrose, Pa. Filed Oct. 28, 1887. Serial No. 253,599. (No model.)



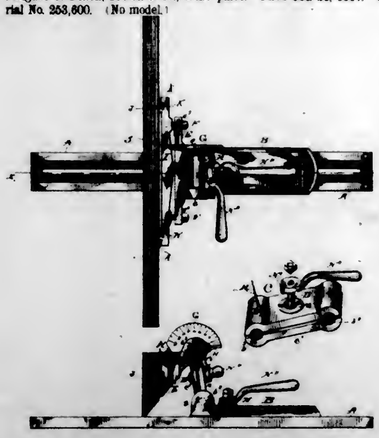
Claim.—1. The combination, with the main frame, of a saw-frame, a slotted plate, L, secured thereto, having a curved seat between itself and said saw-frame, and an adjusting screw or bolt passed through said frame and slotted plate, whereby said frame is adjusted to a perpendicular position, substantially as described.

2. The main frame, the plate L, having a spindle mounted therein, said plate having a concaved upper face and slot L′, a saw-frame having an arm, M^3, with convex under face seated on said plate, and a screw or bolt, L″, passing through said arm and slot and adjusting the saw-frame perpendicularly, substantially as described.

3. The main frame, the slotted table, and a saw-frame mounted in the main frame and having a slotted end, in combination with the casting O, adjustably secured by means of a slot therein to the main frame and having an arm passing through the slotted end of the saw-frame to keep the saw in the center of the slot in the table, substantially as described.

4. An improved scroll-saw comprising a main frame, a saw-frame consisting of arms M and M^2, a plate having a spindle mounted in the main frame, a curved bearing between said plate and lower arm of the saw-frame, the adjustable arm Q in the forward ends of the upper arm, M, the clamping-plates pivoted thereto and to the lower arm, M^3, and carrying the saw-blade, a table, and an adjustable casting or plate, O, on the main frame, having an arm for holding the saw-blade in the center of the slot in the table, and also for preventing the rotation of the saw-frame, substantially as herein described.

381,752. SAW-TABLE GAGE. HENRY L. BEACH, Montrose, Pa., assignor to Beach, Brown & Co., same place. Filed Oct. 28, 1887. Serial No. 253,600. (No model.)



Claim.—1. In a saw-table gage, a plate movable upon a bed-plate and a block or gage, J, in combination with the plate I, secured to said block, the plate E, secured to the plate I and bearing upon a projection at its center, the shafts b^2 and b^3, carried by the plate I and the movable plate, respectively, and a link-connection between said shafts, said connection consisting of two spaced plates having curved faces fitting the shafts and a lever having a cam-surface engaging a similar surface on one of the spaced plates, whereby said plates may be clamped tightly upon the shafts, substantially as and for the purpose specified.

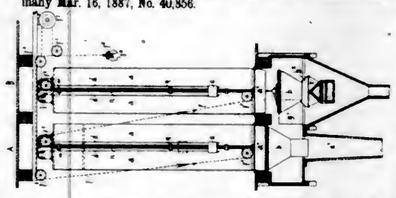
2. The combination, with the slotted bed-plate and the plate B, adapted to be moved thereon, of the block or gage having the plate I secured thereto, the plate E, secured to said plate I and provided with a graduated plate, and a link-connection between said movable plate and plate I, said connection having a pointer adapted to register with the graduated plate, substantially as described.

3. The slotted bed-plate and the movable plate B, provided with the ears *b*, in combination with the shafts b^2 and b^3, the link-sections *c* and *c*′, mounted thereon, one of said sections having a pointer, H, and double inclined or cam surface, a locking-lever engaging said surface to clamp the link-sections, the block J, having a plate, I, secured thereto, and the plate E, connected with said plate I and having a graduated plate, whereby when said block is moved the graduated plate and pointer indicate the angle of the block, substantially as described.

4. The block or gage J, the plate I, secured at its end thereto, so as to leave a space between itself and gage, and provided with the rib or projection e^3, in combination with a plate or bar having a recess for said rib or projection, and the regulating-screws F, substantially as described.

5. An improved saw-table gage comprising a slotted bed-plate, a plate moving thereon, a locking-lever for the movable plate, a block or gage, J, the plate I, secured thereto and provided with a rib or projection, the plate or bar E, secured to the plate I and having the graduated plate G, recess e^3, and ears *e*, the regulating-screws securing plate E to plate I, the link-sections, one of which has a fixed pointer, and a lever for locking or clamping the link-sections together, substantially as described.

381,753. DUST-COLLECTOR. GUSTAV BEHRNS, Lubeck, Germany. Filed Oct. 5, 1887. Serial No. 251,534. (No model.) Patented in Germany Mar. 16, 1887, No. 40,856.



Claim.—1. The combination, with the chamber *g*′ and the inverted bags *a*, of the weight *c*, ropes *d*, connected to the weight and the bags, pulleys *i*, for guiding the ropes, traveling chain *f*, passing through the weight and having collars *g*, for engaging and lifting the weight, and means for releasing the weight from the collars, substantially as and for the purpose described.

2. The combination, with the chamber *g*′ and the inverted bags *a*, of the weight *c*, ropes *d*, connected to the weight and the bags, pulleys *i*, for guiding the ropes, traveling chain *f*, passing through the weight and having collars *g*, for engaging and lifting the weight, latch *o* and pawl *p*, pivoted to the weight, and fixed toe *r*, substantially as and for the purpose specified.

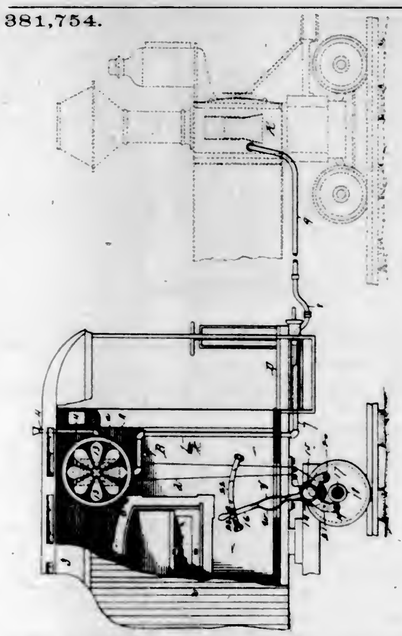
3. The combination, with the chamber *g*′ and the inverted bags *a*, of the weight *c*, ropes *d*, connected to the weight and the bags, traveling chain *f*, passing through the weight and having collars *g*, for engaging and lifting the weight, means for releasing the weight from the collars, funnel *b*, rod *u*, having the collar *v*, means of connection between the rod *u* and funnel *b*, pawl *x*, and cone *b*′, substantially as and for the purpose described.

4. The combination, with the chamber *g*′ and the inverted bags *a*, of the weight *c*, ropes *d*, connected to the weight and the bags, traveling chain *f*, passing through the weight and having collars *g*, for engaging and lifting the weight, means for releasing the weight from the collars, funnels *b* and *z*, sleeve b^2, rod *u*, having the collar *v*, means of connection between the rod *u* and funnel *b*, pawl *x*, and cones *b*′ and *z*′, substantially as and for the purpose set forth.

381,754. MEANS FOR HEATING RAILWAY-CARS. ELIJAH R. BENHAM, Holyoke, Mass., assignor of one-half to J. J. Fraser, same place. Filed Apr. 25, 1887. Serial No. 235,906. (No model.)

Claim.—1. Means for warming the cars of a train by the products of combustion taken from the smoke-box of the locomotive, consisting of a heat-radiating fan, substantially as described, having hollow arms supported in a position to rotate within a car, a belt, *d*, connecting-pulleys actuated by the axle of the car with the fan, whereby said fan is rotated, a pipe conveying the products of combustion from said smoke-box to the fan, a receptacle for said products of combustion, with which the hollow arms of the fan communicate, and an ejecting-pipe connected to said receptacle, combined and operating substantially as set forth.

381,754.



2. Means for warming cars by the products of combustion taken from the locomotive, consisting of a heat-radiating fan having a series of hollow metallic arms, a drum to which said arms are fixed by one end, a circular tubular receptacle having an annular groove in its inner side, a flat ring within said receptacle and covering said groove through which said arms pass, a hollow hub on which said drum rotates, having communication therewith by passages through its sides, a pipe conveying said products of combustion from the smoke-box of said fan, and a discharge-pipe leading from said receptacle to the outside of the car, substantially as set forth.

3. Means in a car for receiving the products of combustion from the smoke-box of a locomotive and imparting the heat thereof to the air in said car, consisting of a heat-radiating fan constructed with a series of hollow metallic arms having in cross-section substantially the form of a segment of a circle, a drum to which said arms are fixed by one end, a tubular receptacle encircling the outer ends of said arms, having an annular groove in its inner side, a flat ring within said receptacle covering said groove through which said arms pass, a hollow hub on which said drum rotates having communication therewith by passages through its sides, and a pipe conveying the products of combustion from the smoke-box of a locomotive to said hollow hub and a pipe for discharging the products of combustion from said receptacle, substantially as set forth.

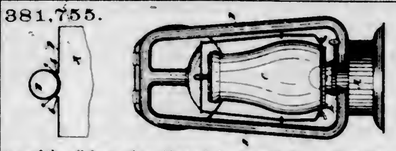
381,755. TUBULAR LANTERN. LEWIS F. BETTS, New York, N. Y., assignor of one-half to Robert E. Dietz, same place. Filed Nov. 17, 1887. Serial No. 255,408. (No model.)

Claim.—1. In a tubular lantern, the oil-fount top provided with parallel ridges or corrugations extending from the central portion to the circumference, substantially as and for the purposes set forth.

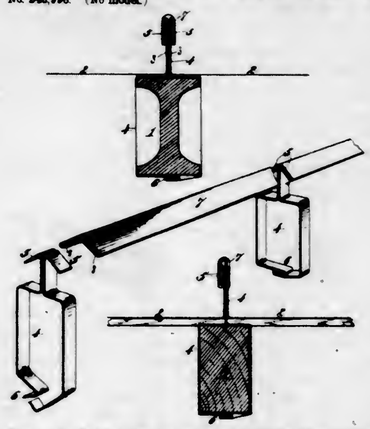
2. In a tubular lantern, the oil-fount top provided with a central dome, a ridge concentric with said dome, and parallel ridges extending from the central portion to the circumference, substantially as and for the purposes set forth.

3. In a tubular lantern, the combination of the air-tubes and the top of the oil-fount, the said top being provided with parallel ridges, between which the tubes are located, and the parts being secured by solder, substantially as and for the purposes set forth.

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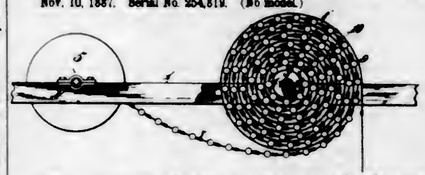
381,756. CAP AND ANCHOR FOR METALLIC ROOFING. BENJAMIN F. CALDWELL, Wheeling, W. Va. Filed Aug. 15, 1887. Serial No. 246,998. (No model.)



Claim.—1. In combination, with a cap angular in cross-section to form two flanges, of an anchor consisting of two metallic straps adjustably engaged with said cap, and having their lower ends hooked to interlock beneath a rafter, substantially as described.

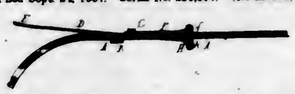
2. The combination, with an angular cap having two flanges bent or doubled to form longitudinal grooves or recesses, of an anchor consisting of two metallic straps having at their upper ends arms adjustably engaged in the grooves of the cap and hooked lower ends adapted to interlock beneath a rafter, substantially as described.

381,757. MACHINE FOR PAINTING METALLIC ROOFING. BENJAMIN F. CALDWELL and WILLIAM F. PETERSON, Wheeling, W. Va. Filed Nov. 10, 1887. Serial No. 254,819. (No model.)



Claim.—An apparatus for drying painted sheet-metal roofing, consisting of a frame, 1, a shaft, 2, having means to engage the end of the sheets of metal, the chains engaging the shaft, and the shaft 4, having spools 5, and to which the chains are attached, substantially as described.

381,758. TWO-WHEELED VEHICLE. JOHN P. CALLAN, Aurora, Ill. Filed Sept. 24, 1887. Serial No. 250,597. (No model.)



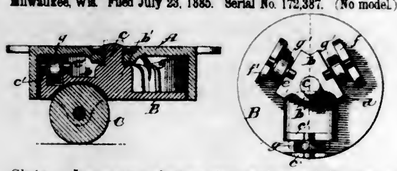
Claim.—1. In combination with the bar B, the seat-arms vertically adjustable at the extremities with the forward free ends of springs F, whose rear ends are secured to the shafts, all substantially as shown and described.

2. The combination of the seat-arm having the T-shaped piece upon the forward end and provided with the holes *h* in the cross-arm

of the same, the spring F, and bolt *f*, all substantially as described, and for the purpose set forth.

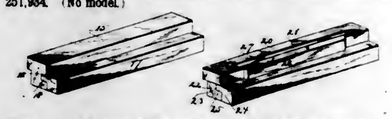
3. The combination of the plate I, secured to the upper side of the cross-bar B and having the hole *j*, with the plate K, having the pin *l*, and attached to the under side of the seat-arm, all substantially as shown, and for the purpose described.

381,759. TRUNK OR FURNITURE CASTER. JOHN P. CARMICHAEL, Milwaukee, Wis. Filed July 23, 1885. Serial No. 172,387. (No model.)



Claim.—In a caster, a bottom plate having a spindle, with an anti-friction wheel or wheels sustained adjacent thereto, and another anti-friction wheel moving in a circle outside the line of motion of the first-named wheel or wheels, in combination with a roller journaled beneath a point between the last-named anti-friction wheel and the spindle, substantially as set forth.

381,760. BUREAU. DWIGHT C. CLAPP, Owosso, Mich., assignor of one-half to David M. Estey, same place. Filed Oct. 10, 1887. Serial No. 251,934. (No model.)



Claim.—1. In a bureau, the combination, with the end panels, the inner faces of which are provided with horizontal grooves, of the combined guides and supports, each of which is composed of a bar and a strip, the outer side of each of which is provided with a tongue formed by rabbeting the lower outer edges, and the inner face of the bar is provided with a longitudinal groove, the tongue of the bar fitting within the groove in the inner face of the end panel, and the tongue of the support fitting in the groove of the bar.

2. In a bureau, the combination, with the end panels, of drawers, guides upon the inner face of one panel and supports upon the inner face of the other panel, strips upon the supports, each having a dovetailed recess in its inner face, and a spring-actuated dovetailed piece cut from said strip and fitting within the recess and bearing against the end of the drawer, as and for the purpose set forth.

3. The combination of an end panel of a bureau having transverse grooves upon the inner side, bars secured in the grooves and having dovetailed recesses in their inner projecting faces, bars glued to the projecting portions of the under sides of the bars and having their upper corners rabbeted to form grooves, supporting-strips fitted with tongues into the said grooves, and dovetailed bars or pieces fitting into the recesses and forced outward in the same by suitable springs, as and for the purpose shown and set forth.

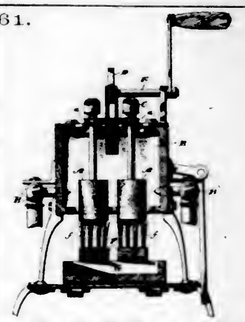
4. In a bureau, the combination of the drawers, suitable end guides for the drawers upon one end panel, an end panel having horizontal grooves, bars secured with their outer sides in the grooves and having dovetailed recesses in their inner sides, bars secured to the under sides of the former bars and having their upper corners rabbeted to form grooves, strips having tongues fitting into the said grooves and forming supports for the drawers, dovetailed pieces fitting in the recesses and projecting slightly out of the same, and flat springs secured with their inner ends in the inner sides of the recesses and having their diverging and bulging ends bearing against the inner faces of the dovetailed strips or pieces, forcing them out of the recesses, as and for the purpose shown and set forth.

381,761. APPARATUS FOR CLEANING SOLDERING-IRONS. ISAAC H. COX, Bridgeton, N. J. Filed Oct. 6, 1887. Serial No. 251,599. (No model.)

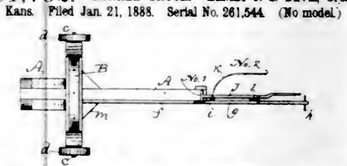
Claim.—1. As an improvement in mechanism for capping cans, in combination with revoluble soldering-irons, a metal-bristle brush which is mounted upon a bed that is adapted to slide beneath said soldering-irons, and thereby bring the bristles of said brush into contact with the operative ends of the same, substantially as and for the purpose specified.

2. As an improvement in mechanism for capping cans, a machine in which is combined cylindrical soldering-irons that are journaled within a frame and adapted to be rotated upon vertical axes, mechanism, substantially as shown, whereby said soldering-irons may be simultaneously rotated within their bearings, a metal-bristle brush, and a frame or carrier which is adapted to support such brush and to permit it to be moved beneath said soldering-irons with its bristles in contact with the operative ends of the same, substantially as and for the purpose set forth.

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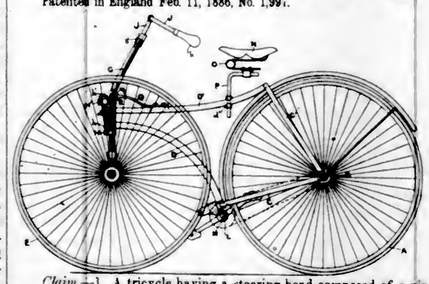
381,762. BARREL-TRUCK. ERNEST J. S. DAVIS, Great Bend, Kans. Filed Jan. 21, 1888. Serial No. 261,544. (No model.)



Claim.—1. In a barrel-truck, the combination of an axle having wheels on its ends, a runner fixed to the axle to extend forward at right angles from the center of the axle, and a pole adjustably connected with the runner, for the purposes stated.

2. A barrel-truck comprising a runner, an axle and bolster fixed at right angles to the runner and provided with journals on its ends and rollers or wheels on the journals, a pole adjustably and detachably connected with the runner, a lever having a hook on its end, and a chain having a hook on its end, arranged and combined to operate in the manner set forth.

381,763. TRICYCLE. JOSEPH H. DEARLOVE and HARRY TREBSHER, London, County of Middlesex, England, assignors to Albert H. Overman, Boston, Mass. Filed May 17, 1887. Serial No. 238,466. (No model.) Patented in England Feb. 11, 1886, No. 1,997.



Claim.—1. A tricycle having a steering-head composed of a pin carried by the frame of the vehicle and raking forward from its lower end, and two centers for such head carried by the steering-fork, the upper center being located in advance of the lower center, substantially as set forth.

2. A tricycle having a steering-fork bent back at its upper end and supporting a transverse handle-bar, and a steering-head carried by such fork and raking forward from its bottom center, substantially as set forth.

3. A tricycle having a steering-fork, two cross-pieces bracing such fork and respectively provided with spindle or pin centers located forward of the fork with the upper center in advance of the lower center, and a spindle carried by the frame of the vehicle and raking forward from its lower end and working in such centers, substantially as set forth.

4. A tricycle having an upper backbone carrying the driver's seat and a lower backbone carrying the driving-cranks, a spindle secured to the forward ends of such backbones, two forks carried by the driven axle and connected with the rear ends of the said backbones, and a steering-head carrying a handle-bar and provided with two centers, respectively, receiving the upper and lower ends of the spindle aforesaid, substantially as set forth.

5. A tricycle having two parallel steering-wheels located opposite each other, a driving-wheel located centrally behind them, an axle carrying the steering-wheels, an upright fork secured to such axle and provided with a transverse handle-bar and two centers, and a spindle connected with the frame of the vehicle and entered at its upper and lower ends into such centers, substantially as set forth.

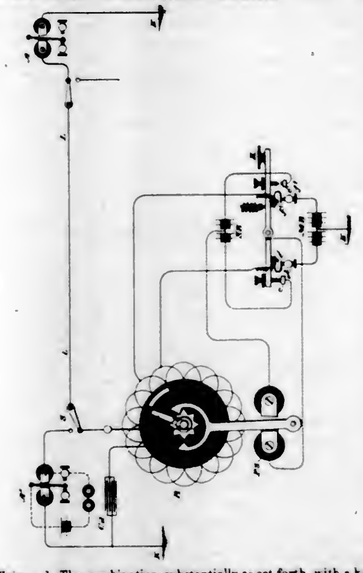
6. A tricycle having two parallel steering-wheels located opposite each other, a driving-wheel located centrally behind them, a rigid cross-axle, stud-axles located at the ends thereof and carrying the steering-wheels, an upright fork carried by such cross-axle, a handle-bar located at the upper end of the fork, a steering-head carried by such fork and raking forward from its lower center, two backbones connected with the head, two forks carried by the driving-axle and respectively connected with such backbones, a seat carried by the upper backbone, and driving-cranks carried by the lower backbone, substantially as set forth.

7. A tricycle having two parallel steering-wheels located opposite each other, a driving-wheel located centrally behind them, an upright forked frame connected with the steering-wheels and stayed by two cross-pieces forming a head for the neck-spindle of the frame carrying the driving-wheel, and a handle-bar carried by such forked frame, substantially as set forth.

8. A tricycle having a heart-shaped cam with its depression in the center line of the machine, and a spring movable in the vertical plane and entering the depression in the cam, the cam being fixed to one part of the vehicle and the spring to the other part thereof, substantially as set forth.

9. A tricycle having two parallel steering-wheels located opposite each other, a driving-wheel located centrally behind them, a steering-head raked forward from its bottom center and located in line with the driving-wheel, two backbones connected at their forward ends with the neck-pin and at their rear ends with the forks attached to the axle of the driving-wheel, and a transverse handle-bar directly connected with the steering-head, substantially as set forth.

381,764. TELEGRAPHY. PATRICK B. DELANY, New York, N. Y. Filed Dec. 17, 1887. Serial No. 258,178. (No model.)



Claim.—1. The combination, substantially as set forth, with a key, of contacts or segments respectively connected through contacts controlled by the key with sources of electricity of opposite polarity, a trailer or contact-maker normally resting upon one of said segments, and trailer-moving devices operated by the manipulation of the key, for the purpose described.

2. The combination of a key, the interposed line-transferring devices consisting of the contacts *e*, connected through a back contact of the key with a source of electric energy, the contacts *f*, connected through a front contact of the key with a source of electric energy of opposite polarity, the trailer resting upon a contact, *f*, when the key is raised, and trailer-actuating devices controlled by the key, whereby upon the movement of the key an impulse is first sent into the line through the segment *f*, and the trailer then moved from *f* to *e*, and so on, substantially as set forth.

3. The combination, substantially as set forth, of the Morse key, the trailer, the segments *e* and *f*, traversed by the trailer and respectively connected through contacts on the key with sources of electricity of opposite polarity, the polarized sounder and its trailer-driving mechanism, which operates the trailer step by step and moves it from one of said segments to another at each movement of the key, the battery, and circuit of said sounder and its contacts controlled by the key.

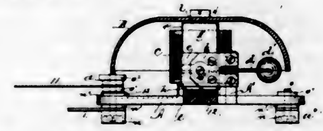
4. The combination, substantially as set forth, of the key, the line, a trailer connected therewith, the segments *e f*, upon which the trailer pauses, and which are respectively connected with sources of electricity of opposite polarity through contacts controlled by the key, the trailer-actuating devices, also controlled by the key, which move the trailer from one of said segments to another upon each movement of the key, and the intermediate contacts, *g*, connected to earth through a condenser.

5. The combination, substantially as set forth, of a line and split battery or sources of electricity of opposite polarity, both normally disconnected from the line, a key interposed between the battery and line, battery and line contacts for each side of the battery placed at front and back of key, whereby one pole of the battery is put to line when the key is depressed and the other pole when the key is raised, and line-disconnecting devices consisting of contacts and a contact-maker operated by the key, whereby when the key is depressed or raised and an impulse sent into the line the battery is disconnected from the line, for the purpose set forth.

6. The combination of the key, a battery, contacts or segments respectively connected with the battery through contacts controlled by the key, a trailer or contact-maker, and trailer-moving devices operated by the manipulation of the key to move the trailer to the next segment after it has been connected with the battery through one of said segments either by the depression or elevation of the key.

7. The combination of a battery, a key, its front and rear battery-contacts, segments respectively connected with the battery through said front and rear contacts, a trailer normally resting upon one of said segments, and trailer-moving devices operated by the manipulation of the key to move the trailer to the next segment after it has been connected with the battery upon the depression or elevation of the key, whereby the trailer is placed in communication with the battery for practically uniform periods upon the depression and elevation of the key.

381,765. ELECTRIC BELL. CONSTANT F. DE REDON, New York, N. Y., assignor to Pearce & Jones, same place. Filed Feb. 20, 1888. Serial No. 264,589. (No model.)



Claim.—1. The combination, in an electric bell, with the base and gong, of an electro-magnet connected at its respective ends to the base and gong, the pole-pieces extending out laterally, the circuit-breaker *i*, the electrode or contact *k*, the armature, and its spring and contact-screw and hammer, substantially as specified.

2. The combination, in an electric bell, with the base and gong, of an electro-magnet connected at its respective ends to the base and gong, the pole-pieces extending out laterally, the circuit-breaker *i*, the electrode or contact *k*, the armature and its spring-hammer and contact-screw, and a case, *r*, inclosing the circuit-breaker, to exclude the dust, substantially as specified.

3. In an electric bell, the combination, with the electro-magnet, of the pole-pieces extending laterally and the ends bent toward and in line with each other and into close proximity, a circuit-breaker connected to one pole upon its inner side, the electrode or contact *k*, the armature *c*, adjacent to the exterior flat surface of the poles, and its contact-screw *c'*, substantially as specified.

4. In an electric bell, the combination, with the electro-magnet, of the pole-pieces extending laterally and the ends bent toward and in line with each other and into close proximity, a circuit-breaker connected to one pole upon its inner side, the electrode or contact *k*, the armature *c*, adjacent to the exterior flat surface of the poles, and its contact-screw *c'*, and a three-sided case, *r*, of non-magnetic material, grasping the sides of the poles and inclosing the contacts or electrodes to exclude dust, substantially as specified.

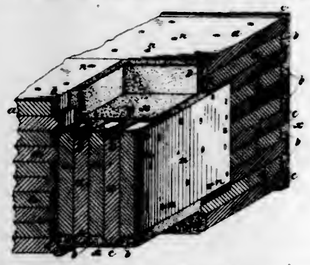
5. In an electric bell, the combination, with the electro-magnet, of the pole *g*, extending laterally from the top of the magnet and its end bent over the circuit-breaker connected therewith upon its inner side, the plate *e*, of insulating material, the slotted pole *h*, connected to the electro-magnet and plate *e*, and having its outer end bent over toward and in line with the end of the pole *g*, the electrode or contact *k*, and armature *c*, substantially as specified.

381,766. ADVERTISING-SIGN. LORENZ A. DEUTHER, Buffalo, N. Y. Filed Oct. 22, 1887. Serial No. 253,058. (No model.)



Claim.—The combination, with the side pieces, A, hinged at their upper ends and provided with longitudinal grooves *h*, of removable plates or boards G, arranged in said grooves, and rods or bolts *b b'*, connecting said side pieces, and whereby the plates are held in their grooves, substantially as set forth.

381,767. CONSTRUCTION OF BUILDINGS. M. HARVEY EATON, Philadelphia, Pa. Filed Sept. 19, 1887. Serial No. 250,028. (No model.)



Claim.—1. A building having its walls and partitions constructed of a series of ordinary boards laid one upon the other flatwise and secured together by nails, the angles or corners of said walls being interlocked in such manner as to leave no openings or spaces between the boards, substantially as shown and described.

2. A building having its walls constructed of a series of boards provided with longitudinal grooves adjacent to their edges and nailed together flatwise, said boards being alternately offset so as to form dovetail grooves on both sides of said walls and nailed together, substantially as and for the purpose set forth.

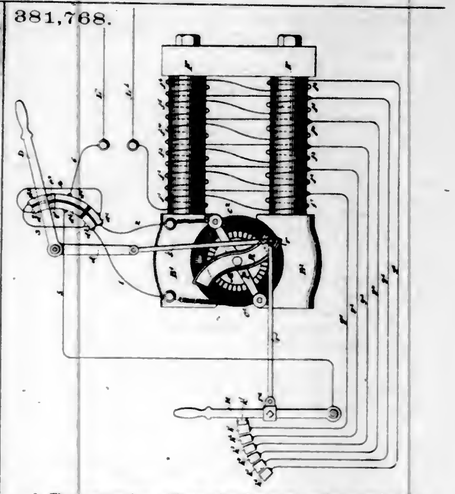
3. The hereinbefore-described fire-proof building, the same having its walls, partitions, floors, and roof constructed of a series of boards laid and nailed close together flatwise, the angles or corners of the walls and the partitions being interlocked in such manner as to leave no spaces or openings between the boards, said boards being grooved and alternately offset, as shown, and the walls, &c., provided with a coating of plaster or other suitable fire-proof material on each side thereof, substantially as and for the purpose specified.

381,768. REGULATION OF ELECTRIC MOTORS. STEPHEN D. FIELD, Yonkers, N. Y. Filed Aug. 13, 1887. Serial No. 246,836. (No model.)

Claim.—1. The combination, with an electric motor having field-magnet coils of variable, active length, of a circuit-controller determining the amount of said coils in action, a current-reverser for the armature, a commutator adjustment, a mechanical connection between the latter and the circuit-controller, and means for reversing the said mechanical connection by the operation of the current-reverser.

2. The combination of an electric motor, means for modifying the strength of the field-magnet of the same and simultaneously modifying the relative positions of the commutator and commutator-brushes, a current-reverser for the armature, and a mechanical connection between the current-reverser and the commutator adjustment, substantially as described.

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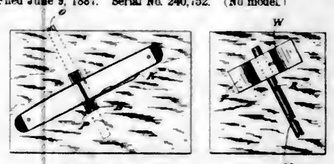
3. The combination, with an electric motor and a circuit-controlling lever for modifying the field-magnet strength, of a movable support for the commutator-brushes, a frame secured thereto, a block sliding in said frame and mechanically connected with the lever, and a second lever for determining the position of said block in said frame.

4. The combination of an electric motor, the lever H, for determining the field-magnet strength of the same, the frame R, secured to the commutator-brush support, the block *r*, sliding in said frame, the link *r'*, extending from the lever to said block, the lever D, and the link *s'*, coupling said block with said lever D.

5. The combination, with an electric motor and a commutator-adjusting device and a lever for operating the same, of a movable connection between said lever and said device, a current-reverser for changing the direction of motion of the motor, and a mechanical connection between the said movable connection and said reverser, whereby the operation of the latter reverses the direction of movement of the commutator-adjusting device relative to its lever.

6. The combination of an electric motor, the adjustable commutator, the lever H, controlling the same and having a reversible coupling therewith, the current-reversing lever D, and the mechanical connection between the same and the coupling, whereby the movements of the reversing-lever reverse the connection between the commutator and its lever.

381,769. SAMPLE-FASTENER. CHARLES FOLSOM, New York, N. Y. Filed June 9, 1887. Serial No. 240,752. (No model.)

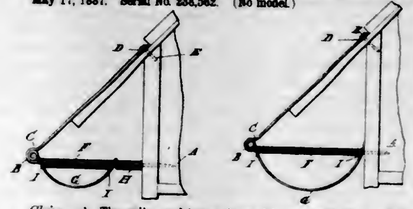


Claim.—1. The combination, with an object to which a sample is adapted to be fastened, of a sample-fastener consisting of a spindle adapted to be inserted in a socket on one side of such object and a cord adapted to engage the sample on the opposite side of such object, connected with the spindle so that it can be wound up, thereby retaining the sample in position, substantially as shown and described.

2. The combination, with an object to which a sample is adapted to be fastened, of a sample-fastener consisting of a spindle provided with an opening and inserted and adapted to be held by friction in a socket on one side of such object, and a cord held in said opening and adapted to engage the sample on the opposite side of such object, whereby it can be wound upon said spindle for retaining the sample in position, substantially as shown and described.

3. The combination, with a slotted box or cover having a re-enforcing piece at one end contiguous to the slot, of a spindle adapted to be inserted in a socket in said re-enforcing piece and a cord adapted to engage a sample through said slot, said cord being connected with the spindle so that it can be wound up, thereby retaining the sample in position, substantially as shown and described.

381,770. MODE OF HANGING SHEET-METAL GUTTERING TO THE RAVES OF HOUSES. CARL C. FREDERICK, Lancaster, Mo. Filed May 17, 1887. Serial No. 238,562. (No model.)



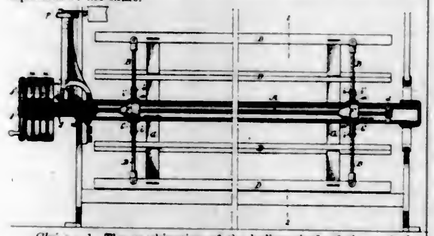
Claim.—1. The spike and brace formed in one, with the eye B at their junction, in combination with the spool or brace F, substantially as described.

2. The combination, with the eaves-trough support comprising the spike and a brace, of the spool H, interposed between the trough and the wall to space the same from the building, substantially as described.

3. The combination, with the spike and brace formed in one, of the spool or brace F within the trough, and the spool H exterior to said trough, substantially as described.

381,771. SKEIN-REEL. JOSHUA GARNER, Philadelphia, Pa. Filed Jan. 23, 1888. Serial No. 261,569. (No model.)

Brief.—The object of the invention is to improve the construction of winding or skein reels, so as to permit the ready contraction or expansion of the same.



Claim.—1. The combination of the hollow shaft of the reel, the bars of the same, the arms carrying said bars, conical expanders within the shaft for acting on said bars, and means for moving said expanders, all substantially as specified.

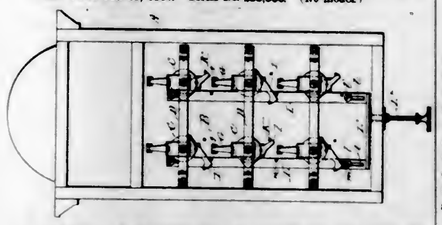
2. The combination of the hollow shaft, the reel-bars, arms carrying the same, a conical expander, a screw-rod, and a nut engaging with said rod, whereby when either rod or nut is turned a longitudinal movement is imparted to the expander, all substantially as specified.

3. The combination of the hollow shaft and its slotted studs, the reel-bars, the arms guided in the studs and having stop-pins adapted to the slots of the same, and conical expanders acting on the arms, all substantially as specified.

4. The combination of the hollow shaft, the reel-bars, the arms, the conical expanders, and the devices for moving the latter, both the arms and expanders being slotted for engagement with each other, all substantially as specified.

5. The combination of the hollow shaft, the reel-bars, the slotted arms, the conical expander slotted for engagement with said arms, and the threaded rod adapted to nuts on the expanders, all substantially as specified.

381,772. ELECTRIC ANNUNCIATOR. JOHN GEARY, Philadelphia, Pa. Filed Oct. 26, 1887. Serial No. 253,390. (No model.)



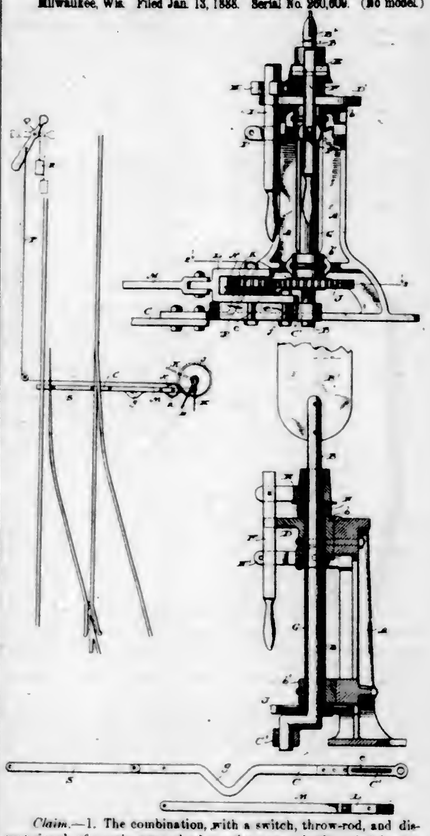
Claim.—1. In an annunciator, the combination, with an electro-magnet and its armature, of a shaft journaled in said armature apart from said magnet, an index-hand secured to one end of said shaft, an arm secured to the other end of the same, and a stop for engagement with said arm, substantially as described.

2. In an annunciator, the combination, with an electro-magnet and its movable armature, of a stop, an arm engaging therewith, a horizontally-movable shaft journaled apart from said magnet and carrying said arm, and an index-hand secured to said shaft, said parts being so arranged that the movement of the armature toward the magnet will disengage said arm and stop, substantially as described.

3. In an annunciator, the combination, with the electro-magnet C, armature F, secured to spring G, and stop K, of the shaft or pivot *e*, index-hand E, and arm I, secured to said shaft, substantially as and for the purpose described.

4. In an annunciator, the combination, with electro-magnet C, armature F, and stop K, of the shaft *e*, journaled in said armature, the arm I, secured to said shaft and beveled, as at *i*, and the frame or standard L, substantially as and for the purpose described.

381,773. INTERLOCKING SWITCH AND SIGNAL. GEORGE GIBBS, Milwaukee, Wis. Filed Jan. 13, 1888. Serial No. 260,609. (No model.)



Claim.—1. The combination, with a switch, throw-rod, and distant signal, of a main gear-wheel, another gear-wheel carried by the throw-rod to come in and out of mesh with the main one, and a cord, wire, or analogous means connected to the signal and arranged to be actuated by a rotation of the gear-wheels, substantially as set forth.

2. The combination, with a switch, throw-rod, and distant signal, of a main gear-wheel, another gear-wheel carried by the throw-rod to come in and out of mesh with the main one, a sheave or analogous device arranged to be actuated by a rotation of said gear-wheels, and a cord, wire, or analogous means connecting the sheave and signal, substantially as set forth.

3. The combination, with a switch, throw-rod, and distant signal of a main gear-wheel, another gear-wheel carried by the throw-rod to come in and out of mesh with the main one, a sheave fast to the gear-

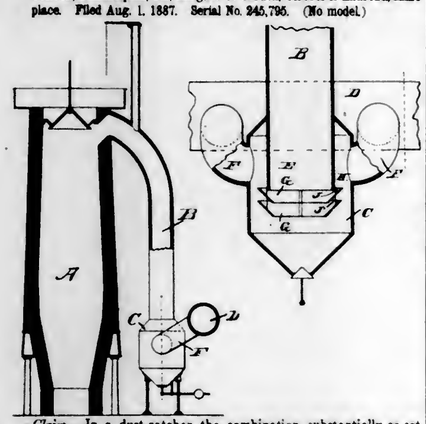
wheel on said throw-rod, a cord, wire, or analogous means connecting the sheave and signal, and suitable mechanism for actuating said main gear-wheel, substantially as set forth.

4. The combination, with a switch, a flexible throw-rod longitudinally slotted at its rear end, and a distant signal, of a main gear-wheel, an auxiliary rod bolted to the throw-rod and bifurcated at its rear end, a spindle passed through the bifurcations of the auxiliary rod and extended down into the slot of said throw-rod, a gear-wheel arranged on the spindle, a sheave or analogous device also arranged on said spindle adjacent to the latter gear-wheel, a cord, wire, or analogous means connecting the sheave and signal, and a suitable mechanism for actuating said main gear-wheel, substantially as set forth.

5. The combination, with a switch, crank-rod, throw-rod, and distant signal, of a pipe-sleeve surrounding the crank-rod, a gear-wheel fast on the pipe-sleeve, another gear-wheel carried by the throw-rod to come in and out of mesh with the one on said pipe-sleeve, a sheave adjacent to the latter gear-wheel, a cord, wire, or analogous means connecting the sheave and signal, and levers for actuating said crank-rod and pipe-sleeve, substantially as set forth.

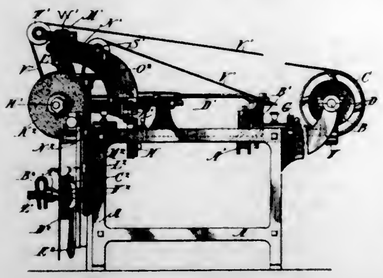
6. The combination, with a switch, throw-rod, crank-rod, and distant signal, of a main gear-wheel, a lever mechanism for actuating the gear-wheel, another gear-wheel carried by the throw-rod to come in and out of mesh with the main one, a cord, wire, or analogous means connected to the signal and arranged to be actuated by a rotation of the gear-wheels, and a lever connected to the crank-rod to come in the path of the lever for actuating the main gear-wheel, whereby the interference of said levers compels a proper relative position of the switch and signal, substantially as set forth.

381,774. DUST-CATCHER FOR BLAST-FURNACES. FRED. W. GORDON, Philadelphia, Pa., assignor to Gordon, Strobel & Laureau, same place. Filed Aug. 1, 1887. Serial No. 245,795. (No model.)



Claim.—In a dust-catcher, the combination, substantially as set forth, of a dust-catching chamber, C, the outlets F, leading horizontally outward therefrom, the downcomer B, projecting downwardly into the chamber below said outlets, and one or more deflecting-rims, G, disposed within said chamber below said projecting end of the downcomer and outlets.

381,775. SAW-SHARPENING MACHINE. WILLIAM H. HALLADAY, Chicago, Ill., assignor to the William H. Halladay Manufacturing Company, same place. Filed Feb. 7, 1887. Serial No. 226,760. (No model.)



Claim.—1. In an automatic saw-sharpening machine, the combination of the main frame with a table hinged on one side of the frame and supported on a rotating cam on the opposite side and a grinding-wheel arbor supported about midway of the frame on the pivoted table.

2. In an automatic saw-sharpening machine, the combination of the main frame with a table hinged at one side to the frame and supported toward the other end on a rotating cam and a grinding-wheel arbor supported on such table between the cam and its pivot-point by means of a vertical bolt, so that the grinding-wheel arbor rises and falls with the table and may be turned about on its pivot.

3. In an automatic saw-sharpening machine, the combination of the main frame with a grinding-wheel arbor, a saw-support, and a vertical pivot from which the grinding-wheel arbor is suspended, the whole being arranged so that the vertical pivot is directly over the grinding-wheel and the saw when the latter is in position.

4. In an automatic saw-sharpening machine, the combination of the main frame with a table hinged at one side to such frame and supported at the other on a rotating cam-wheel, a grinding-wheel arbor supported, as shown, by a vertical pivot on the pivoted table, a rod secured to one end of the arbor and attached to a rock-shaft, and a cam-wheel which rocks said rock-shaft, the whole combined so that the grinding-wheel is alternately raised and lowered by the motion of the table and is turned about its vertical pivot by the motion of the rod and rock-shaft.

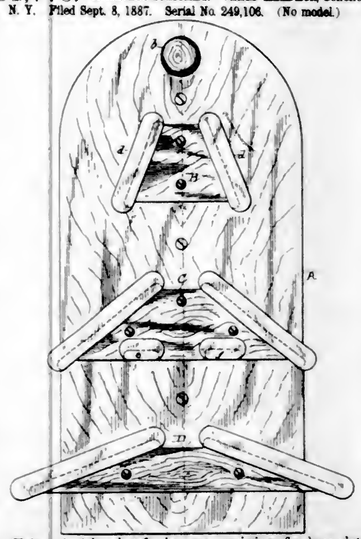
5. In an automatic saw-sharpening machine, the combination of a pivoted rocking bar, a feed-finger pivoted to such bar, a rotating shaft provided with a crank, a groove in the back of said rock-shaft to receive the crank, and a suitable main frame on which the parts are mounted, so that by the rotating of the rod the shaft is rocked back and forth on its pivot.

6. In an automatic saw-sharpening machine, the combination of the main frame, a rocking bar pivoted thereon, a box secured to the upper end of said bar, a feed-finger pivoted to such box, and a screw-bolt which passes through said box on the upper end of the bar, by turning which the position of the finger on the rock-shaft may be changed to vary its throw.

7. In an automatic saw-sharpening machine, the combination of the main frame, a rock-bar provided with a series of holes, whereby it may be adjustably pivoted on the frame, and a finger adjustably secured to the upper end of said rocking bar.

8. In an automatic saw-sharpening machine, the combination of the main frame, a saw-supporting piece thereon, and a block to which the saw is secured, said block provided above with a groove and below with a cam-lever, whereby said block, together with the saw, may be secured at any desired position on the saw-supporting bar.

381,776. HARNESS-BRACKET. JAMES HARRISON, Schenectady, N. Y. Filed Sept. 8, 1887. Serial No. 249,106. (No model.)

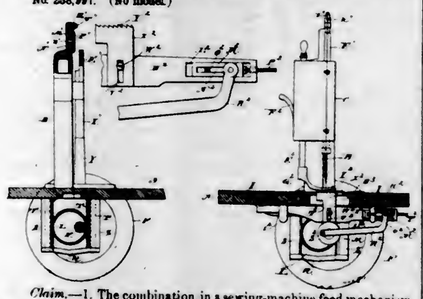


Claim.—1. A bracket for harness, consisting of a base-plate provided at its upper portion with a pin, *b*, and a series of pairs of inclined supporting-plates located below said pin, the members of each pair being separated by an intervening space, and separated pins *e f*, located between and beneath one of said pairs, substantially as described.

2. A bracket for harness, provided with a series of pairs of inclined supporting-plates, the members of each pair being separated by an intervening space, and separated pins *e f*, located between and beneath one of said pairs, substantially as described.

381,777. WITHDRAWN.

381,778. FEEDING DEVICE FOR SEWING-MACHINES. RICHARD M. HATCHER, St. Bethlehem, Tenn. Filed May 21, 1887. Serial No. 238,997. (No model.)

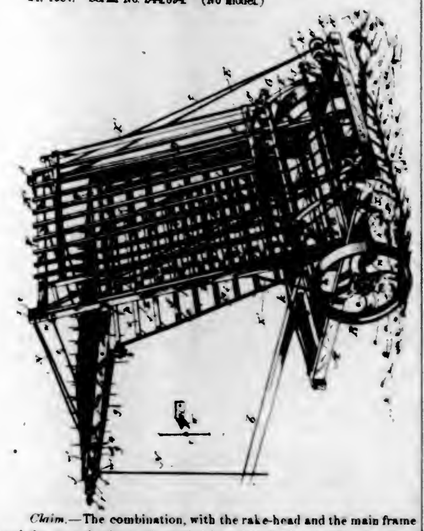


Claim.—1. The combination, in a sewing-machine feed mechanism, of the rotating cam M, the feed-bar H², bearing on the said cam and carrying the feed-plate, the block M³, secured to the feed-bar and adjustable thereon, for the purpose set forth, and the pitman R², connecting the said block to the cam M, substantially as described.

2. The combination of the rotating cam M, the feed-bar H², bearing thereon and carrying the feed-plate, said feed-bar having the longitudinal slot in one end, the slotted block secured in the slot in the feed-bar, means for adjusting the said block longitudinally, the guide-pin passing through the slot in the block, and the pitman R², connecting the said block to the cam, substantially as described.

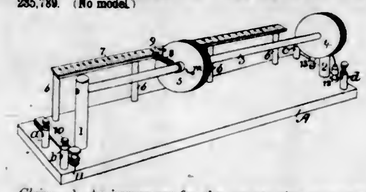
3. The combination, in a sewing-machine feed mechanism, of the rotary cam M, the feed-bar H², bearing on the said cam, the block M³, secured to the feed-bar and adjustable thereon, for the purpose set forth, the pitman connecting the said block to the cam, and the feed-plate attached to the feed-bar and vertically adjustable thereon, substantially as described.

381,779. HAY-LOADER. EDWIN L. HAY, Lilly, Ill. Filed July 21, 1887. Serial No. 244,894. (No model.)



Claim.—The combination, with the rake-head and the main frame and the curved rake-teeth carried by said rake-head, of the brackets F, secured to the standards of the elevator-frame, said rake-head being journaled in said brackets, the rod J, resting on the rake-teeth between their free ends and the rake-head, rocker-arms I, connecting said rod and rake-head, the lugs J', secured to the side bars of the main frame, the rods *k'*, steered at one end on said shaft J, the other end passed through said lugs, the adjusting-nuts on the ends of said rods, and the coil-springs *l²* on said rods between said nuts and lugs, substantially as shown and described.

381,780. ELECTRICAL-MEASUREMENT APPARATUS. HAMMOND V. HAYES, Cambridge, Mass. Filed Apr. 22, 1887. Serial No. 235,789. (No model.)



Claim.—1. An instrument for the comparative measurement of electrical currents, comprising, in combination, a single coil or helix in a circuit conducting a current to be measured or compared, an additional coil or coils in a circuit including a receiving-telephone, a support for said coils, and means whereby one coil can be moved toward and away from the other until a point is determined where the current in the first coil ceases to act inductively on the second coil or coils, substantially as described.

2. An instrument for the comparative measurement of electrical currents, comprising, in combination, a single coil or helix fixed upon a rod or bar and connected in a circuit conducting a current to be measured or compared, and including also a circuit-breaker, an additional coil or coils adapted to be moved on said rod or bar toward and away from the first coil to determine the point where the current in the latter ceases to act inductively upon the second coil or coils, and a graduated scale for measuring the distance between said coils, substantially as described.

3. The method of comparing and measuring telephonic currents, which consists in causing the said currents to circulate through a helix, in noting the induced currents excited in the circuit of an adjacent and parallel helix of like character by means of a telephone included in said second coil, and in increasing the distance between the two helices until a point is reached where the induction between them ceases, substantially as described.

4. The method of comparing and measuring electrical currents, consisting in causing them to exercise an inductive effect upon an independent electrical circuit including a telephone, in gradually withdrawing the said independent circuit from such influence, and in observing and comparing the points in each case at which such inductive effect becomes imperceptible, substantially as described.

5. The combination, substantially as hereinbefore described, in an instrument for comparing and measuring telephonic currents, of two or more flat coils of insulated wire, one fixed and the other or others movable upon a supporting metal rod, whereby the movable coil or coils may be moved to and from the fixed coil, but at all times in parallelism therewith, a metal graduated scale mounted in proximity to the said coils and extending parallel to the supporting-bar thereof, one of the terminals of the said movable coil or coils being connected with the supporting-rod and the other with the metal scale, and the said fixed coil being insulated from both and having its terminals connected with independent binding-screws, for the purposes specified.

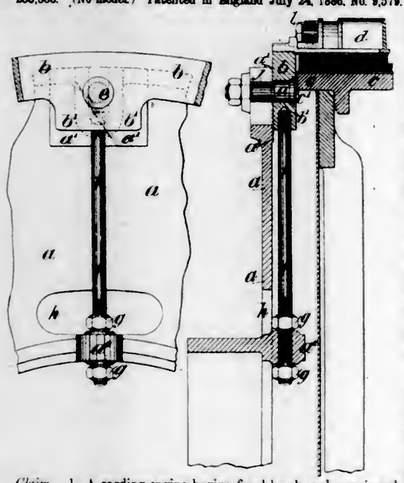
6. The combination of a flat helix or coil of insulated wire in a circuit conducting a current to be measured or compared, an additional coil or coils of like character in a circuit including a magneto-telephone, a supporting rod or bar for said coils, the first being fixed and the latter movable thereon, as described, a graduated scale extending parallel with said supporting rod throughout its length, a pointer carried by the movable coil or coils for indicating on the scale the distance moved along the supporting-rod from the fixed coil, and a circuit closing and breaking key in circuit with the movable coil, substantially as described.

7. In an instrument for comparing and measuring the efficiency of telephone-transmitters and like instruments, the combination of a base-board, a rod or bar mounted in suitable standards thereon, fixed and movable coils or helices mounted on said rod and adapted to be included, as described, in independent electric circuits, a graduated scale mounted, also, on standards attached to said base-board and extended parallel to the coil-supporting rod throughout its length, a needle or pointer mounted on the movable coil or coils and moving over the said scale to indicate the extent of motion of said coil or coils, and a circuit-breaking key in the circuit of said movable coil, all substantially as described.

8. The combination of a flat helix or coil of insulated wire fixed

upon a supporting-rod and connected in a circuit conducting a current to be measured or compared, two movable coils or helices mounted on said rod on opposite sides of the first helix and connected in circuit with a magneto-telephone, and means for moving the two last-named coils simultaneously toward and away from the fixed coil, substantially as and for the purpose set forth.

381,781. CARDING-ENGINE. JOHN M. HETHERINGTON, Manchester, County of Lancaster, England. Filed Nov. 22, 1887. Serial No. 255,888. (No model.) Patented in England July 24, 1886, No. 9,579.



Claim.—1. A carding-engine having fixed bends and a main cylinder, in combination with flexible bends or curved guide-rails for the flats secured to the inner faces of the fixed bends and just clearing the edges of the cylinder, all substantially as and for the purpose set forth.

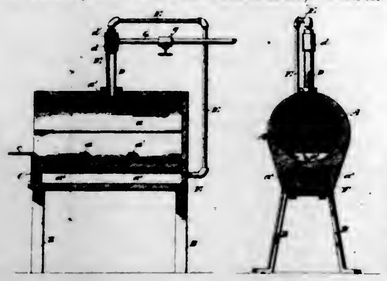
2. A carding-engine provided with a main cylinder and fixed bends, each having a trued inner face *a'*, in combination with a flexible bend secured to each said face and having itself a trued inner face *b'*, closely parallel to the edge of the cylinder, all substantially as described.

3. The combination of the fixed bend of a carding-engine slotted and having a trued inner face with a flexible bend fitted to the said inner face of the fixed bend, and bolts passing through the flexible bends and through the slots in the fixed bends and having bowls within the said slots, all substantially as set forth.

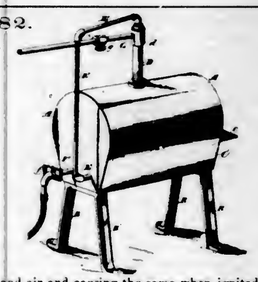
381,782. FURNACE FOR HEATING SOLDERING-COPPERS. EDWARD HOLM, Chicago, Ill. Filed May 18, 1886. Serial No. 202,519. (No model.)

Claim.—1. As a means for heating soldering-coppers, an apparatus in which are combined a furnace provided with a combustion-chamber, a device for mixing gas and air and admitting such mixture through the upper side of the furnace into the heating-chamber, and mechanism for forcing air under pressure through a passage in said furnace immediately below said heating-chamber and thence into the mixing device, substantially as and for the purpose specified.

2. As a means for heating soldering-coppers, the combination of a furnace which is provided with a combustion-chamber, a device for



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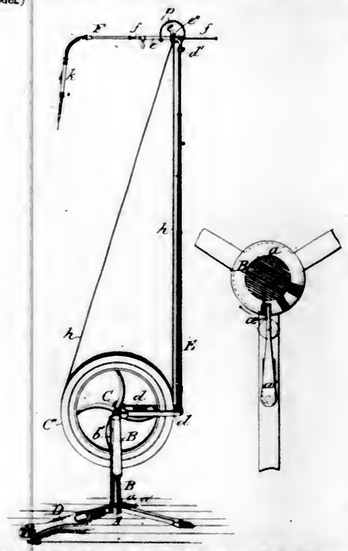


mixing gas and air and causing the same when ignited to pass downward to and impinge upon the bottom of such combustion-chamber, and a pipe or conduit for conveying air under pressure to the mixing device, which is in part formed within said furnace immediately beneath said combustion-chamber, substantially as and for the purpose shown.

3. The hereinbefore-described apparatus for heating soldering-coppers, consisting of the furnace provided with a combustion-chamber and beneath the same with a passage or chamber for heating air, a pipe for conveying air under pressure through the air-heating passage or chamber into the upper side of the combustion-chamber, a pipe for furnishing a supply of combustible gas, and a device for mixing such gas with the air before the latter passes into said combustion-chamber, said parts being combined to operate in the manner and for the purpose substantially as set forth.

4. The hereinbefore-described apparatus for heating soldering-coppers, composed of the furnace provided with the combustion-chamber having the supporting-ledges and supporting-shelf, and having beneath said combustion-chamber an air-heating passage or chamber, a pipe for conveying air through said passage or chamber and delivering the same into the upper portion of said combustion-chamber, mechanism for forcing air under pressure into said air-pipe, a pipe for furnishing combustible gas, and a device for mixing such gas with the air in the air-supply pipe, substantially as and for the purpose shown and described.

381,783. DENTAL ENGINE. JOHN HOOD and STEPHEN H. REYNOLDS, Boston, Mass. Filed Nov. 4, 1887. Serial No. 254,289. (No model.)



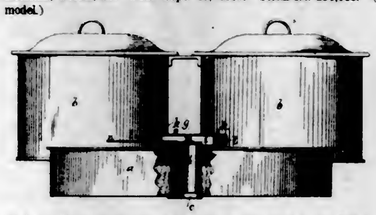
Claim.—1. In a dental engine, the base provided with a socket adapted to receive the lower end of the standard, said standard being provided with a recessed flange, a spring foot-lever engaging with said recess, and pin entering holes in the base and preventing said lever from escaping from the recesses in the flange, all combined and arranged substantially as described, to allow the standard to be turned and secured, as set forth.

2. In a dental engine, the base A and bifurcated standard B, having recessed flange *a*, in combination with the spring foot-lever *a'*, adapted to hold said standard in position upon the base, as specified.

3. In a dental engine, the turning standard and crank-shaft, in combination with the bifurcated extension-bar, said bifurcation being bent at right angles to the body of the bar, embracing the wheel and oscillating upon the crank-shaft, substantially as set forth.

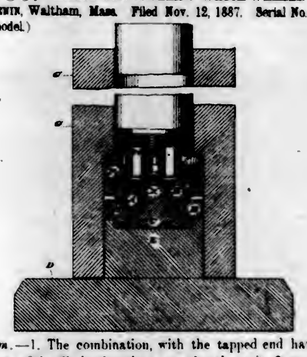
4. In a dental engine, the combination of the standard and extension-bar E, with its bifurcated lower end extending at a right angle to said bar, with a spring secured at one end to the bar and its opposite end passing through a slot in a stud projecting from the standard, and adapted to automatically return said bar to an upright position whenever it is forced therefrom, substantially as set forth.

381,784. COMBINED STEAM-COOKER AND FRIER. HARRY C. HORTON, Peoria, Ill. Filed Sept. 19, 1887. Serial No. 250,063. (No model.)



Claim.—The combination of a boiler, *a*, provided with flue *c*, removable utensil-holder, consisting of the expanded part or chamber *i* and the cylinder *h*, extending therefrom and forming a flue, the chamber *i* being provided at its top with openings *o k* and on its side with openings *l*, and cover *m*, placed in chamber *i* and free to be moved over the flue formed by cylinder *h*, substantially as described.

381,785. MEANS FOR BEVELING WATCH-WHEELS. HENRY HUGUENIN, Waltham, Mass. Filed Nov. 12, 1887. Serial No. 255,002. (No model.)



Claim.—1. The combination, with the tapped end having the wheel-recess, of the die having the proper bevels on its face, substantially as specified.

2. The combination, with the tapped end having the wheel-recess and the screw-sleeve having the instanding circumferential flange at its upper end, of the die-spindle and die secured to the lower end thereof, substantially as specified.

3. The combination, with the tapped end having the wheel-recess, and the screw-sleeve having the instanding flange, of the die-spindle, the die secured thereto, and the guide-sleeve for the said spindle, substantially as specified.

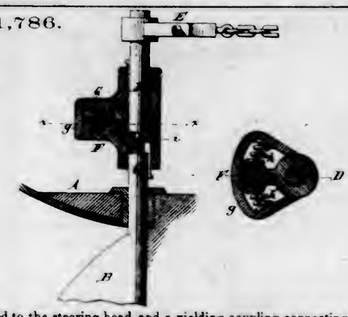
4. The combination, with the tapped end having the wheel-recess and circumferential flange, the base-piece D, and the screw-sleeve having the instanding circumferential shoulder around its upper end, of the die-spindle, die, and guide-sleeve for the die-spindle, substantially as specified.

381,786. RUDDER. WILLIAM W. HUNTLEY, Silver Creek, N. Y. Filed Dec. 12, 1887. Serial No. 257,621. (No model.)

Claim.—1. The combination, with the rudder, of a divided rudder-post and a yielding coupling connecting the parts of the divided rudder-post, substantially as set forth.

2. The combination, with the rudder, of a lower part of the rudder-post secured to the rudder, an upper part of the rudder-post

381,786.



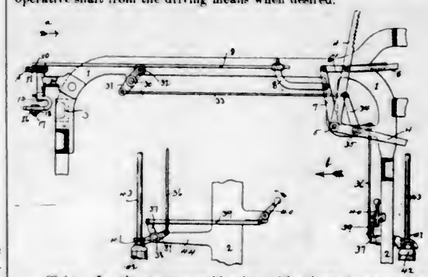
secured to the steering-head, and a yielding coupling connecting both parts of the rudder-post, substantially as set forth.

3. The combination, with the rudder provided with the lower part, C, of the rudder-post, and the upper part, D, of the rudder-post, provided with a steering-head, E, of an arm, F, secured to one part of the rudder-post, an arm, G, secured to the other part of the rudder-post, and springs interposed between said arms, substantially as set forth.

4. The combination, with the rudder provided with the lower part, C, of the rudder-post, and the upper part, D, of the rudder-post, provided with a steering-head, E, of an arm, F, secured to one part of the rudder-post, extending beyond the latter and receiving the end of the other part of the rudder-post, an arm, G, secured to the other part of the rudder-post, and springs interposed between the arms F and G, substantially as set forth.

381,787. LET-OFF MECHANISM FOR LOOMS. GEORGE F. HUTCHINS, Worcester, Mass., assignor to the Knowles Loom Works, same place. Filed Aug. 8, 1887. Serial No. 246,388. (No model.)

Brief.—The rolls between which the pile-warps pass are geared together and actuated by a ratchet and pawl operated from a harness-lever through a suitable combination of links, knee-levers, &c., in accordance with the requirements of the pattern. A hand-lever is also provided, which, through suitable connections, not only serves to disconnect the train for actuating the warp-rolls, but also unclutches the operative shaft from the driving means when desired.



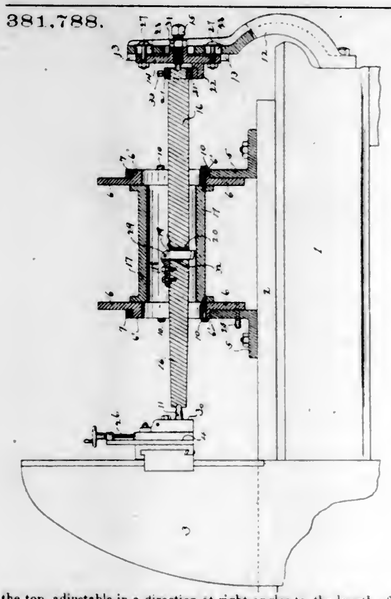
Claim.—In a loom, the combination, with a lever, 7, actuated by the usual harness-motion, a ratchet-wheel and pawl, and an arm carrying said pawl for operating the drawing-off rolls, and said drawing-off rolls and connections intervening between said lever and ratchet-wheel, substantially as described, of means for disconnecting the ratchet movement of the let-off motion, consisting of lever 31, rod 33, knee-lever 34, connector 36, knee-lever 37, rod 39, and hand-lever 40, all combined together substantially as shown and described.

381,788. PLANER ATTACHMENT FOR CUTTING INTERNAL GEARS. GEORGE F. HUTCHINS, Worcester, Mass., assignor to the Knowles Loom Works, same place. Filed Feb. 13, 1888. Serial No. 263,845. (No model.)

Claim.—1. The combination, with a reciprocating table, a supporting-bed, and stands for carrying the work, of a cutter-bar supported at one end from the bed on a bearing adjustable in the direction of the length of the cutter-bar, and at the other end on a bearing carried by a tool-head movable in a direction at right angles to the length of the cutter-bar, and a cutting-tool carried by the bar, substantially as shown and described.

2. The reciprocating table, supporting-bed, stands for carrying the work, tool-head, cutter bar and tool, in combination with a supporting-stand attached to the bed and provided with a plate, 14, at

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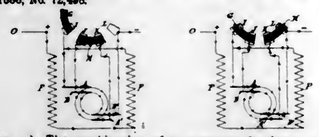


the top, adjustable in a direction at right angles to the length of the cutter-bar, and carrying a bearing for one end of the cutter-bar, adjustable in the direction of the length of the bar, substantially as shown and described.

3. The reciprocating table, supporting-bed, a cutter set in a cutter-bar supported by the tool-head, and an arm from the bed, in combination with a head or heads through which the cutter-bar passes, supported in bearings fastened to the reciprocating table to which the work is attached, and provided with index-holes by which the work is set and held in position for successive cuts, substantially as set forth.

4. The reciprocating table, supporting-bed, stands for carrying the work fastened thereto, tool-head, and cutter-bar support attached to the bed and provided with a lug, 22, in combination with a cutter-bar carrying a cutter, and a projection or collar, 21, provided with a slot which is entered by the lug 22, for the purpose stated, substantially as shown and described.

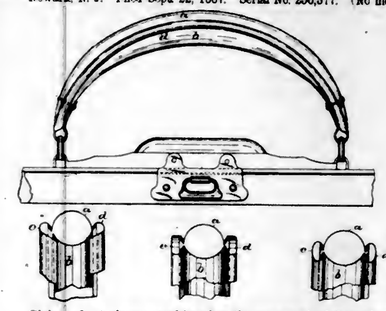
381,789. DYNAMO-ELECTRIC MACHINE AND MOTOR. MORITZ IMMISCH, London, County of Middlesex, England. Filed Dec. 23, 1886. Serial No. 222,378. (No model.) Patented in England Mar. 2, 1886, No. 2,956; in France Mar. 24, 1886, No. 174,998, and in Belgium Mar. 26, 1886, No. 72,498.



Claim.—1. The combination of an armature for dynamo-electric generators, the coils of said armature being connected to form two continuously-closed circuits, two commutators, the segments of which are disposed in alternation, connections extending from alternating armature-coils to one commutator, and similar connections between the remaining coils and the segments of the other commutator, and commutator-brushes bearing separately upon the alternate commutator-terminals of both armature-circuits, substantially as described.

2. The combination of an armature for dynamo-electric generators, the coils of which are connected to form two continuously-closed circuits, a double commutator, the segments of which are arranged in alternation, connections extending from alternating armature-coils to one portion of the commutator, and similar connections extending from the remaining coils to the segments of the other portion of the commutator, and separate commutator-brushes for each portion of the commutator, said brushes bearing upon the alternate commutator-terminals of the respective armature-circuits and adapted to be connected in series or parallel, substantially as described.

381,790. SHEET-METAL BAG-HANDLE. RICHARD C. JENKINSON, Newark, N. J. Filed Sept. 22, 1887. Serial No. 250,377. (No model.)

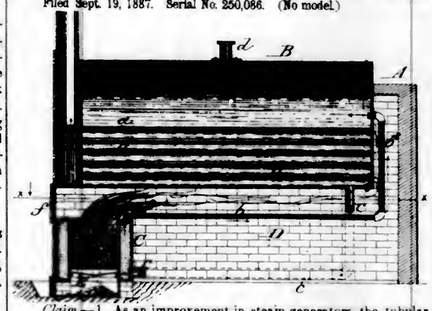


Claim.—1. A sheet-metal bag-handle composed of four pieces—viz., the body portions *a b* and bead portions *c d*, each of said portions *a b c d* consisting of separate metallic pieces, constructed and arranged substantially as and for the purposes set forth.

2. In a sheet-metal bag-handle, the combination of the upper and lower body portions or sections, *a b*, the opposite edges of which are turned up, forming grooves longitudinally therein, and the side portions or sections, *c d*, the edges of which are bent down into the grooves in the body portions, substantially as and for the purposes set forth.

3. In a sheet-metal bag-handle, the combination of the upper and lower body portions or sections, *a b*, curved in cross-section, the opposite edges of which are turned up, forming grooves longitudinally therein, and the side portions or sections, *c d*, angular in cross-section, the edges of which are bent down into the grooves in the body portions, substantially as and for the purposes set forth.

381,791. STEAM-BOILER. JONATHAN JOHNSON, Lowell, Mass. Filed Sept. 19, 1887. Serial No. 250,066. (No model.)



Claim.—1. As an improvement in steam-generators, the tubular horizontal boiler, in combination with the detached heating-chamber forming a fuel-receptacle, and the series of circulating-pipes *b*, passing through the combustion-chamber and connecting the top of said heater with the rear of the boiler, for the purpose of conveying water from the heater to the boiler and assist in maintaining a circulation between them, as set forth.

2. As an improvement in steam-generators, the combination of the outer casing, the horizontal tubular boiler, the detached heater, the circulating-pipes *b*, connecting the top of the heater with the rear of the boiler, and the pipe *c*, connecting the bottom of the boiler with the bottom of the heater, said pipe being deflected to one side, so as to be protected from the direct action of the heat, all as shown and described.

381,792. DOUBLE-ACTING LATCH. AUGUSTUS H. JONES, Meriden, Conn. Filed Jan. 16, 1888. Serial No. 260,889. (No model.)

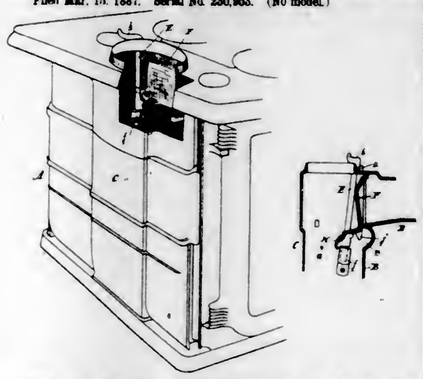


Claim.—1. The combination of the cylindrical case A, open at one end, spring-follower C within the case, and triangular bolt B, hung upon an axis, *a*, at the open end of the case, said axis diametrically across the case and projecting through the case, its two ends turned at right angles to form prongs *b b*, substantially as and for the purpose described.

2. The combination of the case A, open at one end, spring-follower C within the case, and triangular bolt B, hung upon an axis diametrically across the open end of the case and through said triangular bolt, with a cam, E, arranged within the case inside the follower upon an axis diametrically across the case, and a key adapted to turn said cam, substantially as and for the purpose described.

3. In combination with a spring-bolt latch or lock, a keeper consisting of the cup H, with the central screw I, projecting therefrom, and as substantially an integral part thereof, and constructed with a suitable nick within the cup, substantially as and for the purpose described.

381,793. COOKING-STOVE. WILLIAM J. KEEP, Detroit, Mich. Filed Mar. 15, 1887. Serial No. 230,953. (No model.)



Claim.—1. A cooking-stove having an oven and a flue extending over the oven-top and from side to side of the stove, and downdraft-flues and a central updraft-flue between said downdraft-flues, the top plate of the oven being depressed at its rear edge, whereby the size of the opening between the flue over the oven and the central-draft flue is increased, substantially as described.

2. The combination, with a stove provided with a direct-draft flue and two downflues, of a pivoted dropping-damper arranged to control the exit of the direct-draft flue, and a vertical damper-rod for said damper, turning on its axis at right angles to the movement of said damper, substantially as and for the purpose specified.

3. The combination, with a stove having two or more rear vertical flues and a grooved strip forming a division-wall between said flues, of a vertical damper-rod situated in said groove, and a damper actuated by said rod, substantially as described.

4. The combination, with a stove having two or more rear vertical flues and a flue-wall having a lip, of a vertical damper-rod concealed by said lip and a damper actuated by said rod, substantially as described.

5. The combination, with a stove, of a vertical flue, a damper closing the entrance to said flue, and a vertically-grooved flue-strip provided at its lower end with a socket, and a vertical damper-rod stepped in said socket and situated in said groove, substantially as described.

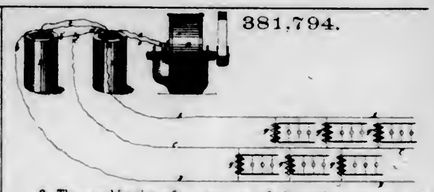
6. The combination, with a stove provided with a back plate and a back oven-plate arranged with a space between them, of a damper arranged within said space and provided with spur *j* and arm *k*, and a vertical damper-rod, E, provided with a laterally-projecting cam arm or horn, H, working between said spur and arm, substantially as and for the purposes set forth.

7. The combination, with a stove having an oven, of a flue in the rear thereof, a damper closing the entrance to said flue, a plate forming one wall of said flue and provided with a recess, *n*, and a damper-rod having a horn working in said recess, substantially as described.

381,794. TRANSFORMATION AND DISTRIBUTION OF ELECTRIC ENERGY. RANKIN KENNEDY, Glasgow, County of Lanark, Scotland, assignor of one-half to Robert Dick, same place. Filed Dec. 29, 1886. Serial No. 222,931. (No model.)

Claim.—1. The combination of an electric generator or generators with three main conductors, secondary generators in parallel or multiple arc connection to said main conductors, and translating devices in the secondary circuits of the secondary generators, substantially as set forth.

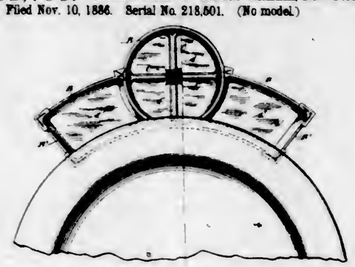
381,794.



2. The combination of a generator of alternating currents and two main transformers with three main conductors therefrom, secondary generators in parallel or multiple arc connection to said main conductors, and translating devices in the secondary circuits of said secondary generators, substantially as set forth.

3. An electrical-distribution system having three main conductors, means for supplying high-potential alternating currents of electric energy to said conductors, secondary generators in parallel or multiple arc connection to such main conductors, and translating devices in the secondary circuits of said secondary generators, substantially as herein set forth.

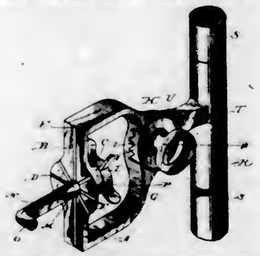
381,795. TABLE-WARE. J. ALBERT KIMBALL, New York, N. Y. Filed Nov. 10, 1886. Serial No. 218,501. (No model.)



Claim.—1. A refuse-holder for table use, provided with a circular portion, A, having a rim, B, and cross-ridges C, and wings A', all adapted to serve both as a refuse-holder and a goblet-holder, as herein specified.

2. A dish for use auxiliary to a dining-plate, but separate therefrom, having a curved form and adapted to match under the edge of a dining-plate, and provided with knife and fork holding depressions B' at the ends, as herein specified.

381,796. HANDLE FOR CROSSCUT-SAWS. HENRY L. KINCAID, York, Mont. Filed Nov. 15, 1887. Serial No. 255,211. (No model.)



Claim.—1. A saw-handle consisting of a yoke approximately in the form of the letter D, and a clamping-screw and nut located within the yoke, said screw being provided with an arm passing through one of the faces of said yoke and having a recess adapted to receive the inner end of a saw-blade, and also having a hook or stud which is adapted to enter an opening in the saw-blade, substantially as described.

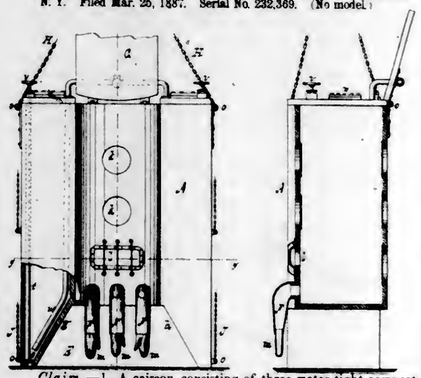
2. A saw-handle consisting of a yoke approximately in the form of the letter D and having a flattened arm with a central aperture, and provided with channels or grooves diametrical with reference to said aperture, and the clamping-screw projecting through said aperture and revoluble therein, said screw having a diametrical recess adapted to register with the channels or grooves and to receive the inner end of the saw-blade, and also provided with a hook or stud adapted to enter an opening in the saw-blade, substantially as described.

3. The combination of the yoke A, the device to clamp the saw-blade thereto, the sleeve to receive a bar or handle pivotally jointed

to the yoke at right angles to the axis of the latter, and the screw W, to clamp the said sleeve to the said yoke, substantially as described.

4. The combination of the yoke A, having the countersunk recess on one side of its outer arm, the clamping device to secure the inner end of the saw-blade to the inner arm of the yoke, the sleeve to receive the handle, having the arm T at right angles thereto provided with the head fitting in the recess, and the clamping-screw W, arranged at right angles to the axis of the yoke, securing the said head in the said recess, the opposing sides of the head and the recess being provided with matched radial corrugations, substantially as described.

381,797. PORTABLE CAISSON. HENRY P. KIRKHAM, Brooklyn, N. Y. Filed Mar. 25, 1887. Serial No. 232,369. (No model.)



Claim.—1. A caisson consisting of three water-tight compartments separated by water-tight partitions, provided with windows, and tubular flexible arm-sections which terminate in mittens or gloves, whereby an operator may make repairs, as and for the purpose described.

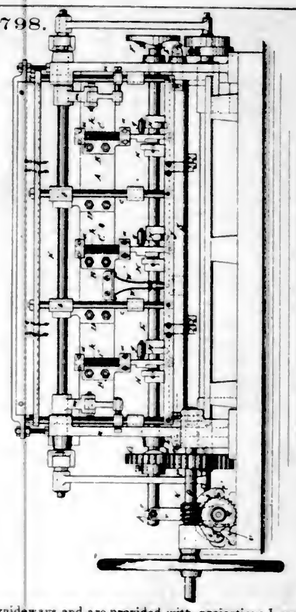
2. In a subaqueous caisson, flexible tubular and gloved arm-sections fixed permanently to the caisson, combined with a window located and constructed to permit the operator to guide his arms in said tubular sections, as and for the purpose described.

3. In combination, in a subaqueous caisson, a middle compartment of less length than the compartments on each side of the same, whereby a space, E, without a bottom is formed, which enables the caisson to straddle a projecting object, as and for the purpose described.

4. In combination, a subaqueous caisson constructed with convex and concave sides, with the means hereinbefore described for operating said caisson, as and for the purpose described.

5. A subaqueous caisson constructed with a concave or recessed side to receive within it such projecting part or parts as need repairs and bring the same within reach of the operator in the caisson, substantially as and for the purpose described.

381,798. QUILTING-MACHINE. WILLIAM KOCH, New York, N. Y. Filed Dec. 15, 1886. Serial No. 185,693. (No model.)



Claim.—1. In a quilting-machine, the combination, with a feed-bar, of a shaft which reciprocates longitudinally in its bearings, and which is provided with cams that act upon the feed-bar and impart to it a longitudinal reciprocating motion, as and for the purpose described.

2. In a quilting-machine, the combination, with a feed-bar, of a shaft which revolves and reciprocates longitudinally, and which is provided with systems of cams that act upon the feed-bar through suitable bearings and impart to it regular reciprocating movements in a longitudinal, a transverse, and a vertical direction, as and for the purpose described.

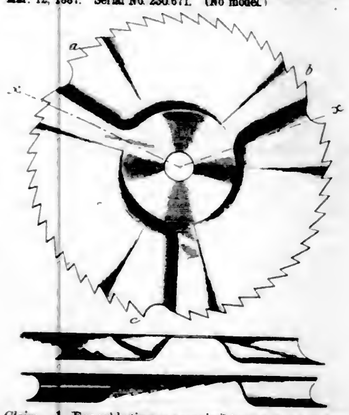
3. In a quilting-machine, the combination, with a feed-bar having a series of guide-bars attached thereto, of a shaft which revolves and reciprocates longitudinally, and which is provided with systems of cams that act upon bearings connected with said guide-bars and feed-bar, and impart to the feed-bar regular reciprocating movements in a longitudinal, a transverse, and a vertical direction, as and for the purpose described.

4. In a quilting-machine, in combination, a revolving and reciprocating shaft provided with cams, a feed-bar having a longitudinal reciprocating motion imparted to it by said cams, and springs for regulating said motion of the feed-bar, as and for the purpose described.

5. In a quilting-machine, the following combination of parts: a feed-bar, a series of guide-bars attached thereto, which pass through suitable guideways and are provided with projections I, and bearing-rollers *f* and *g*, a series of cams, H, which act on the rollers *f*, a series of cams, H', which act on the rollers *g*, springs *h*, and pistons *k*, with springs *l*, all arranged to operate in the manner and for the purpose described.

6. In a quilting-machine with a series of needles, the combination of a supporting-bar, A, extending across the width of the machine and provided with suitable guideways, a series of feed-bar guide-bars, C, fitted into said guideways, a feed-bar, S, needle-bar J, revolving and reciprocating shaft E, gear-wheel G, with cam *d*, fixed thereto, gear-wheel P, driving-shaft O, worm N, gear-wheel M; cam *v*, yoke-arms *s s'*, lever *r*, and cam-wheel F, all constructed, arranged, and combined in the manner and for the purpose described.

381,799. CUTTER-HEAD. WILLIAM H. LAWSON, Chicago, Ill. Filed Mar. 12, 1887. Serial No. 230,671. (No model.)



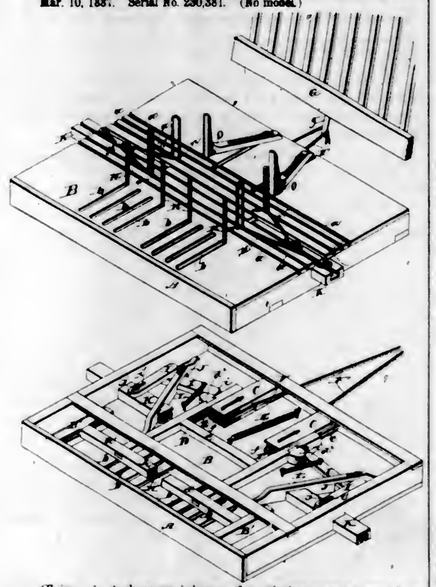
Claim.—1. For rabbeting or grooving, two or more sectors joined to form a circular saw, each of said sectors having its outer toothed margin oblique to the axis of rotation and its teeth approximately equidistant from said axis, whereby the teeth cut to the same depth but in different planes perpendicular to the axis of rotation.

2. A circular saw consisting of a single plate, the outer parts of certain of its component sectors pressed into the form of portions of spirals or screw-threads whose axes are the axis of rotation of the saw, each sector having a separate series of teeth.

3. A cutter-head consisting of a marginally-toothed plate having spirally-warped sectors connected by inclined portions of the plate, substantially as and for the purpose set forth.

4. A cutter-head whose working-edge consists of distinct series of teeth arranged obliquely to the axis of rotation and equidistant therefrom, whereby the teeth in each series cut to the same depth but in planes parallel to each other and at right angles to the axis of rotation.

381,800. SHEET-STRAIGHTENER FOR PRINTING-PRESSES. HUGO LOEWENBACH and WILLIAM F. H. MATTER, Milwaukee, Wis. Filed Mar. 10, 1887. Serial No. 230,381. (No model.)



Claim.—1. A sheet-straightener for printing-presses, comprising a suitable main frame, stationary gage-arms arranged thereon, a sliding frame carrying gage-pins and having its sides provided with lugs, lateral slides operative in the main frame and carrying one or more gage-arms, bell-cranks connected to the slides and arranged to be actuated by the lugs on the sliding frame, and a strap for operatively connecting the latter frame with a press-fly, substantially as and for the purpose set forth.

2. A sheet-straightener for printing-presses, comprising a main frame having a top piece provided with a series of transverse grooves and a series of longitudinal slots, a sliding frame carrying gage-pins that engage the slots, slides operative in the main frame, one or more gage-arms pivotally connected to the slides to be laterally adjustable thereon and having their free ends arranged to play in the grooves of the main-frame top piece, normally stationary gage-arms pivoted to said top piece and longitudinally adjustable thereon, a lever mechanism for actuating the slides simultaneously with a movement of said sliding frame, and a strap for operatively connecting the latter frame with a press-fly, substantially as and for the purpose set forth.

3. The combination of the main frame A, provided with the guide-blocks C, the sliding frame D, carrying gage-pins H and having its sides provided with lugs d^3, pulleys *f*, journaled in the guide-blocks, the strap F, for connecting said sliding frame with a press-fly, the spring E, uniting both frames, the slides K, bell-cranks I, and springs L, the gage-arms M N, adjustably secured to said slides, and the gage-arms O, adjustably connected to said main frame, substantially as and for the purpose set forth.

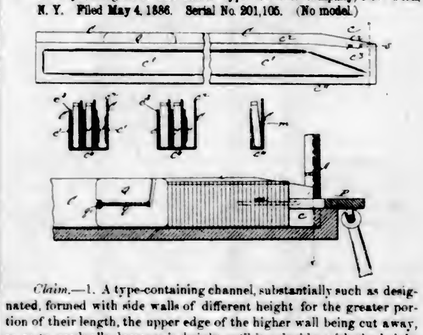
4. The combination of the main frame A, provided with the guide-blocks C, the sliding frame D, carrying gage-pins H and having its sides provided with lugs d^3, pulleys *f*, journaled in said guide-blocks, the strap F, for connecting said sliding frame with a press-fly, the spring E, uniting both frames, bell-cranks I, guide-bars J, slides K, springs L, and the adjustable gage-arms M N O, substantially as and for the purpose set forth.

381,801. RECEPTACLE FOR TOBACCO. PIERRE LORILLARD, Jr., New York, N. Y. Filed Jan. 3, 1888. Serial No. 259,677. (No model.)



Claim.—The herein-described package or receptacle for tobacco, consisting of the body A, provided with the removable cover B, and with the head *a*, having the upwardly-projecting flange 2 fitted into the end of the body, and having the opening *b*, provided with the removable tight-fitting cover *c*, substantially as described.

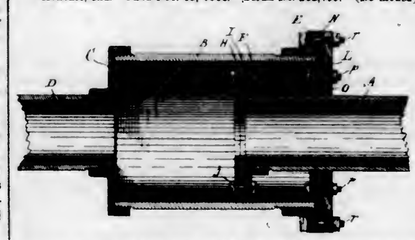
381,802. TYPE-CONTAINING CHANNEL. A. AUGUSTUS LOW, Brooklyn, assignor to The Alden Type Machine Company, New York, N. Y. Filed May 4, 1886. Serial No. 201,105. (No model.)



Claim.—1. A type-containing channel, substantially such as designated, formed with side walls of different height for the greater portion of their length, the upper edge of the higher wall being cut away, so as to gradually decrease in height until it coincides with the height of the lower wall at the receiving end, substantially in the manner and for the purpose described.

2. A type-containing channel, substantially such as described, formed at its receiving end with an abrupt shoulder and a depression or recess in the upper edge of one side wall, and provided with an inwardly-projecting rib or section of elastic or semi-elastic material upon the other side wall, for the purpose and substantially in the manner described.

381,803. SLIDING JOINT FOR GAS-MAINS. DANIEL M. MARQUIS, Kokomo, Ind. Filed Feb. 13, 1888. Serial No. 263,799. (No model.)

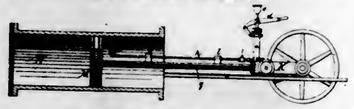


Claim.—1. In a sliding joint for pipes, the combination, with pipe-section B, having flange E, and pipe-section A, of the removable head consisting of plates L and O and gasket N and bolts *p* and *r*, all arranged substantially as and for the purpose specified.

2. In a sliding joint for pipes, pipe-section B, having reducing-head C and flange E screwed thereon, plates L and O, gasket N, bolts *p* and *r*, pipe-section A, having flange F screwed thereon, annular plate

H, gasket I, and bolts *j*, all combined and arranged to co-operate substantially as and for the purpose specified.

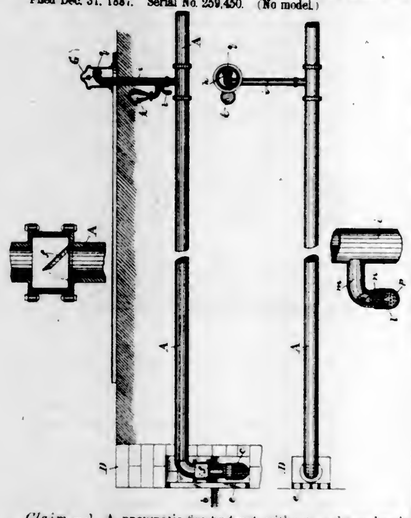
381,804. LUBRICATOR. ROBERT MARSHALL, Pittsburg, Pa. Filed Dec. 24, 1887. Serial No. 258,898. (No model.)



Claim.—1. The combination, with the open-ended cylinder N, its piston, and moving head, of an oil pump and reservoir attached to the moving head and fitted with a delivery-pipe, *h*, arranged alongside the piston-rod and terminating in an upwardly-directed nozzle at a point within the cylinder, but outside the piston, substantially as described.

2. The combination, with the cylinder N, its piston, and moving head, of an oil pump and reservoir attached to the moving head, and a delivery-pipe, *h*, arranged substantially as described, said oil-pump having a spring-retracted piston-rod projecting and adapted to be operated by contact with the cylinder N.

381,805. PNEUMATIC FIRE-HYDRANT. HUGH L. MCAVOY, Baltimore, Md., assignor of one-half to S. Hamilton Caughy, same place. Filed Dec. 31, 1887. Serial No. 259,450. (No model.)



Claim.—1. A pneumatic fire-hydrant without cocks or hand-operated valves, comprising the combination of an underground horizontal pipe, A, having its end submerged in water and provided at said end with a check-valve, one or more branch pipes, each having a vertical portion and a nozzle provided with a cap, *q*, and an automatic waste-water valve attached to the said vertical portion of the branch pipe.

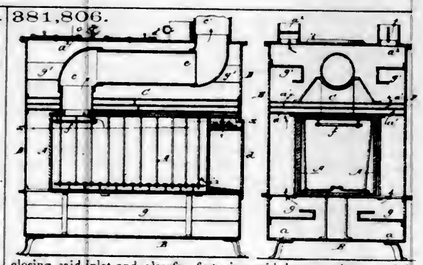
2. In a pneumatic fire-hydrant, the combination of a pipe, A, having its end submerged and provided at said end with a check-valve, a branch pipe having a nozzle for attachment of a hose and without cocks or hand-operated valves, an air-chamber, and an automatic waste-water valve.

381,806. HEATER FOR CARS AND BUILDINGS. THOMAS MCCROSSAN, Winnipeg, Manitoba, Canada. Filed Oct. 15, 1887. Serial No. 252,436. (No model.) Patented in Canada June 6, 1887, No. 26,899.

Claim.—1. The combination, with the stove proper and its surrounding casing, between which is an air-chamber, as specified, of the hollow door which closes the registering openings in both said stove and casing and has itself an imperforate face and top and bottom air-openings, whereby, when the door is closed, air to support combustion is supplied through it from the said interior chamber, as shown and described.

2. The combination, with the fire-box and casing therefor, of the hollow door having an inlet from the upper air-chamber and an outlet into the fire-box, and slides working through the sides of the casing and in guides on the top of the door, whereby they are adapted for

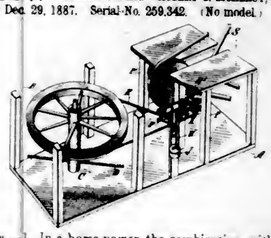
381,806.



closing said inlet and also for fastening said door, as shown and described.

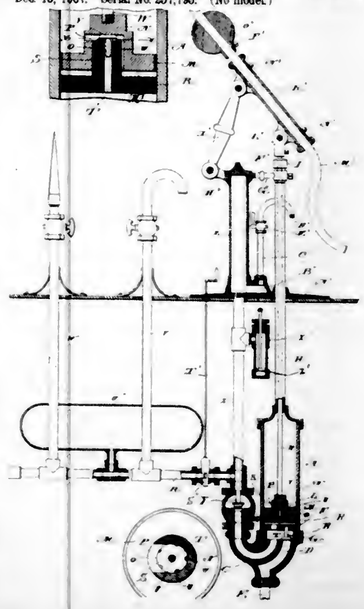
3. The combination, with the fire-box and a casing separated therefrom by an air-space and having air-inlets *a* in its base, of catch-pans *g*, having inwardly-bent edges and located in such space between the fire-box and inlets, substantially as shown and described.

381,807. HORSE-POWER. ROBERT G. MCELROY, Uniontown, Ala. Filed Dec. 29, 1887. Serial No. 259,342. (No model.)



Claim.—1. In a horse-power, the combination, with the horizontal driving master-wheel, the driven pulley, and endless belt E, of the horizontally-swinging bifurcated wing G, bearing a vertical pulley, the rope and its weight attached to said wing, the grooved pulley I on post K, and the intermediate guiding-pulley, R', substantially as and for the purposes described.

381,808. PUMP. ELIJAH NEFF, Mentone, Ind., assignor of two-thirds to Isaac E. Bell and Hiram J. Eley, both of same place. Filed Dec. 13, 1887. Serial No. 257,795. (No model.)



Claim.—1. In a pump, the combination of the cylinder having the check-valve in its lower side and the outlet-channel C, the plunger arranged in the said cylinder and having the recess O and the channel P communicating therewith, the packing R, arranged below the said plunger, and having the stud S extending into the said recess and provided with the channel T, communicating with the channels P and O, and the check-valve V in the upper end of the channel T, substantially as described.

2. In a force-pump, the combination of the cylinder, the plunger therein, the packing below the said plunger and at a suitable distance therefrom, so as to leave a space, M', the channel communicating with the lower end of the cylinder and with the space between the plunger and packing, and the valve V, arranged in one of said channels, substantially as described.

3. The combination, in a pump, of the pump-rod, the socket-tube connected thereto, the link connecting the said socket-tube to a fixed point, the handle M', extending through the said socket-tube and adjustable longitudinally therein, and the counterbalancing-weight O', adjustable on the outer end of the said handle, substantially as described.

4. In a pump, the combination, with the plunger, the packing R below the same and at a suitable distance therefrom, so as to leave a space, M', the recess O in the plunger, the hollow stud S, extending from the packing and fitting in the recess O, the valve V, the channel P, and the channel U, communicating with the space M', as set forth.

5. In combination with the cylinder A, the pipe H, rising therefrom, the pump-rod W, passing through the pipe, the air-chamber Z', the cap F' for the chamber, having arm G' to connect with the pipe H, the link I', pivoted to the cap, the socket-tube K', pivoted to the pump-rod, and also to the link I', as set forth.

381,809. TREATMENT OF ORES AND MATERIALS CONTAINING SULPHUR FOR THE EXTRACTION OF METALS AND OTHER CONSTITUENTS. ROBERT OXLAND, Plymouth, County of Devon, and CHARLES OXLAND, Sydenham, County of Surrey, England. Filed June 15, 1886. Serial No. 205,242. (No specimens.)

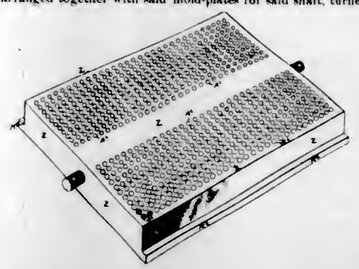
Claim.—1. The method of treating raw or unburned sulphuret ores of copper and iron to render the copper soluble in water, while leaving the iron for the most part insoluble, consisting in mixing the finely-pulverized ore to a semi-fluid consistency with sulphuric acid and a solution of persulphate of iron, and heating the mixture to a temperature such as to evolve sulphurous-acid vapor, substantially as described.

2. The method of treating raw or unburned sulphuret ores of copper and iron to render the copper soluble in water, while leaving the iron for the most part insoluble and rendering the sulphur in the ore available for the manufacture of sulphuric acid, consisting in mixing the finely-pulverized ore to a semi-fluid consistency with sulphuric acid and solution of persulphate of iron, heating the mixture to a temperature such as to evolve sulphurous-acid vapor, and collecting and condensing such acid vapor, substantially as described.

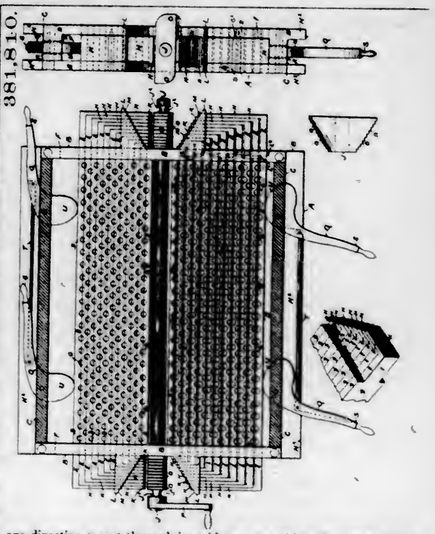
381,810. MACHINE FOR THE MANUFACTURE OF CRAYON PENCILS. JOSEPH W. PECK, Waltham, Mass., assignor to Zenas Parmenter, same place. Filed Mar. 26, 1887. Serial No. 232,595. (No model.)

Claim.—1. In combination, a mold-frame, sectional mold-plates in two series located therein and those of each series free to be opened from and closed upon each other, and a shaft common to both series of mold-plates and having diametrically-opposed cams which are constructed and arranged together with said mold-plates for said shaft, turned in one direction to act through its said cams on said mold-plates to open them from each other, and turned in the other direction to leave them free to be closed, substantially as described.

2. In combination, a mold-frame, sectional mold-plates in two series located therein and those of each series free to be opened from and closed upon each other, a shaft common to both series of mold-plates and having diametrically-opposed cams which are constructed and arranged together with said mold-plates for said shaft, turned in



381,810.



one direction to act through its said cams on said mold-plates to open them from each other, and turned in the other direction to leave them free to be closed, and means consisting of levers fulcrumed upon the mold-frame and having cams to work on said mold-plates to close them upon each other, substantially as described.

3. In combination, a mold-frame, A, sectional mold-plates D, located in said frame and arranged in two series and those of each series to be free to be opened from and closed upon each other, an extension, H, of each mold-plate D, and a shaft, J, located between and common to said two series of mold-plates and turning in bearings of said mold-frame and provided with diametrically-opposed cams O to work through said extensions H on said mold-plates, substantially as described, for the purpose specified.

4. In combination, a mold-frame, A, sectional mold-plates D, located in said frame and arranged in two series and those of each series to be free to be opened from and closed upon each other, an extension, H, of each mold-plate, having an abutment, N, fixed guideways L for said extensions, and made with an angular running edge, M, and a shaft, J, located between and common to said two series of mold-plates and turning in bearings of said mold-frame and provided with diametrically-opposed cams O to work through said extensions H on said mold-plates, substantially as described, for the purpose specified.

5. In combination, a mold-frame, A, a series of sectional mold-plates, D, located in said mold-frame and constructed and arranged to be opened and closed, and a frame or block, V, having a series of dressing-swabs, W, correspondingly located to the molds of the mold-plates and otherwise for simultaneous entrance into said molds, substantially as described, for the purpose specified.

6. In combination, a mold-frame, A, a series of sectional mold-plates, D, located in said mold-frame and constructed and arranged to be opened and closed, and a frame or block, Z, having a series of holes or sockets, A^2, correspondingly located to the molds of the mold-plates and otherwise adapted to be placed against said mold-plates, substantially as described, for the purpose specified.

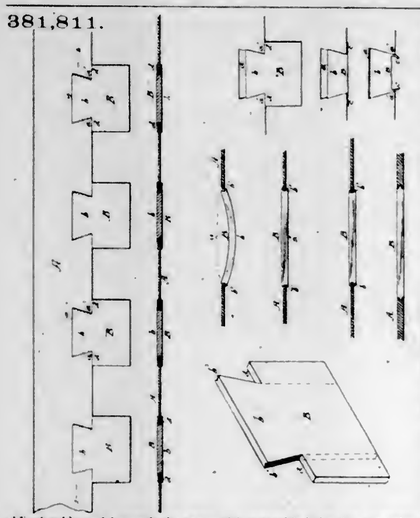
7. In combination, a mold-frame, A, a series of sectional mold-plates, D, located in said mold-frame and constructed and arranged to be opened and closed, a frame or block, Z, having a series of holes or sockets, A^2, correspondingly located to the molds of the mold-plates and otherwise adapted to be placed against said mold-plates, and a cabinet-rack, B^2, having guideways F^2, to receive said mold-frames and said blocks, and otherwise constructed and arranged substantially as described, for the purpose specified.

381,811. STONE-SAW. JAMES PECKOVER, Philadelphia, Pa. Filed Dec. 7, 1887. Serial No. 257,201. (No model.)

Claim.—1. The combination of a saw-blade having an undercut recess with a tooth having a correspondingly-shaped shank, forming a tongue-and-groove joint at the sides of the recess, said shank being flexible, so that it can be bent for lateral insertion into the recess and afterward spread thereinto, all substantially as specified.

2. The combination of a saw-tooth having an undercut shank and

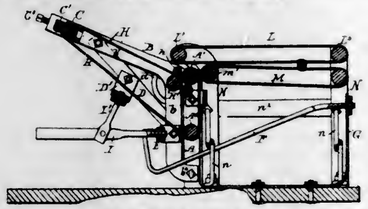
381,811.



side shoulders, *d*, beneath the same with a saw-blade having an undercut recess corresponding in shape with the shank of the tooth, the edges of which are grooved to receive the saw-blade, all substantially as set forth.

3. The combination of a saw-blade having an undercut recess and a tooth having side shoulders, *d*, and an undercut shank adapted to the recess, the latter being of a depth greater than the shank of the tooth, substantially as described.

381,812. CIGAR-MACHINE. FRANK E. PELLANT, Janesville, Wis. Filed Oct. 5, 1887. Serial No. 251,530. (No model.)



Claim.—1. In a cigar bunching, pressing, and forming machine, the combination, with fixed standards having rollers journaled between them at different levels, of a frame pivotally connected at its lower end with said standards and having its upper portion extended in a substantially horizontal plane, which portion is provided with a roller at its outer end and a pair of rollers at its inner end, and an endless apron passed between said pair of rollers over the outer roller and around the rollers supported by the standards, and of sufficient length to form a bunching-pocket between the pair of rollers and the upper roller supported by said standards.

2. In a cigar bunching, pressing, and forming machine, the combination of the fixed standards and the rollers mounted therein at different levels and having their journals extended and suitably geared together, a movable frame having a portion extended in a substantially-horizontal plane, a pair of rollers journaled at the inner end of said horizontal portion, a roller journaled at the outer end thereof, a pulley keyed to an extension of one of said pair of rollers, gearing, substantially as described, connecting the pulley with one of the rollers supported by the standards, and an endless apron passed around the several pulleys and between said pair of rollers, substantially as and for the purposes hereinbefore set forth.

3. In a cigar bunching, pressing, and forming machine, the combination, with the bunching mechanism composed of a fixed and movable part normally held closed by a spring, rollers, and belts, substantially as described, of the tripping mechanism for actuating said movable part at fixed intervals, consisting of the trip-bar, the shaft provided with a crank-pin to alternately engage with the trip-bar, and means, substantially as set forth, for imparting motion to said shaft.

4. In a cigar bunching, pressing, and forming machine, the combination, with the bunching mechanism composed of a fixed and movable part, and the spring for normally holding the movable part closed, and rollers and belts, substantially as described, of the tripping mechanism for actuating said movable part at stated intervals, consisting of the trip-bar, the shaft provided with the crank and having a friction-wheel keyed thereto, a second shaft located at a distance therefrom and parallel with the crank-shaft and having a pulley secured thereto, which is in frictional contact with said pulley on the crank-pin shaft, substantially as and for the purpose described.

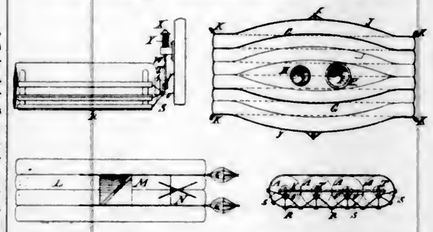
5. In a cigar bunching, pressing, and forming machine, the combination, with the bunching mechanism composed of a fixed and a movable part, rollers and belts, substnatially as described, of a spring and a Y-shaped connection having its forward ends hooked and connected with said movable part and having its rear ends adjustably connected with the spring, as and for the purpose set forth.

6. In a cigar bunching, pressing, and forming machine, the combination, with the bunching mechanism composed of a fixed and movable part, rollers and belts, substantially as described, and mechanism, substantially as described, for intermittently actuating said movable part, of a pair of traveling aprons located to the rear of said bunching mechanism and arranged the one above the other, and mechanism for moving them in the same direction and at different rates of speed, whereby the cigar after it is ejected from the buncher is rolled and at the same time carried to and dropped into a receptacle placed at the rear of the machine, substantially as set forth.

7. In a cigar bunching, pressing, and forming machine the combination, with fixed standards having rollers journaled between them at different levels, of a frame pivotally connected at its lower end with said standards and having its upper portion extended in a substantially-horizontal plane and provided with a pair of rollers at its inner end, a roller journaled in longitudinally-adjustable bearings in the ends of the upper frame portion, and an endless apron passed between the rollers at the inner end of the swinging frame, over the outer adjustable roller and aronnd the rollers between the standards and of a sufficient length to form an adjustable bunching-pocket between the pair of rollers and the upper roller in the standards, as and for the purpose set forth.

8. In a cigar bunching, pressing, and forming machine, the combination of the rollers A' A^2, journaled one above the other in fixed standards, the swinging frame B, having the lower portions, *b*, hinged to the standards, and having the upper portions, *b'*, extended in a substantially-horizontal plane, the rollers H' and *k*, journaled in the upper ends of the lower frame portions, the boxes or bearings sliding adjustably in the outer ends of the upper frame portions, the roller C, journaled in the said boxes or bearings, and the apron passed around the rollers A', A^2, C, and H', and under the small roller *k*, and forming a slack portion between the inner rollers when the frame is tilted in, as and for the purpose set forth.

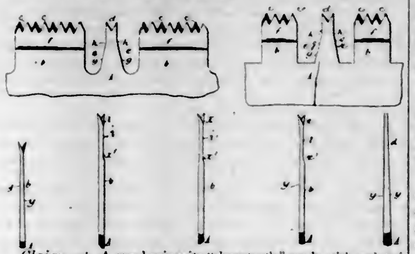
381,813. TUBULAR FLOATING MATTRESS. CHARLES J. PIGEON and LOUIS J. T. LACROIX, Paris, France. Filed Feb. 25, 1888. Serial No. 265,335. (No model.) Patented in France July 8, 1887, No. 184,677.



Claim.—1. The combination of a series of inflatable cylinders of water-proof flexible material arranged and secured together side by side, with the middle ones separable at or near the middle of their length, but united at their ends, and a water-tight pocket and water-tight close-bottomed and loaded pantaloon-legs fitted water-tight between the separable portions of the middle cylinders, substantially as herein described, for the purpose set forth.

2. The combination of the series of inflatable cylinders of water-proof flexible material arranged and secured together side by side, the middle cylinder or cylinders of the series having hinged sections M, capable of folding over the end sections and producing an opening between the adjacent cylinders, and a water-tight pocket and closed and loaded pantaloon-legs fitted water-tight to said opening, substantially as and for the purpose herein set forth.

381,814. SAW. JOHN J. RALYA, Springport, Ind. Filed Aug. 24, 1887. Serial No. 247,749. (No model.)



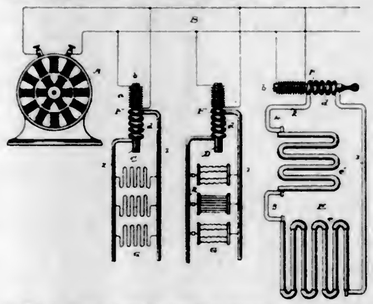
Claim.—1. A saw having its "drag-teeth" made with pointed tips meeting at an acute angle and having their outer edges extending in parallel lines from their points or tips for about one-third the length of the teeth, and thence diverging obtusely from such lines with a gradually-increasing breadth to the base of the teeth, as and for the purposes set forth.

2. A saw having its cutting-teeth made substantially as shown and described—that is, with a broad base-connection with the blade or body and gradually narrowing upward at its opposite edges for about two-thirds its length, then extending upward with substantially parallel sides and meeting at an obtuse angle the edges of the cutting-tips.

3. Saw-teeth on an elevated base having the side ventilation described—that is, with the elevated base thinned or reduced to about one gage thinner than the body of the plate from the tips of the cutting-teeth to a line considerably below the roots of such cutting-teeth.

4. A saw having its group of cutters or teeth provided with an elevated gradually-broadened base reaching to about two-thirds their height or length, as set forth, and having, also, drag-teeth with parallel sides extending down from their tips and then diverging at obtuse angles to the blade to form a broad elevated base, all as shown and described.

381,815. HEATING BY ELECTRICITY. ELIAS E. RIES, Baltimore, Md., assignor of one-half to Albert H. Henderson, same place. Filed Feb. 9, 1887. Serial No. 227,044. (No model.)



Claim.—1. In a system of heating by electricity, the combination, with suitable low-resistance supply-conductors, of one or more exposed heat-developing conductors arranged in multiple arc between the supply-conductors, substantially as described.

2. In a system of heating by electricity, the combination, with suitable low-resistance supply-conductors, of one or more exposed heat-developing metallic conductors arranged in multiple arc between the supply-conductors, substantially as described.

3. In a system of heating by electricity, the combination, with the heating-circuit, of an inductional transformer the primary coils of which are in circuit with the supply-conductors, secondary conductors extending therefrom and carrying electric currents of low electromotive force but large volume, and heat-developing translating devices connected in multiple arc between said secondary conductors and consisting of thin strips of conducting metal of small cross-section and large surface area, substantially as described.

4. The combination of conductors of very low resistance, a suitable source of alternating currents of electricity, and metallic heat-developing radiators of large surface, but inferior conductivity, having greater superficial area than said low-resistance conductors, but of lesser conductivity, in circuit therewith, substantially as described.

5. A system of heating by electricity, consisting, essentially, of a source of alternating current, an inductional transformer having its primary in circuit with said source, and the secondary circuit of which is of very low resistance, and conductors consisting of exposed heat-radiating metallic bodies of comparatively low resistance connected between the secondary circuit-conductors in multiple arc, substantially as described.

6. An inductional transformer comprising one or more primary coils and a plurality of secondary coils, the primary coils being connected with a source of alternating or intermittent electric currents, and the secondary coils supplying their currents direct to separate working-circuits, including, respectively, electric lamps and exposed heat-developing conductors, substantially as described.

7. The combination, with an electric circuit of varying intensity and heat-radiating devices included therein, of an automatic cut-off consisting of a bent or folded metallic strip arranged to be operated by an abnormal increase of current in the heating devices to open the circuits thereof, substantially as described.

8. In a system of heating by electricity, the combinstion, with the heating-conductors, of heat-radiating devices consisting of a pair of strips of metal folded to form expansible radiators, the inner extremity of each being provided with a terminal, which terminals are normally held in contact by the resilience of the metal, but adapted to be separated, and the radiator-circuit opened by the expansion of the metal under excessive heat, substantially as described.

9. In a system of heating by electricity, the herein-described radiating devices, consisting, substantially, of the combination, with the supply-conductors, of one or more thin strips of corrugated or fluted metal adapted to be heated by the passage therethrough of an electric current, as set forth.

10. In a system of heating by electricity, the herein-described heating and ventilating device, consisting, substantially, of an inclosing-case having one or more adjustable air-inlets, supply-conductors, and heat-radiating conducting-strips connected between said supply-conductors in multiple arc and arranged to heat and deflect the passing current of air, substantially as described.

11. In a system of heating by electricity, the combination, with the supply-conductors, including the primary coils of an inductional transformer, and the secondary conductors, carrying electric currents of large heating capacity, of a radiating-frame between said secondary conductors, consisting of a number of thin strips or bands of corrugated or fluted metal arranged to be heated by the passage therethrough of said currents, substantially as described.

12. In a system of heating by electricity, the combination of a source of alternating or interrupted current, an inductional transformer in circuit with said source of current, a heating-circuit of low resistance supplied with current from the secondary coil or coils of said transformer, exposed heat-radiating conducting-bodies connected in parallel order between the conductors of the heating or secondary circuit, and a thermostatic cut-out for opening the circuit whenever the heat developed therein exceeds a predetermined temperature, substantially as described.

381,816. ELECTRIC HEATING APPARATUS FOR RAILWAY-CARS. ELIAS E. RIES, Baltimore, Md., assignor of one-half to Albert H. Henderson, same place. Filed Feb. 9, 1887. Serial No. 227,045. (No model.)

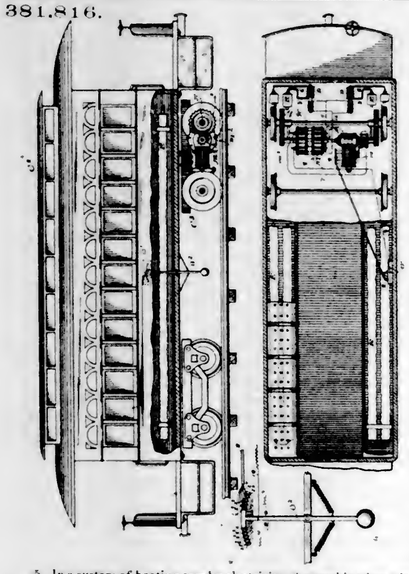
Claim.—1. In a system of heating cars by electricity, the combination of the moving vehicle, a generator of electricity arranged to be driven by the momentum thereof, one or more inductional transformers for converting the current from said generator into one of much greater intensity, heating devices in the secondary circuit of the transformer, and means, substantially such as described, for completing the generator-circuit and bringing the transformer into action under predetermined conditions.

2. In a system of heating cars by electricity, the combination of the moving vehicle, an electric generator arranged to be driven when the vehicle is in motion, an inductional transformer or transformers in the generator-circuit, heat-radiating devices in the transformer-circuit, and means, substantially as described, for automatically closing the generator-circuit when the vehicle is moving on a descending grade and for opening said circuit on an ascending grade.

3. In a system of heating cars by electricity, the combination, with a car, a generator of high-tension currents, and transforming apparatus for converting said currents or a portion thereof into one of lower tension but larger volume, of automatic switching devices arranged to close the generator-circuit when the car is descending a grade, substantially as described.

4. In a system of heating cars by electricity, the combination of a car, a generating and transforming apparatus, and automatic switching devices, said switching devices being mounted on said car and operated by the force of gravity and controlling the operative condition of the generator to cause the generator to produce more or less current according to the pitch of the grade being traversed by the car, as described.

381,816.



5. In a system of heating cars by electricity, the combination, with a car or cars, of a generator on each car arranged to be driven by one of the axles thereof, one or more inductional transformers in the circuit of said generator, heating devices in said car located in the secondary or working circuit of the transformer, and means for automatically closing the generating-circuit under predetermined conditions.

6. In a system of heating cars by electricity, the combination, with a car or cars, of a dynamo-electric machine upon each car, a generating-circuit, inductional transformers in said generating-circuit, heating devices located on said car and connected in parallel in the secondary circuit thereof and arranged to receive the secondary currents from the transformer or transformers, and means, as described whereby the dynamo-electric machine is arranged to generate the main supply-current and act as a braking-generator when on descending grades.

7. In a system of heating cars by electricity, the combination, with a separate generator for each car, said generator being operated by connection with one of the axles thereof, of one or more inductional transformers included in said generator-circuit and a series of exposed conductors of relatively large area and arranged as translating devices in the secondary circuits of the aforesaid transformers, as described.

8. In a system of heating cars by electricity, the combination, with the axle of one of the supporting-wheels, a counter-shaft in continuous mechanical connection with said axle, an alternating-current generator, the armature of which is mounted on said counter-shaft, suitable inductional transformers arranged to receive the current from the generator and to convert it into one of lower potential and increased intensity, and heat-radiating devices upon the car adapted to receive said low-tension current, substantially as shown and described.

9. In a system of heating cars by electricity, the combination, with one of the axles of a car, of a main generator of alternating electric currents and an exciter therefor, separate field-magnet coils for the exciter, the terminals of all of which are brought to a suitable switch-box, and a gravity-switch arranged to operate only when the car is descending a grade and to cut in more or fewer of the coils of the field-magnet of the said exciter according to the pitch of the grade upon which the car is traveling, as described.

10. In a system of heating cars by electricity, the combination, with a car and one of the axles thereof, of a counter-shaft in continuous mechanical connection with said axle, an alternating-current generator and a separate continuous-current exciter therefor, the armatures of both machines being mounted upon said counter-shaft, inductional transformers arranged to receive the current from the generator and to transform the same into one of lower potential but increased intensity, heating devices upon the car arranged to develop heat from said current, and a pendulum or gravity switch arranged to operate when the car is traversing a grade and to cut out more or fewer of the coils of the field-magnet of the exciting-generator as the grade is of greater or lesser steepness, as set forth.

11. In a system of heating cars by electricity, the combination, of the alternating-current generator and continuous exciter, means, substantially as described, for continuously rotating the armatures thereof, the gravity-switch O^2, having duplicate sets of points, and a movable stop whereby the action of said switch is limited to one or other of the set of points according to the direction in which the car is moving, as shown and described.

12. In a system of heating cars by electricity, the combination, with an electric conductor of large area, of a tube of corrugated metal within which said conductor is arranged, substantially as described.

13. In a system of heating cars by electricity, the combination, with the main supply-conductors, of a heating device consisting in whole or in part of a corrugated metallic tube supported between fixed standards and adapted to absorb the expansions and contractions due to its changes of temperature produced by the passage therethrough of the electric current, substantially as described.

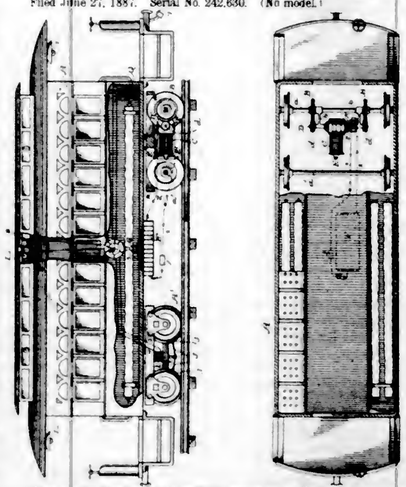
14. In a system of heating cars by electricity, a combined heat-developing device and thermostatic cut-out consisting of a corrugated plate of metal provided with a movable contact and included in the heating-circuit in such a manner that undue heating and consequent excessive expansion of said plate will move the contact and open the heater-circuit, substantially as set forth.

15. In a system of heating by electricity, a combined heat-developing device and thermostatic cut-out consisting of a strip of metal adapted to expand beyond a predetermined point under the influence of heat due to the passage therethrough of an abnormal electric current, and an adjustable stop or contact against which the strip normally rests and through which its circuit is normally completed, substantially as described.

16. The method herein described of converting the surplus energy or momentum of a moving car or train into heat, which consists in causing said surplus energy of the car or train to generate a current of electricity, transforming said current into one of lower electro-motive force and larger volume, and sending said transformed currents through heat developing, radiating, or translating devices of low electrical resistance and large surface, substantially as described.

17. The herein-described method of heating railway cars or trains by electricity, which consists in generating an electric current or currents through the agency of the surplus mechanical energy of the car or train when said car or train is descending a grade or coming to a stop, transforming the current so generated into one of larger volume but lower electro-motive force, and in then sending the said transformed current or a portion thereof into one or more heat developing and absorbing devices on said car or train, substantially as described

381,817. ELECTRIC-HEATING SYSTEM. ELIAS E. RISS, Baltimore, Md., assignor of one-half to Albert H. Henderson, same place. Filed June 27, 1887. Serial No. 242,630. (No model.)



Claim.—1. The herein-described method of utilizing a continuous current of electricity of relatively high potential and small volume, which consists in transmitting said continuous current from a generating-station over relatively small conductors to one or more points of consumption, converting a portion of said continuous current at the point or points of consumption into one of intermittent or alternating polarity and increasing the volume or quantity of the said current, then passing the converted current through heat-developing conductors in the secondary circuit of the transformer, and in passing the remainder of the continuous current into one or more continuous-current consumption-circuits, as set forth.

2. The herein-described method of producing heat from electricity, which consists in generating continuous currents of relatively high electro-motive force and small volume, transmitting said continuous currents over relatively small conductors to a storage battery or batteries located at or near the point or points of consumption, interrupting the current from the storage-battery at the points of consumption, sending said interrupted currents to inductional transformers, and utilizing the secondary currents for the production of heat, substantially as described.

3. In a system of heating cars by electricity, the combination, with a car or cars, of one or more generators arranged to be driven by the momentum of said cars, an inductional transformer or transformers having suitable car-heating devices in the secondary circuits thereof, and a pole-changer in the generator-circuit, whereby the current sent to the primary coils of the transformer is of alternating polarity.

4. The combination, with a source of continuous currents, of a secondary battery located in the external circuit thereof, connections from each of the cells of said battery to a commutator-switch, a distributing-circuit and two or more working-circuits leading therefrom, one of which includes a pole-changer, and an inductional transformer and heating devices in the secondary circuit thereof, and connections between the distributing and commutator switches, whereby any desired portion of the battery may be put in circuit therewith and with either of the consumption-circuits leading therefrom, substantially as described.

5. The combination, with suitable source of continuous currents of electricity, of a secondary battery in circuit therewith, a distributing-switch and connections between the switch and battery, a branch circuit, including electric lamps or other translating devices arranged in multiple arc, extending from said switch and another branch extending therefrom and including a pole-changer, an inductional transformer operated by the interrupted current, and heating devices included in a circuit of low resistance extending from the secondary coils of the inductional transformer, substantially as described.

6. The combination, with a suitable source of continuous currents, of a secondary battery connected to said source and arranged to be charged in series, a commutator-switch and separate connections extending from the cells of said battery to said switch, a distributing-switch to which said commutator-switch is connected, whereby any desired portion of the secondary battery may be connected therewith in multiple arc, and consumption-circuits extending from said distributing-switch, one of said circuits including a pole-changer, an inductional transformer, and heating devices included in the secondary circuit of the transformer, substantially as set forth.

7. The combination, with a source of continuous currents, of a secondary battery in circuit with said source and arranged to be charged thereby in series, a commutator-switch having terminals connected with each separate cell or group of cells in the battery, a distributing-switch to which the battery-switch is connected, and whereby any desired portion of the cells of the battery may be connected in multiple arc, and a heating-circuit of very low resistance, an inductional transformer, the secondary coils of which are connected with the heating-circuit, the primary coils whereof extend to a pole-changer, and connections between the separate portions of the interrupter and the distributing-switch for supplying the current thereto, substantially as described.

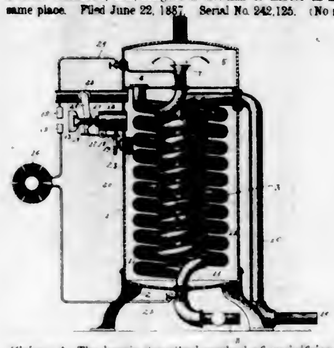
8. The herein-described method of utilizing a continuous current of electricity of relatively high electro-motive force and small volume, which consists in transmitting said continuous current over relatively small conductors to a storage battery or batteries located at or near the point or points of consumption, interrupting a portion of the current from the storage-battery, passing the interrupted current through an inductional transformer, whereby they are converted into secondary currents of larger volume and lower electro-motive force, and supplying the remaining energy of the storage-battery direct to translating devices utilizing continuous currents, substantially as described.

9. The combination, with a source of continuous current of high tension, of two or more consumption-circuits supplied therefrom and containing translating devices requiring currents of different character or quality, and means, substantially as shown, for interrupting or alternating the currents in one of said circuits without interfering with the continuous flow of current in the remaining circuit or circuits, substantially as described.

10. The combination, with a source of continuous current of high tension, of two or more consumption-circuits supplied therefrom and containing translating devices requiring currents of different character or quality, means, substantially as shown, for interrupting or alternating the currents in one of said circuits without interfering with the continuous flow of current in the remaining circuit or circuits, and an inductional transformer for reducing the electro-motive force of said interrupted or reversed current, substantially as described.

11. In a system of heating by electricity, the combination, with suitable low-resistance supply-conductors, of a plurality of low-resistance heat-developing metallic conductors arranged in multiple arc between said supply-conductors, and adapted to automatically regulate the heat developed in each of said conductors by variation in the flow of current therethrough caused by the change in their respective resistances due to the heat developed, substantially as described.

381,818. METHOD OF ELECTRO-CHEMICAL HEATING. ELIAS E. RISS, Baltimore, Md., assignor of one-half to Albert H. Henderson, same place. Filed June 22, 1887. Serial No. 242,125. (No model.)



Claim.—1. The herein-described method of revivifying a steam-generating substance located in a receptacle and having heat-giving qualities, which consists in periodically subjecting the same to the heating effect of an electric current or currents, substantially as specified.

2. The herein described method of maintaining the generation of steam in a generator, which consists in exposing water to the action of a steam-generating substance having heat-giving qualities and revivifying the heat-giving qualities of said substance by periodically subjecting said substance to the heating effect of an electric current or currents, substantially as specified.

3. The herein-described method of maintaining the generation of steam in a generator, which consists in exposing water to the action of a steam-generating substance having heat-giving qualities, re-enforcing the life of said substance by constantly impregnating the same with exhaust-steam until it reaches a desired point of saturation, and evaporating and revivifying said substance by subjecting it to the heating effect of an electric current or currents when said point of saturation is reached, substantially as specified.

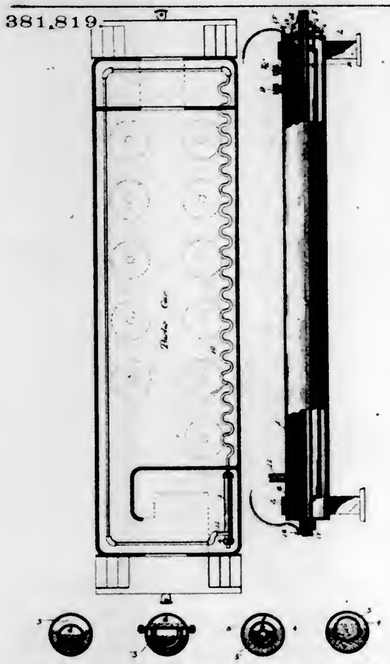
4. The herein-described method of automatically revivifying a steam-generating substance located in a receptacle and having heat-generating qualities, which consists in establishing an electric circuit in proximity to said substance and controlling the flow of electric currents of heating effect through said circuit by the variation of the heat-giving qualities of said substance.

5. The herein-described method of maintainiug the radiation of heat in radiators supplied with steam from a generator, which consists in generating steam by exposing water to the action of a steam-generating substance having heat-giving qualities, distributing the steam thus generated to points of radiation, and maintaining the heating qualities of said substance by impregnating it with exhaust-steam until a desired point of saturation is reached, and evaporating and revivifying said substance by subjecting the same to the heating effect of an electric current or currents when said point of saturation is reached, substantially as specified.

6. The herein-described method of revivifying a heat-generating substance located in a receptacle and having heat-giving qualities, which consists in converting high-tension electric currents into currents of lower tension and heavier heating effect and periodically subjecting said substance to the heating effect of such converted currents.

381,819. HEATING RAILWAY-CARS BY ELECTRO-CHEMICAL MEANS. ELIAS E. RISS, Baltimore, Md., assignor of one-half to Albert H. Henderson, same place. Filed June 28, 1887. Serial No. 242,790. (No model.)

381,819.



Claim.—1. An electro-chemical steam-generator having a water-compartment, a chamber for the caustic substance adjacent to said compartment, a steam-chamber communicating with said water-compartment, means for distributing the generated steam and for returning the exhaust to the chamber containing the caustic substance, an electric circuit passing through the heat-generating substance, for the purpose set forth, an automatic circuit-controller for said circuit, and a suitable source of electricity, all arranged to co-operate substantially in the manner specified.

2. The combination, with a chamber containing a heat-generating substance, of an electric conductor passing through and in contact with said substance and forming part of an electric circuit, a circuit-controller for said circuit, the circuit, and a suitable source of electricity furnishing currents of low potential and large quantity.

3. The combination, with the water-compartment of a steam-generator, of a chamber located in proximity to said water-compartment and containing a heat-generating substance, an electric circuit passing through said heat-generating substance, for the purpose set forth, and an automatic circuit-controller for said circuit, and a suitable source of electricity, as specified.

4. In a steam-boiler, the combination, with the compartment containing the chemical heat-generating substance, of the water-chamber located in proximity to the compartment containing the chemical substance, the steam-space communicating with the water-compartment, a superheating chamber or reservoir; also in proximity to the substance-compartment, pipes for distributing the generated steam to points for consumption and for returning same to the generating-chamber, and an electric circuit and circuit-controller therefor for periodically evaporating the steam deposited in the generating-compartment and for reheating said chemical substance, as described.

5. The combination, with the compartment containing the chemical heat-generating substance, of the exhaust-pipe communicating with said compartment, and an electric circuit and circuit-controller therefor for periodically evaporating the moisture from said substance and for reheating the same by means of an electric current of the required heating effect.

6. The combination, with a compartment of a steam-generator containing a heat-generating substance, of an electric circuit passing through said substance, a circuit-controller operated by the thermostatic conditions of said substance for controlling the passage of an electric current through said substance, for the purpose set forth, and a suitable soure of electricity furnishing currents of low potential and large quantity.

7. The combination, with the compartment containing the chemical heat-generating substance saturated with exhaust-steam, of an expansible thermostat arranged to be expanded and contracted by the temperature of said chemical substance, an electric circuit passing through said heat-generating substance for evaporating the exhaust-steam from said substance, a circuit-controller for said circuit operated by said thermostat, and a source of electricity furnishing currents of low potential and large quantity, as described.

8. The combination, with the chamber containing the chemical heat-generating substance, of the exhanst-pipe communicating with said chamber, the switching-cylinder and its spring-actuated piston operated by the back-pressure of said exhaust, an automatic circuit-controller operated by said piston to close an electric circuit, and the expansible thermostat arranged to break the electric circuit by the variation of the temperature of the chemical substance, as described.

9. The combination, with the compartment containing the chemical heat-generating substance, of an exhaust-steam pipe communicating with said compartment, a safety or blow-off pipe, also communicating with said compartment, a valve located in said blow-off pipe, and an automatic circuit-controller operated by the back-pressure in said compartment to close an electric circuit and to open the valve in the blow-off pipe, as specified.

10. The combination, with the compartment containing the chemical heat-generating substance, of an exhaust-steam pipe communicating with said compartment, a blow-off pipe, also in communication with said compartment, an automatic safety-valve located in said blow-off pipe, and an automatic circuit-controller for periodically closing an electric circuit operated by the back-pressure in the said compartment, as set forth.

11. The combination, with two or more steam-generators located, respectively, in different coaches of a railway-train, of a compartment in each generator containing a heat-generating substance, an electric circuit passing through said substance, a circuit-controller for said circuit, a source of electricity located at a different point on said train from the generators, and an automatic coupling between the several coaches carrying the said generators for the purpose of preserving the continuity of the said electric circuit throughout the train, as set forth.

12. In a railway-car, the combination, with a chamber containing caustic soda, potash, lye, or their equivalents, of a water-compartment in proximity to said chamber, a steam-space communicating with said water-compartment, a tube leading from the steam-space through the caustic substance to the distributing-pipe, the distributing-pipe, the exhaust or return pipe terminating in and communicating with the chamber containing the caustic substance, an electric conductor in contact with said caustic substance, an automatic circuit-controller operated by the temperature of said caustic substance, and the circuit, as specified.

13. The combination, with a source of electricity, of means for transforming the current furnished by said source into a current of increased volume, the circuit, a compartment containing a chemical heat-generating substance, and an automatic circuit-controller for periodically closing the said circuit according to the varying temperature of the said caustic substance, as specified.

14. The combination, with a steam-boiler having a compartment containing a chemical heat-generating substance, of an electric conductor in contact with said substance and in circuit with an inductional transformer, an automatic circuit-controller for periodically changing an electric circuit according to the temperature of the chemical substance, an inductional transformer having a primary of fine wire and a secondary of coarser wire and in circuit with an alternating dynamo, and an alternating dynamo operated by the momentum of a train.

15. The combination, with a steam-boiler having a compartment containing a chemical heat-generating substance, of an electric conductor in contact with said substance and in circuit with an inductional transformer, an automatic circuit-controller for periodically changing an electric circuit according to the temperatnre of the said chemical substance, an inductional transformer having a primary of fine wire, a secondary of coarser wire, and in circuit with an alternating dynamo, a current-regulating solenoid switch for maintaining a uniform generation of current by cutting in or out the field-coils, and an alternating dynamo operated by the momentum of the train.

16. The combination, with a steam-boiler having a compartment containing a chemical heat-generating substance, of an electric conductor in contact with said substance and in circuit with an inductional transformer, automatic circuit-controller for changing an electric circuit according to the temperature of the chemical substance, an inductional transformer having a primary of fine wire, a secondary of coarser wire, and in circuit with an alternating dynamo, a current-regulating solenoid switch for maintaining a uniform generation of current by cutting in or out the field-coils, a secondary battery in circuit with the said solenoid switch and with the primary of the inductional transformer, and an alternating dynamo operated by the momentum of the train, as specified.

381,820. **MEANS FOR SECURING STEREOTYPE-PLATES WHICH ARE CAST SEPARATELY FROM THEIR BEDS.** EDMUND D. ROGERS, Church End, Finchley, County of Middlesex, England, assignor to Paul Wilcox, New York, N. Y. Filed Sept. 17, 1887. Serial No. 250,009. (No model.) Patented in England June 4, 1880, No. 2,275.



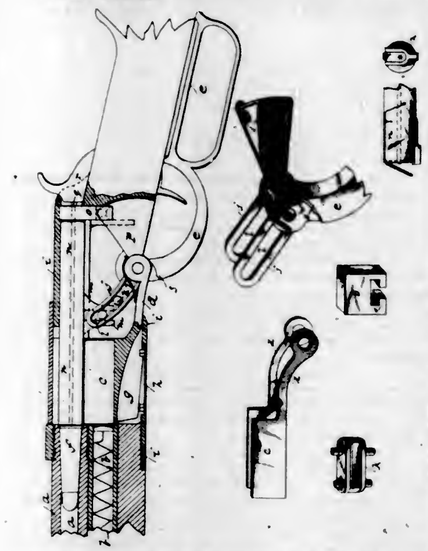
Claim.—1. A stereotype-plate provided with a longitudinal oblique rib on its under side and the straight vertical flange b^* on one edge, with the recess to receive it, in combination with a bed having its upper part provided with a longitudinal oblique groove to receive the said rib, substantially as described.

2. A stereotype-plate, *a*, with a longitudinal oblique rib, *c*, on its under side, flange *b*, with beveled or inclined inner side, *b'*, and plain flange b^*, at right angles to the plate *a*, substantially as described.

3. A bed for a stereotype-plate, formed at its upper part with a longitudinal oblique groove to receive a longitudinal oblique rib formed on the under side of said plate, and with a recess narrower at its lower part than at its upper part and adapted to receive a flange of the stereotype-plate made with a beveled or inclined inner side, substantially as described.

4. A stereotype-plate, *a*, with longitudinal oblique rib *c* on its under side, flange *b*, with beveled or inclined inner side, *b'*, and plain flange b^*, in combination with a bed, *e*, formed with longitudinal oblique groove, and with recesses at its respective sides adapted to receive said flanges *b* and b^*, substantially as herein described.

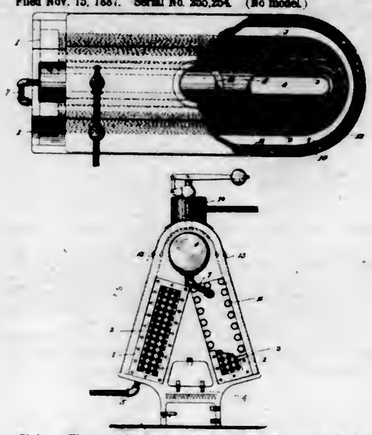
381,821. **MAGAZINE FIRE-ARM.** ROBERT M. AUGHENBAUGH and GEORGE E. RUFFLEY, Glenfield, Pa. Filed Apr. 14, 1887. Serial No. 234,846. (No model.)



Claim.—1. In a magazine fire-arm such as described, the combination of the operating-lever *e*, slotted arms *j j*, and segmental plate *p*, formed integral, the carrier-block *c'* with the arms pivoted on the same fulcrum as the lever, the actuating-shoulder *s* on the lever *e* for operating the same, the breech-bolt *n*, engaged and operated by the arms *j j*, and the sliding block *o*, engaging the plate *p*, and thereby moved into locking engagement with the bolt, substantially as specified.

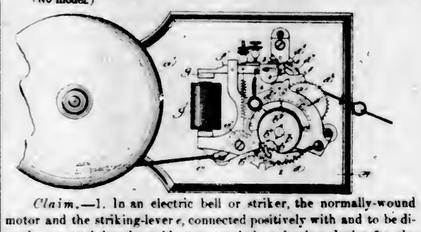
2. The combination with the pivoted carrier-block and a pivoted lever, *e*, provided with slotted arms *j*, and a segment, *p*, of the sliding block *o*, between the hammer and breech-pin, engaged and operated by the segment *p*, the arms *m* on this breech-pin, and the block *k*, engaging such arms, and the slotted arms *j j*, all adapted to operate as described.

381,822. **STEAM-BOILER.** LAMBERT B. BATTIN, Elizabeth, N. J. Filed Nov. 15, 1887. Serial No. 255,254. (No model.)



Claim.—The combination of the headers 1 2, arranged in a vertical plane with their lower ends divergent, the U-shaped boiler-tubes having their ends expanded in said headers respectively, whereby said tubes form converging walls, a fire-box between the walls thus formed, and an inlet at the bottom of one and an outlet at the top of the other of said headers, substantially as set forth.

381,823. **ELECTRICAL BELL OR MECHANICAL STRIKER.** JOHN H. BICKFORD, Salem, Mass. Filed May 31, 1887. Serial No. 239,756. (No model.)



Claim.—1. In an electric bell or striker, the normally-wound motor and the striking-lever *e*, connected positively with and to be directly operated by the said motor, and the releasing device for the said motor, and the electro-magnet *q'*, for moving the releasing device, permitting the motor to operate, and the winding device for the motor, combined with the independent disengaging device, substantially as described, for the winding device, as and for the purposes set forth.

2. In an electric bell or striker, the motor and striking-lever operated by it, the winding device for the motor, said winding device consisting of the pawl *c* and ratchet *d'*, and means for moving the winding device, combined with the releasing device composed of a pivoted lever, *f'*, having a projection, 5, and a part carried by the motor having the projections 3 4, all substantially as described, and an electro-magnet for effecting the movement of the pivoted lever.

3. In an electric bell or striker, a motor mechanism consisting of a train of gears and a winding device, a series of pins or studs carried by one of the large gears, as *d*, and a pivoted lever, one end of which is directly engaged and operated by the said pins or studs, combined with a releasing device carried by one of the small gear-shafts, whereby a large number of movements may be given to the striking-lever at each time the motor is wound.

4. In an electric bell or striker, a motor, a releasing device therefor, a striking-lever adapted to operate once at each time the motor is released, combined with a winding device for the motor, the star-wheel *n*, pinion b^3, projection n', and projection n^3, substantially as described.

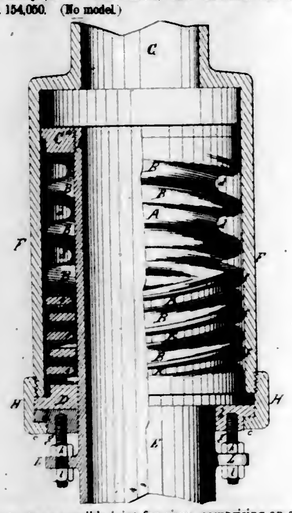
5. In a bell or striker, the normally-wound motor and the releasing device therefor, consisting of the arm *f'*, projection 5 thereon, the disk *f*, and the projections 3 and 4, and an electro-magnet, *g'*, for moving the said motor, the winding device, as the pawl *c* and ratchet *b'*, for the motor, and the independent disengaging device for the winding device, operating substantially as described, combined with means, as the lever b^3, substantially as described, for moving the winding device, substantially as and for the purposes set forth.

381,824. **BREAD, CAKE, OR CHEESE BOX.** SALLIE E. BOWERSOCK, Baltimore, Md. Filed Sept. 16, 1887. Serial No. 249,838. (No model.)



Claim.—The herein-described receptacle, consisting of a rectangular body portion with solid end portions, *c d*, having an interposed reticulated panel, C, rigidly secured to said portions, the outer lid, A, and the inner supplemental lid, B, consisting partly of reticulated material, said lid B being hinged to the back body portion of said receptacle, said parts being combined substantially as shown and described.

381,825. **EXPANSIBLE JOINT FOR PIPES.** HENRY W. BRINCKERHOFF, Brooklyn, N. Y. Filed Mar. 3, 1883. Renewed Jan. 26, 1885. Serial No. 154,050. (No model.)



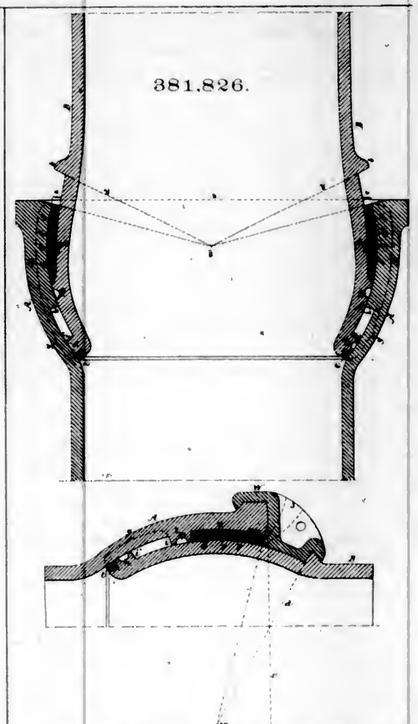
Claim.—1. An expansible joint for pipes, comprising an entering tube, E, and its attached ring C, a corrugated sleeve, A, attached to said ring, a ring, D, to which the other end of said sleeve is attached, the covering-mouth F, and the flanged screw-ring H, connected to the covering-mouth to hold the ring D in place, substantially as shown and described.

2. In an expansible joint for pipes and tubes, a sleeve of thin metal, made with two spiral corrugations of opposite pitch, substantially as shown and described, and for the purpose set forth.

3. The combination, with the sleeve A, of corrugated sheet metal, and the mouth F, of the spiral K, arranged in the valleys inside and outside the sleeves, with the faces *e* of its coils bearing against said sleeve and the faces *f* thereof bearing against the mouth, substantially as and for the purpose described.

4. In an expansible joint for pipes and tubes, the following elements in combination: an entering tube, E, and an inclosing-mouth, F, a corrugated sleeve, A, and screw-ring C, with one end of the sleeve A fixed thereon, a ring, D, with the other end of the sleeve secured thereto, and a screw-ring, H, lugs L, screw-bolts *g*, and nuts *k* and *l*, all constructed and arranged in the manner and for the purpose shown and described.

381,826. **SPHERICAL PIPE-JOINT.** HENRY W. BRINCKERHOFF, Brooklyn, N. Y., assignor to John F. Ward, Jersey City, N. J. Filed Dec. 4, 1885. Serial No. 184,715. (No model.)



Claim.—1. The combination of the bell and spigot and the interposed packing, with internal stop-shoulders formed upon the bell and spigot and serving to limit the movement of the bell and prevent straining of the packing, all substantially as specified.

2. The combination, in a spherical pipe-joint, of the bell, spigot, and interposed packing, said bell having an internal shoulder and the spigot having an external stop to seat against the mouth of the bell, and a second stop to simultaneously seat against the internal shoulder in the bell, all substantially as specified.

3. The combination of the bell and spigot, and intervening packing of a spherical pipe-joint, with the rings *f*, embedded in and forming part of the packing, as set forth.

4. The combination of the bell, spigot, and packing of a spherical pipe-joint, with the retaining-ring *h*, adapted to a groove in the spigot or bell and projecting into the packing so as to retain the same, as specified.

5. The combination of the bell and spigot constructed to form a packing-space, *e*, between them, shoulders in the rear of said packing-space to limit the movement of the spigot, and a groove between the packing-space and the forward shoulder, all substantially as and for the purpose specified.

6. The combination of the bell and spigot, constructed to form internal stop-shoulders, a packing-space around the inner end of the spigot, and a groove to prevent the passage of packing from said space to the clearance-space between the stop-shoulders, all substantially as specified.

7. The combination of the bell, the spigot having an external stop-shoulder, and the jointing-ring W, fitted to the bell and to the spigot and its stop-shoulder, all substantially as specified.

381,827. **HAMMOCK OR SWING.** MARTIN BRODERICK, Bedias, Tex. Filed Dec. 3, 1887. Serial No. 256,907. (No model.)

Claim.—1. The combination of a suspended canopy, the hoop of which is provided with screw-eyes, with a basket consisting of a hoop and a suitable platform supported thereon, a cushion upon and a guard secured to said platform, and supporting-ropes secured with their lower ends to the guard and the platform of the basket, and having at their upper ends snap-hooks engaging the said screw-eyes of the hoop of the canopy, substantially as set forth.

2. The combination of a suspended canopy, consisting of a hoop provided with screw-eyes and having a textile covering and a mosquito-netting secured thereto and depending therefrom, with a basket

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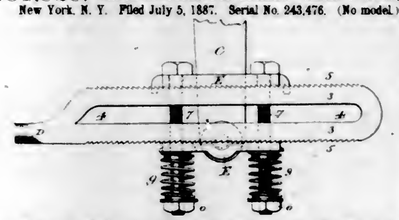


consisting of a hoop, a suitably-constructed bottom, a cushion, and a guard, substantially as described, and supporting-ropes secured at their lower portions to the basket and to the guard, and having snap-hooks at their upper ends adapted to engage the screw-eyes in the hoop of the canopy, substantially as set forth.

3. The combination of a suspended canopy, the hoop of which is provided with screw-eyes, with a basket consisting of a hoop and a suitable platform supported thereon, a cushion and a guard, supporting-ropes having at their upper ends snap-hooks, suspending-ropes, a compound hook having shoulders or offsets, to which the upper ends of said suspending-ropes are secured, a pulley mounted on the straight portion of said compound hook, and an adjusting-rope passing over said pulley and secured with one end to the top of the canopy.

4. The combination of a canopy, consisting of a hoop having a textile covering and a mosquito-netting secured thereto and depending therefrom, with a compound hook having the shoulders or offsets, as described, a pulley on the straight portion of said hook, suspending-ropes, and an adjusting-rope passing over said pulley and being secured to the top of the canopy.

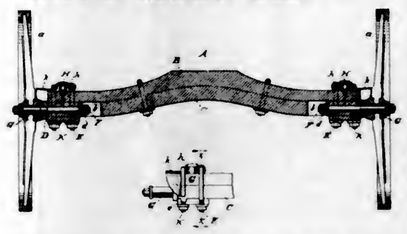
381,828. **SLACK-ADJUSTER FOR BRAKES.** ORIGEN C. CRANE, New York, N. Y. Filed July 5, 1887. Serial No. 243,476. (No model.)



Claim.—1. The arrangement of the lower clamping-block, in combination with the brake-lever and pivot in relation to the ratchet-teeth on the forked end of the brake-rod, so that the center of the pivot shall be on the same plane as the ratchet-teeth, the pivot being the point at which the power is applied from the brake-lever and the ratchet-teeth being the point at which the power is received and transmitted to the brake-rod and brake-beam, all substantially as herein set forth.

2. The upper clamping-block with ends projecting between the two parts of the forked rod, acting as guides to keep the said block in a central position during its motion along the top of the forked rod, all substantially as herein set forth.

381,829. **VEHICLE-AXLE.** JOHN F. DIXON, Clay Centre, Kans. Filed Oct. 13, 1887. Serial No. 252,234. (No model.)

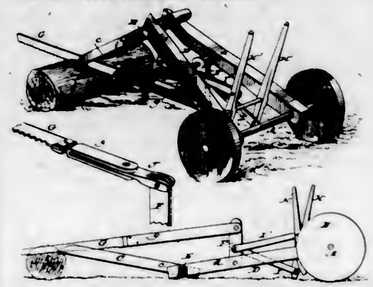


Claim.—1. The combination, with the axle, the journal-boxes, and the clips E K, of the cover *h*, hinged to the clip E, and the fender-plate *k*, having the inward projection engaging the clip K, substantially as specified.

2. The combination, with the axle composed of the central wooden piece and the metal strips C C, secured to the sides of said central piece and provided with the retaining-lugs *c c*, of the journal-boxes secured between the ends of said metal strips, the oil-cups made in the tops of said journal-boxes, and the spindles rotating in the journal-boxes and having the wheels attached to and rotating with their outer ends, substantially as specified.

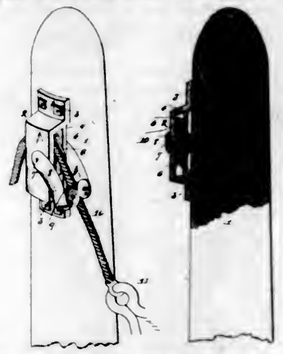
3. The combination, with the axle A, composed of the center piece, B, and metal strips C C, provided with the lugs *c*, of the journal-boxes D, the oil-cups H, made in said boxes, the clips to secure the center piece and strips C C together, the fender clamp-plates, the spindles F, turning in the journal-boxes, the boxing G, secured to the hubs of the wheels and fitting on the squared part of the spindles, and the nuts on the tapped inner and outer ends of the spindles, substantially as specified.

381,830. **DRAG-SAW.** ROBERT DOAK, Sidney, Ohio. Filed Nov. 22, 1887. Serial No. 255,944. (No model.)



Claim.—The machine, substantially as described and shown, consisting of the axle or shaft, the wheels thereon, the frame-section D, having beams *d*, the frame-section C, having slot *c* in one end and having its other end fitted between the ends of beams *d*, the bolt connecting the beams *d* and C, the pendulum-arm pivoted to the beams *d*, the saw, and the handle-levers and pitmen, substantially as and for the purposes specified.

381,831. **ANTI-FRICTIONAL CHOCK OR LEADER.** LUCIUS DYER, Millbridge, Me. Filed Jan. 30, 1888. Serial No. 262,361. (No model.)



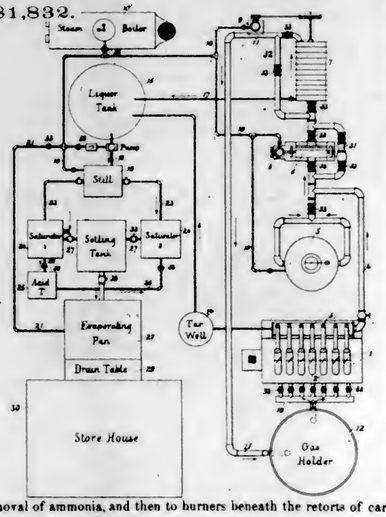
Claim.—In an anti-friction leader for the rigging of vessels, the combination, with a cleat, the inner side of which is provided with a recess extending from its outer to its inner edge, and having a slot, a sheave in the slot, a pin through the leader and through the sheave, and a frame secured upon the pin, with one of its arms within the recess and the other arm upon the outside of the cleat, and having guide-pulleys journaled in the other end of the frame.

381,832. **PROCESS OF OBTAINING AMMONIA AND BONE-BLACK.** FREDERIC BOSER, St. Louis, Mo. Filed June 2, 1887. Serial No. 240,107. (No model.)

Claim.—1. The described process of producing bone-black and ammonia by mixing the gaseous products of the carbonization of the bone-black with combustible gas from a gas-producer, and passing them through a device for the removal of ammonia.

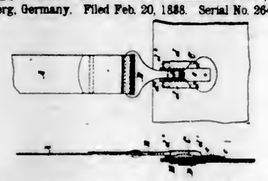
2. The described process of producing bone-black and ammonia by mixing the gaseous products of the carbonization of the bone-black with gas from a gas-producer, passing them through a device for the

381,832.



removal of ammonia, and then to burners beneath the retorts of carbonizing-furnace.

381,833. SUSPENDER-FASTENING. HERMANN FRIED, Cannstadt, Würtemberg, Germany. Filed Feb. 20, 1888. Serial No. 264,627. (No model.)



Claim.—In a suspender-fastening, the slotted holder B, having at its lower end the projections *b*, the guiding-grooves *b'*, and the depression *a*, in combination with the retaining-case C, provided with a vaulted spring, *c*, and having the overlapping flanges *d*, forming guides open at one end and closed at the opposite end, substantially as and for the purpose specified.

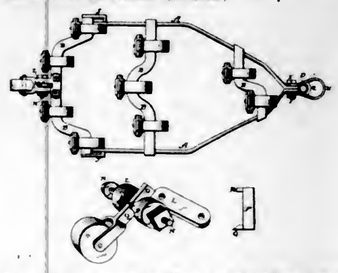
381,834. BABY-CARRIAGE. JACOB H. GIBSON, New York, N. Y. Filed Oct. 27, 1887. Serial No. 253,542. (No model.)



Claim.—1. The herein-described carriage, wherein the body is movably suspended above the running-gear and out of direct contact therewith by means of the uprights C and the angularly-bent rods D, relatively arranged and connected as set forth.

2. The combination, with the carriage-body having bifurcated clips on the under side thereof, of the running-gear having uprights secured thereto and formed with eyes at their upper ends, and the angularly-bent suspending-rods engaging the clips on the under side of the carriage-body and the two ends thereof with the eyes in the upper portions of the uprights, substantially as described.

381,835. HARROW. GEORGE W. GORSUCH, Martinsburg, Pa., assignor of one-third to Philip H. Bridenbaugh, same place. Filed Jan. 16, 1888. Serial No. 260,913. (No model.)

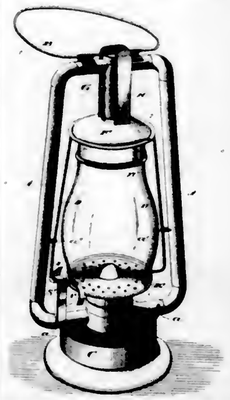


Claim.—1. In a harrow, the frame A, formed from a single continuous rod which is formed into an eye at its front end, in combination with the sleeve in which the front roller is swiveled, and the clamping-bolt by which the eye is closed around the sleeve, substantially as shown.

2. In a harrow, the frame A, formed from a single continuous rod which is bent or turned upward at the front end of the frame and formed into an eye, in combination with the roller which supports the front end of the frame, the sleeve in which the roller is swiveled, and the clamping-bolt, substantially as described.

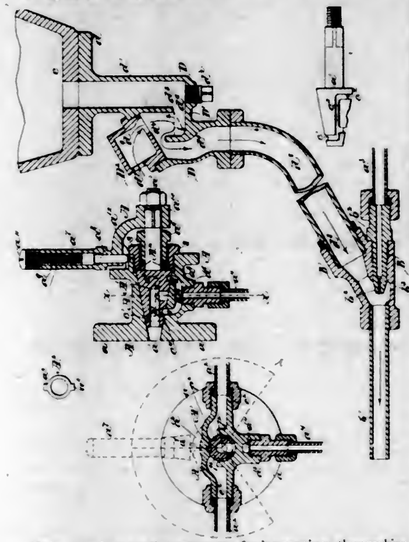
3. The combination of the harrow-frame, the rear cross-bar having the stationary portion L of the ratchet rigidly secured thereto, the rear roller provided with a perforated shank, the clamping-bolt, the movable part of the ratchet provided with a point to engage with the stationary part L, and a flange to catch over the front edge of the shank of the roller, and the clamping-nut, substantially as set forth.

381,836. LANTERN. HUDSON M. DREW and JOSEPH A. GRANT, New Limerick, Me. Filed Oct. 20, 1887. Serial No. 252,928. (No model.)



Claim.—In a lantern, the combination, substantially as before set forth, of the standards having the gnide-staples on their inner opposing sides, the wire frame movable in said staples and attached at its lower end to the burner-plate and at its rear upper end to the top cap, the retaining-spring comprising an engaging-spur and an operating finger-loop, the upper depending slotted tube, the coiled spring inclosed by said tube, and the cross-wire passing through the slot in the tube and bearing on the coiled spring therein.

381,837. APPARATUS FOR APPLYING SAND TO THE DRIVING-WHEELS OF LOCOMOTIVES. JAMES GRESHAM, Stretford, near Manchester, England. Filed Aug. 22, 1887. Serial No. 247,586. (No model.) Patented in England Aug. 20, 1885, No. 9,861; in France July 25, 1887, No. 184,974; in Germany July 25, 1887, No. 42,054, and in Belgium Nov. 2, 1887, No. 73,391.



Claim.—1. In a sanding apparatus for locomotives, the combination of a sand-trap, a sand-delivery pipe communicating with the delivery of the sand-trap, and an ejector connected with the delivery-pipe and operating to induce a current of air through the trap and delivery-pipe, and to eject from said pipe the sand carried thereto by said air-current, substantially as and for the purpose specified.

2. In a sanding apparatus for locomotives, the combination of a sand-receptacle, a sand-trap provided with an air-inlet and with a feed-port connected with the sand-receptacle and arranged at a point below the delivery of said trap, a sand-delivery pipe communicating with the delivery of the trap, and an ejector connected with the delivery-pipe and operating to induce a current of air through the trap and delivery-pipe, and to eject from said pipe the sand carried thereto by the air-current, substantially as and for the purpose specified.

3. In a sanding apparatus for locomotives, the combination, with a sand-trap open at top, of a feed-duct forming one of the walls of the trap, an air-duct arranged at an angle to said duct to cause the air admitted to the sand-trap to impinge upon said duct, a delivery-pipe communicating with the open end of the trap, and an ejector connected with the delivery-pipe and operating to induce a current of air through the trap and delivery-pipe, and to eject from said pipe the sand carried thereto by the air-current, substantially as and for the purpose specified.

4. In a sanding apparatus for locomotives, the combination of a sand-receptacle, a sand-trap consisting of a vessel or receiver open at top, a feed-duct connected with the sand-receptacle and projecting into the sand-trap, a supply port or passage connecting the trap with the feed-duct, said port or passage being arranged relatively to the trap and the feed-duct to cause the sand to flow into the trap at an angle of not less than thirty degrees, a steam-ejector, a sand-delivery pipe extending to the upper edge of the sand-trap and in front of the ejector-nozzle, an air-duct adapted to conduct the air over the mouth of the sand-delivery pipe into the sand-trap to take up the sand and carry the same to said sand-delivery pipe, and a delivery-nozzle for delivering the combined sand, air, and steam, substantially as and for the purpose specified.

5. In a sanding apparatus for locomotives, the combination, with the source of steam-supply, a steam-ejector, a pipe or pipes connecting the ejector with said source of steam-supply, and a pipe adapted to supply sand in front of the ejector-nozzle, of a steam-cock interposed in the connections between the source of steam-supply and the ejector, and a drip-pipe connected with the steam-cock, said steam-cock being provided with ports and passages formed in the periphery of its plug and communicating with the drip-pipe to conduct the leakage or condensed steam to said drip-pipe when the cock is closed and prevent said leakage or condensed steam from passing to the ejector or its connections with the source of steam-supply, substantially as and for the purpose specified.

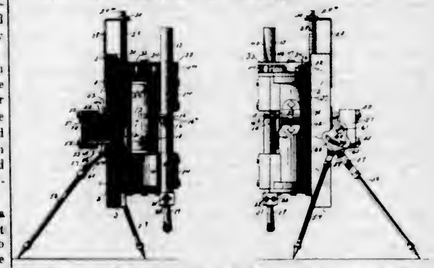
6. In a sanding apparatus for locomotives, the combination, with a steam-ejector, of the sand-receptacle *c*, a delivery-pipe, *d'*, opening into the sand-receptacle, the sand-trap D, a port or passage, d^4, between said trap and delivery-pipe, the pipe d^5, connecting the trap with the ejector, as described, and the hollow plug D^4, (provided with the air-ports d^7 and d^8,) screwed into the casing of the sand-trap, said parts being constructed and operating substantially as and for the purpose specified.

7. In a sanding apparatus for locomotives, the combination, with a plurality of steam-ejectors, the locomotive-boiler, and pipes connecting the ejectors with the steam-space of the boiler, of a steam-cock interposed in said connections, comprising a casing having branches to which said ejector-connections are coupled, and ports communicating with said branches, a plug provided with an axial steam-passage, and a steam-port in communication with said passage and adapted to communicate with the ports leading to the branches of the casing, the glands *a'* and *a''*, the washer a^6, and the lever a^7 on the stem *a'* of the plug, said parts being constructed and operating substantially as and for the purpose specified.

8. In a sanding apparatus for locomotives, the combination, with a plurality of steam-ejectors, the locomotive-boiler, and pipes connecting the ejectors with the steam-space of the boiler, of a steam-cock interposed in said connections, comprising a casing provided with a plurality of branches, c^2, and a branch, a^{15}, a plug, A', provided with an axial steam-passage, and a lateral port adapted to communicate with the ports leading to said branches c^2, and with peripheral semi-annular channels c' c^3 and longitudinal peripheral channels c^3 c^4, adapted to communicate with the branch a^{15}, said parts being constructed and operating substantially as described, for the purpose specified.

9. In a sanding apparatus for locomotives, the combination, with a plurality of steam-ejectors, the locomotive-boiler, and pipes connecting the ejectors with the steam-space of the boiler, of a steam-cock interposed in said connections, comprising a casing provided with a segment, a^{13}, in which is formed a stop-notch, with a plurality of branches, c^2, and with a branch, a^{15}, a plug provided with an axial steam-passage, *p'*, a lateral port adapted to communicate with the ports leading to the branches c^2, and with semi-annular and longitudinal peripheral channels c' c^3 c^4 c^5, adapted to communicate with the branch a^{15} of said casing, a manipulating-lever connected to the stem of the plug, and a spring-actuated pin arranged in said lever and adapted to engage the stop-notch in the segment a^{13} of the casing, substantially as and for the purpose specified.

381,838. ROCK-DRILL. SIMON INGERSOLL, Glenbrook, Conn. Filed Dec. 7, 1887. Serial No. 257,175. (No model.)



Claim.—1. In a rock-drill, a cylinder closed at both ends and having a slot through one side, and a piston adapted to reciprocate in said cylinder, in combination with an independent drill-bar and a carrier for said drill-bar, whose shank passes through said slot and engages the piston.

2. The cylinder closed at both ends and having a slot in one side, and a piston adapted to reciprocate in said cylinder, in combination with an independent drill-bar and a carrier having arms which embrace the drill-bar, and a shank which passes through the slot in the cylinder and engages the piston.

3. The frame-work, the carriage, and a cylinder upon said carriage closed at both ends and having a slot, 18, in combination with a drill-bar journaled in said carriage and having a groove, 15, and a carrier having arms which engage said groove, and a shank which passes through said slot and engages the piston, said groove being wider than said arms, so that the drill-bar can continue its stroke after the return movement of the piston has commenced, enabling the drill to strike the

rock with full force before the carrier comes in contact with the upper side of the groove.

4. The cylinder having ports 23 and 24 and slot 18, the piston, drill-bar 13, and a carrier having an arm, 16^a, which engages the drill-bar, and a shank passing through said slot and engaging the piston, in combination with a valve adapted to cover and uncover said ports alternately, and a rock-shaft, 10, having an arm engaging said valve, and tappets 12, which are engaged by arm 16^a in the upward and downward movements of the drill-bar to control the movements of the valve.

5. The combination, with a cylinder closed at both ends and having a slot, 18, an independent drill-bar, and a carrier having an arm, 16^a, engaging the drill-bar, and a shank passing through said slot and engaging the piston, of a rock-shaft carrying tappets 12, one of which is engaged by arm 16^a in its upward movement and the other engaged in its downward movement, as and for the purpose set forth.

6. The frame-work, the carriage sliding therein, a cylinder upon said carriage closed at both ends and having a slot, 18, a piston in said cylinder, an independent drill-bar, a carrier having an arm, 16^b, engaging said drill-bar, and a shank passing through said slot and engaging the piston, in combination with a screw, 29, carried by the frame-work, a ratchet, 32, upon the carriage, which is internally threaded to engage the screw, and connecting mechanism, substantially as described, whereby each downward movement of arm 16^b is caused to actuate said ratchet and impart a downward movement to the carriage.

7. In a rock-drill, an automatic feed consisting of a screw attached to the frame-work, a ratchet upon the carriage internally threaded to engage the screw, a reciprocating arm, 16^b, a rock-shaft, 38, having arms 37 and 41, one of which is engaged by arm 16^b, and the other carries a spring-pawl engaging the ratchet, whereby each downward movement of arm 16^b carries the ratchet forward and moves the carriage downward.

8. A steam-cylinder closed at both ends and having slot 18, a piston, and an independent drill-bar, in combination with valve mechanism, automatic feed mechanism, and a carrier having a shank passing through said slot and engaging the piston, and arms 16^a 16^b, which engage the drill-bar and also actuate the valve mechanism and the feed mechanism.

9. The combination, with valve mechanism and feed mechanism, of a steam-cylinder closed at both ends and having a slot in its side, a piston, an independent drill-bar, and a carrier therefor having a shank which passes through the slot and engages the piston, and arms 16^a 16^b, which actuate, respectively, the valve mechanism and the feed mechanism.

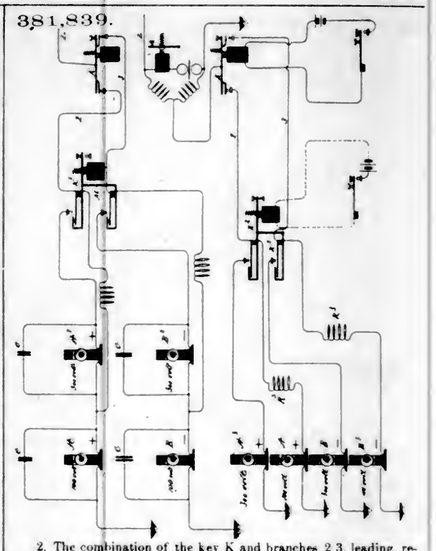
10. The combination, with a carriage, a cylinder closed at both ends and having a slot in its side, an independent drill-bar having a spiral groove, a piston in said cylinder, and a carrier for the drill-bar, whose shank passes through the slot and engages the piston, of ratchet 44 upon the carriage, through which the drill-bar passes and which is provided with a spline engaging the spiral groove, and a pawl adapted to hold said ratchet against backward movement.

11. The carriage, the cylinder closed at both ends and having slot 18, a piston in said cylinder, and an independent drill-bar journaled in the carriage and having a spiral groove, in combination with a carrier connected to said drill-bar and to the piston, whereby the movements of the latter are communicated to the former, a ratchet, 44, through which the drill-bar passes and which is provided with a spline engaging the groove, and a bolt acting to hold the ratchet against backward movement, so that when said drill-bar is raised a partial turn is imparted thereto through the engagement of said spline and groove, and when the downward movement takes place the ratchet is free to turn.

12. The steam-chest, valve 8, having recess 11, and the cylinder closed at both ends and having ports 23 and 24, open space 25, exhaust-opening 26, and slot 18, in combination with a piston, an independent drill-bar, a carrier therefor having a shank engaging the piston, and an arm, 16^a, and a rock-shaft having an arm engaging the valve, and tappets engaged by arm 16^a, all operating as described, and for the purpose set forth.

13. The steam-chest, valve, cylinder, piston, and valve mechanism constructed substantially as described, in combination with feed mechanism, an independent drill-bar, and a carrier therefor having a shank engaging the piston, and arms engaging the drill-bar, one of said arms being adapted to actuate the feed mechanism and the other to actuate the valve mechanism.

381,839.

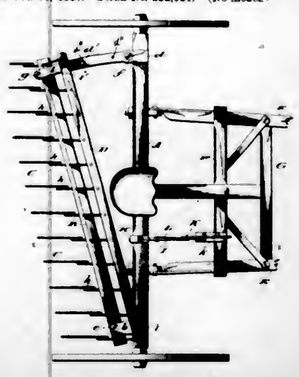


2. The combination of the key K and branches 2 3, leading, respectively, from the front and back contacts of the key to dynamo-machines or their equivalent, as described, having, respectively, opposite poles connected to the branches, and a tension-changing key having two sets of contacts insulated from one another in said branches and governing the connections of additional dynamo-machines with the branches, whereby the machine potential may be varied irrespective of the position of key K.

3. The combination of a key, K, having branches 2 3, leading, respectively, from front and back contacts of the same, dynamo-machines A B, of opposite polarity in said branches, respectively, dynamo-machines A^1 B^1, of the same polarity, respectively, as machines A B, and a tension-changing key having two sets of simultaneously-moving contacts insulated from one another and governing, respectively, the connections of the machines A^1 B^1 with branches, whereby the electric energy delivered to the back and front contacts of the key K may be varied, as and for the purpose described.

4. The combination, with the key K, having separate branches or connections from its front and back contacts, of dynamo-machines A B, or their equivalent, as described, of opposite polarity in said branches, respectively, a tension-changing key, K^2, having two sets of simultaneously-movable contacts insulated from one another and placed in said branches, and dynamo-machines A^2 B^2 in sub-branches leading from the key K^2 to earth independently of the dynamo-machines A B, as and for the purpose described.

381,840. HORSE HAY-RAKE. GEORGE KEITH, Freedom, Ill. Filed Oct. 20, 1887. Serial No. 252,921. (No model.)



381,839. DYNAMO-TELEGRAPHY. FRANCIS W. JONES, New York, N. Y. Filed July 13, 1887. Serial No. 244,159. (No model.)

Claim.—1. The combination, with a key, K, having separate connections from its back and front contacts, respectively, of dynamo-machines of opposite polarity in said connections, respectively, and a tension-changing transmitter, K^2, having two sets of simultaneously-acting contacts placed in said connections, respectively, for varying the amount of electric energy, as described, irrespective of the position of the key K.

Claim.—1. In a horse hay-rake, the combination, substantially as described, of the axle, the long and short armed brackets rigidly secured to the axle at each end thereof, the arms of the said brackets being arranged one above the other, and the long arms of the one bracket curved, as set forth, the rake, the head of which is pivoted in the short-armed bracket at one end and capable of having free movement between the long curved arms of the other bracket at its opposite end, and a pin to secure the rake-head against movement between the arms of the latter bracket.

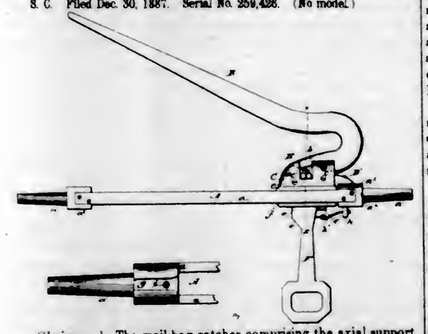
2. In a horse hay-rake, the combination of the axle provided with brackets near its outer ends having rearwardly-extending arms arranged one above the other, the arms of the one bracket having a greater rearward extent than the arms of the other bracket and constructed of a segmental curved configuration, as set forth, a rake, the head of which is pivotally secured at one end in the short-armed bracket and capable of having free movement in the long-armed bracket at its opposite end, and a bar, D, pivoted to the short-armed bracket, to which the rake-head is also pivoted, the said bar bearing upon the long-armed bracket at its opposite end, the rake-teeth being connected to the head by vertical pivots and having their forward extensions connected to bar D by vertical pivots, whereby the said rake-teeth will remain at right angles with the axle, substantially as described.

3. The combination, in a horse hay-rake, of a rake-head composed of two pieces, the meeting faces of which are recessed, spring-teeth journaled in said recesses and having forwardly-projecting ends, the axle having long and short armed brackets secured to opposite ends thereof, in which the rake is mounted and operates, and a bar, D, arranged above and parallel with the rake-head and pivotally connected to the forwardly-projecting ends of the rake-teeth and secured at one end to the short-armed bracket, to which the rake-head is connected, and having bearing on the long-armed bracket at its other end, substantially as described.

4. In a horse hay-rake, the combination, substantially as described, of the axle provided with forwardly-projecting lugs, the shaft pivoted to said lugs, the rearwardly-extending brackets rigidly secured to the axle at each end thereof and constructed with long and short arms which are arranged one above the other, all as set forth, the rake-head, the said head being pivotally supported at one end in the short-armed bracket and at its opposite end capable of having movement in the long-armed bracket, a projecting arm rigidly secured to the axle, a lever pivoted to the cross-bar of the shafts, and a link connecting the arm on the axle with the lower end of the lever.

5. In a horse hay-rake, the combination, substantially as described, of the axle, the shafts pivotally connected therewith, brackets rigidly secured to the axle and provided with rearwardly-extending arms, the rake-head arranged between the upper and lower arms of said brackets, an upwardly-projecting arm rigidly secured to the axle, a lever pivotally connected to the shafts, a link to connect said arm and lever, and a hooked rod pivoted to the link and arranged to slide through a staple secured to the lever above its fulcrum.

381,841. MAIL-BAG CATCHER. JARRETT M. KEITH, Greenville, S. C. Filed Dec. 30, 1887. Serial No. 259,426. (No model.)



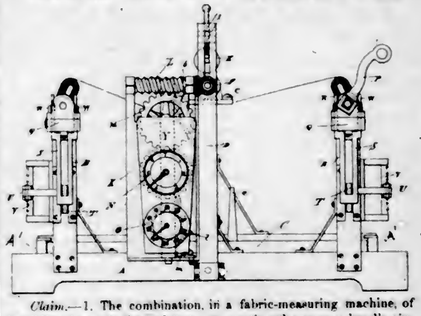
Claim.—1. The mail-bag catcher comprising the axial support, the carriage mounted thereon, the hook or catcher proper applied to said carriage, and the handle or lever provided with a pivoting-bolt connecting with the hook or catcher proper and passing through the carriage, whereby the carriage with the hook is adapted to be moved along the axial support from side to side of the doorway or opening and the hook is reversed by the manipulation only of the handle, substantially as set forth.

2. The mail-bag catcher comprising the axial support having near its ends grooved and apertured shoulders, the hook or catcher proper provided with an apertured projection fitting in either of the grooves of said shoulders, a pin or means for effecting connection between said projection and either of said shoulders, the carriage mounted upon said axial support, and the handle or lever provided with a pivoting-bolt passing through said carriage and connecting with said hook or catcher proper, whereby, after sliding or moving the carriage with the hook or catcher proper along the axial support to its destination and the hook is reversed by the manipulation only of the handle, connection is effected between the hook or catcher proper and the axial support, securing the hook with the carriage to said support, substantially as set forth.

3. The mail-bag catcher combining the axial support, the carriage mounted upon said support, the hook or catcher proper applied to said carriage, and the handle provided with a pivoting-bolt having a cylindric portion passing through the carriage and an angular portion fitting in a similarly-shaped aperture in the hook or catcher proper, substantially as and for the purpose set forth.

4. The mail-bag catcher combining the axial support having grooved and apertured shoulders near its ends, the carriage mounted upon said support and provided with a stop, the hook or catcher proper applied to the carriage and provided with an apertured projection fitting into either of the grooves of said shoulders, and the handle or lever having a projection engaging with the stop upon the carriage, and the pivoting-bolt having a cylindric portion passing through the carriage and an angular portion entering a correspondingly-shaped aperture in the hook or catcher proper, substantially as specified.

381,842. FABRIC-MEASURING APPARATUS. JOHN W. KRUGER, Litchfield, Minn. Filed Dec. 15, 1886. Serial No. 221,661. (No model.)



Claim.—1. The combination, in a fabric-measuring machine, of the sliding frame C, the bed-frame supporting the same, a handle pivoted to said sliding frame, spring-actuated bolts carried thereby, adapted to take into the bed-frame, rods connecting said handle with the aforesaid bolts, standards B' B', carried by said movable frame, having means thereon for holding the fabric to be measured, standards B B, also having devices thereon for holding the fabric to be measured, and means for adjusting the latter devices toward or from the aforesaid means upon the standards B' B' for holding the fabric independently of the adjustment of the sliding frame carrying said standards B' B'.

2. The combination, in a cloth-measuring machine, of the fixed rod *b*, an upright frame, D I G D, supporting the same, a movable clamping-frame, H, elastically mounted upon the latter, and a roller, as F, over which the fabric passes, and with which the registering mechanism is attached, for the purpose described.

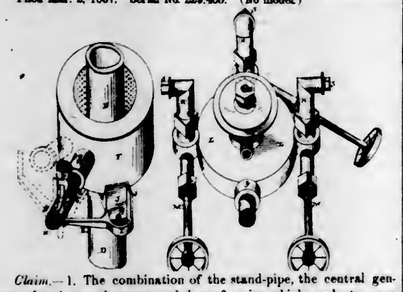
3. The combination, in a fabric-measuring machine, of the fixed rods *b* and *c*, mounted upon transverse pieces *h*, secured to an upright frame, D I G D, a spring-actuating clamping-frame H, movably attached to the said upright frame, and the roller F, journaled in the upright frame D I G D and suitably connected with registering mechanism, for the purpose set forth.

4. The combination, in a fabric-measuring apparatus having a roller, F, suitably geared to the registering apparatus, of a rod, *b*, substantially parallel therewith, a clamping-frame, H, movably attached to an upright frame, springs for holding said clamping-frame against said rod, and a device, as *q*, for manual operation, separating the part H from the part *b* when operated, as and for the purpose set forth.

5. The combination, in a fabric-measuring machine, of a sliding frame, C, mounted in a bed-frame, spring-actuated bolts, and a handle for manipulating the same, mounted upon said sliding frame, standards B' and B', having means for holding the fabric, said standards being mounted on the aforesaid sliding frame, standards B B, having means for also holding the fabric, and devices thereon for adjusting said means independently of the adjustment of the sliding frame carrying the standards B' B', an upright frame, as D I G D, carrying rollers be-

tween which the fabric is adapted to be passed, registering apparatus geared to the lower roller, and a clamp-frame, as H, substantially as and for the purpose set forth.

381,843. VAPOR-BURNER. FORDYCE A. LYMAN, Cleveland, Ohio.
Filed Mar. 2, 1887. Serial No. 229,405. (No model.)



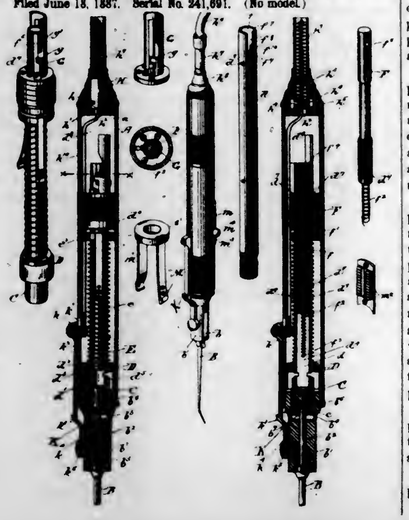
Claim.—1. The combination of the stand-pipe, the central generator placed upon the upper end thereof, a pipe which conducts vapor from the generating to the heating chamber, the valve which controls the flow of vapor into the heating-chamber, the rotating heating-chamber, and the lighting-cup which is secured to the chamber, the chamber and the cup being adapted to be moved through an arc of a circle, substantially as shown.

2. The combination of the stand-pipe, the central generator placed upon the upper end thereof, a pipe for conducting vapor from the generating to the heating chamber, the valve placed in this pipe, the heating-chamber placed on the stand-pipe, the lighting-cup fastened to the chamber, and the stops on the cup for regulating the distance the cup and the heating-chamber shall be turned upon the staud-pipe, substantially as described.

3. The combination of the stand-pipe, the central generator placed upon the upper end thereof, the heating-chamber placed upon the stand-pipe, a pipe for conducting vapor from the generating to the heating chamber, and the lighting-cup provided with the perforated partition J, and the two wells *a c*, substantially as set forth.

4. The combination of the stand-pipe, the central generator placed upon the upper end thereof, a support, E, placed on the stand-pipe, the heating-chamber placed upon the stand-pipe above the support and resting thereon, and the lighting-cup which is secured to the heating-chamber and projects beyond one side thereof, the heating-chamber and the lighting-cup being adapted to be turned through an arc of a circle in relation to the other parts of the burner and to move the receiving-nozzle of the chamber out of line with the valve, substantially as specified.

381,844. DENTAL PLUGGER. PRESTON C. MORSE, Natick, Mass.
Filed June 18, 1887. Serial No. 241,691. (No model.)



Claim.—1. The combination, in an instrument for dentistry and other purposes, of a hammer adapted to have a reciprocating movement imparted to it by a piston-rod, a piston carried by said rod and movable in a cylinder, said cylinder, and valves for controlling the admission and escape of compressed air thereto, and an actuating-spring for bearing against the piston-rod, whereby the piston-rod is moved in one direction by the compressed air and in a reverse direction by the actuating-spring, as and for the purposes specified.

2. The combination, in an instrument for dentistry, of a loose or free hammer, C, adapted to receive and deliver blows by impact, with a piston-rod moved in one direction by a piston actuated by compressed air, and in a reverse direction by an actuating-spring, as and for the purposes specified.

3. The combination, in an instrument for dentistry and other purposes, of a piston-rod for communicating a blow to a hammer or other instrument, a piston carried thereby, a cylinder or piston-chamber, a valve for automatically controlling the inflow and escape of compressed air thereto, and an actuating-spring, E, as and for the purposes specified.

4. The combination, in an instrument for dentistry and other purposes, of a hollow piston contained in a case, a cylinder or piston-chamber, a hollow piston-rod opening into said piston-chamber and provided with supply-ports d^7 and escape-ports d^8, and the valve F, to open and close said ports contained in said hollow piston-rod, and provided with endwise and turning movements therein, as and for the purposes specified.

5. The combination, in an instrument for dentistry and other purposes, of a case having a piston-chamber, a piston movable therein, a hollow piston-rod having inlet-ports d^7 and escape-ports d^8, a compressed-air-supply chamber, d^6, a hollow valve, F, contained in said chamber, and having holes which register with the inlet and exhaust ports, the pin or stud f^3, extending from the valve, the valve-actuating spring f^9, the shoulder f^{10} upon the hollow piston-rod, and the stop *g* and incline *g'*, as and for the purposes specified.

6. The combination, in an instrument for dentistry, of a piston adapted to be moved in one direction by compressed air and in a reverse direction by an actuating-spring, a piston-chamber in which said piston is moved, an air-supply chamber connected with the piston-chamber by inlet-ports, a valve controlling said inlet-ports, and a valve controlling the air-supply passage to the said chamber, as and for the purposes specified.

7. In an instrument for dentistry and other purposes, a piston adapted to be moved in a piston-chamber in one direction by compressed air, and a valve for regulating the supply of compressed air furnished the piston-chamber through a supply tube or passage, and a valve-actuating device having an arm or push-rod extended to a location near the operating end of said instrument, as and for the purposes described.

8. The combination, in an instrument for dentistry and other purposes, of a case, A, supporting a tool, B, said tool B, and a reciprocating piston-rod contained in said case and arranged to strike the end of said tool B in each reciprocation, adapted to be moved in one direction by compressed air and in the opposite direction by an actuating-spring, a piston carried by said rod, a tube for supplying compressed air to the piston-chamber, and a valve for controlling the air-supply passage, as and for the purposes described.

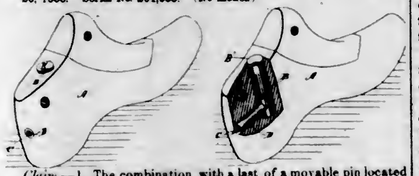
9. The combination, in an instrument for dentistry and other purposes, of a tool, B, loosely attached to its holder, a loose or free hammer interposed between the end of the tool and the reciprocating piston-rod, a reciprocating piston-rod having a piston contained in a piston-chamber in a case, said piston-chamber, an automatic valve for opening and closing the inlet and exhaust passages to permit the compressed air to act to move the rod in one direction, and a spring to move the rod in a reverse direction, as and for the purposes specified.

10. The combination, in an instrument for dentistry and other purposes, of a tool, B, loosely attached to its holder, a loose or free hammer interposed between the end of the tool and the reciprocating piston-rod, a reciprocating piston-rod having a piston contained in the piston-chamber, said piston-chamber, an automatic valve for opening and closing the inlet and exhaust passages to permit the compressed air to act to move the rod in one direction, and a spring to move the rod in a reverse direction, a chamber connected with the compressed-air-supply pipe, and a valve for opening and closing the supply-passage, whereby upon the admission of compressed air to said chamber the said piston-rod is immediately caused to be automatically reciprocated to deliver blows in rapid succession to the hammer, as and for the purposes described.

11. The combination, in an instrument for dentistry and other purposes, of the case A, having a compressed-air passage or chamber, d^6, the air-supply tube h^4, pipe h^7, valve-chamber h^3, valve-seat h', valve H, spring h^9, and push-rod h^{10}, as and for the purposes described.

12. The combination, in an instrument for dentistry and other purposes, of the reciprocating rod d^6, adapted to be moved in one direction by compressed air, an actuating-spring, E, and a tension-regulating device for varying the tension upon the spring E, comprising the collar *c'*, the spring pawl or hook M, the ratchet-plate m^2, and a stud, m^3, as and for the purposes described.

381,845. LAST. JAMES B. MULLEN, Rochester, N. Y. Filed Jan. 26, 1888. Serial No. 261,935. (No model.)



Claim.—1. The combination, with a last, of a movable pin located within its heel portion and adapted to be projected beyond the rear surface of the last to hold the upper in position, said last having an aperture in its top, through which a tool may be inserted to operate the pin, substantially as described.

2. The combination, with a last and a movable pin within its heel portion adapted to be projected beyond the rear surface of the last to hold the upper in position and retracted by spring-pressure, of an inclined-faced spindle or tool engaging the rear end of said pin for projecting it, substantially as described.

3. The combination, with a last and a movable pin located in a tubular casing within its heel portion, said casing extending from a vertical aperture, through which a tool may be inserted to project the pin to the rear surface of the last, of a spring in said casing engaging a collar on the pin for holding the same normally retracted and its rear end projected into said vertical aperture, substantially as described.

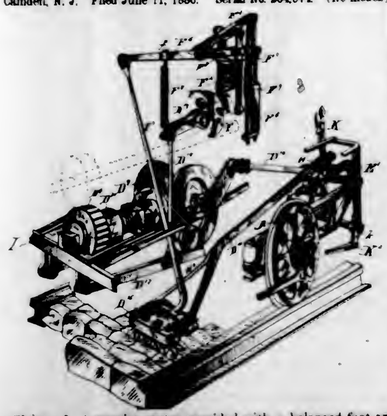
381,846. BOOK-COVER. OTTO W. KLAS-JOHAN NORDENFALK, Linköping, Sweden. Filed Apr. 8, 1887. Serial No. 234,165. (Model.)



Claim.—1. As a substitute for ordinary book-covers, a cover composed of two metal plates, each having a retroverted outwardly-turned fold, *g*, such plates being connected together by a flexible back, *c*, clamped under and by such folds and covering the retroverted part, the folds having prongs *d*, or their described equivalent, for the purpose set forth.

2. A metallic book-binding composed of two covers or plates, *a*, each having a fold, *g*, turned outward and connected by a flexible back, *c*, clamped by and outwardly covering both such folds, and each provided with prongs *d*, or their described equivalent, combined with and secured to a book having an inner back, *f*, with long projecting sides, all substantially as set forth.

381,847. MOTOR FOR STREET-RAILWAYS. BENJAMIN C. POLK, Camden, N. J. Filed June 11, 1886. Serial No. 204,874. (No model.)



Claim.—1. A traction-motor provided with a balanced foot and springs, for the purposes set forth, said foot being operated by rod, crank, connecting-rod, and cam, substantially as described.

2. In a traction-motor, the combination, with a balanced foot and springs, of the clutch escapement and connecting mechanism, said clutch escapement being arranged to permit the movement of the foot by ground contact, substantially as and for the purpose set forth.

3. A traction-motor provided with elastic foot mechanism, comprising a balance-beam, thrust-rod, counter-spring beam, crank-axle, cams, and connecting-rod, and a spring-clutch, whereby independent foot movement is permitted, substantially as and for the purpose set forth.

4. A traction-motor provided with a driving-lever, combined by rods to the brakes of the driving-wheels of the motor, and to a clutch of the friction-brake on the motor, as and for the purposes set forth.

5. The foot on the pushing-leg of a traction-motor adjusted by connections to be pressed elastically on the ground by cams, spring-beams, and a thrust-rod, also operated by connecting-rod and crank-axle sliding on and between guides in the motor, substantially as and for the purpose set forth.

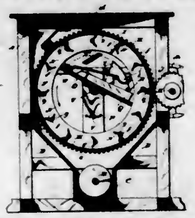
6. The pushing-leg of a traction-motor provided with the elongated loop and an operating eye and strut to brace the foot squarely to said leg, as and for the purposes set forth.

7. The combination, with a traction-motor or other vehicle, of a foot device having the following elements: a pushing-leg having a foot braced squarely in the direction of the thrust of said pushing-leg, a thrust-rod adapted to hold it squarely upon the ground, beams, spring-beams, and counterbalanced beams, all combined with motive power, substantially as and for the purposes set forth.

8. In a traction-motor, a foot mechanism consisting of a row of claws with rubber backing, adapted to be held squarely on the ground by a thrust-rod, and having a pushing-leg operated by connecting-rod and crank-axle, said crank-axle provided with cams to operate connecting-rods and spring-beams, and a balance-beam connected to said thrust-rod, combined substantially as shown, and for the purposes as set forth.

9. In a traction-motor, a driving-axle provided with a flange and keyed on driving-wheels, with sliding beveled pinions and fixed central collar, combined with a removable arm, provided with removable intermediate shafts, and surmounted with swiveled box for main motive-power shaft, operated by a friction-brake, substantially as and for the purpose set forth.

381,848. ELEVATING-BOLT. FAUSTIN PRIES, Milwaukee, Wis. Filed Mar. 12, 1886. Serial No. 194,968. (No model.)



Claim.—1. The combination, with the cylindrical grading-surface, of the elevators supported in proximity to the grading-surface, with a space between the surface and elevators, and the directing-board supported within the cylinder and inclined from the ascending to the descending side of the cylinder, substantially as described, to receive material from the elevators at the upper part of the cylinder and deliver it to the descending side of the grading-surface, substantially as and for the purpose described.

2. The combination, with the cylindrical grading-surface and elevators, of the directing-board located within the cylinder and inclined, substantially as described, from the ascending to the descending side of the grading-surface to receive material from the elevators and deliver it to the descending side of the grading-surface, substantially as described.

3. The combination, with the cylindrical grading-surface and elevators, of a directing-board located within the cylinder and inclined from the ascending to the descending side thereof, for the purposes specified, and adjustable bars or wings for regulating the flow of material over the said board, substantially as described.

4. The combination, with the cylindrical grading-surface and elevators, of an adjustable directing-board located within the cylinder and inclined from the ascending to the descending side of said cylinder, substantially as described.

5. The combination, with the cylindrical grading-surface and elevators, of a vibrating directing-board located within the cylinder and inclined from the ascending to the descending side of said cylinder to receive material from the ascending side of the grading-surface and deliver it to the descending side, substantially as described.

6. The combination, with the cylindrical grading-surface, of a vibrating screen located within said cylinder and means for vibrating said screen lengthwise of said cylinder, substantially as described.

381,849. TREATING ORES AND METALLURGICAL PRODUCTS. EDWARD H. RUSSELL, Park City, Utah. Filed June 24, 1886. Serial No. 206,150. (No specimens.)

Claim.—1. As an improvement in the art of extracting metals from ores or metallurgical products, the method of preparing the ore or product for the use thereon of a leaching solution, which consists in treating the ore with a solution of a compound or salt of copper, substantially as and for the purpose specified.

2. The process of extracting metals from ores and metallurgical products, which consists in subjecting the ore or product to the action of a solution of a copper salt or compound and then treating the ore or product with a hyposulphite solution, substantially as and for the purpose described.

3. The process of extracting metals from ores and metallurgical products, which consists in first treating the ore or product with a solution of sulphate of copper and then subjecting the ore or product to the dissolving action of a hyposulphite leaching solution, substantially as and for the purpose described.

381,850. TREATING ORES AND METALLURGICAL PRODUCTS. EDWARD H. RUSSELL, Park City, Utah. Filed July 2, 1886. Renewed Mar. 12, 1888. Serial No. 266,951. (No specimens.)

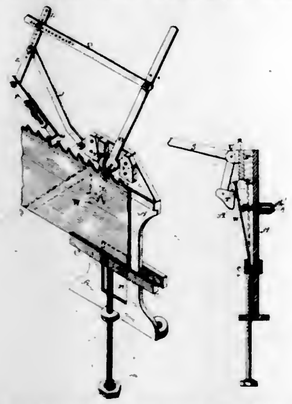
Claim.—1. As an improvement in the art of extracting metals from ores and metallurgical products by means of a leaching solution, the method of preparing the ore for the use of the solution, which consists in placing in the path of the solution through the ore or product a compound or salt of copper, substantially as and for the purpose described.

2. As an improvement in the art of extracting metals from ores and metallurgical products, the method of preparing the mass of ore or product for the leaching solution, which consists in mixing with such ore or product a salt or compound of copper, substantially as and for the purpose described.

3. The process of extracting metals from ores and metallurgical products, which consists in placing a salt or compound of copper so that it will be passed through by the leaching solution and then treating the mass with a hyposulphite leaching solution, substantially as and for the purpose described.

4. The process of extracting metals from ores and metallurgical products, which consists in mixing with the ore or product sulphate of copper and then treating the mass with a hyposulphite solution, substantially as and for the purpose described.

381,851. SAW-SWAGING DEVICE. CHRISTIAN A. SCHOESSEL, Rock Island, Ill. Filed Nov. 15, 1887. Serial No. 255,223. (No model.)



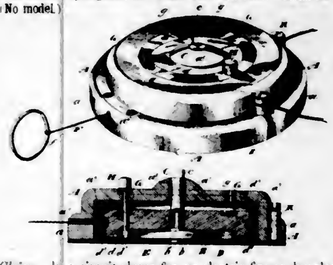
Claim.—1. In a saw-swage, the combination of the frame A, the adjustable support C for the saw, the die secured to the upper part of the frame, the pivoted lever G, carrying the roller I, the connecting-rod O, lever L, the foot Q, operated thereby, and the arm J, extending out from the frame, substantially as shown and described.

2. The combination of the frame upon which the saw is supported, the lever G, provided with a roller in its end, and the die, with a pivoted lever and a clamp for clamping the saw while one of its teeth is being swaged, substantially as set forth.

3. In a swage, the combination of a frame for supporting the saw, the die, a lever for swaging the teeth, a lever for moving the saw forward, and which is operated by the swaging-lever, and a lever and clamp for clamping the saw while the tooth is being swaged, the clamp and lever being made to extend at right angles to the operating-lever and saw, so as to force the clamp against the side of the saw, substantially as specified.

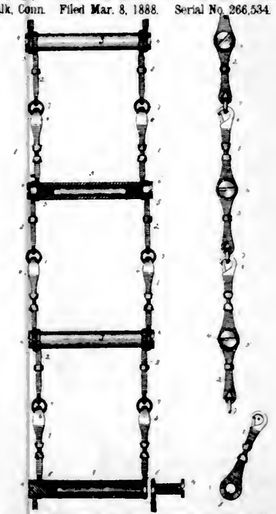
4. The combination of the frame for supporting the saw, the die, the lever for swaging the saw, a lever for moving the saw forward, and which is operated through suitable connecting-rods by the operating-lever, the lever S, provided with a clamp, T, and projecting from the frame at right angles to the saw, and the spring-actuated rod which moves the upper edge of the saw laterally when it is left free to move by the clamp, substantially as shown.

381,852. ELECTRIC FIRE AND BURGLAR ALARM. ANDREW SCHUCHMAN, Springfield, Ill. Filed Nov. 29, 1887. Serial No. 256,475. (No model.)



Claim.—In a circuit-closer for an electric fire or burglar alarm, the combination of a spring-actuated rotatable disk, a destructible cord fastened to and wound circumferentially around the same, an electric terminal secured to and rotating with said disk, and a stationary terminal which is adapted to be engaged by said disk-moved terminal, substantially as and for the purpose specified.

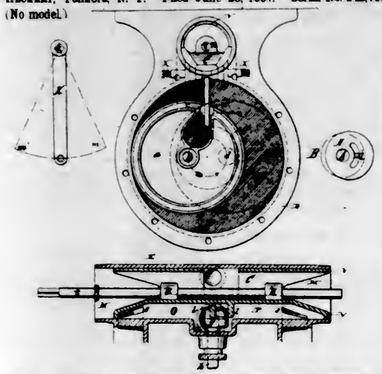
381,853. FLEXIBLE LADDER. CHARLES B. SCHUMANN, South Norwalk, Conn. Filed Mar. 8, 1888. Serial No. 266,534. (No model.)



Claim.—1. A flexible ladder consisting of parts 1, having hooks, and parts 2, having rings, both of said parts having eyes at their opposite ends, rungs 3, and screws, said rungs being internally threaded at their opposite ends to receive said screws, which are passed through the eyes of said parts.

2. A flexible ladder consisting of rungs 3, alternate parts 1 and 2, provided, respectively, at one end with hooks and rings and all provided at their opposite ends with eyes, and screws passing through said eyes and engaging the opposite ends of the rungs, whereby a double or single ladder of any required length may be formed, sections being added or removed by connecting or disconnecting the hooks and rings below the last rung required.

381,854. STEAM-ENGINE. G. HILTON SCRIBNER and WILLIAM HECKERT, Yonkers, N. Y. Filed June 28, 1887. Serial No. 242,769. (No model.)



Claim.—1. In a steam-engine, the combination, with a steam-cylinder having a radial steam-tight partition and a combined inlet and exhaust port on each side of the partition, of a cylindrical piston of smaller diameter than the cylinder, vibrating in steam-tight contact with the periphery and the flat ends of the cylinder about a movable pivot upon the partition, and vacuum-valves controlling communication between each port and the external air, substantially as described.

2. In a steam-engine, the combination, with a cylindrical steam-chest and two steam-cylinders communicating with the same by ports, of a combined expansion and reversing valve consisting of a cylindrical plug fitted to the steam-chest with V-shaped notches cut in its ends, leaving two prongs at each end for controlling the ports, a hand-lever for rotating the valve to control the admission of steam, and an eccentric for automatically reciprocating the valve, substantially as described.

3. In a steam-engine, the combination of a steam-chest and a pair of steam-cylinders communicating with the chest by suitable ports, with a plug-valve fitted to the chest for rotating and reciprocating within the same to control the admission of steam, a reversing-lever for rotating the valve, and an eccentric for automatically reciprocating the same, whereby the cut-off and the direction of motion is controlled by a single valve, substantially as described.

381,855. CHAIN-FASTENER. JOHN F. SEARS, Clifton, Ontario, Canada, and HARRY E. KELLEY, Niagara Falls, N. Y., assignors to the Oneida Community, (Limited,) Community, N. Y. Filed Sept. 2, 1887. Serial No. 248,650. (No model.)



Claim.—1. The combination of the sleeve *a*, provided with the shoulder *s*, the cross-bar *b*, formed with cams *c c*, the coupling-bar *d*, connected to the cross-bar between the cams thereof and extending into the sleeve, the head *h*, attached to the coupling-bar, and the expansive spring *e*, surrounding the bar *d* between the head *h* and shoulder *s*, substantially as described and shown.

2. The combination of the sleeve *a*, provided with the shoulder *s*, the cross-bar *b*, formed with cams *c c*, the coupling-bar *d*, connected to the cross-bar between the cams thereof and extending through the sleeve and terminating with an attaching hook or eye, the head *h*, secured to the bar *d* back of the hook or eye, and the expansive spring *e*, surrounding the said bar between the head and shoulder *s*, and the chain C, connected to the hook or eye of the coupling-bar *d*, substantially as described and shown.

381,856. ELECTRICAL APPARATUS. CLARENCE C. SIBLEY, New York, N. Y., assignor to the New Haven Clock Company, New Haven, Conn. Filed Nov. 23, 1886. Serial No. 219,594. (No model.)

Claim.—1. An automatically-operated armature carrying a contact-point, a movable contact-point normally in contact with that of the armature and mounted or suspended to be set in virtually free motion in an unobstructed arc by the impetus derived from the effective stroke of the armature, which thus breaks the circuit between the two points, the circuit being re-established when the movable point returns again to its position of contact with the contact-point of the armature, substantially as set forth.

381,856.



2. An automatically-operated armature carrying a contact-point, a movable contact-point normally in contact with that of the armature and mounted or suspended to be set in virtually free motion in an unobstructed arc by the impetus derived from the effective stroke of the armature, which thus breaks the circuit between the two points, and a spring to restore the movable point to its normal position after its impetus is spent, substantially as set forth.

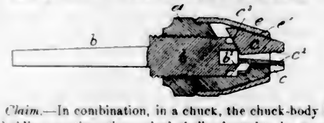
3. An automatically-vibrated armature carrying a contact-point, and a balance-wheel carrying a contact-point normally in contact with that of the armature and mounted to be set in motion in a wholly unobstructed arc by the impetus imparted to the wheel by the stroke of the armature, substantially as set forth.

4. An electrical apparatus having a contact-pole suspended or mounted for movement in an unobstructed arc, and an automatically-operated armature adapted to move such point so as to break a circuit which is closed when the point returns to its normal position, substantially as set forth.

5. An automatically-vibrated armature, a contact-point carried thereby, a balance-wheel, a pin carried by such wheel and normally in contact with the point carried by the armature, and a spring for reversing the wheel and re-engaging the point and pin after they have been separated by the actuation of the wheel under the stroke of the armature, substantially as set forth.

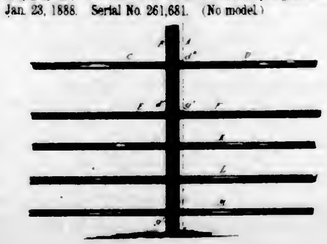
6. An automatically-vibrated armature, a pallet connected therewith, a contact-point connected with the armature, a balance-wheel, a contact-point carried thereby and normally in contact with that carried by the armature, the two points being separated to break the circuit under the stroke of the armature, and a spring connected with the balance-wheel to reverse it and re-engage the points after the momentum to the wheel has been spent, substantially as set forth.

381,857. DRILL-CHUCK. JAMES N. SKINNER, New Britain, Conn. Filed Sept. 12, 1887. Serial No. 249,415. (No model.)

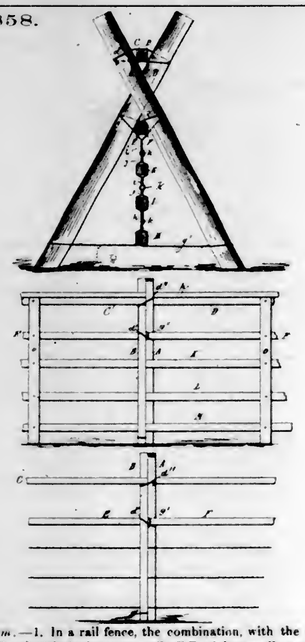


Claim.—In combination, in a chuck, the chuck-body having the jaw-holding mortises, the conical shell adapted to be secured to the chuck-body and bearing on its inner surface the annular cam, the screw-shaft fitting within the body of the chuck and having its forward end seated on the back of the jaws, and the jaws located in the respective mortises with their backs resting upon the annular cam within the shell, and each jaw having an outward tapered holding-face that is normally at an angle with the axis of the chuck, all substantially as described.

381,858. FENCE. JAMES Z. STANLEY, Springdale, Mich. Filed Jan. 23, 1888. Serial No. 261,681. (No model.)



381,858.



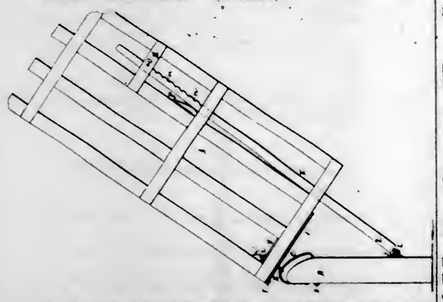
Claim.—1. In a rail fence, the combination, with the crossing stakes A B and with the lower top rails, E F, of short endless uncrossed wire loops placed around said stakes and tightened up to bind the parts firmly together by the lever action of such lower rail in forcing it after the insertion of its end into the loop from an inclined to a horizontal position, all as shown and described.

2. In a rail fence, the described combination, with the crossing stakes and the upper top rails, C D, of the short endless uncrossed wire loops placed around the tops of the stakes above their point of crossing and having within them the ends of the said rails, the loops being forced to bind all these parts firmly together by the downward lever action of said rails to bring them to their horizontal position, and the direction of this binding of these upper rails being opposite that of the lower top rails, all as shown and described.

3. In combination, the crossing stakes, the lower top rails and their wire loops applied and tightened by the rail, as set forth, and the upper top rails and their endless wire loops applied and tightened in the opposite direction by the rail, all as set forth.

4. In combination, the crossing stakes combined with the under top rails, E F, the wire *g'*, hung thereon and double twisted, as described, hanging vertically beneath the crotch of the stakes, and a series of rails or their described equivalent pendent from such wire.

381,859. GATE. JAMES Z. STANLEY, Springdale, Mich. Filed Feb. 28, 1883. Serial No. 266,571. (No model.)

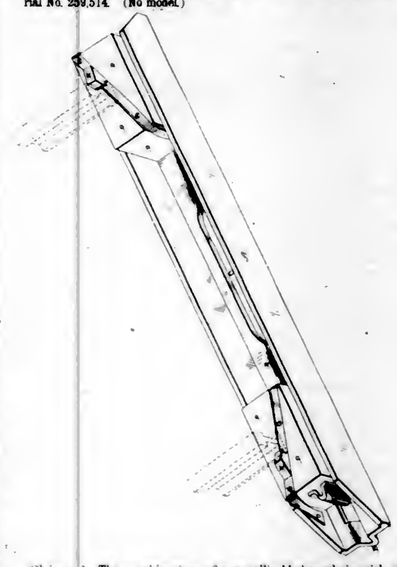


Claim.—1. A gate combined with a post having on its top the metal arch or half-circle C, engaging with an eyed staple or bolt on the upper head of the gate, the combination permitting the gate to be raised high or lowered about the top of the post, as in a center of motion.

2. The post, its half-circle C, and the gate hung thereon, as described, in combination with the long tongue K, extending the length of the gate and connected by strap L to an eyebolt on the post, and means, substantially as described, for automatically holding up the gate on the tongue in any position to which the gate may be raised.

3. The combination of the gate, its post and half-circle, and eyebolt, the notched tongue K, its spring, and its described connections with the post, and the fixed pin or bolt serving to hold the gate in any of its raised positions.

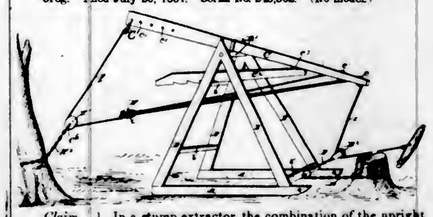
381,860. COMBINED METAL TIE AND FASTENING FOR RAILROADS. EDWARD R. STILES, Litchfield, Ill. Filed Dec. 31, 1887. Serial No. 259,514. (No model.)



Claim.—1. The combination, of a metallic U-shaped tie with the blocks and the diagonal bands which extend across their tops and are secured at opposite ends to vertical sides of the tie, each of the bands having a fastening for one side of the rails formed as a part thereof, substantially as set forth.

2. The combination of the U-shaped tie, the blocks placed therein and having grooves cut in their tops which are deeper in their inner than at their outer ends, and the metallic bands or ties which extend across the blocks and having their ends fastened to opposite sides of the tie, the rails being made to bear directly upon the bands at their outer edges and upon the blocks at their inner edges, substantially as specified.

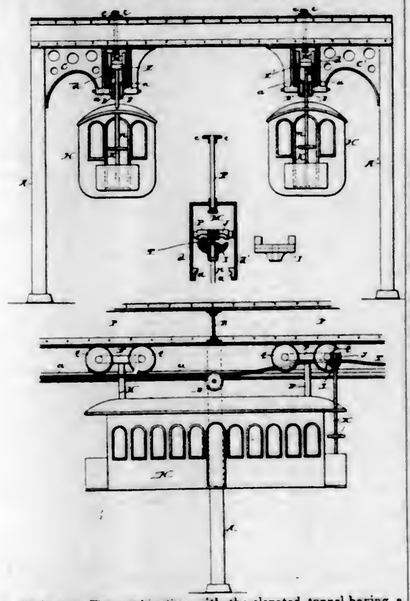
381,861. STUMP-EXTRACTOR. GEORGE M. STROUP, Philomath, Oreg. Filed July 26, 1887. Serial No. 245,362. (No model.)



Claim.—1. In a stump-extractor, the combination of the upright beams B B, the rocking bar B', the sweep C, secured to the rocking bar and provided with the sheaves *c c* at one end and the link C at the other end, the pulley E', secured to a fixed support, the rope F, passing around the pulley E' and secured to the link C at one end, and provided with the pulley E at its other end, the chain D, to be secured to the stump and provided with the pulley B^3, and the rope 1, provided at one end with a whiffletree and secured at its other end to the pulley E', its intermediate portion passing around the pulleys *c c*, E, and B^3, substantially as described.

2. The combination of the supporting-frame, the sweep mounted in the upper end of the same and having the pulleys *c c* at one end and the series of perforations *c'* at its other end, the chain E^3, attached to a suitable place of securement and provided with the pulley E', the rope F, having the link C at one end engaging the perforations *c'*, and provided at its other end with the pulley E, its intermediate portion passing around the pulley E', the chain D, secured to the stump end, having its end provided with the pulley B^3, the intermediate portion passing around a pulley secured to the bottom portion of the supporting-frame, and the rope 1, provided at one end with a whiffletree or similar device, and then passing around the pulley B^3 and up to and around the outer pulley *c*, thence to and around the pulley E, and then to and around the inner pulley *c*, and back to the pulley E, where it is secured, substantially as specified.

381,862. SUSPENDED CABLE AND ELECTRIC RAILROAD. GEORGE R. TAYLOR, Louisville, Ky., and WILLIAM HECKERT, Yonkers, N. Y. Filed Dec. 2, 1885. Serial No. 184,490. (No model.)



Claim.—1. The combination, with the elevated tunnel having a track within the tunnel upon which the cars travel, of the cable-supporting sheaves over which a cable passes, also arranged within the tunnel, substantially as described.

2. The combination, with an elevated tunnel open at its bottom and having a track upon which the cars travel, of a bracing-bracket to the side of said tunnel, and cable-supporting sheaves arranged within the tunnel and carried by said bracket, substantially as described.

3. The combination, in an elevated road, of a tramway-tunnel having inclosed top and sides, rails secured to the sides within the tunnel, sheaves supporting a traveling cable, a truck-frame carrying a gripper composed of stationary and movable jaws, and a hand-wheel controlling the movable jaw, substantially as described.

4. The combination, in an elevated road, of a tramway-tunnel having inclosed top and sides, rails secured to the sides, sheaves supporting a traveling cable in the tunnel, a truck traveling on the rails and supporting a car, and a grip carried by the truck and operated from the car to grasp the cable, substantially as described.

381,863. HAMMOCK-SPREADER. VINCENT P. TRAVERS, New York, N. Y. Filed Dec. 12, 1887. Serial No. 257,599. (No model.)

Claim.—1. The spreader B, composed of separate parts *a b*, combined with the skeleton tube D, within which the ends of the parts *a b* of the spreader are pivoted, substantially as described.

2. The spreader B, composed of separate parts *a b*, said parts having beveled meeting ends, combined with the skeleton tube D, within which said parts *a b* are pivoted, substantially as described.

381,863.



3. The spreader B, composed of the parts *a b*, having beveled ends, combined with the skeleton tube D, having straps *e e*, semicircular piece *g*, and semicircular pieces *f f*, the parts *a b* being pivoted in said straps so that their ends may abut, substantially as described.

4. The combination of the hammock A, two-part spreader B, skeleton tube D, within which the parts of the spreader are pivoted, and the rope *h*, carried by the tube D, all arranged for operation substantially as herein shown and described.

381,864. HOLDER FOR HAMMOCK-SUPPORTING ROPES. VINCENT P. TRAVERS, New York, N. Y. Filed Dec. 12, 1887. Serial No. 257,600. (No model.)



Claim.—1. A supporting-rope holder, D, for hammocks, having holes *a*, stem *b* between two holes *a*, and shank *d* at one end of the holder, said stem and shank being adapted to be held in the strands forming the end loop of a hammock, substantially as described.

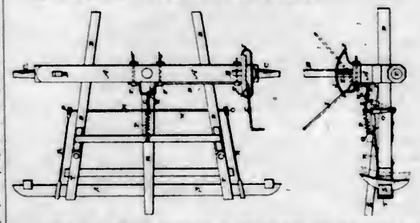
2. The combination, with the end loop, A, of a hammock, of the perforated rope-holder D, held within and traversing said loop longitudinally and having holes within the embrace of said loop, substantially as described.

3. The combination, with the end loop, A, of a hammock and its supporting-rope B, of the holder D, having holes *a* for the rope, shank *d*, embedded in the strands at the end of the hammock, and the stem *b* between two holes *a*, said stem being held between the strands *e* at the ends of the hammock-loop, substantially as described.

4. A hammock having loop A, composed of the end strands of the hammock united in a mass, and a perforated rope-holder passing longitudinally through said loop, part of said holder being embedded in the strands *e* at the outer end of the loop, and part of said holder in the strands *f* at the inner end of said loop, said holder being perforated within said loop and also outside of said loop, substantially as herein shown and described.

5. A supporting-rope holder for hammocks, consisting of a rod, D, having holes *a*, shank *d* for embedding in the strands of the hammock, and projection *g*, said holder being adapted to be held in the end loop of a hammock, the projection *g* being held in the strands of the hammock, thereby preventing said holder turning on its longitudinal axis, substantially as described.

381,865. WAGON-BRAKE. JOSEPH R. WALKER, Tressevant, Tenn. Filed Dec. 19, 1887. Serial No. 258,406. (No model.)



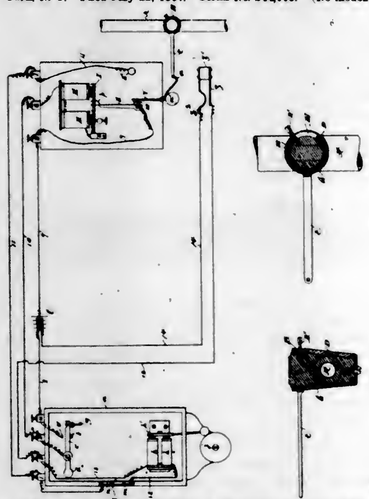
Claim.—1. The combination of the bolster and standard with the catch for the operating-lever, and which is secured both to the standard and the bolster, the cranked shaft journaled upon the bolster and provided with a crank at one end and an operating-lever at the other, a connecting-rod, the shaft N, provided with a crank at each of its ends, a spring for drawing the shaft N back to position after having been moved, the connecting-rod, and brake-beam guides, substantially as shown and described.

2. The combination of the bolster and the standard with the catch for the operating-lever, and the eyebolt F, which passes through

the bolster and which serves both as a journal for one end of the shaft G and to secure the ends of the catch in position upon opposite sides of the bolster, substantially as set forth.

3. The combination of the bolster, the front axle upon which it is pivoted, the shaft G, provided with the crank at its inner end, the hounds, the shaft N, bent upward at its center, the connecting-rod, and the ring which unites the shaft N and the screw together, the ring being adapted to move back and forth upon the crank when the axle is turned at an angle to the bolster, substantially as specified.

381,866. **ELECTRICAL METHOD OF AUTOMATICALLY CONTROLLING THE SUPPLY OF WATER OR GAS.** LEOPOLD WEIL, New York, N. Y. Filed July 22, 1887. Serial No. 244,993. (No model.)



Claim.—1. A method or system of automatically controlling the supply of water, gas, or other fluid to a building, which consists in automatically operating the circuit-controller for an electrically-controlled valve by a mechanical movement, substantially as described, incidental to the closing of the building, as set forth.

2. The combination, with the cut-off valve for the water, gas, or other fluid-supply of a building, of a controlling-magnet, a mechanism automatically controlled or operated in the performance of some act attendant upon the closing of the building or its equivalent, as described, and an electrical circuit-controller actuated or governed by said mechanism and placed in a circuit leading to said magnet, as and for the purpose described.

3. In an apparatus for controlling the supply of water, gas, or other fluid to a building, a cut-off valve, an electric circuit actuating the same, and a circuit closer or breaker in the form of a device necessarily manipulated in the operation of closing the building, as set forth.

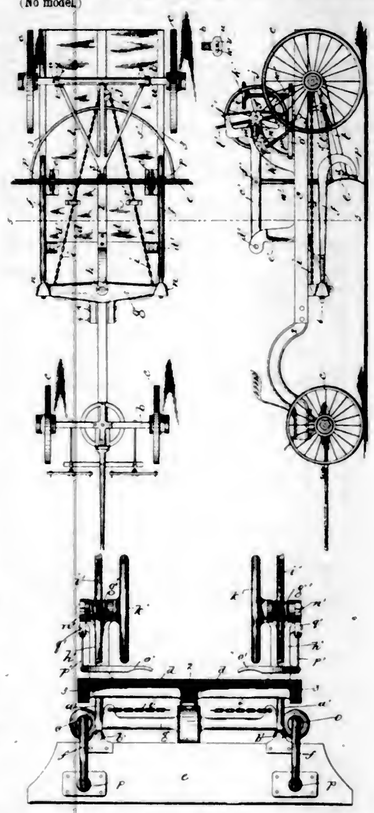
4. The combination, in an apparatus for controlling the supply of water or gas, of a cut-off valve, an electro-magnet or equivalent device controlling said valve, and a circuit-controlling device in the circuit of said electro-magnet automatically actuated by a mechanical operation incidental to the closing of the building, as described.

5. In an apparatus for controlling the supply of water or gas, the combination of a cut-off valve, an electro-magnet or equivalent device controlling said valve, a circuit-controlling lever in the circuit of said electro-magnet, and a removable weight upon said lever, whereby the latter is caused normally to close or open the circuit, and whereby the removal of the weight will permit the lever to reverse its function, as and for the purpose described.

6. In an apparatus for controlling the supply of water, gas, or other fluid, the combination of a cut-off valve, an electro-magnet or equivalent device controlling said valve, a circuit-controlling device in the circuit of said electro-magnet automatically actuated by a mechanical movement incidental to the closing of the building, and an audible-signal device automatically operated by said valve, as and for the purpose described.

7. In an apparatus for controlling the supply of water, gas, or other fluid, the combination of a cut-off valve, an electro-magnet or equivalent device controlling said valve, a circuit-controlling device located in a compartment and automatically actuated by a predetermined mechanical movement, and an audible-signal device actuated by the opening of said compartment, whereby the signal must be made before the circuit-controlling device can be reached, as and for the purpose described.

381,867. **ROAD-SCRAPING MACHINE.** WILLARD F. WELLMAN, Boston, Mass., assignor to Charles H. Dunham, same place, and Fred H. Hondlette, Waltham, Mass. Filed Nov. 11, 1887. Serial No. 254,877. (No model.)



Claim.—1. In a road-scraping machine, the combination of a supporting-frame mounted on wheels, a fulcrum supported by said frame and adapted to swing in a vertical plane, but not laterally, a scraper having a universal-joint connection with said fulcrum, a lever pivoted to the frame in advance of the scraper, draw-bars jointed to the scraper and lever, means for turning the lever and scraper horizontally to vary the angle of the scraper with the direction of its movement, and means for holding the scraper at any angle to which it may be so adjusted.

2. In a road-scraping machine, the combination of a supporting-frame mounted on wheels, a fulcrum supported by said frame and adapted to swing in a vertical plane, but not laterally, a scraper having a universal-joint connection with said fulcrum, draw-bars connecting the scraper with a lever on the frame in advance of the scraper and jointed to the scraper and lever, and independent mechanisms supported by the frame, whereby either end of the scraper may be raised independently, and means to incline the scraper from end to end, and means for holding the scraper at any inclination to which it may be adjusted, as set forth.

3. In a road-scraping machine, the combination of a supporting-frame mounted on wheels, a fulcrum supported by said frame and adapted to swing in a vertical plane, but not laterally, a scraper having a universal-joint connection with said fulcrum, draw-bars connecting the scraper with a lever on the frame in advance of the scraper and jointed to the scraper and lever, and means for tipping the scraper forward or backward to vary the angle of its front surface with the ground, and means for holding the scraper at any angle to which it may be tipped, as set forth.

4. In a road-scraping machine, the combination of a wheeled supporting-frame, a lever, *g*, pivoted to said frame, a vertically-movable fulcrum connected to the frame in line longitudinally of the frame with the pivot of the lever *g*, a scraper engaged at its central portion with said fulcrum and adapted to turn in any direction thereon, draw-bars jointed to the scraper and to the lever *g*, means, substantially as described, for moving said lever on its pivot to turn the scraper horizontally on its fulcrum, and means, substantially as described, for elevating the scraper independently at either end, and thereby turning the scraper vertically on its fulcrum.

5. In a road-scraping machine, the combination of a wheeled supporting-frame, a lever, *g*, pivoted to said frame, a vertically-movable fulcrum connected to the frame in line longitudinally of the frame with the pivot of the lever *g*, a scraper engaged at its central portion with said fulcrum and adapted to turn in any direction thereon, draw-bars jointed to the scraper and to the lever *g*, means, substantially as described, for moving said lever on its pivot to turn the scraper horizontally on its fulcrum, means, substantially as described, for elevating the scraper independently at either end, and thereby turning the scraper vertically on its fulcrum, and means for tipping the scraper forward or backward, and thereby varying the inclination of the scraper.

6. In a road-scraping machine, the combination of the supporting-frame, the lever *g*, pivoted directly to said frame, means, substantially as described, for turning said lever on its pivot and for holding it in different positions, the scraper *e*, located behind said lever, the fulcrum for said scraper, and the draw-bars jointed to the ends of the lever, and having their rear ends curved downwardly to pass over the scraper and bear against the back thereof, and connected with the scraper by ball-and-socket joints, as set forth.

7. The combination of the supporting-frame, the lever *g*, pivoted thereto, the scraper connected by draw-bars *f f* with said lever, the slides *d d*, movable in guides on the supporting-frame, scraper raising and lowering devices supported by said slides, and means, substantially as described, whereby the lever and scraper may be swung horizontally to vary the angle of the scraper and the slides *d d* at the same time moved to correspond with the movement of the scraper, as set forth.

8. The combination of the supporting-frame, the lever *g*, pivoted thereto, the scraper, the draw-bars connecting the scraper and lever, the slides *d d*, movable in guides in the supporting-frame, the levers *c' c'*, pivoted to standards on said slides and connected with the scraper, devices, substantially as described, supported by said slides for raising and lowering said levers, the chain *i*, secured to the lever *g* and to the slides *d d*, and the chain-operating shaft *j*, journaled in a fixed bearing in the supporting-frame, as set forth.

9. The combination of the supporting-frame, the scraper, the vertically-movable fulcrum *s*, means, substantially as described, for swinging said scraper horizontally, means, substantially as described, for adjusting the scraper vertically, the curved rod or bail *s'*, engaged with the scraper, and the lever *t'*, pivoted to the supporting-frame and engaged, as described, with said bail, whereby the scraper may be tipped forward or backward, as set forth.

10. In a road-scraping machine, the frame composed of the central I-beam connected with the front and rear axles and the channeled side beams secured at their rear ends to the rear axle and extending forward from said axle substantially parallel with the central beam, and bent inwardly at their forward ends and secured to the central beam, as set forth.

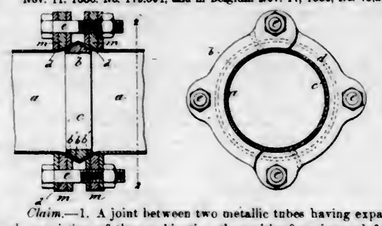
11. In a road-scraping machine, the frame composed of the central I-beam connected with the front and rear axles and the channeled side beams secured at their rear ends to the rear axle and extending forward from said axle substantially parallel with the central beam, and bent inwardly at their forward ends and secured to the central beam, combined with the lever *g*, pivoted to the frame, the slides *d d*, guided by the channels of the parallel portions of the frame-beams, the scraper *e*, the draw-bars connecting the scraper to the lever *g*, devices supported by the slides *d d* for raising and lowering the scraper, and mechanism for simultaneously moving the lever *g*, slides *d d*, and scraper *e*, horizontally, as set forth.

381,868. **SPLIT-HOOF CLAMP FOR HORSES.** JOHN H. WIESTNER, Philadelphia, Pa. Filed May 31, 1887. Serial No. 239,916. (No model.)



Claim.—The within-described hoof-clamp, consisting of a bowed spring having its ends bent to form clips for engaging with the hoof, said spring possessing such inherent elasticity as to draw the bent ends toward each other, all substantially as specified.

381,869. **TUBE-COUPLING.** FRANK A. WILLIAMS, Albrighton, County of Salop, England. Filed Nov. 19, 1886. Serial No. 219,424. (No model.) Patented in England Oct. 5, 1886, No. 12,614; in France Nov. 11, 1886, No. 179,591, and in Belgium Nov. 17, 1886, No. 75,263.



Claim.—1. A joint between two metallic tubes having expanded ends, consisting of the combination therewith of an internal ferrule having cutting-edges in position to cut into the interior flared surfaces of the tubes, and external flanges for drawing the expanded ends against said ferrule and thereby causing said edges to cut into said surfaces.

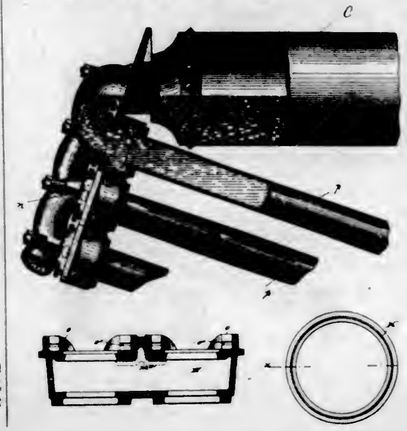
2. A joint between two metallic tubes having expanded ends, consisting of the combination therewith of an internal ferrule having grooves on its exterior and cutting-edges on opposite sides of said grooves, and in position to cut into the interior flared surfaces of the tubes, packing-rings in said grooves, and external flanges for drawing the expanded ends against said ferrule in such manner that said edges shall cut into the interior surfaces of the tubes, so as to close said grooves and confine said packing-rings therein.

3. A joint between two metallic tubes having expanded ends, consisting of the combination therewith of an internal ferrule having cutting-edges in position to cut into the interior flared surfaces of the tubes and formed on its exterior as reversed frusta of cones between said cutting-edges, and external flanges for drawing the expanded ends against said ferrule in such manner that said cutting-edges shall cut into the tubes and the latter are pressed tightly against the conical surfaces of the ferrule.

4. A joint between two metallic tubes having expanded ends, consisting of the combination therewith of an internal ferrule having exterior grooves of angular section, packing-rings in said grooves, and external flanges for drawing the expanded ends against said ferrule in such manner as to close said grooves, whereby said packing-rings are compressed within annular recesses of angular section and inclosed on all sides, so that they make a tight joint and their escape is prevented.

5. A joint between two metallic tubes having expanded ends, consisting of the combination therewith of an internal ferrule having exterior grooves of angular section with abrupt sides opposite the ends of the ferrule, packing-rings in said grooves, and external flanges for drawing the expanded ends against said ferrule in such manner as to close said grooves and compress the packing-rings therein, whereby in so drawing the parts together the packing-rings are forced against said abrupt sides of the grooves, which prevent their being displaced by the thrust of the expanded ends.

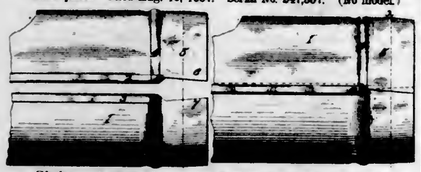
381,870. **BOILER.** AMASA WORTHINGTON, Brooklyn, N. Y. Filed Oct. 12, 1886. Serial No. 216,060. (No model.)



Claim.—1. In a means for connecting the tubes of water-tube boilers in horizontal and vertical series, the header E, comprising a shell having openings on its opposite sides for the bends and tubes, respectively, and provided with a projection, *m*, and recesses *m'*, for the reception of a lock-plate, substantially as described.

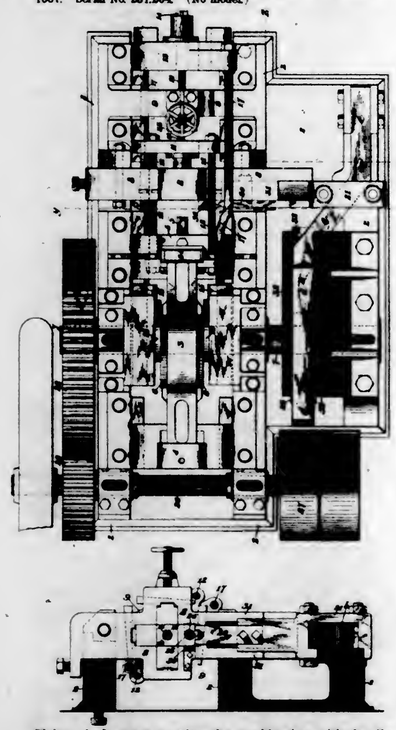
2. The means herein described for securing together the headers and bends of a water-tube boiler, which consists in the lugs *o*, formed upon the header, provided with inward-opening recesses *o'* and transverse recesses *o''*, T-bolts *n*, the head and part of the shank of which are inserted in the recesses *o' o''*, projecting perforated ears *l* upon the bend to receive the bolt *n*, and screw-nuts, substantially as described.

381,871. **STOVE-PIPE.** URBANA D. ALEXANDER, Canonsburg, Pa., assignor of one-half to the Canonsburg Iron and Steel Company, same place. Filed Aug. 19, 1887. Serial No. 247,357. (No model.)



Claim.—A stove-pipe section having the joint or locking members 2 and 3 along its meeting edges, and having said edges notched or cut away with re-entering angles, as described, whereby the edges of the section are permitted to cross each other at or near the ends of the hooks, and to overlap each other at or near the end of a section, substantially as described.

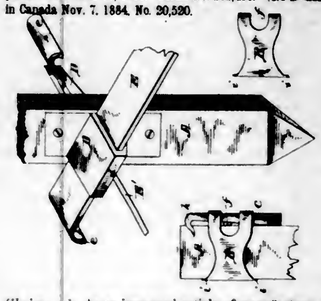
381,872. **NUT-MAKING MACHINE.** FRANK BRÜNER, Pittsburg, Pa., assignor of one-half to William Charles, same place. Filed Mar. 17, 1887. Serial No. 231,264. (No model.)



Claim.—1. In a nut-machine, the combination, with the dies, of a knife moving transversely thereto and arranged to cut blanks from a rod which is fed transversely to the line of motion of the knife, the knife-head, the power-shaft 7, and a reciprocating inclined bar or wedge, *c*, driven by the shaft 7, moving transversely to the knife-head and bearing thereon, substantially as and for the purposes described.

2. In a nut-machine, the combination, with the dies, of a knife moving transversely thereto and arranged to cut blanks from a rod which is fed transversely to the line of motion of the knife, the knife-head, the power-shaft 7, and a reciprocating inclined bar or wedge, *c*, driven by the shaft 7, moving transversely to the knife-head and working in a slot in the knife-head, substantially as and for the purposes described.

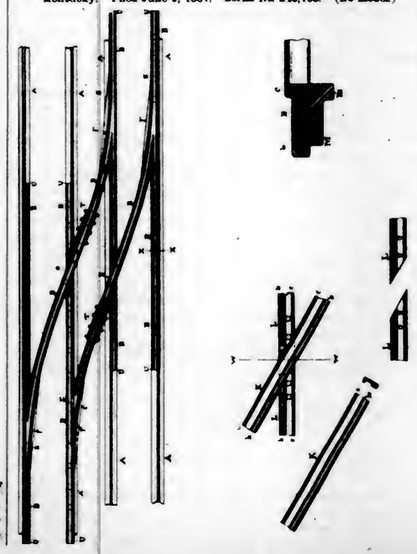
381,873. **FENCE-POST.** JOHN W. DAVY, Kingston, Ontario, Canada, assignor to the Excelsior Iron Fence Company, (Limited,) same place. Filed Jan. 31, 1888. Serial No. 262,498. (No model.) Patented in Canada Nov. 7, 1884, No. 20,520.



Claim.—1. As an improved article of manufacture, the herein-described brace-supporting strap, consisting, essentially, of a flat body portion, with apertures near its opposite ends for the admission of bolts or the like, and provided near its center with a laterally-projecting diagonally-inclined loop adapted to receive and hold in an inclined position an anchor-brace, as set forth.

2. The combination, with a fence-post and a wire or the like, of a wire-supporting clip constructed in the form of a sleeve to embrace the post, and provided with upwardly and downwardly extending projections or arms upon one end and with a horizontal transverse wire-holding slot in its opposite end, said slot extending a short distance into the sides of the clip, and a wedge driven between the slotted end of the clip and the wire and firmly locking the wire against the post, said wedge being adapted to have its small end clinched or bent, thereby holding it rigidly in position, substantially as described.

381,874. **PORTABLE CONNECTING-TRACK.** ALFRED V. DU PONT, Louisville, Ky., assignor to The Johnson Steel Street Rail Company, of Kentucky. Filed June 9, 1887. Serial No. 240,703. (No model.)

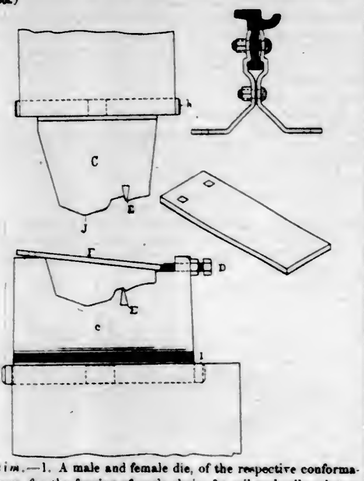


Claim.—1. A portable connecting-track consisting of rails provided with locking-pieces on their under sides for locking said rails to the rails of the main track, whereby said under sides are adapted to be set flush upon the street surface or pavement when the same is above the level of the heads of the main-track rails, substantially as and for the purposes set forth.

2. A switch-piece connection for connecting main and side tracks, as described, composed of two flat guard-rails cut and fitted together at the required angle and riveted to a flat plate provided with a tongue, substantially as and for the purposes set forth.

3. A crossing for main and side connecting-tracks composed of rails, as K and L, the crossed rail L being cut at the desired angle and its severed ends riveted by a flat under plate, as M, offset as at *m*, substantially as and for the purposes set forth.

381,875. **DIE FOR MAKING RAILROAD-CHAIRS.** EDWARD R. EATWELL, Johnstown, Pa., assignor to The Johnson Steel Street Rail Company, of Kentucky. Filed July 14, 1887. Serial No. 244,300. (No model.)



Claim.—1. A male and female die, of the respective conformations shown, for the forging of angle-chairs for railroad-rails, substantially as set forth.

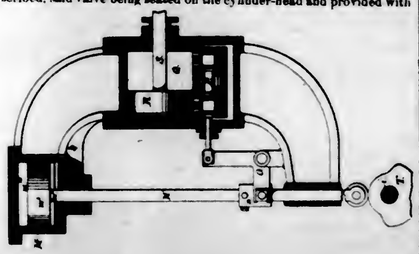
2. A female die for the forging of angle-chairs, having its face cut at two different levels, whereby the die is adapted to receive the blank to be forged at an angle instead of in a horizontal plane, substantially as and for the purposes set forth.

3. A pair of dies for the forging of angle-chairs, having each therein forming-edges, as E E, located as described, substantially as and for the purposes set forth.

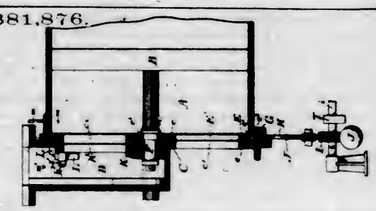
4. A pair of dies for the forging of angle-chairs, provided each with removable forming edge pieces, as E E, substantially as and for the purposes set forth.

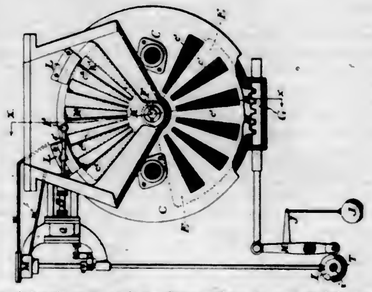
381,876. **COMPRESSING OR BLOWING ENGINE.** WILLIAM R. GOOD, Reading, assignor to the Southwark Foundry and Machine Company, Philadelphia, Pa. Filed July 7, 1887. Serial No. 243,616. (No model.)

Claim.—1. In a compressing or blowing engine, a cylinder-head slotted to form air-passages in it, in combination with a sliding slotted valve arranged to register with the slots in the cylinder-head, as described, said valve being seated on the cylinder-head and provided with



381,876.





a back bearing arranged at a distance from its seat slightly greater than the thickness of the valve.

2. In a compressing or blowing engine, a cylinder-head having slots formed in it to serve as air-passages, in combination with a pivoted sliding and radially-slotted valve arranged to register with the slots in the cylinder-head, as described, said valve being seated on the cylinder-head and provided with a back bearing arranged at a distance from its seat slightly greater than the thickness of the valve.

3. In a compressing or blowing engine, a cylinder-head having slots formed in it to serve as air-passages for the entrance and outlet of air, all of said slots radiating from the same point on the cylinder-head, in combination with radially-slotted sliding valve-plates pivoted at the point from which the slots in the head radiate, the valve-plate registering with the inlet-slots being on the inside of the head, and the valve-plate registering with the outlet-slots on the outside of said head, and back bearings for said valve-plates, arranged at a distance from their seats on the cylinder-head slightly greater than the thickness of the valve.

4. In a compressing or blowing engine, the combination of an air-inlet opening formed by slots in the cylinder-head with a sliding slotted valve seated upon the inside of the head and having back bearing arranged at a distance from its seat slightly greater than its thickness, a cam, I, driven by the engine and connected with the inlet-valve so as to open it substantially at the point where the pressures within and without the compressing-cylinder are equal when the air is being compressed to the maximum point, and mechanism connecting the cam and valve, substantially as and for the purpose specified.

5. In a compressing or blowing engine, the combination of a cylinder-head slotted to form openings for the outlet of the air, a slotted sliding valve seated on the outside of said head, a back bearing for said valve, situated at a distance from its seat slightly greater than the thickness of the valve, so that it will leave its seat when the air-pressure inside exceeds that outside the cylinder, a cylinder, M, connected at one end with the compression-cylinder and at the other end with the outlet-conduit, a piston situated in said cylinder and arranged to move when the pressure in the compression-cylinder approximates that of the outlet-conduit, and a connecting device uniting the sliding outlet-valve with said piston, as described, whereby the motion of the piston acts to open the valve.

6. In a compressing or blowing engine, the combination of a cylinder-head radially slotted to form openings for the outlet of the air, a pivoted and radially slotted sliding valve seated on the outside of said head, a back bearing for said valve, situated at a distance from its seat slightly greater than the thickness of the valve, so that it will leave its seat when the air-pressure inside exceeds that outside the cylinder, a cylinder, M, connected at one end with the compression-cylinder and at the other end with the outlet-conduit, a piston situated in said cylinder and arranged to move when the pressure in the compression-cylinder approximates that of the outlet-conduit, and a connecting device uniting the pivoted sliding outlet-valve with said piston, as described, whereby the motion of the piston acts to open the valve.

7. In a compressing or blowing engine, the combination of a cylinder-head slotted to form openings for the outlet of the air, a slotted sliding valve situated on the outside of the head, a cylinder, M, connected at one end to the compression-cylinder and at its other end to the exit-conduit, a piston situated in said cylinder and arranged to move when the pressure in the compression-cylinder approximates that of the exit-conduit, a piston-rod, a connecting device uniting the piston-rod and outlet-valve, whereby the motion of said rod operates to open and close said valve, and a cam, T, arranged to move the piston-rod in the direction to close the valve and to keep it in said position during the return-stroke of the compressing-piston.

8. In a compressing or blowing engine, the combination of a cylinder-head slotted to form openings for the outlet of the air, a slotted sliding valve situated on the outside of the head, back bearing for said valve, situated at a distance from its seat on the cylinder-head slightly greater than the thickness of the valve, so that it will leave its seat when the air-pressure inside exceeds that outside the cylinder, a cylinder, M, connected at one end to the compression-cylinder and at its other end to the exit-conduit, a piston situated in said cylinder and arranged to move when the pressure in the compression-cylinder approximates that of the exit-conduit, a piston-rod, a connecting device uniting the piston-rod and outlet-valve, whereby the motion of said rod operates to open and close said valve, and a cam, T, arranged to move the piston-rod in the direction to close the valve and to keep it in said position during the return-stroke of the compressing-piston.

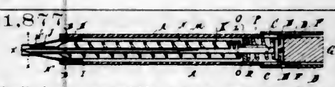
9. In a compressing or blowing engine having a cylinder-head provided with slots to form openings for the outlet of the compressed air and having a slotted sliding valve adapted to register with said openings, as specified, the combination of a cylinder, M, connected at one end with the compression-cylinder and at the other to the exit-conduit, a piston situated in said cylinder, a piston-rod, N, actuated by said piston, a cylinder, Q, having a piston, R, and piston-rod S, connecting with and actuating the said outlet-valve, a valve, P, placed to open and close the ports of cylinder Q, and connecting mechanism whereby the valve P is actuated by piston-rod N, all substantially as and for the purpose specified.

10. In a compressing or blowing engine having a cylinder-head provided with slots to form openings for the outlet of the compressed air and having a slotted sliding valve adapted to register with said openings, as specified, and having a back bearing situated at a distance from its seat slightly greater than the thickness of the valve, so that it will leave its seat when the air-pressure inside exceeds that outside the cylinder, the combination of a cylinder, M, connected at one end with the compression-cylinder and at the other to the exit-conduit, a piston situated in said cylinder, a piston-rod, N, actuated by said piston, a cylinder, Q, having a piston, R, and piston-rod S, connecting with and actuating the said outlet-valve, a valve, P, placed to open and close the ports of cylinder Q, and connecting mechanism whereby the valve P is actuated by piston-rod N, all substantially as and for the purpose specified.

11. In a compressing or blowing engine having a cylinder-head provided with slots to serve as openings for the outlet of the compressed air and having a slotted sliding valve adapted to register with said openings, as specified, the combination of a cylinder, M, connected at one end with the compression-cylinder and at the other to the exit-conduit, a piston situated in said cylinder, a piston-rod, N, actuated by said piston, a cylinder, Q, having a piston, R, and piston-rod S, connecting with and actuating the said outlet-valve, a valve, P, placed to open and close the ports of cylinder Q, and connecting mechanism whereby the valve P is actuated by piston-rod N, and cam T, acting on the rod N to force it into position to close the outlet-valve and retaining it in said position during the return-stroke of the compression-piston, all substantially as and for the purpose specified.

12. In a compressing or blowing engine, the combination of a cylinder-head, C, radially slotted to form openings for the entrance and outlet of the air, pivoted sliding and radially-slotted valves for opening and closing said openings, a rod, N, connected with the outlet-valve, so as to open or close the same as it is moved, a piston secured to rod N and situated in a cylinder, M, connected with the compression-cylinder and exit-passage, as described, so that the piston and rod N will move to open the valve when the pressures of the compression-cylinder and exit-passage are approximately the same, a cam, I, connected with the inlet-valve, so as to close it and keep it closed during the forward stroke of the compression-piston and a definite portion of its return-stroke, and a cam, T, connected with rod N, so as to move it to close the outlet-valve and keep it closed during the return-stroke of the compression-piston, all substantially as and for the purpose specified.

381,877. PROPELLER-PENCIL. JOSEPH HOFFMAN, Hoboken, N. J., assignor to Gustavus A. Goldsmith, New York, N. Y. Filed July 25, 1887. Serial No. 245,270. (No model.)



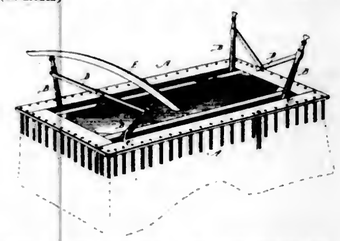
Claim.—1. The combination of a spring-actuated propeller, consisting of a lead-tube, J, lead-holder K, rider L, and worm M, having longitudinal movement within an outer case or handle, a longitudinally-movable cap, and a catch operated from the exterior of the pencil, which locks the cap to the case and projects to the outside of the case and holds the propeller-pencil in its projected position against the stress of the retractile spring, substantially as set forth.

2. The combination of a spring-actuated propeller, consisting of a lead-tube, J, lead-holder K, rider L, and worm M, having longitudinal movement within an outer case or handle, a case or handle extended rearwardly for the reception of a rubber eraser, and a longitudinally-movable cap provided with a spring-catch which locks the cap to the case, the cap being constructed and arranged to cover the rubber when retracted, substantially as set forth.

3. The combination of a propeller longitudinally movable within a case or handle, and provided with a feather or equivalent device which engages with the case to allow longitudinal but not axial movement irrespective of the case, and a tip attached to the case in such manner as to allow of axial but not longitudinal movement irrespective of the case, and engaged with the propeller in such manner as to allow longitudinal but not axial movement irrespective thereof, substantially as set forth.

4. The combination of propeller mechanism, consisting of a lead-tube, J, lead-holder K, rider L, and worm M, having longitudinal movement within an outer case or handle, the case or handle being extended rearwardly for the reception of an erasive material, and locking devices, whereby the propeller may be locked in its projected and also retracted position, substantially as set forth.

381,878. ATTACHMENT FOR BABY-CARRIAGES, CRIBS, OR CRADLES. STRANGE A. HOLMAN, Chicago, Ill., assignor to S. A. Smith & Co., Brattleborough, Vt. Filed July 13, 1887. Serial No. 244,569. (No model.)



Claim.—1. The combination, with a baby-carriage body, of legs folding into recesses in said body and connected thereto by a two-way joint, a toggle-joint brace connecting said legs yieldingly, and a suitable stop, as *c'*, to limit the lateral movement of said legs, substantially as and for the purpose set forth.

2. The combination, with a baby-carriage body, of folding legs pivotally connected thereto, whereby they may be unfolded and their free ends separated so as to project angularly from the body, rockers having undercut recesses to receive and retain the legs in their angular position, and a toggle-joint brace connecting said legs yieldingly, and whereby said legs are secured in the recesses of the rockers, substantially as described.

3. The combination, with a body, as A, of legs B, connected to said body by a pivot, as C *c*, a toggle-joint brace, as D, and rockers E, having undercut recesses, as *e*, substantially as described.

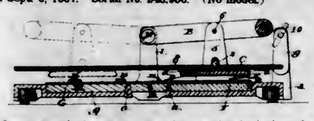
4. The combination of a body, as A, with pivoted legs B, a toggle-joint brace, as D, adapted to strike the body when the pivoted legs are in positions to be folded, and rockers E, adapted to the legs, substantially as set forth.

381,879. ELASTIC BAND. ROBERT W. HOWARD, Chelsea, assignor of one-half to Edward F. Reed, Everett, Mass. Filed July 13, 1887. Serial No. 244,221. (No model.)



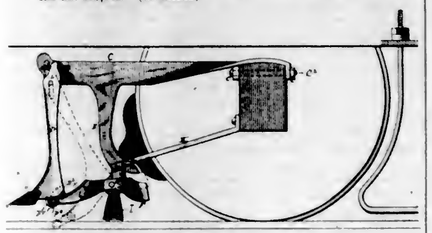
Claim.—An elastic band consisting of the elastic piece or pieces A A' and the piece or pieces B B', adapted to receive writing or printing, substantially as described, and for the purpose set forth.

381,880. PRINTING-STAMP. HENRY LANG, Albany, and EDWARD J. WATSON, Troy, N. Y.; said Watson, assignor to said Lang. Filed Sept. 6, 1887. Serial No. 248,930. (No model.)



Claim.—A printing-stamp consisting of a bed-piece having at one end an inking-pad and at the opposite end an impression-pad, impression-levers pivoted to said bed-piece, so as to vibrate to each of said pads, a platen carrying a type-pallet pendulously attached to said impression-levers, a steadying-bar which passes through a lug on said platen and is pivoted to a pendulous arm that is adjustably attached to said bed-piece, all constructed and arranged to operate as herein specified.

381,881. DEVICE FOR REMOVING OBSTRUCTIONS OR PREVENTING ACCIDENTS ON STREET-RAILWAYS. CHARLES MAHON, Washington, D. C. Filed Feb. 8, 1886. Renewed Mar. 31, 1887. Serial No. 233,202. (No model.)





Claim.—1. The combination, with a tram-car, of a pendent swinging arm and a pivoted shoe disconnected from each other and arranged in such relation to each other as to operate conjointly to remove obstruction from the track, as set forth.

2. In a tram-car, the combination of the forwardly-extending brace secured to the axle-box, the pendent swinging arm, and a pivoted shoe secured to said brace, whereby said parts are held at a fixed relation to the track, as set forth.

3. In a tram-car, the pendent swinging arm, in combination with a pivoted weighted shoe, F, arranged in such relation to the arm as to be depressed thereby in the backward movement of the same, and to automatically return to its normal position by gravity when released from engagement with the arm, substantially as described.

4. The combination, with the pendent swinging arm having the bar arranged at its rear lower end, of the pivoted shoe having a curved forward face, adapted to be engaged by the bar to throw the same downward into engagement with the track, substantially as and for the purpose described.

5. In a tram-car, the combination of the brace extending forward from axle-box, having the swinging pendent arm connected thereto, the pendent rigid arm secured to said brace, and a pivoted shoe connected to the lower end of the rigid arm, substantially as described.

6. In a tram-car, the combination of the pivoted shoe having a flexible toe or point, with the pendent swinging arm operating in connection therewith, substantially as and for the purpose set forth.

7. In a tram-car, the combination of the forwardly-extending brace, the pendent swinging arm, the pivoted shoe, the rigid pendent arm, and the flexible points, secured to the lower end of the rigid pendent arm, substantially as and for the purpose set forth.

8. In a tram-car, the combination of the forwardly-extending brace, the pendent swinging arm, and the stop secured to the brace, for engaging the rear face of said arm, substantially as and for the purpose described.

9. In a tram-car, the combination of the forwardly-extending brace having the rigid pendent arm secured thereto, the pendent swinging arm, the pivoted shoe secured to the pendent arm, and the stop connected to the rigid pendent arm for limiting the downward movement of the shoe, and the backward movement of the pendent swinging arm, substantially as described.

10. In a tram-car, the combination of the forwardly-extending brace, the rigid pendent arm, the swinging arm, the pivoted shoe, and the rearwardly-extending brace secured to the lower end of the rigid arm and to the axle-box, substantially as and for the purpose set forth.

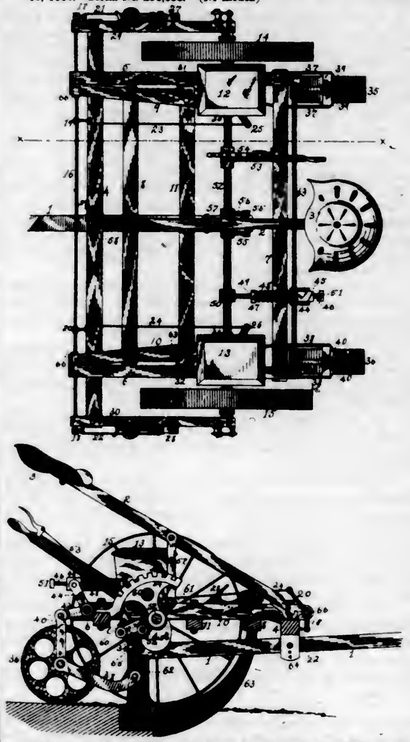
11. In a tram-car, the combination of the forwardly-extending brace having the rigid arm secured thereto, and the pendent swinging arm having the flexible or yielding collar, substantially as described.

12. In a tram-car, the combination of the forwardly-extending brace, the rigid pendent arm, and the pivoted shoe, with the rods suspended between the wheels, as and for the purpose set forth.

381,882. COMPOSITION FOR SURFACING STRUCTURAL ARTICLES. TERRENCE MCSWEENEY, Allegheny, assignor of one-half to Thomas A. Gillespie, Pittsburg, Pa. Filed Oct. 17, 1887. Serial No. 252,596. (No specimens.)

Claim.—A composition for surfacing pipes, conduits, or other structural articles, the same consisting of rosin, plaster-of-paris, and pulverized glass or sand, substantially as set forth.

381,883. CORN-PLANTER. FRANK P. MURPHEY, Decatur, Ill., assignor of one-half to William D. Chamberlain, same place. Filed Sept. 19, 1887. Serial No. 250,035. (No model.)



Claim.—1. In corn-planters, in combination, an outer frame carrying a transverse axle on which the supporting-wheels are mounted, and an inner frame over the axle carrying the planting mechanism in transverse alignment with the wheels and hinging at its front end to the front end of the outer frame, as and for the purpose set forth.

2. In corn-planters, in combination, an outer frame mounted on wheels, an inner frame carrying planting mechanism and hinging at its front end to the front end of the outer frame, and a check-row shaft traversing the frames at the hinge thereof.

3. In corn-planters, in combination, an outer frame mounted on wheels, an inner frame carrying planting mechanism, tubular pivots on which the frames hinge at their front ends, and a check-row shaft extended through the tubular pivots.

4. In corn-planters, in combination, an outer frame mounted on a transverse axle of supporting-wheels and carrying covering devices, and an inner frame over the axle carrying planting mechanism and hinging at its front end to the front end of the outer frame, as and for the purpose set forth.

5. In corn-planters, in combination, an outer frame having a rock-

ing axle on which the supporting-wheels are journaled, an inner frame carrying planting mechanism and hinging at its front end to the front end of the outer frame, a lever for rocking the axle, and crank-arms on the axle from which the inner frame is supported at its rear end.

6. In corn-planters, in combination, an outer frame having a rocking axle on which the supporting-wheels are journaled, an inner frame carrying planting mechanism and hinging at its front end to the front end of the outer frame, a lever to rock the axle, crank-arms on a side of the axle from which the rear end of the inner frame is supported, and a crank-arm on the opposite side of the axle supporting the driver's seat.

7. In corn-planters, in combination, an outer frame having a rocking axle on which the supporting-wheels are journaled, an inner frame carrying planting mechanism and hinging at its front end to the front end of the outer frame, a lever to rock the axle, a tongue pivotally connected with the front of the outer frame and extended under the axle, crank-arms on the axle supporting the rear end of the inner frame, and a crank-arm on the axle from which the rear end of the tongue is suspended.

8. In corn-planters, in combination, an outer frame having a rocking axle on which the supporting-wheels are journaled, an inner frame carrying planting mechanism and hinging at its front end to the front end of the outer frame, covering devices pivotally connected with the shanks of the planting-runner, a bell-crank lever on the rear of the outer frame from which the covering devices are suspended, a crank-arm on the axle connected with the bell-crank lever, and a hand-lever to rock the axle.

9. In corn-planters, in combination, an outer frame having a rocking axle on which the supporting-wheels are journaled, an inner frame carrying planting mechanism and hinging at its front end to the front end of the outer frame, a lever to rock the axle, crank-arms on the axle from which the inner frame is supported, a tongue pivotally connected with the front of the onter frame and extended under the axle, guide-flanges on the axle affording lateral support for the rear end of the tongue, and a crank-arm also on the axle, from which the rear end of the tongue is supported by a link.

10. In corn-planters, in combination, an axle for the supporting-wheels having oscillatory adjustment, crank-arms on a side of the axle supporting the planting mechanism, and a crank-arm on the opposite side of the axle supporting the driver's seat.

11. In corn-planters, in combination, an axle for the supporting-wheels having oscillatory adjustment, and crank-levers on the axle supporting the planting mechanism and the rear end of the tongue, respectively.

12. In corn-planters, in combination, an axle for the supporting-wheels having oscillatory adjustment, and crank-arms on the axle adapted to adjust the vertical positions of the planting mechanism and the covering devices.

13. In corn-planters, in combination, an axle for the supporting wheels having oscillatory adjustment, and crank-arms on the axle connecting, respectively, with the planting mechanism, the driver's seat, and the rear end of the tongue.

14. In corn-planters, in combination, an axle for the supporting-wheels having oscillatory adjustment, and crank-arms on the axle connecting, respectively, with the planting mechanism, the driver's seat, the rear end of the tongue, and the covering devices.

15. In corn-planters, in combination, an outer frame having a transverse axle on which the supporting-wheels are journaled, an inner frame carrying planting mechanism and hinging at its front end to the front end of the outer frame, a seat-bar extended upward and backward from the front of the outer frame, and a brace supporting the seat-bar from the axle.

16. In corn-planters, in combination, an outer frame having a rocking axle on which the supporting-wheels are journaled, an inner frame carrying planting mechanism and hinging at its front end to the front end of the outer frame, a seat-bar pivotally connected with the front of the outer frame and extended upward and backward therefrom, and crank-arms on the axle supporting the planting mechanism and the seat-bar, respectively, as set forth.

17. In corn-planters, in combination, a frame mounted on wheels, a shaft traversing the frame, crank-arms on one side of the shaft supporting the planting mechanism, and a crank-arm on the opposite side of the shaft supporting the driver's seat.

18. The outer frame mounted on wheels and having its front bar extended laterally beyond the wheels, an inner frame carrying planting mechanism and hinging at its front end to the front end of the outer frame, check-row bars extended rearwardly from the outer ends of the forward bar of the outer frame, check-row tappets on the check-row bars, a check-row shaft in line with the hinge of the frames, and crank-arms on the check-row shaft connected, respectively, with the check-row tappets and the planting mechanism of the inner frame.

19. The outer frame mounted on wheels and having its front bar extended laterally beyond the wheels, an inner frame carrying planting mechanism and hinging at its front end to the front end of the outer frame, check-row bars supported from the outer ends of the forward bar of the outer frame and from the terminations of the axle of the wheels, check-row tappets on the check-row bars, a check-row shaft in line with the hinge of the frames, and crank-arms on the check-row shaft connected, respectively, with the check-row tappets and the planting mechanism of the inner frame.

20. In corn-planters, in combination, the outer frame having the rocking axle on which the supporting-wheels are journaled, the inner frame carrying planting mechanism and hinging at its forward end to the forward end of the outer frame, the lever to rock the axle, the covering-wheels pivotally connected with the shanks of the planting-runners, the rock-shaft on the rear of the outer frame having approximately horizontal crank-arms from which the covering-wheels are supported, and having also an approximately vertical crank-arm, the block pivoted in the vertical crank-arm of the rock-shaft, the rod having longitudinal motion in the block, the crank-arm on the axle connecting with the rod, and the spring on the rod between the crank-arms.

21. In corn-planters, in combination, the outer frame having the rocking axle on which the supporting-wheels are journaled, the inner frame carrying planting mechanism and hinging at its forward end to the forward end of the outer frame, the lever to rock the axle, the covering-wheels pivotally connected with the shanks of the planting-runners, the rock-shaft on the rear of the outer frame having approximately horizontal crank-arms from which the covering-wheels are supported, and having also an approximately vertical crank-arm, the block pivoted in the vertical crank-arm, the rod having longitudinal motion in the block, the adjustable collar on the rod, the spring between the collar and the block, and the crank-arm on the axle connected with the rod.

22. In corn-planters, in combination, an outer frame having a rocking axle on which the supporting-wheels are journaled, an inner frame carrying planting mechanism and hinging at its front end to the front end of the outer frame, crank-arms on the axle from which the planting mechanism is supported, a lever to rock the shaft carrying a locking-catch, and a segmental rack on the axle and the rear bar of the outer frame adjacent to the locking-catch of the rocking lever.

23. In corn-planters, in combination, a seed-plate having peripheral ratchet-teeth, a lever pivoting concentric with the seed-plate and carrying a pawl in contact with the ratchet-teeth thereof, and a pivotal stop having one end in position to arrest the motion of the lever, and the other end in position to be swung against the back of a tooth of the seed-plate by the impingement of the lever, for the purpose set forth.

24. In corn-planters, in combination, a seed-plate having peripheral ratchet-teeth, a lever pivoting concentric with the seed-plate and carrying a pawl in contact with the ratchet-teeth thereof, a lever-actuating rod connected with the outer end of the pawl, and a pivotal stop having one end in position to arrest the motion of the lever and the other end in position to be swung against the back of a tooth of the seed-plate by the impingement of the lever, for the purpose set forth.

25. In corn-planters, in combination, a seed-plate having peripheral ratchet-teeth and bevel crown-gear on its under surface, a lever pivoting concentric with the seed-plate and carrying a pawl in contact with the ratchet-teeth thereof, a pinion in mesh with the crown-gear adapted to make a semi-revolution at each seed-depositing movement of the seed-plate, a pin on the face of the pinion resting always on a line approximately horizontal with the pivot of the pinion, and a vibrating second drop-valve having its upper termination slotted to receive the pin of the pinion.

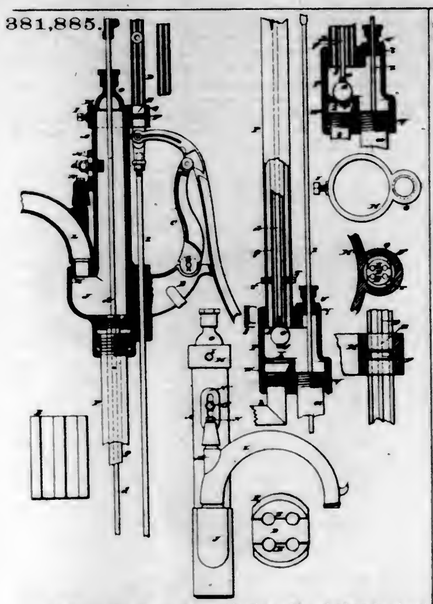
381,884. **TRACE-FASTENING.** CHARLES S. NEWSOM and LEMUEL OXLEY, Athens, Ohio, assignors, by direct and mesne assignments, to said Newsom, Robert E. Hamblin, and Henry R. Mathias, all of same place. Filed Feb. 23, 1888. Serial No. 264,956. (No model.)



Claim.—The combination, with a whiffletree, of an elongated spring-arm having a loop, *b*, bent as set forth, and an outwardly-bent end, *b'*, substantially as described.

381,885. **DOUBLE-ACTING FORCE-PUMP.** JOSEPH M. NORMAND, Springfield, Ohio, assignor of one-half to Jacob K. Mower, same place. Filed June 23, 1887. Serial No. 242,216. (No model.)

381,885.



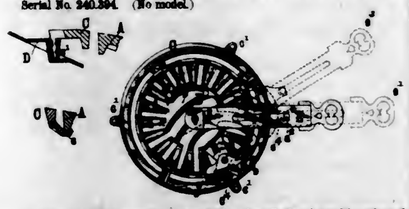
Claim.—1. In a pump, the combination, with a platform-head and a detachable ring secured thereto and having an eye with an interior groove, of two guide-blocks each forming less than one-half of the area of the eye and having beads which enter said groove, a piston or plunger-rod, and an extension therefor which works between said blocks and fills the area of the eye in the ring not occupied by the blocks themselves, substantially as shown.

2. In a pump, the combination, with a stationary hollow head having a spout-seat formed therein, of a spout above the seat fitted into said seat and adapted to be turned partially round the head in either direction and an adjustable holding device secured to said head and engaging with said spout to take up the wear occasioned by adjusting the spout to different positions.

3. In a pump, the combination, with a hollow head having an elbow in whose upper end a spout-seat is formed, a vertically-adjustable bracket having a recess in the lower end, and a set-screw, of a spout having one end constructed to smoothly fit said seat and having a lug extending into said recess and engaged by said set-screw.

4. In a pump, the combination, with a stock or barrel, of a discharge-pipe therein and a screw which enters the walls of the stock or barrel and the pipe, and which is hollow and communicates with the exterior space to form a drip.

381,886. **GRATE.** JOHN O'KEEFE, St. Louis, Mo., assignor to the Excelsior Manufacturing Company, same place. Filed June 6, 1887. Serial No. 240,394. (No model.)

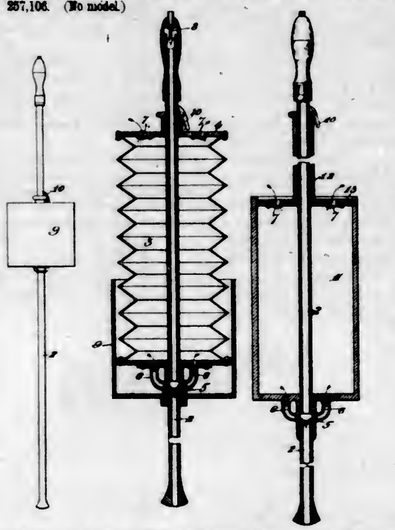


Claim.—1. The combination of the ring C, the slotted bearing c^4, and the center B, having the arm *b* pivoted to and extending through said bearing, as described.

2. The combination of the ring C, the slotted bearing c^4, the annular portion A, the center B, the arms *b a'*, and the rod E, slotted at e^4, substantially as described.

3. The combination of the ring C, the slotted bearing c^4, the center B, having the arm *b*, pivoted to and extending through said bearing, the rod E, slotted at e^4, and the arm *a'* engaging therein, whereby the grate can be agitated and the center can be drawn out and swung around, substantially as set forth.

381,887. **GLASS-BLOWING APPARATUS.** WILLIAM M. PIPER, Allegheny City, Pa., assignor of two-thirds to Stephen Newbern and Charles W. Wolfendale, same place. Filed Dec. 6, 1887. Serial No. 257,106. (No model.)

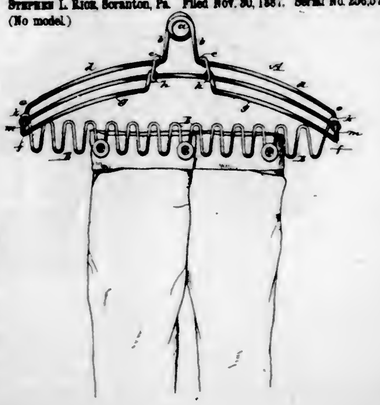


Claim.—1. As an apparatus for blowing glassware, a tube having mounted thereon a compressible air-blowing device, which moves up and down on the tube and is connected therewith, so that air compressed thereby shall flow into the tube to expand the article of glassware, said tube being of constant length from its mouth-piece to the end on which the glass is gathered, substantially as and for the purposes described.

2. In an apparatus for blowing glass, the combination, with a blowing-tube, of a flexible air-compressing device, 3, and a heat-protecting casing composed of insulating material, such as asbestus, substantially as and for the purposes described.

3. As an apparatus for blowing glassware, a tube having mounted thereon a compressible air-blowing device, which moves up and down on the tube and is connected therewith, so that air compressed thereby shall flow into the tube to expand the article of glassware, said tube being of constant length from its mouth-piece to the end on which the glass is gathered, and a pawl and ratchet, whereby the bellows may be confined, substantially as and for the purposes described.

381,888. **COMBINED COAT AND PANTALOONS SUPPORTER.** STEPHEN L. RICE, Scranton, Pa. Filed Nov. 30, 1887. Serial No. 256,573. (No model.)



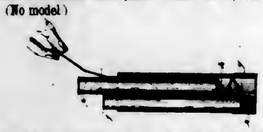
Claim.—1. The combination, with a bent wire yoke or coat-hanger, of a wire brace affixed to the ends of the wire yoke below it and adapted to engage the waist-buttons of a pair of pantaloons to stretch them between their side seams and support them when the coat-hanger is suspended from a hook or nail, substantially as set forth.

2. The combination, with a wire yoke bent to support a coat or vest, of a pantaloons-supporter that is bent into zigzag undulations and connected by its ends to the ends of the wire yoke or coat-hanger, substantially as set forth.

3. The combination, with a pantaloons stretcher and supporter that is bent from a single piece of wire into wave or zigzag undulations to adapt it to engage the waist-buttons of pantaloons of different widths, of a wire yoke that is attached by its ends to the pantaloons-supporter, so as to be braced to sustain the weight of garments hung upon it, substantially as set forth.

4. The combination, with a yoke bent from a single piece of wire and stiffened by an arched wire that is inserted into eyes bent in the inner cross-bars of the yoke and hooked onto the outer cross-bars of this yoke, of a pantaloons-supporter which is bent into zigzag notches or waves and is secured to the outer cross-bars of the coat-hanger or yoke, substantially as set forth.

381,889. BOX. WILLIAM H. SCOTT, minor, Washington, D. C.; Alexander Scott, guardian of said William H. Scott, assignor of one-half to David C. Reinohl, same place. Filed Dec. 3, 1887. Serial No. 256,909. (No model.)

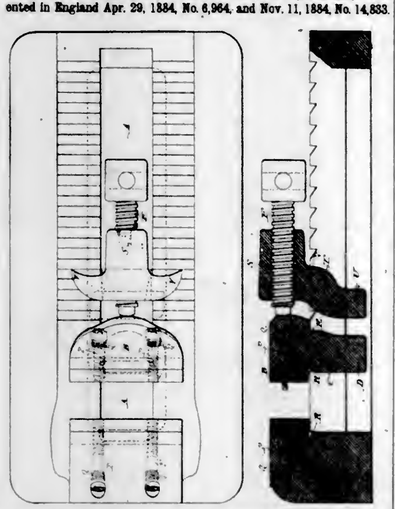


Claim.—1. A box consisting of a body and a sliding lining folded within the body and provided with a double fold in one of its ends, substantially as described.

2. A box consisting of a body and a strip forming a sliding lining on one side and both ends of the box, one of said ends having a double fold, substantially as described.

3. A box consisting of a body and a strip forming a sliding lining on one side and both ends of the box, one of said ends having a double fold and the other a flap, substantially as described.

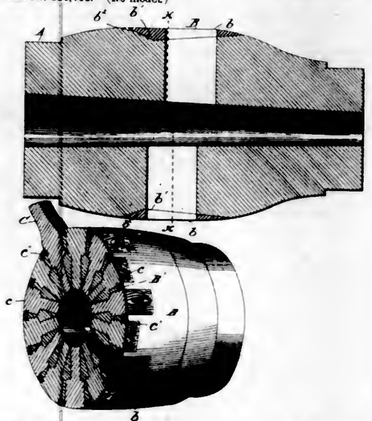
381,890. MACHINE-VISE. GEORGE R. TAYLOR, Birmingham, England. Filed Jan. 4, 1886. Serial No. 187,620. (No model.) Patented in England Apr. 29, 1884, No. 6,964, and Nov. 11, 1884, No. 14,833.



Claim.—1. The combination, in a machine-vise, of ratchet-teeth, as described, the toothed grip-plate S, carrying the screw F, the loose jaw B, (the leg C and bottom part, D, of which are nearly cylindrical, having flats formed on the front and back,) and the inclined plate Z to each jaw, with its springs Q Q, pins P P, and spring working in the recess R, substantially as described.

2. In a machine-vise, the combination, with suitable jaws, of the inclined jaw-plates with their respective springs Q Q, pins P P, and spring working in the recess R, substantially as described, the plates being applied to the jaws, and the said jaws being suitably shaped to receive them, all substantially as described.

381,891. VEHICLE-HUB. MOSES E. TRUE, Batavia, N. Y., assignor to the Batavia Wheel Company, same place. Filed Jan. 3, 1888. Serial No. 259,700. (No model.)

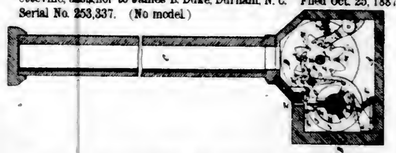


Claim.—1. The wooden hub having a band-seat diametrically smaller at its rear part, in combination with the metallic band, made thicker at one end so as to form an inward taper corresponding with the seat upon the hub, and provided with a mouth flaring outwardly from the contracted part, so that in driving the band the mouth will first encircle the enlarged part of the hub, compressing the same while in the act of being placed thereupon, and afterward allow of the expansion of the same to its normal position, thereby firmly interlocking the parts, substantially as described and herein set forth.

2. The combination of the wooden hub having the peripherally-enlarged mortise for the reception of the full-sized spoke a portion of the depth, the smaller mortise for the reception of the spoke-tenon, the metallic shell band surrounding the hub, having the inwardly-beveled spoke-parting walls, the bevel of which extends in a straight line the entire thickness of the band, and the spoke having beveled notches terminating with a square shoulder upon either side at the base of the notch and adapted to expand after being driven so as to form a square lock underneath the band, substantially as described, and for the purpose set forth.

3. The combination of the metallic band having the inside taper and the inwardly-beveled spoke-parting walls, the wooden hub made conformable with the band, and the notched spoke having the square shoulder for engagement with the inner part of the metal band, all arranged and operating substantially as herein described.

381,892. VENDING APPARATUS. JOSEPH B. UNDERWOOD, Fayetteville, assignor to James B. Duke, Durham, N. C. Filed Oct. 25, 1887. Serial No. 253,337. (No model.)



Claim.—1. The above-described apparatus, comprising a rotary coin-receiving wheel operated from the exterior of the apparatus and arranged to receive and hold the coin during a part of its revolution, a knife-edge arranged in the path of the coin, a locking-lever for holding and releasing the delivery device, also placed in the path of the coin, a delivery device placed beneath the magazine and provided with an arm which is placed in the path of the coin, a pawl for preventing backward movement of the delivery device, and a stop to prevent backward turning of the coin-receiving wheel, substantially as and for the purposes set forth.

2. The combination of a rotary coin-receiving wheel operated from the exterior of the apparatus and arranged to receive and hold

the coin during a part of its revolution, a locking-lever for holding and releasing the delivery device, a delivery device provided with an arm, said locking-lever and said arm being both placed in the path of the coin, a pawl for preventing backward movement of the delivery device, a delivery device placed underneath the magazine, a stop to prevent the backward turning of the coin-receiving wheel, and a stripper to remove the coin from the coin-receiving wheel, substantially as set forth.

3. The combination of a rotary coin-receiving wheel operated from the exterior of the apparatus and arranged to receive and hold the coin during a part of its revolution, a locking-lever for holding and releasing the delivery device, a delivery device provided with an arm, said locking-lever and said arm being both placed in the path of the coin, a pawl for preventing the backward movement of the delivery device, a delivery device placed underneath the magazine, and a stop to prevent the backward turning of the coin-receiving wheel, substantially as set forth.

4. The above described apparatus, comprising a rotary coin-receiving wheel operated from the exterior of the apparatus and arranged to receive and hold the coin during a part of its revolution, a knife-edge arranged in the path of the coin, a locking-lever for holding and releasing the delivery device, a delivery device placed beneath the magazine and provided with an arm which is placed in the path of the coin, and a pawl for preventing backward movement of the delivery device, substantially as set forth.

5. The combination of a rotary coin-receiving wheel operated from the exterior of the apparatus and arranged to receive and hold the coin during a portion of its revolution, a locking-lever for holding and releasing the delivery device, a delivery device provided with an arm, said locking-lever and said arm being both placed in the path of the coin, a pawl for preventing backward movement of the delivery device, a delivery device placed underneath the magazine, and a stripper, substantially as set forth.

6. The combination of a rotary coin-receiving wheel operated from the exterior of the apparatus and arranged to receive and hold the coin during a portion of its rotation, a locking-lever for holding and releasing the delivery device, a delivery device provided with an arm, said locking-lever and said arm being both placed in the path of the coin, and a delivery device placed underneath the magazine, substantially as set forth.

7. The combination of a rotary coin-receiving wheel operated from the outside of the apparatus and arranged to receive and hold the coin during a portion of its revolution, a locking-lever for holding and releasing the delivery device, a delivery device provided with an arm, said locking-lever and said arm being both placed in the path of the coin, a delivery device placed underneath the magazine, and a stop to prevent backward turning of the coin-receiving wheel, substantially as set forth.

8. The combination of a rotary coin-receiving wheel operated from the outside of the apparatus and arranged to receive and hold the coin during a portion of its revolution, a locking-lever for holding and releasing the delivery device, a delivery device provided with an arm, said locking-lever and said arm being both placed in the path of the coin, a delivery device placed underneath the magazine, a stop to prevent backward movement of the coin-receiving wheel, and a locking device to prevent backward movement of the delivery device, substantially as set forth.

9. The combination of a rotary coin-receiving wheel operated from the exterior of the apparatus and arranged to receive and hold the coin during a part of its revolution, a delivery device provided with an arm which is placed in the path of the coin, and a delivery device placed beneath the magazine, substantially as set forth.

10. The combination of a rotary coin-receiving wheel operated from the exterior of the apparatus and arranged to receive and hold the coin during a part of its revolution, a delivery device provided with an arm which is placed in the path of the coin, a delivery device placed beneath the magazine, and a stop to prevent backward turning of the coin-receiving wheel, substantially as set forth.

11. The combination of a rotary coin-receiving wheel operated from the exterior of the apparatus and arranged to receive and hold the coin during a part of its revolution, a delivery device provided with an arm which is placed in the path of the coin, a delivery device placed beneath the magazine, a stop to prevent backward turning of the coin-receiving wheel, and a stripper, substantially as set forth.

12. The combination of a rotary coin-receiving wheel operated from the exterior of the apparatus and arranged to receive and hold the coin during a part of its revolution, a delivery device provided with an arm which is placed in the path of the coin, a delivery device placed beneath the magazine, and a stripper, substantially as set forth.

13. The combination of a rotary coin-receiving wheel operated from the exterior of the apparatus and arranged to receive and hold the coin during a part of its revolution, a delivery device provided with an arm which is placed in the path of the coin, a delivery device placed underneath the magazine, and a stop to prevent the backward movement of the delivery device, substantially as set forth.

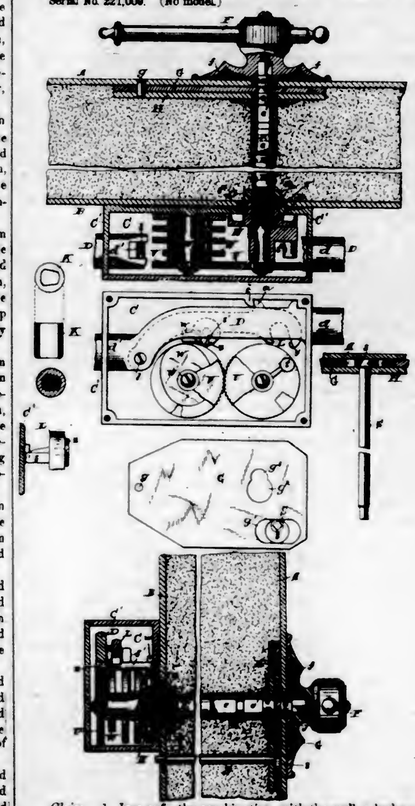
14. The herein-described coin-receiving wheel, having the circumferential groove I, the crosswise grooves J J, and the shoulders K, substantially as set forth.

15. The combination of a rotary coin-receiving wheel operated from the exterior of the case, a rotary delivery device provided with an arm which lies in the path of the coin and engages with it during the revolution of the coin-wheel, a magazine containing the articles to be sold and which feeds them to the delivery device by gravity, and an opening in the case, whereby the said articles may be removed by the purchaser, substantially as set forth.

16. The combination of a rotary coin-receiving wheel with a rotary delivery device provided with an arm adapted to engage with the coin during the revolution of the coin-receiving wheel, and a case provided with an opening, whereby the goods may be removed by the purchaser, substantially as set forth.

17. The combination of a rotary coin-receiving wheel, a case provided with a slot to receive and guide the coin to the coin-receiving wheel, a delivery device provided with an arm against which the coin strikes during its revolution, and a magazine superimposed above the delivery device, substantially as set forth.

381,893. SAFE-LOCK. JAMES WHITE, Cleveland, Ohio, assignor to the National Safe and Lock Company, same place. Filed Dec. 8, 1886. Serial No. 221,009. (No model.)



Claim.—1. In a safe, the combination, with the wall, a lock upon the inside, and a dial upon the outside, of the removable arbor, the arbor-lock which engages with said arbor on lines between the inner and the outer plates of the wall, and means for operating the arbor-lock, arranged substantially as set forth, to be accessible from the inside only of the door, as set forth.

2. In a safe, the combination, with a lock on the inside thereof

and devices on the outside for operating the lock, of a longitudinally-extensible arbor connected to the inside lock and rigidly connected to the lock-actuating devices outside, substantially as described.

3. In a safe, the combination, with the lock upon the inside thereof and the dial upon the outside, of the removable arbor, the lock-plate G, and the lock-operating devices extending to the inside of the safe-door, substantially as described.

4. The combination, with the arbor, of movable plate G, mounted inside of the outer plate of the safe, and detachably engaging with the arbor, and the shaft S, for operating said plate, substantially as set forth.

5. The combination, with the removable arbor, of stationary plate H, movable plate G, engaging with the arbor and both lying inside of the outer plate of the safe, and means for operating the movable plate G from the inside of the door, substantially as set forth.

6. In a safe, the combination, with the arbor made in two parts separable longitudinally, of means, substantially as described, for adjusting longitudinally and fastening one of the said parts independently of the other, substantially as described.

7. In a safe, the combination, with the lock on the inside thereof, and the arbor made in two longitudinally-separable parts, one or both of which is removable, of means, substantially as described, for fastening the inner part of the arbor relatively to the lock, and means, substantially as described, for fastening the outer part longitudinally, as set forth.

8. In a safe, the combination, with the arbor divided transversely on a line between the inner and the outer plates of the wall, of a door-lock on the inside of the door, and an arbor-lock engaging with the outer part of the arbor, and adapted, substantially as set forth, to be operated from the inner side of the door, substantially as described.

9. In a safe, the combination, with the wall and the lock, of an arbor made in separable parts, one or both parts being removable from the wall, and a coupling constructed and arranged, substantially as set forth, to unite the said parts of the arbor only when they are in one predetermined position relatively to each other axially, as described.

10. The combination, with the arbor and the lock, of an adjustable nut, N, secured to and rotating with the arbor and bearing in one direction against a stationary part of the lock, and an adjustable nut, O, bearing in an opposite direction against a stationary part of the lock, substantially as described.

11. In a safe, the combination, with the wall, the lock upon the inside thereof, and the dial on the outside, of the arbor separable transversely into two parts, one of said parts being formed with a substantially circular groove, J, extending around it, a plate, G, adapted to fit into the said recess, whereby the arbor is prevented from longitudinal movement but is allowed to rotate, and means, substantially as described, for operating said plate G, substantially as described.

12. In a safe, the combination, with the wall, the locking mechanism upon the inside thereof, and the dial on the outside, of the arbor separable transversely into an inner part, e, and an outer part, e', the latter being formed with the bearings e^2 e^2, fitted in the wall, the recess at J, between said bearings, and the locking-plate, adapted to fit between the said parts e^2 e^2, substantially as described.

13. In a safe, the combination, with the wall, the lock upon the inside of the door, and the dial upon the outside, of the arbor divided transversely at a point between the inner and the outer plates of the wall, the plate H, secured to the outer plate, A, the arbor-lock mounted between the said plate H and the outer plate, and means, substantially as set forth, for operating the said arbor-lock, substantially as described.

14. In a safe, the combination, with the wall, the lock upon the inside, and the dial upon the outside, of the arbor divided transversely upon a line between the inner and the outer plates of the door, the lock-plate G, the key-shaft S, and means, substantially as described, for uniting the key-shaft with the arbor-lock, as described.

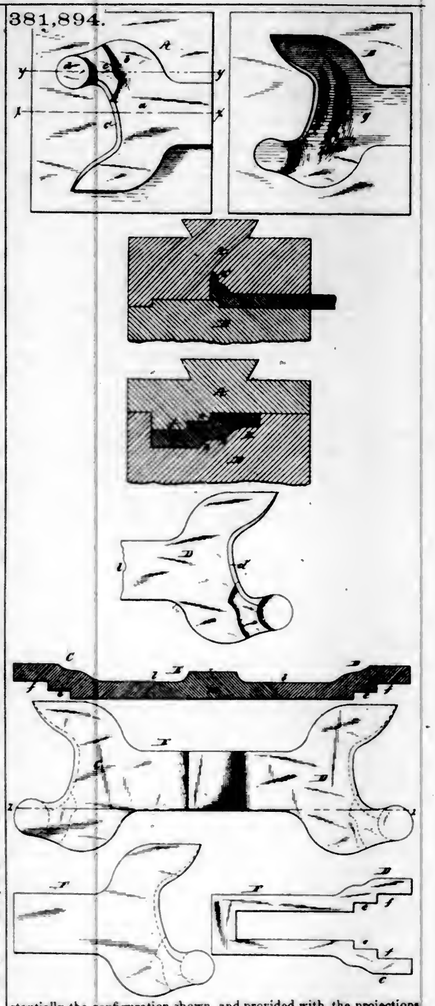
15. In a safe, the combination, with the arbor and the tumbler mechanism, of the bolt, the lever pivoted to the bolt, a stationary guide, w, and a projection carried by the lever to engage with the said guide to hold the lever down, as described.

16. In a safe-lock, the combination, with the arbor, the tumbler mechanism, and the casing which surrounds them and is provided with bearings in its opposite sides for the bolt, of a bolt which is mounted in the said bearings, and is adapted to be projected from either side of the said casing, and the connecting devices which join the bolt to the arbor, substantially as described.

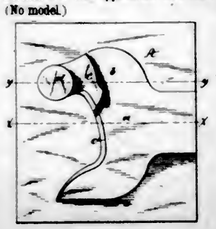
17. In a safe-lock, a sliding bolt having each end constructed to engage with a stationary wall of the safe, said ends lying on different lines longitudinally of the bolt, substantially as set forth.

381,894. **DIE FOR MAKING DRAW-BARS.** JOHN T. WILSON, Pittsburg, Pa., assignor of one-half to the Pittsburgh Forge and Iron Company, same place. Filed Jan. 18, 1888. Serial No. 261,086. (No model.)

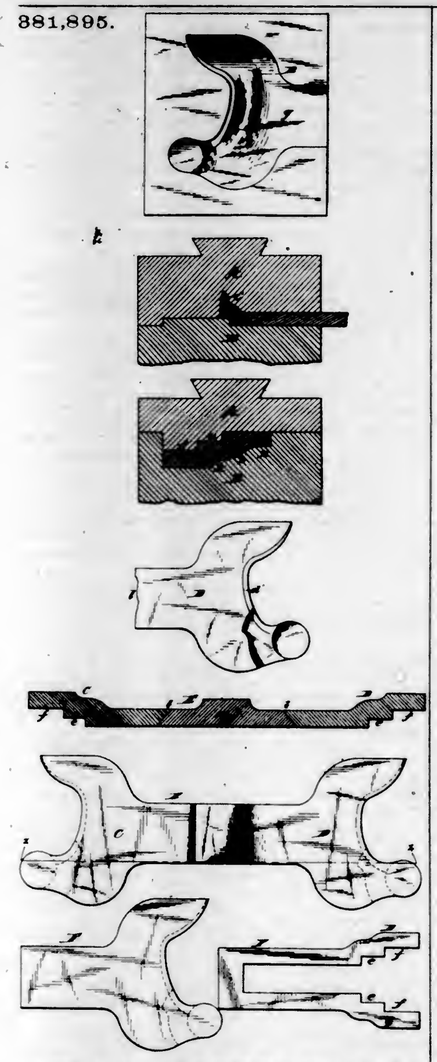
Claim.—The die herein described for manufacturing vertical-hook draw-bar heads, which consists of a male die having a head of substantially the configuration shown, and provided with the projections c d, in combination with a female die having a recess corresponding with the head of the male die, substantially as described.



381,895. **METHOD OF MAKING DRAW-BARS.** JOHN T. WILSON, Pittsburg, Pa., assignor of one-half to the Pittsburgh Forge and Iron Company, same place. Original application filed Jan. 18, 1886, Serial No. 251,086. Divided and this application filed Mar. 24, 1888. Serial No. 268,414. (No model.)



381,895.



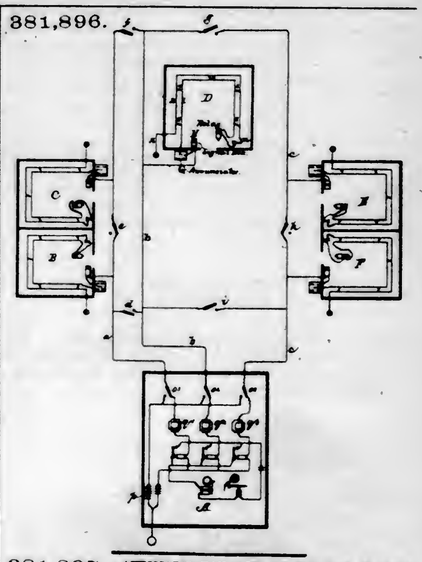
Claim.—1. The method of manufacturing draw-bars herein described, which consists in forging right and left end sections separately to form the head and then welding said sections to a body portion, substantially as set forth.

2. The method of manufacturing draw-bars herein described, which consists in drop-forging right and left end sections to form the head separately and providing them with rabbets e f, and then welding said sections to a body portion, substantially as set forth.

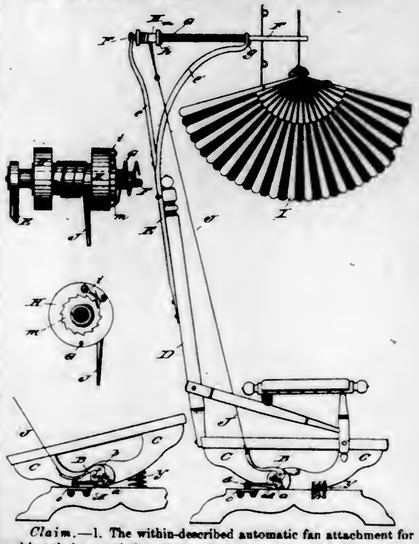
381,896. **AUTOMATIC FIRE-ALARM SYSTEM.** JOHN YOUNG, Chicago, Ill. Filed Apr. 23, 1884. Serial No. 129,066. (No model.)

Claim.—In an automatic fire-alarm system, a sounder of high resistance permanently placed at the terminal of a circuit of a building back of the thermostats, and a key permanently connected with the circuit for closing said circuit through said sounder, whereby a test may be made to determine whether the circuit is complete without operating the signal apparatus included in said circuit.

381,896.



381,897. **AUTOMATIC FAN ATTACHMENT FOR ROCKING-CHAIRS.** MOSES MARCOUX, Springfield, Mass. Filed July 15, 1887. Serial No. 244,364. (No model.)

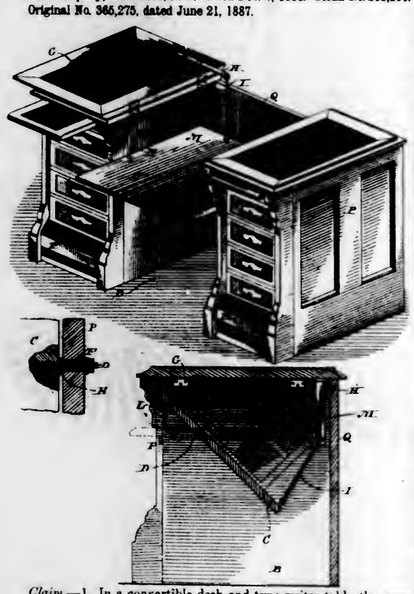


Claim.—1. The within-described automatic fan attachment for rocking-chairs, consisting of a rocker, C, two levers, A B, hinged to the rocker with their shorter arms operatively connected, as shown and described, to cause their longer arms to move in opposition and arranged to have the longer arm of one lever project beyond the rocker-edge and rest upon the rocker bearing-surface, and the longer arm of the other free to have a cord attached thereto, a fan-shaft, F, supported and journaled in a frame or bracket, E, raised from and secured to the chair, a spool, H, upon shaft F, a spring, G, fast at one end to bearing E and at its other to spool H, a cord, J, having one end wound upon the spool and the other fast to the free lever end, and a fan, I, secured to shaft F, all combined and arranged, substantially as shown and described, to cause an oscillation of the fan-rocker to impart an oscillation of the fan.

2. The within-described automatic fan attachment for rocking-chairs, consisting of a rocker, C, two levers, A B, hinged to the side thereof to have their shorter arms engage to cause their longer arms to move to and from each other and arranged to have one lever, A, project beyond the edge of the rocker to rest upon the rocker bearing-surface, and the one B to extend in a position to have a cord from above attached to its free end, a fan-shaft, F, supported and journaled in a frame or bracket, E, raised above and secured to the chair, a spool, H, journaled upon shaft F, a coil-spring, G, upon shaft F, fast at one end to bearing E and having its other end secured to spool H, a pawl, *i*, and ratchet *m*, respectively upon the spool H and shaft F and engaging, as shown and described, a cord, J, wound upon spool H and connecting it with lever B, and a fan, I, upon shaft F, all arranged substantially as shown, and operating to cause an oscillation of the rocker to rotate the fan-shaft.

REISSUES.

10,924. **COMBINED DESK AND TYPE-WRITER CABINET.** WILLIAM H. PORTER, Washington, D. C., assignor to the Porter Drop Cabinet Company, New York, N. Y. Filed Feb. 7, 1888. Serial No. 263,290. Original No. 366,275, dated June 21, 1887.



Claim.—1. In a convertible desk and type-writer table, the combination, to form the body of the cabinet, of the fixed supporting end parts, P P, the fixed back part, Q, connecting the two end parts at the back, and a platform, C, pivoted between the two end parts forward of the part Q, so as to secure them to each other, substantially as set forth.

2. In a convertible desk and type-writer table, the combination of fixed supporting end parts, P P, a fixed back part, Q, connecting the two end parts, a cover in sections, the middle section, G, being hinged to one of the end ones, so as to form an independent desk-top when turned out, and a platform, C, below the hinged-cover section between and pivoted to the fixed end parts, substantially as set forth.

3. In a convertible desk and type-writer table, the combination of fixed supporting end parts, P P, a fixed back part, Q, connecting the two end parts, a cover in sections, the middle section, G, being hinged to one of the end ones, so as to form an independent desk-top when turned out, a platform, C, below the hinged cover-section between and pivoted to the fixed end parts, and flexible mechanism connecting the parts C and G, so that they may be moved simultaneously, substantially as set forth.

4. In a convertible desk and type-writer table, the combination of fixed supporting end parts, P P, a fixed back part, Q, connecting the two end parts, and a platform, C, betweeo and pivoted to the fixed end parts below their tops and projecting out beyond the front of the end parts, substantially as set forth.

5. In a combined desk and type-writer cabinet, the combination, with a desk having its top in sections, the middle one of which is hinged to another, so as to swing to one side, of a platform pivotally secured intermediate its ends below said swinging section, the front end of which is adapted to be raised by turning on its fixed pivot, (without the platform moving bodily toward the rear of the desk,) so as to touch said swinging section when the desk-top is closed, and means, substantially as described, for connecting said platform and said swinging section.

6. In a combined desk and type-writer cabinet, the combination, with a desk having its top in sections, one of which is hinged to another, of a platform pivotally secured below said swinging section, the front end of which is adapted to project in front of the desk when open or in a horizontal position, and means, substantially as described, for connecting said platform and said swinging section.

7. In a combined desk and type-writer cabinet, the combination of a desk the ends of which are entirely disconnected at their front portions and each provided with a hole, a sleeve of non-sound-conducting material within each of said holes, a platform between said ends, a pivot upon each edge or side of said platform and projecting through said sleeves in said holes, firmly securing the ends of the desk to the platform, washers of non-sound-conducting material upon said pivots and between the edges of the platform and the ends of the desk, a cover hinged above said platform, and means, substantially as described, for connecting said cover and platform.

8. In a combined desk and type-writer cabinet, the combination, with a desk having its top in sections, one of which is hinged to swing laterally, of a platform pivotally secured below said section and a jointed bar pivotally secured at its ends to said platform and said swinging section.

9. In a combined desk and type-writer cabinet, the combination, with a desk having its top in sections, one of which is hinged to swing laterally, of a platform pivotally secured below said swinging section, a bar pivotally connected at one end to said swinging section, the opposite end of which projects beyond the hinged edge of said section when the desk is open, and a rod pivotally connected with the end of said bar and with the rear portion of said platform.

10. In a combined desk and type-writer cabinet, the combination of a desk the ends of which are entirely disconnected at their front portions, and having a space between them, a pivoted platform within said space firmly secured at its sides to the said ends, a cover in sections above said platform, and means, substantially as described, for connecting one section of said cover and said platform.

PHOTO-LITH. NORRIS PETERS WASHINGTON D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE SMITH.

Decided April 4, 1888.

1. Section 4896 Revised Statutes construed in connection with the right of the executor or administrator to prosecute the application of a deceased inventor or to file a new application for the invention of the decedent.
2. Should the executor elect to pay a new fee and file a new application for the inventiou of the decedent, instead of continuing the prosecution of the original application, the application so filed by the executor should be entitled to the same status and precedence in order of examination as the application of the decedent. Such application is merely a revival and continuation of the original application, and should receive the same action and consideration which belonged to the original application had death not intervened and arrested the progress of decedent's case.

REQUEST.

Application of Edward L. Smith, administrator of the estate of Luther L. Smith, deceased, filed March 3, 1888, Serial No. 266,039.

Mr. W. W. Swan for the applicant.

HALL, *Commissioner:*

Edward L. Smith, administrator of the estate of Luther L. Smith, deceased, requests the Office to give the same precedence or priority in the order of examination to an application filed by him as administrator that belonged to the original application made for the same invention by Luther L. Smith in his lifetime.

It seems that Luther L. Smith, claiming to be the original inventor of an invention, filed an application therefor in the Office and subsequently died. Action was had upon his application, however, before his death. Thereafter, Edward L. Smith, his administrator, came into the Office and filed an application, as such administrator, for the same invention. The examiner, taking the view that this second application was to be treated in the order of examination as any other original appplication, declined to take it up for consideration until it was reached in its regular order. Petitioner presents the question whether this is the strict and proper practice. Section 4896 of the Revised Statutes is as follows:

When any person, having made any new invention or discovery for which a patent might have been granted, dies before a patent is granted, the right of applying for and obtaining the patent shall devolve on his executor or administrator, in case he shall have died intestate; or if he shall have left a will, disposing of the same, then in trust for his devisees, as in full manner and on the same terms and conditions as the same might have been claimed or enjoyed by him in his lifetime; and when the application is made by such legal representatives, the oath or affirmation required to be made shall be so varied in form that it can be made by them.

This statute does not provide specifically for the revival of the application of the decedent by his executor or administrator in any other way than by the filing of an original application—at least that is a fair inference from the phraseology employed. The language is—

the right of applying for and obtaining the patent shall devolve on his executor or administrator, &c.

It might seem on first consideration that this applied only to a case where the decedent had died without having first made application for a patent himself; but that construction could scarcely prevail, for otherwise there would be no provision of law authorizing patent to issue to an executor when the application had been made by the decedent, so I have no doubt but that the statute is broad enough to cover both cases.

Rule 25 provides:

In case of the death of the inventor, the application may be made by, and the patent will issue to, his executor or administrator. In such case the oath will be made by the executor or administrator.

It seems to be a well-settled practice in the Office that when a decedent has filed his application and his death has occurred before a patent issues the executor may appear, file his letters of administration or executorship, and proceed with the case without filing a new application and paying a new fee. In such case, of course, the application retains its original status in the Office, and is disposed of precisely as if the applicant had not died; but the statutes, the rule, and the practice recognize the other method of continuing the application—that is, of filing a new original application for the same invention and in continuation of the original application.

Both methods are simply revivals of the original application, and I see no reason in the statute, the rule, or the practice why a new application filed under these circumstances should not receive action and consideration in the same order that belonged to the original application, for it is in fact a revival and continuation thereof.

Attention is called to the fact that under section 4897, which provides for the renewal of applications, the practice has been to treat such renewal application as an original, and to give it no precedence whatever; but the statute in express language provides a limitation in declaring that the applicant shall have a right to make an application for a patent for such invention or discovery the same as in the case of an original application. There is no reason that I am aware of why an applicant who has allowed his case to forfeit after the Office has examined and passed it to issue should be entitled to any especial precedence or

consideration. In the case of an executor, however, it is different; death has intervened and arrested the progress of the decedent's application; the executor is his representative and is acting in continuation of the original application. If he sees proper to come into the Office and pay a new fee for the purpose of reviving the old application, I think he should be entitled to the same consideration as if he had pursued the other course, and that his new application should be placed in the same status in the Office as the application of decedent.

Action therefore having been had upon the original application before the decedent's death, I direct that the application of the administrator shall receive consideration in the same order which belonged to the original.

EX PARTE MAXIM.

Decided April 3, 1888.

1. When division of an application has been required and an amendment is presented which does not relieve the application from the objection raised, but simply reduces the number of the inventions, the examiner should refuse to admit it.
2. The only effect of such amendment, when admitted, is to narrow or limit the right of applicant in making election of the invention he desires to prosecute in his pending application.
3. The objection that applicant has elected and cannot be permitted to further amend his case raises the question of what constitutes an election under these circumstances. *Held* that such action does not put the applicant in the status of having made a final election from which he may not be allowed to recede, and applicant cannot be considered to have made a final election until he shall have complied with the requirement as to division and the Office approves and accepts his action.

ON petition.

CARTRIDGES.

Application of Hiram S. Maxim filed October 11, 1887. No. 252,079.

STATEMENT OF THE CASE.

The application when filed covered several distinct and separate inventions. Applicant was permitted to enter an amendment which limited the number of the inventions to two—viz., a cartridge and a projectile. The requirement for division was repeated, and applicant presented an amendment containing a claim for the method of making the cartridge. The examiner refused to enter this amendment, holding that the application must be confined to one of the two inventions presented in applicant's first amendment.

Messrs. Duncan, Curtis & Page for the applicant.

HALL, *Commissioner:*

This application involves a question of division. When originally filed it contained several distinct and separate inventions. As stated in Office letter of October 17, 1887, there were four forms of cartridges, illustrated by figures 1, 9, 10, and 15 of the drawings; two alleged methods of manufacturing cartridge-cases, covered by claims 1 and 3; a projectile, covered by claim 4; dies or forging-plates, covered by claim 5; a method of tempering projectiles, covered by claim 6, and five or six other various inventions. Division of the application was required, and on the 9th of January, 1888, an amended specification was filed in which the applicant limited the application to two of the inventions, as follows: A cartridge, covered by claims 1 and 2, and a form of projectile, covered by claims 3 and 4. It is to be noted here that the cartridge covered by claims 1 and 2 was not claimed as a new article, but as an article which was new by reason of the manner or method of its construction. This amended specification was admitted, notwithstanding the fact that it covered two distinct inventions, and in an Office letter of January 14, 1888, division was again required, as between the two inventions thus embraced in the amended specification of January 9, 1888, and applicant was informed that he must limit the pending claims to one of those two inventions. In this same letter applicant's attention was called to the patents of Wood, No. 132,227, dated October 15, 1872, and Ganthey, No. 159,665, dated February 9, 1875, for cartridges, as disclosing in part the state of the art. This, the examiner says, was done in order that applicant might with better understanding divide the case.

It is clear from an examination of the amended specification of January 9, 1888, that the applicant did not contemplate specifically asking for a patent upon a process of making a cartridge or projectile, but limited his claim to a cartridge and a projectile made by the respective methods described. The examiner again required division, and applicant presented another amended specification, dated January 27, 1888, substituting two claims for the former four, covering the method of making the cartridge. This amendment the examiner refused to entertain, stating that action could not be taken upon the merits until the application had been confined to one of the two inventions above referred to in the four claims presented in the amendment of January 9, 1888. From this action petition is taken to the Commissioner.

When applicant was first called upon to make division, he saw proper to eliminate from his application everything which related to the figures of the drawings, except figures 1, 2, and 3, the latter two of which related to the cartridge and the former to the projectile; but the specification still contained a description of the cartridge and the projectile as articles of manufacture, and also the process or method by which each, respectively, was made, and which gave to each its quality, if any, of novelty and patentability. When the amendment of January 9, 1888, came into the Office in response to the requirement of division, the examiner, in my judgment, should have refused to admit it, for the reason that the original requirement was that the application should be reduced to a claim for a single invention, and to allow this amendment left the case in no better condition than the original application, except that the number of inventions contained in it was not so great. Had this course been pursued, the Office would have been relieved of all the difficulty which now presents itself in the present case. Instead of doing that, however, the amendment was received, and its effect was to narrow or limit the right of the applicant to make his election, because it practically disposed of everything in the application except the four claims presented in the amendment. But it is claimed by the examiner, and also by the majority of the Committee on Division, that when the applicant filed his amendment of January 27, 1888, he had himself previously elected to confine his application to either a cartridge-case or a projectile, as claimed in the four claims of the amendment of January 9, and that, having so elected, he must now be limited to them, and not be permitted by any amendment to claim the process or method by which the cartridge-case or projectile was constructed. This raises the question of what constitutes an election under such circumstances. There has been no examination of any claim in this case for the purpose of final action or rejection. It is stated by the examiner himself that only a partial examination was made, and that not for the purpose of determining whether or not the claims should be rejected, but simply to enable applicant to act with greater intelligence in making the division. I am satisfied that such action does not put the applicant in the status of having made a final election from which he may not be allowed to recede. (See *Ex parte Heaton*, 15 O. G., 1044; *Preston*, 17 O. G., 853.) I am strengthened in this conclusion by the fact that the examiner was not called upon to furnish the references or make the partial examination which he did, and that the proper course for him to have pursued was to have refused from the beginning to admit any amendment which contained claims for more than one invention. If that course had been pursued and the applicant had filed his amendment, limiting his application to a single invention, then there would have followed an examination which would have disposed of the case and been conclusive upon the applicant as an election, and it would not have been possible for him subsequently to amend, bring in another one of the original inventions, and ask a second examination upon that, for such a course would bring the application into the condition stated by the examiner and the Committee on Division, enabling a party to get several examinations of different inventions for one fee.

An applicant ought not to be held to have made a final election, which places his action beyond recall, until he shall have complied with the requirement as to division and the Office approves and accepts his action. Such approval and acceptance can only be properly made where the applicant's election limits his application to a single invention and puts it in condition for examination. Prior to this no examination can be properly made, and consequently no election. I think, therefore, that applicant cannot be deemed to have made an election to such an extent as to preclude his right to vacate and make an amendment such as is presented in this case. I reverse the action of the examiner, and direct that he shall entertain the amendment and proceed with its consideration. This order, however, directing the examiner to admit the amendment of January 27, 1888, is predicated upon the supposition that the two process claims substituted for the four former claims are for the same invention or sub-invention. If the examiner is satisfied that the last amendment covers two distinct inventions, he shall refuse to admit the same, and repeat his requirement that applicant must present an application covering but a single invention, and until that is done proceed no further.

EX PARTE JOHNSON.

Decided April 5, 1888.

STATEMENT OF THE CASE.

Applicant has been required to amend his claim by erasing the words "or equivalents." Acquiescing in such requirement, applicant seeks to amend by inserting a description of a device asserted to be the equivalent of that originally described and shown. The examiner refused to enter the amendment, and applicant appeals to the Commissioner. *Held* that the action of the examiner was correct for the following reasons:

1. The proposed amendment did not cure any defect in the original specification, for the invention therein described was complete and operative. It added nothing which had been omitted, nor omitted anything which ought not to have been originally inserted.
2. The proposed amendment did not explain any matters set forth originally. It simply described in detail devices not originally disclosed, and broadened the scope of the claims which contained the parts of the newly-described devices which are said to be the equivalents of those originally set forth but from which they differ in construction.
3. The proposed amendment involved *new matter*, and would compel the Office to pass upon the merits of each newly-introduced device in order to determine the question of equivalency.
4. The proposed amendment would have the effect of permitting applicant to add new and different species—would be analogous to permitting an applicant who originally claimed a genus and one species to amend by adding other species which he did not claim or show, although they might to some extent illustrate the nature and character of the invention.
5. The admission of such amendments would permit an applicant to make a picture-gallery of his application by introducing all the known forms of what might be equivalents, and thus secure an examination of each device.

ON petition.

PRINTING-PRESSES.

Application of Henry Johnson filed August 10, 1886, No. 210,508.

Mr. James A. Skilton for the applicant.

HALL, *Commissioner:*

This application relates to an ink-distributing fountain for printing-presses, and after describing certain features of the invention in his original specification applicant employs the words "or equivalents" in some of the claims. The examiner required these words to be erased, and upon appeal to the Commissioner the decision of the examiner was affirmed. Applicant now presents an amendment striking out the words "or its equivalents" from claims 19, 29, and 30 and inserting a description of a differently-constructed device which, it is asserted, is the equivalent of the device which was originally described and shown in the specification and drawings. The examiner has refused to enter this amendment, and petition is taken to the Commissioner. It is to be noted that the proposed amendment does not cure any of the defects in the original specification, for a complete and operative invention is therein described. Neither does the amendment explain any matters set forth originally; but it simply describes in detail devices which were not originally disclosed, and tends to broaden the scope of those claims which contain the parts of the newly-described devices which are said to be the equivalents of those orignally set forth, but from which they differ in construction. It

is very clear to my mind that this amendment cannot be permitted. It constitutes a clear departure, because it introduces new matter. It is well known that an applicant may present one claim for a genus and another for a species, and he may illustrate any number of other species, but his specific claim will be limited to one species; but after he has come into the Office with a specification and drawing illustrating unclaimed species it would be a departure from the original invention to permit him to add new and different species not originally described. If he were to claim originally a genus and single species and illustrate but that one, he would not be permitted to amend by adding other species which he did not claim, although the addition of those other species might be said to illustrate to some extent the nature and character of the invention. Much less can this be permitted in the matter of equivalents. Such action would not only constitute a departure in this sense, but would compel the Office to pass upon the merits of each newly-introduced device claimed as an equivalent. The first question would be, Is it an equivalent? and the answer involves an examination of the new device upon its merits, and that, too, without any compensation from the applicant. It in effect involves a question of interference, because if the two devices are not equivalent, of course the second one should not be admitted at all, and an applicant might be permitted in this way to introduce an innumerable variety of devices which he regarded as equivalents, and the Office would be compelled to pass upon their merits as such, and allow them to remain if equivalent and refuse them if they were not, for the applicant himself does not contend that they ought to be admitted if they are not equivalents. Not only this, but an applicant could make a picture gallery of his application by introducing all the known forms of what might be equivalents.

The applicant says:

> Nothing in the language of the Commissioner's decision in *ex parte Snyder* (22 O. G., 1975) or in *ex parte Crandall* (35 O. G., 625) can be considered as interpreting Rule 60 as preventing the filing of these amendments, since they contain descriptions of equivalents. In neither one of those cases was the proposed amendment a description of equivalent devices or methods of operation. On the contrary, in each the applicant attempted to change the construction and operation of an invention which had been fully described.

This is a clear concession that the attempt to introduce new equivalent forms of construction is not an amendment. No defect is cured; nothing is added which had been omitted, nor omitted which ought not to have been originally inserted. It introduces new matter, not in respect to the original device or construction, for that is already perfect and complete, but new matter in the direction of new and different inventions in the same field of art. It is none the less new matter because it may be in fact an equivalent of that originally shown, for, as just stated, it was not present originally, and to admit it would compel the Office to examine the case in respect to determining the question of equivalency. This the Office cannot be required to do. An applicant can take a patent for the precise invention shown and claimed; but the question of equivalency can only arise in matters of interference or infringement and must be determined in such proceedings.

I think the action of the examiner was correct in refusing to accept this amendment, and it is affirmed.

BOULTON *v.* ILLINGWORTH.

Decided April 3, 1888.

1. It is well settled that what an inventor did in a foreign country while a citizen of such country cannot in any way be used to antedate an invention made in the United States, and evidence tending to establish such facts would be wholly incompetent. Consequently a motion to amend a preliminary statement to set back the dates of invention and to allege disclosure and reduction to practice in such foreign country should have been denied.
2. A party to an interference may have the right to prove what he did as an inventor, although living in a foreign country, for the purpose of showing his *knowledge*, but *not* for the purpose of establishing facts of invention as such. Such evidence is competent and admissible without the facts being set up in the preliminary statement.

APPEAL from Examiner of Interferences.

METHOD OF AND MEANS FOR CASTING INGOTS.

Application of James B. D. Boulton filed March 25, 1887, No. 232,362. Application of John Illingworth filed June 10, 1887, No. 240,875.

Messrs. Crane & Miller for Boulton.
Messrs. Drake & Co. for Illingworth.

HALL, *Commissioner:*

This appeal is taken by Illingworth from the action of the Examiner of Interferences permitting Boulton to amend his preliminary statement. In this motion, which was filed on the 11th of January, 1888, Boulton seeks to set back the date of his invention and disclosure from the month of March, 1880, to November, 1868, and to set forth a disclosure of the same to one Arthur Williams and others, and also to allege that applicant immediately put the invention into practical and successful operation, &c. Boulton's preliminary statement shows very distinctly that he was a citizen or resident of Great Britain at and prior to the 1st of June, 1881, and that everything contained in this amendment, which he seeks to put into his statement, in the way of conception, disclosure, or reduction to practice, occurred in Great Britain while he was a citizen or resident of that country. It is well settled that such acts of invention in a foreign country cannot in any way be used to antedate an invention made in the United States, and that the evidence to establish such facts would be wholly incompetent. Consequently, it was improper, in my judgment, for the Examiner of Interferences to permit such an amendment to be made. This view of the case is supported by the decision of Mr. Commissioner Marble in *Bell* v. *Brooks*, (1881, C. D., 4; 19 O. G., 290,) in which the authorities are collated and the subject is fully considered.

It sometimes happens that an applicant who is a party to an interference may have the right to prove what he did as an inventor, although living in a foreign country, for the purpose of showing his knowledge, but not for the purpose of establishing facts of invention as such. This I recently held in the case of *Thomas* v. *Murray*, (MSS. vol. 35, 480.) But such evidence will be entirely competent and admissible for such purpose without any statement of the facts being set up in the preliminary statement.

I therefore reverse the action of the Examiner of Interferences, and direct that the proposed amendment be not admitted.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

HOSKIN *et al. v.* FISHER *et al.*

Decided March 19, 1888.

1. FISHER—HYDRAULIC MINING APPARATUS.
   Reissued Letters Patent No. 8,876, granted to Frank H. Fisher, September 2, 1879, for an improvement in hydraulic-mining apparatus, adjudged to be invalid.
2. PRACTICE—WHAT IS INCLUDED IN THE RECORD.
   A stipulation in the suit included the evidence taken in another suit, and a certified copy of Fisher's original patent appearing in the record under the certificate of the clerk of the circuit court that it was a part of the record and of the proceedings in the cause, although there was no separate memorandum in the record of introduction of the original patent in evidence, this Court assumes the same to be properly in the case.
3. NO PRESUMPTION OF LAW AS TO THE SIMILARITY OF TWO REISSUES, ONE OF WHICH IS NOT IN EVIDENCE.
   The reissue in suit being a second reissue, and the first reissue not being found in the record, no presumption of law arises that the first and the second reissues were for the same invention with similar second and third claims. To have the advantage of the first reissue it should have been put in evidence.
4. THE COMPARISON CONFINED TO THE REISSUE IN SUIT AND THE ORIGINAL PATENT.
   The original patent and the second reissue being properly before the Court, a comparison of the two may be made to determine the validity of the second reissue.
5. INEXCUSABLE DELAY IN APPLYING FOR REISSUE RENDERS THE SAME INVALID.
   The delay in filing the application for the reissue in suit not accounted for nor shown to be reasonable renders such reissue invalid.
6. INVENTIONS NOT ASSERTED IN OBTAINING ORIGINAL PATENT ABANDONED OR WAIVED.
   Where it does not appear that any attempt had been made to secure by the original patent the inventions covered by the new claims in the reissue, those inventions must be regarded as having been waived or abandoned so far as the reissue is concerned.
7. PRACTICE—WHEN RECORD IS INCOMPLETE.
   Where the contention of the plaintiff was that the inventor only knew of the invalidity of his first reissue by the result in an earlier suit upon the same, and did not have evidence of these facts in the record, he should have brought by *certiorari* before this Court such parts of the record as the defendants had omitted to bring before us.

APPEAL from the Circuit Court of the United States for the District of California.

Mr. M. A. Wheaton for the appellants.
Mr. John H. Miller and *Mr. J. P. Langhorne* for the appellees.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This a suit in equity, brought in the Circuit Court of the United States for the District of California, by Frank H. Fisher and Joshua Hendy against Richard Hoskin and others, for the infringement of Reissued Letters Patent No. 8,876, granted to Frank H. Fisher, September 2, 1879, on an application filed March 29, 1879, for an improvement in hydraulic-mining apparatus, the original patent, No. 110,222, having been granted to Fisher, December 20, 1870. This reissue was a second reissue, and it appears that there was a first reissue, No. 5,193, dated December 17, 1872, granted on the surrender of the original patent, and that the second reissue was granted on the surrender of the first reissue.

The bill of complaint sets forth the fact of the surrender of the original patent and the granting of the first reissue, and that the first reissued patent is "ready in court to be produced" by the plaintiffs, "or a duly-authenticated copy thereof." The bill also sets forth that the second reissue—

> was issued for the same invention as that described in the original letters patent.

There was only one claim in the original patent, as follows:

> The swivel-jointed nozzle and pipes A B D E, combined, as described, with the lever F, working through slotted post *f*, strap *i*, lever *c*, and pawl and ratchet *j k*, for the purpose specified.

The second reissue contains three claims, as follows:

> 1. The swivel-jointed sections A B and ball-and-socket-jointed sections D E, combined, as described, with the lever F, working through slotted posts *f*, strap *i*, lever C, and pawl and ratchet *j K*, for the purpose set forth.
> 2. A ball-and-socket joint for connecting the discharge-pipe of a hydraulic mining apparatus with the end of a swivel-section, B, substantially as above described.
> 3. The discharge-pipe E, having a semi-cylindrical or ball-shaped enlargement at its base, in combination with a corresponding cup-shaped socket, D, on the end of the horizontally-swiveling section B, substantially as and for the purpose described.

The claim of the original patent and the first claim of the second reissue are substantially alike. It is not alleged that the defendants have infringed the first claim of the second reissue, or that their apparatus would have infringed the claim of the original patent. The contention is that they have infringed claims 2 and 3 of the second reissue.

The answer sets up that the second reissue contains new matter which was not contained in the original patent, and which describes and claims that of which Fisher "was not the inventor;" that Fisher did not discover or invent or make any hydraulic machine which machine or combination included either a ball-and-socket joint, or ball-and-socket-jointed sections, or a discharge-pipe having a ball-shaped enlargement at its base; that his original patent did not contain any description of either of those devices, and did not claim them in any combination or otherwise; that all that is said in the second reissue about a ball-and-socket-jointed section, and ball-and-socket joints, and a discharge-pipe with a ball-shaped enlargement at its base is new matter, which was not contained in the original patent, and was inserted in the second reissue by Fisher fraudulently and for the sake of deceiving and misleading the public, he well knowing that no part of it was his invention, and also knowing that it was not contained in the original patent, and that by reason of such fraudulent insertion of such new matter the second reissue is void.

Issue is joined and proofs were taken on both sides, and on the 17th of March, 1882, the case having been heard by the circuit judge, an interlocutory decree was entered in favor of the plaintiffs, adjudging the second reissue to be valid, and that the defendants had infringed upon the second and third claims of it, and awarding a decree to the plaintiffs for profits and damages, and ordering a reference to a master to ascertain them, and a perpetual injunction in regard to the second and third claims. Afterward a rehearing was ordered by the circuit judge to be had upon the same testimony. The rehearing was had before the circuit justice and the circuit judge, and on the 4th

of September, 1882, an interlocutory decree was entered in the same terms as the first interlocutory decree. On the report of the master a final decree was entered March 7, 1884, awarding to the plaintiffs a sum of money as profits derived by the defendants from the infringement.

It is to be gathered from the record that Fisher had at some time brought a suit against one or both of the present defendants named Craig for the infringement of the first reissue, and at the commencement of the taking of evidence on the part of the plaintiffs in the present suit the following stipulation is found entered on the record:

It is stipulated and agreed by and between the counsel for the respective parties herein that the evidence taken and on file in this court in the case of *Fisher* v. *Craig*, No. 1,144, shall be considered in evidence in this case, reserving, however, to each party the right to introduce such additional evidence as they may desire. It is further agreed that in case any exhibits introduced in evidence in said case of *Fisher* v. *Craig* shall be missing from the files the same may be supplied, each party supplying his own exhibits.

It does not appear by the record to what extent the evidence taken and on file in the same court in the case of *Fisher* v. *Craig*, thus referred to, was used on the hearing of the present case. There is found in the record a paper, marked "Exhibit No. 5," being a certified copy from the Patent Office, certified March 8, 1873, of the original patent granted to Fisher, with its specification and drawings. There is no separate memorandum in the record of the introduction of this original patent in evidence; but, as it is found in the record, under a certificate of the clerk of the circuit court that it is a part of the record and of the proceedings in the cause, we must accept it as such, and, if necessary, assume it to have been a part of the evidence taken and on file in the case of *Fisher* v. *Craig* and covered by the stipulation above referred to. That stipulation was to the effect that the evidence in *Fisher* v. *Craig* should "be considered in evidence in this case."

The first reissue is not found in the record. The plaintiffs do not appear to have put it in evidence, although the bill avers that it is ready in court to be produced by them, or a duly-authenticated copy of it. Nor does it appear that the defendants put it in evidence, although, as the suit of *Fisher* v. *Craig* was founded upon it, it is to be inferred that it must have been part of the evidence taken and on file in that case, and which, by the stipulation, was to be considered in evidence in this case. Nevertheless neither party has brought it before us.

The plaintiffs contend that in order to determine the validity of the second reissue that must be compared with the first reissue, on the surrender of which it was granted; that in the absence of the first reissue no such comparison can be made; that therefore it must be presumed that the first reissue and the second reissue were both for the same invention, and that it must also be presumed that the second and third claims of the second reissue were contained in the first reissue. But we are of opinion that, the original patent and the second reissue being properly before us, we have a right to compare them with each other, and that upon such comparison the question of the validity of the second reissue must be determined.

Under the proffer in the bill of complaint it was for the plaintiffs to introduce the first reissue in evidence, and, if they desired to show an excuse for the delay of more than eight years and three months after the granting of the original patent in applying for the second reissue, by showing that the first reissue, granted a little less than two years after the date of the original patent, contained, substantially, claims 2 and 3 of the second reissue, they should have affirmatively made good that excuse by themselves introducing the first reissue in evidence, or bringing it before us in the record as a part of the evidence taken and on file in the case of *Fisher* v. *Craig*.

Under the allegations contained in the answer, that the original patent did not claim the devices covered by the second and third claims of the second reissue, and that said second and third claims are new matter, not contained in the original patent, and that the second reissue is void by reason of such new matter, the question is fairly raised, on the face of the original patent and the second reissue, as to the effect of the delay of more than eight years and three months after the date of the original patent in applying for the second reissue, the case standing, for the purpose of such comparison, as if there never had been any first reissue.

In the case of *Wollensak* v. *Reiher* (115 U. S., 96) the following propositions were laid down by this Court: (1) The question whether delay in applying for a reissue of a patent has been reasonable or unreasonable is a question of law for the determination of the Court. (2) The action of the Patent Office in granting a reissue and deciding that from special circumstances shown it appeared that the applicant had not been guilty of laches in applying for it is not sufficient to explain a delay in the application which would otherwise appear unreasonable and to constitute laches. (3) Where a reissue expands the claims of the original patent and it appears that there was a delay of two years or more in applying for it, the delay invalidates the reissue, unless accounted for and shown to be reasonable. These principles are applicable to the present case, and require that the decree of the circuit court should be reversed. The delay is not accounted for by the plaintiffs, nor shown to be reasonable.

The descriptive parts of the specifications of the original patent and the second reissue are substantially alike, and the drawings of the two are the same; but claims 2 and 3 of the second reissue are not found in the original patent. The claim in that patent to the swivel-jointed nozzle and pipes A B D E, combined with the other parts of the machine, and to nothing else, was, under the decisions of this Court, an abandonment and dedication to the public of sub-combinations less than the whole combination, after an unexplained delay such as that in the present case. The second and third claims of the second reissue are claims to such sub-combinations. It was not indicated in the specification of the original patent that Fisher considered his invention as consisting in anything less than a combination of all the elements embraced in the combination claimed in that patent.

In the recent case of *Parker & Whipple Co.* v. *Yale Clock Co.* (123 U. S., 87) it was held that what was suggested or indicated in the original specification, drawings, or Patent Office model is not to be considered as a part of the invention intended to have been covered by the original patent, unless it can be seen from a comparison of the original and the reissued patents that the invention which the original patent was intended to cover embraced the things thus suggested or indicated in the original specification, drawings, or Patent Office model, and unless the original specification indicated that those things were embraced in the invention intended to have been secured by the original patent, and that where it did not appear that any attempt had been made to secure by the original patent the inventions covered by the new claims in the reissue those inventions must be regarded as having been abandoned or waived so far as the reissued was concerned.

The plaintiffs contend that it appears from the testimony of Fisher that it was the result of the suit of *Fisher* v. *Craig*, brought on the first reissue, which convinced him that that reissue was inoperative, and that he took out the second reissue to remedy the defect in the first, and that the delay in taking out the second reissue is explained by the fact that the suit on the first reissue was pending. But we have not before us the proceedings in the suit of *Fisher* v. *Craig* to such an extent as to be able to form any intelligent judgment upon the question as to how far the proceedings in that suit bear upon the question of the delay in taking out the second reissue. If the plaintiffs desired to avail themselves of those proceedings to show such excuse, it was their duty to have brought them before us if they were a part of the evidence in this case under the stipulation above referred to. Although the defendants did not incorporate them in the record, and although the clerk of the court below, in making his return to this Court, certifies that what is contained in the transcript is a "full, true, and correct copy of the record (excepting models) and of all proceedings in the above and therein entitled cause, and that the same together constitute the transcript on appeal to the Supreme Court of the United States in said cause," such certificate being entitled in the present cause, it was perfectly competent for the plaintiffs to have brought before this Court, and it was their duty to have done so, by *certiorari*, any necessary parts of the record which the defendants had omitted to bring before us.

The decree of the circuit court is reversed, and the case is remanded to the Circuit Court for the Northern District of California, with a direction to dismiss the bill, with costs.

DECISIONS OF STATE COURTS.

Philadelphia Court of Common Pleas No. 3.

WILSON v. KEELY.

Decided March 16, 1888.

1. In a proceeding under a bill in equity alleging the assignment of an invention to the complainant and the identity of said invention with an invention alleged by the defendant to have been subsequently made by him and not assigned, and also alleging the consequent ownership by the complainant of both inventions, apparatus embodying both of said inventions being in possession of the defendant and inaccessible to the complainant, the equities of the bill resting upon an affidavit of the complainant, and the allegations of the complainant's bill and affidavit being denied by the counter-affidavit of the defendant, a court in equity will conclude that the alleged *prima facie* rights of the complainant have been sufficiently established to support a reasonable expectation that an examination of the machines alleged to embody said inventions will aid the administration of justice. In such case a court in equity has the inherent power, on motion of the complainant, to grant him an order of inspection of the apparatus in possession of the defendant which is alleged to embody the inventions in controversy, to the end that the complainant may be enabled to adduce evidence in support of the allegations of his bill.

2. Where an invention was assigned to the complainant in the year 1869, and shortly thereafter the defendant alleged to the complainant that the embodiment of it (said invention) in a working machine proved it to be impracticable and unsatisfactory, and where the complainant, by reason of the representations of the defendant, was led to believe that said invention had been abandoned and thrown aside, and, relying upon said representations, rested for a period of nineteen years before asserting his rights in and to said invention, having only a short time before asserting said rights become aware of the fact that said assigned invention had not been abandoned, but that it was in fact the same in principle and mode of operation as an invention at that time alleged by the defendant to be a practical one, a court in equity will consider that the complainant had a right to rely on the statements of the defendant, and that in such a case no laches could be attributed to him.

3. In a case upon the facts above stated the defendant's denials of the allegations of complainant's bill are insufficient to defeat the equities of the bill or to avoid the complainant's *prima facie* case. To work such result it is necessary for the defendant to fully disclose to the court such facts as will advise it of the non-identity of the invention assigned with the later invention, against which the complainant's bill is directed.

Mr. R. E. Shapley, *Mr. A. S. L. Shields*, and *Messrs. Strawbridge & Taylor* for the plaintiff.

Mr. J. J. Murphy and *Mr. C. B. Collier* for the defendant.

FINLETTER, *J.*:

The defendant has demurred to the plaintiff's bill because he has not described the machine with sufficient accuracy and has slept too long upon his rights. By the demurrer all the facts alleged in the bill are admitted.

On the 14th day of August, 1869, the defendant assigned to the plaintiff—

one-half interest in a certain principle or machine known as a "reacting rotary machine," being an independent motor, or self-acting, having a revolving globe and other appliances.

From the assignment of August 31, 1869, it appears that this machine had become the—

reacting rotary motor, said machine being independent of any outside appliances to produce the motion and power, viz: a revolving globe with the necessary connections and appliances, said globe being the center for the dispensation of said motion and power and where all the actual power is produced, dependent only upon itself for this production and reaction, (unlimited.)

Whatever this may be called, it is evident that the idea conveyed is a new principle or machine by which motion unlimited is produced, dependent upon itself for this production and reaction. We have therefore this principle of unlimited self-creating and self-reproducing motion, and also the machine by which these marvelous results are produced, whereby it may be known and made the subject of a decree. We have, moreover, the averments of the bill that the Keely motor in construction, principle, and mode of operation is the same as the motor assigned to plaintiff in 1869. The identity of the principle and machine assigned with what is known as the "Keely motor" is thus established.

If the plaintiff has erred in his statements, it may

be attributable to the fact that the defendant has prevented him from having an examination of the Keely motor. We are, however, compelled from admitted facts to consider so far as this demurrer is concerned that the machines in principle, construction, and mode of operation are identical.

As to the laches of the plaintiff, we have only to say that he had a right to rely upon the statement of the defendant that the machine had been abandoned. Ever since he believed otherwise he has continuously asserted his right.

It will be understood that in overruling the demurrer we have only decided that it presents no bar to the adjudication of the plaintiff's complaint. The defendant has leave to answer and defend if he thinks proper, and then we will define the rights of the parties.

The motions for inspection and for dissolving the special injunction will be considered upon the bill and affidavits.

We have no doubt of our authority if the necessity for its use arises. It is an inherent power of a court of equity and may be necessary to determine and enforce the rights of suitors. It is, however, an extraordinary power, and should be exercised only when all other means fail, and then with extreme caution. Inspection will not be allowed to enable parties to fish for evidence. There must be *prima facie* right established, with a reasonable expectation that the examination will aid the administration of justice. There can be no doubt that the plaintiff has presented such a case, and unless the defendant has given evidence sufficient to induce us to consider it without merit, or such as to enable us to determine the contested question, we should make the order.

The defendant claims that the machine of 1869 was abandoned, and that the Keely motor is entirely a new and distinct machine, operated by a new and different principle. If this proposition be established, then there should not be an inspection and the special injunction should be dissolved. This requires an examination of the affidavits.

It will be observed that the assignments to plaintiff by defendant were of a principle and machine, self-acting and reacting, independent of any outside appliances to produce motion and power, dependent only on itself for this production and reaction, unlimited. This principle gave character to the machine and made it valuable. We have no information as to the materials used to produce the results.

The Keely motor, if the proofs exhibited are to be relied upon, produces immense power, and the means used are a little air and water. It has also the self-creating reacting power. It would therefore seem to have a similarity with the machine of 1869.

It is the principle of a machine and its results which give character to it, and not its physical conditions. The principle of steam as a motive power is the same, no matter what the form of the machine may be in which or by which it is produced. It is still a steam-engine. And so with electricity or anything from which power is produced.

It is obvious that in this inquiry the most satisfactory testimony would be that of witnesses who have seen both machines and understand their construction, the means used, and the principle of their operation. The evidence of all others must, in its nature, be useless or misleading. It is enough to say in this connection that we cannot regard as satisfactory any of the affidavits presented by the defendant except his own. He says that his invention, termed the "Keely motor," is based on the discovery of a scientific fact made long after he ceased to have any business relation with the complainant, and that the said discovery and the apparatus in which it has from time to time been embodied has not the remotest similitude to or connection with the invention referred to in complainant's bill or the assignments thereto annexed, and that the same was not the outgrowth of any experiments made by the deponent at any time during his association with the defendant, and that the complainant never contributed a dollar directly or indirectly connected therewith. This is a full and complete denial of the plaintiff's claim and might be conclusive. The effect, however, which should be given to evidence may depend upon not only what is averred but also upon what is unsaid.

The defendant has in no way stated what the principle and machine were which he assigned to plaintiff. He is the only one who could give any information upon this subject and enable us to judge correctly between the contradictory statements of the parties. This information would either corroborate him or corroborate the plaintiff. He has withheld it, and he may not complain if we are compelled thereby to draw inferences unfavorable to his assertions.

In this case we find it impossible to determine from the affidavits and arguments of counsel what the principle and machine assigned to plaintiff may be in construction, operation, or results. We know a little more of the Keeley motor in this respect, but even that is vague and indefinite. The examination is therefore necessary for an intelligent consideration of the rights of the parties. It may also determine this proceeding, and can be made without injury to the rights of any one interested.

We regret that the zeal of counsel has induced reflections upon Mr. Keely not warranted by the evidence and not necessary for a proper presentation of their case.

The demurrer is overruled, with leave to answer. The order for inspection is allowed. Upon the return thereof the motion to dissolve the special injunction will be determined.

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